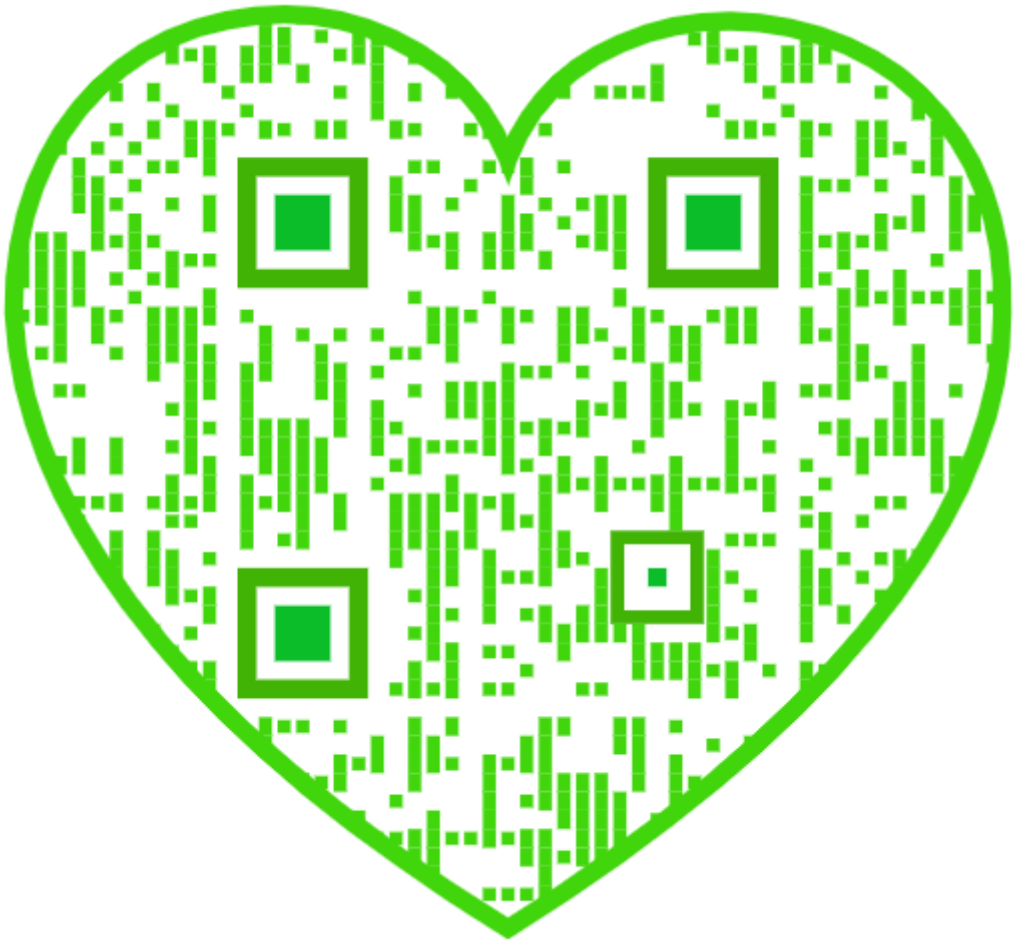

126

A

CYCLOPEDIA OF COMMERCE

AND

COMMERCIAL NAVIGATION.

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PREFACE.

THE want of a comprehensive commercial work has long been felt in the United States—a work exhibiting the condition and resources of the United States and the separate States, as well as of foreign nations. The only attempt hitherto made in this country to supply the want of such a work was the reprint, twenty-five years ago, of M'Culloch's *Dictionary of Commerce and Commercial Navigation.* This work, probably as complete in reference to the commercial statistics of foreign countries as could be made at the time of its compilation, is very deficient in statistics relating to this continent, particularly of the United States. The later editions of Mr. M'Culloch's work contain much matter of an obsolete or local character, in which the American reader feels but little interest; while many subjects of great importance to commercial men in this country are, in the English work, either omitted entirely or mentioned only incidentally.

The extensive and important changes that have taken place within the past ten years in commercial affairs—the establishment of new States, new Territories, new commercial places—the unexampled increase of the commerce of the United States, of the development and the record of the great industrial resources of the United States—all seem to require a new and distinct work, with a view to place before commercial readers a more ample account of the progress of commerce throughout the world. The present volume has been prepared with a view to supply this want; and while we have aimed at presenting a fair exhibit of the finances, the internal and foreign commerce, the staple products of each State, we have at the same time gathered together the latest statistics in reference to the products and the commercial relations of foreign nations; especially of those with whom the United States have the most intimate intercourse.

We have endeavored to present, in a condensed manner and from reliable sources, historical and statistical details in reference to the great staples of the country; of those important products whose export to foreign countries has contributed largely to the prosperity of the States; and the increase of which is calculated to give us in future years a control of the vast markets of the world, and

thus add greatly to the material wealth of the Union. Among these we mention the subjects of Wheat, Corn, Cotton, Rice, Hemp, Provisions, Iron, Copper, Gold and Silver, etc.

This is the first attempt in the United States to collect the historical and statistical facts in reference to these important subjects into one single work. In collecting these materials, and condensing them within a moderate compass, we have been aided by the valuable official Reports issued by the Treasury Department and by the Patent Office of the United States, for a series of years; and by the recent and highly valuable Reports of the Department of State upon *The Commercial Relations of the United States.* Much of the varied and important information contained in those official documents is brought together in the present work under its appropriate heads; so that the reader, instead of the labor of consulting some fifty or sixty volumes, may find every subject discussed under its alphabetical order.

A leading feature of the *Cyclopedia of Commerce*, at least to the American reader, is the reproduction, in brief, of views urged by Chancellor Kent, Judge Story, Professor Parsons, and other authors, upon the subjects of the Laws of Shipping, Insurance, Maritime Law, Seamen, etc. The extracts from these writings are only such, however, as will lead the careful reader to refer for further information on these subjects to the several works themselves.

In regard to the commercial relations of foreign countries—their finances, population, internal and foreign trade, staple productions, etc.—the reader will find condensed, from the most reliable authorities, much valuable information of a late date. The commerce and resources of the principal maritime countries are illustrated up to the years 1856–'57, and the relative importance of each in reference to the others, especially to the United States, is fully illustrated. The foreign trade of the United States with each country for the last thirty-six years is also shown, compiled with great care from the Treasury Reports of the United States from 1821 to 1857. These tabular details, valuable as showing the commercial progress of the United States, have not been officially communicated in a compact form to Congress, but are reproduced from "an Historical and Statistical Account of the Foreign Commerce of the United States," by the junior editor of this work.

The editors take pleasure in acknowledging the valuable aid derived from Mr. Poole's *Index to Periodical Literature*, a necessary appendage to the editorial table, and a key to the fugitive writings of the most able authors, English and American, of the present century; also from Mr. Alexander's elaborate and reliable *Dictionary of Weights and Measures;* from Professor Bache's official Reports on the Coast Survey of the United States; from Mr. Browne's able work on the *Trees of America;* and from Mr. Maury's *Physical Geography of the Sea*, etc.

A *Cyclopedia of Commerce* must necessarily be, in a great measure, a compilation, and any attempt to prepare a work of this character without taking advantage, to the fullest extent, of the labors of predecessors, would result in a failure. And though all of the articles have been rewritten or remodeled, to adapt them to this country, and with new information to bring them up to the present time, many of the important ones are entirely original, as far as compilation goes, and are carefully collated with the latest commercial statistics. Full use has been made of those standard works on commercial affairs which could give information pertaining to the subjects discussed. Under this view nothing more is claimed for this work than that it is a well-digested compilation. The plan of the work is based in many respects upon M'Culloch's *Dictionary of Commerce*, and from this work and the eighth edition of the *Encyclopedia Britannica* (now being published) have been principally compiled the articles relating to the commercial law and commercial trade of foreign countries. The statistics of the commerce of this country have been prepared from official sources, through a series of years; and in all instances no pains have been spared to obtain the latest and most reliable tabular details on all subjects, as they are the foundation and principal value of a work of this kind. In all cases where possible, charts of the harbors and sea-ports, by the latest surveys, have been obtained; and in this we are much indebted to the United States Coast Survey Reports for accurate details of the harbors of our own country. We add here a list of those works consulted, from which we have obtained much of the valuable information contained in the present work.

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LIST OF MAPS AND ENGRAVINGS.

Artesian Wells	Page 62	Life-boats	Page 1212
Atlantic Ocean	" 73	"	" 1213
Harbor of Bahia	" 84	"	" 1214
Harbor of Boston	" 197	"	" 1216
Harbor of Constantinople	" 401	Light-houses	" 1220
Dry Docks	" 550	"	" 1221
Harbor of Elsineur	" 589	"	" 1222
Straits of Gibraltar	" 816	"	" 1223
Gulf Stream	" 915	"	" 1225
Marine Dynamometer	" 935	"	" 1226
Heights of Waves	" 943	Harbor of Rio de Janeiro	" 1637
Harbor and City of Havana	" 949		

ABBREVIATIONS USED.

E. B. for Encyclopedia Britannica. *J. R. M.* for John R. M'Culloch. *Com. Rel.* for Commercial Relations.

A CYCLOPEDIA OF COMMERCE AND COMMERCIAL NAVIGATION.

Aam, Aum, or **Ahm,** a measure for liquids, used at Amsterdam, Antwerp, Hamburg, Frankfort, etc. At Amsterdam it is nearly equal to 41 English wine gallons, at Antwerp to 36½ gallons, at Hamburg to 38¼ gallons, and at Frankfort to 39 gallons.

Aback (a sea term), the situation of the sails when the surfaces are flatted against the masts by the force of the wind. The sails are said to be *taken aback* when they are brought into this situation either by a sudden change of the wind or by an alteration in the ship's course. They are *laid aback*, to effect an immediate retreat, without turning to the right or left; or in the sea phrase, to give the ship *stern-way*, in order to avoid some danger discovered before her in a narrow channel, or when she has advanced beyond her station in the line of battle, or otherwise. The sails are placed in this position by slackening their lee braces, and hauling in the weather ones; so that the whole effort of the wind is exerted on the fore part of their surface, which readily pushes the ship astern, unless she is restrained by some counteracting force.

Abacus is the name of an ancient instrument for facilitating operations in arithmetic. The exhibition of numbers by counters appears happily fitted for unfolding the principles of calculation. In the schools of ancient Greece, the boys acquired the elements of knowledge by working on a smooth board with a narrow rim—the *abax;* so named, evidently, from the combination of A, B, Γ, the first letters of their alphabet, resembling, except perhaps in size, the tablet likewise called A, B, C, on which the children with us used to begin to learn the art of reading. The pupils, in those distant ages, were instructed to compute by forming progressive rows of counters, which, according to the wealth or fancy of the individual, consisted of small pebbles, of round bits of bone or ivory, or even of silver coins. From ψηφος, the Greek word for a *pebble*, comes the verb ψηφιζειν, to *compute*. But the same board served also for teaching the rudiments of writing and the principles of geometry. The *abax* being strewed with green sand, the *pulvis eruditus* of classic authors, it was easy, with a *radius* or small rod, to trace letters, draw lines, construct triangles, or describe circles. Besides the original word Αβαξ, the Greeks had the diminutive Αβακιον; and it seems very probable that this smaller board was commonly used for calculations, while the larger one was reserved among them for the purpose of tracing geometrical diagrams.

To facilitate the working by counters, the construction of the *abacus* was afterward improved. Instead of the perpendicular lines or bars, the board had its surface divided by sets of parallel grooves, by stretched wires, or even by successive rows of holes. It was easy to move small counters in the grooves, to slide perforated beads along the wires, or to stick large nobs or round-headed nails in the different holes. To diminish the number of marks required, every column was surmounted by a shorter one, wherein each counter had the same value as five of the ordinary kind, being half the index of the Denary Scale.

The civil arts of Rome were communicated to other nations by the tide of victory, and maintained through the vigor and firmness of her imperial sway. But the simpler and more useful improvements survived the wreck of empire, among the various people again restored by fortune to their barbarous independence. In all transactions wherein money was concerned, it was found convenient to follow the procedure of the *abacus*, in representing numbers by counters placed in parallel rows. During the Middle Ages, it became the usual practice over Europe for merchants, auditors of accounts, or judges appointed to decide in matters of revenue, to appear on a covered *bank* or *bench*, so called from an old Saxon or Franconian word signifying a *seat*. Hence those terms were afterward appropriated to offices for receiving pledges, chambers for the accommodation of money-dealers, or courts for the trying of questions respecting property or the claims of the crown. Hence also the word *bankrupt*, which occurs in all the dialects of Europe. The term *scaccarium*, from which was derived the French, and thence the English name for the *Exchequer*, anciently signified merely a *chess-board*, being formed from *scaccum*, denoting one of the movable pieces in that intricate game. The reason of this application of the term is sufficiently obvious. The table for accounts was, to facilitate the calculations, always covered with a cloth, resembling the surface of the *scaccarium* or *abacus*, and distinguished by perpendicular or *chequered* lines. The learned Skene was therefore mistaken in supposing that the Exchequer derived its name from the play of chess, because its suitors appear to fight a keen and dubious battle.*

The Court of Exchequer, which takes cognizance of all questions of revenue, was introduced into England by the Norman Conquest. Richard Fitznigel, in a treatise or dialogue on the subject, written about the middle of the twelfth century, says that the *scaccarium*

* "Because mony persons conveents in the Checker to playe their causes, contrare uthers, as gif they were fechtand in an arrayed battell, quilk is the forme and ordour of the said playe." —Skene, ad voc. *Scaccarium.*

was a quadrangular table about ten feet long and five feet broad, with a ledge or border about four inches high, to prevent any thing from rolling over, and was surrounded on all sides by seats for the judges, the tellers, and other officers. It was covered every year, after the term of Easter, with fresh black cloth, divided by perpendicular white lines, or distinctures, at intervals of about a foot or a palm, and again parted by similar transverse lines. In reckoning, they proceeded, he says, according to the rules of arithmetic,* using small coins for counters. The lowest bar exhibited *pence*, the one above it *shillings*, the next *pounds;* and the higher bars denoted successively *tens, twenties, hundreds, thousands*, and *ten thousands* of pounds; though, in those early times of penury and severe economy, it very seldom happened that so large a sum as the last ever came to be reckoned. The first bar, therefore, advanced by *dozens*, the second and third by *scores*, and the rest of the stock of bars by the multiples of *ten*. The teller sat about the middle of the table; on his right hand *eleven* pennies were heaped on the first bar, and a pile of *nineteen* shillings on the second; while a quantity of pounds was collected opposite to him, on the third bar. For the sake of expedition, he might employ a different mark to represent half the value of any bar, a silver penny for ten shillings, and a gold penny for ten pounds.

In early times, a chequered board, the emblem of calculation, was hung out, to indicate an office for changing money. It was afterward adopted as the sign of an inn or *hostelry*, where victuals were sold, or strangers lodged and entertained. We may perceive traces of that ancient practice existing even at present. It is customary in London, and in some provincial towns, to have a chequer, diced with red and white, painted against the sides of the door of a chop-house.

The Chinese have from the remotest ages used, in all their calculations, an instrument called the *Swan-pan*, or *Computing Table*, similar in its shape and construction to the *abacus* of the Romans, but more complete and uniform. It consists of a small oblong board surrounded by a high ledge, and parted lengthwise near the top by another ledge. It is then divided vertically by ten smooth and slender rods of bamboo, on which are strung two small balls of ivory or bone in the upper compartment, and five such balls in the lower and larger compartment; each of the latter on the several bars denoting unit, and each of the form ', for the sake of abbreviation, expressing five.

The system of measures, weights, and coins, which prevails throughout the Chinese empire, being entirely founded on the decimal subdivision, the swan-pan was admirably suited for representing it. The calculator could begin at any particular bar, and reckon with the same facility either upward or downward. This advantage of treating fractions exactly like integers was, in practice, of the utmost consequence. Accordingly, those arithmetical machines, but of very different sizes, are constantly used in all the shops and booths of Canton and other cities, and are said to be handled by the native traders with such rapidity and address as quite astonish the European factors.

Abaft, a sea term signifying the hinder part of a ship, or all those parts both within and without which lie toward the stern, in opposition to *afore*. *Abaft* is also used as a preposition, and signifies *further aft*, or *nearer the stern;* as, the barricade stands *abaft* the main-mast, *i. e.* behind it, or nearer the stern.

Abandonment, in commerce and navigation, is used to express the abandoning or surrendering of the ship or goods insured to the insurer.

It is held, by the law of England, that the insured has the right to abandon, and to compel the insurers to pay the whole value of the thing insured, in every case "where, by the happening of any of the misfortunes or perils insured against, the voyage is lost, or not worth pursuing, and the projected adventure is frustrated; or where the thing insured is so damaged and spoiled as to be of little or no value to the owner; or where the salvage is very high; or where what is saved is of less value than the freight; or where further expense is necessary, and the insurer will not undertake to pay that expense," etc.—Marshall, book i. cap. 13, § 1.

Abandonment very frequently takes place in cases of capture: the loss is then total, and no question can arise in respect to it. In cases, however, in which a ship and cargo are recaptured *within such a time that the object of the voyage is not lost*, the insured is not entitled to abandon. The mere *stranding* of a ship is not deemed of itself such a loss as will justify an abandonment. If by some fortunate accident, by the exertions of the crew, or by any borrowed assistance, the ship be got off and rendered capable of continuing her voyage, it is not a total loss, and the insurers are only liable for the expenses occasioned by the stranding. It is only where the stranding is followed by *shipwreck*, or in any other way renders the ship incapable of prosecuting her voyage, that the insured can abandon.

It has been decided that damage sustained in a voyage to the extent of forty-eight per cent. of the value of the ship did not entitle the insured to abandon. If a cargo be damaged in the course of a voyage, and it appears that what has been saved is less than the amount of freight, it is held to be a total loss.—Park *on Insurance*, cap. 9.

When by the occurrence of any of the perils insured against the insured has acquired a right to abandon, he is at liberty either to abandon or not, as he thinks proper. He is in no case bound to abandon; but if he make an election, and resolve to abandon, he must abide by his resolution, and has no longer the power to claim for a partial loss. In some foreign countries specific periods are fixed by law within which the insured, after being informed of the loss, must elect either to abandon or not. In England, however, no particular period is fixed for this purpose; but the rule is, that if the insured determine to abandon, he must intimate such determination to the insurers within a *reasonable period* after he has got intelligence of the loss—any unnecessary delay in making this intimation being interpreted to mean that he has decided not to abandon.

No particular form or solemnity is required in giving notice of an abandonment. It may be given either to the underwriter himself, or the agent who subscribed for him.

"The effect of an abandonment is to vest all the rights of the insured in the insurers. The latter become the legal owners of the ship, and as such are liable for all her future outgoings, and entitled to her future earnings. An abandonment, when once made, is irrevocable.

"A total loss within the meaning of the policy may arise either by the total destruction of the thing insured, or, if it specifically remains, by such damage to it as renders it of little or no value. A loss is said to be total if the voyage be entirely lost or defeated, or not worth pursuing, and the projected adventure frustrated. It is a constructive total loss if the thing insured, though existing in fact, is lost for any beneficial purpose to the owner. In such cases the insured may abandon all his interest in the subject insured and all his hopes of recovery to the insurer, and call upon him to pay as for a total loss. The object of the provision is to enable the insured to be promptly reinstated in his capital, and be thereby enabled to engage in some new mercantile adventure. Long interruption to a voyage, and uncertain hopes of recovery, would often be ruinous to the business of the merchant; and therefore, if the object of the voyage be lost, or not worth pursuing by reason of the peril insured against, or if the cargo be so damaged as to be of little or no value, or where

* He calls it *Ariemetica:* In the *Myrrour of the Worlde*, printed by Caxton in 1481, it is strangely named *Ars Metrike*, a proof of the total ignorance of Greek at that period in England.

the salvage is very high and further expense be necessary, and the insurer will not engage to bear it, or if what is saved be of less value than the freight, or where the damage exceeds one half the value of the goods insured, or where the property is captured, or arrested, or even detained by an indefinite embargo; in these and other cases of a like nature the insured may disentangle himself and abandon the subject to the underwriter, and call upon him to pay a total loss. In such cases the insurer stands in the place of the insured, and takes the subject to himself, with all the chances of recovery and indemnity. A valid abandonment has a retrospective effect, and does of itself, and without any deed of cession, and prior to the actual payment of the loss, transfer the right of property to the insurer to the extent of the insurance; and if after an abandonment, duly made and accepted, the ship should be recovered, and proceed and make a prosperous voyage, the insurer, as owner, would reap the profits.

"These considerations have introduced the right of abandonment into the insurance law of every country, and yet the text writers have generally condemned the privilege as inconsistent with just notions concerning the nature of the contract of insurance, which is a contract of indemnity. But it has now become an ingredient so interwoven with the whole system of insurance, that it can not be abolished; though the late English cases, says Mr. Benecke, show a stronger inclination in the courts to restrict than to enlarge the right. The laws of Hamburg distinguish themselves from all others, by restricting the right of abandonment to the only case of a missing ship.

"As soon as the insured is informed of the loss, he ought (after being allowed a reasonable time to inspect the cargo, and for no other purpose) to determine promptly whether he will or will not abandon, and he can not lie by and speculate on events. If he elects to abandon, he must do it in a reasonable time, and give notice promptly to the insurer of his determination; otherwise he will be deemed to have waived his right to abandon, and will be entitled to recover only for a partial loss, unless the loss be, in fact, absolutely total. If the thing insured exists in specie, and the insured wishes to go for a total loss, an abandonment is indispensable. The same principle which requires the insured, who abandons, to do it in a reasonable time, also requires the insurer, who rejects an abandonment, to act promptly. The object of the abandonment is to turn that into a total loss which otherwise would not be one; and it is unnecessary, and would be idle, to abandon in the case of an entire destruction of the subject. It is only necessary when the loss is constructively total within the policy, and not an actual total loss. The right of abandonment does not depend upon the certainty, but upon the high probability, of a total loss, either of the property, or voyage, or both. The insured is to act, not upon certainties, but upon probabilities; and if the facts present a case of extreme hazard, and of probable expense, exceeding half the value of the ship, the insured may abandon, though it should happen that she was afterward recovered at a less expense. Though the subject may physically exist, yet there may be a technical total loss to the owner if the things be taken from his free use and possession. Such are the common cases of total losses by embargoes, by captures, and by restraints, and detainments of princes.

"The right to abandon exists when the ship, for all the useful purposes of the voyage, is gone from the control of the owner; as in the cases of submersion, or shipwreck, or capture, and it is uncertain, or the time unreasonably distant, when it will be restored in a state to resume the voyage; or when the risk and expense of restoring the vessel are disproportioned to the expected benefit and objects of the voyage. All these general doctrines concerning abandonment have been entirely incorporated into our American law, and they exist to all essential purposes in the French jurisprudence.

"Upon a valid abandonment, either of the vessel or of the cargo insured, the master becomes the agent of the insurer, and the insured is not bound by his subsequent acts unless he adopts them. The owner or insured, equally with the master, becomes the agent of the insurer on abandonment, and he can not purchase in the property on his own account without the consent of his principals; and if he does, it revokes the abandonment, and turns the total into a partial loss. It is the duty of the master, resulting from his situation, to act with good faith, and care, and diligence, for the protection and recovery of the property, for the benefit of whom it may eventually concern. The master of an insured ship injured by the perils of the sea, and not competent to complete the voyage, may sell her in a case of necessity, as when the ship is in a place in which she can not be repaired; or the expense of repairing her will be extravagant, and exceed her value; or when he has no money in his possession, and is not able to raise any. In cases of capture, he is bound, if a neutral, to remain and assert his claim until condemnation, or the recovery be hopeless. His wages, and those of the crew, are a charge on the owner, and ultimately, in case of recovery, to be borne as a general average by all parties in interest; and if the abandonment be accepted, the underwriter becomes owner for the voyage, and in that character liable for the seamen's wages, and entitled to the freight subsequently earned. If the master purchases in the vessel, or ransoms her, the insurer will be entitled to the benefit of the purchase or composition; and, on the other hand, if the insured affirms the purchase of the master, it will be, at the option of the insurer, a waiver of the abandonment. The insurer can accept of the repurchase of the master, as his constructive agent, and affirm the act, or he may leave it to fall upon the master.

"The assured has the right of abandoning the freight when there has been a constructive total loss of the ship; and he has sustained a total loss of the freight, if he abandons the ship to the underwriters on the ship, when the case justifies it, for after such abandonment, he has no longer the means of earning the freight, or of receiving it if earned, for the freight goes to the underwriters on the ship. But it has been a very controverted question, whether an abandonment of the ship transferred the freight in whole or in part. It was finally settled in the jurisprudence of New York and of Massachusetts, and adopted as the true rule in the Circuit Court of the United States for Massachusetts, that on an accepted abandonment of the ship, the freight earned previous to the disaster was to be retained by the owner or his representative, the insurer on the freight, and apportioned *pro rata itineris;* and that the freight subsequently earned went to the insurer on the ship."—*See* KENT'S *Comm.*, Lect. XLVIII. vol. iii.

Abassi, or **Abassis**, a silver coin current in Persia, equivalent in value to a French livre, or at present tenpence sterling. It took its name from Schah Abbas II., king of Persia, under whom it was struck.

Abatement, or **Rebate**, is the name sometimes given to a discount allowed for prompt payment; it is also sometimes used to express the deduction that is occasionally made at the custom-house from the duties chargeable upon such goods as are damaged, and for loss in warehouses.

Abattoir, the term applied by the French to designate slaughter-houses for cattle. These useful establishments were introduced into Paris and other large cities by Napoleon. Formerly the multitude of animals slaughtered in Paris became a nuisance of great magnitude to the inhabitants, from the exhibition of the barbarities practiced on the poor animals by the butchers, the piteous cries of sheep and cattle pent up,

without food or water, in the confined stalls in which they were crowded, and from the offensive exhalations of putrid blood and offal that proceeded from slaughter-houses, often planted in the most populous parts of the city. The same nuisance, till lately, disgraced the British metropolis, and many other English towns. It appears hardly conceivable that London should, till 1852, have tolerated the nuisance of Smithfield market. When this mart was established five centuries ago, it was far beyond the precincts of the city. There, in the midst of a dense population, no fewer than 248,537 head of cattle, and 1,455,249 sheep were sold in 1852, to be afterward slaughtered in the crowded lanes and ill-ventilated courts of the metropolis; while the French, and the people of the United States, do not tolerate such sources of disgust and disease in the interior of their great towns.

The abattoirs of Paris, created by Napoleon's decree of 1810, amounted to five in 1818, when they were all completed, and put under excellent regulation. There are three on the north, and two on the south side of Paris; and all are in the outskirts of the town, about two miles from its centre. The largest to the north is in the Rue Rochechouart, between the Barrieres Poissonnieres and des Martyres; the largest on the south side is just behind the Place Breteuil; the rest are near the banks of the Seine. The cattle-markets are all at the distance of some miles from Paris; and the cattle are driven from them to the abattoirs, round by the external Boulevards, so as to avoid the streets as much as possible.

Each butcher goes to his own abattoir; to which are attached proper places for preserving the meat, provided with an iron rack for the fat, pans for melting the tallow, and stalls for the cattle before they are slaughtered. The stalls are furnished with proper racks and troughs for hay and water, that the animals may suffer as little as possible before they are slaughtered. The abattoirs and the whole establishment are kept very clean by an abundant supply of water, that carries off the blood and all impurities into sewers. Considering the nature of the place, every thing is commendably clean.

An inspector is appointed to each abattoir, whose business it is to prevent the sale of unwholesome meat, and to enforce order and cleanliness. For these accommodations a butcher pays according to the number of animals he slaughters. The sum now paid for each ox is six francs, four for a cow, two for a calf, and one for a sheep or lamb. The money thus raised from all the Parisian abattoirs in 1842 amounted to about £48,000 sterling. It is greatly to be wished that some regulations like those of the French abattoirs were introduced into the principal English towns, especially London, Liverpool, Manchester, Glasgow, etc., as has lately been done at Edinburgh.

In 1851, the corporation of Edinburgh constructed a greatly improved abattoir in that city, from designs prepared by Mr. David Cousin, the city architect. It occupies an area of four acres and a quarter, surrounded by a screen-wall, with entrance gates on each side in the Egyptian style of architecture; behind the screen-wall is a large open area, from which access is given to all the different buildings connected with the establishment. The slaughtering booths consist of a double row of buildings, extending in a straight line to about 376 feet in length, with a centre roadway 25 feet wide. There are three separate blocks of building on each side of the roadway, the extreme blocks being each 100 feet in length, and the central one 140 feet, with cross-roads 18 feet wide between these, giving access to the other portions of the grounds. The different ranges of building contain 42 booths in all; each booth is 18 feet wide, 24 feet in length, and 20 feet in height, having a cattle shed attached, 18 feet by 22 feet, and a small inclosed yard behind, with a separate back entrance, by which all the cattle are driven into the sheds, where they are kept previously to being slaughtered. By a series of large ventilators along the roof, and by other contrivances, these buildings are thoroughly ventilated. The large doors of the booths, instead of being hinged in the usual manner, are hung by balance weights, so as to slide up and down similarly to an ordinary sash-window, so that they never interfere with the operations within, or with the thoroughfare of the road.

Improved mechanical contrivances have been introduced, some of them of a novel application, which have secured great facilities in the dressing and preparation of the meat. Each booth is amply provided with water. In addition to the slaughtering booths, there is large accommodation for triperies, pig-slaughtering houses, tallow-weighing houses, and all the other necessaries of such an establishment.

The whole of the booths have been laid with thick, well-dressed pavement, resting on a stratum of concrete twelve inches thick, and the walls to the height of seven feet are formed of solid ashler, so as to prevent the possibility of rats burrowing in them. With this view also, the whole surface of the roadways has been laid with concrete and causewayed with well-dressed whinstone pavement. The drainage, also, consists entirely of glazed earthen-ware tiles, so that the whole area of the buildings is rendered impervious to these destructive vermin. There are two distinct sets of drains, one for surface water, which is conveyed directly into Lochrin burn; the other for soil from the booths, which is conveyed into large tanks formed for its reception, and sold for agricultural purposes.

Before the erection of these buildings, private slaughter-houses were scattered all over the city, often in the most populous districts, where, through want of drainage and imperfect ventilation, they contaminated the whole neighborhood. Since the opening of the public abattoir, all private slaughter-houses are prohibited.

Aboard, the inside of a ship. Hence any person who enters a ship is said to *go aboard:* but when an enemy enters in the time of battle, he is said to *board;* a phrase which always implies hostility.—To *fall aboard of*, is to strike or *encounter* another ship when one or both are in motion, or to be driven upon a ship by the force of the wind or current.—*Aboard-main-tack*, the order to draw the main-tack, *i. e.* the lower corner of the mainsail, down to the Chess-Tree.

Abrasion is sometimes used to denote the wear and tear of coins. The deficiency in the weight of the old worn coins, on their being called in to be recoined, falls upon the public. Mr. M'Culloch reckons, that if the currency of the United Kingdom consisted wholly of gold, it would amount to at least sixty millions of sovereigns, and that the loss sustained by abrasion, including what results from shipwreck, fire, and other accidents, would amount to a hundredth part of the sum in circulation, or £600,000 annually.—M'Culloch's *Treatises and Essays on Economical Policy*, p. 33.

Acacia, Egyptian Thorn, or **Binding Beantree,** in *Botany*, a species of mimosa, according to Linnæus, though other botanists make it a distinct genus. Several species of acacia produce *gum arabic*, especially *A. Ehrenbergii*, *A. tortilis*, *A. arabica*, *A. vera*, *A. Seyal*, *A. Verek*. An inferior sort is produced by *A. Adansonii*, *A. albida*, and *A. Karro*. These are natives of Egypt, Arabia, or Africa. The inspissated gum of the bark of *A. catechu* forms the astringent substance named catechu; which, however, is also produced in India from several other trees. The bark of several species of acacia produces a *tannin;* of which a large quantity is now imported from Van Diemen's Land for the purposes of the tanner, and is chiefly the produce of *A. decurrens* and *A. mollissima*.

A. julibrissin, a native of Persia, has, on account of its elegant foliage and flowers, been long acclimated in England; *A. sophora* is a fragrant species, that has

more lately been introduced, and is nearly acclimated in the south of our island. It flowers early in spring, and bears many clusters of rich yellow flowers. The flowers of a species of the acacia are used by the Chinese in making that yellow which we see bears washing in their silks and stuffs, and appears with so much elegance in their painting on paper. The method is this: They gather the flowers before they are fully open; these they put in a clean earthen vessel over a gentle heat, and stir them continually about as they do the tea-leaves, till they become dryish and of a yellow color; then to half a pound of flowers they add three spoonfuls of fair water, and after that a little more, till there is just enough to hold the flowers incorporated together; they boil this for some time, and the juice of the flowers mixing with the water, it becomes thick and yellow; they then take it from the fire, and strain it through a piece of coarse silk. To the liquor they add half an ounce of common alum, and an ounce of calcined oyster-shells reduced to a fine powder. All is then well mixed together; and this is the fine lasting yellow they have so long used.

The dyers of large pieces use the flowers and seeds of the acacia for dyeing three different sorts of yellow. They roast the flowers, as before observed, and then mix the seeds with them, which must be gathered for this purpose when fully ripe; by different admixtures of these they give the different shades of color, only for the deepest of all they add a small quantity of Brazil wood.

Mr. Geoffroy attributes the origin of bezoar to the seeds of this plant; which being browsed by certain animals, and vellicating the stomach by their great great sourness and astringency, cause a condensation of the juices, till at length they become coated over with a stony matter which we call BEZOAR.

Acapulco, a sea-port on the western coast of Mexico, in lat. 16° 50′ 29″ N., long. 99° 46′ W. Pop. 4000 (?). "It is," says Captain Hall, "the very *beau ideal* of a harbor. It is easy of access, very capacious, the water not too deep, the holding ground good, quite free from hidden dangers,* and as secure as the basin in the centre of Portsmouth dock-yard."—*South America*, ii. 172. Previously to the emancipation of Spanish America, a galleon, or large ship, richly laden, was annually sent from Acapulco to Manilla, in the Philippine Islands, and at her return a fair was held, which was much resorted to by strangers. But this sort of intercourse is no longer carried on, the trade to Manilla and all other places being now conducted by private individuals. The exports consist of bullion, cochineal, cocoa, indigo, etc. The imports principally consist of cotton goods, hardware, articles of jewelry, raw and wrought silks, spices, and aromatics. Acapulco, for foreigners, is extremely unhealthy; and though it be one of the principal ports on the west coast of Mexico, its commerce is but inconsiderable. The navigation from Acapulco to Guayaquil and Callao is exceedingly tedious and difficult, so that there is but little intercourse between Mexico and Peru, Panama having of late years become the leading port for foreign imports near this latitude.

Account, or **Accompt**, in a general sense, a computation or reckoning of any thing by numbers. Collectively, it is used to express the books which merchants, traders, bankers, etc., use for recording their transactions in business.

Accountant, or **Accomptant**, in the most general sense, is a person skilled in accounts. In a more restricted sense, it is applied to a person or officer appointed to keep the accounts of a public company or office.

Accountant-General, an officer in the English Court of Chancery, appointed by act of Parliament to receive all moneys lodged in court, instead of the masters, and convey the same to the Bank of England for security. There is also an accountant-general in the Irish Chancery, and one in Scotland, who has charge of the accounts of the Court of Session.

Accounts, Chamber of, in the French polity, a sovereign court of great antiquity, which took cognizance of and registered the accounts of the king's revenue; nearly the same with the English *Court of Exchequer*.

Acids are a class of compounds which are distinguished from all others by the following properties: They are generally possessed of a very sharp and sour taste; redden the infusions of blue vegetable colors; are often highly corrosive, and enter into combination with the alkalies, earths, and metallic oxides; forming compounds in which the characters of the constituents are entirely destroyed, and new ones produced differing in every respect from those previously existing. The quality or strength of an acid is generally ascertained either by its specific gravity, which is found by means of the hydrometer, if the acid be liquid, or by the quantity of pure and dry subcarbonate of potass or soda, or of carbonate of lime (marble), which a given weight of the acid requires for its exact neutralization. This latter process is termed Acidimetry, or the ascertaining the quantity of *real* acid existing in any of the liquid or crystallized acids.

The principal acids at present known are, the Acetic, Benzoic, Boracic, Bromic, Carbonic, Citric, Chloric, Cyanic, Fluoric, Ferroprussic, Gallic, Hydrobromic, Hydriodic, Iodic, Lactic, Malic, Margaric, Meconic, Muriatic or Hydrochloric, Nitrous, Nitric, Oleic, Oxalic, Phosphoric, Prussic or Hydrocyanic, Purpuric, Saccholactic, Suberic, Sulphurous, Sulphuric, Tartaric, Uric, and many others which it would be superfluous to detail. It is the most important only of these, however, that will be here treated of, and more particularly those employed in the arts and manufactures.

Acetic or pyroligneous Acid.—This acid, in its pure and concentrated form, is obtained from the fluid matter which passes over in distillation, when wood is exposed to heat in close iron cylinders. This fluid is a mixture of acetic acid, tar, and a very volatile ether; from these the acid may be separated, after a second distillation, by saturating with chalk, and evaporating to dryness; an acetate of lime is thus procured, which, by mixture with sulphate of soda (Glauber's salt), is decomposed, the resulting compounds being an insoluble sulphate of lime, and a very soluble acetate of soda; these are easily separated from each other by solution in water and filtration; the acetate of soda being obtained in the crystalline form by evaporation. From this, or the acetate of lime, some manufacturers employing the former, others the latter, the acetic acid is obtained by distillation with sulphuric acid (oil of vitriol); as thus procured, it is a colorless, volatile fluid, having a very pungent and refreshing odor, and a strong acid taste. Its strength should be ascertained by the quantity of marble required for its neutralization, as its specific gravity does not give a correct indication. It is employed in the preparation of the acetate of lead (sugar of lead), in many of the pharmaceutical compounds, and also as an antiseptic.

Vinegar is an impure and very dilute acetic acid, obtained by exposing either weak wines or infusions of malt to the air and a slow fermentation; it contains, besides the pure acid, a large quantity of coloring matter, some mucilage, and a little spirit; from these it is readily separated by distillation. The impurities with which this distilled vinegar is sometimes adulterated, or with which it is accidentally contaminated, are oil of vitriol, added to increase the acidity, and oxides of tin or copper, arising from the vinegar having been distilled through tin or copper worms. These may be easily detected; the oil of vitriol by the addition of a

* This is not quite accurate. There is one shoal on which a vessel was lost in 1781; but being laid down in the charts, it is easily avoided.—HUMBOLDT, *Nouvelle Espagne*, iv. 90.

little solution of muriate of barytes to the distilled vinegar, which, should the acid be present, will cause a dense white precipitate; and the oxides of tin or copper by the addition of water impregnated with sulphureted hydrogen. Vinegar is employed in many culinary and domestic operations, and also very largely in the manufacture of the carbonate of lead (white-lead).

Benzoic Acid exists naturally formed in the gum benzoin, and may be procured either by submitting the benzoin in fine powder to repeated sublimations, or by digesting it with lime and water, straining off the clear solution, and adding muriatic acid, which enters into combination with the lime, and the benzoic acid, being nearly insoluble in water, falls as a white powder; this may be further purified by a sublimation. Benzoic acid is of a beautiful pearly white color when pure, has a very peculiar aromatic odor, and an acrid, acid, and bitter taste; it is used in making pastilles and perfumed incense. This acid also occurs in the balsams of Tolú and Peru, and in the urine of the horse and cow.

Boracic Acid is found in an uncombined state in many of the hot springs of Tuscany, as also at Sesso, in the Florentine territory, from whence it has received the name of Sessolin. In Thibet, Persia, and South America, it occurs in combination with soda, and is imported from the former place into this country in a crystalline form, under the name of Tincal. These crystals are coated with a rancid, fatty substance, and require to be purified by repeated solutions and crystallizations; after which it is sold under the appellation of borax (biborate of soda); from a hot solution of this salt the boracic acid is readily obtained, by the addition of sulphuric acid in slight excess; sulphate of soda is formed, and the boracic acid crystallizes as the solution cools. When pure, these crystals are white, and have an unctuous greasy feel; they are soluble in alcohol, communicating a green tinge to its flame; when fused it forms a transparent glass, and has been found by Mr. Faraday to unite with the oxide of lead, producing a very uniform glass, free from all defects, and well adapted for the purpose of telescopes and other astronomical instruments. Borax is much employed in the arts, particularly in metallurgic operations as a flux; also in enameling and in pharmacy. (*See* Borax.)

Carbonic Acid.—This acid occurs very abundantly in nature, combined with lime, magnesia, barytes, aerial acid, fixed air, mephitic acid: from any of these it is easily separated by the addition of nearly any of the other acids. In its uncombined form it is a transparent, gaseous fluid, having a density of 1·53, atmospheric air being unity; it is absorbed to a considerable extent by water, and when the water is rendered slightly alkaline by the addition of carbonate of soda, and a large quantity of gas forced into it by pressure, it forms the well-known refreshing beverage soda water. This gas is also formed in very large quantities during combustion, respiration, and fermentation. Carbonic acid gas is destructive of animal life and combustion, and from its great weight accumulates in the bottoms of deep wells, cells, caves, etc., which have been closed for a long period, and numerous fatal accidents arise frequently to persons entering such places incautiously. The precaution should always be taken of introducing a lighted candle prior to the descent or entrance of any one; for, should the candle be extinguished, it would be dangerous to enter until properly ventilated. The combinations of carbonic acid with the alkalies, earths, and metallic oxides are termed carbonates.

Citric Acid exists in a free state in the juice of the lemon, lime, and other fruits, combined, however, with mucilage, and sometimes a little sugar, which renders it, if required to be preserved for a long period, very liable to ferment; on this account the crystallized citric acid is to be preferred. It is prepared by saturating the lemon juice with chalk; the citric acid combines with the lime, forming an insoluble compound, while the carbonic acid is liberated; the insoluble citrate, after being well washed, is to be acted upon by dilute sulphuric acid, which forms sulphate of lime, and the citric acid enters into solution in the water; by filtration and evaporation the citric acid is obtained in colorless transparent crystals. The chief uses to which it is applied are as a preventive of sea scurvy, and in making refreshing acidulous or effervescing drinks; for which latter purposes it is peculiarly fitted from its very pleasant flavor.

Fluoric Acid is found in the well-known mineral fluor spar in combination with lime; from which it is procured in the liquid form by distillation with dilute sulphuric acid in a leaden or silver retort: the receiver should be of the same material as the retort, and kept cool by ice or snow.

This acid is gaseous in its pure form, highly corrosive, and intensely acid; it is rapidly absorbed by water, communicating its properties to that fluid. Its chief use is for etching on glass, which it corrodes with great rapidity. For this purpose a thin coating of wax is to be melted on the surface of the glass, and the sketch drawn by a fine hard-pointed instrument through the wax; the liquid acid is then poured on it, and after a short time, on the removal of the acid and coating, an etching will be found in the substance of the glass. A very excellent application of this property, possessed by fluoric acid, is in the roughing the shades for table lamps. All the metals, except silver, lead, and platina, are acted upon by this acid.

Gallic Acid.—The source from which this acid is generally obtained is the nut-gall, a hard protuberance produced on the oak by the puncture of insects. The most simple method of procuring the acid in its pure form is to submit the galls in fine powder to sublimation in a retort, taking care that the heat be applied slowly and with caution; the other processes require a very long period for their completion. When pure, gallic acid has a white and silky appearance, and a highly astringent and slightly acid taste. The nut-galls, which owe their properties to the gallic acid they contain, are employed very extensively in the arts for dyeing and staining silks, cloths, and woods of a black color; this is owing to its forming with the oxide of iron an intense black precipitate. Writing-ink is made on the same principle; a very excellent receipt of the late Dr. Black's is, to take 8 ounces of the best Aleppo galls in fine powder, 1 ounce sulphate of iron (green vitriol), 1 ounce of logwood finely rasped, 1 ounce of gum arabic, 1 pint of the best vinegar, 1 pint of soft water, and 8 or 10 cloves; in this case the black precipitate is kept suspended by the gum.

Hydriodic Acid is a compound of iodine and hydrogen. In its separate form it is of very little importance in the arts.

Malic Acid exists in the juices of many fruits, particularly the apple, as also in the berries of the service and mountain ash.

Meconic Acid is found in opium, in combination with morphia, forming the meconate of morphia, on which the action of opium principally depends.

Muriatic Acid, or *Spirits of Salts.*—This acid (the hydrochloric of the French chemists) is manufactured from the chloride of sodium (dry sea salt), by the action of sulphuric acid (oil of vitriol). The most economical proportions are 20 pounds of fused salt, and 20 pounds of oil of vitriol previously mixed with an equal weight of water; these are placed in an iron or earthen pot, to which an earthen head and receiver are adapted, and submitted to distillation; the muriatic acid passes over in the vaporous form, and may be easily condensed. The liquid acid thus obtained should have a specific gravity of 117, water being equal to 100; it has a strong acid taste, and a slight yellow color; this is owing to a small quantity of oxide of iron. By redistillation in a glass retort at a low temperature, it may be

obtained perfectly pure and colorless. It sometimes contains a little sulphuric acid; this is detected by a solution of muriate of barytes. Muriatic acid, in its uncombined state, is an invisible elastic gas, having a very strong affinity for water; that fluid absorbing, at a temperature of 40° Fahrenheit, 480 times its volume, and the resulting liquid acid has a density of 121. So great is this attraction for water, that when the gas is liberated into the air, it combines with the moisture always present in that medium, forming dense white vapors. Its combinations with the alkalies, etc., are termed muriates; those of the greatest importance are the muriates of tin, ammonia, barytes, and sea salt. The test for the presence of muriatic acid in any liquid is the nitrate of silver (lunar caustic), which causes a curdy white precipitate.

Nitric Acid, or Aquafortis.—This, which is one of the most useful acids with which the chemist is acquainted, is prepared by acting upon saltpetre (nitric or nitrate of potass) with oil of vitriol: the proportions best suited for this purpose are three parts, by weight, of nitre, and two of oil of vitriol; or 100 nitre, and 60 oil of vitriol previously diluted with 20 of water: either of these proportions will produce a very excellent acid. When submitted to distillation, which should be conducted in earthen or glass vessels, the nitric acid passes over in the form of vapor, and a bisulphate of potass (sal mixum) remains in the retort.

Nitric acid of commerce has usually a dark orange-red color, giving off copious fumes, and having a specific gravity of 150, water being 100. It is strongly acid and highly corrosive. It may be obtained perfectly colorless by a second distillation, rejecting the first portion that passes over. It is much employed in the arts for etching on copper plates for engraving; also, for the separation of silver from gold in the process of quartation. In pharmacy and surgery it is extensively used, and is employed for destroying contagious effluvia. Combined with muriatic acid, it forms aqua regia (nitro-muriatic acid), used as a solvent for gold, platina, etc. This acid is frequently contaminated with the muriatic and sulphuric acids; these may be detected by the following methods: A portion of the suspected acid should be diluted with three or four times its volume of distilled water, and divided into two glasses; to one of which nitrate of silver (lunar caustic) in solution is to be added, and to the other nitrate of barytes: if muriatic acid be present, a white curdy precipitate will be thrown down by the former; and if sulphuric, a white granular precipitate by the latter.

Oxalic Acid occurs in combination with potass as binoxalate of potass in the different varieties of sorrel, from whence the binoxalate of potass has been termed salt of sorrel. This acid is usually prepared by the action of nitric acid upon sugar, evaporating the solution, after the action has ceased, to the consistence of a syrup, and redissolving and recrystallizing the crystals which are thus procured.

It is sold in small white acicular crystals, of a strongly acid taste and highly poisonous, and sometimes in its external appearance bears a strong similarity to Epsom salts (sulphate of magnesia), which it has been unfortunately frequently mistaken for. It is instantly distinguished from Epsom salts by placing a small crystal upon the tongue; when its strong acid taste, compared with the nauseous bitter of the sulphate of magnesia, will be quite a sufficient criterion. In cases of poisoning, however, by this acid, lime or chalk, mixed with water to form a cream, should be immediately administered, the combinations of oxalic acid with these substances being perfectly inert. It is employed in removing ink-stains, iron-moulds, etc., from linen and leather; the best proportions for these purposes are 1 ounce of the acid to a pint of water. The most delicate test of the presence of oxalic acid is a salt of lime or lime-water, with either of which it forms a white precipitate, insoluble in water, but soluble in acids. Its combinations are termed oxalates.

Phosphoric Acid is of very little importance in a commercial point of view, except as forming with lime the earth of bones (phosphate of lime). It is prepared by heating bones to whiteness in a furnace; from this phosphoric acid is obtained by the action of sulphuric acid, still combined, however, with a small quantity of lime. The action of nitric acid upon phosphorus, the latter being added gradually and in small pieces, yields this acid in a state of purity: its combinations are termed phosphates.

Prussic Acid, or Hydrocyanic Acid.—This acid, which is the most virulent and poisonous acid known, is contained in peach blossoms, bay leaves, and many other vegetable productions, which owe their peculiar odor to the presence of prussic acid. For the purposes of medicine and chemistry, this acid is prepared either by distilling one part of the cyanuret of mercury, one part of muriatic acid of specific gravity 1·15, and six parts of water, six parts of prussic acid being collected; or, by dissolving a certain weight of cyanuret of mercury, and passing a current of sulphureted hydrogen through the solution, until the whole of the mercury shall be precipitated; if an excess of sulphureted hydrogen should be present, a little carbonate of lead (white lead) will remove it; on filtering, a colorless prussic acid will be obtained. By the first process, which is the one followed at Apothecaries' Hall, the acid has a density of 995, water being equal to 1000; by the latter, it may be procured of any required strength, depending on the quantity of cyanuret of mercury dissolved. The best test for the presence of this acid is, first to add a small quantity of the protosulphate of iron (solution of green vitriol), then a little solution of potassa, and, lastly, diluted sulphuric acid; if prussic acid be present, Prussian blue will be formed. Its combinations are called prussiates or hydrocyanates; when in its concentrated form, it is so rapid in its effects that large animals have been killed in the short space of 80 seconds, or from a minute to a minute and a half.

Sulphurous Acid is formed whenever sulphur is burned in atmospheric air; it is a suffocating and pungent gas, strongly acid, bleaches vegetable colors with great rapidity, and arrests the process of vinous fermentation. For these purposes it is therefore very much employed, especially in bleaching woolen goods and straws. Fermentation may be immediately arrested by burning a small quantity of sulphur in casks, and then racking off the wine while still fermenting into them; this frequently gives the wine a very unpleasant taste of sulphur, which is avoided by the use of sulphate of potass, made by impregnating a solution of potass with sulphurous acid gas.

Sulphuric Acid, or Oil of Vitriol, called oil of vitriol from its having been formerly manufactured from green vitriol (sulphate of iron). In some parts of the Continent this process is still followed. The method generally adopted in this country is to introduce nine parts of sulphur, intimately mixed with one part of nitre, in a state of active combustion, into large leaden chambers, the bottoms of which are covered with a stratum of water. Sulphurous and nitrous acid gases are generated, which, entering into combination, form a white crystalline solid, which falls to the bottom of the chamber; the instant that the water comes in contact with it, this solid is decomposed with a hissing noise and effervescence, sulphuric acid combines with the water, and nitrous gas is liberated, which, combining with oxygen from the air of the chamber, is converted into nitrous acid gas, again combines with sulphurous acid gas, and again falls to the bottom of the chamber: this process continues as long as the combustion of the sulphur is kept up, or as long as atmospheric air remains in the chamber; the nitrous acid merely serving as a means for the transference of oxygen from the at-

mosphere to the sulphurous acid to convert it into sulphuric acid. The water is removed from the chamber when of a certain strength, and replaced by fresh. These acid waters are then evaporated in leaden boilers, and finally concentrated in glass or platina vessels. As thus manufactured, sulphuric acid is a dense oily fluid, colorless, intensely acid, and highly corrosive, and has a specific gravity of 1846, water being equal to 1000. This acid is the most important with which we are acquainted; it is employed in the manufacture of the nitric, muriatic, acetic, phosphoric, citric, tartaric, and many other acids; also in the preparation of chlorine, for the manufacture of the bleaching powder (oxymuriate of lime, or chloride of lime), for the preparation of sulphate of mercury, in the manufacture of calomel and corrosive sublimate, and in innumerable other chemical manufactures. In the practice of physic it is also very much employed. It usually contains a little oxide of lead, which is readily detected by diluting the acid with about four times its volume of water, and allowing the sulphate of lead to subside. Its combinations are denominated sulphates. The fuming sulphuric acid, as manufactured at Nordhausen, contains only one half the quantity of water in its composition.

Tartaric Acid.—This acid is procured from the cream of tartar (bitartrate of potass), obtained by purifying the crust which separates during the fermentation of wines by solution and crystallization. When this purified bitartrate is dissolved, and lime or carbonate of lime added, an insoluble tartrate of lime falls, which, after washing, should be acted upon by sulphuric acid; sulphate of lime is thus formed, and the tartaric acid enters into solution, and may be obtained by evaporation and crystallization. It is employed very much in the arts, in calico-printing, as also in making effervescing draughts and powders in pharmacy.

Uric Acid is an animal acid of very little importance, except in a scientific point of view: it exists in the excrement of serpents to the amount of 95 per cent., and forms the basis of many of the urinary calculi and gravel.

Acorn, in sea language, a little ornamental piece of wood fashioned like a cone, and fixed on the uppermost point of the spindle, above the vane, on the mast-head. It is used to keep the vane from being blown off from the spindle in a whirlwind, or when the ship leans much to one side under sail.

Acorns (Ger. *Eicheln, Eckern;* Fr. *Glands;* It. *Ghiande;* Sp. *Bellotas;* Rus. *Schedudii;* Lat. *Glandes*), the seed or fruit of the oak. Acorns formed a part of the food of man in early ages, and frequent allusion is made in the classics to this circumstance (VIRGIL, *Georg.* lib. i. lin. 8; OVID, *Met.* lib. i. lin. 106, etc.). In some countries they are still used, in periods of scarcity, as a substitute for bread. With us they are now rarely used except for fattening hogs and poultry. They are said to make, when toasted, with the addition of a little fresh butter, one of the best substitutes for coffee. Their taste is astringent and bitter.

Acre, a measure of superficies, and the principal denomination of land-measure in use throughout the whole of Great Britain and the United States. The word (formed from the Saxon *acher*, or the German *aker*, a field) did not originally signify a determinate quantity of land, but any open ground, especially a wide campaign; and in this antique sense it seems to be preserved in the names of places; as, Castle-acre, West-acre, etc. The standard acre is formed by raising a square of which the basis is the chain of 66 feet, or 22 yards, or 1-80th of a mile; and ten of these squares form the acre, which thus contains 4840 square yards. This is divided into *roods*, of which there are four in the acre; and into *poles* or *perches*, of which there are 40 in each rood, or 160 in the acre. The rood will thus measure 1210 square yards, and the pole 30¼ square yards, according to the following table, which contains also other denominations useful to be compared with the acre:

Inches.	Links.	Feet.	Yards.	Poles or Perch.	Chains.	Roods.	Acre.
62·720	1						
144	2·295	1					
1296	20·661	9	1				
39204	625	272¼	30¼	1			
627264	10000	4356	484	16	1		
2508160	25000	10890	1210	40	2½	1	
10272640	100000	43560	4840	160	10	4	1

The following table contains the principal foreign land-measures, with their equivalents in acres:

		Acres.	Roods.	Perches.
France,	Are	0	0	3·9538
"	Hectare	2	1	35.38
"	Arpent, great	1	1	1·92
"	Arpent, small	0	3	15.18
Amsterdam,	Morgen	2	0	1·68
Berlin,	Morgen, large	1	1	24·32
"	Morgen, small	0	2	20·95
Dantzic,	Morgen	1	1	19·99
Hamburg,	Morgen	2	1	21·64
"	Scheffel of corn land	1	0	6·
Nuremberg,	Morgen, corn land	1	0	26·90
"	Morgen, meadow	0	2	4·00
Hanover,	Morgen	0	2	22·47
Prussia,	Morgen	0	2	20·92
Rhineland,	Morgen	2	0	16·60
Zurich,	Acre, common	0	3	3·11
"	Acre, wood	0	3	22·35
"	Acre, meadow	0	2	33·33
Saxony,	Acre	1	1	17·85
Spain,	Fanegada, for corn land	1	0	21·81
"	Arranzada, for vineyards	0	3	32·32
Russia,	Dessetina	2	2	31·95
Sweden,	Tuneland	1	0	25·04
Switzerland,	Faux	1	2	10·66
Tuscany,	Quadrato	0	3	14·07
Vienna,	Joch	1	1	27·73
Naples,	Moggia	0	3	12·16
Rome,	Pezza	0	2	24·40
Portugal,	Geira	1	1	30·41

In the United States of America the imperial acre is used. The Roman jugerum was somewhat larger than half an imperial acre, containing 2 roods, 10 perches, 180 square feet. Two jugera formed a heredium, so called from its being the quantity of land originally assigned to each Roman citizen; a hundred heredia formed a centuria, and four centuriæ a saltus. The Greek plethron consisted of 4 aruræ, and was equal to 37 perches, 153 square feet.

Action, in *Commerce*, is a term used abroad for a certain part or share of a public company's capital stock. Thus, if a company has 400,000 livres capital stock, this may be divided into 400 actions, each consisting of 1000 livres.

Actuary, a person skilled in the doctrine of life annuities and insurances, and who is competent to give opinions upon all cases involving annuities, reversions, etc. An actuary sometimes combines with the professional duties of a scientific adviser those of a secretary, in all matters involving calculation, upon which it may be supposed that the members of the board are not generally conversant.

Adarcon, or **Daric,** *δραχμή*, the most ancient gold coin of which any specimens have been preserved to the present day. It was the earliest coined money known among the Jews; the impression on the coin is a crowned archer, in a garb such as is seen in the sculptures of Persepolis. The specimens weighed by Dr. Bernard were fifteen grains heavier than the English guinea; their intrinsic value may therefore be reckoned at twenty-five shillings sterling.—ECKHET, *Doctrina Nummorum Veterum;* BERNARD, *De Mensuris et Ponderibus.*

Adarme, in *Commerce*, a small weight in Spain, which is also used at Buenos Ayres, and in all Spanish America. It is the 16th part of an ounce, which at Paris is called the *demi-gros.* But the Spanish ounce

is seven per cent. lighter than that of Paris. Stephens renders it in English by a *drachm*.

Adatais, Adatis, or **Adatys,** in *Commerce*, a muslin or cotton cloth, very fine and clear, of which the piece is ten French ells long, and three quarters broad. It comes from the East Indies, and the finest is made in Bengal.

Adelaide, a city of South Australia, capital of the British colony of that name, about 7 miles S.S.E. from its port, an inlet on the east side of St. Vincent's Gulf, lat. 34° 57′ S., long. 138° 38′ E. Though founded so recently as 1834, and not well situated, this is a well-built, prosperous town. Some of the houses, and most part of the principal buildings, are of brick and stone. Population in 1846, 7143; and in 1858 probably about as great.

The river Torrens, on which Adelaide is built, loses itself in a marsh before reaching the sea, so that the city is about 7 miles distant from its port, an inlet of St. Vincent's Gulf. This inland situation is a serious drawback on the trade of the city; and it would seem that a mistake was committed in not building it on, or much nearer to, the coast. This, we are aware, has been denied, though, as we think, upon very unsatisfactory grounds. There appears, indeed, to be but little doubt that in no very lengthened period most part of the commerce of the town will be transferred to the port, and that it will be preferred as a residence by all commercial people. In the rainy season the Torrens is much flooded, though it seldom overflows its banks, which are steep and lofty; but in the dry season it has no current, its bed being then formed into a series of pools or tanks.

Port Adelaide, 7 miles N.N.W. from the city, in a low and marshy situation, consists of a number of dwelling houses and warehouses, some of which are of stone, with wharves, partly belonging to government, and partly to the South Australian Company. Population in 1848 about 1800. The inlet of the sea, forming the harbor, opposite the entrance to which a light-vessel is moored, stretches from the Gulf, from which it is separated by a narrow neck of land, for about 8 miles southward, surrounding Torrens Island. At its mouth is a sandy bar, with 8 feet water at ebb and 16 feet at flood tide; this depth being considerably increased during south and southwest winds. Ships of 400 or 500 tons may, consequently, pass the bar in safety, and once over, there is depth enough for the largest ships to the head of the harbor.—DUTTON, *South Australia*, p. 112. Large vessels are, however, obliged to lie in mid-channel; but projects were recently on foot for improving the harbor, either by carrying out piers into the deep water, or by establishing a new port about 2 miles nearer to the harbor's mouth, where the water inshore is deeper, and the situation affords greater facilities for the accommodation of shipping. Port Adelaide has a custom-house; but vessels are exempted from all port charges in this and in the other ports of the colony. A railway, planned to unite the city with the port, will most likely be completed at an early date.

The trade of Adelaide is already extensive, and will continue to increase with the increase of the population and trade of the colony, of which it is the grand emporium. The mines of copper, lead, etc., discovered in its vicinity are of the richest description, and the ores furnished by them form at present the principal article of export. In 1852, the imports of copper into England from South Australia, principally from the Burra-Burra mine, amounted to 8582 tons, worth above £600,000! The discovery of the gold fields, by attracting many of the laborers from the copper mines, gave a serious check to the progress of the latter, though it is probable that it will be but temporary. Wool is also an important article; and the imports of it into England, which in 1852 amounted to 3,022,318 pounds, have increased with the same extraordinary rapidity as those from the other parts of Australia. Among the items of import from this colony in 1852 were 1858 pounds quicksilver, and 2267 cwt. bark. We subjoin the following statements with respect to the trade, shipping, etc., of Port Adelaide in the following years:

Years.	Total Imports.	Total Exports.
1844	£118,915 6 11	£95,272 14 6
1845	184,819 18 5	148,459 4 7
1846	329,099 12 9	312,837 16 6
1847	410,825 9 6	350,348 12 2
1848	384,338 19 0	504,068 7 0
1849	509,548 10 6	408,107 0 6

Years.	Exports the Produce of South Australia.	Imports re-exported	Imports consumed in the Colony.
1844	£82,268 13 8	£12,921 13 10	£105,998 13 1
1845	131,800 6 0	10,658 18 7	168,160 19 10
1846	287,053 13 0	25,778 5 0	303,321 7 9
1847	275,115 12 0	75,133 0 2	335,092 9 4
1848	465,878 10 0		
1849	374,155 10 0		

It would be to no purpose to give any later details in regard to the trade of this colony. The discovery of the gold fields in Victoria and New South Wales have had nearly the same influence here as in Van Diemen's Land (*see* GOLD). They occasioned an excessive emigration, and gave a sudden and severe shock to all sorts of industry. And though, no doubt, the colony will in the end recover from the contingency, and will most probably be improved by the circumstances in which it originated, some considerable time will have previously to elapse.

Aden, a sea-port town of Southern Arabia, in the possession of the East India Company, on the Indian Ocean, 118 miles east from the Straits of Babelmandel, lat. 12° 46′ 15″ N., long. 45° 10′ 20″ E. It stands on the east side of a promontory, projecting south into the ocean, called the Peninsula of Aden. This peninsula, which terminates in a lofty mountain, bearing a striking resemblance to the rock of Gibraltar, is connected with the main land by a low isthmus about 400 yards in breadth. On the north and west the town is overhung by steep and craggy rocks, on which are the remains of old fortifications. The east or outward harbor of Aden, formerly (and apparently at a recent period) large and commodious, is now partly filled up with sand. But the harbor on the west side of the town, between the promontory on which it stands and another parallel thereto, is a magnificent basin, capable of accommodating the largest fleets. It has a contracted entrance, which might easily be fortified, so as to make it inaccessible to a hostile squadron. From this harbor the approach to the town is over a low ridge of the mountain, the road being in parts cut through the rock.

The site of this town, the best adapted for trade on the whole coast of Arabia, and the key of the Red Sea, has always made it a point of primary importance in the direct trade between Europe and the East. It became at a very early period a celebrated emporium (the *Arabiæ emporium* of Ptolemy). After the Romans obtained possession of Egypt, and Hippalus (A.D. 50) had discovered the direct route to India, they destroyed Aden, lest it should fall into hostile hands, and interfere with their monopoly of this lucrative traffic.—VINCENT's *Commerce, etc., of the Indian Ocean*, ii. 327, 528. It is not known when or by whom it was rebuilt; but from the 11th to the 16th century it was the great, or rather the exclusive *entrepôt* of Eastern commerce. The discovery of the passage by the Cape of Good Hope was the first great blow to its importance. Simultaneously with the appearance of the Portuguese in India, the Turks, under Solyman the Magnificent, took possession of various Arabic ports, Aden among the number. They erected the fortifications, the ruins of which excite the admiration of every traveler, and which repelled the attacks of the famous Portuguese general, Albuquerque. From this date, however, Aden

rapidly declined; nor did the expulsion of the Turks, which took place about the middle of last century, retard its downfall. Its ruin was more complete than could have been anticipated; for its convenient harbors and plentiful supply of water make it, apart from other considerations, a most desirable port.

When first occupied by the British, it had not more than 100 houses, with a parcel of wretched huts, and from 3000 to 4000 inhabitants. It had, indeed, the ruins of several cisterns and reservoirs cut in the solid rock, and of aqueducts for conveying water from the mountains of the interior, which fully testified its former greatness. But within the last half dozen years a vast change has taken place, and the ancient prosperity of Aden bids fair to be again restored. Hotels for the accommodation of the passengers by the steamers have been erected; and the population of the vicinity, attracted by the security afforded by the English flag, have flocked to the place, which has now (1853) from 25,000 to 30,000 inhabitants! Some defensive works have already been constructed, and others projected, which, if completed, will make it (which it should be) the Gibraltar of the Red Sea. While its commanding position, excellent port, and abundant supply of water, make Aden an important station in the route from India to Europe by the Red Sea, it is no less favorably situated for becoming an *entrepôt* for the contiguous countries of Arabia and Africa. It owed its former consequence mainly to its natural advantages, and these it still retains. And it can hardly fail again to become an important emporium, and to be of the greatest utility to the surrounding continents. The climate, though hot, is not unhealthy. The abundant supply of water, for which Aden is remarkable among Arabic towns, is drawn from the ravines and gullies of the surrounding mountains, and from the land springs, which are abundant on the se -shore.—(See *Geographical Dictionary*, art. ADEN, ar.. other authorities there quoted.)

Adjustment, in *Commercial Navigation*, the settlement of a loss incurred by the insured. In the case of a total loss, if the policy be an *open* one, the insurer is obliged to pay the goods according to their *prime cost*; that is, the invoice price, and all duties and expenses incurred till they are put on board, including the premium of insurance. Whether they might have arrived at a good or a bad market, is held by the law of England to be immaterial. The insurer is supposed to have insured a constant and not a variable sum; and in the event of a loss occurring, the insured is merely to be put into the same situation in which he stood before the transaction began. If the policy be a *valued* one, the practice is to adopt the valuation fixed in it in case of a total loss, unless the insurers can show that the insured had a colorable interest only, or that the goods were greatly over-valued. In the case of all partial losses, the value of the goods must be proved.

"The nature of the contract between the insured and insurer is," says Mr. Justice Park, "that the goods shall come safe to the port of delivery; or, if they do not, that the insurer will indemnify the owner to the amount of the value of the goods stated in the policy. Wherever, then, the property insured is lessened in value by damage received at sea, justice is done by putting the merchant in the same condition (relation being had to the prime cost or value in the policy) in which he would have been had the goods arrived free from damage; that is, by paying him such proportion of the prime cost or value in the policy as corresponds with the proportion of the diminution in value occasioned by the damage. The question then is, how is the proportion of the damage to be ascertained? It certainly can not be by any measure taken from the prime cost; but it may be done in this way: Where any thing, as a hogshead of sugar, happens to be spoiled, if you can fix whether it be a third, a fourth, or a fifth worse, then the damage is ascertained to a mathematical certainty. How is this to be found out? Not by any price at the port of shipment, but it must be at the port of *delivery*, when the voyage is completed and the whole damage known. Whether the price at the latter be high or low, it is the same thing; for in either case it equally shows whether the damaged goods are a third, a fourth, or a fifth worse than if they had come sound; consequently, whether the injury sustained be a third, fourth, or fifth of the value of the thing. And as the insurer pays the whole prime cost if the thing be wholly lost, so if it be only a third, fourth, or fifth worse, he pays a third, fourth, or fifth, not of the value for which it is sold, *but of the value stated in the policy*. And when no valuation is stated in the policy, the invoice of the cost, with the addition of all charge, and the premium of insurance, shall be the foundation upon which the loss shall be computed."

Admeasurement. *See* TONNAGE.

Administrator, in *English Law*, he to whom the ordinary commits the administration of the goods of a person deceased, in default of an executor. The origin of administrators is derived from the civil law. Their establishment in England is owing to a statute made in the 31st year of Edward III. Till then no office of this kind was known besides that of executor; in default of whom, the ordinary had the disposal of goods of persons intestate, etc.

Admiral, a great officer or magistrate, who has the government of a navy, and the hearing of all maritime causes. There can be little doubt of the Asiatic origin of the name given to this officer, which does not appear to have been known in the languages of Europe before the time of the holy wars. *Amir*, in Arabic, is a chief or commander of forces; it is the same word as the *ameer* of the peninsula of India (as *ameer al omrah*, the chief of lords or princes), and the *emir* of the Turks or Saracens, who had, and still have, their *emir* or *ameer'l dureea*, commander of the sea, *amir'l asker dureea*, commander of the naval armament. The incorporation of the article with the noun appears, we believe, for the first time in the Annals of Eutychius, patriarch of Alexandria, in the tenth century, who calls the Calif Omar *Amirol mumumim*, seu, *Imperator fidelium*. Spelman says, "In regno Saracenorum quatuor prætores statuit, qui *admiralli* vocabantur." The *d* is evidently superfluous, and is omitted by the French, who say *Amiral*. The Spanish write *Almirante*; the Portuguese the same. Milton would seem to have been aware of the origin of the word, when he speaks of "the mast of some great Ammiral." It is obvious, then, that the supposed derivations of *ἀλμυρος* from the Greek, *aumer* from the French, and *aen mereal* from the Saxon, are fanciful and unauthorized etymologies.

Admiral is also an appellation given to the most considerable ship of a fleet of merchantmen, or of the vessels employed in the cod fishery of Newfoundland. This last has the privilege of choosing what place he pleases on the shore to dry his fish; gives proper orders, and appoints the fishing-places to those who come after him; and as long as the fishing season continues, he carries a flag on his main-mast.

Admiralty, High Court of. This is a court of law, in which the authority of the lord high admiral is exercised in his *judicial* capacity. Very little has been left on record of the ancient prerogative of the admirals of England. For some time after the first institution of the office, they judged all matters relating to merchants and mariners, which happened on the main sea, in a summary way, according to the laws of Oleron (so called because promulgated by Richard I. at that place). These laws, which were little more than a transcript of the Rhodian laws, became the universally received customs of the western part of the world. "All the sea-faring nations," says Sir Leoline Jenkins, "soon after their promulgation, received and entertained these laws from the English, by way of deference to the sovereignty of our kings in the British

ocean, and to the judgment of our countrymen in sea affairs."

The vice-admiralty courts of the British colonies are of two descriptions. The one has power to inquire into the causes of detention of enemies or neutral vessels, to try and condemn the same for the benefit of the captors, as well as to take cognizance of all matters relating to the office of the lord high admiral. The other has power only to institute inquiries into misdemeanors committed in merchant vessels, and to determine petty suits, etc., and to guard the privileges of the admiral. The former are usually known by the name of *Prize Courts*, the latter by that of *Instance Courts*.

The following are the colonies and foreign possessions of Great Britain in which *Prize Courts* have been established in the course of the last war: Gibraltar, Malta, Newfoundland, Halifax, Bermuda, Bahama Islands, Barbadoes, Antigua, Tortola, Jamaica, Cape of Good Hope, Ceylon, Bombay, Madras, and Calcutta. The following British colonies had *Instance Courts* only: Dominica, Grenada, St. Vincent, St. Christopher, Trinidad, St. Cervix, Martinique, Berbice, Demerara, and Essequibo; in addition to which is a court established at Sierra Leone for the trial and condemnation of captured slavers only; and since that time, Gibraltar, Malta, St. Helena, Berbice, Demerara, and Essequibo, Sierra Leone (this court has jurisdiction only over ships concerned in the slave-trade), Newfoundland, Halifax, Nova Scotia, Prince Edward's Island, Lower Canada, Barbadoes, Tobago, and St. Lucia, Antigua, Montserrat, and Barbadoes, Tortola, Jamaica, Bahamas, Falkland Islands, Cape of Good Hope, Gambia, Gold Coast, Ceylon, Bombay, Calcutta, Madras, New South Wales, Van Diemen's Land, Western Australia, South Australia, New Zealand, Vancouver's Island, Hong Kong, Lahuan.—E. B.

"The ordinary admiralty and maritime jurisdiction, exclusive of prize cases, embraces all civil and criminal cases of a maritime nature; and though there does not seem to be any difficulty or doubt as to the proper jurisdiction of the prize courts, there is a great deal of unsettled discussion respecting the civil and criminal jurisdiction of the district court as an instance court, and possessing, under the constitution and judiciary act of 1789, admiralty and maritime jurisdiction.

"The act of Congress gives to the district courts, exclusive of the State courts, and concurrently with the circuit courts, cognizance of all crimes and offenses cognizable under the authority of the United States, and committed within their districts, or upon the high seas, where only a moderate corporal punishment, or fine, or imprisonment, is to be inflicted. This is the ground of the criminal jurisdiction of the district courts; and it is given to them as district courts: and as it includes the minor crimes and offenses committed on the high seas, and cognizable in the courts of admiralty under the English law, the district courts may be considered as exercising the criminal jurisdiction of a court of admiralty in those cases. The Constitution of the United States declares that the judicial power of the Union shall extend to all cases of admiralty and maritime jurisdiction; and it has been supposed that the federal courts might, without any statute, and under the general delegation of admiralty powers, have exercised criminal jurisdiction over maritime crimes and offenses. But the courts of the United States have been reluctant to assume the exercise of any criminal jurisdiction which was not specially conferred by an act of Congress."—KENT'S *Comm.* Lect. XVII.

Adulteration, the act of debasing, by mixing with any pure and genuine commodity a spurious article, or an inferior one of the same kind, for pecuniary profit; but it may also occur accidentally, as, for instance, by the action of acids and oils on vessels of copper or lead in culinary and other operations. But few articles of commerce, comparatively, are exempt from fraudulent deterioration; and although the adulteration of excisable commodities and of food are offenses punishable by law, the risk too frequently is outweighed by the temptation of gain. In Paris, malpractices connected with the adulteration of food are investigated by the Conseil de Salubrité, and punished; but English laws are directed chiefly to the protection of such articles as affect the revenue. Adulterations of food, however, have been made punishable by the laws of most countries. In Great Britain numerous acts have been passed for the prevention of adulterations which are usually punished by a fine, determined by a summary process before a magistrate. In Turkey, a culprit baker has his ears nailed to his door. By 5th and 6th Vict. c. 93, § 1, 3, 8, manufacturers of tobacco or snuff are liable to a penalty of £200 for having in their possession any substance or liquid to be used, or capable of being used, as a substitute for tobacco or snuff, or to adulterate or give them weight. The preparer, vender, or disposer of such articles, is liable to the same. For actual adulteration the penalty is £300, and for having such adulterated goods in possession, £200. After a similar manner, beer is protected by still heavier penalties; which laws extend to chemists, druggists, and beer retailers. See *56th Geo. III.* c. 58, *1st Will. IV.* c. 51, 64, *4th and 5th Will. IV.* c. 85. Tea, coffee, cocoa, pepper, etc., are protected by law; but the adulterations of these, as of most other articles of food, are almost endless. The mixture of chiccory with coffee, is, however, authorized under certain conditions. A treasury minute of 27th July, 1852, prohibiting the sale of "chiccory or other vegetable substances mixed with coffee," was rescinded by a subsequent minute of 25th February, 1853, which permits dealers in coffee "to keep and sell chiccory prepared and mixed with coffee, provided the packages in which such mixture is delivered to purchasers have printed distinctly thereon, according to directions which will be given by the Board of Inland Revenue, the whole of the following words, 'Mixture of Coffee and Chiccory.'"

The following results were obtained by a recent series of analyses of some articles of common domestic consumption, purchased from different dealers, chiefly in London. In the several kinds of tea were found (partly, perhaps, accidentally present) exhausted tea-leaves, leaves of the beech, elm, horse-chestnut, plane, bastard-plane, fancy-oak, willow, poplar, hawthorn, and sloe; catechu, rose-pink, black-lead, soap-stone, sulphate of iron, logwood, indigo, starch, rice husks, excrement of silkworms, Prussian blue, sulphate of lime, verdegris, etc. Of 18 samples of chiccory procured from manufactories, 5 were adulterated with roasted wheat-flour; and of 16 samples of chiccory, purchased from different grocers, several were colored with Venetian red, or reddle. Of 68 samples of cocoa and chocolate, 39 contained colored earthy substances; in some samples of cocoa, sugar and starch constituted more than half the article. Of 24 samples of bread, all contained more or less alum; and it may be observed that the quartern loaf, as delivered at houses by 13 different bakers, showed deficiency in weight, the maximum being between 3 and 4 ounces. Out of 30 samples of oatmeal, 16 were adulterated with barley-meal; in one instance, apparently, much more than one half. Of 36 samples of arrow-root, 18 were mixed with potato-flour, or potato-starch, sago-powder, or tapioca-starch, etc.; and 5 were almost entirely potato-starch. Of 26 samples of milk, 11 were mixed with water, in proportions varying from 10 to 50 per cent. Of 28 samples purchased as isinglass, 10 consisted entirely of gelatine. It is well known that quack medicines frequently contain ingredients they are guaranteed not to contain; hence the evils resulting from their indiscriminate use. Nor are woolen, linen, and silk goods exempt from inferior admixture; various substances are employed to give body to silk fabrics; as in China a gluey preparation from the *Fucus Tenax* is used to give them weight and gloss. The above facts will give some idea of the

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extent to which adulteration is practiced in the most common articles of consumption. We may add that all legislative enactments on the subject will prove ineffectual unless the public exercise their own discrimination, and dealers who are discovered to have imposed spurious commodities are made to feel that honesty is the best policy.

Adulteration of Wines.—The various substances used in the manufacture to flavor and to color wines (such as almonds, raisins, orris root, burned sugar, brandy, logwood, whortleberries, elderberries, etc.) must be distinguished from others which are directly deleterious, such as alum, used to impart astringency, and litharge and cerusse, to dulcify "pricked" or sour wines. The following is an excellent test for any of the preparations of lead: mix an aqueous solution of tartaric acid with liquid sulphureted hydrogen; when added to the suspected wine, should any copper or iron be present, they are kept in solution by the tartaric acid, while the lead is thrown down by the sulphureted hydrogen as a dark precipitate. Red wine should be decolorized before using the test, which is conveniently done by mixing the wine with an equal weight of milk, and filtering it. When the tartrate of lead is found in the bottom of the cask, it may easily be detected by calcining a portion of the insoluble matter, and reducing it by the blowpipe on charcoal. A portion of the sediment may be digested with vinegar, which would give, by evaporation, acetate of lead; and it may be tried by sulphureted hydrogen. Alum may be precipitated from white wine by carbonate of soda gradually added until no more falls down; filter; on the filter will be found alumine. The sulphate of potassa remains in the solution; but the quantity present may be found by precipitating the sulphuric acid by muriate of baryta. Iron is sometimes accidentally present in wines; but it is not dangerous, and may be detected by nutgalls. Copper sometimes occurs from the use of copper stop-cocks: it is detected by the addition of ammonia; and, if much, by a plate of polished iron left some time in the wine. Arsenic has occasionally occurred from the sulphuring of the cask. After decoloration by animal charcoal, pass a stream of sulphureted hydrogen through the wine, and a yellow precipitate will fall, which may be reduced to the metallic state by charcoal and soda. The same tests are applicable to all fermented liquors. —E. B. *See* HENDERSON'S *Ancient and Modern Wines.*

Adulteration of Coin.—This has been accounted among all nations, both in ancient and modern times, a very grave offense, and punishable by death in several ways. It was formerly considered as treason in Great Britain, and rigorously punished with death; but in the amelioration of the criminal code by Lord John Russell's act (Will. IV. c. 34, Vict. 1), the punishment has been commuted to transportation for any period not less than seven years, or by imprisonment for not more than four years, at the discretion of the judge. The specific gravity of pure gold=19·30; standard gold=18·88; pure silver=10·51; standard silver=10·34. The proportion of alloy in the gold and silver coin of Britain is one-twelfth copper, which gives durability. A genuine coin, unless it be cracked, is quite sonorous; yet even this quality is not an invariable test for counterfeit money. Much false coin is in circulation, especially in the metropolis, a statement confirmed by its very frequent reception as change. Besides the frauds by clipping, filing, casing, electroplating, etc., the debasement of coin has been effected by boring the edge of a piece, and plugging the cavity with inferior metal: in this manner has platinum been inserted in gold. Another method has been practiced by sawing a gold piece laterally, and skilfully filling the centre with platinum; a fraud which cutting alone could detect.

To ascertain the adulteration of silver and gold coin by excess of copper, the following processes will suffice: dissolve a given weight of the silver in nitric acid, and precipitate by a solution of common salt; dry, and weigh the precipitate, which is the *chloride of silver*, and contains 75·5 per cent. of the metal; or it may be reduced on charcoal before the blowpipe, when a button of pure silver will be obtained, by weighing which, the proportions of silver and of copper will be known. Silver coin is very frequently imitated by some white alloy, generally of tin, antimony, and lead; it may be known by its pliancy and dull appearance, or it may be tested for silver, as described above. German silver, a beautiful imitation of silver by nickel and copper, may be detected by its deficient specific gravity, and its emitting, when briskly rubbed, a faint, coppery odor; or by dissolving it in nitric acid, and adding a solution of common salt, when it will give no precipitate. The amount of alloy in gold may readily be ascertained, for ordinary purposes, by the *streak* on touchstone, and comparing that with the streak of the gold needles made for the purpose; or more nicely by this process: file off a given weight of the gold, and dissolve in *aqua regia*, then precipitate the gold by immersing in the solution a plate of silver or copper; or more quickly, by weak galvanic action; or the gold may be thrown down by addition of an alkaline solution, or by adding the muriate of tin, which throws down the purple powder of Cassius, from which the quantity of gold may be easily ascertained, by oxidating with the blowpipe a given weight of the powder, and so obtaining a button of pure gold.

The purity of copper is ascertained by dissolving a given weight in any of the mineral acids, and obtaining copper of cementation by immersing a plate of iron or zinc in the solution; or by decomposing the salt of copper by charcoal, alkali, and heat, in the usual way. (*See* CHEMISTRY.) It may be noticed as a curious fact that, in England, the copper coinage of William IV. was found to contain gold, from which discovery these coins speedily became scarce.—E. B.

Ad Valorem, a term chiefly used in speaking of the duties or customs paid per cent. on goods. The duties on some articles are paid by the number, weight, measure, tale, etc., and others paid *ad valorem*, that is, according to their value.

Advance implies money paid before goods are delivered, or upon consignment. It is usual with merchants to advance from a half to two-thirds of the value of goods consigned to them, on being required, on their receiving invoice, bill of lading, orders to insure them from sea risk, etc.

Adventurers, Merchant, a celebrated and enterprising company of merchants, was originally formed for the discovery of territories, extension of commerce, and promotion of trade, by John, duke of Brabant, in 1296. This ancient company was afterward translated into England in the reign of Edward III., and Queen Elizabeth formed it into an English corporation in 1564. —ANDERSON.

Advertisement, in its general sense, is any information as to any fact or circumstance that has occurred, or is expected to occur; but, in a commercial sense, it is understood to relate only to intimations with respect to the sale of articles, the formation and dissolution of partnerships, bankruptcies, meetings of creditors, etc. Advertisements in newspapers in England, as now published, were not general until the beginning of the 18th century. A penalty of £50 was inflicted on persons advertising a reward with "No questions to be asked" for the return of things stolen, and on the printer, 25 Geo. II. 1754.—*Statutes.* The advertisement duty was formerly charged according to the number of lines; it was afterward fixed in England at 3*s.* 6*d.*, and in Ireland at 2*s.* 6*d.* each advertisement. The duty was further reduced, in England to 1*s.* 6*d.*, and in Ireland to 1*s.* each, by statute 3 and 4 Will. IV. 1833. The duty was altogether abolished in the United Kingdom, by 16 and 17 Vict. c. 63, Aug. 4, 1853.—HAYDN.

Advice is usually given by one merchant or bank-

er to another *by letter*, informing him of the bills or drafts drawn on him, with all particulars of date, or sight, the sum, to whom made payable, etc. Where bills appear for acceptance or payment, they are frequently refused to be honored for *want of advice*. It is also necessary to give advice, as it prevents forgeries: if a merchant accept or pay a bill for the honor of any other person, he is bound to advise him thereof, and this should always be done under *an act of honor* by a notary public.

Affreightment. "A charter-party is a contract of affreightment in writing, by which the owner of a ship lets the whole, or a part of her, to a merchant, for the conveyance of goods on a particular voyage, in consideration of the payment of freight. All contracts under seal were anciently called charters, and they used to be divided into two parts, and each party interested took one, and this was the meaning of the *charta partita*. It was a deed or writing divided, consisting of two parts, like an indenture at common law. Lord Mansfield observed, that the charter-party was an old informal instrument, and, by the introduction of different clauses at different times, it was inaccurate and sometimes contradictory. But this defect has been supplied by giving it, as mercantile contracts usually receive, a liberal construction, in furtherance of the real intention and the usage of trade.

"This mercantile lease of a ship describes the parties, the ship and the voyage, and contains, on the part of the owner, a stipulation as to sea-worthiness, and as to the promptitude with which the vessel shall receive the cargo and perform the voyage; and the exception of such perils of the sea for which the master and shipowners do not mean to be responsible. On the part of the freighter, it contains a stipulation to load and unload within a given time, with an allowance of so many lay, or running days, for loading and unloading the cargo, and the rate and times of payment of the freight, and rate of demurrage beyond the allotted days.

"When the goods of several merchants, unconnected with each other, are laden on board, without any particular contract of affreightment with any individual for the entire ship, the vessel is called a *general* ship, because open to all merchants; but where one or more merchants contract for the ship exclusively, it is said to be a *chartered* ship. The ship may be let in whole or in part, and either for such a quantity of goods by weight, or for so much space in the ship, which is letting the ship by the ton. She may also be hired for a gross sum as freight for the voyage, or for a particular sum by the month, or any other determinate period, or for a certain sum for every ton, cask, or bale of goods put on board; and when the ship is let by the month, the time does not begin to run until the ship breaks ground, unless it be otherwise agreed. The merchant who hires a ship, may either lade it with his own goods, or wholly underlet it upon his own terms; and if no certain freight be stipulated, the owner will be entitled to recover, upon a *quantum meruit*, as much freight as is usual under the like circumstances, at the time and place of shipment. It is the duty of the owner of the ship, not only to see that she is duly equipped, and in a suitable condition to perform the voyage, but he is bound to keep her in that condition throughout the voyage, unless he be prevented by perils of the sea. If, in consequence of a failure in the due equipment of the vessel, the charterer does not use her, he is not bound to pay any freight; but if he actually employs her, he must pay the freight, though he has his remedy on the charter-party for damages sustained, by reason of the deficiency of the vessel in her equipment. The freighter is bound, on his part, not to detain the ship beyond the stipulated or usual time, to load, or deliver the cargo, or to sail. The extra days beyond the lay days (being the days allowed to load and unload the cargo) are called days of *demurrage;* and that term is likewise applied to payment for such delay, and it may become due either by the ship's detention, for the purpose of loading or unloading the cargo, either before, or during, or after the voyage, or waiting for convoy. If the claim for demurrage rest on express contract it is strictly enforced, as where the running days for delivering the cargo under the bill of lading had expired, even though the consignee was prevented from clearing the vessel of the goods by the default of others.

"The old and the new French codes of commerce require the charter-party to be in writing, though Valin holds that the contract, if by parol, would be equally valid and binding. In the English law, the hiring of ships without writing is undoubtedly valid; but it would be a very loose and dangerous practice, at least in respect to foreign voyages. In the river and coasting trade, there is less formality and less necessity for it; and the contract is, no doubt, frequently without the evidence of deed or writing. If either party be not ready by the time appointed for loading the ship, the other party, if he be the charterer, may seek another ship, or, if he be the owner, another cargo. This right arises from the necessity of precision and punctuality in all maritime transactions. By a very short delay, the proper season may be lost, or the object of the voyage defeated. And if the ship be loaded only in part, and she be hired exclusively for the voyage, and to take in a cargo at certain specified rates, the freighter is entitled to the full enjoyment of the ship; for he is answerable to the owner for freight, not only for the cargo actually put on board, but what the vessel could have taken had a full cargo been furnished. The master has no right to complete the lading with the goods of other persons without the consent of the charterer; and if he grants that permission, the master must account to him for the freight. He has no right to complain if the charterer refuses to grant the permission, or to complete the lading, provided he has cargo enough to secure his freight. This was the regulation of the French ordinance, and it has been adopted into the new code. By the contract, the owner is bound to see that the ship be sea-worthy, which means that she must be tight, stanch, and strong, well furnished, manned, victualed, and in all respects equipped in the usual manner for the merchant service in such a trade.

"The ship must be fit and competent for the sort of cargo and for the particular service for which she is engaged. If there should be a latent defect in a vessel, unknown to the owner, and undiscoverable upon examination, yet the better opinion is that the owner must answer for the damage occasioned by the defect. It is an implied warranty in the contract, that the ship be sufficient for the voyage, and the owner, like a common carrier, is an insurer against every thing but the excepted perils. To this head of sea-worthiness may be referred the owner's obligation to see that the ship is furnished with all the requisite papers according to the laws of the country to which she belongs, and according to treaties and the laws of nations. Such documents are necessary to secure the vessel from disturbance at home, on the high seas, and in foreign ports. If the charter-party contains any stipulation on the part of the owner to keep the ship in good order during the voyage, the entire expense of the repairs requisite in the course of the voyage are then to be borne by the owner, and are not, in that case, the subject of general average or contribution. But the owner does not insure the cargo against the perils of the sea. He is answerable for his own fault or negligence, or those of his agents, and for defects in the ship or her equipments; and generally, as a common carrier, he is answerable for all losses other than what arise from the excepted cases of the act of God and public enemies. The responsibility of the owner begins where that of the wharfinger ends, and when the goods are delivered to some accredited person on board the ship. The cargo must be taken on board with care and skill, and be properly stowed, and the contract by the bill of lading

import that the goods are to be safely stowed under deck; and if they are stowed on deck without the consent of the shipper, or without the sanction of custom, they are at the risk of the ship-owner or master, and he and the owners of the vessel would not be protected from liability for their loss by the exception in the bill of lading of the *dangers of the seas*. If the ship has been advertised by the agent of the owner for freight as a general ship, and the notice had stated that she was to sail with convoy, this would amount to an engagement to that effect; and if she sails without convoy and be lost, the owner becomes answerable to the shipper in damages for the breach of that representation."—KENT'S *Comm.*, Lect. XLVII.

Africa. The knowledge of this great continent which ancient writers have transmitted to posterity is of very limited extent, owing principally to its physical construction. The great desert, which in a broad belt stretches quite across the continent, forbade every attempt to pass it until the introduction of the camel by the Arabs. The want of any known great river, except the Nile, that might conduct into the interior, contributed to confine the Greek and Roman colonists to the habitable belt along the northern coast. The Phœnicians are known to have formed establishments on the northern coast of Africa at a very early period of history, probably not less than 3000 years ago; and the conquest of Egypt by Cambyses dates as far back as the year B.C. 525. We may consider, therefore, the coasts of Egypt, of the Red Sea, and of the Mediterranean, to have been settled and well known to the ancient Asiatics, who were constantly passing the narrow isthmus which divided their country from Africa, and led them immediately from parched deserts into a fertile valley, watered by a magnificent river. But whether they were much or little acquainted with the western coast, which bounds the Atlantic, and the eastern coast washed by the Indian Ocean, is a question that has exercised the research and ingenuity of the ablest scholars and geographers, and has not yet been satisfactorily answered.

From the shores of the Mediterranean to about the latitude of 20° north, the population of Africa consists largely of tribes not originally native to the soil, but of Arabs and Turks, planted by conquest, with a considerable number of Jews, the children of dispersion; and the recently introduced French. The Berbers of the Atlas region, the Tuaricks and Tibbus of the Sahara, and the Copts of Egypt, may be viewed as the descendants of the primitive stock, while those to whom the general name of Moors is applied are perhaps of mixed descent, native and foreign. From the latitude stated, to the Cape colony, tribes commonly classed together under the title of the Ethiopic or negro family are found, though many depart very widely from the peculiar physiognomy of the negro, which is most apparent in the natives of the Guinea coast. In the Cape colony, and on its borders, the Hottentots form a distinct variety in the population of Africa, most closely resembling the Mongolian races of Asia.

The British colony of Sierra Leone extends from Rokelle River in the north, to Kater River in the south, and about twenty miles inland. The population, consisting chiefly of liberated slaves, amounted in 1847 to 41,785. Freetown, the capital, has 10,580 inhabitants, and is, after St. Louis, the most considerable European town on the western coast of Africa.

The Malaghetta or Grain Coast extends from Sierra Leone to Cape Palmas. Malaghetta is a species of pepper yielded by a parasitical plant of this region. It is sometimes styled the Windy or Windward Coast, from the frequency of short but furious tornadoes, throughout the year. The Republic of Liberia, a settlement of the American Colonization Society, founded in 1822, for the purpose of removing free people of color from the United States, occupies a considerable extent of the coast, and has for its capital Monrovia, a town named after the president, Mr. Monro. The population amounts to from 10,000 to 15,000 native inhabitants, and 3200 liberated negroes from America.

The Ivory Coast extends from Cape Palmas to Cape Three Points, and obtained its name from the quantity of the article supplied by its numerous elephants. The Gold Coast stretches from Cape Three Points to the River Volta, and has been long frequented for gold dust and other products. The Dutch have several trading ports, of which Elmina, a town of 19,000 inhabitants, is the principal and oldest of the European stations, founded by the Portuguese in 1411. The British possess Cape Coast Castle, a spacious fortress, and James's Fort, near Accra. The Danish settlements of Christiansburg and Friedensburg were ceded to the English in 1849. The Slave Coast extends from the River Volta to the Calabar River, and is, as its name implies, the chief scene of the most disgraceful traffic that blots the history of mankind. Eko, or Lagos, one of the chief towns of the coast, was destroyed in 1852. The kingdoms of Ashanti, Dahomey, Yoruba, and others, occupy the interior country of the Guinea coast. The coast from the Old Calabar River to the Portuguese possessions is inhabited by various tribes. Duke's Town, on the former river, is a large town of 30,000 to 40,000 inhabitants, with considerable trade in palm-oil, ivory, and timber. On the Gabun River, close to the equator, are a French settlement and American missionary stations. At the equator, Southern or Lower Guinea begins, where the only European settlements are those of the Portuguese. Loango is reckoned from the equator to the Zaire or Congo river. Its chief town is Boally, called Loango by the Europeans. Congo extends south of the Zaire, comprising a very fertile region, with veins of copper and iron. Banza Congo, or St. Salvador, is the capital. Angola comprises the two districts of Angola proper and Benguela. In these regions the Portuguese settlements extend farther inland than in the two preceding districts, namely, about 200 miles. The population of the settlements is about 400,000, comprising only 1800 Europeans. The capital, St. Paolo de Loando, contains 1600 Europeans and 4000 native inhabitants, and has a fine harbor. St. Felipe de Benguela is situated in a picturesque but very marshy and most unhealthy spot.

The coast from Benguela to the Cape colony may, in a general arrangement like this, be included either within West Africa or South Africa. The whole coast is little visited or known, being of a most barren and desolate description, and possessing few harbors. From Walfich Bay, Mr. Galton recently penetrated nearly 400 miles into the interior toward Lake Ngami, and explored the country inhabited by the Ovaherero, or Damaras, and other tribes.

Under South Africa the Cape colony only is generally comprised. It takes its name from the Cape of Good Hope, and extends from thence to the Orange River in the north, and to the Tugela River in the east. A large proportion of the territory included within these limits, especially in the north, is either unoccupied, or, excepting missionary stations, entirely in the hands of the aborigines.

Natal, or Victoria, a district on the east coast, and separated from the Cape colony by Kaffraria, is a recently formed British settlement, containing an area of about 18,000 square miles. It is highly favored in those respects in which the Cape is most deficient, having abundance of wood and water, with coal and various metallic ores, a fine alluvial soil, and a climate adapted to the cultivation of the products for which the home demand is large and constant—cotton, silk, and indigo. Pietermaritzburg, the capital of the settlement, lies 50 miles from the coast. Port Natal, now D'Urban, seated on a fine lake-like bay, is the only harbor.

To Africa belong a considerable number of islands. The Madeiras, belonging to Portugal, lie off the north-

west coast of Africa, at a distance of about 360 miles. Madeira, the chief island, is about 100 miles in circuit, and has long been famed for its picturesque beauty, rich fruits, and fine climate, which renders it a favorite resort of invalids. Wine is the staple produce. Funchal, the chief town, with nearly 30,000 inhabitants, is a regular station for the West India mail steam-packets from Southampton, and the Brazilian sailing-packets from Falmouth. The Canaries, belonging to Spain, the supposed Fortunate Islands of the ancients, are situated about 300 miles south of Madeira. They are 13 in number, all of volcanic origin, Teneriffe being the largest. The latter is remarkable for its peak, which rises as a vast pyramidal mass to the height of 12,172 feet. The Cape Verd Islands, subject to Portugal, are a numerous group about 80 miles from Cape Verd. They obtained their name from the profusion of sea-weed found by the discoverers in the neighboring ocean, giving it the appearance of a green meadow. They are also of volcanic origin. Fernando Po, a very mountainous island, is in the Bight of Biafra. Formerly a British settlement, it was abandoned owing to its unhealthiness, and is now only inhabited by a few negroes and mulattoes. St. Thomas, immediately under the equator, is a Portuguese settlement; as also Prince's Island, 2° north of the line. Annobom, in 2° S. lat., belongs to the Spaniards. Ascension, a small, arid, volcanic islet, was made a British port on the arrival of Napoleon Bonaparte at St. Helena, and since retained as a station, at which ships may touch for stores. Green Hill, the summit of the island, rises to the height of 2840 feet. St. Helena is a huge dark mass of rock, rising abruptly from the ocean to the height of 2692 feet. James' Town is the only town and port, containing 5300 inhabitants. Madagascar, the largest island of Africa, and one of the largest in the world, is separated from the Mozambique coast by a channel of that name, about 250 miles wide. The area exceeds that of France, comprising 225,000 square miles, and the population is estimated at 4,000,000. It has an atmosphere so pestilential, in particular localities, that to breathe it for a short duration is generally, and very quickly, fatal. But other parts are not insalubrious. The lemurs, an interesting tribe of animals, are peculiar to Madagascar and the Comoro Archipelago. The inhabitants are diverse races of Negro, Arab, and Malay origin. The Ovahs, a people of the central provinces, are now dominant. The principal town, Tananarivu, has 8000 inhabitants. The Comoro isles, four in number, are in the north part of the Mozambique Channel, and inhabited by Arab tribes. Bourbon, 400 miles east of Madagascar, is a colony of France, producing for export coffee, sugar, cocoa, spices, and timber. Mauritius, ceded to the British by the French in 1814, is 90 miles northeast of Bourbon. The sugar-cane is chiefly cultivated. Port Louis, the capital, beautifully situated, has 26,000 inhabitants. Within the jurisdiction of the Governor of the Mauritius are the islands of Rodriguez, the Seychelles, and the Amirante islands. Socotra, a large island, east of Cape Jerdaffun, with an Arab population, has been known from early times; it is now a British possession. This island was long celebrated as producing the finest aloetic drug: a few years ago this was denied; but now it is found still to produce a fine kind of aloe, though much of what passed as Socotrine aloes really came from India.—E. B.

African Company, a society of merchants trading to Africa. An association in Exeter, which was formed in 1588, gave rise to this company. A charter was granted to a joint stock company in 1618: a third company was created in 1631; a fourth corporation in 1662; and another formed by letters patent in 1672, and remodeled in 1695. The rights vested in the present company, 23 Geo. II. 1749.—*See* SLAVE TRADE.

Agate (popularly CORNELIAN), Germ. *Achat*; Du. *Achaat*; Fr. *Agate*; It. *Agata*; Rus. *Agat*; Lat. *Achates*. A genus of semi-pellucid gems, so called from the Greek ἀχάτης, because originally found on the banks of the river of that name in Italy. It is never wholly opaque like jasper, nor transparent as quartz-crystal; it takes a very high polish, and its opaque parts usually present the appearance of dots, eyes, veins, zones, or bands. Its colors are yellowish, reddish, bluish, milk-white, honey-orange, or ochre-yellow, flesh-blood, or brick-red, reddish brown, violet blue, and brownish green. It is found in irregular rounded nodules, from the size of a pin's head to more than a foot in diameter. The lapidaries distinguish agates according to the color of their ground, the finer semi-transparent kinds being termed Oriental. The most beautiful agates found in Great Britain are commonly known by the name of *Scotch pebbles*, and are met with in different parts of Scotland, principally on the mountain of Cairngorm; whence they are sometimes termed Cairngorms. The German agates are the largest. Some very fine ones have been brought from Siberia and Ceylon. They are found in great plenty at the eastern extremity of the settlement of the Cape of Good Hope, and are still met with in Italy. But the principal mines of agate are situated in the little principality of Rajpepla, in the province of Gujrat, 14 miles distant from the city of Brooch, where they are cut into beads, crosses, snuff-boxes, etc. They are exported in considerable quantities to other parts of India, and to this country; and hence, perhaps, the jewelers' term "broach."

Agent. *See* FACTOR.

Agio, a term used in *Commerce* to denote the difference between the real and the nominal value of money. In some states the coinage is so debased, that the real is greatly reduced below the nominal value. Sometimes this is owing to abrasion, and the wear of circulation. Where this reduction amounts, *e. g.*, to 5 per cent., if 100 sovereigns were offered as payment of a debt in England, while such sovereigns were current at their nominal value, they would be received as just payment; but if they were offered as payment of the same amount of debt in a foreign state, they would be received only at their intrinsic value of £95, the additional £5 constituting the *agio*. The same principle is applied to the paper currency of a country, when reduced below the bullion value which it professes to represent. According to the respective demand for gold or paper money for the purposes of commerce, it becomes necessary, in order to procure the one or other, as the case may require, to pay a premium for it, which is called the *agio*.—E. B.

Agrarian Law, *Agraria Lex*. This was an equal division among the Roman people of all the lands which they acquired by conquest, limiting the acres which each person should enjoy, first proposed by Sp. Cassius, to gain the favor of the citizens, 486 B.C. It was enacted under the tribune Tiberius Gracchus, 132 B.C.; but this law at last proved fatal to the freedom of Rome under Julius Cæsar.—LIVY; VOSSIUS.

Ahead, a sea term, signifying farther onward than the ship or at any distance before her, lying immediately on that point of the compass to which her stem is directed. It is used in opposition to *astern*, which expresses the situation of any object behind the ship.

Ahull, in *Naval Language* the situation of a ship when all her sails are furled on account of the violence of the storm, and then, having lashed her helm on the lee-side, she lies nearly with her side to the wind and sea, her head being somewhat inclined to the direction of the wind.

Alabama, one of the Southern United States, is bounded north by Tennessee, east by Georgia, south by Florida and the Gulf of Mexico, and west by Mississippi. It is between 30° 10′ and 35° N. lat., and 85°

and 88° 30′ W. long., and between 8° and 11° 30′ W. long. from Washington. It contains 50,722 square miles, or 32,462,080 acres. Population in 1800 was only 2000; in 1810, 10,000; in 1820, 127,901; in 1830, 308,997; in 1840, 590,756; and in 1850, 771,671. Whites, 426,507; free colored, 2272; slaves 342,892. It contained in 1850 fifty-two counties. The capital is Montgomery, situated on the left bank of the Alabama River, 338 miles above Mobile by the course of the river. Mobile, the metropolis, is the most populous and commercial place in the State. The other principal places are Huntsville, Florence, Wetumpka, Tuscaloosa, Cahaba, Eufala, etc.

Surface, Soil, etc.—The surface of this State exhibits much variety: bordering the Gulf shore, and for some distance interior it is low and level, soil sandy, and the prevailing timber is pine. The central portion exhibits an undulating surface, with a deep, rich, and productive soil, especially along the margins of streams. Approaching the north, it rises into a hilly region, and in the northeast corner of the State it becomes mountainous. This is caused by the southern termination of the Alleghany Ridge, which here, in crossing the State, melts away into a hilly district, and is finally lost in the rolling prairies and gently undulating plains. The Tennessee Valley, from where it enters the State, near the northeast corner, until it leaves it at the northwest corner, presents rich and fertile bottom lands, and the lands bordering thereon are the richest agricultural portion of the State. The climate, varying from the south to the north part of the State, is favorable for the production of its great staples, cotton, rice, sugar, sweet potatoes, and Indian corn, and in the middle and northern part wheat and other cereals. Alabama has great mineral resources; the entire middle region is underlaid with bituminous coal, and deposits of iron ore, and in different localities throughout the State are lead ore, manganese, limestone, marble, etc.; in the northeast gold mines have been wrought with some success.

There were in this State, in 1850, 4,435,614 acres of land improved, and 7,702,067 of unimproved land in farms. Cash value of farms, $64,323,224, and the value of implements and machinery was $5,125,663. *Live Stock*: horses, 128,001; asses and mules, 59,895; milch cows, 227,791; working oxen, 66,961; other cattle, 433,263; sheep, 871,880; swine, 1,904,540; value of live stock, $21,690,112.

Agricultural Products, etc.—Wheat, 294,044 bushels produced; rye, 17,261; Indian corn, 28,754,048; oats, 2,965,696; barley, 3,958; buckwheat, 648; peas and beans, 892,701; potatoes, 246,001; sweet potatoes, 5,475,204; rice, 2,312,252 pounds. Value of products of the orchard, $15,408; produce of market gardens, $84,821; pounds of butter made, 4,008,811; of cheese, 31,412; sugar, hogsheads of, 8242; maple-sugar, 643 pounds; molasses, 83,428 gallons; beeswax and honey, 897,021 pounds; wool, 657,118 pounds produced; cotton, 564,429 bales; flax, 3921 pounds; silk cocoons, 167; hops, 276 pounds; tobacco, 164,990; hay, 32,685 tons; clover seed, 138 bushels; other grass seeds, 547; flax seed, 69 bushels; and there were made 220 gals. of wine. Value of home-made manufactures, $1,934,120; of slaughtered animals, $4,823,485.—*Census*, 1850.

Rivers, etc.—Mobile, the principal river, is formed by the junction of the Alabama and Tombigbee rivers, and enters Mobile Bay by two mouths. The Alabama is navigable for vessels requiring six feet of water 60 miles above its junction, and has four or five feet of water 150 miles to the mouth of the Cahawba, and to the junction of the Coosa and Tallapoosa, of which it is formed; it has in its shallowest places three feet of water. The Tombigbee, the other constituent of Mobile River, is navigable for schooners 120 miles to St. Stephens, and for steamboats to Columbus, Mississippi. The Black Warrior, a large branch of it, is navigable for steamboats to Tuscaloosa. The Chattahoochee for a considerable distance separates this State from Georgia on the east. The Tennessee curves southwardly from the northeast to the northwest corner of the State, and is navigable for steamboats to Florence, at the foot of the Muscle Shoals.

Mobile Bay sets up 30 miles from the Gulf of Mexico, with an average breadth of 12 miles. *See* MOBILE.

Internal Improvements, etc.—Muscle Shoals Canal is designed to overcome an obstruction in the Tennessee River, and extends from Florence 35¾ miles, and cost $571,835, and when completed to Brown's Ferry, at the head of the shoal, is estimated to cost $1,361,057. Huntsville Canal extends 16 miles from Triana, on Tennessee River, to Huntsville. There were in this State, January, 1854, six railroads, four of which were wholly or in part in operation; aggregate miles finished, 221; cost, $3,546,000; and 65 miles chartered or in course of construction. There are three banks in the State, with an aggregate capital of $2,100,000. The State Penitentiary is at Wetumpka. There is also a State insane hospital, and a school for the deaf and dumb at Robinson's Springs.

The railway system is yet in its infancy in this State. There are 236 miles in operation, and 663 miles in construction. Congress has this year (1856) granted land for Alabama railroads, and this grant will doubtless be sufficient to build the roads now in progress. Alabama is one of the States that peculiarly need railroads. Its products are not consumed in the State, but have to be transported to the sea-board, and the absence of large rivers makes railroads indispensable to the prosperity of the State.

Manufactures.—There were in this State in 1850, 18 cotton factories, with a capital invested of $681,900, employing 349 males and 397 females, producing 8,281,000 yards of sheeting, etc., and 790,000 pounds of yarn, valued at $398,585; 3 woolen factories, with a capital of $3600, employing 11 males and 3 females, manufacturing cloth valued at $7470; 1 establishment making pig iron, with a capital of $25,000, employing 40 persons, producing 522 tons of pig iron, valued at $28,896; 10 establishments with a capital of $216,625, employing 212 persons, and making 1915 tons of castings, etc., valued at $271,126; 1 establishment with a capital of $2500, employing 14 persons, manufacturing 100 tons of wrought iron, valued at $7500; 217 flouring and grist mills, 294 saw mills, 149 tanneries, 50 printing-offices, issuing 60 newspapers, etc.

This State was originally included in the territorial limits of Georgia, except the part which belonged to Florida. In 1802 Georgia ceded all her territory west of Chattahoochee River to the Mississippi River, to the United States, and in 1817 it was constituted the Mississippi Territory, and Alabama continued a part of this territory until it was admitted into the Union, and became an independent State in 1820.

Alabaster (Germ. *Alabaster;* It. *Alabastro;* Fr. *Albâtre;* Russ. *Alabastr;* Lat. *Alabastrites*). A kind of stone resembling marble, but softer. Under this name are confounded two minerals, the *gypseous* and *calcareous* alabasters; they are wholly distinct from each other when pure, but in some of the varieties are occasionally mixed together. The former, when of a white, or yellowish, or greenish color, semi-transparent, and capable of receiving a polish, is employed by statuaries. It is very easily worked, but is not susceptible of a polish equal to marble. Calcareous alabaster is heavier than the former; it is not so hard as marble, but is notwithstanding susceptible of a good polish, and is more used in statuary. The statuaries distinguish alabaster into two sorts, the common and Oriental. Spain and Italy yield the best alabaster. That produced at Montania, in the Papal States, is in the highest esteem for its beautiful whiteness. Inferior sorts are found in France and Germany. Alabaster is wrought into tables, vases, statues, chimney-pieces, etc.

Alcohol (ARDENT SPIRIT), (Fr. *Esprit de Vin*; Germ. *Weingeist*; It. *Spirito ardente*, *Spirito di Vino*, *Acquarzente*), the name given to the *pure spirit* obtainable by distillation, and subsequent rectification, from all liquors that have undergone the vinous fermentation, and from none but such as are susceptible of it. It is light, transparent, colorless; of a sharp, penetrating, agreeable smell; and a warm, stimulating taste. It is quite the same, whether obtained from brandy, wine, whisky, or any other fluid which has been fermented. The specific gravity of alcohol when perfectly pure is from ·792 to ·800, that of water being 1·000; but the strongest spirit afforded by mere distillation is about ·820; alcohol of the shops is about ·835 or ·840. Alcohol can not be frozen by any known degree of cold. It boils at 174°. It is the only dissolvent of many resinous substances, and is extensively used in medicine and the arts.—*Drs.* A. T. THOMSON, URE, *etc.*

Alder, the *Betula alnus* of botanists, a forest tree abundant in England and most parts of Europe. It thrives best in marshy grounds and on the banks of rivers. It rarely attains to a very great size; its wood is extremely durable in water or in wet ground; and hence it is much used for piles, planking, pumps, pipes, sluices, and generally for all purposes where it is kept constantly wet. It soon rots when exposed to the weather or to damp; and, when dry, it is much subject to worms. The color of the wood is reddish yellow, of different shades, and nearly uniform. Texture very uniform, with large septa of the same color as the wood. It is soft, and works easily.—TREDGOLD'S *Principles of Carpentry*.

Ale and **Beer**, well known and extensively used fermented liquors, the principle of which is extracted from several sorts of grain, but most commonly from barley, after it has undergone the process termed malting.

1. *Historical Notice of Ale and Beer.*—The manufacture of ale or beer is of very high antiquity. Herodotus tells us that, owing to the want of wine, the Egyptians drank a liquor fermented from barley (lib. ii. cap. 77). The use of it was also very anciently introduced into Greece and Italy, though it does not appear to have ever been very extensively used in these countries. Mead, or metheglin, was probably the earliest intoxicating liquor known in the north of Europe. Ale or beer was, however, in common use in Germany in the time of Tacitus (*Morib. Germ.* cap. 23). "All the nations," says Pliny, "who inhabit the west of Europe have a liquor with which they intoxicate themselves, made of corn and water (*frugæ madida*). The manner of making the liquor is somewhat different in Gaul, Spain, and other countries, and it is called by many various names; but its nature and properties are every where the same. The people of Spain, in particular, brew this liquor so well that it will keep good for a long time. So exquisite is the ingenuity of mankind in gratifying their vicious appetites, that they have thus invented a method to make water itself intoxicate."—*Hist. Nat.* lib. xiv. cap. 22. The Saxons and Danes were passionately fond of beer; and the drinking of it was supposed to form one of the principal enjoyments of the heroes admitted to the hall of Odin.—MALLET'S *Northern Antiquities*, cap. 6, etc. The manufacture of ale was early introduced into England. It is mentioned in the laws of Ina, king of Wessex; and is particularly specified among the liquors provided for a royal banquet in the reign of Edward the Confessor. It was customary in the reigns of the Norman princes to regulate the price of ale; and it was enacted by a statute passed in 1272, that a brewer should be allowed to sell two gallons of ale for a penny in cities, and three or four gallons for the same price in the country.

The use of hops in the manufacture of ale and beer seems to have been a German invention. They were used in the breweries of the Netherlands in the beginning of the 14th century; but they do not seem to have been introduced into England till 200 years afterward, or till the beginning of the 16th century. In 1580, Henry VIII. enjoined brewers not to put hops into their ale. It would, however, appear that but little attention was paid to this order; for in 1552 hop plantations had begun to be formed.—BECKMANN'S *Hist. Invent.* vol. iv. p. 336–341, Engl. edition. The addition of hops renders ale more palatable, by giving it an agreeable bitter taste, while, at the same time, it fits it for being kept much longer without injury. Generally speaking, the English brewers employ a much larger quantity of hops than the Scotch.

Years.	MALT IN GREAT BRITAIN.				
	Bushels charged with duty.	Duty paid.	Rates of Duty per bushel.		
			England.	Scotland.	Ireland.
		£	s. d.	s. d.	s. d.
1801	19,742,741	1,317,776	1 4½	0 8½	1 6½
1802	24,760,441	2,088,692	2 5	1 8½	....
1803	24,716,984	3,977,369	4 5½	....	1 9½
1804	24,753,023	5,240,035	....	3 9½	2 9½
1805	25,568,183	5,365,800	....	....	2 3½
1806	26,710,947	6,514,463	....	....	2 6½
1807	27,791,064	5,936,568	....	....	....
1808	25,573,119	5,875,042	....	....	....
1809	25,852,350	5,409,614	....	....	....
1810	26,889,183	5,741,992	....	....	....
		1·58 bshls.*			
1811	29,676,927	6,382,857	....	....	....
1812	21,263,623	4,493,704	....	....	....
1813	25,354,203	5,461,954	....	....	....
1814	29,745,642	6,411,817	....	....	3 8½
1815	30,209,088	6,707,446	....	....	3 8½
1816	24,200,023	4,741,812	2 5	1 8½	4 0
1817	22,334,720	2,567,188	....	....	2 4½
1818	26,304,080	3,296,320	....	....	....
1819	25,815,254	4,075,436	3 7½	3 7½	....
1820	26,860,121	4,843,421	....	....	3 6½
		1·88 bshls.*			
1821	29,393,411	4,297,581	....	....	....
1822	29,848,080	4,082,888	2 7	2 7	2 7
1823	28,164,497	3,809,501	....	3 7½	....
1824	31,511,743	4,172,453	....	....	....
1825	30,205,450	4,031,324	....	....	....
1826	32,468,779	4,177,278	....	....	....
1827	29,515,501	3,809,983	....	....	....
1828	30,854,206	4,731,585	....	....	....
1829	29,152,777	3,743,616	....	....	....
1830	32,964,454	4,231,997	....	....	....
		1·89 bshls.*			
1831	29,252,289	5,036,602	....	....	....
1832	37,890,635	4,799,053	....	....	....
1833	40,072,895	5,140,759	....	....	....
1834	41,145,591	5,275,408	....	....	....
1835	42,892,053	5,499,883	....	....	....
1836	44,337,780	5,899,379	....	....	....
1837	40,550,748	5,216,864	....	....	....
1838	40,555,566	5,181,883	....	....	....
1839	39,928,329	4,139,804	....	2 7	....
1840	42,406,862	5,592,477	....	....	....
		1·60 bshls.*			
1841	36,164,295	4,889,243	2 7	2 7	2 7
1842	35,871,394	4,848,561	and 5	and 5	and 5
1843	35,693,890	4,827,950	per cent.	per cent.	per cent.
1844	37,187,186	5,027,071	....	....	....
1845	36,545,990	5,538,039	....	....	....
1846	42,097,065	5,691,278	....	....	....
1847	35,307,815	4,775,901	....	....	....
1848	37,545,912	5,076,238	....	....	....
1849	38,925,460	5,266,779	....	....	....
1850	40,744,750	5,511,440	....	....	....
		·72 bshls.*			
1851	40,337,412	5,030,369	....	....	....
1852	41,071,536	5,229,935	....	....	....

* Decennial average annual consumption per head.

2. *Distinction between Ale and Beer, or Porter.*—This distinction has been well elucidated by Dr. Thomas Thomson, in his article on Brewing, in the *Encyclopædia Britannica:* "Both ale and beer are in Great Britain obtained by fermentation from the malt of barley; but they differ from each other in several particulars. Ale is light-colored, brisk, and sweetish, or at least free from bitter; while beer is dark-colored, bitter, and much less brisk. What is called *porter* in England is a species of beer; and the term 'porter' at present signifies what was formerly called *strong beer*. The original difference between ale and beer was owing to the malt from which they were prepared. Ale malt

was dried at a very low heat, and consequently was of a pale color; while beer, or porter malt, was dried at a higher temperature, and had of consequence acquired a brown color. This incipient charring had developed a peculiar and agreeable bitter taste, which was communicated to the beer along with the dark color. This bitter taste rendered beer more agreeable to the palate, and less injurious to the constitution than ale. It was consequently manufactured in greater quantities, and soon became the common drink of the lower ranks in England. When malt became high-priced, in consequence of the heavy taxes laid upon it, and the great increase in the price of barley which took place during the war of the French Revolution, the brewers discovered that a greater quantity of wort of a given strength could be prepared from pale malt than from brown malt. The consequence was that pale malt was substituted for brown malt in the brewing of porter and beer. We do not mean that the whole malt employed was pale, but a considerable proportion of it. The wort, of course, was much paler than before; and it wanted that agreeable bitter flavor which characterized porter, and made it so much relished by most palates. The porter brewers endeavored to remedy these defects by several artificial additions. At the same time, various substitutes were tried to supply the place of the agreeable bitter communicated to porter by the use of brown malt. Quassia, cocculus Indicus, and we believe even opium, were employed in succession; but none of them was found to answer the purpose sufficiently. Whether the use of these substances be still persevered in we do not know; but we rather believe that they are not, at least by the London porter brewers."

Ale and Wine are said to have been invented by Bacchus; the former where the soil, owing to its quality, would not grow grapes.—TOOKE'S *Pantheon*. Ale was known as a beverage at least 404 B.C. Herodotus ascribes the first discovery of the art of brewing barley-wine to Isis, the wife of Osiris. The Romans and Germans very early learned the process of preparing a liquor from corn by means of fermentation, from the Egyptians.—TACITUS. Ale-houses are made mention of in the laws of Ina, king of Wessex. Booths were set up in England A.D. 728, when laws were passed for their regulation. Ale-houses were licensed 1621; and excise duty on ale and beer was imposed on a system nearly similar to the present, 13 Charles II. 1660.—HAYDN.

Alexandria, so called from its illustrious founder, Alexander the Great, the principal sea-port of Egypt, on the coast of the Mediterranean, about 14 miles W.S.W. of the Canopic mouth of the Nile; the light-house being in lat. 31° 11′ 31″ N., long. 29° 51′ 28″ E. The situation of this famous city was admirably chosen. Until the discovery of the route to India by the Cape of Good Hope, Egypt formed the centre of the commerce between the Eastern and Western Worlds; and Alexandria was placed in the most favorable position in Egypt for an emporium, being the only port on its northern coast, where there is at once deep water and security for shipping throughout the year. The ports of Rosetta and Damietta, the former on the west, and the latter on the eastern arm of the Nile, are both difficult of entrance, each having a bar, upon which there is always a dangerous surf. Ships bound for Alexandria avoid this serious inconvenience; and by means of an artificial navigation, stretching from the city to the western branch of the Nile, it has almost the same facilities for internal navigation that are enjoyed by the cities referred to.

It may be proper, however, to mention that this artificial communication with the Nile has not always been open. It existed in antiquity, but fell into decay during the barbarism of more modern times. After being shut up for some centuries, it has been reopened by Mehemet Ali, who dug the Mahmoudie canal from Alexandria to Atfeh, on the Nile, about 27 miles above Rosetta. This important work is 42 miles in length, 90 feet in breadth, and from 15 to 18 feet deep. It was opened in 1819; but owing partly to the nature of the ground, partly to some defects in its construction, and partly to the mud deposited by the water of the Nile, it is difficult to keep in repair; and can only be navigated by boats that draw little water, and are not suitable for the navigation of the Nile. But, with all its defects, the construction of this canal has been of the greatest advantage, not to Alexandria only, but to Egypt and even Europe.

Ports, etc.—The ancient city was situated a little more inland than the modern one, opposite to the small island of Pharos, on which was erected the light-house, so celebrated in antiquity.—CÆSAR, *De Bello Civili*, lib. iii. cap. 112. This island was, partly by artificial means, and partly by natural causes, gradually joined to the land by a mound, and on this the more modern town is principally built. The isthmus and island have now the form of a T, its head being northeast and southwest. A square castle, or tower, built on a small islet or rock, at the extremity of a mole projecting from the northeast angle of the city, is still called the Pharos, and may perhaps occupy the site of the ancient light-house: a light was exhibited on it down to 1842, when it ceased. On each side of the city there is a port. That on the western, or African side, called the Old Port, the *Eunostos* of the ancients, is by far the largest and best. It stretches from the town westward to Marabout, about 6 miles, and is about 1½ miles in width. It is bounded on the north, partly by the western tongue or angle of the island on which the city is partially built, at the extremity of which is the new light-house, and partly by rocks and sand banks. It has three entrances. The first, or that nearest the city, having 17 feet water, is nearly 1¾ miles southwest from the light-house; but it is too narrow and difficult to be attempted by any one not thoroughly acquainted with the port. The *eastern* side of the second or middle entrance is marked by buoys which lie about 2½ miles southwest from the light-house; it is about a quarter of a mile wide, and has, where shallowest, 27 feet water. The third or western entrance has its *western* boundary within about three-eighths of a mile from the east end of Marabout island: it is about half a mile wide, and has from 25 to 27 feet water in its shallowest places. This last is the best entrance. Ships, when in, may anchor close to the town in from 22 to 40 feet water, and there is good anchorage in deep water all along the shore. Foreigners were formerly excluded from this port; but this prohibition no longer exists, and it is now principally resorted to by the shipping frequenting the port.

What is called the New (though it be really the oldest) or Asiatic harbor is on the eastern side of the town. A rock called the Diamond lies a little to the east of the Pharos tower; and ships entering the port ought to have this rock about a cable's length on the right. If they get much farther to the left, they will come in contact with a shoal which stretches westward from the Pharillon, or little tower, on the east side of the port. The water immediately within the port southwest from the Pharos is from 30 to 40 feet deep; but the space for anchorage is very limited, and is exposed to the northerly gales; and the ground being foul and rocky, hempen cables are very apt to chafe, and several accidents have happened in consequence to ships unprovided with iron cables. Ordinary tides rise 2 feet; but during the overflow of the Nile the rise is 4 feet. Variation 13° west.

Trade of Alexandria.—The imports principally consist of cotton stuffs, timber, woolen and silk stuffs, iron and hardware, including copper and tin plates, jewelry, machinery, ammunition, paper and stationery, cutlery, etc., etc. The exports consist principally of raw cotton, rice, wheat and barley, beans, linseed, senna, and other drugs and gums brought from the interior;

Indigo, opium, ostrich feathers, dates, soda, linen cloth, coffee from Arabia, etc. The exports of wheat, barley, and pulse for a while declined in consequence of the superior encouragement given to the growth of cotton; but they have again increased, and in 1849 we brought from Alexandria 129,954 qrs. wheat, 247,594 qrs. beans, and 13,151 qrs. Indian corn. The culture of flax has declined: formerly from 50,000 to 60,000 quarters of linseed have been exported from Alexandria in a single season, but the exports are now much less. Sugar has been long cultivated in Egypt, but not to any great extent, though the soil and climate of Upper Egypt are said to be especially favorable to its growth. Indigo and madder are among the articles of culture introduced by the late Pacha.

Cotton has been grown in Egypt from a very remote period; previously, however, to the ascendency of Mehemot Ali it was but little cultivated, and that little was of inferior quality, short-stapled, and closely resembling "Surats," under which name the small quantities exported from the country were usually sold. But in 1820 a Frenchman of the name of Jumel accidentally observed a very valuable variety of long-stapled cotton, raised from seeds brought from Dongola and Senaar, growing in the garden of Mahè Boy, at Cairo. Jumel having represented its superiority to the Pacha, its cultivation was undertaken on a large scale on account of the latter; and has succeeded so well, that Mahè or Makko cotton has been for a lengthened period by far the principal article of export from Egypt. At a later period seeds of the Sea-Island cotton were introduced, and for a while it also answered remarkably well; its produce, which in Egypt was called Senaar, and in England "Egyptian Sea-Island," ranking next in the estimation of the manufacturers to genuine "Sea-island." Unfortunately, however, this variety was found to degenerate, and its culture, which was never very extensive, as well as that of the old short-stapled variety, has, we believe, been wholly abandoned.

Constantinople and the islands of the Archipelago are the great markets for the wheat and other grain exported from Egypt. The supplies are, however, extremely uncertain. Every thing in Egypt depends on the Nile; and when it does not rise to the usual height, the crops are very much below an average. Beans are extensively cultivated, and have sometimes been brought to England, but rarely, if ever, with advantage to the importers. They are inferior to English beans, and are peculiarly subject to the worm. No oats are raised in Egypt, the horses being entirely fed upon barley. Silk is grown to some extent. The date-palm thrives in every part of Egypt, and the fruit is largely exported. It is singular that, notwithstanding the luxuriance of many of its vegetable productions, Egypt should be entirely destitute of timber.

Money.—Accounts are kept at Alexandria, as at Cairo, in *current piastres*, each piastre being equal to 40 paras, or medini, and each medino to 30 aspers. The medino is also divided into 8 borbi, or 6 forli. A purse contains 25,000 medini. At the close of 1842 the exchange with England was 93·08 current piastres per £1; but in general calculations 100 piastres are supposed to equal £1. Payments, in transactions of any importance, are generally made in Spanish dollars.

Duties.—With the exception of the arbitrary principles on which the Pacha fixes the prices of commodities, there is nothing objectionable in his policy as to commerce. The duties on imports are only 3 per cent. We believe, however, that a small increase of the customs' duty would compensate the Pacha for the abolition of other oppressive charges, and there can be little doubt that his subjects would be materially benefited by the change.

Letters written last summer (1855) at Alexandria, Egypt, state that Said Pasha, the viceroy, has given the necessary orders for the construction of a railway across the desert between Cairo and Suez, a distance of 84 miles. The rails are to be brought out from England, and the Pasha's own engineers, who are Frenchmen, are to carry out the works. In about three years from this time it may be hoped that a railroad will run quite across the country, and the transit of passengers, which now occupies more than two days of uncomfortable traveling, will be reduced to ten or twelve hours of easy conveyance. For the extension of trade and communication with India, it will be very desirable if the Pasha should consent to carry coal to Suez at a moderate charge, as the high price of coal at Suez is at present the principal obstacle to other steamers regularly coming up the Red Sea besides those of the Peninsular and Oriental Steam Navigation Company. According to letters from Egypt dated December, 1855, the railway between Alexandria and Cairo has been nearly completed, and, according to the last advices, is about to be opened for passengers and goods. The importance of this communication, in superseding both the canal and the Nile passage, and shortening the transit between the two cities to about eight hours, will be readily appreciated by every person who has traveled across Egypt. The construction of the portion of the railway from Cairo to near Suez, which is to complete the communication between the Mediterranean and the Red Sea, is in active progress. The directors are endeavoring to induce his highness, the viceroy, to construct at the termini of these railways at Cairo and the Red Sea commodious hotels, adapted to the convenience of travelers from the East. The spirit of improvement in the East is further shown by the recent establishment of an electric telegraph across Egypt. This has been determined upon by his highness the viceroy, and will form an important improvement in the overland communication with India, China, etc. The directors sometime since submitted, at the request of the viceroy, a proposal to establish a monthly postal communication with Australia as soon as the release of the vessels now engaged in the war service should enable them to do so. No definite arrangement has, however, been yet made to that effect.

Ancient Trade of Alexandria.—Alexandria was for a long series of years—first under the Greek successors of Alexander, and subsequently under the Romans—the principal *entrepôt* of the ancient world. Most part of the traffic between Asia and Europe, that had at a more early period centred at Tyre, was gradually diverted to this new emporium. An intercourse between the ports on the eastern coast of Egypt and those on the opposite coast of Arabia had subsisted from a very early period. That between Egypt and India was more recent. It was at first carried on by ships, which having sailed down the Red Sea from Myos Hormos and Berenice, coasted along the Arabian shores till they reached Cape Rasselgate, whence a short course brought them to India, near the mouth of the River Indus. This was the course followed during the dynasty of the Ptolemies; but about eighty years after Egypt had been annexed to the Roman empire, Hippalus, the commander of an Egyptian ship trading to India, having observed the regular shifting of the trade-winds, ventured to sail with the western monsoon from the Straits of Babelmandeb right across the Arabian Ocean; and was fortunate enough, after a prosperous voyage, to arrive at Musiris, in that part of India now known by the name of the Malabar coast. Having taken on board a cargo of Indian produce Hippalus returned in safety with the eastern monsoon to Egypt. This discovery was deemed of so much importance, that the name of the discoverer was given to the wind which had carried him across the ocean to India: and how trifling soever this voyage may now appear, those who consider that Hippalus had no com-

pass by which to direct his course, and that owing to this circumstance, and the otherwise imperfect state of the art of navigation, the ancients seldom ventured out of sight of land, even in seas with which they were well acquainted, will be forward to admit that his enterprise and daring were nowise inferior to his success; and that he was well entitled to the gratitude of his contemporaries, and the respect of posterity.

From the epoch of this discovery, fleets traded periodically from Egypt to Musiris, conveying the products of Europe to India, and conversely. The Indian goods having been landed at Myos Hormos and Berenice were thence conveyed by caravans to Coptos (the modern Kenné), on the Nile, where they were put on board lighters and sent to Alexandria, whence they were distributed all over the Western World. The goods sent to India were conveyed to Myos Hormos and Berenice by the same route. Myos Hormos was situated on the shore of the Arabian Gulf, about a degree to the north of the modern port of Cosseir. The distance from it to Coptos, in a straight line, is about 70 English miles. Berenice was situated a good way farther south, being nearly under the tropic. It was built by Ptolemy Philadelphus. Its distance from Coptos is stated by Pliny at 258 Roman miles; the different resting-places on the road were determined by the wells, and the journey occupied about 12 days. Ptolemy seems to have preferred this station to Myos Hormos, though the land-carriage to Coptos was so much farther, from its greater proximity to the Straits of Babelmandeb, and its lessening the voyage up the Red Sea. Pliny says that the cost of the Indian commodities brought to Rome through Alexandria was increased a hundredfold (*centuplicato veneant*) by the expense of carriage, etc. We suspect, however, that this is a rhetorical exaggeration, meaning merely that their price was very materially enhanced. If the increase was any thing like that mentioned, it must have been owing to the imposition of oppressive tolls and duties, for it could not possibly have been occasioned by the mere expenses of conveyance. In the 16th century, the cost of Indian commodities, brought to Western Europe by way of Alexandria and Aleppo, was about *three* times the cost of those brought by the Cape of Good Hope.—See *post*, EAST INDIA COMPANY, *History of*. But Egypt was then occupied by the Mamelukes and Turks, who threw every sort of obstacle in the way of commerce, and loaded it with the most oppressive exactions.—PLIN. *Hist. Nat.* lib. vi. cap. 23; AMEILHON, *Commerce des Egyptiens*, p. 161–176, etc.; ROBERTSON'S *Ancient India*, note 20, etc.

Besides this important traffic, which supplied Rome and the Western World with the silks, spices, precious stones, and other products of Arabia and India, a great trade in corn was carried on from Alexandria to Rome. Egypt, for a lengthened period, constituted the granary from which Rome, and afterward Constantinople, drew the principal part of their supplies; and its possession was, on that account, reckoned of the utmost consequence. Augustus employed merchantmen of a larger size than any that had previously traded in the Mediterranean to convey the corn of Egypt to Ostia. They were escorted by ships of war. The fleet received the names of *sacra* and *felix embole*, and enjoyed several peculiar privileges. The ships belonging to it were the only ones authorized to hoist the small sail called *supparum*, when they drew near the coasts of Italy. Some of the fast-sailing vessels attached to the fleet were sent on before, to give notice of its approach; and a deputation of senators went down to Ostia to receive the ships, which anchored amidst the acclamations of an immense number of spectators. The captains were obliged to make oath that the corn on board their ships was that which had been delivered to them in Egypt, and that the cargoes were entire as shipped. —HUET, *Commerce et Navigation des Anciens*, cap. xlviii.; *Senecæ Epist.* lxxvii., etc.

Intercourse with India through Alexandria.—These few details will, perhaps, serve to give a faint idea of the importance of Alexandria in the commerce of antiquity. It is impossible, indeed, for any one to glance at a map of the world, or of the ancient hemisphere, and not to perceive that Egypt is the natural *entrepôt* of the commerce between Europe and all the vast countries stretching east from Arabia to China. The discovery of the route to India by the Cape of Good Hope, in 1498, must, no doubt, have, under any circumstances, diverted a considerable portion of the trade with the western States of Europe, and in the heavier and bulkier class of articles, into a new channel. It is, however, abundantly certain that, had the same facilities for conducting the trade with the East existed in Egypt in the 16th and 17th centuries that existed in it in antiquity, she would have continued to be the centre of the trade for all the lighter and more valuable products, and the route of the greater number of the individuals passing between Europe and Asia. But the lawless and arbitrary dominion of the Mamelukes, who loaded all individuals passing through the country with oppressive exactions, at the same time that they treated all foreigners, and especially Christians, with insolence and contempt, put an entire stop to the intercourse so long carried on by this shortest, most direct, and most convenient route. Happily, however, a new era has begun, and Egypt has once more become the grand thoroughfare of the Eastern and Western Worlds. After good order and a regular government had been introduced into Egypt by Mehemet Ali, it was seen that it might be again made the channel of communication with India; and the importance of facilitating the intercourse with that continent forcibly attracted the attention of the British government and the East India Company. We believe, however, that the public are principally indebted to the exertions of Mr. Waghorn for the early and successful opening of what has been called the "over-land route" to India. At all events, the establishment of a steam communication between Europe and Southern Asia, by way of Alexandria and Suez, is one of the most striking and important events in recent times. It has shortened the journey to India from England more than a half, and rendered it comparatively safe and expeditious. Steamers ascend the Nile as far as Cairo; and the passengers and mails are thence conveyed across the desert to Suez, and conversely, with comfort and expedition! We subjoin the following details:

OVERLAND MAILS.—OUTWARD.

Dispatched from London.		Arrive at Alexandria about	Leave Suez about	Arrive in Bombay about
Via Southampton.	Via Marseilles.			
4th and	8th of every month.	18th of every month.	21st or 22d of every month.	9th of every month.
				Arrive at *Calcutta* about
20th of every month by contract steamers.	24th of every month.	4th or 5th of every month.	6th or 7th of every month.	1st and 15th of every month.

The steamers that take the Southampton mails call at Gibraltar, and arrive at Malta about the 14th and 30th. The mails from Marseilles leave that port by one of her Majesty's steamers about the 11th and 27th of each month, and arrive at Malta the 15th and 31st. At Malta the mails are transhipped, and conveyed by steamers to Alexandria.

OVERLAND MAILS.—HOMEWARD. FROM BOMBAY TO LONDON.

Dispatched from Bombay about	Arrive at Suez about	Leave Alexandria about	Arrive in London about	
			Via Marseilles.	Via Southampton.
1st of each month.	18th of each month.	21st of each month.	1st of each month.	
Dispatched from Calcutta				
7th of each month. Dispatched from Bombay about 20th of each month	8th of each month.	10th of each month.	21st of each month.	26th of each month.

The contract steamer with the outward mail waits at Alexandria for the homeward mail, and arrives at Malta about the 13th and 24th of every month, where the Marseilles portion is transferred to one of her Majesty's steamers, which carries it to Marseilles, whence it is sent by land to Paris, and via Dover to London; the remaining portion is landed at Southampton, and is thence sent by railway to London. Average time to or from Bombay, via Marseilles, 31 days; and to or from Calcutta, via Marseilles, about 42 or 43 days; and via Southampton, from 47 to 53 days. By ship round the Cape, 4 months. The newspaper proprietors run expresses from Marseilles on the arrival of each mail, and thus are enabled to publish the news some two days before the letters arrive in London.

ROUTES FOR PASSENGERS.—FIRST, *via* SOUTHAMPTON.

Time of Starting.	Fare to Alexandria.	Alexandria to Suez.	Suez to Bombay.	From Suez to Ceylon, Madras, or Calcutta.
	1st Cabin. £ s. d.	1st Cabin. £ s. d.	1st Cabin. £ s. d.	1st Cabin.
Steamers leave Southampton the 4th and 20th of every month, and call at Gibraltar and Malta, arriving at Alexandria about the 18th, 4th, or 5th of every month.	30 0 0	12 0 0	50 0 0	60l. to 70l.

SECOND ROUTE, *via* MARSEILLES.—By steamer to Boulogne; railway to Paris and Chalons-sur-Saone; thence to Lyons, Avignon, and to Marseilles. Time occupied, three days. French government steamers leave Marseilles the 9th, 19th, and 29th of every month, calling at Leghorn, Civita Vecchia, Naples, Malta, and Messina. French government steamers also leave Marseilles on the 6th and 26d of every month for Alexandria and Beyroot direct, calling at Malta on the way.

The Peninsular and Oriental Steam Navigation Company have published the following statements:

	First Class.	Second Class.	Servants.
	£ s. d.	£ s. d.	£ s. d.
Rates of passage between England and Malta	20 0 0	12 0 0	10 0 0
" " " Alexandria	30 0 0	19 0 0	15 0 0

RATES OF PASSAGE, INCLUSIVE OF EXPENSES OF TRANSIT THROUGH EGYPT, BETWEEN ENGLAND AND

	Aden.	Ceylon.	Madras.	Calcutta.	Penang.	Singapore.	Batavia.	Hong Kong.	Adelaide.	Port Philip. Sydney.
Gentlemen occupying a berth in a cabin, with 2 or 3 others, on the lower deck. Ladies, if booked early, a berth in a cabin, with two or three others, on the upper deck	£75	£95	£100	£105	£105	£110	£120	£130	£150	£160
Married couples, occupying a reserved cabin on the main deck	200	240	250	270	270	290	310	335	390	360
Children with the parent, 3 years and under 10	35	48	50	53	53	55	60	65	75	80
A child under 3 years (no berth provided)	Free.	Free.	Free.	Free.	Free.	Free.	Free.	Free.	Free.	Free.
Servants, European	30	43	46	50	50	52	55	60	75	80
" native	18	26	28	30	30	31	33	36		

For large families an allowance will be made in the foregoing rates to Ceylon, Madras, and Calcutta.

The expenses of transit through Egypt are charged at the Company's offices, at the time of securing the passage, for the Egyptian government. We subjoin an extract from the

TRANSIT ADMINISTRATION TARIFF.

	Between Alexandria and Suez.			Between Alexandria and Suez.
A lady	In vans across the Desert.	£12	A child under two years	In vans across the Desert. Free.
A gentleman		19	A European female servant		£10
A child above ten years		12	A European man servant or mechanic		8
A child of five years and under ten		8	A native female servant		8
A child of two years and under five		0	A native man servant on a dromedary or donkey		4

N.B.—These charges are now included in the fares to Aden and Ceylon, etc.

Canal between the Nile and the Red Sea.—We are assured that, were it not for the hostilities in which the Pacha has been almost always engaged, he would have attempted to reopen the famous canal that formerly connected the Red Sea and the Nile. According to Herodotus, this canal was commenced by Nechos, king of Egypt, and finished by Darius (lib. iii. § 158, iv. 39). Under the Ptolemies, by whom, according to some authorities, it was completed, this canal became an important channel of communication. It joined the east, or Pelusiac branch of the Nile at Bubastis, the ruins of which still remain; it thence proceeded east to the bitter or natron lakes of Temrah and Cheik-Aneded, whence it followed a nearly south direction to its junction with the Red Sea at Arsinoe, either at or near where Suez now stands. It is said by Strabo (lib. xvii. p. 805) to have been 1000 stadia (122 miles) in length; but if we measure it on the best modern maps, it could hardly have exceeded from 85 to 95 miles. Herodotus says that it was wide enough to admit two triremes sailing abreast. This great work having fallen into decay after the downfall of the Ptolomaic dynasty, was renovated either by Trajan or Adrian; and it was finally renewed by Amrou, the general of the calif Omar, the conqueror of Egypt, anno 639. The French engineers traced the remains of this great work for a considerable distance, and it would be of singular advantage to Egypt and the commerce of the world were it reopened.

Marshal Marmont states that the ground has been carefully examined by M. Lepère, an able engineer, and that it presents no sort of difficulty that may not easily be overcome. This, indeed, might have been inferred from the fact of its former construction; for the ancients, being unacquainted with the use of locks, had to encounter difficulties in the construction and working of canals which are now obviated with the utmost facility. According to M. Lepère, the cost of constructing a navigable canal from the Nile to the Red Sea would not exceed 17,000,000 francs, or less than £700,000 (MARMONT, iv. 161). The completion of this work need not, therefore, be despaired of. The

opening of the Mahmoudieh Canal from Alexandria to Atfeh shows what the present government is able to achieve; and an enterprise like that now under consideration, though more difficult, would be of still greater importance to Egypt, as well as to Europe and Asia.

Algebra is a general method of resolving mathematical problems by means of equations, or it is a method of performing the calculations of all sorts of quantities by means of general signs or characters. The modern writers on the subject are Lambert, D'Alambert, Lagrange, Ozanam, Saunderson, Clairaut, Cousin, Templehof, Kastner, Bezout, Gauss, etc. Where algebra was first used, and by whom, is not precisely known. Diophantus first wrote upon it probably about A.D. 170; he is said to be the inventor. Brought into Spain by the Saracens, about 900; and into Italy by Leonardo, of Pisa, in 1202. The first writer who used algebraical signs was Stifelius, of Nuremberg, in 1544. The introduction of symbols for quantities was by Francis Vieta, in 1590, when algebra came into general use.—Moreri. The binomial theorem of Newton, the basis of the doctrine of fluxions, and the new analysis, 1668.—Haydn.

Alicante, a sea-port town of Spain, in the new province of Alicante, lat. 38° 20′ 41″ N., long. 0° 30′ W. Population of the city about 20,000, and of the province 363,000. The port is an open and spacious bay, between Cape de la Huerta on the northeast, and Isla Plana on the south, distant from each other southwest and northeast about ten miles. Ships may enter on any course between these points, steering direct for the castle, which stands on an eminence about 400 feet high. Those of considerable burden moor north and south, distant from ¼ to 1 mile from shore, in from 4 to 8 fathoms water; they are exposed to all winds, from E.N.E. to S. by W.; but the holding ground is good, and there is no instance during the last twenty years of a ship having been driven from her moorings. Small craft lie alongside the mole, which is already 320 yards in length, and is continuing to be projected still farther into the sea. The mole has a fixed light, 95 feet high, visible 15 miles. The trade of Alicante, though still considerable, has declined much within the last few years; a consequence partly of the emancipation of America from the Spanish yoke, but more of the oppressive duties laid on the importation of most articles of foreign produce into Spain (*see* Cadiz), and the extensive smuggling carried on from Gibraltar, Algiers, etc.

Raisins form the principal article of export; and their produce, which amounts to nearly 200,000 cwt., has increased rapidly of late years. They are principally taken off by England, the shipments thither, in 1832, having been 146,496 cwt. But with this single exception all the other articles of export have declined. The principal are silk, wool, barilla, almonds, wine, salt, oil, lead, mats, saffron, brandy, anise, etc. The exportation of barilla, which formerly amounted to from 50,000 to 100,000 cwt., has declined, partly from its having been largely adulterated, but principally from its being to a great extent superseded by *soude factice* (artificial soda), to little more than 20,000 cwt. The imports consist principally of sugar, coffee, cocoa, and other colonial products; cotton, and linen stuffs, and other manufactured goods, from England and France; salted fish, tobacco, iron and hardware, deals and tar, etc.; but it is impossible to form any estimate of the imports from official or other returns, as by far the largest portion are supplied clandestinely. Indeed, the whole population of this part of Spain are clothed in prohibited articles, which are sold as openly in the towns as if they were of Spanish manufacture!—*Consul's Report for* 1841. An *Associacion Britanica* has recently been formed in this port for smelting and refining the rich argentiferous lead ores of Almagrera and other parts of the province of Murcia. The manufacture of woolens is carried on pretty extensively at Alcoy, 23 miles north from Alicante; but they are coarse, and of inferior quality.

Aliens. "An alien, according to the laws of the United States, is a person born out of the jurisdiction and allegiance of the United States. This varies from the rule adopted by the ancient English law, as in the case of the children of public ministers abroad (provided their wives be English women), for they owe not even a local allegiance to any foreign power. So, also, it is said that in every case the children born abroad of English parents were capable, at common law, of inheriting as natives, if the father went and continued abroad in the character of an Englishman, with the approbation of the sovereign.

"The Act of Congress of the 14th April, 1802, establishing a uniform rule of naturalization, affects the issue of two classes of persons. By the 4th section it was declared that 'the children of persons duly naturalized under any of the laws of the United States, or who, previous to the passing of any law on that subject by the Government of the United States, may have become citizens of any one of the States under the laws thereof, being under the age of twenty-one years at the time of their parents being so naturalized, or admitted to the rights of citizenship, shall, if dwelling in the United States, be considered as citizens of the United States.' This provision appears only to apply to the children of persons naturalized, or specially admitted to citizenship; and there is color for the construction, that it may have been intended to be prospective, and to apply as well to the case of persons *thereafter* to be naturalized as to those who had previously been naturalized. It applies to all the children of 'persons duly naturalized'—under the restrictions of residence and minority—at the time of the naturalization of the parent. The act applies to the children *of persons* duly naturalized, but does not explicitly state whether it was intended to apply only to the case where both parents were duly naturalized, or whether it would be sufficient for one of them only to be naturalized, in order to confer, as of course, the rights of citizens upon the resident children being under age. Perhaps it would be sufficient for the father only to be naturalized; for in the supplementary act of the 26th of March, 1804, it was declared, that if any alien who should have complied with the preliminary steps made requisite by the act of 1082 dies before he is actually naturalized, his *widow* and *children* shall be considered as citizens. This provision shows that the naturalization of the father was to have the efficient force of conferring the right on his children; and it is worthy of notice that this last act speaks of children at large, without any allusion to residence or minority; and yet, as the two acts are intimately connected, and make but one system, the last act is to be construed with reference to the prior one, according to the doctrine of the case of *Ex parte Overington*. By a subsequent part of the same 4th section, it is declared that 'the children of persons who now are, or have been citizens of the United States, shall, though born out of the limits and jurisdiction of the United States, be considered as citizens of the United States; provided that the right of citizenship shall not descend to persons whose fathers have never resided within the United States.' This clause is certainly not prospective in its operation, whatever may be the just construction of the one preceding it. It applied only to the children of persons who then *were* or *had been* citizens; and, consequently, the benefit of this provision narrows rapidly by the lapse of time, and the period will soon arrive when there will be no statutory regulation for the benefit of children born abroad, of American parents, and they will be obliged to resort for aid to the dormant and doubtful principles of the English common law. The proviso annexed to this last provision seems to remove the doubt arising from the generality of the preceding sentence, and which was whether the act

intended by the words 'children of persons' both the father and mother, in imitation of the statute of 25 Edw. III., or the father only, according to the more liberal declaration of the statute of 4 Geo. II.; the provision also differs from the preceding in being without any restriction as to the age or residence of the child, and it appears to have been intended for the children of natural born citizens, or of citizens who were original actors in our Revolution, and therefore it was more comprehensive and more liberal in their favor; but the whol statute provision is remarkably loose and vague in its terms, and it is lamentably defective in being confined to the case of children or parents who were citizens in 1802, or had been so previously. The former act of 29th January, 1795, was not so; for it declared generally, that 'the children of citizens of the United States, born out of the limits and jurisdiction of the United States, shall be considered as citizens of the United States.' And when we consider the universal propensity to travel, the liberal intercourse between nations, the extent of commercial enterprise, and the genius and spirit of our municipal institutions, it is quite surprising that the rights of the children of American citizens born abroad should, by the existing act of 1802, be left so precarious, and so far inferior in the security which has been given, under like circumstances, by the English statutes."—KENT'S *Comm.*, Lect. XXV.

In England, aliens were grievously coerced up to A.D. 1377. When they were to be tried criminally, the juries were to be half foreigners, if they so desired, 1430. They were restrained from exercising any trade or handicraft by retail, 1483. The celebrated Alien Bill passed, January, 1793. Act to register Aliens, 1795. Bill to abolish their naturalization by the holding of stock in the banks of Scotland, June, 1820. New Registration act, 7 Geo. IV., 1826. This last act was repealed and another statute passed, 6 Will. IV., 1836. The celebrated Baron Geramb, a conspicuous and fashionable foreigner, known at court, was ordered out of England, April 6, 1812.—HAYDN.

Influence of the Residence of Aliens.—There can be no doubt that, generally speaking, the resort of foreigners to a country, and their residence in it, are highly conducive to its interests. Those who emigrate in order to practice their calling in an old settled country are pretty uniformly distinguished for activity, enterprise, and good conduct. The native inhabitants have so many advantages on their side, that it would be absurd to suppose that foreigners should ever come into any thing like successful competition with them, unless they were acquainted with some branch of trade or manufacture of which the others were ignorant, or possessed superior skill, industry, or economy. But whether aliens practice new acts, or introduce more perfect processes into the old, or display superior economy, etc., their influx can not fail to be of the greatest advantage. They practically instruct those among whom they reside in what it most concerns them to know—that is, in those departments of art and science in which they are inferior to others; and enable them to avail themselves of whatever foreign sagacity, skill, or practice has produced that is most perfect. It is not easy, indeed, to overrate the benefits conferred on most countries by the resort of aliens. Previously to the invention of printing, there was hardly any other way of becoming acquainted with foreign inventions and discoveries; and even now it is far easier to learn any new art, method, or process, from the example and instruction of those familiar with its details, than from the best possible descriptions. The experience, indeed, of every age and country shows that the progress of nations in the career of arts and civilization depends more on the freedom of commerce, and on the liberality with which they have treated foreigners, than almost any thing else.

Alkalies. The distinguishing characters of these bodies are, a strong acrid and powerfully caustic taste; a corrosive action upon all animal matter, destroying its texture with considerable rapidity; exposed to the atmosphere, when in their caustic state, they absorb carbonic acid with great rapidity, and become carbonated (or mild). Their action upon vegetable colors also affords us means by which the presence of an uncombined or carbonated alkali may be detected; the yellow color of turmeric is changed to a red brown tint when immersed into solutions containing them; the blue color of the litmus, after being reddened by an acid, is again restored; the infusions of the red cabbage, the violet, and many other purple vegetable colors, are converted to green. Litmus paper reddened by carbonic acid is, however, the most delicate test of the presence of an alkali. With the various acids they also combine, forming the very important and extensive class of compounds generally called salts—a salt being any compound formed by the union of an acid with an alkali or metallic oxide.

Alkalimetry.—The method by which the value of the alkalies, or carbonated alkalies, is determined, being of considerable importance in a commercial point of view, we shall here treat it somewhat in detail. It is an established fact that 49 parts, by weight, of oil of vitriol of the specific gravity of 1·8485 are exactly equivalent to the neutralization of 70 parts, by weight, of pure carbonate of potash, or 48 of pure potass, or 54 of carbonate of soda, or 32 of soda, and that 70 parts of oil of vitriol will therefore be necessary to neutralize 100 parts of carbonate of potass. Hence, by employing a glass tube of about two ounces' capacity, and accurately divided into 100 equal parts, taking 70 grains of oil of vitriol, and diluting it with water, to make the 100 measures complete, every measure of this dilute acid must be equal to a grain of pure carbonate of potass. The percentage of real carbonate of potass existing in any sample of pearlash may be at once ascertained by taking 100 grains of the sample, dissolving it in hot water, straining, and adding by degrees 100 measures of the test acid above mentioned; the point of neutralization (when it ceases to affect litmus paper or reddened litmus) being accurately ascertained, the residual acid will give the percentage of impurities; for instance, say that 75 measures of the dilute acid have been employed to render 100 grains of a sample of pearlash perfectly neutral, then we have ascertained that it contains 25 per cent. impurities. The same process, of course, must be followed in examining samples of barilla or kelp, except that the alkali contained in them being carbonate of soda, 90·75 of oil of vitriol must be employed instead of 70. The process recommended by Mr. Faraday, and in which he uses only one test acid, is as follows: Into a tube about three quarters of an inch in diameter, and nine and a half long, and as cylindrical as possible throughout its whole length, 1000 grains of water are to be weighed, and the space occupied marked on the tube by a fine file; this space is then divided from above downward into 100 equal parts. At 23·44, or 76·56 parts from the bottom, an extra line should be made, and soda marked opposite to it; at 48·96 potass should be marked in the same way; at 54·63 carbonate of soda; and at 65 carbonate of potass. A diluted acid is now to be prepared, which shall have a specific gravity 1·127, and this is made by mixing intimately together 19 parts, by weight, of oil of vitriol and 81 of water. The method to be followed in the employment of this acid is as follows: The dilute acid is to be measured in the tube up to the line opposite to which the alkali sought for is marked; if barilla, which contains carbonate of soda, 54·63 measures are to be taken. The 100 measures are then made up by the addition of water, and is then ready for use, following the method before stated.

The alkalies are four in number; namely, ammonia

(or volatile alkali), potass (or vegetable alkali), soda (or mineral alkali), and lithia; which last is of so little importance that we shall not treat of it here. The combination of these alkalies with the various acids, whenever they form compounds of any importance, will be noticed.

Ammonia, or Spirits of Hartshorn, or Volatile Alkali, in its uncombined form, is an elastic gaseous body, having a very pungent and suffocating odor, destroys animal life, converts the yellow of turmeric paper to a brown, which, from the volatility of the alkali, is again restored by a gentle heat to its original color. This gas is rapidly absorbed by water, which takes into solution about 780 times its volume, forming the liquid ammonia, or what is commonly called hartshorn. Ammonia is liberated whenever any of the compounds of this alkali are acted upon by potass, soda, lime, and many other alkaline earths. Lime, from its being the most economical, is generally employed; the best proportions for its preparation are equal weights of sal ammoniac (muriate of ammonia) and fresh slaked lime. When these are introduced into a retort, and heat applied, ammonia is liberated in the gaseous form, and is conducted by a Wetter's safety-tube into a vessel of water, by which the gas is instantly absorbed. Muriate of lime remains in the retort; sometimes water is added to the mixture, and then distilled. As thus obtained, it has a specific gravity of ·930 or ·940, water being equal to 1·000. The most concentrated solution of ammonia has the specific gravity of ·875.

Carbonate of Ammonia, or Volatile Salt, or Subcarbonate of Ammonia.—This salt, which is very much employed in various processes of the arts, was formerly obtained by the action of chalk (carbonate of lime) upon muriate of ammonia; a double decomposition takes place. Carbonic acid and ammonia are sublimed in vapor, and muriate of lime remains in the vessel. A much less expensive process is, however, now followed, namely, from the waste gas liquors obtained in the purification of coal gas; these are evaporated, and the black, impure sulphuric acid added. By this means a sulphate of ammonia is formed, and the carbonate procured from it by the action of powdered chalk, as in the former process. Its uses are principally in forming other compounds of ammonia, as smelling salts; and it is likewise employed rather extensively by pastry-cooks for making light pastry, which is caused by the volatile carbonate of ammonia escaping and raising up the pastry by the heat of the oven. It is entirely dissipated during the baking, so that no ill effect can arise from its use. Both this compound and the preceding act as violent stimulants on the animal system.

Muriate of Ammonia, or Sal Ammoniac, was formerly brought to Europe from Egypt, where it was procured by submitting the soot of camels' dung (there employed for fuel) to sublimation in closed vessels; it is, however, at present manufactured in very large quantities in England in a variety of ways. The most economical processes are either submitting sulphate of ammonia mixed intimately with muriate of soda (sea salt) to sublimation, or by substituting the bittern of sea-water, which consists chiefly of muriate of magnesia, for the sea salt. In the first process a sulphate of soda is formed, and the muriate of ammonia, which, being volatile, rises in the vaporous form, and is condensed in the cool parts of the apparatus; in the latter process a sulphate of magnesia (Epsom salts) results. It is generally from this salt (muriate of ammonia) that the liquid ammonia is manufactured; it is also employed in tinning and soldering, to preserve the metals from oxidation. It is a semi-transparent, tough salt, having an acrid and cool taste, and is usually met with in the form of hemispherical masses. Sal ammoniac is made at Calcutta, and is thence exported to Great Britain, the United States, and the Arabian and Persian Gulfs. In 1824-25 the exports amounted to 114 tons.

Sulphate of Ammonia.—The preparation of the sulphate has been already given under the head of ammonia; it is employed in the manufacture both of the carbonate and muriate.

Acetate of Ammonia.—The spirit of Mindererus is obtained by acting upon the carbonate of ammonia by acetic acid; the carbonic acid escapes with effervescence, and an acetate of ammonia is formed; it is employed in medicine as a febrifuge. All these salts of ammonia have the following properties: they are volatile at a low red heat; the fixed alkalies decompose them, combining with their acid, and the ammonia is liberated. When combined with a fixed acid, such as the boracic or phosphoric, they are decomposed, the ammonia alone being volatilized, and the acid remaining pure. *This process was described for obtaining pure phosphoric acid.*

Potass, or Vegetable Alkali.—The original source of this alkali is in the vegetable kingdom, whence is derived its name of vegetable alkali. When wood is burned, and the ashes lixiviated with water, boiled, strained, and evaporated to dryness, an intensely alkaline mass is obtained, which is known by the name of potash, from this process being conducted in iron pots. It is then removed to a reverberatory furnace, and submitted to heat, and a current of air. This burns out extractive matter and other impurities, and the salt assumes a pearly white color, and is hence called pearlashes. Care should be taken during this process that the potashes do not enter into fusion, as this would destroy the full effect of the operation.

Pearlashes.—Pearlashes generally contain about from 60 to 88 or 84 per cent. of pure carbonate of potass. Its uses in manufactures are numerous and important. It is employed in making flint-glass, of which it constitutes about one sixth of the materials employed; in soap-making, especially for the softer kinds of soap; for this purpose, however, it is first rendered caustic by means of lime. In the rectification of spirits large quantities are employed to combine with the water previously in union with the spirit.

Subcarbonate of Potass, or Salt of Tartar, is used in preparing the subcarbonate of potass of the Pharmacopœia (carbonate of potass of the chemical nomenclature), and likewise in rendering hard spring waters soft, and in cleansing substances from grease: it is sometimes called salt of wormwood. When made by the deflagration of two parts of tartar of argol and one of nitre, it is called black flux, and is used extensively in metallurgic operations. From the subcarbonate of potash the pure and uncombined potass is obtained, by adding an equal weight of fresh burned lime, previously slaked, and boiling them with half their weight of water. By this process the lime combines with the carbonic acid, and the potass remains in solution in its caustic state; by boiling the clear solution rapidly in iron vessels, and submitting it to fusion, we obtain the fused potass. If it be required perfectly pure for chemical purposes, it is necessary to evaporate in silver vessels, and dissolve in strong alcohol. This takes up the pure potass, and leaves any portion of the subcarbonate that may not have been acted upon by the lime; then the alcohol is to be distilled off, and the potass fused at a red heat, and poured out in its liquid state on a cold slab. As thus procured, it is a white, brittle mass, highly deliquescent, absorbing moisture and carbonic acid rapidly from the atmosphere. When evaporated in iron vessels it has a dirty color, and lets fall a quantity of oxide of iron when dissolved in water, from its having acted upon the iron boilers. Potass acts with great rapidity upon animal substances, destroying their texture, and is on this account employed as a caustic, and was formerly called *lapis infernalis*.

Carbonate (or, in the chemical nomenclature, *Bicarbonate*) *of Potass*, is prepared by passing carbonic acid gas through a solution of the subcarbonate; and evap-

orating at a temperature below 212°, and crystallizing. It is used in making effervescing draughts. It loses one proportion of its carbonic acid when heated, and is converted into the subcarbonate.

Sulphate of Potass, or Sal Polychrest, or Vitriolated Tartar, is obtained by submitting the salt which remains after the manufacture of nitric acid from nitre and sulphuric acid to a red heat, or by neutralizing the excess of acid contained in that salt by subcarbonate of potass.

Bisulphate of Potass, or Sal Enixum.—This is the salt mentioned above, as the residue from the process for obtaining nitric acid. It is employed in very large quantities in the manufacture of alum; also in tinning iron, for pickling, as it is termed; it is sometimes also used as a flux.

Nitrate of Potash, Nitre, or Saltpetre.—This salt, which is of so much importance in every branch of the arts, is found native in many parts of the world, especially in the East Indies. It is obtained from soils composed of decomposing granite, the feldspar of which gives rise, as is supposed, to the potass. The nitric acid is not so easily accounted for, except it is by a union of the nitrogen and oxygen gases in the atmosphere taking place in those hot climates; for, from authenticated accounts, no decaying animal or vegetable matter exists in the nitre districts of India. By lixiviation with water the nitre is dissolved from the soil, which is again thrown out into the air, to be washed the following year; so that it is formed continually. These lixiviations are then evaporated; and when of a certain strength, a quantity of common salt separates, which is removed as it falls; and the nitre is then crystallized and imported to England, always containing a certain quantity of impurities, which are deducted in the purchase of large quantities of the article, being termed its refraction. It is generally used for the manufacture of gunpowder and pure nitric acid, refined or recrystallized. Nitre may be also made artificially, in beds of decaying vegetable or animal substances, mixed with old mortar, or other refuse calcareous earth; these are watered occasionally, too much moisture being hurtful; after a certain period, depending on the rapidity with which the process has gone on, the whole is submitted to lixiviation together with wood-ashes, which contain subcarbonate of potass, and which decomposes any nitrate of lime formed, of which there is generally a considerable quantity. After the lixiviation is complete, which takes some time, the solution is separated and boiled down; the salt separates as in the other process, and the nitre is then crystallized. It was from this source that the whole of the nitre, nearly, employed by the French during the long-protracted war with the continental powers was obtained. Nitre has a cold, penetrating, and nauseous taste; enters into igneous fusion at a gentle heat, and is then moulded into round cakes, called sal prunella. It is employed in the manufacture of nitric acid; of gunpowder, which is composed of 75 parts by weight of nitre, 16 of charcoal, and 9 of sulphur (the nitre for this purpose should be of great purity); and in the manufacture of oil of vitriol: as a flux it is one of the most powerful we possess; it is also used for the preservation of animal food, and in making frigorific mixtures: 1 ounce of nitre dissolved in 5 ounces of water lowers its temperature 15 degrees of Fahrenheit's thermometer.—*See* SALTPETRE.

Oxalate and Binoxalate of Potass.—The binoxalate of potass, or salt of lemon, or sorrel, by both which last names it is very commonly known, is procured from the juice of the common sorrel (*Rumex Acetosa*), or the wood sorrel (*Oxalis Acetosella*), by crystallization, after the feculent matter has been separated by standing a few days. Its chief uses are, in removing ink spots or iron moulds; and also as a refreshing beverage when mixed with sugar and water. The neutral oxalate is obtained from this salt by combining the excess of acid which it contains with a solution of subcarbonate of potass. Is very much used in chemistry, as the best test of the presence of lime.

Tartrate and Bitartrate of Potass.—Bitartrate of potass, or cream of tartar, is, when in its crude and impure state, called argol, and is deposited in the interior of wine-casks during fermentation, and from this source the whole of the cream of tartar is obtained. It is generally of a very dark brown color, but may be purified and rendered perfectly white by solution and crystallization. It is employed very extensively in dyeing, hat-making, and in the preparation of tartaric acid, and many of the compounds of tartaric acid, as tartar emetic, soluble tartar (tartrate of potass): when heated to redness, it is converted into carbonate of potass and charcoal; mixed with half its weight of nitre and thrown into a red-hot crucible, it forms the black flux, and with its own weight of nitre the white flux, both of which are very much employed in metallurgic operations. The tartrate is made by the addition of subcarbonate of potass to a solution of the bitartrate until perfectly neutral: it is used in medicine as a mild purgative.

Ferro-cyanate, or Prussiate of Potass.—This salt is obtained by the action of subcarbonate of potass, at a low red heat, upon refuse animal matter, such as hoofs, horns, skin, etc., in the proportion of two of subcarbonate to four or five of the animal matter. But the process recommended by M. Gautier is preferable; he finds that when animal matter is heated with nitre, it yields a much larger quantity of the ferro-Prussiate than when either potass or subcarbonate of potass are employed; the proportions he finds most economical are, 1 part by weight of nitre, 3 parts of dry blood, and iron scales or filings equal to a fiftieth of the blood employed. The coagulum of blood is mixed intimately with the nitre and iron filings, and dried by exposure to the air; they are then submitted to a very low red heat, in deep iron cylinders, as long as vapors continue to be liberated; when cold, the contents are dissolved in 12 or 15 times their weight and strained. On evaporation till of the specific gravity 1·284, and allowing it to cool, a large quantity of bicarbonate of potass crystallizes; and by further evaporation till of the specific gravity 1·306, the ferro-Prussiate of potass crystallizes on cooling. This is to be recrystallized. It is a beautiful yellow salt, very tough, having a tenacity similar to spermaceti, and is decomposed at a red heat. It is employed very extensively in dyeing blues, and in calico printing; also in the manufacture of Prussian blue, which is a compound of the ferro-Prussic acid and oxide of iron, prepared by adding 1 part of the ferro-Prussiate of potass dissolved in water, to 1 part of copperas, and 4 parts of alum in solution.

Chromate of Potass.—This salt is obtained from the native chromate of iron by the action of nitre at a full red heat in equal proportions. By solution, filtration, and evaporation, a beautiful lemon-yellow colored salt results. It is very much employed in dyeing, calico printing, and calico making, from its producing bright yellow precipitates with solutions of lead.

Bichromate of Potass is prepared from the above-mentioned salt, by the addition of nitric acid to the yellow solution obtained from the heated mass by the action of water; on evaporating this, a dark red colored salt crystallizes, which is the bichromate. This is also very largely employed by the calico printers, and when mixed in solution with nitric acid, possesses the property of destroying vegetable colors; on this account it is of great importance, as it at the same time removes a vegetable color, and forms a base for a yellow dye.

Chlorate or Hyperoxymuriate of Potass.—The preparation of this salt is attended with some little difficulty, and requires a great deal of nicety. It is obtained by passing a current of chlorine gas through a solution of caustic potass; then boiling and evaporating; the first salt that separates is the chlorate of potass; and by

further evaporation, muriate of potass is obtained. It is used in making matches for instantaneous light boxes, which are prepared by first dipping the wood in melted sulphur, and then into a thin paste, formed of 3 parts chlorate of potass, 2 parts starch, and a little vermilion; with sulphur it forms a very explosive compound, generally employed for filling the percussion-caps of fowling-pieces.

Soda, or Mineral Alkali.—The sources of this alkali in nature are various. It is obtained in combination with carbonic acid, when plants which grow by the sea-side are burned. The ashes thus obtained are called barilla and kelp; and also in some countries it is found as an efflorescence upon the surface of the earth, and is called nitrum or natron; this occurs particularly in Egypt and South America. Trona is also another native carbonate of soda, and is exported from Tripoli. In combination with muriatic acid it is also found in immense abundance, forming the rock salt, and sea salt or muriate of soda. It is obtained from the carbonate exactly in the same way as potass is obtained from its carbonate, namely, by boiling it with fresh-burned lime previously slaked, decanting the clear solution, and evaporating and fusing. It is a white brittle substance, and by exposure to the air becomes converted into a dry carbonate. Its uses in the arts and manufactures are of considerable importance. In soap-making it is employed in very large quantities, and for this purpose is generally procured from barilla or kelp, by mixing them with lime, and by the infusion of water procuring a caustic soda ley; this is mixed with oil and fatty matters in various proportions, and boiled; the saponification of the fatty matter takes place, and the soap formed rises to the surface; the ley is then drawn from beneath, and fresh leys added, until the soap is completely free from oil; it is then allowed to dry. Soda is also employed in the manufacture of plate, crown, and bottle glass, though for this purpose it is generally in the form of carbonate or sulphate.

Subcarbonate of Soda. (In the chemical nomenclature it is called *carbonate.*)—This is generally prepared from barilla, which contains about from 16 to 24 per cent. Barilla is procured by incinerating the *salsola soda*, and other sea-side plants; it is made in large quantities on the coast of Spain. Kelp is another impure carbonate of soda, but does not contain more than 4 or 5 per cent.; it is the ashes obtained from sea-weeds by incineration, and is made on the northern shores of Scotland. From these, the crystallized carbonate (or subcarbonate, as it is more frequently called) is made by the addition of a small quantity of water, boiling, straining, evaporating, and skimming off the common salt as it forms on the surface; on cooling, the subcarbonate of soda crystallizes. Another method is by heating the sulphate of soda with carbonate of lime and charcoal, and then dissolving out the soluble carbonate; also, by the action of carbonate of potass (pearlash) upon solutions of sea salt.—*See* BARILLA *and* KELP.

Bicarbonate of Soda is procured by driving a current of carbonic acid gas through solutions of the carbonate, and then evaporating at a temperature below 212° Fahrenheit; it is chiefly employed in making soda-water powders. This is the carbonate of soda of the Pharmacopœia. By the application of a red heat it loses carbonic acid, and is converted into the subcarbonate.

Sulphate of Soda, or Glauber Salts.—This salt, which has received the name of Glauber, from its discoverer, is the residue of a great many chemical processes; for instance, when muriate of soda is acted upon by oil of vitriol, muriatic acid and sulphate of soda result; in making chlorine gas for the manufacture of the chloride of lime, or bleaching powder, sulphate of soda and sulphate of manganese result—the materials employed being sea salt, sulphuric acid (oil of vitriol), and black oxide of manganese; also, in the preparation of acetic acid from the acetate of soda, and in the preparation of muriate of ammonia from sea salt and sulphate of ammonia. Sulphate of soda is a colorless, transparent salt, effloresces readily when exposed to the air, and becomes converted into a dry powder; it has a cold, bitter taste. It is used for the preparation of carbonate of soda, and as a medicine. It is found native in some countries, particularly in Persia and South America—frequently as an efflorescence upon new walls.

Nitrate of Soda.—This salt is found native in some parts of the East Indies, and is called, from its square form, cubic nitre; it is, however, very little used.

Muriate of Soda, or Sea Salt.—This compound is found in immense quantities in the earth, and is called from this circumstance rock salt, or sal gem. The mines of Cheshire and Droitwich, in England, and those in Poland, Hungary, and Spain, and many others, afford immense quantities of this compound. It is also obtained by the evaporation of sea-water, both spontaneously in pits formed for the purpose, and in large iron boilers; the uncrystallizable fluid is called the bittern; basket salt is made by placing the salt, after evaporation, in conical baskets, and passing through it a saturated solution of salt, which dissolves and carries off the muriate of magnesia or lime. Pure salt should not become moist by exposure to the air; it decrepitates when heated: it is employed for the preparation of muriatic acid, carbonate of soda, muriate of ammonia, and many other operations; also in glazing stone-ware, pottery, etc.; and from its great antiseptic properties, is used largely for the preservation of animal food; as a flux also in metallurgy.

Borate of Soda, or Borax.—This salt is found in Thibet and Persia, deposited from saline lakes; it is called tincal, and is imported into this country, where it is purified by solution—the fatty matter with which the tincal is always coated being removed, and the solution evaporated and crystallized: its principal uses are as a flux, from its acting very powerfully upon earthy substances.

Alkanet, or **Anchusa** (Ger. *Orkanet*; Du. *Ossetong*; Fr. *Orcanette*; It. *Ancusa*; Sp. *Arcaneta*), a species of bugloss (*Anchusa tinctoria*, Linn.). It has been cultivated in England; but is found of the finest quality in Siberia, Spain, and more particularly in the south of France, in the vicinity of Montpellier. The roots of the plant are the only parts that are made use of. When in perfection, they are about the thickness of the finger, having a thick bark of a deep purplish red color. This, when separated from the whitish woody pith, imparts a fine deep red to alcohol, oils, wax, and all unctuous substances. To water it gives only a dull brownish hue. It is principally employed to tint wax, pomatum, and unguents, oils employed in the dressing of mahogany, rose-wood, etc. The alkanet brought from Constantinople yields a more beautiful but less permanent dye than that of France.—LEWIS'S *Mat. Med.*; MAGNIEM, *Dictionnaire des Productions.*

Alligation, the name of a method of solving all questions that relate to the mixture of one ingredient with another. Though writers on arithmetic generally make alligation a branch of that science, yet as it is plainly nothing more than an application of the common properties of numbers, in order to solve a few questions that occur in particular branches of business, we choose rather to keep it distinct from the science of arithmetic. Alligation is generally divided into *medial* and *alternate.*

Alligation Medial, from the rates and quantities of the simples given, discovers the rate of the mixture.

Rule. As the total quantity of the simples,
To their price or value;
So any quantity of the mixture,
To the rate.

Example. A grocer mixes 30 pounds of currants, at

4*d.* per pound, with 10 pounds of other currants, at 6*d.* per pound; What is the value of 1 pound of the mixture? *Ans.* 4½*d.*

lb.	*d.*		*d.*
30	at 4	amounts to	120
10	at 6	"	60
40			180.

lb. *d.* *lb.* *d.*
If 40 : 180 : : 1 : 4½.

Alligation Alternate, being the converse of alligation medial, from the rates of the simples, and rate of the mixture given, finds the quantities of the simples.

Rules. I. Place the rate of the mixture on the left side of a brace, as the root; and on the right side of the brace set the rates of the several simples, under one another, as the branches. II. Link or alligate the branches, so as one greater and another less than the root may be linked or yoked together. III. Set the difference between the root and the several branches right against their respective yoke-fellows. These alternate differences are the quantities required. *Note* 1. If any branch happen to have two or more yoke-fellows, the difference between the root and these yoke-fellows must be placed right against the said branch, one after another, and added into one sum. 2. In some questions the branches may be alligated more ways than one; and a question will always admit of so many answers as there are different ways of linking the branches.

Alligation alternate admits of three varieties; viz., 1. The question may be unlimited, with respect both to the quantity of the simples and that of the mixture. 2. The question may be limited to a certain quantity of one or more of the simples. 3. The question may be limited to a certain quantity of the mixture.

Variety I. When the question is unlimited, with respect both to the quantity of the simples and that of the mixture, this is called *Alligation Simple.*

Example. A grocer would mix sugars at 5*d.*, 7*d.*, and 10*d.* per pound, so as to sell the mixture or compound at 8*d.* per pound: What quantity of each must he take?

		lb.
5	2	2
7	2	2
10	3,1	4.

Here the rate of the mixture 8 is placed on the left side of the brace as the root; and on the right side of the same brace are set the rates of the several simples, viz., 5, 7, 10, under one another, as the branches; according to Rule I. The branch 10 being greater than the root, is alligated or linked with 7 and 5, both these being less than the root, as directed in Rule II. The difference between the root 8 and the branch 5, viz., 3, is set right against this branch's yoke-fellow 10; the difference between 8 and 7 is likewise set right against the yoke-fellow 10; and the difference between 8 and 10, viz., 2, is set right against the two yoke-fellows 7 and 5, as prescribed by Rule III. As the branch 10 has two differences on the right, viz., 3 and 1, they are added; and the answer to the question is, that 2 pounds at 5*d.*, 2 pounds at 7*d.*, and 4 pounds at 10*d.*, will make the mixture required. The truth and reason of the rules will appear by considering that whatever is lost upon any one branch is gained upon its yoke-fellow. Thus, in the above example, by selling 4 pounds of 10*d.* sugar at 8*d.* per pound, there is 8*d.* lost: but the like sum is gained upon its two yoke-fellows, for by selling 2 pounds of 5*d.* sugar at 8*d.* per pound, there is 6*d.* gained; and by selling 2 pounds of 7*d.* sugar at 8*d.* there is 2*d.* gained; and 6*d.* and 2*d.* make 8*d.* Hence it follows that the rate of the mixture must always be mean or middle with respect to the rates of the simples; that is, it must be less than the greatest, and greater than the least; otherwise a solution would be impossible. And the price of the total quantity mixed, computed at the rate of the mixture, will always be equal to the sum of the prices of the several quantities cast up at the respective rates of the simples.

Variety II. When the question is limited to a certain quantity of one or more of the simples, this is called *Alligation Partial.*

If the quantity of one of the simples only be limited, alligate the branches, and take their differences, as if there had been no such limitation; and then work by the following proportion:

As the difference right against the rate of the simple whose quantity is given,
To the other differences respectively;
So the quantity given,
To the several quantities sought.

Example. A distiller would, with 40 gallons of brandy at 12*s.* per gallon, mix rum at 7*s.* per gallon, and gin at 4*s.* per gallon: How much of the rum and gin must he take to sell the mixture at 8*s.* per gallon?

Gallons.

12	1,4	5	40 of brandy,	
8 { 7	4	4	32 of rum,	} *Ans.*
4	4	4	32 of gin.	

The operation gives for answer, 5 gallons of brandy, 4 of rum, and 4 of gin. But the question limits the quantity of brandy to 40 gallons; therefore say,

If 5 : 4 : : 40 : 32.

The quantity of gin, by the operation, being also 4, the proportion needs not be repeated.

Variety III. When the question is limited to a certain quantity of the mixture, this is called *Alligation Total.*

After linking the branches, and taking the differences, work by the proportion following:

As the sum of the differences,
To each particular difference;
So the given total of the mixture,
To the respective quantities required.

Example. A vintner has wine at 3*s.* per gallon, and would mix it with water, so as to make a composition of 144 gallons, worth 2*s.* 6*d.* per gallon: How much wine, and how much water, must he take?

Gallons.

36	30	120 of wine,	} *Ans.*
30 { 0	6	24 of water.	
36		144 total.	

120 × 36 = 4320
24 × 0 = 0

Proof 144)4320(30
As 36 : 30 : : 144 : 120
As 36 : 6 : : 144 : 24.

There being here only two simples, and the total of the mixture limited, the question admits but of one answer.—E. B.

Allocation denotes the admitting or allowing of an article of an account, especially in the exchequer. Hence *Allocatione Facienda* is a writ directed to the Lord Treasurer, or Barons of the Exchequer, commanding them to allow an accountant such sums as he has lawfully expended in the execution of his office.—E. B.

Allowances, Tares, etc. In selling goods, or in paying duties upon them, certain deductions are made from their weights, depending on the nature of the packages in which they are inclosed, and which are regulated in most instances by the custom of merchants, and the rules laid down by public offices. These allowances, as they are termed, are distinguished by the epithets *Draft*, *Tare*, *Tret*, and *Cloff*.

Draft is a deduction from the original or gross weight of goods, and is substracted before the tare is taken off. *Tare* is an allowance for the weight of the bag, box, cask, or other package, in which goods are weighed. *Real* or *open tare* is the actual weight of the package. *Customary tare* is, as its name implies, an established allowance for the weight of the package. *Computed tare* is an estimated allowance agreed upon

at the time. *Average tare* is when a few packages only among several are weighed, their mean or average taken, and the rest tared accordingly. *Super-tare* is an additional allowance, or tare, where the commodity or package exceeds a certain weight. When tare is allowed, the remainder is called the net weight; but if tret be allowed, it is called the *suttle weight*. *Tret* is a deduction of 4 pounds from every 104 pounds of suttle weight. This allowance, which is said to be for dust or sand, or for the waste or wear of the commodity, was formerly made on most foreign articles sold by the pound avoirdupois; but it is now nearly discontinued by merchants, or else allowed in the price. It is wholly abolished at the East India warehouses in London; and neither tret nor draft is allowed at the custom-house. *Cloff*, or *Clough*, is another allowance that is nearly obsolete. It is stated in arithmetical books to be a deduction of 2 pounds from every 3 cwt. of the *second suttle*; that is, the remainder after tret is subtracted; but merchants at present know cloff only as a small deduction, like draft, from the original weight, and this only from two or three articles.—*See* KELLY'S *Cambist*, art. LONDON.

Alloy, or **Allay**, properly signifies a proportion of a baser metal mixed with a finer one. The alloy of gold is estimated by carats, that of silver by pennyweights. In different nations different proportions of alloy are used; whence their moneys are said to be of different degrees of fineness or baseness, and are valued accordingly in foreign exchanges. The chief reasons alleged for the alloying of coin are, 1, the mixture of the metals, which, when smelted from the mine, are not perfectly pure; 2, the saving of the expense it must otherwise cost if they were to be refined; 3, the necessity of rendering them harder, by mixing some parts of other metals with them, to prevent the diminution of weight by wearing in passing from hand to hand; 4, the melting of foreign gold or coin which is alloyed; 5, the charges of coinage, which must be made good by the profit arising from the money coined; 6, and lastly, the duty belonging to the sovereign, on account of the power he has to cause money to be coined in his dominions.—E. B.

Almadie, a kind of canoe or small vessel, about four fathoms long, commonly made of bark, and used by the negroes of Africa. At Calicut the same name is applied to a kind of long boats, 80 feet in length and six or seven in breadth. They are exceedingly swift, and are otherwise called *cathuri*.—E. B.

Almanac, a book or table, containing a calendar of days and months, the rising and setting of the sun, the age of the moon, the eclipses of both luminaries, etc. Authors are divided with regard to the etymology of the word; some deriving it from the Arabic particle *al*, and *manach*, to count; some from *almanach*, New-year's gifts, because the Arabian astrologers used at the beginning of the year to make presents of their ephemerides; and others from the Teutonic *almaen achte*, observations on all the months. Dr. Johnson derives it from the Arabic particle *al*, and the Greek *μην*, a month. But the most simple etymology appears from the common spelling; the word being composed of two Arabic ones, *Al Manack*, which signify *the Diary*. All classes of the Arabs are commonly much given to the study of astronomy and astrology; to both of which they are inclined by their belief in fate, and by their pastoral life, which affords time and opportunity to cultivate them. They neither sow, reap, plant, nor undertake any expedition or business, without previously consulting the stars, or, in other words, their almanacs, or some of the makers of them. From these people, by their vicinity to Europe, this art, no less useful in one sense than trifling and ridiculous in another, has passed over to us; and those astronomical compositions have still every where not only retained their old Arabic name, but were, like theirs, for a long while, and still are among many European nations, interspersed with a great number of astrological rules for planting, sowing, bleeding, purging, etc., down to the cutting of the hair and paring of the nails. Regiomontanus appears to have been the first in Europe, however, who reduced almanacs into their present form and method, gave the characters of each year and month, foretold the eclipses and other phases, calculated the motions of the planets, etc. His first almanac was published in 1474. The essential part of an almanac is the calendar of months and days, with the risings and settings of the sun, age of the moon, etc. To these are added lists of posts, offices, dignities, public institutions, with many other articles, political as well as local, and differing in different countries.

Almanac, Nautical. This, which in some respects is a national almanac, is published under the sanction of the Board of Longitude, and is designed chiefly to facilitate the use of Mayer's Lunar Tables, by superseding the necessity of making calculations to determine the longitude at sea. It commenced with the year 1767, and has ever since been continued annually, but two or three years in advance. The late Dr. Maskelyne was the originator of this very valuable publication. It is now published under the immediate superintendence of the secretary to the board. Similar to this almanac is the French publication entitled *Connoissance des Tems*, directed by the *Bureau de Longitude*, and which commenced so early as the year 1698. At Berlin, the celebrated Bode for about 50 years conducted the excellent astronomical almanac, *Astronomisches Jahrbuch*, which is still continued.—E. B.

The American Ephemeris and Nautical Almanac is a valuable work for navigators. The act establishing this work was passed by Congress in 1849, and the preparation of the first volume was commenced in the fall of the same year. The work was put under the superintendence of Commander C. H. Davis, of the navy, with Professor Benjamin Peirce as consulting astronomer. Owing to the smallness of the first appropriations, and the great amount of preliminary labor, the first volume, for 1855, was not published until 1852; since which time a volume has been issued each year. The volume for 1859 is now in a forward state of preparation, and will be ready about January, 1857. The primary object of the work is to promote the interests of commerce; and for this reason great pains have been taken with those problems upon which the science of navigation depends. Especially is this the case with the Lunar Ephemeris; and all the tests which have been applied show that this labor has been rewarded with great success. Professor Peirce's Tables are used in preparing this ephemeris. The ephemeris of the sun is prepared from Hansen's Tables. The nautical part of the work, besides the foregoing, contains the ephemerides of those planets most commonly used with the moon in determining a ship's place at sea; also the apparent places of about one hundred fixed stars. All this part of the work is referred to the meridian of Greenwich; and to prevent confusion in its use, the arrangement of the British Almanac is adopted. The astronomical part is referred to the meridian of Washington, and such changes in the ordinary forms of the ephemerides have been adopted as would render them most practical in the daily routine of the observatory. The ephemerides of the planets are being based upon new theories, as fast as can be done consistently with the demands which the regular issues of the almanac make upon the annual appropriations made by Congress for its support.

The Egyptians computed time by instruments. Leg calendars were anciently in use. Almon-aght is of Saxon origin. In the British Museum and universities are curious specimens of early almanacs. Michael Nostrodamus, the celebrated astrologer, wrote an almanac in the style of Merlin, 1566.—DUFRESNOY. The most noted early almanacs were:

John Somer's Calendar, Oxford	1380
One in Lambeth palace, written in	1460
First printed one, published at Buda	1472
First printed in England, by Richard Pynson	1497
Tybault's Prognostications	1533
Lilly's Ephemeris	1644
Poor Robin's Almanac	1652
Lady's Diary	1705
Moore's Almanac	1713
Season on the Seasons	1735
Gentleman's Diary	1741
Nautical Almanac (materially improved in 1834)	1767
Poor Richard's Almanac (Franklin's, Philadelphia)	1733
British Imperial Calendar	1809
British Almanac and Companion	1828
American Atmanac, Boston	1829
Nautical Almanac, United States	1855

Of Moore's, at one period, upward of 500,000 copies were annually sold. The Stationers' company claimed the exclusive right of publishing, until 1790, in virtue of letters patent from James I., granting the privilege to this company, and the two universities. The stamp duty on almanacs was abolished in England, 1834.

Almonds (Ger. *Mandeln;* Du. *Amandelen;* Fr. *Amandes;* It. *Mandorli;* Sp. *Almendra;* Port. *Amendo;* Russ. *Mindal;* Lat. *Amygdalæ amaræ, dulces*), a kind of medicinal fruit, contained in a hard shell, that is inclosed in a tough sort of cotton skin. The tree (*Amygdalus communis*) which produces this fruit nearly resembles the peach both in leaves and blossoms; it grows spontaneously only in warm countries, as Spain, and particularly Barbary. It flowers early in the spring, and produces fruit in August. Almonds are of two sorts, sweet and bitter. They are not distinguishable from each other but by the taste of the kernel or fruit. "The Valentia almond is sweet, large, and flat-pointed at one extremity, and compressed in the middle. The Italian almonds are not so sweet, smaller, and less depressed in the middle. The Jordan almonds come from Malaga, and are the best sweet almonds brought to England. They are longer, flatter, less pointed at one end and less round at the other, and have a paler cuticle than those we have described. The sweet almonds are imported in mats, casks, and boxes; the bitter, which come chiefly from Mogadore, arrive in boxes."—THOMSON'S *Dispensatory.*

Aloes (Du. *Aloe;* Fr. *Aloès;* Ger. and Lat. *Aloe;* Russ. *Sabir;* Sp. *Aloè;* Arab. *Mucibar*), a bitter, gummy, resinous, inspissated juice, obtained from the leaves of the plant of the same name. There are four sorts of aloes met with in commerce; viz., *Socotrine, Hepatic, Caballine,* and *Cape.*

1. *Socotrine*—so called from the island of Socotra, in the Indian Ocean, not very distant from Cape Guardaful, where the plant (*Aloe spicata*), of which this species is the produce, grows abundantly. It is in pieces of a reddish-brown color, glossy as if varnished, and in some degree pellucid. When reduced to powder, it is of a bright golden color. Its taste is extremely bitter, and it has a peculiar aromatic odor, not unlike that of the russet apple decaying. It softens in the hand, and is adhesive, yet is sufficiently pulverulent. It is imported by way of Smyrna and Alexandria, in chests and casks, but is very scarce in England.

2. *Hepatic.*—The real hepatic aloes, so called from its liver color, is believed to be the produce of the *Aloe perfoliata,* which grows in Yemen, in Arabia, from which it is exported to Bombay, whence it finds its way to Europe. It is duller in the color, bitterer, and has a less pleasant aroma than the Socotrine aloes, for which, however, it is sometimes substituted. Barbadoes aloes, which is often passed off for the hepatic, is the produce of the *Aloe vulgaris.* It is brought home in calabashes, or large gourd shells, containing from 60 to 70 pounds. It is duskier in its hue than the Bombay, or real hepatic aloes, and the taste is more nauseous, and intensely bitter. The color of the powder is a dull olive yellow.

3. *Caballine,* or *Horse Aloes,* seems to be merely the coarsest species or refuse of the Barbadoes aloes. It is used only in veterinary medicine; and is easily distinguished by its rank, fetid smell.

4. *Cape Aloes* is the produce of the *Aloe spicata,* which is found in great abundance in the interior of the Cape colony, and in Melinda. The latter furnishes the greater part of the extract sold in Europe under the name of Socotrine aloes. The odor of the Cape aloes is stronger and more disagreeable than that of the Socotrine; they have also a yellower hue on the outside, are less glossy, softer, and more pliable; the color of the powder is more like that of gumboge than that of the true Socotrine aloes.—AINSLIE'S *Materia Indica;* THOMSON'S *Dispensatory* and *Materia Medica.*

Aloes-wood (Ger. *Aloeholz;* Du. *Aloëhout, Paradyshout;* Fr. *Bois d'Aloès;* It. *Legno di Aloe;* Sp. *Aloè chino;* Lat. *Lignum Aloes;* Sans. *Aguru;* Malay, *Agila;* Siam. *Kisna*), the produce of a large forest tree, to be found in most of the countries between China and India, from the 24th degree of north latitude to the equator. It seems to be the result of a diseased action confined to a small part of a few trees, of which the rest of the wood is wholly valueless. It appears to be more or less frequent according to soil and climate, and from the same causes to differ materially in quality. It is produced both in the greatest quantity and perfection in the countries and islands on the east coast of the Gulf of Siam. This article is in high repute for fumigations, and as incense, in all Hindoo, Mohammedan, and Catholic countries. It formerly brought a very high price, being at one time reckoned nearly as valuable as gold. It is now comparatively cheap, though the finest specimens are still very dear. The accounts of this article in most books, even of good authority, are singularly contradictory and inaccurate. This is more surprising, as La Loubère has distinctly stated that it consisted only of "*certains endroits corrumpus dans des arbres d'une certaine espèce. Toute arbre de cette espèce n'en a pas; et ceux qui en ont, ne les ont pas tous en même endroit.*"—*Royaume de Siam,* t. i. p. 45, 12mo ed. The difficulty of finding the trees which happen to be diseased; and of getting at the diseased portion, has given rise to the fables that have been current as to its origin. The late Dr. Roxburgh introduced the tree which yields this production into the Botanical Garden at Calcutta, from the hills to the eastward of Sylhet, and described it under the name of *Aquillaria Agalocha.*

Alpaca, a species of the South American family of quadrupeds called *Llama,* the soft hairy wool of which is now largely employed in the fabrication of cloths of different sorts. There would appear to be three species of this family, the *Guanaco,* or wild Llama; the *Alpaca,* which was domesticated as a beast of burden by the ancient Peruvians, and hence considered as the camel of the New World; and the *Vicuña,* a small species, chiefly valued for the softness of its fine wool. Some consider the *Paco* a fourth species; but the descriptions of travelers are too indefinite to enable us to decide this point. The fleece of the alpaca is fine, long, and shaggy; and the animal exceeds much in size the other two.

Alum (Ger. *Alaun;* Du. *Aluin;* Fr. *Alun;* It. *Allume;* Sp. *Allumbre;* Russ. *Kwasszè;* Lat. *Alumen;* Arab. *Sheb*), a salt of great importance in the arts, consisting of a ternary compound of *aluminum,* or pure argillaceous earth, potass, and sulphuric acid. Alum is sometimes found native; but by far the greater part of that which is met with in commerce is artificially prepared. The best alum is the Roman, or that which is manufactured near Civita Vecchia, in the Papal territory. It is in irregular, octahedral, crystalline masses, about the size of a walnut, and is opaque, being covered on the surface with a farinaceous efflorescence. The Levant, or Roch alum, is in fragments, about the size of the former, but in which the crystal-

line form is more obscure; it is externally of a dirty rose-color, and internally exhibits the same tinge, but paler. It is usually shipped for Europe from Smyrna; but it was anciently made at Roccha, or Edessa, in Syria; and hence its name, Roch alum. English alum is in large, irregular, semi-transparent, colorless masses, having a glassy fracture; not efflorescent, and considerably harder than the others. It is very inferior to either the Roman or Roch alum. The principal use of alum is in the art of dyeing, as a mordant for fixing and giving permanency to colors which otherwise would not adhere at all, or but for a very short time; but it is also used for a great variety of other purposes. Beckmann has shown (*History of Inventions*, vol. i. *article* ALUM) that the ancients were unacquainted with alum, and that the substance which they designated as such was merely vitriolic earth. It was first discovered by the Orientals, who established alum works in Syria in the thirteenth or fourteenth century. The oldest alum works in Europe were erected about the middle of the fifteenth century. Toward the conclusion of the reign of Queen Elizabeth, Sir Thomas Chaloner established the first alum work in England, in the vicinity of Whitby, in Yorkshire, where the principal works of the sort in that country are still carried on: the shipments of alum from Whitby in 1841 amount to 3237 tons. There is also a large alum work at Hurlett, near Paisley, the produce of which may be estimated at about 1200 tons a year. Alum is largely manufactured in China, and is thence exported to all the western Asiatic countries. In 1837, 35,642 piculs (2120 tons) were exported from Canton.

Amalgamation, the operation of making an amalgam, or mixing mercury with any metal. For the combination of one metal with another, it is generally sufficient that one of them be in a state of fluidity. Mercury being always fluid, is therefore capable of amalgamation with other metals without heat, iron excepted; nevertheless, heat considerably facilitates the operation. To amalgamate without heat requires nothing more than rubbing the two metals together in a mortar; but the metal to be united with the mercury should be previously divided into very thin plates or grains. When heat is used (which is always most effectual, and with some metals indispensably necessary), the mercury should be heated till it begin to smoke, and the grains of metal made red hot before they are thrown into it. If it be gold or silver, it is sufficient to stir the fluid with an iron rod for a little while, and then to throw it into a vessel filled with water. This amalgam is used for gilding or silvering on copper, which is afterward exposed to a degree of heat sufficient to evaporate the mercury. Amalgamation with lead or tin is effected by pouring an equal weight of mercury into either of these metals in a state of fusion, and stirring with an iron rod. Copper amalgamates with great difficulty, and iron not at all.—E. B.

Amazon, Maranon, Orellana, or **Solimoes**, the chief river of South America, and the largest in the world, whether regarded as to its volume, or the extent of its basin. It is formed by the union of the Maranon and Ucayale; the former rising in Lake Lauricocha (Peru), in lat. 10° 30′ S., long. 76° 10′ W.; and the head stream of the latter, the Apurimac, originating about lat. 16° S., long. 72° W. Both rivers have a general course at first northward; the Maranon, for the first 500 miles of its course, flows N.N.W., and at about lat. 6° S. bends eastward, and at lat. 4° 40′ takes an almost due east course, and after receiving the Huallaga from the south (where it is about 500 yards broad), it pursues a course of 46½ leagues, and joins the Ucayale at lat. 4° 35′ S., long. 74° W. Here the stream has depth sufficient to float the largest class of ships. Thenceforth the Amazon flows generally east to the Atlantic, which it enters nearly under the equator, and between long. 48° and 50° W., its estuary widening until it is 180 miles across. Taking the Apurimac as its source, its direct length is estimated at 1769 miles, and including its windings, nearly 4000 miles; for great part of which (viz., from the ocean to Pongo de Manseriche, long. 76° 50′ W.) it is navigable and uninterrupted by any rapid or cataract. At least twenty noble rivers, navigable to near their sources, pour their waters into it, besides numerous other less important streams. Chief tributaries, the Napo, Putumayo, Yapura, and Rio Negro, from the north; the Yavari, Jutay, Jurua, Coary, Purus, Madeira, Tapajos, and Xinga, from the south. By the Casiquiaire, a branch of the Rio Negro, the Amazon has a direct and remarkable connection with the Orinoco. The Amazon and its tributaries afford an immense inland navigation, estimated at 50,000 miles; and the extent of its basin has been computed at about two millions of square miles, or about two fifths of the whole continent of South America. The depth of the river is great; in mid-current no bottom is found with 20 fathoms. The velocity of the current is pretty uniform, at the rate of 3½ miles an hour. Tides ascend this river for 400 miles from the Atlantic—as far as Obidos, where the Amazon is still more than a mile in width—and near the full moon the rise of the tide occasions a formidable rush of water into the channel, sometimes bringing in several waves from 10 to 15 feet in height. This phenomenon, called the *bore*, is witnessed on a smaller scale in the Ganges, and in some European rivers. The upper part of the river, as far as the mouth of the Yavari, which forms the boundary line between Brazil and Peru, is called Maranon; thence to the mouth of the Rio Negro it is called Solimoes or Solimas; and from the Negro to its mouth, Amazon. The tropical rains swell the river annually to 40 and 50 feet above its ordinary level. The Maranon attains its greatest height in January, the Solimoes in February, the Amazon in the middle of March. In the lower part of its course, the Amazon abounds with islands, and in its estuary are Marajo and Caviana, of considerable extent. Santiago (Ecuador), S. Borja, S. Joaquim, Tabatinga, Olivenza, Matura, Serpa, Santarem, Montalegre, Para, Arayates, and Gurupa, are towns on its banks; but, with trifling exceptions, the whole country which it traverses is still in a state of nature. In 1848, a steamboat made a passage from Para, up the river as far as the Negro. The estuary of the Amazon was discovered by Pinçon in 1500; in 1539, Francis d'Orellana sailed down it from the Napo, and it obtained its name of Amazon from his having reported that he had seen armed women on its shores.—HARPERS' *Gazetteer*.

Its capacities for trade and commerce are inconceivably great. Its industrial future is the most dazzling; and to the touch of steam, settlement, and cultivation, this rolling stream and its magnificent water-shed would start up into a display of industrial results that would indicate the Valley of the Amazon as one of the most enchanting regions on the face of the earth. From its mountains you may dig silver, iron, coal, copper, quicksilver, zinc, and tin; from the sands of its tributaries you may wash gold, diamonds, and precious stones; from its forests you may gather drugs of virtues the most rare, spices of aroma the most exquisite, gums and resins of the most varied and useful properties, dyes of hues the most brilliant, with cabinet and building woods of the finest polish and most enduring texture. Its climate is an everlasting summer, and its harvest perennial. I translate from a book of travels in these countries, by Count Castelnau (received since my return to the United States), an account of the capacities of some of the southern portions of this vast water-shed:

"The productions of the country are exceedingly various. The sugar-cane, of which the crop is gathered at the end of eight months from the time of planting, forms the chief source of wealth of the province of Cercado.

"Coffee is cultivated also with success in this province, and in that of Chiquitos yields its fruit two years after having been planted, and requires scarcely any attention. Cocoa, recently introduced into these two provinces, gives its fruit at the end of three or four years at most. The tamarind, which thrives in the same localities, produces its harvest in five years. Cotton gives annual crops; there are two varieties—the one white, the other yellow. Tobacco grows, so to speak, without cultivation, in the province of Valle Grande, where it forms the principal article of commerce. Indigo, of which there are three cultivated kinds and one wild, is equally abundant. Maize yields at the end of three months all the year round; it is also cultivated in the province of Cercado. The cassave produces in eight months after planting; there are two kinds of it—one sweet, and the other bitter; the first can replace the potato, and even bread; the second is only good for starch. There is an enormous amount of kinds or varieties of bananas, which produce in the year from seed; they are specially cultivated in the province of Cercado. Two kinds of rice—one white, the other colored—are cultivated in the two provinces of Cercado and Chiquitos. They produce every five or six months; they say it is found wild in the region of Chiquitos.

"The grape, which grows well every where, and especially in the province of Cordilleras, where it was cultivated in the Missions up to the time of the Independence, is nevertheless made no article of profit. It will some day, perhaps, form one of the principal sources of wealth of this country. Wheat, barley, and the potato might be cultivated with advantage in the provinces of Chiquitos and Cordilleras; but till now results have been obtained only in that of Valle Grande. The cultivation of cocoa has commenced in the province of Cercado, and it is also found in a wild state, as well as the Peruvian bark, on the mountains of Samaripata. As we have already said, fruits abound in this region. They cultivate there principally oranges, lemons, citrons, figs, papaws, pomegranates, melons, water-melons, chirimoyas (which the Brazilians call *fruto de conde*), pine-apples, etc. The last of these fruits grow wild, and in great abundance, in the woods of Chiquitos. We met it, particularly the evening of our arrival, at Santa Ana. Its taste is excellent; but it leaves in the mouth such a burning sensation that I bitterly repented having tasted it. They cultivate in sufficient abundance, in the province, jalap, Peruvian bark, sarsaparilla, vanilla, rocou, copahu, ipecacuanha, caoutchouc, copal, etc. Woods for dyeing, cabinet-making, and building, abound; and the people of the country collect carefully a multitude of gums, roots, and barks, to which they attribute medicinal virtues the most varied. In many points in the departments, and especially in the provinces of Valle Grande and Cordilleras, iron is found, and traces of quicksilver. Gold is found in the province of Cercado, near the village of San Xavier. The Jesuits wrought mines of silver in the mountains of Colchis. Don Sebastian Rancas, while Governor of Chiquitos, announced to the government that diamonds, of very fine water, had been found in the streams in the environs of Santo Corazon."

The citizens of the United States are, of all foreign people, most interested in the free navigation of the Amazon. We, as in comparison with other foreigners, would reap the lion's share of the advantages to be derived from it. We would fear no competition. Our geographical position, the winds of heaven, and the currents of the ocean, are our potential auxiliaries. Thanks to Maury's investigations of the winds and currents, we know that a chip flung into the sea at the mouth of the Amazon will float close by Cape Hatteras. We know that ships sailing from the mouth of the Amazon, for whatever port of the world, are forced to our very doors by the southeast and northeast trade-winds; that New York is the half-way house between Pará and Europe.

The present limited commerce of the Amazon may be judged of by a statement of the exports and imports of Pará, the port of entry, and situated most advantageously at the month of an estuary of the Amazon.

COMMERCE OF PARÁ FOR 1851.

	No. of Vessels.	Tonnage.	Men.	Value of Imports.	Value of Exports.
American....	30	4,574	226	$425,484	$476,210
English	14	2,732	139	275,000	335,000
French	10	536	99	122,830	188,690
Portuguese ..	10	3,666	342	231,457	215,142
Hamburg....	2	510	18	27,500	131,000
Belgian.....	2	320	20	5,250	16,250
Danish	2	480	22	4,750	34,000
Swedish	2	420	22	....	28,500
	81	14,238	888	$1,092,271	$1,424,801

The city of Santa Maria do Belem de Graõ Pará, founded by Francisco Caldeira do Castello Branco, in the year 1616, is situated on a low elbow of land at the junction of the River Guamá with the River Pará, and at a distance of about eighty miles from the sea. A ship generally requires three tides, which run with a velocity of about four miles to the hour, to reach the sea from the city. The harbor is a very fine one; it is made by the long island of Onças in front, and at two miles distant, with some smaller ones farther down the river. There is an abundance of water, and ships of any size may lie within one hundred and fifty yards of the shore. There is a good landing-place for boats and lighters at the custom-house wharf; and at half-tide at the stone wharf, some five hundred yards above.

Owing to the miserable policy of the Brazilian government, the free commerce of the Amazon will be retarded until Brazil is forced to do justice to herself and others.

The Bolivian government are pursuing a more liberal policy, and have issued the following decree, dated *La Paz, 27th January* 1853:

"Whereas, 1st, the eastern and western parts of the republic, inclosing vast territories of extraordinary fertility, intersected by navigable rivers flowing to the Amazon and to the La Plata, offers the most natural channels for the commerce, population, and civilization of these districts;

"Whereas, 2d, the navigation of these rivers is the most efficacious and certain means of developing the riches of this territory, by placing it in communication with the exterior, and applying to its waters the fruitful principle of free navigation, as useful to the interests of the republic as to those of the world;

"Whereas, 3d, by the law of nature and of nations, confirmed by the conventions of modern Europe, and applied in the New World to the navigation of the Mississippi, Bolivia, as owner of the Pilcomayo, of the tributaries and the greater part of the Madeira, of the left shore of the Itenes from its junction with the Saravé to its emptying into the Mamoré, of the western bank of the Paraguay to the Marco del I——, as far as 26° 54′ of south latitude, and of the greater part and the left shore of the Bermejo, has the right to navigate these rivers from the point in her territory in which they may be susceptible of it to the sea, without any power being able to arrogate to itself the exclusive sovereignty over the Amazon and La Plata;

"Whereas, 4th, this navigation can not be effected without the necessary ports are afforded for trade;

"Therefore, be it decreed:

"ART. 1. The Bolivian government declares free to the commerce and mercantile navigation of all the nations of the globe the waters of the navigable rivers which, flowing through the territory of this nation, empty into the Amazon and Paraguay.

"ART. 2. The following are declared free ports, open to the traffic and navigation of all vessels of commerce, whatever may be their flag, destination, or tonnage:

"In the River Mamoré—Exaltacion, Trinidad, and Loreto.

"In the Beni—Renenavaque, Muchanis, and Magdalena.

"In the Piray—Cuatro, Ojos.

"In the Chaparé—Coni and Chimoré, tributaries of the Mamoré, the points of Asunta, Coni, and Chimoré.

"In the rivers Mapiri and Coroico, tributaries of the Beni, the points of Guanay and Coroico.

"In the Pilcomayo—the port of Magriñe on the east coast of the Paraguay, La Bahia Negra, and the point of Borbon.

"In the Bermejo—the point situated in 21° 30′ south latitude, at which embarked, in 1846, the national engineers Ondarza and Mujia.

"ART. 3. The vessels of war of friendly nations will also be permitted to visit these ports.

"ART. 4. The government of Bolivia, availing itself of the unquestionable rights which the nation has to navigate these rivers as far as the Atlantic, invites all the nations of the earth to navigate them, and promises—

"1st. To donate in the Bolivian territory, for the purposes which the law allows, tracts of land, from one league to twelve leagues square, to the individuals or companies who, sailing from the Atlantic, shall arrive at any one of the points declared to be ports of entry, and may wish to found near them agricultural or industrial establishments.

"2d. To guarantee the reward of ten thousand dollars ($10,000) to the first steamer which, through the La Plata or Amazon, may arrive at either of the abovementioned points.

"3d. To decree free the river exportation of the products of the earth, and of the national industry.

"4th. In due time there will be established and regulated at the above-mentioned points, where it may be necessary, custom-houses for the loading and unloading of merchandise, the government seeing that the charges for the use of these custom-houses may be as moderate as possible.

"5th. This decree will be submitted for the examination and approval of Congress on their next meeting.

"6th. The Minister of State, in the office of foreign relations, is charged with its fulfillment, by circulating it and communicating it to all whom it may concern.

"Given in the Palace of the Supreme Government, in the place of Ayacucho, 27th of January, 1853, 44th of independence, and 4th of liberty.

"MANUEL ISIDORO BELZU.
"RAFAEL BUSTILLO,
"*Minister of Foreign Relations.*

"A certified copy: AMARO ALVAREZ,
"*El Official Mayor.*"

—*See* HERNDON'S *Valley of the Amazon.*

Amber (Ger. *Bernstein*; Du. *Barnsteen*; Da. *Bernsteen, Rav.*; Fr. *Ambre jaune*; It. *Ambra gialla*; Sp. *Ambar*; Russ. *Jantar*; Pol. *Burszlyn*; Lat. *Succinum, Electrum*), a brittle, light, hard substance, usually nearly transparent, sometimes nearly colorless, but commonly yellow, or even deep brown. It has considerable lustre. Specific gravity 1·065. It is found in nodules or rounded masses, varying from the size of coarse sand to that of a man's hand. It is tasteless, without smell, except when pounded or heated, when it emits a fragrant odor. It is highly electric. Most authors assert that amber is bituminous; but Dr. Thomson states, that "it is undoubtedly of a vegetable origin; and though it differs from resins in some of its properties, yet it agrees with them in so many others, that it may without impropriety be referred to them." —*Chemistry*, vol. iv. p. 147, 5th ed. Pieces of amber occasionally inclose parts of toads and insects in their substance, which are beautifully preserved. It is principally found on the shores of Pomerania and Polish Prussia; but it is sometimes dug out of the earth in Ducal Prussia. It is also to be met with on the banks of the River Giaretta, in Sicily. Sometimes it is found on the east coast of Britain, and in gravel pits round London. The largest mass of amber ever found was got near the surface of the ground in Lithuania. It weighs 18 pounds, and is preserved in the royal cabinet at Berlin. Most of the amber imported into this country comes from the Baltic, but a small quantity comes from Sicily. Amber was in very high estimation among the ancients, but is now comparatively neglected.

Ambergris, or **Ambergrease** (Ger. *Amber*; Du. *Amber*; Fr. *Ambergris*; It. *Ambragrigia*; Sp. *Ambargris*; Lat. *Ambra, Ambra grisea*), a solid, opaque, generally ash-colored, fatty, inflammable substance, variegated like marble, remarkably light, rugged and uneven in its surface, and has a fragrant odor when heated; it does not effervesce with acids, melts freely over the fire into a kind of yellow resin, and is hardly soluble in spirit of wine. It is found on the seacoast, or floating on the sea, near the coasts of India, Africa, and Brazil, usually in small pieces, but sometimes in masses of 50 or 100 pounds weight. "Various opinions have been entertained respecting its origin. Some affirmed that it was the concrete juice of a tree, others thought it a bitumen; but it is now considered as pretty well established that it is a concretion formed in the stomach or intestines of the *Physeter macrocephalus*, or spermaceti whale."—THOMSON'S *Chemistry*. Ambergris ought to be chosen in large pieces, of an agreeable odor, entirely gray on the outside, and gray with little black spots within. The purchaser should be very cautious, as this article is easily counterfeited with gums and other drugs.

America. Our object in this article is to take a comprehensive survey of the American continent in its physical, moral, and general relations. In attempting this, we do not intend to go much into detail upon those subjects which will be more fully and appropriately discussed in the distinct articles assigned in this work to the several States included in the Western World; but we shall dwell at some length upon those features, peculiarities, and classes of facts which either belong to it as a whole, or can be most advantageously considered or described when all its parts are viewed in connection with one another. Such are the climate and physical structure of the country, the geographical distribution of its cultivated plants, its indigenous population, its animal tribes, its commercial and political capabilities, and its means of progressive improvement. The new continent may be styled emphatically "a land of promise." The *present* there sinks into nothing in itself, and derives all its importance from the germs it contains of a mighty future. The change must not only be great, but rapid, beyond all which the past history of mankind would lead us to expect. Even after we have familiarized our minds with the principles upon which its progress depends, we find it difficult to reconcile ourselves to the consequences that inevitably result from them. But time will do its work; and the great grandsons of those now in existence may live to see the New World contain a greater mass of civilized men than the Old. It is this greatness in prospect which lends an interest to the Western Continent similar to that which the Eastern derives from its historical recollections. The same circumstance requires that we should dwell at some length on the physical structure of America, and on those indigenous tribes which, in the course of three centuries, will only live in poetry and tradition. The future history of the New World must be read by us in the configuration of its surface, the distribution of its mountains and rivers, the productions of its soil, its natural and political capabilities, and in the character rather than the numbers of its civilized inhabitants.

The continental part of America extends from the 54th degree of south to the 71st of north latitude, its extreme length, from the Straits of Magellan to those

of Behring, being 10,500 English miles. The islands of Tierra del Fuego reach one degree beyond its southern extremity into the Antarctic Ocean; and Greenland, which is connected by geographers with America, has been traced to the 78th degree of north latitude, and probably is prolonged much farther into the polar circle. The late discoveries of Captains Parry, Ross, and Franklin have given us much more exact ideas than we formerly possessed of the northern regions of America. The coast of the main land has been traced almost completely from Behring's Straits to Fox's Channel on Hudson's Bay, and is found to run in a direction east and west, in an uneven line near the parallel of 70°. The bounds of continental America may therefore be considered as nearly determined on every side. The additional lights furnished by Captain Parry's and other recent voyages render it extremely probable that a great archipelago of islands occupies all the space between the northern coast of the continent and the 80th parallel; and there is even some reason for believing that the country known by the name of Greenland is traversed from east to west by arms of the sea, like the regions on the west side of Baffin's Bay.

The new continent, when compared with the old, enjoys three important advantages. First, it is free from such vast deserts as cover a large part of the surface of Asia and Africa, and which not only withdraw a great proportion of the soil from the use of man, but are obstacles to communication between the settled districts, and generate that excessive heat which is often injurious to health, and always destructive to industry. Secondly, no part of its soil is so far from the ocean as the central regions of Asia and Africa. Thirdly, the interior of America is penetrated by majestic rivers, the Mississippi, Amazon, and Plata, greatly surpassing those of the old continent in magnitude, and still more in the facilities they present for enabling the remotest inland districts to communicate with the sea.

According to the geographical system adopted in the Old World, America ought to be considered as two distinct continents, connected by the isthmus of Darien. Its two great divisions have evidently more of a defined and separate character than Africa and Asia, or than Asia and Europe; but though this arrangement may be very properly adopted for the purpose of description, it is too late now to think of assigning separate names to regions which have so long been known by a common appellation. In the physical arrangement of the parts of South and North America there is a remarkable resemblance. Both are very broad in the north, and gradually contract as they proceed southward, till they end, the one in a narrow isthmus, and the other in a narrow promontory. Each has a lofty chain of mountains near its western coast, abounding in volcanoes, with a lower ridge on the opposite side, destitute of any trace of internal fire; and each has one great central plain declining to the south and the north, and watered by two gigantic streams, the Mississippi corresponding to the Plata, and the St. Lawrence to the Amazon. In their climate, vegetable productions, and animal tribes, the two regions are very dissimilar.

The extent of the American continent and the islands connected with it is as follows:

	Square Eng. Miles.
North America	7,400,000
South America	6,500,000
Islands	150,000
Greenland, and the islands connected with it, lying north of Hudson's Straits, may be estimated at	900,000
	14,950,000

The American Continent, therefore, with its dependent islands, is fully four times as large as Europe, about one third larger than Africa, and almost one half less than Asia, if we include with the latter Australia and Polynesia. It constitutes about three-tenths of the dry land on the surface of the globe. Of the continental part of North America, a considerable portion is condemned to perpetual sterility by the rigor of the climate, as we shall explain more fully by-and-by. At present it is sufficient to state, that if we draw a line from the head of Cook's Inlet, in latitude 61°, on the west side, to the Straits of Bellisle on the east, so as to pass through Fort Churchill, on Hudson's Bay, we shall cut off a space rather exceeding one million and a half of square miles, which may be considered as incapable of cultivation. At the south extremity of America, a small tract, extending 200 miles north of the Straits of Magellan, though far within the limits of the temperate zone, is nearly in the same condition. These and the summits of the Andes are the only parts of the American continent which are rendered incapable of cultivation by the severity of the climate.

The vast chain of the Andes is distinguished by several peculiar features from all other mountains in the world. It has its principal direction nearly north and south, while all the great ridges of the old continent run from east to west; it is unparalleled in its prodigious length, in the richness of its mineral treasures, and in the number and magnitude of its volcanoes. The Andes, if we connect with them the Mexican Cordillera and the Rocky Mountains, extend from the Straits of Magellan in a line which may be considered as unbroken, to Point Hrownlow on the shores of the Arctic Ocean, in the latitude of 70°, over a space equal to 10,000 miles in length, or two-fifths of the circumference of the globe. Their height, which attains its maximum within the tropics, declines toward both poles, but in such a manner that, with a few exceptions, its higher summits ascend to the line of perpetual snow from one extremity to the other. It may thus be said to carry the temperature of the pole over the whole length of the American continent. The chain of the Andes is common to the two parts of America, and is in fact the link which connects them and makes them one continent. As we propose, however, to describe North and South America separately, we shall reserve the details for another part of this article.

South America is a peninsula of a triangular form. Its greatest length from north to south is 4550 miles; its greatest breadth 3200; and it covers an area, as already mentioned, of 6,500,000 square English miles, about three-fourths of which lie between the tropics, and the other fourth in the temperate zone. From the configuration of its surface, the peninsula may be divided into five distinct physical regions: 1. The low country skirting the shores of the Pacific Ocean, from 50 to 150 miles in breadth, and 4000 in length. The two extremities of this territory are fertile, the middle a sandy desert. 2. The basin of the Orinoco, a country consisting of extensive plains or *steppes*, called Llanos, either destitute of wood or merely dotted with trees, but covered with a very high herbage during a part of the year. During the dry season the heat is intense here, and the parched soil opens into long fissures, in which lizards and serpents lie in a state of torpor. 3. The basin of the Amazon, a vast plain, embracing a surface of more than two millions of square miles, possessing a rich soil and a humid climate. It is covered almost every where with dense forests, which harbor innumerable tribes of wild animals, and are thinly inhabited by savages, who live by hunting and fishing. 4. The great southern plain, watered by the Plata and the numerous streams descending from the eastern summits of the Cordilleras. Open *steppes*, which are here called Pampas, occupy the greater proportion of this region, which is dry, and in some parts barren, but in general is covered with a strong growth of weeds and tall grass, which feeds prodigious herds of horses and cattle, and affords shelter to a few wild animals. 5. The country of Brazil, eastward of the Parana and Araguay, presenting

alternate ridges and valleys, thickly covered with wood on the side next the Atlantic, and opening into steppes or pastures in the interior.

Nine-tenths of North America lying under the temperate zone, the climate follows a different law from what is observed in the southern peninsula, and presents more striking contrasts with that of the best known parts of the Old World. The long narrow region now denominated Central America, which connects the two great divisions of the continent, stretching from Panama to Tehuantepec, has in general a very humid atmosphere; but, for a tropical country, it must be only moderately hot, as every part of it is within a small distance of the sea. At Vera Paz the rains fall during nine months of the year. Mexico is hot, moist, and unhealthy on the low coasts; but two-thirds of its area, comprising all the populous districts, consist of table-land, from 5000 to 9000 feet in height. In consequence of this singular configuration of its surface, Mexico, though chiefly within the torrid zone, enjoys a temperate and equable climate. The mean heat at the capital, which is 7400 feet above the sea, is 62½°, and the difference between the warmest and coldest months, which exceeds 30° at London, is here only about 12°; but the atmosphere is deficient in moisture, and the country suffers from drought. Beyond the parallel of 24° the western shores are hot and arid.

In the extensive region lying between the parallels of 30° and 50°, which comprehends three-fourths of the useful soil of North America, we have three well-marked varieties of climate, that of the east coast, the west coast, and the basin of the Mississippi. On the east coast, from Georgia to Lower Canada, the mean temperature of the year is lower than in Europe by 9° at the latitude of 40°, and by 12½° at the latitude of 50°, according to Humboldt's calculation. In the next place, the range of the thermometer is much greater than in Europe, the summer being much hotter and the winter much colder. At Quebec the temperature of the warmest month exceeds that of the coldest by no less than 60½° of Fahrenheit; while at Paris, which is nearly under the same latitude, the difference is only 31°. In the third place, the climate undergoes a more rapid change in America as we proceed from south to north, a degree of latitude in the middle of the temperate zone producing a decrease of annual temperature of 1·13° in Europe, and of 1·57° in America. The comparison is greatly to the disadvantage of America when made in this form; but when the east coasts of the two continents are compared, the case is altered: the Old World is found to have no superiority over the New, for Pekin has still colder winters and warmer summers than Philadelphia, which is under the same latitude. It is the west coast of the new continent which ought to exhibit the climate of Europe; and from the few facts known, we have reason to believe that it is quite as mild and equable. At the mouth of Columbia River, in latitude 46½°, Captains Lewis and Clarke found the rains to be copious and frequent; but they had very little frost, and saw no ice even in the depth of winter. From observations made in 1822–4, it appears that the mean heat of the warmest month was about 62°, of the coldest about 36°, and of the whole year 51°. Now the place is under the same latitude with Quebec, where the snow lies five months, and the mean temperature during the three winter months is 18° below the freezing point. This single circumstance marks emphatically the contrast in the climate of the east and west coasts of North America. But the mouth of Columbia River is also under the same parallel with Nantes at the mouth of the Loire, where snow and ice are no strangers in the cold season of the year. We have, therefore, good grounds to conclude that the west coast of America, in the middle latitudes, has nearly as mild and equable a climate as the west coast of Europe. The climate of the great central valley, or basin of the Mississippi, has a considerable affinity to that of the east coast. It was long a matter of dispute in what the difference between the two consists; but this seems at last to have been clearly settled, by the meteorological registers kept at the military posts of the United States. From a comparison of four of these registers, from posts near the centre of this great valley, with others kept on the Atlantic coast in the same latitudes, it appears that in the hottest month the temperature is from 5° to 6° higher, and in the coldest month as much lower, in the basin of the Mississippi, than on the coasts of New England. The proportion of fair weather to cloudy is as 5 to 1 in favor of the east coast. The climate of the interior, therefore, exhibits in still greater excess those extremes of temperature which distinguish the eastern coast of this continent from the western, and from the shores of Europe. The fourth region of extra-tropical America includes the parts beyond Mount St. Elias on the west coast, and, in the interior, the plains extending from the 50th parallel to the Polar Seas. The intensity of the cold in this tract of country is scarcely equaled by any thing that is known under the same parallels in Northern Asia. The northernmost spot in America where grain is raised is at Lord Selkirk's colony, on Red River, in latitude 50°. Wheat, and also maize, which requires a high summer heat, are cultivated here. Barley would certainly grow as far north as Fort Chippewayan, in latitude 58¾°, where the heat of the four summer months was found by Captain Franklin to be 4° higher than at Edinburgh. There is even reason to believe that both this species of grain and potatoes might thrive as far north as Slave Lake, since the spruce fir attains the height of 50 feet three degrees farther north, at Fort Franklin, in latitude 65°. These, however, were low and sheltered spots; but in this dreary waste generally it will not be found practicable, we suspect, to carry the arts of civilized life beyond the 60th parallel; and the desirable country, capable of supporting a dense population, and meriting the name of temperate, can scarcely be said to extend beyond the 50th parallel. At 65° the snow covers the ground in winter to the depth of only two feet, but small lakes continue frozen for eight months. The sea is open only for a few weeks, fogs darken the surface, and the thermometer in February descended, in one instance, to *minus* 58°, or 90° below the freezing point. At Melville Island, under the 75th parallel, such is the frightful rigor of the climate, that the temperature of the year falls 1° or 2° below the zero of Fahrenheit's scale. It is a peculiarity in the climate of America, that beyond the parallel of 50° or 52°, it seems to become suddenly severe at both extremities. At the one, summer disappears from the circle of the seasons; at the other, winter is armed with double terrors.

In no single circumstance is the superiority of America over the Old World so conspicuous as in the number and magnitude of its navigable rivers. The Amazon alone discharges a greater quantity of water than the eight principal rivers of Asia, the Euphrates, Indus, Ganges, Oby, Lena, Amour, and the Yellow River and Kang-tse of China. The Mississippi, with its branches, affords a greater amount of inland navigation than all the streams, great and small, which irrigate Europe; and the Plata, in this respect, may probably claim a superiority over the collective water of Africa. But the American rivers not only surpass those of the Old World in length and volume of fluid, but they are so placed as to penetrate every where to the heart of the continent. By the Amazon, a person living at the eastern foot of the Andes, 2000 miles of direct distance from the Atlantic, may convey himself or his property to the shores of that sea in forty-five days, almost without effort, by confiding his bark to the gliding current. If he wishes to return, he has but to spread his sails to the eastern breeze, which blows perennially against the stream. The naviga-

tion is not interrupted by a single cataract or rapid, from the Atlantic to Jaen, in west longitude 78°, where the surface of the stream is only 1240 feet above the level of its estuary at Para. The remotest and least accessible part of North America is the great interior plain extending from the Rocky Mountains to the Alleghanies and the lakes, between the parallels of 40° and 50°; but the Mississippi, Missouri, and St. Lawrence, with their branches, are so wonderfully ramified over this region, that when it is filled with civilized inhabitants, two centuries hence, those who dwell in its inmost recesses, at the falls of the Missouri, for instance, 1700 miles from the Atlantic, will have a more easy communication with the ocean than the population of the interior of Spain and Hungary. It is only necessary to cast the eye over a map of South America, to see that all the most sequestered parts of the interior are visited by branches of the Plata and the Amazon. These streams, having their courses in general remarkably level, and seldom interrupted by cataracts, may be considered, without a figure, as a vast system of natural canals, terminating in two main trunks, which communicate with the ocean at the equator and the 35th degree of south latitude. Since the invention of steam navigation, rivers are, in the truest sense of the term, Nature's highways, especially for infant communities, where the people are too poor, and live too widely dispersed, to bear the expense of constructing roads. There is little risk in predicting that in two or three centuries the Mississippi, the Amazon, and the Plata will be the scenes of an active inland commerce, far surpassing in magnitude any thing at present known on the surface of the globe. The Mississippi is navigable for boats from the sea to the falls of its principal branch, the Missouri, 1700 miles from the Mexican Gulf in a direct line, or 3900 by the stream; and the whole amount of boat navigation afforded by the system of rivers, of which the Mississippi is the main trunk, has been estimated as equal to 40,000 miles in length, spread over a surface of 1,350,000 square miles. Perhaps this is rather beyond the truth; but let us call the navigation 35,000 miles, and the following table will exhibit the lengths, size of the basins, and probable extent of the navigable waters of the greater rivers of America:

	Length.	Area of Basin.	Navigable Waters.
	Miles.	Sq. Miles.	Miles.
Mississippi to source of Missouri	4200	1,350,000	35,000
St. Lawrence through the lakes	2200	600,000	4,000
Orinoco	1800	400,000	8,000
Amazon, not including Araguay	4000	2,100,000	50,000
Plata, including Uruguay	2400	1,200,000	20,000

The Amazon contains many islands, is broad, and in the upper part so deep, that on one occasion Condamine found no bottom with a line 103 toises long. At its mouth, two days before and after the full moon, the phenomenon called a *Bore* occurs in a very formidable shape. It is a wave of water rushing from the sea, with its front as steep as a wall and as high as a house. No small vessel can encounter it without certain destruction.

The estuaries of all these great American rivers open to the eastward; and thus Providence seems to have plainly indicated that the most intimate commercial relations of the inhabitants of America should be with the western shores of the Old World. It should at the same time be observed that the position of the great rivers of America is but one example of a physical arrangement which is common to the whole globe; for it is remarkable that, in the Old World as well as in the New, no river of the first class flows to the westward. Some, as the Nile, the Lena, and the Oby, flow to the north; others, as the Indus and the rivers of Ava, to the south; but the largest, as the Wolga, Ganges, Great River and Yellow River of China, the Euphrates, and the Amour, have their courses to the east or southeast. This arrangement is not accidental, but depends most probably on the inclination of the primary rocks, which, in all cases where their *direction* approaches to the south and north, seem to have their steepest sides to the west and the longest declivities to the east. We have examples in the Scandinavian Alps, the mountains of Britain, the Ghauts of India, the Andes, and the Rocky Mountains.

North America, like the Southern peninsula, naturally divides itself into five physical regions: 1. The table-land of Mexico, with a strip of low country on its eastern and western shores; 2. The plateau lying between the Rocky Mountains and the Pacific Ocean, a country with a mild and humid atmosphere as far north as the 55th parallel, but inhospitable and barren beyond this boundary; 3. The great central valley of the Mississippi, rich and well wooded on the east side, bare but not unfertile in the middle, dry, sandy, and almost a desert on the west; 4. The eastern declivities of the Alleghany Mountains, a region of natural forests, and of mixed but rather poor soil; 5. The great northern plain beyond the 50th parallel, four-fifths of which is a bleak and bare waste, overspread with innumerable lakes, and resembling Siberia both in the physical character of its surface and the rigor of its climate.

We should extend this article to an unreasonable length were we to describe in detail the discoveries and settlements made by the several nations of Europe in America. We shall therefore confine ourselves to a very brief chronological notice of the more important events.

1495. The first place in which the Spaniards established their power was the large island of Hayti or Hispaniola, which was inhabited by a numerous race of Indians, of a mild and gentle character, a third part of whom are said to have perished within two or three years after the Spaniards conquered them. — 1497. John Cabot, in the service of Henry VII. of England, discovered Newfoundland, and coasted along the shores of North America to Florida.—1500. Cabral, a Portuguese, visited the coast of Brazil, and discovered the mouth of the Amazon. It was probably colonized before 1515, as the first cargo of wood was sent from it to Portugal in that year.—1508. Vincent Pinzon is said to have entered the Rio de le Plata. It was in the same year that the Spaniards, finding the aborigines too weak for the labor of the mines in Hayti, first imported negroes from Guinea, and thus laid the foundation of a traffic which continues to this day to disgrace the civilization of Europe. — 1511. Diego Columbus conquered the island of Cuba with 300 soldiers, of whom he did not lose one.—1513. Balboa crossed the isthmus of Darien with 290 men, and discovered the South Sea.—1519. Hernando Cortes sailed from Cuba with 11 ships and 550 men, and landed on the coast of Mexico, which had been discovered in the previous year. The conquest of the empire was finished in 1521 by 950 Spaniards, assisted by a vast number of the Indians of Tlascala.—1531. Peru invaded by Pizarro, and conquered in little more than one year, with a force of 1000 men.—1534. James Cartier, a Frenchman, discovers the Gulf of St. Lawrence.—1535. Mendoza, a Spaniard, with 2000 followers, founds Buenos Ayres, and conquers all the country, as far as Potosi, at which silver mines were discovered nine years after. —1537. Cortes discovers California.—1541. Chili conquered; Santiago founded; Orellana sails down the Amazon to the Atlantic from the sources of the Rio Napo.—1578. New Albion, on the northwest coast of America, discovered by Sir Francis Drake.—1586. The Spaniards found St. Thomas's Island, in Guiana. — 1587. Davis's Straits and Cumberland Islands discovered by John Davis.—1604. De Monts, a Frenchman, founded the first settlement in Nova Scotia, then called Acadie.—1607. After many ineffectual attempts dur-

ing more than twenty years, the first permanent settlement of the English in North America was made this year, on the banks of James's River, in Virginia.—1608. Quebec founded by the French, who had had a small neglected colony in Canada since 1542.—1611. Newfoundland colonized by the English; a Dutch colony established at Hudson's River. New York was founded in 1614.—1618. Baffin penetrates to the 78th degree of latitude, in the bay which bears his name.—1620. The first English colony established in New England, at Plymouth. It was in this year that the first negroes were imported into Virginia. They were brought by a Dutch vessel.—1635. A French colony established in Guiana.—1655. Jamaica conquered by the English.—1664. The Dutch colonies on Hudson's River capitulate to the English.—1666. The Buccaneers begin their depredations on the Spanish colonies.—1682. William Penn establishes a colony in Pennsylvania. La Salle takes possession of Louisiana in the name of the French king.—1698. A colony of 1200 Scots planted at Darien, and ruined in the following year, in consequence of the miserable jealousy of the English.—1733. Georgia colonized by the English.—1760. Canada, and all the other French settlements in North America, conquered by the English.

The following table, given by Humboldt, exhibits the average produce of all the gold and silver mines in the New World about 1803:

	Pure Gold.	Pure Silver.	Value of both.
	Marks.	Marks.	Dollars.
Mexico	7,000	2,338,220	23,000,000
Peru	3,400	611,000	6,240,000
Chili	12,212	29,700	2,060,000
La Plata	2,200	481,830	4,850,000
Colombia(New Granada)	20,505		2,990,000
Brazil	29,900		4,360,000
	75,217	3,460,840	43,500,000
In English money			£8,700,000

The Spanish mark, in which the quantity is expressed in the first two columns, is valued at 145·82 dollars in gold, and at 9·4 dollars in silver. This branch of industry has been injured more deeply than any other during the late wars. The great exertions required to maintain the mines free of water, the amount of capital necessary to keep them working, and the facility with which violent hands could be laid upon their produce, all rendered these establishments extremely liable to suffer from domestic convulsions. Mr. Ward computes that in the 15 years between 1810 and 1825, the annual produce of the Mexican mines did not exceed 10,000,000 of dollars, or about *two-fifths* of their average annual produce during the 15 years preceding. In Brazil, the washings have probably experienced no interruption. Humboldt computes the whole produce of the American mines from 1492 to 1803 to be 5,706,000,000 dollars, or £1,255,000,000, of which only 4½ per cent. was retained in America, and 5,445,000,000 dollars (£1,197,900,000), or 95½ per cent. was remitted to Europe.

The project of joining the Atlantic and Pacific Oceans by a canal carried across the narrow part of the American continent, has often excited the attention of statesmen and commercial men. This canal, if executed upon a scale sufficient to admit vessels of 300 or 400 tons, would have a powerful influence upon the fate of America. For all the purposes of commercial intercourse it would bring the east and west sides of the continent within one-third part of their present distance from one another, and would be of even more advantage to the New World than the discovery of the passage to India by the Cape has been to the Old. It has also been proposed to accomplish the same object by a boat canal, or by a railroad, and four different routes have been recommended. A digest of the surveys and explorations connected with these, and an estimate of their comparative merits, has been published in the *Journal of the Geographical Society* (vol. xx. 1851), by Captain Fitzroy, R.N. From this our materials are derived.

1. The Isthmus of Tehuantepec, at 94½° west longitude. The distance from sea to sea in a straight line is 140 English miles, the surface has few great inequalities, and the lowest summit level is about 700 feet above the sea. The climate is said to be rather better than at the parts of the isthmus farther eastward, and there is a settled population, though not very numerous, from whom labor might be obtained. On the other hand, there is no port at either end of the line, the rivers are small, and barred at their mouths by sand-banks, and the length of the route, as well as the elevation of its summit level, would render the execution of a railroad or a canal too expensive to permit the hope of even a moderate remuneration for the outlay. The project, however, has found warm support in the United States, as it would render available by far the shortest maritime route to California. A survey has been made, and a cession of the necessary quantity of land has, we believe, been obtained.

2. The Nicaragua route, at 11° of north latitude. The first portion of this is the River San Juan, which flows from the Lake of Nicaragua, and, after a course of 80 miles, falls into the Caribbean Sea. It is of considerable depth, but is obstructed by rapids, and the port at its mouth, now called Greytown, is only capable of receiving small vessels. The lake is 90 or 100 miles long, 30 or 40 broad, and 125 feet above mean tide level at Greytown. Its depth varies from 2 fathoms to 40, but much of it has never been sounded, and recent surveys show shallows at both ends. From this lake to the Pacific six different routes have been traced, and some of them surveyed. One through the Lake Managua (which is 28 feet higher than Nicaragua Lake), westward to the Bay of Fonseca, would require 90 or 100 miles of canal, and the whole length of inland navigation from Greytown would exceed 300 miles; another route from the same lake to Realejo is 40 miles shorter; and a third to Tamarinda a good deal shorter still, but both the latter want good ports at their termini on the Pacific. A fourth route goes direct from the southwest side of Nicaragua Lake to San Juan del Sur; it is only 10 to 12 miles in length, but requires a tunnel (for ships) 1 or 2 miles long, and the port at its mouth is very small. A fifth runs from the same lake a little farther east to the Bay of Salinas, a distance of 15 miles, half of which is by the River Sapoa, and now navigable for boats; and the summit level is only 130 feet above the lake, and twice as much above the Pacific. It is believed there would be a sufficient supply of water from the stream, and the canal would further have the advantage of a good port. Captain Fitzroy seems to think this one of the most promising lines, but it has not yet been carefully surveyed. Of the sixth proposed route, running from the east end of the lake to the Gulf of Nicoya, neither the precise length nor the nature of the intervening country is known. Of the whole district Captain Fitzroy says, that though insufficiently explored, "enough is known to discourage any attempt to construct either canal or railway, unless the Sapoa track (the fifth) should prove to be as eligible as Dr. Oersted believes. Even then there will be the disadvantages of so inferior a harbor as that of Greytown, and the difficulties of the river, which must be cleansed from its numerous obstructions, though renewed annually by floods." He considers the climate pestilential, particularly in the low grounds on both sides of the river, which holds its course amidst forests, swamps, and mud banks. Mr. Squier, however, in his work on Nicaragua, thinks the climate comparatively good. In reference to a canal there is a physical evil not to be overlooked, namely, the volcanic eruptions which shake the soil, and might disturb the levels; and there is a moral one still more serious, arising from the fre-

quent insurrections and political revolutions, which makes property insecure, and may render engagements with the government mere waste paper. The latter evil applies to the whole isthmus, but more especially to this district, touching as it does the territories of three States (Nicaragua, Costa Rica, and Mosquito) which are often at war with one another.

3. The Panama line, at 79° and 80° of west longitude. The extreme narrowness of the isthmus here called attention to it as an eligible point for establishing a communication between the two seas, before any other locality was thought of. Numerous explorations have been made; four routes have been pretty carefully surveyed—those of Loyd, Morel, Garella, and Hughes; and along the last of these a railway has been in operation since February, 1855. It commences on the Atlantic at Limon or Navy Bay, from which the direct distance to Panama, according to Captain Fitzroy, is (33 geographical) 38½ English miles. It passes by Gorgona, and is carried 42 miles over elevations of nearly 300 feet, through a tunnel, and over large viaducts and bridges, terminating a little westward of Panama. The port of Chagres is unfit for large ships. Limon Bay, which is large, and has a good depth of water, is exposed to strong north winds. A breakwater, to protect it from these, has been proposed, but is impracticable on account of the vast sum it would cost. But Captain Fitzroy thinks that a large wet dock or basin might be excavated between Manzanilla Island and the main land, at the terminus of the railroad, and might serve as the first step toward an artificial harbor, to which Limon Bay would be accessory as a useful roadstead. "On the opposite coast, near Panama, a spacious and tolerably sheltered anchorage, with access to works carried out into the sea, may be found in the bay, but not very near the city." A ship canal here, whether at the elevation of the railroad (300 feet), or at the lower level proposed by Garella, of 150 feet, would require works on a gigantic scale; for his plan includes a tunnel *for ships*, 125 feet in interior height, 97 feet wide, and nearly three miles long, with about 33 locks. Without some better security than can now be obtained, it is not probable that any private company will risk the capital necessary for the execution of such works. Morel, in his survey, professes to have found a valley or tract of low ground between the Trinidad, a branch of the Chagres, and the Caymito, which falls into the Pacific 10 miles west of Panama, of which low ground the summit level is only 40 feet above the sea. This, unluckily, is contradicted by other authorities; but if such a low summit level exist, a channel navigable by the largest ships might possibly be made from sea to sea without a lock. The portion of the railroad now in progress is the southern half, extending from Panama to Gorgona, and was expected to be finished in 1853. On the north side, the River Chagres is made use of as far as navigable.

4. The Atrato and Cupica line commences on the Atlantic side in the Gulf of Darien, at 77° of west longitude. It has not been surveyed, but the nature and form of the ground are well known, and its suitableness for a canal was pointed out by Humboldt 40 years ago. The route extends from the inner part of the Gulf of Darien up the River Atrato, thence westward along its branch, the Naipi, and through a low tract of ground to the River Cupica, which falls into the Pacific. The whole length of the proposed line is estimated at 114 miles. For two-thirds of this distance, or 76 miles, the rivers are said to be navigable by ships, for 19 miles more by loaded boats, and it is supposed that a canal might be cut through the remaining 19 miles without any extraordinary difficulty. The proprietor of an estate on the Naipi told Mr. Watts, the British vice-consul at Carthagena, that he was in the habit of crossing to the Bay of Cupica, and the rise between the bay and the river was gradual.—E. B.

A company with a large capital was formed in England, within a few years, for the purpose of constructing a ship canal over the Isthmus; but according to the recent Report by Lieutenant Strain, of the U.S. Navy (1855), the work is almost impracticable. He represents the summit level between the oceans to be one thousand instead of one hundred and fifty feet. An English expedition started from the Pacific side in December, 1853, and returned after a few days' investigation of the route before suggested, and found it unfavorable for any canal near the proposed route. A few years will perhaps develop a more extended series of observations in this quarter.

Amethyst (Germ. *Amethyst;* Fr. *Amethyste;* It. *Amatista;* Sp. *Ametisto;* Lat. *Amethystus*), a precious stone, of which there are two species differing widely in quality and value. The *Oriental amethyst* is a gem of the most perfect violet color, and of extraordinary brilliancy and beauty. It is said to be as hard as the sapphire or ruby, with which it also corresponds in its form and specific gravity (*see* SAPPHIRE), differing in color merely. It has been met with in India, Persia, Siam, and other countries; but it is exceedingly scarce. That found in India is said by Pliny to be the best. —*Principatum amethysti Indicæ tenent*, Nat. Hist. lib. xxxvii. cap. 9. Mr. Mawe says he had rarely seen an Oriental amethyst offered for sale, unless small and inferior in color. Mr. Hope, the author of *Anastasius*, had in his cabinet the finest gem of this sort in Europe. This exquisite specimen exceeds an inch in its greatest diameter; in daylight it exhibits the most beautiful violet color, while by candlelight it is a decided blue. The *Occidental amethyst* is merely colored crystal or quartz. "When perfect, its color resembles that of the violet, or purple grape; but it not unfrequently happens that the tinge is confined to one part of the stone only, while the other is left almost colorless. When it possesses a richness, clearness, and uniformity of hue, it is considered a gem of exquisite beauty; and as it occurs of considerable size, it is suited to all ornamental purposes. In specific gravity and hardness it bears no comparison with the Oriental amethyst; it is also inferior in beauty and lustre; though I have often seen the common amethyst offered for sale as Oriental. Brazil, Siberia, and Ceylon produce very fine amethysts: they are found in rolled pieces in the alluvial soil, and finely crystallized in fissures of rock. From the first of these localities, they have lately been imported in such quantities as considerably to diminish their value; but as they are the only colored stones, except garnets, that are worn with mourning, they still retain, when perfect, a distinguished rank among the precious gems. The present price of inferior light-colored stones, in the rough state, is about 20*s.* per pound, while those of good quality sell at 10*s.* or 12*s.* per ounce. Amethysts calculated for brooches or seals may be purchased at from 15*s.* to two or three guineas each, for which, ten years ago, treble that sum would have been given."—MAWE *on Diamonds*, 2d. ed.

Amianthus, Asbestos, or **Mountain Flax,** a mineral of which there are several varieties, all more or less fibrous, flexile, and elastic. It is inconsumable by a high degree of heat; and in antiquity the art was discovered of drawing the fibres into threads, and then weaving them into cloth. Pliny says that he had seen napkins made of this substance, which, when soiled, were thrown into the fire, and that they were better cleaned by this means than they could have been by washing! Hence it obtained from the Greeks the name of Αμίαντος (undefiled). Its principal use, as stated by Pliny, was to wrap the bodies of the dead previously to their being exposed on the funeral pile, that the ashes of the corpse might not be mixed with those of the wood. And in corroboration of this statement we may mention, that in 1702, a skull, some calcined bones, and a quantity of ashes, were found at Rome, in a cloth of amianthus nine Roman palms in

length by seven in width. Its employment in this way was, however, confined to a few of the very richest families, incombustible cloth being very scarce, and bringing an enormously high price. *Rarum inventu, difficile textu propter brevitatem. Cùm inventum est, æquat pretia excellentium margaritarum.*—PLIN., *Hist. Nat.* lib. xix. cap. 1. The disuse of the practice of cremation, or of burning the dead, caused the manufacture of amianthine cloth to be neglected. Several moderns have, however, succeeded in making it; but if it be not lost, the art is now rarely practiced.—For further particulars, *see* REES's *Cyclopedia*.

Ammoniac, Sal. *See* ALKALIES.

Ammoniacum (Fr. *Gomme Ammoniaque;* It. *Gomma Ammoniaco;* Sp. *Goma Ammoniaco;* Lat. *Ammoniacum;* Arab. *Feshook*), a concrete resinous juice obtained from a plant resembling fennel, found in the north of Africa, Arabia, Persia, the East Indies, etc. Pliny says that it derived its name from its being produced in the vicinity of the temple of Jupiter Ammon, in Africa.—*Hist. Nat.* lib. xii. cap. 23. It has a faint but not ungrateful smell; and a bitter, nauseous, sweet taste. The fragments are yellow on the outside and white within, brittle, and break with a vitreous fracture; their specific gravity is 1·207. The best ammoniacum is brought from Persia by Bombay and Calcutta, packed in cases and chests. It is in large masses, composed of small round fragments or tears; or in separate dry tears, which is generally considered a sign of its goodness. The tears should be white internally and externally, and free from seeds or other foreign substances. Reject that which is soft, dark-colored, and foul. It is used principally in the materia medica, and the quantity imported is but small.—REES's *Cyclopedia;* THOMSON's *Dispensatory*.

Ammunition, a general name for all warlike provisions, but more particularly powder, ball, etc.—E. B.

Amoy, a commercial city and sea-port of China, province of Fo-kien, on an island of the same name in a bay of the China Sea, opposite Formosa, and 320 miles E.N.E. of Canton. Lat. 24° 10′ N.; long. 118° 13′ E. Population, 250,000. The city is separated from the suburbs or outer town by a line of rocky hills, commanded by a citadel on a height, and fortified with numerous works constructed during the late war. The town is not handsome nor clean, but has many roomy public buildings, well-supplied shops, and good private houses. Harbor excellent; ships can lie close to the quays, or in a deep and sheltered creek. There is a considerable trade, especially with Formosa; manufactures of porcelain, grass cloths, umbrellas, paper, etc., which, with sugar-candy and Congou tea, compose its principal exports. Imports comprise rice, sugar, camphor, and European produce. Amoy, then the great military depôt of the province, was taken on the 26th August, 1841, by the English, who held the fortified island of Kolungsoo, commanding the entrance to the harbor, until the final payment of the sum of six million dollars exacted from the Chinese government by the treaty of Nankin.

Amplitude, in *Astronomy*, an arch of the horizon intercepted between the east or west point and the centre of the sun or a planet at its rising or setting; and which therefore is said to be either north and south, or *ortive* and *occasive*.

Magnetical Amplitude, the different rising or setting of the sun from the east or west points of the compass. It is found by observing the sun, at his rising and setting, by an amplitude compass.—E.B.

Amsterdam, the principal city of Holland, situated on the Y, an arm of the Zuyder Zee, in lat. 52° 22′ 17″ N., long. 4° 53′ 15″ E. From 1580 to 1750, Amsterdam was, perhaps, the first commercial city of Europe; and though her trade has experienced a great falling off since the last-mentioned epoch, it is still very considerable. In 1785 the population is said to have amounted to 235,000; in 1815 it had declined to 180,179; but its increase in the interval has been such, that it amounted in 1840 to 210,077. The harbor is spacious and the water deep; and it has recently been much improved by the construction of docks, two of which are already completed, and a third in a very advanced state. Owing, however, to a bank (the Pampus) where the Y joins the Zuyder Zee, large vessels going or coming by that sea are obliged to load and unload a part of their cargoes in the roads. The navigation of the Zuyder Zee is also, by reason of its numerous shallows, very intricate and difficult; and as there were no hopes of remedying this defect, it became necessary to resort to other means for improving the access to the port. Of the various plans suggested for this purpose, the preference was given to the scheme for cutting a canal capable of admitting the largest class of merchantmen, from the north side of the port of Amsterdam to Newdiep, opposite to the Texel, and a little to the east of the Helder. This canal has fully answered the views of the projectors, and has proved of signal service to Amsterdam, by enabling large ships to avoid the Pampus, as well as the difficult navigation of the Zuyder Zee, where they were frequently detained for three weeks, and to get to and from Newdiep without any sort of risk in less than twenty-four hours. The canal was begun in 1819, and completed in 1825. It has five sluices large enough to admit ships of the line; the dues and charges on account of towing, etc., being at the same time very moderate. At Newdiep the water is deeper than in any other port on the coast of Holland, and ships are there in the most favorable position for getting expeditiously to sea.—*See* CANALS. The imports principally consist of sugar, coffee, spices, tobacco, cotton, tea, indigo, cochineal, wine and brandy, wool, grain of all sorts, timber, pitch and tar, hemp and flax, iron, hides, linen, cotton and woolen stuffs, hardware, rock salt, tin plates, coal, dried fish, etc. The exports consist partly of the produce of Holland, partly and principally of the produce of her possessions in the East and West Indies, and other tropical countries, and partly of commodities brought to Amsterdam, as to a convenient *entrepôt* from different parts of Europe. Of the first class are cheese and butter (very important articles), madder, clover, rape, hemp, and linseeds, rape and linseed oils, Dutch linen, etc. Geneva is principally exported from Schiedam and Rotterdam; oak bark and cattle principally from the latter. Of the second class are spices, coffee, and sugar, principally from Java, but partly also from Surinam, Brazil, and Cuba; indigo, cochineal, cotton, tea, tobacco, and all sorts of Eastern and colonial products. And of the third class, all kinds of grain, linens from Germany, timber, and all sorts of Baltic produce; Spanish, German, and English wools; French, Rhenish, and Hungarian wines, brandy, etc. The trade of Amsterdam may, indeed, be said to comprise every article that enters into the commerce of Europe. Her merchants were formerly the most extensive dealers in bills of exchange, and though London be now, in this respect, far superior to Amsterdam, the latter still enjoys a respectable share of this business.

The Bank of the Netherlands was established at Amsterdam in 1814. It is not, like the old Bank of Amsterdam, which ceased in 1796, merely a bank of deposits, but a bank of deposit and circulation formed on the model of the Bank of England. Its capital, which originally amounted to 5,000,000 florins, was doubled in 1819. It has the exclusive privilege of issuing notes. Its original charter, which was limited to twenty-five years, was prolonged in 1838 for twenty-five years more. About 300 or 350 large ships belong to Amsterdam; they are employed in the East and West India trades, and in trading to the Baltic, the Mediterranean, etc. There is comparatively little coasting trade at Amsterdam, the communication with most other ports in the vicinity being principally kept up by canals, and that with Friesland by regular

packets. The total imports into Holland in 1851 were estimated at 303,993,224 florins, and the exports at 242,744,806. The United Kingdom, the German Customs Union, Belgium, Java, France, and Russia, are the countries with which she carries on the most extensive trade.

Dutch Commercial Policy.—The policy of Holland, civil, religious, and commercial, has long been of the most liberal and enlightened description (see *post*); and she was the first country to follow the example set in repealing the Navigation Laws in 1849. The Dutch law on this subject was passed in 1850. Previously to that period discriminating duties were imposed on most articles imported on foreign bottoms, and also on those imported by foreigners into Java and her other colonies. But these preferences no longer exist. The following is an extract from the law relative to these matters: Differential duties are abolished on the vessels of those States which "*a.* I lace the Dutch flag on the same footing with their national flag trading to and from their own ports (coasting trade and fisheries excepted); *b.* Which place the Dutch flag on the same footing with their national flag trading to and from their colonies, if they possess any; and, *c.* Which do not levy other differential duties to the disadvantage of the produce of the Netherland colonies, or to the prejudice of produce imported from other parts of the world, from Netherland ports, than those which are levied in favor of the produce of their own colonies, when imported direct."

The fisheries and the coasting trade of Holland and of her colonies is reserved to Dutch ships. But it is no longer necessary that the latter should be of Dutch build. Foreign built ships have, however, to pay, on being registered, an *ad valorem* duty of 4 per cent. over and above the fee charged on the registration of Dutch-built ships. Several important reductions were at the same time made in the tariff of import duties. The navigation dues or tolls that were formerly charged on vessels or goods passing through Holland by the Rhine and the Yssel, and transit duties of all kinds, have also been repealed. And though it may be said, and truly, that these wise and liberal measures will be much more advantageous to the Dutch than to any other people, still they are of the greatest importance to all commercial nations, and especially to those who have an extensive intercourse with them. We are glad to have to state that this liberal policy has in Holland, as in England, had its appropriate reward. Commerce has been largely extended. The mercantile marine is in a highly prosperous state, and is daily receiving large additions. Many Dutch ships have latterly been chartered by English merchants.

The importations into the United States from Holland, in the year 1852–3, were, free of duty, $115,227; dutiable, $1,509,943; total, $1,625,170; in American vessels, $462,641; foreign, $1,162,529. Total value of imports for the same year from the Dutch East Indies, $384,583; Dutch West Indies, $109,185.

The exports of domestic produce for the same year were, in American vessels, $872,780; in foreign vessels, $1,110,943; total, £1,983,723. To the Dutch East Indies, $202,822; to the Dutch West Indies, $251,258.

Comparative Table of Exports of Domestic Produce to Holland, for the fiscal Years ending June 30, 1853, 1854.

Years.	Exports.			Imports.
	American Vessels.	Foreign Vessels	Total.	
1853	462,641	1,162,529	1,625,170	1,983,723
1854	1,409,195	890,515	2,299,710	1,695,976

In 1852 Great Britain imported from Holland 221,559 quarters of wheat, oats, and other grain, but she frequently supplies more considerable quantities. She also sends large quantities of butter and cheese (226,671 cwt. of the former, and 266,857 ditto of the latter in 1850), with, in 1851, 56,461 head of cattle and 165,365 sheep; her other exports are bark for tanning, flax and hemp, clover-seed, madder, geneva, nutmegs, etc. England also takes considerable quantities of Dutch sugar and coffee. The greater portion, however, of the trade between the United Kingdom and Holland is carried on with Rotterdam, which is much more conveniently situated for such intercourse than Amsterdam. But the latter continues to engross by far the larger share of the commerce with the flourishing colony of Java and the other Dutch possessions in the East; and is, consequently, the principal continental mart for Eastern produce.

The warehousing system has been long established in Amsterdam; and all goods, whether for home consumption or transit, may be deposited in bonded warehouses. Speaking generally, goods can only be kept in bonded warehouses for two years; but grain of all kinds may be kept for an unlimited period. The warehouse rent chargeable per month on a quarter of wheat is, on an upper loft, 1*d.* and 2-5ths; on an under loft 1½*d.* On a ton (Engl.) of sugar in casks the charge is 8*d.*; in bags, 6*d.*

The dock and its adjacent warehouses, belonging to the *Entrepôt General*, or establishment for warehousing goods imported by sea, or intended to be re-exported by sea or by the Rhine, are large and commodious. The dock has water to float the largest ships, and the dues and other charges are exceedingly moderate. Merchants may employ their own men or those of the dock in loading or unloading; and may either place their property in separate vaults or floors of which they keep the key, or intrust it to the care of the dock officers.

Dutch Trading Company.—A large proportion of the foreign trade of Holland was for a considerable period engrossed by the large trading company called the *Nederlandsche Handelmaatschappy*, created in 1824. Its capital, which consisted originally of 37 million florins, was reduced in 1824 to 24 million florins; but as the company borrowed 10 million florins in 1835, and 13 millions more in 1837, its capital consists of 47 million florins. At first it extended its operation to America and the West Indies, as well as to the East Indies. But it has latterly very much contracted the scale of its operations; and having lent 40 millions of its capital to government, it is now merely the agent employed by the latter to bring home and sell that part of the produce of Java which, under the new colonial system, belongs to the State, and to carry on the trade with Japan, which, however, is of little or no value. The company has no ships of its own, but charters those of private individuals. Its charges on importation are limited to certain fixed rates. The business of insurance is extensively practiced at Amsterdam; the premiums are moderate, and the security unexceptionable. The high duty formerly imposed in other countries on policies of insurance contributed to the increase of this business in Holland.

Credit, Discount, etc.—Holland is, and has always been, a country of short credits. A discount is usually given for prompt payment, at the rate of 1 per cent. for six weeks, and 2 per cent. for two months; but the terms of credit on most articles and the discount allowed for ready money, have been fixed by usage, and are regarded as essential conditions in every bargain. In consequence of the preference given in Holland to ready money transactions, it is not a country in which adventurers without capital have much chance of speedily making a fortune. "Rien, en effet, de plus facile que de s'établir à Amsterdam; mais *rien de plus difficile de s'y soutenir sans des grandes resources.* Dans cette ville, où l'argent abonde, où on le prête contre des sûretés à si bon marché, *il est pourtant impossible de s'en procurer à crédit*; et sans argent il n'y a plus de possibilité d'y travailler, que de trouver quelqu'un qui veuille de se charger d'un papier nouveau qui ne seroit pas appuyé d'un crédit que l'opinion, la protection, ou des effets réels feroient valoir à la bourse. Les Hollandois suivent là-dessus des maximes très austères,

même à l'égard des maisons d'une certain considération."—*Encyclopédie Méthodique, Commerce*, t. ii. p. 650. But this *austerity* is not a disadvantage, but the reverse. It prevents commerce from degenerating, as it has too often done in other places, into gambling adventures, and places it on a comparatively solid foundation. And it should be mentioned to the honor of the Dutch, and as a proof of the excellence of this system, that notwithstanding the distress and loss of trade occasioned by the invasion and occupation of their country by the French, the bankruptcies in 1795 and subsequent years were not, comparatively, so numerous as in England in ordinary seasons! The regulations in the Code Napoléon as to bankruptcy are enforced in Holland.

It has long been the practice in Holland to make, on selling articles, considerable deductions from their weight, particularly from those of large bulk, as compared with their value. These tares and drafts, as they are termed, are now fixed by ancient usage.

Magnitude of the Commerce of Holland in the Seventeenth Century.—Causes of its Prosperity and Decline.—We believe we need make no apology for embracing this opportunity to lay before our readers the following details with respect to the commerce and commercial policy of Holland. It forms one of the most instructive topics of investigation; and it is to be regretted that so little attention should have been paid to it in this country. Previously to the commencement of the long-continued and glorious struggle made by the Dutch to emancipate themselves from the blind and brutal despotism of Old Spain, they had a considerable marine, and had attained to distinction by their fisheries and commerce; and the war, instead of being injurious to the trade of the republic, contributed powerfully to its extension. After the capture of Antwerp by the Spaniards, in 1585, the extensive commerce of which it had been the centre was removed to the ports of Holland, and principally to Amsterdam, which then attained to the distinction she long enjoyed, of the first commercial city of Europe.

In 1602 the Dutch East India Company was formed; and, notwithstanding the pernicious influence of that association, the Indian trade increased rapidly in magnitude and importance. Ships fitted either for commercial or warlike purposes, and having a considerable number of soldiers on board, were sent out within a few years of the establishment of the company. Amboyna and the Moluccas were first wrested from the Portuguese, and with them the Dutch obtained the monopoly of the spice trade. Factories and fortifications were in no long time established, from Bussorah, near the mouth of the Tigris, in the Persian Gulf, along the coasts and islands of India as far as Japan. Alliances were formed with several of the Indian princes; and in many parts, particularly on the coasts of Ceylon, and in various districts of Malabar and Coromandel, they were themselves the sovereigns. Batavia, in the large and fertile island of Java, the greater part of which had been conquered by the Dutch, formed the centre of their Indian commerce; and though unhealthy, its port was excellent, and it was admirably situated for commanding the trade of the Eastern Archipelago. In 1651 they planted a colony at the Cape of Good Hope, which had been strangely neglected by the Portuguese.

Every branch of commerce was vigorously prosecuted by the Dutch. Their trade with the Baltic was, however, by far the most extensive and lucrative of which they were in possession. Guicciardini mentions that the trade with Poland, Denmark, Prussia, etc., even before their revolt, was so very great, that fleets of 300 ships arrived twice a year at Amsterdam from Dantzic and Livonia only; but it increased prodigiously during the latter part of the sixteenth and the beginning of the seventeenth centuries. The great population of Holland, and the limited extent and unfruitful nature of the soil, render the inhabitants dependent on foreigners for the greater part of their supplies of corn. The countries round the Baltic have always furnished them with the principal part of those supplies; and it is from them that they have been in the habit of bringing timber, iron, hemp and flax, pitch and tar, tallow, ashes, and other bulky articles required in the building of their houses and ships, and in various manufactures. Nothing, however, redounds so much to the credit of the Dutch as the policy they have invariably followed with respect to the trade in corn. They have at all times had a large capital embarked in this business. The variations which are perpetually occurring in the harvests early led them to engage very extensively in a sort of speculative corn trade. When the crops happened to be unusually productive, and prices low, they bought and stored up large quantities of grain, in the expectation of profiting by the advance that was sure to take place on the occurrence of an unfavorable year. Repeated efforts were made, in periods when prices were rising, to prevail on the government to prohibit exportation; but they steadily refused to interfere. In consequence of this enlightened policy, Holland has long been the most important European *entrepôt* for corn; and her markets have on all occasions been furnished with the most abundant supplies. Those scarcities which are so very disastrous in countries without commerce, or where the trade in corn is subjected to fetters and restraints, have not only been totally unknown in Holland, but became a copious source of wealth to her merchants, who then obtained a ready and advantageous vent for the supplies accumulated in their warehouses. "Amsterdam," says Sir Walter Raleigh, "is never without 700,000 quarters of corn, none of it of the growth of Holland; and a dearth of only one year in any other part of Europe enriches Holland for seven years. In the course of a year and a half, during a scarcity in England, there were carried away from the ports of Southampton, Bristol, and Exeter alone nearly £200,000; and if London and the rest of England be included, there must have been £2,000,000 more."—*Observations touching Trade and Commerce with the Hollander*. Miscel. Works, vol. ii. The very well informed author of the *Richesse de la Hollande*, published in 1778, observes, in allusion to these circumstances, "Que la disette de grains regne dans les quatre parties du monde; vous trouverez du froment, du seigle, et d'autres grains à Amsterdam; *ils n'y manquent jamais*."

The Bank of Amsterdam was founded in 1609. The principal object of this establishment was to obviate the inconvenience and uncertainty arising from the circulation of the coins imported into Amsterdam from all parts of the world. The merchants who carried coin or bullion to the bank obtained credit for an equal value in its books: this was called bank-money; and all considerable payments were effected by writing it off from the account of one individual to that of another. The establishment continued to flourish till the invasion of the French in 1795. Between the years 1651 and 1672, when the territories of the republic were invaded by the French, the commerce of Holland seems to have reached its greatest height. De Witt estimates its increase from the treaty with Spain, concluded at Munster in 1643, to 1669, at fully a half. He adds, that during the war with Holland, Spain lost the greater part of her naval power; that since the peace, the Dutch had obtained most of the trade to that country, which had been previously carried on by the Hanseatic merchants and the English; that almost all the coasting trade of Spain was carried on by Dutch shipping; that Spain had even been forced to hire Dutch ships to sail to her American possessions; and that so great was the exportation of goods from Holland to Spain, that all the merchandise brought from the Spanish West Indies was not sufficient to make returns for them.

At this period, indeed, the Dutch engrossed, not by means of any artificial monopoly, but by the greater number of their ships, and their superior skill and economy in all that regarded navigation, almost the whole carrying trade of Europe. The value of the goods exported from France in Dutch bottoms, toward the middle of the fourteenth century, exceeded 40,000,000 livres; and the commerce of England with the Low Countries was, for a very long period, almost entirely carried on in them.

The business of marine insurance was largely and successfully prosecuted at Amsterdam; and the ordinances published in 1551, 1563, and 1570, contain the most judicious regulations for the settlement of such disputes as might arise in conducting this difficult but highly useful business. It is singular, however, notwithstanding the sagacity of the Dutch, and their desire to strengthen industrious habits, that they should have prohibited insurance upon lives. It was reserved for England to shew the advantages that might be derived from this beautiful application of the science of probabilities.

In 1690, Sir William Petty estimated the shipping of Europe at about 2,000,000 tons, which he supposed to be distributed as follows: viz., England, 500,000; France, 100,000; Hamburg, Denmark, Sweden, and Dantzic, 250,000; Spain, Portugal, and Italy, 250,000; that of the Seven United Provinces amounting, according to him, to 900,000 tons, or to nearly one half of the whole tonnage of Europe! No great dependance can, of course, be placed upon these estimates; but the probability is, that, had they been more accurate, the preponderance in favor of Holland would have been greater than it appears to be; for the official returns to the circulars addressed in 1701 by the commissioners of customs to the officers at the different ports show that the whole mercantile navy of England amounted at that period to only 261,222 tons, carrying 27,196 men.—Macpherson's *Annals of Commerce, anno* 1701. It may, therefore, be fairly concluded that during the seventeenth century the foreign commerce and navigation of Holland was greater than that of all Europe besides; and yet the country which was the seat of this vast commerce had no native produce to export, nor even a piece of timber fit for ship-building. All had been the fruit of industry, economy, and a fortunate combination of circumstances. Holland owed this vast commerce to a variety of causes: partly to her peculiar situation, the industry and economy of her inhabitants, the comparatively liberal and enlightened system of civil as well as of commercial policy adopted by the republic; and partly also to the wars and disturbances that prevailed in most European countries in the sixteenth and seventeenth centuries, and prevented them from emulating the successful career of the Dutch.

The ascendency of Holland as a commercial state began to decline from about the commencement of last century. After the war terminated by the treaty of Aix-la-Chapelle, the attention of the government of Holland was forcibly attracted to the state of the shipping and foreign commerce of the republic. The discovery of means by which their decline might be arrested, and the trade of the republic, if possible, restored to its ancient flourishing condition, became a prominent object in the speculations of every one who felt interested in the public welfare. In order to procure the most correct information on the subject, the stadtholder, William IV., addressed the following queries to all the most extensive and intelligent merchants, desiring them to favor him with their answers: "1. What is the actual state of trade? And if the same should be found to be diminished and fallen to decay, then, 2. To inquire by what methods the same may be supported and advanced, or, if possible, restored to its former lustre, repute, and dignity." In discussing these questions, the merchants were obliged to enter into an examination, as well of the causes which had raised the commerce of Holland to the high pitch of prosperity to which it had once attained, as of those which had occasioned its subsequent decline. It is stated that, though not of the same opinion upon all points, they, speaking generally, concurred as to those that were most important. When their answers had been obtained and compared with each other, the stadtholder had a dissertation prepared from them, and other authentic sources, on the commerce of the republic, to which proposals were subjoined for its amendment. Some of the principles advanced in this dissertation apply to the case of Holland only; but most of them are of universal application, and are not more comprehensive than sound. We doubt, indeed, whether the benefits resulting from religious toleration, political liberty, the security of property, and the freedom of industry, have ever been more clearly set forth than in this dissertation. It begins by an enumeration of the causes which contributed to advance the commerce of the republic to its former unexampled prosperity: these the authors divide into three classes, embracing under the first those that were natural and physical; under the second, those they denominated moral; and under the third, those which they considered adventitious and external.

The central situation of the country, its command of some of the principal inlets to the Continent, and the necessity under which the inhabitants have been placed, in consequence of the barrenness of the soil and its liability to be overflowed, to exert all their industry and enterprise, are circumstances that seem to be in a great degree peculiar in Holland. But though there can be no doubt that their influence has been very considerable, no one will pretend to say that it is to be compared for a moment with the influence of those free institutions which, fortunately, are not the exclusive attributes of any particular country, but have flourished in Phœnicia, Greece, England, and America, as well as in Holland.

Many dissertations have been written to account for the decline of the commerce of Holland. But, if we mistake not, its leading causes may be classed under two prominent heads; viz., first, the natural growth of commerce and navigation in other countries; and, second, the weight of taxation at home. During the period when the republic rose to great eminence as a commercial State, England, France, and Spain, distracted by civil and religious dissensions, or engrossed wholly by schemes of foreign conquest, were unable to apply their energies to the cultivation of commerce, or to withstand the competition of so industrious a people as the Dutch. They, therefore, were under the necessity of allowing the greater part of their foreign, and even of their coasting trade, to be carried on in Dutch bottoms, and under the superintendence of Dutch factors. But after the accession of Louis XIV. and the ascendency of Cromwell had put an end to internal commotions in France and England, the energies of these two great nations began to be directed to pursuits of which the Dutch had hitherto enjoyed almost a monopoly. It was not to be supposed that when tranquillity and a regular system of government had been established in France and England, their active and enterprising inhabitants would submit to see one of their most valuable branches of industry in the hands of the foreigners. The Dutch ceased to be the carriers of Europe, without any fault of their own. Their performance of that function necessarily terminated as soon as other nations became possessed of a mercantile marine, and were able to do for themselves what had previously been done for them by their neighbors.

Whatever, therefore, might have been the condition of Holland in other respects, the natural advance of rival nations must inevitably have stripped her of a large portion of the commerce she once possessed. But

the progress of decline seems to have been considerably accelerated, or rather, perhaps, the efforts to arrest it were rendered ineffectual, by the extremely heavy taxation to which she was subjected, occasioned by the unavoidable expenses incurred in the revolutionary struggle with Spain, and the subsequent wars with France and England. The necessities of the State led to the imposition of taxes on corn, on flour when it was ground at the mill, and on bread when it came from the oven; on butter, and fish, and fruit; on income and legacies; the sale of houses; and, in short, almost every article of either necessity or convenience. Sir William Temple mentions that in his time—and taxes were greatly increased afterward—one fish sauce was in common use, which directly paid no fewer than *thirty* different duties of excise; and it was a common saying at Amsterdam, that every dish of fish brought to table was paid for *once* to the fishermen, and *six* times to the State.

The pernicious influence of this heavy taxation has been ably set forth by the author of the *Richesse de la Hollande*, and other well-informed writers; and it has also been very forcibly pointed out in the Dissertation already referred to, drawn up from the communications of the Dutch merchants. "Oppressive taxes," it is there stated, "must be placed at the head of all the causes that have co-operated to the prejudice and discouragement of trade; and it may be justly said, that it can only be attributed to them that the trade of this country has been diverted out of its channel, and transferred to our neighbors, and must daily be still more and more alienated and shut out from us, unless the progress thereof be stopped by some quick and effectual remedy; nor is it difficult to see, from these contemplations on the state of our trade, that the same will be effected by no other means than a *diminution of all duties*. In former times this was reckoned the only trading state in Europe; and foreigners were content to pay the taxes, as well on the goods they brought hither as on those they came here to buy, without examining whether they could evade or save them, by fetching the goods from the places where they were produced, and carrying others to the places where they were consumed: in short, they paid us our taxes with pleasure, without any further inquiry. But, since the last century, the system of trade is altered all over Europe: foreign nations, seeing the wonderful effect of our trade, and to what an eminence we had risen only by means thereof, they did likewise apply themselves to it; and, to save our duties, sent their superfluous products beside our country, to the places where they are most consumed; and in return for the same, furnished themselves from the first hands with what they wanted." But, notwithstanding this authoritative exposition of the pernicious effects resulting from the excess of taxation, the necessary expenses of the State were so great as to render it impossible to make any sufficient reductions. And, with the exception of the transit trade carried on through the Rhine and the Meuse, which is in a great measure independent of foreign competition, and the American trade, most of the other branches of the foreign trade of Holland, though still very considerable, continue in a comparatively depressed state.

In consequence principally of the oppressiveness of taxation, but partly, too, of the excessive accumulation of capital that had taken place while the Dutch engrossed the carrying trade of Europe, profits in Holland were reduced toward the middle of the seventeenth century, and have ever since continued extremely low. This circumstance would of itself have sapped the foundations of her commercial greatness. Her capitalists, who could hardly expect to clear more than two or three per cent. of net profit by any sort of undertaking carried on at home, were tempted to vest their capital in other countries, and to speculate in loans to foreign governments. There are the best reasons for thinking that the Dutch were, until very lately, the largest creditors of any nation in Europe. It is impossible, indeed, to form any accurate estimate of what the sums owing them by foreigners previously to the late French war, or at present, may amount to; but there can be no doubt that at the former period the amount was immense, and that it is still very considerable. M. Demeunier (*Dictionnaire de l'Economie Politique*, tom. iii. p. 720) states the amount of capital lent by the Dutch to foreign governments, exclusive of the large sums lent to France during the American war, at *seventy-three* millions sterling. According to the author of the *Richesse de la Hollande* (ii. p. 292), the sums lent to France and England only, previously to 1778, amounted to 1,500,000 livres tournois, or sixty millions sterling. And besides these, vast sums were lent to private individuals in foreign countries, both regularly as loans at interest and in the shape of goods advanced at long credits. So great was the difficulty of finding an advantageous investment for money in Holland, that Sir William Temple mentions that the payment of any part of the national debt was looked upon by the creditors as an evil of the first magnitude. "They receive it," says he, "with tears, not knowing how to dispose of it at interest with such safety and ease."

Among the subordinate causes which contributed to the decline of Dutch commerce, or which have, at all events, prevented its growth, we may reckon the circumstance of the commerce with India having been subjected to the trammels of monopoly. De Witt expresses his firm conviction that the abolition of the East India Company would have added very greatly to the trade with the East; and no doubt can now remain in the mind of any one that such would have been the case. The interference of the administration in regulating the mode in which some of the most important branches of industry should be carried on, seems also to have been exceedingly injurious. Every proceeding with respect to the herring fishery, for example, was regulated by the orders of government, carried into effect under the inspection of officers appointed for that purpose. Some of these regulations were exceedingly vexatious. The period when the fishery might begin was fixed at five minutes past twelve o'clock of the night of the 24th of June! and the master and pilot of every vessel leaving Holland for the fishery were obliged to make oath that they would respect the regulation. The species of salt to be made use of in curing different sorts of herrings was also fixed by law; and there were endless regulations with respect to the size of the barrels, the number and thickness of the staves of which they were to be made; the gutting and packing of the herrings; the branding of the barrels, etc., etc.—*Histoire des Pêches, etc., dans les Mers du Nord*, tom. i. chap. 24. These regulations were intended to secure to the Hollanders that superiority which they had early attained in the fishery, and to prevent the reputation of their herrings from being injured by the bad faith of individuals. But their real effect was precisely the reverse of this. By tying up the fishers to a system of routine, they prevented them from making any improvements; while the facility of counterfeiting the public marks opened a much wider door to fraud than would have been opened had government wisely declined interfering in the matter.

In despite, however, of the East India monopoly, and the regulations now described, the commercial policy of Holland has been more liberal than that of any other nation. And in consequence, a country not more extensive than Wales, and naturally not more fertile, conquered, indeed, in a great measure from the sea, has accumulated a population of upward of two millions; has maintained wars of unexampled duration with the most powerful monarchies; and, besides laying out immense sums in works of utility and orna-

ment at home, has been enabled to lend hundreds of millions to foreigners.

During the occupation of Holland by the French, first as a dependent State, and subsequently as an integral part of the French empire, her foreign trade was almost entirely destroyed. Her colonies were successively conquered by England; and, in addition to the loss of her trade, she was burdened with fresh taxes. But such was the vast accumulated wealth of the Dutch, their prudence, and energy, that the influence of these adverse circumstances was far less injurious than could have been imagined; and, notwithstanding all the losses she had sustained, and the long interruption of her commercial pursuits, Holland continued, at her emancipation from the yoke of the French in 1814, to be the richest country in Europe! Java, the Moluccas, and most of her other colonies were then restored, and she is now in the enjoyment of a large foreign trade. Her connection with Belgium was an unfortunate one for both countries. The union was not agreeable to either party, and was injurious to Holland. Belgium was an agricultural and manufacturing country; and was inclined, in imitation of the French, to lay restrictions on the importation of most sorts of raw and manufactured produce. A policy of this sort was directly opposed to the interests and the ancient practice of the Dutch. But though their deputies prevented the restrictive system from being carried to the extent proposed by the Belgians, they were unable to prevent it from being carried to an extent that materially affected the trade of Holland. Whatever, therefore, may be the consequences as to Belgium, there can be little doubt that the separation of the two divisions of the kingdom of the Netherlands will redound to the advantage of Holland. It must ever be for the interest of England, America, and all trading nations, to maintain the independence of a State by whose means their productions find a ready access to the great continental markets. It is to be hoped that the Dutch, profiting by past experience, will adopt such a liberal and conciliatory system toward the natives of Java as may enable them to avail themselves to the full of the various resources of that noble island. And if they do this, and freely open their ports, with as few restrictions as possible, to the ships and commodities of all countries, Holland may still be the centre of a very extensive commerce, and may continue to preserve a respectable place among mercantile nations. Even at this moment, after all the vicissitudes they have undergone, the Dutch are, beyond all question, the most opulent and industrious of European nations. And their present no less than their former state shows that a free system of government, security, and the absence of restrictions on industry, can overcome almost every obstacle; "can convert the standing pool and lake into fat meadows, cover the barren rock with verdure, and make the desert smile with flowers."

Amulets, or **Charms**. All nations have been fond of amulets. The Egyptians had a great variety; so had the Jews, Chaldeans, and Persians. Among the Greeks, they were much used in exciting or conquering the passion of love. They were also in estimation among the Romans.—PLINY. OVID. Among the Christians of early ages, amulets were made of the wood of the true cross, about A.D. 328. They have been sanctioned by religion and astrology, and even in modern times by medical and other sciences; witness the anodyne necklace, etc. The pope and Catholic clergy make and sell amulets and charms even to this day.—ASHE. HAYDN.

Anam, or **An-nam**, an empire of Southeastern Asia; between lat. 10° and 23° N., and long. 102° and 109° E.; comprising Cochin-China, Tonquin, and a part of Camboja. Surface generally fertile, and climate healthy. The coasts are bold, and include some of the best harbors in the world. Products, rice, sugar, cinnamon, pepper, and other spices; indigo, dye-woods, an inferior tea, ivory, and the precious metals. These articles form the principal exports. Imports are manufactured silks, porcelain, fine teas, and drugs from China, opium from India, cottons from Canton and Singapore, woolens and fire-arms from Europe. The navy is large; and the people have a maritime taste, excelling most Asiatics in ship-building.—HARPER'S *Gazetteer*.

Anchor, in *Navigation*, from the Greek *ἄγκυρα*, which Vossius thinks is from *ὄγκη*, a *crook* or *hook*, an instrument of iron or other heavy material used for holding ships in any situation in which they may be required to lie, and preventing them from drifting by the winds or tides, by the currents of rivers, or any other cause. This is done by the anchor, after it is let down from the ship by means of the cable, fixing itself into the ground, and there holding the vessel fast. The anchor is thus obviously an implement of the first importance in navigation, and one on which too much attention can not be bestowed in its manufacture and proper construction, seeing that on it depends entirely the safety of the vessel in storms. The invention of so necessary an instrument remounts, as may be supposed, to the remotest antiquity. The most ancient anchors consisted merely of large stones, baskets full of stones, sacks filled with sand, or logs of wood loaded with lead. Of this kind were the anchors of the ancient Greeks, which, according to Apollonius Rhodius and Stephen of Byzantium, were formed of stone; and Athenæus states that they were sometimes made of wood. These sorts of anchors retained the vessel merely by their inertia, and by the friction along the bottom. Iron was afterward introduced for the construction of anchors, and also the grand improvement of forming them with teeth or flukes to fasten themselves into the bottom; whence the words *ὀδόντες* and *dentes* are frequently taken for anchors in the Greek and Latin poets. The invention of the teeth is ascribed by Pliny to the Tuscans; but Pausanias gives the merit to Midas, king of Phrygia. Originally there was only one fluke or tooth, whence anchors were called *ἑτερόστομοι*; but shortly afterward the second was added, according to Pliny, by Eupalamus, or, according to Strabo, by Anacharsis, the Scythian philosopher. The anchors with two teeth were called *ἀμφίβολοι* or *ἀμφίστομοι*, and from ancient monuments appear to have been much the same with those used in our days, except that the stock is wanting in them all. Every ship had several anchors, the largest of which, corresponding to our bower or sheet anchor, was never used but in extreme danger, and was hence peculiarly termed *ἱερά* or *sacra*; whence the proverb *sacram anchoram solvere*, as flying to the last refuge.

Weight.—Anchors are now universally made of wrought iron, excepting in Spain and some parts of the South Sea, where they are made of copper. One essential quality in every anchor is a sufficient weight and angle of arm and fluke to fix itself in the bottom; and this has been determined by practice for different anchors, and for vessels of different sizes. Large vessels have several anchors of different sizes, which are stowed in different parts of the vessel. These are distinguished by different names; viz., the *best bower* to the starboard; and the *small bower* to the port cathead, with the flukes on the bill-board; the *sheet-anchor* on the after part of the fore-channels, on the starboard side; and the *spare-anchor* on the port side. The above anchors are of the same size and weight. The two latter are only let go in cases of danger, when the vessel is riding in a heavy gale. In men-of-war they are always kept ready for letting go. The *stream-anchor* is of a much smaller size than the above, used only for riding in rivers or moderate streams. It is not generally above one-fourth or one-fifth of the weight of the others. Lastly, the *kedge-anchor* is still smaller, being only about one-half of the stream-anchor, and is

only used when kedging in a river. Ships of the large class carry four large and three small anchors, and the smallest class, as brigs, cutters, and schooners, three or four.

The weight of anchors for different vessels is allowed by the tonnage. A pretty near rule for the principal anchor of ordinary-sized vessels is to allow for the cwt. in the anchor one-twentieth of the tonnage. Thus a vessel of 400 tons would require her principal anchor to be 20 cwt., or according to the following tables:

Merchant Vessels.			Vessels of War.			
Tonnage.	Cable Chain.	Weight of Anchor.	Guns.	Tonnage.	Cable Chain.	Weight of Anchor.
Tons.	In.	Cwt.		Tons.	In.	Cwt.
20	9/16	1	20	500	1 3/8	25
35	11/16	1 3/4	24	700	1 1/2	29
50	3/4	2 1/4	28	750	1 1/2	33
65	13/16	3 1/4	32	920	1 5/8	38
70	—	4 1/2	36	970	1 5/8	41
80	7/8	5	38	1000	1 3/4	44
100	15/16	5 3/4	40	1100	1 3/4	47
130	1	7	44	1300	1 7/8	50
160	1	8	50	1500	1 7/8	61
190	1 1/8	9 1/2	64	1600	2	65
220	1 1/8	10 1/2	74	1900	2	72
250	1 3/16	12	80	2500	2 1/4	85
280	1 1/4	14	90	2600	2 1/4	92
320	—	15 1/2	100	2700	2 1/4	94
380	1 3/8	17 1/2	120	3000	2 1/4	99 to 100
430	1 7/16	20				
480	1 1/2	21				
520	1 1/2	25				
720	1 11/16	33				

Form and Dimensions.—Next to the weight, the form of the anchor, and the proportions of the different parts, are of great importance. The most general form, and that which has indeed been almost universally adopted all over the world, consists of the two hooked arms for penetrating and fixing themselves into the soil; the long bar or shank for attaching the cable; and the stock, which is attached to the extremity of the shank, and serves to direct one of the points downward into the soil. The weight of the anchor, then, causes the point to penetrate more or less according to the softness or hardness of the bottom; and the action of the vessel on the cable, instead of loosening the anchor, tends rather, by the hooked shape of the arms, to fix these deeper and firmer into the soil; so that the vessel is held quite fast, unless either the cable itself gives way, or any part of the anchor, or the anchor is dragged along owing to the looseness of the soil. The cable draws upward by the extremity, and turns the whole round the point of the fluke. The one end of the shank is made square, to receive and hold the stock steadily in its place without turning. To keep the stock also from shifting along the shank, there are raised on it from the solid iron, or welded on it, two square tenon-like projections, called nuts. The length of the square of the shank is about one-sixth of the whole length of the shaft, and the thickness about one-twentieth. From the end of this square the shank increases in thickness, tapering toward the extremity, where the arms are attached: in all this part it is either made wholly round, or with a flat on opposite sides, or polygonal. The end next the stock is called the *small round*. The other extremity, where the arms and the shank unite, is called the *crown*, and the point of the angle between the arms and the shank the *throat*. Here the thickness of the shank is from 1¼ inch in small anchors, to 3 inches in large ones, greater than at the small round. A distance equal to that between the throat of one arm and its bill is marked on the shank from the place where it joins the arms, and is called the *trend*. Near the extremity of the square part of the shank is the hole for receiving the *shackle* for the cable, which is about half the thickness of the small round, and the diameter nearly equal to the length of the square. The shackle is lapped with cordage to prevent the cable from chafing. When hempen cables are used in the British service, one length of bower chain cable, called a *ganger*, is bent to the spare anchor, and the hempen cable united with Admiral Elliott's shackle.

The *arms* make an angle of about 50° with the shank. They are made either round or polygonal like the shank, about half their length. The remainder of the arm consists of three parts, the *blade*, the *palm*, and the *bill*. The blade is merely the continuation of the arm in a square form. The palm or fluke is a broad, flat, triangular plate, fixed on the inside of the blade, the use of which is, by exposing a broad surface, to take a firmer hold of the ground. The bill is the extremity of the arm, where it is tapered nearly to a point, for the purpose of penetrating more readily into the soil. In some cases the arm is made quite straight from the crown to the bill; in others, and particularly in small anchors, the interior half is made with the arch of a circle. The whole length of the arm is nearly half the length of the round part of the shank. It tapers slightly from the throat to the blade, where it is about the same thickness with the small round of the shank. The palm is about one-third of this in thickness, and the breadth of its base is nearly equal to its length.

The *stock* of the anchor is made of oak, consisting of two beams embracing the square, and firmly united by iron bolts and hoops. The length of the stock is rather greater than that of the shank, the thickness in the middle about one-twelfth of its length, and tapering to about the half of this at the extremities, the taper being all on the under surface next the arms, and the other quite straight. The taper is not quite regular. It commences at about half the breadth of the stock from the shank, and continues in one straight line to the extremity. The beams of the stock are hooped close together at the extremities, but gradually open toward the centre, that, in case of the wood shrinking, the hoops may be driven farther in. Of late years the stock has frequently been made of wrought iron, the same as the anchor; and this plan is now very generally followed in anchors up to sixty cwt. It has this advantage, that the stock can be at any time taken out and laid parallel with the anchor, which is very convenient for stowage. The iron stock consists merely of a long round bar, about half the diameter of the anchor at the square. Instead of embracing the anchor, like the wood, it goes through a hole in the square, which is swelled out to receive it. It has a shoulder in the middle, which rests against the square, and a key through a hole in the stock on the other side keeps it fast. When the stock is to be taken out of its place, the key is driven out: the stock then slides through the hole in the shank, and by means of a bend at its extremity, it is laid parallel with the shank.

The operation of the anchor is easily understood. Being let down by means of the cable, the weight of the arms throws them downward, and keeps the whole in a vertical position until it reaches the ground, where it lights upon the crown; and then falling over, the position of the stock at right angles to the arms, and its length and height, together with the weight of the cable, are sure to throw it with one of the arms pointed into the ground, if it does not take this situation of itself. This effect is aided by the anchor descending quickly—and hence it must be allowed to descend freely; for which purpose, in *throwing* or *casting* the anchor, the cable is arranged, one end being attached to the anchor and the cable bitted on deck, and the inner end removed below. Every thing being prepared, the lashing of the anchor is cast off, and the men stand

ready to let go; and when this word is given by the person in command, the fastenings are all cast off, and the anchor, falling into the sea, descends with rapidity. When the anchor, again, is to be removed from its situation and drawn up into the vessel, the operation is termed *weighing;* which requires often a very heavy purchase, particularly at starting. This is obtained by means of the windlass or capstan, round which the cable is wound, and a number of hands applied to work it. With cables which are too large to be wound round a windlass, a smaller rope or chain is used, termed a messenger, which, being attached to the cable at different points, and wound round the capstan, serves to bring the cable forward. But since the introduction of chain cables this contrivance is not so much required.

When the anchor is brought above water, a tackle from the cat-head, called the cat, is hooked on to the shackle of the anchor, and hoisted up; the cat-head stopper is then passed, viz., one end of it is fastened round the cat-head, and the other is brought through the shackle of the anchor, then over the stopper-cleat, and is belayed round a timber head; the cat is then unhooked, and another tackle, called the fish, is hooked on just within the flukes, and the arms are hove up so as to lie upon the gunnal, or bill-board; the stock is then made vertical by hauling upon another tackle, called the stock-tackle, in which position the anchor is secured by the stock-lashing for sea. In the event of bad weather, and before commencing a long voyage, the cat-head stopper and shank painter is doubled.

Mooring Anchors are those which are fixed in certain situations in harbors or roadsteads, and to which any of the vessels frequenting the place may be secured. As these are no way limited as to weight like portable anchors, they often consist merely of a large block of stone, with an inner ring fixed in the middle of the upper side; or several such stones may be fastened together so as to act as one mass. Mooring anchors are also often made by choosing one of the largest anchors used for first-rate ships, weighing 80 cwt., and by bending one of the arms close down upon the shank, to prevent it catching hawsers when transporting ships, nets of fishermen, fouling, etc. These anchors are lowered down into the water with a very strong iron mooring chain fastened to the ring, to which the ships are fastened: they are usually made from such as are damaged in one of the flukes or arms. A new kind of mooring anchor, of cast iron, was described by Mr. Hemman, of Chatham, to the *Society for the Encouragement of Arts, etc.*, in 1809, for which he obtained a silver medal from the society.

Floating Anchor.—This is the name given to a sort of anchor which has often been proposed, but never reduced to practice, for preventing a vessel from drifting, in cases where the great depth of the sea precludes the use of the cable and ordinary anchor. The plan suggested by Dr. Franklin seems the most rational. This anchor consisted of two cross-bars, secured together in the middle, and having sail-cloth fastened to them in the shape of a parallelogram. To the centre of these bars the cable was attached, and, being thrown overboard, it was thought the resistance of so large a surface would at least check the rapidity of the ship's motion.

The following is Mr. Aylen's plan for anchoring in deep water out of soundings, to prevent vessels from drifting in a calm when in a tide-way, or if disabled: Haul out immediately one of the boom boats, let go the kedge anchor, and veer out 40 or 50 fathoms over the bow, and stop it to the ring in the bow and stern of the boat, and then veer out from the ship from 70 to 80 fathoms.

Much attention has been paid of late to the improvement of the manufacture of anchors, and several specimens were sent by the makers to the Royal Exhibition in 1851. A committee, consisting of five ship-owners of London, Liverpool, and Glasgow, with five nominated by the Lords of the Admiralty, was appointed to test the relative merits of these. After trying, on the parade ground of Sheerness dock-yard, on the beach at Garrison point, at Blackstakes in the River Medway, and at the Nore, those that were submitted for competition, viz., Admiralty, Aylen's (a modified Admiralty), Honiball (or Porter's), Isaacs' (United States), Lenox's, Mitcheson's, Rodgers', and Trotman's (an improved Porter's), they reported in 1853 that, taking into consideration the results of all the trials to which the anchors had been subjected, they thought it best to record their opinions in the following tabulated forms:

TABLE SHOWING THE RELATIVE ORDER IN WHICH THE SEVERAL ANCHORS STAND WITH REGARD TO EACH OF THE PROPERTIES ESSENTIAL TO A GOOD ANCHOR; THE NAMES ARRANGED ALPHABETICALLY.

ANCHORS.	Strength computed from first crack.	Holding long and short scope.	Facility of stowing	Quick holding.	Quick tripping.	Exemption from fouling.	Facility of transport in boats.	Fishing in a heavy sea way.	Casting
Admirality	4	5	1	2	1	4	1	2	2	2
Aylen	7	4	1	2	3	4	1	2	2	5
Honiball (or Porter's)..	2	2	3	4	2	1	4	3	5	3
Isaacs	1	6	4	5	1	1	4	4	5	1
Lenox	6	3	2	1	2	3	2	1	3	2
Mitcheson	Refused this trial.	1	3	1	3	2	3	2	4	4
Rodgers	5	2	1	1	2	4	2	1	1	2
Trotman	3	1	3	3	4	1	4	3	5	5

TABLE SHOWING THE ESTIMATED NUMERICAL VALUES OF THE SEVERAL ANCHORS IN REGARD TO THE PROPERTIES CONSIDERED ESSENTIAL TO A GOOD ANCHOR.—[This Table only professes to show approximate values, and has no pretensions to mathematical accuracy or precision.]

ANCHORS.	Strength computed from the first crack.	Holding long and short scope.	Facility of stowing.	Quick holding.	Quick tripping.	Exemption from fouling.	Facility of sweeping.	Facility of transport in boats.	Fishing in a heavy seaway with pressent fish-hook.	Casting	Total values.
Proportionate values of the Qualities.....	15	80	10	15	5	10	5	5	10	5	160
Admirality	2·07	6·42	1·82	2·01	·89	·65	·95	·65	1·98	·73	18·17
Aylen	1·89	9·10	1·82	2·01	·45	·65	·15	·65	1·98	·44	19·94
Honiball (Porter's)	2·33	10·69	·91	1·85	·67	1·85	·29	·52	·55	·60	19·94
Isaacs	2·63	5·	·45	·59	·89	1·85	·29	·26	·55	·81	13·32
Lenox	1·92	9·56	1·36	2·36	·67	1·11	·71	·87	1·32	·73	20·61
Mitcheson		14·10	·91	2·36	·45	1·39	·57	·65	·88	·52	21·83
Rodgers	1·94	10·69	1·82	2·36	·67	·64	·95	·87	2·19	·73	22·86
Trotman	2·22	14·41	·91	1·77	·31	1·85	·29	·52	·55	·44	23·30
Totals.....	15·00	80·00	10·00	14·99	5·00	9·99	5·00	4·99	10·00	5·00	159·97

The following is a recapitulation of the order in which the anchors were ranked by the committee, together with their relative percentage of inferiority or superiority to the Admiralty anchor, the value of

which, as given in the foregoing table (18·17), was taken as the standard or unit:

Trotman	1·28 or 28 per cent.	Superior to Admiralty anchor.
Rodgers	1·26 or 26 do.	
Mitcheson	1·20 or 20 do.	
Lenox	1·18 or 18 do.	
Honiball	1·09 or 9 do.	
Ayten	1·09 or 9 do.	
Admiralty	1· the standard.	
Isaacs	·73 or 27 per cent.	Inferior to Admiralty.

Supposing both the flukes, and about two feet of the shank and crown of the anchor is gone (invariably the place where all anchors break), the weight of the broken part would be about half the weight of the original, say

	Cwt.
Bower anchor for the Hastings class 74 cwt., half	37
Stream anchor and stock for the above ship	29
Kedge and stock for do.	11
	70

In making anchors in the Royal dock-yards of Great Britain, the different parts are forged by the steam-hammers. In the first place, large slabs or pieces are made about five feet long, and three of them put together, soundly welded, and drawn out of sufficient length for the shank; the arms and palms are forged nearly in the same way; the palms are welded on to the arms, and then the arms welded on to the shank, and the shackle is riveted on to the shank, the anchor then being complete.

The shank for an anchor is made larger at the lower end, where the arms are to be welded to it, and is of a square figure. A sort of rebate or scarf is here formed on each side of the square, in order that the arms may apply more properly for welding. This scarf is made in the original shape of the fagot, and finished by cutting away some of the metal with chisels while it is hot, and using sets or punches, properly formed, to make a square angle to the shoulder of the scarf. The upper end of the shank is likewise square; and the length between these square parts is worked either to an octagon or round, tapering regularly from the lower to the upper end. The hole to receive the ring of the anchor is pierced through the square part at the upper end, first by a small punch, and then larger ones are used till it is sufficiently enlarged. The punch is made of steel; and when it is observed to change color by the heat, it is struck on the opposite end to drive it out, and is instantly dipped in water to cool it, and another driven in. The projecting pieces or nuts, which are to keep the stock or wooden beam of the anchor, and its place on the shank, are next welded on. To do this the shank is heated, and at the same time a thick bar is heated in another forge: the end of this is laid across the shank, and the men hammer it down to weld it to the shank; then the piece is cut off by the chisel, and another piece welded on the opposite side.

While this process of forging the shank is going on, the smiths of another forge, placed as near as convenient to the former, are employed in making the arms, which are made from fagots in the same manner as the shank, but of less size and shorter, they are made taper, one end of each being smaller than the other; the larger ends are made square, and cut down with scarfs, to correspond with those at the lower end of the shank. The middle parts of the arms are rounded, and the outer extremities are cut away as much as the thickness of the flukes or palms, that the palms may be flush with the upper sides when they are welded on. The flukes are generally made at the iron-forges in the country, by the forge-hammer; but in some yards they are made by fagoting small bars, leaving a long one for a handle. The next business is to unite the arms to the end of the shank; and in doing this particular care is necessary, as the goodness of the anchor is entirely dependent upon its being effectually performed. In so large a weld, the outside is very liable to be welded, and make a good appearance, while the middle part is not united. To guard against this, both surfaces of the scarfs should be rather convex, that they may be certain to touch in the middle first. When the other arm is welded, the anchor is complete, except the ring, which is made from several small bars welded together and drawn out into a round rod, then bent to a circle, put through the hole in the shank, and its ends welded together. If the shank or other part is crooked, it is set right by heating it in the crooked part, and striking it over the anvil, or by the Hercules. After all this the whole is heated, but not to a white heat, and the anchor hammered in every part, to finish and make its surface even. This is done by lighter hammers, worked by both hands, but not swung over the head. This operation renders the surface of the metal hard and smooth; and if very effectually performed, the anchor will not rust materially by the action of the sea-water.

The iron from which anchors are made ought to be of the best quality: that kind of it which is called red short will not bear sufficient hammering to weld the bars; and cold short, from its brittleness, is not to be depended upon when the anchor is in use. A good anchor should be formed of the toughest iron that can be procured. The most extensive establishment for fabricating anchors, etc., in England, is that at Woolwich dock-yard, where the British Admiralty anchors are made. There the blowing apparatus, the working of the lift and tilt hammers, etc., is all done by a steam-engine of from fourteen to sixteen horse power.—E. B.

To steer the ship to her Anchor, is to steer the ship's head toward the place where the anchor lies when they are heaving in the cable, or lying in a strong tide-way, that the cable may thereby enter the hawse with less resistance, and the ship advance toward the anchor with greater facility. Ships often prevent collision by attention to the helm.

Anchorage, or **Anchoring Ground.** Good anchoring ground should neither be too hard nor too soft; for, in the first case, the anchor is apt not to take a sufficient hold, and in the other to drag. The best bottom is a stiff clay, and next to it a firm sand. In a rocky bottom the flukes of the anchor are sometimes torn away, and hempen cables are liable to chafe and be cut through. It is also essential to a good anchorage that the water be neither too deep nor too shallow. When too deep, the pull of the cable, being nearly perpendicular, is apt to jerk the anchor out of the ground; and when too shallow, the ship is exposed to the danger, when riding in a storm, of striking the bottom. Where a ship is in water that is land-locked, and out of the tide, the nature of the ground is of comparatively little importance.

Anchovy (Fr. *Anchois;* It. *Acciughe;* Lat. *Encrasicolus*), a small fish (*Clupea encrasicolus*, Linn.), common in the Mediterranean, resembling the sprat. Those brought from Gorgona, in the Tuscan Sea, are esteemed the best. They should be chosen small, fresh pickled, white outside and red within. Their backs should be round. The sardine, a fish which is flatter and larger than the anchovy, is frequently substituted for it. About 120,000 pounds are annually entered in Great Britain for home consumption.

Anderson, Adam, was born in Scotland in 1692. He was a clerk for forty years in the South Sea House in London, where he published a large work, entitled *Historical and Chronological Deduction of the Origin of Commerce, containing a History of the Great Commercial Interests of the British Empire*, etc., which is voluminous and heavy; but he seems to have anticipated, in some of his speculations, the opinions of later times. It was first published in 1762, in two vols. folio. A third edition appeared in 1797–9, in four vols. 4to, the last volume being an appendix and continuation by the editor, Mr. Walton. Anderson died in 1765.

Andes. The Andes form a mighty mountain chain running nearly parallel to the western coast of South America. The central ridge extends in an undivided chain from the Rio Atrato, at the Isthmus of Darien, in lat. 8° N., to the Cordilleras of Vilcanoto and Cuzco, in lat. 15° 50′ S., where it separates into western and eastern ridges that inclose the extensive and elevated valley of Desaguedero, and exhibit some stupendous peaks that almost rival the altitude of the Himalayas of the East. After running parallel to each other to lat. 19° 30′ S., they again coalesce, and constitute one central chain to the Straits of Magellan, in lat. 53°. The Andes of South America, then, have a range of about 4200 miles. The most western of the two longitudinal ridges runs parallel to the Pacific, and is called the *Cordillera* of the Coast; the eastern chain is generally termed the *Cordillera* of the Interior, and its northern prolongation *Cordillera Real*. The valley of Desaguedero extends from lat. 15° 5′ to lat. 19° 30′ S., with a varying breadth of 35 to 60 miles, presenting an area of 16,000 square geographical miles. It contains the celebrated Lake of Titicaca, the cradle of Peruvian civilization. It was on the shores of this lake that Manco Capac, the first Inca, was miraculously discovered by the Quichu, the ancestors of the Peruvians.

"The central Andes are rich beyond conception in all the metals, lead only excepted. One of the most curious ores in the bowels of those mountains is the *paco*, a compound of clay, oxide of iron, and the muriate of silver with native silver. The mines of Mexico and Peru, so long the objects of envy and admiration, far from being yet exhausted, promise, under a liberal and improved system, to become more productive than ever. But nature has blended with those hidden treasures the active elements of destruction. The whole chain of the Andes is subject to the most terrible earthquakes. From Cotopaxi to the South Sea no fewer than forty volcanoes are constantly burning; some of them, especially the lower ones, ejecting lava, and others discharging the muriate of ammonia, scorified basalt, and porphyry, enormous quantities of water, and especially *moya*, or clay mixed with sulphur and carbonaceous matter. Eternal snow invests their sides, and forms a barrier to the animal and vegetable kingdoms. Near that confine the torpor of vegetation is marked by dreary wastes."—*Edinb. Review*, vol. xv. p. 233.

Anemometer and **Anemoscope**, machines for measuring the force and indicating the course of the wind.

Angelica, a large umbelliferous plant, with hollow jointed stalks, of which there are several varieties. It grows wild, and is cultivated in moist places near London, and in most European countries from Lapland to Spain. Its roots are thick, fleshy, and resinous; have a fragrant agreeable smell, and a bitterish pungent taste, mixed with a pleasant sweetness glowing on the lips and palate for a long time after they have been chewed. To preserve them, they must be thoroughly dried, and kept in a well-aired place. The other parts of the plant have the same taste and flavor as the roots, but in an inferior degree. The leaves and seeds do not retain their virtues when kept. The London confectioners make a sweetmeat of the tender stems. The faculty used to direct that none but the roots of Spanish angelica should be kept by the druggists. In Norway the roots are sometimes used as bread, and in Iceland the stalks are eaten with butter. The plant is used mostly in confectionery and the materia medica. —Lewis's *Mat. Med.*; Rees's *Cyclopædia*, *etc.*

Angels, in *Commerce*. An angel was an ancient gold coin, weighing four pennyweights, and was valued at 6*s.* 8*d.* in the reign of Henry VI., and at 10*s.* in the reign of Elizabeth, 1562. The angelot was an ancient gold coin, value half an angel, struck at Paris when that capital was in the hands of the English, in the reign of Henry VI., 1431.—Wood.

Anise Seed (Fr. *Anis*; It. *Anice*; Lat. *Anisum*), a small seed of an oblong shape. It is cultivated in Germany, but the best comes from Alicant, in Spain. It is also a product of China, whence it is exported. It should be chosen fresh, large, plump, newly dried, of a good smell, and a sweetish aromatic taste.

Anker, a liquid measure at Amsterdam. It contains about 10¼ gallons English wine measure.

Annals (*Annales*, from *annus*, a *year*), a term commonly applied to a concise and plain kind of narrative of historical facts digested in the order of time, each event being arranged under the particular year in which it happened. Although this style of composition does not necessarily exclude the casual observations of the writer, episodes or formal digressions are incompatible with the brevity characteristic of annals; while history, on the other hand, comprises not only the narrative and exposition of facts, but also the writer's observations on actions, motives, causes, and consequences in general; thus affording ample scope for illustration and embellishment. Annals may be said to constitute the essence of history, since they are the elements or materials of which it is composed.

Annealing, by the workmen called *nealing*, is a process used in glass-making, and in the manufacture of certain metals. In glass-making it consists in placing the bottles, etc., while hot, in a kind of oven or furnace, where they are suffered to cool gradually. They would otherwise be too brittle for use. The difference between unannealed and annealed glass, with respect to brittleness, is very remarkable. When an unannealed glass vessel is broken, it often flies into a small powder, with a violence seemingly very unproportioned to the stroke it has received. In general it is in greater danger of breaking from a very slight stroke than from one of some considerable force. One of these vessels will often resist the effects of a pistol-bullet dropped into it from the height of two or three feet; yet a grain of sand falling into it will make it burst into small fragments. This takes place sometimes immediately on dropping the sand into it; but often the vessel will stand for several minutes after seemingly secure; and then, without any new injury, it will fly to pieces. If the vessel be very thin it does not break in this manner, but seems to possess all the properties of annealed glass.

The same phenomena are still more strikingly seen in glass drops or tears. They are globular at one end, and taper to a small tail at the other. They are the drops which fall from the melted mass of glass on the rods on which the bottles are made. They drop into the tubs of water which are used in the work; the greater part of them burst immediately in the water. When those that remain entire are examined, they discover all the properties of unannealed glass in the highest degree. They will bear a smart stroke on the thick end without breaking; but if the small tail be broken, they shiver into small powder with a loud explosion. They appear to burst with more violence, and the powder is smaller in an exhausted receiver than in the open air. When they are annealed they lose these properties.

Glass is one of those bodies which increase in bulk when passing from a fluid into a solid state. When it is allowed to crystallize regularly, the particles are so arranged that it has a fibrous texture. It is elastic, and susceptible of long-continued vibrations; but when a mass of melted glass is suddenly exposed to the cold, the surface crystallizes, and forms a solid shell round the interior fluid parts. This prevents them from expanding when they become solid. They therefore have not the opportunity of a regular crystallization, but are compressed together with little mutual cohesion. On the contrary, they press outward to occupy more space, but are prevented by the external crust. In consequence of the effort of expansion in the internal parts, the greater number of glass drops burst

in cooling; and those which remain entire are not regularly crystallized. A smart stroke upon them communicates a vibration to the whole mass, which is nearly synchronous in every part; and therefore the effort of expansion has little more effect than if the body were at rest; but the small tail and the surface only are regularly crystallized. If the tail be broken, this communicates a vibration along the crystallized surface without reaching the internal parts. By this they are allowed some expansion; and overcoming the cohesion of the thin outer shell, they burst it, and are dispersed in powder.

In an unannealed glass vessel the same thing takes place. Sometimes the vibration may continue for a considerable time before the internal parts overcome the resistance. If the vessel be very thin, the regular crystallization extends through the whole thickness; or at least the quantity of compressed matter in the middle is so inconsiderable as to be incapable of bursting the external plate.

By the process of annealing the glass is kept for some time in a state approaching to fluidity; the heat increases the bulk of the crystallized part, and renders it so soft, that the internal parts have the opportunity of expanding and forming a regular crystallization.

Iron.—In the manufactures in which the malleable metals are employed, annealing is used to soften a metal after it has been rendered hard by the hammer; and also to soften cast iron, which is rendered very hard and brittle by rapid cooling.

In the manufacture of steel goods, which are first formed by the hammer, and require to be filed or otherwise treated, and in which softness and flexibility are essential to the change, annealing is absolutely necessary. This is particularly the case in making files and scissors, that the metal may be left sufficiently soft for cutting the teeth, and for filing off those parts which can not be ground. Annealing is not less necessary in the drawing of wire, whether iron, copper, brass, silver, or gold. The operation of drawing soon gives the wire a degree of hardness and elasticity which, if not removed from time to time by annealing, would prevent the extension of the wire, and render it extremely brittle. The same operation is also necessary in rolling or flattening those metals which are in a cold state, such as brass, silver, gold, etc. The brazier who forms vessels of copper and brass by the hammer, can work upon it only for a little time before he is obliged to anneal it.

The methods often employed for annealing iron and steel are very injudicious, and materially injure the latter when it is used for making cutting instruments. After they have been formed by the hammer, they are sometimes piled up in an *open* fire, slowly raised to red heat, and then allowed as gradually to cool. By this method the surface of the steel will be found considerably scaled, from the action of the oxygen of the atmosphere. When it is remembered that steel consists of iron joined to carbon, it will be evident that the steel immediately under the scaly oxide will be deprived of its carbon, which has been carried off by the attraction of the oxygen; and, in consequence, will lose the property of acquiring that degree of hardness necessary to a cutting instrument.

Nothing, therefore, can be more obvious than that steel particularly should be annealed in close vessels, to prevent that effect. For this purpose the goods should be placed in a trough or recess made of firestone or fire-brick, and stratified with ashes or clean sand, and finally covered with a thick stratum of the same; but if the size of the vessel be small, it may have a cover of its own materials. This oven or trough must now be heated by the flame of a furnace passing under and round it, till the whole is of a red heat. It must then be suffered to cool, without letting in the air. The goods so treated will be much softer than by the other method. The surface, instead of becoming scaled, will have acquired a metallic whiteness, from the presence of a small quantity of carbonaceous matter contained in the ashes in which they were imbedded. They will become so flexible also, as to allow them to bend considerably without breaking, which is very far from being the case before the operation. The fracture, before annealing, will be smooth and short; but afterward it will be rough, exhibiting bright parts, of a crystalline appearance. Wire, especially that of iron and steel, should be treated in a similar way when it is annealed. The wire used for some purposes requires to be soft, and is sold in that state. If the wire, after finishing, when it is bright and clean, were to be annealed in contact with oxygen, it would not only lose all its lustre and smoothness, but much of its tenacity. The process above mentioned will therefore be particularly necessary in annealing finished wire, as well as in softening it from time to time during the drawing.

Copper and brass suffer much less than iron and steel from annealing in the open air, and do not require to be heated above a low red heat. If, however, the lustre is to be preserved, a close vessel would be desirable. The latter metals, after annealing, although much discolored by the oxygen of the atmosphere, may be cleansed by immersion in a hot liquor composed of water and a small quantity of sulphuric or nitric acid. Very small brass or copper wire is frequently annealed by exposing it to the flame of hay or straw. In casting minute pieces of pig-iron, which is generally done in damp sand, the metal possesses the property of steel to such a degree as to assume, by the rapid cooling, a degree of hardness equal to hardened steel; at the same time that the articles are so brittle as to break by falling on the ground. When, however, these goods are treated in the way above directed, they acquire a degree of softness which renders them penetrable by the file, and at the same time capable of bending. In this state they are much less tenacious than steel, but still so much so as to have been sold in the form of cutlery for steel.

The change which metals undergo by annealing is not yet thoroughly understood. Most of the malleable metals are susceptible of two distinct forms, one called the crystalline form, which they assume by slow cooling; and the other the fibrous, which is acquired by hammering or rolling. When this, however, is carried beyond a certain point, the metal becomes so hard that it is not capable of being bent far without breaking. All the malleable metals in the ingot or in their cast state are brittle, and exhibit a crystalline fracture. By hammering or rolling they become more tenacious, and break with difficulty, exhibiting what is called a fibrous fracture. At the same time they become stiffer and more elastic. They lose the latter properties by annealing, but become more malleable. If the annealing, however, be long continued, the malleability diminishes, and they again have a crystalline fracture. Zinc by wire-drawing becomes very flexible, and possesses a degree of tenacity not inferior to that of copper; but if it be kept in boiling water for a length of time, it will resume its original brittleness, and show a crystalline appearance when broken. This proves that the particles of metals can change their arrangement without losing their solid form; which is still more strongly confirmed by the fact that brass wire loses its tenacity by exposure to the fumes of acids, and even by the presence of a damp atmosphere. This is not caused by the moisture, but by the action of air upon the moistened surface. The manufacturers of common pins are obliged to keep their wire in a dry atmosphere, or immersed in water. If the wire be first moistened, and then exposed to the air, it will assume the brittle state much sooner. In this condition it breaks with a crystalline fracture, similar to that exhibited by an ingot. When a steel-plate, such as a watch-spring, has been once tempered, the operation

of simply rubbing it bright will render it soft and elastic. The same change is brought about by slightly hammering it. It, however, resumes its elastic state by being carefully heated till it becomes of a blue color. If the heat be continued to redness, particularly in a close vessel, it becomes perfectly annealed.—E. B.

Annotto, or **Arnotto** (Fr. *Rocou*; Ger. *Orlean*; It. *Oriana*), a species of red dye formed of the pulp enveloping the seeds of the *Bixa Orellana*, a plant common in South America, and the East and West Indies; but dye is made, at least to any extent, only in the first. It is prepared by macerating the pods in boiling water, extracting the seeds, and leaving the pulp to subside; the fluid being subsequently drawn off, the residuum, with which oil is sometimes mixed up, is placed in shallow vessels and gradually dried in the shade. It is of two sorts, viz. *flag* or *cake*, and *roll* annotto. The first, which is by far the most important article in a commercial point of view, is furnished almost wholly by Cayenne. It is imported in square cakes, weighing 2 or 3 pounds each, wrapped in banana leaves. When well made, it should be of a bright yellow color, soft to the touch, and of a good consistence. It imparts a deep but not durable orange color to silk and cotton, and is used for that purpose by the dyers. Roll annotto is principally brought from Brazil. The rolls are small, not exceeding 2 or 3 ounces in weight; it is hard, dry, and compact, brownish on the outside, and of a beautiful red color within. The latter is the best of all ingredients for the coloring of cheese and butter, and is now exclusively used for that purpose in all the British and in some of the Continental dairies. In Gloucestershire it is the practice to allow an ounce of annotto to a cwt. of cheese; in Cheshire, 8 dwts. are reckoned sufficient for a cheese of 60 pounds. When genuine, it neither affects the taste nor the smell of cheese or butter. The Spanish Americans mix annotto with their chocolate, to which it gives a beautiful tint.—Gray's *Supplement to the Pharmacopeias*; Loudon's *Encyc. of Agriculture*, and private information.

Annuities. An annuity is a periodical income arising from pensions, lands, houses, or money lent. When the possession of an annuity is not to be entered upon until the expiration of a certain period, it is called a *reversionary*, or *deferred* annuity; when the time of possession is not deferred, the annuity is sometimes called *immediate*, but in general it is simply termed an annuity.

Annuities or Pensions were first granted in 1512, when £20 were given to a lady of the court for services done; and £6 13*s*. 4*d*. for the maintenance of a gentleman, 1536. The sum of £13 6*s*. 8*d*. was deemed competent to support a gentleman in the study of the law, 1554. An act was passed empowering the government to borrow one million sterling upon an annuity of fourteen per cent., 4 and 6 William and Mary, 1691–3. This mode of borrowing soon afterward became general among civilised governments. An annuity of £1 per annum, accumulating at ten per cent., compound interest, amounts in one hundred years to £187,796.—Haydn.

The doctrine of compound interest and annuities-certain is too simple ever to have occupied much of the attention of mathematicians: inquiries into the values of interests dependent upon the continuance or the failure of human life, being more interesting and difficult, have occupied them more, but yet not so much as their importance would seem to demand; the discoveries both in pure Mathematics and Physics, especially those of Newton, which distinguished the close of the seventeenth century, having provided them with ample employment of a more interesting kind, ever since the subjects of this article were submitted to calculation.

When annuities are dependent upon the existence of a life or lives they are called *Life Annuities*. The values of such annuities are calculated by means of tables of mortality, which show, out of a considerable number of individuals born, how many on an average have lived to complete each year of their age, and consequently the *expectation* of life for each particular age: this, combined with a certain rate of per cent., will reduce the calculations, if made upon a sufficiently large scale, to mathematical certainty (see articles *Tables of Mortality*, *Interest*, *and Life Insurance*).

In the year 1808 the British government commenced granting life annuities at prices calculated according to the Northampton Tables of Mortality, and continued so to grant them for 20 years, at a great loss to the nation, especially on younger lives, as was shown at the time by a distinguished writer (Joshua Milne, Esq). None were granted then, however, on lives under 35 years of age. After the year 1816 annuities were granted to all persons of ages above 21 years.

In March, 1819, Mr. Finlaison was appointed government actuary, with proper assistants and access to the registers of the nominees in tontines, and others on whose lives annuities had been granted by government for more than a hundred years before; in which registers the exact ages at which the annuitants were nominated, and at which they died, were stated. Upon these data Mr. Finlaison made a table of mortality more valuable than any thing of the same kind which had yet been published, according to which the British government grant annuities at the present time.

By Mr. Finlaison's table it was found that the lives of annuitants were generally *better* (longer) than the general average of the population, as insured lives generally belong to the better classes. This subject will be more fully treated in *Tables of Mortality*, *Interest*, *and Life Insurance*.

Calculations are made, and annuities granted by the British government and by Life Insurance Companies, both in Europe and this country, upon all combinations of lives, such as joint lives, survivorships of two or more lives, etc., etc., affording a perfectly safe and reliable investment, and in the case of a Mutual Life Office, one of very great advantage to the annuitant.

The doctrine of annuities, with its kindred science of Life Insurance, is so abstruse that few writers are found willing to devote their time and attention to it unless actuated by professional motives or an unusual taste for the subject; fortunately, however, its treatment is marked by uniform and eminent talent and ability, so that nearly all the works upon this subject contain something new and valuable. The standard authors are, David Jones, Jenkins Jones, Milne, Morgan, Lubbock, Samuel Brown, G. Davies Babbage, and Dr. Price.

The lives on which annuities depend will generally be somewhat better (by which we here mean, will attain to greater longevity) than the general average of the population, though probably not nearly so much better as many believe them to be. The prevailing error in the popular estimate on this subject appears to have arisen in great measure from comparing the mortality among annuitants and assured lives, with that represented to take place by tables of mortality erroneously considered to correspond with the general average of the people; while, from being constructed on erroneous principles, and from insufficient *data*, or else being derived from observations made where the mortality was and is much greater than in Britain, the mortality, according to these tables, was considerably greater than that which actually prevails among the bulk of the people here. Proofs of this will be found under the article *Law of Mortality*.

The tables on the following page show the cost of an annuity of $100, and the amount of annuity which a deposit of $1000 will purchase according to the life table of the Mutual Life Insurance Company of New York. The rates charged by that company are found in the columns marked five per cent.

ANNUITY PRODUCED BY A DEPOSIT OF ONE THOUSAND DOLLARS AT THE AGE STATED.

Age.	Four and a half per Cent.	Five per Cent.	Six per Cent.
	$ Cts.	$ Cts.	$ Cts.
10	56 00	60 50	69 70
11	56 30	60 80	69 90
12	56 60	61 10	70 20
13	56 90	61 40	70 50
14	57 30	61 70	70 80
15	57 60	62 00	71 20
16	58 00	62 40	71 50
17	58 30	62 80	71 80
18	58 70	63 10	72 20
19	59 10	63 50	72 50
20	59 50	63 90	72 90
21	59 90	64 30	73 30
22	60 40	64 70	73 70
23	60 80	65 20	74 10
24	61 30	65 60	74 60
25	61 80	66 10	75 00
26	62 30	66 60	75 50
27	62 80	67 10	76 00
28	63 40	67 70	76 50
29	63 90	68 20	77 10
30	64 50	68 80	77 60
31	65 10	69 40	78 20
32	65 80	70 00	78 80
33	66 50	70 70	79 50
34	67 20	71 50	80 20
35	67 90	72 20	80 90
36	68 70	73 00	81 60
37	69 60	73 80	82 40
38	70 40	74 60	83 30
39	71 30	75 50	84 10
40	72 30	76 50	85 10
41	73 30	77 50	86 10
42	74 40	78 60	87 10
43	75 60	79 70	88 20
44	76 80	80 90	89 40
45	78 10	82 20	90 70
46	79 40	83 60	92 10
47	80 90	85 00	93 50
48	82 50	86 60	95 00
49	84 10	88 20	96 70
50	85 80	90 00	98 40
51	87 70	91 80	100 20
52	89 70	93 80	102 20
53	91 80	95 90	104 30
54	94 00	98 10	106 50
55	96 40	100 50	109 00
56	99 00	103 10	111 50
57	101 70	105 90	114 30
58	104 70	108 80	117 30
59	107 80	112 00	120 50
60	111 20	115 40	123 90
61	114 90	119 10	127 60
62	118 80	123 00	131 50
63	123 00	127 20	135 80
64	127 50	131 70	140 40
65	132 30	136 50	145 30
66	137 50	141 80	150 60
67	143 10	147 50	156 20
68	149 10	153 50	162 30
69	155 60	160 00	168 90
70	162 70	167 10	176 10
71	170 40	174 90	183 90
72	178 70	183 20	192 40
73	187 70	192 30	201 50
74	197 50	202 10	211 50
75	208 10	212 80	222 30

SUM REQUIRED TO PURCHASE, AT THE RESPECTIVE AGES MENTIONED, AN ANNUITY OF ONE HUNDRED DOLLARS.

Age.	Four and a half per Cent.	Five per Cent.	Six per Cent.
	$ Cts.	$ Cts.	$ Cts.
10	1786 46	1658 76	1435 52
11	1776 73	1645 68	1429 69
12	1768 85	1637 58	1423 78
13	1758 79	1628 96	1417 73
14	1746 55	1620 38	1411 56
15	1736 11	1611 02	1405 24
16	1725 46	1602 67	1398 77
17	1714 60	1593 55	1392 15
18	1703 51	1584 19	1385 36
19	1692 20	1574 63	1378 40
20	1680 64	1564 86	1371 26
21	1668 82	1554 85	1363 93
22	1656 76	1544 62	1356 41
23	1644 45	1534 15	1348 70
24	1631 84	1523 41	1340 77
25	1618 96	1512 41	1332 63
26	1605 76	1501 18	1324 22
27	1592 26	1489 56	1315 53
28	1578 42	1477 69	1306 69
29	1564 27	1465 50	1297 53
30	1549 78	1452 91	1288 09
31	1534 93	1440 18	1278 58
32	1519 71	1426 99	1268 35
33	1504 12	1413 46	1258 01
34	1488 13	1399 54	1247 34
35	1471 72	1385 23	1236 32
36	1454 89	1370 52	1224 93
37	1437 60	1355 36	1213 16
38	1419 85	1339 76	1200 97
39	1401 61	1323 69	1188 60
40	1382 86	1307 12	1175 29
41	1363 59	1290 05	1161 76
42	1343 78	1272 45	1147 74
43	1323 41	1254 30	1133 20
44	1302 45	1235 58	1118 12
45	1280 92	1216 26	1102 50
46	1258 77	1196 39	1086 30
47	1236 04	1175 90	1069 53
48	1212 80	1154 90	1052 26
49	1189 09	1133 42	1034 50
50	1164 92	1111 47	1016 27
51	1140 30	1089 06	997 56
52	1115 24	1066 16	978 38
53	1089 71	1042 82	958 69
54	1063 74	1018 99	938 52
55	1037 30	994 67	917 82
56	1010 41	969 87	896 62
57	983 11	944 62	874 92
58	955 42	918 96	852 73
59	927 30	892 91	830 15
60	899 07	866 52	807 16
61	870 53	839 87	783 89
62	841 85	813 03	760 21
63	813 09	786 03	736 28
64	784 33	759 01	712 39
65	755 65	731 99	688 32
66	727 07	705 01	664 19
67	698 67	678 14	640 07
68	670 47	651 41	615 98
69	642 47	624 81	591 92
70	614 68	598 31	567 86
71	586 89	571 85	543 73
72	559 59	545 70	519 84
73	532 72	520 05	496 23
74	506 34	494 75	472 91
75	480 47	469 90	449 98

"*Select Lives.*—That the lives on which annuities depend can not be so very select or so much better than the common average, as has generally been supposed, might reasonably be expected on these grounds: 1. As to annuitants. The lives are not all chosen on account of their presumed goodness; for many persons who have no occasion to provide for others who may survive them, purchase annuities on their own lives, only that they may themselves enjoy the whole benefit of the purchase-money, both principal and interest, during their lives. And the greatest recommendation of these lives seems to be, that they are generally prudent persons, of temperate and regular habits. Many other persons, especially females, spendthrifts, and faithful servants, enjoy annuities bequeathed to them by their deceased relatives, masters, or mistresses, as the most eligible provision for their future comfort and security from want; and there seems little ground to suppose them to be better lives than the common average of the same age and sex.

"2. In such cases as tontines, where most of the lives are selected for their presumed goodness, the best criterion probably is, hereditary longevity in the family of the nominee; but partiality for their own friends or kindred often has considerable influence in biasing the judgment of those who select them. That they will generally be persons of good constitutions and regular habits when selected, is all that is likely to be obtained under these circumstances; and that is also the case with the average of the population in comfortable circumstances. Whatever the constitutions and habits of annuitants may be, the annuities held by them during their own lives, by protecting them from many of the wants, cares, and anxieties which the bulk of the people are exposed to, no doubt contribute to their longevity. But where powerful motives to raise money by the sale of an annuity on a person's own life exist, it is extremely difficult to prevent him from parting with it, whatever precautions may have been taken with that view; and with it he also loses that help to longevity.

"3. Insured lives are also generally supposed to be

much better than the average of the population, as it is incumbent upon the insurance offices to be cautious in selecting them. But bad lives, by the failure of which persons interested in them would sustain loss, are most likely to be offered, and are continually offered, for insurance; and there is reason to believe that all the caution in selection which the offices in general can exercise, is necessary to keep the lives insured up to the average goodness of the bulk of the population; supposing always that people in general of the industrious classes are in prosperous, or at least in comfortable circumstances. When that is not the case, as for some years previous to 1830 there is reason to apprehend it was not in this country, there will be a corresponding increase in the general mortality, which will not sensibly affect the general mass of persons on whose lives annuities and reversions or assurances depend."—E. B.

Antarctic. The south pole is so called because it is opposite to the north or arctic pole. A continent of 1700 miles of coast from east to west, and 64 to 66 degrees south, was discovered in the Antarctic Ocean by French and American Exploring Expeditions, under D'Urville and Wilkes, respectively on the same day, January 19, 1840; a coincidence the more singular, as the discoverers were at a distance from each other of 720 miles. It was coasted by Captain Wilkes for 1700 miles. Mr. Briscow, of the British Navy, fell in with land, which he coasted for 300 miles, in lat. 67°, long. 50°, in the year 1830.

Antimony (Ger. and Du. *Spiesglas*; Fr. *Antimoine*; It. *Antimonio*; Russ. *Antimonia*; Lat. *Antimonium*), a metal which, when pure, is of grayish white color, and has a good deal of brilliancy, showing a radiated fracture when broken; it is converted by exposure to heat and air into a white oxide, which sublimes in vapors. It is found in Saxony and the Hartz; also in Cornwall, Spain, France, Mexico, Siberia, the Eastern Islands, and Martaban, in Pegu. We are at present wholly supplied with this metal from Singapore, which receives it from Borneo: it is imported in the shape of ore, and commonly as ballast. It is about as hard as gold; its specific gravity is about 6·7; it is easily reduced to a very fine powder; its tenacity is such that a rod of one-tenth of an inch in diameter is capable of supporting ten pounds weight. Antimony is used in medicine, and in the composition of metal types for printing. The ores of antimony are soft, and vary in color from light lead to dark lead gray; their specific gravity varies from 4·4 to 6·8; they possess a metallic lustre, are brittle, and occur in the crystallized massive forms.—THOMSON'S *Chemistry* and private information. Antimony was very early known, and applied by the ancients to various purposes. It was used as paint to blacken both men's and women's eyes, as appears from 2 *Kings* ix. 30, and *Jeremiah* iv. 30, and in Eastern countries it is thus used to this day. When mixed with lead, it makes types for printing; and in physic its uses are so various that, according to its preparation, alone, or in company with one or two associates, it is sufficient to answer all a physician desires in an apothecary's shop.—BOYLE.

Antipodes, in *Geography*, a name given to those inhabitants of the globe that live diametrically opposite to each other. The word is Greek, and compounded of *ἀντί, opposite*, and *ποῦς, a foot*, because their feet are opposite to each other. Pliny is regarded as the first who thought it possible that antipodes existed, and is looked upon as the inventor of the word. As this philosopher apprehended the earth to be spherical, he had only one step to make to conclude the existence of the antipodes. The ancients in general treated this opinion with the highest contempt, never being able to conceive how men and trees could subsist suspended in the air with their feet upward, for so they apprehended they must be in the other hemisphere. They never reflected that these terms *upward* and *downward* are merely relative, and signify only nearer to, or farther from, the centre of the earth, the common centre to which all heavy bodies gravitate.—E. B.

Antwerp (Flem. *Antwerpen*; Fr. *Anvers*), a famous fortified city of Belgium, and the centre of its foreign trade (capital and province of the same name) on the Scheldt, 60 miles from the sea, and distant by railroad 27½ miles from Brussels, 32 from Ghent, 150½ from Cologne, 258½ from Paris, and 74 from Ostend. Lat. of cathedral, 51° 13′ 2″ N.; long. 4° 24′ 2″ E. Population 90,000. Its port was greatly improved by Napoleon, who erected two large basins; and ships anchor in the river opposite the city in from 32 to 40 feet water at ebb-tide. Chief manufactures, silk and cotton hosiery, thread, tape, and linen cloths, calico-printing, embroidery, bleaching, and sugar refining. Ship-building is extensively carried on, and the diamond-cutters of this city are celebrated. The principal imports are coffee, grain, and seeds, raw sugar and woven fabrics; exports flax, woven goods, refined sugar, metals, glass, etc. In the 16th century Antwerp was the richest and most commercial city in Europe, and contained 200,000 inhabitants. In 1648, at the treaty of Westphalia, it was stipulated by Spain and Holland that the navigation of the Scheldt should be shut up—a stipulation which was observed till the occupation of Belgium by the French, when it was abolished. It was taken by the Spaniards in 1576 and in 1585, and by the French in 1792 and 1794. It was the capital of the department Deux Nethes, under the dominion of the French, to whom it again surrendered December 24, 1832. It is the birth-place of the painters Teniers, Jordaens, and Vandyck, the geographer Ortelius, and the engraver Edelinck. In 1803, the improvement of the harbor was begun, and extensive new docks and warehouses have since been constructed. Ships of the largest burden come up to the town, and goods destined for the interior are forwarded with the greatest facility by means of canals and railways. Almost all the foreign trade of Belgium is at present centred in Antwerp, which has again become a place of much commercial importance. There is regular steam communication between Antwerp and London, and Hull and Rotterdam.

Goods may be warehoused in Antwerp *en entrepôt*, at the rates of charge specified in a fixed tariff. The exports chiefly consist of flax, cotton and linen manufactured goods, refined sugar, glass, zinc, oak-bark, grain and seeds, lace, etc. The imports consist principally of coffee, sugar, and other colonial products, cotton stuffs and other manufactured goods, corn, raw cotton, leather, timber, tobacco, wool, rice, dye-stuffs, salt, wines, fruits, etc. A large proportion of the imports not being intended for home consumption, but for transit to other countries, their amount is always much greater than the amount of the exports. Of the total value of the articles imported into Antwerp in 1839, amounting to 97,960,200 francs (£3,918,408), those supplied by England were worth very near 30,000,000 francs; ditto by Russia, 14,366,900 francs; ditto by the United States, 8,217,800 francs; ditto by France, 7,630,200 francs, etc. The principal articles were coffee, worth 14,745,500 francs; grain and seeds, 13,936,800 francs; sugar, 11,430,800 francs; woven fabrics, 11,339,100 francs; raw cotton, 5,225,200 francs; metals, 4,872,300 francs, etc. The total value of the articles exported during the same year was 56,630,000 francs (£1,425,440), whereof those sent to England were worth 14,349,100 francs; ditto to Holland, 5,777,500 francs; the Hanse Towns, 4,320,200 francs.

Money, Weights, and Measures.—The French system of moneys, weights, and measures has been adopted in Belgium. Formerly accounts were kept in florins, worth 1*s.* 8½*d.* sterling. The quintal formerly in use, and still sometimes referred to, = 103½ pounds avoirdupois. In 1837 the Commercial Bank, a joint-stock association, was founded in Antwerp. It has a

capital of 25,000,000 francs (£1,000,000), divided into 25,000 shares of 1000 francs each, and transacts all sorts of banking business. Here also are two considerable insurance companies. The railway from Antwerp to Brussels, 28¼ miles in length, has been signally successful, and has been of great advantage to both cities, but especially to Antwerp.

Custom-house Regulations.—Captains of ships arriving at Antwerp, or any of the Belgian ports, must make, within twenty-four hours, a declaration in writing of the goods of which their cargo consists, specifying the marks and numbers of the bales, parcels, etc., their value, according to the current price at the time when the declaration is made, the name of the ship or vessel, as well as that of the captain, and of the country to which she belongs, etc.

Nine-tenths of the commerce of Belgium carried on by sea centres in Antwerp. The great articles of export are corn, especially wheat; flax; cattle, sheep, and pigs; cast and wrought iron; muskets, fowling-pieces, and small arms; linen and woolen fabrics; clover and other seeds; coal, butter, books, etc. The total value of the exports of articles of the growth and manufacture of Belgium amounted, in 1850, to 263,647,000 francs. Of these the exports to France (principally by land) amounted to 74,480,000 francs; those to Great Britain to 41,943,000; the other great importers of Belgium produce being the German Customs Union, the Netherlands, and the United States. The great articles of import are raw cotton, sugar, coffee, and other colonial products; indigo and all sorts of dyewoods, spices, wine, rice, ashes, fish, oils, etc. We subjoin

An Account of the Number and Tonnage of Vessels entered at Antwerp, and at each of the Belgian Ports, in 1845, 1846, 1847, 1848, and 1849.

Ports.	1845.		1846.		1847.		1848.		1849.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
Antwerp	1,919	280,899	2,208	327,680	1,922	326,675	1,134	204,288	1,654	274,428
Ostend	624	62,716	687	55,486	608	58,404	407	48,271	444	48,918
Ghent (Zelzaete)	224	30,456	166	21,715	198	27,009	110	16,714	265	28,814
Nieuport	111	3,581	80	2,897	65	2,241	89	3,591	91	4,207
Total	2,878	377,646	3,141	407,778	2,794	411,419	1,740	272,664	2,424	356,367

Anville, Jean Baptiste Bourguignon d', a French geographer of the highest eminence, and perhaps unsurpassed in any age. This celebrated man was born at Paris on the 11th of July, 1697. His passion for geographical research displayed itself from his earliest years. At the age of twelve, while reading the Latin authors at college, he amused himself with drawing maps of the countries which they described. While he was thus busily employing himself one day in the class, his master observed and was about to punish him; but upon casting his eye upon the performance, he immediately judged him to be rather deserving of encouragement. D'Anville from this time devoted himself entirely to geography, particularly that of the ancient world; and at the age of twenty-two he began to delineate maps which attracted the attention of the most eminent geographers.—E. B.

Apeak, in *Seamen's language*, signifies perpendicular; thus the anchor is said to be apeak when the stem of the ship is brought directly over it by drawing in the cable.

Apothecary. In the United States, a dispenser of medicines. In England, frequently prescriptions as well as medicines are furnished.

Apron, in *Naval Architecture*, is a piece of curved timber fixed behind the lower part of the stem, immediately above the foremost end of the keel. Apron is also a name given to a platform or flooring of plank raised at the entrance of a dock, against which the dock gates are shut. *Apron*, in *Gunnery*, a piece of lead which caps or covers the vent or touch-hole of a gun.

Appellation, the name by which any thing is known or distinguished when spoken of. Nothing can be more foreign to the original meaning of many words and proper names than their present or vulgar appellations, frequently owing to the history of those things being forgotten, or an ignorance of the language in which they were expressed. Who, for example, would dream that the legal proclamation called "O yes," was a proclamation commanding the talkers to become hearers, being the French word *Oyez*, listen, retained in our courts ever since the law pleadings were held in French? Or would any person suppose that the head-land on the French coast near Calais, called by seamen Blackness, has been so entitled from its French name of *Blanc Nez*, or the *White Head-land*?

King Henry the Eighth having taken the town of Boulogne in France, the gates of which he brought to Hardes, in Kent, where they are still remaining, the flatterers of that reign highly magnified this action, which, Porto Bello like, became a popular subject for signs; and the port or harbor of Boulogne, called *Boulogne Mouth*, was accordingly set up at a noted inn in Holborn. The name of the inn long outliving the sign and fame of the conquest, an ignorant painter, employed by a no less ignorant landlord to paint a new one, represented it by a bull and a large gaping human mouth; answering to the vulgar pronunciation of *bull and mouth*. The same piece of history gave being to the *bull and gate*, originally meant for Boulogne Gate, and represented by an embattled gate or entrance into a fortified town.

The *barber's pole* has been the subject of many conjectures; some conceiving it to have originated from the word *poll* or head, with several other conceits as far-fetched and as unmeaning; but the true intention of that party-colored staff was to show that the master of the shop practiced surgery, and could breathe a vein as well as mow a beard. The white band which encompasses the staff was meant to represent the fillet thus elegantly twined about it.

Nor were the *chequers*, at this time a common sign of a public house, less expressive—being the representation of a kind of draught-board called *tables*, and showing that there that game might be played. From their color, which was red, and the similarity to a lattice, it was corruptly called the *red lettuce*, which word is frequently used by ancient writers to signify an ale-house.

The *Spectator* has explained the sign of the *Bell-savage Inn* plausibly enough, in supposing it to have been originally the figure of a beautiful female found in the woods, called in French *la belle sauvage*. But another reason has since been assigned for that appellation, namely, that the inn was once the property of Lady Arabella Savage, and familiarly called *Bell Savage's Inn*, probably represented, as at present, by a bell and a savage or wild man, which was a rebus for her name, rebuses being much in fashion in the sixteenth century.

The *three gilt balls* so commonly hung out as signs at pawnbrokers' shops, by the vulgar humorously enough said to indicate that it is two to one that the things pledged are never redeemed, were in reality the arms of a set of merchants from Lombardy, who were the first that publicly lent money on pledges. They dwelt together in a street, from them named Lombard Street, in London, and also gave their name to another at Paris. The appellation of Lombard was formerly all over Europe considered as synonymous with that of usurer.

At the institution of yeomen of the guards, they used to wait at table on all great solemnities, and were ranged near the buffets. This procured them the name

of *buffetiers*, not very unlike in sound to the jocular appellation of *beef-eaters*, now given them; though probably it was rather the voluntary misnomer of some wit than an accidental corruption arising from ignorance of the French language.

The opprobrious title of *bum bayliffe*, so constantly bestowed on the sheriff's officers, is, according to Judge Blackstone, only the corruption of *bound bayliffe*, every sheriff's officer being obliged to enter into bonds, and to give security for his good behavior, previous to his appointment.

A *cordwainer* seems to have no relation to the occupation it is meant to express, which is that of a shoemaker. But *cordonier*, originally spelled *cordaunier*, is the French word for that trade; the best leather used for shoes coming originally from Cordova, in Spain.—E. B.

Apples, the fruit of the *Pyrus Malus*, or apple-tree. It is very extensively cultivated in most temperate climates. An immense variety and quantity of excellent apples are raised in England, partly for the table, and partly for manufacturing into cider. Those employed for the latter purpose are comparatively harsh and austere. The principal cider counties are Hereford, Monmouth, Gloucester, Worcester, Somerset, and Devon. Mr. Marshall estimated the produce of the first four at 30,000 hogsheads a year, of which Worcester is supposed to supply 10,000; but it is now probably much greater. Half a hogshead of cider may be expected, in ordinarily favorable seasons, from each tree in an orchard in full bearing. The number of trees on an acre varies from 10 to 40, so that the quantity of cider must vary in the same proportion, that is, from 5 to 20 hogsheads. The produce is, however, very fluctuating, and a good crop seldom occurs above once in three years.—LOUDON'S *Encyclopedia of Agriculture*, etc. Besides the immense consumption of native apples, the English import, for the table, large supplies of French and other foreign apples. Owing, however, to the duty, previously to 1842, having been an *ad valorem* one of 5 per cent., we are unable to specify the quantities imported. They must, however, have been very considerable, as their declared value amounted, in 1841, to £41,197 4s. 10*d*. In 1842 the duty was fixed at 6*d*. per bushel on raw, and 2*s*. per bushel on dried apples. At an average of 1850 and 1851, the entries for consumption amounted to 442,950 bushels. The duties in England were reduced in the course of the year 1853 to 3*d*. per bushel on raw, and 1*s*. per bushel on dried apples. The apples produced in the vicinity of New York are universally admitted to be the finest of any; but unless selected and packed with care, they are very apt to spoil before reaching England. The exports of apples from the United States during the year ending the 30th of June, 1852, amounted to 18,411 barrels, valued at 43,635 dollars. Of these 1808 barrels were shipped for the United Kingdom. In the year 1854-5, the quantity exported was 83,959 barrels, at a value of $107,600.

Appraiser (from *ad*, *to*, and *pretium*, *value*), one who rates or sets a value upon goods, etc., used principally in the custom-house to designate men who appraise goods entered for duty.

Apprentice, a person of either sex bound by indenture to serve some particular individual or company of individuals for a specified time, in order to be instructed in some art, science, mystery, or trade.

Apprenticeship, the servitude of an apprentice, or the duration of his indenture.

Seven years seem anciently to have been, all over Europe, the usual term established for the duration of apprenticeships in the greater part of incorporated trades. All such incorporations were anciently called *universities*, which indeed is the proper Latin name for any incorporation whatever. The university of smiths, the university of tailors, etc., are expressions which we commonly meet with in the old charters of ancient towns. When those particular incorporations which are now peculiarly called *universities* were first established, the term of years which it was necessary to study in order to obtain the degree of master of arts, appears evidently to have been copied from the term of apprenticeship in common trades, of which the incorporations were much more ancient. As to have wrought seven years under a master properly qualified was necessary in order to entitle any person to become a master, and to have himself apprentices in a common trade; so to have studied seven years under a master properly qualified was necessary to entitle him to become a master, teacher, or doctor (words anciently synonymous), in the liberal arts, and to have scholars or apprentices (words likewise originally synonymous) to study under him.

Apprenticeships were altogether unknown to the ancients. The reciprocal duties of master and apprentice make a considerable article in every modern code. The Roman law is perfectly silent with regard to them. There is no Greek or Latin word which expresses the idea we now annex to the word apprentice—a servant bound to work at a particular trade for the benefit of a master during a term of years, upon condition that the master shall teach him that trade.—E. B.

Aqua Fortis. *See* ACID (*Nitric*).

Aqua Marina. *See* BERYL.

Aqua Vitæ (Ger. *Aquavit*; Fr. *Eau de vie*; It. *Acqua vite*; Sp. *Agua de vida*; Russ. *Wodka*; Lat. *Aqua vitæ*), a name familiarly applied to all native distilled spirits; equivalent to the *eau de vie*, or brandy, of the French, the *whisky* of the Scotch and Irish, the *geneva* of the Dutch, etc. In this way it is used in the excise laws relating to the distilleries.

Aqueduct, a conduit or channel for the conveyance of water. It is derived from *aqua*, water, and *ductus*, a conduit. It is applied more particularly to those structures of masonry which have been erected for the conveyance of water across valleys, to which, however, we would rather give the name of aqueduct bridges, extending the term aqueduct to the whole conduit or channel by which the water is conveyed from one place to another. The conveyance of water for the supply of large cities has in all ages formed a very important object of public economy; and aqueducts of various kinds have been in use for this purpose from the earliest times, the remains of which have been examined by travelers in different parts of the East. Pococke describes a work of this kind erected by Solomon, for conveying water from the pools and fountains near Bethlehem to Jerusalem. "The aqueduct," he says, "is built on a foundation of stone; the water runs in round earthen pipes about ten inches diameter, which are cased with two stones, hewn out so as to fit them, and they are covered over with rough stones well cemented together; and the whole is so sunk into the ground on the side of the hills, that in many places nothing is to be seen of it." But it was in the luxurious capital of Rome that the system of aqueducts was brought to the greatest perfection, and carried to an extent which has never been equaled even in modern times, and has justly excited admiration both from the number and magnificence of the works themselves, and the prodigious quantities of water which by these means were continually poured into the city. These aqueducts extended, some of them 30, 40, and even 60 miles from the city, in one continued covered channel of stone, carried by arcades over the widest and deepest valleys, and by tunnels running in many parts for miles through mountains and through the solid rock. "If we consider attentively," says Pliny, "the quantities of water brought into the city for the use of the public, for baths, for fishponds, for private houses, for artificial lakes, for gardens in the neighborhood of the city, and for villas; if we look also at the works which have been constructed for forming a regular channel for the waters—arch-

es raised up, mountains pierced with tunnels, and valleys filled up to a level; it must be acknowledged that there is nothing in the whole world more wonderful."

Within the last century, the invention and improvement of the manufacture of cast iron has completely changed the mode of conducting water into cities, by the introduction of cast-iron pipes instead of the stone conduits of former times. These pipes can now be formed of almost any dimensions, and united together into a continued series, so closely as to prevent the escape of the water, even under a violent pressure arising from the altitude of the fountain-head. They enable us, therefore, to take advantage of and give effect to that grand principle in hydrostatics, that the fluid element tends continually to a level, even though it be confined in the smallest or most complicated system of pipes; so that however low it be carried in any valley, or to whatever distance, still it will rise on the opposite side to the orignal altitude of the fountain-head—a principle which is most important, indeed, in such works, seeing that by it we are not restricted, as the Romans were, almost to a perfect level in the line of the conduit. We have seen that, for the purpose of attaining this level, or very gentle declivity, all along the conduit, they were under the necessity of raising it by arcades continued in one unbroken series, frequently 30 or 40 miles in extent; and, in addition to this, often prolonging the length of the track by a circuitous route, turning and winding for miles out of its course, for the very purpose of increasing its length.

But the use of pipes enables us to dispense with these long arcades, all raised nearly to the same level with the fountain-head; because the conduit may be varied in its level to any extent, and still will rise at last to its original altitude. The pipes, therefore, are merely laid all along the surface of the ground, with a cover of two or three feet of soil to place them beyond the reach of frost. To prevent, however, the frequent or abrupt alternations of rise and fall, any sudden inequalities in the ground are equalized by cuttings and embankments, but not to any thing like the extent that would be required to raise the whole to a level. This, therefore, forms a capital improvement in the method of conducting water, and the greatest, indeed, which has ever been made in this important branch of practical mechanics. That it was not introduced by the Romans, is not to be ascribed, as many have done, to their ignorance of the hydrostatic principle that the fluid would rise to a level in the opposite branches of the same train of pipes. Professor Leslie has shown that they were well acquainted with this principle, and has moreover obtained from Italy a portion of a leaden pipe, supposed to have been used in the baths of Caracalla, which sets this matter at rest. But from the low state of the arts at that period, they were unable to give effect to the principle. They had not the means of fabricating pipes of such a magnitude as would have been required for the enormous quantity of water consumed in Rome, and at the same time of strength sufficient to withstand the pressure from the fountain-head. Lead was the only material that could be used by them for the purpose; and besides the enormous thickness that so weak a material would have required, and the impracticability of their forming them, and uniting them together endwise, they were too well acquainted with the tendency of lead to render the water unwholesome by its poisonous impregnation. The use of cast iron was quite unknown. There remained, therefore, no resource but in the aqueducts, which, though attended no doubt with vast expense, and requiring great enterprise, as well as both skill and patience, were yet attainable by these means, and formed when completed a simple and very perfect mode of effecting the object. Hence arose all those works above described which have since excited such astonishment. Now, however, when the manufacture of cast iron has been brought to such perfection, and methods contrived for uniting perfectly together all the pipes into one connected train, this improved system has been universally adopted.

Croton Aqueduct.—The Croton Aqueduct, by which the city of New York is supplied with water, may be regarded as the most magnificent work of the kind executed in modern times. It was commenced in 1837, and completed in 1842, at an expense of 8,575,000 dollars, the distribution pipes costing 1,800,000 dollars additional. Its length from the Croton Lake to the receiving reservoir is 38½ miles. The Croton Lake, which is formed by the Croton Creek, a small stream of wholesome water falling into the Hudson, covers 400 acres, and contains a body of water of about 500,000,000 gallons. To the valley of the Harlem River, a distance of 33 miles, the aqueduct is built of stone, brick, and cement, arched over and under, 6 feet 3 inches wide at the bottom, 7 feet 8 inches at the top, and 8 feet 5 inches high; and capable of discharging 60,000,000 gallons per day. It is carried over the Harlem valley in iron pipes laid upon a magnificent bridge 1460 feet long, constructed of arches 114 feet above high-water mark at Yorkville. These pipes pass into the receiving reservoir, which is 1826 feet long and 836 feet wide, covering an area of 37 acres, and capable of containing 150,000,000 gallons. Hence, to the distributing reservoir, a distance of 2½ miles, the water is conveyed by a double line of iron pipes 3 feet in diameter. This second reservoir is 420 feet square and 44 feet above the streets, with a capacity of 20,000,000 gallons—whence the water is conveyed through the city by about 170 miles of pipe, principally from 6 to 12 inches in diameter.

In those parts of British India where the fall of rain is scanty and uncertain, recourse is had to artificial irrigation, and the waters of many of the rivers of the country have been rendered available for this purpose by means of public works constructed by the government. Of these the most important is the Ganges Canal, which traverses the northwestern provinces of Bengal, and distributes over their vast area nearly the whole volume of the waters of the Ganges. The canal begins at the point where the river issues from the mountains and enters the plains of Bengal. About 20 miles from its source, the line of the canal crosses the valley of the Solani River, and the works for effecting the transit are designed on a scale worthy of the undertaking. The valley is between two and three miles in width. An earthen embankment is carried across, raised on an average between 16 and 17 feet above the surrounding country, and having a width of 350 feet at its base, and 200 feet in the upper part. This embankment forms the bed of the canal, which is protected by banks 12 feet in depth and 30 feet wide at the top. To preserve these banks from the effects of the action of the water, lines of masonry formed into steps extend on each side throughout their entire length. The Solani River is crossed by an aqueduct 920 feet long, having side walls 8 feet thick and 12 deep, the depth of the water being 10 feet. The water of the canal passes through two separate channels. That of the River Solani flows under fifteen arches, having a span of 50 feet each, constructed in the most substantial manner, and springing from piers resting on blocks of masonry sunk into the bed of the river.

The great water-works that supply the city of Marseilles with the water of the Durance, by a canal about 60 miles in length, are among the boldest undertakings of the kind in modern times. This canal, begun in 1830, and not yet completed (1852), has already cost above £2,000,000 sterling. It is conveyed through three chains of limestone mountains by forty-five tunnels, forming an aggregate length of 8½ miles, and across numerous valleys by aqueducts; the largest of which, the Aqueduct of Roquefavor, over the ravine of the River Arc, about 5 miles from Aix, surpasses in size and altitude the ancient Pont du Gard.

The immense volume of water, which passes at the rate of 138,000 gallons per minute, is carried across as in the old Roman aqueducts by a channel of masonwork. The height of this aqueduct is 262 feet, and its length 1287. The number of cubic yards of masonry contained in it is 57,000; the total cost has been £151,394.

Edinburgh Water-works.—The works undertaken by the Edinburgh Water Company in 1819 were probably the most complete and perfect of the time. They were designed by Mr. Jardine, the then engineer of the company, and carried out under his superintendence in a style quite worthy of the city, and offering, both in the general design and in all the details, a model of propriety and skill in this species of hydraulic architecture. The Crawley springs were conducted by an aqueduct into a covered cistern at a point about 7 miles distant from Edinburgh, and a supply from the stream called the Glencorse Burn, conveyed by an open-work tunnel from about a mile and a half westward. This tunnel is in some places upward of 30 feet deep, and the valley through which it passes, consisting entirely of gravel, acts as a filter through which the water descends and percolates, all solid matter being intercepted in its passage to the tunnel from whence it is delivered into the cistern, and conveyed to Edinburgh by a chain of pipes varying from 20 to 15 inches of interior diameter, without being exposed to the light of day. From the numerous undulations of the surface, the fall of the pipe is not uniform. Abrupt inequalities, however, were removed by cutting and embanking. Toward the northern termination of the line the pipe is carried through a tunnel of 2160 feet in length, and about 70 or 80 feet under the surface of Heriot's Green. In crossing the Grass Market it forks off by one branch to a reservoir in the Castle Hill, and by another about 120 feet under the reservoir, through a tunnel 740 feet in length, cut through the rock of which the ridge leading to the Castle is composed. Branches were laid through all the principal streets.

The pipes are in lengths of 9½ feet each, and were tested before being laid by a pressure equal to a vertical column of 800 feet of water. The joints are what are termed spigot and faucet. Cocks for the discharge of air accumulating in the pipes are placed at the summits of all the considerable elevations; and in the hollows are placed sluice cocks for the purpose of running off sand or other solid matter which may collect in the pipe. It is capable of delivering 253·56 cubic feet of water per minute into the reservoir at the Castle Hill.

The formation of the Compensation Reservoir was undoubtedly the greatest work of hydraulic engineering of its day. It was designed and completed by Mr. Jardine, and, with the then limited experience of contractors and workmen in the construction of similar works, its successful completion does great honor to the genius and perseverance of the engineer. It has been twice enlarged, and now forms an artificial lake extending over an area of 46 imperial acres.—E. B.

Arangoes, a species of beads made of rough carnelian. They are of various forms—as, barrel, bell, round, etc.—and all drilled. The barrel-shaped kind, cut from the best stones, are from two to three inches long, and should be chosen as clear as possible, whether red or white, having a good polish, and free from flaws. The bell-shaped are from one to two inches long, being in all respects inferior. Considerable quantities were formerly imported from Bombay, for re-exportation to Africa; but since the abolition of the slave-trade, the imports and exports of Arangoes are comparatively trifling.—Milburn's *Orient. Com.*

Arbitration, a term derived from the nomenclature of the Roman law, and applied to an arrangement for taking and abiding by the judgment of a selected person in some disputed matter, instead of carrying it to the established courts of justice. Arrangements for avoiding the delay and expense of litigation, and referring a dispute to friends or neutral persons, are a natural practice, of which traces may be found in any state of society; but it is to the Justinian jurisprudence that we owe it as a system which has found its way into the practice of European nations in general, and has even evaded the dislike of the English common lawyers to the civil law. The eighth section of the fourth book of the Pandects is devoted to this subject, and may be consulted through the commentary of Heineccius, or a more minute critical inquiry by Gerard Noodt, in his commentary on this section (Opera, ii. 185). Almost all the advantages, as well as the defects of the system in modern practice, seem to have been anticipated by the Roman jurists. Thus it is shown that voluntarily selected judges can only properly decide questions which the parties themselves could settle by giving and taking, and that they ought not to be authorized to deal with criminal inquiries or public questions; while, by excluding matters of personal status, such as marriage or legitimacy, the Roman jurists anticipated the principle, that even private questions which may affect the public morals or policy can not be thus extrajudicially disposed of. They dwell on the principal advantage of the system in excluding appeal from the arbiter's decision on any such ground as erroneous law, or false views of the influence of well-investigated facts. But, on the other hand, they discuss, with their usual scientific subtlety, the many defects, such as excess of authority, neglect of form, and partiality in receiving pleadings or evidence, and the like, by which arbitrations become vitiated; and thus these jurists at once suggest what is ever the defect of a system of arbitration, that the more it performs its function of doing justice, the more it becomes what the established tribunals of the country ought to be, and fosters two systems of judicature where one should be sufficient. Some of the civilians make a distinction between the *arbitrator*, the name technically applicable to a person voluntarily chosen by parties to decide disputes, and the *arbiter*, an officer to whom the prætor remitted questions of fact as to a jury. In this sense arbiters appear to have been employed as a substitute for jury trial in some of the old provincial laws of France; and hence, perhaps, it comes that, by a very remarkable provision in the French code of commerce, all questions between partners touching the partnership must be referred to arbitration. In the code of civil procedure, the title *des arbitrages* is treated so fully and minutely, as very forcibly to convey the impression of a separate system of voluntary jurisdiction being created for performing what ought to be accomplished by the ordinary tribunals in a well-regulated judicial system.

Arbitration, in the *Law of England* (according to Blackstone), is "where the parties, injuring and injured, submit all matters in dispute, concerning any personal chattels or personal wrong, to the judgment of two or more *arbitrators*, who are to decide the controversy; and if they do not agree, it is usual to add, that another person be called in as *umpire* (*imperator*), to whose sole judgment it is then referred; or frequently there is only one arbitrator originally appointed." The decision must be in writing (unless otherwise expressly provided in the submission), and is called an *award*; and thereby the question is as fully determined, and the right transferred or settled, as it could have been by the agreement of the parties or the judgment of a court of law or equity.

There were, however, many inconveniences attending this mode of proceeding; and in the year 1698, the Legislature accordingly interfered, and passed the act 9th and 10th Will. III., cap. 15, which enacted that, "for promoting trade, and rendering the awards of arbitrators the more effectual in all cases, for the final determination of controversies referred to them by

merchants and traders or others, concerning matters of account or trade, or other matters;" all merchants and others desiring to end any controversy, suit, or quarrel (for which there is no other remedy but by personal action or suit in equity) by arbitration, may agree that their submission of their suit to the award or umpirage of any person shall be made a rule of any of the courts of record, and may insert such agreement in their submission; which agreement being proved by the affidavit of one of the witnesses thereto, the court shall make a rule that such arbitration or umpirage pursuant to such submission shall be conclusive; and after such rule made, the parties disobeying the award shall be liable to be punished, as for a contempt of court; unless such award shall be set aside, as procured by corruption or undue means in the arbitrators or umpire, to be proved on oath to the court, before the last day of the next term after the award is made.

An application for an attachment for not performing an award may be resisted at any time for defects appearing on the face of the award itself; for such an award, after that time, might be pleaded in bar to any action brought upon it, although it can not be *set aside* for such defects after the end of the next term. Submissions of disputes to arbitration may be by consent of the parties, or with the interposition of a court of justice; by rule of court, or order of a judge, when a cause is pending, either by bond, agreement in writing, or by parole. A verbal agreement, however, to abide by an award can not be made a rule of court. Nor can matters purely criminal be submitted to the decision of an arbitrator. And by the 12th and 13th Vict. c. 45, § 12–15, the provisions of the former statutes as to arbitrations are extended to "controversies and disputes, for which the remedy is by appeal to a Court of General or Quarter Sessions of the Peace." Lastly, although the right of real property can not pass by a mere award, yet if a party be awarded to convey land, and refuse, he will be liable to an action, or to an attachment for not performing the award. The agreement of reference must be expressed with great care and accuracy; provisions should be inserted giving power to either party to make the submission a rule of court, to enable the court to refer the matter back to the same or to another arbitrator; and in case of the death of either party before award, for its making and delivery to his representatives; and also as to the costs, which are usually directed to be in the discretion of the arbitrator as to those of the reference, and as to those of the cause to abide the event of the award; and a certain day should be appointed on or before which the arbitrator is to make his award, with a power to each arbitrator to enlarge the time.

When arbitrators have the power of electing an umpire, they may choose him, and call in his assistance as soon as they begin to take the subject into consideration; and this is the more convenient practice, as it secures a decision upon a single investigation of the controversy. As to the award: it must be in pursuance of the submission, and embrace all the matters submitted, and not extend beyond it in the subject-matter, in persons, in time, or in particular circumstances; it must be certain; it must make a final end and determination of all matters contained in the submission; it must be mutual, that is, it must not be entirely of things to be performed by one party, without such things being in satisfaction of the matters in difference; and, finally, it must not be unreasonable, illegal, or impossible to be effectuated. Formerly, a submission to arbitration, being a mere authority, might be revoked at any time before execution by an instrument of as high a nature as that by which the submission was created. But now, by the English Law Amendment Act (3d and 4th Will. IV., cap. 42), the submission to arbitration by *Rule of Court*, or *Judge's order*, or *order of Nisi Prius*, or if there be an *agreement to make the submission a Rule of Court*, can not be revoked by any party thereto, without leave of the court or a judge. The death, however, of either party before award is a revocation of the authority, unless otherwise provided in the submission; and so also is the marriage of a female before award; the marriage operating as a civil death to all her rights as a *feme sole*. Under this statute the attendance of witnesses, or production of documents before the arbitrator, may be compelled by a rule of court, or order of a judge, on payment of expenses and loss of time; and the arbitrators are empowered to administer oaths to the witnesses, where it is so agreed or ordered by the rule or order of reference. Any witnesses failing to attend are deemed to be guilty of contempt of court, or giving false evidence guilty of perjury. The court or judge may also, in the cases within the statute, enlarge the time for an arbitrator to make his award.—E. B.

Archangel, the principal commercial city of the north of Russia, in lat. 64° 32′ 8″ N., long. 40° 33′ E., on the right bank of the Dwina, about 35 English miles above where it falls into the White Sea. Pop. 24,500. The harbor is at the island of Sollenbole, about a mile from the town. The bar at the mouth of the Dwina has from 13 to 14½ feet water; so that ships drawing more than this depth must be partially loaded outside the bar from lighters. The Dwina being a navigable river, traversing a great extent of country, and connected by canals with the Wolga on the one hand, and the Neva on the other, Archangel is a considerable *entrepôt*. It was discovered in 1554, by the famous Richard Chancellor, the companion of Sir Hugh Willoughby in his voyage of discovery; and from that period down to the foundation of Petersburg was the only port in the Russian empire accessible to foreigners. Though it has lost its ancient importance, it still enjoys a pretty extensive commerce. The principal articles of export are grain, tallow, flax, hemp, timber, linseed, iron, potash, mats, tar, etc. Deals from Archangel, and Onega in the vicinity of Archangel, are considered superior to those from the Baltic. Hemp not so good as at Riga, but proportionally cheaper. Tallow is also inferior. Iron same as at Petersburg, sometimes cheaper and sometimes dearer. The quality of the wheat exported from Archangel is about equal to that from Petersburg. The imports, which are not very extensive, consist principally of sugar, coffee, spices, salt, woolens, hardware, etc. The trade of Archangel has latterly been declining. It is much influenced by the demand from the more southerly parts of Europe, and especially from England, for corn. When a brisk demand is anticipated, oats are brought in large quantities from the interior, sometimes even from a distance of 1500 miles, in covered barks capable of holding several hundred quarters. But as there are few extensive establishments here, the supplies are scanty, except when a large demand is expected for some time previously to the season for bringing them down.—Oddy's *European Commerce*, and private information.

Moneys, *Weights*, and *Measures*, same as at Petersburg: which see.

Archipelago, called by the Turks *Ak degniz*, the White Sea, to distinguish it from *Cara degniz*, the Black Sea, is generally applied to that part of the Mediterranean extending from European Turkey and Greece on the west, to Asia Minor on the east, and stretching southward to the island of Candia.

The name Archipelago was unknown to the ancients, and is generally supposed to be a corruption of Αἰγαῖον πέλαγος, by which name, the derivation of which is uncertain, it was known to the Greeks. The ancients divided it into, (1.) *Mare Thracium*, the northern part, extending southward to the northern coast of Eubœa; (2.) *Mar Myrtoum*, the southwestern part, washing the shores of Attica and Argolis; (3.) *Mare Icarium*, the southeastern part, extending along the coasts of Caria and Ionia.

The navigation of this sea is rendered difficult by the many islands and rocks with which it abounds, and by the frequent occurrence of sudden squalls, especially about the equinoxes; but it has a great number of safe and commodious gulfs and bays. Besides the Cyclades and Sporades, which are the two principal groups of smaller islands, it contains Eubœa, Samos, Chios, Lesbos, Lemnos, Imbros, Samothrace, etc. All these islands are mountainous, and many of them are of volcanic formation; while others are almost entirely composed of pure white marble, for which Paros, one of the Cyclades, in particular, is so celebrated. The larger islands have some very fertile and well-watered valleys and plains. The principal productions are wheat, wine, oil, mastic, figs, raisins, honey, wax, cotton, and silk. The inhabitants are much engaged in fishing, and the coral and sponge fishery are actively prosecuted among the Sporades. Manufactures are at a very low ebb, almost the only branch carried on being that of cotton-weaving. The climate is mild and salubrious; the heats of summer being tempered by the sea-breezes, while the winters are less severe than on the neighboring main-land. The men are hardy, well-built, and handsome; and the women are noted for their beauty. The islands of the Archipelago are considered to belong partly to Europe and partly to Asia. At present the Cyclades form a portion of the Greek kingdom, while most of the other islands are subject to Turkey.

The name Archipelago, which was primarily given to the Ægean Sea, is now applied to various other seas which contain numerous islands, as the Eastern Archipelago, Caribbean Archipelago, etc.

Archive, or **Archives**, a chamber or apartment wherein the records, charters, and other papers and evidences, of a state, house, or community are preserved, to be consulted occasionally. Thus we say the *archives* of a college, of a monastery, etc.

Arctic Circle is a lesser circle of the sphere, parallel to the equator, and 23° 30′ distant from the north pole; from whence its name. This, and its opposite, the *antarctic*, are called the two *polar circles*, and may be conceived to be described by the motion of the poles of the ecliptic round the poles of the equator, or of the world.

Arctic Ocean, that portion of the North Sea which extends from the arctic circle (lat. 66° 30′ N.) to the north pole. It receives the waters of the northern slopes of the great continents, and is the recipient of the drainage of an area of 3,751,270 square miles. It enters deeply, in the form of gulfs, bays, etc., into the northern parts of the continents of both hemispheres. The principal of these indentations are the White Sea, in Europe; Sea of Kara, Gulfs of Obe and Yenisee, in Siberia; and Baffin's Bay, in North America. It is united to the Pacific by Behring's Strait, and to the Atlantic by Davis' Strait, and a wide sea extending from Greenland on the west to Norway and Lapland on the east. This portion of the Arctic Ocean is occupied centrally by Greenland, and on the east is the extensive group of Spitzbergen, the small island of San Mayen, and Iceland. West of Greenland, and divided from it by Davis' Strait and Baffin's Bay, are a considerable number of islands of great size, which have been but imperfectly explored. The region north of lat. 70° is the most dreary on the face of the globe.

The shores are covered with eternal snows, and the surface of the sea, when its icy covering is rent asunder, presents a series of huge floating masses in perpetual motion, and whose tremendous collisions are attended with the most appalling sounds. Dense fogs, violent storms, and endless nights, add to the horrors of the scene. In the region of Spitzbergen the sun is not seen for several months in the year, and the thermometer rarely rises above 45° Fahrenheit; while there is but one month in the year (July) in which snow does not fall. The only, or at least the greatest degree of light the inhabitants enjoy during their long winters, or from the latter end of September to the beginning of May, is that which proceeds from the borrowed lustre of the moon, the stars, the aurora, or the snow blink. This ocean freezes even in summer, and during the eight winter months a continuous body of ice extends over its entire surface, filling the area of the circle of between 3000 and 4000 miles in diameter. The icebergs, of which vast numbers are continually in motion wherever an opening appears, vary from a few yards to miles in circumference, and rise to hundreds of feet in height. The ice in these regions is very transparent, compact, and remarkable for the variety and beauty of its tints. The water is extremely pure, shells being distinctly visible at a depth of 80 fathoms. The pressure of the water at a depth of 1¼ miles has been found to be 2809 lbs. on a square inch of surface.

The history of adventure in the Arctic Seas presents a striking disproportion between effort and achievement. All that human daring can do has been done to open up the mysteries of these dreary regions.* The first attempt to explore the Polar Seas was made in 1553, by Willoughby and Chancellor, who were sent out with instructions to ascertain if there was a northeast passage, or if they could reach China by passing to the north of Europe and Asia. Willoughby reached Nova Zembla, but he and all his crew were frozen to death. Chancellor entered the White Sea, and thus opened a communication with Russia. Captain Cook reached Icy Cape from the Pacific in 1778. In 1607 Captain Hudson was sent out to attempt to discover the northwest passage, and reached the lat. of 81°, but was under the necessity of putting back on account of the ice. In 1773 this experiment was again tried by an expedition under the command of Captain Phipps, who advanced about as far as Captain Hudson had previously done; and a similar attempt was made in 1818, which proved equally unfortunate, under Captain Buchan. In 1818 Captain Ross attempted a northwest passage, and passed through Lancaster Sound. In 1819 Captain Parry reached long. 110° W., and in 1821–23 examined the coast to the north of Hudson's Bay; in 1824 he reached Prince Regent Inlet. In 1826 Captain Franklin was sent overland to explore the north coast of America, to the west of Mackenzie's River; and at the same time Captain Beechey was dispatched to meet him in Behring's Strait. The two expeditions approached each other to within a distance of 146 miles, but returned without meeting. In 1827 Captain Parry was sent out to penetrate as far as possible in the direction of the Pole in boats and sledges, over the ice, and he reached about 82° 40′, the highest latitude yet attained. In 1829–33 Captain Ross sailed up Prince Regent Inlet, ascertained that there is no communication between the Arctic Ocean and the Atlantic south of Barrow's Strait. The expedition sent out in search of the long-desired route from the Atlantic to the Pacific, through the Polar Seas, commanded by Sir John Franklin, sailed in 1845, with two ships, the *Erebus* and *Terror*, and has not since been heard of. Several expeditions have been dispatched in search of the missing navigator and his companions, but hitherto without success. One of these expeditions, commanded by Captain Kellet, attained, on August 15, 1849, the lat. of 71° 12′ N., long. 170° 10′ W.; and on the 16th discovered an almost inaccessible island of granite, rising 1400 feet above the sea, beyond which a range of high land was seen; but constant snow-storms compelled him to quit the neighborhood without doing more, to prevent his being hemmed in by the pack-ice.

The long absence of the expedition under the command of Captain Franklin, and the unsuccessful efforts made from Britain to ascertain the fate of the missing navigators, induced Lady Franklin to appeal to America for aid in seeking for her husband and his compan-

lons. Her appeal was responded to by Henry Grinnell. He purchased vessels, which, with the countenance and aid of the United States Government, were sent to assist in the search. This munificent act of Mr. Grinnell is without a precedent. It was an undertaking by a private citizen of one country to seek out and restore to their homes, if possible, the officers and crews of the absent ships of another. The American searching vessels were placed under the command of Lieutenant De Haven, of the United States navy. The *Rescue*, the foremost vessel of the American expedition, entered Wellington Channel in company with the *Assistance*, the foremost vessel of all the British expeditions, on the 24th of August, 1850; and when, at the close of the season, it became apparent that no further progress could be made, the American vessels, *without the aid of steam*, were at the farthest point that was made by any vessel of the three British expeditions then engaged in the search, all of which had been assisted by steam on their outward voyage, when in and while crossing Baffin's Bay. The expeditions of Ross, Austin, and Penny made harbors. The Americans were afloat the whole of a long arctic winter, at the mercy of the winds, the currents, and the ice. On the 18th of September, De Haven was north of Cape Bowditch, the most northern point seen by Parry in 1819, and farther north within Lancaster Sound than had been attained by any vessel of all the exploring and searching expeditions. His discoveries began at Cape Bowden, on the 17th of September; by the end of the month he was at 75° 25′ N. Here he saw hitherto unknown land to the east, and the west, and far to the north. To this new-discovered land he gave the name of GRINNELL LAND; and to a height of land seen, Mount Franklin; and named the bodies of water Maury Channel, etc. The following season this country was explored by passing over the ice much farther west, by Captain Penny and others of the British navy. The name of GRINNELL LAND has been ungenerously omitted from the charts of this region published by the British Admiralty, and the name of *Albert Land* supplies its place.—HARPER'S *Gazetteer*. Captain Sir Robert M'Clure, in the autumn of 1850, by traveling over ice, connected the geography of the waters of the Pacific and the Atlantic for the first time. When in 1853 this news arrived in England, he was hailed, very justly, as the discoverer of the Northwest Passage. But no vessel has ever passed through the frozen straits traversed by M'Clure. The passage discovered by him has been crossed on the ice many times, but never by ship or boat of any sort.

May 31, 1853, Dr. Kane started on his second voyage, and being longer than the time proposed, the *Arctic*, under Lieutenant Hartstein, was sent in search of him. Dr. Kane was found at the Danish settlements on his return home, having lost his vessels and suffered great hardship, but without meeting any success in his efforts or making further discoveries. Lieutenant Hartstein arrived, with Dr. Kane, October 11, 1855. It is now almost certain that the remains found by Dr. Rae were those of Sir John Franklin and party, and the Royal Geographical Society propose giving him the reward of £10,000 which was offered.

Argo, in *Antiquity*, the ship celebrated in ancient poetry as that in which the Argonauts made their expedition to Colchis in quest of the golden fleece. Jason having happily accomplished his enterprise, consecrated the ship *Argo* to Poseidon (Neptune), or, as others say, to Athena (Minerva), on the isthmus of Corinth, where, they add, it did not remain long before it was translated into heaven, and made a constellation.—E. B.

Argol, Argal, or **Tartar** (Germ. *Weinstein*; Du. *Wynsteen*; Fr. *Tartre*; It. Sp. and Port. *Tartaro*; Russ. *Winnui kamen*; Lat. *Tartarus*), a hard crust formed on the sides of the vessels in which wine has been kept; it is red or white according to the color of the wine, and is otherwise impure. On being purified, it is termed *cream* or *crystals of tartar*. It consists principally of bitartrate of potash. White argol is preferable to red, as containing less drossy or earthy matter. The marks of good argol of either kind are, its being thick, brittle, hard, brilliant, and little earthy. That brought from Bologna is reckoned the best, and fetches the highest price. Argol is of considerable use among dyers, as serving to dispose the stuffs to take their colors the better. Pure argol, or cream of tartar, is extensively used in medicine. It has an acid and rather unpleasant taste. It is very brittle, and easily reduced to powder: specific gravity, 1·95. The English duty on argol, of 6*d*. per cwt., was repealed in 1845. In 1852 the imports and exports of argol into Great Britain amounted respectively to 17,839 and 3546 cwt. The price of argol in London, in September, 1853, varied; Bologna, from 58*s*. to 62*s*. per cwt.; Leghorn, 46*s*. to 56*s*. per cwt.; Naples, Sicily, etc., 33*s*. to 39*s*.

Aristolochia (Fr. *Serpentaire*; Germ. *Schlangenwurzel*; It. *Serpentaria*; Lat. *Aristolochia serpentaria*), the dried root of Virginia snake-root, or birthwort: it is small, light, and bushy, consisting of a number of fibres matted together, sprung from one common head, of a brownish color on the outside, and palo or yellow within. It has an aromatic smell, something like that of valerian, but more agreeable; and a warm, bitterish, pungent taste, very much resembling camphor.—*Encyclopædia Metrop.*

Arithmetic. Where first invented is not known, at least with certainty. It was brought from Egypt into Greece by Thales, about 600 B.C. The oldest treatise upon arithmetic is by Euclid (7th, 8th, and 9th books of his *Elements*), about 300 B.C. The sexagesimal arithmetic of Ptolemy was used A.D. 130. Diophantus of Alexandria was the author of thirteen books of arithmetical questions (of which six are extant) in 156. Notation by nine digits and zero, known at least as early as the sixth century in Hindostan; introduced from thence into Arabia about 900; into Spain, 1050; into England, 1253. The date in Caxton's *Mirror of the World*, Arabic characters, is 1480. Arithmetic of decimals invented in 1482. First work printed in England on arithmetic (*de Arte Supputandi*) was by Tonstall, bishop of Durham, 1522. The theory of decimal fractions was perfected by Lord Napier, in his *Rabdologia*, in 1617.—HAYDN.

Ark, Noah's, a floating vessel built by the patriarch Noah, for the preservation of his family, and the several species of animals, during the Deluge. The ark has afforded several points of curious inquiry relating to its form, capacity, materials, etc. The wood of which it was built is called in the Hebrew *gopher wood*, and in the Septuagint, *square timbers*. Some translate the original *cedar*, others *pine*, others *box*, etc. Pelletier prefers cedar, on account of its incorruptibility and the great abundance of it in Asia. Fuller and Bochart contend that it was built of what the Greeks call κυπαρισσός, or the *cypress-tree*; for, taking away the termination, *kupar* and *gopher* differ very little in sound. In what place Noah built and finished his ark is no less a matter of dispute; but the most general opinion is, that it was built in Chaldea, in the territories of Babylon. Its dimensions, as given by Moses, are 300 cubits in length, 50 in breadth, and 30 in height. Dr. Arbuthnot computes its burden at 81,062 tons. It contained, besides eight persons of Noah's family, one pair of every species of unclean animals, and seven pairs of every species of clean animals, with provisions for them all during the whole year. The insuperable difficulties connected with the belief that all the existing species of animals were provided for in the ark, are obviated by adopting the suggestion of Bishop Stillingfleet, approved by Matthew Poole, Pye Smith, Le Clerc, Rossenmüller, and others, that the Deluge did not

extend beyond that regi n of the earth then inhabited, and that only the animals of that region were preserved in the Ark.—*See* DELUGE, and KITTO's *Biblical Cyclopedia*.

Arkansas, one of the Western United States, is bounded north by Missouri, east by the Mississippi River, separating it from Tennessee and Mississippi, south by Louisiana, and west by the Indian Territory. It is between 33° and 36° 30′ N. lat., and between 89° 30′ and 94° 30′ W. long., and between 12° 30′ and 17° 30′ W. long., from Washington. It is 240 miles long and 228 wide, containing 54,500 square miles, or 34,800,000 acres. The population in 1830, 30,388; in 1840, 97,574; in 1850, 209,639. It is divided into 51 counties. The capital is Little Rock, situated on the right bank of Arkansas river, 300 miles from its entrance into the Mississippi. The other principal towns are Helena, Columbia, Van Buren, Fort Smith, Washington, Batesville, Fayetteville, El Dorado, etc.

The eastern part of the State, for the distance of 100 miles from the Mississippi, is low, and much of it is subject to be overflowed at certain seasons; but this has been in a great measure obviated by an extensive embankment or *levee* along the Mississippi, Arkansas, and White Rivers. The central part of the State is uneven and broken, and in the west it is hilly and mountainous. There are some extensive prairies, and some heavily timbered lands. On the margin of the rivers the soil is exceedingly fertile. The Ozark Mountains, rising sometimes to the height of from 1000 to 2000 feet, cross its northwest part. A range of hills, called the Black Mountains, runs between the Arkansas and White Rivers, extending west from near White River to the west border of the State. A little southwest of the centre of the State are boiling springs, the temperature of which at times rises nearly to the boiling point, though subject to much variation. Near these springs are ridges of hills, which rise into elevated peaks known as the Poteau and Washita Mountains, whose highest elevations are west of the State in the Indian Territory. Wild animals, as the deer, elk, bear and wolf; and wild fowls, as the wild goose, turkey, and quail, are found in abundance. Its mineral productions are extensive, consisting of iron ore, lead, zinc, and copper, gypsum, coal, and salt. The country is well adapted to the raising of cattle.

There were in this State, in 1850, 781,531 acres of land improved, and 1,816,684 of unimproved land in farms; cash value of farms, $15,265,245; value of implements and machinery, $1,601,296.

Live Stock.—Horses, 60,197; asses and mules, 11,559; milch cows, 93,151; working oxen, 84,239; other cattle, 165,320; sheep, 91,256; swine, 836,727; value of live stock, $6,647,969.

Agricultural Products, etc.—Wheat, 199,639 bushels produced; rye, 8,047; Indian corn, 8,893,939; oats, 656,183; barley, 177; buckwheat, 175; peas and beans, 285,738; potatoes, 193,832; sweet potatoes, 788,149; rice, 63,179 pounds; value of products of the orchard, $40,141; produce of market gardens, $17,150; pounds of butter made, 1,854,239; of cheese, 30,088; maple sugar, 9,330 pounds; molasses, 18 gallons; beeswax and honey, 192,338 pounds; wool, 182,595 pounds produced; cotton, 65,344; flax, 12,291; hemp, 15 tons; silk cocoons, 38 pounds; hops, 157; tobacco, 218,936; hay (tons of), 3976; clover seed, 90 bushels; other grass seeds, 436; flax seed, 321; and there were made 35 gallons of wine; value of home-made manufactures, $638,217; of slaughtered animals, $1,162,913.

In the eastern part, particularly on the borders of the rivers, the climate is generally moist and unhealthy, but in the middle and western parts it is salubrious. Its rivers afford great facilities for commerce. The Mississippi flows along its eastern border for the distance of nearly 400 miles. The Arkansas River, which gives name to the State, flows through it in a southeastwardly direction; is a broad and deep stream, and is navigable for steamboats 300 miles to Little Rock, and in the spring floods 850 miles farther to Port Gibson, beyond the western border of the State. White River rises in Ozark Mountains, flows through a fertile and healthy country, abounding with springs and streams of pure water, and affords many mill seats. It flows into the Arkansas River, and is uncommonly circuitous in its course. The St. Francis River rises in Missouri, and flows south nearly parallel to the Mississippi, which it at last enters. It is boatable for 300 miles. The Washita waters its southern, and the Red River, a majestic stream, its southwestern part.

The internal improvements are in embryo, but when carried out will form an excellent system. The rivers are numerous, and would give good facilities for commerce, but for the rafts of sunken wood which obstruct nearly all. Congress has made appropriations for the clearance of some, including the Red River, but to such a limited extent as not to remove the obstructions entirely. The railroad system needs but development to give prosperity to the State. Congress has granted lands to all the principal roads in progress; one of which, from Memphis to Little Rock, will be important as a part of the trunk line to California.

Manufactures.—There were in the State in 1850, 3 cotton factories, with a capital invested of $16,500, employing 13 males and 18 females, producing sheetings and 81,250 pounds of yarn, valued at $16,637; 28 flouring and grist mills, 57 saw mills, 51 tanneries, 9 newspapers, including periodicals, published. Capital invested in manufactures, $324,055.

Arkwright, Sir Richard, famous for his inventions in cotton-spinning, was born at Preston, in Lancashire, in 1732, of parents in humble circumstances. He was the youngest of thirteen children, received but a very indifferent education, and was bred to the trade of a barber. But the *res angusta domi* could not repress the native vigor of his mind, or extinguish the desire he felt to emerge from his low situation. In the year 1760 he had established himself in Bolton-le-Moor, where he exchanged the trade of a barber for that of an itinerant hair-merchant; and having discovered a valuable chemical process for dyeing hair, he was in consequence enabled to amass a little property. It is unfortunate that very little is known of the steps by which he was led to those inventions that raised him to distinction, and have immortalized his name. His residence in a district where a considerable manufacture of linen goods, and of linen and cotton mixed, was carried on, must have given him ample opportunities of becoming acquainted with the various processes that were in use in the cotton manufacture, and of the attempts that had been made and were then making to improve them. His attention was thus naturally drawn to this peculiar department; and, while he saw reason to conclude that it was likely to prove the most advantageous in which he could engage, he had sagacity and good fortune to invent and improve those extraordinary machines by which, unlike most inventors, he amassed vast wealth, at the same time that he added prodigiously to the demand for labor, and to the riches and comfort of the civilized world.

The *spinning-jenny*, invented in 1767 by Hargraves, a carpenter at Blackburn, in Lancashire, gave the means of spinning twenty or thirty threads at once with no more labor than had previously been required to spin a single thread. The thread spun by the jenny could not, however, be used, except as weft, being destitute of the firmness or hardness required in the longitudinal threads or warp. But Mr. Arkwright supplied this deficiency by the invention of the *spinning-frame*—that wonderful piece of machinery, which spins a vast number of threads of any degree of fineness and hardness, leaving to man merely to feed the machine with cotton, and to join the threads when they happen

to break. It is not difficult to understand the principle on which this machine is constructed, and the mode of its operation. It consists of two pairs of rollers, turned by means of machinery. The lower roller of each pair is furrowed or fluted longitudinally, and the upper one is covered with leather, to make them take a hold of the cotton. If there were only one pair of rollers, it is clear that a carding of cotton, passed between them, would be drawn forward by the revolution of the rollers; but it would merely undergo a certain degree of compression from their action. No sooner, however, has the carding, or *roving* as it is technically termed, begun to pass through the first pair of rollers, than it is received by the second pair, which are made to revolve with (as the case may be) three, four, or five times the velocity of the first pair. By this admirable contrivance, the roving is drawn out into a thread of the desired degree of tenuity, a twist being given to it by the adaptation of the spindle and fly of the common flax wheel to the machinery.

Such is the principle on which Mr. Arkwright constructed his famous spinning-frame. It is obvious that it is radically different from the previous methods of spinning either by the common hand wheel or distaff, or by the jenny, which is only a modification of the common wheel. Spinning by rollers was an entirely original idea; and it is difficult to determine which is most worthy of admiration—the genius which led to so great a discovery, or the consummate skill and address by which it was so speedily perfected and reduced to practice. Mr. Arkwright stated that he accidentally derived the first hint of his great invention from seeing a red-hot iron bar elongated by being made to pass between rollers; and though there is no mechanical analogy between that operation and his process of spinning, it is not difficult to imagine that by reflecting upon it, and placing the subject in different points of view, it might lead him to his invention. The precise era of the discovery is not known; but it is most probable that the felicitous idea of spinning by rollers had occurred to his mind as early as the period when Hargraves was engaged in the invention of the jenny, or almost immediately after. Not being a practical mechanic, Arkwright employed a person of the name of John Kay, a watch-maker at Warrington, to whom we shall afterward have to refer, to assist him in the preparation of the parts of his machine. Having made some progress toward the completion of his inventions, he applied in 1767 to Mr. Atherton, of Liverpool, for pecuniary assistance to enable him to carry them into effect; but this gentleman declined embarking his property in what appeared so hazardous a speculation, though he is said to have sent him some workmen to assist in the construction of his machine; the first model of which was set up in the parlor of the house belonging to the free grammar school at Preston.

His inventions being at length brought into a pretty advanced state, Arkwright, accompanied by Kay, and a Mr. Smalley, of Preston, removed to Nottingham in 1768, in order to avoid the attacks of the same lawless rabble that had driven Hargraves out of Lancashire. Here his operations were at first greatly fettered by a want of capital. But Mr. Strutt, of Derby, a gentleman of great mechanical skill, and largely engaged in the stocking manufacture, having seen Arkwright's inventions, and satisfied himself of their extraordinary value, immediately entered, conjointly with his partner Mr. Need, into partnership with him. The command of the necessary funds being thus obtained, Mr. Arkwright erected his first mill, which was driven by horses, at Nottingham, and took out a patent for spinning by rollers, in 1769. But as the mode of working the machinery by horse-power was found too expensive, he built a second factory, on a much larger scale, at Cromford, in Derbyshire, in 1771, the machinery of which was turned by a water-wheel, after the manner of the famous silk-mill erected by Sir Thomas Lombe. Having made several additional discoveries and improvements in the processes of carding, roving, and spinning, he took out a fresh patent for the whole in 1775; and thus completed a series of machinery so various and complicated, yet so admirably combined, and well adapted to produce the intended effect, in its most perfect form, as to excite the astonishment and admiration of every one capable of appreciating the ingenuity displayed and the difficulties overcome.—E. B.

Armada, a Spanish term, signifying a fleet of war. The armada which attempted to invade England in the time of Queen Elizabeth is famous in history.

Armed Neutrality. The confederacy, so called, of the Northern powers, against England, was commenced by the Empress of Russia in 1780; but its objects were defeated in 1781. The pretension was renewed, and a treaty ratified in order to cause their flags to be respected by the belligerent powers, December 16, 1800. The principle that neutral flags protect neutral bottoms being contrary to the maritime system of England, the British cabinet remonstrated, and Nelson and Parker destroyed the fleet of Denmark before Copenhagen, April 2, 1801. That power, in consequence, was obliged to accede from the alliance, and acknowledge the claim of England to the empire of the sea; and the Armed Neutrality was soon after dissolved.—HAYDN.

Arms. *See* FIRE-ARMS.

Arrack, or **Rack** (Fr. *Arac*; Germ. *Arrack, Rack*; Du. *Arak, Rak*; It. *Araco*; Sp. *Arak*; Port. *Araco*; Russ. *Arak*), a spirituous liquor manufactured at different places in the East.

Arrack is a term applied in most parts of India, and the Indian islands, to designate every sort of spirituous liquors; a circumstance which accounts for the discrepancy in the statements as to the materials used in making it, and the mode of its manufacture. The arrack of Goa and Batavia is in high estimation; that of Columbo or Ceylon has been said to be inferior to the former; but this is doubtful. Goa and Columbo arrack is invariably made from the vegetable juice, *toddy*, which flows by incision from the cocoa-nut tree (*Kocos nucifera*). After the juice is fermented, it is distilled and rectified. It usually yields about an *eighth* part of pure spirit. Batavia or Java arrack is obtained by distillation from molasses and rice, with only a small admixture of toddy. When well prepared, arrack is clear and transparent; generally, however, it is slightly straw-colored. Its flavor is peculiar; but it differs considerably, no doubt in consequence of the various articles of which it is prepared, and the unequal care taken in its manufacture. In England, arrack is seldom used except to give flavor to punch; formerly the imports were quite inconsiderable; but they have recently been a good deal greater, though, as they are mixed up in the official returns with rum from India, it is impossible to state their exact amount. The duty on rack from a British possession is 8*s*. 2*d*. a gallon, and on that from a foreign country, 15*s*. per gallon. In the East its consumption is immense. It is issued to the soldiers in India as part of the established rations; and it is supplied, instead of rum, to the seamen of the royal navy employed in the Indian seas. It is one of the principal products of Ceylon. Its prime cost in that island varies from 8*d*. to 10*d*. a gallon; and large quantities are exported to India and elsewhere. It is sold in Ceylon by the legger of 150, and in Java by the legger of 160 gallons. In 1841 the exports from the latter amounted to 4672 leggers, or 747,520 gallons, valued at 286,313 florins. Batavia arrack sold in bor l in London, in September, 1853, at from 1*s*. 6*d*. to 2*s*. per gallon.

Pariah-arrack is a phrase used to designate a spirit distilled in the peninsula of India, which is said to be often rendered unwholesome by an admixture of *ganga*

(*Cannabis sativa*), and a species of *Datura*, in the view of increasing its intoxicating power. But it is not clear whether the term pariah-arrack be meant to imply that it is an inferior spirit, or an adulterated compound. This liquor is sometimes distilled from cocoa-nut toddy, and sometimes from a mixture of jaggery, water, and the barks of various trees.—*See* MILBURN'S *Orient. Com.*; and MR. MARSHALL'S *valuable Essay on the Cocoa-nut Tree*, p. 13.

Arrow-root, the pith or starch of the root *Maranta arundinacea*. It has received its common name from its being supposed to be an antidote to the poisoned arrows of the Indians. The powder is prepared from roots of a year old. It is reckoned a very wholesome, nutritious food: it is often adulterated, when in the shops, with the starch or flour of potatoes. It is a native of South America; but has been long introduced into the West Indies, where it forms a pretty important article of cultivation. An excellent kind of arrow-root, if it may be so called, is now prepared in India from the root of the *Curcuma angustifolia*. The plant is abundant on the Malabar coast, where the powder is made in such quantities as to be a considerable object of trade. Some of it has been brought to England. The *Maranta arundinacea* has been carried from the West Indies to Ceylon, where it thrives extremely well, and where arrow-root of the finest quality has been manufactured from it.—AINSLIE'S *Mat. Indica*.

Arrowsmith, Aaron, an eminent geographer and hydrographer, born at London in 1750. He published, in 1817, a new General Atlas, 4to, and produced a great number of maps and charts. His map of the world on Mercator's projection is much esteemed. He died in 1823.

Arsenal (from the Romaunt *arthenal*, a citadel), originally denoted exclusively a magazine of naval stores and warlike apparatus, giving probability to the etymology which derives the word from the Latin *ars navalis*, a naval citadel. Now, however, the term is applied to a repository of warlike stores, whether for land or sea service. The naval arsenals are, however, still the more numerous, and will be found described at length under the article DOCK-YARDS.

The great arsenal of Britain (if we except the Tower) is that of Woolwich, where all warlike stores and apparatus are not only preserved, but manufactured in the immense buildings devoted to the purpose. At Woolwich, Deptford, Chatham, Sheerness, Portsmouth, and Plymouth, are the great naval arsenals. In France, there are military arsenals at Paris, Strasburg, Metz, Lille, etc.; and five great maritime arsenals, the chief of which are those of Brest, Toulon, and Rochefort; next to them L'Orient and Cherbourg. There are also inferior arsenals at Dunkirk, Havre, Saint Servan, Nantes, Bordeaux, and Bayonne. The other principal naval arsenals in Europe are, those of Russia, at St. Petersburg, Cronstadt, and Sebastopol; of Holland, at Anvers, Flushing, Helvoetsluys, and the Texel; of Prussia, at Dantzig; of Hamburg; of Denmark, at Copenhagen; of Turkey, at Constantinople; of Italy, at Genoa, Villafranca, Livorno, Spezzia, Civita Vecchia, Naples, Ancona, Venice, and Trieste; of Spain, at Cadiz, Carthagena, and Barcelona, and the British one at Gibraltar; of Portugal, at Lisbon; of Britain, at Malta and Corfu.—E. B. The principal naval arsenals of the United States are at New York, Boston, and Norfolk. The military arsenals of the United States are at Kennebec, Maine; Watertown, Massachusetts; Watervliet, New York; New York city; Alleghany and Frankford, Pennsylvania; Pikesville, Indiana; Washington, District of Columbia; Fort Monroe, Virginia; Augusta, Georgia; St. Louis, Mobile; Baton Rouge, Louisiana; Mount Vernon, Alabama; Detroit, Michigan; Fayetteville, North Carolina; Charleston, South Carolina; Little Rock, Arkansas; San Antonio, Texas; Benicia, California; of Brazil, at Rio Janeiro and Bahia; of La Plata, at Buenos Ayres and Monte Video; of Chili, at Valparaiso; and of Mexico, at Vera Cruz.

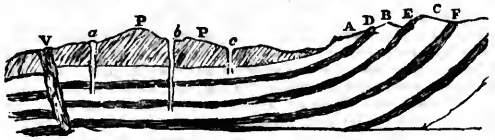
Arsenic (Germ. *Arsenik*; Fr. *Arsenic*; It. and Sp. *Arsenico*; Russ. *Müschjah*; Lat. *Arsenicum*). This metal has a bluish white color not unlike that of steel, and a good deal of brilliancy. It has no sensible smell while cold, but when heated it emits a strong odor of garlic, which is very characteristic. It is the softest of all the metallic bodies, and so brittle that it may be easily reduced to a very fine powder by trituration in a mortar. Its specific gravity is 5·76.—THOMSON'S *Chemistry*. Metallic arsenic is not used in the arts, and is not, therefore, extracted from the ore, except for the purposes of experiment or curiosity. The arsenic of commerce is the white oxide, or *arsenious acid* of chemists. It is a white, brittle, compact substance, of a glassy appearance; is inodorous; has an acrid taste, leaving on the tongue a sweetish impression; and is highly corrosive. In its metallic state arsenic exerts no action on the animal system; but when oxidized, it is a most virulent poison. The arsenic of the shops is sometimes adulterated with white sand, chalk, or gypsum: the fraud may be detected by heating a small portion of the suspected powder, when the arsenic is dissipated, leaving the impurities, if there be any, behind. Though the most violent of all the mineral poisons, the white oxide of arsenic, or the arsenic of the shops, is yet, when judiciously administered, a medicine of great efficacy. It is also used for various purposes in the arts. It is principally imported from Saxony and Bohemia.—THOMSON'S *Chemistry*; A. T. THOMSON'S *Dispensatory*.

Arsura, a term used in ancient times for the melting of gold or silver, either to refine them or to examine their value. The method of doing this is explained in the Black Book of the Exchequer, ascribed to Gervaise, in the chapter *De Officio Militis Argentarii*, being in those days of great use, on account of the various places and different manners in which the king's money was paid. Arsura is also used for the loss or diminution of the metal in the trial. In this sense a pound was said *tot ardere denarios*, to lose so many pennyweights. Arsura is likewise used for the dust and sweepings of silversmiths, and others who work in silver melted down.

Artesian Wells, the name applied to artificial springs, produced by boring a small hole through strata destitute of water, into lower beds in which water is percolating in considerable quantity. On making such perforation, the water often rises forcibly to the surface, and is conveyed to a convenient receptacle by a pipe introduced by the perforation into the strata affording the water. The first place in Europe where such artificial fountains were extensively formed was in the French province of Artois, anciently *Artesium*. But there is reason to believe that the art was long before practiced by the Chinese, who are very expert in the formation of such wells. They are extensively used in the Milanese, in several parts of Germany, and have also been for several years employed in the south of England, on the coast of Lincolnshire, and more lately in the vicinity of London.

An artesian well was sunk at Sheerness in 1781, to the depth of 330 feet.—*Philosophical Transactions*, 1784. It was carried through a thick bed of *London clay*, and water, which rose nearly to the surface, was found on reaching the subjacent sand-beds. Two of better construction were carried to the same depth through similar materials at Portsmouth docks in 1828 and 1829. The soil of the district on the coast of Lincoln, between Lowth and the sea, rests on a thick bed of clay, which precludes the possibility of springs; but by penetrating through this, water was found in abundance in the chalk on which the clay reposed; and artesian wells there now afford a plentiful supply of this necessary element, that rises with such force

through the pipes as to have obtained the local name of *blue-wells*. The theory of artesian wells is founded on the fact that water derived from a higher level may percolate through certain strata, or pass in seams between them, and be prevented from reaching the surface by the superposition of other beds or strata impervious to water. In such circumstances a perforation through the latter allows the water, by hydrostatic pressure, to reach the surface; and it will overflow, or even gush out, with a force proportional to the difference of level of the different parts of the water-bearing strata, especially if the free course of the subterranean sheet of water be interrupted by what are termed *faults* in the strata, or the occurrence of veins of stony bodies intersecting them. Thus, in the diagram of a supposed section of a country, let P P



represent a thick bed of plastic clay, A B C strata affording water, alternating with strata D E F, impervious to water, and let V represent a vein of trap rock traversing these strata, and producing a *shift* or fault; by sinking the pipes *a b c* into the strata A B C respectively, we shall obtain the water derived from the more elevated portions of these strata at such artesian fountains.

The same principles are applicable to the sinking of common wells. It has sometimes happened that a well has been lost in attempts to increase its flow by a deeper excavation. Thus, if the bottom of the well was a bed of clay resting on sand, a perforation made through that clay has occasionally lost all the water; because the stratum of clay had prevented the water from escaping to a lower level, and conducted it toward the surface. The direction of the strata, as well as their nature, are essential elements for the successful formation of either common or artesian wells; which last are of great consequence in champaign countries, where natural springs are less common.

Artesian wells have been also sunk for the purpose of obtaining *warm* water. It is well ascertained that in the interior of our earth there is a source of heat, which may be reached by deep artesian perforations, so as to bring warm water to the surface. Thus Von Bruckmann, of Würtemburg, heated a paper manufactory at Heilbronn by water from a deep artesian well; and by the same means prevented the freezing of the water in winter round the wheels of mills. In the artesian well at Rochelle, at the depth of 370 feet, the water has a temperature 17° higher than that of the atmosphere. M. Arago was the chief promoter of the artesian well in the plain of Grenelle at Paris, which, at the depth of upward of 1900 feet, affords water at 92° Fahrenheit. In the deepest artesian well yet made, that at Kissengen, the temperature of the water is also very considerable.

The instrument now used in making artesian perforations to great depths is not the old machine employed in boring for coal, etc., a series of iron rods screwed together, and forced down by repeated blows with a mallet. That was a costly and tedious operation: a Chinese instrument has lately been introduced with great effect. It consists of a heavy bar of cast iron, six feet long and four inches in diameter, armed at its lower end with a cutting chisel, surrounded by a cylindrical chamber, which, by means of simple valves, receives and retains the abraded portions of the rock. The instrument is suspended by a rope passing over a wheel. As it is wrought up and down, the torsion of the rope gives a circular movement to the bar of iron, sufficient to vary the position of the chisel at each stroke of the instrument; and when the chamber is full of the debris of the rock, it is drawn up and discharged. This mode of working has greatly diminished the labor and expense of such operations; and is applicable to many processes in mining, blasting in quarries, and the like.

An ingenious German engineer, M. Sellow, has by a similar instrument of greater size, succeeded in ventilating the mines at Saarbrück, by perforations 18 inches in diameter, and several hundred feet in depth.

The importance of artesian wells can scarcely be overestimated. They are capable of rendering districts now scantily supplied with or destitute of potable water, convenient domiciles for man; and under an enlightened government might render habitable no small portions of the arid wastes of Africa and Arabia. In the latter, recent observations show that there are abundant subterranean sources of water, and possibly a series of artesian wells might diminish the perils of the passage of the Great Sahara.—E. B. The United States Government has recently authorized a series of experiments for the construction of a number of artesian wells on the plains of Western Texas, on or near the military and emigrant roads leading toward New Mexico and California, for the relief of emigrant parties. An expedition for this purpose left Texas in January, 1855, under the command of Captain Pope, United States army, and had not completed their operations in December, 1856.—*See* Héricat de Thury, *Considerations sur la cause du Jaillissement des Eaux des Puits-forés*, Paris, 1829; Von Bruckmann, *Ueber Artesische Brunnen*, Heilb. 1833; M. Arago, *Notices Scientifiques, Annuaire du Bur. des Long. pour Annes plus.*

Artificer, a person who works in iron, brass, wood, etc.—such as smiths, brasiers, carpenters, etc. The Roman artificers had their peculiar temples, where they assembled and chose their own patron to defend their causes; and they were exempted from all personal services. Tarruntenus Paternus reckons 32 species of artificers, and Constantine 35, who enjoyed this privilege. The artificers were incorporated into divers colleges or companies, each of which had their tutelar gods, to whom they offered their worship. Several of these, when they quitted their profession, hung up their tools, as votive offerings to their gods. Artificers were held a degree below merchants and *argentarii*, or money-changers, and their employment more sordid. Some deny that in the earliest ages of the Roman State artificers were ranked in the number of citizens; others, who assert their citizenship, allow that they were held in contempt, as being unfit for war, and so poor that they could scarcely pay any taxes; for which reason they were not entered among the citizens in the censor's books; the design of the census being only to see what number of persons were yearly fit to bear arms and to pay taxes toward the support of the state. It may be added, that much of the artificers' business at Rome was done by slaves and foreigners.

Artificial Horizon, a contrivance of great utility for enabling an observer to determine the altitude of a heavenly body, or of a terrestrial object, above the horizon of any place, when the sensible horizon is ill defined. The surface of a fluid not easily disturbed by the air, such as quicksilver, or some viscid, opaque fluid, is usually employed for this purpose, as they will adjust themselves to a plane parallel to the rational horizon. To prevent the influence of winds in the open air, the surface is usually covered by a plate of ground-glass with parallel surfaces. In fixed observations this is not necessary; and the mercury is contained in an oblong trough; for locomotive observations, a cup of three inches in diameter is the containing

vessel. But as carrying about mercury is inconvenient, some have employed polished metallic or glass mirrors, adjusted by screws at the corners, and a spirit-level, to horizontality; though this is less accurate than the fluid surface. The surface of the quicksilver, or mirror so adjusted, is a plane touching the surface of the earth where the observation is made, and parallel to the rational horizon; therefore, a ray of light passing from the object to the surface of the instrument, forms an angle with that surface equal to the angular elevation of that object above the true horizon of the place, when it is corrected for parallax and refraction. —E. B.

As, in *Antiquity*, a weight, consisting of 12 ounces, being the same with *libra*, or the Roman pound. The word is derived from the Greek ἀς, which, in the Doric dialect, is used for ἑις, one, an entire thing; or, according to others, from ἀες, because made of brass. It was also the name of a Roman coin, which was of different weight and material in different ages of the commonwealth. Under Numa Pompilius, according to Eusebius, the Roman money was either of wood, leather, or shells. In the time of Tullus Hostilius it was of brass, and called *as libra*, *libella*, or *pondo*, because actually weighing a pound, or 12 ounces. The first Punic war, 420 years later, having exhausted the treasury, the *as* was reduced to two ounces. In the second Punic war it was again reduced to half its weight, viz., to one ounce. And, lastly, by the Papirian law it was still further reduced to the diminutive weight of half an ounce; and it is generally thought that it continued the same during the commonwealth, and even to the reign of Vespasian. The *as*, therefore, was of four different weights in the commonwealth. Its original stamp was that of a sheep, ox, or sow; but from the time of the emperors it had on one side a Janus with two faces, and on the reverse the rostrum or prow of a ship. *As* also denoted any integer or whole; whence the English word *ace*. Thus *as* signified the whole inheritance; whence *hæres ex asse*, the heir to the whole estate.

Asafœtida (Ger. *Teufelsdreck*; Du. *Duivelsdreck*; Fr. *Assa-fetida*; Sp. *Asa-fetida*; Lat. *Asa-fœtida*; Per. *Ungoozeh*), a gum resin, consisting of the inspissated juice of a large umbelliferous plant, the *Ferula asa-fœtida*. It is produced in the southern provinces of Persia, and in the territory of Sinde, or country lying at the mouth of the Indus. It is exported from the Persian Gulf to Bombay and Calcutta, where it is sent to Europe. It has a nauseous, somewhat bitter, biting taste, and an excessively strong, fetid, alliaceous smell: the newer it is, it possesses its smell and other peculiar properties in the greater perfection. It is imported, packed in irregular masses, in mats, casks, and cases; the last being, in general, the best. It should be chosen clean, fresh, strong-scented, of a pale reddish color, variegated with a number of fine, white tears: when broken, it should somewhat resemble marble in appearance; and, after being exposed to the air, should turn of a violet red color. That which is soft, black, and foul, should be rejected. The packages should be carefully examined, and ought to be tight, to prevent the smell from injuring any other article. Neither the imports nor the quantities cleared for consumption are considerable, though the latter are probably greater than might have been expected, amounting to about 9000 lbs. a year. The duty in England is 1*s.* a cwt. In England it is used only in the materia medica. In France it is used both in that way, and, to some extent, also as a condiment. It is worth, in bond, in the London market, from 25*s.* to £5 per cwt.—Milburn's *Orient. Com.*; *Parl. Papers*; and private information.

Ash, Common, the *Fraxinus excelsior* of botanists, a forest tree of which there are many varieties. It is abundant in England, and is of the greatest utility. The ash is of very rapid growth; and, unlike most other trees, its value is rather increased than diminished by this circumstance. Like the chestnut, the wood of young trees is most esteemed. It grows on a great variety of soils, but is best where the growth has been most vigorous. It is inferior to the oak in stiffness, and is more easily split; but in toughness and elasticity it is far superior to the oak, or to any other species of timber. Hence its universal employment in all those parts of machinery which have to sustain sudden shocks, such as the circumference, teeth, and spokes of wheels, ship-blocks, etc., and in the manufacture of agricultural implements; in the latter, indeed, it is almost exclusively made use of. The want of prolonged durability is its greatest defect; and it is too flexible to be employed in building. The wood of old trees is of a dark brown color, sometimes beautifully figured; the wood of young trees is brownish white, with a shade of green. The texture is alternately compact and porous: where the growth has been vigorous, the compact part of the several layers bears a great proportion to the spongy, and the timber is comparatively tough, elastic, and durable. It has neither taste nor smell, and, when young, is difficult to work. The mountain ash (*Pyrus aucuparia*) is quite a different tree from the common ash, and its timber is far less valuable.—Tredgold's *Principles of Carpentry*; *Timber Trees and Fruits*, in *Library of Entertaining Knowledge*, *etc.*

Ashes (Fr. *Vedosse*; Ger. *Waidasche*; Du. *Weedas*; Da. *Veedashe*; It. *Feccia bruciata*; Sp. *Alumbre de hez*; Russ. *Weldasch*; Lat. *Cineres infectorii*), the residuum, or earthy part, of any substance after it has been burned. In commerce, the term is applied to the ashes of vegetable substances; from which are extracted the alkaline salts called potash, pearlash, barilla, kelp, etc.; which see.

Asia. This division of the globe is distinguished by its vast extent; by the striking character of its interior geography; above all, by the stupendous revolutions of which it has been the scene; and, lastly, by the high antiquity of its civilization, of which we can still faintly trace the precious remains. Stretching from the southern hemisphere into the northern regions of perpetual winter, it comprises within its bounds the opposite extremes of heat and cold; all the varieties, consequently, of the animal and vegetable tribes; and that still more interesting variety which the irresistible law of climate impresses on the human species. The surface of Asia, towering to its height far above the regions of perpetual snow, presents, when superficially examined, a confused mass of lofty mountains, diverging into an endless variety of inferior ridges, apparently without plan or system. But a more attentive survey discloses, amidst the bold irregularities of nature, the same order and unity of design in the structure of this great continent as in all the other works of creation.

Asia was the earliest abode of the human race; and, when all the other parts of the world were either uninhabited or sunk in barbarism, it was the seat of great empires, and of flourishing and splendid cities, of commerce, of literature, and of all the arts of civilized life. But its early prosperity was blighted by the ruthless devastations of war; its populous cities were utterly destroyed, so that the spot on which many of them stood is now only marked by masses of ruins; their arts and literature have perished; and in such fragments of their writing as still survive, the meaning is buried under the almost impenetrable veil of an ancient and unknown character. In touching on the various topics which are comprehended under the designation of Asia, it must be remembered that in the following article we are to confine our attention to such general views of its geography, history, institutions, policy, and manners, as will not supersede a more particular description of its various states under their respective designations.

Asia contains a larger area than any of the other divisions of the globe, viz., including its islands, 12,960,000 square geographical miles; the area of America being 10,600,000, that of Africa 8,550,000, and that of Europe 2,560,000.

The islands of Asia are: in the Arctic Ocean, Nova Zembla, consisting of two large islands, and New Siberia, consisting of three islands of considerable extent discovered in the course of this century. Along the east coast: the volcanic group of the Kurile; the Japanese Islands, of which Nipon is the principal; the Lu-ku group to the south of Japan; the large islands of Formosa and Hainan, on the coast of China. Saghalia, opposite the coast of Mantchuria, was long believed to be an island, but is a peninsula extending over 8 degrees of latitude, and connected with the continent by a low, narrow, and sandy isthmus, a little to the south of the mouth of the River Amur. In the southeast and south: the Philippines, among which Luzon and Magindanao are the largest, and half a dozen others have areas surpassing or approaching those of Cyprus and Candia; the great islands of Borneo, Sumatra, Java, and Celebes; the Moluccas or Spice Islands, among which Gilolo, Ceram, Buro, and Amboyna, between Celebes and New Guinea; Nias, Batu, the two Pora, etc., on the west coast, and Battam, Linga, Banka, and Billiton, on the east coast of Sumatra; and, finally, the Sunda and Banda islands, a vast latitudinal Archipelago, extending from the east point of Java toward Australia and New Guinea, and composed of myriads of islands, among which the principal are in a direction from west to east; Madura, Bali, Lambok, Sumbava, Sandelbosh or Tshindana, Flores, Timor (250 miles long), Timor Laut, and Aru, which form a bridge, as it were, between Asia and Australia. In the Indian Ocean: the Nicobar and Andama Archipelagos, between the northwest point of Sumatra and the mouths of the Irawaddy; the large island of Ceylon; and, on both sides of the 70th meridian east, stretching due north from south lat. 8° nearly as far as the latitude of Goa, the Archipelagos of the Tshagos, Maldives, and Lakkadives, all three composed of myriads of mostly very small islands of coral formation. In the Persian Gulf: Ormuzd, Kishm, and Bahrein. In the Red Sea: Perim, Arish (erroneously called Harnish), Farsan, and Dhalak. In the Mediterranean: Cyprus, Rhodes, Chios, etc.

The surface of this vast continent is exceedingly varied. In some places it towers in stupendous mountains, forming four great chains, with subordinate branches, of different names. It often exhibits vast plateaux or elevated table-lands, of prodigious extent; in other points it stretches in plains little elevated above the level of the ocean; while in certain points it presents enormous hollows or depressions that are lower than the surface of the Black Sea. Humboldt computes the superficies of all Asia at 1,346,000 geographical square leagues. Of this a large proportion is mountainous, or raised in elevated plains. The same eminent authority estimates these as follows:

	Sq. leagues.
The mountainous parts of Arabia, Beluchistan, or the plateau of Kelat, Kandahar, with the mountain ridges of India	240,000
The mountainous parts of China	54,400
The plateau of Gobi or Sha-mo	42,000
The plateau of Thibet and Ladak, between the Himalaya and Kuen-lun Mountains	41,000
The plateau of Persia	27,000
The Taurus of Asia Minor, Ararat, and the Hindoo Koosh	81,300
Of which that of Ararat alone is	3,500
The Caucasus, from Baku to Anapa	2,700
The Oural and Altai groups	3,400

The northern portion of Asia consists of a series of plains divided by mountains of small elevation, forming the comparatively low land of Siberia, intersected by several large rivers, and occupied often by extensive swamps. This region is estimated at about 400,000 square leagues. The central part of Asia, still imperfectly known to Europe, was till lately conceived to be one vast table-land, of irregular form, buttressed on every side by lofty mountains; but it now appears, on the contrary, to be traversed by long mountain chains.

Asia presents to the eye such a compactness of conformation, and its outlines are at the same time so diversified by deep indentures of the sea, forming gulfs and peninsulas of every shape and dimension, that neither Africa can be called more compact, nor North America more diversified. Every prominent feature of this vast continent is on a gigantic scale; and the aggregate of its mountains and rivers, its low plains and its elevated plateaux, surpasses those of the other divisions, not only in magnitude, but also by its contrasting variety.* Its mere steppe rivers approach the size of the Don and Dnieper; and the second of its salt lakes, the Aral, is still larger, by 6400 square geographical miles, than Lake Superior, the largest sheet of water in America; while the combined superficies of all the American lakes would not suffice to cover the area of the Caspian. Its Indian Archipelago forms a world by itself, with which the West Indian Islands can be compared neither for extent nor importance; its mountains rise higher into the regions of eternal snow than the far-famed Chimborazo; it has its deserts of burning sand and of frozen swamps, alike destructive to the human race. Nowhere is there such an exuberance of animal and vegetable life, not only spread over the whole continent, but also displaying itself within the narrowest limits, as the traveler rapidly descends from the crest of the Himalaya into the plain of Bengal. The same variety, the same contrasts, appear in its history. Asia, the cradle of mankind, the mother of religion, the nurse of civilization, where arts and letters were cultivated in the remotest times, contains within her inaccessible mountain forests numerous descendants of her primitive inhabitants, who still continue that brutish life which their forefathers led when the first vine was planted, the first hieroglyphic character carved in the rock.

Of the domestic animals, the elephant claims the pre-eminence, being unequaled by any other animal for the purposes of draught. This animal is confined to the southern countries of India, where the climate is hot, being seldom seen in the mountainous tracts toward the north. The camel is used for domestic purposes over a far wider extent of country than the elephant. This animal is of two species, the one with two humps, and the common camel with only one hump. The latter is the camel of Arabia, Syria, Persia, India, and Northern Africa. A lighter variety of this species is the dromedary, used only for riding, and differs from the camel of burden as the racer does from the draught-horse. The two-humped camel is the Bactrian species, and is so rare, even in Western Asia and India, that Captain Lynch states, that in a caravan of 5000 camels there were not above eight or ten of this Bactrian species. In Mongolia, however, they are very numerous. The dromedary is chiefly used for traveling, and its valuable quality is swiftness, by which, joined to its capacity of enduring

* According to Berghaus, there are 10 rivers in America, and 12 in Asia, the basin of each of which contains upward of 10,500 German, or 168,000 geographical square miles. The united area of the former, the first of which is the Amazon, and the last the Rio Negro, is 324,500 German, or 5,192,000 geographical square miles; of which the basin of the Amazon occupies not less than 2,018,400. That of the latter, the Obi standing at the head with 924,800 geographical square miles, and the Tarim being the last, is 363,738 German, or 5,820,000 geographical square miles; giving a difference of 628,000 geographical square miles in favor of Asia. The total length of the 10 American rivers, windings included, is 70,640 geographical miles; that of the Asiatic, 98,448 geographical miles: difference in favor of the latter, 21,808 geographical miles. Yet the system of the Maranon in the former stands unequaled by any in the world.

hardship, it is qualified to travel at an incredible rate for many successive days. In all the low countries, especially in the dry and sandy tracts, such as Arabia, Syria, etc., the common camel is employed. The two-humped camel is a native of the high countries in the neighborhood of the Oxus and the Jaxartes, where it is still chiefly used. So large a portion of Asia is occupied by vast plains and wastes of sand, that its interior intercourse must be maintained by land journeys. But without the aid of the camel, it would be impossible to traverse extensive deserts destitute both of food and water; and in those arid countries such an animal, which has been truly called the *ship* of the desert, is the most valuable gift which Providence could bestow.

Animals.—The other domestic animals of Southern and Western Asia are horses, mules, asses, buffaloes, black cattle, sheep, goats, etc. Arabia may be considered the native country of the horse, in which he arrives at perfection, and combines all the most estimable qualities of symmetry, form, fineness of skin, fire, docility of temper, fleetness, and hardiness. It is chiefly from the Arabian breed that the horses in other parts of the world have been improved. In Persia the horses are neither so graceful nor so swift as those of Arabia, being high, with long legs, spare carcasses, and large heads; but they are highly prized by the inhabitants for their extraordinary capacity of enduring fatigue. To the east of Persia, at Herat, the breed of horses is fine; also on the banks of the Indus and its tributaries; and in the higher regions of Balk and Bokhara they are excellent and numerous, and are exported in great numbers to Hindostan. The mule and the ass, all over India, are miserable animals. The mules are of better quality in the Punjaub, on the upper course of the Indus, and they improve still more farther west. In the countries west of the Indus, they are superior to those in Hindostan, and in Persia there is a still finer breed. But the mule of the East is inferior to that of Europe. The ass partakes of a similar improvement in his progress westward, and is a far finer animal in Western Asia than in Europe. In Syria, Palestine, and generally in Asia Minor, he is distinguished by agility, fire, and patience of fatigue, and ranks in the first class of domestic animals. Buffaloes are found in the hot plains of Asia, as well as in the mountainous tracts; and the oxen which are used in the plow have all a hump on their backs. The wealth of the pastoral tribes, who rove about in the western plains of Khorassan, and in the hilly tracts of Afghanistan, consists chiefly in sheep, which have tails a foot broad, and composed entirely of fat, but in other respects resemble the English sheep, being better and handsomer than those of India. Goats are common all over Asia, especially in the mountains, where there are some breeds with curiously-twisted horns; and they are by no means scarce in the plains.

In the northern parts of Asia, and in the high mountain tracts, a different class of animals is to be found. These cold regions are not distinguished by the same profusion of animal life as the tropical countries. The beasts of the forest decrease in numbers, size, and fierceness; and the wolf, the bear, the glutton, and the wild boar, are the only ferocious animals which thrive in these northern climates. In advancing on the desolate plains of Siberia to about the 60th degree of north latitude, we find the cold still taking effect on the animal as on the vegetable creation, and the living creatures, as well as the plants and trees, stunted in their full proportions. Beyond this limit a different order of animals appears, protected against the severity of the climate by a thick covering of fur, which is sought after as a rich article of dress in more opulent countries. These animals are accordingly hunted for their skins, which constitute the great staple article of trade in Northern Asia. In the Arctic regions the bear seems to form the only exception to the diminished grandeur of the animal creation. This animal, nourished in the regions of Northern Asia, acquires a larger size, and far greater power and fierceness, than in southern climates. The domestic animals of the northern and mountainous countries of Asia are of a less imposing appearance, and not nearly of the same strength as those in the lower valleys of the south and west. In the high and cold plains of Central Asia the camel is no longer used as a beast of burden, nor in the northern parts of the continent. Thibet and Central Asia, till beyond the Altaï Mountains, are inhabited by Mongolish and Turkish tribes, whose wealth consists in their cattle, which not only furnish them with food, clothing, and shelter, but are also used as beasts of burden, and in the labors of agriculture. The yak of Tartary, or the bushy-tailed bull of Thibet, seems to supply the place of the camel in these mountainous countries. This animal is about the size of a small bull, of great strength, and is reckoned a valuable property among the itinerant hordes of Tartars, to whom it affords the means of easy conveyance, of clothing, and shelter for their tents, from the prodigious quantity of long, flowing, glossy hair on its tail, and, finally, of subsistence from its milk and flesh. In those mountains is also found the musk-deer, which delights in the most intense cold, and of which the musk, a secretion by the male, affords a revenue to the government, as well as a valuable article of trade. Here, also, on the highest mountains, amidst ice and snow, is the Cashmere goat, the wool of which affords the materials of the finest shawls. Wild horses are seen in the high plains of Thibet; and the breed of sheep, a peculiar species of which is indigenous to the climate, is of great value. They are nourished on the short and dry herbage of these exposed plains, and serve for subsistence to the inhabitants, as well as for beasts of burden. The wild and extensive plains of Tartary are inhabited by pastoral tribes, who depend in like manner on their herds. On the southern side of the Altaï Mountains we find the same tribes of wanderers, most of them the scattered remnants of the Tartar nations who had formerly so deep a share in the great revolutions of Asia. All these tribes subsist chiefly by pasturage. Near the Ural Mountains some live chiefly by hunting or ensnaring the elk and other wild animals for their furs. Among those who are shepherds, sheep and horned cattle are found; while the hunting tribes have scarcely any domestic animals. In all these countries the wolf and the bear are known to abound. In the rigorous climate farther to the north, where the cattle are stunted in size, and can scarcely subsist, their place is supplied by the reindeer, a species peculiar to a rigorous climate, and most valuable for all domestic purposes, whether for draught or for subsistence. During part of the year the inhabitants of those desolate countries subsist upon its flesh or milk; its skin furnishes them with the chief part of their dress, and its horns with such domestic utensils as they require. The dog is also trained to draw the sledge.

Birds.—The feathered race in Asia includes almost every known species. In the southern parts are found all the tropical birds, distinguished by beautiful plumage, and some of them uttering sounds that have a resemblance to the human voice. Here are also found some of the largest and rarest birds—the ostrich, the cassowary, and, in the Himalaya Mountains, the gypaëte, one of which, shot by a British officer, is stated by Bishop Heber to have measured from the extremity of one wing to another the enormous length of 14 feet. The other birds are eagles, kites, vultures, magpies in the higher countries, hawks, crows, wild geese and ducks, flamingos, herons, bustards, florikens, rock pigeons, lapwings, storks, plovers, snipes, quails, partridges, different species of *fringillidæ*, and almost all the other small birds to be found in similar climates. In Northern Asia the feathered creation is nearly the same as in Europe.

Early Commerce.—Asia, notwithstanding the wars by which it has been desolated, was from an early period the seat of commerce and of wealth. The eastern countries of Hindostan and China preceded Europe in civilization and industry, and, independent of that diversity of natural productions which is the foundation of trade, they had cultivated many arts and manufactures which were unknown in the Western World. Asia, accordingly, abounded in many precious commodities which could not be produced by the ruder industry of Europe. Thus China had its silk and porcelain; Hindostan its muslins, cotton, precious stones, and aromatics of all sorts; costus, bdellium, spikenard, ivory, tortoise-shell, pepper, etc. These were in general demand throughout Europe, where they could not be produced; and they were procured in exchange chiefly for bullion, which then, as in later times, was the great article of export to India; also for woolen cloths, wine, brass, lead and tin, glass, coral, female slaves, etc., all which commodities met with a ready sale in the markets of Hindostan. The staple commodity of China was silk; and the mode of producing this esteemed luxury being unknown in Europe, it was brought in large quantities, either by the caravans or by the annual fleets, to Alexandria, at that time the great commercial mart of the East, and was thence sent to supply the demand at Rome, where it sold at one time for its weight in gold; but, owing to the high profit, caravans began to travel so regularly to China, that the supply increased with the demand, and the price was reduced. Between the sixth and the seventh centuries, Eastern Asia was robbed of this precious monopoly by the art of two Persian monks, who contrived, in a hollow cane, to transport the eggs of the silk-worm from China to Europe, where they were hatched by means of heat, and the race quickly propagated; and one great link of commerce between China and Europe was in this manner broken. The trade of Asia was interrupted by the irruption of the barbarians, who invaded and finally subverted the Roman empire; but tho moment the storm was past commerce resumed its quiet course. Constantinople, the eastern capital of the empire, was still the centre of luxury and trade; as were also such parts of the Roman territory as had not been swept by barbarian invasion; and with those places the caravans still traded, shaping their course as they best could to avoid the distractions of the interior. Farther to the east, the califs who reigned at Bagdad encouraged science, commerce, and the arts; and the extensive country through which the Oxus and the Jaxartes flowed was the seat of a flourishing commerce, and of many opulent cities. Besides Bokhara, still a great city, Balk, Samarcand, Cosh, and others in the valley of the Oxus and the Jaxartes, numerous splendid cities are enumerated which are scarcely known to Europeans. To the east of the great range of mountains, which takes a direction from the main Himalaya ridge, the country of Cashgar contained Cashgar, its capital, and Khoten, which were both large, populous, and wealthy. Those countries served as the connecting link between India and Europe, and the resting-place of the caravans, which there collected in great force, and prepared for their journey to China across the great eastern desert, or for a more southerly course, through the country of Thibet. The armies of Zinghis Khan in the thirteenth, and of Tamerlane in the beginning of the fifteenth century, laid waste this highly cultivated and flourishing region. But these conquerors were not the enemies of commerce, and the surplus produce of India still reached Europe, though by a route rendered more difficult and dangerous from the desolation of the intervening countries. But the effect produced on the trade of Asia in the East by the encroachments of barbarism, and by the disorders in the interior, was more than counterbalanced by the growing civilization of Europe. About the beginning of the fourteenth century, the darkness which had so long covered the Western World began to dispel, and the Italian cities of Venice, Genoa, and others, had already made advances in letters, science, and commerce. The costly articles of Asia, her rich stuffs and precious aromatics, were now required to answer the growing demands of luxury and wealth; and the produce of India, imported into Alexandria through the Red Sea, was thence brought into Italy by the nobles of Venice and Genoa, who were all engaged in trade, and was diffused in smaller quantities all over Europe. The Italian States were enriched by this lucrative traffic, which only ceased with the discovery of the maritime route to India by the Cape of Good Hope. From this period the trade between Asia and Europe took a different direction. The commodities of India and China were transported to Europe directly by sea; and neither Alexandria nor the other ports of the Red Sea or of Italy were any longer the depositories of the Eastern trade. The Portuguese, always distinguished by their ardor for maritime discovery, were the first adventurers in the Asiatic seas. In the course of the sixteenth century the English and Dutch appeared as their competitors; and with the growing wealth of those countries the trade to the East rapidly increased. The commerce of Asia may therefore be distinguished into the following branches: 1st. The inland trade of China, Hindostan, Burmah, etc, with Turkey, the eastern countries of Europe, and with the intervening countries of Persia, Balk, Bokhara, and the regions of the Oxus; also, by a different route, the trade with Russia and the north of Asia. 2d. The maritime trade, including the coasting trade and the trade to the Eastern Archipelago, and the great trade to Europe and America, in which, from the progress of wealth and luxury, there is a great consumption of Asiatic produce.

Caravans.—The inland trade is carried on by caravans, or bodies of merchants, who travel together for the sake of security through those parts of the country which are disturbed by predatory tribes. It is only from the southern countries of Asia, such as Hindostan, China, the Burmese countries, Thibet, and the western countries of Persia, Afghanistan, Bokhara, and the regions of the Oxus and the Jaxartes, that Europe can derive any supply of valuable commodities; and all this trade, from whatever quarter it comes, must flow in its progress to Europe through the countries that lie between the Persian Gulf and the Caspian Sea; as the caravans could not, without inconvenience and danger from wandering tribes, pass to the north of this sea or the Sea of Aral; and accordingly, though an annual caravan is sent from Astrican to Khyvah and the countries on the Oxus, the chief trade with Russia is by sea to the port of Mangalshuck, and thence to Khyvah and Bokhara. The Russians have also begun to trade with Persia from the Caucasian province of Georgia, of which Tiflis, the capital, has, from a wretched collection of wooden huts, been rapidly improved, under the protecting influence of a European government, into a respectable and wealthy town, the future emporium, as may be anticipated, of this growing trade. The caravans from Constantinople and Syria proceed through Asia Minor and the northern or southern provinces of Persia, according as their ulterior route is through Afghanistan and the Punjaub into Hindostan, or to Thibet and China, or the more northern districts of Balk, Bokhara, and the country of the Oxus and the Jaxartes. Bokhara, though reduced to desolation by Zinghis Khan, is still one of the largest towns of the East, its population being estimated by Burnes at 160,000. It is also a great commercial mart; and the caravans which come from the West, passing along the southern shore of the Caspian Sea, through the Persian province of Astrabad, a most luxuriant and fertile country, arrive successively at Balfroosh, Ashruff, Astrabad, Mushed, Serrukhs, Merve, formerly the capital of the Seljook sovereigns, but now

surrounded by deserts, and at Bokhara. From this great centre of commerce they proceed northeastward about 400 or 500 miles to Khojend and Kokaun, the former a large city, said to contain 30,000 houses; and crossing the Bolor range of the Himalaya Mountains, they arrive in the Mohammedan States of Kashgar and Yarkund, 600 miles east of Kokaun, passing some towns on the way, of which Ush is the most important, being a trading and populous town. Those two latter States lie within the precincts of the Chinese authority, where the most exact order is enforced; and they are fertile, rich, and well cultivated. The town of Cashgar is said to contain 20,000 houses, and to be thronged with strangers from all parts of Asia. Yarkund is also wealthy and populous. So strict a police is maintained by the Chinese authority, that, according to the information given to Fraser, a single traveler may traverse the whole territory as safely as a large caravan. From Kashgar there is a constant intercourse through Chinese Tartary, along the edge of the great central desert, with China, though we know little of the intervening countries beyond what we learn from the accounts of the early missionaries. Besides this eastern trade, and the trade westward along the southern shore of the Caspian, two caravans, consisting of 4000 or 5000 camels each, proceed to Astracan by Khyvah, round the northern shore of the Caspian Sea. The imports from Russia into Bokhara are, iron, steel, copper, brass, quicksilver, vermilion, coral, hardware, plated goods, gold and silver embroidery, copper wire; furs, the broadcloths and cotton manufactured goods of Britain, Germany, and France; refined sugar, cochineal, paper, and a variety of rich goods, which, from this great commercial dépôt, are diffused far and wide over Central Asia. Russia receives in exchange black lamb skins, certain manufactures of cotton and silk imported from Persia, antique gems and coins, lapis lazuli, rubies, and turquoises, which are received from the southern country of Budukshia, where there are famous mines of these precious stones. From Cashgar, Yarkund, and the side of China, Bokhara receives large quantities of tea, the great modern staple of the China trade, porcelain and China ware, and the various manufactures of China; and in return sends turquoises, coral, sheep, lamb, and fox skins, and furs, etc. From Persia shawls are imported, and woolen goods from Kerman; silk stuffs from the cities of Yezd and Ispahan; gold and silver embroidery, copper ware, loaf, candy, and raw sugar; Hamadan leather; and turquoises, of which there are mines in Persia; and, in return, black sheep and lamb skins are sent, which are in great request, to be manufactured into black caps; camblet made of camel's hair, coarse colored silk handkerchiefs, lapis lazuli, indigo from India, cochineal, tobacco, chintzes from Masulipatam, and cotton manufactures. Slaves form a staple article in the commerce of Bokhara, and also of Khyvah. These are made prisoners by the disorderly tribes of Asia, the Koords, Turkomans, etc., in the course of the wars in which they are constantly engaged; and they are carried to the great slave markets of Bokhara and Khyvah, where they are exposed for sale like cattle. The balance of trade is always in favor of Bokhara. Money is consequently in great plenty, and can not be imported with a profit into this trading city. The Russian caravans, as they journey round the northern shore of the Caspian Sea, are frequently attacked by the Kirgeesh and Cossack tribes, and prisoners are carried off and sold into slavery. Fraser was assured that the number of Persian slaves in Khyvah and its dependencies exceeded the male population of these countries, and amounted to 150,000; and that, according to inquiries set on foot by the Empress Catherine, there were in Bokhara no less than 60,000 Russian slaves.

The commerce of the west with the southern countries of Asia—namely, Kaubul of Afghanistan, Cashmere, and India—passes through Persia by a different and more southerly route, namely, by Cashan, Yezd, which is the seat of rich silk manufactures, a great entrepôt of commerce, and a convenient resting-place for all the caravans, both from the East and other quarters; through Furrah and Herat, on the frontiers of Persia, famed for its rich manufactures of silk stuffs, a great channel of communication between the East and the West, and also an entrepôt of all the richest productions from Kabul, Cashmere, and India on the one side, and from Bokhara, Persia, Arabia, Turkey, and even Europe, on the other. From Herat the route continues through Furrah and across the River Helmund and the ranges of the Faropamisan Mountains, to Candahar, a journey of about 800 miles; thence to Kabul, Peshawur, and the countries on the Indus, and across extensive sandy deserts to the rich valley of the Ganges, whence by this river there is an easy access to Bengal and to Central India. There are various other routes by which the commerce of Asia, concentrated within the comparatively narrow boundaries of the Caspian Sea and the Persian Gulf, diverges in its progress eastward to the north, as well as to the south. From Bokhara there is a mountainous route into Little Thibet, and thence through Thibet into China; besides other more sequestered and difficult roads, through glens and mountains, where the only mode of transport is on the backs of asses and mules.

Persia.—Persia, from its central situation between the East and the West, is not only a great entrepôt of trade, but, though on the whole rather a poor country, it still contributes some valuable productions to the commerce of the East. It has long been famed for its abundant produce of raw silk, of cotton, and of wool—that of the province of Kerman especially being so valuable for shawls that it rivals in some respects that of Cashmere; of fruits, turquoises, tobacco, grain, etc. Almost all the principal towns of Persia, such as Kashan, Ispahan, Yezd, Tabreez, Kerman, Herat, etc., excel in the manufacture of silks, cottons, woolens, fine carpets, etc.; Kerman also in the manufacture of shawls; and others in that of cutlery, arms, etc. These are its chief exports to other countries, in exchange for their manufactures or produce. To India Persia sends raw silk, carpets, Kerman shawls, dried fruits, tobacco, horses—in which there is considerable traffic, swords, etc., and specie to make up the deficient balance. The imports from India are cotton goods, as chintzes, sent from Masulipatam by sea to Bushire, whence they reach the interior of Persia, and are thence carried eastward into Kabul and the countries on the Indus; the same article from Moultan, Lucknow, Delhi, etc.; some muslins, indigo, spices, sugar, and sugar-candy, in large quantities; gold and silver stuffs and brocades from Benares; precious stones, Cashmere shawls, iron, lead, copper, etc. Many of these articles, namely, Cashmere shawls, spices, indigo, muslins, etc., are carried through Asia Minor by a long land carriage to their final destination in European Turkey, and are found, with the lamb skins of the no less distant Bokhara, in the bazars of Bagdad and Constantinople. To those countries Persia exports also every article of her own rude and manufactured produce; coarse fabrics, both of silk and cotton, for the consumption of Asia Minor; and many heavy articles, such as grain, rice, tobacco, salt, coffee, cotton, etc.; besides fine silks, brocades, and prints, which are exchanged in Turkey for European goods brought through the countries of the Levant, namely, broad and narrow cloths, cassimeres, cotton goods, chintzes, muslins, veils, silks, satins, French brocades and embroidered goods, imitation shawls, cutlery of all sorts, glass, etc., and a considerable quantity of gold and silver bullion. Persia imports coffee and pearls from Arabia, in exchange for wheat, dried fruits, and cloaks. The mountainous country of Afghanistan, on the southern declivity of the Himalaya ridge, and the country on the head streams of the Indus, export to India

horses and ponies bred in Tartary, fur, shawls, Moultan chintz, madder, asafœtida, tobacco, and dried and other fruits, such as almonds and pistachio nuts. The imports from India are, coarse cotton cloths, worn by the common people of this country, and also in Tartary; muslins and other fine manufactures, silken cloth and brocade, indigo in great quantities, ivory, chalk, bamboos, wax, tin, sandal-wood, almost all the sugar which is used in the country, and spices from the Malabar coast, through Kurrachee and other parts of Sinde, and thence to Kabul and Candahar. The Indian cloths, shawls, chintzes, and also the indigo, are exported to Bokhara, from which are imported the broadcloths, cutlery, and hardware of Europe, received from the Russians, and finally consumed in Kabul and the countries of the Indus, loaded with the expense of a land journey across nearly half the [illegible].

China.—In the east, China has [illegible] been the seat of wealth and of an [illegible] trade. The Chinese have been always noted for their industrious habits, and the country has from [illegible] imperial abounded in the most valuable produce and manufactures. These were sent westward in the caravans to Asia Minor and into Europe, or they were transported by sea to India, and carried thence by the European fleets to the Red Sea. The same commerce is still continued, and China exports its produce of woolens, silk, and satin; tea in small boxes of thin lead; china; porcelain, raw silk, cochineal, crystal, gold dust, golden ingots, and silver with the Chinese stamp. These are sent through Chinese Tartary into the countries on the Oxus, and also to Cashmere, Kabul, and the countries situated on the southern declivity of the Himalaya Mountains. Regular caravans of horses and ponies—no other animal being fit to travel through those mountainous districts—set out from Cashmere, and from Peshawur, the capital of the Afghan country of Kabul, and a considerable commercial resort, to make their way through Chinese Tartary with goods imported from India and Persia. China carries on also an interior trade to a considerable extent with Russia, by the frontier town of Maimatchin, in which European goods and furs are received in exchange for tea, silk, and other articles of Chinese produce and manufacture.

Foreign Commerce.—In addition to her internal trade, Asia maintains an extensive intercourse by sea with Europe, America, Egypt and the Mediterranean. A great trade is also carried on from Hindostan and China to the Asiatic Archipelago, and the trade of the Asiatic islands with each other is of great importance. It appears that these islands were at a very early period the seat of commerce; and the learned researches of Europeans have brought to light, in some of them, the monuments of ancient civilization. Sumatra was the seat of the Malay empire, Java of a Hindoo State; and the Celebes were inhabited by the Bugis, a race of expert navigators and merchants. The productions of these islands, and of the Moluccas and Borneo, namely, spices, aromatics, and gold, entered into the commerce of the ancient world, and were imported into Rome through Egypt. In later times, about the ninth century, the Asiatic Archipelago was visited by the Arabs and the Chinese, while the adventurous Malays frequented the coasts of Asia, and even of Africa, and particularly the African island of Madagascar. When these islands were visited by Europeans, about the fifteenth century, Malacca, Acheen, and Bantam were the great marts of the Eastern Archipelago, where the rich produce of Sumatra, Borneo, and the Moluccas, conveyed in the small trading craft of the country, was exchanged for that of India and China. The Portuguese fixed on Goa, on the Malabar coast, as the capital of their Eastern settlements; and they afterward selected Malacca as a central station for protecting and extending their intercourse with the neighboring nations. The Dutch chose Bantam, and afterward Batavia, situated midway between Hindostan and China, as the centre of their commercial settlements. The situation was most advantageous, and the port was soon frequented by vessels from China and Japan, Tunkin, Malacca, Cochin China, and the island of Celebes. But the great and flourishing trade of Java was crushed under the colonial monopoly of the Dutch, and under what Sir Stamford Raffles terms "the short-sighted tyranny of a mercantile administration." The conquest of Java by the British in 1812 put an end to this thraldom, and the great trade of the Asiatic Archipelago began to centre in Batavia, which was fast rising into a great commercial emporium; all the articles which were the exclusive produce of the Eastern islands being collected at its principal ports for re-exportation to India, China, and Europe. Since Java was restored to the Dutch, the free port of Singapore, established by the British, is the centre of a great trade, and is frequented by the Chinese in their junks, and by all the other navigators of those seas with the produce of their respective islands. The Chinese take back with them the nests of a certain species of bird, which are esteemed a great luxury at their tables, and sell, it is said, for their weight in silver; biche-de-mer or tripang, a dried sea-slug, also used in Chinese dishes; Malayan camphor, the exclusive produce of Sumatra and Borneo; the tin of Banca, the spices of the Moluccas, opium, indigo imported from Hindostan; gold and silver, the first collected in Sumatra, Borneo, and some of the other islands. The maritime country trade of the Asiatic islands is carried on chiefly by the Chinese in their junks and brigs, by the Arabs in square-rigged vessels, and by the Bugis, the inhabitants of Celebes, who are all bold and expert navigators.

Products.—The annual fleet of Chinese junks arrives with the favorable monsoon among these islands, from Canton, Amoy, and other provinces, with cargoes of teas, raw silk, silk, piece goods, and innumerable minor articles, for the use of the Chinese, who are settled in great numbers here, and are distinguished by their shrewd, intelligent, and industrious habits. The Chinese extend their voyages to Sumatra, the Straits of Malacca, and eastward as far as the Moluccas and Timor collecting edible bird-nests, biche-de-mer, and other articles of which Java is the great entrepôt. Java is also a great dépôt of European goods; and the people being rather industrious cultivators of their fertile island than mariners or traders, it exports rice, a variety of vetches, salt, oil, tobacco, timber, brass-wire, and its own cloths, and a considerable quantity of European, Indian, and Chinese goods, in exchange for gold dust, diamonds, camphor, benjamin, and other drugs; edible bird-nests, biche-de-mer, rattans, beeswax, tortoise-shell, and dyeing woods from Borneo and Sumatra. The rice and other productions of Java are exchanged for spices and pungent oils of the Moluccas, and for the tin of Banca. The natives of Celebes are famed for the manufacture of a particular species of fine cloths, of a very strong texture, which are in great request, and, along with spices, wax, and sandal-wood, are exchanged for the produce of Sumatra, Borneo, and Java, whence they are exported to China. The Bugis have a large share of the carrying trade of the Asiatic Archipelago; and they bring the produce of the Moluccas, and of Borneo and Sumatra, to Java and the other islands, and receive in exchange tobacco, rice, and salt, from Java, besides opium, iron, steel, European chintzes, and broadcloths and Indian piece goods, with which they return eastward during the southwest monsoon.*

The eastern countries of Asia, viz., India and China, as we have already stated, have from time immemorial been famed for certain manufactures, such as silks, cambrics, muslins, etc., as well as for other products

* Raffles' *History of Java*; Marsden's *Sumatra*.

peculiar to the climate; viz., spices, precious aromatics, medicinal herbs, etc. These were always in great demand in Europe, while the produce of Europe was not wanted in Asia. From the rude state of industry among the Western nations, they had nothing to offer in exchange for the finer manufactures of India, and still less could the soil of Europe yield any equivalent the more genial produce of Eastern climes. Hence the great article of export in those times from Europe to Asia was always bullion, the instrument of exchange all over the world. Bullion could only be procured by an exportation of European produce or manufactures such low prices as to insure a sale; and the loss on such transactions must have been made up to the merchant by the high price of Asiatic goods. The ancient monopoly of silk secured to Asia a favorable balance of trade with Europe, bullion being the only article with which it could be purchased. Notwithstanding the introduction of the silk manufacture into Europe about the sixth or seventh century, the commercial pre-eminence of Asia still continued, and bullion was the chief article of export to the East. Throughout the interior of Asia this superiority remains to the present day; and a continual stream of bullion flows from the Bosphorus eastward, through Asia Minor and Persia, into Hindostan, and is finally dispersed in the great ocean of the Chinese currency. Bullion is also the principal article sent from Arabia to India in exchange for Indian goods.

But a great revolution has taken place in the trade between Asia and Europe, and especially with Great Britain. Europe is now in a condition to offer an equivalent in manufactures for the produce of Asia; goods of various kinds are sent in exchange for those of India; and from Great Britain remittances in bullion have nearly ceased. So prodigiously has the price of goods been lowered by the use of machinery, that the cotton wool of India is now imported into Britain, and, after being manufactured, is re-exported to the place of its growth, and sold at a lower price than the same goods from the loom of the India workman, though it is loaded with the expense of a double voyage across half the globe. The goods of the European manufacturers are poured into Asia through all its sea-ports, and reaching the interior on the backs of mules and asses, often after a journey of several thousand miles over deserts and mountains covered with perpetual snow, they are sold cheaper than the same articles by the native workmen. The woolen manufactures of Yorkshire, the cotton goods of Manchester and Glasgow, French cloths, and German linens, are dispersed all over India, and even partially in China; they are found in the bazars of Bokhara, Samarcand, and Cashgar, and are carried eastward by the caravans into the wilds of Tartary. The natural productions of Asia, namely, spices, rich aromatics, dyes, and other rare luxuries of tropical climates, will always be in demand in Europe; and the monopoly of tea by the Chinese gives them the command of the European markets. Tea has now almost become one of the necessaries of life, and it travels for a market across half the globe. It is the great commercial link between Europe and China, from which, like the precious produce of silk in ancient times, it can only be procured. But the improved industry of Europe supplies, as is already observed, an equivalent in woolen and cotton goods for this highly-prized luxury. Since the expiration of the East India Company's charter, in 1834, the trade has been thrown open to all classes of British subjects, and their merchants can now freely trade to all places accessible to Europeans to the east of the Straits of Malacca. During the short time that has elapsed since then, the increase of the exports and imports has fully realized the expectations held out by those who opposed the company's monopoly.—E. B. *See* HINDOSTAN.

Asphaltum, Bitumen Judaicum, or **Jews-pitch**, is a light, solid bitumen, of a dusky color on the outside, and a deep shining black within; of very little taste, and having scarcely any smell unless heated, when it emits a strong pitchy odor. It is found, in a soft or liquid state on the surface of the Dead Sea, and by age grows dry and hard. The same kind of bitumen is met with likewise in the earth in other places of the world—in China, America, and in some places of Europe; as the Carpathian Hills, France, Neufchatel, etc.—E. B.

Aspinwall (formerly **Colon**), a town, province of Panama, dépôt Ismo, New Granada, Central America. Situated on Navy Bay, lat. 9° 21′ N., lon. 79° 59′ W., 50 miles by railroad from Panama. It is built on Manzanilla Island, which is connected with the shore by the Panama railroad. Population, 3000. The buildings, 200 in number, are mostly of wood, and all recently erected. The railroad company have handsome and extensive dépôts, warehouses, machine-shops, etc., and ample wharfs and piers, alongside which steamers and vessels lay, and the harbor has safe anchorage. The streets are graded, and many of them lined with shops and hotels, affording every convenience for travelers. The vicinity of the place is rather low and swampy, making it somewhat unhealthy for strangers. The foreign consuls, who generally reside at Chagres, distant nine miles, now reside here. The American and British Mail Steamers regularly touch here. There is a hospital belonging to the railroad company. A newspaper is published tri-weekly. By government act, it is necessary to date all wills and business made here *Colon*, otherwise they have no legal force in the local courts.

Assay, Essay, or **Say**, in [illegible] the proof or trial of the goodness, purity, value, etc., of metals and metalline substances. In ancient statutes this is called *touch*, and those who had the care of it *keepers of the touch*.—E. B.

Assaying, taken in its general acceptation, is a chemical process by which any ore, or other metallic compound, is analyzed, and its constituent parts determined. But the term more particularly denotes the peculiar art by which gold and silver are examined, and their qualities ascertained, in relation to their state of purity. By the former the whole contents of the substance under examination are separated and collected; by the latter it is only necessary in practice to find, by the destruction or separation of the alloys, the amount of pure metal contained in the specimen operated on, so that a value may be given, by computation, to the whole mass. To this specific branch we purpose to confine ourselves in the following observations.

The art of assaying the precious metals must be esteemed of considerable importance in many points of view, but more especially to commercial nations trading extensively in these commodities. For although the ultimate destination of these metals be their conversion into coin, plate, or other articles of use and ornament, still there are vast treasures of bullion consigned to the stores of different countries merely as commodities, as convenient representatives of value, or in security for nominal wealth, the marketable value of which is determined solely by the skill and accuracy of the assayer. Every one having experience of such matters knows that, unlike other things of a mercantile nature, bullion can not be valued by its bulk, weight, or any simple external characteristic, but by ascertaining in some way the amount of fine metal contained in a given quantity. And implicit confidence being placed in the honesty, accuracy, and fidelity of the assayer, who, by examining a small portion only, gives a certificate of its quality upon which the whole is estimated, merchants are enabled to buy and sell bullion without risk of loss, and with the most perfect assurance of the value being maintained. By means

of the art of assaying, as applicable to small as to large things, we also possess a certain safeguard against fraud in the manufacture of plate and other articles of personal or domestic use, which must be regarded as of some importance in a country rich and affluent like Great Britain, where gold and silver have become so common among the middle classes as scarcely to be esteemed luxuries. We could only wish that the laws which prevail in reference to plate were more generally extended in their application to the manufacture of jewelry, and other personal ornaments; for in these things the public have no guarantee against fraud and knavery beyond the character or assurance of the dealer.

If the art of assaying be deemed valuable and important as regards bullion and plate, securing a certain and reliable test of value, as well as a sufficient check upon fraudulent designs, we can not surely question its even greater importance in reference to the metallic currency of a country, the standard accuracy of which affects materially the interests of all, and so far tends to promote the welfare of mankind. Whatever this standard be, it is obvious the value of all property in exchange must be regulated and determined by it, whether in land, houses, commodities, or the wages of labor; and if we had no reliance on the integrity of our coin as a measure of value, we could enjoy no security in our property. In all countries, therefore, claiming a character for honesty, the integrity of the standard should be a fundamental principle. Any the slightest deviation from it will instantly be discovered, followed by a loss of credit, and violent fluctuations in the exchange, which of all things are most injurious to trading communities. For the exchange between one country and another is not determined by coin merely as a circulating medium, but, in reality, by the exact amount of fine metal contained in the coin; and, therefore, it is necessary to know that the proportion is maintained called *the standard*, which, in our gold currency, consists of eleven-twelfths of pure metal and one-twelfth of alloy. This fact can only be ascertained by the process of assay. But when nations acquire a character for honesty and integrity, the currency will freely circulate all over the world without suspicion, at its reputed value, and the currency of one be easily converted into the currency of another. But we should fail to secure this great advantage, this implicit confidence, without the assayer's skill and check, by which the due proportions of metal are guaranteed, and any depreciation detected.

We need now no longer apprehend any of those capricious and dishonorable changes in the currency, not unknown to our history before the reign of Elizabeth, which enriched the monarch at the expense of his subjects, created sudden and violent changes in the value of property, and often spread dismay and poverty among all classes, without any clear knowledge of the cause. That patriotic and sagacious queen, of whom England is justly proud, among other great and durable merits, is honorably distinguished by the restoration of our currency to purity, and by fixing our present standard of value, from which, happily, no deviation can be notified in succeeding ages. In this respect science and knowledge, if not always the handmaids of integrity, are the best guarantees against fraud and evil designs; and we can scarcely believe it possible, in these times, to suffer from a dishonorable depreciation of the currency, while any vague apprehension of error is instantly dissipated by the numerous checks, public and private, on the purity of our coin.

Trial of the Pyx.—Among these we may briefly instance the ancient ceremony called the *Trial of the Pyx*, which, in the most public manner, secures an impartial examination of the coinage, and a verdict, as public, of its legal or standard purity. In no other country have we been able to discover an institution analogous to this, which, after all intermediate tests have been tried in the process of manufacture, affords an ultimate and judicious appeal for the public satisfaction. And it may be added, to the credit of the officers of the Mint, that, whatever may happen in future times, amidst the sudden and hasty revolutions in public affairs, during the past, we are unable to adduce any instance of this ordeal being passed without honor and integrity; and instead of the allowance or remedy by law for errors, unavoidable in manufacture, being taken advantage of, as a protection to carelessness, we may pronounce that the coinage has always been proved to be as nigh to the legal standard as is possible, the deviation being on the average scarcely worth notification.

The *Trial of the Pyx*, in England, takes place once in about every three years, but no specified period is fixed by law. It is so denominated from the pyx, or chest, in which the specimen coins are deposited in the Mint for future examination; these coins being supposed a fair representation of the whole money coined within a certain period. Out of each bag of coin, whether gold or silver, two pieces are taken, one for the trial by assay within the Mint, the other for the general pyx; and these are carefully sealed up in paper by three officers, and deposited in the chest. It should be remarked, that previously to the issue of coin to the public, a minor pyx takes place within the Mint, intended for the examination of the coined money by appointed officers, as regards both weight and fineness, and no coin is permitted to be delivered before it has passed this necessary ordeal.

It having been notified to the government that a trial of the pyx is called for, the Lord Chancellor issues his warrant to summon a jury of goldsmiths, who, on the appointed day, proceed to the exchequer office, Whitehall, and there, in presence of several privy-counselors and the officers of the Mint, receive the solemn charge of the Lord Chancellor, who directs them in their important functions, and requests them to deliver to him a verdict of their finding. A piece of gold and silver, cut from the *trial-plates* deposited in the Exchequer, supposed to be of the exact legal standard, are delivered to the foreman of the jury, who is required to declare to what degree the coin under examination deviates from them. This being done, the jury proceed to Goldsmith's Hall, London, where assaying apparatus, and all other necessary appliances, are in daily use for the trial of gold and silver plate; and sealed packets of the specimen coins being delivered to them by the officers of the Mint, they are first tried by weight, and then a certain number are taken from the whole and melted into a bar, from which the assay trials are subsequently taken.

The verdict of the jury, founded on the results of these proceedings, proving favorable, the Master of the Mint and subordinate officers are released from all further responsibility, while the country receives, by the publicity of the verdict, an attestation of the standard purity of the coinage.

In times of comparative ignorance, the art of assaying was esteemed a mystery, and, like some other crafts, the practice of it was retained in few hands. There were supposed secrets in the conduct of the processes, which none but the initiated were permitted to know; but now it is admitted that those secrets are nothing but the knowledge acquired by long experience, amounting in reality to certain allowances or adjustments in the results of the operations. The uncertain tests and appliances employed in ancient times, which afforded only a wide approximation to truth, and exposed the public to extortion and fraud, have in more scientific times been superseded by chemical processes as accurate as they are delicate and beautiful. The exquisite and varied laws of nature, in connection with metals and their transformations, are made instrumental to the use and knowledge of mankind; and science, so called, enables man to nicely balance and

estimate the vast treasures found in the bowels of the earth, and constitute them measures of value more unchanging than any other product of nature. As science has progressed, so has the art of assaying improved, while in modern times new fields have been opened up for its use and application. Along with increased accuracy, it has become more varied and extensive in its practice. The amount of the precious metals have not only increased immeasurably, thereby magnifying the importance of the art, but in recent times changes in the mode of refining or separating these metals have created a new branch of business little practiced in former ages. The application of sulphuric acid to separate gold from silver, and silver from gold, by which the operation is effected with great economy, and nearly all the contents recovered at comparatively little cost, has led to an extensive business in *parting* assays, which did not formerly exist. In this manner the holder of bullion, of a mixed character, has a higher value put upon his metal by reason of the gold or silver contained in it; and in the market he is able to realize the whole value by assay, less the deduction made to cover the charge of refining. The *parting* assay is different from the simple assay in this, that it declares upon the certificate of a gold assay the amount of silver combined with it, and of a silver assay the number of grains of fine gold contained in each pound.

The bullion to be valued having been melted into ingots or bars, small pieces are cut from each and folded separately in slips of paper with a corresponding mark or number of the bar, so as to preserve the identification of the assay reports with the bars. On these slips of paper the assayer writes his report, which declares the quality of the gold and silver, and this is the certificate upon which the bullion is bought and sold in the market. The Bank of England, however, and the Mint, in order to guard against any surreptitious change or fraud, require the assays upon which they receive bullion to be cut off in presence of appointed officers. The assayer reports gold by *carats*, and silver by pennyweights. In the one case the Troy pound is divided into 24 parts or carats, and British standard being 11-12ths fine gold and 1-12th alloy, the carat will thus represent 10 dwts. Troy, the standard being therefore 22 carats fine and 2 carats alloy. In the other the Troy pound is divided into 240 dwts., and the standard of silver being 222 dwts. fine and 18 dwts. of alloy, the pennyweight will represent the 1-240th of the pound.

Carats are subdivided into four carat grains, = 60 Troy grains each, and these are again farther subdivided into eighths of a carat grain, = 7½ grains Troy. The lowest trade report of gold is one-eighth of a carat grain, and of silver half a pennyweight. In reporting gold, the practice in general use is to take 2 carats as the representative of fine gold for bullion *better* than standard, and 24 carats for bullion *worse* than standard. Thus a bar reported *better* 1 3⅜, or one carat, three carat grains, and three-quarters of a grain, is within one-quarter of a carat grain of purity, or 15 grains Troy. But if a bar were found to contain only one-half of fine gold, the report would not be one carat worse, but *worse* 12 carats, or 12-24ths. We may observe, however, that this complex mode of enumeration, so great a mystery to the uninitiated, will probably in a few years be entirely superseded by the decimal system of notation in general use on the continent. Already it is partially adopted by assayers in England, who are now required to append the decimal report to the ordinary one on the certificate. Instead of carats and pennyweights, the numeral 1000 will represent fine gold and silver, and any deviation in purity from this will be expressed by a decimal instead of a vulgar fraction.

It has been already remarked that the lowest denomination of the trade report is ¼th of a carat grain, or 7½ grains Troy, as respects gold, and half a pennyweight, or 12 grains, as respects silver; but practically an assayer can arrive at a much nearer approximation to the truth. As in the Royal Mint in making the combination for standard coin, he can report to a single grain, or 1-5760th, in each case; but in buying and selling bullion some protection to the purchaser is deemed necessary as an indemnity against errors and irregular mixture of the alloy, and hence arises the above latitude in the assay report. It is probable, however, that the general use of decimal notation will eventually cause a more accurate report, and deprive the bullion dealer of a share of that advantage which obviously is greater than is necessary.

An ordinary assay report of gold and silver expresses the variation from the standard, and not the fine metal contained in it; and it is, therefore, marked as either better or worse than standard. The standard of gold being 22 carats fine and 2 alloy, or 11-12ths fine, an ingot of gold found to contain only 21 carats pure gold would be reported *worse* 1 carat; if it contained 23½ carats, it would then be reported *better* 1 carat, 3 grains, and half a grain. The standard of silver being 11 oz. 2 dwts. fine, and 18 dwts. alloy, an inget of silver found to contain only 11 oz. of fine would be reported *worse* 2 dwts., but if it contained 11 oz. 4½, the report would then be *better* 2½ dwts.

In buying or selling, the *betterness* or *worseness* of the bar is added or deducted from the gross weight; and the value is computed on this, the standard weight, at the market price of the day.

When the assay required is a *parting* assay, or an assay of gold containing silver, a report is given of the weight of fine silver in the pound; and when the silver exceeds 15 dwts. per pound, all above that is usually added to the value of the gold, that being an allowance made by general agreement for the cost of separation or refining. So likewise with an assay of silver holding good. The report declares the number of grains of fine gold in the pound, and all above 3 or 4 grains is added to the computed value of the silver.

In these delicate operations we need scarcely impress upon the reader how important an instrument an accurate balance must be in securing a certain and uniform result. The specimen taken by an assayer is no more than 12 or 15 grains of the mass, and if 12 grains, each grain would represent an ounce, or 1-430th. In the Royal Mint, the fine balances in use are sensible to the 1-1000th of a grain.

The principle of assaying gold and silver is very simple theoretically, but in practice great experience is necessary to insure accuracy; and there is no branch of business which demands more personal and undivided attention. The result is liable to the influence of so many contingencies, that no assayer who regards his reputation will delegate the principal processes to one not equally skilled with himself. Besides the result ascertainable by weight, there are allowances and compensations to be made which are known only to an experienced assayer, and if these were disregarded, as might be the case with the mere novice, the report would be wide from the truth.—E. B.

Assessor, a person appointed to assess property, and particularly to determine the value of property for taxation.

Assets, in *Commerce*, a termed used to designate the stock in trade, and the entire property of all sorts, belonging to a merchant or to a trading association. It is also applied to goods or property placed, for the discharge of some particular trust or obligation, in the hands of executors, assignees, etc.

Assiento, a Spanish word signifying a contract. In commercial history, it means the contract or agreement by which the Spanish government ceded first to a company of French, and afterward (by the treaty of Utrecht) to a company of English merchants, the right to import, under certain conditions, a specified number of slaves into the Spanish colonies. For full

particulars with respect to this contract, see Mr. Bandinel's valuable work on the Slave-trade.

Assignat, the name given to a peculiar species of paper money issued during the first French Revolution. The influence of the system, operating along with the other attempts to regulate trade, form a prominent feature in the calamitous history of the epoch. The share borne in it by the assignats is at the same time a memorable instance, for the use of the economist and financier, of the hopelessness of projects for creating or preserving national wealth by an issue of paper money, not the representative of available wealth and real business transactions. The first issue of assignats was made in the security of the forfeited ecclesiastical property, and was adopted as a preferable alternative to throwing the forfeited lands on the market, which it was no doubt judiciously believed that so large an amount of property would glut. The holder of the assignats might use them as money, or claim the land which they represented. As more forfeitures occurred, the issue of assignats was increased. But it soon ceased to be measured by property, and was enlarged according to the exigencies of the revolutionary government. The paper money fell to half, then to a sixth part of the value of the same denomination in silver, and sinking rapidly through successive grades of decrease, silver held at last the value of 150 times its denomination in paper. In August of 1773, 3776 millions of francs were thus put in circulation; and virtually the assignats became worthless. The establishment of the maximum, and the other tyrannical interferences with trade by which revolutionary governments endeavor to support credit, have their proper place, along with the account of the condition of the country during the depreciation of the assignats, under the head of FRANCE.—E. B.

Assignee, a person appointed by competent authority to do, act, or transact some business, or exercise some particular privilege or power, for or on account of some specified individual or individuals. Assignees may be created by deed, or by law: by deed, where the lessee of a farm assigns the same to another; by law, where the law makes an assignee, without any appointment of the person entitled, as an executor is assignee in law to the testator, and an administrator to an intestate. The term is most commonly applied to the official assignees appointed to manage bankrupt estates.—*See* BANKRUPT.

Assignment, Assignation, Assignee, are of frequent technical use in law. To assign is to make over, and the term is generally used to express a transference by writing, in contradistinction to a transference by actual delivery. In England the usual expression is assignment, in Scotland it is assignation. The person making over is called *assignerer, assigner*, or *cedent;* the recipient, *assignee*. This last term is of important application in the law of bankruptcy in England and Ireland, as expressing persons of two classes, the official assignees and the trade assignees, to whom the realization and distribution of the bankrupt estate is committed.—E. B. *See* BANKRUPTCY.

Assize. *See* BREAD.

Association (from the Latin *associare*, to join in fellowship), the act of associating or constituting a society or partnership, in order to carry on some scheme or business with more advantage. The reader is referred to the *Encyclopedia Britannica*, articles SOCIETIES and AGITATION, in reference to the influence of association upon workmen and employers, and as a political engine.

Assumption, the capital of the province of Paraguay, in South America. It is situated on an obtuse angle formed by the eastern bank of the River Paraguay, 18 miles above the junction of the first mouth of the Pilcomayo, and 48 above that of the second. It was originally a small fort, but, from the convenience of its situation, in a few years it became a city, and in 1547 was erected into a bishopric. The adjacent territory is rich and fertile in a high degree, and abounds in a great variety of fruits. The air is temperate and the climate salubrious; the trees are perpetually green, and the rich pastures in the neighborhood feed numerous flocks of cattle. The city is inhabited by Spaniards, Indians, and Mestizoes, who trade in hides, tobacco, and sugar. The Paraguay affords a channel of communication with Buenos Ayres; but the passage is long, owing to the rapid flow of the waters of that river: this, however, is considerably obviated by the favorable winds which blow from the south for a great part of the year. Population, 12,000. Long. 57° 37′ W.; lat. 25° 16′ S.—E. B.

Assurance. *See* INSURANCE.

Astern, a sea phrase, used to signify any thing at some distance behind the ship; being the opposite of AHEAD, which signifies the space before her.

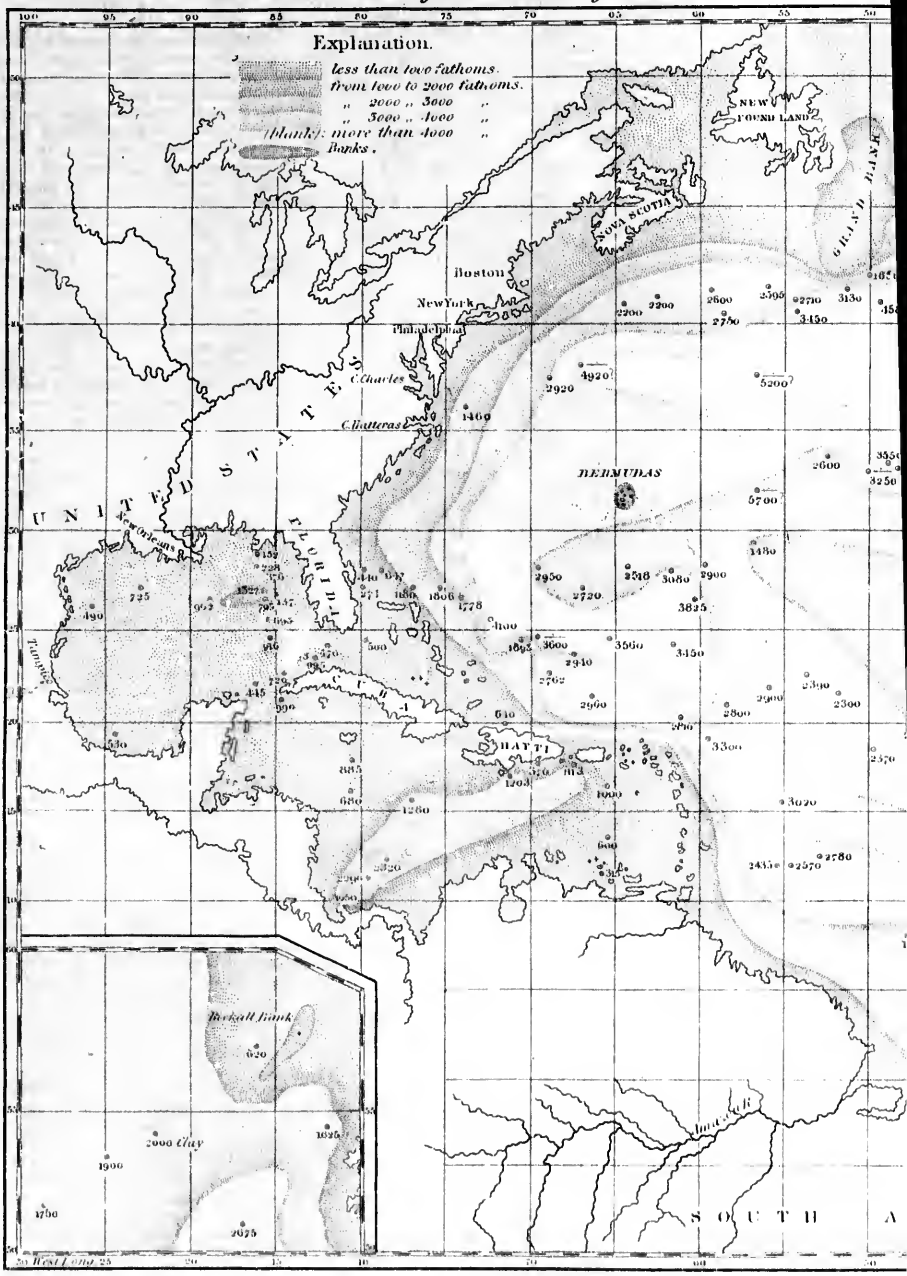
Astringents, a class of medicines used for binding or contracting the several parts, external or internal, of the human system, for restraining profuse discharges, coagulating the fluids, condensing and strengthening the solids. The principal astringents are the mineral acids, alum, lime-water, chalk, several preparations of copper, zinc, iron, etc., catechu, kino, oak-bark, galls, and all vegetable substances containing tannin.—E. B.

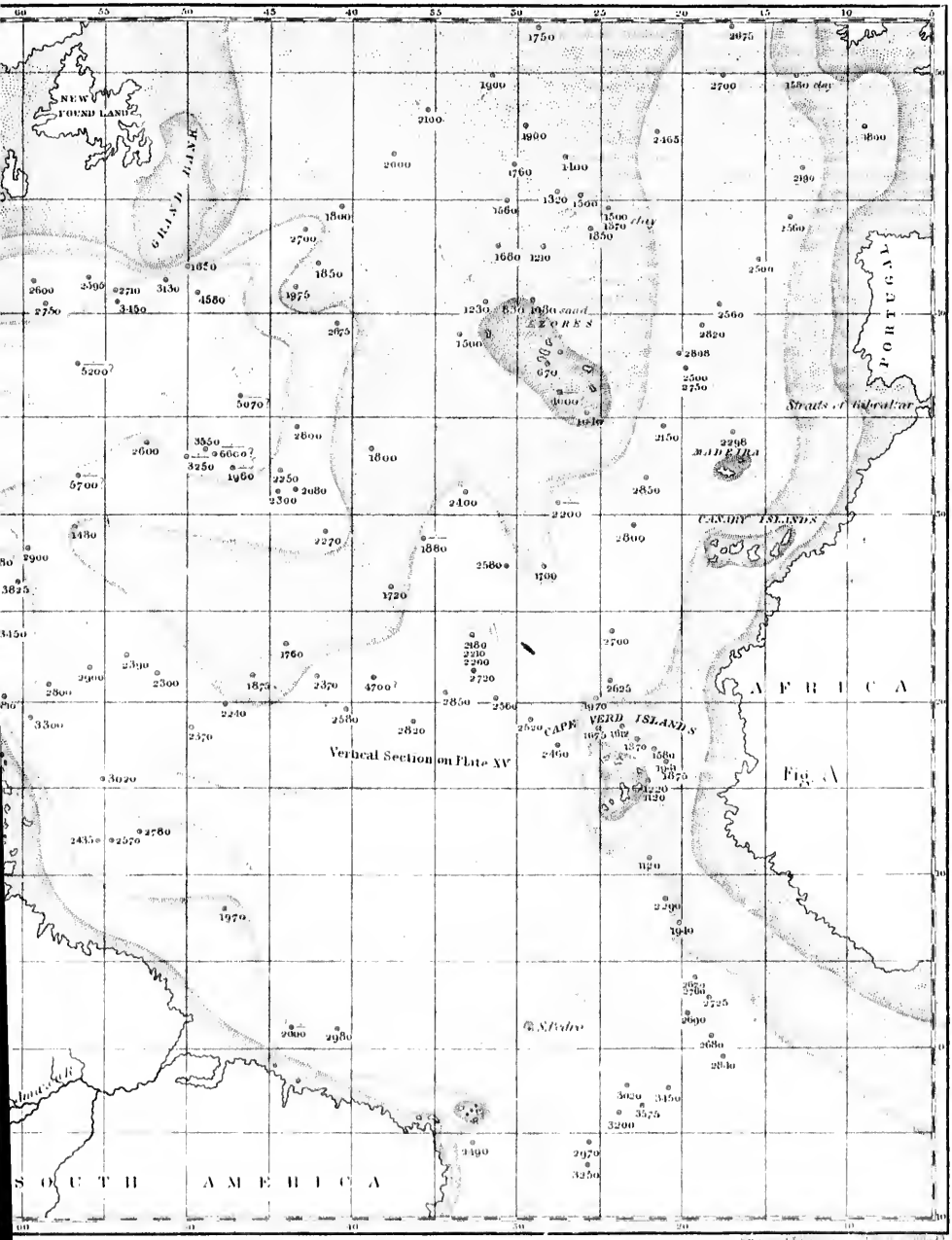
Astronomy. The earliest accounts we have of this science are those of Babylon, about 2234 B.C.—BLAIR. The study of astronomy was much advanced in Chaldea under Nabonassur: it was known to the Chinese about 1100 B.C.; some say many centuries before. Lunar eclipses were observed at Babylon with exceeding accuracy, 720 B.C. Spherical form of the earth, and the true cause of lunar eclipses, taught by *Thales*, 640 B.C. Further discoveries by *Pythagoras*, who taught the doctrine of celestial motions, and believed in the plurality of habitable worlds, 500 B.C. *Hipparchus* began his observations at Rhodes, 167 B.C.; began his new cycle of the moon in 143; and made great advances in the science, 140 B.C. The precession of the equinoxes confirmed, and the places and distances of the planets discovered, by *Ptolemy*, A.D. 130. After the lapse of nearly seven centuries, during which time astronomy was neglected, it was resumed by the Arabs about 800; and was afterward brought into Europe by the Moors of Barbary and Spain, but not sooner than 1201, when they also introduced geography.

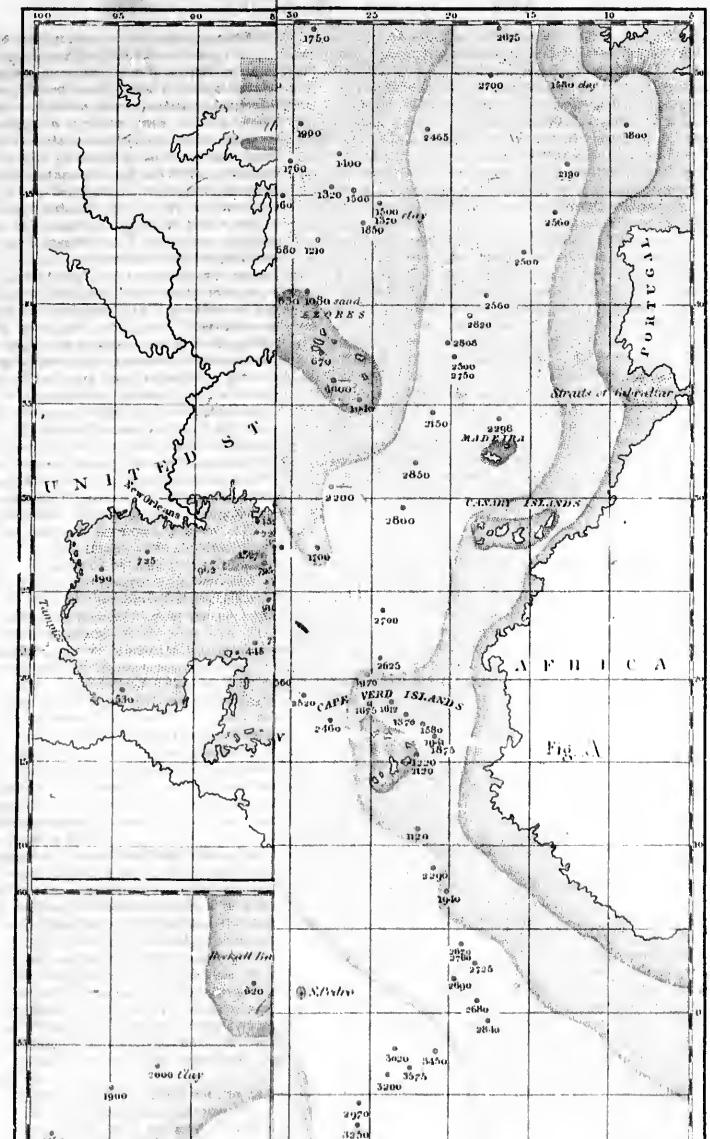
	A.D.
The Alphonsine tables were composed	1284
Clocks first used in astronomy about	1300
True doctrine of the motions of the planetary bodies revived by Copernicus	1530
The science greatly advanced by Tycho Brahe about	1582
True laws of the planetary motions, by Kepler	1619
Telescopes and other instruments used in astronomy about	1627
The discoveries of Galileo were made about	1631
The transit of Venus over the sun's disk first observed by Horrox, November 24	1639
Cassini drawa his meridian line, after Dante	1655
The aberration of the light of the fixed stars discovered by Horrebow	1659
Discoveries of Picart	1669
Map of the moon constructed by Hevelius	1670
Motion of the sun round its own axis proved by Halley	1676
Discoveries of Huygens	1686
Newton's *Principia* published, and the system as now taught incontrovertibly established	1687
Catalogue of the stars made by Flamstead	1688
Satellites of Saturn, etc., discovered by Cassini	1761
Aberration of the stars clearly explained by Dr. Bradley	1737
Celestial inequalities found by La Grange	1780
Uranus and satellites discovered by Herschel, March 13	1781
Mécanique Celeste, published by La Place	1796
Ceres discovered by Piazzi, January 1	1801
Pallas, by Dr. Olbers, March 28	1802
Juno, by Harding, September 1	1804
Vesta, by Olbers	1807
Neptune, by Le Verrier	1846
United States astronomical expedition to the South Hemisphere, under Lieutenant Gillis, left Baltimore July 18	1849

The distance of the fixed stars is supposed to be 400,000 times greater from us than we are from the sun, that is to say, 38 millions of millions of miles; so that a

Basin of the North Atlantic Ocean. by Lieut. Maury U.S.N.




NEW FOUND LAND
GRAND BANK
PORTUGAL
Straits of Gibraltar
MADEIRA
CANARY ISLANDS
CAPE VERD ISLANDS
AFRICA
SOUTH AMERICA
Vertical Section on Plate XV
Fig. A
S. Pedro
Amazon R.


UNITED STATES
AFRICA
EUROPE
Tropic
Straits of Gibraltar
MADEIRA
CANARY ISLANDS
CAPE VERD ISLANDS
Bermudas
Fig. A
St Pedro
Rockall
1750
2675
2700
1880 clay
3900
2465
1800
1760
1100
2180
1320
1560
1500
1570
1680
clay
2560
1210
2500
1080
sand
2560
2630
2868
670
2500
2750
3800
3240
2150
2266
2850
2200
2600
1500
2700
2625
3170
2820
3075
1012
1376
2580
2460
1875
3120
3120
3120
3290
3160
2675
2700
2525
2690
2680
2840
3620
3450
3575
3200
2970
3250
1900
2000 clay
1750
2675
920
30 West Long. 25 20
30 20 10

cannon-ball would take near nine millions of years to reach one of them, supposing there were nothing to hinder it from pursuing its course thither. As light takes about eight minutes and a quarter to reach us from the sun, it would be about six years in coming from one of those stars; but the calculations of later astronomers prove some stars to be so distant, that their light must take centuries before it can reach us; and that every particle of light which enters our eyes left the star it comes from three or four hundred years ago.—HAYDN.

Atlantic Ocean (*Atlanticus Oceanus*), one of the five great hydrographical divisions of the globe, occupies an immense valley, and extends from the Arctic circle on the north to the Antartic circle on the south, bounded west by the coast of America to Cape Horn, and thence by a line continued on the same meridian to the Antarctic circle, and east by the shores of Europe and Africa to the Cape of Good Hope, and thence prolonged on the meridian of Cape Agulhas till it meets the Antartic circle. Its extreme breadth is about 5000 miles, and its area is computed at 25,000,000 square miles. It is naturally divided into three portions: 1st, the north; 2d, the south; and, 3d, the intertropical Atlantic. The North Sea, or German Ocean, the Caribbean Sea, and the Irish Sea, form portions of the Atlantic; but the Baltic and the Mediterranean, which communicate with the North Sea by narrow channels, are properly considered separate seas. The principal gulfs of the Atlantic are, in Europe, the Bay of Biscay, or Golfe de Gascogne; in Africa, the Gulf of Guinea; in America, the Gulf of Mexico and the Gulf of St. Lawrence. The chief islands are, in Europe, the British Isles and Iceland; in Africa, the Azores, Madeira, and Canary islands, and the Archipelago of the Gulf of Guinea; in America, the Antilles, Newfoundland, and the Islands of the Gulf of St. Lawrence. The Atlantic, with its branches, drains nearly the whole of Europe west of the basin of the Volga; all North America east of the Rocky Mountains and the Sierra Madre of Mexico; and the whole of South America east of the Andes. Its chief affluents are, in Europe, the Rhine, Loire, and Tagus; in Africa, the Senegal, Niger, and Congo; and in North America, the St. Lawrence and Mississippi; in South America, the Orinoco, Amazon, and La Plata. The bed of the Atlantic is very unequal in elevation, in some places rising in immense sand banks to within a few fathoms of the surface, and in others sinking to great depths. In 1853, Lieutenant Berryman, of the United States navy, ran a line of deep sea soundings from the neighborhood of Newfoundland to Ireland, to test the practicability of finding a base for a submarine telegraph between America and Europe. Average depth, 12,000 feet. But farther south, Lieutenant Berryman made a sounding (lat. 52° 55′ N., 47° 58′ W. long.) 39,600 feet in depth, equal to a little over 7½ miles. The most extensive banks are those of Newfoundland, the Dogger Bank in the German Ocean, and the Agulhas Bank off the south point of Africa. The minimum depth on the Bank of Newfoundland is 60 feet. The German Ocean varies in depth from 66 to 600 feet.

"From the top of Chimborazo to the bottom of the Atlantic, at the deepest place yet reached by the plummet in the North Atlantic, the distance, in a vertical line, is nine miles. In its entire length, the basin of this sea is a long trough, separating the Old World from the New, and extending probably from pole to pole. Could the waters of the Atlantic be drawn off, so as to expose to view this great sea-gash, which separates continents, and extends from the Arctic to the Antartic, it would present a scene the most rugged, grand, and imposing. The very ribs of the solid earth, with the foundations of the sea, would be brought to light, and we should have presented to us at one view, in the empty cradle of the ocean, 'a thousand fearful wrecks,' with that dreadful array of dead men's skulls, great anchors, heaps of pearl, and inestimable stones, which, in the poet's eye, lie scattered in the bottom of the sea, making it hideous with sights of ugly death. There is at the bottom of this sea, between Cape Race in Newfoundland and Cape Clear in Ireland, a remarkable steppe, which is now known as the telegraphic plateau. A company is now engaged with the project of a submarine telegraph across the Atlantic. It is proposed to carry the wires along this plateau from the eastern shores of Newfoundland to the western shores of Ireland. The great-circle distance between these two shore-lines is one thousand six hundred miles, and the sea along the route is probably nowhere more than two thousand feet deep."—MAURY'S *Geography of the Sea.*

One attempt has been made to lay a cable from Port au Basque, Newfoundland, to Cape North, the extremest point of Cape Breton Island, but owing to continued storm the cables had to be parted, and it was given up. Preparations are now being made for another trial.

The trade-winds blow regularly in the intertropical portion of the Atlantic; beyond these limits the winds are variable. The principal currents of the Atlantic are, the equatorial current, which flows from the coast of Africa to the Caribbean Sea, with a velocity of from 30 to 70 miles a day, and the Gulf Stream, which, leaving the Gulf of Mexico, flows through the Strait of Florida, with a velocity of 80 miles a day, and a temperature of 86° Fahrenheit, and extends with a gradually decreasing velocity and diminished temperature to the Azores. Immense numbers of fish are found in the Atlantic, and herring and cod fishing are important branches of industry in the northern portion. A great part of the surface of the Atlantic, between lat. 16° and 45° N., and long. 35° and 75° W., is covered with a species of weed (*Fucus Natans*) of a beautiful green color, from which circumstance it is called the Sargazo Sea—the sea of duck-weed, or the grassy sea. In the higher latitudes of the North and South Atlantic, navigation is impeded by immense icebergs, which are floated from the polar regions, and although these are generally melted before reaching the frequented parts of the ocean, they have occasionally been met with as far south as lat. 40° 45′ in the North Atlantic, and in the vicinity of the Cape of Good Hope in the South Atlantic Ocean. For extensive information on the navigation and currents of the Atlantic, *see* MAURY'S *Wind and Current Charts of the Atlantic Ocean.*

Plate I., from MAURY'S *Geography of the Sea*, "presents a map of the depths of the ocean according to recent soundings. "It relates exclusively to the bottom of that part of the Atlantic Ocean which lies north of 10° south. It is stippled with four shades; the darkest (that which is nearest the shore-line) shows where the water is less than 6000 feet deep; the next, where it is less than 12,000 feet; the third, where it is less than 18,000; and the fourth and lightest, where it is not over 24,000 feet deep. The blank space south of Nova Scotia and the Grand Banks includes a district within which very deep water has been reported, but from casts of the deep-sea lead which upon discussion do not appear satisfactory. The deepest part of the North Atlantic is probably somewhere between the Bermudas and the Grand Banks, but how deep it may be yet remains for the cannon-ball and the sounding-line to determine."—MAURY.

The Atlantic, according to Humboldt, presents all the indications of a valley, as if a flow of eddying waters had been directed from toward the northeast, then toward the northwest, and back again to the northeast. The parallelism of the coast north of 10° south latitude, the projecting and receding angles, the convexity of Brazil opposite to the Gulf of Guinea, that of Africa under the same parallel with the Gulf of the Antilles, all favor this apparently speculative view. In this Atlantic valley, as is almost every where the case in the configuration of large continental masses, coasts deeply indented and rich in islands are situated

opposite to those possessing a different character. The depth of this ocean is extremely various; and is enormous, both to the north and south of the equator. Thus, Captain Sir Edward Belcher, R.N., in lat. 0° 4′ N. long., 10° 6′ W., *sounded* to the depth of 3065 fathoms = 18,390 feet; Captain Barnett, R.N., in lat. 41° 2′ N. long. 44° 3′ W., sounded to the depth of 3700 fathoms, or 22,200 feet; Captain Sir James Ross, R.N., in 1840, to 2677 fathoms, or 16,062 feet; and afterward, in lat. 33° 3′ S., long. 9° 1′ E., to 4600 fathoms, or 27,600 feet; and Captain H. M. Denham, H.M.S. *Herald*, has obtained soundings at the vast depth of 7706 fathoms = 46,236 feet, or about 8¾ English miles. This, which is the deepest sounding ever yet taken, occurred on 30th October, 1852, in lat. 36° 49′ S., long. 37° 6′ W. Two American captains have also obtained soundings at the depth of 3100 and 3500 fathoms.

The intertropical part of the Atlantic is under the influence of the trade-winds, which frequently extend to the 32d degree of north or south latitude. The winds blow almost invariably in the same direction, from east to west, occasionally varying a few points to the north or south, on the north and south sides of the equator. A region of calms, varying from 3 to 10 degrees of latitude, according to the season of the year, separates the two trade-winds. It is, however, daily agitated by a squall, which begins about two o'clock in the afternoon, and continues about an hour. This region does not always occupy the same part, but its central line may be placed about the 5th degree of north latitude. In some tracts the influence of the trade-winds extends to the shores, but in general it does not come within 200 miles of the coasts.

The current of this ocean first known to mariners, is called the equinoctial, and is within the tropics, especially flowing from the coast of Senegal to the Caribbean Sea. Its direction is constantly from east to west, with a mean rapidity of 9 or 10 miles in 24 hours. This current is attributed to the impulse which is given to the surface of the sea by the trade-winds. "In the channel," says Humboldt, "which the Atlantic has dug between Guiana and Guinea on the meridian of 20 or 23 degrees, and from the 8th or 9th to the 2d or 3d degrees of north latitude, where the trade-winds are often interrupted by winds blowing from the south or south-southwest, the equinoctial current is more inconstant in its direction. The equinoctial current is felt, though feebly, even beyond the tropic of Cancer, in the 26th and 28th degrees of latitude. In the vast basin of the Atlantic, at 600 or 700 leagues from the coasts of Africa, vessels from Europe bound to the West Indies find their sailing accelerated before they reach the torrid zone." In the Caribbean Sea, the motion of this current is much accelerated by the action of another current. The Mozambique current, flowing from north to south, between Madagascar and the eastern coast of Africa, bends to the north of the Lagullas bank, round the southern point of Africa, and advances with much violence along its western coast beyond the equator to the island of St. Thomas. It gives a northwesterly direction to a portion of the waters of the South Atlantic, causing them to strike Cape St. Augustin, and to follow the shores of Guiana beyond the mouth of the Orinoco, the Boca del Drago, and the coast of Paria. The coast of America presenting a barrier to the equinoctial current, its waters are driven with velocity through the strait formed by Cape Catoche and Cape St. Antony, into the Gulf of Mexico; and, after following the bendings of the coast, force their way back into the open sea north of the Straits of Bahama, where it forms a warm rapid current, known as the Gulf Stream. At first its rapidity is sometimes as great as five miles an hour; but it decreases as it proceeds toward the north, at the same time that its temperature augments, its waters become cool. Between Cape Hatteras and the bank of Bahama the breadth is about 75 leagues, while in the latitude of 28½ degrees it is 17; and in the parallel of Charleston, opposite Cape Henlopen, from forty to fifty leagues. "The waters of the Mexican Gulf forcibly drawn to northeast preserve their warm temperature to such a point, that in 40 and 41 degrees of latitude I found them at 22·5° cent. (=72·4° Fahrenheit), when out of the current the heat of the ocean at its surface was scarcely 17·5° (=63·5° Fahrenheit). In the parallel of New York and Oporto, the temperature of the Gulf Stream is consequently equal to that of the seas of the tropics in the 18th degree of latitude; as, for instance, in the parallel of Porto Rico and the Islands of Cape Verd."—HUMBOLDT. In lat. 41° 25′ and long. 67°, where it is nearly 80 leagues broad, it turns suddenly to the east, and almost touches the southern edge of the Great Newfoundland Bank, from whence it continues its course east and east-southeast to the Azores. On the meridian of Corvo and Flores, the most westerly islands of the Azores group, the breadth of the current is 180 leagues. From the Azores it turns toward the Straits of Gibraltar, the island of Madeira, and the Canary group. There are several other minor currents in the vast ocean, as the branch sent off by the Gulf Stream before reaching the Western Azores, which at certain seasons of the year flows toward Ireland and Norway. The experiments of Sir James Ross and Captain Denham show that, after the depth of 200 or 300 fathoms, the temperature of the Atlantic waters is stationary at 40° Fahrenheit, whatever be the temperature at the surface. This uniformity of temperature in the waters of great oceans renders them the means of mitigating the extremes of tropical and polar regions.—E. B. *See* GULF STREAM. *See also* RENNELL'S *Investigation of the Currents of the Atlantic Ocean*; HUMBOLDT'S *Cosmos, personal narrative*; *and* MAURY'S *Physical Geography of the Sea.*

Atlas, in *Literature*, a collection of maps, charts, or other tables; so called from the fabulous king of that name, who is sometimes represented as supporting the world on his shoulders. The term was first used in this sense by the celebrated geographer Mercator, in the 16th century.

Atmometer (from *ἀτμος*, *vapor*, and *μετρόν*, *a measure*), an instrument contrived by Professor Leslie for measuring the quantity of moisture exhaled from any humid surface in a given time. It consists of a very thin ball of porous earthen-ware, from one to three inches in diameter, having a small neck firmly cemented to a long and rather wide tube of glass, to which is adapted a brass cap, with a narrow collar of leather to fit close. Being filled with distilled or pure water, the waste and descent of this column serves to indicate the quantity of evaporation from the external surface of the ball. The tube is marked downward, through its whole length, by the point of a diamond, with divisions across it, amounting to from 200 to 500, each of which corresponds to a ring of fluid, that, spread over the whole exhaling surface, would form a film only one thousandth part of an inch in thickness. This graduation is performed by previously sealing one of the ends of the tube with wax, and introducing successive portions of quicksilver, to mark every 20, 50, or 100 of those divisions; being calculated of equal bulk to disks of water, that have the surface of the ball (exclusive of the neck) for their base, and so many thousand parts of an inch for their altitude.

Atmosphere, is the name applied to the invisible elastic medium which surrounds the globe of the earth to an unknown height. The fluid of which it is composed is usually known by the name of *air*.

Attachment, in *English Law*, is a process from a court of record, awarded by the justices at their discretion, on a bare suggestion, or on their own knowledge; and is properly grantable in cases of contempt. It differs from arrest, in that he who arrests a man carries him to a person of higher power to be forthwith disposed of; but he that attaches keeps the party attached, and pre-

sents him in court at the day assigned, as appears by the words of the writ. Another difference is, that arrest is only upon the body of a man, whereas an attachment is often upon his goods. It is distinguished from distress in not extending to lands, as the latter does; nor does a distress touch the body, as an attachment does. Every court of record has power to fine and imprison for contempt of its authority.—E. B.

Attar, or Otto of Roses, a well-known perfume of great strength, is an essential oil prepared in several parts of Asia and in Egypt from the *Rosa moschata* and *Rosa Damascena*. It is said that 100,000 roses yield but 180 grains of attar. This oil is at first of a palish green color, which by keeping becomes darker, and presents various tints of green, yellow, and red.

Attorney-at-law is one who is put in the place, stead, or *turn* of another (*attornatus*), to manage or conduct his law proceedings or affairs. The term is used in England to denote the class of legal practitioners whose functions are preparatory to those of the barrister or advocate.

Auction, a well-known mode of selling property, in open competition, to the highest offerer, by means of an agent or auctioneer. When the property is of considerable value, a person is sometimes appointed to superintend the sale, who is denominated judge of the roup, and acts as an arbiter in settling any disputes that may arise. The terms of the sale may be regulated at the will of the exposer, provided they are distinctly announced to the public beforehand. The party offering the highest price is declared the purchaser. When formal articles of sale are employed, they commonly regulate how much each offer shall exceed the previous one; whether the exposer shall be allowed to make an offer, or to withdraw the subject, if the highest offer does not amount to a given sum; and sometimes it is declared that an installment of the price shall be payable instantly, or that se[illegible] shall be found within a stipulated period; failing which the immediately preceding offerer is preferred. Secret contrivances, either to raise or depreciate the price, are unlawful. The seller must not attempt to practice any imposition on the public; neither are the bidders permitted to adopt any unfair means to prevent the natural operation of free competition. Where any such thing is detected, not only is the sale vitiated, but reparation is due to the injured party. For example, the secret employment by the seller of a friend to raise the price by making a fictitious offer is fraudulent, and entitles the highest offerer, on detecting it, to repudiate the transaction, or (in case he has been outbidden by such fictitious party) to demand the property at the price which he fairly offered. On the other hand, the obligation on the part of the public to act fairly is equally stringent. Accordingly, if two or more individuals combine to withhold their biddings that one of their number may purchase cheaply in order to divide among them the expected profit, or if a bidder were to give money to others to induce them to refrain from bidding, the exposer is entitled to have the sale declared void, on the ground that such a secret combination or paction obviously deprived him of the advantage which he expected from that competition which a public sale is intended to secure.—E. B.

Of Sales at Auction.—"An auctioneer has not only possession of the goods which he is employed to sell, but he has an interest coupled with that possession. He has a special property in the goods, and a lien upon them for the charges of the sale, and his commission, and the auction duty. He may sue the buyer for the purchase-money, and if he gives credit to the vender, and makes delivery without payment, it is at his own risk. If the auctioneer has notice that the property he is about to sell does not belong to his principal, and he sells notwithstanding the notice, he will be held responsible to the owner for the amount of the sale. So, if the auctioneer does not disclose the name of his principal at the time of the sale, the purchaser is entitled to look to him personally for the completion of the contract, and for damages on its non-performance.

"In the sale of real property at auction, care should be taken that the description of it be accurate, or the purchaser will not be held to a performance of the contract. But if the description be substantially true, and be defective or inaccurate in a slight degree only, the purchaser will be required to perform the contract, if the sale be fair and the title good. Some care and diligence must be exacted of the purchaser. If every nice and critical objection be admissible, and sufficient to defeat the sale, it would greatly impair the efficacy and value of public judicial sales; and, therefore, if the purchaser gets substantially the thing for which he bargained, he may generally be held to abide by the purchase, with the allowance of some deduction from the price, by way of compensation for any small deficiency in value by reason of the variation.

"A bidding at an auction may be retracted before the hammer is down. Every bidding is nothing more than an offer on one side, which is not binding on either side until it is assented to, and that assent is signified, on the part of the seller, by knocking down the hammer.

"If the owner employs puffers to bid for him at an auction, it has been held to be a fraud upon the real bidders. He must not enhance the price by a person privately employed by him for that purpose. It would be contrary to good faith, as persons resort to an auction under a confidence that the articles set up for sale will be disposed of to the highest real bidder. A secret puffer employed by the owner is not fair bidding, and is a fraud upon the public, nor can the owner privately bid upon his own goods; or secret dealing on the part of the seller is deemed fraudulent. If he be unwilling that his goods shall be sold at an under price, he may order them to be set up at his own price and not lower, or he may previously declare, as a condition of the sale, that he reserves a bid for himself."—KENT's *Comm.*, vol. ii. Lect. XXXIX.

Auctioneer, a person who conducts sales by auction. It is his duty to state the conditions of sale, to declare the respective biddings, and to terminate the sale by *knocking down* the thing sold to the highest bidder. An auctioneer is held to be lawfully authorized by the purchaser to sign a contract for him, whether it be for lands or goods; and his writing down the name of the highest bidder in his book is sufficient to bind any other person for whom the highest bidder purchased, even though such person be present, provided he do not object *before entry*. An auctioneer who declines to disclose the name of his principal at the time of sale makes himself responsible. But if he disclose the name of his principal, he ceases to be responsible, either for the soundness of or title to the thing sold, unless he have expressly warranted it on his *own* responsibility. If an auctioneer pay over the produce of a sale to his employer, after receiving notice that the goods were not the property of such employer, the real owner of the goods may recover the amount from the auctioneer. It has long been a common practice at certain auctions (called for that reason *mock* auctions) to employ *puffers*, or mock bidders, to raise the value of the articles sold by their apparent competition, and many questions have grown out of it. It was long ago decided that if the owner of an estate put up to sale by auction employ puffers to bid for him, it is a fraud on the real bidder, and the highest bidder can not be compelled to complete his contract.—6 *T. Rep.* p. 642. But it would seem as if the mere employment of puffers under any circumstances were now held to be illegal. "The inclination of the courts at the present time is, that a sale by auction should be conducted in the most open and public manner possible; that there should be no reserve on the part of the seller, and no collusion on the part of the buyers.

Puffing is illegal, according to a late case, even though there be only one puffer; and it was then decided that the recognized practice at auctions, of employing such persons to bid upon the sale of horses, could not be sustained."—WOOLRYCH on *Commercial Law*, p. 262. A party bidding at an auction may retract his offer at any time before the hammer is down. Another clearly established principle is, that verbal declarations by an auctioneer are not to be suffered to control the printed conditions of sale; and these, when pasted up under the box of the auctioneer, are held to be sufficiently notified to purchasers. Auctioneers, like all other agents, should carefully observe their instructions. Should those who employ them sustain any damage through their carelessness or inattention, they will be responsible. They must also answer for the consequences, if they sell the property intrusted to their care for less than the price set upon it by the owners, or in a way contrary to order.

Auditor, in *English Law*, is an officer who, by examining yearly the accounts of the under officers, makes up a general book, which shows the difference between their receipts and charges, and their several allowances.—E. B.

Auncel Weight, an ancient balance, prohibited by several statutes, on account of the deceits practiced by it. It consisted of scales hanging on hooks, fastened at each end of a beam, which were lifted up by the hand. In many parts of England auncel weight signifies meat sold by the hand, without scales.—E. B.

Aureus, the standard gold coin of Rome, first struck A.U.C. 546; current value = 25 denarii, or 100 sestertii, equivalent to 17*s.* 8½*d.* Forty aurei were made from a pound of gold; but their value was gradually diminished, till, under Nero, 45 were made from a pound, and under Constantine, 72.—HUSSEY, *on Ancient Weights and Money.*—E. B.

Australasia, in *modern Geography*, the *fifth* great division of the earth's surface. The learned and intelligent President de Brosses was the first writer who suggested that all the lands and islands in the Austral world should be divided into three portions, corresponding with the three great oceans, the Indian or Ethiopic, the Atlantic, and the Pacific; those in the Indian Ocean and to the south of Asia to be named *Australasia;* those in the two Pacifics, from the multitude of islands, *Polynesia* (a name first used, we believe, by De Barros); and those in the Atlantic to the south of Cape Horn and the Cape of Good Hope, *Magellanica.* The last, however, became unnecessary, as soon as it was ascertained that the *Terra Australis incognita* had no existence.

The two divisions of Australasia and Polynesia will be found to comprehend, with sufficient convenience, all those islands that can not with propriety be referred to any of the four continents of the globe. Nor is there any difficulty in drawing a line of separation between these two divisions; though it is not quite so easy to mark the distinct boundary between the Australasian and the Asiatic islands, where they melt into each other, about the equator, at the northwest extremity of Papua or New Guinea. In a geographical view, the small islands of Waygiou, Salwatty, Batanta, Mysol, and Timorlaut, ought strictly to belong to Australasia; but peopled as they are by Asiatics of the Malay tribe, and under the influence of the Dutch settlements, it may perhaps be more proper, in a moral and political point of view, to consider them as belonging to the Asiatic Islands; more particularly as we shall then have all the Australasian population, with very few exceptions, marked with more or less of the African or Negro character. But, in fact, all geographical divisions are and must be, to a certain degree, arbitrary.

If, then, we take the equator as the northern boundary from the 132° to the 176° of east longitude; continue a line on the latter meridian to the 55th parallel (bending a little to take in New Zealand) for the eastern; another line along the same parallel to the 65th degree of east longitude for the southern; and a slanting line to the point on the equator from which we set out, so as to include Kerguelen's Land, and pass on the eastern sides of Timorlaut, Ceram, Mysol, and Salwatty, for the western boundary; these lines will circumscribe the whole of the Australasian islands. We have included the uninhabited islands of Kerguelen and St. Paul and Amsterdam, because they can not properly be considered as African islands, though arranged, we believe, under that division by Pinkerton; they are of less importance to geography than to geology.

Australasia, then, may be subdivided into the following groups and islands: 1. Australia, or New Holland; 2. Van Diemen's Land, or Tasmania; 3. New Guinea, and the Louisiade Archipelago; 4. New Britian, New Ireland, and neighboring islands; 5. Solomon's Islands; 6. New Hebrides; 7. New Caledonia; 8. New Zealand, and isles to the southward; 9. Kerguelen's Islands, or Islands of Desolation; 10. St. Paul and Amsterdam; 11. Numerous reefs and islets of coral scattered over the Australasian Sea.

The first attempt to explore New Holland, which, from its size, may be considered as the fifth continent of the earth, is unquestionably due to the Dutch; for although some part of the northern coast may have been seen by the early navigators of Spain and Portugal, there is no direct testimony in favor of such a discovery. There are two charts in the British Museum which belonged to the *Harleian Collection;* one French, without date, which was probably the original; and the other English, apparently a copy: the latter is dedicated to the King of England, and bears date 1542. In both of these charts is marked down an extensive tract of country to the southward of the Moluccas, under the name of *Great Java,* agreeing more nearly with the position and extent of New Holland than any other land. The form given to the northwest part of the coast in these charts approaches nearest to the truth; a part, indeed, which may have been seen by those early navigators who visited the Moluccas long before the date of the English chart. It is a singular coincidence in geographical nomenclature, that, on the east coast of the French chart, something like a *Botany Bay* should be designated under the name of *Coste des Herbaiges.* The Abbé Prévost, in the *Histoire Générale des Voyages,* and the President de Brosses, in his *Histoire des Navigations aux Terres Australes,* are not very happy in advancing a claim in favor of Paulovier de Gonneville, a French captain, to the discovery of this *Terra Australis* in 1504. It was the coast of Madagascar upon which Gonneville was driven, as is evident by their own accounts.—E. B.

Australia, or **New Holland,** the largest island on the globe, is situated in the southern hemisphere; and, as described in the preceding article, forms the main land around which are clustered those groups of islands which, in modern geography, constitute the *fifth* great division of the earth's surface. Wilson Promontory, its most southern angle, is in lat. 39° 11′ S., and Cape York, its northernmost headland, in lat. 10° 43′ S. Its greatest breadth from north to south is thus 1708 geographical miles, or 1965 statute miles. Cape Byron, the eastern limit, is in long. 153° 37′ E., and Cape Inscription, in 112° 55′ E., forms its westernmost point; making the extreme length of the island from east to west about 2603 British miles, by an average breadth of 1200 miles—a tract of land well entitled to be called a continent, by which name it is frequently designated by geographers. Its superficies approximates to 2,690,810 square miles. That of the continent of Europe being 3,684,841 square miles, we can form some idea of its extent by comparison.

The nomenclature and geographical subdivisions of this island-continent have undergone many alterations from time to time, as the territory has become colo-

nized. Before any settlement had been effected by the British government upon its shores, the entire island was designated New Holland, not only by the Dutch—from whom it received its name—but on our own charts and maps. The east coast, first discovered and explored by Captain Cook in 1770, was named by him New South Wales. The middle portion of the north coast bore the name of Arnhem Land, after the ship of its discoverer, Zeachen, in 1618. The west and southwest coasts were named in like manner by their discoverers, the Dutch navigators, in the seventeenth century, De Witt's Land, Endraght's Land, Edel's Land, Leeuwin's Land, and Nuyt's Land. That of Van Diemen's Land was given by Tasman to what he supposed was the southern peninsula of New Holland, but which was afterward discovered by Bass to be an island. The colonists have been anxious to name it after its discoverer, but the government still retain the first title.

Since this great territory has become the undisputed possession of Britain, other names, with the exception just mentioned, have, according to the law of nations, been substituted for the old Dutch titles. New South Wales is only applied now to about one-half the east coast territory. The name of the entire island also is changed from New Holland to the more appropriate designation of Australia, by which it is now universally recognized and described. The subdivisions South, North, and Western Australia would be equally proper if their boundaries were defined according to the ordinary rules of geographical dissection. But while the first section, South Australia, is only the middle portion of the south coast, trending inland to the central region; and the second, North Australia, embraces all to the north of New South Wales; the third section, Western Australia, nearly bisects the island, leaving a small tract of land between it and South Australia with no name at all. A better division would be to draw a line right across from east to west in lat. 26° S.; thus bisecting the island near its intertropical parallel; for although this line would be 3½ degrees south of the tropic of Capricorn, still the influence of the tropical rains and winds ascend even higher than this parallel. At all events, this would be sufficient for us to designate the northern section *Tropical Australia*, and the southern *Temperate Australia*. Besides these two great meteorological divisions, they could conveniently be subdivided into four political sections by drawing another line from south to north in the meridian of 133° 30′. Each of these sections might then be designated, according to its direction from the centre, Southwestern and Northwestern Australia, Northeastern and Southeastern Australia. And these, again, might be subdivided into provinces, as the last-named section includes the three colonies of New South Wales, Victoria, and South Australia. This arrangement would tend to simplify an important section of geography which at present is very much confused.

If, for the better elucidation of our subject, we suppose these lines and boundaries to exist on the map, the northern or tropical division has little to do with the history of British colonization in Australia. It is within the temperate zone that our colonies have been planted and successfully nurtured. And this tract, again, separated by the meridian line suggested, confines to a still smaller compass the subject of our description. The group of colonies which absorb the attention of the statesman and merchant in that far-off land are comprised within the last-named section, Southeastern Australia. On the west it is bounded by a line drawn from the south coast, in long. 132° E., meeting another line drawn at a right angle from the east coast, in lat. 26° S.; the southern and eastern boundaries being formed by the coast line; which, by following the sinuosities of the gulfs and bays, comprehends a sea-board of nearly 2000 miles. Again, if a line be traced on the map, commencing about 150 miles inland from the head of Gulf St. Vincent, and continued more or less (within half a degree) the same distance from the coast until it reaches the northern boundary-line, the intermediate space will give a fair average of the extent of country at present colonized, which may be estimated in round numbers at 1500 miles long by 150 miles broad, or 225,000 square miles; or nearly three times the superficies of England.

From a letter written by Mr. Edward Hammond Hargraves to the colonial secretary, dated the 3d April, 1851, we learn that on the 12th of February previous he had discovered the existence of gold among the alluvium of the surface rocks over a large area of crown lands within the settled districts of the colony; which subsequently turned out to be from 20 to 30 miles beyond the town of Bathurst, an inland town 125 miles from Sydney. He was led to prosecute a search for the precious metal in that locality, from the similarity of that mountainous section of New South Wales to the auriferous regions of California, where he had successfully worked as a gold-digger. Governor Fitzroy was doubtful of the discovery, from the circumstance of a similar statement having been made to him two years before, by a Mr. Smith, of Berrima, who allowed the matter to drop on the governor's refusing to pay him a large fixed sum for the discovery. At the same time, Sir Roderick Impey Murchison, president of the Royal Geographical Society, and other eminent geologists in the colony and in England, had predicted the discovery of gold in the Australian mountain ranges, from their presenting similar characters, both geographically and geologically, to the gold-bearing mountains in Russia. Partly from these representations, and partly from the general claims of the colony to have its mineral wealth scientifically investigated, the government had just recently appointed Mr. Samuel Stutchbury, as geological surveyor; and that gentleman at this period was prosecuting his *stereotyped* researches not very zealously in the mountain ranges at a short distance from Mr. Hargraves. It is worthy of notice that gold had been found in its native state from time to time some twenty years previous, by a Scotch shepherd, who was known to have sold a large quantity to the jewelers in Sydney; having kept the secret so long from a fear, as he stated, that, if any one dogged him to the spot, they might murder him. Notwithstanding these and other evidences which need not be specified, no one had prosecuted the search systematically before Mr. Hargraves, who demonstrated the fact publicly and without delay. To him, therefore, is due all the honor of the discovery.

After having intimated to the government that he was satisfied to leave to their liberal consideration any reward or remuneration they chose to offer him for his discovery, he posted off to Bathurst, and announced to the astounded inhabitants that they were living within a day's journey of the richest gold mines in the world. Followed by a number of the enterprising inhabitants, he led the way to Summer-hill Creek, and there, in a romantic vale, surrounded by hills, where this streamlet wound its course round a picturesque point of land, they dug the auriferous earth from the adjacent bank, washed it in the stream, and found that the soil was mixed with grains of gold. These gold pioneers, who thronged to the first "diggings," reminded of the resemblance between their country and the rich gold mines mentioned in Scripture, called this spot the Valley of Ophir.

This was in May, 1851, and it became the signal for the colonists in other parts of the territory to be up and doing. "Ascertaining the nature and description of the rocks occurring in the vicinity of the gold deposits, they immediately set to work in their own localities to search for the hidden treasure, instead of flocking with the multitude to the Bathurst mountains, concluding wisely that these comprised only a small section of the great mountain chain where it existed. Like the industrious tenants of an Australian ant-hill

suddenly roused, the whole community of bushmen became alive among the rocks and valleys of the colony. Stock-whips and shepherd's crooks were thrown aside for pickaxes and shovels, with which these adventurous men might be seen exploring the gold regions, and with what success is now well known to the world." The Turon River, Muckerwa Creek, Louisa Creek, Meroo Creek, Frederick's Valley, Abercrombie River, and Araluen Vale, had their hidden treasures exhumed by the industrious diggers; and in three months after the workings at Bathurst had been set in operation, the newly-erected province of Victoria, within seven weeks from the time of her separation from New South Wales, disclosed her treasures at Ballarat; and before the close of the year, the Mount Alexander gold region gave forth that astounding yield of the precious metal, to which no record of ancient or modern times can furnish a parallel. The result of the latter discovery not only arrested the departure of the Victoria colonists who were flocking to the Bathurst Mountains, but afterward turned the tide of adventurers from the parent colony to the greater attractions of the Mount Alexander gold fields, which threatened at one time to decimate the populations of Sydney and the surrounding townships.

The gold was not merely found in the scales or grains which at first came from the stream-washings at Ophir, but it was now dug up in large masses, varying from several ounces to many pounds in weight, which were familiarly called "nuggets" by the diggers, after the Californian name given to these *pepitas* or nodules; and in one instance, at Louisa Creek, 106 lb. weight of pure gold was found by an aboriginal shepherd imbedded in the quartz matrix, which formed one solid block of about 3 cwt. Neither was it found in the beginning at any great depth in the ground, but in many localities lay scattered among the surface soil, and hung to the roots of trees and shrubs. So easily and plentifully did it come to the hands of the gold-seekers, that it bore the aspect (and such was the belief of many of the less-informed diggers) of having only then sprung into existence from the earth, or having recently been scattered over the land by some mysterious agency, instead of carrying along with it the geological fact that its veins are coeval with the primary rocks. It was also discovered that the convicts had built a bridge across a small stream on the Bathurst road to Carcoar, above the gold formation, and that they had unconsciously paved the road with broken fragments of the gold quartz veins. Even in the streets of Bathurst and Melbourne, small particles of the precious metal were picked up by children in its natural bed; and several farmers and gardeners found that they had been plowing, digging, sowing, and planting their grain and trees in the auriferous soil. A knowledge of these facts industriously circulated by the colonial press throughout a community possessed of all the modern facilities of information, and keenly alive to the speculations of money-making, could not but fairly upset the minds of the people. Consequently, a gold mania seized every class of colonists, to the temporary suspension of all industrial pursuits.

Then followed a heterogeneous scramble for the coveted ore throughout the length and breadth of the land, which spread like wildfire to the neighboring colonies of South Australia, Van Diemen's Land, and New Zealand, threatening to depopulate them of their male adult inhabitants. Masons and bricklayers left unfinished buildings in the towns; shopmen left their counters, clerks their desks, sailors their ships; and artisans of every description threw up their employments, leaving their masters, and their wives and families, to take care of themselves. All other interests were absorbed in the search for gold; scarcely any other subject was talked of or thought of; and the mass of the people ran off to the "diggings," as this new occupation was termed. Nor did the mania confine itself to the laboring classes, for "these were soon followed by responsible tradesmen, farmers, captains of vessels, and not a few of the superior classes; some unable to withstand the mania and the force of the stream, or because they were really disposed to venture time and money on the chance; and others because they were, as employers of labor, left in the lurch and had no alternative. Cottages became deserted, houses to let, business was at a stand-still, and even schools were closed. In some of the suburbs not a man was left, and the women were known, for self-protection, to forget neighbors' jars, and to group together to keep house." The ships in the harbor, also, were in a great measure deserted; and instances were known where not only farmers and respectable agriculturists found that the only thing they could do, seeing that the people employed by them had deserted, was to leave their farms and join their men in the golden scramble; "but even masters of vessels, foreseeing the impossibility of maintaining any control over their men otherwise, agreed to make up parties among them, abandon their vessels, and proceed with their crews to the gold fields." The towns and their environs being thus drained of their laboring populations, the prices of provisions rapidly rose. The common necessaries of life reached famine prices, which fell heavily upon those depending upon salaries. This, coupled with the high wages demanded by domestic servants, forced the upper classes of society to dispense with their services, and the ladies had to perform the household drudgery. Clerks and others under government, and in public and private offices, finding it impossible to make both ends meet, threw up their appointments and rushed to the diggings, and even the constabulary force were leaving the towns unprotected. During this state of affairs the government was obliged to raise the salaries of their officers, in order to maintain a sufficient staff for the public service, and to preserve the public peace, which was becoming sadly disturbed. The banks and mercantile firms were obliged also to follow their example.

Meanwhile, the governments of New South Wales and Victoria—the two gold colonies—looked with apprehension upon the probable result of this gold-revolution among a pastoral population widely scattered over the country, a portion of which had but recently been reclaimed from the ranks of the felon. Therefore, how to regulate the prosecution of this new pursuit on crown lands became a matter of grave consideration. The crime and anarchy which had prevailed in California upon a similar discovery brought the worst fears to their recollection. Precautionary measures were promptly taken, and all the available military force—which was but slender—was called into requisition, assisted by the mounted police to maintain order and authority at the localities where the diggers were working; for at some places communities had assembled, and erected tents with the rapidity of a military encampment, in larger numbers than were to be found congregated within the ordinary townships scattered over the country. A proclamation was issued asserting the right of the queen's government to all gold or precious metals found on crown lands; and that every person digging therein in search of it, or any individuals trading or otherwise profitably employed at the diggings, must take out a monthly license and pay the sum of 30s. This measure was at once acceptable to the people, and gold commissioners were appointed to see that it was carried into effect. Notwithstanding the excitement which prevailed at the first blush of the discovery, and during the subsequent discoveries in other localities, which drew from time to time one half of the adult male population to the gold fields, to the honor of the people of New South Wales be it said, that no greater amount of crime existed in that colony during the following eighteen months than the usual average. "Every where," as stated in the dispatches of his excellency the governor general, "the gold-diggers were loyal, orderly, and obedient to the laws," and they

cheerfully paid the fee of one shilling per diem for license to dig. The same flattering testimony can not be borne to Victoria, where a Californian state of anarchy at one time threatened the subversion of all law and order; the consideration of which will be reserved for our remarks on that colony. At the close of 1851, six months' experience had proved the most satisfactory results as to the extent and richness of the gold deposits. In New South Wales, upward of 20,000 licenses were issued; and the export sheet from the port of Sydney showed that 142,975 ounces, valued at upward of half a million sterling, had left the colony.

By this time also, hundreds, nay, thousands, had ascertained that they were morally and physically unfit for the hard labor and privations to be encountered in the search for gold. The consequences were, that not only did many clerks, shopmen, and artisans come back to their former occupations in the towns, but much distress was felt by those who had abandoned lucrative employments, which were shut against them on their return; in many instances impaired in health from exposure to the rigorous climate of the gold regions, which, it will be understood, were first worked in the winter season in Australia. The beneficial effects which accrued from this reaction in favor of the industrial pursuits, was the supply of labor to be had, although at exorbitant wages, for securing the woolcrop of the season. Not only was this evil result anticipated, among others, at the beginning of the gold discovery, but at many sheep and cattle stations in the far interior, the herds and flocks were abandoned by their keepers, and at that period nothing short of utter ruin to the pastoral interests of the colony hovered over the sheep-farmers and graziers. In one instance, an enterprising squatter drove 26,000 sheep into one flock, which he shepherded with four trusty shepherds on horseback. Here, as in other matters, the gentlemen settlers and capitalists in the colony proved themselves equal to the occasion; and much consideration is due to them for assisting to maintain the peace and prosperity of the community, by their untiring energy and support given to the government, under such an unlooked-for event. And where at first the squatters anticipated a ruinous reduction in the value of their stock, the demand for sheep and cattle to supply the diggers with food raised the prices 50 per cent., while the land-holders found new purchasers of land among the judicious and fortunate gold-diggers. So at the close of the year 1851, the prospects of New South Wales, on all sides, were most cheering, where the reverse was expected. The population had increased to 197,168 persons. The value of the imports was £1,563,931, and the exports £1,796,912. Thus the average of the former, for every man, woman, and child in the colony, would be at the rate of £8 per head, and of the latter about £9. The ordinary revenue = £277,728; and the crown revenue £208,969; the coin in the colony £560,766; and the paper currency £418,541. The wool exported = 15,269,317 lb., valued at £828,342; the tallow 86,460 cwt., value £114,168; and the gold 144,120 oz. 17 dwt., value £468,336. Shipping inwards 553 vessels, of 153,002 tons, having 7955 men on board; and the shipping outwards 563 vessels of 139,020 tons, having 7988 men.

From the circumstance of gold mines having been hitherto only worked by barbarous or despotic nations, who, from ignorance or policy, shrouded their operations in mystery, our information regarding the extent and character of gold-bearing rocks throughout the world was of a very meagre description. The "great fact," therefore, of gold regions being discovered, and worked within territories claimed by the Anglo-Saxon race in California and Australia, is not only an event of considerable interest in the history of the world, but has proved of the utmost benefit to science in determining this important question in auriferous geology. Not only was the gold found in the ordinary quartz matrix, but the reports of the geological surveyors of New South Wales have shown that it is found in granite at Araluen Creek; schistose or slaty rocks at the Turon; and in Frederick's Valley specimens were found of a ferruginous rock, beautifully dotted with globules of gold. It would seem, therefore, that gold is the most universally distributed of metals among the unstratified rocks, although found in greatest abundance in the quartz veins which intersect these rocks. However, the great bulk of the gold found in Australia has not been extracted from its matrices, but dug out of the gold alluvium formed by the disintegration of these rocks. Hence the gold mines in this region have received the familiar name of "diggings," from the practical-minded Americans and Australians. What are termed the "gold diggings," then, are spots where the miners have to dig pits from 10 to 15 feet deep before they arrive at the substratum of auriferous soil in which the particles of gold are found loosely imbedded. This subsoil is generally a stiff blue clay mixed with sand and gravel, and the pure metal appears in scales about the size and shape of bran or shellings; and in rounded grains and lumps varying from the size of a pin's head to the form and dimensions of flints as they occur in chalk, a specimen of which, when gilded, gives exactly the appearance presented by these gold nodules, or, as they are now universally called, "nuggets." This alluvium is collected and mixed freely with water in a tub, which is termed "puddling." After having undergone two or three washings, the residue is thrown into a cradle or wooden trough, with "cleets" or ribs fastened across the bottom, and a sieve at the head, which prevents large stones or lumps of gold from passing through. The cradle is then rocked and tilted to and fro, while water is poured over the auriferous sand or gravel. When sufficiently washed, the residue at the bottom of the cradle is examined carefully, the large pieces, if any, picked out, and the scales of gold separated from any foreign substance by further washing in a tin dish, until it is perfectly clean; after which a magnet is passed through it to extract small particles of iron-sand, which are frequently mingled with it. Upon reaching the "washing-stuff," as the "diggers" term the gold alluvium, they sometimes see the nuggets dotting the earth, and collected into heaps or "pockets," which they extract easily with the point of a knife. This pleasing operation to the fortunate digger is called "nuggeting." Again, a similar process is followed at some localities where the grains of gold lie on the surface of the ground, technically termed "forsicking."—E. B. *See* ADELAIDE.

Average, a term used in maritime commerce to signify damages or expenses resulting from the accidents of navigation. Average is either *general* or *particular*. General average arises when sacrifices have been advisedly made, or expenditures incurred, with a view to the preservation of the ship, cargo, and freight from the effects of some extraordinary peril; and it implies a subsequent contribution from all the parties concerned, in order to make good the loss which one or more of them may thus have sustained. Particular average signifies the damage or partial loss happening to the ship, goods, or freight, in consequence of some fortuitous or unavoidable accident; and it is borne by the individual owners of the articles damaged, or by their insurers.

It may be here remarked, that the term Average was originally used to signify what is now distinguished as General Average. The expression "Particular Average" is not strictly accurate, as it does not, in its current acceptation, imply the idea of an *equalizing contribution*, as originally signified by the word Average. It has, nevertheless, been generally adopted, and is now fully recognized as the distinctive expression for damage or partial loss falling on *some one* of the individuals interested in a sea adventure. Average is said by Cowell to be derived from the Latin

word *averagium*, from the verb *averare*, to carry. He supposes it to have been introduced into commerce to show the proportion to be paid by every man according to his goods *carried*. Loccenius, on the other hand, derives it from the French *havre*, or the German **haben**, a port; it being a contribution paid for having goods *brought safely to port*.—*De Jure Maritimo*, lib. ii. cap. vii. sect. 1.

Petty Average consisted of certain small c[illegible]s for pilotages, light-dues, etc., which were apporti[illegible]e-third to the ship and two-thirds to the cargo; but this is now superseded by the agreement that the freight payable for the cargo shall include all such expenses; and the term has, consequently, become obsolete.

Although nothing can be more simple than the fundamental principle of general average—which is, that a loss incurred by one party for the advantage of several shall be made good in equitable proportions by all who are benefited by it—yet the application of this principle to the varied and complicated cases which arise in the course of maritime commerce has occasioned many diversities of usage in different countries, and even in the same country at different periods. Without entering on so wide a field as the discussion of these diversities would open up, we shall endeavor to present a brief summary of the leading principles which have been established in Great Britain, by usage or by legal decisions, in connection with the subject.

All general average losses may be divided into two principal classes: 1. *Sacrifices* of part of the cargo and freight, or of part of the ship, for the general benefit; 2. *Extraordinary expenditures*, incurred with the same object. Under the first of these classes we shall begin by noticing the acts which involve sacrifices of *part of the cargo and freight*. When a part of the cargo is thrown overboard (or *jettisoned*, as it is termed) to save the ship from foundering in a storm, or to float her when stranded, or to facilitate her escape from an enemy, the loss of the goods and of the freight attached to them must be made good by average contribution. In like manner, if goods be damaged in the ship by opening the hatches in order to effect a jettison, or by being brought upon deck for that purpose, the damage forms a general average charge. But if goods jettisoned have been originally stowed *on deck*, no contribution can be demanded for them, unless they are so carried according to the common usage and course of trade on the voyage for which they were shipped.

If, instead of being thrown overboard, the goods are put into boats or lighters, and lost or damaged before reaching the shore, such loss is regarded as a virtual jettison, and gives a claim to average contribution. The same rule applies to damage occasioned by the goods being put ashore on muddy ground, as may sometimes happen, when there is no other place where they can be landed. But when the goods have been conveyed to a place of ordinary safety, they are no longer at the risk of the *general* interest; and should they be damaged by fire or other accidents, the loss must be borne by the *individual* proprietors or by their insurers. The loss of corn, salt, guano, or similar goods, arising from their being pumped up or bailed out with the water in the vessel, can not be recovered by average contribution. If, in consequence of there being no other means of raising money at a foreign port, a part of the cargo be sold for the purpose of repairing losses or defraying expenses which are themselves of the nature of general average, the loss arising from the sale gives a claim to contribution. But if the funds are required for the purpose of repairing particular average losses on the ship, or of defraying the ordinary expenses of the navigation, the loss must be borne by the shipowner.

The damage done to the cargo by means of water thrown down the hatches to extinguish an accidental fire, or by scuttling the ship for that purpose, is excluded, *by usage*, from general average. This point seems to have never yet been settled by any legal decision; and the usage referred to is considered by several writers of high authority to be at variance with sound principle. It is sometimes defended on the ground that the damage in question is *secondary* and *incidental*, and not *primary* and *intentional*. But this reason seems somewhat fanciful for the purposes of equity, and is, besides, inconsistent with the analogy of certain other cases, where an opposite principle is practically recognized; as, for instance, in the case of goods incidentally damaged in effecting a jettison of other goods. The amount of compensation to be made for goods sacrificed by general average acts is determined by the net market price they would have produced on arrival at the port of destination had they not been sacrificed; but under deduction of the freight attaching to them (which is made good to the shipowners), and of the charges for duties and landing expenses which are saved.

We now proceed to notice the general average acts which involve sacrifices of part of the *ship or her materials*. The same principles which regulate the case of goods thrown overboard apply also to the jettison of the ship's chains, anchors, hawsers, spars, boats, or other stores. But if water-casks are stowed on deck, or if chains and hawsers are carried on deck when the vessel is not near the land, so as to render it necessary that they should be so carried, the loss arising from the jettison of these articles falls on the ship-owner; and if boats are jettisoned in consequence of their having been broken adrift from their fastenings on deck by the force of the sea, they are excluded from general average, and are charged to particular average on the ship. The damage done to the ship by cutting holes to effect a jettison of the cargo, or to pour down water to extinguish a fire, or by scuttling her for that purpose, is allowed as a general average charge. The damage arising from cutting or knocking away a portion of the ship's bulwarks in order to prevent the deck from being flooded in a storm, is compensated in the same manner. When sails or ma[illegible]s are cut away in order to righten a ship which has been thrown on her beam-ends, or to prevent her from driving on a lee shore, the loss is made good by average contribution; but if the object in cutting away a sail or spar be merely to *save a mast*, the loss is not made good in general average.

It frequently happens that masts or yards are sprung and carried away by the force of the wind, and are left entangled in the rigging, or hanging over the ship's side in what is termed "a state of wreck;" in these circumstances it becomes necessary to cut them away, with the sails and rigging attached, and to throw the whole overboard, otherwise they would impede the navigation, and endanger the ship and cargo. On this ground it is held by some authorities that the loss caused by the act of cutting them away should be made good by average contribution. But this act is the direct consequence of the previous accident, which places these articles in a situation where it is impossible to save them without imperiling the ship, cargo, and lives. It would not be reasonable to imperil these for such a purpose; whence it follows that the displaced articles are already *virtually* irrecoverably lost by means of the original accident, before the loss is *actually* consummated by cutting [illegible]m away. And as the *general* interest ought not to be endangered for the purpose of attempting to save these articles, so neither should it be implicated in the loss resulting from the only remaining alternative of clearing them away. This loss is accordingly excluded, by the usage of this country, from average contribution. On the same principle, no contribution can be demanded for any articles which are sacrificed as having themselves become, through previous accident, the immediate cause of danger to the whole interest.

The loss of sails or spars, in consequence of carrying

a press of canvas to avoid a lee-shore, or to escape from an enemy, is not the subject of general average in this country; neither is the damage suffered by the ship from *straining*, under any such extraordinary press of sail. When anchors and cables are slipped from in order to work a vessel off a lee-shore, or to avoid collision with another ship, the loss is made good by average contribution; but if the cable is slipped in order that the vessel may join convoy, or because the anchor has become hooked to some object at the bottom and can not be raised, the loss is borne by the ship-owner. When sails, ropes, or other materials are cut up and used at sea for the purpose of stopping leaks or to rig jurymasts, or when the common benefit requires that they should be applied to some purpose for which they were not originally intended, the loss is made good in general average. The same rule applies to the case of hawsers, cables, anchors, sails, or boats, lost or damaged in attempting to force off a stranded vessel from the shore. The damage sustained in defending a ship against a pirate or an enemy is not the subject of general average; it is treated as particular average on the ship.

It has been much debated by writers on maritime law, whether the voluntary stranding of a ship, in order to prevent her from foundering, should be treated as a general or as a particular average loss. In the United States it has been settled, by judicial decision, that the loss in question constitutes a general average claim; but the opposite doctrine is acted upon in the usage of Great Britain, and the point has never been raised before the courts of law. It appears to us that the argument greatly preponderates against the rule adopted in the United States, and in favor of the usage established in Great Britain. The only reason for regarding this loss as the subject of general average is, that it originates in the intentional act of running the ship aground, for the preservation, as far as possible, of the whole interest concerned. But it can seldom be known beforehand how the different interests at stake will be specially affected by the act in question; whether, for instance, the damage to the cargo may not be more serious than the damage to the ship, or *vice versa*. Thus no particular part of the interest can be said to be intentionally sacrificed for the benefit of the whole; the intention, indeed, is not to sacrifice any one part, but to place the whole interest in a situation of less peril than it would otherwise have been in. What particular damages may thereafter ensue to either ship or cargo will depend, in each case, on a variety of circumstances entirely accidental in their character, and therefore in no proper sense the subject of previous intention. The same rule, therefore, which excludes from general average accidental damages in all other cases ought to exclude them in this case also. Moreover, when the alternatives are, either that the vessel be left to founder, or that she be run ashore with a chance of preservation, there can really be no room for choice, or, at all events, the elements of will and intention are entirely subordinate in the part they must play under the pressure of the existing circumstances; and in this view the stranding is as truly inevitable as if it had been caused by the force of the winds and waves alone.

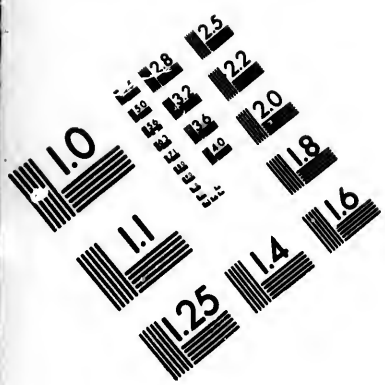
But, even were these reasons less weighty than we hold them to be, a serious practical objection might be urged against the doctrine that voluntary stranding should be a general average loss, on the ground that it would in most cases be impossible to distinguish between the damages received by the ship and cargo prior to the stranding, and those sustained after or in consequence of it. It is needless to remark, that before a ship can be in such imminent danger of foundering as to render it necessary to run her ashore, she must be presumed to have sustained a very considerable amount of damage; and the probability is, that the cargo also will have suffered to a corresponding extent. Up to this point these damages are confessedly *particular* average; and were it held that the damages *after* the stranding were the subject of *general* average, it would, of course, be necessary to distinguish the separate damages that belonged to each. But in every case these different damages would exist in varying proportions, yet always so incorporated together that justice could never have a more perplexing task than that of discriminating between them. No general rule could be applied that would meet the widely different circumstances of each particular case; and the arbitrary method of adjustment that would alone be possible would doubtless give rise to endless dissatisfaction and dispute. On the ground of expediency, therefore, as well as on that of principle, the usage now established in Great Britain ought to be maintained, notwithstanding the high authorities by whom the opposite has been countenanced.

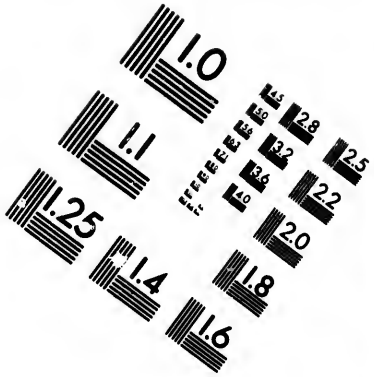
The amount of general average losses on the ship is compensated by allowing to the owners the cost of repairs, or of new materials in place of those sacrificed, subject to the deduction of one-third for the difference of value between old and new; but no deduction is made from the cost of new anchors, and only one-sixth is deducted from the cost of new chain cables. If the ship be on her first voyage (which is held to include the homeward as well as the outward passage), the repairs and new materials are allowed in full.

Extraordinary Expenditures.—When a ship is obliged to put into a port of refuge, in consequence of damage received in the course of the voyage, the usage in Great Britain is to allow as general average all the charges connected with the entrance of the vessel into the port, and with the landing and warehousing of the cargo, when this is necessary to admit of the ship being repaired. Thus the expenses of pilotage or other assistance into the port, the harbor dues and similar charges, the costs of the protest taken by the master and crew, and of the survey held to ascertain whether the cargo requires to be discharged, together with the charges for landing the cargo and conveying it to a warehouse or other place of safety, are all made good as general average. The costs of repairing the ship are charged to general average only in so far as the repairs may refer to damages which are themselves the proper subject of general contribution. If the damages are of the nature of particular average, as is more usually the case, they are charged accordingly; or if they proceed from "wear and tear," they are stated against the ship-owner.

The warehouse rent for the cargo at a port of refuge, and any expenses connected with its preservation, form special charges against that particular interest, and are borne by the proprietors of the goods, or by their insurers. When goods are insured "free from particular average, unless the ship be stranded," it is necessary, if the ship has not been stranded, to distinguish the charges for warehouse rent and fire insurance from those incurred in connection with the preservation of the goods from the effects of damage; the underwriters being liable for the former, but not for the latter. The expenses of reshipping the cargo, and the pilotage or other charges *outward*, are borne by the freight. If the entire cargo can not be taken on board again, from the want, at the port of refuge, of the usual facilities for stowing it, the loss or expenses resulting from the exclusion of part of it are not treated, in Great Britain, as the subject of general contribution. The wages and provisions of the master and crew during the period of detention at a port of refuge are not admitted as a charge against general average; it being held that the ship-owner is bound to keep a competent crew on board the ship from the commencement to the end of the voyage at his own expense.

The charges for agency at a port of refuge are brought against the general average, even though they may have been originally made in the form of separate charges against the ship and cargo respect-





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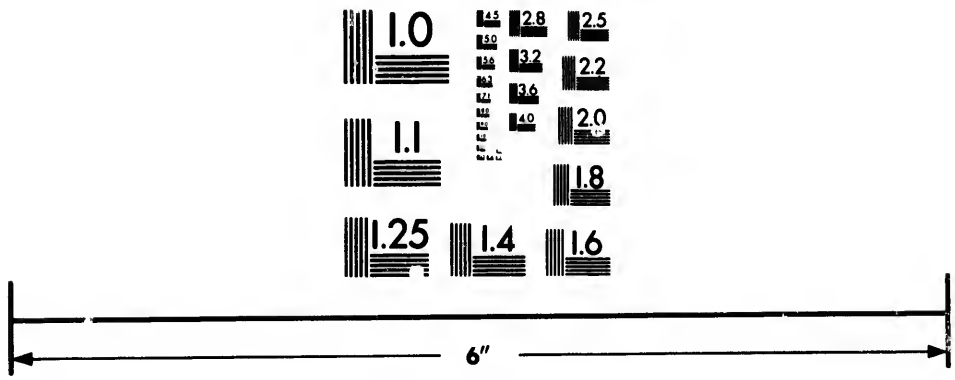

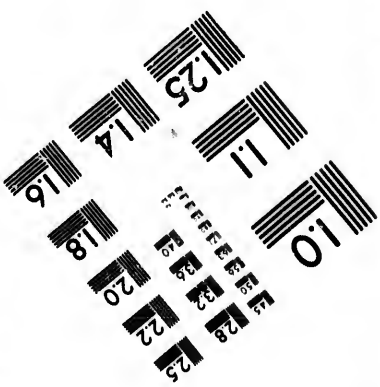

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ively. Commissions on money advanced, maritime interest on bottomry and *respondentia*, and the loss on exchanges, etc., are apportioned relatively to the gross sums expended on behalf of the several interests concerned.

The expenses incurred in getting a stranded ship off the ground, the hire of extra hands to pump a ship which has sprung a leak, and the sums awarded for salvage or for other services rendered to the ship and cargo under any extraordinary emergencies, are compensated by average contribution. But this rule applies only to the *extraneous* assistance that may have been obtained; the crew being bound to do their utmost in the service of the ship on all occasions, without extra remuneration for what they might consider extraordinary exertions on their part. The costs of reclaiming the ship and cargo after having been captured, are allowed as general average charges; and although *ransom* to an enemy is prohibited in Great Britain by legal enactment, it seems that this does not apply to the case of money or goods given up by way of composition to pirates for the liberation of the ship and cargo, and that this would also form a subject of average contribution.

When the ship and cargo arrive at the port of destination, it is unnecessary, in ordinary cases, to distinguish, in the adjustment of the general average, between the losses which have arisen from *sacrifices*, and those which have resulted from *expenditures* for the common benefit. But if the ship and cargo should be lost before reaching their destination, no contribution is due for the goods or ship's materials which may have been *sacrificed* at a former stage of the voyage, the owners of these being in no worse position than any of their coadventurers. On the other hand, it is evident that when money has been *expended* for the common benefit, the subsequent loss of the ship and cargo should not affect the right of the party who has made the advance to recover it in full from all the parties for whose advantage it was originally made. Hence, while *sacrifices* are made good only in the event of the ship and cargo being ultimately saved, *expenditures* must be reimbursed whether the ship and cargo be eventually saved or lost; and the contribution for these expenditures must be regulated by the values of the ship, cargo, and freight, as they stood at the time when the advances were made.

If, however, the money required for average expenditures has been raised by means of bottomry, and the ship be lost before completing the voyage, there can be no claim for reimbursement; the risk being assumed by the bottomry lender in consideration of the premium he receives on the sum advanced. It is by no means clear that the average expenditures which have been advanced without any contract of bottomry form a specific insurable interest, according to the law of Great Britain, although in practice they are very frequently insured. When this has been done, and when the amount has been recovered on the subsequent loss of the ship, no claim can be *equitably* made against the individuals who would otherwise have been liable. But if the expenditures are not insured, either by a bottomry contract, or by a special policy, and if the ship and cargo be totally lost in the subsequent course of the voyage, the parties for whose benefit the expenditures were incurred must reimburse them on the principles already explained. These parties, however, have recourse on their original insurers, not only for the total loss of the interests insured, but also for the previous expenditures, although the insurers may thus be called on to pay a *larger sum* than the amount of the insurance.

The contribution for general average losses is regulated by the values of the respective interests for the benefit of which they were incurred. The practical rule adopted, in all ordinary cases, is to estimate the ship, cargo, and freight, and their *net* values to their owners, in the state in which they arrive at the port of destination, *but including in these values the sums made good for sacrifices*, and to assess the contribution accordingly. The necessity for including the amount of compensation made for sacrifices in the valuations on which the contribution is charged, arises from the principle that all the parties interested in the adventure should bear the ultimate loss in exact proportion to their respective interests, which would not be the case if the owners of the articles sacrificed were to recover their full value without being themselves assessed for the loss thereon in the same manner as their coadventurers.

The contributory value of the *ship* is accordingly her actual value to her owner in the state in which she arrives, whether damaged or otherwise, including the sum made good in the general average for any sacrifices which may have been made of part of the ship or her materials.

The value of the *cargo* for contribution is its net market value on arrival, after deducting the charges incurred for freight, duty, and landing expenses, but without deducting the costs of insurance or commission. If goods be damaged, they contribute only according to their deteriorated value; and if special charges have been incurred on the cargo at a port of refuge (as for warehouse rent, etc.), the amount of these charges is deducted. The sum charged to general average for goods sacrificed is of course added to the valuation. All goods carried in the ship for the purpose of traffic must be included in the valuation of the cargo; but the wearing apparel, or personal effects, of the passengers and crew are exempted from contribution.

The value of the *freight* for contribution is the sum received by the ship-owner on the completion of the voyage for the carriage of the cargo, after deducting from that sum the wages then due, the port charges at the place of destination, and the special charges against the freight which may have been incurred at a port of refuge, consisting of the costs of reshipping the cargo, and of outward pilotage, etc. The provisions for the voyage are not deducted, as these are held to have formed part of the original value of the *ship*. If the freight has been paid in advance, it forms part of the value of the *goods*, and, consequently, does not contribute as a separate interest. It has been decided that when a vessel has been originally chartered for a double voyage, the *whole* freight to be earned under the charter-party must contribute at its net value, after deducting the wages and other charges which must be incurred in earning it. The effect of this rule is to render the freight attaching to the *return* voyage, as well as that attaching to the voyage *outward*, liable to contribute for average losses arising in the course of the outward passage; a result the equity of which is not always very apparent.

An adjustment of general average made at any foreign port where the voyage may terminate, if proved to be in conformity with the law and usage of the country to which such foreign port belongs, is binding on all the parties interested as coadventurers, although they may be subjects of Great Britain, and although the adjustment may be made on principles different from those sanctioned by the laws or usages of Britain. The reason for this rule is, that the parties engaging in the adventure are held to assent to the known maritime usage according to which the general average is adjusted on the arrival of the ship and goods at the port of destination.

The subject of general average is only incidentally connected with that of marine insurance, being itself a distinct branch of maritime law. But the subject of particular average arises directly out of the contract of insurance, and will therefore be best considered in connection with it.—E. B. *See* INSURANCE, MARINE.

For further information with respect to the subject

of average, the reader is referred to the famous work of M. Valin, *Commentaire sur l'Ordonnance de* 1681, tome ii. p. 147–198, ed. 1760; to Emerigon, *Traité des Assurances*, tome i. p. 598–674; Park *on Insurance*, chap. viii.; Marshall *on Insurance*, book i. chap. xii. sect. 7; Steven's *Essay on Average*; Benecke *on the Principles of Indemnity in Marine Insurance*; Lord Tenterden's excellent work on the *Law of Shipping*, part iii. chap. viii. etc.; Arnould *on Marine Insurance*; Baily *on General Average*; Kent's *Commentaries*, Lect. XLVII.

Avoirdupois, the name of a weight, derived from the French, *avoir du poise—to have weight*. Its pound contains 16 ounces, in distinction to the pound Troy, which has only 12. This weight is used for groceries and all other commodities, except the precious metals, gems, and medicines. The pound avoirdupois contains 7000 grains Troy, and is equal to 8532·5 Paris grains.—E. B. *See* Weights and Measures.

Azimuth, in *Astronomy*, an arc of the horizon intercepted between the meridian of the place and the vertical circle passing through the centre of the object. *Azimuth, Magnetical*, an arc of the horizon intercepted between the vertical circle passing through the centre of any heavenly body and the magnetical meridian. *Azimuth Compass*, an instrument for finding either the magnetical azimuth or amplitude of a heavenly object. *Azimuth Circles*, called also *azimuths* or *vertical circles*, are great circles of the sphere intersecting each other in the zenith and nadir, and cutting the horizon at right angles. On these are reckoned the height of the stars and that of the sun when not in the meridian.—E. B.

Azoga Ships (from the Spanish *azoque, mercury*), vessels which carried quicksilver to the Spanish West Indies, in order to extract the silver from the mines of Mexico and Peru. They carried no goods except for the king.—E. B.

B.

Bacon and **Hams**. The former is made from the sides and belly of the pig, and the latter from its hind legs. The process of curing may be effected indifferently by the employment of salt or sugar, or both; but the first is by far the most commonly used. After being impregnated with salt or sugar, and allowed to remain a certain time in the solution, the bacon and hams are taken out, dried, and smoked. In the States of Ohio, Indiana, Kentucky, Virginia, Maryland, etc., large quantities of bacon are put up yearly for domestic use and for export. The counties of England most celebrated for bacon and hams are York, Hants, Berks, and Wilts. Ireland produces great quantities of both; but they are coarse, not so well cured as the English, and much lower priced. Of the Scotch counties, Dumfries, Wigtown, and Kirkcudbright are celebrated for the excellence of their bacon and hams, of which they export large quantities, principally to the Liverpool and London markets.—*See* Pork Trade.

Baggage, in *Commercial Navigation*, the wearing apparel and other articles destined for the sole use or accommodation of the crews and passengers of ships.

Bahamas, or **Lucayas**, a chain of islands stretching in a northwesterly direction from the north coast of St. Domingo to that of East Florida, and lying between lat. 21° and 27° 30′ N., and long. 70° 30′ and 79° 5′ W. The group is composed of about twenty inhabited islands, and an immense number of islets and rocks. The principal islands in this group are New Providence, containing the capital, Nassau; Harbor Island; Abaco; Eleuthera; Heneagua, or Inagua; Mayaguana; St. Salvador; Andros Island; Great Bahama; Ragged Island; Rum Cay; Exuma; Long Island; Crooked Island; Long Cay; Watling's Island; the Caicos, the Turks, and the Berry Islands.

Most of these islands are situated on those remarkable flats called the Great and Little Bahama Banks, and some out of soundings in the ocean. The Great Bahama Bank is about 300 miles in length from northwest to southeast, and 100 in breadth; and the Little Bahama is about 130 miles long. The islands have, in general, a very flat appearance, and many of them consist of mere bleak and barren rocks. The soil in those that are under cultivation is thin, and generally light and sandy, but interspersed with occasional patches of rich mould. The substratum, so far as has been ascertained, consists of calcareous rocks, composed of coral, shells, madrepores, and marine deposits hardened into solid masses. The surface stratum is a combination of debris of the rock, exuviæ, and decayed vegetable matter. Though destitute of running streams, they possess numerous springs; and by digging wells down to the level of the sea, fresh water is obtained. The productions of the soil comprehend all the varieties of a tropical climate. Provisions—such as maize, yams, sweet potatoes, etc.; and fruits, as oranges, lemons, pine-apples, cocoa-nuts, etc.—are produced in abundance. There are also several species of valuable trees; as mahogany, fustic, lignum vitæ, cedars, pines, etc. Oxen, sheep, horses, poultry, and a great variety of live stock are reared; and wild hogs and agoutis are found in the woods. There are many varieties of birds, and the shores and creeks abound in turtle and excellent fish of various kinds. In the most southerly islands are salt ponds of great value.—E. B.

Bahia, or **St. Salvador**, a large city (formerly a capital) of Brazil, contiguous to Cape St. Antonio, which forms the right or eastern side of the entrance of the noble bay of Todos os Santos, or All-Saints, 170 miles southwest of Sergipe del Rey, and about 880 miles north-northeast of Rio Janeiro. Population 100,000, one-third of whom are whites, one-third mulattoes, and the rest blacks. According to the observations of M. Roussin, the light-house on the Cape is in lat. 13° 0′ 30″ S., long. 38° 30′ W. The opposite side of the entrance to the bay is formed by the island of Taporica, distant from Cape St. Antonio about 2½ leagues. But a bank along the shore of the island narrows the passage for large ships to about two-thirds this distance. Another bank runs south-southwest from Cape St. Antonio about 1½ leagues. Within, the bay expands into a capacious basin, having several islands and harbors, the depth of water varying from 8 and 10 to 40 fathoms, affording ample accommodation and secure anchorage for the largest fleets.

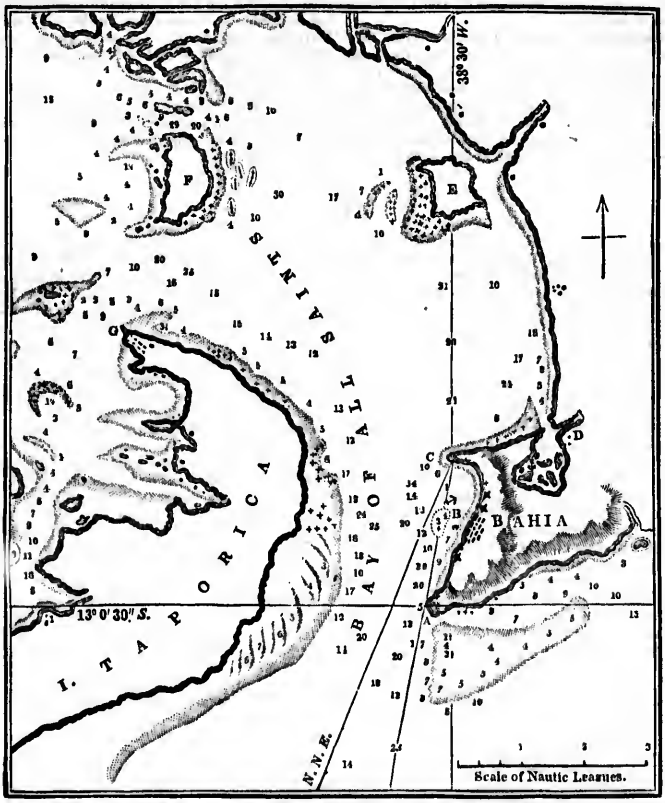
There is another entrance to the bay, partly exhibited in the annexed plan, on the west side of the island of Taporica; but it is narrow, intricate, and at its mouth has not more than 6 feet water. Several rivers have their embouchure in the bay, which generally occasions a current to set from the north end of the island by Cape St. Antonio; when the rivers are flooded, this current is sometimes very strong. The light-house at the extremity of the cape has no great elevation, and can not be seen at a distance of more than 3 or 3½ leagues. The usual place of anchorage is abreast of the city, north and south of Fort de Mar.

The city stands partly on a height, and partly along the shore of the bay. The lower town is dirty and badly laid out; but in the upper town and suburbs are several good streets, a rich cathedral, palaces of the archbishop and governor, town-hall, court of appeal, theatre, hospitals, and many religious houses. In the lower town are an exchange, arsenal, and imperial dock-yard; and about 3 miles northeastward are yards for the construction of mercantile shipping. Houses of the city mostly of stone, and often lofty; the city is defended by several forts, none of great strength.

Bahia, founded in 1549, by Thomas da Sonza, first captain general of Brazil, is one of the most important commercial cities in America.

In 1858, the trade of Bahia was very extensive: about 60,000 tons sugar, 18,500 bags (182 pounds) cotton; 20,000 bags (160 pounds) coffee; with hides, tobacco, rice, dye and fancy woods, bullion, etc. The imports consist principally of cottons and other manufactured goods, provisions, flour, salt, salt-fish, soap, wines, etc.

Plan.—The subjoined wood-cut conveys a clearer and better idea of this celebrated bay than could be acquired from any description. It is copied, without any reduction, from a revised edition of a Portuguese chart published by Mr. Laurie, and exhibits the banks, soundings, anchorage, etc.



References to the Plan.—A, Cape, light-house, and fort of St. Antonio; B, Fort do Mar; C, Fort St. Philip; D, Tapagippe; E, Isla do Mar; F, Isla dos Frados; G, Fort Beaumont. The figures in the plan are the soundings in fathoms.

Bailiffs, or Sheriffs, are said to be of Saxon origin. London had its *shire-reve* prior to the Conquest, and this officer was generally appointed for counties in England in 1079. Sheriffs were appointed in Dublin, under the name of bailiffs, in 1308; and the name was changed to sheriff, 1548. There are still some places where the chief magistrate is called bailiff, as the high bailiff of Westminster. The term *Bum-bailiff* is a corruption of bound-bailiff, every bailiff being obliged to enter into bonds of security for his good behavior.—BLACKSTONE.

Balachong, an article consisting of pounded or bruised fish. It consists principally of small fish, with prawns and shrimps. Though fetid and offensive to strangers, this substance, used as a condiment to rice, is largely consumed in all the countries to the east of Bengal, including the southern provinces of China, and the islands of the Eastern Archipelago. Its distribution gives rise to an extensive internal traffic.

Balance, a machine for ascertaining the weight of substances. There are several kinds of balances, as the common balance or scales, the steelyard, the Danish or Swedish balance, the Chinese balance, the hydrostatic balance, etc. The same name is also given to certain kinds of apparatus for measuring or comparing the intensities of very small forces, as the balance of torsion, the electric balance, etc.—E. H. *Balance,* in accounts, is the term used to express the difference between the debtor and creditor sides of an account.

Balance of Trade, in *Commerce,* is the term commonly used to express the difference between the value of the exports from and imports into a country. The balance is said to be favorable when the value of the exports exceeds that of the imports, and unfavorable when the value of the imports exceeds that of the

exports. According to the custom-house returns, the official value of the exports from Great Britain, exclusive of foreign and commercial merchandise, during the year ending 5th of January, 1842, amounted to £102,180,517; and the official value of the imports during the year had increased to £64,377,962; leaving a favorable balance of £37,802,555. The attainment of a favorable balance was formerly regarded as an object of the greatest importance. The precious metals, in consequence of their being used as money, were long considered as the only real wealth that could be possessed either by individuals or nations. And as countries without mines could not obtain supplies of these metals except in exchange for exported products, it was concluded that if the value of the commodities exported exceeded that of those imported, the balance would have to be paid by the importation of an equivalent amount of the precious metals; and conversely. A very large proportion of the restraints imposed on the freedom of commerce during the last two centuries grew out of this notion. The importance of having a favorable balance being universally admitted, every effort was made to attain it; and nothing seemed so effectual for this purpose as the devising of schemes to facilitate exportation, and to hinder the importation of almost all products, except gold and silver, that were not intended for future exportation. But the gradual though slow growth of sounder opinions with respect to the nature and functions of money, showed the futility of a system of policy having such objects in view. It is now conceded on all hands that gold and silver are nothing but commodities, and that it is in no respect necessary to interfere, either to encourage their importation or to prevent their exportation. The truth is, however, that the theory of the balance of trade is not erroneous merely from the false notions which its advocates entertained with respect to money, but proceeds on radically mistaken views as to the nature of commerce. The mode in which the balance is usually estimated is, indeed, completely fallacious. Supposing, however, that it could be correctly ascertained, it would be found, in opposition to the common opinion, that the imports into every commercial country generally exceed the exports; and that when a balance is formed, it is only in certain cases, and those of rare occurrence, that it is canceled by a bullion payment.

The proper business of the wholesale merchant consists in carrying the various products of the different countries of the world from the places where their value is least to those where it is greatest; or, which is the same thing, in distributing them according to the effective demand. It is clear, however, that there could be no motive to export any species of produce, unless that which it was intended to import in its stead were of greater value. When an English merchant commissions a quantity of Polish wheat, he calculates on its selling for so much more than its price in Poland, as will be sufficient to pay the expense of freight, insurance, etc., and to yield, besides, the common and ordinary rate of profit on the capital employed. If the wheat did not sell for this much, its importation would obviously be a loss to the importer. It is plain, then, that no merchant ever did or ever will export, but in the view of importing something more valuable in return. And so far from an excess of exports over imports being any criterion of an advantageous commerce, it is directly the reverse; and the truth is, notwithstanding all that has been said and written to the contrary, that unless the value of the imports exceeded that of the exports, foreign trade could not be carried on. Were this not the case—that is, were the value of the exports always greater than the value of the imports—merchants would lose on every transaction with foreigners, and the trade with them would be speedily abandoned.

In England, the rates at which all articles of export and import are officially valued were fixed so far back as 1696. But the very great alteration that has since taken place, not only in the value of money, but also in the cost of most part of the commodities produced in this and other countries, has rendered this official valuation, though valuable as a means of determining their quantity, of no use whatever as a criterion of the true value of the exports and imports. In order to remedy this defect, an account of the *real* or *declared* value of the exports is annually prepared, from the declarations of the merchants, and laid before Parliament: there is, however, no such account of the imports; and, owing to the difficulties which high duties throw in the way, it is, perhaps, impossible to frame one with any thing like accuracy. It has also been alleged, and apparently with some probability, that merchants have not unfrequently been in the habit of exaggerating the value of articles entitled to drawbacks on exportation; but the recent extension and improvement of the warehousing system, and the diminution of the number of drawbacks, must materially lessen whatever fraud or inaccuracy may have arisen from this source. Most articles were formerly charged with an *ad valorem* duty of 10*s.* per cent. on exportation, so that, if any thing, their value was probably rather under than overrated; but now that this duty has been repealed (5 and 6 Vict. cap. 47, § 40), the presumption is that their declared value comes very near the truth; at least, sufficiently so for all practical purposes. Now the declared value of the exports of Great Britain in 1841 was £61,634,623, being only about half their official value, and nearly £13,000,000 under the official value of the imports. What the excess of the latter might be, had we the means of comparing their real value with that of the exports, it is impossible to say; but there can be no manner of doubt that, generally speaking, it would be very considerable. The value of an exported commodity is estimated at the moment of its being sent abroad, and *before* it is increased by the expense incurred in transporting it to the place of its destination; whereas the value of the commodity imported in its stead is estimated *after* it has arrived at its destination, and, consequently, after it has been enhanced by the cost of freight, insurance, importer's profits, etc.

In the United States, the value of the imports, as ascertained by the custom-house returns, always exceeds the value of the exports. And although practical politicians have been in the habit of considering the excess of the former as a certain proof of a disadvantageous commerce, "it is nevertheless true," says Mr. Pitkin, "that the real gain of the United States has *been nearly in proportion as their imports have exceeded their exports.*"—*Commerce of the United States*, 2d ed. p. 280. The great excess of American imports has in part been occasioned by the Americans generally exporting their own surplus produce, and, consequently, receiving from foreigners not only an equivalent for their exports, but also for the cost of conveying them to the foreign market. "In 1811," says the author just quoted, "flour sold in America for *nine dollars and a half* per barrel, and in Spain for *fifteen dollars*. The value of the cargo of a vessel carrying 5000 barrels of flour would, therefore, be estimated at the period of its exportation at 47,500 dollars; but as this flour would sell, when carried to Spain, for 75,000 dollars, the American merchant would be entitled to draw on his agent in Spain for 27,500 dollars more than the flour cost in America, or than the sum for which he could have drawn had the flour been exported in a vessel belonging to a Spanish merchant. But the transaction would not end here. The 75,000 dollars would be vested in some species of Spanish or other European goods fit for the American market; and the freight, insurance, etc., on account of the return cargo, would probably increase its value to 100,000 dollars, so that, in all, the American merchant might

have imported goods worth 52,500 dollars more than the flour originally sent to Spain." It is as impossible to deny that such a transaction as this is advantageous, as it is to deny that its advantage consists entirely in the excess of the value of the goods imported over the value of those exported. And it is equally clear that America might have had the real balance of payments in her favor, though such transactions as the above had been multiplied to any conceivable extent.

The argument about the balance of payment is one of those that contradict and confute themselves. Had the apparent excess of exports over imports, as indicated by the British custom-house books for the last hundred years, been always paid in bullion, as the supporters of the old theory contend is the case, there should at this moment be about 450,000,000 or 500,000,000 of bullion in the country, instead of 50,000,000 or 60,000,000, which it is supposed to amount to! Nor is this all. If the theory of the balance be good for any thing—if it be not a mere idle delusion—it follows, as every country in the world, with the single exception of the United States, has its favorable balance, that they must be paid by an annual importation of bullion from the mines corresponding to their aggregate amount. But it is certain that the entire produce of the mines, though it were increased in a *tenfold* proportion, would be insufficient for this purpose! This *reductio ad absurdum* is decisive of the degree of credit that should be attached to conclusions respecting the flourishing state of the commerce of any country drawn from the excess of the exports over the imports! Not only, therefore, is the common theory with respect to the balance of trade erroneous, but the very reverse of that theory is true. In the *first* place, the value of the commodities imported by every country which carries on an advantageous commerce (and no other will be prosecuted for any considerable period) invariably exceeds the value of those which she exports. Unless such were the case, there would plainly be no fund whence the merchants and others engaged in foreign trade could derive either a profit on their capital, or a return for their outlay and trouble; and in the *second* place, whether the balance of debt be for or against a country, that balance will neither be paid nor received in bullion, unless it be at the time the commodity by the exportation or importation of which the account may be most profitably settled. Whatever the partisans of the doctrine as to the balance may say about money being a preferable product, or *marchandise par excellence*, it is certain it will never appear in the list of exports and imports, while there is any thing else with which to carry on trade, or cancel debts, that will yield a larger profit, or occasion a less expense to the debtors.

It is difficult to estimate the mischief which the absurd notions relative to the balance of trade have occasioned in almost every commercial country; in Great Britain they have been particularly injurious. It is principally to the prevalence of prejudices to which they have given rise that the restrictions on the trade between England and France are to be ascribed. The great, or rather the only argument insisted upon by those who prevailed on the Legislature, in the reign of William and Mary, to declare the trade with France a *nuisance*, was founded on the statement that the value of the imports from that kingdom considerably exceeded the value of the commodities Great Britain exported to it. The balance was regarded as a *tribute* paid by England to France; and it was sagaciously asked, What had we done, that we should be obliged to pay so much money to our natural enemy? It never occurred to those who so loudly abused the French trade, that no merchant would import any commodity from France, unless it brought a higher price in the country than the commodity exported to pay it; and that the profit of the merchant, or the national gain, would be in exact proportion to this excess of price. The very reason assigned by these persons for prohibiting the trade affords the best attainable proof of its having been a lucrative one; nor can there be any doubt that an unrestricted freedom of intercourse between the two countries would still be of the greatest service to both.—J. R. M.

The production of gold in the United States since the acquisition of California has been such as to stimulate trade throughout the country. The importations from Europe have been very large, more than commensurate with the export trade. Hence gold has been required to the extent of more than 170 millions during the five years 1851–1855 to discharge this accumulated debt or *balance of trade*. This is demonstrated by the following official table:

STATEMENT EXHIBITING THE AMOUNT OF COIN AND BULLION IMPORTED INTO AND EXPORTED FROM THE UNITED STATES ANNUALLY FROM 1821 TO 1855 INCLUSIVE; AND ALSO THE AMOUNT OF IMPORTATION OVER EXPORTATION, AND OF EXPORTATION OVER IMPORTATION, DURING THE SAME YEARS.

Years ending Sep. 30.	COIN AND BULLION.			
	Imported.	Exported.	Excess of Importation over Exportation.	Excess of Exportation over Importation.
1821	$8,064,890	$10,478,059		$2,413,169
1822	3,369,846	10,810,180		7,440,334
1823	5,097,996	6,372,087		1,275,091
1824	8,379,835	7,014,552	$1,365,283	
1825	6,150,705	8,932,034		2,781,269
1826	6,880,966	4,704,533	2,176,433	
1827	8,151,160	8,014,880	136,250	
1828	7,489,741	8,248,476		758,735
1829	7,403,812	4,924,020	2,479,592	
1830	8,105,964	2,178,773	5,977,191	
1831	7,805,845	9,014,831		1,708,986
1832	5,907,504	5,656,340	251,164	
1833	7,070,908	2,611,701	4,458,067	
1834	17,911,632	2,076,758	15,834,874	
1835	13,191,447	6,477,775	6,658,672	
1836	13,400,881	4,324,336	9,076,545	
1837	10,516,414	5,976,249	4,540,165	
1838	17,747,116	3,508,046	14,239,070	
1839	5,595,176	8,776,743		3,181,567
1840	8,882,813	8,417,014	465,799	
1841	4,988,633	10,034,332		5,045,699
1842	4,087,016	4,813,539		726,523
1843*	22,890,559	1,520,791	20,869,768	
1844	15,830,429	5,454,214	376,215	
1845	4,079,242	8,636,495		4,556,253
1846	3,777,732	3,905,268		127,536
1847	24,121,289	1,907,024	22,214,265	
1848	6,360,224	15,841,616		9,481,392
1849	6,651,240	5,404,648	1,246,592	
1850	4,028,702	7,522,904		2,394,202
1851	5,453,592	29,472,752		24,019,160
1852	5,505,044	42,674,135		37,169,091
1853	4,201,882	27,486,875		23,285,403
1854	6,758,587	41,197,300		34,438,713
1855	3,650,312	56,247,043		52,587,531
	$289,095,514	$390,602,713	$112,561,545	$213,855,744

* Nine months. † 12 months ending June 30.

Bale, a pack, or certain quantity of goods or merchandise; as a *bale* of silk, cloth, etc. *Bales* are always marked and numbered, that the merchants to whom they belong may know them, and the marks and numbers correspond to those in the bills of lading, etc. Selling under the *bale*, or under the *cords*, is a term used in France and other countries for selling goods wholesale, without sample or pattern, and unopened.

Balks, large pieces of timber.

Ballast (Du. *Ballast;* Fr. *Lest;* Ger. *Ballast;* It. *Savorra;* Sp. *Lastre;* Sw. *Ballast*), a quantity of iron, stones, sand, gravel, or any other heavy material laid in a ship's hold, in order to sink her deeper in the water, and to render her capable of carrying sail without being overset. All ships clearing outward, having no goods on board other than the personal baggage of the passengers, are said to be in ballast. The quantity of ballast required to fit ships of equal burden for a voyage is often materially different; the proportion being always less or more, according to the sharpness or flatness of the ship's bottom, called by seamen the *floor*. The proper ballasting of a ship deserves peculiar attention, for, although it be known that ships in

general will not carry sufficient sail till they are laden so that the surface of the water nearly glances on the extreme breadth midships, more than this general knowledge is required. If the ship have a great weight of heavy ballast, as lead, iron, etc., in the bottom, the centre of gravity will be too low in the hold; this no doubt will enable her to carry a press of sail, but it will, at the same time, make her sail heavily, and roll so violently as to run the risk of being dismasted. The object in ballasting a ship is, therefore, so to dispose of the ballast or cargo, that she may be duly poised, and maintain a proper equilibrium on the water, so as neither to be too *stiff* nor too *crank*, qualities equally pernicious. If too stiff, she may carry much sail, but her velocity will not be proportionally increased; while her masts are endangered by sudden jerks and excessive laboring. If too crank, she will be unfit to carry sail without the risk of oversetting.

Stiffness in ballasting is occasioned by disposing a too great quantity of heavy ballast, as lead, iron, etc., in the bottom, which throws the centre of gravity very near the keel; and this being the centre about which the vibrations are made, the lower it is placed, the more violent is the rolling. Crankness, on the other hand, is occasioned by having too little ballast, or by disposing the ship's lading so as to raise the centre of gravity too high: this also endangers the masts when it blows hard; for when they cease to be perpendicular, they strain on the shrouds in the nature of a lever, which increases as the sine of their obliquity; and it is superfluous to add, that a ship that loses her masts is in great danger of being lost. Hence the art of ballasting consists in placing the centre of gravity to correspond with the trim and shape of the vessel, so as to be neither too high nor too low; neither too far forward, nor too far aft; and to lade the ship so deep, that the surface of the water may nearly rise to the extreme breadth midships: she will then carry a good quantity of sail, incline but little, and ply well to windward.—*See* FALCONER'S *Marine Dictionary*.

The mischievous consequences of not attending to the circumstances now mentioned are often experienced by ships loading barilla, brimstone, and such heavy articles, on the coast of Sicily and Spain. The habit there is to cut large quantities of brushwood and fagots, and to spread them in the hold, to hinder the cargo from sinking the centre of gravity too low, and causing the ship to labor violently; but it very frequently happens that the pressure of the cargo on this sort of dunnage is so great as to squeeze it into a much smaller space than could at first have been supposed; so that ships after getting to sea are sometimes obliged to return to port to unload a part of their cargo, to prevent their foundering. In such cases, firm dunnage, such as oak staves, should, if possible, be always employed.—*See* JACKSON'S *Commerce of Mediterranean*, p. 125–128. Ships that have cargoes of light goods on board require a quantity of ballast; increasing, of course, according to the greater lightness of the goods.

Balloon. Galien of Avignon wrote on aerostation in 1755. Dr. Black gave the hint as to hydrogen in 1767. A balloon was constructed in France by MM. Montgolfier, in 1783, when Rozier and the Marquis d'Arlandes ascended at Paris. Pilâtre Desrozier and M. Romain perished in an attempted voyage from Boulogne to England, the balloon having taken fire, June 14, 1785. At the battle of Fleurus, the French made use of a balloon to reconnoitre the enemy's army, and convey the observations by telegraph, June 17, 1794. Garnerin ascended in a balloon to the height of 4000 feet, and descended by a parachute, September 21, 1802. Gay-Lussac ascended at Paris to the height of 23,000 feet, September 6, 1804. Madame Blanchard ascended from Tivoli at night, and the balloon, being surrounded by fire-works, exploded, and she was precipitated to the ground and killed, July 6, 1819.—HAYDN.

Balsam (Ger. *Balsam*; Du. *Balsem*; Fr. *Baume*; It. and Sp. *Balsamo*; Lat. *Balsamum*). Balsams are vegetable juices, either liquid, or which spontaneously become concrete, consisting of a substance of a resinous nature, combined with benzoic acid, or which are capable of affording benzoic acid by being heated alone, or with water. The liquid balsams are copaiva, opobalsam, balsam of Peru, storax, and Tolu; the concrete are benzoin, dragon's blood, and red or concrete storax.—URE. 1. *Copaiva* (Fr. *Baume de Copahu*; Ger. *Kopaiva Balsam*; Sp. *Copayva*), obtained from a tree (*Copaifera*) growing in South America and the West India Islands. The largest quantity is furnished by the province of Para, in Brazil. It is imported in small casks, containing from 1 to 1½ cwt. Genuine, good copaiva, or copaiba balsam, has a peculiar but agreeable odor, and a bitterish, hot, nauseous taste. It is clear and transparent; its consistence is that of oil; but when exposed to the action of the air it becomes solid, dry, and brittle, like resin.—THOMSON'S *Dispensatory*.

2. *Opobalsam* (Fr. *Balsamier de la Mecque*; It. *Opobalsamo*; Lat. *Balsamum verum album, Ægyptiacum*; Egypt. *Balessan*), the most precious of all the balsams, commonly called Balm of Gilead. It is the produce of a tree (*Amyris Gileadensis*), indigenous to Arabia and Abyssinia, and transplanted at an early period to Judea. It is obtained by cutting the bark with an axe at the time that the juice is in the strongest circulation. The true balsam is of a pale yellowish color, clear and transparent, about the consistence of Venice turpentine, of a strong, penetrating, agreeable, aromatic smell, and a slightly bitterish pungent taste. By age it becomes yellower, browner, and thicker, losing by degrees, like volatile oils, some of its finer and more subtile parts. It is rarely, if ever, brought genuine into this country; dried Canada balsam being generally substituted for it. It was in high repute among the ancients, but is now principally used as a cosmetic by the Turkish ladies.—*Drs.* URE *and* THOMSON. The Canada balsam, now referred to, is merely *fine turpentine*. It is the produce of the *Pinus Balsamea*, and is imported in casks, each containing about 1 cwt. It has a strong, but not a disagreeable odor, and a bitterish taste; is transparent, whitish, and has the consistence of copaiva balsam.—*See* TURPENTINE. "Szafra and Beder are the only places in the Hedjaz where the balsam of Mecha, or Balessan, can be procured in a pure state. The tree from which it is collected grows in the neighboring mountains, but principally upon Djebel Sobh, and is called, by the Arabs, Beshem. I was informed that it is from 10 to 15 feet high, with a smooth trunk, and thin bark. In the middle of summer, small incisions are made in the bark; and the juice, which immediately issues, is taken off with the thumb nail and put into a vessel. The gum appears to be of two kinds, one of a white, and the other of a yellowish white color: the first is the most esteemed. I saw here some of the latter sort in a small sheep-skin, which the Bedouins use in bringing it to market: it had a strong turpentine smell, and its taste was bitter. The people of Szafra usually adulterate it with sesamum oil and tar. When they try its purity, they dip their finger into it and then set it on fire; if it burn without hurting or leaving a mark on the finger, they judge it to be of good quality: but if it burn the finger as soon as it is set on fire, they consider it to be adulterated. I remember to have read, in Bruce's Travels, an account of the mode of trying it, by letting a drop fall into a cup filled with water; the good balsam falling coagulated to the bottom, and the bad dissolving and swimming on the surface. I tried this experiment, which was unknown to the people here, and found the drop swim upon the water; I tried also their test by fire upon the finger of a Bedouin, who had to regret his temerity; I therefore regarded the balsam sold here as adulterated: it was of less density than

honey. I wished to purchase some; but neither my own baggage nor any of the shops of Szafra could furnish any thing like a bottle to hold it; the whole skin was too dear. The Bedouins, who bring it here, usually demand 2 or 3 dollars per pound for it when quite pure; and the Szafra Arabs resell it to the hadjeys of the great caravan at between 8 and 12 dollars per pound in an adulterated state. It is bought up principally by Persians."—BURCKHARDT's *Travels in Arabia*, vol. ii. p. 123.

8. *Balsam of Peru* (Fr. *Baume de Peru*; Ger. *Peruvianischer Balsam*; Sp. *Balsamo de Quinquina*; Lat. *Balsamum Peruvianum*), the produce of a tree (*Myroxylon Peruiferum*) growing in the warmest parts of South America. The balsam procured by incisions made in the tree is called *white liquid balsam*; that which is found in the shops is obtained by boiling the twigs in water: it is imported in jars, each containing from 20 to 40 pounds weight. It has a fragrant aromatic odor much resembling that of benzoin, with a warm bitterish taste. It is viscid, of a deep reddish-brown color, and of the consistence of honey.

4. *Storax* (Fr. *Storax*; Ger. *Styraxbroom*; It. *Storace*; Sp. *Azumbar*; Lat. *Styrax*; Arab. *Usterut*), the produce of a tree (*Styrax officinale*) growing in the south of Europe and the Levant. Only two kinds are found in the shops: storax in tears, which is pure, and storax in the lump, or red storax, which is mixed with sawdust and other impurities. Both kinds are brought from the Levant in chests and boxes. Storax has a fragrant odor, and a pleasant, sub-acidulous, slightly pungent, and aromatic taste: it is of a reddish-brown color, and brittle.—THOMSON's *Dispensatory*.

5. *Tolu, Balsam of* (Fr. *Baume de Tolu*; Ger. *Tolutanischer Balsam*; Sp. *Balsamo de Tolu*). The tree which yields this balsam is the same as that which yields the balsam of Peru, it being merely the white balsam of Peru hardened by exposure to the air.

6. *Benzoin*, or *Benjamin* (Fr. *Benzoin*; Ger. *Benzoe*; Sp. *Benjui*; It. *Belzuino*; Lat. *Benzoinum*; Arab. *Liban*; Hind. *Luban*; Jav. *Menian*; Malay, *Caminyan*), is an article of much greater commercial importance than any of those balsams previously mentioned. It is obtained from a tree (*Styrax Benzoin*) cultivated in Sumatra and Borneo, but particularly the former. The plants produce in the seventh year. The balsam is obtained by making incisions in the bark, when it exudes, and is scraped off. During the first three years the balsam is of a clear white color, after which it becomes brown. Having borne 10 or 12 years, the tree is cut down, a very inferior article being obtained by scraping the wood. The balsams procured in these different stages are distinguished in commerce, and differ widely in value. Benzoin has a very agreeable, fragrant odor, but hardly any taste. It is imported in large masses, packed in chests and casks. It should be chosen full of clear, light-colored, and white spots, having the appearance of white marble when broken; it is rarely, however, to be met with in so pure a state, but the nearer the approach to it the better. The worst sort is blackish, and full of impurities.—MILBURN's *Orient. Com.*, and private information. The price of Benzoin in bond varied, in the London market, in February, 1843, from £3 to no less than £46 per cwt.! Mr. Crawfurd has given the following interesting and authentic details with respect to this article: "Benzoin, or frankincense, called in commercial language Benjamin, is a more general article of commerce than camphor, though its production be confined to the same islands. Benzoin is divided in commerce, like camphor, into three *sorts* (head, belly, foot), according to quality, the comparative value of which may be expressed by the figures 105, 45, 18. Benzoin is valued in proportion to its whiteness, semi-transparency, and freedom from adventitious matters. According to its purity, the first sort may be bought at the *emporia* to which it is brought, at from 50 to 100 dollars per picul (133⅓ pounds), the second from 25 to 45 dollars, and the worst from 8 to 20 dollars. According to Linschoten, benzoin, in his time, cost, in the market of Sunda Calapa or Jacatra, from 19·05 to 25·40 Spanish dollars the picul. By Niebuhr's account, the worst benzoin of the Indian islands is more esteemed by the Arabs than their own best *olibanum*, or frankincense. In the London market, the best benzoin is fourteen times more valuable than *olibanum*, and even the worst two and one third times more valuable. Benzoin usually sells in England at 10*s.* per pound. The quantity generally imported there in the time of the monopoly was 312 cwt. The principal use of this commodity is as incense, and it is equally in request in the religious ceremonies of Catholics, Mohammedans, Hindoos, and Chinese. It is also used as a luxury by the great in fumigating their apartments, and the Japanese chiefs are fond of smoking it with tobacco. Its general use among nations in such various states of civilization, and the steady demand for it in all ages, declare that it is one of those commodities the taste for which is inherent in our nature, and not the result of a particular caprice with any individual people, as in the case of Malay camphor with the Chinese."—*Indian Archipelago*, vol. iii. p. 418. An inferior description of benzoin, the produce of a different tree from the *Styrax benzoin*, is produced in Siam. It is comparatively cheap and abundant.

7 *Dragon's blood* (Fr. *Sang-Dragon*; Lat. *Sanguis Draconis*; Arab. *Damulākhwain*; Hind. *Heraduky*), the produce of a large species of rattan (*Calamus Draco*) growing on the north and northeast coast of Sumatra, and in some parts of Borneo. It is largely exported to China, and also to India and Europe. It is either in oval drops, wrapped up in flag-leaves, or in large and generally more impure masses composed of smaller tears. It is externally and internally of a deep dusky red color, and when powdered it should become of a bright crimson: if it be black, it is worth little. When broken and held up against a strong light, it is somewhat transparent, and it has little or no smell or taste; what it has of the latter is resinous and astringent. Dragon's blood in drops is much preferable to that in cakes, the latter being more friable, and less compact, resinous, and pure than the former. Being a very costly article, it is very apt to be adulterated. Most of its alloys dissolve like gums in water, or crackle in the fire without proving inflammable, whereas the genuine dragon's blood readily melts and catches flame, and is scarcely acted on by watery liquors. It sells in the market of Singapore at from 15 to 35 dollars per picul, according to quality; but the Chinese have the art of purifying and refining it, when it sells at from 80 to 100 dollars per picul.—MILBURN's *Orient. Com.*; CRAWFURD's *East. Archip.*; and private information. The price of dragon's blood, in the London market, varied, in November, 1853, from £5 to £15 per cwt.

Baltic Sea. The denomination of the Baltic, applied to the inland sea which forms the subject of this article, is first found in the work entitled *Chorographia Scandinaviæ*, by Adam of Bremen, who was canon of that city at the close of the eleventh century. The etymology of the name has given rise to many conjectures. The Swedes derive it from the Scandinavian word *baelt*, a girdle, because of its peculiar form; the Prussians from the Sclavonian or Lettonian word *balt*, white, from its being frozen part of the year, or from *Baltus*, one of their kings; while by others it is derived from *Baltea*, the name of an island mentioned by Pytheas, a merchant of Marseilles, who, in the second or third century before the Christian era, is supposed to have sailed as far north as this sea. In the countries which bound it, its ancient name was *Variatzkoïe Morè*, or the Sea of Variaghi; by the modern Russians it is called *Baltiskoè Morè*; and by the Swedes, Danes, and Germans, the *East Sea*.

Extent of the Baltic.—The Baltic is inclosed by Swe-

den, Russia, Prussia, Mecklenburg, and Denmark; and it communicates with the North Sea by the Skager-Rack, Cattegat, Sound, and Great and Little Belts. From Swinemünde in the south, to Tornea in the north, its length is 770 geographical miles; and its width from Karlscrona to Memel is not less than 180 miles. Its whole area, including the Gulf of Bothnia, is about 125,000 geographical square miles. It runs first in an easterly direction as far as Memel, a distance of 300 miles, and then northward as far as lat. 59° 21′ N., a distance of 850 miles, at which point it separates into two great gulfs. One of these, the Gulf of Finland, runs nearly due east; the other, the Gulf of Bothnia, almost north. The Gulf of Bothnia is 400 miles in length, with an average breadth of 120 miles, but where narrowest it does not exceed 40 miles. The Archipelago of Aland lies at its entrance. The Gulf of Finland is 200 miles in length, with a mean breadth of 60 or 70 miles. Numerous rocky islands and reefs, many of them level with the water, render the navigation of this sea extremely dangerous.

Depth of the Baltic.—The greatest depth of the Baltic rarely exceeds 100 fathoms. On the western side it is not more than 15 fathoms; and, in general, only from 8 to 10 fathoms. On the south it nowhere exceeds 50 fathoms. The Gulf of Finland suddenly shallows from 50 or 60 fathoms to 5, or even less. The average depth of the Gulf of Bothnia is not greater than that of the rest of the sea. It has long been a generally received opinion that the waters of the Baltic are gradually diminishing. Celsius, a learned Swede, who flourished toward the middle of last century, advances this hypothesis; and, from observations made on the coasts of the Baltic, he estimated the diminution at 45 inches in a hundred years. This hypothesis was supported by Linnæus, who founded on it a theory of the earth. M. Otto, in his physical observations on this sea, has suggested another theory to account for its apparent decrease. He supposes that, instead of really subsiding, it may be only shifting its position, and gaining in one quarter what it loses in another; and this he ascribes to the large and rapid rivers, which carry along with them an immense quantity of earth and sand, by which the beds at their mouths are raised, and their banks extend toward the sea. The views of Celsius have been confirmed by the observations of Von Buch, who also discovered at several places on the western shores of Scandinavia, and at considerable elevations, deposits of sand and mud containing numerous marine shells of species still existing in the neighboring ocean. Mr. Lyell at first entertained doubts of these phenomena; but on subsequent inspection he was led to concur in the opinion of Von Buch. Mr. Lyell found the marks which were cut in the rocks at water-line some years previous to his visit to be actually several inches above the level of the Baltic. From these observations, that eminent geologist concludes that, in several parts of Sweden, a gradual elevation of the land is taking place.—Lyell's *Principles of Geology*. The great quantity of sand and mud carried down by the rivers has considerably raised the bottom of this sea, and affected its navigation, so that the mouths of rivers formerly navigable are now inaccessible.

In the Baltic, the tides are scarcely, if at all, perceptible. There are sensible tides in the Skager-Rack; but these begin to diminish in the Cattegat, and are very trifling in the Sound and Belts. There are, however, irregular variations in the level of the waters of the Baltic which bear some resemblance to tides. These elevations generally occur in autumn, when the weather threatens rain; and they last sometimes a few days, sometimes several weeks. The maximum rise is three feet and a half, and the low shores are occasionally inundated. They also render brackish the fresh-water lakes which communicate with the sea. In the Gulf of Bothnia, the subsidence of the waters is usually succeeded by north winds; whereas, near Stockholm, these winds usually follow their rise. M. Kraft, formerly professor of experimental philosophy in the Imperial Academy of Sciences at St. Petersburg, in his treatise on the inundations of the Neva at the autumnal equinox, observes that, three or four days before or after the full or new moon, a violent northwest wind drives the waters of the Northern Ocean, during the influx of the tide, into the Baltic, and is accompanied or immediately succeeded by a south wind in that sea and the Gulf of Finland. By Schultens, a learned Swede, who paid particular attention to the physical geography of the Baltic, the irregular elevations of this sea are attributed to the state of the atmosphere. He had observed that when the waters were about to rise the barometer fell, and that when they were about to fall it rose. Hence he inferred that the unequal pressure of the atmosphere on different portions of the water deranged the level of the waters. The difference between the greatest and the least rise of the barometer in the northern parts of Europe is two and a half inches, which answers to three and a half feet of water, or the difference of the elevation of the waters at their extremes.

Superior and inferior Currents.—In the Sound there are superior and inferior currents. These were first observed by some Englishmen, who, being in a boat in the middle of the channel, found that they drifted toward the Cattegat; but having let down a loaded bucket to the depth of four or five fathoms, the boat became stationary; and when the bucket was sunk deeper, the boat drifted against the superficial current. The general currents of the Baltic are strong, and evidently occasioned by the vast number of rivers and streams that pour their waters into it, many of which, especially toward the north, rise thrice in the course of the year. At the northern extremity of the Island of Bornholm, a violent agitation of the waters, or kind of whirlpool, called by the Swedes *malt-quern*, or the grinding-mill, is occasioned by the current rushing over a circular cluster of sunken rocks. The waves of the Baltic are short and broken, in consequence of sudden changes of wind, irregular depths, and strong currents.

Saltness.—The waters of this sea are not nearly so salt as those of the ocean; and when the wind blows strong from the north they become so fresh as to be fit for drinking or cooking meat. The degree of their saltness varies in different parts, and even in the same parts, according to the season or wind. According to Bergman, in his *Physical Geography*, the waters near the south coast of Norway, at the entrance of the Skager-Rack, contain from one-tenth to one-seventh part of their weight of salt; in the Cattegat, one-twelfth; in the Baltic, one-sixteenth; and in the Gulf of Bothnia from one-fortieth to one-fiftieth. The southwest and west winds augment the saltness, by introducing the waters of the ocean. In the summer it requires 300 tons of the water of the Gulf of Bothnia to produce one ton of salt, but in the winter only 50 tons. This difference is caused by congelation, and by the diminished flow of fresh water.

Temperature.—There is great difference in the temperature in different parts of the Baltic. The general temperature of the Gulf of Bothnia in July is from 48° to 56°, but it is sometimes heated to 70°; the medium of the thermometer throughout the year at Uleoborg is 29°, and at Stockholm 42 4-5°. Near the land in the Gulf of Bothnia, the temperature of the atmosphere in the month of July was observed to be 68°, while the temperature of the surface of the water was 65°; and in October the temperatures of both were respectively 39° and 46. In the Sound, the temperature of the atmosphere in the month of August was 70°; on the surface of the water, 68°; and at three fathoms, 66°. On the 10th of October, 1818, Dr. Thomson found the temperature of the Sound to be 54°. The Skager-

Rack and Gulf of Norway are open to navigation all the winter, whereas several portions of the Baltic are covered with ice in a very moderate degree of cold; and generally the bays and channels are encumbered with ice at the latter end of December. The waters toward the heads of the Gulfs of Bothnia and Finland are first frozen; and the ice being conveyed by the currents to the south, the masses of it are united by the increasing cold into vast fields, which become stationary on the west toward Stockholm, and in the east toward the islands of Dagœ and Œsel. In the southern parts of the sea the ice begins to break up in April, but the Gulfs of Bothnia and Finland often continue closed till May. The rigor of the climate in the Baltic is supposed to be considerably diminished by the clearing of the forests and the progress of cultivation; at least the frosts during the fourteenth and fifteenth centuries appear, in their intensity and long continuance, to have exceeded those of the severest seasons in more recent times.

The winds are extremely variable in the Baltic, but they blow most commonly from the east in the spring, and from the west in autumn. Calms are seldom experienced except in the middle of summer.

Fisheries.—There is historical evidence that the herring fishery was a branch of national industry in the Sound as early as the year 1168; and in 1389, according to Philip de Mezières, such vast shoals of herrings crowded into the Sound, that 40,000 boats, with from six to ten men each, were employed in the fishery, besides 900 large vessels, in which the herrings were salted. This important branch of industry, however, no longer exists. "In the year 1238, the inhabitants of Gothia (Sweden) and Friso were prevented, by their fear of the Tartars, from sending, as usual, their ships to the herring fishing on the coast of England; and as there was no exportation, 40 or 50 of these fish were sold for a shilling.—Matthew Paris, p. 396. It is whimsical enough that the orders of Mogul Khan, who reigned on the borders of China, should have lowered the price of herrings in the English market."—Gibbon, vol. xi. p. 422. Salmon ascend the rivers from April to June, according as they are free from ice. On the south, they abound most in the Oder, Vistula, Düna, and Narrowa; on the north, in the Motala, Dalecarlia, Ules, Kemi, Tornea, and Keymen. Salmon-trout is taken in some bays of the Baltic. In the middle of the River Kemi is a small island where an annual salmon fair is held.

Whales very rarely enter the Baltic. The common porpoise is the only one of the lesser species of cetaceous animals that lives habitually in this sea; and at Middlefahrt, in Funen, is a company which enjoys the exclusive privilege of taking it. There are two varieties of the common seal, which are hunted for their oil, in March and April, by the peasants of the Isle of Gottland, and of the islands in the Gulfs of Bothnia and Finland.

The trade of the Baltic is of great extent and importance. In 1852, 17,563 ships passed up and down the Sound, of which 3902 were British vessels. The internal trade is also very considerable. The exports consist of the various productions of the countries on its coasts, and include corn, timber, pitch and tar, hemp, flax, tallow, hides, linseed, bristles, wool, etc. Its imports are colonial products, manufactured goods, dry stuffs, wines, salt, coal, etc. The most important ports are St. Petersburg, Riga, Königsberg, Danzig, Swinemünde, Lübeck Copenhagen, Karlscrona, and Stockholm. By means of numerous large rivers and canals a considerable trade is carried on with the interior.—E. B. *See* Thomson's *Travels in Sweden; Tableau de la Mer Baltique*, par Catteau; *Tableau des Etats Danois*, par Catteau.

Of all seas, the Baltic is one of the most dangerous to shipping and harassing to crews. Sudden and frequent changes of the wind, shallow waters off shore, innumerable shoals and insulated rocks, with currents divided by these obstacles, branching off in different directions to be divided by the same cause, till, meeting from opposite quarters, the waters are embroiled in the hurly-burly of a sturdy conflict; these are almost constant causes of anxiety to the mariner, for the navigation is most beset with such impediments precisely in those parts which are eminently the highways of commerce. Hence the proportion of maritime casualties is much greater in the case of vessels sailing to the Baltic ports than in the instance of merchantmen passing between Great Britain and America.

Three of the rivers flow into the North Sea; the Oder flows into the Baltic, and the trade of all the four, particularly that of the Weser, is increasing. Of the Jahde the world has heard but little till lately, when it was made known that Prussia had acquired a port on it. By an agreement between Oldenburg and Prussia, concluded in July, 1853, and ratified in December, Prussia purchased of Oldenburg for 500,000 thalers (about £80,000) the sovereignty of 500 morgens (about 3000 acres) of land and marshes, in order that Prussia might have a sea-port on the North Sea, to give protection to her trade. Jahde, or rather Fahrhuh, will probably hereafter become a place of some importance. It is seated on a large and tolerably safe bay between the Ems and the Weser, and may probably, in the hands of Prussia, increase in importance. At present it possesses little except coasting trade. The Weser, a short river, with all its tributaries, so far as navigable, flows through the territories of six different Powers, and, as their territories are mixed and mingled the sovereignty through which it flows changes no less than thirty-four times. Formerly every sovereign had his tolls, and at every change of sovereignty there was a toll-house. At present the tolls are reduced to one sum, and the toll-houses, which were 22, are reduced to 9. The toll at present, from Bremen to Carlshafen, is nearly a third of the freight.—*Die Deutschen Ströme*, u. s. w. Vierte abtheilung die Weser, Ems, Jahde, und Oder: Leipzig.—Pope's *Journal of Trade*.

Baltimore, a city, port of entry, metropolis of the State, and capital of Baltimore county, Maryland. The third city in extent and population in the United States; situated on the north side of Patapsco River, 10 miles from its entrance into Chesapeake Bay, and 200 miles from the ocean by ship channel. In 39° 17′ 23″ N. lat., and 76° 37′ 30″ W. long.

It is by railroad route 38 miles from Washington, 98 from Philadelphia, 186 from New York, 590 from Pittsburg, and 590 northeast from Charleston. Population in 1790, 13,503; 1800, 26,514; 1810, 35,583; 1820, 62,738; 1830, 80,625; 1840, 102,313; 1850, 169,054; 1854, with environs 200,000. The branch of the Patapsco River, around which the city is built, is about a mile and three-quarters long, and varies from one-eighth to three-quarters of a mile in width, having its greatest breadth opposite to the tract called Canton. It affords an easy access to the city, and a capacious, safe, and well-protected harbor of a depth and extent sufficient to float ships of the largest class, and to afford ample accommodation for at least two thousand vessels. Its harbor consists of an inner basin, at the wharves of which vessels drawing ten or twelve feet of water may lie, and an outer bay lying between Fells Point and Canton on the north and east, and Whetstone Point on the south, with from sixteen to twenty feet of water. Ships of heavy burden do not go up higher than the Point. From the facilities offered by the depth of the water, the Point is also the seat of the principal ship-yards, from which have been launched some of the finest and fleetest vessels of the American marine, which are especially noted for beauty of proportion and excellence of construction. The

name of Baltimore clipper is synonymous all over the world with all that is beautiful in naval architecture, and perfect in the requisites of a stanch and well-appointed ship.

The commerce of Baltimore is extensive and rapidly increasing. The receipts for the year ending 1853 were 406,000 tons of Cumberland, and 183,000 tons of anthracite coal; 85,003 bales of cotton, 3,411,965 bushels of wheat, 3,906,494 bushels of corn, 780,000 bushels of oats, 160,000 bushels of rye, 13,000 bushels of peas, 4000 bushels of beans, and 83,000,000 feet of lumber. There were 1,181,603 barrels of wheat flour inspected, 5394 of rye flour, and 38,478 of corn meal. Imports, of coffee, 208,702 bags; molasses, 3820 hogsheads, 632 tierces, and 72 barrels from the West Indies, and 192 hogsheads, 115 tierces, and 18,187 barrels coastwise; of sugar, New Orleans and West Indies, 12,582 hogsheads, and 14,350 barrels; tobacco inspected, 40,667 hogsheads; wool, foreign and domestic, 900,000 pounds; mackerel inspected, 12,597 barrels; herrings, 29,000 barrels; shad, 6071 barrels. Value of hides imported, $137,690. There were 356 (tonnage 88,798) American vessels cleared from this port, and 227 (tonnage 55,772) foreign. Tonnage registered, 92,772·46; enrolled and licensed, 65,706·14; total, 158,478·60. Number of vessels built 71, and their aggregate tonnage 18,391·62. There were, in 1853, 12 banks with an aggregate capital of $7,292,315, a savings bank, and 8 insurance offices; 20 printing-offices, issuing 5 daily, 4 tri-weekly, 8 weekly newspapers, 1 semi-monthly, and 3 monthly publications.

Manufactures.—A great amount of water-power is concentrated in the vicinity, which has been extensively improved for manufacturing purposes. Jones' Falls, a small stream which passes through the city, has a succession of falls which afford considerable water-power. The Patapsco, though not a large river, has a fall of about 800 feet in the course of 30 miles, affording many valuable mill sites. There are within 20 miles of the city sixty flouring mills, besides numerous cotton manufactories and other manufactories of cloth, powder, paper, iron, copper, glass, steam-engines, chemicals, tobacco, etc.

Ship-building.—The number of vessels built at Baltimore, and other ports of Maryland, in the fiscal year 1854–5, were as follows:

	Ships and Barks.	Brigs.	Schooners.	Sloops and Canal Boats.	Steamers.	Total.	Value.
Baltimore	13	3	96	1	4	57	$16,618
Oxford	..	..	19	..	..	19	1,519
Vienna	..	..	35	..	..	35	1,753
Snow Hill	..	..	10	..	..	10	604
Annapolis	..	..	1	..	..	1	57
Total	13	3	101	1	4	122	$20,552

List of new Vessels registered, enrolled, etc., at the Port of Baltimore during the Years 1854, '55, 56.

	1854.		1855.		1856.	
	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.
Ships	8	8,353·60	7	9,169·12	5	6,112·10
Barks	4	1,485·67	5	2,201·55	12	5,093·36
Brigs	8	712·22	6	1,491·64	12	2,381·99
Schooners	32	3,766·10	45	4,166·11	29	2,848·32
Sloops	1	48·55	5	95·90	3	29·05
Steamboats	2	2,276·10	1	180·45	..	....
Steamships	..	....	1	1,011·83	..	....
Canal Boats	..	....	2	116·47	..	....
Yachts	..	....	..	....	1	12·71
Total	50	16,691·04	72	18,383·28	62	17,577·54

Value of Foreign Imports and Exports at the District of Baltimore for the last Seventeen Years.

Years.	Imports.	Exports.	Years.	Imports.	Exports.
1840	$5,100,274	$5,808,018	1849	$5,291,566	$8,660,181
1841	6,109,101	4,997,038	1850	6,417,113	8,530,970
1842	4,052,260	4,445,946	1851	7,243,963	6,466,165
1843	3,607,738	4,740,042	1852	5,978,021	7,549,766
1844	4,251,883	4,622,066	1853	6,331,071	9,086,914
1845	3,356,670	6,256,276	1854	7,750,887	11,306,010
1846	4,238,760	6,710,559	1855	7,772,591	11,601,637
1847	4,146,743	9,626,479	1856	9,772,591	13,962,252
1848	5,245,894	7,209,092			

Inspections of Maryland and Ohio Tobacco for the last Sixteen Years.

Years.	Inspections.			Stock on hand December 31.
	Maryland.	Ohio.	Total.	
	Hhds.	Hhds.	Hhds.	Hhds.
1841	29,980	7,692	37,672	10,900
1842	33,759	11,279	45,038	9,600
1843	29,617	13,465	43,082	12,854
1844	32,163	15,320	47,503	12,665
1845	30,844	26,716	66,560	15,842
1846	41,027	28,862	69,889	32,416
1847	33,729	15,671	49,400	28,467
1848	23,253	9,845	33,098	32,751
1849	30,965	13,618	44,583	19,028
1850	27,085	13,965	41,040	10,617
1851	25,018	16,791	41,804	17,699
1852	29,570	17,720	47,290	11,760
1853	29,248	17,947	47,195	9,779
1854	26,048	10,362	36,410	3,715
1855	28,470	10,097	38,567	4,273
1856	44,779	6,510	51,289	4,094

Exports of Flour from Baltimore for the last Five Years.

Where to.	1852.	1853.	1854.	1855.	1856
	Barrels.	Barrels.	Barrels.	Barrels.	Barrels.
Great Britain	257,552	239,049	223,937	124,294	126,715
France	....	....	....	30,088	10,707
Brazil	285,042	113,086	104,755	108,753	130,332
River Plate	17,108	31,140	12,998	12,635	54,156
British N. A. Col.	39,445	27,086	25,086	62,062	88,062
Venezuela	10,300	9,025	8,766	4,077	7,557
West Indies	156,975	154,842	95,723	103,552	166,545
Pacific	6,571	13,762	600	4,005	2,980
Other ports	27,961	42,700	44,680	30,254	28,614
Total	731,044	632,140	516,475	480,120	621,250

Exports of Maryland and Ohio Tobacco from Baltimore for the last Sixteen Years.

Years.	Bremen.	Rotterdam.	Amsterdam.	Antwerp.	Emden.	France.	Trieste.	England.	Total Export.
	Hhds.	Hhds.	Hhds.	Hhds.	Hhds.	Hhds.	Hhds.	Hhds.	Hhds.
1841	10,373	7,918	5,199	905	...	2,814	1183	120	53,432
1842	17,719	10,874	8,109	978	...	4,682	1401	...	43,763
1843	10,949	6,474	7,811	324	886	8,266	2514	...	42,324
1844	17,137	11,872	7,095	190	502	7,212	902	...	44,910
1845	28,732	18,171	10,944	667	190	7,183	1373	...	65,910
1846	24,074	8,104	7,314	1856	..	3,165	455	...	51,386
1847	22,251	8,598	10,409	1059	235	8,947	150	...	53,344
1848	12,705	7,035	3,030	181	...	4,911	...	260	20,092
1849	18,581	13,876	8,736	200	510	9,562	...	600	52,348
1850	15,936	7,816	5,089	...	...	8,177	600	1965	44,403
1851	12,600	9,061	4,154	...	...	2,326	1851	1320	33,340
1852	22,707	11,258	5,064	...	320	7,679	940	2815	51,773
1853	18,947	10,395	9,989	...	...	5,390	1619	2773	50,388
1854	16,876	7,263	5,425	471	...	10,180	...	1115	41,540
1855	8,999	9,722	5,754	...	...	7,626	640	2000	35,221
1856	21,403	14,628	10,141	180	...	4,919	802	4253	56,693

Included in the above total are the following: In 1845, 650 hhds. shipped to St. Petersburg; 1846, 733 hhds. do.; 1849, 533 hhds. do.; 1850, 1856 hhds. to St. Petersburg, and 2129 to Spain; 1851, 602 hhds. to St. Petersburg, 1151 hhds. to Spain, and 175 hhds. to Hamburg; 1852, 203 hhds. to St. Petersburg, and 673 hhds. to Hamburg; in 1853, 904 hhds. to Hamburg; 1855, 250 hhds. Virginia to Genoa, and 350 hhds. to West Indian and other ports; and in 1856, 350 hhds. to West Indian and other ports.

ACCOUNT OF THE INSPECTIONS OF WHEAT FLOUR, INDIAN CORN MEAL, RYE MEAL, AND TOBACCO AT BALTIMORE, DURING EACH OF THE EIGHT YEARS ENDING WITH 1852.

Year.	Flour.		Indian Corn Meal.		Rye Meal.		Tobacco.
	bbls.	*hhds.*	*bbls.*	*half-bbls.*	*bbls.*	*half-bbls.*	*hhds.*
1845	576,745	631	23,949	1450	6518	24	
1846	850,116	1076	40,942	1744	5402		
1847	959,456	934	105,842	1298	6666	40	50,571
1848	736,441	333	60,225	1322	7520	105	38,906
1849	764,519	428	51,772	2051	8007	9	45,601
1850	806,592	272	42,466	3369	5419	22	41,833
1851	912,498	629	28,917	2256	7654	53	42,742
1852	1,307,165	477	52,658	745	6449	21	

Bamboo (Fr. *Bambou, Bambouchés;* Ger. *Indianischer Rohr;* It. *Bambu;* Hind. *Rans;* Malay, *Bilah;* Jav. *Preng*), a species of cane, the *Bambos arundinacea* of botanists. It grows every where within the tropics, and is of the greatest utility: strictly speaking, it is a gigantic grass with a ligneous stem. It often rises to the height of 40 or 50 feet, and sometimes to even double those heights. Like most plants long and extensively cultivated, it diverges into many varieties. Some of these are dwarfish, while others, instead of being hollow canes, are solid. The bamboo is of rapid growth, and in four or five years is fit for many uses, but does not bear fruit or grain till it is 25 years old, after which it perishes. The grain makes tolerable bread. The young but gigantic shoots, as they spring from the earth, make a tender and good esculent vegetable. The mature bamboo is employed in an immense variety of ways—in the construction of houses, bridges, boats, agricultural implements, etc. Some varieties grow to such a size as to be, in the largest part, near two feet in circumference, and single knees of these are used as pails or buckets. The Chinese are believed to fabricate their cheap and useful paper of macerated bamboo. The canes used in Europe as walking-sticks are not bamboos, but rattans—a totally distinct class of plants. Bamboos are never used for that purpose.—*Private information.*

Banana (*Musa sapientum*), an herbaceous plant, a native of the West Indies. Its fruit is produced in large clusters weighing many pounds, and forms a considerable article of food among the better classes.

Bandanas, silk handkerchiefs, generally red spotted with white. They were formerly manufactured only in the East Indies; but they are now manufactured of a very good quality at Glasgow and other places.

Bangkok, or **Bankok**, the capital city of Siam, and one of the most commercial cities in Asia, on the Menam, about 20 miles above its mouth. Lat. 13° 58′ N., long. 100° 34′ E. Population from 50,000 to 60,000 (?), half of whom are Chinese. It stretches along both banks of the river, and consists of three portions; viz., the palace or citadel, on an island inclosed by walls, and comprising the residences of the sovereign and court, with many temples and gardens; the city proper; and the floating town, composed of movable bamboo rafts, each bearing rows of 8 or 10 houses. It has numerous Buddhic temples; and in the palace is a spacious audience-hall. The more solid buildings are of brick; but the majority of the dwellings are of wood, mounted on posts. Most of the intercourse is carried on by water, and the Menam is navigable to the city for vessels of 250 tons. Bangkok has manufactures of tin and iron wares, and leather. Exports comprise sugar (from 10,000 to 12,000 tons yearly), black pepper (4000 to 5000 tons), tin, cardamoms, fine woods, ivory, cotton, rice, hides, horns, skins, and feathers. Imports, tea, quicksilver, raw and manufactured silks, porcelain, and numerous manufactured articles from China; camphor, and edible birds' nests, from the Asiatic Archipelago; and European and Indian piece goods, opium, and glass wares, from the British and Dutch settlements in the East. The country around is flat, but contains rich mines of iron, and extensive forests of teak. The most favorable time for reaching Bangkok, in ships of considerable draught, is about the beginning of November, when the rains are just over, and the season is cool and healthful. There is then on the bar of the river, at low water, a depth of 3½ fathoms. In the spring and summer months it is sometimes as low as two fathoms, or a little more, and the capital is then reached with some difficulty.

Bank.—Banking. Banks are establishments intended to serve for the safe custody and issue of money; for facilitating its payment by one individual to another; and sometimes for the accommodation of the public with loans. These subjects will be considered under the heads: I. General Principles of Banking; II. Account of Bank of England; III. English Private and Provincial Banks; IV. Scotch Banks; V. Irish Banks; VI. Foreign Banks; VII. Banking in the United States; VIII. Savings Banks.

"The first established was in Italy, A.D. 808, by the Lombard Jews, of whom some settled in Lombard Street, London, where many bankers still reside. The name is derived from *banco*, a bench, which was erected in the market-place for the exchange of money. The mint in the Tower of London was anciently the depository for merchants' cash, until Charles I. laid his hands upon the money, and destroyed the credit of the mint in 1640. The traders were thus driven to some other place of security for their gold, which, when kept at home, their apprentices frequently absconded with to the army. In 1645, therefore, they consented to lodge it with the goldsmiths in Lombard Street, who were provided with strong chests for their own valuable wares; and this became the origin of banking in England."—HAYDN.

	A.D.
Bank of Venice formed	1157
Bank of Genoa	1345
Bank of Barcelona	1401
Bank of Genoa	1407
Bank of Amsterdam	1607
Bank of Hamburg	1619
Bank of Rotterdam	1635
Bank of Stockholm	1688
Bank of England	1694
Bank of Scotland	1695
Bank of Copenhagen	1736
Bank of Berlin	1765
Caisse d'Escompte, France	1776
Bank of Ireland	1783
Massachusetts Bank, Boston, established	1784
Bank of St. Petersburg	1786
In the East Indies	1787
Branch Banks in Great Britain	1828

I. GENERAL PRINCIPLES OF BANKING.—Banks are commonly divided into the two great classes of *banks of deposit* and *banks of issue*. This, however, appears at first sight to be rather an imperfect classification, inasmuch as almost all banks of deposit are at the same time banks of issue, and almost all banks of issue also banks of deposit. But there is in reality no ambiguity; for by banks of deposit are meant banks for the custody and employment of the money deposited with them or intrusted to their care by their customers, or by the public; while by banks of issue are meant banks which, besides employing or issuing the money intrusted to them by others, issue money of their own, or notes payable on demand. The Bank of England is principally a bank of issue; but it, as well as the other banks in the different parts of the empire that issue notes, is also a great bank of deposit. The private banking companies of London, and the

various provincial banks that do not issue notes of their own, are strictly banks of deposit. Banking business may be conducted indifferently by individuals, by private companies, or by joint-stock companies or associations.

Utility and Functions of Banks of Deposit.—Banks of this class execute all that is properly understood by banking business; and their establishment has contributed in no ordinary degree to give security and facility to commercial transactions. They afford, when properly conducted, safe and convenient places of deposit for the money that would otherwise have to be kept, at a considerable risk, in private houses. They also prevent, in a great measure, the necessity of carrying money from place to place to make payments, and enable them to be made in the most convenient and least expensive manner. A merchant or tradesman in London, for example, who employs a banker, keeps but very little money in his own hands, making all his considerable payments by drafts or checks on his banker; and he also sends the various checks, bills, or drafts payable to himself in London, to his bankers before they become due. By this means he saves the trouble and inconvenience of counting sums of money, and avoids the losses he would otherwise be liable to, and would no doubt occasionally incur, from receiving coins or notes not genuine. Perhaps, however, the great advantage derived by the merchant or tradesman from the employment of a banker, consists in its relieving him from all trouble with respect to the presentation for payment of due-bills and drafts. The moment these are transferred to the banker, they are at his risk. And if he either neglect to present them when due, or to have them properly noted in the event of their not being paid, he is responsible for the consequences. "This circumstance alone must cause an immense saving of expense to a mercantile house in the course of a year. Let us suppose that a merchant has only two bills due each day. These bills may be payable in distant parts of the town, so that it may take a clerk half a day to present them; and in large mercantile establishments it would take up the whole time of one or two clerks to present the due-bills and the drafts. The salary of these clerks is, therefore, saved by keeping an account at a banker's: besides the saving of expense, it is also reasonable to suppose that losses upon bills would sometimes occur from mistakes or oversights; from miscalculation as to the time the bill would become due; from errors in marking it up; from forgetfulness to present it; or from presenting it at the wrong place. In these cases the indorsers and drawees are exonerated; and if the acceptor do not pay the bill, the amount is lost. In a banking-house such mistakes occur sometimes, though more rarely; but when they do occur, the loss falls upon the banker, and not upon his customer."—GILBART'S *Practical Observations on Banking.*

It is on other grounds particularly desirable for a merchant or tradesman to have an account with a banking-house. He can refer to his bankers as vouchers for his respectability; and in the event of his wishing to acquire any information with respect to the circumstances or credit of any one with whom he is not acquainted, his bankers render him all the assistance in their power. In this respect they have great facilities, it being the common practice among bankers in London, and most other trading towns, to communicate information to each other as to the credit and solvency of their customers.

In Great Britain, to provide for the public security, the statute 7 & 8 Geo. 4, c. 29, § 49, "for the punishment of embezzlement committed by agents intrusted with property," enacts, "That if any money, or security for the payment of money, shall be intrusted to any banker, merchant, broker, attorney, or other agent, with any direction *in writing* to apply such money, or any part thereof, or the proceeds, or any part of the proceeds of such security, for any purpose specified in such direction, and he shall, in violation of good faith, and contrary to the purpose so specified, in any wise convert to his own use or benefit such money, security, or proceeds, or any part thereof respectively, every such offender shall be guilty of a misdemeanor, and, being convicted thereof, shall be liable, at the discretion of the court, to be transported beyond seas, for any term not exceeding fourteen years, nor less than seven years, or to suffer such punishment by fine or imprisonment, or by both, as the court shall award; and if any chattel or valuable security, or any power of attorney for the sale or transfer of any share or interest in any public stock or fund, whether of this kingdom, or of Great Britain, or of Ireland, or of any foreign State, or in any fund of any body corporate, company or society, shall be intrusted to any banker, merchant, broker, attorney, or other agent, for safe custody, or for any special purpose, *without any authority to sell*, negotiate, transfer, or pledge, and he shall, in violation of good faith, and contrary to the object or purpose for which such chattel or security or power of attorney, shall have been intrusted to him, sell, negotiate, transfer, pledge, or in any manner convert to his own use or benefit such chattel or security, or the proceeds of the same, or any part thereof, or the share or interest in stock or fund to which such power of attorney shall relate, or any part thereof, every such offender shall be guilty of a misdemeanor, and, being convicted thereof, shall be liable, at the discretion of the court, to any of the punishments which the court may award, as hereinbefore last mentioned."

This act is not to affect trustees and mortgagees, nor bankers receiving money due upon securities, nor securities upon which they have a lien, claim, or demand, entitling them by law to sell, transfer, or otherwise dispose of them, unless such sale, transfer, or other disposal shall extend to a greater number or part of such securities or effects than shall be requisite for satisfying such lien, claim, etc.—§ 50.

Nothing in this act is to prevent, impeach, or lessen any remedy at law or in equity, which any party aggrieved by any such offense might or would have had had it not been passed. No banker, merchant, etc., shall be convicted as an offender against this act, in respect of any act done by him, if he shall at any time previously to his being indicted for such offense have disclosed such act on oath, in consequence of any compulsory process of any court of law or equity, in any action *bonâ fide* instituted by any party aggrieved, or if he shall have disclosed the same in any examination or deposition before any commissioner of bankrupt.—§ 52. Under the provisions of this act the members of the firm of Strahan, Paul, and Bates, bankers, London, were found guilty, and on the 27th of October, 1855, were sentenced to transportation for fourteen years.

The Bank of England, and the private banking companies of London, as well as some of the English provincial banks, charge no commission on the payments made and received on account of those who deal with them. And until the recent introduction of joint-stock banks, none of the London bankers, except in peculiar cases, allowed interest on deposits; nor is it yet allowed by the great majority of the metropolitan private bankers. It is also either stipulated or distinctly understood that a person employing a banker should, besides furnishing him with sufficient funds to pay his drafts, keep an average *balance* in the banker's hands, varying, of course, according to the amount of business done on his account; that is, according to the number of his checks or drafts to be paid, and the number of drafts and bills to be received for him. The bankers then calculate, as well as they can, the probable amount of cash that it will be necessary for them to keep in their coffers to meet the ordinary demands of their customers, and employ the balance in dis-

counting mercantile bills, in the purchase of securities, or in some other sort of profitable adventure; so that their profits consist of the sum they realize from such part of the moneys lodged in their hands as they can venture to employ in an advantageous way, after deducting the various expenses attendant on the management of their establishments. A bank of deposit would never be established if it had to depend on its own capital; it makes no profit, in its capacity of bank, till it begins to employ the capital of others.

The directors of the Bank of England do not allow any individual to overdraw his account. They answer drafts to the full extent of the funds deposited in their hands; but they will not pay a draft if it exceed their amount. Private bankers are not generally so scrupulous; most of them allow respectable individuals in whom they have confidence to overdraw their accounts, those who do so paying interest at the rate of 5 per cent. on whatever sums they overdraw. The possession of this power of overdrawing is often a great convenience to merchants, while it is rarely productive of loss to the banker. The money which is overdrawn is usually replaced within a short period; sometimes, indeed, in a day or two. The directors of the Bank of England decline granting this facility, from a disinclination on their part to come into competition in a matter of this sort with private bankers, who transact this kind of business better, probably, than it could be done by a great establishment like the Bank.

Banks afford great facilities to the public in the negotiation of bills of exchange, or in the making of payments at distant places. Many of the banking companies established in different districts have a direct intercourse with each other, and they have all correspondents in London. Hence an individual residing in any part of the country, who may wish to make a payment in any other part, however distant, may effect his object by applying to the bank nearest to him. Thus, suppose A. of Penzance has a payment to make to B. of Inverness: to transmit the money by letter would be hazardous; and if there were fractional parts of a pound in the sum, it would hardly be practicable: how then will A. manage? He will pay the sum to a banker in Penzance, and his creditor in Inverness will receive it from a banker there. The transaction is extremely simple: the Penzance banker orders his correspondent in London to pay to the correspondent of the Inverness banker the sum in question on account of B., and the Inverness banker, being advised in course of post of what has been done, pays B. A small commission charged by the Penzance banker, and the postages, constitute the whole expense. There is no risk whatever, and the whole affair is transacted in the most commodious and cheapest manner.

By far the largest proportion both of the inland bills in circulation in the country, and also of the foreign bills drawn upon Great Britain, are made payable in London, the grand focus to which all the pecuniary transactions of the empire are ultimately brought to be adjusted. And in order still further to economize the use of money, the principal bankers of the metropolis are in the habit of sending a clerk each day to the *clearing-house* in Lombard Street, who carries with him the various bills in the possession of his house that are drawn upon other bankers; and having exchanged them for the bills in the possession of those others that are drawn upon his constituents, the balance on the one side or the other is paid in cash or Bank of England notes. By this contrivance the bankers of London are able to settle transactions to the extent of several millions a day, by the employment of not more, at an average, than from £200,000 to £300,000 of cash or bank notes.—*See* CLEARING-HOUSE.

In consequence of these and other facilities afforded by the intervention of bankers for the settlement of pecuniary transactions, the money required to conduct the business of an extensive country is reduced to a trifle only, compared to what it would otherwise be. It is not, indeed, possible to form any very accurate estimate of the total saving that is thus effected; but, supposing that 50 or 60 millions of gold and silver and bank-notes are at present required, notwithstanding all the devices that have been resorted to for economizing money, for the circulation of Great Britain, it may, one should think, be fairly concluded that 200 millions would, at the very least, be required to transact an equal extent of business but for those devices. If this statement be nearly accurate, and there are good grounds for thinking that it is rather under than overrated, it strikingly exhibits the vast importance of banking in a public point of view. By its means 50 or 60 millions are rendered capable of performing the same functions, and in an infinitely more commodious manner, that would otherwise have required four times that sum; and supposing that 20 or 30 millions are employed by the bankers as a capital in their establishments, no less than 120 or 180 millions will be altogether disengaged, or cease to be employed as an instrument of circulation, and made available for employment in agriculture, manufactures, and commerce. The security afforded by a bank of deposit is a matter as to which there must always be more or less of doubt. When, indeed, a banking company confines itself to its proper business, and does not embark in speculations of unusual hazard, or from which its funds can not be easily withdrawn, in the event of any sudden run or demand, it can hardly ever fail of being in a situation to meet its engagements; while the large private fortunes that most commonly belong to the partners afford those who deal with it an additional guarantee. Much, however, depends on the character of the parties, and on a variety of circumstances with respect to which the public can never be correctly informed; so that though there can be no doubt that the security afforded by many private banks of deposit is of the most unquestionable description, this may not be the case with others.

All joint-stock banks, or banks having more than six partners, whether for deposit and issue, or for deposit merely, are ordered, by the act 3 and 4 Will. 4, cap. 83, to send quarterly returns of the number and names of their partners to the stamp-office. But this act does not apply to private banks, or banks not having more than six partners, though we see no good reason why similar returns should not, and several why they should, be required from them as well as from others. At present few have any certain knowledge of the partners in private banks. Individuals often appear in the names of firms who have been dead for many years; and it has not unfrequently been found in cases of bankruptcy that parties of large fortune, who were supposed to have belonged to the concern, had withdrawn long previously. All uncertainty and obscurity of this kind might, however, be easily put an end to by making periodical declarations of the names of the partners; and provided this were done, and the names made sufficiently public, we doubt whether any other step should be taken for interfering in any way with banks of deposit. There is in this respect a wide difference between them and banks of issue. It is the duty of the government to take care that the value of the currency shall be as invariable as possible; but it has never been pretended that it is any part whatever of its duty to inquire into the security given by the borrowers to the lenders of money, any more than into the security given by the borrowers to the lenders of any thing else. Government very properly obliges a goldsmith to have his goods stamped, this being a security to the public that they shall not be imposed on in buying articles of the quality of which they are generally ignorant; but it does not require that the persons to whom the goldsmith sells or lends his goods should give him a guarantee for their payment. This is a matter as to which individuals are fully competent

to judge for themselves; and there neither is nor can be any reason why a lender or depositor of bullion or notes should be more protected than a lender or depositor of timber, coal, or sugar. Gold being the standard or measure of value, government is bound to take effectual precautions that the currency shall truly correspond in the whole and in all its parts with that standard—that every pound note shall be worth a sovereign, and that the amount and value of the aggregate notes in circulation shall vary exactly as a gold currency would do were it substituted in their stead. But this is all that government is called upon to do. If A. trust a sum of money in the hands of B., it is their affair, and concerns no one else. Provided the money afloat correspond with the standard, it is of no importance, in a public point of view, into whose hands it may come. The bankruptcy of a deposit bank, like that of a private gentleman who has borrowed largely, may be productive of much loss or inconvenience to its creditors. But if the paper in circulation be equivalent to gold, such bankruptcies can not affect either the quantity or value of money, and are therefore injurious only to the parties concerned.

Substitution of Notes for Coins—Banks of Issue—Means by which the Value of Notes may be kept on a Level with the Value of the Precious Metals.—Notwithstanding the precious metals are in many respects admirably fitted to serve as a medium of exchange (*see art.* MONEY), they have two very serious drawbacks—their cost, and the difficulty and expense of carrying them from place to place. If the currency of Great Britain consisted only of gold, it would amount to at least sixty millions of sovereigns; and the expense attending such a currency, allowing only ¼ per cent. for wear and tear and loss of coins, could not be reckoned at less than £3,250,000 a year. The weight of 1000 sovereigns exceeds 21 pounds Troy; so that, were there nothing but coins in circulation, the conveyance of large sums from place to place to discharge accounts would be a very laborious process, and even small sums could not be conveyed without considerable difficulty. Hence it is that most commercial and civilized nations have fabricated a portion of their money of less costly and heavy materials, and resorted to various devices for economizing the use of coin. Of the substitutes for the latter hitherto suggested, paper is in all respects the most eligible. When governments are sufficiently powerful and intelligent to enforce the observance of contracts, individuals possessed of written promises from others that they will pay certain sums at specified periods begin to assign them to those to whom they are indebted; and when those by whom such obligations are subscribed are persons of whose solvency no doubt can be entertained, they are readily accepted in payment of the debts due by one individual to another. But when the circulation of obligations or bills in this way has continued for a while, individuals begin to perceive that they may derive a profit by issuing them in such a form as to fit them for being readily used as a substitute for money in the ordinary transactions of life. Hence the origin of bank-notes, or paper money. An individual in whose wealth and discretion the public have confidence being applied to for a loan, say of £5000, grants the applicant his bill or note payable on demand for that sum, on his receiving adequate security for its repayment with interest. Now, as this note passes, in consequence of the confidence placed in the issuer, currently from hand to hand as cash, it is quite as useful to the borrower as if he had obtained an equivalent amount of gold; and supposing that the rate of interest is 4 per cent., it will yield, so long as it continues to circulate, a revenue of £200 a year to the issuer. A sense of the advantages that might, in this way, be derived from the circulation of bills or notes, led to the formation of banks for their regular issue. Those who issue such notes coin, as it were, their credit. They derive the same revenue from the loan of their written promises to pay certain sums that they would derive from the loan of the sums themselves; and while they thus increase their own income, they at the same time contribute to increase the wealth of society. Besides being incomparably cheaper, bank-notes are also incomparably more commodious than a metallic currency. A bank-note for £1000 or £100,000 may be carried about with as much facility as a single sovereign. It is of importance, too, to observe, that its loss or destruction, whether by fire, shipwreck, or otherwise, would be of no greater importance, in a public point of view, than the loss or destruction of as much paper. No doubt it might be a serious calamity to the holder; but to whatever extent it injured him, it would proportionally benefit the issuer, whereas the loss of coin is an injury to the holder without being of service to any one else; it is, in fact, so much abstracted from the wealth of the community.

To obviate the endless inconveniences that would arise from the circulation of coins of every weight and degree of purity, were there no restrictions on their issue, all governments have forbidden the circulation of coins except they be of a certain specified or standard weight and fineness. And the recurrence of similar inconveniences from the issue of notes for varying sums, and payable under varying conditions, has led, in all countries in which paper money is made use of, to the enacting of regulations forbidding the issue of notes below a certain amount, and laying down rules for their payment. In England at this moment no note payable to bearer on demand can be issued for less than five pounds, and they must all be paid the moment they are presented. In Scotland and Ireland the minimum value of bank-notes is fixed at one pound, the regulations as to payment being the same as in England. In order to preserve monopoly of the London circulation to the Bank of England, no notes payable to bearer on demand are allowed to be issued by individuals or associations, other than the Bank of England, within sixty-five miles of St. Paul's. But beyond these limits every one who complies with the above regulations as to the minimum amount of notes, and who promises to pay them on demand, may, on paying the stamp-duty, and making returns of the issues to the stamp-office, circulate any amount of notes he can succeed in getting the public to take off.

But though the condition that they shall be paid on demand, and the belief that this condition will be complied with, be necessary to sustain the value of notes issued by private parties or associations, it is not necessary to sustain the value of paper money, properly so called, or of notes which have been made *legal tender*. The only thing required to sustain the value of the latter description of currency is, that it should be issued in *limited quantities*. Every country has a certain number of exchanges to make; and whether these are effected by the employment of a given number of coins of a particular denomination, or by the employment of the same number of notes of the same denomination, is, in this respect, of no importance whatever. Notes which have been made legal tender, and are not payable on demand, do not circulate because of any confidence placed in the capacity of the issuers to retire them; neither do they circulate because they are of the same real value as the commodities for which they are exchanged; but they circulate because, having been selected to perform the functions of *money*, they are, as such, readily received by all individuals in payment of their debts. Notes of this description may be regarded as a sort of tickets or counters to be used in computing the value of property, and in transferring it from one individual to another. And as they are nowise affected by fluctuations of credit, their value, it is obvious, must depend entirely on the quantity of them in circulation as compared with the payments to be made through their instrumentality, or the business they have to per-

form. By reducing the supply of notes below the supply of coins that would circulate in their place were they withdrawn, their value may be raised above the value of gold; while, by increasing them to a greater extent, it is proportionally lowered. Hence, supposing it were possible to obtain any security, other than immediate convertibility into the precious metals, that notes declared to be legal tender would not be issued in excess, but that their number afloat would be so adjusted as to preserve their value as compared with gold nearly uniform, the obligation to pay them on demand might be dispensed with. But it is needless to say that no such security can be obtained. Wherever the power to issue paper, not immediately convertible, has been conceded to any set of persons, it has been abused; or, which is the same thing, such paper has uniformly been overissued, and its value depreciated from excess. And it is now admitted on all hands to be quite indispensable, for the prevention of injurious fluctuations in the value of money, that all notes be made payable, at the pleasure of the holder, in an unvarying quantity of gold or silver.

But though such be the law in this and most other countries, it is, we are sorry to say, operative only on the richest, most cautious, and respectable bankers, and is found to afford no real security against the roguery and misconduct of others. This security is, however, the more indispensable, seeing that the issue of notes is, of all businesses, that which seems to hold out the greatest prospect of success to the schemes of those who attempt to get rich by preying on the public. The circumstances that excite the public confidence in the first instance, and that afterward keep it up, are often of the most treacherous description. The cost of engraving and issuing notes is also but an inconsiderable item, compared with the sums for which they are issued, and provided they be got into any thing like extensive circulation, they become at once considerably productive. They are seldom issued except on the deposit of bills or other securities yielding a considerable rate of interest; so that if an individual, or set of individuals, with little or no capital, contrive, by fair appearances, promises, and similar devices, to insinuate himself or themselves into the public confidence, and can maintain £20,000, £50,000, or £100,000 in circulation, he or they secure a good income in the mean time; and when the bubble bursts, and the imposture is detected, they are no worse off than when they set up their bank. On the contrary, the presumption is that they are a great deal better off; and that they have taken care to provide, at the cost of the credulous and deceived public, a reserve stock for their future maintenance. Hence, seeing the facilities for committing fraud are so very great, the propriety, or rather necessity, of providing against them.

It must not be imagined that this is mere hypothetical reasoning. On the contrary, as every body knows, innumerable instances have occurred of the population of extensive districts having suffered severely from the insolvency of bankers in whom they placed the utmost confidence. In 1793, 1814–16, and 1825–26, a very large proportion of the British banks stopped payments, and produced by their fall an extent of bankruptcy and ruin that has seldom been equaled elsewhere. But when such gigantic disasters had already happened, and were on the eve of again happening in 1837–38, it became the bounden duty of government to hinder, by every means in its power, their recurrence. It is no exaggeration to affirm that England has sustained a thousand times more injury from the circulation of worthless paper, or paper issued by persons without the means of retiring it, than from the issue of spurious coin.

It has been supposed that the objections to the issue of notes because of the risk of non-payment might be obviated, were they issued only by associations or joint-stock companies. But there is no real foundation for any such supposition. There can not, in fact, be a greater error than to suppose that because a bank has a considerable number of partners it will necessarily be either rich or well managed. It may be neither the one nor the other. A single individual may possess more wealth than a number of individuals associated together; and the chances are that, if he engage in banking or any other business, it will be better managed than by a company. Under the present system (and it can not be prevented under any system), the partners in joint-stock banks, as in others, may be men of straw, or persons without property, and unable to fulfill their engagements. It is of the essence of a secure and well-established paper currency that the notes of which it consists should be of the exact value of the gold or silver they profess to represent, and that, consequently, they should be paid the moment they are presented. But it is not enough to order that this condition shall be uniformly complied with. Such order is obeyed only by the opulent, prudent, and conscientious banker, and forms little or no check on the proceedings of those of a contrary character. It is the latter class, however, that it is especially necessary to look after; and it is needless to say that any system that permits notes to be issued without let or hinderance by speculative, ignorant, or unprincipled adventurers, must be essentially vicious.

It has sometimes been contended, in vindication of the plan of allowing any individual, or set of individuals, how bankrupt soever in fortune and character, to issue notes without check or limitation of any kind other than the promise to pay them on demand, that they are essentially *private paper*; that their acceptance in payment is optional; and that, as they may be rejected by every one who either suspects or dislikes them, there is no room or ground for interfering with their issue! But every body knows that, whatever notes may be in law, they are in most parts of the country *practically and in fact legal tender*. The bulk of the people are totally without power to refuse them. The currency of many extensive districts consists in great part of country notes, and such small farmers or tradesmen as should decline taking them would be exposed to the greatest inconveniences. Every one makes use of or is a dealer in money. It is not employed by men of business only, but by persons living on fixed incomes; by women, laborers, minors; in short, by every class of individuals, very many of whom are necessarily, from their situation in life, quite unable to form any estimate of the solidity of the different banks whose paper is in circulation. Such parties are uniformly severe sufferers by the failure of banks. The paper that comes into their hands is a part of the currency or money of the country; and it is quite as much the duty of government to take measures that this paper shall be truly and substantially what it professes to be, as that it should take measures to prevent the issue of spurious coins or the use of false or deficient weights and measures.

The fact is, that the paper currency of a country can not be on a perfectly sound footing until the issue of notes, whether by joint-stock banks or private individuals, be suppressed. It has been proposed, to obviate any recurrence of the wide-spread ruin that has so frequently resulted from the bankruptcy of banks of issue, to compel them to give security for the payment of their notes; and the adoption of such a regulation would, no doubt, have been a vast improvement on the late system. But though the exacting of security would have materially mitigated, it would not have eradicated the vices of a system which allowed banks to be established at the pleasure of individuals. A paper currency is not in a sound or wholesome state, unless, 1st, means be taken to insure that each particular note or parcel of such currency be paid immediately on demand; and unless, 2d, *the whole currency vary in amount and value exactly as a*

metallic currency would do were the paper currency withdrawn and coins substituted in its stead. The last condition is quite as indispensable to the existence of a well-established currency as the former; and it is one that can not be fully realized otherwise than by confining the issue of paper to a single source.

It is exceedingly difficult to prevent the issue of forged notes. Various schemes have been suggested for this purpose; and though it be hardly possible to suppose that an *inimitable* note will ever be produced, it is contended that by judiciously combining different sorts of engraving, forgery may be rendered so difficult as to be but rarely attempted. But however this may be, during the period from 1797 to 1819, when the Bank of England issued £1 notes, their forgery was carried on to a great extent. And the desire to check this practice, and to lessen the frequency of capital punishments, appears to have been among the most prominent circumstances which led to the return to specie payments in 1821, and the suppression of £1 notes.

Bank of England Notes legal tender.—According to the law as it stood previously to 1834, all descriptions of notes were legally payable at the pleasure of the holder in coin of the standard weight and purity. But the policy of such a regulation was very questionable; and we regard the enactment of the stat. 3 & 4 Will. 4, c. 98, which makes Bank of England notes legal tender, every where except at the Bank and its branches, for all sums above £5, as a great improvement. The unjust liabilities imposed upon the Bank of England by the old system placed her in a situation of great difficulty and hazard. They obliged her to provide a supply of coin and bullion, not for her own exigencies only, but for those of *all* the country banks; and, what is harder still, they exposed her to be deeply injured by any misconduct on the part of the latter, as well as by the distress in which they might accidentally be involved. In consequence, her free action was at all times in some degree impeded; and her power to render assistance to the banking and mercantile interests in periods of discredit materially diminished. The country banks kept but a small supply of coin in their coffers. They were all, however, holders, to a greater or less extent, of government securities; and whenever any circumstance occurred to occasion a demand upon them for coin, they immediately sold or pledged the whole or a portion of their stock, carried the notes to the Bank to be exchanged, and then carried the specie to the country. Hence, when any suspicions were entertained of the credit of the country banks, or when a panic originated among the holders of their notes, as was the case in 1793 and 1825, the whole of them retreated upon the Bank of England, and 700 or 800 conduits were opened, to draw off the specie of that establishment, which was thus, it is evident, exposed to the risk of stoppage without having done any thing wrong. It was not the drain for gold from abroad, but the drain for gold from the country, that nearly exhausted the Bank's coffers in 1825, and forced her to issue about a million of £1 and £2 notes. The currency could not be in a sound, healthy state, while the Bank of England, and, through her, public credit, were placed in so perilous a situation. But the making of Bank of England notes legal tender at all places except the Bank, has tended materially to protect her from the injurious consequences of panics or runs among the holders of country bank paper; and while it does this, it has not, it appears to us, any wise impaired the securities against overissue or depreciation.

It has, no doubt, been contended that the measure now referred to might lead to the depreciation of provincial paper; inasmuch as the expense of sending notes from a distance to London, to be exchanged for gold, would prevent any one from demanding Bank of England notes from country banks in good credit, till the value of the notes issued by them was so much depreciated below the value of gold that the difference would more than pay the expense of sending them to London, and bringing gold back. There can not, however, be the least difference, as respects value, in the provinces, between Bank of England paper, now that it is legal tender, and gold. London being the place where the exchanges are adjusted, the value of money in every part of the empire must depend on its value in it; and *this*, it is plain, is not in any degree affected by the measure under consideration. Formerly the provincial currency, gold as well as paper, might be, and indeed frequently was, depreciated. This was brought about either by an overissue on the part of the country banks, generally in the first instance the effect, but always in the end the cause, of a rise of prices; or by the issues of the Bank of England being, in consequence of an adverse exchange, narrowed sooner or more rapidly than those of the country banks. In either case, the provincial currency being redundant as compared with that of the metropolis, there was a demand on its issuers for bills on London; but it is material to observe that, unless their credit was suspected, there was not, in such cases, any demand upon them for gold. It is, indeed, obvious that a redundancy of the currency is a defect that can not be obviated by getting gold from the country banks, unless (as hoarding is out of the question) it be intended to send it abroad; and that may always be done *better and cheaper* by getting from them Bank of England notes, or bills on London. A local redundancy of the currency may take place now as it has done formerly; and its occurrence can not be prevented, even though paper were wholly banished from circulation, so long as the whole currency is not supplied from *one* source, and as London is the focus where the exchanges with foreign countries are adjusted. But the statements now made show that it is a radical mistake to suppose that it can take place more readily, or to a greater extent, under the present system than formerly. In this respect no change was made in 1834. And while the ancient security against overissue was maintained unimpaired, the arrangements then made increased the stability of the Bank of England, and consequently improved the pecuniary system of the country.

If any doubt could possibly remain as to the operation of this system, it would be removed by referring to Scotland. Gold has been practically banished from that country for a long series of years; and yet no one pretends to say that prices are higher in Scotland than in England, or that her currency is depreciated. The Scotch currency is kept at its proper level, not by the check of gold payments, but by the demand for bills on London; and it is as effectually limited in this way as it would be were the banks universally in the habit of exchanging notes for gold. On what grounds, then, is it to be apprehended that the obligation to give Bank of England notes or bills on London will be less effectual in restraining overissue in Yorkshire or Durham than in Scotland? A banker who issues notes must keep beside him such a stock of cash and bullion as may be sufficient to answer the demands of the public for their payment. If the value of the cash and bullion in his coffers were equal to the value of his notes in circulation, he would not, it is plain, make any profit; but if he be in good credit, a third, a fourth, or even a fifth part of this sum will probably be sufficient; and his profit consists of the excess of the interest derived from his notes in circulation over the interest of the sum he is obliged to keep dormant in his strong-box, and the expenses of managing his establishment. The Bank of England, as will be afterward seen, keeps an average stock of coin and bullion equal to a third of her liabilities.

No particular form of words is necessary in a banknote. The essential requisites are, that it should be for a definite sum (in England and Wales not less than

£5, and in Scotland and Ireland not less than £1), that it should be payable to bearer on demand, and that it should be properly stamped. Promissory notes, though issued by bankers, if not payable to bearer on demand, do not come under the denomination of bank-notes; they are not, like the latter, taken as cash in all ordinary transactions; nor are they, like them, assignable by mere delivery.

The circulation of notes for less than £5 was restrained by law (stat. 15 Geo. 3, c. 51) from 1766 to 1797. In 1808, it was enacted by stat. 48 Geo. 3, c. 88, that all bank-notes, promissory notes, or other negotiable instruments for less than 20s., should be absolutely void: a penalty of from 20s. to £5, at the discretion of the justices, being imposed on their issuers. It was enacted by the 7 Geo. 4, c. 6, that the issue of all bank-notes or promissory notes for less than £5 by the Bank of England, or by any licensed English bankers, and stamped on the 5th of February, 1826, or previously (after which period such notes were not stamped), should terminate on the 5th of April, 1829.

By the 9 Geo. 4, c. 23, English bankers not in the city of London, or within three miles thereof, are authorized to issue promissory notes, and to draw and issue bills of exchange, on unstamped paper, for any sum of £5 or upward, expressed to be payable to the bearer on demand, or to order, at any period not exceeding 7 days after sight (*bills* may also be drawn at any period not exceeding 21 days after date), upon obtaining licenses, costing £30, to that effect; provided such bills of exchange be drawn upon bankers in London, Westminster, or Southwark; or provided such bills be drawn by any banker or bankers at the place where he or they shall be licensed to issue unstamped notes and bills, upon himself or themselves, or his or their copartner or copartners, payable at any other place where such bankor or bankers shall be licensed to issue such notes and bills. Bankers having such licenses are to give security, by bond, that they will keep a true account of all promissory notes and bills so issued, and account for the duties on them at the rate of 3s. 6d. for every £100, and also for the fractional parts of £100 of the average value of such notes and bills in circulation. Persons post-dating unstamped notes or bills shall, for every such offense, forfeit £100.

Legal Effect of the Payment of Bank-notes.—Notes of the Bank of England were not, previously to the act 3 & 4 Will. 4, c. 98, like bills of exchange, mere securities, or documents of debt, but were treated as money or cash in the ordinary course or transactions of business; the receipts given upon their payment being always given as for money. Now, however, they are legal tender, every where except at the Bank, for all sums above £5. All notes payable to bearer are assignable by delivery. The holder of a bank-note is *primâ facie* entitled to its prompt payment, and can not be affected by the previous fraud of any former holder in obtaining it, unless evidence be given to show that he was privy to such fraud. Such privity may, however, be inferred from the circumstances of the case. To use the words of Lord Tenterden, "If a person take a bill, note, or any other kind of security, under circumstances which *ought to excite suspicion* in the mind of any reasonable man acquainted with the ordinary affairs of life, and which ought to put him on his guard to make the necessary inquiries, and he do not, then he loses the right of maintaining possession of the instrument against the lawful owner."—*Guildhall*, 25th October, 1826.

Country bank-notes are usually received as cash. But though taken as such, if they be presented *in due time* and not paid, they do not amount to a payment, and the deliverer of the notes is still liable to the holder. It is not easy to determine what is a due or reasonable time, inasmuch as it must depend in a great measure on the circumstances of each particular case. On the whole, the safest rule seems to be to present all notes or drafts payable on demand, if received in the place where they are payable, on the day on which they are received, or as soon after as possible. When they have to be transmitted by post for payment, no unnecessary delay should be allowed to intervene.—Chitty's *Commercial Law*, vol. iii. p. 590; and the *art.* Check in this work.

Distinction between Bank-notes and Bills of Exchange.—It is common with those who object to any restrictions being laid on the issue of bank-notes to represent them as substantially identical with ordinary bills of exchange, and to contend that if it would be imprudent or impracticable to interfere with the issue of the latter, the issue of the former should also be left to the discretion of the parties. The cases, however, are not parallel. It is true that bills of exchange perform in some respects the functions of money; and, being transferred from one individual to another, make payments much in the same way as if they were bank notes. But though there are, no doubt, certain points in which bills of exchange and bank-notes closely resemble each other, there are others, and those too of the greatest importance, in which there is a distinct and material difference between them. Bank-notes are issued only by parties licensed for the purpose, or by bankers; they are uniformly payable on demand, or when presented; they are not indorsed by the holder on his paying them away; the party receiving has no claim on the party from whom he received them in the event of the failure of the issuers; and every one is thus encouraged, reckoning on the facility of passing them to others, to accept bank-notes, "even though he should doubt the ultimate solvency of the issuers."—Thornton *on Paper Credit*, p. 172. Bills, on the contrary, may be drawn by all individuals; they are mostly all made payable at some distant period; and those into whose hands they come, if they be not in want of money, prefer retaining them in their possession, in order that they may get the interest accruing upon them. But the principal distinction between notes and bills is, that the latter are not assignable by mere delivery, but that every individual, in passing a bill to another, has to indorse it, and by doing so makes himself responsible for its payment. "A bill circulates," says Mr. Thornton, "in consequence chiefly of the confidence placed by each receiver of it in the last indorser, his own correspondent in trade; whereas the circulation of a bank-note is owing rather to the circumstance of the name of the issuer being so well known as to give it a universal credit."—P. 40. Nothing, then, can be more inaccurate than to represent bills and notes in the same point of view. If A. pay to B. £100 in satisfaction of a debt, there is an end of the transaction; but if A. pay to B. a bill of exchange for £100, the transaction is not completed; and, in the event of the bill not being paid by the person on whom it is drawn, B. will have recourse upon A. for its value. It is clear, therefore, that a great deal more consideration is always required, and may be fairly presumed to be given, before any one accepts a bill of exchange in payment, than before he accepts a bank-note. The note is payable on the instant, without deduction—the bill not until some future period; the note may be passed to another without incurring any risk or responsibility, whereas every fresh issuer of the bill makes himself responsible for its value. Notes form the currency of all classes, not only of those who are, but also of those who are not engaged in business, very many of whom are, as already seen, without the power to refuse them, and without the means of forming any correct conclusion as to the solvency of the issuers. Bills, on the other hand, pass only, with very few exceptions, among persons engaged in business, who, being fully aware of the risk they run in taking them, reject such as they apprehend might involve them in loss. There is plainly, therefore, a wide and obvious distinc-

tion between the two species of currency; and it would be ridiculous to argue that because government is bound to interfere to regulate the issue of the one, it should also regulate the issue of the other.

II. Account of the Bank of England.—This great establishment, which has long been the principal bank of deposit and circulation, not in that country only, but in Europe, was founded in 1694. Its principal projector was Mr. William Paterson, an enterprising and intelligent Scotch gentleman, who was afterward engaged in the ill-fated colony at Darien. Government being at the time much distressed for want of money, partly from the defects and abuses in the system of taxation, and partly from the difficulty of borrowing, because of the supposed instability of the revolutionary establishment, the bank grew out of a loan of £1,200,000 for the public service. The subscribers, besides receiving *eight* per cent. on the sum advanced as interest, and £4000 a year as the expense of management, in all £100,000 a year, were incorporated into a society denominated the *Governor and Company of the Bank of England*. The charter is dated the 27th of July, 1694. It declares, among other things, that they shall "be capable in law to purchase, enjoy, and retain to them and their successors, any manors, lands, rents, tenements, and possessions whatsoever; and to purchase and acquire all sorts of goods and chattels whatsoever, wherein they are not restrained by act of Parliament; and also to grant, demise, and dispose of the same.

"That the management and government of the corporation be committed to the governor, deputy governor, and twenty-four directors, who shall be elected between the 25th day of March and 25th day of April, each year, from among the members of the company duly qualified. That no dividend shall at any time be made by the said governor and company, save only out of the interest, profit, or produce arising by or out of the said capital stock or fund, or by such dealing as is allowed by act of Parliament. They must be natural-born subjects of England, or naturalized subjects; they shall have in their own name and for their own use, severally, viz.: the governor at least £4000, the deputy governor £3000, and each director £2000 of the capital stock of the said corporation. That thirteen or more of the said governors and directors (of which the governor or deputy governor must be always one) shall constitute a court of directors, for the management of the affairs of the company, and for the appointment of all agents and servants which may be necessary, paying them such salaries as they may consider reasonable. Every elector must have in his own name and for his own use, £500 or more capital stock, and can only give one vote. He must, if required by any member present, take the oath of stock; or the declaration of stock, in case he be one of the people called Quakers. Four general courts to be held in every year; in the months of September, December, April, and July. A general court may be summoned at any time, upon the requisition of nine proprietors, duly qualified as electors. The majority of electors in general courts have the power to make and constitute by-laws and ordinances for the government of the corporation, provided that such by-laws and ordinances be not repugnant to the laws of the kingdom, and be confirmed and approved, according to the statutes in such case made and provided." The corporation is prohibited from engaging in any sort of commercial undertaking other than dealing in bills of exchange, and in gold and silver. It is authorized to advance money upon the security of goods or merchandise pledged to it; and to sell by public auction such goods as are not redeemed within a specified time.

It was also enacted in the same year in which the Bank was established, by statute 6 William and Mary, c. 20, that the Bank "shall not deal in any goods, wares, or merchandise (except bullion), or purchase any lands or revenues belonging to the crown, or advance or lend to their majesties, their heirs or successors, any sum or sums of money by way of loan or anticipation, or any part or parts, branch or branches, fund or funds of the revenue, now granted or belonging, or hereafter to be granted to their majesties, their heirs and successors, other than such fund or funds, part or parts, branch or branches of the said revenue only, on which a credit of loan is or shall be granted by Parliament." And in 1697 it was enacted that the "common capital and principal stock, and also the real fund of the governor and company, or any profit or produce to be made thereof, or arising thereby, shall be exempted from any rates, taxes, assessments, or impositions whatsoever, during the continuance of the Bank; and that all the profit, benefit, and advantage, from time to time arising out of the management of the said corporation, shall be applied to the uses of all the members of the said corporation of the Governor and Company of the Bank of England, ratably and in proportion to each member's part, share, and interest in the common capital and principal stock of the said governor and company hereby established." It was further enacted, in 1697, that the forgery of the company's seal, or of any sealed bill or bank-note, should be felony without benefit of clergy, and that the making of any alteration or erasure in any bill or note should also be felony.

In 1696, during the great recoinage, the Bank was involved in considerable difficulties, and was even compelled to suspend payment of her notes, which were at a heavy discount. Owing, however, to the judicious conduct of the directors, and the assistance of government, the Bank got over the crisis. But it was at the same time judged expedient, in order to place her in a situation the better to withstand any adverse circumstances that might afterward occur, to increase her capital from £1,200,000 to £2,201,171. In 1708, the directors undertook to pay off and cancel one million and a half of Exchequer bills they had circulated two years before, at 4½ per cent., with the interest on them, amounting in all to £1,775,028; which increased the permanent debt due by the public to the Bank, including £400,000 then advanced in consideration of the renewal of the charter, to £3,375,028, for which they were allowed 6 per cent. The Bank capital was then also doubled or increased to £4,402,343. But the year 1708 is chiefly memorable, in the history of the Bank, for the act that was then passed, which declared that, during the continuance of the corporation of the Bank of England, "it should not be lawful for any body politic, erected or to be erected, other than the said Governor and Company of the Bank of England, or for any persons whatsoever, united or to be united in covenants or partnership, exceeding the number of six persons, in that part of Great Britain called England, to borrow, owe, or take up any sum or sums of money on their bills or notes payable on demand, or in any less time than six months from the borrowing thereof." This proviso, which has had so powerful an operation on banking in England, is said to have been elicited by the Mine-adventure Company having commenced banking business, and begun to issue notes.

It has been pretty generally imagined, from the private banking companies in the metropolis not issuing notes, that they were legally incapacitated from doing so. But the clause in the act of 1708, which has been the only restriction on the issue of notes, applied generally to all England, and had no peculiar reference to London. The fact that banks with six or fewer partners have not issued notes in the metropolis, as well as in the provinces, is, therefore, ascribable either to their being aware that their notes would obtain no considerable circulation concurrently with those of a great association like the Bank of England, or from their believing that their issue would not be profitable.

AN ACCOUNT OF THE SUCCESSIVE RENEWALS OF THE CHARTER, OF THE CONDITIONS UNDER WHICH THESE RENEWALS WERE MADE, AND OF THE VARIATIONS IN THE AMOUNT AND INTEREST OF THE PERMANENT DEBT DUE BY GOVERNMENT TO THE BANK, EXCLUSIVE OF THE DEAD WEIGHT.

Date of Renewal.	Conditions under which Renewals were made, and Permanent Debt contracted.	Permanent Debt. £ s. d.
1694.	Charter granted under the act 5 & 6 Will. 3, c. 20, redeemable upon the expiration of 12 months' notice after the 1st of August, 1705, upon payment by the public to the Bank of the demands therein specified.	
	Under this act the Bank advanced to the public £1,200,000, in consideration of their receiving an annuity of £100,000 a year, viz. 8 per cent. interest, and £4000 for management	1,200,000 0 0
1697.	Charter continued by the 8 & 9 Will. 3, c. 20, till 12 months' notice after 1st of August, 1710, on payment, etc.	
	Under this act the Bank took up and added to their ock £1,001,171 Exchequer bills and tallies.	
1708.	Charter continued by 7 Anne, c. 7, till 12 months' notice after 1st of August, 1732, on payment, etc.	
	Under this act the Bank advanced £400,000 to government without interest; and delivered up to be canceled £1,775,027 17s. 10d. Exchequer bills, in consideration of their receiving an annuity of £100,501 13s., being at the rate of 6 per cent.	2,175,027 17 10
1713.	Charter continued by 12 Anne, stat. 1, c. 11, till 12 months' notice after 1st August, 1742, on payment, etc.	
	In 1716, by the 3 Geo. 1, c. 8, Bank advanced to government, at 5 per cent.	2,000,000 0 0
	And by the same act, the interest on the Exchequer bills canceled in 1708 was reduced from 6 to 5 per cent.	
	In 1721, by 8 Geo. 1, c. 21, the South Sea Company were authorized to sell £200,000 government annuities, and corporations purchasing the same at 20 years' purchase were authorized to add the amount to their capital stock. The Bank purchased the whole of these annuities at 20 years' purchase.	4,000,000 0 0
	5 per cent. interest was payable on this sum to mid-summer, 1727, and thereafter, 4 per cent.	8,375,027 17 10
	At different times between 1727 and 1738, both inclusive, the Bank received from the public, on account of permanent debt, £3,275,027 17s. 10d., and advanced to it on account of ditto, £3,000,000: difference.	275,027 17 10
	Debt due by the public in 1738	9,100,000 0 0
1742.	Charter continued by 15 Geo. 2, c. 13, till 12 months' notice after 1st of August, 1764, on payment, etc.	
	Under this act the Bank advanced £1,600,000 without interest, which being added to the original advance of £1,200,000, and the £400,000 advanced in 1710, bearing interest at 6 per cent., reduced the interest on the whole to 3 per cent.	1,600,000 0 0
	In 1745, under authority of 19 Geo. 2, c. 6, the Bank delivered up to be canceled £986,6.. of Exchequer bills, in consideration of an annuity of £29,472, being at the rate of 3 per cent.	986,800 0 0
	In 1749, the 23 Geo. 2, c. 0, redu ed the interest on the 4 per cent. annuities held by the Bank to 3½ per cent. for 7 years from the 25th of December, 1750, and thereafter to 3 per cent.	
1764.	Charter continued by 4 Geo. 3, c. 25, till 12 months' notice after 1st of August, 1786, on payment, etc.	
	Under this act the Bank paid into the Exchequer £110,000 free of all charge.	
1781.	Charter continued by 21 Geo. 3, c. 60, till 12 months' notice after 1st of August, 1812, on payment, etc.	
	Under this act the Bank advanced £3,000,000 for the public service, for 3 years, at 3 per cent.	
1800.	Charter continued by 40 Geo. 3, c. 28, till 12 months' notice after 1st of August, 1833, on payment, etc.	
	Under this act the Bank advanced to government £3,000,000 for 6 years without interest; but in pursuance of the recommendation of the committee of 1807, the advance was continued without interest till 6 months after the signature of a definitive treaty of peace.	
	In 1816, the Bank, under authority of the act 56 Geo. 3, c. 96, advanced at 3 per cent., to be repaid on or before 1st of August, 1833.	3,000,000 0 0
1833.	Charter continued by 3 & 4 Will. 4, c. 98, till 12 months' notice after 1st of August, 1855, with a proviso that it may be dissolved on 12 months' notice after 1st of August, 1845, on payment, etc.	14,686,800 0 0
	This act directs that in future the Bank shall deduct £120,000 a year from their charge on account of the management of the public debt, and that a fourth part of the debt due by the public to the Bank, or £3,671,700, be paid off	3,671,700 0 0
	Permanent advance by the Bank to the public, bearing interest at 3 per cent., independent of the advances on account of dead weight, etc.	11,015,100 0 0
1844.	Charter continued by 7 & 8 Vict. c. 32, till 12 months after the 1st of August, 1855, on payment, etc.	
	This act, an abstract of which is given in a subsequent part of this article, exempts the notes of the Bank from all charge on account of stamp-duty, and directs that in future the Bank shall deduct £180,000 a year from the charge on account of the management of the public debt. It also separates the banking from the issuing department of the establishment, and effects other important changes.	

The charter of the Bank of England, when first granted, was to continue for eleven years certain, or till a year's notice after the 1st of August, 1705. The charter was further prolonged in 1697. In 1708, the Bank having advanced £400,000 for the public service, without interest, the exclusive privileges of the corporation were prolonged till 1733; and, in consequence of various arrangements made at different times, the exclusive privileges of the Bank have been continued by successive renewals, till a year's notice after the 1st of August, 1855. For further details as to this subject, see the *Appendix* No. 1 *of the Report of* 1832 *on the Renewal of the Bank Charter*, and the Acts of Parliament referred to in it; see also POSTLETHWAIT's *History of the Revenue*, p. 301–310; and FAIRMAN *on the Funds*, 7th ed. p. 85–88, etc.

The capital of the Bank on which dividends are paid has never exactly coincided with, though till of late it seldom differed very materially from, the permanent advance by the Bank to the public. We have already seen that it amounted, in 1708, to £4,402,343. Between that year and 1727 it was increased to near £9,000,000. In 1746 it amounted to £10,780,000. From this period it underwent no change till 1782, when it was increased 8 per cent., or to £11,642,400. It continued stationary at this sum down to 1816, when it was raised to £14,553,000 by an addition of 25 per cent. from the profits of the Bank, under the provisions of the act 56 Geo. 3, c. 96. The act for the renewal of the charter in 1833, the 3 & 4 Will. 4, c. 98, directed that the sum of £3,671,700 of the debt due to the Bank should be repaid by the public, giving the directors power, if they

thought fit, to deduct it from the bank capital. But this was not done, the sum being reinvested in a government annuity, terminable in 1860. The Bank of England has been frequently affected by panics among the holders of its notes. In 1745, the alarm occasioned by the advance of the Highlanders, under the Pretender, as far as Derby, led to a run upon the Bank; and in order to gain time to concert measures for averting the run, the directors adopted the device of paying in shillings and sixpences! But they derived a more effectual relief from the retreat of the Highlanders, and from a resolution agreed to at a meeting of the principal merchants and traders of the city, and very numerously signed, declaring the willingness of the subscribers to receive bank-notes in payment of any sum that might be due to them, and pledging themselves to use their utmost endeavors to make all their payments in the same medium. During the tremendous riots in June, 1780, the Bank incurred considerable danger. Had the mob attacked the establishment at the commencement of the riots, the consequences might have proved fatal. Luckily, however, they delayed their attack till time had been afforded for providing a force sufficient to insure its safety. Since that period a considerable military force is nightly placed in the interior of the Bank, as a protection in any emergency that may occur. In the latter part of 1792 and beginning of 1793, there was, in consequence of a previous overissue on their part, a general run on most of the private banks, and about a *third* part of these establishments were forced to stop payments. This led to a considerable demand for coin from the Bank.

The year 1797 is, however, the most important epoch in the recent history of the Bank. Owing partly to events connected with the war in which England was engaged—to loans to the Emperor of Germany; to bills drawn on the treasury at home by the British agents abroad; and partly and chiefly, perhaps, to the advances most unwillingly made by the Bank to government, which prevented the directors from having a sufficient control over their issues—the exchanges became unfavorable in 1795, and in that and the following year large sums in specie were drawn from the Bank. In the latter end of 1796 and beginning of 1797, considerable apprehensions were entertained of invasion, and rumors were propagated of descents having been actually made on the coast. In consequence of the fears that were thus excited, runs were made on the provincial banks in different parts of the country; and some of them having failed, the panic became general, and extended itself to London. Demands for cash poured in upon the Bank from all quarters, and on Saturday, the 25th of February, 1797, she had only £1,272,000 of cash and bullion in her coffers, with every prospect of a violent run taking place on the following Monday. In this emergency an order in council was issued on Sunday the 26th, prohibiting the directors from paying their notes in cash until the sense of Parliament had been taken on the subject; and after Parliament met, and the measure had been much discussed, it was agreed to continue the restriction till six months after the signature of a definitive treaty of peace.

As soon as the order in council prohibiting payments in cash appeared, a meeting of the principal bankers, merchants, traders, etc., of the metropolis was held at the Mansion House, when a resolution was agreed to, and very numerously signed, pledging, as had been done in 1745, those present to accept, and to use every means in their power to cause bank-notes to be accepted as cash in all transactions. This resolution tended to allay the apprehensions that the restriction had excited. Parliament being sitting at the time, a committee was immediately appointed to examine into the affairs of the Bank; and their report put to rest whatever doubts might have been entertained with respect to the solvency of the establishment, by showing that, at the moment when the order in council appeared, the Bank was possessed of property to the amount of £15,513,690, after all claims upon her had been deducted.

Much difference of opinion has existed with respect to the policy of the restriction in 1797; but, considering the peculiar circumstances under which it took place, its expediency seems abundantly obvious. The run did not originate in any overissue of bank paper, but grew entirely out of political causes. So long as the alarms of invasion continued, it was clear that no bank paper immediately convertible into gold would remain in circulation. And as the Bank, though possessed of ample funds, was without the means of instantly retiring her notes, she might, but for the interference of government, have been obliged to stop payment—an event which, had it occurred, must have produced consequences in the last degree fatal to the public interests. It had been generally supposed, previously to the passing of the Restriction Act, that bank-notes would not circulate unless they were immediately convertible into cash; but the event showed, conformably to principles that have since been fully explained, that this was not really the case. Though the notes of the Bank of England were not, at the passing of the Restriction Act, publicly declared to be legal tender, they were rendered so in practice by being received as cash in all transactions on account of government, and of the vast majority of individuals. For the first three years of the restriction, their issues were so moderate that they not only kept on a par with gold, but actually bore a small premium. In the latter part of 1800, however, their quantity was so much increased that they fell to a discount of 8 per cent. as compared with gold, but they soon after rose nearly to par; and it was not until 1808 that the decline of their value excited any considerable attention. Early in 1810 they were at a discount of about 13½ per cent.; and this extraordinary fall having attracted the attention of the Legislature, the House of Commons appointed a committee to inquire into the circumstances by which it had been occasioned. The committee examined several witnesses; and in their report, which was drawn up with considerable ability, they justly ascribed the fall to the overissue of bank paper, and recommended that the Bank should be obliged to resume cash payments within two years. This recommendation was not, however, acted upon; and the value of bank paper continued to decline, as compared with gold, till 1814.

At the period when the restriction on cash payments took place in 1797, it is supposed that there were about 280 country banks in existence; but so rapidly were these establishments multiplied, that they amounted to above 900 in 1813. The price of corn, influenced partly by the depreciation of the currency, and the facility with which discounts were obtained, but far more by deficient harvests and the unprecedented difficulties which the war threw in the way of importation, had risen to an extraordinary height during the five years ending with 1813. But the harvest of that year being unusually productive, and the intercourse with the Continent being then also renewed, prices, influenced by both circumstances, sustained a very heavy fall in the latter part of 1813 and the beginning of 1814; and this fall having ruined a considerable number of farmers, and produced a general want of confidence, such a destruction of provincial paper took place as has rarely been paralleled. In 1814, 1815, and 1816, no fewer than 240 country banks stopped payment; and *eighty-nine* commissions of bankruptcy were issued against these establishments, being at the rate of *one* commission against every *ten and a half* of the total number of banks existing in 1813. The great reduction that had been thus suddenly and violently brought about in the quantity of country bank paper, by extending the field for the circulation of Bank of England paper,

raised its value in 1817 nearly to a par with gold. The return to cash payments being thus facilitated, it was fixed, in 1819, by the act 59 Geo. 3, c. 78, commonly called Sir Robert Peel's Act, that they should take place in 1823. But to prevent any future overissue, and at the same time to render the measure as little burdensome as possible, it was enacted, in pursuance of a plan suggested by the late Mr. Ricardo, that the Bank should be obliged, during the interval from the passing of the act till the return to specie payments, to pay her notes, if required, in bars of standard bullion of not less than sixty ounces weight. This plan was not, however, acted upon during the period allowed by law; for, a large amount of gold having been accumulated at the Bank, the directors preferred recommencing specie payments on the 1st of May, 1821.—See Table for an account of the price of bullion, the depreciation of paper, etc., from 1800 to 1821.

A great diversity of opinion has been entertained with respect to the policy of the return to the old standard in 1819. By one party it has been represented as a wise and politic measure; they contend that Sir Robert Peel's Act not only put an end to those fluctuations in the value of money, which had previously been productive of great mischief, and gave effect to the solemn engagements into which the public had entered with the national creditor, but that it did this without adding any thing material to the national burdens. But another, and also a very numerous party, take a total different view of this measure: they contend that the public was not really bound to return to cash payments at the old standard at the termination of the war; that the return has very greatly enhanced the value of the currency; and that this enhancement, by adding proportionally to the fixed burdens laid on the industrious classes, has been most injurious to their interests. It will, however, be found in this, as in most cases of the sort, that the statements of both parties are exaggerated, and that if, on the one hand, the measure has not been so advantageous as its eulogists represent, neither, on the other, has it been nearly so injurious as its enemies would have us believe.

In discussing this question, it is material to observe that the value of paper, which had been in 1815 and 1816 about 16¾ per cent. below that of gold, rose in 1817 and 1818, from the causes already mentioned, without any interference whatever on the part of government, to within little more than 2½ per cent. of the value of gold; and that in 1819 the depreciation only amounted to 4½ per cent.—See Table. It is, therefore, futile to ascribe to the act of 1819, as is often done, the whole rise that has taken place in the value of the currency since the peace, seeing that the currency had been for *three years previously to its enactment* from 12½ to 14½ per cent. above its value in 1815, and from 21 to 23 per cent. above its value in 1814! The main object which the promoters of the act of 1819 had in view was to sustain the value of the currency at the point to which it had recovered itself without legislative interference. This, however, could not be done without recurring to specie payments; and the difference of 4½ per cent. that obtained in 1819, between the value of gold and paper, was not deemed sufficiently considerable to warrant a departure from the old standard, and from the acts engaging to restore it.

But it is alleged that those who suppose that the act of 1819 added only 4½ per cent. to the value of the currency mistake altogether the effect of the measure. It is admitted, indeed, that paper was then only 4½ per cent. less valuable than gold; but by reverting to specie payments, an unexpected purchase of *thirty millions* of gold was made; and it is affirmed that this novel and large demand, concurring simultaneously with the contraction of paper in several of the Continental states, and with a falling off in the supply of bullion from the mines, had the effect of adding very greatly to the value of gold itself, and consequently to that of the currency. It is very difficult, or rather, perhaps, impossible, to determine the precise degree of credit that should be attached to this statement; but, while we incline to think that it is well founded to a certain extent, we see no grounds for believing that it is so to any thing like the extent that has been stated. The gold imported into Great Britain, to enable the Bank to resume specie payments, was not taken from any particular country or district, but was drawn from the market of the world; and considering the vast extent of the supply whence it was derived, it is against all reason to suppose that its value could be materially influenced by the purchases. We doubt, too, whether the contraction of the paper currency of some of the Continental states, and the substitution of specie in its stead, was not more than balanced by the cessation of the demand for specie for the military chests of the different armies, by the stoppage of the practice of hoarding, and the greater security consequent to the return of peace. And with respect to the falling off in the supplies from the mines, it is not a circumstance, supposing it to have had a considerable influence, that Parliament could take into account. It could neither determine the extent to which bullion had been raised, nor at what point the rise would stop, nor how soon it might again begin to decline. The diminution in the supply of bullion had then continued for too short a period, and its influence on the value of gold was much too uncertain, to make it a ground for interfering in any degree with the standard. And notwithstanding the falling off in the productiveness of the American mines still continues, the diminution thence arising has been since more than compensated by the extraordinary increase that has taken place of late years in the produce of the Russian mines and washings.

The decline in the price of most articles that has taken place since the peace has been often referred to as a conclusive proof of the great enhancement in the value of bullion. But the inference is by no means so certain as has been represented. The prices of commodities are as much affected by changes in the cost of their production as by changes in the quantity of money afloat. Now, there is not one of the great articles of commerce the cost of which has not been considerably reduced, or which has not been supplied from new and more productive sources within the last few years. The growth of corn, for example, has been vastly extended in France, Prussia, and generally throughout the Continent, by the splitting of large estates, and the complete subversion of the feudal system; and the reduction of its price in England has been wholly owing to the astonishing improvements made in agriculture, and to the increase of imports from Ireland. The fall in the price of wool is satisfactorily accounted for by the introduction and rapid multiplication of Merino sheep in Germany, where they seem to succeed even better than in Spain; and by the large and rapidly growing imports from Australia, where little more than 50 years ago there was not a single sheep! And a very large portion, if not the whole, of the fall in the price of colonial products, is admitted, on all hands, to be owing to the destruction of the monopoly system, and the vast extension of cultivation in Cuba, Brazil, Java, Louisiana, etc. Although, therefore, we do not deny that the falling off in the supply of bullion from the mines must, at first, have had some influence over prices, we hold it to be the greatest imaginable error to ascribe to it the entire fall that took place after the peace. Were its effect rated at from 5 to 10 per cent., we believe it would be very considerably overstated.—*See* PRECIOUS METALS.

On the whole, therefore, we are disposed to approve of the conduct of those who framed the act of 1819. That it added somewhat to the burdens of the industrious classes, and has been in so far hostile to the public interests, it seems impossible to doubt; but it has

not been so in any thing like the degree which its enemies represent. The period, too, when it was passed is now so distant, that the existing engagements among individuals have almost all been formed with reference to the altered value of the currency; so that whatever injury it may have occasioned in the first instance must be nearly gone by. To modify or change the standard at this late period, would not be to repair injustice, but to commit it afresh. At the end of the war, the circumstances were considerably different. The standard had been really abandoned for the previous 18 years; and perhaps we may now say that it would have been better, all things considered, had the mint price of bullion been raised in 1815 to the market price. But having surmounted all the difficulties attendant upon the restoration of the old standard, and maintained it since 1821, it would be in the last degree impolitic to subject it to new alterations. Should the country become, at any future period, unable to make good its engagements, it will better consult its honor and its interest by fairly compounding with its creditors, than by endeavoring to slip from its engagements by resorting to the underhand and dishonest expedient of enfeebling the standard.

The price of grain, which had been very much depressed in 1821 and 1822, rallied in 1823; and this circumstance contributed, along with others peculiar to that period, to promote an extraordinary rage for speculation. The issues of the country banks being in consequence far too much extended, the currency became redundant in the autumn of 1824; and the exchanges having been depressed, a drain for gold began to operate upon the Bank of England. But the directors of the Bank having entered, in the early part of that year, into an engagement with government to pay off such holders of 4 per cent. stock as might dissent from its conversion into a 3½ per cent. stock, they were obliged to advance a considerable sum on this account after the depression of the exchange. This tended to counteract the effect of the drain on the Bank for gold; and, in consequence, the London currency was not very materially diminished till September, 1825. When, however, the continued demand of the public on the Bank for gold had rendered money scarce in the metropolis, the pressure speedily extended to the country. Such of the provincial banks—and they were a numerous class—as had been originally established without sufficient capital, or had conducted their business upon erroneous principles, began to give way the moment they experienced an increased difficulty of obtaining pecuniary accommodations in London. The alarm, once excited, soon became general; and confidence and credit were, for a while, almost wholly suspended. In the short space of six weeks, above 70 banking establishments were destroyed, notwithstanding the very large advances made to them by the Bank of England; and the run upon the Bank for cash to supply the exigencies of the country banks was so heavy, that she was well nigh drained of all the coin in her coffers, and obliged, as already remarked, to issue about a million of £1 and £2 notes.

To guard against a recurrence of the wide-spread mischief and ruin produced by this and the previous bankruptcies of the country banks, it was resolved, in 1826, with consent of the Bank of England, to make a change in the law of 1708 limiting the number of partners in banking establishments to six only. And it was accordingly enacted that thenceforth any number of partners might form themselves into associations to carry on the business of banking, including the issue of notes, any where not within *sixty-five miles* of London. The directors of the Bank of England came, at the same time, to the resolution of establishing branches in some of the principal towns; and these have since been established in Gloucester, Manchester, Birmingham, Leeds, Liverpool, Bristol, Exeter, Newcastle-upon-Tyne, Hull, Norwich, etc.

Besides attempting to lessen the frequency of bankruptcy among the country banks by repealing the law limiting the number of partners, it was further resolved, in 1826, to prohibit the issue of £1 notes. The policy and effects of this measure gave rise to much dispute. It seems clear that it went far to shut up one of the most convenient channels by which the inferior class of country bankers contrived to get their notes into circulation, and must, in so far, have done good. But there were many other channels still open to them; and to imagine that this measure was to place the provincial currency on that solid basis on which it should be placed was quite visionary. There were no notes under £5 in circulation in 1792; and yet fully *one third* part of the country banks then in existence became bankrupt! The truth is, as already stated, that it is not possible to guard against loss and fraud from the proceedings of the country bankers, otherwise than by compelling them to give security for their issues; and as security may as easily be given for £1 notes as for those of £5, the suppression of the former does not appear to be essential. No doubt can, however, be entertained that the representations of the extreme injury occasioned by the withdrawal of £1 notes were greatly exaggerated; though it is, at the same time, obvious that the means of the bankers to make advances, as well as the profit derived from making them, must both have been diminished by the suppression of the small notes; and it would be foolish to deny that this circumstance must have occasioned some loss and inconvenience to many individuals. These remarks are meant to apply only to the case of the country banks. The extraordinary extent to which the forgery of the £1 notes of the Bank of England was carried affords a sufficient vindication of the policy of their suppression. But the comparativeiy limited circulation of the country banks, and perhaps we may add the greater attention paid to the manner in which their notes were engraved, hindered their forgery from becoming injuriously prevalent.

Charter of 1844.—The defects inherent in the old system were again fully developed in 1836 and 1837. It is needless now to enter upon any investigation of the circumstances which led to the overtrading of these years; but it was carried to a great extent in England and in the United States. In nothing, however, was this more strikingly evinced than in the rapid increase of joint-stock banks; their number, which in 1834–35 had amounted in England and Wales to 55, having risen in 1835–36 to no fewer than 100! Many of these were banks of issue, and in consequence of the large additions that were thus suddenly made to the number of notes afloat, and still more to the number of bills, checks, and other substitutes for money, the currency became redundant and the exchange depressed; and the deficient harvests of 1838 and 1839, conspiring with this redundancy, occasioned a further fall in the exchange, and a severe drain upon the Bank of England for gold. But while the latter was narrowing her issues by supplying the exporters of bullion with gold in exchange for notes, the country banks went on increasing their issues! What the former did by contracting on the one hand, the latter more than undid by letting out on the other. The vacuum created by the withdrawal of Bank of England paper was immediately filled up, and made to overflow, by the issue of a more than equal amount of provincial paper; so that had it not been for the rise in the rate of interest, and the other repressive measures adopted by the Bank, the probability is that she might have gone on paying away bullion for notes till she was drained of her last sixpence, without in any degree affecting the exchange; and as it was, the bullion in her coffers in August, 1839, was reduced to £2,420,000, so that the market narrowly escaped a tremendous crisis.

This perilous experience having again forcibly attracted the public attention to the state of the banking

system, Sir Robert Peel was encouraged to attempt its improvement. The clause in the act 3 & 4 Will. 4, c. 98, for the renewal of the charter in 1833, which gave to Parliament power to revise or cancel it in 1845, afforded a legitimate opportunity for the introduction of the new system. But, however desirable, the total suppression of the issue of notes by joint-stock and private banking companies would have been a measure too much opposed to popular prejudices, and to the real or supposed interests of a large and powerful class, to have had any chance of being carried; and there also would have been great, though inferior, difficulties in the way of the plan for taking security. It was, indeed, indispensable, in attempting to obviate the defects inherent in the banking system, to proceed cautiously, to respect, in as far as possible, existing interests, and to avoid taking any step that might excite the fears or suspicions of the public; the grand difficulty being to reconcile the introduction of such a course with the adoption of any plan that would obviate in any considerable degree the defects complained of. Happily, this difficult problem has been dexterously and satisfactorily solved by Sir Robert Peel; the measures he introduced and carried through Parliament in 1844 and 1845, for the improvement of the banking system, having been so skillfully contrived as to provoke little opposition, at the same time that they effected very extensive and, as we think, most beneficial changes.

The measures in question consist of the act 7 & 8 Vict. c. 32, which refers to the Bank of England and the English country banks; and the acts 8 & 9 Vict. c. 37, 38, referring to the Banks of Scotland and Ireland. The principal object of these statutes has been to obviate the chances of overissue and of sudden fluctuations in the quantity and value of money, by limiting the power to issue notes payable on demand, and by making the amount of such notes in circulation vary more nearly than previously with the amount of bullion in the possession of the issuers. Sir Robert Peel adopted, in dealing with the Bank of England, the proposal made by Mr. Loyd, in 1837, for effecting a complete separation between the issuing and banking departments of that establishment. And while the directors are left at liberty to manage the latter at discretion, their management of the former, or issue department, is subjected to what seems to be a well-devised system of restraint. The Bank is allowed to issue £14,060,000 of notes upon securities (of which the debt of £11,015,100 lent by her to government is a part); and whatever paper the issue department may at any time issue over and above this maximum amount of securities, it must have an equal amount of coin and bullion in its coffers. A clause is inserted in the act allowing the Bank to increase her issue upon securities in the event of her notes being used instead of those of any or all of the existing banks of issue. Hence it is impracticable for the issue department to increase its issues without, at the same time, proportionally increasing its stock of coin and bullion; or to diminish the latter without proportionally diminishing the amount of paper supplied to the public and the banking department. And, therefore, if the latter issued the whole notes assigned to it, the total amount issued by the issue department and the amount in circulation would be identical; and it might under such circumstances be truly said that, in so far as the currency consists of Bank of England notes payable on demand, it varied in amount and value as it would do were it wholly metallic, and, consequently, by being so closely identified with the standard, realized the *beau ideal* of a paper currency.

But, though the currency approaches to, it has not arrived at this degree of perfection. The public does not deal alone with the issue, but also, and to a far greater extent, with the banking department. And this latter department retained such a portion of the notes issued to it by the former, under the 2d clause of the 7 & 8 Vict. c. 32, as was supposed at the time to be sufficient to carry on its business, their amount having since varied with the varying demands for bullion, the sales and purchases of securities, etc. But it is sufficient, in illustration of what is now stated, to observe that during the week ending the 4th of November, 1848, notes to the amount of £26,796,660 had been issued to the public and the banking department, of which the latter had £8,242,575 in its coffers, making the sum in the hands of the public £18,554,085. And as it is sometimes supposed that the banking department might issue this sum of £8,212,575, or the spare notes at any time in its coffers, in the discount of bills, or any other way, it is concluded that there is still room for some, though but little, derangement of the currency from mistaken proceedings on the part of the Bank; and this, no doubt, may be sometimes true, at least to some extent. But it is idle to suppose that the banking department could carry on business without a large reserve of notes or of coin. This department may have, owing to a variety of circumstances, to meet a drain for deposits; and as it is very unsafe to trust to the sale of securities in periods of discredit, a very considerable supply of notes or of bullion, or of both, can never be advantageously or safely dispensed with.

This shows the little weight to be attached to the statements of those who contend that the late measure has laid no real restraint on the issues of the Bank, because, say they, she has a large reserve of unissued notes which she might legitimately throw on the market. But in truth and reality she can do nothing of the sort. A reserve is indispensable, not only to her safety, but to her ability to carry on banking business; and it is at present (November, 1848) sufficientiy narrow. More vigilance and caution are now required on the part of the bank directors than formerly; for otherwise the banking department of the Bank may be reduced to the greatest difficulties, without its being possible for it to obtain any assistance from the issue department, how able soever the latter might be to render it. This was strikingly evinced in the autumn of 1847; and nothing but the exercise of a proper degree of foresight and caution can prevent its recurrence. No gold can now be obtained from the issue department except in exchange for notes; nor can the latter be obtained from it except in exchange for gold. Hence it is no longer, as formerly, in the power of the Bank to create paper money at pleasure to supply the place of cash in any emergency in which she may be involved; and instead of less she requires to act with more circumspection under the new system than under the old.

But though the check on the overissue of bank-notes be thus nearly effectual, it appears rather singular that no check should be established on the issue of bank post-bills, which amounted to £1,048,503 on the 4th November, 1848, and which are and may be substituted for notes. No doubt, however, were the Bank (which is hardly to be imagined) to abuse the privilege of issuing post-bills, by making advances in them which she could not have made in notes, measures would be taken to prevent the abuse; and perhaps, on the whole, it was as well to postpone devising means for the prevention of what seems so unlikely to occur. Weekly returns are now published of the issues of the Bank, and of the securities, bullion, etc., in her possession. The sum to be deducted by the Bank from the charge on account of the management of the national debt is in future to be £180,000 instead of £120,000 a year, as fixed by the act 3 & 4 Will. 4, c. 98. The charter is to be continued till twelve months' notice after the 1st of August, 1855. The provisions made in this act for restraining the country circulation were, perhaps, still more important. The maximum future issue of the joint-stock and other banks in England and Wales was limited to the average amount of the circulation

of each during the twelve months preceding the 27th of April, 1844. It was farther enacted that no new bank shall be established for the issue of notes, and that the names of the partners in joint-stock and other banks shall be periodically published. The regulations in the statutes relating to banking in Scotland and Ireland are nearly similar. The maximum amount of notes to be issued by the banks of both countries is, in time to come, not to exceed the average amount which each bank had in circulation during the twelve months ending the 1st of May, 1845. Certain returns, including among others the amount of gold and silver coin held by the banks, the names of the partners, etc., are to be periodically published. The small-note currency of Scotland has not been affected by the measure.

It is impossible to doubt that these regulations interpose a formidable obstacle to overissue; and that, consequently they discourage overtrading, and tend to reduce both the number and the violence of those commercial revulsions and changes in the value of money, that have always been, and must necessarily continue to be, productive of the greatest mischief. No one ever pretended to say that these or any other measures which could be adopted with respect to the currency would wholly prevent unsafe speculation and overtrading. These may originate in an endless variety of circumstances; but in times past the tendency to speculation and gambling, when once set on foot, was in most cases powerfully stimulated by the facility which banks then possessed of issuing additional quantities of paper; and of that facility they are now all but deprived. It is, perhaps, true that the fair and legitimate influence of the acts now referred to may be in some degree countervailed by the circulation, to a greater extent than formerly, of bills and other sorts of paper not payable on demand, but at short dates; and it is not improbable that sooner or later the question may arise whether any regulations should be adopted in regard to the issue of such paper. In so far, however, as respects the issue of *paper money*, or notes payable on demand, the regulations in the act of 1844 appear to have left little to be desired. No doubt, also, numbers of the private and other banks that now issue notes will from time to time wind up their affairs; and as no new banks of issue can be established in their stead, the vacuum caused by the withdrawal of their notes will be supplied by those of the Bank of England; so that a gradual progress will be made toward the desirable consummation of having only one bank of issue.

It is sometimes contended, by those opposed to the policy of limiting the issues, that they never can be in excess so long as they are payable on demand. Such, however, is not the case: notes payable, *and really paid*, on demand, can not, it is true, fall below the value of specie in the country in which they are issued; but the check of payment in specie does not, in fact, begin to operate till their overissue has depreciated the value of the whole currency, gold as well as paper, in such country, below its level in the surrounding countries, and till, consequently, the exchange becomes unfavorable, and it is of advantage to export gold. Then, of course, the overissue is stopped, but such stoppage is almost always accompanied by a great deal of public distress and inconvenience; while it by no means necessarily follows that any considerable portion of the loss thence arising will fall on those banks by whose misconduct or overissue the fall in the exchange and the demand for bullion may have been occasioned.

The measures adopted in 1844, though they deeply affected many powerful private interests, were, as already stated, passed with little difficulty, and were very generally approved of. In this respect, however, the public opinion has, to some extent, changed; and the act of 1844 has been charged with having aggravated the pressure experienced by the mercantile world in 1847. But we are satisfied that there is no real room or ground for any such imputation. The crisis of 1847 was a consequence partly of the railway mania of the previous year, and partly of the failure of the potato crops of 1845 and 1846. The failure in the latter year deprived fully two-thirds of the people of Ireland, and a considerable portion, also, of those of Great Britain, of their accustomed supplies of food. In consequence of this deficiency, and of government having come forward to provide the means for its relief, there was an unprecedented importation of all sorts of corn; and the demand for bullion for exportation to meet this importation, occurring simultaneously with a vast railway expenditure, pecuniary accommodations were obtained with the greatest difficulty, and the rate of interest rose to an extraordinary height. Interest, however, of being increased by the act of 1844, it is abundantly certain that the operation of the latter contributed to alleviate the severity of the crisis. The restraints it imposed on the issues of the country banks had hindered them from embarking to any great extent in railway adventures, so that they were better able to assist their customers; and it also prevented the Bank of England from attempting to meet the exigencies of the case, otherwise than by raising the rate of interest and restricting her issues. And besides being the natural and proper, these were, in fact, the only means by which the value of bullion could be raised, its demand for foreign remittance checked, and the exchange turned in favor of England. A great many mercantile houses that had been trading upon very insufficient capitals, or which had previously been virtually insolvent, were, of course, swept off during the crisis; and the alarm that was thereby occasioned, though for the most part without any good foundation, gave rise to a species of panic. During the prevalence of the latter, government consented (25th October, 1847) to a temporary suspension of the act of 1844; but there is now, we believe, little doubt that this was an unwise proceeding. When it took place the violence of the crisis had abated. The drain for gold for exportation had not only ceased, but had begun to react; and the probability is, that in a very few days all alarm would have passed off, without the dangerous precedent which was set by the interference of ministers. Hence, in our view of the matter, the experience afforded by the crisis of 1847 tells strongly in favor of the act of 1844. But for its influence, it is most probable that the Bank would have attempted to meet the demand for bullion without raising the rate of interest, at least to the extent to which she did raise it; and if so, she should have been exposed to the imminent risk of a suspension of cash payments. If, therefore, the act of 1844 should be subjected to any modifications, it is to be hoped that they may be such as may tend to carry out and strengthen the principles on which it is founded.

Previously to the late changes, the Bank directors endeavored, as a general rule, to have *as much coin and bullion in their coffers as might together amount, when the exchange was at par, to a third part of the Bank's liabilities, including deposits as well as issues;* so that, in the event of the notes afloat, and the public and private deposits in the coffers of the Bank, amounting to £27,000,000 or £30,000,000, they did not consider the establishment in a perfectly satisfactory state, unless she was, generally speaking, possessed of about £9,000,000 or £10,000,000 of coin and bullion. The issues of the Bank were then wholly governed, at least in ordinary cases, by what Mr. Horsley Palmer expressively called "the action of the public;" that is, they were increased during a favorable exchange, or when bullion was sent to the Bank to be exchanged for notes; and diminished during an unfavorable exchange, or when notes were sent to the bank to be paid. But the vice of the old system was that this rule was not strictly enforced, and that the directors were every now and then compelled to relax it. But under the present system such relaxation is practicable only to a very

limited extent, and can be but little abused, which formerly was not always the case. It is frequently said that the value of money, and consequently that the price of all sorts of property, depends on the fiat of the Bank, by which it is capriciously elevated at one time and depressed at another. But the account previously given of the mode in which the issues of the Bank are regulated completely disproves such statements; and independently of this, every one who knows that the Bank must pay her notes in coin when presented, and that coin may be at all times obtained from the Mint without any charge, in exchange for bullion, must know that the very supposition of their being true involves a contradiction.

AN ACCOUNT OF THE NOTES, SECURITIES, BULLION, ETC., OF THE BANK OF ENGLAND FOR THE FIRST WEEK IN EACH MONTH, AS PUBLISHED WEEKLY IN THE "GAZETTE," FROM THE PASSING OF THE ACT 7 AND 8 VICT. C. 32, TO THE 5TH DECEMBER, 1846.

ISSUE DEPARTMENT.				
Week ending.	Notes.	Government Debt.	Other Securities.	Bullion. Gold.	Bullion. Silver.
	£	£	£	£	£
1844, December 7	27,817,505	11,015,100	2,984,900	12,223,394	1,593,611
1845, January 4	28,067,055	11,015,100	2,984,900	12,493,444	1,593,611
February 1	28,232,485	11,015,100	2,984,900	12,548,405	1,084,080
March 1	28,902,105	11,015,100	2,984,900	12,943,918	2,008,187
April 5	29,552,145	11,015,100	2,984,900	13,260,548	2,091,602
May 3	29,167,995	11,015,100	2,984,900	13,088,142	2,078,953
June 7	29,732,600	11,015,100	2,984,900	13,605,716	2,126,884
July 5	29,891,935	11,015,100	2,984,900	13,751,932	2,140,006
August 2	29,190,760	11,015,100	2,984,900	13,206,091	1,989,769
September 6	28,953,800	11,015,100	2,984,900	12,982,591	1,970,709
October 4	28,355,670	11,015,100	2,984,900	12,514,730	1,840,940
November 1	27,267,115	11,015,100	2,984,900	11,661,681	1,605,434
December 6	26,540,480	11,015,100	2,984,900	10,992,681	1,547,849
1846, January 3	26,675,925	11,015,100	2,984,900	11,093,869	1,582,056
February 7	26,698,620	11,015,100	2,984,900	11,140,210	1,558,410
March 7	27,079,270	11,015,100	2,984,900	11,417,640	1,662,220
April 4	27,181,980	11,015,100	2,984,900	11,460,445	1,731,535
May 2	27,072,295	11,015,100	2,984,900	11,279,190	1,793,185
June 6	28,325,000	11,015,100	2,984,900	12,192,710	2,152,290
July 4	29,322,200	11,015,100	2,984,900	12,905,074	2,417,126
August 1	29,292,320	11,015,100	2,984,900	12,854,618	2,437,702
September 5	29,760,870	11,015,100	2,984,900	13,057,997	2,792,873
October 3	29,359,795	11,015,100	2,984,900	12,632,794	2,727,001
November 7	28,237,885	11,015,100	2,984,900	11,724,111	2,511,774
December 5	28,269,105	11,015,100	2,984,900	11,702,647	2,506,453

BANKING DEPARTMENT.									
Week ending.	Capital.	Rest.	Deposits. Public.	Deposits. Private.	Seven Days' and other Bills.	Securities. Public.	Securities. Other.	Notes.	Coin.
	£	£	£	£	£	£	£	£	£
1844, Dec. 7	14,553,000	3,110,069	5,795,572	8,422,809	966,455	13,540,619	10,193,718	8,286,105	827,468
1845, Jan. 4	14,553,000	3,127,278	7,366,643	8,037,320	1,015,100	15,539,720	11,426,996	8,418,125	714,566
Feb. 1	14,553,000	3,208,944	2,892,124	8,713,090	1,085,065	13,541,692	8,052,751	7,642,235	646,145
Mar. 1	14,553,000	3,575,172	5,476,984	10,326,799	983,898	13,474,379	11,707,490	8,992,545	777,959
April 5	14,553,000	3,586,219	6,924,106	10,445,950	1,005,189	13,474,379	13,193,678	9,252,350	722,057
May 3	14,553,000	3,183,817	2,712,041	10,355,640	1,139,258	13,616,966	9,857,086	7,827,925	641,159
June 7	14,553,000	3,156,091	5,745,482	10,564,624	1,018,497	13,384,898	11,470,905	9,382,505	779,486
July 5	14,553,000	3,164,463	7,830,309	10,041,440	1,045,502	13,384,206	12,944,496	9,279,785	526,197
Aug. 2	14,553,000	3,338,246	3,215,363	10,960,214	1,072,280	13,321,844	11,463,606	7,849,785	502,851
Sept. 6	14,553,000	3,608,180	6,474,705	8,507,213	1,021,689	13,468,643	11,967,081	8,255,505	473,568
Oct. 4	14,553,000	3,629,978	8,703,497	8,167,961	1,088,160	13,348,643	15,188,965	7,095,615	509,573
Nov. 1	14,553,000	3,224,453	4,497,058	9,099,737	1,106,405	13,203,138	13,429,813	5,219,775	617,927
Dec. 6	14,553,000	3,209,394	8,110,401	9,022,019	1,004,471	13,201,866	16,224,712	5,945,840	526,870
1846, Jan. 3	14,553,000	3,254,660	9,369,650	8,350,465	959,067	13,201,072	16,262,596	6,418,510	605,547
Feb. 7	14,553,000	3,402,787	5,054,438	13,912,445	963,688	13,137,047	22,008,661	6,265,625	687,025
Mar. 7	14,553,000	5,757,708	6,502,355	17,828,778	898,176	13,136,440	22,118,987	7,576,625	707,965
April 4	14,553,000	3,799,508	7,074,026	16,768,047	965,446	13,136,440	22,068,631	7,316,415	643,541
May 9	14,553,000	3,326,540	2,578,451	16,790,880	905,730	13,303,065	17,901,148	6,408,470	661,418
June 6	14,553,000	3,379,044	5,753,512	15,927,013	852,008	12,988,065	18,321,641	8,408,180	686,801
July 4	14,553,000	3,424,178	7,794,200	14,402,460	887,364	12,987,142	18,145,319	9,208,690	625,651
Aug. 1	14,553,000	3,597,679	2,793,610	13,449,388	948,423	12,961,735	14,068,257	8,796,675	510,223
Sept. 5	14,553,000	3,804,479	7,818,919	8,557,109	935,830	12,961,735	12,523,550	9,281,695	512,957
Oct. 3	14,553,000	3,886,985	9,776,195	8,107,143	980,793	12,961,860	15,086,775	8,809,150	456,331
Nov. 7	14,553,000	3,468,352	5,428,783	8,281,024	1,019,610	12,808,119	12,153,009	7,264,820	524,621
Dec. 5	14,553,000	3,432,203	8,612,488	8,303,523	895,483	12,807,417	13,853,212	8,402,300	753,768

Connection with Government and the Public.—The Bank of England conducts the whole banking business of the British government. "It acts not only," says Dr. Smith "as an ordinary bank, but as a great engine of state. It receives and pays the greater part of the annuities which are due to the creditors of the public; it circulates Exchequer bills; and it advances to government the annual amount of the land and malt taxes, which are frequently not paid till some years thereafter."

Advances by the Bank in Discounts, etc.—The greater part of the paper of the Bank has generally been issued in the way of advances or loans to government, upon security of certain branches of the revenue, and in the purchase of Exchequer bills and bullion; but her issues through the medium of discounts to individuals have, notwithstanding, been at all times considerable, while during war, and in periods of distress, they have been occasionally very great. Generally speaking, however, the directors do not think it advisable to enter into competition with private bankers in the transacting of ordinary banking business, or in the discounting of mercantile paper. Mr. Horsley Palmer is decidedly of opinion that all banking business, apart from the issue of notes, is better transacted by private bankers than by public bodies.—*Min. of Evidence, Report of* 1832, p. 37. He also thinks that were the Bank to come fairly into competition at all times with the private bankers and other individuals in discounting, it would be very apt to lead, every now and then, to an excess of the currency, and a fall of the exchange, producing fluctuations that could not fail to be injurious. At present, therefore, and generally since the peace, the rate of interest charged by the Bank for loans has been somewhat above the market rate. The consequence is, that, in ordinary periods, very few applications are made to her for discounts. But, at the same time, every one who has any reasonable security to offer, knows where they may always be had; while the rate of interest charged by the Bank

necessarily forms a *maximum* rate which no other establishment can exceed. When, however, any circumstances occur to occasion a pressure in the money market, or a difficulty of obtaining accommodations in the usual channels, the market rate of interest immediately rises to the rate fixed by the Bank; and on such occasions the private bankers, and the public generally, resort to the Bank for aid. She then becomes, as it were, a *bank of support;* and has, as such, on many trying occasions, particularly in 1793, 1815 and 1816, 1825–26, and 1838, rendered essential service to public credit, and to the commercial interests of the country. The usual limited amount of the Bank's discounts does not, therefore, proceed, as has been absurdly enough stated, from any indisposition on the part of the directors to render every assistance in their power to the commercial classes, but is, in fact, the effect of such disposition. They consider, and we believe justly, that, except under peculiar circumstances, the business of discounting and banking is best conducted by private parties; and that by abstaining from coming into competition with them they are better able to act as a bank of support in seasons of distress and difficulty. This is not to neglect the interests of the mercantile classes, but to promote them in the best and most efficient manner, even though it should be at the expense of the Bank.

At the same time, however, it must be admitted that the interference of the Bank in assisting the commercial interest is a matter that requires the greatest consideration, and that it can only be safely undertaken under very peculiar circumstances. It should always be borne in mind that however a drain for gold may originate, the fact of its existence is of itself a conclusive proof that gold is more valuable abroad than at home, and consequently that the currency is redundant, and ought to be diminished. Under such circumstances, it is the imperative duty of the directors, in order to provide for the safety of the Bank, to prevent the vacuum caused by the exchange of bullion for notes from being again filled up by the issue of fresh notes. This may be done in various ways; but the best and surest way is by raising the rate of discount so as to lessen the number of applicants for loans.—*See* Post. It is at such periods, however, that the applications for assistance are the most urgent; and it is exceedingly difficult to yield to them, and at the same time to enforce that systematical and continuous reduction of the issues that is now indispensable to reduce the currency to its proper level, and to restore the exchange to par. Unquestionably the Bank allowed the stock of bullion in her coffers to be reduced in 1839 a great deal too low. And though, perhaps, as things turned out, less hardship was, in the end, inflicted on individuals than if the directors had adhered more to the stern path of duty, still it is extremely hazardous to trust in matters of such vast importance to the chapter of accidents; and we incline to think that in this, as in most other cases, the safest plan, or the systematic reduction of the issues whenever the exchange becomes unfavorable, is that also which, speaking generally, is most advantageous to all classes. And this, as already seen, is now all but imperative on the Bank.

In 1839, and we believe, also, on a previous occasion, the Bank negotiated credits abroad, and endeavored to restore the exchange to par by selling bills on the Continent. The policy of this device gave rise to a good deal of discussion at the time; but in the particular cases it appears to us to have been most judicious; and we incline, also, to think that under the old system the same course might and should have been followed on various occasions. This device is now less necessary; but we may still easily conceive occasions when it might be advantageous. What merchants want during an adverse exchange is good foreign bills, it being only in default of such that they export bullion; and the Bank, by supplying them with such bills, and getting, of course, her notes in exchange, is able to diminish her issues quite as effectually as if her notes were sent in for bullion. Another advantage of this plan is, that no one knows when it is in operation, and, consequently, that it goes far to obviate that internal discredit and alarm that are apt to be produced when the stock of bullion in the Bank is reduced unusually low. In fact, had the Bank not acted, in part at least, on this plan in 1839, the probability is that she must have suspended payments. No doubt the Bank would be exposed, if she adopted this plan, to the contingency of losing by her foreign securities in the event of the breaking out of hostilities, or of the occurrence of any event by which their value might be reduced. These events may, however, be in general foreseen and provided against; and if the Bank's investments were judiciously made, not in one only, but in several quarters, the risk they would involve does not appear to be at all equivalent to the advantage. Perhaps, as the law now stands, there may be legal objections to the Bank's holding foreign securities; but if it be expedient that she should do so, the law might be easily altered. The amount of the discounts of private paper at the Bank and her branches varies, as already seen, greatly in different periods; and depends, indeed, wholly on contingent and accidental circumstances. Thus, on the 1st of January, 1839, the bills discounted in London amounted to only £296,000, whereas on the 3d of December of the same year they amounted to £3,926,000. The annual average loss by bad debts on the discounts of the Bank of England in London, from 1791 to 1831, both inclusive, was £31,698.—*Appendix to Rep. on Bank Charter*, No. 60.

Advances to Government.—These are made on account of the produce of taxes not yet received, and on the security of the Exchequer bills, etc. They varied, from 1792 down to 1810, from about £10,000,000 to about £16,000,000. During the remainder of the war, and down to 1820, they were a good deal larger; but in 1819 provision was made for reducing the amount of these advances; and they do not at present, excluding the permanent advance on account of the dead weight, exceed a fourth part of their amount in 1820. They are represented by the Exchequer bills and deficiency bills in the hands of the Bank.

Balances of Public Money.—In point of fact, however, a very large part of these advances has been nominal only, or has been virtually canceled by the balances of public money in the hands of the Bank. Thus, from 1806 to 1810, both inclusive, the average advances to government amounted to £14,492,970. But the average balance of public money in possession of the Bank during the same period amounted to about £11,000,000; so that the real advance was equal only to the difference between these two sums, or to about £3,500,000. This statement completely negatives, as Mr. Tooke has justly stated, the supposition so commonly entertained and reasoned upon as a point beyond doubt, that the Bank was rendered, by the restriction, a mere engine in the hand of government for facilitating its financial operations.—*First Letter to Lord Grenville*, p. 64. The Bank being enabled to employ the greater part of the balances of public money in her hands as capital, they have formed one of the main sources of the profit she has derived from her transactions with the public. This subject was brought very prominently forward in the Second Report of the Committee of the House of Commons on Public Expenditure in 1807. And it was agreed in the same year that the Bank should, in consideration of the advantages derived from the public balances, continue the loan of £3,000,000 made to government in 1800 for 6 years without interest, on the same terms, till 6 months after the signature of a definitive treaty of peace. In 1816 this sum was finally incorporated with the debt due by government to the Bank, at an interest of 3 per cent.

Management of Public Debt.—Previously to 1786, the Bank received an allowance on this account; that is, for trouble in paying the dividends, superintending the transfer of stock, etc., of £562 10*s.* a million. In 1786 this allowance was reduced to £450 a million, the Bank being, at the same time, entitled to a considerable allowance for her trouble in receiving contributions on loans, lotteries, etc. This, however, though long regarded as a very improvident arrangement on the part of the public, was acquiesced in till 1808, when the allowance on account of management was reduced to £340 per million on £300,000,000 of the public debt, and to £300 per million on all that it exceeded that sum, exclusive of some separate allowances for annuities, etc. The impression, however, was still entertained that the allowances for management should be further reduced. In consequence, the act 3 & 4 Will. 4, c. 98, directed that £120,000 a year should be deducted from their amount; and the late act, the 7 & 8 Vict. c. 32, directs that this deduction shall be increased to £180,000. During the year ending the 5th of January, 1846, the Bank received £93,111 19*s.* 10*d.* for the management of the public debt and annuities. It should be observed that the responsibility and expense incurred by the Bank in managing the public debt are very great. The temptation to the commission of fraud in transferring stock from one individual to another, and in the payment of the dividends, is well known; and notwithstanding the skillfully devised system of checks adopted by the Bank for its prevention, she has frequently sustained very great losses by forgery and otherwise.

In 1803 the Bank lost, through a fraud committed by one of her principal cashiers, Mr. Astlett, no less than £349,000; and the forgeries of Fauntleroy the banker cost her a still larger sum. At an average of the ten years ending with 1831, the Bank lost, through forgeries on the public funds, £40,204 a year.—*Report on Bank Charter, Append.*, p. 165. The total sums paid by the public to the Bank on account of the loans raised, Exchequer bills funded, transfer of 8½ per cent. stock, etc., from 1793 to 1820, both included, amounted to £426,795 1*s.* 11*d.*—*Parliamentary Paper*, No. 81, Sess. 1822.

Dead Weight.—Besides the transactions alluded to, the Bank entered, on the 20th of March, 1823, into an engagement with government with respect to the public pensions and annuities, or, as they have been more commonly termed, the *dead weight*. At the end of the war, the naval and military pensions, superannuated allowances, etc., amounted to above £5,000,000 a year. They would, of course, have been gradually lessened and ultimately extinguished by the death of the parties. But it was resolved in 1822 to attempt to spread the burden equally over the whole period of *forty-five* years, during which it was calculated the annuities would continue to decrease. To effect this purpose, it was supposed that, upon government offering to pay £2,800,000 a year for forty-five years, capitalists would be found who would undertake to pay the entire annuities, according to a graduated scale previously determined upon, making the first year a payment of £4,900,000, and gradually decreasing the payments until the forty-fifth and last year, when they were to amount to only £300,000. This supposition was not, however, realized. No capitalists were found willing to enter into such distant engagements. But in 1823 the Bank agreed, on condition of receiving an annuity of £585,470 for *forty-four* years, commencing on the 5th of April, 1823, to pay, on account of the pensions, etc., at different specified periods between the years 1823 and 1828, both inclusive, the sum of £13,089,419. —4 *Geo.* 4, c. 22.

Rate of Discount.—The Bank discounted private bills at 5 per cent. during nearly the whole period from her establishment till 1824, when the rate was reduced to 4 per cent.

AN ACCOUNT OF THE MINIMUM RATE OF DISCOUNT CHARGED BY THE BANK OF ENGLAND, IN LONDON, FROM 1694 TO 1855.

From Aug. 5, 1694, to Aug. 30, 1694, on foreign bills		8	per cent.
From Aug. 30, 1694, to Jan. 16, 1695, on "		4½	per cent.
From Oct. 24, 1694, to Jan. 16, 1696, on inland bills		6	per cent.
From Jan. 16, 1695, to May 16, 1695, on foreign bills		6	per cent.
From Jan. 16, 1695, (to customers of the bank) do.		4	per cent.
From Jan. 16, 1695, to July 26, 1716, on inland bills		6	per cent.
From May 19, 1696, to Feb. 28, 1704, on foreign bills		4	per cent.
From " on Foreign bills, not payable at the bank		5	per cent.
From Feb. 28, 1704, to June 23, 1710, on foreign bills		6	per cent.
From June 23, 1710, to July 26, 1710, on for. and inland do.		4	per cent.
From July 26, 1716, to April 30, 1719, on bills and notes		5	per cent.
From April 30, 1719, to Oct. 27, 1720, on bills		5	per cent.
From Oct. 27, 1720, to Aug. 25, 1722, on "		4	per cent.
From Aug. 25, 1722, to Oct. 18, 1749, on inland bills		6	per cent.
From Aug. 25, 1722, to Oct. 18, 1745, on foreign bills		4	per cent.
From Oct. 18, 1749, to Dec. 12, 1744, on "		5	per cent.
From Dec. 12, 1744, to May 1, 1745, on " (15 d. to run)		6	per cent.
From Dec. 12, 1744, to May 1, 1746, on inland bills		5	per cent.
From May 1, 1746, to April 5, 1773, on foreign bills		5	per cent.
From May 1, 1746, to June 20, 1822, on bills and notes (35 days to run)		4	per cent.
From June 20, 1822, to Dec. 13, 1825, on "		5	per cent.
From Dec. 13, 1825, to July 5, 1827, on "		5	per cent.
From July 5, 1827, to July 11, 1836, on "		4	per cent.
From July 21, 1836, to Sept. 1, 1836, on "		4½	per cent.
From Sept. 1, 1836, to July 15, 1838, on "		5	per cent.
From Feb. 13, 1838, to May 16, 1839, on "		4	per cent.
From May 16, 1839, to June 20, 1839, on "		5	per cent.
From June 20, 1839, to Aug. 1, 1839, on "		5½	per cent.
From Aug. 1, 1839, to Jan. 23, 1840, on "		6	per cent.
From Jan. 23, 1840, to Oct. 15, 1840, on 65 day bills		5	per cent.
From Oct. 15, 1840, to June 3, 1841, on 95 day bills		5	per cent.
From June 3, 1841, to April 7, 1842, on "		5	per cent.
From April 7, 1842, to Sept. 5, 1844, on "		4	per cent.
From Sept. 5, 1844, to Mar. 18, 1845, on bills		2½	per cent.
From Sept. 5, 1844, to Mar. 13, 1845, on notes		3	per cent.
From Mar. 13, 1845, to Oct. 16, 1845, on minimum rate		3½	per cent.
From Oct. 16, 1845, to Nov. 6, 1845, on "		3	per cent.
From Nov. 6, 1845, to Aug. 17, 1846, on "		3½	per cent.
From Aug. 17, 1846, to Jan. 14, 1847, on "		3	per cent.
From Jan. 14, 1847, to Jan. 21, 1847, on "		3½	per cent.
From Jan 21, 1847, to April 8, 1847, on "		4	per cent.
From April 8, 1847, to Aug. 5, 1847, on "		5	per cent.
From Aug. 5, 1847, to Sept. 23, 1847, on "		5½	per cent
From Sept. 23, 1847, to Oct. 25, 1847, on "		5	per cent.
From Oct. 25, 1847, to Nov. 22, 1847, on "		8	per cent.
From Nov. 22, 1847, to Dec. 2, 1847, on "		7	per cent.
From Dec. 2, 1847, to Dec. 23, 1847, on "		6	per cent.
From Dec. 23, 1847, to Jan. 27, 1848, on "		5	per cent.
From Jan. 27, 1848, to June 15, 1848, on "		4	per cent.
From June 15, 1848, to Nov. 2, 1848, on "		3½	per cent.
From Nov. 2, 1848, to Nov. 23, 1849, on "		3	per cent.
From Nov. 23, 1849, to Dec. 26, 1850, on "		2½	per cent.
From Dec. 26, 1850, to Jan. 1, 1852, on "		2	per cent.
From Jan. 1, 1852, to April 22, 1852, on "		2½	per cent.
From April 22, 1852, to Jan. 6, 1853, on "		2	per cent.
From Jan. 6, 1853, to Jan. 20, 1853, on "		2½	per cent.
From Jan. 20, 1853, to June 2, 1853, on "		3	per cent.
From June 2, 1853, to Sept. 1, 1853, on "		3½	per cent.
From Sept. 1, 1853, to Sept. 15, 1853, on "		4	per cent.
From Sept. 15, 1853, to Sept. 29, 1853, on "		4½	per cent.
From Sept. 29, 1853, to May 11, 1854, on "		5	per cent.
From May 11, 1854, to Aug. 3, 1855, on "		5½	per cent.
From Aug. 3, 1854, to April 5, 1855, on "		5	per cent.
From April 5, 1855, to May 3, 1855, on "		4½	per cent.
From May 3, 1855, to June 14, 1855, on "		4	per cent.
From June 14, 1855, to Sept. 6, 1855, on "		3½	per cent.
From Sept. 6, 1855, to Sept. 13, 1855, on "		4	per cent.
From Sept. 13, 1855, to Sept. 27, 1855, on "		4½	per cent.
From Sept. 27, 1855, to Oct. 4, 1855, on "		5	per cent.
From Oct. 4, 1855, to Oct. 18, 1855, on "		5½	per cent.
From Oct. 18, 1855, on 65 day bills		6	per cent.
From Oct. 18, 1855, on 95 day bills		7	per cent.

When the currency happens, from any cause, to become redundant, its contraction, always a matter of some difficulty, is to be effected only (if she hold no foreign securities) by the sale of bullion or public securies by the Bank, or by a diminution of the usual discounts, or both. But were the Bank to throw any considerable amount of public securities upon the market, the circumstance would be apt to excite alarm; and, even though it did not, it would be difficult to dispose of them without a heavy loss. Hence, when a reduction is determined upon, it is most commonly effected, in part at least, by a contraction of discounts; and it is plain that such contraction can not be made except by rejecting altogether some of the bills sent in for discount, or, which is in effect the same thing, by shortening their dates, or by raising the rate of interest, so that fewer may be sent in. Of these methods, the last seems to be in every respect the most expedient. When bills are rejected for no other reason than that the currency may be contracted, the greatest injury is done to individuals, who, entertaining no doubt of getting their usual accommodation from the Bank, may have entered into transactions which they are thus deprived of the means of completing. When the reduction is made by raising the rate of interest, it principally affects those who are *best able to bear it*; at the same time that its operation, instead of being, like the rejection of bills, arbitrary and capricious, is uniform and impartial. It does, therefore, seem that the Bank should seldom or

never throw out good bills that she may contract her issues; but that, when she has resolved upon such a measure, she should, provided the contraction can not be made by the sale of bullion and public securities, raise the rate of discount so as to lessen the demands upon her for loans.

The dividends on bank stock, from the establishment of the company to the present time, have been as follows:

Years.		Dividend.
	1694	8 per cent.
	1697	9 "
	1708 to 1729	Varied from 9 to 5½ per cent.
Lady-day	1730	6 "
Michaelmas	1730	5½ "
Lady-day	1731	6 "
Michaelmas	1731	5½ "
Lady-day	1732	6 "
Michaelmas	1732	5½ "
Lady-day	1747	5 "
"	1753	4½ "
Michaelmas	1764	5 "
"	1767	5½ "
"	1781	6 "
Lady-day	1788	7 "
"	1807	10 "
"	1823	8 "
"	1889	7 "

Previously to 1759, the Bank of England issued no notes for less than £20. She began to issue £10 notes in 1759; £5 notes in 1793; and £1 and £2 notes in March, 1797. The issue of the latter may be said to have ceased in 1821, though they were again issued on the emergency in 1825.

Interest on Deposits.—The Bank of England does not allow, either in London or at her branches, any interest on deposits; but it would be exceedingly desirable if she could safely make some alteration in this respect. The want of the power readily to invest small sums productively, and at the same time with perfect security, tends to weaken the motives to save and accumulate. Nothing has contributed more to diffuse a spirit of economy, and a desire to save, among all classes of the population of Scotland, than the readiness with which deposits of small sums are received by banks of undoubted solidity in that part of the country, and the allowance of interest upon them.—*See* SCOTCH BANKS. This advantage is now, however, in some degree secured in England, not only by the institution of savings banks, but by the joint-stock banks that have been opened in most parts of the country. The receiving of deposits is, indeed, an essential part of the proper business of a bank. "A banker is a dealer in capital, an intermediate party between the borrower and the lender. He borrows of one party and lends to another; and the difference between the terms at which he borrows and those at which he lends is the source of his profit. By this means he draws into active operation those small sums of money which were previously unproductive in the hands of private individuals, and at the same time furnishes accommodation to another class, who have occasion for additional capital to carry on their commercial transactions."—*See* GILBART'S *Practical Observations on Banking*, p. 52.

In further corroboration of what has now been stated, it may be mentioned that it is estimated by the best authorities that the deposits in the Scotch banks may amount at present (1846) to about £30,000,000, of which more than a half consists of sums of from £10 to £200! This is a most satisfactory proof of the vast importance of the system. Perhaps it is not going too far to affirm that but for the receiving of deposits by the banks, and the allowing of interest upon them, not a third part of the sums under £200, and not a half of those above it, would ever have been accumulated.—*See* SCOTCH BANKS. We are not, however, able to say whether the Bank of England could offer interest on deposits without having so large a sum forced upon her as might in periods of distrust seriously endanger her stability. And it were better that the system should continue as at present, than that any risk of this sort should be incurred. Since 1826, the private deposits in the hands of the Bank have been greatly augmented. Their increase is mainly ascribable to the preceding panic, and the loss that was then occasioned by the failure of private banks.

Method of conducting Business at the Bank.—All accounts kept at the Bank with individuals are termed *drawing accounts;* those with whom they are opened being entitled to draw checks upon them, and to send the bills and drafts in their favor to be presented by the Bank, exactly as if they dealt with private bankers. There is no fixed sum with which an individual must open a drawing account; nor is there any fixed sum which the Bank requires him to keep at his credit to indemnify her for her trouble in answering his drafts, etc. Mr. Horsley Palmer gave in his evidence, in 1832, the following statement as to the facilities granted by the Bank in drawing accounts since 1825: 1. The Bank receives dividends by power of attorney for all persons having drawing accounts at the Bank. 2. Dividend warrants are received at the drawing office for ditto. 3. Exchequer bills and other securities are received for ditto; the bills exchanged, the interest received, and the amount carried to their respective accounts. 4. Checks may be drawn for £5 and upward, instead of £10, as heretofore. 5. Cash-boxes taken in, contents unknown, for such parties as keep accounts at the Bank. 6. Bank-notes are paid at the counter, instead of drawing tickets for them on the pay clerks, as heretofore. 7. Checks on city bankers paid in by three o'clock may be drawn for between four and five; and those paid in before four will be received and passed to account the same evening. 8. Checks paid in after four are sent out at nine o'clock the following morning, received and passed to account, and may be drawn for as soon as received. 9. Dividend warrants taken in at the drawing office until five in the afternoon, instead of three as heretofore. 10. Credits paid in to account are received without the bank-book, and are afterward entered therein without the party claiming them. 11. Bills of exchange accepted payable at the Bank are payable with or without advice; heretofore with advice only. 12. Notes of country bankers payable in London are sent out the same day for payment. 13. Checks are given out in books, and not in sheets as heretofore.

A person having a drawing account *may* have a *discount account;* but no person can have the latter without, at the same time, having the former. When a discount account is opened, the signatures of the parties are entered in a book kept for the purpose, and powers of attorney are granted, empowering the persons named in them to act for their principals. No bill of exchange drawn in the country is discounted by the Bank *in London* under £20, nor London *note* under £100, nor for a longer date, under existing regulations, than three months. The number of holidays formerly kept at the Bank has recently been reduced about a half, in the view, as stated by the directors, of preventing the interruption of business. There are no holidays in the months of March, June, September, and December, excepting Christmas; Easter Monday and Tuesday are no longer kept.

We subjoin an account of the days for transferring stock, and when the dividends are due at the Bank of England, the South Sea House, and the East India House:

Transfer Days at the Bank.	Dividends due.
Bank Stock.—Tuesday, Wednesday, Thursday, and Friday	April 5.
3 per cent. Red.—Tuesday, Wednesday, Thursday, and Friday	Oct. 10.
3 per cent. 1726.—Tuesday, Wednesday, Thursday, and Friday	Jan. 5.
3 per cent. Cons.—Tuesday, Wednesday, Thursday, and Friday	July 5.

	Dividends due.
Long Annuity to Jan., 1860.—Tuesday, Wednesday, Thursday, and Friday	April 5. Oct. 10.
New 3½ per cent. Annuity.—Tuesday, Wednesday, Thursday, and Friday	Jan. 5.
New 5 per cent. Annuity.—Tuesday, Wednesday, Thursday, and Friday	July 5.
Annuities for terms of years, some payable on	April 5. Oct. 10.
Ditto, others on	Jan. 5. July 5.
Life Annuity, if transferred between January 5 and April 4, or between July 5 and October 9	Jan. 5. July 5.
Life Annuity, if transferred between April 5 and July 4, or between October 10 and January 4	April 5. Oct. 10.

At the South Sea House.

South Sea Stock.—Monday, Wednesday, and Friday	Jan. 5. July 5.
3 per cent. Old Annuity.—Monday, Wednesday, and Friday	April 5. Oct. 10.
3 per cent. New Annuity.—Tuesday, Thursday, and Saturday	Jan. 5. July 5.
3 per cent. 1751.—Tuesday and Thursday	

At the East India House.

India Stock.—Tuesday, Thursday, and Saturday	Jan. 5. July 5.
Interest on India bonds, due	Mar. 31. Sept. 30.

Branch Banks of the Bank of England.—The Bank of England, as already observed, has within these few years established branch banks at several of the most considerable towns throughout the country. The mode and terms of conducting business at these establishments have been described as follows: "The branch bank at Swansea (and the same is true of those established in other places) is to be a secure place of deposit for persons having occasion to make use of a bank for that purpose; such persons are said to have *drawing accounts:* to facilitate to the mercantile and trading classes the obtaining discounts of good and unexceptionable bills, founded upon real transactions, two approved names being required upon every bill or note discounted; these are called *discount accounts.* The applications of parties who desire to open discount accounts at the branch are forwarded to the parent establishment for approval, and an answer is generally received in about ten days. When approved, good bills may be discounted at the branch without reference to London. Bills payable at Swansea, London, or any other place where a branch is established, are discounted under this regulation. The dividends on any of the public funds, which are payable at the Bank of England, may be received at the branch, by persons who have opened 'drawing accounts,' after signing powers of attorney for that purpose, which the branch will procure from London. No charge is made in this case, except the expense of the power of attorney and the postages incurred in transmitting it. Purchases and sales of every description of government securities are effected by the branch at a charge corresponding to that made by the local bankers where the branch is situated. A commission, including brokerage in London, and all expenses of postage, is charged on paying at the Bank of England bills accepted by persons having drawing accounts at Swansea, such bills to be advised by the branch; also for granting letters of credit on London, or on the other branches. The branch grants bills on London, payable at seven days' date, without acceptance, for sums of £10 and upward. Persons having drawing accounts at Swansea may order money to be paid at the Bank in London to their credit at Swansea, and *vice versâ*, at a charge of 6*d.* in lieu of postage. The branch may be called upon to change any notes issued and *dated* at Swansea; but they do not change the notes of the Bank in London, nor receive them in payment, unless as a matter of courtesy where the parties are known. Bank post-bills, which are accepted and due, are received at the branch from parties having drawing accounts, and taken to account without any charge for postage; but unaccepted bank post-bills, which must be sent to London, are subject to the charge of postage, and taken to account when due. No interest is allowed on deposits. No advance is made by the branch upon any description of landed or other property, nor is any account allowed to be overdrawn. The notes are the same as those issued by the parent establishment, except being dated Swansea, and made payable there and in London. No note issued exceeds the sum of £500, and none are for a less amount than £5."

Bank-notes to be legal Tender, except at the Bank and Branch Banks.—From and after the 1st of August, 1834, unless and until Parliament shall otherwise direct, a tender of a note or notes of the Governor and Company of the Bank of England, expressed to be payable to bearer on demand, shall be a legal tender to the amount expressed in such note or notes, and shall be taken to be valid as a tender to such amount for all sums above £5 on all occasions on which any tender of money may be legally made, so long as the Bank of England shall continue to pay on demand their said notes in legal coin: provided always, that no such note or notes shall be deemed a legal tender of payment by the Governor and Company of the Bank of England, or any branch bank of the said governor and company; but the said governor and company are not to become liable or be required to pay and satisfy, at any branch bank of the said governor and company, any note or notes of the said governor and company not made specially payable at such branch bank; but the said governor and company shall be liable to pay and satisfy at the Bank of England in London all notes of the said governor and company, or of any branch thereof.—§ 6.

AN ACCOUNT OF THE AVERAGE MARKET PRICE OF BULLION IN EACH YEAR, FROM 1800 TO 1821 (TAKEN FROM OFFICIAL DOCUMENTS); OF THE AVERAGE VALUE PER CENT. OF THE CURRENCY, ESTIMATED BY THE MARKET PRICE OF GOLD FOR THE SAME PERIOD; AND OF THE AVERAGE DEPRECIATION PER CENT.

Years.	Average Price of Gold per oz.	Average per Cent. of the Value of the Currency.	Average Depreciation per Cent.
	£ s. d.	£ s. d.	£ s. d.
1800	3 17 10½	100 0 0	Nil.
1801	4 5 0	91 12 4	8 7 8
1802	4 4 0	92 14 2	7 5 10
1803	4 0 0	97 6 10	2 13 2
1804	4 0 0	97 6 10	2 13 2
1805	4 0 0	97 6 10	2 13 2
1806	4 0 0	97 6 10	2 13 2
1807	4 0 0	97 6 10	2 13 2
1808	4 0 0	97 6 10	2 13 2
1809	4 0 0	97 6 10	2 13 2
1810	4 10 0	86 10 0	13 9 0
1811	4 4 6	92 3 2	7 16 10
1812	4 15 6	79 5 3	20 14 9
1813	5 1 0	77 2 0	22 18 0
1814	5 4 0	74 17 6	25 2 6
1815	4 13 6	83 5 0	16 14 3
1816	4 13 6	83 5 0	16 14 3
1817	4 0 0	97 6 10	2 13 2
1818	4 0 0	97 6 10	2 13 2
1819	4 1 6	95 11 0	4 9 0
1820	3 19 11	97 8 0	2 12 0
1821	3 17 10½	100 0 0	Nil.

AN ACCOUNT OF THE PROFITS OF THE BANK OF ENGLAND IN THE YEAR ENDING THE 29TH OF FEBRUARY, 1832; STATING THE DESCRIPTION OF THE SECURITIES HELD BY THE BANK, AND THE SOURCES FROM WHICH THE SAID PROFITS HAVE ACCRUED.—*No.* 15, *Append. to Report.*

Interest on commercial bills	£130,095
Interest on Exchequer bills	204,109
Annuity for 45 years (the dead-weight account)	451,415
Interest on capital received from government	446,502
Allowance received for management of the public debt	251,806
Interest on loans on mortgages	60,684
Interest on stock in the public funds	15,075
Interest on private loans	56,941
Profit on bullion, commission, rent, receipts on discounted bills unpaid, management of the business of the Banks of Ireland, of Scotland, and Royal Bank of Scotland, and sundry items	71,859
	£1,689,170

AN ACCOUNT OF ALL DISTRIBUTIONS MADE BY THE BANK OF ENGLAND AMONG THE PROPRIETORS OF BANK STOCK, WHETHER BY MONEY PAYMENTS, TRANSFER OF 5 PER CENT. ANNUITIES, OR OTHERWISE, UNDER THE HEADS OF BONUS, INCREASE OF DIVIDEND, AND INCREASE OF CAPITAL, BETWEEN THE 25TH OF FEBRUARY, 1797, AND 31ST OF MARCH, 1832, IN ADDITION TO THE ORDINARY ANNUAL DIVIDEND OF 7 PER CENT. ON THE CAPITAL STOCK OF THAT CORPORATION, EXISTING IN 1797, INCLUDING THEREIN THE WHOLE DIVIDEND PAID SINCE JUNE, 1816, ON THEIR INCREASED CAPITAL; STATING THE PERIOD WHEN SUCH DISTRIBUTIONS WERE MADE, AND THE AGGREGATE AMOUNT OF THE WHOLE.

Denomination and Periods of Distribution.	Amount.
In June, 1799: £10, per cent. bonus in 5 per cents. 1797, on £11,642,400, is	£1,164,240
May, 1801: £5 per cent. ditto, in Navy 5 per cents. ditto	582,120
November, 1802: £2 10s. per cent. ditto, ditto, ditto	291,060
October, 1804: £5 per cent. ditto, cash, ditto	582,120
October, 1805: £5 per cent. ditto, ditto, ditto	582,120
October, 1806: £5 per cent. ditto, ditto, ditto	582,120
From April, 1807, to October, 1822, both inclusive — Increase of dividends at the rate of £3 per cent. per annum, on £11,642,400, is, 16 years	5,588,352
From April, 1823, to October, 1829, both inclusive — Increase of dividends at the rate of £1 per cent. per annum, on £11,642,400, is, 7 years	814,968
In June, 1816 — Increase of capital at 25 per cent., is	2,910,600
From October, 1816, to October, 1822, both inclusive — Dividend at the rate of £10 per cent. per annum on £2,910,600, increased capital, is, 6½ years	1,901,300
From April, 1823, to October, 1831, both inclusive — Dividend at the rate of £8 per cent. per annum on £2,910,600, increased capital, is, 9 years	2,095,632
Aggregate amount of the whole	£17,318,070
Annual dividend payable on Bank stock in 1797, on a capital of £11,642,400 at the rate of £7 per cent. per annum	£814,968
Annual dividend payable since June, 1816, on a capital of £14,553,000, to October, 1822, inclusive, at the rate of £10 per cent. per annum	£1,455,300
Annual dividend payable from April, 1823, to the 31st of March, 1832, both inclusive, on a capital of £14,553,000 at the rate of £8 per cent. per annum	£1,164,240

AN ACCOUNT OF THE NOTES, POST-BILLS, ETC., OF THE BANK OF ENGLAND IN CIRCULATION, ON THE 28TH OF FEBRUARY IN EACH YEAR, FROM 1698 TO 1792, BOTH INCLUDED, AS NEAR AS THE SAME CAN BE MADE UP.

Year.	28th February.	Year.	28th February.	Year.	28th February.	Year.	28th February.
	£		£		£		£
1698	1,221,290	1732	2,305,640	1746	3,383,720	1770	5,237,210
1699	743,860	1733	3,516,110	1747	4,107,423	1771	6,322,780
1700	998,240	1734	3,292,830	1748	3,894,650	1772	5,962,160
1701	998,860	1735	3,734,480	1749	3,737,110	1773	6,037,060
1702	920,780	1736	3,076,850	1750	3,904,970	1774	7,550,780
1703	935,760	1737	3,388,180	1751	4,022,160	1775	9,135,980
1704	961,980	1738	4,574,920	1752	4,444,960	1776	8,699,720
1705	856,010	1739	4,162,500	1753	4,401,680	1777	8,712,230
1706	996,840	1740	3,998,280	1754	4,002,870	1778	7,440,330
1707	959,920	1741	4,451,720	1755	3,950,650	1779	9,012,610
1708	648,080	1742	4,251,606	1756	4,106,790	1780	8,410,790
1709	707,470	1743	4,385,060	1757	5,319,130	1781	7,002,450
1710	661,580	1744	4,205,070	1758	5,320,590	1782	8,028,890
1711	677,510	1745	4,627,990	1759	4,586,840	1783	7,075,090
1712	739,920	1746	4,907,750	1760	4,969,250	1784	6,202,760
1713	1,221,880	1747	5,215,010	1761	5,632,350	1785	5,923,060
1714	923,040	1748	4,760,280	1762	5,741,090	1786	7,681,960
1715	972,160	1749	4,347,270	1763	5,999,910	1787	8,329,840
1716	1,460,060	1740	4,550,080	1764	5,501,800	1788	9,971,130
1717	2,058,150	1741	4,841,840	1765	5,316,070	1789	9,807,210
1718	2,782,420	1742	4,471,510	1766	5,617,570	1790	10,040,540
1719	1,807,010	1743	4,654,800	1767	5,510,990	1791	11,439,200
1720	2,466,380	1744	4,253,010	1768	5,778,990	1792	11,907,380
1721	2,244,280	1745	4,270,610	1769	5,707,190		

No previously published table of the circulation of the Bank of England extends further back than 1777; we are indebted to the Court of Directors for being able to supply this striking defect, and to exhibit for the first time the circulation of the Bank, from within four years of its establishment down to the present day.

STATEMENT EXHIBITING THE TOWN AND COUNTRY CIRCULATION, DEPOSITS, SECURITIES, BULLION, ETC., OF THE BANK OF ENGLAND, ON THE UNDERMENTIONED DAYS OF THE FOLLOWING YEARS.

Dates.	Notes in Circulation.		Deposits.	Total Liabilities.	Securities.	Bullion.	Total Assets.	Balance of Assets over Liabilities.
	In London.	In the Country.						
	£	£	£	£	£	£	£	£
1832, July 3	14,309,000	2,734,000	8,558,000	25,601,000	21,290,000	6,016,000	27,840,000	2,185,000
1833, January 1	14,298,000	2,778,000	12,725,000	29,801,000	21,047,000	10,026,000	31,973,000	2,172,000
July 2	15,783,000	3,150,000	12,836,000	31,778,000	22,683,000	11,391,000	34,074,000	2,296,000
1834, January 7	14,193,000	3,229,000	19,889,000	37,311,000	29,094,000	10,142,000	39,236,000	2,525,000
July 1	15,518,000	3,171,000	15,373,000	34,062,000	27,471,000	8,885,000	36,356,000	2,294,000
1835, January 5	15,850,000	3,155,000	17,894,000	36,933,000	30,933,000	6,838,000	37,771,000	2,872,000
July 7	14,081,000	3,329,000	17,702,000	35,112,000	31,445,000	6,536,000	37,981,000	2,869,000
1836, January 5	13,818,000	3,596,000	20,426,000	37,143,000	32,057,000	7,057,000	39,754,000	2,611,000
July 5	13,715,000	3,595,000	16,315,000	33,326,000	29,397,000	6,714,000	36,111,000	2,785,000
1837, January 3	13,023,000	4,074,000	16,078,000	33,775,000	32,447,000	4,221,000	36,668,000	2,893,000
July 4	13,149,000	3,735,000	10,257,000	27,141,000	24,589,000	5,577,000	30,166,000	3,025,000
1838, January 2	13,369,000	3,723,000	11,230,000	28,322,000	20,927,000	9,906,000	30,833,000	2,511,000
July 3	14,699,000	4,038,000	9,199,000	27,936,000	23,580,000	9,980,000	33,570,000	2,634,000
1839, January 1	13,461,000	4,008,000	11,827,000	28,856,000	22,877,000	8,048,000	31,425,000	2,569,000
July 2	13,442,000	4,169,000	7,489,000	25,100,000	24,061,000	3,976,000	27,737,000	2,637,000
1840, January 7	11,921,000	3,926,000	14,518,000	30,065,000	28,411,000	4,508,000	32,919,000	2,854,000
July 7	12,941,000	3,971,000	7,293,000	23,905,000	21,915,000	4,819,000	26,734,000	2,829,000
1841, January 5	11,650,000	3,971,000	8,479,000	24,100,000	22,850,000	4,063,000	26,913,000	2,813,000
July 6	12,357,000	4,167,000	14,728,000	31,252,000	28,947,000	5,319,000	34,266,000	3,014,000
1842, January 4	11,815,000	4,364,000	9,008,000	25,187,000	22,512,000	5,602,000	28,114,000	2,927,000
July 2	13,251,000	4,953,000	8,670,000	26,894,000	21,092,000	8,593,000	29,685,000	2,791,000
1843, January 7	13,304,000	5,214,000	16,534,000	35,052,000	26,706,000	10,932,000	37,638,000	2,586,000

A RETURN OF THE AVERAGE AGGREGATE AMOUNT OF PROMISSORY NOTES, PAYABLE TO BEARER ON DEMAND, IN CIRCULATION IN THE UNITED KINGDOM IN THE MONTHS OF JANUARY AND JULY, DISTINGUISHING THOSE CIRCULATED BY THE BANKS OF ENGLAND AND IRELAND, AND BY PRIVATE AND JOINT-STOCK BANKS IN ENGLAND, SCOTLAND, AND IRELAND, TOGETHER WITH THE BULLION IN THE BANK OF ENGLAND, FROM SEPTEMBER, 1833, TO JANUARY, 1843.

Dates.	England.				Scotland.	Ireland.		Total Issues in the United Kingdom.	Bullion in the Bank of England.
	Bank of England.	Private Banks.	Joint-stock Banks.	Unreturned.	Private and Joint-stock Banks.	Bank of Ireland.	Private and Joint-stock Banks.		
	£	£	£	£	£	£	£	£	£
1833, September	19,014,000	6,163,037	1,115,521	2,807,086	2,644,495	3,678,900	1,112,155	36,065,244	10,844,250
1834, January .	19,234,500	6,621,623	1,260,685	2,105,989	3,004,088	4,017,600	1,520,578	37,855,988	9,052,500
July	19,483,400	6,368,122	1,537,511	2,054,514	3,108,239	3,638,300	1,134,764	37,829,850	8,403,600
1835, January .	18,547,500	6,670,988	1,822,491	1,807,577	3,056,828	3,853,560	1,702,056	37,526,900	6,552,500
July	18,864,750	6,535,365	2,130,908	1,821,730	3,063,053	3,491,175	1,276,589	37,178,630	6,268,500
1836, January .	17,953,500	6,842,803	2,472,267	1,893,915	3,091,510	3,484,320	2,035,709	37,779,824	7,682,000
July	18,582,750	6,716,330	3,371,942	1,491,240	3,230,066	3,230,600	1,940,976	38,654,404	8,224,250
1837, January .	18,735,000	6,831,721	3,661,650	540,988	3,149,821	3,487,150	2,143,361	38,549,195	3,900,600
July	19,174,500	6,229,418	3,355,911	346,242	2,977,539	3,091,200	1,444,792	36,619,672	5,857,000
1838, January .	18,948,000	6,655,282	3,765,187	271,498	3,000,288	3,212,600	2,246,424	38,201,279	3,912,000
July	20,249,400	6,762,555	4,239,338	250,719	3,121,892	3,222,350	1,896,768	39,743,007	9,650,800
1839, January .	18,554,800	7,539,120	4,566,369	232,592	3,244,603	3,551,625	3,090,246	40,779,255	8,018,800
July	18,407,800	6,847,002	4,243,419	84,891	3,165,761	3,198,175	2,074,422	38,016,470	8,118,800
1840, January .	17,815,000	6,026,674	3,941,307	62,376	3,076,585	3,205,550	2,715,645	37,003,137	4,864,500
July	17,681,000	6,356,524	3,697,041	57,921	3,228,595	2,979,950	1,876,651	35,857,982	4,499,750
1841, January .	16,852,250	6,801,992	3,587,619	164,717	3,174,555	3,218,200	2,366,264	35,660,297	3,965,250
July	17,970,000	5,997,682	3,418,810	....	3,181,594	3,055,025	1,905,672	35,444,783	5,011,000
1842, January .	16,293,000	5,478,189	3,042,197	....	3,070,075	3,205,875	2,515,677	33,605,013	5,629,000
July	16,908,000	5,166,581	2,939,105	....	2,715,080	2,842,775	1,680,987	33,503,218	8,883,000
1843, January .	18,283,000	4,942,825	2,889,909	....	2,770,838	3,112,950	2,099,641	34,049,163	11,054,000

ACCOUNT OF THE CIRCULATION, DEPOSITS, SECURITIES, BULLION, AND SURPLUS (EXCLUSIVE OF CAPITAL) OF THE ASSETS OVER THE LIABILITIES OF THE BANK OF ENGLAND AT (OR AS NEAR THERETO AS THE ACCOUNTS CAN BE MADE UP) THE UNDER-MENTIONED DATES IN EACH OF THE FOLLOWING YEARS.

Dates.	Circulation.	Deposits.	Securities.	Bullion.	Rest or Surplus of Assets over Liabilities.
	£	£	£	£	£
1793, February 28	11,888,910	5,346,450	16,005,250	4,010,680	2,780,570
August 31	10,585,050	6,442,810	14,509,680	5,322,010	2,823,830
1794, February 28	10,744,020	7,891,810	14,524,550	6,087,110	2,875,830
August 30	10,286,730	5,955,710	12,440,450	6,770,110	2,994,080
1795, February 28	14,017,510	5,973,020	16,811,340	6,127,720	2,948,530
August 31	10,802,200	8,154,980	16,980,920	5,136,250	3,109,090
1796, February 28	10,729,520	5,702,300	17,139,840	2,530,630	3,247,500
August 31	9,246,790	6,656,320	17,025,470	2,122,950	3,245,310
1797, February 28	9,674,780	4,891,530	16,537,750	1,086,170	3,357,610
August 31	11,114,120	7,765,350	18,261,170	4,080,620	3,471,320
1798, February 28	13,095,830	6,148,900	16,799,500	5,828,940	3,383,710
August 31	12,180,610	8,300,720	17,849,640	6,546,100	3,414,410
1799, February 28	12,959,800	8,181,820	17,030,080	7,563,900	3,511,310
August 31	13,389,490	7,642,240	16,930,440	7,000,780	2,890,490
1800, February 28	16,844,470	7,002,680	21,024,050	6,144,250	3,661,150
August 31	15,047,180	8,335,060	22,138,420	5,150,450	3,900,630
1801, February 28	16,218,280	10,745,840	26,424,730	4,640,120	4,105,730
August 31	14,056,110	8,133,530	22,200,570	4,925,260	3,854,890
1802, February 28	15,156,830	6,868,210	21,050,820	4,152,050	4,067,050
August 31	17,097,680	9,739,140	27,731,360	8,891,750	4,166,370
1803, February 28	15,310,930	8,050,240	23,014,900	3,776,750	4,321,480
August 31	15,982,330	9,817,240	26,918,840	3,502,500	4,710,770
1804, February 29	17,077,830	8,676,630	26,998,970	3,372,140	4,610,450
August 31	17,153,800	9,716,530	26,526,080	5,879,190	4,836,450
1805, February 28	17,871,170	12,083,620	28,661,890	5,883,800	4,590,400
August 31	16,388,400	14,048,080	27,772,850	7,624,500	4,960,870
1806, February 28	17,730,120	9,980,790	26,591,070	5,087,190	4,867,350
August 31	21,027,470	9,636,330	29,479,100	6,215,020	5,024,320
1807, February 28	16,953,680	11,820,320	27,408,460	6,142,840	4,771,300
August 31	19,678,360	11,789,200	29,936,050	6,481,350	4,950,740
1808, February 29	18,188,860	11,961,060	27,884,080	7,855,470	5,088,750
August 31	17,111,200	13,012,510	29,244,090	6,015,940	5,136,200
1809, February 28	18,542,860	9,982,050	29,118,200	4,488,700	5,081,090
August 31	19,574,180	12,267,180	33,435,270	8,652,480	5,256,390
1810, February 28	21,019,600	12,457,810	33,373,530	5,501,410	5,403,080
August 31	24,793,090	13,617,520	40,973,770	8,191,850	5,754,110
1811, February 28	23,960,220	11,440,050	37,122,350	9,350,940	5,667,420
August 31	20,286,850	11,075,060	37,083,280	5,248,800	5,964,070
1812, February 29	23,408,820	11,595,200	38,026,290	2,988,190	6,005,960
August 31	25,026,880	11,848,910	38,176,120	8,099,270	6,399,600
1813, February 27	25,210,030	11,268,180	37,930,050	2,884,500	6,336,340
August 31	24,828,120	11,150,780	40,100,080	2,712,270	6,830,500
1814, February 24	24,801,080	12,455,460	41,989,010	2,204,480	6,987,800
August 31	28,968,290	14,849,940	48,345,960	2,097,680	7,225,410
1815, February 28	27,261,650	11,702,250	44,558,500	2,086,910	7,631,510
August 31	27,248,670	12,696,000	44,854,180	3,409,040	8,318,550
1816, February 29	27,018,620	12,388,890	45,401,910	4,649,880	8,039,680
August 31	26,758,720	11,856,380	47,279,540	7,592,780	6,227,220
1817, February 28	27,397,900	10,826,610	34,278,630	9,080,970	5,736,090
August 30	29,543,780	9,084,590	32,605,630	11,408,260	5,645,520
1818, February 28	27,770,970	7,997,550	30,905,330	10,055,460	5,192,270
August 31	26,202,150	7,927,780	32,370,760	6,363,160	4,044,940
1819, February 27	25,126,700	6,413,370	31,455,000	4,184,020	4,099,550
August 31	23,262,090	6,304,160	31,740,550	3,595,360	3,779,060
1820, February 29	23,484,110	4,093,550	30,187,490	4,911,050	3,520,980
August 31	24,290,840	4,420,910	29,846,120	8,211,080	3,836,950
1821, February 28	23,884,920	5,622,890	20,796,270	11,809,000	3,159,300
August 31	20,295,300	5,818,450	19,475,540	11,233,590	3,695,380

Dates.	Circulation.	Deposits.	Securities.	Bullion.	Rest or Surplus of Assets over Liabilities.
	£	£	£	£	£
1822, February 28	18,665,350	4,689,940	15,973,080	11,057,150	3,674,940
August 31	17,464,790	6,399,440	17,290,510	10,007,960	3,524,240
1823, February 28	18,592,240	7,181,100	18,319,730	10,384,230	3,130,620
August 30	19,221,240	7,827,350	17,407,370	12,658,240	3,067,020
1824, February 28	19,736,990	10,007,850	18,572,000	13,810,060	2,847,220
August 31	20,132,120	9,679,810	20,904,530	11,787,430	2,880,030
1825, February 28	20,753,760	10,168,780	24,051,330	8,779,100	2,807,890
August 31	19,398,840	6,440,560	25,106,030	3,634,920	2,930,950
1826, February 28	25,467,910	6,935,940	32,918,580	2,459,510	2,974,240
August 31	21,563,560	7,109,860	25,083,630	6,754,280	3,074,440
1827, February 28	21,890,610	8,801,060	23,529,530	10,159,020	2,996,280
August 31	22,747,600	8,052,090	23,199,320	10,463,770	2,863,400
1828, February 29	21,980,710	9,198,140	22,581,270	10,347,290	2,740,710
August 30	21,357,510	10,201,280	23,905,530	10,498,880	2,845,620
1829, February 28	19,870,850	9,553,960	25,384,750	6,835,020	2,794,960
August 31	19,547,380	9,085,070	24,661,810	6,795,530	2,874,890
1830, February 27	20,050,750	10,763,150	24,204,390	9,171,000	2,661,510
August 30	21,464,700	11,620,840	24,565,390	11,150,480	2,630,030
1831, February 28	19,699,140	11,215,530	25,268,080	8,217,050	2,612,360
August 31	18,538,030	9,069,810	22,905,030	6,439,700	2,736,850
1832, February 29	18,051,710	8,937,170	24,333,490	5,293,150	2,637,760
August 28	18,320,000	10,278,000	23,420,000	7,514,000	2,386,000
1833, February 26	19,372,000	12,455,000	23,850,000	10,205,000	2,228,000
August 27	19,925,000	11,927,000	23,245,000	10,871,000	2,264,000
1834, February 25	19,050,000	13,087,000	25,212,000	9,225,000	2,300,000
August 20	19,195,000	13,300,000	27,732,000	7,303,000	2,540,000
1835, February 24	18,510,000	10,071,000	24,895,000	6,289,000	2,603,000
August 25	18,085,000	13,725,000	28,173,000	6,255,000	2,618,000
1836, February 23	18,181,000	14,044,000	27,368,000	7,787,000	2,930,000
August 30	18,018,000	12,040,000	27,697,000	5,250,000	2,889,000
1837, February 28	18,105,000	10,007,000	27,207,000	4,077,000	3,202,000
August 29	18,887,000	10,040,000	25,357,000	6,548,000	2,978,000
1838, February 27	18,975,000	10,825,000	21,958,000	10,471,000	2,629,000
August 28	19,488,000	8,922,000	21,611,000	9,540,000	2,741,000
1839, February 26	18,098,000	7,730,000	21,741,000	6,173,000	2,677,000
August 27	17,682,000	6,488,000	25,141,000	2,420,000	3,091,000
1840, February 25	16,504,000	6,556,000	21,611,000	4,311,000	2,802,000
August 25	17,170,000	6,254,000	22,075,000	4,209,000	2,150,000
1841, February 23	16,399,000	6,407,000	21,344,000	4,335,000	2,873,000
August 31	17,370,000	6,975,000	22,602,000	4,822,000	3,070,000
1842, February 22	16,920,000	8,239,000	22,124,000	6,119,000	3,084,000
August 27	20,332,000	8,690,000	22,150,000	9,729,000	2,866,000
1843, February 25	20,218,000	11,520,000	23,564,000	11,016,000	2,872,000

AN ACCOUNT OF THE NOTES IN CIRCULATION OF THE BANK OF ENGLAND, AND OF THE OTHER BANKS OF ISSUE IN ENGLAND AND WALES, SCOTLAND, AND IRELAND, SPECIFYING ALSO THE BULLION IN THE BANK OF ENGLAND.

Four Weeks ending	England.			Scotland.	Ireland.		Total.	Bullion in the Bank of England.
	Bank of England.	Private Banks.	Joint-stock Banks.	Chartered, Private, and Joint-stock Banks.	Bank of Ireland.	Private and Joint-stock Banks.		
	£	£	£	£	£	£	£	£
24 July, 1841	17,976,000	5,907,632	3,418,810	3,181,594	3,055,025	1,905,672	35,444,733	5,011,000
8 January, 1842	16,203,000	5,478,189	3,042,197	3,070,075	3,205,875	2,515,677	33,605 013	5,029,000
2 April, "	16,674,000	5,289,050	3,047,656	2,670,290	3,074,125	2,259,556	33,014,677	7,006,000
23 July, "	19,908,000	5,166,581	2,939,195	2,715,680	2,892,775	1,080,987	35,303,218	8,883,000
15 October, "	19,503,000	5,483,661	3,064,539	2,743,715	3,041,150	2,002,784	35,843,929	9,801,000
7 January, 1843	18,283,000	4,942,825	2,839,969	2,770,838	3,112,950	2,099,641	34,049,163	11,054,000
1 April, "	19,539,000	4,716,596	2,862,986	2,457,604	3,085,400	2,019,740	34,681,236	11,420,000
22 July, "	19,809,000	4,460,008	2,840,312	2,605,326	3,089,100	1,081,958	34,545,794	11,872,000
14 October, "	19,024,000	4,721,109	5,130,002	2,702,358	3,232,575	2,068,845	34,928,884	12,086,000
6 January, 1844	18,964,000	4,822,675	3,294,999	2,901,740	3,483,650	2,361,180	35,774,259	14,638,000
27 April, "	21,339,000	5,295,230	5,752,867	2,714,627	3,025,925	2,357,440	39,585,104	15,884,000
20 July, "	21,445,000	4,624,179	3,540,226	2,903,322	3,440,700	1,974,284	37,730,811	15,485,000
12 October, "	21,629,000	4,674,102	3,331,516	2,987,665	3,597,850	2,456,261	38,676,454	14,832,000
4 January, 1845	20,301,000	4,429,454	3,056,802	3,159,456	3,917,800	3,065,751	37,930,317	14,307,000
26 April, "	22,078,000	4,080,648	3,306,245	3,001,240	4,036,400	3,910,331	40,113,764	15,924,000
19 July, "	22,076,000	4,478,679	3,158,775	3,333,906	3,860,475	2,633,657	39,541,492	16,274,000
11 October, "	21,890,000	4,553,712	3,311,527	3,428,074	3,907,025	2,926,265	40,022,603	14,988,000
3 January, 1846	21,028,000	4,351,200	3,162,742	3,336,409	4,051,200	3,053,166	39,437,340	13,313,000
25 April, "	21,279,000	4,736,786	3,301,184	3,036,317	4,355,925	3,181,298	39,940,610	13,682,000
18 July, "	21,284,000	4,410,585	3,088,619	3,390,060	3,995,875	2,930,616	38,859,755	15,808,000
10 October, "	21,194,000	4,666,748	3,202,588	3,665,155	4,184,575	3,060,980	40,040,046	15,983,000
2 January, 1847	20,033,000	4,525,855	3,138,321	3,787,151	4,212,225	3,303,189	39,599,741	15,083,000
27 March, "	20,087,000	4,541,543	3,247,531	3,360,348	3,857,800	2,846,936	37,941,158	11,322,000
1 January, 1848	17,924,990	3,528,107	2,410,276	3,341,317	3,988,700	2,107,416	32,400,806	12,404,250
27 January, 1849	19,202,000	3,651,797	2,621,819	3,032,872	2,717,525	1,957,214	33,273,227	15,015,000
26 January, 1850	20,244,000	3,685,291	2,680,457	3,112,859	2,990,800	1,970,024	34,392,431	16,878,000
25 January, 1851	20,805,000	3,573,202	2,728,024	3,252,485	2,646,150	2,156,501	35,142,052	14,307,000
24 January, 1852	21,485,000	3,493,416	2,743,351	3,283,502	2,484,650	2,195,806	35,686,725	17,083,000
22 January, 1853	24,848,000	3,771,528	2,989,578	3,612,710	2,896,100	2,793,551	40,911,467	19,712,000
24 December, "	22,112,000	3,833,753	3,056,085	4,112,787	3,095,800	3,357,327	39,567,852	15,424,000

EXPENSES OF THE BANK OF ENGLAND FOR THE YEAR ENDING 29TH OF FEBRUARY, 1852.

Dr.		Cr.	
National debt department	£164,143	Salaries and pensions	£213,003
Bank-notes	100,092	House expenses	39,187
Banking department	69,165	Directors' allowance	8,000
		Rent	40,000
		Expenses at eleven branches arising from the banking department	5,702
		Expenses attending the circulation of £2,500,000 of branch Bank of England notes, at eleven branches	28,508
	£339,400		£339,400

III. English Private and Provincial Banks.—Besides charging the usual rate of interest on bills discounted, the provincial bankers are mostly in the habit of charging 5s. or 6s. per cent. as commission. They also charge a commission on all payments, and derive a profit from charges for the transmission of money, etc. They usually allow from 2 to 3 per cent. on money deposited; but the numerous failures that have taken place among them have, by generating a feeling of insecurity in the minds of the depositors, confined this branch of their business within comparatively narrow limits. When their customers overdraw their accounts, they are charged with interest at the rate of 5 per cent. Country banks, established by individuals possessed of adequate funds, and managed with due discretion, are productive of the greatest service. They form commodious reservoirs, where the floating and unemployed capital of the surrounding districts is collected, and from which it is again distributed, by way of loan, to those who will employ it to the best advantage. It is, therefore, of the utmost importance, in a public point of view, that these establishments should be based upon solid foundations. But in England, unfortunately, this, till recently, has been but little attended to; and the destruction of country banks has, upon three different occasions—in 1792, in 1814, 1815, and 1816, and in 1825 and 1826—produced an extent of bankruptcy and misery that has never, perhaps, been equaled, except by the breaking up of the Mississippi scheme in France. Government is bound to interfere to hinder such disastrous results, and we have already given some account of the measures adopted in this view.

The following is an account of the number of commissions of bankruptcy issued against country bankers in England from 1809 to 1830, both inclusive:

Years.	Commissions.	Years.	Commissions.
1809	4	1820	4
1810	20	1821	10
1811	4	1822	9
1812	17	1823	9
1813	8	1824	10
1814	27	1825	37
1815	25	1826	43
1816	37	1827	8
1817	3	1828	3
1818	3	1829	3
1819	13	1830	14

Exclusive of the above, many banks stopped payments, to the great injury of their creditors and the public, that afterward resumed them; at the same time that the affairs of some bankrupt concerns were arranged without a commission. During the whole of this period not a single Scotch bank gave way.

Besides the stamp duties payable on notes, each individual or company issuing them must take out a license, renewable annually, which costs £30. This license specifies the names and places of abode of the body corporate, person or persons in the firm to whom it is granted, the name of such firm, the place where the business is carried on, etc.; and a separate license is to be taken out for every town or place where any notes shall be issued by or on account of any banker, etc. Unless the license granted to persons in partnership set forth the names and places of abode of all persons concerned in the partnership, whether their names appear on the notes issued by them or not, such license shall be absolutely void.—55 *Geo.* 3, c. 184, s. 24. For the regulations as to the issue of unstamped notes, see *ante*, p. 69. The issue of notes for less than £5 was prohibited in England, as previously shown, from 1777 to 1797; but they continued to be issued from the latter period down to the 5th of April, 1829, when their further issue ceased, in consequence of an act passed in 1826. This act did not extend to Scotland or Ireland, and was intended to give greater stability to the system of country banking in England, by shutting up one of the principal channels through which the inferior class of bankers had been in the habit of getting their notes into circulation. The joint-stock banks established in different parts of England and Wales, under the provisions of the act 7 Geo. 4, c. 46, authorizing their establishment, consist of bodies of partners, varying from seven, the minimum, to any greater number. Each partner holds one or more shares of the company's stock, and is individually liable for the entire debts and engagements of the company; so that a person holding a £50 or £100 share in a joint-stock bank may, in the event of its becoming bankrupt, be called upon to make payment of as many thousands of pounds! They are uniformly almost managed by boards of directors appointed by, and generally responsible to, the body of shareholders. The conditions of copartnery vary materially in different associations; but the above are distinguishing features common to them all. The shares in many joint-stock banks are very small, few being above £100, the greater number not exceeding £50, while many are only £25, and some not more than £10, and even £5! Generally, too, it is understood, or rather it is distinctly set forth in the prospectus, that not more than five, ten, or twenty per cent. of these shares is to be called for; so that an individual who has ten or twenty shillings to spare may become a shareholder in a bank. And owing to a practice, or rather a flagrant abuse, introduced into the management of various banks, by which they make large advances or discounts on the credit of the stock held by the shareholders, not a few individuals in doubtful or even desperate circumstances take shares in them, in the view of obtaining loans, and bolstering up their credit! The great danger arising from such banks is obvious; and were one of them to stop payment, it is plain, even though the claims on it should be ultimately made good, that they could be so only at the cost, and perhaps ruin, of such of its proprietors as had abstained from the abusive practices resorted to by others. It may well excite astonishment, that any one who can really afford to make a *bonâ fide* purchase of shares in a bank should be foolhardy enough to embark in such concerns.

No doubt a joint-stock bank, if it possess adequate capital, and be discreetly managed, may afford ample security to its shareholders and the public. But there is no foundation for the notion that because a bank has 50 or 100 partners, it will therefore be better managed than if it had only 5 or 10. On the contrary, the fair presumption is that it will not be so well managed. A few wealthy individuals engaged in banking or any other sort of business, must, if they would protect themselves from ruin, pay unremitting attention to their concerns, and act in a discreet and cautious manner. But the partners and managers of a great joint-stock company act under no such direct and pressing responsibility. "I think," said the highest authority on such subjects, "that joint-stock banks are deficient in every thing requisite for the conduct of banking business, except extended responsibility; the banking business requires peculiarly persons attentive to all its details, constantly, daily, and hourly watchful of every transaction, much more than mercantile or trading businesses. It also requires immediate, prompt decisions, upon circumstances when they arise—in many cases a decision that does not admit of delay for consultation; it also requires a discretion to be exercised with reference to the special circumstances of each case. Joint-stock banks being, of course, obliged to act through agents, and not by a principal, and therefore under the restraint of general rules, can not be guided by so nice a reference to degrees of difference in the character or responsibility of parties; nor can they undertake to regulate the assistance to be granted to concerns under temporary embarrassment by so accurate a reference to the circumstances, favorable or unfavorable, of each case."—*Evidence of* S. J. Loyd, *Esq., before the Committee of* 1832 *on the Renewal of the Bank Charter.*

In fact, more than nine-tenths of the partners in joint-stock banks are wholly ignorant of banking business, and have nothing better to trust to than the supposed honesty and intelligence of the directors; and, even if they were acquainted with the business, the result would be nearly the same, as it would not be possible for any one, by a mere cursory inspection of the books of any bank (if such were permitted), to form any accurate estimate of its condition, or of the mode in which it transacted business. And hence the directors in these establishments are practically all but absolute. If they be worthy of the confidence placed in them, all goes on smoothly; and this also is the case when they are most unworthy, till they have involved the concern in inextricable difficulties! The history of the Norwich Bank, of the Northern and Central Bank, the Marylebone Bank, the Manchester Bank, and a host of others, sufficiently attests the truth of what has now been stated. The responsibility of the directors to the shareholders has not been found, in any of these instances (and it is, indeed, ludicrous to suppose that it ever should be otherwise), to have been any check whatever over their frauds and improvidence. The whole paid-up capital of the Manchester Bank, amounting to about £750,000, had been wasted in the most improvident speculations, and additional debts incurred, before the great body of the shareholders had the least suspicion that the company was otherwise than prosperous!

We may observe, by-the-way, that the mischief occasioned by an establishment of this sort, when perverted from its proper objects, and mismanaged, is not to be estimated by the ruin it entails on its partners, and probably, also, on its customers. It becomes, in fact, a public nuisance, and entails privations on many who might be supposed to be beyond the sphere of its influence. Within the ten years ending with 1842, we believe it may be moderately estimated that about £1,500,000 of banking capital was wholly dissipated in Manchester and its immediate vicinity. And as nine-tenths of this enormous loss was occasioned by advances made to manufacturers who had little or no capital of their own, it is not easy to imagine what a ruinous stimulus it must have given to reckless competition, and how very injurious it must have been to parties trading on their own capital. Indeed, no inconsiderable portion of the distress in Manchester, in 1842 and 1843, may be traced to this source.

Remedial Measures that should be adopted.—The act of 1844, 7 & 8 Vict. c. 32, has successfully obviated some of the defects formerly existing in the joint-stock and private banking system, especially by limiting the extent of their issues; but in other respects the system is still open to serious objections. We retain the remarks made upon it in a former edition of M'Culloch's *Dict. of Commerce*, before the act of 1844 was passed:

"We do not, however, think that it would be at all necessary, in providing for a secure system of joint-stock banking, to make any regulations with respect to many of the points noticed by the committee as to which the law is silent. At present every partner in a joint-stock bank is liable to the public for the whole debts of the firm; and this may be truly said to be the saving principle of the system, and without which it would be an unmixed evil. No individual should, however, by merely withdrawing from a joint-stock concern, get rid of his liabilities in connection with it. To prevent fraud, and to insure due caution, these ought to continue for a period of three years at least after he has publicly withdrawn his name. The public, too, are clearly entitled to know the partners in joint-stock associations; that is, to be informed who the individuals are with whom they are dealing, and who are responsible to them. But, unluckily, no effective means are taken for supplying this necessary information, or, consequently, of properly discriminating between one establishment and another. The act of 1833 directed that an account of the places where they carry on business, and of the names and residences of the partners, should be quarterly transmitted to the Stamp-office. But doubts have been entertained as to the correctness of these returns, and comparatively little use has been, or, indeed, can be made of them. The accounts of the names and residences of the proprietors are not published, but are secluded from the public eye in the repositories of Somerset House! It is true that these lists may be seen, by those who choose to apply at the office, for a small fee, and that certified copies may be procured at no great expense. But few know that such returns exist; and fewer still have the opportunity, or think of availing themselves of them as sources of information. To render them of any real utility, they should be brought under the public eye, by being hung up in the offices of the banks to which they refer, and periodically published in the newspapers of the places where they carry on business. By this means the public would know exactly to whom they had to look, and would act accordingly. They would not be deceived, as they are liable to be at present, by supposing that, because a bank has a number of partners, some of them must be opulent and trustworthy. They would know the precise state of the fact; and if it were seen, from the quarterly returns, that opulent and intelligent individuals were withdrawing from a bank, every one would be put on his guard, and would naturally conclude that the parties had very sufficient reasons for quitting the concern. Thus far publicity may be made effectual, and would be of the greatest importance. Neither is it possible to allege a single plausible objection to this proposal. It interferes in no degree, nor in any way, with the proceedings of the parties: all that it does is to declare who and what they are; and to this degree of publicity no honest man will object." And we are glad to have to state that this is now effected by the act 7 & 8 Vict. c. 32, § 21.—See *ante*, p. 84.

"But we have great doubts whether it be possible to carry publicity farther than this. The committee state that 'the law does not provide for any publication of the liabilities and assets of these banks, nor does it enforce the publication of any balance-sheet to the proprietors at large;' and it has been proposed to compel the periodical publication of a statement of this sort; but it is very questionable whether any such publication would not be a great deal worse than useless. It is not proposed that commissioners should be appointed to inspect the accounts of the different banks, and to see that the returns are accurate: this would be too inquisitorial, too cumbrous, and too costly a plan to be thought of for a moment. There would be nothing for it, in fact, but to trust entirely to the *honor* of the parties! Hence, in all cases in which a disclosure would be really useful, the publication of an account of assets and liabilities would afford the means of deceiving the public, and of representing a bankrupt concern as being in a prosperous condition. Supposing, however, that the parties were, in all instances, perfectly honest, still the publication of a balance-sheet would be good for nothing. Every one knows how sanguine people are in relation to their own affairs, and that debts and obligations that other parties would hardly reckon worth any thing are estimated by them as if they were so much bullion. But, independently of this, the futility of the thing is obvious. A bank with a capital of £100,000 discounts bills and other obligations to the extent, perhaps, of £300,000 or £400,000; the fact that it has discounted them shows that it believes these bills and obligations to be good; and they will, consequently, be reckoned among its assets. But should a revulsion take place, or any circumstance occur to shake credit, these bills may not be worth £100,000; and those who have dealt with the bank, on the hypothesis of its having capital and assets more than enough to meet all its obligations, may find, to their cost, that it is not possessed of a single shilling, but is, on the contrary, some £200,000 or £300,000 worse than nothing!

"The committee seem to think that some regulation should be enacted, providing that a certain portion of its capital should be paid up before a bank begins business. But the better way would be to prohibit all advertising of *nominal* capital. This, in fact, is a mere device by which to entrap and delude the public. A bank is announced with a capital of £1,000,000, £2,000,000, or £3,000,000; and a great number of people, perhaps the majority, immediately conclude that there can be no risk in dealing with an establishment possessed of so great an amount of property. But what is the fact? The capital advertised is nominal merely; not more, perhaps, than a tenth or a fifth part of it has been received into the coffers of the bank, and we have nothing better than the statement of the bank proprietors, or their agents, that they will pay up the remainder, if necessary; of which necessity they of course are to be the only judges! Practically this is neither more nor less than a fraud upon the public; it is a contrivance for making £10,000 pass in the public estimation for £100,000, and for procuring the same degree of credit to its holders. This, however, is not all. Where is the security that, if a greater amount of capital were really required, it would be forthcoming? The notion that the bulk of the shareholders in many, we are pretty sure we might safely say most, of the joint-stock banks now in existence, could pay up the full

amount of their shares, is too ludicrous to deserve notice. We might as well call upon a man worth £5 to extinguish a debt of £500.

"There can be no doubt, therefore—unless it be meant to affirm that deception and fallacious statements are indispensable to the success of joint-stock banking schemes—that all advertising of nominal capitals should be put an end to; and that no association should be allowed to represent its capital as exceeding the sum actually paid up by the proprietors. But though this would obviate one source of fraud and deception, there would still be abundant means of practicing on the credulity of the public at the disposal of parties inclined to use them. Admit that a bank has a capital of £500,000 actually received into its coffers, what is to hinder the directors from lending out the whole of this sum, or even more, to themselves or to partners in the bank? or, supposing them not to do this, who can tell whether the entire capital, or some considerable part of it, be not wholly ingulfed in ruinous speculations? It is indeed alleged, and truly too, that this could not happen with any 'respectable' bank; that 'gentlemen of character' would not lend themselves to such transactions! Unluckily, however, there are no decisive marks or tests by which the public can, *a priori*, say what is or what is not a 'respectable' bank, or who is or is not a 'gentleman of character;' and it is not a little hazardous in such matters to indulge in speculative remarks. Hence it is that the Marylebone Bank, the Bank of Manchester, and indeed all banks, are held to be respectable, that is, solvent, till the event prove the contrary; and that all gentlemen connected with banks are held to be 'men of character,' paragons, in fact, of honor, honesty, and intelligence, till their fraud or ignorance has involved hundreds or thousands in bankruptcy and ruin.

"We do not state these circumstances in order to raise any prejudice against joint-stock banks or other associations, for they apply equally to banks with one or a small number of partners; but we state them to show the folly of placing any reliance on statements as to the capital of any bank, or the character of its managers. Such statements may be either true or false; but, as the public can not tell which, they are plainly good for nothing. The only real security is to be found, if it exist at all, in the names of the partners responsible for the debts and obligations of the bank. The number of such partners is a very inferior consideration. There can not, in truth, be a greater error than to suppose that because a bank has a great number of partners, its security may be safely depended upon. A single individual worth £100,000 is an incomparably better security than fifty individuals worth £2000 each; and a hundred individuals worth £1000 would hardly be any security at all, at least for a sum of £10,000 or £20,000. A private bank with *six* may be a safer place of deposit than a joint-stock bank with *six hundred* partners. Every thing depends upon *the available wealth* of those responsible for the debts of the concern; and hence the propriety and justice, whether the firm consist of one or of many partners, of publicly declaring and specifying their names.

"We are decidedly hostile to a proposition we have heard mooted, and which seems to be countenanced by the committee on joint-stock banks, for obliging all banks to establish a guarantee fund; that is, for obliging them to accumulate a *portion of their profits* as a reserve stock. Where is the security that such reserve would be always deducted from profits? The truth is, that bankrupt and fraudulent concerns, and none else, would gain by such a regulation; inasmuch as it would enable them, by appearing to be prosperous, the better to deceive the public, and to blind them to the real state of their affairs. It is worse than absurd to induce the public to depend on guarantees that can not be enforced, and which, consequently, must be good for nothing. The knowledge of whom the partners in banks really consist, and their unlimited responsibility, are the only securities that, speaking generally, are worth a pinch of snuff. If these can not protect the public from fraud or loss, nothing else will; and the question will come to be, not whether the system should be reformed, but whether it should be abated as an incurable nuisance. On this ground, also, we should be disposed to dissent from any attempt to prevent, by legislative enactment, the making of loans upon the credit of bank stock. We do not question the advantage of such a regulation, provided it were honestly carried into effect. But it is useless to say that, whenever the parties were disposed to defeat such a regulation, it would be quite inoperative.

"Some of the joint-stock banks have an extraordinary number of branches; and the multiplication of these subordinate establishments all over the country is not one of the least striking features of the system. Neither is it very difficult to discover why banks of issue, at least, are so very anxious about the formation of these outworks. They are bound, it seems, by the present law, to pay their notes *only at the parent establishment;* so that by issuing them at a branch bank, perhaps a hundred miles distant from the head bank, the chances are ten to one that they will continue for a much longer period in circulation, and that they will consequently be able to carry on business with a less amount of capital than if they were, as they ought to be, obliged to pay their notes at the branches as well as at the principal office. It is obvious, indeed, that the convertibility of the paper, even of first-class banks, into either cash or Bank of England notes, is at present exceedingly imperfect; and that very great facilities are afforded for getting the worst class of notes into circulation, and for keeping them afloat even after their quality may be suspected. This defect in the law should undoubtedly be amended, by obliging all banks that issue notes to pay them indifferently at any of their offices. But we incline to think that Parliament might go farther than this; and that it should enact that no branch bank be established, whether for the issue of notes or otherwise, beyond a certain distance (say fifty miles) from the head office.

"Several of the points recapitulated by the committee, as to which the law is silent, respect the rights and interests of the partners in joint-stock banks, in relation to each other, and not as between them and the public. But it is always a very difficult matter to interfere to dictate the footing on which parties in any undertaking should stand among themselves. Much should, in such cases, be left to the judgment of the parties; and public regulations, if enforced at all, should only go to prevent obvious and acknowledged abuse; the parties may, in most cases, be safely left to take care of themselves. The protection of the public interest is the paramount consideration; and we do not well know what can be done to effect this, in the case at least of such banks as do not issue notes, other than the making known who their partners are.

"The joint-stock banks formed in the city of London offer a fair rate of interest for deposits; and if they go on successfully in doing this, they will confer no slight advantage on the community, and will become, as it were, so many savings' banks for the middle classes, and for the rich as well as the poor. But the responsibilities this system will bring along with it are neither few nor small. A bank with a numerous body of partners of undoubted wealth and integrity, that should give 2 per cent. interest on all deposits of £10 and upward, how short soever the period for which the deposit might remain in the bank, would, there is little doubt, speedily have ample funds at its disposal. In quiet and prosperous times the system would work exceedingly well; and the bank and the public would be vastly well pleased with each other. But when the cycle of prosperity has gone by, and the cycle of adversity has begun; when the waters are out, and the winds begin to blow—it is doubtful whether either the bank or its depositors may feel quite at ease. The former will probably raise the rate of interest; but it is doubtful whether that will have the wished-for effect. Should the exchange set against us, and the Bank of England be forced to narrow her issues, and should bankruptcy and a feeling of insecurity begin to prevail, as they have done hitherto on all similar occasions, a run for deposits may, and most probably will, be made upon the bank; and in such a case her situation, however well she may have been managed, will be most critical. She will be compelled to dispose of or pledge securities in a market where they may be all but unsalable; and it will be impossible for her suddenly to pull up in discounting, without exposing herself to the imminent danger of extra loss, by bringing on the stoppage of those who have been accustomed to trust to her for loans.

"It will be said, perhaps, that this is all imaginary, and that nothing of the sort ever occurs in Scotland! But it would really be about as much to the purpose to say that nothing of the sort ever occurs in Japan. London is the pivot on which the foreign exchanges turn, and when they become depressed many of the London depositors will do what the Scotch depositors never so much as dreamed of, that is, they will demand their deposits, convert them in[to] gold, and either send this gold abroad, or get a profit fro[m] those who will. From this source of annoyance and loss the Scotch banks are perfectly free; and this, by exhausting the resources of the London banks, and subjecting the weaker ones to difficulties, occasions discredit, and, in the end, runs or panics. Nothing, therefore, can be more perfectly futile than to contend that because this system has proved profitable for the Scotch banks, it will also be profitable for the London banks. We do not presume to affirm that such will not, and we hope that it may, be the case. But it would be rather illogical to affirm, because wheat succeeds remarkably well in the vale of Gloucester, that it will succeed equally well on the Welsh mountains.

"The joint-stock banks may, if they do not already, endeavor to obviate some of the difficulties now stated, by declining to pay interest on deposits unless they lie for a certain time, or by stipulating for a certain notice before they are paid. But either the one condition or the other is subversive of what is

meant by granting interest on deposits, and goes far to make the announcements to that effect little better than a hoax upon the public. All, or nearly all, the existing banks are banks of deposit in this sense of the word; that is, they give interest on deposits of a certain amount, provided they be not called for till after the lapse of an agreed-on period, and that the depositors give them no further trouble. But it is doubtful whether money deposited at 2 per cent. under such conditions, and still more under an engagement to give notice of demand, be as well laid out as if it were deposited with the Bank of England, or any other bank of undoubted solidity, at no interest, but payable on demand. Most men of business would, undoubtedly, prefer the latter. Nobody, indeed, not wishing to get into difficulties, would be disposed to deal with any bank that required notice of demand; and it is questionable whether any such stipulation should be sanctioned by law.

"The committee on joint-stock banks omitted all reference to what is by far the most prominent evil in our banking system—we mean the power conceded to all private and joint-stock banks and companies, whether with or without property or character, to issue paper money or notes payable on demand, without let or hinderance of any sort. This abuse should certainly be put down;" and we have already seen that this power can now be but little abused.

"*Responsibility ought not, in any case, to be limited.*—We protest against the proposal for allowing the partners in banks not issuing notes to limit their responsibility. Such a measure would be good for nothing, except to serve as a premium on every species of fraud. What check would there be, under such a system, to hinder the partners of a bank going on for a series of years dividing large profits, when perhaps they were really incurring a loss, until every farthing of its capital and deposits was absorbed? To talk of subjecting such persons to punishment as fraudulent bankrupts, on evidence derived from their books, is absurd; for, supposing that it was the intention of the parties to defraud, they might easily keep their books so that they could afford no information that was not false or misleading. The annexed list of joint-stock banking companies shows that there is no disinclination on the part of individuals to engage in such concerns, even with the present unlimited responsibility. And the way in which some of them are conducted proves sufficiently, if such proof were wanted, that the serious liabilities incurred by the partners are not more than enough for the protection of the public. To lessen them would be an act of gratuitous folly. If we are to interfere, let them be increased, not diminished. But in the case of banks not issuing notes, enough is done, if measures be taken to prevent deception, by letting the public know the partners in them, and making sure that they shall have no means of evading the responsibility attaching to their engagements. The first object may be secured by compelling all banking associations whatever to publish annually a list of the names and addresses of their partners, with the amount of their paid-up capital; and to accomplish the latter object, we have merely to abstain from interference, and to let the law take its natural course."

AN ACCOUNT OF THE NUMBER OF PRIVATE AND JOINT STOCK BANKS IN ENGLAND REGISTERED IN EACH YEAR, FROM 1820 TO 1842, BOTH INCLUSIVE.

Year.	Number of Private Banks.	Number of Joint-stock Banks.
1820 to 1821	521	—
1821 to 1822	520	—
1822 to 1823	547	—
1823 to 1824	547	—
1824 to 1825	544	—
1825 to 1826	554	—
1826 to 1827	465	6
1827 to 1828	456	7
1828 to 1829	400	11
1829 to 1830	419	15
1830 to 1831	426	19
1831 to 1832	424	25
1832 to 1833	416	35
1833 to 1834	416	47
1834 to 1835	411	55
1835 to 1836	407	100
1836 to 1837	351	107
1837 to 1838	341	104
1838 to 1839	332	108
1839 to 1840	332	113
1840 to 1841	321	115
1841 to 1842	311	118

Drawing on London.—The act 3 & 4 Will. 4, c. 83, repeals the regulation in the 7 Geo. 4, c. 46, prohibiting banks with more than six partners from drawing on London on demand, or otherwise, for sums of less than £50.—§ 2. For statistics of English joint-stock banks, see conclusion of article on BANKING.

IV. SCOTCH BANKS.—The act of 1708, preventing more than six individuals from entering into a partnership for carrying on the business of banking, did not extend to Scotland. In consequence of this exemption, several banking companies, with numerous bodies of partners, have always existed in that country.

Bank of Scotland.—This institution was projected by Mr. John Holland, merchant, of London, and was established by act of the Scotch Parliament (Will. 3, Parl. 1, § 5) in 1695, by the name of the Governor and Company of the Bank of Scotland. Its original capital was 1,200,000 pounds Scotch, or £100,000 sterling, distributed in shares of 1000 pounds Scotch, or £83 6*s.* 8*d.* sterling, each. The act exempted the capital of the bank from all public burdens, and gave it the exclusive privilege of banking in Scotland for twenty-one years. The objects for which the Bank was instituted, and its mode of management, were intended to be, and have been in most respects, similar to those of the Bank of England. The responsibility of the shareholders is limited to the amount of their shares. The capital of the Bank was increased to £200,000 in 1744, and was enlarged by subsequent acts of Parliament, the last of which (44 Geo. 3, c. 23) was passed in 1804, to £1,500,000, its present amount. Of this sum, £1,000,000 has been paid up. The last-mentioned act directed that all sums relating to the affairs of the Bank should henceforth be rated in sterling money; that the former mode of dividing bank stock by shares should be discontinued; and that for the future it should be transferred in any sums or parcels. On the union of the two kingdoms in 1707, the Bank of Scotland undertook the recoinage, and effected the exchange of the currency in Scotland: it was also the organ of government in the issue of the new silver coinage in 1817. The Bank of Scotland is the only Scotch bank constituted by act of Parliament. It began to establish branches in 1696, and issued notes for £1 so early as 1704. The bank also began, at a very early period, to receive deposits on interest, and to grant credit on cash accounts, a minute of the directors with respect to the mode of keeping the latter being dated so far back as 1729. It is, therefore, entitled to the credit of having introduced and set on foot the distinctive principles of the Scotch banking system, which, whatever may be its defects, is probably superior to every other system hitherto established. Generally speaking, the Bank of Scotland has always been conducted on sound and liberal principles; nor can there be a doubt that it has been productive, both directly and as an example to other banking establishments, of much public utility and advantage. It may be worth mentioning, that the act of Will. 3, establishing the Bank of Scotland, declared that all foreigners who became partners in the bank should, by doing so, become, to all intents and purposes, naturalized Scotchmen. After being for a long time forgotten, this clause was taken advantage of in 1818, when several aliens acquired property in the bank in order to secure the benefit of naturalization. But after being suspended, the privilege was finally cancelled in 1822. We subjoin an *official* abstract of the constitution and objects of the Bank of Scotland, printed for the use of the proprietors; the terms and mode of transacting business are, of course, sometimes altered, according to circumstances:

I. The Bank of Scotland is a public national establishment, erected and regulated by the Legislature alone; and expressly as a public bank in this kingdom; for the benefit of the nation, and for the advancement of agriculture, commerce, and manufactures, and for other objects of public policy.—*Will.* Parl. 1, § 5; 14 *Geo.* 3, c. 32; 24 *Geo.* 3, c. 8; 32 *Geo.* 3, c. 25; 34 *Geo.* 3, c. 19; 44 *Geo.* 3, c. 23. II. The statutory capital is at present £1,500,000 sterling. It is raised by voluntary subscription, and has been subscribed for. £1,000,000 has been called for, and paid in.—44 *Geo.* 3, cap. 23. III. Subscribers, if not under obligation to the Bank, may, at pleasure, transfer their right. If under obligation to the Bank, the obligation must be previously liquidated; or the proceeds of the sale, at a price to the satisfaction of the direct-

ors, must be applied toward such liquidation. Transfers are made by a short assignment and acceptance thereof, both in a register appointed for that purpose. The expense, besides the government stamp, is 1*l*s.—*Will.* Parl. 1, § 5. IV. Bank of Scotland stock may be acquired, in any portions by any person, community, or other lawful party whatsoever; without selection, exclusion, or limitation of numbers.—*Will.* Parl. 1, § 5; 44 *Geo.* 3, c. 23. V. Bank of Scotland stock may be conveyed by will, and, if specially mentioned, without expense of confirmation. It can not be arrested: the holder's right may be adjudged. Dividends may be arrested.—*Will.* Parl. 1, § 5. VI. The Bank of Scotland is a public corporation by act of Parliament. The Bank's transactions are distinct from those of the stockholders, and theirs from those of the Bank.—*Will.* Parl. 1, § 5. VII. The establishment is expressly debarred from any other business than that of banking.—*Will.* Parl. 1, § 5. VIII. The management is vested, by statute, in a governor, deputy governor, twelve ordinary, and twelve extraordinary directors. They are chosen annually, on the last Tuesday of March, by the stockholders having £250 of stock or upward. Those above £250 have a vote for every £250, to £5000, or twenty votes. No person can have more than twenty votes. The governor must hold at least £2000 of stock; the deputy governor £1500; and each director £750. They swear to be equal to all persons, and can not hold any inferior office in the Bank.—*Will.* Parl. 1, § 5; 14 *Geo.* 3, c. 32; 44 *Geo.* 3, c. 23. IX. The executive part is conducted by a treasurer, secretary, and other public officers, all sworn. Those having the official charge of cash find due security.—*Will.* Parl. 1, § 5. X. The board of directors sits for the general administration of the Bank, at the Bank's public head office in Edinburgh. The local business of that district is also conducted at that office. For the local business in the other parts of the kingdom, the Bank has its regular public offices in the principal towns. At each of these offices there is the bank agent or cashier, who gives due security, and conducts the Bank's business for that district in the manner after mentioned. There is also the Bank's accountant for that office, who is appointed by the directors.—*Will.* Parl. 1, § 5. XI. The Bank takes in money, at all its public offices, on deposit receipts or promissory notes, or on current deposit account. At the head office, drafts on London, or on any of the agencies, are given; at each agency, drafts on London, or on the head office, are given. All these documents are on *the Bank's check* (and *sealed with the Bank's seal*). They bear, in words, to be "For the Bank of Scotland;" or, "For the Governor and Company of the Bank of Scotland." These documents are signed, if at Edinburgh, by the treasurer, and countersigned by the principal accountant: if at an agency, they must be signed by the Bank's agent *as agent*, and *countersigned by the Bank's accountant* for that agency; otherwise they infer no obligation on the Bank.—*Resolution of Court*, 28th Feb. 1793. XII. Bills on London, Edinburgh, or any town where the Bank has its official correspondents, are discounted and purchased at all the Bank's public offices. The Bank's agents judge, in ordinary cases, of the bills presented; so that parties meet with no delay. The Bank does not sell, at any of its offices, the bills which it has discounted and purchased. Its agents can not indorse its bills, unless officially to the treasurer.—*Resolution of Court*, 23d Feb. 1789. XIII. Government stock and other public funds, transferable in London, may be purchased or sold, and dividends thereon may be received through the Bank. XIV. The Bank gives credit on cash accounts at any of its offices, on bond, with security. The security may be personal co-obligants, conjunctly and severally; or Bank of Scotland stock; or both; or such other security as may be specially agreed on. Applications for cash accounts are given in to the office where the cash account is wanted, and must specify the credit desired and the security proposed; and the individual partners, where copartneries are proposed. Cash accounts are granted by the directors only, and are not recalled unless by their special authority. It is understood that these credits are not used as dead loans, to produce interest only. In the fair course of business, the advantage of the Bank is consulted by an active circulation of its notes, and by frequent repayments to it in a way least affecting that circulation.—*Resolution of Court*, 6th Nov., 1729, and 23d Feb., 1789. XV. The Bank's dividend of profits has been for some considerable period six per cent. per annum, on its paid-up capital of £1,000,000 sterling. The dividends are paid regularly twice a year, without expense. They may be drawn either at the Bank's head office, or at any of its other offices, as most agreeable to the stockholder.

Most of the other Scotch banks are conducted on the same principles and in the same way as the Bank of Scotland, so that the details as to its management will nearly apply to them all. The *Royal Bank of Scotland* was established in 1727. Its original capital of £151,000 has been increased to £2,000,000. The *British Linen Company* was incorporated in 1746, for the purpose, as its name implies, of undertaking the manufacture of linen. But the views in which it originated were speedily abandoned; and it became a banking company only. Its capital amounts to £500,000. None of the other banking companies established in Scotland are chartered associations, with limited responsibility; the partners being jointly and individually liable, to the whole extent of their fortunes, for the debts of the firms. Some of them, such as the National Bank, the Commercial Banking Company, the Dundee Commercial Bank, the Perth Banking Company, etc., have very numerous bodies of partners. Their affairs are uniformly conducted by a Board of Directors, annually chosen by the shareholders. The Bank of Scotland began, as already stated, to issue £1 notes so early as 1704; and their issue has since been continued without interruption. "In Scotland," to use the statement given in the Report of the Committee of the House of Commons of 1826 on the Promissory Notes of Scotland and Ireland, "the issue of promissory notes payable to the bearer on demand, for a sum of not less than 20*s*., has been at all times permitted by law; nor has any act been passed limiting the period for which such issue shall continue legal in that country. In *England*, the issue of promissory notes for a less sum than £5 was prohibited by law from the year 1777 to the epoch of the Bank Restriction in 1797. It has been permitted since 1797; and the permission will cease, as the law at present stands, in April, 1829."

There have been comparatively few bankruptcies among the Scotch banks. In 1793 and 1825, when so many of the English provincial banks were swept off, there was not a single establishment in Scotland that gave way. This superior stability seems to be ascribable partly to the formation of so many banks with numerous bodies of partners, which tends to prevent any company with only a few partners, unless they are known to possess considerable fortunes, from getting paper into circulation; partly to the less risk attending the business of banking in Scotland; and partly to the facility afforded by the law of Scotland of attaching a debtor's property, whether it consist of land or movables, and making it available to the payment of his debts.

In the Report already quoted, the last-mentioned topic is touched upon as follows: "The general provisions of the law of Scotland bearing upon this subject are calculated to promote the solidity of banking establishments, by affording to the creditor great facilities of ascertaining the pecuniary circumstances of individual partners, and by making the private fortunes of those parties available for the discharge of the obligations of the bank with which they are connected. There is no limitation upon the number of partners of which a banking company in Scotland may consist; and, excepting in the case of the Bank of Scotland and the two chartered banks, which have very considerable capitals, the partners of all banking companies are bound jointly and severally, so that each partner is liable, to the whole extent of his fortune, for the whole debts of the company. A creditor in Scotland is empowered to attach the real and heritable, as well as the personal estate of his debtor, for payment of personal debts, among which may be classed debts due by bills and promissory notes; and recourse may be had, for the purpose of procuring payment, to each description of property at the same time. Execution is not confined to the real property of a debtor merely during his life, but proceeds with equal effect upon that property after his decease. The law relating to the establishment of records gives ready means of procuring information with respect to the real and heritable estate of which any person in Scotland may be possessed.

No purchase of an estate in that country is secure until the seizin (that is, the instrument certifying that actual delivery has been given) is put on record, nor is any mortgage effectual until the deed is in like manner recorded. In the case of conflicting pecuniary claims upon real property, the preference is not regulated by the date of the transaction, but *by the date of its record*. These records are accessible to all persons; and thus the public can with ease ascertain the effective means which a banking company possesses of discharging its obligations; and the partners in that company are enabled to determine, with tolerable accuracy, the degree of risk and responsibility to which the private property of each is exposed."

Deposits.—As was previously observed, all the Scotch banks receive deposits of so low a value as £10, and sometimes lower, and allow interest upon them. "The interest," says the committee, "allowed by the bank upon deposits varies, from time to time, according to the current rate of interest which money generally bears. In the year 1826 the interest allowed upon deposits was 4 per cent." (At this moment [1846] the interest allowed on deposits is 3 per cent.) "It has been calculated that the aggregate amount of the sums deposited with the Scotch banks amounts to about £20,000,000 or £21,000,000." (It is believed to be now [1846] little, if any thing, under £28,000,000 or £30,000,000.) "The precise accuracy of such an estimate can not, of course, be relied on. The witness by whom it was made thought that the amount of deposits could not be less than £16,000,000, nor exceed £25,000,000, and took an intermediate sum as the probable amount. Another witness, connected for many years with different banks in Scotland, and who has had experience of their concerns at Stirling, Edinburgh, Perth, Aberdeen, and Glasgow, stated that more than one half of the deposits in the banks with which he had been connected were in sums from £10 to £200. Being asked what class of the community it is that makes the small deposits, he said the laboring class; from which it appears that the mode of conducting this branch of the banking business in Scotland has long given to that country many of the benefits derivable from the establishment of savings banks.

The system of cash credits has been very well described in the Report of the Lords' Committee of 1826 on Scotch and Irish Banking. "There is also," say their lordships, "one part of their system, which is stated by all the witnesses (and, in the opinion of the committee, very justly stated) to have had the best effects upon the people of *Scotland*, and particularly upon the middling and poorer classes of society, in producing and encouraging habits of frugality and industry. The practice referred to is that of cash credits. Any person who applies to a bank for a cash credit is called upon to produce two or more competent sureties, who are jointly bound; and, after a full inquiry into the character of the applicant, the nature of his business, and the sufficiency of his securities, he is allowed to open a credit, and to draw upon the bank for the whole of its amount, or for such part as his daily transactions may require. To the credit of the account he pays in such sums as he may not have occasion to use, and interest is charged or credited upon the daily balance, as the case may be. From the facility which these cash credits give to all the small transactions of the country, and from the opportunities which they afford to persons who begin business with little or no capital but their character, to employ profitably the minutest products of their industry, it can not be doubted that the most important advantages are derived to the whole community. The advantage to the banks who give these cash credits arises from the call which they continually produce for the issue of their paper, and from the opportunity which they afford for the profitable employment of part of their deposits. The banks are indeed so sensible that, in order to make this part of their business advantageous and secure, it is necessary that their cash credits should, as they express it, be frequently operated upon, that they refuse to continue them unless this implied condition be fulfilled. The total amount of their cash credits is stated by one witness to be £5,000,000, of which the average amount advanced by the banks may be one-third."

Recapitulation of Scotch Banks, September 1, 1855.—The following return shows the circulation of the Scotch banks, and the average amount of coin held during the four weeks ending the 1st September:

Name and Title as set forth in License.	Circulation authorized.	Average Circulation in Notes.	Average Gold and Silver Coin.
	£	£	£
Bank of Scotland.....	600,485	375,184	170,812
Royal Bank of Scotland	183,000	185,502	63,826
British Linen Company	438,024	465,751	208,735
Commercial Bank of Scotland	374,880	470,407	160,613
National Bank of Scotland...	297,024	535,288	80,164
Union Bank of Scotland and Banking Company in Aberdeen.....	415,600	514,781	179,078
Edinburgh and Glasgow Bank	156,657	165,773	52,948
Aberdeen Town and County Banking Company	70,133	109,842	46,243
North of Scotland Banking Company.....	154,319	198,604	66,554
Dundee Banking Company ..	33,451	38,122	11,837
Eastern Bank of Scotland....	32,636	38,684	18,471
Western Bank of Scotland...	357,928	515,102	286,454
Clydesdale Banking Company	104,028	155,923	82,016
City of Glasgow Bank.....	72,921	213,463	162,868
Caledonian Banking Company	53,434	72,913	29,559
Perth Banking Company	38,656	48,551	18,174
Central Bank of Scotland....	42,933	59,493	24,772

V. Irish Banks.—"In no country, perhaps," says Sir Henry Parnell, "has the issuing of paper money been carried to such an injurious excess as in Ireland. A national bank was established in 1783, with similar privileges to those of the Bank of England, in respect to the restriction of more than six partners in a bank; and the injury that Ireland has sustained from the repeated failure of banks may be mainly attributed to this defective regulation. Had the trade of banking been left as free in Ireland as it is in Scotland, the want of paper money that would have arisen with the progress of trade would, in all probability, have been supplied by joint-stock companies, supported with large capitals, and governed by wise and effectual rules.

"In 1797, when the Bank of England suspended its payments, the same privilege was extended to Ireland; and after this period the issues of the Bank of Ireland were rapidly increased. In 1797, the amount of the notes of the Bank of Ireland in circulation was £621,917; in 1810, £2,266,471; and in 1814, £2,986,999. These increased issues led to corresponding increased issues by the private banks, of which the number was 50 in the year 1804. The consequence of this increase of paper was a great depreciation of it; the price of bullion and guineas rose to 10 per cent. above the mint price, and the exchange with London became as high as 18 per cent., the par being 8¾. This unfavorable exchange was afterward corrected, not by any reduction in the issues of the Bank of Ireland, but by the depreciation of the British currency in the year 1810, when the exchange between London and Dublin settled again at about par. The loss that Ireland has sustained by the failure of banks may be described in a few words. It appears by the Report of the Committee on Irish Exchanges in 1804, that there were at that time in Ireland 50 registered banks. Since that year a great many more have been established; but *the whole have failed*, one after the other, involving the country from time to time in immense distress, with the following exceptions: first, a few that withdrew from business; secondly, four banks in Dublin; thirdly, three at Belfast; and, lastly, one at Mallow. These eigh banks, with the New Provin-

cial Bank, and the Bank of Ireland, are the only banks now existing in Ireland.

"In 1821, in consequence of 11 banks having failed nearly at the same time in the preceding year in the south of Ireland, government succeeded in making an arrangement with the Bank of Ireland by which joint-stock companies were allowed to be established at a distance of 50 miles (Irish) from Dublin, and the Bank was permitted to increase its capital £500,000. The act of 1 & 2 Geo. 4, c. 72, was founded on this agreement. But ministers having omitted to repeal in this act various restrictions on the trade of banking that had been imposed by 33 Geo. 2, c. 14, no new company was formed. In 1824 a party of merchants of Belfast, wishing to establish a joint-stock company, petitioned Parliament for the repeal of this act of Geo. 2, and an act was accordingly passed in that session repealing some of the most objectionable restrictions of it (the 5 Geo. 4, c. 73). In consequence of this act the Northern Bank of Belfast was converted into a joint-stock company, with a capital of £500,000, and commenced business on the 1st of January, 1825. But the remaining restrictions of 33 Geo. 2, and certain provisions contained in the new acts of 1 & 2 Geo. 3, and 5 Geo. 4, obstructed the progress of this company, and they found it necessary to apply to government to remove them; and a bill was accordingly introduced which would have repealed all the obnoxious clauses of the 33 Geo. 2, had it not been so altered in the committee as to leave several of them in force. In 1825 the Provincial Bank of Ireland commenced business, with a capital of £2,000,000; and the Bank of Ireland has of late established branches in all the principal towns in Ireland.

"The losses that have been sustained in Ireland by abusing the power of issuing paper have been so great, that much more is necessary to be done, by way of protecting the public from future loss, than the measure proposed in the year 1826 by Parliament for abolishing small notes, and the measure already adopted of allowing joint-stock companies to be established in the interior of the country. As the main source of the evil consists in the interference of the law in creating a national bank with exclusive privileges, the first step that ought to be taken for introducing a good system into Ireland is the getting rid of such a bank, and opening the trade of banking in Dublin. The next measure should be the requiring of each bank to give security for the amount of paper that is issued; for after the experience of the ignorance with which the Irish banks have conducted their business, and the derangement of the natural course of the trade by the long existence of the Bank of Ireland, it would be unwise to calculate upon a sound system of banking speedily supplanting that which has been established. Under the circumstances in which Ireland is placed, nothing would so much contribute to her rapid improvement in wealth as the introducing of the Scotch plan of cash credits, and of paying interest on deposits. By cash credits the capital which now exists would be rendered more efficient, and the paying of interest on small deposits would lead to habits of economy, and to the more rapid accumulation of new capital."—*Observations on Paper Money, etc., by Sir* HENRY PARNELL, p. 171–177.

The capital of the Bank of Ireland, at its establishment in 1783, amounted to £600,000, but it has been increased at various periods, and has, since 1821, amounted to £3,000,000. The Bank of Ireland draws on London at 10 days' date. She neither grants cash credits, nor allows any interest on deposits. She discounts at the rate of 5 per cent. In 1828 the currency of Ireland was assimilated to that of Great Britain. Previously to that period the currency of the former was 8⅓ per cent. less valuable than that of the latter.

Provincial Bank of Ireland.—This important establishment was, as already stated, founded in 1825. Its subscribed capital consists of £2,000,000, divided into 20,000 shares of £100 each, of which 25 per cent., or £500,000, has been paid up. Its head office is in London; and at present it has subordinate offices in Cork, Limerick, Clonmel, Londonderry, Sligo, Wexford, Waterford, Belfast, Galway, Armagh, Athlone, Coleraine, Kilkenny, Ballina, Tralee, Youghall, Enniskillen, Monaghan, Banbridge, and Ballymena. The last five have been opened since 1831. The entire management of the establishment is vested in the court of directors in London. The business of the branch banks is conducted, under the control of the head office, by the managers, with the advice and assistance of two or more gentlemen of respectability in the district, each holding 10 shares in the bank. The business consists of discounting bills; granting cash credits after the manner of the Scotch banks; receiving deposits, on which interest, varying according to circumstances, is allowed; in drawing and giving letters of credit on other places of Ireland, Great Britain, etc.; and of other details incident to banking. It has had several pretty severe runs to sustain. In the course of a single week, in October, 1828, about £1,000,000 in gold was sent from England to Ireland on account of the Provincial Bank! This prompt and ample supply effectually maintained the credit of the establishment, and did much to restore confidence.

The notes of the Provincial Bank have always been payable at the places where they are issued. The Bank of Ireland began to establish branches in 1825; but the notes issued by her branches were not, at first, payable except at the head office in Dublin. This distinction, which tended to throw the principal pressure of runs in the country on the Provincial Bank and other private companies, was abolished by the act 9 Geo. 4. Several joint-stock banks have been established in Ireland since 1825, especially in 1836. But the greatest of these, the Agricultural and Commercial Bank, which had nearly 4000 partners and 28 branches, was in no long time obliged to suspend payments. Some of the others have also been abandoned. There are comparatively few private banks in Ireland.

"Not many years ago there were upward of six hundred loan societies in Ireland, besides private pawnbrokers, who abounded in every town throughout the kingdom. Two hundred were enrolled under 6 & 7 Will. 4, one hundred and sixty-eight were under the direction of the Irish Reproductive Loan Fund society founded in 1822. These various loan associations were productive of very little good to the people, the rates of interest charged to their customers being nearly such as are charged at ordinary pawnbrokers' establishments."—LAWSON *on Banking.*

The provisions in the act 8 & 9 Vict. c. 37, with regard to banking in Ireland, do not differ materially from those in the preceding act relating to Scotland. The prohibition that formerly existed against joint-stock banks carrying on business in Dublin or any where within 50 miles thereof is repealed; the charter of the Bank of Ireland is prolonged till January, 1855, when it may be dissolved on notice; notes of the Bank of England are declared not to be legal tender in Ireland; and notes for less than 20s. are not negotiable.

AVERAGE AMOUNT OF BANK-NOTES IN CIRCULATION OF THE SEVERAL CHARTERED BANKS OF IRELAND, AND OF COIN HELD DURING THE FOUR WEEKS ENDING SEPT. 27, 1856.

Name and Title.	Circulation authorized.	Average Circulation.	Average Coin held.
	£	£	£
Bank of Ireland	3,738,428	3,132,475	769,199
Provincial Bank	927,667	959,855	284,134
Belfast Bank	281,011	402,660	240,177
Northern Bank	248,440	249,532	112,032
Ulster Bank	311,079	403,847	135,365
National Bank	761,757	1,150,954	524,467
Carrick-on-Suir National Bank	24,084	30,075	7,620
Clonmel National Bank	66,428	57,313	13,175

A List of the Joint-stock Banking Companies of Ireland in 1846, specifying the Dates of their Establishment, the Number of their Partners, the Amount of their paid-up Capital, the Situation of their Head Offices, and of their Branches, when they have any, with the fixed Issue of those authorized to issue Notes.

Banks.	When established.	Number of Partners.	Paid-up Capital.	Amount of fixed Issue.
Bank of Ireland[1]	1783	—	£2,000,000	£3,768,428
Belfast Banking Company[2]	Dec., 1827	258	125,000	281,611
Hibernian Bank, Dublin[3]	June, 1825	—	250,000	No Issue.
London and Dublin Bank[4]	1843	426	100,000	No Issue.
National Bank of Ireland[5]	24 Jan., 1835	877	450,000	761,767
" " Clonmel[6]	May, 1836	—	—	66,428
" " Carrick-on-Suir[6]	May, 1836	—	—	24,084
Northern Banking Company, Belfast[6]	1 Jan., 1825	179	150,000	243,440
Provincial Bank of Ireland[7]	Sept., 1825	891	500,000 New Shares, 40,000	927,667
Royal Bank of Ireland[8]	Sept., 1836	436	209,050	
Tipperary Joint-stock Bank[9]	1838	—	—	No Issue.
Ulster Banking Company, Belfast[10]	April, 1836	480	200,000	311,079
			Total....	..£6,354,494

[1] Head Office, Dublin; Branches, Armagh, Ballinasloe, Belfast, Carlow, Clonmel, Cork, Drogheda, Dublin, Dundalk, Galway, Kilkenny, Limerick, Londonderry, Longford, Mountmellick, New Ross, Newry, Sligo, Tralee, Tullamore, Waterford, Westport, Wexford, and Youghal.

[2] Head Office, Belfast; Branches, Armagh, Ballymena, Ballymoney, Coleraine, Cookstown, Derry, Dungannon, Larne, Letterkenny, Magherafelt, Monaghan, Newtownlimavady, Newtownards, Portadown, Strabane, Tandragee, Dublin, Newry, and Castleblaney.

[3] Head Office, Dublin; Branch, Drogheda.

[4] Head Office, London; Branches, Dublin, Dundalk, Wicklow, Mullingar, Kells, Parsonstown, Carrick-on-Shannon, Carrickmacross, Athy, and Kinsale.

[5] Head Office, London; Branches, Dublin, Athlone, Ballina, Ballinasloe, Boyle, Carrick-on-Suir, Cashel, Castlerea, Charleville, Clonmel, Clonakilty, Cork, Dungarvan, Ennis, Enniscorthy, Fermoy, Galway, Kanturk, Kilkenny, Killarney, Kilrush, Middleton, Limerick, Longford, Loughrea, Mallow, Mitchelstown, Meate, Nenagh, New Ross, Rathkeale, Roscommon, Roscrea, Skibbereen, Tallow, Thurles, Tipperary, Tralee, Tnam, Waterford, Westport, and Wexford.

[6] Head Office, Belfast; Branches, Armagh, Ballymena, Coleraine, Clones, Carrickfergus, Downpatrick, Londonderry, Lurgan, Lisburn, Magherafelt, and Newtownlimavady.

[7] Head Office, London; Branches, Dublin, Armagh, Athlone, Ballina, Ballymena, Ballyshannon, Banbridge, Bandon, Belfast, Carlow, Cavan, Clonmel, Coleraine, Cork, Cootehill, Downpatrick, Drogheda, Dundalk, Dungannon, Dungarvan, Ennis, Enniscorthy, Enniskillen, Fermoy, Galway, Kilkenny, Kilrush, Limerick, Londonderry, Mallow, Monaghan, Newry, Omagh, Parsonstown, Sligo, Strabane, Skibbereen, Tralee, Waterford, Wexford, and Youghal.

[8] Dublin.

[9] Head Office, Clonmel; Branches, Athy, Carlow, Carrick-on-Suir, Nenagh, Roscrea, Thurles, Thomastown, and Tipperary.

[10] Head Office, Belfast; Branches, Armagh, Antrim, Ballymoney, Ballymena, Banbridge, Cootehill, Cookstown, Downpatrick, Enniskillen, Londonderry, Lurgan, Monaghan, Portadown, and Omagh.

VI. Foreign Banks.—To attempt giving any detailed account of the principal foreign banks would very far exceed our limits; we shall, therefore, only notice a few of the more celebrated.

The *Bank of Venice* seems to have been the first banking establishment in Europe. It was founded so early as 1171, and subsisted till the subversion of the republic in 1797. It was essentially a deposit bank, and its bills bore at all times a premium or *agio* over the current money of the city.

The *Bank of Amsterdam* was established in 1659. It was a deposit bank, and payments were made by writing off sums from the account of one individual to those of another. According to the principles on which the bank was established, it should have had at all times in its coffers bullion equal to the full amount of the claims upon it. But the directors privately lent about 10,500,000 florins to the States of Holland and Friesland. This circumstance transpired when the French invaded Holland, and caused the ruin of the bank.

The *Bank of the Netherlands* was established in 1814. It is formed on the model of the Bank of England, and has the exclusive privilege of issuing notes. The original capital of 5,000,000 florins was doubled in 1819. The king holds *one-tenth* of the shares. The affairs of the bank are managed by a president, secretary, and five directors, who are chosen every six months, but may be indefinitely re-elected. This bank discounts bills of exchange with three responsible signatures; it takes continuations on stock, and sometimes lends on bullion at such a rate of interest and to such an extent as may be agreed upon. It occasionally, also, makes loans on merchandise, but never at less than 5 per cent. Its notes vary from 1000 florins to 25 florins; that is, from £83⅓ to £2 1-12. The dividends have varied from 3 to 7 per cent. The shares are each 1000 florins. The responsibility of the shareholders is limited to the amount of their stock. Its original charter, which was limited to 25 years, was prolonged, in 1838, for 25 years more.

The *Bank of Hamburg* is a deposit bank, and its affairs are managed according to a system that insures the fullest publicity. It receives no deposits in coin, but only in bullion of a certain degree of fineness. It charges itself with the bullion at the rate of 442 shillings the mark, and issues it at the rate of 444 shillings, being a charge of four-ninths, or nearly one-half per cent., for its retention. It advances money on jewels to three-fourths of their value. The city is answerable for all pledges deposited with the bank; they may be sold by auction, if they remain 1 year and 6 weeks without any interest being paid. If the value be not claimed within three years, it is forfeited to the poor. The Bank of Hamburg is universally admitted to be one of the best managed in Europe.

France.—The *Bank of France* was founded in 1803. The exclusive privilege of issuing notes payable to bearer was granted to it for forty years, and was continued, by a law passed in 1840 (confirmed in 1852), till 1867. This law was preceded by a very able Report, drawn up by M. Dufaure, in which, among other questions, the policy of having only one bank of issue in Paris is examined, and decided in the affirmative. The capital of the Bank consisted at first of 45,000,000 fr.; but it was subsequently increased to 90,000,000 fr., divided into 90,000 shares or *actions* of 1000 fr. each. Of these shares, 67,900 passed into the hands of the public; 22,000, having been purchased up by the bank out of the surplus profits, were subsequently canceled; hence the capital of the bank consisted, previously to the Revolution of 1848, of 67,900,000 fr. (£2,716,000), exclusive of a reserve fund of 10,000,000 fr., since increased to 12,980,750 fr. But notwithstanding the laudable skill and caution with which her affairs were conducted, the bank could not avoid suspending payment under a decree of the Provisional Government of the 16th March, 1848, to which and to the city of Paris she had to make large advances. To set some limit to the abuses that might have taken place under the suspension, the maximum circulation of the Bank was fixed, by the decree now referred to, at 350,000,000 fr.; while, in the view of supplying a currency suited to the smaller class of payments, she was permitted to re-

duce the denomination of notes in circulation from 500 to 100 fr. At the same time, or soon after, the departmental banks, or banks which had been established in some of the principal provincial towns, were consolidated with, and made branches of the Bank of France. We subjoin a copy of the decree of the 27th of April, 1848, by which this amalgamation was effected.

Art. 1. The banks of France, of Rouen, Lyons, Havre, Lille, Toulouse, Orleans, and Marseilles are united.

Art. 2. The departmental banks above enumerated will continue in operation as branches of the Bank of France, conformably to the regulations stipulated in the decree of the 18th of May, 1808, and the ordonnance of the 25th of March, 1841.

The present number of the administrators of the departmental banks is maintained, as also the boards of discount, organized for the service of several of them.

The number of shares, the possession of which is at present required as a guarantee from the directors, censors, administrators, and members of the councils of discount of those departmental banks, is provisionally maintained.

Art. 3. The shares of these banks are annulled, and the holders shall receive in exchange shares of the Bank of France at a nominal value of 1000 fr. for a nominal value of 1000 fr.

Art. 4. In order to execute the above article the Bank of France is empowered to issue 17,200 new shares, which will increase its capital to 85,100 shares of 1000 fr.

Art. 5. By the cession of those new shares to the shareholders of the banks of Rouen, Lyons, Havre, Lille, Toulouse, Orleans, and Marseilles, the Bank of France shall become proprietor of the capital of those banks, and be made chargeable with their engagements. The reserve funds, existing in each of those banks, shall be added to the reserve fund of the Bank of France. The multing of the landed and chattel property, resulting from the present article, shall be subjected to the fixed registry duty imposed on deeds of partnership.

Art. 6. The Bank of France is authorized to add to the *maximum* of circulation, fixed by the decree of the 15th of March last, the *maximum* of the circulation fixed for each of the departmental banks by the decree of the 25th of the same month.

From the date of the promulgation of the present decree the notes issued by the banks incorporated with the Bank of France shall be received throughout the republic as a legal tender by all the branches of the public treasury and private individuals. The holders of said notes shall have to present them to the Bank of France, or to its branches, within the following six months, in order to exchange them for notes of that bank. Beyond that period those notes shall cease to be current as a legal tender, but the Bank of France and its branches shall not be exonerated from the obligation of exchanging them.

Art. 7. The inspectors of the finance department, on an order of the minister, may verify the situation of the branch banks.

Art. 8. In future the branch banks of the Bank of France shall bear the following denomination: "Bank of France, Branch Bank of ——."

Banks.	Shares.	Francs.
Bank of Rouen	3,000	3,000,000
" Lyons	2,000	2,000,000
" Havre	4,000	4,000,000
" Lille	2,000	2,000,000
" Toulouse	1,200	1,200,000
" Orleans	1,000	1,000,000
" Marseilles	4,000	4,000,000
	17,200	17,200,000
Bank of France	67,900	67,900,000
	85,100	85,100,000

The banks of Bordeaux and Nantes were at first disposed strenuously to resist the project for their incorporation with the Bank of France. In the end, however, they gave way; and, in consequence, 6150 shares, and an additional capital of 6,150,000 fr., were added to the shares and capital of the Bank of France, making at present (1853), the former 91,250, and the latter 91,250,000 fr. The maximum circulation of the bank was at the same time increased from 350,000,000 to 452,000,000 fr.

On the whole, we are inclined to think that this conversion of the departmental banks into branches of the Bank of France is a considerable improvement. It gives an equality of value to the paper currency, which it could not otherwise have had, and makes it equally serviceable in all parts of the country. It is surprising, indeed, how soon the Bank of France recovered from the severe shocks to which she was exposed in 1848, and to what a degree she has regained the public confidence. But despite the able management of the bank, her intimate connection with the government makes her stability in a great degree dependent on that of the latter.

A decree of the 3d March, 1852, has prolonged the charter of the bank till 1867, and has authorized her to make advances on railway stock and on the bonds of the city of Paris. The issue of notes for 50 fr. and 25 fr. would, we incline to think, be a great improvement. There has been, within the last three or four years, a great accumulation of bullion in the coffers of the bank. Recently, however, it has been diminished notwithstanding a rise in the rate of interest.—Seneuil, *Traité de Banque*, p. 196–224, 2d ed., etc. No bills are discounted that have more than three months to run. The bank is obliged to open a *compte courant* for every one who requires it, and performs services for those who have such accounts similar to those rendered by the private banks of London to their customers. She is not allowed to charge any commission upon current accounts, so that her only remuneration arises out of the use of the money placed in her hands by the individuals whose payments she makes. This branch of the business is said not to be profitable. The bank advances money on pledges of different kinds, such as foreign coin or bullion, government or other securities, etc. It also undertakes the care of valuable articles, as plate, jewels, title-deeds, etc. The charge is $\frac{1}{4}$ per cent. of the value of each deposit for every period of six months or under.

The administration of the bank is vested in a council-general of 20 members, viz., a governor and deputy-governor, nominated by the emperor; and 15 directors and three censors, chosen by the general body of the shareholders. The bank has a large surplus capital, and at present enjoys a high degree of credit.

"The circulation of the Bank of France has increased since 1848; first, in consequence of smaller notes being put into circulation (for notes of 100 fr. are now current); and, secondly, because of the establishment of branch banks facilitating intercommunication with all the principal cities of the empire. The circulation in 1853 and 1854 exceeded 500 millions. But in those years the amount of specie in the bank cellars exceeded the amount of the whole circulation, so that the substitution of paper for gold was not of so much service, or so economical to the country, as it might have been under other circumstances. Not less than the value of 10,000 francs is received as a deposit, and discount for forty-five days is deducted from the amount of the sum advanced; nor, if the deposit be redeemed the next day, is any part of the discount refunded. The paper of the Bank of France chiefly circulates in Paris and the neighborhood; at a distance from Paris its notes pass at a discount of one and a half per cent., as they are not received in payment of taxes or custom-house duties in seaports."—E. B.

New Financial Institution in Paris.—"The *Société Générale de Crédit Mobilier*, established by a decree of 18th November, 1852, is a species of a bank, the partners in which have not given their names. Its principal operations consist in purchasing or acquiring shares in public companies, provided they be *en société anonymes*; secondly, in circulating its own securities for a sum equivalent to the shares or stock purchased; thirdly, in exchanging all actions and obligations so acquired; fourthly, in lending on public securities on the deposit of actions and obligations, etc. The capital of the society is fixed at 60,000,000 fr., and it is represented by 120,000 shares of 500 fr. each. The society can circulate its own 'obligations' for a sum six times as large as its capital."—E. B.

LIABILITIES AND RESOURCES OF THE BANK OF FRANCE FOR SEPTEMBER AND OCTOBER, 1850.

Liabilities.	Oct., 1850.	Sept., 1850.
	Francs.	Francs.
Capital of the Bank	91,250,000	91,250,000
Reserve of the Bank	12,980,750	12,980,750
Do. in landed property	4,000,000	4,000,000
Bank-notes in circulation	551,975,100	543,502,200
Do. of the branch banks	69,120,700	77,024,400
Bank-notes to order	4,273,286	4,423,524
Receipts payable at sight	5,521,358	5,063,888
Treasury account current	101,412,547	118,818,302
Sundry accounts current	119,685,763	100,008,295
Do. with the branch banks	23,379,947	25,475,446
Dividends payable	916,431	1,141,905
Discounts and sundry interests	11,247,398	7,480,220
Re-discount the last six months	1,029,993	1,029,993
Protested bills	23,350	15,862
Sundries	6,753,523	5,074,128
Total	1,002,170,644	998,458,913
Assets.		
Cash in hand	77,062,910	113,126,401
Cash in the branch banks	89,407,036	122,076,020
Commercial bills overdue	605,681	2,111,194
Bills discounted, not yet due	271,955,426	221,808,498
Do. in the branch banks	239,023,302	217,820,320
Advanced on deposit of bullion	3,726,900	1,749,400
Do. by the branch banks	3,745,975	2,923,475
Advanced on public securities	76,021,936	78,420,339
Do. by the branch banks	11,914,950	11,876,150
Advanced on railroad securities	38,060,000	38,273,100
Do. by the branch banks	17,211,100	17,180,900
Advanced to the State on agreement of June 30, 1848	55,000,000	55,000,000
Discount of Treasury bonds	40,000,000	40,000,000
Government stock reserved	12,980,750	12,980,750
Do. disposable	52,190,045	52,299,795
Hotel and furniture of Bank	4,000,000	4,000,000
Landed property of branch banks	5,256,495	4,998,397
Expenses of management	1,188,680	823,584
Premium on gold and silver	2,128,594	1,496,313
Sundries	84,551	75,347
Total	1,002,170,644	993,458,913

Banks have also been established in Berlin, Copenhagen, Vienna, and Petersburg. Those who wish for detailed information with respect to these establishments may consult the 4th vol. of the *Cours d'Economie Politique* of M. STORCH, which contains a good account of the paper money of the different Continental states down to 1823. We also refer to other portions of this article; but in the mean time we lay before our readers the following details with respect to the Commercial Bank of Russia, established in 1818:

This bank receives deposits in gold and silver, foreign as well as Russian coin, and in bars and ingots. It has a department for transferring the sums deposited with it, on the plan of the Hamburg Bank. It discounts bills, and lends money on deposits of merchandise of Russian produce or origin. Its capital consists of 8,571,429 silver rubles. It is administered by a governor and four directors, appointed by government; and four directors, elected by the commercial body of Petersburg. The property in the bank is protected against all taxation, sequestration, or attachment; and it is enacted that subjects of countries with which Russia may be at war shall be entitled at all times to receive back their deposits without any reservation. It is also declared that at no time shall the bank be called upon for any part of its capital to assist the government. All deposits must be made for 6 months at least, and be repayable at or before that period, and not be less than 500 paper rubles: sums so deposited to pay ½ per cent. The deposits, if in bars, ingots, or foreign specie, are estimated in Russian silver coin, and so registered in the attestation; and if not demanded back within 15 days of the expiration of 6 months, or the necessary premium paid for the prolongation, the owner loses the right of claiming his original deposit, and must take its estimated value in Russian silver coin. No bills are discounted that have less than 8 days or more than 6 months to run. The rate of discount is 6 per cent. No interest is allowed on money deposited in the bank, unless notice be given that it will be allowed to lie for a year, and 3 months' notice be given of the intention to draw it out, when *six* per cent. interest is allowed. The bank has branches at Archangel, Moscow, Odessa, Riga, &c.

By means of its capital and deposits, which in 1839 amounted together to 161,881,839 silver rubles, the bank effected in that year the following operations:

	Rubles.	Cop.
1. Repayments on deposits in transfer	24,966,101	45
2. Transfers from one city to another	19,986,313	96
3. Drafts purchased	3,332,661	64
4. Repayment of deposits at interest	31,925,770	91
5. Discount of bills of exchange	17,217,541	7
6. Advances on deposits of merchandise	1,548,604	08
7. Advances on the notes of other banks	659,001	13
8. Discount of notes of the Lombard	1,925,571	43
9. Advanced on fixed property by branch at Kieff	174,070	80

The net profit during the same year amounted to 656,501 silver rubles, and the reserve capital of the bank was then also 1,279,976 silver rubles.—*See* Supplement to the *Journal de St. Petersbourg* for 1839, p. 87.

Banks of Germany.—The Bank Royal of Prussia was founded at Berlin in 1765, upon the model of that of Hamburg. So it existed until 1846, when it was reorganized under a new charter, by which more extension was given to its operations. In accordance with this new constitution, which has been in force since the 1st of January, 1847, the issue of notes has been carried to fifteen millions of thalers (the thaler equal to 2*s.* 10¾*d.* sterling). In 1850 this issue was raised to twenty-one millions of thalers. The capital of the bank is always to be in proportion with the notes in circulation, two-sixths in silver, three-sixths in bills discounted, and the rest in loans on securities. The bank-notes are from twenty-five to fifty thalers each. The share of the government in the bank amounts, at most, to 500,000 thalers. The shareholders are entitled to an annual interest of 3½ per cent. upon the capital, and, after deduction of the sum set apart for the reserve or rest, which is not to exceed 30 per cent. of the capital, one moiety of the surplus profits is apportioned to them in addition, and the other goes to the treasury. The bank has branches in a great number of cities, as Breslau, Königsberg, Dantzic, Stettin, Magdeburg, Munster, Cologne, Memel, Posen, Stolpe, Elberfeld, Treves, Aix-la-Chapelle, Dusseldorf, Coblentz, Minden, Erfurt, Frankfort-sur-Oder, Stralsund, Kostlin, Liegnitz, and Oppeln, and thus forms a vast network of financial operations through all the kingdom.

The private bank of the noblesse of Pomerania was founded at Stettin, in 1824, by an association of noble proprietors, with a capital of 1,000,000 thalers. After the crisis of 1830, this capital was carried to 1,534,500 thalers. The operations of this bank embrace discount, loans upon lodgments of merchandise, loans upon public and private securities, current accounts, and deposits with interest. Formerly, it issued promissory notes to bearer; but this privilege was withdrawn from it in 1835. There is a circulation of about ninety millions of thalers of mortgage notes in Prussia (these are, in fact, for one hundred and five millions). They have been issued, at different periods, by associations of proprietary nobles in various parts of the kingdom, and carry interest at 3½ per cent.

The National Bank of Vienna was founded in 1815, to re-establish order in the finances of Austria, and more particularly for the repurchase or the conversion of the paper money in circulation, the value of which was become almost nominal. The different creations of shares have raised its capital to about 89,000,000 florins. This capital is divided into 50,621 shares of 1500 florins each. The actual operations of the bank are discount; the issue of bank-notes, a privilege which it enjoys exclusively throughout the Austrian empire; loans upon deposits, and negotiations of loans. The bank pays an annual interest of 6 per cent. upon the primitive capital, and a dividend, after deduction of the reserve fund. Its privilege, or charter, extends to the year 1866. It has branches at Prague, Brünn,

Troppau, Ogen, Temeswar, Kashau, Lemberg, Trieste, Innspruck, Goritz, Linz, and Hermstadt.

The Bank of Extraordinary Credit of Vienna was constituted in 1846 by imperial decree, and has for its object to devote a part of the sums destined for the redemption of the national debt to the purchase of certain shares in railway and other enterprises, in order to sustain useful undertakings, and communicate a greater impulse to them.

The Loan and Exchange Bank of Bavaria was founded at Munich, in 1835, by shares, under the surveillance and control of the government. It is privileged for ninety-nine years. The original capital was 10,000,000 florins, with liberty of increase to 20,000,000. In 1846 there was a new emission of shares of 500 florins. The net profits are divided as follows: Three per cent. as divided to the shareholders, and, of the surplus, three-fourths as extra dividend, and the remaining fourth carried to the reserve, until it shall reach to one-tenth of the capital. Three-fifths of the capital are employed in loans on mortgage. The other operations are discounts, loans on securities and ingots; the issue of bank-notes, whose amount is limited to four-tenths of the capital, and three-fourths of it to be covered by a value of double the sum in mortgage credits, or in silver. The bank has a branch at Augsburg.

The Royal Bank of Bavaria, first established at Ansbach, and now at Nuremberg, is one of the oldest establishments of the kind. Its operations are discounts, deposits, loans upon personal and other securities. The government is entitled to half the profits. It has branches at Ansbach and Bamberg.

The Royal Bank of the Court of Wurtemberg, founded in 1802 at Stutgardt, limits its operations to discounts and loans.

The Bank of Leipsic was founded in 1839, under the auspices of the government, with a capital of 1,500,000 thalers, divided into shares of 250 thalers, receiving 3 per cent. interest. Its operations are deposits, loans, and discounts. It has the right of issuing notes of 20 and 100 thalers each, of which the two-thirds should be guaranteed by values to the amount in specie or ingots.

There exists, besides, at Dresden, a loan bank, which makes advances to land proprietors and farmers for the payment of taxes, tithes, etc. Leipsic has also an institution of this kind under the name of "Union of Credit for the hereditary lands of the Saxon nobility."

It was in agitation, in 1846, to found at Dessau a great central establishment, to answer the purpose of a vast banking system for the north of Germany. It was proposed to endow it with an accumulation of capitals to the extent of from 50,000,000 to 100,000,000 thalers. But this gigantic project has resolved itself into a private enterprise, established in the beginning of 1847, under the title of the Provisional Bank of Anhalt-Dessau, with a capital of 2,500,000 thalers, divided in shares of 200 thalers. This establishment issues notes of 1, 5, 10, 20, 50, 100, 500, and 1000 thalers each. One-fourth the value of the bank-notes in circulation should be covered by an equivalent sum in specie.

The Bank of Hamburg was founded in 1619. The minimum deposit of a member desiring to open an account is 100 marks banco in bar silver, or in a bill, for the same sum, of one of the members of the bank, which is then transferred from the account of the latter to that of the former. Transfers can not take place for a less sum than 100 marks, except some days before Christmas, or in the middle of July. Hitherto, for each mark of fine silver of Cologne, the depositor was accredited with 27⅔ marks banco; while, in withdrawing his money for a similar sum, he was debited with 27¾ marks banco, so that the simple usage of the operation brought a cost of 9·20 per cent. A new regulation, which is to come into force on the 15th of August, 1857, imports that the mark of fine silver of Cologne shall be credited 27⅔ marks banco, and debited at a similar rate after deduction of 1 per mille. Independently of this sort of business, the bank lends upon Spanish and American dollars, and sometimes also on copper. These are its only operations.

The association of the new loan, established equally at Hamburg, in 1839, possesses a capital of 100,000 marks banco, and does business prohibited to the bank, principally loans on securities, public funds, etc.

There have been numerous financial enterprises, lately started on the Continent of Europe, absorbing a heavy amount of capital hitherto available for other purposes. The following list of new banks in Germany represents a capital of nearly 115,000,000 dollars, which forms but a small part of the amount lately invested by German capitalists within the borders of their own country. The shares of all the banks named hereafter command a high premium, although but few of them have been sufficient time in operation to pay dividends.

List of Banks established in Germany since 1853.

Year.	Name.	Place.	Capital.
1853	Landes Bank,	Dessau,	4,000,000 Thalers.
1853	Braunschweiger Bank,	Brunswick,	2,500,000 Thalers.
1853	Bank fuer Handel und Industrie,	[illegible]rmstadt,	25,000,000 Guilders.
1854	Weimarsche Bank,	[illegible]eimar,	5,000,000 Thalers.
1855	Frankfurter Bank,	Frankfort-on-the-Main,	20,000,000 Guilders.
1855	Wiener Cr. Bank,	Vienna,	60,000,000 Guilders.
1856	Gerae Bank,	Gera,	3,000,000 Thalers.
1856	Thueringische Bank,	Sondershausen,	3,000,000 Thalers.
1856	Bank fuer Sued Deutschland,	Darmstadt,	20,000,000 Guilders.
1856	Coelner Bank,	Cologne,	1,000,000 Thalers.
1856	Bremer Bank,	Bremen,	2,500,000 Th. Gold.
1856	Hess. Landes Bank,	Homburg,	1,000,000 Guilders.
1856	Mittel Deutsches Cr. Institut,	Meiningen,	8,000,000 Thalers.
1856	Credit Anstalt,	Dessau,	8,000,000 Thalers.
1856	Credit Institut,	Leipsic,	10,000,000 Thalers.
1856	Disconto Gesellschaft,	Berlin,	5,000,000 Thalers.
1856	Coburg-Gothaische Cr. Gesellschaft,	Coburg,	10,000,000 Thalers.
1856	Cr. und Verisicherungs Gesellschaft,	Lubec,	3,000,000 Thalers.
1856	Privat Bank,	Magdeburg,	1,000,000 Thalers.
1856	Norddeutsche Bank,	Hamburg,	20,000,000 Mares Bco.
1856	Vereins Bank,	Hamburg,	20,000,000 Mares Bco.

"The mania for establishing Credit Mobiliers in Germany shows no signs of subsiding. To those of Vienna, Frankfort, Darmstadt, Leipsic, Dessau and others, of which the shares are at premiums ranging from 10 to 90 per cent., there are now two additions which have been introduced at Berlin. The first consists of several second-rate merchants and bankers. The other, which is designated the Society of Commercial Credit, counts among its administrators some of the first mercantile names in Berlin. The capital is fixed at 15,000,000 thalers (or £2,250,000), of which the directors take 7,550,000 thalers at par, while the remainder are to be sold at a premium, which is to be carried to the credit of the company. Upon a subscription being opened for a portion of the amount, at 10 per cent. premium, applications were sent in to the extent of 140,000,000 thalers. The eagerness to obtain shares is attributable to the fact of the company having at its head commercial men who have always been known to be successful. The managers reserve to them-

selves 5 per cent. out of the profits, and the directors are to have 5 per cent. before any distribution whatever is made to the shareholders. The shares are of two hundred thalers each, and are already in great demand at 17 per cent. premium."—*London Times, August*, 1856.

MOVEMENTS OF THE IMPERIAL BANK OF AUSTRIA, FOR THE YEARS 1852-1855.

Transactions of the Bank in Florins.

During the Year.	Advanced to the Government.	Drafts.	Discounts.	Advances on Securities.	Indorsements.	Amount of Bills redeemed.
	Florins.	Florins.	Florins.	Florins.	Florins.	Florins.
1852	—	89,252,531	199,354,440	91,171,300	191,406,338	112,200
1853	—	84,985,637	231,935,293	107,750,500	236,043,698	80,600
1854	241,000,525	149,917,815	325,058,183	177,705,000	224,359,896	66,075
1855	—	154,085,575	414,188,043	282,006,450	244,479,407	22,475

At the close of the Year.	Claims on the Government.	Specie.	Circulation.	Notes and Bills of Exchange on hand.	Amount of pledged	
					Securities.	Deposits.
	Florins.	Florins.	Florins.	Florins.	Florins.	Florins.
1852	150,660,279	43,247,366	194,943,256	36,321,435	81,450,350	93,245,428
1853	121,710,790	44,881,354	188,309,217	53,447,337	41,805,364	85,764,908
1854	294,226,495	45,207,083	383,491,000	73,212,203	89,709,660	83,166,666
1855	253,175,172	49,410,555	377,880,275	86,764,715	154,649,506	82,380,229

Results.

	Total Amount of Specie Transactions.	Total		Surplus of Receipts.	Dividend.	Amount of the Reserve Fund.	Pension Fund.
		Receipts.	Expenditures.				
	Florins	Florins.	Florins.	Florins.		Florins.	Florins.
1852	2,324,000,255	1,284,635,327	1,883,512,482	101,112,845	70	10,361,588	967,671
1853	2,324,942,752	1,273,106,264	1,852,949,335	120,156,931	83	10,361,588	930,949
1854	3,004,141,937	2,089,517,101	1,939,754,707	149,772,454	85	10,361,588	961,367
1855	3,397,338,028	1,862,101,449	1,384,999,033	177,102,416	73	10,361,588	992,489

VII. BANKING IN THE UNITED STATES.—The banking interest of the United States has attained an importance in the varied concerns of this widely-extended country, and is so interwoven with all our commercial, manufacturing and agricultural pursuits, that it must be conceded that it is a great motive power in our condition of national prosperity, and secondary in its influence only to that of the government itself. And yet there are few subjects of a practical nature on which the people of the United States have so widely differed in opinion as upon the policy of banks and the substitution of a paper currency, based even upon coin, for one purely metallic. On one side, the zealous friends of banks have sometimes overrated the utility of paper credit, and attributed to it a creative power which even gold and silver do not possess; on the other side, their opponents, without distinguishing between the uses and abuses of banks, discerned, in these useful and almost indispensable auxiliaries to commerce, manufactures and agriculture, nothing but mischief, and regarded them as impeding the wealth of the nation, and even as injurious to its morals as well as dangerous to its liberties. Both parties, perceiving the glaring errors of their adversaries, have been strengthened in their own opinions, and as each party has alternately come into power, it has established or subverted, encouraged or rejected, the present banking policy of the country. A comparison of the amounts of bank capital in several important years, from 1837 to 1856, will exhibit the fluctuations which have taken place during the last twenty years:

Years	Capital.	Banks.	Circulation.
1837	$290,772,091	788	$149,185,890
1840	358,442,692	901	106,968,572
1843	228,861,948	691	58,563,608
1846	196,894,309	707	105,552,427
1850	217,317,211	824	131,366,526
1851	301,376,071	1208	204,689,207
1856	347,420,240	1371	177,157,412

These banks had, in the corresponding years, specie in their vaults, 38, 33, 33½, 42, 45, 59 and 60 millions of dollars, and the amount of specie in *circulation* steadily increased from 35 to 191 millions, in addition thereto, according to the most reliable estimates, viz.:

Years.	Deposits.	Loans and Discounts.
1837	$127,397,185	$525,115,702
1840	75,696,857	462,896,523
1843	56,168,628	254,544,937
1846	96,913,970	312,114,404
1850	109,586,595	364,204,078
1854	188,188,744	607,287,428
1856	237,964,981	634,183,280

It must be borne in mind that the two last crises in bank affairs occurred in the years 1837 and 1842-43, and their circulation, as it appears above, was reduced from $149,200,000 to $58,563,608, and their specie from $37,915,340 to $33,515,806. The consequence was a ruinous fall in prices of property, and many business men found it impossible to comply with their engagements, under the sudden contraction of bank loans from 525 to 254 millions of dollars.

The history of all our bank pressures and panics has been the same in 1825, 1837, and 1843, and the causes given in two simple words—*universal expansion;* and nothing but gold and silver possesses the conservative power to regulate the state of our currency or check the ruinous inflation to which our banks are prone, but for this check on their issues. All other kinds of property have but a fictitious value, which in periods of continued prosperity is enhanced beyond the limits of reason or common discretion. At such times the banks themselves have aided the popular delusion by stretching their utmost spread of canvas to court the favoring breeze; but when caught aback, are the most alarmed at the perils which they are sure to encounter. Instead of becoming auxiliary to others, they but increased the panic and aggravated the troubles, which foresight might have prevented. Experience has shown that the contraction which succeeds an uninterrupted prosperity is more disastrous than if the community had never enjoyed any bank extension. If the effect of these fluctuations was confined to the speculators who originated them, there would be little to excite public anxiety or sympathy; but the misfortune is, that they reach the industrial classes of society, and all who are dependent on their daily labor for support. When the banks fail to redeem their circulation, the laborer, the artisan and small dealer, who earn their ten or twenty dollars per week, are despoiled of their hard earnings, and it is not surprising that among these classes of society there should exist a jealousy of banks, when they are always in danger of receiving and holding bankrupt notes; since, in the interior, most of them are unacquainted with the character of the currency which is proffered to them in payment.

But the laborer and the operative not only suffer by the suspension of banks; they are in a greater or less degree affected by bank inflations. When money is abundant in what are termed *prosperous* times, their daily wages have never yet kept pace with the high prices of produce or manufactures. Nor do our seamen always participate in the advanced rate of freights; but when the price of every thing about us is enhanced,

we are accustomed to adhere to the same valuation of the wages of labor. If the standard of their value is rightly estimated in part by the cost of subsistence, the rate ought, in justice, to be advanced when prices are high, as well as to reduce the rate when the market is depressed; but the latter course is frequently adopted, while the former is submitted to with evident reluctance.

But are the banks *alone* to blame for these fluctuations of expansions and contractions? To a certain extent they are, but not wholly so; they are but auxiliaries. In periods of prosperity they have on hand money to loan, and dispense it freely while it is in their power, as it is their duty to do, in order to secure good dividends for their stockholders; but it was the excess of confidence out of the banks which first induced speculation, and the expansion of individual credit to its utmost tension. While money is redundant and capital unemployed, temptations are offered to the adventurous, and speculation becomes rife in stocks, lands, railroads, mines, and the countless "fancies" which promise such flattering results in such a brief period of time. Nor is this speculative spirit confined to our commercial cities; it pervades the whole country, and a fictitious value is attached to every thing animate and inanimate, movable or fixed, which possesses any value at all. The property thus enhanced in valuation, without any reasonable cause, is either sold to some irresponsible purchaser, or perhaps mortgaged as security for some other speculation; pay day comes round, the sober second thought discloses the infatuation, and the dreamer awakes to the appalling perception of his true condition. The property is *sacrificed*; in other words, it is sold for its specie value, and the speculator is ruined, involving in his fall the credulous individuals who have trusted in his supposed forecast or his plausible representations. All classes of the community feel the shock, and the general outcry is against the banks as the origin of the evil; but is it an evil?

It must be acknowledged by all that an uninterrupted course of prosperity caused by a redundancy of currency, and the consequent supply of bank facilities, would, in the end, be prejudicial to the true and permanent welfare of the country. We have had experience enough during our intervals of success to note the consequences of a prosperous career, and the benefits have never been equally shared by the community. Bold and reckless speculators, monopolists in every branch of trade, wealthy capitalists, and a few adventurers, may have amassed fortunes in some few instances, but ten times the number of each description have been *ruined*; and under any circumstances, the great mass of the community, the laboring classes, salaried officers, annuitants of every sort, professional men, medical, legal, and clerical, while they derive little benefit from the golden harvest, are inevitably doomed to suffer their full proportion of the losses which ensue.

The moral tone of society is also deteriorated and corrupted by the continuance of prosperity; luxury, with its enervating influence; extravagance, with its lavish expenditures, undermine the foundation of our moral strength, economy, and integrity, and corrupt not only our morals but our legislation. An extravagant style of living and habits of personal expenditure on the nameless artificial wants and luxuries of society, which are almost inseparable from suddenly acquired or even suppositive wealth, have no small share in creating a demand for money, which ultimately leads to ruin; first, by a loss of confidence and impaired credit; next, temporary sacrifices; and, finally, by bankruptcy. And it is better that it should be so, for the occasional sifting of the chaff from the wheat has always been followed by periods of well-regulated trade, reasonable profits, and that degree of thrift with which men of integrity and substance are contented. Trade flows on in its natural channels, neither impeded by artificial barriers nor impelled by the force of speculation. Reverses, then, are the surest safeguards against approaching ruin, and banks managed by conscientious and prudent directors are the great conservatives which arrest the proclivity of financial profligacy to national destruction. What reason is there, then, in the popular outcry in the dominant party against banks, when it is obvious that they are one of the strongest and best protectors of the interests of the industrial classes? "It is true that the banks are not beyond the reach of adversity; like other business corporations, they may be on the high tide of success, and tempests from distant quarters may sink them beneath the waters, without any fault of their own. Channels of trade, now full, may dry up; important departments of industry may be broken down; the earth may not yield its increase in unpropitious seasons; wars may arrest or reverse the great currents of trade; embargoes and non-intercourse may sweep commerce from the ocean; and when the whole country is overwhelmed with embarrassment by events so great and controlling in the commerce of the world, it can not be expected that the banks should escape."

From 1843 to 1850, there was at first a diminution and then an increase of capital, but the circulation steadily advanced each successive year, especially in 1848, occasioned by the large exportation of breadstuffs to Europe the preceding year, and the return of nearly twenty-five millions of specie, which gave to all the western banks the long-needed relief. During the financial year ending in June, 1847, our exports amounted to $158,000,000, of which $68,000,000 were in breadstuffs, and $54,000,000 in cotton, and exceeded our imports $12,000,000. This amount of exports was larger by $40,000,000 than in any preceding year (excepting in 1839, when the amount was $162,000,000), and about $30,000,000 more than in 1835-'36 or 1841. The amount of domestic exports has never been exceeded before nor since, with the exception of 1854, when the export of breadstuffs was nearly $66,000,000, and of cotton $94,000,000; the whole export having been, in 1847, $158,000,000, as above stated, and in 1854, $274,000,000; but in the latter year the imports exceeded the exports nearly $30,000,000; while in 1847 the latter were $12,000,000 greater.

We have stated these facts merely to show some of the causes of the fluctuations which periodically occur in our financial difficulties. It is common to attribute these difficulties to excessive importations; but this is not so. A tabular statement of the excess of imports over exports will aid us in our examination of this subject. Since 1800, there have been thirteen years when the exports have exceeded the amount of imports from two to five millions; in 1839, $41,000,000; in 1813, $20,000,000; and in 1847, $12,000,000.

Years.	Excess of Imports.	Years.	Excess of Imports.
1800	21,000,000	1828	16,000,000
1801	17,000,000	1831	22,000,000
1805	25,000,000	1832	14,000,000
1806	28,000,000	1833	18,000,000
1807	30,000,000	1834	22,000,000
1808	35,000,000	1835	28,000,000
1810	19,000,000	1836	61,000,000
1812	39,000,000	1837	23,000,000
1815	61,000,000	1840	27,000,000
1816	66,000,000	1850	42,000,000
1818	28,000,000	1853	37,000,000
1819	17,000,000	1854	29,000,000
1820	15,000,000		

In the intervening years the excess was from two to ten millions, but which our freights discharged by their earnings. With the exception, therefore, of 1836, none of our crises can with justice be attributed to *excessive importations*.

We do not, however, assert that our banks are inculpable, nor that they are not responsible for much of the mischief that this overtrading and speculative

spirit has occasioned. When the course of our foreign trade is prosperous, and specie is not in demand for export, the banks have been and are strongly tempted to extend their loans, by the seeming impunity with which they can increase their profits, while the cheering influence of public prosperity has given a great spring to the spirit of enterprise, and by affording aliment to this spirit, they give it a force and vigor of mischief which it would not otherwise attain. Thus, without intending it, and in the mere pursuit of their own vocation, they stimulate the love of gain in all sorts of schemes and adventures. The wild and extravagant spirit of speculation is never found to prevail to such an extent as will be found in all places where there are banks of circulation, and especially in those cities and larger towns where banks are numerous. If banks would confine their discounts to the paper of those who are engaged in a regular course of business, and refuse accommodation to the rash, adventurous, and oversanguine; if they would restrain their issues whenever the spirit of speculation was rife and rampant, they would do much to preserve the balance of trade, and keep the equilibrium between imports and exports. But while bank charters, for small capitals in country towns as well as larger ones for cities, can be so easily obtained, and often is trusted to the management of directors destitute of the knowledge even of the theory of banks, and especially of that *practical knowledge* so essential to a right management, the course pursued by them will inevitably be injurious to the community, and probably disastrous to those who own the stock.

We have in the United States at this period (1856) about 1400 banks, with capitals amounting to $344,000,000, and a circulation of $200,000,000. The discounted paper of these banks is about $634,000,000, and the amount of bonds and stocks held in Europe is probably near $300,000,000 more, making an aggregate of $934,000,000. Now the value of this immense amount of credit is affected by the condition of our money market, and a depreciation of ten per cent. of its amount is equal to the loss of one of our cotton crops. Should we allow a few reckless adventurers to trespass upon the rights of others, and by the agency of a few small banks, scattered throughout the country, disturb our financial equilibrium and depreciate the value of property, by causing needless fluctuations? Still, however, the multiplication is going on with fearful rapidity; some originating with parties who have surplus capital, and wish to facilitate their own and their neighbor's commercial transactions; with others, who wish to invest funds for the sake of the income; with another class, who are solicitous to create *bank capital*, as it is called, for the supply of their business wants, by an exchange of their own stock notes for the bills of their chartered banks; and last of all, by those whose sordid motive is to speculate on the community, by foisting upon it notes of circulation, and then decrying their value, to purchase them back again through other channels at a discount, or perhaps finally abandon them to their fate, without redemption, on any terms. Our banks are the offspring of twenty-seven different States, and are founded upon the three different systems of a specie basis, a safety fund, and the "free banking" principle, a deposit of stocks; but until some uniform system of bank circulation is adopted, we can not hope to escape the evils of our present heterogeneous currency. The issues of our banks ought to be regulated by the state of our foreign exchanges, restricted when gold is flowing out of the country, and expanded when it is coming in. As it is now, however, if the banks in our commercial cities curtail their circulation, the vacuum is soon supplied by the country banks, who eagerly avail themselves of the opportunity, and thus nothing is gained, but, on the contrary, much is lost by this substitution of a weaker currency; and when a pressure comes, these smaller banks add fuel to the flames, by their importunate cries for assistance and indulgence. The efforts of our banks on the sea-board can produce but little perceptible effect in contracting the currency, if the great mass of the interior banks persist in issuing their paper as long as they have confidence in their customers, or the public are willing to receive it. We therefore need a restraining or an overawing power, which can be exercised for the general good; and until we have this, the currency will continue to be fluctuating, both in quantity and quality.

An annual report on the condition of the banks throughout the Union is made to Congress by the Treasury Department. The resolution adopted in July, 1832, under which these annual reports are made, calls for "such statements and returns as may have been communicated to the Legislatures, governors, or other officers of the several States *within the year*, and made public." The want of uniformity of dates, however, is not the only deficiency in these annual reports; there is no specification of *immediate liabilities* and *deferred*, or of *immediate and deferred resources*—without a knowledge of which it is impossible to arrive at a true knowledge of the condition of the banks. It will be fortunate for the country if this subject should ever attract the attention of Congress and the State Legislatures, and they should be induced to unite in some common system of action, by which all the banks in the country should be required to make quarterly statements of their affairs at the *same specified dates, at the close of the day's business*, and upon a uniform and simple plan, so that no one who is acquainted with an ordinary account current could fail to understand them. Such, however, we fear, will never take place, and for the present we must be content with the imperfect, heterogeneous, and mystified statements which are annually furnished to Congress in the voluminous documents of the Secretary of the Treasury, with such condensed tables as the arts of finance and divination will enable him to make out, and we must abandon the idea of statistical exactness.

1800–1810.—The number of State banks in 1800 was thirty-two, having authorized capitals of $23,550,000, but it was not all paid in; and it has been stated that the capital of the first United States Bank, chartered in 1791 ($10,000,000), probably exceeded the paid up capital of the thirty-two local banks. Of these, eighteen were in New England, five in New York, two each in Pennsylvania, Maryland, District of Columbia and South Carolina, and one in Delaware. There are no reliable statements of the amount of circulation or specie on record prior to 1808, but estimates have been published by the Secretary of the Treasury, in 1855, which give the circulation at $10,500,000 in 1800, and gradually increasing to $18,000,000 in 1807, while the specie *in the country* was estimated at $17,500,000, running up to $20,000,000 during the same period; the amount in the banks, however, is not even conjectured. In 1808 the Bank of the United States had $4,787,000 in circulation, against $15,300,000 in specie; and the Secretary adds, "the policy of the banks in New England was widely different. They pushed their issues to the very limits of their credit, some of them issuing notes for even fractional parts of the dollar. The result was, that there was, in 1808–9, a grand explosion among the banks in New England, by which most of them were shattered, and some of them totally destroyed."

The first return of specie in the banks was in 1811, when the amount was $15,400,000 against a circulation of 28,000,000. This amount must have been mainly drawn from the United States Bank, whose charter expired the same year; for from the time of the embargo in 1808 to 1811, "when our produce could no longer be exported, all who had any engagements to meet in foreign countries—all to whom remittances abroad were advantageous, if not indispensable—transmitted specie as the commodity most easily concealed and transported. From this time the amount of specie di-

minished; the unsettled state of our commercial and political regulations with foreign powers during the three succeeding years presented a new accumulation; and soon after our declaration of war against Great Britain, in 1812, the banks throughout the Middle and Southern States, which had for some time been paying specie reluctantly and sparingly, suspended altogether their specie payments."—*South Carolina Bank Report.*

In 1814 all the banks in the Union, with the exception of those in New England, suspended payment, and the confusion and depreciation of their notes assisted the plan of re-establishing another United States Bank, which was finally accomplished in 1816, with a capital of $35,000,000, and a charter of twenty years' duration. This capital, as in the former bank, was paid "one-fourth in coin and three-fourths in stock, which the bank might sell at the rate of $2,000,000 per year." Though its affairs were mismanaged, and it sustained some heavy losses in the first years after its establishment, it was afterward conducted with great skill, prudence, and success. It established branches in nearly every State, and bought and sold bills of exchange between all parts of the Union to an immense amount, because the low rates of its premiums and discounts gave to it almost a monopoly of this branch of business. While it rendered this and other important services to commerce, it was the general financial agent of the government through nearly the whole term of its existence, and transmitted the public revenue to whatever points it was wanted with equal promptitude and certainty, and without charge. Its charter expiring in 1836, it was then dissolved, after ineffectual attempts in both houses of Congress, during two terms, to counteract the opposition of President Jackson, and to renew its charter. In June, 1832, the renewal of its charter passed the Senate by a vote of 28 to 20, and in July following the House of Representatives confirmed the vote by 107 to 85, but the president vetoed the bill a week afterward. The same corporation afterward obtained a charter from the State of Pennsylvania, but in 1841 it finally suspended payment, and its shares were sold during that year at $17½, and subsequently at $9, the same year. After the fate of the United States Bank was decided, in 1832, the number of local banks was greatly multiplied, and rose from 330 banks in 1830, with capitals amounting to $145,000,000, to 829 banks in 1838, with $317,000,000 capital. So great an increase, and the consequent distention of the circulation, contributed, with the excessive importations of the four preceding years, especially in 1836, to the general suspension which took place in May, 1837. At this period we commenced these remarks, and we will now advert to some of the local diversities in banking; for which purpose we will consider the State banks according to the geographical divisions of the United States, as the banks in each of the five divisions have some common features of resemblance. We shall then take up the several States where there is a material difference in each division.

New England.—Banking in the New England States has, with the exception of the Southwestern States, been carried on to a greater extent than in any other portion of the Union. The first attempt at banking among the colonies in New England was in the years 1739–40, when the "Land Bank" was established by about eight hundred subscribers, who pledged their real estate to the amount of their respective shares, and, after the choice of ten directors and a treasurer, agreed to issue £150,000 in bills, to be circulated as lawful money, each £1 note being equivalent to three ounces of silver; but it was soon after dissolved by act of Parliament, and each holder of the bills was entitled to a right of action against any individual partner for the amount, with interest. The first legitimate bank in Boston was instituted in 1784, the second in 1792, the third in 1803, all of which are now in existence; there were, however, four other banks in the State in 1800, one of which was the Essex Bank, in Salem, incorporated in 1799. There are no reliable tables of the aggregate condition of the banks prior to 1836; but from various sources we ascertain that the following tabular statements of the number of banks, and the amount of capital at the periods named, are nearly correct, in reference to New England:

Years.	Banks.	Capital.
1805	47	$13,353,000
1811	47	12,207,394
1815	68	19,053,992
1820	92	19,862,194
1830	173	35,297,869
1838	319	65,257,540
1850	312	60,259,185
1856	486	114,549,836

The annual reports of the Treasury for 1850 and 1854 present the following comparative views of the condition of the New England banks on the 1st of January:

1850.				
States.	Banks.	Capital.	Circulation.	Specie.
Maine.....	37	$3,038,000	$2,252,764	$339,251
New Hampshire	23	2,186,500	1,776,921	130,125
Vermont	24	1,826,975	2,222,962	120,708
Massachusetts .	119	34,630,011	15,700,935	2,749,917
Connecticut ...	36	8,528,264	4,511,570	575,656
Rhode Island ..	61	11,212,404	2,525,549	291,215
1854.				
Maine.....	60	$6,913,870	$5,317,750	$1,132,610
New Hampshire	35	3,376,000	3,021,579	180,239
Vermont	33	2,914,040	4,764,439	188,173
Massachusetts .	143	49,050,175	25,020,472	3,731,764
Connecticut ...	53	13,164,594	10,224,441	1,145,857
Rhode Island ..	77	15,947,429	4,815,529	259,699

Of the six States of New England, Rhode Island has the greatest amount of bank capital in proportion to its population, but its extensive manufacturing concerns require it all. Vermont has the smallest capital, but its circulation is proportionately the largest, as the preceding tables exhibit.

Prior to the commencement of the present century, and for several years afterward, the prosperous condition of the commerce of New England gave an impetus to trade, and a speculative spirit prevailed, and large investments, for those days, were made in real estate and the construction of turnpikes. Money, in 1808, was in great demand, and at a high rate of interest, but during that and the succeeding year a great revulsion occurred; real estate and all other descriptions of property depreciated, and several banks failed. The Farmers' Exchange Bank of Rhode Island, with a circulation of $650,000, was among the number, and the entire amount was a total loss to the bill-holders, in February, 1809. The failure of this bank caused others to fall, and among them, the Farmers' Bank of Gloucester, the Coos Bank in New Hampshire, and others of less note. No shock of public or private credit had taken place, since 1783, which so alarmed the people of New England as did these failures.

Massachusetts.—After this period the amount of bank capital was diminished about one million of dollars, although the number of banks was, in 1811, the same as that of 1805, being forty-seven in both of those years. In 1811 the State Bank, with a capital of three millions, was chartered in Boston, and the Merchants' Bank in Salem, both of which were subscribed for by the dominant party of the day; and when war was declared in 1812, the State Bank subscribed $500,000 toward the first war loan of eleven millions, the Merchants' Bank $20,000, and the Providence Banks $80,000, which was the entire sum taken by the banks of New England of the first loan. Of the second loan of thirteen millions, in December, 1812, $9,230,000 was subscribed for by the banks throughout the country, and $3,870,000 by individuals; but the whole amount contributed by New England was only $2,311,500, of which Boston and Salem furnished $2,144,100. During the war of 1812–14, all the banks in New England maintained specie payments, while all the rest in the Middle, Western, and

Southern States suspended payment. The following table exhibits the accumulation of specie in Massachusetts in 1814:

Years.	Banks.	Capital.	Circulation.	Specie.
1805	16	$5,460,000	$1,553,824	$847,988
1810	15	6,685,000	2,098,491	1,847,722
1814	21	11,050,000	2,922,611	6,046,542
1815	25	11,462,000	3,464,241	2,740,511
1820	28	10,600,000	2,614,734	1,280,852
1825	41	14,535,000	5,094,264	1,033,380
1830	" 63	19,295,009	5,124,990	1,258,444
1835	105	30,410,000	9,430,35	1,136,357

As all the banks in the other New England States were founded on the same basis, it is fairly to be inferred that they were all well fortified with specie, but we can not find any specifications of their condition in any authentic shape. We give, however, a comparative view from 1820 to 1837, to show how rapidly both banks and banking capital were multiplied during this brief period of seventeen years: showing an increase between 1820 and 1830 of eighty banks and $15,335,675 capital, and between 1830-'37, of one hundred and sixty-three banks and $33,650,328 capital:

States.	1820.		1830.		1837.	
	Banks.	Capital.	Banks.	Capital.	Banks.	Capital.
Maine	15	$1,654,900	18	$2,050,000	59	$5,535,000
New Hampshire	10	1,005,276	18	1,791,670	23	2,663,308
Vermont	1	44,955	10	432,625	20	2,200,000
Massachusetts	23	10,485,700	66	20,320,000	138	40,530,000
Rhode Island	30	2,982,026	47	6,118,397	64	9,100,581
Connecticut	8	3,632,337	13	4,485,177	31	8,519,308
	92	$19,862,194	172	$35,197,869	335	$68,848,107

In the suspension of specie payments in 1837, all the New England banks concurred, but they all resumed in 1838; and in the suspension of 1839, only three banks in Maine (one of which resumed) suspended; one in New Hampshire partially, and sixty-three in Rhode Island, twenty-one of which immediately resumed payment; the remaining banks in the other five States all redeemed their bills.

The banks of New England were originally founded upon the only true principle of banking—a full paid up capital in coin, placed under the management of discreet and responsible directors. The caution which characterized these important personages in those early days superseded the necessity of providing against the cunning devices which modern financiering has discovered; and banks were regarded as the depositories of surplus wealth, concentrated for the ostensible purpose of accommodating the public by discounting short paper with ample security, and thereby yielding to the stockholders a satisfactory remuneration without any personal exertion or care. The trade of our country was then limited in its extent; manufactures were carried on by individual exertions only, and disposed of within the narrow precincts of their own neighborhood. The products of agriculture were exchanged for articles of domestic use, and our commerce, then in its infancy, was principally employed in the conveyance of our domestic productions, and the proceeds of our fisheries, to the West Indies, South America, and Europe, and returned home with such productions of those countries as were required for consumption or use; and for such operations bank facilities were not needed. But the unparalleled increase of the commerce and navigation of Massachusetts, Maine, and Rhode Island, as well as throughout the country at large, soon created a class of traders who purchased and held larger stocks of merchandise for their business, and whose transactions were profitably carried on between the merchant and the agriculturist, the importer and the consumer, the exporter and the producer. In proportion as trade and commerce increased, their operations called into requisition a larger amount of capital, and bank facilities were more and more needed. The stringent regulations of earlier days did not suit the wants of the community, and new banks were created with more liberal views, but still conducted with great caution. With every decade of years, the banking institutions have always kept pace with the legitimate wants of trade, and sometimes transcended them. They have now reached a point where it is desirable that they should rest a while, as the banks in New England are more than one-third of all the country in number, and but little less than one-third of its entire bank capital.

It is now upward of seventy years since the first bank was established in New England, and the country has passed through the various vicissitudes of prosperity and adversity, commercial seizures and embargoes, peace and war, growing out of the continental troubles in Europe; and when, after the general peace of 1815, the country emerged from its dark cloud of despondency and resumed her commercial pursuits, it was with a buoyancy which astonished the world with her unprecedented success. Since that period we have been in imminent peril of war, once with France, three times with Great Britain, once with Spain, and engaged in actual hostilities with Mexico, to say nothing of Austria and Peru, which were of minor importance; and although all these national troubles have, with but one exception, been amicably settled without an appeal to arms, still their effects have been felt in our financial circles, producing those sudden fluctuations which operate so disastrously upon the interests of trade. Throughout all these perilous periods the New England States have proudly sustained their banking system, yielding only once to the financial crisis of 1837, which prostrated every bank in the United States, for one brief year, and even then with reluctance. It must then be conceded that a system which has been subjected, for so long a period, to such various vicissitudes and severe experience and trial, must possess elements of vitality and strength which should entitle it to the confidence and support of the community, however antiquated it may appear to be, in comparison with those subtle theories which our modern financiers so strenuously advocate.

In reviewing the bank history of New England, we find many errors and omissions which have from time to time been corrected, as the various developments of bank failures were scrutinized by successive Legislatures in every State. The very first charter granted in Boston was *unlimited* in its duration, but it has since been restricted by consent, and expires in 1870. But the greatest error was in relation to the power of issuing notes. An overissue of paper is one of the greatest mischiefs of banks, and one to which they are most strongly tempted by the desire of increasing their profits; it is obviously wise, therefore, to impose a limit on these issues, which should not under any circumstances be transcended. But we find that when the first charters were granted, the Legislatures, being unfamiliar with the subject of banking, and learning probably from English books that the Bank of England considered it a safe rule to have in its vaults one-third as much specie as it had notes in circulation, they conceived that after having required the whole capital stock to be paid in specie, they were adopting the same rule as the Bank of England, by limiting the amount of circulation to three times the amount of the capital stock.

This provision having once found its way into some of the early charters, it was copied into others on the presumption that it had been tested by experience. In some of the States the only restriction was that the amount of their loans should not exceed three times

the amount of their capital stock, or that their issues should not exceed that proportion; but both these restrictions are merely nominal, for there is not a bank in New England whose discounts have ever amounted to three times the capital. This error, however, has been remedied in all the States of New England, first by law, and secondly by the operation of the Suffolk Bank system, which exercises a constant watchfulness over the issues of every bank, and not one can venture upon an excessive issue without immediate exposure. The laws of Massachusetts, in relation to circulation and loans, are as perfect as legislation can make them; they limit the circulation to 25 per cent. beyond the amount of the capital paid in, and impose upon the stockholders an individual liability to the amount of their stock, for the redemption of the bills of the bank. The loans are limited to double the amount of the capital paid in, nor can they be extended beyond this amount, however large or permanent the deposits may be. Weekly returns from the banks in Boston, and monthly returns from all others in the State, are required to be made to the Secretary of State on the first Monday of the month, showing their true condition, under a penalty of $500 for every omission; and, finally, three commissioners are appointed, whose duty it is to visit every bank and savings bank "at least once in every two years, and to examine every new bank, and every bank whose capital has been increased, within a year after they go into operation, or after the stock shall have been paid in respectively." Maine, Vermont, and Connecticut have bank commissioners also, and with the aid of the proposed new "Bank of Mutual Redemption," should it go into operation, the currency of New England will be the safest in the Union.

There have been other errors in banking in past times, of which we have not yet taken notice. The Legislatures of the different States have not been sufficiently careful to discriminate between real and nominal capital; and while the stockholders have gone through the form of paying up the stock of the banks, it has been too often nothing but form. In some instances, stock notes have constituted the chief part of the capital; gold has been borrowed from other banks for the purpose of examination on pay day, and then returned to its rightful owners. The stock notes were the next day discounted by the new bank, its bills paid out therefor, and scattered far and wide for the purpose of circulation. Being new, curiosity would retain them for a while, until the bank could gather in its deposits, and these would enable it to redeem that portion of them which would be presented for specie payment.

Again, the banks have been too numerous, though the capital may have been real, and this part of the machinery has been not only more expensive, but more easily deranged. In consequence of the excessive competition induced by the undue multiplication of banks, arts and schemes have been resorted to for the purpose of obtaining a larger share of circulation, thereby enlarging their profits, the currency greatly distended, and the safety of the banks themselves endangered. In general, the same capital will be safer, as well as more profitable, if concentrated in one bank, than if distributed among several smaller ones. When the number of banks has been sufficiently enlarged to secure to the public the benefit of competition, it appears to be as unwise to multiply them any farther as it would be to make any unnecessary addition to the number of our colleges, churches, or any other public institutions.

The only innovations which have been attempted upon the banking system of New England have been introduced in Vermont, Massachusetts, and Connecticut, by the passage of free banking laws; but the experiment has signally failed, and the laws have become almost inoperative. The charters of the banks in Maine expire by limitation in 1857; those in Rhode Island are perpetual, and there, as in Massachusetts, stockholders are individually liable for the redemption of the circulation. The failures which have occurred have been numerous, but they have all originated either from a deficiency of the payment of the original capital, or by palpable mismanagement. It has been truly remarked by a keen observer, that "the personal character of the officers and stockholders of banks is intimately blended with their safety. At the start, good intentions prevail as a general rule, and the directors pay strict attention to business; gradually, however, the management passes into fewer hands, and sometimes into one only. Trade in money has its peculiar effects upon character, like all other occupations and avocations, from which effect only the most sterling men escape. Malpractice will grow as care and diligence slacken; so, from neglect or undue anxiety to make money, losses occur. This is the general feature of all banking; much of the safety of banks lies in the unremitting attention of directors and stockholders to the affairs of the bank."

The truth of these remarks will be admitted by those who were conversant with the circumstances attending the disasters of the following banks in Massachusetts: American, Kilby, Commonwealth, Oriental, Middling Interest, Cochituate, and many others in Boston; and the Newburyport, Woburn, Roxbury, Chelsea, Nahant, Dover, and others in the country. In Maine—Kennebec, Castine, Hallowell and Augusta, Wiscasset and others. In Connecticut—Eastern, Derby, Eagle of New Haven, Commercial Bank of Tolland, Bridgeport Manufacturing Company, and others. In New Hampshire—Hillsboro and Piscataqua. In Vermont—Windsor, Barrington, Agricultural, Green Mountain, etc. In Rhode Island—Burrillville, Eagle, Franklin, Mount Hope, etc. We have specified these banks because they are the most prominent and the most recent, and, with perhaps some few exceptions, owe their downfall to one of the two causes to which we have alluded, viz., fictitious capital or palpable mismanagement. The art of successful banking is in itself a *science*, not acquired with facility or mere observation, but by laborious study and application to its practical details and operations; and when we investigate the origin, foundation, and career of the various banks in New England, and the vicissitudes and political changes through which they have passed during the period which we have been considering, it appears marvelous that any of the earlier banks should have been conducted in safety through the mysteries and perplexities of currency in its frequent contractions and expansions, and of exchange in its constant fluctuations, produced by silent operations in distant markets, and imperceptibly, yet inevitably, influencing the monetary condition of their sphere of operations. And yet, in comparison with the whole number of banks in New England, how few of them have failed? And to what cause can we more probably attribute it than to the excellence of the *system* under which they are constituted—*a specie basis*?

MIDDLE STATES. *New York.*—In the early history of banking in New York, since 1800, politics and finance were so intermingled that the question of granting a bank charter was a matter of direct issue between the two political parties of the day; but prior to that period, in the establishment of the first banks, this state of partisan excitement did not exist, but in lieu of it there was a jealousy in regard to the incorporation of moneyed institutions; and after they were established, great caution was required to avoid the perils which their opponents had predicted would inevitably ensue. Fortunately, however, the first bank established in New York was managed with such ability and discretion that it disarmed all opposition, and became an important auxiliary to the government of the United States, by a loan of $400,000 at five per cent., thereby securing in its early career great popularity, as the bank owed no favor to the government, and had

no interested motives in loaning the money. The organization of this bank (the Bank of New York) was, however, an association for banking purposes, rather than a regular bank. It commenced business in 1784 (its first application for a charter having been unsuccessful) without a charter, and discounted short paper at 6 per cent. per annum, which rate was advanced to 7 per cent. three years afterward. In 1791 a charter was granted, the act of incorporation having been drawn by General Alexander Hamilton, which was not materially altered before its expiration. Its authorized capital was $1,000,000, but it is now double that amount, and its annual dividends have usually been 8 to 10 per cent. per annum.

The next banks incorporated were the Bank of Albany in 1792, and the Bank of Columbia, which were chartered without any other opposition than that of the timid portion of the community, who had not forgotten the disastrous losses by the Continental system of paper money.

In 1799 the Manhattan Company was incorporated, with an unlimited charter, and was regarded as a partisan triumph; and from this period all projected moneyed institutions in the city of New York were advocated or opposed on political considerations only, and thus finance and politics became blended in the contest, which continued until the question of the construction of the Erie Canal diverted the gladiature of zealous politicians to this new area of strife. In 1801 the whole number of banks in the State was but five, whose authorized capitals were $4,722,000. In 1803 the New York State Bank at Albany was chartered, and in 1805 the Merchants' Bank in New York, having commenced business, however, two years previous to its being chartered. There were then, in 1805, but seven banks in New York State, the aggregate of whose capitals was only $5,430,000; but it has now 300 banks, having a capital of $96,000,000. In 1810 the Mechanics' Bank was chartered; in 1811, the Union, and the Farmers and Mechanics' in Albany; in 1812, the Phœnix, the City, and the Bank of America. The projectors of this latter bank originally applied for a capital of six millions of dollars, to supply the place of the United States Bank, whose charter had so recently expired, and offered for the charter a bonus to the State of $400,000 unconditionally: $100,000 in ten years, and $100,000 in twenty years, if, at the expiration of those terms, there should be no additional banking capital authorized by the Assembly in the city of New York. They further offered to loan the State one million of dollars, at 5 per cent., for the construction of the Erie Canal, and one million more at 6 per cent., to be reloaned to farmers and others on landed security.

As in the case of the Manhattan Company's application for a charter in 1799, all the arts of political intrigue were brought into requisition, but after a protracted and violent opposition the bill was finally passed as petitioned for; but a subsequent Legislature authorized the bank to reduce its capital to two millions of dollars, and at the same time reduced its bonus to the State to $100,000, as immediately after the charter was granted war was declared against Great Britain, and "with it came the long series of commercial disasters and financial troubles, and a general interruption of our foreign trade." In 1814 the banks in New York, in consequence of their liberal bonus to the government, and their excessive issues of paper consequent thereon, suspended specie payments, in common with all the other banks in the Middle, Western and Southern States. Six months after the suspension, the news of peace was received, but the banks did not resume specie payments; and instead of contracting their circulation, they increased it, and were encouraged to do so by the general government, who continued to receive their inconvertible paper for public dues, until February, 1817, when there was a partial resumption of specie payments, and the second United States Bank commenced its operations. After the peace in 1815, large amounts of specie were annually exported to the East Indies and China, and the premium on silver was from 15 to 18 per cent. The United States Bank resorted *to forced* importations of specie to supply the vacuum, and having spent $500,000 on one experiment, they wisely abandoned the scheme, and allowed trade to follow its natural channels. Between 1812 and January, 1818, about two hundred new banks were chartered in various parts of the Union, which distended the currency to its utmost point; but a day of reckoning was near at hand, and all further inflation was at an end. In the middle of 1818 the contraction commenced, and banks and individuals were swept away in one promiscuous mass of ruin. The disastrous effects of this local banking mania were felt until the close of 1820, and in many portions of the country for many succeeding years. The following tabular statement exhibits the banking capital of New York during this period of twenty years:

Years.	Banks.	Capital.
1801	5	$4,720,000
1805	7	5,420,000
1811	8	7,522,760
1815	26	18,046,819
1816	27	18,766,756
1820	33	18,988,744

but we have no means of ascertaining the amount of circulation or specie. The estimates of the whole country for 1815 were 208 banks, $82,260,000 capital, $70,000,000 to $110,000,000 circulation, $15,500,000 specie.

When the suspension of specie payments took place in 1814, a public meeting of the merchants and others interested was held, and they promptly sanctioned the measure, under the assurances of the banks, however, that whenever the war was terminated specie payments should be resumed. Doubtless this was the intention of the banks, as they commenced the curtailment of their loans immediately after their suspension; but when peace took place the redemption of this pledge was not demanded at the stipulated time, and the banks, regardless of all moral obligations, and stimulated by the prospect of large profits and enormous dividends, extended their circulation to an amount unexampled in the annals of folly. The "plenty of money," as it was called, was so profuse, that the bank directors were fearful that they could not find a demand for all the "money" they could fabricate, and not unfrequently solicited individuals to become borrowers, under promises of indulgence of the most liberal and tempting nature. Every city, town, and county had its own local currency, bearing no equivalent with, or fixed proportion to, any other; and a new and extensive class of brokers appeared, who still exist, and have ever been supported at the expense of those who have been defrauded by the banks of their just right, the *par value* of their notes.

When the United States Bank was incorporated, the city banks became alarmed for their safety, and made a retrograde movement, and, by a reduction of their loans immediately, occasioned great commercial distress. This temporarily produced a reduction of the currency, and the directors of the National Bank proposed to the State banks a resumption of specie payments on the 21st February, 1817, and the city banks, relying upon the forbearance which had been extended to them by a confiding but defrauded community, who for two years and a half had been paying 6 per cent. per annum for their depreciated and dishonored bank bills, assented to the arrangement, and specie payments were *nominally* resumed on the appointed day. But the resumption was merely nominal, for silver, both foreign and American, still commanded a premium over the par value of city bank-notes, and depreciation may result, as well from the forbearance of

creditors in demanding their rights as from the refusal of banks to meet their engagements; and this arrangement was not a real resumption, but a mere change of one species of inconvertible paper for another of like character. As soon, however, as the directors of the National Bank had completed their arrangement for elevating this depreciated paper to the standard of their own convertible notes, instead of reviewing the experience of the past, or acting upon the general principle that circulation could not be extended beyond a certain limit, and that, when this point was reached, any further issues would occasion depreciation, and with the full knowledge that such was the actual state of existing affairs, they at once commenced issuing their own circulation, and in a few months added to the currency an amount greater than that which had previously been withdrawn. By their operations, the currency *nominally* convertible was depreciated below its former rate, and retrograded instead of advanced toward restoration. But the bank finally discovered its error when almost too late, and sought to retrieve it by withdrawing their circulation, reducing their loans, and curtailing all their other transactions, thereby causing a second pressure in October, 1818, which continued for more than a year, and in many parts of the country many years longer. If the city banks had availed themselves of the opportunity of curtailing their operations while the United States Bank was extending, it would have been financial wisdom; but the same cupidity controlled their movements, and they were also compelled to contract their issues, loans, and all other operations.

The banking system of New York was originally founded on the universal principle of a specie basis; but after the disasters of the period which we have just been reviewing, financiers and political economists were impressed with the belief that there was something defective in the system; that some reform was necessary in regard to the currency, and that unless a remedy was found, the whole banking fabric would ultimately be overthrown. The first innovation which was tried commenced in New York with the adoption of the "safety fund" system in 1829. It required from each bank an annual contribution of half per cent. of its capital to a common fund, to be deposited with the State Treasurer as a "bank fund," until it amounted to 3 per cent. of the capital of each bank, and was to be applied to the payment of the debts of any bank which might become insolvent which had contributed to the same; and in case the fund was at any time diminished by payment therefrom, the banks were again required to make their annual contributions, till each had in deposit the 3 per cent. on its capital stock. For a series of years this system was regarded with favor, but the sudden failure of 10 banks, with capitals amounting to $2,559,000, occasioned a loss of $1,548,560 for redemption of circulation, and $1,010,376 for the payment of the other liabilities of these insolvent banks. At the time of the failure, the fund amounted to $1,876,073, and the balance was paid by a 6 per cent. stock authorized by the State, the redemption of which stock was provided for by the subsequent contributions of the banks to the fund. Under this same law of 1829, three bank commissioners were appointed, with large powers, to supervise and inspect the several banks of the State. These officers were at first appointed, one by the governor and Senate, one by the city banks, and one by the country banks; but in 1837 the power of appointing the whole number was transferred to the governor and Senate, which placed these officers "within the vortex of the great political whirlpool of the State, and the place was sought for and conferred upon partisan aspirants, without due regard, in all cases, to their qualifications to discharge the delicate trust committed to them." In 1843 the Legislature abolished the office, conferring the power of examining the banks upon the controller of the State.

After nine years trial of the "safety fund" scheme, it was virtually abandoned, and another experiment was substituted in 1838, by the passage of the "free bank" law. By this system "every individual and association was authorized to engage in the business of banking; and on depositing with the controller the stocks of the United States, the stocks of any State which should be or be made equal to a 5 per cent. stock, or such stocks and bonds, and mortgages to the same amount on improved, productive, and unincumbered real estate, worth double the amount secured by the mortgage, over and above all buildings thereon, and bearing an interest thereon of 6 per cent. per annum, the controller was required to deliver to such individual or association an equal amount of banknotes for circulation, duly numbered, registered and signed at his office." No specific amount was required from individual bankers before they commenced operations, nor were the stockholders liable in their individual capacity. The result was, that in the abundant supply of stocks of every description, banks were immediately created out of the cheapest materials, and bank-notes were furnished to the community with the most generous profusion. This extraordinary expansion produced the usual results, inflation of prices, extension of credits, and wildness of speculation; and to aid the delusion, the bonds of the Western and Southwestern States were freely supplied. But the crisis came with fearful results; first in the shape of nonpayment of interest, next of great depreciation, and, finally, the repudiation of the State bonds, and the consequent failures of the banks which owned them. But these disasters did not discourage the people from a persistence in the scheme of free banking; on the contrary, the Legislature of 1840 preserved the system, by excluding the stocks of other States, after that date, and required the banks to deposit the stocks of New York and the United States only. Although the system has been materially improved by legislative enactments since it was first established (and almost every year furnishes some valuable amendment to its provisions and restrictions), and is now regarded with favor by prominent financiers, as affording ample security to bill-holders, yet even on this point there may linger some doubts. In periods of prosperity all would be well; but in the event of severe pressure and a panic, a sudden contraction of the currency, and a general withdrawal of all floating capital, the free banks would find it difficult, if not impossible, to convert their stocks and mortgages into the requisite funds to carry on their redemption; and the failure of even one of them would be disastrous to many. In confirmation of these remarks, we have only to recur to the controller's past reports, and ascertain what the results of the failures of some of these free banks were, and we find the following, among others: St. Lawrence Bank, securities $81,277, sold for $27,232 50; New York Banking Company, N. Y., securities $26,000, sold for $4,370; Erie County Bank, whose mortgages for $15,000 on property valued at $31,500, exclusive of buildings, were sold for $3,000; State Bank of New York, Buffalo, $5,000 Illinois 6's, sold for $812 50; and so on with the remaining 27 banks in his report of 1849. To illustrate the rapid progress which the banking interest has made within the last twenty years, we add the following table:

Years.	Banks.	Capital.
1838	100	$37,101,460
1850	198	43,618,762
1854	238	80,726,370
1856	300	96,000,000

Weekly returns of the condition of the banks in the city of New York were first made in September, 1849, and in October, 1853, a "clearing-house" was established for the city banks. The returns for two years, for 1853 to 1855, show an aggregate of exchanges of $11,875,996,450, and of balances settled of $600,273,826.

Pennsylvania.—The first bank which was established in this State was the Bank of North America, which was chartered by Congress on the 31st December, 1781, with a capital not to exceed ten millions of dollars, and without any limitation of duration. The charter was confirmed by the State in April, 1782, and it commenced its operations upon a capital, paid in, of $400,000, and as the country was deficient in notes of circulation, and its credit stood high, it was enabled to extend its issues vastly beyond its capital. The extensive circulation of the notes of the bank, occasioned by the disbursements of the government, which was a heavy borrower, emboldened its directors to overstep the bounds of discretion. The channels of circulation soon became surcharged, and the public, beginning to doubt the ability of the bank to redeem its notes on presentation, they were returned so rapidly for payment, that it was compelled to call upon its debtors for payment also. This reduction of loans occasioned a general pressure for money, bankruptcies, usurious extortions, the disappearance of specie, and the impossibility of procuring money at the legal rates of interest. Petitions were shortly afterward presented to the Legislature for the repeal of the charter, which was granted on the 13th September, 1785; but the bank continued its business, claiming the right to do so under the charter granted by Congress. In March, 1787, the Legislature revived its charter, limiting its capital to $2,000,000, of which only $830,000 were paid in, and its duration to fourteen years. In February, 1791, the first Bank of the United States was chartered, with a capital of $10,000,000, for twenty years, and on the expiration of its charter in 1811, it was wound up. In 1793 the Bank of Pennsylvania was chartered, with a capital of $2,000,000, for twenty years, with four branches; in March, 1804, the Philadelphia Bank, with a capital limited to $2,000,000, of which $1,800,000 were paid in, and limited to 1st of May, 1814, but afterward extended to 1824, with liberty to establish branches, and four of which were established; in March, 1809, the Farmers' and Mechanics' Bank, with a capital of $1,250,000, to continue till the 1st May, 1824. These were the only *incorporated* institutions in 1811, although there were others in the State, such as the Farmers' Bank of Lancaster, with a capital of $300,000, established in 1810, and several others in the city as well as in the State. The following circulation of the three chartered banks we give:

Banks.	Circulation. 1811.	Circulation. 1816.
Bank of Pennsylvania	$1,425,203	$1,400,356
Philadelphia Bank	713,309	654,420
Farmers' and Mechanics' Bank	804,730	504,700

In March, 1810, the Legislature enacted a law to prohibit unincorporated associations from issuing notes or pursuing any of the operations of banks; but in defiance of its provisions, the system was persevered in, and even companies incorporated for the purpose of constructing bridges departed from the spirit of their charters, converted themselves into banks, and issued notes for circulation. This mania for banking would soon have been checked by the return of the notes for payment, had not the war of 1812 intervened, and the cessation of the demand for specie for exportation to India and China removed the usual check at that period against excessive issues of bank paper. The apparent success of the Farmers' Bank of Lancaster, which, from the enormous extent of its issues, was enabled to divide 12 per cent. per annum, and to accommodate its stockholders *with loans to double the amount of their stock*, had a powerful influence on the public mind. During the session of 1812-'13, a bill was passed by the Legislature, by a majority of one in each branch, to incorporate twenty-five new banks, whose aggregate capitals amounted to $9,525,000, but it was vetoed by Governor Snyder, and returned with his objections, some of which were, that "it would, by readiness to give credit, invite to visionary speculations, divert men from useful pursuits, damp the ardor of industrious enterprise, and consequently demoralize the community." In March, 1814, the subject was renewed, and a bill was passed incorporating *forty-one* banks, with capitals amounting to upward of $17,000,000, of which only one-fifth part was required to be paid in. Although the bill passed both houses by large majorities, Governor Snyder returned this bill also, with his objections, but two-thirds of both houses voted for its passage notwithstanding; it became a law, and thirty-seven banks went into operation under its sanction.

The immediate commencement of a number of these banks, whose *bona fide* capital was little more than the first installment required, increased the amount of circulation, already too redundant, and the depreciation of the currency grew worse and worse, and all confidence in its convertibility was lost. The new banks *discounted stock-notes* to meet the *remaining installments*, and hence only one-fifth part of their capitals was ever paid in, as before stated. In our remarks upon the New York banks, we have commented upon the movements and operations of the United States Bank in 1817 and 1818, and their influence was, of course, more severely felt in the central point of its negotiations, Philadelphia. And here it would be most appropriate to glance at the rise, progress, and final doom of the second United States Bank; but so much has been written on the subject, and its history is so familiar to our readers, that we shall add no further remarks to those which have already been made in a previous portion of this review.

In 1819, 15 of the 37 banks chartered in 1814 failed, and in due time were officially announced as "dissolved, unlawful, and unincorporated," and there were at the same time 22 banks more in the State transacting business without charters. In 1820 there were 86 banks in existence, with capitals amounting to $14,681,780, and an indefinite number of "*freebooters.*" It is an unpleasant task to run over the next decade of years, from 1820 to 1830, for there is nothing cheering in the review; throughout almost this entire period there was a rapid succession of untoward events, leading to embarrassments, insolvency, litigation, dishonesty, and more flagrant crimes. It is a continuous history of bankruptcy throughout a large portion of the country, and of frauds upon the community without any previous parallel. Banks were *bribed* to fail, that the stockholders might pay their indebtedness in the currency of the same bank, after it had reached its minimum point of depreciation, commonly 50 per cent. "Money mills" were established in New York, Philadelphia, and other places, which were based on the system of the celebrated Malepar, the keeper of an *oyster cellar* in New York, who had the adroitness to swindle the community out of $500,000 by his notes of circulation, and whose motto was, "Make money, *honestly* if we can, but *rascally* if we must." In 1822 there was a pressing scarcity of money; in 1825 and 1826, convulsions and bankruptcies among the banks; in 1827 and 1828 among the banks and the manufacturers from New England to Georgia; but in 1829 and 1830 the gloom which had settled so long upon the country was dispelled, and a brighter prospect was unfolded. For the first time for eight years, the natural course of trade had brought a balance in specie of eight millions and a half of dollars into the country, and to Pennsylvania there is due a large share of this fortunate result, by her effective act for the suppression of the circulation of small notes within the borders of the State. Here was an illustration of the principles which have been always maintained by the ablest financiers of our country, "that we must widen the basis of our metallic currency by abolishing the use of small notes, so as to allow coin to take the place of them, as it inevitably would."

Another cause of this influx of gold in 1830, and its

temporary retention in this country, was the partial cessation of the exportation of specie to India and China, occasioned by the substitution of bills of exchange, and letters of credit on London for the imports from those countries. On a review of the tabular statements of the capitals of the banks in Pennsylvania, there does not appear, with the exception of 1814, when the 41 banks were chartered, any extraordinary augmentation of banking capital.

Years.	Banks.	Capital.
1801	2	$5,000,000
1805	3	7,000,000
1811	4	6,153,000
1815	42	15,068,800
1820	56	14,681,780
1838	25	23,750,338
1845	51	16,154,000
1850	54	18,066,350
1856	57	21,281,464

During the four years of 1832–1836, the specie imports exceeded the exports more than thirty-six millions of dollars, owing to a combination of favorable causes, viz., high prices for cotton, an increase of English credits, foreign indemnities paid in gold, increased production of our Southern gold mines and the silver mines of Mexico, loans effected in Europe by the United States Bank, and various other operations in stocks and bonds. The consequence of this influx of gold was an increase of issues by the old banks, and the establishment of new ones. The number of banks in the country was estimated in 1830 at 329, with 110 millions of capital. In 1837 there were 788, including branches, and a capital of 290 millions.

In 1836 the Bank of England required payment from the "American houses" in London, which was resounded throughout our commercial cities, and shortly after Congress passed "the surplus revenue" bill, and the bank credits, which represented the surplus revenue, were transferred from place to place without any regard to the laws of trade. The combination of these circumstances was too much for the banks, and they all simultaneously stopped specie payments in May, 1837, as well as three of the leading American banking houses in London. The depreciation of bank-notes throughout the country varied from 12 to 25 per cent. The banks at the eastward adopted all needful measures to secure a speedy resumption of payments, but in the west and south an opposite policy was adopted, and new banks were created. During the residue of 1837 and 1838, the excess of specie imports over exports was eighteen millions of dollars, of which a part was sent by the Bank of England to enable the American banks to resume. In May, 1838, the banks in New York and New England resumed, and continued to pay specie. In August following, the banks of Philadelphia professed to pay specie; and in January, 1839, there was a *nominal* resumption throughout the United States. In October, 1839, the Philadelphia banks suspended a *second* time; resumed in January, 1841; suspended a *third* time 4th February following, and permanently resumed in March, 1842.

Maryland.—The first bank established in this State was the Bank of Maryland, which was incorporated in 1790, with a capital of $300,000. Next in the order of succession was the Bank of Baltimore, incorporated in 1795, with a capital of $1,200,000, of which $1,122,900 were paid in. In 1803 the Farmers' Bank of Maryland, with two branches, was chartered, with a capital of $1,000,000, of which $752,745 were paid in. Next,

		Capital.
The Union Bank of Baltimore	in 1804,	$3,600,000
The Bank of Hagerstown	in 1806,	250,000
The Commercial and Farmers'.....	in 1810,	1,000,000
The Farmers' and Merchants'.....	in 1810,	500,000
The Franklin Bank, Baltimore.....	in 1810,	600,000
The Marine Bank, Baltimore	in 1810,	600,000
The Elkton Bank, Maryland.....	in 1810,	300,000
The Cumberland Bank, Alleghany ..	in 1812,	200,000
The Farmers' Bank, Cumberland and Worcester	in 1812,	200,000
The City Bank of Baltimore.....	in 1813,	150,000

and four others in 1814, one in 1815, and one in 1816, the aggregate capital of all of which was $13,300,000, of which only $8,506,595 were paid in.

The annexed tabular statement, derived from the Treasurer's reports and estimates, will exhibit the amount of banking capital in the State for the last fifty years, and presents a striking contrast to the banking mania of other Atlantic cities.

The progress of bank capital in Maryland has been less than in other States, viz.:

Years.	Banks.	Capital.	Years.	Banks.	Capital.
1792	1	$500,000	1830	21	$8,203,575
1801	2	1,600,000	1837	23	10,438,655
1805	4	5,600,000	1840	23	10,5[illegible]0,494
1811	6	4,8 5,:02	1845	22	8,858,352
1815	17	7,882,002	1850	23	8,704,711
1820	14	6,708,180	1856	30	11,180,821
1830	13	6,250,405			

Some of the banks specified in the preceding schedule failed in 1834, such as the Bank of Maryland, Farmers' Bank of Maryland, Elkton Bank, Havre de Grace Bank, Susquehanna Bridge and Banking Company, and various others; but the loss of their capitals was supplied by the enlargement of others, and is scarcely perceptible in the above returns. As an illustration of the vicissitudes of some of these banks, we select at random the history of the Franklin Bank, of Baltimore, chartered in 1810, with a capital of $600,000, for five years, and of which $415,000 only were paid in. In 1815 the charter was extended twenty years, and in 1821 ten years more, but a tax for the benefit of the school fund was imposed, of twenty cents on every hundred dollars of its stock. In 1834 the charter was extended from 1815 to 1857, and in 1835 the bank was authorized to double its stock, making its capital $1,200,000; but in 1840 it was discovered that its cashier had committed large frauds on the bank, and it was compelled to stop payment in 1841. After an examination of its affairs, the Legislature authorized a reduction of its capital to $301,595, and in 1853 it was increased again to $500,000. The adoption of the new Constitution in 1851 imposed upon stockholders in new banks, or in those whose charters might be renewed, personal liability for the debts or liabilities of such banks, to the extent of the stock held by them respectively. In 1852 the circulation of notes under five dollars was prohibited by law, under similar penalties to those in various other States, and we believe has had a favorable influence in creating a larger circulation of coin.

The banks of Maryland all suspended specie payments in 1814 and 1837, in common with all the others in the Middle, Western, and Southern States; and it would be superfluous to recapitulate the circumstances attending these events, as they have already been described in the preceding pages. The same causes occasioned and the same results followed in both periods. It will be recollected that in 1814 the New England banks did not suspend payment, and this produced great jealousy and acerbity of feeling, especially in Baltimore. In *Niles' Register*, in 1814, we find the following remarks: "If money (specie) be the evidence of commercial prosperity, Massachusetts was never half so well off as now. Some years ago, when the trade of the United States naturally sought the places where its commodities were to be had, *one* of the *Baltimore* banks had more specie than *all* the banks in Massachusetts combined; nay, probably more than there was in the whole State, whether in possession of the banks or of individuals; and so it will have again, when a regular and honest commerce shall succeed the British war and *Eastern smuggling*." Instead of the "commercial prosperity of Massachusetts" being derived from "Eastern smuggling," the true cause may be found in the following abstract from the report of a committee of the Senate of Pennsylvania in 1819:

"The laws of the New England States had been so rigorous on the subject of banks, which were liable to

a penalty of 12 per cent. per annum for the non-payment of their notes, that *no depreciation of their* currency took place. The consequence thereof was, that the difference between the New England prices of commodities, stocks and foreign bills of exchange, and those of Pennsylvania, was equal to the extent of the depreciation of the currency of the latter, and as our bank-notes were at that time redeemable on demand, the most profitable remittance which could be made to New England in exchange for her commodities was specie; and this demand created a run upon the banks which they were not able to withstand. The situation of the Southern and Western banks was precisely similar to that of our own; all had overissued, and a general depreciation had ensued. The same causes produced the same effects, and a general stoppage of payments of all the banks in the United States, except those of New England, took place in August and September, 1814. The New England demand, it is true, was increased by two causes, viz.: first, by facilities in foreign trade through neutral vessels, which were afforded them by an exemption from the blockade of the enemy; and, secondly, by a well-grounded apprehension that the Southern banks, from their extensive emissions, would necessarily become embarrassed. Certain it is, however, that all these causes combined could not have produced a general suspension of payment *had our banks observed the same caution in their issues as that which characterized the banks of the Eastern States.*" Again, in *Niles' Register* of 1821, we find the following remarks: "That country whose money currency is kept at *the highest rate of value* will have the greatest advantage in trade with other countries. The hand of labor is not injured by money being scarce; no interest of the country is injured, but the speculator and monopolizer. It is true that the scarcity of money checks imports, but it encourages exports; it is not so important in what the money consists, as that it should be at as high a rate of value as that of other countries."

New Jersey.—There are two other States in our subdivision of "Middle States"—New Jersey and Delaware—which claim our attention next. The increase in New Jersey was as follows:

Years.	Banks	Capital.
1805	2	$1,000,000
1811	3	730,740
1815	11	2,121,932
1820	14	2,130,949

From and after this period banks occasionally failed, and new ones created to take their places, and tabular statements would not exhibit the annual rise and fall of the moneyed institutions. In our ordinary "Bank-note Reporters" there may be found the names of about thirty of these banks, against three of which the word "fraud" appears, and among these is the "Morris Canal and Banking Company"—a concern which made no incousiderable commotion in Wall Street at one period. Besides these failures, there is nothing in particular to note, until 1835, when the Legislature passed a law prohibiting the issue of small bills. From authentic sources, we learn that the New Jersey banks had in circulation $500,000 in bills of denominations below five dollars, and an equal amount in five dollar notes, being one-eighth part of the entire amount of small bills in circulation in the United States, and one-half of their own emissions.

In 1850, a general banking law was passed in New Jersey, which, like those adopted in other States, has subsequently been revised and amended. "The new banks established, or at least most of them, instead of being legitimate banks of discount as well as of issue, are simply *manufactories of paper money*, for the benefit of their owners residing in other States, having no affinities here, and of no advantage to New Jersey, save in the amount of tax on their capitals that may be paid into the State Treasury; and it is questionable whether that is not more than counterbalanced to the people of the State by the loss they sustain in the discount upon notes passing through their hands. As the profits to the owners depend entirely upon the depreciation and the circulation of their notes, it becomes desirable that the banks should be ostensibly located in places difficult of access, so that no one will be disposed to apply at their counters (if perchance they should have offices) for the specie or its equivalent; and the more distant and out of the way, the greater the discount they will bear, and the greater the accruing profit. And to extend their circulation, nothing is easier than to adopt the name and general appearance of some well-known bank, in good credit, keeping the place of issue as much in the background as possible. For example, locating a 'Delaware and Hudson Bank' amidst the sands and pines of Ocean County, making the *title* very prominent, but having the *place* quite the reverse, so that the inexperienced are readily induced to receive the notes." These banks are entitled to three days' grace upon any application for redemption, and of course they have ample time to procure the specie from Wall Street whenever they are pressed. In 1853 there were 24 regular banks in New Jersey, the aggregate of whose capitals was $4,080,815—whose charters expired in from one to twenty-one years. Besides these, there were fourteen "free banks," the aggregate of whose capitals was $1,026,966, and circulation $722,895. In his message of 1852, Governor Fort recommended the prohibition of the issue of any notes under five dollars; after two years, all under ten dollars, and in a few years all under twenty dollars, and then proceeds: "I am satisfied, however, that fifty dollars, as the minimum denomination of bank paper, should be our ultimate aim. If we excommunicate all small notes, whether of our own or other States, specie must necessarily flow in to supply their places. The smallness of our territory presents no serious objection; the constant trade with the large cities on our borders would supply us with an abundance of the precious metals, which no adverse policy of neighboring States could possibly prevent. *The State which soonest adopts the use of coin*, by the *expulsion of paper* in the smaller business transactions, *will outstrip all others in the permanent prosperity of every other branch of useful industry.* Bank explosions and individual bankruptcies would then be as rare as they are now frequent."

He further adds, "the persistent evasion of the law by some of the free banks calls for prompt and efficient action on the part of the Legislature. They *are of no advantage* to the business community, and add nothing to our reputation as a State. I would recommend that an inquiry be instituted in regard to these banks, to the end that such as do not conduct a regular and *bona fide* banking business be dissolved. This may be done by the Legislature, under the provisions of the 17th section of the general banking act."

The following statement shows the practical working of the general banking law:

Years.	Banks.	Capital.
1841	26	$3,884,816
1849	25	3,407,061
1850	24	3,505,283
1852	25	4,019,000
1854	24	4,080,815
1854	14 Free	1,000,926
1856	36	5,522,060

Delaware.—In the State of Delaware there was one bank in 1801, with a capital of $110,000—Bank of Delaware.

Years.	Banks.	Capital.
1815	5	$996,900
1820	6	974,000
1837	8	818,020
1849	2	210,000
1850	4, with 3 branches	640,000
1854	6, with 3 branches	680,000
1856	8, with 3 branches	1,690,000

Banking is done in this State on a specie basis, and we believe that the only failures which have ever occurred in it were the Bank of Milford, in 1854, and the Laurel Bank. In New England, as we have previously stated, there are 486 banks, with capitals amounting to $111,849,836, of which 170 banks and $59,060,000 are in Massachusetts.

WESTERN STATES. *Ohio.*—The first bank chartered in Ohio was in 1803, called the Miami Exporting Company, with a capital of $200,000. It was not a regular bank, but "its main purpose was to facilitate trade, then suffering under great depression." The Bank of Marietta was chartered in 1808, and subsequently the Bank of Chillicothe, the former with $500,000, the latter with $100,000 capital. Other institutions were soon after incorporated, and the following statement shows the progress of banking in the State:

Years.	Banks.	Capital.	Years.	Banks.	Capital.
1805	1	$200,000	1838	33	$9,247,296
1811	4	856,000	1840	37	10,507,521
1815	12	1,484,719	1845	8	2,171,807
1810	21	2,091,927	1850	56	7,129,227
1820	20	1,797,463	1856	60	6,995,250
1835	24	5,819,692			

Of the banks chartered in this State, 18 have been closed under various circumstances of disaster or want of success, and their bills are sold at 50 to 75 per cent. discount, and about 36 of them have failed, and their bills are reported as worthless. Two branches of the second Bank of the United States were established in Cincinnati and Chillicothe in 1817, and the State imposed a tax of $50,000 on each branch in 1819; but after a long controversy in the courts, it was decided at Washington that the tax was illegal, and the State submitted to the decree. In 1845 a new system of banking was introduced into the State, known as the "safety fund system," and under the same act, an "independent bank system." The former was based upon the New York system, but it was more perfect; it created a State bank, subdivided into about forty branches, under the supervision of a Board of Control, who furnish all the notes required for circulation; and to this board each branch is required to contribute 10 per cent. of the amount required for circulation, either in stocks of the State or of the United States, or the amount in money; to be applied by the board, in case of need, to the redemption of the notes of circulation of any one of the branches which may fail to redeem its bills; and each branch is required to contribute in the ratio of the circulation to which it is entitled, to the sum necessary for the redemption of the notes of the failing bank, to be remunerated from the safety fund as soon as the sale of the stocks in the hands of the board of control can be effected. Whenever a branch fails, all its property, notes and assets, pass into the hands of the Board of Control, who appoint a receiver to wind up its affairs, and distribute the proceeds among the stockholders after all the debts are paid. Of the 42 branches there are now 36 remaining, whose aggregate capital is $4,034,525; four branches have become insolvent and are closed, and one has withdrawn and become a private bank. The strength of this institution lies in the obligation of each branch to receive the notes of the others in payment of debts, and with a safety fund of 10 per cent., secured by a deposit of $808,000, to protect the circulation in the event of the failure of any one or more branches; the constant supervision of the Board of Control over all their movements, and the jealous vigilance of each other to protect themselves from loss by the mismanagement of others. All these furnish a guarantee of the circulation as perfect as can be desired; quarterly statements are required from each bank, which are regularly published by the Auditor of State, and the community at large have thereby a full knowledge of their true condition at desirable intervals. Under the old system, bank commissioners were appointed to examine the banks periodically, but the Board of Control now perform these duties. The independent banks are twelve in number, having a capital of $587,500, one of them having become insolvent, and two others are liquidating their concerns. These banks are required to deposit with the State Treasurer certificates of stocks, either of the State of Ohio or of the United States, for the entire amount of their circulation, which can not exceed three times the amount of their capital. These banks are annually examined by a commissioner appointed by the auditor, and quarterly returns of their condition must be furnished to him, and are published with those of the State Bank branches. The banks are all required to have 30 per cent. of the amount of their circulation always on hand, in gold or silver coin, or its equivalent in value, one-half at least being in gold or silver; "but deposits in any bank or banker's hands of established credit in the cities of New York, Boston, Philadelphia, or Baltimore, subject to drafts at sight, and payable in specie, shall be deemed equivalent to gold and silver." Of the banks chartered prior to 1845, but one remains in existence, the Ohio Life Insurance and Trust Company, whose operations are managed in two departments: the "Trust Department," and the "Banking Department." Its capital is two millions of dollars, and it was chartered in 1834, and at one time its circulation was nearly one million of dollars; but in 1842 the bank surrendered the right to issue notes, and its circulation has all been redeemed, excepting $4350, which have never been presented for payment, and a large portion of which probably never will be; as, for the past seven years, long intervals (in one instance, nearly eighteen months) have elapsed without the presentation of a single bill, and that for only five dollars. In 1851, the Legislature passed an act authorizing "free banking," and under its provisions 18 banks were established, the aggregate of whose capitals was $738,050, and a circulation was created of $709,397. At one period this was nearly one million of dollars larger; but in consequence of some of the bank plates having been stolen, an alarm was raised, and the notes of these banks were suddenly presented for redemption. A few months after the passage of the free bank law, the new Constitution of Ohio was submitted to the people and was adopted. By its provisions, the General Assembly were no longer authorized to grant banking powers to associations, until the people ratified any act passed for that purpose, and approved it by their votes, taken at the next general election after the passage of such acts. In addition to this fatal blow to all projected banks, in 1852, the General Assembly passed the notorious "tax law," which, under a forced construction, levied an exorbitant tax upon all the banks, and which for a time threatened destruction to every moneyed institution in the State. Fortunately, the Supreme Court of the United States overruled the decisions of partisan judges, and pronounced this outrageous tax *unconstitutional*. From the preceding, it appears that there are four classes of banks in Ohio, and each of them has furnished one or more instances of failure, occasioned more by imprudence and mismanagement than from any defect in the system under which they were organized. The experience of four years has taught the people of Ohio some severe lessons in regard to currency, which has been chiefly supplied to them by the banks of other States, and especially by Indiana; and a law has passed the Legislature, which is now before the people for adoption or rejection, during the present month, authorizing "the incorporation of the Bank of Ohio and other banks," in order to furnish additional banking facilities to the increased trade and population of this prosperous State. We are, however, not without apprehension that the "personal liability" clause, or thirty-fifth section of the act, will render it inoperative, even if the act should be ratified by the people.

Indiana.—Next in order comes the State of Indiana. This State was admitted into the Union in 1816, and in 1820 it had two banks, whose capitals amounted to $202,857. In 1834 the State Bank of Indiana was incorporated, with a capital of $1,600,000, and with ten branches, subsequently increased to thirteen in number. By the original charter, $160,000 were assigned to each branch, but they were subsequently authorized to increase the amount to $250,000 each. The branches were mutually liable for the debts of each other, but divided their own profits; each share was subject to a tax of 12½ cents for educational purposes, in lieu of all other taxes; but in case of an *ad valorem* system of taxation in the State, then the stock was liable the same as other capital, not exceeding, however, 1 per cent. altogether. No note under *five* dollars was allowed to be issued, and the Legislature reserved the right to restrict it to *ten* dollars within ten years. The capital of any branch might be increased by and with the assent and concurrence of the Legislature and the directors of the State Bank. The directors of the parent bank were to have charge of the plates and bank paper of the branches, and were empowered to deliver to them an amount of such paper not exceeding twice the amount of the stock subscribed for. One-half of the stock was subscribed for and owned by the State, for which they authorized bonds to be issued to the amount of $1,800,000, at 5 per cent., to realize the funds to pay for their half of the stock; the remaining half was to be subscribed for, and owned by individuals and corporations. The debts of each branch were limited to double the amount of capital paid in, exclusive of deposits. In January, 1836, an amendment was passed by the Legislature, and the discounts were allowed to be extended to twice and a half of the amount of the capital paid in. In 1841, the branches were authorized to issue notes of a less denomination than five dollars, not exceeding one million of dollars, on the payment of one per cent. for the privilege; and of its circulation, about $3,800,000, nearly one-sixth part was in small notes. After the resumption of specie payments in 1838, out of the 959 banks then in existence, 848 wholly suspended, and 62 partially so; of which latter number were those of the State Bank of Indiana, which did not again resume the payment of specie until October, 1841, when the branches held $1,127,518 in specie, to meet a circulation of $2,960,414, and deposits amounting to $317,890 only. Since that period the bank has maintained its credit inviolate, and under able management successfully effected a regular reduction of its suspended debt, which had rapidly accumulated during the inflation of business in former years, without ruinous sacrifices to the debtors of the bank. If we scrutinize the origin of this bank, we perceive at once that it was founded on false principles, and that the issue of the State bonds for $1,800,000, to provide for the payment of $800,000 of stocks, was a violation of the first article of the Constitution of the United States, which prohibits any State from issuing "bills of credit." "No State can coin money—no State (not even Congress itself) can make any thing a tender but gold and silver—no State can emit bills of credit." In direct opposition to these views, Indiana issued her bonds to procure her quota of stock, and for upward of twenty years has been participating in the profits of the institution. In November, 1851, a new Constitution went into operation, and in May, 1852, a general banking law was passed under its provisions; it is called "An act to authorize and regulate the business of banking." It was *liberal* enough in its details to suit *all* parties, and ninety-four banks were in a brief period in full operation, and supplying all the neighboring States, and especially Ohio, with every variety of pictorial bank-bills which the art of engravers could devise. In October, 1854, there were 84 of these banks whose bills could be found in any of the banks of Cincinnati, and the returns which were published of 67 of these exhibited $7,425,067 in circulation, and their authorized capitals $32,900,000. At one time the circulation was not far from nine millions of dollars, and as the securities deposited with the auditor (and for which bank-notes were exchanged dollar for dollar) might be Indiana 5 per cent. bonds, worth only about 95 per cent., the law presented strong temptations to bank operators. "A Board of Directors was not a necessary appendage to a bank, nor were the stockholders required to be citizens of the State." The result was, that after the oppressive tax law of Ohio had driven banking capital from that State, it was at once invested in the "free banks" of Indiana. The people were duly warned of the danger of this scheme of banking in the following suggestions: "Is it not obvious that a banker who issues ten times the amount of his capital in circulation does so for speculative purposes only? The temptation is great—for in periods of prosperity he can make 30 to $40,000 per annum by his circulation; and if the bank fails, he is only liable for $50,000, or the amount of his stock; and even this he might avoid by a timely transfer of his stock to irresponsible parties, and thus avoid personal responsibility altogether. But how long would it require to dispose of the $500,000 of Indiana 5 per cent. bonds in the New York market at par (at which rate they have been received by the auditor), in a period of panic, or even in a severe monetary crisis; and meanwhile, what would be the discount on the bills of his bank if driven into liquidation? Past experience has taught us that the community would suffer a loss of *twenty-five per cent. of their amount*, and we maintain that that is not legitimate banking which exposes a community to such a contingent hazard." Such was the *prediction* in 1854; what was the result? Of the 94 free banks of Indiana, 51 have *suspended*, and their bills are selling at from 25 to 75 per cent. discount in the city of Cincinnati. The charter of the State Bank of Indiana expires this year, but the Legislature, at their last session, chartered a new State Bank, with a capital of $6,000,000, having 15 to 20 branches, one in each specified district—the new bank purchasing the interest of the State in the old bank, and the capital to be paid in by the 1st of January, 1857.

Illinois.—Bank legislation in Illinois has been quite as extraordinary as in any other State in the Union. This State was admitted into the Union in December, 1818, but the first bank was established while it was under territorial government, in 1818, at Shawneetown, the whole territory then containing but 1500 inhabitants. In 1816 it was regularly incorporated, and, aided by the government deposite, it acquired extensive credit, paying specie for its bills until August, 1821, after the Kentucky banks had suspended; it was at length compelled to stop, and remained dormant until February, 1835, when the Legislature renewed its charter until 1st January, 1857. In the following month its capital, originally $300,000, was increased to $1,400,000, and subscribed for by the State; and their bonds, payable in 1861, were issued to provide the funds for this increase of capital.

The Constitution, in 1818, prohibited the establishment of any new banks except a State Bank and its branches; and in March, 1819, "the State Bank of Illinois" was incorporated, with a capital of $4,000,000, for 25 years, one-half to be subscribed for by individuals, and the balance by the State, whenever the Legislature thought proper. This charter was repealed in 1821, as no effort was made to carry it into operation, and another bank was chartered in lieu of it, with a capital of $500,000, for ten years, to be owned by the State and managed by the Legislature. The *capital* consisted of *its office furniture* and *bank-note plates only*; and $300,000 were directed to be issued and loaned on notes for one year, with mortgages as securities, and

not exceeding $1000 to each individual. These notes were receivable for taxes and all debts due to the State or the bank. It had hardly commenced operations before its bills fell to 75 per cent.; shortly after to 50 per cent., and finally to 25 per cent., when they ceased to circulate at all. The members of the Legislature received their pay in the depreciated currency at the market value, and on one occasion received $9 per day for their services, which the State was compelled to redeem at par; and a loan of $100,000 received in these notes at par was paid out at fifty cents on the dollar.

In February, 1835, a new bank was incorporated, with a capital of $1,500,000, with the liberty to increase it to $2,500,000—the State taking $100,000 of the stock; but in March increased the capital $2,000,000; the whole of which the State subscribed for. The bank was allowed *fifty* days for the redemption of its bills, and was required to redeem the $100,000 loan above referred to. The career of this bank was brief; it was shortly compelled to suspend payment, and in 1842 it went into liquidation. After the suspension of specie payments in 1837, the State was without any banks until 1851, when a general banking law was passed, similar to that in the States we have already described. The bonds of all States paying 6 per cent. interest, United States stocks and Illinois bonds at 80 per cent. were received by the auditor in exchange for the notes of circulation, and the bank commenced operations. The *amount* of bank-notes is limited to the amount of the bonds in the hands of the auditor; but the denominations are optional, so that the *whole circulation* may be in *one dollar notes* if the parties choose to require them; but in case of failure to redeem them, they are subject to 12½ per cent. damages per annum, ten days having elapsed after specie is demanded, and the corporate privilege becomes forfeited. The stockholders are individually liable for all the debts and liabilities of the bank, and provision is made for the collection of the same, if occasion should require. The act does not limit the amount of capital, excepting that it shall not be less than $50,000 for each bank, nor the length of time, but leaves both optional with the applicants, who may designate any number of millions for any number of years, *unlimited* and *perpetual*. There are now fifty banks in Illinois, whose capitals amount to about $5,000,000, and thirteen of uncertain value, ranging from 10 to 75 per cent. discount.

These three States—Ohio, Indiana, and Illinois—all of which are usually called "Western;" but there are three more designated as "Northwestern"—Michigan, Iowa, and Wisconsin—which we include in the same division. Michigan was admitted into the Union of the States in January, 1837; and in 1838 there were 11 banks, with an aggregate capital of $1,400,000. During that year many more were created, as the following statement will show:

Years.	Banks and Branches.	Capital.
February, 1808.....	43	$2,307,715
January, 1841.....	4	1,000,000
January, 1843.....	2	428,760
December, 1843.....	5	719,100
December, 1844.....	3	202,650
December, 1845.....	6	815,667
December, 1846.....	2	176,167
January, 1848.....	1	129,450
January, 1849.....	1	147,650
January, 1850.....	5	392,530
January, 1854.....	6	1,084,718
January, 1856.....	5	1,100,000

The only banks which are now in existence in the State are the Michigan Insurance Company, the Peninsular Bank, and Farmers' and Mechanics' Bank, all of Detroit; the Bank of Macomb County, and Bank of Tecumseh in the interior. "Free bank laws" were adopted by this State in 1849, and personal liability is also imposed upon the stockholders. The Treasurer of the State has the supervision of the banks, and the custody of the securities deposited for the bank-note circulation.

Iowa.—Iowa was admitted into the Union in 1846, but at present this State is destitute of any incorporated banks. There is a private bank, called the Miners' Bank, at Dubuque, but its bills are not current, nor even salable in Cincinnati.

Wisconsin was admitted into the Union in 1848. The first bank was established in Milwaukie, in 1851, with a capital of $225,000. In 1852 the free banking law was adopted, similar to those in other States, receiving all State stocks paying 6 per cent., and first mortgage railroad bonds, on roads of their own State, at 80 per cent. of their par value, but not exceeding one-half of the cost of the road on which they are a lien, nor for more than one-half the amount of the circulating notes delivered. A tax of 1½ per cent. was imposed, and the personal liability of the stockholders, to the amount of their stock.

Years.	Banks.	Capital.	Circulation.
January, 1854.....	10	$554,000	$519,814
July, 1854.....	19	1,250,000	786,218
January, 1855.....	22	1,400,000	940,009
January, 1856.....	32	1,883,000	1,153,554
July, 1856.....	38	2,635,000	1,443,215

There is a bank controller by law, who has the supervision of the banks, receives the securities, and issues the notes therefor. Bills under $5, of foreign banks, are prohibited from circulation.

SOUTHERN STATES. *Kentucky.*—This State was admitted into the Union in June, 1792, and the first bank was established in 1802, with a capital of $150,000, in Lexington, under the covert name of an *insurance company*, which was authorized to issue notes, payable to bearer. In 1804 a regular bank was incorporated, under the name of "The Bank of Kentucky," with a capital of $1,000,000. This bank suspended payment in 1814, but resumed it in 1815; in 1817 forty new banks were incorporated, with capitals amounting to $10,000,000, and had permission to redeem their notes with the bills of Kentucky banks, instead of specie. In 1818 the State was inundated with the paper of these banks; large loans were made, speculation was rife, and most of the bubbles which were set afloat collapsed within one brief year. The pressure became universal, and for "relief" the Legislature chartered a new bank, "The Commonwealth," with a capital of three millions, pledging the public faith for the redemption of its circulation; and as security held certain lands, south of Tennessee River, as a guaranty. If a creditor refused to receive this paper in payment, the debtor was authorized to "replevy the debt for the space of two years." The paper of the new bank fell 50 per cent., and creditors had the choice of the payment of one-half the amount of their claims, or a delay of two years in the settlement, with all the hazard of ultimate bankruptcy, and a total loss. The conflict of the two parties, known as the "relief" and anti-relief," or the "old court" and "new court," was the fiercest which ever agitated the State, but after five years struggle, the "old court" party triumphed, the replevin act was repealed, and the paper of the Commonwealth Bank was suppressed, and ultimately destroyed by successive acts of the Legislature. In 1833 the dominant party determined to supply the place and currency of the two branches of the United States Bank, at Lexington and Louisville, by the establishment of State banks; and in 1834 the Bank of Kentucky, with a capital of five millions, the Northern Bank of Kentucky, with three millions, and the Bank of Louisville, with five millions of dollars, were chartered, and are now in existence; but whose aggregate capitals are only $7,030,000, instead of the thirteen millions granted. In 1837 all these banks suspended payments in specie, but resumed again in 1839, and the Legislature chartered the Southern Bank of Kentucky. Shortly afterward, however, the banks suspended a second time,

and the universal prostration of trade, the repudiation of their bonds by some of the States, and the universal derangement of the currency South and West, prevented the stock of the new bank from being taken up. The trading community was in a desperate condition, yet they staggered on under their oppressive load of debts; but by the liberal accommodations and indulgences of the banks, they were partially relieved, until 1843, when the pressure gradually diminished, and shortly afterward it ceased altogether. In 1842 the three banks resumed specie payments, and from a circulation of $2,800,000 in 1842, gradually extended their issues until 1850, when they amounted to $6,683,000. The Southern Bank of Kentucky had its charter amended, and in 1852 went into operation with a capital of $1,300,000. Since then charters have been granted to the Farmers' Bank, with $2,300,000 capital; the Commercial Bank, with $400,000; the Kentucky Trust Company, with an *unlimited* capital; and the Newport Safety Fund Bank, with $300,000 capital. Both of these institutions failed in 1854, and their notes are now selling at 50 per cent. discount; and the small notes of the latter bank at 90 per cent. With the exception of the charters of these two last banks, the legislation of Kentucky has been of a fixed character, and her circulation has ever been esteemed in the Western States as of the highest character. There now 54 banks and branches in the State, the agte of whose capitals is $11,730,000, and circulation about $13,3000,000. In the session of 1854, it was proposed to charter six new banks, with capitals amounting to $6,100,000; but the governor having vetoed one of the bills of incorporation, the bills all failed to pass, and there for the present the matter rests.

Tennessee.—In 1807 the Nashville Bank was incorporated, with a capital of $200,000, afterward increased to $400,000, and after one or two suspensions it wound up with loss to all parties. In 1811 the Bank of the State of Tennessee was chartered, with a capital of $400,000, and nine other banks, with capitals of $200,000 to $400,000 each, and were permitted to become branches of the Bank of Tennessee. In 1819 the Farmers' and Mechanics' Bank of Nashville was chartered, with a capital of $400,000, but within a year it was insolvent. In 1820 the State Bank of Tennessee was established, with a capital of $1,000,000, on the basis of funds belonging to the State. This bank loaned money to individuals, in sums of $500 to each, on twelve months' credit, secured by a mortgage. The bank was *not required to have any specie*, but was authorized to sell $250,000 6 per cent. State stocks as its working capital. The proceeds of the Hiawassee lands, and some other securities, were pledged for the redemption of the circulation, and although its paper was rejected by two of the oldest banks in the State, and was 10 per cent. below par, yet the bank struggled on, and after six years it attained an available capital of $575,000 out of the proceeds of the pledged lands. The bank was finally wound up in 1832, with considerable loss to the State. The Union Bank was incorporated in 1832, with a capital of $3,000,000, the State owning one-third of the stock; in 1833 the Planters' Bank was incorporated, with a capital of $2,000,000; and in 1835 the Farmers' and Merchants' Bank of Memphis, with $600,000 capital. This latter bank for a short time enjoyed a high credit, but it attempted to do too much business, and failed in consequence. In 1838 the Bank of Tennessee was incorporated, with a capital of $3,226,976, all owned by the State, its nominal capital being $5,000,000. The State requisitions on this bank were so onerous, that its capital, in 1849, was reduced to $2,500,000. Subsequently to the charter of the Bank of Tennessee, in 1843, the Bank of East Tennessee, capital of $800,000; in 1848, the Lawrenceburg Bank, capital $100,000; 1852, the Citizens' Bank of Nashville and Memphis, capital $200,000, were chartered. In 1852 a free banking law was passed, similar in its provisions to those we have previously described, but, like those in other States, requiring amendments. Some eight or ten banks have been organized under it, but it is not very popular in the State. In addition to this, the Legislature, in 1853, chartered seven stock banks, with a view of supplying the vacuum which the winding up of the Bank of Tennessee would occasion, and which Governor Johnson recommended in 1855. The last returns of the banks in this State are in number 46, capitals $11,827,197, and all are under the supervision of a State controller.

Arkansas.—We have little to say of Arkansas, where there are no remaining banks to claim our attention, and proceed at once to *Mississippi*, where the theme is as fertile as their cotton crops are luxuriant. There were formerly two banks in Arkansas, the Real Estate Bank and the Bank of the State of Arkansas. They are both in the hands of trustees for liquidation, and are indebted to the State about $1,500,000, and interest to an equal amount for State bonds loaned to them, and still unpaid. This State was admitted into the Union in December, 1817, and it had then one bank, with a capital of $100,000. In 1820 this capital was increased to $900,000, and in 1830 it had but one bank, capital $950,600. At this period there were no banks in Kentucky or Missouri, only one in Tennessee, two in Alabama, and four in Louisiana.

Mississippi.—During this year the Planters' Bank of Mississippi was chartered, with a capital of $3,000,000, of which two-thirds were reserved for the State, and one-third allotted to individuals. In July, 1831, the State issued $500,000 6 per cent. bonds, and in March, 1832, $1,500,000 more, for her proportion of the stock. These bonds were sold at 13¼ per cent. advance, and yielded to the State a premium of $250,000. This was deposited in the bank as a sinking fund, to be increased by the dividends on the State's stock in the bank, from which fund the interest on the two millions of bonds was to be regularly paid. The bank paid 10 per cent. dividends up to September, 1839, when the State stock was transferred to the Natchez Railroad Company. The sinking fund was then $800,000 beyond the amount required to pay the interest on the State bonds. In 1836 to 1839, a large proportion of this fund was lost, and the remnants left were only $60,000, to which about an equal sum has since been added by the commissioners, by collections from the assets of the Planters' Bank. In 1835, the banking capital of the State amounted to $12,000,000, and such was the prosperous condition of the State, that it was proposed to add $10,000,000 more to the amount; and in the session of 1835–'36 about $17,000,000 in banks and railroads were chartered. In 1837 there were 18 banks in Mississippi, the aggregate capitals of which were $12,872,815, having a circulation of $5,073,425, and loans $24,351,414. But the end was not yet. In 1838 the Mississippi Union Bank was chartered, with a capital of $15,500,000, to be "raised by means of a loan, to be obtained by the directors of the institution." The governor was authorized to issue 7500 bonds of $2000 each, interest at 5 per cent., and payable in 12, 18, and 24 years, and for the payment of which the faith of the State was pledged. Two and a half per cent. in cash was required of individual subscriptions, and the balance secured by mortgages on real estate. In June, 1838, Governor M'Nutt executed and delivered to the bank 2500 of the proposed bonds. The three commissioners appointed under the charter negotiated these bonds with Mr. Biddle, who paid the commissioners of the bank $5,000,000 therefor, in five installments of one million each. This contract was guaranteed by the Pennsylvania Bank of the United States, on behalf of Mr. Biddle. Upon this sum of five millions, and $8000 received from indi-

vidual subscribers, the bank based all its operations, and the deplorable issue of which we shall shortly state. In 1839 another series of bonds, for a similar amount, was issued to the bank for further "*active capital*;" but in 1840 the governor issued a proclamation, warning the community against advancing money on the hypothecation of these bonds, *on any terms not authorized by the charter*. In 1841 the governor communicated to the Legislature that this proclamation had prevented an *illegal* sale of these bonds, and with it the following interesting summary of the "condition" of the Union Bank:

Suspended debt, *in suit*	$2,680,000
Suspended debt, *not in suit*	1,777,000
Resources, chiefly *unavailable*	8,034,000
Specie on hand	4,349
Circulation	3,034,000

Nearly a year previous to this date the bank had become hopelessly insolvent. The governor's proclamation was followed shortly after by his *atrocious scheme* of "*repudiation*" of the $5,000,000 of the bonds of 1838, on the pretext of "alleged fraud and illegality," and communicated to the Legislature; to which they responded, "that the State of Mississippi *will* pay her bonds, and *preserve her faith inviolate!*" In the whole of this disastrous transaction, there is nothing but *disgrace;* Governor M'Nutt was the first open, avowed, and relentless assassin of American credit in Europe, and the "deep damnation of its taking off" originated a feeling of distrust and disquietude in financial circles, which will be forgotten only when John Law's *Mississippi scheme* has been surpassed in extravagance. Well and truly did the Senator from Mississippi utter that unforgotten sentence, "the moral sense of communities and of mankind will condemn us," unless a tax was raised for the payment of these bonds; and it may be safely asserted that the deepest injury ever inflicted upon the commercial and financial reputation of the United States was in this reprobated and dishonest act of "REPUDIATION." The Planters' Bank bonds were not *officially* repudiated, but the people of the State, in 1852, refused, by a majority of 4400 votes, to authorize a tax to pay them, and redeem "the plighted faith of the State." In July, 1854, the amount of these bonds, with interest, was $3,518,081, and the bonds of the Union Bank, for $5,000,000 and interest, may be added thereto, as the cost of banks to the State, independent of the individual loss that can be superadded thereto. The following tabular statement furnishes a sufficient warning of the fate of banks which are based upon fictitious capital. There were in the State in

Years.	Banks.	Capital.	Circulation.	Specie.	Loans.
1830	1	$950,000	$540,190	$77,000	$1,927,425
1837	13	12,372,815	5,073,425	1,309,000	24,251,414
1840	19	30,370,403	15,071,689	867,000	48,538,728
1842	17	9,261,200	2,374,189	11,000	13,340,491
1850	1*	....	....	....	....
1856	1	240,165	284,880	....	....

* "Unpaid capital, not worth reporting."

Louisiana.—We gladly turn away from this melancholy review of past disasters, and enter upon a scene of still larger operations in Louisiana. The State was admitted into the Union in 1812, but there was a bank capital in the Territory in 1805, of $500,000, which in 1815 was increased to $1,432,300, distributed among three banks; and in 1820 four banks, with $2,597,420. There are no reliable returns of the banks between 1820 and 1830; but as the increase of their number in the United States was but twenty-two, and of their capital only eight millions, we take Mr. Gallatin's report of four banks in 1830, as the actual number in Louisiana at that period, as "in all the Western and Southwestern States there were, in 1830, only eighteen banks, with capitals amounting to $9,462,268. By the 1st of January, 1837, the number of banks in these States was increased to 161, including branches, with paid up capitals of the amount of $86,099,074," of which Louisiana had 16 banks, with 81 branches, and $36,769,455 capital, $7,909,788 circulation, $11,487,431 deposits, $3,108,416 specie, and loans $59,108,741, which was the highest point of the operations of the banks. *Niles' Register*, of March, 1836, gives the following statement of bank capital in Louisiana at that date:

Years.	Capital.	Years.	Capital.
1811	$754,000	1834	$23,364,755
1815	1,432,000	1835	27,172,145
1820	2,597,420	1836	56,000,000
1830	5,665,980		

of which about thirty-two millions were paid in, and the circulation of six millions—less than the specie in the banks to redeem it. The official reports, however, exhibit a more correct view of the matter, and from it we copy the following table:

Years.	Banks.	Branches.	Capital.	Circulation.	Specie.	Loans.
1837	16	81	$36,769,455	$7,909,788	$3,108,416	$59,108,741
1840	16	81	41,711,214	6,448,788	3,163,248	48,646,710
1845	6	29	20,929,340	1,087,377	4,451,023	20,420,948
1850	6	29	17,528,910	4,296,788	6,636,394	21,582,744
1855	5	22	14,257,520	5,969,807	6,979,772	18,602,649

The banks in the last line, in 1850, were

	Capital.
Louisiana Bank	$3,952,200
Canal and Banking Company	3,163,750
City Bank	994,400
Louisiana State Bank	1,734,820
Mechanics' and Traders' Bank	1,704,350
Union Bank	2,668,000
Total	$14,257,520

Besides these, there were the Citizens' Bank and Consolidation Association, with liabilities amounting to $8,751,813, and assets, $8,000,071. In 1852 the new consolidation was adopted, and the Citizens' Bank charter was restored to the bank, which had been forfeited by its continued suspension. The charter of the City Bank expired in 1853; that of the Mechanics' and Traders' also expired. The latter reorganized under the general banking law. The provisions of the free banking law of Louisiana are such as will compel the banks to retain specie to the amount of one-third of their liabilities. In 1854 the returns were,

	Capital.
5 Banks	$15,870,486
3 Free banks	2,688,775

In 1856 there were nine banks, whose capitals amounted to $15,702,600. As New Orleans is the grand entrepôt of the products of the whole Western country, large banking facilities are requisite to expedite the cotton, sugar, and tobacco shipped annually from this great commercial mart, and to supply the demands of the planters during each successive season. For many years past there has been a deficiency of banking capital in New Orleans, in consequence of the restrictive limits of the banking policy of the State in relation to discounts, as the supply of specie in the banks has been always large enough to justify a much larger amount of circulation than has ever been issued. Under the general banking law, it is probable, from the general appearances of things, that this deficiency will no longer exist, but, on the contrary, there will be a tendency to an opposite extreme.

STATEMENT OF THE BANKS OF NEW ORLEANS, OCT. 11, 1856.

ACTIVE MOVEMENTS.—LIABILITIES.			
Banks.	Circulation.	Deposit.	Due Distant Banks.
Bank of Louisiana	$708,439	$2,417,644	$243,808
Louisiana State Bank	1,292,100	2,025,270	99,858
Canal Bank	908,175	602,895	174,586
Citizens' Bank	2,744,945	3,128,115	122,131
Mechanics' and Traders'	351,465	571,412	20,048
Union Bank	559,300	941,242	123,432
Southern Bank	158,600	178,691	....
Bank of New Orleans	565,495	705,801	60,201
Total	$7,378,539	$11,741,570	$844,664

RESOURCES.			
Banks.	Specie.	90 day Paper.	Exchange.
Bank of Louisiana	$1,360,288	$3,905,323	$284,619
Louisiana State Bank	1,649,330	3,725,925	212,128
Canal Bank	643,850	2,618,325	465,771
Citizens' Bank	1,915,508	5,135,112	758,196
*Mechanics' and Traders'	277,460	1,004,138	76,645
*Union Bank	366,702	1,484,994	442,416
*Southern Bank	132,486	573,298	153,444
*Bank of New Orleans	326,351	1,942,480	187,776
Total	$6,674,973	$20,239,595	$2,573,990

* Free banks under the general law; the others are chartered banks.

Alabama was admitted into the Union in 1819, and in the following year there were three banks, whose capitals amounted to $469,112; in 1830, one bank, with $495,503 capital; and we give below the tabular statements of four years, to exhibit its bank history during the memorable epoch of 1836-'42.

In 1843 the banking capital was reduced to $1,500,000, the Bank of Mobile being the only institution until 1851. The State owned two-fifths of the stock, $600,000, for which it issued its bonds, and the bank paid the interest thereon. Since then the Southern Bank of Alabama, capital $500,000; Bank of Montgomery, $100,000; and the Northern Bank of Alabama, $200,000, have been organized. In 1850 a free banking law was passed, but there has been no advantage taken of its privileges, by establishing any such institution in the State. The Bank of the State has been winding up its affairs ever since the expiration of its charter, and it has furnished another illustration of the principle that there should be no interwoven interests of State and bank, or of politics and finance; they may be *correlative*, but not *conjoint*. The executive messages have fully argued this point, and there is no occasion for further comment.

Years.	Capital.	Circulation.	Specie.	Deposits.	Discounts.
1839	$9,553,909	$6,172,107	$1,502 404	$8,152,047	$15,0.0,505
1840	14,870,955	7,211,141	1,589,510	2,827,622	24,186,586
1841	14,340,334	1,728,042	685,192	980,428	23,065,522
1842	3,067,700	10,871	28,204	629,659	2,948,929

With the State of Texas we shall close the remarks on the Southwestern division of the Southern States, with merely stating the fact that there is *one* bank in the State, at Galveston, having a capital of $822,000. This State was admitted into the Union in 1845, and although she has cost the country a vast amount of money, in prolonged debates in Congress, in the wasted hours of the excited masses of the people, in cities, towns, and villages, and the exhaustion of all the intense expletives that suppositive patriotism could invent, yet beyond those straws, after the payment of the hard money of the contract, we believe that the government have made a good bargain, and that her territory may be our favored pathway to the Pacific. We have done with the Southwestern division, when we have quoted a remark of Professor Tucker, twenty years ago, 1836. "The banking mania has prevailed in the Southwestern States beyond any other in the Union, not excepting New England, but in consequence of which, with the *most profitable agriculture in the United States*, the bank circulation has been the most depreciated, and they are still suffering the evils of a disordered currency."

Virginia.—The first notice of any bank in Virginia was in 1805, mentioned in Mr. Gallatin's report, capital $1,500,000. This was the Bank of Virginia, chartered in 1804, and which expires in April, 1857; its capital has been enlarged to $2,650,000. There was, it is true, a branch of the first Bank of the United States in Norfolk; but the paper of this bank rarely found its way into the interior of the country, where the currency was purely metallic. "The desk of every agriculturist in Virginia had some gold or silver to spare, if he was a prudent, industrious man; or he had something like money to spare in the hands of his merchant, who, in the days of which I am speaking, acted as a banker to his prospering customers. The current money being specie, was widely scattered through the land, and in diversified hands, so that its concentration at any particular point was impossible; and consequently its removal from the country could not happen to any great extent." The same writer proceeds: "No people had more cause to rejoice than the people of Virginia; but alas! the banks came, and all things became changed. Like the Upas-tree, they have withered and destroyed the healthful condition of the country, and inflicted on the people political and pecuniary disease of the most deadly character."

Such was the tone of public sentiment in the Southern States, originating with the establishment of the first United States Bank, and cherished by Virginia until the expiration of its charter in 1811, when, through fear that its sovereignty would not be represented at the funeral orgies, the Assembly, in January, 1811, passed a special resolve, "to instruct their senators and request their representatives to vote against the renewal of the charter of the United States Bank"—a puny little institution, on its last legs, with an embargo behind it, and a war before its last expiring moments. But in one brief year the mystery was explained: *Virginia wanted a bank of her own*, and in February, 1812, we perceive that the Farmers' Bank of Virginia, with a capital of $2,000,000, and with a right to issue $6,000,000 of circulation, was chartered; and with the Bank of Virginia (in which the State was interested $300,000), and the enlargement of capital to the old, and the creation of new banks, it certainly was very politic that the State should wish to avoid either the rivalry or the surveillance of a national institution. Three other banks followed in quick succession, with capitals amounting to four millions more, and there was no further outcry against paper money or banks, because the "Old Dominion" had adopted them. The charters of the two first banks prohibited the issue of notes under $5, which they adhered to, until it was found convenient to issue $7, $8, and $9 notes to supply the use of coin; and thus the intent of the law was frustrated. Our usual tabular statement furnishes the readiest mode of showing the banking operations of the State from 1820 to 1850:

Years.	Banks.	Capital.	Loans.	Circulation.
1820	4	$5,212,192	....	....
1830	4	5,751,100	$7,630,000	$3,858,000
1837	5	6,731,260	18,021,000	9,107,000
1840	6	10,283,033	15,500,000	6,707,000
1842	6	10,303,362	14,170,000	7,740,000
1848	6	9,684,970	17.302,000	8,997,000
1850	6	9,731,370	18,163,000	8,044,000
1854	16	12,790,436	24,913,000	14,298,000
1850	60	13,734.800	....	....

With the exception of 1837, there does not appear to be any extravagant banking; but in January of that year the proportion of loans to capital was larger than that of any other State in the Union—being 50 per cent. above the average rate of all the banks, and its circulation in excess by a larger ratio, 214 to 91 average proportion of circulation to capital. In 1851 the general

banking law was passed, and as the chartered banks expire, they have been required to comply with the general rule of securing their circulation by a pledge of public stocks. The Bank of Virginia and the Farmers' Bank charters expire in 1857; but they have been wisely renewed upon their old basis, "as the experiment of 'independent banking' has not so triumphantly vindicated the sound wisdom of the principle as to induce the public to sacrifice a system which has operated, in the main, equally to the advantage of the State and the community. There is certainly nothing in the financial condition of the State to warrant any hazardous experiments with its monetary relations."

North Carolina.—The first bank incorporated in this State was the Bank of Cape Fear, in 1804, with a capital of $250,000, located at Wilmington. Its charter has been extended, and its capital increased by various enactments. It has now $2,000,000 of capital, of which the State owns $532,200; and its present charter expires, by limitation, in 1880. It has seven branches. The Bank of the State of North Carolina was originally incorporated in 1833, with a capital of $1,500,000. It is now $2,000,000, of which the State owns $500,000; and its charter expires in 1860. It has nine branches. In 1834, the Merchants' Bank, $300,000 capital; in 1847, Commercial Bank, $300,000; in 1849, Bank of Fayetteville, $800,000; in 1850, Bank of Washington, $400,000, and Bank of Wadesborough, $200,000 capitals, were severally incorporated; and the whole number in the State at present is 29 banks and branches, the aggregate of whose capital is $6,050,000. In one of the late reports of the Bank of North Carolina we find the following remark: "By successful management, this bank has obtained a position and influence which scarcely any State institution ever possessed, and certainly none in North Carolina. After passing *uninjured* through the crisis of 1837, under the able guidance of its first president, Mr. Cameron, it rapidly acquired confidence and strength, and now stands pre-eminent among the State institutions of our land." We are happy to add that there are no "free bank" laws in this State.

South Carolina.—The first bank established in this State was the Bank of South Carolina, chartered in 1792, with a capital of $1,000,000. In the appendix to Mr. Woodbury's report of the banks in 1837, he states the South Carolina banks as follows:

Years.	Banks.	Capital.	Years.	Banks.	Capital.
1792	1	$675,000	1811	4	$3,475,000
1801	2	3,000,000	1815	5	3,780,100
1805	2	3,000,000	1820	5	4,475,000

But we believe that the account we subjoin is the correct one:

Years.	Name.	Banks.	Capital.
1792	Bank of South Carolina.....	1	$1,000,000
1802	State Bank of South Carolina....	1	1,000,000
1810	Union Bank	1	1,000,000
1810	Planters' and Mechanics' Bank ..	1	1,000,000
1812	Bank of the State of South Carolina	1	1,125,357
	Making an aggregate capital, in 1820, of.....		$5,125,357

The Bank of the State of South Carolina was a purely State institution, and had no private stockholders. It was originally founded for the purpose of furnishing temporary aid to planters, by loans of $2000 to each, and for many years was a mere "loan institution." In 1820 the capital of this bank was pledged as security for the redemption of the bonds of the State, issued to carry out a system of internal improvements recently undertaken. The consequence was, that the bank was immediately converted into a commercial institution, and conducted on corresponding principles. In 1833 it was deemed "expedient and beneficial, both to the citizens and to the State, to recharter the bank until 1856," but to be wound up in 1860. It has now a surplus of assets over its liabilities of over two millions and a half of dollars, and the last of their bonds due in London is payable in 1868, commonly known as the "fire loan," and is little short of $500,000.

In regard to this bank we will transcribe some extracts from Governor Seabury's message to the Legislature in 1849, which we commend to the notice of some rabid politicians who succeeded in hunting down the United States Bank: "The Bank of the State of South Carolina is a dangerous institution, anti-republican in its character and tendency, and the evils inevitably arising from the connection between a moneyed corporation and the State increase and ramify the longer the rights and privileges of the former are extended. The political history of South Carolina has too long presented the anomalous spectacle of its constituted authorities pertinaciously upholding a State corporation, *while it denounced any union between a bank and the Federal government.* I also desire, in this place, to express my settled conviction that the Bank of the State was founded on a false and pernicious principle; that to grant to the members of a community, almost exclusively devoted to rural pursuits, unusual facilities for commanding money, is to inflict upon them and their posterity an unmitigated evil."

In glancing over the Treasury Reports for 1850 and 1854, we notice that the Bank of the State of South Carolina had $1,169,541 in circulation in the first-named year, and in the second $1,054,561. By what right did they issue these bills? In an article on the currency in *Hunt's Magazine*, in 1842, by Professor Tellkampf, we find the following remarks: The Constitution of the United States declares, "that no State shall coin money, emit bills of credit, or make any thing but gold and silver a tender in payment of debts." It is a known and settled principle, founded on philosophy, that no one can transfer to another a right which he does not himself possess. "*Nemo plus juris in alium transferre potest, quam quod ipse habet.*" Since no State can coin money or emit bills of credit (under which paper money is included), can they make any thing but gold and silver a tender for the payment of debts? No State has a right to make money, no matter whether gold or silver, or any other material; and therefore it can not transfer the right to banks by charter. Wherefore, these charters are wholly unconstitutional. Congress only has the right, and that is the only power which can confer it.

Other banks have been subsequently chartered in South Carolina, as follows:

		Capital.
In 1835,	Bank of Charleston	$3,160,800
" 1838,	Southwestern Railroad and Banking Company	869,426
	Commercial Bank, Columbia.....	800,000
	Bank of Hamburg	500,000
	Merchants' Bank of Cheraw	400,000
	Bank of Camden	377,500
	Bank of Georgetown.....	200,000
	Farmers' and Exchange Bank	999,900
	Bank of Newberry	300,000

and some others, numbering altogether 20 banks and branches, having an aggregate capital of $16,600,000.

The annexed tabular statement finishes our notice of these banks:

Years.	Banks.	Capital.	Circulation.	Deposits.	Specie.	Loans.
1836	10	$7,186,318	$7,488,727	$4,021,210	$2,500,427	$16,316,819
1837	12	8,650,118	7,225,016	5,048,477	1,664,786	18,860,838
1843	11	11,479,922	2,962,154	1,742,000	1,755,178	13,580,033
1846	11	11,636,960	5,911,360	2,253,168	1,723,561	14,181,722
1850	14	13,139,571	8,741,765	3,822,182	1,711,002	20,601,187
1855	19	16,603,253	6,739,023	2,871,095	1,283,284	23,140,098

Georgia.—In Georgia, the first bank which appears in Mr. Woodbury's report is, in 1811, one bank, capital $210,000; in 1815, two banks, capital $628,580; in 1816, three banks, capital $1,502,600; in 1820, four banks, with an aggregate capital of $3,401,510; and the following table shows that Georgia has had her full share of banking business, notwithstanding her frequent complaints of dependence upon Charleston for facilities, and her own want of bank capital. There were in the State, in

Years.	Banks.	Capital.	Circulation.	Deposits.	Specie.	Loans.
1830	9	$4,203,029	$2,719,356	$1,382,634	$1,560,141	$6,25?,474
1837	32	11,438,828	8,058,789	2,043,632	2,800,828	16,602,215
1840	39	15,908,634	5,518,322	1,585,418	1,800,694	13,783,221
1843	24	10,250,792	1,972,215	1,050,842	1,200,971	5,451,751
1846	22	9,970,739	2,471,264	1,318,263	1,104,235	5,540,322
1849	18	12,595,010	4,118,419	1,607,099	1,547,026	6,953,166
1853	18	12,957,600	9,519,777	2,523,227	1,570,818	13,567,469
1855	21	13,413,100	6,698,869	2,084,455	1,451,880	11,648,559

These statements give a very imperfect idea of the real state of financial operations in Georgia. For instance, in the report of 1849, the Central Bank, the property of the State, which had for ten years been winding up its concerns, had its capital included, $1,480,000, and the two railroad companies, capitals $6,694,000, making, in the aggregate, $8,171,000, which should be deducted from the banking capital, as above stated, when the return would be, in 1849, fifteen banks.

Capital.....	$4,420,764	Specie.....	$1,404,706
Deposits.....	1,373,780	Loans.....	5,502,714
Circulation	3,619,749		

The banking community are indebted to a distinguished representative from Georgia (the late Richard Henry Wilde) for the introduction and adoption of the resolution in Congress by which we have our annual reports on the banks of the United States. Imperfect as these reports are, they illustrate the importance of having more attention bestowed upon them, even if their preparation should require an additional bureau at Washington.

Florida.—We come now to Florida, the last State in the Southern division, and which was admitted into the Union in 1845. Under its territorial government, it had, in 1838, five banks, with an aggregate amount of capital of $2,113,302, $774,040 circulation, $145,842 specie, $493,623 deposits, and $2,652,614 loans. These were located at Pensacola, Tallahassee, Appalachicola, and Magnolia, but they are all broken and worthless. A law was passed in 1849 authorizing a bank at Tallahassee, but we believe that it was not organized, and we know of no regular bank in the State.

Missouri.—This State was admitted into the Union in 1821. There was one bank in existence prior to this date, the operations of which were disastrous, but the first we find in the regular reports is the State Bank of Missouri, at St. Louis, with one branch, in 1837, and a capital of $533,538, circulation $28,000, and specie $466,000. This is now the only bank in the State, although it has increased the number of its branches to meet the increasing demand for banking facilities. We give a tabular statement of its operations, during a series of years, from 1837 to 1856:

Years.	Branches.	Capital.	Circulation.	Deposits.	Specie.	Loans.
1837	1	$533,538	$028,000	$819,000	$466,000	$1,100,000
1839	2	1,116,123	410,000	1,174,000	502,000	2,077,000
1843	3	1,200,588	731,000	1,116,000	1,200,000	951,000
1846	5	1,200,582	2,195,000	1,296,000	1,458,000	2,658,000
1849	5	1,208,107	2,560,000	1,735,000	2,427,000	3,152,000
1853	5	1,208,751	2,594,000	1,877,000	1,902,000	3,265,000
1856	5	1,216,400	2,805,000	1,331,000	1,355,000	4,300,000

This bank is owned by the State to the extent of $954,205, and the balance by individuals, and its charter will expire in February, 1861, having been extended to that date by act of 1856. A committee on banks formerly recommended a sale of the State's interest in the bank, and the charter of a new one with $5,000,000 capital. The constitution allows but one bank and branches, and, of course, without its alteration free banks can not be introduced. It will be perceived that the bank has always had on hand a large supply of specie for the redemption of its circulation, and has consequently always enjoyed a high reputation. It has maintained specie payments since its incorporation, although its circulation was necessarily restricted, while many of the banks of the East and West were under suspension during the years 1837-1840. We trust that it may continue a fortress of strength to resist the encroachment of free banking principles, which are now pervading several of the States, and furnish an enduring evidence of the profit and security of banks based upon a specie capital.

California.—We are not aware of any incorporated banks in the State of California; and it only remains for us to speak of those of the District of Columbia. The first bank established at Washington was in 1792, with a capital of $500,000; in 1802, there were two banks, $1,500,000; in 1805, three banks, $2,000,000; in 1811, four banks, $2,341,395; in 1815, ten banks, $4,0.8,295; in 1820, thirteen banks, $5,525,319 capitals.

Years.	Banks.	Capital.
1830	0	$3,879,574
1837	7	2,204,445
1842	6	1,784,020
1844	6	1,649,280

The charters of all these banks expired some years since, and passed into the hands of trustees for the benefit of the stockholders. The Farmers and Mechanics' Bank, Georgetown, the Bank of the Metropolis, Bank of Washington, and Patriotic Bank of Washington, are of the above class, and are about the only banks whose bills are current on any terms, and they are looked upon with distrust out of their own neighborhood.

Conclusions.—The past financial history of the United States abounds with examples and warnings; but the misfortune is, that they are apt to be unheeded and forgotten. How many of our merchants now on the stage of active enterprise have an intimate acquaintance with the past history of commerce *in our own country during the present century*, if, indeed, they know that which relates to their own business, beyond the last twenty years?

How few statesmen and financiers of these modern days of high attainments are familiar with the financial events of 1836-'42! Those who retain a fresh remembrance of that financial crisis will ever dread a recurrence, and be inspired with caution, prudence, and distrust. But the race of these "conservatives" is fast passing away, and the counsels of the few remaining are almost derided. Junior partners, or successors, and "Young America," fill their places, and now take the lead. The past is disregarded, and similar errors will probably eventuate in similar disasters.

Our illustrious statesman, Daniel Webster, who has left for our use invaluable lessons of political wisdom, in his celebrated speech at Trenton, in 1844, uttered these words: "We are well instructed by experience; but let us not be lost to experience. Let not all the good, all the comforts, all the blessings, which now

seem in prospect for all classes, be blighted, ruined, and destroyed, by running into danger which we may avoid. The rocks before us are all visible—all high out of water. They lift themselves, covered with the fragments of the awful wrecks and ruin of other times. Let us avoid them. Let the master and the pilots, and the helmsman and all the crew, be wide awake, and give the breakers a good berth."

In 1832, Mr. Biddle, the President of the United States Bank, was examined by a committee of the House of Representatives, of which Mr. Cambreleng, of New York, was chairman. To one of the interrogatories he answered in the following language: "The idea, at the present day, of doing the business of this country *without banks* would be equal to the project of renouncing canals, and railroads, and steamboats, and all the other improvements belonging to trade. That banks do occasional mischief there can be no doubt; but until some valuable improvement is found which supplies unmixed good, this is no objection to them, and, as constituted as they now are, the banks of the United States may be considered safe instruments of commerce. On the whole, it seems wisar to retain the established institutions of the country, instead of resorting to *doubtful* and *hazardous experiments*. What is wanted, I think, in our banking system is this: first, to widen the basis of our metallic circulation, by *abolishing the use of small notes*, so as to allow coin to take the place of them, as it inevitably would; and, secondly, to annex to the non-payment of specie by the banks so heavy a penalty, say an interest of 12 per cent., as in the case of the Bank of the United States, or 24 per cent., as in some of the Jersey banks, as would deprive the banks of all temptation to incur the risk of insolvency."

Nearly a quarter of a century has elapsed since these remarks were made by the "moneyed autocrat of Philadelphia," and the very principles avowed by him are now the adopted dogmas of his former opponents. We believe that it is now generally admitted that, in order to carry on successfully the extensive business of this country, we require a solid, stable, and uniform currency. It is undeniable, also, that a system like banking, which has constituted a prominent engine of trade, commerce, and manufactures in all civilized communities, must possess intrinsic, fixed, and ascertained principles; the discovery, development, and application of which, in the most equitable and advantageous manner, should be the leading object of those who exercise any agency in the creation or management of our moneyed institutions.

The early antipathy of our people against banks was a blinded prejudice; the retrospect of half a century discloses many great evils and abuses, springing from multifarious causes not imputable to the system, but rather fungous excrescences, which a luxuriant growth has produced. Frauds without number have been perpetrated, undiscovered and hopeless; thousands and millions of dollars have been scattered in thoughtless profusion by Boards of Directors, who knew nothing of the first elements of banking, and loaned their paper promises to oblige their friends, taking a worthless written individual promise for an equally worthless printed bank-note. But what of all these things, and many more which might be added, the great extension of credit, consequent upon the increased banking facilities, *unrestrained* as they have *formerly* been, has been beneficial to all classes, to the farmers and mechanics not less than to the merchants. "Young Americans," men of industrious, enterprising, and energetic characters, have left the comforts of their parental homes, and by the aid of bank capital have found the facilities by which they could convert boundless forests and untrodden wilds into cultivated farms and villages, within the precincts of which they have established schools and churches, erected work-shops and factories, and clustered around them the civilization, the comforts, and refinements which are now spread over our Western States. True it is, that this expansion of bank facilities has cast its dark shadow as well as its sunlight. In many a city and town, thousands have been ruined by the recklessness or improvidence of those who have made haste to be rich, and many a possessor of an ample fortune, acquired by a life-long labor, has gone down to his grave in sadness, sorrow, and deprivation, by the violent explosion of those fearful volcanoes which periodically have scattered burning lava and ashes over the golden vistas which speculation had conjured up.

But the question now arises, When are our experiments in banking to end? We have tried national banks, specie banks, safety-fund banks, free banks, and bogus banks; and we have a sub-treasury scheme, and untold treasures of gold in California, but these are merely chaotic materials, moving in space at random—no single mind directs their movements, and the result will probably be "confusion worse confounded." Where, then, are we to look for succor? We can discover but one sure point, and that is the general government, who alone have the power to exercise a salutary control over the currency of our whole country, through the agency of that grand regulator of exchange, an exchequer system, added, if need be, by that pet of the government, the present sub-treasury scheme.

From the following table of the number of banks, amount of capital, and circulation, it will appear that the number of banks has doubled in a period of nearly twenty years; while the capital and circulation have increased only about 30 per cent. in the same time, which ratio is not equal to the growth or increase in wealth of the country.

TREASURY REPORT.

Years.	Banks.	Capital paid in.	Circulation.
1837	788	$220,000,000	$149,000,000
1838	829	319,000,000	116,000,000
1839	840	327,000,000	135,000,000
1840	907	303,000,000	107,000,000
1841	784	313,000,000	107,000,000
1842	692	260,000,000	83,000,000
1843	691	228,000,000	58,000,000
1844	696	210,000,000	75,000,000
1845	707	200,000,000	89,000,000
1846	707	196,000,000	105,000,000
1847	715	203,000,000	105,000,000
1848	751	204,000,000	128,000,000
1849	782	207,000,000	114,000,000
1850	824	217,000,000	131,000,000
1851	879	227,000,000	155,000,000
1852	..	....	....
1853	..	....	....
1854	1208	301,000,000	204,000,000
1855	1307	332,000,000	187,000,000

Our task is ended, when we have acknowledged the sources from which this compilation has been derived. From Condy Raguet and Professor Tucker's works on *Banks and Banking*, from *Niles' Register*, the *Bankers'* and *Hunt's Magazines*, liberal extracts have been made, and all the tabular statements have been derived either from the *Bankers' Magazine* or the reports of the Secretary of the Treasury. The admirable Index to *Periodical Literature*, by the accomplished librarian of the Boston Athenæum, has been an efficient guide to authorities and essays which might otherwise have escaped our attention, and has fully verified the motto on his title-page,

"Qui scit ubi sit scientia, habenti est proximus."

Bank of the United States.—The old Bank of the United States was incorporated by an act of Congress, approved February, 1791. By the limitation of the charter, it was to expire on the 4th of March, 1811. This, like the Banks of England, France, and Sweden, was a bank of deposit, discount, and circulation, with a capital of $10,000,000.

Those European writers, both British and French, who have eulogized this institution as being purely commercial, and distinguished from those of England

and France by not being connected with the government, or an engine of finance, can not have read the charter, the preamble to which begins thus: "Whereas the establishment of a bank will be very conducive to the conducting of the national finances, will tend to give facility to the obtaining of loans for the use of the government in sudden emergencies, and will be productive of *considerable advantages* to trade and industry in general," etc. Instead of being a merely commercial establishment, therefore, it was essentially and mainly of a financial and political character, and it was on this ground that its constitutionality was defended; the right of Congress to grant such a charter being claimed mostly upon the strength of that clause of the Constitution which gives to Congress the power necessary for carrying into execution the powers enumerated, and expressly vested in that body. The origin of this establishment was, therefore, similar to that of the Bank of England, and the resemblance is not limited to the general purposes of its institution, for, as the Bank of England originated in a loan to the British government, so the act by which the old Bank of the United States was chartered provided that the sums subscribed by individuals and corporations should be payable one-fourth in gold and silver and three-fourths in the public debt certificates. The President of the United States was authorized to subscribe for two millions of the stock in behalf of the United States. The directors, being twenty-five, were chosen by the stockholders without any interference on the part of the government in the election; but the government reserved the right of inspecting the affairs of the Bank, and for this purpose the Secretary of the Treasury was authorized to demand of the president and directors a statement of its concerns as often as he might see fit. The corporation was authorized to establish branches in any part of the United States. The only restriction as to circulation was, that the amount of debts due from the corporation by bond, bill, note, or otherwise, besides the debts due for deposits, should never exceed $10,000,000; and in case of excess, the directors by whose agency such debt should be incurred were made personally answerable. This bank went into operation, and had a most powerful agency in establishing the credit of the government, facilitating its financial operations, and promoting the interests of industry and commerce. Congress having refused to renew the charter, it expired, by its own limitation, in 1811. But during the war which ensued the want of a national bank was severely felt, not only as an agent for collecting the revenues, but more especially for transmitting funds from one part of the country to another, and then it might have been a useful auxiliary to the public credit by supplying temporary loans in cases of emergency. So thoroughly convinced were the public of the necessity of such an institution, that the members of the same political party from which the constitutional objections had been made to the old Bank, and which had refused to renew its charter, passed an act of Congress, which was approved by the President, April 10, 1816, chartering the second Bank of the United States, with a capital of $35,000,000, upon principles and with provisions very similar to those contained in the former charter. For this charter the government demanded and received a bonus of $1,500,000 from the stockholders. The government became a stockholder in the same proportion as in the former bank, taking one-fifth, or $7,000,000 of the stock. The direction of the institution was left to the stockholders, as in the old bank, except that the government reserved the right of appointment and removal at pleasure, by the President, of five directors out of the twenty-five, the other twenty being elected by the stockholders. The government also reserved the right to demand a statement of the concerns of the institution by committees of either branch of the Legislature. One quarter of the subscription to the stock was payable either in gold and silver or United States stock, at the option of subscribers. The $7,000,000 to be subscribed by the government was payable either in gold and silver, or public stock, at an interest of 5 per cent., at the option of the government. The transactions of the corporation were limited to making loans and trading in the precious metals, and the sale of such goods or proceeds of such lands as should be pledged.

Branches were established in various parts of the Union. No other similar corporations could be chartered by the government, except banks in the District of Columbia, with a capital not exceeding in total $6,000,000, during the period for which the charter was granted, namely, to the 3d of March, 1836. The bank was prohibited from purchasing any part of the public debt, taking interest over 6 per cent., or loaning to the government over $500,000, or to any State over $50,000; and the debts of the bank were in no case to exceed the amount of deposits by more than $35,000,000. And in case of refusing specie payment of its notes or deposits in specie, the bank was made liable to pay interest at the rate of 12 per cent. per annum. The bank was also obliged, by its charter, to give the government the necessary facilities for transferring the public funds from place to place within the United States without charging commissions, or claiming any allowance on account of the difference of exchange, and to transact all the business of commissioners of loans whenever required so to do. The bank was prohibited from issuing bills under the denomination of $5.

The bank commenced operations on the 7th of April, 1817; and soon after entered into a compact with the State banks for a simultaneous resumption of specie payments, which took place on the 20th February, 1817. Every effort was made to push its paper into circulation. Its discounts were increased in one month from $3,000,000 to $20,000,000; and in October, nine months after going into operation, they had increased to $33,000,000. Of course, with this immense expansion, the currency depreciated; prices of every thing ranged high; speculation, especially in stocks, was rife. The management of the bank was very bad; money was lent on the stock of the bank to its par value, and so persons of no means became stockholders—pledging the stock for the loan with which they bought the stock. The branches which had been made at all points, North, East, West, and South, were issuing notes, limited by the ability to make them. In obedience to a fixed law of action and reaction being equal, a revulsion soon came, and, owing to the mismanagement of the directors, it was increased. The branches met with great losses: at Baltimore, for instance, from the improper conduct of the officers, it was estimated at $1,571,221; and the aggregate losses of the parent bank up to the 6th of March, 1819, exceeded $3,500,000. The dividends in the same time amounted to $4,410,000, of this sum $1,348,553 was received for interest on public debt held by the bank, which made the profits on the banking operations less by half a million than its losses. These losses, and the fluctuations caused by the difficulties of the bank in the currency and in money affairs generally, created a strong feeling against the bank, which added to the party who held that the bank was unconstitutional and inexpedient.

In the sessions of 1831–'32 the bank made application to Congress for a renewal of the charter; and a bill was passed incorporating anew the bank. This was vetoed by President Jackson. It was then reconsidered by Congress, but failing to obtain the constitutional majority of two-thirds, it was finally rejected, July, 1832.

The removal of the government deposits from the Bank of the United States by the President, September 23, 1833; the adoption, in consequence, by Congress of what was afterward called the "deposit-bank

system," as a means of safely keeping the public money; the resolution of the Senate that the removal was uncalled for, and the responsibility assumed by the President unconstitutional, etc., introduced by Mr. Webster, and passed March 28, 1834; the passage of the act of June 23, 1836, for the distribution of the surplus revenue among the different States of the Union; the issue by the Secretary of the Treasury of the famous specie circular of July 11, 1836; the incorporation of the Bank of the United States by the Legislature of Pennsylvania early in the same year; the derangement in the currency of the country, which led, in May, 1837, to the general suspension of specie payments by the banks; the resumption of specie payments by the banks in the summer of 1838, with the adoption of the "free-banking system" by the State of New York, and several others, were events which may be regarded as being intimately connected with the suspension of the Bank of the United States.—E. A.

"When it was finally settled that no recharter of the national bank was to be obtained, a plan was projected to combine the advantages of the long-established correspondence, name, and machinery of the former bank, by incorporating its stock with a new institution under the name of "The President, Directors, and Company of the Bank of the United States of Pennsylvania," which was chartered on the 18th of February, 1836, by the Legislature of that State. The transfer of the funds of the old institution was made into the new State bank. More than 15 per cent. was restored by the government beyond its subscription at the period of the transfer, and 3½ per cent. had been paid to the same source every six months for a long course of years. In consequence of the advantages to be derived from the new institution, the stockholders were content to subscribe anew in the new State bank; and it is alleged that all of them might, at this juncture, have received their investments back, not only at par, but with a large advance. This the government actually did, and no power was enjoyed by the government that was not shared by every individual. Indeed it was alleged by Mr. Nicholas Biddle (who held the administration of the affairs of the State bank, as he had done in the national bank), as recently as April, 1841, that the State institution was prosperous down to the end of his administration in March, 1839. The downfall of the State institution, however, soon occurred, bringing disaster upon the stockholders. From March, 1839, to March, 1841, the stock of the State bank declined from 116 to 17 per cent., and this loss fell in considerable part upon those who had been the original stockholders of the national bank. The stock is now quoted from $1 to $2 per share. The new institution did not rest upon the broad foundation of national aid, and of course had not the confidence possessed by the national bank."—HUNT's *Merch. Mag.*

A bill for establishing a Fiscal Bank of the United States passed the House of Representatives, August 6, 1841; vetoed by President Tyler, August 16. Another bill for a Fiscal Corporation vetoed September 9, 1841, followed by a resignation of all the Cabinet, except Mr. Webster, which ended for a time all efforts to obtain under any name a new national bank.

CANADA.—There are eight banks in Canada besides the Bank of British North America, which has its chief office in England, and spreads its branches all over British America. This bank, which was incorporated in 1840, has a capital of £1,000,000 sterling. Of the eight more strictly colonial banks, four are in Lower and four in Upper Canada. The most important of these is the Bank of Montreal, with a present capital of £1,500,000 currency. The three other banks in Lower Canada are, the City Bank of Montreal, with a capital of £300,000; the Banque du Peuple in Montreal, with a capital of £300,000; and the Quebec Bank, with a capital of £500,000. The banks in Upper Canada are, the Bank of Upper Canada, Toronto, incorporated 1821, with a present capital of £1,000,000; the Commercial Bank of the Midland District, Kingston, incorporated 1832, capital £1,000,000; the Gore Bank, Hamilton, incorporated with a capital of £100,000; and the Niagara District Bank at St. Catherines, with a capital of £500,000.

Almost all of these institutions have branches in various parts of the country, and issue notes, payable on demand, from one dollar upward. The least denomination of the notes of the Bank of British North America is four-dollar notes, representing £1 colonial currency. The greater number of these institutions are now understood to be paying from 6 to 7 per cent. per annum upon their paid-up stock; and the stock of the most successful among them was selling, in April, 1854, at from 16 to 25 per cent. premium. All accounts are kept in Canada in pounds, shillings, and pence, provincial currency. The present one pound of provincial currency is about equal to 16*s.* 4*d.* sterling, or four dollars United States currency. The English sovereign is equal to 24*s.* 4*d.* currency; the shilling within a fraction of 1*s.* 3*d.*; and the half-crown about 3*s.* 1½*d.* colonial currency. The bank capital of Canada was largely increased by act of 1854, viz.:

Names.	Former Capital.	Addition, 1854.	Capital, 1854.
	£	£	£
Bank of Montreal	1,000,000	500,000	1,500,000
Bank of Upper Canada	500,000	500,000	1,000,000
Comm. Bank of Canada	500,000	500,000	1,000,000
City Bank, Montreal	225,000	75,000	300,000
Banque du Peuple	200,000	100,000	300,000
Quebec Bank	250,000	250,000	500,000
Total	2,675,000	1,925,000	4,600,000

FRIENDLY SOCIETIES.—Friendly Societies are associations, mostly in England, of persons chiefly in the humbler classes for the purpose of making provision by mutual contribution against those contingencies in human life, the occurrence of which can be calculated by way of average. The principal objects contemplated by such societies are the following: the insurling of a sum of money to be paid on the birth of a member's child, or on the death of a member or any of his family; the maintenance of members in old age and widowhood; the administration of relief to members incapacitated for labor by sickness or accident; and the endowment of members or their nominees. Friendly societies are, therefore, associations for mutual assurance, but are distinguished from assurance societies, properly so called, by the circumstance that the sums of money which they insure are comparatively small.

Although the period when such societies originated appears to be unknown, their existence in ancient times is unquestionable. They were numerous in England among the Anglo-Saxons, but from the general want of learning at so early an age, and the difficulty of preserving written documents even of the highest importance relating to a period so remote, it can not be expected we should now possess any very complete records of their history or proceedings. Writers of credit, however, have mentioned several of these fraternities or "guilds" as existing both before and subsequently to the Norman Conquest, and their rules, which are still preserved, are highly interesting, from their similarity to those of the friendly societies of the present day. "These guilds or social corporations," observes an excellent writer, "seem, on the whole, to have been friendly associations made for mutual aid and contribution to meet the peculiar exigencies which were perpetually arising from burials, legal exactions, penal mulcts, and other payments and compensations." —TURNER's *Anglo-Saxons.* Some of them had for their objects the bestowal of annual charity, the payment of stipends to poor persons, the entertainment of poor strangers and travelers, and various other works of a like charitable and benevolent character.

Banks of the United States, 1857.—The following is a summary of the liabilities and the resources of the banks of each State in the Union, according to the official returns in or near January, 1857.—*From the Finance Report of the Secretary of the Treasury, December*, 1857.

States.	No. of Banks.	No. of Branches.	Date.	Capital.	Circulation.	Deposits.	Due other Banks.	Other Liabilities.
	LIABILITIES.							
Maine	76	..	Jan., 1857	$8,135,785	$4,641,646	$1,994,732	$145,083	$121,743
New Hampshire	49	..	Dec., 1856	4,631,000	3,677,689	1,058,803	....	....
Vermont	41	..	July, 1856	3,856,946	2,970,720	797,585	1,848	317
Massachusetts	172	..	Oct., 1856	55,598,300	36,544,315	23,437,250	4,807,601	981,868
Rhode Island	98	..	Dec., 1856	20,375,899	5,521,225	3,141,657	1,475,221	659,703
Connecticut	70	1	April, 1856	13,913,372	9,197,762	4,090,335	875,287	911,458
New York	310	1	Sept., 1856	96,381,301	84,019,633	96,907,970	29,014,125	6,707,333
New Jersey	46	..	Jan., 1857	6,589,770	4,759,855	4 891,970	1,458,608	....
Pennsylvania	71	..	Nov., 1856	23,609,344	17,963,096	27,593,584	4,215,515	127,059
Delaware	3	3	Jan., 1857	1,429,185	1,394,094	868,414	147,250	....
Maryland	31	..	Jan., 1857	12,297,276	5,155,036	9,811,324	1,895,284	679,701
Virginia	19	38	Jan., 1857	18,868,000	12,685,627	7,397,474	729,507	98,235
North Carolina	12	15	Jan., 1857	6,425,250	6,901,262	1,170,026	224,821	6,645
South Carolina	13	9	Jan., 1857	14,937,642	10,654,652	3,502,783	3,518,962	3,355,119
Georgia	19	4	Jan., 1857	15,428,690	9,147,611	3,126,550	1,663,429	372,644
Alabama	4	..	Jan., 1857	2,297,800	3,177,234	2,422,263	703,413	5,000
Louisiana	9	10	Dec., 1856	21,730,400	9,194,189	13,478,729	965,555	2,207,583
Mississippi	1	..	Jan., 1857	386,000	556,345	83,435	....	....
Tennessee	23	18	Jan., 1857	3,451,422	8,401,948	4,875,346	944,917	951,262
Kentucky	8	27	Jan., 1857	10,596,305	13,682,215	4,473,878	2,983,378	50,000
Missouri	6	..	Dec., 1856	1,215,405	2,780,380	1,188,983	111,984	....
Illinois	49	..	Oct., 1856	5,373,144	5,534,945	1,002,399	219,483	157,931
Indiana	33	18	Oct., 1856	4,123,083	4,731,705	1,852,742	272,815	177,809
Ohio	61	..	Nov., 1856	6,742,421	9,153,629	6,843,420	1,202,961	392,756
Michigan	4	..	Dec., 1856	841,482	670,549	1,847,956	113,962	52,640
Wisconsin	49	..	Jan., 1857	2,055,000	1,702,570	3,565,562	....	1,290,480
Nebraska Terri'y	4	..	Jan., 1857	205,000	353,796	125,291	1,749	....
Total liabilities	1233	133	.....	$370,834,686	$214,778,822	$230 851,852	$57,674,333	$19,816,859

States.	Loans.	Stocks.	Real Estate.	Other Investments.	Due by other Banks.	Notes of other Banks.	Specie Funds.	Specie.
	RESOURCES.							
Maine	$13,277,620	....	$138,251	....	$1,158,276	$375,216	....	$705,143
New Hampshire	3,846,421	....	75,393	....	741,475	136,534	....	236,018
Vermont	7,302,951	$114,589	135,268	$52,881	1,142,104	43,146	$39,440	208,858
Massachusetts	101,132,792	....	1,426,892	....	7,574,791	5,248,379	....	4,555,571
Rhode Island	28,879,543	128,539	473,652	70,133	1,875,322	1,291,754	....	548,548
Connecticut	28,511,149	1,216,680	425,192	483,138	3,432,975	867,819	246,248	1,006,493
New York	205,892,499	24,027,533	6,866,945	....	12,179,159	2,935,205	22,678,028	12,893,771
New Jersey	13,890,085	581,773	224,711	288,226	2,227,204	710,072	....	849,026
Pennsylvania	52,237,234	2,301,026	1,206,563	303,730	5,143,330	5,719,284	1,538,696	5,073,188
Delaware	3,021,378	33,076	130,000	1,065	506,514	40,680	195,601	146,367
Maryland	22,293,554	758,278	402,217	23,528	1,894,791	1,666,603	9,168	3,522,561
Virginia	24,899,575	3,184,066	872,368	484,682	2,405,211	1,509,080	18,402	3,092,741
North Carolina	12,636,521	94,116	192,475	7,913	846,416	366,076	1,379	1,156,993
South Carolina	28,227,870	3,263,976	681,273	636,662	1,180,938	539,497	....	1,107,774
Georgia	16,649,201	2,249,083	3,368,280	534 619	1,368,971	1,480,570	31,928	1,702,108
Alabama	6,545,209	142,291	78,148	1,252	665,302	504,287	....	1,139,912
Louisiana	31,200,296	4,794,855	2,470,688	1,493,905	6,416,728	....	....	6,811,162
Mississippi	657,020	519	11,413	....	257,505	26,503	....	7,912
Tennessee	16,393,390	2,453,308	590,715	24,109	2,380,700	1,069,408	62,767	2,094,682
Kentucky	23,404,551	730,126	465,907	368,924	4,115,450	840,999	....	4,406,106
Missouri	4,112,791	....	98,254	....	75,091	190,910	....	1,215,184
Illinois	1,740,671	5,129,613	52,832	....	3,953,450	435,717	19,297	635,810
Indiana	7,089,691	1,694,857	227,599	389,911	1,338,413	857,233	68 535	1,420,076
Ohio	15 335,241	2,749,686	310,145	637,937	2,749,558	1,192,803	39,007	2,016,814
Michigan	1,903,603	588,389	60,110	11,145	245,061	180,489	9,141	92,762
Wisconsin	5,280,634	2,025,160	150,315	1,892	453,771	701,161	78,222	542,938
Nebraska Terri'y	418,097	....	6,975	2,151	129,804	15,069	210	136,325
Total resources	$334,456,837	$59,272,329	$26,124,522	$5,920,396	$65,849,205	$28,124,008	$25,081,641	$58,349,558

Since the early portion of this article was prepared for the press, important events have occurred both in Europe and the United States, involving the stability of the banking concerns of both continents. The above tables contain the latest official returns of the liabilities and resources of the banks of the Union, and may be considered as a fair exhibit of the condition of these institutions in the several States at the beginning of the year 1857. The unfavorable condition of the foreign trade of the Union, added to a redundant bank circulation, led to a large export of specie from the United States during the nine months ending September, 1857. A panic followed these continuous exports, which was accompanied by a sudden reduction of bank loans during the months of August and September in the Atlantic cities, producing in September a suspension of the banks of Philadelphia, Baltimore, Washington, and other cities; and in October, 1857, to a suspension of those of the cities of New York, Boston, and other portions of the Union. Those of Ohio, Kentucky, Illinois, Indiana, and a portion of those in South Carolina, New Orleans, Pennsylvania, Missouri, etc., and one in New York city, being the exceptions. On the 14th December following, a resumption of specie payments took place throughout New York and New England; a measure soon after adopted by those of Pennsylvania, Maryland, and other States.

The suspension of specie payments in the United States was followed by the failure of several provincial banks in England and Scotland; and by an order in council on the 12th November, authorizing the temporary suspension of the Bank Charter Act, whereby the bank was authorized to enlarge its issues, if necessary, beyond the chartered prescribed limits. This necessity did not, however, arise; but the announcement had the effect at once to allay the panic prevailing in England at the time. The rate of interest adopted by the bank was raised to 10 per cent. temporarily. In Scotland, the City of Glasgow Bank, and Western Bank of Scotland, suspended, and are now in process of liquidation. The Borough Bank of Liverpool also failed, together with numerous small banks in the interior.—For recent discussions as to the principles of banking and the currency, the reader is referred to the *Bankers' Magazine*, New York, 1850–1858; *London Quarterly*, 1857–'58.

VIII. Savings Banks.—These banks were originally established in England for the receipt of small sums deposited by the poorer class of persons, and for their accumulation at compound interest. They are there managed by individuals who derive no benefit whatever from the deposits. All moneys paid into any Savings Bank established according to the provisions of the acts 9 Geo. 4, c. 92, and 7 & 8 Vict. c. 83, are ordered to be paid into the Banks of England and Ireland, and vested in Bank annuities or Exchequer bills. The interest payable to depositors is not to exceed 2*d.* per cent. *per diem*, or £3 0*s.* 10*d.* per cent. *per annum*. No depositor can contribute more than £30, exclusive of compound interest, to a Savings Bank in any one year; and the total deposits to be received from any individual are not to exceed £150; and whenever the deposits, and compound interest accruing upon them, standing in the name of any one individual, shall amount to £200, no interest shall be payable upon such deposit so long as it shall amount to £200. The commissioners for the reduction of the national debt have the disposal of the sums vested in the public funds on account of Savings Banks.

This system began in 1817; and on the 20th of November, 1850, there was due to depositors, including interest accruing on deposits, £31,208,322. It farther appears that from the 6th of August, 1815, down to the 20th of November, 1842, the public paid on account of interest and charges on the sums due to Savings Banks and Friendly Societies under the act 9 Geo. 4, c. 92, £14,070,341 2*s.* 6*d.*, and that the dividend received during the same period on the stock and other public securities in which the commissioners for the reduction of the national debt invested the said sums, amounted to £12,039,781 8*s.* 6*d.*, leaving a balance of £2,030,559 14*s.*, which consequently may be said to be the sum which the system has cost the public.—*Parl. Paper*, No. 258, Sess. 1843. But the reduction of the interest on deposits in 1844 from 2½*d.* to 2*d.* per cent. *per diem*, has either entirely or in a great measure obviated this source of loss.

The principle and object of Savings Banks can not be too highly commended. In the metropolis, and many other parts of England, public banks do not receive small deposits, and until recently they did not pay any interest on them. And even in Scotland, where the public banks allow interest upon deposits, they do not generally receive less than £5 or £10. But few poor persons are able to save even this much, except by a lengthened course of economy. The truth, therefore, is, that until Savings Banks were established, the poorer classes were every where without the means of securely and profitably investing those small sums they are not unfrequently in a condition to save; and were consequently led, from the difficulty of disposing of them, to neglect opportunities for making savings, or, if they did make them, were tempted, by the offer of high interest, to lend them to persons of doubtful characters and desperate fortunes, by whom they were, for the most part, squandered. Under such circumstances, it is plain that nothing could be more important, in the view of diffusing habits of forethought and economy among the laboring classes, than the establishment of Savings Banks, where the smallest sums are placed in perfect safety, are accumulated at compound interest, and are paid, with their accumulations, the moment they are demanded by the depositors. The system is yet little more than in its infancy; but the magnitude of the deposits already received sets its powerful and salutary operation in a very striking point of view.

We subjoin a copy of the rules of the St. Pancras Savings Bank, which may be taken as a model for similar institutions, inasmuch as they have been drawn up with great care, and closely correspond with the provisions in the acts 9 Geo. 4, c. 92, and 7 & 8 Vict. c. 83.

1. *Management.*—This bank is under the management of a president, vice-presidents, trustees, and not less than fifty managers, none of whom are permitted to derive any benefit whatsoever, directly or indirectly, from the deposits received, or the produce thereof. One or more of the managers attend when the bank is open for business.

2. *Superintending Committee.*—A committee of not less than ten managers, three of whom form a quorum, is empowered to superintend, manage, and conduct the general business of this bank; to add to their number from among the managers; to fill up vacancies in their own body, and to appoint a treasurer or treasurers, agent or agents, auditors, an actuary and clerks, and other officers and servants, and to withdraw any such appointments, and to appoint others, should it be considered necessary so to do. The proceedings of this committee are regularly laid before the general meetings of the bank.

3. *Elections.*—The superintending committee is empowered to add to the number of managers, until they amount to one hundred and twenty, exclusively of the president, vice-presidents, and trustees; and any vacancies of president, vice-presidents, and trustees are to be filled up at a general meeting.

4. *General Meetings.*—A general meeting of the president, vice-presidents, trustees, and managers of this bank shall be held once a year, in the month of February. The superintending committee shall lay before every such meeting a report of the transactions of the bank, and state of the accounts. The superintending committee for the succeeding year shall be elected at such general meeting; and failing such election, the former committee shall be considered as reappointed.

5. *Special Meetings.*—The superintending committee are authorized to call special general meetings when they think proper; and also, on the requisition of any ten managers, delivered in writing to the actuary, or to the manager in attendance at the bank; and of such meeting seven days' notice shall be given.

6. *Liability of Trustees, Managers, Officers, etc.*—No trustee or manager shall be personally liable except for his own acts and deeds, nor for any thing done by him in virtue of his office, except where he shall be guilty of willful neglect or default; but the treasurer or treasurers, the actuary, and every officer intrusted with the receipt or custody of any sum of money deposited for the purposes of this institution, and every officer, or other person, receiving salary or allowance for their services from the funds thereof, shall give good and sufficient security, by bond or bonds, to the clerk of the peace of the county of Middlesex for the just and faithful execution of such office of trust.

7. *Investment and Limitations of Deposits.*—Deposits of not less than *one shilling*, and not exceeding *thirty pounds* in the whole, exclusive of compound interest, from any one depositor, or trustee of a depositor, during each and every year ending on the 20th of November, will be received and invested, pursuant to 9 Geo. 4, c. 92, s. 11, until the same shall amount to *one hundred and fifty pounds* in the whole; and when the principal and interest together shall amount to *two hundred pounds*, then no interest will be payable on such deposit, so long as it shall continue to amount to that sum. But depositors whose accounts amounted to or exceeded *two hundred pounds* at the passing of the said act, on the 28th of July, 1828, will continue to be entitled to interest and compound interest thereon.

8. *Interest to be allowed to Depositors.*—In conformity with the act 7 & 8 Vict. c. 83, an interest at the rate of 2*d.* per cent. per day, being £3 0*s.* 6*d.* per cent. per annum (*the full amount authorized by the said act*), will be allowed to depositors, and placed to their accounts as a cash deposit, in the month of *November* in each year. Depositors demanding payment of the whole amount of their deposits in this bank will be allowed the interest due on such deposits up to the day on which notice of withdrawing shall be given, but no interest will be allowed, in any case, on the fractional parts of a pound sterling.

9. *Description and Declaration.*—Every person desirous of making any deposit in this bank shall, at the time of making their first deposit, and at such other times as they shall be required so to do, declare their residence, occupation, profession, or calling, and sign (either by themselves, or, in case of infants under the age of seven years, by some person or persons to be approved of by the trustees or managers, or their officer) a declaration that they are not directly or indirectly entitled to any deposit in, or benefit from, the funds of any other Savings Bank in England or Ireland, nor to any sum or sums standing in the name or names of any other person or persons in the books of this bank. And in case any such declaration shall not be true, every such person (or the person on whose behalf such declaration may have been signed) shall forfeit and lose all right and title to such deposits, and the trustees and managers shall cause the sum or sums so forfeited to be paid to the commissioners for the reduction of the national debt; but no depositor shall be subject or liable to any such forfeiture on account of being a trustee on behalf of others, or of being interested in the funds of any Friendly Society legally established.

10. *Trustees on behalf of others.*—Persons may act as trustees for depositors, whether such persons are themselves depositors in any Savings Bank or not, provided that such trustee or trustees shall make such declaration on behalf of such depositor or depositors, and be subject to the like conditions in every respect as are required in the case of persons making deposits on their own account, and the receipt and receipts of

such trustee or trustees, or the survivor of them, or the executors or administrators of any sole trustee, or surviving trustee with or without (as may be required by the managers) the receipt of the person on whose account such sum may have been deposited, shall be a good and valid discharge to the trustees and managers of the institution.

11. *Minors.*—Deposits are received from, or for the benefit of, minors, and are subject to the same regulations as the deposits of persons of 21 years of age and upward.

12. *Friendly and Charitable Societies.*—Friendly Societies, legally established previous to the 25th of July, 1828, may deposit their funds through their treasurer, steward, or other officer or officers, without any limitation as to the amount. But Friendly Societies formed and enrolled after that date are not permitted to make deposits exceeding the sum of £300, principal and interest included; and no interest will be payable thereon, whenever the same shall amount to, or continue at, the said sum of £300 or upward.

Deposits are received from the trustees or treasurers of Charitable Societies, not exceeding £100 per annum, provided the amount shall not at any time exceed the sum of £300, exclusive of interest.

13. *Deposits of Persons unable to attend.*—Forms are given at the office enabling persons to become depositors who are unable to attend personally; and those who have previously made a deposit may send additional sums, *together with their book*, by any other person.

14. *Depositors' Book.*—The deposits are entered in the books of the bank at the time they are made, and the depositor receives a book with a corresponding entry therein; which book must be brought to the office every time that any further sum is deposited, also when notice is given for withdrawing money, and at the time the repayment is to be made, so that the transactions may be duly entered therein.

15. *Withdrawing Deposits.*—Depositors may receive the whole or any part of their deposits on any day appointed by the managers, not exceeding *fourteen* days after notice has been given for that purpose; but such deposits can only be repaid to the depositor personally, or to the bearer of an order under the hand of the depositor, signed in the presence of either the minister or a church-warden of the parish in which the depositor resides, of a justice of the peace, or of a manager of this bank.

The depositor's book must always be produced when notice of withdrawing is given.

16. *Money withdrawn may be re-deposited.*—Depositors may withdraw any sum or sums of money, and re-deposit the same at any time or times within any one year, reckoning from the 20th day of November, provided such sum or sums of money re-deposited, and any previous deposit or deposits which may have been made by such depositor in the course of the year, taken together, shall not exceed, at any time in such year, the sum of £30 additional principal money bearing interest.

17. *Return or Refusal of Deposits.*—This bank is at liberty to return the amount of the deposits to all or any of the depositors, and may refuse to receive deposits in any case, where it shall be deemed expedient so to do.

18. *Arbitration of Differences.*—In case any dispute shall arise between the trustees or managers of this bank, or any person or persons acting under them, and any individual depositor therein, or any trustee of a depositor, or any person claiming to be such executor, administrator, or next of kin, then, and in every such case, the matter so in dispute shall be referred to the barrister at law appointed by the commissioners for the reduction of the national debt, under the authority of the 9 Geo. 4, c. 92, s. 45; and whatever award, order, or determination shall be made by the said barrister, shall be binding and conclusive upon all parties, and shall be final, to all intents and purposes, without any appeal.

Government Annuities by Depositors in Savings Banks.—The act 2 & 3 Will. 4, c. 14, enables depositors in Savings Banks and others to purchase government annuities for life or for years, and either immediate or deferred. At present these annuities are limited to £30 a year. The money advanced is returnable in case the contracting party does not live to the age at which the annuity is to become payable, or is unable to continue the monthly or annual installments. That this measure was benevolently intended, and that it may be productive of advantage to many individuals, can not be doubted; but we look upon all attempts, and particularly those made by government, to get individuals to exchange capital for annuities, as radically objectionable, and as being subversive of principles which ought to be strengthened rather than weakened. —*See* FUNDS. We subjoin

AN ACCOUNT OF THE NUMBER OF SAVINGS BANKS, THE NUMBER OF DEPOSITORS, AND THE AMOUNT OF DEPOSITS, IN ENGLAND, WALES, SCOTLAND, AND IRELAND, ON THE 20TH NOVEMBER, 1850.

	England.			Wales.			Scotland.			Ireland.			United Kingdom.		
	No. of Depositors.	Investments.	Average Amount.	No. of Depositors.	Investments.	Average Amount.	No. of Depositors.	Investments.	Average Amount.	No. of Depositors.	Investments.	Average Amount.	No. of Depositors.	Investments.	Average Amount.
		£	£		£	£		£	£		£	£		£	£
Number and amount of Individual depositors in Savings banks	563,093	3,415,592	6	11,296	77,689	7	73,711	474,459	6	24,873	179,201	7	677,969	4,046,841	6
	21,754	6,635,688	31	5,650	171,763	30	16,946	463,767	29	15,772	481,799	31	251,131	7,152,517	31
Number and amount invested by charitable institutions in account with Savings banks	95,093	6,580,915	69	2,246	153,299	68	4,175	280,854	67	5,056	340,121	67	106,510	7,253,740	68
	32,689	3,929,660	120	719	85,917	119	849	100,256	118	1,358	158,867	118	35,914	4,273,967	119
Number and amount invested by Friendly Societies in account with Savings banks	17,652	3,021,194	171	334	55,787	167	276	48,457	175	628	104,469	166	18,854	3,229,567	170
	2,370	539,650	228	46	10,679	233	8	1,121	373	29	6,259	216	2,448	557,709	228
Total	924,617	24,102,699	26	20,300	555,134	27	99,960	1,369,424	13	47,704	1,273,306	27	1,092,581	27,186,563	25
Number and amount invested by charitable institutions in account with Savings banks	11,353	592,946	51	279	17,780	64	681	25,014	37	418	19,351	47	12,913	655,093	51
Number and amount invested by Friendly Societies in account with Savings banks	6,740	659,498	142	305	75,755	192	159	51,625	199	212	10,448	49	7,506	1,071,326	144
Total	942,826	25,055,145	27	20,974	648,669	31	100,800	1,395,063	13	48,299	1,303,105	27	1,112,999	28,900,982	26
Invested by Friendly Societies with the Commissioners of National Debt													586	2,477,340	..
Gross Total													1,113,585	31,378,323	..

Bankok, or Bangkok, the capital of Siam, situated about 20 miles from the sea on both sides the River Menam, but chiefly on its left or eastern bank, in lat. 13° 49′ N., long. 101° 10′ E. The Menam opens in the centre nearly of the bottom of the Gulf of Siam. There is a bar at its mouth, consisting, for the most part, of a mud flat 10 miles in length. The outer edge of this flat, which is little more than 200 yards broad, is sandy, and of harder materials than the inner part, which is so soft, that when a ship grounds on it during the ebb, she often sinks 5 feet in the mud and clay, which supports her upright, so that she is but little inconvenienced. The highest water on the bar of the Menam, from February to September, is about 13½ feet; and in the remaining 4 months somewhat more than 14 feet; a difference probably produced by the accumulation of water at the head of the bay after the southwest monsoon, and by the heavy floods of the rainy season. On account of the deficiency of water on the bar, vessels sent to Bangkok had better, perhaps, not exceed 200 or 250 tons burden. In all other respects the river is extremely safe and commodious. Its mouth is no sooner approached than it deepens gradually; and at Paknam, twelve miles up, there are 6 and 7 fathoms water. This depth increases as you ascend, and at Bangkok is not less than 9 fathoms. The only danger is, or rather was, a sand-bank off Paknam, bare at low water; but on this spot a battery has been erected within the last few years, affording at all times a distinct beacon. The channel of the river is so equal, that a ship may range from one side to another, approaching the banks so closely that her yards may literally overhang them. The navigation is said to be equally safe all the way up to the old capital of Yuthia, 80 miles from the mouth of the river.

The city of Bangkok extends along the banks of the Menam to the distance of about 2½ miles; but is of no great breadth, probably not exceeding 1½ miles. On the left bank there is a long street or row of floating houses—each house or shop, for they are in general both, consisting of a distinct vessel, which may be moored any where along the banks. Besides the principal river, which at the city is about a quarter of a mile broad, the country is intersected by a great number of tributary streams and canals, so that almost all intercourse at Bangkok is by water. The population has been computed at 50,000 or 60,000, half of whom are Chinese settlers.

The total area of the kingdom of Siam has been estimated at 190,000 square miles, and the population at only 2,790,500, principally resident in the rich valley of the Menam. Of the entire population, it is supposed that not less than 440,000 are Chinese. The common necessaries of life at Bangkok are exceedingly cheap. A cwt. of rice may always be had for 2*s.*, and very often for 1*s.* Other necessaries, such as salt, palm-sugar, spices, vegetables, fish, and even flesh, are proportionally cheap. The price of good pork, for example, is 2½*d.* per lb. A duck may be had for 7*d.*, and a fowl for 3*d.* The neighborhood of Bangkok is one of the most productive places in the world for fine fruits; for here are assembled, and to be had in the greatest perfection and abundance, the orange and lichi of China, the mango of Hindostan, and the mangosteen, durian, and shaddock of the Malay countries.

Trade.—The foreign trade of Siam is conducted with China, Cochin China, Cambogia, and Tonquin, Java, Singapore, and the other British ports within the Straits of Malacca, with an occasional intercourse with Bombay and Surat, England and America. The most important branch of the foreign trade is that with China, which is wholly carried on in vessels of Chinese form, navigated by Chinese, the greater portion of them being, however, built in Siam. The imports from China are very numerous, consisting of what are called in commercial language "assorted cargoes." The following is a list of the principal commodities: coarse earthen-ware and porcelain, spelter, quicksilver, tea, lacksoy (vermicelli), dried fruits, raw silk, crapes, satins, and other silk fabrics, nankeens, shoes, fans, umbrellas, writing paper, sacrificial paper, incense rods, and many other minor articles. Not the least valuable part of the importations are immigrants.

The exports from Siam are also very various, including, among others, black pepper, sugar, tin, cardamoms, eagle-wood, sapan-wood, red mangrove bark, rose-wood for furniture and cabinet work, cotton, ivory, stick-lac, rice, areca-nuts, salt fish; the hides and skins of oxen, buffaloes, elephants, rhinoceroses, deer, tigers, leopards, otters, civet cats, and pangolins; of snakes and rays, with the belly-shell of a species of land tortoise; the horns of the buffalo, ox, deer, and rhinoceros; the bones of the ox, buffalo, elephant, rhinoceros, and tiger; dried deer's sinews; the feathers of the pelican, of several species of storks, of the peacock and kingfisher, etc.; and, finally, esculent swallows' nests. The tonnage carrying on the China trade amounts in all to probably about 130 junks in number, a few of which are 1000 tons burden, and the whole shipping is not short of 35,000 tons.

The trade with the different countries of the Malay Archipelago is, also, very considerable. In this intercourse, the staple exports of Siam are sugar, salt, oil, and rice; to which may be added the minor articles of stick-lac, iron pans, coarse earthen-ware, hogs lard, etc. The returns are British and Indian piece goods, opium, with a little glass ware, and some British woolens from the European settlements, with commodities suited for the Chinese market—such as pepper, tin, dragon's blood, rattans, biche-de-mer, esculent swallows' nests, and Malay camphor from the native ports.

The total exports of clayed sugar and black pepper, the staple articles of Siamese export, may be estimated, the former at about 10,000 tons, and the latter from 3500 to 4000 tons.

Bankrupt and Bankruptcy. Bankrupts, in England, first law enacted regarding them, 35 Henry VIII. 1543. Again, 3 of Elizabeth, 1560; again, 1 James I. 1602; again, 1706; and more recently. It was determined by the King's Bench that a bankrupt may be arrested except in going and coming from any examination before the commissioners, May 13, 1780. The lord chancellor (Thurlow) refused a bankrupt his certificate because he had lost five pounds at one time in gaming, July 17, 1788. Enacted that members of the House of Commons becoming bankrupts, and not paying their debts in full, shall vacate their seats, 1812. The new bankrupt bill, constituting a new bankrupt court, passed October, 1831.—*Statutes at Large.*

Number of Bankrupts in Great Britain at different Periods.

1700	38	1820	1358
1725	416	1825	2683
1750	432	1830	1467
1775	520	1835	954
1800	1339	1840	1508
1810	2000	1844	1064

It would really, therefore, as it appears to us, be for the advantage of creditors, were all penal proceedings against the persons of honest debtors abolished. The dependence placed on their efficacy is deceitful. A tradesman ought rather to trust to his own prudence and sagacity to keep out of scrapes, than to the law for redress: he may deal upon credit with those whom he knows; but he should deal for ready money only with those of whose circumstances and characters he is either ignorant or suspicious. By bringing penal statutes to his aid, he is rendered remiss and negligent. He has the only effectual means of security in his own hands, and it seems highly inexpedient that he should be taught to neglect them, and put his trust in prisons.

It is pretty evident, too, that the efficacy of imprisonment in deterring individuals from running into debt has been greatly overrated. Insolvents who are hon-

est must have suffered from misfortune, or been disappointed in the hopes they entertained of being able, in one way or other, to discharge their debts. The fear of imprisonment does not greatly influence such persons; for when they contract debts they have no doubt of their ability to pay them. And though the imprisonment of *bona fide* insolvents were abolished, it would give no encouragement to the practices of those who endeavor to obtain goods or loans of money, whether by concealing or misrepresenting the real state of their affairs, are, in fact, about the very worst species of cheats; and the temptation to resort to such practices, and the facility with which they may be carried into effect, should make them, when detected, be visited with a proportionally increased severity of punishment, on the principle laid down by Cicero, that *ea sunt animadvertenda peccata maxime, quæ difficillime præcaventur.*

While, however, the law of England has always given the creditor an unnecessary degree of power over the debtor's person, it did not, till very recently, give sufficient power over his property. In this respect, indeed, it was so very defective, that one is almost tempted to think it had been intended to promote the practices of fraudulent debtors. The property of persons subject to the bankrupt and insolvent laws was, it is true, nominally placed at the disposal of assignees or trustees, for the benefit of their creditors; but when a person possessed of property, but not subject to the bankrupt laws, contracted debt, if he went abroad, or lived within the rules of the King's Bench or the Fleet, or remained in prison without petitioning for relief, he continued most probably to enjoy the income arising from that property without molestation.

ACCOUNT OF THE NUMBER OF BANKRUPTCIES GAZETTED IN EACH YEAR, FROM 1847 TO 1852 INCLUSIVE.

District.	1847.	1848.	1849.	1850.	1851.	1852.
Liverpool	156	103	113	66	96	72
Manchester ...	164	145	80	66	69	58
Birmingham ..	158	173	115	102	93	106
Leeds	140	119	94	70	90	78
Bristol	126	152	98	52	56	49
Exeter	63	85	52	38	35	27
Newcastle.....	52	60	50	32	22	33
Total country..	859	903	582	426	402	482
London	800	705	574	411	473	399
	1659	1608	1256	837	925	822

France.—In June, 1838, the French law of bankruptcy and insolvency was abrogated, and an entirely new law was promulgated, which now forms Book III. of the "Code de Commerce."

United States.—The power of making uniform laws on the subject of bankruptcy in the United States, is, by the Constitution, conferred upon Congress, and was generally understood to be exclusively vested in that body. This power was exercised by Congress in 1800, by the enactment of a bankrupt law, limited to five years, and which was repealed by act of December 19, 1803.—KENT. The Congress of the United States legislated a second time on the subject of bankruptcy, by an act, passed in August, 1841, to establish a uniform system throughout the Union, which took effect on the 2d February, 1842, but was repealed March 3, 1843. The repeal of this act scarcely affected any existing interests, as almost every debtor had hastened, in anticipation of the possibility of its repeal, to take advantage of it voluntarily. At present there is not any bankrupt system under the general government of the United States, and the several States are left free to institute their own bankrupt systems, under certain limitations. The Supreme Court of New York had declared the bankrupt act of Congress to be constitutional (Justice Bronson dissenting), but the U. S. District Court of Missouri declared it to be unconstitutional.

Barbadoes, or **Barbados,** is one of the West India islands belonging to Great Britain, and the oldest of her settlements in that part of the world. The exact date of its discovery is unknown, but it was probably not later than the early part of the sixteenth century. The Portuguese are supposed to have been the first Europeans that visited this island, as it lay almost directly in their course to and from Brazil. They, however, had not regarded it as holding forth sufficient inducements for colonizing, as when first visited by the English in 1605 it was destitute of inhabitants, and covered with thick forests. The first English vessel that arrived there was the *Olive Blossom,* the crew of which took possession of the island in the name of King James, by erecting a cross upon the spot where Jamestown was afterward built, and cutting upon the bark of a tree that stood near, "James, K. of E. and this island"—James, king of England and this island. The favorable accounts which Sir William Courteen, a London merchant, afterward received of the island from one of his ships that had touched there, induced him to attempt a settlement. He accordingly fitted out two large vessels under the protection of Lord Ley, afterward Earl of Marlborough, who had obtained a grant of this island from James I. One only of these ships arrived at its destination on 17th February, 1625, and landed 40 English, and 7 or 8 negroes, who laid the foundation of a town, which, in honor of their sovereign, they called Jamestown.

Barbadoes is the most eastern of the Caribbee islands, lying 78 miles due east of the island of St. Vincent, between lat. 13° 2′ and 13° 19′ N., and long. 59° 26′ and 59° 39′ W. It presents almost the form of an irregular triangle; its greatest length, in a direction north by west, is nearly 21 miles, and its extreme breadth from east to west is 14½ miles. Its circumference, excluding the sinuosities of the bays, is 55 miles, and its area 106,470 acres, or about 166 square miles. In size, and in some measure in its outline, it bears a considerable resemblance to the Isle of Wight. It is almost encircled by coral reefs, which in some parts extend seaward for nearly three miles, and prove very dangerous to navigation.

The chief staple articles produced in Barbadoes for export are sugar, arrow-root, aloes, and cotton. The following table gives the value of the imports and exports for the years 1849, 1850, and 1851:

Years.	Imports.	Exports.	Tonnage.
1849	£691,478	£791,740	85,781
1850	734,358	831,534	96,381
1851	789,977	887,627	95,272

Carlisle Bay, the port or harbor of Barbadoes, forms an open roadstead, which is much exposed to the wind when blowing from the south and southwest. It is spacious, and capable of containing upward of 500 vessels of all sizes. It affords, however, no protection during gales; and at such times vessels at anchor generally prefer putting to sea, to running the risk of being driven ashore.—E. B.

Barcalao, or **Bacalao,** the Spanish name for cod.

Barcelona, the capital of Catalonia, and the principal town of Spain on the Mediterranean, lat. 41° 22′ 58″ N., long. 2° 8′ 11″ E. It is a strongly fortified, well-built city. The population is supposed to amount to about 120,000. Barcelona is eminently distinguished in the history of the Middle Ages for the zeal, skill, and success with which her citizens prosecuted commercial adventures at a very early period. She would seem also to be entitled to the honor of having compiled and promulgated the famous code of maritime law known by the name of the *Consolato del Mare;* and the earliest authentic notices of the practice of marine insurance and of the negotiation of bills of exchange are to be found in her annals. Catalonia has continued, amidst all the vicissitudes it has undergone, to be the most industrious of the Spanish provinces. Several

extensive manufactures have been established in Barcelona, especially of cotton; and no fewer than 23 steam-engines were erected in Catalonia in 1842, the greater number being in Barcelona. Latterly, however, her commerce, owing to a variety of causes, but principally to oppressive restrictions on the importation of foreign goods, the emancipation of South America, and internal dissensions, has very much declined.

Imports.—The principal articles of import are raw cotton, sugar, coffee, cocoa, and other colonial products, principally from Cuba and Porto Rico; salted fish, hides, and horns; iron and hardware, etc. Most species of manufactured goods are prohibited; but it is needless to add that they are, notwithstanding, largely imported into this as into most other parts of Spain. The trade with the colonies, France, and the coasting trade is pretty active. The imports from England are not very considerable, and the exports little or nothing. In 1842, no fewer than 3667 vessels entered the port: but these were mostly coasters of small size, the burden of the whole being only 189,117 tons.

Exports.—The principal exports are wrought silks, soap, fire-arms, paper, hats, laces, ribbons, steel, etc. But no vessels, except a few that take on board manufactured goods for the Spanish West Indies, are loaded here; and even this trade is much fallen off. Upward of 2000 hands used formerly to be employed in the city in the manufacture of shoes for the colonies; but their export has now nearly ceased. The principal articles of native produce that Catalonia has to export are most conveniently shipped at Villanova, Tarragona, and Salou. They consist of wine, brandy, nuts, almonds, cork, bark, wool, fruits, etc. Of these, Cuba takes annually about 12,000 pipes of wine, worth at an average £4 per pipe, and about 3000 pipes of brandy, worth £8 per do.; South America, 16,000 pipes of wine, and 6000 do. brandy; the north of Europe, 2000 pipes of wine, and 2000 do. brandy. A good deal of brandy is sent to Cadiz and Cette: most part of the former finds its way into the wine vaults of Xeres; and the latter, being conveyed by the canal of Languedoc to the Garonne, is used in the preparation of the wines of Bordeaux. From 25,000 to 30,000 bags of nuts are annually sent from Tarragona to England. Tarragona also exports about 12,000 bags of almonds. The ships belonging to the port carry on no foreign trade except to the Spanish West Indies; they are few in number, and are daily decreasing. Those engaged in the coasting trade are usually of very small burden. We have derived these details from various sources; but principally from British *Consular Returns*, and from *Inglis's Spain in* 1830, vol. ii. p. 384-387, and 362.

Barilla (Du. *Sc'a;* Fr. *Soude, Barille;* Ger. *Soda, Barilla;* It. *Barriglia;* Port. *Solda, Barrilha;* Russ. *Socianka;* Sp. *Barilla;* Arab. *Kali*), carbonate of soda (*see* ALKALIES), is found native in Hungary, Egypt, and many other countries. It is largely used by bleachers, manufacturers of hard soaps, glass-makers, etc. The barilla of commerce consists of the ashes of several marine and other plants growing on the sea-shore. The best, or Alicant barilla, is prepared from the *Salsola soda*, which is very extensively cultivated for this purpose in the *huerta* of Murcia, and other places on the eastern shores of Spain.—TOWNSEND'S *Travels in Spain*, vol. iii. p. 195. The plants are gathered in September, dried, and burned in furnaces heated so as to bring the ashes into a state of imperfect fusion, when they concrete into hard, dry, cellular masses of a grayish blue color. Sicily and Teneriffe produce good barilla, but inferior to that of Alicant and Carthagena. Kelp, which is a less pure alkali, is formed by the incineration of sea-weed. *See* KELP.

The Saracens established in Spain seem to have been the first who introduced the manufacture of barilla into Europe. They called the plants employed in its preparation *kali;* and this, with the Arabic article *al* prefixed, has given rise to the modern chemical term alkali. Prime quality in barilla is to be distinguished by its strong smell when whetted, and by its whitish color. Particular attention should be paid to have as little small or dust as possible. The manufacture of artificial soda (*soude factice*), now very extensively carried on, occasioned an extraordinary decline in the imports of barilla, the quantity entered into Great Britain for home consumption in 1834, amounting to 237,712 cwt., having been reduced in 1841 to 47,380 cwt. Considerable quantities used formerly to be imported from Teneriffe, but it now comes principally from Alicant in Spain, and Sicily. Thus, of 1744 tons imported into Great Britain in 1850, 836 came from Spain, 753 from Italy (Sicily), 109 from the United States, and none from the Canaries. The duty on barilla, after being reduced in 1842 from 40*s.* to 5*s.* a ton, was wholly repealed in 1845. But even this judicious measure has not had so much influence over the consumption of the article as was expected. In 1852, the imports amounted to 1807 tons, or 36,140 cwt., none of which was re-exported.—*Parl. Paper*, 1853.

Bark, the outer rind of plants. There is an immense variety of barks known in commerce; as, cinnamon, Peruvian bark, oak bark, quercitron, etc. The term "bark" is, however, generally employed to express either Peruvian bark or oak bark, and it is these only that we shall notice in this place.

1. *Peruvian or Jesuits' Bark* (Fr. *Quinquina;* Ger. *Kron-china;* Du. *China-bast;* Sp. *Quina, Quinquina;* Lat. *Quinquina Cortex Peruvianus*). There are three principal species of this bark known in commerce, which have been elaborately described by Dr. A. T. Thomson, from whose account the following particulars are selected. The first species is the *pale* bark of the shops. It is the produce of the *Cinchona lancifolia*, and is the original cinchona of Peru. It is now very scarce. It is imported in chests covered with skins, each containing about 200 pounds, well packed, but generally mixed with a quantity of dust and other heterogeneous matter. It consists of pieces 8 or 10 inches long, some of them being scarcely one-tenth of an inch thick, singly and doubly quilled, or rolled inward, the quills generally being in size from a swan's quill to an inch and a half. It is internally of a pallid fawn or cinnamon hue, but approximates, on being moistened, to the color of a pale orange. When in substance it has scarcely any odor, but during decoction the odor is sensible, and agreeably aromatic. The taste is bitter, but not unpleasant, acidulous, and austere. The second species, or red bark, is obtained from the *Cinchona oblongifolia*, growing on the Andes. It is imported in chests containing from 100 to 150 pounds each. It consists of variously sized pieces, most of them flat, but some partially quilled or rolled. The internal part is woody, and of a rust red color: it has a weak peculiar odor, and its taste is much less bitter, but more austere and nauseous, than that of the other barks. The third species, or yellow bark of the shops, is obtained from the *Cinchona cordifolia*, growing in Quito and Santa Fé. It is imported in chests containing from 90 to 100 pounds each, consisting of pieces 8 or 10 inches long, some quilled, but the greater part flat. The interior is of a yellow color, passing to orange. It has nearly the same odor in decoction as the pale; the taste is more bitter and less austere, and it excites no astringent feeling when chewed. The goodness decreases when the color varies from orange yellow to pale yellow; when of a dark color, between red and yellow, it should be rejected. It is needless to add, that bark is one of the most valuable medical remedies. The Indians were unacquainted with its uses, which seem to have been first discovered by the Jesuits. It was introduced into Europe in 1632, but was not extensively used till the latter part of the seventeenth century. According to Humboldt, the Jesuits' bark annually exported from America amounts to from 12,000 to 14,000 quintals. Of these, 2000 are

furnished by Santa Fé, and 110 by Loxa; Peru furnishing the remainder, which is shipped at Callao, Guayaquil, etc.

2. *Oak Bark* (Fr. *Ecorce de la Chêne*; Ger. *Eichenrinde*; It. *Corteccia della Quercia*; Lat. *Quercus cortex*). The bark of the common oak is a powerful astringent, and is preferred to all other substances for tanning leather. The bark of the larch is now, however, used for the same purpose. Though the importation of oak bark into England for tanning has somewhat declined, it is still very considerable. It is impossible, however, to state its exact amount, inasmuch as a species of oak bark, called quercitron, the produce of the *Quercus tinctoria*, imported from abroad, and used to give a yellow dye to silk and wool, is mixed up in the custom-house returns with bark for tanning. The bark which is by far the most important, is brought principally from Belgium and Holland, Germany, Italy, and Spain, Norway and Australia. Quercitron is found principally in the United States. The quality of bark differs—according to the age and size of the tree, the season when it is barked, etc.—so much that its price varies from £5 to £10 a ton. The duty on bark for tanning and dyeing, which previously to 1842 was 8*d.* a cwt., after being then reduced to 3*d.*, was repealed in 1845. In 1852 the imports and exports of Peruvian bark were respectively 18,207 and 10,092 cwt. During the same year was imported 403,930 cwt. bark for the use of tanners and dyers, of which only 146 cwt. was re-exported. But in addition to the above were imported, in 1852, 2515 tons divi divi, and 13,871 tons valonia, of which very little was re-exported. Belgium, Holland, the United States, Germany, Italy, and Norway furnish by far the largest portion of the imports of oak bark. We are indebted for the discovery and application of the useful properties of quercitron to Dr. Bancroft. The doctor obtained a patent for his invention in 1775; but the American war breaking out soon after, deprived him of its advantages. In consideration of this circumstance, Parliament passed, in 1785, an act (25 Geo. 3, c. 38) securing to him the privileges conveyed by his patent for 14 years. At the expiration of the latter period the House of Commons agreed to extend the doctor's privilege for an additional 7 years, but the House of Lords rejected the bill. Like too many discoverers, Dr. Bancroft profited but little by his invention, though it has been of great use to the arts and manufactures of the country.—J. R. M. *See* BANCROFT *on Permanent Colors*, vol. ii. p. 112, and the *Report of the Committee of the House of Commons on Patents*, Appendix, p. 175.

Barley (Fr. *Orge*; Ger. *Gerstengraupen*; Du. *Ryg*; It. *Orzo*; Sp. *Cebada*; Russ. *Fatschmca*; Lat. *Hordeum*; Arab. *Dhourra*; Hind. *Jow*), a species of bread-corn (*Hordeum*, Linn.), of which there are several varieties. It is extensively cultivated in most European countries, and in many of the temperate districts of Asia and Africa. It may also be raised between the tropics; but not at a lower elevation than from 3000 to 4000 feet, and then it is not worth cultivating. Large quantities of barley have been, for a lengthened period, raised in Great Britain. Recently, however, its cultivation has been supposed, though probably on no good grounds, to be declining. In 1765 Mr. Charles Smith estimated the number of barley consumers in England and Wales at 739,000; and as a large proportion of the population of Wales, Westmoreland, and Cumberland continue to subsist chiefly on barley bread, we are inclined to think that this estimate may not, at present, be very wide of the mark. But the principal demand for barley in Great Britain is for conversion into malt, to be used in the manufacture of ale, porter, and British spirits; and though its consumption in this way has not certainly increased proportionally to the increase of wealth and population, still there does not seem to be any ground for supposing that it has diminished. Barley is also extensively used in fattening black cattle, hogs, and poultry. It now generally follows turnips, and is a very important crop in the rotation best adapted to light soils. The produce varies, according to soil, preparation, season, etc., from about 20 to 60 or 70 bushels an acre. The most usual crop is from 28 to 36 or 38 bushels. Barley is a tender plant, and easily hurt in any stage of its growth. It is more hazardous than wheat, and is, generally speaking, raised at a greater expense; so that its cultivation should not be attempted except when the soil and climate are favorable for its growth.—For further details as to its consumption and culture, *see* SMITH'S *Tracts on the Corn Trade*, 2d ed. p. 182; BROWN *on Rural Affairs*, vol. ii. p. 42; LOUDON'S *Encycl. of Agriculture*, etc.

Barometer and **Thermometer**. Torricelli, a Florentine, having discovered that no principle of suction existed, and that water did not rise in a pump owing to nature's abhorrence of a vacuum, imitated the action of a pump with mercury, and made the first barometer in 1643, and Descartes explained the phenomena. Wheel barometers were contrived in 1668; pendent barometers in 1695; marine in 1700. The invention of the thermometer is ascribed to several scientific persons all about the same time. Invented by Drebbel of Alemaer, A.D. 1609.—BOERHAAVE. Invented by Paulo Sarpi, 1609.—FULGENTIO. Invented by Sanctorio in 1610.—BORELLI. Fahrenheit's thermometer was invented about 1726; and the scale called Reaumur's soon after, 1730. The mode of construction, by substituting quicksilver for spirits, was invented some years subsequently.

Barra, or **Vara**, in *Commerce*, a long measure used in Portugal and some parts of Spain, to measure woolen and linen cloths and serges. In Valencia, 13 barras = 12 6-7 yards English measure; in Castile, 7 barras = 6 4-7 yds.; and in Aragon, 3 barras = 2 4-7 yds.—E. B.

Barracan, in *Commerce*, a sort of stuff something like camlet. It is used to make various outer garments. The cities where barracans are chiefly made, in France, are Valenciennes, Lisle, Abbeville, Amiens, and Rouen.—E. B.

Barratry, in *Navigation*, is, in its most extensive sense, any fraudulent or unlawful act committed by the master or mariners of a ship, contrary to their duty to their owners, and to the prejudice of the latter. It appears to be derived from the Italian word *barratrare*, to cheat. It may be committed by running away with a ship, willfully carrying her out of the course prescribed by the owners, delaying or defeating the voyage, deserting convoy without leave, sinking or deserting the ship, embezzling the cargo, smuggling, or any other offense whereby the ship or cargo may be subjected to arrest, detention, loss, or forfeiture. It is the practice in most countries to insure against barratry. Most foreign jurists hold that it comprehends every fault which the master and crew can commit, whether it arise from fraud, negligence, unskillfulness, or mere imprudence. But in England it is ruled that no act of the master or crew shall be deemed barratry, unless it proceed from a *criminal* or *fraudulent* motive. "Barratry can only be committed by the master and mariners by some act contrary to their duty in the relation in which they stand to the owners of the ship. It is, therefore, an offense against them, and consequently an owner himself can not commit barratry. He may, by his fraudulent conduct, make himself liable to the owner of the goods on board, but not for *barratry*. Neither can barratry be committed against the owner *with his consent*; for though he may be liable for any loss or damage occasioned by the misconduct of the master to which he consents, yet this is not barratry. Nothing is more clear than that a man can never set up as a crime an act done by his own direction or consent."—MARSHALL *on Insurance*, book i. c. 12, §6.

When, therefore, the owner of a ship is also the mas-

ter, no act of barratry can be committed; for no man can commit a fraud against himself. It is a maxim in law, that fraud shall not be presumed, but must be clearly proved; and it is a rule in questions of insurance, that he who charges barratry must substantiate it by conclusive evidence. It is not necessary, to render an act barratrous, that it should be committed with a criminal intent as respects the owners, in order to injure them, or to benefit the captain or crew. It may even be committed with a view to promote the owner's interests; for *an illegal act* done without the authority or privity of the owners, and which proves detrimental to them, is barratry, whatever be the motives in which it originated. Lord Ellenborough, in an able judgment, has laid it down as clear law, "that a breach of duty by the master in respect of his owners, with a fraudulent or criminal intent, or *ex malefício*, is barratry; that it makes no difference whether this act of the master be induced by motives of advantage to himself, malice to the owner, or *a disregard of those laws which it was his duty to obey*; and that it is not for him to judge or suppose, in cases not intrusted to his discretion, that he is not breaking the trust reposed in him, when he endeavors to advance the interests of his owners by means which the law forbids, and which his owners also must be taken to have forbidden." The circumstance of the owners of ships being permitted to insure against the barratry of the master and mariners can hardly fail, it may be not uncharitably presumed, of rendering them less scrupulous in their inquiries with respect to their character than they would otherwise be. Perhaps, therefore, it might be expedient to prohibit such insurances, or to lay some restrictions upon them. They were, indeed, expressly forbidden by the Ordinance of Rotterdam; and Lord Mansfield, whose authority on all points connected with the law of insurance is so deservedly high, seems to have thought that it would be well to exclude barratry entirely from policies, and to cease "making the underwriter become the insurer of the conduct of the captain whom he does not appoint, and can not dismiss, to the owners who can do either." But though it were expedient to prevent the owners from making an insurance of this sort, nothing can be more reasonable than that third parties, who freight a ship, or put goods on board, should be allowed to insure against such a copious source of loss.

For a further discussion of this subject, see the article MARINE INSURANCE; and MARSHALL *on Insurance*, book 1. c. 12, § 6, and PARK *on Insurance*, c. 5. Owners, masters, or seamen, who wilfully cast away, burn, or destroy ships, to the prejudice of freighters or insurers, incur the penalty of death.—*See* SEAMEN.

Barrel, a cask or vessel for holding liquids, particularly ale and beer. Formerly the barrel of beer in London contained only 32 ale gallons = 32½ Imperial gallons; but it was enacted by 43 Geo. 3, c. 69, that 36 gallons of beer should be taken to be a barrel; and by the 6 Geo. 4, c. 58, it is enacted, that whenever any gallon measure is mentioned in any excise law, it shall always be deemed and taken to be a standard imperial gallon. At present, therefore, the barrel contains 36 imperial gallons. It may be worth while observing that the barrel or cask is exclusively the produce of European ingenuity; and that no such article is known to any nation of Asia, Africa, or America, who have not derived it from Europeans.

Barricade, in *Naval Architecture*, a strong wooden rail, supported by stanchions, extending across the foremost part of the quarter-deck in ships of war. The vacant spaces between the stanchions are commonly filled with rope-mats, cork, or pieces of old cable; and the upper part, which contains a double rope-netting above the rail, is stuffed with hammocks, to prevent the execution of small-shot in time of action.—E. B.

Barwood, a red dye wood brought from Africa, particularly from Angola, and the River Gaboon. The dark red which is commonly seen upon British bandana handkerchiefs is for the most part produced by the coloring matter of barwood, saddened by sulphate of iron.—BANCROFT *on Colors*. The imports of barwood into England, in 1841, amounted to 2012 tons. It brought, in January, 1843, from £3 to £4 a ton (duty 2*s.* included) in the London market.

Baskets (Fr. *Corbeilles*; Ger. *Körbe*; It. *Paniere*; Sp. *Canastas, Canastos*; Russ. *Korsinäi*) are made, as every one knows, principally of the interwoven twigs of willow, osier, birch, etc., but frequently also of rushes, splinters of wood, straw, and an immense variety of other materials. They are used to hold all sorts of dry goods, and are constructed of every variety of quality and shape.

Bast, for straw hats or bonnets.—*See* HATS.

Batavia, a city of the island of Java, the capital of the Dutch possessions in the East Indies, and the principal trading port of the Oriental islands, lat. 6° 8′ S., long. 106° 50′ E., on the northwest coast of the island, at the mouth of the Jaccatra River, on an extensive bay. The harbor lies between the main land and several small uninhabited islands, which, during the boisterous or northwestern monsoon, afford sufficient shelter and good anchorage. Population in 1842, 53,860, including about 3000 Europeans; the rest are Chinese, Javanese, Malays, etc. It is built on marshy ground, and intersected by canals in the Dutch style; defended by a citadel and several batteries, and has a considerable garrison and marine arsenal. Mean temperature of year, 78°·3: winter, 78°·1; summer, 78°·6 Fahrenheit. Temperature at mid-day, 80° to 90°; at night, 70° Fahrenheit. It has a studthouse, exchange, hospital, numerous churches, a mosque, a Chinese and two orphan hospitals, several Chinese temples, a large club-house termed the *Harmonie*, and a botanic garden. Batavia was formerly so very insalubrious, that General Daendels was anxious to transfer the seat of government to Sourabaya; but being thwarted in this, he set about building a new town, a little farther inland, on the heights of Weltevreden, whither the government offices were immediately removed. Most of the principal merchants have now their residences in the new town, repairing only to the old city, when business requires it, during a portion of the day. In consequence, the old town is at present principally occupied by Chinese, and the descendants of the ancient colonists, several of its streets having been deserted and demolished. More recently, however, the Baron Capellen, whose enlightened administration will long be gratefully remembered in Java, sensible of the superior advantages of the old town as a place of trade, exerted himself to prevent its further decay, by removing the causes of its unhealthiness; to accomplish which, he widened several of the streets, filled up some of the canals, and cleansed others, demolished useless fortifications, etc.; and the effect of these judicious measures has been, that Batavia is now as healthy as any other town of the island. It is the seat of a supreme commission of public instruction for the Dutch East Indies, and has a school of arts and sciences, and publishes a newspaper. The Jaccatra is navigable by vessels of 40 tons two miles inland; ships of from 300 to 400 tons anchor in the bay, one mile and a half from shore. Batavia is the great commercial emporium of the Asiatic Archipelago, and absorbs by far the greatest proportion of the trade of Java and Madura; the annual exports of which islands amount to 60,000,000 florins ($25,123,000), and the imports to 30,000,000 florins ($12,000,000). Exports consist mostly of coffee, sugar, pepper, indigo, hides, cloves, nutmegs, mace, tin, rice, ratans, and arrack. Chief imports, linen and cotton goods, woolen stuffs, provisions, wines, metallic wares, and manufactured articles of all kinds from Europe and America; with the prod-

ucts of the Archipelago, China, Siam, Bengal, Japan, and the West Indies. It was founded by the Dutch in 1619; taken by the English in 1811, and occupied by them till 1816. The district of Batavia, extending along the north shore of the island, is flat and not so fertile as the other provinces of Java. The residence of the governor general was transferred from Buitenzorg to Batavia in 1847. As the population has increased since, it may at present be estimated at from 130,000 to 140,000, independently of the military, of which there are always a considerable number. Among the principal merchants are Dutch, English, Americans, French, and Germans. The island of Java forms the most important portion of the Dutch possessions in the East, and is, in fact, one of the finest colonies in the world. It contains, including Madura, an area of 52,000 square miles, with a population of nearly, if not quite, 10,000,000.

THE VALUES OF THE EXPORTS FROM JAVA, AND THEIR DESTINATION, IN 1846, 1836, AND 1826, WERE AS FOLLOWS:

Countries.	1846.	1836.	1826.
	Florins.	Florins.	Florins.
Netherlands	39,609,848	27,232,588	6,513,525
Indian Archipelago	9,326,548	6,706,153	4,357,783
Great Britain	2,365,987	139,592	349,069
China, Macao, etc.	1,886,703	3,319,706	1,974,192
France	1,326,149	1,944,145	42,232
America	1,199,644	1,002,529	211,281
Hamburg	615,041	108,142	63,534
Sweden	345,949	253,959	57,172
Other places	711,868	369,315	959,735

OFFICIAL ACCOUNT OF THE QUANTITIES OF THE PRINCIPAL ARTICLES OF PRODUCE EXPORTED FROM JAVA AND MADURA IN THE FOLLOWING YEARS.

Years.	Coffee.	Pepper.	Indigo.	Hides.	Cloves.	Nutmegs.	Sugar.	Tin.	Rice.	Raisins.	Mace.	Arrack.
	Piculs.	Piculs.	Pounds.	Pieces.	Piculs.	Piculs.	Piculs.	Piculs.	Coyans.	Piculs.	Piculs.	Leggs.
1830	288,740	6,061	22,063	30,249	803	1,304	108,640	21,426	15,521	5,930	177	1,927
1835	466,871	11,868	535,753	139,095	4,566	5,022	439,543	40,836	25,577	4,905	1,606	2,075
									Piculs.			
1840	1,132,124	9,911	2,123,911	110,494	53	3,600	1,024,493	62,334	680,009	28,032	870	5,261
1841	901,467	13,477	1,827,986	120,472	7,600	5,125	1,046,576	48,540	676,213	37,017	1,171	4,672
1842	1,013,854	10,441	1,627,437	167,677	1,718	5,129	884,685	69,127	884,157	36,594	1,432	4,668
1843	1,018,102	25,083	1,830,129	152,310	2,027	2,113	929,709	45,705	1,008,774	73,535	486	6,362
1844	1,239,925	12,484	1,648,520	150,224	2,800	8,131	1,008,632	68,729	785,276	73,600	2,300	6,258
1845	1,006,190	11,527	1,653,369	105,751	2,234	3,403	1,455,423	73,537	447,017	51,260	830	4,378

ACCOUNT OF THE QUANTITIES AND VALUES OF THE PRINCIPAL ARTICLES EXPORTED FROM JAVA AND MADURA IN 1836 AND 1845.

Principal Articles.	Quantities exported in 1836.	Value of Exports in 1836.	Quantities exported in 1845.	Value of Exports in 1845.
		Florins.		Florins.
Arrack	1,477 leggers.	115,905	4,378 leggers.	153,229
Hides	109,008 pieces and 846 piculs.	217,715	105,751 pieces.	220,649
Indigo	407,798 pounds.	1,122,382	1,543,869 pounds.	4,061,608
Coffee	498,078 piculs.	15,090,362	1,006,190 piculs.	20,123,798
Pepper	7,006 piculs.	125,035	11,527 piculs.	184,433
Rice	36,430 coyans.	3,389,615	447,017 piculs.	2,682,101
Spices, Mace	991 piculs.	396,268	830 piculs.	132,834
Cloves	2,185 piculs.	153,036	2,234 piculs.	201,045
Nutmegs	3,886 piculs.	1,711,600	3,403 piculs.	510,383
Sugar	509,514 piculs.	9,033,141	1,455,423 piculs.	20,350,209
Tobacco	2,477 kodies.	769,850	5,811 kodies.	2,324,480
Tin	47,739 piculs.	2,718,810	73,536 piculs.	4,044,518
All other articles and treasure	....	7,767,835	....	10,005,888
Totals		42,261,642		65,895,168

Bank of Batavia.—A bank, for the issue of notes and other banking business, was established at Batavia in 1827, with branches at Samarang and Sourabaya; the history of which is not uninstructive. The capital of the bank, consisting of 2,000,000 florins, divided into 4000 shares, was subscribed with difficulty; and the most unfavorable anticipations were entertained of the success of the establishment. No sooner, however, had the bank been set on foot than she began to enjoy a large share of prosperity. The rapid increase of cultivation and commerce in Java led to a corresponding demand for capital, and to the payment of a very high rate of interest on loans; and as the loans made by the bank consisted of bank-notes, which cost next to nothing, the profits became quite enormous; so much so that they amounted in 1837 to 33 per cent., the price of the 500 florins share of bank stock being then also 1550 florins. But this prosperity was as brief as it was signal. The offer of an exorbitant interest had tempted, in not a few cases, the bank to make advances on doubtful security; and in Java, as elsewhere, issues of paper payable on demand necessarily stop, the moment the circulation has been fully saturated with notes; and this result having been attained in 1839, and the notes issued by the bank being henceforth returned on her for payment, she speedily became involved in the greatest difficulties; many of those who depended on her advances for support were no longer able to meet their engagements; and the whole island was subjected to a severe pecuniary and commercial crisis: in fact, but for the intervention of the government, in 1840, when bank-notes were made *legal tender* for a limited period, she must have stopped payments! This intervention has, however, given her time to recover from the difficulties into which she had been precipitated; and having again, after sustaining a very heavy loss, resumed specie payments, it is to be hoped that she may profit in future by her past experience. We subjoin dividends paid by the Bank of Java from 1829 to 1840, both inclusive:

	Per Cent.		Per Cent.
1829	9	1835	30
1830	12	1836	32
1831	12	1837	33
1832	18	1838	26
1833	20	1839	20
1834	27	1840	0

General Remarks on Java.—The previous statements show that the produce and trade of Java have increased during the last dozen years with a rapidity unknown in any other colony, Cuba, perhaps, excepted; and if the resources and capabilities of this noble island be fully developed, it is quite impossible to say how much further her trade may be extended. It would far exceed our limits, and, even were this not the case, it would involve us in discussions nowise suitable for this work, were we to enter into any detailed examination of the means by which the extension of culture in Java has been brought about. We may, however, shortly mention that the produce for exportation is principally raised on account of government, partly by contributions in kind, and partly and principally by contributions of compulsory labor applied to its production. And, provided these contributions be not carried to an excess, we incline to think that they are at once the least onerous mode in which

the natives can be made to pay their taxes, and the most profitable for the government. It is, we apprehend, idle to suppose that industry, if left to itself, will ever become flourishing in a country like Java, where the wants of the inhabitants are so few and so easily satisfied, or where the climate indisposes to exertion. No doubt the system of compulsory labor may be easily abused and converted into an instrument of the most grinding oppression; but so long as it is managed with discretion and good sense, we are disposed to believe, from all we can learn, that it is preferable to every other system hitherto devised for developing the resources of tropical countries.—For some remarks on this subject, see the learned and able *Dissertatio Historico-Politica*, on the Dutch East India Company, by Van Lijnden, published in 1839, p. 161–171.

Very great public improvements have been already effected, and are still in progress in the island. Among others, an excellent high road has been constructed through its whole length, from Bantam, on its western, to Sourabaya on its eastern coast, whence cross-roads lead to all the principal stations. A number of forts have, also, been constructed in commanding situations in the interior, the principal of which, at Surackarta, near the centre of the island, is a regular and strong citadel. It is said to be the intention to transfer the seat of government thither from Batavia. These forts have been erected principally to keep the natives in check, and to prevent those outbreaks that have done so much to retard the prosperity of the island. Several important establishments have also been recently founded along the southern coast, which had previously been all but neglected.—See *Argout sur Java, Singapore*, etc.

Rice used to be the staple product of Java; but it is now far surpassed by coffee and sugar, the culture of both of which has been astonishingly increased. In proof of this we may mention that the exports of coffee, which in 1830 amounted to 288,740 piculs, had increased in 1845 to 1,006,190 piculs, or to 61,090 tons; while the exports of sugar, which in 1830 amounted to 108,640 piculs, had increased in 1845 to 1,455,423 piculs, or 88,365 tons. More than half the trade of the island centres in Batavia. Indigo has also become an important product. The other principal articles of export are tin from Banca, tobacco, tea, and birds' nests. The imports compriso cottons, woolens, and other manufactured goods; wines and spirits, with iron, hardware, and machinery; opium from the Levant and from Bengal; and a great variety of other articles.

Port Regulations.—The following is the substance of the port regulations of Batavia: 1st. The commander of a ship arriving in the roads is not to land himself, or permit any of his crew or passengers to land, until his vessel be visited by a boat from the guardship. 2d. The master, on landing, is first to wait on the master attendant, and afterward report himself at the police office. 3d. A manifest of the whole cargo must be delivered at the custom-house within 24 hours of the ship's arriving in the roads. 4th. The master of a vessel must lodge the ship's papers with the master attendant when he first lands, which are duly delivered up to him when he receives his port clearance from the same authority. 5th. No goods can be shipped or landed after sunset, under a penalty of 500 florins. 6th. No goods can be shipped on Sunday without a special permission from the water fiscal, which, however, is never refused on application. 7th. No muskets or ammunition can be imported; but the prohibition does not extend to fowling-pieces exceeding 100 florins value.

Tariff.—After a good deal of negotiation, it has been fixed that goods imported in foreign vessels shall pay an *ad valorem* duty of 25 per cent., and under the Netherlands flag of 12½ per cent.; that is, a duty upon the wholesale price at Batavia, not in bond. The export duty on coffee, if exported on a foreign bottom to a foreign country, is 5 florins per picul; if on a foreign bottom to a port in the Netherlands, 4 florins; and if on a Netherlands bottom to a Netherlands port, 2 florins. Sugar exported on a foreign bottom pays 2 florins per picul; but if exported on a Netherlands bottom, 1 florin. Rice, on whatever bottom exported, and to whatever country, pays a duty of 3 florins per coyang of 27 piculs. Tin, exported in a foreign ship to whatever port, 4 florins per picul; and by a Netherlands ship, 2 florins per picul. The trade in spices is monopolized by the Netherlands Trading Company.

Goods are received in *entrepôt* not only at Batavia, but at the ports of Samarang, Sourabaya, and Anjier in Java, and Rhio in the Straits of Malacca, on payment of a duty of 1 per cent. levied on the invoice value.

Money.—Accounts are kept, at Batavia, in the florin or guilder, divided into centimes, or 100 parts, represented by a copper coinage or doits. The florin is a new coin made expressly for India, but of the same value as the florin current in the Netherlands. It is usually estimated at the rate of 12 to the pound sterling, but the correct par is 11 florins 58 cent. per pound. Doubloons, and the coins of Continental India, are receivable at the custom-house at a fixed tariff; the Spanish dollar, for example, at the rate of 100 for 260 florins.

Weights.—The Chinese weights are invariably used in commercial transactions at Batavia and throughout Java and the other Dutch possessions in India. These are the picul and the cattle, which is its hundredth part. The picul is commonly estimated at 125 Dutch, or 133⅓ lbs. avoirdupois, but at Batavia it has been long ascertained and considered to be equal to 136 lbs. avoirdupois.—Hoogendorp, *Coup d'Œil sur l'Ile de Java*, cap. 8, etc.; *Evidence of* Gillian Maclaine, *Esq., before the Select Committee of the House of Commons on the Affairs of the East India Company*, 1831; *Nederlandsche Staats-Courant*, 13th August, 1842, and other official information.

Batten, a name in common use for a scantling of wood 2½ inches thick and 7 wide. If above 7 inches wide, it is called deal.

Bay (Saxon *bygge*, an angle), an arm of the sea extending into the land. It is smaller than a gulf, and larger than a creek.

Bayou, bi'oo, or more usually bi'o, a term confined chiefly to inlets of the Lower Mississippi River, signifying properly any stream which is derived from some other stream, or from a lake; in other words, any stream which is not fed by fountains. The word is supposed to be a corruption of the French *boyau*, a "gut" or "channel"—a derivation which is rendered more probable by the prevalent pronunciation, bi'o. Several of the bayous from Lake Pontchartrain, near New Orleans, and from the Gulf of Mexico, are very important channels to the interior country, and afford great facilities to commercial intercourse.

Bazar, a term used in the East to designate a market, or building, in which various articles of merchandise are exposed for sale. Bazars are now met with in most large cities of Europe. There are several in London, of which the one in Soho Square is the most considerable.

Bdellium (Arab. *Affatoon*), a gum-resin, semipellucid, and of a yellowish-brown or dark-brown color according to its age, unctuous to the touch, but brittle; soon, however, softening between the fingers: in appearance it is not unlike myrrh, of a bitterish taste, and moderately strong smell. Two kinds have been distinguished: the *opocalpasum* of the ancients, which is thick like wax, and the common dark sort. It is found in Persia and Arabia, but principally in the latter; all that is met with in India is of Arabic origin. The tree which produces it has not been clearly ascertained.—Ainslie's *Materia Indica*.

Beach, a shelving tract of sand or shingle washed by the sea or a fresh-water lake, and interposed between the water and the land, on which vegetation grows. The beach of the ocean is, generally speaking, little more than the space between high and low water-mark; the beach of a lake, that between the water marks of the highest and lowest ordinary level of the lake. An inland sea without tide, such as the Mediterranean, has commonly very little beach, except on flat coasts, where the waters are apt to fall and rise considerably, according to the prevailing winds. —E. A.

Beacons, in *Commerce* and *Navigation*, public marks or signals to give warning of rocks, shoals, etc. No man is entitled to erect a light-house, beacon, etc., without being empowered by law.—*See* Buoys.

Beads (Fr. *Rosaires;* Ger. *Rosenkränze;* Du. *Paternosters;* It. *Corone;* Sp. *Coronas*), small globules or balls used as necklaces, and made of different materials; as pearl, stee., amber, garnet, coral, diamonds, crystal, glass, etc. Roman Catholics use beads in rehearsing their Ave Marias and Paternosters. Glass beads or bugles are imported in large quantities into India and Africa, 288,058 lbs. having been shipped from England to the west coast of the latter in 1841. Large quantities are sent from China to India, the Eastern islands, etc. The glass beads sent from England are nearly all imported, principally from Venice, where they are very largely produced. Their non-manufacture in Great Britain is said to be a consequence of the excise regulations as to the manufacture of glass; but the truth is, that the Venetian manufacturers color them better, and give them a better finish than the English.

Beam, in weaving, a long thick wooden cylinder, placed lengthwise on the back part of the loom of those who work with a shuttle. That cylinder on which the stuff is rolled as it is weaved is also called the *beam* or *roller*, and is placed on the fore part of the loom.—E. B.

Beam-compass, an instrument consisting of a square wooden or brass beam, with sliding sockets that carry steel or pencil points. Beam-compasses are used for describing larger circles than can conveniently be drawn by the common compasses.

Beams of a Ship are the great main cross-timbers which hold the sides of the ship from falling together, and also support the deck and the orlops. The main beam is next the main-mast, and from it they are successively reckoned as first, second, third, and so on. The greatest beam of all is called the *midship beam.* A ship is said to be *on her beam-ends* when she inclines so much to one side that her beams approach to a vertical position.—E. B.

Bean-cod, a small fishing vessel, or pilot-boat, common in Portugal. It is extremely sharp forward, having its stem bent above into a great curve inward, plated on the fore side with iron, and fortified with bolts. It is commonly navigated with a large lateen sail.—E. B.

Beans (Fr. *Fèves;* Ger. *Bohnen;* It. *Fave;* Russ. *Boobii;* Sp. *Habu;* Lat. *Fabæ*), a well-known vegetable of the pulse species, largely cultivated both in gardens and fields. Its cultivation is of much importance in rural economy, inasmuch as it has gone far to supersede fallows on strong loams and clays.

Bearing, in *Navigation*, an arch of the horizon intercepted between the nearest meridian and any distant object, either discovered by the eye and referred to a point on the compass, or resulting from the spherical proportion; as, in the first case, "At four P.M. Cape Spado, in the Isle of Candia, bore south by west by the compass." In the second, the longitudes and latitudes of any two places being given, and consequently the difference of latitude and longitude between them, the bearing of one from the other is discovered by the following analogy: As the meridional difference of latitude is to the difference of longitude, so is the radius to the tangent of the bearing.

Bearing is also the situation of any distant object estimated from some part of the ship according to her position. An object so discovered must be either ahead, astern, abreast, on the bow, or on the quarter. If the ship sails with a side wind, it alters in some measure the names of such bearings, since a distant object on the beam is then said to be to leeward or to windward; on the lee quarter or bow, and on the weather quarter or bow.—E. B.

Beating, in *Navigation*, the operation of making progress at sea against the wind, by steering in a zigzag course.—E. B.

Beaver, or **Castor**, an amphibious quadruped of the order *Rodentia*, with a thick glossy fur, and horizontally flattened tail, abounding in North America and Siberia, and still found in the north of Europe. It formerly appears to have been known as far south as the Rhone and the Danube; and though with us now extinct, was formerly an inhabitant of Great Britain. The fur of the beaver forms a considerable article of commerce. Among traders the skins are distinguished into three kinds: 1. The fresh beaver, which is obtained in winter, before the animal has shed any of its hair, and consequently that is most esteemed by furriers. 2. The dry or lean beaver, which is captured in summer, when the animal is moulting. 3. The fat beaver, which differs from the fresh only in having acquired additional softness and oiliness from being worn for some time on the persons of the native hunters. This is the kind that is chiefly used in hat-making. The substance called *castor* is found in pouches in the inguinal region of the beaver. It is regarded as a powerful antispasmodic.—E. B.

Beech (*Fagus sylvatica*), a forest tree met with in England, the United States, etc. There is only one species, the difference in the wood proceeding from the difference of soil and situation. A considerable quantity of beech is grown in the southern parts of Bucks. It is not much used in building, as it soon rots in damp places; but it is used as piles in places where it is constantly wet. It is manufactured into a great variety of tools, for which its great hardness and uniform texture render it superior to all other sorts of wood; it is also extensively used in making furniture.

Beech-mast, the fruit or nuts of the beech-tree, used for fattening hogs, deer, and other animals. It has sometimes proved a useful substitute for bread, as experienced at Chios during a memorable siege.—E. B.

Beech-oil, an oil expressed from the mast of the beech-tree. It is common in Northern Germany, also in Picardy, and in other parts of France, instead of butter; but it is said to be unwholesome.—E. B.

Beef is used either fresh or salted. Formerly it was usual for most families, at least in the country, to supply themselves with a stock of salt beef in October or November, which served for their consumption until the ensuing summer; but in consequence of the universal establishment of markets where fresh beef may be at all times obtained, the practice is now nearly relinquished, and the quantity of salted beef made use of as compared with fresh beef is quite inconsiderable. Large supplies of salted beef are, however, prepared in the United States for exportation to the East and West Indies. During the war, large supplies were also required for victualing the navy. The vessels engaged in the coasting trade, and in short voyages, use only fresh provisions. The English have at all times been great consumers of beef; and at this moment more beef is used in London, as compared with the population, than any where else. Previously to 1842 the importation into England of fresh beef was prohibited; and salt beef from a foreign country was charged with a duty of 12*s.* a cwt. But in that

year the duties on both sorts were reduced to 8*s.* 4½*d.* a cwt., and in 1846 they were wholly repealed. In 1852 the imports of salted beef into Great Britain amounted to 122,665 cwt., and those of fresh beef to only 2028 cwt.—*See* PROVISIONS.

Beer. All ancient Greek writers agree in assigning the honor of the discovery of beer to the Egyptians; but from the circumstance of no notice being taken of beer in the books of Moses, it has been rather rashly concluded that such a drink was unknown to them till after his death. This, however, is unlikely. The vine was alone cultivated in Egypt in those districts which were beyond the reach of the inundations; and the quantity of wine raised being limited was reserved for the rich, while the poorer classes had to content themselves with a cheaper drink prepared from barley. Herodotus, who wrote about 450 years B.C., is perhaps the earliest writer who gives any particulars regarding Egypt, and he describes beer prepared from barley as the ordinary drink of the Egyptians in his day. Pliny, Aristotle, Strabo, and others, who mention that this beer was known by the name of Zythos, give full descriptions of its qualities and intoxicating properties; and Diodorus even affirms that some kinds were so palatable as to be scarcely inferior to wine. The researches of Sir J. G. Wilkinson relative to the ancient Egyptians have thrown much light on this subject, and render it probable that beer was used as a drink by the ancient Egyptians nearly as early as wine itself. Xenophon, in his account of the retreat of the ten thousand Greeks, 400 years B.C., mentions that the inhabitants of Armenia used a fermented drink made from barley. Diodorus Siculus states, that the nation of Galatia prepared a fermented drink from barley, styling it zythus, like the Egyptians. Beer was distinguished among the Greeks by a variety of names. It was called *ἄινος κριθινος* (barley wine), from its vinous properties, and from the material employed in its formation. In Sophocles, and probably in other Greek writers, it is distinguished by the name of *βρῦτον*. Dioscorides describes two kinds of beer, to one of which he gives the name *ζῦθος*, and to the other *κοῦρμα*; but he gives no description of either sufficient to enable us to distinguish them from each other. Both, he informs us, were made from barley, and similar liquors were manufactured in Spain and Britain from wheat.

Tacitus informs us that in his time beer was the common drink of the Germans, and from his imperfect description of the process which they followed, it is not unlikely, or rather there can be no doubt, that they were acquainted with the method of converting barley into malt. Pliny gives us some details respecting beer. He distinguishes it by the name of *cerevisia* or *cervisia*, the appellation by which it is known in modern Latin works.

This beverage does not appear to have come into general use in Greece or Italy; but in Germany and Britain, and some other countries, it appears to have been the common drink of the inhabitants in the time of Tacitus, and probably long before. It has continued in these countries ever since; and great quantities of beer are still manufactured in Germany, the Low Countries, and Britain. We might quote numerous passages from the narratives of recent travelers to show that the use of a drink prepared from barley is nearly universal over the northern and temperate parts of Europe and Asia. One of the latest of these travelers, M. Huc, the French missionary, remarks that the drink of the farmers in Thibet is "a sort of sharp drink made with fermented barley, which, with the addition of hops, would be very like our beer."

Porter is a strong beer of a dark color and peculiar flavor, and is said to be so named, either from its having been the common drink of the porters, or from Harwood, the original brewer of the drink, sending it round to his customers by men, who when they knocked at the doors called out "porter," meaning thereby not the drink, but themselves, its porters or carriers. Porter was originally brewed to take the place of two or three kinds of beer which used to be mixed by the retailers in the mug as they drew them from the taps; and as this new drink had the taste of all three, but was brewed at once, and run out of one tap, it saved the publican trouble, and was denominated "entire." Hence, as the sign so often noticed in London, such a brewer's "entire."

Bavarian Beer is the only other malt liquor which, from the peculiarities attending its fermentation, requires a special notice. The Germans, from the earliest historical periods, have been a beer-drinking nation, and some excellent malt liquors are made in that country. The "weiss bier," the truly patriotic beverage of Bavaria, is not made from barley alone, but from 1 part oats and 5 parts wheat malt; but the excessive tendency of wheat beers to sour has caused the Bavarian brewers to be substituted for the wheat, and sometimes also to give the admired tartness. The other beers, however, more especially the ones now to be noticed, the Bavarian beers, both the common pot beer (schank-bier) and the intoxicating luscious beck-beer, are brewed from barley malt alone.—*See* LAGER BIER.

Ale appears to be an ancient drink, and the name is usually given to strong beer of a pale color, as porter is to that of a dark color. The varieties of ale are infinite, but we purpose only to notice the peculiarity in the manufacture of English ale, Indian ale, English home-brewed ale, and Scottish ale.

In all high-priced English ales of the present day, brilliancy and paleness of color, with as little excess of sweetness as possible, are the objects to be attained by the brewer. To accomplish these ends, nothing but the finest pale malt must be used; and to secure sound-keeping ale, it is of first importance that the malt shall have been thoroughly dried on the kiln. If prepared from what is technically known as "slack-dried malt," that is, malt not thoroughly dried for fear of coloring it, or which has had water sprinkled over it while still warm from the kiln, the wort as run from the mash-tun will be found acid, and will tinge litmus paper of a much deeper red than ordinary wort from well dried malt, and the ale prepared from it will not keep beyond a few months. It is necessary also to be careful in the selection of the hops for ale. Good sound hops should alone be used; many brewers now use a proportion of foreign hops along with the English hop.

Pale, Indian, or Burton Ale, originally intended for exportation, and now so deservedly in high repute as among our most esteemed and wholesome beverages, requires more particular treatment in its manufacture. This ale can only be prepared from the best pale malt and the best hops; and the chief peculiarities attending its manufacture are, that it requires more than double the usual proportion of hops, that the attenuation is generally carried to a much greater extent, and that the temperature during the fermentation should never be allowed to exceed 65° Fahrenheit. That a considerable amount of sweetness should exist in common ale is allowable, and indeed it is the presence of a large quantity of undecomposed saccharine extract which gives to common strong ale its luscious mildness. It is, however, the presence of this large quantity of undecomposed saccharine extract which prevents common ale from being used as a diet drink by the invalid, or being relished in a warm country; and it is the circumstance of the Indian or pale ale having its fermentation carried so much further, and its saccharine matter reduced in quantity, together with its larger proportion of bitter, that commends it so much as a grateful and stimulant stomachic to the European resident in a warm climate, and to the invalid.

Home-brewed Ale, as brewed by the middle classes

in England, is usually made in quantities of 2 barrels, *i.e.*, 72 gallons. For this purpose a quarter of malt, or if wished to be extra strong, 9 bushels of malt, are taken, with 12 lbs. of hops. The malt being crushed or ground, is mashed with 72 gallons of water, at the temperature of 160°, and covered up for three hours, when 40 gallons are drawn off; and into this the 12 lbs. of hops are put, and left to infuse. Sixty gallons of water, at the temperature of 170°, are then added to the malt in the mash-tub and well mixed, and, after standing two hours, 60 gallons are drawn off. The wort from these two mashes is boiled along with the hops for two hours, and after being cooled down to 65°, it is strained through a flannel bag into the fermenting-tub, where it is mixed with 1¼ gallons of yeast and left to work for twenty-four or thirty-six hours. It is then run into barrels to cleanse, a few gallons being reserved for filling up the casks as the yeast works over. Eighteen or twenty gallons of beer are obtained from the used malt by making a third mash with 25 or 30 gallons of water, and boiling the wort thus procured with the used hops.

Scottish Ale, but especially the Edinburgh ale, has been long celebrated, but as an ordinary beverage it is much more luscious and heady than London porter, English ale, or pale Indian ale. It is a much stronger drink than any of these, the home-brewed English ale approaching nearest to it in this respect; and as the attenuation of the saccharine extract is only carried the length of the decomposition of two-thirds of its original strength, the large quantity of undecomposed saccharine extract renders it much more luscious to the taste, and milder than the English ales. The Scottish ales are brewed of various strengths, and are known in the market by their price per hogshead, and are hence commonly mentioned as £7 ale, £6 ale, etc.—E. B. *See* ALE AND BREWING.

IMPORTATION OF BEER, ALE, AND PORTER INTO THE UNITED STATES, ACCORDING TO TREASURY REPORT OF 1855.

Years.	Beer, Ale, and Porter from England.		Beer, Ale, and Porter from Scotland.	
	Gallons.	Value.	Gallons.	Value.
1844	107,489	$102,157	19,236	$18,343
1845	79,302	73,729	26,711	21,294
1846	117,621	110,397	38,464	39,831
1847	178,303	110,292	17,526	10,552
1848	130,000	101,171	39,282	21,553
1849	146,473	118,233	52,297	30,088
1850	156,735	129,957	52,856	41,790
1851	275,336	189,010	88,179	56,736
1852	262,838	186,964	110,752	67,804
1853	397,420	284,347	131,357	77,414
1854	825,571	424,875	270,064	128,667
1855	919,252	550,900	345,016	188,457

Beet, or **Beta**, a well-known genus of plants. The common beet, *Beta vulgaris*, a variety of the red beet, has long been cultivated as a food for cattle, and is also used for the table as a pickle. It was introduced for this purpose in the latter part of the last century from Germany, where it is known by the name of *mangel-wurzel*.—*See* AGRICULTURE. The variety termed *white beet* is smaller than the former, and has chiefly been cultivated on a large scale for the formation of sugar from its root. The chemical elements of beet-root sugar are expressed *atomically* thus: C_{12}, H_9, $O_9 + 2HO$, or, twelve atoms of carbon, nine of hydrogen, nine of oxygen, and two of water. The largest extract of pure sugar from beet-root in Belgium was formerly 3 per cent., but is now 6 per cent., and is capable of further increase by improvement in the process of manufacture. The cultivation of beet-root was especially fostered in France by Napoleon, whose policy it was to encourage every thing that tended to render the Continent independent of Britain, then in possession of the chief sugar colonies. It is only within a comparatively recent period, however, that the manufacture of beet-root sugar in Europe has assumed any degree of importance, the total quantity produced in 1828 not exceeding 7000 tons, while in 1851 it was estimated at not less than 180,000 tons. We subjoin a few statistics relative to the increasing importance of this manufacture from *The Economist* (Nos. 431 and 432, Nov. 29th, and Dec. 26th, 1851). The quantity of beet-root sugar annually produced in France is 60 000 tons, or fully one-half of the entire consumption. Though now subject to a higher duty than colonial cane sugar, it is considered probable that very shortly it will exclude foreign sugar from the French market altogether. The production of beet-root sugar in Belgium also is rapidly on the increase, the quantity produced in 1850 being 7000 tons, or half the entire consumption of that kingdom. This had increased in 1851 to 10,000 tons, while of foreign cane sugar only 4000 tons were imported. In Germany it has made similar progress. In 1848 the quantity produced was 26,000 tons, which had risen in 1851 to 43,000, with a corresponding decrease in the imports of foreign sugar. Of 85,000 tons of sugar estimated to have been consumed in Russia, 35,000 tons were beet-root sugar. In Austria, also, the production of this article increased from 8000 tons in 1848, to 15,000 tons in 1851, while the consumption of cane sugar had sunk from 32,000 to 25,000 tons.—E. B.

Behring's Strait, explored by a Danish navigator in the service of Russia, whose name it bears. Behring thus established that the continents of Asia and America are not united, but are distant from each other about thirty-nine miles, 1728.

Belfast, a maritime town, a municipal and parliamentary borough, the capital of Ulster, the chief manufacturing and commercial town in Ireland, and since 1850 the county town of Antrim. It is mainly comprised in the county of Antrim; but the large suburb of Ballymacarret, separated from the town by the River Lagan, is in the county of Down. Belfast is situated in lat. 54° 36′ 8·5″ N., and long. 5° 55′ 53·7″ W., at the mouth of the River Lagan, which flows immediately into Belfast Lough (Carrickfergus Bay), an estuary about 12 miles in length, and 5 miles broad. The town is built upon an alluvial deposit and land reclaimed from the sea, the greater portion being not more than six feet above high-water mark. In common with all places so situate, it is exposed to occasional inundations, and somewhat to the visitations of epidemics; but independently of the lowness of its site, Belfast is in other respects advantageously placed, and generally by no means unhealthful. The environs of the town are highly agreeable and picturesque. Belfast has been steadily progressive in population from an early period. In 1758 the number of inhabitants was 8549; in 1782, 13,105; in 1798, 18,320; in 1821, 45,177; in 1831, 48,221; in 1841, 75,308; and in 1851, 100,300. The custom duties collected at the port in 1784 amounted to £104,376, and, after various fluctuations, reached £288,756 in 1834, £339,989 in 1843, and £377,929 in 1852. The great increase of shipping frequenting the port appears in the following account of the number and tonnage of vessels entered inward at various periods:

Years.	No. of Vessels.	Tonnage.	Years.	No. of Vessels.	Tonnage.
1786	772	34,287	1825	2,060	133,441
1795	801	52,576	1835	2,730	290,769
1805	840	69,585	1845	3,655	445,597
1815	1,134	91,371	1851	5,046	650,958

The chief export trade is carried on by the cross-channel navigation; but a considerable direct trade also exists with the United States and Canada, the West Indies, the Mediterranean, and the Baltic. Belfast is the centre of the Irish linen manufacture, to the cultivation of which it is mainly indebted for its prosperity. In 1841 about 240,000 spindles were employed, and the increase during the last ten years has been so rapid, that about 510,000 spindles are now in operation. The total value of all products of the linen manufacture exported abroad in the ten months ending 5th November, 1852, was £1,357,874, against £4,150,157 in 1851; and

the export of linens and yarns, especially of the latter, continues on the increase. In 1851, 5,060,160 pounds of linen yarns were exported from Belfast; and in 1852, 6,779,680 pounds. The harbor of Belfast, originally a creek of the River Lagan, has been much improved of late years, and now allows vessels drawing eighteen feet of water to reach the quays at spring-tides.—E. B.

Belgium. Belgium extends from lat. 49° 27′ to 51° 30′ N., and from long. 2° 34′ to 6° 4′ E. On the north it is bounded by Holland; east by Dutch Limbourg and Luxembourg, and Rhenish Prussia; south by France; and on the west by the North Sea. It is somewhat of a triangular form, of which the longest side is that adjoining France, being 366 miles in length. The eastern boundary is 238 miles, and the northern and western are together 279 miles in length. Its greatest length from northwest to southeast (from Ostend to Arlon) is 56 leagues of 5000 metres, or 174 English miles, and its greatest breadth from north to south is 105 miles. It has an area of 2,945,593 hectares, equal to 7,278,968 English acres, or 11,373 square miles; being about one-eighth of the area of Great Britain. This country is divided into nine provinces —Antwerp in the north; West and East Flanders and Hainault in the west; Namur in the south; Luxembourg in the southeast; Liège and Limbourg in the east; and Brabant in the centre.

Commercial Association.—Belgium possesses a great number of commercial and financial associations. In 1851 there were no fewer than 191 legally authorized joint-stock companies for carrying on public works or enterprises, having a united capital of 880,347,298 francs. Of these 12 were assurance companies, 12 private banking companies, and 14 railway companies. It has eight commercial exchanges, under the direction of government; namely, in Antwerp, Brussels, Ghent, Bruges, Ostend, Mons, Tormonde, and Louvain. In 1822 the General Society for the Encouragement of National Industry was formed at Brussels, under a royal charter for 27 years, and which has since been extended to 1875. It has a social capital of 30,000,000 florins, divided into 60,000 shares of 500 florins, bearing interest at 5 per cent. The administrative body consists of a governor, nominated by the king, six directors, a secretary, and a treasurer. It discounts bills, receives money at interest, grants loans and advances on titles and other deposits, etc. The national bank, instituted by charter granted in 1850, for twenty-five years, has its seat at Brussels, and has branches in all the provincial capitals and several other towns. Its capital is 25,000,000 francs, in shares of 1000 francs each. It pays a dividend of 5 per cent. upon the shares, and one-third at least of the profits, exceeding 6 per cent., goes to form a sinking fund. The administration consists of a governor, nominated by the king, six directors, and a council of censors. The banking operations are superintended by a government commissary; a report upon its state is presented to the government every month. The State funds are deposited in this bank. The Bank of Belgium, chartered in 1835 for twenty-five years, but which has been extended to 1875, has a capital of 30,000,000 francs. Its seat is at Brussels. The Bank of Flanders is established in Ghent. Antwerp is the principal sea-port of Belgium; it has a good harbor, and superior commercial facilities. Population, in 1850, 420,000.

The weights and measures of Belgium are the same as those of France. Gold, silver, and copper coins are struck at the royal mint in Brussels. The gold coins are ten and twenty-five franc pieces; the silver are of the value of ¼, ½, 1, 2, and 2½ francs; and the copper of 1, 2, 5, and 10 centimes.

Commerce.—In 1851 Belgium possessed 149 trading vessels, of the aggregate burden of 30,577 tons. The value of the imports and exports for the years 1849, 1850, and 1851, was as follows:

Years.	Imports.	Exports.
	Francs.	Francs.
1849	405,249,000	374,776,000
1850	423,117,000	411,292,000
1851	418,555,925	401,176,052

In 1851 the imports by Belgic vessels were valued at 44,702,097 francs; by foreign, 124,736,164 francs; and by land and rivers, 249,117,064 francs. Exports by Belgic vessels, 24,107,906 francs; by foreign, 81,326,815 francs; and by land and rivers, 295,741,931 francs. The laden Belgic vessels entering were 402, of 70,261 tons; and foreign 1591, of 229,771 tons. The laden Belgic vessels leaving were 351, of 62,996 tons; and foreign, 1168, of 161,314 tons. The number entering in ballast was 149, of 17,434 tons: 1359 vessels entered the port of Antwerp, 448 Ostend, 234 Ghent, and 101 Nieuport. The imports are principally from France, England, Holland, and the United States; and the exports principally to France, Holland, Prussia, and England. The imports are divided into three classes: those for direct consumption in the country, those for transit, and those brought into warehouses to be either consumed in the country on paying the duties, or exported. The value of goods imported for consumption, and of the productions of the country exported, was for the three years above as follows:

Years.	Imported.	Exported.
	Francs.	Francs.
1849	206,777,000	179,054,000
1850	211,222,000	210,023,000
1851	218,085,070	200,129,626

These are divided into three branches. 1. *Premières matières*, articles consumed in the state in which they are found, as coals, etc.; 2. Articles of food; and, 3. Manufactures. The imports and exports of 1851, so divided, give

	Imports.	Exports.
	Francs.	Francs.
Premières matières.....	93,663,110	97,742,481
Food	84,362,885	26,258,285
Manufactures	40,059,075	76,128,860

The value of the goods in transit for the years 1850 and 1851 was

Years.	Direct.	By Warehouse.
	Francs.	Francs.
1850	175,553,000	25,706,000
1851	175,104 292	25,942,134

Of the latter, the value exported by Belgic vessels was 7,046,655 francs; by foreign, 28,712,479; and by land and canals, 165,287,292 francs. Although there is a slight decrease in 1851 as compared with 1850, in comparing 1850 with 1841 we find an increase of 259 per cent. The value of goods in warehouse on the 1st January, 1851, was 26,626,000 francs; entered during that year, 65,006,000; taken out for consumption, 39,922,000; for export, 25,942; and 25,480,000 were in bond at the end of that year.

Under the rule of France, Belgium, like the other parts of the Continent, had suffered severely from the operation of the conscription laws, which had deprived the country of those active laborers who were necessary to cultivate the fields. Although peace could not restore the great numbers who had perished, yet it stopped the further progress of the evil in the Netherlands, by the establishment of a voluntary enrollment for a small regular army, and of a militia, whose service was required only for one month in the year. The mines felt the benefit of this regulation. The minerals of Belgium consist of coal, iron, and calamine. As soon as the union had been formed, and laborers became less scarce, a great impetus was communicated to this branch of industry; and companies were formed, who were most liberally repaid by the profit of their investments in this branch of industry, which was augmented from year to year as long as Belgium and Holland constituted one kingdom. By the excitement com-

munieated to mining, the provinces of Liege and Hainault, and a part of Namur, were greatly enriched; and a company formed to explore the mines of Luxembourg were amply rewarded in their labors and their profits, till interrupted by internal commotions. The various branches of manufacturing industry received a similar impulse, though at first they were checked by the peace. The continental system of Bonaparte had given a factitious encouragement to some articles of manufacture, which ceased with the return of peace; and, till the formation of the kingdom of the Netherlands, many branches were depressed by the rivalry of foreign goods in the markets to which they had access. But as soon as the junction was completed, a stimulus was given to the manufacturers, by opening to their goods the markets of the East and West Indies, and those of all countries with which the Hollanders had traded. The iron manufactures of Liege advanced rapidly in prosperity; the woolen manufactures of Verviers felt most powerfully a similar impulsion; and many large establishments were formed at Ghent and other places, where cotton goods were fabricated which rivaled those of England, and so far surpassed those of France, that much of the goods was sold by the contraband trade in that kingdom. The opening of the Scheldt was the necessary effect of the formation of the united kingdom. Merchants from various countries formed establishments with large capitals at Antwerp; its docks became crowded with ships from all countries; its warehouses were loaded with colonial and other produce; and it advanced rapidly to a rivalry with Amsterdam, Rotterdam, and Hamburg in the transit trade to the interior of Germany. The king directed his best efforts to the state of the roads, the greater part of which had suffered dilapidation, while the cross-roads, so important in a country chiefly agricultural, were in many places scarcely passable. The management of the former was under the general government, while that of the latter was superintended by the local authorities; but in the first few years of the union the whole were repaired and placed in the most excellent state. The interests of internal navigation were sedulously watched over by the king. The old canals were repaired, the shallow parts of the rivers were deepened, and new and important water communications were formed. The chief of these, the Canal Guillaume, which extends from Maestricht to Bois-le-Duc, was an expensive but highly beneficial work; and that of Antoing in Hainault, that of Charleroy in the province of Namur, and that of Ternuse in Flanders, have been found in a very high degree beneficial. Though no longer of any importance to Belgium, it may not be quite out of place to remark, that the spirit of improvement which spread throughout the whole kingdom was to be seen in Holland in the Grand Canal of North Holland, which opens to Amsterdam a way for ships of the largest size to the ocean by way of the Helder, without incurring the risks arising from the shoals of the Zuyder Zee.

The following table shows the annual income and expenditure for the seven years preceding 1851:

Years.	Income.	Expenditure.
	Francs.	Francs.
1844	198,810,508	195,185,657
1845	129,850,951	134,389,949
1846	114,964,043	122,752,999
1847	113,528,068	127,572,074
1848	140,117,886	137,060,595
1849	113,871,437	112,267,069
1850	132,877,187	118,730,904

The number of works, in 1850, for the preparation of iron was 351, steel 2, lead 8, copper 20, zinc 19, alum 2, glass 35; 13,223 workmen were engaged, and the value of the produce was 51,261,457 francs. There is a decrease of 37 per cent. on the average of the three years preceding 1848, as compared with the three subsequent, in the iron manufacture. During the former period the demand for iron was great, and the prices were augmented by the number of railways constructing in Belgium and other countries.

The population of Belgium in 1831 was 3,785,814; in 1840, 4,073,162; and in 1850, 4,426,202; distributed as follows:

	1831.	1840.	1850.
Antwerp	340,942	371,157	420,556
Brabant	561,828	621,072	734,617
West Flanders	608,226	640,054	651,137
East Flanders	742,973	779,466	783,450
Hainault	613,179	661,701	724,740
Liege	375,060	410,171	467,843
Limbourg	160,090	169,980	188,118
Luxembourg	100,762	174,719	192,589
Namur	213,784	238,862	274,053
Total	3,785,814	4,073,162	4,426,202

There are nineteen chambers of commerce and manufacture established in the principal towns, the members of which are nominated by the king from a triple list of candidates presented to him by the chambers. The members of each vary in number from nine to twenty-one, one-third going out annually. They present to the government or legislative chambers their views as to the best means of increasing the commercial and industrial prosperity of the country, report annually upon the state of their districts, and give useful information or direction to the provincial or civic authorities under their administration.

Schools of navigation have been established at Antwerp and Ostend for furnishing properly educated masters for merchant vessels. Instruction is given gratuitously in navigation and the branches connected with it—as arithmetic, geometry, trigonometry, nautical astronomy, etc.; with the elements of commercial law, as applicable to merchant vessels, the English language, and the manœuvring, rigging, and trimming a vessel, both theoretically and practically. Certificates of qualifications as masters or mates are given by a jury of examiners.—E. B.

Alterations and Modifications in the Tariff, Tonnage Duties, and Port Regulations of Belgium, by Acts of the 12th day of April, and the 30th day of March, 1855.—A law of the 21st July, 1844, article 6, authorizes the government to provide, by royal order, the necessary measures for admitting the products of Asia, Africa, and America, imported direct into Belgium under the flag of the countries of production, or of the countries whence imported, on the same terms as if imported under the Belgian flag, provided Belgian vessels are placed in such countries on an equality with the national flag. By royal order of the 12th July, 1854, this law is made applicable to Mexican vessels and products. The law of 8th June, 1853, provides that the government is empowered to allow vessels proceeding from transatlantic countries, or from a port beyond the Straits of Gibraltar, to touch at an intermediate port, whether for the purpose of receiving orders or carrying on commercial transactions by discharging or receiving cargoes. This law, being of limited duration, is continued in force until the 31st day of March, 1856, by the law of 30th March, 1855.* The law of the 11th of June, 1853, authorizes the government to admit, free of duty, machines, new or improved machinery imported for the purpose of introducing new branches of industry or perfecting those already established, or for agricultural purposes; also, steam-vessels constructed on a new principle or improved plan, or such as could be regarded as models. This law is continued in force to the 24th day of May, 1856, by law of 4th June, 1855.

* This law suspends the practical operation of the 7th article of the treaty of November 10, 1845, between the United States and Belgium, which restricts the equality of flags in Belgian ports to *direct* importations from ports in the United States. Under its operation the flag of the United States is equalized with the Belgian, whether the vessel proceeds from a port in the United States or not.

TARIFF CHANGES.*

Description of Merchandise.	Duty.	Under which Law.
Whalebone, raw	Free.	Mar. 30, 1855.
Timber for building, 5 centimetres or under in width, per sea ton	$2 05	"
Spirits—brandy, gin, and liquors of every kind:		
In barrels, per hectolitre	1 12	"
In bottles, 116 or more to the hectolitre, per 100 bottles	2 24	"
Terra japonica	Free.	"
Coffee, from country of production direct:		
In national vessels,† per 220 pounds	1 67	"
In foreign vessels, per 220 pounds	2 14	"
From other places:		
In national vessels, per 220 pounds	2 59	"
In foreign vessels, per 220 pounds	2 88	"
Cinnamon and cassia ligna:		
Of China, per 220 pounds	4 84	"
Of Ceylon and other places, per 220 pounds	37½	"
Pot and pearl ashes	Free.	"
Flax in bulk, and other vegetable filaments not otherwise enumerated, per 220 pounds	37½	"
Horns and bone-tips of oxen, cows, etc.	Free.	"
Cotton, raw	Free.	April 12, 1854.
Hides and skins, untanned and dry, per 220 pounds	0 00½	Mar. 30, 1855.
clippings	Free.	"
Copper ore	Free.	"
Spices, not specially enumerated	20 per cent. ad valorem.	"
Tin, crude	Free.	"
Ginger	20 per cent. ad valorem.	"
Tar	Free.	"
Flaxseed, imported direct from Riga, from 1st Aug. to 1st April, upon proof of origin	Free.	"
Fat, tallow, and lard, per 220 pounds	47	"
Oil, of palm, cocoa, Touloucuna, per 220 pounds	56	"
Indigo	Free.	"
Honey, per 220 pounds	2 25	"
Marble, in blocks and rough	Free.	"
Lead ore and old lead	Free.	"
Fish:		
Herrings, other than in dry salt and pickled, per 1000	1 86	"
Codfish, pickled or in dry salt, per ton of 150 to 160 kilogrammes	4 65	"
Stockfish, per 220 pounds	22	"
Pepper and pimento, per 220 pounds	2 08	"
Quercitron bark	Free.	"
Rice, not hulled, or paddy, direct from countries of production:		
In national vessels, per 220 pounds	45	"
In foreign vessels, per 220 pounds	65	"
From elsewhere:		
In national vessels, per 220 pounds	84	"
In foreign vessels, per 220 pounds	94	"
Rice, hulled, from the country of production, or from transatlantic countries:		
In national vessels, per 220 pounds	1 50	"
In foreign vessels, per 220 pounds	1 68	"
From elsewhere:		
In national vessels, per 220 pounds	1 85	"
In foreign vessels, per 220 pounds	2 05	"
Saltpetre, crude, per 220 pounds	27	"
Soap, hard, per 220 pounds	2 79	"
Sirup and molasses of every kind, per 220 pounds	13 96	Nov. 30, 1854.
Tobacco—Havana, Porto Rico, Columbia, and Orinoco, direct from transatlantic countries:		
In national vessels, per 220 pounds	2 74	Mar. 30, 1855.
In foreign vessels, per 220 pounds	3 06	"
From elsewhere:		
In national vessels, per 220 pounds	2 92	"
In foreign vessels, per 220 pounds	3 25	"
Tobacco—St. Domingo, or West Indies, direct from transatlantic countries:		
In national vessels, per 220 pounds	2 32	"
In foreign vessels, per 220 pounds	2 01	"
From elsewhere:		
In national vessels, per 220 pounds	2 52	"
In foreign vessels, per 220 pounds	2 79	"
Other kinds of tobacco, of countries out of Europe, direct from country of production, or transatlantic countries:		
In national vessels, per 220 pounds	1 86	"
In foreign vessels, per 220 pounds	2 13	"
From elsewhere:		
In national vessels, per 220 pounds	2 09	"
In foreign vessels, per 220 pounds	2 32	"
Tea, per 220 pounds	12 10	"

* Within the year ending September 30, 1855, changes and modifications have been made in the general customs tariffs of Mexico, New Granada, Peru, Guatemala, San Salvador, Costa Rica, Turkey, Belgium, Holland, Portugal, England and her dependencies, and France; but inasmuch as these tariffs, thus modified or changed, will appear in detail in the answer to the resolution of the House of Representatives of December 14, 1853, now in course of preparation at the State Department, the changes in the tariffs of Belgium, Holland, Portugal, Bermuda, and Newfoundland, are alone given in the present report in tabular form; and those in the tariffs of England and France by abstracts of the acts and decrees of the governments of those countries respectively.

† Wherever the term "national vessels" occurs, it is to be understood as applicable to vessels of the United States.

Bell, a well-known instrument, ranked by musicians among the musical instruments of percussion. Bells were used among the Jews, Greeks, Roman Catholics, and heathens. The responses of the Dodonæan oracle were in part conveyed by bells.—STRABO. The monument of Porsenna was decorated by pinnacles, each surmounted by bells.—PLINY. Introduced by Paulinus, bishop of Nole, in Campagna, about A.D. 400. First known in France in 550. The army of Clothair II., king of France, was frightened from the siege of Sens by the ringing of the bells of St. Stephen's church. The second Excerption of the English King Egbert commands every priest, at the proper hours, to sound the bells of his church. Bells were used in churches by order of Pope John IX., *as a defense, by ringing them, against thunder and lightning,*

about 900. First cast in England by Tnrkeytel, chancellor of England, under Edmund I. His successor improved the invention, and caused the first tunable set to be put up at Croyland Abbey, 960.—STOWE.

Great Bell of St. Paul's, weighs.....	8,400 lbs.
Great Tom of Lincoln, weighs	9,894 "
Great Tom of Oxford, weighs	17,000 "
Bell of the Palazzo, Florence, weighs..	17,000 "
St. Peter's, at Rome, weighs.....	18,600 "
Great Bell at Erfurth, weighs.....	28,224 "
St. Ivan's Bell, Moscow, weighs	127,836 "
Bell of the Kremlin, weighs	443,772 "

The last is the great unsuspended bell, the wonder of travelers. Its metal alone is valued, at a very low calculation, at £66,565 sterling. In its fusion great quantities of gold and silver were thrown in as votive offerings by the people.—HAYDN.

Bell-metal, an alloy of copper and tin, usually in the proportion of 80 parts of copper to 20 parts of tin. Zinc generally enters into the composition of small shrill bells. By analysis Dr. Thompson found an English bell-metal to consist of 800 parts of copper, 101 tin, 56 zinc, and 43 lead. The thickness of a bell's edge is usually 1-15th of the diameter, and its height is twelve times its thickness. The bell-founders have a diapason, or scale, wherewith they measure the size, thickness, weight, and tone of their bells.—E. B.

Bending, in *Nautical Language*, the tying of two ropes or cables together; thus, to *bend the cable*, is to make it fast to the ring of the anchor; to *bend the sail*, to make it fast to the yard.

Bends, in a ship, more generally called *wales*, are the thickest and stoutest planks in her side, on which men set their feet when climbing up. They form the chief strength of a ship's sides, and have the beams, knees, and foot-hooks bolted to them.

Bengal, the largest and most important division of Hindostan, situate toward its eastern extremity, and containing Calcutta, the seat of the British government in India. Excluding the possessions of the native princes, over which the British government merely exercises political supremacy, and excluding also the Punjab and the Agra, or northwestern provinces, which are administered by functionaries having the powers and authority of lieutenant governors, the tract embraced within the presidency of Bengal lies between 10° and 28° N. lat., and between 83° and 99° E. long. Its most northern extremity is situate in the province of Assam, and its most southern point lies on the coast of Tenasserim. The district of Mirzapore, under the jurisdiction of the lieutenant governor of Agra, forms the extreme boundary on the west, and the frontier of Siam constitutes its most eastern limit. The longest line which could be drawn with extremities lying within the limits of the presidency, is that in a direction from southeast to northwest, from the Pak Chan River, in Tenasserim, to the northwestern angle of the district of Sarun, where the River Gunduck issues from the mountains of Nepaul, in lat. 27° 25′, long. 83° 55′, and would measure about 1550 miles in length. A considerable part of this line would, however, lie across the Bay of Bengal. The longest line that could be drawn without crossing the bay is from northeast to southwest, from the boundary of Assam to that of the British district of Palamow, a distance of about 870 miles. The extreme breadth of the presidency, measured at right angles to this last-stated line, is about 465 miles, bearing from southeast to northwest, from the mouth of the Hooghly to the exit of the Gunduck from the mountains of Nepaul. The area of the presidency, as thus defined, amounts to 225,103 squares miles.

Bengal, especially as it approaches the sea, may be designated a level country. Even in its northern frontier, it is reached only on one point by any of the branches that diverge from the Himalayas. A spur from the great culminating range bounds the northeastern extremity of Assam; and thence taking a southerly direction through the native States of Munneepore and independent Tipperah, forms the eastern frontier of the British district of Chittagong. Continuing from this point its southerly course, it stretches, under the name of the Yoomadoung Mountains, through the province of Arracan to its southernmost point at Cape Negrais, forming the western boundary of the valley of the Irrawaddy. This spur where it touches upon Assam attains an elevation of 14,540 feet above the level of the sea, and there its summit is covered with perennial snow.

The soil of so extensive a province varies, of course, in its character and fertility with the physical peculiarities of the country. In the level tract interlaced by the Ganges and Brahmapootra, with their numerous branches and tributaries, the soil is alluvial, its basis being composed of sand, on which are annually deposited, by the retiring waters, clay, calcareous matter, and other fertilizing substances. In the tracts which lie beyond the reach of inundation, it is marked by different degrees of productiveness, from the dry and arid rocks of the southwestern frontier overrun with brushwood, to the hills of Chittagong and Tenasserim clothed with magnificent forests. Taken as a whole, however, the soil of Bengal, enriched as it is by the combined influence of fierce suns and deluging rains, may be said to be characterized by an amazing fertility. Its productions are those both of the tropical and the temperate climates. Of the grains which contribute to the subsistence of man, rice is of the first importance: it is the great staple of Bengal agriculture, is particularly luxuriant within the tract of inundation, and thrives in all the southern districts. It is sown after the first showers at the end of March down to the setting in of the rainy season, and occupies a period ranging (according to its variety, of which there are three principal denominations) from three to five months to ripen. The early crop is sown broadcast; the later crop, after the seed has attained the height of a few inches, is planted with the hand in rows at the distance of about a foot asunder. The rice harvest is succeeded by the cold-weather crops, which are sown in autumn and reaped in spring. They consist chiefly of vetches, gram, barley, peas, mustard, etc. Millet and other small grains, sown at the beginning of the rains and reaped at the end, constitute the food of the poorer classes, and, bearing a very low price, are of importance. Maize is less cultivated in Bengal than in those countries where the climate is more suitable, having no preference above millet to compensate for the greater labor required for its culture. Potatoes have lately been introduced into Bengal, and have succeeded well. They are suited to the climate; and the small potato is little inferior to that raised in England. Esculent plants are found in Bengal in great abundance and variety. The different species of the cucumber are much more numerous than in Europe, and whole fields are covered with them. The watermelon is of incredible size; and its stalk, leaves, and blossoms form a finely variegated matting, with which most of the cottages in the villages are entirely covered.

The universal and vast consumption of vegetable oils which takes place in Bengal is supplied by the extensive cultivation of mustard, linseed, sesamum, and palma-christi, in addition to the produce obtained from the cocoa-nut. The sesamum comes to maturity during the rains, or soon after them, the others during the cold season. Among the most important of the commercial crops are tobacco, sugar, the opium poppy, indigo, cotton, and silk, most of which require land solely appropriated to their peculiar culture; of late years coffee has been successfully cultivated. Tobacco, which was unknown in India before the discovery of America, is now produced every where. The sugar-cane has flourished in Bengal from the remotest times; there is scarcely a district in which its cultivation is not pursued with success, and there seems to be no limit to its production, except the demand for it. It is cheaply

and frugally manufactured; and as it now enters the British market on equal terms with West India sugar, it forms an important article of export. The manufacture of indigo appears to have been known and practiced in Bengal from an early period; and from the East Europe was supplied with this dye until the superior produce of America engrossed the markets. European skill has, however, succeeded in reviving this branch of trade in Bengal, and the indigo now exported from this presidency amounts to five-sixths of the supply obtained from the whole world. Cotton is raised in abundance, but the produce scarcely exceeds the consumption; and the demand of the British and China markets for the cotton wool of India is almost wholly supplied from the western side of the country. Silk is an ancient product of India; the silkworm, it is said, being originally introduced from China. Formerly the raw material was brought from India to Greece and Italy, whence Europe was chiefly supplied. Bengal still carries on a trade in this valuable article; and although the quality is scarcely equal to the finest Italian silk, the annual export from Calcutta exceeds in value half a million sterling. A coarse species of silk is procured from the wild silkworm, which is found in the countries bordering on Bengal, and in several districts included within it. It is rendered useful in the fabrication of inferior silks, though bearing no comparison to the produce of the domesticated insect. The cultivation of the poppy is entirely regulated and controlled by the government. Annual contracts are made with the farmers to sow certain quantities of land with the plant, and to deliver the produce to the government in the form of opium at a fixed price. The sowings commence in November, and the crop arrives at maturity by the end of February. The revenue realized by the government from the sale of opium produced in Bengal alone amounts to between two and three millions sterling per annum.

The orchard is a great object of cultivation with the peasant in Bengal; and it attaches him to his native soil, from the almost superstitious predilection which he feels for the trees planted by his ancestor. The seasons, however, from the long continuance of the rains, which occupy the greater part of the summer, are not particularly favorable for bringing fruit to maturity; yet the orange, lime, shaddock, citron, tamarind, and other fruits, may be reckoned among the productions of Bengal. Orchards of mango, a tree thriving with little care, and yielding a fruit esteemed one of the best among those of India, diversify the plains. In size and foliage this tree resembles the Spanish chestnut; its fruit is extremely delicious, and is said to surpass in flavor the large yellow peach of Venice. Another fruit tree is the cocoa-nut, valuable not only on account of the nut, from which a superior oil is largely extracted, but in consideration also of its timber, which is peculiarly fitted for the construction of water-pipes and other useful purposes. Even the husk which envelops the fruit furnishes a fibre from which the best cordage is manufactured. The mulberry is extensively planted in consideration of its leaves, which afford the food of the silkworm. Assam abounds with the genuine tea plant; and the bassia thrives in various localities, especially in the hilly districts. Its produce is esculent and nutritious, and its flowers yield an intoxicating spirit. From its seeds is expressed an oil which is sometimes used as a substitute for butter. There are also valuable forest trees, among which may be noticed the teak, equal to the oak for purposes of ship-building, the sal, and the banyan. There is also the bamboo, which, being hollow, light, and strong, is serviceable in supplying the peasant with materials for his buildings, as well as for the manufacture of baskets, mats, and other articles of like character, to which, when split, its flexible fibre is well adapted.

Minerals.—From the alluvial character of the greater portion of the soil of Bengal, no great amount of mineral wealth is to be expected. In the hilly tracts, however, both in the eastern and western parts of the country, two of the most useful products which the mineral kingdom can boast, coal and iron ore, exist in abundance. Gold, in the form of dust, is found in a few places, but not in quantities sufficient to encourage to any extent the search for it.

Manufactures and Commerce.—Cotton piece goods form the staple manufacture of Bengal; though the use of Indian fabrics of this description in Europe has almost entirely ceased, while even in India the demand for them has been in a great degree superseded by the cheaper goods of Great Britain. The district of Dacca, in the eastern quarter of Bengal, has long been famed for the manufacture of plain muslins, distinguished by various names according to the fineness and the closeness of their texture, as well as for flowered, striped, or checkered muslins of the most beautiful and exquisite fabrics. Several kinds more closely woven are manufactured on the western side of the delta of the Ganges; but these of a more rigid texture do not seem to be limited to particular districts: coarse turbans and handkerchiefs are also made in almost every province. Under the general appellation of calicoes are included various species of cloth which are still distinguished by their Indian designations. Moorshedabad and its neighborhood is the chief seat of the silk manufacture.

The internal trade of Bengal consists chiefly in the exportation from the grain districts of corn and rice in exchange for salt. The supply of this article in Bengal is provided partly by manufacture conducted on account of the government, partly by importation, and to a small extent by private manufacture under a system of excise. The duty on all imported salt is at the rate of five shillings on 82 pounds, or about three farthings per pound; and the same rate of duty is levied on the home manufacture of the article, the prime cost of which amounts to about one farthing per pound. The wholesale price of salt at Calcutta may therefore be estimated at one penny the pound. Its supply is no longer a monopoly; for though the manufacture and sale have not been relinquished by the government, yet the public participate in its provision, under a combined system of customs and excise. The net revenue derived from salt by the government within the presidency of Bengal exceeds a million and a half sterling per annum.

Salt is a very ancient source of revenue in the East; but a feeling against its manufacture being carried on by the government has been for some time on the increase. During the parliamentary session of 1853, a clause was proposed to be inserted in the India bill, then in its progress through Parliament, forbidding the manufacture after the 1st May, 1856; and though opposed by the ministry, it was in the House of Commons carried. By the House of Lords it was, however, rejected, it being deemed unsafe thus suddenly to diminish the resources of India by so large an amount as that of the revenue produced by the trade as at present conducted. The facilities afforded for the introduction of English salt have for several years past caused a great increase of the imported article, the quantity received in Calcutta in the official year 1850–51 being double that of previous years.

The internal trade of Bengal is greatly aided by the navigable communications which intersect the country in every direction. The boats used in this navigation vary in form and construction, being each adapted to the nature of the rivers which they generally traverse. Steam navigation has been introduced upon the Ganges with success; and the Macadamized trunk road from Calcutta to Delhi has afforded facility of communication with the capital to various parts of the presidency; but there can be little doubt that in the course of a few years the rivers and roads of Bengal will alike become subsidiary to the great arteries of communication which, in the form of railways, are now com-

mencing to intersect the country. The line from Calcutta to Burdwan is advancing rapidly to completion; from this point it will be continued in a northerly direction to Rajmahal, on the Ganges, whence it will traverse the heart of the presidency in a northwesterly direction to Allahabad.

Bengal carries on an extensive commerce with Britain. The exports consist chiefly of all the staple articles of the country—such as cotton, silk, sugar, rum, and indigo. The imports are metals of all sorts, wrought and unwrought; woolen and cotton manufactures of various kinds, which can be sent from Britain and sold cheaper than the home manufactures of the same description; naval and military stores; gold and silver bullion; and almost every article of British manufacture. An extensive trade is carried on to China and the countries and islands to the east. The exports are chiefly opium, saltpetre, gunpowder, cotton, and cotton piece goods.—E. B.

Bengal, Bay of, a portion of the Indian Ocean of the figure of a triangle, having on its western side the coast of Bengal, and on the east the coast of Arracan, Pegu, and the Malayan peninsula. Its two sides, from Bengal to Ceylon on the west, and to Junkseylon on the east, may be estimated at 1120 miles in length, and the whole is comprehended within the latitudes of 8° and 20° N. At the bottom of the bay the breadth from Chittagong to Balasore is not above 250 miles; and at its mouth, from Cape Comorin to the Malayan peninsula, the breadth may be estimated at 1200 miles. The western and eastern coasts of the Bay of Bengal form a singular contrast in all the points most essential to a navigator. On the western coast there are no harbors for large ships, while on the eastern coast there are many excellent harbors, such as Arracan, Cheduba, Negrais, and Syriam, in Pegu; a harbor near Martaban, Tavay River, and King's Island; and several harbors in the Mergui Archipelago, besides Junkseylon, Telebone, and Pula Lada. Off the west coast of Coromandel there are no soundings about thirty miles from the shore, while the east coast has soundings two degrees from it. Coromandel presents an open country: it is parched with drought from winds blowing over sultry sands; the mouths of its rivers are shallow from bars of sand, and it is often visited by dangerous gales. The east coast, on the other hand, is covered with wood. The climate is always temperate; the rivers are deep and muddy; and the weather is generally calm. The monsoons blow over the Bay of Bengal, though it is remarkable that here, as in many parts of India, strong winds are found blowing directly from the sea, while at some distance from the land it is a dead calm. Thus in Bengal there are strong northerly winds, while at sea calms prevail until May and June; and on the Malabar coast the southwest monsoon does not commence blowing till the beginning of the rainy season, while on shore there are strong westerly winds about and after the time of the vernal equinox.—E. B.

Bergamot, a species of citron, *Citrus limetta*, distinguished from the orange and lemon by having wingless leaf-stalks. It is a native of the south of Europe, and is produced abundantly in the neighborhood of Nice. The fruit has a delicious taste and smell, and its essential oil is highly esteemed as a perfume. The essence of bergamot is also called *essenzia di cedro*. It is extracted from the yellow rind of the fruit by cutting it in small pieces, and expressing the oil, or by distilling it from water. One hundred bergamots of Nice yield, by expression, 2½ ounces of oil.

Bergamot is also the denomination of a coarse tapestry, manufactured with flocks of silk, wool, cotton, hemp, cow's or goat's hair, and supposed to be invented at Bergamo, in Italy.

Bergen, the first commercial city of Norway, situated at the bottom of a deep bay, in lat. 60° 24′ N., long. 5° 20′ E. Population 26,000. The bay is inclosed on all sides by rugged rocks and islands: the water is deep; but, owing to the number and intricacy of the passages, the access to the town is attended at all times with a good deal of difficulty, and should never be attempted without a pilot. Codfish, salted or dried, is the principal article of export: when dried, it is called stock-fish, and goes chiefly to Italy and Holland. The fishery is the principal employment; and considerable quantities of fish and other products are also brought hither for exportation from the more northerly parts of the kingdom. At an average, from 25,000,000 to 30,000,000 lbs. salted and dried fish are annually exported. Herrings, whale-oil, skins, bones, tar, lobsters, etc., are also largely exported. The exports of timber from Bergen are inconsiderable, and none has latterly gone to England. Norway timber is not so large as that brought from Prussian ports, nor so free from knots; but, being of slower growth, it is more compact, and less liable to rot. The planks are either red or white fir or pine: the red wood is produced from the Scotch fir; the white wood, which is inferior in price and estimation, is the produce of the spruce fir; each tree yields three pieces of timber of 11 or 12 feet in length, and is 70 or 80 years of age before it arrives at perfection. The planks or deals of Bergen are, however, a good deal inferior to those of Christiana. The imports into Bergen principally consist of grain from the Baltic; and salt, hardware, coffee, sugar, etc., from England.—For *Moneys, Weights*, and *Measures*, see CHRISTIANA, where there are further details as to the trade and navigation of Norway.

Berlin Decree, a memorable interdict against the commerce of England. It declared the British islands to be in a state of blockade, and all Englishmen found in countries occupied by French troops were to be treated as prisoners of war; the whole world, in fact, was to cease from any communication with Great Britain. Issued by Bonaparte from the court of the Prussian king, shortly after the battle of Jena (which for the time decided the fate of Prussia), Nov. 21, 1806.

Bermudas, or **Somers' Isles,** were discovered by João Bermudas, a Spaniard, in 1527; but were not inhabited until 1609, when Sir George Somers was cast away upon them. They were settled by a statute 9 James I., 1612. Among the exiles from England, during the civil war, was Waller the poet, who wrote, while resident here, a poetical description of the islands. There was an awful hurricane here, Oct. 31, 1780, and another, by which a third of the houses was destroyed, and all the shipping driven ashore, July 20, 1813.

Berries (*Baccæ*), the fruits or seeds of many different species of plants. The berries quoted in London price-currents are bay, juniper, Turkey and Persian.

1. *Bay-berries* (Fr. *Baies de Laurier*; Ger. *Lorbeeren*; It. *Bacchi di Lauro*; Sp. *Bayas*), the fruit of the *Laurus nobilis*. This tree is a native of the south of Europe, but is cultivated in England, and is not uncommon in their gardens. The berry is of an oval shape, fleshy, and of a dark purple color, almost black; it has a sweet fragrant odor, and an aromatic astringent taste. Bay-berries, and the oil obtained by boiling them in water, are imported from Italy and Spain.—THOMSON'S *Dispensatory*.

2. *Juniper Berries* (Fr. *Genièvrier*; Du. *Sevenboom*; It. *Ginepro*; Sp. *Enebro*), the fruit of the common juniper (*Juniperus communis*). They are round, of a black purple color, and require two years to ripen. They have a moderately strong, not disagreeable, but peculiar smell, and a warm pungent, sweetish taste, which, if they be long chewed, or previously well bruised, is followed by a considerable bitterness. They are found in England; but most of those made use of there are imported from Holland, Germany, and Italy. They should be chosen fresh, not much shriveled, and free from mouldiness, which they are apt to contract in keeping. On distillation with water, they yield a volatile essential oil, very subtle and pungent, and in

smell greatly resembling the berries. The peculiar flavor and diuretic qualities of Geneva depend principally on the presence of this oil. English gin is said to be, for the most part, flavored with oil of turpentine. —Lewis's *Mat. Med.*; Thomson's *Dispensatory*.

3. *Turkey Yellow Berries*, the unripe fruit of the *Rhamnus infectorius* of Linnæus. They are used as a dye drug in preparing a lively but very fugitive yellow, for topical application in calico-printing. Considerable quantities of them are exported from Salonica, to which they are brought from Thessaly and Albania. An inferior sort is produced in France.—Bancroft *on Colors*. Price in the London market, September, 1853, 34*s.* to 40*s.* per cwt.

4. *Persian Yellow Berries* are said by the merchants to be of the same species as the Turkey yellow berries. The colors which they yield are more lively and lasting. They are high-priced, fetching from 80*s.* to 110*s.* a cwt.

Beryl, called by the jewelers *Aquamarine*. This stone was suspected by Pliny to be a variety of the emerald; a conjecture which modern mineralogists have completely confirmed. The term emerald is applied to that particular variety which presents its own peculiar color, or *emerald green*; while that of beryl is given indiscriminately to all the other varieties; as the sea green, pale blue, golden yellow, and colorless. Pliny says that the beryl is found in India, and rarely elsewhere; but besides India, it is found in Peru and Brazil; at Nantes and Limoges, in France; in the Wicklow Mountains, in Ireland; in the district of Cairngorm, in Scotland; and in various other places. —Pliny, *Hist. Nat.* lib. xxxvii. cap. 5; *Encyc. Brit.* new edition.

Those only which are of good color and sufficient depth are manufactured; they have a pretty, lively effect, if in good proportion and well polished. Large stones, from one to three and four ounces, are not uncommon, but from their bulk are only in request as specimens for the cabinet; smaller stones, suitable for necklaces, may be bought at low prices, within the reach of every description of purchasers.—Mawe *on Diamonds*, etc. 2d edition.

Besant, or **Bezant**, a coin of pure gold, struck at Byzantium in the time of the Christian emperors; and hence the gold offered by the king at the altar is called *besant* or *bisant*. It seems to have been current in England from the tenth century till the time of Edward III. Its value is not precisely ascertained, but it is generally estimated at 9*s.* 4½*d.* sterling.

Betel-leaf (Hind. *Pan*; Malay, *Sirek*; Javan. *Suro*), the leaf alluded to in the following article. It is the produce of a species of pepper vine (*Piper bette*), and somewhat resembles the ivy leaf. In their fresh state, betel leaves form an important article of Eastern traffic, being every where used in the preparation of betel. The *Piper bette* is a scandent plant, and poles are placed in the ground, round which it twines itself. In consequence of the great consumption of its leaves, it is extensively cultivated throughout tropical Asia. It grows in the greatest perfection in rich soils close to the equator, and is raised with more difficulty the farther we recede from it.—*Encyc. Britannica*, new edition, article Betel; Crawfurd's *Indian Archipelago*, vol. i. p. 403.

Betel-nut, or **Areca** (Sans. and Hind. *Suapri*; Malay, *Pinang*; Javan. *Jambi*), the fruit of the *Areca catechu*, a slender and graceful palm, rising to the height of about 30 or 40 feet; it produces fruit at the age of [illegible] six years, and continues bearing till its 25th or 30th year. The fruit, which is the only part of the palm that is made use of, is eaten both in its unripe and in its mature state. When ripe, it is of the size of a small egg, and of an orange color; the external part consists of a soft, spongy, fibrous matter, inclosing a nucleus resembling a nutmeg in shape, internal structure, and color, but usually larger, and always harder. A single tree produces, according to its situation, age, culture, etc., from 200 to 800 nuts. They are objects of great importance in the East, forming the principal ingredient of a compound in universal use as a masticatory in all Central and tropical Asia. The other ingredients are the leaf of the betel pepper (which see), in which the areca-nut is wrapped; a little Chunam (which see); and generally, but not always, a little *catechu* or terra japonica.—*See* Catechu. The whole compound is called *betel*, and is used to an extent of which it is difficult for a European to form a just idea. All individuals, without exception of age or sex, begin at an early period to accustom themselves to betel. They are unceasingly masticating it, and derive a gratification from its use that strangers can neither understand nor explain. It reddens the saliva, gives a bright hue to the lips, and, in course of time, renders the teeth quite black. It is said to dispel nausea, excite appetite, and strengthen the stomach. Besides being used as an article of luxury, it is a kind of ceremonial which regulates the intercourse of the more polished classes of the East. When any person of consideration visits another, after the first salutations, betel is presented: to omit it, on the one part, would be considered neglect, and its rejection would be judged an affront on the other. No one of inferior rank addresses a dignified individual without the previous precaution of chewing betel; two people seldom meet without exchanging it; and it is always offered on the ceremonious interviews of public missionaries. The areca-nut is, in consequence, an article of very extensive trade. The countries which yield it most largely for exportion are, Malabar, Ceylon, and Sumatra. Of the extent of this trade some notion may be formed from the fact that the imports of areca into Calcutta in 1841–1842 amounted to 53,633 Ind. maunds, or 1966 tons, and those into Canton in 1837, by British ships only, amounted to 25,978 piculs, or 1502 tons, notwithstanding Bengal and Southern China are countries in which areca is largely produced.—*See the article* Betel in the new edition of the *Encyc. Britannica*; Bell's *Review of the External Commerce of Bengal*; Crawfurd's *Indian Archipelago*, vol. i. p. 102, vol. ii. p. 414; *Chinese Calendar and Register*.

Beyrout, Beirout, or **Bairut** (*Berytus*), a fortified sea-port, and the most flourishing commercial town of Syria in proportion to its size, pashawlic of Acre, on a bay of the Mediterranean, 57 miles west-northwest of Damascus, of which city it is the port, and 3 miles south of Cape Beyrout, which is in lat. 33° 50′ N., long. 35° 26′ E. Population estimated at 12,000. Its walls are about 3 miles in circumference, outside of which are suburbs equaling the town in extent. It has some large and well supplied bazars. Streets narrow, but clean, it being plentifully furnished with springs; and it is said to have derived its original name from the Phœnician deity, *Baal Beerith*, "lord of wells." Along the shore are some remains of antiquity, comprising mosaic pavements, columns, and a thick wall. The harbor, protected by a mole, is adapted only for small boats; but in the bay beyond it ships may anchor in from 6 to 11 fathoms. The town has some manufactures of silk stuffs, and gold and silver thread. Principal exports, silk, galls, madder, gums, wine, and oils: imports, muslins, cottons, tin, hardware, cloths, and manufactures of western Europe. In 1841, 383 ships, mostly Turkish, Arab, and Greek, aggregate burden 38,441 tons, entered the port with cargoes to the value of £66,748, and nearly the same number cleared out with cargoes worth £25,128, besides ballast. Beyrout was bombarded and taken by the English in 1840.

Bezoar (Arab. *Padsj*; Hind. *Zeher-morah*; Pers. *Padzehr Kanie*), a concretion found in the stomach of an animal of the goat kind; it has a smooth glossy surface, and is of a dark green or olive color: the word bezoar, however, has lately been extended to all the concretions found in animals; such as the *hog bezoar*, found in the stomach of the wild boar in India; the

borine bezoar, found in the gall-bladder of the ox, common in Nepaul; and the *camel bezoar*, found in the gall-bladder of the camel: this last is much prized as a yellow paint by the Hindoos. The finest bezoar is brought to India from Borneo and the sea-ports of the Persian Gulf; the Persian article is particularly sought after, and is said to be procured from animals of the goat kind, *Capra Gazella*. Many extraordinary virtues were formerly ascribed to this substance, but without any sufficient reason.—AINSLIE'S *Materia Indica*.

Bible. The first translation from the Hebrew into the Greek was made by seventy-two interpreters, by order of Ptolemy Philadelphus; it is thence called the Septuagint version, and was completed in seventy-two days, at Alexandria, 277 B.C.—JOSEPHUS. It was commenced 284 B.C.—LENGLET. In 283.—BLAIR. The Jewish Sanhedrim consisted of seventy or seventy-two members, and hence probably the seventy or seventy-two translators of Josephus.—HEWLETT. The seventy-two were shut up in thirty-six cells, and each pair translated the whole; and on subsequent comparison, it was found that the thirty-six copies did not vary by a word or a letter.—JUSTIN MARTYR.

Ancient copies of the Bible.—The oldest version of the Old and New Testament belonging to the Christians is that in the Vatican, which was written in the fourth or fifth century, and published in 1587. The next in age is the Alexandrine MS., in the British Museum, presented by the Greek patriarch to Charles I., and said to have been copied nearly about the same time. The most ancient copy of the Jewish Scriptures existed at Toledo, about A. D. 1000; and the copy of Ben Asher, of Jerusalem, was made about 1100.—HAYDN.

Bishops' Bible.—Bishop Alley prepared the Pentateuch; Bishops Davis and Sandys, the Historical Books; Bishop Bentham, the Psalms, etc.; Bishop Horne, the Prophets; Bishop Grindal, the Minor Prophets; Bishops Parkhurst and Barlow, the Apocrypha; Bishop Cox, the Gospels and Acts; and Archbishop Parker, the remainder. Printed A.D. 1558.

Division of the Bible.—The Bible was divided into twenty-two books by the Jews, the number of letters in the alphabet. The Christians divided the Bible into thirty-nine books. The Hebrew division into chapters was made by the Rabbi Nathan about 1445. Our Bible was divided into chapters, and a part into verses, by Archbishop Langton, who died in 1228; and this division was perfected by Robert Stephens, about 1534.

Editions of the Bible.—The vulgate edition, in Latin, was made by St. Jerome A.D. 405, and is that acknowledged by the Catholic Church to be authentic: it was first printed by Guttenberg at Mayence, 1450–1455.—*See* BOOKS. The first perfect edition in English was finished, as appears from the colophon, by Tindal and Coverdale, October 4, 1535. A revision of this edition was made, 1538–39. This last was ordered to be read in churches, 1549. In 1604, at the conference at Hampton court, a new translation was resolved upon, which was executed 1607–1611, by order of King James I., and is that now generally used in Great Britain. J. Eliot's Indian Bible, one of the first books printed in North America, at Cambridge, 1664. The Bible was first printed in Ireland, at Belfast, in 1704. Permitted by the Pope to be translated into the language of the Catholic States, 1759. The Bible was printed in

Spanish	1478	Indian (Mass.)	1664
German	1522	Turkish	1666
English	1534	Irish	1685
French	1535	Portuguese	1748
Swedish	1541	Manks	1775
Danish	1550	Italian	1776
Dutch	1560	Bengalee	1801
Russian	1581	Tartar	1813
Hungarian	1589	Persian	1815
Polish	1596	African	1816
Modern Greek	1638	Chinese	1820

Editions of the Old and New Testament, separately, appeared in several instances at earlier dates, particularly in European languages. The Polyglot Bible, edited by Walton, bishop of Chester, in the Hebrew, Syriac, Chaldee, Samaritan, Arabic, Ethiopic, Persic, Greek, and Latin languages, 1657.—WOOD'S' *Fasti. Oxon.*—HAYDN.

Bight (Dutch *bogt*, participle of *boogen*, to bend), a bend in the sea-coast, forming an open bay; also a round of a rope or cable when coiled.

Bilbao, a city and principal port of the north of Spain, capital of the province of Vizcaya (Biscay), on the Nervion, 6 miles from its mouth at Portugalete, and 28 miles north of Vitoria, lat. 43° 14′ 3″ N., long. 2° 56′ 5″ W. Population 11,900. It is inclosed by lofty mountains, and is well built. Principal manufactures, hardware, anchors, leather, paper, hats, tobacco, and earthen-ware; there are large rope-walk, and docks for building merchant vessels, with iron and copper mines in the vicinity. Exports comprise wool, iron, fish, and fruits. Principal imports, cotton and woolen fabrics, and colonial produce. Bilbao was founded in 1300; at the end of the 15th century it became the seat of the famous consulado, originally established at Burgos, and having the highest authority in Spain as a commercial tribunal. It was the scene of frequent contests in the late Carlist wars, and Zumalacarregui received his death wound here, June 10, 1835.

Bilge of a ship, the bottom of her floor, or the breadth of the part she rests on when aground. *Bilge-water* is that which lodges on her floor below the level of the well of the pump; and *bilge-pumps*, or burr-pumps, are those that carry off the bilge-water. A ship is said to be *bilged* when her bilge is broken in and she springs a leak.

Bilge, the greatest circumference of a cask.

Bill, in *Nautical Language*, the point of the fluke of an anchor.

Bill, in *English Law*, a declaration in writing, expressing either some wrong the complainant has suffered from the defendant, or a fault committed by the person complained of against some law or statute. In Scottish law, every summary application, by way of petition to the Court of Session, is called a *bill*.

Bill, in *Commerce*, has been usually defined a writing in which one man is bound to another to pay a sum of money, on a day that is future, or presently on demand, according to the agreement of the parties at the time when it is drawn; and on which, in the event of failure, execution may be summarily done to enforce payment.—E. B.

Bills of Exchange. Without entering into any investigation regarding the origin of bills of exchange, which has been assigned by different writers to different countries and causes, we may say that it is now the most generally adopted opinion that they originated in the twelfth or thirteenth century, in Italy, at the public fairs, which received a marked importance in commerce, through the Crusades. The money-changers transacted their principal business at the public fairs in the principal cities, and bills or orders for the payment of money at a distant place were at first drawn only from one fair to another, and were called *cambia regularia*. But when commerce increased, through the Hanseatic League, and extended to places where no public fairs were held, bills of exchange were also drawn upon such other places, and these bills were called *cambia irregularia*.

The oldest copy of a formal bill of exchange known at present is one dated at Milan on the 9th of March, 1325, and runs in the original as follows:

"*Pagate per questa prima litera* [*lettera*] *a dì IX. Ottobre a Luca de Goro Lib. XLV. Sono per la valuta qui da Masco Reno, al tempo il pagate e ponete a mio conto e R. che Christo vi guarde Bonromeo de Bonromei de Milano. IX. de' Marzo, 1325.*"—"Pay for this first bill of exchange, on the 9th of October, to Luca de

Goro XLV. Livres; they are for value received here from Masco Reno; at the time of maturity pay the same and pass it to my account, and thanking you, may Christ protect you, Bonromeo de Bonromei of Milan, the 9th of March, 1325."

In England, reference was made, in the statute of 5 Rich. II. ch. 2, to the drawing of foreign bills, which was in the year 1381. The legal properties of bills in England are derived from the custom of merchants, but promissory notes are said to derive their properties from the act of Parliament of the 3d and 4th Anne, c. 9, which puts them on the same footing with inland bills. In the United States, bills of exchange and promissory notes are recognized in law as negotiable instruments, with all the properties usually attached to them by the custom of merchants. The statute laws in many States especially provide for their negotiability; but in States where this is not the case, the same customary properties would be held to attach to them.

Name and Definition.—A bill of exchange, in common speech called a draft, is an open letter of request, addressed by one person to a second, desiring him to pay a sum of money to a third, or to any other to whom that third person shall order it to be paid; or it may be made payable to bearer. For instance:

"*Boston, 1st January*, 1852.

"*Exchange for* $1000.

"*Sixty days after sight of this bill of exchange, pay to the order of George Green, One Thousand Dollars, value received, and place the same to account, as advised by*

"CHARLES WHITE.

"To MR. JACOB BROWN, *New York.*"

Parties.—The person who writes the request is called the *drawer*, and he to whom it is addressed is called the *drawee*; and if he agrees or consents to pay the money signified in the bill, he is said to *accept* it, and is then called the *acceptor*. The third person, to whom the money is payable, is called the *payee*. In the above instance, Charles White is called the *drawer*, Jacob Brown the *drawee*, and after he has consented or accepted to pay it, the *acceptor*, and George Green is called the *payee*. If it is made payable to him or order, or to the order of him, as above, and he then assigns it to another person, to whom the money is to be paid, by writing his name on the back of the bill (which is called indorsing the bill, and the act itself an indorsement), he is then called an *indorser*. The person to whom he orders the money to be paid is called the *indorsee* or *holder*, and if this one again assigns the bill to another person, the latter is called the indorsee or holder, and the other the second indorser; and every other person who successively puts his name on the back of the bill is called an indorser, and the person to whom it is last delivered is called the holder.

If in the above-cited instance George Green should write on the back of the bill, "Pay to the order of William Baker," signing his name beneath, "George Green," the latter would be called an indorser, and William Baker would be called indorsee or holder; and if Baker, again, should sign his name under that of Green, and order the contents of the bill to be paid to somebody else, Baker would be called an indorser, and the person designated by him the indorsee or holder, and so on.

Blank Indorsements.—It is very common for parties to sign simply their names on the back of the bill, without designating to whom the contents shall be paid. This is called a "blank indorsement," and whosoever holds the bill may write above the signature that it is payable to his order. For instance, if George Green, the original payee in the above-cited bill, had simply written his name on the back of it, and had delivered it to William Baker, and Baker again had simply put his name on the back under that of Green, and had delivered the bill to one J. Brown, the latter would be the holder, and Green would over the signature of Green, "Pay to the order of William Baker," and over the signature of Baker, "Pay to the order of J. Brown." Although these blank indorsements are very common, it would be desirable, and it is highly to be recommended, that each indorser should write in full over his name the place of his residence, the date, and the name of his indorsee; that is, the name of the person to whom he assigns the bill. Thus, in the above instance, if George Green resided in New York, he should write on the back, over his signature:

"*New York, January 3d*, 1852.

"*Pay to the order of William Baker,*

"GEORGE GREEN."

And in a similar way the successive indorsers should do. This way of indorsing has two advantages. In the first place, if the bill should be lost or stolen, with a blank indorsement on it, any person who finds or holds it might fill up the blank in his own name, and demand payment; whereas if it were indorsed in full, the finder or holder would have to forge the name of the indorsee before he could get payment. In the second place, if the bill should be protested for non-acceptance or non-payment, the holder would know at once the places of residence of the different indorsers, and be able to give them due notice without delay.

Forms.—When bills of exchange are drawn on a place at a distance, and in a foreign country, it is customary to give a set of three bills of the same tenor, that they may be sent separately by different mails, so that in case one should be lost, one of the others might reach the person concerned safely. One of the common forms of a bill of this kind would be substantially as follows:

"*Boston, July 1st*, 1852.

"*Exchange for* £1000.

"*Sixty days after sight* [*or after date, or at sight, or on demand*], *pay this my* FIRST *bill of exchange (second and third of the same tenor and date not paid) to the order of Mr. ——, One Thousand Pounds Sterling, value received, and place the same to my account, as advised by*

"PAUL JONES.

"To Messrs. GREEN & CO., *London.*"

The second bill of the same set would be in every respect the same with the first, except that it would read, "Pay this my *second* bill of exchange, first and third, etc., not paid."

And the third bill would run, "Pay this my *third* bill of exchange, first and second, etc., not paid."

Foreign and Inland Bills.—Bills of exchange are divided into *foreign* bills of exchange and *inland* bills of exchange, because the rights of proceeding and remedies thereon are not uniformly governed by the same rules and regulations. A bill of exchange is called a *foreign* bill when it is drawn in one state or country upon a person residing in a foreign state or country; as, for instance, when drawn by a person in one of the United States of America upon a person resident in England, and payable by the latter. And it is called an *inland* bill (or a domestic bill) when both the drawer and drawee reside in the same state or country; for instance, when the bill is drawn in Boston upon a person residing in Salem, both places being in the State of Massachusetts. The different States of the United States are considered as foreign to each other, so that a bill drawn in Massachusetts upon a person in New York is considered a foreign bill. In like manner, a bill drawn in England upon Scotland or Ireland is considered a foreign bill.—Mahoney v. Ashlin, 2 Barn. & Adolph. R. 478, 482.

The Form.—A bill is not confined to any set form of words, and it is not essential that the very language of the formulary which has been given above should be used. It is only requisite that it be in writing, and contain an order or direction by one person to another person to pay money to a third person, absolutely and

at all events. The writing may be in pencil, as well as in ink, nor is it necessary that the whole instrument be in writing; the general formulary is generally printed, but the signatures must be in writing. If a person should order another person to deliver a particular sum of money to A. B., or to be accountable or responsible for a particular sum of money to A. B., it would constitute a bill of exchange. So if the expression should be "Please to pay," or "I request you to pay or deliver," it would be a good bill, because these expressions are mere words of politeness, in the place of an absolute order. But if the language used necessarily or naturally imports a request as a favor, and not as a matter of right, it would not be a good bill. So it has been held in England that a note addressed by A to B in these words: "Mr. Little, please to let the bearer have £7, and place it to my account, and you will much oblige your humble servant, J. Slackford," was not a bill of exchange.—Little *v.* Slackford, 1 Mood. and M. 171. However, where the language used is susceptible of two interpretations, the true rule seems to be, that the mere drawing of a bill is deemed to be the demand of a right, and not the asking of a favor, and to deem it a favor only when the language used repels, in an unequivocal manner, the notion that it is claimed as a right.—Story *on Bills of Exchange*, § 33. If the word "at," instead of "to," should be put before the name of the drawee; *e. g.*, "Two months after date pay to the order of J. J. £78, value received, T. S. At Messrs. John Morson & Co.," it might be held a bill of exchange (Shuttleworth *v.* Stevens, 1 Camp. 407), or a promissory note, at the election of the holder. So in a case where the instrument was as follows: "May 20, 1813. Two months after date pay to me or my order the sum of £30. W. S. Payable at No. 1, Wilmot Street, opposite the Lamb, Bethnal Green, London," and was accepted by the person residing at that place, it was held to be a bill of exchange.—Gray *v.* Wilmer, 8 Taunt. 739. The rule is, that, where an instrument is so framed as to admit of reasonable doubt whether it was intended for a bill or a note, the holder is at liberty to treat it either as a bill or as a note, as against the maker.

It does not seem necessary that the whole of the bill be written on one and the same side of a paper, or on one and the same paper; it may be written in part on one paper, and in part on another separate and detached paper, provided the writing on each be done at one and the same time, and both parts be intended to form one entire contract.—Story *on Bills of Exchange*, § 34, and note 1. If there should be no room left for indorsements, a paper might be affixed to the original bill for this purpose, but it would require proof of the fact that this paper formed a part of the bill. It often happens that there are but two parties to a bill, which is the case when the drawer makes the bill payable to his own order; and when he then indorses it, the indorsee becomes in fact the payee. And if no drawee should be named, but the bill be made payable at a particular place, and the person living at that place should accept it, he would be held answerable as acceptor.

Negotiability.—In order to make a bill negotiable, it must be made payable to the payee and to *his order* or *assigns*, or to *bearer*. The common form, as stated before, is "to the order of A. B.," or "to A. B. or order," or "to bearer." It would be advisable to adopt the form, "to A. B. or his order." If no expression be used which gives to the payee the power of transfer, it is nevertheless a bill. If the payee of a negotiable bill indorse it in blank, it is transferable by mere delivery, in the same manner as if it were payable to bearer. If the name of the payee be left in blank; *e. g.*, "Pay to ——— or order"—any holder may insert his name, and then indorse it; the effect would be the same as if it were made payable to bearer. So, also, if the name of the payee is fictitious, and the bill be indorsed in the name of this fictitious person, a holder who was ignorant of this fact when he took it may regard it as a bill payable to bearer, and may sue the drawer, and also the acceptor, if the latter knew that the name of the payee was fictitious. The words "value received" are generally inserted in a bill, but it is not necessary, for the law in cases of negotiable instruments of this kind presumes it.

Several Drawees.—A bill addressed to "A, or in his absence to B," is valid, and will, if accepted by either, bind him. If a bill is intended to be accepted by two persons, it should be addressed to both; otherwise, although accepted by both, it will bind only the person to whom it is addressed as acceptor. If a bill is drawn upon A, B, and C, it may be accepted by A and B only, and it will bind them.—Story *on Bills of Exchange*, § 58. On the Continent of Europe it is not unfrequent to put, besides the name of the principal drawee, the name of another person, to whom application may be made for acceptance or payment, if the first-named drawee should be absent or refuse payment; which is generally done in this form: "In case of need, apply to Mr. —— at ——" (In French, "Au besoin, chez M. ——, à ——;" in German, "Im Nothfall bei Herrn ——, in ——"). The holder of the bill is obliged to follow the direction, if the first drawee should be absent or refuse. Although it is common to use the words, at the end of the bill, "and put it to my account," or "to your account," or "and put it to the account of A. B.," or "put it to account as per advice," or "as advised by," these words are not essential, but are used only as a matter of convenience. If the drawer should be indebted to the drawee, he would say, "and put it to my account;" if, on the other hand, the drawee should be indebted to the drawer, he would say, "and put it to your account;" and if the bill were drawn on account of a third person, he would say, "and put it to the account of A. B." If the bill concludes with the words "as per advice," then the drawee is not obliged to accept or pay, without receiving further directions or advice, and if he do so, he does it at his own peril. If the bill conclude with the words, "without advice," or "with or without advice," then the drawee may accept or pay without being further instructed by the drawer. But the words may be altogether omitted without impairing the validity of the bill. We may generally state, that all persons who are legally capable of entering into any other contract are capable of becoming parties to a bill; or, in other words, all persons of full age and sound mind, both males and females, may draw, hold, indorse, and accept bills.

Partners.—In regard to partners, the signature of the firm must be put to the bill, either in case of indorsement, drawing, or accepting; and each partner has complete authority to use it; and when so used, the bill is deemed to be on partnership account, unless it appear on the face of the bill, or it can be proved that the party taking it had full knowledge that the bill was drawn, indorsed, or accepted, not for partnership, but individual purposes.

Agents.—Agents, if empowered for the purpose, either expressly or tacitly, may bind their principals to the full extent that their principals might do for themselves, provided that they do not exceed the scope of their authority. But if agents would bind their principals, they must draw, indorse, or accept the bills in the name of their principals, and not in their own name. The most proper way of doing this is in the following form, supposing A. Green to be the principal, and B. White, the agent:

"A. Green,
by B. White, his Agent."

A number of other forms may be used; care should be taken, however, by the agent, if he means to exempt himself from personal responsibility, to use clear and explicit words to show that intention, and to ex-

press on the contract the quality in which he acts; otherwise he does not bind the party who employs him, but binds himself. A great many lawsuits have arisen in consequence of an indistinct and loose way of stating the quality in which a person signs a bill, and different decisions in different States have been the consequence. It is understood in all these cases that the agent has sufficient authority from his principal to draw or accept bills, or make notes. If the agent, however, has no authority, then the agent himself is liable on the instrument.—*See* Ballou *v.* Talbot, 16 Mass. 461; Rossiter *v.* Rossiter, 8 Wend. 494.

Payment in Money.—A bill of exchange must be for the payment of *money*, but it matters not what denomination the money specified has, whether it is called dollars, francs, pounds sterling, Marc Banco, or any other currency, because the value of each kind can be ascertained. In England negotiable paper must be for the payment of money in specie, and not in bank-notes, and it may be said that the same rule obtains generally in the United States of America, although there are some cases in some States which have extended this rule.—Kent's *Comm.*, Lect. XLIV., p. 45, 46. Hence an order to pay money "in good East India bonds," or to pay "in cash or Bank of England notes," or "in foreign bills," or "in goods," is not a negotiable bill. In New York it has been held that a note payable "in York State bills or specie" was a negotiable paper.—Keith *v.* Jones, 9 Johns. R 120. So also a note "payable in bank-notes current in the city of New York;" and the court remarked that it would have been a note under the statute if payable in bank-notes generally.—Judah *v.* Harris, 19 Johns. R. 144. But a note payable "in Pennsylvania paper currency, or New York, to be current in the State of Pennsylvania or the State of New York," was held in New York not to be a note for the payment of money, within the statute, because the court say that they may take notice, officially, of their own bank paper being regarded as cash, but not of the value of the paper currency of other States.—Leiber *v.* Goodrich, 5 Cowen, 136. A note made payable in New York in Canada money, is not a negotiable promissory note within the statute. —Thompson *v.* Sloan, 23 Wendell, 71. In Pennsylvania it was held that a note payable to A. B. or order "in bank-notes of the chartered banks of Pennsylvania" was not a negotiable note.—M'Cormick *v.* Trotter, 10 Serg. and Rawle, 94. In New York it was held that a check, drawn in that State, upon a bank in Mississippi, payable in current notes, is not negotiable.—Little *v.* The Phœnix Bank, 7 Hill's R. 359. A note payable to the bearer *in goods* is not negotiable. —Clark *v.* King, 2 Mass. 524. Nor a note payable in "foreign bills."—Jones *v.* Fales, 4 Mass. 245. It is not necessary that the sum payable should be expressed in words; it is sufficient if it be in figures. But it is necessary that the order be for a specific amount. A bill or note for a given sum, "and for whatever else may be due to the payee," is not, even between the original parties, a bill or note.—Bayley *on Bills*, p. 12. So an order for "$1000, or what might be due after deducting all advances and expenses," is not negotiable.—Cushman *v.* Haynes, 20 Pick. 132.

Payable absolutely.—A bill must also be payable absolutely and at all events, and the payment must not be made to depend on any uncertainty or contingency, or it will not be considered a bill of exchange. Thus a bill drawn payable "provided the terms mentioned in certain letters shall be complied with;" or "out of rents;" or "on the sale of produce when sold;" or "when the drawer shall come of age;" or "at thirty days after the ship A. shall arrive at B.;" "or when the drawer shall marry;" or "when freight becomes due;" or "if the money be not paid at a certain day by a third party;" or "provided a certain act is done or not done;" or "on the balance of account between the parties;" or "provided, at the maturity of the bill, I am living;" or "when certain carriages are sold by payee;" in all these and similar cases the instrument is not considered a bill of exchange.—Bayley *on Bills*, p. 14–17, and Story *on Bills*, § 46. But where payment only seemingly depends upon a contingency, but in reality is certain and at all events, although the particular time when it will arrive is uncertain, it will be a good bill of exchange in law; *e. g.*, a bill payable at the death of the drawer or of another person, or at a fixed time afterward. A note payable "provided the ship *Mary* arrives," etc., "free from capture and condemnation," is not negotiable.—Coolidge *v.* Ruggles, 15 Mass. 387.

Acceptance.—The person who receives a bill or note thereby contracts with every other party to the bill or note who would be entitled to bring an action on paying it, to present it in proper time to the drawee for acceptance when acceptance is necessary, and to the acceptor for payment when the bill shall have arrived at its maturity and be payable; to allow no extra time for payment to the acceptor; and to give notice in a reasonable time, and without delay, to every such person, of a failure in procuring a proper acceptance or payment. Any default or neglect in any of these respects will discharge every such person from responsibility on account of a non-acceptance or non-payment; and will make it operate generally as a satisfaction of any debt, demand, or value for which it was given.—Greenleaf *on Evidence*, vol. ii. § 175; Wallace *v.* M'Connell, 13 Peters's R. 136; Story *on Bills*, § 227.

When Necessary.—If a bill is payable at sight, or in so many days after sight or after demand, or upon any other contingency, or after a certain event, a presentment of the bill to the drawee for acceptance must be made, in order to fix the period of payment. But if the bill is payable *on demand*, or payable at a certain number of days after date, or after any other certain event, it need not be presented merely for acceptance, but only for payment; but if it be presented for acceptance, and acceptance be refused, the holder must give notice of the dishonor, in the same manner as if the bill were payable at sight or after sight.—Story *on Bills*, § 112, 227, 228. It is, however, usual and advisable to present a bill drawn payable a certain number of days after date, for acceptance.

By whom to be presented.—The presentment for acceptance must be made by the holder or his agent. If the bill is presented by one not authorized to hold the bill, the drawee may not be bound to accept it; but if he does accept it, it is available to the holder. A presentment by any person in possession of a bill or note *bona fide* is sufficient, and no letter of attorney or other writing from the proprietor of the bill or note is necessary to give an authority to another person to make a presentment.—Freeman *v.* Boynton, 7 Mass. R. 483; Bank of Utica *v.* Smith, 18 Johns. R. 230. And a person's having a bill or note in his possession on the day and at the place of payment is presumptive evidence of authority to demand payment.—Agnew *v.* Bank of Gettysburg, 2 Har. and Gill, 478.

To whom to be presented.—The bill must be presented to the drawee, or his authorized agent. If it is drawn on partners, a presentment to one of them is sufficient; but if drawn on several persons not partners, it has been said that it should be presented to each; and if one of the drawees should refuse to accept, the holder would not be bound to take the acceptance of the others alone.—Story *on Bills*, § 229. The death, bankruptcy, insolvency, or absconding of the drawee will not absolve or excuse the holder from presenting the bill. If he is dead, it should be presented to his personal representatives, his executor or administrator, if any there be, and if not, at his last domicile; and if he has absconded, it should be presented at his last domicile or place of business.—Chitty and Hulme *on Bills*, p. 279, 280; Groton *v.* Dalheim, 6 Greenl. 476. If the holder, upon presentment, should ascer-

tain that the drawee is a married woman, or a person under age, or otherwise incapable of contracting, he is not bound to take their acceptance, but may treat the bill as dishonored.—CHITTY on *Bills*, ch. 7, p. 310.

Time of Presentment.—As regards the time within which a bill ought to be presented for acceptance, no definite rule can be laid down, and the law says only that it must be presented within a reasonable time; but what this reasonable time is, depends upon the peculiar circumstances of each case. If the holder keeps a bill, payable at sight, or payable a certain number of days after sight, in his own possession for an unreasonable time, he makes the bill his own, and loses his right of claim upon the drawer and indorsers. But if the bill (whether it be foreign or domestic) is kept in circulation, and not held by any one holder an unreasonable time, no particular time can be assigned in which it ought to be presented. It is not necessary to send a bill, payable after sight, by the most direct route to the place where it is payable, when it is the common course of trade to send such bills by an indirect route. Thus, where a bill of exchange was drawn in Havana upon London, payable at sixty days after sight, it was held that the holder need not send it directly to London, but might send it to the United States for sale, such being the common course of trade. —Wallace *v.* Agry, 4 Mason, 336. So, where a bill was drawn at New Orleans on Liverpool, it was held that it might be sent to New York first for sale, that being the usual course of business.—Belton *v.* Harrod, 9 Martin, 326. But if the holder of a foreign bill carry it to the place where it is payable, he ought to present it for acceptance without delay.—Fernandez *v.* Lewis, 1 M'Cord, 322. But if a bill, payable after sight, is negotiated, and thus sent to different places before it is presented for acceptance, the courts have held this delay allowable.—Goupy *v.* Harden, 7 Taunt. 159; Gowan *v.* Jackson, 20 Johns. R. 176. A presentment for acceptance or a demand of payment must also be made at *a proper time*. No drawee is required to accept a bill on any day which is set apart, by laws or observances, or usages of the country or place, for religious or other purposes, and which is not deemed a day for the transaction of secular business, such as Sunday, Fast, or Thanksgiving-day, the Fourth of July, or any other general holiday. Out of New England, Christmas and New-year's day are also generally regarded as holidays. The statutes of several States point out the days, which may be found under the statute laws appended. And in all cases the presentment must be made at a *reasonable hour* of the day. If made at the place of business, it must be made within the usual business hours, or, at farthest, while some person is there who has authority to receive and answer the presentment. If made at the dwelling-house of the drawee, it may be made at any seasonable hour, while the family is up.—CHITTY and HULME *on Bills*, p. 454, 9th ed.; STORY *on Bills*, § 236.

Place of Presentment.—As to the *proper place* where presentment for acceptance should be made, the general rule is, that it is the town or municipality of the domicile of the drawee, without any regard to its being drawn payable generally, or payable at a particular specified place.—CHITTY and HULME *on Bills*, p. 365, 666, 9th ed.; STORY *on Bills*, § 235. If the drawee dwells in one place, and has his place of business in another, whether it be in the same town or in another town, the bill may be presented for acceptance at either place at the option of the holder. If the bill is addressed to the drawee at a place where he never lived, or if he has removed to another place, the presentment should be at the place of his actual domicile, if by diligent inquiries it can be ascertained; and if it can not be ascertained, or if the drawee has absconded, the bill may be treated as dishonored.—CHITTY and HULME *on Bills*, p. 654, 655, 9th ed. It has been held that if the drawee or maker of a note has moved out of the State of his former residence, either into a foreign country or into another State, a presentment to him is not necessary.—Magruder *v.* Bank of Washington, 9 Wheat. R. 598; BAYLEY on *Bills*, p. 198, 199. If, however, an absent drawee has a known agent in the same place, the bill should be presented to the agent.—STORY *on Bills*, § 235. Or if he have still a place of business there, it should be presented there. But if he have neither, then it should be presented at his last place of abode, if it can be ascertained, and the bill is to be considered as dishonored. In the case of the drawee's bankruptcy, it is not necessary to present a bill for acceptance to the assignees of his estate, because accepting bills forms no part of their duty.

Foreign Laws.—As the English law agrees, in almost every particular, with that in the United States, we shall here point out only the principal and essential rules which prevail on the Continent of Europe, among the different nations, in regard to bills of exchange and promissory notes. The most important nations are the French and the German. The French Commercial Code on bills and notes has been adopted in a number of other countries, viz. Belgium, Modena, Sardinia, Lucca, Poland, Greece, Geneva, Hayti, Ionian Islands, Turkey and Wallachia, the Papal States, Luxemburg, Tessin, and Wallis, with but slight variations here and there; so that when we speak of the French law, it will equally apply to all these countries. A new and uniform code of laws regarding bills of exchange and promissory notes has been introduced, since 1849, throughout Germany (with the exception of the small States of the Grand Duchy of Luxemburg, the Duchy of Limburg, and the principality of Lichtenstein), so that when we speak of the German law, it will apply to every one of the thirty-eight States of Germany (excepting the above-named three), including the whole of Austria and her crown-lands, and the whole of Prussia, Wurtemberg, Bavaria, Hanover, Saxony, Brunswick, Baden, etc., containing more than sixty millions of people, and the important commercial cities of Hamburg, Bremen, Frankfort-on-the-Maine, Lubeck, Leipsic, Berlin, Vienna, Trieste, Brunswick, Stuttgart, etc. There exist yet distinct codes on bills and notes in Russia, Holland, Copenhagen, Spain, Portugal, at Basle, and St. Gallen, which we shall notice where they essentially differ from other codes. The law on the Continent of Europe, in regard to legal remedies on bills and notes, is more stringent than in regard to other civil contracts, in so far as it allows personal imprisonment for a breach of such a commercial engagement, be it as drawer, acceptor, or indorser; whereas no personal arrest and imprisonment can be had against a debtor for an ordinary debt. When we use the expression, that a party is liable according to the laws of bills of exchange, it must be understood, also, to mean that these extreme legal remedies of coercion may be applied to him. The time of imprisonment differs in different States, and varies according to the amount of indebtedness. The French law allows personal imprisonment not exceeding one year, if the debt does not exceed 50 francs; two years if the debt does not exceed 1000 francs; three years for a bill of from 1000 to 3000 francs; and four years for a debt of from 3000 to 5000 francs; and five years for any sum beyond this. But persons of the age of seventy are entirely exempted from arrest, and parties to promissory notes (*billets à ordre*), if not merchants, except the notes were given on account of some mercantile transaction, traffic, exchange, banking, or brokerage, are also free from personal arrest in France. In Austria the imprisonment for a debt on bills can not exceed one year, in Prussia five years; other German States differ in regard to time, but they are generally less rigorous than the French law, and exempt from arrest, besides persons of the age of seventy, various others; for instance, relations by blood or otherwise, military persons, public officers, etc. The creditor,

however, has to bear the expense of board for the debtor, and if he neglects to provide for it, the debtor is released and can not be arrested again.

Requisites of Bills of Exchange.—A bill of exchange is called in French *lettre de change;* in Italian, *lettera di cambio;* in German, *wechsel*, or *gezogener wechsel* (a Drawn Bill, to distinguish it from a promissory note, which is called a Dry Bill, *trockner wechsel*).—*See* PROMISSORY NOTES. The essential requisites of a bill of exchange in Germany are (*Art.* 4): 1. That the word "bill of exchange" (*wechsel*) be contained in the instrument, or, if written in a foreign language, the expression corresponding to it. 2. The specification of the sum of money. 3. The name of the person or firm to whom or to whose order it is payable. 4. The statement of the time of payment; and this can be made only on a day certain, at sight (*a vista*, etc.), or at a certain time after sight, or at a certain day after date, or at a certain fair (*messe*). 5. The signature of the drawer, by his name or firm. 6. The statement of the place and date of month and year where and when it was drawn. 7. The name of the person or firm on whom it is drawn (*drawee*). 8. The specification of the place of payment; if no place is mentioned, the place of the drawee is to be taken as the place of payment and the domicile of the drawee. The bill must be for the payment of a sum of money, and not for goods or State stocks; nor can it be made payable with interest, or with any condition attached to it. The Code of the Kingdom of the Two Siellies allows also payment in goods. The bills of exchange payable to bearer (*au porteur*) are not admissible, either in Germany or France. The French law (*Art.* 110) requires that bills of exchange shall be drawn from one place on [illegible] place; that they shall be *dated*, and that they [illegible] The sum to be paid. 2. The name of the person who is to pay the same. 3. The time *when*, and the place where [illegible] payment is to be made. 4. The value furnished, whether in money, in merchandise, in account, or in any other manner. They are drawn to the order of a third person, or to the order of the drawer himself. If they be drawn in sets, 1, 2, 3, etc., it must be so expressed.

In Germany, every person who can lawfully bind himself by a contract may become a party to a bill of exchange. The age of majority is, however, different in different States; in Prussia it commences with the completion of the twenty-fourth year of age; in Austria, Bavaria, Saxony, Baden, and in those States on the Rhine where the French Civil Code prevails, it commences with the twenty-first year of age, and the same is the case in France and Turkey. In Sardinia, only merchants can draw inland bills, but any body may draw foreign bills. The Russian law excludes only women who do not carry on commerce. The Code of the Kingdom of the Two Sicilies excludes women in general. The Code of Copenhagen makes the capability of becoming a party to a bill of exchange general, but confines it only to bills of exchange, and does not include promissory notes. The Spanish Code of Commerce of 1829, § 434, grants to other persons than merchants the right of also becoming parties to bills of exchange, but only in cases where they have drawn or accepted bills on account of a mercantile transaction. Parma and Tuscany grant only to merchants the right of becoming parties to bills. The Code of Basle of 1809, § 53, requires that a person's name be entered in the book of mercantile firms, called the book of *Ruggiones*, which is in many cities kept either at the exchange or the city-hall. The law of Basle requires the sum payable to be stated in letters, and not merely in figures; the laws of Russia and Copenhagen require the sum to be stated both in letters and in figures; and the law of St. Gallen provides that any erasure or alteration of the sum, or any other requisite part of the bill, renders the bill void, and entitles the drawee to refuse payment. By the law of Copenhagen, the bills payable to bearer (*lettres au porteur*) are allowed, but not by the law of Germany or France.

By the French law (*Art.* 129) a bill of exchange may be drawn payable at sight, or at one or more days, or months, or usances, after sight or after date; or on a day fixed, or at or during a fair (*en foire*); and (*Art.* 132) the usance is thirty days, which run from the day after the date of the bill; and (*Art.* 133) a bill payable at the fair is at maturity on the evening preceding the day fixed for the termination of the fair, or the day after the fair, if it continue only one day. The German law (*Art.* 4, No. 4) does not now allow bills drawn in Germany on a foreign country, or inland bills, to be drawn at usance (*a uso, mezzo uso, doppio uso*, i. e. at single, half, or double usance), or *a piacere*, "on demand" (with the exception of Austria, which allows the latter). If foreign bills are drawn upon any German State at a usance, the time of maturity (*echeance, scadenza*) is to be determined by the foreign law, viz. that of the place where the bill is drawn, which law also determines whether the *usance* is counted from the day of presentation, or from the day of drawing. The German law does not admit either of fixing the time by the happening of certain events, or by certain periods of time, as "on Easter," etc. The law in Turkey does *not* admit *usance* (*Art.* 87), differing in this respect from the French law. The law of Norway (of 1842) provides (*Art.* 1) that bills shall not be drawn beyond the time of six months, or, if payable out of Europe, not beyond one year. The law of Copenhagen appoints still shorter periods.

Indorsement. — In Germany, the law in regard to indorsement (*indossament, endosso, giro*) is, that the payee can transfer a bill of exchange upon another person by indorsing it either in blank or in full, and the indorsee will have the same rights against all other antecedent parties as the indorser; and the payee may indorse, and the bill is negotiable, although the drawer did not make it payable to order. If the drawer does not wish to make it negotiable, he must insert the words "not to order" (*nicht an ordre*), or something similar. The mere striking out of the word "order" in the printed formula, and adding the word "self" to the name of the payee, will not operate as forbidding the negotiability. The blank indorsement must be put on the back of the bill, or of a copy of it, or on a piece of paper, commonly called "rider" (*allonge*), connected with, and joined to the bill or copy. Every holder may fill up the blank indorsement, or may also indorse it further in blank, and is answerable to all subsequent holders, unless he adds the words "without guaranty" (*ohne gewährleistung, ohne obligo*) or some similar expression, which corresponds to our "without recourse." If the words "not to order" (*nicht an ordre*), or a similar expression, are added to an indorsement, and the bill is yet indorsed or handed over to other persons, these subsequent holders can have no recourse against such an indorser. But if the words *in procura*, "for collecting" (*zur einkassirung*), are added to an indorsement, then such an indorsement does not transfer the property in the bill, but empowers such indorsee to indorse it further for the same purpose, and also to have the bill protested, and to give notice to his antecedent indorser, and to commence legal proceedings for non-payment. The laws of Copenhagen (Denmark), Holland, Russia, and Sweden, also allow blank indorsements. But the French law requires (*Art.* 137 of the Code) that, in order to pass a valid title to a bill, the indorsement should be dated, and the name of the indorsee and the value should be stated, and if further negotiability be intended, the words "to order" should be added. A blank indorsement is held to be a mere "*procura* indorsement," *i. e.* for the purpose of collecting. The Spanish law, which also prevails in Mexico and South America, holds the blank indorsement of no effect.

The French and Russian laws punish the antedating of an indorsement like forgery. But the Spanish and Dutch laws regard it as forgery only when it is done for an evil purpose. The law of Portugal requires the date to a blank indorsement. The French law, and all the countries following the same, the Russian law, and that of St. Gallen, hold only bills made payable to order as negotiable and transferable. The Spanish law (of Bilbao) requires the indorsement on the back of the instrument. The Sardinian law regards the clause "without recourse," "without *obligo*," as not written at all; and if the *drawer* should add these words to his name, the instrument is not regarded as a bill. The law in Germany is (*Art.* 16), when a bill has been indorsed after the lapse of time accorded to protesting for non-payment, that the indorsee acquires the rights springing from the acceptance against the drawee, and the right of recourse against those who indorsed it after the lapse of this period. But if the bill has been protested for non-payment before the indorsement is made, then the indorsee has only the rights which his indorser has against the acceptor, the drawer, and the indorsers up to the time of protest. Nor is such an indorser after protest, in such a case, liable according to the laws on bills, but only according to the common law. The Russian law makes a like distinction. The Dutch and Portuguese laws regard an indorsement after maturity only as a cession of rights. The Sardinian law regards it only as an indorsement for procuration. The French law is not decided on this point, and the courts regard such an indorsement generally as admissible, but sometimes as a full and good indorsement, and then again only as one for procuration, *i. e.* power of attorney. In Italy it is regarded as a *procura* indorsement, *i. e.* as a power of attorney.

Presentation for Acceptance.—The German law (*Art.* 18) provides that the holder of a bill is entitled to present the bill for acceptance at once, and, if not accepted, to have it protested for non-acceptance. But bills payable at fairs (*mess-wechsel*, *cambia regularia vel feriarum*) can be presented only at the time fixed by the law for presentation. The mere possession of a bill entitles a person to present it, and to have it protested, in case of dishonor. But (*Art.* 19) the holder of a bill, payable at sight, or a certain time after sight, must present it at least within *two* years from the date of its being drawn; and if a period of presentation has been prescribed either by drawer or indorser, the bill must be presented within that period, or the holder will lose his right of recourse against drawer and indorser as debtors on account of the bill. The law of Russia fixes the time within which bills at sight or after sight must be presented at one year, unless the drawer has prescribed a period; but in case of neglect to present the bill, it will still be good as evidence of indebtedness for the ordinary period beyond which debts become outlawed. The laws of other countries fix the time of presentation for acceptance or payment according to the distance from the place of drawing to the place of payment. The French law (*Art.* 160) requires that the holder of a bill of exchange, drawn from the Continent and the European islands, and payable in the European possessions of France, whether at sight, or at one or more days, months, or usances after sight, must demand payment, or acceptance, within six months from its date, under the penalty of losing his remedy against the indorsers, and even against the drawer, if the latter had made provision for the payment of the bill in the hands of the drawee. A delay of eight months is allowed for the presentment of a bill drawn from the ports of the Levant, and northern coast of Africa, on the European possessions of France, and, reciprocally, from the Continent and European islands on the French establishments in the Levant, and northern coast of Africa. A year is allowed for the presentment of bills drawn on the western coast of Africa, as far as, and including, the Cape of Good Hope. A year is also allowed for the presentment of bills of exchange drawn from the American continent and West India islands on the European possessions of France, and, reciprocally, from the European continent and islands on the French possessions or establishments on the western coast of Africa, on the American continent, and West India islands. Two years is allowed for the presentment of bills of exchange drawn from the East Indian continent and islands on the European possessions of France, and, reciprocally, from the European continent and islands on the French possessions or establishments on the East Indian continent and islands. The delays above mentioned, of eight months, one year, and two years, are allowed to be doubled in time of maritime war. If the drawer has not made provision for payment with the drawee, the former will be held liable, although a protest has been made after the time fixed by law.

Of Acceptance.—The law of Germany (*Art.* 21) requires that acceptance of a bill shall be made in writing on the bill itself; and if the drawee writes but his name or that of the firm on the face of the bill, it is considered an absolute acceptance, and every declaration written on the bill and signed is taken as an absolute acceptance, unless the drawee expressly states in it that he will not accept, or will accept only on certain conditions. The acceptance, once made, can not be taken back. The French law (*Art.* 122) requires that the acceptance of a bill of exchange must be signed; it is expressed by the word "accepted" (*accepté*); it is dated, if the bill be at one or more days or months after sight. And in the latter case, the want of a date to the acceptance renders the bill payable at the term specified in it, counting from the date when it was drawn. The same rule prevails in those countries which have formed their laws on bills after the French law, which countries have been specified before; it also obtains by the law of Copenhagen. By the Spanish law, such a bill runs from the day on which it might have been presented, according to the ordinary course of the post. The French law (*Art.* 124) enacts that the acceptance can not be conditional, but it may be limited in regard to the sum accepted. But in this case the holder is bound to have the bill protested for the deficiency. And (*Art.* 125) a bill of exchange must be accepted on its presentment, or, at the latest, within twenty-four hours afterward. After the twenty-four hours have elapsed, if it be not returned, accepted or not accepted, he who has retained it is liable in damages to the holder. The German law (*Art.* 20) provides, that if a drawee refuses acceptance, or refuses to date his acceptance, the holder must have the bill protested within the period prescribed for presenting a bill (*i. e.* two years from date or the time prescribed by drawer or indorser), or he will lose his legal claim against indorser and drawer. The day of protest is, in that case, taken for the day of presentation. If no protest has been taken, and the acceptor has omitted to date his accentance, the maturity of the bill is counted from the last day of the period within which it ought to have been presented. The law of Portugal and Russia and St. Gallen makes it generally obligatory, and the law of Holland makes it obligatory only upon the holder, who presents the bill for acceptance, to have the bill protested, absolutely and without delay. The Spanish law (Law of Bilbao, chap. 13, § 33, which also prevails in Mexico and South America) provides that the drawee who gets the bill into his hands with the consent of the holder, and lets the day of presentation pass by without returning it, is obliged to pay, that is, it is deemed a silent acceptance; and if the acceptance is made in writing, it is required (Bilbao, chap. 13, § 33) that, besides the name of the drawee, also the word "accepted" be added. The law of Bilbao (chap. 13, § 52) has yet the peculiar

provision, that, when bills at sight are accepted, only one-half of the name of the firm need be signed. By the French and Portuguese laws, a similar word with "accepted" may be substituted; but it is a mooted question whether the word *vu*, "seen," is sufficient. The laws of Copenhagen and Portugal also allow, like the French and German laws, the acceptance for a smaller sum than the face of the bill states, and oblige the holder to have the bill protested for the rest, but consider all other conditions as not written. The Russian law also requires the holder, in such a case, to have the bill protested, or he will lose his right of recourse against the other parties. In Germany, the law requires the drawee to declare at once, without delay, whether he will accept or not. But the law of France, and of those countries which have been named before as having followed the French law, allows the drawee twenty-four hours' time, as stated before. The law of Copenhagen also allows twenty-four hours for consideration, and requires the protest only on the next day following. The law of Tessin allows three days for consideration, and the law of Russia grants time, for taking protest and sending it, till to the second post.

Proceedings upon Non-acceptance.—When acceptance has been refused, or when the acceptance is qualified, or for a smaller sum than stated in the bill, the law in Germany (*Art.* 25) obliges the indorsers and drawer, upon receiving the protest for non-acceptance, to give sufficient security that payment of the whole sum, or of so much as has not been accepted, shall be made on the day the bill falls due for payment, together with the amount of cost. The sum may likewise be deposited in some court of justice, or other authorized institution. (*Art.* 28.) The deposited security is restored if the bill should afterward be fully accepted, or if the holder or other person who takes recourse does not commence a suit within a year from the maturity of the bill, or if the bill has been paid. The French law is the same with that in Germany. But the law of Denmark, Sweden, and Norway, like the English and American law, allows immediate recourse against drawer and indorsers for payment if the bill has not been accepted. The law of Portugal follows the French law, but gives the holder also the right to demand from the drawer that he assign and hand over to him all his claims against the drawee, and all the papers relating thereto. The German law further provides, that when the bill has been accepted, and the acceptor stops payment or goes into bankruptcy, or if an execution against the property of the acceptor has not been satisfied, or his person has been arrested for non-payment—in all these cases, the holder of a bill may demand security, if the acceptor has not given security, and a protest has been taken in consequence. The French law (*Art.* 163) goes yet farther, and provides that, if the acceptor fails before the day of payment, the bill may be considered as due, and recourse may be had for payment against the drawer and indorsers; and that if the drawer of a promissory note, or the acceptor of a bill, or the drawer of a non-accepted bill, shall fail, the other persons liable on the instruments shall be obliged to give security (Law of 28th May, 1838).

Time of Payment.—The following days have been fixed by law at the principal cities: In Brunswick it is law that no protest for non-acceptance can be had on a bill drawn on the Brunswick fair before Monday in the first week of the fair, and the day of payment of these bills is the Wednesday in the first week of the fair. In Frankfort-on-the-Maine it has been enacted that bills which are drawn payable at a fair, without specifying the week of the fair, must be paid or protested on Tuesday of the third week, *i. e.* on the last day of the fair. In Austria, in the countries where the general civil code prevails, such bills fall due, if the fair last but one day, on this day; if it last several days, but not more than eight, on the day before the legal termination of the fair; and if the fair last longer than a week, on the third day before the legal termination of the fair. In Hungary such bills fall due, if the markets last but one day, on this day; if they last from two to eight days, on the last day of the market; if the markets last longer than eight days, on Wednesday of the second week. In Leipsic bills that are drawn payable at the Michaelmas fair fall due on the Thursday after the fair has been opened by the ringing of the bell, and bills payable at the New-year's fair fall due on the 12th of January, and if this should fall on Sunday, then on the next following day. According to the law of Portugal and Spain, bills drawn payable at the fairs fall due on the last day of the fair. The law of France (*Art.* 130) provides that a bill drawn at sight is payable on its presentment, and (*Art.* 131) that the maturity of a bill, at or after a certain time after sight, is determined by the date of the acceptance, or by that of the protest for non-acceptance. (*Art.* 132.) The usance is thirty days, which run from the day after the date of the bill. The months are according to the regulation of the Gregorian calendar. (*Art.* 133.) A bill payable at the fair (*en foire*) is at maturity on the evening preceding the day fixed for the closure of the fair, or the day of the fair if it continue only one day. The law of Copenhagen counts the day when the bill is dated, and grants to the acceptor *eight* days of grace, and to the holder *ten* days of grace (called in Italian *giorni di rispetto*). The law of Russia (§ 66) allows on bills at or after sight *three* days of grace, and on other bills *ten* days of grace, and the same on promissory notes. The law of St. Gallen allows *six* days of grace on bills and promissory notes. The German law (*Art.* 38) enacts that the holder *must* not refuse an offered part-payment, even though the bill has been accepted for the whole sum. The French law (*Art.* 156) states that the payments made on account, as part of the amount of a bill of exchange, operate in discharge of the drawer and indorsers. The holder is bound to have the bill protested for the balance.

FORMS OF FOREIGN BILLS OF EXCHANGE.

French.

Lille, le 28 Septembre, 1856. *Bon pour* £158 9 *Sterlings.*

Au vingt-cinq Décembre prochain, il vous plaira payer par ce mandat à l'ordre de nous-mêmes la somme de cent cinquante-huit livres sterlings 9 shellings valeur en nous-mêmes et que passerez suivant l'avis de

A Messieurs _____

à Londres.

German.

Nürnberg, den 28 October, 1856. *Pro* £100 *Sterling.*

Zwei monate nach dato zahlen sie gegen diesen Prima Wechsel an die Ordre des Herrn _____

Ein Hundert Pfund Sterling den Werth erhalten. Sie bringen solche auf Rechnung laut Bericht von

Herren _____

London.

DUTCH.

Grouw, den 1st November, 1856. *Voor* £59 17 6

Twee maanden na dato gelieve UEd te betalen voor dezen onzen prima Wisselbrief de secunda niet betaald zynde aan de order van de Heeren _____ *negen & vyftig Vonden zeventien schelling en zespences sterling, de waarde in rekening UEd stelle het op rekening met of zonder advys van*

_____

de Heer _____

te London.

ITALIAN.

Livorno, le 25 *Settembre*, 1856. *Per* £500 *Sterline.*

A Tre mesi data pagate per questa prima de Cambio (una sol volta) all' ordine _____, *la somma di Lire cinque cento sterline valuta cambiata, e ponete in conto M. S. secondo l'avviso Addio*

_____

Al _____

Londra.

SPANISH.

Malaga, e. le Setbre de 1856. *Son* £300.

A noventa dias fecha se serviran V^s mandar pagar por esta primera de cambio á la orden de los S^res _____ *Tres cientas libras Esterlinas en oro o plata valor recibido de dhos S^res que anotaran valor en cuenta segun aviso de*

_____

A los S^res _____

Londres.

PORTUGUESE.

£ 600 *Esterlinas.* *Lisbon, aos* 8 *de Dezembro de* 1856.

A Sessenta dias de vista precizos pagará V _____ *por esta nossa unica via de Letra Segura, á nos ou á nossa Ordem a quantia acima de Seis Centas Livras Esterlinas valor de nos recebido em Fazendas, que passera em Comta segundo o aviso de*

_____

Ao Senr _____

Londres.

SWEDISH.

Bjorneberg, den 23 *September*, 1856. *For £Ster.* 100.

Nittio Dagar efter dato behagade H. H. emot denna prima Wexel (secundo obetald) betala till Herr _____ *elle ordres Ethundra Pund Sterling som stalles i rakning enligt avis.*

_____

Herrar _____

London.

DANISH.

Kiobenhavn, 9 *December*, 1856. *Rbae* 4000.

Tre maaneder efter dato behager de at betale denne Prima Vexel, secunda ikke, til Herr _____ *eller ordre med Five Tusinde Rigsbank Daler, Valutta modtaget og stilles i Regning ifølge advis.*

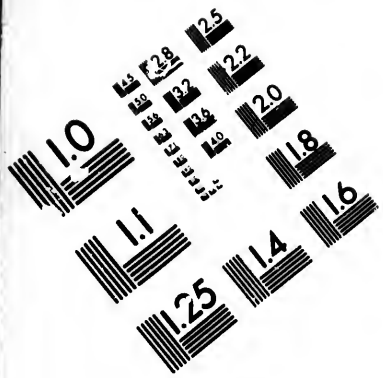
_____

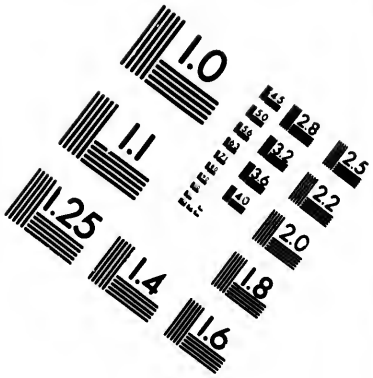
Herrer _____

London.

Proceedings upon the Non-payment of Bills.—In order to entitle the holder to redress, it is required of him, in Germany, that he present the bill for payment, and that he have the bill duly protested. The protest *may* be made on the day of payment, but it *must* be made, at latest, on the second secular day after the day of payment. The presentation of the bill for payment may likewise be made within this period of two days, and the holder would not lose his rights, even if he had waited with the presentation to the last day of protest, and the drawee were yet solvent on the day the bill fell due. But a protest before the day of maturity is not good, although payment would not have been made on the day of maturity. The law of Basle, St. Gallen, Zurich, Russia, Spain, and Portugal, requires that the bill be protested on the day of maturity, and up to a certain hour of that day (the latter provision is not law in Portugal). The law of France (*Art.* 162) and Holland (§ 179), however, requires protest on the day after the day of maturity (*lendemain*); and if this day be a legal holiday, the protest is made on the following day. If a bill is made payable at a place different from the domicile of the acceptor, and a person there is specified, the German law requires that it must be presented to such person; and if no person be specified, it must be presented to the acceptor at the place specified; and, in case of non-payment, it must be protested there. If the proper protest is neglected the holder loses his recourse, not only against the drawer and indorsers, but also against the acceptor. But in no other case is the acceptor discharged from his liability by the German law.

Notes and Bills lost or destroyed.—If a promissory note or bill of exchange has been lost or destroyed, the holder must, nevertheless, make demand of payment at its maturity, and, in case of non-payment, give due notice to the antecedent parties. But whether the promisor or acceptor and indorsers can be compelled to make payment, without a delivery or production of the note or bill, is a question on which the authorities in America differ. In England it has been held that the holder can not recover in a court of law, but only in a court of equity, on a negotiable note or bill lost or destroyed. A distinction is had between negotiable and non-negotiable instruments, or those which have been specially indorsed, so that no person but the holder, who sues, could have acquired a right to sue thereon. In the latter cases, the note or bill may be recovered at law. And in an action on a lost note, where the evidence does not prove affirmatively that it is negotiable, the presumption in New York is held to be that it is not negotiable, and the plaintiff is therefore entitled in such case to recover. If a bill or note transferable by delivery be lost, the loser should give immediate notice thereof to the drawee, or persons who are to pay it; and if such persons afterward pay it to a person who has not taken it *bona fide*, or paid value for it, they will be responsible to the loser. If the note or bill lost is negotiable and transferable when lost, it has been held in some States that a suit at law is maintainable against the maker, in others that it is not; and, again, in others it has been held that the holder may recover at law, provided he executes a proper instrument of indemnity. It was held in Massachusetts that, where a note has been stolen from the payee, he may still prove his demand against the





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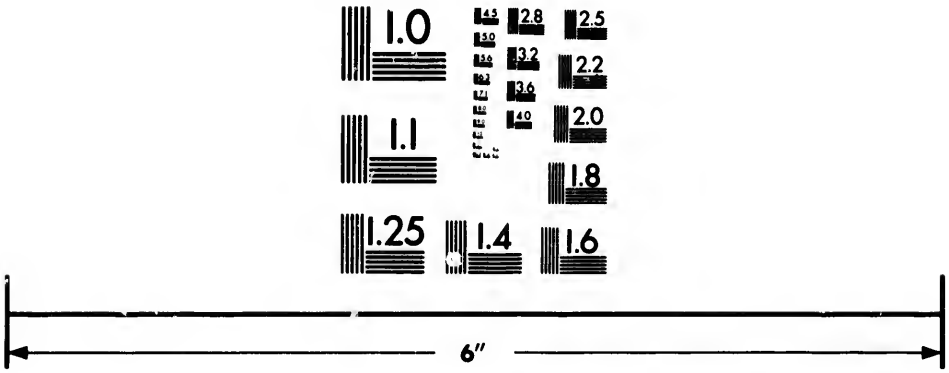

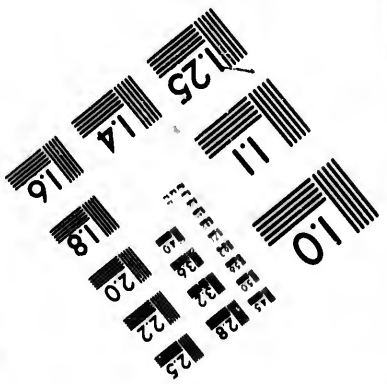

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maker, and enforce payment; the court in such case prescribing the bond to be given to the maker. But if a bill or note be destroyed by fire or other accident, an action may be brought thereon for recovery.—BAYLEY *on Bills.*

Forged Instruments.—When the signature of the drawer of a bill of exchange is forged, and the bill is accepted by the drawee, the latter will be bound to pay the same to a *bona fide* holder; and if he has paid it, he can not recover back the money from the person to whom he paid it, although he can not recover it back from the reputed drawer. The same doctrine applies to an acceptor *supra protest*, as to the signatures of the parties for whose honor he accepts. But if the signature of the payee, or of any other indorser, be forged, and even if the drawer is at the same time payee and indorser, and his signature be forged, in these cases the acceptor is not bound to know their signatures, and if the indorsement under which the holder claims is forged, the acceptor is not bound to pay the bill; and if he does, the real owner is entitled to recover the amount from him and the holder. If a person not a party to a bill pays it for the acceptor, or indorser, whose name is forged, he may recover back the money from the person to whom he paid it, if he gives notice thereof on the same day to the holder. But if he does not discover it or give notice until the next day, then he is not entitled to recover back the money from the holder. But if an indorser pays the bill under a forged indorsement of the name of a prior indorser, or of the drawer, he can not recover back the money from any subsequent indorsee to whom he paid it, because his indorsement admits the genuineness of the antecedent indorsements and that of the drawer. —STORY *on Bills*, § 451. In cases of promissory notes, if the signature of the payee, or other indorser, under whom the actual holder claims, is forged, and the maker pays the note, such payment to the holder will be null and void, and he will be entitled to recover back the money from the holder. So, if the payee should pay the note to the holder under a subsequent forged indorsement, he may likewise recover back the amount. But if a subsequent indorser should pay the amount to the holder, where the signature of the maker or of a prior indorser is forged, he could not recover it back, because every indorser warrants the genuineness of the signatures of the antecedent parties, both of the indorsers and maker.—*See* STORY *on Notes*, § 387. Therefore, before the maker or an indorser pays a note, he should be satisfied that the signature of the payee or other indorser under whom the actual holder claims is a genuine signature, for if it be a forgery, the payment would be a nullity.

Damages to be Recovered.—When the holder of a bill of exchange has complied with all the requisitions of the law, upon the dishonor of a bill, either for non-acceptance or non-payment, he is entitled to an immediate recourse against the drawer, acceptor, and indorsers or guarantors, and to a full reimbursement of all the damages sustained by him. These different parties are liable according to the law of the place where they entered into their respective contracts; namely, the drawer according to the law of the place where the bill is drawn; the acceptor according to the law of the place of acceptance; and the indorsers and guarantors according to the law of the place where the indorsements and guaranties were made. The acceptor, upon non-payment of the bill, is ordinarily liable to the holder only for the principal sum, and the expenses of the protest, and interest thereon from the time of the maturity of the bill, and he is not liable for re-exchange. But if the acceptor has expressly or impliedly agreed with the drawer, or with any indorser, for a valuable consideration, to pay the bill at its maturity, and has failed so to do, and the drawer or indorser has been compelled to take up the bill, and pay damages and other expenses, he may perhaps be liable to the drawer or indorser for all such damages and expenses.—*See* STORY *on Bills*, § 398, and BAYLEY *on Bills*, p. 380. The drawer and indorsers of bills of exchange are liable to the holder for the principal sum, and interest, and the damages and expenses incurred by the dishonor. The interest is due according to the legal rate allowed at the place where the bill is payable; and the expenses are the ordinary cost of protest and other incidental expenditures, such as postage, commission, and brokerage, if the party has been obliged to pay the holder, in consequence of the acceptor's refusal. The damages, in the absence of any positive rule, which, however, exists in nearly all the States of the Union, are ascertained by the rate of re-exchange between the country where the bill is accepted and the country where the bill is drawn, in case of the drawer; and between the former and the country where the bill is indorsed, in the case of the indorser. If the bill has been in part paid by the acceptor, damages and interest are to be deducted in proportion. By re-exchange is meant the amount for which a bill can be purchased in the country where the acceptance is made, drawn upon the drawer or indorser in the country where he resides, which will give the holder of the bill protested a sum equal to the amount of that bill at the time when it ought to have been paid, together with his necessary expenses and interest. The full indemnity of the holder, hence, requires him to draw for such an amount as will make good the face of the bill, together with interest from the time it ought to have been paid, and the necessary charges of protest, postage, and broker's commission, and the current rate of exchange at the place where the bill was to be demanded or payable, or the place where it was drawn or negotiated. The law does not require an actual re-drawing, but it gives the holder the right to recover what would be the price of another new bill, with interest, and the necessary expenses, including the amount, or price, of the re-exchange. But the indorser of a bill is not entitled to recover of the drawer the damages incurred by the non-acceptance of the bill, unless he has paid them, or is liable to pay them.—3 KENT'S *Comm.*, Lect. XLIV.

BILLS OF EXCHANGE DRAWN IN THE UNITED STATES.—In order to avoid the difficulty of ascertaining what is the true rate of exchange, most of the States of the Union have provided by a statute a certain fixed sum, in the place of damages and re-exchange. The law in the different States, in this respect, is as follows:

Maine.—The damages on bills of exchange negotiated in Maine, payable in other States, and returned under protest, are as follows (R. S. 510): 1. New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, 3 per cent. 2. New Jersey, Pennsylvania, Delaware, Maryland, Virginia, District of Columbia, South Carolina, Georgia, 6 per cent. 3. North Carolina, Alabama, Arkansas, Florida, Illinois, Indiana, Iowa, Kentucky, Louisiana, Michigan, Mississippi, Missouri, Ohio, Tennessee, Texas, Wisconsin, 9 per cent. The damages on foreign bills of exchange returned under protest are 10 per cent.

New Hampshire.—No statute in force in this State allowing damages on foreign or domestic bills returned under protest.

Vermont.—There is no statute in this State in reference to damages on protested foreign or domestic bills of exchange.

Massachusetts.—The damages on bills of exchange negotiated in Massachusetts, payable in other States, and returned under protest, are as follows: 1. Bills payable in Maine, New Hampshire, Vermont, Rhode Island, Connecticut, or New York, 2 per cent. 2. Bills payable in New Jersey, Pennsylvania, Maryland, or Delaware, 3 per cent. 3. Bills payable in Virginia, District of Columbia, North Carolina, South Carolina, or Georgia, 4 per cent. 4. Bills payable elsewhere

within the United States or the Territories, 5 per cent. 5. Bills for one hundred dollars or more, payable at any place in Massachusetts not within seventy-five miles of the place where drawn, 1 per cent. *Foreign Bills.*—1. Bills payable, returned under protest, beyond the limits of the United States (excepting places in Africa beyond the Cape of Good Hope, and places in Asia and the islands thereof) shall pay the current rate of exchange when due, and 5 per cent. additional. 2. Bills payable at any place in Africa beyond the Cape of Good Hope, or any place in Asia or the islands thereof, shall pay damages, 20 per cent.

Rhode Island.—The damages on bills of exchange, payable in other States, and returned under protest, are uniformly 5 per cent. The damages on *foreign bills of exchange* returned under protest are 10 per cent.

Connecticut.—The damages on bills of exchange negotiated in Connecticut, payable in other States, and returned under protest, are as follows: 1. Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, New York (interior), New Jersey, Pennsylvania, Delaware, Maryland, Virginia, District of Columbia, 3 per cent. 2. New York city, 2 per cent. 3. North Carolina, South Carolina, Georgia, and Ohio, 5 per cent. 4. All the other States and Territories, 8 per cent. There is no statute in force in Connecticut in reference to damages on foreign bills of exchange.

New York.—The damages on bills of exchange negotiated in this State and payable in other States, and returned under protest for non-acceptance or non-payment, are as follows: 1. Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, District of Columbia, and Ohio, 3 per cent. 2. North Carolina, South Carolina, Kentucky, and Tennessee, 5 per cent. 3. Alabama, Arkansas, Florida, Illinois, Indiana, Iowa, Louisiana, Mississippi, Missouri, Michigan, Texas, Wisconsin, 10 per cent. The damages on foreign bills, returned under protest, are 10 per cent.

New Jersey.—There is no statute in force in reference to damages on protested bills of exchange, either foreign or domestic.

Pennsylvania.—The damages on bills of exchange negotiated in this State, payable in other States, and returned under protest, are as follows: 1. Upper and Lower California, New Mexico, and Oregon, 10 per cent. 2. All other States, 5 per cent. The damages on foreign bills returned under protest are as follows (May 13, 1850): 1. Payable in China, India, or other parts of Asia, Africa, or islands in the Pacific Ocean, 20 per cent. 2. Mexico, Spanish Main, West Indies, or other Atlantic islands, east coast of South America, Great Britain, or other parts of Europe, 10 per cent. 3. West coast of South America, 15 per cent. 4. All other parts of the world, 10 per cent.

Delaware.—There is no statute in force in reference to damages on domestic bills. The damages upon bills of exchange drawn upon any person in England or other parts of Europe, or beyond the seas, and returned under protest, are 20 per cent.

Maryland.—The damages on bills of exchange negotiated in Maryland, payable in other States, and returned under protest, are uniformly 8 per cent. The claimant is entitled to receive a sum sufficient to buy another bill of the same tenor, and 8 per cent. damages on the value of the principal sum mentioned in the bill, and interest from the time of protest, and costs. *Practice* includes the District of Columbia in this law of damages (Act of Assembly, 1785, c. 38), but it is questionable whether the District be within the law, which provides only for *States*. *Foreign Bills.*—The damages on these, returned under protest, are 15 per cent. The claimant is to receive a sum sufficient to buy another bill of same tenor, and 15 per cent. damages on the value of the principal sum mentioned in the bill, and interest from the time of protest, and costs.

Virginia.—Damages on bills of exchange negotiated in Virginia, payable in other States, and returned under protest, are uniformly 3 per cent. The damages on *foreign bills of exchange* returned under protest are uniformly 10 per cent.

North Carolina.—The damages on bills of exchange negotiated in this State, payable in other States, and returned under protest, are uniformly 3 per cent. The damages on *foreign bills of exchange* returned under protest are as follows: 1. Bills payable in any part of North America, except the northwest coast and the West Indies, 10 per cent. 2. Bills payable on Madeira, the Canaries, the Azores, Cape de Verd Islands, Europe, and South America, 15 per cent. 3. Bills payable elsewhere, 20 per cent.

South Carolina.—The damages on bills of exchange negotiated in South Carolina, payable in other States, and protested for non-payment, are uniformly 10 per cent., together with costs of protest. A bill drawn in South Carolina, payable in another State, is deemed a foreign bill, and damages may be claimed, although such bill be not actually returned after protest. *Foreign Bills.*—The damages on foreign bills of exchange negotiated in South Carolina, are: 1. On bills on any part of North America other than the United States, and on the West Indies, 12½ per cent. 2. On bills drawn on any other part of the world, 15 per cent.

Georgia.—The damages on bills of exchange negotiated in Georgia, payable in other States, and returned under protest, are uniformly 5 per cent. The damages on *foreign bills of exchange* returned under protest are 10 per cent.

Alabama.—The damages on bills of exchange negotiated in Alabama, payable in other States, and returned under protest, are uniformly 15 per cent. Bills payable within the State of Alabama, 5 per cent. The damages on *foreign bills of exchange* returned under protest are 20 per cent.

Arkansas.—The damages on bills of exchange drawn or negotiated in Arkansas, expressed to be for value received, and protested for *non-acceptance*, or for *non-payment* after non-acceptance, are as follows (R. S. 1848, c. 25): 1. If payable within the State, 2 per cent. 2. If payable in Alabama, Louisiana, Mississippi, Tennessee, Kentucky, Ohio, Indiana, Illinois, or Missouri, or at any point on the Ohio River, 4 per cent. 3. If payable in any other State or Territory, 5 per cent. 4. If payable within either of the United States, and protested for non-payment, *after acceptance*, 6 per cent. 5. The damages on bills of exchange, expressed *for value received*, and payable beyond the limits of the United States, 10 per cent.

California.—By an act passed April 18, 1850, the damages on protested bills of exchange drawn or negotiated in California were fixed as follows: 1. If drawn upon any person or persons east of the Rocky Mountains, and within the limits of the United States, 15 per cent. 2. If drawn upon any person or persons in Europe, or in any foreign country, 20 per cent. By an act passed March 13, 1850, the rate of interest on money loaned in California was fixed at 10 per cent. per annum, where there is no special contract; but "parties may agree in writing for the payment of any rate of interest whatever on money due, or to become due, on any contract. Any judgment rendered on such contract shall conform thereto, and shall bear the interest agreed upon by the parties."

Florida.—The damages on bills of exchange negotiated in Florida, payable in other States, and returned under protest for non-payment, are uniformly 5 per cent. Damages on *foreign bills of exchange*, 5 per cent.

Illinois.—The damages on bills of exchange negotiated in Illinois, payable in other States or Territories, and returned under protest for non-payment, are uniformly (by act of March, 1845) 5 per cent. Damages on *foreign bills*, 10 per cent.

Indiana.—The damages on bills of exchange negoti-

ated in Indiana, payable in other States, and returned under protest for non-payment, are uniformly 5 per cent. The damages on *foreign bills* are 10 per cent.

Iowa.—The damages on bills of exchange negotiated in Iowa, payable in other States, and protested for non-payment, are uniformly 5 per cent. No statute exists as to damages on *foreign bills of exchange*.

Kentucky.—There is no statute in force upon the subject of damages on either domestic or foreign bills of exchange.

Louisiana.—The damages on bills of exchange negotiated in Louisiana, payable in other States, are uniformly 5 per cent. The damages on *foreign bills of exchange*, returned under protest, are uniformly (statute of 1838) 10 per cent.

Michigan.—The damages on bills of exchange negotiated in Michigan, payable in other States, and returned under protest, are uniformly 8 per cent.; and the damages on *foreign bills* are also 8 per cent.

Mississippi.—The damages on bills of exchange negotiated in Mississippi, payable in other States, and returned under protest, are uniformly 5 per cent. The damages on *foreign bills* are 10 per cent.

Missouri.—The damages on bills of exchange negotiated in Missouri, payable in other States, and returned under protest, are uniformly 10 per cent. On bills payable within the State, 4 per cent. On *foreign bills*, 20 per cent.

Ohio.—The damages on bills of exchange negotiated in Ohio, payable in other States, and returned under protest, are uniformly (by act of February 15, 1831) 6 per cent. On *foreign bills*, 12 per cent.

Tennessee.—The damages on bills of exchange negotiated in Tennessee, payable in other States, and protested for non-payment, are 8 per cent. The damages on *foreign bills* protested, are: 1. If drawn upon any person out of the United States, and in North America, bordering upon the Gulf of Mexico, or in any part of the West India Islands, 15 per cent. 2. If payable in any other part of the world, 20 per cent.

Texas.—There is no statute in force in reference to damages on either domestic or foreign bills of exchange.

Wisconsin.—The damages on bills of exchange drawn or indorsed in Wisconsin, payable in either of the States adjoining the State, and protested for non-acceptance or non-payment, are 5 per cent. If drawn upon a person, or body politic or corporate, within either of the United States, and not adjoining to that State, the damages are 10 per cent. The damages on bills of exchange drawn or indorsed in Wisconsin, payable beyond the limits of the United States, and protested for *non-acceptance* or *non-payment*, are (R. S. 1849, p. 263) 5 per cent., together with the current rate of exchange at the time of demand.

See *Manual for Notaries Public*, by H. Roelker, New York; Story *on Bills*; Chitty *on Bills*; Kent's *Commentaries*; and for late decisions in the United States Courts, refer to the *Bankers' Magazine*, published in New York.

Bill of Health, a certificate or instrument signed by consuls or other proper authorities, delivered to the masters of ships at the time of their clearing out from all ports or places suspected of being particularly subject to infectious disorders, certifying the state of health at the time that such ship sailed. A *clean* bill imports that at the time that the ship sailed no infectious disorder was known to exist. A *suspected* bill, commonly called a *touched* patent or bill, imports that there were rumors of an infectious disorder, but that it had not actually appeared. A *foul* bill, or the absence of clean bills, imports that the place was infected when the vessel sailed.—*See* Quarantine.

Bill of Lading, is a *formal receipt* subscribed by the master of a ship in his capacity of carrier, acknowledging that he has received the goods specified in it on board his ship, and binding himself (under certain exceptions) to deliver them, in the like good order as received, at the place and to the individual named in the bill, or his assigns, on his or their paying him the stipulated freight, etc. When goods are sent by a ship hired by a charter-party, the bills of lading are delivered by the master to the merchant by whom the ship is chartered, but when they are sent by a *general ship*—that is, by a ship not hired by charter-party, but employed as a general carrier—each individual who sends goods on board receives a bill of lading for the same. In all cases, therefore, the bill of lading is the evidence of and title to the goods shipped. The liability of a carrier, at common law, to deliver the goods intrusted to his care, is canceled only by "the act of God and the king's enemies." But to limit this responsibility, the following exception is now invariably almost introduced into the clause in bills of lading binding the master to the delivery of the goods: "*The act of God, the king's enemies, fire, and all and every other dangers and accidents of the seas, rivers, and navigation, of whatever nature and kind soever, excepted.*" Bills of lading are not, in general, immediately given by the master on receiving the goods. The usual practice is for the master or his deputy to give a common receipt for the goods, which is delivered up on receiving the bill of lading. The latter should always be required within twenty-four hours after the goods are received on board. Three sets of all bills of lading are made out: one of these should be remitted by the first post to the person to whom the goods are consigned, a second being sent to him by the ship; the third is retained by the shipper of the goods. The master ought always to retain copies of the bills of lading for his government.

Transfer of Bills of Lading.—Bills of lading are transferable either by blank or special indorsement, like bills of exchange. And whatever may be the character of the person to whom the goods are consigned, whether he be a buyer, or merely the factor, agent, or broker of the consigner, the *bona fide* holder of a bill of lading indorsed by the consignee is entitled to the goods, and may claim them from the master if he can prove that he has purchased the bill for a *good consideration*; but unless he can do this, he is not entitled to the goods.—Holt, *Law of Shipping*, 2d ed. p. 363.

Delivery under Bill of Lading.—It being usual to sign and deliver three bills of lading, it is possible that there may be conflicting demands upon the captain by the different holders. Nothing, however, is, in such a case, required of him, except that he act with good faith, and to the best of his judgment; and that he make delivery of the goods to the person who first demands them of him, upon presentment of the bill of lading, *provided the circumstances be not such as to justify a suspicion* of his having unfairly got possession of it. If he act differently, he is answerable, according to the peculiarities of the case, to the person injured by his negligence; the bill of lading being not only the instructions of the merchant to him, as his carrier or servant, but his own especial agreement to deliver according to its conditions. Where several bills of lading of a different import have been signed, no regard is to be paid to the time when they were first signed by the master; but the person who first gets legal possession of one of them from the owner or shipper, has a right to the consignment; and where such bills of lading, though different upon the face of them, are constructively the same, and the master has acted *bona fide*, a delivery according to such legal title will discharge him from all.—Holt, p. 375 and 377.

Bill of Sale, a contract under seal, by which an individual conveys or passes away the right and interest he has in the goods or chattels named in the bill. The property of ships is transferred by bill of sale.

Bill of Sight. In England, when a merchant is ignorant of the real quantities or qualities of any goods assigned to him, so that he is unable to make a perfect

entry of them, he must acquaint the collector or controller of the circumstance; and they are authorized, upon the importer or his agent making oath that he can not, for want of full information, make a perfect entry, to receive an entry by *bill of sight* for the packages, by the best description which can be given, and to grant warrant that the same may be landed and examined by the importer in presence of the officers; and within three days after any goods shall have been so landed, the importer shall make a perfect entry, and shall either pay down the duties, or shall duly warehouse the same.—8 & 4 *Will.* 4, c. 52, § 24. In default of perfect entry within three days, such goods are to be taken to the king's warehouse; and if the importer shall not within one month make a perfect entry, and pay the duties thereon, or on such parts as can be entered for home use, together with charges of moving and warehouse rent, such goods shall be sold for payment of the duties.—§ 25.

Bill of Store is a license granted by the custom-house to merchants, to carry such stores and provisions as are necessary for a voyage, free of duty.

Billiards. Invented by the French, by whom, and by the Germans, Dutch, and Italians, they were brought into general vogue throughout Europe.—*Nouv. Dict.* The French ascribe their invention to Henrique Devigne, an artist, in the reign of Charles IX., about 1571. Slate billiard-tables were introduced in England in 1827.

Billingsgate, a market for fish, contiguous to the custom-house in London. It is held every lawful day, and was established in 1669. Every person buying fish in Billingsgate market may sell the same in any other market-place or places within the city of London or elsewhere, by retail, with this condition, that none but fishmongers be permitted to sell in fixed shops or houses. No person or persons shall purchase at Billingsgate any quantity of fish, to be divided by lots or in shares among any fishmongers or other persons, in order to be afterward put to sale by retail or otherwise; nor shall any fishmonger engross or buy in the said market any quantity of fish, but what shall be for his own sale or use, under the penalty of £20. No person is to have in his possession, or expose to sale, any spawn of fish, or fish unsizable, or out of season.—26 *Geo.* c. 118. The minimum size of the lobsters to be sold at Billingsgate is fixed by statute.—*See* Lobster.

Previously to 1842 no fish of foreign taking or curling, or in foreign vessels, could be imported into the United Kingdom, except turbots and lobsters, stock-fish, live eels, anchovies, sturgeon, botargo, and caviare. But the importation of all sorts of fish was then permitted on payment of duties, which were finally repealed in 1853. At present, therefore, the trade in fish is quite free.—For some further remarks with respect to this subject, *see* Fish.

Binacle, or **Binnacle** (formerly *Bittacle*, from the French *habitacle*), a wooden case or box in which the compasses are kept on board a ship, with lights to show the compass at night.

Birch (Fr. *Bouleau*; Du. *Berke*; Germ. *Birke*; It. *Betulla*; Lat. *Betula*; Pol. *Brzoza*; Russ. *Bereza*; Sp. *Abedul*, *Betulla*), a forest tree met with every where in the north of Europe. It is applied to various purposes. In Lapland, Norway, and Sweden, the long twigs of the birch are woven into mats and twisted into ropes; the outer bark forms an almost incorruptible covering for houses; and the inner bark is used, in periods of scarcity, as a substitute for bread. Russia leather is prepared by means of the empyreumatic oil of the birch. It is an excellent wood for the turner, being light, compact, and easily worked. Its durability is not very great. It is sometimes used in the manufacture of herring barrels.

Bird-lime (Germ. *Vogelleim*; Fr. *Glu*; It. *Pania*; Sp. *Liga*; Russ. *Ptitschei Klei*) exudes spontaneously from certain plants, and is obtained artificially from the middle bark of the holly. Its color is greenish, its flavor sour, and it is giney, shining, and tenacious. The natural is more adhesive than the artificial bird-lime.—Thomson's *Chemistry.*

Birds' Nests (Germ. *Indianische Vogelnester*; Du. *Indiaansche Vogelnestjes*; Fr. *Nids de Tunkin*; It. *Nidi di Tunchino*; Sp. *Nidos de la China*; Javan. *Susu*; Malay, *Sarungburung*), the nests of a species of swallow peculiar to the Indian islands (*Hirundo esculenta*), very much esteemed in China. In shape this nest resembles that of other swallows; it is formed of a viscid substance; and in external appearance, as well as consistence, is not unlike fibrous, ill-concocted isinglass. Esculent nests are principally found in Java, in caverns that are most frequently, though not always, situated on the sea-coast. Many conflicting statements have been made as to the substance of nests; some contending that they are formed of sea-foam or other marine products, and others that they are elaborated from the food of the bird, etc. But these are points as to which nothing satisfactory is known.

We borrow from Mr. Crawfurd's valuable work on the *Eastern Archipelago* (vol. iii. p. 432–437) the following authentic and curious details as to the traffic in this singular production: "The best nests are those obtained in deep damp caves, and such as are taken before the birds have laid their eggs. The coarsest are those obtained after the young are fledged. The finest nests are the whitest, that is, those taken before the nest has been rendered impure by the food and *fæces* of the young birds. They are taken twice a year, and, if regularly collected, and no unusual injury be offered to the caverns, will produce very equally, the quantity being very little, if at all, improved by the caves being left altogether unmolested for a year or two. Some of the caverns are extremely difficult of access, and the nests can only be collected by persons accustomed from their youth to the office. The most remarkable and productive caves in Java, of which I superintended a moiety of the collection for several years, are those of *Karang-bolang*, in the province of *Baglen*, on the south coast of the island. Here the caves are only to be approached by a perpendicular descent of many hundred feet, by ladders of bamboo and ratan, over a sea rolling violently against the rocks. When the mouth of the cavern is attained, the perilous office of taking the nests must often be performed by torch-light, by penetrating into recesses of the rock, where the slightest trip would be instantly fatal to the adventurers, who see nothing below them but the turbulent surf making its way into the chasms of the rock.

"The only preparation which the birds' nests undergo is that of simple drying, without direct exposure to the sun, after which they are packed in small boxes, usually of half a picul. They are assorted for the Chinese market into three kinds, according to their qualities, distinguished into *first* or *best*, *second*, and *third* qualities. Caverns that are regularly managed will afford, in 100 parts, 53·3 parts of those of the first quality, 35 parts of those of the second, 11·7 parts of those of the third. The common prices for birds' nests at Canton are, for the first sort, no less than 3500 Spanish dollars the picul, or £5 18*s.* 1½*d.* per pound; for the second, 2800 Spanish dollars per picul; and for the third, 1600 Spanish dollars. From these prices it is sufficiently evident that the birds' nests are no more than an article of expensive luxury. They are consumed only by the great; and, indeed, the best part is sent to the capital for the consumption of the court. The sensual Chinese use them, under the imagination that they are powerfully stimulating and tonic; but it is probable that their most valuable quality is their being perfectly harmless. The people of Japan, who so much resemble the Chinese in many of their habits, have no taste for the edible nests; and how the latter acquired a taste for this foreign commodity is no less

singular than their persevering in it. Among the Western nations there is nothing parallel to it, unless we except the whimsical estimation in which the Romans held some articles of luxury, remarkable for their scarcity rather than for any qualities ascribed to them."

Mr. Crawford estimates the whole quantity of birds' nests exported from the Archipelago at 242,000 pounds, worth £284,290. "The value," he observes, "of this immense property to the country which produces it rests upon the capricious wants of a single people. It is claimed as the exclusive property of the sovereign, and every where forms a valuable branch of his income, or of the revenue of the State. This value, however, is of course not equal, and depends upon the situation and the circumstances connected with the caverns in which the nests are found. Being often in remote and sequestered situations, in a country so lawless, a property so valuable and exposed is subject to the perpetual depredation of freebooters, and it not unfrequently happens that an attack upon it is the principal object of the warfare committed by one petty State against another. In such situations, the expense of affording them protection is so heavy, that they are necessarily of little value. In situations where the caverns are difficult of access to strangers, and where there reigns enough of order and tranquillity to secure them from internal depredation, and to admit of the nests being obtained without other expense than the simple labor of collecting them, the value of the property is very great. The caverns of *Karang-bolang*, in Java, are of this description. These annually afford 6810 pounds of nests, which are worth, at the Batavia prices of 3000, 2500, and 1200 Spanish dollars the picul, for the respective kinds, nearly 139,000 Spanish dollars; and the whole expense of collecting, curing, and packing, amounts to no more than 11 per cent. on this amount. The price of birds' nests is of course a monopoly price, the quantity produced being by nature limited, and incapable of augmentation. The value of the labor expended in bringing birds' nests to market is but a trifling portion of their price, which consists of the highest sum that the luxurious Chinese will afford to pay for them, and which is a tax paid by that nation to the inhabitants of the Indian islands. There is, perhaps, no production upon which human industry is exerted, of which the cost of production bears so small a proportion to the market price."—See also the valuable work of *Count* HOGENDORF, *Coup d'Œil sur l' Ile de Java*, p. 291.

Birmingham, a parliamentary and municipal borough, one of the principal manufacturing towns of England, near its centre, county and 17 miles northwest of Warwick, 100 miles northwest of London, and 78½ miles southeast of Liverpool. Area of borough, which includes the adjacent townships, Aston, Edgbaston, etc., 2660 acres. Population in 1690, 4000; in 1801, 60,822; in 1841, 182,922; in 1851, 282,841. The town, on the River Rea, occupies the eastern declivity of three undulating hills, and from the southeast presents to view a mass of red brick houses, interspersed with several lofty church spires, and a vast number of tall chimneys belonging to its factories. Birmingham existed in the reign of Alfred, A.D. 872; but its importance as a manufacturing town commenced in the reign of William III. Birmingham was besieged and taken by Prince Rupert in 1643. The great works of Soho were established by the illustrious engineer, Matthew Boulton, in 1764. The Birmingham canal was originated by act of Parliament, 1768. Memorable riots commenced here, July 14, 1791, on some persons commemorating the French Revolution. The theatre was destroyed by fire, August 17, 1792. More commotions, November, 1800. The theatre again burned in 1817; and again, January 7, 1820. Birmingham political union formed, 1831; dissolved itself, May 10, 1834. Town Hall built, 1833. Birmingham and Liverpool railway opened as the Grand Junction, July 4, 1837. London and Birmingham Railway opened its entire length, September 17, 1838. Great political riot, firing of houses and other outrages committed by the Chartists, July 15, 1839. Corn Exchange opened, October 27, 1847. Birmingham has made most rapid progress in manufacturing industry within the present century. Its manufactures comprise almost every description of iron and steel goods, brass and iron founding, saddlery, fire-arms, cutlery, gold, silver, plated, bronze, ormolu, and japanned wares; papier-mache goods, toys, jewelry, electroplated goods, buttons, steel-pens, glass, tools, steam-engines, and all kinds of machinery.

Biscay, Bay of (Fr. Golfe de Gascogne, *Aquitanicus Sinus*), a vast bay or gulf formed by the Atlantic, and extending between Ouessant island on the west coast of France, and Cape Ortegal on the north coast of Spain. It receives the waters of the Loire, Charente, Gironde, and Adour. Its principal ports are, L'Orient, Nantes, La Rochelle, Rochefort, Bordeaux, and Bayonne, in France. Passages, San Sebastian, Bilbao, Santander, and Gihon, in Spain. Chief islands, Belle Isle, Ré, and Oleron, on the coast of France. Its north and south coasts are bold and rocky; but on the east, from the mouth of the Gironde to the Adour, the coast is composed of sand downs, and interrupted by numerous lagoons. The depth varies from 20 fathoms on the west coast of France, to 200 fathoms on the north of Spain. Navigation is much impeded by the heavy seas produced by the northwest winds, and by a current (*Rennel's*) which sets in from the Atlantic, and sweeping round the north coast of Spain, runs north and northwest along the west coast of France, and enters the Irish Channel.

Bismuth (Ger. *Wismuth*; Du. *Bismuth, Bergsteen*; Fr. *Bismuth*; It. *Bismutte*; Sp. *Bismuth, Piedra inga*; Russ. *Wismut*; Lat. *Bismuthum*), a metal of a reddish white color, and almost destitute of taste and smell. It is softer than copper; its specific gravity is 9·822. When hammered cautiously, its density is considerably increased; it breaks, however, when struck smartly by a hammer, and, consequently, is not malleable, neither can it be drawn out into wire; it melts at the temperature of 476°.—THOMSON'S *Chemistry*. Bismuth is used in the composition of pewter, in the fabrication of printers' types, and in various other metallic mixtures. With an equal weight of lead, it forms a brilliant white alloy, much harder than lead, and more malleable than bismuth, though not ductile; and if the proportion of lead be increased, it is rendered still more malleable. Eight parts of bismuth, five of lead, and three of tin, constitute the fusible metal, sometimes called Newton's, from its discoverer, which melts at the heat of boiling water, and may be fused over a candle in a piece of stiff paper without burning the paper. Pewterers' solder is formed of one part of bismuth, with five of lead, and three of tin. It forms the basis of a sympathetic ink.—URE.

Bitumen (Germ. *Judenpech*; Du. *Jodenlym*; It. *Asfalto*; Sp. *Asfalto*; Port. *Asphalto*; Russ. *Asfalt*; Lat. *Asphaltum Bitumen Judaicum*). This term includes a considerable range of inflammable mineral substances, burning with the flame in the open air. They differ in consistency, from a thin fluid to a solid; but the solids are for the most part liquefiable at a moderate heat. They are: 1. *Naphtha*; a fine, white, thin, fragrant, colorless oil, which issues out of white, yellow, or black clays in Persia and Media. This is highly inflammable. Near the village of Amiano, in the State of Parma, there exists a spring which yields this substance in sufficient quantity to illuminate the city of Genoa, for which purpose it is employed. With certain vegetable oils, naphtha is said to form a good varnish. 2. *Petroleum* is much thicker than naphtha, resembling in consistence common tar. It has a strong disagreeable odor, and a blackish or reddish brown color. During combustion, it emits a thick black smoke, and leaves a little residue in the form of black coal. It is more abund-

ant than the first-mentioned variety, from which it does not seem to differ, except in being more inspissated. It is found in various countries, and is especially abundant in the Birman empire, where it is met with above Prome, within about two miles of the Irrawaddi. The gross annual produce of the wells in this place has been estimated at about 80,000,000 lbs., worth on the spot about 1*s.* 8*d.* a cwt.; and the supply might, if a market could be found, be indefinitely increased. It is used as a lamp oil, and, when mingled with earth or ashes, as fuel and in the paying of boats.—*Geographical Dictionary*, i. 377. In the United States it is found abundantly in Kentucky, Ohio, and New York, where it is known by the name of *Seneca* or *Genesee* oil. It is also obtained from wells in the island of Zante. Herodotus tells us that he had seen these wells (lib. iv. c. 195); and the description he has given of them, and of the mode of obtaining the petroleum, corresponds in all respects with the accounts of the best modern travelers. The average annual produce of the Zante springs is about 100 barrels.—CHANDLER'S *Travels in Greece*, 4to ed. p. 301; HOLLAND'S *Travels in Greece*, 4to ed. p. 18. Petroleum is particularly abundant in Persia. "When taken from the pit, it is a thick liquid resembling pitch. The bottoms of most vessels which navigate the Euphrates and Tigris are covered with it, and it is also used in lampsins tead of oil by the natives. The most productive fountains are those of Kerkook, Mendali, and Badku. The wells in the neighborhood of the latter seem to be quite inexhaustible, being no sooner emptied than they again begin to fill. Some of them have been found to yield from 1000 to 1500 lbs. a day!"—KINNIER'S *Persian Empire*, p. 39 and 359. 3. *Maltha*, or *Sea-wax*, is a solid whitish substance, not unlike tallow. It melts when heated, and in cooling assumes the consistence of white cerate. This is most probably the *bitumen candidum* of Pliny.—*Hist. Nat.* lib. xxxv. c. 15. It is not used as pitch; but it affords a better light than petroleum, and emits a less disagreeable smell. It is found on the surface of the Baikal Lake in Siberia, at the foot of the mountains of Bucktiari in Persia, and in some other places. 4. *Elastic Bitumen* yields easily to pressure; is flexible and elastic. It emits a strong bituminous odor, and is about the weight of water. On exposure to the air it hardens, and loses its elasticity. It takes up the traces of crayons in the same manner as caoutchouc or Indian rubber, whence it has obtained the name of *mineral caoutchouc*. It has hitherto been found only in the lead mines of Derbyshire. 5. *Compact Bitumen*, or *Asphaltum*, is of a shining black color, solid, and brittle, with a conchoidal fracture. Its specific gravity varies from 1 to 1·6. Like the former varieties, it burns freely, and leaves but little residuum. It is found in India, on the shores of the Dead Sea, in France, in Switzerland, and in large deposits in sandstone in Albania; but nowhere so largely as in the island of Trinidad, where it forms a lake three miles in circumference, and of a thickness unknown. A gentle heat renders it ductile, and, when mixed with grease or common pitch, it is used for paying the bottoms of ships, and is said to protect them from the teredo of the West Indian seas. The ancients employed bitumen in the construction of their buildings. The bricks of which the walls of Babylon were built were, it is said (HERODOTUS, lib. i. § 179), cemented with hot bitumen, which gave them unusual solidity.

Blacking (Ger. *Schuhschwärze*, *Wichse*; Fr. *Noir (de cordonnier)*; It. *Nero da ugner le scarpe*; Sp. *Negro de zapatos*). A factitious article, prepared in various ways, used in the blacking of boots and shoes. The principal ingredients in its manufacture are oil, vinegar, and various sorts of blacking matter. It is in very extensive demand. Some of the establishments for its manufacture, especially those in the metropolis, are on a large scale; and it is in such only that it can be cheaply and advantageously produced. One of the principal, or rather we may say the principal outlay in establishing a blacking business, consists in advertising. Indeed, any individual or set of individuals, provided they supply a reasonably good article, may, by continuous advertising and puffing, attain to the highest eminence in the "blacking line."

Black-lead, Plumbago, or **Wad** (Du. *Potloot*; Fr. *Mine de Plomb noir, plomb de mine, Potelot*; Ger. *Pottloth, Reissbley*; It. *Miniera di piombo, Piombaggine, Corezolo*; Lat. *Plumbago*; Sp. *Piedra mineral de plomo*), a mineral of a dark steel gray color, and a metallic lustre; it is soft, has a greasy feel, and leaves a dark-colored line when drawn along paper.

This mineral is found only in a state of purity in Borrowdale, in Cumberland, the mines in which have been wrought since the days of Elizabeth. The lead is not found in veins but in detached pieces, or in what are called *sops* or *bellies*, so that the supply is very irregular, the miners being frequently employed for a lengthened period in seeking at random for the lead. Its quality also differs very widely. The best is that which is lightest, and the trace of which on paper is easily and completely removed by the application of India rubber. The mine used only to be opened at intervals, but for a considerable number of years past it has been constantly open. The supply, however, has been extremely scanty, and mostly also very inferior. This lead is now almost wholly employed in making pencils; an inferior variety from Spain and Ceylon being used in the manufacture of crucibles, the polishing of cast-iron utensils, the diminishing of friction, and other purposes to which genuine black-lead was formerly applied.

Black-lead Pencils (Du. *Potlootpennen*; Fr. *Crayons noirs*; Ger. *Bleystifte*; It. *Lapis nero*; Port. *Lapis negro*; Russ. *Karanaschik*; Sp. *Lapiz negro*) are formed of black-lead, encircled with cedar. There is hardly, perhaps, any thing in which the temptation to substitute a spurious for a genuine article is greater, or in which, consequently, the purchaser is more liable to be deceived, than black-lead pencils. This is occasioned by the vast difference between the cost of genuine Cumberland lead and of the other articles that are or may be substituted for it. Pencils are usually described as follows: first quality, or drawing pencils; second quality, or prepared pencils; third quality, or composition pencils. 1. Pencils of the *first* quality are, when genuine, made of pure Cumberland lead, and cost, in the year 1843, 30*s.* per lb., or £168 per cwt. From 18 to 20 dozen such pencils are produced from a pound of this lead. These pencils are usually made by sawing the lead into the pieces inserted in the cedar. Sometimes, however, the lead is in parts gritty and defective, so that a pencil of this kind may, in fact, be very inferior. To obviate this defect, some makers prepare the lead, to free it from the grit or earthy particles; and, provided no antimony or other alloy be mixed up with the prepared lead, the pencils produced from it are most to be depended on. 2. Pencils of the *second* quality are manufactured out of the sawings or dust of pure lead, with the dust of the small pieces picked up by poor people from the rubbish thrown out of the mine, mixed or alloyed with a greater or less quantity of antimony. The goodness of this pencil depends, of course, on the proportion in which the pure lead exceeds the antimony. But as the cost of the former may be taken at £100 a cwt., and that of the latter at only 26*s.*, there is an all but irresistible temptation to increase the proportion of the latter beyond due bounds. This sort of composition produces about 15 or 16 dozen pencils to the pound; their price varying according to the purity of the lead. 3. The *third* quality of pencil is made by using Mexican or Spanish lead dust, costing 45*s.* or 50*s.* a cwt., with antimony costing about 26*s.* per cwt. It produces about 14 or 15 dozen pencils to the lb., which may be sold at from 2*s.* 6*d.* to 12*s.* per gross, according to the cost of the articles employed

and the care taken in mixing them. This sort of pencil may take a firm point, and make a fine stroke, but its trace will not obliterate on being rubbed with India rubber. The easy and complete obliteration of the stroke is, in fact, the best and perhaps only test of a pencil being of pure Cumberland lead.—*Private information.*

Black Sea, or **Euxine Sea** (*Pontus Euxinus* of the ancients), is a large inland sea, bounded on the west by Rumelia, Bulgaria, and Bessarabia; on the north by Russian Tartary; on the east by Mingrelia, Circassia, and Georgia; and on the south by Anatolia. It is entered from the Mediterranean through the channel of the Dardanelles, anciently the *Hellespont*, the Sea of Marmora or *Propontis*, and the channel of Constantinople or *Thracian Bosporus*; and it is connected with the Sea of Azof, or *Palus Mæotis*, by the strait between the Crimea and the Isle of Taman, anciently the *Cimmerian Bosporus*, and known by the various modern names of the Strait of Kertch, of Yenikale, and of Taman.

Till within less than half a century, the extent of the Black Sea, and the position of several of its principal capes, gulfs, and ports, were very imperfectly ascertained. But soon after the commencement of the French Revolution, the National Institute sent M. Beauchamp to examine this sea, and especially its southern shores. In this enterprise he was much impeded by the jealousy of the Turks; nevertheless, he ascertained that Cape Kerempe, *Carambis*, was placed in the charts too far to the south; that the Gulf of Sansoun, *Amisenus Sinus*, was deeper than it is commonly represented; and that Trebizond, the Trabazan of the Turks, anciently *Trapezus*, was five or six leagues farther to the west than it appeared in the charts. But recent travelers have discovered that even the Parisian charts are inaccurate. According to Dr. Clarke, the Isle of Serpents, the Ulan-Adassi of the Turks, the Fidonisi of the modern Greeks, and ancient *Leuce*, lies fifteen minutes, and the port of Odessa twenty-seven minutes, too far toward the north (Clarke's *Travels*, i. 653); and Mr. Macgill ascertained, from two observations of his own, compared with those of some captains who had navigated this sea, that in the French charts even Cape Kerempe is set down fifteen miles too far north, while Cape Aria or Saritch or Careza, *Kriu-Metopon*, in the Crimea, is placed twenty-two miles too far south. This, of course, makes a difference in the width of the sea at this place of thirty-seven miles.—Macgill's *Travels*, i. 195.

According to the best authorities, which Mr. Arrowsmith has followed in his maps of this sea, it lies between 41 and 46½ degrees of north latitude (the bottom of the Bay of Sansoun penetrating nearly to the 40th degree, and Cape Kerempe stretching out nearly to the 42d), and between 28 and 41½ degrees of east longitude from Greenwich. This will give for its extreme breadth, from Cape Baba, in Anatolia, to Odessa, about 380 miles, and for its extreme length, from the coast of Rumelia to the mouth of the Phasis, 700 miles. The Black Sea, however, may be considered as divided into two parts, by Cape Aria on the south of the Crimea, and Cape Kerempe on the coast of Paphlagonia; the former lying in about 44½, and the latter in about 42 degrees of north latitude. Both these capes being high land, vessels sailing between them can discover the coast on either side. The circumference of the Black Sea is about 3800 miles.

Russian statistical reports are so little to be relied upon, that it is difficult to give any very accurate returns of the general trade of the Black Sea. Within the last twenty years a total change has been effected in the aspect of its commerce. This is chiefly to be attributed to the existence of the British market. When importations of corn into England were freed from fiscal influences, the vast and fertile plains of southern Russia, and the rich valley of the Danube, supplied the ever-increasing demand; and the requirements of Great Britain, however they may increase, will be met by enormously elastic powers of production. The prohibitive policy of Russia exercises, however, a most injurious influence upon foreign trade, and combines to render the expense of freight upon the coasts of the Black Sea higher than upon any other eastern sea-board. In consequence of the more liberal commercial policy of Turkey and the Danubian principalities, the exports of Rumelia, Moldavia, and Wallachia, are increasing far more rapidly than those of the Russian provinces, while the grain is more highly esteemed in the English market. The total amount of wheat received by Great Britain in 1852 from the Russian shores of the Black Sea was 789,750 quarters, in 374 vessels. The total amount shipped from Rumelia and the Danubian principalities was 112,650 quarters, in 92 vessels. The general exports of the principalities have been gradually increasing. In 1849 the total value of the imports amounted to £809,240; in 1850, £898,715; and in 1851, £896,895. The total value of the exports in 1849 was £1,113,272; in 1850 it was £839,712; and in 1851, £1,274,525. As the corn trade to the British dominions is the mainly important branch of commerce in the Black Sea, these statistics connected with it which are derived from the English official reports contain all that is most important. Apart from this no very remarkable features in the local trade have been recently developed, nor, if there were, are there any authentic reports of its extent.

The principal articles of commerce afforded by the countries on the Black Sea are, wheat, rice, tobacco, hides, tallow, hare-skins, honey, wax, iron, and yellow grains for dyeing from Rumelia and Bulgaria, by the ports of Varna and Bourgas. The same articles, with the addition of wool, butter, hemp, masts, ship-timber, and pitch, are exported from Moldavia and Wallachia, by Ibraila and Galatz, on the Danube. From Bessarabia by Ovidopol, and from the province of Cherson by Odessa, Akermann, and Cherson, come corn, oak timber, hides, tallow, tar, shagreen, wax, honey, hemp, sail-cloth, and wool; from the Crimea, by the ports of Actiar, Kosloff, and Caffa, corn, wool, wax, honey, dried and salted hides, deer-skins, morocco leather, sheep-skins, salted and dried fish, potash, felt, caviare, wine, silk, and saltpetre; from the countries on the Sea of Azof, by the ports of Taganrog, Berdianski, and Mariapol, iron (of which Constantinople and Smyrna require about 60,000 quintals each), dried fish, caviare, butter, hides, tallow, wheat, timber, furs, sail-cloth, cordage, hemp, linens, wax, and wool; from Anatolia, by the ports of Erekli, Amasreh, Ineboli, Sinope, and Uniah, hides, dried fruits, linens, linen thread, wax, honey, hemp, copper, and ship-timber; from the coast of Roum and Sansoun the same articles; from the countries of the Laziens and Gurions, principally by Trebizond, all the above articles, except ship-timber; and from Mingrelia, and the country of the Abasses, principally by Soudjuk and Anapa, slaves, timber, box-wood, wool, silk, furs, butter, hides, wax, and honey. The trade to these coasts is entirely carried on by a few Greeks of Constantinople, and is very insignificant.—E. B.

Blank (French *Blanc*) literally signifies white. *Blancus*, or *Blanca*, was a kind of white or silver money, of base alloy, coined by Henry V. in those parts of France which were then subject to England. It was valued at 8*d.* sterling. *Blank* also denotes a small copper coin, formerly current in France, at the rate of five deniers Tournois.—E. B.

Bleaching is the art of depriving cotton, linen, silk, wool, wax, etc., of their coloring matter, and rendering them as white as possible. The word is probably derived from the French term *blanchiment*, which signifies the process of *rendering white*.

This art was known early in Egypt, Syria, and

India. Known in ancient Gaul.—PLINY. In the last century an improved chemical system was adopted by the Dutch, who introduced it into England and Scotland in 1768. There are now immense bleaching-fields in both countries, particularly in Lancashire and in the counties of Fife, Forfar, and Renfrew, also in the vale of the Leven, in Dumbarton. The chemical process of Berthollet was introduced in 1795.—*Blanchiment des Toiles.*

Blockade, in war, the shutting up of any place or port by a naval or military force, so as to cut off all communication with those who are without the hostile line. There is, perhaps, no part of the law of nations which, in practice, presents so many perplexing questions as that which concerns the respective rights of neutral and belligerent states. No definite line of distinction has yet been drawn between the privileges of war and peace; and the consequence has been, that, in all the wars which have been waged in Europe, the general tranquillity of the world has been endangered by the jarring of these two different interests. It has commonly happened, too, that all these important questions have been agitated during a season of war; when the passions of the contending parties were keenly engaged in the dispute; when principles were already subverted; and when the minds of men, exasperated by the glaring infraction of acknowledged rights, were not in a state to agree on any system of general equity by which to regulate and reform the erring policy of states. In these circumstances, many points of international law, which appear to rest on the most obvious principles, and which are very clearly settled in the writings of civilians, have, nevertheless, been the occasion in practice of no small controversy, and have frequently involved nations in all the miseries of protracted war. This has been in some measure manifested in the case of the *Rights of Blockade*, respecting which, though no difference of opinion has ever prevailed among speculative writers, a controversy arose during the late contests in Europe, which, along with other points, ultimately involved Great Britain in a war with the neutral powers. We propose, in the course of the subsequent observations, to state, 1st. The general principles from which the most approved writers have deduced the rights of blockade; and, 2d. To give a short account of the differences which took place between the neutral and the belligerent states respecting the extent of those rights.

In regulating the respective privileges of the neutral and the belligerent, it has generally been held as a fundamental principle, by writers on the law of nations, that those rights from the exercise of which less benefit would accrue to one party than detriment to the other should be abandoned; and in all cases where the rights of war happen to come into collision, the application of this rule will decide which of the two parties must yield to the convenience of the other. Thus the neutral state is debarred from carrying on any trade with either of the belligerents in warlike stores. The general right to a free trade is modified, in this particular instance, by the paramount rights of the belligerent. To refrain for a time from trading with an individual state in warlike stores can at most only impose a trifling inconvenience on the neutral power, while the continuance of such a trade might terminate in the destruction of the belligerent. The detriment occasioned to the one party by the existence of such a trade, is, in this manner, infinitely greater than the loss suffered by the other from its abandonment. Warlike stores, and whatever else bears a direct reference to war, are accordingly proscribed as unlawful articles of trade, and made liable to seizure by either of the belligerents. To this inconvenience the neutral is exposed, to avoid the greater inconvenience and damage which might fall on the belligerent by the licensing of such a trade. On the other hand, the neutral state enjoys the most unlimited freedom of trade in all other articles with either of the powers at war; and though, by means of this beneficial intercourse, they may be both furnished with the means of carrying on a protracted contest, this is a contingent and incidental consequence of the trade, which, in its character, is substantially pacific, and which is attended with such great and immediate advantages, that they could not, with any regard to equity, be sacrificed to the remote convenience of the belligerent.

Applying these principles to a siege or to a blockade, it is evident that the belligerent who had an expensive scheme of hostile operations of either kind in dependence would be far more seriously injured by its interruption than the neutral would be benefited by a free intercourse with the blockaded place. On this ground, therefore, a belligerent who has formed a siege or a blockade has an indisputable right to debar the neutral from all intercourse with those who are included within his lines; and any attempt to penetrate the blockade for the purposes of trade subjects those who attempt it to destruction, and their properties to confiscation. The very existence, indeed, of a siege or a blockade, as a lawful act of hostility, implies the right of enforcing it by an indiscriminate exclusion of all who seek access to the besieged.

But although this view of the natnre of a blockade, and of the rights attaching to it, is clearly laid down by all writers on the law of nations, and although it has been acknowledged in practice by all civilized states, a question was agitated in the late wars of Europe, between the neutral and the belligerent powers, as to the *degree* of restraint necessary to constitute a blockade, and, of course, to entitle the blockading party to all the rights consequent upon this scheme of operations; and it is this dispute which was, in a great measure, the occasion of a general war with the neutral powers.

The success which attended the naval operations of Great Britain during the war with France naturally suggested to her rulers the possibility of extending this species of annoyance, and of converting the all-powerful navy which they possessed into an instrument of active hostility. With this view, instead of confining its efforts to the mere watching of the enemy's already ruined trade, it was resolved to give greater scope to such an immense engine of maritime power, by placing under blockade the enemy's ports, the mouths of navigable rivers, and even extensive tracts of his coast. Proclamations to this effect were accordingly issued; and the neutral trader was duly warned off, and prohibited, under the peril of detention, from all intercourse with the interdicted coast. But the legality of these blockades by proclamation being disputed both by the neutral powers and by the enemy, their execution was resisted by a counter decree, which, on the plea of retallation, placed under blockade the whole island of Great Britain, and subjected all neutral vessels to detention and capture which should have been found touching at any of its ports. On the same plea of retallation, several decrees or orders in council were issued by Britain, ordaining that no neutral vessel should have any intercourse with France and her dependencies, except such vessel should first touch at a British port, where, in some cases, the cargo was to be landed, and was to pay certain duties to the British government. From this period the maxims of equity and the rules of international law were set aside, and the ocean became a scene of proscription and pillage. All this anarchy having originated in a disagreement respecting the nature and extent of a blockade, it becomes of importance to bring back the question to its true elements, and to fix the principles by which alone it should be settled.

The object of a blockade is to reduce the inhabitants of the blockaded town to such straits that they shall be forced to surrender to the discretion of their enemies in order to preserve their lives; and hence the legality

of every blockade, except with a view to capture, has been questioned. But without entering into this question, it seems obvious that, in order to constitute the blockade of a town, either with a view to capture or to temporary annoyance, the line by which it is surrounded should be so complete as entirely to obstruct all access into the place. When a place is blockaded with a view to capture, the task of maintaining a real blockade may safely be left to the blockading party. But when a port is blockaded with a view to mere maritime annoyance, the case is widely different; because, in these circumstances, the belligerent will equally attain his end by maintaining the mere show of a blockade, while he is in possession of all its substantial rights. He may, to save himself expense and trouble, relax the blockade of his enemy's ports, while he enforces the exclusion of all neutrals as rigorously as if he were maintaining an effectual blockade; and, in this case, his proclamations, while they are issued ostensibly for the blockade of the enemy's ports, would, in reality, amount to edicts for the suppression of the neutral trade. The urgent, immediate, and obvious interests of the neutral would here be sacrificed to the remote, and in many cases imaginary, convenience of the belligerent. An edict might be issued for the blockade of the enemy's ports, or of extensive tracts of his coast, round which no hostile line could ever be drawn so as to constitute a real blockade; and the whole trade of the neutral with those interdicted parts of the enemy's territory would be immediately annihilated at the arbitrary mandate of one of the belligerents. Instead of being carried on as a matter of right, instead of being regarded as a common benefit to the civilized world, and on this account as proper to be cherished and encouraged, the neutral trade would, under such a system, be looked upon in the light of a tolerated evil, existing only by the sufferance of those who imagined they had an interest in obstructing and in crushing it. The law of nations is not a partial system, modeled to suit the convenience of one party. It is a system of general equity, and its edicts are founded on a comprehensive view of what is for the common welfare and protection. In this view, then, the consequences to the neutral of those extensive and nominal blockades are sufficient to constitute them illegal. The damage to the neutral is infinitely greater than the benefit to the belligerent. The rights of blockade, and the limitation of those rights, must stand upon the same principle of justice and of public law; and their extension beyond this equitable principle must terminate in universal confusion and anarchy.

In opposition to these arguments in favor of the neutral powers, it has been urged that the new system of naval annoyance, introduced by Great Britain in 1806, was legal according to the strictest construction of the law of blockade, because the proclamations for interrupting all intercourse between the different parts of the French coast were not issued until it was ascertained, by the most particular inquiries, that Great Britain possessed an effectual naval force to blockade the enemy's coast from Brest harbor to the mouth of the Elbe. It is solely upon this principle that the ministers of that country maintained the legality of those blockades; and any breach in the line of blockade, they admitted, would be sufficient to constitute them illegal. Such, then, is the state of this important controversy, which seems to resolve itself into a mere question of fact, namely, whether the blockading power has actually carried into effect the blockade, of which notice by proclamation has been given to the neutral powers.

At the conclusion of the last treaty between Great Britain and America, no settlement of these disputed questions took place. The main war between the European belligerents, out of which the American dispute had incidentally sprung, being at an end, the controversy respecting rights which could only be exercised state of war had lost all practical importance. It become a mere question of abstract right, the decision of which was wisely adjourned by the powers at war, and not suffered to clog the work of a general peace. It is likely, however, that on the breaking out of any new war, this and other questions of a like nature would recur, and on this account it might be of importance to the future peace of the world if these questions could be settled according to some acknowledged rule of equity or policy, and that without delay. —E. B.

Blubber (Germ. *Thran, Fischtran;* Du. *Thraan;* It. *Olio di pesce;* Sp. *Grasea, Aceite de pescado;* Russ. *Salo worwannoe, Worwan;* Lat. *Oleum piscinum*), the fat of whales and other large sea-animals, of which train-oil is made. The blubber is the *adeps* of the animal: it lies under the skin, and over the muscular flesh; it is about six inches in thickness, but about the under lip it is two or three feet thick. The whole quantity yielded by one of these animals ordinarily amounts to 40 or 50, but sometimes to 80 or more hundred weight. Formerly train-oil was manufactured from the blubber in the seas round Spitzbergen, and other places where whales were caught; but the practice is now to bring the blubber home in casks, and to prepare the oil afterward.

Board of Trade. Cromwell seems to have given the first notions of a board of trade. In 1655 he appointed his son Richard, with many lords of his council, judges and gentlemen, and about twenty merchants of London, York, Newcastle, Yarmouth, Dover, etc., to meet and consider by what means the trade and navigation of the republic might be best promoted.—THOMAS's *Notes of the Rolls.* Charles II., on his restoration, established a council of trade for keeping a control over the whole commerce of the nation, 1660; he afterward instituted a board of trade and plantations, which was remodeled by William III. This board of superinspection was abolished in 1782; and a new council for the affairs of trade, on its present plan, was appointed September 2, 1786.—HAYDN. In many cities of Europe and the United States, a voluntary *Board of Trade* is established by the merchants of such cities—in some instances termed a "*Chamber of Commerce.*" Such associations are productive of incalculable benefit to the commercial interests at large.

Boat, a small open vessel, propelled on the water by oars or sails. The construction, machinery, and even the names of boats, are very different, according to the various purposes for which they are intended, and the services on which they are to be employed. Thus they are occasionally slight or strong, sharp or flat-bottomed, open or decked, plain or ornamented; as they may be designed for swiftness or burden, for deep or shallow water, for sailing in a harbor or at sea, and for convenience or pleasure. The largest boat that usually accompanies a ship is the *long-boat,* which is generally furnished with a mast and sails. Long-boats fitted for men-of-war are occasionally decked, armed, and equipped, for cruising short distances against merchant ships of the enemy, or smugglers, for impressing seamen, and oth services. The *barges,* which are next in order, are longer, slighter, and narrower. They are employed to carry the principal sea-officers, as admirals and captains of ships of war, and are unfit for the open sea. *Pinnaces* exactly resemble barges, but are somewhat smaller, and have never more than eight oars; whereas a barge properly never rows less than ten. The *cutters* of a ship are broader, deeper, and shorter, than the barges and pinnaces: they are fitter for sailing, and are commonly employed in carrying stores, provisions, passengers, and the like, to and from the ship. In the structure of this sort of boat the lower edge of every plank in the side overlays the upper edge of the plank below, which is called by ship-wrights clinker-build. *Yawls* are somewhat less than cutters, nearly of the same form, and used for

similar services. They are generally rowed with six oars. The above boats more particularly belong to men-of-war. Merchant vessels above 150 tons have at least two, a long-boat and yawl. Merchant ships employed in the Mediterranean find it more convenient to use a *launch*, which is longer, flatter in the bottom, and better adapted every way to the harbors of that sea, than a long-boat. A *wherry* is a light, sharp boat, used in a river or harbor for carrying passengers from place to place. *Punts* are a sort of oblong, flat-bottomed boats, nearly resembling floating stages. They are used by ship-wrights and caulkers, for breaming, caulking, or repairing a ship's bottom. It is also the name for the smallest boat of yachts, etc. A *moses* is a very flat, broad boat, used by merchant ships among the Caribbee Islands, to bring hogsheads of sugar off from the sea-beach to the shipping anchored in the roads. A *felucca* is a strong passage-boat used in the Mediterranean, and propelled with oars and lateen sails. The *pirogue* of the Southern and Eastern seas is a kind of canoe made of the trunk of a tree hollowed out. It is generally worked with paddles, but sometimes it is decked and furnished with sails and an outrigger. The *proa*, so much used by pirates in the Eastern Archipelago, is sharp at both ends, in order to sail either way. Its lee side is rounded, but the weather side is flat, and provided with an outrigger to secure its stability.—E. B. The invention of boats was so early, and their use so general, the art can not be traced to any age or country. Flat-bottomed boats were made in England in the reign of the Conqueror: the flat-bottomed boat was again brought into use by Barker, a Dutchman, about 1690. The life-boat was first suggested at South Shields; and one was built by Mr. Greathead, the inventor, and was first put to sea, January 30, 1790.—Haydn.

Boatswain, the officer in a ship who has the charge of the boats, sails, rigging, colors, anchors, cables, and cordage. It is also the duty of this officer to summon the crew to their duty; to assist with his mates in the necessary business of the ship; and to relieve the watch when its time expires. He has a mate who has the charge of the long-boat, for setting forth anchors, weighing or fetching home an anchor, warping, towing, or mooring.

Bobbin, a small cylinder of wood, with a little border or head at each end, and bored through to receive an iron pivot. It is used in spinning, to wind thread, worsted, hair, cotton, silk, gold, and silver.

Bobbing, among fishermen, a method of catching eels, different from sniggling. To bob for eels, a number of large lobs are well scoured, and a twisted silk thread is run through them from end to end with a needle: they are then tied fast with the two ends of the silk thread, that they may hang in so many hanks; after which the whole mass is attached to a strong cord, with a plummet fixed a little above the worms to sink the bait, and the cord is made fast to a strong pole. This apparatus is thrown into muddy water: the eels tug lustily at the bait; the rope is then to be drawn in gently, and the eels are brought ashore.

Bogs, commonly the remains of fallen forests, covered with peat and loose soil. Moving bogs are slips of land carried to lower levels by accumulated water. Of recent acts, one relating to Ireland for their drainage, passed March, 1830. The bog land of Ireland has been estimated at 3,000,000 acres; that of Scotland at upward of 2,000,000; and that of England at near 1,000,000 of acres. In January, 1849, Mr. Rees Reece took out a patent for certain valuable products from Irish peat.—*Household Words*, No. 41.

Bohea, a species of tea. *See* Tea.

Bole, a friable earthy substance, a species of the soap-stone family. Specific gravity 1·4 to 2. It is found in the island of Lemnos, whence it is sometimes called Lemnian earth; and in Armenia, Italy, France, Silesia, various parts of South America, etc. Armenian and French bole were at one time not uncommon in this country, being used in the materia medica; but they are now entirely, or almost entirely, discarded. In India, however, Armenian bole still continues to be in extensive demand. It is brought to Bombay from the Persian Gulf. It is soft, feels greasy to the touch, adheres strongly to the tongue, and is very frangible: it is generally of a yellowish brown color; though sometimes it is seen of a fine flesh red, which is the variety held in the highest estimation. Some savage nations, such as the Ottomaques, described by M. Humboldt, are in the habit of allaying the pains of hunger by eating boles. The Javanese, when they wish to become thin, eat cakes, called *tanaampo*, made of bole.—Lewis's *Materia Medica*; Thomson's *Chemistry*; Ainslie's *Materia Indica*.

Bolivia. This name was given in 1825 to a new State or Republic in South America, formed from the provinces of Upper Peru, which formerly constituted part of the vice-royalty of Buenos Ayres, and were well known by the names of Charcas, Potosi, La Paz, Cochabamba, and Santa Cruz de la Sierra. These provinces, on securing their independence, soon after the battle of Ayacucho, 9th December, 1824, found it necessary to come to a determination as to their future political state and institutions; and therefore it became a question with the inhabitants of Upper Peru whether they should continue their former connection with the Buenos Ayrean or Argentine provinces, attach themselves to the republic of Peru, or form their country into a separate and independent republic. But the existing government of Buenos Ayres having with equal judgment and generosity divested itself of the claim which it had on the provinces of Upper Peru, the inhabitants of the latter were left at perfect liberty to decide on the future political government of their country. Deputies from all the provinces were in consequence nominated; and having assembled in Chuquisaca, the capital of the republic, in August, 1825, the result of their deliberations was, that the provinces of Upper Peru should in future constitute a separate and independent nation. This assembly, continuing its sessions, issued a declaration of national independence; and, in the exuberance of their gratitude to General Bolivar for the important influence he had exercised in accomplishing the liberation of their country, they determined on giving the name of Bolivia to the whole country.

Bolivia extends from 9° 80′ to 25° 40′ of S. lat., and from 58° to 71° of W. long. from London, and it is bounded on the north by Peru and Brazil, on the east by Brazil and Paraguay, on the south by the Argentine provinces and Chili, and on the west by the Pacific Ocean and Peru. It has been divided by the constituent Congress of Bolivia into six departments, viz., Potosi, Chuquisaca, La Paz, Santa Cruz, Cochabamba, and Oruro; and these have been subdivided into provinces and cantons. Thus each department includes in its jurisdiction certain provinces of the ancient régime. The department of Potosi contains Atacama, Lipez, Potosi, Porco, Chayanta, and Chicas; Chuquisaca contains Charcas or Chuquisaca, Cinti, Yamparaes, and Tomina; La Paz, the provinces of La Paz, Pacajes, Sicasica, Chulumani, Omasuyos, Larecaja, and Apolobamba; Santa Cruz, the provinces of Santa Cruz, Mojos, Chiquitos, Vallegrande, Pampas, and Baures; Cochabamba contains Cochabamba, Sacaba, Tapacari, Arque, Palca, Clisa, and Misque; and the department of Oruro, the provinces of Paria, Oruro, and Carangas.

The only productions hitherto furnished by Bolivia as articles of commerce have been the precious metals, which were exchanged for various articles of luxury and necessity. The rude and simple fabrics manufactured by the Peruvian Indians are usually appropriated to their own domestic uses; while the valuable vegetable productions, and the herds of cattle and

mules, which are reared in the eastern parts of the republic, have hitherto scarcely been sufficient for the supply of the inhabitants of those populous mining districts that are principally dependent on them for subsistence. Cocoa to the value of $200,000 is annually exported from La Paz to other parts of Bolivia and Peru.

Before the Revolution, a very extensive traffic was maintained between the upper provinces of Peru and the provinces of the Rio de la Plata, for supplies of cattle and mules. These were reared in great numbers in all the interior Argentine provinces, expressly for the use of those countries, and were first sent by easy journeys to the luxuriant pastures of Salta and Jujuy, where they were carefully fed and tended during the winter, previous to their being conveyed to their final destination in Bolivia and Peru. Some idea may be formed of the extent of this traffic by stating, that besides all those furnished by the other Argentine provinces, the province of Salta alone supplied annually to Upper and Lower Peru from 60,000 to 80,000 mules, on all of which they realized considerable profits, the prices being proportioned to the distance to which they were conveyed. The war of independence, which has so greatly desolated the northern provinces of the Rio de la Plata, and the diminished working of the mines of Bolivia, have almost annihilated this lucrative traffic; but it may be expected to revive with increasing vigor on their again resuming their former habits of tranquillity, and becoming stimulated to increased exertion, by the accession of laborious and intelligent Europeans, and by the spread of education and intelligence.

By the route of Cordova, Tucuman, and Salta, the provinces of Upper Peru or Bolivia formerly received their supplies of articles of commerce from Europe, which were landed at Buenos Ayres; and by the same channel they likewise obtained large supplies of *Yerba* or Paraguay tea, to the great amount, it is affirmed, of 100,000 *arrobas*, or about 2,500,000 pounds annually, which had been previously conveyed by water from Paraguay to Buenos Ayres, and from thence by wagons and mules to Jujuy and Bolivia; thus enhancing its value by a circuitous and expensive land-carriage of from 2000 to 3000 miles, while, by a more improved system of conveyance, it might be sent by the rivers Vermejo and Pilcomayo into the heart of Bolivia, at a vast saving of trouble and expense. The large amount of goods sent from Buenos Ayres by wagons to Jujuy tended greatly to enrich the various provinces through which they passed, giving employment to numbers of the inhabitants; and Jujuy, which formed the most distant point that could be reached by wagons or carriages, became a place of considerable importance, forming the *entrepôt* of the commerce of Peru and the Argentine provinces. From this place the various articles of commerce were conveyed on mules to their ulterior destination.

The new order of affairs consequent on the Revolution has necessarily produced important changes in this branch of commerce, and Bolivia has in a great measure ceased to receive her supplies of foreign commodities by this expensive route. Commerce, where unrestricted, always finds out the shortest and least expensive channels for the introduction of its commodities. The trade is now in a great degree diverted to the ports of the Pacific, called the Puertos Intermedios. Tacna and Arequipa, with their respective ports, have now become the principal channels through which Bolivia receives the produce and manufactures of other countries. How far the Bolivian government has succeeded in making Cobija or Puerto la Mar of that exclusive commercial importance which it contemplated, remains yet to be ascertained. Nature presents great obstacles to the success of the undertaking, which is certainly a most praiseworthy one; while all the rest of the coast, in which are situated the Puertos Intermedios, forms part of the republic of Peru, to which, therefore, they must necessarily pay transit duties. A new and very important channel of communication for commerce will be opened between Bolivia and the Atlantic, whenever commercial enterprise and increasing civilization shall have established steam navigation on the Rio de la Plata and its tributary streams, the Vermejo and Pilcomayo, and from the mouth of the Amazon to its distant tributaries, the Beni and the Mamori.

By a decree of the republican government of Peru, dated 22d February, 1831, the following judicious regulations have been established for settling the commercial relations of that state with the republic of Bolivia: 1. The productions of the territory of the Bolivian republic, introduced into Peru for its consumption, shall be subject to an import duty of 4 per cent. on their valuation. 2. Those productions of Bolivia which only pass through the territory of Peru for embarkation from its ports, shall only be subjected to a transit duty of 2 per cent. 3. Silver and gold, either coined or otherwise, introduced from Bolivia into Peru, shall be exempted from any duties. 4. All foreign articles of commerce passing through the territory of Peru, and destined for Bolivia, shall only be subjected to the payment of 2 per cent. *ad valorem;* and the decree of 22d January, 1830, which imposed transit duties of from 15 to 45 per cent. on such commodities, has been repealed.

Silver, however, has hitherto been the staple metallic production of Bolivia, and has given to it that celebrity which it has long possessed. In the rich mountain of Potosi alone, from the year 1545 to the year 1800, no less than $823,950,509 were coined; and if to this be added the amount of the preceding years, not included, and that obtained in a clandestine manner, $1,647,001,018 has been obtained in the space of 225 years.—E. B.

Bomb (*βόμβος*, a loud noise), in military affairs, a large shell of cast iron, with a vent to receive a fusee, which is made of wood. The shell being filled with gunpowder, the fusee is driven into the vent within an inch of the head, and fastened with a cement made of quick-lime, ashes, brick-dust, and steel-filings, worked together in a glutinous water; or of four parts of pitch, two of colophony, one of turpentine, and one of wax. This tube is filled with a combustible matter made of two ounces of nitre, one of sulphur, and three of gunpowder-dust, well rammed. To preserve the fusee, it is pitched over, but uncased when the bomb is put into the mortar, and covered with gunpowder-dust, which, taking fire by the flash of the powder in the chamber of the mortar, burns all the time the bomb is in the air; and when the composition in the fusee is spent, it fires the powder in the bomb, which bursts with great violence and commits dreadful devastation.

Bombs may be used without mortars, as was done by the Venetians at Candia, when the Turks had possessed themselves of the ditch. Bombs were rolled down upon them along a plank with ledges set sloping toward their works. Bombs did not come into common use before the year 1634, and then only in the Dutch and Spanish armies. One Malthus, an English engineer, is said to have first carried them into France, where they were used at the siege of Collioure.—E. B.

Bombay (Portug. *Buon-Bahia*, "good harbor"), a city, sea-port, and capital of the presidency, is situated on a narrow neck of land at the southeastern extremity of the island of Bombay, separated from the main land by an arm of the sea, forming, with the contiguous islands of Colabah, Salsette, Butcher's Island, and Caranjah, one of the best harbors in India. Lat. 18° 56′ N., long. 72° 53′ E. In 1716 the population was 16,000; in 1816, 161,350; and, according to the *Bombay Calendar*, in 1845, 235,000. Of these two-thirds are Hindoos, 20,000 Parsees, and the rest Musulmans, Jews, and Christians; with a great variety

of fluctuating population, chiefly sailors and traders. It consists of the fort or old town, 1 mile in length by ¼ mile in breadth, in which the European inhabitants and most of the Parsee merchants reside; and the new town, about 1 mile distant northward, inhabited by the Hindoos and Mohammedan native population, beyond which suburb are many detached villas and bungalows, belonging to European and other residents. Bombay Island was ceded by the Portuguese to the English in 1661, as the dower of Queen Catharine, wife of Charles II., and was taken possession of in 1664; so that it has been in their occupation about 180 years, being by far the oldest of their possessions in the East. In 1668 it was transferred by the crown to the East India Company by letters-patent, in free and common soccage, on payment of the annual rent of £10. But by the present charter it has reverted to the crown, with the rest of the company's assets, being held by the company in trust merely. On its cession to the crown of England, in 1661, its population did not exceed 15,000; but at present it has upward of 230,000 inhabitants. The fort stands on the south-eastern extremity of the island, on a narrow neck of land, immediately over the harbor. The fortifications are extensive, and on the sea-side very strong.

Bombay has a lively appearance from the sea; but as a city it is greatly inferior to Calcutta or Madras. The houses within the walls are built of wood, and covered with tiles. Principal edifices in the fort are the court-house, secretariate, and other government offices, custom-house, town-hall, castle, mint, cathedral of St. Thomas, St. Andrew's Scotch church, European hospital, etc. In the centre of the fort is an irregular open space called the "Green;" and outside of the massive fortifications is the esplanade. In the new town are Elphinstone college, Sir J. Jejeebhoy's hospital, the Byculla church and club, the house of correction, theatre, and the great Hindoo temple of *Momba Devi*. On the southwest the fort is connected by Colabba causeway with the island of Colabba, on which are the light-house, observatory, lunatic asylum, some mercantile buildings, and a stone pier. The government-house is at Parell, 6 miles north of the fort. There are two banks—the Bank of Bombay and the Commercial Bank of India. The property of the island belongs principally to the Parsees, who are the chief merchants and moneyed men. The harbor of Bombay is one of the best in India, and affords good anchorage for ships of the largest burden. On it are also excellent building and other docks for ships of the first class. Next to Calcutta and Canton, Bombay is the principal commercial emporium in the East, and for many years its trade has been uniformly increasing. In 1837 a steam navigation was commenced between Bombay and Suez; three steamers were at first employed, which the war in 1843 increased to 8; and a regular monthly passage is now made from London to India, under the arrangements of the Oriental Steam Navigation Company. *Bombay Island*, on which the city is built, is 8 miles in length, and 3 miles in breadth, and is formed of two ranges of green-stone, connected in the middle by sand-stone strata. The interior lies low, and was at one time liable to be flooded by the tide, but an embankment was erected to keep out the sea.

Bombay Harbor is one of the safest and most commodious in India. It is bounded on the west and north by the island of Colabah, or Old Woman's Island, Bombay Island, and the island of Salsette. The first two are separated only by a narrow creek fordable at low water, and Bombay Island was joined to Salsette by a causeway constructed in 1805. On the east side of the harbor, between it and the main land, is Butcher's Island, distant about 4 miles from Bombay; and immediately behind Butcher's Island is the famous island of Elephanta. About 3 miles south from Butcher's Island is the island of Caranjah, on the western side of which, next the harbor, is an extensive shoal. Southwest from Caranjah, distant about 5 miles, is Tull Point; between which and Colabah, or Old Woman's Island, is the entrance to the harbor. There is a light-house on the southern extremity of Colabah Island, elevated about 150 feet above the level of the sea, which in clear weather may be seen at the distance of 7 leagues. The point on which the light-house stands is surrounded on all sides by an extensive reef of rocks divided into prongs: of these, the most dangerous is the prong stretching southwest about 3 miles from the light-house, and forming the northern boundary of the entrance into the harbor. The reef, stretching west-northwest from Tull Point about 3½ miles, forms the southern boundary of the entrance; the breadth of the channel between them being about 3 miles, with a depth of from 7 to 8 fathoms. In going into the harbor, it is necessary to clear a sunken rock, lying almost due east from the light-house, at about 1½ mile distant; and also a bank, called the middle-ground, lying nearly opposite to and about 1½ mile from the southern extremity of the town.—*See* NICHOLSON *and* WATSON'S *Plan of Bombay Harbor.*

Docks.—Bombay is the only port of consequence in British India in which the rise and fall of the tide are so considerable as to admit of the formation of extensive wet docks. At ordinary spring-tides the rise is about 14 feet, but occasionally as high as 17 feet. The capacious docks constructed by the East India Company are their property, and are for the most part under the direction of Parsees, who, excepting the Chinese, are the most industrious and intelligent people of the East. Merchant vessels of the largest class, or from 1300 to 1400 tons burden, for the cotton trade to China, have been built in these docks. Frigates and line-of-battle ships have also been occasionally constructed in them, sometimes under the exclusive direction of Parsee artificers. The timber having to be brought from a great distance, ships built at Bombay are very costly; but being, contrary to the practice in other parts of India, entirely constructed of teak, they are the most durable vessels in the world, requiring little repair, and often running 50 or 60 years. Being for the most part built by natives, without any very strict application of the rules of the art, they are commonly, though not always, heavy sailers.

Commerce, etc.—The small and sterile island of Bombay affords no produce for exportation; indeed, hardly a week's consumption of corn for its inhabitants. Nor does the whole presidency of Bombay, although comprising about 130,000 square miles, and from 8,000,000 to 9,000,000 inhabitants, with a net revenue in 1848–'49 of £2,460,000, yield, with the exception of cotton, rice, and coffee, any of the great colonial staples, such as sugar and indigo; a circumstance which may, perhaps, be ascribed to the impolitic restraints upon the employment of British settlers and capital that were long imposed by law, and acted upon with peculiar rigor in this and the sister presidency of Madras, in contradistinction to the greater latitude afforded in Bengal. Bombay is also much less favorably situated, in respect of internal communications, than Calcutta. The Ganges and its tributary streams intersect the richest provinces of India, and give Calcutta a vast command of inland navigation; whereas all the inland trade of Bombay has to be carried on by means of roads that are seldom available for carriages, and which can be used only by pack-bullocks and camels. The transit duties, by which the inland trade was grievously oppressed, have been abolished; and if this judicious measure be followed up by the formation of lines of railways to the principal markets in the interior, a great increase of the trade of the town and improvement of the presidency may be expected.

The principal trade of Bombay is carried on with China, Great Britain, the countries on the Persian and Arabian gulfs, Calcutta, Cutch and Scinde, the Mala-

bar coast, foreign Europe, etc. The imports from China consist principally of raw silk, sugar, and sugar-candy, silk piece goods, treasure, etc. The principal articles of export to China are, raw cotton, opium (18,000 chests), principally from Malwa, sharks' fins and fish maws, sandal-wood, pearls, etc. The exports to China being much greater than the imports, the returns for several years past have been made to a large extent in bills on London, and on the Indian governments, drawn by the merchants in China.

The trade with the United Kingdom has been regularly increasing since the abolition of the restrictive system. The chief articles of import from Great Britain are, cotton and woolen stuffs, cotton yarn, hardware, copper, iron and lead, glass, apparel, fur, stationery, wine, etc. The principal articles of export to Britain are, raw cotton, raw silk from China and Persia, ivory, pepper, and spices, piece goods, coffee from the Red Sea, and wool. The export of the last-mentioned article increased with extraordinary rapidity, the quantity shipped for England in 1833–'34 being only 69,944 lbs.; whereas the shipments for England in 1840–'41 amounted to 8,428,055 lbs. But it has since continued nearly stationary. At present the principal supply of the article is drawn from Cutch and Scinde, and from Marwar, *via* Guzerat; but active measures have been taken by government for improving the flocks in the pastoral country of the Deccan, so that a further and very considerable increase of this new and important trade may be anticipated.

Bombay Presidency, the most westerly and the smallest of the three presidencies of British India, mostly between lat. 14° and 24° N., and long. 72° and 76° E., having northwest and north the Guicowar's dominions, east the territories of Indore and the Nizam, south Goa, Mysore, and the Madras presidency, and west the Indian Ocean. Area, with Scinde and Sattara, 120,065 square miles. Population 10,485,017, and is composed of the following subdivisions: Bombay Island, Poonah, Ahmednuggur, Candeish, Dharwar, South Jaghiredars, South Concan, North Concan, Surat, etc., Baroach, Ahmedabad, Kaira, Sattara, etc. The Western Ghauts separate the western or maritime from the eastern districts, which latter form a part of the great table-land of the Deccan. In the north the mountains belong to the Santpoora and other ranges connected with the Vindhyan chain. Principal rivers, the Nerbudda, Taptee, Mhye, and Sabermutty, falling into the Gulf of Cambay. Above the Ghauts, the rivers are tributary to the Godavery and Kistnah. Climate for the most part less hot and more healthy than in the other presidencies, a great part of the country being under the influence of the sea-breezes. Rice and cotton are the principal articles of culture, and the cotton of this presidency is decidedly superior to that of the others. Some sugar and indigo are raised in Candeish. Opium is nowhere cultivated, and other examples of Indian produce are only produced in small quantities; but in return, the cardamoms, pepper, and teak, exported from India, are almost exclusively the growth of this region. The northern districts are famous for their great variety of fruits; cocoa palms cover a very large extent of sandy land in the Concan, etc.; wool has lately been exported in considerable quantities from Bombay; and great exertions have been made to introduce the culture of silk. The cattle of Gujerat are a large and fine breed. West of the Ghauts, the ox and buffalo are almost the only domestic animals. The whole presidency is assessed under the native village system of India, except the districts of Surat and Kaira, where the *ryotwarry* system is in force. In the capital of each collectorate is the seat of a British collector and a judge, subordinate to the central court of Bombay. A few years ago the army comprised about 30,000 men and officers, of whom 6250 were Europeans. The whole of the Indian marine is attached to this presidency. In the south there are many native and Roman Catholic and Nestorian Christians. The Parsees are now almost confined to this part of Asia. Revenue, 1849, 24,608,376 rupees. There are in the presidency an English episcopal bishopric with 24 clergy, a Scottish kirk, and Roman Catholic establishments, which receive government aid. Elphinstone college was founded in 1837, and there are 120 schools for the native Hindoos, in which from 800 to 900 boys receive education, besides nearly 2000 native village schools. Bombay was the earliest possession of the British in the East. It was ceded by the Moguls to the Portuguese in 1530, and it came into the possession of the English in 1662 as a part of the dowry of the Infanta of Portugal, on her marriage with Charles II.; but by far the greater part of the territory has been acquired between 1803 and 1818.—*See* INDIA.

Bombazine, a kind of silk stuff, originally manufactured at Milan, and thence sent into France and other countries. Now, however, it is manufactured in large quantities and of a good quality in Great Britain as well as on the Continent.

Bomb-vessel, or **Bomb-ketch**, a small ship of unusual strength, employed for throwing bombs into a fortress; said to have been invented by M. Reyneau, and first used at the bombardment of Algiers. Till then it had been judged impracticable to bombard a place from the sea.—E. B.

Bond, in *Law*, is a deed whereby the party obliges himself, his executors, or administrators (and, if the deed so express it, his heirs also), to pay a certain sum to another at a day appointed. If this be all, the bond is called a simple one (*simplex obligatio*). But there is generally a condition added, that, if the obligor does some particular act, the obligation shall be void, or else shall remain in full force; as, payment of rent, performance of covenants in a deed, or repayment of a principal sum of money borrowed of the obligee, with interest; which special sum is usually one-half of the penal sum specified in the bond. In case this condition is not performed, the bond becomes forfeited, or absolute at law, and charges the obligor while living, and, after his death, his personal representatives, and his heirs if the heirs be named in the bond. In case of a failure to perform the condition of the bond, the obligee can recover only his principal, interest, and expenses; if the bond were given to secure the payment of money, or if it were given to secure the performance of a covenant, he can recover only reasonable damages for the breach.—E. A.

Bones of cattle and other animals are extensively used in the arts, in forming handles for knives, and various other purposes; but of late years they have been of most importance in agriculture. When employed in the latter, they are, in most instances, ground or reduced to powder, and are commonly used as manure for turnips, being in general drilled in with the seed, though sometimes, also, they are sown broadcast, and with other crops. The quantity used varies from about 25 bushels of *dust* to about 40 bushels *large* an acre. Their effect is said to be considerably increased when they have undergone the process of fermentation. They were first used in England on a large scale as a manure in Lincolnshire; and there can be no doubt that their extensive employment in that county has been one of the chief causes of its rapid improvement, and of the high state of cultivation to which it has attained. Bone-dust is now, however, very largely used, and its influence in increasing the crops of corn and turnips, and consequently, also, the supplies of butcher's meat and farm manure, has been quite extraordinary.

Book-keeping, the art of keeping the accounts and books of a merchant. Book-keeping by double entry means that mode or system in which every entry is double, that is, has both a debtor and a creditor. It is called also the Italian method, because it was

first practiced in Venice, Genoa, and other towns in Italy, where trade was conducted on an extensive scale at a much earlier date than in England, France, or other parts of Europe. This method, however familiar to merchants and book-keepers, seems intricate to almost all who have not practiced it; nor is the dryness and difficulty of the task much lessened by the printed works on the subject, which, having been compiled more by teachers than by practical merchants, contain a number of obsolete rules and unnecessary details. To discuss this subject fully would require more space than could be appropriated in this work. We therefore refer our readers to the reliable volumes of Mr. Marsh (published by Appleton & Co., New York) and other writers.

Books (Ger. *Bücher;* Du. *Boeken;* Da. *Böger;* Sw. *Böcker;* Fr. *Livres;* It. *Libri;* Sp. *Libros;* Port. *Livros;* Russ. *Knigi;* Pol. *Ksiaski, Kniegi;* Lat. *Libri*), written or printed treatises on any branch of science, art, or literature, composed in the view of instructing, amusing, or persuading the reader. Ancient books were originally boards, or the inner bark of trees; and bark is still used by some nations, as are also skins, for which latter parchment was substituted. Papyrus, an Egyptian plant, was adopted in that country. Books whose leaves were vellum were invented by Attalus, king of Pergamus, about 198 B.C., at which time books were in volumes or rolls. The MSS. in Herculaneum consist of papyrus, rolled and charred, and matted together by the fire, and are about nine inches long, and one, two, or three inches in diameter, each being a separate treatise. The Pentateuch of Moses, and the history of Job, are the most ancient in the world; and in profane literature, the poems of Homer, though the names of others still more ancient are preserved.—Haydn.

Prices of Books.—Jerome states that he had ruined himself by buying a copy of the works of Origen. A large estate was given for one on cosmography, by Alfred, about A.D. 872. The *Roman de la Rose* was sold for above £30; and a Homily was exchanged for 200 sheep and five quarters of wheat; and they usually fetched double or treble their weight in gold. They sold at prices varying from £10 to £40 each, in 1400. In our own times, the value of some volumes is very great. A copy of *Macklin's Bible*, ornamented by Mr. Tomkins, has been declared worth 500 guineas.—Butler. A yet more superb copy is at present insured in a London office for £3000.—*Times. Il Decamerone* of Boccacio, edition of 1471, was bought at the Duke of Roxburgh's sale by the Duke of Marlborough for £2260, June 17, 1812.—Phillips. A copy of the "Mazarin Bible," being the first edition and first book ever printed (by Guttemberg at Mentz, in 1455), was sold at auction in London, in April, 1846, for £500. This copy, the only one known to exist except 19 in public libraries, is now in a private library in New York.—*Id.*

Printed Books.—The first printed books were trifling hymns and psalters, and, being printed only on one side, the leaves were pasted back to back. The first printing was, as a book, the *Book of Psalms*, by Faust and Schœffer, his son-in-law, Aug. 14, 1457. Several works were printed many years before; but as the inventors kept the secret to themselves, they sold their first printed works as manuscripts. This gave rise to an adventure that brought calamity on Faust. He began in 1450 an edition of the Bible, which was finished in 1460. The second printed was *Cicero de Officiis*, 1466.—Blair. The first book printed in England was *The Game and Play of the Chesse*, by Caxton, 1474. The first in Dublin was the *Liturgy*, in 1550. The first classical work printed in Russia was *Corn. Nepotis Vitæ*, in 1762. *Lucian's Dialogues* was the first Greek book printed in America (at Philadelphia), 1789. Books of astronomy and geometry were all destroyed in England as being infected with magic, 6 Edw. VI. 1552.—Stowe's *Chronicles*. According to Pettigrew (*Biblio. Sussex.*), the first book printed with movable types was the Latin Bible, printed by John Guttemberg at Mayence, about 1455. It was in two folio volumes; and so excellent was the workmanship, both in type, ink, paper, and press-work, that it has scarcely been surpassed since. The succeeding editions for 200 years were much inferior. This edition is called the *Mazarin Bible*, as a copy was first found in the library of Cardinal Mazarin. Only 20 copies are now known to exist, all but one being in public libraries in Europe. Specimens of the *block books*, printed with engraved wooden blocks, instead of type, are now very rare. Of the *Biblia Pauperum*, done in this way, only two copies exist, one of which belongs to a citizen of New York.

Copyright is the right which the authors of books or treatises claim to the exclusive privilege of printing, publishing, and selling them.

Books are divided into *classes*, according to the mode in which the sheets of the paper on which they are printed or written are folded: viz., *folio*, when the sheet is folded into two leaves; *quarto*, when folded into *four; octavo*, when folded into *eight; duodecimo*, when the sheet is folded into *twelve*, etc. In making these classifications, no attention is paid to the *size* of the sheet.

Progress and present State of the Law as to the Copyright of Books.—It has been doubted whether, in antiquity, an author had any exclusive right to a work, or whether, having once published it, he could restrain others from copying it and selling copies. We incline to think that he could. The public sale of copies of works is often referred to in the classics; and in such a way as warrants the inference that they were productive to the author, which could not have been the case had every one been permitted to copy them at pleasure. Terence, in one of his plays (*Prol. in Eunuch.* l. 20), says, *Fabulam, quam nunc acturi sumus, postquam ædiles emerunt;* but why should the magistrates have bought it, had it been free to every one to copy it? It would have been singular, indeed, had it been otherwise. Of all the species of property a man can possess, the fruits of his mental labors seem to be most peculiarly his own. And though it may, we think, be shown that many serious inconveniences would result from giving the same absolute and interminable property over ideas that is given over material objects, these inconveniences could hardly have been perceived in antiquity. It will also be observed that in antiquity a copyright was of much less value than in modern times. Books could then only be multiplied by copying them with the pen; and if any one chose privately to copy a work, or to buy it of another, it must have been very difficult to hinder him; but when printing had been introduced, the greater cheapness of books not only extended the demand for them in far greater proportion, and consequently rendered copyrights more valuable, but it also afforded the means of preventing their piracy. Printing is not a device by which a few copies of a book can be obtained at a cheap rate. It is productive of cheapness only when it is employed upon a large scale, or when a considerable impression is to be thrown off. And hence, after its invention, piracy could hardly be committed in secret: the pirated book had to be brought to market; the fraud was thus sure to be detected, and the offending party might be prosecuted and punished.

For a considerable time after the invention of printing, no questions seem to have occurred with respect to copyrights. This was occasioned by the early adoption of the licensing system. Governments soon perceived the vast importance of the powerful engine that had been brought into the field; and they endeavored to avail themselves of its energies by interdicting the publication of all works not previously licensed by authority. During the continuation of this system, piracy was effectually prevented. The licensing act (13 & 14 Chas. II. c. 2), and the previous acts and proclamations to the same effect, prohibited the printing of any book

without consent of the owner, as well as without a license. In 1694 the licensing act finally expired, and the press then became really free. Instead, however, of the summary methods for obtaining redress for any invasion of their property enjoyed by them under the licensing acts, authors were now left to defend their rights at *common law;* and as no author or bookseller could procure any redress for a piracy at common law, except in so far as he could *prove damage*, property in books was virtually annihilated; it being in most cases impossible to prove the sale of one printed copy out of a hundred. Under these circumstances, applications were made to Parliament for an act to protect literary property, by granting some speedy and effectual method of preventing the sale of spurious copies. In consequence, the statute 8 Anne, c. 19, was passed, securing to authors and their assignees the exclusive right of printing their books for 14 years certain, from the day of publication, with a contingent 14 years, provided the author were alive at the expiration of the first term. Persons printing books protected by this act, without the consent of the authors or their assignees, were to forfeit the pirated copies, and 1*d.* for every sheet of the same. Such books as were not entered at Stationers' Hall were excluded from the benefit of this act.

Every one must be satisfied that 14 years' exclusive possession is far too short a period to indemnify the author of a work, the composition of which has required any considerable amount of labor and research; though 28 years is perhaps, all things considered, not a very improper period. But the grand defect of the statute of Anne consisted in its making the right to the exclusive possession for 28 years contingent on the fact of a person having lived a day more or less than 14 years after the publication of his work. This was making the enjoyment of an important right dependent on a mere accidental circumstance over which man has no control. Could any thing be more oppressive and unjust than to hinder an author from bequeathing that property to his widow and children that would have belonged to himself had he been alive? Nothing, indeed, as it appears to us, can be more obvious than the justice of extending all copyrights to the same period, whether the authors be dead or not.

In the United States, the jurisdiction of this subject is vested in the Federal government by the Constitution (art. 1, sec. 8), which declares that Congress shall have power "to promote the progress of science and useful arts, by securing for limited times, to authors and inventors, the exclusive right to their respective writings and discoveries."

By the acts of Congress, May 31, 1790 (c. 15), and April 29, 1802 (c. 36), the authors of maps, charts, books, engravings, etchings, etc., being citizens of the United States, or resident therein, are entitled to the exclusive right of publishing for 14 years, and, if the author be living at the end of that period, for an additional term of 14 years.

The English law does not distinguish between residents and non-residents, aliens, like the American law.

A copyright may exist in a translation, or in part of a work (as in notes or additional matter); but a *bona fide* abridgment of a book is not considered in England and the United States a violation of the original copyright. So a person may use a fair quotation, if by application he makes it part of his own work; but can not take the whole, or large part, under pretense of quotation. If an encyclopedia or review copies so much of a book as to serve as a substitute for it, it becomes liable to an action for a violation of the law. An encyclopedia is not allowed by its transcripts to sweep up all modern works. In Germany abridgments are not protected as in the United States.

The great practical difficulty in interpreting the copyright acts is in distinguishing between an original work and a copy made, *animo furandi*, from one already in existence. The following is a summary of Mr. Godson's remarks on this subject:

"The identity of a literary work consists entirely in the *sentiments* and *language*. The same conceptions, clothed in the same words, must necessarily be the same composition; and whatever method is taken of exhibiting that composition to the ear or the eye, by *recital*, or by *writing*, or by *printing*, in any number of copies, or at any period of time, the property of another person has been violated; for the new book is still the identical work of the real author. Thus, therefore, a transcript of nearly all the sentiments and language of a book is a glaring piracy. To copy part of a book, either by taking a few pages *verbatim*, when the sentiments are not new, or by imitation of the principal ideas, although the treatises in other respects are different, is also considered to be illegal. Although it was held by Chief-Justice Ellenborough that a variance in *form* and *manner* is a variance in *substance*, and that any material alteration which is a *melioration* can not be considered as a piracy; yet a piracy is committed, whether the author attempt an original work, or call his book an abridgment, if the principal parts of a book are servilely copied or unfairly varied. But if the main design be not copied, the circumstance that part of the composition of one author is found in another is not of itself piracy sufficient to support an action. A man may fairly adopt part of the work of another; he may so make use of another's labors for the promotion of science, and the benefit of the public; but having done so, the question will be, Was the matter so taken used fairly with that view, and without what may be termed the *animus furandi*? In judging of a quotation, whether it is fair and candid, or whether the person who quotes has been swayed by the *animus furandi*, the quantity taken, and the *manner* in which it is adopted, of course must be considered. If the work complained of be *in substance* a copy, then it is not necessary to show the intention to pirate; for the greater part of the matter of the book having been purloined, the intention is apparent, and other proof is superfluous. A piracy has undoubtedly been committed. But if only a *small portion* of the work is quoted, then it becomes necessary to show that it was done *animo furandi*, with the intention of depriving the author of his just reward, by giving his work to the public in a cheaper form. And then the *mode* of doing it becomes a subject of inquiry; for it is not sufficient to constitute a piracy that part of one author's book is found in that of another, unless it be nearly the whole, or so much as will show (being a question of fact for the jury) that it was done with a bad intent, and that the matter which accompanies it has been *colorably* introduced.—P. 215–217. If a work be of such a libelous or mischievous nature as to affect the *public morals*, and that the author can not maintain an action at law upon it, a court of equity will not interpose with an injunction to protect that which can not be called property. Even if there be a doubt as to its evil tendency, the lord chancellor will not interfere."—Godson, p. 212.

Expediency of limiting Copyrights to a reasonable Term.—It is argued by many that copyrights should be made perpetual; that, were this done, men of talent and learning would devote themselves much more readily than at present to the composition of works requiring great labor; inasmuch as the copyright of such works, were it perpetual, would be an adequate provision for a family. But we doubt much whether these anticipations would be realized. Most books or manuscripts are purchased by the booksellers, or published upon the presumption that there will immediately be a considerable demand for them; and we apprehend that when copyrights are secured for 42 years certain, very little more would be given for them were they made perpetual. When an annuity, or the rent or profit arising out of any fixed and tangible property, with respect to which there can be no risk, is sold, if the number of years for which it is to continue be considerable, the price which it is worth, and which it fetches, does not differ materially from what it would bring were it perpetual. But the copyright of an unpublished work is, of all descriptions of property in which to speculate, the most hazardous, and the chances of reaping contingent advantages from it, at the distance of 42 years, would be worth very little indeed.

Perhaps the period of 28 years has been advantageously extended to 42; but we are satisfied that more injury than benefit would result to literature by extending it beyond this term. In France, copyrights

continue for 20 years after the death of the author. In most of the German States they are perpetual; this, however, until very recently, hardly indemnified the authors for the ease with which spurious copies might be obtained from other States. But by a late resolution of the Diet, a copyright secured in one State is good in all.

International Copyrights.—The establishment of an international copyright system, that should enable the authors of one country to secure the copyright of their works in other countries, has of late excited a good deal of attention. We doubt, however, whether the advantages that would result from such a system, were it established, would be so great as many seem to suppose. No doubt it would be advantageous for the authors of popular works in Great Britain and the United States, for example, to be able to secure a copyright in both countries; but the real question is, would the interests of literature and of the public be promoted by such arrangement? Now we incline to think that this question must be answered in the negative. The single market of either Great Britain or the United States is quite large enough to secure a sale for really good works sufficient to afford ample encouragement to their authors; and such being the case, it is difficult to see on what ground the republication at a cheap rate in the one country of books originally published in the other should be prevented. Indeed, such prevention would appear, by obstructing the circulation of knowledge and of amusement, to be injurious to both. It has, it is true, been alleged that if we had a copyright system in common with England, English and American books might be published at a less price, inasmuch as the extension of the market would secure them a larger sale. But though this result *might*, we doubt much whether it really *would*, happen. We apprehend that then, as now, authors and publishers would impose such prices on their works as they supposed would realize the largest amount of profit, and that if they thought a high price more likely to do this than a low one, it would be preferred. The extensive reprinting of cheap editions of French works that has for a lengthened period been carried on at Brussels has certainly been disadvantageous to the literati of France. Still, however, the market of that kingdom seems to be sufficiently extensive to insure the unlimited production of works displaying the greatest talent, research, and industry; and it is plain that if the production of valuable works be not checked in France by their being reprinted abroad, the injury done to French men of letters redounds to the advantage of every foreigner who has occasion to look into or consult their works. Every effort should be made to prevent copyrights being invaded by pirates at home, and by the clandestine importation of books printed abroad; but farther than this we should not go. We are well convinced that it is for the advantage of the public and of literature that nations should have full liberty to republish each other's works in such forms and at such times and prices as they may think fit.

The real evil with which our literature has to contend originates in the barefaced piracy carried on at home, and not in the proceedings of foreigners. The latter may, perhaps, interfere a little with the sale of native works, by supplying the public with foreign instead of home editions; but the proceedings of the indigenous pirates are ten times more mischievous. They consist, for the most part, of knaves and drudges, without talent or learning of any sort, save only that of transmuting and adulterating the labors of others, and disguising their own rascality. Such persons fasten like leeches on any new work of talent, research, and industry; they forthwith announce some system, compilation, or abridgment of the same sort, every idea and statement in which is stolen; and then publish their spurious rubbish at a low price, advertise it as being decidedly the best work on the subject, and find numbers of newspaper writers ready to puff off and eulogize their disinterested and meritorious labors! It is difficult, we admit, to deal with such a nuisance, and it can not, perhaps, be abated by legislation. But while we regret the fact, there can not, we believe, be a question that courts and juries have for a lengthened period inclined too much to a lenient interpretation of the law as to piracy; and that literary plunderers, whose robberies are but little disguised, too often escape with impunity.

By the following table it will be seen that the foreign trade in books and maps is limited. The imports are from England and France principally, and also a few from Germany.

DOMESTIC EXPORTS FROM THE UNITED STATES, FOR THE YEARS ENDING JUNE 30TH, 1853, 1854, 1855.

	1853.	1854.	1855.
Books and Maps	$142,604	$187,395	$207,219
Paper and Stationery....	122,212	191,848	185,637

IMPORTS OF PAPER AND BOOKS INTO THE UNITED STATES, FOR THE YEARS ENDING JUNE 30TH, 1853, 1854, 1855.

	1853.	1854.	1855.
Paper and Stationery....	$602,659	$755,829	$768,122
Books and printed matter	723,221	917,044	793,431

Boom (Dutch *boom*, a beam), in naval language, a long spar for spreading out the clew or corner of particular sails; as the jib-boom, studding-sail boom, main boom, square-sail boom, etc. Boom denotes also a strong chain or cable stretched across the mouth of a river or harbor, with spars lashed to it, to prevent the entrance of an enemy's ships.—E. B.

Booming, among sailors, denotes the application of a boom to the sails, in order to accelerate the speed of the ship.—E. B.

Boots and **Shoes**, the external covering for the legs and feet, too well known to require any description. Boots are said to have been the invention of the Cerians, and were made of iron, brass, or leather; of the last material, some time after their invention, boots were known to the Greeks, for Homer mentions them about 907 B.C.—For an account of the value of the boots and shoes annually produced, *see* LEATHER, and for the duties on those imported *see* TARIFF.

Borax, or **Tincal** (Arab. *Burak*; Pers. *Tunkar*), one of the salts of soda. It is white, transparent, rather greasy in its fracture; its taste is styptic, and it converts sirup of violets to a green. It readily dissolves in hot water, and swells and bubbles in the fire. It is of great use as a flux for metals.—THOMSON'S *Chemistry*. This salt is found in a crystallized state at the bottom of certain lakes in Thibet, and in various localities in Persia, China, South America, and Europe. Formerly, however, the demand of Europe was almost wholly supplied from the East, and especially by importations from Thibet, where the salt is comparatively abundant. Crude borax, when imported, is called *tincal*, being enveloped in a fatty matter, from which it has to be separated by a process that was long known only to the Venetians and Dutch. Large quantities are supplied from the famous lagoons near Monte Corbolo, in Tuscany. These lagoons, which occupy a large extent of surface, consist of an infinite number of low volcanoes, and springs in a furious state of ebullition; the ground, which shakes and burns beneath the feet, is covered with crystallizations of sulphur and other minerals; the whole scene presenting a striking picture of the most tremendous energy and sterility. The vapors that are constantly bursting forth from the boiling lagoons being found to contain boracic acid, it occurred to a most ingenious person, a M. Larderel, to construct pans through which the vapors being made to pass impregnate the water in them with the acid. The pans are kept boiling by the heat of the lagoons; and the water being evaporated, the acid is deposited in crystals. In consequence

of this discovery, the lagoons, from being altogether worthless, have become most valuable. From 10,000 to 12,000 pounds (12 ounces each) of acid were, a few years ago, daily produced; and this vast supply, and the facility with which borax may be obtained from the acid, has occasioned a great reduction in its price, and enabled it to be much more extensively employed than before.—*See Dr.* BOWRING'S *Report on Tuscany.*

Bordeaux, a large and opulent commercial city of France, on the Garonne, about 75 miles from its mouth, lat. 44° 50′ 26″ N., long. 0° 34′ W. Population, in 1851, 130,927. The commerce of Bordeaux is very extensive. The Garonne is a noble river, with depth of water sufficient to enable large ships to come up to the city, laying open, in conjunction with the Dordogne and their tributary streams, a large extent of country. The commerce of Bordeaux is greatly promoted by the famous canal of Languedoc, which communicates with the Mediterranean. By its means Bordeaux is enabled to furnish the south of France with colonial products at nearly as cheap a rate as Marseilles. Wines, brandies, and fruits are the staple articles of export; but the merchants apply themselves more particularly to the wine trade. Most part of their other business is confined to dealing on commission; but this they conduct almost invariably on their own account. The reason they assign for this is, that the difficulties attending the purchase, racking, fining, and proper care of wines, so as to render them fit for exportation, are so very great, as to make it almost impossible to conduct the business on any thing like the ordinary terms so as to satisfy their employers. Colonial products, cotton, dye-stuffs, pepper, hides, tobacco, rice, form the principal articles of importation.

ACCOUNT OF PORT CHARGES, BROKERAGE, AND OTHER PUBLIC DISBURSEMENTS PAYABLE IN BORDEAUX ON ACCOUNT OF A FRENCH OR FOREIGN VESSEL OF 300 TONS BURDEN, FROM A FOREIGN PORT TO BORDEAUX, OR FROM BORDEAUX TO A FOREIGN PORT.

Nature of Charges.	On a French or British Vessel.		On a Foreign Vessel.	
	In French Money.	In Sterling Money.	In French Money.	In Sterling Money.
	Francs. c.	£ s. d.	*Francs. c.*	£ s. d.
Report and pilotage from sea to Bordeaux for a vessel drawing 14 French feet water (15 feet 3·9 in British)	218 93	8 15 2	247 50	9 18 0
Lazaretto dues	61 0	2 18 10	61 8	2 18 10
Moving vessel up and mooring her	10 0	0 8 0	10 8	0 8 0
Entering vessel at custom-house, and brokerage inward	100 0	4 0 0	100 0	4 0 0
Advertisement for freight and passengers, 6 francs (4s. 10d.) to each newspaper				
Tonnage money and navigation dues on 300 tons	455 0	19 16 0	1230 0	49 11 2
Visiting officers, clearances, harbor master, etc.	14 75	0 11 10	14 75	0 11 10
Manifest and freight list	15 0	0 12 0	15 0	0 12 0
Ballast taken in or out, 1 franc 25 centimes per ton (1s.)				
Consul's bill. Usual fees (English vessels), 17 francs 25 cent. (15s.)				
Pilotage from Bordeaux to sea	220 0	8 10 0	245 34	9 16 8
Broker's commission outward, care and attendance for expediting the vessel:				
In ballast, 50 c. per ton (5d.), say 120 fr. at most (£4 16s.)				
Loaded per charter or on owner's account, 1 fr. (10d.) per ton	300 0	12 0 0	300 0	12 0 0
Loaded in freight, 1 franc 50 centimes (1s. 3d.) per ton				
Total	1434 68	57 7 10	2232 50	89 6 1

N. B.—No regard paid to the nature of the cargo, as all goods are imported either for consumption or exportation, which does not expose vessels to pay more or less charges.

Wine.—The culture of the vine is by far the most important branch of industry carried on in the department of the Gironde. The annual produce of its wines, the red growths of which are known by the general name of *claret*, amounts to about 2,500,000 hectolitres, or about 55,000,000 imperial gallons. The vineyards are the property of about 12,000 families, and the expenses of their cultivation are estimated to amount to 45 or 46 million francs a year. The best growths are from the confines of the "Landes," behind Bordeaux; the secondary growths are chiefly the produce of the country between the Garonne and Dordogne, and the *Palus*, a district of a strong rich soil bordering the banks of those rivers. The first growths of the red wines are denominated *Lafitte*, *Latour*, *Château-Margaux*, and *Haut Brion*. The first three are the produce of the district of *Haut Medoc*, northwest of Bordeaux, and the last of the district called *des Graves*. These wines are all of the highest excellence; their produce is very limited, and in favorable years sells at from 3000 to 4000 francs the tun, which contains 210 imperial gallons; but when they have been kept in the cellar for six years the price is doubled, so that even in Bordeaux a bottle of the best wine can not be had for less than 6 or 7 francs. The *Lafitte* is the most choice and delicate, and is characterized by its silky softness on the palate, and its charming perfume, which partakes of the nature of the violet and the raspberry. The *Latour* has a fuller body, and, at the same time, a considerable aroma, but wants the softness of the *Lafitte*. The *Château-Margaux*, on the other hand, is lighter, and possesses all the delicate qualities of the Lafitte, except that it has not quite so high a flavor. The *Haut Brion*, again, has more spirit and body than any of the preceding, but is rough when new, and requires to be kept 6 or 7 years in wood; while the others become fit for bottling in much less time.—HENDERSON *on Wines*, p. 184.

Among the secondary red wines, those of *Rozan*, *Gorce*, *Leoville*, and *Larose*, *Bran-Mouton*, *Pichon-Longueville*, and *Calon*, are reckoned the best. The third-rate wines comprise those called *Pauillac*, *Margaux*, *St. Jullien*, *St. Estèphe*, *St. Emilion*, etc. It is but seldom that any of these growths are exported in a state of purity. The taste of the English, for example, has been so much modified by the long-continued use of port, that the lighter wines of the Gironde would seem to us to want body. Hence it is usual for the merchants of Bordeaux to mix and prepare wines according to the markets to which they are to be sent. Thus the strong rough growths of the *Palus* and other districts are frequently bought up for the purpose of strengthening the ordinary wines of Medoc; and there is even a particular manufacture, called *travail à l'Anglaise*, which consists in adding to each hogshead of Bordeaux wine three or four gallons of Alicant or Benicarlo (large quantities of which are imported into Bordeaux by way of Cette and the canal of Languedoc), half a gallon stum wine, a bottle of alcohol, and sometimes a small quantity of hermitage. This mixture undergoes a slight degree of fermentation; and when the whole is sufficiently "fretted in," it is exported under the name of claret. This mixture chiefly consists of secondary wines, the first-rate growths falling far short of the demand for them.—HENDERSON, p. 184; see also JULLIEN, *Topographie des Vignobles*, p. 203. But even the first-class wines are most frequently intermixed with the best secondary growths; and it is customary to employ the wines of a superior to mix with and bring up those of an inferior vintage. Hence we need not wonder at the statement of a gentleman who, after living twenty years in the best soci-

ety in Bordeaux, doubted whether he had tasted more than *three times* any pure wine of the first quality! The *white* wines of the Gironde are of two kinds; those called *Graves*, which have a dry, flinty taste, and an aroma somewhat resembling cloves; of these, the principal are, *Sauterne*, *Barsac*, *Preignac*, and *Langon*. These are said by Jullien to be *très-moelleux, ou, pour mieux dire, semi-liquoreux et assez spiritueux*. The white wines of the Gironde have for several years past been advancing in estimation and value, and may be said, speaking generally, to come to us in a less adulterated state than the red wines. About half the wines of the Gironde are sent to other parts of France: one-fifth part is consumed in the department; one-fifth is exported, the finest growths to England, but the larger quantity to the north of Europe and Holland; and about one-fifth part is supposed to be converted into brandy. A person accustomed to good society in London, and, indeed, in most other parts of the country, would be apt to conclude that French wines were consumed in England to the almost total exclusion of other wines. But any such inference would be in the last degree erroneous. The fact is, that French wines are rarely drunk, except by the upper classes, and their consumption is inconsiderable, compared with that of the middle and lower classes. So much is this the case, that while, in 1852, 2,489,350 gallons port, and 2,696,857 gallons sherry, were entered for home consumption, the entries of *all* descriptions of French wines (including champagne, claret, Sauterne, and every thing else) amounted to only 475,948 gallons!—See *post*, art. WINE. The purchase of wines, whether from the grower or merchant, is always effected through brokers, some of whom have acquired a reputation for accuracy in dissecting the different flavors, and in tracing the results of the wines by certain measures of training or treatment. England takes off nearly half the highest-priced wines, and very little of any other quality. Except in Bordeaux itself, there is but a very moderate portion of the superior Medoc consumed in France. The capital takes off only second, third, and fourth rate wines. The Dutch, who are large consumers of Bordeaux wine, go most economically to work. They send vessels to the river in the wine season, with skillful supercargoes, who go among the growers, and purchase the wines themselves cheaper even than a broker would do. They live on board ship, take their own time to select, and wait often for months before the cargo is completed; but they attain their object, getting a supply of good sound wine, and at as low a rate, with all charges of shipping included, as the wine-merchants can deliver it into their stores in Bordeaux. They never purchase old wine; they take only that newly made, which, being without the support of stronger-bodied wines, must be consumed in the course of 2 or 3 years. They follow the same system at Bayonne, where 2 or 3 ships go annually for the white wines of Jurançon, etc. The cargo wines, which are the lowest class, are so manufactured that it is hardly possible to know of what they are composed. They are put free on board for £2 per hogshead and upward, according as they are demanded. They will not bear exposure in a glass when shipping; the tasters have a small flat silver cup expressly for them. These wines are principally shipped to America and India, and some at a higher price to the north of Europe.

Brandies, and Spirits of Wine.—The quantity distilled in the neighborhood of Bordeaux is estimated at about 18,000 pieces, of 50 veltes each; ditto, in the Armagnac, 20,000 ditto; ditto, in the Marmandais, 8000 ditto; making in all 46,000 pieces, ordinary proof. Of this quantity France takes off about 23,000 pieces for consumption; England, 2500; United States, 10,000; India, 2500; north of Europe, 5000; in all 43,000 pieces. Languedoc produces annually about 40,000 pieces, of 80 veltes each, the greater part of which comes to Bordeaux to be forwarded to the different ports of the north of France, or to foreign countries. France consumes about two-thirds of the above quantity; the remaining one-third goes to the north of Europe. The prices of brandy are from 180 fr. to 150 fr. per 50 veltes, ordinary proof; spirits of wine, from 4 fr. to 5 fr. per velte. The greatest shipments of brandy take place to England from the port of Formay, on the Charente. Cognac, from which the brandy takes its name, and where there are large distilleries, is a few leagues up the river. The quantity exported is far greater than what is made at Cognac; the two leading distillers there (Martel and Henessey) buying great quantities from the small cultivators. The greater part of the wines made about Angoulême, and thence down toward the sea, are of inferior quality, and fit only for making brandy; and so little do the prices vary, that the proprietors look upon it nearly in the same light as gold. When they augment their capital by savings or profits, it is employed in keeping a larger stock of brandy, which has the further advantage of paying the interest of their capital by its improved value from age. England is said to receive upward of 6000 pieces annually from Charente. At Bordeaux, as at Paris and Marseilles, there is a constant gambling business in time bargains of spirits of wine. It is in the form of spirits of wine that nearly all the brandy consumed in France is expedited, as in this form there is a great saving in carriage.—For an official account of the exports of wine and brandy from France, *see* WINE. The fruits exported consist almost entirely of prunes and almonds. The latter come principally from Languedoc. Bordeaux possesses some iron foundries, cotton factories, sugar refineries, glass works, etc., but labor and living are too high to admit of its becoming a considerable manufacturing city.

Banking Establishments.—The "Bordeaux Bank," which had a capital of 3,000,000 fr., in shares of 1000 fr. each, was incorporated, in 1848, with the Bank of France, of which it is now a branch. Its affairs have been well managed.—*See* BANKS, FOREIGN.

Brokers.—No one is allowed to act as a mercantile broker in France who is not 25 years of age, and who has not served 4 years in a commercial house, or with a broker, or a notary public. They are nominated by the government, after their qualifications have been ascertained by the Chamber of Commerce. All brokers must deposit the sum of 8000 fr. in the treasury as a guarantee for their conduct, for which they are allowed interest at the rate of 4 per cent. All foreigners are obliged to employ ship brokers to transact their business at the custom-house; and although masters and owners of French vessels might sometimes dispense with their services, they never do so, finding it to be, in all cases, most advantageous to use their intervention. All duties outward on vessels and cargoes are paid by the ship brokers, who invariably clear out all vessels, French as well as foreign.

Operation of the French Commercial System on the Trade of Bordeaux, etc.—The trade of this great city has suffered severely from the short-sighted, untisocial policy of the French government. This policy was first broadly laid down, and systematically acted upon, by Napoleon; and we believe it would not be difficult to show that the privations it entailed on the people of the Continent powerfully contributed to accelerate his downfall. But those by whom he has been succeeded have not hitherto seen the expediency of returning to a sounder system; on the contrary, they have carried, in some respects at least, the "continental system" to an extent not contemplated by Napoleon. Notwithstanding the vast importance to a country like France of supplies of iron and hardware at a cheap rate, that which is produced by foreigners is excluded, though it might be obtained for a third part of the price of that which is manufactured at home. A similar line of policy has been followed as to cotton-yarn, earthen-ware, etc. And in order to force the manufac-

ture of sugar from the beet-root, oppressive duties have been laid, not only on foreign sugar, but even on that imported from the French colonies. The operation of this system on the commerce and industry of the country has been most mischievous. By forcing France to raise at home articles for the production of which she has no natural or acquired capabilities, the exportation, and consequently the growth, of those articles in the production of which she is superior to every other country, has been very greatly narrowed. All commerce being bottomed on a fair principle of reciprocity, a country that refuses to import must cease to export. By excluding foreign produce—by refusing to admit the sugar of Brazil, the cottons and hardware of England, the iron of Sweden, the linens of Germany, and the cattle of Switzerland and Wirtemberg—France has done all that was in her power to drive the merchants of those countries from her markets. They are not less anxious than formerly to obtain her wines, brandies, and silks; inasmuch, however, as commerce is merely an exchange of products, and as France will accept very few products belonging to others, they can not, how anxious soever, maintain that extensive and mutually beneficial intercourse with her they would otherwise carry on: they sell little to her, and their purchases are, of course, proportionally diminished. This, indeed, is in all cases the necessary and inevitable effect of the prohibitive system. It never fails to lessen exportation to the same extent that it lessens importation; so that, when least injurious, it merely substitutes one sort of industry for another—the production of the article that had been obtained from the foreigner for the production of that which had been sent to him as an equivalent.

France is not only extremely well situated for carrying on an extensive intercourse with foreign countries but she is largely supplied with several productions which, were she to adopt a liberal commercial system, would meet with a ready and advantageous sale abroad, and enable her to furnish equivalents for the largest amount of imports. The superiority enjoyed by Amboyna in the production of cloves is not more decided than that enjoyed by France in the production of wine. Her claret, Burgundy, Champagne, and brandy are unrivaled, and furnish of themselves the materials of a vast commerce. Indeed, the production of wine is, next to the ordinary business of agriculture, by far the most extensive and valuable branch of industry in France. It is stated by the landholders and merchants of the department of the Gironde, in the admirable *Pétition et Mémoire à l'Appui*, presented by them to the Chamber of Deputies in 1828, that the quantity of wine annually produced in France amounts, at an average, to about 40,000,000 hectolitres, or 1,060,000,000 gallons; that its value is not less than from 800,000,000 to 1,000,000,000 francs, or from £32,000,000 to £40,000,000 sterling; and that upward of *three millions* of individuals are employed in its production. In some of the southern departments it is of paramount importance. The population of the Gironde, exclusive of Bordeaux, amounts to about 450,000 individuals, of whom no fewer than 230,000 are supposed to be directly engaged in the cultivation of the vine. Here, then, is a branch of industry in which France has no competitor, which even now affords employment for about a tenth part of her population, and which is susceptible of indefinite extension. She has, in this single article, the means of carrying on the most extensive and lucrative commerce. "Le gouvernement Français," says M. Chaptal, in his work *Sur l'Industrie Française*, "doit les plus grands encouragements à la culture des vignes, soit qu'il considére ses produits relativement à la consommation intérieure, soit, qu'il les envisage sous le rapport de notre commerce avec l'étranger, *dont il est en effet la base essentielle*."

But instead of laboring to extend this great branch of industry, government has consented to sacrifice it to the interests of the iron-founders, the cotton and linen manufacturers, and the planters of Martinique and Guadaloupe! We do not, indeed, imagine that they were at all aware that such would be the effect of their policy. Theirs is only one instance, among myriads that may be specified, to prove that ignorance in a ministry is quite as pernicious as bad intentions. The consideration, apparently not a very recondite one, that, notwithstanding the bounty of nature, wine was not gratuitously produced in France, and could not, therefore, be exported except for an equivalent, would seem never to have occurred to the ministers of Louis XVIII. and Charles X. But those whose interests were at stake did not fail to apprise them of the hollowness of their system of policy. In 1822, when the project for raising the duties on sugar, iron, linens, etc., was under discussion, the merchants of Bordeaux, Nantes, Marseilles, and other great commercial cities, the silk manufacturers of Lyons, and the wine-growers of the Gironde, and some other departments, presented petitions to the Chambers, in which they truly stated that it was a contradiction and an absurdity to attempt selling to the foreigner without, at the same time, buying from him; and expressed their conviction that the imposition of the proposed duties would be fatal to the commerce of France, and would consequently inflict a very serious injury on the wine-growers and silk manufacturers. These representations did not, however, meet with a very courteous reception. They were stigmatized as the work of ignorant and interested persons. The Chambers approved the policy of ministers; and, in their ardor to extend and perfect it, did not hesitate deeply to injure branches of industry on which several millions of persons are dependent, in order that a few businesses, nowise suited to France, and the support of which costs her several millions a year, might be bolstered up and protected! It is plain, had there not been some powerful counteracting cause in operation, that the exports of wine from France should have been very greatly augmented since the peace of 1815. The United States, Russia, England, Prussia, and all those countries that have at all times been the great importers of French wines, have made prodigious advances in wealth and population since 1789; and had the commerce with them not been subjected to injurious restrictions, there is every reason to think that their imports of French wine would have been much greater now than at any former period. So far, however, from this being the case, they have declined in a most extraordinary degree. This is proved beyond all question by the following extract from a report made to the Council General of the Gironde in 1841, and published by its orders and with its sanction. "Previously to 1790, the wine trade at Bordeaux had an immense development. The books of our most ancient houses, transmitted down religiously from father to son, and the registries of our lands, prove that in the years preceding 1787 our exports had reached more than 100,000 tuns of wine, 10,000 casks of brandy, and 5000 of vinegar. They also show that from 1200 to 1400 vessels from the north took large quantities of wine, in return for their national produce, which they easily disposed of among us. It was a most lucrative commerce, for we then sent 15,000 tuns to Prussia, 18,000 to England and Ireland, 6000 to Dantzic, 40,000 to Hamburg, Lubeck, and Bremen, 15,000 to Holland, 7000 to Sweden, 5000 to Denmark and Norway, and 12,000 to Russia. But at that period we had not closed our frontiers to the produce of all these nations; we received at moderate duties their woolens, linens, hemp, iron, wood, cattle, and other articles, the consumption of which was less expensive, and the quality better, than similar articles made at home, and forced on us by customs duties. At present, notwithstanding the rapid increase of commercial affairs, notwithstanding the new nations of America, the advantages of a more expeditious, certain, and economical navigation, the

demands of nations increased in number and industry, and consequently more disposed to purchase for consumption, our commerce is declining in a most alarming manner. Authentic documents prove that in 1839 our exports only reached 1839 tuns to England, 2499 to Russia, 147 to Sweden, 342 to Norway, 2964 to Prussia, 612 to Denmark, 8188 to the Hans Towns, and 7621 to the Netherlands. Since then our exports have not increased, so that instead of 100,000 tuns at least taken by the north of Europe from the department of the Gironde previously to 1790, not more than 25,000 tuns are taken at present. Yet the taste for wine and the necessity to use it have not been weakened among the various nations; but the exaggerated duties with which its introduction has been loaded only allow it to be consumed by the wealthy classes, who are every where the least numerous. These duties are established in retaliation of those which France lays on foreign productions. If the exportation of wine has diminished in so great a proportion, the cause must be sought in the protective system. When the variations in the exports of wine are attentively examined, and their decrease looked to since 1822, when this system attained its height, to 1840, it is impossible not to be struck with the fact that these variations are intimately connected with the system itself. The decrease in the exports of wine has followed the increased development of the protective system, and therefore we are forced to draw this conclusion, that *it is this system which destroys our export trade.* Yet foreign consumption is the most certain and most profitable for Bordeaux wines, and it is particularly in the markets of the north of Europe and of England that the wines of the finest quality which our department produces find purchasers. Let us, then, insist on the necessity of reopening these markets, which have been closed by the enormous amount of duties imposed by foreigners in reprisal of those laid by us on their products."

Besides the injury inflicted on the wine trade by the prohibitive system of commercial policy adopted in France, and the retaliatory measures it has provoked in other countries, it has suffered severely from the octrois and other duties on internal consumption. But the depression, though felt every where, is greatest in the Gironde, which is especially dependent on its export trade. This is strikingly evinced by the large stocks of wine that remain in the hands of the growers and merchants, and by the fall in its price. This has, of course, reacted on the vineyards, many of which have become all but unsalable; and a stop has been put to every sort of improvement. Nor have matters been in the least amended during the current year: on the contrary, they seem to be gradually getting worse. Such is the poverty of the proprietors, that wine is now frequently seized and sold by the revenue officers in payment of arrears of taxes; and such is at present the extent of the evil, that in the course of this year (1843) the committee of wine growers have applied to government for a loan of 2,000,000 francs to be applied to the payment of taxes due by the wine growers.

Such are the effects of the restrictive system of policy on the wine trade of France—on a branch of industry which, as already seen, employs *three millions* of people. It is satisfactory, however, to observe that the land-owners and merchants are fully aware of the source of the misery in which they have been involved. They know that they are not suffering so much from hostile or vindictive measures on the part of foreigners as from the blind and senseless policy of their own government; that they are victims of an attempt to counteract the most obvious principles—to make France produce articles directly at home, which she might obtain from the foreigner in exchange for wine, brandy, etc., at a third or a fourth part of the expense they now cost. *They can not export, because they are not allowed to import.* Hence they do not ask for bounties and prohibitions; on the contrary, they disclaim all such quack nostrums; and demand what can alone be useful to them, and beneficial to the country—a free commercial system. And notwithstanding the powerful interests involved in the support of the prohibitive policy, we can not doubt but that, in the end, they will be compelled to give way; and that France, by opening her ports to a freer importation of foreign products, will insure the proportional extension of her exports of wines, brandies, silks, and other products, which she can furnish more cheaply and of a better quality than any other country. It is reasonable to suppose that the experience that has been afforded of the ruinous effects of the prohibitive system, and the more general diffusion of correct ideas with respect to the real sources of wealth, will at no distant period occasion the adoption of such changes in the commercial legislation of France as may render it more conducive to her interest, and more in accordance with the spirit of the age. Indeed, we incline to think that but for the unfortunate misunderstanding about the Turkish question, and the irritation thence arising, a commercial treaty on a comparatively liberal footing would have been already entered into between France and this country; and it is much to be wished that some such arrangement should speedily be completed. If, indeed, we were hostile to France, we should wish her to continue her present system, for it must effectually prevent her making any considerable progress either in manufactures or commerce; but we disclaim being actuated by any such feelings. We are truly anxious for her prosperity, for her sake and our own; for unless she be surrounded by Bishop Berkeley's wall of brass, whatever contributes to her well-being must, in some degree, redound to the advantage of her neighbors.—J. R. M.

"Were such narrow and malignant politics to meet with success," said Mr. Hume, writing in the middle of the last century, and when the prosperity of others was generally regarded with an evil eye, "we should reduce all our neighboring nations to the same state of sloth and ignorance that prevails in Morocco and the coast of Barbary. But what would be the consequence? They could send us no commodities; they could take none from us: our domestic commerce itself would languish for want of emulation, example, and instruction; and we ourselves should soon fall into the same abject condition to which we had reduced them. I shall, therefore, venture to acknowledge, that not only as a man, but as a British subject, I pray for the flourishing commerce of Germany, Spain, Italy, and even France itself. I am, at least, certain that Great Britain, and all those nations, would flourish more did their sovereign and ministers adopt such enlarged and benevolent sentiments toward each other." —*Essay on the Jealousy of Trade.*

Borneo, or, as it is called by the natives, Brunê, an island forming part of the great East Indian Archipelago, and, next to New Holland, which may be considered as a species of continent, the largest in the known world. It reaches from about 7° N. to 4° S. lat., and from 109° to 118° E. long. Its length may be estimated at 750 miles, its greatest breadth at 600, and its average breadth at 350. Its area has been calculated by Baron Melville, of Carnbee, at 12,745 geographical square leagues. It exhibits the usual insular structure, a mass of lofty mountains in the centre, sloping gradually down to level and alluvial tracts along the seashore. It is in every part intersected by fine rivers, many of them navigable to a considerable distance from the sea. The interior of Borneo is covered with immense forests, filled with wild animals, particularly orang-outangs. A great part of the coast is marshy, so that it is in portions only that it displays the exuberance of tropical fertility. Of all the East Indian islands, Borneo ranks lowest as to civilization and improvement. Nothing, perhaps, has tended so powerfully to check its progress as the solid and unbroken form of its coasts, destitute of those large bays or in-

land seas which have always proved the nursery of commerce.

The commerce of Borneo, though not equal to its extent and natural capacities, is by no means inconsiderable. Gold is its principal export. Mr. Milburn estimates the annual quantity exported at 200 peculs, or 26,000 lbs. avoirdupois, which would coin into upward of 900,000 guineas. Like some other commodities, it is divided, by a grotesque scale, into three kinds, called the head, the belly, and the feet; the first being the best, and the two others gradually diminishing in value. Camphor is exported to the extent of thirty peculs (3990 lbs.), all to China, where it is more esteemed than that of Sumatra. The singular Chinese luxuries of *biche-de-mer*, or sea-slug, and edible birds' nests, are found in Borneo, as over all the Indian Archipelago. Pepper to a considerable amount, canes and rattans of various descriptions, sago, and a little tin, complete the list of exports. The chief import is opium to a very great extent, with piece goods, hardware, coarse cutlery, arms, and toys. By far the greater proportion of the trade is in the hands of the Chinese.—E. B.

Boston, city, capital of Massachusetts, and metropolis of New England, the second commercial city, and the fourth in population in the United States of America, is mostly situated on a peninsula, 3 miles long, and a little more than 1 mile broad, at the head of Massachusetts Bay. The harbor extends from Point Alderton to Medford, a distance of 14 miles; is 8 miles in width, and covers an area of 75 square miles. It has a depth of water sufficient for 500 vessels of the largest class to ride at anchor in safety. The entrance is barely sufficient for two ships of a large class to sail abreast, and is defended by three fortresses, two of which, situated on George's and Castle Islands, are on the largest scale, and constructed with all the improvements of modern science; the third, or the citadel, on Governor's Island, is still incomplete, but, when finished, the defenses may be considered impregnable.

The territory now covered by the city was, in 1630, a peninsula, connected with the main land by a narrow isthmus: this tract contained 600 acres—it was called Shawmut or Trimountain, and derived its name from its springs, and three lofty hills. The spot was undoubtedly selected for its security from the inroads of the Indians, and its facilities for trade. Before the Revolutionary War, Boston became the most commercial town in the colonies. The narrow limits of the peninsula have long since been found insufficient for the growth of the population, and her extended commerce. Dorchester Point, containing 600 acres, was first annexed, then Noddle's Island, comprising 600 acres more, and several hundred acres have been reclaimed from the sea; but so rapid has been the increase of population, that the number of inhabitants of the suburbs within a few miles of the city limits nearly equals the city proper. Boston lies in 42° 21′ 27″ N. lat., 71° 3′ 30″ W. long., from Greenwich, England. It is 105 miles south-southwest from Portland, Maine; 216 miles from New York, *via* Stonington, 236 *via* New Haven and Springfield; 313 Philadelphia; 411 Baltimore; 449 Washington; 990 Charleston, South Carolina, and 1838 from New Orleans. The population in 1790 was 18,033; in 1800, 24,937; in 1810, 33,250; in 1820, 43,298; in 1830, 61,391; in 1840, 93,383; in 1850, 138,788; and in 1854, 178,000.

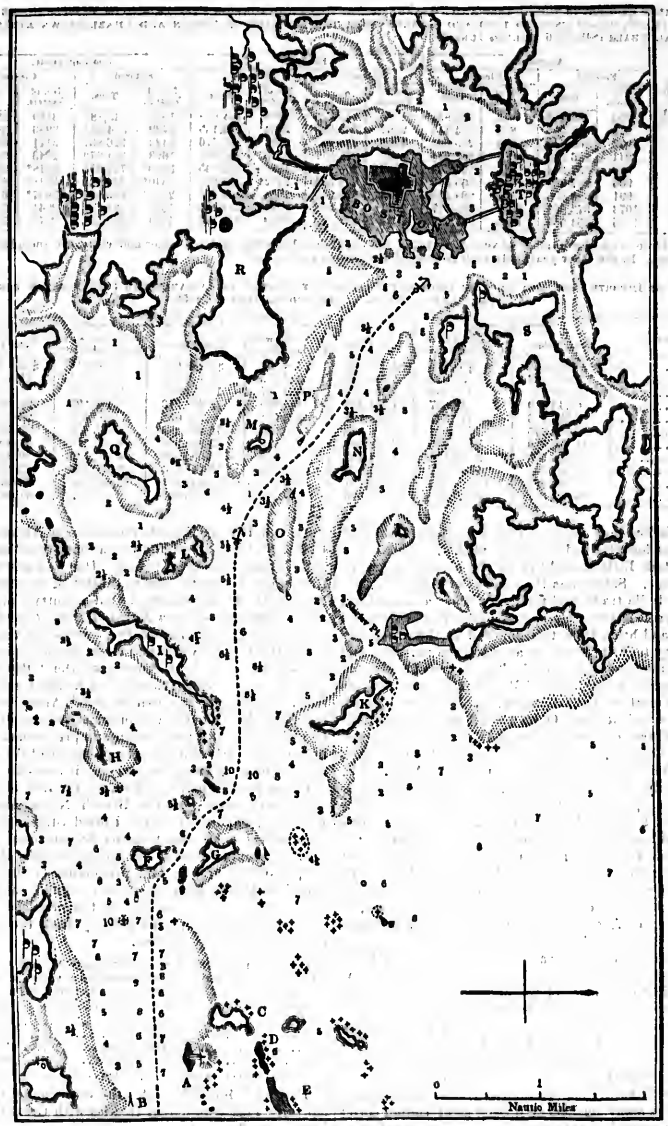
Boston has overstepped her sea-girt isles, and attached herself to the main land by one wide, enlarged avenue, the Neck, paved, and planted with trees; by one granite structure, the Western avenue, a mile and a half in length, 6 bridges, 8 railroads, and 3 ferries; 8 railroads branch into 16, and 10 avenues divide into 80, within the first 9 miles from the Exchange. The city exhibits a picturesque and beautiful appearance when approached from the sea; and in surveying its several parts, the visitor finds much to admire. Beacon Hill, on which the State House stands, is 110 feet above high water mark; it was originally 30 feet higher. Fort Hill, on the east side, fronting the harbor, is 80 feet, and Copp's Hill, in the north part, is 50 feet above high water. On this hill the British had a battery in 1775, from which, during the memorable battle of Bunker Hill, they bombarded and burned Charlestown. Mount Washington, or Dorchester Heights, is 130 feet above the sea. On these heights, the Americans under Washington erected a fortification, in 1775, which soon compelled the British to evacuate Boston.

TABLE OF THE RATES OF PILOTAGE ON OUTWARD AND INWARD BOUND VESSELS IN THE PORT OF BOSTON.

OUTWARD.								INWARD.							
From November 1 to May 1.				From May 1 to November 1.				From November 1 to May 1.				From May 1 to November 1.			
Ships drawing Water.	Dol. per Foot.	Ships drawing Water.	Dol. per Foot.	Ships drawing Water.	Dol. per Foot.	Ships drawing Water.	Dol. per Foot.	Ships drawing Water.	Dol. per Foot.	Ships drawing Water.	Dol. per Foot.	Ships drawing Water.	Dol. per Foot.	Ships drawing Water.	Dol. per Foot.
7 ft.	0·90	17 ft.	1·10	7 ft.	0·75	17 ft.	1·00	7 ft.	1·45	17 ft.	1·87	7 ft.	1·10	17 ft.	1·35
8	0·90	18	1·20	8	0·75	18	1·00	8	1·45	18	2·50	8	1·10	18	1·88
9	0·90	19	1·30	9	0·75	19	1·25	9	1·45	19	2·75	9	1·10	19	1·88
10	0·95	20	1·50	10	0·80	20	1·50	10	1·56	20	3·00	10	1·20	20	1·88
11	1·00	21	2·00	11	0·85	21	1·75	11	1·72	21	4·00	11	1·25	21	2·80
12	1·05	22	2·50	12	0·90	22	2·00	12	1·77	22	4·00	12	1·30	22	3·00
13	1·10	23	2·75	13	0·15	23	2·25	13	1·77	23	4·00	13	1·35	23	3·00
14	1·10	24	2·75	14	0·15	24	2·25	14	1·87	24	4·00	14	1·35	24	3·00
15	1·10	25	2·75	15	0·15	25	2·25	15	1·87	25	4·00	15	1·35	25	3·00
16	1·10			16	0·25			16	1·87			16	1·35		

STATEMENT OF THE DECLARED VALUE OF GOODS, WARES, AND MERCHANDISE EXPORTED FROM THE DISTRICT OF BOSTON AND CHARLESTOWN DURING THE YEARS 1853, 1854.

Quarter ending.	American Merchandise.		Foreign Merchandise.	
	1853.	1854.	1853.	1854.
March 31	$3,184,914	$2,084,941	$415,857	$627,016
June 30	3,115,180	2,078,925	515,121	607,957
September 30	1,962,028	2,059,202	477,575	582,789
December 31	2,350,707	2,450,255	365,656	574,317
Total in American vessels	$10,613,029	$8,674,113	$1,774,209	$2,392,079
March 31	$768,286	$934,822	$279,208	$293,268
June 30	1,672,030	2,250,874	378,054	480,790
September 30	1,745,472	2,587,796	220,427	301,710
December 31	3,000,572	2,206,998	321,560	185,167
Total in foreign vessels	$7,186,560	$7,970,890	$1,199,575	$1,210,935
Total in American vessels (as above)	10,613,029	8,674,113	1,774,209	2,392,079
Total	$17,999,589	$16,654,003	$2,973,784	$3,602,914



PLAN OF BOSTON HARBOR.

References to Plan.—A, outer light-house, 65 feet high, having a revolving light, alternately brilliant 40, and obscured 20 seconds; B, buoy on the outward edge of the shoal, off Alderton Point; C, D, E, Great, Middle, and Outward Brewster's Islands; F, George's Island. The passage for ships, lying between this Island and the rocks on the opposite side of Lovell's Island (G), being very narrow, it is, in effect, the key of the harbor; and large sums have recently been expended on its fortification. To the south of George's Island and Hospital Island (H) is Nantasket road, where there is good anchorage. The outer harbor lies to the west of Lovell's (G) and George's (F) Islands, being separated from the inner harbor by Castle Island (M) and Governor's Island (N). On the north end of Long Island (I) is a harbor fixed light, 27 feet high; K, Deer Island; L, Spectacle Island; O, Middle Ground, dry at three-quarter ebb; P, Upper and Middle Ground, having, at ebb, only 5 feet water; Q, Thomson's Island; R, Dorchester Peninsula; S, Noodle Island; T, Charlestown. Governor's Island (N), Castle Island (M), and Noodle's Island (S), are all fortified. The course that a ship ought to steer is marked by the dotted line leading between the light-house and Alderton Point, and between George's Island (F) and Lovell's Island (G). The soundings are laid down in fathoms at low water.

STATEMENT EXHIBITING THE NUMBER AND TONNAGE OF AMERICAN AND FOREIGN VESSELS, AND OF VESSELS IN THE COASTING TRADE, WHICH ENTERED INTO AND CLEARED FROM THE DISTRICT OF BOSTON AND CHARLESTOWN DURING THE FISCAL YEARS 1848–1856, ENDING JUNE 30.

Year ending June 30.	American.				Foreign.				Coasting Trade.			
	Entered.		Cleared.		Entered.		Cleared.		Entered.		Cleared.	
	No. of Vessels.	Tons.	No. of Vessels.	Tons.	No. of Vessels.	Tons.	No. of Vessels.	Tons.	No. of Vessels.	Tons.	No. of Vessels.	Tons.
1848	1153	269,257	1012	229,851	1926	163,375	1823	164,019	1628	$45,883	3110	554,730
1849	975	248,095	882	214,145	2062	208,026	2084	195,185	1422	324,184	2980	580,078
1850	1028	260,540	904	215,801	1908	218,295	2199	208,776	1423	326,837	3171	602,506
1851	944	236,929	881	207,044	2042	275,317	2045	286,828	1628	314,979	2843	518,408
1852	908	257,344	843	224,784	1899	260,768	1896	285,845	3670*	727,171	2818*	571,577
1853	906	287,969	1246	265,513	2089	294,021	2112	314,689	2340*	620,282	2018*	629,489
1854	991	320,638	990	294,580	2083	333,249	2064	330,028	2408*	589,980	3047*	610,947
1855	1073	373,826	1033	353,537	2071	334,236	1911	334,238	1875	491,439	2941	663,193
1856	1065	354,5.8	1026	357,133	2033	327,853	2089	310,164	1504	385,231	2773	702,921

* In these years the number of vessels arriving and departing, but which did not enter and clear, are included in the statement. In the other years only such as entered and cleared are given.

VALUE OF IMPORTS INTO, AND EXPORTS FROM, THE DISTRICT OF BOSTON AND CHARLESTOWN TO FOREIGN PORTS FOR THE ELEVEN FISCAL YEARS ENDING JUNE 30, 1856.

Years	Domestic Goods.		Foreign Goods.		Domestic and foreign Exports.		Foreign Imports	
	Total Value.	Of which were Gold and Silver.	Total Value.	Of which were Gold and Silver.	Total Value.	Of which were Gold and Silver	Total Value.	
1846.....	$4,609,595	$53,574	$2,208,436	$404,241	$8,968 031	$160,515	$22,6.5,117	
1847.....	7,872,992	30,018	1,843,990	344,458	9.716,991	374,471	35.5 3,968	
1848.....	8,149,933	191,100	4,054,870	2,359,757	12,204,812	2,550,857	27,182,368	
1849.....	6,714,590	88,597	1,977,433	144,999	8,692,073	173,596	23,841,145	
1850.....	6,953,923	170,947	2,188,124	388,621	9,141,653	651,468	28,850,733	
1851.....	8,269,645	805,925	2,228,508	459,980	10,498.153	1,265 8'5	30,508,417	
1852.....	11,110,010	3,070,025	2,278,502	256,718	13,388,512	4,206,743	31,958,192	
1853.....	15,203,203	3,736,939	2,891,480	267,810	18,094,683	4,004,549	39,300,912	
1854.....	16,408,841	4,980,487	3,843,575	537,963	19,751,916	5,518,450	45,988,545	
1855.....	22,970,460	12,022,598	3 671,201	256,470	26,641.661	12,279,068	43,256,279	
1856.....	24,673,577	11,860,362	3,312,076	149,721	27,985 653	12,010,088	41,661,088	

India Trade of Boston.—This important branch of business has attained in Boston at the present time a magnitude little thought of by the early founders of this trade. Salem was the pioneer in many branches of the India trade, and for many years a great mart for the sale of teas, spices, dye-stuffs, drugs, coffee, etc. Ships and brigs from two hundred to three hundred and fifty tons burden were at that time the class and size of the vessels employed. The course of trade, and the superior advantages of Boston and New York as central markets, have diverted this business very much from its ancient seat. Quite a number of Salem houses have still an extensive interest in the East India and Pacific business, but their vessels are, for the most part, fitted from and arrive at Boston or New York. The East India and Pacific trade of the United States employs, in all its various branches, at the present time some six hundred ships and barks. Most of these vessels—at least two-thirds of them—are owned in Boston and New York, and many of the remaining third at ports east of Boston, in Massachusetts and Maine. To show the extent of the Boston trade with India, we would state that one hundred and nine ships were, in January, 1857, expected at this port from Calcutta alone previous to August 1, 1857.

The sale of the heavy and bulky kinds of East India goods at Boston has greatly increased within a few years, in consequence of the enormous growth of the manufactures and general trade of the commonwealth. The annual sale at the present time in Boston of the principal articles of East India produce would much surprise any one not acquainted with the extent and rapid growth of this important branch of our business. One would hardly believe that we received at this port nearly as many bushels of linseed as of Indian corn; yet for several years past such has been the fact.—*Boston Board of Trade Report*, 1857, p. 104.

Mediterranean Trade.—Among the various branches of commerce which have contributed to augment the wealth and extend the fame of Boston, none deserve mention more than the Mediterranean and fruit trade. At various ports of Malaga, Palermo, Messina, Marseilles, Genoa, Leghorn, Trieste, etc., the merchants of Boston enjoy a large portion of the American trade, and at some of the above-named places the trade may be said to be entirely controlled by the cities of New York and Boston, the other commercial cities of the United States having but an occasional vessel arriving at their ports from these places. It is well known that Boston has nearly the entire control of the American trade with Turkey through that country's principal port of Smyrna.—*Boston Board of Trade Report.*

Direct Trade with British Provinces.—The treaty between the United States and Great Britain, concluded the 5th of June, 1854, known as the "Reciprocity Treaty," was intended to regulate a direct reciprocal free trade between the British North American provinces and the United States in certain designated articles of their respective growth and production. This purpose is clearly stated in the preamble of the treaty, and in the act of Congress carrying it into effect.

On an application, therefore, for the free admission of certain products of the British North American Provinces, imported into the United States from Havana and London, the Treasury Department decided that they could not be so admitted; and that the articles, if of the growth and production of the North American British Provinces, and designated as free in the treaty, would be entitled to the privilege of free entry only when imported directly from those provinces into the United States.

STATEMENT EXHIBITING THE DECLARED VALUE OF MERCHANDISE TRANSPORTED IN BOND TO CANADA FROM THE DISTRICT OF BOSTON AND CHARLESTOWN, DURING THE TEN YEARS ENDING JUNE 30, 1856.

1847.....	$21,715	1852..	$1,966,172
1848.....	24,348	1853.....	4 047,484
1849.....	33.140	1854.....	5,178,911
1850.....	151.817	1855.....	4,970.408
1851.....	594,709	1856.....	4,787,386

This table fully illustrates the operation of the Reciprocity Treaty and other treaties with Great Britain in reference to Canada.

It may not be uninteresting to mention here that the "Clearing-house" for the banks in Boston, which was organized January 15, 1856, is in full operation, and perfectly successful. The business began March 29, 1856, and the transactions from that date to the 31st December, inclusive, amount to $1,129,794,519, being a monthly average of $125,532,724. With the commencement of the Clearing-house all the bank ledger accounts of daily transactions with each other were merged into one Clearing-house account.—*Ibid.*

Ship Building.—Number of vessels launched during the years 1854 and 1855, at East Boston, Medford, Chelsea, South Boston, and Charlestown:

	1854.		1855.	
	Number.	Tonnage.	Number.	Tonnage.
East Boston	30	49,654	20	19,575
Medford	13	12,760	10	8,870
Chelsea	10	10,116	5	4,805
South Boston	4	4,254	4	5,000
Charlestown	3	2,363	2	1,308
Total	60	72,147	41	39,558

Estimating this amount at $60 a ton, which is a fair average price paid for ships during the year, the amount of the ship-building in Boston and vicinity during 1855 is as follows:

	Tons.	Value.
East Boston	19,575	1,174,500
Medford	8,870	532,200
South Boston	5,000	300,000
Chelsea	4,805	288,300
Charlestown	1,308	78,100
Total	39,558	$2,373,480

Duties collected at Boston.—The annexed statement exhibits the amount of duties collected at the port of Boston in each year, from 1838 to 1853, distinguishing the amount paid on merchandise brought in American and foreign vessels.

Years.	American.	Foreign.	Total.
1838	$2,305,197	$105,958	$2,411,155
1839	3,134,514	160,315	3,294,829
1840	2,364,206	92,419	2,456,626
1841	3,013,083	213,599	3,226,682
1842	2,543,748	236,437	2,780,186
1843	2,734,134	757,384	3,491,019
1844	4,800,877	1,234,067	6,034,945
1845	4,027,336	1,222,297	5,249,634
1846	3,630,744	1,241,825	4,872,510
1847	3,936,825	1,512,036	5,448,361
1848	3,790,267	1,118,559	4,908,827
1849	3,607,608	1,429,702	5,037,310
1850	3,903,440	2,224,377	6,127,817
1851	3,899,822	2,596,704	6,496,527
1852	3,826,428	2,466,622	6,293,050
1853	4,588,777	3,137,415	7,696,193

In the year ending June 30, 1853, the amount of duties was upward of a million dollars more than in any previous year. The foreign trade of Boston has increased very rapidly since the Cunard steamers commenced running between that port and Liverpool.

British Royal Mail Packets.—The mail packets between England and America (nine in number) leave Liverpool every Saturday, alternately for Boston and New York. The latter convey large quantities of the more valuable descriptions of goods; the imports by them into Boston in 1846 being estimated at $4,445,000. They also convey large numbers of the more opulent class of passengers.

Insurance Companies.—Insurance, both fire and marine, is carried on to a great extent by joint-stock companies, and to some extent also by individuals. The stocks of the different insurance companies amounted, in 1856, to $5,000,000. There is a great deal of risk in the business, which is more, indeed, like a lottery than a regular trade; and the dividends consequently vary from next to nothing to 10 and sometimes even 20 per cent. and upward. The dividends paid by the different companies varied, at an average of the previous ten years, from 3½ to 20 per cent.

Banks.—There were, in January, 1857, in Boston, 36 banking companies, having an aggregate capital of $31,960,000. Their dividends have recently varied from 5½ to 10 per cent.

East Boston, a part of the city, Suffolk county, Massachusetts. Population, in 1850, 10,214; and in 1854, 15,000.

The following summary of statistics will exhibit the amount of capital invested in manufacturing and mechanical business in East Boston, the number of hands employed, and the amount of annual products:

Business.	Capital.	No. of Hands.	Annual Product.
Manufacturing and mechanics	$1,858,000	1103	$3,799,916
Ship-building	71,000	292	851,200
Lumber, wood, coal, etc.	45,000	—	338,000
Teaming, trucking, etc.	32,000	275	140,000
Curing and packing fish	40,000	23	158,600
Total	$2,066,000	1785	$5,231,716

Steam power is used in twenty of the establishments mentioned in the table, and several others are making preparations to use it. There were built in 1850 at the different ship-yards fourteen ships and barks, making an aggregate tonnage of 14,035 tons. East Boston, with its superior location for commercial and manufacturing purposes, will doubtless soon double its present population. It has water frontage of 17,000 feet on the deep water of the harbor, as well adapted and better protected for commerce than wharves in the city proper. The Grand Junction Railroad unites East Boston with all the principal roads from the city, thus affording an unbroken chain of railroad communication from the deep-water wharves in this section of the city through the great manufacturing districts of New England to the Canadas, the lakes, and the Great West, greatly to the advantage of the commerce of Boston, by bringing to and taking from the ships and warehouses all merchandise intended for the interior, and products and manufactures destined for shipment, free from expense of transhipment. East Boston was formerly known as Maverick's, Noddle's, and Williams' Island. In 1814 the citizens of Boston erected a fort on its eastern extremity, which was called Fort Strong. In 1830 some eight or ten of the most enterprising capitalists purchased this island, and commenced laying it out into streets and lots, with a view of making it an important part of the city. Among the important improvement in that portion of the city termed East Boston are the introduction of the Cochituate water by the city of Boston, the construction of the Grand Junction Railroad, and the construction of the sea-wall across the Basin, thus reclaiming a large quantity of low lands which were hitherto partially covered by the tide-waters. These lands consist of marsh and flats to the extent of about ninety-five acres, lying between Westwood Island and the Eastern railroad.—*See* Massachusetts.

Botany Bay. A bay of the Pacific Ocean, on the east coast of Australia, New South Wales, county of Cumberland, five miles south of Sydney, about five miles in length and breadth. Lat. 34° S., long. 151° 15′ E. It was discovered by Captain Cook in 1770, and derived its name from the variety of new plants then observed on its shores. It became an English penal colony in 1787. On its coast is a column erected in 1825 to the memory of the French navigator, La Perouse.—*See* Sydney.

Botargo, called in Provence *Bouargues*, a sausage made on the shores of the Mediterranean and the Black Sea, of the roe of the mullet. The best come from Tunis and Alexandria.

Bottles (Fr. *Bouteilles*; Ger. *Bouteillen*; It. *Botiglie, Fiaschi*; Russ. *Bulülki*; Sp. *Botellas*), glass vessels for holding liquids, too well known to require any description. They are manufactured in considerable quantities. The imports of bottle glass into the United States average about $140,000 annually. The imports of all other descriptions of glass amount to about $2,200,000 yearly, and are very constant. About one-fourth of this consists of window glass. The principal places of manufacture of bottle glass, in the United States, are Pittsburg, Pennsylvania, and East Cambridge, Massachusetts.—For further details, *see* Glass.

Bottles, of glass, were first made in England about 1558. The art of making glass bottles and drinking-glasses was known to the Romans at least before 79 A.D., for these articles and other vessels have been found in the ruins of Pompeii. A bottle which con-

tained two hogsheads was blown, we are told, at Leith, in Scotland, in January, 1747–'8.

Bottom, in *Mercantile Language*, is a familiar expression for a ship; as in the phrase to *ship goods in foreign bottoms*.—E. B.

Bottomry, a maritime contract by which a ship (or bottom) is hypothecated in security for money borrowed for the purposes of her voyage, under the condition that, if the ship arrive at her port of destination, the borrower personally, as well as the ship, shall be liable for the repayment of the loan, together with such premium thereon as may have been agreed on; but that, if the ship be lost, the lender shall have no claim against the borrower, either for the sum advanced or for the premium. In consideration of the risk thus incurred by the lender, the premium (which is sometimes termed *maritime interest*) is usually high: it may range from 10 to 25 per cent., or even more, according to the nature of the risk, or the difficulty of procuring the necessary funds. The freight may be pledged as well as the ship, and, if necessary, the cargo also. When money is borrowed on the security of the cargo, it is said to be taken up at *respondentia*, a term which seems to have been introduced from the circumstance of the borrower engaging to *answer* for the repayment of the loan on the arrival of the goods. But though the terms are distinctive, there is no essential difference in the nature of bottomry and respondentia contracts, and both are regulated by the same principles of maritime law. Indeed, the contract of respondentia is now seldom or never entered into unless in conjunction with that of bottomry.

A bottomry contract may be written out in any form which sufficiently shows the conditions agreed on between the two parties; but it is usually drawn up in the form of a *bond*. The document must show, either by express terms, or from its general tenor, that the risk of loss is assumed by the lender; this being the consideration for which the high premium is conceded. The lender may transfer the bond by indorsation, in the same manner as a bill of exchange or bill of lading, and the right to recover its value becomes invested in the indorsees.

According to the law of England, a bottomry contract remains in force so long as the ship exists *in the form of a ship*, whatever amount of damage she may have sustained. Consequently, the "constructive total loss," which is recognized in marine insurance when the ship is damaged to such an extent that she is not worth repairing, is not recognized in reference to bottomry, and will not absolve the borrower from his obligation; that is, if the ship go to pieces the borrower is freed from all liability under the bottomry contract; and the lender is not entitled to receive any share of the proceeds of such of the ship's stores or materials as may have been saved from the wreck. Money advanced on bottomry is not liable, in England, for general average losses.

If the ship should *deviate* from the voyage for which the funds were advanced, her subsequent loss will not discharge the obligation of the borrower under the bottomry contract. If she should not proceed at all on her intended voyage, the lender is not entitled to recover the bottomry premium in addition to his advance, but only the ordinary rate of interest for the temporary loan. As the bottomry premium is presumed in every case to cover the risks incurred by the lender, he is not entitled to charge the borrower with the premium which he may pay for *insurance* of the sum advanced in addition to that stipulated in the bond.

The contract of bottomry seems to have arisen from the custom of permitting the master of a ship, when in a foreign country, to pledge the ship in order to raise money for repairs, or other extraordinary expenditures rendered necessary in the course of the voyage. Circumstances often arise in which, without the exercise of this power on the part of the master, it would be impossible to provide means for accomplishing the voyage; and it is better that the master should have authority to burden the ship, and, if necessary, the freight and cargo also, in security for the money which has become requisite, than that the adventure should be defeated by inability to proceed. But the right of the master to pledge the ship or goods must always be created by necessity; if exercised without necessity the contract will be void. Accordingly, the master of a British ship has no power to grant a bottomry bond at a British port, or at any foreign port where he might have been able to raise funds on the personal credit of the ship-owners. Neither has he any power to pledge the ship or goods for private debts of his own; but only for such supplies as are indispensable for the purposes of the voyage.

The bottomry lender must use reasonable diligence to ascertain that a real necessity exists for the loan; but he is not bound to see to the application of the money advanced. If the lender have originally advanced the funds on the personal credit of the master or owners, or on any other security than that of bottomry, he is not entitled at a subsequent period to convert his claim into a bottomry obligation; and although the master should grant him such obligation, it would not bind the owners. In every case a bond procured by compulsion would be void.

The power of the master to pledge the cargo depends upon there being some reasonable prospect of benefit to it by his so doing. He has no such power except in virtue of circumstances which may oblige him to assume the character of *agent for the cargo*, in the absence of any other party authorized to act on its behalf. Under ordinary circumstances he is not at liberty to pledge the cargo for repairs to the ship. If, indeed, the goods be of a perishable nature, and if it be impossible to get the ship repaired in sufficient time to obviate serious loss on them by delay without including them under the bottomry contract, he has power to do so; because it may fairly be assumed, in the case supposed, that the cargo will be benefited by this procedure. But if there be time to communicate with the proprietors of the cargo, it is his duty to give them notice before resorting to this course. The general principle is, that the master must act for the cargo, with a reasonable view to the interests of its proprietors, under the whole circumstances of the case. When he does this his proceedings will be sustained; but should he manifestly prejudice the interests of the cargo by including it under bottomry for the mere purpose of relieving the ship, or of earning the freight, the owners of the cargo will not be bound by the bottomry contract. Any bottomry or respondentia bond may be good in part, or bad in part, according as the master may have acted *within* or *beyond* the scope of his legitimate authority in granting it. If two or more bottomry bonds have been granted at different stages of the voyage, and the value of the property be insufficient to discharge them all, the last-dated bond has the priority of payment, as having furnished the means of preserving the ship, and thereby preventing the total loss of the security for the previous bonds.

In a recent case in the English Admiralty Court (the Cynthia, 20 L. 7, 54), it was decided that a bond granted by a British consul over a British ship, the master of which had been murdered in a mutiny by the crew, was valid, although the new master, appointed by the consul, had not been required to sign it.

When the sum due under a bottomry bond over ship, freight, and cargo, is not paid at the stipulated time, proceedings may be taken by the bond-holder for recovery of the freight, and for the sale of the ship; and should the proceeds of these be insufficient to discharge the claim, a judicial sale of the cargo may be resorted to. As a general rule, the value of the ship and freight must be exhausted before recourse can be taken against the cargo.

The bottomry premium must be ultimately paid by the parties for whose especial benefit the advances were obtained, as ascertained on the final adjustment of the average expenditures at the port of destination.

For further information on this subject the reader is referred to the cases of the Gratitudine, 2 Rob. Ad. R. 240, 272; the Lochiel, 3 Rob. 34; the Alexander, 1 Rob. 346; to Soares *v.* Rahn, 3 E. F. Moore; Dobson *v.* Lyall, 8 Jurist 969; and especially to the cases of the Lord Cochrane, 8 Jurist 714, and of Jacobsen *v.* Reinhardt, 22 Scottish Jurist 309. See also MARSHALL on *Insurance*, book 2; PARK on *Insurance*, c. 21; ARNOULD on *Insurance*; *Lord* TENTERDEN on the *Law of Merchant Ships*, part 2, c. 3.—E. B.

Bougainville, Count Louis Antonie M., a circumnavigator of the eighteenth century, was born at Paris, 1729. He first studied law, and was afterward a distinguished soldier, diplomatist, scholar, and navigator, and remarkable in each for his energy of character. He fought in Canada, under Montcalm, where he was wounded, in 1758. On the death of his superior and friend, he returned to France, and served with distinction in Germany, in 1761. On the conclusion of peace, he entered the French navy, and led the expedition intended to form a settlement in the Falkland Islands, for which he sailed in 1763. The prior claim of the Spanish government to these islands compelled him to surrender them; and he returned to France, the government of which commissioned him to carry the surrender into execution, on receiving from the Spanish government remuneration for his expenses. Having accomplished this, he set sail on his voyage of circumnavigation, and having enriched geographical science by a number of new discoveries, he returned to France in March, 1769. During the American war, he was again in service, from which, however, he wholly retired in 1790, and devoted himself exclusively to scientific research.

Boulogne-sur-mer (*Gesoriacum*), a fortified seaport town of France, capital of arrondissement, department Pas de Calais, on the English Channel, at the mouth of the Lianne, and on the Boulogne and Amiens Railroad, 140 miles from Paris, and 112 from London, and 19 southwest from Calais. Lat. (of the column) 50° 44′ 32″ N., long. 1° 36′ 15″ E. Population, 1858, 31,000, of whom a great number are English residents. It is divided into the Upper and Lower towns. The first, on a hill whence the English coast is distinctly visible, is well, though irregularly built, and has two squares ornamented with fountains, a feudal citadel, and ramparts, a modern cathedral, an episcopal palace, a town hall, and a house in which Le Sage, the author of Gil Blas, lived and died. The Lower, or new town, stretching from the Upper town to the sea, is newly and regularly built, and more populous. It has fine public baths, with ball and concert rooms, a commercial college, a theatre, a museum, including a library of 23,000 volumes, a hospital, custom-house, and barracks. Boulogne has also an English library and reading-room, six English churches, several excellent hotels, a great number of boarding-schools (both French and English), a school of navigation, tribunal of commerce, societies of agriculture, commerce, and arts; manufactories of coarse woolens, sail-cloth, cordage, bottle-glass, and earthen-ware. In its vicinity are important marble quarries. Its fisheries are very extensive, and furnish the chief supply of fish for the Paris markets; but the town is mainly indebted for its prosperity to its English residents, who, since the peace, have resorted thither in great numbers, particularly during the summer. Steamers make the passage to Folkstone in two hours, and to London in about twelve hours; and the number of passengers who disembark here annually exceeds 50,000. The port is not very easy of access, being formed by two wooden piers stretching out only to low-water mark, but the tide rises upward of 16 feet, and ships find pretty good anchorage about half a mile from the harbor. It was on the heights of Boulogne that the Emperor Caligula, A.D. 40, encamped an army of 100,000 men for the fruitless purpose of invading Britain, and here also, in 1804, nearly 18 centuries later, the Emperor Napoleon assembled an army of 180,000 men, and a flotilla of 2400 transports, with the same design. The *Colonne Napoléone*, a column 164 feet high, nearly one mile from the town, commemorates the latter futile attempt.

Bounties. They were first granted on the exportation of British commodities—a new principle introduced into commerce by the British Parliament. The first bounties granted on corn were in 1688. First legally granted in England for raising naval stores in America, 1703. Bounties have been granted by Great Britain on sail-cloth, linen, and other goods, and by this country on fisheries.—*See* FISHERIES. *Elements of Commerce.* Bounties on production are most commonly given in the view of encouraging the establishment of some new branch of industry; or they are intended to foster and extend a branch that is believed to be of paramount importance. In neither case, however, is their utility very obvious. In all old settled and wealthy countries, numbers of individuals are always ready to embark in every new undertaking, if it promise to be really advantageous, without any stimulus from government; and if a branch of industry already established be really important and suitable for the country, it will assuredly be prosecuted to the necessary extent, without any encouragement other than the natural demand for its produce.

However injurious to the state, it has been pretty generally supposed that bounties on exportation are advantageous to those who produce and export the articles on which they are paid. But the fact is not so. A trade that can not be carried on without the aid of a bounty must be a naturally disadvantageous one. Hence, by granting it, individuals are tempted to engage or continue in businesses which are necessarily very insecure, and are rarely capable of being rendered lucrative; at the same time that they are prevented, by trusting to the bounty, from making those exertions they naturally would have made had they been obliged to depend entirely on superior skill and industry for the sale of their produce. The history of all businesses carried on by the aid of bounties proves that they are hardly less disadvantageous to those engaged in them than to the public.

Bowditch, Nathaniel, a self-taught American mathematician, born in 1773, of humble parents, at Salem, in Massachusetts. He was bred to his father's business as a cooper, and afterward was apprenticed to a ship-chandler. His taste for mathematics early developed itself; and he acquired Latin that he might study Newton's *Principia*. In 1795 he sailed as supercargo, in which capacity he made four long voyages; and, being an excellent navigator, he afterward commanded a vessel, instructing his crews in taking lunar and other observations. He edited three editions of Hamilton Moore's Navigation. In 1804 he became actuary to a Boston insurance company; and in the midst of his active and useful career published a translation of the *Mécanique Celeste* of Laplace, with annotations; a work which will better prove the great acquirements of this self-taught philosopher than any labored panegyric. He died in 1838, at Boston. A statue of this distinguished mathematician has been erected to his memory in Mount Auburn Cemetery, Cambridge, Massachusetts.

Bowline, a rope leading forward from the leech (side border) of a square sail, to keep it tightly out. When a vessel is sailing close-hauled she is then said to be sailing *on a bowline* or *on a taut bowline*. Bowline bridles are the spans of cord by which the bowline is fastened to the leech.—E. B.

Bowsprit, or **Boltsprit,** a large spar which projects over the stem of a ship, resting slopewise on the

head of the main stem, and having its lower end fastened to the partners of the foremast, and further supported by the forestay. It carries the sprit-sail, spritsail-top-sail, and jack-staff; and its length is usually the same as that of the foremast.—E. B.

Box-haul, in *Navigation*, to bring a ship, when close-hauled, round upon the other tack, when she refuses to stay and there is not room to wear.—E. B.

Boxing the Compass, denotes the rehearsing the points in their proper order.—E. B.

Box-wood (Germ. *Buchsbaum*; Du. *Palmhout*; Fr. *Buis*; It. *Busso*, *Bosso*, *Borsolo*), the wood of the box-tree (*Buxus sempervirens*), growing wild from Massachusetts to Florida. A very common name in the United States is dogwood, though both names are used. This tree was greatly admired by the ancient Romans, and has been much cultivated in modern times, on account of the facility with which it is fashioned into different forms. Box is a very valuable wood. It is of a yellowish color, close-grained, very hard, and heavy; it cuts better than any other wood, is susceptible of a very fine polish, and is very durable. In consequence, it is much used by turners, and mathematical and musical instrument makers. It is too heavy for furniture. It is the *only* wood used by the engravers of wood-cuts for books; and provided due care be exercised, the number of impressions that may be taken from a box-wood cut is very great. In France, box-wood is extensively used for combs, knife-handles, and button moulds; and sometimes, it has been said, as a substitute for hops in the manufacture of beer. The value of the box-wood sent from Spain to Paris is reported to amount to about 10,000 francs a year. In 1815, the box-trees cut down on Box-hill, near Dorking, in Surrey, England, produced upward of £10,000.

Bracelets. They were early worn and prized among the ancients; we read of them in almost all nations: those that were called *armillæ* were usually distributed as rewards for valor among the Roman legions.—*Nouv. Dict.* Those of pearls and gold were worn by the Roman ladies; and armlets are female ornaments to the present day.—HAYDN.

Bradford, a parliamentary borough, market, and parish of England, county of York, West Riding, on an affluent of the Aire, and branch of the Leeds and Liverpool canal, 8 miles west of Leeds, on the Leeds Railroad. Area of parish, 34,146 acres. Population in 1851, 149,543. Population of the borough, 103,778. Area of parliamentary borough, comprising the townships of Bradford, Manningham, Bowling, and Horton, 6590 acres. The town, built entirely of stone, has streets mostly narrow, but well paved and lighted. Bradford is now the principal seat of the worsted yarn and stuff manufactures in England, and the great mart for the long wools used in these fabrics. In 1838 it had 142 worsted, 9 woolen, and 2 cotton mills, employing together 11,675 hands. In the same year there were in the town upward of 1500 power looms, each producing three to four pieces per week. Its rapid advance is mainly attributable to its central position in the great manufacturing district of Yorkshire, and to the abundance of coal and iron in its immediate vicinity. The Leeds and Liverpool canal connects it with both the Irish and North Seas.

Bran, the thin skins or husks of corn, particularly wheat, ground, and separated from the corn by a sieve or bolter.

Brandy Germ. *Brantewein*; Du. *Brandewyn*; Fr. *Eau de vie*, *Brandevin*; It. *Aquarzente*; Sp. *Aguardiente*; Port. *Aguardente*; Russ. *Wino*; Lat. *Vinum adustum*), a spirituous and inflammable liquor, obtained by distillation from wine and the husks of grapes. It is prepared in most of the wine countries of Europe; but the superiority of French brandy is universally admitted. The latter is principally distilled at Bordeaux, Rochelle, Cognac, the Isle de Rhé, Orleans, Nantes, and in Poitou, Touraine, and Anjou. That of Cognac is in the highest estimation. Wines of all descriptions, but chiefly those that are strong and harsh (*poussés*), are used in the manufacture of brandy. The superior vintages, and those that have most flavor, are said to make the worst brandy. It is naturally clear and colorless. The different shades of color which it has in commerce arise partly from the casks in which it is kept, but chiefly from the burned sugar, sanders wood, and other coloring matter intentionally added to it by the dealers. It is said that the burned sugar gives mellowness to the flavor of the liquor, and renders it more palatable. The art of distillation is believed to have been first discovered by the Arabians. From a passage in the *Testamentum Novissimum* of the famous Raymond Lully, who flourished in the thirteenth century, it would appear that the production of brandy and alcohol from wine was familiar to his contemporaries.—P. 2, edit. *Argent.* 1571. But the practice does not appear to have been introduced into France till 1313.—*Le Grand d'Aussi Vie privé de François*, tome iii. p. 64. When first introduced, brandy or burned wine (*vinum adustum*) appears to have been used principally as an antiseptic and restorative medicine; and the most extravagant panegyrics were bestowed on its virtues. It was described as a sovereign remedy in almost all the disorders of the human frame; it was commended for its efficacy in comforting the memory and strengthening the reasoning powers; it was extolled, in short, as the elixir of life, and an infallible preservative of youth and beauty.—HENDERSON'S *History of Wine*, p. 24. Dr. Henderson says that the experience of later times has shown how little the eulogy was merited; but in this he is contradicted by Burke, who maintains, with equal eloquence and ingenuity, that "the *alembic* has been a vast benefit and blessing."—*Thoughts and Details on Scarcity*, p. 41. Brandy formed, for a lengthened period, a prominent article in the exports of France—few ships sailing from Bordeaux, Rochelle, or Nantes, without taking a certain quantity of it on board; but of late years there has been an extraordinary falling off in the exports of brandy as well as of wine. We subjoin

AN ACCOUNT OF THE QUANTITIES AND VALUES OF THE BRANDY EXPORTED FROM FRANCE DURING EACH OF THE 10 YEARS ENDING WITH 1839, TO THE UNITED KINGDOM AND TO ALL COUNTRIES.

Years.	To the United Kingdom.		To all Countries.	
	Quantity.	Value.	Quantity.	Value.
	Litres.	*Francs.*	*Litres.*	*Francs.*
1830	9,028,140	8,164,071	17,913,330	15,337,280
1831	6,996,719	5,480,000	14,132,788	11,960,000
1832	13,569,445	12,208,900	23,787,782	20,732,624
1833	10,857,676	9,236,760	22,089,926	18,703,180
1834	7,829,366	6,654,956	16,146,280	13,712,700
1835	6,512,650	5,226,120	18,458,224	14,937,883
1836	7,179,544	5,939,123	19,991,596	16,262,194
1837	5,905,236	4,783,241	18,888,909	14,928,811
1838	7,410,510	6,002,613	20,609,714	16,668,437
1839	5,234,289	4,187,431	15,418,655	12,393,509
Totals	80,463,575	67,877,215	187,580,960	155,636,618
Average of ten years	8,046,357½	6,787,721½	18,788,696	15,563,661½
Average of the 10 years in imperial gallons	1,771,185		4,124,740	

The export value of brandy from France to the United States in the year 1853 was 16,661,000 francs; wines, 23,402,000 francs.

IMPORTATION OF BRANDY INTO THE UNITED STATES, TREASURY REPORT, 1855.

Year ending June 30.	Gallons.	Value.
1844	782,510	$606,633
1845	1,081,814	819,450
1846	963,147	889,231
1847	954,417	931,082
1848	1,570,111	1,135,089
1849	2,064,091	1,547,514
1850	4,145,902	2,659,537
1851	3,163,783	2,128,679
1852	2,751,810	1,792,799
1853	3,854,056	2,251,408
1854	2,152,366	2,255,344
1855	1,024,497	1,479,362

Brass, an alloy of copper and zinc. This name, however, has not been exclusively applied to the alloy of these metals; for the gun-metal, which has been also called brass, is an alloy of copper with tin. The same alloy, with more tin, is used in machinery, and is preferred to the alloy of copper and zinc on account of its greater hardness. It appears from the analysis of the brass of the ancients that it was an alloy of copper and tin. A small portion of tin gives to copper great hardness, and renders it capable of bearing much greater resistance. A larger portion of tin gives increased hardness, but is less fitted to bear a straining resistance, on account of its brittleness. Its elasticity is very great, which fits it for bells. In this state it is called bell-metal; and with a still greater proportion of tin it forms an alloy employed for the mirrors of reflecting telescopes. The alloy of copper with tin is easily distinguished from that with zinc, from the agreeable color of the latter, which varies with the proportions of the metals. Pinchbeck has the least proportion of zinc. Common brass has more zinc, and the gold-colored alloy called prince's metal contains a still greater proportion of zinc. An alloy of copper with a very large proportion of zinc is used for the common white metal buttons.

Brass-color is prepared by braziers and colormen to imitate brass. There are two kinds, the red brass or bronze, and the yellow or gilt brass. The latter is made only of copper-tilings, the smallest and brightest that can be found; with the former it is usual to mix some red ochre, finely pulverized.

The various alloys of copper with tin and zinc forming the different kinds of brass, are to be considered as chemical compounds, and, of course, governed by the same laws of definite proportions which obtain in the more conspicuous compounds. On these principles, which can not be doubted, we have an unerring rule for uniting these and other metals in the best proportions, the weights of their atoms being previously known. The weight of the atom of copper being 8, tin 7·35, and zinc 4, the following tables exhibit the proportions of the various alloys, expressed in atoms, and their proportions by weight, the third column pointing out the color and character of the resulting compound. C, Z, and T are to represent the atoms of the metals respectively.

COMPOUNDS OF ZINC WITH COPPER.

Atoms.	Proportions by Weight.	Character and Color of the Compounds.
C+Z	2 to 1	The best proportions for common brass.
C+2 Z	1 to 1	The alloy called prince's metal, of a beautiful gold color.
C+3 Z	2 to 3	Of a paler yellow, very little malleable.
C+4 Z	1 to 2	Still lighter in color, and not malleable.
C+5 Z	2 to 5	Yellowish-white and brittle.
C+6 Z	1 to 3	Very brittle, nearly white.
2 C+Z	4 to 1	A very malleable brass, used in watch-work.
3 C+Z	6 to 1	An alloy much harder than copper, and inclining to its color.

COMPOUNDS OF TIN WITH COPPER.

Atoms.	Proportions by Weight.	Character and Color of the Compounds.
T+C	11 to 12	A very brittle and rather white alloy.
2 T+C	11 to 6	Still more brittle and more white.
3 T+C	11 to 4	Very white, used for speculums.
4 T+C	11 to 3	Coarse-grained, and too brittle for any purpose.
T+2 C	11 to 24	A yellowish alloy, very hard and sonorous.
T+3 C	11 to 36	Bell-metal.
T+4 C	11 to 48	A very hard alloy, used for some culinary vessels.
T+5 C	11 to 60	Softer, but not malleable.
T+6 C	11 to 72	Still increased in softness, and of a yellower color.
T+7 C	11 to 84	Used for some purposes in machinery.
T+8 C	11 to 96	An alloy used for cannon.
T+9 C	11 to 108	More common for cannon and machinery, and used for bronze statues.

Hitherto the proportions of these alloys have depended upon the practice of workmen, guided by numerous trials; but what confirms the law of definite proportions, is the necessity of adhering to fixed proportions, ascertained by trial. By attending to the proportions pointed out above, the most striking and proper compounds will be produced, without the trouble of trial. Any intermediate proportions will, doubtless, be marked by defective color, irregular crystallization, or imperfect malleability.

Although the most direct way of forming these different kinds of brass is by immediately combining the metals together, one of them, which is most properly called brass, was manufactured long before zinc, one of its component parts, was known in its metallic form. The ore of the latter metal was cemented with sheets of copper, charcoal being present; and the zinc was united with the copper without becoming visible in a distinct form. The same method is still practiced for making brass.—E. B.

Brass was known among all the early nations.—USHER. The British, from the remotest period, were acquainted with its use.—WHITTAKER. When Lucius Mummius burned Corinth to the ground, 146 B.C., the riches he found were immense, and during the conflagration, it is said, all the metals in the city melted, and, running together, formed the valuable composition described as *Corinthian brass*. This, however, may well be doubted, for the Corinthian artists had long before obtained great credit for their method of combining gold and silver with copper; and the Syriac translation of the Bible says that Hiram made the vessels for Solomon's temple of Corinthian brass. Articles made of this brilliant composition, though in themselves trivial and insignificant, were yet highly valued. —DU FRESSNOY.

Brazil, an extensive empire of South America, occupying a large proportion of the eastern and central part of that country, extending between lat. 4° 28′ N. and 32° 45′ S., and long. 34° 55′ and 65° 20′ W. Length from north to south, about 2630 miles; greatest breadth, 2540 miles. Its internal boundaries come in contact with all the different states and territories of South America, with the exception of Chili and Patagonia, while the Atlantic ocean washes its shores from its northeast to its southern limits.

Brazil was discovered by Alvarez da Cabral, a Portuguese, who was driven upon its coasts by a tempest in 1500. He called it the land of the Holy Cross; but it was subsequently called Brazil, on account of its red wood, and was carefully explored by Amerigo Vespucci about 1504. The gold mines were first opened in 1684; and the diamond mines were discovered in 1730. The French having seized on Portugal in 1807, the royal family and nobles embarked for Brazil. A revolution took place here in 1821. Brazil was erected into an empire, when Don Pedro assumed the title of emperor, Nov. 18, 1825. He abdicated the throne of Port-

ugal, May 2, 1826; and that of Brazil, in favor of his infant son, now (1855) emperor, April 7, 1831, and returned to Portugal, where a civil war ensued.—HAYDN.

The empire is divided into 19 provinces, 14 situated along the shores of the ocean, and four in the interior, the relative population of which is exhibited in the following table, drawn up according to the most recent and accurate authorities.

Provinces.	Area in Square Miles.	Population.
Maritime Provinces.		
Para	534,270	165,000
Maranham	84,900	390,000
Piauhy	109,068	80,000
Ceara	66,878	190,000
Rio Grando do Norte	28,860	110,000
Paraiba	51,948	260,000
Pernambuco	108,806	600,000
Alagoas	75,036	220,000
Sergipe del Rey	40,484	175,000
Bahia	202,020	780,000
Espirito Santo	45,290	140,000
Rio de Janeiro	89,466	850,000
Santo Paulo	178,100	458,000
Santa Catarina	31,746	90,000
Santo Pedro do Sul	118,720	260,000
Interior Provinces.		
Amasonas	750,000	125,000
Minas Geraes	216,490	500,000
Matto Grosso	865,800	180,000
Goyaz	560,750	185,000
Total	3,956,800	6,150,000

The surface of Brazil is about equally divided into uplands and lowlands, or valleys. Two parallel mountain ranges traverse the country from north to south, forming elevated ridges of table-land—the greatest height of the central range being from 6000 to 7000 feet. Several minor ranges intersect the country, inclosing tracts, some of which are elevated, and others low-lying plains. The northern part of Brazil consists of the greater part of the vast plain through which flows the River Amazon and its tributaries, and varying in width from 350 to 800 miles. The rivers, lakes, and water courses are so numerous as completely to intersect this great plain, the soil of which is deep and soft, and covered for the most part with dense forests. Southeast of this is another plain. The principal rivers in this direction are the Tocantins, Araguay, Paranahiba, San Francisco, Belmonte, Doce, Paraiba do Sul, and Rio Grande do Sul, all of large size, but of difficult navigation, in consequence of rapids, etc. The table-land on the west is separated from the Andes of Bolivia by a large and extensive plain, traversed by those rivers which join to form the Madeira; the elevation of this plain is from 1200 to 1500 feet. On the banks of the Iriuana, and westward to the north branch of the Serra Parecis, extends a sandy and nearly barren desert, called Campos dos Parecis. From seven lakes (Sete Lagoas) on this table-land rises the River Paraguay, which flows southward through a swampy country, and then through the great plain of Paraguay to join the Parana. The latter has a course of 1000 miles, and receives the Rio Grande, the Paranahiba, Sapucahy, Pardo, etc. Several small streams flow in a southeast direction into the Atlantic. The Uruguay flows south through another table-land of smaller dimensions to the plain of the Missiones. The principal lakes are Patos, an enlargement of the Rio Grande, and Lake Mirim. Many others of less size are in the western provinces. The climate of the Amazon valley is of a tropical nature; only the dry and rainy seasons are not very distinctly marked. The nights are cloudless; but in the morning clouds accumulate and continue till the afternoon, when thunder and lightning, with torrents of rain, prevail for two hours, and all again is clear. The climate of Central and West Brazil is more varied, the heat in the dry season being excessive, while frosty nights are of frequent occurrence in winter; rain in some situations is of rare occurrence. The climate in the valley of the southeast coast is, notwithstanding its low latitude, as genial as that of Italy, being clear and serene, and refreshed by the sea-breeze from the east. At Rio Janeiro the annual mean of Fahrenheit's thermometer is 77°. The shores of the east coast are generally low-lying, the ground rising gradually behind into the mountain region, which runs parallel to the coast. The harbors are generally good, particularly those of Rio de Janeiro and Bahia. The population of Brazil consists of Europeans, whites born in the country, who call themselves Brazilians; Mulattoes, Mamalucoes, or offsprings of whites and native Indians; Negroes; Mestizoes, or Zamboes, mixed castes between Negroes and Indians; and the Aborigines, or American Indians. The slave population consists of Negroes and mixed breeds. Of the Aborigines, a portion are in a civilized condition, who are styled Caboclocs; the rest are in a savage and unreclaimed state. Dense forests furnish almost every variety of useful and ornamental timber, more than 100 species of palms, logwood, mahogany, Brazil, and numerous other dyewoods, with sassafras, sarsaparilla, ipecacuanha, and a great variety of other drugs. Cocoa, caoutchouc, and manioc, are indigenous products; maize, sugar, coffee, cotton, rice, wheat, and tobacco, have been introduced by European culture. The culture of the tea-plant was, some years ago, unsuccessfully attempted by a colony of Chinese, in the province of Saõ Paulo; the *yerba maté*, or Paraguay tea, is, however, an abundant product of the western provinces. The horse, ox, and sheep, derived from European stocks, have long been naturalized in the country; and vast herds of cattle are reared on all the more open parts. Hides, horns, bones, tallow, and other animal products, form leading articles of the export trade. Wild animals comprise the jaguar, hyena, tiger-cat, and other rapacious genera; with the tapir, wild-hog, etc., and a great variety of birds of the richest plumage; the animal as well as the vegetable products here presenting the greatest diversity. The diamond mines of Minas Geraes are the most productive at present known. Estimated value of the diamonds produced here, from 1740 to 1850, exceeds $20,000,000. Other gems, and large quantities of gold, besides silver, copper, iron, and platinum, are among the mineral products of the same province. Manufactures are almost wholly in their infancy in Brazil, being confined to cotton weaving, tanning, and the production of goods of primary necessity; and nearly all branches of industry are performed by slave labor. From its central position in reference to the chief commercial countries of the globe, and its very extensive line of coast, Brazil is most favorably situated for trade, which, though extensive, is not yet nearly commensurate with the resources of the empire. The articles imported in 1850 consisted, of cottons, 42,560 packages; woolens, 5488; linens, 5695; silks, 1088, and mixed goods, 1263; codfish, 54,602 quintals; coal, 42,007 tons; ale and porter, 23,704 barrels; flour, 283,893 barrels; candles—sperm, 90, composition, 6052, and tallow, 1013 boxes; wines—Portugal, 14,033 pipes, Mediterranean, 7644, and Bordeaux, 4421; butter, 25,561 firkins; cordage, 5480 coils, etc.

The produce of the country exported consisted of, coffee, 1,846,213 bags; hides, 147,296; sugar, 7824 cases; rum, 3892 pipes; rice, 8229 bags; horns, 256,949; tobacco, 28,755 rolls; rose-wood, 36,547 pieces; half-tanned hides, 12,744; tapioca, 17,737 barrels, etc. The imports from the United States, in 1851, amounted in value to $3,764,409, consisting mostly of flour and other provisions, and cotton manufactures; the exports at the same period amounted to $10,547,360, mostly in coffee, sugar, and hides.

Commerce of Brazil.—From the report of the Minister of Finance, read in the Chamber of Deputies on the 10th May, we gather the following particulars of the imports into, and exports from, the empire of Brazil, for the years 1854–'55. The commerce of Brazil with foreign nations, during the year 1854–'55, employed 5075 ships or vessels, measuring 1,657,015 tons.

The revenue of the last three years amounted to—1852-'53, $18,191,458; 1853-'54, $17,249,806; 1854-'55, $17,797,950. Total, 53,239,214. Average, $17,746,405.

On the 31st of December, 1855, the exterior public debt amounted to £5,635,900. The passive interior funded debt, $28,969,600.

Countries.	Imports.	Proportions. 1853-'54.	Proportions. 1854-'55.	Exports.	Proportions. 1853-'54.	Proportions. 1854-'55.
Great Britain and her possessions	$22,775,420	53·72	53·59	$19,687,362	32·43	32·32
France and her possessions	4,989,187	11·71	11·07	4,086,181	7·05	6·02
United States	3,995,868	9·06	8·25	11,903,644	28·25	26·26
Portugal and her possessions	3,234,396	0·83	7·63	2,324,899	4·35	5·12
Hanseatic Towns	2,442,228	0·25	5·76	3,337,579	8·27	7·37
Rio de la Plata	2,108,545	5·03	4·97	2,037,433	4·25	4 61
Belgium	835,752	2·15	4·97	1,391,847	1·78	3·07
Spain and her possessions	605,408	0·84	1·45	488,960	0·84	0·96
Chili	554,133	0·49	1·33	789,553	1·02	1·53
Sardinia	377,584	0·78	0·89	603,978	0·83	1·34
Sweden and Norway	180,774	0·26	0·45	1,254,649	2·18	2·77
Austria	130,277	0·84	0·31	812,011	3·53	1·79
Holland and her possessions	53,750	0·07	0·14	109,511	0·18	0·24
Other countries	322,327	0·94	0·76	687,557	1·25	1·47
Denmark	....	..	..	779,088	2·64	1·72
Turkey	....	..	..	134,709	0·15	0·29
Re-exportation	300,450	..	..	....	..	..
Total	$43,040,174			$50,534,365		

A decree of the government of Brazil, under date of January 10th, 1855, exempts foreigners from permits of residence, and permits them to travel in the interior of the empire with such passports as they may have brought with them, and, for the want of such, with the passport of their respective ministers, consuls, or vice-consuls, the same bearing the *visa* of the Brazilian authorities.

[Translation.]

Art. 1. Permits of residence are abolished, and foreigners coming to the empire are exempted from the same.

Art. 2. At every police office a book shall be kept for the registration of foreigners entering or leaving the empire.

Art. 3. On the occasion of the police visit foreigners shall state their names, condition, the place of their nativity, profession, the object for coming here when they arrived, and where they intend to reside. In those places where no police visit is made, the aforesaid declaration shall be made before the chief of police, delegate, or sub-delegate within twenty-four hours after landing, under penalty of from $10 to $50 fine, imposed by the competent authority.

Art. 4. The declaration alluded to in the foregoing article does not exonerate captains and masters of merchant vessels from the obligation imposed upon them by the twenty-fifth article of regulation No. 120, of January 31st, 1842, to declare, in a statement signed by them, the number, name, employment, occupation, and place of nativity of the passengers they bring with them, with or without passports.

Art. 5. The declaration of the foreigner and of the master or captain of the vessel shall be immediately transmitted to the bureau of police by the visiting officer or the authority who receives them.

Art. 6. The visiting officer, the chief of police, or the delegate or sub-delegate to whom the foreigner presents himself, shall examine his passport, and the same being found in due form, it shall be returned to him visaed, dated, and signed.

Art. 7. If there should be any doubt as to the legality of the passport, or the foreigner come without one, the chief of police, the delegate, or sub-delegate shall permit him to land if there is no reason for suspecting him to be a criminal; but if he should be suspicious, and have no certificate to present in his favor from his minister, or, in the absence thereof, from his respective consul or vice-consul, the chief of police, the delegate or sub-delegate shall compel the vessel which brought him to take him back, reporting the circumstance to the government at the capital, and to the president in the provinces.

Art. 8. To enable a foreigner to travel from one province to another, or in the interior of the same, the passport with which he arrived in the empire will be sufficient, provided it bears the *visa* of the competent authority with this clause, "For the province of ——." The visa must be dated, signed, paid for, and renewed every time the foreigner leaves one province for another.

Art. 9. But if the foreigner should happen to have come without a passport, or have lost the one he brought with him to the empire, the passport of the minister, or, in the absence thereof, that of his respective consul or vice-consul, with the visa of the Brazilian authorities, as set forth in the preceding article, shall answer the same purpose.

Art. 10. A foreigner who has resided in the empire for two years, being in possession of an establishment, and conducted himself well, or being married to a Brazilian, shall be at liberty to travel freely like a Brazilian, after having obtained from the chief of police a certificate of either of said conditions. this certificate is revokable in case of a change of circumstances.

Art. 11. In case of there being no diplomatic or consular agent, or the foreigner be a refugee or emigrant, or not come under the provisions of the preceding article, the passport shall be issued by the chief of police, the delegate, or sub-delegate, the same being always free of charge for the emigrant or the poor.

Art. 12. The ministers of state, or the chief clerks of the several departments at the seat of government, the presidents or their secretaries in the capitals of the provinces, the chief of police, the delegate or sub-delegate, at the place of landing or of departure, shall be empowered to grant the passport or the visa referred to in the preceding articles. The powers conferred by this decree upon the chief of police, the delegate and sub-delegate, are not concurrent, but shall be exercised by the delegate in places where no chief of police resides, or by the sub-delegate where no chief of police or delegate exists.

Art. 13. In consideration of the foregoing articles, the respective portions of the articles in regulation No. 120, of January 31st, which referred to permits of residence, and to passports for foreigners traveling in the interior of the empire, are hereby abolished.

Brazil-nuts, or **Chestnuts of Brazil**, the fruit of the Juvia (*Bertholletia excelsa*), a majestic tree growing to the height of one hundred or one hundred and twenty feet, abounding on the banks of the Orinoco, and in the northern parts of Brazil. The nuts are triangular, having a cuneiform appearance, with sutures at each of the angles; the shell is rough and hard, and of a brownish ash color. The kernel resembles that of an almond, but is larger, and tastes more like a common hazel-nut; it contains a great deal of oil, that may be obtained by expression or otherwise. These nuts do not grow separately or in clusters, but are contained, to the number of from fifteen to fifty or more, in great ligneous pericarps or outer shells, generally of the size of a child's head. This outer shell is very hard and strong, so that it is rather difficult to get at the nuts, which are closely packed in cells inside. The natives are particularly fond of this fruit, and celebrate the harvest of the juvia with rejoicings; it is also very much esteemed in Europe. The nuts exported to England and the European continent are chiefly from Para, and form an article of considerable commercial importance.—Humboldt's *Personal Narrative*, vol. v. p. 538, English translation.

Brazil-wood (Fr. *Bois de Brésil*; Ger. *Brasilienholz*; Du. *Brasilienhout*; It. *Legno del Brasile, Verzino*; Sp. *Madera del Bresil*; Port. *Pao Brasil*). It has been commonly supposed that this wood derived its name from the country in which it is principally produced; but Dr. Bancroft has conclusively shown that woods yielding a *red dye* were called Brazil-woods long previously to the discovery of America; and that the early voyagers gave the name of Brazil to that part of that continent to which it is still applied from their having ascertained that it abounded in such woods.—

See the learned and excellent work, *Philosophy of Colors*, vol. ii. p. 316–321. It is found in the greatest abundance, and is of the best quality, in the province of Pernambuco, where it is called *Pao de rainha*, or Queen's wood; but it is also found in many other parts of the Western hemisphere. The tree is large, crooked, and knotty; the leaves are of a beautiful red, and exhale an agreeable odor. Its botanical name is *Cæsalpinia Brasileto*, but it is called by the natives *ibiripitanga*. Notwithstanding its apparent bulk, the bark is so thick, that a tree as large as a man's body with the bark will not be so thick as the leg when peeled. When cut into chips, it loses the pale color it before had, and becomes red, and when chewed has a sweet taste. It is used for various purposes by cabinet-makers, and admits of a beautiful varnish, but its principal use is in dyeing red; and though the color is liable to decay, yet, by mixing with it alum and tartar, it is easily made permanent. There is also made of it, by means of acids, a sort of liquid lake or carmine for painting in miniature. Brazil-wood has been for many years past a royal monopoly; its exportation, except on account of government, being prohibited under the severest penalties. Owing to the improvident manner in which it has been cut down by the government agents, it is now rarely found within several leagues of the coast. Indeed, we are assured that many of the planters have privately cut down the trees on their estates, and used the timber as fire-wood, that they might not expose themselves to annoyance from the arbitrary and vexatious proceedings of these functionaries. The quantity of Brazil-wood imported into Great Britain is but inconsiderable. Its price in the London market, exclusive of the duty (2*s.* per ton), varies for the first quality from £60 to £80 per ton.—*Dr.* BANCROFT *in loc. cit. Encyclop. Metrop. Modern Traveler*, vol. xxix. p. 87; MALTE BRUN, vol. v. p. 525, English edition, etc.

Bread, the principal article in the food of most civilized nations, consists of a paste or dough formed of the flour or meal of different sorts of grain mixed with water, and baked. When stale dough or yeast is added to the fresh dough, to make it swell, it is said to be *leavened*; when nothing of this sort is added, it is said to be *unleavened*.

Historical Sketch of Bread.—The President de Goguet has endeavored, with his usual sagacity and learning, to trace the successive steps by which it is probable men were led to discover the art of making bread (*Origin of Laws*, etc. vol. i. p. 95–105, English translation); but nothing positive is known on the subject. It is certain, however, from the statements in the sacred writings, that the use of unleavened bread was common in the days of Abraham (*Gen.* xviii. 8); and that leavened bread was used in the time of Moses, for he prohibits eating the Paschal lamb with such bread.—*Exod.* xii. 15. The Greeks affirmed that Pan had instructed them in the art of making bread; but they no doubt were indebted for this art, as well as for their knowledge of agriculture, to the Egyptians and Phœnicians, who had early settled in their country. The method of grinding corn by hand-mills was practiced in Egypt and Greece from a very remote epoch; but for a lengthened period the Romans had no other method of making flour than by beating roasted corn in mortars. The Macedonian war helped to make the Romans acquainted with the arts and refinements of Greece; and Pliny mentions that public bakers were then for the first time established in Rome.—*Hist. Nat.* lib. xviii., c. 11. The conquests of the Romans diffused, among many other useful discoveries, a knowledge of the art of preparing bread, as practiced in Rome, through the whole south of Europe. The use of yeast in the raising of bread seems, however, from a passage of Pliny (lib. xviii. c. 7), to have been practiced by the Germans and Gauls before it was practiced by the Romans; the latter, like the Greeks, having leavened their bread by intermixing the fresh dough with that which had become stale. The Roman practice seems to have superseded that which was previously in use in France and Spain; for the art of raising bread by an admixture of yeast was not practiced in France in modern times till toward the end of the seventeenth century. It deserves to be mentioned that, though the bread made in this way was decidedly superior to that previously in use, it was declared by the faculty of medicine in Paris to be prejudicial to health; and the use of yeast was prohibited under the severest penalties. Luckily, however, the taste of the public concurring with the interest of the bakers, proved too powerful for these absurd regulations, which gradually fell into disuse; and yeast has long been almost every where used in preference to any thing else in the manufacture of bread, to the wholesomeness and excellence of which it has not a little contributed.

The species of bread in common use in a country depends partly on the taste of the inhabitants, but more on the sort of grain suitable for its soil. But the superiority of wheat to all other farinaceous plants in the manufacture of bread is so very great, that, wherever it is easily and successfully cultivated, wheaten bread is used, to the nearly total exclusion of most others. Where, however, the soil or climate is less favorable to its growth, rye, oats, etc., are used in its stead. A very great change for the better has, in this respect, taken place in Great Britain within the last century. It is mentioned by Harrison, in his description of England (p. 168), that in the reign of Henry VIII. the gentry had wheat sufficient for their own tables, but that their *household* and poor neighbors were usually obliged to content themselves with rye, barley, and oats. It appears from the household book of Sir Edward Coke that, in 1596, rye bread and oatmeal formed a considerable part of the diet of servants, even in great families, in the southern counties. Barley bread is stated in the grant of a monopoly by Charles I., in 1626, to be the usual food of the ordinary sort of people.—*Sir* F. M. EDEN *on the Poor*, vol. i. p. 561. At the Revolution, the wheat produced in England and Wales was estimated by Mr. King and Dr. Davenant to amount to 1,750,000 quarters.—DAVENANT'S *Works*, vol. ii. p. 217. Mr. Charles Smith, the very well informed author of the Tracts on the Corn Trade, originally published in 1758, states that in his time wheat had become much more generally the food of the common people than it had been in 1689; but he adds (2d ed. p. 182, Lond. 1766) that, notwithstanding this increase, some very intelligent inquirers were of opinion that even then not more than *half* the people of England fed on wheat. Mr. Smith's own estimate, which is very carefully drawn up, is a little higher; for, taking the population of England and Wales, in 1760, at 6,000,000, he supposed that 3,750,000 were consumers of wheat; 739,000 of barley; 888,000 of rye and 623,000 of oats. Mr. Smith further supposed that they individually consumed, the first class, 1 quarter of wheat; the second, 1 quarter and 3 bushels of barley; the third, 1 quarter and 1 bushel of rye; and the fourth, 2 quarters and 7 bushels of oats.

About the middle of last century, hardly any wheat was used in the northern counties of England. In Cumberland, the principal families used only a small quantity about Christmas. The crust of the goose pie, with which almost every table in the county is then supplied, was, at the period referred to, almost uniformly made of barley meal.—EDEN *on the Poor*, vol. i. p. 564.

Every one knows how inapplicable these statements are to the condition of the people of England at the present time. Wheaten bread is now universally made use of in towns and villages, and almost every where in the country. Barley is no longer used, except in the distilleries and in brewing; oats are employed only in the feeding of horses; and the consumption of rye bread is comparatively inconsiderable. The produce

of the wheat crops has been, at the very least, *quadrupled* since 1760. And if to this immense increase in the supply of wheat we add the still more extraordinary increase in the supply of butchers' meat (*see article* CATTLE), the fact of a very signal improvement having taken place in the condition of the population, in respect of food, will be obvious.

But great as has been the improvement in the condition of the people of England since 1760, it is but trifling compared to the improvement that has taken place since the same period in the condition of the people of Scotland. At the middle of last century, Scotch agriculture was in the most depressed state; the tenants were destitute alike of capital and skill; green crops were almost wholly unknown; and the quantity of wheat that was raised was quite inconsiderable. A field of eight acres sown with this grain, in the vicinity of Edinburgh, in 1727, was reckoned so great a curiosity that it excited the attention of the whole neighborhood.—ROBERTSON'S *Rural Recollections*, p. 267. But even so late as the American war, the wheat raised in the Lothians and Berwickshire did not exceed a third part of what is now grown in them; and taking the whole country at an average, it will be a moderate estimate to say that the cultivation of wheat has increased in a *tenfold* proportion since 1780. At that period no wheaten bread was to be met with in the country places and villages of Scotland, *oat cakes* and *barley bannocks* being universally made use of. But at present the case is widely different. The upper and also the middle and lower classes in towns and villages use only wheaten bread, and even in farm-houses it is very extensively consumed. There is at this moment hardly a village to be met with, however limited its extent, that has not a public baker. In many parts of England it is the custom for private families to bake their own bread. This is particularly the case in Kent, and in some parts of Lancashire. In 1804 there was not a single public baker in Manchester, and their number is still very limited.

The word bread is sometimes used for all the necessaries of human life, especially in the Scriptures. Chiug-Noung, the successor of Fohi, is reputed to have been the first who taught men (the Chinese) the art of husbandry, and the method of making bread from wheat, and wine from rice, 1998 B.C.—*Universal History.* Baking of bread was known in the patriarchal ages; see *Exodus*, xii. 15. Baking bread became a profession at Rome, 170 B.C. During the siege of Paris by Henry IV., owing to the famine which then raged, bread, which had been sold, while any remained, for a crown a pound, was at last made from the bones of the charnel-house of the Holy Innocents, A.D. 1594. —HENAULT. In the time of James I. the usual bread of the poor was made of barley; and now in Iceland, cod-fish, beaten to powder, is made into bread; and the poor use potato-bread in many parts of Ireland. Earth has been eaten as bread in some parts of the world: near Moscow is a portion of land whose clay will ferment when mixed with flour. Some of the Indians of the Southwest eat a white earth with salt; and the Indians of the Oronoko eat a white unctuous earth. —GREIG; PHILLIPS.

Bread-making.—Bread is a most important and generally used article of food, and its proper preparation is a matter of the first importance. In New York it is chiefly composed of wheat flour, although rye and Indian meal enter somewhat into the composition of some species. 100 parts of wheat flour consist of

Starch	68 parts.
Gluten	24 "
Sugar	5 "
Vegetable Albumen	3 "

Of these different constituents, the gluten is that which gives to it the universal preference it enjoys over all other articles for bread-making. In oats, barley, and rye, the amount of gluten is small. As its name imports, it gives to the flour, when mixed with water, in the form of dough, its *glutinous* or adhesive property; and hence, although wheat flour can easily be converted into a plastic paste with water, yet it is found exceedingly difficult or impossible to make an adhesive dough with rye or oat meal flour without the addition of a portion of wheat flour.

The quality of wheat flour is greatly improved by three or four months' age, and it makes a much stronger bread after this period than before. If, however, it is kept too long, it is not only liable to fermentation, but loses in part its glutinous property. It is the custom with bakers, who seldom use flour before it is of the age indicated, to mix that of three or four months' age with that which is one or two years old; beyond this period it can not be well kept without especial care; and, indeed, so great is the demand, that it is seldom permitted to accumulate for a longer time.

Most of the bread used in New York is *fermented* or raised bread, which is induced by adding to the dough a portion of leaven, or yeast, which quickly diffuses itself through the whole mass, and causes it to ferment. This fermentation, which, although daily observed, is far from being so well understood as at first sight might be supposed, evolves a quantity of fixed air into the dough, which the gluten of the flour, by its tenacity, causes to be retained in the little cells seen in the raised dough before baking, or in the bread as it comes into the consumer's hands. Flour is now sold which contains tartaric acid and saleratus, or soda, in a dry state. When water is added to this, it causes an evolution of the carbonic acid gas contained in the soda, or potash, and the bread is suddenly raised without the process of fermentation.

The method of making bread in large bakeries is to sift a quantity of flour into a kneading-trough, into which is thrown a quantity of hot water in which salt has been dissolved. Into this mixture yeast is cast in the centre, and worked with a portion of the surrounding mass, which is made of the consistence of a stiff batter. The surface is covered with a little loose flour, and the whole is left in a state of repose until it begins to manifest decided signs of "working," when it is kneaded into dough.

This dough is sprinkled with a little flour, covered with a warm woolen cloth, and left for an hour and a half, when it is subjected to a second but less general kneading, cut in pieces, weighed, and shaped into the form it is intended to assume in the loaf, and set aside for some time in a warm place. When ready for the oven, the loaves are placed in it, baked, and removed in the form of bread. The loaf increases to about twice the size which it had in the form of dough, but loses somewhat in weight in the process of baking.

In most European countries the weight of the loaf is regulated by law, the assize being attended with strict regulations and penalties; but in this country the subject of quantity and quality, as a general rule, has been left for the baker and his customers to regulate between themselves, it being considered that competition would probably regulate this matter as advantageously for the consumer as it could be done by strict legal enactments. This is the more advisable, because the baker has it in his power to increase the weight of his loaf by adulterations, which are difficult to detect, without adding to its nutritious properties. As it is, he is free to select the mixture of flour which is best suited to the wants and tastes of his customers.

There is a great difference in the ability of various kinds of flour to make a given quantity of bread. A portion of this difference consists in the capacity of the flour to absorb and retain water, which is not only used to moisten the flour, but absolutely enters into the composition of the bread. Notwithstanding a large portion of the water used in making dough is expelled by the heat of the oven in baking, yet a sufficiency is retained to increase the weight of the bread largely over the solid materials used in making it.

When the bread is weighed immediately after baking, it is found that for every 100 pounds of flour about 138 pounds of bread are made. This will diminish, by keeping, four or five pounds, but even when stale it is much above the weight of the flour actually used. As a general rule, fifteen pounds of flour and ten pounds of water will make twenty pounds of bread, so that *one-fourth of each loaf of bread consists of water chemically combined and solidified.*

Each baker has his own standard for the size and weight of his loaves, as well as his particular method of making bread. As a general rule, the sixpenny loaf weighs from one pound two ounces to one pound six ounces, and larger loaves bear a like proportion of weight to price. Those whose custom is among the more fashionable classes use a higher-priced quality of flour, and make a smaller loaf, while those who supply the laboring class of the community use a good but less high-priced flour, and furnish their customers with a large loaf. Many of the shops contain American, French, and German loaves, while large numbers of establishments confine themselves to the one or the other of these species. The chief difference between the American and French bread consists in the larger quantity of yeast used in the latter, and its greater porosity, or want of closeness. The German bread is more dense than either of these, and contains, in addition to wheat flour, a small admixture of rye flour, which gives to it a slightly sweetish taste, much relished by those accustomed to its use.

The amount of bread consumed every where is very great. According to M. Husson, the Parisian uses about one pound each day, or three hundred and sixty pounds each year. The Londoner consumes in the same time about three hundred pounds; and the New Yorker about two hundred and sixty pounds. The reason of this great disparity in the consumption of bread in these three great cities is easily seen in the larger quantity of meat and vegetables used in the one than in the other. The Londoner consumes more meat than the Parisian, and consequently less bread, while the amount both of meat and vegetables used by the New Yorker exceeds that of the Londoner; and his consumption of bread is proportionably diminished. This, however, is subject, in every country, to great variations; but it may be safely assumed that the family that uses much meat consumes but little bread; and that which consumes but little meat requires a corresponding increase in the amount of bread.

Bread-fruit. The bread-fruit is a large, globular berry, of a pale-green color, about the size of a child's head, marked on the surface with irregular six-sided depressions, and containing a white and somewhat fibrous pulp, which, when ripe, becomes juicy and yellow. The tree that produces it (*Artocarpus incisa*) grows wild in Otahelte and other islands of the South Seas, is about 40 feet high, with large spreading branches, and has large, bright green leaves, deeply divided into seven or nine spear-shaped lobes. We are informed, in Captain Cook's first Voyage round the World, that the eatable part of this fruit lies between the skin and the core, and that it is as white as snow, and somewhat of the consistence of new bread. When gathered, it is generally used immediately; if it be kept more than 24 hours, it becomes hard and choky. The inhabitants of the South Sea islands prepare it as food by dividing the fruit into three or four parts, and roasting it in hot embers. Its taste is insipid, with a slight tartness, somewhat resembling that of the crumb of wheaten bread mixed with Jerusalem artichoke. Of this fruit, the Otaheitans make various messes by mixing it with water, or the milk of the cocoa-nut, then beating it to a paste with a stone pestle, and afterward mingling with it ripe plantains, bananas, or a sour paste, made from the bread-fruit itself, called *mahie*. It continues in season eight months, and so great is its utility in the island of Otahelte, "that," observes Captain Cook, "if in those parts where it is not spontaneously produced, a man plant but ten trees in his whole lifetime, he will as completely fulfill his duty to his own and to future generations as the native of our less temperate climate can do by plowing in the cold of winter, and reaping in the summer's heat, as often as these seasons return; even if, after he has procured bread for his present household, he should convert the surplus into money, and lay it up for his children." Not only does this tree supply food, but clothing, and numerous other conveniences of life. The inner bark, which is white, and composed of a net-like series of fibres, is formed into a kind of cloth. The wood is soft, smooth, and of a yellowish color, and is used for the building of boats and houses. In whatever part the tree is wounded, a glutinous milky juice issues, which, when boiled with cocoa-nut oil, is employed for making bird-lime, and as a cement for filling up cracks in such vessels as are intended to hold water. Some parts of the flowers serve as tinder, and the leaves are used for wrapping up food, and other purposes. As the climate of the South Sea islands is considered not very different from that of the West Indies, it was, about 42 years ago, thought desirable that some of the trees should be transferred, in a growing state, to the English islands there. His majesty's ship, the *Bounty*, sailed, in 1787, for this purpose, to the South Seas, under the command of Lieutenant, afterward Admiral Bligh. But a fatal mutiny of the crew at that time prevented the accomplishment of this benevolent design. The commander of the vessel, however, returned in safety to his country, and a second expedition, under the same person, and for the same purpose, was fitted out in the year 1791. He arrived in safety at Otahelte, and, after an absence from England of about 18 months, landed in Jamaica with about 352 bread-fruit trees in a living state, having left many others at different places in his passage thither. From Jamaica these trees were transferred to other islands; but the Negroes having a general and long-established predilection for the plantain, the bread-fruit is not much relished by them. Where, however, it has not been generally introduced as an article of food, it is used as a delicacy; and, whether employed as bread, or in the form of pudding, it is considered highly palatable by the European inhabitants.—E. A.

Breadstuffs. Next to the cotton trade, that of breadstuffs and provisions is the most important in our foreign export trade, and of far more importance in its general bearings upon commerce, and amounts yearly to about *one-fifth* of the total exports from the United States. As will appear from the table below, the exports are increasing very rapidly, having quadrupled from 1844 to 1854. It is probable that this increase will continue, as the same causes are now operating to enlarge the demand that have increased the exports for the past.

Great Britain has always been the best customer for the surplus breadstuffs of the United States. To most other countries which take breadstuffs of us, our shipments of flour have been comparatively uniform, whether the crop was large or small; but to British ports the shipments have varied with the quantity we have had to spare, although averaging nearly half the total clearances of all foreign ports. Brazil and the West Indies are regular customers for our flour, as they purchase about the same quantity every year, and, after Great Britain, take the largest quantity in a series of years; but a large portion of our shipments of grain (with wheat and corn) go to British ports. Thus, of 18,583,151 bushels of wheat shipped to all ports from July 1, 1849, to June 30, 1855, 14,661,211 were sent to Great Britain; and of 43,737,597 bushels corn exported to all ports within the same period, 36,663,951 bushels had the same destination. We annex a tabular statement showing the exports from all ports of the United States to all foreign ports, of wheat, wheat

flour and Indian corn, both in quantity and value, from 1849 to 1855 inclusive, with a comparison of the quantity of each sent to Great Britain. The totals are all taken from official documents, and may be relied upon as authentic, although it must be noted that of many direct clearances to Great Britain for orders there are sometimes considerable quantities directed from thence to Continental ports. The "famine" of 1847 led to large shipments of breadstuffs, and to the inauguration of free trade in England, and we commence, therefore, with 1848–'49, when the business had become settled under this system. The periods noted are for the fiscal years ending June 30:

EXPORTS FROM THE UNITED STATES, OF WHEAT, WHEAT FLOUR, AND INDIAN CORN, FROM 1849 TO 1855, BOTH INCLUSIVE.

Articles.	To Great Britain.	To all Foreign Ports.	Value.
1849.	Quantity.	Quantity.	$
Wheat, bushels.	1,072,780	1,527,534	1,756,848
Flour, barrels..	953,815	2,108,013	11,280,582
Corn, bushels..	12,396,242	13,257,309	7,966,369
1850.			
Wheat, bushels.	816,926	608,661	643,745
Flour, barrels..	870,777	1,585,448	7,070,570
Corn, bushels..	5,957,206	6,595,092	3,892,193
1851.			
Wheat, bushels.	592,583	1,026,755	1,025,782
Flour, barrels..	1,004,788	2,202,335	10,524,631
Corn, bushels..	2,760,329	3,426,811	1,761,549
1852.			
Wheat, bushels.	2,049,557	2,604,540	2,555,209
Flour, barrels..	1,532,094	2,790,339	11,860,148
Corn, bushels..	1,894,700	2,027,075	1,540,225
1853.			
Wheat, bushels.	3,572,248	3,890,141	4,354,408
Flour, barrels..	1,388,065	2,920,918	14,783,394
Corn, bushels..	1,659,840	2,274,909	1,374,077
1854.			
Wheat, bushels.	6,058,903	8,036,665	12,420,172
Flour, barrels..	2,020,121	4,022,370	21,701,444
Corn, bushels..	5,965,850	7,788,816	6,074,277
1855.			
Wheat, bushels.	896,215	798,884	1,329,246
Flour, barrels..	189,712	1,204,540	10,896,908
Corn, bushels..	5,935,284	7,807,595	6,961,571

The ordinary shipments in former years have not included any thing direct for France. In the first year named above (1849) there were no exports of flour to French ports, and only 108 bushels of wheat; in 1852 the total includes 2700 barrels of flour, and in 1853 only 8784 barrels; but in the year ending June 30, 1854, there were shipped direct to France 1,041,086 bushels of wheat, 728,279 barrels of flour, and 39,200 bushels of Indian corn. In the following fiscal year (1854–'55) the shipments of flour to the same ports had dwindled down to 8557 barrels, and there was no shipment of wheat, but the exports of corn increased to 312,740 bushels. During the year 1855, the partial failure of the crops on the Continent of Europe led to large direct shipments, and the total exports to France for 1855–'56, not yet officially compiled, have been larger than ever before recorded to the same ports. As soon as the threshing of wheat commenced in the west and north of France in 1855, its bad quality and light weight created a general panic, and prices continued to advance up to the first of January. The abundance caused by the large receipts from this country, Spain, and other sources of supply, caused a downward tendency in prices throughout January, 1856, and every thing was promising for the next harvest until the inundations in May. These checked the decline without wholly arresting it; but as the harvest approached, the hopes of an average crop became less sanguine, and it is now generally admitted that the supply will be deficient from five to ten million hectolitres, that is, from fourteen to twenty-eight millions of bushels. The quantity of arable land in France is set down at 56,810,000 acres, of which fourteen million hectares, or 34,580,000 acres, are devoted to the culture of grain. The average annual product is 495,000,000 bushels of wheat, oats, rye, maize, and meslin, of which about one-fourth are oats, and two-fifths, or 198,000,000 bushels, are wheat. With an average crop, France has heretofore been able not only to supply her wants, but to furnish about 5,500,000 bushels of wheat (or its equivalent in flour) for the consumption of Great Britain. It is evident that this export trade must be cut off or greatly reduced during the current year, as the crop in France is below the wants of her own people. Indeed the total exports to Great Britain from all the French ports for the year 1855 amounted to an equivalent of only 880,000 bushels, or about 15 per cent. of the usual shipments, and this was all foreign produce, shipped from bond.

STATEMENT EXHIBITING THE AGGREGATE VALUE OF BREADSTUFFS AND PROVISIONS EXPORTED ANNUALLY FROM THE UNITED STATES, FROM THE YEAR 1821 TO 1855, BOTH INCLUSIVE.

Year ending September 30.	Amount.	Year ending September 30.	Amount.
1821	$12,341,901	1839	$14,147,779
1822	13,886,856	1840	19,007,535
1823	13,767,847	1841	17,196,102
1824	15,059,484	1842	10,002,876
1825	11,634,449	1843*	11,204,123
1826	11,303,496	1844†	17,970,135
1827	11,685,556	1845	16,743,421
1828	11,461,144	1846	27,701,121
1829	13,131,858	1847	68,701,921
1830	12,075,430	1848	37,472,751
1831	17,538,227	1849	58,155,507
1832	12,424,703	1850	20,051,373
1833	14,209,128	1851	21,998,651
1834	11,524,024	1852	25,357,027
1835	12,009,309	1853	32,985,322
1836	10,614,130	1854	65,941,328
1837	9,588,359	1855	38,895,848
1838	9,036,650	Total	720,834,956

* 9 months, to June 30. † 12 months, to June 30.

In Great Britain the crop this year is very good; but it is never sufficient to supply the wants of the people. The total imports of breadstuffs into the United Kingdom for the last three years (reckoning flour, etc., at its equivalent in grain) are as follows:

Years.	Equal to Bushels Wheat.
1853	84,413,632
1854	63,207,240
1855	58,227,608

The high prices have contributed to reduce the imports into the United Kingdom during the last two years to the lowest possible point; but the first six months of the current year the total imports amounted to 1,859,000 quarters, showing an increase of 161,000 quarters, or 1,248,000 bushels, and must continue at about this rate throughout the remainder of the year. Even with a good harvest, the kingdom must need at least 49,000,000 bushels of grain, or its equivalent in flour, for its own consumption. Of this amount Russia —Northern and Southern ports—whose supplies were cut off during the war, can now furnish 10,000,000 bushels; Prussia, whose harvest is this year below the average, 10,000,000 bushels; all other countries 5,000,000 bushels; leaving 15,000,000 to come from the United States. If prices rule at a comparatively low rate, the consumption will be increased, and the quota from this country may reach 20 or 25 millions of bushels. Spain and Portugal have hitherto exported to both France and England, the shipments to the latter last year being upward of 4,000,000 bushels.

It is difficult to ascertain the exact production of the United States. The total arable land under actual cultivation is given in the Census of 1850 at 113,032,614 acres, of which 51,700,000 acres were producing breadstuffs. The following was the total production of grain as given in the Census returns for 1840 and 1850:

Articles.	1840.	1850.
	Bushels.	Bushels.
Wheat	84,823,272	100,485,944
Rye	18,645,567	14,188,813
Oats	123,071,341	146,584,179
Corn	377,531,875	592,071,104
Barley	4,161,504	6,167,015
Buckwheat	7,291,743	8,956,912
Total	615,525,302	867,453,967

A large amount of arable land has been brought under cultivation since 1850, and those most conversant with the West think that the product of wheat has increased 50 per cent. since the date last given, while other grain has increased 20 to 25 per cent. The total yield of wheat being computed at 150,000,000 bushels, it is easy to see that the export demand can be filled without creating any extraordinary excitement throughout the country. Last year the farmers anticipated such high rates, that many of them refused to sell in time, and thus were obliged to dispose of their stock far below the average price. This year the early sales promised to be the best, but there appears to be a limit below which foreign orders will rapidly diminish any home accumulation. At present good white wheat is worth here about $1 60, and good red about $1 50. We scarcely expect to see a decline of 20 cents from these rates during the current season, but within that range an active foreign business may be expected. The prospects for Indian corn can not be given until nearer the close of the harvest. Flour will fluctuate more than wheat in price; sales have been made to arrive in England at a price which would net here about $5 for a standard superfine, but this is generally thought to be an inside price. We have compiled from the official records a statement of the average export price in flour since 1836. The highest price, since 1800, was $14 75 per barrel, at which all the shipments averaged in the year 1817. The lowest was $4 25, which was the average of 1852. The following is the average of the total shipments to all ports in each year for the last twenty years. The price in 1854–'55 was enhanced materially by the demand arising for export to Europe during the war with Russia. At intervals of that period first brands produced over $13 in the New York market, and common shipping flour over $10 per barrel.—*See* CENSUS REPORT, UNITED STATES.

YEARLY AVERAGE PRICE OF THE EXPORTS OF WHEAT FLOUR FROM THE UNITED STATES TO FOREIGN PORTS, FROM 1836 TO 1855.

Years.	Price.	Years.	Price.	Years.	Price.	Years.	Price.
1836	$7 50	1841	$5 20	1846	$5 18	1851	$4 77
1837	10 25	1842	6 00	1847	5 05	1852	4 24
1838	9 50	1843	4 50	1848	6 22	1853	5 60
1839	6 75	1844	4 75	1849	5 35	1854	7 88
1840	5 37	1845	4 51	1850	5 00	1855	10 10

The periods before noted are the government fiscal years, ending June 30. The average of 1856 is not yet made up, but will be considerably below that of 1855. If any think we have overestimated, in the following table, the present production of wheat in this country, we have only to remind them that the cultivation of this grain for export received but little stimulus until the repeal of the British corn laws; and since that time we have added the States of Illinois, Iowa, and Michigan to our wheat-producing States, and by means of railroads made them equal competitors with the Atlantic States.—*See Art.* WHEAT.

PRODUCTION OF WHEAT, RYE, AND INDIAN CORN IN THE UNITED STATES, IN 1850.

States and Territories.	Wheat.	Rye.	Indian Corn.
	Bushels.	Bushels.	Bushels.
Maine	296,260	102,916	1,550,056
New Hampshire	185,698	183,317	1,573,670
Vermont	535,955	176,253	2,582,396
Massachusetts	81,211	481,021	2,345,490
Rhode Island	49	26,409	539,201
Connecticut	41,762	600,893	1,935,043
New York	13,121,498	4,148,182	17,858,400
New Jersey	1,601,190	1,255,578	8,759,704
Pennsylvania	15,367,691	4,805,160	19,835,214
Delaware	482,511	8,066	3,145,542
Maryland	4,494,680	226,014	11,104,631
District of Col.	17,370	5,509	65,280
Virginia	11,232,616	458,930	35,254,319
North Carolina	2,130,102	229,563	27,941,051
South Carolina	1,066,277	43,790	16,271,454
Georgia	1,088,534	53,750	30,080,099
Florida	1,027	1,152	1,996,809
Alabama	294,044	17,261	28,754,048
Mississippi	137,990	9,606	22,446,552
Louisiana	417	475	10,266,373
Texas	41,689	3,108	5,926,811
Arkansas	199,639	8,047	8,893,939
Tennessee	1,619,381	89,163	52,276,223
Kentucky	2,140,822	415,073	58,675,591
Ohio	14,487,351	425,718	59,078,605
Michigan	4,925,889	105,871	5,641,420
Indiana	6,214,458	78,792	52,964,363
Illinois	9,414,575	83,364	57,646,984
Missouri	2,981,652	44,268	36,214,537
Iowa	1,530,581	19,916	8,656,799
Wisconsin	4,286,131	81,253	1,988,979
California	17,328	....	12,236
Minnesota Ter.	1,401	125	16,725
Oregon Territory	211,493	106	2,918
Utah Territory	107,702	210	9,309
New Mexico	190,516	....	365,411
Total	100,503,899	14,188,639	592,226,612

AN ACCOUNT OF THE EXPORTS OF FLOUR AND WHEAT, INDIAN CORN AND INDIAN CORN MEAL, RYE, SHIP BREAD, ETC., FROM THE UNITED STATES, DURING THE YEAR ENDING 30TH JUNE, 1847, KNOWN AS THE "FAMINE YEAR" IN IRELAND, SPECIFYING THE COUNTRIES TO WHICH THE SAME WERE SENT, AND THE QUANTITIES SENT TO EACH.

TO AMERICA.

Articles.	British North American Colonies.	West Indies.	South America.	North America generally.
Flour, barrels	272,299	483,571	328,937	66,993
Wheat, bushels	919,058	15,105	....	200
Indian corn, bushels	119,615	593,029	3,964	23,925
Corn meal, barrels	39,936	176,418	2,750	10,354
Rye meal, barrels	27,401	3,480	101	180
Rye, oats, etc.	$24,312	$113,355	$2,291	$18,599
Ship bread, barrels	20,506	54,788	1,711	21,218
Ship bread, kegs	220	13,267	7,437	673

TO EUROPE.

Articles.	Great Britain.	Ireland.	France.	Spain and Portugal.	Other parts of Europe.
Flour, barrels	2,144,581	342,495	612,641	1312	113,429
Wheat, bushels	2,078,652	465,911	749,242	..	170,421
Indian corn, bushels	7,527,586	7,908,939	7,248	4892	22,203
Corn meal, barrels	426,070	287,013	4,401	..	605
Rye meal, barrels	4,030	2,362	3,006	..	8,352
Rye, oats, etc.	$565,322	$66,580	$50,697	..	$152,081
Ship bread, barrels	24,736	11,994	3,771	..	1,728
Ship bread, kegs	6,047	556	16	..	548

TO OTHER COUNTRIES.

Articles.	Asia generally.	Africa generally.	South Seas and Pacific.	Total to all Ports.	Total Value of Exports.
Flour, barrels	8,674	36,809	764	4,382,496	$26,139,811
Wheat, bushels	1,362	....	..	4,399,951	6,049,350
Indian corn, bushels	175	24,474	..	16,326,050	14,395,212
Corn meal, barrels	77	436	..	948,060	4,301,334
Rye meal, barrels	....	....	..	48,092	225,502
Rye, oats, etc.	$4,596	$2,568	$131	....	1,600,962
Ship bread, barrels	3,166	5,609	1,753	160,980	556,266
Ship bread, kegs	163	1,482	100	81,082	
Total value	....	....	..	....	$53,262,437

Breakers, a name given to those billows that break violently over rocks lying below the surface of the sea. —E. B.

Breakwater is any obstruction of wood, stone, or other material, as a boom or raft of wood, sunken vessels, etc., placed before the entrance of a port or harbor, or any projection from the land into the sea, as a pier, mole, or jetty, so placed as to break the force of the waves, and prevent their action on ships and vessels lying at anchor within them. Thus the piers of the ancient Pirræus and of Rhodes; the moles of Naples, Genoa, and Castellamare; the piers of Ramsgate, Margate, Folkstone, Howth, and the wooden dike de Richelieu, thrown across the port of Rochelle, may all be denominated *Breakwaters*. In French it is sometimes called *Battre d'Eau;* a name which appears to have been applied to the mole at Tangier, a work commenced in 1663, under the direction of Lord Tiviot, Sir J. Lawson, and Sir Hugh Cholmley, and finished, or rather discontinued, in 1676, after having cost England the sum of £243,897 5*s.* 4½*d.* The term *Breakwater*, however, has of late years been considered as more peculiarly appropriate to large insulated dikes of stone, whether of regular masonry or sunk promiscuously in rough masses, so placed as to form an artificial island across the mouth of an open roadstead, and thereby, from obstructing and breaking the waves of the sea, to convert a dangerous anchorage into a safe and commodious harbor for the reception of ships of war or merchant men.

Of this description of dike for creating an artificial harbor on a grand scale, fit for the reception of ships of war of the largest class, there are remarkable examples in the breakwaters of Cherbourg, Plymouth, Portland, Delaware, etc. The first stone of the breakwater at Plymouth was lowered in the presence of multitudes of the people, August 12, 1812. It was designed to break the swell at Plymouth, and stretches 5280 feet across the Sound; it is 360 feet in breadth at the bottom, and more than 30 at the top, and consumed 3,666,000 tons of granite blocks, from one to five tons each, up to April, 1841; and cost a million and a half sterling. The architect was Rennie.—*See Art.* Cherbourg and Delaware Breakwaters.

Breeches. Among the Greeks this garment indicated slavery. It was worn by the Dacians, Parthians, and other Northern nations; and in Italy, it is said, it was worn in the time of Augustus Cæsar. In the reign of Honorius, about A.D. 394, the *braccari*, or breeches-makers, were expelled from Rome; but soon afterward the use of breeches was adopted in other countries, and at length it became general.—Haydn.

Bremen, one of the free Hanseatic cities, on the Weser, about 50 miles from its mouth, lat. 53° 4½′ N., long. 8° 48′ 3″ E. Population in 1849, 53,478. Its situation renders Bremen the principal emporium of Hanover, Brunswick, Hesse, and other countries traversed by the Weser. The charges on the buying, selling, and shipping of goods are very moderate. The principal German exports are, woolen goods, linens, grain, oak bark, glass, smalts, hides, rape-seed, beef and pork, rags, wool, wine, etc. The wheat and barley shipped here are mostly inferior; but the oats are useful common feed; beans are good. The linens are mostly the same as those from Hamburg. The imports consist of tobacco (of which large quantities are re-exported), coffee, sugar, and other colonial products; whale-oil, iron, rice, hides, wines, raw cotton, cotton stuffs and yarn, earthen-ware, brandy, tar, tea, dye-woods, timber, hemp, etc.

Bremen has long been, and continues to be, the most important *entrepôt* on the Continent for the sale of tobacco. In 1851, about 5000 hands were engaged in the manufacture of cigars, of which the export was estimated at 235,000 boxes of 1000 each; but an increase of the duty on cigars imported into the German Customs Union subsequently gave the trade a check.

Entrance to Bremen.—The entrance to the Weser lies between the Mellum and other sands on the southwestern, and the Teglers Plaat, etc. on the northeastern side. Its course from Bremerlehe to its mouth is nearly southeast and northwest. It is buoyed throughout. The buoys on the right or starboard side, when entering, being black and marked with letters, while those on the left or larboard are white and numbered. The first or outer black buoy has a gilt key upon it, and is, therefore, called the *schlussel*, or key buoy; it lies in 10½ fathoms, bearing northeast 5 miles from Wrangeroog light. This is an intermitting light, having replaced, in 1850, the old coal-fire beacon on the island of Wrangeroog, opposite to the northern extremity of East Friesland. It is, according to the most authentic statements, in lat. 53° 47½′ N., long. 7° 51′ 55″ E.; is elevated 63½ feet above high-water mark, being alternately visible and invisible for the space of a minute. A light-vessel is moored in the fair-way of the Weser, between the black buoys E and F, and the white buoys 2 and 3. She has two masts; during the day a red flag, with a white cross upon it, is kept flying at the main-mast; and at night she exhibits 7 lantern lights, 28 feet above deck. This vessel is on no account to leave her station, unless compelled by the ice. Large vessels do not now generally ascend farther than Bremerlehe, on the east side of the river, about 38 miles below Bremen, where a new and spacious harbor, called "Bremer Haven," has been constructed. But vessels not drawing more than 7 feet water come up to town; and those drawing from 13 to 14 feet may come up to Vegesack, about 13 miles from Bremen. The latter had, in 1849, a population of 8538, and Bremer Haven of 3618.—See the *Sailing Directions for the North Sea*, published by Mr. Norrie.

Account of the Arrivals of Ships at Bremen in 1850 and 1851, specifying the Countries from whence they came, and the Numbers and Tonnage of those from each.

Countries.	1850.		1851.	
	Vessels.	Tons.	Vessels.	Tons.
Great Britain	381	49,237	402	52,481
Denmark	84	2,581	107	3,270
France	44	5,049	51	6,068
Holland	151	8,313	217	14,364
Prussia	133	12,160	136	10,452
Russia	66	7,473	125	15,661
Sweden and Norway	151	9,958	172	10,600
United States	128	62,049	131	64,714
Cuba	61	13,146	57	12,245
Hayti	18	4,310	17	3,398
Porto Rico	19	3,515	21	3,863
Mexico	8	1,301	6	942
Venezuela	13	2,485	11	1,859
Brazils	14	2,873	50	9,066
Other places	20	5,400	84	7,578

Breslau, a city of Prussia, capital of the province of Silesia, and of the circle of same name, on the Oder, at the influx of the Ohlau, and on the railroad from Berlin to Vienna, 409 feet above the Baltic, 190 miles southeast of Berlin. Lat. (of observatory) 51° 6′ 57″ N., long. 17° 2′ 33″ E. Population of the circle in 1849, 1,174,676; of the city, 112,194, of whom nearly three-fourths are Protestants. It is the greatest emporium for the linens of Silesia, for which it has four annual fairs of eight days each, and the greatest mart for wool in Germany. It has manufactures of linen, woolen, cotton, and silk fabrics, lace, needles, plate, jewelry, earthen-ware, colors, soap, alum, starch, snuff, and sealing-wax; and an extensive trade in mining produce, timber, flax, hemp, madder, corn, and oxen, from the southern Russian provinces, and in Hungarian wines and other merchandise. It has an active trade on the Oder, and communicates by railroad with Berlin and Frankfort on the north, Dresden on the west, Cracow and Warsaw on the east, and Vienna in the south. It was bombarded and taken by the French, January 7, 1807, and its fortress, then partly destroyed, has since been entirely razed.

Brewing is the art of preparing an exhilarating or

intoxicating beverage by means of a process of fermentation; but at the present day the term is usually limited to the manufacture of different kinds of beer, from infusions of malt or of grains. In all countries, savage and civilized, one kind or other of exhilarating or intoxicating drink is prepared. In the warmer regions of the globe the juice of various palm-trees is extracted, and, when fermented, forms the favorite beverage. Over all the warmer regions of South America, and in Mexico, the universal drink is *Pulque*, the fermented juice of the American aloe (*Agave Americana*). *Guarapo*, a favorite drink with the Negro races is the fermented juice of the sugar-cane; and when the sugar-cane is not in season, these races prepare fermented drinks from honey and from rice. In many Northern countries, and even occasionally in the highlands of Scotland, the juices of the birch, maple, or ash, are fermented, and form a palatable drink. *Koumis*, the intoxicating beverage of the Mongols and the Tartars, is the fermented milk of the mare. In countries favorable to the growth of the vine, wine is the usual beverage. The Peruvians and many other Indians prepare their favorite intoxicating drink, *chicha*, from maize. The Arablans, Abyssinians, and several tribes in Africa, prepare their fermented drink, *bousa*, from the flour or bread made from teff (*Poa Abyssinica*); but the durrha or millet (*Sorghum vulgare*), and even barley itself, are occasionally substituted for the teff to prepare the muddy, sour *bousa*. The universal Russian beverage, *krass* or *quass*, a sharp, acid, muddy liquid, almost the same in taste and appearance as "bousa," is made by mixing rye bread or rye flour, or sometimes barley flour, with water, and fermenting it. The well-known national German drink, the *weiss bier*, is prepared from a fermented infusion of wheat malt with only a sixth part of barley malt. But over almost all the civilized world, the fermented infusion of barley malt, seasoned or not with hops or other bitters, when it takes the name of beer, is the favorite beverage.—E. B.

Bribe. The giving or offering a recompense or reward to any person to induce him to neglect his duty.

Bricks and Tiles, well-known articles used in the building and covering of houses. They are made of baked clay and sand.

Fire-bricks.—A mode has been invented intended to do away with manual labor in the manufacture of fire-bricks made from ground clay, by passing it directly from the grinding-mill to the machine, where it is made into bricks ready for the kiln, instead of adding water and making it into a paste according to the present process. The invention consists of a combination of hydraulic machinery, for compressing clay in a pulverized state into bricks, and for changing the position of the moulds in which the clay is compressed, so that they may fill and discharge themselves after compression. After the clay is formed into bricks the sides and end of the mould recede, and leave them free, without any forcing, which effectually prevents all liability to fracture or damage. A machine with two moulds will produce from 2000 to 4000 per day.

Bridges. So early and general, and the expedients for their construction so various, their origin can not be traced; they were first of wood. The ancient bridges in China are of great magnitude, and were built of stone. Abydos is famous for the bridge of boats which Xerxes built across the Hellespont. Trajan's magnificent stone bridge over the Danube, 4770 feet in length, was built in A.D. 103. The Devil's bridge, in the canton of Uri, so called from its frightful situation, was built resting on two high rocks, so that it could scarcely be conceived how it was erected, and many fabulous stories were invented to account for it. At Shaffhausen an extraordinary bridge was built over the Rhine, which is there 400 feet wide: there was a pier in the middle of the river, but it is doubtful whether the bridge rested upon it; a man of the lightest weight felt the bridge totter under him, yet wagons heavily laden passed over without danger. This bridge was destroyed by the French in 1790. Suspension bridge at Niagara Falls completed July 29, 1848. The ancient bridges in England were of wood, and were fortified with planks and merlined; the first bridge of stone was built at Bow, near Stratford, A.D. 1087. Westminster bridge, then the finest erected in these realms, and not surpassed by any in the world, except in China, was completed in twelve years, 1750. The other London bridges are Blackfriars, completed 1770; London (rebuilt), 1831; Southwark, of Iron, 1819. The first iron bridge, on a large scale, was erected over the Severn, in Shropshire, 1779. The finest chain suspension bridge is that of the Menai Strait, completed in 1825. Hungerford suspension bridge, 1845.—HAYDN.

Bridgewater Canal, the first great work of the kind in England, was begun by the Duke of Bridgewater, styled the father of canal navigation in that country, in 1758. Mr. Brindley was the architect. The canal commences at Worsley, seven miles from Manchester; and at Barton bridge is an aqueduct which, for upward of 200 yards, conveys the canal across the navigable River Irwell: the canal is 29 miles long.

Brimstone. *See* SULPHUR.

Bristles (Fr. *Soies;* Ger. *Borsten;* Du. *Borstels;* It. *Setole;* Sp. *Cerdas, Setas;* Pol. *Szczeciny;* Russ. *Schtschetina;* Lat. *Setæ*), the strong glossy hairs growing on the back of the hog and the wild boar.

Bristol, a city, sea-port, and county of England, situated chiefly in Gloucestershire, and partly in Somersetshire, on the Avon, at its confluence with the Frome, and 8 miles southeast of its embouchure in the Bristol Channel, 11½ miles northwest of Bath, 33¾ miles south-southwest of Gloucester, and 118¾ miles west of London, with which it is connected by the Great Western Railroad. Lat. of cathedral, 51° 27′ N., long. 2° 36′ W. Area of border, including the distance added by the municipal act, 9870 acres. Population in 1801, 39,914; in 1841, 123,188; and in 1851, 137,328. Bristol extends over several hills and intermediate valleys. It long ranked as the second commercial emporium of England, but its progress has not kept pace with that of other ports more advantageously placed as outlets of great manufacturing districts. It has, however, large iron and brass founderies; copper, tin, zinc, and glass works; chemical and color works; sugar refineries and distilleries; and considerable manufactures of pins, shot, china, earthen-wares, soap, leather, tobacco, cottons, hats, and floor-cloths, with extensive establishments for ship-building; and in its vicinity are large brick and coal works. The Avon at Bristol, though narrow, is deep enough for large ships, and early in the present century its course was turned for some distance at a cost of £700,000, and its own channel now forms a harbor furnished with locks and quays 6000 feet in length. Ships of large burden and first-rate steamers load and discharge cargo at Kingroad, in the mouth of this river. The city retains a large share of the West India trade. Imports consisting chiefly of sugar, molasses, rum, coffee, tobacco, with wool, turpentine, hemp, timber, wine, and brandy, from North and South America, the Baltic, and France. Bristol communicates by railroad with Birmingham and Exeter, with the Thames, etc., by the Kennet and Avon canal. It was the first port in Britain whence regular steam communication with the United States was established. It has a chamber of commerce and several mercantile corporate bodies; and it lately had six banking companies. In 1848 it was made a free port. The city is divided into ten wards, and governed by a mayor, sixteen aldermen, and forty-eight councilors. Its corporation has jurisdiction on the Avon from four miles above the city down to the sea, and along the channel to Clevedon; also the right to license pilots for numerous ports on the Bristol Channel. Markets

daily, that on Thursday for cattle. Fairs for horses, leather, etc., March 1st and September 1st. Spring Assizes for civil causes, Quarter Sessions, Sheriff's and other courts are held here. Bristol belongs to Clifton and Bedminster poor-law union. Under Henry VIII. it was made a bishop's see, lately united with that of Gloucester. It sends two members to the House of Commons. It was a fortified city as early as the fifth century. In Norman times it had a castle built by the Earl of Gloucester, son of Henry I. In 1831 it was the scene of a violent riot, during which its Episcopal palace and many other buildings were destroyed. Among its distinguished natives may be noticed Sebastian Cabot, Chatterton, Southey, and the sculptor Bailey. Bristol confers the title of Marquis on the Hervey family. The scenery in the vicinity, especially at Hotwell Saline Spring, is exceedingly beautiful.

Bristol Channel, an arm of the Atlantic, entering between St. Ann's Head on the north and Land's End on the south, extending into the southwest part of Great Britain, between lat. 50° and 51° 40′ N., and long. 3° and 5° 30′ W., bounded northward by South Wales, and southward by the English counties of Somerset, Devon, and Cornwall. At its eastern extremity it terminates in the estuary of the Severn, besides which river it receives the Parrat, Taw, Torridge, Taff, and Towy. Sandy island, with its light-house, is in the mouth of the channel, and the towns of Ilfracombe, Combe-Martin, Watchet, Swansea, Kidwelly, and Tenby, are on its coasts. It contains Milford Haven, Carmarthen Bay, and Swansea Bay on the north, and Barnstable, Porlock, and Bridgewater Bay on the south. Its tides flow rapidly upward, and, meeting with the currents of the Severn, cause the phenomenon called the bore.

Britain. *See* GREAT BRITAIN.

Brocade (Spanish *brocado*), a stuff of gold, silver, or silk, raised and enriched with flowers, foliages, and other ornaments. Formerly the word signified only a stuff woven all of gold, both in the warp and in the woof, or all of silver, or of both mixed; at present all stuffs which are raised and enriched with flowers or other figures are called brocades. The trade in this article was carried on by the Venetians.—ANDERSON. Its manufacture was established with great success at Lyons in 1757.

Brokerage, the commission or percentage paid to brokers on the sale or purchase of bills, funds, goods, etc.—*See* FACTORAGE.

Brokers. Those both of money and merchandise were known early in England. Their dealings were regulated by law, and it was enacted that they should be licensed before transacting business, 8 & 9 Will. III. 1695–'96. The dealings of stock-brokers were regulated by act 6 Geo. I. 1719, and 10 Geo. II. 1736. Some derive the word *broker* from the French *broier*, "to grind;" others from *brocarder*, "to cavil or higgle;" and others, again, from a trader broken, and that from the Saxon *broc*, "misfortune."

A broker is an agent or intermediate person appointed for transacting special business on account of another, but differing somewhat from an ordinary factor in functions and responsibility. Of this class there are various descriptions exercising employment without the smallest analogy, though all are brought under the general name of brokers; and of these the principal are exchange brokers, whose province is to ascertain the rates and relation of exchange between countries; stock-brokers, who negotiate transactions in the public funds; insurance brokers, who effect insurances on lives or property, and pawnbrokers, who advance money on goods, on condition of being allowed to sell the goods, if the sum advanced is not repaid with interest, within a limited time.—*See* AGENT, INSURANCE, and SALE.

Separating pawnbrokers and those dealers in old wares who are called brokers, as both distinct from the class to whom the term in its broader acceptation applies, the broker is an agent for both parties, the buyer and the seller; and for the general principles of jurisprudence applicable to his position, reference may be made to the word AGENT. It is a marked peculiarity, however, of the broker as an agent, that his quality of agency is not only palpable in the face of the transaction, but he is agent for both parties, and therefore those subtle niceties of law which arise out of the agent acting as principal can not apply to this class of agencies. The function of the broker is, indeed, a very simple one, and easily separates itself from the usual intricacies of the law of sale and of agency. It is his proper function to find buyers and sellers, and to bring them together that they may transact with each other. Hence the rise of such a class in any department of business is an indication of its great increase. In small towns, and in narrow and peculiar departments of business, the buyers and the sellers know each other, and need not be at the expense of employing a third party. But where both bodies are numerous, and the individual members of each find enough to occupy their attention in the production of their commodity, or its purchase and distribution, there is economy in the establishment of a distinct class who bring the buyer and the seller together. The late enlargement of the railway system has created a peculiar and extensive system of brokerage transactions.—E. B.

Brokers are divided into different classes, as bill or exchange brokers, stock-brokers, ship and insurance brokers, pawnbrokers, and brokers, simply so called, or those who sell or appraise household furniture distrained for rent. Exclusive, too, of the classes now mentioned, the brokers who negotiate sales of produce between different merchants usually confine themselves to some one department or line of business, and by attending to it exclusively they acquire a more intimate knowledge of its various details, and of the credit of those engaged in it, than could be looked for on the part of a general merchant, and are consequently able, for the most part, to buy on cheaper and to sell on dearer terms than those less familiar with the business. It is to these circumstances—to a sense of the advantages to be derived from using their intervention in the transaction of business—that the extensive employment of brokers in all large commercial cities is wholly to be ascribed.

Bronze (Ger. *Stükgut, Stükmetall;* Du. *Stükgoed;* It. *Bronzo;* Sp. *Metal de Canones;* Lat. *Metallum tormentorum*), "a mixed metal, consisting chiefly of copper, with a small proportion of tin, and sometimes other metals. It is used for casting statues, cannon, bells, and other articles, in all of which the proportions of the ingredients vary."—URE. Bronze was known to the ancients, some of whose statues, vessels, and various other articles, made of bronze are in the British Museum. The equestrian statue of Louis XIV., 1699, in the Place Vendôme at Paris (demolished August 10, 1792), was the most colossal ever made; it contained 60,000 pounds' weight of bronze. Bronze is two parts brass and one copper, and the Greeks added one fifteenth of lead and silver.

Brooms (Ger. *Besen;* Fr. *Balais;* It. *Scope, Granate;* Sp. *Escobas;* Russ. *Metlii*) are principally made of birch or heath. Vast quantities are manufactured in Southwark for the supply of the London market.

Bruges (Flem. *Brugge*), a fortified city of Belgium, capital of the province of West Flanders, on the Brussels, Ghent, and Ostend railroad, 75 miles from Brussels and 14 from Ostend, and at the junction of the canals from Ghent to Ostend, and to Sluis. Lat. (of the halle spire) 51° 12′ 30″ N., long. 3° 13′ 44″ E. Population, 50,272. Bruges is surrounded by walls, and defended by an old citadel; it is one of the most flourishing commercial cities in the kingdom. It owes its name to the number of its bridges (upward of fifty), which cross its canals, and is remarkable for the many fine Gothic buildings which it contains. Chief indus-

try, the manufacture of lace, which is celebrated, and occupies more than a sixth part of the female population; manufactures of linen, woolen and cotton fabrics, cordage, tobacco, and soap. Bruges has numerous distilleries, breweries, tanneries, dye-works, sugar and salt refineries, and ship-building yards. Its docks are capable of containing one hundred barges, and are surrounded with spacious warehouses. Principal exports, lace and other manufactured goods, grain, and cattle. Imports, wool, cotton, dye-woods, wine, and colonial products. Bruges was formerly the capital and residence of the Counts of Flanders; in the thirteenth century it was one of the most commercial cities in the world, and the richest *entrepôt* of the Hanseatic League; it was long renowned for the excellence of its woolen cloths and tapestries; it began to decline at the end of the fifteenth century, when the religious persecutions of Philip II. obliged its inhabitants to seek refuge in England. In 1430 Philip the Good, duke of Burgundy, here instituted the order of the Golden Fleece. Charles II. lived at Bruges during his exile from England.

Brush, a well-known implement used for various purposes, such as clearing away dust, smoothing or polishing surfaces, etc. Ordinary brushes are made of small bundles of bristles or hairs, secured at one end by a ligature; and this knotted end is set with glue or cement into a wooden stock, which is shaped and pierced with holes for the purpose. A patent was obtained in 1830 for several improvements in the construction of brushes. Of these the chief feature consists in pressing the knotted ends of the bundles into wedge-shaped grooves in the stock; after which they may be further secured by being covered with a ferule of metal, or a wooden pallet. Small brushes are generally made by doubling the hair or bristle, and bringing it through the holes in the stock by means of a thread or wire which is engaged in the fold, and serves to secure it; after which the bristles are cut even. Brushes vary in their size, form, and materials of construction, according to the several uses to which they are applied. Silver-smiths and other artificers use a *wire brush* for scrubbing silver, copper, or brass, previous to gilding. In some countries the bamboo or other fibrous plant is converted into a kind of brush, for painting and similar purposes, by fretting the extremity by beating and then binding it firmly above the part so treated.

Brussels (Fr. *Bruxelles*), a city of Central Europe, capital of the kingdom of Belgium and of the province of Brabant, on the Senne, and on the Belgian railroad, 88 miles from Ostend, 27 from Antwerp, 48 from Ghent, 71 from Liege, 92 from Lille, 149 from Cologne, 150 from Paris, and 272 from London. Lat. (of observatory) 50° 51′ 11″ N., long. 4° 21′ 10″ E. Population in 1845, 117,462; in 1853, 145,000. Altitude of observatory, 190 feet. Climate temperate, humid, and very variable, but healthy. Mean temperature of year, 49°·6; winter, 38°; summer, 64° Fahrenheit. It is the most important city in the kingdom, and the chief seat of public instruction and industry, the residence of the courts, the seat of the legislative assemblies, courts of appeal, and chamber of commerce. Brussels is remarkable for the number and richness of its ancient buildings; and, from the elegance of its new quarters, it ranks among the finest cities of Europe. It is the seat of the principal banks, and of the only mint of the kingdom, and has a savings bank and many wealthy and charitable institutions; it is one of the great centres of Belgian industry, and it is still celebrated for its lace, considered the finest in the world; its other chief manufactures are of fine linens, damask, silk and cotton ribbons, gold and silver embroidery, hats, paper, machinery, jewelry, and mathematical and musical instruments. It has also establishments for coach-building and cabinet-making, manufactories of chemical products, soap, porcelain, and crystal, and extensive sugar refineries and breweries. It has many extensive typographical and lithographic establishments, which are chiefly employed in reprints of works published in France. The commerce of Brussels is facilitated by a canal which connects it with Antwerp, and admits vessels of 300 tons burden, by excellent roads and by railways, which radiate from it in every direction. Brussels is a very ancient city; it is believed to have been founded in the seventh century; it was fortified in the eleventh century, and was the residence of the Dukes of Brabant, and afterward of the Spanish and Austrian governors general of the Netherlands: its fortifications were dismantled by Joseph II. It was, under the French empire, capital of the dependencies of the Dyle; previous to 1830, it was one of the capitals of the kingdom of the Netherlands, and alternately with the Hague, the seat of the court and of the States-General: it is the birth-place of the physicians Vesalius and Van Helmont, and one of the two painters Champaigne.

Bubbles, a familiar name applied generally to fraudulent or unsubstantial commercial projects, which hold out hopes of rapid gain, for the purpose of enriching the projectors at the expense of sanguine and ignorant adventurers: and particularly used to designate those projects the funds for which are raised by the sale of shares or subscription to a transferable stock.

In consequence of the mischief produced by the gambling in transferable shares of bubble companies at the time of the South Sea project, 1719 and 1720, the stat. 6 Geo. I. c. 18, reciting that several undertakings or projects had been contrived and practiced, which "manifestly tended to the common grievance, prejudice, and inconvenience of great numbers of his majesty's subjects in their trade and commerce," and describing, among other practices of the time, the ordinary mode of raising money by shares and subscriptions to a pretended transferable stock, enacted that the undertakings and attempts so described, and public subscriptions, assignments, and transfers for furthering them, and particularly the raising or pretending to raise transferable stocks without authority of charter or act of Parliament, should be deemed illegal and void, and prohibited them under severe penalties. Some decisions limited the operation of, and finally the stat. 6 Geo. IV. c. 91, altogether repealed these enactments and prohibitions. The projectors of bubbles, therefore, are now punishable only when they can be deemed guilty of frauds or conspiracies at common law; and there is no other check on the adventurers than the loss and troublesome liabilities under the law of partnership, to which participation in these projects often involves them.

Buccaneer (from the French *boucaner*), in its primary sense, denotes one who dries and smokes flesh or fish after the manner of the Indians. The name was particularly given to the first French settlers in the island of St. Domingo or Hayti, whose principal employment consisted in hunting bulls or wild boars, in order to sell their hides and flesh. The name has also been applied to those famous piratical adventurers, chiefly English and French, who joined together to commit depredations on the Spaniards of America.

The Buccaneers of St. Domingo.—The Spaniards had not long been in possession of the West Indies and of the continent of America, when other nations, especially the English and the French, began to seek establishments there. But though the Spaniards were unable to people such extensive countries themselves, they were resolved that no others should do it for them, and therefore waged a cruel war on all those of any other nation who attempted to settle in any of the Antilles or Caribbee Islands. The French, however, were at last lucky enough to acquire some footing in the island of St. Christopher's; but by the time they began to subside into a regular form of government, the Spaniards found means to dislodge them. Upon this the wretched fugitives, considering at how great a distance they were from their mother country, and how near to the island of Hispaniola or St. Domingo, the

northern parts of which were then uninhabited, and full of swine and black cattle, immediately resolved to take possession of that country, in conjunction with several other adventurers of their own and the English nation; especially as the Dutch, who now began to appear in these seas, promised to supply them plentifully with all kinds of necessaries they might require, in exchange for the hides and tallow they should procure by hunting.

These new settlers obtained the name of *buccaneers*, from their custom of bucanning their beef and pork in order to keep it for sale or for their own consumption. But some of them soon grew tired of this new way of life, and took to planting; while many more chose to turn pirates, trusting to find among those who remained on shore a quick sale for all the plunder they could make at sea. This new body of adventurers were called *freebooters*, from their making free prey or booty of whatever came in their way.

The colony now began to thrive at a great rate, by the cheap and easy manner in which the freebooters acquired the greatest riches, and the profusion with which they distributed them among their old companions, the buccaneers and planters, for the merest trifles. This brought numbers of settlers from France in quality of indentured servants, though they toiled rather like slaves than servants during the three years for which they generally bound themselves. One of these men presuming to represent to his master, who always fixed upon Sunday for sending him with skins to the port, that God had forbidden such a practice when he had declared that "six days shalt thou labor, and on the seventh day shalt thou rest," the brutish buccaneer replied, "And I say to thee, six days shalt thou kill bulls, and strip them of their skins, and on the seventh day shalt thou carry their hides to the sea-shores;" and this command was followed by blows. Thus the colony consisted of four classes—buccaneers, freebooters, planters, and indentured servants, who generally remained with the buccaneers or planters. And these four orders composed what they now began to call the *body of adventurers*, who lived together in perfect harmony, under a kind of democracy; every freeman having a despotic authority over his own family, and every captain being sovereign in his ship, though liable to be discarded at the discretion of the crew.

The planters had settled chiefly in the little island of Tortuga, on the northern coast of Hispaniola; but soon afterward some of them having gone to the great island to hunt with the buccaneers, the rest were surprised by the Spaniards; and all, even those who had surrendered at discretion in hopes of mercy, were put to the sword or hanged. The next care of the Spaniards was to rid the great island of the buccaneers; and for this purpose they assembled a body of five hundred lance-men, who, by their seldom going fewer than fifty in a company, obtained from their enemies the name of the *Fifties*. But before detailing the particulars of this attack we shall endeavor to give some account of the manners and customs of the people whom it was proposed to extirpate.

The buccaneers lived in little huts built on some spots of cleared ground, just large enough to dry their skins on, and contain their bucanning houses. These spots they called *boucans*, and the huts they dwelt in *ajoupas*, a word which they borrowed from the Spaniards, and the Spaniards from the natives. Though these ajoupas lay open on all sides, they were very agreeable to the hardy inhabitants in a climate where a free circulation of air is so desirable. As the buccaneers had neither wives nor children, they associated by pairs, and mutually rendered each other all the services a master could reasonably expect from a servant, living together in so perfect a community that the survivor always succeeded his deceased partner. This kind of union or fellowship they called *s'emateloter* (inasailoring), and each other *matelot* (sailor), whence is derived the custom of giving, at least in some parts of the French Antilles, the name *matelotage* (sailorage) to any kind of society formed by private persons for their mutual advantage. They behaved to each other with the greatest justice and openness of heart; it was considered as a crime to keep any thing under lock and key; but, on the other hand, the least pilfering was unpardonable, and punished with expulsion from the community. And, indeed, there could be no great temptation to steal, seeing it was reckoned a point of honor never to refuse a neighbor what he wanted; and where there was so little property, it was impossible there should be many disputes. If any such happened, the common friends of the parties at variance interposed, and soon put an end to the difference.

As to laws, the buccaneers acknowledged none but an odd jumble of conventions made between themselves, which, however, they regarded as the sovereign rule. They silenced all objections by coolly answering that it was not the custom of the coast; and grounded their right of acting in this manner on their baptism under the tropic, which freed them, in their opinion, from all obligations antecedent to that marine ceremony. The governor of Tortuga, when that island was again settled, though appointed by the French court, had very little authority over them; and they contented themselves with rendering him from time to time some slight homage. They had in a manner entirely shaken off the yoke of religion, and thought they did a great deal in not wholly forgetting the God of their fathers. We are surprised to meet with nations among whom it is a difficult matter to discover any trace of a religious worship; and yet it is certain that, had the buccaneers of St. Domingo been perpetuated on the same footing on which they subsisted at the time we are speaking of, the third or fourth generation of them would have possessed as little religion as the Caffres and Hottentots of Africa, or the Cannibals of the South Sea islands.

Such were the buccaneers of St. Domingo, and such was their situation when the Spaniards undertook to extirpate them. And at first the assailants met with great success; for as the buccaneers hunted separately, every one attended by his servants, they were easily surprised. Hence the Spaniards killed numbers, and took many more, whom they condemned to a most cruel slavery. But whenever the buccaneers had time to put themselves into a state of defence, they fought like lions, to avoid falling into the hands of a nation from whom they were sure to receive no quarter; and by this means they often escaped; nay, there are many instances of single men fighting their way through numbers. These dangers, however, and the success of the Spaniards in discovering their boucans, where they used to surprise and cut the throats of the buccaneers and their servants in their sleep, engaged them to cohabit in greater numbers, and even to act offensively, in hopes that by so doing they might at last induce the Spaniards to let them live in peace. But the fury with which they behaved whenever they met any Spaniards served only to make their enemies more intent on their destruction; and assistance coming to both parties, the whole island was turned into a slaughter-house, and so much blood spilled on both sides, that many places, on account of the carnage of which they had been the scenes, were described as the hill of the massacre, the plain of the massacre, the valley of the massacre, and so forth.

At length the Spaniards grew tired of this mode of proceeding, and had recourse to their old method of surprise, which, against enemies of more courage than vigilance, was likely to succeed better. This placed the buccaneers under the necessity of never hunting except in large parties, and fixing their boucans in the little islands on the coast, where they retired every evening; an expedient which succeeded very well, and the boucans, by being more fixed, soon acquired

the air and consistency of little towns. When the buccaneers had once established themselves, as here related, each boucan sent out scouts every morning to the highest part of the island, in order to reconnoitre the coast, and see if any Spanish parties were abroad. If no enemy appeared, they appointed a place and hour of rendezvous in the evening, and were never absent if not killed or made prisoners. When, therefore, any one of the company was missing, it was not lawful for the rest to hunt again till they had got intelligence of him if taken, or avenged his death if killed. Things continued in this situation for a long time, till the Spaniards made a general hunt over the whole island, and, by destroying the game, forced the buccaneers to betake themselves to another course of life. Some of them turned planters, and thus increased the French settlements on the coast, or formed others; while the rest, not relishing so confined and regular a life, entered among the freebooters, who thereby became a very powerful body. France, which had hitherto disclaimed for her subjects these ruffians, whose successes were only temporary, acknowledged them, however, as soon as they formed themselves into settlements, and took proper measures for their government and defense.

Buccaneers, the Pirates.—Before the English had effected any settlement in Jamaica, and the French in St. Domingo, some pirates of both nations, who were afterward so much distinguished by the name of *Buccaneers*, had driven the Spaniards out of the small island of Tortuga; and, fortifying themselves there, had with an amazing intrepidity made excursions against the common enemy. They formed themselves into small companies consisting of fifty, a hundred, or a hundred and fifty men each. A boat, of greater or smaller size, was their only armament. Here they were exposed night and day to all the inclemencies of the weather, having scarce room enough to lie down. A love of absolute independence rendered them averse from those mutual restraints which the members of society impose upon themselves for the common good; and as the authority they had conferred on their captain was confined to his giving orders in battle, they lived in the greatest confusion. Like the savages, having no apprehension of want, nor any care to preserve the necessaries of life, they were constantly exposed to the severest extremities of hunger and thirst; but deriving from their very distresses a courage superior to every danger, the sight of a ship transported them to a degree bordering on frenzy. They never deliberated on the attack, but it was their custom to board the ship as soon as possible. The smallness of their vessels, and the skill they showed in the management of them, screened them from the fire of the larger class of ships; and they presented only the fore part of their little vessels filled with fusileers, who fired at the port-holes with so much exactness that it entirely confounded the most experienced gunners. As soon as they threw out the grappling, the largest vessels seldom escaped them.

In cases of extreme necessity they attacked the people of every nation, but fell upon the Spaniards at all times. They thought that the cruelties which the latter had exercised on the inhabitants of the New World justified the implacable aversion they had sworn against them. But this was heightened by the mortification they felt in seeing themselves debarred from the privileges of hunting and fishing, which they considered as natural rights. Their principles of justice and religion in no degree interfered with their predatory habits; for whenever they embarked on any expedition, they used to pray to Heaven for the success of it; and they never came back from plundering without returning thanks to God for their victory.

The ships which sailed from Europe to America seldom tempted their avidity, since the merchandise which these contained could not have been easily sold, nor indeed very profitable to those barbarians. They always waited for them on their return, when they were certain they were laden with gold, silver, jewels, and all the valuable productions of the New World. If they met with a single ship, they never failed to attack her. As to the fleets, they followed them till they sailed out of the Gulf of Bahama; and as soon as any one of the vessels was separated by accident from the rest, it was taken. The Spaniards, who trembled at the approach of the buccaneers, whom they called devils, immediately surrendered. Quarter was granted if the cargo proved to be a rich one; if not, all the prisoners were thrown into the sea.

The buccaneers, when they had got a considerable booty, at first held their rendezvous at the island of Tortuga, in order to divide the spoil; but afterward the French went to St. Domingo, and the English to Jamaica. Each person, holding up his hand, solemnly protested that he had secreted nothing of what he had taken. If any one among them was convicted of perjury, a case which seldom happened, he was left, as soon as an opportunity offered, upon some desert island, as a traitor unworthy to live in society. Such of their number as had been maimed in any of their expeditions were first provided for. If they had lost a hand, an arm, a leg, or a foot, they received twenty-six pounds; while an eye, a finger, or a toe, lost in fight, was valued only at half this sum. The wounded were allowed half a crown per day for two months, to enable them to have their wounds taken care of; and if they had not money enough to answer these several demands, the whole company were obliged to engage in some fresh expedition, and to continue it till they had acquired a sufficient stock to enable them to satisfy these honorable contracts. The remainder of the booty was then divided into as many shares as there were buccaneers. The commander could only lay claim to a single share; but they complimented him with two or three, in proportion as he had acquitted himself to their satisfaction. Favor never had any influence in the division of the booty, for every share was determined by lot. The most rigid justice was extended even to the dead. His share was given to the man who was known to be his companion when alive, and therefore accounted his heir. If the person who had been killed had no intimate, his portion was sent to his relations when they were known; and if there were no friends or relations, it was distributed in charity to the poor, and to the churches, which consented to offer up prayers for the person in whose name these benefactions were given.

Among the buccaneers who signalized themselves in this new species of freebooting, Montbar, a gentleman of Languedoc, particularly distinguished himself. Having by chance, in his infancy, met with a circumstantial account of the cruelties practiced in the conquest of the New World, he conceived an aversion, which he carried to a degree of frenzy, against that nation which had committed such enormities. The enthusiasm which this spirit of humanity worked him up to merged in a ferocity still more cruel than that of the religious fanaticism to which so many victims had been sacrificed. The manes of these unhappy sufferers seemed to rouse him, and call for vengeance. He had heard some account of the buccaneers, who were said to be the most inveterate enemies to the Spanish name; and he therefore embarked, with some others, on board a ship in order to join them.

His savage disposition, as well as that of the other buccaneers who attended him, having obliged the Spaniards to confine themselves within their settlements, the freebooters resolved to attack them there. This new method of carrying on the war required superior forces; and their associations in consequence became more numerous. The first considerable one was that formed by L'Olonois, who derived his name from the sands of Olones, the place of his birth. From the abject state of a bondsman, he had gradually raised himself to

the command of two canoes, with twenty-two men; and with these he was so successful as to take a Spanish frigate on the coast of Cuba. He then repaired to Port-au-Prince, in which were four ships, fitted out purposely to sail in pursuit of him; but he took them, and threw all the crews into the sea except one man, whom he saved in order to send him with a letter to the governor of the Havana, acquainting him with what he had done, and assuring him that he would treat in the same manner all the Spaniards who should fall into his hands, not excepting the governor himself, if he were fortunate enough to take him. After this expedition he ran his canoes and prize ships aground, and sailed with his frigate only to the island of Tortuga.

But while they were idly dissipating the spoils which they had made on the coast of Venezuela, Morgan, the most renowned of the English buccaneers, sailed from Jamaica to attack Porto Bello. His plan of operations was so well contrived that he surprised and took the city without opposition. The conquest of Panama was an object of much greater importance. To secure this, Morgan thought it necessary to sail in the latitudes of Costa Rica, in order to procure some guides in the island of St. Catharines, where the Spaniards confined their malefactors. This place was so strongly fortified that it might have held out for ten years against a considerable army. But notwithstanding this, the governor, on the first appearance of the pirates, sent privately to concert measures how he might surrender himself without incurring the imputation of cowardice; and the result of this consultation was, that Morgan in the night-time was to attack a fort at some distance, while the governor was to sally out of the citadel to defend a post of so much consequence, and that the assailants should then attack him in the rear and take him prisoner, which would occasion an immediate surrender of the place. It was agreed that a smart firing should be kept up on both sides, without doing mischief to either. This farce was admirably carried on. The Spaniards, without being exposed to any danger, appeared to have done their duty; and the buccaneers, after having totally demolished the fortifications, and put on board their vessels a prodigious quantity of warlike ammunition, which they found at St. Catharines, steered their course toward the River Chagres, the only channel whereby they could arrive at the place which was the object of their wishes.

Morgan left his vessels at anchor, with a sufficient number of men to guard them, and sailed up the river in his sloops for thirty-three miles, till he came to Cruces, where it ceases to be navigable; and he then proceeded by land to Panama, which was only five leagues distant. Upon a large and extensive plain which stretched out before the city, he met with a considerable body of troops, whom he put to flight with the greatest ease, and entered the city, which was now abandoned. Here were found prodigious treasures concealed in the wells and caves; some valuable commodities were also taken in the boats which were left aground at low water; and in the neighboring forests were likewise found several rich deposits. Having burned the city, they set sail with a great number of prisoners, who were ransomed a few days afterward, and arrived at the mouth of the Chagres with a prodigious booty.

In 1603 an expedition of the greatest consequence was formed by Van Horn, a native of Ostend, but who had served all his life among the French. His own intrepidity prevented his tolerating the least sign of cowardice among those who associated with him. In the heat of an engagement he went about his ship, observed his men in succession, and immediately killed those who shrunk at the sudden report of a pistol, gun, or cannon. This extraordinary discipline rendered him the terror of the coward and the idol of the brave. In other respects he readily shared with the men of spirit and bravery the immense riches which were acquired in the course of his marauding expeditions. When he went upon such expeditions, he generally sailed in his frigate, which was his own property. But his designs requiring greater numbers to carry them into execution, he called to his assistance Grammont, Godfrey, and Jonqué, three Frenchmen distinguished by their exploits, and Lawrence de Graff, a Dutchman, who had signalized himself still more than they. Twelve hundred buccaneers joined themselves to these commanders, and sailed in six vessels for Vera Cruz.

The darkness of the night favored their landing, which was effected about three leagues from the place, where they arrived without being discovered. The governor, the fort, the barracks, and the posts of the greatest consequence, every thing, in short, which could occasion any resistance, were taken by the break of day. All the citizens, men, women, and children, were shut up in the churches, whither they had fled for shelter. At the door of each church were placed barrels of gunpowder to blow up the building; and a buccaneer, with a lighted match, was to set fire to it upon the least appearance of an insurrection.

While the city was kept in this state of terror, it was easily pillaged; and after the buccaneers had carried off whatever was most valuable, they made a proposal to the citizens who were kept prisoners in the churches to ransom their lives and liberties by a contribution of £437,500. This unfortunate people, who had neither eaten nor drunken for three days, cheerfully accepted the terms which were offered them. Half of the money was paid the same day, and the other part was expected from the interior of the country, when there appeared on an eminence a considerable body of troops advancing, and near the port a fleet of seventeen ships from Europe. At the sight of this armament, the buccaneers, without any marks of surprise, retired quietly, with fifteen hundred slaves they had seized, as a trifling indemnification for the rest of the money they expected, the settling of which they referred to a more favorable opportunity. Their retreat was equally daring. They boldly sailed through the midst of the Spanish fleet, which let them pass without firing a single gun, and, in fact, seemed afraid of being attacked and beaten. The Spaniards would not probably have escaped so easily if the vessels of the pirates had not been laden with silver, or if the Spanish fleet had been freighted with any other effects but such merchandise as was little valued by these daring freebooters.

A year had scarcely elapsed since their return from Mexico, when, on a sudden, they were all seized with a passion for going to plunder Peru. It is probable that the hopes of finding greater treasures upon a sea little frequented than on one long exposed to piracies of this kind, was the cause of this expedition; but it is somewhat remarkable that both the English and French, and the associations of these two nations, had projected this plan at the same time, without any communication, intercourse, or design of acting in concert with each other. About four thousand men were employed in this expedition. Some of them proceeded by Terra Firma, others by the Straits of Magellan, to the place which formed the object of their wishes; and if the intrepidity of these barbarians had been directed, under the influence of a skillful commander, to a single end, it is certain that they would have deprived the Spaniards of this important colony. But their natural character presented an invincible obstacle to so rare a union; for they always formed themselves into several distinct bodies, sometimes even so few in number as ten or twelve, who acted together, or separated, as whim or caprice dictated. Grognier, Lecuyer, Picard, and Le Sage, were the most distinguished officers among the French; David Samms, Peter Wilner, and Towley, among the English.

Such of these adventurers as had got into the South

Sea by the Straits of Darien seized upon the first vessel which they found upon the coast: and their associates, who had sailed in their own vessels, were not much better provided. Weak, however, as they were, they several times beat the squadrons which were fitted out against them. But these victories were prejudicial to them, by interrupting their navigation; and when there were no more ships to be taken, they were continually obliged to make descents upon the coasts to get provisions, or to go by land in order to plunder those cities where the booty had been secured. They successively attacked Seppa, Puebla-Nuevo, Leon, Realejo, Puebla-Viejo, Chiriquita, Lesparso, Granada, Villia, Nicoy, Tecoanteca, Mucmeluna, Chiloteca, New Segovia, and Guayaquil, the most considerable of all these places.

Many of these places were taken by surprise, and most of them deserted by their inhabitants, who fled at the sight of the enemy. As soon as the buccaneers took a town, it was directly set on fire, unless a sum proportioned to its value was paid to save it. The prisoners taken in battle were massacred without mercy if they were not ransomed by the governor or some of the inhabitants; while gold, pearls, or precious stones, were the only things accepted of for the payment of their ransom. Silver being too common, and too weighty for its current value, would have been troublesome to them. The chances of fortune, which seldom leave guilt unpunished, or adversity without a compensation for its suffering, atoned for the crimes committed in the conquest of the New World; and the Indians were amply avenged on the Spaniards.

While such piracies were being committed on the Southern Ocean, the Northern was threatened with the same by Grammont. He was a native of Paris, by birth a gentleman, and had distinguished himself in a military capacity in Europe; but his passion for wine, gaming, and women, had obliged him to join the pirates. Nevertheless, he was affable, polite, generous, and eloquent; endued with a sound judgment, and a person of approved valor; qualities which soon made him be considered as the chief of the French buccaneers. As soon as it was known that he had taken up arms, he was immediately joined by a number of brave men. The governor of St. Domingo, who had at length prevailed upon his master to approve of the project, equally wise and just, of fixing the pirates in some place, and inducing them to become cultivators, was desirous of preventing the concerted expedition, and forbade it in the king's name. But Grammont, who had a greater share of sense than his associates, was not on that account inclined to comply, and sternly replied, "How can Louis disapprove of a design he is unacquainted with, and which has been planned only a few days ago?" This answer highly pleased all the buccaneers, who directly embarked in 1685 to attack Campeachy.

They landed without opposition. But at some distance from the coast they were attacked by eight hundred Spaniards, who were beaten and pursued to the town, which both parties entered pell-mell together. The cannon they found there were immediately leveled against the citadel; but as these had very little effect, they were contriving some stratagem to enable them to become masters of the place, when intelligence was brought that it had been abandoned. There remained in it only a gunner, an Englishman, and an officer of signal courage, who chose rather to expose himself to the greatest extremities than basely to fly from the place with the rest. The commander of the buccaneers received him with marks of distinction, generously released him, gave him up all his effects, and, besides, complimented him with some valuable presents: such influence have courage and fidelity even on the minds of those who systematically violate all the rights of society.

In 1697, twelve hundred buccaneers were induced to join a squadron of seven ships which sailed from Europe under the command of one Pointis, to attack the famous city of Carthagena. This was the most difficult enterprise which could be attempted in the New World. The situation of the port, the strength of the place, and the badness of the climate, were so many obstacles which would have seemed insurmountable to any but such men as the buccaneers. But every obstacle yielded to their valor and good fortune; the city was taken, and booty gained to the amount of £1,750,000. Their rapacious commander, however, deprived them of the advantages resulting from their success. He scrupled not, as soon as they set sail, to offer £5250 for the share of those who had been the chief instruments in procuring him so considerable a spoil.

The buccaneers, exasperated at this treatment, resolved immediately to board the vessel called the *Sceptre*, where Pointis himself was, and were with great difficulty prevented from assassinating him. They then set sail for Carthagena, where they amply repaid themselves for the losses they had sustained through the avarice of their late commander.

At length, after amassing all they could, these adventurers set sail, when unfortunately they met with a fleet of Dutch and English ships, then in alliance with Spain. Several of the pirates were either taken or sunk, with the cargoes they had on board; and the rest escaped to St. Domingo.

Such was the last memorable event in the history of the buccaneers. The separation of the English and French, when the war on account of the Prince of Orange divided the two nations; the success of the means employed to promote the cultivation of land among their colonies, by the assistance of these enterprising men; the prudence evinced in selecting the most distinguished among them, and intrusting them with civil and military employments; and the protection afforded to the Spanish settlements, which till then had been a general object of plunder; all these circumstances, and various others, besides the impossibility of supplying the place of these remarkable men, who were continually dropping off, concurred to put an end to a society as extraordinary as any that ever existed. Without any regular system, without laws, without subordination, and even without any fixed revenue, they became the astonishment of the age in which they lived, as they will be also of posterity.—E. B.

Buckles. The wearing of buckles commenced in the reign of Charles II., but people of inferior rank, and such as affected plainness in their garb, wore strings in their shoes some years after that period: these last were, however, ridiculed for their singularity in using them. Buckles continue to be used in court dress, and by persons of rank in most countries of Europe.

Buckwheat (Fr. *Blé Sarrasin, Blé noir;* Germ. *Buchweizen, Heidekorn;* It. *Grano Saraceno, Faggina, Fraina;* Sp. *Trigo Saraceno, Trigo negro;* Pol. *Tatarca, Gryka, Pohanca;* Russ. *Gretscha;* Lat. *Fagopyrum*) is principally cultivated in order that it may be cut when young and green, and employed as fodder for cattle; when allowed to ripen, the grain is usually employed to feed pigeons and poultry. When ripe, it is of a deep yellow color, the seeds bearing a great resemblance to beech-mast: it will grow on the poorest soils. It is cultivated in almost every part of the temperate and arctic climates of the civilized world for the farinaceous albumen of its seeds, which, when properly cooked, affords a delicious article of food to a large portion of the human race. It also serves as excellent fodder to milch cows, and the straw, when cut green and converted into hay, as well as the ripened seeds, are fed to cattle, poultry, and swine. It is believed to be a native of Central Asia, as it is supposed to have been first brought to Europe in the early part

of the twelfth century, at the time of the Crusades for the recovery of Syria from the dominion of the Saracens; while others contend that it was introduced into Spain by the Moors, four hundred years before. This grain appears not to have been much cultivated in this country prior to the last century, as it is not often mentioned by writers on America previous to that period. Holm, in his History of Pennsylvania (Nieu Swedeland), published at Stockholm in 1702, mentions it among the productions of that province; and Kalm, the Swedish naturalist, who visited this country in 1748-'49, speaks of it as growing in Pennsylvania, New Jersey, and New York; and several American writers on agricultural subjects have treated of it since. The cultivation of buckwheat, in one or other of its species, is principally confined to Great Britain, France, Switzerland, Italy, Netherlands, Germany, Sweden, Russia, China, Tartary, Japan, Algeria, Canada, and the middle and northern portions of the United States. In this country, from thirty to forty-five bushels per acre may be considered as an average yield in favorable seasons and situations, but sixty or more bushels are not unfrequently produced. This grain heretofore has never entered into our foreign commerce. According to the census returns of 1840, the annual quantity raised in the United States was 7,291,743 bushels; and of 1850, 8,956,916 bushels.—*Census Report.* *See* BREADSTUFFS.

The following table shows the product of barley in the year 1840, and of buckwheat in 1840 and 1850, in each State, according to the census returns:

States and Territories.	Barley.	Buckwheat.	
	1840.	1840.	1850.
	Bushels.	Bushels.	Bushels.
Alabama	7,092	58	248
Arkansas	760	88	175
California	....	....	....
Columbia, District of	204	272	378
Connecticut	33,750	302,043	229,297
Delaware	5,200	11,299	8,615
Florida	30	....	55
Georgia	12,970	141	250
Illinois	82,251	57,884	184,504
Indiana	28,015	49,019	149,740
Iowa	728	6,212	52,516
Kentucky	17,491	8,169	16,097
Louisiana	....	....	3
Maine	355,161	51,543	104,523
Maryland	9,594	73,606	103,671
Massachusetts	165,319	87,000	105,895
Michigan	127,802	113,592	472,917
Mississippi	1,054	61	1,121
Missouri	9,891	15,318	23,041
New Hampshire	121,899	105,199	65,265
New Jersey	12,501	856,117	878,934
New York	2,520,068	2,287,835	3,183,955
North Carolina	3,574	15,991	19,704
Ohio	212,440	638,139	638,060
Pennsylvania	293,893	2,113,742	2,193,692
Rhode Island	66,499	2,979	1,245
South Carolina	3,097	72	283
Tennessee	4,800	17,118	19,427
Texas	....	....	59
Vermont	54,781	228,416	209,819
Virginia	87,430	243,822	214,893
Wisconsin	11,062	10,654	79,873
Minnesota Territory	....	....	515
New Mexico Territory	....	....	100
Oregon Territory	....	....	....
Utah Territory	....	....	332
Total	4,161,504	7,291,743	8,956,916

Buenos Ayres, the largest and most important province of the Argentine Confederation, is bounded on the north by the Parana, which separates it from the province of Entre Rios; and by the provinces of Santa Fé, San Luis, and Mendoza; on the east by the Atlantic; on the south by the Rio Negro, which separates it from Patagonia; and on the west by the country of the Indians, which extends westward to the Andes. The area of the province is estimated by Sir Woodbine Parish at about 200,000 square miles, being little less than that of France. Its sea-board along the Rio de la Plata and the ocean is upward of 600 miles in length. Since 1825 no census of the population has been taken. At that date it was found to amount to 183,000. Parish estimates the present population at 320,000, of which number 120,000 belong to the city of Buenos Ayres. By M'Cann, another authority, the entire population of the province is computed at 200,000. This small increase over the results of the census of 1825 is attributed by him to the civil wars, to the prohibition of the slave-trade, and other causes.

The general aspect of the country, as viewed from the sea, is eminently uninteresting. From the mouth of the Plata to the Bahia Blanca the sea-line presents an unbroken series of sand-dunes, varied here and there with low ridges of rock. From this latter point to the Patagonian frontier the aspect of the coast is less monotonous, though equally destitute of life or interest. Though Buenos Ayres is the only province of the Argentine Confederation that borders upon the sea, and though all the exports and imports of the country pass through it, it possesses only two harbors, one of which (that of the city of Buenos Ayres) is extremely bad; the other (that of Belgrano, near the southern extremity of the province), though possessing great natural advantages, is by no means adequately appreciated. It might be turned to good account as a starting-point for vessels engaged in trade with the South American states that border upon the Pacific, but the difficult and sometimes dangerous navigation of the adjoining seas counterbalances in the mean time the other advantages which it offers. The interior of the country, except where it is intersected by the low mountain ranges of the Ventana and Vaulean in its southern portions, and the spurs of the Andes in the west, is one vast plain, of which by far the larger part is laid out in *estancias*, or cattle farms, though the soil is in itself well adapted for producing all the European cerealia. Agricultural pursuits, however, are by no means in favor with the natives, who can not bring themselves to engage in any pursuit that can not be prosecuted on horseback. "Every man, woman, and child in the country rides," says Parish. "One might fancy one's self in the land of centaurs, amid a population half-men half-horses. Even beggars ride on horseback." Some of the cattle-farms are of immense extent; one in particular is mentioned by travelers as comprising more than 300 square miles of land, and yielding an enormous revenue to the proprietor. Some of the largest of them belong to British settlers, and are worked by British servants. The cattle were formerly hunted down and killed merely for the sake of their hides and tongues, while the carcasses were abandoned to beasts and birds of prey. They are now slaughtered in abattoirs, where every part of the animal is made available. The beef is salted for exportation; the tallow is boiled down, and now forms an important item in the farmer's revenue; and the trade in hides is steadily increasing. Beef and an infusion of the native tea are the staple food of the natives. By the care of a few British colonists, sheep have of late years been extensively reared, and their wool is annually increasing in value. Till recently they were reputed so valueless that their carcasses were used as fuel for kilns, etc. A decree of government ordained that no live sheep should be employed for this purpose. The number of cattle in the province is estimated at 12,000,000; of sheep, about the half of that number. The total value of exports from Buenos Ayres in 1849, was £2,537,821; in 1850, £1,983,513; and in 1851, £2,126,705. In this latter year the value of the jerked beef exported was £172,749; of hides, £1,300,570; of tallow, £217,690; of wool, £190,060. The other exports consisted chiefly of hair, horns, bones, skins, and feathers. The value of imports into Buenos Ayres may be stated approximately, for the year 1851, at £2,110,000; of which Great Britain contributes £900,000; France, £500,000; northern Europe, £170,000; Gibraltar, Spain, and the Mediterranean, £120,000; the United States, £200,000; Brazil and other countries, £220,000. Of the cereals

grown in Buenos Ayres, the most important is maize, which is indigenous to the country. Wheat thrives well in the southern parts of the province, but the inhabitants rarely grow more than enough to supply their own necessities. In the event of a surplus, it is commonly exported to Brazil. Flax and hemp are cultivated with success. The vine, fig, orange, and olive, have been introduced from the Old World, and are found to suit the climate admirably; but the most valuable of European fruits is the peach. A considerable fruit trade is carried on in coasting vessels, by merchants for the most part Italian or French. The geographical position of Buenos Ayres is such as to enable it completely to control the foreign commercial relations of the entire confederation of which it forms a part. The exclusive policy which it has always pursued on this point has often involved it in serious quarrels, not only with many of the South American states and the other provinces of the Argentine Confederation, but with England and France. Since the expulsion of General Rosas, the navigation of the Parana and Uruguay has been thrown open, and other measures have been taken to place both the province and city of Buenos Ayres on a level with the other provinces of the confederation. Buenos Ayres has published a protest against any such measure, and the dispute is still unsettled. The only other towns in the province of any importance, besides the capital, are San Nicolas, which is situated on the Parana, about 200 miles northwest of Buenos Ayres, and contains a population of about 10,000; San Pedro, also on the Parana, about 150 miles from the capital in the same direction, with a population of 1000; Chascamas, on the shores of a cognominal lake, once a place of considerable importance, but seriously injured by the long continuance of the civil wars; and Belgrano, which, from its position, bids fair to become the rival of the capital itself.

Buenos Ayres, the capital of the Argentine Confederation and of the province of Buenos Ayres, is situated on the right bank of the estuary of the Plata, in lat. 34° 39′ S., long. 58° 18′ W. The river is at this point so wide, that it is quite impossible with the naked eye to distinguish the opposite bank; and at the same time so shallow, that ships drawing 15 or 16 feet of water must anchor seven or eight miles from the city. Small craft generally anchor in what are called the inner roads, abreast of the city. As the depth of water is never sufficient to admit of their coming to shore, passengers and goods are landed by means of large-wheeled carts, which are either drawn or pushed by the requisite number of horses. The town of Buenos Ayres is situated in a vast plain extending westward to the Andes. The level uniformity of its outline is only broken by the spires of the various churches. The stranger, on landing, is struck with the regularity of the streets, which are quite straight, and intersect eachother at distances of 150 yards, forming squares like those of a chess-board, with the cleanly appearance of the houses, and the general air of independence that distinguishes the inhabitants. The only public buildings that have any pretensions to architectural beauty are the churches, which were built for the most part by the Jesuits. The houses have never more than two stories, and commonly only one, the rooms of which open into each other, and till lately were chiefly supplied with furniture of a very inferior description from the United States. A chimney was a thing unknown, as the old Spanish brazero alone was employed in heating the damp and white-washed rooms. A great change has, however, taken place in these respects within the last few years. The furniture is now supplied from Europe, the walls are papered, grates and chimneys have come into fashion, and English coal is burned at a lower price than it brings in the London market. These comforts are all the more valuable, as the climate of Buenos Ayres is one of the most humid and changeable in the world. As the system of police is still somewhat of the rudest, the inhabitants are obliged to guard themselves and their property by means of the iron railings with which they protect the windows of the houses. Even this, however, is not always found to be an efficient guard against the dexterity of thieves. Though the city is built within 50 yards of the largest river in the world, the supplies of fresh water are both scanty and expensive. There are no public reservoirs or fountains, and the wells of the city yield only a brackish and disagreeable water. By the wealthier classes tanks are constructed, in which a sufficiency of rain-water for domestic purposes is collected from the roof of the house. The common people are obliged to purchase water from the water-carriers. As it is derived from the river, it is commonly muddy, and must stand for twenty-four hours till the sediment sinks to the bottom. It is then found to be excellent. The streets of the city are now tolerably paved with granite. Many of them, however, are still unpaved; and these in wet weather can hardly be traversed by a mounted horseman, and are utterly impassable by a person on foot. Floriculture is a favorite pursuit; and many English and Scotch gardeners have nurseries in the neighborhood of the town.—E. B.

The Plata is one of the largest rivers of the world, traversing a vast extent of country, of which it is the great outlet. Unluckily, however, its estuary, though broad, is in most parts shallow, being also encumbered with sand banks, and infested with sudden gusts of wind called *pamperos*. Its navigation is consequently attended with a good deal of difficulty, and ships bound for Buenos Ayres generally take pilots on board. There is no harbor, and vessels drawing 16 or 17 feet of water anchor in the outer roads, called the *Amarradero*, 7 or 8 miles from shore, loading and unloading by means of lighters. This, too, is an operation by no means free from danger, boats being sometimes swamped in crossing the bar between the outer and inner roads. From the want of a pier, and the shallowness of the water on the beach, even the boats are not able to come close to the shore, but are met at a little distance from it by a rude sort of ox-carts, into which they deposit their goods at no little risk, and sometimes much loss. These unfavorable circumstances, which might, however, be materially improved by a little exertion and outlay on the part of the government, operate as a heavy drawback on the trade of the city, and tend proportionally to augment that of Montevideo, which is more easily accessible. But notwithstanding the competition of the latter, Buenos Ayres is still the principal outlet for the produce of the vast countries traversed by the Plata, and especially for the provinces situated on its right bank. The principal articles of export are specified in the subjoined table.—*See* PLATA RIVER.

Previously to 1828 no wool was exported from Buenos Ayres. But in that year merino and Saxon sheep were introduced; and notwithstanding the constant recurrence of disturbances, they have succeeded remarkably well, as is obvious from the following

ACCOUNT OF THE EXPORTS OF WOOL FROM BUENOS AYRES FOR FIVE YEARS, ENDING WITH 1852.

Years.	England.	France.	United States.	Genoa.	Belgium.	Sundries.	Total.
	Pounds	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.
1852	2,539,500	2,907,750	5,589,000	516,000	1,844,147	81,103	13,507,500
1851	663,312	854,614	11,827,530	305,942	380,276	105,300	13,636,974
1850	1,869,100	2,058,752	8,611,320	267,462	705,420	271,352	13,843,380
1849	3,139,442	1,690,708	10,934,228	890,415	665,840	168,936	17,495,650
1848	3,784,242	2,012,018	7,686,406	170,120	98,389	69,146	13,820,321

Corn, which for a considerable period was not produced in sufficient quantity for home consumption, has latterly become an occasional article of export. Most part of the jerked beef, and numbers of mules, are exported to the Havana and Brazil. Hides, tallow, skins, bones, and horns, especially the first, are leading articles of export. Sir Woodbine Parish estimates the total amount of the imports into the Plata at about £2,110,000, of which about one half may be for Buenos Ayres. The value of British exports to the latter, in 1851, amounted to £458,329, cottons being by much the most important article, and next to it silks, linens, and woolens, with cutlery, hardware, etc. France supplies silks, wines (of which the imports have largely increased), jewelry, perfumery, etc. The imports from the United States consist chiefly of unbleached cloths, spirits, soap, sperm candles, dried and salted provisions, tobacco, furniture, and deals. Germany sends woolen and linen cloths, and Rhenish cottons; the Netherlands, fire-arms, swords, etc.; Holland, butter, cheese, Westphalia hams, etc. The Baltic furnishes iron, cordage, canvas, pitch, deals, etc. The Mediterranean trade is principally in Sicilian and Spanish produce, particularly cheap wines, brandies, olive oil, macaroni, dried fruits, and peppor. Spanish goods are in little demand, though some serges, handkerchiefs, and ribbons, sewing silk and salt, are imported. The annual importation of Spanish and Sicilian wines is from 10,000 to 12,000 pipes, besides about 1000 pipes of brandy. The *yerba mate*, or Paraguay tea, formerly an import article of some consequence, has been nearly superseded, even in Buenos Ayres, by genuine tea. The trade with Chili and Peru is insignificant. The markets are well supplied with butcher's meat and fish. Poultry, vegetables, and fruit are generally dear. All the butter used is imported. (We have derived these details principally from the excellent work of Sir Woodbine Parish on Buenos Ayres, 2d edition, p. 349–369.)

Port Charges.—The Argentine government has notified that, 1. From the 1st of January, 1847, national vessels sailing for ports beyond sea shall pay 3 dollars per ton; 2. Foreign vessels shall pay 4 dollars per ton, except those which, in virtue of existing treaties, are assimilated to national vessels; 3. Foreign vessels shall pay, for the visit of the health officer 25 dollars, and the same amount for the bill of health; 4. Foreign vessels belonging to nations having no consul, and whose roll is made out by the captain of the port, shall pay 40 dollars for it; 5. The duties fixed by the preceding articles shall be paid one half on the entrance of the vessel, and the other half on her departure; 6. National and foreign vessels, which do not leave nor receive cargoes, shall pay one half of the duties here established; 7. Let this decree be communicated and published in the official registers.

Buff (Ger. *Buffel, Büffelhäute*; Fr. *Buffle, Peau de buffles, et Peaux passées en buffles*; It. *Bufalo, Cuojo di bufalo*), a sort of leather prepared from the skin of the buffalo, dressed with oil, after the manner of chamois. The skin of elks, oxen, and other like animals, when prepared after the same manner as that of the buffalo, is likewise called *buff*. It is used in making sword-belts and other articles, where great thickness and firmness are required.

Buffalo, city, port of entry, and capital of Erie county, New York, is situated at the entrance of Buffalo Creek into Lake Erie; it is at the northeastern extremity of the lake, and near the commencement of its outlet, Niagara River. Lat. 42° 53′ N., and 78° 56′ W. long. from Greenwich, England; 298 miles west from Albany, 391 northwest from New York, 183 east from Cleveland, Ohio, 327 from Detroit, and 310 from Washington. Population in 1810, 1508; 1820, 2095; 1830, 8653; 1840, 18,213; 1845, 29,773; 1850, 42,261; and in 1854, with the addition of Black Rock, annexed to it in 1853, 75,000.

The city of Buffalo occupies a very important and commanding position at the western terminus of the Erie Canal and the central line of railroad from Albany and Boston, and also the northern termination of the Erie and other railroads, and has communication with the principal cities of the Western States, and also with Western Canada. It is the eastern port of transhipment of the great lakes Erie, Huron, Michigan, and Superior. Its commerce is immense, employing a vast number of steamers, brigs, and sloops, which convey from the several lake ports a large amount of produce, which from hence is transported to eastern markets by canal and railroad. The ground on which the city is built rises gradually from Buffalo Creek on the south, and within a short distance from the lake on the west it becomes an extended plain 50 feet above the surface of Lake Erie. From this elevation is obtained a picturesque view of the Canadian shore, Niagara River, and the lake. The streets are broad and straight, crossing each other mostly at right angles. Main Street is 100 feet in breadth, and extends for a distance of four miles, and is built very compactly with stores, hotels, and expensive private dwellings. The houses generally are constructed with neatness and taste.

The manufactures of Buffalo are very extensive, consisting of engine and boiler factories, furnaces, car-work, founderies, etc. The capital employed in 1850 was $1,946,348; value of manufactured articles, $3,674,988; and since that time both the capital employed and value of products have been largely increased. In 1853 there were six steam flouring mills, manufacturing during the year 216,296 barrels of flour.

The commerce of Buffalo is immensely large, far surpassing all other ports on the great lakes. The number of arrivals and clearances in 1853 were 8298 vessels, with an aggregate tonnage of 3,252,978. There are owned in Buffalo 30 steamers, with an aggregate tonnage of 26,593; 46 propellers, aggregate tonnage 18,004; 39 brigs and barks, aggregate tonnage 10,376; 115 schooners, aggregate tonnage 17,099; total tonnage of steam and sail vessels, 72,917. Value of the leading articles landed at Buffalo during the year 1853, $168,898,360. Value of the real and personal estate, $27,455,752. Buffalo was originally laid out by the Holland Land Company in 1801. Its progress was slow for many years. In 1812 it contained 100 houses; in December of the next year (1813) it was entirely burned by the British and Indians, with the exception of two houses, and at the close of the war the inhabitants received from the United States government $80,000 as a compensation for their losses. The rapid growth and its commercial importance commenced at the completion of the Erie Canal in 1825. It was incorporated as a city in 1832. It is divided into thirteen wards, and is governed by a mayor and common council, elected by the people.—*See* LAKE TRADE.

Bugle-horn, a small brass instrument used in the hunting-field, and in cavalry regiments. The compass of the bugle is now extended by finger-keys.

Bugles, small glass beads of different colors. They are in considerable demand in Africa, to which they are mostly exported.

Buhl, ornamental wood-work, inlaid with mother-of-pearl, brass, etc. The name is derived from the inventor.

Builder, in the general sense of the term, and undertaker of works of building. With reference to the operations of civil architecture particularly, the builder stands between the proprietor and architect on the one hand, and the artisan, merchant, and manufacturer on the other; he engages to the first to carry a certain proposed work into execution, as he may be directed by the second, and saves to both of them the trouble and responsibility of procuring materials and employing workmen.

The builder's emolument arises from an improved price, or charges bearing an advance on the prime cost,

to remunerate him for the use of his capital in materials, work-shops, plans, and labor, and his own personal application and risk. A builder has the power also of deriving an advantage from the division of labor by employing artisans in those operations only which habit enables them to execute with the greatest facility.

The builder contracts to do certain specified works for a certain total sum of money, the amount of which he determines by a previous estimate, or to do prescribed operations at so much for a certain fixed quantity of every sort involved, per yard, per rod, per foot, and so on, the amount to be ascertained, when they are completed, by measurement; or he executes works according to instructions or specifications, leaving the charges to be determined according to the usual and accustomed rates, on the quantities ascertained by admeasurement. In the two former cases he is said to work by contract, and in the last by measure and value. For jobbing, in repairs and alterations, a day account is kept; that is, a record of the time workmen are employed, and of the materials used, in performing certain operations. This is made out with an advance of so much per cent. on the prime cost, or wages of the workmen and selling prices of the unwrought materials, for the builder's profit or remuneration efore stated.

A builder should be theoretically acquainted with the principles of construction, and practically conversant with the details of all the mechanic arts used in building; as well to be enabled to carry on his business with advantage to his own interest as to the proper execution of the works he may undertake. He should be qualified to ascertain with the utmost minuteness, from the drawings of a design, and the specification of the manner in which, and matter of which, it is to be carried into execution, the quantity of labor and materials of every kind and description, and the exact value of them all. In this is involved the necessity of being well acquainted with the market prices of raw and manufactured articles to a very great extent, and a matured judgment of the quantity of labor required, or how much time a workman will take to produce a certain result. These things, however, which involve the making of estimates on which to make contracts, in the practice of this country are generally referred to a surveyer or measurer, because of the general ignorance and incompetence of builders, or because of the greater aptitude of the latter, in consequence of their attention being solely occupied by such things.—E. B.

Building. The first structures were of wood and clay, then of rough stone, and, in the end, the art advanced to polished marble. Building with stone was practiced early among the Tyrians; and as ornaments and taste arose, every nation pursued a different system. The art of building with stone may be referred in England to Benedict or Benet, a monk, about A.D. 670. The first bridge of this material in England was at Bow, in 1087. Building with brick was introduced by the Romans into their provinces. Alfred encouraged it in England in 886. Brick-building was generally introduced by the Earl of Arundel, about 1598, London being then almost built of wood. The increase of building in London was prohibited within three miles of the city gates by Elizabeth, who ordered that one family only should dwell in one house, 1580.

Bulk-heads are partitions made athwart a ship with boards, by which one part is divided from the other; as the great cabin, gun-room, bread-room, etc.—E. B.

Bulk of a Ship, the whole space in the hold for the stowage of goods.

Bullets. Those of stone e in use, A.D. 1514; and iron ones are first mentioned in the *Fœdera*, 1550. Leaden bullets were made before the close of the sixteenth century, and continue to be those in use in all nations for musketry. The cannon-ball in some Eastern countries is still of stone instead of iron.—ASHE.

Bullion, uncoined gold or silver in the mass. The precious metals are so called either when smelted and not perfectly refined, or when refined and melted down in bars or ingots, or in any form uncoined, as in plate.—E. B.

Bum-boat, a small boat used to sell vegetables, etc., to ships lying at a distance from shore.

Bunk is a word used, in the United States, to signify a case or cabin of boards for a bed. Thus, in the army, the soldier's berth is called his bunk.

Bunt, the middle part or cavity of the principal square sails, as the mainsail, foresail, etc.: if one of them be supposed to be divided into four equal parts from one side to the other, the two middle divisions, which comprehend half of the sail, form the limits of the bunt.—E. A.

Bunting, a thin woolen stuff, of which the colors and signals of a ship are usually formed.

Buoy, a close empty cask, or a block of wood or cork fastened by a rope to an anchor, and floating on the water to show where the anchor is situated. Buoys are of various kinds; as *can-buoys*, in the form of a cone; *nun-buoys*, which swell in the middle, and taper to a point at each end; *cable-buoys*, empty casks employed to buoy up the cable in rocky anchorage. Buoys are also used to indicate the position of rocks and shoals, or to mark a channel.

The *life-buoy*, of which there are various kinds, is used to throw overboard to preserve a person from drowning. The kind now commonly used in the navy consists of two hollow copper vessels connected together, between which there is fixed a hollow pole, with a port-fire fixed to its top. This apparatus, which is properly ballasted, is suspended so as to be ready for use at a moment's notice; and it is so contrived that by the act of letting it off the port-fire is ignited; thus enabling the person in the water to discern the buoy in the darkest night.

Burden or **Burthen** (Saxon *byrden* or *byrthen*), a fixed quantity of any commodity for transit.

Burden of a Ship, its contents, or the number of tons it will carry.—*See* TONNAGE.

Burgundy. *See* WINE.

Burgundy Pitch, a resin, the produce of the *Pinus Abies*, or spruce fir. It is obtained by making incisions in the bark down to the wood, whence it flows thickly and languidly, immediately concreting into flakes that adhere firmly to the tree. These, being taken off, are melted in boiling water, and strained through coarse cloths. It is of a close consistence, rather soft, has a reddish-brown color, and a not unpleasant smell: it is very adhesive. The greatest quantity is collected in the neighborhood of Neufchatel, from whence it is brought packed in casks. A fictitious sort is made in England, and found in the shops under the title of *common* Burgundy pitch: it may be distinguished by its friability, want of viscidity, and of the odor which characterizes the genuine sort.

A species of Burgundy pitch exudes spontaneously from the Norway spruce fir. This, which undergoes no preparation, is the *resin* or *thus* of the old London Pharmacopœias. It is imported in the form of tears or small masses, packed in casks, each containing from 1 to 2 cwt. It fetches about half the price as that which is strained.—GRAY'S *Supplement to the Pharmacopœias*, THOMSON'S *Dispensatory*.

Burmah, or **Birmah**, the Burmese empire, or kingdom of Ava, a state of Farther India, and formerly the most extensive and powerful in that peninsula; but since the war of the Burmese with the British, in 1824–'26, its territories have been comprised within lat. 16° and 27° N., and long. 93° and 99° E., having on the west Aracan and Munipoor, on the north the Nagas territory and Upper Assam, on the east the Chinese province of Yun-nan, the Independent Laos country, and the British province of Martaban (from which last it is separated by the Sa-luen or Than-lweng River), and on the south the Gulf of Martaban, a portion

of the Bay of Bengal. Estimated area, 200,000 square miles; population from two to three millions. It is composed of the kingdoms of Burmah, Pegu, and Pong, with portions of the countries inhabited by the Khyen, and the Shang countries, and the Kubo valley (*Munipoor*), reannexed to it by treaty with the British in 1834; it is inclosed on most sides by mountain ranges, in elevation from 2000 to 5000 feet above the sea, its central part consisting of the basin of the Irrawaddi. Lagoons are numerous in low beds of the south, and in the centre, a little north of Ava, is a lake thirty miles in length by ten miles across. The country is reckoned salubrious. From May till the middle of September is the rainy season. From September till March the weather is delightful, the temperature seldom exceeding 75°; in April and May the heat becomes very great, but is soon mitigated by the commencement of rain. Annual fall of rain 150 to 200 inches. The soil is of very high fertility; but except near the towns most of it lies waste, or is only irregularly tilled; and agriculture is generally in the most backward condition. Rice is the chief crop, especially in the south; pulses, Indian millet, and maize are raised in the north, and sesamum is universally cultivated for cattle. Other products are, cotton of short staple, indigo (though this product is so badly managed as to be unfit for export), yams, sweet potatoes, tobacco, capsicums in great quantities, gourds, oil-plants, bananas, and other fruits, betel nut and leaf, sugar-cane, onions, garlic, and in the north a kind of tea. Teak, of a quality inferior to that of both Malabar and Java, oak, and other valuable woods, abound on the mountain ranges, and palm and bamboo are also plentiful. Oxen, buffaloes, and goats are the principal animals used for draft, and the elephant is domesticated for the same purpose; a good breed of horses is also reared. Mineral products are numerous and valuable. The gold and silver obtained in the empire has been estimated in value at upward of £200,000, and the produce of petroleum in pits, along the Irrawaddi, to 8,000,000 lbs. annually. Fine marble, serpentine, amber, sapphires, and other gems, iron, copper, tin, lead, antimony, sulphur, nitre, and coal, are also found. In physical form the Burmese are more allied to the Mongolians of Eastern Asia than to the Hindoos. Their figure is short, squat, robust, and fleshy, face lozenge-shaped, cheek-bones large, and eyes obliquely placed. They excel in boat-building, and they cast bells, work in gold and silver, and dye silk and other fabrics, weave silk and cotton goods, and manufacture lacquered wares, paper, coarse earthenwares, and some other articles in a respectable manner; but most of their manufactured goods in ordinary use are imported from foreign countries. China sends silks, porcelain, copper, carpets, metals, drugs, tea, etc., in return for raw cotton, feathers, ivory, birds' nests, horns, gums, and some British manufactures; this intercourse being chiefly conducted at a large annual fair at Bhamo. From the Shan tribes the Burmese obtain their best sword-blades, with lac, wax, varnish, in return for salt and dried fish; other articles are mostly imported by sea from British India and the Asiatic Archipelago, and consist of British cotton goods, areca and cocoa-nuts, tobacco, iron, hardwares, copper, lead, and other minerals, opium, sugar, spirits, English glass, earthen-wares, fire-arms, and gunpowder, the manufactures of the Burmese in the two last articles being of the most wretched description. Public revenue is derived from a tithe of the profit of cultivation, duties of 10 per cent. on imports, and 5 per cent. on exports, and on petroleum collected, a royal monopoly of marble, amber, and the precious metals, and gems above a certain size, a poll tax on the unsettled tribes, etc.; and the whole fiscal system is "replete with uncertainty, rapacity, and violence." The Burmese empire is divided into seven provinces. Ava and Monchobo have alternately been constituted the capital of the empire. The other principal towns are, Amarapure, Sakaing, Rangoon, Bassain, Martaban, Setang, Taungo, Prome, Patango, Yandabo, and Bhamo. In 1823 the Burmese, by encroaching on the East India Company's territories, brought on a war with the British, which lasted during the years 1824–'25, and terminated in their defeat and the cession of several territories to the English.

Burning-glass and **Concave Mirrors.** Their power was not unknown to Archimedes, but the powers of these instruments are rendered wonderful by the modern improvements of Settalla; of Tchirnhausen, 1680; of Buffon, 1747; and of Parker and others more recently. The following are experiments of the fusion of substances made with Mr. Parker's lens, or burning mirror:

Substances fused.	*Weight.*	*Time.*
Pure gold	20 grains	4 seconds.
Silver	20 grains	3 seconds.
Copper	33 grains	20 seconds.
Platina	10 grains	3 seconds.
Cast iron	10 grains	3 seconds.
Steel	10 grains	12 seconds.
A topaz	3 grains	45 seconds.
An emerald	2 grains	25 seconds.
A crystal pebble	7 grains	6 seconds.
Flint	10 grains	30 seconds.
Cornelian	10 grains	75 seconds.
Pumice-stone	10 grains	24 seconds.

Green wood takes fire instantaneously; water boils immediately; bones are calcined; and things not capable of melting at once become red hot like iron.

Bushire or **Abushire**, a sea-port town of Persia, in the province of Fars, on the northeast coast of the Persian Gulf, lat. 29° N., long. 50° 50′ E. Population uncertain, but estimated by Major Wilson at from 15,000 to 20,000. Bushire is situated at the northern extremity of a sandy peninsula, to the north and east of which is the bay. There is a convenient anchorage for large ships due west from the town, three or four miles distant, in from 25 to 28 feet of water; but ships of 300 tons burden or thereby lie in the inner roads, to the north, about six miles from shore; the anchorage is pretty good; but during violent northwesterly gales they are sometimes obliged to cut their cables, and bear up for Karak, a small island about 15 leagues west-northwest of Bushire. The water immediately to the east of the town is deep, but the passage to it is obstructed by a bar, which can not be passed by vessels drawing more than eight or nine feet of water, except at spring-tides, when there is a rise of from eight to ten feet. The variation in 1811 was 4° 43′ W.—*Chart of the Persian Gulf, by* Captain Ritchie, *etc.* The climate here, as in all the other ports of the Persian Gulf, is extremely hot, particularly June, July, and August. The unhealthy season is in the fall of the year.

Buss, a small sea-vessel, used by the English and the Dutch in the herring fishery, commonly from 50 to 60 tons burden, and sometimes more. A buss has two small sheds or cabins; one at the prow, and the other at the stern: that at the prow serves for a kitchen.

Bussorah, or **Basrah**, a city of Arabia, on the western bank of the Shat-el-Arab (the name given to the river formed by the junction of the Tigris and the Euphrates), above 70 miles from its mouth, lat. 30° 30′ N., long. 47° 32′ E. Population about 60,000, consisting of Arabs, Turks, Persians, Armenians, Jews, etc. The houses and streets are mean and filthy. There is a vast area within the walls, occupied principally by gardens and plantations of date-trees, and intersected by canals, on which are numerous small craft.

The bar at the mouth of the Shat-el-Arab has only about twelve feet of water, but the channel within is deep, so that ships of 500 tons burden, provided they cross the bar at the springs, may without difficulty ascend the river as far as the city; and both its grand branches may be navigated to a great distance by smaller vessels. Bussorah is the principal inlet on the east, through which Indian and other Eastern products find their way into the Turkish empire. Its commerce

is, therefore, even at present, pretty considerable; and were the rich and extensive countries traversed by the Tigris and the Euphrates occupied by a civilized and industrious people, it would be very great. Its Imports from India and Europe are similar to those at Bushire. From Persia it imports shawls, pearls from Bahrein, etc., and coffee from Mocha. At an average, six or eight British ships arrive in the course of the year from India; but the principal part of the trade is carried on in Arabian bottoms, the merchants of Muscat being the owners of some of the finest ships that are to be met with in the Indian seas. Its exports are principally bullion, pearls, dates, copper, raw silk, horses, gall-nuts, and drugs. Captain Hamilton mentions that in the early part of last century the exports of dates from Bussorah exceeded 10,000 tons a year.—*New Account of the East Indies*, vol. i. p. 78. The commerce with the interior is conducted by means of caravans to Aleppo and Bagdad; but it might be carried on to much more advantage by means of steamboats. It was at one time proposed to forward mails from India by steam by the Shat-el-Arab and the Euphrates to Bir, thence by land to Scanderoon, and again by steam to the Gibraltar and England; but this project was very wisely given up in favor of the route by the Red Sea.

Money.—All sorts of coins circulate here, but their values are constantly fluctuating. Accounts are kept in mamoodis of 10 danims, or 100 floose; 100 mamoodis make a toman, which may be valued at about 15 sicca rupees, or 26*s.* sterling.

Weights and Measures.—Gold and silver are weighed by the chekl of 100 miscals, or 7200 English grains.

The commercial weights are the maund atteree, the maund sofy or sesse, and the oke of Bagdad. 1 vakia =19 oz. avoirdupois; 2½ vakias=1 oke of Bagdad= 47½ oz. avoirdupois; 1 maund atteree=28 lbs. 8 oz. avoirdupois; 1 maund sofy=20 lbs. 4 oz. avoirdupois; 1 cutra of indigo=138 lbs. 15 oz. avoirdupois.

These are the weights used by the Europeans settled at Bussorah; those used by the Arabians differ a little from the above, and frequently also among themselves —a circumstance to which the merchant must pay particular attention.

The long measures are the Aloppo yard for silks and woolens=2 feet 2·4 inches; the Bladded ditto for cotton and linens=2 feet 1·2 inches; the Bagdad ditto for all purposes=2 feet 7·6 inches.

For further details as to the commerce of Bussorah, *see* KINNEY'S *Memoir on the Persian Empire*, p. 283; KELLY'S *Oriental Metrology*; THORNTON'S *East Indian Calculator*, p. 424. Niebuhr has given a plan of Bussorah, *Voyage en Arabie*, tome ii. p. 170.

Butchers. Among the Romans there were three classes: the *Suarii* provided hogs; the *Boarii* oxen; and the *Lanii*, whose office was to kill. The butchers' trade is very ancient in England; so is their company in London, although it was not incorporated until the second year of James I., 1604.—*Annals of London.*

Butlerage. *See* PRISAGE.

Butt, a vessel or measure for wine, containing two hogsheads, or 126 wine gallons.

Butter and **Cheese** (Da. *Smör*; Du. *Boter*; Fr. *Beurre*; Germ. *Butter*; It. *Burro, Butiro*; Lat. *Butyrum*; Pol. *Maslo*; Port. *Manteiga*; Russ. *Maslo Korowe*; Sp. *Manteca*; Sw. *Smör*). Butter is known as a fat, unctuous, and, in temperate climates, a pretty firm substance, obtained from milk, or rather from cream, by the process of churning. According to some writers, it was late before the Greeks had any notion of butter, and by the early Romans it was used only as a medicine—never as food. The Christians of Egypt burned butter in their lamps, instead of oil, in the third century. In 1675, there fell in Ireland, during the winter time, a thick yellow dew, which had all the medicinal properties of butter. In Africa, vegetable butter is made from the fruit of the shea-tree, and is of richer taste, at Kebba, than any butter made from cows' milk.—MUNGO PARK. The various circumstances attending the introduction and use of butter in antiquity have been investigated by Beckmann with great learning and industry. The conclusion at which he arrives is, "that butter was not used either by the Greeks or Romans in cooking or the preparation of food, nor was it brought upon their tables by way of dessert, as is every where customary at present. We never find it mentioned by Galen and others as a food, though they have spoken of it as applicable to other purposes. No notice is taken of it by Apicius; nor is there any thing said of it in that respect by the authors who treat of agriculture, though they have given us very particular information with respect to milk, cheese, and oil. This, as has been remarked by others, may be easily accounted for by the ancients having accustomed themselves to the use of good oil; and in the like manner, butter is very little employed at present in Italy, Spain, Portugal, and the southern parts of France."—*History of Inventions*, vol. ii. p. 413, English edition.

Beckmann has further shown that the little butter that was used by the ancients was in an oily or liquid state; and such is its usual state in all hot countries. It is rather singular that Beckmann does not allude to the consumption of butter by the Arabs, by whom it has been very extensively used from a remote period.

"Arab cookery is extremely *friant*, more so than even the Italian; but no oil is used for culinary purposes, except in frying fish. Butter is their universal sauce, and of it the consumption is immense; their vegetable dishes float in butter; with it they work their *adjoue* (paste made of dates) into a proper consistency; dried corn, or bread crumbs, boiled in butter, is a common breakfast with all classes; and in the dessert, the *kemmuyes* are prepared for use in the same manner. In short, butter forms an indispensable part of the diet of the Arab; and, besides the various forms in which it is taken with other articles, it is a common practice with both Bedouins and townspeople to swallow a coffee-cupful of butter every morning; the former, and the lower orders of the latter, adding another half cup, which—to the disgust of strangers—they snuff up their nostrils! Arab butter is made from the milk of sheep and goats, that of camels not being used for that purpose. The home supply is not nearly sufficient for the consumption, and butter consequently forms an important article of importation."—*Geographical Dictionary, article Arabia.*

Considerable quantities of butter are made in Ireland, and it forms a prominent article in the exports of that country: generally it is very inferior to that of Britain; but this is a consequence rather of the want of cleanliness and attention than of any inferiority in the milk. Some of the best Irish butter brought to London, after being washed and repacked, is sold as Dorsetshire and Cambridge butter. The salt butter of Holland is superior to that of every other country; large quantities of it are annually exported. It forms about two-thirds of all the foreign butter imported by England, the rest being brought from Germany, Denmark, etc. The production and consumption of butter in Great Britain is very great. The consumption in the English metropolis may, it is believed, be averaged at about eight pounds a year for each individual; and supposing this estimate to be nearly accurate, and the population to amount to 2,300,000, the total annual consumption would, on this hypothesis, be 18,400,000 lbs., or 8214 tons; but to this may be added 3000 tons for the butter required for the victualing of ships and other purposes; making the total consumption, in round numbers, 11,200 tons, or 25,088,000 lbs., which at 10*d.* per pound would be worth £1,045,333.

The census of 1840 furnishes us no statistics from which we can accurately determine the quantity of butter and cheese then produced. The value of both

is given under the heading of "value of the products of the dairy" at the sum of $33,787,008. It is presumed that the marshals made their returns in accordance with the prices governing in their respective districts, which would differ so widely as to render any assumed average a mere conjecture. New York is far in advance of any other State in the productiveness of its dairies. They yield one-fourth of all the butter, and nearly one-half the cheese produced in the Union. Pennsylvania, which makes 40,000,000 pounds of butter, is less prolific in cheese than several smaller States. In this latter article Ohio is before all other competitors, except New York.

Census Report, 1850.—The following table shows the amount of dairy products exported from the United States for several years:

Years.	Butter.	Cheese.	Value.
	Pounds.	Pounds.	$
1820-'21.....	1,069,024	766,431	190,287
1830-'31.....	1,728,212	1,131,817	264,796
1840-'41.....	3,787,993	1,743,471	504,815
1841-'42.....	2,055,133	2,456,607	385,185
1842-'43.....	3,408,247	3,440,144	508,968
1843-'44.....	3,251,952	7,343,145	758,329
1844-'45.....	3,587,489	7,941,187	878,865
1845-'46.....	3,436,660	8,675,890	1,063,087
1846-'47.....	4,214,433	15,673,600	1,741,770
1847-'48.....	2,751,086	12,918,305	1,361,668
1848-'49.....	3,406,242	17,433,682	1,654,157
1849-'50.....	3,876,175	13,920,817	1,215,468
1850-'51.....	3,994,542	10,361,189	1,124,652

PRODUCT OF BUTTER AND CHEESE IN THE SEVERAL STATES IN 1850, AND VALUE OF DAIRY PRODUCTS IN 1840.

States and Territories.	Butter.	Cheese.	Total, 1850.	Dairy Products.
	Pounds.	Pounds.	Pounds.	$
Alabama	4,008,811	31,412	4,040,223	265,200
Arkansas	1,854,289	30,088	1,884,327	59,205
California	705	150	855	
Columbia, District of	14,372	1,500	16,372	5,566
Connecticut	6,498,119	5,363,277	11,861,396	1,376,534
Delaware	1,055,308	3,187	1,058,495	115,828
Florida	371,498	13,015	389,513	23,004
Georgia	4,640,550	46,976	4,687,585	605,172
Illinois	12,526,543	1,278,225	13,804,768	428,175
Indiana	12,881,535	624,564	13,506,099	742,269
Iowa	2,171,188	209,840	2,381,028	23,609
Kentucky	9,947,523	218,954	10,161,477	931,383
Louisiana	683,069	1,957	685,026	153,069
Maine	9,243,311	2,484,454	11,673,765	1,496,902
Maryland	3,806,160	3,975	3,810,135	457,466
Massachusetts	6,071,370	7,088,142	15,159,512	2,373,299
Michigan	7,065,878	1,011,492	8,077,370	301,052
Mississippi	4,346,234	21,191	4,367,425	359,585
Missouri	7,834,359	203,572	8,037,931	100,432
New Hampshire	6,977,056	3,196,563	10,173,619	1,638,543
New Jersey	9,487,210	365,756	9,852,966	1,323,032
New York	79,766,094	49,741,413	129,507,507	10,496,021
North Carolina	4,146,290	95,921	4,242,211	674,349
Ohio	34,449,379	20,819,542	55,268,921	1,848,369
Pennsylvania	39,378,418	2,505,034	42,383,452	3,187,292
Rhode Island	995,670	316,508	1,312,178	223,229
South Carolina	2,981,850	4,970	2,986,820	577,810
Tennessee	8,139,585	177,681	8,317,266	472,141
Texas	2,344,900	95,290	2,440,199	....
Vermont	12,137,930	8,720,834	20,858,814	2,008,737
Virginia	11,069,359	436,292	11,525,651	1,480,498
Wisconsin	3,633,750	400,283	4,034,033	35,077
Minnesota Territory	1,100	....	1,100	....
New Mexico Territory	111	5,848	5,959	....
Oregon Territory	211,464	36,980	248,444	....
Utah Territory	83,309	30,998	114,307	....
Total	313,345,306	105,535,894	418,881,200	$33,776,808

Milch Cows.—Under the general term of "neat cattle" were embraced in the sixth census of the United States the three descriptions of animals designated in that of 1850 as milch cows, working oxen, and other cattle. The aggregate of the three classes, in 1840, was 14,971,586; in 1850, 18,355,287. The increase, therefore, between the two periods was 3,383,701, or about 20 per cent. They appear to be distributed quite equally over the Union. The amount of butter produced gives an average of something over 49 pounds to each milch cow. The average production of cheese to each cow is 16¾ pounds. As with horses, the same allowance must be made, on account of the omission of cows, except in connection with agriculture. The only schedules in which the live stock of the country could be enumerated were those used for obtaining the agricultural products of farms. From the fact that the schedules for enumerating agricultural productions and live stock were not used in cities, their live stock was necessarily omitted. The value of the butter produced in the United States in 1850 was estimated at $50,135,000; and cheese, $5,276,000.—*Census Report*, 1850.

Butternut-tree (*Juglans cathartica*). This species of walnut is known in the United States under different denominations. In Massachusetts, New Hampshire, and Vermont, it bears the name of *oil-nut*; in Pennsylvania and Maryland, and on the banks of the Ohio, it is generally known by that of *white walnut*; in Connecticut, New York, New Jersey, Virginia, and the mountainous districts of the upper parts of the Carolinas, it is called *butternut*. The last of these names we have adopted, because it is most generally used. This tree is found in the Canadas, in all of the New England States, New York, New Jersey, Kentucky, Tennessee, and on the banks of the Missouri, and in the bottoms which border on the Ohio. It flourishes most abundantly in a cold, unproductive soil, interspersed with large rocks, and on the steep, elevated banks of rivers. From its want of solidity, and from the difficulty of procuring pieces of considerable length, the timber of the butternut is seldom used in the construction of houses. As it long resists the effects of heat and of moisture, it is esteemed for the posts and rails of rural fence. For corn shovels and wooden dishes, it is preferred to the red flowering maple, because it is lighter and less liable to split. In Vermont it is used for the panels of coaches and chaises; the workmen find it excellently adapted to this object, not only from its lightness, but because it is not liable to split, and receives paint in a superior manner.—BROWN'S *Sylva Americana*.

Button-wood, or Sycamore-tree. In the Atlantic States this tree is commonly known by the name of *button-wood*, and sometimes in Virginia by that of *water-beech*. On the banks of the Ohio, and in the States of Kentucky and Tennessee, it is most frequently known by the name of *sycamore*, and by some persons *plane-tree*. The French of Canada and of Upper Louisiana, give it the name of *coton-tree*. The wood,

in seasoning, becomes of a dull red; its grain is fine and close, and it is susceptible of a brighter polish than the wood of the beech, to which it bears some resemblance. Its concentric circles are divided into numerous sections, by fine medullary rays extending from the centre to the circumference. When a trunk is sawn in a direction parallel to these rays, they appear larger than when it is cut parallel to the concentric circles. It would seem, then, that the division should be made in the intermediate direction, so that the spots may be of a proper size and at equal distances, which gives an elegant surface to the wood. Cabinet-makers seldom make use of this wood, on account of its liability to warp, except for bedsteads, which retain the color of the wood, and are coated with varnish. This wood speedily decays when exposed to the atmosphere, hence it is only proper for work that is sheltered from the weather; when thoroughly seasoned, it may be usefully employed in the interior of houses for joists, and for sheathing the frame. It never is used in naval architecture.—Brown's *Sylva Americana*.

Buttons (Du. *Knoopen*; Fr. *Bouton*; Ger. *Knöpfe*; It. *Bottoni*; Russ. *Pogowizii*; Sp. *Botones*) are well-known articles, serving to fasten clothes, etc. They are manufactured of an endless variety of materials and forms. Buttons were of early manufacture in England; those covered with cloth were prohibited by a statute, thereby to encourage the manufacture of metal buttons, 8 Geo. I., 1721. The manufacture owes nothing to encouragement from any quarter of late years.

Buttress, a kind of abutment built archwise, or a mass of stone or brick, serving to support the side of a building or wall externally, when very high or loaded with a heavy superstructure. Buttresses are chiefly used against the angles of steeples and on the outside of such buildings as have heavy roofs, which would be apt to thrust out the walls if unsupported in this manner. They are sometimes placed for a support and abutment against the feet of arches that are turned across great halls in old palaces, abbeys, etc. *Flying buttresses* are such as are carried across by an arch from one wall to another.

Byron, John, was the second son of William, lord Byron; born November 8, 1723. He went out with Lord Anson, in the *Wager*, about 1740, and was wrecked on the coast of South America. An Indian chieftain conveyed him and his companions, after thirteen months of dreadful sufferings and privations, to the island of Chiloe, from whence they made their way northward, and were kindly treated by the Spaniards (though they were at war with England), in consequence of the chivalrous conduct of Lord Anson toward some Spanish ladies whom he had taken prisoners. This wreck, and the sufferings through which they passed, form the subject of "*Byron's Narrative*," which was published in 1745. He was constantly employed by the British government, both in war and peace, and, among other public services, he destroyed the French squadron, then lying in Chaleur Bay. In command of two ships, he made a voyage to the South Sea in 1764; was appointed superior of the West India fleet in 1778, and soon after created vice-admiral of the white. He died in London, April 10, 1786, enjoying to the last a well-earned reputation. The poet, Lord George Gordon Byron, was his grandson.

C.

Cabbage, a biennial plant (*Brassica*, Linn.), of which there are many varieties. It is too well known to require any particular description; it is extensively cultivated in the United States. Sour-crout, or more properly *sauer-kraut*, is a very favorite dish in Germany; it consists of a fermented mess of salted cabbage.

Cabin, an apartment in a ship for officers and passengers. In large ships there are several cabins, the principal of which is occupied by the commander. In small vessels there is only one cabin, which is in the stern. The bed-places in ships are also called *cabins*; or, more commonly, *berths*. *Berth* is used, likewise, for the room where a number of men mess and reside. —E. A.

Cables are strong ropes or chains, principally used in the anchoring or mooring of ships. *Rope cables* are principally manufactured of hemp; but in the East they are more frequently made of *coir*, or the fibrous part of the cocoa-nut, and in some places, particularly on the Red Sea, of the coating of the branches of the date-tree. *Hemp cables* are formed of three principal strands, every strand of three ropes, and each rope of three twists. The twists have more or fewer threads, according to the greater or less thickness of the cable. All vessels have ready for service three cables, which are usually designated the *sheet* cable, the *best bower* cable, and the *small bower* cable; but besides these, most ships have some spare cables. The ordinary length of a cable is from 100 to 120 fathoms.

Iron Cables.—The application of strong iron chains or cables to the purposes of navigation is a late and an important discovery by Captain Samuel Brown, British navy. It is singular, indeed, that this application should not have been made at a much earlier period. On rocky bottoms, or where coral is abundant, a hempen cable speedily chafes, and is often quite destroyed in a few months, or perhaps days. M. Bougainville, the French navigator, in his voyage of discovery, lost *six* anchors in the space of nine days, and narrowly escaped shipwreck—a result, says that able seaman, which would not have happened, "*si nous eussions été munis des quelques chaînes de fer. C'est une précaution que ne doivent jamais oublier tous les navigateurs destinés à de pareils voyages.*"—*Voyage autour du Monde*, p. 207, 4to ed. The work from which this extract is taken was published in 1771; and yet it was not till nearly *forty* years after that any attempt was made practically to profit by so judicious a suggestion. The difficulties in the way of importing hemp from 1808 to 1814, and its consequent high price, gave the first great stimulus to the manufacture of iron cables. Iron cables are constructed in different ways (see *Encyclopedia Metropolitana*); but they are uniformly tested by a machine, which strains them by a force greater than the absolute strength of the hempen cable they are intended to replace. By this means the risk of accident from defective links is effectually obviated; and there are exceedingly few instances in which an iron cable has broken at sea. Their great weight also contributes to their strength, inasmuch as the impulse of the ship is checked before the cable is brought nearly to a straight line, or that the strain approaches to a maximum. Bolts and shackles are provided at every fathom or two fathoms, by striking out which the ship may, if necessary, be detached from her anchors with less difficulty than a hempen cable can be cut. Even in their most defective form, iron cables are a great deal stronger than those of hemp; and as to durability, no sort of comparison can be made. No wonder, therefore, that they should be rapidly superseding the latter; which are now almost wholly laid aside in the navy, and to a great extent also in the merchant service. The *sheet anchor cable* is the greatest cable belonging to a ship. The *stream cable* is a hawser or rope used to moor the ship in a river or haven sheltered from the wind and sea.

Cabot, Sebastian, the celebrated navigator and re-discoverer of the American continent (the continent of North America had been seen, and even repeatedly

visited about five centuries before by the Icelanders), was the son of John Cabot, a Venetian merchant resident in England, and was born about the year 1477. Although long the subject of much dispute, it is now certain that England was the place of his nativity. In an ancient collection of voyages and travels by Richard Eden, a learned writer and contemporary of Sebastian, the author, in a marginal note, says, "Sebastian Cabote tould me, that he was borne in Brystowe (Bristol), and that at iiii yeare ould he was carried with his father to Venice, and so returned agayne into England with his father after certayne years, whereby he was thought to have been born in Venice."—*Decades of the New World*, fol. 255. It also appears that he returned, while still young (*pæne infans*), to England, and remained there till he grew up to manhood. The brilliant discoveries of Columbus having awakened a spirit of enterprise throughout the enlightened nations of Europe, Henry VII. of England was not slow in perceiving the advantages to be gained by promoting adventure in the new career opened up to human ambition. The all-important and engrossing object was to discover a route to India; and an expedition in a northwesterly direction, ostensibly to reach what was called Cathay, or the Land of Spice, was projected by Sebastian Cabot, and fitted out under the auspices of the English government. The first patent, which bears date March 5, 1496 (Rymer, *Fœdera*, vol. xii. p. 595), was given to John Cabot and his three sons, Lewis, Sebastian, and Sancius. The patentees were empowered to set up the royal banner, and occupy and possess all the "newly-found" lands in the name of the king, who reserved a fifth of the profits. It was also stipulated that the vessels should return to Bristol, and that the privilege of exclusive resort and traffic should belong to the patentees. Although the patent was conferred on John Cabot and his three sons, there can be no doubt, even if the father did accompany the expedition, that its success was entirely owing to the genius of Sebastian.

It is now undoubted that to Sebastian alone belongs the glory of the re-discovery of the *terra firma* of the Western World. The expedition, consisting of the ship commanded by Sebastian, and three or four smaller vessels, sailed from Bristol in the beginning of May, 1497; and an ancient Bristol manuscript records the fact that "in the year 1497, the 24th June, on St. John's day, was Newfoundland found, by Bristol men, in a ship called the *Mathew*." On the authority of Peter Martyr, we learn that, after quitting the north, where he reached latitude sixty-seven and a half, Cabot proceeded along the coast of the continent, to a latitude corresponding probably with that of the Straits of Gibraltar. Indeed, he is said to have gone so far southward, "ut Cubam Insulam a læva longitudine grauduum pene parem habuerit." A failure of provisions at this point compelled him to desist from further pursuit, and the expedition returned to England. The second patent is dated 3d February, 1498, and gives authority to "John Kabotto, or his deputies," to take at pleasure six English ships, and "them convey and lede to the londe and isles of late found." Shortly after the date of this patent, John Cabot died; and it is said that his sons, Lewis and Sancius, went to settle in Italy. Sebastian, however, did not abandon the enterprise in which he had embarked; and a second voyage was zealously undertaken under his superintendence. A ship equipped at the king's expense, along with four small vessels, sailed from Bristol in the spring of the year 1498. The result of the expedition is unfortunately wrapt in much obscurity. Gomara alone furnishes us with what may be a correct account. According to this author, Cabot "directed his course by the traete of islande, uppon the Cape of Labrador, at lviii. degrees; affirmynge that, in the monethe of July, there was such could, and heapes of ise, that he durst passe no further; also, that the dayes were very longe, and in maner without nyght, and the nyghtes very clear. Certayne it is, that at the lx. degrees, the longest day is of xviii. houres. But consyderynge the coulde, and the straungeness of the unknowen lande, he turned his course from thense to the west, folowynge the coast of the lande of Baccalaos unto the xxxviii. degrees, from whense he returned to Englande."—Eden's *Decades*, fol. 31b. The results of this second voyage were not sufficiently important to induce Henry to equip another expedition. We have good authority for believing, however, that Cabot, in 1499, "with no extraordinary preparations sett forth from Bristoll, and made greate discoveries."—Seyer's *Memoirs of Bristol*. But the narrative of Cabot's life for the fifteen years subsequent to the departure of his second expedition is meagre and unsatisfactory. One circumstance deserves notice, that during that period Amerigo Vespucci, in company with Hojeda, crossed the Atlantic for the *first time*, while Sebastian was prosecuting his third voyage.

After the death of Henry VII., upon the invitation of Ferdinand, Sebastian Cabot went to Spain; and Vespucci, who held the office of pilot-major, having died, he was appointed his successor. He was soon employed in a general revision of maps and charts; and his public and private character endeared him to most of the learned and good men in Spain. The death of Ferdinand put an end to an expedition then in contemplation. The ignoble commencement of the reign of Charles V. frustrated all further hopes of its prosecution; and Cabot returned to England, where, under Henry VIII., he got honorable employment, and performed another westwardly voyage in 1517, which, however, proved unsuccessful. In 1518 we find Cabot in Spain, and again reinstated in the appointment of pilot-major. The dispute between Spain and Portugal in regard to their respective rights to the Moluccas having been decided at the Congress of Badajos, in 1524 in favor of Spain, a company was formed at Seville to open a commercial intercourse with those islands; and Cabot, with the title of captain general, after many delays, set sail with a fleet in April, 1526. The squadron was ill assorted, and a mutiny broke out; in consequence of which he diverted his course from the Moluccas to the mouth of the Rio de la Plata, up which he penetrated about three hundred and fifty leagues. He erected a fort at St. Salvador, and afterward sailing up the Parana, he built other two forts. He subsequently entered the Paraguay, where he was drawn into a sanguinary contest with the natives. From the report then made by him to Charles V., it is probable, had he been supplied with means and ammunition, he would have made the conquest of Peru, which Pizarro afterward accomplished with his own private resources. After tarrying in the hopes of receiving supplies, Cabot was forced to return to Spain, where he resumed his functions of pilot-major.

He finally settled in England, where he appears to have exercised a general supervision over the maritime concerns of the country, and enjoyed a pension of two hundred and fifty merks. It was then that he disclosed to Edward VI. his discovery of the phenomenon of the variation of the needle; a discovery for which alone his name deserves to be immortalized. It was also at his instigation that the important expedition was undertaken which resulted in the opening of the trade with Russia; and in the charter of the company of merchant adventurers he was nominated governor for life, as "the chiefest setter forth" of the enterprise. Cabot lived to a very advanced age, and died about 1557, probably in London; but neither the date of his death nor the place of his interment is properly authenticated. Sebastian Cabot may be justly regarded as one of the most illustrious navigators the world has ever seen, and the world owes him a debt of imperishable gratitude. "He ended," says the author of the memoir which has rescued so much of his life from

obscurity, "he ended, as he had begun, his career in the service of his native country; infusing into her marine a spirit of lofty enterprise, a high moral tone, and a system of mild but inflexible discipline, of which the results were not long after so conspicuously displayed. Finally, he is seen to open new sources of commerce, of which the influence may be distinctly traced on her present greatness and prosperity."—E. B. *See Memoir of Sebastian Cabot, with a Review of the History of Maritime Discovery, illustrated by documents from the Rolls, now first published.* 8vo. London, 1831.

Cacao, or **Cocoa**, the substance prepared from the seeds of the *Theobronia cacao*. When the bruised seeds are flavored with the *Epidendrum vanilla*, mixed with a little sugar, they form the agreeable confection well known under the name of *chocolate*.

Cadiz, the principal commercial city and sea-port of Spain, on its southwestern coast, on the rocky and elevated extremity of a narrow, low peninsula, or tongue of land, projecting from the Isla de Leon, north-northwest about 4½ nautical miles. It is surrounded on all sides, except the south, where it joins the land, by the sea, and is very strongly fortified. Population in 1837, 58,525. It is well built, and has, at a distance, a very striking appearance. The tower or light-house of St. Sebastian stands on the western side of the city, being, according to Tofiño, in lat. 36° 31′ 7″ N., long. 6° 18′ 52″ W. It is a most conspicuous object to vessels approaching from the Atlantic. The light, which is 172 feet high, is of great brilliancy, revolves once a minute, and in fair weather may be seen more than six leagues off.

Bay of Cadiz.—The entrance to this noble basin lies between the city and the town and promontory of Rota, bearing north-west by north, distant about 1½ league. The bay is of very great extent, affording, in most places, good anchorage. The port is on the eastern side of the city, where a molo of considerable dimensions has been constructed; but the water is not sufficiently deep to allow large vessels to approach nearer than within about three-quarters of a mile, where they anchor in from 5 to 7 fathoms. The rocks called the Cochinos, the Puercas, and the Diamante, lie to the north of the city, in the entrance to the bay; the first two at about three-fifths of a mile distant, and the Diamante at rather more than 1½ mile from the city. Vessels may enter between the Puercas and the Diamante; but none, except those not drawing more then 15 feet water, and well acquainted with the channel, ought to attempt entering between the Cochinos and Puercas and the city. The town of St. Mary's, on the opposite side of the bay, is famous for being the dépôt of the wines of Xeres. The outer bay, or that of Cadiz properly so called, is separated from the inner bay by the promontory having at its extremity the castle of Matagorda, which approaches within about three-quarters of a mile of the Puntales castle, on the Isla de Leon. Within the inner bay is the famous arsenal of the Caracas, the town of San Carlos, the canal of Trocadero, etc. At spring-tides the water in the bay rises 10 or 11 feet, but at neaps the rise does not exceed 6 feet.—For further particulars see the excellent *Chart of the Bay of Cadiz, by* Tofino; Malham's *Naval Gazetteer*; and Purdy's *Sailing Directions for the Bay of Biscay, etc.*

History, Trade, etc.—Cadiz is a very ancient city, having been founded by the Phœnicians about 1200 years before the Christian era. The temple which they erected in it in honor of Hercules was one of the most celebrated in antiquity.—*Sainte Croix, des Anciennes Colonies*, p. 14; *Pomp. Mela*, lib. iii. cap. 6. Its excellent port, and its situation, favorable alike for commerce and security, have made it, whether possessed by Carthaginians, Romans, Moors, or Christians, and under every vicissitude, a place of considerable commercial and political importance. It has long been one of the principal stations of the Spanish naval force. In 1720 the commerce with Spanish America, which had previously been exclusively carried on from Seville, was transferred to Cadiz. It enjoyed this valuable monopoly till 1765, when it was partially relaxed by the trade to Cuba, St. Domingo, Porto Rico, and the other islands, being opened to all the greater ports of Spain. The benefits resulting from this relaxation were so very great, that in 1778 the trade to all parts of America was opened to ships from every considerable Spanish port, except those of Biscay, which, not being subject to the general laws of the kingdom, were not allowed to participate in this privilege. In consequence, however, of her situation, the great capital of her merchants, and their established connections, Cadiz continued, notwithstanding the abolition of the monopoly, to preserve by far the largest share of the American trade. But since the colonies achieved their independence, her commerce has been contracted within comparatively narrow limits; nor is there much prospect of its being materially improved, without a total change of policy on the part of the Spanish government. Barcelona is at present the principal seat of Spanish commerce.—Robertson's *America*, b. viii. passim; Townsend's *Travels in Spain*, vol. ii. p. 395–401, 2d edition.

The white wines of Xeres in its vicinity form by far the principal article of export from Cadiz. The quantity exported may amount to about 30,000 pipes a year. The prices vary from £12 to £65 per pipe; but as the lower qualities predominate, the price may be taken, at a medium, at about £25, making the total value of the exports £750,000. More than three-fourths of the whole goes to England. The other articles of export are quicksilver, brandy, oranges, and other fruits, oil, provisions, flour, salt, wool, etc. The imports consist principally of sugar and coffee from the Havana and Porto Rico, cocoa, hemp, flax, linens, dried fish, hides, cotton wool and cotton manufactures, rice, spices, indigo, staves and timber, etc.

Statement of the Number, Tonnage, Crews, and Values of the Cargoes of Vessels, belonging to various Nations, which entered and cleared at the Port of Cadiz in 1845 and 1846.

	Nations.	Entered.				Cleared.			
		Vessels.	Tons.	Crews.	Value of Cargoes.	Vessels.	Tons.	Crews.	Value of Cargoes.
1845.	British	297	49,576	2,857	£230,616	307	51,122	2,955	£847,247
	French	40	6,217	635	20,554	37	5,684	578	14,937
	American (U. S.)	53	7,541	671	12,071	56	8,213	657	15,676
	Swedish and Norwegian	64	13,090	668	7,634	68	14,370	721	13,620
	Prussian	46	15,231	693	20,280	52	17,121	774	6,910
	Spanish	234	42,708	3,416	471,631	161	36,125	2,890	223,217
	Total	734	134,763	8,390	£562,786	681	132,635	8,575	£1,121,807
1846.	British	257	39,833	2,334	£30,808	250	38,633	2,270	£707,840
	French	42	7,534	677	8,610	45	7,908	720	12,882
	American (U. S.)	53	20,688	729	35,719	48	19,256	678	14,397
	Swedish and Norwegian	55	11,280	581	11,485	46	9,104	479	7,117
	Prussian	54	15,479	747	44,104	49	13,271	650	5,500
	Spanish	217	45,881	3,146	506,670	152	36,524	2,214	235,680
	Total	678	140,405	8,214	£637,396	590	124,766	7,020	£975,416

The commercial greatness of Cadiz has long been on the wane. At one time it was the great focus of commercial intercourse between Spain and the Spanish colonies, and from 1720 to 1765 it enjoyed a monopoly

of the traffic with Spanish America. Its prosperity began to decline when the trade of St. Domingo, Cuba, Porto Rico, and the other islands was opened up to the greater ports of Spain, and decayed almost entirely in the beginning of the present century, when the colonies achieved their independence. An attempt was made by the Spanish government in 1828 to restore its former greatness, by making it a free warehousing port; but this valuable privilege was withdrawn in 1832, and commerce relapsed into its former depressed condition. By far the greatest obstacle in the way of its future prosperity is the oppressive commercial restrictions imposed by government on all imports—a policy which throws three-fourths of the trade of Spain into the hands of contrabandistas. The principal manufactures of Cadiz are, soap, glass, coarse woolen, cotton, and silk stuffs, and hats. There are also some sugar refineries and tanneries. A considerable stimulus to industry is given by the *Sociedad economica de Amigos del pais;* which introduced the cochineal plant, and grants medals for improvements in manufactures. —E. B.

Caen, the capital of the arrondissement of the same name, in the department of Calvados, in France. It stands in an extensive valley, on the left bank of the Orne, at the influx of the Odon, 9 miles from the English Channel, and 122 west of Paris. Lat. 49° 11′ 12″ N., long. 0° 21′ 38″ W. The town is handsome and well built; the streets are generally wide, straight, and clean; and the houses, being built of freestone, have a very good appearance. Population (1851), 40,569; while that of the arrondissement amounted to 139,922. The commerce and manufactures of Caen are considerable. It exports corn, wine, brandy, fruit, cattle, stones, hardware, etc. Its manufactures consist chiefly of laces, caps, table-linen, cotton fabrics, earthen-ware, cutlery, etc.; it has also breweries, dyeworks, and ship-building yards. Several large fairs are annually held here. At high water, vessels of 150 or 160 tons can come up to the town, and a canal to connect it with the sea is in course of construction, which will render it accessible to large vessels.—E. B.

Caffila, a kind of caravan or company of merchants. It differs, however, from a caravan, at least in Persia; for the caffila properly belongs to some sovereign, or to some powerful company in Europe; whereas a caravan is a company of particular merchants, each trading upon his own account. Caffilas also cross some parts of the deserts of Africa, particularly that of Sahara.—E. B.

Cagliari, the capital of Sardinia, on the northeast shore of a spacious bay on the south coast of the island, lat. 39° 12′ 13″ N., long. 9° 7′ 44″ E. Population in 1850, 30,000? The city stands on a rising ground, and has an imposing effect from the sea. The public buildings and churches are numerous, and some of them splendid; but the streets are, for the most part, narrow, steep, and filthy. The Gulf of Cagliari extends from Pula on the west to Cape Carbonara on the east, a distance of about 24 miles across, and about 12 in depth, with good anchorage every where after getting into soundings. A mole projects from the Pratique office, and ships usually lie about 1 mile southwest by south from it, in 6 or 8 fathoms water, on an excellent bottom of mud. There is a very convenient pier harbor at the south angle of the tower wall, capable of containing 14 or 16 vessels of a tolerable size, besides small craft. Altogether, Cagliari is one of the best and safest ports in the Mediterranean.—*See* SARDINIA.

Cairo, the modern capital of Egypt, occupies the natural centre of the country, situate on the east bank of the Nile, 12 miles above the apex of its delta, 112 miles southeast of Alexandria, and 75 miles west from Suez. N. lat. 30° 2′ 4″; E. long. 31° 15′ 36″. It is built partly on the plain and partly on the lower slopes of the rocky range of Mokattem, on a spur of which stands the citadel, in a most advantageous position to command the town. Cairo occupies a site of about 7 miles in circumference, and is surrounded by a wall strongly built and fortified with lofty towers. The prospect from the ramparts of the citadel is one of great magnificence and beauty. The commerce of Cairo, although still depressed, is considerable. Being the rendezvous of one of the great caravans to Mecca, it is the central mart in which the slaves, gum, and gold dust of the interior, and the oils and flannels of the north of Africa, with the European merchandise from Alexandria, are exchanged for the coffee, perfumes, spices, and shawls of Arabia and India. As the residence of the learned and wealthy of Egypt, it affords a market for the agricultural produce of the surrounding districts; and in addition to the making of arms, already extensive, it contains manufactories of sal-ammoniac, saltpetre, coarse gunpowder, glass lamps, and linen cloths. From the central situation of Cairo, and its proximity to the hot sandy deserts, its temperature is much higher than near the coast; but the diseases which infest it, such as the plague, ophthalmia, and malignant fevers, seem to originate in its "stifled filth," and other local causes which advancing civilization will greatly remove, rather than in the unhealthiness of its situation. Population estimated at about 200,000, comprising about 121,000 Mohammedans, 60,000 Copts, 4000 Jews, and the rest Franks, Greeks, and Armenians.—E. B.

Cajeput Oil, the volatile oil obtained from the leaves of the cajeput-tree (*Melaleuca Leucadendron*, Linn.). The name is a corruption of the native term *cayu-puti*, that is, white-wood oil; because the bark of the tree which yields it has a whitish appearance, like our birch. This tree is common in Amboyna and other Eastern islands. The oil is obtained by distillation from the dried leaves of the smaller of two varieties. It is prepared in great quantities in Banda, and sent to Holland in copper flasks. It is of a green color, very limpid, lighter than water, of a strong smell resembling camphor, and a strong pungent taste. It burns entirely away without leaving any residuum. It is often adulterated with other essential oils, colored with resin of milfoil. In the genuine oil, the green color depends on the presence of copper; for, when rectified, it is colorless.—THOMSON'S *Dispensatory*.

Calabar Skin (Fr. *Petit-gris;* Ger. *Grauwerk;* It. *Vaor, Vajo;* Russ. *Bjelka;* Sp. *Gris pequeno*), the Siberian squirrel skin, of various colors, used in making muffs, tippets, and trimmings for clothes.

Calabash (Spanish *calabaza*), in *Commerce*, a kind of vessel formed of the dried shell of the *cucurbita*, or gourd plant. It is used for containing liquors or gums, as pitch, rosin, and the like.

Calamander Wood, a beautiful species of timber brought from Ceylon. It is so hard that common edge-tools can not work it, so that it must be rasped and almost ground into shape. It is singularly remarkable for the variety and admixture of colors. The most prevailing is a fine chocolate, now deepening almost into absolute black, now fading into a medium between fawn and cream colors. It arrests the eye from the rich beauty of the intermingled tints, not from any undue showiness. It takes a very high polish; and is wrought into chairs, and particularly into tables. Sir Robert Brownrigg, late governor of Ceylon, had the doors of the dining-room of his seat in Monmouthshire made of calamander. It is scarce in Ceylon, and is not regularly imported. In a few instances, it has been imported by private gentlemen, returning from the colony, for their own use. It is by far the most beautiful of all the fancy woods. The nearer it is taken from the root of the tree, the finer it is.—MILBURN'S *Orient. Com.; Library of Entertaining Knowledge*, Vegetable Substances, p. 179.

Calcedony. The distinction between this substance and agate rests upon very arbitrary grounds.

Agate frequently presents a variety of colors, and a multiplicity of beautiful delineations. Calcedony is generally of one uniform color, of a light brown, and sometimes nearly white. It occurs in irregular masses, forming grotesque cavities in the trap rocks, particularly in Iceland and the Faroe Isles, from the former of which there are specimens in the Museum of Edinburgh of a very large size. These stalactites appear always to have proceeded from the upper part of the cavity, which is sometimes filled to the very summit with solid matter. Calcedony is used for the construction of cups and plates, and other articles of taste, of which the most splendid specimens are imported from India. The labor which has been bestowed in the manufacture of these articles, and the perfection with which it has been accomplished, is a matter of surprise to all who examine them. There are some of them as thin and as delicate as china. The finest stones are of course selected for this purpose. They are generally clear and almost transparent, still maintaining the warm brown color which characterizes the stone. They often have the appearance of having been hammered, so shaded and undulated is the aspect of the mass; and to add to their beauty, the fine dendritic Mocha stones are often selected. We are in ignorance even of the locality where these beautiful objects are manufactured, whether in Japan or China; but they generally come from India, where, we believe, they are found among the most precious treasures in the repositories of the nabobs and princes of the East. —E. B.

Calcutta, the principal city of the province of Bengal, the capital of the British dominions in India, and, with the exception, perhaps, of Canton, the greatest emporium to the eastward of the Cape of Good Hope. Its citadel is in lat. 22° 34′ 49″ N., long. 88° 27′ 16″ E. It is about 100 miles from the sea, being situated on the eastern bank of the western branch of the Ganges, denominated by Europeans the Hooghly River, which is the only arm of the Ganges navigable to any considerable distance by large ships. At high water the river opposite to the town is about a mile in breadth; but during the ebb the side opposite to Calcutta exposes a long range of dry sand banks. Owing to the length and intricacy of the navigation from the sea, it can not be undertaken without a pilot; so that, even if it did not exceed our limits, it would be useless to attempt any description of it in this place.—See *Hooghly River*.

In 1717 Calcutta was only a petty village; but it subsequently increased very rapidly, and was supposed, toward the close of the last century, to have 600,000 or 700,000 inhabitants. This, however, was a gross exaggeration. A census of the population, taken in May, 1850, by order of the chief magistrate, gives the following results:

Europeans	6,233
Eurasians (the progeny of European fathers and native mothers)	4,615
Americans	892
Chinese	847
Armenians	15,542
Hindoos	274,335
Mohammedans	110,018
Total	413,182

The occupations of these various classes are nearly what might be expected in the luxurious capital of a great empire, and in so great an emporium of maritime commerce. Public officers, lawyers, physicians, merchants, and their families, make up the bulk of the British inhabitants. The natives and foreigners of respectability are mostly engaged in trade, or live upon their property; and the lower classes are principally composed of retail dealers, mechanics, and servants. A great part, however, of what may be fairly considered the population of Calcutta, consisting of laborers, mechanics, and persons engaged in trade, reside at night in the suburbs, or neighboring villages, coming into town early in the morning to their respective employments. These were estimated, in 1837, on tolerably good data, at 177,000. The small number of English resident in Calcutta (where, however, they are far more numerous than in any other part of India) may well excite surprise. It was supposed that the cessation of the East India Company's monopoly, and of the prohibition of European resort to India, would occasion an influx of British settlers and capital. But this anticipation has not been realised. Scarcely a single English agriculturist, with capital sufficient to cultivate 100 acres of land, has established himself in India, and there has been no immigration of artisans. And this, after all, is only what might have been expected—the country being too fully occupied, the burdens on the land too heavy, and the wages of labor far too low, to admit of any thing like an extensive immigration. The Eurasians, the progeny of white fathers and native mothers, are mostly employed as clerks in the government offices and mercantile establishments, and are said to be an industrious and useful class.—*Bengal and Agra Gazetteer*. The town, excluding suburbs, extends about 4½ miles along the bank of the river, with an average breadth inland of 1½ mile. Fort William, the citadel, lies on the same side of the river, a little lower down. It is a strong, regular fortification; but so extensive that it would require a garrison of 10,000 men for its effectual defense. Calcutta possesses great natural advantages for inland navigation, all sorts of foreign produce being transported with great facility on the Ganges and its subsidiary streams to the north-western quarters of Hindostan, over a distance of at least 1000 miles, while the productions of the interior are received by the same easy channels.

The principal merchants and traders consist of British and other Europeans, Portuguese born in India, Armenians, Jews, Persians from the coast of the Persian Gulf, commonly called Parsees, Moguls, Mohammedans of Hindostan, and Hindoos; the latter usually either of the Brahminical or mercantile castes, and natives of Bengal. The native Portuguese and Armenian merchants have of late greatly declined in wealth and importance. On the other hand, the Persian merchants have increased in numbers and wealth, several of them being worth £250,000 sterling. The large fortunes of the Hindoo merchants have been much broken down of late years by litigation in the courts, and naturally through the law of equal coparcenary among brothers. To counterbalance this, there has been, since the opening of the free trade in 1814, a vast augmentation of the number of inferior merchants, worth from £20,000 to £50,000 sterling. There are but few Hindoo merchants at present whose wealth exceeds £200,000 sterling.

The British merchants form a most respectable class, and contribute essentially to the prosperity of the settlement. Many of them are possessed of large fortunes, and live in a style of suitable splendor. The Armenians are the most numerous body of foreign merchants in Calcutta. They trade extensively to all parts of the East, are uncommonly diligent and attentive to business, and are considered to have a more minute intelligence from foreign ports than any other body of merchants. The native bankers, agents, and money-dealers, are numerous. Though formerly timorous, the Hindoo now adventures in almost every species of mercantile speculations; and goods belonging to native merchants, to the amount of several millions sterling, are generally lying for sale in the warehouses of Calcutta. The native merchants of an inferior class engross nearly the whole of the retail trade of Calcutta, under the titles of Banians, Sircars, and other appellations. In the transactions of usury, these men are watchful and acute beyond even those engaged in similar pursuits in the West.

The English society in Calcutta is of the best de-

scription, and numerous fêtes are given during the cold season, which lasts from September to April, on a splendid scale, by the governor general and other public functionaries, as well as by private individuals. There is a theatre, chiefly supported by amateur performers; and public concerts are given, also supported by amateur talent. The usual mode of visiting is in palanquins, but many of the British have carriages adapted to the climate; and the breed of horses having been greatly improved, it is the universal practice to drive out between sunset and dinner. It is only during the cold season that it is possible to venture abroad in the heat of the day, which, for the rest of the year, is devoted to repose. The hot season begins in April. Every day the heat increases until the middle of June, when the periodical rains begin, which last till August. The weather then being extremely close, is more oppressive and more unhealthy than before. The mean temperature is about 66° in January, 69° in February, 80° in March, 85° in April and May, 83° in June, 81° in July, 82° in August and September, 79° in October, 74° in November, and 66° in December. The annual fall of rain during six years, commencing with 1820, averaged sixty-four inches.—E. B

COMMERCIAL WEIGHTS AND MEASURES OF INDIA, WITH THEIR EQUIVALENTS IN ENGLISH AVOIRDUPOIS, BENGAL FACTORY, MADRAS, AND BOMBAY WEIGHTS.

Commercial Measures, etc.	Avoirdupois.			Bengal Factory.			Madras.			Bombay.		
	Lbs.	oz.	dr.	Mds.	s.	Ch.	Mds.	Vis.	Pol.	Mds.	S.	Pice.
Acheen bahar of 200 cattics	423	6	13	5	20	13	16	7	10	15	4	21
Acheen guncha of 10 nelly	220	0	0	2	37	13·7	8	6	16	7	34	8·6
Anjengo candy of 20 maunds	560	0	0	7	20	0	22	3	8	20	0	0
Batavia peeul of 100 cattics	135	10	0	1	32	10	5	9	16	4	35	23·4
Benccolen bahar	560	0	0	7	20	0	22	3	8	20	0	0
Bengal factory maund	74	10	10·7	1	0	0	2	7	35·7	2	28	20
Bengal bazar maund	82	2	2·1	1	4	0	3	2	11·3	2	37	10
Bombay candy of 20 maunds	560	0	0	7	20	0	22	3	8	20	0	0
Bussorah maund of 78 vaklas	90	4	0	1	8	5·6	3	4	35·2	3	8	27·9
Bussorah maund of 24 vaklas	28	8	0	0	15	4·3	1	1	4·8	1	0	21·4
Calicut maund of 100 poots	80	0	0	0	16	1·1	1	1	24	1	2	25·7
China peeul of 100 cattics	133	5	5·8	1	31	6	5	9	26	4	30	14·3
Cochin candy of 20 maunds	542	8	0	7	11	2·6	21	5	36·8	19	16	12·9
Gombroon bazar candy	7	8	0	0	4	0	0	9	10	0	10	21·4
Goa candy of 20 maunds	495	0	0	6	25	2·9	19	6	16	17	27	4·3
Jenkeeylon bahar of 8 captns	485	5	5·3	6	20	0	19	3	12	17	18	10
Madras candy of 20 maunds	500	0	0	6	28	0	20	0	0	17	34	3·6
Malacca bahar of 3 peculs	405	0	0	5	16	15	16	1	24	14	18	17·1
Mocha bahar of 16 frastla	450	0	0	5	0	1	18	0	0	16	2	25·7
Muscat Custom-house maund	8	12	0	0	4	11	0	9	32	0	13	15
Mysore candy of 7 morahs	560	0	0	7	20	0	22	3	8	20	0	0
Pegu candy of 150 vis	500	0	0	6	28	0	20	0	0	17	34	3·6
Penang peeul of 100 cattics	133	5	5·3	1	31	6	5	6	26	4	30	14·3
Surat maund of 40 seers	37	5	5·3	0	20	0	1	6	37·9	1	13	10
Surat Pucca maund	74	10	10·7	1	0	0	2	7	35·7	2	28	20
Tellicherry candy of 20 maunds	600	0	0	8	0	2	24	0	0	21	17	4·5

Calcutta is the great emporium of India. By means of the Ganges and its tributary streams, it has an uninterrupted water communication with the whole of the lower provinces of Bengal, and also with the fertile territory subject to the jurisdiction of the lieutenant governor of Agra. Being thus advantageously situated for commerce, it trades extensively with almost every country in the world, and numbers of vessels of every form and description are constantly arriving in or departing from the river, which, in the vicinity of the town, presents the busiest scene imaginable. Numerous dock-yards have also been established, in which are built vessels of great burden and of admirable construction. Indigo, sugar, cotton, rice, opium, silk, and saltpetre, are the staple commodities of export. Those of import are, British cotton goods, salt, copper, iron, and hardware.

The commerce of Calcutta has for a long period of years enjoyed the advantage of a bank, called the Bank of Bengal, established by government authority and carried on under government inspection. Various acts have at different periods been passed by the government of India for its regulation; the last bears date the 18th of March, 1839, and took effect from the 1st of May following. By this all previous charters and acts, except so far as continued by the new act, were canceled and repealed; the capital stock, previously fixed at 75 lacs of rupees, was increased by one half, the nature of the transactions in which the bank might engage was prescribed, and the conditions and limitations under which its business was to be conducted were laid down. The stock is divided into shares of 4000 rupees, or quarter shares of 1000 rupees each; and a portion is, and always has been, held by government.

Pilotage.—The navigation of the River Hooghly, from the Sand Heads to Calcutta, a distance of about 180 miles, is naturally dangerous and intricate; but rendered comparatively safe by a skillful and excellent, though costly, pilot establishment.

All foreign vessels pay the same pilotage as those under British colors. By broken pilotage is meant the proportion of full pilotage between the different stages or places of anchorage. All ships the property of foreigners, as well Asiatic as European, are subject to the charge termed "lead money;" it being indispensably necessary that the pilot should have with him a leadsman in whom he can confide.

Detention money, at the rate of 4*s.* per diem, from British and foreign vessels, is charged by persons of the pilot service kept on board ships at anchor by desire of the commander or owner.

In the river before Calcutta, and in other parts, there are chain moorings, of which the charges are as follow:

Burden of Ships.	April to October, 7 Months.	November to March, 5 Months.
500 tons and upward.	10*s.* per diem	12*s.* per diem
Under 500 tons.....	14*s.* per diem	10*s.* per diem

Hire of the chain-moorings at Diamond Harbor, £1 per diem. The lowest charge to a ship requiring the accommodation of the chain moorings at either of the places above mentioned is for ten days; and using them longer, a further charge is made at the established rate per diem for every day exceeding ten. The charge for transporting a ship from her moorings into any of the docks at Kidderpore, Howrah, or Sulkea, or from any of the docks to her moorings, is fixed at 50 rupees; and no higher charge for such service is authorized. Besides pilotage, every ship is chargeable with the hire of a row-boat to accompany her; viz.: for a boat of the first class, 24*s.*; of the second class, 18*s.*; and of the third class, 14*s.* Of late years a light-house has been erected at Kedgeree, for which the charge on British or American flags is at the rate of 3*d.* per ton per annum. Ships proceeding to Calcutta must land their gunpowder at the powder magazine at Moyapore: the charge is at the rate of 1½*d.* per ton for each voyage. The whole pilot establishment, and the care of the navigation of the Hooghly,

is under the management of government, and is directed by a marine board, with a master attendant and harbor-master.

The Marine Board at Calcutta have issued the following resolutions with respect to pilotage, etc.:

1. Commanders are requested, prior to quitting their vessels, on arrival off Calcutta, to fill up and certify, or cause to be filled up and certified, a form of certificate showing the actual registered tonnage, the draught of water, and whether the vessel has or has not been tugged by a steamer any part of the way, or has or has not had the use of a row-boat; which form will be furnished to the pilot, in order to the bills of the vessels being correctly made out. 2. Commanders are further requested, as early after their arrival as possible, to notify in writing to the master attendant the name and residence of the reference for the payment of his vessel's bills. On the receipt by the master attendant of the above certificate, and written reference for payment, a single bill will be prepared, including inward pilotage, light-house duty, Moyapore magazine duty, and row-boat hire (if any), which, together with the certificate, will be forwarded to the marine paymaster, for collection within fifteen days of the arrival of the vessel, and having on it the name and residence of the party referred to for payment, which commanders are requested to furnish to the master attendant, in writing, as early after their arrival as practicable, that officer will more readily be enabled to present it. By this arrangement, all the charges connected with the vessel, up to her arrival off Calcutta, will be embodied in one bill, instead of, as hitherto, being made up in separate bills. 3. In the event of vessels docking, or being transported at the desire of the commander, it is requested that a certificate may be given by the commanding officer of the operation having been performed, in order to its accompanying the bill when presented for payment to the referee. 5. The practice of charging for hauling to the chain-moorings, for their monthly hire, and for hauling from the moorings, in separate bills, is discontinued, and henceforward one bill will be prepared, including the charge for hauling to the moorings, that for occupying them, and that for hauling from them; and commanders are requested to give, or cause their commanding officers to give, to the master attendant, or the harbor-master, certificate of the date of hauling to and from the moorings, which certificate, as before, will accompany the bill when presented for payment. The hire of the moorings will be charged for the day on which the vessel is hauled thereto, without reference to the period of the day; and in like manner, no charge will be made for the day on which she hauls from her moorings, however late in the day she may quit them. The charges connected with the chain-moorings will thus be embodied in one bill, and be discharged in one payment, instead of three or more, according to the number of months the vessel occupied the moorings. 6. The system of charging outward pilotage on an estimated draught of water, with an addition of 10 per cent., subject to adjustment after the vessel has sailed, and of charging a certain number of days for a row-boat, subject to a like adjustment, is abolished; and in future the outward pilotage and charge for row-boat hire on outward-bound vessels will be as follows: When the vessel is finally laden, the commander is to give notice thereof to the master attendant, when the draught of water is to be ascertained and certified by the commander or commanding officer on the part of the vessel, and by the harbor-master on the part of the government; subject, in case of dispute, to the decision of the master attendant. On receipt of the certificate, the master attendant will cause a bill to be made out for the regular amount of pilotage, and for the row-boat hire, according to an average rate, with reference to the size of the vessels and the season of the year, fixed by a marine committee which lately sat at the Bankshall, the majority of which was composed of members of houses of agency and commanders of ships. The bill and certificate will be presented in due course for payment. 7. As, however, it frequently happens that vessels are taking in cargo or filling their water up to the last day of their departure, or that from other causes the bills for the chain-moorings and outward pilotage can not be made out till the eve of departure, owners, agents, and commanders are in such cases particularly requested, with a view to dispatch, to cause an individual to attend at the Bankshall, and expedite the transmission of the bill and certificate to the board for registry, and to the pay office for collection; at each of which offices they may in such cases depend upon the most ready and special attention. 8. In the event of a vessel being tugged any part of the way down by steam, or not having the use of a row-boat, commanders are to obtain from the pilot of Kedgeree a certificate to that effect, which they should forward by the Dâk to their agents. On receipt thereof, agents are requested to make out a bill against the honorable company for the quarter deduction from the pilotage allowed if tugged by steam, or for the row-boat hire paid, as the case may be: and to forward it, together with the certificate, to the marine board for audit and payment. 9. In cases where a vessel leaves Calcutta avowedly intended to fill up cargo at some place below, the pilotage will be charged at the draught at which she leaves Calcutta, in like manner, though at the reduced amount, as if she had proceeded to sea; and, with respect to the subsequent pilotage charge, from the place at which the vessel takes in the additional cargo to sea, owners or agents of vessels will be required to furnish a special guarantee to pay the amount chargeable according to a certificate of the draught of water, to be signed by the commander, or commanding officer and pilot. 10. Six sets of moorings at Diamond Harbor having been fitted especially to enable vessels arriving in distress from loss of anchors and cables to be readily moored, the charge will be Co.'s Rs. 50 for mooring and unmooring, and the daily hire the same as for the moorings at Calcutta. The moorings will, of course, be available to vessels not in distress from loss of anchors and cables; but the harbor-master will be instructed at all times to keep two sets vacant during the southwest monsoon, to meet casualties.

There are several dry docks at Calcutta, in which vessels of any size may be built or repaired. Ships built at Calcutta are of inferior durability to those constructed at Bombay, in consequence of the framework being always of the inferior woods of the country; and the planks, sheathing, upper works, end decks, alone of teak; which last is furnished almost entirely from Pegu. In 1848, the number of registered ships belonging to the port of Calcutta was 134, of the burden of 43,569 tons; being at an average of about 330 tons for each. The largest class of vessels carry nearly 750 tons; but ships drawing so much water are unfit for the navigation of the Hooghly. Not being able to load at Calcutta, they are obliged to receive part of their cargo at Diamond Harbor, about thirty-four miles farther down the river. The most convenient-sized ship for trade between Calcutta, and Europe, and America, is from 400 to 500 tons.

Duties, etc.—The export and import duties and drawbacks are regulated by an ordinance of the year 1836, revised in 1845, and are the same for every port under the government of Bengal; or, as it is technically called, the Presidency of Fort William and British India generally.

The following is an act of the Indian government, which took effect from the 25th March, 1848, and which abolished all duties on goods carried coastwise in the company's territories.

I. It is hereby enacted, that from and after the 25th day of March, 1848, all goods imported on foreign bottoms by sea into any port of the Presidencies of Fort William, in Bengal, Fort St. George, or Bombay, shall be charged only with the same rates of duty as such goods would now by law be charged with if such goods were imported into any of the said ports on British bottoms, any thing in any act of the Council of India contained to the contrary notwithstanding.

II. And it is hereby enacted, that from and after the said day, all goods exported on foreign bottoms by sea, from any port of the said presidencies, shall be charged only with the same rates of duty as such goods would now by law be charged with if such goods were exported from any of the said ports on British bottoms, any thing in any act of the Council of India contained to the contrary notwithstanding.

III. And it is hereby enacted, that from and after the said day, no duty shall be charged on any goods lawfully carried from any port in the territories subject to the government of the East India Company, to any other port in the said territories, any thing in any act of the Council of India contained to the contrary notwithstanding.

IV. Provided always, that nothing in this Act contained shall apply to the articles of salt or opium.

Schedule A.—Rates of duty to be charged on goods imported by sea into any port of the Presidencies of Fort William, in Bengal, Bombay, or Fort St. George.

Bullion and coin	Free.
Precious stones and pearls	Free.
Grain and pulse	Free.
Horses and other living animals	Free.
Ice	Free.
Coal, coke, bricks, chalk, and stones	Free.
Books printed in the United Kingdom, or in any British possession	Free.

Foreign books	3 per cent.
Marine stores, the produce or manufacture of the United Kingdom, or of any British possession	5 per cent.
Marine stores, the produce or manufacture of any other place or country	10 per cent.
Metals, wrought or unwrought, the produce or manufacture of the United Kingdom, or any British possession	5 per cent.
Metals, wrought or unwrought, the production or manufacture of any other place	10 per cent.
Woolens, the produce or manufacture of the United Kingdom, or any British possession	5 per cent.
Woolens, the produce of any other place or country	10 per cent.
Cotton and silk piece goods, and all manufactures of cotton or silk, except thread, twist, and yarn, or of cotton, or silk mixed with any other material, the produce of the United Kingdom, or of any British possession	5 per cent.
Ditto, the produce of other places	10 per cent.
Opium	24 rs. per seer of 80 tolas.
Porter, ale, beer, cider, and other fermented liquors	5 per cent.
Salt	Rs. 3-4 per md. of 80 tolas per seer.
Alum	10 per cent.
Camphor	10 per cent.
Cassia	10 per cent.
Cloves	10 per cent.
Coffee	7½ per cent.
Coral	10 per cent.
Nutmegs, mace	10 per cent.
Pepper	10 per cent.
Ratans	7½ per cent.
Tea	10 per cent.
Vermillion	10 per cent.
Wines and liquors	1 rup. per imp. gal.
Spirits	1 rup. 8 annas, per imp. gal.
And the duty on spirits shall be ratably increased as the strength exceeds London proof, and when imported in bottles, five quart bottles shall be deemed equal to the imperial gallon.	
All manufactured articles not included in the above enumeration	5 per cent.
All other articles not included in the above enumeration	3½ per cent.

And when the duty is declared to be *ad valorem*, it shall be levied on the market value without deduction; and if the collector of customs shall see reason to doubt whether the goods come from the country from which they are declared to come by the importer, it shall be lawful for the collector of customs to call on the importer to furnish evidence as to the place of manufacture or production, and if such evidence shall not satisfy the said collector of the truth of the declaration, the goods shall be charged with the highest rates of duty, subject always to an appeal to the Board of Customs, salt and opium.

And upon the re-export by sea of goods imported, excepting opium and salt, provided the re-export be made within two years of the date of import as per custom-house register, and the goods be identified to the satisfaction of the collector of customs, there shall be retained one-eighth of the amount of duty levied, and the remainder shall be repaid as drawback. And if goods be re-exported in the same ship without being landed (always excepting opium and salt, in regard to which the special rules in force shall continue to apply), there shall be no import duty levied thereon.

Schedule B.—Rates of duty to be charged upon goods exported by sea from any port or place in the Presidency of Fort William, in Bengal.

Bullion and coin	Free.
Precious stones and pearls	Free.
Books printed in India	Free.
Horses and living animals	Free.
Opium purchased at government sales in Calcutta	Free.
Cotton wool exported to Europe, the United States of America, or any British possession in America	Free.
Cotton wool exported to places other than the above	As. 8 per md. of 80 tolas to the seer.
Sugar and rum exported to the United Kingdom or to any British possession.	Free.
Sugar and rum exported to any other place	3 per cent.
Grain and pulse of all sorts	1 anna per bag.
Indigo	Rs. 8 per md. of 80 tolas to the seer.
Lac-dye and shellac	4 per cent.
Silk raw, filature	8½ as. per seer of 80 tolas.
Silk, Bengal, wound	3 as. per seer of 80 tolas.
Tobacco	4 as. per maund.
All country articles not enumerated or named above	8 per cent.

When the duty is declared to be *ad valorem*, the same shall be levied on the market value of the article at the place of export, without deduction. Since the 1st of April, 1837, credit has not been given, nor drawback allowed, of any inland customs or land-frontier duty paid at any custom-house or chokee of the Jumna frontier line, or of Benares, except only upon the article of cotton wool, covered by ruwanas taken out at the custom-house of the western provinces, and proved to have been destined for export by sea when passed out of those provinces.

The policy of charging duties on exported articles seems very questionable. The great difficulty under which India labors, in a commercial point of view, consists principally in her inability to furnish equivalents for foreign imported goods, and to make the necessary payments abroad; and, when such is the case, it is certainly not a little contradictory to lay duties on exports. The most obvious considerations of expediency and common sense would suggest that they should be allowed to be exported duty free. There can be no doubt that the stimulus this would give to their production would, by increasing the public wealth, infinitely more than compensate the government for the loss of the inconsiderable sum produced by the duties with which they are charged.

Trade of Calcutta. Exports.—During the last forty years the trade of Calcutta has experienced some very striking vicissitudes. Previously to the opening of the trade in 1814–'15, cotton piece goods formed the principal article of export from India; the value of those exported from Calcutta, at an average of the five years from 1814–'15 to 1818–'19, being (at 2*s.* per sicca rupee) £1,260,786 a year. The extreme cheapness of labor in India, and the excellence to which the natives had long attained in several departments of the manufacture, would, it might have been supposed, have sufficed to place this important department beyond the reach of foreign competition. But the wonderful genius and the admirable skill of the European machinists, and their immense capital, have far more than countervailed the apparently insuperable drawback of high wages, and the expense of bringing the raw material of the manufacture from America, and even India itself; and have enabled English manufacturers to bear down all opposition, and to triumph over the cheaper labor, contiguous material, and traditional art of the Hindoos. The imports of British cottons and twist into India have increased since 1814–'15 with a rapidity unexampled in the annals of commerce, and the native manufacture has sustained a shock from which it is not very likely it will ever recover. The influence of these circumstances on the trade in piece goods has been very striking. During the year 1851–'52, the value of those exported from Bengal was no more than £62,352, being only about one-twentieth part of what it amounted to twenty-six or twenty-eight years previously.

It does not, however, appear to be very difficult to account for these variations. Formerly the export of bullion to India, though influenced by other causes, was mainly occasioned by the difficulty under which merchants were placed of providing articles of merchandise suitable for the Indian markets sufficient to balance the imports. The astonishing increase of British exports of cotton goods and yarn to India has, however, gone far to obviate this difficulty; in truth, the fair presumption seems to be, that in future the circumstances of the case will be reversed, and that the difficulty of procuring return cargoes of produce suitable for a market will, in ordinary years, be found to be the principal obstacle to the extension of the trade with Hindostan as well as with China. There seems

to be no limit other than the necessity of furnishing equivalents in their stead, to the indefinite sale of our products in the East; and in so far, at least, as India is concerned, the facilities for furnishing such equivalents will, most likely, be gradually increased. The soil and climate of Bengal seem to be peculiarly well suited to the production of grain, sugar, indigo, opium, silk, cotton, saltpetre, and a host of other articles. And as the inhabitants are not deficient in industry, nor in the desire to improve their condition, it would seem that there wants only a reduction of the land-tax, which is so heavy as to paralyze all their energies, to enable them to increase their articles of export to an indefinite extent, and to render their country comparatively flourishing and prosperous.

In the year 1853, the great articles of export from Calcutta were opium, indigo, sugar, raw silk and silk piece goods, saltpetre, rice, hides, cotton and cotton piece goods, gunny bags and gunny cloth, rum, etc. We subjoin

AN ACCOUNT OF THE QUANTITIES AND VALUES OF THE NATIVE PRODUCE AND TREASURE EXPORTED FROM CALCUTTA DURING THE OFFICIAL YEAR 1851–'52.

Merchandise.		1851–'52.	
		Quantity.	Value.
			Rupees.
Opium	Chests.	32,906	3,13,77,814
Indigo	Indian mds.	1,77,004½	1,89,16,536
Sugar	"	16,16,826	1,51,38,513
Saltpetre	"	7,09,500½	41,09,908
Rice	"	30,91,563	35,36,136
Paddy	"	1,494	879
Wheat	"	2,87,253	3,28,516
Gram	"	1,01,540	1,05,594
Dholl and peas	"	86,630	93,272
Oats	"	40,614½	44,158
Barley	"	250	250
Bran	"	1,170	877
Raw cotton	"	4,95,890	49,58,758
Raw silk	"	20,858½	77,85,384
Cotton piece goods (country)	Pieces.	46,962	62,352
Silk piece goods	"	5,60,127	27,47,653
Mixed piece goods	"	1,26,819	2,73,486
Country woolens	"	8,603	76,720
Arrow-root	Indian mds.	79½	2,113
Borax and tincal	"	12,767½	1,52,794
Castor oil	"	50,065½	5,00,953
Canvas	Bolts.	1,920	9,707
Cigars	Indian mds.	....	49,067
Elephants' teeth	"	3½	494
Ghee	"	1,008½	14,123
Ginger	"	32,676	1,15,690
Gunny bags	Nos.	1,44,56,498	16,53,845
Gunny cloth	Pieces.	4,34,349	17,36,424
Hemp twine	Indian mds.	11,854½	1,04,779
Hemp	"	8,316½	10,632
Hides of sorts	Nos.	88,02,554	27,02,171
Horn tips	Indian mds.	4,397½	29,567
Jute	"	7,29,707	18,10,303
Lac Dye	"	32,881½	6,60,707
Lac (Shell	"	43,140	5,37,084
Lac Seed	"	634½	3,537
Lac Stick	"	6,304½	2,389
Linseed	"	14,26,891½	82,53,661
Molass	"	9,060½	6,518
Munjeet	"	594½	1,786
Mustar	"	5,48,391	10,96,776
Mustard oil	"	2,327	62,909
Patchuck	"	8,405½	59,135
Provisions standard	"	....	1,62,098
Rum (Bengal)	Gallons.	3,2..,766½	1,19,927
Safflower	Indian mds.	23,120½	6,90,203
Sal ammoniac	"	256½	3,243
Soap	"	2,421	14,610
Tallow	"	9,364	91,489
Teel seed	"	60,065½	1,20,191
Teel-seed oil	"	256	1,792
Tobacco leaf	"	18,802	47,720
Turmeric	"	50,583½	1,58,871
All other exports	"	....	6,44,727
Total exports—Company's rupees			10,49,66,541
Goods re-exported			34,97,356
Treasure exported			19,45,809
Total private exports			11,04,09,706
Specie exported by E. I. Company			6,82,000

The export trade of Calcutta would be much increased if facilities were created for internal commerce, especially in building railroads and improving the water communications with the interior. Something has been done in the way of building good turnpike roads and in locating railroads, and farther improvements may be anticipated. The present mode of communication between Howra, on the opposite bank of the river, and the metropolis, is by ferry; but Howra has been selected as the locality for the terminus of the East India railway; and upon the opening of the first section, which is now complete, greater facilities will be required, as well of access from Howra, as of egress from the city in the same direction.

Opium.—The trade in opium has rapidly grown in magnitude and importance. At an average of the years 1830–'31 and 1831–'32, the exports from Calcutta were 7278 chests, worth £1,121,560; whereas during the year 1851–'52 the exports had increased to 82,306 chests, worth £3,137,781. China is not the principal mercly, but almost the only market for opium, so that the trade between Calcutta and her is now second only to that between the former and England. It is true that large quantities of opium are shipped for Singapore and other intermediate ports, but China is its ultimate destination. Subjoined is a statement of the quantity and value of the opium shipped from Calcutta in 1840–'41 and 1851–'52.

Chests, to	1840–'41.		1851–'52.	
	Quantity.	Value.	Quantity.	Value.
		Rupees.		Rupees.
China	5,852	39,47,745	27,921	2,71,54,959
Singapore	10,322	70,05,693	3,916	37,05,980
Penang	546	3,54,340	398	3,77,040
Batavia	55	32,075	50	50,350
Pegu	79	49,150	21	19,755
Elsewhere	2	1,390	..	....
Total	17,356	1,13,90,313	32,306	3,13,77,814

Previously to the year 1815, the exports of indigo from Calcutta were comparatively trifling. But about that period Europeans began to engage in the business; and the culture of the plant was, in consequence, so much extended, and the preparation of the drug so much improved, that it has been for a lengthened period an article of primary commercial importance. Of late years, however, the growth of indigo appears to have been nearly stationary, the shipments in 1830–'31 and 1831–'32 being about equal to those in 1840–'41 and 1851–'52. This stationary state of the trade has been ascribed partly to the influence of the importations from Java, where indigo is now very extensively raised, and partly to the alleged decrease in the use of blue cloth. France is, next to England, the great market for indigo.

STATEMENT OF THE QUANTITY AND VALUE OF THE INDIGO SHIPPED FROM CALCUTTA IN 1840–'41, AND 1851–'52.

Countries.	1840–'41.		1851–'52.	
	Quantity.	Value.	Quantity.	Value.
	Factory Mds.	Rupees.	Indian Mds.	Rupees.
Great Britain	84,205	1,05,31,074	80,879½	1,27,18,127
France	20,260½	40,86,266	24,791½	39,68,162
North America	4,822½	9,45,868	3,751½	5,97,297
Arabia, etc.	5,053½	9,64,414	6,887½	6,31,194
Bombay	637	1,21,499	207½	22,795
Bremen	206½	41,256		
Elsewhere	78½	15,775	1,697½	2,78,961
Total	1,15,263½	2,27,11,602	1,17,004½	1,82,16,536
Being in lbs.	8,601,557½		9,633,371	

In 1835, the British duty on East India sugar, which had previously been comparatively high, was reduced to the same amount as that on West India sugar; and that circumstance, and the continued high price of sugar, did not fail to give a powerful stimulus to its culture in and exportation from India. On the whole, however, great as was the increase in the exports of sugar between 1830 and 1840, it has since receded. And now that the sugar trade is placed on a proper footing by the abolition in Great Britain of the discriminating duties on foreign sugars, the importations from India will, perhaps, be still farther reduced. Subjoined is a statement of the quantity and value of the sugar shipped from Calcutta in 1840–'41 and 1851–'52.

Countries.	1840-'41.		1851-'52.	
	Quantity.	Value.	Quantity.	Value.
	Indian Maunds.	Rupees.	Indian Maunds.	Rupees.
Great Britain	17,17,200	1,59,90,863	15,06,447½	1,42,50,598
Bombay	48,131	3,40,565	80,513½	6,17,866
Arabian and Persian Gulfs	6,671½	57,170	2,099½	24,957
Madras	251	2,063	200½	1,600
Ceylon	1,234½	9,568	6,434½	53,714
Pegu	240½	1,864	954½	7,417
Maldives	....	....	671½	6,256
New Holland	8,936½	55,878	10,413	99,221
Cape of Good Hope	2,036½	10,837	575½	5,758
Elsewhere	....	....	7,016	71,131
Total	17,31,731½	1,64,68,895	16,16,924	1,51,38,515
Being in pounds	146,575,081½	....	133,115,674	

The exports of cotton from Calcutta continue stationary; the expectations that it would be improved in its quality by greater attention being given to its culture and preparation have not been realized. The exports of saltpetre from India have not, as many anticipated, been affected by the competition of nitrate of soda from South America. In 1830-'31, the exports from Calcutta were 424,729 factory maunds, whereas in 1851-'52 they amounted to 709,500 Indian maunds. The exports of rice from Bengal fluctuate very greatly. This is not caused so much by variations in the crops of the country as by variations in those of other countries; for when a scarcity occurs in most parts of continental Asia, or in any of its islands, recourse is almost invariably had to Bengal to supply the deficiency; and the demands thence arising have been sometimes enormous. In 1831-'32, for example, the exports of rice from Calcutta to the coast of Coromandel amounted to only 16,545 maunds, whereas in 1833-'34 they amounted to 1,252,056 maunds.—BELL'S *Comparative View of* 1832-'33 and 1833-'34, p. 41. It is worthy of remark, that while Bengal is shipping immense supplies of rice and other grain to distant parts, a large part of her own population is frequently in a state of great want and suffering. Ireland is not, therefore, the only country in which the most abject poverty and wretchedness on the part of the inhabitants are found combined with great fertility of soil and a large exportation of food. Besides the articles of native Indian produce exported from Calcutta, she re-exports pretty considerable quantities of various articles brought from other parts. The value of the British cotton goods re-exported amounts to about £200,000 a year. They are principally bartered with the Burmese for silver. The conveyance of the latter out of the Burmese dominions is strictly prohibited; but in Burma, as in England and elsewhere, the ingenuity of the smuggler is too much for the vigilance of the government, and the trade is carried on without much difficulty. The great articles of import into Calcutta are, cotton manufactures and cotton twist; bullion; copper, with spelter, tin, lead, iron, and other metals; woolens; wines and spirits; ale and beer; haberdashery, millinery, etc.; coffee; hardware and cutlery; spices; coal; coral, glass, and bottles; plate, jewelry, watches, etc.; books and stationery; tea, etc.

STATEMENT OF THE QUANTITY AND VALUE OF THE PRINCIPAL ARTICLES OF MERCHANDISE IMPORTED INTO CALCUTTA DURING THE YEARS 1851-'52.

	Merchandise.		1851-'52. Quantity.	1851-'52. Value.
				Rupees.
	Alum	Indian maunds.	14,266	28,532
	Beads and false pearls	—	....	2,28,938
	Books and pamphlets	—	....	2,55,148
	Cloves	—	3,238	78,052
	Coffee	—	10,591½	1,33,760
	Coals	—	7,57,794	3,32,242
	Coral	Sa. wt.	3,06,298½	1,82,164
	Cocoanut shells, etc.	—	....	3,78,441
	Glass-ware, etc.	—	....	2,33,774
	Haberdashery, millinery, and apparel	—	....	13,94,440
	Hardware and cutlery	—	....	5,08,077
Metals.	Copper: Slab and tile	Indian maunds.	62,320½	21,49,432
Metals.	Copper: Sheet and nail	—	25,444½	8,77,868
Metals.	Copper: Old	—	2,215	73,190
Metals.	Spelter	—	56,671½	4,05,595
Metals.	Tin-block	—	24,480½	5,87,600
Metals.	Iron	—	4,42,883½	13,78,646
Metals.	Steel	—	4,827	37,077
Metals.	Ironmongery, machinery, and anchors	—	....	14,18,984
	Pepper, black	—	02,347½	4,08,149
Piece goods.	White cotton	Pieces.	36,89,755	2,54,96,107
Piece goods.	White cotton	Yards.	20,35,451½	
Piece goods.	White cotton	Dozens.	7,264½	
Piece goods.	Colored cotton	Pieces.	11,58,702	55,43,032
Piece goods.	Colored cotton	Yards.	35,123	
Piece goods.	Colored cotton	Dozens.	80,355½	
Piece goods.	Silk and mixed	Pieces.	13,306	6,70,198
Piece goods.	Silk and mixed	Metres.	3,00,022½	
Piece goods.	Silk and mixed	Yards.	305½	
	Salt (duty paid)	Indian maunds.	31,74,370	31,74,370
	Sugars and cheroots	—	....	1,62,718
	Stationery and cards	—	....	4,50,477
	Ale and porter	—	....	6,72,904
	Twist and yarn	Lbs.	1,70,85,355	07,03,546
	Wines	—	....	11,34,092
	Woolens	—	....	13,27,383
	All other articles	—	....	80,45,314
	Total merchandise by private traders		....	6,75,14,750
	Treasure by private traders		....	*2,49,63,184
	Private trade, grand total		....	9,24,77,934

* In addition to this, the registered amount of specie imported by the Honorable Company is as follows:
1850-'51 = Company's vessels = 37,47,180 | 1851-'52 = Company's vessels = 1,24,653.

ABSTRACT VIEW OF THE EXTERNAL COMMERCE OF BENGAL.

Countries or States.	Imports. 1851-'52.			Exports. 1851-'52.		
	Merchandise.	Treasure.	Total.	Merchandise.	Treasure.	Total.
Great Britain	5,59,79,292	91,74,544	6,51,53,826	4,78,20,145	78,053	4,78,98,188
France	2,58,031	4,25,850	13,63,881	48,07,431	....	48,07,431
North America	9,99,653	2,22,090	12,21,743	76,84,224	....	76,84,224
Madras Coast	9,24,339	18,08,553	27,32,891	12,52,990	1,47,924	14,00,614
Ceylon	90,631	1,30,225	1,60,906	1,50,240	57,100	2,07,340
Maldives and Laccadives	1,36,292	....	1,36,292	60,632	....	60,632
Malabar coast	17,75,800	3,47,380	21,23,180	29,71,501	....	29,71,501
Arabian and Persian Gulfs	7,29,205	1,80,722	9,09,927	12,51,597	....	12,51,597
Singapore	14,69,431	16,25,031	30,94,462	44,04,137	540	44,04,677
Penang and Malacca	6,12,629	1,34,531	7,47,260	5,44,759	7,148	5,51,907
China	16,00,946	89,12,598	1,05,13,244	3,22,17,277	....	3,22,17,277
New Holland	12,66,255	16,452	12,82,707	3,16,544	....	3,13,544
Java and Sumatra	37,152	2,497	39,649	68,971	....	68,971
Pegu	5,34,963	3,51,063	8,86,026	14,43,668	15,96,174	30,40,057
Mauritius	22,323	8,61,993	8,84,316	15,95,297	56,370	16,51,667
Bourbon	20,053	7,33,905	7,53,963	6,06,865	....	6,06,865
Cape and St. Helena	35,675	35,850	71,525	2,68,585	2,500	2,71,085
Hamburg	1,49,014	....	1,49,014	2,27,950	....	2,27,950
Cadiz	1,18,996	....	1,18,996	....	....	....
Amsterdam	1,568	....	1,568	....	....	....
Trieste	....	....	....	88,063	...	88,063
Genoa	35,956	....	35,956	4,21,838	....	4,21,838
Other places	96,602	....	96,602	2,66,278	....	2,66,278
Total, Company's rupees	6,75,14,750	2,49,03,184	9,24,77,934	10,84,63,897	19,45,809	11,04,09,706

STATEMENT EXHIBITING THE PROPORTION OF THE EXTERNAL COMMERCE OF BENGAL ENJOYED BY EACH COUNTRY AND STATE DURING THE YEARS 1850-'51 AND 1851-'52.

Countries.	Import Trade. 1850-'51.		1851-'52.		Export Trade. 1850-'51.		1851-'52.	
	Value.	Per Cent.	Value.	Per Cent.	Value.	Per Cent.	Value.	Per Cent.
Europe.	Rupees.		Rupees.		Rupees.		Rupees.	
United Kingdom	4,91,12,788	69·6	6,51,53,826	70·5	4,92,74,209	46·0	4,78,98,188	43.4
France	16,80,031	2·4	13,63,881	1·5	46 88,252	4·4	48,07,431	4·3
Hamburg	6,58,938	0·8	1,49,014	0·2	1,85,413	0·2	2,27,950	0·2
Altona	....	..	....	..	13,005	..	....	..
Cadiz	1,36,760	0·2	1,18,996	0·1	....	..	....	..
Guam	....	..	....	..	20,450	..	....	..
Trieste	....	..	....	..	1,59,200	0·2	88,063	0·1
Gibraltar	....	..	....	..	20,732	..	....	..
Lisbon	....	..	37,436	..	....	..	....	..
Amsterdam	55,856	0·1	1,568	..	....	..	....	..
Rotterdam	....	..	....	..	66,362	0·1	76,573	0·1
Antwerp	....	..	....	..	....	..	84,559	0·1
Genoa	1,17,891	0·2	35,956	..	56,031	0·1	4,21,838	0·4
	5,16,57,264	73·3	6,68,60,677	72·3	5,45,83,654	51·0	5,35,99,602	48·6
Asia.								
Coromandel Coast	17,72,347	2·5	27,32,891	2·9	15,18,022	1·4	14,00,614	1·3
Ceylon	57,404	0·1	1,60,906	0·2	10,77,065	1·0	2,07,340	0·2
Malabar Coast	18,00,015	2·7	21,23,180	2·3	39,23,987	3·7	29,71,501	2·6
Maldives and Laccadives	1,87,479	0·2	1,36,292	0·2	79,450	0·1	60,632	0·1
Arabian and Persian Gulfs	11,65,759	1·7	9,09,927	1·0	13,77,998	1·3	12,51,597	1·1
China	60,82,851	8·6	1,05,13,244	11·4	3,04,52,909	28·4	3,22,17,277	29·2
Singapore	34,77,786	4·9	30,94,462	3·3	39,47,231	3·6	44,04,677	4·0
Penang and Malacca	6,46,024	0·9	7,47,260	0·8	4,88,250	0·4	5,51,907	0·5
Java and Sumatra	43,748	0·1	39,649	..	1,60,784	0·2	68,971	0·1
New Holland	8,85,164	1·1	12,82,707	1·4	1,42,409	0·1	3,16,544	0·3
Pegu	6,72,341	1·0	8,86,026	1·0	22,66,211	2·1	30,40,057	2·7
New Zealand	....	..	1,021	..	....	..	....	..
Sandwich Islands	1,856	..	....	..	....	..	....	..
Manilla	20,644	..	23,150	..	....	..	....	..
	1,68,22,918	23·3	2,26,50,721	24·5	4,53,34,270	42·3	4,64,91,117	42·1
Africa.								
Mauritius	6,70,563	1·0	8,84,316	1·0	12,83,701	1·2	16,51,667	1·5
Bourbon	4,50,435	0·6	7,53,963	0·8	4,67,964	0·4	6,06,865	0·6
Cape and St. Helena	70,441	0·1	71,525	0·1	1,45,217	0·1	2,74,085	0·2
Cape Verd Islands	29,008	..	32,200	..	....	..	....	..
	12,20,557	1·7	17,42,004	1·9	18,97,082	1·7	25,32,617	2·3
America.								
North America	8,32,171	1·2	12,21,743	1·3	53,98,553	5·0	76,84,224	6·9
South America	....	..	2,789	..	43,280	..	71,643	0·1
Trinidad	....	..	....	..	24,107	..	33,503	..
	8,32,171	1·2	12,24,532	1·3	54,65,930	5·0	77,89,370	7·0
	7,05,32,910	100	9,24,77,934	100	10,72,80,805	100	11,04,09,706	100

EXPORTS OF WHEAT FROM CALCUTTA. IN INDIAN MAUNDS.

Places.	1852-'53.	1853-'54.	1854-'55.	May 1, 1855, to January 31, 1856.
Mauritius	75,866	64,620	116,060	78,940
Bourbon	45,300	50,600	60,800	65,800
Ceylon	440	1,400	2,310	106
Madras Coast	23,050	35,950	113,196	8,508
Singapore	37,828	47,149	58,976	33,491
Penang	16,212	15,026	15,524	9,248
Batavia	....	6,900	8,430	16,274
Pegu	10,064	8,702	62,122	4,262
The Cape	2,046	2,000	8,764	3,730
New Holland and Australian ports	48,663	4,667	9,184	56,228
Great Britain	....	9,000	20,012	473,321
North America	....	....	....	2,930
Other ports	....	420	400	81,286
Total	259,469	252,814	426,078	934,178

ACCOUNT OF THE NUMBER OF SHIPS AND THEIR TONNAGE WHICH ENTERED CALCUTTA IN 1851–'52, DISTINGUISHING THOSE WHICH BROUGHT BRITISH IMPORTS FROM THOSE WHICH BROUGHT FOREIGN IMPORTS, AND THE PLACES WHENCE THEY CAME.

Countries.	British Imports.		Countries.	Foreign Imports.	
	Vessels.	Tonnage.		Vessels.	Tonnage.
United Kingdom	270	164,795	Foreign Europe	33	11,020
Foreign Europe	1	650	North America (United States)	120	69,415
Bombay and Malabar Coast	34	20,221	Madras and Coromandel Coast	2	997
Madras and Coromandel Coast	69	10,997	China and Singapore	3	950
Madras and Suez	13	13,629	Bourbon	38	11,156
Rangoon, Akyab, and Moulmein	56	20,048	Cape	1	256
China and Singapore	62	24,574	Muscat, Judda, and Aleppee	11	5,215
Singapore, Malacca, and Penang	30	9,462	Penang, Malacca, and Singapore	1	502
Mauritius	35	18,754	Mauritius	6	1,969
Muscat, Judda, and Aleppee	20	10,445	Bombay and Malabar Coast	1	385
Cape	8	2,125	United Kingdom	18	9,557
Coylon, Maldives, and Laccadives	20	1,915	Australia	1	398
Australia	22	11,146	Aden	1	737
Sumatra	4	1,241	Total Foreign Imports	287	112,957
British vessels from North America	1	535	Add total British Imports	649	312,596
British vessels from West Indies	4	2,550	Total British and foreign Imports	886	425,553
Total British Imports	649	312,596			

Total customs duty collected at Calcutta in 1851–'52, £1,169,685. We are indebted for these details to Wilkinson's excellent *Account of the Commerce of Bengal* in 1850–'51 and 1851–'52.

The number of vessels which arrived at Calcutta during the year 1854, and their aggregate tonnage, were as follows:

British ships	441
French ships	103
American ships	96
Arabian ships	17
Dutch ships	8
Hamburg ships	6
Swedish ships	6
Sardinian ships	3
Belgian ships	2
Danish ships	2
Prussian ships	1
	685

Aggregate tonnage about 430,000 tons.

This gives an increase of vessels over that of the previous year of 49, and of tonnage of 49,281 tons.—*Bengal Hurkaru*, March 21, 1855.

Failures at Calcutta.—During the three years ending with 1833 some of the principal mercantile establishments in this city failed for immense sums. To examine minutely into the origin of these disasters would lead us into inquiries foreign to the object of this work, and with respect to which it would be difficult to get accurate information. We believe, however, that the main source of the evil was the combination, by most of the principal houses, of the business of merchants with that of bankers. Their credit being high, at the end of the war large sums were deposited in their hands, for which they engaged to pay a high rate of interest. But instead of employing these deposits, as bankers in England would have done, in the discount of bills at short dates, or in the purchase of government securities readily convertible into money, they employed them, probably because they could with difficulty dispose of them otherwise, in all manner of mercantile speculations; advancing very large sums to the indigo planters, exporting goods to Europe, either directly on their own account, or indirectly by lending to those who did, becoming owners of Indian shipping, etc. Most of those speculations turned out exceedingly ill. The production of indigo was so much increased, partly in consequence of the large capitals turned to the business, and partly of the high prices in England, that "fine blue violet," which had brought in the London market, at an average of the three years ending with 1827, from 12*s.* 10*d.* to 18*s.* 4*d.* per lb., fell, at an average of the three years ending with 1832, to from 5*s.* 8*d.* to 6*s.* 4*d.* per lb., and other sorts in proportion. At these prices the production would not pay; and very heavy losses were sustained and much capital sunk by the planters and those who had supplied them with funds to extend their undertakings. The investments in Indian shipping turned out even worse than those in the indigo plantations, the shipping of England having nearly driven that of India out of the field. The embarrassment occasioned by this locking up of their capital, and by the ruinous nature of the adventures in which they were embarked, began to manifest itself simultaneously with the scarcity of money occasioned by the drains on account of the Burmese war. The great mercantile houses began then to find that they were entangled in difficulties from which they were wholly unable to extricate themselves. After struggling on, some for a longer and some for a shorter period, most of them subsequently failed, the greater number for very large sums.

But, however distressing in the mean time, the embarrassment and want of confidence arising from the failures alluded to were not of long continuance, and have in the end been advantageous. It is of the utmost consequence that the vicious combination of the business of a merchant with that of a banker should be put an end to. It is singular, indeed, that individuals should be found willing to intrust large sums in the hands of those who they are aware are employing them in the most hazardous adventures. The higher the interest promised by such persons, the greater ought to be the caution of the public in dealing with them.

Internal Transit Duties.—A very great improvement has been effected in the domestic economy of British India by the abolition of the duties on the transit of goods from one part of the country to another. This important measure was preceded, and, we believe, principally brought about, by the publication of an elaborate and valuable report on the inland customs of Bengal, by Mr. Trevelyan (now Sir Charles, K. C. B.), then one of the secretaries to the Indian government, and now Secretary to the Treasury. These duties had existed in India from a very remote period; and, by obstructing the intercourse between its different districts, were singularly pernicious. After the East India Company began to acquire a footing in India, they availed themselves of a favorable opportunity to procure an exemption from the transit duties in favor of their own trade; "the goods which they imported being allowed to pass into the interior, and those which they purchased for exportation in the interior being allowed to pass to the sea, without either stoppage or duties."—MILL'S *India*, 8vo ed. vol. iii. p. 289. They were, however, not long permitted to monopolize this privilege. Immediately after the victories of Clive had raised the company to the situation of a great territorial power, their servants engaged largely in the inland trade, and endeavored, partly by fraud and partly by force, to extend to their own goods the exemption from transit duties established in favor of those belonging to the company. Every reader of Indian history is aware of the multiplied abuses and disturbances that grew out of this attempt of the company's servants to release themselves from duties and charges that pressed with grinding severity on the natives, and, by consequence, to engross (for such was their object) the whole internal trade of the country. The company endeavored to obviate the evil by strictly forbidding

their servants from engaging in internal traffic; but its orders to this effect were long either totally disregarded, or but very imperfectly obeyed. At length, in 1788, Lord Cornwallis adopted the decisive and judicious measure of abolishing the duties. They were, however, again renewed in 1801. The exclusion of Englishmen from all participation in the interior traffic of the country having been gradually carried into complete effect for a lengthened period, they were less alive than they would otherwise have been to the injurious influence of the duties, so that their re-establishment met with comparatively little opposition. In 1810 a new tariff was introduced, by which the duties "were frightfully augmented;" and they continued from that epoch down to their recent abolition seriously to obstruct all sorts of internal traffic, and to oppose the most formidable obstacle to the improvement of the country.

Had the inland transit duties been productive of a large amount of revenue, that would have been some set-off against the enormous evils of which they have been productive. But such has not been the case. The expenses of collection, and the interruption of communication, were so very great that the net produce of the inland transit duties was quite insignificant; so much so, that, according to Trevelyan, it did not exceed, in the extensive province of Bengal, the miserable pittance of £27,500 a year.—*Report*, p. 148. We see no reason to doubt the accuracy of this statement; and, assuming it to be correct, we are warranted in affirming that there is not another instance to be found in the history of taxation of a tax so fruitful of mischievous results and so barren of revenue.

Town Duties.—These were charged on the principal articles of consumption in 23 of the chief towns of Bengal. They were in many respects similar to the *octrois* in France; and, though not nearly so injurious as the internal transit duties, were productive of much inconvenience. We are glad, however, to have to state that they, as well as the transit duties, have recently been abolished; and that the internal trade of Bengal is now as free, in so far, at least, as statutory regulations can make it, as the internal trade of England.

This article has been compiled from various authorities, including MILBURN'S *Oriental Commerce*; BELL'S *Comparative View of the external Commerce of Bengal*, with the Continuation by WILKINSON for the years from 1828–'29 to 1841–'42; *The Bengal and Agra Guide and Gazetteer* for 1841 and 1842; *Parliamentary Papers relating to the Finances of India, and the Trade of India and China*, 1830–1843; and private communications.

Caledonian Canal, from the North Sea to the Atlantic Ocean. By means of this magnificent canal the nautical intercourse between the western ports of Great Britain, and those also of Ireland, and the North Sea and Baltic, is shortened in some instances 600, and in others 1000 miles. A sum exceeding a million sterling was granted by Parliament from time to time; and this safe navigation for ships of nearly every tonnage was completed and opened in 1822.—HAYDN.

Calendar. The Roman calendar, which has in great part been adopted by almost all nations, was introduced by Romulus, who divided the year into ten months, comprising 304 days, A.D. 758 B.C. The year of Romulus was of fifty days less duration than the lunar year, and of sixty-one less than the solar year, and its commencement did not, of course, correspond with any fixed season. Numa Pompilius, 713 B.C., corrected this calendar by adding two months; and Julius Cæsar, desirous to make it more correct, fixed the solar year as being 365 days and six hours, 45 B.C. This almost perfect arrangement was denominated the Julian style, and prevailed generally throughout the Christian world till the time of Pope Gregory XIII. The calendar of Julius Cæsar was defective in this particular, that the solar year consisted of 365 days five hours and forty-nine minutes, and not of 365 days and six hours. This difference, at the time of Gregory XIII., had amounted to ten entire days, the vernal equinox falling on the 11th instead of the 21st of March. To obviate this error, Gregory ordained, in 1582, that *that* year should consist of 365 days only; and, to prevent further irregularity, it was determined that a year beginning a century should not be bissextile, with the exception of that beginning each fourth century; thus 1700 and 1800 have not been bissextile, nor will 1900 be so; but the year 2000 will be a leap-year. In this manner three days are retrenched in 400 years, because the lapse of eleven minutes makes three days in about that period. The year of the calendar is thus made as nearly as possible to correspond with the true solar year; and future errors in chronology are avoided.—HAYDN. *See* ALMANAC.

The Gregorian calendar was introduced into Spain, Portugal, and part of Italy, the same day as at Rome. In France it was received in the same year in the month of December, and by the Catholic states of Germany the year following. In the Protestant states of Germany the Julian calendar was adhered to till the year 1700, when it was decreed by the Diet of Ratisbon that the new style and the Gregorian correction of the intercalation should be adopted. Instead, however, of employing the golden numbers and epacts for the determination of Easter and the movable feasts, it was resolved that the equinox and the paschal moon should be found by astronomical computation from the Rudolphine tables. But this method, though at first view it may appear more accurate, was soon found to be attended with numerous inconveniences, and was at length, in 1774, abandoned at the instance of Frederick II., king of Prussia. In Denmark and Sweden the reformed calendar was received about the same time as in the Protestant states of Germany. Russia still adheres to the Julian reckoning.

In Great Britain the alteration of the style was for a long time successfully opposed by popular prejudice. The inconvenience, however, of using a different date from that employed by the greater part of Europe in matters of history and chronology began to be generally felt; and at length, in 1751, an act of Parliament was passed for the adoption of the new style in all public and legal transactions. The difference of the two styles, which then amounted to eleven days, was removed by ordering the day following the 2d of September, of the year 1752, to be accounted the 14th of that month; and in order to preserve uniformity in future, the Gregorian rule of intercalation respecting the secular years was adopted. At the same time, the commencement of the legal year was changed from the 25th of April to the first of January. In Scotland the new style was adopted from the beginning of 1600, according to an act of the Privy Council in December, 1599. This fact is of importance with reference to the date of legal deeds executed in Scotland between that period and 1751, when the change was effected in England. With respect to the movable feasts, Easter is determined by the rule laid down by the Council of Nice; but instead of employing the new moons and epacts, the golden numbers are prefixed to the days of the *full* moons. In those years in which the line of epacts is changed in the Gregorian calendar, the golden numbers are removed to different days, and of course a new table is required whenever the solar or lunar equation occurs. The golden numbers have been placed so that Easter may fall on the same day as in the Gregorian calendar. The calendar of the Church of England is therefore, from century to century, the same in form as the old Roman calendar, excepting that the golden numbers indicate the full moons instead of the new moons.—E. B.

Calender, a mechanical engine employed by clothlappers for dressing and finishing cloths and stuffs of various descriptions and fabrics, before exposure to sale, or delivery to purchasers. It is also used by cal-

ico-printers, in order to extend and smooth the surface of their cloths after they have been bleached, and before they are subjected to the operations of the printing-table or copper-plate press. British muslins are folded generally to a yard in length, with a small allowance for extra measure; and as the folding is alternately from right to left, every part can be instantly examined upon a table or counter, every fold opening as easily as the leaves of a book in its uncut state. The piece, when folded, is reduced by doubling it longitudinally to about nineteen inches, and it is then folded across to the breadth of about thirteen inches. An ordinary-sized trunk, 39 × 19 inches, thus contains three layers of pieces, in which package goods for exportation to the colonies are generally packed, the trunk there forming an article of merchandise as much in general demand as the muslins which it contains. Even the Indian ornaments of gilt silver threads which were at first woven into one end of each piece, although they did not exceed the value of twopence each, have been either greatly curtailed or totally given up upon principles of economy. Even the cost of this trivial ornament has been computed to have amounted annually in Glasgow and Paisley to about £30,000. Pullicate and other handkerchiefs are most commonly folded up in dozens. For the African and some other foreign trades, pieces containing only eight handkerchiefs are preferred. These are still imitations of Indian precedents, confined to markets where competition continues to exist, not only with the British company, but with Americans and others trading to India. A species of pale orange-colored India handkerchiefs, distinguished by the name of *Madras*, being in extensive reputation in the Caraccas and other Spanish settlements in South America at the period of the capture of Trinidad, in 1795, patterns were procured by some British traders, who ordered very large quantities to be manufactured in Scotland of the same quality and appearance. With such effect were these imitated in texture, in dye, in finishing, and even in the packages, that some hundreds of pieces sent to London for exportation were actually seized at the custom-house as India goods, either illegally imported, or stolen from some of the Company's ships in the river. A scrutiny, however, clearly ascertained that these goods were not Indian, but British, and that no trespass either against the privileges or the property of the company had been even attempted. The goods were of course released, and permitted to proceed to their destination, where, after examination and trial, it was found totally unnecessary longer to conceal their real origin; and a very extensive trade, through direct channels, has since been carried on for similar goods.—E. B.

Calico (Ger. *Kattun*; Du. *Katoen*; Dan. *Kattun*; Sw. *Cattun*; Fr. *Coton, Toile de Coton*; It. *Tela Bambagina, Tela dipinta*; Sp. *Tela de Algodon*; Port. *Pano de Algoda*: Russ. *Wiboika*; Pol. *Bawelnika*), cloth made of cotton; so called from Calicut, on the Malabar coast, whence it was first imported. In England all white or unprinted cotton cloths are denominated calicoes; but in the United States this term is applied to those only that are printed.

Calico Printing.—This art, though apparently one of the most difficult, has been practiced from a very remote era. Herodotus mentions (lib. 1, § 202) that a nation on the shores of the Caspian were in the habit of painting the figures of animals on their clothes with a color formed from the leaves of trees bruised and soaked in water; and he adds that this color was not effaceable, and was as durable as the clothes themselves. It is difficult to imagine that the colors could have been so permanent, had not those using them been acquainted with the use of mordants. There is, however, a passage in Pliny (*Hist. Nat.* lib. xxxv. § 11), which, though in some respects obscure, shows that the ancient Egyptians were fully acquainted with the principle of calico printing. "They paint," says he, "the clothes, not with colors, but with drugs (*sorbentibus medicamentis*) that have no color. This being done, they immerse them in a vatful of boiling dye, and leave them there for a little: when they take them out they are painted of various colors. It is extraordinary, seeing that there is only one color in the vat (*unus in cortina color*), that a variety of colors should be produced by the operation of the drugs." Pliny further states that the colors were so adhesive that they could not be washed out; and that clothes were the stronger for being dyed. A similar process is known to have been followed in India from the earliest times. The chemical and mechanical inventions of modern ages have been the cause of vast improvements in this ingenious and beautiful art; but the passage now quoted shows distinctly that we have, in this instance, been only perfecting and improving processes practiced in the remotest antiquity.

California. The name "*California*" is found in the history of the conquest of Mexico by Bernal Diaz, a companion of Cortez. But there it is only *applied to a bay.* Afterward it was given *to the whole country north of that bay.* Its origin is uncertain. Some learned men started the opinion that it ought to be derived from the Latin "*Calida fornax*" (a hot oven), and that it was given to the rocky peninsula because the first discoverers suffered there much from the heat. Some other derivations of the name California from the Latin may be found in Clavigero's history of Mexico, in paragraph first. Clavigero makes the remark that Cortez was very fond of such Latin words. Probably it is *a corruption of the original Indian name.* Because it was for a long time supposed that it was a large island, and that many small islands belonged to it, some called the country "*Las Californias*" (the Californias). One hundred and thirty years after Cortez, after the middle of the seventeeth century, some geographers called those supposed Californian islands "*Islas Carolinas*" (King Charles' Islands), in honor to Charles II., king of Spain, who intended to conquer the whole.

What we now call "*Upper California*" was called by the geographers of the sixteenth century "*Quivira,*" from a supposed rich kingdom of this name. The northern part of this same Upper California and of our Oregon Territory was called (1578) by Sir Francis Drake "*Nora Albion,*" and this name was pretty generally adopted by the European geographers, except the Spanish. It was extended at last over the whole of Oregon and Upper California.

The name "*Upper California* or *New California*" (California Nueva) sprung into existence when the Franciscan missionaries, since 1769, made settlements to the north of the old Californian Peninsula. They called "*California Nueva*" the whole Pacific slope, as far north as it became known to them.

Since 1819, the date of the so-called Florida treaty, the northern boundaries of New California were fixed at the 42d degree of latitude, and then soon the more northern part began to be called the "*Oregon Country.*"

Since the conquest and cession of the province to the United States (since 1847), the southern boundaries were fixed at 32° 35′ of lat.

We now generally call the country only "*California.*" By geographers it is sometimes called "*Continental California,*" in contrast to the Californian peninsula.—*From Historical Notes on the Ancient and Modern Names with which the Regions, Countries, Territories, and States along the Coasts of the North American Union have been designated, by J. G.* Kohl.

California is bounded on the north by Oregon, on the east by Utah and New Mexico, and on the west by the Pacific Ocean. The Constitution of the State thus describes its limits. Commencing at the point of intersection of the 42d degree of north latitude, with the 120th degree of longitude west from Greenwich, and running south on the line of said 120th degree of

west longitude until it intersects the 39th degree of north latitude; thence running in a straight line in a southeasterly direction to the River Colorado, at a point where it intersects the 35th degree of north latitude; thence down the middle of the channel of said river to the boundary line between the United States and Mexico, as established by the treaty of May 30, 1848; thence running west and along said boundary line to the Pacific Ocean, and extending thereon three English miles; thence running in a northwesterly direction, and following the direction of the Pacific coast to the 42d degree of north latitude; thence on a line of said 42d degree of north latitude to the place of beginning. Also all the islands, harbors, and bays along and adjacent to the Pacific coast. Area, 188,982 square miles. Population in 1802 (*Humboldt*), 16,862, consisting of 15,562 converted Indians, and 1300 of other classes; in 1813 the population was estimated by Forbes to be 23,025. Emigrants from the United States began to enter the country before 1835, and so numerous had become the settlers that when the war commenced with Mexico, Colonel Fremont had little difficulty in raising a regiment of 500 men. At the close of the war, the population, exclusive of Indians, amounted to about 12,000.

The number of wild Indians scattered through the mountains is unknown, but is very considerable. The native Californians are, like the Mexicans and South Americans, chiefly of Spanish descent, but generally with a very large mixture of Indian blood, so that in complexion and features they are of all shades and degrees, from the pure Indian to the pure Castilian.

The population of the State, according to the census of the United States in 1850, was 92,569; and by the State census in 1852, 264,435.

The seat of government is at Sacramento City, on the left bank of the Sacramento, just below the entrance of the American Fork. The principal places are San Francisco, Stockton, Monterey, Santa Barbara, San Diego, Humboldt, etc.

Surface.—The greater part of the State is hilly or mountainous. The most prominent range of mountains is the Sierra Nevada, lying nearly parallel with the coast, and from 100 to 200 miles distant. On the western slope of this range are the principal gold mines, extending 400 or 500 miles in length, and 50 or 60 in width. This slope of the Sierra is broken by the numerous tributaries of the Sacramento and San Joaquin into deep gorges and ravines, and the surface of the region is extremely rugged and uneven. West of the Sierra Nevada range of mountains, the great valley of the Sacramento and San Joaquin spreads 500 miles in length, and 50 or 60 in width. This is very level, contains but little timber, and though fertile in some portions, is extensively covered with an arid unproductive soil back from the streams, and by immense tule or bulrush marshes in the vicinity of the rivers. The annual freshets in this valley occur in the winter and spring, and the streams are often at their maximum height as late as June, in consequence of the melting snows of the Sierra. This great valley is bounded on the west by the coast range of hills and mountains, which rise in some parts to the height of 3000 feet and upward, and lie from 30 to 80 miles back from the coast. These hills are interspersed with numerous valleys, some of them of great beauty and fertility.

Soil and Productions.—The best agricultural lands are found in the great basins of the Sacramento and San Joaquin, and these valleys in spring and summer are covered with a luxuriant vegetation of various grasses, wild oats, etc. The hills are generally covered with wild oats, and furnish excellent pasturage, though for the most part too dry for cultivation. Farther north, the valley of the Mendocino or Eel River is represented by recent explorers as well adapted to agriculture. The lands in the vicinity of Humboldt harbor are also said to be very fertile, and in consequence of occasional showers through the dry season, they stand in no need of irrigation, which, though not essential to the success of most crops in other parts of the country, is, nevertheless, occasionally desirable.

The grape flourishes all over the State, and wine has long been manufactured at Los Angelos and other places. The various vegetables and fruits of the temperate zone flourish finely, and in the southern counties many tropical productions may be successfully cultivated. California seems by nature peculiarly adapted for grazing; but, under a judicious cultivation, its agricultural resources are very great.

There were in this State in 1850, 62,324 acres of land improved, and 3,831,571 of unimproved land in farms; cash value of farms, $3,874,041, and the value of implements and machinery $108,483; live stock—horses, 21,719; asses and mules, 1666; milch cows, 4280; working oxen, 4780; other cattle, 258,599; sheep, 17,574; swine, 2776; value of live stock, $3,351,058.

Agricultural Products.—Wheat, 17,328 bushels; Indian corn, 12,296 bushels; barley, 9712 bushels; peas and beans, 2292 bushels; potatoes, 9292 bushels; sweet potatoes, 1000 bushels; value of products of the orchards, $17,700; produce of market gardens, $75,275; pounds of butter made, 705; of cheese, 150; pounds of wool produced, 5520; of tobacco, 1000; hay, tons of, 2038; and were made 58,055 gallons of wine; value of home-made manufactures, $7000; of slaughtered animals, $100,173. The State census of 1852 shows an increase of improved lands to 110,748 acres; of live stock—horses, 64,778; mules, 16,578; milch cows, 104,339; beef cattle, 315,392; working oxen, 29,065; agricultural products—wheat, 271,763 bushels; Indian corn, 62,532 bushels; oats, 100,497 bushels; potatoes, 1,393,170 bushels; barley, 2,978,734 bushels.

The State, as a whole, can not be described as well timbered. The plains and valleys are, in the main, destitute of forests, though in many of them is an extensive growth of scattered oaks. Among the coast range of mountains are many forests of red-wood, a species of cedar, growing to an immense size, and furnishing an extremely durable material for building. In the northern part of the State, and among the snowy mountains, are forests of gigantic pines, firs, cedars, and other valuable forest trees, ranging from 100 to 200 feet in height, and from 5 to 15 feet in diameter. In the central part of the valley of the Sacramento and San Joaquin, near the junction of these rivers with the Bay of Suisun, is an extensive tract of low, marsh land called the Tulares, or Tule lands, from the *tule* or bulrush with which they are thickly covered. These lands are estimated to cover an area of at least 600,000 acres, and are drained by a net-work of sloughs which generally afford navigable channels from two to six fathoms in depth. Should these lands be reclaimed, their fine alluvial soil will doubtless prove well adapted to the cultivation of rice. The coast range of mountains, and the valleys of the Sacramento and San Joaquin, abound in deer, elk, antelopes, and other wild game, and the plains are traversed by immense herds of wild horses. The formidable grizzly bear is found in nearly all parts of the State. The cattle of the country are fine, and are owned by the native Californians often in herds of many thousands. These were formerly killed in great numbers for their hides and tallow, which constituted the principal exports of the country, and the chief source of wealth to the inhabitants.

Mines.—Silver, lead, copper, platinum, and other mines, have been discovered in California (though not yet worked), but the great mineral wealth of the State consists in its mines of quicksilver and gold, particularly the latter. The *quicksilver* mine of New Almaden, discovered in 1845, 18 miles south of San José, is probably the richest in the world, and, if properly worked, would yield a million of dollars a year. Gold

is liberally scattered over a large portion of the State. From its first discovery, in February, 1848, to the present time, new deposits have been successively opened in various directions, and the whole extent and richness of the mines still remains a matter to be developed hereafter. The first gold discovered was on the American Fork, about 50 miles east of Sutter's Fort (now Sacramento City). About three months afterward it began to be found on the Yuba and Feather rivers to the northward, and on the Cosumnes to the southward. Subsequently it was discovered on all the principal eastern tributaries of the Sacramento and San Joaquin, and, still later, extensive deposits have been opened among the coast range of mountains in the northern part of the State, particularly on the Trinity and Klamath, and their tributaries.

Total production of the mines to January 1, 1852	$140,931,103
Product of 1852	67,699,548
Product of 1853	92,000,000
	$300,630,651

There were in 1852, 108 quartz mills, with a capital of $5,871,405, and other mining operations employing capital of $8,026,042.

Position of the Gold.—The gold is found under two principal forms; interspersed in irregular veins through beds of quartz rock; in grains and irregular water-worn lumps of all sizes, mingled with the beds of *drift* or gravel, which cover the face of the country, but most abundantly in the bottoms of the mountain ravines. These grains and lumps were once parts of veins traversing quartz rock, and have been dislodged from their original matrix and reduced to the form in which we now behold them by those aqueous and elemental agencies which have every where disintegrated and broken down the surface rocks, and of their ruins formed the present sand and gravel beds that cover the face of the earth. Their origin, or rather the origin of the forms in which we see them, was the same as that of all our sand and gravels. They are, in fact, nothing more nor less than golden pebbles—metallic gravel and sand. The idea so prevalent that the gold has been thrown out from volcanoes in a melted state, is entirely unscientific and erroneous. The gold region is not volcanic, and all search for the "blow-holes," or "fountains," from which the gold is supposed to have been thrown must always be, as it heretofore has been, entirely fruitless. In general, the loose gold is found in the immediate vicinity of the parent veins of which it once formed a part; or, at least, at no great distance down the slopes of the valleys and ravines which have in process of time been excavated by the elements.

The vein gold found *in place* in the quartz rocks occurs in various parts of the mines, but chiefly in the southern districts—in the neighborhood of the Cosumne, Moquelumne, Tuolumne, and Mariposa rivers, and elsewhere. The working of these veins requires machinery, and has not yet been fairly tested. Some trials have been made with flattering success.

The scale and lump gold is found most abundantly in the bottoms of ravines, and in the banks and beds of the rivers, particularly in the bars of sand and gravel thrown up in the streams by the rush of the mountain torrents. The gravel bed containing the gold lies generally not over two or three feet below the surface; but occasionally it is covered to the depth of 10, 20, and even 50 feet. Most of the gold hitherto obtained has been taken from such localities. The banks and beds of the rivers yield most abundantly at the lowest stage of water in the autumn and latter part of summer. The side "gulches," or ravines, are usually destitute of water in the dry season, and hence the explorations in them are denominated "dry diggings," and are conducted most successfully during the winter, spring, and early part of summer, particularly the two latter.

It is impossible to say which portion of the mines is the richest. All parts of them have yielded immense quantities of gold. The southern mines have turned out the greatest number of large lumps, and more of the coarse or lump gold is generally found in that region. But for this very reason, perhaps, digging in them is somewhat more precarious and lottery-like than elsewhere. In the northern mines the chances of finding large specimens may be less, but the prospect of making fair daily wages has been considered rather more certain there than in the southern mines. The recently-discovered deposits in the coast range on the Klamath and Trinity, and their affluents, are reported to be unusually rich, and many have hastened to give them a trial.

The implements needed for procuring the alluvial or loose gold are picks, shovels, and washers. The washers are either simple pans or wooden bowls, or machines, generally in the form of a cradle, and hence called *cradles* or *rockers*. These are sometimes more expensively constructed, and furnished with cells for quicksilver; by means of which the gold may be more completely and economically extracted.

It is well known that comparatively but a small portion of the products of the mines is entered at the San Francisco custom-house. Large sums are taken by passengers leaving the country among their baggage. An immense amount has also been taken out overland, by the Sonoranians and other Mexicans who have returned from the mines to their homes. It may be estimated, therefore, that not much less than three hundred and twenty millions of dollars have been dug from the gold region of California since its discovery.—H. G.

For later California statistics, see articles SAN FRANCISCO and GOLD.

California, Gulf of, an arm of the Pacific Ocean, separating the peninsula of Lower California from the main land. It lies between lat. 28° and 32° N., and long. 107° and 114° W.; and is about 700 miles in length, with a breadth varying from 40 to 150 miles. Its western shores are generally high and rocky, with few places of shelter; its eastern shores are lower and less rocky. It contains numerous islands, and at its northern extremity receives the rivers Colorado and Gila.

Calk, to drive a quantity of oakum into the seams of planks, to prevent the entrance of the water. After the oakum is driven in, it is covered with melted pitch or resin, to preserve it from the action of the water.

Callao, a fortified town of Peru, department, and six miles west of Lima, of which it is the port, on the Pacific, in lat. 12° S., long. 77° 13′ 7″ W. Population perhaps 20,000. It is generally well built; its castle, formerly very strong, has lately been dismantled, and is now used for a custom-house. Its roadstead, sheltered by the island of San Lorenzo, is the best on the Peruvian coast. It has a convenient quay, and communicates with Lima by a good carriage road, along which omnibuses now run daily. Customs revenue, about $1,000,000. Exports consist chiefly of bullion, specie, copper, cotton, bark, and hides. In 1841, 498 vessels, aggregate burden 101,034 tons, entered; and 494 vessels, burden 99,944 tons, cleared out of the port. In 1746 the old town of Callao was destroyed by an earthquake. In 1820, the Earl of Dundonald (then Lord Cochrane) gallantly cut out the Esmeralda, a large Spanish ship of war, from under the guns of the fort.—*See* LIMA.

Calms, Region of. In the Atlantic Ocean, between the Tropic of Cancer and latitude 29° north, and on the confines of the trade-winds, between 4° and 10° north latitude, calms of long duration prevail; and hence these tracts are called *the calm latitudes*, or the *region of calms*. In the latter tract, particularly, these perpetual calms are accompanied by a suffocating heat, by thunder-storms and floods of rain, so that it is some-

times called the *Rainy Sea*. The only winds that occur are sudden squalls of short duration and extent. In these calms the provisions are corrupted, the deck seams open, and the stagnant air breeds disease. When a ship is in this position, if the current sets in toward rocks, and the sea is too deep to cast anchor, her destruction is almost inevitable. In the Mediterranean, where there are no tides, *dead calms* are more common than in the open ocean; but they are often the presages of approaching storms.—E. A.

Calomel, a preparation of mercury, much used in medicine.

Caloric, the principle or matter of heat, or the simple element of heat.

Cambric, or **Cambrick** (Ger. *Kammertuch*; Du. *Kamerykdoek*; Fr. *Cambray Batiste*; It. *Cambraja*; Sp. *Cambrai*; Port. *Cambraia*; Russ. *Kamertug*), a species of very fine white linen, first made at Cambray, in French Flanders, whence it derives its appellation. Cambrics were first worn in England, and accounted a great luxury in dress, 22 Elizabeth, 1580.—STOWE. The importation of them was restricted in 1745; and was totally prohibited by statute of 32 Geo. II., 1758. Readmitted in 1786, but afterward again prohibited: the importation of cambrics is now allowed in Great Britain.—HAYDN.

Camel (Fr. *Chameau*; It. and Sp. *Camelo*; Ger. *Kameel*; Arab. *Djimel*; Lat. *Camelus*; Greek Καμηλος), is indigenous to Arabia, and we only mention it in this place on account of its extreme importance in the commerce of the East.

The camel is one of the most useful of the animals over which the inhabitants of Asia and Africa have acquired dominion. These continents are intersected by vast tracts of burning sand, the seats of desolation and drought, so as, apparently, to exclude the possibility of any intercourse taking place between the countries that they separate. "But as the ocean, which appears at first view to be placed as an insuperable barrier between different regions of the earth, has been rendered by navigation subservient to their mutual intercourse; so, by means of the camel, which the Arabians emphatically call *the Ship of the Desert*, the most dreary wastes are traversed, and the nations which they disjoin are enabled to trade with one another. Those painful journeys, impracticable by any other animal, the camel performs with astonishing dispatch. Under heavy burdens of 600, 700, and 800 pounds' weight, they can continue their march during a long period of time, with little food or rest, and sometimes without tasting water for eight or nine days. By the wise economy of Providence, the camel seems formed on purpose to be the beast of burden in those regions where he is placed, and where his service is most wanted. In all the districts of Asia and Africa, where deserts are most frequent and extensive, the camel abounds. This is his proper station, and beyond this the sphere of his activity does not extend far. He dreads alike the excesses of heat and cold, and does not agree even with the mild climate of our temperate zone."—ROBERTSON'S *Ancient India*.

The first trade in Indian commodities of which we have any account (Genesis xxxvii. 25) was carried on by camels; and they still continue to be the medium employed in the conveyance of merchants and merchandise throughout Turkey, Persia, Arabia, Egypt, Barbary, and many contiguous countries. The merchants assemble in considerable numbers, forming themselves into an association, or *caravan* (*see* CARAVAN), for their mutual protection against the attacks of robbers, and the dangers incident to a journey through such rude and inhospitable countries. These caravans are often very large, and usually consist of more camels than men. The capacity of the camel to endure fatigue, and the small supply of provisions that he requires, is almost incredible. "His ordinary burden," says Volney, "is 750 pounds; his food whatever is given him—straw, thistles, the stones of dates, beans, barley, etc. With a pound of food a day, and as much water, he will travel for weeks. In the journey from Cairo to Suez, which is 40 or 46 hours, they neither eat nor drink; but these long fasts, if often repeated, wear them out. Their usual rate of traveling is very slow, hardly above two miles an hour: it is in vain to urge them; they will not quicken their pace; but if allowed some short rest, they will travel 15 or 18 hours a day."—*Voyage en Syrie*. The Arabians regard the camel as a sacred animal, the gift of Heaven, without whose aid they could neither subsist, nor trade, nor travel. Its milk is their ordinary food; they also eat its flesh, especially that of the young camel, which they reckon excellent; its hair, which is renewed every year, is partly manufactured into stuffs for their clothes and furniture, and partly sent abroad as a valuable article of merchandise; and even its fæces serve them for fuel. Blessed with their camels, the Arabs want nothing, and fear nothing. In a single day they can traverse 40 or 50 miles of the desert, and interpose its trackless sands as an impenetrable rampart between them and their foes. (See the admirable description of the camel, in BUFFON.) But, however useful to the inhabitants of parched, sandy deserts, it may be worth while, perhaps, to observe, that the camel is of very little service elsewhere. He can not walk 100 yards in wet or slippery ground without stumbling. He is totally unknown in all hilly or woody countries; and, with few exceptions, may be said to be as great a stranger in the Eastern Islands, Japan, the southern parts of China, the whole country lying between China and India, and all the southern parts of the latter, including Bengal, as he is in Europe. In all those vast countries the ox is the most useful of the lower animals. It is used for draught (for which the camel is totally unfit), in the cart and plow, in the carrying of burdens, in treading corn, in the oil-press, etc., and finally as food.

In 1855, Congress, in accordance with a recommendation of the Secretary of War, granted an appropriation for the purpose of importing and introducing the camel into the United States, to be used principally on the prairies and deserts of the West—the States of Texas and New Mexico especially. To carry out this plan, an expedition, under Major Wayne, of the United States Artillery, and Lieutenant Porter, United States Navy, visited the Mediterranean, and purchased a number of camels and dromedaries, and conveyed them to Texas. A second expedition has just started, as the plan promises to succeed, and the plan will be tested on a larger scale. Emigrants have suffered much in their trains for the want of a burden animal that could do without water for a long time, and a great number of animals are annually lost on the plains with thirst.

There are now thirty-two camels, old and young, in the State of Texas, in charge of officers of the army, and forty more on their way to this country. With the natural increase, the experiment will thus be commenced with nearly a hundred of these "ships of the desert." The War Department has the highest expectations of their availability for the inland travel on southern portions of this continent, and there can be little doubt of the justification of his hopes. The route to the Pacific offers better forage for these hardy animals than they find in their own deserts; and as to climate, the Tartars use them on the steppes of Asia, in regions as inhospitable as can be found on the California route, except in mid-winter, when travel may be suspended. A correspondent of the *Galveston News* states that the Indians have never yet had a sight of these strange animals, and it is expected that the appearance of such ungainly creatures will cause, for a season at least, such terror to the red man as to prove a protection for caravans. The Indians may get over this; but, unless the horses of the prairies differ from their Asiatic cousins, they will require long training to learn to like the aspect of the camel. The Tartars

who visit Chinese frontier towns and markets throw every thing into confusion. Horses fling, and bound, and break their halters to escape a creature to which they will not get accustomed. We happened once to see a couple of camels driven through a country village, and never were horses and mules inspirited with more ridiculous fright than the farmers' nags were at this ungainly apparition.

Camel, a machine, of Dutch invention, for raising large ships so far above the water-line as to enable them to pass over the obstruction of a bar or shallow. It consisted of two large boxes, or half ships, which were applied to each side of the hull of a large vessel, and from which a number of cables were passed under the keel, and attached to horizontal windlasses on the deck of either half of the camel. When the machine was to be used, water was allowed to enter, so as to sink the two parts of the machine to the requisite depth; the ropes were then cast loose, and large beams were placed horizontally through the port-holes of the ship, with their ends resting on the camel on each side. When the ropes were made fast, and the ship properly secured, the water was pumped out of the camel, which then rose and bore up the ship along with it. By this contrivance, East Indiamen drawing 15 feet could be made to draw only 11 feet; and ships of war carrying 90 or 100 guns were enabled to pass the sand banks of the Zuyder Zee.—Beckmann's *Hist. of Inventions*, vol. iii. p. 338. This machine is also available for raising sunken vessels.—E. B.

Camel's Hair (Germ. *Kameelhaar*; Fr. *Poil de chameau, Laine de chevron*; It. *Pelo di camello*; Sp. *Pelo ó lana de camello*). The hair of the camel imported into this country is principally used in the manufacture of fine pencils for drawing and painting. In the East, however, it is an important article of commerce, and is extensively used in the arts. It serves for the fabrication of the tents and carpets of the Arabs, and for their wearing apparel. Cloth is also manufactured of it in Persia and other places. The most esteemed hair comes from Persia, divided into three qualities—black, red, and gray. The black is the dearest, and the gray only worth half the red. Considerable quantities of camel's hair are exported from Smyrna, Constantinople, and Alexandria. It is used in the manufacture of hats, particularly by the French. —Rees' *Cyclopedia, art.* Camelus.

Camelia, a very ornamental genus of plants, natives of China and Japan, belonging to the natural order *Ternstromiaceæ*. Many varieties of this plant are grown in England and Belgium, sometimes in the open air, but more generally in hot-houses. Though usually cultivated in pots, they are found to thrive best in open soil in a glass-house artificially heated.

Cameo, a peculiar kind of onyx; also a stone, on which are found various figures or representations of landscapes, a kind of *lusus naturæ*, exhibiting pictures without painting. It is of these *camaieux* that Pliny is understood to speak when he says of the manifold pictures of gems, and the party-colored spots of precious stones, *Gemmarum pictura tam multiplex lapidumque tam discolores maculæ*. Cameo is also frequently applied to any kind of gem on which figures are sculptured, either indentedly or in relievo. The shell of large univalves is now much used for making cameos, the subject being wrought on the outer or white layer of the shell, and the pink or brown under one serving for the ground. Cameo is also used for a painting of only one color, where the lights and shadows are of gold, wrought on a golden or azure ground. When the ground is yellow the French call it *cirage*; when gray, *grissaile*. This kind of work is chiefly used to represent basso relievos. The Greeks called such works *μονοχρωματα*.—E. B.

Camera Lucida. Invented by Dr. Hook, about 1674.—Woon's *Ath. Ox.* Also an instrument invented by Dr. Wollaston, in 1807.

Camera Obscura (i. e. *Dark Chamber*), in *Optics*, a machine or apparatus representing an artificial eye, by which the images of external objects, received through a double convex glass, are exhibited distinctly, and in their native colors, on a white matter placed within the machine, in the focus of the glass. The *camera obscura* affords very diverting spectacles, by representing images perfectly like their objects, while at the same time it exhibits all their motions. By means of this instrument, a person unacquainted with designing may delineate objects with the greatest accuracy.—E. B. The *camera obscura*, or dark chamber, was invented, it is believed, by the celebrated Roger Bacon, in 1297; it was improved by Baptista Porta, the writer on natural magic, about 1500.—Moheri. Sir Isaac Newton remodeled it. By the recent invention of M. Daguerre, the pictures of the camera are rendered permanent: the last was produced in 1839.—Haydn.

Camlet, or **Camblet** (Ger. and Du. *Kamelot*; Fr. *Camelot*; It. *Ciambellotto*; Sp. *Camelote*; Russ. *Kamlot*), a plain stuff, manufactured on a loom, with two treadles, as linens are. There are camlets of various colors and sorts; some wholly of goats' hair; others in which the warp is of hair, and the woof half hair and half silk; others, again, in which both the warp and the woof are of wool; and, lastly, some of which the warp is of wool and the woof of thread: some are striped, some watered, and some figured. The true Oriental camlet is made of the hair of a sort of goat frequent about Angora, and which constitutes the riches of that city. Camlets are now made in Europe. Writers of the Middle Age mention stuffs of camel's hair, under the denominations of *cameletum* and *camelinum*, whence probably the term; but these are represented as coarse and rough, and seem to have been chiefly used among the monks by way of mortification, as the hair shirt of later times.

Camomile, or more properly **Chamomile**, the flowers of the *Anthemis nobilis*. The flowers have a white ray with a central yellow disk, and an aromatic bitter taste and powerful odor. The infusion of the flowers is, when cold, a useful stimulant, bitter or tonic; the infusion taken warm, however, acts as an emetic. The virtues reside in a volatile oil, and in a bitter principle, which may be separated from one another.

Camphor or **Camphire** (Ger. *Kampfer*; Du. *Kamfer*; Fr. *Camphre*; It. *Canfora*; Sp. *Alcanfor*; Russ. *Kamfora*; Lat. *Camphora*; Arab. and Pers. *Kâfoor*; Mal. *Kaafur*). There are two descriptions of this valuable article, which must not be confounded. 1. *Camphor of Commerce*, which is obtained by boiling the timber of a species of laurel (*Laurus camphora*) found in the forests of Fokien, in China, near the city of Chinchiew, and in certain localities in Japan. Most of the camphor imported into Europe is from China; but a small quantity, considered of superior quality, comes from Japan by way of Batavia. The exports from Canton may be estimated at about 3000 piculs, or 400,000 lbs.; and if to this we add the exports from Batavia of Japan camphor, amounting to about 500 piculs, the total annual exports will be about 466,000 lbs. It is packed in chests, drums, and casks; and is in small, granular, friable masses, of a dirty white or grayish color, very much resembling half-refined sugar. When pure, the camphor of commerce has a strong, peculiar, fragrant, penetrating odor, and a bitter, pungent, aromatic taste. It is in reality a concrete essential oil. Camphor, when refined, is in thin hollow cakes, beautifully white, and, if exposed to the air, totally evaporates. Great care is, therefore, requisite in packing camphor to prevent serious loss. 2. *Camphor, Malay*, commonly called, to distinguish it from the last, camphor of Baros, from the port of Sumatra, where it is mostly shipped. It is a product of the *Dryobalanops camphora*, a forest tree confined to Sumatra, Borneo, and the Malay peninsula. It is

found in concrete masses in the fissures of the wood: there are, however, but very few trees that afford it; and those that do, only in small quantities. This species of camphor is more fragrant, and less biting and pungent, than that yielded by the laurel, and is in high repute among the Chinese, by whom it is almost wholly consumed. There is an immense disparity in the prices of the two species in China; the finest Chinese camphor being sometimes quoted at $30 per picul, while the Malay camphor is quoted at $30 per catty, making the price of the latter 100 times greater than that of the former! Malay camphor is wholly unknown in this country as an article of trade.

Camphor Oil (Malay, *Minyak*), a fragrant essential oil, obtained in large quantities by heating the wood of the *Dryobalanops camphora*. It is nearly as cheap as spirits of turpentine, but is not held in any esteem by the Chinese. It might, perhaps, be profitably imported as a substitute for spirits of turpentine in the arts, and for medicinal purposes. We may add, that the timber of the *Dryobalanops camphora* is not inferior to any produced in the countries where it grows, for the purposes of house and ship building Private information, and CRAWFURD'S *Indian Archipelago*.

Cam-wood, a red dyewood, first brought to Europe from Africa by the Portuguese. It is principally obtained from the vicinity of Sierra Leone. The coloring matter which it affords differs but little from that of ordinary Nicaragua wood, either in quality or quantity; and it may be employed with similar mordants.—BANCROFT *on Colors*.

Canada. This extensive tract of country, and most important colony of England, may be described as a great belt of territory stretching from the centre of North America to the shores of Labrador, and from the waters which flow into the Northern Ocean to the parallel of Pennsylvania, in the United States. Its extent from east to west is computed at about 1400 miles, and from north to south at from 200 to 400 miles. Its precise geographical limits are between the parallels of 41°, 71' and 50° N. lat., and between the meridian of 57° 50' and 117° W. long. Canada, lying diagonally along the frontier of the United States, from northeast to southwest, and possessing an inland navigation along its entire border, in a series of lakes and rivers unrivaled for extent and grandeur, has, especially of late years, been making such rapid progress, that it promises soon to become, in conjunction with its sister British provinces, a power of first-class importance, commercially and politically. The entire surface of the present territory of Canada, exclusive of its great waters, has been estimated at 196,000,000 acres, or between two and three times the size of Great Britain and Ireland. This country, formerly divided into two provinces known as Upper and Lower Canada, was in 1841, by an act of the Imperial Parliament, constituted one province, with one Legislature. Although now united, however, for legislative and other purposes, the country will most probably continue to be viewed and spoken of under its formerly recognized divisions of Upper and Lower Canada.

Canada may be said to comprise one vast valley, through which the great River St. Lawrence takes its course, issuing from Lake Superior and flowing successively through Lakes Huron, Erie, and Ontario, until it falls into the ocean after a course of 2000 miles. This immense valley is on each side encompassed by different mountain ranges, sometimes nearly approaching the water, and at other times receding into the interior, and thus forming extensive plains, for the most part alluvial, and suitable for nearly every description of produce. The high table-land along the northern boundary of this valley separates the streams which take their rise within it and flow into its basin from those that take their rise in the almost unknown territory beyond, and which fall into Hudson's Bay. The high land along the southern boundary of the valley separates the streams which flow northward into its basin from those that have their course southward toward the Atlantic and Mississippi. Commencing at the northern shore of the St. Lawrence, toward the mouth of that river, where the width is 90 miles, we find one of the walls of this vast valley which constitutes Canada rising boldly in mountainous form, close to the river, and continuing thus to form its rugged bank for upward of 100 miles. One of the most remarkable of the heights of this northern bank is Cape Tourment, overhanging the very brink of the river, and somewhat preparing the voyager for the still bolder and more magnificent grandeur of Cape Diamond, the Gibraltar of America, which rises to a height of 400 feet, and is crowned by the citadel of Quebec.

The city of Quebec, here clinging around the rocky steeps of Cape Diamond, and overlooking one of the most magnificent harbors in the world, is situate on the northern bank of the St. Lawrence, and about 400 miles from the mouth of that river. The view from the citadel presents on every side a country with features of peculiar and striking grandeur. Immediately opposite Quebec the St. Lawrence contracts to about half a mile in width, with bold rocky banks on either side. The northern or Cape Diamond side, being much the bolder of the two, commands a view of the wide stretch of table-land extending beyond the southern bank, the vast plains presenting for leagues upon leagues their dark masses of forest, with houses and cultivated fields interspersed, until the distant mountains of the States of Maine and Vermont bound the view. The northern shore presents a wilder and more rugged aspect. From the heights of Cape Diamond the spectator surveys bold ranges of hills fringing the northern horizon, and forming the boundaries of almost unexplored territories beyond.

About 30 miles below Quebec is Cape Tourment, to which, in our upward progress, we had traced the rocky northern bank of the river. Here the ridge, taking a direction west-southwest, terminates on the River Ottawa, about 120 miles above its confluence with the St. Lawrence, thus extending westward from Cape Tourment along the course of the St. Lawrence about 300 miles. The tract of country lying between this ridge and the St. Lawrence, which may be estimated at from 15 to 30 miles in breadth, is beautifully picturesque, well watered, level, and fertile. This portion of Canada, a stretching along the northern shore of the river, from below Quebec upward to Montreal, a distance of about 200 miles, and thence along the banks of the beautiful Ottawa, may be considered, especially toward its upper and western extremity, one of the choicest parts of the country.

The territory lying beyond this ridge is intersected by another and higher range of mountains, which runs into the interior in a northwest direction, at the distance of about 200 miles from the other, and forms the water-shed between the tributary streams of the St. Lawrence and those that fall into Hudson's Bay. This territory may be said to be only one great wilderness of forest, whose solitudes are as yet unexplored, and only occasionally tracked by wandering hunters.

Glancing at the south shore of the St. Lawrence, a ridge commences nearly 100 miles below Quebec, which, passing upward in a southwest direction, opposite that city, at a distance of 30 miles from the river, crosses the boundary line between Canada and the United States, and finally slopes down to the River Hudson. Beyond this ridge, at about the distance of 50 miles, is another and a higher one, which commences at Cape Rozière, the bold headland at the mouth of the St. Lawrence, and, running for about 400 miles in a direction nearly parallel with the river and with the other chain, terminates upon the eastern branch of the River Connecticut. This forms the dividing ridge between the tributary streams of the St. Lawrence and

those which flow toward the Atlantic Ocean, and separates a portion of Canada from the territory of the United States. The general character of the country along this south side of the river, from Cape Rozière upward, to within about 100 miles of Quebec, where the lesser ridge commences, is somewhat rugged and mountainous; but there are many fertile parts near the river which are populous and well cultivated. On the south side of this main ridge, down to the shores of Gaspé and Chaleur Bay, the country is mountainous, but interspersed with level and fertile spots, some of which are under cultivation, especially along the coast, where the inhabitants are principally dependent on the fisheries. The country for 100 miles below Quebec, and extending to the River Chaudière, a few miles above that city, has much of the broken and hilly character which it has farther down the river, but with extensive tracts of excellent land. This portion, as well as for a distance of above 100 miles farther down along the banks of the river, is a succession of settlements. Between Quebec and the lower ridge of mountain-land already mentioned, the country presents a fertile plain, broken by a few insulated hills covered with trees to their summits. It is well settled, and a considerable portion of the land cultivated. The country above Quebec, along the south side of the St. Lawrence, to the line 45° of N. lat. (which is the southern boundary of Lower Canada), may be characterized as one extensive and fertile plain, in parts agreeably broken and undulating. Much of it is covered with populous and prosperous settlements. As it lies contiguous to the United States, and embraces some of the principal points of communication between the two territories, it is at present, and bids fair to continue to be, the most flourishing portion of this lower division of Canada.

The city and island of Montreal, situated in Lower Canada, and immediately below the confluence of the River Ottawa with the St. Lawrence, may be said to form the chief connecting link between the lower and upper provinces. Being about 180 miles above Quebec, and Quebec being itself about 400 miles up the river, Montreal is thus situated nearly 600 miles in the interior of Canada.

"The banks of the St. Lawrence are here presented stretched out into smiling plains of most luxuriant appearance, in midst of which, and forming a main feature, is the garden-island of Montreal—producing grain and fruit, especially some descriptions of the latter, in perhaps greater perfection than in any other part of the country. The size of this island is 32 miles in length and about 10 in breadth, upon which is situated the city, covering above one thousand acres—with its quaint mixture of English, American, and old French architecture, in its streets, shops, English, American, and Scotch churches, French cathedrals and spires, and ancient convents. Rising from, and forming a sheltering background to the city on the north, is 'The Mountain,' as it is called, thickly wooded to the summit—an elevation of between 500 and 600 feet, commanding a magnificent view of the picturesque and luxuriant country around, the expanse of the St. Lawrence, and the bold mountain scenery in the distance. Along the substantially-built stone wharfs skirting the south of the town, and toward the broadest channel of the river, lie throngs of ships, barges, and steam-vessels, loading and unloading the natural products of the interior, and the manufactures and other merchandise of Britain. Montreal, situated about 600 miles up the St. Lawrence, forms the head of navigation for the large class of ocean vessels, and is the main point at which the produce of the interior arrives, in steamboats, screw-propellers, and barges, for reshipment on board of the Atlantic vessels."

Ocean vessels may now, however, by recent improvements of the internal navigation upward through the great lakes, proceed with their cargoes many hundreds of miles farther into the interior; thus opening up to Canada not only the fertile regions of her own most westerly districts, but the famous Far West of the United States, stretching even to the territories of the Mississippi; and it may be at no remote period to the yet distant shores of the Pacific.

Upper Canada.—We will now briefly describe the leading features of Upper Canada. This division of the country, commencing about 80 miles up the St. Lawrence from Montreal, upon the north side of the river, extends for about 100 miles farther along this shore of the river to the city of Kingston, at the foot of Lake Ontario, and thence along the north shores of the great lakes Ontario, Erie, St. Clair, Huron, and Superior, with their connecting rivers or straits, and stretching to the head waters of the streams which flow into Lake Superior. This great stretch of territory, with its almost unsurpassed extent of inland coast navigation, extends from 74° 30' to 117° W. long. The grand course of navigable waters directly inland through Canada, by the St. Lawrence and great lakes, may be safely stated to exceed 2000 miles. The coast of the lakes alone has been estimated at upward of 5000 miles. The shores of this great valley, through which these waters take their course, embrace a country which has been styled "the Garden of North America." It has already in our own day presented an increase in population, and in agricultural and commercial wealth, so wonderfully rapid as to be unprecedented in history. Upper Canada, thus so favorably situated—comprehending one side of the entire upper portion of the great valley of the St. Lawrence—is bounded on the south by the territories of the United States, on the north by the Hudson's Bay Territory, and on the east by Lower Canada, while to the west extends that vast tract of country within British dominion, but as yet in a comparatively primeval state, and most generally known hitherto as the Northwest Indian Territory.

That portion of Upper Canada which has been set apart and divided for settlement, extends from its extreme eastern point, where it leaves Lower Canada, 80 miles above Montreal, and reaches along the northern shore of the St. Lawrence, and upward along the lakes to the shores of Lake Huron—a direct course of about 700 miles. This breadth of settled country toward the north may be said to vary from 50 to 80 miles. Throughout the whole of this tract the soil is excellent, and is not surpassed by any other part of the American continent. It consists, generally speaking, of a fine dark loam, mixed with a vegetable mould, but it is in a great measure so varied as to present soils adapted to almost every species of produce. From the commencement of Upper Canada to the head of the Bay of Quinte, on Lake Ontario, the land is spread out into an almost uniform level of great beauty, which rises only a few feet from the banks of the St. Lawrence. It is in every direction well watered by numerous streams, which are generally navigable for boats and canoes, and at the same time present the most desirable situations for the erection of machinery. Farther into the interior, along the course of the great stream of the Ottawa, which flows into the St. Lawrence a short distance above Montreal, and between the Ottawa and Lake Ontario, the face of the country—which we have noticed as being spread out into a plain so attractive—is, in parts, here diversified by ridges and bold heights, and also by numerous streams and inland lakes. The Rideau Canal, a work constructed by the imperial government for military purposes, passing through this part of the interior, from the town of Bytown, on the Ottawa, 120 miles above Montreal, through the country to Kingston—a distance of 135 miles—is almost one continued chain of natural lakes and streams. The chief link of these waters is Rideau Lake, 24 miles in length, forming the summit level of the canal, and being 280 feet above

the level of the Ottawa River, and 150 feet above Lake Ontario. Lake Ontario, which receives the waters of the upper lakes from the Niagara River, and discharges them into the St. Lawrence, nearly 800 miles from the mouth of that river, may be said to be the first link in our upward progress of the chain of great lakes which so distinguish Canada, and confer upon the country unsurpassed means of internal communication. The height of this lake above the sea is 232 feet. It is 180 miles in length, 50 miles in breadth, and 470 miles in circumference. While the shores of this lake present the most populous and prosperous parts of Canada, the lake itself is believed to be the safest of the three lower lakes for the purposes of navigation. It possesses several excellent harbors; and from its great depth of 500 feet, compared with the two lakes above it, it is not so easily moved by storms as Lake Erie, while it is quite exempt from the shallows, or *flats*, as they are called, of Lake St. Clair.

There are several pretty large islands scattered over the lower extremity of Lake Ontario, one of which, Amherst Island, is about 10 miles in length and 6 in breadth. One of the most fertile and beautiful portions of this lake is the magnificent inlet of the Bay of Quinte, commencing near the city of Kingston, at the foot of the lake, and forming a spacious indentation of about 70 miles to the mouths of the rivers Trent and Moira. The shores of this bay are more diversified and pleasing in their features than those of the great lake itself, whose Indian name, "Ontario," signifies the Beautiful. Lake Ontario is never frozen over, and throughout winter steamboats frequently run across the upper part of the lake from Toronto to Niagara when the weather is fine. All along the north shore of Lake Ontario, a distance of 180 miles, one extensive fertile plain presents itself, now and then agreeably sloping to the very edge of the lake, and bearing evidences of successful cultivation and progress. Several thriving towns are growing up rapidly along the shores of Ontario, the chief of which are, Kingston, at the foot of the lake; Toronto, 35 miles from the head; and Hamilton, at the extreme head. Toronto, which is very finely situated, spreading over a wide and gently rising plateau, and in a protected part of the lake shore, is the largest city of Upper Canada. The generally level stretch of well-cultivated plain which forms this northern shore of Lake Ontario is only partially broken by an inconsiderable ridge which runs through it, and which, coursing around the head of the lake, and crossing into the United States at the Falls of Niagara, forms the commencement of the extensive and fertile table-land which stretches westward from Lake Ontario, and, situated between Lakes Erie and Huron, forms the great western peninsula of Upper Canada. The eastern boundary of this peninsula, thus situated between these three great lakes, is the neck of land of 36 miles between the shores of Lake Ontario, at Toronto, and Lake Simcoe, which communicates by means of the River Severn with the Georgian Bay, on Lake Huron. The settled parts of this great peninsula embrace about one-half of the settled parts of Upper Canada; and it is estimated to have at present a cultivated surface equal to about a fourth part of the cultivated surface of Scotland. This settled and partially occupied portion of the peninsula contains upward of 9,000,000 acres. The entire district has been styled "the Garden of Upper Canada." "I am delighted to have seen this part of the country," said the late Lord Sydenham, in recording his impressions to a friend, after having visited this district in the course of a tour which he performed in the capacity of governor general of Canada, in the autumn of 1840—"I am delighted to have seen this part of the country; I mean the great district, nearly as large as Ireland, placed between the three lakes—Erie, Ontario, and Huron. You can conceive nothing finer! The most magnificent soil in the world—4 feet of vegetable mould; a climate certainly the best in North America—the greater part of it admirably watered. In a word, there is land enough and capabilities enough for some millions of people, and in one of the finest provinces in the world."—E. B.

The number of acres held by the 194,809 occupiers of land in Canada is 17,937,148, 9,283,333 acres of which are in Upper Canada. The number of acres under cultivation in Canada in 1852 was 7,303,241, the greater proportion of this cultivated land being in the upper provinces. The increasing quantity of cultivated land in Upper Canada is another of the gratifying proofs of the substantial progress of the country; and this increase of the area of cultivation keeps full pace with the increase of population. In 1842 the population of Upper Canada, amounting to 486,055, possessed 1,927,816 acres of land under cultivation; and in 1852 the population, which had increased to 952,004, possessed an area under cultivation of 3,697,724 acres. The proportion of occupied lands in Canada under cultivation, under crops, pasture, and used as gardens and orchards, and also in forest or wild state, were as follows:

	Acres.
Land under crops	4,347,539
Land under pasture	2,870,004
Land under gardens	85,698
Land forest or wild	10,633,907
Total	17,937,148

The distribution of the land under crops, and the produce of these crops respectively, were:

Under	Acres.	Produce.
		Bushels.
Wheat	1,209,226	15,168,720
Oats	1,012,106	20,161,438
Peas	357,301	4,055,584
Potatoes	150,916	9,443,586
Buckwheat	96,046	1,160,501
Maize	93,240	2,096,800
Rye	84,975	821,004
Barley	72,843	1,204,501
Turnips	21,082	4,014,851
Fallow and other crops	1,240,854	....
Total land under crops	4,347,539	
Total produce of above specified crops		58,826,575

Besides these amounts of specified produce from these 4,347,539 acres of land under crops, the Canadian farmers possessed other crops, such as hay, clover, and grass seeds, carrots, mangel-wurzel, beans, hops, flax, hemp, and tobacco. The quantity of tobacco produced in Canada in 1852 amounted to 1,253,128 pounds; of this 764,476 pounds were the produce of Upper Canada; and the greater portion of which was grown along the shores of the upper part of Lake Erie, and of the River Detroit, where the soil and climate seem best adapted for this description of crop, and where the farmers in those parts have had the best opportunities of receiving the services of the colored or runaway slave population of the United States, who have been accustomed to the management of such produce in the tobacco plantations of the South. The produce in tobacco of the two counties of Kent and Essex alone, situated in this southwestern point of Canada, amounted in 1852 to 760,300 pounds.

The growth of hemp in Canada assumes a position of great national importance at the present time, when British supplies have been so seriously checked by the war with Russia. The important towns upon the east coast of Scotland, which are the chief seats of the flax trade, have suffered severely by the check received by their dependence upon Russia for this great staple of a growing branch of national manufactures.

One effect of the Canadian Reciprocity Treaty has been to give business to the leading railroads of New York and Massachusetts, and to reduce the import and export trade of Quebec; thus benefiting the towns of Canada West, while those on the St. Lawrence are becoming less and less the points of transhipment. Thus the exports of Quebec in two years have declined

one-third, and the imports in the same ratio; while at Toronto the exports have nearly doubled, and the imports have increased twenty per cent. between the years 1853 and 1855. The exports and imports of the leading towns for the years 1853, 1854, and 1855 are as follows:

	1853.	1854.	1855.
IMPORTATIONS.			
Quebec	£1,141,595	£1,754,320	£732,556
Montreal	3,881,540	3,816,082	3,064,061
Toronto	1,165,056	1,362,706	1,401,454
EXPORTS.			
Quebec	£2,243,453	£2,511,767	£1,553,702
Montreal	1,883,728	572,514	475,650
Toronto	221,490	278,040	404,105
DUTIES COLLECTED.			
Quebec	£128,454	£179,139	£74,307
Montreal	449,102	478,603	319,219
Toronto	156,033	172,576	152,586

The Canadian £ is equal to four dollars United States currency; the shilling being equal to twenty cents. Formerly, all the importations into Canada were made via Quebec, but the opening of the Atlantic and St. Lawrence Railroad, between Portland and Montreal, has developed a large and increasing import and export trade with Montreal direct. At the same time, the Reciprocity Treaty is the means of facilitating, by a period of fifteen to twenty days, the delivery of goods at Toronto via New York, in lieu of Quebec. The export trade of the latter is mainly products of the forest, grain, etc.

EXPORTS OF CANADA FOR THE YEAR 1855.

Produce of the forest	£2,358,255
Produce of the mines	27,339
Produce of the sea	85,000
Value of ships built	620,000
Vegetable food	1,995,094
Animals and their produce	342,031
Manufactures, produce, etc.	525,006
Total	£5,950,525

The reduced business of Quebec is further shown in the comparative number of arrivals and tonnage at that port for the first ten months of 1854 and 1855.

Arrivals.	Vessels.	Tons.
1854 (to Oct. 22)	1276	553,631
1855 "	665	341,201

The value of exports from the United States to Canada for the fiscal year 1852-'53 was $7,829,000, exceeding those to any country, except Great Britain, France, and the Hanse Towns. Since then the trade with Canada has been increasing rapidly, and assuming each year a greater importance to us.

Reciprocity Treaty between the United States and Great Britain.—This treaty was concluded and signed by the respective ministers of the two governments on the 5th of June, 1854. The following is a *synopsis* of it:

Art. 1. It is agreed that United States fishermen shall have the privilege of taking fish on the sea-coasts and shores, in the bays, harbors, and creeks of Canada, New Brunswick, Nova Scotia, Prince Edward's Island, and the adjacent islands, without being restricted to any distance from the shore; with permission to land on these coasts and islands for the purpose of drying their nets and curing their fish, provided they do not interfere with any prior right of British fishermen. It is understood that this includes only sea-fish—shell-fish, salmon, and shad fisheries, and all river fisheries, are reserved exclusively for British fishermen.

Art. 2. It is agreed that British fishermen shall have similar privileges to take fish on the sea-coasts and shores of the United States north of the 36th parallel of latitude.

Art. 3. It is agreed that the articles enumerated in the following schedule, being the growth and product of the aforesaid British colonies, or of the United States, shall be admitted into each country free of duty:

Grain and breadstuffs of all kinds.
Manures.
Ores of metals of all kinds.
Animals of all kinds.
Fresh, smoked, and salted meats.
Cotton-wool.
Seeds and vegetables.
Undried fruits.
Dried fruits.
Fish of all kinds.
Products of fish, and of all other creatures living in the water.
Poultry.
Eggs.
Hides, furs, skins, or tails, undressed.
Stone or marble in its crude or unwrought state.
Slate.
Butter.
Cheese.
Tallow.
Lard.
Horns.
Coal.
Pitch, tar, turpentine.
Ashes.
Timber and Lumber of all kinds—round, hewed, and sawed, unmanufactured in whole or in part.
Fire-wood, plants, shrubs, and trees.
Pelts.
Wool.
Fish-oil.
Rice.
Broom-corn and bark.
Gypsum, ground or unground.
Hewn, or wrought, or unwrought burr or grindstones.
Dye-stuffs.
Flax, hemp, and tow, unmanufactured.
Unmanufactured tobacco.
Rags.

Art. 4. It is agreed that the citizens and inhabitants of the United States shall have the right to navigate the River St. Lawrence and the canals in Canada used as a means of communicating between the Great Lakes and the Atlantic Ocean, with their vessels, boats, and crafts, as fully and freely as the subjects of her Britannic majesty, subject only to the same tolls and other assessments as are now exacted of British subjects.

Art. 5. It is agreed that British subjects shall have the right to navigate Lake Michigan on the same terms, as long as the Canada canals and St. Lawrence River are open.

Art. 6. It is agreed that no export duty shall be levied on lumber or timber cut on that portion of the State of Maine watered by the River St. John and its tributaries, and floated down that river and shipped to the United States from the province of New Brunswick.

The effect of this treaty, especially of *Art.* 3, has been to give a great impetus to the trade between the United States and the British possessions, especially Canada. This treaty has been and will be of great advantage to both countries, promoting intercourse and extending commercial relations.

Canal, Canals. A canal is an artificial channel, filled with water kept at the desired level by means of locks or sluices, forming a communication between two or more places.

Ancient Canals.—The comparative cheapness and facility with which goods may be conveyed by sea, or by means of navigable rivers, seem to have suggested at a very early period the formation of canals. The best-authenticated accounts of ancient Egypt represent that country as intersected by canals conveying the waters of the Nile to the more distant parts of the country, partly for the purpose of irrigation, and partly for that of internal navigation. The efforts made by the old Egyptian monarchs, and by the Ptolemies, to construct a canal between the Red Sea and the Nile, are well known, and evince the high sense which they entertained of the importance of this species of communication.—AMELHON, *Comm. des Egyptiens*, p. 76. Greece was too small a territory, too much intersected by arms of the sea, and subdivided into too many independent states, to afford much scope for inland navigation. Attempts were, however, made to cut a canal across the Isthmus of Corinth; but they did not succeed. The Romans did not distinguish themselves in canal navigation. Their aqueducts, the stupendous ruins of which attest the wealth and power of their founders, were intended to furnish supplies of water to some adjoining city, and not for the conveyance of vessels or produce.

Chinese Canals.—In China, canals, partly for irrigation and partly for navigation, have existed from a very early period. The most celebrated among them is the Imperial or Grand Canal, commencing at Hang-tchou, near the mouth of the Tching-tang-chiang river, in about lat. 30° 22′ N., long. 119° 45′ E.; it then stretch-

es north, and, crossing the great rivers Yang-tse-Kiang and Hoang-ho, terminates at Ling-ting, on the Eu-ho River, in about lat. 37° N., long. 116° E. The direct distance between the extreme limits of the canal is about 512 miles, but, including its bends, it is above 650 miles in length; and as the Eu-ho, which is a navigable river, unites with the Pei-ho, also navigable, an internal water communication is thus established between Hang-tchou and Pekin across 10° of latitude. But, apart from its magnitude and utility, the Grand Canal does not rank high as a work of art. A vast amount of labor has, however, been expended upon it; for though it mostly passes through a flat country, and winds about to preserve its level, its bed is in parts cut down to a great depth, while in other parts it is carried over extensive hollows, and even lakes and morasses, on vast mounds of earth and stone. The sluices, which preserve its waters at the necessary level, are all of very simple construction, being merely intended to elevate or depress the height of the water by a few inches; as, excepting these, there is not a single lock or interruption to the navigation throughout the whole length of the canal. It is seldom more than five or six feet in depth, and in dry seasons is sometimes considerably less. The vessels by which it is navigated are sometimes rowed, and sometimes dragged by men, so that the navigation is for the most part slow. The canal is frequently faced with stone. The construction of this great work is usually ascribed to the Tartars, but the Chinese allege that it was merely repaired and renovated by the latter, and that it had been completed in the remotest period of their history.—Barrow's *China*, p. 335, etc.; La Lande, *Canaux de Navigation*, p. 529, etc.

Italian Canals.—The Italians were the first people in modern Europe that attempted to plan and execute canals. They were principally, however, undertaken for the purpose of irrigation; and the works of this sort executed in the Milanese and other parts of Lombardy, in the eleventh, twelfth, and thirteenth centuries, are still regarded as models, and excite the warm admiration of every one capable of appreciating them. In 1271, the Navillo Grande, or canal leading from Milan to Abbiate Grasso and the Tesino, was rendered navigable.—Young's *Travels in France*, etc. vol. ii. p. 170.

Dutch Canals.—No country in Europe contains, in proportion to its size, so many navigable canals as the kingdom of the Netherlands, and particularly the province of Holland. The construction of these canals commenced as early as the twelfth century, when, owing to its central and convenient situation, Flanders began to be the *entrepôt* of commerce between the north and south of Europe. Their number has since been astonishingly increased. "Holland," says Mr. Phillips, in his *History of Inland Navigation*, "is intersected with innumerable canals. They may be compared in number and size to our public roads and highways; and as the latter with us are continually full of vehicles and horsemen going from and to the different cities, towns, and villages, so, on the former, the Hollanders in their boats and pleasure barges, their treckschuyts, and vessels of burden, are continually journeying and conveying commodities for consumption or exportation from the interior of the country to the great cities and rivers. An inhabitant of Rotterdam may, by means of these canals, breakfast at Delft or the Hague, dine at Leyden, and sup at Amsterdam, or return home again before night. By them, also, a most prodigious inland trade is carried on between Holland and every part of France, Flanders, and Germany. When the canals are frozen over, they travel on them with skates, and perform long journeys in a very short time, while heavy burdens are conveyed in carts and sledges, which are then as much used on the canals as on our streets. The yearly profits produced by these canals are almost beyond belief; but it has been incontestably proved that they amount to more than £250,000 for about 400 miles of inland navigation, which is £625 per mile, the square surface of which mile does not exceed two acres of ground; a profit so amazing, that it is no wonder other nations should imitate what has been found so advantageous. The canals of Holland are generally 60 feet wide and 6 deep, and are carefully kept clean; the mud, as manure, is very profitable. The canals being generally level, but few locks are required. From Rotterdam to Delft, the Hague, and Leyden, the canal is quite level, but is sometimes affected by strong winds. For the most part, the canals are elevated above the fields or the country, to enable them to carry off the water, which in winter inundates the land. To drain the water from Delftland, a province not more than 60 miles long, they employ 200 wind-mills in springtime to raise it into the canals. All the canals of Holland are bordered with dams or banks of immense thickness, and on these depends the security of the country from inundation; of course, it is of great moment to keep them in the best repair; to effect which there is a kind of militia, and in every village is a magazine of proper stores, and men whose business it is to convey stones and rubbish in carts to any damaged place. When a certain bell rings, or the waters are at a fixed height, every man repairs to his post. To every house or family there is assigned a certain part of the bank, in the repair of which they are to assist. When a breach is apprehended, they cover the banks all over with cloth and stones."

Canal from Amsterdam to Niewdiep, near the Helder.—The object of this canal, which is the greatest work of its kind in Holland, and probably in the world, is to afford a safe and easy passage for large vessels from Amsterdam to the German Ocean. This city has 40 feet of water in the road in front of its port; but the pampas or bar at the junction of the Y with the Zuyder Zee, 7 miles below, has only a depth of 10 feet; and hence all ships of any considerable burden entering or leaving the port must unload and load part of their cargoes without the bar. As the Zuyder Zee is every where full of shallows, all ordinary means of improving the access to Amsterdam were necessarily ineffectual; and the resolution was, therefore, at length adopted of cutting a canal from the city to the Helder, the most northern point of the province of Holland. The distance between these extreme points is 41 English miles, but the length of the canal is about 50½. The breadth at the surface of the water is 124½ English feet (120 Rhineland feet); the breadth at bottom, 86 feet; the depth, 20 feet 9 inches. Like the Dutch canals generally, its level is that of the highest tides, and it receives its supply of water from the sea. The only locks it requires are two tide-locks at the extremities; but there are, besides, two sluices, with flood-gates in the intermediate space. It is crossed by about 18 draw-bridges. The locks and sluices are double—that is, there are two in the breadth of the canal; and their construction and workmanship are said to be excellent. They are built of brick, for economy; but bands of limestone are interposed at intervals, and these project about an inch beyond the brick to protect it from abrasion by the sides of vessels. There is a broad towing-path on each side, and the canal is wide enough to admit of two frigates passing. The line which the canal follows may be easily traced on a map of Holland. From the Y, at Amsterdam, it proceeds north to Purmerend; thence west to Alkmaar Lake; again north by Alkmaar to a point within 2 miles of the coast, near Petten; whence it runs nearly parallel to the coast, till it joins the sea a little to the east of the Helder, at the fine harbor of Niewdiep, formed within the last 30 years. At the latter place there is a powerful steam-engine for supplying the canal with water during neap-tides, and other purposes. The time spent in towing vessels from Niewdiep to Amsterdam is 18 hours. The Helder is the only spot on the shores of Holland that has deep water; and it owes this advantage to its being opposite to the Texel, which by contract-

ing the communication between the German Ocean and the Zuyder Zee to a breadth of about a mile, produces a current which scours and deepens the channel. Immediately opposite the Helder there are 100 feet water at high tides, and at the shallowest part of the bar to the westward there are 27 feet. In the same way, the artificial mound which runs into the Y opposite Amsterdam, by contracting the water-way to about 1000 feet, keeps a depth of 40 feet in the port (at high water), while above and below there are only 10 or 12. The canal was begun in 1819, and finished in 1825. The cost was estimated at 10,000,000 or 12,000,000 florins, or about £1,000,000 sterling. If we compute the magnitude of this canal by the cubic contents of its bed, it is the greatest, we believe, in the world, unless some of the Chinese canals be exceptions. The volume of water which it contains, or the *prisme de remplissage*, is twice as great as that of the New York and Erie Canal, or the canal of Languedoc, and two and a half times as great as that of the artificial part of the Caledonian Canal. In consequence, however, of the facility with which the Dutch canal was dug, and of the evenness of the ground through which it passes, the difficulties with which the engineer had to contend in making it were trifling compared to those which had to be overcome in constructing the canals now mentioned. We have not learned what returns this canal yields; most probably it is not, at least in a direct point of view, a profitable concern. Even in Holland, notwithstanding the lowness of interest, it would require tolls to the amount of £40,000 a year to cover interest and expenses; and so large a sum can hardly, we should think, be raised by the very moderate tolls laid on the ships passing through it.—*See* AMSTERDAM. This, however, is not the only consideration to be attended to in estimating the value of a work of this sort. Its influence in promoting the trade of Amsterdam, and, indeed, of Holland, may far more than compensate for its cost. It is evident, too, that the imposition of oppressive tolls would have effectually counteracted this advantage; that is, they would have defeated the very object for which the canal was constructed.

Danish Canals.—The Holstein Canal, in Denmark, is of very considerable importance. It joins the River Eyder with Kiel Bay, on the northeast coast of Holstein, forming a navigable communication between the North Sea, a little to the north of Heligoland, and the Baltic; enabling vessels to pass from the one to the other by a short cut of about 100 miles, instead of the lengthened and difficult voyage round Jutland, and through the Cattegat and the Sound. The Eyder is navigable for vessels not drawing more than 9 feet of water, from Tonningen, near its mouth, to Rendsburg, where it is joined by the canal, which communicates with the Baltic at Holtenau, about 3 miles north of Kiel. The canal is about 26 English miles in length, including about 6 miles of what is principally river navigation. The excavated portion is 95 feet wide at top, 51 feet 6 inches at bottom, and 9 feet 6 inches deep (English measure). Its highest elevation above the level of the sea is 24 feet 4 inches; to which height vessels are raised and let down by 6 locks or sluices. It is navigable by vessels of 120 tons burden, or more, provided they are constructed in that view. The total cost of the canal was about £500,000. It was opened in 1785, and has so far realized the views of its projectors, as to enable coasting vessels from the Danish islands in the Baltic and the east coast of Holstein, Jutland, etc., to proceed to Hamburg, Holland, England, etc., in less time, and with much less risk, than, in the ordinary course of navigation; they could have cleared the point of the Skaw; and conversely with ships from the west. The smaller class of foreign vessels, particularly those under the Dutch and Hanseatic flags, navigating the Baltic and North Seas, have largely availed themselves of the facilities afforded by this canal. About 3000 vessels pass annually through the canal. This is a sufficient evidence of its utility. It would, however, be much more frequented, were it not for the difficult navigation of the Eyder from the sea to Rendsburg. The dues are moderate.—COXE'S *Travels in the North of Europe*, 5th edition, vol. v. p. 239, where there is a plan of the canal; CATTEAU, *Tableau des États Danois*, tome ii. p. 300–304; and private information.

Swedish Canals.—The formation of an internal navigation connecting the Cattegat and the Baltic has long engaged the attention, and occupied the efforts, of the people and government of Sweden. Various motives conspired to make them embark in this arduous undertaking. The Sound and other channels to the Baltic being commanded by the Danes, they were able, when at war with the Swedes, greatly to annoy the latter, by cutting off all communication by sea between the eastern and western provinces of the kingdom. And hence, in the view, partly of obviating this annoyance, and partly of facilitating the conveyance of iron, timber, and other bulky products, from the interior to the coast, it was determined to attempt forming an internal navigation, by means of the River Gotha, and the Lakes Wener, Wetter, etc., from Gottenburg to Soderkœping, on the Baltic. The first and most difficult part of this enterprise was the perfecting of the communication from Gottenburg to the Lake Wener. The Gotha, which flows from the latter to the former, is navigable, through by far the greater part of its course, for vessels of considerable burden; but, besides others less difficult to overcome, the navigation at the point called Trollhætta is interrupted by a series of cataracts about 112 feet in height. Owing to the rapidity of the river, the stubborn red granite rocks over which it flows, and the perpendicular banks by which it is bounded, the attempt to cut a lateral canal, and still more to render it directly navigable, presented the most formidable obstacles. But undismayed by these, on which it is, indeed, most probable he had not sufficiently reflected, Polhem, a native engineer, undertook, about the middle of last century, the Herculean task of constructing locks in the channel of the river, and rendering it navigable. Whether, however, it were owing to the all but insuperable obstacles opposed to such a plan, to the defective execution, or deficient strength of the works, they were wholly swept away, after being considerably advanced, and after vast sums had been expended upon them. From this period, down to 1793, the undertaking was abandoned; but in that year the plan was proposed, which should have been adopted at first, of cutting a lateral canal through the solid rock, about 1½ mile from the river. This new enterprise was begun under the auspices of a company incorporated for the purpose in 1794, and was successfully completed in 1800. The canal is about 3 miles in length, and has about 6½ feet water.—CATTEAU, *Tableau de la Mer Baltique*, tome ii. p. 77; ODDY, in his *European Commerce*, p. 306, and BALBI, *Abrégé de la Géographie*, p. 885, say that the depth of water is 10 feet. It has 8 sluices, and admits vessels of above 100 tons. In one part it is cut through the solid rock to the depth of 72 feet. The expense was a good deal less than might have been expected, being only about £80,000. The Lake Wener, the navigation of which was thus opened with Gottenburg, is very large, deep, and encircled by some of the richest of the Swedish provinces, which now possess the inestimable advantage of a convenient and ready outlet for their products. As soon as the Trollhætta canal had been completed, there could be no room for doubt as to the practicability of extending the navigation to Soderkœping. In furtherance of this object, the Lake Wener was joined to the Lake Wetter by the Gotha Canal, which admits vessels of the same size as that of Trollhætta; and the prolongation of the navigation to the Baltic from the Wetter, partly by two canals of equal magnitude with the above, and partly by lakes, has since been com-

pleted. The entire undertaking is called the Gotha Navigation, and deservedly ranks among the very first of the kind in Europe. Besides the above, the canal of Arboga unites the Lake Hielmar to the Lake Maelar; and, since 1819, a canal has been constructed from the latter to the Baltic at Södertelge. The canal of Stromsholm, so called from its passing near the castle of that name, has effected a navigable communication between the province of Dalecarlia and the Lake Maelar, etc.—For further details, see, besides the authorities already referred to, COXE'S *Travels in the North of Europe*, 5th ed. vol. iv. p. 253–266, and vol. v. p. 58–66; THOMSON'S *Travels in Sweden*, p. 35, etc.

French Canals.—The first canal executed in France was that of Briare, 34½ English miles in length, intended to form a communication between the Seine and the Loire. It was commenced in 1605, in the reign of Henry IV., and was completed in 1642, under his successor, Louis XIII. The canal of Orleans, which joins the above, was commenced in 1675. But the most stupendous undertaking of this sort that has been executed in France, or indeed on the continent, is the canal of Languedoc. It was projected under Francis I.; but was begun and completed in the reign of Louis XIV. It reaches from Narbonne to Toulouse; and was intended to form a safe and speedy means of communication between the Atlantic Ocean and the Mediterranean. It is 64 French leagues in length, and 6 feet deep; and has in all 114 locks and sluices. In its highest part it is 600 feet above the level of the sea. In some places it is conveyed, by bridges of great length and strength, over large rivers. It cost upward of £1,300,000; and reflects infinite credit on the engineer, Riquet, by whom it was planned and executed. Besides this great work, France possesses several magnificent canals, such as that of the Centre, connecting the Loire with the Saone; of St. Quentin, joining the Scheldt and the Somme; of Besançon, joining the Saone, and consequently the Rhone, to the Rhine; of Burgundy, joining the Rhone to the Seine, etc. Some of these are of very considerable magnitude. The canal of the Centre is about 72 English miles in length. It was completed in 1791, at an expense of about 11,000,000 francs. Its summit level is about 240 feet above the level of the Loire at Digoin; the breadth at the water's edge is about 48 feet, and at bottom 30 feet; depth of water, 5½ feet; number of locks, 81. The canal of St. Quentin, 28 English miles in length, was completed in 1810. The canal joining the Rhone to the Rhine is the most extensive of any. It stretches from the Saone, a little above St. Jean de Losne, by Dole, Besançon, and Mulhouse, to Strasburg, where it joins the Rhine—a distance of about 200 English miles. From Dole to Vogeaucourt, near Montbéliard, the canal is principally excavated in the bed of the Doubs. It is not quite finished. The canal of Burgundy will, when completed, be about 242 kilometres, or 150 English miles, in length; but at present it is only navigable to the distance of about 95 kilometres. In addition to these, a great many other canals have been finished, while several are in progress, and others projected. There is an excellent account of the French canals, in the *Histoire de la Navigation Interieure de la France*, by M. Dutens, in 2 vols. 4to, and to it we beg to refer the reader for further details. He will find, at the end of the second volume, a very beautiful map of the rivers and canals of France. The railroads now in the course of construction in France have, however, checked the progress of canals. We may observe, too, that the state of the law in France is very unfavorable to the undertaking and success of all great public works; and we are inclined to attribute the comparative fewness of canals in France, and the recent period at which most of them have been constructed, to its influence. In that country, canals, docks, and such like works, are mostly carried on at the expense and for behoof of government, under the control of its agents. No scope has been given to the enterprise of individuals or associations. Before either a road or a canal can be constructed, plans and estimates must be made out and laid before the Minister of the Interior, by whom they are referred to the prefect of the department, and then to the *Bureau des Ponts et des Chaussés*; and supposing the project to be approved by these, and the other functionaries consulted with respect to it, the work must after all be carried on under the superintendence of some public officer. In consequence of this preposterous system, very few works of this description have been undertaken as private speculations. And while not a few of those begun by government remain unfinished and comparatively useless, those that are completed have, as was to be expected, rarely proved profitable. There are some good remarks on this subject in the useful work of M. Dupin, on the *Forces Commerciales* of Great Britain.

Prussian Canals.—The Prussian states are traversed by the great navigable rivers the Elbe, the Oder, and the Vistula; the first having its embouchure in the North Sea, and the others in the Baltic. The formation of an internal navigation, that should join these great *water-ways*, excited the attention of government at a distant period; and this object has been successfully accomplished, partly by the aid of the secondary rivers falling into the above, and partly by canals. In 1662, the canal of Muhlrose was undertaken, uniting the Oder and the Spree; the latter being a navigable river falling into the Havel, also a navigable river joining the Elbe near Havelburg. But the navigation from the Oder to the Elbe by this channel was difficult, and liable to frequent interruption; and to obviate these defects, Frederick the Great constructed, toward the middle of last century, the Finnow Canal, stretching from the Oder, at Oderburg, to the Havel, near Liebenwalde; the communication is thence continued by the latter and a chain of lakes to Plauen; from which point a canal has been opened, joining the Elbe near Magdeburg. The Elbe being in this way connected with the Oder by a comparatively easy navigation, the latter has been united to the Vistula, partly by the River Netze, and partly by a canal joining that river to the Brahe, which falls into the Vistula near Bromberg. A vast inland navigation has thus been completed, barks passing freely through the whole extent of the country from Hamburg to Dantzic; affording the means of shipping the products of the interior, and of importing those of foreign countries, either by the North Sea or the Baltic, as may be found most advantageous.—CATTEAU, *Tableau de la Mer Baltique*, tome ii. p. 11–18.

Russian Canals.—The inland navigation of Russia is of vast extent, and very considerable importance. By means partly of rivers, and partly of canals, St. Petersburg is connected with the Caspian Sea. Goods are conveyed from the latter to the capital, a distance of 7434 miles, without reshipment.

Bavarian Canals.—A grand canal, which was for a lengthened period in progress in Bavaria, was completed in 1846, and promises to become of great public utility. It extends from Dietfurth, on the Altmuhl, a navigable affluent of the Danube, to Bamberg, on the Mayn, a distance of 23½ German, or about 112 English miles. It is on a large scale, and has cost above £1,000,000. This magnificent undertaking, which carries an inland navigation through the centre of Europe, and realizes the project of Charlemagne for uniting the Black Sea with the German Ocean, is conducted by a joint-stock company, with the assistance of the Bavarian government. But the navigation of the Mayn and the Danube requires to be considerably improved before this grand channel of communication acquires all the importance which, most probably, it is destined to obtain.

Austrian Canals.—The Austrian empire is traversed in its whole extent by the Danube; but the advant-

ages that might result to the foreign trade of the empire from so great a command of river navigation have been materially abridged by the jealousy of the Turks, who command the embouchure of the river, and by the difficulties that are in some places incident to its navigation. Two pretty extensive canals have been constructed in Hungary. That called the Bega Canal is 73 English miles in length: it stretches from Fascet through the Bannat, by Temeswar to Becskerek, whence vessels pass by the Bega into the Theiss, a little above its junction with the Danube. The other Hungarian canal is called after the Emperor Francis. It stretches from the Danube by Zambor to the Theiss, which it joins near Foldvar, being 62 English miles in length; its elevation, where highest, does not exceed 27 feet. Besides the above, the canal of Vienna establishes a communication between that city and Neustadt. It is said to be the intention to continue this canal to Trieste; but however desirable, we doubt much whether this be practicable. A railroad has been made from Munchausen, on the Danube, to Budweiss, on the Moldau, a navigable river that falls into the Elbe, which promises to be a highly useful communication.—BRIGHT'S *Travels in Hungary*, p. 246; BALBI, *Abrégé de la Géographie*, p. 216.

Spanish Canals.—Nowhere are canals more necessary, both for the purposes of navigation and irrigation, than in Spain; but the nature of the soil, and the poverty and ignorance of the government, as well as of the people, oppose formidable obstacles to their construction. During the reign of Charles II., a company of Dutch contractors offered to render the Manzanares navigable from Madrid to the Tagus, and the latter from that point to Lisbon, provided they were allowed to levy a duty for a certain number of years on the goods conveyed by this channel. The Council of Castile took this proposal into their serious consideration, and, after maturely weighing it, pronounced the singular decision, "That if it had pleased God that these two rivers should have been navigable, he would not have wanted human assistance to have made them such; but that, as he has not done it, it is plain he did not think it proper that it should be done. To attempt it, therefore, would be to violate the decrees of his providence, and to mend the imperfections which he designedly left in his works!"—CLARKE'S *Letters on the Spanish Nation*, p. 284. But such undertakings are no longer looked upon as sinful; and many have been projected since the accession of the Bourbon dynasty, though few have been perfected. The canal of the Ebro, begun under the Emperor Charles V., is the most important of the Spanish canals; but it is only partially completed, and during dry seasons it suffers from want of water. It runs parallel to the right bank of the Ebro, from Tudela, in Navarre, to below Saragossa; the intention being to carry it to Sastago, where it is to unite with the Ebro. The canal of Castile is intended to lay open the country between the Douro and Reynosa, and to facilitate the conveyance of grain from the interior to Santander and Bilbao. It passes by Valladolid, Palencia, and Aguilar del Campos; a small part has been executed, and is now in operation. A company has also undertaken, what the Dutch contractors formerly offered, to render the Tagus navigable from Aranjuez to Lisbon—the free navigation of the river having been stipulated at the Congress of Vienna. A project for deepening the Guadalquiver and some others are also on foot.—*Gsographical Dictionary*, ii. 710.

British Canals.—Owing partly to the rise of extensive manufactures and commerce in Great Britain, but more, perhaps, to the insular situation of the country, no part of which is very distant from the sea, or from a navigable river, no attempt was made in England to construct canals till a comparatively recent period. The efforts of those who first began to improve the means of internal navigation were limited to attempts to deepen the beds of rivers, and to render them better fitted for the conveyance of vessels. So early as 1635, a project was formed for rendering the Avon navigable from the Severn, near Tewkesbury, through the counties of Warwick, Worcester, and Gloucester, "that the towns and country might be better supplied with wood, iron, pit-coal, and other commodities." This scheme was approved by the principal nobility and land-owners in the adjoining counties; but the civil war having broken out soon after, the project was abandoned, and does not seem to have been revived. After the restoration, and during the earlier part of last century, various acts were at different times obtained for cheapening and improving river navigation. For the most part, however, these attempts were not very successful. The current of the rivers gradually changed the form of their channels; the dikes and other artificial constructions were apt to be destroyed by inundations; alluvial sand banks were formed below the weirs; in summer the channels were frequently too dry to admit of being navigated, while at other periods the current was so strong as to render it quite impossible to ascend the river, which at all times, indeed, was a laborious and expensive undertaking. These difficulties in the way of river navigation seem to have suggested the expediency of abandoning the channels of most rivers, and of digging parallel to them artificial channels, in which the water might be kept at the proper level by means of locks. The act passed by Parliament in 1755 for improving the navigation of Sankey Brook, on the Mersey, gave rise to a lateral canal of this description, about 11¼ miles in length, which deserves to be mentioned as the earliest effort of the sort in England. But before this canal had been completed, the celebrated Duke of Bridgewater, and his equally celebrated engineer, the self-instructed James Brindley, had conceived a plan of inland navigation independent altogether of natural channels, and intended to afford the greatest facilities to commerce, by carrying canals across rivers and through mountains, wherever it was practicable to construct them. The duke was proprietor of a large estate at Worsley, 7 miles from Manchester, in which were some very rich coal-mines that had hitherto been in great measure useless, owing to the cost of carrying coal to market. Being desirous of turning his mines to some account, it occurred to his grace that his purpose would be best accomplished by cutting a canal from Worsley to Manchester. Mr. Brindley, having been consulted, declared that the scheme was practicable; and an act having been obtained, the work was immediately commenced. "The principle," says Mr. Phillips, "laid down at the commencement of this business reflects as much honor on the noble undertaker as it does upon his engineer. It was resolved that the canal should be perfect in its kind; and that, in order to preserve the level of the water, it should be free from the usual obstruction of locks. But in accomplishing this end many difficulties were deemed insurmountable. It was necessary that the canal should be carried over rivers, and many large and deep valleys, where it was evident that such stupendous mounds of earth must be raised as would scarcely, it was thought by numbers, be completed by the labor of ages; and, above all, it was not known from what source so large a supply of water could be drawn, even on this improved plan, as would supply the navigation. But Mr. Brindley, with a strength of mind peculiar to himself, and being possessed of the confidence of his great patron, contrived such admirable machines, and took such methods to facilitate the progress of the work, that the world soon began to wonder how it could be thought so difficult.

The success that attended the Duke of Bridgewater's canal stimulated public-spirited individuals in other districts to undertake similar works. Mr. Brindley had early formed the magnificent scheme of joining

the great ports of London, Liverpool, Bristol, and Hull, by a system of internal navigation; and though he died in 1772, at the early age of 56, he had the satisfaction to see his grand project in a fair way of being realized. The Trent and Mersey, or, as it has been more commonly termed, the Grand Trunk Canal, 96 miles in length, was begun in 1766, and completed in 1777. A water communication between Hull and Liverpool was thus completed; and by means of the Staffordshire and Worcestershire Canal, which joins the Grand Trunk near Haywood in the former, and the Severn near Stourport in the latter, the same means of communication was extended to Bristol. During the time that the Grand Trunk Canal was being made, a canal was undertaken from Liverpool to Leeds, 130 miles in length; another from Birmingham to the Staffordshire and Worcestershire Canal, joining it near Wolverhampton; and one from Birmingham to Fazely, and thence to Coventry. By canals subsequently undertaken, a communication was formed between the Grand Trunk Canal and Oxford, and consequently with London, completing Brindley's magnificent scheme. In 1792 the Grand Junction Canal was begun, which runs in a pretty straight line from Brentford, on the Thames, a little above the metropolis, to Braunston, in Northamptonshire, where it unites with the Oxford and other central canals. It is about 90 miles in length. There is also a direct water communication, by means of the River Lea navigation, the Cambridge Junction Canal, etc., between London and the Wash. In addition to these, an immense number of other canals, some of them of great magnitude and importance, have been constructed in different parts of the country; so that a command of internal navigation has been obtained, unparalleled in any European country, with the exception of Holland.

In Scotland, the great canal to join the Forth and Clyde was begun in 1768, but it was suspended in 1777, and was not resumed till after the close of the American war. It was finally completed in 1790. Its total length, including the collateral cuts to Glasgow and the Monkland Canal, is 38¾ miles. Where highest, it is 150 feet above the level of the sea. It is on a larger scale than any of the English canals. Its medium width at the surface is 56, and at the bottom 27 feet. Originally it was about 8 feet 6 inches deep; but within these few years its banks have been raised, so that the depth of water is now about 10 feet. It has in all 39 locks. In completing this canal many serious difficulties had to be encountered. These, however, were all successfully overcome; and though unprofitable for a while, it has for many years past yielded a handsome return to its proprietors, the dividend having latterly been about 20 per cent. on the original stock. Swift boats on the plan of those subsequently described were established on this canal in 1852.—*See* CLELAND'S *Statistics of Glasgow*, p. 170, etc. The Union Canal joins the Forth and Clyde Canal near Falkirk, and stretches thence to Edinburgh, being 31½ miles in length. It is 40 feet wide at the top, 20 at the bottom, and 5 deep. It was completed in 1822. But it appears to have been an extremely ill-advised undertaking; so much so that its proprietors have sold it, at a heavy loss, to the Edinburgh and Glasgow Railway Company, who employ it in the conveyance of coal and other heavy goods. A canal intended to form a communication between Glasgow, Paisley, and Ardrossan, was commenced in 1807; but only that portion connecting Glasgow with Paisley and the village of Johnstoun has hitherto been finished. This part is about 12 miles long; the canal being 30 feet broad at top, 18 at bottom, and 4½ deep. It was here that the experiments were originally made on quick traveling by canals, which are said to have demonstrated that it was practicable to impel a properly-constructed boat, carrying passengers and goods, along a canal at the rate of 9 or 10 miles an hour, without injury to the banks! The Crinan Canal across the peninsula of Kintyre, admitting vessels of 160 tons burden, is 9 miles in length, and 12 feet in depth. The Caledonian Canal is the greatest undertaking of the sort attempted in the empire. It stretches southwest and northeast across the island from a point near Inverness to another near Fort William. It is chiefly formed by Loch Ness, Loch Oich, and Loch Lochy. The total length of the canal, including the lakes, is 60½ miles; but the excavated part is only about 23 miles. At the summit it is 96½ feet above the level of the Western Ocean. It is mostly constructed upon a grand scale, being intended to be 20 feet deep, 50 feet wide at bottom, and 122 at top; the locks are 20 feet deep, 172 long, and 40 broad; and had it been wholly executed as was originally intended, frigates of 32 guns, and merchant ships of 1000 tons burden, might [illegible]. It was opened in 1822, being [illegible] entirely at the expense of government, from the designs and under the superintendence of Thomas Telford, Esq. The entire cost amounted, exclusive of interest, on the 1st of May, 1853, to £1,347,780. It would appear, however, to have been projected without due consideration, and has been a most unprofitable speculation. The revenue of the canal amounted, in 1852–53, to only £6889, whereas the expenditure during the same year amounted to £7429! But this is not all. Owing to a wish to lessen the expense, and to hasten the opening of the canal, parts of it were not excavated to their proper depth, while others were executed in a hurried and insufficient manner. Hence the canal does not really admit vessels of above 250 or 300 tons burden; and previously to steam-tugs being provided on the lakes, they were frequently delayed in making their passage across for a lengthened period. During 1837 and 1838 the works sustained considerable damage; and the reader need not be surprised to hear that it was gravely debated whether it would not be better entirely to break up and abandon the canal! There was naturally, however, an extreme disinclination to destroy a work which, how inexpedient soever originally, has been executed at an enormous expense; and various schemes have been suggested for relieving the public from the expense of keeping it up without involving its destruction. Among others, it has been proposed to assign it to a joint-stock company, on their agreeing to complete the works and keep them in repair; and an act authorizing such transfer was passed in 1840. But hitherto it has not been found possible to dispose of the canal in this way; and Parliament has since voted large sums for the partial repair of the works, which, though a good deal improved, will every now and then require fresh outlays. Some other canals have been projected and completed in different parts of Scotland. Of these the Monkland Canal, for the supply of Glasgow with coal, has been the most successful.

Irish Canals.—Various canals have been undertaken in Ireland, of which the Grand Canal and the Royal Canal are the principal. The Grand Canal was begun in 1765, by a body of subscribers; but they could not have completed the work without very large advances from government. The canal commences at Dublin, and stretches in a westerly direction, inclining a little to the south, to the Shannon, with which it unites near Banagher, a distance of 85 statute miles, and thence on the west side of the river to Ballinasloe, 14 miles. But, exclusive of the main trunk, there is a branch to Athy, where it joins the Barrow, a distance of about 27 miles; and there are branches to Portarlington, Mount-Mellick, and some other places. The total length of the canal, with its various branches, is about 164 English miles. Its summit elevation is two hundred feet above the level of the sea at Dublin. It is 40 feet wide at the surface, from 24 to 20 feet at bottom, has six feet water, and cost in all above £2,000,000.

American Canals.—The States of the Union are distinguished by the spirit with which they have undertaken, and the perseverance they have displayed in executing, the most magnificent plans for improving and extending internal navigation. The following is a description of the principal canals in the United States:

MAINE.—Cumberland and Oxford Canal. This navigation, partly natural and partly artificial, extends about 50 miles from Portland, Me., to Sebago Lake. The head of the canal is at the end of Long Pond, which is 10 miles in length.

NEW YORK.—This State has the most extended and important system of canals, connecting the navigation of the Hudson River with that of the great Lakes, and Lake Champlain, Delaware, and Alleghany Rivers. Champlain Canal is 62½ miles in length, 40 feet wide at the surface, 26 feet at the bottom, and 4 feet in depth, and connects Albany, on the Hudson River, with Whitehall on Lake Champlain.

Important Connection of New York Canals.—The Lateral Canal, connecting the canals of New York State with the head waters of the Alleghany River, has just been finished to its terminus at Olean, on that river, in Cattaraugus county, New York. From thence it extends to the Genesee Canal, on the Genesee River, in Alleghany county, New York, which runs north to Rochester, where it commands the trade of Lake Ontario, and, connecting with the Erie Canal, leads to Buffalo and Albany. The connection of Pittsburg and Rochester, by this route, depends on the navigation of the Alleghany River. The whole distance to Olean, 240 miles, is said to be navigable, and for 200 miles above Pittsburg it is navigable for small steamboats. The consummation of this work will be of vital importance to the people of the Alleghany Valley, and a large share of the rapidly increasing trade of that section will find its way to this city over the Pennsylvania Railroad. The distance from Pittsburg to Philadelphia is 353 miles, and from Olean to New York, by the New York and Erie Railroad, is 396 miles.

Delaware and Hudson Canal, built by a private company. It is 33 miles in length, 32 feet wide at the surface, 20 feet at the bottom, and 4 feet deep. It connects the Hudson at Rondout with the Delaware River, and connects with the Lackawaxen Canal, in Pennsylvania. The principal trade of this canal is in coal, as it extends by its connections into the coal region of Pennsylvania.

NEW JERSEY.—Morris Canal is 102 miles long, 32 feet wide at the surface, and 18 feet at the bottom, and 4 feet deep. It extends from Jersey City, on the Hudson, to Easton, Pennsylvania, where it connects with the Lehigh Canal, Pennsylvania.

PENNSYLVANIA.—Schuylkill Canal or Navigation. It is 108 miles in length, is 36 feet wide at the surface, 24 feet at the bottom, and 4 feet deep. It extends from Philadelphia to Reading, and from thence to Mount Carbon, where it has connections with the anthracite coal mines.

The Pennsylvania Canal is formed of several divisions: it is to connect Columbia with Pittsburg, on the Ohio; but its middle division over the Alleghany Mountains, from Hollidaysburg, on the eastern side, to Johnstown, on the western side, is a division of railroad. Its total length, including 37 miles of railroad, is 315 miles.

The Chesapeake and Ohio Canal, had it been completed, would have been a great and useful work. It begins at the tide-water of the Potomac River, above Georgetown, in the District of Columbia, and is intended to terminate at Pittsburg, in Pennsylvania, a distance of 341½ miles. Its dimensions are nearly identical with those of the new Erie Canal; its breadth at the surface being from 60 to 80 feet, 50 feet at the bottom, with a depth of water varying from 6 to 7 feet. Several tunnels occur in the line, which crosses the Alleghany ridge. The cost of this work was estimated at $22,275,000, which were to be subscribed partly by individuals, and partly by the United States and the States of Maryland and Pennsylvania. This canal now terminates at Cumberland, Maryland, and there is but a slight probability of its ever being completed.

OHIO.—The principal canal in this State is from Portsmouth, on the Ohio, to Cleveland, on Lake Erie: it is 307 miles long.

ILLINOIS.—The canal from Chicago, on Lake Michigan, to Peru, on the Illinois River, is of the first importance to the trade of this State.

INDIANA.—The Louisville and Portland Canal, now the sole property of the United States, has been under the direction of the Treasury Department the past two years. The tolls, by direction of the department, were reduced one-half, and the receipts for the past two years have been expended in the repair of the locks and enlargement of the canal, improvement of the bridges, etc.

Erie Canal.—Besides others of great, though inferior, magnitude, a canal has been formed connecting the Hudson with Lake Erie. This work is 363 miles in length, the rise and fall along the entire line being 692 feet. It was originally 40 feet wide at the surface, 28 feet at the bottom, and 4 feet deep. But these dimensions being found, from the rapidly increasing traffic and importance of the canal, to be far too limited, an act was passed in 1835 providing for its enlargement. Under this act the canal has been increased, so as to be 70 feet wide on the surface, 42 feet at the bottom, and 7 feet in depth, the locks being of corresponding dimensions. The original cost of the canal was $9,027,456; and the cost of the enlargement has been about $25,000,000, or nearly three times its first cost. The Erie Canal is the property of the State of New York, and is one of the greatest and most important works of its kind in the world. Notwithstanding the contracted scale on which it was originally constructed, it has completely verified the predictions of its projector, De Witt Clinton, having been of singular advantage, in a public point of view, to the State of New York and the Union generally. This work was first suggested as early as the year 1816, by a memorial from the City of New York to the Legislature. An artificial canal from the Hudson to Lake Erie had, in fact, been under consideration by eminent citizens of the State for a century before. As early as 1724, Cadwallader Colden, then surveyor general of the province of New York, described the route as practicable to Lakes Champlain and Ontario. During the Revolution, the importance of such a work was made evident. After that period, General Washington made a tour to the interior of New York, and also westwardly to Pittsburg, and at that early day urged the connection of the Ohio with the waters of the Chesapeake. President Jefferson took a deep interest in the same subject, and said, "there will be a competition between the Hudson and Potomac Rivers for the residue of the commerce of all the country westward of Lake Erie."—*See* HUNT'S *Merchants' Magazine*, September, 1850, p. 262. He urged the construction of a canal from the Ohio to the Chesapeake, as nearer to Alexandria than New York by 580 miles; and that navigation through New York would be closed several months of the year; "whereas the channel to the Chesapeake leads directly into a warmer climate, so that vessels may pass the whole winter, subject only to short delays."—*Ibid.* The importance of adding facilities for communication with the western parts of New York was also urged by Governor Clinton, in 1791 and 1792; by General Schuyler; Surveyor general De Witt, in 1808; and at every meeting of the Legislature from the time of the adoption of the Constitution, the subject was strongly urged upon the consideration of the members. In March, 1810, a joint resolution was introduced for the appointment of Governeur Morris, Stephen Van Rensselaer, De Witt Clinton, Peter B. Porter, and others,

as commissioners for exploring the route for inland navigation from the Hudson to Lakes Ontario and Erie; and $3000 appropriated for expenses of surveys. A through canal was then considered as the acme of human wishes, so far as communication with the *Far West* was concerned. Railroads were not dreamed of then, nor, in fact, until the years 1820 and 1825.

The commissioners said in 1812: "Viewing the extent and fertility of the country with which this canal is to open a communication, it is not extravagant to suppose that, when settled, its produce will equal the present export of the United States." (The foreign exports of that year amounted to the enormous sum of $38,000,000, and four years before were $108,000,000). And they add, "Will it appear improbable that twenty years hence (1832) the canal should annually bring down 250,000 tons?"

The prophecy of the commissioners was more than fulfilled. In twenty years after the completion of the Erie Canal, there came to tide-water on that canal 1,107,000 tons, valued at more than $45,000,000; and the tolls amounted to two and a half millions of dollars.

On the 26th of October, 1825, eight years and four months from the time of its commencement, the Erie Canal was completed. The original profile of the Erie Canal, published in 1825, shows 83 locks, and a rise and fall equal to 687 feet. These were finally reduced to 71 locks, and a rise and fall of 640 feet.

In 1828, an act was passed to connect the Cayuga and Seneca Canal with Cayuga Lake. In 1829 the construction of the Chenango Canal was authorized, and surveys ordered of a route from the Erie Canal to the Alleghany River; 2. For the Black River Canal; 3. For a canal from Otsego Lake to the Erie Canal.

In July, 1835, the Canal Board resolved that the Erie Canal be enlarged, so as to give 6 feet depth and 60 feet width of water on the surface, and that the locks be 105 feet long and 15 feet wide in the clear. It was finally decided to make the locks 110 feet long and 18 feet wide.

Previous to this time, in addition to the Erie and Champlain Canals, the following had been authorized:

1. The Oswego Canal; from the Erie Canal at Syracuse to Lake Ontario, thirty-eight miles, finished in 1838, at a cost of $565,437
2. The Cayuga and Seneca Canal, connecting the Cayuga and Seneca Lakes with the Erie Canal at Montezuma, twenty-three miles, finished in 1829, at a cost of 237,000
3. The Chemung Canal, connecting the Chemung River at Elmira with the head of Seneca Lake; length in all, thirty-nine miles; finished in 1833, at a cost of $316,000
4. Crooked Lake Canal, eight miles, finished in 1836 ..... $120,000
5. The Chenango Canal, from the Susquehanna River at Binghamton to the Erie Canal at Utica, ninety-six miles, finished in 1837 ..... $2,417,000

CANAL TOLLS OF THE ERIE AND CHAMPLAIN CANALS.

Years.	Erie Canal.		Champlain Canal.		Total Tolls.
	Miles.	Tolls.	Miles.	Tolls.	
1820	94	$5,244			$5,244
1821	94	25,001	24	$1,386	24,388
1822	116	60,440	49	3,625	64,072
1823	160	126,132	61	26,966	153,100
1824	280	294,546	64	46,214	340,761
1825	333	492,664	64	73,615	566,280
1826	363	677,466	64	84,596	762,003
1827	363	775,919	64	83,341	859,260
1828	363	727,630	64	107,757	835,407
1829	363	707,883	64	87,171	795,054
1830	363	943,545	64	89,053	1,032,600
1831	363	1,091,714	64	102,896	1,194,610
1832	363	1,085,612	64	110,191	1,195,804
1833	363	1,290,136	64	132,539	1,422,695
1834	363	1,179,744	64	115,211	1,294,956
1835	363	1,375,821	64	116,131	1,491,952
1836	363	1,440,539	64	115,425	1,555,965
		$12,297,099		$1,206,084	$13,594,613

A further enlargement of the Erie Canal, and of the Genesee Valley and Black River Canals, was authorized by the law of July 10, 1851. This Act, although declared unconstitutional, was subsequently confirmed.—*See* NEW YORK and HUDSON RIVER.

CANALS IN THE UNITED STATES—1850.

Canals.	Miles.	Canals.	Miles.
Maine.		Union	82
Cumber'd and Oxford	20·5	Lehigh Navigation	47·
Songo River Impr.	30·	*Delaware.*	
New Hampshire.		Chesapeake and Del.	14·
Bow Falls	·3	*Maryland.*	
Hunkset Falls	·1	Chesapeake and Ohio	184·
Amoskeag Falls	1·	Chesapeake and Delaware	—
Sewell's Falls	·3	*Virginia.*	
Middlesex	9·	Alexandria	7·2
Vermont.		James River and Kanawha	148·
White River Falls	·5	Dismal Swamp	23·
Bellow's Falls	·2	Branches	11·
Waterqueeshy	·4	*North Carolina.*	
Massachusetts.		Weldon	12·
Middlesex	27·	Club Foot	1·5
Pawtucket	1·6	Dismal Swamp	—
Blackstone	45·	*South Carolina.*	
Hampshire	22·	Santee	22·
Montague Falls	3·	Winyaw	7·5
South Hadley Falls	2·	Sainda	6·2
Rhode Island.		Drehr's	1·3
Blackstone	—	Lorick	1·
Connecticut.		Lockhart's	2·7
Enfield Falls	5·5	Wateree	4·
New York.		Catawba	7·8
Erie	364·	*Georgia.*	
Champlain Junction	64·	Savannah	16·
Waterford Junction	2·	Brunswick	12·
Oswego	38·	*Alabama.*	
Cayuga and Seneca	21·	Muscle Shoal	35·7
Crooked Lake	8·	Huntsville	16·
Chemung	39·	*Louisiana.*	
Chemung Feeder	16·	Orleans Bank	4·2
Chenango	97·	Carondelet	4·
Genesee Valley	108·5	Barataria	85·
Danville Branch	11·	Lake Veret	8·
Black River	77·5	*Kentucky.*	
Black River Feeder	10·	Louisville and Portl'd	2·5
Delaware and Hudson	85·	Kentucky River Impr.	100·
Harlaem (not used)	5·	Licking " "	64·
Croton Aqueduct	40·	Green " "	150·
Oneida	8·	Barren " "	100·
New Jersey.		*Illinois.*	
Delaware and Raritan	42·	Illinois and Michigan	100·
Morris	101·	*Indiana.*	
Salem	4·	Wabash and Erie	367·7
Pennsylvania.		Whitewater	—
Delaware Division	59·7	*Ohio.*	
Eastern Division	44·5	Ohio and Erie	307·
Susquehanna Division	39·	Zanesville Branch	14·
Juniata	127·5	Columbus "	10·
West Branch	75·	Lancaster "	9·
North Branch	73·	Hocking Valley	56·
Western Division	105·	Walhonding Branch	26·
Franklin	22·	Easport "	4·
Erie and Beaver	136·	Dresden "	2·
French Creek Feeder	27·	Miami and Branches	87·7
Lackawaxen	22·	Miami Extension, etc.	159·
Bald Eagle	25·	Wabash and Erie	91·
Tide-water	45·	Muskingum Impr.	91·
Conestoga	18·	Sandy and Beaver	86·
Codorus	11·		
Schuylkill	108·		

COMPARATIVE COST OF CANALS.

	Miles.	Per Mile.
Of New York	443	$24,150
Of Pennsylvania	642	26,100
Of New Jersey	144	41,300
Of Maryland and Delaware	204½	62,250
Of Virginia	147	34,150
Of Ohio	646	16,600
Of Indiana	379	33,968
Of Illinois	102	84,846
Of Canada	89¼	155,300

Recapitulation of canals (including slack-water navigation) in each State in 1854.

States.	Miles of Canals.	States.	Miles of Canals.
Alabama	51	Missouri	....
Connecticut	61	New Hampshire	11
Delaware	14	New Jersey	147
Florida	....	New York	989
Georgia	28	North Carolina	13
Illinois	100	Ohio	924
Indiana	367	Pennsylvania	936
Iowa	....	Rhode Island	....
Kentucky	486	South Carolina	50
Louisiana	101	Tennessee	....
Maine	50	Texas	....
Maryland	184	Vermont	....
Massachusetts	100	Virginia	189
Michigan	....	Wisconsin	....
Mississippi	....	Total	4798

Canadian Canals.—The British government has expended a very large sum upon the Rideau River and Canal, stretching from Kingston, on Lake Ontario, to Bytown, on the Ottawa, or Grand River, an affluent of the St. Lawrence. But this work was undertaken as much in the view of improving the military defenses of Canada as of protecting its commerce, though in the latter respect it has been of considerable utility. The British government has also constructed the Welland Canal, uniting Lakes Erie and Ontario, the navigation between which by the river is interrupted by the Falls of Niagara. This canal has become a well-frequented commercial channel, and is every day rising in importance. The public works of Canada have already attained some degree of celebrity, both in America and England. "There is no country," observes Mr. I. D. Andrews, in his report to the United States Senate, "which possesses canals of the magnitude and importance of those in Canada." The Erie Canal, which is the rival American water route for carrying the produce of the great Western wheat-growing countries to the Atlantic sea-board, is capable only of transporting barges of 75 tons burden; whereas the canals of Canada are on a scale to allow of ocean-going vessels of from 350 to 500 tons, and carrying 4000 barrels of flour, to proceed through them, and thus accomplish an inland navigation into the heart of the continent for a distance of 1587 miles from tide water at Quebec. The public productive works of Canada, consisting of canals, light-houses, etc., yielded a net revenue in 1851 of £58,738. The work yielding the largest amount of revenue was the Welland Canal, extending from the head of Lake Ontario to the foot of Lake Erie, thus overcoming the interruption to navigation caused by the Falls of Niagara. The length of the main trunk of this canal is 28 miles, and of a feeder branch, from the Grand River to the main trunk, 21 miles. Its width at bottom is 35 feet, at top 71 feet, and the depth is 10 feet. The dimensions of the locks are from 150 to 200 feet in length, the width from 26½ to 45 feet, and the depth on metre 9½ feet. The amount of lockage is 346 feet, and the number of locks 27. This canal is also important as affording an unlimited supply of water-power to numbers of mills and factories on its banks. The St. Lawrence Canals, connecting Lake Ontario with the River St. Lawrence at Montreal, extend in all to 40½ miles, having 27 locks, and an amount of lockage of 204¾ feet. The whole of these have the dimensions of their locks as large as those of the Welland Canal, and have all 9 feet of water in these locks. The Lachine Canal, cutting through the island of Montreal, is 8 miles in length and 10 feet deep. It is now in contemplation to construct another important canal, connecting Lake Champlain with the St. Lawrence, and thus afford a more desirable route for the trade between the Hudson River and Canada and the Western States.

Increased Speed of Traveling by Canals.—Great, however, as have been the advantages derived from the formation of canals, their progress has been to a considerable degree checked by the formation of RAILROADS (which see). We believe, however, that canals will always be preferred for the conveyance of coal and other bulky and heavy products; and even passengers are now conveyed along them with a rapidity that would previously have been supposed impossible. This new system was introduced on the Paisley and Glasgow Canal, by Mr. Houstan, in June, 1831. The results are described in the following statements, to which it is unnecessary to call the reader's attention.

Mr. Thomas Grahame, civil engineer, in his "Letter to Canal Proprietors and Traders," says, "The experiments of great velocity have been tried and proved *on the narrowest, shallowest, and most curved canal in Scotland*, viz., the Ardrossan or Paisley Canal, connecting the city of Glasgow with the town of Paisley and village of Johnstoun, a distance of 12 miles." The result has disproved every previous theory as to difficulty and expense of attaining great velocity on canals, and as to the danger or damage to their banks by great velocity in moving vessels along them. "The *ordinary speed* for the conveyance of passengers on the Ardrossan Canal has, for nearly two years, been *from nine to ten miles an hour*; and, *although there are fourteen journeys along the canal per day at this rapid speed, its banks have sustained no injury.* The boats are 70 feet in length, about 5 feet 6 inches broad, and, but for the extreme narrowness of the canal, might be made broader. They carry easily from 70 to 80 passengers; and, when required, can and have carried upward of 110 passengers. The entire cost of a boat and fittings up is about £125. The hulls are formed of light iron plates and ribs, and the covering is of wood and light oiled cloth. They are more airy, light, and comfortable than any coach. They permit the passengers to move about from the outer to the inner cabin, and the fares per mile are *one penny* in the *first*, and *three farthings* in the *second cabin*. The passengers are all carried under cover, having the privilege also of an uncovered space. These boats are drawn by two horses (the prices of which may be from £50 to £60 per pair), in stages of four miles in length, which are done in from 22 to 25 minutes, including stoppages to let out and take in passengers, each set of horses doing three or four stages alternately each day. In fact, the boats are drawn through this narrow and shallow canal at a velocity which many celebrated engineers *had demonstrated, and which the public believed, to be impossible.* The entire amount of the whole expenses of attendants and horses, and of running one of these boats four trips of 12 miles each (the length of the canal), or 48 miles daily, including interest on the capital, and 20 per cent. laid aside annually for replacement of the boats, or loss on the capital therein vested, and a considerable sum laid aside for accidents and replacement of the horses, is £700 some odd shillings; or, taking the number of working days to be 312 annually, something under £2 2*s.* 4*d.* per day, or about 11*d.* per mile. The actual cost of carrying 80 to 100 persons a distance of 30 miles (the length of the Liverpool Railway), at a velocity of nearly 10 miles an hour, on the Paisley Canal, one of the most curved, narrow, and shallow in Britain, is therefore just £1 7*s.* 6*d.* sterling. Such are the facts, and, incredible as they may appear, they are facts which no one who inquires can possibly doubt. Boats on this principle have since been established on a great many British canals, and on the Grand and Royal Canals in Ireland.

Profits of Canals.—It is a well-known fact that canals, at an average, and allowing for the length of time that must elapse from the first outlay of capital before they yield any return, are not very productive. When, indeed, they connect places that have an extensive intercourse, and when no very extraordinary difficulties have to be surmounted in their construction, they most commonly yield very large profits; but, generally speaking, this does not appear to be the case; and, on the whole, they seem to have been more beneficial to the public than to their projectors.

Canary Islands. They lie in the North Atlantic Ocean, between the parallels of lat. 27° 40′ and 29° 30′ N., and the meridians of long. 13° 30′ and 18° 20′ W. The names of the seven principal islands, their respective area in English square miles, and their population in 1835, are given in the following table:

	Teneriffe.	Grand Canary.	Palma.	Lancarote	Fuerteventura.	Gomera.	Hierro.
Area, sq. miles....	877·7	758·3	718·5	323·5	836·1	169·7	82·2
Population	85,000	68,000	58,000	17 400	13 800	11,700	4400

Fuerteventura lies nearest to the African coast, the interval being between 50 and 60 miles. Besides these, there are many islets, most of which are uninhabited. The grape disease made its appearance at the Canaries in 1853, and destroyed nearly the whole crop. Previously the total annual produce was estimated at about 40,000 pipes, of which 25,000 pipes were produced in Teneriffe. Between 8000 and 9000 pipes were exported. The price per pipe on board ranged from £8 to £20. Some of the wine is distilled into good brandy. Sumach for the tanners, canary-seed, and a little flax, are grown. The gardens produce, in addition to the vegetables of English gardens, pumpkins, gourds, yams (taro), garlic, red pepper, and the castor-oil plant. The fruit trees are badly managed, so that the fruit is generally inferior. Here are found fruits from every quarter of the globe, including oranges, figs, bananas, dates, pine-apples, pomegranates, papaws, guavas, custard apples, and prickly pears (the fruit of the cactus). There are no cocoa-nut trees or bread-fruit trees, as Humboldt reports. A little oil is obtained from the olive in Grand Canary. The agave is abundant, and supplies a material for ropes, girths, etc. The leaves of the date palm are made into hats and baskets. A good deal of orchilla lichen is gathered for exportation; and the ice-plant is cultivated for barilla. The sugar manufacture, once so largely carried on, has fallen before the American and West Indian trade; the only two existing mills are on Palma. Wine having been for some time so little remunerative, other things have received attention, the chief of which is the cochineal insect, which feeds on the common cactus (*Opuntia tuna*), and is now largely produced on all the islands, land formerly occupied by grain and vines being devoted to its cultivation. The insect has not been long introduced, but the cultivation has rapidly extended. In 1849, 800,000 pounds were exported, principally to France and England. Since that year the exports have much increased; the price paid to the Canary exporter is about a dollar per pound. The silkworm is reared to a small extent, chiefly on Palma. Raw silk is exported, and some is manufactured on the spot into stockings, ribbons, etc. Some linen and woolen stuffs of a coarse kind are made for home consumption, but the great bulk of the clothing in use is of British manufacture. The island goats (a peculiar and esteemed breed) furnish milk, from which butter and cheese are made. Sheep, of a small coarse-wooled breed, are numerous. Horses and cattle are scarce; domestic fowls and rabbits are plentiful. Asses and mules are much used. A fishery on the African coast, at present engaging from 40 to 50 vessels, and giving employment to many persons, has existed since an early period. It was deemed of such importance, that the home government lately sent out a commissioner to report on it with a view to its improvement. The fish taken is principally bream. It is salted, and largely consumed at the Canaries. There is an extensive intercourse by means of boats and small sailing vessels among the different islands. In this way wine, raw silk, cochineal, barilla, and dried fruits are taken to the places of export; and grain is conveyed from those islands where it is abundant to those where the supply is deficient. The principal foreign trade is with England, the chief exports being wine, cochineal, barilla, and orchilla. The imports consist of iron, metal goods, glass, crockery, leather, silk, cotton, and woolen manufactures. There is also a considerable trade with the United States, and the countries bordering the Mediterranean. With Hamburg and France an exchange of commodities takes place. The ships employed in this commerce are foreign, chiefly British, but the islanders send a few vessels of their own with brandy, coarse earthen-ware, and silk goods to the Spanish West Indies, bringing back cigars, sugar, coffee, rum, cacao (the material of chocolate), and a few other articles. Santa Cruz, Orotava, and Las Palomas, are the only ports engaged in foreign trade: nearly 200 vessels enter these ports in the course of a year. In 1852 the ports were practically made free—the small duty of 2*s.* per cent. only being now levied upon imported goods, with the exception of tobacco, which pays 5*d.* per pound and cigars, which pay 10*d.* per pound. A Spanish steamer from Cadiz makes two voyages to Santa Cruz every month. The Spanish government packet, on her outward voyage to Havana, touches at Santa Cruz once a month; and the same port is visited monthly by the English mail steamers to Brazil and the African coast, both on their outward and homeward voyages.

Teneriffe, the largest island of the group, lies between Canary and Gomera. It is of an irregular shape, 60 miles in length, with an extreme breadth of 30 miles. Not more than one-seventh is cultivable. A chain of mountains traverses the island in the direction of its greatest length, and in the middle of the broadest part rises the celebrated peak locally known as the Pico de Teyde, which, with its supports and spurs, occupies nearly two-thirds of the whole island. It has a double top; the highest, El Piton, is 12,180 feet above the sea; the second, Chahorra, connected with the first by a short and narrow ridge, has a height of 9880 feet. They are both orifices in the same grand dome of trachyte. Neither reaches the line of perpetual snow. There is, however, a natural cavern, 11,000 feet above the sea, where snow is preserved all the year. Snow remains about four months on the upper part of the peak.—E. B.

There are several species of *nopal* (*la Tunera silvestre*), Indian fig (*Cactus tuna*), short leaf with numerous thorns, which serves only for coloring sugar, fruit, and wafers; and *la Tunera amarilla*, with large, yellow, sweet fruit, and round green leaves. The *Tunera blanca* is best adapted for the culture of cochineal; but it is inconvenient on account of its numerous thorns. Lastly, there is an American species, with very soft thorns, which is likewise available for cochineal culture.

The following table shows the increased product and exportation of cochineal from the Canaries:

Years.	Pounds.	Years.	Pounds.
1831	7½	1842	69,116
1832	118	1843	74,964
1833	1,060	1844	88,294
1834	1,752	1845	168,109
1835	4,561	1846	232,550
1836	5,966	1847	296,292
1837	7,001	1848	375,585
1838	23,119	1849	449,757
1839	27,061	1850	782,670
1840	66,521	1851	868,109
1841	90,919	1852	806,254

Thus, in the year 1853, the exportation would probably amount to 1,300,000 pounds; and the value of this, since the increased price consequent on the failure of crops in Honduras, would be £225,000.

Candle (Ger. *Lichter*, *Kerzen*; Du. *Kaarzen*; Fr. *Chandelle*; It. *Candelle*; Sp. and Port. *Velas*; Russ. *Swjetschi*; Lat. *Candela*), a taper of tallow, wax, or spermaceti, the wick of which is commonly of several threads of cotton spun and twisted together. The Roman candles were composed of strings surrounded by wax or dipped in pitch. Splinters of wood, fatted, were used for light among the lower classes in England about A.D. 1300. At this time wax candles were little used, and esteemed a luxury, and dipped candles usually burned. The Wax Chandlers' Company, of London, was incorporated 1484. Mould candles are said to be the invention of the sieur Le Brez, of Paris. Spermaceti candles are of modern manufacture. The Chinese candles are made from the berries of the candlebury-myrtle, and they universally burn this wax, which is fragrant, and yields a bright light.—Hayden.

Dr. Ure gives the following table, as containing the result of certain experiments he had made, in order to determine the relative intensity of the light, and the duration of different sorts of tallow candles:

Number in a Pound.	Duration of a Candle.	Weight in Grains.	Consumption per Hour, in Grains.	Proportion of Light.	Economy of Light.	Candles equal one Argand.
10 mould	5 hrs. 9 min.	682	132	12½	68	5·7
10 dipped	4 " 36 "	672	150	13	65½	5·25
8 mould	6 " 31 "	856	132	10½	50½	6·6
6 mould	7 " 24 "	1160	163	14½	66	5·0
4 mould	9 " 36 "	1787	196	20½	80	3·5
Argand oil flame			512	60·4	100	

"A Scotch mutchkin," says Dr. Ure, "or ½th of a gallon of good seal oil, weighs 6010 gr., or 13 1-10 oz. avoirdupois, and lasts in a bright Argand lamp 11 hours 44 minutes. The weight of oil it consumes per hour is equal to four times the weight of tallow in candles eight to the pound, and three times and a quarter the weight of tallow in candles six to the pound. But its light being equal to that of 5 of the latter candles, it appears from the above table, that 2 pounds weight of oil, value 9*d.*, in an Argand, are equivalent in illuminating power to 3 pounds of tallow candles, which cost about 2*s*. The larger the flame in the above candles, the greater the economy of light."

Until of late years, candles were solely manufactured from beeswax, spermaceti, or tallow. The application of scientific chemical research, however, to this branch of art, coupled with the withdrawal of the vexatious excise supervision, which prevents improvements in every trade which comes under its influence, has so improved the materials used, as well as the manufacture itself, that all the best candles are now made from the pure solid and crystallizable margaric and stearic acids. These are freed from the fluid oleic acid, and from glycerin, which exist in combination with them in ordinary tallow, as well as from other analogous substances, as from paraffine (a carbo-hydrogenous substance resembling spermaceti, prepared from tar and peat), the stearic and margaric acids of the cocoa-nut oil and the palm oil (*Elais guineensis*), besides the old substances spermaceti, and wax, both vegetable and animal.

The discovery by the celebrated French chemist Chevreul, that fats were composed of three highly inflammable bodies, stearic and margaric acids (solids), and oleic acid (a liquid), combined with a comparatively uninflammable body, glycerin, has led to the creation of the great new manufacture of stearic and composite candles; the importance and growth of which will be understood when we state, that while in 1833 the new candles were unknown in England, and the quantity manufactured in France amounted to only twenty-five tons *annually*, a single London house (that of E. Price and Co.) manufactured last winter (1854) more than that quantity of stearic and composite candles *daily*, and employs in this business above 900 hands, and a capital of nearly three-quarters of a million. The old process for making stearic acid may be thus described: Tallow is boiled up with thin cream of lime, which causes the fat acids by superior affinity to forsake their glycerin and combine with the lime, the glycerin dissolving in the water; this combination is then broken by means of sulphuric acid, which, seizing on the lime, sets free the fat acids; these are then separated (the liquid from the solid) by means of pressure. This process of making fat acids is called "lime saponification." The hard matter remaining in the press is stearic, or a mixture of stearic and margaric acids, and the candles made from it are called stearin, or more properly stearic candles.

In 1840, it was discovered in England that by combining stearic acid with the solid matter, or stearin obtained by pressure from cocoa-nut oil, good candles not requiring snuffing might be made at a considerably less cost than stearic candles. These were called by the inventor "composite." The trade in these composite candles is now very great. Since 1840, numerous great improvements have been invented, which have resulted in the present manufacture of candles having all the good qualities of the old stearic, while they are sold at prices little exceeding that of tallow candles. The present improved process is this: Palm oil or other fatty matter is exposed at a high temperature to the action of concentrated sulphuric acid, which changes it into a mixture of fat acids of a very dark color, with a high melting point; this is then distilled in an atmosphere of steam. The distilled material is either used for making the cheaper descriptions of composite candles, or is subjected to hydraulic pressure, first at the temperature of the air, and then at a high heat; the result of pressure being the material used for making what are known as "Belmont sperm," corresponding with stearic candles.

A great improvement has been made in the manufacture of wicks; instead of the common twisted wick, a wick is now used plaited by machinery. The new wick, together with an improved process of preparing stearin, are used in the manufacture of the Star candles, which are burned in large quantities in the United States.

Wax candles do not appear to have participated in the improvements which have attended the manufacture of the improved stearic or composite candles, and they appear to be still chiefly manufactured by hand. They are made of a cotton or flaxen wick, slightly twisted, and covered with white or yellow wax. Of these there are several kinds; some of a conical figure, used to illuminate churches, and in religious processions, funeral ceremonies, etc.; others of a cylindrical form, used on ordinary occasions.—E. B.

Sale or Auction by Inch of Candle, is when a small piece of candle being lighted, the by-standers are allowed to bid for the merchandise that is selling; but the moment the candle is out, the commodity is adjudged to the last bidder.

Candy, or **Sugar Candy**, a preparation of sugar made by melting and crystallizing it six or seven times, to render it hard and transparent. *Candying* is the method of preserving fruits, etc., in substance, by boiling them in sugar.

Canella Alba (Fr. *Canella blanche*; Ger. *Weisser Zimmet*; It. *Canella bianca*; Sp. *Canella blanca*; Lat. *Canella alba*), the inner bark of the *Canella alba*, a tree growing in the West Indies. It is exported packed in casks and cases, in long pieces, some rolled in quills and others flat; the quilled sort is considerably thicker than cinnamon, and the flat nearly one-fourth of an inch in thickness. The quilled pieces are yellow on both sides; the flat pieces are yellow on the outside and pale brown within. The odor of both kinds, when fresh broken, is aromatic, something like a mixture of cloves and cinnamon; and the taste slightly bitter, and extremely warm and pungent.

Canes. *See* BAMBOO, RATANS.

Cannon, Cannons (Du. *Kanonen*; Fr. *Canons*; Ger. *Kanonen*; It. *Cannoni*; Pol. *Dziala*; Port. *Canhoes*; Russ. *Puschki*; Sp. *Canones*; Sw. *Kanon*), a kind of long hollow engines for throwing iron, lead, or stone balls by the force of gunpowder, commonly made of iron, but frequently also of a mixture of copper, tin, and brass. They are either cast hollow, or solid and then bored; those made in the latter way being very superior. Brass cannons, or cannons made of mixed metal, are said not to be so well calculated for hard service, or quick and continued firing, as those made of iron. The proportions of the ingredients used in making the former do not differ materially in different countries, though they rarely coincide. To 240 pounds of metal fit for casting, is commonly put 68 pounds of copper,

52 pounds of brass, and 12 pounds of tin. To 4200 pounds of metal fit for casting, the Germans put 3687 3-41 pounds of copper, 204 11-41 pounds of brass, and 307 26-41 pounds of tin. Others, again, use 100 pounds of copper, 6 pounds of brass, and 9 pounds of tin; and others, 100 pounds of copper, 10 pounds of brass, and 15 pounds of tin.

It seems to be the general opinion that cannon were first made use of in 1336 or 1338; but Don Antonio de Capmany has produced some statements which render it almost certain that some sort of artillery was used by the Moors in Spain so early as 1312.—*Questiones Criticus*, p. 181, etc. Cannons were certainly used by the English in 1347 at the siege of Calais, and by the Venetians at Chioggia in 1366, and in their wars with the Genoese in 1379 and 1380. The Turks employed them at the sieges of Constantinople, in 1394 and 1453. When first introduced, they were for the most part very heavy and unwieldy, and threw balls of an enormous size: they were, however, owing to their frequently bursting, about as dangerous to those using them as to their opponents. There is a valuable article on the construction and history of cannons in REES' *Cyclopedia*; but it was published previously to the appearance of Capmany's work referred to above.

The largest known piece of ordnance is of brass, cast in India in 1685. At Ehrenbreitstein Castle, one of the strongest forts in Germany, opposite Coblentz, on the Rhine, is a prodigious cannon eighteen feet and a half long, a foot and a half in diameter in the bore, and three feet four inches in the breech. The ball made for it weighs 180 pounds and its charge of powder 94 pounds. The inscription on it shows that it was made by one Simon in 1529. In Dover Castle is a brass gun called Queen Elizabeth's pocket-pistol, which was presented to her by the States of Holland: this piece is 24 feet long, and is beautifully ornamented, having on it the arms of the states, and a motto in Dutch, importing thus,

"Charge me well, and sponge me clean,
I'll throw a ball to Calais Green."

Some fine specimens are to be seen in the Tower. A leathern cannon was fired three times in the King's Park, Edinburgh, October 23, 1788.—PHILLIPS.

The precise date of the first cast-iron guns is not known, but it has been asserted by General Haguenin, that a piece of this description at Bois-le-Duc bears the date 1411. Some doubt, however, has been expressed on this subject, and it has been thought more probable, with reference to the invention of high smelting furnaces, to suppose this date 1511. In 1510 Ralph Page cast eight iron guns at Rackstadt; and in 1547 the use of such artillery began to become general, and was for nearly a century exclusively adopted in some countries. In France cast-iron guns were not manufactured before 1600; but so evident were the advantages to be gained by their use, both as regards the qualities of the guns and their moderate cost, that they were speedily adopted in most countries; foundries for iron guns having been established in Silesia in 1470, in Germany in 1577, in Saxony in 1594, in the Hartz in 1626, and in Sweden in 1640; one foundery alone, in the latter country, having been said to have supplied for some time from 400 to 500 cannons annually.

All these pieces of ordnance were cast hollow until 1729, when a horizontal boring machine was established at Lyons, and, after some trials made in 1731, M. Maritz abandoned hollow casting at Strasburg in 1744–'45, and adopted the boring machines.—E. B.

Canoe, or **Canoa**, the term generally used to designate the small vessels which uncivilized people, living near the water, use. In the East Indies there is a kind of boat known by this name, sometimes from 40 to 50 feet long, and 5 or 6 broad. The North American Indians generally impel their canoes with paddles, which have a very large blade and are managed perpendicularly. The canoes of Canada are of the most fragile texture, and of so little weight, that in passing from one river to another, the boatmen carry them on their heads across their portages. They are mostly covered with bark, the pieces of which are sewed together with a kind of grass. This bark is generally not more than a quarter of an inch in thickness; yet, in these frail vessels, the Indians and Canadians do not hesitate to descend very dangerous rapids. The Esquimaux are exceedingly dexterous in the management of their canoes. These consist of a light, wooden frame, covered with seal-skins, sewed together with sinews. The skins are not only extended round the bottom and sides, but likewise over the top, forming a complete deck, and having only one opening to admit the Indian to his seat. To this hole a flat hoop, rising about four inches, is fitted, to which is fastened the surrounding skin. The paddle is about 10 feet long, light, and flat at each end. In the Esquimaux language, the canoe is called a *kaiak*, or *man's boat*, to distinguish it from *umiak*, the *woman's boat*, which latter is a large boat for transporting the women with their families and possessions. The Greenlanders and Esquimaux use the same kind of canoes, and it is astonishing, when we consider their insignificant construction, at what a distance from the regions they commonly inhabit, these people, especially the former, are found in them. In the islands of the South Sea, the natives have a double canoe, united by a strong platform, serving in this way as one vessel. Such a canoe is capable of carrying a number of persons, and a considerable lading. Captain Cook gives us a long account of the different kinds of canoes used in Otaheite. —E. A.

Canoe Birch (*Betula papyracea*). By the French Canadians *Bouleau Blanc*, white birch, and *Bouleau à Canot*, canoe birch: it is known to the American also by these denominations, and sometimes by that of *paper birch*. The heart or perfect wood of this tree, when first laid open, is of a reddish hue, and the sap is perfectly white. It has a fine glossy grain, with a considerable share of strength; that it is but little employed is attributed partly to its speedy decay when exposed to the succession of dryness and moisture, and partly to the existence, in the countries which produce it, of several species of wood, which are far preferable for the uses of the carpenter and the wheelwright. It is sometimes employed by cabinet-makers for tables which are stained in imitation of mahogany. But the most important purpose for which it is employed, and one in which it is replaced by the bark of no other tree, is the construction of canoes. To procure proper pieces, the largest and smoothest trunks are selected; in the spring two circular incisions are made several feet apart, and two longitudinal ones on opposite sides of the tree; after which, by introducing a wooden wedge, the bark is easily detached. These plates are usually ten or twelve feet long, and two feet nine inches broad. Great use is made of these canoes by the Indians and by the French Canadians in their long journeys into the interior of the country; they are very light, and are easily transported on the shoulders from one lake or river to another, which is called the *portage*. A canoe calculated for four persons, with their baggage, weighs from forty to fifty pounds: some of them are made to carry fifteen passengers. Such are the ordinary uses of the bark and of the wood of this tree.—HOWN's *Sylva Americana*.

Cantharides, or **Spanish Fly** (Fr. *Cantharides, Mouches d'Espagne*; Ger. *Spanische Fliegen*; It. *Cantarelle*; Lat. *Cantharis*; Russ. *Hischpanskie muchi*; Sp. *Cantaridas*). This insect is found on a variety of shrubs in Spain, Italy, France, etc. Those used in England are imported partly from Sicily, but principally from Astracan, packed in casks and small chests: the most esteemed come from St. Petersburg. The best are of a lively fresh color, a small size, and not mouldy. They are frequently adulterated with the

Melolontha vitis; but this is distinguishable by its form, which is squarer than the cantharis, and by its black feet. If they be properly dried and protected from the air, they may be kept for a very long period. —THOMSON'S *Dispensatory*. There were four new varieties of cantharides from India shown at the London Exhibition of 1851.

Canton, one of the greatest emporiums in the East, ranking, as a port of trade, either before, or immediately after, Calcutta, in the province of Quantong, in China; being, previously to 1843, the only place in that empire open by authority to European traders: lat. 23° 7′ 10″ N., lon. 113° 14′ E. Canton stands on the eastern bank of the Pekin River, which flows from the interior in a navigable stream of 800 miles to this city, where it is rather broader than the Thames at London Bridge; falling, after an additional course of 80 miles, into the southern sea of China. Near its junction with the sea, it is called by foreigners Bocca Tigris. The town is surrounded by a thick wall, partly of stone and partly brick, and is divided into two parts by another wall running east and west. The northern division is called the old, and the southern the new city. In the old city is the Mantchou or Tartar general, with his garrison of Mantchou troops. The lieutenant governor or Fooyuen's office is also in the old city, but the governor and hoppo (principal customs officer) reside in the new city, not far from the river.

All foreign commerce is conducted in the southwest suburb, where the foreign factories are situated; and which, with the other suburbs, is probably not less populous than the city itself. The residence of Europeans is confined to a very small space, on the banks of the river; which might, however, be as pleasant as a crowded mercantile place can well be, were it not for the great number of small *dwelling boats* which cover the face of the river. The people who occupy the larger portion of these boats are said to have come originally from the south; and being a foreign and despised race, were not, at first, allowed to dwell on shore; but most of the distinctions between them and the rest of the people have been abolished. Although Canton is situated nearly in the same parallel of latitude as Calcutta, there is a considerable difference in their temperature; the former being much the coolest, and requiring fires during the winter months. The streets are very narrow, paved with little round stones, and flagged close to the sides of the houses. The front of every house is a shop, and those of particular streets are laid out for the supply of strangers. China Street is appropriated to Europeans; and here the productions of almost every part of the globe are to be found. One of the shop-keepers is always to be found sitting on the counter, writing with a camel's-hair brush, or calculating with his swampan, on which instrument a Chinese will perform operations in numbers with as much celerity as the most expert European arithmetician. This part of Canton being much frequented by the seamen, every artifice is used by the Chinese retailers to attract their attention; each of them having an English name for himself painted on the outside of his shop, besides a number of advertisements composed for them by the sailors in their own peculiar idiom. The latter, it may be supposed, are often duped by their Chinese friends, who have, in general, picked up a few sea phrases, by which the seamen are induced to enter their shops; but they suit each other extremely well, as the Chinese dealers possess an imperturbable command of temper, laugh heartily at their jokes without understanding them, and humor the seamen in all their sallies. Ships only ascend the river as far as Whampoa, about 15 miles below Canton, loading and unloading by means of native boats.

The Chinese, considered as traders, are eminently active, persevering, and intelligent. They are, in fact, a highly commercial people; and the notion that was once very generally entertained of their being peculiarly characterized by a contempt of commerce and of strangers is as utterly unfounded as any notion can possibly be. Business is transacted at Canton with great dispatch; and nowhere in the world may cargoes be sold and bought, loaded and unloaded, with more business-like speed and activity. Provisions and refreshments of all sorts are abundant in Canton, and, in general, of an excellent quality; nor is the price exorbitant. Every description of them, dead and alive, is sold by weight. It is a curious fact that the Chinese make no use of milk, either in its liquid state, or in the shape of curds, butter, or cheese. Among the delicacies of a Chinese market are to be seen horseflesh, dogs, cats, hawks, and owls. The country is well supplied with fish from the numerous canals and rivers by which it is intersected.

Foreign Factories.—These extend for a considerable way along the banks of the river, at the distance of about 100 yards. They are named, by the Chinese, *hongs*, and resemble long courts, or closes, without a thoroughfare, which generally contain four or five separate houses. They are built on a broad quay, and have a parade in front. This promenade is railed in, and is generally called *Respondentia Walk*; and here the European merchants, commanders, and officers of the ships meet after dinner and enjoy the cool of the evening. The English hong, or factory, far surpasses the others in elegance and extent. This, with the American and Dutch hongs, are the only ones that keep their national flags flying. The neighborhood of the factories is occupied with warehouses for the reception of European goods, or of Chinese productions, until they are shipped. In 1822, during a dreadful conflagration that took place at Canton, the British factories and above 10,000 houses were destroyed; on which occasion the East India Company's loss was estimated at £500,000 sterling, three-fifths in woolens.

For the space of four or five miles opposite to Canton the river resembles an extensive floating city, consisting of boats and vessels ranged parallel to each other, leaving a narrow passage for others to pass and repass. In these the owners reside with their families, the latter rarely visiting the shore. All the business at Canton with Europeans is transacted in a jargon of the English language. The sounds of such letters as B, D, R, and X are unknown in China. Instead of these they substitute some other letter, such as L for R, which occasions a Chinese dealer in rice to offer for sale in English a rather unmarketable commodity. The name mandarin is unknown among the Chinese, the word used by them to denote a person in authority being *quan*. Mandarin is a Portuguese word derived from the verb *mandar*, to command.—HAMILTON'S *East India Gazetteer*; MILBURN'S *Orient. Commerce*; *Companion to Anglo-Chinese Calendar*, *etc.*

The trade of Canton is retrograding, while that of Shanghai is increasing; and indeed it is not unlikely that the latter will in time supplant Canton in the European trade, as it enjoys the additional advantage of being nearer the tea districts. Canton was no doubt fixed upon by the Chinese government for the European trade, as being the most distant from the capital, Pekin.

Formerly only a limited number of merchants, called the hong or security merchants, were allowed to trade with foreigners. They were commonly men of large property, and were famed for integrity in their transactions. All foreign cargoes passed through the hands of these merchants, and by them also the return cargoes were furnished. They became security for the payment of duties, and it was treason for any other merchant to engage in the trade with foreigners. This severe law, however, has recently been abolished, and foreigners may now deal with any merchant they think fit to employ.

All goods are sold by weight in China—even articles of food, such as fowls, hogs, and the like.

The foreign trade of Canton is very extensive; but the great article of export is tea, for which the demand in Europe has been increasing for upward of a century. This article was formerly monopolized by the East India Company; and from their accounts it appears that they imported annually into England about 30,000,000 of pounds. But this monopoly was abolished in 1834, and the commerce with China was thrown open to all. The other exports are raw silk and silk manufactures, nankeen cloth, cassia, lignea, etc. The principal imports are cotton and woolen goods, earthen-ware, iron, steel, etc. In 1848, 176 British vessels of 73,975 tons, with goods of the value of 8,653,033 dollars, left, and 171 of 72,315 tons, with goods to the value of 6,534,597 dollars, entered the port of Canton. The Americans, French, and Dutch, also carry on a considerable trade with Canton.

Although situated in the same parallel of latitude as Calcutta, the climate of Canton is much cooler, and is considered superior to that of most places situated between the tropics. The thermometer, during the months of July and August, averages from 80° to 88°; and in January and February from 50° to 60°. The highest recorded observation in 1831 was 94° in July, and the lowest 29° in January. In shallow vessels ice sometimes forms at Canton a line or two in thickness. A fall of snow, nearly two inches deep, occurred at Canton in February, 1835, and remained on the ground three hours—a circumstance so unusual that the citizens hardly knew its proper name. Fogs are common during February and March. Most of the rain falls during May and June, but it is nothing in comparison of a rainy season in Calcutta. July, August, and September are the regular monsoon months, the wind coming from the southwest, with frequent showers, which allay the heat. In the succeeding months the northerly winds commence, with some interruptions at first; but from October to January the temperature is agreeable, the sky clear, and the air invigorating. Few large cities are more healthy than Canton; no epidemics nor malaria prevail there, though much of the town is built upon piles.

The intercourse between China and Europe by the way of the Cape of Good Hope began in 1517, when Emanuel, king of Portugal, sent a fleet of eight ships, with an embassador, who was conveyed to Pekin, and who obtained the sanction of the emperor to establish a trade at Canton. It was in 1596, in the reign of Queen Elizabeth, that the English first attempted, with two ships, to open an intercourse with China; but they were lost in the outward voyage. About 1634 several English ships visited Canton; but a misunderstanding having occurred with the Chinese authorities, by the treachery of the Portuguese, a rupture and a battle took place, and it was with difficulty that this misunderstanding was rectified. China was again visited in 1673 by an English ship that was refused admission into Japan. In 1677 a factory was established at Amoy; but in 1680 the factory was destroyed by an irruption of the Tartars, and it was not till 1685 that the emperor permitted any trade with the Europeans. Upon the union of the two East India companies in London, an imperial edict was issued, restricting the European commerce to the port of Canton. Tea was first imported about the year 1667. This is one of the five Chinese ports opened to Europeans by t[illegible] of 1842.—E. H.

GENERAL REGULATIONS UNDER WHICH THE BRITISH TRADE (AND APPLYING TO ALL FOREIGNERS) IS TO BE CONDUCTED AT THE FIVE PORTS OF CANTON, AMOY, FOO-CHOW-FOO, NINGPO, AND SHANGHAI.

1. *Pilots.*—Whenever a British merchantman shall arrive off the five ports opened to trade, viz., Canton, Foo-chow-foo, Amoy, Ningpo, or Shanghai, pilots shall be allowed to take her immediately into port; and in like manner, when such British ship shall have settled all legal duties and charges, and is about to return home, pilots shall be immediately granted to take her out to sea, without any stoppage or delay. Regarding the remuneration to be given these pilots, that will be equitably settled by the British consul appointed to each particular port, who will determine it with due reference to the distance gone over, the risk run, etc.

2. *Custom-house Guards.*—The Chinese Superintendent of Customs at each port will adopt the means that he may judge most proper to prevent the revenue suffering by fraud or smuggling. Whenever the pilot shall have brought any British merchantman into port, the superintendent of customs will depute one or two trusty custom-house officers, whose duty it will be to watch against frauds on the revenue. These will either live in a boat of their own, or stay on board the English ship, as may best suit their convenience. Their food and expenses will be supplied them from day to day from the custom-house, and they may not exact any fee whatever from either the commander or consignee. Should they violate this regulation, they shall be punished proportionately to the amount so exacted.

3. *Masters of Ships reporting themselves on Arrival.*—Whenever a British vessel shall have cast anchor at any one of the above-named ports, the captain will, within four-and-twenty hours after arrival, proceed to the British consulate and deposit his ship's papers, bills of lading, manifest, etc., in the hands of the consul; failing to do which he will subject himself to a penalty of 200 dollars. For presenting a false manifest the penalty will be 500 dollars. For breaking bulk and commencing to discharge before due permission shall be obtained, the penalty will be 500 dollars, and confiscation of the goods so discharged. The consul, having taken possession of the ship's papers, will immediately send a written communication to the superintendent of customs, specifying the register tonnage of the ship, and particulars of the cargo she has on board; all of which being done in due form, permission will then be given to discharge, and the duties levied as provided for in the tariff.

4. *Commercial Dealings between English and China Merchants.*—It having been stipulated that English merchants may trade with whatever native merchants they please, should any Chinese merchant fraudulently abscond, or incur debts which he is unable to discharge, the Chinese authorities, upon complaint being made thereof, will of course do their utmost to bring the offender to justice; it must, however, be distinctly understood that if the defaulter really can not be found, or be dead or bankrupt, and there be not wherewithal to pay, the English merchants may not appeal to the former customs of the Hong merchants paying for one another, and can no longer expect to have their losses made good to them.

5. *Tonnage Dues.*—Every English merchantman, on entering any one of the above-mentioned five ports, shall pay tonnage dues at the rate of five mace per register ton, in full of all charges. The fees formerly levied on entry and departure, of every description, are henceforth abolished.

6. *Import and Export Duties.*—Goods, whether imported into or exported from any one of the above-mentioned five ports, are thenceforward to be taxed according to the tariff as now fixed and agreed upon, and no further sums are to be levied beyond those which are specified in the tariff. All duties incurred by an English merchant vessel, whether on goods imported or in the shape of tonnage dues, must first be paid up in full; which done, the superintendent of customs will grant port clearance, and this being shown to the British consul, he will thereupon return the ship's papers, and permit the vessel to depart.

7. *Examination of the Goods at the Custom-house.*—Every English merchant having cargo to load or discharge must give due intimation thereof, and hand particulars of the same to the consul, who will immediately dispatch a recognized linguist of his own establishment to communicate the particulars to the superintendent of customs, that the goods may be examined, and neither party subjected to loss. The English merchant must have a properly qualified person on the spot, to attend to his interests when his goods are being examined for duty; otherwise, should there be complaints, these can not be attended to. Regarding such goods as are subject by the tariff to an *ad valorem* duty, if the English merchant can not agree with the Chinese officer in fixing a value, then each party shall call two or three merchants to look at the goods, and the highest price at which any of these merchants would be willing to purchase shall be assumed as the value of the goods. To fix the tare on any article, such as tea: if the English merchant can not agree with the custom-house officer, then each party shall choose so many chests out of every 100, which, being first weighed in gross, shall afterward be tared, and the average tare upon these shall be assumed as the tare upon the whole, and upon this principle shall the tare be fixed upon all other goods in packages. If there should still be any disputed points which can not be settled, the English merchant may appeal to the

consul, who will communicate the particulars of the case to the superintendent of customs, that it may be equitably arranged. But the appeal must be made on the same day, or it will not be regarded. While such points are still open, the superintendent of customs will delay to insert the same in his books, thus affording an opportunity that the merits of the case may be duly tried and sifted.

8. *Manner of paying the Duties.*—It is herein-before provided, that every English vessel that enters any one of the five ports shall pay all duties and tonnage dues before she be permitted to depart. The superintendent of customs will select certain shroffs, or banking establishments of known stability, to whom he will give licenses authorizing them to receive duties from the English merchants on behalf of government, and the receipts of these shroffs for any money paid them shall be considered as a government voucher. In the paying of these duties, different kinds of foreign money may be made use of; but as foreign money is not of equal purity with sycee silver, the English consuls appointed to the different ports will, according to time, place, and circumstances, arrange with the superintendent of customs at each port what coins may be taken in payment, and what percentage may be necessary to make them equal to standard or pure silver.

9. *Weights and Measures.*—Sets of balance-yards for the weighing of goods, of money weights, and of measures, prepared in exact conformity to those hitherto in use at the custom-house of Canton, and duly stamped and sealed in proof thereof, will be kept in possession of the superintendent of customs, and also at the British consulate, at each of the five ports, and these shall be the standard by which all duties shall be charged, and all sums paid to government. In case of any dispute arising between British merchants and the Chinese officers of customs regarding the weights or measures of goods, reference shall be made to these standards, and disputes decided accordingly.

10. *Lighters* or *Cargo Boats.*—Whenever an English merchant shall have to load or discharge cargo, he may hire whatever kind of lighter or cargo boat he pleases, and the sum to be paid for such boat can be settled between the parties themselves, without the interference of government. The number of these boats shall not be limited, nor shall a monopoly of them be granted to any parties. If any smuggling take place in them, the offenders will, of course, be punished according to law. Should any of these boat people, while engaged in conveying goods for English merchants, fraudulently abscond with the property, the Chinese authorities will do their best to apprehend them; but, at the same time, the English merchants must take every due precaution for the safety of their goods.

11. *Transhipment of Goods.*—No English merchant ships may tranship goods without special permission; should any urgent case happen where transhipment is necessary, the circumstances must first be submitted to the consul, who will give a certificate to that effect, and the superintendent of customs will send a special officer to be present at the transhipment. If any one presumes to tranship without such permission being asked for and obtained, the whole of the goods so illicitly transhipped will be confiscated.

12. *Subordinate Consular Officers.*—At any place selected for the anchorage of the English merchant ships, there may be appointed subordinate consular officers, of approved good conduct, to exercise due control over the seamen and others. He must exert himself to prevent quarrels between the English seamen and the natives, this being of the utmost importance. Should any thing of the kind unfortunately take place, he will in the like manner do his best to arrange it amicably. When sailors go on shore to walk, officers shall be required to accompany them; and should disturbances take place, such officers will be held responsible. The Chinese officers may not impede natives from coming alongside the ships to sell clothes, or other necessaries to the sailors living on board.

Opium.—A notion having been entertained that opium might be legally imported into China, under the provisions of this tariff, on paying an *ad valorem* duty of 5 per cent., the following proclamation has been issued on the subject:

PROCLAMATION.—*It having been brought to my notice that such a step has been contemplated as sending vessels with opium on board into the ports of China to be opened by treaty to foreign trade, and demanding that the said opium shall be admitted to importation, by virtue of the concluding clause of the new tariff, which provides for all articles not actually enumerated in that tariff passing at an* ad valorem *duty of 5 per cent., I think it expedient, by this proclamation, to point out to all whom it may concern, that opium, being an article the traffic in which is well known to be declared illegal and contraband by the laws and imperial edicts of China, any person who may take such a step will do so at his own risk, and will, if a British subject, meet with no support or protection from her Majesty's consuls or other officers. This proclamation will be translated and published in Chinese, so that no one may plead ignorance of it.*

GOVERNMENT-HOUSE, VICTORIA, *this 1st day of August*, 1843.

But, notwithstanding this proclamation, and in defiance of the strong denunciation of smuggling in the proclamation of the 2d day of July it is distinctly stated in Hong Kong papers that there was, on the 21st day of September, 1843, almost in sight of the consular flags, a "fleet of British vessels openly engaged in the vending of opium to the Chinese!" This certainly is a curious commentary on the above proclamation; and it were much to be wished, seeing that the trade can not be suppressed, that it were legalized on opium paying a reasonable duty. The consuls for the United States have salaries.—*See* CONSULS. The payment of British consuls by fees is much, and we believe justly, objected to at Canton. Supposing, however, that the treaty with China is *bona fide* carried into effect, still it may be doubted whether the trade with that empire will ever be so extensive as many suppose. We believe, indeed, that China will afford a most extensive outlet for various descriptions of manufactured goods, provided we can bring away equivalents suitable for the European and other foreign markets. But this, we incline to think, will be no easy matter. Excepting tea, China has few articles suitable for extensive use in Europe, other than silk and silver. Chinese silk is, however, losing ground as compared with that of Italy and Turkey, while it is most probable that the enhancement of its price, consequent to any great increase in the exportation of silver, would in no very long time bring it to a close. Tea is the grand equivalent which the Chinese have to exchange for our products, and this trade is increasing very rapidly.—For the exports of tea to the United States for the last ten years, *see* CHINA.

Hong Kong.—The island of this name, ceded to England by the above treaty, is situated on the northern side of the entrance from the sea to the estuary of the Canton River, being separated from the main land by a narrow channel having 14 fathoms water. It stretches about 8 miles from east to west, and is of a very irregular figure, having several promontories, and being deeply indented with bays. It consists principally of a series of high hills, the highest having an elevation of about 1200 feet. Victoria, the principal British settlement on the north side of the island, in lat. 22° 16′ 27″ N., long. 114° 10′ 48″ E., has the advantage of an excellent roadstead, with from 3 to 7 fathoms water and good holding ground. There are also numerous well-sheltered roads and bays with deep water on the south side of the island, which, indeed, appears, from its position and other advantages, extremely well fitted for a naval station. Every thing, however, will depend on the fact of its being healthy, of which, we are sorry to observe, grave doubts are entertained. Should these happily prove unfounded, it is probable that in no very lengthened period a considerable portion of the trade which is at present centred in Canton will be transferred to Hong Kong; and, under the above condition, it can hardly fail to become an important *entrepôt* not merely for trade with the Canton River, but with China generally.

In 1844 the total population of Hong Kong (consisting of Chinese) was 19,463; while on the 31st of December, 1853, the Chinese population was 37,536; Europeans and Americans, 476; other races, 1005. In 1853, 1103 square-rigged vessels, carrying in all 447,053 tons, arrived in Victoria harbor. Of these vessels 201 imported, and 154 exported goods into and from the colony, being an increase over 1852 of 74 and 79 vessels respectively; while the total tonnage of vessels arrived as compared with the preceding year shows an increase of 13,670 tons.—*See* HONG KONG.

TARIFF OF DUTIES ON EXPORTS FROM CHINA, ESTABLISHED IN PURSUANCE OF THE ABOVE TREATY, IN CHINESE AND MERCANTILE CURRENCY (DOLLARS AND CENTS), REDUCED INTO THEIR EQUIVALENT RATES IN STERLING MONEY, ACCORDING TO ENGLISH WEIGHTS AND MEASURES.

EXPORTS.	Per	Chinese. T. M. C. C.	Mer. Cur. $ Cts.	Per	Sterling. s. d.
Alum	picul.	0 1 0 0	0 14	ton.	11 2·61
Anise-seed	—	0 5 0 0	0 70	cwt.	2 9·35
Anise-seed oil	—	5 0 0 0	6 94	pound.	0 3·65
Arsenic	—	0 7 5 0	1 04	cwt.	4 2·47
Bamboo screens, and bamboo ware of all kinds	—	0 2 0 0	0 28	—	1 1·46
Bangles, or glass armlets	—	0 5 0 0	0 70	—	2 9·65
Brass leaf	—	1 5 0 0	2 10	pound.	0 0·90
Building materials	—	Duty free.	....	....	....
Bone and horn ware	—	1 0 0 0	1 40	cwt.	5 7·30
Camphor	—	1 5 0 0	2 10	—	8 4·85
Canes of all kinds	1000.	0 5 0 0	0 70	1000.	3 4·06
Capoor cutchery	picul.	0 3 0 0	0 42	cwt.	1 8·19
Cassia	—	0 7 5 0	1 05	—	4 2·47
Cassia buds	—	1 0 0 0	1 40	—	5 7·30
Cassia oil	—	5 0 0 0	6 04	pound.	0 3·00
China-root	—	0 2 0 0	0 28	cwt.	1 1·46
China ware of all kinds	—	0 5 0 0	0 70	—	2 9·65
Clothes, ready-made	—	0 5 0 0	0 70	—	2 9·65
Copper ware, pewter ware, etc.	—	0 5 0 0	0 70	—	2 9·65
Corals (or false coral)	—	0 5 0 0	0 70	pound.	0 0·30
Crackers and fire-works of all kinds	—	0 7 5 0	1 05	—	0 0·45
Cubebe	—	1 5 0 0	2 10	cwt.	8 4·85
Fans (as feather fans, etc.)	—	1 0 0 0	1 40	pound.	0 0·60
Furniture of all kinds	—	0 2 0 0	0 28	cwt.	1 1·46
Galangal	—	0 1 0 0	0 14	—	0 0·73
Gamboge	—	2 0 0 0	2 78	—	11 2·61
Glass and glass ware of all kinds	—	0 5 0 0	0 70	—	2 9·65
Glass beads	—	0 5 0 0	0 70	—	2 9·65
Glue (as fish glue, etc.)	—	0 5 0 0	0 70	—	2 9·65
Grass cloth of all kinds	—	1 0 0 0	1 40	—	5 7·30
Hartall	—	0 5 0 0	0 70	—	2 9·65
Ivory ware of all kinds	—	5 0 0 0	6 94	pound.	0 3·00
Kittysols, or paper umbrellas	—	0 5 0 0	0 70	cwt.	2 9·65
Lacquered ware of all kinds	—	1 0 0 0	1 40	—	5 7·30
Lead, white	—	0 2 5 0	0 35	—	1 4·82
Lead, red	—	0 5 0 0	0 70	—	2 9·65
Marble slabs	—	0 2 0 0	0 28	—	1 1·46
Mats (straw, rattan, bamboo, etc.)	—	0 2 0 0	0 28	—	1 1·46
Mother-of-pearl ware	—	1 0 0 0	1 40	pound.	0 0·60
Musk	catty.	0 5 0 0	0 70	ounce.	0 1·87
Nankeens and cotton cloth of all kinds	picul.	1 0 0 0	1 40	cwt.	5 7·30
Pictures, viz., large paintings	each.	0 1 0 0	0 14	each.	0 8·01
Pictures, rice paper	100.	0 1 0 0	0 14	100.	0 8·0.
Paper fans	picul.	0 5 0 0	0 70	pound.	0 0·30
Paper of all kinds	—	0 5 0 0	0 70	cwt.	2 9·65
Pearls (false)	—	0 5 0 0	0 70	pound.	0 0·30
Preserves and sweetmeats of all kinds	—	0 5 0 0	0 70	—	0 0·30
Ratan work of all kinds	—	0 2 0 0	0 28	cwt.	1 1·46
Rhubarb	—	1 0 0 0	1 40	pound.	0 0·60
Silk, raw, whether Chekiang, Canton, or elsewhere, all kinds	—	10 0 0 0	13 89	—	0 6·01
Silk, coarse, or refuse of silk	—	2 5 0 0	3 47	—	0 1·50
Silk organzine of all kinds	—	10 0 0 0	13 89	—	0 6·01
Silk ribbons, thread, etc.	—	10 0 0 0	13 89	—	0 6·01
Silk piece goods; all kinds; as silks, satins, pongees, velvets, crapes, lutestrings, etc. *N.B.*—The additional duty of so much per piece, hitherto levied, to be henceforth abolished.	—	12 0 0 0	16 67	—	0 7·01
Silk and cotton mixtures, silk and woolen mixtures, and goods of such class	—	3 0 0 0	4 17	—	0 1·80
Shoes and boots, leather, satin, or otherwise	—	0 2 0 0	0 28	cwt.	1 1·46
Sandal-wood ware	—	1 0 0 0	1 40	pound.	0 0·60
Soy	—	0 4 0 0	0 56	—	0 0·24
Silver ware and gold ware	—	10 0 0 0	13 89	oz. Troy.	0 0·41
Sugar, white and brown	—	0 2 5 0	0 35	cwt.	1 4·82
Sugar-candy of all kinds	—	0 3 5 0	0 49	—	1 11·55
Tin-foil	—	0 5 0 0	0 70	—	2 9·65
Tea	—	2 5 0 0	3 47	pound.	0 1·50
Tobacco of all kinds	—	0 2 7 0	0 28	—	0 0·12
Turmeric	—	0 2 0 0	0 28	cwt.	1 1·46
Tortoise-shell ware	—	10 0 0 0	13 89	pound.	0 6·01
Trunks of leather	—	0 2 0 0	0 28	cwt.	1 1·46
Treasure (coin of all kinds)	—	Duty free.	....	....	....
Vermilion	—	3 0 0 0	4 17	pound.	0 1·80
Articles unenumerated in this tariff to pay 5 per cent.	ad valorem.	....	....	....	....

Currency.—Doubts having been entertained respecting the value of the coins current in Hong Kong and its dependencies, the following rates at which such coins are made legal tenders were fixed by a proclamation dated the 1st of May, 1844:

"The gold mohur of the East India Company's territory, coined since the 1st day of September, 1835, at the rate of 29s. 2d. sterling money of the United Kingdom.

"The dollar of Spain, Mexico or American States, at the rate of 4s. 2d. sterling.

"The rupee of the West India Company's territory, coined since the 1st day of September, 1835, at the rate of 1s. 10d. sterling; and the half rupee, quarter rupee, and eighth of rupee pieces in proportion.

"The cash, or copper coin current in China, at the rate of 188 cash for 1s. sterling."

The following proviso establishes, with respect to silver currency, the principle that prevails in England:

"Provided that nothing herein contained shall be deemed or taken to render it compulsory on any person to accept at any one payment a larger amount in silver coins of the United Kingdom of lower denomination than 1s., or in the half quarter, or eighth rupee pieces herein-before mentioned, than the equivalent to 20s. sterling money, or a larger amount in copper coins of the United Kingdom, or in the Chinese copper coins before mentioned, than the equivalent to 1s. sterling.

ESTIMATIONS.—*Chinese Weights*, per steelyard: 1 picul = 100 cattles = 1600 taels = 133⅓ lbs. avoirdupois; 1 tael = 583½ grains Troy; 400 lbs. avoirdupois = 3 piculs; 1 cwt. avoirdupois = 84 cattles; 1 lb. avoirdupois = 12 taels.

Chinese Measures: 1 chang = 141 English inches, or

12 chang = 47 yards. Liquids, and generally grain, are sold by weight.

Chinese Moneys: 1 tael = 10 mace = 100 candareen = 1000 cash

The principal monetary integer, the tael, is this weight of sycee silver, there being no Chinese coins in gold, and no other Chinese currency, or medium of payment, in silver, than small ingots of sycee silver, stamped by the shroffs or bankers appointed by the government. The average purity of sycee silver may be reckoned at 98 touch, or 13½ dwts., better than British standard; and as it contains, on the average, about 12 grains of gold in the pound Troy, the net value at 60 pence per ounce standard, after making the usual allowance for the extraction of the gold, is very nearly equal to 78⅝ pence sterling per tael.

In mercantile currency, or the money of account of foreign merchants trading with China, the dollar is divided into 100 cents, and 720 taels of Chinese account are reckoned equal to 1000 dollars in this currency, making the tael equal to $1 38 8-9th cents; but in small amounts it is reckoned at $1 40 cents. This is, however, only a nominal valuation, by which the dollar is made nearly 56⅜ pence sterling, or 13½ per cent. above its real value.

According to the 8th article of the general regulations under which the British trade is to be conducted at the five ports of Canton, Amoy, Foo-chow-foo, Ningpo, and Shanghai, the English consuls appointed to these ports are to arrange with the superintendents of the customs at each what coins may be taken in the payment of the duties, and what percentage may be necessary to make them equal to standard or pure silver. In pursuance of this regulation, the following estimations have been made at Canton, and will, probably, be followed at the other ports of trade: rupees weighing 109*t.* 7*m.* 9*c.* 0*c.*; Peruvian dollars, 111*t.* 4*m.* 5*c.* 5*c.*; Mexican dollars, 111*t.* 9*m.* 0*c.* 0*c.*; Bolivian dollars, 112*t.* 1*m.* 5*c.* 0*c.*; Chilian dollars, 112*t.* 5*m.* 2*c.* 0*c.*; and chopped dollars, 113*t.* 2*m.* 0*c.* 7*c.*: are to be accounted as 100 taels of sycee silver, being, according to this monetary tariff, respectively equal to 2 dwts., 5½ dwts., 6½ dwts., 6½ dwts., 7½ dwts., and 8¾ dwts. worse than British standard. To these percentages are to be added ½ per cent. for difference between the hoppo's and the shroff's weights, and another ½ per cent. for refining. Hence the value of the tael of sycee silver is rendered very nearly equal to 79½ pence, and with the 1 per cent., to 80½ pence sterling, at which value the Chinese rates in the above schedule have been reduced.—TATE.

Moneys.—Accounts are kept at Canton in taels, mace, candarines, and cash; the tael being divided into 10 mace, 100 candarines, or 1000 cash. There is but one kind of money made in China, called cash, which is not coined, but cast, and which is only used for small payments: it is composed of six parts of copper and four of lead; it is round, marked on one side, and rather raised at the edges, with a square hole in the middle. These pieces are commonly carried, like beads, on a string of wire. A tael of fine silver should be worth 1000 cash; but, on account of their convenience for common use, their price is sometimes so much raised that only 750 cash are given for the tael.

Foreign coins, however, circulate here, particularly Spanish dollars; and for small change they are cut into very exact proportions, but afterward weighed; for which purpose merchants generally carry scales, called dotchin, made somewhat after the plan of the English steelyards.

The tael used to be reckoned at 6*s.* 8*d.* sterling in the books of the East India Company; but its value varies, and is generally computed according to the price paid per ounce for Spanish dollars in London. The tables given for this proportional value may be calculated in pence sterling, by the multiplier 1·208. Thus, if the price of the Spanish dollar be 60*d.* per ounce, the value of the tael will be 60×1·208=72·48*d.*; if at 66*d.*, the value of the tael will be 79·728*d.*; and for any other price in the same proportion.

Fineness of Gold and Silver.—The fineness of gold and silver is expressed by dividing the weight into 100 parts, called toques or touch; similar to the modern practice of France. Thus, if an ingot be 98 touch, it is understood to contain 7 parts of alloy and 93 of pure metal, making in the whole 100.

The fineness of the precious metals, expressed in these decimal proportions, may be converted into English proportions by the following analogies: Suppose gold is 91·66 touch; say, as 100 : 91·66 : : 12 : 11, the standard, and *vice versa*; and to convert standard silver into touch, say, as 240 : 222 : : 100 : 92·5, the touch of sterling silver. Pure gold or silver without alloy is called by the Chinese sycee; and sometimes, when of less purity, the metal is accepted as sycee.

Silver Ingots are used as money, and weigh from ½ a tael to 100 taels, their value being determined by their weight. These ingots are of the best sort of silver; that is, about 94 touch.

Gold Ingots.—Gold is not considered as money, but as merchandise: it is sold in regular ingots of a determined weight, which the English call shoes of gold; the largest of these weigh 10 taels each; and the gold is reckoned 94 touch, though it may be only 92 or 93.

Weights.—Gold and silver are weighed by the catty of 16 taels; the tael is divided into 10 mace, 100 candareens, or 1000 cash. 100 taels are reckoned to weigh 120 oz. 16 dwts. Troy, which makes the tael equal to 579·8 English grains or 37·566 grammes.

The principal weights for merchandise are the picul, the catty, and the tael; the picul being divided into 100 catties, or 1600 taels.

	Lbs.	oz.	dwts.	
1 Tael weighs, avoirdupois ..	0	1	5·333 =	1¼ oz.
16 Taels, or 1 catty	1	5	5·333 =	1¼ lb.
100 Catties, or 1 picul	133	5	5·333 =	133⅓ lbs.

Hence the picul weighs 60·472 kilogrammes, or 162 lbs. 0 oz. 8 dwts. 13 grs. Troy.

The above weights are sometimes otherwise denominated, especially by the natives: thus, the catty is called gin; the tael, lyang; the mace, tchen; the candareen, fivan; and the cash, lis.

There are no commercial measures in China, as all dry goods and liquids are sold by weight. In delivering a cargo, English weights are used, and afterward turned into Chinese piculs and catties.

Long Measure.—That used in China is the covid or cobre; it is divided into 10 punts, and is equal to 0·3713 metre, or 14·625 English inches.

The Chinese have four different measures answering to the foot, viz.:

	Metres.	Eng. inch.
The foot of the mathematical tribunal .	= 0·333	= 13·125
The builders' foot, called congpu	= 0·3228	= 12·7
The tailors' and tradesmen's foot.....	= 0·3383	= 13·33
The foot used by engineers	= 0.3211	= 12·65

The li contains 180 fathoms, each 10 feet of the last-mentioned length; therefore the li = 1897½ English feet; and 192½ lis measure a mean degree of the meridian nearly; but European missionaries in China have divided the degree into 200 lis, each li making 1826 English feet, which gives the degree 69·166 English miles, or 11·131 French myriametres.

European Trade at Canton.—As soon as a vessel arrives among the islands which front the entrance to the Canton River, she is generally boarded by a pilot, who conducts her into Macao or Hang Kong roads. The entrance is, however, so safe that ships push on without waiting for the pilot, who, if the weather be bad, is sometimes long in coming on board. The pilots' names are registered at the Keun-min-foo's office near Macao; and for a license to act the sum of $600 is paid. The person who takes out the license sometimes knows nothing about ships or the river, but employs fishermen to do the duty. On the vessel's

arrival in the roads, the pilot goes on shore to report her at the office of the keun-min-foo, who, when he has received answers to his inquiries, gives a permit for her to pass through the Bogue, and orders a river pilot on board. This pilot seldom repairs on board the vessel before 24 hours have elapsed. When arrived, the vessel proceeds through the Bogue, and up the Canton River to Whampoa.

Every ship that enters the port requires the service of a linguist and comprador before she can commence unloading. The master used to be required to give a written declaration, in duplicate, solemnly affirming that the ship has brought no opium. All the trade with foreigners used to be confined to the hong or security merchants; but this restriction has recently been abolished; and foreigners may now deal with any merchant or other party they think fit to employ. The linguists are government interpreters, who procure permits for delivering and taking in cargo, transact all the custom-house business, and keep accounts of the duties. All the minor charges of the government, also, are paid by them; in consideration of which they receive a fee of about $173 previously to the vessel's departure. When a vessel wishes to discharge or receive cargo, the linguist is informed a day or two previously what kind of goods are to be received or discharged, and in what quantities. He then applies for a permit, which being issued, the lighters or chop-boats proceed to Whampoa, where they usually arrive on the evening of the second or morning of the third day. For a single boat the linguist used to receive a fee of $23; but if a permit be obtained for from two to six boats at a time, the fee for each boat was only 11 taels 2 mace 6 cand., or about $15½.

When the goods are ready to be landed from or sent to the ship, the hoppo (principal custom-house officer) sends a domestic, a writer, and a police runner; the hong merchant who has secured the ship sends a domestic, called a court-going man (one who attends at the public offices on ordinary occasions in behalf of his master); and the linguist sends an accountant and interpreter to attend at the examination of the goods. The hong merchants used to be held responsible by government for all duties, whether on imports or exports in foreign vessels; and therefore, when goods were purchased, it was customary for the parties, before fixing the price, to arrange between themselves who was actually to pay the duties. Of an import cargo, each chop-boat, according to rule, which, however, is not rigidly enforced, should contain—of woolens, camlets, and long-ells, 140 bales; tin, 500 bars; lead, 600 pigs; Bombay cotton, 55 bales; Bengal cotton, 80 bales; betel-nut, pepper, etc., 300 piculs.

Of export goods, a chop-boat should take—of tea, 600 chests; of other sorts of goods, 500 piculs. If more than this, the hong merchant gives to the chop-boat, for each additional picul, $6½. In calculating the duties on export goods, 90 catties are considered 100. The woolens, long-ells, and camlets, are measured by the chang of 10 covids, without any deduction; and single articles are numbered.

If, after entering the port, any persons tranship goods, it is considered that the one ship sold them to the other; and in that case the same duty has to be paid as if the goods were brought up to Canton. Provisions are not included in this regulation. Ships' boats are not allowed to carry up or down any thing chargeable with duty. Gold, silver, copper, and iron are prohibited to be exported; a few culinary utensils are the only exceptions. When it is desired to export treasure, the hong merchant must make an estimate of the value of the import and export cargoes, and whatever balance there may be in favor of the ship may then be shipped off as treasure. If more cargo be sent to a ship than she can take on board, and she wishes it to be shipped on board another, it must be done within 3 days after announcing the goods at the custom-house, and a hong merchant must state it to government; if granted, a hong merchant and linguist are ordered to go to Whampoa and take an account of such goods; all which, with the expense of boats, runners, etc., at Whampoa, costs 40 or 50 dollars.—*Companion to Anglo-Chinese Calendar*, p. 99–101.

Hong Merchants.—Previously to the commencement of the new system, it had been the invariable practice, enforced by law, that all foreign vessels arriving in the port should employ, as broker or agent, a hong or security merchant, who became, by doing so, responsible to the government for the duties. These merchants, who were but few in number, were the only individuals in the empire legally authorized to trade with foreigners, a privilege for which they had to pay very largely. But after an arrangement had been made with any particular hong merchant for securing a ship, her captain or supercargo might deal with any other hong merchant, or, even with any outside merchant (or merchant not belonging to the hong) as pleased. The peculiar duty of the hong merchant was to pay the duties on both the inward and outward cargoes; and hence arose the practice of foreigners buying all goods for export duty paid, and selling all the goods brought with them free of duty, the duties being, in both cases, paid by the hong merchants who had secured the ship; and hence, also, the ignorance of most foreigners as to the amount of the duties. But now that the privilege of the hong merchants has been abolished, the duties will have to be paid to the Chinese authorities by the parties importing and exporting, in the same way as in this country.

Port Charges are fixed under the new treaty at five mace per register ton, in full of all charges; so that the complex system that previously obtained for charging those duties is now, in so far at least as British ships are concerned, at an end. Vessels importing rice or other grain into any of the five ports open to British vessels, are liable to no charges whatever; but if they take away an export cargo, they then have to pay the duties on such cargo agreeably to the tariff, and one moiety of the tonnage dues, or 2½ mace per ton.

The whole number of vessels arriving at Canton in 1854 was 320, with the tonnage of 154,157. Of this number, 137 were British, 65 American, 23 Dutch, 21 Spanish, 11 Danish, and 18 Peruvian. The latter, we imagine, are all engaged in kidnapping, a system which condemns hundreds of Chinese to a speedy death among the guano islands of Callara. These vessels brought in the same year goods to the value of £795,255, constituting Canton a good, but not a first-rate customer to Europe. Of cotton goods our merchants purchased $2,706,425; of rice, $300,000 worth; and every thing else in infinitesimal quantity. Fish-maws, beche-de-mer, cloves, shark-fins, sandal-wood, liquors, appear to meet with the readiest sale in the great sea-port of China. The exports make a little better appearance; but still they are far from large. The tea trade has flown to Shanghai, the value exported from Canton being in 1854 only $4,627,552, but a fraction of the export at the northern port. Silk is sold to the value of about $1,140,000, and curiosities make up the remainder. Bamboo and rattan ware, bone and ivory toys, China dishes and lacquered ware, mother-of-pearl and marble slabs, preserves and drugs, sugar-candy and pitchers, all testify to the ingenuity of the Chinese, and the boundless opulence of certain classes in Europe and America. The whole amounts only to £1,445,308 a year, and this endures an exorbitant weight of taxation.

The tonnage paid by British ships alone amounted to £117,834, or nearly 10 per cent. *ad valorem* upon the whole movement of British trade in that port. The customs dues of Calcutta, heavy as we believe them to be, are a trifle when compared to those of Canton, which average very nearly 17 rupees a ton.—*Hong Kong Government Gazette.*

Foreign Merchants.—These consist of British, American, French, Dutch, Danish, Swedish, Spanish, and Portuguese, with Parsee and India Mohammedan British subjects. The Americans, French, and Dutch have each consular agents recognized by the imperial government. The same privileges have been, or are to be, conceded to all foreigners that have been granted to the English.

RATES OF COMMISSION IN CHINA, AGREED UPON IN NOVEMBER, 1831, AND REVISED BY THE CHAMBER OF COMMERCE, MARCH, 1838.

1. On all sales of opium, cotton, cochineal, camphor baroos, birds' nests, diamonds, and other precious stones, pearls, ships, houses	8 per cent.
2. On sales of all other goods	5 per cent.
3. On returns, if in goods	2½ per cent.
4. On returns, if in treasure, bullion, or bills	1 per cent.
5. On purchases, not being returns for goods sold:	
1st. Of raw silk	3 per cent.
2d. Of manufactured silk	5 per cent.
3d. Of all other goods	5 per cent.
6. On inspecting teas, whether for returns or otherwise, an additional charge of	½ per cent.
7. On sale, purchase, or shipment of bullion	1 per cent.
8. On drawing, sale, or negotiation of bills when not involving responsibility as drawer or indorser	1 per cent.
9. On drawing, sale, or negotiating of bills when guaranteed by the agent as drawer or indorser, and not covered by adequate security	2½ per cent.
10. On purchasing bills, or effecting remittance by bills, of the agent or otherwise	1 per cent.
11. On negotiating loans or respondentia	2 per cent.
12. On guaranteeing bills, bonds, or other engagements	2½ per cent.
13. On guaranteeing sales when especially required without including responsibility for remittances	2½ per cent.
14. On guaranteeing both sales and remittance of proceeds	1 per cent.
15. On bills of exchange, returned protested	1 per cent.
16. On letters of credit for mercantile purposes	2½ per cent.
17. On all advances of money for purposes of trade, whether the goods are consigned to the agent or not, and where a commission of 5 per cent. is not charged	2½ per cent.
18. On ordering goods or superintending the fulfilment of contracts, where no other commission is derived	2½ per cent.
19. On all goods, treasure, etc., consigned, and afterward withdrawn or sent to auction, and for goods consigned for additional delivery to others	½ commission.
20. On procuring freight, or advertising as agents, or owners, or commanders, on the amount of freight, whether the same passes through the hands of the agent or not	5 per cent.
21. On receiving inward freight	1 per cent.
22. On ships' disbursements	2½ per cent.
23. On chartering ships for other parties	2½ per cent.
24. On effecting insurance, or writing orders for insurance	½ per cent.
25. Settling insurance losses, total or partial, and on procuring return of premium	1 per cent.
26. Debts, where a process at law or arbitration is necessary, 2½ per cent.; and if recovered	5 per cent.
27. Collecting house rent	2½ per cent.
28. Acting for the estates of persons deceased, as executors or administrators	5 per cent.
29. The management of the estates of others, on the amount received	2½ per cent.
30. All cash receipts, not serving for the purchase of goods, and not otherwise specified above	1 per cent.
31. Shroffing	2 per mil.
32. Transhipping goods	1 per cent.
33. All advances not punctually liquidated, the agent to have the option of charging a second commission, as upon a fresh advance, provided the charge does not occur twice in the same year	1 per cent.
34. At the option of the agent, on the amount debited or credited within the year, including interest, and excepting only items on which a commission of 5 per cent. has been charged	1 per cent.

N.B.—This charge not to be applied to paying over a balance due on an account made up to a particular period, unless where such balance is withdrawn without reasonable notice.

Opium, which is by far the most profitable of all the articles imported into China, is excluded from the official account of imports, which comprises those articles only that are legally admissible. Although, however, it be nominally excluded, opium is openly, systematically, and easily introduced; the trade in it being, in fact, as safe and as regular as that in any other commodity, while it is incomparably more extensive. Notwithstanding the efforts that have sometimes been made to effect its exclusion, the imports have continued rapidly to increase. In 1816–'17 they amounted to only 3210 chests, whereas in 1829–'30 they had increased to about 14,000 chests; and they are now estimated at about 54,000 chests, worth about $33,000,000. So rapid an increase in the production and consumption of a drug is, perhaps, unparalleled in the history of commerce. It is probable, however, that its importation will shortly receive a check; for it is believed that the Chinese, aware at last of the impotency of the attempts to prevent its introduction, are about to legalize its importation and culture in the empire. And as the soil in many parts of China is understood to be well suited to the growth of the poppy, there can be little doubt that its cultivation will be rapidly extended. Should this expectation be realized, it will produce a very important change in the trade of China. On the whole, however, we incline to think that the change will be beneficial. It will go far to restore the balance between the imports and exports without draining China of her bullion; and it will enable her to purchase larger quantities of the manufactures and other products of this and other countries. The change in question, supposing it to be realized, will, however, seriously affect India, which furnishes almost all the opium sent to China, and the culture and sale of which, besides affording employment and subsistence to a large population, yields a net revenue to the East India Company of considerably more than £3,000,000 a year!

Shanghai is situated in the southern part of the province of Kiang-Su, at a considerable distance from the sea, on the River Woo-Sung, in about lat. 31° 10′ N., long. 120° 50′ E. The river, which may be navigated by large ships for a considerable distance above the town, crosses the grand canal, and, consequently, makes Shanghai an *entrepôt* for all the vast and fertile countries traversed by the canal and by the great rivers with which it is connected; and hence the present importance of this emporium, as evinced by the extent of our trade with it in 1848; and hence, also, the infinitely greater importance to which its commerce will hereafter most probably attain.

EXPORTS OF TEA FROM CHINA.

	Black Tea.	Green Tea.	Total.
	Pounds.	Pounds.	Pounds.
To Great Britain, 1848–'49	38,763,500	8,479,200	47,242,700
To Great Britain, 1849–'50	45,448,900	8,120,400	53,569,300
To Great Britain, 1850–'51	55,696,800	8,056,606	63,753,400
To United States, 1851–'52	15,361,513	20,965,915	34,327,428

From this statement it will be seen that the amount of the exports of black tea to Great Britain is increasing very fast, at the rate of 20 per cent. per annum; and was in 1850–'51 seven times as great as the exports of green tea; while the exports of black tea to the United States were only two-thirds the exports of green tea.

EXPORTS OF TEA FROM CHINA.

Year ending June.	United States.	Great Britain.
	Pounds.	Pounds.
1854	27,867,000	77,217,000
1855	31,515,000	86,509,000
1856	40,246,000	91,035,000

Trade with the Indian Islands, etc.—In his evidence before the select committee of the House of Commons, Mr. Crawfurd gave the following details with respect to the native foreign trade with China:

"The principal part of the junk or shipping trade is carried on by the four contiguous provinces of Canton, Fokien, Chekiang, and Kiannan. No foreign trade is permitted with the island of Formosa; and I have no means of describing the ex-

tent of the traffic which may be conducted between China, Corea, and the Leechew islands. The following are the countries with which China carries on a trade in junks: viz., Japan, the Philippines, the Socoo islands, Celebes, the Moluccas, Borneo, Java, Sumatra, Singapore, Ichio, the east coast of the Malayan peninsula, Siam, Cochin China, Cambodia, and Tonquin; and these may, in all, employ about 222 junks. The ports of China at which this trade is conducted are, Canton, Tchao-tcheou, Nomhong, Hoeitcheou, Suheng, Kongmoon, Changlim, and Hainan, in the province of Canton; Amoy and Chinchew, in the province of Fokien; Ningpo and Siang-hai, in the province of Chekiang; and Soutcheou, in the province of Kiannan. The above estimate does not include a great number of small junks belonging to the island of Hainan, which carry on trade with Tonquin, Cochin China, Cambodia, Siam, and Singapore. Those for Siam amount yearly to about 50, and for the Cochin Chinese dominions to about 42; these alone would bring the total number of vessels carrying on a direct trade between China and foreign countries to 507. The trade with Japan is confined to the port of Ningpo, in Chekiang, and expressly limited to 10 vessels; but as the distance from Nangasaki is a voyage of no more than four days, it is performed twice a year. With the exception of this branch of trade, the foreign intercourse of the two provinces, Chekiang and Kiannan, which are famous for the production of raw silk, teas, and nankeens, is confined to the Philippine Islands, Tonquin, Cochin China, Cambodia, and Siam; and none of this class of vessels, that I am aware of, have ever found their way to the western parts of the Indian Archipelago. The number of these trading with Siam is 24, all of considerable size; those trading with the Cochin Chinese dominions, 16, also of considerable size; and those trading with the Philippines, 5; making in all 45, of which the average burden does not fall short of 17,000 tons. Besides the junks now described, there is another numerous class, which may be denominated the colonial shipping of the Chinese. Wherever the Chinese are settled in any numbers, junks of this description are to be found: such as in Java, Sumatra, the [illegible] Malacca, etc.; but, the largest commerce of this description is conducted from the Cochin Chinese dominions, especially from Siam, where the number was estimated to me at 200. Several junks of this description from the latter country come annually to Singapore, of which the burden is not less than from 300 to 400 tons. The junks which trade between China and the adjacent countries are some of them owned and built in China; but a considerable number also in the latter countries, particularly in Siam and Cochin China. Of those carrying on the Siamese trade, indeed, no less than 81 out of the 89, of considerable size, were represented to me as being built and owned in Siam. The small junks, however, carrying on the trade of Hainan, are all built and owned in China. The junks, whether colonial or trading direct with China, vary in burden from 2000 piculs to 15,000, or carry dead weight from 120 to 900 tons. Of those of the last size I have only seen three or four, and these were at Siam, and the same which were commonly employed in carrying a mission and a tribute yearly from Siam to Canton. Of the whole of the large class of junks, I should think the average burden will not be overrated at 500 tons each, which would make the total tonnage employed in the native foreign trade of China between 60,000 and 70,000 tons, exclusive of the small junks of Hainan, which, estimated at 150 tons each, would make in all about 80,000 tons.

"The junks built in China are usually constructed of fir and other inferior woods. When they arrive in Cambodia, Siam, and the Malayan islands, they commonly furnish themselves with masts, rudders, and wooden anchors, of the superior timber of these countries. The junks built in Siam are a superior class of vessels, the planks and upper works being invariably teak. The cost of ship-building is highest at the port of Amoy, in Fokien, and lowest in Siam. At these places, and at Chang-lim, in Canton, the cost of a junk of 5000 piculs, or 476 tons burden, was stated to me, by several commanders of junks, to be as follows: at Siam, $7400; Chang-lim, $16,000; Amoy, $21,000. A junk of the size just named has commonly a crew of 90 hands, consisting of the following officers, besides the crew: a commander, a pilot, an accountant, a captain of the helm, a captain of the anchor, and a captain of the hold. The commander receives no pay, but has the advantage of the cabin accommodation for passengers, reckoned on the voyage between Canton and Singapore worth 150 Spanish dollars. He is also the agent of the owners, and receives a commission, commonly of 10 per cent., on the *profits* of such share of the adventure, generally a very considerable one, in which they are concerned. The pilot receives for the voyage $200 of wages, and 50 piculs of freight out and home. The helmsman has 15 piculs of freight and no wages. The captains of the anchor and the hold have 9 piculs of freight each; and the seamen 7 piculs each. None of these have any wages. The officers and seamen of the colonial junks are differently rewarded. In a Siamese junk, for example, trading between the Siamese capital and Singapore, of 6000 piculs burden, the commander and pilot had each $100 for the voyage, with 12 piculs of freight apiece. The accountant and helmsman had half of this allowance, and each seaman had $13, with 5 piculs of freight. In construction and outfit, Chinese junks are clumsy and awkward in the extreme. The Chinese are quite unacquainted with navigation, saving the knowledge of the compass; notwithstanding this, as their pilots are expert, their voyages short, and as they hardly ever sail except at the height of the monsoons, when a fair and steady 7 or 8 knots' breeze carries them directly from port to port, the sea risk is very small. During 13 years' acquaintance with this branch of trade, I can recollect hearing of but four ships wrecks; and in all these instances the crews were saved. The construction and rigging of a Chinese junk may be looked upon as her proper registry, and they are a very effectual one; for the least deviation from them would subject her at once to foreign charges and foreign duties, and to all kinds of suspicion. The colonial junks, which are of a more commodious form and outfit, if visiting China, are subjected to the same duties as foreign vessels. Junks built in Siam, or any other adjacent country, if constructed and fitted out after the customary model, are admitted to trade to China upon the same terms as those built and owned in the country. If any part of the crew consist of Siamese, Cochin Chinese, or other foreigners, the latter are admitted only at the port of Canton; and if found in any other part of China, would be seized and taken up by the police exactly in the same manner as if they were Europeans. The native trade of China conducted with foreign countries is not a clandestine commerce, unacknowledged by the Chinese laws, but has in every case at least the express sanction of the viceroy or governor of the province, who, on petition, decides the number of junks that shall be allowed to engage in it, and even enumerates the articles which it shall be legal to export and import. At every port, also, where such a foreign trade is sanctioned, there is a hong or body of security merchants, as at Canton; a fact which shows clearly enough that this institution is parcel of the laws or customs of China, and not a peculiar restraint imposed upon the intercourse with Europeans. The Chinese junks properly constructed pay no measurement duty, and no cumshaw or present; duties, however, are paid upon goods exported and imported, which seem to differ at the different provinces. They are highest at Amoy, and lowest in the island of Hainan. The Chinese traders of Siam informed me that they carried on the fairest and easiest trade, subject to the fewest restrictions, in the ports of Ningpo and Siang-hai, in Chekiang, and Soutcheou, in Kiannan. Great dexterity seems every where to be exercised by the Chinese in evading the duties. One practice, which is very often followed, will afford a good example of this. The coasting-trade of China is nearly free from all duties and other imposts. The merchant takes advantage of this; and, intending in reality to proceed to Siam or Cochin China, for example, clears a junk out for the island of Hainan, and thus avoids the payment of duties. When she returns she will lie four or five days off the mouth of the port, until a regular bargain be made with the custom-house officers for the reduction of duties. The threat held out in such cases is to proceed to another port, and thus deprive the public officers of their customary perquisites. I was assured of the frequency of this practice by Chinese merchants of Cochin China, as well as by several commanders of junks at Singapore. From the last-named persons I had another fact of some consequence, as connected with the Chinese trade; viz., that a good many of the junks carrying on trade with foreign ports to the westward of China often proceeded on voyages to the northward in the same season. In this manner they stated that about 20 considerable junks, besides a great many small ones, proceeded annually from Canton to Souchong, one of the capitals of Kiannan, and in wealth and commerce the rival of Canton, where they sold about 200 chests of opium at an advance of 50 per cent. beyond the Canton prices. Another place where the Canton junks, to the number of five or six, repair annually, is Chinchew, in the province of Canton, within the Gulf of Pecheley, or Yellow Sea, and as far north as the 37th degree of latitude."—*Appendix, Report of 1830*, p. 298.

A Chinese ship or junk is seldom the property of one individual. Sometimes 40, 50, or even 100 different merchants purchase a vessel, and divide her into as many different compartments as there are partners, so that each knows his own particular part of the ship, which he is at liberty to fit up and secure as he pleases. The hulk-heads, by which these divisions are formed, consist of stout planks, so well caulked as to be com-

pletely water-tight. A ship thus formed may strike on a rock, and yet sustain no serious injury; a leak springing in one division of the hold will not be attended with any damage to articles placed in another; and, from her firmness, she is qualified to resist a more than ordinary shock. A considerable loss of stowage is, of course, sustained; but the Chinese exports generally contain a considerable value in small bulk. It is only the very largest class of junks that have so many owners; but even in the smallest class the number is very considerable.—*See* CHINA.

Canvas (Fr. *Toile à voile*; Ger. *Segeltuch*; It. *Canevazzo, Lona*; Russ. *Parussnoe polotno, Parussina*; Sp. *Lona*), unbleached cloth of hemp or flax, chiefly used for sails for shipping.

Caoutchouc. "This substance, which has been improperly termed elastic gum, and vulgarly, from its common application to rub out pencil marks on paper, *India rubber*, is obtained from the milky juice of different plants in hot countries. The chief of these are the *Jatropha elastica*, and *Urcola elastica*. The juice is applied in successive coatings on a mould of clay, and dried by the fire or in the sun; and when of a sufficient thickness, the mould is crushed and the pieces shaken out. Acids separate the caoutchouc from the thinner part of the juice at once, by coagulating it. The juice of old plants yields nearly two-thirds of its weight; that of younger plants less. Its color, when fresh, is yellowish-white, but it grows darker by exposure to the air. The elasticity of this substance is its most remarkable property; when warmed, as by immersion in hot water, slips of it may be drawn out to 7 or 8 times their original length, and will return to their former dimensions nearly. Cold renders it stiff and rigid, but warmth restores its original elasticity. Exposed to the fire, it softens, swells up, and burns with a bright flame. In Cayenne it is used to give light as a candle."—URE'S *Dict.* *See* INDIA RUBBER.

Caoutchouc has become an article of very considerable importance. M. de la Condamine, who was one of the first to communicate authentic information with respect to it, mentions that, owing to its being impervious to water, it was made into boots by the Indians. —*Voyage de la Rivière des Amazones*, p. 76. It is now employed in a similar way here. Means have, within these few years, been discovered of reducing it to a state of solution; and when thin filaments of it are spread over cloth or any other substance, it is rendered impervious alike to air and water. Air-cushions and pillows are manufactured in this way; as are waterproof cloaks, now in very extensive demand, hats, boots, shoes, etc. It is also extensively used in the manufacture of bruces and other articles which it is desirable should possess considerable elasticity; and there can be little doubt that it will be employed still more extensively, and in a still greater variety of ways.

The great variety of purposes to which its elasticity and imperviousness to water and to air have occasioned its application are too numerous and familiar to be particularized in this place. The extent of its employment in Britain in the several branches of manufacture is shown by the quantity of caoutchouc imported, which, for the year ending January 5, 1854, amounted to 17,326 cwt. The total quantity exported from Para alone, in 1852, was 32,860 cwt., and 116,465 pairs of shoes. The dilature of caoutchouc, for the manufacture of elastic fabrics, such as cloth, cord, tape, braces, etc., is an important and increasing branch of our national industry. This operation has been made the subject of various patents, all modifications more or less perfect of our general principle, namely, that of reducing it to threads by means of steel edges acting either on the bottle caoutchouc compressed in a mould, on the solid cake, or by cutting it when stretched on a mandrel of wood, which is set in rapid revolution. In this operation water is allowed to trickle over the cutting blades in order to prevent the cohesion that would otherwise impede their progress. In this manner thread of 5000 yards to a pound weight is produced. Previous to its employment in the manufacture of textile fabrics, it is necessary to render the thread inelastic, which is effected by winding it tightly on reels and allowing it to remain in that condition until nearly deprived of its elasticity—which is afterward restored by exposing it to the action of a heated smoothing-iron. Sheets are sometimes cut from the solid cake, and may likewise be obtained of any size, and of extreme tenuity, by spreading a solution in naphtha upon cloth previously sized, stripping it off when dry. The use of rollers, with a piece of cloth similarly prepared and superimposed on the varnished surface of the first, may also be employed in this operation.—E. B.

Cap. The Romans went for many ages without regular covering for the head, and hence the heads of all the ancient statues appear bare. But at one period the cap was a symbol of liberty, and when the Romans gave it to their slaves it entitled them to freedom. The cap was sometimes used as a mark of infamy; in Italy the Jews were distinguished by a yellow cap, and in France those who had been bankrupts were forever after obliged to wear a green cap. The general use of caps and hats is referred to the year 1449; the first seen in these parts of the world being at the entry of Charles VII. into Rouen, from which time they took the place of chaperons or hoods. A statute was passed that none should sell any hat above 20*d.* (40 cents) nor cap above 2*s.* 8*d.* (66 cents), 5 Henry VII., 1489.—HAYDN.

Cape Hatteras, a headland, North Carolina. Lat. 35° 15′ 12″ N., long. 75° 30′ 54″ W. The light-house was built in 1798 of brown sand-stone. The light is *fixed*, elevated 112 feet above the sea, and is visible for a distance of 17 nautical miles. Very dangerous shoals extend off from this point 10 nautical miles.

Cape Haytien, formerly *Cape Français*, and *Cape Henry*, a sea-port town of the island of Hayti, on its north coast, 90 miles north of Port au Prince. Lat. 19° 40′ N., long. 69° 54′ W. Population probably from 12,000 to 16,000. Previously to the Haytian revolution it was a handsome city, and it still has some fine buildings, with a secure and tolerably defended harbor, and a considerable trade, chiefly with the United States, Great Britain, France, and Germany.

Cape Henlopen, Delaware, a headland on the south side of the entrance to Delaware Bay. Lat. 38° 46′ 36″ N., long. 75° 4′ 42″ W. The light-house shows a *fixed* white light elevated 170 feet above the sea, and is visible for a distance of 18½ nautical miles.

Cape Henry, Virginia, a headland on the south side of the entrance to Chesapeake Bay. Lat. 36° 55′ 30″ N., long. 76° 0′ 12″ W. The light-house, built in 1791, is the leading mark for vessels bound into Chesapeake Bay. It shows a *fixed* white light elevated 120 feet above the sea, and is visible for a distance of 18 nautical miles.

Cape of Good Hope, an important colony of Great Britain, occupying the south part of the peninsula of Africa, between lat. 29° 41′ and 34° 51′ S., and long. 17° 10′ and 27° 32′ E.; bounded on the south and east by the Indian Ocean, and on the west by the Atlantic Ocean, on the north by the countries of the Namaquas, Griquas, and other Hottentot tribes, and on the northeast by British Kafraria. Length, west to east (Cape peninsula to Keiskamma River), 550 miles; average breadth, 250 miles. Area, estimated at 110,000 square miles. Population in 1850, 261,436, mostly Africans, Dutch, negroes, and a small number of Hottentots. The country is formed of a series of territories rising in successive stages from south to north. Bays, Helena, Table, False (the west part of which forms Simon's Bay), St. Sebastian, Mossel, Plettenberg, and Algoa. Streams are numerous but rapid, mostly dry in summer, and unfit for navigation; the

chief are, on the east and south coast, Keiskamma, Great Fish, Bushman, Sunday, Camtoos, and Breede; on the west, Berg and Elephant or Olifhant; and on the north, several small streams tributary to the Orange. The climate is mild and healthy, but very dry; rains irregular, often falling in torrents on the coast, but rare in the plains of the interior. Snow falls only in the mountains, and is not permanent, even on the most elevated. December and January are the warmest, and June and July the coldest months. Mean temperature at Cape Town—in summer, 58°·3; in winter, 76°·6 Fahrenheit. The greater number of diseases are unknown at the Cape; the most common are consumption and apoplexy. Few of the inhabitants attain an advanced age. Soil fertile where sufficiently watered, but the general appearance of the country is sterile and monotonous. The arid steppes or *Karoos* of the interior are destitute of trees, and covered with an ephemeral vegetation, only after heavy rains. The flora of the colony is of a peculiar character, comprising 1200 species, which, however, are more remarkable for the variety and beauty of their flowers than for their uses. The most valuable is the aloe, the produce of which has been exported in one year to the amount of $12,000; a species of soda, found in the Karoo, is employed by the inhabitants in the manufacture of soap, and candles are made from the covering of the wax-berry. European grains, and the fruits of temperate and tropical regions, have been successfully introduced. Corn is raised more than requisite for consumption, and the cultivation of the vine is an important source of wealth; a good white wine is produced in the interior, but only the small vineyard at the foot of Table Mountain produces the celebrated liqueur called *Constantia*. Cattle-rearing is the chief branch of rural industry; and the introduction of the Merino sheep has rendered the rural trade of the colony important. The value of produce of the colony exported in 1840 amounted to £359,517. The coasts abound with mackerel and herrings, and in 1842 the whale and seal fishery employed 144 boats. Some of the wild animals of Africa are still met with, but the larger species decrease in proportion as colonization extends. The lion, hyena, buffalo, hippopotamus, and zebra, are occasionally seen; the rhinoceros is rare, and the elephant is driven beyond the boundary. The ostrich and eagle are found in the mountains, and snakes are numerous. The commerce of the colony is extensive; the ports are Cape Town and Simon's Town in the west, and fort Elizabeth in the east. Total value of exports in 1844, £350,735, of which £236,217 were to the United Kingdom. Imports same year, £1,123,061. In 1845, 35 ships (3713 tons) and 307 men belonged to the colony; and in 1847, 791 ships (209,426 tons) entered, and 782 ships (205,618 tons) cleared from its ports. The colony consists of an east and a west province, and these are divided into 14 districts; viz., Cape Division and Stellenbosch in the southwest; Zwellendam, George, Uitenhage, and Albany, on the south coast; Clanwilliam on the northwest; Worcester and Beaufort, Graaf Reynet, and Somerset in the interior; Colesberg on the northeast; Cradock and Victoria on the east. The capitals have the same names as the districts, except Graham's Town, which is the capital of Albany, and Fredericksburg, of Victoria district. Stellenborch is the chief wine, and Zwellendam the principal corn-growing district; the others are mostly appropriated to grazing. Government is administered by a Parliament, composed of the governor, legislative Council of 16 members, and a House of Assembly of 46 members, elected for a term of five years. (*Salary of governor and commander-in-chief*, £5000.) The Dutch founded a colony at the Cape in 1648, which was taken by the British in 1795.—*See* CAPE TOWN.

The boers or farmers of the Cape colony, descendants of the original Dutch settlers, have lost much of their ancestral industry and cleanliness; they are affectionate in their family relations, and strict in religious observances, but prejudiced and illiterate. Education has been long neglected in the colony; the only institutions of importance were, till lately, the South African college, and the South African institution at Cape Town; but a comprehensive system, embracing primary and classical schools, was instituted by the government in 1839. In many of the districts are missionary schools supported by different Protestant societies. In 1842 there were 40 public and 102 private schools, attended by 2700 children. The colonial grants in the same year were, for educational purposes, £6021, and for religious purposes, distributed among the different sects, £10,481. Slavery was abolished in 1833. The English language is alone used in the courts of law, but the Dutch is also taught in the government schools. The money in use is exclusively British; and Dutch weights and measures are nearly superseded by the English. The peace of the colony is frequently interrupted by incursions of the Kaffers, and other savage tribes on the frontier.

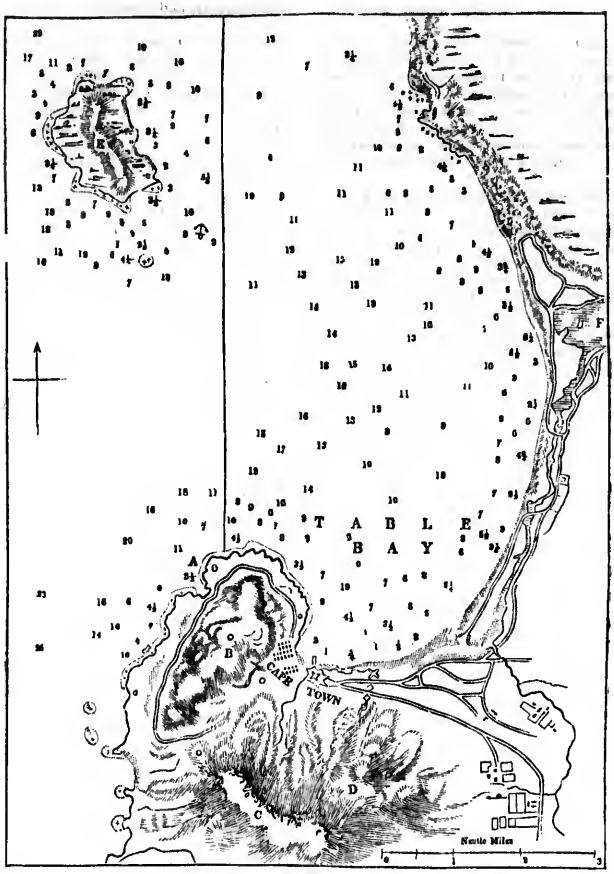
Capers (Fr. *Capres*; Germ. *Kappern*; Du. *Kappers*; It. *Cappari*; Sp. *Alcaparras*; Russ. *Kapersui*; Lat. *Capparis*), the pickled buds of the *Capparis spinosa*, a low shrub, generally growing out of the joints of old walls and the fissures of rocks, in most of the warm parts of Europe. Capers are imported from different parts of the Mediterranean; the best from Toulon, in France. Some small salt capers come from Majorca, and a few flat ones from the neighborhood of Lyons. In 1852, 117,067 pounds of capers were retained for consumption.

Cape Town, the capital of the British territory in South Africa, at the bottom of Table Bay, about 32 miles north from the Cape of Good Hope, and on the western side of the territory to which it gives its name; lat. 33° 55′ 56″ S., long. 18° 21′ E. The town was founded by the Dutch in 1650; and remained, with the territory subject to it, in their possession till it was taken by the British in 1795. It was restored to the Dutch by the treaty of Amiens; but being again captured by the British in 1806, it was finally ceded to them in 1815. The streets are laid out in straight lines, crossing each other at right angles; many of them being watered by canals, and planted on each side with oaks. The population in 1842 amounted, according to the statement in the *Cape Almanac*, to 22,543, of whom about a third were blacks. The town is defended by a castle of considerable strength. Table Bay is capable of containing any number of ships; but it is exposed to the westerly winds, which, during the months of June, July, and August, throw in a heavy swell, that has been productive of many distressing accidents. This, in fact, is the great drawback upon Cape Town, which in all other respects is most admirably fitted for a commercial station. At the proper season, however, or during the prevalence of the easterly monsoon, Table Bay is perfectly safe; while the cheapness and abundance of provisions, the healthiness of the climate, and, above all, its position, render it a peculiarly desirable resting-place for ships bound to or from India, China, Australia, etc.

The plan of Table Bay on the opposite page is taken from the survey of the Cape of Good Hope, executed by Lieutenant Vidal and others, under the direction of Captain Owen.

Port Instructions.—Art. 1. On the arrival of merchant vessels in Table Bay, a proper berth will be pointed out to the masters thereof by the port captain when he boards them; and no master of a merchant vessel shall shift his birth without permission from the port captain, unless in case of extreme emergency, when he must report his having done so as early as possible at the port-office.

Art. 2. Should it be the intention of a master of a vessel to discharge or receive on board any considerable quantity of merchandise, a berth will be pointed



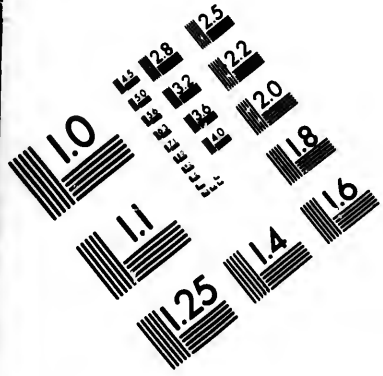
PLAN OF TABLE BAY. BY LIEUTENANT VIDAL, R. N.—*See* p. 268.

References to the Plan.—A, light-house, furnished with double lights. They may be seen clearly off deck at 16 miles' distance; but they do not appear double till within 6 or 7 miles to the westward; from the northward only one light is seen. B, Lion's Rump. C, Table Mountain. D, Devil's Peak, in lat. 33° 57′ 2″. E, Robbin Island. F, Salt River. The figures denote the soundings in fathoms.

out to him as close to the jetty, or other landing-place, as the safety of the vessel and other circumstances will admit. And the master will then moor with two bower anchors, with an open hawse to the north-northeast, taking especial care, in so mooring, not to overlay the anchors of any other ship, or in any way to give the vessel near him a foul berth. Ships and vessels touching in Table Bay for water and refreshments alone may ride at single anchor in the outer anchorage; but in this case it is particularly recommended to veer out 80 or 90 fathoms, if they ride by a chain cable, as the liability of starting or fouling the anchor, or breaking the chain, will thereby be greatly lessened; and if riding by a rope or coir cable, to run out a stream or good kedge, to steady the ship; and in both cases the other bower anchor should be kept in perfect readiness to let go. When the vessel is properly moored with bower anchors, or well secured with a bower and stream anchor, and with good cables, buoys, and buoy-ropes, the master will then take the exact place of the ship by the bearings of two landmarks, and the depth of the water; and should accident occur, by which the vessel may drift from this situation, or lose her anchors, a good bearing and depth of water must be taken at the time, and the same must be notified in writing to the port captain. It is particularly recommended that vessels be kept as snug as possible, to counteract the effects of the periodical winds, which at times blow with considerable violence.

The district subject to Cape Town is of very great extent, and contains every variety of soil, from the richest level land to the wildest mountain, and tracts destitute of even the appearance of vegetation. The climate fluctuates between the two extremes of rain and drought. On the whole, its advantages and disadvantages seem to be pretty equally balanced; and the prospects which it holds out to the industrious emigrant, if not very alluring, are certainly not discouraging.

Population.—According to the official returns, the



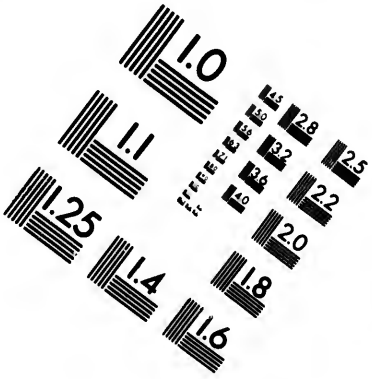
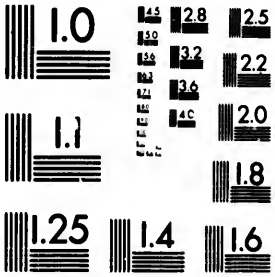
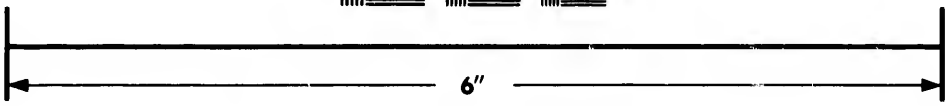
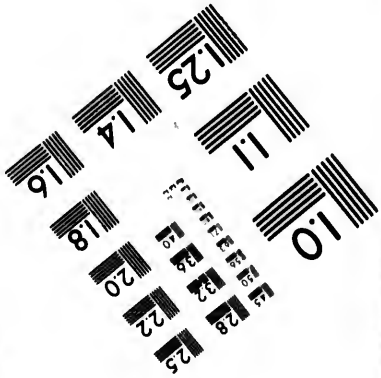


IMAGE EVALUATION TEST TARGET (MT-3)







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population of the Cape Colony in 1847 consisted of 167,995.

Produce.—Large quantities of corn of a very good description are produced in the immediate neighborhood of Cape Town, and in other parts of the colony; but agriculture is crippled by the Dutch law of succession, which, by dividing a man's property equally among his children, hinders the accumulation of capital in masses, and the formation of proper farming establishments.—THOMSON'S *Travels in Southern Africa*, p. 324.

The Mauritius and Rio Janeiro are the principal markets for the corn of the Cape. The exports of wool have increased very rapidly within the last ten years, and it now forms by far the most important article sent from the colony. The native breed of sheep is very inferior; its fleece is worth nothing, and it is remarkable only for the size of the tail, which sometimes weighs 20 lbs.! But fine-wooled Spanish merinos, Saxon and English sheep, succeed remarkably well, and their wool fetches a high price. The eastern district of Albany is especially suitable for sheep.

Large quantities of wine, and of what is called brandy, are produced at the Cape; but, with the exception of Constantia, they are very inferior. The effect of allowing the importation of Cape wines into the United Kingdom at a comparatively low duty is, not to occasion their direct consumption, but to cause them to be employed as a convenient means of adulterating others; so that, besides being injurious to the revenue, such reduction of duty promotes fraudulent practices, and detracts from the comforts of the public.

Considerable quantities of hides, skins, and horns are exported. They are principally brought from Algoa Bay, on the eastern side of the colony; and the trade has increased very fast during the last six or seven years. Aloes are an important product; and horses, butter, beef, ivory, argol, and various other articles, are among the exports. The latter also include dried fish, whale and seal oil, etc., the Cape fisheries being of considerable value.

The imports at the Cape consist of woolens, cottons, hardware, earthen-ware, furniture, haberdashery, soap, paper, books, and portions of most articles used in this country. Piece goods and teak timber are imported from India, tea from China, sugar from India, the Mauritius, etc.

Trade.—The trade between the colonists and the independent natives is subjected to various restraints, of which it is not always very easy to discover the policy. The sale of gunpowder and fire-arms to the natives has been prohibited: a regulation which might have been a judicious one, had they not been able to obtain them from any one else. The Americans have, however, traded with the eastern coast, and have liberally supplied the natives with these and various other articles; so that by keeping up the regulation in question, the English exclude themselves from participating in what might be an advantageous trade But since they have taken possession of Natal, this intercourse may perhaps have been stopped.

ACCOUNT OF THE QUANTITIES AND VALUES OF THE STAPLE ARTICLES, THE PRODUCE OF THE COLONY OF THE CAPE OF GOOD HOPE, EXPORTED IN THE YEAR ENDING 5TH JANUARY, 1847.

Articles.		Quantities.	Value. £ s. d.	Articles.		Quantities.	Value. £ s. d.
Aloes	Pounds.	918,780	2,846 0 0	Hides (horse and ox)	Num.	60,837	32,777 0 0
Argol	—	60,000	960 0 0	Horns	—	83,650	1,244 0 0
Beef and Pork	Casks.	4,806	18,484 0 0	Horses	—	490	17,028 0 0
Bone (whale)	Pounds.	3,851	264 0 0	Ivory	Pounds.	28,342	5,872 0 0
Butter	—	81,765	5,807 0 0	Mules	Num.	18	215 0 0
Candles	—	25,299	945 0 0	Oil—viz.: Whale	Gallons.	2,584	211 0 0
Corn and meal—viz.:				Skins—viz.: Calf	Num.	120	26 0 0
Barley	Muids.	2,399	1,302 0 0	Goat	—	230,164	22,649 0 0
Beans and peas	—	949	1,058 0 0	Seal	—	460	188 0 0
Bran	Pounds.	353,195	1,432 0 0	Sheep	—	249,049	9,703 0 0
Flour	—	756,438	7,918 0 0	Spirits—viz.: Brandy	Gallons.	4,047	653 0 0
Oats	Muids.	908	490 0 0	Tallow	Pounds.	147,971	2,491 0 0
Wheat	—	240	242 0 0	Wax	—	2,843	168 0 0
Feathers (ostrich)	Pounds.	1,327	7,655 0 0	Wine—viz.:			
Fish (cured)	—	1,092,225	7,221 0 0	Constantia	Gallons.	3,064	2,614 0 0
Fruits (dried)	—	255,812	3,888 0 0	Ordinary	—	508,708	37,858 13 6
Fruits (green)	—	5,600	50 0 0	Wool	Pounds.	3,271,128	178,011 0 0
							£366,290 18 6
Other Articles							32,485 0 6
Total							£398,775 13 6

	£ s. d.	
Of the above, the value of the exports from Cape Town was	228,815 0 0	
Ditto, exported from Simon's Town	471 13 6	
Ditto, exported from Port Elizabeth*	170,289 0 0	
		£398,775 13 6

* Port Elizabeth, on the east side of Algoa Bay, is rapidly rising in commercial importance; and from the greater fertility of the country in its vicinity, its exports will probably, in no very lengthened period, exceed those from the Cape.

A SUMMARY VIEW OF THE TRADE AND NAVIGATION OF THE COLONY IN THE YEAR ENDING 5TH JANUARY, 1847.

Ports.	Vessels inward. No.	Vessels inward. Tonnage.	Vessels outward. No.	Vessels outward. Tonnage.	Total Customs Duties. £ s. d.	Total Revenue collected by the Customs, including Fees, Wharfage, etc. £ s. d.	Total Value of Imports. £ s. d.	Total Value of Exports. £ s. d.
Cape Town	399	138,685	374	131,708	74,163 12 8	80,937 1 7	814,687 0 4	315,090 0 0
Coastwise	181	21,854	195	27,780	.....	.....	.....	.....
Simon's Town	33	12,772	31	12,850	428 19 10	1,046 4 0	4,626 15 0	470 3 6
							50,000 0 0 Specie commis.	800 0 0 Specie.
Coastwise	6	960	8	1,401	.....	.....	.....	.....
Port Elizabeth	76	19,805	62	16,328	18,488 7 11	18,774 19 2	253,848 0 0	172,904 0 0
Coastwise	99	15,107	112	16,961	.....	.....	.....	.....
Total Colony	508	171,522	467	160,986	93,081 0 5	100,758 4 9	1,123,061 15 10	489,364 3 6
Coastwise	286	37,904	315	45,232	.....	.....	.....	.....
Grand Total	794	209,426	782	206,618	93,081 0 5	100,758 4 9	1,123,061 15 10	489,364 3 6

By an act passed by the colonial government of the Cape of Good Hope, it is provided, "That it shall be lawful for the proper officers of customs to deliver, from any of the bonded warehouses in this colony, any articles whatever duly warehoused therein, being original packages as imported, to be shipped free from customs duty as stores for the use of any vessel, not being then on any voyage from any one port to any other port of this colony: such delivery and shipment shall be un-

der such rules and regulations as the collector of customs shall direct; and any such articles shipped as stores contrary to such rules and regulations shall be forfeited, and shall be dealt with in the same manner as is provided in the ordinance No. 6 of 1853, in respect of goods forfeited, or liable to forfeiture, for breaches of the customs laws."

By an act passed June 8th, 1855, it is further provided, "That the following articles shall be exempt from the payment of wharfage and crsnage duties, upon being landed or shipped in Table Bay or Simon's Bay respectively—that is to say, all surplus stores or provisions for the use of whaling vessels; all whalebone, whale-head matter, and whale or fish oil, landed or shipped from or on board of whaling vessels, or from or on board of any other vessel conveying such whalebone, whale-head matter, or oil, from or to any whaling vessel; provided, that such whalebone, whale-head matter, be not entered for colonial consumption."

Cape Verd, the most western cape of Africa, in the Atlantic Ocean, between the rivers Senegal and Gambia. Lat. 14° 43′ N., long. 17° 34′ W. Its name is derived from a group of enormous baobab-trees which crowns its summit.

Cape Verd Islands are situated 329 miles west of the Cape, between lat. 14° 45′ and 17° 13′ N., and long. 22° 45′ and 25° 25′ W. The Archipelago consists of the following ten islands: Sal, Boavista, Mayo, Santiago (St. James), the largest, Forgo, Brava, Grande, Rombo, St. Nicolão, and St. Luzia; and four islets, Branco, Razo, St. Vicente, and St. Antão. Area estimated at 1680 square miles. Population in 1850, 86,738. The white population, in the whole Archipelago is to the colored as 1 to 20. The surface of the islands is in general mountainous, and some of their peaks have a considerable elevation. The volcano of Fogo is 9157 feet in height. The soil is extremely various, but mostly fertile; the absence of trees and the scarcity of water are the causes of frequent and severe distress. Climate very hot, but tempered by the sea-breezes; mean temperature of May and August, 70°·9, April to September 70°, during the other months 65° Fahrenheit; the mornings and evenings are cool, and dews abundant. Chief vegetable products, maize, rice, and French beans. Coffee, introduced in 1790, has completely succeeded; the cotton shrub is indigenous; indigo grows wild, and tobacco is cultivated in some of the islands; little sugar is grown, and wine of inferior quality; tropical fruits are abundant.—*See* PORTUGAL.

Capital, in political economy, is that portion of the produce of industry existing in a country which may be made directly available, either for the support of human existence or the facilitating of production. But in commerce, and as applied to individuals, capital is understood to mean the sum of money which a merchant, banker, or trader, adventures in any undertaking, or which he contributes to the common stock of a partnership. It signifies likewise the fund of a trading company or corporation; in which sense the word *stock* is generally added to it. Thus we say the *capital stock* of the bank, etc. The profit derived from any undertaking is estimated by the *rate* which it bears to the capital that was employed.

A desire to accumulate some portion of the produce of industry being natural to mankind, and nearly universal, the growth of capital may be expected wherever the means of accumulation exist; or, in other words, wherever men are not obliged to consume the whole products of their labor in their own subsistence. From the moment at which a man produces more than he consumes, he is creating a capital; and the accumulated surplus of production over the consumption of a whole community is the capital of a country.—KNIGHT'S *Cyclopedia.* Public credit and public order are essentially bound up with each other, and with the maintenance of general prosperity. An infringement of either, or both, is the first and surest signal of derangement in commerce, and lessened employment. At the present moment, when the state of Europe furnishes so many sad examples of the misery and ruin which have resulted to the commercial and working classes, it is of the greatest importance that we should form a just estimate of the consequences which would result, in this country, to the various classes of society from any important interruption of that peace and order for which it has been generally so much distinguished; and under which, in comparison with those countries which have been exposed to continual outbreaks, it has risen to so much social and general prosperity.

Capoc, a sort of cotton, so short and fine, that it can not be spun. It is used in the East Indies to line palanquins, to make beds, mattresses, etc.

Capricorn, Tropic of, a lesser circle of the sphere, which is parallel to the equinoctial and at 23° 30′ distance from it southward, passing through the beginning of Capricorn.

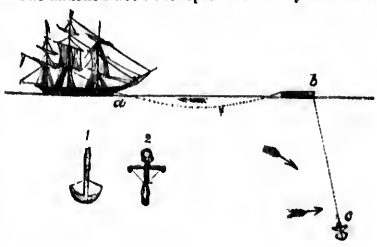
Capsicum. *See* PEPPER.

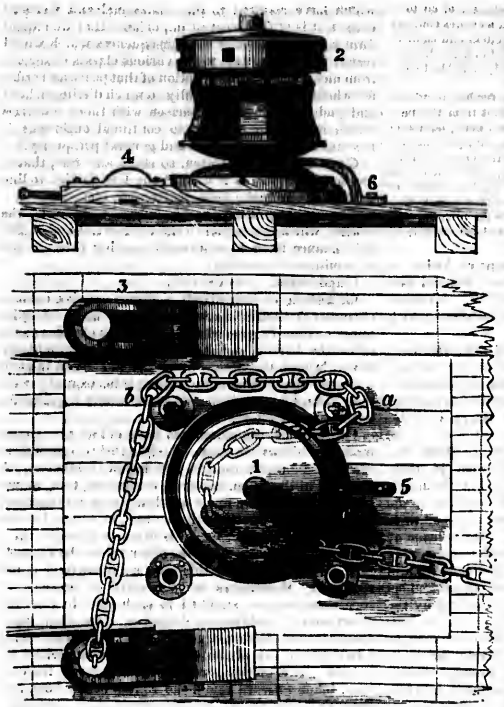
Capstan, or **Capstern,** a strong massive column of timber, formed like a truncated cone, and having its upper extremity pierced with a number of holes to receive the bars or levers. It is let perpendicularly down through the decks of a ship, and is fixed in such a manner that the men, by turning it horizontally with their bars, may perform any work which requires an extraordinary effort.

Considerable improvements have of late years been made in Phillips' capstans, which in their original form are not now much used in her majesty's service. A part of Phillips' plan, however, is retained, that, namely, of connecting the upper and lower capstan together. A French plan was recently devised, in which, instead of the wheel, an iron flange is fitted to take the three cables (the one above and the other below the class, or rate, for ships), and by this means a messenger is not required. Messengers are generally of chain; but rope ones are also supplied to each ship, in case the chain ones should become defective. The chain-messenger is made with a large link and a small one. This latter the spikes of the wheel enter as the wheel revolves. This messenger is passed half round the capstan, taken forward round the rollers in the bow, and the two parts of the messenger shackled together. Rope-messengers are passed three times round the capstan, and with an eye at each end lashed together. The rope-messengers in all ships are cut from five to eight fathoms longer than the distance between the capstan and the bow, in order that the men may hold on when the cable is hove in. Nippers, made of rope, from four to five fathoms long are used to attach the cables to the messenger. These are taken off when the cable is hove in, and come aft to the chain locker (or, if the cable is hempen, to the hatchway near the tier).

A patent has lately been taken out by Mr. Thomas Brown, of London, in which various improvements are introduced. The principal of these are illustrated in the following wood-cuts. The numbers 1 and 2 represent the plan and elevation of the capstan flange, for working various sizes of chain cable; 3 and 4 are the plan and elevation of the deck-pipe stopper, to be used for checking the cable when bringing the ship to, and for riding by when at anchor; 5 and 6 are the plan and elevation of the clearing guide.

The annexed wood-cut represents Mr. Aylen's mode





of anchoring a ship during a calm, when out of soundings, to prevent her drifting when a strong current is running against her.

Supposing a ship of from 500 to 600 tons in a calm, with the current running three knots against her, and out of soundings; let go the kedge anchor, having previously secured two pieces of canvas to it as per figure, No. 1 and 2; veer out 40 to 50 fathoms of 3 to 4 inch hawser; then lower the quarter boat or cutter, and stop the above hawser to the ring in the bow and stern of the boat; then veer from the ship 70 to 80 fathoms on the hawser, between the boat and ship; put on a snatch-block to traverse, with one or two pigs of ballast, to be used according to the strength of the current.

Supposing that the current at from 40 to 50 fathoms deep is running in a different direction from that of the surface—as has been frequently observed in clear water at sea—it is plain that a great strain is taken off the anchor by using the boat, inasmuch as the whole strain would be on the hawser *b c*, the greater part of which is borne by hawsor *a b*; that if the ship rode immediate at *b*, the whole of the strain being at *b c*, would naturally require a greater weight to hold her; in fact, a bower anchor with 60 fathoms of cable would not be sufficient, besides the difficulty of again recovering the anchor.

If the surface and deep current should happen to run in the same direction, the ship would not then separate from the boat; all would drift together. This plan for anchoring, there is every reason to suppose, will answer near the equator, or at any place at a distance from the main land, but it is not intended for a tide way.—E. B.

Captain (Fr. *capitaine*; It. *capitano*, from the Latin *caput*), literally a head, or chief officer; but the term is used in particular to denote an officer holding a certain rank in the army or the navy. In the army, a captain is the officer who commands a troop of cavalry, or a company of infantry, or of artillery. His full pay in British cavalry regiments is 14*s.* 7*d.* a day; in the infantry 11*s.* 7*d.* Captains in the Life and Foot Guards rank with the colonels of other regiments, and their full pay is 15*s.* a day. *Captain General*, the commander-in-chief of an army, or of the militia. *Captain Lieutenant* is an officer who, with the rank of captain, but the pay of lieutenant, commands a troop or company in the name and place of some other person. Thus the colonel of a regiment being usually captain of the first company, that company is commanded by his deputy under the title of captain lieutenant. *Captain of a ship of war*, the officer who commands a ship of the line or a frigate. Officers who command smaller vessels are called commanders. In ships of the line a commander is also appointed with the captain; the former is therefore second captain. The charge of a captain in the navy is very comprehensive, inasmuch as he is not only answerable for any bad conduct in the military government, navigation, and equipment of the ship he commands, but also for any neglect of duty or mismanagement on the part of his inferior officers, whose several charges he is appointed to superintend and regulate. *Captain of a merchant ship*, he who has the direction of the ship, crew, lading, etc.

Caracas, or **Caraccas**, the capital city of Venezuela, South America, department and province of Caracas, lat. 10° 30′ 13″ N., long. 67° 4′ 45′ W., on a declivity 2880 feet in elevation, and 16 miles south-southeast of La Guayra, its port, on the Caribbean Sea. Population estimated from 35,000 to 50,000. It is regularly built, well supplied with water, and has a healthy climate. Mean temperature of June 72°, February 68°·2 Fahrenheit. Principal buildings, a cathedral, the fine church of Alta Gracia, and three hospitals. Exports from La Guayra consist principally of cacao, cotton, indigo, tobacco, coffee, hides, and live cattle. By the earthquake of 1812, 12,000 persons perished; since which time most of its houses have been constructed of sun-dried bricks. It is the seat of a university, and the residence of the principal merchants, on whose account the trade of La Guayra is conducted. It is the birth-place of Bolivar. The province lies between lat. 7° 38′ and 10° 26′ N., and long. 65° 30′ and 68° W. Area, 2842 square leagues. Population, 242,888. Surface partly mountainous and partly flat; the former toward the sea-coast, where several deep indentations occur, and form good harbors; the latter in the interior, and on the south, where the country stretches out into vast plains. It produces the best cacao, and all tropical fruits are grown in perfection. It is divided into 16 cantons.

Carat, the weight which expresses the degree of fineness of gold. The word is also written *carract*, *carrat*, *karract*, and *karrat*. Its origin is contested; but the most probable opinion is that of Kennet, who derives it from *carecta*, a term which anciently denoted any weight, and came afterward to be appropriated to that which expresses the fineness of gold and the gravity of diamonds. Carats are not real determinate

weights, but only imaginary. The whole mass, whatever be the weight, is conceived to be divided into twenty-four carats; and as many twenty-fourth parts as it contains of pure gold, it is called *gold of so many carats*, or *so many carats fine*. Thus, gold of eighteen carats is a mixture, of which eighteen parts are pure gold, and the other six of inferior metal. Carat is also a certain weight which goldsmiths and jewelers use for weighing precious stones and pearls. In this sense the word is supposed by some to be derived from the Greek *κεράτιον*, a fruit which in Latin is called *siliqua*, the *carob bean*, each of which may weigh above four grains of wheat; and hence the Latin *siliqua* has been used for the weight of four grains. This carat weighs four grains; but they are sometimes lighter than the grains of other weights. Each of these grains is subdivided into $\frac{1}{4}$, $\frac{1}{8}$, $\frac{1}{16}$, $\frac{1}{10}$, etc. *See* WEIGHTS and MEASURES.—E. B.

Caravan, an organized company of merchants, or pilgrims, or both, who associate together in many parts of Asia and Africa, that they may travel with greater security through the deserts and other places infested with robbers; or where the road is naturally dangerous. The word is derived from the Persian *kervan*, or *cárván*, a trader or dealer.—SHAW's *Travels in the Levant*, p. 9, 4to ed.

Every caravan is under the command of a chief or aga (*caravan-bachi*), who has frequently at his disposal such a number of troops or forces as is deemed sufficient for its defense. When it is practicable, they encamp near wells or rivulets, and observe a regular discipline. Camels are used as a means of conveyance, almost uniformly, in preference to the horse or any other animal, on account of their wonderful patience of fatigue, eating little, and subsisting three or four days or more without water. There are generally more camels in a caravan than men.—*See* CAMEL.

The commercial intercourse of Eastern and African nations has been principally carried on, from the remotest period, by means of caravans. During antiquity, the products of India and China were conveyed either from Suez to Rhinoculura, or from Bussorah, near the head of the Persian Gulf, by the Euphrates, to Babylon, and thence by Palmyra, in the Syrian desert, to the ports of Phœnicia, on the Mediterranean; where they were exchanged for the European productions in demand in the East. Sometimes, however, caravans set out directly from China, and, occupying about 250 days in the journey, arrived on the shores of the Levant, after traversing the whole extent of Asia.—GIBBON, vol. vii. p. 93. The formation of caravans is, in fact, the only way in which it has ever been possible to carry on any considerable internal commerce with Asia or Africa. The governments that have grown up in those continents have seldom been able, and seldomer indeed have they attempted, to render traveling practicable or safe for individuals. The wandering tribes of Arabs have always infested the immense deserts by which they are intersected; and those only who are sufficiently powerful to protect themselves, or sufficiently rich to purchase an exemption from the predatory attacks of these freebooters, can expect to pass through territories subject to their incursions, without being exposed to the risk of robbery and murder.

Since the establishment of the Mohammedan faith, religious motives, conspiring with those of a less exalted character, have tended to augment the intercourse between different parts of the Eastern world.

The numerous camels of each caravan are loaded with those commodities of every country which are of easiest carriage and readiest sale. The holy city is crowded during the month of Dhulhajja, corresponding to the latter part of June and the beginning of July, not only with zealous devotees, but with opulent merchants. A fair or market is held in Mecca and its vicinity on the twelve days that the pilgrims are allowed to remain in that city, which used to be one of the best frequented in the world, and continues to be well attended. "Few pilgrims," says Burckhardt, "except the mendicants, arrive without bringing some productions of their respective countries for sale; and this remark is applicable as well to the merchants, with whom commercial pursuits are the main object, as to those who are actuated by religious zeal; for, to the latter, the profits derived from selling a few articles at Mecca diminish, in some degree, the heavy expenses of the journey. The Moggrebyns (pilgrims from Morocco and the north coast of Africa) bring their red bonnets and woolen cloaks; the European Turks, shoes and slippers, hardware, embroidered stuffs, sweetmeats, amber, trinkets of European manufacture, knit silk purses, etc.; the Turks of Anatolia bring carpets, silks, and Angora shawls; the Persians, Cashmere shawls and large silk handkerchiefs; the Afghans, tooth-brushes, called Mesouak Kattary, made of the spongy boughs of a tree growing in Bokhara, beads of a yellow soap-stone, and plain coarse shawls manufactured in their own country; the Indians, the numerous productions of their rich and extensive region; the people of Yemen, snakes for the Persian pipes, sandals and various other works in leather; and the Africans bring various articles adapted to the slave-trade. The pilgrims are however, often disappointed in their expectations of gain; want of money makes them hastily sell their little adventures at the public auctions, and often obliges them to accept very low prices."—*Travels in Arabia*, vol. ii. p. 21.

The two principal caravans which yearly rendezvous at Mecca are those of Damascus and Cairo. The first is composed of pilgrims from Europe and Western Asia; the second of Mohammedans from all parts of Africa. The Syrian caravan is said by Burckhardt to be very well regulated. It is always accompanied by the pacha of Damascus, or one of his principal officers, who gives the signal for encamping and starting by firing a musket. On the route, a troop of horsemen ride in the front, and another in the rear to bring up the stragglers. The different parties of pilgrims, distinguished by their provinces or towns, keep close together. At night torches are lighted, and the daily distance is usually performed between three o'clock in the afternoon and an hour or two after sunrise on the following day. The Bedouins or Arabs, who carry provisions for the troops, travel by day only, and in advance of the caravans; the encampment of which they pass in the morning, and are overtaken in turn and passed by the caravan on the following night, at their own resting-place. The journey with these Bedouins is less fatiguing than with the great body of the caravan, as a regular night's rest is obtained; but their bad character deters most pilgrims from joining them.

At every watering-place on the route is a small castle and a large tank, at which the camels water. The castles are garrisoned by a few persons, who remain the whole year to guard the provisions deposited there. It is at these watering-places, which belong to the Bedouins, that the sheikhs of the tribe meet the caravan, and receive the accustomed tribute for allowing it to pass. Water is plentiful on the route; the stations are nowhere more distant than 11 or 12 hours' march; and in winter pools of rain-water are frequently found. Those pilgrims who can travel with a litter, or on commodious camel-saddles, may sleep at night, and perform the journey with little inconvenience; but of those whom poverty, or the desire of speedily acquiring a large sum of money, induces to follow the caravan on foot, or to hire themselves as servants, many die on the road from fatigue.—*Travels in Arabia*, vol. ii. p. 8–9. The caravan which sets out from Cairo for Mecca is not generally so large as that of Damascus; and its route along the shores of the Red Sea is more dangerous and fatiguing. But many of the African and Egyptian merchants and pilgrims sail from Suez, Cos-

seir, and other ports on the western shore of the Red Sea, for Djidda, whence the journey to Mecca is short and easy. The Persian caravan for Mecca sets out from Bagdad; but many of the Persian pilgrims are now in the habit of embarking at Bussorah, and coming to Djidda by sea. Caravans from Bagdad and Bussorah proceed to Aleppo, Damascus, and Diarbeker, laden with all sorts of Indian, Arabian, and Persian commodities; and large quantities of European goods, principally of English cottons, imported at Bussorah, are now distributed throughout all the eastern parts of the Turkish empire by the same means. The intercourse carried on in this way is, indeed, every day becoming of more importance.

The commerce carried on by caravans in the interior of Africa is widely extended, and of considerable value. Besides the great caravan which proceeds from Nubia to Cairo, and is joined by Mohammedan pilgrims from every part of Africa, there are caravans which have no object but commerce, which set out from Fez, Algiers, Tunis, Tripoli, and other states on the sea-coast, and penetrate far into the interior. Some of them take as many as 50 days to reach the place of their destination; and as their rate of traveling may be estimated at about 18 miles a day at an average, the extent of their journeys may easily be computed. As both the time of their outset and their route is known, they are met by the people of the countries through which they travel, who trade with them. Indian goods of every kind form a considerable article in this traffic; in exchange for which the chief commodity the inhabitants have to give is slaves. Three distinct caravans are employed in bringing slaves and other commodities from Central Africa to Cairo. One of them comes direct from Mourzouk, the capital of Fezzan, across the Libyan desert; another from Senaar; and the third from Darfur. They do not arrive at stated periods, but after a greater or less interval, according to the success they have had in procuring slaves, ivory, gold dust, drugs, and such other articles as are fitted for the Egyptian markets. The Mourzouk caravan is said to be under the best regulations. It is generally about 50 days on its passage; and seldom consists of less than 100, or of more than 300, travelers. The caravans from Senaar and Darfur used formerly to be very irregular, and were sometimes not seen in Egypt for two or three years together; but since the occupation of the former by the troops of Mohammed Ali, the intercourse between it and Egypt has become comparatively frequent and regular. The number of slaves imported into Egypt by these caravans is said to amount at present to about 10,000 a year. The departure of a caravan from Darfur is looked upon as a most important event; it engages for a while the attention of the whole country, and even forms a kind of era.—Browne's *Travels in Africa*, 2d ed. p. 78. A caravan from Darfur is considered large if it has 2000 camels and 1000 slaves. Many of the Moorish pilgrims to Mecca cross the sea from Souakin and Massouah to the opposite coast of Arabia, and then travel by land to Mecca; and Burckhardt states, that of all the poor pilgrims who arrive in the Hedjaz, none bear a more respectable character for industry than those from Central Africa.

Caravans are distinguished into *heavy* and *light*. Camels loaded with from 500 to 750 lbs. form a heavy caravan; light caravans being the term applied to designate those formed of camels under a more moderate load, or perhaps only half loaded. The mean daily rate at which heavy caravans travel is about 18½ miles, and that of light caravans 22 miles.

The safety of a caravan depends materially on the conduct of the *caravan-bachi*, or leader. Niebuhr says, that when the latter is intelligent and honest, and the traveler understands the language, and is accustomed to the Oriental method of traveling, an excursion through the desert is rarely either disagreeable or dangerous. But it is not unusual for the Turkish pachas to realize considerable sums by selling the privilege of conducting caravans; and it is generally believed in the East that leaders so appointed, in order to indemnify themselves, not unfrequently arrange with the Arabian sheikhs as to the attack of the caravans, and share with them in the booty. At all events, a leader who has paid a large sum for the situation, even if he should be honest, must impose proportionally heavy charges on the association. Hence the best way in traveling with caravans is, to attach one's self to one conducted by an active and experienced merchant, who has a considerable property embarked in the expedition. With ordinary precaution, the danger is then very trifling. It would be easy, indeed, were there any thing like proper arrangements made by government, to render traveling by caravans, at least on all the great routes, abundantly secure.—Niebuhr, *Voyage en Arabie*, tome ii. p. 194, ed. Amst. 1780.

No particular formalities are required in the formation of a caravan. Those that start at fixed periods are mostly under the control of government, by whom the leaders are appointed. But, generally speaking, any dealer is at liberty to form a company and make one. The individual in whose name it is raised is considered as the leader, or *caravan-bachi*, unless he appoint some one else in his place. When a number of merchants associate together in the design, they elect a chief, and appoint officers to decide whatever controversies may arise during the journey.—For further details with respect to caravans, see the *Modern Part of the Universal History*, vol. xiv. p. 214–243; Robertson's *Disquisition on Ancient India*, Note 54; Rees' *Cyclopedia*, art. *Caravan*, most of which is copied from Robertson, though without a single word of acknowledgment; Burckhardt's *Travels in Arabia*, vol. ii. *passim*; Urquhart *on Turkey and its Resources*, p. 137, 151, etc.

Caravanserai, a large public building or inn appropriated for the reception and lodgment of the caravans. Though serving in lieu of inns, there is this radical difference between them—that, generally speaking, the traveler finds nothing in a caravanserai for the use either of himself or his cattle. He must carry all his provisions and necessaries with him. They are chiefly built in dry, barren, desert places; and are mostly furnished with water brought from a great distance and at a vast expense. A well of water is, indeed, indispensable to a caravanserai. Caravanserais are also numerous in cities; where they serve not only as inns, but as shops, warehouses, and even exchanges.

Caraway-seed (Fr. *Carvi, Cumin des prés*; Ger. *Keummel, Brodkümmel*; It. *Carvi*), a small seed, of an oblong and slender figure, pointed at both ends, and thickest in the middle. It is the produce of a biennial plant (*Carum carui*), with a taper root like a parsnip, but much smaller. It should be chosen large, new, of a good color, not dusty, and of a strong agreeable smell. It is principally used by confectioners. The stem rises from two to three feet in height, and produces numerous umbels of small whitish or reddish flowers; and each flower is succeeded by two single-seeded capsules, which are the caraway-seeds of commerce. These have a strong peculiar odor, with an aromatic bitter taste, and yield, on distillation, about 4 per cent. of a volatile oil, on which their properties depend.

Carboy, a large globular bottle of green glass, protected by wicker-work; used chiefly for holding acids and highly corrosive liquids. The average capacity of these bottles is 12 gallons.

Carbuncle (Gor. *Karfunkel*; Fr. *Escarboukie*; It. *Carocchio*; Sp. *Carbunculo*; Lat. *Carbunculus*), a precious stone of the ruby kind, of a very rich glowing blood-red color, highly esteemed by the ancients.—*See* Ruby.

Card (Fr. *Cardes*; Ger. *Kardätschen, Karden, Wollkratzen*; It. *Cardi*; Russ. *Bardü*; Sp. *Cardas*), an in-

strument, or comb, for arranging or sorting the hairs of wool, cotton, etc. Cards are either fastened to a flat piece of wood, and wrought by the hand; or to a cylinder, wrought by machinery.—*See* PLAYING CARDS.

Cardamoms (Fr. *Cardamomes*; Ger. *Kardamom*; It. *Cardamomi*; Sp. *Kardamomos*; Hind. *Gujarati elachi*), seed capsules produced by a plant, of which there are different species growing in India, Cochin China, Siam, and Ceylon. The capsules are gathered as they ripen; and when dried in the sun, are fit for sale. The small capsules, or lesser cardamoms, are produced by a particular species of the plant, and are the most valuable. They should be chosen full, plump, and difficult to be broken; of a bright yellow color; a piercing smell; with an acrid, bitterish, though not very unpleasant taste; and particular care should be taken that they are properly dried. They are reckoned to keep best in a body, and are therefore packed in large chests, well jointed, pitched at the seams, and otherwise properly secured, as the least damp greatly reduces their value. The best cardamoms are brought from the Malabar coast. They are produced in the recesses of the mountains by felling trees, and afterward burning them; for wherever the ashes fall in the openings or fissures of the rocks, the cardamom plant naturally springs up. In Soonda Balagat, and other places where cardamoms are planted, the fruit or berry is very inferior to that produced in the way now mentioned. The Malabar cardamom is described as a species of bulbous plant, growing 3 or 4 feet high. The growers are obliged to sell all their produce to the agents of government at prices fixed by the latter, varying from 550 to 700 rupees the candy of 600 lbs. avoirdupois; and it is stated that the contractor often puts an *enhanced value on the coins* with which he pays the mountaineers; or makes them take in exchange tobacco, cloths, salt, oil, betel-nut, and such necessary articles, at prices which are frequently, no doubt, estimated above their proper level. Such a system ought assuredly to be put an immediate end to. Not more than *one hundredth* part of the cardamoms raised in Malabar are used in the country. They are sent in large quantities to the ports on the Red Sea and the Persian Gulf, to Sind, up the Indus, to Bengal, Bombay, etc. They form a universal ingredient in curries, pillaus, etc. The market price, at the places of exportation on the Malabar coast, varies from 800 to 1200 rupees the candy.—MILBURN'S *Orient. Commerce*, and the valuable evidence of T. H. Baber, Esq., before Parliament, 1830.

Cardinal Points, in *Cosmography*, are the four intersections of the horizon with the meridian and the prime vertical circle, or *North* and *South*, *East* and *West*. The cardinal points, therefore, coincide with the four cardinal regions of the heavens, and are 90° distant from each other. The intermediate points are called *collateral points*.

Cards, or **Playing Cards** (Du. *Kaarten, Speelkarden*; Fr. *Cartes à jouer*; Ger. *Karten, Spiel Karten*; It. *Carte da giuoco*; Russ. *Kartu*; Sp. *Cartas, Naipes*; Sw. *Kort*), manufactured of pieces of paste-board, having various devices, and arranged in packs, generally of 52 pieces in a pack and used for playing numerous games.—*See* PLAYING CARDS.

Careening (Fr. *Faire abbattre carène*), heaving a vessel down on one side, by applying a strong purchase to the masts, so that the vessel may be cleared from any *filth* that adheres to it by breaming. A *half careen* takes place when it is not possible to come at the bottom of the ship, so that only half of it can be careened.

Caribbean Sea, that part of the Atlantic Ocean lying between the coasts of Central and South America and the islands of Cuba, Hayti, Porto Rico, and the Leeward and Windward Islands.

Caribbee Islands, in its more extended sense, is applied to the whole of the West Indies; but strictly it only comprehends that cluster of islands stretching from Porto Rico to the coast of South America, and known as the Leeward and Windward Islands.

Carline, or **Caroline**, a silver coin current at Naples, worth about 4*d.* sterling.

Carlines, or **Carlings**, in a ship, two pieces of timber ranging fore and aft from one beam to another directly over the keel. On these rest the ledges to which the planks of the deck are fixed. Carline knees are timbers lying athwart the ship, from the sides to the hatchway, and serving to sustain the deck.

Carmine (Ger. *Karmin*; Du. *Karmyn*; Fr. *Carmine*; It. *Carminio*; Lat. *Carminum*), a powder of a very beautiful red color, bordering upon purple, and used by painters in miniature. It is a species of *lake*, and is formed of finely pulverized cochineal. It is very high priced.

Carnelian. *See* AGATE.

Carpet, Carpets (Ger. *Teppiche*; Du. *Tapyten, Vloer-tapyten*; Fr. *Tapis*; It. *Tappeti*; Sp. *Alfombras, Alcatifas, Tapetes*; Russ. *Kowrü, Kilimi*), is supposed to be derived from Cairo (whence also the French *Cairan*, a Turkey carpet), and from the Latin *tapes*, tapestry, corresponding to the Italian *carpetta* and the Dutch *karpet*. It is legitimately applied to an article of manufacture used for covering the floors of chambers or spreading on the ground, although, while it was a novelty in Europe, tables also were covered with it. Carpets and rugs were manufactured at a very remote period in Egypt, India, and China; but those of Persia and Turkey are the most celebrated. They were originally used for sitting and reclining upon, as may still be observed in Eastern countries, where they constitute the entire furniture of the people. In Egypt they were first applied to religious purposes by the priests of Heliopolis, and were also used to garnish the palaces of the Pharaohs. It was also a custom of antiquity to place them under the couches of guests at banquets. Sardinian carpets are mentioned by Plato, the comic poet, as being disposed in this manner—"beneath the ivory feet of purple-cushioned couches." The carpets of the Homeric Age were generally white or plain cloths; but they were also sometimes produced with various colors and embroidered designs. At the supper of Iphicrates, purple carpets were spread on the floor; and at the magnificent banquet of Ptolemy Philadelphus (an account of which is given by Callixenus of Rhodes) we learn that underneath 200 golden couches "were strewed purple carpets of the finest wool, with the carpet pattern on both sides; and there were handsomely embroidered rugs, very beautifully elaborated with figures. Besides this," he adds, "thin Persian cloths covered all the centre space where the guests walked, having most accurate representations of animals embroidered on them."—*Athenæus*, v. 26. The Babylonians, who were very skillful in weaving cloths of divers colors (PLINY, viii. 48), delineated upon their carpets entire groups of human figures, together with such fabulous animals as the dragon, the sphinx, and the griffin. These were numbered among the luxuries of Heliogabalus. On the tomb of Cyrus was spread a purple Babylonian carpet, and another covered the bed whereon his body was placed.—ARRIAN, vi. 29. These carpets were exported in considerable quantities to Greece and Rome, where they were highly esteemed. Carthage was also noted by Hermippus, Antiphanes, and others, for its magnificent carpets.

"Carpets were in use, at least in some kind, as early as the days of Amos, about 800 B.C.—AMOS, ii. 8. Carpets were spread on the ground, on which persons sat who dwelt in tents; but when first used in houses, even in the East, we have no record. In the twelfth century carpets were articles of luxury; and in England, it is mentioned as an instance of Becket's splendid style of living, that his sumptuous apartments were every day in winter strewn with clean straw or hay; about A.D. 1160. The manufacture of woolen

carpets was introduced into France from Persia, in the reign of Henry IV., between 1589 and 1610. Some artisans who had quitted France in disgust went to England, and established the carpet manufacture about 1750. There, as with most nations, Persian and Turkey carpets, especially the former, are most prized. The famous Axminster, Wilton, and Kidderminster manufacture is the growth of the last hundred years. The manufacture of Kidderminster and Brussels carpets has much advanced within fifteen years, at Lowell, Massachusetts, and Thomsonville, Connecticut."—HAYDN.

Sir J. Gardiner Wilkinson gives us an account of an ancient carpet-rug of Egyptian manufacture. "This rug," he tells us, "is made, like many cloths of the present day, with woolen threads on linen strings. In the centre is the figure of a boy in white, with a goose above, the hieroglyphic of a 'child,' upon a green ground, around which is a border composed of red and blue lines," etc.—*Manners and Customs of the Ancient Egyptians*, vol. iii. p. 141-2. He further informs us that there are in the Turin Museum some specimens of worked worsted upon linen, "in which the linen threads of the weft had been picked out, and colored worsted sewed on the warp." In these two examples we have evidence of the existence, at a very early time, of a system of tapestry-weaving. The ancient carpet manufacture of the Asiatic countries may resolve itself under the appellation of needle-work. Of this, the present process of carpet-weaving in Persia and Turkey, and the tapestry manufacture of France, may be considered as fitting examples. The tapestry, as is well known, consists of woolen or other threads sewed on the strings of the warp by means of small shuttle-needles. The Persian carpet is formed by knotting into the warp tuft after tuft of woolen yarn, over each row of which a woof shot is passed, the fingers being here employed instead of the shuttle-needles, as the fabric is of a coarser description. In both methods the principle is the same. Both are formed in looms of very simple construction, the warp threads are arranged in parallel order, whether upright or horizontal, and the fabric and pattern are produced by colored threads, hand-wrought upon the warp. This may be designated the hand-wrought or needle-work method, which only makes one stitch or loop at a time, in contradistinction to the machine-wrought process, the result of mechanical appliances, whereby a thousand stitches are effected at once. Herein lies the essential difference between the ancient and modern, the simple and complex carpet manufacture.

Persia.—In Persia there are entire tribes and families whose only occupation is that of carpet-weaving. These dispose of their productions at the bazars to native merchants, who remove them to Smyrna or Constantinople, where they meet with European purchasers. The trade in real Persian carpets is, however, very limited, owing to their small size. They are seldom larger than hearth-rugs, long and narrow. Very many of them, moreover, are considerably tarnished by exposure in bazars, if they have not indeed been already used. To render them more salable they are cleaned. This is done by cropping the surface, which in some cases is shaved quite close to the knot; hence a great proportion of those brought to this country have not their original richness and depth of pile. Felted carpets or *nurmuds* are also made in Persia, but do not constitute an export commodity. Sir Henry Bethune, late Persian embassador, had in his possession a very singular specimen of this felt carpeting, in which colored tufts of worsted had been inserted during the process of manufacture, producing a regular pattern when finished.

Turkey.—The greater part of those Turkey carpets imported into Western Europe are manufactured at Ushak or Ouchak, in the province of Aidin, about six days' journey from Smyrna, and rugs principally at Kulah or Koula, an adjacent village. In the provinces of Hoodavendigniar, Adana, and Nish, numerous households are employed in their production, as also in the districts of Bozah, the city of Aleppo, and the villages of Trebizoud. Here and there, throughout Caramania, such carpets are also made. The Turcomans of Tripoli, the women of Candia, and the peasantry of Tunis and Algiers, are likewise engaged in their fabrication. In none of these places, however, does any large manufactory exist; the carpets are the work of families and households. These carpets are woven in one piece, and there is this notable peculiarity in their manufacture, that the same pattern is never again exactly reproduced; no two carpets are quite alike. The patterns are very remarkable, and their origin is unknown even to Mussulmans. The Turkey carpet pattern represents inlaid jeweled work, which accords with Eastern tales of jewels and diamonds. If this were rightly understood, it would prevent such speculations as those of Mr. Redgrave in his Great Exhibition Report on Design, where he remarks, that "the Turkish carpets are generally designed with a *flat* border of flowers of the natural size, and with a centre of larger forms conventionalized in some cases even to the extent of obscuring the forms—a fault to be avoided." This is doubtless a very ingenious mode of accounting for the curious forms of a Turkey carpet; but these, however fantastic, are never obscured, nor are there any flowers, *flat* or otherwise, in the borders or elsewhere. The great beauty of these carpets lies in the equal balance of color, of dull neutral shades, somewhat sombre in effect.

India.—Generally throughout British India the carpet manufacture is carried on. At Benares and Moorshedebad are produced velvet carpets with gold embroidery. A very elaborate carpet, sent from Cashmere to the Great Exhibition by Maharajah Goolab Singh, was composed entirely of silk, and excited great admiration. In every square foot of this carpet, we are informed, there were at least 10,000 ties or knots. Silk embroidered hookah carpets are made at Lahore, Mooltan, Khyrpoor, Tanjore, and Bengal; cotton carpets, or *satrunjees* at Rungpore, Agra, and Sasseram; printed cotton carpets at Ahmedabad; printed floor-cloth at Mooltan. Woolen carpets are far more extensively manufactured; some of which come from Ellore, Mirzapore, and Goruckpore; but the principal manufacture is at Masulipatam, 292 miles north from Madras. There the capital and enterprise of Great Britain have lent their aid to the rather tardy movements of the natives, and this article is now in general demand. Of late years linen warp has been introduced instead of cotton, and the fabric is thereby much improved. The designs of the Indian carpets have more regularity than those of Turkey, and the colors are mostly warm negatives, enlivened with brilliant hues interspersed. For the introduction of Masulipatam carpets, as of many others, the English are indebted to the firm of Watson, Bell, & Co., whose Indian connection is the sole means of obtaining these beautiful fabrics.—E. B.

The total value of Persian, Turkey, and Indian carpets imported into England may be computed at about £20,000 per annum.

Oriental carpets were first introduced into Spain by the Moors; and at a later date the Venetians imported them into Italy, and supplied Western Europe with this luxurious manufacture. We have frequent mention of them during the Middle Ages, and their costliness and magnificence are celebrated in the illuminated pages of fabliaux and romances. They were spread in the presence-chambers of royalty, before the high altars of chapels and cathedrals, in the bowers of "ladyes faire," and on the summer grass. Many articles of furniture were also covered with them—beds, couches, tables, and regal faldestols; but here it becomes difficult to distinguish between carpet and tap-

estry, both being used promiscuously. Tapestry of Baldekine or Baldachine (from Baldak, ancient name of Bagdad), was a carpet inwrought with gold and silver threads. Such were carried on poles, and uplifted as a canopy over the host, and over great personages in procession. The troubadours had carpets of gold embroidery which they laid upon the grass beneath them. Hearth-rugs and throne carpets, gorgeously embiazoned with heraldic centre-pieces, were the handiwork of high-born dames during the romance period. To some of these were attached fringes, but such were more usually composed of the fag-ends of the warp, like those of Persia, India, and Turkey. A black velvet carpet, "fringed with silver and gold, and lined with taffeta," is enumerated in the inventory of Archbishop Parke's household furniture in 1577. Rushes were strewn on the floor of Queen Mary's presence-chamber, and that of Elizabeth had the additional covering of a Turkey carpet. Long prior to this, however, Eastern carpets had been introduced. In the reign of Edward VI. we read that before communion-tables were placed

"Carpets full gay,
That wrought were in the Orient."

Checkered matting appears to have been very generally used about the fifteenth century. The same article is produced in many parts of Asia from the grassy fibres of the ratan. A superior description is now made from cocoa-nut fibre and Manillan flax. In Lydgate's metrical life of St. Edmund (MS. Harl. No. 2278) is a representation of the room wherein that saint was born; the floor is covered with checkered matting, and a fringed hearth-rug of Gothic design is before the fire-place. Carpets composed entirely of leather strips interlaced together may be seen in our antiquarian museums. A sample of this description was lately prepared for the inspection of the new houses of Parliament, and offered as a covering for their halls and passages, but was rejected.

France.—In the reign of Henry IV. the carpet manufacture appears to have been introduced from Persia into France. Colbert, the minister of Louis XIV., established the manufactory at Beauvais in 1664, which is now in the hands of the French government, and produces very artistic specimens. A variety of these, "in Turkish, Peruvian, and Chinese styles," was exhibited in London in 1851. The national manufactory of Gobelins, which likewise sent its beautiful carpets and tapestry to the great exhibition, was established shortly after that of Beauvais. It was purchased in 1677 by Colbert from the Gobelin family, whose progenitors, a century ago (Gilles and Jean Gobelin), brought their art, as was supposed, from Flanders. An attempt was made, in the time of Henry VIII., by William Sheldon, to start this manufacture in England; but under the patronage of James I. it was more successfully established, with the superintendence of Sir Francis Crane, at Mortlake, in Surrey, where both carpets and tapestry were produced. Toward this object the sum of £2676 sterling was contributed by its royal patron, and French weavers were brought over to assist. But it does not appear that any thing considerable was effected until after the revocation of the edict of Nantes in 1685, when artisans of every trade fled to England, among whom were tapestry and carpet weavers, who settled in various parts. About the year 1750, Mr. Moore was awarded a premium by the Society of Arts for the best imitation Turkey carpets; and Parisot conducted an establishment for their manufacture at Paddington, under the patronage of the Duke of Cumberland. Subsequently, carpets were wrought on the same principle at Axminster, in Devonshire, whence the name; and afterward at Wilton, where they are still manufactured. The board of trustees for the encouragement of arts and manufactures in Scotland offered prizes for the best Persian and Turkey carpets. About ninety years previously they had been made in the vicinity of Holyrood Palace. These expensive and magnificent carpets are now made in many parts of Europe, but more particularly at the Gobelins manufactory, at Aubusson and Felletin, in the department of Creuse, at the manufacture royal de tapis de tournai in Belgium, and at Deventer in the Netherlands. They are also made in London and Kidderminster.

Hitherto we have been treating of the simple hand-wrought or needle-work process, which implies great expense and waste of time and labor, and is therefore not calculated to supply a general demand. The machine-wrought fabric now claims our attention; and first in order, the common ingrain, Kidderminster, or Scotch carpet, which is made in many parts of Scotland, the north of England, and in the United States. This consists of worsted warp traversed by woolen weft, and is woven in pieces about a yard wide. It is composed of two distinct webs interlaced together at one operation, and is therefore a double or two-ply carpet, similar on either side. In this article only two colors can with propriety be introduced, as otherwise it has a striped or mixed appearance. A pure or plain color can only be obtained where the weft traverses the warp of the same color. Suppose a crimson figure on a maroon ground; the one web is maroon, the other is crimson, and the pattern is produced by these intersecting and decussating each other at points predetermined; thus what is crimson on one side is maroon on the other, and *vice versa*. One beam contains the warp of both plies, arranged in two tiers, which is passed through the *mails* or metallic eyes of the harness—two threads through each eye—and thence through the reed. The harness draws up certain warp threads, to admit of the passage of the shuttle with the weft, the pattern depending upon such warp threads as are so drawn up. This was formerly effected by means of a revolving barrel, whose surface was studded with pins, which by rotation acted upon the warp threads. These studs being arranged so as to produce one pattern, a separate barrel, or a new arrangement of the studs, was requisite for every other pattern. But this machine is now superseded by the more efficient Jacquard apparatus, which produces the pattern by means of an endless chain of perforated cards working against parallel rows of needles. This double fabric is also made in France, and sprigs of divers colors inserted. A detailed account of this process, with elaborate diagrams, is given by M. Roland de la Platière, in the *Encyclopédie Méthodique*. An improvement upon the Kidderminster carpet is the triple or three-ply fabric, the invention of Mr. Thomas Morton, of Kilmarnock. This is composed of three distinct webs, which, by interchanging their threads, produce the pattern on both sides. A variety of color is thus obtained, and the texture is of great thickness and durability. Figured Venetian carpeting is of similar description; here the woof is completely covered by a heavy body of warp. Dutch carpeting is much inferior in quality, and was originally made of cow-hair, but now of the coarsest wool. Neither fabric has great capabilities of design; simple diced patterns are wrought in the Venetian, stripes and checkers in the Dutch.

The Brussels carpet is a very superior texture. It is composed of worsted and linen, and has a rich corded appearance. The figures are raised entirely from the warp, by inserting a series of wires between the linen foundation and the superficial yarn. These wires are afterward withdrawn, leaving a looped surface. In this manufacture there is a great waste of material, and the colors are usually limited to five. Each color has its continuous layer of thread, running from end to end of the web, which rises to the surface at intervals indicated by the design, and then sinks into the body of the fabric. Thus there are five layers or covers, only a fifth part of which is visible; and owing to the irregularity of their ascent to the surface, they can

not be placed upon one beam, but each thread is wound on a separate bobbin, with a weight attached to give a proper tension. These bobbins are arranged in five frames jutting out behind the loom, two hundred and sixty bobbins in each frame for the ordinary width. Additional frames are requisite for additional colors introduced; but where more than five are engaged the pattern is rather indistinct. The threads of all the bobbins are then drawn through the harness, heddles, and reed, to unite with the linen yarn in the compound fabric, the Jacquard machine being employed to produce the pattern. Brussels carpets were first introduced into Wilton about a century ago, from Tournai, in Belgium. Kidderminster is now the chief seat of this manufacture, where upward of 2000 looms are in operation.

Moquette or Wilton carpets are woven in the same manner, and differ only in this, that the loops are cut open into an elastic velvet pile. To effect this, the wires are not circular as in the Brussels fabric, but flat, and furnished with a groove in the upper edge, wherein the sharp point of a knife is inserted and drawn across the yarn, cutting the pile. These carpets, besides being manufactured in many parts of England and Scotland, are also made in France.

Recent Improvements.—We now proceed to describe a very ingenious improvement in this branch of carpet manufacture, the invention of Mr. Richard Whytock, of Edinburgh. This is a combination of the arts of printing and weaving, at the same time simplifying both. These arts may be said to be combined when any *woven* fabric is *printed*; but here the process is reversed, the threads being printed before they are in cloth. This, to be sure, is the case when warps are printed and then woven; but the grand novelty of this invention is that the *threads* are printed before even the *warp* is formed. One thread, or two treated as one, in some cases miles in length, are colored by steps of half an inch, faster than a swift runner would make the distance. When these threads have been all parti-colored in this manner, they form the elements, as it were, of the intended design or fabric. Singly, they exhibit no regular figure or pattern; but when arranged in their proper order, ready for the weaver's beam, the figure comes into view, much elongated of course, inasmuch as eighteen feet of the warp will sometimes be gathered into four feet of cloth, in order to secure the due proportions of the intended object. It has been said that the two combined arts of printing and weaving are simplified by this contrivance. With regard to the weaving: *First.* The loom occupies only one-third of the space in length that the Brussels loom requires. *Second.* The latter must have 1300 little beams or bobbins, from which the worsted pile has to be gathered; whereas this loom requires only one beam for the whole of the worsted threads. *Third.* While the Brussels or Wilton, on a web of twenty-seven inches, requires for the best fabric 2860 threads, only 780 are here requisite—one layer instead of five—to produce as good or a better surface. *Lastly.* While the number of colors in succession lengthwise, on the old principle, must not exceed six or seven, upward of twenty or thirty can be introduced by the new method. Then, again, as a simplification of the printing process: whereas formerly a change of blocks was required for every change of pattern, in this new process the same blocks serve for all patterns, as the pen serves for every form of type. Many of those manufacturers who are now availing themselves of this invention do not see wherein its true economy consists. If an object, say a rosebud, recurs a thousand times in the length of a web, at intervals of four feet, the block printer must apply his block a thousand times to point the opening bud; but here the buds are congregated, so that one stroke may dye them all. If it be desired to have a thousand buds in the length of the web, let a thread be wound round a hollow cylinder a thousand times, and a traversing wheel charged with color be passed across the coil. The thread, when uncoiled, will be found to be marked in a thousand places, exactly where it is wanted to tip the opening bud with red from end to end of the web. Design-paper, whereon the pattern is indicated in small squares, serves as a guide to the printer; each square being one stroke of the color-pulley. After the threads are thus streaked across with color, they are removed from the cylinder or drum, and the dyes are fixed by the action of steam. The threads are then arranged in setting-frames, according to the squares of the design-paper, to constitute the warp of the projected web. The Jacquard machine now so far at a discount, and the loom restored to nearly the same simplicity as of old, when

"Between two trees the web was hung."

The principle here referred to is only in its infancy. The works of the first masters may yet be multiplied by this process, if they will condescend to furnish the cartoons. Already flowers are produced which the botanist can classify without mistake.

Like every other improvement, this invention met with considerable opposition, particularly on the part of manufacturers and dealers. During the first fourteen years, the number of looms employed gradually increased from one to fifty-six, the greatest number in operation at Lasswade in 1847. Now, so extensive is the manufacture in England, that one house produces to the extent of half a million sterling per annum, having upward of three hundred looms at work by steam-power. It is gratifying to learn that these power-looms, instead of throwing out of employment, engage more operatives with better wages and easier work. Messrs. Henderson and Widnell of Lasswade, John Crossley and Sons of Halifax, Pardoe, Heomans, and Pardoe of Kidderminster, and Sutherland and Tod of Lanark, are the principal manufacturers engaged upon this patent. An extraordinary consequence upon the introduction of this article is that it has not interfered with other branches of the carpet manufacture, not one of which appears to have been diminished. There is, therefore, an addition to the trade of the country, to the whole amount of its produce, itself no mean result; the whole trade being at least doubled, as far as fine carpets are concerned. Whytock's carpets are known under the designation of Patent Tapestry and Velvet Pile Carpets. Rugs, table-covers, fine velvets, and tapestry hangings, are wrought on the same principle.

Another great improvement in carpet-making, which originated also in Scotland, was patented by Mr. James Templeton, of Glasgow. It is on the chenille principle, and consists of a process of double weaving. First a thin striped fabric is made; and this, when cut up, is again woven into a denser fabric for carpets, rugs, and table-covers. The chenille stripes, like the parti-colored threads in Whytock's invention, form the elements of the second fabric, only those elements go to compose the woof instead of the warp, as in the former case. Extremely beautiful carpets have been made on this principle, and these being woven in large squares, have interfered much with the Tournai or Axminster carpets, having the same depth of pile, without being so expensive. Hitherto, however, the manufacture has been confined to the place where it originated.

Patent wool mosaic is another novelty. This manufacture was introduced into England from Germany. It is produced by cementing with caoutchouc a close velvet pile on a plain cloth. Messrs. John Crossley and Sons of Halifax have brought out some admirable specimens of this mosaic-work, in carpets, rugs, and hangings for walls; but as yet this method has been more extensively applied to the manufacture of small articles. A very cheap description of carpet is now made near Manchester. It is first woven in plain colors by steam-power, under Scivier's patent, by Bright & Co. It is then printed with colored blocks by machinery patented by Burch & Co. This article has a

large export sale. The carpet manufacture is rapidly increasing in Great Britain. Upward of 5000 looms, it is computed, are now in operation, upon every description.

It remains to speak of carpet design. This matter is regulated by prevailing fashion and caprice, under the ever-varying semblance of good taste. There are revolutions in decorative art as in all things else, and in these carpet design is involved. An acute observer can discover here symptomatic indications of national or individual character. The supremacy of Gothic architecture, in our day, implies the revival of mediæval art. Simple ornamental designs, in quiet and subdued coloring, are now about to take the place of their more brilliant predecessors. Many colors will only be tolerated in Moorish and Arabesque ornament, or in the *bizarre* Turkey carpet.—*E. B.*

The production of carpets is carried on extensively in the United States, especially in Massachusetts, Rhode Island, Connecticut, New York, and New Jersey. In Massachusetts alone, in 1850, the capital invested in this branch of business amounted to $2,264,000, and the annual product about $1,400,000, in which 1600 persons were employed. Our manufacture of carpets is increasing, and will probably equal the demand when the production of wool shall supply the wants of our manufacturers. Of the imports into this country fully nine-tenths come from Great Britain.

Imports of Carpets into the United States.

	Year ending June 30, 1853.		Year ending June 30, 1854.		Year ending June 30, 1855.	
	Yards.	Value.	Yards.	Value.	Yards.	Value.
Wilton, Saxony, and Aubusson	73,879	$92,571	68,027	$93,280		
Brussels, Turkey, and treble ingrained	735,402	752,487	2,256,268	1,318,107	1,492,953	$1,327,707
Venetian and other ingrained	239,157	142,817	353,725	165,391		
Not specified	....	229,404	....	697,087	....	178,870
Total	....	$1,217,279	....	$2,268,815	....	$1,506,577

The duty on carpets and carpeting, and carpet-bags and oil-cloth imported into the United States is 30 per cent. *ad valorem.* On straw matting, worsted carpet-bags, and carpet binding, 25 per cent.

Carriages. The invention of them is ascribed to Erichthonius of Athens, who produced the first chariot about 1486, B.C. Carriages were known in France in the reign of Henry II. A.D. 1547; but they were of very rude construction, and rare. They seem to have been known in England in 1555; but not the art of making them. Close carriages of good workmanship began to be used by persons of the highest quality at the close of the sixteenth century. Henry IV. had one, but without straps or springs. Their construction was various: they were first made in England in the reign of Elizabeth, and were then called whirlicotes. The Duke of Buckingham, in 1619, drove six horses; and the Duke of Northumberland, in rivalry, drove eight. They were first let for hire in Paris, in 1650, at the Hôtel Fiacre; and hence their name.—Haydn. Premiums at the World's Fair held in London were given to the makers of carriages in the United States, as they were superior in lightness and strength, with an equal finish. New York carriages are very celebrated.

Carriers are persons undertaking for hire to carry goods from one place to another. Proprietors of carts and wagons, masters and owners of ships, hoymen, lightermen, bargemen, ferrymen, etc., are denominated common carriers. The master of a stage-coach who *only carries passengers for hire* is not liable for goods; but if he undertake to carry *goods and passengers*, then he is liable for both as a common carrier. The post-master-general is not a carrier in the common acceptation of the term, nor is he subjected to his liabilities.

Duties and Liabilities of Carriers.—Carriers are bound to receive and carry the goods of all persons for a reasonable hire or reward; to take proper care of them in their passage; to deliver them safely, and in the same condition as when they were received (excepting only such losses as may arise from *the act of God*); or, in default thereof, to make compensation to the owner for whatever loss or damage the goods may have received while in their custody, that might have been prevented. Hence a carrier is liable, though he be robbed of the goods or they be taken from him by irresistible force; and though this may seem a hard rule, yet it is the only one that could be safely adopted; for if a carrier were not liable for losses unless it could be shown that he had conducted himself dishonestly or negligently, a door would be opened for every species of fraud and collusion, inasmuch as it would be impossible, in most cases, to ascertain whether the facts were such as the carrier represented. On the same principle a carrier has been held accountable for goods accidentally consumed by fire while in his warehouse. In delivering the opinion of the Court of King's Bench on a case of this sort, Lord Mansfield said: "A carrier, by the nature of his contract, obliges himself to use all due care and diligence, and is answerable for any neglect. But there is something more imposed upon him by custom, that is, by the common law. *A common carrier is in the nature of an insurer.* All the cases show him to be so. This makes him liable for every thing except the act of God and the king's enemies; that is, even for *inevitable accidents*, with these exceptions. The question then is, *What is the act of God?* I consider it to be laid down in opposition to the act of *man;* such as lightning, storms, tempests, and the like, which could not happen by *any human intervention.* To prevent litigation and collusion, the law presumes negligence except in those circumstances. An armed force, though ever so great and irresistible, does not excuse; the reason is, for fear it may give room for collusion, which can never happen with respect to the act of God. We all, therefore, are of opinion that there should be judgment for the plaintiff."—*Forward* v. *Pittard*, 1 *T. R.* 27. A carrier is not obliged to have a new carriage for every journey; it is sufficient if he provide one that, without any extraordinary accident, may be fairly presumed capable of performing the journey. A carrier may be discharged from his liability by any fraud or concealment on the part of the individual employing him, or of the bailor; as if the latter represent a parcel as containing things of little or no value, when, in fact, it contains things of great value. But when the carrier has not given a notice limiting his responsibility, and when he puts no questions with respect to the parcel to the bailor, the latter need not say any thing with respect to it; and though the bailor should represent the thing delivered to the carrier as of no value, yet, *if the latter know it to be otherwise*, he will be responsible in the event of its being lost or damaged. If the bailer deliver goods imperfectly packed, and the carrier *does not perceive it*, he is not liable in the event of a loss occurring; but if the defect in the package were such that the carrier could not but perceive it, he would be liable. On this principle a carrier was made to answer for the loss of a greyhound that had been improperly secured when given to him. A carrier may refuse to admit goods into his warehouse at an unseasonable time, or before he is ready to take his journey; but he can not refuse to do the ordinary duties incumbent on a person in his situation. It is felony if a carrier open a parcel and take goods out of it with intent to steal them; and it has been decided that if goods be delivered to a carrier to be carried to a specified place, and he carry them to a different

place, and dispose of them for his own profit, he is guilty of felony; but the embezzlement of goods by a carrier without a felonious taking merely exposes to a civil action.

A carrier is always, unless there be an express agreement to the contrary, entitled to a reward for his care and trouble. In some cases his reward is regulated by the Legislature, and in others by a special stipulation between the parties; but though there be no legislative provision or express agreement, he can not claim more than a *reasonable* compensation.

Commencement and Termination of Liability.—A carrier's liability commences from the time the goods are actually delivered to him in the character of carrier. A delivery to a carrier's servant is a delivery to himself, and he will be responsible. The delivery of goods at an inn yard or warehouse, at which other carriers put up, is not a delivery so as to charge a carrier, unless a special notice be given him of their having been so delivered, or some previous intimation to that effect.

"In New York it was held that placing goods on the wharf without notice to the consignee is not a delivery to the consignee, so as to discharge the carrier, even though there was a usage to deliver goods in that manner. The carrier must not leave or abandon the goods on the wharf, even though there be an inability or refusal of the consignee to receive them."—KENT'S *Commentaries*.

A carrier's liability ceases when he vests the property committed to his charge in the hands of the consignee or his agents, by actual delivery; or when the property is resumed by the consigner, in pursuance of his right of stopping it *in transitu*. It is in all cases the duty of the carrier to deliver the goods. The leaving goods at an inn is not a sufficient delivery. The rule in such cases, in deciding upon the carrier's liability, is to consider whether any thing remains to be done by the carrier, as such; and if nothing remains to be done, his liability ceases, and conversely.

A carrier has a lien upon goods for his hire. Even if the goods be stolen, the rightful owner is not to have them without paying the carriage.

For further details as to this subject, *see* JEREMY *on the Law of Carriers*, passim; CHITTY'S *Commercial Law*, vol. iii. p. 369–386; BURNS' *Justice of the Peace*, title *Carriers*; and KENT'S *Commentaries*, Lect. XL. There are some excellent observations with respect to it in *Sir* WILLIAM JONES'S *Essay on the Law of Bailments*.—For an account of the regulations as to the conveyance of passengers in stage-coaches in England, *see* M'CULLOCH'S *Dictionary*.

Carrot (*Daucus carota*, Linn.), a biennial plant, a native of Britain. Though long known as a garden plant, its introduction into agriculture has been comparatively recent. The uses of the carrot in domestic economy are well known.

Cart, a carriage with two wheels, drawn commonly by horses, and used to carry heavy goods, etc. The word seems formed from the French *charrette*, or the Latin *carreta*, a diminutive of *carrus*. *Carts of War*, a peculiar kind of artillery anciently in use among the Scotch. In an act of Parliament, passed in 1456, they are thus described: "It is thought speidfull, that the king may requeist to certain of the great burrous of the land that are of ony myght, to mak carts of weir, and in ilk cart twa gunnis, and ilk ane to have twa chalmers, with the remnant of the graith that effeirs thereto, and an cunnand man to shute thame." By another act passed in 1471, the prelates and barons are commanded to provide such carts of war against their old enemies the English.—E. B.

Cartagena (*Carthago Nova*, or "New Carthage," it having been a principal colony of the Carthaginians), a celebrated city and sea-port, and the chief naval arsenal of Spain, on a noble bay of the Mediterranean, province, and 27 miles south-southeast of Murcia. Lat. 37° 36′ 5″ N., long. 0° 56′ 36″ W. Population 27,727; in 1786 it contained 60,000 inhabitants. It occupies the declivity of a hill, and a small plain extending to the harbor, which is one of the best in the Mediterranean, and protected from all winds by surrounding heights, and by an island on the south, which, as well as the city, is strongly fortified. The city, though dull, dilapidated, and unhealthy, owing to an adjacent swamp, has some good streets and houses, numerous churches and convents, a marine school, large royal hospital, foundling hospital, town-hall and custom-house, observatory, theatre, circus, etc. In its western division, an arsenal, docks for building men-of-war, and a *bagne* for galley-slaves. Its port communicates with the Segura River, by the Lorca Canal. Its manufactures of cordage and canvas, with trade in barilla and agricultural produce, have decayed, but it still has a valuable tunny fishery, and a glass factory recently established by an English house; and in 1843, 14 new smelting works had been set up here. The mines of Cartagena, originally wrought by the Carthaginians, were re-discovered a few years ago; and in 1839 the new mine of *La Carmen* was opened successfully by a joint-stock company. Since then, drainages and mining have proceeded vigorously. Cartagena was taken by Scipio B.C. 208, at which period Livy states that it was one of the richest cities in the world. It was ruined by the Goths; and its modern importance dates only from the time of Philip II.

Cartagena, or **Carthagena**, a strongly fortified city and sea-port of New Granada, South America, of which republic it is the chief naval arsenal, capital of the province, on a sandy peninsula in the Caribbean Sea. Lat. of the dome 10° 25′ 36″ N., long. 75° 34′ W. Population 10,000, nine-tenths of whom are a mixed black race. It is well laid out, and built mostly of stone. It has a massive citadel, several churches, a college with about 200 pupils, various seminaries, and two hospitals. The temperature is very high, from 80° to 86° Fahrenheit, but the air dry and healthy. Its excellent port is defended by two forts, and is the only harbor on the north coast of New Granada adapted for repairing vessels. Cartagena is the principal dépôt for the produce of the provinces watered by the Cauca and Magdalena Rivers, and is connected with the Magdaleua by a canal. It exports sugar, cotton, coffee, tobacco, hides, specie, bullion, etc. Under the Spaniards, this city was the seat of a captain general, and of one of the three tribunals of the Inquisition in America. It was the first town that proclaimed independence, and in 1815 endured a most vigorous siege, and was subdued only by famine. Population of the province, 108,783.

Cartridge, in the military art a case of pasteboard or parchment, holding the exact charge of a fire-arm. The cartridges for muskets, carabines, and pistols, contain both the powder and ball. Those made for cannon and mortars are cases of pasteboard or tin, sometimes of wood; and simple flannel bags have been found convenient in practice. *Cartridge-box*, a case of wood or turned iron, covered with leather, with cells for holding a dozen or more cartridges. It is worn upon a belt thrown over the left shoulder, and hangs a little below the pocket-hole on the right side.—E. B.

Carving. We have Scriptural authority for its early introduction.—*See* Exodus xxxi. The art of carving is first mentioned in profane history 772 B.C., and is referred to the Egyptians. It was first in wood, next in stone, and afterward in marble and brass. Dipœnus and Scyllis were eminent carvers and sculptors, and opened a school of statuary, 568 B.C.—PLINY. *See articles* WOOD. Carvers of meat were called by the Greeks *deribitares*, as mentioned by Homer.—HAYDN.

Case, in *Printing*, a large, flat, oblong frame or box, placed aslope, and divided into numerous little square compartments, each containing a number of

types of the same kind, whence the compositor takes the particular letters he requires in composing his matter.

Case-hardening, the process of converting the superficies or outer part of iron into steel. This is effected by placing the article in a box with some animal or vegetable charcoal, and exposing it to a red heat. It differs only from the making of steel in the shorter duration of the process. Iron tools, etc., when thus treated, combine the toughness of iron with the hardness of steel.

Cash, in *Commerce*, means the coin, bank bills, drafts, bonds, and all immediately negotiable paper in an individual's possession.

Cash Account, in *Book-keeping*, an account to which nothing but cash is carried on the one hand, and from which all the disbursements of the concern are drawn on the other. The balance is *the cash in hand*. When the credit side more than balances the debit or disbursement side, the account is said to be *in cash*; when the contrary, to be *out of cash*. *Cash account*, in *Banking*, is the name given to the account of the advances made by a banker in Scotland to an individual who has given security for their repayment.

Cashew-nuts (Ger. *Akajunüsse, Westindische Anakarden*; Du. *Catajoenooten*; Fr. *Noix d'acajou*; It. *Acaju*; Sp. *Nueces d'acaju*; Port. *Nozes d'acaju*), the produce of the *Anarcardium occidentale*. They are externally of a grayish or brownish color, of the shape of a kidney, somewhat convex on the one side, and depressed on the other. The shell is very hard; and the kernel, which is sweet and of a very fine flavor, is covered with a thin film. Between this and the shell is lodged a thick, blackish, inflammable oil, of such a caustic nature in the fresh nuts, that if the lips chance to touch it, blisters immediately follow. The kernels are used in cooking, and in the preparation of chocolate.

Cashier, a cash-keeper; he who receives and pays the debts of a society. In the generality of foundations the cashier is called *treasurer*. In a banking institution the cashier is the officer who superintends the books, payments, and receipts of the bank. He also signs or countersigns the notes, and superintends all the transactions under the order of the directors.

Cashmere, a kingdom in Northern India, so called from its principal division, the celebrated valley of that name, and comprehending within its limits the various territories which constitute the dominions of Ghulab Singh. Its boundaries are, the Karakorum Mountains on the north; Thibet on the east; the British possessions of Spiti, Lahoul, and the Punjaub on the south; and the Hunzareh country on the west. It extends from lat. 32° 17′ to lat. 36°, and from long. 73° 20′ to long. 79° 40′; its extreme length from east to west being 350 miles, and its breadth about 270. Area about 25,000 square miles. The population has been estimated at 750,000. Within its limits are included the valley of Cashmere, and the provinces of Jamoo, Ladahk, Bulti or Iskardoh, Chamba, and some others. Cashmere has been long famed for the manufacture of shawls, which are distributed all over northern and western Asia, and are exported in great quantities to Europe. These shawls owe their peculiar beauty and fine texture to the wool which is brought from Thibet, lying at a distance of a month's journey to the northeast. The wool forms the inner coat with which the goat is covered, and the breed is peculiar to Thibet; all attempts to introduce it into India or Persia having invariably failed. The wool, which is originally of a dark gray color, is bleached in Cashmere by a preparation of rice flour. The process of manufacture is very slow, not more than one inch being added to the finest shawls in the course of a day. It is estimated that about 16,000 looms were at one time employed in this manufacture; but of late years the demand has declined, owing to the decay of the Persian and Ottoman empires, and the desolation and poverty of the Eastern countries. When Cashmere was tributary to Afghanistan, a great portion of the public revenue was exacted in shawls. The yarn into which the wool is spun is dyed with various colors, and, after being woven, the piece is once washed, and the border, in which is displayed a variety of figures and colors, is attached to the shawls in so dexterous a manner that it is hardly possible to discover the junction. The price varies in proportion to the quality. A species of writing-paper is also made in Cashmere, which is highly praised throughout the East, and was formerly a great article of traffic; as were also its lacquered ware, cutlery, and sugar. A wine resembling Madeira is manufactured, and a spirituous liquor is distilled from the grape. The internal intercourse of the country is chiefly maintained by means of the numerous streams which intersect it, and which are navigated in long and narrow boats moved by paddles.—E. B.

Cashmere Shawls. The district from whence come these costly shawls is described as being "the happy valley, and a paradise in perpetual spring." The true Cashmere shawls can be manufactured of no other wool than that of Thibet. They were first brought to England in 1666; but they were well imitated by the spinning at Bradford, and the looms of Huddersfield. Shawls for the omrahs, of the Thibetian wool, cost 150 rupees each, about the year 1660.—Bernier.

Caspian Sea, the *Mare Hyrcanum* of the ancients, derives its name from the Caspii, a tribe who settled on its shores. Among the Orientals it is known under a variety of names; by the Russians it is called the Sea of Astracan, and by the Turks Bahri-Ghong. It is situated between 36° 35′ and 47° 25′ N. lat., and 46° 15′ and 55° 10′ E. long., is the largest inland lake in the world, and has no outlet to the ocean. It is surrounded by the Russian governments of Astracan and Orenberg, the Caucasian countries, Persia, and Tartary; its greatest length is about 760 miles, and its greatest breadth about 400 from east to west; generally, however, only half that breadth, and where narrowest not more than 120 miles across. Its estimated area is from 120,000 to 140,000 square miles. There are no tides in this sea, nor are there any regular currents; but the high winds which occasionally blow over its large surface cause considerable and irregular agitations in its motions. The mean depth of the Caspian Sea is from 400 to 600 feet, and in some places is found to be 2700 feet; but its waters are every where very shallow near the shore, especially toward the west. Vessels drawing 9 or 10 feet water are thus compelled to unload far from the shore, excepting near Bakou and some other parts of the lake. Navigation is, in general, dangerous, owing to the frequency and violence of the east and west winds; and the contracted space forces the navigator to beat about in order to avoid the sand banks concealed near its shores. The waters of the Caspian have a slightly bitter taste, communicated by the naphtha which abounds in the surrounding countries, and is carried into it by the streams which it receives; but they are not so salt as those of the ocean, in consequence of the great volume of water poured into it by the Volga and its other tributaries. Horses do not refuse to drink along the shores and near the mouths of the rivers.—E. B.

Cassia. There are four species of cassia in the market; viz., *Cassia Lignea*, or *Cassia Bark*; *Cassia Fistula*; *Cassia Buds*; and *Cassia Senna*.

1. *Cassia Lignea*, or *Cassia Bark* (Fr. *Casse*; Ger. *Cassia*; Port. *Cassia lenhosa*; Arab. *Seleekeh*; Hind. *Tuj*; Malay, *Kayü-legi*), the bark of a tree (*Laurus Cassia*, Linn.) growing in Sumatra, Borneo, the Malabar coast, Philippine Islands, etc.; but chiefly in the provinces of Quantong and Kingsi, in China, which furnish the greatest part of the cassia met with in the markets. The tree grows to the height of 50 or 60

feet, with large, spreading, horizontal branches. The bark resembles that of cinnamon in appearance, smell, and taste, and is very often substituted for it; but it may be readily distinguished; it is thicker in substance, less quilled, breaks shorter, and is more pungent. It should be chosen in thin pieces; the best being that which approaches nearest to cinnamon in flavor: that which is small and broken should be rejected. A good deal of the cassia in the Indian markets is brought from Borneo, Sumatra, and Ceylon. Malabar cassia is thicker and darker-colored than that of China, and more subject to foul packing; each bundle should be separately inspected.—AINSLIE'S *Materia Indica*, MILBURN'S *Orient. Com., etc.* *See* CINNAMON.

2. *Cassia Buds*, the dried fruit or berry of the tree (*Laurus Cassia*) which yields the bark described in the previous article. They bear some resemblance to a clove, but are smaller, and, when fresh, have a rich cinnamon flavor. They should be chosen round, fresh, and free from stalk and dirt. Cassia buds are the produce of China.—MILBURN'S *Orient. Com.*; *Anglo-Chinese Kalendar*; and *Parl. Paper*, No. 257, Sess. 1843.

3. *Cassia Fistula* (Fr. *Casse*; Ger. *Rhonkasie*; It. *Polpa di cassia*; Lat. *Cassiæ pulpa*; Arab. *Khyar sheber*) is a tree which grows in the East and West Indies, and Egypt (*Cassia fistula*, Linn.). The fruit is a woody, dark-brown pod, about the thickness of the thumb, and nearly two feet in length. It is exported principally from the West Indies, packed in casks and cases; but a superior kind is brought from the East Indies, and is easily distinguished by its smaller smooth pod, and by the greater blackness of the pulp.

Castanet (Spanish *Castaneta*, or rather *Castañuela*, probably from *Castaña*, a chestnut), an instrument much used by the Spaniards and Moors as an accompaniment to their dances and guitars. It is composed of two small pieces of ebony, or other well-dried hard wood, shaped like spoons, which are placed together with the concavities inward, fastened by a string to the thumb, and beat with the middle finger, so as to produce a rattling sound. This instrument is very similar to the ancient *crotalum*, which appears to have consisted, in its original form, of two pieces of reed, which made a clattering noise when shaken with the hand.—E. B.

Casting, the running of liquid metal into a mould prepared for that purpose. *Casting in Sand or Earth*, is the running of metals between two frames or moulds filled with sand or earth, in which the figure that the metal is to take has been impressed *en creux*, by means of the pattern. *Casting*, among sculptors, implies the taking of casts and impressions of figures, busts, medals, leaves, or the like. The method of taking casts of figures and busts is most generally by the use of plaster of Paris, that is, alabaster calcined by a gentle heat. The advantage of using this substance in preference to others is, that notwithstanding a slight calcination reduces it to a pulverized state, it becomes again a tenacious and cohering body by being moistened with water, and afterward suffered to dry. By this means either a concave or a convex figure may be given by a proper mould or model to it when wet, and retained by the hardness it acquires when dry; and, from these qualities, it is fitted for the double purpose of making casts, and moulds for forming casts. The particular manner of making casts depends on the form of the subject to be taken. Where there are no projecting parts it is very simple and easy, as likewise where there are such as form only a right or any greater angle with the principal surface of the body; but where parts project in lesser angles, or form a curve inclined toward the principal surface of the body, the work is more difficult.—E. B.

Castor (Fr. *Castoreum*; Ger. *Kastoreunt*; It. *Castoro*; Sp. *Castoreo*), the produce of the beaver. In the inguinal region of this animal are found four bags, a large and a small one on each side: in the two large ones there is contained a softish, grayish-yellow, or light-brown substance, which, on exposure to the air, becomes dry and brittle, and of a brown color. This is castor. It has a heavy but somewhat aromatic smell, not unlike musk; and a bitter, nauseous, and subacrid taste. The best comes from Russia; but of late years it has been very scarce; and all that is now found in the shops is the produce of Canada. The goodness of castor is determined by its sensible qualities; that which is black is insipid, inodorous, oily, and unfit for use. Castor is said to be sometimes counterfeited by a mixture of some gummy and resinous substances; but the fraud is easily detected by comparing the smell and taste with those of real castor.—THOMSON'S *Dispensatory*.

Castor-oil (Fr. *Huile du Ricin*; Ger. *Rizinusohl*; It. *Olio di Ricino*; Sp. *Ricinsoel*) is obtained from the seeds of the *Ricinus communis*, or *Palma Christi*, an annual plant found in most tropical countries, and in Greece, the south of Spain, etc. The oil is separated from the seeds either by boiling them in water, or by subjecting them to the action of the press. It is said that though the largest quantity of oil may be procured by the first method, it is less sweet, and more apt to become rancid, than that procured by expression, which, in consequence, is the process now most commonly followed. Good expressed castor-oil is nearly inodorous and insipid; but the best leaves a slight sensation of acrimony in the throat after it is swallowed. It is thicker and heavier than the fat oils, being viscid, transparent, and colorless, or of a very pale straw color. That which is obtained by boiling the seeds has a brownish hue; and both kinds, when they become rancid, thicken, deepen in color to a reddish-brown, and acquire a hot, nauseous taste. It is very extensively employed in the materia medica as a cathartic.—THOMSON'S *Dispensatory*.

Culture and Manufacture of Castor-oil.—Southern Illinois is the source whence all the castor beans are brought that are sold or manufactured in St. Louis. The ground is prepared as for other crops, and when there is no longer any danger from the spring frosts the seeds are planted in hills and rows, much in the manner of planting Indian corn, with the exception that there is but one seed put into each hill, and that at every fourth row a space is left sufficiently wide to admit of the passage of a team for the purpose of gathering the crop. Unlike the cereal grains, the *ricinus* bears at the same time flowers and fruit, and the severity of our climate, which renders it in this latitude an annual plant, destroys its vitality while yet decked with bloom. The ripening commences in August, and the crop is gathered at intervals from this date until the plants are destroyed by frost.

The yield, of course, varies with the quality of the soil and the care of the culture. Twenty-five bushels from an acre of ground is considered a very large crop, and is but seldom obtained. From sixteen to twenty bushels per acre is a very fair yield in a season not marked by drought or other unfavorable feature.

The primitive mode of making castor-oil was by putting the (bruised) beans in a bag, and placing the same in a kettle of water, and as the beans were boiled the oil came to the surface and was skimmed off. Subsequently there were adopted the screw and lever presses, and other devices for pressing the beans, and many mills sprang up throughout the southern part of Illinois, some of which remain in use until this time. The beans are first kiln-dried, and then pressed without grinding, the oil thus obtained being called "cold pressed," to distinguish it from the boiled oil (that obtained by boiling the beans in water).

About ten years ago, the St. Louis manufacturers commenced using the ordinary hydraulic press, increasing the yield from the raw material, and work-

ing the beans with greater rapidity and economy. About two years since there was introduced a new press, which has brought the business to a greater state of perfection, by increasing the product of oil from the bean 37½ per cent. over the ordinary hydraulic press, and securing other advantages in the economy of labor and fuel. One of these presses will work 150,000 bushels of beans per annum, producing as much as 400,000 gallons of oil. It is said that one of these presses worked on castor-oil, in connection with others on linseed-oil, furnishes sufficient combustible refuse from the castor bean to supply fuel for the works; and in this way the fuel from the bean is of sufficient value to pay all the expenses of manufacturing the oil. The amount saved in Latourette's establishment by burning the above refuse, when in full operation, is about fifty dollars per week. After the oil is pressed from the beans, it is clarified by boiling in large kettles with a small portion of water, and when perfectly clear is allowed to cool, and is then drawn off into barrels ready for market. During the months of July, August, and September, 1854, there were manufactured thirty-two thousand gallons of castor-oil at this establishment alone. The manufacture of the oil, which, in 1850, was largely carried on in Illinois, is now mostly effected in the city of St. Louis.

	1850.	1851.	1852.	1853.
Crop in bushels.....	250,000	160,000	90,000	65,000
Factories in St. Louis..	9	9	9	8
Factories in Illinois...	18	7	5	3
Barrels of oil made ...	9,000	7,000	5,500	4,200
Equivalent in gallons .	350,000	255,000	192,500	147,000

The estimated crop of beans for 1854 was but 10,000 bushels, being almost a total failure; arising from the excessive drought that prevailed during the summer over that part of the country. The number of mills in operation in 1854 was only five, and those only employed part of the time. These statements exhibit a gradual decline in the amount of oil produced, which arises partly from the decreased crops, and partly, probably, from a limitation in the demand. The price of oil in 1852–'53 was as low as 60 to 80 cents per gallon, and is at present about $1 25 by the barrel, which, with the short crop of the past year, will probably prove an inducement to the farmers to again turn their attention to raising the beans. It has been stated that castor-oil had been used on one of the Western railroads for oiling the axles of cars, and probably also on the locomotives. Since the rise in the price of whale oil, the attention of machinists has been turned to various substitutes, and it is probable that the non-drying quality of the castor-oil, when pure, will render it very valuable for lubricating purposes, if it can be produced at a sufficiently low price.—*American Journal of Pharmacy*, 1855.

Catechu (Fr. *Cachou;* Ger. *Kaschu;* Hind. *Cut, Gambir*), a brown astringent substance, formerly known by the name of *Terra Japonica*, because supposed to be a kind of earth. It is, however, a vegetable substance obtained from two plants; viz. the *Mimosa*, or more correctly the *Acacia catechu*, and the *Uncaria gambir*. The first of these is a tree from 20 to 30 feet high, found in abundance in many of the forests of India, from 16° of lat. up to 30°. The places most remarkable for its production are the Burmese territories; a large province on the Malabar coast called the Concan; and the forests skirting the northern part of Bengal, under the hills which divide it from Nepaul. The catechu is obtained from this tree by the simple process of boiling the heart of the wood for a few hours, when it assumes the look and consistency of tar. The substance hardens by cooling; is formed into small balls or squares; and being dried in the sun, is fit for the market. Johnson, in his "*Chemistry of Common Life*," says, "In the most relaxing climates of the East this strongly astringent substance acts beneficially upon the system." Perron, the traveler, states that he preserved his health during a long and difficult voyage by the habitual use of betel, while his companions, who did not use it, died, mostly of dysentery.

Cat-head, a strong timber projecting from either bow of a ship, to which the anchor is raised and secured.

Cat's Eye, a mineral of a beautiful appearance, brought from Ceylon. Its colors are gray, green, brown, red, of various shades. Its internal lustre is shining, its fracture imperfectly concholdal, and it is translucent. From a peculiar play of light, arising from white fibres interspersed, it has derived its name. The French call the appearance *chatoyant*. It scratches quartz, is easily broken, and resists the blow-pipe. It is set by the jewelers as a precious stone.

Cat Skins. The skin or fur of the cat is used for a variety of purposes, but is principally dyed and sold as false sable. It appears from evidence taken before a late Committee of the House of Commons, that it is a common practice in London to decoy the animal and kill it for the sake of its skin. The fur of the wild-cat is, however, far more valuable than that of the domestic cat. The wild-cat skins imported into Europe are brought almost wholly from the territories of the Hudson's Bay Company. The animal from which they are taken is a good deal larger than the English wild-cat, and is sometimes called the *loup servier*, or Canadian lynx.

Cattle, a collective term applied to designate all those quadrupeds that are used either as food for man or in tilling the ground. By *neat* or *horned cattle* is meant the two species included under the names of the ox (*bos*) and the buffalo (*bubulus*); but as the latter is principally confined to Asiatic countries, it is the former only that we have here in view. The raising and feeding of cattle, and the preparation of the various products which they yield, have formed, in all countries emerged from the savage state, an important branch of industry. It would be quite inconsistent with the objects and limits of this work to enter into any details with respect to the different breeds of cattle raised in this or other countries. They are exceedingly various. In Great Britain and in this country they have been vastly improved, both in the weight of carcass, the quality of the beef, and the abundance of the milk, by the extraordinary attention that has been given to the selection and crossing of the best breeds, according to the objects in view. This sort of improvement began about the middle of last century, or rather later, and was excited and very much forwarded by the skill and enterprise of two individuals—Mr. Bakewell, of Dishley; and Mr. Culley, of Northumberland, England. The success by which their efforts were attended roused a spirit of emulation in others; and the rapid growth of commerce and manufactures since 1760 having occasioned a corresponding increase in the demand for butcher's meat, improved systems of breeding, and improved breeds, have been very generally introduced. But the improvement in the size and condition of cattle has not been alone owing to the circumstances now mentioned. Much of it is certainly to be ascribed to the great improvement that has been made in their feeding. The introduction and universal extension of the turnip and clover cultivation has had, in this respect, a most astonishing influence, and has wonderfully increased the food of cattle, and consequently the supply of butcher's meat.

Among the various races of cattle existing among us, where strict regard is paid to breeding with a definite object in view, a preference is given to the Durhams or short horns, the Herefords, the Ayrshires, and the Devons. The Durhams, from their rapid growth, early maturity, and capability of taking on fat, are adapted only for high keeping, or to the richest pastures of the Middle and Northern States, and those of Ohio, Kentucky, and other parts of the West. The

males, when judiciously crossed with the other breeds, or with the common cows of the country, often beget the best of milkers, and for this purpose they have been especially recommended. The Herefords, on the contrary, from their peculiar organization, are better adapted for poor or indifferent pastures, and regions subject to continued drought; and for this reason they are well suited for California, New Mexico, Texas, and other parts of the South. The oxen of this breed are good in the yoke, and the cows, when properly fed, give an abundance of milk. The Ayrshires are best suited for a cool, mountainous region, or a cold, rigorous climate. They succeed well in Massachusetts, New Hampshire, and Vermont, and are highly prized for their tameness, docile tempers, and rich milk. The Devons, from their hardihood, comparatively small size, and peculiar structure, appear to be adapted to almost every climate, and to all kinds of pasturage. From their stoutness, good tempers, honesty, and quickness of action, they make the best teams, and in this respect their chief excellency consists. The cows make fair milkers, and their flesh very good beef. They also possess great aptitude to take on fat.—*See* ABATTOIR.

Caulking, or **Cauking**, the driving of oakum or old rope untwisted into the seams between the planks in a ship's deck or sides, to prevent the entrance of water or leakage. The seams are then covered with melted pitch or rosin, to keep the oakum from rotting.

Cavendish, Thomas, was the son of a gentleman of good estate in Suffolk, England, but having impoverished himself by early extravagances, with a view to retrieve his affairs he fitted out three vessels for a predatory expedition against the Spanish American colonies, for which he sailed in July, 1585. After ravaging the western coasts, and taking a Spanish vessel richly ladened, he sailed across the South Sea, and returned to England by way of the Cape of Good Hope, in September, 1588, having circumnavigated the globe in a shorter time than any preceding adventurer. The great wealth which he acquired from this undertaking prompted him to engage in another voyage, on which he embarked in August, 1591. Tempestuous weather, sickness, and other causes contributed to render this scheme unfortunate; and Cavendish himself died on the coast of Brazil on his passage home, in 1592.

Caviar (Fr. *Caviar, Cavial;* Ger. *Kaviar;* It. *Caviario, Caviale;* Sp. *Caviorio;* Russ. *Ikra;* Lat. *Caviarium*), a substance prepared in Russia, consisting of the salted roes of large fish. The best, which is made of the roe of the sturgeon, appears to consist entirely of the eggs, and does not easily become fetid. It is packed in small casks or kegs, the inferior sort being in the form of dry cakes. Caviar is highly esteemed in Russia, and considerable quantities are exported to other countries. It is principally made of the roe of the sturgeon caught in the Wolga, in the neighborhood of Astrachan, as many as 30,000 barrels of caviar having been exported from that city in a single season.—See *Geog. Dict.* art. ASTRACHAN.

Cayenne, a sea-port town, and the capital of French Guiana, on the west point of the island of same name, at the mouth of the Cayenne or Oyaque River, in the Atlantic. Lat. 4° 56′ 5″ N., long. 52° 30′ W. Population 6000. It is built mostly of wood, and consists of an old town, with the government-house and Jesuits' college, and the new town, with wide and clean streets, large warehouses, and good residences, between which two divisions is a large open space planted with orange-trees. Harbor shallow: it has two quays, and is protected by a fort and several batteries. Cayenne is the seat of a court of assize, and the centre of all the trade of French Guiana. Exports to France amount to 6,000,000 francs, and imports thence to 5,000,000 francs. The island of Cayenne, in the Atlantic, separated from the continent of South America by a narrow channel, is 30 miles in circumference; chief products, sugar, cotton, coffee, and fruits. Population (exclusive of the town of Cayenne) 8000. First settled by the French in 1625, but they left it in 1654. It was afterward successively in the hands of the English, French, and Dutch. These last were expelled by the French in 1677. Cayenne was taken by the British, January 12, 1809, but was restored to the French at the peace in 1814. In this settlement is produced the *capsicum baccatum*, or Cayenne pepper, so esteemed in Europe. —HAYDN.

Cayenne Pepper is prepared from several varieties of capsicum, a genus of solanaceous plants which produce a fleshy-colored fruit. This fruit contains an extremely pungent principle, that exists in greatest activity in the seed. The capsicum from which the Cayenne is procured is a native of the East Indies and America. The principal Indian species is *C. frutescens*, and the American *C. annuum*. The capsicum enters largely into the seasoning of food and the preparation of pickles; and is also used in medicine, both internally and externally. The pods may be preserved in vinegar, or in a dry state in salt. The strongest variety of Cayenne pepper comes from the West Indies, and is prepared from the *capsicum baccatum* (bird pepper).

Cedar (Germ. *Zeder;* Du. *Ceder;* Fr. *Cedre;* It. and Sp. *Cedro;* Russ. *Kedr;* Lat. *Cedrus*). The Cedar of Lebanon, or great cedar (*Pinus cedrus*), is famous in Scripture: it is a tall, majestic-looking tree. "Behold," says the inspired writer, "the Assyrian was a cedar in Lebanon with fair branches, and with a shadowing shroud, and of a high stature; and his top was among the thick boughs. His height was exalted above all the trees of the field, and his boughs were multiplied, and his branches became long. The fir-trees were not like his boughs, and the chestnut-trees were not like his branches, nor any tree in the garden of God was like unto him in beauty."—*Ezekiel*, xxxi. 3, 5, 8. The cedar grows to a very great size. The timber is resinous, has a peculiar and powerful odor, a slightly bitter taste, a rich yellowish brown color, and is not subject to the worm. Its durability is very great; and it was on this account (*propter æternitatem*, Vitruvius, lib. ii. § 9) employed in the construction of temples and other public buildings, in the formation of the statues of the gods, and as tablets for writing upon. In the time of Vitruvius, cedars were principally produced in Crete, Africa, and some parts of Syria.—*Loc. cit.* Very few are now found on Lebanon; but some of those that still remain are of immense bulk, and in the highest preservation. Cedar exceeds the oak in toughness, but is very inferior to it in strength and stiffness. Some very fine cedars have been produced in England.

There are several other kinds of timber that are usually called cedar: thus a species of cypress is called white cedar in America; and the cedar used by the Japanese for building bridges, ships, houses, etc., is a kind of cypress, which Thunberg describes as a beautiful wood, that lasts long without decay. The *Juniperus oxycedrus* is a native of Spain, the south of France, and the Levant; it is usually called the brown-berried cedar. The Bermudian cedar (*Juniperus Bermudiana*), a native of the Bermuda and Bahama islands, is another species that produces valuable timber for many purposes; such as internal joiners' work, furniture, and the like. The red cedar, so well known from its being used in making black-lead pencils, is produced by the Virginian cedar (*Juniperus Virginiana*), a native of North America, the West India islands, and Japan. The tree seldom exceeds 45 feet in height. The wood is very durable, and, like the Cedar of Lebanon, is not attacked by worms. It is employed in various ways, but principally in the manufacture of drawers, wardrobes, etc., and as a cover to pencils. The internal wood is of a dark red color, and has a very strong odor. It is of a nearly uniform texture, brittle, and light.—*See* TREDGOLD'S *Principles of Carpentry*.

Cements. The substances used for producing cohesion between different materials are very various. They are mostly, however, soft, or semi-fluid, and harden in the course of time. The number employed is very great. We can mention only a few. The joints of iron pipes and the flanges of steam-engines are cemented with a mixture composed of sulphur and muriate of ammonia, together with a large quantity of iron chippings. The putty of glaziers is a mixture of linseed oil and powdered chalk. Plaster of Paris, dried by heat, and mixed with water, or with resin and wax, is used for uniting pieces of marble. A cement composed of brick-dust and resin, or pitch, is employed by turners, and some other mechanics, to confine the material on which they are working. Common paint, made of white-lead and oil, is used to cement China ware. So also are resinous substances, such as mastic and shellac, or isinglass dissolved in proof-spirit or water. The paste of book-binders and paper-hangers is made by boiling flour. Rice-glue is made by boiling ground rice in soft water to the consistence of a thin jelly. Wafers are made of flour, isinglass, yeast, and white of eggs, dried in thin layers upon tin plates, and cut by a circular instrument. They are colored by red-lead, etc. Sealing-wax is composed of shellac and rosin, and is commonly colored with vermilion. Common glue is mostly employed for uniting wood, and similar porous substances. It does not answer for surfaces not porous, such as those of metals, and is not durable if exposed to water. The cements mostly used in building are composed of lime and sand. Lime is procured by burning substances in which it exists in combination with carbonic acid, such as limestone, marbles, chalk, and shells. By this process, the carbonic acid is driven off, and quicklime is obtained. The quicklime is slaked by mixture with water, after which it swells and cracks, becomes hot, and assumes the form of a white and impalpable powder. This is a hydrate of lime, and contains about three parts of lime to one of water. When intended for mortar, it should immediately be mixed with sand, and used without delay, before it imbibes carbonic acid anew from the atmosphere. The lime adheres to and unites the particles of sand. Cements thus made increase in strength and solidity for an indefinite period. Fresh sand, wholly silicious and sharp, is the best. That taken from the sea-shore is unfit for making mortar, as the salt is apt to deliquesce and weaken the mortar. The amount of sand is always greater than that of the lime. From two to four parts of sand are used, according to the quality of the lime and the labor bestowed on it. Water cements, called also *Roman cements*, harden under water, and consolidate almost immediately on being mixed. Common mortar dissolves or crumbles away if laid under water before it has had time to harden; but certain rocks, which have an argillaceous as well as a silicious character, communicate to lime or mortar the property of hardening in a very few minutes, both in and out of water. The ancient Romans, in making their water cements, employed a peculiar earth, obtained at the town of Puteoli. This they called *pulvis Puteolanus*. It is the same as is now called *Puzzolana*, and is evidently of volcanic origin. The Dutch, in their great aquatic structures, have mostly employed a substance denominated *tarras*, *terras*, or *trass*, found near Andernach, in the vicinity of the Rhine. It is said to be a kind of decomposed basalt, but resembles puzzolana. It is very durable in water, but inferior to the other kinds in the open air. Baked clay and the common greenstone afford the basis of very tolerable water cements, when mixed with lime. Some of the ores of manganese may be used for the same purpose. Some limestones calcined, and mixed with sand and water, also afford water cements, usually in consequence of containing some argillaceous earth. Some cements, of great hardness and permanency, have been obtained from mixtures into which animal and vegetable substances enter, such as oil, milk, mucilage, etc. The name of *maltha* or *mastic* is given them. They are not much used. The principal manufacturing places of cement in the United States are in the State of New York, along the Delaware and Hudson Canal.

Census is now almost solely used to denote that enumeration of the people made at intervals in most European countries, and in Britain decennially. The term had its origin in Rome, where a group of the many functions performed by the high officer called censor received the name of *census*. An enumeration of the people was only one of them, but they were chiefly of a statistical character. They were especially directed to fiscal objects; and it does not appear that the enumeration of the people was then deemed of value as a source of statistical knowledge which might influence morals and legislation. It was connected with the Servian constitution, which apportioned the rights and duties of citizens to the amount of property, dividing them into six classes, which were subdivided into centuries by a mixed ratio of wealth and numbers.

The Roman census must have been minute and full. It indicated not only the number and respective classes of all free persons, but their domestic position as husbands and wives, fathers and mothers, and sons and daughters. The slaves and freedmen were indicated in connection with the possessions of the head of the house, and landed property was analyzed into several classes, according to its character and produce. The important practical effect of the census caused it to be conducted at intervals generally so frequent as every fifth year. It was followed by a sacrifice of purification or lustration, whence the term of five years came to be denoted a lustrum.

While the word census was thus applied to the taxation of the Middle Ages, it will readily be understood that in its modern sense it received no practical application, since neither taxation nor the adjustment of social rank required a numbering of the people; and the statistic or economic ends of such a process were as little known as they had been to the Romans. Under the despotic governments of the Continent, however, the tendency to central organization for purposes of administration and police prepared the way for statistical inquiries into the numbers of the inhabitants of particular areas whenever there should occur an occasion for enumerating them. It was in Britain, with its abstinent government and unrestrained people, that the want of population statistics became most flagrantly conspicuous. It is difficult at present to realize the idea that, long after Adam Smith's day, the number of the inhabitants of the British empire could only be guessed at, as the populousness of China is at the present day; and, as in all matters of statistics, which have their own simple solution through specific inquiry, the guesses about the population of the empire were not only vague but extravagantly contradictory. During the eighteenth century, the most trust-worthy geographers were generally those who did not venture on an estimate of the population even in those European states which had the best means of enumeration at their command.

The first effort to take a census of the population of Great Britain was made in 1801; it did not then extend to Ireland. The success which attended this and the two succeeding efforts was mainly owing to the zeal and ability of Mr. Rickman, the assistant clerk of the House of Commons. Where there is an organization like that in many of the European states for preserving a constant official record of all the fluctuations of the population, not only in their absolute numbers throughout a whole territory but in the relative numbers in its respective parts as they may be affected by fluctuations, systematic arrangements are thus prepared not only for obtaining a general census at any one moment, but for checking its accuracy and

classifying its elements. But to deal at once with the raw material in the self-governed British empire, required great ingenuity and sagacity. A census, to be accurate, must be taken on a uniform system, and must be taken simultaneously.

The enumerations of 1841 and 1851 in England were much facilitated by the uniform system of registration of births, marriages, and deaths, established in 1836, which not only afforded the means of checking the accuracy of the returns, but provided a prompt and skilled machinery accustomed to statistical work. Far more dependence could now be placed on the discretion and skill of the officers to whom the local duties were committed; and the returns were made more minute and complete. Scotland and Ireland are perhaps the only considerable countries in Christian Europe where there is no uniform system of registration. In Scotland it was necessary to adopt the clumsy method of employing the parish schoolmasters to perform the local duty in the country districts. In Ireland the first attempt at a general census was made in 1811, but it was decidedly unsuccessful. It was repeated in 1821, but went no further than a bare enumeration of doubtful accuracy. The census there taken in 1831 was subject to correction in 1834, to make it the basis of the new system of national education. In the two subsequent enumerations the aid of the admirable constabulary force, and the use of an ordnance survey, nearly complete in 1841, have gone far to supply the want of permanent local statistical machinery. The census of 1851 was taken on the 31st day of March, the previously-distributed schedules being then collected.

POPULATION AND NUMBER OF INHABITANTS TO THE SQUARE MILE OF VARIOUS AMERICAN AND EUROPEAN COUNTRIES.

Countries.	Population.	Density.
United States	23,191,876	7·10
Canada	1,842,265	5·81
Mexico	7,661,919	7·37
Central America	2,049,950	10·07
Brazil	6,065,000	2·19
Peru	2,100,402	3·63
Russia in Europe	60,315,150	28·44
Austria	36,514,466	141·68
France	35,783,170	172·74
England	16,921,888	332·00
Great Britain and Ireland	27,475,271	225·19
Prussia	16,331,187	151·32
Spain	14,216,219	78·03
Turkey in Europe	15,500,000	73·06
Sweden and Norway	4,645,007	15·83
Belgium	4,426,209	368·60
Portugal	3,473,758	15·14
Holland	3,267,638	259·31
Denmark	2,296,597	101·92
Switzerland	2,392,740	160·45
Greece	968,266	55·70

The United States.—There have been seven enumerations of the inhabitants of the United States, the periods and aggregate results of which are as follows:

Census of 1790	3,929,827
Census of 1800	5,305,125
Census of 1810	7,239,814
Census of 1820	9,638,131
Census of 1830	12,866,020
Census of 1840	17,069,453
Census of 1850	23,191,876

At the close of 1857, the total population of the United States, upon the supposition that its average ratio of increase has been maintained, or nearly so, may be stated in round numbers at 28,600,000.

The present population of the Union may be said to consist of, *first*, the number who were in the country on the formation of the government in 1789, and their descendants; *second*, of those who have come into the country since that period by immigration, and their descendants (of this class much will be said under the head of NATIVITIES); *third*, of those who have been brought in by annexation, as in Louisiana, Florida, New Mexico, etc., and their descendants. It is sufficient to say of the last class, that Louisiana, when purchased, had 77,000 inhabitants, including 53,000 slaves; Florida about 10,000; California and New Mexico about 60,000; and that Texas and Oregon only brought back into the Union citizens who had emigrated thither but a short time before. The number of Indians (taxed) domesticated and absorbed in the population can not be ascertained. The colonial population was swelled, in 1765, by the extension of the boundary to the Mississippi, and the introduction of 2000 French residents of the territory incorporated.

Cent, a contraction of the Latin *centum*, a hundred, is used in commerce to denote a certain rate by the hundred; thus 10 per cent. profit or 10 per cent. loss upon the sale of any merchandise implies that the seller has gained or lost $10 on every $100 of the price at which he bought that merchandise. The rate is termed *percentage.*—*See* DOLLAR.

Cent is also the name of a copper coin of the United States, equal to the hundredth part of a dollar, or rather more than a halfpenny English money. The copper coinage of the United States to the end of 1858 amounted to $1,518,987. We have of that ponderous currency about 1590 *tons* of 2000 pounds avoirdupois. This circulation is almost entirely confined to the Northern and Middle States, as it is rejected by the South and West. According to the laws establishing the Mint of the United States, "of the copper coins, the weight of the cent shall be one hundred and sixty-eight grains, and the weight of the half cent eighty-four grains; and the cent shall be considered of the value of one hundredth part of a dollar, and the half cent of the value of one two-hundredth part of a dollar. Copper bullion shall be purchased for the Mint, from time to time, by the treasurer, under instructions from the director; the cost shall be paid from the fund hereinafter provided for; and the copper bullion shall be of good quality, and in the form of planchets fit for passing at once into the hands of the chief coiner. The copper planchets shall be delivered, from time to time, by the treasurer to the chief coiner, to be by him coined; and all such copper shall be returned to the treasurer by the chief coiner, weight for weight, without allowance for waste. It shall be the duty of the treasurer of the Mint to deliver the copper coins, in exchange for their legal equivalent in other money, to any person who shall apply for them: *Provided*, That the sum asked for be not less than a certain amount, to be determined by the director, and that it be not so great as in his judgment to interfere with the capacity of the Mint to supply other applicants. The copper coins may, at the discretion of the director, be delivered in any of the principal cities and towns of the United States, at the cost of the Mint for transportation. The money received by the treasurer in exchange for copper coins shall form a fund in his hands, which shall be used to purchase copper planchets, and to pay the expense of transportation of copper coins; and if there be a surplus, the same shall be appropriated to defray the contingent expenses of the Mint. No copper coins or pieces whatsoever, except cents and half cents, shall pass current as money, or shall be paid, or offered to be paid, or received in payment for any debt, demand, claim, matter, or thing whatsoever; and all copper coins or pieces, except the cents and half cents, which shall be paid, or offered to be paid, or received in payment, contrary to the prohibition aforesaid, shall be forfeited, and every person by whom any of them shall have been so paid, or offered to be paid, or received in payment, shall also forfeit the sum of ten dollars, and the said forfeiture and penalty shall and may be recovered, with costs of suit, for the benefit of any person or persons by whom information of the incurring thereof shall have been given."—*See* COINS, COINAGE.

According to the acts of Congress prior to 1850, the gold and silver coins of the United States were legal tender to any extent, but by the law of 1853, authorizing the debased silver coins, the latter are receivable in small sums only. Copper coins are not by statute le-

gal tender to any amount. Frequent suggestions in Congress have been recently made to reduce the weight of the copper coins, but thus far without effect.

Cereal Grasses (Lat. *ceres*, corn), grasses which produce the bread corns; such as wheat, rye, barley, oats, maize, rice, and millet.

Cette, a commercial and fortified sea-port town of France, department of Hérault, capital of the canton, at the head of the railroad from Beaucaire, between the Mediterranean and the lagoon of Thau, 17 miles southwest of Montpellier. Lat. of light-house, 43° 23′ 48″ N., long. 3° 42′ 16″ E. Population 16,613. It is a fortress of the first class, defended by a citadel; principal edifices, Church of St. Louis, public baths, and library. Its harbor is spacious and secure, from 16 to 19 feet in depth, formed by two piers with a breakwater in front, defended by two forts, one on either pier. A broad and deep canal, bordered with quays and warehouses, connects the port with the lagoon of Thau and the canal du Midi, and with canals leading to the Rhone, by which means Cette has an extensive traffic with the interior. Imports comprise Benicarlo wine from Spain, for mixing with French wines for the English and other markets. It has a large establishment where is manufactured sulphate of soda, magnesia, and potash, from sea-water. The exports consist of about 36,000 tuns of wine, and 4000 ditto of brandy annually, with almonds, Montpellier verdigris, salt from adjacent salt-works, and syrups, liquors, soap, perfumery, and glass-wares, the products of its own factories. Cette is the entrepôt for an extensive coasting-trade, and possesses much foreign commerce. It has ship-building yards, and an active oyster and anchovy fishery, and is the residence of various European consuls. It is wholly of modern origin, having been founded by Louis XIV. at the base of the ancient *Mons Setius* (whence its name). Steamboats to Marseilles daily.

Ceylon, an island in the Indian Ocean, situated at the southern extremity of the Coromandel coast, from which it is separated by the Gulf of Manaar. It lies between lat. 5° 54′ and 9° 50′ N., and long. 79° 50′ and 82° 10′ E. Its length is 270 miles, and its greatest breadth 145 miles. It is of an oval form, pointing north and south; its broadest part being at its southern extremity, where also is to be found the great mass of its high lands. It is distant from Cape Comorin, the southernmost point of the Indian peninsula, about 175 miles. The most important cultivation is that of coffee, a branch of industry which, since the year 1841, has assumed a position of great and growing prominence. Coffee was an article of growth and export from Ceylon so far back as the time of the Portuguese, but like the cinnamon it grew wild without any attempt at cultivation. Patches of it were to be seen around the Kandian villages in wild luxuriance, and the berry gathered before ripe, and imperfectly cured, seldom possessed much flavor, and was lightly esteemed as an article of European commerce. Coffee cultivation on the West Indian plan was first commenced by Sir E. Barnes, the then governor of Ceylon, in 1824, who hoped by his example to introduce coffee-planting by Europeans into the island.

The *Cocos nucifera*, or cocoa-nut palm, is a native of the island, and may justly be considered the most valuable of its trees. It grows in vast numbers along the entire sea-coast of the west and south sides of the island, and furnishes almost all that a Singhalese villager requires. Its fruit, when green, supplies food and drink; when ripe, it yields oil. Its sap gives him toddy and arrack. The fibrous casing of the fruit, when woven, makes him ropes, nets, and matting. The nut-shells form drinking-vessels, spoons, etc. The plaited leaves serve as plates and dishes, and as thatch for his cottage. The dried flower-stalks are used as torches, the large leaf-stalks as garden fences. The trunk of the tree sawn up is employed for every possible purpose, from knife-handles to door-posts; hollowed out, it forms alike a canoe or a coffin. There are four kinds of this palm; the common, the king cocoa-nut, the dwarf, and the Maldive sorts. The Palmyra and Areca palms grow luxuriantly and abundantly, the former in the northern, the latter in the western and central districts. The one is valuable chiefly for its timber, of which large quantities are exported to the Indian coasts; the other supplies the betel-nut, in such common use among natives of the Eastern tropics as a masticatory. The export trade in this latter to India and Eastern ports is very considerable, amounting in some years to £12,000. Next in importance to the cocoa-nut palm among the indigenous products of Ceylon is the cinnamon-plant, yielding the well-known spice of that name.—*See* CINNAMON. The fruits indigenous to Ceylon are few and insignificant. Others of more value have been introduced with success from various tropical and extra-tropical countries; among these are the citron, orange, lime, shaddock, banana, pomegranate, custard apple, guava, grape, rambatam, alligator-pear, etc.

Pearl Fishery.—Although the once far-famed and lucrative pearl fishery of this island has ceased since the year 1837, it will be well to give in this place a passing notice of the pearl-oyster, especially as a survey of the "banks" or beds off Aripo, made in 1852, holds out promise of a good fishing at no distant date. The banks on which these oysters are usually found lie off the northern part of the west coast of Ceylon, at a distance of from 16 to 20 miles from the shore. They extend for many miles north and south, varying considerably in their size and productiveness. The oyster arrives at maturity in its seventh year; the pearl within is then of full growth, and if the fish be not then taken up, it will shortly die, and the pearl be lost. The fishery, which is in the hands of the local government, took place in the month of March, when the water was perfectly calm, and most favorable for the work of the divers. It was formerly rented to native speculators, who paid a certain sum for the privilege of fishing with a fixed number of divers during a given period. In 1797 and the following year, the rental of the fishery realized £128,982 and £142,780 respectively. Since that time the government have fished on their own account, selling the produce of each boat by auction on the beach before the fish could be examined. This mode, however, had not proved so lucrative as the old method; the annual returns never having exceeded £87,000, and frequently falling as low as £18,000; in some cases, indeed, amounting to but a few hundred pounds sterling. Various causes have been assigned for the failure of these fisheries. It may, however, be properly attributed to the mismanagement of an inspector of the pearl banks, who in 1836 took charge of them, and, from neglecting to attend to the instructions given him by his predecessors, caused the wrong beds to be fished. The result was a complete failure of the fishery; the oysters which should have been brought up were left to die; young beds were disturbed, and from that time this large source of revenue has been lost to the island. A survey of the pearl banks made in March, 1853, induced the local government to look for a fishery of some extent in 1855 or the following year.—E. B.

However, the pearl fishery of Ceylon continues to engross a large share of public attention. The importance of any discovery which would enable us to preserve and fish the mature oysters is evident from the statement made by Captain Stuart, that from the fifth to the sixth year the pearl-oyster doubles in value, and again doubles should he survive the seventh year. The pearl-oyster, though called the mother-of-pearl shell, and though its interior surface is beautifully lined with the pearly secretion, is valueless as "mother-of-pearl." The latest intelligence from the scene of the fisheries is as follows:

17th Sale.—205,000 oysters brought on shore on the 7th (by 42 boats) were sold at rates varying from 15 to

18 rupees per 1000, and produced £315. Total receipts £9930.—*Overland Colombo Observer*, April 18th, 1855.

The trade of Ceylon has been greatly augmented since the opening of the cinnamon trade and the commencement of coffee-planting. In 1832 the imports amounted to £351,222; the exports to £163,587. In 1842 the imports and exports amounted to £622,447 and £421,418 respectively. In 1852 those amounts were £1,000,474 and £948,400. The largest increase in exported produce has been in coffee, which from 17,287 cwts. in 1831 grew to 77,475 cwts. in 1841, and to 287,910 cwts. in 1851. In 1854 the crops of native and plantation kinds are expected to amount to 500,000 cwts. The cinnamon trade of Ceylon forms a remarkable exception to the rule that by the removal of fiscal restrictions the consumption of articles will be increased. Cinnamon is now exported from Ceylon duty free, yet the annual demand for the spice is found to be no greater than when burdened with an export duty of 8*s.* the lb. When the island was transferred from the administration of the East India Company to that of the crown in 1802, the government entered into a contract with the company by which the latter acquired the exclusive privilege of exporting cinnamon from the colony. It was agreed that the Ceylon government should deliver annually 400,000 pounds of cinnamon, for which the company was to grant a credit of £60,000, making the price of the cinnamon 3*s.* per pound. In 1814 the company agreed to allow to the Ceylon government a sum of £200,000 sterling for surplus profits on their sales of cinnamon; and to give in future £101,000 sterling annually, instead of £60,000, for a supply of 400,000 pounds of that commodity. This contract was entered into for seven years, and it does not appear that during this period the stipulated quantity of cinnamon was ever delivered. In 1821 the exclusive privilege of exporting cinnamon was given up by the company; and in 1833 the government abandoned their monopoly of the trade, throwing it open to the public, but levying a duty of 3*s.* per pound on its exportation.

In 1835 an inferior or third sort was allowed to be shipped on payment of 2*s.* the pound. Two years later, the duty on the best sorts was lowered to 2*s.* 5*d.*; and in 1843 the duty on all kinds was fixed at 1*s.* It was since reduced to 4*d.*; and in 1853 the article was declared duty free. These periodical reductions of duty were in all cases followed by heavy shipments of the spice; the sole effect of which has been to overstock the European markets, and reduce its price beyond the reduction of duty. The annual European consumption is at the present time precisely what it was fifty years ago; thus proving that articles of mere luxury are not affected by the laws which govern the consumption of the necessaries of life. Of the exports, four-fifths are to Great Britain; of the imports, one-third is from the United Kingdom, and the remainder chiefly from India. The imported goods from Great Britain consist of cotton manufacture, glass-ware, hardware, millinery, hosiery, metals, tools, beer, wines, etc.; those from India are mainly rice and coarse cotton cloth. The exports to Europe being larger than the imports thence, the balance of value is drawn for by bills of exchange, a part of which are negotiated in India to pay for rice, the rest for rupees sent down to Ceylon to pay the Malabar coolies on the coffee estates, who carry three-fourths of their earnings out of the island. The trade of Ceylon is carried on by upward of twenty European firms, and eight or nine native houses; the latter confining their transactions to British India. Besides these, there are nearly a dozen European estate agents in Kandy, and a great number of small native dealers, called "Chitters," in connection with Madras and Bombay firms. There are no export duties, and the duty on imports is 5 per cent. on the declared value, with some few exceptions, such as arms, wines, spirits, and grain. In 1852 the revenue derived from customs duties was £121,354.

The coasting and Indian trade is carried on by country-built brigs and *dhomies*, a craft peculiar to Ceylon. Of the former there are 56, of 8178 tons in the aggregate, and 559 dhomies, of a tonnage equal to 24,270 tons, belonging to the island. The value of the former is £6 per ton, and of the latter £1 per ton. In 1836 the custom-house shipping entries gave 1831 vessels inward, and 1200 outward; in 1852 they gave 8140 inward, and 8074 outward. The banking business of the island is conducted by branches of the Oriental Bank Corporation of London, and the Mercantile Bank of Bombay, in Colombo and Kandy. The former establishment possesses the privilege of issuing notes of 10*s.* and upward.—E. B.

Chaff. The husk or withered calyx of grasses, and more especially of the bread corns. The term is also applied to straw or hay cut into very short lengths, and used for mixing with corn, roots, or other food for horses or cattle. This kind of chaff, in greater lengths, is also used for mixing with mortar on some parts of the Continent, more particularly in Germany and Russia; and it is used as a substitute for hair in making plaster for rooms. Both stubble and cut hay were used by the ancient Egyptians in making bricks.

Chain, in *Surveying*, a measure of length, composed of a certain number of links made of iron wire, serving to take the distance between two or more places. Gunter's chain contains 100 such links, each measuring 7 92-100 inches, consequently equal to 66 feet, or four poles.

Chaldron, a dry English measure of 36 coal bushels; 21 chaldrons make a score. The coal bushel is 19½ inches wide from the outside, and 8 inches deep. It contains 2217·6 cubic inches; but when heaped, 2815·5, making the chaldron 58·65 cubic feet. There are 12 sacks of coal in a chaldron; and if 5 chaldrons be purchased at the same time, the seller must deliver 63 sacks: the 3 sacks additional are called the *ingrain*. But coals are now sold in London and almost every where else by the ton of 20 cwt. avoirdupois. The Newcastle chaldron of coals is 53 cwt., and is exactly double the London chaldron.

Chaleurs, Bay of, an inlet of the Gulf of St. Lawrence, in North America. Lat. 48° N., long. 65° W. Length from east to west about 90 miles; breadth varies from 12 to 20 miles. It separates Canada East from New Brunswick, and at its western extremity receives the Ristigouche River. This bay possesses great advantages for the prosecution of the fisheries. The entire bay may be considered one great harbor, as throughout its entire breadth and extent there is not a single rock, reef, or shoal. During the summer it literally swarms with fish of every description known on the shores of this portion of America; and its ancient name of "*Ecketaun'Nemaachi*"—the sea of fish—well denotes its character.

Chalk (from *calx*), in Latin called *creta*, a species of carbonate of lime, found abundantly in Britain, France, Norway, and other parts of Europe. The island of Candia is said to have received its ancient name of *Creta* from the quantity of chalk found there. Chalk is used as an anti-acid; and from the readiness with which it imbibes liquids, it is much employed as an absorbent. When powdered and freed from gritty particles by washing, it forms the substance called *whitening*, or Spanish white, used to polish metalline utensils and glass. It is prepared as follows: mix chalk that has been well triturated with a large quantity of water, allow the silicious and ferruginous particles to subside, and then decant the supernatant fluid into a very fine sieve or linen bag, where the whitening will be deposited.—*Black Chalk*, a mineral used by artists for drawing. It is a variety of bituminous shale, the *schistegraphique* of Haüy.—*French Chalk*, steatite or soapstone, a hydrated silicate of magnesia and alumina. It occurs of several colors, as white, brown, green, etc.; and is used in the preparation of crayons, the manu-

facture of porcelain, for polishing marble, and as the basis of certain cosmetic powders.—*Red Chalk* is an indurated clayey ochre used for similar purposes. It is *reddle*, or earthy clay-ironstone of the mineralogist.—E. B.

Chamber of Assurance, in France, denotes a society of merchants and others for carrying on the business of insurance; but in Holland it signifies a court of justice, where causes relating to assurances are tried.

Chamber of Commerce. An assembly of merchants and traders, where affairs relating to trade are treated of. There are several establishments of this sort in most of the chief cities.—*See* BOARD OF TRADE.

Chamomile Flowers. The flower-heads of the *Anthemis nobilis*, or common chamomile. They are used in medicine in consequence of their bitter extract, which is strengthening, and of their essential oil, which is aromatic and stimulant.

Champagne, one of the most esteemed and celebrated of the French wines. An official report, made by the directors of the indirect taxes for the department of Marne, furnishes the following information as to the trade in champagne between the 1st of April, 1846, and the 1st of April, 1847. The produce is distributed among the arrondissements of Chalons, Epernay, and Rheims. On the 1st of April last there were in the cellars of the wholesale dealers 18,815,367 bottles of this wine; viz. at Chalons, 4,404,237 bottles; at Epernay, 5,710,753; and at Rheims, 8,500,377. The number of bottles sold and delivered between the 1st of April, 1846, and the 1st of April, 1847, were, at Chalons, 2,497,355; at Epernay, 2,187,553; at Rheims, 4,090,577; making a total of 8,775,485 bottles. These quantities were thus distributed:

Places.	To go Abroad.	To other Depots.	Within the Depot.
	Bottles.	Bottles.	Bottles.
From Chalons.....	1,074,214	753,175	669,966
From Epernay.....	806,663	386,425	994,465
From Rheims.....	2,831,038	1,215,766	43,773
Total.....	4,711,915	2,355,366	1,707,304

Champlain Lake lies between the States of New York and Vermont. It extends from Whitehall, New York, to the 45th degree of north latitude 102 miles, and thence about 24 miles to St. John's, in Canada, to which point it is navigable, making its whole length 126 miles. Its breadth is from one-fourth of a mile to 13 miles; but, including the expanse which contains its large islands, it is 15 miles wide. Its broadest part, unobstructed by islands, is opposite Burlington, Vermont. Its chief islands are North Hero, South Hero, and La Motte, which, with some smaller islands, and the peninsula of Alburg, constitute Grand Isle county, Vermont. This lake was discovered by Samuel Champlain, a French nobleman, in 1609. It was the theatre of many important military operations, in the French, Revolutionary, and the war of 1812. The scenery along its shores is highly picturesque, and rendered grand by the lofty mountains at a little distance from it on both sides. It forms an important medium of commerce, and is navigated by steamboats, and by many sloops, generally from 80 to 100 tons burden. It receives a number of considerable rivers. Its outlet is Sorelle or Richelieu River, the navigation of which has been improved by the works of the Chambly Canal (Canada), so as to afford an easy communication for large vessels with the St. Lawrence River. The Champlain Canal, 64 miles long, connects it with the Hudson River on the south, and cost $1,079,872. It abounds with fish, among which are salmon, lake shad, pike, and other fish. It is generally frozen entirely over, and is passed on the ice, in winter. The broad lake closes in January or February, and opens early in March. The narrow parts continue frozen considerably longer. It has three light-houses on its coasts. It comprises the collection districts of Burlington and Champlain. Aggregate tonnage in 1853, 1,461,749. The aggregate shipping in 1851 measured 197,500 tons, and employed 11,850 men. The commerce of the lake in the same year amounted to $26,390,895; and the enrolled tonnage was, of steam, 4157 tons, and 8983 tons of sailing vessels.

Chanks, or **Chank Shells**, common conch shells (*Voluta pyrum*), are fished up by divers in the Gulf of Manaar, on the coast opposite Jaffnapatam, in Ceylon, in about two fathoms water; and at Travancore, Tuticoreen, and other places. Large fossil beds of chanks have also been found. They are of a spiral form, and constitute a considerable article of trade in India, where they are in extensive demand all over the country. They are sawn into narrow rings or bracelets, and are worn as ornaments on the arms, legs, fingers, etc., by the Hindoo women; many of them are also buried with the bodies of opulent and distinguished persons. Those which, from being taken with the fish, are called *green chanks*, are most in demand. The *white chank*, which is the shell thrown upon the beach by strong tides, having lost its gloss and consistency, is not worth the freight up to Calcutta. The value of the green chank depends upon its size. A chank opening to the right, called in Calcutta the right-handed chank, is so highly prized as sometimes to sell for 400 or 500, or even 1000 rupees.—BELL'S *Commerce of Bengal*, and private communications.

The fishery of chanks used to be monopolized by government, who formerly let the banks for from £3000 to £4000 a year. But of late years the fishery, partly from the poaching of the fishermen of the contiguous coasts, and partly from a decrease in the supply of chanks, declined so that the rental of the banks fell off to from £300 to £400 a year. And this smaller sum was not paid, as formerly, for a license to dive for live chanks, but for permission to dig up the dead shells along the shores of the Gulf of Manaar. Under these circumstances government have wisely abandoned the chank monopoly, which, without being of any value in a financial point of view, obstructed the employment of the inhabitants on the shores of the Gulf.—See the valuable Report of Sir J. E. TENNENT, p. 55, of *Papers on Ceylon*, presented to Parliament in 1848.

Charcoal (Fr. *Charbon de bois*; Ger. *Reine Kohle*; It. *Carbone di legna*; Sp. *Carbon de lena*; Lat. *Carbo ligni*), a sort of artificial coal, consisting of wood burned with as little exposure to the action of the air as possible. "It was customary among the ancients to *char* the outside of those stakes which were to be driven into the ground or placed in water, in order to preserve the wood from spoiling. New-made charcoal, by being rolled up in clothes which have contracted a disagreeable odor, effectually destroys it. When boiled with meat beginning to putrefy, it takes away the bad taint; it is, perhaps, the best tooth-powder known. When putrid water at sea is mixed with about one-ninth of its weight of charcoal powder, it is rendered quite fresh; and a much smaller quantity of charcoal will serve, if the precaution be taken to add a little sulphuric acid previously to the water. If the water casks be charred before they are filled with water, the liquor remains good in them for years; this precaution ought always to be taken for long sea voyages. The same precaution, when attended to for wine-casks, will be found very much to improve the quality of the wine."—THOMSON'S *Chemistry*. Common charcoal intended merely for fuel is prepared by cutting pieces of wood from one to three inches in diameter into lengths of from one to three feet, forming them into a conical pile, and covering them with turf or clay; leaving two or three small holes close to the ground for lighting the wood, and boring through the turf in the upper part of the cone, a few other small holes for the escape of the smoke. The pile being lighted at the several holes along the bottom, continues burning with a slow smouldering flame for a week or two, and is allowed to cool before

the turf is removed. In the case of very high winds, the holes to the windward are stopped, to prevent combustion from going on with too great rapidity. Charcoal obtained by distilling beach-wood, log-wood, willow, and other woods which are free from resin, is called *cylinder charcoal*. The charcoal employed in the manufacture of gunpowder is now always so prepared.

Charge d'Affaires. The third or lowest class of foreign ministers, according to the regulations adopted at the Congress of Vienna.

Chariots. The invention of chariots and the manner of harnessing horses to draw them, is ascribed to Erichthonius of Athens, 1486 B.C. Chariot-racing was one of the exercises of Greece. The chariot of the Ethiopian officer, mentioned in *Acts* vii. 27, 28, 31, was, it is supposed, something in the form of our modern chaise with four wheels. Cæsar relates that Cassibelanus, after dismissing all his other forces, retained no fewer than 4000 war chariots. Those of the ancients were like the modern phaetons, and drawn by one horse. —Haydn.

Charleston, city, port of entry, and capital of Charleston district, South Carolina. It is the metropolis of the State, and the twelfth city in population in the United States. Situated in 32° 46′ 33″ N. lat., and 79° 55′ 38″ W. long. from Greenwich, England; 2° 56′ 3″ W. long. from Washington; 124 miles southsoutheast from Columbia; 110 miles from Savannah, Georgia; 165 miles from Wilmington, North Carolina; 547 miles from Washington; 587 miles from Baltimore; 684 miles from Philadelphia; 773 miles from New York, and 989 miles from Boston. The population in 1790 was 16,359; in 1800, 18,712; in 1810, 24,711; in 1820, 24,780; in 1830, 30,289; in 1840, 29,261; and in 1850, 42,985; to which may be properly added the inhabitants of the Neck, north of the city, but lying without the charter limits, which contains about 15,000 inhabitants. Charleston is on a peninsula, formed by the confluence of Ashley and Cooper Rivers, which unite immediately below the city, and form a spacious and convenient harbor, communicating with the ocean at Sullivan's Island, seven miles southeast of the city. The city is defended by Fort Pinckney, two miles below, and Fort Johnson, four miles; and by Fort Moultrie on Sullivan's Island. The city is divided into eight wards, and is built on ground but slightly elevated, being only about nine feet above the level of the harbor at high tides. It extends from Battery Point on the south to the city limits on the north, a distance of three miles, and at an average width of one and a quarter mile. Meeting Street, the principal street, is sixty feet wide, and extends for a distance of three miles nearly in a direct line north; the cross-streets run nearly parallel to each other, and at right angles to Meeting Street, and extend from east to west, and from Ashley to Cooper Rivers. The houses built within a few years are of brick; none are now allowed to be constructed but of this material or of stone. The wooden houses are generally kept well painted, and most of them have piazzas extending to the roof, tastefully arranged with vines and creepers. Those in the suburbs are surrounded by gardens, planted with orange, peach, and other ornamental and useful trees, and a profusion of vines and shrubbery.

Charleston is a great mart for cotton, rice, and tobacco; and rice especially, as it is the heart of the rice-growing region, forms the great staple, of which it exports 125,000 tierces annually. There is a line of steamers with New York weekly, a line with Baltimore and Philadelphia, and also with Havana and Cuba. Tonnage of the port in 1852, 42,658 tons. The light-house at the entrance of Charleston harbor is on Light-house Island, and west of the ship channel. Lat. 32° 41′ 54″ N., long. 79° 32′ 30″ W. from Greenwich. The tower is 102 feet high, shows a revolving light elevated 125 feet above the surface of the sea, and is visible for a distance of 16½ nautical miles. There is also a beacon, which with the light is used as a range to cross the main bar, and two others, the Morris Island and Sullivan's Island beacons. By its being the port of an extensive system of railroads, it drains supplies from a wide range of territory; besides almost the entire State of South Carolina, it comprises a large portion of North Carolina, Georgia, and of East Tennessee. Charleston was first settled in 1680. A colony of French refugees, exiled in 1690, in consequence of the revocation of the edict of Nantes, fled to South Carolina, and a portion of them settled in Charleston, from whom some of its most respectable inhabitants have descended. At the close of the year 1779 the city was captured by the British, who held it until the following May.

Export Trade of Charleston.

Exports of Cotton.

Places.	1854. Sea Island.	1854. Upland.	1855. Sea Island.	1855. Upland.
	Bales.	Bales.	Bales.	Bales.
To Great Britain	14,186	148,784	14,830	189,572
To France	3,966	37,279	4,150	66,506
To North of Europe	2	12,639	....	13,700
To South of Europe	....	18,191	....	27,020
Total to foreign ports	18,154	217,603	18,680	296,798
To Boston	391	16,321	129	12,065
To Rhode Island, etc	....	498	....	911
To New York	6,140	148,438	5,651	157,106
To Philadelphia	81	12,934	....	19,118
To Baltimore & Norfolk	....	12,687	....	9,151
To other U. States ports	....	102	....	102
Total to coastwise ports	6,612	190,675	5,771	196,453
Total to foreign ports	18,154	217,603	18,680	296,798
Grand total	24,766	408,278	24,451	495,251

Exports of Rice.

Places.	1854.	1855.	Rough Rice. 1854.	Rough Rice. 1855.
	Bushels.	Bushels.	Bushels.	Bushels.
To British ports	7,204	2,691	16,539	41,749
To France	7,192	2,247	15,122	....
To North of Europe	9,740	3,365	154,284	24,326
To West Indies	22,152	17,657	100	....
Total to foreign ports	46,278	25,960	264,045	66,066
To Boston	6,766	4,383	....	....
To New York	41,050	82,545	43,585	6,502
To Philadelphia	4,785	5,767	....	....
To Baltimore & Norfolk	10,197	7,512	....	....
To New Orleans	16,176	17,142	....	....
To other U. States ports	547	236	15,634	500
Total to coastwise ports	79,521	67,585	59,019	7,002
Total to foreign ports	46,278	25,960	264,045	66,066
Grand total	125,799	93,545	323,064	73,068

Exports of Lumber.

Places.	1854. Feet.	1855. Feet.
To Great Britain	153,404	669,542
To France	330,716	1,143,382
To North of Europe	648,472	467,305
To South of Europe	1,265,402	3,926,771
To West Indies etc	3,526,651	2,025,653
Total to foreign ports	6,730,645	7,538,653
To Boston	4,190,779	1,633,466
To Rhode Island, etc	4,846,103	6,405,655
To New York	1,428,261	1,135,198
To Philadelphia	2,993,416	5,555,205
To Baltimore and Norfolk	2,799,869	2,577,531
To other United States ports	855,977	1,226,709
Total to coastwise ports	17,114,005	16,513,764
Total to foreign ports	6,730,645	7,538,653
Grand total	23,844,650	23,852,417

—Hunt's *Merchants' Magazine.*

Port.—Charleston harbor is spacious and convenient; but the entrance to it is incommoded by a range of sand banks, stretching from Sullivan's Island on the north to Folly Island on the south, about 2½ leagues. There are several channels through these banks, but only three, the middle or direct channel, the ship channel, and Lawford channel, between the latter and the main land, that ought to be attempted by ships of considerable burden. The entrance to the ship channel is in lat. 32° 40′. The depth of water on the shallowest part of the bar at ebb-tide is 12 feet, and at flood-tide from

17 to 18 feet; while the depth in the middle channel at low water does not exceed 9 feet, and in Lawford channel it does not exceed 10 or 11 feet. A light-house has been erected on the south point of Light-house Island, bearing from the middle of the bar of the ship channel northwest by west half west. It is 80 feet high, having a revolving light, alternately brilliant and obscure, the period of obscuration being double that of brilliancy; but on approaching the light, the latter gains upon the former, and within 1½ league it is never wholly dark. The light may be seen in fine weather at from 3 to 4 leagues off. After getting into the channel, which is marked by the breakers and buoys on each side, the proper course for a ship to steer is to bring the light-house to bear northwest by west, and stand direct for it till you get within the banks, when the course is north by west. But it is unnecessary to enter into further details on these points, as all ships entering Charleston harbor are bound, provided they are hailed by a licensed pilot off the bar, to pay him full pilotage fees, whether they accept his services or not. In point of fact, however, they are always accepted; for the shifting of the sands, the influence of the tides, etc., render the entrance so difficult to those not perfectly familiar with it, that even the packet ships that sail regularly to and from New York uniformly heave to without the bar for a pilot.—See *Plan of Charleston Harbor*, reduced from the original survey of Major H. Bache.

Ships usually moor alongside quays or wharfs, where they are in perfect safety.

Shipping Charges.—The charges of a public nature paid by ships entering this port differ but little in amount on a native and a foreign ship. On a vessel supposed to be of 300 tons burden, entering, unloading, taking on board a mixed cargo and clearing out, they would be as under:

	$ Cts.	£ s.	d.
Fee on entry at the custom-house.....	2 60 or	0 11	1½
Surveyor's fee on a foreign ship	5 00 "	1 1	4½
Surveyor's fee on a native ship	3 00 "	0 12	5½
Harbor-master's fee	2 00 "	0 8	6½
Portwarden's survey, when required.....	10 00 "	2 2	8½
Fees, on clearance at the custom-house, of a native ship	3 50 "	0 14	11½
Ditto, of a foreign ship	2 70 "	0 11	6½
Pilotage inward and outward, supposing the ship to draw 14 feet of water.....	50 00 "	10 13	6½
Wharfage per diem	1 00 "	0 4	8½

The difference in the fees on the clearance at the custom-house of a native and a foreign ship is owing to the former being obliged to give certain bonds which are not required of the latter.

The greater or smaller tonnage of the ship makes no difference on any of the above charges except that of pilotage, which is in proportion to her draught of water, and is the same whether for a foreign or a native ship.

Rates of Commission.—The rates of commission or factorage usually charged and allowed at Charleston on transacting different sorts of business, are as follows, viz.:

For selling domestic produce, 2½ per cent.

For selling foreign merchandise, 5 per cent.

For guaranteeing either of these sales, 2½ per cent. additional is commonly allowed.

For purchasing with funds in hand, or drawing domestic bills for reimbursement, 2½ per cent.

For purchasing goods and drawing foreign bills for reimbursement, 5 per cent. is charged.

For the sale of real or personal estate the regular charge is 5 per cent.; but where the property to be sold is of any considerable value, the parties in general enter into an agreement beforehand, and a much lower rate of commission is allowed.—*See* SOUTH CAROLINA.

Chart, or **Sea-chart**, a hydrographical map, or a projection of some part of the earth's superficies in *plano*, for the use of navigators. Charts differ very considerably from geographical or land-maps, which are of no use in navigation. Nor are sea-charts all of the same kind; some being what are called plane charts, others Mercator charts, and others globular charts. *Plane Chart* is a representation of some part of the superficies of the terraqueous globe, in which the meridians are supposed parallel to each other, the parallels of latitude at equal distances, and consequently the degrees of latitude and longitude every where equal to each other. *Mercator's Chart* is that where the meridians are straight lines, parallel to each other, and equidistant; the parallels also straight lines, and parallel to each other; but the distance between them increasing from the equinoctial toward either pole, in the ratio of the secant of the latitude to the radius. *Globular Chart*, a meridional projection, in which the distance of the eye from the plane of the meridian, upon which the projection is made, is supposed to be equal to the sine of the angle 45°. This projection comes the nearest of all to the nature of the globe, because the meridians are placed at equal distances; the parallels also are nearly equidistant, and consequently the several parts of the earth have their proper proportion of magnitude, distance, and situation, nearly the same indeed as on the globe itself. *Hydrographic Charts*, sheets of large paper on which several parts of the land and sea are described, with their respective coasts, harbors, sounds, flats, rocks, shelves, sands, etc., together with the longitude and latitude of each place, and the points of the compass. *Selenographic Charts* represent the spots, appearances, and maculæ of the moon. *Topographic Charts*, draughts of small parts of the earth, or of particular places. Anaximander, of Miletus, was the inventor of geographical and celestial charts, about 750 B.C. Modern sea-charts were brought to England by Bartholomew Columbus, with a view to illustrate his brother's theory respecting a Western Continent, 1489. Mercator's chart, in which the world is taken as a plane, was drawn 1556.—E. B.

Charter-party, the name given to a contract in writing between the owner or master of a ship and the freighter, by which the former hires or lets the ship, or a part of the ship, under certain specified conditions, for the conveyance of the goods of the freighter to some particular place or places. Generally, however, a charter-party is a contract for the use of the whole ship: it is in commercial law what an indenture is at common law.—*See* AFFREIGHTMENT.

No precise form of words, or set of stipulations, is requisite in a charter-party. The forms subjoined to this article are those most commonly in use; but these may, and, indeed, in many cases must, be varied, to suit the views and intentions of the parties. A charter-party is generally under seal; but sometimes a printed or written instrument is signed by the parties, called a *memorandum of a charter-party*; and this, if a formal charter-party be not afterward executed, is binding. The stamp in either case is the same. Charter-parties, when ships are let or hired at the place of the owners' residence, are generally executed by them, or some of them; but when the ship is in a foreign port, it must necessarily be executed by the master, and the merchant or his agent, unless the owners have an agent in such port, having proper authority to act for them in such matters. A charter-party made by the master in his name, when he is in a foreign port in the usual course of the ship's employment, and therefore under circumstances which do not afford evidence of fraud; or when it is made by him at home, under circumstances which afford evidence of the expressed or implied assent of the owners, is binding upon the latter. But according to the law of England, no *direct* action can be maintained upon the instrument itself against the owners, unless it be signed and sealed by them, or unless they authorize the master (or agent, as the case may be) to enter into the contract, and unless it be distinctly expressed in the charter-party that he acts only as agent. When a ship is chartered by several owners to several persons, the charter-party should be

executed by each, or they will not be liable to an action for non-performance. But if the charter-party be not expressed to be made between the parties, but runs thus: "This charter-party indented, witnesseth, that C., master of the ship W., with consent of A. and B., the owners thereof, lets the ship to freight to E. and F.," and the instrument contains covenants by E. and F. to and with A. and B.; in this case A. and B. may bring an action upon the covenants expressed to be made with them; but unless they seal the deed, they can not be sued upon it. This, therefore, is a very proper form. The general rule of law adopted in the construction of this, as of other mercantile instruments, is, that the interpretation should be liberal, agreeable to the real intention of the parties, and conformable to the usage of trade in general, and of the particular trade to which the contract relates. The charter-party usually expresses the burden of the ship; and by the famous French Ordinance of 1681, it is required to do so. According to Molloy (book ii. c. 4, § 8), if a ship be freighted by the ton, and found of less burden than expressed, the payment shall be only for the real burden; and if a ship be freighted for 200 tons, or *thereabout*, the addition of thereabout (says the same author) is commonly reduced to *five* tons, more or less; but it is now usual to say so many tons "register measurement." The usual covenant that the ship shall be seaworthy, and in a condition to carry the goods, binds the owners to prepare and complete every thing to commence and fulfill the voyage. But though the charter-party contained no such covenant, the owner of the vessel would be, at common law, bound, as a *carrier*, to take care that the ship should be fit to perform the voyage; and even though he should give notice, limiting his responsibility from losses occasioned to any cargo put on board his vessel, unless such loss should arise from want of ordinary care, etc., he would be liable if his ship were not sea-worthy.—*See* SEA-WORTHY.

In all maritime transactions expedition is of the utmost consequence; for even by a short delay the object or season of a voyage may be lost; and therefore, if either party be not ready by the time appointed for the loading of the ship, the other may seek another ship or cargo, and bring an action to recover the damages he has sustained. The manner in which the owner is to lade the cargo is, for the most part, regulated by the custom and usage of the place where he is to lade it, unless there be any express stipulation in the charter-party with respect to it. Generally, however, the owner is bound to arrange the different articles of the cargo in the most proper manner, and to take the greatest care of them. If a cask be accidentally staved in letting it down into the hold of the ship, the master must answer for the loss. If the owner covenants to load a full and complete cargo, the master must take as much on board as he can do with safety, and without injury to the vessel. The master must not take on board any contraband goods, whereby the ship or cargo may be liable to forfeiture and detention; nor must he take on board any false or colorable papers; but he must take and keep on board all the papers and documents required for the protection and manifestation of the ship and cargo by the law of the countries from and to which the ship is bound, by the law of nations in general, or by any treaties between particular states. If the master receive goods at the quay or beach, or send his boat for them, his responsibility commences with the *receipt* in the port of London. With respects to goods intended to be sent coastwise, it has been held that the chief responsibility of the wharfinger ceases by the delivery of them to the mate of the vessel *upon the wharf*. As soon as he receives the goods, the master must provide adequate means for their protection and security; for even if the crew be overpowered by a superior force, and the goods taken while the ship is in a port or river within the country, the master and owners are liable for the loss, though they may have committed neither fraud nor fault. This may seem a harsh rule; but it is necessary, to put down attempts at collusive or fraudulent combinations. The master must, according to the terms of the charter-party, commence the voyage without delay, as soon as the weather is favorable, but not otherwise.

Sometimes it is covenanted and agreed upon between the parties that a specified number of days shall be allowed for loading and unloading, and that it shall be lawful for the freighter to detain the vessel a further specified time, on payment of a daily sum as *demurrage*.—*See* DEMURRAGE. If the vessel be detained beyond both periods, the freighter is liable to an action on the contract. The rate of demurrage mentioned in the charter-party will, in general, be the measure of the damages to be paid; but it is not the absolute or necessary measure; more or less may be payable, as justice may require, regard being had to the expense and loss incurred by the owner. When the time is thus expressly ascertained and limited by the terms of the contract, the freighter is liable to an action for damages if the thing be not done within the time, *although this may not be attributable to any fault or omission on his part*; for he has engaged that it shall be done.—ABBOTT *on the Law of Shipping*, part iii. c. 1. If there has been any undertaking or warranty to sail with convoy, the vessel must repair to the place of rendezvous for that purpose; and if the master neglect to proceed with convoy, he will be answerable for all losses that may arise from the want of it. The owners or master should sail with the ship for the place of her destination with all due diligence, and by the usual or shortest course, unless in cases of convoy, which the master must follow as far as possible. Sometimes the course is pointed out in the charter-party. A *deviation* from the usual course may be justified for the purpose of repairs, or for avoiding an enemy or the perils of the seas, as well as by the sickness of the master or mariners, and the mutiny of the crew. By an exception in the charter-party, not to be liable for injuries arising from the act of God and the king's enemies, the owner or master is not responsible for any injury arising from the sea or the winds, unless it was in his power to prevent it, or it was occasioned by his imprudence or gross neglect. "The question," said Lord Mansfield, in an action brought by the East India Company, "is, whether the owners are to pay for the damage occasioned by the storm, the act of God; and this must be determined by the intention of the parties and the nature of the contract. It is a charter of freight. The owners let their ships to hire, and there never was an idea that they insure the cargo against the perils of the sea. What are the obligations of the owners which arise out of the fair construction of the charter-party? Why, that they shall be liable for damages incurred by their own fault or that of their servants, as from defects in the ship, or improper stowage, etc. If they were liable for damages occasioned by storms, they would become insurers." The House of Lords confirmed this doctrine by deciding (20th of May, 1788) that the owner is not liable to make satisfaction for damage done to goods by storm. The charterer of a ship may lade it either with his own goods, or, if he have not sufficient, may take in the goods of other persons, or (if not prevented by a clause to that effect in the charter-party) he may wholly underlet the ship to another.—For further details, *see* ABBOT on the *Law of Shipping*, part iii. c. 1; CHITTY'S *Commercial Law*, vol. iii. c. 9, etc.; and the articles BILL OF LADING, FREIGHT, and MASTER.

Forms of Charter-parties.—The following is one of the most usual forms of a charter-party:

This charter-party, indented, made, etc., between A. B., etc., mariner, master, and owner of the good ship or vessel, called, etc., now riding at anchor, etc., of the burden of 200 tons, or thereabout, of the one part, and C. D. of, etc., merchant, of the other part, witnesseth, that the said A. B., for the consid-

eration hereinafter mentioned, hath granted, and to freight letten, and by these presents doth grant, and to freight let, unto the said C. D., his executors, administrators, and assigns, the whole tonnage of the hold, stern-sheets, and half-deck of the said ship or vessel, called, etc., from the port of London, to, etc., in a voyage to be made by the said A. B. with the said ship, in manner hereinafter mentioned, (that is to say,) to sail with the first fair wind and weather that shall happen after, etc., next, from the port of London with the goods and merchandise of the said C. D., his factors or assigns, on board, to, etc., aforesaid (the act of God, the king's enemies, fire, and all and every other dangers and accidents of the seas, rivers, and navigation, of whatever nature and kind, in so far as ships are liable thereto, during the said voyage, always excepted), and there unlade and make discharge of the said goods and merchandises; and also shall there take into and on board the said ship again the goods and merchandises of the said C. D., his factors or assigns, and shall then return to the port of London with the said goods, in the space of, etc., limited for the end of the said voyage. In consideration whereof, the said C. D., for himself, his executors, and administrators, doth covenant, promi . and grant, to and with the said A. B., his executors, administrators, or assigns, by these presents, that the said C. D., his executors, administrators, factors, or assigns, shall and will well and truly pay, or cause to be paid, unto the said A. B., his executors, administrators, or assigns, for the freight of the said ship and goods, the sum of, etc. (or so much per ton), within twenty-one days after the said ship arrived, and goods returned, and discharged at the port of London aforesaid, for the end of the said voyage; and also shall and will pay for demurrage (if any shall be by default of him, the said C. D., his factors or assigns) the sum of, etc., per day, daily, and every day, as the same shall grow due. And the said A. B., for himself, his executors and administrators, doth covenant, promise, and grant, to and with the said C. D., his executors, administrators, and assigns, by these presents, that the said ship or vessel shall be ready at the port of London to take in goods by the said C. D., on or before, etc., next coming. And the said C. D., for himself, his, etc., doth covenant and promise, within ten days after the said ship or vessel shall be thus ready, to have his goods on board the said ship, to proceed on in the said voyage; and also, on arrival of the said ship at, etc., within, etc., days to have his goods ready to put on board the said ship, to return on the s id voyage. And the said A. B., for himself, his executors a d administrators, doth further covenant and grant, to and w th the said C. D., his executors, administrators, and assigns that the said ship or vessel now is, and at all times during the voyage shall be, to the best endeavors of him, the said A. B., his executors and administrators, and at his and their own proper costs and charges, in all things made and kept stiff, staunch, strong, well-appareled, furnished, and provided, as well with men and mariners sufficient and able to sail, guide, and govern the said ship, as with all manner of rigging, boats, tackle, and apparel, furniture, provision, and appurtenances, fitting and necessary for the said men and mariners, and for the said ship during the voyage aforesaid. In witness, etc.

The great variety of circumstances under which different voyages are made produce a corresponding diversity in charter-parties. The charter-party of which the following is a copy affords a good example of the more complex species of these instruments.

It is this day mutually agreed between Mr. T. B. Rann, owner of the good ship or vessel called the *Mermaid*, William Henniker, master, of the measurement of 472 tons, or thereabout, now in the River Thames, and Mr. David Thomson, of the firm of Messrs. Thomson, Passmore, & Thomson, of Mauritius, merchants, that the said ship, being tight, staunch, and strong, and every way fitted for the voyage, shall, with all convenient speed, sail and proceed to Calcutta, with leave to take convicts out to New South Wales, and from thence troops, merchandise, or passengers, to the afore-mentioned port of Calcutta, with leave to touch at Madras on her way thither, if required on owner's account, or so near thereunto as she may safely get, and there load, from the factors of the said merchants at Calcutta, a full and complete cargo of rice, or any other lawful goods which the charterer engages to ship, and proceed with the same to Port Louis, in the Isle of France, and deliver the same free of freight; afterward load there a full and complete cargo of sugar in bags, or other lawful merchandise of as favorable tonnage, which the charterer engages to ship, not exceeding what she can reasonably stow and carry over and above her tackle, apparel, provisions, and furniture; and, being so loaded, shall therewith proceed to London, or so near thereunto as she may safely get, and deliver the same on being paid freight, viz., for such quantity of sugar equal to the actual quantity of rice, or other goods, that may be shipped at Calcutta, at the rate of £5 12s. 6d. per ton of 20 cwt. net, shipped there; and should the vessel deliver more net sugar in the port of London than the quantity of rice, or other goods, actually shipped in Calcutta, the owners to be paid on the excess at the regular current rate of freight for sugar which other vessels, loading at the same time at Port Louis, receive; the tonnage of the rice, wheat, or grain, to be reckoned at 20 cwt. net per ton; that of other goods at the usual measurement (the act of God, the king's enemies, fire, and all and every other dangers and accidents of the seas, rivers, and navigation, of whatever nature and kind soever, during the said voyage, always excepted). The freight to be paid on unloading and right delivery of the cargo, as is customary in the port of London. Ninety running days are to be allowed the said merchant (if the ship is not sooner dispatched) for loading the ship at Calcutta, discharging the cargo at Port Louis, and loading the cargo there; the said lay days to commence on the vessel being ready to receive cargo, the master giving notice in writing of the same at Calcutta, and to continue during the loading there; and from the time of her arrival at Port Louis, and being ready to discharge, till the final loading at that port, and to be discharged in the port of London with all possible dispatch; and 20 days on demurrage over and above the said laying days, at £12 per day. Penalty for non-performance of this agreement, £4000. The cargo to be brought to and taken from alongside at the expense and risk of the merchants. The necessary cash for the disbursements of the vessel at Calcutta, not exceeding £350, to be advanced by the charterer's agents; they taking the master's drafts on the owner for the same at the regular current rate of exchange, and at three months' sight; and if the said bills be not regularly accepted and paid when due, the same to be deducted from the freight payable by this charter-party. The vessel to be disbursed at Port Louis by the chartering agents; sum not to exceed £300, free of commission; and the amount to be deducted from the freight at the final settlement at the port of London. Captain not to ship goods without consent. In the event of the ship being prevented, by damage or any other cause, reaching the Mauritius on or before the 1st day of January, 1843, the charterer or his agents shall be at liberty to employ the vessel for one or two voyages to Calcutta, at the rate of £2 per ton of rice, or other goods, delivered at Mauritius. Fifty running days, to load and discharge, to be allowed on each voyage; it being understood that the charterer or his agents shall load the ship, as before agreed, either at the end of the first or second voyage, as the case may be. The freight on the intermediate voyages (if any) to be paid on delivery of the cargo, in cash, or by bills on London at usance, at the option of the master. The vessel to be addressed, both at Calcutta and Isle of France, to the agents of the charterer. In witness whereof, the said parties have hereunto set their hands and seals, at London, the 2d day of December, 1841.

Signed, sealed, and deliv- } Thos. B. Rann, (L.s.)
ered, in the presence of } D. Thomson, (L.s.)
(Signed) E. Forsyth.

Chase. In nautical language, pursuit; also the vessel pursued.

Chaser. The vessel pursuing; also guns at the head and stern for firing when in chase.

Chay, or Choy Root, the roots of a small biennial, rarely triennial, plant, growing spontaneously in light, dry, sandy ground near the sea; and extensively cultivated, especially on the coast of Coromandel. The cultivated roots are very slender, and from one to two feet in length, with a few lateral fibres; but the wild are shorter, and supposed to yield one-fourth part more of coloring matter, and of a better quality. The roots are employed to dye the durable reds for which the Indian cotton yarn and chintzes have been long famous, and which can only be equaled by the Turkey red.

Chay root forms a considerable article of export from Ceylon. Only a particular set of people are allowed to dig it. It used to be all bought up by government, who paid the diggers a fixed price of 75 or 80 rix-dollars a candy, and sold it for exportation at about 175 rix-dollars.—Bertolacci's *Ceylon*, p. 270.

This root has been imported into Europe, but with no success. Dr. Bancroft suspects it may be injured by the long voyage; but he adds, that it can produce no effect which may not be more cheaply produced from madder. It is a very bulky article, and is con-

sequently burdened with a very heavy freight.—*Permanent Colors*, vol. ii. p. 282–303.

Checks, Cheques, or Drafts, are orders addressed to some person, generally a banker, directing him to pay the sum specified in the check to the person named in it, or bearer, on demand.

In point of form, checks nearly resemble bills of exchange. They are assignable by delivery only; and are payable instantly on presentment, without any days of grace being allowed. But by the custom of some places, a banker has until five of the afternoon of the day on which a check is presented for payment, to return it; so that where a check was returned before five, with a memorandum of "canceled by mistake" written under it, it was held a refusal to pay. If a check upon a banker be lodged with another banker, a presentment by the latter at the clearing-house is sufficient. Checks are usually taken conditionally as cash; for unless an express stipulation be made to the contrary, if they be presented in due time and not paid, they are not a payment. It is difficult to define what is the due or reasonable time within which checks, notes, or bills should be presented. A man, as Lord Ellenborough has observed, is not obliged to neglect all other business that he may immediately present them; nevertheless, it is the safest plan to present them without any avoidable delay; and if received in the place where payable, they had better be presented that day, or next at farthest. If a check be not presented within a reasonable time, the party on whom it is drawn will be justified in refusing to pay it; and the holder will lose his recourse upon the drawer.—CHITTY *on Commercial Law*, vol. iii. p. 591; WOOLRYCH *on Commercial Law*. *See* BILLS OF EXCHANGE.

Cheese (Germ. *Käse*; Du. *Kaas*; Fr. *Fromage*; It. *Formaggio, Cacio*; Sp. *Queso*; Russ. *Sur*; Lat. *Caseus*). The curd of milk compressed into solid masses of different sizes and shapes; and, when intended for keeping, salted and dried, and sometimes colored and flavored. It is almost always made from the milk of cows, but occasionally from that of ewes, and sometimes, though very rarely, from the milk of goats. The following are the principal British cheeses: *Brickbat*, formed of new milk and cream, chiefly in Wiltshire, in the autumn, and sold in little square pieces about the size of brickbats. *Cheddar*, round thick cheeses, weighing about 150 or 200 lbs., with a spongy appearance, and the eyes or vesicles filled with a rich oil. *Cheshire*, large, round, thick cheeses, commonly weighing from 100 to 200 pounds each; solid, homogeneous, and dry and friable rather than viscid. They are made from the whole of the milk and cream; the morning's milk being mixed with that of the preceding evening previously warmed. *Derbyshire* is a small, white, rich cheese. *Dunlop*, originally made in Ayrshire, but now general throughout Scotland, is large, round, white, buttery, and weighs from 30 to 60 pounds. This and the Derbyshire cheese are very much alike in form, color, and flavor. *Gloucester*, large, round, and mild; buttery rather than friable. There are two kinds, the single and double Gloucester; the single is made of the milk deprived of about half the cream, and the double of the milk with the whole of the cream. *Green* or *Sage* cheese may be made of any of the other kinds, by mixing the milk before it has curdled with a decoction of sage leaves, among which some put a few flowers of marigold and leaves of parsley. In the Highlands of Scotland the leaves or seeds of lovage are added to the sage, which communicate a very strong flavor. *Lincolnshire* is made of new milk and cream; it is quite soft, not above two inches thick, and will not keep more than two or three months. *Norfolk*, the weight is generally from 30 to 50 pounds; the curd is dyed yellow with arnotto or saffron; and though not a rich cheese, it is considered a good keeper. *Soft* or *Slip-coat* is a small, soft, rich cheese, which might almost be mistaken for butter, if it were not white, and which must be eaten in a week or two after making. *Stilton*, so named from the town in Huntingdonshire where it was first brought into notice, but which is made principally in Leicestershire. It is solid, rich, buttery, and white; and, unlike all the other cheeses which have been mentioned, it is twice as high as it is broad. It is much improved by keeping, and is seldom used before it is two years old. It is the dearest of all English cheeses, the price being generally to that of Chester as 2 to 1, or 2 to 1½. In order to induce premature decay, and the consequent appearance of age in these cheeses, it is said the makers sometimes bury them in masses of fermenting straw. *Cottenham*, so named from a town in Cambridgeshire: it differs chiefly from the cream cheese of Stilton in being flat, broader, and superiorly flavored. The flavor is said to be owing to the rich grasses which grow on the fens. *Suffolk*, or *skim-milk*, is round and thin, weighing from 25 to 30 pounds each, and is the best-keeping cheese made in England. *Wiltshire* resembles the Cheshire; but is poorer, and of inferior flavor. It is apt to become scarfy, to prevent which it is generally coated over with red paint. *Yorkshire*, or *Cream Cheese*, is the same as the slip-coat cheese, already mentioned.

European Cheeses.—The most remarkable of these are the following: *Parmesan* is chiefly made at Parma and other places in Lombardy, of the curd of skimmed milk hardened by heat. Its flavor is said to be owing to the rich pastures of that part of Italy, where all plants, from the greater quantity of bright sunshine than in Britain, have doubtless their aromatic properties greatly increased. *Swiss cheese* is of various kinds; but the chief sorts are the Gruyere or Jura cheese, and Schabzieger or green cheese; the last is flavored with the seeds and leaves of the melilot (*Melilotis officinalis*). *German cheeses* are of different kinds; but none are celebrated, unless we except that of Westphalia, which is made up into round balls or short cylinders, under a pound weight each. The peculiar flavor which this cheese acquires arises from the curd being allowed to become putrid before it is compressed. In Holland very good cheese is made, particularly the Edam and Gouda cheeses: the former is very salt, and keeps well at sea. In many parts of the Continent, and even in the interior of Poland and Russia, there are imitations of English cheese made; but what may be called the indigenous cheese of the Russian empire is nothing more than salted curd put into a bag and powerfully pressed, and taken to market as soon as it is made, in the same manner as butter is. In some places, instead of a press, the whey is forced out of the curd by putting it into a long cloth midway between the two ends, while a person at each end twists the cloth in an opposite direction, and thus wrings out the whey. In some miserable Russian villages the curd is exposed for sale in small lumps, retaining the marks of the fingers, which shows that no other pressure has been employed than what can be given with the hand. In France the Roquefort cheese is the most esteemed, and next that of Neufchatel. The former somewhat resembles Stilton, but is much inferior; and the latter is a cream cheese, seldom exceeding a quarter of a pound in weight.—*See* JOHNSTON'S *Lectures on Chemistry*.

Cheese, in the United States, except for local consumption, is manufactured principally in New York and Ohio. The New York Orange county cheese, when new, is equal to any of the mild cheeses; but it does not acquire by age that richness of flavor that English cheese does. The Ohio cheese is produced at a very low price, and is taking a rank among the important products of that agricultural State. The prairies of the West, affording wild grasses of great nutriment and fine flavor, are exceedingly well adapted for the production of cheese of good quality, and at a price that excludes foreign cheese from the market, except for epicurean tastes.

EXPORTS OF CHEESE FROM THE UNITED STATES.

Year ending June 30.	To Great Britain.	To other Places.	T
	Pounds.	Pounds.	Pounds.
1853	2,068,935	724,997	2,793,932
1854	5,322,864	1,681,110	7,003,974
1855	3,419,637	1,426,637	4,846,568
	$354,154	$159,880	$514,034

IMPORTS OF CHEESE INTO THE UNITED STATES.

Year ending June 30.	Pounds.	Value.
1853	874,949	$70,528
1854	909,416	93,152
1855	1,526,942	146,260

Fully one-half of these imports came from France. —*See* BUTTER.

Chemistry and **Distilling.** Introduced into Europe by the Spanish Moors about A.D. 1150; they had learned them from the African Moors, and these from the Egyptians. In Egypt they had, in very early ages, extracted salts from their bases, separated oils, and prepared vinegar and wine; and embalming was a kind of chemical process. The Chinese also claim an early acquaintance with chemistry; but the fathers of true chemical philosophy were, Bacon, Boyle, Hooke, Mayow, Newton, etc. The modern character of chemistry was formed under Beecher and Stahl, who perceived the connection of the atmosphere and the gases with the production of phenomena. Bergman and Scheele were contemporary with Priestley in England, and Lavoisier in France; then followed Thomson, Davy, and other distinguished men.—HAYDN.

Cherbourg, a commercial and fortified sea-port town of France, and nearly opposite the western extremity of the Isle of Wight, 16 miles east-south-east of Cape la Hague. Latitude of Fort Royal, 49° 40′ 3″ N., longitude 1° 35′ W. Population, 22,460. Its climate is remarkably mild. Its naval docks are cut out of solid rock; and it has a commercial harbor lined with stone quays. Its roadstead, defended by several large forts and batteries, is now one of the best in the Channel, being sheltered by a *digue,* or breakwater, 411 yards in length (or considerably more than twice as long as the Plymouth breakwater), begun under Louis XVI., and completed in 1810. Cherbourg has a maritime tribunal, a national academic society, commercial college, naval school, and museums; sugar and soda refineries, and tanneries; and an active trade in eggs, cattle, lard, butter, wine, and other produce, exported to England and the Channel Islands. It was the last place in Normandy resigned by the English. Charles X. embarked here with his family, on quitting France, August 16, 1830. The first French transatlantic steamer arrived at New York from Cherbourg, 8th July, 1847.

Cherries. They were brought from Pontus, to Lucullus, to Rome, about 70 B.C. Apricots from Epirus; peaches from Persia; the finest plums from Damascus and Armenia; pears and figs from Greece and Egypt; citrons from Media; and pomegranates from Carthage, 114 B.C. The cherry-tree was first planted in Britain, it is said, about A.D. 100. Fine kinds were brought from Flanders, and planted in Kent, and with such success that an orchard of thirty-two acres produced in one year £1000, A.D. 1540.

Cherry-tree (*Cerasus Virginiana*). The wild-cherry tree is one of the largest productions of the American forest. In the Atlantic as well as the Western States, this tree is known only by the name which we have adopted. It is more or less abundant as the soil and climate are more or less favorable to its growth, to which the extremes of heat and cold in the seasons, and of dryness and humidity in the soil, are alike unpropitious. It abounds in Illinois, in New York, and in Upper Canada; but it is nowhere more profusely multiplied nor more fully developed than beyond the mountains in the States of Ohio, Kentucky, and Tennessee. The perfect wood is of a dull, light red tint, which deepens with age. It is compact, fine-grained, and brilliant, and not liable to warp when perfectly seasoned. It is extensively employed by cabinet-makers for every species of furniture, and when chosen near the ramification of the trunk it rivals mahogany in beauty. This wood is generally preferred to the black walnut, whose dim complexion with time becomes nearly black. On the banks of the Ohio it is employed in ship-building, and the French of Illinois use it for the felloes of wheels.—BROWNE'S *Sylva Amer.*

Chesapeake Bay (Maryland), is 190 miles long, and from 7 to 20 broad, and generally 9 fathoms deep, being the largest bay in the United States. Its entrance is wholly in the State of Virginia, between Cape Charles on the north and Cape Henry on the south, which are about 12 or 15 miles apart. But the bay lies mostly in Maryland, dividing the State into two parts, called the Eastern and the Western Shore. It has several commodious harbors, and a safe and easy navigation. It receives the waters of the Potomac, Rappahannoc, and James rivers, which are all large and navigable; also of the Susquehanna and York rivers.

Chestnut (*Fagus castanea*), a forest tree growing abundantly in most parts of the southern countries of Europe. It is long-lived, grows to an immense size, and is very ornamental. The wood is hard and compact; when young, it is tough and flexible; but when old, it is brittle, and often shaky. The chestnut contains only a very small proportion of sap-wood; and hence the wood of young trees is found to be superior to even the oak in durability. It is doubtful whether the roof of Westminster Hall be of oak or chestnut, the two woods being, when old, very like each other, and having been formerly used almost indifferently in the construction of buildings. A good deal of chestnut has been planted in England within the last thirty years.—TREDGOLD'S *Principles of Carpentry.*

Chestnut (*Castanea Vesta*). The American chestnut does not venture beyond the 44th degree of latitude. It is found in New Hampshire, between the 43d and 44th degrees; but such is the severity of the winter, that it is less common than in Connecticut, New Jersey, and Pennsylvania. It is the most multiplied in the mountainous districts of the Carolinas and of Georgia, and abounds in the Cumberland Mountains and in East Tennessee. The coolness of the summer and the mildness of the winter in these regions are favorable to the chestnut; the face of the country, also, is perfectly adapted to a tree which prefers the sides of mountains, or their immediate vicinity, where the soil in general is gravelly, though deep enough to sustain its perfect development. It is a stranger in Vermont, the State of Maine, and a great part of New York, to the maritime parts of Virginia, to the Carolinas, Georgia, the Floridas, Louisiana, and as far as the mouth of the Ohio. The American chestnut sometimes attains the height of 70 or 80 feet, with a circumference of 15 or 16 feet. The wood is strong, elastic, and capable of enduring the succession of dryness and moisture. Its durability renders it especially valuable for posts, which should be made of trees less than ten inches in diameter, and charred before they are set in the earth. It is also used for rails, and is said to last more than fifty years. For shingles this wood is superior to any kind of oak, though it has the same defect of warping. It is not extensively used for staves, and its pores, like those of the red-oak, are so open, that it is proper only for dry wares. The chestnut is little esteemed for fuel, and is not much used; it is filled with air, and snaps when it burns. The coal is excellent.—BROWNE'S *Sylva Americana.*

Chestnuts (Fr. *Châtaigne*: Ger. *Kastanien*; It. *Castagne*; Sp. *Castañas*), the fruit of the chestnut-tree. In some parts of Europe they are frequently used as a substitute for bread, and form a large proportion of the food of the inhabitants. This is particularly the

case in the Limousin, in Corsica, and of several districts of Spain and Italy. The inhabitants of the Limousin are said to prepare them in a peculiar manner, which deprives them of their astringent and bitter properties. Chestnuts imported from Spain and Italy are frequently kiln-dried, to prevent their germination on the passage. In this country they are principally served up roasted at desserts.

Chetwert, or **Tschetwert,** a measure of corn in Russia, equal to 5·77 Imperial bushels; hence 100 chetwerts = 72·12 Imperial quarters.

Chicago, city and capital of Cook county, and the most commercial place in Illinois, 204 miles north-northeast from Springfield and 717 from Washington. The city was laid out in 1830, and lots first sold in 1831. Population in 1840, 4470; in 1850, 29,964; in 1852, 38,734; and in 1854, 55,000. It is beautifully situated at the terminus of the Michigan Central and Southern Railroad, on level ground, elevated about five feet above the lake, which secures it from ordinary floods, and extends on both sides of the river of the same name, between the junction of its north and south branches, and distant 1¾ mile from its entrance into Lake Michigan. The harbor has a depth of from twelve to fifteen feet of water, which makes it a commodious and safe haven; and it has been much improved artificially by the construction of piers which extend on each side of the entrance of the river for some distance into the lake, to prevent the accumulation of sand upon the bar. The light-house is on the south side of the harbor, and shows a fixed light on a tower 40 feet above the surface of the lake; and there is a beacon on the end of the pier. Numerous steamboats and vessels ply between this place and Buffalo, and the various intermediate places on the upper lakes. West of the city, toward the West Plains road, is a fertile prairie, which, for the first three or four miles, is elevated and dry. Along the north branch of the Chicago and the lake shore are extensive bodies of fine timber. White pine lumber is obtained from the regions about Green Bay and Grand River, in Michigan, and across the lake from St. Joseph's River. The city is a great shipping point for an immense and fertile region. The Illinois and Michigan Canal, which is 60 feet wide at the top, 6 feet deep, and 107 miles in length, including 5 miles of river navigation, through which is brought a large amount of produce from the south and southwest; and the railroads radiating from Chicago, add to the vast accumulation which is here shipped for the Atlantic sea-board. There are 10 steamers, 30 propellers, and 190 barks, brigs, schooners, and sloops, engaged in the Chicago trade. In 1836 the value of the exports was $1000; in 1840, $228,635; in 1845, $1,543,519; and in 1852, $12,000,000. The assessed value of real and personal estate in 1853 was $16,841,831. There are twelve trunk railroads now constructed and in process of construction, all centreing at Chicago, and measuring in the aggregate 2485 miles. Of this amount, 1725 miles will lie within the State of Illinois, and the remainder in Indiana, Michigan, and Wisconsin. Besides these trunk roads, there are several hundred miles of branches, all centreing toward Chicago. The trunk and branch roads reach the Mississippi River at ten different points from Galena south to Cairo. Chicago is supplied with the purest of water from the lake, is within a short distance of the most extensive coal fields to be found in Illinois, and is the natural outlet for the produce of one of the richest agricultural sections of the Union.—*See* LAKES, *commerce of.*

The lumber trade of Chicago is immense. During the year 1855 over *three hundred millions of feet* were received here. The following table will show the receipts for the past six years:

Year.	Feet received.	Year.	Feet received.
1850	100,546,779	1853	202,101,008
1851	125,056,467	1854	228,232,000
1852	147,816,232	1855	305,277,055

Flour and Grain received at Chicago for the Years 1854–'55.

Articles.	1854.	1855.
Flour, reduced to bushels of wheat	795,520	1,210,000
Wheat, bushels	3,070,880	7,660,326
Corn, bushels	7,478 443	8,489,066
Oats, bushels	4,194,188	2,890,922
Rye, bushels	85,600	68,520
Barley, bushels	200,000	150,000
Total	15,824,611	20,458,784
1854		15,824,611
Increase in 1855		4,634,173

The total value of articles of commerce received at Chicago in 1855 was nearly two hundred millions of dollars; viz.:

	Imports.	Exports.
By lake	$95,724,797 43	$34,783,726 32
By canal	7,417,769 80	80,913,167 07
By railroads	88,381,597 90	98,421,324 86
Total value	$191,524,165 13	$214,118,218 25

Chicago has grown more rapidly up to this time than any city in the world. In 1823 Major Long and party made a journey to examine the sources of the St. Peter's River, etc.; and in his account of the expedition writes as follows of Chicago:

"The village presents no cheering prospect, as, notwithstanding its antiquity, it consists of but few huts, inhabited by a miserable race of men, scarcely equal to the Indians from whom they are descended. Their log or bark houses are low, filthy, and disgusting, displaying not the least trace of comfort. Chicago is, perhaps, one of the oldest settlements in the Indian country; its name, derived from the Potawatomi language, signifies either a skunk or a wild onion; and either of these significations has occasionally been given for it. A fort is said to have formerly existed there. Mention is made of the place as having been visited in 1671 by Perot, who found 'Chicagou' to be the residence of a powerful chief of the Miamis. The number of trails centering all at this spot, and their apparent antiquity, indicate that this was probably for a long period the site of a large Indian village. As a place of business, it offers no inducement to the settler; for the whole annual amount of the trade of the lake did not exceed the cargo of five or six schooners, even at the time when the garrison received it supplies from Mackinaw. It is not impossible that at some distant day, when the banks of the Illinois shall have been covered with a dense population, and when the low prairies which extend between that river and Fort Wayne shall have acquired a population proportionate to the produce which they can yield, Chicago may become one of the points in the direct line of communication between the northern lakes and the Mississippi. But even the intercourse which will be carried on through this communication will, we think, at all times be a limited one; the dangers attending the navigation of the lake, and the scarcity of harbors along the shore, must ever prove a serious obstacle to the increase of the commercial importance of Chicago. The extent of the sand banks which are formed on the eastern and southern shores by the prevailing north and northwesterly winds, will likewise prevent any important works from being undertaken to improve the port of Chicago."

It is estimated that the city now (1857) contains 100,000 inhabitants, and does a larger trade in proportion to its size than any city in the Union. What better illustration can be given of the rapid growth of the West at this place?

The population for the years between 1850 and 1860 (the last four years being estimated) is as follows:

Years.	Population.	Years.	Population.
1851	33,000	1856	83,000
1852	40,000	1857	100,000
1853	48,000	1858	119,000
1854	58,000	1859	143,000
1855	69,000	1860	172,000

The following list embraces the trunk roads actually completed and in operation, with their branch and extension lines, centring in Chicago:

	Miles.
Chicago and Milwaukie	85
Racine and Mississippi	86
Chicago, St. Paul, and Fond du Lac	121
Milwaukie and Mississippi, Western Division	115
Galena and Chicago Union	121
Fox River Valley	33
Wisconsin Central	6
Beloit Branch	20
Beloit and Madison	17
Mineral Point	17
Galena (Fulton) Air Line	136
Chicago, Iowa, and Nebraska	13
Chicago, Burlington, and Quincy	210
Burlington and Missouri	30
Northern Cross	100
Hannibal and St. Joseph	50
Chicago and Rock Island	182
Mississippi and Missouri, 1st Division	15
" 3d "	15
Peoria and Bureau Valley	47
Peoria and Oquawka	143
Chicago, Alton, and St. Louis	283
Illinois Central	704
Pittsburgh, Fort Wayne, and Chicago	383
Michigan Southern and Northern Indiana	242
Cincinnati, Peru, and Chicago	28
Michigan Central	282
New Albany and Salem	284
11 trunk and 17 branch and extension lines	5076

Taking the portions of the above lines which lie in the State of Illinois, and adding the length of the different roads completed in the central portions of the State, we find that Illinois now contains *two thousand seven hundred and sixty-one miles of completed railway.* Five years ago there were only ninety-five miles. These facts show a most gratifying progress, of which every citizen of Illinois may well be proud.

GENERAL SUMMARY OF RAILROADS.

Total number of miles of railway centring in Chicago February 20, 1852	40
Total number of miles now completed and in operation	3,676
Increase in 1856	915
Total number to be completed in from five to eight years	6,929
Total number of miles of railway in the State of Illinois now in operation	2,761
Increase in 1856	351
(Only 15 miles were completed five years ago.)	
Increase in the State in five years (over 500 miles per year)	2,666
Total earnings of all the railways centring in Chicago for the year 1856	$17,343,242
(Five years ago they were only $40,000.)	
Increase in five years	17,303,242
Increase of 1853 over 1855	4,045,041
Total number of trains arriving and departing daily (midwinter), 104; adding 15 per cent. as soon as navigation opens	120
Population of Chicago in 1852	38,733
" Jan. 1, 1857, estimate (in June, 1855, it was 83,569)	110,000
Total receipts of grain in Chicago for the year 1855 bushels	20,487,953
Total receipts of grain for the year 1855 (increase in 1856 over 20 per cent.) bushels	24,674,824
Shipments of grain from the port of Chicago for the year 1856 bushels	21,583,221
Corn received in 1856 bushels	21,888,398
Wheat " " " bushels	9,392,365
Number of hogs alive and dressed received in Chicago for 1855-'56	308,519
Number shipped alive and dressed	170,831
Averaging the weight at only 200 lbs. and the price at $5 per hundred, the value of the hogs received would be	$3,585,880
Number of barrels of beef packed in 1856	33,058
Receipts of lumber at the port of Chicago for the year 1856 feet	456,675,000
Receipts of lead for the year 1856 lbs.	9,527,000
Now laid up in the port of Chicago, steamers and sail vessels	245
Total number of vessels arriving in Chicago for the year 1856	7,528
Total tonnage of vessels arriving in this port for the year 1856	1,545,379
Amount of imports received at the Chicago custom-house on foreign goods for the year 1856	$102,094
Capital invested in manufactures during the year 1856—showing an increase of $1,464,400 over 1855	$7,759,400
Number of hands employed—showing an increase over 1855 of 1833	10,573
Value of manufactured articles, showing an increase of $4,483,572	$15,515,000
Amount invested during the year 1856 in improvements, stores, dwellings, hotels, etc.	$5,708,000
Number of passengers carried west by four principal railways leading out of Chicago	639,666
Total number of passengers moved on all the roads centring in Chicago	3,350,000

The above facts and figures will be regarded with special satisfaction by the people of the Northwest generally. They show a healthy, but rapid and most astonishing progress. It may be doubted whether the history of the civilized world can furnish a parallel to the vigorous growth and rapid development of the country which has Chicago for its commercial metropolis. When it is remembered that twenty years ago it was not an incorporated city, and less than a quarter of a century since the Indians still had possession of the largest portion of this magnificent country, these facts, stubborn and incontestable though they be, seem more like the dreams of some vagrant imagination than sober matters of reality, which scores of men still among us have themselves seen and realized.

Twenty years ago Chicago was an insignificant town at the southern end of Lake Michigan, importing nearly all its produce from Western New York and Northern Ohio. Last year it shipped 21,583,221 bushels of grain, and the total receipts were over twenty-four and a half millions. Six years ago she had only a single railroad some twenty miles long entering the city; now there are 3676 miles completed and in operation, and the earnings of these lines for the last year amount to the enormous sum of $17,343,242. The increase of earnings during the year 1856 is over four mill' of dollars. More than a hundred trains of cars arrive and depart daily. The trade in lumber exceeds by far that of any other city in the world, amounting to 456,673,169 feet. Ten years ago the manufactures were in their infancy, and were scarcely worthy of commendation. In 1856 the capital invested amounted to $7,759,400, and the value of manufactured articles to more than *fifteen millions and a half of dollars.* Six years ago Chicago was reproached as being a city of wooden shanties; last year she invested in magnificent stores, many of them with superb marble and iron fronts, elegant palatial residences and other improvements, $5,708,624. And wonderful as has been the progress of the city, it has not been able to keep pace with the improvements of the country by which it is surrounded.

The statistics of the movement of population westward show that people enough found their homes west of Chicago during the year 1857 to form two entire States. Nor is this a movement of mere human bone and muscle; it is a concentration upon the rich rolling prairies and amid the beautiful groves of a vast host of active, vigorous, intelligent men, who plant schools and churches wherever they settle, and bring with them all the elements of an enterprising Christian civilization—a deep, controlling, ever-abiding reverence for liberty and for law. They are laying the foundations for an empire of whose wealth, intelligence, and power, the sun in all his course has never seen the equal. Ere the next quarter of a century shall have rolled away, the beautiful valleys of the Upper Missouri, the Yellow Stone, the Platte, and the Kansas, ay, and even that of the Red River of the North, will all have been settled, and this ever-deepening current of emigration will meet an equally resistless stream from the Pacific coast, and roll back in mingling eddies from the summits of the Rocky Mountains. Fourteen States as large as Ohio, but on an average more wealthy and populous, will have grown up on the magnificent country between the lakes and the Rocky Mountains, and how many will repose upon the "Pacific slope" we dare not attempt to predict.

Chicory, or **Succory**, the wild endive, or *Cichorium Intybus* of Linnæus. This plant is found growing wild on calcareous soils in England, and in most countries of Europe. In its natural state the stem rises from one to three feet high, but when cultivated it shoots to the height of five or six feet. The root, which runs deep into the ground, is white, fleshy, and yields a milky juice. In Germany, the Netherlands, and France, chicory has long been extensively cultivated for the sake of its root, which is used as a substitute for coffee. When prepared on a large scale, the roots are partially dried, and sold to the manufacturers of the article, who wash them, cut them in pieces, kiln-dry them, and grind them between fluted rollers into a powder, which is packed up in papers containing from two ounces to three or four pounds. The powder has a striking resemblance to dark ground coffee, and a strong odor of liquorice. It is largely used in Prussia, Brunswick, and other parts of Germany; but as it wants the essential oil and the rich aromatic flavor of coffee, it has little in common with the latter except its color, and has nothing to recommend it except its cheapness. Chicory is now grown in Westchester county, New York.

Chili. The republic of Chili occupies that long strip of land which lies on the southwestern side of South America, extending from 24° to 55° 59′ S. lat.; and from 69° to 72° W. long. It is bounded west by the Pacific Ocean, and east by the Andes, by which it is separated from the Argentine Confederation. On the north, Chili is separated from Bolivia by the extensive desert of Atacama; and it extends southward to the extreme limits of that Archipelago which embraces all the islands between Chiloë and the Straits of Magellan. Reckoning its length from the desert of Atacama to Cape Horn, it comprehends 36 degrees of latitude. Its average breadth is only 150, and where greatest not more than 210 geographical miles. The superficial area of Chili is computed at 218,925 English square miles, which is about 3195 miles more extensive than that of France and Belgium together. Except where the Andes are intersected by ravines, which frequently change into vales or plains fit for cultivation, these mountains, with their parallel ranges and spurs, occupy a great part of its area. South of the Cuesta de Chacabuco there are extensive plains, broken only by a few ridges of hills; but the highlands are almost continuous from north to south along the coast of the Pacific.

Chili is rich in almost every class of metals; but the silver mines of late years have yielded enormous quantities of ore. The metals at present discovered are gold, silver, copper, lead, antimony, cobalt, zinc, nickel, bismuth, iron, molybdenum, and quicksilver; but the only ores which are worked are gold, silver, copper, and occasionally quicksilver. The latter will now be abandoned in consequence of the low price of mercury, caused by the quantity produced in California. The metals are found in all the series of rocks between granite and trachyte, in veins which generally run from north and northwest to south and southeast; in some places, however, their course is irregular, or they extend east and west. The auriferous veins run nearly parallel to the grain or imperfect cleavage of the surrounding granite rocks. Gold is found most abundantly in the beds of detritus, derived from the degradation of the upper portion of the rocks. Copper ores, containing a small quantity of gold, are generally associated with micaceous specular iron. In the hills of Altruc, about four leagues from Rancagua, in the province of Santiago, are the only gold mines worked with any spirit, excepting some new mines near Copiapo, and they are remarkable for the variety of minerals mixed with the gold, such as galena, blende, copper and iron pyrites, and peroxyd of iron. The substances are found disseminated in quartz veins, running nearly north and south. Near Illapel are some very poor gold mines, in the beds of the gypseous formation, in altered feldspathic clay-state, which alternate with purple porphyritic conglomerate.

Until 1832, the only silver mines in Chili were those of Dehesa, San Francisco, San Lorenzo, Sema and San Pedro Nolazco, in the province of Santiago, and Arqueros mineral district, about 17 leagues from Coquimbo; but these mines now produce very little silver, and are nearly abandoned for the rich silver mines in the province of Atacama, near to Copiapo. Within a circuit of 25 leagues from Copiapo, there are 19 silver mineral districts; the richest are Chañarcillo and Tres Puntas. In Chañarcillo the upper part of the mines produces native silver, iodid, and bromid, associated with chlorid of silver and carbonate of lead. In the "Colorado" mine of Chañarcillo, embolite with native silver is occasionally found. In the mine of San Antonio, in the same district, is found bismuthic silver ore, combined with native silver, copper, and arsenic. As the mines become deeper, the silver ores are changing principally into what the natives call "metales frios" (cold ores); these contain different proportions of antimony, sulphur, and one sort a little arsenic. The dark-red silver ore is a pyrargerite, containing sulphuret of silver and antimony, with sometimes a little arsenic. The gray ore contains silver, arsenic, and antimony. Of these two sorts upward of 5000 tons were exported to England during 1852, as the natives are unable to extract the silver by the usual plan of amalgamation adopted with the other ores. The export of the "metales frios" to England will in a great measure cease, as an English establishment is forming at Caldero, the port of Copiapo, to treat them on an improved plan. Some of the mines in Chañarcillo yield nearly pure silver; the most productive are in the hands of four or five large capitalists. The ground near some of the richest mines is sometimes sold at enormous prices, the price being in some regulated by the probability of the rich veins of metal running into it. In Copiapo a regular traffic is carried on in buying and selling "barras" (a 24th part) in different mines.

A railroad runs from Caldera to Copiapo, a distance of 54 miles, which is to be continued on to Chañarcillo, about 50 miles from the city; and a tram-road is projected to the rich mineral district of Tres Puntas (8400 feet above the sea), which, when completed, will enable the miners to send down the poor silver ores which they now throw away. The commerce of Chili has vastly increased since the time when the country lay torpid under the yoke of Spain. As soon as it had recovered from the unsettled condition caused by the revolution, business of all kinds acquired new energy, and the trade, freed from its oppressive restrictions, extended to the larger ports of the United States and Europe. A few years were sufficient to show a large increase in its export and import trade, and Valparaiso soon became a flourishing port.

The precious metals are the most valuable exports from Chili. While obtaining annually from her mines metal to the amount of £1,500,000, she exported in the year 1851 gold to the value of £59,950, silver to the value of £709,467, and copper to the value of £414,503. Flour, wheat, barley, and biscuits figure largely in her exports, but with considerable variations in amount. In 1850 there were shipped more than 68,000,000 lbs. of flour; in 1851, 44,000,000; and in 1852 only 41,000,000. Above 62,000 quarters of wheat were exported in 1850; in 1851 the quantity was 26,470; and in 1852, 55,570 quarters. In barley, however, there has been a considerable increase. From 37,750 quarters in 1850, it rose to 96,190 quarters in 1852. The increased export of wheat and flour in 1850 arises from the extensive shipments made in that year to California.

In the latter half of 1852 the exports of wool amounted in value to £32,330, pulse to £26,808, coal to £13,970, hides and skins to £3762, guano to £5562, and charqui

or jerked beef to £6393. Among the minor articles of export are figs, dried peaches, walnuts, Cayenne pepper, wine, brandy, bones, horns, hoofs, leather, ham, fat, cheese, butter, rugs, and timber.

In return for her various exports Chili receives from England cotton goods, from France silks and various articles of luxury, and from other countries a variety of articles for domestic use. Chili has reciprocal treaties of commerce with Austria, Brazil, Belgium, Bremen, Sardinia, Denmark, France, Great Britain, Prussia, Sweden, Norway, Tuscany, Hamburg, Lubeck, Oldenburg, the United States, Peru, Ecuador, and the Sandwich Islands. Her commercial relations are most extensive with Great Britain and the British colonies, the imports into Chili amounting in 1852 to £1,159,613, and the exports to £1,093,772. Next in importance is the trade with France, the United States and California. With the other republics of South America her commercial transactions, which were once considerable, appear to be on the decline.

In 1851 several important restrictions were removed from the customs code of Chili, which had been only partially modified in 1834. The exportation of national produce was then declared free in principle, but a small duty was to be maintained for a short time upon a very few articles. All imports, with the exception of iron, steel, zinc, cotton, mercury, coal, agricultural tools, surgical instruments, and books, are liable to a moderate duty. Jewelry pays 2 per cent.; horses, mules, and dried fruit, 6 per cent.; shoes, linen stuffs, furniture, and articles used only by the wealthy, 30 per cent. The duty on white wine is reduced to 10 reals per dozen, and on red to 8 reals. Teas pay 2 reals the pound. Grain of all kinds is subject to a movable tariff. As long as the price in the home market does not exceed 16*s.* 8*d.* the fanega of 150 lbs., foreign grain pays an import duty of 12 reals the fanega; but if the price rises to 20 shillings, the duty falls to 8 reals, and if it exceeds 25 shillings the import duty ceases altogether. Many of the merchants of Valparaiso are desirous of the complete abolition of all restrictive duties; but government will probably delay any further steps in this direction until the advantage of the reform already made has been tested by further experience. The effect of this legislation, introduced under the administration of General Bulnes, has hitherto been to increase the revenue.

The weights and measures of Chili are the same as those used in Spain; but according to the decree of January, 1848, those of France are to be substituted in January, 1858. The largest dry measure of capacity is the fanega, which is subdivided into twelve *almuds*, and contains 5,430,626 cubic inches. The usual corn measure is the half fanega, which is a long parallelopipedon having one of its narrow sides trapezoidal. The imperial bushel contains 2,218,274 cubic inches, so that the fanega of Chili is to the former as 2·448 to 1. The average weight of a fanega of wheat is 157 lbs.

The old table of long measure is divided into lineas, pulgadas, pies, varas, and cuadras, or lines, inches, feet, yards, and quadras. Corresponding exactly in value to Troy weight there are the Spanish granos, onzas, and libras—or grains, ounces, and pounds; and to avoirdupois weight, onzas, libras, and quintales, or cwt. In liquid measure the English quart is equal to 1·022 Spanish cuartillo, and the imperial gallon to 4·089 cuartillos. Gold is bought by the castellano or marco. Its relative fineness is expressed by quillates or carats, four granos or grains making one quillate. The weight of the marco is equal to 4800 Spanish grains, or to 7 oz. 7 dwt. and 22 gr. English Troy weight. The standard fineness of gold is 21 quillates. The relative fineness of silver is expressed by dineros, the dinero being equal to 24 granos; and the standard fineness of that metal is 10 dineros and 20 granos. The old gold coins are the ounce, equal to 17 dollars 2 reals, £3 9*s.* sterling money; the half ounce, equal to 8 dollars 5 reals, £1 14*s.* 6*d.*; the quarter ounce, equal to 4 dollars 2½ reals, 17*s.* 3*d.*; and the escudito, equal to 2 dollars 1½ real, 8*s.* 7½*d.* Among the silver coins, besides the real, whose value is 6*d.*, there are now pieces representing various values, expressed in centavos, a copper coin, of which one hundred make a dollar. There are silver pieces of 5, 10, and 20 centavos. One of 50 centavos is equal to half a dollar, or 2*s.* English money. The new gold and silver coins contain nine-tenths of pure metal, and one-tenth of alloy. The copper coins are quite pure, containing no alloy. Their names, value, and weight may be most conveniently represented by means of the following table:

	£ *s.* *d.*	Spanish Grancs.	French Grammes.
Gold Condor	= 2 0 0	305·540 or	15·253
Gold Doblon	= 1 0 0	152·770 "	7·676
Gold Escudo	= 0 8 0	61·108 "	3·071
Silver Peso	= 0 4 0	500·708 "	25
Silver Medio peso	= 0 2 0	250·384 "	12·500
Silver Quinto	= 0 0 9½	100·153 "	5
Silver Décimo	= 0 0 4½	50·076 "	2·500
Silver Veintavo	= 0 0 2½	25·038 "	1·250
Copper Centavo	= 0 0 0·48	200·307 "	10
Copper Medio centavo	= 0 0 0·24	100·153 "	5

The communication between the several towns of Chili is now greatly facilitated by roads, railways, and steam-vessels. The excellent road from Santiago to Valparaiso was constructed at a great cost by General O'Higgins, when President of the republic. A road, generally kept in good repair, connects the towns of Atacama and Concepcion. By far the most pleasant for the traveler is that by which Santiago and Talca are united. A railroad has been already established between Coplapo and Caldera; and in 1852 the President, M. Montt, laid the first stone on the line (about 90 miles in length) between Santiago and Valparaiso, and it is now rapidly advancing to completion. When finished it will be the most extensive work of the kind in South America. Proposals for railways from Serena to the sea, from Copiapo to Tres Puntas, and from Concepcion to Talcahuano, have also been laid before Congress. A line of electric telegraph has also been established between Valparaiso and Santiago.

The revenue of Chili is in a very prosperous condition, exhibiting a surplus of receipts over expenditure in the returns of several years. In 1845 the revenue amounted to £1,083,169 13*s.*, leaving, after the necessary outlay, a surplus of £410,215. In 1849 the revenue, including the surplus from 1848, was £1,352,210. The surplus of 1849 was £57,048, which, together with the receipts of 1851, amounting to £885,881 8*s.*, were entirely swallowed up during the revolution of the latter year. With the restoration of peace in 1852, the revenue rose to £1,096,096, which, with the sum of £24,000 paid by Peru as interest for its debt, gives an increase of £234,714 12*s.* over the income of the preceding year.

Table of Revenue for 1852.

Customs	£693,007 14 0
Government monopolies	156,672 10 0
Licenses	11,155 12 0
Stamp paper	12,887 7 0
Tithes	105,388 2 0
Mint	19,420 6 0
Post-office	14,065 11 0
Peaje	12,582 16 0
Auction-houses	1,212 14 0
Catastro	19,724 10 0
Alcabala	39,587 14 0
	£1,120,096 0 0

The catastro is a duty of 5 per cent. levied upon the sale of lands. The alcabala is a duty of 4 per cent. on the sale and exchange of immovable property, and of 2 per cent. on the sale of mines. Peaje consists of tolls and pontages, and is levied on cattle, mules, vehicles, etc.—E. B.

In 1835, the exclusive right of steam navigation between the ports of the republic was granted to a

company, which commenced its operations in 1840. A similar privilege was afterward extended to the same company by the governments of Peru, Ecuador, and New Granada. The communication between England and Chili is maintained by way of the Isthmus of Panama. Steamers sail between England and Chagres, from which by traveling across the Isthmus the Pacific is reached in about four hours, and the remainder of the journey continued in steam-vessels. The voyage from England to Chili by this route occupies about forty or fifty days; while the voyage from the United States to Chili requires about thirty days.

COMMERCE OF THE UNITED STATES WITH CHILI, FROM OCTOBER 1, 1824, TO JULY 1, 1856.

Year ending September 30.	Exports.			Imports.	Whereof there was Bullion and Specie.		Tonnage Cleared.	
	Domestic.	Foreign.	Total.	Total.	Exported.	Imported.	American.	Foreign.
1825.....	$454,254	$467,184	$921,438	$229,509	$88,760	$46,306	7,207	....
1826.....	512,650	934,848	1,447,498	629,949	59,100	251,774	6,798	....
1827.....	1,046,748	661,853	1,702,601	184,693	20,781	65,502	12,664	....
1828.....	1,519,978	1,109,424	2,629,402	781,863	....	330,803	19,338	....
1829.....	830,356	590,778	1,421,134	416,118	....	153,850	9,670	....
1830.....	915,718	620,396	1,536,114	182,585	....	1,569	12,287	....
Total...	$5,333,704	$4,324,483	$9,658,187	$2,424,717	$168,641	$879,804	67,373	....
1831.....	$840,493	$518,662	$1,968,155	$413,758	$21,362	$91,694	11,145	....
1832.....	579,370	641,749	1,221,119	504,623	100,762	37,483	8,105	....
1833.....	730,140	733,800	1,463,940	334,130	....	97,550	8,500	....
1834.....	714,407	761,948	1,476,355	787,499	361	385,031	8,550	641
1835.....	586,188	355,696	941,884	917,095	....	415,150	6,080	....
1836.....	582,866	355,051	937,917	811,497	....	203,180	5,837	81
1837.....	1,092,399	395,440	1,487,799	1,180,156	1,580	550,017	6,944	....
1838.....	1,047,572	322,692	1,370,264	942,095	....	262,093	6,235	....
1839.....	1,307,143	487,410	1,794,553	1,186,641	....	134,603	8,682	241
1840.....	1,372,254	356,575	1,728,829	1,616,859	....	480,536	7,414	....
Total...	$8,861,792	$4,929,023	$13,790,815	$8,694,263	$124,065	$2,658,584	77,502	963
1841.....	$846,410	$256,578	$1,102,988	$1,230,980	....	$346,496	5,962	991
1842.....	1,270,941	568,735	1,839,676	831,099	$800	93,120	7,092	694
1843*....	869,883	179,580	1,049,463	857,556	....	98,680	5,378	....
1844†....	858,645	248,576	1,106,221	750,370	....	185,817	7,247	....
1845†....	1,247,360	300,831	1,548,191	1,123,690	....	60,085	8,573	....
1846†....	1,533,130	229,434	1,768,570	1,275,060	....	111,929	8,649	1,462
1847†....	1,401,547	210,263	1,671,610	1,716,903	....	70,112	7,185	1,077
1848†....	1,703,625	220,886	1,924,511	1,319,451	....	20,593	10,465	366
184 †....	1,722,457	294,643	2,017,100	1,817,723	....	170,462	25,930	1,351
1850†....	1,297,133	125,588	1,422,721	1,796,877	....	119,057	41,279	25,383
Total...	$12,814,937	$2,435,114	$15,250,051	$12,711,649	$800	$1,228,751	127,466	31,314
1851†....	$1,668,877	$286,428	$1,895,305	$2,734,746	$3,000	774	48,140	41,657
1852†....	2,043,836	295,297	2,339,133	2,062,160	17,250	32,723	21,386	23,402
1853†....	2,157,320	169,117	2,326,437	2,214,252	30,000	12,318	28,488	38,665
1854†....	1,942,330	250,929	2,193,259	3,332,107	6,570	22,805	22,371	22,403
1855†....	2,904,231	432,026	3,426,257	3,518,890	13,166	11,708	21,667	10,109
1856†....	2,591,354	276,389	2,867,743	2,467,819	10,000	....	22,477	4,778

* 6 months to June 30. † 1 year to June 30.

Chillies (Hind. *Gas Murridge*; Javan. *Lombok*; Malay *Chabai*), the pods or fruit of the *Capsicum annuum*, or Guinea pepper. This is one of the hardiest and most productive plants found in tropical climates; growing luxuriantly in almost all dry soils, however indifferent. In the wild state the pods are small, and so pungent and acrid as to blister the tongue; but when raised on rich soils, they are large and comparatively mild. The plant is said to be a native of both Indies. It is very extensively cultivated; and, with the exception of salt, it is far more extensively used than any other condiment. In tropical countries, the pods are frequently made use of when unripe and green; when ripe, they become of a deep red color; and in that state they are exported dry and entire, or reduced to powder.—*See* CAYENNE PEPPER.

China. The conterminous empires of Russia and China occupy between them about one-fifth part of the habitable globe, in pretty nearly equal portions; but the population of the latter is about four times greater than that of the former, even after including its recent annexation of Poland. We can easily trace the boundaries and mark the extreme limits of these two great empires, by parallels of latitude and meridional lines of longitude; but when we come to reduce them to square miles, or speak of their contents in acres, the mind is bewildered by the magnitude of the numbers required to express them, and forms but an indistinct idea of their superficial extent.

No country in the world is better adapted, from situation, climate, and products, for extensive commerce, than China; yet no civilized country has profited less by these advantages. The happy distribution of its numerous rivers, aided by artificial canals, affords an almost uninterrupted water communication from the northern to the southern, and from the western to the eastern extremities of this grand empire; and thus a facility is given for the interchange of the products of one province with those of another, unknown in any other country, and unequaled even in Great Britain. The multitudes of barges of different sorts and sizes, which vary in their construction on almost every river, are incredible. The Chinese are rarely to be trusted where numbers are concerned; but they are probably not far amiss in stating that the number of imperial barges employed in the grand canal and its lateral branches, for the purpose of collecting and distributing among the public granaries the rice and grain paid in kind as taxes, amounts to 10,000, or, as they express it, where they mean to be correct, to 9999. A vast number of vessels are also employed in conveying the copper currency from place to place, wherever it may be wanted; others in collecting the silks, cottons, and various articles of taxes, paid in kind, and depositing them in the public magazines; and the salt barges alone are probably not less numerous than those which carry grain. It was calculated that the dépôt of salt accumulated at Tien-sing for the use of the capital and the northern provinces was sufficient for a year's consumption for thirty millions of people. This was all brought up in the course of the summer, from the sea-coast of Tche-kiang and Fokien, in sea-going vessels. Cakes of coal-dust and turf, for fuel, and cakes made up of various ingredients for garden manure, employ a multitude of barges; and when to these are added the various kinds of vessels employed in general commerce, in the conveyance of passengers, and in the fisheries of the interior, we may be sure that the number of persons who constantly reside upon the water amounts to many millions.

COMMERCE OF THE UNITED STATES WITH CHINA, FROM OCTOBER 1, 1820, TO JULY 1, 1856.

Year ending September 30.	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage Cleared.	
	Domestic.	Foreign.	Total.	Total.	Exported.	Imported.	American.	Foreign.
1821.....	$388,535	$3,902,025	$4,290,560	$3,111,151	$3,391,487	....	6,040	....
1822.....	429,230	5,506,138	5,935,368	5,242,536	5,075,012	$500	8,185	....
1823.....	288,375	4,347,686	4,630,061	6,511,425	3,584,182	22,036	9,478	....
1824.....	330,466	4,970,705	5,301,171	5,618,502	4,463,852	....	9,563	....
1825.....	100,059	5,410,456	5,570,515	7,533,115	4,529,075	....	8,667	....
1826.....	242,451	2,324,193	2,566,644	7,422,186	1,651,595	....	4,456	....
1827.....	290,862	3,573,543	3,864,405	3,617,183	2,524,818	....	8,950	....
1828.....	230,585	1,252,417	1,482,802	5,350,168	454,500	24,390	5,664	....
1829.....	200,759	1,094,103	1,354,862	4,080,847	661,593	....	6,351	....
1830.....	156,290	585,903	742,193	3,878,141	79,284	9,104	3,501	....
Total...	$2,777,412	$32,967,109	$35,744,581	$52,954,094	$26,350,008	$56,120	69,355	....
1831.....	$244,790	$1,046,045	$1,290,835	$3,083,205	$367,024	....	5,061	....
1832.....	336,162	924,360	1,260,522	5,344,907	452,119	$25,932	7,232	....
1833.....	537,774	835,585	1,435,759	7,541,570	296,456	6,400	9,308	....
1834.....	255,756	754,727	1,010,483	7,892,327	378,850	....	8,123	....
1835.....	335,808	1,532,712	1,868,580	5,587,187	1,391,666	....	7,104	....
1836.....	344,563	852,701	1,194,264	7,324,816	418,661	50	5,662	....
1837.....	318,973	811,618	630,591	3,965,337	155,960	....	8,793	....
1838.....	655,881	861,021	1,516,902	4,764,536	728,661	4,000	7,314	....
1839.....	430,464	1,103,137	1,533,601	3,678,509	992,563	....	6,419	....
1840.....	409,186	540,780	1,009,966	6,640,829	477,003	....	3,960	....
Total...	$3,926,117	$8,823,086	$12,749,203	$61,225,223	$5,646,988	$36,382	68,376	....
1841.....	$715,322	$485,494	$1,200,816	$3,665,283	$426,592	$485	4,876	....
1842.....	737,509	706,888	1,444,397	4,234,645	606,714	....	7,259	364
1843*.....	1,755,393	663,565	2,418,958	4,285,566	571,660	....	13,552	....
1844†.....	1,110,023	646,918	1,756,941	4,891,455	566,155	....	15,035	....
1845†.....	2,079,341	196,654	2,275,995	7,285,914	158,866	27,107	17,477	....
1846†.....	1,178,188	153,553	1,331,741	6,563,881	112,574	....	13,697	....
1847†.....	1,708,655	124,229	1,832,884	5,585,543	33,308	....	12,334	....
1848†.....	2,063,625	126,388	2,190,013	8,083,496	72,013	....	17,150	....
184 †.....	1,460,045	122,279	1,588,324	5,513,785	9,267	....	11,740	....
185†.....	1,485,961	119,256	1,605,217	6,555,462	25,000	....	17,830	5,106
Total...	$14,294,962	$3,545,224	$17,640,186	$57,000,735	$2,583,645	$27,592	130,920	3,470
1851†.....	$2,155,045	$329,342	$2,485,287	$7,065,144	$147,475	....	46,817	10,108
1852†.....	2,480,066	183,111	2,663,177	10,593,150	19,728	$281	67,264	21,507
18 3†.....	3,242,574	524,418	3,736,992	10,573,710	480,344	....	66,041	24,808
1854†.....	1,203,925	104,163	1,308,088	10,506,329	115,688	108,174	68,658	18,547
18 5†.....	1,533,057	186,372	1,719,429	11,048,726	674,183	....	101,660	15,768
1856†.....	2,048,244	509,993	2,558,237	10,454,436	633,502	1,000	85,438	10,467

* 6 months to June 30. † 1 year to June 30.

All foreign commerce is systematically discouraged. The extent, fertility, and variety of their soil and climate, happily situated between the extremes of heat and cold, partaking of the advantages of both, without experiencing the inconveniences of either, supply the Chinese with the productions of almost all the world besides, whether to minister to the necessities, the comforts, or the luxuries of their numerous population; and leave this great empire, as a nation, almost independent of foreign supplies through the medium of commerce. Satisfied, or affecting to be satisfied, with the prodigal bounty of nature, jealous of strangers, and governed by a gradation of arbitrary despots, the Chinese long considered it as a favor bestowed on foreigners to open any of their ports for the interchange of commodities. The revenue derived from this limited intercourse was of little or no importance at the chief seat of government.

A very extensive intercourse is carried on by them with Japan, the Philippine Islands, Java, Sumatra, Timor, Gelolo, and the great island of Borneo, in all of which are found multitudes of Chinese, living in habits of peaceful industry, in the midst of the more idle and less civilized natives, conducting the concerns of trade, cultivating the ground, and exercising all the various branches of the mechanical arts; in no place, however, varying in the smallest degree their original character. But though the Chinese spread themselves over every part of the Asiatic, and into many of the Polynesian islands, there seems to be no reciprocity of commerce by the vessels of those countries visiting the ports of China, excepting some ten or twelve junks that annually visit the southern ports of Fokien from Japan, and perhaps as many from Cochin China. "From Canton," says Lord Macartney, "to Ten-chou-foo, at the entrance of the Gulf of Pe-tche-lee (to say nothing of the country within the Gulf itself), is an extent of coast of near two thousand miles, indented with innumerable harbors, many of them capable of admitting the largest European ships, and all of them safe and sufficiently deep for the vessels of the country. Every creek or haven has a town or city upon it; the inhabitants, who abound beyond credibility, are mostly of a trafficking mercantile cast, and a great part of them, from their necessary employment in the fishery, which supplies them with a principal article of their subsistence, are accustomed to the sea, and the management of shipping." From Java alone they import birds' nests to the value of half a million dollars annually; the sea-slug or biche-de-mer (*holothuria*), from the coast of New Holland, Timor, and adjoining islands, to a still greater extent; sharks' fins from the same quarter; copper from Japan, and tin from Bantam; pepper, areca-nut, spices of different kinds, ebony, sandal-wood, red-wood for dyeing, tortoise-shell, pearl-shell, coral, camphor, wax, and a variety of articles, generally produced or collected by their own countrymen resident in the islands of the East.

The Chinese levy no specific duties on the articles imported, nor *ad valorem* duties on the cargoes; the only impost is on the ship itself, and is estimated by a rule as absurd as it is partial and unequal. They measure the length from the centre of the foremast to the centre of the mizen-mast, and the breadth is taken close abaft the mainmast. The length is then multiplied by the breadth, and the product, divided by ten, gives the measurement of the ship. All ships, according to this measurement, are classed under first, second, or third rates; all other vessels, however small, are classed as third-rates. By this rule a ship of a hundred tons would pay from $1000 to $5000, and a ship of a thousand not above double that sum.

Revenue.—To ascertain exactly or even approximately the revenue of the Chinese Empire is almost impossible. In 1587, Trigault, a French missionary, stated it at 20,000,000 taels—the tael being equal to about 5*s.* 6*d.* English, or $1 25 United States currency.

In 1655, Nieuhoff estimated it at 108,000,000 taels. Twelve years later, Magelhaens reckoned it at about £4,000,000 sterling. In 1721, it was calculated to have risen to £10,000,000 or £14,000,000 sterling. Toward the close of the eighteenth century it was given by Sir George Staunton at £66,000,000; of which sum, however, little more than a fifth was transmitted to Pekin. According to the Chinese constitution each province is obliged to support itself, and to transmit a certain surplusage for the maintenance of the Emperor and his court. The manner in which the items of the revenue are divided are thus stated by De Guignes, the last authority on this subject:

	Taels.
Income in money	27,967,000
Equal revenue in kind from grain	27,967,000
Tax on the second crop in the southern provinces	21,800,000
Gabel, coal, transit duties	6,479,400
Customs at Canton	800,000
Revenue from silk, porcelain, etc.	7,000,000
Taxes, licences, tonnage duties	4,000,000
Total	89,713,400

Till within a few years ago, Canton was the principal mart for foreign commerce, and was in fact the only port open to foreigners. In virtue of the treaties, however, concluded at the termination of the war with England, four additional ports have been thrown open, viz., Shanghai, Ningpo, Foo-chow, and Amoy. Under the respective heads of these articles will be found detailed accounts of the exports and imports of the districts in which they are respectively situated. The foreign commerce of China, as more fully detailed below, may be roughly estimated at between 20 and 25 millions sterling. This, however, bears a very small proportion to the inland trade. It has been asserted that there is a greater amount of tonnage belonging to the Chinese than to all the other nations of the world combined; and from the length and number of the canals, and the myriads of boats necessary for carrying on the enormous inland trade of the empire, it is believed that this statement is not very wide of the truth.

The mode of conducting the trade is fully described in the *Chinese Commercial Guide*, where the forms of custom-house blanks are given both in English and Chinese. The foreigners themselves employ clerks called *linguists* to transact their business, and these linguists act also in many transactions as brokers. Every Chinese who intends to engage in trade in this capacity, or as a trader, previously learns to speak English by studying manuscript vocabularies in which the English sounds of words and phrases are written underneath in the Chinese character, the student obtaining the assistance of more advanced scholars to correct his pronunciation. The idioms of the English learned in this *viva voce* manner are chiefly Chinese, which explains the inverted arrangement of sentences in the Canton English, as this jargon is called, and the utter disregard paid to gender, number, person, time, and other proprieties considered of importance in most languages. The whole trade is conducted in this meagre gibberish, which the natives, however, suppose to be as copious and correct as foreigners themselves speak, but which hardly serves even the common purposes of trade and household need, much less enables the two parties to exchange ideas upon recondite subjects. Much of the misunderstanding and trouble experienced in daily intercourse with the Chinese is doubtless owing to this imperfect medium, for they seldom take the trouble to ascertain if their idea of what is told them is the correct one; and mutual vexation and ill-will arise, when one party finds his orders to have been heedlessly performed, and the other that his efforts to please have only earned maledictions instead of commendation. These petty annoyances have also had more serious results in strengthening the national dislikes, and still farther separating those who originally intended, perhaps, to endure each other only so long as they could make gain thereby.

The total amount of the exports and imports of the five towns now open to foreign commerce is given in the subjoined table for 1845:

Canton	Imports in vessels of all nations	£3,046,942
	Exports in vessels of all nations	6,822,726
Amoy	Imports in British vessels	147,494
	Exports in British vessels	154,781
Ningpo	Imports	18,000
	Exports	19,000
Foo-chow	Imports	100,000
	Exports	85,000
Shanghai	Imports	1,223,080
	Exports	1,347,052

The contraband trade in opium is estimated to amount to upward of 40,000 chests, at a sale price of nearly £5,000,000 sterling, which with the pearls, gold and silver ware, precious stones, and other articles smuggled, will swell the total of the foreign trade to about £21,000,000 sterling annually, exclusive of the Russian trade at Kiakhta. The consumption of tea in England is about 60,000,000 of pounds annually; in the United States it is about 20,000,000; in the Netherlands, 2,000,000; in Russia, 5,000,000; in Germany, 3,000,000; in New South Wales, 4,000,000; in Spain and France, 3,000,000. The aggregate consumption of tea in China itself has been estimated, though not on very good authority, at about 700,000,000 of pounds. The prospects of the rapid extension of the foreign trade with China are not very promising, except in a few articles. The raw produce furnished from that country is very trifling, silk and alum being the chief, and there is in the mean time little prospect of any great increase in the exportation of her manufactured articles, except tea and silk goods. The opium trade has been for many years between three and four millions sterling in excess of the regular exchange of commodities, and the drainage of the country for this balance will probably go on as long as the taste for this pernicious narcotic continues, or there is any specie to pay for it. To legalize the opium trade would make no material difference in the exportation of specie, as long as the balance of imports so greatly exceeds the exports. England may make every effort to supply China with her manufactures, but so long as the Chinese furnish so little that she wants beyond a supply of tea, it is difficult to perceive with what they are to pay for all the cottons and woolens they may be expected to buy.

The Chinese appear to have no regular established system of credit among themselves, and the only circulating medium in the shape of coin is a small piece of base metal (copper, tin, or lead mixed), of the value of the one-thousandth part of six shillings and eightpence, of little more intrinsic value, in fact, than a cowrie-shell, which the Chinese, as well as the Hindus, would seem once to have used; as the same character in their language which signifies a *shell* signifies also money and wealth, and it enters into the composition of characters which represent *buying, selling, paying, etc.* Silver in small ingots is used in commerce, but they have no determinate value, the price fluctuating with the demand, as in other articles of commerce. The high rate of interest operates as a discouragement to mercantile speculations, and the rigor of corporal punishment is added, with the view, as it would appear, of deterring the most hardy speculator. The law says, "whoever shall lend either money or goods, shall only receive three parts in the hundred per month," and that "how much soever may be suffered to accumulate, the capital shall remain the same." It is lent from month to month, and if the lender should complain of the interest not being punctually paid, the borrower is subject to the punishment of ten stripes of the bamboo the first month, twenty the second, and so on. The legal rate of interest, however, is seldom paid, and in large transactions among business men it is from 12 to 15 per cent. per annum. The borrower makes a special agreement with the lender for a rate of interest varying between these two sums.

On the 29th August, 1842, a treaty of peace was signed before Nankin, on board of the *Cornwallis*, by Sir Henry Pottinger on the part of Great Britain, and by Ke-ying, Elepoo, and Niu-kien, on the part of the Emperor of China. The most important provisions of the treaty were, lasting peace and friendship between the two empires; China to pay twenty-one millions of dollars during that and the three succeeding years; the ports of Canton, Amoy, Foo-chow, Ningpo, and Shanghai, to be thrown open to foreign trade; consular officers to be appointed by foreign powers to reside at these places; regular and just tariffs of import and export and inland transit dues to be established and published; the island of Hong Kong to be ceded in perpetuity to her Britannic majesty, her heirs, and successors; and correspondence to be conducted on terms of perfect equality between the officers of both governments. To this important treaty the emperor signified his assent on the 8th of September, and on the 31st of December it was ratified by the British government. In June, 1843, the ratifications were exchanged at Hong Kong, which was then taken possession of by proclamation, and the functionaries of government appointed.

The announcement of the treaty of Nankin excited considerable sensation in Europe and America, chiefly in the commercial circles; and agents were sent to China from the governments of Belgium, Holland, Prussia, Spain, and Portugal, and most of them had interviews with Ke-ying at Canton before he returned to court. France and the United States of America sent embassadors extraordinary to the court of Pekin, but neither of them went farther than Canton. Ke-ying having been reappointed commissioner for the purpose, a treaty was signed between China and the United States, embodying all the important stipulations of the treatles and commercial regulations agreed to with England, and providing further for the erection of hospitals, chapels, and cemeteries at the five ports; for permission to ships of war to visit any part of the coasts of China; and for the extension of these privileges to all nations. The ratifications of this treaty were exchanged on 31st December, 1845. The French embassador having also arrived at Canton, and entered into negotiation with Ke-ying, a treaty was concluded between them at Whampoa on the basis of that of the United States.

Their naval architecture wears the stamp of great antiquity, and is exceedingly grotesque. They have, in fact, made little progress in maritime navigation, from the inveterate dislike of the government to all foreign intercourse, and to all innovation. The very same kind of vessels as those described by Marco Polo at the port near st to Pekin, in the thirteenth century, were found without variation by Lord Macartney, five hundred years afterward, and accurate to the Italian's description, even to the number of compartments into which the hold of each vessel was divided. They had anchors of wood, and ropes and sails of bamboo. The boats and barges for internal commerce and communication are very varied, generally commodious, especially the passage-boats on the grand canal, and all of them suited to the depth and velocity of the stream, and the width of the locks and flood-gates of the respective canals and rivers which they are intended to navigate. These vessels are so numerous as almost to supersede the necessity of land-carriage; and the most common and convenient mode of traveling in China is in barges, which are generally provided with cabins for sleeping, and a kitchen and utensils for cooking victuals. Their military navy is unworthy of the name. It consists of a flotilla, whose principal occupation is that of conveying soldiers where they may be wanted, and looking after pirates and smugglers. An English frigate would beat the whole naval force of China.—Grozier, Du Halde, Barrow, De Guignes, etc.

The principal articles of export from China are tea and raw silk; and of these the following quantities have been exported during the ten years ending 1st July, 1858:

Tea exported from China to the United Kingdom.

Year ending June.	Pounds.	Year ending June.	Pounds.
1844	50,613,000	1851	64,020,000
1845	53,670,200	1852	65,137,000
1846	57,584,600	1853	72,906,000
1847	53,365,000	1854	77,217,000
1848	47,694,500	1855	80,509,000
1849	47,242,600	1856	91,035,000
1850	53,961,000		

Thus, in the last seven years, the quantity of tea shipped from China to the United Kingdom has become nearly doubled, and, even compared with 1852, is nearly one half more. But, as we have already intimated, it is as important a question, as regards the exchanges with China, what progress has been made in the shipments to the United States. These have been as follows:

Tea exported from China to the United States.

Year ending June.	Pounds.	Year ending June.	Pounds.
1849	18,072,000	1853	40,974,000
1850	31,757,000	1854	27,867,000
1851	28,700,000	1855	31,515,000
1852	34,334,000	1856	40,246,000

From these two tables it appears that since 1849, only seven years ago, the quantity of tea exported from China to the United Kingdom and the United States has increased from 65,314,000 lbs. to 131,280,000 lbs. Since 1852 the increase has been from 99,471,000 lbs. to 131,282,000 lbs. Then as to silk: the entire exports from China to the United Kingdom, eleven years ago, amounted only to 10,727 bales. In the year ending June, 1848, there were 17,229 bales, since which time, particularly during the last four years, they have very rapidly increased. The following table shows the export in each year:

Silks exported to the United Kingdom from China.

Year ending June 30.	Bales.	Year ending June 30.	Bales.
1849	17,228	1853	25,571
1850	16,134	1854	61,948
1851	22,142	1855	51,486
1852	23,040	1856	55,489

Imports of Silks into the United States.

Year ending June 30.	Piece Goods.	Sewing Silk.	Embroideries.	Raw.	Others.
1853	723,143	3,497	485,950	347,457	7,365
1854	1,065,510	2,353	174,556	748,457	29,420
1855	1,372,365	19,736	9,164	455,770	1,915

Statement of Chinese Passengers and Tonnage to California.

Years.	Vessels.	Tonnage.	Passengers.
1849	13	3,700	323
1850	22	7,708	447
1851	35	11,700	2,716
1852	84	43,144	18,434
1853	54	25,535	4,216
1854	52	28,021	15,063
1855	37	15,527	3,212
Total	297	135,355	44,511

Statement of Emigration of Chinese to their own Country, and Tonnage employed.

Years.	Vessels.	Tonnage.	Passengers.
1851	96	51,241	261
1852	120	72,536	2,056
1853	89	53,349	4,405
1854	113	85,098	2,586
1855	92	73,003	3,528
Total	510	335,977	12,436

China Porcelain. This manufacture is first mentioned in history in 1531: it was introduced into England in the sixteenth century. Porcelain was made at Dresden in 1706; fine ware in England, at Chelsea, 1752; at Bow in 1758; in various other parts of England, about 1760; and by the ingenious Josiah Wedgwood, who much improved the British manufacture, in Staffordshire, 1762 *et seq.*—Haydn. *See* Porcelain.

China-root (Ger. *Chinawurzel*; Du. *Chinawortel*, Fr. *Squine, Esquine*; Sp. *Raiz China, Cocolsera*; Arab.

Rhubarbe), the root of a species of climber (*Smilax China*, Linn.). It comes from the West Indies, as well as from China; but that from the latter is best. It is oblong and thick-jointed, full of irregular knots, of a reddish-brown color on the outside, and a pale red within; while new, it will snap short, and look glittering within; if old, the dust flies from it when broken, and it is light and kecky. It should be chosen large, sound, heavy, and of a pale red color internally. It is of no value if the worm be in it.—MILBURN'S *Oriental Commerce*.

Chints, or **Chintz** (Fr. *Indiennes*; Ger. *Zitze*; It. *Indiane*; Russ. *Siz*; Sp. *Chites*, *Zaruza*), a peculiar pattern upon printed calicoes, in which flowers and other devices are printed in five or six different colors, upon white and colored grounds. A good chintz pattern in fast colors is one of the most surprising and difficult efforts of the art. It was first manufactured in the East Indies, but is now largely manufactured in Europe, particularly in Great Britain.—*See* CALICO.

Chocolate (Du. *Chocolade*; Fr. *Chocolat*; Germ. *Schokolate*; It. *Cioccolata*; Port. *Chocolate*; Russ. *Schokolad*; Sp. *Chocolate*), a kind of cake or confection, prepared principally from the cacao-nut. The nuts are first roasted like coffee; and being reduced to powder and mixed with water, the paste is put into tin moulds of the desired shape, in which it speedily hardens, being, when taken out and wrapped in paper, fit for the market. Besides cacao, the Spanish use vanilla, sugar, maize, etc., in the preparation of chocolate. Chocolate was first introduced into Europe from Mexico about A.D. 1520. It was sold in the London coffee-houses soon after their establishment in 1650.—*Tatler*.

"Alike easy to convey and employ as an aliment, it contains a large quantity of nutritive and stimulating particles in a small compass. It has been said with truth that, in Africa, rice, gum, and *shea* butter, assist man in crossing the deserts. In the New World, chocolate and the flour of maize have rendered accessible to him the table-lands of the Andes, and vast uninhabited forests."—HUMBOLDT'S *Personal Narrative*, vol. iv. p. 234, Engl. transl.

Christiana, the capital of Norway, situated at the bottom of a fiord or gulf, in the province of Aggerhuus; in lat. 59° 55½′ N., long. 10° 48½′ E. Population in 1845, 26,141. Christiana is about 60 miles from the open sea: the gulf is in some places very narrow, and its navigation somewhat difficult; but it is sufficiently deep for the largest vessels, having 6 or 7 fathoms water close to the quay. It is compulsory on all ships to take a pilot on board at the mouth of the bay. The trade of the town is considerable. The principal exports are timber and deals, which are largely imported into England; glass, particularly bottles; iron and nails, bones, smalts, oak bark, etc. Salted and pickled fish, one of the staple products of Norway, is principally exported from Bergen. The deals of Christiana have always been in the highest estimation—a consequence of the excellence of the timber, and of the care with which the sap-wood and other defective parts are cut away; and not, as Mr. Coxe seems to have supposed, of the skillful sawing of the plank. The saw-mills were formerly licensed to cut a certain quantity only, and the proprietors were bound to make oath that it was not exceeded.—COXE'S *Travels in the North of Europe*, 5th edition, vol. iv. p. 28. This absurd regulation no longer exists. There are far fewer restrictions on industry and commerce in Norway than in Sweden. In the former, manufactured goods are admitted on moderate duties, and are very generally made use of. The principal articles of import are colonial produce; iron and hardware; machinery; woolen, linen, and cotton goods; coals, butter, wine, brandy, etc.; corn is sometimes extensively imported.

Customs Regulations.—Within 24 hours after a vessel has got to her moorings, the master should deliver to the collector his general report as to ship and cargo, or present the requisite documents for having such report made out with the assistance of a ship-broker, whose services masters of foreign vessels can not entirely dispense with. On making this general report, the measuring bill is to be exhibited, and payment of the tonnage and other dues inward is to be made. If the ship have not been previously measured in Norway, and is, consequently, not provided with a Norwegian measuring bill, she is to be measured, to ascertain her burden in Norwegian commercial lasts, for the calculation of the tonnage duty. The general report having been made, the custom-house officers in charge of the vessel are furnished with the books for delivery, and the discharge of the cargo commences under their inspection; and the consignees may make their special reports under their responsibility and signature. If they are without precise information as to the contents of any or all of the packages or bales to their address, these bales or packages may, at their request, be opened in the presence of the officers before report is made. If a consignee omits availing himself of this permission, his pretending thereafter that more or other goods than he had ordered or been advised of have been sent to his address, will not be attended to. In the reports or entries is to be stated whether it is intended to pay the duties forthwith, whether the goods are intended for exportation, or whether they are to be landed. Prior to commencing loading outward, the master is to give verbal notice of his intention at the custom-house. If he have no Norwegian measuring bill, the vessel is to be measured. This being done, the shipper or shippers of the outward-bound cargo are each of them to make their special entries as to the quality, weight, and measure of the goods they mean to load. A copy of such entries is to be deposited at the custom-house, and the loading commences under the control of the officers. This applies to all mixed cargoes; but if the outward-bound cargo consist exclusively of wood, the shipper or shippers are only to notify that they intend loading wood, without specifying quantity, measure, etc., as the export duty on wood is charged according to the burden of the vessel. When the master clears outward, he produces the proper documents for showing the burden of his vessel, and to what port she belongs, and he is then, on proper application being made, provided with a pilot, who takes his vessel to sea.

Warehousing.—In Norway goods brought from abroad may be bonded or warehoused, with a view to their being again exported at some future period. Goods entered for home consumption may also be bonded for a certain period, in order to facilitate the payment of the duties. The former is called "*transit oplag*;" that is, depositing or warehousing goods for exportation, subject to transit duties only. The latter is called "*credit oplag*;" that is, warehousing or bonding on credit.

Transit Oplag.—Under this system goods from abroad may be warehoused for exportation free of import duty, paying on exportation a transit duty, which in most cases is 1-10th of what they would pay if entered for home consumption. If the goods are deposited in the custom-house warehouses, they lie free of rent or dues during 14 days, and if in private warehouses, under the key and seal of the customs, during six months. If they remain long, viz., beyond 14 days in the one, and beyond six months in the other case, they pay rent or dues equal to ½ of the transit duty per month, which, after the lapse of three months, as regards goods in the custom-house warehouses, is increased to ¼ of the transit duty per month.

Credit Oplag.—This system allows most goods imported from abroad to be placed in the owner's or importer's own warehouses, under his own lock, free of duty, for a given time, on his reporting to the customs, every three months, how much he has sold, otherwise consumed, or exported, and then paying the duty on such amount; the custom-house officers, who are bound quar-

terly to examine the goods, convincing themselves by ocular demonstration that no more is missing than the quantity reported to have been taken away. This credit on the duties in no case to exceed two years from the time the goods were imported.

By way of security for payment of the duties on which the credit is granted, government reserve to themselves, 1. Priority of mortgage on all the goods in question. 2. Priority, or first right, in the property, goods, and effects of every description belonging to the trader availing himself of this credit, in as far as such property is not previously legally mortgaged. 3. Liberty for the custom-house officers, when and as often as they shall deem it expedient, between the stated quarterly inspections, to look over the stock on hand, with a view of ascertaining whether there remains sufficient value for the duties; and if they see reason to doubt this, full right, in default of other satisfactory security being offered, to seize the stock, and to sell the whole, or as much as shall cover the duties. 4. In case of death or failure of the party, an equal right to sell forthwith the whole of his stock at public auction, and to retain as much of the proceeds as shall cover the duties; and in case of deficiency, an established claim for the remainder on the estate of the deceased or bankrupt, as the case may be. In charging the duties no allowance is made for waste or damage in the warehouses. The warehouse rent charged on goods bonded under the transit system, in the custom-house warehouses, is as follows:

On a quarter of wheat for the first 3 months	0	0·5538 per month
Afterward	0	1·1076 "
On a ton of raw sugar for the first 3 months	0	11·5384 per month
Afterward	1	11·0765 "

Money, Weights, and Measures.—In Norway there are no gold coins. The principal silver coin, called a species dollar, is divided into 120 skillings. There are also half species, or 60 skilling pieces; 1-5th species, or 24 skilling pieces; 1-15th species, or 8 skilling pieces; and what is denominated skillemynt, or small change—that is, 4 and 2 skilling pieces. The species dollar contains 390·58 English grains of pure silver, and is consequently worth 4*s.* 6½*d.* sterling, the par of exchange being four species dollars 42 6-17 skillings=£1. All Norway coins, except the small change, are alloyed with 1-7th copper, so that the species dollar weighs 448·38 English grains, and its divisions in proportion. Small change coins are alloyed with three times their weight of copper. There are one and two skilling pieces of copper.

Weights and Measures, same as at COPENHAGEN; which see.

Shipping Charges.—The various charges of a public nature payable by a ship of about 300 tons burden, entering the port of Christiana with a mixed cargo on board, unloading there, taking on board another cargo, and clearing out, are as follows:

	£	*s.*	*d.*
1. *Charges Inward.*—Pilotage from Farder, at the mouth of Christiana Bay, where all ships must take a pilot on board	2	2	2
Bill of health, assuming that the crew, including the master, consists of 14 persons	0	17	9
Tonnage dues and light money	9	16	9
Brokers' fees	1	5	4
	£14	2	0
2. *Charges Outward.*—Pilotage	0	9	2
Castle dues	0	1	7
Muster-roll of crew	1	0	5
Pale or stake money	0	3	2
Measuring bill	2	4	5
Charity chest	0	1	7
Tonnage dues and light money	10	11	1
Ilgholm light	0	0	9
Pilotage to Farder	1	16	8
Brokers' fees	1	18	11
	£18	6	11

N.B.—There is no difference between the charges on native ships in Norwegian ports and privileged foreign ships, that is, the ships of countries having reciprocity treaties with Norway; nor in the duties on goods imported by native ships and such privileged foreign ships. Great Britain is a privileged country.

The shipping of Norway has declined considerably of late years; a proof, if any such were wanting, of the groundlessness of the clamors kept up in Great Britain as to the supposed pernicious influence of reciprocity treaties on shipping.

Banking.—There are no private banking establishments in Norway; but there is a public bank, having its principal office at Dronthelm, with branches at Christiana, Bergen, and Christiansand. It was established by a compulsory assessment in 1816. Its capital consists of 2,000,000 species dollars, in transferable shares, divided among those who were forced to contribute to its formation. These shares are now at a premium of 30 per cent. Its managers are appointed by, and are accountable to, the Storthing or Norwegian Parliament. It issues notes for 100, 50, 10, and so low as 1 species dollar. These notes should be payable in specie on demand; but they are at a discount of 35 per cent., and are paid by the bank at that rate. It discounts bills at two and three months date at 6 per cent. per annum; advances money on mortgage at 4 per cent.; and transacts the ordinary banking business of individuals. It does not allow interest on deposits.

Credit.—Goods are sold partly for ready money, and partly on credit, but principally the former.

Commission, etc.—The number of brokers in Christiana is limited to four. Commission on the sale of goods, 2 per cent., or, *del credere* included, 3 per cent. Brokerage is fixed by law at 5-6ths per cent., which, in practice, is paid by the sellers.

Insurance.—All houses situated in Norwegian market towns must be insured in the General Insurance Company at Christiana, which is guaranteed by the state. The premium is moderate, being, on buildings situated in towns, ¼th, and on those situated in the country, ⅛th per cent. Sometimes, however, when very destructive fires occur, it is raised.

Provisions, etc.—Christiana is not a favorable place for careening and repairing ships; but supplies of beef, bread, water, and other sea-stores, may be had as cheap or cheaper than in any other port of Norway; but its distance from the sea is too great to allow of its being visited by ships desirous merely of victualing.—We have derived these details from various sources, but principally from Consular Returns.

Timber.—A standard Christiana deal is 11 feet long, 1¼ inch thick, and 9 inches broad; and 51·2 such deals make a load. Freight of deals from Norway to England is calculated at the rate of single deals, the standard measure of which for Christiana and all the southern ports of Norway, except Dram (a small town on the Drammen, about 20 miles southwest of Christiana), is 11 feet long and 1¼ in thickness. A single deal from Dram is reckoned 10 feet long and 1¼ inch thick.

Battens.—Three battens make 2 deals, retaining their own length and thickness. Half deals are only counted as deal ends, if they run under 6 feet; but if they run 6 or 7 feet long, then two half deals are counted a deal, retaining their own thickness.

Ends of Deals.—Four ends of deals, although 5 feet long, make but a deal 11 feet long, retaining their thickness; but as the freighters of ships seldom wish to have this assortment, which commonly run from 3 to 5 feet, and are taken on board as stowage, consequently for the advantage of the ship and not the freighter, the ship ought to bear the burden.

Ends of Battens, called *Larwick Palings.*—No less than six ought to be counted a single deal, 11 feet long and 1¼ inch thick.

Pale-boards, when they have their proper length, are 7 feet long; three pale-boards are counted a single deal.

Staves for hogsheads take up much room; in consequence of which more than ten can not be computed a single deal.

Christopher (St.), or St. Kitt's, one of the British West India islands, Leeward group. Lat. (Fort Smith) 17° 17′ 7″ N., long. 60° 42′ 2″ W., 46 miles west-northwest from Antigua. Length, northwest to southeast, 20 miles, breadth 5 miles, except at its southeastern extremity, where a narrow tongue of land extends toward the island of Nevis. Area, 68 square miles. Population in 1848, 23,127, of whom about 2000 are whites. The island is an irregular oblong, traversed in the centre from north to south by a mountain ridge of volcanic origin, in the middle of which rises the perpendicular craggy summit of Mt. Misery, elevation 3711 feet, and overhanging the crater of an extinct volcano; from this central ridge the land gradually and uniformly slopes to the sea, every portion of which is a rich fertile soil, and highly cultivated; pasture and woodlands ascending almost to the mountain summits. Four rivers water this country, and in the northeast there are several salt ponds, producing abundance of salt. Soil composed of loam, clay, and volcanic ashes, in some places with a depth of 75 feet, resting on gravel. Brimstone-hill consists of granite, limestone, and primary schists. Sulphur is found in the central range, and some indication of silver ore. The climate is dry and healthy; mean annual temperature of coast 80°, but the mornings and evenings are cooled by sea-breezes. The coldest month is February, the warmest August. Prevailing winds, northeast and southeast; rains frequent, but not in excess; hurricanes occur occasionally, and a terrific and fatal one nearly destroyed the island in 1722. The scenery, especially the vale of Basseterre, is rich and beautiful. The soil is particularly adapted for sugar plantations. Chief towns, Basseterre, the capital, and Sandy Point. Besides the parish churches, there are three Methodist congregations, and several schools. This island was discovered by Columbus in 1493, and was then densely peopled by Caribs. In 1625 it was simultaneously taken possession of by colonies of English and French, and divided into upper and lower portions. From that period it became the scene of frequent and bloody contests between the two nations, till at last it was finally ceded to the British in 1783.

Chronometer (Greek *χρονος, time*, and *μετρον, measure*), a watch of peculiar construction, and great perfection of workmanship, used for determining geographical longitudes, or other purposes where time must be measured with extreme accuracy. The chronometer differs from the ordinary watch in the principle of its escapement, which is so constructed that the balance is entirely free from the wheels during the greater part of its vibration; and also in having the balance compensated for variations of temperature. Marine chronometers generally beat half seconds, and are hung in gimbals, in boxes about six or eight inches square. The pocket chronometer does not differ in appearance from the ordinary watch, excepting that it is generally a little larger. Chronometers are of immense utility in navigation; and ships going on distant voyages are usually furnished with several, for the purpose of checking one another, and also to guard against the effects of accidental derangement in any single one. The accuracy with which some of the better sort of chronometers have been found to perform is truly astonishing; the error in a two months' voyage not exceeding two or three seconds.—*See* DENT *on the Construction and Management of Chronometers.*

Chunam, the name given in India to lime. The best, obtained by the calcination of shells, is employed in the mastication of betel (which see), to prevent, it is said, its injuring the stomach.

Cider or **Cyder,** a vinous liquor made from the expressed and fermented juice of the apple. In England, the counties of Devon and Hereford are noted as the cider counties; but good cider is also produced in the counties of Gloucester, Monmouth, Worcester, Dorset, Somerset, and Cornwall. Normandy has long been known for the excellence of its cider; and considerable quantities are manufactured in other districts of France, and also in Belgium, Germany, and in North America.

In England the manufacture of cider is almost entirely in the hands of the common farmer, so that little or nothing has been done either to improve the machinery or bring science to bear on the processes which are followed. Hence much of the cider is of inferior quality, and much waste ensues in the manufacture. The apples for cider should only be gathered when fully ripe, as it is only then that they contain their full proportion of saccharine matter. As the apples are gathered they are laid in heaps, and are allowed to lie thus from 15 to 30 days, in order to become fully ripe or mellow. They are then thrown into a stone trough, round which a heavy circular stone is turned by means of one or two horses. When the apples are thoroughly ground, the pulp is carried in pails to the screw-press and poured into square pieces of hair-cloth, the edges of the hair-cloth being so folded over the pulp as to prevent any escaping. The pulp is then subjected to pressure, when the juice escapes, leaving a solid cake. The juice is now transferred to casks, where it rapidly undergoes a process of fermentation, without requiring any addition; and in three or four days the process is completed, when it is drawn off into casks. The best cider is almost always that in which the process of fermentation has been most slowly conducted. When the fermentation has been rapid the cider is apt to run to acidity.

In France several manufacturers of cider have lately employed improved apparatus for mashing their apples, somewhat similar to that used for mashing the beet-root in the manufacture of sugar; and have also given special attention to the management of the process of fermentation. The quality of the cider is said to have been thereby greatly improved. The cake after its first pressure is sometimes broken up with water, and subjected to a second pressure, and the juice it then yields furnishes, on fermentation, an inferior cider, which must be soon used, as it will not keep. Cider is not fit to be drunk till about three months after it is made. Good cider yields about 6 per cent. of alcohol on distillation, and thus contains nearly the same amount of alcohol as the ordinary bitter Indian ales; but the inferior kinds do not contain above half that proportion. Cider appears to be a refreshing and healthful drink; and the natives of the counties in which it forms the ordinary drink are remarked to be nearly exempt from stone and from gravel complaints.—E. B.

Cigars. *See* TOBACCO.

Cincinnati, the metropolis of Ohio, capital of Hamilton county, and the largest and most commercial place west of the Alleghany Mountains. It is situated on the right bank of the Ohio River, 455 miles below Pittsburg, and 1548 miles above New Orleans, and 502 miles from Washington. It is the largest city of the Mississippi Valley north of New Orleans, and the fifth in population in the United States. Population in 1800, 750; in 1810, 2540; in 1830, 24,831; in 1840, 46,338; in 1845, 65,000; in 1850, 115,438; in 1853, 160,141. The suburbs have 25,000 inhabitants additional.

This city is near the eastern extremity of a valley, about twelve miles in circumference, surrounded by a series of hills, which rise to the height of 300 feet by gentle and varying slopes, and are partly covered with the native forest trees. From the summit of these hills is presented a beautiful and picturesque view of the city and valley. It is built on two table lands, the one elevated from 40 to 60 feet above the other. Low-water mark in the river, which is 108 feet below the upper part of the city, is 432 feet above tide-water at Albany, and 133 feet below the level of Lake Erie. Covington and Newport, opposite, in Kentucky, and

Fulton and the adjacent parts of Mill Creek township on the north, are but suburbs of Cincinnati, and if added to the above population would extend it to 185,000. The shore of the Ohio at the landing is substantially paved to low-water mark, and is supplied with floating wharves, adapted to the great rise and fall of the river, which renders the landing and shipping of goods at all times convenient.

The Ohio River at Cincinnati is 1800 feet, or about one-third of a mile wide, and its mean annual range from low to high water is about 50 feet; the extreme range may be about 10 feet more. The greatest depressions are generally in August, September, and October, and the greatest rise in December, March, May, and June. The upward navigation is in winter very rarely suspended by floating ice, and in some winters not at all. Its current at its mean height is about three miles an hour; when higher or rising, it is more; and when very low, it does not exceed two miles

The commercial returns for the year 1856 show that Cincinnati has participated in the general prosperity of the W st. The total value of principal imports for the year ending September 1, 1856, was $75,295,000, against $67,501,000 the previous year; and of exports $50,744,000, against $38,777,000 the previous year, showing an increase in the value of imports of $7,794,000, and in the value of our exports $11,967,000: these figures do not represent the total value of imports and exports at Cincinnati. To the value of the imports 10 per cent. may be added, and to the exports 25 per cent., to embrace those articles not included in them. The figures then would stand thus:

Value of imports	$82,825,000
Value of exports	63,430,000

No record being kept of imports by the Cincinnati custom-house officers, except those which come under custom-house bond, the Chamber of Commerce, at its own expense, keeps a record of the imports and exports.

Imports into Cincinnati for Five Years, commencing September 1st, and ending August 31st, each Year.

Articles.		1850-'51	1851-'52.	1852-'53.	1853-'54.	1854-'55.
Apples	Barrels.	16,984	71,882	19,845	31,477	15,971
Beef	"	1,101	1,609	1,118	1,841	1,766
Barley	Bushels.	111,257	89,994	225,844	286,536	204,224
Beans	"	31,037	14,137	20,439	21,332	17,173
Butter	Barrels.	8,259	10,203	16,484	16,842	10,185
Butter	Firkins and kegs.	11,043	13,720	11,331	11,092	7,192
Corn	Bushels.	489,195	653,788	723,334	745,455	845,579
Cheese	Boxes.	205,444	241,753	212,336	216,892	183,979
Cotton	Bales.	7,168	12,776	16,550	22,513	15,107
Coffee	Sacks.	91,177	95,732	109,138	91,425	114,118
Flour	Barrels.	482,772	511,042	449,080	427,464	342,772
Hogs	Head.	111,484	160,684	420,594	525,273	496,360
Lard	Barrels.	36,889	36,047	51,744	76,004	55,654
Lard	Kegs.	31,087	32,283	26,159	19,752	14,831
Molasses	Barrels.	61,490	93,132	115,112	86,430	56,257
Pork and Bacon	Hogsheads.	6,277	10,333	15,251	12,164	5,047
Pork and Bacon	Tierces.	1,183	1,987	3,550	2,736	6,770
Pork and Bacon	Barrels.	31,595	22,501	39,517	39,387	38,365
Pork in bulk	Pounds.	14,961	17,417	27,209	27,986	19,197
Potatoes	Barrels.	19,649	20,739	15,585	35,244	20,289
Rye	Bushels.	41,308	58,518	33,670	29,592	53,164
Sugar	Hogsheads.	29,808	39,324	44,299	64 401	46,953
Sugar	Barrels.	18,584	15,237	24,004	25,441	19,465
Wheat	Bushels.	388,660	377,037	343,649	408,084	437,412
Whisky	Barrels.	244,049	272,788	280,317	285,345	272,165

In the above table the number of hogs does not include those driven into the city or by private conveyance.

Value of the Principal Exports from the Port of Cincinnati for the Years ending August 31st, 1854-'55.

Articles.	1854.	1855.
Alcohol	$528,838	$311,047
Beef, Barrels	202,216	251,594
Beef, Tierces	237,609	122,336
Butter	508,536	524,040
Corn	90,081	39,426
Cheese	337,761	454,116
Candles	1,057,851	1,064,476
Cattle	719,950	502,100
Cotton	440,924	664,185
Flour	1,624,099	2,096,501
Lard	1,158,607	1,458,000
Lard-oil	1,307,856	1,223,728
Pork and Bacon	5,394,681	5,378,315
Sugar	2,010,784	1,985,355
Whiskey	2,922,612	1,966,890
Other articles	20,434,995	27,390,215
Total	$38,777,394	$45,432,780

—Hunt's *Merchants' Magazine.* *See* Ohio.

Cinnabar (Germ. *Zinnober;* Du. *Cinaber, Vermiljoen;* Fr. *Cinnabre;* It. *Cinabro;* Sp. *Cinabrio;* Russ. *Kinowar;* Lat. *Cinnabrium*).

Native Cinnabar—a mineral substance, red, heavy, and brilliant. It is found in various places, chiefly in quicksilver mines, being one of the ores of that metal. The cinnabar of the Philippine Islands is said to be of the highest color; but that of Almaden, in Spain, is the richest. The best native cinnabar is of a high color, brilliant, and free from earthy or stony matter.

Artificial Cinnabar.—"When two parts of mercury and one of sulphur are triturated together in a mortar, the mercury gradually disappears, and the whole assumes the form of a black powder, formerly called *Ethiops mineral.* When this mineral is heated red hot, it sublimes; and if a proper vessel be placed to receive it, a cake is obtained of a fine red color. This cake was formerly called cinnabar; and, when reduced to a fine powder, is well known in commerce under the name of *vermilion.*"—Thomson's *Chemistry.*

Cinnamon (Du. *Kaneel;* Fr. *Cannelle;* Ger. *Zimmet, Kanehl;* It. *Canella;* Lat. *Cinnamomum, Canella;* Port. *Canella;* Sp. *Canela;* Pers. and Hind. *Darchinie;* Arab. *Darsini;* Malay *Kaimanis;* Greek Κινάμον), the bark of the cinnamon-tree (*Laurus cinnamomum*), a native of Ceylon, where it grows in great abundance, Cochin China, and perhaps of some other countries. It is brought home in bags or bales weighing 92½ lbs. each; and, in stowing it, black pepper is mixed with the bales to preserve the cinnamon. The best cinnamon is thin and rather pliable; it ought to be about the substance of royal paper, or somewhat thicker; is of a light yellow color, approaching nearly to that of Venetian gold; it is smooth and shining; fractures splintery; has an agreeable, warm, aromatic flavor, and a mild, sweetish taste; when chewed, the pieces become soft, and seem to melt in the mouth; it is not so pungent but that it may be borne on the tongue without pain, and is not succeeded by any after taste. Whatever is hard, thick as a half-crown piece, dark-colored or brown, or so hot that it can not be borne, should be rejected. Particular care should be taken that it be not false packed, or mixed with cinnamon of an inferior sort.—Milburn's *Oriental Commerce;* Marshall's *Essay.*

The cinnamon of Cochin China grows in the dry sandy districts lying northwest of the town of Faifoe, between the 15th and 16th degrees of north latitude.

It is referred in China to the cinnamon of Ceylon. The annual imports into Canton and other ports vary from 250,000 to 300,000 lbs. There are no fewer than ten varieties of this species in the market. It is not cured, like that of Ceylon, by freeing it from the epidermis.—CRAWFURD'S *Embassy to Siam*, etc., p. 475.

Cinnamon Monopoly.—Down to 1833, the cultivation of cinnamon in Ceylon was restricted to a few gardens in the neighborhood of Colombo, the production and sale of the article being wholly monopolized by government. Upon the transference of the island from the East India Company to the king's government, the former agreed to pay £60,000 a year for 400,000 lbs. or 4342½ bales of cinnamon; it being stipulated that if the quantity collected exceeded this amount *the surplus was to be burned!* But this agreement was afterward broken off; and the cinnamon was sent to England by government, and sold on its account at quarterly sales. The net revenue derived from the cinnamon monopoly, in 1831, is said to have amounted to £127,961. As the monopoly could not be enforced, except by confining the culture of cinnamon to certain districts, it necessarily led to the most oppressive interferences with the rights of individuals, to the creation of numberless imaginary offenses, and the multiplication of punishments forming a heavy drawback upon the prosperity of the island. A sense of these disadvantages led at length to the abolition of the monopoly system in 1833, when England ceased to be amenable to the charge of upholding, without improving, the worst part of the Dutch policy, and restored to the natives their right to cultivate cinnamon anywhere and in any way they think fit.

Cinque Ports (*i. e.* the five ports), five havens on the southeastern coast of England, opposite France, and thus called by way of eminence, on account of their importance as safeguards against invasion. These comprise Hastings, Romney, Hythe, Dover, and Sandwich; to which were afterward added the two ancient towns of Winchelsea and Rye. These places were anciently deemed of so much importance in the defense of the kingdom against invasion, that they received royal grants of particular privileges, on condition of providing during war a certain number of ships at their own expense. They are governed by a warden with the title of Lord Warden of the Cinque Ports, and each had the privilege formerly of returning to Parliament two members under the title of Barons of the Cinque Ports; but since 1831 this privilege has been confined to Hastings, Dover, and Sandwich. We are told by Camden that William the Conqueror appointed the first warden of the Cinque Ports; but their charters are traced to the time of Edward the Confessor. The salary of the Lord Warden is £3000 a year. E. B.—*See* CHITTY'S *Commercial Law.*

Circumnavigators. Among the greatest and most daring of human enterprises was the circumnavigation of the earth at the period when it was first attempted, A.D. 1519. The first ship that sailed round the earth, and hence determined its being globular, was Magellan's, or Magelhoen's; he was a native of Portugal, in the service of Spain, and by keeping a westerly course he returned to the same place he had set out from in 1519. The voyage was completed in three years and twenty-nine days; but Magellan was killed on his homeward passage, at the Philippines, in 1521.—BUTLER. The following are the most renowned of this illustrious class of men: their voyages were undertaken at the dates affixed to their names.—*See* NAVIGATORS.

	A.D.
Magellan, a Portuguese, the first who entered the Pacific Ocean	1519
Grualva, a Spanish navigator	1537
Avalradi, a Spaniard	1537
Mendana, a Spaniard	1567
Sir Francis Drake, first English	1577
Cavendish, his first voyage	1586
Le Maire, a Dutchman	1615
Quiros, a Spaniard	1625
Tasman, Dutch	1642
Cowley, British	1683
Dampier, an Englishman	1689
Cooke, an Englishman	1788
Clipperton, British	1719
Roggewein, Dutch	1721
Anson (afterward Lord)	1740
Byron (grandfather of Lord Byron)	1764
Wallis, British	1766
Carteret, an Englishman	1766
Cook, the illustrious captain	1768
On the death of Captain Cook, his last voyage was continued by King	1779
Bougainville, French	1776
Portlocke, British	1788
Wilkes, American	1837
D'Urville, French	1837

Several voyages have been since undertaken, and, among other nations, by the Russians.—HAYDN.

Cities. The word *city* has been in use in England only since the Conquest, at which time even London was called *Londonburgh*, as the capital of Scotland is still called *Edinburgh*. The English cities were very inconsiderable in the twelfth century. Cities were first incorporated A.D. 1079. The institution of cities has aided much in introducing regular governments, police, manners, and arts.—ROBERTSON.

Citron (Ger. *Succade*; Da. *Sukkat*; It. *Confetti di cedro*; Sp. *Acitron verde*; Fr. *Citronat verd*), an agreeable fruit, resembling a lemon in color, smell, and taste. The principal difference lies in the juice of the citron being somewhat less acid, and the yellow rind being somewhat hotter, and accompanied with a considerable bitterness.—LEWIS' *Mat. Med.* It is imported, preserved and candied, from Madeira, of the finest quality.

Civet (Germ. *Zibeth*; Du. *Civet*; Fr. *Civette*; It. *Zibetto*; Sp. *Algalia*), a perfume taken from the civet cat: it is offensive unless extremely diluted, and then, in combination with other perfumes, it adds to their energy. It is brought from the Brazils, Guinea, and the interior of Africa.

Civita Vecchia, a fortified sea-port town of the papal dominions, on the Mediterranean, lat. 42° 4′ 38″ N., long. 11° 44′ 52″ E. Population 7000. The port of Civita Vecchia is artificial, and is formed by three large moles. Two of them projecting from the main land, inclined one to the north and the other to the south, form the sides of the harbor; while a third mole, or breakwater, constructed opposite to the gap between the other two, serves to protect the harbor from the heavy sea that would otherwise be thrown in by the westerly gales. A light-house, having the lantern elevated seventy-four feet above the level of the sea, is erected on the southern extremity of the outward mole; the distance from its extremities to the extremities of the lateral moles, on which there are towers, being about ninety fathoms. Vessels may enter either by the south or north end of the outer mole, but the southern channel is the deepest, having from eight to six and four fathoms. Ships may anchor within the port, in from sixteen to eighteen feet of water; or between it and the outer mole, where the water is deeper. Within the port there is a dock and an arsenal.—*Plan of Civita Vecchia.*

Imports and Exports.—Though the wealth and population of the country round Civita Vecchia be much fallen off in modern times compared with antiquity, it still continues to be the *entrepôt* of Rome, and engrosses almost the entire trade of the papal dominions on the side of the Mediterranean. The imports consist principally of cotton, woolen, silk, and linen stuffs; coffee, sugar, cocoa, and other colonial products; salt and salted fish, wines, jewelry, glass and earthen ware, etc. The exports consist of staves and timber, corn, coal, wood, cheese, potash, pumice-stone, alum, from Tolfa, in the vicinity, and other articles. The total value of the imports may be reckoned at from £650,000 to £700,000, and it may be fairly presumed that the real value of the exports is not much inferior. Marseilles

and Genoa have the largest share of the foreign trade of Civita Vecchia, and next to them, England.

Duties.—Civita Vecchia is a free port; that is, a port into which produce may be imported, and either consumed or re-exported, free of duty.

Quarantine regulations are strictly enforced, no vessel with a foul bill of health being permitted to enter any of the papal ports.—*Annuaire du Commerce Maritime*, tom. ii. p. 366, etc.

Claret, one of the best French wines. It is derived from the Latin *Claretum*, from *Clarere*, to be clear.—*See the articles* BORDEAUX *and* WINE.

Clarification, the act of clearing; particularly the clearing or fining of liquids from feculent matter by the separation of the insoluble particles. This is performed by depuration, filtration, or coagulation. The substances usually employed for clarifying liquors are the albumen of eggs, blood, and isinglass. The first two are used for such liquors as are clarified while boiling hot; the last for those which are clarified in the cold state, as wines, etc. The whites of eggs are beaten up into a froth and mixed with the liquor, when they unite with and entangle the impure matters that float in it; and, presently coagulating by the heat, carry these impurities up to the surface in the form of scum. Blood operates in the same manner. Isinglass is much employed for fining wines. For this purpose, about a quarter of an ounce may be thrown into the cask, or the isinglass may be previously dissolved and boiled down to a slimy consistence. It is then mixed with the liquor by rolling the cask about; after which it is allowed to settle.

Clearing, among London *bankers*, is a method adopted for exchanging the drafts on each other's houses, and settling the differences. Thus, at half-past three o'clock, a clerk from each bank attends at the clearing-house, where he brings all the drafts on the other bankers which have been paid into his house that day, and deposits them in their proper drawers (a drawer being allotted to each banker); he then credits their accounts separately with the articles which they have against him, as found in the drawer. Balances are then struck from all the accounts, and the claims transferred from one to another, until they are so wound up and canceled that each clerk has only to settle with two or three others, and their balances are immediately paid.

Clearing-house, the place where the operation termed clearing is carried on. The London clearing-house was established some years since, for the convenience of bankers and joint-stock banks in the metropolis by facilitating the transfer, liquidation, or exchange of bank checks and bills. This object is fully accomplished by each party, or some one representing it, meeting at a fixed place, at a fixed hour per day, to deliver checks on each other, and receiving in return checks on themselves, or cash to balance. It follows, necessarily, that the payments and receipts daily must exactly counterbalance each other. The utility of this arrangement, its economy of time and labor, and avoidance of risk, may be estimated from the fact that the annual clearings for one year (1839) amounted to £954,000,000 sterling, or over $15,000,000 each business day. In the year 1810, the average payments or clearings were $1,700,000 daily, on an average.

1839.	Aggregate Demands.	Bank-notes.	Per Cent.
January	£82,762,400	£6,348,500	£7·672
February	76,164,700	4,960,200	6·513
March	75,879,200	5,621,500	7·408
April	85,839,200	5,856,000	6·809
May	80,587,600	5,675,000	6·882
June	67,413,900	5,060,000	7·506
July	83,865,200	6,284,800	7·493
August	87,610,500	6,764,000	7·037
September	74,237,700	5,129,800	6·910
October.....	87,478,200	5,706,800	6·524
November	81,729,200	4,792,100	5·866
December	70,833,800	4,755,000	6·713
Total....	£954,401,600	£66,275,600	£6·944

The New York clearing-house was established in 1853, and a constitution adopted in September of that year, when fifty-two of the banks of the city were represented and became members. Operations were commenced the second week in October, 1853, and have been carried on regularly ever since.

The hour for making exchanges at the clearing-house is 10 o'clock A.M., when all the checks or bills of each bank are delivered by a clerk, and distributed by the manager or his assistant to the clerk or representative of the banks respectively. At 1 o'clock P.M., the debtor banks pay to the manager the balances against them, either in coin or in bank certificates—the latter representing coin and used only by and among the banks, to avoid the carrying of specie to and from the clearing-house. At the same hour the creditor banks receive from the manager, at the same place, the respective balances due to them. The manager receives a salary of $3000, and has two clerks under him. The expenses of the clearing-house are borne by a tax upon the city banks who are members, now fifty-three in all. Banks having a capital less than $.,.00,000 pay $100 each, annually; less than $1,000,000 pay $200, and those over $1,000,000 pay $300 each, annually.

TRANSACTIONS OF THE NEW YORK CLEARING-HOUSE, FROM ITS COMMENCEMENT, OCTOBER, 1853, TO OCTOBER 1, 1856.

Date.	Clearings.	Balances.
October, 1853....	$325,796,792 05	$19,356,275 25
November, "	470,625,765 57	24,216,666 59
December, "	481,443,321 57	27,611,805 47
January, 1854....	465,245,490 37	23,166,400 96
February, "	448,236,297 08	23,294,241 75
March, "	520,929,949 17	26,953,985 11
April, "	511,931,155 98	24,484,423 40
May, "	581,011,472 41	29,251,982 50
June, "	527,360,722 12	25,162,991 65
July, "	499,250,993 11	26,543,709 51
August, "	458,402,906 71	25,601,446 23
September, "	454,161,119 12	25,722,465 47
Total.....	$5,750,455,987 06	$297,411,495 69
October, 1854....	$478,977,120 35	$24,574,949 04
November, "	447,128,246 10	22,240,636 87
December, "	426,948,104 46	22,023,515 76
January, 1855....	472,204,524 60	23,159,158 99
February, "	383,072,087 45	20,007,744 42
March, "	446,302,243 30	24,154,071 12
April, "	441,336,357 61	24,144,093 52
May, "	488,064,634 24	25,543,048 94
June, "	465,222,844 64	25,769,645 97
July, "	438,644,305 99	27,306,548 85
August, "	457,258,918 12	25,425,105 30
September, "	402,752,711 54	24,745,618 96
Total.....	$5,407,912,098 38	$289,694,733 14
October, 1855....	$557,111,464 83	$26,990,960 25
November, "	552,708,677 93	25,841,747 17
December, "	552,993,465 14	26,186,320 52
January, 1856....	544,860,535 98	28,662,804 57
February, "	544,143,624 37	26,855,260 63
March, "	557,425,295 50	28,864,462 92
April, "	606,421,614 53	27,128,724 61
May, "	665,013,835 28	32,063,642 09
June, "	567,700,305 47	28,227,589 30
July, "	596,557,439 10	30,549,658 54
August, "	547,674,578 61	26,688,813 78
September, "	615,602,471 84	27,674,704 95
Total.....	$6,906,213,3: 8 88	$331,714,489 33

The Boston clearing-house was organized in that city September 26, A.D. 1855, and commenced business March 29, A.D. 1856. All the banks in the city (thirty-five in number) are connected with the institution, representing a capital of $31,960,000. The executive committee consists of five gentlemen, all of which are presidents of banks. The total transactions from its commencement to November 30th, 1856, amounted to $1,060,390,841. The Merchants' Bank is the depository bank for the special deposit of coin from the several banks connected with the association.

Cleveland, city, port of entry, and the capital of Cuyahoga county, Ohio, on the south shore of Lake Erie. Lat. 41° 30′ N., long. 81° 47′ W. The population in 1799 consisted of one family; in 1825 about 500 inhabitants; in 1830, 1000; in 1834, 4300; in 1840, 6071;

in 1850, 17,034; and in 1854, about 25,000; and with the addition of Ohio City, 7000 more, making a total of 32,000. Cleveland is the emporium of Northern Ohio, and, next to Cincinnati, the most important town in the State; possesses a commanding situation on Lake Erie, at the mouth of the Cuyahoga River, and the northern termination of the Ohio Canal, by which it is connected with the Ohio River, and by railroad to New York, to Buffalo, to Philadelphia *via* Pittsburg, to Cincinnati, to Chicago. It is 130 miles north-east from Pittsburg, 146 northeast from Columbus, 200 by water from Buffalo, 180 from Detroit, and 359 from Washington. The value of imports in 1851 amounted to $22,804,159; exports same year amounted to $12,026,497. The licensed and enrolled tonnage of the district for 1851 was 36,070 tons; 11,355 steam, and 24,615 sail. The harbor of Cleveland is formed by the mouth of the Cuyahoga River, and improved by a pier on each side, extending 425 yards into the lake, 200 feet apart, and faced with substantial stone masonry. Cleveland has a ready communication with New York *via* railroad and the Erie Canal, with Philadelphia by railroad and canal, with Cincinnati by railroad, and with the Ohio River by the Ohio Canal, and it exports much by the way of the Welland Canal to Canada.—*See* OHIO.

Clock, Clocks (Ger. *Uhren, Grosse Uhren, Wiandunrhe;* Du. *Uuren, Uurwerken, Horologien;* Fr. *Horloges;* It. *Orologgi, Oriuoli;* Sp. *Relojes;* Russ. *Tschasi*), a kind of machine put in motion by a gravitating body, and so constructed as to divide, measure, and indicate the successive portions of time with very great accuracy. Most clocks mark the hour by striking or chiming. It is a highly useful instrument, and is extensively employed for domestic and philosophical purposes. Clocks are made of an endless variety of materials and models, so as to suit the different uses to which they are to be applied, and the different tastes of their purchasers. The Germans, Dutch, and Americans are particularly celebrated for their skill in the manufacture of clocks; while the English, French, and Genevese, especially the former, have carried the art of making metallic clocks, so as to keep time with the greatest precision, to a high degree of perfection. The history of the invention, introduction, and successive improvements in the manufacture of clocks, has been carefully investigated by some very learned and industrious antiquaries (*see* BECKMANN'S *Hist. of Inventions*, vol. i. p. 419–462, English ed.; and REES' *Cyclopedia*); but, notwithstanding these researches, the subject is still involved in considerable obscurity. It seems, however, that the middle of the fourteenth century may be regarded as the epoch when clocks, having weights suspended as a moving power and a regulator began to be introduced. The period when, and the individual by whom, the pendolum was first applied to clock-work, have been subjects of much contention. Galileo and Huygens have disputed the honor of the discovery. "But whoever may have been the inventor, it is certain that the invention never flourished till it came into the hands of Huygens, who insists that if ever Galileo thought of such a thing, he never brought it to any degree of perfection. The first pendulum clock made in England was in the year 1662, by one Fromantel, a Dutchman."—HUTTON'S *Math. Dictionary.*

The origin of clock-work is involved in great obscurity. Notwithstanding the statements by many writers that clocks, *horologia*, were in use so early as the ninth century, and that they were then invented by an archdeacon of Verona, named Pacificus, there appears to be no clear evidence that they were machines at all resembling those which have been in use for the last five or six centuries. But it is certain that for that period at least clocks have been made depending on the action of a weight on a train of wheels, as distinguished from the water-clocks, *clepsydræ*, which are well known to have been used many centuries before. We will refer the reader who is curious about it to the articles on clocks, etc., in the *Encyclopedia Britannica* and the various works there cited. We will only add to the information there given, that it appears from a communication of Captain Smith to the Antiquarian Society in 1851, that there is still a clock in existence at Dover Castle bearing the date 1348, earlier by thirty years than that of the clock made by De Vick for the palace of the Emperer Charles V., which has generally been described as the earliest clock of which the actual construction known. Mr. Denison also, in his *Rudimentary Treatise on Clocks* (of which we have largely availed ourselves throughout this article, and also of various papers by him in the Cambridge Philosophical Transactions, and the Journal of the Society of Arts), mentions a clock in Peterborough Cathedral, still in use as to the striking part, of which the construction is more like that of the Dover Castle clock than that of De Vick; and Lord Chief Justice Coke tells us that a clock was set up in Westminster Hall in the thirteenth century out of a fine levied on one of his predecessors in that seat, from which, perhaps, the appropriate inscription *Discite justitiam moniti* was copied on to the sundial on a house now facing the hall.

The clock called the clepsydra, or water-clock, was introduced at Rome 158 B.C. by Scipio Nasica. Toothed wheels were applied to them by Ctesibius, about 140 B.C. Said to have been found by Cæsar on invading Britain, 55 B.C. The only clock supposed to be then in the world was sent by Pope Paul I. to Pepin, king of France, A.D. 760. Pacificus, archdeacon of Verona, invented one in the ninth century. Originally the wheels were three feet in diameter. The earliest complete clock of which there is any certain record was made by a Saracen mechanic, in the thirteenth century.

The scapement, ascribed to Gerbert, A.D.	1000
A clock constructed by Richard, abbot of St. Alban's, about	1326
A striking clock in Westminster	1368
A perfect one made at Paris by Vick	1370
The first portable one made	1530
In England no clock went accurately before that set up at Hampton Court (maker's initials, N. O.)	1540
Richard Harris (who erected a clock in the church of St. Paul's, Covent Garden and the younger Galileo constructed the pendulum	1641
Christian Huygens contested this discovery, and made his pendulum clock some time previously to	1658
Fromantel, a Dutchman, improved the pendulum, about	1659
Repeating clocks and watches invented by Barlow, about	1676
The dead beat, and horizontal escapements, by Graham, about	1700

The subsequent improvements were the spiral balance spring suggested, and the duplex scapement invented by Dr. Hooke; pivot holes jeweled by Facio; the detached scapement invented by Mudge, and improved by Berthoud, Arnold, Earnshaw, and others.—HAYDN.

Clocks imported into the United States pay a duty of 30 per cent.; watches, 10 per cent. Of clocks, the value imported in the fiscal year 1854–'55 was $69,258; watches, $3,651,187.

Olive-oil is most commonly used in lubricating clock machinery and preventing too great wear. We believe, however, that animal oil is better than any of the vegetable oils, as some of them are too thin, while others soon get thick and viscid. For turret clocks and common house clocks, good sperm oil is fine enough, and is probably the best. For finer work the oil requires some purification. Even common neat's-foot oil may be made extremely fine and clear by the following method: mix it with about the same quantity of water, and shake it in a large bottle, not full, until it becomes like a white soup; then let it stand till fine oil appears at the top, which may be skimmed off: it will take several months before it has all separated into water at the bottom, dirt in the middle, and fine oil at the top. And it should not be done in hot weather, because heat makes some oil come out as fine

which in cold would remain among the dirty oil in the middle, and in cold weather that fine oil of hot weather will become muddy. There are various vegetable oils sold at tool-shops as oil for watches, including some for which a prize medal was awarded in the Exhibition, but not by any of the mechanical juries; we have no information as to the test which was applied to it, and none but actual use for a considerable time would be of much value. We have heard of 5 per cent. in power being saved in a manufactory by the use of sperm instead of sweet oil to small spindles requiring constant lubrication.—E. B.

Close-hauled; that is, the tacks close down, the sheets aft, the yards braced sharp up, and the bowlines hauled, the ship making her progress as near the direction of the wind as she can.

Cloth. Both woolen and linen cloth were known in very early times. Coarse woolens were introduced into England A.D. 1191; and seventy families of clothworkers from the Netherlands settled in England by Edward III.'s invitation, and the art of weaving was thereby introduced, 1331.—RYMER'S *Fœdera*. Woolens were first made at Kendal in 1390. Medleys were manufactured 1614. The fine English broad-cloths were yet sent to Holland to be dyed, 1654. Dyed and dressed in England by one Brewer, from the Low Countries, 1667. The manufacture was discouraged in Ireland and that of linen countenanced, at the request of both Houses of Parliament, 1698.—HAYDN. *See* WOOL.

Clover (Ger. *Klee*; Du. *Klaver*; Fr. *Trefle*, *Luzerne*, It. *Trifoglio*; Sp. *Trebol*; Russ. *Trilistnik*; Lat. *Trifolium*), a very important species of grass. Some of the species in cultivation are annual, others biennial or triennial, and others perennial. The seed used formerly to be principally imported from Holland; but that which is raised in England is now said to be of a superior quality. Culture for seed is, however, very precarious, and of uncertain profit. For crops of hay and grass seeds (including clover) raised in the United States, *see art.* HAY.

Cloves (Ger. *Nägkein*, *Gewurznelken*; Du. *Kruidnagelen*; Fr. *Clous de girofle*, *Girofles*; It. *Chiovi di garofana*, *Garofina*, *Garoffoli*; Sp. *Clavos de especia*, *Clavillos*, Russ. *Gwosdika*; Arab. *Kerenful*; Malay, *Chankee*), the fruit, or rather cup of the unopened flowers of the clove-tree, or *Caryophyllus aromaticus*. The clove-tree is a native of the Moluccas, where it was originally found; but plants have since been carried to Cayenne and other places, where they succeed tolerably well. Cloves are shaped like a nail, whence the name, from the French *clou*, nail. They are imported from the Dutch settlements; the best in chests, and an inferior kind in bags. The best variety of the Amboyna cloves is smaller and blacker than the other varieties, very scarce, and, as a mark of pre-eminence, is termed the royal clove. Good cloves have a strong, fragrant, aromatic odor; and a hot, acrid, aromatic taste, which is very permanent. They should be chosen large sized, perfect in all parts; the color should be a dark brown, almost approaching to black; and, when handled, should leave an oily moisture upon the fingers. Good cloves are sometimes adulterated by mixing them with those from which oil has been drawn; but these are weaker than the rest, and of a paler color; and whenever they look shriveled, having lost the knob at the top, and are light and broken, with but little smell or taste, they should be rejected. As cloves readily absorb moisture, it is not uncommon, when a quantity is ordered, to keep them beside a vessel of water, by which means a considerable addition is made to their weight.—THOMSON'S *Dispensatory*; MILBURN'S *Oriental Commerce*.

Policy of the Dutch as to the Trade in Cloves.—From the expulsion of the English from Amboyna, in 1623, the Dutch have, a few short intervals only excepted, enjoyed the exclusive possession of the Moluccas, or Clove Islands. In their conduct as to the clove trade, they have exhibited a degree of short-sighted rapacity, which has been, we believe, seldom equaled even in the annals of monopoly. Their object has not been to encourage the growth and trade of cloves, but to confine both within the narrowest limits. They have preferred deriving a large profit from a stunted and petty trade to a moderate profit from a trade that might have afforded employment for a very large amount of capital; and to prevent their narrow and selfish projects from being counteracted by the operations of the natives, they have subjected them to the most revolting tyranny. "That they might," says Mr. Crawfurd, "regulate and control production and price just as they thought proper, the clove-trees were extirpated every where but in Amboyna, the seat of their power; and the surrounding princes were bribed by annual stipends to league with them for the destruction of their subjects' property and birth-right. This plan was begun about the year 1551. The contracts are still in force, and an annual fleet visits the surrounding islands to suppress the growth of cloves, which in their native country, spring up with a luxuriance which these measures of Satanic rigor, and of sacrilege toward bountiful nature, can scarce repress. By the plan on which the clove trade is now conducted—a plan carried into effect through so much iniquity and bloodshed—the country of spices is rendered a petty farm, of which the natural owners are reduced to the worst condition of predial slavery; and the great monopolizer and oppressor is that government, whose duty it should have been to insure freedom and afford protection. Human ingenuity could hardly devise a plan more destructive of industry, more hostile to the growth of public wealth, or injurious to morals, than this system framed in a barbarous age; and it reflects disgrace upon the character of a civilized people to persevere in it. It is curious to remark how the monopolizers, in carrying the details of this system into effect, at once impose upon the natives and deceive themselves. The *nominal* price paid to the natives is actually above the natural price of the commodity, but they are cheated in the details. The cultivator brings his produce to the public stores, where it is subjected at once to a deduction of one-fifth for payment of the salaries of the civil and military officers. The price of the remainder is fixed at the rate of 9·6 Spanish dollars the picul; but before payment is made, another deduction of one-fifth is made; one-half of which is for the chiefs or *rajas*, and the other for the native *elders*, who are overseers of the forced culture. The real price, therefore, paid to the grower is 8 Spanish dollars per picul, or 4¼*d.* per pound avoirdupois, instead of 11 52-100 Spanish dollars per picul, or 5¾*d.*, which is pretended to be given. When cloves have been sold on the spot, the price usually exacted has been about 64 Spanish dollars the picul, or eight times the price paid to the cultivator. The average price in Holland, previously to the war of the French Revolution, may be taken at 6*s.* per pound, or 177 78-100 Spanish dollars per picul, being 2122 per cent. advance on the real cost of the commodity in the place of its growth. When brought direct to England, they have cost at an average 3*s.* 8*d.* the pound, making 108 64-100 Spanish dollars per picul, an advance on the natural export price of 1258 per cent."—*Eastern Archipelago*, vol. iii. p. 388–390.

Oil of Cloves is procured from cloves by distillation. When new, it is of a pale reddish brown color, which becomes darker by age. It is extremely hot and fiery, and sinks in water. The kind generally imported from India contains nearly half its weight of an insipid expressed oil, which is discovered by dropping a little into spirits of wine; and on shaking it, the genuine oil mixes with the spirit, and the insipid separating, the fraud is discovered.—MILBURN.

Clyde, one of the largest and most important rivers in Scotland. It takes its rise from numerous streams flowing from the mountain range in the south-

ern part of Lanarkshire and borders of Dumfriesshire; the chief summits of which are the Lowthers, Leadhills, Queensbury Hill, and Rodger Law, with elevation approaching 8000 feet. Its course is through rich and fertile valleys to Glasgow. From this city it expands into a river navigable for ships of 300 to 400 tons, and flows northwest, dividing the county of Renfrew on the west, from Dumbarton on the northeast, receiving the tributaries of the Kelvin, Cart, and Leven. After passing Dumbarton, it opens up into a noble estuary four miles in width, spreading northward into Loch Long, and southward into the Firth of Clyde, with the islands of Bute and Cumbraes, situated at the mouth of the estuary. Here the Clyde expands into a *firth* averaging about 32 miles in width, and at the distance of 48 miles becomes identified with the North Channel. The length of the river from its source to Glasgow, including windings, is about 75 miles. From Glasgow to the south point of Bute Island about 40 miles. In the Clyde was launched the first steamboat constructed in Britain, 1812. *Clydesdale* is the district forming the valley of the Clyde, and is celebrated for its orchards, coal and iron mines, and horses.

Coaches, vehicles for commodious traveling. They have sometimes two, and sometimes four wheels. The body of the coach is generally suspended, by means of springs, upon the frame-work to which the wheels are attached. They are usually drawn by horses, but recently have been impelled by steam. The forms and varieties of coaches are almost innumerable.

Historical Notice.—Beckmann has investigated the early history of coaches with his usual care and learning. t is certain that a species of coaches was used at Rome; but whether they were hung on springs, like those now made use of, is not certain. After the subversion of the Roman power, horseback was almost the only mode of traveling. About the end of the fifteenth century, however, covered carriages began to be employed by persons of distinction on great occasions. In 1550, there were at Paris only three coaches; one of which belonged to the queen; another to the celebrated Diana of Poitiers; and the third to a corpulent, unwieldy nobleman, René de Laval, lord of Bois-Dauphin. Coaches were seen for the first time in Spain in 1546. They began to be used in England about 1580; and were in common use among the nobility in the beginning of the seventeenth century.—*History of Inventions,* vol. i. p. 111, 127, English translation.

According to HAYDN's *Dictionary of Dates,* the coach is of French invention. Under Francis I., who was a contemporary with Henry VIII., there were but two in Paris, one of which belonged to the queen, and the other to Diana, the natural daughter of Henry II. There were but three in Paris in 1550; and Henry IV. had one, but without straps or springs. The first courtier who set up this equipage was John de Laval de Bois-Dauphin, who could not travel otherwise on account of his enormous bulk. Previously to the use of coaches the kings of France traveled on horseback, the princesses were carried in litters, and ladies rode behind their squires. The first coach seen in England was in the reign of Mary, about 1553.—PRIESTLEY's *Lecture.* They were introduced much earlier.—ANDREWS' *History of Great Britain.* They were introduced by Fitz-Allen, earl of Arundel, in 1580.—STOWE. And in some years afterward the art of making them.—ANDERSON's *History of Commerce.* A bill was brought into Parliament to prevent the effeminacy of men riding in coaches, 43 Eliz. 1601.—HAYDN.

Stage-coaches, Traveling by.—Owing to the improvement in the breed of horses and the building of carriages, but above all, to the extraordinary improvements that were effected within the last half century in the laying out, construction, and keeping of roads, the ordinary rate of traveling by stage-coaches, previously to their all but total extinction by railways, was seldom under 9 or 10 miles an hour, stoppages included, and on some roads was as much as 11 or 12. The stages having been shortened, this speed was not found to be materially more injurious to the horses than the slower rate at which they previously traveled. The surface of the roads being perfectly smooth, and most sharp turns or rapid descents having been got rid of, traveling even at this rate was comparatively safe; and it was surprising, considering the number of coaches, how few accidents occurred. They were occasioned, for the most part, by the misconduct of the drivers; and principally by their endeavoring to make up by increased speed for time lost at stoppages, or by their attempting to pass each other. It is, perhaps, needless to add that, since the opening of railways between all the principal places of the country, traveling by stage-coaches in England no longer exists, except in a few remote districts, and has now become almost a matter of history.

Coal (Du. *Steenkoolen;* Fr. *Charbon de terre;* Ger. *Steinkohlen;* It. *Carboni fossili;* Lat. *Lithanthrax;* Port. *Carvoes de terra, ou de pedra;* Russ. *Ugolj, Kamennoe;* Sp. *Carbones de tierra, Carbones de piedra;* Swed. *Stenkol*). This highly important combustible mineral is divided by mineralogists into the three great families of black coal, uninflammable coal, and brown coal; each of these being again divided into many subordinate species.

It is contended, with much seeming truth, that coals, although they are not mentioned by the Romans in their notices of Britain, were yet in use by the ancient Britons.—BRANDT. They were first discovered at Newcastle-upon-Tyne in 1234; some say earlier, and others in 1239. Sea-coal was prohibited from being used in and near London, as being "prejudicial to human health;" and even smiths were obliged to burn wood, 1273.—STOWE. Coals were first made an article of trade from Newcastle to London, 4 Rich. II., 1381.—RYMER's *Fœdera.*

This mineral will be considered under the general heads of—I. Origin of Coal; II. Coal Statistics of Great Britain; III. Areas of Coal-beds in the World, and a Comparison of their Extent; IV. Comparison of the Coal Trade of the United States and Europe; V. Statistics of the Coal Trade in the United States.

I. *Origin of Coal. Phenomena of Combustion, etc.*—Coal beds, or strata, lie among those of gravel, sand, chalk, clay, etc., which form great part of the present surface of the earth, and have been evidently accumulated during remote ages by the agency of "moving water"—similar to accumulations now in process of formation at the mouths of all great rivers, and in the bottoms of lakes and seas. When these strata had, by long contact and pressure, been solidified into a rocky crust to the earth, this crust, by subsequent convulsions of nature, of which innumerable other proofs remain, has been in various parts broken and heaved up above the level of the sea, so as to form the greater part of our dry or habitable land; in some places appearing as lofty mountains, in others as extended plains. In many situations, the fracture of the crust exhibits the edges of the various distinct strata found in a given thickness of it. When the fracture has the form of a precipitous cliff, these edges appear one above another, like the edges of piled planks or books; but often also they are met with in horizontal succession along a plain, as the edges of a pile of books laid down upon a table; or they may be seen surrounding hills of granite, which protrude through them. Coal, and other precious minerals, were first discovered at the fractures of the strata above described, and by the continued digging of the strata or veins the vast excavations called mines have been gradually formed. When it was at last discovered that the mineral strata occur every where in nearly the same order or succession, so that the exposure of a portion of one stratum is a good indication of the other strata being near, the operations of the miner became of much surer result, and expensive boring through superior strata might be

prudently undertaken, even where no specimen of the desired but more deeply buried substance had yet been seen.

Before the discovery of coal mines, or the invention of cheap means of working them, wood was generally used as fuel; and in many countries where the arts have not much flourished, it continues to be principally employed as such. Coal, however, for many purposes, answers much better than wood; and, in fact, the two, although in appearance so different, are in their ultimate composition very nearly allied. They both have for their basis or chief ingredient the substance called by the chemists *carbon*, and for their chief other ingredient the substance called *hydrogen*, which, when separated, exists in the form of air or gas. The hydrogen is easily driven away or volatilized from either coal or wood, by heating in a close place; and when it is caught and preserved, it forms the gas now used to light our streets and public buildings. What remains of coal, after being so treated, is the substance called *coke*; and what remains of wood, similarly treated, is the substance called *charcoal*—both being nearly pure carbon, but differing as to the states of compactness. This kindred nature of coal and wood does not surprise when the fact is known that much of our coal is really transformed wood; many coal mines being evidently the remains of antediluvian forests, swept together in the course of the terrestrial changes alluded to, and afterward solidified to the state now seen. In these mines the species of the plants or trees which formed them are still quite evident in abundant specimens, mixed often with the remnants of the animals which inhabited the earth at the same time. The extensive peat-mosses now existing on the surface of the earth consist chiefly of vegetable remains at an early stage of the kind of change which terminates in the formation of coal.

A substance which, like coal or wood, cheaply answers the purpose of producing great heat and light is called fuel, and the phenomenon of that production is called combustion. Now modern discovery has ascertained that, in every instance, combustion is merely an appearance which accompanies the mutual action, when very intense, of two substances in the act of forming an intimate or chemical union. Where that act is less energetic, the heat produced is less intense, and there is no light. Thus, water and sulphuric acid, when mixing, produce great heat, but no light. Water and quick-lime produce still greater heat; sufficient, it is known, to set fire to a ship in which the mixture unfortunately occurs. It is an occurrence of the same kind when heat is evolved from an acid dissolving a metal; and it is still of the same kind when a mass of coal or wood in a fire-grate is, with the appearance of combustion, undergoing solution in the oxygen of the atmosphere. In this last case, however, the temperature of the fuel is, by the very intense action, raised so much that the fuel becomes incandescent or luminous; an appearance assumed by every substance, whether burning or not—of a stone, for instance, or piece of metal—when heated beyond the temperature indicated by 800° of Fahrenheit's thermometer. The inferior degrees of such incandescence are called *red heat*, the superior degrees *white heat*. The reason why any strongly heated body throws out light, we can not yet explain. When a quantity of wood or coal has been burned to ash in a confined portion of air, the whole of the fuel, vanished from view, is held in solution by the air, as salt is held in water, and is again recoverable by the art of the chemist. The phenomenon of common fire, or combustion, then, is merely the fuel being chemically dissolved in the air of the atmosphere. If the fuel has nothing volatile in it, as is true of pure carbon, and nearly true of coke and charcoal, it burns with the appearance of red-hot stones; but if there be an ingredient, as hydrogen, which, on being heated, readily assumes the form of air, that ingredient dilates before burning, and in the act produces the more bulky incandescence called flame.

Varieties of Coal.—There is a curious chain of links which connect living wood with dead coal. First, there is *peat*, consisting of various kinds of plants and moss, imbedded and pressed together into a mass, and exposed to the action of air or water, or both, and perhaps heat, for unnumbered centuries. Then there is *lignite*, formed in nearly the same way from trunks of trees, and accumulated in layers of vast thickness in Germany and other parts of Europe; it has not hitherto been much used as fuel, but there are indications that it will so be ere long. Next comes *jet*, which appears to be a peculiar variety of vegetable matter brought almost to a bituminous state. Then we have *cannel coal*, which not only yields the best and most abundant gas for street-lighting, but has often such a hardness, blackness, and polish, as to enable it to be worked up into very beautiful ornaments. One peculiar kind of cannel coal, called the Breckinridge coal, was lately discovered in Kentucky, from which a burning oil has been manufactured, which by experiment has proved quite equal to sperm whale oil, if not superior, and can be manufactured for one-half the cost of sperm oil. The United States government have under consideration a contract to use it in the light-house system. Next is the *caking*, or common bituminous coal, which combines so many useful qualities for household purposes. Somewhat different from this is the *stratified coal* of the midland counties of England, which is obtained in very long pieces, and has less bituminous or caking quality. A still less gaseous coal is that which, from the purpose to which it is now found to be admirably adapted, is called *steam coal*; it is obtained chiefly from Wales, and burns with intense heat, and little flame or smoke. Last on the list is *anthracite*, so nearly without gas as to consist almost entirely of carbon; its intense heat and freedom from sulphur render it invaluable for iron-smelting and other manufacturing processes.

The two great purposes which combustion serves to man are to give light and heat. By the former he may be said to lengthen considerably the duration of his natural existence; for he converts the dismal and almost useless night into what, for many ends, serves him as well as day; and by the latter, besides converting winter into any climate which he desires, he is enabled to effect most important mutations in many of the substances which nature offers for his use; and, since the invention of the steam-engine, he makes heat perform a great proportion of the work of society. From these considerations may be perceived the importance of having fire at command; and, as the cheapest means of commanding fire, of having abundance of coal.

II. *Coal in Great Britain.*—As respects the supply of coal, Great Britain is singularly favored, a large portion of the surface of the country having under it continuous and thick beds of this valuable mineral—vastly more precious than would have been mines of the precious metals, like those of Peru and Mexico; for coal, since it has been applied to the steam-engine, is really hoarded power, applicable to almost every purpose which human labor directed by ingenuity can accomplish. It is the possession of her coal mines which has rendered Great Britain, in relation to the whole world, what a city is to the rural district which surrounds it—the producer and dispenser of the various products of art and industry. Calling her coal mines the coal-cellars of the great city, there is in them a supply which, at the present rate of expenditure, will last for 2000 years at least; and, therefore, a provision which, as coming improvements in the arts of life will naturally effect economy of fuel, or substitution of other means to effect similar purposes, may be regarded as inexhaustible.

The kinds or differences of coal depend on their

comparative proportions of carbon and hydrogen, and of earthy impurities totally incombustible. While some species of coal contain nearly a third of their weight of hydrogen, others have not a fiftieth part. The former kinds are flaming coal, pleasing in parlor fires, and fit for the manufacture of gas. The other kinds—some of the Welsh stone coal, for instance—will only burn when in large heaps, or when mixed with more inflammable coal: they have no flame. When flaming coal is burned where a sufficiency of oxygen can not pass through or enter above the fire, to combine with and consume the hydrogen as fast as it rises, a dense smoke is given out, consisting of hydrogen and carbon combined in the proportions which form a pitchy substance. The Welsh coal above mentioned can as little give out smoke as flame, and hence is now much used in great breweries, and in the steam-engine furnaces of towns, where smoke is a serious nuisance. The foliated or cubical coal, and slate coal, are chiefly used as fuel in private houses; the caking coals, for smithy forges; the slate coal, from its keeping open, answers best for giving great heats in a wind furnace, as in distillation on a large scale; and glance coal, found in Staffordshire, is used for drying grain and malt. The coals of South Wales contain less volatile matter than either the English or the Scotch; and hence, when employed in smelting the ore, produce a greater quantity of iron. It is supposed that three parts of good Newcastle coal are equivalent, as fuel, to four parts of good Scotch coal.

Consumption of Coal. Number of Persons engaged in the Trade. Supply of Coal.—The great repositories of coal in England are in Northumberland and Durham, whence London and most parts of the south of England are at present supplied; in Cumberland, whence large quantities of coal are exported to Ireland; and in Staffordshire, Derbyshire, Lancashire, Yorkshire, Leicestershire, Warwickshire, South Wales, etc. In Scotland, coal is found in the Lothians, Lanarkshire, Renfrewshire, Ayrshire, and other counties. In Ireland, coal is both deficient in quantity and inferior in quality to that of Great Britain; and turf forms the great article of fuel.

The importance of coal as a necessary of life, and the degree in which superiority in arts and manufactures are dependent upon obtaining supplies of it at a cheap rate, has naturally attracted a good deal of attention to the question as to the period when the exhaustion of the coal mines may be anticipated. But the investigations hitherto made as to the magnitude and thickness of the different coal-beds, and the extent to which they may be wrought, are too vague and unsatisfactory to afford grounds for forming any thing like a tolerably near approximation to a solution of this question. But such as they are, they are sufficient to show that *many centuries* must elapse before posterity can feel any serious difficulties from a diminished supply of coal. According to an estimate prepared by Mr. Taylor, an intelligent coal engineer, in 1829, the coal-fields of Durham and Northumberland are adequate to furnish the present annual supply for a very long period. We subjoin Mr. Taylor's estimate.

ESTIMATE OF THE EXTENT AND PRODUCE OF THE DURHAM AND NORTHUMBERLAND COAL-FIELDS.

	Sq. Miles.	
Durham.		
From South Shields southward to Castle Eden, 21 miles; thence westward to West Auckland, 33 miles; northeast from West Auckland to Eltringham, 55 miles; and then to Shields, 22 miles; being an extent or area of	594	
Northumberland.		
From Shields northward 27 miles, by an average breadth of 9 miles	243	
	—	837
Portion excavated.		
In Durham, on Tyne, say	60	
on Wear	40	
	70	
In Northumberland, say 13 miles by 2	26	
	—	105
		732

	Tons.
Estimating the workable coal strata at an average thickness of 12 feet, the contents of one square mile will be 12,600,000 tons, and of 732 square miles	9,069,480,000
Deduct one-third part for loss by small coal, interceptions by dikes, and other interruptions	3,023,160,000
Remainder	6,046,320,000

This remainder is adequate to supply the present vend from Newcastle, Sunderland, Hartley, Blyth, and Stockton, of 3,500,000 tons, for a period of 1727 years.

It will be understood that this estimate of the quantity of coal in Durham and Northumberland can only be an approximation, especially as the southeastern coal district of Durham is yet almost wholly unexplored; but the attempt is made, in the hope of satisfying your lordships that no apprehension need be entertained of this valuable mineral being exhausted for many future generations.

There is also a considerable extent of coal-field in the northern and southwestern districts of Northumberland, but the foregoing comprises that which is continuous, and most suitable and available for exportation. It is, however, to be observed that the shipments of coal from the ports mentioned by Mr. Taylor has been largely increased during the last dozen years: so that, supposing the estimate to be in other respects accurate, it must now be modified accordingly.—*Lords' Report*, 1829, p. 124.

Dr. Buckland, the celebrated geologist, considers Mr. Taylor's estimate as greatly exaggerated; but in his examination before the committee of the House of Commons in 1829, he quoted with approbation a passage of Bakewell's *Geology*, in which it is stated that the coal-beds in South Wales were alone sufficient to supply the then demand of England for coal for 2000 years. The passage is as follows:

"Fortunately we have in South Wales, adjoining to the Bristol Channel, an almost exhaustless supply of coal and iron-stone, which are yet nearly unwrought. It has been stated that this coal-field extends over about 1200 square miles; and that there are 23 beds of workable coal, the total average thickness of which is 95 feet; and the quantity contained in each acre is 100,000 tons, or 65,000,000 tons per square mile. If from this we deduct one half for waste, and for the minor extent of the upper beds, we shall have a clear supply of coal equal to 32,000,000 tons per square mile. Now if we admit that 5,000,000 tons from the Northumberland and Durham mines is equal to nearly one-third of the total consumption of coal in England, each square mile of the Welsh coal-field would yield coal for two years' consumption; and as there are from 1000 to 1200 square miles in this coal-field, it would supply England with fuel for 2000 years, after all the English coal mines are worked out!"

But supposing this supply to last only 1000 years, that carries us so far into futurity, that it appears to be quite idle either to prohibit or impose heavy duties on the exportation of coal, on the ground of its accelerating the exhaustion of the mines.

Profits of Coal Mining. Coal Owners' Monopoly, etc.—Instead of the business of coal mining being, generally speaking, an advantageous one, it is distinctly the reverse. Sometimes, no doubt, large fortunes have been made by individuals and associations engaged in this business; but these are rare instances. The opening of a mine is a very expensive and hazardous operation, and of very uncertain result. Collieries are exposed to an infinite number of accidents, against which no caution can guard. The chances of explosion have, it is true, been a good deal lessened by the introduction of Sir Humphry Davy's lamp; and some mines are now wrought that, but for the invention of this admirable instrument, must have been entirely abandoned. But besides explosions, which are still every now and then occurring, from the carelessness of the workmen, and other contingencies, mines are very liable to be destroyed by *creeps*, or by the sinking of the roof, and by drowning, or the irruption of water from old workings, through fissures which can not be seen, and consequently can not be guarded against. So great, indeed, is the hazard attending this sort of

property, that it has never been possible to effect an insurance on a coal-work against fire, water, or any other accident.

Coal Trade.—It is estimated that not less than forty million tons of coals are raised annually from the various mines in the United Kingdom. Of these the greater part is either used in the immediate neighborhood of the mines, or sent by inland navigation or land carriage to different parts of the kingdom. In 1852, 12,709,771 tons of coals, cinders, and culm were shipped from ports in the United Kingdom; of these, 9,069,577 tons were sent coastwise to other ports of the kingdom; being, coals 8,805,934 tons, cinders 43,376 tons, culm 220,267 tons. The quantities of coals, cinders, and culm shipped coastwise from the different ports of the United Kingdom in 1851 and 1852, were:

	1851.	1852.
ENGLAND.	Tons.	Tons.
Portsmouth	6,103	6,644
Bristol	1,562	1,085
Gloucester	85,963	88,801
Cardiff	501,002	462,243
Newport	451,491	451,770
Swansea	352,247	375,182
Llanelly	219,460	214,735
Milford	49,573	50,102
Chester	101,044	85,772
Liverpool	115,904	105,932
Preston	42,257	37,018
Fleetwood	9,898	9,349
Lancaster	5,837	4,838
Whitehaven	226,266	222,208
Workington	95,703	85,014
Maryport	201,076	230,012
Carlisle	15,153	17,851
Newcastle	2,067,112	2,175,857
Shields	214,329	168,172
Sunderland	1,399,160	1,978,611
Stockton	388,046	336,521
Hartlepool	1,157,989	1,340,876
Gainsborough	9,577	7,005
Hull	12,725	10,119
Goole	104,336	96,083
Other ports	4,252	3,984
SCOTLAND.		
Leith	9,091	8,358
Barrowstounness	36,550	34,550
Grangemouth	6,521	2,043
Alloa	23,015	18,206
Kirkcaldy	37,035	29,504
Glasgow	86,393	81,906
Irvine	224,193	250,847
Ayr	72,569	77,883
Other ports	430	2,091
IRELAND.		
Ross	476	179
Total	8,816,538	9,069,577

In 1852 the exports from the United Kingdom to foreign countries, including British settlements, were as follows: Coals 3,479,282 tons, of the value of £1,287,626; cinders 159,040 tons, of the value of £83,832; culm 1872 tons, of the value of £656; total, 3,640,194 tons, of the declared value of £1,372,114.

The principal foreign countries to which coals, cinders, and culm were exported from the United Kingdom in 1851 and 1852, were the following:

Countries.	Quantities Exported.	
	1851.	1852.
	Tons.	Tons.
Russia	215,221	188,041
Denmark	295,153	315,689
Prussia	216,603	214,513
Hanseatic Towns	343,065	350,499
Holland	132,258	147,540
France	602,898	603,261
Spain and Canaries	191,855	203,371
Italy	152,919	171,367
Turkey	98,295	72,782
British East Indies	97,738	94,364
British West Indies	82,14.	95,449
United States, North America	83,546	122,285

The quantities of coal brought coastwise and by inland navigation into the port of London were:

Years.	Coastwise.	Inland Navigation and Land Carriage.	Total.
	Tons.	Tons.	Tons.
1851	3,236,542	254,421	3,490,963
1852	3,330,428	414,917	3,745,345

During the six months ending 30th June, 1852, 179,386 tons of coal were imported into London by railway, and 19,637 tons by canal: for the corresponding period of 1853 the imports by railway were 296,361 tons, and by canal 10,322, showing a decrease by canal, but a very considerable increase by railway.

The coal trade was long subjected to very heavy and oppressive duties. A duty of 17*s.* per chaldron on large, and 4*s.* 6*d.* per chaldron on small coals, was levied on all coal exported to foreign countries. In 1831 these duties were considerably modified, and in 1835 they were repealed, with the exception of an *ad valorem* duty of 10*s.* per cent. on coal exported in British vessels, or in those of foreign countries entitled to the privileges conferred by treaties of reciprocity, while in other foreign vessels it was subject to a duty of 4*s.* a ton. These duties were, in 1840, altered to 10*s.* 6*d.* per cent., and 4*s.* $2\frac{8}{20}$*d.* per ton respectively. In 1842, duties of 2*s.* per ton on large, and 1*s.* per ton on small coal and culm were imposed, and on all coal exported in foreign vessels not entitled to the privileges conferred by treaties of reciprocity a duty of 4*s.* per ton. The two former were abolished on 12th March, 1845, but the last continued in force till 14th August, 1850.

In the reign of William III., a duty of 5*s.* per chaldron was laid upon coal carried coastwise from one part of the kingdom to another. During the last war with France this was raised to 9*s.* 4*d.*, but in 1824 it was reduced to 6*s.*, and in 1831 was repealed. This tax pressed unequally on different parts of the empire, for while it amounted to 6*s.* a chaldron, or 4*s.* a ton in the metropolis, and all the south of England, it was only 1*s.* $7\frac{1}{4}$*d.* a ton on coal carried by sea to Ireland, and 1*s.* 8*d.* on that to Wales; while Scotland was for many years entirely exempted from this duty.

Though these duties are now abolished, the coal trade is still in some places burdened with heavy local duties. Thus a duty of 1*s.* 1*d.* per ton is chargeable upon all coal brought into the port of London. By act 1st and 2d William IV., cap. 76, several oppressive acts were repealed, and the duties payable to the corporation of the city of London were commuted for a duty of 1*s.* 1*d.* per ton; and by 8th and 9th Vict., cap. 101, a like duty was imposed on coal brought into London by railway, canal, or other inland carriage. Of this duty 8*d.* per ton is carried to the London Bridge Approaches Fund, for effecting street improvements in the metropolis; 4*d.* per ton is the property of the corporation of the city of London, and after defraying certain charges is carried to the general account of the corporation; 1*d.* per ton is payable to her majesty's commissioners of works, to be applied by them in effecting public improvements in the metropolis, authorized by several acts of Parliament. The produce of these duties, with the drawbacks allowed upon coal exported, was, in 1852,

	Gross Duty.	Drawback.	Net Duty.
8*d.* per ton to 5th January, 1853	£128,657	£10,098	£118,559
4*d.* per ton to 31st December, 1852	62,640	5,040	57,591
1*d.* per ton to 31st December, 1852	15,560	1,262	14,298
Total	£201,857	£16,400	£185,448

In 1851 the gross amount of duty was, on sea-borne coal, £175,840; on coal brought landwise, £12,151. The 4*d.* per ton duty, in 1851, amounted to £54,104, of which £215 were salaries in relation to collection; £3009 drawback allowed upon coal exported; £7607 retiring allowances paid to deputy sea-coal meters and others, upon the abolition of their offices in consequence of act 1st and 2d Will. IV., cap. 76, and which had gradually decreased from £16,820 in 1836; and £20,000 an annual charge for making a new street in the line of Canon Street, and other improvements. The attention of government is at present directed to these unjust local imposts, by which our home trade is unnecessarily burdened, and the merchant and ship-

owner made to pay for improvements which ought properly to be charged against the landlords or inhabitants; and it is expected that they will speedily be abolished.—E. B.

III. *Areas of Coal-beds in the World, and a Comparison of their Extent.*—From the elaborate work, "Statistics of Coal," by R. C. Taylor, we extract a comparison of the proportionate areas of coal land in Europe and America:

The following table shows the relative magnitude of the principal coal-producing countries, and their respective *areas of coal land*, together with the proportions which they severally bear to each other. Those of France and Spain are considerably less than the actual amount. Coal occurs in almost every principal subdivision of Spain, but we have only included the Asturias region.

Hence, as regards European countries, Great Britain takes the first rank; Belgium, as regards territorial proportion, occupies the second rank, although in relative coal area she is the least of the four. Pennsylvania, in respect to territorial proportion, is higher than any of these, being relatively one-third; but in absolute area of coal formation, the four eastern colonies of British America united exceed them all, being larger than that of Great Britain, France, Belgium, and Spain conjoined. This table is not strictly perfect, since we possess the areas of the concessions only in France; and in Spain, only of the single coal region of Asturias. We add the coal areas of Prussia and Austria, but can not state the proportions of coal formation therein. The American area of coal is nearly three-fourths of the whole amount in our table.

Countries.	Entire Area of each Country.	Area of Coal Lands.	Proportion of Coal to their whole Areas.	Proportions, Relative Parts of 1000, of Coal Areas.
	Square Miles.	Square Miles.		
Great Britain	120,290	11,859	1-10	64
Spain (Asturias region)	177,781	9,408	1-52	18
France (area of fixed concession) in 1845	204,736	1,719	1-118	9
Belgium conceded lands	11,372	518	1-22	3
Pennsylvania, United States	43,950	15,437	1-3	84
British Provinces, North America	81,113	18,000	1-4½	98
Persian dominions	167,937	....	..	..
Austrian Prov containing coal or lignite	150,000	....	..	..
United States.	2,280,000	....	1-17	..
Twelve principal coal-producing States	665,283	133,132	1.4	724
Total	....	184,073	..	1000

We assume these, in round numbers, as correct; and here we perceive at a glance the vast resources of the United States in their coal-producing regions, when compared with Europe. It must be recollected, too, that several of our States have not had geological surveys; and it would not be surprising if other States than those enumerated were found hereafter to possess coal in abundant quantities.

The whole coal region of Europe is by Mr. Taylor shown to be only 50,941 square miles, being *somewhat less than that of the Western States of Illinois and Indiana;* while England has only 8139 miles, and Ireland 3720 miles, the aggregate being somewhat less than that of the State of Ohio. But Great Britain produces annually upward of 34,000,000 tons of coal; while that of Pennsylvania is about 10,000,000 tons.

IV. *Comparison of the Coal Trade of the United States and Europe.*—The consumption of coal in Europe and the United States was estimated as follows in 1845, showing also the square miles of coal formation, the relative proportions, and the value in dollars:

Countries.	Square Miles.	Production, 1845.	Proportion.	Value.
		Tons.		
Great Britain	11,859	31,500,000	·642	$45,738,000
Belgium	518	4,960,000	·101	7,080,000
United States	133,132	4,400,000	·089	6,650,000
France	1,719	4,141,000	·084	7,663,000
Prussian States	undefined.	3,500,000	·070	4,122,000
Austrian States	undefined.	659,000	·014	800,000
Total	....	49,160,000	1·000	$72,662,000

The quantities of coal imported into the United States from England and the British provinces were, in 1850, 180,439 tons; and in the year 1853, 231,508 tons. From a letter of Mr. E. K. Collins, we learn that the Collins line of steam vessels had used the Cumberland coal, but had relinquished it, and afterward tried the anthracite, which was used for three years. In January, 1854, they thought of using the Cumberland coal again.

Mr. Cunard states that for his line they use the Welsh coal on the voyage from Liverpool, and the Cumberland coal on the return trips.

"We have in the United States more iron ore and more coal, with the usual fluxes, in convenient connection and of cheaper access, than all the other civilized nations of the world, and have the necessary capital, skill, and labor to produce all the iron and steel, and manufactures of iron and steel, required for our consumption, or that may be required for our consumption, for centuries to come, and also to enable us to supply the markets of other countries in fair competition with the iron and steel of other nations. Our production of iron and steel, and manufactures of iron and steel, was greater in proportion to population in 1850 than it was in 1840, and that it was greater in 1855 than it was in 1850, giving us the right to assume that, influenced by the same causes, it will be greater in 1860 than it now is, and in time will be sufficient for our own consumption, and then give us a surplus for export. But taking into consideration our present population and accumulated capital, with the amount of capital annually drawn from other countries in the course of emigration, and the great cost of carriage to the interior of our country, with the late improvements in the modes of production and manufacture of iron and steel, it would not be rash to expect a full supply for our own consumption between this and the returns of the census of 1870."—*United States Treasury Report*, 1856.

The question of duty on coal attracts considerable attention, and it is well to understand certain facts which have a direct bearing upon its decision.

In the year 1815, when the duty on foreign coal was $3 60, the price in New York was $23 the chaldron of 36 bushels.

From 1816 to 1823 the duty was $1 80, and the average price was $11.

From 1824 to 1834 the duty was $2 16, and the average price was $14.

In 1842 the duty was $1 75 per ton, and the market price was $7 16; and in 1841, with a duty of $1, the price was $5 56. In the year 1846 the duty was altered to an *ad valorem* one of 30 per cent., or about 45 cents per ton, and the market price since has ranged from $6 50 to $7 50.

V. *Statistics of the Coal Trade of the United States.*—Pennsylvania is rich in its coal product. This article is one of the great sources of wealth to that State, and its importance may be seen from the single fact that about 6,000,000 tons are carried over or through the various railroads and canals of that State eastwardly. We refer only to the anthracite region, which mines seem to be inexhaustible, and we leave out of view the immense production in Western Pennsylvania. The latter portion of the State owes its growth mainly to its coal-beds, in conjunction with its iron and glass manufactures.

The maximum capabilities of the transportation

companies may be set down at 7,600,000 tons per year, with their present forces; viz.:

	Tons.
Lehigh (Canal) Navigation Company	1,300,000
Schuylkill (Canal) Navigation Company	1,000,000
Reading Railroad	4,000,000
Delaware and Hudson Canal	1,300,000
Total	7,600,000

If we may judge by the increase of the last two or three years, the quantity of coal required by the above conveyances will be 7,500,000 tons for the coming year, and between eight and nine millions for the year 1856. We have received from London the special Report of Professor Wilson on the New York Industrial Exhibition, in which document we find a variety of useful information in reference to the manufactures, minerals, mining, and metallurgy of the United States. His remarks on the iron, lead, copper, and zinc products and manufactures will be a valuable addition to the information already in possession, and will be acceptable as well to the legislator as to the manufacturer and merchant.

Virginia takes the lead among the Eastern (or Atlantic) States as the owner of coal-fields, and is, in fact, one of the prominent States of the whole Union as the possessor of this valuable mineral.

AREA OF THE SEVERAL STATES WHERE COAL IS FOUND, AND THE COAL AREA OF EACH, AND THE PROPORTION OF COAL.

States.	Area.	Coal Areas.	Proportion of Coal.
	Square Miles.	Square Miles.	
Alabama	50,815	3,400	1-14
Georgia	58,200	150	1-386
Tennessee	44,720	4,300	1-10
Kentucky	39,015	13,500	1-3
Virginia	64,000	21,105	1-3
Maryland	10,820	550	1-20
Ohio	38,850	11,900	1-3
Indiana	34,800	7,700	1-5
Illinois	59,130	44,000	3-4
Pennsylvania	43,950	15,437	1-3
Michigan	60,520	5,000	1-20
Missouri	60,384	6,000	1-10
Total	565,283	133,132	Nearly ¼th

North Carolina is reputed to hold about as much coal land as Georgia. Iowa is one of the richest coal States, and has a coal area almost equal to Ohio.

From this valuable reference-table it will be seen that Illinois takes the lead, having within her own borders *one-third* of the entire coal region of the United States. Next in importance is Pennsylvania, producing both anthracite and bituminous coals. Of these immense fields Professor Wilson says:

"These comprise the three anthracite coal-fields of Eastern Pennsylvania, known as the Southern Schuylkill, the Middle of Shamokin, and the Northern or Wyoming, and the Frostburg or Cumberland coal-field (semi-bituminous), in the State of Maryland. Besides these beds, a small outlying bed exists in Pennsylvania of semi-bituminous coals, known as the Broadtop, which, however, owing to its insulated position, being without any means of access, is only available for local purposes; and some deposits of considerable area in Virginia, whose importance is being daily recognized, and whose produce is gradually finding its way into the markets. The demand at present, however, is confined chiefly to gas-making purposes.

"Of the three anthracite beds of Pennsylvania, the Southern is, both by situation and magnitude, the most important, and furnishes a large proportion of the entire supply. It presents great facilities of access, which have been made advantageous use of by two Canal Companies, the Lehigh and the Schuylkill, and by the Reading Railroad, which penetrate far into the interior, and form the great outlets for its produce. Other railways are now in progress, which will not only afford additional facilities of transfer to the Atlantic cities, but also open a communication to the latter, and through them to the Western markets."

The third in importance is Ohio, having nearly one-third of its area in coal. The returns as to production are not copious; but Charles Lyell, who made critical inquiries on the subject, reported the following as the yield for 1851-'52:

	Bushels.	Tons.
Western Pennsylvania	35,000,000	1,170,000
Virginia	15,000,000	500,000
Eastern Ohio	16,000,000	535,000
Total	66,000,000	2,205,000

At the Exhibition were produced samples of coal from Valley Falls, Rhode Island, but the product is of inferior quality.

Of the Virginia coal, twelve miles west of Richmond, and extending fifty miles, the seams are 800 feet in thickness, being the deepest mines known in America. In Belgium some of the mines are known to be from 1140 to 1476 feet in depth. In England, 1000 to 1794 feet—with an average in Lancasnire of 750 feet.

DISTANCES OF THE CHIEF COAL DISTRICTS OF PENNSYLVANIA AND MARYLAND FROM TIDE-WATER.

Bituminous Coal.		Miles.
Farrandsville	to Havre de Grace	202
Alleghany Coal Mines	to Havre de Grace	195 to 200
Cumberland, Maryland,	to Georgetown	199
Cumberland, Maryland,	to Baltimore	189
Dauphin and Susq. Co.	to Havre de Grace	93
Anthracite Coal.		
Del. and Hudson Co.	to Rondout	125
Pine Grove	to Havre de Grace	120
Lykens' Valley Co.	to Havre de Grace	116½
Bear Mountain Co.	to Havre de Grace	111
Lehigh Room Run	to Bristol	110
P. Grove by Minersville	to Philadelphia	110
Stony Creek Coal Estate	to Havre de Grace	100
Minersville	to Port Richmond	98
Pottsville	to Port Richmond	95½

IMPORTED COAL.—The only countries from which coal ever finds its way into the United States are Great Britain and British America, and the contributions from them appear to be annually diminishing. For a time there was an increasing foreign importation; viz., from 22,123 tons in 1821, to 181,551 tons in 1839. By the operation of the American tariff this advance was not only checked, but a retrograda movement was produced, so as in 1843 to amount to only 41,163 tons, by the United States returns. By the last annual return, that for 1847, the entry of foreign coals, whether from Europe or from British America, was 148,021 tons; of which from 12,000 to 15,000 tons were re-exported for the service of the English steamships. In 1850, 180,439 tons were imported into the United States; in 1853, 231,508 tons; showing an increase.

INCREASED PRODUCTION OF COAL. *Anthracite Coal.*—The production of anthracite may be said to be entirely confined to Pennsylvania, which possesses a numerous and interesting group of coal basins of various sizes and character.

Our returns show that the consumption of anthracite, in other words, the coal trade, commenced with 365 tons in the year 1820; that the production reached 48,047 tons in 1827; that it had increased to 881,026 tons in 1837, and advanced to 3,000,000 of tons in 1847, without including much that is consumed on the spot, in the mining districts, or interior of the country.

The increased production, therefore, was, in the first ten years, viz., from 1827 to 1837, 1735 per cent.; in the second ten years, viz., from 1837 to 1847, 240 per cent.; and in the twenty years previous to 1848, that is, from 1827 to 1847, 6100 per cent.

We introduce another view of the subject, which exhibits this accelerated increase in the consumption of anthracite, perhaps, with yet greater perspicuity. The amount which was periodically forwarded to market, exclusive of the consumption in or near the places of production, and which has not been estimated, is as follows:

	Tons.
Aggregate in the 21 years, from 1820 to 1840, inclusive	6,847,172
In the succeeding 7 years, to 1847, inclusive	12,371,961
Total	19,219,133
From 1847 to 1853, inclusive	23,841,358
Total	43,060,491

We add the statistics from the various regions for the year 1855.

Schuylkill Region.	1854.	1855.	Increase.	Decrease.
	Tons.	Tons.	Tons.	Tons.
By railroad	987,854	2,213,994	225,498	....
By canal	907,354	1,105,263	197,909	....
Pinegrove	62,462	15,019	15,019	....
Total	2,957,670	3,396,097	438,366	....
Lehigh Region.				
Lehigh Canal	1,207,186	1,224,842	17,656	....
Lehigh Valley Railroad	....	9,063	9,063	....
Wyoming Region.				
Del. and Hudson Co.	440,944	565,460	124,516	....
Pennsylvania Coal Co.	496,648	597,803	8,155	....
N. Branch Canal	492,689	564,039	....	28,650
White Haven Railroad	39,232	50,209	10,977	....
Western Railroad	133,965	187,000	53,035	....
Shamokin	65,506	116,117	52,617	....
Anthracite	5,831,834	6,517,569	715,385	28,650
	....	5,831,818	28,650	....
Increase of anthracite in 1855	....	686,735	686,735	....

Showing an increase of anthracite coal in 1855 of 686,735 tons, against 734,690 tons last year.

An Official Statement of the Amount of Coal sent to Market from the Lehigh Region, from the commencement of the Trade to the Close of the Year 1856.

Years.	Tons.	Years.	Tons.
1820	365	1839	222,042
1821	1,073	1840	225,591
1822	2,441	1841	142,807
1823	5,823	1842	271,913
1824	9,541	1843	267,125
1825	28,396	1844	376,803
1826	31,280	1845	430,988
1827	32,074	1846	522,513
1828	30,232	1847	643,563
1829	25,110	1848	680,197
1830	41,750	1849	806,988
1831	40,366	1850	729,681
1832	75,000	1851	989,254
1833	123,000	1852	1,118,543
1834	106,244	1853	1,080,550
1835	131,250	1854	1,245,815
1836	146,522	1855	1,274,983
1837	225,937	1856	1,357,520
1838	214,211		

Bituminous Coal.—We have given, in the first part of this article, data by which the approximate increase of this description of fuel can be determined, and give here all the statistics that can be collected.

Semi-anthracite or Bituminous.	1854.	1855.	Increase.	Decrease.
	Tons.	Tons.	Tons.	Tons.
Lykens' Valley Co.	57,500	66,721	9,221	....
Short Mountain Co.	50,000	50,000	500	....
Dauphin Co.	63,000	1,000	....	62,000
Cumberland Region	648,229	664,304	16,005	....
Foreign coal	252,855	287,408	34,543	....
Total	1,071,644	1,069,933	60,269	62,000
	1,069,933	....	....	60,269
Decrease in 1855	1,731	....	....	1,731

The increase of semi-anthracite or bituminous coal in 1854 including foreign, over the previous year, was 218,167 tons. This year (1855) there is a decrease of 1731 tons, making the total increase of all kinds in 1855 684,004 tons, against 952,857 tons in 1854.

Almost as interesting as the statistics of the areas and production of the coal countries, is the consideration of the means of transportation and the facilities needed to give us fuel in abundance and at a low price. It is of great importance to the consumer, and an extract from a private letter will be of interest, throwing some light on the ways and means, the cost and contingencies in the transit to market:

"By canal, besides the distance and cost of the structure, there are so many contingencies, arising from too much or too little water, as to weaken the dependence; and on the railroads, the grades and the adaptation to the business are alone the objects by which the price can be regulated. If the grades be level or descending, the capacity of the engine is not only increased, but the expense is so much reduced as to determine its value, and it is only upon a road so graded and so constructed as to endure the burden that the price can be fixed or defined. On the down-hill grade the momentum keeps up the speed, and relieves the engine, while on the up-hill grade the speed is depressed, the power is reduced, the strain is increased, and the expense augmented.

"On the Reading Railroad, in operation since 1841, these facts are so illustrated and defined as to establish their existence beyond a question. On the stem as upon the laterals, the descent is from 22 feet to a mile to a level of 36,000 feet, and as the maximum is but four miles in length, the balance descends to the level without the slightest rise to interfere with the speed. On this descent and over the level, a single engine can take as many cars loaded as it can bring empty to the place of starting. This difference, from the weight of the descending and ascending trains, is ascertained to be equal to two and three-quarters engines, or 175 per cent. more than on the downward grade—consequently a reversion of the trade; or upon a road where the grade is equal to twenty-two feet to the mile against the trade, the expense for engines, fuel, and wages, would be more for the same distance than the profits derived from the coal in market.

"But as these are the questions for railroad-makers, we will next consider the extent of the trade, and arrive at our object by the expenditure made to accommodate it. On the Lehigh, we have an expenditure on the part of the Lehigh Coal and Navigation Company of $8,441,405, and on the part of some fourteen or fifteen companies passing over their works about five millions more, making together $13,441,405. From the commencement of the company in 1820 until the close of the season in 1855, the production of the region is 12,278,012—equal to 353,725 tons per annum. But if we take the amount sent to market during the year just closed, 1,274,986 tons, and admit a clear profit of 75 cents per ton, which it did not give to the several parties concerned, the income would be less than 7 per cent. on the money expended. In the region it is also understood the mining operations are above water-level, and that until recently they were conducted on the principle of a quarry, and that the expenses, together with the transit, prevented a dividend to the stockholders until the outside operators came in to their relief.

"On the Lackawana, the Delaware and Hudson Company, and the Pennsylvania Coal Company, with capitals amounting to $11,626,761, brought to market during 1855, 1,092,000 tons, and during the period they have been in existence the average is equal to 332,000 tons per annum. The production of 1855, at 75 cents per ton clear profit, gives, however, but 7 per cent.

"On the Schuylkill, the operations are more extensive, and the expenditure, including the

Reading Railroad, cost	$18,464,114 64
Schuylkill Canal cost	10,850,451 41
496 miles Lateral Roads to the Collieries.	4,000,000 00
Total	$33,314,566 05

Besides this expenditure for reaching the trade, there is a population depending upon it of 60,717 in 1850, which is divided into 10,927 families and 10,670 houses. In the region there are also 300 stationary engines, equal to 10,000 horse power, used in mining. In 1855, the production was 3,318,340 tons, and during the existence of the works (the Navigation Company thirty-four years, and the Reading fifteen years), the product has been 28,508,944 tons, equal to 838,495 tons per annum. At 75 cents on the product of the year just closed, clear profit, the percentage on $36,631,516, including the improvements at the mines, would be between 7 and 8 per cent.

"Altogether the cost for improving and reaching the three regions in operation, including the eastern division of the Pennsylvania works, is $62,272,898. The product during 1855 amounted to 5,262,189 tons, which, at 75 cents profit, would be equal to 7½ per cent. profit."

—*See articles* Iron *and* United States.

Coasting-trade, the trade or intercourse carried on by sea between two or more ports or places of the same country. It has been customary in most countries to exclude foreigners from all participation in the coasting-trade. This policy began in England in the reign of Elizabeth (5 Ellz. c. 5), or perhaps at a more remote era; and it was perfected by the acts of navigation passed in 1651 and 1660. This policy is now entirely abrogated in Great Britain.—*See* Great Britain.

Of Vessels which may engage in the Domestic Trade of the United States.—Vessels of twenty tons and upward, enrolled, and having a license in force, and vessels of less than twenty tons, not enrolled, but having a license in force, and no others, shall be deemed vessels of the United States, entitled to the privileges of vessels employed in the coasting-trade and fisheries. Every vessel of twenty tons or upward (other than such as are registered) trading between district and district, or between different places in the same district, or carrying on the fishery, without being enrolled and licensed, or if of less than twenty tons, and not less than five tons, without a license, if laden with goods the growth or manufacture of the United States only (distilled spirits only excepted), shall pay the same fees and tonnage in every port at which she may arrive as are payable by vessels not belonging to a citizen of the United States; and if she have on board any articles of foreign growth or manufacture, or distilled spirits, other than sea-stores, she, together with her tackle, apparel, and furniture, and lading, found on board, shall be forfeited. But if such vessel be at sea at the expiration of the time for which the license was given, and the master shall swear that such was the case, and shall also, within forty-eight hours after his arrival, deliver to the collector of the district in which he shall first arrive the license which shall have expired, she shall not be forfeited, nor shall be liable to pay such fees and tonnage. No goods shall be imported, under penalty of forfeiture thereof, from one to another port of the United States, in a vessel belonging wholly, or in part, to a subject of any foreign power; but such vessel may sail from one to another such ports, carrying such goods only as were imported in her from some foreign port, and which shall not have been unladen.

Of the Enrollment and License of Vessels.—The like qualifications and requisites are necessary for the enrollment as for the registry and record of vessels, and the same duties are imposed on, and authority given to, all officers respectively, in relation to such enrollments, and the same proceedings shall be had in similar cases touching such enrollments; and vessels so enrolled, with their masters or owners, shall be subject to the same requisites as are in these respects provided for registered vessels. The record of such enrollment shall be made, and an abstract or copy thereof granted, as nearly as may be, in the form directed by law. Enrolled and licensed vessels may be registered upon the registry being given up; and registered vessels may be enrolled, upon surrendering up the enrollment and license. And when any vessel shall be in any other district than that to which she belongs, the collector, on application of the master, and on his making oath that, to the best of his knowledge and belief, the property remains as expressed in the register or enrollment, proposed to be given up, and upon his giving the bonds required for granting register, shall make such exchanges; and such collector shall transmit the register or enrollment given up to the register of the treasury. The register or enrollment and license granted in lieu thereof, shall, within ten days after the arrival of the vessel within the district to which she belongs, be delivered up to the collector of such district, and be by him canceled. And if the master shall neglect to deliver such register or enrollment and license within the time specified, he shall forfeit one hundred dollars. In order to the licensing of any vessel for carrying on the coasting-trade or fisheries, the husband, together with the master, with one or more sureties, to the satisfaction of the collector, shall become bound to pay to the United States, if she be of the burden of five tons and less than twenty tons, the sum of one hundred dollars; and if twenty tons, and not exceeding thirty tons, the sum of two hundred dollars; and if above thirty tons, and not exceeding sixty tons, the sum of five hundred dollars; and if above sixty tons, the sum of one thousand dollars, in case it shall appear, within two years from the date of the bond, that she has been employed in any trade whereby the revenue of the United States has been defrauded, during the time her license remained in force; and the master of such vessel shall also swear that he is a citizen of the United States, and that such license shall not be used for any other vessel, or any other employment, than that for which it is specially granted, or in any trade whereby the revenue may be defrauded; and if such vessel be less than twenty tons burden, her husband shall swear that she is wholly the property of a citizen or citizens of the United States; whereupon the collector of the district whereto such vessel may belong (the duty of six cents per ton being first paid) shall grant a license, in the form directed by law, for carrying on the coasting-trade, whale fishery, cod fishery, or mackerel fishery. A steam-vessel, intended to be employed only in a river or bay of the United States, owned wholly or in part by an alien, resident within the United States, shall be enrolled and licensed as if she belonged to a citizen of the United States, except that no oath shall be required that she belongs to a citizen or citizens of the United States. The owner of such steam-vessel, upon application for enrollment or license, shall give bond to the collector of the district, to and for the use of the United States, in the penalty of one thousand dollars, with sufficient surety, conditioned that she shall not be employed in other waters than the rivers and bays of the United States. When the master of any licensed vessel, ferry-boats excepted, shall be changed, the new master, or, in case of his absence, an owner, shall report such change to the collector residing at the port where the same may happen, if there be one, otherwise to the collector residing at any port where such vessel may next arrive, who, upon the oath of such new master, or in case of his absence, of an owner, that he is a citizen of the United States, and that she shall not, while such license continues in force, be employed in any manner whereby the revenue may be defrauded, shall indorse such change on the license, with the name of the new master; and when any change shall so happen, and shall not be reported, and the indorsement so made, such vessel, found carrying on the coasting-trade or fisheries, shall be subject to pay the same fees and tonnage as a vessel of the United States having a register, and the new master shall forfeit and pay the sum of ten dollars. Before any vessel, of the burden of five tons, and less than twenty tons, shall be licensed, the same admeasurement shall be made, and the same provisions observed relative thereto, as are to be observed in case of admeasuring vessels to be registered; but in all cases where such vessel, or any other licensed vessel, shall have been once admeasured, it shall not be necessary to measure her anew for the purpose of obtaining another enrollment or license, except she shall have undergone some alteration as to her burden subsequent to the time of her former license. Every licensed vessel shall have her name, and the port to which she belongs, painted on her stern, as is directed for registered vessels, and if found without such painting, the owner shall pay twenty dollars. No collector shall grant to any vessel, whose enrollment or license for carrying on the coasting-trade has expired, a new enrollment or license, before the master shall have rendered a true account of the number of seamen, and the time they have severally been employed on board such vessel during the continuance of the expired license,

and shall have paid to the collector twenty cents per month, for every month such seamen have been so severally employed, which sum the master may detain from the wages of such seamen. If the master shall render a false account of the number of men, and the length of time they have severally been employed, he shall forfeit and pay one hundred dollars. Any boat, sloop, or other vessel of the United States, navigating the waters on our northern, northeastern, and northwestern frontiers, otherwise than by sea, shall be enrolled and licensed in such form as may be prescribed by the Secretary of the Treasury; which enrollment and license shall authorize any such boat, sloop, or other vessel, to be employed either in the coasting or foreign trade; and no certificate of registry shall be required for vessels so employed on said frontiers: *Provided*, That such boat, sloop, or vessel, shall be, in every other respect, liable to the rules, regulations, and penalties, now in force, relating to registered vessels on our northern, northeastern, and northwestern frontiers.—*Laws of the United States.*

TONNAGE EMPLOYED IN THE COASTING-TRADE OF THE U. S.

Years.	Tonnage.	Years.	Tonnage.
1815	435,066	1830	873,023
1816	479,979	1837	956,980
1817	481,457	1838	1,041,105
1818	503,140	1839	1,153,551
1819	523,556	1840	1,176,694
1820	539,080	1841	1,107,067
1821	559,435	1842	1,045,753
1822	573,080	1843	1,076,155
1823	566,408	1844	1,109,614
1824	589,223	1845	1,190,898
1825	587,278	1846	1,289,870
1826	666,420	1847	1,452,023
1827	732,937	1848	1,620,988
1828	758,922	1849	1,730,410
1829	808,858	1850	1,755,796
1830	516,978	1851	1,854,817
1831	539,723	1852	2,008,021
1832	649,627	1853	2,134,256
1833	744,198	1854	2,273,900
1834	783,618	1855	2,491,108
1835	792,301	1856	2,211,935

From this table we see that our coasting-trade has increased 12 per cent. on an average for forty years, and has doubled in the past ten years—from 1845 to 1855. The total tonnage has increased from 435,066 tons in 1815 to 2,491,108 tons in 1855, giving an increase of 10 per cent. per annum; showing that we have at this time a larger tonnage than any other nation.

"The coasting-trade of the United States has, from the beginning, been strictly reserved for vessels built within the United States, and owned by citizens of the United States, to the exclusion of foreign-built and foreign-owned vessels. The American tonnage engaged in foreign trade and in the coasting-trade has been American built, and has had the absolute protection of our laws, and the licensed tonnage absolute protection, in the carrying-trade on our coast, and in our own waters. The protection given to our foreign-commercial and to our coasting-commercial marine has secured a large and efficient body of skillful officers and sailors, at all times ready for the defense of our cities and coast, for repelling aggression on our commerce, and for manning our ships of war. In the protection given to our shipping interest, for the purpose of having at all times the power to repel foreign aggression, and protect our coast and trade, there appears to have been but little division of sentiment, from the earliest time to the present, while the yearly increase of our tonnage proves the wisdom of our laws in this particular. We have no data to ascertain the annual number of persons, or the annual tons of freight carried, in our coasting-trade, nor the value thereof. Each person must make his own estimate of the tonnage employed, and the average number of trips the vessels can make, combined with the facts that capital constantly tends to that business, and the growth of our enrolled and licensed tonnage keeps pace with our increasing population and wealth. The amount of coasting-tonnage, and the annual number of tons of freight transported on our railroads, with an estimate of that carried by other modes of transfer, exhibit the magnitude of the means required for our internal trade."—*U. S. Treasury Report*, December, 1856.

Coast Line. The following statement of the river navigation and shore line of the United States was prepared by Colonel Abert, of the Topographical Engineers, at the request of the Treasury Department, December 7th, 1845. It has since been completed to date. The head of tide-water is assumed as the limit of steam navigation, as impeding falls or rapids are encountered at that point, above which many rivers are adapted to steam navigation, but to what extent is not sufficiently known. The shore line of rivers to head of tide-water, from

Maine to Texas, is	10,501	miles.
Rivers of Texas	1,210	"
Lower Mississippi, islands and bayous	6,272	"
Upper Mississippi and tributaries	2,736	"
Big Black, Yazoo, and bayous	1,100	"
Red River and tributaries	4,924	"
Arkansas River and tributaries	3,250	"
Missouri River and tributaries	7,830	"
Ohio River and tributaries	7,342	"
Total	47,355	"
Add rivers on the Pacific—Sacramento 600		
San Joaquin 600		
Oregon 460		
Umpqua 59		
	1,710	
Total river shore line in the United States in 1854, including both banks	49,065	miles.
Shore line of northern lakes, including bays, sounds, and islands (American)	3,020	"
Total river and lake shore line	52,785	"

A calculation made at the office of the Coast Survey in 1853 gives for the total main shore line of the United States (exclusive of bays, sounds, islands, etc.) 12,609 statute miles. If all of these be followed, and the rivers entered to the head of tide-water, the total shore line will be swelled to 33,069 miles.

SHORE LINE OF THE UNITED STATES IN STATUTE MILES.

Coasts.	Main Shore, including Bays, Sounds, etc.	Proportion of each Part of Coast to Total.	Islands.	Proportion.	Rivers to Head of Tide.	Proportion.	Total.	Proportion.	Ocean Line in Steps of Ten Miles.	Continental Shore Line of States North of Virginia.	Continental Shore Line of States South of Maryland.
	Miles.	Per Cent.	Miles.	Per Ct.	Miles.	Per Ct.	Miles.	Per Ct.	Miles.	Miles.	Miles.
Atlantic coast	6,861	54·41	6328	68·44	6,655	59·25	19,844	60·01	2050	907	1256
Pacific coast.	2,281	18·09	702	7·59	712	6·35	3,695	11·17	1405	..	..
Gulf coast	3,467	27·50	2217	23·97	3,846	34·30	9,530	28·82	1643	..	1764
Total	12,609	100·00	9247	100·00	11,213	100·00	33,069	100·00	5107	907	3020

The main shore line of the Atlantic, including bays, etc., is twice that of the Gulf, three times that of the Pacific, and more than equal to that of the Pacific and Gulf combined. The Southern States have three times as much sea-coast as the Northern.

Europe, in extent of shore line, is more favored than any other portion of the earth, and North America next; the former having, according to Guyot, only 156 miles, and the latter 228 miles of surface to one mile of coast (the United States having 241); while South America has 376, Africa 623, and Asia 459 miles.

The following table furnishes three measurements:

1. *The coast line*, i. e. sea-coast, bays, islands, etc., of the Atlantic coast	12,359	miles.
The rivers to head of tide, *both shores*	6,655	"
For the Gulf of Mexico, the coast line is	5,744	"
Length of rivers to head of tide	3,846	"
2. *Coast line, exclusive of islands and rivers* to head of tide—for the Atlantic	6,017	"
" Gulf	3,551	"
3. *Coast line, exclusive of bays, islands*, etc., etc., except Massachusetts Bay—Atlantic.	2,163	"
Gulf	1,764	"

THE RESULTS OF MEASUREMENTS OF COAST AND SHORE LINE OF THE UNITED STATES AS REQUIRED BY THE SUPERINTENDENT OF THE CENSUS BUREAU FROM THE COAST SURVEY OF JULY 12, 1854, ARE AS FOLLOWS, IN STATUTE MILES:

States.	Shore Line, including Bays, Islands, and all Irregularities.	Shore Line, except Islands.	Continent Line; viz.: Shore Line, except Islands, Bays, etc.	Remarks.
				Measurements taken on best maps of the Coast Survey Archives.
Maine	2,486	784	278	Measured on Greenleaf's map of Maine, as correct as possible, but the great irregularities of coast prevent a correct result.
New Hampshire	40	41	18	Measured on Carrigain's map of N. H., generally correct as compared with Smith's map.
Massachusetts	686	622	286	Measured on Borden's map of Mass., generally correct as compared with Smith's map.
Rhode Island	320	245	45	Measured on Smith's and Mitchell's maps.
Connecticut	202	240	104	Measured on Coast Survey off shore charts.
New York	980	50	none.	Measured on Coast Survey off shore charts.
New Jersey	540	300	120	Measured on Coast Survey off shore charts.
Delaware	118	106	23	Measured on F. Lucas's map of Md., Ches. Bay, and C. S. Sketches and Charts.
Maryland	509	411	33	Measured on F. Lucas's map of Md., Ches. Bay, and C. S. Sketches and Charts.
Northern Atlantic	6,150	2799	907	From northeast boundary to State line between Md. and Va.
Virginia	654	548	116	Measured on F. Lucas's map of Md. and C. S. maps.
North Carolina	1,641	1089	320	Measured on Brazier's map of N. C., and compared with Smith's.
South Carolina	756	267	220	Measured on Smith's map, and compared with Mitchell's.
Georgia	684	480	128	Measured on Smith's map, and compared with Mitchell's.
Florida, East Coast	2,474	1034	472	Measured on map of Topographical Engineers.
Southern Atlantic	6,269	3218	1256	From State line between Md. and Va. to S. extremity of Florida.
Total Atlantic	12,359	6017	2163	
Florida, West Coast	1,562	883	674	Measured on map of Topographical Engineers.
Alabama	316	247	58	Measured on Smith's map, and compared with Mitchell's.
Mississippi	287	225	88	Measured on Smith's map, and compared with Mitchell's.
Louisiana	2,250	1256	552	Measured on Gerdes's Reconnoissances and Smith's map.
Texas	1,330	940	392	Measured on Blunt's and Smith's map.
Total Gulf	5,744	3551	1764	
Total South Atlantic and Gulf	11,953	6769	3020	
Total Pacific, from boundary of San Diego to mouth of Frazer's River	3,251	2533	1343	Measured on Alden's Reconnoissances.

Coast Survey of the United States. It was to be expected that a people devoted to the pursuits of commerce, and depending in some degree on the sea as a means of communication between distant parts of the national territory, should demand, at an early period of their history, a competent survey of their coasts and inland waters.

But a short time previous to the separation of the colonies, charts had been constructed of the shores and harbors of North America, under the direction of F. W. Des Barres, his majesty's Surveyor General for the Colonies. The progress of his labors was interrupted by the Revolution. The surveys made under the personal superintendence of Des Barres still bear testimony to his skill and fidelity, and present a generally correct view of those parts of New England and the British possessions which, being rocky, are but little liable to change. They continue to form the principal basis of the charts of the northeastern coast of this continent. In the Southern and Middle States, however, they have been rendered worse than useless by the inconstant character of the bottoms, and the unequal merit of the originals. The surveys of Des Barres, covering a vast extent of coast, were originally deficient in minuteness of detail, and in hydrographical information; and these defects have been increased by the rapid and extensive changes in the direction, means, and wants of navigation caused by the growth of the country.

The project of a complete survey, conducted upon a uniform system and extending over the whole coast, was first proposed by the late Professor Patterson, in 1806. It combined three objects, the astronomical determination of prominent points, a triangulation to connect those points, and a hydrographic survey based upon this triangulation. Mr. Gallatin, then Secretary of the Treasury, encouraged the project, and obtained in writing the opinions of learned men as to the best mode of executing it. He selected the plan of operations recommended by Mr. Hassler, the first superintendent of the Coast Survey. This gentleman, a native of Switzerland, had been employed in the triangulation of the Canton of Berne, and had studied the science of geodesy under the most distinguished masters. It was exceedingly fortunate that his presence and advice here secured the early adoption of the only method of conducting a comprehensive trigonometrical survey that science approves—the only one of which the results have a certain and permanent value.

It is only, however, since the year 1832 that the survey of the coast has been in steady and active operation. During this long interval of neglect on the part of the government, the coasting trade and foreign commerce of the country have been chiefly indebted to the indefatigable labors of those distinguished hydrographers, the Messrs. Blunt of New York (both father and son), for the means of safe navigation.

The history of its fortunes, or rather misfortunes, during the preceding twenty-five years, may be recited in a few words. A law authorizing a survey of the coast was passed in 1807, but nothing was done under the law until 1811, when Mr. Hassler was sent to Europe to procure the instruments specified in his plan. They had all to be constructed. The war of 1812, and the failure of remittances, prevented Mr. Hassler's return before 1816, and in August of that year he was appointed to the office of superintendent. In 1818 Mr. Hassler's connection with the work was broken off by the repeal of that part of the law of 1807 which authorized the employment of citizens. During the ten years that followed, the coast survey seems to have been forgotten by the public and by Congress. In 1827 Mr. Southard, the Secretary of the Navy, a name never to be mentioned without an expression of the high respect which ability, patriotism, and long, faithful, and valuable services must always command in the republic, took occasion in his annual report to say that perfect surveys and charts of our harbors could not be made without the aid of the means contemplated by the act of 1807; and in February, 1828, the House directed the Committee on Naval Affairs to inquire into the expe-

diency of carrying into effect the provisions of that act. Finally, in 1832, the act of 1807 was revised, and an appropriation made for carrying it into execution, and since that period regular annual appropriations have been made, varying in amount, but generally such as have been called for by the estimates of the superintendent.

In 1843 there was added to the appropriation a proviso stipulating that a board, consisting of scientific persons in the service of the government, should be empowered to reorganize the work, and the plan presented by them, when approved by the president, was to be, and is now, the law regulating the operations of the survey. The scientific methods pursued by Mr. Hassler were continued, and it was directed that the topography should be carried so far inland as might be necessary for a proper delineation of the shore, and for purposes either of commerce or defense.

It is now understood that the aim of the coast survey is to furnish with the utmost attainable accuracy, and in a connected and uniform manner, all the geographical, topographical, and hydrographical data that can be made in any way useful to the navigation and defense of the coast. And it is also supposed that, in collecting these data, information will be accumulated that may become serviceable in suggesting and directing local and general improvements; such as the placing and constructing of light-houses, beacons, buoys, etc., the means of improving channels, the effect of contemplated constructions upon harbors and tidal deposits, the suitableness of a submerged soil for building, etc. And, lastly, it is presumed that those States through which the survey passes will, sooner or later, avail themselves of the base it is able to supply, to form a correct geographical map of their own territory, under circumstances very favorable to economy and accuracy. These are the practical benefits, either direct or incidental, conferred by the coast survey.

In abstract science it has also its mission, equally useful and distinguished. It is to contribute a part of the means by which the irregularly elliptical form of the earth may be satisfactorily determined, the variations in local gravitation, their causes, and thence the internal structure of the earth, be made known, and the phenomena of terrestrial magnetism be explained. It will illustrate the astronomical problem of the tides. Its numerous meteorological records will also contribute to a better knowledge of the climates of the United States, and of the nature and action of meteoric storms, and thus be of service to the farmer as well as the navigator.

The science of geodetics prescribes the principles upon which a survey of an extended region should be conducted. In the ordinary operations of land-surveying, the surveyor is permitted to regard his field of work as a plane surface; but the engineer who is to construct a map of a whole country, or of a long line of continuous sea-coast, must take into consideration the spheroidal figure of the earth, and present an exact delineation of that part of the spheroid upon which he is employed. This necessity controls the processes used in computation, and the plan of projection upon which the detailed results are given, whether it be called a map or chart. Both the projection and the formulæ for computation involve the higher mathematics, and require an acquaintance with the most advanced state of the mathematico-physical sciences.

The system of projection introduced by Mr. Hassler originated with Flamsteed. It is the development of a part of the earth's surface upon a cone, either a tangent to a certain latitude, or cutting two given parallels and two meridians equidistant from the middle meridian, and extended on both sides of the meridian and in latitude only so far as to admit of no deviation from the real magnitudes, such as would be sensible in the detail surveys. In this method of reducing the curved surface of the earth to a plane, the radii of curvature of the parallels and meridians, depending upon the value given to the expression for the ellipticity, and the assumed form of the globe, are important terms. For practical use, tables have been computed in the office of the coast survey, showing the length in metres of every minute and second of the arcs of the meridians and parallels comprehended in the maps. It has been found necessary to recalculate these tables since 1844, on account of the new value of the ellipticity announced by Bessel, and adopted by the present superintendent. There will be occasion to recur to this subject.

The practical operations of the coast survey are classed under the general heads of triangulation, astronomical and magnetic observations, topography, and hydrography. The fundamental basis of the survey is a net-work of great triangles, the sides of which, varying from ten to one hundred and ten miles, are the longest that the limits of vision or the nature of the country will allow, and hence a mountainous region is much the most favorable for a first or *primary triangulation*. The starting line, or first side of the first triangle, called the *base line*, is measured by mechanical means, and this is a labor demanding, as much as any other on the survey, accuracy, a philosophical regard to minute details, and long previous preparation. Observing, in passing, that several kinds of measuring-rods have been heretofore used, as wood and glass, and that the apparatus of Mr. Hassler consisted of an assemblage of four iron bars, each of them two metres in length, with which he obtained excellent results. In 1817 the *preliminary* measurement of two base lines was made by Mr. Hassler, and in 1834 the length of the same lines was determined by computation, carried from the new base on Tin Island beach. The difference between the measured and computed lengths of these lines was in one case less than a foot, and in the other about four inches; the bases themselves were 5·9 and 4·8 miles long. It will, perhaps, best serve to convey an idea of the difficulty of measuring a base-line if some account be given of Professor Bache's base-apparatus. The measuring bars are upon the compensating system, first used by Colonel Colby in Great Britain, and by Mr. Borden in the trigonometrical survey of the State of Massachusetts; but a principle not before applied was introduced in reference to the dimensions of the bars, which is thus stated. Bars of brass and iron (the materials employed), of the same dimensions will not, owing to their different conducting powers and specific heats, heat equally in equal times, and therefore, during changes of temperature, the system ceases to be compensating. This Mr. Bache corrected by giving a coating to the bars that made them absorb equally, and by proportioning the sections to each other, so that both would have the same temperature during variable temperatures of the atmosphere. In order to do this satisfactorily, it was necessary to make direct experiments upon the materials of the bars themselves, after having first arranged them approximately by means of the numbers taken from the books. The contact between two sets of bars is made by a blunt knife-edge and a plane of agate, and a lever of contact at the ends of the bars is corrected by a level so delicate that several of its divisions make up a quantity entirely insignificant in the measurement. The bars are covered with a double conical case of tin, to keep the fluctuations of the temperature within moderate limits, and the bases on which they are supported are covered with several thicknesses of imperfectly conducting material for the same purpose. The length of the apparatus is compared, before and after final measurement, with a standard iron bar that had been compared in the coast-survey office by means of Mr. Saxton's reflecting pyrometer. By this instrument, a change of the one hundred thousandth part of an inch in the length of the standard bar is perceptible.

To the preceding description it should be added that

the bars (regulated in size by the relative specific heats of the two metals) were heated above the possible temperature to which they could be exposed in use, in order to give them a set. This precaution was at first overlooked in the compensation base-apparatus of the British ordinance survey, and it was afterward found necessary to resort to it. Those who are at all familiar with the subject will perceive that Professor Bache's application of the lever of contact and level (first used by Bessel in standards of measure) has not only greatly increased the delicacy of the instrument and lessened its complexity, but also removed several sources of error. By optical contact, and the employment of a microscopic apparatus to determine the distance between the compensation points, the measures are repeated in two different terms, each having its peculiar standard. Such was the case in the British and Indian surveys, and Colonel Everest complains of the consequent liability to error, and the burdensome accumulation of petty corrections. The remeasurement of a base of seven and a half miles, in India, differed, however, only 2·4 inches from the first length. In a base of seven miles, Professor Bache found that the same difference might be about 0·5 inch, if all the errors were supposed to fall on the same side, which is most improbable. The probable error in remeasuring one hundred and twelve yards was less than five thousandths of an inch, and the actual resulting error in remeasuring one-third of a mile was nothing.

This may appear like refining too much, but it must be known that the lines measured by the same bar in winter and summer might differ materially in nominal length. This difference in the original base of the coast survey might be about twenty feet, and, at a rough estimate, an error of twenty feet in this place would amount, in one of the large triangles, of which the sides are between fifty and sixty miles, to about one-tenth of a mile. The source of error and its correction being recognized, there is no other limit to accuracy than the possible.

We return now to the great triangles of the survey, which, as has been said, form its fundamental basis. The points of the primary triangulation are selected with scrupulous regard to all those conditions which make triangles, in the technical acceptation, good. Scattered at distant intervals over the vast field of work, they are certain guides by which the more detailed operations are conducted and controlled. Within them the space is subdivided into smaller triangles, constituting the *secondary* and *tertiary triangulations*. They bring down the work to the minute details of topography and hydrography, and these subsidiary triangulations and details, circumscribed as they are by the primary points, are restrained and corrected by them in their deviations. As an additional explanation of the necessity for this first net of great triangles, it may be well to inform the general reader that there is no instrument, however delicate in construction, that is not liable to very small errors, which the most studious attention to every disturbing influence, whether mechanical or meteorological, can not altogether remove. Now this primary triangulation, which in a mountainous region spans the surface with giant strides, has fewer of these unaccountable errors, simply because it has fewer triangles. It is hardly necessary to add that better instruments also are used in it. The two and a half feet theodolite, made by Simms (after Troughton's death), under Mr. Hassler's supervision, and used by him and by Professor Bache in the primary triangulation, is still regarded in this country and in Europe as a master-piece of invention and mechanism. It reads to seconds.

Magnetic and astronomical observations accompany the primary triangulation. The latter are for latitude, longitude, and azimuth, or angular direction from the meridian.

Following the secondary triangulation in order comes the *Topography*, the duty of which is to delineate faithfully the features of the ground. It exhibits the height and contour of elevations, the shape and extent of plains, the courses of streams, all the constructions of man, and the waving and indented outline of the shores. It distinguishes the tilled land from the pasturage, and the grove from the orchard, and designates the character of the wood-land. It speaks a universal language, and observes strict fidelity to nature.

Depending upon the secondary triangulation and the topography for its means of progress, follows the *Hydrography*. In this term is included all that concerns local navigation, as the depths and character of the bottom, the direction and strength of the currents, the ebb and flow of the tides, and the information, coming under the head of sailing directions and nautical instruction, which make up the valuable knowledge of the local or general pilot. This branch enjoys the honor of announcing the nautical discoveries of the coast survey, which, though resulting from the combined operations of all, are yet brought out by its means.

In the preceding pages the plan of the survey is presented, and the general distribution of its labors is stated; it remains now to speak of the execution of the various details, and of the benefits that have been conferred by the coast survey upon science, and upon the local and general commerce of the country and of the world. In doing this it will be most convenient to keep to its actual state at this day.

It would not be just, however, to leave its past history without a tribute of respect to the memory and services of the man by whose enlightened efforts a right direction was given to the views of the government in founding the survey, who was faithful to it through thirty-five years of checkered fortunes, and who literally died in the performance of its duties, having written the last few lines of his final report after he felt that he had been touched by the hand of death. Educated in the best European schools of theory and practice, and devoted to the pursuits of science, for which he was eminently qualified by natural endowments, Professor Hassler always brought to the task before him that zeal and tenacity of purpose which give spirit to enterprises of great moment, and gain for them the name of action. He is honorably known for his mathematical and astronomical writings, and his papers in the American Philosophical Transactions, containing an account of the methods employed by him on the coast survey, will always be regarded as a valuable contribution to geodetical knowledge. Those who knew him intimately praise the ardor of his friendship and the generosity of his disposition, while the labors of his life, and the manner in which they were performed, bear ample witness to his industry and integrity. That he had some defects of character it is hardly necessary to say, for this is the inevitable lot of humanity; but they were not such as it requires the exercise of magnanimity to forget, and time, which is rapidly drawing over them the veil of perfect obscurity, will endear his name and his virtues to the reverent and affectionate respect of all true lovers of American science.

On the death of Mr. Hassler, in 1843, the appointment of his successor was regarded with deep interest by the learned men of the country. The office of superintendent of the coast survey is recognized as one of the central positions of American science, and the incumbent is expected not only to be able to fulfill its prescribed duties, but to be qualified to direct his powers to the advancement of knowledge in every department of the work. How far the present superintendent, Professor Bache, is suited to answer these expectations, to sustain the national reputation, and to promote the cause of science, may be estimated from the fact that his appointment was solicited by gentlemen in all parts of the country engaged in the pursuits of learning. He was educated at West Point, and since graduating there he has, in connection with the Franklin Institute

and the University of Pennsylvania, followed a course of physical science that has made him well known in this country and in Europe. While traveling as the President of Girard College, he received from the principal European academies distinguished marks of consideration. It is but justice to Professor Bache to say that there is no branch of the work into which he has not been able to introduce improvements, either owing to the discoveries of the day, as in the use of the magnetic telegraph for meridian differences, or owing (still oftener) to his own great and eminent scientific attainments. This must appear in the course of these remarks, but it is quite as creditable to his administration to state, as may be done with strict accuracy, that the amount of results now obtained is double that under the former plan, for an increase of 50 per cent. in the cost.

The points of the *primary triangulation* are selected by means of a preliminary reconnoissance. The reconnoissances that precede the triangulations are indispensable, and require great judgment. The object of the general reconnoissance is to make known the facilities and difficulties of the work, and to discover the best plan for its execution. A particular reconnoissance decides the position of the stations, and presents a general sketch of the triangles in any section. As they constitute the authority to which the rest is subordinate, and by which it is controlled, it is of the greatest consequence to know the circumstances under which a satisfactory result may be secured with the least delay. The rule generally followed (and adopted by the former superintendent) is to observe on those days only that appear entirely unobjectionable. This rule is attended with a serious loss of time. Mr. Bache has increased the rapidity of the work, and improved rather than diminished its value, by applying the mathematical test of the least probable error to observations made under such conditions as are ordinarily favorable and of frequent occurrence. The number of observations made under these conditions, which will reduce the probable error to what is attributable to the unavoidable errors of instrument and observer, is ascertained and taken as a governing rule. Six triangles measured by Mr. Bache in 1841 gave for the greatest difference from 180°, after allowing for the spherical excess, 0″·2 (of space) to each angle; from this the difference descended to nothing.

Allusion has been made to the necessity of recomputing the first tables of projection, in consequence of the adoption of Bessel's latest determination of the ellipticity. The tables for computing the triangles have also been affected by this change, and the formulæ have been revised, and undoubtedly greatly improved in convenience and accuracy. The tables have undergone a further modification by substituting the *legal* ratio of the metre to the toise in the place of the arbitrary standard resulting from the ingenious, but (as Bessel has said) "not allowable," comparisons of Mr. Hassler.

This is the proper place to advert to the mode of operations pursued on the Southern coast. It was perceived, in the early progress of the work, that the inaptitude of this level region for a comprehensive triangulation was to be overcome, either by great expense, or by resources not yet developed. The most apparent expedient was that employed in the northern section of the great meridional arc of India, where it crosses the flat territory of the Doab. Costly edifices of masonry, with walls five feet thick at the base and two at the summit, are erected at each of the principal stations, and their height, about fifty feet, is sufficient to command a view above the vegetation. And this expedient was, if contemplated, in accordance with the former progress of the American survey, which, advancing in two directions from a central base, was necessarily slow.

In 1845, however, the present superintendent exhibited in his annual report a plan for the more rapid execution of the survey, which consisted in dividing the whole of our extended sea-board, including the Gulf of Mexico, into nine sections, comprising a nearly equal extent of shore line, and in prosecuting the work separately and simultaneously in as many of these sections as the appropriations would allow. The work of each section is commenced by the measurement of a base-line, and, as the triangulation is extended, this base serves as the verification-base of an adjoining section. The rapidity of this plan is made apparent by considering that all the different processes of the survey (in their necessary order) may be conducted at the same time in every section, and thus, if the appropriations were sufficient, the whole coast might be completed in the time required for a single division of it. But this plan accommodates itself more easily to the character of the ground than one in which the direction and progress are derived from previous connections. Indeed, every latitude is allowed for the selection of sites for bases, and for the most favorable disposition of the triangles, because each section is for the time a distinct undertaking. The combination of all will unite the extended coast of the United States into one comprehensive scheme of triangulation.

The value of permanent and conspicuous structures of masonry to designate points of primary triangulation is not, however, underrated. While temporary means of elevation are employed, such as the high tripods, with independent stands for the instruments, first used in Delaware Bay by the senior assistant of the survey, Mr. Edward Blunt, of New York, it must be remembered that the coast survey is enabled to avail itself of the light-houses, and other lofty structures along the coast. And it may be safely concluded that the governments of the Southern States will raise appropriate edifices at those points of the primary triangulation of the coast survey which limit the bases of their local operations.

Accompanying the primary triangulation, as an essential part of it, are the *astronomical* and *magnetic observations*. The former are for azimuth, latitude, and longitude. For the determination of azimuths, Mr. Bache has employed (for the first time on the work) the elongations of Polaris in its eastern and western digressions. At the time of elongation, when the change in altitude is most rapid, the movement in azimuth is nothing; and thus the opportunity is enjoyed of making careful and deliberate observations. This method is independent of local time. By using several circumelongation observations, a mean of a number of results is substituted for a single one. In this reduction a very simple formula, first investigated by Mr. Nulty, of Philadelphia, has been applied, and the practice is simplified by the use of tables for the computations of latitude, subjected to a slight trigonometrical change. It is proper to state that this method has been in use on the survey since 1845, as one similar to it, if not identical with it, has recently been communicated to the Royal Astronomical Society of London.

The superintendent has adopted the suggestion of the astronomer royal at Greenwich, who proposed referring the points of greatest elongation of circumpolar stars to marks in the horizon, by perpendicular lines demitted by means of an altitude and azimuth circle. Elongation signals are established about two miles distant, consisting of a delicate wand by day and a lamp by night, the latter seen through a perforated board.

The determinations of the latitude (as well as of the azimuths) are frequent. Since 1844 fourteen stations have been occupied for latitude, and seven for azimuth, in Sections I., II., and III. of the survey. A comparison of the latitudes deduced geodetically from a central point with astronomical determinations led the superintendent, in 1844, to the discovery of certain variations in the level, which could only be attributed to changes in form and density of the material compos-

ing the earth's crust. These variations are *similar* to those caused by the proximity of mountains; but while the latter have been well understood, the former had escaped notice. The numerous determinations of this element will, therefore, occupy an important place in the future discussions of the general form and internal structure of the earth. A similar discovery has since been made in the ordinance survey of Ireland by Major-general Colby, and appears to have been anticipated by Laplace in the opinion given by him in the Chamber of Peers, in 1817, upon the topographical map of France: "If the latitudes of the extreme points (of certain lines) and of several intermediate points are observed, and the length of the seconds pendulum corresponding to these points measured, a great deal of light will be thrown upon the figure of the earth, and upon the irregularities of its degrees and of gravity."

It is very interesting, in this respect, to know that latitudes observed at the extremities of the side of a triangle, and forward and backward azimuths on the same line, have differed by several seconds, and that these deviations in the plumb-line have occurred where the want of uniformity (whether arising from differences in density, or the want of homogeneousness of structure) was not apparent as a topographical feature of the country. After the computations from which the preceding conclusions are derived were verified, the results were confirmed by the introduction of new instruments on the work. During the last year a zenith telescope has been used for obtaining the latitude, by a method invented by Captain Talcott, which consists in observing the differences of zenith distances of stars culminating within a short distance of each other, and at nearly the same altitudes, on different sides of the zenith. The circummeridian altitudes by the repeating circle, the prime vertical transits, and the absolute measurement of zenith distances by the zenith sector, are still used.

Observations for the comparison of these instruments and methods have been made by the superintendent, and by Captain T. J. Lee, of the United States Topographical Engineers, an assistant in the coast survey, whose valuable labors have been chiefly devoted to the astronomical and magnetic observations. Of the *magnetic observations* it will be sufficient to say, as an indication of their character, that they are made with the new instruments invented by Dr. Lloyd and Mr. Weber. The portable declinometer of Mr. Weber (perfected by Lieutenant Riddle, and manipulated according to his instructions) measures inclination, and, by a subsidiary apparatus, the horizontal force, by the method of Gauss. Fox's dip circle, with the use of the deflecting magnet, has given very satisfactory results. By means of these instruments, the *declination*, *inclination*, and *intensity* (horizontal and vertical) are determined in a manner that supplies all that is practically necessary, and contributes valuable additions to general magnetic researches.

Longitudes have been determined by occultations, eclipses, moon-culminations, and the frequent transportation of chronometers. Mr. Bond, the director of the observatory at Cambridge, Massachusetts, communicates the meridian differences by chronometers between the British observatories and Boston. All determinations of this element are referred to a principal port on the sea-coast, and are connected in the aggregate with differences obtained from Europe by chronometric and astronomical comparisons. The security against error afforded by employing persons to compute who are disconnected with the duties of the field or the observatory, is well understood. Gentlemen in private life are engaged to repeat the important calculations of the survey, and this system, which enlarges the sphere of labor in a way not less commendable for its economy than for its other advantages, receives universal sanction.

But the discoveries of Professor Henry (secretary of the Smithsonian Institute), resulting in the invention of the magnetic telegraph, have provided a new and more precise method of arriving at the difference between the times of two places, or their difference of longitude expressed in time. The details of these observations were consigned to Mr. S. C. Walker. The following concise account of the manner of transmitting the signals, of the possible errors of observation, and of the real value of the results, is from the pen of Dr. Bache: "The signals are given at one of the stations by pressing a key, which causes a closing of the circuit. This closing, it is intended, shall be simultaneous with the ticking of a clock or chronometer at the station. The circuit being closed, if the electrical wave or current takes a sensible time to propagate itself, or to pass from one station to another, the absolute time at which the signal reaches the second or receiving station is sensibly different from that of making the signal at the first or giving station. A coil about the poles of a horse-shoe magnet of soft iron forms part of the circuit through which the electrical effect is transmitted. Under its influence the soft iron becomes magnetic, attracting the soft iron bar (armature or keeper) delicately poised at a determined distance from the poles of the magnet; the movement of this keeper sets in action a local battery, which gives sufficient power to make the dots and lines constituting the Morse telegraphic signals. The click of the keeper of this temporary magnet is compared, at the receiving station, with that of a clock or chronometer, thus marking the time at which the signal made at a known time at the giving station is received. From this explanation, it appears that there is liability to error."

Dr. Bache then proceeds to enumerate five possible errors, numbered in order, and shows that the numerical values can be in each case assigned to two (viz. 1 and 5), and that one (viz. 2) is insensible. A comparison of the observations proves that the errors denoted by 3 and 4 are cancelled by a very small residual quantity having the opposite sign, and "the interesting consequences follow, that 'the telegraphic method of comparing clocks, distant two hundred miles from each other, is free from error when the method of coincidence of beats is employed; and that the probable error of the longitude, from this method, is the same as the mean result of the computed relative correction of the clocks for the nights of observation.' An investigation of the probable value of such error shows that, under favorable astronomical circumstances, and with due care in the use of the transit instrument, 'the astronomical difference of longitude between any two stations of a trigonometrical survey may be determined by telegraphic signals, with a degree of precision of the same order as that of difference of latitude,' the inaccuracy depending upon the same causes as the deviation of the plumb-line." Before concluding with the primary triangulation, it must be observed that Dr. Bache uses reciprocal vertical angles for determining differences of heights at the primary stations. These angles may be measured at a time of day when it is impracticable to observe horizontal angles, and the effect of refraction near the surface is investigated by a long series of observations. The space circumscribed by the terrestrial angles of the first order, and defined by the celestrial observations that accompany them, is subdivided into a minute net-work of smaller triangles, constituting the *secondary* and *tertiary triangulations*, the points of which embrace and determine headlands, light-houses, beacons, churches, hills, and all conspicuous objects along the coast, that can be made useful in its navigation. They also bring down the work to the details of the topography and hydrography, and supply the bases for these branches of the survey.

It has been already mentioned that the topography is minutely and exactly descriptive of the ground, both in form and character. The Lehman system of topographical drawing has been adopted, but with such

modifications as the nature of this country exacted, in order to preserve the beauty of the maps. The slopes are represented by hachures, the strength and distance apart of which indicate the degree of inclination. In the original maps, the horizontal curves limiting the different slopes are drawn in red ink, as the draughtsman progresses in his sheet.

The scale of the original sheet is $\frac{1}{10000}$, or about 6¾ inches English to the mile. Plans are frequently executed in the field, and furnished from the office, when wanted for local improvement, on twice this scale. But the charts designed for navigators are necessarily reduced in dimension. The harbor charts are published on the scale of $\frac{1}{20000}$, or about 3½ inches English, and the more general charts on that of $\frac{1}{80000}$, or about three-fourths of an inch to the mile; which last is the scale of the *great* topographical map of France. In all the maps, the topographical details are faithfully preserved, including height, contour, etc.

It appears from the report of the council of the Royal Astronomical Society to the twenty-seventh annual general meeting, that a similar scale of execution, and an equal fidelity of representation in the topographical details, have been finally attained in the ordinance maps of England and Ireland. In both the American and English maps, the subdivisions of the meridians and parallels are so minute, that parts of a second of space can be estimated.

As the first object of the coast survey is the knowledge of our own shores and inland waters, and the general improvement of the navigation, both external and internal, of the coast, so the large class of facts and researches embraced in the general term *hydrography* are regarded as being of paramount importance. It is to the hydrography that the friends of the coast survey direct the public attention for the evidences of its great practical utility, and the discoveries in this department have been so numerous and valuable as to secure for it a high degree of public favor. The first popular inquiry concerning the coast survey is as to the progress it has made, and this inquiry is satisfied by learning the extent of the shore line over which the hydrographer has passed. But before estimating its performance in this way, it is necessary to say, that, as the operations of the triangulations, etc., must precede the hydrography, this leads to an unfair estimate. The hydrography can only be laid down when the trigonometrical points on which its operations are based have been established; thus two-thirds of the work may be completed when the hydrographical labors commence. In 1844, the first year of Dr. Bache's superintendence, nine States on the Atlantic sea-board shared in the benefits conferred by the coast survey; in 1845, thirteen States; in 1846, fifteen; and in 1847, eighteen States. The estimates for the present year include all the States on the Atlantic and the Gulf of Mexico, and it may be inferred at once from this statement that, if sufficient appropriations are supplied by Congress, a definite and not distant period can be assigned for the completion of the whole work.

Having premised this statement, which was necessary to give a correct idea of the progress of the work, it may be added that the nautical parts of the survey have extended generally from Nantucket Sound to Hampton Roads nearly, including the Vineyard Sound, Block Island and Long Island Sounds, with all their harbors, great and small, New York Bay and harbor, Delaware Bay and river, a large part of Chesapeake Bay, together with most of the rivers emptying into it north of the Potomac, and all the external sea-coast, from the southern coast of Massachusetts to the Capes of the Delaware. In this broad field a little remains to be done, but very little in comparison with the whole. In addition to the above, something has been accomplished in the hydrography of Albemarle and Mississippi Sounds, and in the latter especially great benefits have already resulted to its local commerce.

It will give, perhaps, the best idea of the value of the hydrographical work to enumerate some of those discoveries and corrections which, in different places, have signalized the progress of the coast survey. The first of these in order and in merit is the discovery of a new channel, straighter and deeper than the channels before known, over the outer bars of New York harbor. Such a gift as this to the first commercial city of the continent, where it was very much needed, ought to gain permanent favor for the enterprise by which it has been made. Important changes in the main ship-channel near Sandy Hook were first noticed by Major Bache, of the Topographical Engineers, by a comparison of his own limits with those of the coast survey in 1842, and this discovery has since been confirmed by the latter. So rapid has been the accumulation upon the extreme point of the Hook, that the high-water mark now stands where there was a depth of 40 feet in 1836. The Chamber of Commerce of New York has gratefully acknowledged the communication of this important fact by the present superintendent. In Delaware Bay a new and straight channel was discovered, lying parallel to the main ship-channel, more narrow than the latter, but likely to prove serviceable in scant winds, and better sheltered from floating ice. Three channels were opened through the ridges of Cape May, and a passage made known through the "Over-falls." The future changes in the latter, which may prove to be the germ of a new pass to the ocean, will be watched with interest. The result of the survey in Delaware Bay has been wholly to change the form of the bottom, as it stood on the old charts. Some shoals have been erased altogether, a new one near the deep water of the channel-way has been added, and the limits, shape, depth, and direction of every shoal in the bay have been altered.

In Long Island Sound, Buzzard's Bay, Massachusetts Bay, and Chesapeake Bay, so much has been added to the safety of navigation by laying down positions correctly, and by good sailing directions, but chiefly by the actual discovery of useful channels or of hidden and unknown dangers, that a list of these additions alone would occupy too much space. In Long Island Sound, a rock having only 13½ feet of water on it, on the Cerberus Shoal, was discovered and determined by the brig Washington, in September, 1845; and in the same year three rocks were found in the most frequented part of Buzzard's Bay by the Gallatin. Changes of the highest importance, which, owing to natural causes, had taken place in the channel-way of the entrance to Mobile Bay, were found out by the Phœnix in 1847.

In the off-shore work, the most valuable discoveries have been made by the hydrographical party employed on the Nantucket Shoals. They deeply concern the navigation, foreign and domestic, of the whole coast; especially the European trade from New York and the West India trade from the Eastern States. The insurance offices of New York and Boston have publicly acknowledged their obligation for these discoveries.

To this part of the hydrography belongs the *exploration of the Gulf Stream*, an enterprise that originated with the present superintendent. This is a work of difficulty and time. It was commenced by the hydrographical assistant in command of the brig Washington, in 1845, who obtained bottom near the inner edge of the stream at the depth of 7800 feet, and the marked and rapid change of temperature at this place gave reason to hope that a curve of similar depths might be traced, corresponding to the inner line of direction of the Gulf Stream, of which any point would be known when crossing, from the characteristic changes of temperature. The latitude (the most easy of the two coordinates to ascertain correctly) being given, the ship's longitude would result sufficiently near the truth to be of essential service in approaching the coast. The deep sea and surface temperatures were both taken in 1845.

Lieutenant Bache succeeded to the charge of this duty in 1846. Professor Henry has thus spoken of his merits and success: "In the last report, an account was given of a series of observations on the Gulf Stream, made by Lieutenant George M. Bache, whose life fell a sacrifice to his zeal in the discharge of his duty, and whose loss science was called upon to mourn just as he was commencing, with his accustomed ardor, the investigation of one of the most interesting phenomena of our globe. The results he obtained will be given to the world in another publication, and it will be sufficient to state in this place that he examined three entire sections across the stream. His researches exhibit the remarkable fact that the whole current of warm water, to the depth of at least 480 fathoms, divides itself into two principal branches, separated by a portion of cold water, and that the transition from the cold water, along and next to the coast, is almost instantaneous, as if the two were separated by a nearly perpendicular wall, slightly inclining to the east at the top."

The subject of the tides is now receiving for the first time, in this country, proper attention. The tide-tables on the charts contain all the information as to times, heights, and durations, that is required in practice. Corrected establishments are deduced from the means of the luni-tidal intervals combined for each half-hour of transit. The astronomical problem of the tides is worked out for prominent points where the observations have sufficiently accumulated.

The mean curves of semi-menstrual inequality of time and height, corrected for the mean annual parallax and declination, are compared with the curves of observation (freed from the diurnal inequality) at each semi-lunation, and the variations in the times and heights of high water, due to changes in the moon's declination and distance from the earth, are tabulated for the future improvement of the tide-tables.

By the continuance of careful and constant observations, the means will be supplied of adding to the knowledge of the diurnal and solar inequalities, and of studying all other phenomena of the tides. The residual errors that appear in the semi-menstrual curves, after eliminating the effects of parallax and declination, are caused by atmospheric changes. The local influence, therefore, of particular winds, and the general effect of changes in the pressure of the atmosphere, are to be investigated, and enough is already known to prove that the seaman will derive great profit from this part of the labors of the coast survey. The direction and velocity of tidal currents are now carefully determined for the normal condition of the tides, and for their disturbance by winds and storms, and a knowlege of the courses and conflicts of the tides in the harbors and inland waters of the United States (as Long Island and Vineyard Sounds) will also result from the comparison of numerous records, kept with a special view to their investigation.

To the preceding account of the operations of the coast survey it must be added, that the reduction of the maps to the scale of publication, the engraving and printing of them, are entirely executed in the office at Washington. An exception is made in the engraving of the smaller harbor maps, particularly of the harbors of refuge. They are sometimes placed in the hands of private artists, which serves the double object of an earlier publication and of encouraging the art of map-engraving in this country. The propriety of publishing to the world the important results of the coast survey as soon as obtained was immediately recognized by Professor Bache. In the case of a discovery affecting the general navigation of the coast, like that of the "New South Shoal," a "preliminary sketch," anticipating the complete chart, has been freely distributed. In other cases, information has been disseminated through the press, or furnished by authority, to chart-sellers. The office at Washington contains also workshops, at which the various instruments of the survey are repaired and made. All the details of the office duties, whether relating to the verification and engraving of maps, or the occupation of the workmen, in the absence of the superintendent, are under the direction of Captain A. A. Humphreys, of the Topographical Engineers, an assistant. As the operations of the coast survey are numerous and various, and its duties very multiplied in detail and complicated in their connection, it will be readily believed that the direction and adjustment of them—the instructions, the reports, and communications arising from them—make the office of superintendent one of increasing labor and responsibility. Besides personal attention to these duties, Dr. Bache occupies the station of the primary triangulation at the north, and the observations, whether geodetic, or astronomical, or magnetic, are either made by himself or under his immediate supervision. In the same manner he has also measured a base line for Section VIII., on Dauphin Island, and carried the main triangulation across from the Chesapeake to Washington. In a work of such magnitude and extent, occasional indirect contributions to knowledge may be expected, and there is every disposition to make them.

A point of interest to the geologist, developed by the operations of the coast survey, is the changes that are constantly occurring in different parts of the coast. In this respect its present accurate determinations will furnish in future the means of interesting comparisons. It must be remarked here, also, that too much importance can not be assigned to this view of the results of the coast survey. With regard to most harbors of consequence, the question is repeatedly asked whether they have undergone any change; and this question can rarely be satisfactorily answered, for the want of a correct standard of comparison. The charts of the coast survey will enable the future hydrographer to point out the changes, if any, and the future engineer, in his endeavors to improve or to preserve the channels of navigation, will, by a careful study of these changes, be able to guard against the causes of obstruction, and to co-operate intelligently with natural laws, instead of blindly opposing their effects. The manner in which harbors are affected by the matter held in suspension by the rivers emptying into them, that is, the place and form in which this matter is deposited, will receive such elucidation from the inquiries of the coast survey as will assist the counsels of the constructing engineer.

The charts of the coast survey exhibit, as far as they go, a view of the topographical formation of the bottom of the sea. Specimens are collected, and preserved in the office, of the bottom in all its varieties, and it was the intention of the late Lieutenant Bache to form a geological map, on which the materials thus collected should appear, in the natural order of their formation. Besides serving as useful indications to the navigator and pilot, they prove to be, when placed under the microscope, highly interesting to the naturalist. The deep-sea soundings have been examined by Professor J. W. Bailey, of West Point, and have been found to be filled with organisms, particularly those of the calcareous polythalamia, to an amount that is really amazing, hundreds of millions existing in every cubic inch. "One specimen, from the depth of ninety fathoms, is crowded with remains, most of them large enough to be recognized by a practiced eye without the aid of a magnifier." And it is not impossible that, in similar cases, science may supply the mariner with another mode recognizing the character of the bottom. In 1847, Professor L. Agassiz, of Cambridge, accompanied one of the hydrographical parties engaged in the off-shore work, by the invitation of its commander, and enjoyed an opportunity of examining the animals inhabiting depths that are rarely accessible. It proved to be a rich field of discovery. Not only many new species, but several new genera, were added to the known lists; the subject of embryology received fresh illustrations, and a new light was thrown upon the

laws of the geographical distribution of animals, showing that in the different depths of the sea, as in the elevations of the land, distinct families have each their assigned and native dwelling-place.

It would lead to but a partial estimate of the value of the coast survey to omit these examples of its incidental benefits to knowledge. There are others upon which there is not room to dwell. The friends of this work have reason to be satisfied with its progress, and it is confidently believed that they may lay aside all apprehensions for its future prosperity. It rests upon the firm support of a controlling public opinion in the government and among the people. Working, as it does, in a field that is useful and honorable, and being conducted in all its branches with zeal and efficiency, it can not fail to add every year to the consideration with which it is now regarded, not only at home, but in every country where science and its application to the arts of life are justly appreciated.—*American Almanac for* 1849.

RESULTS OF THE COAST SURVEY AT DIFFERENT PERIODS, FROM 1844 TO 1854.

	Previous to 1844.	From 1844 to 1852.	For 1852.	For 1853.	Total from beginning of Survey.
Reconnoissance:					
area in square miles	9,642	30,548	1,706	1,708	43,604
parties, number of	....	....	6	5	....
Base lines:					
number of	1	5	....	2	8
preliminary, number of	2	14	4	4	24
length of, in miles	10½	64	4½	18½	106½
Triangulation:					
area in square miles	9,076	17,294	1,703	3,089	31,162
extent of coast line, in miles	310	976	224	154	1,664
extent of shore line, in miles	8,215	6,427	900	888	11,430
horizontal angle stations, number of	750	1,160	223	224	2,357
points determined, number of	1,183	2,008	446	346	3,983
vertical angle stations, number of	15	71	14	7	107
heights determined, number of	44	244	66	9	363
Astronomical stations:					
azimuth, number of	9	32	6	9	56
latitude, number of	9	44	17	20	90
longitude, number of	1	27	18	21	67
latitude, extra, number of	....	....	....	....	....
longitude, extra, number of	....	....	5	5	....
Magnetic stations, number of	....	116	8	13	137
Triangulation parties, number of	....	....	13	16	....
Astronomical parties, number of	....	....	4	7	....
Magnetic parties, number of	....	....	5	9	....
Topography:					
area in square miles	6,222	3,967	601	551	11,341
length of shore line, in miles	6,100	7,033	1,301	1,468	15,902
Topographical parties, number of	....	....	15	14	....
Hydrography:					
area in square miles	9,629	20,950	....	....	....
parties, number of	....	....	9	10	....
soundings, number of	808,147	1,852,009	288,875	305,377	3,253,008
soundings in Gulf Stream for temperature	....	1,455	....	....	1,455
fathoms of line used in same	....	143,108	....	....	143,108
tidal stations, number of	108	174	56	100	438
tidal parties, number of	....	....	5	6	....
current parties, number of	....	....	3	3	....
current stations, number of	....	321	21	89	431
specimens of bottom, number of	1,327	4,345	252	105	6,029
Topographical maps (original), number of	166	187	20	34	416
Hydrographical maps (original), number of	127	172	25	49	373
Reductions and other maps	326	399	174	133	1,032
Total number of manuscript maps	619	758	228	216	1,821
Records of triangulations (original), number of volumes	97	133	33	64	327
Records, astronomical (original), number of volumes	17	149	48	29	243
Records, magnetic (original), number of volumes	4	42	7	6	59
Duplicates of the above, number of volumes	27	250	73	76	426
Computations, number of volumes	78	158	72	101	409
Hydrographical books, sounding and angle observations (original), number of volumes	188	990	206	183	1,567
Hydrographical books, sounding and angle observations (duplicates), "	28	70	27	15	140
Hydrographical books, tidal and current observations (original), "	127	499	139	123	888
Hydrographical books, tidal and current observations (duplicates), "	....	599	132	114	845
Hydrographical books, tidal reductions, number of volumes	....	220	26	6	252
Total records, number of volumes	566	3,110	763	717	5,156
Library, number of volumes	....	1,613	171	273	2,117
Engraved plates of maps, number of	5	40	3	4	52
Engraved plates electrotyped, number of	....	55	23	47	125
Published maps, number of	....	37	5	5	47
Printed sheets of maps distributed, number of	....	15,501	5,799	8,042	29,342
Printed sheets of maps, sale agents, number of	....	28 077	6,866	4,375	39,318
Total number of printed sheets	....	57,001	31,818	24,056	112,895
Instruments, cost of	....	$167,094	$3,835	$5,296	$176,225

General List of Coast Survey Discoveries and Developments to 1853 *inclusive, compiled by Lieutenant E. B. Hunt.*—As the operations of the survey advance along the coast, important facts before unknown are constantly brought to light. Many facilities for, and dangers to, navigation are thus discovered, which had been before wholly unknown, and those before but imperfectly known are developed by accurate surveys. Many such developments and discoveries occur in the geodetic and topographical operations, some of which are of no slight value; but those which are embraced in the hydrographic work are often of vital importance to commerce and navigation. The following list presents some of the most important items of this nature, and may collectively be regarded as exhibiting one of the most valuable results of the survey. In fact, each sheet which gives shore line and hydrography with increased accuracy has somewhat of discovery or development to claim; but in this list only those cases are included in which a specific benefit has been conferred on navigation, either by unfolding some new facility, disclosing some serious danger, or indicating some important change of configuration. The arrangement is geographical, and in the order of sections.

1. A rock not on any chart, in the inner harbor of Gloucester, Massachusetts—discovered in 1853.

2. A bank 90 miles eastward of Boston, with about 36 fathoms water—probably a knoll connected with

Cashe's ledge, but with deep water between it and the ledge—1852.

3. Boston harbor: Broad Sound channel thoroughly surveyed, and marks recommended—1848.

4. Nantucket Shoals: Davis's New South Shoal, discovered in 1846, six miles south of the old Nantucket South Shoals, in the track of all vessels between New York and Europe, or running along the coast from the Eastern to the Southern States, or South America.

5. Ditto: Two new shoals north and east of Nantucket—discovered in 1847.

6. Ditto: Six new shoals near Nantucket, the outermost one 14½ miles from land, and with only ten feet water—discovered in 1848.

7. Ditto: McBlair's Shoals, off Nantucket—discovered in 1849.

8. Ditto: Davis's Bank—discovered in 1848, and survey finished in 1851.

9. Ditto: Fishing Rip, a large shoal extending north and south about 10 miles to the eastward of Davis's Bank and 30 from Nantucket, with 4½ fathoms—surveyed in 1852.

10. Ditto: A ridge connecting Davis's New South Shoal and Davis's Bank—found in 1853.

11. Ditto: A small bank or knoll, with but five fathoms on it, about five miles east of Great Rip, with 12 fathoms between it and Davis's Bank and Fishing Rip, the water gradually deepening outside of it to the northward and eastward, beyond the limits of the series of shoals.

12. Contraction of the inlet at the north end of Monomoy Island, and opening of new entrance to Chatham harbor—1853.

12 *bis.* Muskeget Channel—surveyed by Lieutenant C. H. Davis in 1848, and Lieutenant C. H. McBlair in 1850.

13. Numerous rocks in Martha's Vineyard Sound, Long Island Sound, and the various bays and harbors connected with them.

14. Gedney's Channel into New York Bay, having two feet more water than the old channels. Had the true depth of this channel (which is seen, by comparing old and new charts, to have then probably existed) been known in 1778, the French fleet under Count D'Estaing would have passed into the bay and taken the assembled British vessels.

15. Sandy Hook: its remarkable increase out across the main ship-channel has been traced from the surveys of the topographical engineers and others, and by several successive special surveys.

15 *bis.* Increase of depth in Buttermilk Channel, ascertained and made known in 1848, by survey of Lieutenant D. D. Porter.

16. Delaware Bay: Blake's Channel at the entrance discovered in 1844—open when the eastern channel is closed by the ice. This discovery has served to develop strikingly the resources of that portion of Delaware.

17. Blunt's Channel in Delaware Bay.

18. Changes in the Delaware near the Pea Patch.

19. The true extent and position of the dangerous shoals near Chincoteague Inlet, Virginia—1852.

20. Metompkin Inlet, Virginia, shoaling from 11 to 8 feet in the channel during 1852.

21. Two channels into Wachapreague Inlet, Virginia—one from the northward and the other from the eastward—both with seven feet water at low tide—1852.

22. A shoal half a mile in extent, not put down on any chart, 5½ miles east from the north end of Paramore's Island, Virginia: it has but four fathoms water on it, and has nine fathoms around it—1852.

23. Great Machipungo Inlet, Virginia; found to have a fine wide channel, with 11 feet water on the bar at low tide and 14 at high; good anchorage inside in from two to eight fathoms: the best harbor between the Chesapeake and Delaware entrances—1852.

24. Two shoals near the entrance to the Chesapeake—one 4¾ nautical miles southeast by east from Smith's Island light-house, with 17 feet upon it; and the other east by south nearly, 7¾ miles from the same light, with 19½ feet upon it—1853.

25. Only three feet water upon the "Inner Middle," the shoal part of the Middle Ground west of the "North Channel," at the Chesapeake entrance—1852.

26. A 25 fathom hole 2¾ miles west-southwest from Tazewell triangulation point, eastern shore of the Chesapeake; all other charts give not more than 16 fathoms in this vicinity.

27. A shoal at the mouth of the Great and Little Choptank, in Chesapeake Bay—1848.

28. Deeper water found on Diamond Shoal, and a dangerous nine-feet shoal off Cape Hatteras—1850.

29. A new channel, with 14 feet water, into Hatteras Inlet, formed during the year 1852, which is better and straighter than the old channel.

30. The well-ascertained influence of prevailing winds in the movement of the bars at Cape Fear and New Inlet entrances, and the gradual shoaling of the main bar; the latter fact being of great importance to the extensive commerce seeking this harbor—1853.

31. Frying-pan Shoals, off Cape Fear, North Carolina. A channel of 2½ fathoms, upward of a mile wide, distant 11 nautical miles from Bald Head light-house, across the Frying-pan Shoals. A channel extending from 3 to 4 miles from the point of Cape Fear to 8 to 8½ miles from it, with sufficient water at low tide to allow vessels drawing nine or ten feet water to cross safely. A channel at the distance of 14 nautical miles from Bald Head light-house, one mile wide, with 3½ to 7 fathoms water on it. The Frying-pan Shoals extend 20 nautical miles from Bald Head light-house, and 16, 17, and 18 feet water is found 17 and 18 nautical miles out from the light—1851.

32. Shoaling of Cape Fear River bar thoroughly examined for purposes of improvement—1852.

33. Changes at the entrance of Winyah Bay, Georgetown harbor, and the washing away of Light-house Point, at the same entrance—1853.

34. Mafitt's new channel, Charleston harbor, with the same depth of water as the ship-channel—1850.

35. Changes in the channels at the entrance of Charleston harbor—1852.

36. The remarkable discovery of continuous deep-sea soundings off Charleston, and of soundings in the depth of between 400 and 500 fathoms beyond the Gulf Stream—1853.

37. The discovery of cold water at the bottom of the sea below the Gulf Stream, along the coasts of North and South Carolina, Georgia, and Florida—1853.

38. The discovery of the cold wall, alternate warm and cold bands, and various other features of the Gulf Stream, especially such as concern its superficial and deep temperatures on sections, and its distribution relative to the shore and bottom.

39. Various facts relative to the distribution of minute shells on the ocean-bottom, of probable use to navigators for recognizing their positions.

40. Hetzel Shoal, off Cape Canaveral, Florida—1850.

41. A new passage, with three fathoms water, through Florida Reef to Legaré harbor, under Triumph Reef (lat. 25° 30′ N., long. 80° 03′ W.), which, if properly buoyed, will be valuable as a harbor of refuge.

42. A new channel into Key West harbor—1850.

43. Isaac Shoal, near Rebecca Shoal, Florida Reef; not laid down on any chart—1852.

44. Channel, No. 4, a northwest entrance into Cedar-Keys Bay—1852.

45. Mobile Bay Entrance Bar; in 1822 only 17 feet at low water could be carried over it; in 1841 it was 19 feet; and in 1847 it was 20¾ feet, as shown by successive surveys—1847.

46. The diminution, almost closing, of the passage

between Dauphine and Pelican Islands, at the entrance of Mobile Bay—1853.

47. Horn Island Channel, on the Coast of Mississippi.

48. The removal of the East Spit of Petit Bois Island in the hurricane of 1852, opening a new communication between the Gulf and Mississippi Sound, and the rendering of Horn Island Pass more easy of access by the removal of knolls—1853.

49. The accurate determination of Ship Shoal, off the coast of Louisiana, in connection with the site for a light-house—1853.

50. The changes at Aransas Pass, Texas, as bearing on the question of a light-house site—1853.

51. The determination of the position and soundings on Cortez Bank, near the island of San Clemente, coast of California—1855.

52. A shoal inside of Ballast Point, San Diego Bay, with 12½ feet of water; not laid down on any chart—1852.

53. Changes in the channels of entrance of Humboldt Bay or harbor, California—1852 and 1853.

54. The depth of water on the bars at the entrance of Rogue River and Umquah River, Oregon—1853.

55. South Channel, Columbia River, surveyed and made available to commerce—1851. Changes of channels, their southward tendency, and a new three-fathom channel from Point Hancock, due west to open water, Columbia entrance—1852. Further changes—1853.

56. Various surveys and charts of small harbors on the Pacific, and a continuous reconnoissance of the entire western coast and islands adjacent, a great part of which was very imperfectly known.

Additional List for 1854.

57. Determination of the dimensions of Alden's Rock, near Cape Elizabeth, Maine.

58. A bank (Stellwagen's Bank), with 10½ to 14½ fathoms of water on it, at the entrance to Massachusetts Bay, and serving as an important mark for approaching Boston and other harbors.

59. A dangerous sunken ledge (Davis's Ledge) to the eastward, and in the neighborhood of Minot's Ledge.

60. Several rocks in the fair channel-way in Boston harbor entrance.

61. The tidal currents of Nantucket Shoals and the approaches.

62. The tidal currents of Long Island Sound.

63. The changes in New York harbor, near the city, between 1845 and 1854.

64. The general permanence of the Bodkin Channel and shoals in its vicinity, at the entrance of the Patapsco River—between 1844 and 1854.

65. A shoal (New Point Shoal) in Chesapeake Bay, with 16 feet water on it, southeast from New Point Comfort light-house, off Mobjack Bay.

66. A reconnoissance of the Wimble Shoals near Nag's Head, coast of North Carolina.

67. The general permanence in depth on the bar of Beaufort, North Carolina, with the change of position of the channel.

68. The changes in Maffitt's Channel, Charleston harbor, South Carolina, from 1852 to 1854.

69. A harbor of refuge (Turtle harbor) to the northward and westward of Carysfort light-house, Florida Reef, with a depth of water of 26 feet at the entrance.

70. A safe rule for crossing the Florida Reef near Indian Key.

71. Co-tidal lines for the Atlantic coast of the United States.

72. An increase of depth of water on the bar at Pass Fourchon, Louisiana.

73. A shoal at the entrance to the Straits of Rosario, Washington Territory, giving good holding ground in 33 feet.

74. Belle Rock, in the middle of Rosario Strait, Washington Territory, visible only at extreme low tides.

75. Entrance Rock, at the entrance of Rosario Strait.

76. Unit Rock, in the Canal de Haro, Washington Territory.

77. A five-fathom shoal in the Strait of Juan de Fuca, between Canal de Haro and Rosario Strait.

78. The non-existence of two islands at the northern entrance of Canal de Haro, laid down on charts.

79. The non-existence of San Juan Island, usually laid among the Santa Barbara group.

80. Tides of San Diego, San Francisco, and Astoria. —*Coast Survey Report for* 1854.

Cobalt (Ger. *Kobalt*; Du. *Kobal*; Swed. *Cobolt*; Fr. *Cobalt*; It. *Cobalto*; Russ. *Kobolt*; Lat. *Cobaltum*), a mineral of a gray color, with a shade of red, and by no means brilliant. It has scarcely any taste or smell; is rather soft; specific gravity about 8·6. Sometimes it is composed of plates, sometimes of grains, and sometimes of small fibres adhering to each other. Its oxides are principally employed.—*See* SMALTS, or SMALTZ. They form the most permanent blue with which we are acquainted. The coloring power of oxide of cobalt on vitritiable mixtures is greater, perhaps, than that of any other metal. One grain gives a full blue to 240 grains of glass.—THOMSON'S *Chemistry* and URE'S *Dictionary*.

Cocculus Indicus, or **Indian Berry** (Sansc. *Kakumari*; Malay, *Tubabidgi*), the fruit of the *Menispermum Cocculus*, a large tree of the Malabar coast, Ceylon, etc. It is a small kidney-shaped berry, having a white kernel inside of a most unpleasant taste. It is of a poisonous and intoxicating quality, and has been employed to adulterate ale and beer.

Cochineal (Ger. *Koschenilje*; Du. *Conchenilje*; Fr. *Cochenille*; It. *Cocciniglia*; Sp. *Cochinilla, Grana*; Port. *Cochenilha*; Russ. *Konssenel*), an insect (*Coccus cacti*) found in Mexico, Georgia, South Carolina, and some of the West India islands; recently, also, it has been introduced into Java, and promises to become an important product of that rapidly improving colony. Formerly it was in Mexico only that it was reared with care, and formed a valuable article of commerce; but its culture is now more or less attended to in various parts of the West Indies and of the United States. It is a small insect, seldom exceeding the size of a grain of barley; and was generally believed, for a considerable time after it began to be imported into Europe, to be a sort of vegetable grain or seed. There are two sorts or varieties of cochineal: the best or domesticated, which the Spaniards called *grana fina*, or fine grain; and the wild, which they call *grana sylvestra*. The former is nearly twice as large as the latter, probably because its size has been improved by the favorable effects of human care, and of a more copious and suitable nourishment, derived solely from the *Cactus cochinillifer*, during many generations. Wild cochineal is collected six times in the year, but that which is cultivated is only collected thrice during the same period. The insects, of which there are about 70,000 in a pound, being detached from the plants on which they feed by a blunt knife, are put into bags, and dipped in boiling water to kill them, after which they are dried in the sun. It is principally used in the dyeing of scarlet, crimson, and other esteemed colors. The watery infusion is of a violet crimson; the alcoholic, of a deep crimson; and the alkaline, of a deep purple, or rather violet hue. It is imported in bags, each containing about two hundred pounds; and has the appearance of small, dry, shriveled, rugose berries or seeds, of a deep brown, purple, or mulberry color, with a white matter between the wrinkles. In this state they suffer no change from length of keeping. Dr. Bancroft says that that cochineal is the best which is "large, plump, dry, and of a *silver-white* color on the surface."

The species of cochineal called *granilla*, or dust, is supposed by Dr. Bancroft to be principally formed of

grana sylvestra. The insects of which it consists are smaller than those composing the fine cochineal, and it does not yield more than a third part of the coloring matter that is yielded by the latter. The cochineal insect was introduced into India in 1795; but a very inferior sort only is produced. It has also been introduced into Java and Spain, but with what success remains to be seen.—THOMSON'S *Dispensatory*; BANCROFT *on Colors*, *etc*.

The cochineal plant (*Cactus cochinillifer*), or some of its congeners, is found in varying abundance throughout the torrid zone, as well as in several warm and temperate countries without the tropics. But much doubt still exists as to what particular species nourishes the cochineal insect, as it is believed that the plant which was named by Linnæus, and which has been almost universally called *Cactus cochinillifer*, is not the one that produces the best Mexican cochineal; nor is it positively known in what part of America it was originally a native. Linnæus speaks of it as indigenous to Jamaica, and the warmer parts of the New World; but others assert that it was brought from South America by a Spanish priest.

Cochin China. This extensive kingdom is situated in the southern extremity of Asia, and forms part of the peninsula between China and Hindostan. It is not separated, however, by any distinct boundary from the neighboring countries; and its limits have been greatly extended by conquest beyond those of Cochin China proper, which is merely a strip of land between the China Sea and the mountains, and is not above sixty or seventy miles broad. The empire of Cochin China, which took its present form in the beginning of the present century, comprehends Cochin China proper, Tonquin, the principal part of Cambodia, and the little state of Chiampa. This state, as it has been aggrandized by conquest, extends from the point of Cambodia, in about 8° 30′ N. lat., to the northern confines of Tonquin, which reach within a very few miles of the tropic of Cancer, and from the longitude of 102° to about 109° E. It is bounded on the north by the Chinese Quangsi or Kiangsi and Yunan; on the west by the kingdoms of Laos and Siam; while the Gulfs of Siam, Tonquin, and the China Sea bound it on the southwest, east, and northeast. Its area is estimated at about 98,000 square miles, and its population at from 12,000,000 to 16,000,000. This great country is divided by long ranges of mountains, which run nearly north and south, and in almost parallel chains, forming it into separate provinces, divided by physical boundaries, and inhabited by distinct tribes and nations, although subject to the same sovereign. By these mountainous ridges Tonquin and Cochin China proper are separated from Laetho, Laos, and Cambodia. Another chain separates the three latter states from Siam and China, and gradually diminishes in height as it approaches the south, terminating at the southern extremity of Cambodia.

The soil in Cochin China, especially in the low lands, is fertile, and its products are very valuable. Of these rice, as being the general food of the people, is the staple commodity; and after supplying the wants of the people, about 100,000 piculs remain annually for exportation. The cultivation of the sugar-cane, as well as the preparation of sugar, has of late years much increased; and the annual exportation of sugar is considered to be not less than 70,000 piculs. Cotton of the best quality is produced on the coast; and of this probably about 60,000 piculs are exported. Though raw silk is produced, it is principally for home consumption. Cinnamon ranks high among its productions, and has always been celebrated in China. In the southern parts the cocoa-nut grows very luxuriantly, and hence there is a large exportation of oil. Pepper of a good quality, but in small quantity and of a high price, is produced in the central provinces of Cochin China; but the quantity is inadequate to the demand which the Chinese trade creates for its exportation. It grows among the central mountains of Cochin China, whence it is exported to Cambodia and Tonquin, but principally to China, where it is much more highly valued than any other quality of this aromatic. Another exclusive product of the central parts of the kingdom, which is extensively cultivated and sent to the neighboring provinces, is tea, which is very coarse and only used by the poorer classes. The other productions of the country are, gamboge, gum, cardamoms, eagle-wood, areca-palm, betel-nut, ivory, stick-lac; hides, consisting of deer-skins, buffalo, elephants', and rhinoceros hides; peltry, consisting of tiger, leopard, otter, and cat skins; feathers, salt fish, horns and bones, dye-woods, and woods for ship-building and for domestic purposes. Valuable timber is only found in Cambodia, and a small quantity of teak-wood is found in the forests; also ebony cedars, mimosas, walnuts, iron-wood, and poon, and most of the other trees found in the woods of India. The wood used for ship-building and for domestic purposes is strong and durable, and is carried to the capital in large quantities. There is a hard, black wood extensively used in cabinet-work, and of large dimensions, which takes a fine polish, and might form an article of exportation. Cambodia also produces the Portuguese rose-wood, which the Chinese export as they do from Siam; also sandal-wood and other scented woods. Among the products of Tonquin is a species of vegetable root, a cheap material, which forms the dead-weight of all the Chinese cargoes exported from Tonquin, and is used extensively both throughout Cochin China and the adjacent countries, and also in China, as the material of a red dye. Edible birds'-nests, the sea-slug usually called biche-de-mer, or *Sipunculus edulis*, and various marine productions of a gelatinous quality, form standing articles of trade with China, and are always in demand.

The geological formation of Cochin China is primitive; the mountains are chiefly composed of granite and sienite. Mica slate and primary limestone here and there occur, while several hills consist of quartz rock. Among the mountains of Tonquin is the only portion of the Cochin Chinese empire which produces iron, gold, and silver. The iron received from these mines, which is as cheap as that from Siam, supplies the whole kingdom, with the exception of Saigun, which is furnished from the latter country. Gold dust is found in many of the rivers; and there are immense rocks of marble situated on the banks of the River Faifo, on a kind of sandy plain, of which large quantities have been exported. This remarkable range of limestone rocks rises almost perpendicularly from the low sand hills, to a height of from 300 to 400 feet, without a hill or mountain near them.

The foreign trade of the Cochin Chinese is almost exclusively with China; the trade carried on with Siam being inconsiderable, and that with European nations still smaller. But there is no indisposition to trade, though among the European nations the notion has been propagated by travelers that the resort of European traders is in a great measure interdicted in this kingdom, on the same principle as in Japan and China. In 1818, a new tariff was imposed on foreign vessels, by which the high duties imposed on all foreign vessels prior to 1818 were repealed, and equal duties substituted in their stead. By this regulation all vessels pay a rated measurement duty, moderate in its amount, and are exempted from all import duties payable previous to 1818. Vessels that are driven into the ports of Cochin China by stress of weather, or that visit them for the purpose of commercial inquiries, are free from all charges. Besides the exports above mentioned are cardamoms, betel-nut, eagle-wood, dye-woods, stick-lac, gamboge, ivory, elephants' hides and bones, and rhinoceros bones. The imports are silk goods of various kinds, the coarser kinds of teas, coarse china-ware, paper, cotton and woolen stuffs, iron, opi-

um, cutlery, etc. Of the internal trade of the country, though considerable, little is known. The trade with China is chiefly conducted with Cachao in Tonquin, Saigun in Cambodia, and Faifo and Huế in Cochin China. There is also some inconsiderable intercourse with other parts of the empire.

Cochin China, from its central situation, its navigable rivers, and its many excellent harbors, possesses extraordinary advantages for commerce. Few countries are so amply provided with harbors, there being within the 6½° of latitude which intervene between Cape St. James and the Bay of Turon no less than nine of the finest harbors in the world, accessible in every wind, quite safe to approach, and affording the most complete protection. The Bay of Turon, situated in lat. 16° 7′ N., is equaled by few in the Eastern World, and surpassed by none for the security and convenience which it affords.—E. B.

Cocket, in *Commerce*, a scroll of parchment, signed and delivered by the officers of the custom-house to merchants upon entering their goods, to certify that their merchandise is customed and may be discharged.

Cock-pit, of a ship of war, the apartment of the surgeon and his mates appropriated to the use of the wounded in time of action. It is situated under the lower deck, below the water-line.

Cockswain (pronounced *coxen*), an officer on board of a man-of-war, who has the care of a boat or sloop, and who must be always ready with his gang or crew. He sits in the stern of the boat, which he steers, and has a whistle to summon his men.

Cocoa, or, more properly, **Cacao** (Fr. and Sp. *Cacao;* Ger. *Kakao*), the seed or nuts of the cocoa-tree (*Theobroma cacao*), growing in the West Indies, and in many parts of South America. It is said, by Mr. Bryan Edwards, to bear some resemblance, both in size and shape, to a young *black-heart cherry*. The nuts are contained in pods, much like a cucumber, that proceed immediately from all parts of the body and larger branches; each pod contains from ten to thirty nuts, of the size of large almonds, very compactly set. The shell of the nut is of a dark brown color, brittle and thin; the kernel is, both internally and externally, brownish, divided into several unequal portions, adhering together, but separating without much difficulty; it has a light agreeable smell, and an unctuous, bitterish, rather rough and peculiar, but not ungrateful taste. The nuts should be chosen full, plump, and shining, without any mustiness, and not worm-eaten. They yield, by expression, a great deal of oil; but they are cultivated only that they may be employed in the preparation of the excellent beverage cocoa, and the manufacture of chocolate, of which they form the principal ingredient. The finest cocoa is said to be that of Socomusco. The principal importations were formerly derived from the Caraccas and Guayaquil, particularly the former, the cocoa of which is also the more valuable. The exports from Venezuela amounted in 1851 to 8,159,905 pounds, worth $1,299,631. M. Humboldt estimated the consumption of cocoa in Europe in 1806 at 23,000,000 pounds, of which from 6,000,000 to 9,000,000 were supposed to be consumed in Spain. The production of cocoa was languishing in the Caracas for several years previously to the commencement of the disturbances in South America; and latterly the cultivation of coffee seems to have been in most parts gaining the ascendency.—Humboldt, *Pers. Narrative*, vol. iv. p. 236–247, Engl. transl. In 1851 the exports of coffee from Venezuela amounted to 37,968,081 pounds.

Coco. Coker, or, more properly, **Cocoa-nuts** (Ger. *Kokosnüsse;* Du. *Kokosnooten;* Fr. and Sp. *Cocos;* It. *Cocchi;* Russ. *Kokos;* Sans. *Narikela*), the fruit of a species of palm-tree (*Cocos nucifera*, Linn.). This tree is common almost everywhere within the tropics, and is extremely valuable; being to the palmivorous inhabitants of many parts of Ceylon, Brazil, and other intertropical regions, not merely their principal wealth, but almost their entire dependence. Every part of the tree is appropriated to some peculiar purpose; and an Indian with a garden containing twelve cocoa-nut trees and two jack-trees is said to be comparatively independent! But we may observe that this facility of obtaining subsistence is not an advantage, but the reverse; indolence and a want of civilization being its invariable accompaniment. The tree grows to the height of from 50 to 90 feet; it has no branches, but the leaves are from 12 to 14 feet in length, with a very strong middle rib. The fruit is nearly as large as a man's head; the external rind is thin, tough, and of a brownish-red color. Beneath this there is a quantity of very tough fibrous matter, which is used in the manufacture of cordage and coarse sail-cloth. It is buoyant and extremely well suited for ropes of large diameter; and until the introduction of chain cables a majority of the ships which navigated the Indian seas were supplied with cables of this material. Within the fibrous coating is the shell of the nut, which is nearly globular, very hard, susceptible of a high polish, and used for many domestic purposes; the kernel is white, in taste and firmness resembling that of a hazel-nut; it is hollow in the interior, the hollow being filled with a milky fluid. While the nut is green, the whole hollow of the shell is filled with fluid, which is refreshing, agreeable, and pleasant to the taste. The solid part of the ripe kernel is extremely nutritious, but rather indigestible. The kernels yield by expression a great deal of oil, which, when recent, is equal to that of sweet almonds: but it soon becomes rancid, and is then employed by painters. A tree generally yields about 100 nuts, in clusters, near the top, of about a dozen each. The wood of the tree is made into boats, rafters, the frames of houses, and gutters to convey water. The leaves are used for thatching buildings; and are wrought into mats, baskets, and many other things for which osiers are employed in Europe; so that every part of it is applied to some useful end.

If the body of the tree be bored, there exudes from the wound a white liquor, called palm wine or toddy. It is very sweet when fresh; kept a few hours, it becomes more poignant and agreeable; but next day it begins to grow sour, and in the space of 24 hours is changed into vinegar. When distilled, it produces the best species of Indian arrack; it also yields a great deal of sugar. Toddy is obtained from several species of palms, but that of the *Cocos nucifera* is the best.—*See* Marshall *on the Cocoa-nut Tree;* Ainslie's *Materia Indica*. An improvement effected in the preparation of cocoa-oil has made it of much importance in the arts, by rendering it available in the manufacture of candles and soap, and for various purposes to which it was not previously applicable. The palm-oil met with in the market is not obtained from the *Cocos nucifera*, but from another species of palm. It is chiefly imported from the coast of Guinea.—*See* Palm-oil.

Cocoa-nuts are produced in immense quantities in Ceylon, forming, with their products—oil, arrack, and coir—the principal articles of export from that island. They are also very abundant in the Maldiv Islands, Siam, and on several places of the coast of Brazil. Cocoa oil is in very extensive use all over India, and large quantities are manufactured in the lower provinces of Bengal. This latter is said to be superior to that imported from Ceylon. At an average of the three years ending with 1850, 431,071 gallons of cocoa-nut oil were exported from Ceylon.

Cod (Ger. *Cabljau, Bakalau;* Du. *Cabeljaauw, Baukaelja;* Dan. *Cabliau, Skreit-fisk, Bakelau;* Sw. *Cabeljo, Bakelau;* Fr. *Morue, Cabillaud;* It. *Bacca, Baccalare;* Sp. *Bacalao;* Port. *Bacalhão;* Lat. *Gadus*), a species of fish too well known to require any description. "It is amazingly prolific. Leewenhoek counted 9,384,000 eggs in a cod-fish of a middling size—a number that will baffle all the efforts of man to exterminate. In the British seas they begin to spawn in January, and

deposit their eggs in rough ground, among rocks. Some continue in roe till the beginning of April. The cod is only found in the Northern parts of the world; it is an ocean fish, and never met with in the Mediterranean. The great rendezvous of the codfish is on the Banks of Newfoundland, and the other sand banks that lie off the coasts of Cape Breton, Nova Scotia, and New England. They prefer those situations, by reason of the quantity of worms produced in these sandy bottoms, which tempt them to resort there for food. But another cause of the particular attachment the fish have to these spots is their vicinity to the polar seas, where they return to spawn: there they deposit their roes in full security; but want of food forces them, as soon as the more southern seas are open, to repair thither for subsistence. Few are taken to the north of Iceland, but they abound on its south and west coasts. They swarm on the coasts of Norway, in the Baltic, and off the Orkney and Western Isles; after which their numbers decrease in proportion as they advance toward the south, when they seem quite to cease before they reach the mouth of the Straits of Gibraltar. Before the discovery of Newfoundland, the greater fisheries of cod were on the seas of Iceland, and off the Western Isles, which were the grand resort of ships from all the commercial nations; but the greatest plenty was met with near Iceland. The English resorted thither before the year 1415; for we find that Henry V. was disposed to give satisfaction to the King of Denmark for certain irregularities committed by his subjects on those seas. In the reign of Edward IV. the English were excluded from the fishery by treaty. In latter times, we find Queen Elizabeth condescending to ask permission to fish in those seas from Christian IV. of Denmark. In the reign of her successor, however, no fewer than 150 English ships were employed in the Iceland fishery; which indulgence might arise from the marriage of James with a princess of Denmark."—PENNANT'S *British Zoology*. Cod is prepared in two different ways; it is either gutted, salted, and then barreled—in which state it is denominated green or pickled cod; or it is dried and cured—in which state it is called dried cod. Ready access to the shore is indispensable to the prosecution of the latter species of fishery.

Distant Cod Fishery.—The great Bank of Newfoundland, discovered by John or Sebastian Cabot in 1497, was long, and perhaps still is, the principal seat of the distant cod fishery. The extraordinary abundance of codfish on its banks having been speedily ascertained, the French, Portuguese, and Spaniards soon after engaged in the fishery. The English were later in coming into the field. In 1578 France had on the Banks of Newfoundland 150 vessels, Spain 120 or 130, Portugal 50, and England from 30 to 50. During the first half of last century, the fishery was principally carried on by the English, including the Anglo-Americans and the French; but the capture of Cape Breton, and of their other possessions in America, gave a severe blow to the fishery of the latter. The American war divided the British fishery; that portion of it which had previously been carried on from New England being thereafter merged in that of the United States. During the last war, the French being excluded from the fisheries, those of England attained to an extraordinary degree of prosperity; the total value of the produce of the Newfoundland fishery in 1814 having exceeded £2 800,000. But since the peace, the British fishery on the Newfoundland banks has rapidly declined; and can hardly, indeed, be said, at this moment, to exist. It is now carried on almost entirely by the French and the Americans; the facilities enjoyed by the latter for its prosecution being greater than those of any other people, and the former being tempted to engage in it by the extraordinary encouragements offered by government. At present, the British fishery carried on by the inhabitants of Newfoundland is confined entirely to the shore or boat fishery. But this, though probably not so good a nursery of sailors as the bank fishery, is admitted to be "the most productive of merchantable fish and oil."—M'GREGOR'S *Brit. Amer.*, 2d ed. vol. I.

American Cod Fishery.—The Americans have at all times prosecuted the cod fishery with great vigor and success. Their fishermen are remarkable for their activity and enterprise, sobriety and frugality; and their proximity to the fishing-grounds, and the other facilities they possess for carrying on the fishery, give them advantages with which it is very difficult to contend. In 1795 the Americans employed in the cod fishery about 31,000 tons of shipping; in 1807 they are said to have employed 70,306 tons; but it subsequently declined for several years, and was almost entirely suspended during the late war. According to the official returns (laid before Congress the 1st of January, 1853), the Americans had, in the year ending the 30th of June, 1852, 102,659 tons shipping engaged in the cod fishery. During the same year they exported 134,732 quintals of dried, and 19,579 barrels of pickled cod; their aggregate value being $453,610. "The Americans follow two or more modes of fitting out for the fisheries. The first is accomplished by six or seven farmers, or their sons, building a schooner during winter, which they man themselves (as all the Americans on the sea-coast are more or less seamen as well as farmers); and after fitting the vessel with necessary stores, they proceed to the banks, Gulf of St. Lawrence, or Labrador; and, loading their vessel with fish, make a voyage between spring and harvest. The proceeds they divide, after paying any balance they may owe for outfit. They remain at home to assist in gathering their crops, and proceed again for another cargo, which is salted down, and not afterward dried: this is termed mud-fish, and kept for home consumption. The other plan is, when a merchant or any other, owning a vessel, lets her to 10 or 15 men on shares. He finds the vessel and nets. The men pay for all the provisions, hooks and lines, and for the salt necessary to cure their proportion of the fish. One of the number is acknowledged master; but he has to catch fish as well as the others, and receives only about 20*s.* per month for navigating the vessel; the crew have five-eighths of the fish caught, and the owners three-eighths of the whole. The first spring voyage is made to the banks; the second either to the banks, Gulf of St. Lawrence, or the coast of Labrador; the third or fall voyage is again to the banks; and a fourth, or second fall voyage, is also made, sometimes, to the banks."—M'GREGOR, vol. i. p. 220. It is stipulated in the first article of a convention between Great Britain and the United States, signed at London, 20th of October, 1818, that the citizens of the United States shall have liberty to take all sorts of fish "on that part of the coast of Newfoundland from Cape Ray to the Rameau Islands, on the western and northern coasts of Newfoundland from Cape Ray to the Quirpon Islands, on the Magdalen Islands, and also on the coasts, bays, harbors, and creeks, from Mount Joly, on the southern coast of Labrador, to and through the Straits of Belleisle, and thence northward indefinitely along the coast, without prejudice, however, to any of the exclusive rights of the Hudson's Bay Company; and that the American fishermen shall also have liberty forever to dry and cure fish in any of the unsettled bays, harbors, and creeks of the southern parts of the coast of Newfoundland here above described, and of the coast of Labrador; but so soon as the same, or any portion thereof, shall be settled, it shall not be lawful for the said fishermen to dry or cure fish without previous agreement for such purpose with the inhabitants, proprietors, or possessors of the ground. And the United States hereby renounce forever any liberty heretofore enjoyed or claimed by the inhabitants thereof, to take, dry, or cure fish on or within three marine miles of any of the coasts, bays, creeks, or harbors of his Britannic majesty's dominions in

America not included within the above-mentioned limits." The American fishermen are, however, admitted into all bays, etc., for the purpose of shelter, of repairing damages, of purchasing wood, and of obtaining water, and for no other purpose whatever; and when there, they are to be placed under such restrictions as may be necessary to prevent their abusing the privileges hereby reserved to them.—*See* FISHERIES.

French Cod Fishery.—France has always enjoyed a considerable share of the cod fishery. The following table shows the extent to which she has carried it since the peace:

ACCOUNT OF THE NUMBER OF SHIPS, WITH THEIR TONNAGE, CREWS, AND CARGOES, THAT HAVE ENTERED THE DIFFERENT PORTS OF FRANCE FROM THE COD FISHERY DURING THE UNDER-MENTIONED YEARS.

Years.	Shipping.			Imports.		
	Ships.	Tons.	Men.	Codfish, green.	Codfish, dry.	Oil.
				Quintals.	Quintals.	Quintals.
1825	336	35,172	6,311	72,889	168,237	12,943
1830	377	45,036	8,174	104,003	136,457	11,560
1835	463	55,881	11,225	161,657	87,742	12,870
1840	458	54,583	9,897	336,740		17,362
1841	449	54,064	2,239	....	....	....

The quantities of oil are exclusive of *draches* (huiles non epurés); there are also sounds, etc. Marseilles, Granville, Dunkirk, Bordeaux, La Rochelle, and Nantes are the principal ports whence ships are fitted out for the fishery.

But notwithstanding the apparent prosperity of this branch of industry, it may be doubted whether it be really so beneficial to France as would at first sight appear. It depends more upon artificial regulations than upon any thing else. Foreign cod is excluded from the French markets by the oppressive duty with which it is loaded; and the comparatively great demand for dried fish in Catholic countries renders this a very great boon to the French fishermen. But it is admitted that this would not be enough to sustain the fishery; and high bounties are paid to those engaged in it. These, however, have been reduced of late years; and they will probably in no long time undergo still further alterations. St. Pierre and Miquelon, small islands on the coast of Newfoundland, belong to the French. Their right of fishing upon the shores of that island, and upon the great bank, was replaced in 1814, upon the footing on which it stood in 1792. This concession has been much objected to by Mr. M'Gregor and others: we believe, however, that they have materially overrated its influence.—For further information, *see* FISHERIES *and* FRANCE.

Cod-liver Oil. Pure cod-liver oil is obtained from the livers of codfish; and is best prepared when the liver is in a state most nearly approaching that in which it exists when alive, and is best adapted for medicinal use. The finest oil is devoid of color, taste, and smell, three physical characters that are more valuable than any chemical tests. The success which has attended the use of this oil in pulmonary complaints has led to the introduction of a spurious oil, chiefly prepared of bleached whale oil, etc., which does not possess the valuable medicinal properties of pure cod-liver oil.

Shark-liver Oil is an oil that has been lately imported from the coast of Africa. It gives the usual liver-oil reactions with sulphuric acid; its peculiar interest, however, comes from its low specific gravity. Until now, sperm oil, which has a specific gravity of ·875, was the lightest oil known; but the specific gravity of this oil is only ·866. It is prepared, as its name implies, from shark's liver.

Coffee (Ger. *Koffe, Kaffebohnen*; Du. *Koffy, Koffiboonen*; Da. *Kaffe, Kaffebönner*; Swed. *Koffe*; Fr. It. and Port. *Caffe*; Sp. *Cafe*; Russ. *Kofe*; Pol. *Kawa*; Lat. *Coffea, Caffea*; Arab. *Bun*; Malay, *Kāwa*; Pers. *Tochem, Kiach*; Turk. *Chaube*). The coffee-tree is a native of Ethiopia and Abyssinia; but it was in Arabia that it first became an object of interest and importance to the civilized world. The plant is an evergreen, and is accurately described by La Roque as follows: "The coffee-tree is from six to twelve feet high; the stem ten, twelve, and fifteen inches in circumference. When it is full grown, it much resembles in figure our apple-trees of eight or ten years' standing. The lower branches ordinarily bend when the tree begins to grow old, and extend themselves into a round form, somewhat like an umbrella; and the wood is so very limber and pliable, that the ends of the longest branches may be bent down within two or three feet of the earth. The bark is whitish, and somewhat rough; its leaf is much like that of the citron-tree. It continues green all the year, and the tree is never without leaves, which are ranged almost opposite on each side of the bough, and at small distances from each other. Nothing is more singular in its kind than its productions; for almost in all seasons of the year blossoms, and green and ripe fruit, may be seen on the same tree at the same time. When the blossom falls off, there remains in its room, or rather springs from each blossom, a small fruit, green at first, but which becomes red as it ripens, and is not unlike a large cherry, and is very good to eat. Under the flesh of this cherry, instead of the stone, is found the bean or berry we call coffee, wrapped round in a fine thin skin. The berry is then very soft, and of a disagreeable taste; but as the cherry ripens, the berry in the inside grows harder, and the dried-up fruit, being the flesh or pulp of it, which was before eatable, becomes a shell or pod of a deep brown color. The berry is now solid, and of a clear transparent green. Each shell contains one berry, which splits into two equal parts. When the fruit is sufficiently ripe to be shaken from the tree, the husks are separated from the berries, and are used in Arabia by the natives; while the berries are exported for the European markets."

From Arabia the plant was taken by the Dutch about the year 1690 to Java, whence its culture spread slowly among the islands of the Indian Archipelago. In the early part of the eighteenth century it found its way to the West India Islands. The plant is now common in every botanical garden of Europe, and there are few private conservatories without good specimens of the tree. When cultivated with a view to trade, it is most productive on hills and mountains, where its root is almost always dry, and its head frequently watered with gentle showers. It prefers a westerly exposure and a loose gravelly soil, but freed from weeds and grass. The plants are inserted at distances of six or eight feet asunder, and in holes from twelve to eighteen inches deep.

If left to themselves they would rise to the height of sixteen or eighteen feet; but in extensive plantations the trees are topped and stunted to about five feet, for the convenience of having the fruit within reach of the gatherer. Thus dwarfed, they extend their branches until they cover the whole spot round about them. They begin to yield fruit the third year. By the fifth, sixth, or seventh year, according to the nature of the soil, they are at full bearing, and continue to bear for upward of twenty years.

It has but recently come to the knowledge of Europeans that the leaves of the coffee-plant contain the same essential principle for which the berries are so much valued, and that in the Dutch island of Sumatra, in the Indian Archipelago, the natives scarcely use any thing else, and greatly prefer a beverage made from the leaf to the berry itself. The leaves undergo a proc-

ess of curing similar to tea, and they possess all the virtues of either tea or coffee. This may be looked upon as the introduction of a new element among the innocent and beneficial necessaries of life; for while the culture of the coffee plant for the sake of its fruit is limited to particular soils and high temperatures, the tree produces leaves in abundance any where within the tropics where the soil is sufficiently fertile. This extensive habitat, added to its nutritive qualities and freedom from any deleterious principle, points out the coffee plant as the best adapted for general consumption of all the productions affording caffein.

The coffee berry (for which the plant has hitherto been chiefly cultivated), when ripe, is cured in the West Indies, in Java, Ceylon, the East Indies, and South America, by a process called pulping and washing. In Arabia, Persia, etc., it is neither pulped nor washed, but cured in the ancient fashion by the labor of the hands and the action of the sun. The pulping process is performed by machinery, which greatly expedites the work; but practical experienced West India planters admit that this process is in some important respects inferior to the Oriental mode. "A manifest preference," says one, "is given in the leading European markets to coffee which has gone through the pulping and washing process; but, strange to say, the consumers of this beverage are totally ignorant of the fact that the produce which is cured in the pulp furnishes a stronger decoction than an equal quantity of the same coffee which has undergone the other process. The mucilaginous substance which is washed off by the pulping process is absorbed by the bean when cured in the pulp. This gives strength to the produce, and enhances its aromatic flavor." Before the berry is available for use, it undergoes a process called roasting. The valuable properties of coffee depend very much on the manner in which this process is performed. For the most recent and intelligent dissertation on this point, consult Dr. Ure's *Dictionary of Arts, Manufactures, and Mines*, last edition, vol. i. p. 456.

Species of Coffee. Roasting, etc.—The coffees of Jamaica, Ceylon, and Mocha are generally esteemed the best; then follow the coffees of Costa Rica, Dominica, Berbice, Demerara, Bourbon, Java, Martinique, and Hayti. Arabian or Mocha coffee is produced in a very dry climate, the best being raised upon mountainous slopes and sandy soils. The most fertile soils are not suitable for the growth of very fine coffee. Mr. Bryan Edwards observes, that "a rich deep soil, frequently ameliorated by showers, will produce a luxuriant tree and a great crop; but the beans, which are large, and of a dingy green, prove for many years rank and vapid." And the same remark is made by Mr. Crawfurd with respect to the coffee of Java.—*East Indian Archipelago*, vol. i. p. 487. Coffee is improved by being kept; it then becomes of a paler color. Mocha, or, as it is commonly called, Turkey coffee, should be chosen of a greenish light olive hue, fresh and new, free from any mustiness, the berries of a middling size, clean, plump, and without any intermixture of sticks or other impurities. Particular care should be taken that it be not false packed. Good West India coffee should be of a greenish color, fresh, free from any unpleasant smell, the berries small and unbroken. Coffee berries readily imbibe exhalations from other bodies, and thereby acquire an adventitious and disagreeable flavor. Sugar placed near coffee will, in a short time, so impregnate the berries and injure their flavor, as to lower its value 10 or 20 per cent. Dr. Moseley mentions that a few bags of pepper on board a ship from India spoiled a whole cargo of coffee.

"The roasting of the berry to a proper degree requires great nicety: the virtue and agreeableness of the drink depend upon it; and both are often injured by the ordinary method. Bernier says, when he was at Cairo, where coffee is so much used, he was assured by the best judges that there were only two people in that great city who understood how to prepare it in perfection. If it be underdone, its virtues will not be imparted, and in use it will load and oppress the stomach; if it be overdone, it will yield a flat, burned, and bitter taste, its virtues will be destroyed, and in use it will heat the body, and act as an astringent."

Coffee also denotes the drink which is made from the coffee berries. This beverage has been familiar in Europe for the last two hundred years. The first human beings who appear to have used the coffee berries were the half savage tribes of the higher Ethiopia. According to Bruce, the berries were first parched like any other grain, bruised into powder, and mixed up with any sort of grease into paste rolled into little balls. The same authority declares that two or three of these balls were sufficient to support a man for a whole day in a marauding excursion, or in active war against some neighboring tribe. They merely preferred the coffee berry to other grain, because it fed them as well, and cheered them more.

From Ethiopia, both the coffee plant and the use of its fruit were introduced into Persia and Arabia, and it is to the Arabs that we are indebted both for the first written account of it and for the manner of using it in a liquid state. But though we derive the only authentic account of coffee from the Arabs, they admit that they were taught by the Persians; and it was in the city of Aden, in Arabia, about the middle of the fifteenth century, that the drinking of coffee first became general. The mufti of that city introduced the custom from Persia; his authority gave reputation to the practice—lawyers began to drink it—those who loved reading followed their example—artisans who were obliged to work in the night did the same thing, as well as travelers who journeyed in the night to avoid the heat of the day. In short, says M. Galland, "the whole inhabitants of Aden soon became drinkers of coffee, and not only at night to keep them awake, but even in the daytime for its other virtues."

From Aden the taste for coffee found its way to Mecca, from Mecca to Cairo, from Cairo to Damascus, from Damascus to Aleppo and from Aleppo to Constantinople; but it was not until 1615 that the use of coffee found its way from Constantinople to Venice.

In 1644 it was introduced to Marseilles, in 1652 to London, and in 1669 to Paris.

The first English author who mentioned coffee was Burton, in his *Anatomy of Melancholy* (vol. i. p. 130), published in 1621, thirty years before the introduction of the drink into London. "The Turks," says he, "have a drink called coffee (for they use no wine), so named of a berry as black as soot and as bitter, which they sip up as warm as they can suffer, because they find by experience that that kind of drink so used helpeth digestion and procureth alacrity."

It would be an error to infer that the mode of making coffee in Europe and Asia is the same. In Europe, an infusion or a decoction of the roasted berry is all that is consumed; but this is a refinement in cookery not appreciated in Asia; there the custom is now, and always has been, different.

A highly trustworthy traveler, Lamartine, in describing the ordinary khan in Palestine and Syria, says, "a charcoal fire is constantly burning on the hearth, and one or two copper coffee-pots are always full of *thick farinaceous coffee*, the habitual refreshment and only want of the Turks and Arabs."—*Travels in Syria and the East*, vol. i. p. 292. A cup of well-made coffee exhilarates, arouses, and keeps awake. It allays hunger, to a certain extent, gives to the weary increased strength and vigor, and imparts a feeling of comfort and repose. Its physiological effects upon the system, so far as they have been scientifically investigated, appear to be that, while it makes the brain more active, it soothes the body generally, makes the change and waste of matter much slower than usual, and the demand for food in consequence proportionately less.

All these effects are produced by the conjoined action of three ingredients, either identical with, or similar to, those contained in tea. There is a volatile oil produced during the roasting; a variety of tannic acid, which is also altered in some degree during the roasting; and the substance called theïn or caffein, which is common to both tea and coffee, and is found in the leaves of *Guarana officinalis* and *Ilex paraguénsis*, both used by the aborigines of South America, as tea is in the Old Continent, a remarkable result of chemical investigation. The chemical constitution of caffein is $C_{16}\ H_{15}\ N_4\ O_4$.

Coffee-trade. The extent to which the cultivation of coffee has been carried in the British possessions, the vast amount of capital embarked in plantations suited to its growth, the multitude of hands engaged in its culture, and the shipping necessarily employed in connection with that trade, invest the article, in a commercial point of view, with great importance; while as a beverage, the tendency of which is to wean the community from indulgence in intoxicating liquors, it is second to no commodity in the British tariff. The history of the coffee-trade prior to 1850 is only valuable now as an example of a commodity for which there is a universal craving among mankind, struggling successfully, and at last triumphantly, over fiscal restrictions, high duties, differential duties, and an endless mass of antiquated obstructions. In common with other important necessaries of life, it has now attained to the natural state of unrestricted competition, though it still pays a customs duty of three-pence per pound.—E. B.

The cultivation of coffee met with great success in St. Domingo, and for many years that was the source whence Europe derived its chief supplies, having exported at one time about 38,000 tons, or about seventy-six million pounds; and it was supposed that, had not the revolution broken out in 1792, it would in that year have exported 42,000 tons, or about eighty-four million pounds. The devastation by that event caused almost a total cessation in the supplies. Being driven from St. Domingo, its culture was greatly augmented in Cuba, Jamaica, Surinam, and Java, and was subsequently introduced with great success into Brazil. As the culture advanced in Brazil, it declined in Cuba, the growth of sugar having been found capable of more rapid extension and being more profitable. It was some time after coffee was first planted in Brazil before it became an article of export to any great extent.

In 1774 a Franciscan friar, named Villaso, cultivated a single tree in the garden of the Convent of St. Antonio. Brazil was then governed by the Marquis de Lavadio as viceroy. The first fruits of the tree were presented to the marquis, who distributed them among the most respectable planters, explaining to them the advantages of adding another valuable article to the produce of the country; but being strong in their prejudices in favor of sugar and indigo, few took pains to cultivate it, and hence its progress was very slow. In 1808 Don Joas VI. fled from Portugal to Rio Janeiro, and soon after opened the port to foreign trade. The annual crop of coffee then did not exceed 30,000 bags of 160 pounds each, or 8,000,000 pounds. Although the revolution in St. Domingo had overthrown its culture there, Cuba and Jamaica continued, to some extent, to supply the trader. In 1820 its increase in Brazil had swelled to 100,000 bags. The decrease of supply, by the desolation of St. Domingo, caused it to reach the enormous price of 148*s.* per cwt., or nearly 37½ cents per pound, in London, in the years 1817 and 1821. This great price stimulated the production in Brazil. The fall of St. Domingo had caused the culture of indigo to be transferred to British India, and its culture was abandoned in Brazil, with sugar, for coffee. Hence emancipation in St. Domingo gave the monopoly of the cultivation and supply of indigo to British India, where it has remained ever since.

In 1789, just previous to the revolution, Hayti exported 76,835,219 pounds of coffee; in 1818 we find the exports fell to about 26,000,000 pounds, and at this time they do not probably exceed thirty or thirty-five millions. The export of sugars in 1789, just before the revolution, reached 140,000,000 pounds. It has now ceased, and the population actually import supplies from Cuba and Porto Rico. In 1834, the year in which the Emancipation Act went into effect, Jamaica exported to England,

	1834.	1839.
Sugar, cwt.	1,256,253	705,072
Coffee, pounds	18,268,883	9,423,197

We thus find that the exports of coffee fell off the first five years after emancipation about one-half, and sugar nearly in an equal ratio. In August, 1834, the negroes were emancipated by the English government in Jamaica, which struck a death-blow at its culture there, while sugar had measurably superseded its growth in Cuba. These causes combined, with the unrestricted supply of African slave labor, to give its culture a powerful impulse in Brazil. Hence we find by the year 1830 its crop had increased to 400,000 bags, or 64,000,000 pounds. The slave-trade, by convention with England, was to cease in February, 1830. This produced an enormous import of slaves, which could only be disposed of at low prices and on long credits. This, again, stimulated the planting of new estates, and the crop rapidly increased, so that in 1840 it actually reached 1,060,898 bags, or about 168,600,000 pounds. The cultivation being found profitable, the demand for slaves continued, and notwithstanding the attempts of the British government to put a stop to it, the slave-trade has been continually carried on clandestinely ever since, the importations from Africa having amounted to from 30,000 to 50,000 annually, the vessels supplied for which having been chiefly built and fitted out in the Northern cities of the United States, and sailing under whatever colors best answered their purpose.

The increase in the crop since 1840 has been very rapid, and in 1847 reached about 1,804,558 bags, about 288,333,000 pounds. The low prices in 1848 and 1849 had a tendency to check production. The difficulties of importing slaves, under a new treaty made with England in 1845, cut off the supply so far that those which were secretly introduced barely supplied the annual loss, which was 10 per cent., and sometimes more; and should the trade be stopped altogether, as aimed at by England, it will cause the cultivation of coffee to decrease in Brazil, to become augmented in the East Indies, and especially in British India; and should negro slavery be overthrown, coffee would to a great extent follow the course of indigo, and become to some extent an article of British production and control. The climate of Brazil is highly favorable to the cultivation of coffee, the trees yielding nearly double those of the West Indies.

The growth of Brazil, by 1854, reached the astonishing quantity of 400,000,000 pounds, while the production in the British West India Islands has rapidly declined since the emancipation of the slaves in 1834, as will be seen from the following table:

In the year 1848 the British West India Islands yielded	10,000,000 lbs.
In the years 1853, '54, and '55, they yielded only	5,000,000 lbs.
Jamaica alone, in 1834, the year the Emancipation Act was declared in the Islands, amounted to	18,268,183 lbs.

We see by this the same result as that which followed emancipation in St. Domingo. Coffee, with other tropical products, has fluctuated with the supply, and cheapness, and reliability of African slave-labor. If coolies can be brought in under a voluntary apprenticeship, why can not Africans be allowed to come in by the same method, placed under proper regulations and guarantees on the coast of Africa?

The coffee-growing districts of Brazil are divided into the Serra Abaixo (or below the mountains) and Serra Acima (above the mountains). The produce of the former is about one-sixth part of the whole crop in good years, but is much more uncertain than the Serra Acima, being more liable to injury from drought, which is said of late years to have been frequent. The quality is also inferior, and seldom shipped to the United States. The trees usually flower three times each year, generally in August, September, and October, and are ready for picking, in favorable seasons, in March, April, and May, with considerable variation according to situation. In April small quantities of poor new coffee appear in market. In May and June the quantity is greater, but never abundant until July and August. The trees of Serra Acima bloom later, but the crop is more uniform, enabling planters to gather a crop at a single picking, which is a great saving of labor. Entire cargoes are not generally obtained from the Serra Acima district until August and September. Usually the supplies remaining over of the old crop are first sent to the market before planters clean out the new, and hence it is often as late as October and November before the bulk of the new crop is in market.

The cost of transporting the coffee to market is said to average the planter about two cents per pound, owing to imperfect facilities. The actual cost of production is said to be not much under 4½ cents per pound, and as negroes are decimated by cholera and other diseases, without new importations are required to supply their places, negroes must advance in value and enhance the cost of production.

The first import of Brazil coffee into the United States was made in 1809, which consisted of 1809 bags, landed at Salem, by the ship *Marquis de Somerinlas*. Hence, within the brief period of forty-seven years, the exports from Brazil have increased to the large amount of 400,000,000 pounds in 1854, and 320,000,000 in 1855. From 1809 to 1849, or in a period of forty years, the imports of coffee from Brazil into the United States increased from 1809 bags to over 100,000,000 pounds.

For the fiscal year ending the 30th of June, 1855, the United States imported from Brazil 185,869,383 pounds of coffee, of the value of $11,815,818; other Brazilian products, including some sugars, amounted to $3,408,117.

Total imports	$15,218,935
Total exports to Brazil	4,261,273
Balance of trade against the United States	$10,957,662

The imports of coffee alone from Brazil in 1854–'55 exceeded the exports of the United States to that country by $7,558,545.

The total importation of coffee into the United States for the year ending June 30th, 1855, amounted to 190,764,259 pounds, valued at $16,764,259. For the year ending June, 1856, the quantity has been much larger, and as prices have ruled high, the value has been much greater.

The consumption of coffee has rapidly increased within the past twenty-five years, the greatest augmentation having been in the United States, where it has averaged 7½ per cent. per annum, while in Europe it has been 2½ per cent. per annum, or at the rate of 4 per cent. per annum for the world.

We submit the following table, showing the production and consumption of coffee for the world at different periods:

COMPARATIVE STATEMENT OF THE PRODUCTION OF COFFEE IN THE WORLD AT DIFFERENT PERIODS. (THE PRODUCTION OF ONE YEAR ENTERS INTO THE CONSUMPTION OF THE SUCCEEDING YEAR.)

	1848.	1850.	1854.	1855.
	Pounds.	Pounds.	Pounds.	Pounds.
Brazil	270,000,000	280,000,000	400,000,000	320,000,000
Java	110,000,000	115,000,000	140,000,000	120,000,000
St. Domingo	40,000,000	45,000,000	40,000,000	35,000,000
Cuba and Porto Rico	40,000,000	30,000,000	25,000,000	20,000,000
British West Indies	10,000,000	5,000,000	5,000,000	5,000,000
Sumatra	10,000,000	15,000,000	15,000,000	15,000,000
Mocha, etc.	5,000,000	5,000,000	5,000,000	5,000,000
Ceylon, India	25,000,000	35,000,000	40,000,000	50,000,000
Venezuela	20,000,000	25,000,000	25,000,000	20,000,000
Costa Rica	5,000,000	7,000,000	8,000,000	9,000,000
Total	540,000,000	565,000,000	716,000,000	607,000,000

It will be seen from this table that the greatest increase in 1855 was in Ceylon, a British East India possession, where its future growth is to be most largely augmented should slavery be overthrown in Brazil; with regard to which attempts have already been made by a member of the Legislature. A bill was introduced for gradual emancipation, but it, of course, did not pass. The question arises, if negro slavery in Brazil should be overthrown, where will the cultivation of coffee next take refuge? Java can not materially augment the supplies. There are but two other points, viz., British India and the west coast of Africa. The tree is a native of the latter locality. The consumption of the world in time of peace, and increased wealth from the influx of gold, has overtaken the labor of production. The future consumption in England and in the United States is expected to be materially augmented.

France.—In France, also, owing to the failure of the vintage for several years, the consumption of coffee is likely to be increased. The annexed statement shows the present estimated consumption of the world:

	Pounds.
United States and British provinces	210,000,000
German Zolverein	110,000,000
Austria, and other German states	75,000,000
Holland and Belgium	90,000,000
France, Switzerland, and Southern Europe	125,000,000
Great Britain	40,000,000
Denmark, Sweden, and Norway	30,000,000
Russia	15,000,000
Cape of Good Hope, Australia, and California	15,000,000
Total	710,000,000

The question of labor in the cultivation of this and other tropical productions which have become commercial necessities to the populations of the temperate northern latitudes, which embrace the largest civilized portions of the human race, is becoming one of great importance. The growing deficiency must not only continue, but in time greatly enhance the prices of these products, which have become necessaries of life, and tend to drain the money from Northern nations, in order to secure them, or, in other words, place them under heavy tribute for articles which are, from habit, necessary to their comfort and well-being. England, through her East India possessions, is, no doubt, anxious to secure as large a share of this tribute as possible, and may, to a certain extent, succeed with indigo, sugar, and coffee; but she has failed, and will continue to fail, in the production of cotton. The United States have secured, and are likely to keep, and, if necessary, by the aid of England to back the South in securing this indispensable production to her prosperity, as well as the prosperity of Europe and the Northern States of this Union. The value of slaves in Brazil—the only South American state which has made any great progress, and that through African labor—has for several years steadily increased. Prior to 1830, when the slave-trade was legal, slaves were sold at 120‖, or $66. From 1830 to 1850, when the trade was, under treaties with England, prohibited, and had to be conducted clandestinely, they advanced to 400‖, or $220. Since 1850, the trade having been almost

entirely suppressed, they have gradually advanced, aided by the decimation of 5 per cent. per annum, to 1100‖, or $605, in 1858. Since then, 10 per cent., it is estimated, have died from cholera, as appears by a recent statement of the Minister of the Empire, and they are now stated to be worth 1500‖, or $825 each. It was the low price of slaves prior to 1820 which stimulated the production of coffee, and caused prices to rule so low, which were in 1835 to 1840 not much over half the present prices.

It takes four to five years to mature coffee-trees after planting them before they will yield a crop of berries; hence the sudden rise or fall in prices can not so suddenly influence production, as is the case with annual crops from new plantations of sugar and cotton. At the present time, owing to the high prices of slaves, no new estates can be formed, and none have been for several years; and it is stated that there are not hands enough left in the country to pick out a full crop.

It may be remarked that the rise and fall of tropical productions have fluctuated with the supply of the only labor suitable for their production beneath a tropical sun, and that is African.

ESTIMATED SUPPLIES OF COFFEE FOR EUROPE AND THE UNITED STATES.

From	1851.	1852.	1853.
	Tons.	Tons.	Tons.
Brazil	142,000	133,000	126,000
Java	60,000	69,000	62,000
St. Domingo	18,000	25,000	20,000
Cuba	5,000	4,000	5,000
Porto Rico	5,500	9,500	9,500
La Guyara and Venezuela	10,500	12,000	12,000
Costa Rica	3,000	3,000	3,000
British West Indies	1,500	1,500	1,500
British E. Indies and Ceylon	16,000	21,000	16,000
French colonies, East and West Indies	500	500	500
Dutch West Indies	500	500	500
Manilla 600, Arabia 1400	2,000	2,000	2,000
Total	264,500	281,000	258,000
Deduct United States	94,000	88,000	85,000
For Europe	170,500	193,000	172,000
Consumption in Europe	176,500	171,400	193,000
Surplus	....	7,600	....
Deficit	6,000	....	21,000

ESTIMATED CONSUMPTION OF COFFEE.

Countries.	1851.	1852.	1853.
	Tons.	Tons.	Tons.
Great Britain (official)	14,000	15,700	17,500
France (official)	18,500	21,500	21,500
Belgium (official)	17,500	20,700	20,000
Holland, estimated	13,500	15,000	15,000
Germany, Zollverein, etc.	56,000	58,000	58,000
Bohemia, Galicia, and Hungary	6,000	6,000	6,000
Austria	10,500	11,000	11,000
Switzerland	6,500	7,000	7,000
Italy, Greece, Levant, and North Africa	14,000	15,000	15,000
Spain and Portugal	6,000	6,000	6,000
Sweden, Norway, and Denmark	9,000	10,000	10,000
Russia, Finland, and Poland	4,500	5,500	6,000
Europe	176,500	191,400	193,000
United States	84,000	92,000	92,000
Total	260,500	283,400	285,000
Estimated fresh supplies in the year	264,500	281,000	258,000
Deficit	....	2,400	27 000
Surplus	4,000	....	....

The above quantities may be considered the nearest approximation to the truth which the present state of commercial statistics can supply; but any one familiar with the writings of modern travelers in the south of Europe and in Asia must be convinced that a very large quantity of coffee is consumed in Turkey, Syria, Palestine, Persia, Egypt, Abyssinia, etc., regarding which commerce takes no note.

IMPORTS OF COFFEE INTO THE UNITED STATES SINCE 1821.

Years.	Pounds.	Years.	Pounds.
1821	21,273,659	1836	95,796,507
1822	26,782,390	1837	88,140,403
1823	37,334,732	1838	88,139,720
1824	30,224,296	1839	100,603,992
1825	45,190,630	1840	94,996,095
1826	37,349,497	1841	114,284,783
1827	50,051,986	1842	112,885,127
1828	55,194,697	1843	92,914,257
1829	51,133,538	1844	160,461,943
1830	51,488,248	1845	107,860,911
1831	81,757,386	1846	132,611,596
1832	91,722,329	1847	156,716,575
1833	99,955,020	1848	150,559,138
1834	80,150,366	1849	165,334,700
1835	103,199,777	1850	144,586,855

RE-EXPORTS OF COFFEE FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30.

Re-exports to	1853.		1854.		1855.	
	Pounds.	Dollars.	Pounds.	Dollars.	Pounds.	Dollars.
Belgium	6,441,060	537,851	3,778,517	340,505	7,914,358	696,130
Hanse Towns	1,194,613	103,677	1,515,971	143,502	585,479	58,685
Italy	1,436,846	133,766	988,691	116,037	1,820,564	170,354
Turkey	827,586	70,193	549,246	55,028	959,995	80,157
Other places	3,449,717	318,598	5,173,475	516,298	5,024,921	447,361
Total	13,349,819	$1,163,875	12,005,800	$1,171,367	16,315,317	$1,452,687
Not excepted by treaty stipulations	19,483	1,728	3,790	379	12,930	1,290
Total	13,368,802	$1,165,603	12,009,590	$1,171,746	16,328,217	$1,453,977

IMPORTS OF COFFEE INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30.

Imports from	1853.		1854.		1855.	
	Pounds.	Dollars.	Pounds.	Dollars.	Pounds.	Dollars.
Holland	747,978	86,873	1,755,121	81,520	3,092,410	325,526
Dutch East Indies	3,059,659	326,675	5,828,600	494,936	8,121,784	686,480
British East Indies	2,012,637	101,002	82,534	10,098	1,063,523	81,779
British West Indies	1,538,532	119,936	1,796,705	165,597	2,025,352	177,158
Cuba	2,658,997	158,160	2,855,523	204,154	835,168	35,782
Hayti	19,747,817	1,590,612	19,002,613	1,772,898	21,931,807	1,935,225
Venezuela	13,732,879	1,128,788	11,238,174	1,041,404	14,008,933	1,300,976
Brazil	153,338,464	11,844,414	116,794,773	10,329,992	135,369,883	11,815,818
Africa generally	861,741	84,029	716,323	69,724	407,986	42,014
Other places	891,119	84,870	8,030,455	277,142	3,547,913	453,101
Total	199,089,823	$15,525,954	162,100,822	$14,536,945	190,704,759	$16,872,929
Not excepted by treaty or non-producers	318,222	20,052	155,171	12,773	714,398	67,471
Total	199,408,045	$15,545,986	162,255,993	$14,549,718	191,478,657	$16,940,400

According to Mr. Cook, the prices of Jamaica and St. Domingo (Hayti) coffee, exclusive of duty, in the London market, at the close of the following years, were,

Years.	Jamaica.	St. Domingo.	Years.	Jamaica.	St. Domingo.
1830	32s. to 78s. per cwt.	34s. to 35s. per cwt	1837	75s. to 127s. per cwt.	42s. 6d. to 44s. per cwt.
1831	50s. to 86 "	45s. to 46 "	1838	77s. to 141 "	43s. to 45s. 6d. "
1832	60s. to 90 "	55s. to 57 "	1839	88s. to 148 "	47s. to 49 "
1833	77s. to 110 "	65s. to 66 "	1840	73s. to 148 "	41s. to 45s. 6d. "
1834	69s. to 124 "	48s. to 52 "	1841	54s. to 144 "	37s. to 42 "
1835	80s. to 113 "	51s. to 53 "	1849	47s. to 138 "	31s. to 34 "
1836	66s. to 120 "	46s. to 54 "			

Coffee-houses. The first in England was kept by a Jew, named Jacobs, in Oxford, 1650. In that year, Mr. Edwards, an English Turkey merchant, brought home with him a Greek servant named Pasquet, who kept the first house for making coffee in London, which he opened in George-yard, Lombard Street, in 1652. Pasquet afterward went to Holland, and opened the first house in that country.—ANDERSON. The Rainbow Coffee-house, near Temple-bar, was represented as a nuisance to the neighborhood, 1657. Coffee-houses were suppressed by proclamation, 26 Charles II., 1675. The proclamation was afterward suspended on the petition of the traders in tea and coffee.—HAYDN.

Coffer-dam. In architecture and bridge-building, a case of piling, water-tight, fixed in the bed of a river for the purpose of laying the bottom dry for a space large enough to build the pier on. Coffer-dams are formed in various ways, either by a single inclosure or a double one, with clay or chalk rammed in between the two to prevent the water from coming through the sides. They are also made either with piles only, driven close together, and sometimes notched or dovetailed into one another; or, if the water is not very deep, by piles driven at a distance of five or six feet from each other, and grooved in the sides, with boards let down between them in the grooves. In order to build in coffer-dams a very good natural bottom of solid earth or clay is required; for though the sides be made water-tight, if the bed of the river be of a loose consistence, the water will ooze up through it in too great a quantity to permit the operations to be carried on. It is almost needless to remark that the sides must be very strong, and well braced in the inside to resist the pressure of the ambient water.—HUTTON'S *Tracts*, vol. i.

Coffins. The Athenian heroes were buried in coffins of the cedar-tree, owing to its aromatic and incorruptible qualities.—THUCYDIDES. Coffins of marble and stone were used by the Romans. Alexander is said to have been buried in one of gold; and glass coffins have been found in England.—GOUGH. The earliest record of wooden coffins in England is that of the burial of King Arthur, who was buried in an entire trunk of oak, hollowed, A.D. 542.—ASSER. The patent coffins were invented in 1796.—HAYDN.

Cognac (*Conacum*,) a commune and town of France, capital of arrondissement, department of Charente, 21 miles west from Angoulême, on the left bank of the Charente. Population 4148. It has an old castle, in which Francis I. was born. It is the entrepôt of the brandy of the Charente, to which it gives its name, and which forms the object of a very extensive commerce. Manufactures, earthen-ware and paper.

Coins, pieces of metal, most commonly gold, silver, or copper, impressed with a public stamp, and frequently made legal tender in payment of debts, either to a limited or an unlimited extent. When the precious metals first began to be used as money, or as standards by which to measure the value of different articles, and the equivalents for which they were most commonly exchanged, they were in an unfashioned state, in bars or ingots. The parties having agreed upon the quantity of metal to be given for a commodity, the exact amount was then ascertained by weight. But it is obvious that a practice of this sort must have been attended with a great deal of trouble and inconvenience. There can, however, be little doubt that the greatest obstacle to the use of unfashioned metals as money would be found in the difficulty of determining their quality, or the degree of their purity, with sufficient precision. The operation of assaying is one of great nicety and difficulty; and could not be performed in the early ages otherwise than in a clumsy, tedious and inaccurate manner. It is, indeed, most probable that when the precious metals were first used as money their quality would be appreciated only by their weight and color. A very short experience would, however, be sufficient to show the extreme inexactness of conclusions derived from such loose and unsatisfactory criteria; and the devising of some method by which the fineness of the metal might be easily and correctly ascertained would very soon be felt as indispensable to the general use of gold and silver as money. Such a method was not long in presenting itself: it was early discovered that, to ascertain the purity of the metal, and also to avoid the trouble and expense of weighing it, no more was necessary than to mark each piece with a *stamp* declaring its weight and fineness. This invention was made at a very early period. According to Herodotus, the Lydians were the first who coined money.—*Lib.* i. c. 94. Other ancient authors say that the art of coining was invented during the period when Saturn and Janus reigned in Italy; that is, in a period antecedent to authentic history.—GOGUET, *De l'Origine des Loix, etc.* tome i. p. 267.

Metal used in the Manufacture of Coins.—Before the art of metallurgy was well understood, the baser metals were frequently used as money. Iron was the primitive money of the Lacedæmonians, and copper of the Romans. But both iron and copper deteriorate by being kept; and besides this defect, the rapid improvement of the arts, by lowering their price, rendered their bulk too great in proportion to their value to permit of their continuing to be used as money. Copper, indeed, is still used, in the form of tokens convertible into silver, in very small payments. In England, copper pence and halfpence are rated at about 72 per cent. above their real value; but as their issue is exclusively in the hands of government, and as they are only legal tender to the extent of one *shilling* in any one payment, this over-valuation is not productive of any bad effect. The use of copper in other countries is limited in much the same way; gold and silver being every where the only metals made use of in the manufacture of the coins used in considerable payments.

Standard of Coins.—By the standard of a coin is meant the degree of its purity and its weight; that is, the fineness of the metal of which it is made and the quantity of metal contained in it. *Silver Coins.*—A pound Troy, or 12 ounces, of the metal of which English silver coins are made, contains 11 oz. 2 dwts. pure silver, and 18 dwts. alloy. This pound is coined into 66 shillings; so that each shilling contains 80·727 grains fine silver, and 87·27 grains standard silver; and the *money pound*, consisting of 20 shillings, contains 1614·545 grains pure silver, and 1745·454 grains standard silver. From 1600 down to 1816, the pound weight of standard silver bullion was coined into 62 shillings. All the English silver coins have been coined out of silver of 11 oz. 2 dwts. fine, from the Conquest to this moment, except for the short period of 16 years, from the 34th Henry VIII. to the 2d Elizabeth. *Gold Coins.*—The purity of gold is not estimated by the weights commonly in use, but by an Abyssinian weight called a *carat*. The carats are subdivided into four parts, called grains, and these again into quarters; so that a *carat grain*, with respect to the common divisions of a pound Troy, is equivalent to 2¼ dwts. Gold of the highest degree of fineness, or pure, is said to be 24 carats fine. When gold coins were first made at the English Mint, the standard of the gold put in them was of 23 carats 3½ grains fine and ½ grain alloy; and so it continued, without any variation, to the 18th of Henry VIII., who in that year first introduced a new standard of gold of 22 carats fine, and 2 carats alloy. The first of these standards was called the old, and the second the new standard, or crown gold; because crowns, or pieces of the value of 5*s.*, were first coined of this new standard. Henry VIII. made his gold coins of both these standards under different denominations; and this practice was continued by his successors until 1663. From that

period to the present, the gold of which the coins of England have been made has been invariably of the *new* standard, or crown gold; though some of the coins made of the old standard, previously to 1633, continued to circulate till 1732, when they were forbidden to be any longer current.

Variations of the Standard.—The value of all sorts of property being estimated, and the stipulations in almost all contracts for its purchase, sale, or hire, being made in money or coins, it is plain that no change can take place in the value of such money or coins without virtually subverting these estimates and contracts, and enriching the debtor portion of society at the expense of the creditor portion, or *vice versa*. As the cost of producing all commodities is liable to vary, from improvements in the arts, the exhaustion of the present or the discovery of new sources of supply, none can be selected to serve as money or coin that may not vary in its real value. It is believed, however, that the precious metals vary less than any material that could be suggested. And with the exception of the extraordinary fall in their value caused by the discovery of the American mines, it seems to have been remarkably constant at other periods. But in addition to the fluctuations naturally inherent in the value of coins, arising from variations in the cost of the metal of which they are made, their standard has been repeatedly changed. Notwithstanding that money or coin, from its being universally used as a scale by which to compute the value of all commodities, and as the equivalent for which they are commonly exchanged, is by far the most important of all measures used in society, and should, consequently, be preserved as invariable as possible, there is none that has been so frequently altered. The necessities or extravagance of governments have forced them to borrow; and to relieve themselves of the incumbrances thus contracted, they have almost universally had recourse to the disgraceful expedient of degrading the coin; that is, of *cheating* those who lent them money, to the extent of the degradation, and of enabling every other debtor in their dominions to do the same.

The ignorance of the public in remote ages facilitated this species of fraud. Had the names of the coins been changed when the quantity of metal contained in them was diminished, there would have been no room for misapprehension. But although the weight of the coins was undergoing perpetual, and their purity occasional, reductions, their ancient denominations were almost uniformly preserved; and the people, who saw the same names still remaining after the substance was diminished—who saw coins of a certain weight and fineness circulate under the names of florins, livres, dollars, and pounds; and who saw them continue to circulate as such, after both their weight and the degree of their fineness had been lessened—began to think that they derived their value more from the *stamp* affixed to them by the authority of government than from the quantity of precious metals they contained. This was long a very prevalent opinion. But the rise of prices which invariably followed every reduction of the standard, and the derangement that was thereby occasioned in every pecuniary transaction, undeceived the public, and taught them and their rulers the expediency of preserving the standard of money inviolate.

The standard may be reduced by simply raising the denomination of the coin; by ordering, for example, that a half-sovereign should pass for a sovereign, and the latter for a double sovereign, etc. If injustice be resolved upon, this is the least mischievous way in which it can be perpetrated, inasmuch as it saves all the trouble and expense of a recoinage. But as it renders the fraud obvious and glaring, it has rarely been resorted to; and most reductions have been effected either by diminishing the weight of the coins, or by increasing the proportion of alloy in the metal of which they are made, or both. Originally the coins of all countries seem to have had the same denomination as the weights commonly used in them, and contained the exact quantity of the precious metals indicated by their name. Thus the *talent* was a weight used in the earliest period of the Greeks, the *as* or *pondo* by the Romans, the *livre* by the French, and the *pound* by the English and Scotch; and the coins originally in use in Greece, Italy, France, and England, bore the same names, and weighed precisely a talent, a pondo, a livre, and a pound. The standard has not, however, been preserved inviolate, either in modern or ancient times. It has been less degraded in England than any where else; but even there the quantity of silver in a pound sterling is less than the *third* part of a pound weight—the quantity it contained in 1300. In France, the livre current in 1789 contained less than *one sixty-sixth* part of the silver implied in its name, and which it had actually contained previous to 1103. In Spain, and some other countries, the degradation has been carried still farther. From 1296 to 1355, the coins of England and Scotland were of the same weight and purity; but at the last-mentioned epoch the standard of Scotch money was for the first time sunk below that of England; and by successive degradations, the value of Scotch money, at the union of the crowns in 1600, was only a *twelfth* part of the value of the English money of the same denomination. It remained at this point till the union of the kingdoms canceled the separate coinage of Scotland. The gold and silver coins of Ireland have been for a considerable period the same as those of Great Britain; but, until 1825, they were nominally rated 8⅓ per cent. higher. This difference of valuation, which was attended with considerable inconveniences, was put an end to by the act 6 Geo. IV. c. 79, which assimilated the currency throughout the empire. The tables annexed to this article contain all the information that can be desired by mercantile men with respect to the weight, fineness, etc., of English and Scotch gold and silver coins, from the earliest periods to the present moment.

Mint, or Government Valuation of Gold and Silver Coins.—If both gold and silver coins be made legal tenders, it is obviously indispensable that their value with respect to each other should be fixed by authority; or that it should be declared that individuals shall be entitled to discharge the claims upon them by payments, either of gold or silver coins, according to some regulated proportion. The practice of making both metals legal tenders was long adopted in England. From 1257 to 1664, the value of gold coins was regulated by proclamation; or, which is the same thing, it was ordered that the gold coins then current should be taken as equivalent to certain specified sums of silver. From 1664 down to 1717, the relation of gold to silver was not fixed by authority; and silver being then the only legal tender, the value of gold coins fluctuated, according to the fluctuations in the relative worth of the metals in the market. But in 1717 the ancient practice was again reverted to; and it was fixed that the guinea should be taken as the equivalent of 21*s.*, and conversely. But the value of each of the precious metals is liable to perpetual change. And hence, how accurately soever their proportional value, as fixed by the Mint regulations, may correspond with the proportion which they actually bear to each other in the market when the regulation is made, the chances are ten to one that it will speedily cease to express their relation to each other. But the moment that such a change takes place, it becomes the obvious interest of every one who has a payment to make to make it in the *overvalued* metal; which, consequently, becomes the sole, or nearly the sole, currency of the country. Hence the reason why the coins of some countries are almost wholly of silver, and others almost wholly of gold. It is estimated, for example, that when it was

fixed, in 1717, that the guinea should exchange for 21*s.*, gold was overvalued as compared with silver to the extent of 1 19-31 per cent.; and as the real value of silver with respect to gold continued to increase during the greater part of last century, the advantage of paying in gold in preference to silver became more decided, and ultimately led to the universal use of gold in all large payments, and to the fusion or exportation of all silver coins of full weight.

In France, a different valuation of the metals has had a different effect. Previous to the recoinage in 1785, the *Louis d'or* was rated in the Mint proportion at only 24 livres, when it was really worth 25 livres 10 sols. Those, therefore, who should have discharged the obligations they had contracted by payments of gold coin instead of silver would plainly have lost 1 livre 10 sols on every sum of 24 livres. In consequence very few such payments were made; gold was almost entirely banished from circulation, and silver became almost the only species of metallic money used in France. In 1816, however, a new system was adopted in Great Britain; it being then enacted (56 Geo. III. c. 68) that *gold coins only should be legal tender in all payments of more than forty shillings.* The pound of silver bullion, that had previously been coined into sixty-two shillings, was then also coined into sixty-six shillings, the additional *four* shillings being retained by the government as a *seignorage* or duty (amounting to 6 14-31 per cent.) upon the coinage. To prevent the silver coins from becoming redundant, government has retained the power to issue them in its own hands. Under these regulations, silver has ceased to be a standard of value, and forms merely a subordinate or subsidiary species of currency or change, occupying the same place in relation to gold that copper occupies in relation to itself. This system has been found to answer exceedingly well. A good deal of difference of opinion has existed as to whether gold or silver coins are best fitted for being made legal tender. It does not seem that the one possesses any very striking advantage over the other; none, certainly, that would justify a change after a selection had been made and acted upon for any considerable period. Down to 1626, a seignorage or duty upon the coinage was usually charged upon the gold and silver coins issued by the Mint; and it may be easily shown that the imposition of such a duty, when it is not carried to an undue height, is advantageous. A coin is more useful than a piece of uncoined bullion of the same weight and purity; the coinage fitting it for being used as money, while it does not unfit it for being used for any other purpose. When, therefore, a duty or seignorage is laid upon coin equal to the expense of coinage, it circulates at its real value; but when this charge is defrayed by the public, it circulates at *less* than its real value, and is consequently either melted down or exported whenever there is any demand for bullion in the arts, or any fall in the exchange. It is, indeed, true, that were a seignorage to be laid on gold coins, it would be necessary, to prevent an enhancement of the value of the currency, that their weight should be proportionally reduced; and it is on this account better, perhaps, to let them remain on the present footing. But when a seignorage was laid on the silver coins in 1816, it was not necessary to take the circumstance now alluded to into consideration; for as they were made subordinate to gold, and were intended to serve as change merely, its imposition had no tendency to raise the value of the currency, at the same time that it was calculated effectually to prevent the fusion of the coins and to yield a small revenue to government.

Current Coin; loss by wear.—From very careful investigations made by the officers of the British Mint toward the close of the last century, it was found that 72 1-10 silver shillings, taken as a fair average from all those then in circulation, were required to make 1lb. Troy; whereas 62 is the number when new. Eleven years afterward another fair average was taken, and another examination made, when it was found that 82 9-40 shillings were required to make a pound. But this diminution of weight is excessive, and is not likely to be exhibited by the less-worn and more frequently renewed silver coinage of the present day. Still it is unquestionable that the gold and silver coins are exposed to daily wear and diminution. The British government requested Mr. Cavendish and Mr. Hatchett, two distinguished fellows of the Royal Society, to make an extensive investigation respecting the power of metals to resist friction; and their results are highly curious. They made various alloys of silver, copper, platina, iron, tin, lead, bismuth, manganese, nickel, cobalt, zinc, antimony, and arsenic, with gold; they rubbed plates of different kinds of metal over each other half a million times, to determine which resist friction best; and they rotated similar pieces among each other in a barrel. The effects were such as to reflect no little credit on those, whoever they were, who established the standard of English gold coin; for the English standard (22 gold to 2 alloy) and the quality of the alloy (silver and copper combined) were found about the best of all the combinations subjected to experiment. In 1807 the Mint officers, wishing to ascertain how much the current coin had actually lost by wear, selected at random one thousand good guineas from a broker, and found that they had lost on an average 19*s.* per cent. in value. A hundred guineas from a shop-keeper's till had lost 22*s.* per cent. Two hundred half-guineas exhibited a loss of 42*s.* per cent.—the smaller coins being subjected to more severe wear than the larger. Mr. Jacob, a great authority on the subject of precious metals, stated it as his opinion that, taking the average of all the gold coins in this country, and an average of all the hard usage to which the coins are exposed, each one bears an *annual* loss of about 1-900 by friction, which is a little more than a farthing in the pound. In silver coins the loss is supposed to be five or six times greater, owing to the more unceasing circulation of silver than gold, and to the less fitness of the metal to bear friction. The matter may be stated thus: put 900 new sovereigns and 900 new shillings into average ordinary circulation; in twelve months' time the former will be worth about 899, and the latter about 894.

"*Recent Coins of the World.*—A coin, once set in circulation, retains its place and use longer than any other part of the machinery of life, and is extremely slow in going out of fashion; so that the information respecting it which the dealer, the collector, and the public at large require, does not soon become obsolete.

"Pieces are current among us a full century old; and all that space of time is included in the history of coinage, contained in our large manual. But new coins, or modifications of old ones, are continually appearing; and in the latter case, it often happens that the holder finds he has become, if we may so speak, an unconscious sufferer. Old names are retained, but essential properties are altered; and a new progeny of doubloons, dollars, francs, or shillings, is found by an assayer's scrutiny to be something different, most likely inferior, to the older stock. Keeping a steady watch on these, as it is impliedly our duty, we have collected a number of items which, as in our former publication, will be set forth in alphabetical order, and as briefly as possible."—*Manual of Coins, by* Eckfeldt and Du Bois.

The weight is expressed in grains, and the fineness in thousandth parts.

Belgium.—Gold coin, 25 francs; a new denomination: 1848 is the earliest date noticed. It expresses on its reverse the intended standards, 7·915 grammes (equal to 122·12 Troy grains), 900 fine. The average of twenty pieces tried is 121·9, fineness 899; value $4 72. This is a slight depreciation: it ought to be $4 79, to compare with the former series of Belgian gold coin, or $4 81, to be equivalent with the French.

We notice also, in silver, a piece of 2½ francs, 1849, weighing 192 grains; fineness (of a single specimen) 901; value 46½ cents.

Bolivia.—The dollars from 1841 to 1846, tried in parcels, vary in fineness from 896 to 901; a very large lot gave 897; showing some tendency downward. Weight, varying from 411 to 421, averages 416½; value on a general average, 100·6 cents.

Britain.—The new *florin*, or two-shilling piece, being one-tenth of a pound sterling, is understood to be an advance toward a decimal system. A considerable number have been coined, and the piece is fairly in circulation; but, like other silver coins of that country, it seldom makes its way out of the realm.

California.—See *Coins of United States*, p. 344.

Central America.—It is not easy to keep pace with the fluctuations in the coinage of this country, any more than with its political history. Nine years ago, we averaged the doubloon at $14 96, and the dollar at $1 00·1. The country now seems to be divided (we judge by the coins) into two distinct republics, Central America and Costa Rica.

Of the recent *gold* coinage of Central America, we have had opportunities of examining the quarter-doubloon, the eighth or escudo, and the sixteenth. The first, 1850, weighed 97 grains, fineness 863, value $3 60. The second, 1844 to 1849, 48 grains, 809 fine, value $1 67. The third, 1825 to 1849, 24 grains, 809 fine, value 83½ cents. In *silver*, the dollar of 1847 is found to vary from 880 to 820 thousandths in fineness; those of 1840 to 1842 averaged 887. It would, therefore, not be safe to give more than 92 cents for a single piece, or 95 by the quantity; the laws of wholesale and retail, in the coin market, being directly opposite to those in other branches of trade.

The coins of Costa Rica, the seceding state, are in several respects quite remarkable; and in this particularly, that the gold pieces are among the handsomest that are current in the world, while the silver are beyond comparison the rudest; at least the samples that we have seen. The specimens assayed here lately are the half-doubloon, weighing 208 grains, 851 fine, value $7 62; and the quarter-doubloon, 97 grains, 845 fine, value $3 53. The silver piece is the *real* (apparently shaped with hammer and chisel), 1846, 29 to 45 grains, 550 to 687 fine; average value $\frac{8}{10}$ cents.

Chili.—In the dollar of 1848 we find a variation of weight from 415 to 419; fineness 901½, which is lower than former dates; but the average value is 101 cents.

Until lately, we had no opportunity of testing the fractional coins. The quarter-dollar, 1843 to 1845, weighs only 92, but is 903 fine; the eighth, or *real*, is strictly proportional. Values respectively, 22·4 and 11·2 cents; making a profit to government, and a loss to holders, of about 11 per cent.

The newspapers of the day contain the following statement, concerning which we have no other information:

"The Chilian Congress, now in session, has passed a new coinage law, article first of which states that three classes of gold are to be coined, of the standard of nine-tenths fine, to be denominated, respectively, condor, doubloon (doblon), and escudo.

"1. The condor to weigh three hundred and five $\frac{305}{1000}$ grains, and to correspond in value with ten silver dollars.

"2. The doubloon to weigh one hundred and fifty-two $\frac{152}{1000}$ grains, and to correspond in value with five silver dollars.

"3. The escudo to weigh sixty-one $\frac{61}{1000}$ grains, and be of the value of two silver dollars.

"Art. 2. There shall be five classes of silver money, also of the standard of nine-tenths fine; viz.:

"A dollar, weighing five hundred $\frac{500}{1000}$ grains, and divided into hundredth parts or cents.

"A piece of fifty cents, containing two hundred and fifty $\frac{250}{1000}$ grains.

"One of twenty cents, with one hundred $\frac{100}{1000}$ grains.

"One of ten cents, with fifty $\frac{50}{1000}$ grains.

"One of five cents, with twenty-five $\frac{25}{1000}$ grains.

"Art. 3d establishes two classes of copper coinage, to be termed cents and half cents, to be composed of pure copper without any alloy."

China.—The trashy coin of this great empire deserves notice only by way of recreation. In 1842 we quoted the *cash* (tong-tsien) at 800 to the Spanish dollar; in 1847 the equivalent varied from 1200 to 1300—so hard is it to fasten a value upon that which is valueless. A carpenter or tailor, we are told, receives 160 of them (say thirteen cents) for a day's work, of which sixty are required for his daily bread. The coin is extremely convenient for alms-giving, a single piece being the usual quietus for a beggar.

Ecuador.—The quarter-dollar, or two-real piece, 1847, weighs 104, and is only 675 fine; value 18·9 cents. This depreciation corresponds with what prevails in some of the fractional coins of Peru.

France.—The twenty and five-franc pieces of the republic, although entirely changed in face, are the same for weight and fineness as before.

Germany.—Here there is no change of standards, but we observe the denomination of double gulden, not in general circulation, value 79 cents. The whole German issue of the gulden series gives an average of 900 fine by actual assay.

Since the adoption of the new rate of charges at this Mint, the thaler of Northern Germany, 750 fine, yields a return of 67¼ to 68¼ cents, according to wear; the crown, 875 fine, 106 to 107 cents.

Hayti.—Large quantities of Haytian coins have been recoined here. They are so variable in weight and fineness that it is not easy to put a definite valuation upon them. They should, however, yield 76 to 78 cents per ounce, taken promiscuously and unwashed. The piece of 100 centimes, dignified with the name of dollar, bearing the head of President Boyer, is worth about 25 cents upon an average; while that of 25 centimes, both of Petion and Boyer, averages 7½ cents. In a large promiscuous deposit of all sizes, we found the average net value of the "dollar" to be 25·7 cents. The coins range from 600 to 625 fine, if free from counterfeits—a baser quality than is to be found in any other coinage on this side of the Atlantic. But since August, 1849, there has been a new order of things; and coin collectors and assayers are looking with impatience for the head of Faustin the First.

Mexico.—In 1842, we averaged recent dollars at 416½ grains, 898 fine, value 100·6 cents. The average fineness has since improved to 899, and value 100·75 cents.

The coins of two new Mints have recently been tried. The doubloon of Guadalupe y Calvo, in the state of Durango, 1847, varies in weight from 417 to 420; fineness 869 to 873; average value $15 69. The dollar of the same Mint, 1844 to 1847, averages in weight 420½, in fineness 908, and therefore in value as high as 102·8 cents. The Mint began operations in 1844; its distinctive mark is G. C., in the usual place in the legend.

The dollar of Culiacan, in Sinaloa, 1846 to 1848, averages 415½ grains, with a pretty wide variation in individual pieces; fineness 903; value 101 cents. The Mint-mark is the letter C.

Mexican dollars are not flowing so abundantly in this direction as in former years, although they are yielding a better return.

Milan.—The revolution of 1848 produced a new gold coin in Lombardy: it bears on the obverse a female figure with the legend, ITALIA LIBERA, DIO LO VUOLE—"Italy free, God wills it;" and on the reverse, a wreath, within which is the denomination, 20 LIRE ITALIANE—"20 Italian livres;" and outside of it the legend, GOVERNO PROVISORIO DI LOMBARDIA. It weighs the same as the twenty-franc piece of France, and was evidently meant as a return to the Milanese

standard of 1805. The coin is more rare than could be wished: only a single specimen has reached us. Coin-collectors will consider it as a prize for its singular beauty and its scarcity, and as the monument of a great event in history.

Netherlands.—The new 2½-guilders piece was announced in our Manual as having been decreed, but had not then been received. The legal standards are, 25 grammes (385·8 grains) in weight, 945 thousandths in fineness. The actual results of dates 1842 to 1845 are, 386 grains, 944 fine; value 98·2 cents. The coin often appears here in mixed deposits. It is remarkable for its high grade of fineness; yet it is really a depreciated issue, since, to be equal to the former guilder series, it ought to be worth 100·2 cents.

New Granada.—This country continues to send a large supply of doubloons to our market, and this makes it the more important to notice a very recent and considerable reduction in the value of the coin. Within a few months a new piece has appeared, with new devices and standards; the latter being expressed on the face of the coin by "Lei 0,900—Peso 25,8064 G." That is, *fineness*, 900 thousandths; *weight*, so many *grammes*—a long-drawn fraction, corresponding to 398·31 Troy grains. At those rates, the piece would be worth $15 43·8, and would avowedly fall below the previous value of the doubloon; but upon actual trial it is still worse, as will be shown directly. This change must have taken place since the beginning of 1849, as we notice pieces of the old style bearing that date.

But as the doubloons of New Granada are alloyed almost entirely with silver, which is now profitably parted at this Mint, it is necessary to restate the Mint value of the older piece, as well as to give information respecting the new. The silver extracted makes a sensible addition to the values of both kinds; that is, if they are offered in sufficient quantities to meet the requirement that the net product of a parting must be not less than five dollars; below that limit the operation is not performed. The following terms must therefore be noticed. The doubloon of the old style, down to the early part of 1849, weighs on an average 416½ grains, and contains 870 thousandths gold, and about 120 silver; if presented in a quantity less than 58 ounces, its net Mint value will be $15 61; in a larger quantity than that, it will be $15 66. The new doubloon, beginning with 1849, weighs 398 grains, and contains in parcels 893½ to 895 thousandths gold, say 894, and of silver about 100; net Mint value, in any quantity less than 93 ounces, $15 31; in a larger quantity, $15 36.

Norway.—The immigration from this country brings us considerable parcels of Norwegian and Swedish silver coins. The *dalers* of these two realms, which have the same monarch, were stated in the Manual to be interchangeable as to value, although very different as to their standards. Under our new Mint charges there is some variation of value, since those of Sweden are of so much lower fineness, and are subjected to a greater charge for refining. They will be noticed in place. The daler, and half, of Norway, average 878 fine (the law calling for only 875, or seven-eighths), and their weights, unworn, are respectively 446 and 223 grains; net Mint value of the daler, 105 cents; the half, 52½. This valuation is down to 1848, the latest date we have seen.

Peru.—A new half-dollar, with the word Pasco in the legend, 1844, gives an average weight of 203 (variation 200 to 210), fineness 906; value 49½ cents.

Prussia.—The years 1848 and 1849, in other respects unsettled, show no change in the gold coinage. It still maintains its superiority to the other classes of ten and five-thaler pieces. The double-Frederick, or ten-thaler, is 903 fine, weighs 200 grains, and is worth $8 01; practically, an even eight-dollar piece for us.

Russia.—Five-rouble pieces of 1848 and 1849 show the fineness of 916½; a proof that the assaying and alloying are conducted with admirable exactness, the standard being 916⅔. The coin is worth $3 96·7. As the Russian Mint depends, no doubt, upon the Russian mines, and not upon foreign coins, for its material, we felt an interest in examining as to what proportion of *silver* was left in the alloy of the coin, and found only 5⅓ thousandths. Hitherto we have found no gold coins so nearly desilvered.

Siam.—We were not sufficiently acquainted with the silver bullets of Siam to take account of them in the Manual. Some specimens of this curious money have since been examined. They are of different calibres, and tolerably well proportioned to each other. The *tical* weighs, without much variation, 235 grains, and is 928 fine; value 58·7 cents. The *salung*, 61 grains, 929 fine, 15·2 cents. The *prang*, 30 grains, 907 fine, 7·3 cents. Below this we have, as a present to the Mint collection, three varieties, weighing 10, 4, and 1½ grains; the last being worth about three-eighths of a cent, and very good silver withal. A sight of it would reconcile our people to the gold dollar. Siam may claim the merit of originality in the shape of her coin, which will not admit of rolling, and scarcely of lying still—the lively emblem of a true circulating medium.

Sweden.—The specie daler of Oscar, 1847 and 1848, is 750 fine, weighs 525 grains, and yields 104·2 cents after Mint charges.

Turkey.—There was a new system of coinage promulgated in 1840, which did not prevail long; there is a still newer, beginning with 1845. The gold coins are evidently designed to be 22 carats (916·6) fine, as in the neighboring empire of Russia. By actual assay they are 915 fine; the piece of 100 piastres weighs 111 grains, and is worth $4 37·4; the piece of 50 piastres, 55½ grains, worth $2 18·7. In respect to value they compare with the former series of 20, 10, and 5 piastres, though entirely of different standards.

The silver coins are greatly improved in quality, and apparently based upon the Austrian standard of five-sixths (833⅓) fine. They are the piece of 20 piastres, 371½ grains, 828 fine, net value 82 cents; 10 piastres, 186 grains, 826 fine, 41 cents; and 5 piastres, 92½ grains, 824 fine, 20½ cents. These coins are well adjusted in their weight, and altogether show in their way a great advance in the progress of Turkish civilization. The piastre of commerce seems to be based upon the gold; the exchange in 1845, when these coins were received, rated the piastre at 4·3 cents.

United States.—By the law of March 3, 1849, two new gold coins, the double-eagle and the dollar, were added to the list; the former weighing 516 grains, or 21½ pennyweights, the latter $25\frac{8}{10}$ grains; and both of the fineness of nine-tenths, as the other coinage. A very large number in both denominations have been issued.

The new postage law of March 3, 1851, provided for the coinage of a three-cent piece, composed of three-fourths silver and one-fourth copper, and weighing $12\frac{3}{8}$ grains.

There are several classes of gold coin which are not of the United States, but which are struck within the national boundaries, and which ought to be noticed in this place. These are the Bechtler's coins of *North Carolina*, and the various *California* coins. In the same connection, it will be proper to give some details respecting several varieties of stamped ingots.

The coins of C. Bechtler are fully described in the Manual (p. 160); but since the date of that publication, the mint has passed into the hands of A. Bechtler, as appears on the face of the coin; and there is a marked difference of value between the *C* and *A*. The five-dollar pieces of the former were deficient from 1 to 6 per cent. upon the alleged value, averaging 3 per cent., or $4 85; the one-dollar pieces were worth 95½ to 97 cents. The five-dollar pieces of the latter vary, from the full alleged value, to a deficit of 1½ per cent. There are no dates on the coins to enable us to mark

the difference; but the pieces assayed in 1843 were better than those (apparently fresh) assayed in 1849. The last and newest lot gave $4 94 to the five-dollar piece. It is to be borne in mind, that as Bechtler's pieces are alloyed with silver, they will produce about a half of one per cent. more if offered in sufficient quantity. The dollars, as far as tried, are 2 per cent. below their nominal value. The coin appears to be considerable in amount, but it is not current in the Middle and Northern States; it is frequently brought to the Mint for recoinage.

The number of private Mints which have been in operation in California, as indicated by specimens received here, is fourteen. Some of these have issued but a single denomination of coin, others two, and one (the Mormon) four. Besides these, there are the stamped ingots of Moffatt & Co., and of F. D. Kohler, State Assayer; and lastly, the coin of Augustus Humbert, a United States assayer under a legal provision of 1850.

1. The coin of "N. G. & N." does not profess the same degree of accuracy as Bechtler's as to fineness. Its claim to be FULL WEIGHT OF HALF EAGLE is proved by a number of trials, the variation not exceeding one grain in any case; but the legend on the reverse, CALIFORNIA GOLD WITHOUT ALLOY, allows a pretty wide range. As far as our assays go, the truth of this stamp is proved; there is no alloy other than that already introduced by the hand of nature, and which is generally more than sufficient. Three pieces gave severally the fineness of 870, 880, and 892 thousandths; all were within the scope of "California gold." They consequently are worth $4 83, $4 89, and $4 95½ respectively, without the silver; and including that, 2½ cents more.

The coin is neatly executed, and besides the two legends above quoted, bears an eagle, a circle of stars, the date 1849, and the name SAN FRANCISCO. It wears the somewhat brassy tint which belongs to gold alloyed with silver only.

2. The Mint of the "Oregon Exchange Company" issues two denominations, 10 and 5 dollars. They respectively profess 260 and 130 grains weight of "native gold." One five-dollar piece was found to weigh 127½ grains, was 878 fine, and contained only the natural alloy; resulting value, $4 82; with the silver (in sufficiently large lots), 2½ cents more.

The coin is not well struck, but is pleasantly distinguished by the picture of a beaver, a good emblem of mining industry and of Western life.

3. Next is the mintage of the "Miners' Bank, San Francisco;" a ten-dollar piece, of plain appearance.

The average weight is 263½ grains, the fineness about 865 thousandths, part of the alloy being copper. Average value $9 87, with a risk of having it as low as $9 75.

4. Coinage of Moffatt & Co., 1849, 1850; pieces of 10 and 5 dollars, in imitation of the national coinage. Several of the coining establishments, as will be seen, have adopted the same device, but evidently without evil intent, as most of their coins are worth what is professed, and some even more. The fineness, however, is in every case inferior to the standard of the Mint, and this is likely to prove a source of discredit from European assayers, who will not take the trouble to assort. A large promiscuous lot of both kinds of Moffatt & Co.'s coins, dates 1849, 1850, shows an average of 897; average weight, to the ten-dollar piece, 258½ grains; average value, $9 97·7.

The S. M. V. on this and other coins is said to mean "Standard Mint Value."

5. Ten-dollar piece of J. S. O. (said to be Dr. Ormsby, of Pennsylvania); one piece assayed gave 842 fine; weight 258½ grains; value $9 37. Very few have come to hand.

6. Twenty-five dollar and ten-dollar pieces of Templeton Reid; weigh respectively 649 and 260 grains. Being the only two specimens received, they have not been cut for assay, but appear to be of California gold without artificial alloy. Assuming this, the values would be about $24 50 for the first, and $9 75 for the second.

7. Ten-dollar and five-dollar pieces of the "Cincinnati Mining and Trading Company," 1849. These also have not been cut on account of their rarity, but appear to be of native gold, and, at the weights of 258 and 132 grains, may be rated at $9 70 and $4 95 respectively.

8. Ten and five-dollar pieces of the "Pacific Company," 1849; very irregular in weight, and debased in fineness; a ten-dollar piece weighed 229 grains, a five-dollar, 130; assay of a third, 797 thousandths. At those rates, the larger piece would be worth $7 86, the smaller $4 48; but the valuation is altogether uncertain.

9. Five-dollar piece of the "Massachusetts and California Company," 1849; a very pretty coin, but apparently debased with copper. Only one specimen has been noticed here; it weighs 115½ grains; has not been assayed.

10. Coins of Baldwin & Co., four varieties; 1. A ten-dollar piece, 1850, distinguished by a horse and his rider, with a lasso; 2. Twenty-dollar piece; 3. Ten-dollar, 1851; 4. Five-dollar, 1850; the last two in imitation of United States coinage. Of the first, one piece tried weighed 263 grains, fineness 880, value $9 96. Of the second, four pieces tried varied from 511 to 523 grains; but one hundred pieces averaged 517; the fineness varied from 861 to 871; average fineness 868½, average value $19 33. Of the third, ten pieces averaged 259½ grains; average fineness 870; average value $9 72. Of the fourth, average value $4 92. The Baldwin coins contain some copper; about 20 thousandths.

11. Ten and five-dollar pieces of Dubosq & Co., 1850, also in imitation of the national coinage. The larger piece averages 262 grains, and three specimens gave the fineness of 899½, which is a mere shade below standard; consequent value, $10 15. A single five-dollar piece yielded $4 92. But a mixed parcel containing $1000, gave the fineness of 887, and the close value of $1000 20. Consequently the pieces may be averaged at par.

12. Five-dollar piece of Shultz & Co., 1851. Average weight, 128¾ grains; fineness of three pieces, 879; value, $4 97·4. The devices are in imitation of United States coin.

13. The Mormon coinage, although executed in the Territory of Utah, is without impropriety classed among California coins, on account of neighborhood, and the source whence the material is derived. These are the four denominations of twenty, ten, five, and two and a half dollars. Although there is much irregularity both in weight and fineness, the denominations are tolerably in proportion to each other. A parcel made up of all sizes, and counting $562 50, yielded at the Mint $473 20; say $8 52 to the ten-dollar piece. The fineness was 886.

14. Five-dollar piece of Dunbar & Co., in imitation of United States coin. A lot of 111 pieces averages 131 grains weight, 883 fineness, value $4 98.

15. Fifty-dollar piece of the United States Assay-Office at San Francisco, established by act of Congress of 1850. It first appeared here in April, 1851. The coin is prepared and issued by Messrs. Moffatt & Co. as contractors, and bears the stamp of Augustus Humbert, assayer. The two professed rates of fineness, 880 and 887 thousandths, are found upon assay here to be duly maintained, whether in single pieces or in large quantities. But some irregularity in the weight of so heavy a piece, alloyed with silver only, and offering eight corners to wear is to be expected. When presented in quantities sufficient to allow for parting the silver, say 70 ounces, the average Mint value is about $50 10; in less quantities, the silver not being allowed for, the average value is about $49 90. But even with-

out the silver they occasionally come up fully to the alleged value. This coinage is understood to have put a stop to all private issues in California.

The foregoing comprehend all the varieties of *coin* that have been brought to this Mint. There have been, besides, two sorts of stamped bars or ingots, evidently intended for currency.

1. The ingots of Moffatt & Co., of various sizes, from about $9 to $260. It may be stated, in general, that some were found to be rated too high, and others too low. The sixteen-dollar ingot yields about $15 75, but is irregular.

2. The issue of bars by F. D. Kohler, Assayor of the State of California, commenced in May, 1850. They are of various sizes, from $40 to $150. We find a slight undervaluing in his basis of calculation, and generally an error of assay in the same direction; so that on the average his bars are worth at the mint 1 per cent., perhaps 1½, more than the value stamped upon them.

Recapitulation of the net Mint Value of Gold and Silver Coins issued within twenty-five Years past.—Inquiry has been frequently made at the Mint for a compend of the values of foreign coins, without a due consideration of the difficulty of putting in a small space such a statement as would be satisfactory. The quarto volume, now entirely out of print, was not found too large for its purpose, which was to supply such information as dealers, amateurs, and legislators would from time to time be likely to require. Still, a condensed table of the coins more usually seen, and within a contracted range of date, would certainly be useful to dealers and others, and especially with the modifications occasioned by the new Mint tariff of charges. We therefore offer the following, inserting values only, and leaving the details of legal weight and fineness, and of actual weight and fineness, to be sought for elsewhere; as also the particulars concerning coinage of older date than just specified.

Gold Coins.

	D. c. m.
Austria.—Quadruple ducat	9 12
Ducat	2 27 5
Sovereign (for Lombardy)	6 75
Baden.—Five gulden	2 04
Bavaria.—Ducat	2 27
Belgium.—Twenty-franc piece	3 83 2
Twenty-five-franc piece	4 72
Bolivia.—Doubloon	15 58
Brazil.—Piece of 6400 reis	8 72
Britain.—Sovereign	4 84 5
Brunswick.—Ten thaler	7 89
California.—*See* United States.	
Central America.—Doubloon	14 96
Escudo	1 07
Costa Rica.—Half-doubloon, 1850	7 62
Chili.—Doubloon (before 1835)	15 57
" (1835 and since)	15 66
Denmark.—Double Fred., or ten-thaler	7 88
Ecuador.—Half-Doubloon	7 60
Egypt.—Hundred Piastres	4 97
France.—Twenty francs	3 85
Greece.—Twenty drachms	3 45
Hanover.—Ten-thaler, George IV.	7 84
Do. William IV. and Ernest	7 89
Hindostan.—Mohur, East India Company	7 16
Mecklenburg.—Ten-thaler	7 89
Mexico.—Doubloon, average	15 53
Netherlands.—Ducat	2 26 5
Ten guilders	4 00 7
New Granada.—Doubloon, 21 carat standard	15 61
" including the silver	15 60
" nine-tenths standard	15 31
" including the silver	15 26
Persia.—Tomaun	2 23
Peru.—Doubloon, Lima, to 1835	15 55
" Cuzco, to 1835	15 62
" " 1837	15 53
Portugal.—Half-joe (full weight)	8 65
Crown	5 81
Prussia.—Double Frederick	8 00
Rome.—Ten scudi	10 37
Russia.—Five roubles	3 96 7
Sardinia.—Twenty lire	3 84 5
Saxony.—Ten-thaler	7 94
Ducat	2 26
Spain.—Pistole (quarter doubloon)	3 80 5
Turkey.—Hundred piastres	4 37 4

Gold Coins.

	D. c. m.
Turkey.—Twenty piastres (new)	83
Tuscany.—Sequin	2 30
United States.—Eagle (before June, 1834)	10 62
Five-dollar piece of C. Bechtler, average	4 85
Dollar of the same, average	98
Five-dollar piece of A. Bechtler	4 92 to 5 00
Dollar of the same	96
Oregon Exchange Company, five dollars	4 82
N. G. and N., San Francisco, five dollars	4 83 to 4 95
Miners' Bank, San Franc., ten dollars, average	9 87
Moffatt's ten-dollar piece	9 75
" five-dollar piece	5 00
" sixteen-dollar ingot	15 75
J. S. O., ten-dollar piece	9 37
T. Reid, twenty-five dollar piece	24 50
" ten-dollar piece	9 75
Pacific Company, ten and five, uncertain.	
Massachusetts Company, five, uncertain.	
Cincinnati Company, ten, estimated	9 70
" five, estimated	4 95
Baldwin, twenty dollars	19 33
" ten " with horsemen	9 96
" ten " second issue	9 72
" five " "	4 92
Dubosq, ten "	10 00
" five "	5 00
Shults, " "	4 97
Dunbar, " "	4 98
Humbert, United States Assayer, fifty dollars	50 00
Mormon coinage, twenty dollars, average	17 00
" ten dollars, average	8 50
" five dollars, average	4 25
" two and a half dollars, average	2 12
Kohler's bar, about 1 per cent. higher than his valuation.	

Silver Coins.

Austria.—Rix dollar	97
Florin	48 5
Twenty kreutzers	16
Lira (for Lombardy)	16
Baden.—Crown	1 07
Gulden or florin	39 5
Bavaria.—Crown	1 06 5
Florin	39 5
Six kreutzers	63
Belgium.—Five francs	93
Two and a half francs	46 5
Two francs	37
Franc	18 5
Bolivia.—Dollar	1 00 0
Half dollar, debased, 1830	37 5
Quarter dollar, debased, 1830	18 7
Brazil.—Twelve hundred reis	99 2
Eight "	66
Four "	33
Bremen.—Thirty-six groto	35 6
Britain.—Half crown	54
Shilling	21 7
Fourpence	07 1
Brunswick.—Thaler	68
Central America.—Dollar, uncertain; say	97
Costa Rica, new real of	35 8
Chili.—Dollar	1 01
Quarter dollar	22 4
Eighth dollar, or real	11 2
Denmark.—Rigsbank daler	52 3
Specie daler	1 04 7
Thirty-two skillings	17
Ecuador.—Quarter dollar	18 7
Egypt.—Twenty piastres	96
France.—Five francs	93 2
Franc	18 5
Frankfort.—Florin	39 5
Greece.—Drachm	16 5
Guiana, British.—Guilder	26 2
Hanover.—Thaler, fine silver	69 2
" 750 fine	63
Hayti.—Dollar, or 100 centimes	25 7
Hesse Cassel.—Thaler	67 5
One-sixth thaler	11
Hesse Darmstadt.—Florin or guldou	39 5
Hindostan.—Rupee	44 5
Mexico.—Dollar, average	1 00 7
Naples.—Scudo	94
Netherlands.—Three guilders	1 20
Guilder	40
Twenty-five cents	09 5
Two and a half guilders	98 2
New Granada.—Dollar, usual weight	1 02
Dollar, or ten reals, 1851	93
Norway.—Rigsdaler	1 05
Persia.—Sahib koran	21 5
Peru.—Dollar, Lima Mint	1 00 6
" Cuzco	1 00 8
Half dollar, Cuzco, debased	36
" Arequipa, debased	86
" Pasco	49 5
Poland.—Zloty	11 2

Silver Coins.

	D. C. M.
Portugal.—Cruzado	55 2
Crown, of 1000 reis	1 12
Half crown	56
Prussia.—Thaler, average	68
One-sixth thaler, average	11
Double thaler, or 3½ gulden	1 39
Rome.—Scudo	1 00 5
Teston ($\frac{1}{10}$ scudo)	30
Russia.—Rouble	75
Ten zloty	1 13 5
Thirty copecks	22
Sardinia.—Five lire	93 2
Saxony.—Species thaler	96
Thaler (XIV. F. M.)	93
Siam.—Tical	58 5
Spain.—Pistareen (4 reals vellon)	19 5
Sweden.—Species daler	1 04 2
Half daler	52
Turkey.—Twenty piastres, new coinage	82
Tuscany.—Leopoldone	1 65
Florin	92
Wurtemberg.—Gulden, 1824	[illegible]
" 1838 and [illegible]	[illegible]
Double thaler, or 3½ gulden	[illegible]

Comparison of American and Foreign Weights for Precious Metals.—The normal weight of the United States Mint is the Troy ounce, for considerable quantities, and the Troy grain, for single coins. This ounce is equal to 480 grains; to 31·09815 French grammes; to 1·08108 Spanish ounce. The grain is 64·788 milligrammes. Our standard French kilogramme weighs 15,435 grains, or 32·15625 ounces. The gramme is 15·435 grains. The milligramme ·0154 grain. The average estimate of the Spanish mark is 3552 Troy grains, or 7·40 ounces Troy. It is differently subdivided, according as it is applied to the weighing of gold or silver. For gold, it is divided into 50 castellanos; each castellano into 8 tomines; each tomine into 12 granos. For silver, the mark is divided into 8 ounces; each ounce into 8 ochavos; each ochavo into 6tomines; each tomine into 12 granos. Consequently, in gold weighings there are 4800 grains, and in silver 4608 grains to the mark. The castellano is much used, however, as a normal weight for gold bullion. By deduction from the above, it should weigh 71·04 Troy grains; by an invoice from New Granada, we have found it to correspond with 70·935; so that 71 grains might be taken as the equivalent, accurate enough in practice. This is just one grain less than three pennyweights; or ·1479 of a Troy ounce. This mark, being employed not only in Spain, but in all Spanish America, is of course a very important weight to the bullion and coin dealer, and should be duly understood. It is, perhaps, not more difficult to master than the pounds Troy and avoirdupois, with their respective trains. The Cologne mark, normal money-weight of Germany, by the German Convention of 1838, was estimated at 233·855 grammes, answering to 3609·55 grains Troy. It was before rated usually at 3609. Our silver dollar, since 1837, weighs 26·725 grammes. A kilogramme of standard $(\frac{9}{10})$ gold is worth $598 25 5.

Bulk and Packing of Precious Metals.—A solid or cubic inch of fine gold weighs 10·1509 ounces, and is worth $209 84. A cubic foot of the same, $362,600. A cubic inch of standard gold weighs 9·0989 ounces, and is worth $169 28. A cubic foot of the same, $292,500. A cubic inch of fine silver weighs 5·5225 ounces, and is worth $7·74. A cubic foot of the same, $12,338. A cubic inch of standard silver weighs 5·4173 ounces, and is worth $6 80 3. A cubic foot of the same, $10,891. These calculations are based upon the weight of water as 252·458 grains to the cubic inch, the thermometer being at 60° and the barometer 30 inches.—Silliman's *First Prin. Chem.*, 1848. The specific gravity of fine gold is taken at 19·3, standard at 17·3; fine silver 10·5, standard 10·3. As these gravities are only approximate, we may be excused for not carrying out the decimals very far, as is rather too often done in works of science. Gold is not measured by the *pint*, at least out of California; yet it may be interesting to know that a dry-measure pint of California grains is found to weigh from 141 to 143½ ounces; value about $2560. The average specific gravity is consequently 9·61; so that it occupies about twice as much bulk, in that form, as when melted and cast into bars. A pint of African dust was found to weigh 148 ounces. The advantage of having gold grains or dust cast into bars as a preparative for exportation, is perhaps overrated. True, it has rather an insufficient outfit, if packed in paper, leather, muslin, Seidlitz boxes, or porter-bottles, as it came at first from San Francisco. A good tin box, well soldered, will hold fast and keep dry; and the Mint charges nothing for melting. This is the most general kind of packing now used; but the tin case, if large, requires to be inclosed in a wooden box, and after that there is need of [illegible] watch and care. A most daring theft was [illegible] committed, somewhere on the route, by boring through box and case; and about $9000 worth was abstracted. A keg 13½ inches high, including the chine, with a diameter of 10 inches at the head and 11½ at the bilge (outside measures), is a convenient size for $2000 in silver coin, or $50,000 in gold coin. A keg whose measurements are 19, 11, 13, as above, is a proper size for $5000 in silver coin. A rectangular box, measuring inside 10 by 8 inches by 5 in depth, is the size used at the Mint for $1000 in silver coin. This allows the coin to be thrown in promiscuously; if piled, at least one-third more can be put in. Such a box would hold $36,000 in gold coin, laid in order; or $27,000 in disorder. A bag 6 inches by 9 holds $5000 in gold coin, with room to tie. A bag 14 by 18 is a good size for $1000 in silver coin. One thousand pieces of our three-cent coin ($30 worth) make a smaller budget than many of our customers seem to anticipate. A bag 3½ inches by 5 easily contains them.—See *Manual of Coins*, by Eckfeldt and Du Bois of United States Mint. Published, New York, 1853, by G. P. Putnam & Co.

Privilege of Coining.—The privilege of coining money has always been claimed as a prerogative of the executive power, which was guarded with extreme jealousy. "The legitimation of money," says Sir Matthew Hale, "and the giving it its denominated value, is justly reckoned *in jura majestatis*, and in England it is one special part of the king's prerogative." And Ruding observes, "As to the impression of the coins, the stamping thereof is the unquestionable prerogative of the crown, and it was in very few instances communicated to those persons on whom the privilege was conferred; for, in general, the dies were sent either from the Exchequer, or from the master of the mint in the Tower." The privilege implied that the authority of the crown was necessary to give legal currency to the coin; and although Blackstone thinks it did not extend to the debasement of the coin to the injury of the people, no one can doubt that the power was not always legitimately exercised. In truth, it is only in the case of a depreciated currency that the king's proclamation is necessary to give legal circulation to the coin of the realm; and, as a better protection to his subjects, the tender is limited within very narrow bounds.

Ancient Constitution of the Mints.—The constitution of the mints in the earliest times of British history, and the regulations applied to the coinage, are questions of antiquarian research which will be deemed more curious than profitable. The materials for such an inquiry are extremely meagre and incomplete; for, according to Ruding, both the Anglo-Saxon laws and Domesday-Book are silent on the subject. They frequently mention the moneyers, but make no allusion to any other officers of the mint; though it is reasonable to suppose that the crown, whose prerogative it was to coin money, must have had some jurisdiction over those who were employed in the practical operations.—E. B.

TABLES RELATIVE TO THE COINS OF GREAT BRITAIN AND OTHER COUNTRIES.

ENGLISH COINS.—Account of the Quantity of *Fine* Silver contained in 20s. or the Pound Sterling; the Quantity of *Standard* Silver, of 11 oz. 2 dwts. Fine and 18 dwts. Alloy, contained in 20s. or the Pound Sterling, in the different Reigns, from the Time of Edward III. to the Reign of George III.—A similar Account with respect to Gold.—And an Account of the proportional Value of Fine Gold to Fine Silver, according to the Number of Grains contained in the Coins.—*Calculated in Grains and 1000th Parts Troy Weight.*

A. D.	Anno Regni.	Silver. 1. Number of Grains of Fine Silver in 20 Shillings, or the Pound Sterling, as Coined by the Mint Indentures.	Silver. 2. Number of Grains of Standard Silver, 11 oz. 2 dwts. Fine, in 20 Shillings, or the Pound Sterling, as Coined by the Mint Indentures.	Gold. 3. Number of Grains of Fine Gold in 20 Shillings, or the Pound Sterling, as Coined by the Mint Indentures.	Gold. 4. Number of Grains of Standard Gold 22 Carats Fine, in 20 Shillings, or the Pound Sterling, as Coined by the Mint Indentures.	5. Proportionate Value of Fine Gold to Fine Silver, according to the Quantity of each Metal contained in the Coins.
		Grains.	Grains.	Grains.	Grains.	Gold to Silver.
1344	18 Edward III.	733·333	6333 333	407 990	445·080	1 to 12·091
1349	23 Edward VII.	540·000	4800·000	383·795	418·588	1 to 11·571
1356	30 Edward III.	3996·000	4320 000	358·125	390·682	1 to 11·158
1401	3 Henry IV.	3990 000	4320·000	358·125	390·682	1 to 11·158
1421	9 Henry V.	3330·000	3600·000	322 312	351·613	1 to 10·331
1464	4 Edward IV.	2664·000	86 000	257·850	281·291	1 to 10·331
1465	5 Edward IV.	2664 000	2880·000	238·750	260·454	1 to 11·158
1470	49 Henry VI.	2664·000	2880·000	238·750	260·454	1 to 11 158
1482	22 Edward IV.	2664·000	2880 000	238·750	260·454	1 to 11·158
1509	1 Henry VIII.	2664·000	2880·000	238 750	260·454	1 to 11·158
1527	18 Henry VIII.	2538·000	2560·000	210·149	229·253	1 to 11·268
1543	34 Henry VIII.	2000·000	2162·162	191·666	209·090	1 to 10·434
1545	36 Henry VIII.	1200·000	1297·297	176·000	192·000	1 to 6·818
1546	37 Henry VIII.	800 000	864 864	160·000	174·545	1 to 5·000
1547	1 Edward VI.	800 000	864·864	160·000	174·545	1 to 5·000
1549	3 Edward VI.	800·000	864 864	155·294	169·412	1 to 5·151
*1551	5 Edward VI.	400·000	....	....	....	.....
1551	5 Edward VI.	1760·000	1902·702	160·000	174·545	1 to 11·000
1552	6 Edward VI.	1768·000	1011·351	160·000	174·545	1 to 11·050
1553	1 Mary	1760 000	1902·702	155·166	173·036	1 to 11·057
1560	2 Elizabeth ..	1776 000	1920·000	160·000	174 545	1 to 11·100
1600	43 Elizabeth ..	1718 709	1858·064	167·612	171·040	1 to 10·904
1604	2 James I.	1718 709	1858·064	141·935	154·838	1 to 12·109
1626	2 Charles I...	1718 709	1858·064	128 780	140·487	1 to 13·346
1666	18 Charles II..	1718 709	1858·064	118·651	129·438	1 to 14·485
1717	3 George I. ..	1718 709	1858·064	113·001	123·274	1 to 15·209
1816	56 George III.	1614·545	1745·454	113·001	123·274	1 to 14·287

ENGLISH COINS.—Account of English Silver and Gold Coins; showing their Value, the Seignorage or Profit upon the Coinage, and the Price of the Pound Troy of Standard Gold and Silver, from the Reign of Edward III. to the Reign of George I.‡

A. D.	Anno Regni.	Silver. 1. Fineness of the Silver in the Coins.	Silver. 2. Pound Weight of such Silver coined into	Silver. 3. Profit or Seignorage on the Coinage.	Silver. 4. Equal to the Mint Price for Standard Silver of 11 oz. 2 dwts. fine, Troy Weight.	Gold. 5. Fineness of the Gold in the Coins.	Gold. 6. Pound Weight of such Gold coined into	Gold. 7. Profit or Seignorage on the Coinage.	Gold. 8. Equal to the Mint Price for Standard Gold of 22 Carats fine, Troy Weight.
		Oz. dwts.	£ s. d.	£ s. d.	£ s. d.	Crts. grs.	£ s. d.	£ s. d.	£ s. d.
1344	18 Edward III....	11 2	1 0 3	0 1 3	1 0 3½	23 3½	18 3 4	0 8 4	12 10 8
1349	23 Edward III....	11 2	1 2 6	0 1 3	1 2 8	23 3½	14 0 0	0 11 8	13 3 9
1356	30 Edward III....	11 2	1 5 0	0 0 10	1 5 0½	23 3½	15 0 0	0 6 8	14 8 4
1394	18 Richard II. ...	11 2	1 5 0	0 0 10	1 5 0½	23 3½	15 0 0	0 5 0	14 9 11
1401	3 Henry IV.....	11 2	1 5 0	0 0 10	1 5 0½	23 3½	15 0 0	0 5 0	14 9 11
1421	9 Henry V.....	11 2	1 10 0	0 1 0	1 10 1½	23 3½	16 13 4	0 5 0	16 2 9
1425	4 Henry VI.....	11 2	1 10 0	0 1 0	1 10 1½	23 3½	16 13 4	0 5 10	16 1 11
1464	4 Edward IV.....	11 2	1 17 6	0 4 6	1 15 2½	23 3½	20 10 8	2 10 0	18 0 5
1465	5 Edward IV.....	11 2	1 17 6	0 4 6	1 15 2½	23 3½	22 10 0	1 0 10	21 1 10
1470	49 Henry VI.....	11 2	1 17 6	0 2 0	1 17 10½	23 3½	22 10 0	0 13 0	21 9 7
1482	22 Edward IV.....	11 2	1 17 6	0 1 6	1 18 4½	23 3½	22 10 0	0 7 6	21 15 0
1483	1 Richard III.....	11 2	1 17 6	0 1 6	1 18 4½	23 3½	22 10 0	0 7 6	21 15 0
1485	1 Henry VII.	11 2	1 17 6	0 1 0	1 18 4½	23 3½	22 10 0	0 7 6	21 15 0
1509	1 Henry VIII.	11 2	1 17 6	0 1 0	1 18 11½	23 3½	22 10 0	0 2 6	22 0 0
†1527	18 Henry VIII. ..	11 2	2 0 0	0 1 0½	1 18 11½	23 3½	24 0 0	0 2 8	22 0 0
15 7	18 Henry VIII. ..	11 2	2 5 0	0 1 0	2 4 0	23 3½	27 0 0	0 2 9	....
1527	18 Henry VIII. ..	.....	....	....	....	22 0	25 2 6	0 3 0	21 19 6
1543	34 Henry VIII. ..	10 0	2 8 0	0 8 0	2 4 4½	23 0	28 18 0	1 4 0	26 8 0
1545	36 Henry VIII. ..	6 0	2 8 0	2 0 0	2 11 9½	22 0	30 0 0	2 10 0	27 10 0
1546	37 Henry VIII. ..	4 0	2 8 0	4 4 0	2 15 6	20 0	30 0 0	5 0 0	27 10 0
1547	1 Edward VI....	4 0	2 8 0	4 4 0	2 15 6	20 0	30 0 0	1 10 0	31 7 0
1549	3 Edward VI....	6 0	3 12 0	4 0 0	2 10 2½	22 0	34 0 0	1 0 0	33 0 0
*1551	5 Edward VI....	3 0	3 12 0	....	....	....	....	....	....
1551	5 Edward VI....	11 0	3 0 0	....	....	23 3½	86 0 0	....	....
1551	5 Edward VI....	.....	....	....	....	22 0	33 0 0	....	....
1552	6 Edward VI....	11 1	3 0 0	0 1 0	2 10 3½	23 3½	86 0 0	0 2 9	....
1552	6 Edward VI....	.....	....	....	....	22 0	33 0 0	0 3 0	32 17 8
1553	1 Mary	11 0	3 0 0	0 1 0	2 10 6½	23 3½	86 0 0	0 3 0	33 0 8
1560	2 Elizabeth	11 2	3 0 0	0 1 6	2 18 6	23 3½	86 0 0	0 5 0	....
1560	2 Elizabeth	.....	....	....	....	22 0	33 0 0	0 4 0	32 10 0
1600	43 Elizabeth	11 2	3 2 0	0 2 0	3 0 0	23 3½	86 10 0	0 10 0	....
1600	43 Elizabeth	.....	....	....	....	22 0	33 10 0	0 10 0	33 0 0
1604	2 James I.....	11 2	3 2 0	0 2 6	2 19 6	22 0	37 4 0	0 10 0	35 14 0
1626	2 Charles I.....	11 2	3 2 0	0 2 0	3 0 0	22 0	41 0 0	1 1 5	39 18 7
†1666	18 Charles II.....	11 2	3 2 0	0 0 0	3 2 0	22 0	44 10 0	....	44 10 0
1717	3 George I.....	11 2	3 2 0	0 0 0	3 2 0	22 0	46 14 6	....	46 14 6
1816	56 George III. ..	11 2	3 6 0	0 4 0	....	22 0	46 14 6	....	46 14 6

* 1551—5 Edward VI.] The coinage of debased silver money, in the 5th year of Edward VI., of 3 oz. fine, ought more properly to be considered as Tokens. The sum of £120,000 only was so coined.—*See* JAMES'S *Essays*, chapter iv.

† 1527—Henry VIII.] The Saxon or Tower pound was used at the Mint up to this time, when the pound Troy was substituted in its stead. The Tower pound was but 11 oz. 5 dwts., Troy; so that, from the Conquest to the 28th of Edward I., 20 shillings in tale were exactly a pound in weight.

‡ 1666—18 Charles II.] The seignorage on the coinage was at this time given up, and the gold bullion brought to the Mint has ever since been coined free of expense. A seignorage of $6\frac{4}{31}$ per cent. was imposed on the coinage of silver by 56 Geo. III.

GOLD COINS OF DIFFERENT COUNTRIES.—A Table containing the Assays, Weights, and Values of the principal Gold Coins of all Countries, computed according to the Mint Price of Gold in England, and allowing £1 to equal $4·84, which is an Average Value, will give the Value of the Coin in United States Decimal Currency. Assays have been made both at London and Paris, which have been found to verify each other.

Coins.	Assay.	Weight.	Standard Weight.	Contents in Pure Gold.	Value in Sterling.
	Car. gr.	Dwt. gr.	Dwt. gr. mi.	Grains.	£. d
AUSTRIAN DOMINIONS. Souverain	W. 0 0½	3 14	3 13 15	78·6	18 10·92
Double ducat	B. 1 2½	4 12	4 20 5	106·4	18 9·07
Ducat Kremnitz, or Hungarian	B. 1 2	2 5½	2 10 3	53·3	9 5·01
BAVARIA. Carolin	W. 3 2	5 5½	5 5 10	115·	20 4·23
Max d'or, or Maximilian	W. 3 2½	4 4	3 14 0	77·	13 7·44
Ducat	B. 1 2½	2 5½	2 19 11	52·8	9 4·12
BERN. Ducat (double, etc., in proportion)	B. 1 1½	1 23	2 2 1	45·9	8 1·48
Pistole	W. 0 1½	4 21	4 19 0	105·5	18 7·86
BRUNSWICK. Pistole (double in proportion)	W. 0 1½	4 21½	4 19 5	105·7	18 8·48
Ducat	B. 1 0½	2 5½	2 8 9	51·8	9 2·
COLOGNE. Ducat	B. 1 2	2 5½	2 9 8	52·6	9 3·70
DENMARK. Ducat current	W. 0 3½	2 0	1 21 19	42·2	7 5·62
Ducat specie	B. 1 2	2 5½	2 9 8	52·6	9 3·70
Christian d'or	W. 0 1	4 7	4 5 16	93·3	16 6·14
ENGLAND. Guinea	Stand.	5 9½	5 9 10	118·7	21 0·
Half-guinea	Stand.	2 16½	2 16 15	59·3	10 6·
Seven-shilling piece	Stand.	1 19	1 19 0	39·6	7 0·
Sovereign	Stand.	5 5 3½	5 5 5	118·1	20 0·
FRANCE. Double Louis (coined before 1780)	W. 0 2	10 11	10 5 6	224·9	39 0·34
Louis	W. 0 2	5 5½	5 2 12	112·4	19 10·71
Double Louis (coined since 1786)	W. 0 1½	9 20	9 15 19	212·6	37 7·93
Louis	W. 0 1½	4 22	4 19 19	106·3	18 9·75
Double Napoleon, or piece of 40 francs	W. 0 1½	8 7	8 3 0	179·	31 8·36
Napoleon, or piece of 20 francs	W. 0 1½	4 3½	4 1 10	89·7	15 10·5
New Louis (double, etc.), the same as the Napoleon.					
FRANKFORT-ON-THE-MAINE. Ducat	B. 1 2½	2 5½	2 9 14	52·9	9 4·34
GENEVA. Pistole, old	W. 0 2	4 7½	4 4 18	92·5	16 4·45
Pistole, new	W. 0 0;	3 15½	3 15 4	80·	14 1·9
GENOA. Sequin	B. 1 3½	2 5½	2 10 6	53·4	9 5·41
HAMBURG. Ducat (double in proportion)	B. 1 2½	2 5½	2 9 14	52·9	9 4·35
HANOVER. George d'or	W. 0 1½	4 6½	4 5 3	92·6	16 4·06
Ducat	B. 1 3½	2 5½	2 10 3	53·3	9 5·19
Gold florin (double in proportion)	W. 3 0½	2 2	1 18 6●	39·	6 10·83
HOLLAND. Double ryder	Stand.	12 21	12 21 0	283·2	59 1·46
Ryder	Stand.	6 9	6 9 0	140·2	24 9·75
Ducat	B. 1 2½	2 5½	2 9 12	52·3	9 4·3
MALTA. Double Louis	W. 1 3½	10 16	9 18 18	215·3	38 1·25
Louis	W. 1 3	5 8	4 21 16	108·	19 1·27
Demi Louis	W. 1 2½	2 16	2 11 3	54·5	9 7·75
MILAN. Sequin	B. 1 3	2 5½	2 10 0	53·2	9 4·98
Doppia or pistole	W. 0 1	4 1½	4 0 8	88·4	15 7·74
Forty-lire piece of 1808	W. 0 1½	8 8	8 4 0	170·7	31 0·64
NAPLES. Six-ducat piece of 1783	W. 0 2½	5 16	5 12 18	121·9	21 6·89
Two-ducat piece, or sequin, of 1762	W. 1 2½	1 20½	1 16 6	37·4	6 7·42
Three-ducat piece, or oncetta, of 1818	B. 1 3½	2 10½	2 15 1	58·1	10 3·40
NETHERLANDS. Gold lion, or fourteen-florin piece	Stand	5 7½	5 7 16	117·1	20 8·69
Ten-florin piece (1820)	W. 0 1½	4 7½	4 5 15	91·2	16 5·23
PARMA. Quadruple pistole (double in proportion)	W. 1 0	18 0	17 12 18	386·	68 3·78
Pistole or doppia of 1787	W. 0 3	4 14	4 10 4	97·4	17 2·85
Ditto of 1796	W. 1 0½	4 14	4 8 14	95·9	16 11·67
Maria Theresa (1818)	W. 0 1½	4 3½	4 1 10	89·7	15 10·5
PIEDMONT. Pistole coined since 1785 (½, etc., in prop.)	W. 0 1½	5 20	5 17 0	125·6	22 2·75
Sequin (½ in proportion)	B. 1 2½	2 5½	2 9 12	52·9	9 4·24
Carlino, coined since 1785 (½, etc., in prop.)	W. 0 1½	29 6	28 20 0	634·4	112 3·23
Piece of 20 francs, called *Marengo*	W. 2 0	4 3½	3 18 4	82·7	14 7·63
POLAND. Ducat	B. 1 2½	2 5½	2 9 12	52·9	9 4·24
PORTUGAL. Dobraon of 24,000 rees	Stand.	34 12	34 12 0	759·	134 3·96
Dobra of 12,800 rees	Stand.	18 6	18 6 0	401·5	71 0·70
Moidore or Lisbonnine (½, etc., in prop.)	Stand.	0 23	6 22 0	152·2	26 11·24
Piece of 10 testoons, or 1600 rees	W. 0 0½	2 6	2 5 14	49·3	8 8·70
Old crusado of 400 rees	W. 0 0½	0 15	0 14 18	13·6	2 4·83
New crusado of 480 rees	W. 0 0½	0 16½	0 16 2	14·8	2 7·43
Milree (coined for African colonies, 1755)	Stand.	0 19½	0 19 15	18·1	3 2·44
PRUSSIA. Ducat of 1748	B. 1 2½	2 5½	2 9 14	52·9	9 4·24
Ducat of 1787	B. 1 2	2 5½	2 9 6	52·6	9 3·71
Frederick (double) of 1709	W. 0 1½	8 14	8 9 18	185·	32 8·90
Frederick (single) of 1778	W. 0 1½	4 7	4 5 4	92·8	16 5·68
Frederick (double) of 1800	W. 0 2	8 14	8 9 6	184·5	32 7·84
Frederick (single) of 1800	W. 0 2	4 7	4 4 13	92·2	16 5·42
ROME. Sequin (coined since 1760)	B. 1 3½	2 4½	2 9 0	52·2	9 2·6
Scudo of the Republic	W. 0 1½	17 0½	16 16 6	367·	64 11·43
RUSSIA. Ducat of 1796	B. 1 2½	2 6	2 10 0	53·2	9 4·98
Ducat of 1763	B. 1 2	2 5½	2 9 8	52·6	9 3·71
Gold ruble of 1756	Stand.	1 0½	1 0 10	22·5	3 11·78
Ditto of 1799	W. 0 0½	0 18½	0 18 14	17·1	3 0·61
Gold poltin of 1777	Stand.	0 9	0 9 0	8·2	1 5·41
Imperial of 1801	B. 1 2½	7 17½	8 6 8	181·9	32 2·91
Half Imperial of 1801	B. 1 2½	3 20½	4 3 4	90·9	16 1·45
Ditto of 1818	B. 0 0½	4 3½	4 3 12	91·3	16 1·98
SARDINIA. Carlino (½ in proportion)	W. 0 2½	10 7½	9 23 16	219·8	39 8·10
SAXONY. Ducat of 1784	B. 1 2	2 5½	2 9 8	52·6	9 3·71
Ducat of 1797	B. 1 2½	2 5½	2 9 14	52·9	9 4·24
Augustus of 1754	W. 0 2½	4 6½	4 3 8	91·2	16 1·69
Augustus of 1784	W. 0 1½	4 6½	4 4 12	92·2	16 3·81
SICILY*. Ounce of 1751	W. 1 2½	2 20½	2 15 8	58·2	10 3·60
Double ounce of 1758	W. 1 2	5 17	5 7 14	117·	20 8·48
SPAIN. Doubloon of 1772 (double and single in proportion)	W. 0 2½	17 8½	16 21 16	372·	65 10·05

* Much variation is found in the fineness of the Sicilian gold coins.

Coins.		Assay.	Weight.	Standard Weight.	Contents in Pure Gold.	Value in Sterling.
		Car. gr.	Dwt. gr.	Dwt. gr. mi.	Grains.	s. d.
SPAIN	Quadruple pistole of 1801	W. 1 1	17 9	16 9 0	380·5	63 9·62
	Pistole of 1801	W. 1 1	4 8½	4 2 6	95·1	15 11·35
	Coronilla, gold dollar, or vintem of 1801.	W. 1 2½	1 3	1 0 18	25·4	4 0·42
SWEDEN	Ducat	B. 1 2	2 5	2 8 12	51·9	9 9·52
SWITZERLAND	Pistole of the Helvetic Republic of 1800.	W. 0 1½	4 21½	4 19 9	105·9	18 3·91
TREVES	Ducat	B. 1 2	2 5½	2 9 8	52·6	9 8·71
TURKEY	Sequin fonduell of Constantinople of 1773	W. 2 2½	2 5½	1 23 6	43·3	7 7·94
	Sequin fonduell of 1789	W. 2 3½	2 5½	1 22 16	42·9	7 7·11
	Half missler (1818)	W. 2 3½	0 18½	0 18 5	19·16	3 3·92
	Sequin fonduell	W. 2 3	2 5	1 22 7	42·5	7 6·20
	Yermeebeshlek	B. 0 8½	2 1½	3 4 13	79·3	12 5·82
TUSCANY	Zecchino or sequin	B. 1 3½	3 5½	2 10 14	58·6	9 5·83
	Ruspone of the kingdom of Etruria	B. 1 3½	6 17½	7 7 18	161·1	28 5·93
UNITED STATES	Eagle (½ and ¼ in proportion)	W. 0 0½	11 6	11 4 8	246·1	43 6·66
VENICE	Zecchino or sequin (½ and ¼ in proportion)	B. 1 3½	2 6	2 10 10	53·6	9 5·93
WIRTEMBERG	Carolin	W. 3 2	6 3½	5 4 0	113·7	20 1·47
	Ducat	B. 1 2	2 5	2 8 12	51·9	9 9·22
	Ducat (double and ½ ducat in proportion)	B. 1 2	2 5½	2 9 8	52·6	9 3·71
EAST INDIES	Mohur of 1770	B. 1 2½	7 22½	8 11 15	186·3	33 0·72
	Mohur, Half (1787) (½ in proportion)	B. 1 2½	3 23½	4 16 10	94·1	16 7·63
	Mohur Sicca of Bengal	B. 1 3½	7 23	8 15 0	189·8	30 1·04
	Mohur of the Dutch East India Company (1783)	W. 3 3½	10 2	3 8 0	183·4	32 5·50
	Mohur, Half Ditto (1801)	W. 3 1½	5 3½	4 18 18	90·2	17 0·30
	Rupee, Bombay (1818)	B. 0 0½	7 11	7 11 13	164·7	29 1·73
	Rupee of Madras (1818)	Stand.	7 12	7 12 0	165·	29 2·42
	Pagoda, star	W. 3 0	2 4½	1 21 11	41·8	7 4·77

The London Assays in this Table were made by Robert Bingley, Esq., F.R.S., the Assay Master of the Royal Mint, and those at Paris by Pierre Frédérick Bonneville, Essayer du Commerce, as published in his elaborate work on the coins of all nations. Specimens of all the foreign coins brought to London for commercial purposes have been supplied for this Table from the Bullion-office, Bank of England, by order of the Bank Directors, and have been selected by John Hamble, Esq., the chief clerk of that office, who also examined the Tables in their progress. It may likewise be added, that the Mint Reports of these commercial coins are chiefly from average assays; and that all the computations have been carefully verified by different calculators.—Note by Dr. KELLY, to second edition of the *Cambist*, published in 1821.

"By one of the articles of the Zollverein, or Customs-union of Germany, it was stipulated that the settlements for the duties should be made either in Prussian dollars or in florins, at the rate of 7 florins for four Prussian dollars. There were, however, no florins in existence exactly of this value; but as the nearest approach to it was a valuation called the 24 guldenfuss, or florin-foot, these Zollverein florins were nominally reckoned to be in this rate, though the difference amounts to more than 2 per cent. The term 24 guldenfuss implies that the mark weight of fine silver is rated at 24 gulden or florins. It was formed by giving to the coins minted or valued in 20 guldenfuss an increased value of one-fifth, as rating the 20-kreutzer piece at 24 kreutzers. At 60*d.* per ounce standard, the value of this mark of fine silver is worth 40*s.* 7½*d.* sterling, from which the value of the different German monetary integers is readily obtained; as reckoning 27½ marks banco or 34 marks current of Hamburg, 14 dollars of Prussia, 24½ florins of South Germany, 20 florins of Austria, and also 60 lire of Austriache of Lombardy, to be of this amount. In order, therefore, to prevent the loss or inconvenience which would attend their adhering to this mode of valuation, a money convention was entered into on the 25th of August, 1837, among the states forming the union, by which it was agreed upon that a new basis of valuation should be adopted for their coins, under the term of Süddeutscher Währung, or South German valuation, at the rate of 24½ gulden or florins from the mark's weight of fine silver. Bavaria, Wirtemberg, Baden, and Saxony have since issued their coins at this rate, and the other states of the confederation are doing or preparing to do the same. Among them Frankfort, in 1840, began the mintage of coins of this value; and by a regulation of the Chamber of Commerce of this free city, all the rates of exchange, as well as the values of bullion and foreign coins, were ordered to be expressed in this Süddeutscher Währung from the commencement of the year (1843). One of these new and very exactly-minted florins was assayed by Messrs. Johnson and Cock, of Hatton Garden, who reported it to be, full weight, 6 dwts. 19½ grains, worse 6 dwts., gold under 2 grains; from which the value, at 60*d.* per ounce standard, is very exactly 19½*d.* sterling, making the par of exchange with London 120¾ florins in S. D. W. for £10 sterling. I have been thus particular in these explanations, partly because several persons imagine that the late alteration in the rate of exchange with Frankfort was made in compliance with the wishes, or to suit the convenience, of one or more of our leading houses in exchange negotiations, but more particularly because it is maintained by many that the valuation of this rate is not merely nominally, but really, in 24 guldenfuss. This is a point of no small importance to the commercial world, for had it been so, the par of exchange with London would have been only 118 florins for £10 sterling, and the difference between this and the present price of sight bills on Frankfort would have exceeded 2¾ per cent.; a variation which every practical cambist well knows could not exist, except under very extraordinary circumstances, and with nearly corresponding differences in the other rates of exchange; neither of which causes is now in operation."—*Letter of William Tate, Esq., cambist to the Times.*

Sterling silver remained in high repute all over the Continent, because it was superior to any other currency; and even in England the words conveyed for centuries the ideas of goodness and purity. And we may remark here that the gold coins of England, from the reign of Henry III., when they were generally introduced, to the reign of Henry VIII., who debased their purity, were made of fine gold. This is a remarkable circumstance, because as gold in its native state is rarely discovered so pure, the existence for a long period of a coinage fabricated of that metal in a state of purity necessarily implies the knowledge of the art of refining, which must have been practiced at a very early period. Pliny, indeed, says that in his time gold was refined by mercury, which mingled with it, but rejected all alloy, and the gold was freed from the mercury by squeezing both in skins, in which operation the mercury ran through and left the gold in a pure state. Some of the Greek gold coins were also of great purity, as those of Philip of Macedon, and his son Alexander the Great, rivaled by those of the other princes and cities which immediately followed. Those of the successors of Alexander in Egypt were 23 carats 3 grains fine, and 1 carat grain alloy, which we give on the authority of Jacob in his book on the "Precious Metals." The Greek silver coins were inferior to ours; as also the Roman of the earliest period.—E. B.

Silver Coins of different Countries.—A Table containing the Assays, Weights, and Values of the principal Silver Coins of all Countries, computed at the rate of 5s. 2d. per Ounce Standard, from Assays made both at the London and Paris Mints.

Coins.		Assay.	Weight	Standard Weight.	Contents in Pure Silver.	Value in Sterling.
		Oz. dwt.	Dwt. gr	Dwt. gr. mi	Grains.	s. d.
Austria	Rix dollar of Francis II. (1800)	W. 1 5	18 1	16 0 4	385·5	4 1·34
	Rix dollar of the kingdom of Hungary	W. 1 9	18 1	16 6 1	389·9	4 2·39
	Half rix dollar, or florin, *Convention*	W. 1 8	9 0½	8 3 1	179·6	2 1·07
	Copfstuck, or 20-creutzer piece	W. 4 8	4 6½	3 16 3	89·4	0 8·29
	17-creutzer piece	W. 4 8	4 0	3 9 16	83·5	0 7·47
	Halbe copf, or 10-creutzer piece	W. 5 5	2 11	1 7 1	28·8	0 4·01
Baden	Rix dollar	W. 1 4	18 2	16 3 1	386·1	4 2·
Bavaria	Rix dollar of 1800 (½ in proportion)	W. 1 4½	17 19	15 13 12	345·6	4 0·25
	Copfstuck	W. 4 8	4 6½	3 16 3	89·4	0 8·29
Bern	Patagon or crown (½ in proportion)	W. 0 7	18 22	18 7 14	406·7	4 8·79
	Piece of 10 batzen	W. 1 2	5 8	4 14 17	102·5	1 2·31
	Piece of 48 grotes	W. 2 2	11 0	8 22 1	198·	2 3·64
Brunswick	Rix dollar, *Convention*	W. 1 8	18 1	16 4 4	359·2	4 2·15
	Half rix dollar	W. 1 8	9 0½	8 2 2	179·6	2 1·07
	Gulden, or piece of ½, fine, of 1764	B. 0 16	8 10½	9 1 1	200·8	2 4·03
	Gulden, common, of 1764	W. 1 2	9 0	8 2 10	180·	2 1·15
	Gulden, ditto, of 1795	W. 2 2	11 1	8 23 7	199·1	2 3·80
	Half gulden, or piece of ½, of 1764	W. 1 2	4 12	4 1 5	90·	1 0·56
Denmark	Rykadaler, specie, of 1796	W. 0 13	18 14	17 11 17	398·4	4 6·23
	New piece of 4 marks	W. 0 12	12 9	11 16 14	259·8	3 0·27
	Half rykadaler	W. 0 13	9 7	8 17 8	194·2	2 3·11
	Mark, specie, or ¼ rykadaler	W. 3 1	4 0	2 21 12	64·4	0 7·59
	Rix dollar, specie, of Sleswick and Holstein (pieces of ½ and ¼ in proportion)	W. 0 12	18 13	17 12 6	389·4	4 6·37
	Piece of 24 skillings	W. 4 7	5 2½	3 2 10	68·9	0 2·62
England	Crown (*old*)	Stand.	19 8½	19 8 10	429·7	5 0·
	Half-crown	Stand.	9 16½	9 16 5	214·8	2 6·
	Shilling	Stand.	3 21	3 21 0	85·9	1 0·
	Sixpence	Stand.	1 22½	1 22 10	42·9	0 6·
	Crown (*new*)	Stand.	18 4½	18 4 7	403·6	4 8·36
	Half-crown	Stand.	9 2	9 2 4	201·8	2 4·18
	Shilling	Stand.	3 15½	3 15 6	80·7	0 11·27
	Sixpence	Stand.	1 15½	1 10 14	40·3	0 5·63
France	Een of 6 livres	W. 0 7	18 15	18 7 16	402·1	4 8·28
	Demi een	W. 0 7	9 0	9 3 18	201·5	2 4·13
	Piece of 24 sous (divisions in proportion)	W. 0 7	3 20	3 16 19	83·4	0 11·64
	Piece of 30 sous (½ in proportion)	W. 3 8	0 12	4 12 4	100·2	1 1·99
	Piece of 5 francs	W. 0 7	16 1	15 12 4	344·9	4 0·16
	Piece of 2 francs	W. 0 7	6 11	6 6 2	138·8	1 7·28
	Franc	W. 0 7	3 5½	3 3 1	69·4	0 9·69
	Demi franc	W. 0 8½	1 15	4 18 6	34·7	0 4·84
Geneva	Patagon	W. 1 0	17 9	15 19 8	351·	4 1·03
	Piece of 15 sous of 1794	W. 2 6	2 1½	1 15 1	26·1	0 5·04
Genoa	Scudo, of 8 lire, of 1796 (½, ¼, etc., in prop.)	W. 0 8	21 9	20 14 10	457·4	5 3·67
	Scudo of the Ligurian Republic	W. 0 9½	21 9	20 11 2	454·3	5 3·43
Hamburg	Rix dollar, specie	W. 0 10	18 18	17 21 12	347·5	4 7·49
	Double mark, or 32-schilling piece (single in proportion)	W. 2 3	11 19	9 11 8	210·8	2 5·36
	Piece of 8 schillings	W. 8 19	3 8½	2 6 4	50·1	0 6·19
	Piece of 4 schillings	W. 4 6	2 2	1 6 12	26·3	0 3·15
Hanover	Rix dollar, *Constitution*	W. 0 9	18 19	16 0 14	400·3	4 7·89
	Florin, or piece of ½, fine	R. 0 10	8 10	9 0 10	200·8	2 3·96
	Half florin, or piece of ½, ditto	R. 0 16	4 4	4 11 4	99·2	1 1·85
	Quarter, or piece of 6 good groschen, ditto	R. 0 16	2 1	2 4 10	48·6	0 6·78
	Florin, or piece of ½, base	W. 2 1	11 0½	8 23 15	199·6	2 3·87
Hesse Cassel	Rix dollar, *Convention*	W. 1 6	18 1	15 22	353·	4 1·39
	Florin, or piece of ⅓ (⅙ in proportion)	W. 1 6	9 0½	7 23	176·8	2 0·68
	Thaler of 1789	W. 0 10½	12 7½	11 17 2	259·7	3 0·26
	Ecu, *Convention* (1815)	W. 1 6	17 23½	15 21 8	349·8	4 0·77
	Bon gros	W. 6 14	1 4	0 11 5	10·8	0 1·43
Holland	Ducatoon	B. 0 3	20 22	21 4 15	471·6	5 5·85
	Piece of 8 florins	W. 0 2	20 7	20 2 12	446·4	5 2·33
	Rix dollar (the assay varies)	W. 0 16	18 6	16 20 8	375·9	4 4·99
	Half rix dollar	W. 0 16	9 0	8 8 8	185·4	2 1·88
	Florin or guilder (½ in proportion)	W. 0 4½	6 18	6 14 14	146·8	1 8·49
	19-stiver piece	W. 0 16½	4 12	4 3 18	99·4	1 0·90
	Florin of Batavia	W. 0 5½	6 18	6 3 2	141·6	1 7·77
	Rix dollar, or 50-stiver piece	W. 0 5½	17 0	16 13 18	361·2	4 3·97
Lubec	Rix dollar, specie	W. 0 13	18 8	17 15 12	381·9	4 6·72
	Double mark	W. 2 3	11 18	9 11 8	210·3	2 5·36
	Mark	W. 2 3	5 21	4 17 14	105·1	1 2·67
Lucca	Scudo	W. 0 3	17 0	16 18 10	372·3	4 3·98
	Barbone	W. 3 3	1 20½	1 7 14	29·3	0 4·09
Malta	Ounce of 30 tari of Emmanuel Pinto	W. 2 5	10 1½	15 4 14	337·4	3 11·11
	2-tari piece	W. 2 19	1 2	0 19 2	17·7	0 2·41
Milan	Scudo of 6 lire (⅓ in proportion)	W. 0 7	14 20½	14 9 10	319·6	3 8·62
	Lira, new	W. 4 10	4 0	2 9 0	53·8	0 7·37
	Lira, old	W. 0 3	2 10	2 0 4	52·9	0 7·38
	Scudo of the Cisalpine Republic	W. 0 7	14 21½	14 10 4	320·2	3 8·71
	Piece of 30 soldi of ditto	W. 2 18	4 17	3 11 8	77·2	0 10·78
Modena	Scudo of 15 lire, 1739 (double, etc., in proportion)	W. 0 14	18 19½	17 8 9	385·2	4 5·78
	Scudo of 5 lire, of 1782	W. 0 3	5 19	5 17 2	126·8	1 5·70
	Scudo of 1796	W. 8 3	18 1½	19 22 13	287·4	3 4·13
Naples	Ducat, new (½ in proportion)	W. 1 0	14 15	13 7 8	295·4	3 5·24
	Piece of 12 Carlini of 1791	W. 1 0	17 15	16 0 18	356·	4 1·71
	Ditto of 1796	W. 1 2	17 10½	15 22 12	353·9	4 1·41
	Ditto of 1805 (½ in proportion)	W. 1 2	17 19½	15 23 18	355·2	4 1·60
	Ditto of 10 Carlini (1818)	W. 1 2	14 18	13 7 0	295·1	3 5·20
Netherlands	Crown (½, etc., in proportion)	W. 0 14	19 0	17 19 4	395·9	4 7·18
	5-stiver piece	W. 6 3	3 4	1 9 18	31·8	0 4·37

Coins.		Assay	Weight.	Standard Weight.	Contents in Pure Silver.	Value in Sterling.
		Oz. dwt.	Dwt gr.	Dwt. gr. mi.	Grains.	s. d.
NETHERLANDS	Florin of 1816	W. 0 7½	6 22	6 10 6	148·4	1 6·72
	Half florin (with divisions in proportion)	W. 4 5½	5 11	3 9 2	75·	0 10·46
PARMA	Ducat of 1784	W. 0 0	16 11	16 18 18	350·6	4 0·95
	Ducat of 1796 (½ in proportion)	W. 0 5½	16 12½	16 2 18	357·9	4 1·97
	Piece of 3 lire	W. 1 4	4 1½	4 2 2	90·7	1 0·66
PIEDMONT	Scudo, 1755 (½, etc., in proportion)	W. 0 5½	22 14	22 0 10	488·0	5 8·26
	Scudo, 1770 (¼ and ½ in proportion)	W. 0 5	22 14	22 1 16	490·	5 8·42
	Piece of 2 lire (1714)	W. 0 4½	7 20½	7 16 13	170·8	1 11·85
	5-franc piece (1801)	W. 0 8	16 1½	15 11 12	348·7	3 11·99
POLAND	Rix dollar, old	W. 1 2	18 1	16 6 0	360·8	4 2·38
	Rix dollar, new (1794)	W. 2 17	15 10½	11 11 6	254·3	2 11·51
	Florin, or gulden	W. 4 2	6 0	3 18 16	84·	0 11·72
PORTUGAL	New crusado (1800)	W. 0 4	11 0	10 19 0	239·2	2 9·40
	Ditto (1718)	W. 0 6½	9 8	9 1 0	200·2	2 3·05
	Ditto (1795)	W. 0 7	9 0	9 1 18	201·0	2 4·15
	Doze vintems, or piece of 240 reos (1799)	W. 0 7	4 16	4 12 10	100·4	1 2·01
	Testoon (1799)	W. 0 7	2 0½	1 22 18	47·4	0 0·96
	New crusado (1809)	W. 0 4	9 3	8 23 0	198·2	2 4·07
	Seis vintems, or piece of 120 reos (1802)	W. 0 0	2 4½	2 2 3	46·6	0 0·50
	Testoon (1802)	W. 0 9	2 0	1 22 0	42·5	0 0·93
	Tres vintems, or piece of 60 reos (1802)	W. 0 9	1 2½	1 1 4	23·3	0 0·25
	Half testoon (1802)	W. 0 9	0 23	0 22 0	20·4	0 0·24
PORTUGUESE COLONIES	Piece of 8 macutes, of Portuguese Africa	W. 0 9	7 12	7 4 14	159·8	1 10·31
	Ditto of 6 ditto	W. 0 9	5 13	5 7 12	118·	0 4·47
	Ditto of 4 ditto	W. 0 9	3 16	3 12 8	78·1	1 10·90
PRUSSIA*	Rix dollar, Prussian currency (½ in prop.)	W. 2 5	14 8½	11 9 0	252·6	2 11·27
	Rix dollar, *Convention*	W. 1 3	18 1	16 4 2	359·	4 2·13
	Florin, or piece of ½	W. 2 3	11 2	8 22 8	198·4	2 3·70
	Florin of Silesia	W. 2 2	9 11	7 16 0	170·3	1 11·78
	Drittel, or piece of 8 good groschen	W. 3 3	5 8½	5 20 4	85·3	0 11·01
	Piece of 6 groschen	W. 2 8	3 14	3 19 6	62·3	0 8·09
ROME	Scudo, or crown (coined since 1755)	W. 0 4	17 1	16 17 13	371·5	4 3·87
	Mezzo scudo, or half-crown	W. 0 4	8 12½	8 8 16	185·7	2 1·93
	Testone (1785)	W. 0 5	5 2	4 23 4	110·3	1 3·40
	Paolo (1785)	W. 0 4	1 17	1 16 4	37·2	0 5·10
	Grosso, or half Paolo (1785)	W. 0 5	0 20½	0 20 0	18·6	0 2·68
	Scudo of the Roman Republic (1799)	W. 0 8	17 1	16 13 18	368·1	4 3·40
RUSSIA	Rouble of Peter the Great	W. 2 7	18 1	14 1 8	312·1	3 7·68
	Ditto of Catharine I. (1725)	W. 2 4½	17 11	13 23 0	309·9	3 7·27
	Ditto of Peter II. (1727)	W. 2 12	18 5½	13 23 4	310·	3 7·28
	Ditto of Anne (1734)	W. 1 11	10 14½	14 6 16	317·2	3 8·29
	Ditto of Elizabeth (1750)	W. 1 7	16 12	14 11 16	321·8	3 8·93
	Ditto of Peter III. (1762)	W. 2 2	15 10	12 12 0	277·5	3 2·75
	Ditto of Catharine II. (1780)	W. 2 4	15 12	12 10 6	275·9	3 2·52
	Ditto of Alexander	W. 0 10	15 12	12 12 12	278·1	3 2·83
SARDINIA	Scudo, or crown (½ and ¼ in proportion)	W. 0 7	15 2½	14 15 0	324·7	3 9·84
SAXONY	Rix dollar, *Convention*, (½ and ¼ in proportion)	W. 1 3	18 0	16 5 4	358·2	4 2·01
	Piece of 16 groschen of Leipsic	W. 2 2	9 0½	7 14 16	169·1	1 11·61
	Rix dollar current of Saxe Gotha	W. 4 4½	18 1	11 4 2	248·1	2 10·64
	½ thaler of 1804	W. 4 11	3 11	2 0 19	45·3	0 6·32
	Ditto of 1808	W. 4 11½	3 5½	1 21 8	42·1	0 5·87
	Ditto of Jerome Bonaparte of 1809	W. 5 4	3 17	1 23 6	43·7	0 6·10
SICILY	Scudo (½ in proportion)	W. 1 4	17 14	15 10 6	348·2	4 0·62
	Piece of 40 grains	W. 1 2	5 21	5 7 2	117·5	1 4·40
SPAIN	†Dollar, of late coinage	W. 0 8	17 3	16 17 0	370·9	4 3·79
	Half dollar, ditto	W. 0 8	8 10	8 8 10	185·4	2 1·88
	Mexican peceta (1774)	W. 0 8	4 7½	4 3 10	92·3	1 0·88
	Real of Mexican plate (1775)	W. 0 8	2 3½	2 1 20	46·1	0 0·43
	Peceta provincial of 2 reals of new plate (1775)	W. 1 9½	5 18	5 6 0	72·2	0 10·08
	Real of new plate (1775)	W. 1 9½	1 21	1 15 0	36·1	0 5·04
SWEDEN	Rix dollar (1702)	W. 0 12	18 20	17 19 10	395·5	4 7·22
	Rix dollar of late coinage	W. 0 14½	19 17	17 12 0	388·5	4 0·18
SWITZERLAND	Ecu of 40 batzen of Lucerne (1796)	W. 0 5	19 0	18 13 14	412·3	4 9·57
	Half ditto	W. 1 2	9 20	8 20 12	196·7	2 3·46
	Florin, or piece of 40 schillings of Lucerne (1793)	W. 1 5	4 22	4 8 14	96·8	1 1·51
	Ecu of 40 batzen of the Helvetic Republic 1798 (½ in proportion)	W. 0 6	18 23	18 10 14	409·5	4 9·18
	Ecu of 4 franken	W. 0 7	18 23	18 8 12	407·6	4 9·18
TURKEY	Piastre of Selim of 1801	W. 5 6	8 6	4 7 8	95·7	1 1·96
	Piastre of Crim Tartary (1778)	W. 6 13	10 5	4 2 4	90·9	1 0 60
	Piastre of Tunis (1787)	W. 6 5½	10 0	4 8 6	94·5	1 1·47
	Piastre (1818)	W. 5 14	6 6½	3 1 4	67·7	0 9·45
TUSCANY	Piece of 10 Paoli of the kingdom of Etruria (1801)	W. 0 4	17 13½	17 5 18	382·0	4 5·46
	Scudo Pisa of ditto (1803)	W. 0 2	17 12	17 8 4	385·0	4 5·76
	Piece of 10 lire ditto (1803)	It. 0 7	25 0	20 1 12	578·7	6 8·30
	Lira (1803)	It. 0 7	2 8	2 0 16	53·4	0 7·45
UNITED STATES	‡Dollar, 1795 (½, etc., in proportion)	W. 0 7½	17 8	16 19 16	373·5	4 4·15
	Dollar (1798)	W. 0 7	17 10½	16 21 6	374·9	4 4·35
	Dollar (180)	W. 0 10½	17 10	16 14 0	368·3	4 3·42
	Dollar, an average of 8 years	W. 0 8½	17 8	16 16 0	370·1	4 3·68
	Dime, or one-tenth dollar	W. 0 4	1 19½	1 18 14	39·5	0 5·71
	Half dime	W. 0 7	0 21½	0 21 0	19·5	0 2·72
VENICE	Piece of 2 lire, or 24 creutzers (1800)	W. 8 4½	5 19½	1 12 2	33·4	0 4·66
	Ditto of 2 lire, called moneta provinciale (1808)	W. 8 3	5 13½	1 11 8	32·8	0 4·58
	Ditto of 2 lire, 1802 (½ and ¼ in proportion)	W. 8 4	5 6½	1 8 19	30·5	0 4·25

* The Prussian coins, having been debased at different periods, vary in their reports.
† This is the coin which is universally circulated under the name of the Spanish dollar.
‡ The American dollars, and inferior silver pieces of late coinage, vary in fineness from W. 4 dwts. to W. 9½ dwts.

Coins.		Assay.	Weight.	Standard Weight.	Contents in Pure Silver.	Value in Sterling.
		Oz. dwt.	Dwt. gr.	Dwt. gr. mi.	Grains.	s. d.
Wirtemberg	Rix dollar, specie	W. 1 3	18 1	16 14 2	859·1	4 2·14
	Copfstuck	W. 4 2	4 16½	2 16 12	59·8	0 8·35
East Indies	Rupee Sicca, coined by the East India Company at Calcutta	B. 0 13	7 11½	7 22 0	175·8	2 0·54
	Company's or Standard	Stand.	....	....	165·	1 11·11
	Calcutta (1818)	Stand.	8 0	8 0 0	175·0	2 0·56
	Bombay, new, or Surat (1818)	W. 0 0½	7 11	7 10 4	164·7	1 11·01
	Fanam, Cananore	W. 0 1½	1 11½	1 11 10	32·0	0 4·5
	Bombay, old	B. 0 10	1 11½	1 13 16	35·	0 4·88
	Pondicherry	B. 0 5½	1 0½	1 1 2	22·8	0 3·18
	Ditto, double	W. 0 3	1 18½	1 18 2	39·	0 5·44
	Gulden of the Dutch E. I. Co. (1820)	W. 0 7½	6 22	6 16 6	148·4	1 8·72

The sterling value of the foreign coins, in the foregoing tables, has been computed from the assays as follows: Let it be required to assign the value, in sterling, of a French double Louis d'or coined since 1786, the assay master's report being as follows: "Weight, 9 dwts. 20 grs.; assay W. 1½ grs.," that is, 0 car. 1½ grs. worse than the English standard. We proceed as under:

From 22 car. 0 gr. the fineness of English standard gold, take 0 car. 1½ gr., there remains 21 car. 2½ gr. Then, as 22 car. : 21 car. 2½ grs. :: 9 dwts. 20 grs. : 9 dwts. 16 grs., the standard gold contained in the Louis d'or; and hence, as 1 oz. : £3 17*s.* 10½*d.* :: 9 dwts. 16 grs. : £1 17*s.* 7½*d.*, the value of the Louis in sterling money, and so for any of the other coins.

Ancient Coins.—We subjoin, for the convenience of such of our readers as may at any time have occasion to consult works in which reference is made to ancient coins, the following tables of those that were principally current among the Jews and Greeks. They were calculated by Dr. Arbuthnot (*Tables of Ancient Coins, Weights, etc.*, 4to ed., Lond., 1754), and do not differ materially from the tables of Paucton, whose *Métrologie* (4to Paris, 1780) is the most complete and elaborate work that has ever been published with respect to ancient moneys, weights, and measures. At the same time we confess we should not be disposed to place much reliance on these tables, and we have elsewhere stated our reasons for holding this opinion.—*Encyc. Britannica*, art. Money.

Jewish Coins.

Named Proportions.				Value in Sterling. £ s. d.
Gerah				0 0 1$\frac{59}{160}$
10	Bekah			0 1 1$\frac{1}{10}$
20	2	Shekel		0 2 3$\frac{3}{5}$
1,200	120	50	Manch or Mina Hebraica	5 14 0$\frac{3}{4}$
60,000	6000	3000	60 Talent	342 3 9
Solidus aureus, or sextula, worth				0 12 0½
Siclus aureus, worth				1 16 6
A talent of gold, worth				5175 0 0

Grecian Coins.

											s.	d	qrs
Lepton											0	0	0$\frac{31}{336}$
7	Chalcus										0	0	0$\frac{31}{48}$
14	2	Dichalcus									0	0	1$\frac{7}{24}$
28	4	2	Hemiobolum								0	0	2$\frac{7}{12}$
56	8	4	2	Obolus							0	1	1½
112	16	8	4	2	Diobolum						0	2	2½
224	32	16	8	4	2	Tetrobolum					0	5	0½
336	48	24	12	6	3	1½	Drachma				0	7	3
662	96	48	24	12	6	3	2	Didrachma			1	3	2
1324	112	96	48	24	12	6	4	2	Tetradrachma		2	7	0
1660	384	120	60	30	15	7½	5	2½	1¼	Pentadrachma.	3	2	3

An Account of all Gold and Silver coined at the British Mint from the 1st of January, 1816, to the 31st December, 1853.

Year.	Gold Coinage. £ s. d.	Silver Coinage. £ s. d.	Year.	Gold Coinage. £ s. d.	Silver Coinage. £ s. d.
1816	....	1,805,551 16 0	1835	1,109,718 8 10	146 665 4 0
1817	4,275,337 10 0	2 430,297 12 0	1836	1,787,782 5 5	497,719 4 0
1818	2,862,373 10 0	570,270 0 0	1837	1,253,088 8 2	75,385 4 0
1819	9,574 0 3	1,207,272 12 0	1838	2,855,364 15 0	174,142 4 0
1820	949,516 0 10½	847,717 4 0	1839	594,316 14 3	300,654 0 0
1821	9,520,758 18 0½	433,686 0 0	1840	....	207,000 0 0
1822	5,356,787 12 6	91 430 7 1	1841	378,472 10 0	89,641 4 0
1823	759,748 10 0	285,271 16 0	1842	5,977,664 18 2	192,852 0 0
1824	4,065,075 0 0	282,070 16 0	1843	6,607,849 10 0	239,580 0 0
1825	4,584,919 0 0	417,535 16 0	1844	3,593,949 7 0	610,632 0 0
1826	5,853,161 7 6	608,695 16 0	1845	4,244,608 10 0½	647,658 0 0
1827	2,512,636 17 6	33,019 16 0	1846	4 334,911 17 0	559,548 0 0
1828	1,008 559 2 6	16,288 3 1	1847	5,148,440 0 0	125,736 0 9
1829	2,446,754 12 6	108,250 15 0	1848	2,451,999 10 1	35,442 0 0
1830	2,987,881 2 6	151 16 0	1849	2,177,955 1 1	119,532 0 0
1831	5 8,517 5 0	33,696 5 8	1850	1,491,893 17 9	129,096 0 0
1832	3 737,065 10 0	145 4 0	1851	4,400,411 4 9	88 868 0 0
1833	1,2 5,269 13 6	145 4 0	1852	8,742,270 12 11	189 536 12 7
1834	66,949 12 5	432,775 4 0	1853	11,952,591 5 11	701,544 14 3
			Total..	121,246,028 7 9	14,837,046 12 8

The currency of France consists chiefly of gold and silver, in which larger payments are effected, and of copper coins for the smaller sums.

It appears that from 1803 to 1814 there were coined, with the effigy of Napoleon, at the different mints, of which there are thirteen in France, in gold to the value of £22,001,018, and in silver to the value of £36,992,502. From 1814 to 1828, the amount of the coinage was £17,081,635 in gold, of twenty and forty franc pieces; and in silver the amount in pieces of five francs down to five sous was £33,996,560 bearing the effigy of Louis XVIII. and Charles X. On the above data, the amount of circulating specie in the kingdom was estimated, on the 1st of January, 1828, at 2,713,731,183 francs, equal in value to £113,072,132 sterling. The gold and silver currency, prior to the Revolution in 1789, was estimated at £87,500,000 sterling. We can scarcely, however, draw any positive inference from the quantity of gold and silver coined in France, respecting the amount of specie actually circulating, as within the last twenty-seven years the exportation of coin has been freely permitted. The coinage of France has accordingly become an article of trade; and bullion and coin have been freely exported or imported, according to the necessities of commerce. For the ten years preceding 1830, the quantity of bullion imported exceeded the quantity exported by £39,089,667.

The amount of the gold and silver coinage in France for 1853, with the value in francs and in sterling money, was:

Gold.	Coinage. Number.	Value. Francs.	Value Sterling £
20-franc pieces	15,641,500	312,830,000	12,513,200
10-franc pieces	1,763,346	17,633,463	705,336
Total gold	17,404,846	330,463,463	13,218,536
Silver	5,090,236	20,089,778	803,588
Copper	30,869,285	1,974,939	78,976
	53,364,367	352,528,180	14,101,120

Coinage of the United States.—The Annual Report of the Director of the Mint, for the year 1855, shows clearly the operation of the parent Mint and all the branches, as well as of the Assay Office at New York, for the whole year of 1855. It appears that the total coinage for the year was over $56,000,000; and that the aggregate coinage of the Mint and all its branches (including gold bars), from the year 1793, has been $498,866,595 82. The portions executed at the parent Mint, and at each branch, have been as follows:

Mints.	Commenced Business.	Coinage, 1855.	Total Coinage, 1793 to end of 1855.
Mint, United States, Philadelphia	1793	$12,945,952 93	$377,383,808 87
Branch, New Orleans	1838	2,308,500 00	57,386,665 00
Branch, Dahlonega	1838	116,778 50	5,690,266 00
Branch, Charlotte, North Carolina	1838	217,935 50	4,222,626 50
Branch, San Francisco	1854	21,121,752 43	30,853,326 04
Assay Office, New York	1854	20,441,813 03	23,320,372 81
Total	....	$56,312,732 99	$498,866,565 82

The domestic production of gold, so far as is indicated by the deposits at the Mint, amounts to more than three hundred and twenty-two millions of dollars from the year 1793 to 1855, both inclusive. Of this large sum, the gross product to the end of the year 1848 was little more than thirteen millions of dollars, as is shown by the annexed table. To this aggregate of three hundred and twenty-two millions of dollars should be added several millions as the export from California, via Panama, to Southampton, and also the export to China and elsewhere.

STATEMENT OF GOLD AND SILVER, OF DOMESTIC PRODUCTION, DEPOSITED AT THE MINT AND BRANCHES AND ASSAY OFFICE AT NEW YORK, FROM 1804 TO THE END OF 1855.

Years.	Gold.	Silver.
1804–1827	$110,000 00	....
1828–1837	5,065,500 00	....
1838–1847	7,638,075 00	$64,482
1848	890,075 00	9,191
1849	7,079,144 00	39,112
1850	30,938,314 00	269,253
1851	56,540,612 00	389,471
1852	54,506,963 00	404,404
1853	55,622,051 00	417,279
1854	57,258,158 23	328,199
1855	49,351,770 11	333,053
Total	$331,002,271 34	$2,251,534
Deduct re-deposits of 1854	8,041,137 00	....
Actual amount to 1855	$322,961,134 34	$2,251,534

Of this aggregate, about ninety-four per cent. has been produced by California, namely:

California (eight years)		$313,235,502 77
North Carolina	$8,282,152 55	
Georgia	6,488,032 86	
Virginia	1,458,210 50	
South Carolina	1,154,305 44	
Alabama	192,205 02	
Tennessee	80,193 00	
New Mexico	45,937 00	
Other sources	64,851 00	
		17,766,708 57
Total		$331,002,271 34
Deduct re-deposits of 1854		8,041,137 00
Net product of the States		$322,961,134 34

The gold mines of North Carolina are still in working order, with a large outlay of capital for their prosecution; but the average results may be considered as not very profitable to the shareholders.

The reduced coinage at Philadelphia for 1855 is accounted for by the unavoidable delays in the repairs at the Mint, authorized by an appropriation made by Congress for this purpose in 1855. These repairs and alterations were commenced 19th July last, and occupied six months.

The total value of the coinage of the United States, from the year 1793 to 1855, both inclusive, has been within a fraction of five hundred millions, namely:

Mints.	Gold.	Silver.	Copper.	Total.
Philadelphia	$295,371,682 66	$80,440,020 90	$1,572,106 31	$377,383,808 87
San Francisco Branch, 1854	30,689,251 61	164,075 00	....	30,853,326 04
New Orleans " 1838–1855	37,856,865 00	19,556,800 00	....	57,386,665 00
Charlotte " 1838–1855	4,222,626 50	....	....	4,222,626 50
Dahlonega " 1838–1855	5,690,266 00	....	....	5,690,266 00
Assay Office, New York, 1854	23,320,372 81	....	....	23,320,372 81
Totals	$397,154,464 61	$100,159,904 90	$1,572,196 31	$498,866,565 82

For the year 1855, the aggregate coinage, including fine bars, was $56,312,732 99, namely:

Mints.	Gold.	Silver.	Copper.	Total.
Philadelphia	$10,610,752 14	$1,449,170	$16,030 72	$12,945,952 93
San Francisco	20,957,077 43	164,075	....	21,121,752 43
New Orleans	459,500 00	1,918,000	....	2,308,500 00
Charlotte	217,935 50	....	....	217,935 50
Dahlonega	116,778 50	....	....	116,778 50
Assay Office	20,441,813 03	....	....	20,441,813 03
Totals	$52,795,457 20	$3,531,245	$16,030 78	$56,312,732 99

It will appear from this tabular view that the branch Mints at New Orleans, Dahlonega, and Charlotte could be advantageously dispensed with. The gold coinage last year at New Orleans was only $450,500, and the silver, $1,918,000. All this could have been done at Philadelphia; and now that the parent Mint is provided with new and improved machinery, all the silver coinage may as well be done at that point.

It appears that the annual coinage at the Georgia and North Carolina branches is less than the years 1818–1853—having declined from $900,000 in 1852, to $383,000 in 1855. According to a report made by Mr. J. Phillips Phenix, of the Committee on Commerce, to the House of Representatives, in September, 1850, when the coinage at these two branches was double what it is now, the expense of coinage was estimated as follows:

At Philadelphia	2·23 per cent.
At New Orleans	6·68 "
At Charlotte	9·00 "
At Dahlonega	9·97 "

At this time, the percentage at the branch Mints must be greater, as the work is less. Every dollar coined at the Charlotte and Dahlonega, probably costs ten cents; whereas the raw material could be transported, at a small cost, to Philadelphia or New York. The annual expense of thirty or forty thousand dollars for the maintenance of these two Mints could well be dispensed with, and the coinage executed at Philadelphia and New York. In fact, the heavy expense incurred by the government for the support of the Mint at New Orleans is entirely superfluous. The receipts of gold at that quarter are now too small to require the further working of a Mint there.

The Director of the Mint, in his report recently made, alludes to recent improvements in machinery which are calculated to facilitate coinage operations, and to produce more highly finished pieces, namely: "In the coinage of half eagles particularly, we shall be materially aided by a very remarkable machine lately invented. * * * This machine was manufactured at Paris, and has been introduced into the Mint there, and one of similar powers is also employed in the Mint of England. The one imported for the United States Mint is adapted to the half eagle only. It is justly regarded as a triumph of mechanism."

The largely increased production of gold in Australia and California, of late years, has, of course, stimulated the workings of the Mints of foreign countries. The coinage may be fairly estimated at about two hundred millions of dollars annually in gold, fifty millions in silver, and nearly one million in copper. We find the annexed summary of foreign coinage for the year 1853, the latest, to which we add that of the United States for the same year, all reduced to sterling:

SUMMARY OF THE COINAGE OF VARIOUS MINTS THROUGHOUT THE WORLD IN THE YEAR 1853.

Countries.	Gold.	Silver.	Copper.	Total.
Great Britain	£11,052,391	£701,544	£9,079	£12,663,008
France	13,218,586	808,588	78,996	14,101,120
Spain	....	350,724	....	350,724
Prussia	35,292	96,014	....	131,306
Austria	1,028,700	1,557,485	....	2,586,185
United States	11,042,781	1,815,514	13,412	12,871,707
India	128,000	4,240,000	63,600	4,426,600
Totals	£37,400,700	£9,594,869	£165,087	£47,130,650

The act of Congress to create new silver coins and to reduce the weight of the old denominations, has had a good effect in providing the country with an abundance of the small coins, and the new act passed by Congress in February, 1857, and now in force, will have the effect to drive out of circulation the old and depreciated Spanish coins that have for many years been in use.

The Act of Congress of February, 1857, in reference to the Coinage, will produce a very desirable reform in our currency of silver and copper coins. The new act authorizes the creation and distribution of a new cent, which relieves us of a hitherto ponderous coin—the comparative weights being as follows: Act of January 18, 1837, 168 grains; Act of February, 1857, 72 grains: difference, 96 grains. The former acts of Congress did not make *copper coins* a legal tender; and it has been disputed as to what amount they were receivable for debts; nor does the new act make them legal tenders for any sum. The new cent may be readily distinguished in the dark from the current silver coin. It presents about the same surface as the ten-cent piece, but is about double the thickness with a smooth edge; whereas the ten-cent piece has a milled edge.

With the aid of the twenty millions of dollars in small silver coins executed since the act of March 3, 1853, and the coinage of two or three millions more annually, for the next few years, the country will be liberally provided with small silver coins, that will not only enter into general circulation and effect the purposes intended, but they will not be liable to be used for the arts and manufactures, their legal value being about ten per cent. beyond that of their intrinsic value as metal.

According to a careful table prepared for the Augsburg *Allgemeine Zeitung*, published April 16, 1856, the following table will show the amount of gold and silver that has been extracted during various periods from the birth of Christ down to the year 1855:

Years.	Gold. Kilo.	Silver. Kilo.	Value. Francs.	Value. Dollars.
From A.D. to 1492	6,123,711	13,662,107	23,459,000,000	4,691,800,000
" 1492 to 1810	9,856,487	137,090,830	40,523,000,000	8,104,600,000
" 1810 to 1825	270,190	6,237,414	2,288,000,000	457,600,000
" 1825 to 1848	863,514	16,715,023	6,598,000,000	1,319,600,000
" 1848 to 1851	330,535	3,013,411	1,803,000,000	360,600,000
" 1851 to 1855	1,615,654	4,054,362	6,375,000,000	1,275,000,000
Total	....	....	81,046,000,000	16,209,200,000

PRODUCTION OF GOLD IN THE UNITED STATES.

STATEMENT OF GOLD, OF DOMESTIC PRODUCTION, DEPOSITED AT THE MINT AND BRANCHES TO THE CLOSE OF THE YEAR 1855.

Years.	Philadelphia.	San Francisco.	New Orleans.	Charlotte, N. C.	Dahlonega, Ga.	New York.	Totals.
1804–1827..	$110,000 00	....	....	....	....	....	$110,000 00
1828–1837..	5,063,500 00	....	....	....	....	....	5,063,500 00
1838–1847..	2,623,641 00	....	$119,6 9 00	$1,673,718 00	$3,218,017 00	....	7,635,075 00
1848.....	241,544 00	....	12,593 00	370,185 00	271,753 00	....	896,075 00
1849.....	5,767,092 00	....	677,189 00	390,732 00	244,131 00	....	7,079,144 00
1850.....	31,700,506 00	....	4,580,021 00	920,289 00	247,608 00	....	36,938,314 00
1851.....	47,074,520 00	....	8,770,722 00	316,061 00	379,309 00	....	56,540,612 00
1852.....	49,821,690 00	....	5,777,784 00	430,900 00	476,789 00	....	54,506,963 00
1853.....	52,857,931 00	....	2,006,673 00	805,157 00	452,200 00	....	55,022,051 00
1854.....	35,713,358 00	$10,542,281 23	961,511 65	213,606 00	280,225 00	$9,227,177 00	57,258,158 23
1855.....	2,691,497 65	20,860,437 26	411,517 24	216,988 86	116,652 07	25,054,686 11	49,351,779 11
Total....	$223,754,879 65	$31,702,718 49	$21,337,709 24	$4,238,236 86	$5,686,864 07	$34,281,863 11	$331,002,271 34
Deduct re-deposits of 1854							8,041,137 00
Actual amount of domestic gold deposited							$322,961,134 34

GOLD, SILVER, AND COPPER COINS OF THE UNITED STATES.

Coins.	Fineness.	Standard Weight.	Value.
GOLD COINS OF 1855–'56.		Grains.	Dollars.
Double eagle	·900	516·	20·00
Eagle	·900	258·	10·00
Half-eagle	·900	129·	5·00
Three dollars	·900	77·4	3·00
Quarter-eagle	·900	64·5	2·50
Dollar	·900	25·8	1·00
SILVER COINS OF 1853–'56.			
Dollar	·900	412·5	1·00
Half-dollar	·900	192·	·50
Quarter-dollar	·900	96·	·25
Dime	·900	38·4	·10
Half-dime	·900	19·2	·05
Three cents	·900	11·52	·03
COPPER COINS.			
Cent (1857)	····	168·	·01
Half-cent	····	84·	·005
New cent (1857)	····	72·	·01

COINAGE OF THE UNITED STATES.

GOLD AND SILVER COINAGE AT THE MINT OF THE UNITED STATES IN THE SEVERAL YEARS FROM ITS ESTABLISHMENT, IN 1792, AND INCLUDING THE COINAGE OF THE BRANCH MINTS AND THE ASSAY OFFICE (NEW YORK), FROM THEIR ORGANIZATION TO SEPTEMBER 30, 1857.

Years.	Gold.	Silver.	Aggregate.
	Dollars. Cts.	Dollars. Cts.	Dollars. Cts.
1793 to 1795 ...	71,485 00	370,683 80	442,168 80
1796	102,727 50	79,077 50	181,805 00
1797	105,422 50	12,591 45	118,013 95
1798	205,010 00	330,291 00	535,301 00
1799	213,285 00	423,515 00	636,800 00
1800	317,760 03	224,296 00	542,056 00
1801	422,570 00	74,758 00	497,328 00
1802	423,319 00	58,343 00	481,653 00
1803	253,377 50	87,118 00	345,495 50
1804	258,642 50	100,340 50	358,983 00
1805	170,397 50	149,388 50	319,756 00
1806	324,565 00	471,319 00	795,884 00
1807	437,495 00	597,448 75	1,034,943 75
1808	284,605 00	684,300 00	968,905 00
1809	109,375 00	707,376 00	876,751 00
1810	501,435 00	688,773 50	1,140,208 50
1811	437,905 00	668,340 00	1,106,245 00
1812	290,435 00	814,029 50	1,104,464 50
1813	477,140 90	620,951 55	1,098,091 50
1814	77,270 00	561,687 50	638,957 50
1815	3,175 00	17,308 00	20,483 00
1816	....	28,575 75	28,575 75
1817	....	607,783 50	607,783 50
1818	242,940 00	1,070,454 50	1,313,394 50
1819	253,015 00	1,140,000 00	1,393,015 00
1820	1,319,030 00	591,080 70	1,910,710 70
1821	189,225 00	825,762 45	1,015,087 45
1822	88,880 00	805,800 50	894,780 50
1823	72,425 00	895,550 00	967,975 00
1824	92,200 00	1,752,477 00	1,845,677 00
1825	156,385 00	1,564,583 00	1,720,068 00
1826	92,245 00	2,002,090 00	2,094,335 00
1827	131,565 00	2,869,200 00	3,000,765 00
1828	140,145 00	1,575,600 00	1,715,745 00
1829	295,717 50	1,994,578 00	2,290,295 50
1830	643,105 00	2,495,400 00	3,138,505 00
1831	714,270 00	3,175,000 00	3,889,270 00
1832	798,435 00	2,579,000 00	3,377,435 00
1833	978,550 00	2,759,000 00	3,737,550 00
1834	3,954,270 00	3,415,002 00	7,369,272 00
1835	2,786,175 00	5,443,003 00	8,229,178 00
1836	4,135,700 00	3,606,100 00	7,741,800 00
1837	1,148,305 00	2,030,010 00	3,244,315 00
1838	1,809,595 00	2,315,250 00	4,124,845 00
1839	1,375,740 00	2,098,636 00	3,474,376 00
1840	1,091,802 01	1,712,178 00	2,802,980 00
1841	1,102,037 50	1,115,875 00	2,217,972 50
1842	1,883,170 50	2,325,750 00	4,158,920 50
1843	8,302,787 50	3,722,250 00	12,025,037 50
1844	5,428,230 00	2,295,550 00	7,663,780 00
1845	3,755,447 50	1,873,200 00	5,629,647 50
1846	4,034,177 50	2,558,580 00	6,592,757 50
1847	20,221,385 00	2,374,450 00	22,595,835 00
1848	3,775 512 50	2,040,050 00	5,815,562 50
1849	9,907,761 50	2,114,951 00	11,122,711 50
1850	31,081,738 50	1,866,100 00	32,947,838 50
1851	62,614,492 50	774,307 00	63,388,800 50
1852	56 846,187 50	993,410 00	57,845,597 50
1853	55,213,906 04	9,077,571 00	64,291,477 04
1854	62,094,595 47	8,619,270 00	70,713,865 47
1855 (to Sep. 30)	41,100,757 03	2,802,745 00	43,960,202 03
1856 (to Sep. 30)	58,936,893 41	6,347,070 49	64,283,963 90
1857 (to Sep 30)	48,437,964 31	3,375,608 01	51,813,572 32
Total.....	492,880,403 06	108,275,083 40	601,155,486 46

By an act of Congress, 1 The old Spanish coins are receivable at the Treasury of the United States and several offices, at the Post-offices and Land-offices, at the following rates:

Quarter-dollar	20 cents.
Eighth-dollar	10 cents.
Sixteenth-dollar	5 cents.

[*But by the sixth section, they will be receivable at* 25, 12½, *and* 6¼ *cents, respectively, in exchange for the new cents.*]

2. Such old coins "shall not again be paid out or put in circulation, but shall be recoined at the Mint" for distribution.

3. All former acts authorizing the currency of foreign gold or silver coins, and declaring the same a legal tender in payment for debts, are repealed; but it shall be the duty of the Director of the Mint to cause assays to be made, from time to time, of such foreign coins as may be known to our commerce, to determine their average weight, fineness, and value, and to embrace in his annual report a statement of the results thereof.

4. The standard weight of the cent shall be seventy-two grains; composed of 88 per cent. of copper and 12 per cent. of nickel; and the coinage of the half-cent shall be discontinued.

5. Authorizes the Treasurer of the Mint to purchase the materials necessary for the coinage of the new cent.

6. It shall be lawful to pay out the said cent at the Mint in exchange for any of the gold and silver coins of the United States, and also in exchange for the former copper coins issued; and to transmit parcels of the said cents, from time to time, to the assistant treasurers and other officers for exchange; and it shall also be lawful for the space of two years from the passage of this act, *and no longer*, to pay out at the Mint the cents aforesaid for the fractional parts of the dollar herein before named at their nominal value of twenty-five, twelve and a half, and six and a quarter cents respectively.

7. Hereafter the Director of the Mint shall make his Annual Report up to the 30th June (instead of 31st December, as heretofore), so that the results of the year's operations may appear in the Annual Report of the Secretary of the Treasury.

In the Annual Report of the Director of the Mint of the United States for 1857, he says: "As my Report in January last presented a statement of the operations for the year 1856, this Report will embrace the operations since that time, namely, from the first day of January to the 30th of June, a period of six months.

"For the purpose of exhibiting in a condensed form the entire operations of the Mint and its branches, I present the annexed summary statement. It embraces the amount of gold and silver bullion operated upon from the time of their respective organizations to the 30th of June, 1857:

Mint of the United States, established	1793..		$394,895,449 61
Branch Mint at New Orleans,	"	1838..	59,423,415 00
Branch Mint at Dahlonega,	"	1838..	5,825,747 00
Branch Mint at Charlotte,	"	1838..	4,333,650 00
Branch Mint at San Francisco	"	1854..	71,909,473 63
Assay Office at New York	"	1854..	52,191,443 93
Total			$588,619,188 17

"Of this amount there has been received since the 1st of January, 1849, of native gold, the production of the United States, the sum of four hundred and two millions of dollars. If, in addition to this sum, we add the gold produced from Australia and other foreign countries during the same period, which may be stated to be about five hundred millions of dollars, and the production of silver bullion from all sources, which is at the rate of about forty millions per annum, it will be seen that within this comparatively brief period the world's supply of the precious metals has been increased to the extent of twelve hundred and forty-two millions of dollars."—Further information on COINS and COINAGE may be obtained by reference to the *Quarterly Rev.*, lxxii. 194; *North American Review*, lvi. 208 (C. F. ADAMS); HUNT'S *Merchants' Magazine*, v. 379, vii. 267, iv. 434; DE BOW'S *Review*, ii. 281; *Bankers' Magazine*, vol. x. (Professor DE MORGAN); *Manual of Coins*, by ECKFELDT and DU BOIS, of United States Mint.

Coir, a species of yarn manufactured ont of the husk of cocoa-nuts. The husks being steeped in water, the dry dusty substance mixed with the fibres is separated. These are afterward spun into yarn, and manufactured into cordage, that is deemed by some superior to that made of hemp. The goodness of coir depends on the fineness of the filaments, and on their being of a bright yellow color. About 2,500,000 lbs. weight are annually exported from Ceylon, principally to Calcutta, and other ports in the East Indies. It is also prepared in the Maldive Islands, and many other places; and is very extensively used throughout the East.—BERTOLACCI'S *Ceylon*; BELL'S *Commerce of Bengal, etc.*

Coke, or **Coak**, charred pit-coal, prepared for the smelting of iron ore by igniting the coals piled up in long ridges in the open air, and closing in the cinders with earth when brought to a glowing red heat. For the use of the manufacturers, the method hitherto most in practice has been to burn the small or screened coal in conical ovens, built of fire-stone or brick, the floor being generally about 6 feet in diameter, and the oven 8 feet high, while an aperture of 18 inches diameter is left at the top. The small coal is thrown in to the depth of 15 inches or more, and then ignited. The oven door is at first kept open, and the hole at the top left uncovered till the mass is red hot. The door is then closed, and by degrees the hole at the top is covered over with two large flat stones, gradually approaching each other, when the whole is left to cool. When sufficiently cooled, it is drawn out with long iron rakes, and the mass is found to have assumed a rude columnar arrangement. The oven is immediately charged again with small coal, which the heat remaining in the floor is found sufficient to ignite, and so the operation goes on. In both the above ways good cokes are made, but the volatile products are lost. To save these, Lord Dundonald proposed to burn the coals in a close furnace, to which he adapted an apparatus for conveying the coal-tar, with the ammoniacal products, into proper recipients. About the same time, Baron Von Haak, a German, constructed works in the neighborhood of Newcastle for distilling the small coal in large cast-iron cylinders upon the plan which has since been adopted in the gas-works, except that the soot from the furnace fires is, at Newcastle, during a certain period of the combustion, before any gray ashes have begun to arise, conveyed into a chamber contrived for the purpose, and collected for lamp-black. It is a curious circumstance, and illustrative of the changes which the carboniferous structure undergoes, that the coal increases in bulk by getting rid of its gas; eight sacks of coal will yield ten sacks of coke.

One of the curiosities in coke is that, although so granular in appearance, some of the particles have almost the hardness of the diamond, and are found fitted for cutting glass.—E. B.

Colliery, a place where coal is found in stratified masses, and excavated by manual labor, and commonly brought to the surface by mechanical power. The exact date when coal began to be used as a fuel is not very certain; the appearance, if not the use of the mineral, must have been known for a long time in districts where the deposit was naturally exposed; and, according to some authorities, it is mentioned as having been used in England in the ninth century, 852. In 1239 King Henry III. granted the privilege of digging coals to certain parties in Newcastle. Seven years afterward coal had become an article of export, and was "carried sea coal"; and in 1306, so extensive was the use of coal in London, that Parliament complained to the king of the nuisance "upon the great pollution of the air." In consequence of which proclamation was made against their further use, lest the health of the subjects of the shire should suffer during their residence in the metropolis. Blythe, writing in 1649, states "It was not many years since the famous city of London petitioned the Parliament of England against two nuisances or offensive commodities, which were likely to come into great use and esteem; and that was, Newcastle coals, in regard of their stench, etc.; and hops, in regard they would spoyle the taste of drinck, and endanger the people." In Belgium the earliest reference to coal was in 1198 or 1200, in the county of Liège, where, according to tradition, a blacksmith was the first to use it as fuel. In France the precise period of its adoption as a substitute for wood is not ascertained. The commencement of its use in Paris was in 1520, the coal being drawn, not from the mines of France, but from the collieries of Newcastle. In Scotland coal was known and used probably at a very early date. We are informed by Chalmers, the antiquary, that coal was worked at Bo'ness by William de Verepont before the end of the twelfth century, and that a tenth of the coals was paid to the monks of Holyrood House. It is more curious, however, than important here, to trace the date when mineral coal was first used as a fuel. The earliest employment of it in England in the manufacture of iron was in 1713, at Colebrookdale, in Scotland, about the commencement of the eighteenth century, and in France in 1782.—E. B. *See* COAL.

Collision (Fr. *Abordage*), in a general sense, is the act of any two or more bodies coming forcibly together; but in commercial navigation it means the shock of two ships coming into sudden and violent contact at sea, by which one or both may be more or less injured. From the great increase of navigation, the risk of accidents by collision at sea has been proportionally augmented. And it is, therefore, of much importance, 1st, to adopt such measures as may be most likely to prevent their occurrence; and, 2d, to determine by whom a loss, when it does occur, should be borne.

In regard to the first and most essential of these objects, it is effected, in part at least, by whatever contributes to the general improvement and security of navigation. At common law, every master of a ship is bound to keep a proper watch at sea, especially in channels much frequented by shipping, and to use every precaution to avoid coming into contact with other vessels. But this matter has been judged too important to be left wholly to depend on the good sense and care of individuals; and with a view to the securing of attention to this subject, and to the obviating of the confusion that would unavoidably arise were shipmasters left to follow their own ideas with respect to it, rules and regulations have been laid down in regard to the courses to be steered when ships are passing each other, the signals to be made during fogs, the number and description of the lights to be exhibited at night, and other particulars. In 1840, the Trinity House, in Great Britain, promulgated a rule of this sort; and though not in itself law, masters not complying with its instructions were held to be guilty of unseamanlike conduct, and the owners were made responsible for the consequences. Regulations similar to those contained in the Trinity rule have since been enacted by the Legislature. As there is no especial statute law in the United States, we follow in a measure the decisions of the English courts, and are governed by the precedents they have established.—*See* KENT'S *Comm.*, Lect. XLVII. The existing English statute law on the subject is embodied in the following clauses of the English Mercantile Shipping Act of 1854, 17 and 18 Vict. c. 104:

Regulations as to Lights and Fog Signals.—The following rules shall be observed with regard to lights and fog signals; viz.: 1. The Admiralty shall from time to time make regulations requiring the exhibition of such lights, by such classes of ships, whether steam or sailing ships, within such places and under such circumstances as they think fit, and may from time to time revoke, alter, or vary the same. 2. The Admiralty may, if they think fit, make regulations requiring the use of such fog signals, by such classes of ships, whether steam or sailing ships, within such places and under such circumstances

as they think fit, and may from time to time revoke, alter, or vary the same. 3. All regulations made in pursuance of this section shall be published in the London Gazette, and shall come into operation on a day to be named in the Gazette in which they are published, and the Admiralty shall cause all such regulations to be printed, and shall furnish a copy thereof to any owner or master of a ship who applies for the same, and production of the Gazette containing such regulations shall be sufficient evidence of the due making and purport thereof. 4. All owners and masters shall be bound to take notice of the same, and shall, so long as the same continues in force, exhibit such lights, and use such fog signals, at such times, within such places, in such manner, and under such circumstances as are enjoined by such regulations, and shall not exhibit any other lights or use any other fog signals, and in case of default the master, or the owner of the ship, if it appears that he was in fault, shall for each occasion upon which such regulations are infringed incur a penalty not exceeding £20.

Rule as to Ships meeting each other.—Whenever any ship, whether a steam or sailing ship, proceeding in one direction, meets another ship, whether a steam or sailing ship, proceeding in another direction, so that if both ships were to continue their respective courses they would pass so near as to involve any risk of a collision, the helms of both ships shall be put to port so as to pass on the port side of each other; and this rule shall be obeyed by all steamships and by all sailing ships, whether on the port or starboard tack, and whether close-hauled or not, unless the circumstances of the case are such as to render a departure from the rule necessary in order to avoid immediate danger, and subject also to the proviso that due regard shall be had to the dangers of navigation, and, as regards sailing ships on the starboard tack close-hauled, to the keeping such ships under command. *Rule for Steamers in narrow Channels.*—Every steamship, when navigating any narrow channel, shall, whenever it is safe and practicable, keep to that side of the fair way or mid-channel which lies on the starboard side of such steamship. *If Collision ensues from Breach of the above Rules, Owner not to be entitled to recover.*—If in any case of collision it appears to the court before which the case is tried that such collision was occasioned by the non-observance of any rule for the exhibition of lights or the use of fog signals issued in pursuance of the powers before contained, or of the foregoing rules as to the passing of steam and sailing ships, the owner of the ship by which such rule has been infringed shall not be entitled to recover any recompense whatever for any damage sustained by such ship in such collision, unless it is shown to the satisfaction of the court that the circumstances of the case made a departure from the rule necessary. *Breaches of such Rules to imply wilful Default.*—In case any damage to person or property arises from the non-observance by any ship of any of the said rules, such damage shall be deemed to have been occasioned by the wilful default of the person in charge of the deck of such ship at the time, unless it is shown to the satisfaction of the court that the circumstances of the case made a departure from the rule necessary.

An authority similar to that given to the Lords of the Admiralty by the clause of the Mercantile Shipping Act now quoted had been already given to them, and under that authority they issued the following regulations, which are now (1855) in force:

Steam Vessels.—All British sea-going steam vessels (whether propelled by paddles or screw) shall, within all seas, gulfs, channels, straits, bays, creeks, roads, roadsteads, harbors, havens, ports, and rivers, and under all circumstances, between sunset and sunrise, exhibit lights of such description, and in such manner as hereinafter mentioned; viz., *when under steam:* A bright white light at the foremast head; a green light on the starboard side; a red light on the port side. 1. The mast-head light is to be visible at a distance of at least five miles in a dark night, with a clear atmosphere, and the lantern is to be so constructed as to show a uniform and unbroken light over an arc of the horizon of twenty points of the compass, being ten points on each side of the ship, viz., from right ahead to two points abaft the beam on either side. 2. The green light on the starboard side is to be visible at a distance of at least two miles in a dark night, with a clear atmosphere; and the lantern is to be so constructed as to show a uniform and unbroken light over an arc of the horizon of ten points of the compass, viz., from right ahead to two points abaft the beam on the starboard side. 3. The red light on the port side is likewise to be fitted so as to throw its light the same distance on that side. 4. The side lights are, moreover, to be fitted with screens, on the inboard side, of at least three feet long, to prevent the lights from being seen across the bow. *When at anchor:* A common bright light.

Sailing Vessels.—We hereby require that all sailing vessels when under sail, or being towed, approaching or being approached by any other vessel, shall be bound to show between sunset and sunrise a bright light in such a position as can be best seen by such vessel or vessels, and in sufficient time to avoid collision. All sailing vessels at anchor in roadsteads or fair ways shall be also bound to exhibit, between sunset and sunrise, a constant bright light at the mast-head, except within harbors or other places where regulations for other lights for ships are legally established. The lantern to be used when at anchor, both by steam vessels and sailing vessels, is to be so constructed as to show a clear good light all round the horizon. We hereby revoke all regulations heretofore made by us relating to steam vessels exhibiting or carrying lights; and we require that the preceding regulations be strictly carried into effect after the 1st day of August, 1852.

Directions for Fitting the Lights.—The manner of fitting the colored lights is to be particularly attended to. They should be fitted each with a screen of wood on the inboard side, in order to prevent both being seen at the same moment from any direction but that of right ahead. This is important, for without the screens (a principle first introduced with this plan) any plan of bow-lights would be ineffective as a means of indicating the direction of steering. This will be readily understood by a reference to the illustrations, where it will appear evident that in any situation in which two vessels may approach each other in the dark, the colored lights will instantly indicate to both the relative course of each; that is, each will know whether the other is approaching directly or crossing the bows, either to starboard or to port. This intimation is all that is required to enable vessels to pass each other in the darkest night, with almost equal safety as in broad day, and for the want of which so many lamentable accidents have occurred. Patterns of the lanterns to be carried, and of the mode in which the screens are to be fitted, may be seen at the custom-houses of the principal commercial ports in the United Kingdom. The system of night lights laid down in the above regulations has been adopted in her majesty's service, and by the governments of the principal foreign maritime nations.

Every master of a ship is bound, as well by the duty he owes to his employers and to those on board his ship, as by positive rule, to keep a proper watch at sea, especially in channels much frequented by shipping, and to use every precaution to avoid coming into contact with other vessels. In order still better to provide against danger, and to obviate disputes, the Trinity House promulgated, on the 30th of October, 1840, the following Rule of Navigation:

Rule of Navigation issued by the Trinity House.—The attention of this Corporation having been directed to the numerous severe, and in some instances fatal, accidents which have resulted from the collision of vessels navigated by steam, and it appearing to be indispensably necessary, in order to guard against the recurrence of similar calamities, that a regulation should be established for the guidance and government of persons intrusted with the charge of such vessels; and whereas, 1. *The recognized rule for sailing vessels* is, that those having the wind fair shall give way to those on a wind; that when both are going by the wind, the vessel on the starboard tack shall keep her wind, and the one on the larboard tack bear up strongly, passing each other on the larboard hand; that when both vessels have the wind large or abeam, and meet, they shall pass each other in the same way on the larboard hand, to effect which two last-mentioned objects the helm must be put to port; and as steam vessels may be considered in the light of vessels navigating with a fair wind, and *should give way to sailing vessels on a wind of either tack*, it becomes only necessary to provide a rule for their observance when meeting other steamers, or sailing vessels going large.

Under these considerations, and with the object before stated, this Board has deemed it right to frame and promulgate the following rule, which, on communication with the Lords Commissioners of the Admiralty, the Elder Brethren find has been already adopted in respect of steam vessels in her majesty's service; and they desire earnestly to press upon the minds of all persons having charge of steam vessels the propriety and urgent necessity of a strict adherence thereto; viz.: 2. *Rule for Steam Vessels on different Courses.*—When such vessels must inevitably or necessarily cross so near that, by continuing their respective courses, there would be a risk of their coming in collision, each vessel shall put her helm to port, so as always to pass on the larboard side of each other. A steam vessel passing another in a narrow channel must always leave the vessel she is passing on the larboard hand. By order,

J. HERBERT, Secretary.

TRINITY HOUSE, *London, 30th October*, 1840.

It may, however, be proper to state that neither this nor any rule of the sort is to be regarded as inflexible, or to be followed at all hazards. The safety of the ship is the paramount consideration, and no master is justified in abiding by a rule, when by doing so he plainly incurs danger. A. may be in his proper course, but if by pursuing it he will run a great risk of coming into collision with B., who is upon a wrong course, he is bound to alter his course so as to avoid a collision. The fact of one master being ignorant, careless, or at fault, is no reason why another should not use every means in his power to provide for the safety of his ship, and, consequently, of the lives and property intrusted to his care.

The conditions under which cases of collision take place differ extremely. Thus, 1st. It may be merely accidental, or be occasioned by circumstances beyond the power of control, as by the violence of the wind or waves dashing or impelling the ships together, without blame being imputable to either party; or, 2d. It may be owing to the culpable negligence or misconduct of one party; or, 3d. Both parties may be to blame. In adjudicating upon losses growing out of collisions that have taken place under such different circumstances, the conclusions must also be very different.

With respect to the first class of cases there is little apparent difficulty: wherever a loss is occasioned by a storm, a fog, or other accidental circumstance without any blame being ascribable to either party it would appear to be equitable that it should be borne by the sufferer. And this principle having been embodied in the Roman law, was subsequently ingrafted into that of England.—MARSHALL *on Insurance*, cap. 12, § 2. But other authorities, to whom the greatest deference is due, contend that the loss arising from accidental collisions, however it may affect the parties, should be equally divided between them; and this fact, is the rule followed in most maritime states.—*Ordonnance* of 1681, lib. iii. tit. xii. art. 10, with the observations of Valin. It also is the rule sanctioned by the law of England in cases where both parties are to blame, but where the blame can not be discriminated. Those cases in which the blame is clearly ascribable to either party present no difficulty.

The leading doctrines of the law of England with regard to collisions have been clearly and succinctly stated by Lord Stowell. "In the first place," says his lordship, "a collision may happen without blame being imputable to either party, as when the loss is occasioned by a storm or any other *vis major*. In that case the misfortune must be borne by the party on whom it happens to light; the other not being responsible to him in any degree. Secondly, a misfortune of this kind may arise where both parties are to blame, where there has been a want of due diligence or of skill on both sides; in such a case the rule of law is, that the loss must be apportioned between them, as having been occasioned by the fault of both of them. Thirdly, it may happen by the misconduct of the suffering party only; and then the rule is, that the sufferer must bear his own burden. Lastly, it may have been the fault of the ship which ran the other down, and in this case the innocent party would be entitled to an entire compensation from the other."—2 DODSON'S *Admiralty Reports*, 83.

We may add that the rule of the equal division of the damage where both vessels are to blame has been, since Lord Stowell's time, fully recognized and finally established by a decision of the House of Lords, on an appeal from Scotland.

Various authorities have spoken disparagingly of the rule now referred to, and have called it a *judicium rusticorum*; and it would, no doubt, be very desirable in cases of collision where both parties are to blame, that the neglect or culpability of each should be accurately determined, and the damages assessed accordingly. But from the obscurity in which such cases are almost always involved, and the conflicting testimony brought forward by the different parties, the difficulties in the way of this being done are usually quite insuperable; and it is better to adopt a rule which, though perhaps less equitable in principle, is fairer in its application than any other that could be adopted. Of its expediency there can, indeed, be no reasonable doubt. The observations of Valin are, in this respect, quite conclusive. "C'étoit," says he, "le moyen le plus propre à rendre les capitaines ou maîtres des navires extrêmement attentifs à eviter tout abordage, surtout ceux des bâtimens foibles et plus susceptibles d'être incommodés par le moindre choc, en leur rendrant toujours présent la crainte de supporter la moitié du dommage qu'ils en pourroient recevoir. Et si l'on dit qu'il auroit été plus simple et plus court de laisser pour le compte particulier d'un chacun le dommage qu'il auroit reçu, comme provenant d'un cas fortuit; la réponse est qu'alors les capitaines de gros navires n'auroient plus craint de heurter les bâtimens d'une beaucoup moindre force que le leurs: rien donc de plus juste que la contribution par moitié."—*Commentaire sur l'Ordonnance de* 1681, ii. 179, ed. 1776.

In apportioning the damage in cases where both parties have been in fault, the question occurs, whether the damage done to the cargo shall be taken into account or left out in the estimate on which the apportionment is to be made. This knotty point has been differently decided in different countries. But the rule which limits the liability of owners to the value of the ship and freight applies to cases of damage by collision. For further observations on this curious and important subject, in addition to Valin and the other authorities already referred to, the reader may consult the chapter on collision added by Mr. Serjeant Shee to his edition of Lord Tenterden's work on the Law of Shipping, and the chapter on the same subject in Maude and Pollock's Treatise on the Law of Merchant Shipping.

Number of Collisions at Sea.—A statement has been prepared by Mr. John A. Rucker, underwriter, giving a classification of the number of collisions at sea reported in Lloyd's lists during the five years from 1845 to 1849 inclusive. It thence appears that the annual numbers were 603, 564, 699, 633, and 565; so that there was a decrease in 1849, notwithstanding the increased traffic of that year. The total collisions of the five years amounted to 3064. Of these 279 were cases in which a vessel was sunk, run down, or abandoned; 189 were cases in which there was serious damage; 686 in which the damage, although less, was still considerable; and 1910 in which it was only slight. The average of steamers in contact with steamers during each year is about 11; of steamers in contact with sailing vessels about 37; of sailing vessels in contact with steamers 36; and of sailing vessels in contact with sailing vessels 533. Since that time the number of collisions has been increasing; and in the years 1855 and 1856 they have been particularly large in number; and attended with great loss of life, especially in the cases of the *Arctic*, the *Pacific*, and the *Lyonnais*.

Colchicum Autumnale (*Meadow Saffron*, or *Autumn Crocus*), a plant of the natural order *Melanthaceæ*, is largely collected for medicinal use in England. Its infusion is well known as a powerful remedy for gout, and has long been celebrated in France under the name of *Eau Médicinale*. The cormus or bulb, and also the seeds, are used in medicine, and have a strong, persistent, bitter taste. Its medicinal virtues appear to be derived from a peculiar alkaloid, which has been termed *colchicia*. The best preparation is the wine of colchicum, prepared by digesting eight ounces of the seeds in forty ounces of sherry for about a week, shaking the vessel daily, and pressing out the liquor. The usual dose is from ten to fifty drops taken in water. It possesses intense activity as a poison. The plant derives its name from Colchis, in Armenia, where it is

said to have abounded.—E. B. *See* CHRISTISON *on Poisons.*

Colocynthis, Coloquintida, or **Bitter Cucumber** (Germ. *Koloquinten;* Du. *Bitter-appelen;* Fr. *Coloquintes;* It. *Coloquintida;* Sp. *Coloquintidas;* Arab. and Pers. *Hunzil*), the produce of an annual plant (*Cucumis colocynthis*, Linn.), growing in Turkey, Nubia, India, and other places, much resembling the cucumber in herbage. When ripe, the fruit is peeled and dried in a stove, and in this state is brought to England. It is inodorous, but has an extremely nauseous taste. It is an exceedingly powerful drastic cathartic. When it is larger than a St. Michael's orange, and has black acute-pointed ends, it is not good.—AINSLIE'S *Materia Indica.*

Cologne (Ger. *Köln;* ancient *Agrippina colonia*), a fortified city of Western Germany, formerly capital of electorate, now capital of Rhenish Prussia, on the left bank of the Rhine, across which a bridge of boats connects it with its suburb, Deutz, 45 miles north-north-west of Coblenz. Lat. of cathedral 50° 56′ 29″ N., long. 6° 57′ 52″ E. Population 78,500. It communicates by railroad with Hamm, Bonn, Aix-la-Chapelle, Mechlin, and has extensive passage traffic with steam-packets on the Rhine. It has manufactures of cotton-yarn and stuffs, silk fabrics, velvets, woolen cloths, hosiery, lace, cordage, tobacco, hats, wax-lights, starch, needles, clocks, gold and silver articles, vinegar, sealing-wax, earthen and lacquered wares, and twenty-four factories of *Eau de Cologne.* Its position gives it an extensive and increasing trade between Germany and the Netherlands, and under the French it was the capital dépôt of Roër. Population of arrondissement in 1849, 497,330.

Colonies: Colony Trade. *Colonies* are establishments founded in foreign countries by individuals who either voluntarily emigrate from, or are forcibly sent abroad by, their mother country. The *colony trade* is the trade carried on between colonies and their parent states.

1. ESTABLISHMENT OF COLONIES. *Greek Colonies.*—Various motives have, in different countries and ages, led to the formation of colonies. The Greek colonies of antiquity seem to have been chiefly founded by citizens whom the violence and fury of contending factions forced to leave their native land; but they were sometimes formed for the purpose of relieving the mother country of a redundant population, and sometimes also for the purpose of extending the sphere of commercial transactions, or of providing for their security. The relations between the mother country and the colony depended, in a great measure, on the motives which led to the establishment of the latter. When a colony was founded by fugitives forcibly expelled from their ancient homes; or when it was founded, as was frequently the case, by bodies of voluntary emigrants, who received no assistance from, and were in no respect controlled by, the parent state, it was from the first independent; and even in those rarer cases in which the emigration was conducted under the superintendence of the parent city, and when the colony was protected by her power and influence, the dependence was mostly far from being absolute and complete. The great bulk of the Greek colonies were really independent states; and though they commonly regarded the land of their forefathers with filial respect, though they yielded to its citizens the place of distinction at public games and religious solemnities, and were expected to assist them in time of war, they did so as allies only, on fair and equal terms, and never as subjects. Owing to the freedom of their institutions, and their superiority in the arts of civilized life to the native inhabitants of the countries among whom they were generally placed, these colonies rose in a comparatively short period to a high pitch of opulence and refinement; and many among them, as Miletus and Ephesus in Asia Minor, Syracuse and Agrigentum in Sicily, and Tarentum and Locri in Italy, not only equaled, but greatly surpassed, their mother cities in wealth and power.

Roman Colonies.—The Roman colonies were for the most part founded by and under the authority of government; being intended to serve both as outlets for poor and discontented citizens and as military stations or garrisons, to secure the subjection of the conquered provinces over which they were scattered. The most intimate political union was always maintained between them and the mother city. Their internal government was modeled on that of Rome; and, while their superior officers were mostly sent from the capital, they were made to contribute their full quota of troops and taxes, to assist in carrying on the contests in which the Republic was almost constantly engaged.

Spanish Colonies.—The early colonies of most modern nations were founded by private adventurers, influenced either by the hope of gain or by a desire to escape from religious persecution, without any wish to relieve the mother country of a surplus population or to bridle subjugated provinces. On their first institution, therefore, the modern colonies approached, though with some essential variations, more nearly to the Grecian than the Roman model; but the period of their freedom was of very limited duration. They were very soon subjected to laws and regulations framed in the metropolis, and calculated, as was to be supposed, rather to promote its interests than those of the colony. At a somewhat later period the foundation of colonial establishments was eagerly patronized by most European governments, in the view of extending commerce and of enriching the mother country, by securing to her the exclusive possession of the market of distant countries; and where, from the thinness of the aboriginal population, or their inferiority in the arts of civilized life, the colonists were enabled to amass fortunes with comparative rapidity. The Spaniards who first resorted to America after its discovery had no intention of settling in the country, or of colonizing it. The idea that gold and silver alone constituted wealth was then universally prevalent; and the bold and enterprising companions and followers of Columbus, instead of engaging in industrious undertakings, which they neither understood nor relished, sought only to enrich themselves by plundering the feeble and defenseless natives of the gold and silver in their possession, and of the abundance of which the most exaggerated accounts were immediately spread throughout Europe. When new adventurers arrived on an unknown coast, their single inquiry was, whether it abounded in gold. If it did, they remained, for some time at least, in the country; if not, they immediately set sail for some other quarter. *Auri rabida sitis a cultura Hispanos divertit,* is the expressive statement of a contemporary writer (Petrus Martyrus, in the *Novus Orbis* of Grynæus, p. 511). The slow progress of the Spanish colonies after their first discovery must principally be ascribed to this cause. The gold and silver accumulated by the natives were very soon exhausted; and the skill and energy of the successive swarms of adventurers, who continued to pour into the country, were principally directed to the unproductive and generally ruinous trade of mining. The few large fortunes that were made in this way, like the large prizes in a lottery, inflamed the cupidity of the multitude, and gave an appearance of credibility to the fabulous accounts of the excessive productiveness of the mines. After the gambling spirit which had exclusively actuated the early adventurers had begun to subside, the colonists gradually betook themselves to agricultural and commercial pursuits; and the vast variety of valuable productions with which Mexico and the other Spanish colonies abounded, the extreme richness of the soil, and their advantageous situation, would, had they been only tolerably well governed, have occasioned their rapid increase in wealth and civilization. But

a blind and intolerant despotism paralyzed their energies, and fettered and retarded their progress. All the abuses and defects of the government of Old Spain were transferred to, and multiplied in, the colonies. The whole property of those vast regions was considered as vested in the crown of Spain; and every law or regulation, whether of a local or general nature, affecting their government, emanated from the council of the Indies, in which it was supposed the king was always present. We can not stop to describe the sort of regulations to which the colonists were subjected with any degree of minuteness; but we may notice a few of them, to furnish the means of judging of their general spirit and probable effect. It was, for example, made a *capital* offense to carry on any intercourse with foreigners; and the inhabitants of the different colonies were even forbidden any intercourse with each other, unless under the strictest and most vexatious regulations. There were several articles, such as flax, hemp, and wine, which they were not permitted to cultivate; at the same time that the crown reserved to itself the monopoly of salt, tobacco, gunpowder, and some other less important articles. The alcavala, and other oppressive imposts, which had proved destructive of industry in Old Spain, were rigorously levied as well on the exports as on the imports of the colonies. No situation of power or emolument could be filled except by a native of Old Spain. The Catholic religion was established, to the exclusion of every other; and bishops, tithes, and the Inquisition followed in its train: while, in order still better to consolidate and strengthen the foundations of this monstrous despotism, the government endeavored to make the colonists insensible of their degradation, by proscribing every species of instruction, and watchfully opposing the introduction and progress of all useful knowledge. Under such circumstances, we can not be surprised that the continental colonists, among whom the monopoly system was maintained in its greatest purity, should have languished for above two centuries in a state of sluggish inactivity. Though surrounded by all the means of producing wealth, they were not generally wealthy. Oppression rendered them indolent; and went far to deprive them not only of the power, but also of the wish, to emerge from poverty. The progress of the colonists who occupied the West India Islands was not quite so slow. It is certain, however, that, down to the middle of last century, Spain reaped no greater advantage from the possession of Cuba, Hispaniola, and Porto Rico, than England or France from the smallest of its dependencies. In proof of this we may mention that the noble island of Cuba, which could without difficulty supply all Europe with sugar, did not, in 1750, produce a sufficient quantity even for the consumption of Old Spain. But the combined influence of an arbitrary and intolerant government, and of a degrading superstition, could not balance the means of improvement which the fertility of the soil, and the command thence arising over most of the necessaries and many of the conveniences of life, gave to the colonists. Owing also to the total incapacity of Old Spain to furnish her transatlantic provinces with a sufficient supply of the articles she had forced them to import from Europe, and the consequent extension of the contraband trade carried on with them by the other European nations, she had been compelled gradually to relax the severity of her commercial monopoly. A new impulse was thus given to the spirit of industry. The colonists began to be more sensible of the natural advantages of their situation, and less inclined to submit to the blind and bigoted policy of the Spanish court. In 1781, a rebellion broke out in Peru, in consequence of an attempt made by the government to establish a new monopoly in that province, which threatened to end in the total dissolution of the connection between Spain and South America, and was not quelled without great difficulty and much bloodshed. But the spirit of liberty, when once excited, could not be suppressed. It continued to gain ground progressively, until the commencement of the last contest between France and Spain interrupted the communication with the mother country, and gave the colonists an opportunity of proclaiming that independence which, after a lengthened and bloody struggle, they happily succeeded in achieving.

British Colonies.—The English, who, like all the other nations of Europe, had been impressed with mingled feelings of admiration and envy by the extent and importance of the acquisitions made by the Spaniards in the New World, speedily entered with enthusiasm and ardor into the career of discovery. Owing, however, to the bull which Ferdinand and Isabella had obtained from the Pope, conveying to them the ample donation of all the countries inhabited by infidels that the Spaniards had discovered or might discover, the English, to avoid encroaching on the dominions of their rivals, directed their efforts farther to the north. Several attempts to found colonies on the coast of America were made in the reign of Elizabeth by Sir Humphrey Gilbert, Sir Richard Grenville, Sir Walter Raleigh, and others. But in consequence of their ignorance of the country, the deficiency of their supplies of provisions, the loss of time in fruitless searches after gold, and the various difficulties incident to the first settlement of a colony, none of these attempts proved successful; and it was not until 1607 that a small body of adventurers founded the first permanent establishment of the English in America, at Jamestown, in Virginia. Letters patent were granted in 1609 by King James to the principal persons resident in London, by whom the expense attending the formation of the colony was to be defrayed, incorporating them into a company, and establishing a council in England for the direction of their proceedings, the members of which were to be chosen by, and removable at the pleasure of, the majority of the partners of the company; permitting whatever was necessary for the support and sustenance of the colony for the first seven years to be exported free of duty; declaring that the colonists and their descendants were to be secured in all the rights and privileges of Englishmen, the same as if they had remained at home or been born in England; and reserving only, as the stipulated price of these concessions, and in imitation of the policy of the Spaniards, *one-fifth* part of the gold and silver ore to be found in the colonies, which was to be paid to his Majesty and his successors in all time to come. In virtue of these powers, the company issued, in 1621, a charter or ordinance, which gave a legal and permanent form to the constitution of the colony. By this charter the supreme legislative authority was lodged, partly in the governor, who held the place of the sovereign, partly in a council of state named by the company, and partly in a general council or assembly composed of the representatives of the people, in which were vested powers and privileges similar to those of the House of Commons. It was not long, however, before the king and the company quarreled. The latter were in consequence divested of all their rights, partly by open violence, and partly under color of law, without compensation, after having expended upward of £150,000 in founding the colony; and a governor and council of state appointed by the king succeeded to the powers of those appointed by the committee.—Robertson's *History of America*, book ix. *passim*; Jefferson's *Notes on Virginia*, p. 179.

The founders of the colony in Virginia had been actuated solely by the hopes of gain; but the colonies that were soon after established in New England were chiefly planted by men who fled from religious and political persecution. The form of government in the New England colonies, though at first modified a good deal by the peculiar religious opinions entertained by the colonists, was in its leading principles essentially free. For a considerable period the colonists elected

their own governors, coined money, and exercised most of the rights of sovereignty; while the English, wholly engrossed with the contest between freedom and prerogative at home, had no leisure to attend to their proceedings. Subsequently to the Restoration, however, the governments of most of the New England States were established nearly on the same footing as that of Virginia; which, indeed, became the favorite model, not only for the constitution of the colonies established on the continent, with the exception of the proprietary governments of Pennsylvania and Maryland, but also for those that were established in the West India Islands. But under every vicissitude of government and fortune, the New England colonists were distinguished by the same ardent and enthusiastic love of liberty that had first induced them to quit their native land. Every thing relating to the internal regulation and administration of the different colonies was determined, in the colonial assemblies, by representatives freely chosen by the settlers. The personal liberty of the citizens was well secured and vigilantly protected. And, if we except the restraints on their commerce, the monopoly of which was jealously guarded by the mother country, the inhabitants of Virginia, Pennsylvania, and New England enjoyed nearly the same degree of freedom when colonists of England that they now enjoy as citizens of the powerful republic of North America. Their progress in wealth and population was in consequence quite unprecedented in the history of the world. The white population of the colonies had increased in 1776, at the commencement of the Revolutionary war, to above 2,000,000, and the value of the exports from Great Britain to them amounted to about £1,300,000 a year!

It is not difficult to discover the causes of the unexampled prosperity and rapid growth of our North American colonies, and generally of all colonies placed under similar circumstances. The North American colonists carried with them a knowledge of the arts and sciences practiced by a civilized and polished people. They had been trained from their infancy to habits of industry and subordination. They were practically acquainted with the best and wisest form of civil polity that had been established in Europe; and they were placed in a situation that enabled them, without difficulty, to remedy its defects, and to try every institution by the test of utility. But the thinness of the aboriginal population, and the consequent facility of obtaining inexhaustible supplies of fertile and unoccupied land, must certainly be placed at the head of all the causes which have promoted the rapid increase of wealth and population in the United States, and in all the other colonies both of North and South America. On the first foundation of a colony, and for long after, each colonist gets an ample supply of land of the *best quality;* and having no rent, and scarcely any taxes, to pay, his industry necessarily becomes exceedingly productive, and he has every means and every motive to amass capital. In consequence, he is eager to collect laborers from all quarters, and is both willing and able to reward them with high wages. But these high wages afford the means of accumulation, and, joined to the plenty and cheapness of the land, speedily change the more industrious laborers into proprietors, and enable them, in their turn, to become the employers of fresh laborers; so that every class participates in the general improvement, and capital and population advance with a rapidity hardly conceivable in old-settled and fully-peopled countries.

It has been frequently said that the establishment of the British American and West India colonies was a device of the supporters of the exclusive or mercantile system—that they founded them in the view of raising up a vast agricultural population, whose commerce should be confined entirely to an exchange of raw products for other manufactured goods. There is, however, no truth in these assertions. On the contrary, the charters granted to the founders of the settlement in Virginia distinctly *empower the colonists to carry on a direct intercourse with foreign states.* Nor were they slow to avail themselves of this permission; for they had, so early as 1620, established tobacco warehouses in Middleburg and Flushing; and the subsequent proceedings of the British government depriving them of this freedom of commerce, were the chief cause of those disputes which broke out in 1676, in an open rebellion of ominous and threatening import.—ROBERTSON'S *America.* It was not until the colonists had surmounted the difficulties and hardships incident to their first establishment, and had begun to increase rapidly in wealth, that their commerce became an object of importance, and that regulations were framed in the view of restricting its freedom, and of rendering it peculiarly advantageous to the mother country. The act of 1650, passed by the republican Parliament, laid the first foundations of the monopoly system, by confining the import and export trade of the colonies exclusively to British or colony built ships. But the famous Navigation Act of 1660 (12 Charles II. c. 18) went much farther. It enacted that certain specified articles, the produce of the colonies, and since well known in commerce by the name of *enumerated* articles, should not be exported directly from the colonies to any foreign country; but that they should first be sent to Britain, and there unladen (the words of the act are, *laid upon the shore*) before they could be forwarded to their final destination. Sugar, molasses, ginger, fustic, tobacco, cotton, and indigo, were originally enumerated; and the list was subsequently enlarged by the addition of coffee, hides and skins, iron, corn, lumber, etc. In 1739, the monopoly system was so far relaxed that sugars were permitted to be carried directly from the British plantations to any port or place southward of Cape Finisterre; but the conditions under which this indulgence was granted continued so strict and numerous down to 1803, when they were a good deal simplified, as to render it in a great degree nugatory (EDWARDS'S *West Indies*); and with this exception, the oppressive and vexatious restrictions on their direct exportations to foreign countries were maintained on most of the other *enumerated* commodities of any importance down to a late period.

But besides compelling the colonists to *sell* their produce exclusively in the English markets, it was next thought advisable to oblige them to *buy* such foreign articles as they might stand in need of entirely from the merchants and manufacturers of England. For this purpose it was enacted, in 1663, that "no commodity of the growth, production, or manufacture of Europe shall be imported into the British plantations but such as are laden and put on board in England, Wales, or Berwick-upon-Tweed, and in English-built shipping, whereof the master and three-fourths of the crew are English." The preamble to this statute, which effectually excluded the colonists from every market for European produce, except that of England, assigns the motive for this restriction to be, "the maintaining a greater correspondence and kindness between the subjects at home and those in the plantations; keeping the colonies in a firmer dependence on the mother country; making them yet more beneficial to it, in the further employment and increase of English shipping, and the vent of English manufactures and commodities; rendering the navigation to and from them more safe and cheap; and making that kingdom a staple, not only of the commodities of the plantations, but also of the commodities of other countries and places for their supply, it being the usage of other nations to keep their plantation trade exclusively to themselves." It was also a leading principle in the system of colonial policy, adopted as well by England as by the other European nations, to discourage all attempts to manufacture such articles in the colonies as could be provided for them by the mother country. The

history of the colonial system is full of efforts of this sort; and so essential was this principle deemed to the idea of a colony, that Lord Chatham did not hesitate to declare, in his place in Parliament, that "the British colonists of North America had *no* RIGHT *to manufacture even a nail for a horseshoe!*"—EDWARDS'S *West Indies*. And when such were the enactments made by the Legislature, and such the avowed sentiments of a great parliamentary leader and a friend to colonies, we need not be surprised at a declaration of the late Lord Sheffield, who did no more, indeed, than express the opinion of almost all the merchants and politicians of his time, when he affirmed that "THE ONLY *use of American colonies or West India islands is* THE MONOPOLY *of their consumption, and the carriage of their produce!*"*

COMMERCE OF THE PRINCIPAL NORTH AMERICAN COLONIES PREVIOUS TO THE REVOLUTION, 1700–1776.

Years.	New England.		New York.		Pennsylvania.		Virginia and Maryland.		Carolina.		Georgia.	
	Exports.	Imports.	Exports.	Imports.	Exports.	Imports.	Exports.	Imports.	Exports.	Imports.	Exports.	Imports.
	£	£	£	£	£	£	£	£	£	£	£	£
1700	41,436	91,918	17,567	49,410	4,668	18,629	317,302	173,481	14,058	11,003	....	....
1701	32,656	86,322	18,547	31,910	5,226	12,003	235,738	199,683	16,978	13,998	....	....
1702	37,026	64,625	7,965	29,991	4,145	9,342	274,782	72,891	11,870	10,460	....	....
1703	33,539	59,608	7,471	17,562	5,160	9,899	144,928	196,718	13,197	12,428	....	....
1704	30,823	74,896	10,540	22,294	2,430	11,819	264,112	60,458	14,067	6,021	....	....
1705	22,793	62,504	7,303	27,902	1,803	7,206	116,768	174,522	2,698	19,788	....	....
1706	22,210	57,050	2,810	31,588	4,210	11,087	149,152	58,015	8,652	4,001	....	....
1707	38,798	120,691	14,283	29,855	786	14,365	207,625	237,901	23,511	10,492	....	....
1708	49,635	115,565	10,847	26,899	2,120	6,723	213,493	79,061	10,340	11,996	....	....
1709	29,559	129,349	12,230	34,577	617	5,881	241,668	80,268	20,431	28,521	....	....
1710	31,112	103,358	8,203	31,475	1,277	8,594	188,429	127,639	20,703	19,013	....	....
1711	26,415	157,421	12,193	28,856	38	19,408	273,181	91,535	12,871	20,406	....	....
1712	24,699	128,105	12,466	18,524	1,471	8,464	297,941	134,583	29,394	20,015	....	....
1713	49,904	120,778	14,428	46,470	178	17,057	206,263	76,804	32,449	23,967	....	....
1714	51,541	121,283	29,816	44,643	2,663	14,927	280,470	128,873	31,260	23,712	....	....
1715	66,505	164,860	21,316	54,629	5,461	17,182	174,764	190,274	29,158	16,631	....	....
1716	69,595	121,156	27,197	52,173	5,193	21,942	281,343	179,695	46,287	27,272	....	....
1717	58,898	132,001	24,534	44,140	4,499	22,505	296,884	215,902	41,275	25,058	....	....
1718	61,501	131,885	27,331	62,966	5,588	22,716	316,576	191,925	46,385	15,841	....	....
1719	54,452	125,317	19,596	56,355	6,564	27,008	332,069	164,630	50,373	19,630	....	....
1720	49,206	128,769	16,836	37,397	7,928	24,531	331,482	110,717	62,736	18,290	....	....
1721	50,488	114,524	15,681	50,754	8,037	21,548	357,812	127,576	61,858	17,703	....	....
1722	47,955	153,722	20,118	57,478	6,882	26,997	283,091	172,754	79,650	34,374	....	....
1723	59,339	176,486	27,992	53,013	8,332	15,992	287,997	123,833	78,103	42,246	....	....
1724	63,585	168,507	21,191	63,020	4,057	30,324	277,344	161,894	90,504	37,839	....	....
1725	72,021	201,768	24,976	70,650	11,981	42,209	244,730	195,884	91,942	39,182	....	....
1726	63,816	200,882	28,307	84,866	5,960	57,634	324,767	185,981	93,453	43,934	....	....
1727	75,052	187,277	31,617	67,452	12,825	31,979	421,588	192,965	90,065	23,254	....	....
1728	64,680	194,590	21,142	81,634	15,230	57,478	413,080	171,992	91,175	35,067	....	....
1729	52,519	161,102	15,833	64,760	7,434	29,799	386,174	108,951	113,329	58,366	....	....
1730	54,701	208,196	8,740	64,356	10,689	48,592	346,823	150,931	151,739	64,785	....	....
1731	49,968	183,467	20,756	66,116	12,740	44,260	408,502	171,278	159,771	71,145	....	....
1732	64,095	216,600	9,411	65,540	7,024	41,098	310,790	148,289	126,207	58,298	....	828
1733	61,983	184,570	11,629	65,417	14,776	40,565	403,193	186,177	177,845	70,466	203	1,635
1734	82,252	146,460	15,597	81,758	20,217	54,592	373,090	172,086	120,466	99,658	18	1,921
1735	72,899	189,125	14,155	80,405	21,919	48,804	394,995	220,381	145,848	117,837	3,010	12,112
1736	66,788	222,158	17,944	86,000	20,786	61,513	380,163	204,794	214,083	101,147	....	2,012
1737	63,347	223,923	16,833	125,833	15,198	56,090	492,246	211,301	187,758	58,986	....	5,701
1738	59,116	203,233	16,228	133,438	11,918	61,450	391,814	258,860	141,119	87,793	17	6,406
1739	46,664	220,378	18,459	106,070	8,134	54,492	444,654	217,200	236,192	94,445	233	3,524
1740	72,389	171,081	21,498	118,777	15,048	56,751	341,997	281,428	265,560	181,821	924	3,524
1741	60,052	198,147	21,142	140,430	17,158	91,010	577,109	248,582	236,830	224,270	....	2,553
1742	53,166	148,809	13,536	167,591	8,527	75,295	427,769	264,186	154,607	127,063	1,622	17,018
1743	63,185	172,461	15,067	134,487	9,599	79,340	557,821	328,195	255,180	111,499	2	2,231
1744	50,248	143,982	14,527	119,920	7,446	62,214	402,700	234,856	192,594	79,141	....	769
1745	58,948	140,463	14,083	84,057	10,130	54,280	399,423	196,799	91,847	66,815	....	930
1746	38,612	200,177	8,841	86,712	15,779	73,693	449,371	283,545	76,897	102,869	....	984
1747	41,771	210,640	14,992	137,984	2,832	82,404	492,619	260,088	107,500	95,529	....	24
1748	29,748	197,682	12,358	143,311	12,363	75,530	494,852	252,624	167,305	160,172	....	1,314
1749	59,999	238,286	23,413	265,773	14,944	238,637	454,618	323,600	120,499	164,085	61	5
1750	48,455	343,650	35,632	267,180	28,191	217,713	508,939	349,419	191,007	134,637	7,942	2,125
1751	63,287	365,974	42,363	248,941	23,870	190,917	460,085	247,027	245,491	189,244	355	2,065
1752	74,313	273,340	40,648	194,050	29,978	201,666	569,453	325,151	288,264	150,777	1,526	3,163
1753	83,395	345,528	40,553	277,864	38,527	245,644	632,575	356,776	164,634	213,009	3,057	14,128
1754	66,538	329,433	26,663	127,497	30,649	24 ,947	573,435	523,513	507,238	149,215	3,230	1,974
1755	59,583	341,796	28,055	151,071	52,336	144,455	480,668	285,157	325,525	189,887	4,437	2,636
1756	47,359	384,371	24,073	250,425	20,041	209,169	537,759	426,687	222,915	181,780	7,155	536
1757	27,556	363,404	19,168	353,311	14,190	168,426	418,881	334,897	130,889	218,949	....	2,571
1758	30,204	465,094	14,200	353,555	21,383	260,953	454,362	438,471	150,511	181,002	....	10,212
1759	25,985	527,067	21,684	636,785	22,404	498,161	357,228	459,007	206,534	216,255	6,674	15,178
1760	37,802	599,647	21,125	480,106	22,754	707,998	564,451	605,882	102,760	218,181	12,108	....
1761	46,225	354,225	48,643	289,570	29,170	204,067	455,085	545,350	253,092	254,587	5,764	24,379
1762	41,733	247,585	58,852	283,043	38,091	260,199	415,709	418,569	181,265	184,176	6,522	25,761
1763	74,815	268,854	52,998	238,560	38,228	284,152	542,284	555,321	282,266	260,182	14,469	44,008
1764	88,157	459,765	53,697	515,416	56,258	435,191	559,508	515,192	541,727	305,808	31,325	18,358
1765	145,819	451,269	54,959	382,549	25,148	343,568	505,671	353,224	385,918	334,709	34,183	29,165
1766	141,733	409,642	67,020	330,829	26,851	327,314	461,096	372,548	293,587	296,732	53,074	67,268
1767	128,207	406,081	61,422	417,957	37,641	371,830	437,926	437,628	395,027	244,093	35,856	23,534
1768	148,375	419,787	87,115	482,930	59,404	432,107	406,048	475,984	508,108	289,868	42,402	36,562
1769	129,353	207,992	73,466	74,918	26,111	199,906	561,892	488,862	387,114	306,000	82,270	940
1770	159,011	394,451	69,882	475,991	28,109	134,881	435,024	717,782	278,907	146,273	55,532	56,193
1771	159,381	1,420,119	95,875	653,621	31,615	728,744	577,848	920,326	420,311	409,169	63,810	70,495
1772	126,265	824,830	82,707	348,970	29,133	507,909	528,404	703,916	425,925	449,010	66,053	92,466
1773	124,624	527,055	76,246	289,214	36,052	426,448	589,803	828,904	456,513	344,859	85,591	62,922
1774	112,248	562,478	80,908	437,937	69,611	625,652	612,050	528,736	432,302	378,116	67,647	57,618
1775	116,588	71,025	137,018	1,228	175,902	1,366	753,356	1,921	579,349	6,245	103,477	113,777
1776	702	55,050	2,318	....	1,421	365	73,226	....	13,668	....	12,569	....

* "During the war of the Revolution our commerce was suspended; after the peace, in 1783, our trade continued to languish; it had to contend with domestic and foreign obstacles; foreign nations entertained a jealousy concerning these States; at home a rivalship was prevalent among the several members of the confederacy, and checked the prosperity of the nation. Each of the thirteen independent sovereignties contemplated its own immediate interests; some of the States declared the commercial intercourse with them to be equally free to all nations."

POPULATION OF THE BRITISH NORTH AMERICAN COLONIES.

Colonies.	Colonial Population.			Increase per Cent. first 46 Years.	Increase per Cent. per Annum.	Increase per Cent. 9d Period, 26 Years.	Increase per Cent. per Annum.	Increase per Cent. in 74 Years.	Increase per Ct. per Ann. in 74 Years
	1701.	1749.	1775.						
Connecticut.....	30,000	100,000	202,000	233·33	4·65	102·00	6·23	773·33	10·45
Delaware.....	....	Incl. in Pa.	37,000	....	....	....	....	....	....
Georgia	....	6,000	27,000	....	....	350·00	13·46	....	....
Maryland	25,000	85,000	174,000	240·00	5·00	104·71	4·00	596·00	8·05
Massachusetts ..	70,000	220,000	352,000	214·29	4·46	60·00	2·31	402·86	5·44
New Hampshire.	10,000	30,000	102,000	200·00	4·17	240·00	9·23	920·00	12·43
New Jersey.....	15,000	60,000	138,000	300·00	6·25	130·00	5·00	820·00	11·08
New York.....	30,000	100,000	238,000	233·33	4·86	138·00	5·31	693·33	9·37
North Carolina ..	5,000	45,000	181,000	800·00	16·67	302·22	11·62	3520·00	47·57
Pennsylvania...	20,000	250,000	541,000	1150·00	23·96	80·40	1·40	1605·00	21·69
Rhode Island ...	10,000	35,000	58,000	250·00	5·21	65·71	2·53	480·00	6·49
South Carolina..	7,000	30,000	93,000	328·57	6·84	210·00	8·08	1228·57	16·60
Virginia.....	40,000	85,000	300,000	112·50	2·34	252·94	9·73	650·00	8·78
Whites.....	....	....	2,303,000						
Slaves, estimated	....	....	500,000						
All classes	262,000	1,046,000	2,803,000	299·24	6·23	167·97	6·46	969·85	13·12

At the beginning of the Revolution the Southern colonies had, therefore, 812,000 white inhabitants, and the Northern 1,491,000. Connecticut was the fourth State in rank. Massachusetts and Pennsylvania were each a third larger than New York, which was even excelled by Connecticut.—*United States Census Report*, 1850.

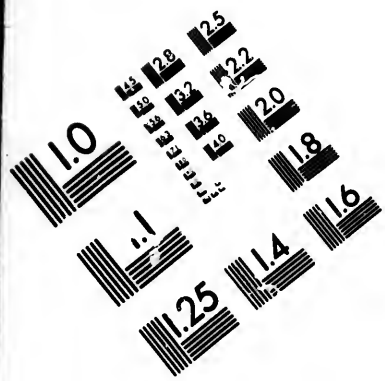
II. MAGNITUDE OF THE BRITISH COLONIES.—Notwithstanding the loss of the United States, the colonies of Great Britain, exclusive of India, exceed in number, extent, and value, those of every other country. Previously, indeed, to the breaking out of the late contests, the colonial dominions of Spain far exceeded in extent and importance those of any other power. But Cuba, Porto Rico, and the Philippine Islands are now all that remain to her. These, indeed, are very valuable possessions, though inferior to those of England.

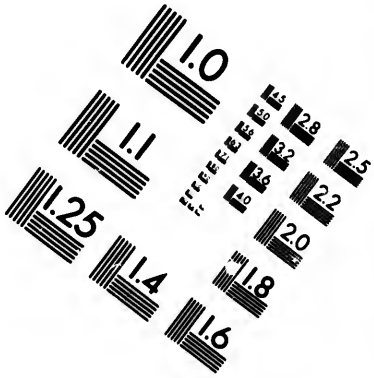
North American Colonies.—In North America, Great Britain possesses the provinces of Lower and Upper, or of East and West Canada, Nova Scotia, New Brunswick, Prince Edward's Island, and their dependencies. The situation and boundaries of these provinces will be more easily learned from the inspection of the map than they could be from any description. The shores of Nova Scotia and New Brunswick are washed by the Atlantic Ocean; and the noble River St. Lawrence, by its communication with the great American lakes, gives to Canada all the benefits of a most extensive inland navigation, and forms a natural outlet for her surplus produce, as well as for the surplus produce of that part of the United States which is washed by the lakes. There is every variety in the soil and climate of these regions. In Lower Canada the winter is very severe. The surface of the country is covered with snow for nearly half the year. From the beginning of December to the middle of April the St. Lawrence is frozen over, and affords a smooth and convenient passage for the sledges by which it is then covered. But though severe, the climate is far from being unhealthy or disagreeable. The weather is generally clear and bracing; and the labor of artisans, at their out-door employments, is rarely suspended for many days in succession. On the breaking up of the ice in the latter end of April or the beginning of May, the powers of vegetation almost immediately resume their activity, and bring on the fine season with a rapidity that is astonishing to a stranger. The highest temperature in Lower Canada varies from 96° to 102° of Fahrenheit; but the purity of the atmosphere abates the oppressive heat that is felt in most countries where the mercury ranges so high; and the weather is, on the whole, decidedly pleasant. That part of the province of Upper or West Canada which stretches from Lake Simcoe and the Rivers Trent and Severn, westward to Lake Huron and the St. Clair River, and southward to Lake Erie and part of Lake Ontario, has a soil of extraordinary fertility, capable of producing luxuriant crops of wheat and every sort of grain. "The climate," says Mr. Bouchette, late surveyor general of Lower Canada, "is so particularly salubrious, that epidemic diseases, either among men or cattle, are almost entirely unknown. Its influence on the fertility of the soil is more generally perceptible than it is in Lower Canada, and is supposed to be congenial to vegetation in a much superior degree. The winters are shorter, and not always marked with such rigor as in the latter. The duration of frost is always accompanied with a fine clear sky and a dry atmosphere. The spring opens, and the resumption of agricultural labors takes place, from six weeks to two months earlier than in the neighborhood of Quebec. The summer heats rarely prevail to excess, and the autumns are usually very friendly to the harvests, and favorable for securing all the late crops."—BOUCHETTE'S *Topographical Description of Canada*, p. 595. The ground on the shores of Lake Ontario and Lake Erie, as far west as the junction of the Thames with the St. Clair Lake, is laid out in townships, and partly settled. But the population is still very thin. To the north of the River Thames, along the banks of the St. Clair and the shores of Lake Huron, round to the River Severn, and thence to the river that joins Lake Nippissing and Lake Huron, is a boundless extent of country that is almost entirely unoccupied. The interior of this space has hitherto been but imperfectly explored; but the banks of the St. Clair and the shores of Lake Huron afford the finest situations for settlements. The soil is in many places of the greatest fertility, the river and lake teem with fish, and every variety of the best timber is found in the greatest profusion. The winters in the provinces of Nova Scotia, Prince Edward's Island, and New Brunswick are more severe than in Upper Canada, and they are a good deal infested with fogs and mists; but their proximity to England, and their favorable situation for the fishing business, give them considerable advantages. In addition to the above, Great Britain possesses the Hudson's Bay territory, a tract of vast extent, but situated in an inhospitable climate, and worth very little except as hunting-grounds. She also possesses the large islands of Newfoundland and Cape Breton, the latter being a dependency of Nova Scotia; but their soil is barren, and the climate severe and foggy; so that they are valuable principally as fishing stations. The following table exhibits the population of the different North American colonies at the under-mentioned epochs:

Colonies.	Population.	Date of Census.
Eastern (Lower) Canada	1,048,000	1854
Western (Upper) Canada.....	1,960,000	1854
New Brunswick	193,800	1851
Prince Edward's Isl. and C. Breton	62,634	1849
Newfoundland.....	96,506	1845
Nova Scotia	276,117	1850

Of the inhabitants of Lower Canada in 1844, no fewer than 518,565 were of French extraction, forming what is called the *Nation Canadienne*. In Upper Canada, on the other hand, the population is almost wholly of British origin.

West India Colonies.—In the West Indies the English possess Jamaica, Barbadoes, St. Lucia, Antigua,





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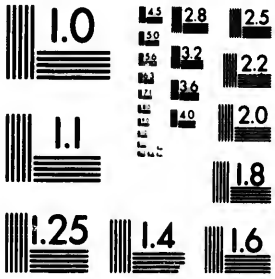

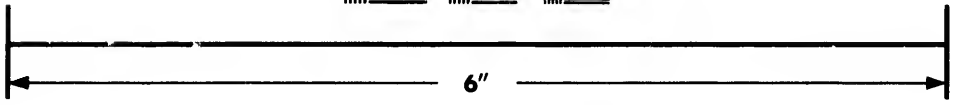

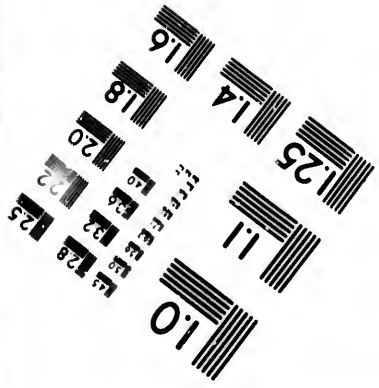

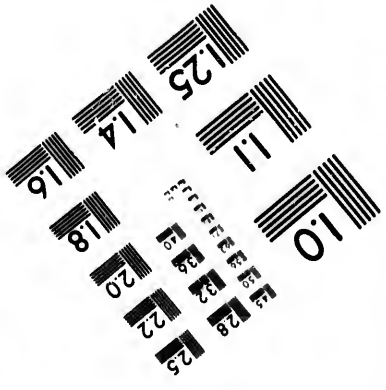

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Grenada, Trinidad, and some other islands, besides Demerara and Berbice in South America. Jamaica, by far the largest and most valuable of her insular possessions, is about 120 miles in length and 40 miles in mean breadth, containing about 2,800,000 acres, of which from 1,100,000 to 1,200,000 are supposed to be in cultivation. Being situated within the tropic of Cancer, the heat in the West Indies is intense, but is moderated by the sea-breeze which blows regularly during the greater part of the day. The rains make the only distinction of seasons. They sometimes fall with prodigious impetuosity, giving birth to innumerable torrents, and laying all the low country under water: the trees are green the whole year round: they have no snow, no frost, and but rarely some hail. The climate is very humid; iron rusts and corrodes in a very short time; and it is this, perhaps, that renders the West Indies so unfriendly to European constitutions, and produces those malignant fevers that are so very fatal. The vegetable productions are numerous and valuable; but the sugar-cane and the coffee-plant are incomparably more important than the others, and constitute the natural riches of the islands.

The West Indies are occasionally assailed by the most dreadful hurricanes, which destroy in a moment the hopes and labors of the planters, and devastate entire islands. Whole fields of sugar-canes are sometimes torn up by the roots, houses are either thrown down or unroofed, and even the heavy copper boilers and stills in the works have, in numerous instances, been wrenched from the ground and battered to pieces. The rain pours down in torrents, sweeping before it every thing that comes in its way. The destruction caused by such dreadful scourges seldom fails to produce a very great scarcity, and not unfrequently famine; and we are grieved to have to add, that the severity of the distress has on several occasions been materially aggravated by a refusal on the part of the authorities to allow importation direct from the United States! This was the case at Dominica so late as 1817. "It is stated in a report by a committee of the Assembly of Jamaica, that 15,000 negroes perished between the latter end of 1780 and the beginning of 1787, through famine occasioned by hurricanes and the prohibition of importation from the United States."—EDWARDS's *West Indies*, vol. ii. p. 515.

Jamaica was discovered by Columbus in 1494, and continued in possession of the Spaniards till 1655, when it was wrested from them by the English. Although it had thus been for more than a century and a half under the power of Spain, such was the deadening influence of her colonial system, that it did not, when it was conquered, contain 1500 white inhabitants, and these were immersed in sloth and poverty. Of the many valuable articles which Jamaica soon after produced in such profusion, many were then altogether unknown; and of those that were known, such a supply only was cultivated as was required for the consumption of the inhabitants. "The Spanish settlers," says Mr. Bryan Edwards, "possessed none of the elegancies of life; nor were they acquainted even with many of those gratifications which, in civilized states, are considered necessary to its comfort and convenience. They were neither polished by social intercourse nor improved by education; but passed their days in gloomy languor, enfeebled by sloth and depressed by poverty. They had been for many years in a state of progressive degeneracy, and would probably in a short time have expiated the guilt of their ancestors by falling victims themselves to the vengeance of their slaves."—*History of the West Indies*, vol. i. p. 297, 8vo ed.

For a considerable number of years after England obtained possession of Jamaica, the chief exports were cocoa, hides, and indigo. Even so late as 1772, the exports of sugar amounted to only 11,000 hogsheads. In 1774 they had increased to 78,000 hogsheads of sugar, 26,000 puncheons of rum, and 6547 bags of coffee. The American war was very injurious to the West India settlements; and they may, indeed, be said to be still suffering from its effects, as the independence of America led to the enactment of those restrictions to the importation of food, lumber, etc., that were so very hurtful to the planters. In 1780 Jamaica was visited by a most destructive hurricane, the devastation occasioned by which produced a dreadful famine; and other hurricanes followed in the immediately succeeding years. But in 1787 a new era of improvement began. The devastation of St. Domingo by the negro insurrection which broke out in 1792, first diminished, and in a few years almost entirely annihilated, the annual supply of 115,000 hogsheads of sugar, which France and the Continent had previously been accustomed to receive from that island. This diminution of supply, by causing a greatly increased demand for, and a consequent rise in the price of, sugar raised in the other islands, occasioned an extraordinary extension of cultivation. So powerful in this respect was its influence, that Jamaica, which at an average of the six years preceding 1799 had produced only 83,000 hogsheads, exported in 1801 and 1802 upward of 286,300 hogsheads, or 143,000 a year!

The same rise of price, which operated so powerfully in Jamaica, occasioned a similar though less rapid extension of cultivation in other islands, and in Cuba, Porto Rico, and the foreign colonies generally. The vacuum caused by the cessation of the supplies from St. Domingo being thus more than filled up, a reaction commenced. The price of sugar rapidly declined; and, notwithstanding a forced market was for a while opened to it, by substituting it for malt in the distillery, prices did not attain to their former elevation. On the opening of the Continental ports, in 1813 and 1814, they, indeed, rose, for a short time, to an extravagant height; but they very soon fell, involving in ruin many of the speculators upon an advance. Prices, however, continued at a pretty high level down to 1818; but they sustained a material fall in the course of the following year, and were comparatively low from that period down to 1835, when the extraordinary falling off in the supplies of sugar consequent to the measures connected with the emancipation of the slaves again occasioned a considerable rise of price. But, as already seen, this high price was entirely factitious, being wholly caused by our excluding foreign sugar from our market. Now that the sugar of Brazil, Cuba, and Java is admitted on paying reasonable duties, prices are comparatively low. And from the extraordinary facility with which sugar may be raised in the countries referred to and elsewhere, we have no idea, provided they adopt no rash or ill-advised measure in relation to slaves, that its price in their markets would be likely to sustain any material or permanent increase, even though the demand for it were doubled or more. The imports to England of sugar from her West Indian colonies, which amounted to 4,103,800 cwts. in 1831, sunk, in 1841, to 2,151,217 cwts.! In 1852 they amounted to 3,408,627 cwts.

The devastation of St. Domingo gave the same powerful stimulus to the growth of coffee in the other West Indian colonies that it did to the growth of sugar; and owing to the extraordinary increase in the demand for coffee in England and other European countries, the supply went on increasing till it was checked by the influence of the measures relating to slavery. In 1752, for example, only 60,000 lbs. of coffee were exported from Jamaica; in 1775 the export amounted to 440,000 lbs.; in 1797 it had increased to 7,031,621 lbs.; and in 1832, when it had attained its maximum, the exports to England only amounted to 19,405,933 lbs. Such, however, and so rapid has been their subsequent decline, that in 1852 the exports to England from Jamaica amounted to only 3,786,796 lbs.!

We have already seen that when Jamaica was taken

from the Spaniards it only contained 1500 white inhabitants. In 1678 the population amounted to 7768 whites, and 9504 slaves. It would have been well for the island had the races continued to preserve this relation to each other; but, unfortunately, the black population has increased more than *five* times as rapidly as the white; the latter having only increased from 7768 to about 30,000, while the former has increased from 9504 to about 310,000, exclusive of persons of color. The real value of the exports to Jamaica amounts to about £700,000 a year, being about one-third part of the exports to the West Indian colonies. It was formerly much more; but then a large portion of the articles sent to Jamaica, and some of the other colonies, were only sent there as to an *entrepôt*; being subsequently exported to the Spanish main. During the ascendency of the Spanish dominion in Mexico and South America, this trade, which was then contraband, was carried on to a great extent. It is now much fallen off, and is principally carried on from St. Thomas and Honduras.

Barbadoes was the earliest English possession in the West Indies. It is the most easterly of the Caribbean islands; Bridgetown, the capital, being in long. 59° 41′ W. Barbadoes is by far the best cultivated of all the West Indian islands. It contains about 105,000 acres, having (in 1852) a population of about 13,000 whites, 15,000 people of color, and 110,000 blacks. Of late years it has exported from 500,000 to 740,000 cwts. of sugar. Barbadoes had attained the acme of its prosperity in the latter part of the seventeenth century, when the white population is said to have amounted to about 50,000, though this is probably an exaggeration. But it is only as compared with itself that it can be considered as having fallen off; for, compared with the other West Indian islands, its superiority is manifest. It raises nearly as much food as is adequate for its supply. The islands next in importance are St. Vincent, Grenada, Trinidad, Antigua, etc. It is unnecessary to enter into any special details with respect to them, their population and trade being exhibited in the annexed tables. During the late war Great Britain took from the Dutch the settlements of Demerara, Berbice, and Essequibo, in Guiana, which were definitively ceded to them in 1814. The soil of these settlements is naturally very rich; and they have, in this respect, a decided advantage over most of the West Indian islands. Their advance was for a while very great, but recently their progress has been checked, and their exports have declined most materially. This, however, is entirely in consequence of the want of labor; for in other respects these colonies have every facility of production. Various schemes have been suggested for supplying this want; but none of them, unless they involve the principle of compulsory service, will, we apprehend, be successful. The rum of Demerara enjoys a high reputation. The best samples of Berbice coffee are very superior, and it used to be extensively cultivated both in that colony and in Demerara. In 1831 the exports amounted, from both colonies, to 3,576,744 pounds; but they have since declined to next to nothing, having amounted in 1852 to only 34,890 pounds. Considerable quantities of cotton were formerly exported from Guiana; but the Americans having superior facilities for its production, its culture has nearly ceased. Cocoa, annotto, etc., are produced, but not abundantly.

Exclusive of the above, the English possess the settlement of Balize, on the Bay of Honduras. This is of importance as affording a means of obtaining abundant supplies of mahogany; but it is of more importance as an *entrepôt* for the supply of Guatemala and Central America with English manufactured goods.

The exports from England to the West Indian colonies consist of coarse cottons, linens, checks, hats, and other articles of negro clothing; iron and steel, wrought and unwrought; leather, including saddlery and harness; glass; beer and ale; soap and candles; stationery; hardware and earthen-ware; staves, hoops, coal, lime, paint, lead; Irish provisions, herrings, and other salt fish; along with furniture, wine, beer, medicines, and indeed almost every article which a great manufacturing country can supply to one situated in a tropical climate, which has very few mechanics and hardly any manufactures. Since the opening of the ports on the Spanish Main to ships from England, the exports to the West Indies have decreased both in quantity and value; this decrease being, however, more than balanced by the increased shipments to Mexico, Colombia, etc. The declared or real value of the exports amounted, in 1852, to £2,031,358.

Money.—What used to be called West India currency was an imaginary money, and had a different value in different colonies. The value it bore, as compared with sterling money, was supposed to represent the corresponding value of the coins in circulation in the different islands at the time the proportion was fixed: these coins being for the most part mutilated and otherwise worn and defaced, currency was in all cases less valuable than sterling. The following are the old values of £100 sterling, and of a dollar, in the currencies of the different islands:

	Sterl.	Curr.	Dol.	Curr.
Jaimaca	£100	= £140	1	= 6s. 8d.
Barbadoes	£100	= £135	1	= 6s. 3d.
Windward Islands (except Barbadoes)	£100	= £175	1	= 8s. 3d.
Leeward Islands	£100	= £200	1	= 9s. 0d.

But latterly these currencies have been in great measure superseded by the introduction of sterling money, current at the same rates as in England, and of the Spanish dollar.

By an order in council of the 23d of March, 1825, British silver money was made legal tender throughout all British colonial possessions at the same nominal value as in England; and bills for the same are given on the treasury of London, of £100 each bill for £103 such silver money. By this order, also, the value of the Spanish dollar was fixed at 4*s.* 4*d.* British silver money throughout all the colonies where it is current; but this value was further reduced on the 21st of September, 1838, to 4*s.* 2*d.* The value of the doubloon was then also fixed at 64*s.*

Australian Colonies.—This group of colonies, though founded in a very distant part of the world, and at a comparatively recent epoch, will probably, at no very distant epoch, far surpass the others in magnitude and importance. The countries in which they are situated, including the great Australian continent, formerly called New Holland, with Van Diemen's Land or Tasmania, New Zealand, etc., are of vast extent, and differ in many respects from each other. Hitherto, also, by far the larger portion of the continent is wholly unexplored; and even the islands are but very imperfectly known. Enough, however, has transpired to show that this great division of the globe differs in some most important respects from most or all countries with which we were previously acquainted; and that it is, in fact, full of anomalies. The interior of the continent has not been sufficiently explored to enable any distinct opinion to be formed as to the height of the mountain chains; but it appears to be pretty well established that it has no great rivers, or at least none that reach the sea. Indeed, it seems, speaking generally, to be a law in this new world that rivers are largest near their source; and that they gradually diminish as they proceed, and most commonly dwindle into insignificance, or lose themselves in marshes, before they reach the ocean. In consequence, perhaps, of this singular constitution of its river system, it is found that in Australia the best land is not at the mouths, but toward the sources of the rivers. There are, no doubt, exceptions to this rule; but it appears to hold in the greater number of instances. Generally, also, the extent of fine land appears to be comparatively limited; and in so far as the continental portion of the country has been ex-

plored, it appears to be much better adapted for pasturage than for tillage.

Gold Deposits.—The land, the pasturage, the sheep, the copper and other ordinary minerals, which are found in abundance in various parts of Australia, have all been rendered, for the present at least, of no importance compared with the gold deposits with which the continent is so largely endowed. These, which were discovered so late as 1851, are of the most extraordinary richness. They exceed in productiveness not only the gold fields of California, but every thing, indeed, of which any idea could previously have been entertained. Australia has, in consequence, become an object of earnest and universal attention. An almost unparalleled amount of emigration has been directed to her shores. Her population and her trade are both increasing with gigantic strides; and her gold is influencing the wages, the prices, and the industry of every civilized people.—*See art.* AUSTRALIA *and* GOLD.

It were idle to indulge in speculations in regard to the period when the exhaustion of the Australian gold fields may be expected; there are no data on which to hazard even a conjecture on such a subject. But whether the supplies from them be destined to be of long or short duration, they have already been, and no doubt will continue to be, of great advantage. We do not mean by this to say or insinuate that the good resulting from the influx of gold from Australia and California has been unaccompanied by any drawbacks. The gambling and dissipation to which it has given rise are obvious. But these, though considerable, are but a trifling deduction from its many advantages; from the powerful stimulus it has given to industry and civilization, from the new channels it has opened to commerce, and from its greatly ameliorating the condition of the laboring classes in this and most other countries.

The northern portion of Australia, including, perhaps, about a third part of the entire continent, lies between the tropics; the other portion of the continent, with the adjacent islands of Van Diemen's Land and New Zealand, being in the south temperate zone. The climate of the different parts of the continent must, therefore, it is obvious, differ very widely. We, however, know but little of the climate of intertropical Australia, except that it is within the range of the Indian monsoon; that the temperature along the coast is rapidly raised by a wind from the south, which has been supposed to afford a strong presumption of the existence of sandy deserts in the interior; and that the air is so very moist that during the season of the monsoon iron implements are with the utmost difficulty preserved from rusting. It is commonly said that the climate of extra-tropical Australia, and especially of New South Wales, assimilates closely to that of Southern Italy. But this statement must be taken with considerable limitation; for, 1st. The atmosphere is very decidedly denser; 2d. The extremes of temperature are infinitely greater; 3d. The average heat is rather less; and, 4th. The temperature appears to decline more rapidly by increase of elevation. The grand defect in the climate of extra-tropical Australia appears to consist in the periodical recurrence of wet and dry seasons. Sometimes hardly a single drop of rain falls for an entire year or more; and though, happily, dews are in such seasons peculiarly abundant, they form no adequate substitute for rain. During long-continued droughts crops of all kinds are destroyed; and herbage, except in a few favored spots, suffers severely. Hence, as already stated, all the eastern parts of extra-tropical Australia, and perhaps also the southern, would seem to be much better fitted for pasturage than for husbandry. The droughts are exceedingly injurious to the latter, and they would necessarily involve any large population that depended principally on the indigenous products of the soil in extreme privations. Certainly, however, no country seems to be better fitted for grazing, or rather for the growth of sheep and wool. A dry climate is especially suitable to the latter; and though the pastures be far from luxuriant, their boundless extent compensates for every other deficiency. Sheep are not native to the country, a small flock of twenty-nine head having been introduced for the first time by the original English settlers in 1788. For a while, however, their value was not appreciated; but the importance of sheep-farming, and its suitableness to the country, having been demonstrated by John M'Arthur, Esq. (to whom the colony is under the greatest obligations), it has since increased with unprecedented rapidity. In proof of this, it may be stated that while the import of wool into Great Britain from Australia amounted, in 1822, to only 152,880 pounds, it had increased in 1825 to 411,600 pounds, in 1830 to 899,750 pounds, and in 1851 to the enormous amount of 41,810,137 pounds. Van Diemen's Land being less subject to droughts than New South Wales, husbandry is carried on in it to a greater extent, and with more advantage; but there also sheep-farming is the principal, and perhaps the most advantageous employment. —*See* VAN DIEMEN'S LAND. New Zealand, which has only been resorted to by regular colonists since 1840, is better fitted for agriculture than either Australia or Van Diemen's Land, and its climate is more like that of England. The ground in it is, however, rather difficult to clear; the natives are also much more formidable, and it is not so suitable for sheep-farming.

Population.—The European population of the Australian colonies is believed to have been, at the undermentioned dates, nearly as follows:

Colonies.	Years.	Population.
New South Wales	1851	197,168
Victoria, 31st December	1852	200,000
Van Diemen's Land	1850	70,000
South Australia	....	64,000
Western Australia	1850	7,000
New Zealand	1850	22,400
Total	....	560,568

Expenditure by Great Britain on the Australian Colonies.—England does not appear to spend any money in Victoria: the last parliamentary return on colonial expenditure does not mention that colony. The following table exhibits the amounts expended on four colonies in the years 1853–'54, and the purposes to which they were applied:

Colonies.	Military Charges.	Civil Charges.	Naval Charges.	Total.
South Australia	£10,248	£2	..	£10,250
New South Wales	61,198	10,036	£83	71,313
Van Diemen's Land	55,110	209,176	..	264,287
West Australia	35,711	98,123	..	133,834
Total	£162,262	£317,337	£83	£479,684

These totals do not really represent £479,685 spent by Great Britain on her Australian colonies; except South Australia, all are "penal settlements," or have been, and the large expenditure has mostly been incurred in guarding, disciplining, feeding, and clothing convicts. In fact, the Australian colonies cost her next to nothing, being but a small per cent. of what it would cost to keep convicts at home. Under the new constitution for the four free colonies, Western Australia has become a convict settlement by her own choice, and has the advantage of a large expenditure in consequence, the following sums having been reserved out of the revenue annually for the purposes indicated. The civil list includes the governor's salary, judicial salaries, and those of departments. The retiring allowances are for officials liable to removal on political grounds.

Colonies.	Civil List.	Retiring Allowances.	Public Worship.
Victoria	£40,500	£4,000	£50,000
New South Wales	20,550	5,000	28,000
Van Diemen's Land	13,300	2,175	15,000
South Australia	16,000	1,766	....
Total	£99,350	£13,941	£93,000

RETURN, ENUMERATING THE VARIOUS COLONIES, OF ANY IMPORTANCE, BELONGING TO GREAT BRITAIN, WITH THEIR POPULATION, TRADE, AND NAVIGATION.

Colonies.	Population, 1850, or last Census.	Imports into the United Kingdom, 1846. (Official Value.)	Declared Value of British and Irish Produce and Manufactures exported from the United Kingdom, 1851.	Number and Tonnage of Vessels, 1845.			
				Entered Inward into the United Kingdom.		Cleared Outward from the United Kingdom.	
		£	£	Ships.	Tons.	Ships.	Tons.
NORTH AMERICA.							
Canada East	900,000?	1,450,500	2,451,534	1580	629,824	1371	559,299
Canada West	952,004						
New Brunswick	193,800	372,807	442,198	1026	281,913	782	279,639
Nova Scotia	276,117	87,151	445,899	236	56,225	190	46,786
Cape Breton			57,109				
Prince Edward's Island	62,684						
Newfoundland	96,506	278,171	834,780	173	21,189	210	29,506
Total	2,481,061	2,188,719	3,730,880	3015	1,089,221	2508	914,980
WEST INDIES.							
Antigua	37,757	373,908	99,703	62	15,106	59	13,930
Barbadoes	135,939	611,608	410,479	82	21,251	83	22,840
Domiuica	22,200	94,742	33,595	12	2,027	10	2,888
Grenada	32,671	120,932	45,168	10	4,180	60	16,027
Jamaica	377,433	1,691,651	700,290	170	56,468	214	56,355
Montserrat	7,653	17,188	173	2	679	1	291
Nevis	9,601	46,764	2,208	11	1,729	5	801
St. Christopher	25,177	168,652	58,664	24	6,561	33	8,122
Anguilla	2,934						
St. Lucia	24,516	120,097	22,974	16	3,479	18	4,036
St. Vincent	30,128	256,404	73,201	20	8,011	24	6,786
Tobago	14,378	108,013	16,820	17	4,518	18	4,150
Tortola	6,689	10,162	....	1	221	2	432
Trinidad	68,600	689,491	275,185	96	22,892	110	25,644
Bahamas	27,519	68,745	32,088	89	5,529	20	2,565
Bermudas	11,092	29,871	32,485	2	218	28	10,238
British Guiana	127,695	1,227,043	389,054	174	44,460	212	59,350
Honduras	11,006	774,242	252,638	77	22,845	50	12,923
Total	970,448	6,428,263	2,433,665	889	220,588	964	263,278
Gibraltar	12,182	56,615	481,286	92	18,221	203	36,258
Malta and Gozo	115,864	168,068	801,448	71	11,550	190	37,062
Cape of Good Hope and Natal	293,279	779,547	752,393	175	47,460	110	27,186
Sierra Leone	44,472	79,146	94,546	52	12,297	60	15,387
Gambia	5,671		47,197				
Gold Coast	382,000	64,521	107,653	44	6,961	34	5,407
Ceylon	1,027,849	1,326,899	175,414	81	11,718	57	22,511
Mauritius	192,523	1,003,039	232,955	97	27,190	71	21,418
New South Wales	197,168	723,639	1,201,261	..	....	..	....
Victoria	200,000	....	604,403	..	....	..	....
Van Diemen's Land	70,000	189,241	420,022	..	....	..	....
Western Australia	7,000	61	84,726	99	86,158	146	58,537
South Australia	64,000	50,798	575,035	..	....	..	....
New Zealand	22,400	21,055	171,009	4	1,184	6	1,875
Ascension	550	....	2,841	..	....	1	180
St. Helena	5,490	22,867	22,248	9	2,101	14	2,724
Hong Kong	32,583	....	632,899	..	....	..	....
Heligoland	2,215	....	298	..	....	..	....
Total	3,278,646	4,460,005	5,658,969	664	174,849	898	228,504
Totals: North American	2,481,061	2,188,719	3,730,880	3015	1,089,221	2508	914,980
Totals: West Indian	970,448	6,428,263	2,433,665	889	220,588	964	263,278
Totals: Other colonies	3,278,646	4,460,005	5,658,969	664	174,849	898	228,504
General Totals	6,730,155	13,077,007	11,823,514	4518	1,484,658	4255	1,406,757

ACCOUNT OF THE TOTAL EXPENDITURE INCURRED BY THE UNITED KINGDOM FOR COLONIES AND MILITARY AND MARITIME STATIONS IN 1849-'50.

Military and Maritime Stations.	£	s.	d.
Gibraltar	210,740	18	10
Malta	169,388	12	6
Cape of Good Hope	291,459	12	3
Mauritius	116,307	9	2
Bermuda	123,075	2	4
St. Helena	60,805	6	11
Ascension	1,486	5	9
Heligoland	948	7	10
Ionian Islands	133,042	18	6
Falkland Islands	3,402	8	0
Hong Kong	132,270	0	5
Plantations and Settlements.			
Barbadoes			
Grenada			
St. Vincent			
Tobago			
Antigua			
Montserrat			
St. Christopher's	339,787	5	10
Nevis			
Anguilla			
Virgin Islands			
Dominica			
St. Lucia			
Trinidad			
British Guiana			

Plantations and Settlements.	£	s.	d.
Jamaica	155,931	6	5
Bahamas	22,058	18	6
Honduras	16,006	10	6
Canada	360,264	15	6
Nova Scotia	144,716	5	7
New Brunswick	11,984	5	4
Prince Edward's Island	8,680	9	9
Newfoundland	31,069	9	8
Sierra Leone	....		
Gambia	92,610	10	7
Cape Coast	....		
Ceylon	91,016	12	9
South Australia	3,905	16	8
North Australia	....		
New Zealand	150,241	14	7
Labuan	8,221	18	4
Penal Settlements.			
New South Wales	56,184	18	11
Van Diemen's Land	224,444	8	9
West Australia	18,920	11	5
General Charges	84,254	19	5
Total	2,979,928	15	11

III. OTHER COLONIES. *Spanish Colonies.*—Spain, whose colonial possessions extended a few years ago from the frontiers of the United States to the Straits of Magellan, is not at present possessed of a foot of ground in the whole American continent. Still, however, her colonial possessions are of great value and

importance. In the West Indies, she is mistress of Cuba and Porto Rico—the former by far the largest and finest of the West Indian islands, and the latter also a very valuable possession. In the East, Spain is mistress of the Philippine Islands, which, were they in the hands of an enterprising people, would speedily become of very great commercial importance.—*See the articles* HAVANA, MANILLA, PORTO RICO.

Dutch Colonies.—Java is the principal Dutch colonial possession, and it is one of which it is not easy to exaggerate the value and importance.—*See* BATAVIA. In the East, the Dutch also possess the Moluccas, Bencoolen, on the coast of Sumatra, Macassar, and the eastern coast of Celebes, Banda, etc. They have several forts on the Gold Coast in Africa; and in the West Indies they possess the islands of Curaçoa and St. Eustatius, Saba, and part of St. Martin; and on the continent of South America they are masters of Dutch Surinam. Curaçoa and St. Eustatius are naturally barren, but they have been both highly improved. From its being very conveniently situated for maintaining a contraband traffic with the Caraccas and other districts in South America, Curaçoa was formerly a place of great trade, particularly during war. But since the independence of South America, Curaçoa has ceased in great measure to be an *entrepôt*; the goods destined for the continent being now for the most part forwarded direct to the place of their destination. That district of Surinam ceded to the British in 1814, comprising the settlements of Demerara, Berbice, and Essequibo, formed the most valuable portion of Surinam, or Dutch Guiana. The district which still belongs to the Dutch lies to the south of Berbice. It contains about 38,000 square miles, and a population of about 65,000. It is daily becoming of more value and importance. The exports of sugar may amount to about 25,000,000 pounds, and those of coffee to about 4,000,000 pounds.

French Colonies.—Previously to the negro insurrection that broke out in 1792, St. Domingo was by far the most valuable colony in the West Indies. But this disastrous event, having first devastated the island, terminated in the establishment of the independent black republic of Hayti.—*See* PORT AU PRINCE. Having also sold Louisiana to the Americans, and ceded the Mauritius to the English, without making any new acquisition, the colonial dominions of France (for Algiers can not be reckoned among them) are at this moment of very limited extent. They consist of Guadeloupe and Martinique, and the small islands of Marie-Galante and Desceada, in the West Indies; Cayenne, in South America; Senegal and Goree, in Africa; the Isle de Bourbon, in the Eastern Ocean; St. Marie, in Madagascar; and Pondicherry and Chandernagor, with a very small surrounding territory, in the East Indies. The annexed tabular statements show the population, trade, etc., of the French colonies.

ACCOUNT OF THE POPULATION OF THE FRENCH COLONIES, AND OF THEIR COMMERCE WITH FRANCE, IN 1836.

Colonies.	Population, 1837.			Real Value, 1836.		Ships entered.		Ships cleared out.	
	Free.	Slave.	Total.	Imports into France.	Exports from France.	Ships.	Tonnage.	Ships.	Tonnage.
	Number.	Number.	Number.	Francs.	Francs.	No.	Tons.	No.	Tons.
Saint Pierre and Miguelon....	1,400	....	1,400	2,424,244	760,336	144	23,926	143	23,305
Martinique.....	40,043	77,459	117,502	16,423,433	17,062,292	358	48,861	353	122,214
Guadeloupe	32,059	95,609	127,668	24,575,141	22,119,138	518	70,027	543	69,656
Cayenne	5,006	16,592	21,048	3,121,752	2,093,106	42	6,792	45	7,050
Bourbon.....	36,805	69,296	106,099	16,743,809	9,804,940	156	43,830	149	43,483
Senegal	18,040	....	18,040 (1 Jan., 1836)	3,374,724	5,466,922	36	4,791	52	6,963
French factories in India (1835)	167,736	....	167,736	4,323,023	441,326	76	11,098	84	16,592
Totals	301,187	258,956	560,093	70,986,221	58,848,121	1330	209,325	1369	290,163

ACCOUNT OF THE QUANTITIES OF THE PRINCIPAL ARTICLES PRODUCED IN THE FRENCH COLONIES IN 1836.

Colonies and Establishments.	Sugars of all Qualities.	Coffee.	Cocoa.	Cotton.	Cloves and Spices.	Annotto.	Tobacco.	Gum.	Wax.	Skins.	Wood.
	Kilog.	Kilog.	Kilog.	Kilog.	Kilog.	Kilog.	Kilog.	Kilog.	Kilog.	Kilog.	Kilog.
Martinique	34,159,680	692,807	126,616	18,705	....	....	....	....	....	....	....
Guadeloupe	34,836,722	471,685	10,501	68,194	239	....	34,047	....	....	....	....
Bourbon.....	23,584,116	928,200	10,000	....	103,500	....	82,000	....	....	....	....
Cayenne.....	2,422,796	42,000	25,100	280,000	107,080	313,000	....	....	....	....	....
Senegal.....	....	1,422	1,447	....	....	....	....	1,791,519	45,134	227,728	40,569
										Cent. 896	
Factories in India (1835)..	....	52,084	....	6,720	....	....	....	....	....	Paq. 38	13,036
Totals.....	94,803,214	2,188,198	172,758	373,619	300,819	313,000	116,047	1,791,519	45,134	227,728	54,145
										Cent. 896	
										Paq. 38	

But it would appear from the following account of the exports from Martinique and Guadeloupe, in 1851, that the emancipation of the slaves has had much the same influence over production in the French colonies that it has had in the British colonies, without being, we believe, in any degree more advantageous to the blacks.

ACCOUNT OF THE EXPORTS OF NATIVE PRODUCE FROM MARTINIQUE AND GUADELOUPE IN 1851.

MARTINIQUE.		
Sugar, Muscovado.....	kil.	23,466,696
Sugar, clayed	—	807
Molasses.....	lit.	33,754
Rum.....	—	206,511
Coffee.....	kil.	110,983
Cocoa.....	—	149,033
Cassia	—	163,580
Logwood.....	—	50,260
GUADELOUPE.		
Sugar, Muscovado	kil.	20,048,888
Molasses	lit.	13,879
Rum.....	—	142,189
Coffee.....	kil.	221,218
Cotton	—	20,443
Cocoa.....	—	11,452
Cassia	—	165

Danish Colonies.—In the West Indies, these consist of the islands of St. Croix, St. Thomas, and St. John. St. Croix contains about 100 square miles, and has about 24,000 inhabitants. The soil is fertile, and it is well cultivated. The principal productions are sugar, rum, and coffee, the exports of sugar having formerly amounted to about 25,000,000 pounds a year. Probably, however, they have been diminished in consequence of the emancipation of the slaves in 1848. St. Thomas, which has about 14,000 inhabitants, has long been, and still continues to be, one of the principal emporiums in the West Indies. It owes this distinction partly to its convenient situation, partly to its spacious and safe harbor at St. Thomas, on the south side of the island, and partly and principally to the moderation of the import duties, which vary from 1 to 1½ per cent. St. Thomas has in consequence become, as it were, a depôt for the supply of the neighboring islands, goods being sent to it to be warehoused till opportunity offers for conveying them to their final destination. The great articles of importation are, manufactured goods, principally from England, but partly

also from other countries of Europe, with provisions, lumber, etc., from the United States. In India the Danes formerly possessed Tranquebar, near Madras; and Serampoor, near Calcutta; but these they sold, in 1845, to the East India Company.

Swedish Colonies.—The Swedes possess one colony—the small island of St. Bartholomew, in the West Indies. It is only about 25 square miles in extent, but is very fertile. It has no springs, nor fresh water of any sort, except such as is supplied by the rain. Population between 8000 and 9000.

Selection of Sites for Colonial Establishments.—Nothing can be more unwise than the plan, if so we may call it, hitherto followed in the selection of places at which to found colonies. The captain of a ship, without any knowledge whatever of the nature of soils or the capacities of a country in an agricultural point of view, falls in after a long cruise with a river or bay, abounding with fish and fresh water, and surrounded with land that *looks* fertile and is covered with herbage. He forthwith reports all these circumstances, duly embellished, and strongly recommending the situation as an admirable one at which to found a colony; and, in nine cases out of ten, *this* is all the information that is required in taking a step of such infinite importance. No wonder, therefore, that many fine schemes of colonization should have ended only in loss and disappointment; and that situations which the colonists were taught to look upon as a species of paradise have proved to be any thing but what they were represented. Botany Bay, though described by Captain Cook as one of the finest places in the world, had to be abandoned by the colonists that were sent out to it, as the country round it, instead of being favorable for cultivation, is a mere sandy swamp. Is it possible to suppose, had the proper inquiries been entered into, that any attempt would have been made to establish a colony in so pestilential a climate as that of Sierra Leone? The colony on Swan River, Australia, may be adduced as another instance of misplaced or premature confidence in the reports of those who were really without the means of forming a correct estimate of the various circumstances necessary to be attended to in forming a colony. We therefore hope that an end may be put to this system—a system which is in no common degree injurious to the public interests, and is highly criminal toward those who embark as colonists. The founding of a colony should be looked upon in its true point of view—as a great national enterprise. It is not an adventure to be intrusted to presumptuous ignorance, but should be maturely weighed, and every circumstance connected with it carefully investigated. Above all, the situation in which it is proposed to found the colony should be minutely surveyed; and its climate, soil, and capacities of production deliberately inquired into by competent persons employed for the purpose. Were this done, government and the public would have the best attainable grounds upon which to proceed; and neither party would have much reason to fear those disappointments which have hitherto so often followed the exaggerated representations of those to whom the important and difficult task of selecting situations for colonies has been delegated.

Columbia or Oregon River, in Washington and Oregon territories, and British possessions. Its northern branch takes its rise in the Rocky Mountains, in lat. 50° N., long. 116° W.; from thence it pursues a northern course to near M'Gillivary's Pass of the Rocky Mountains. At the boat encampment the river is 3600 feet above the level of the sea (here it receives two small tributaries—the Canoe River, and that from the Committee's Punch Bowl); from thence it turns south, having some obstructions to canoe navigation, and receiving many tributaries in its course to Colville, among which are the Kootanie, or Flat Bow, and the Flat Head, or Clarke River, from the east, and that of Colville from the west. This great river is bounded, thus far on its course, by a range of high mountains, well wooded, and in some places expands into a line of lakes before it reaches Colville, where it is 2040 feet above the level of the sea, having a fall of 550 feet in 220 miles. To the south of this it tends to the westward, receiving the Spokane River from the east (which is not navigable), and takes its rise from the Cœur d'Alene. Thence it pursues a westerly course for about 60 miles, receiving several smaller streams, and at its bend to the south it is joined by the Okanagan, a river that has its source in a line of lakes, affording canoe and boat navigation for a considerable extent to the northward. The Columbia thence passes to the southward until it reaches Wallawalla, in the latitude of 45°, a distance of 160 miles, receiving the Piscous, Y'Akama, and Point de Boise, or Entyatecoom, from the west, which take their rise in the Cascade range, and also its great southeastern branch, the Saptin, or Lewis, which has its source in the Wind River Mountains, and brings a large quantity of water to increase the volume of the main stream. The Lewis is not navigable, even for canoes, except in reaches. The rapids are extensive, and of frequent occurrence. It generally passes between the Rocky Mountain spurs and the Blue Mountains. It receives the Kooskooske, Salmon, and several other rivers from the east and west—the former from the Rocky Mountains, the latter from the Blue Mountains—and, were it navigable, would much facilitate the intercourse with this part of the country. Its length, to its junction with the Columbia, is 520 miles. The Columbia below this point forms the boundary between Oregon and Washington territories to the Pacific. The river at Wallawalla is 1286 feet above the level of the sea, and about 3500 feet wide; it now takes its last turn to the westward, receiving the Umatilla, Quisnel's, John Day's and De Chute rivers from the south, and Cnthlatate's from the north, pursuing its rapid course of 80 miles, previous to passing through the range of Cascade Mountains, in a series of falls and rapids that obstruct its flow, and form insurmountable barriers to the passage of boats by water during the floods. These difficulties, however, are overcome by portages around the falls. The waters here descend 40 feet in the distance of two miles. From thence there is still-water navigation for 40 miles, when its course is again obstructed by rapids. At the Dalles the river is compressed into a narrow channel 300 feet wide and half a mile long, and flows between high walls of basalt, and the water falls 50 feet in the distance of two miles. Thence to the ocean, 120 miles, it is navigable for vessels of 12 feet draft of water at the lowest state of the river, though obstructed by many sand bars. In this part it receives the Willamette from the south, and the Cowelitz from the north. The former is navigable for small vessels 20 miles, to the mouth of the Kiackamus, three miles below its falls; the latter can not be called navigable, except for a small part of the year, during the floods, and then only for canoes and barges. The width of the Columbia, within 20 miles of its mouth, is much increased, and it joins the ocean between Cape Disappointment and Point Adams, forming a sand-spit from each, by deposit, and causing a dangerous bar, which greatly impedes its navigation and entrance. The influence of the tides is felt 80 miles above its entrance into the Pacific. Its entire course is about 750 miles. During the year 1850, 160 vessels entered and departed from the ports of Columbia River. Vessels of a draft of 17½ feet have been safely taken over the south bar, and it is supposed that vessels drawing over 20 feet can enter safely. This noble river was discovered by Captain Gray, of Boston, in the year 1792, in the ship Columbia, and named from the ship. It was first explored from its sources to the sea in 1804–'5, by Messrs. Lewis and Clarke, by order of the government of the United States. By the Oregon treaty its navigation is open to British vessels. The Coast Survey are now preparing a chart of this river.

Columbo, the modern capital of Ceylon, on the southwest coast of the island; lat. 6° 56′ 6″ N., long. 79° 49′ 48″ E. It is defended by a very strong fort, nearly surrounded by the sea, in which is a light-house 97 feet high. Population of the town and fort, in 1831, 31,549. The houses, generally only one story high, are of stone, clay, and lime; and the town has more of a European appearance than any other in India. The inhabitants are principally Cingalese. The temperature is remarkable for its equality; and though very humid, the climate may, on the whole, be esteemed salubrious and temperate. There is no harbor at Columbo for large vessels, but only an open roadstead. A projecting rock, on which two batteries are erected, affords shelter to a small semicircular bay on the north side of the fort, having a wooden quay to facilitate the loading and unloading of boats. The depth of water is not sufficient to allow sloops or large dhonies to come alongside the quay; those exceeding 100 tons burden lying at about a cable's length from it. A bar of sand, on which the water is not more than 12 feet deep, extends from the projecting rock across this bay. The channel where it may be crossed by the larger class of ships is liable to shift; and it is only in the fine weather of the safe season that they venture within the bar. The outer road affords secure anchorage for half the year, from the beginning of October to the end of March, during the prevalence of the northeast monsoon, when the wind blows off the land; during the other, or southwest monsoon, when the wind blows from the sea on shore, the road is very far from safe; and the ships that frequent it are sometimes obliged to slip their cables and stand out to sea.—Milburn's *Oriental Commerce;* Hamilton's *Gazetteer, etc.*

As respects its harbor, Columbo is, therefore, very inferior to Trincomalee, the harbor of which is accessible at all times, and is one of the best in India; but the country in the vicinity of Columbo is more fertile; and it has the command of an internal navigation, stretching in a lateral direction along the coast, from Putlam, to the north of the city, to Caltura on the south, a distance of about 100 miles, partly obtained by rivers, and parly by canals. Many flat-bottomed boats are employed in this navigation, the families dependent on which reside mostly on board. Nearly all the foreign trade of Ceylon is carried on from Columbo, and it has also a large share of the coasting traffic.

Moneys.—The rix dollar=1*s.* 6*d.*; but accounts are kept in pounds, shillings, and pence, as in England.

The Bank of Ceylon, established in 1840, has its head office in London, its principal office in the island being in Columbo. It transacts all sorts of banking business, remitting money to and from the island, granting cash credits on the Scotch system, discounting bills, etc.

Weights, Measures, etc.—The weights are divided into ounces, pounds, etc., and are the same as in Great Britain. The candy or bahar=500 lbs. avoirdupois, or 461 lbs. Dutch Troy Weight. The principal dry measures are *seers* or *parrahs*. The former is a perfect cylinder, of the depth and diameter under-mentioned:

	Depth.	Diameter.
Seer	4·35 inches.	4·35 inches.

The parrah is a perfect cube, its internal dimensions being in every way 11·57 inches.

The liquid measure consists of gallons, and their multiples and submultiples. 150 gallons=1 leaguer or legger.

The bale of cinnamon consists of 92½ lbs. very nearly.

Account of the Quantities and Values of the principal Articles produced in and exported from Ceylon during 1851.

Articles.	Quantities.	Values. £	s.	d.
Arrack	galls. 103,789 and 1 keg	6,269	9	7
Areca nuts	cwt. 78,030 0 25	54,806	4	11
Cinnamon	pounds. 508,401	50,849	2	0
Cocoanuts	No. 4,637,814	6,761	4	1
Cocoanut oil	galls. 443,699½ and 22 jars	31,414	9	7
Coffee	cwt. 349,957 0 10	698,156	14	9
Coir rope	— 37,512 0 12	1,285	4	1
Copperah	— 27,026 1 0	9,678	0	7
Horns	— 2,020 3 5	3,207	17	8
Plumbago	— 25,832 3 17	5,608	2	3
Precious stones	pack. 4	1,205	0	0
Rum	galls. 9,844	654	10	0
Sugar	cwt. 1,703	1,635	4	0
Wood	— 84,740 2 14	16,993	4	4
	pcs. 809,558			
	bdls. 554			
All other goods	....	43,083	4	7
Imports re-exported	goods.	139,927	10	11
Ex. the warehouse	specie.	727,311	16	5
Total	....	£1,805,577	6	1

Account of the Quantities of Coffee, Cinnamon, Cocoanut Oil, and Coir, the produce of the Island, exported from Ceylon during the following Years, ending the 5th January.

Years.	Coffee. Cwt.	Cinnamon. Pounds.	Cocoa-nut Oil. Gallons.	Coir. Cwt.
1840	41,865	596,5.2½	357,643	23,195
1841	68,206	389,373½	475,742	23,440
1842	80,584	317,919½	321,966	21,643
1843	119,805	121,145½	475,967	26,130
1844	94,847	662,704	726,206	22,187
1845	133,967	1,057,841	443,301	25,977
1846	178,603	408,211	282,186	19,640
1847	173,892	401,656	125,081	23,197
1848	293,221	447,369½	197,851	23,520
1849	280,010	491,687½	311,520	25,199
1850	373,593	793,781½	573,279	28,422
1851	278,173	644,857	407,060	39,886
1852	349,957	508,491	443,699	37,512

Port Dues—Columbo.

	£	s.	d.
Entry inward, with cargo, ton	0	0	2
" in ballast	Free.		
Clearance outward, with cargo, ton	0	0	2
" in ballast	Free.		
And in no case to exceed	5	0	0

Coffee Export.—We are enabled by the courtesy of the Collector of Customs to afford the total exports of coffee for the year ending October, 10th, 1854, including shipments at Galle. The exact figures are: plantation, 303,908; ordinary, 130,177; total, 434,085 cwt., which is an increase of 85,128 cwt. since 1852.—*Columbo Observer, October 28th*, 1854.

Articles exported from Columbo and Galle.
Chamber of Commerce, Columbo, April 11, 1855.

Articles.	From Oct. 11, 1852, to April 10, 1853.	From Oct. 11, 1853, to April 10, 1854.	From Oct. 11, 1854, to April 10, 1855.
Coffee:			
Plantation . cwt.	131,447	169,823	165,996
Native ..... cwt.	74,344	94,134	76,211
Total	205,791	263,457	241,607
Cinnamon ... pounds.	173,583	336,987	480,869
Cocoanut oil.. gallons.	606,477	782,218	885,130
Plumbago .... cwt.	7,805	14,291	1,843
Coir: Rope ... —	3,249	2,752	5,988
Junk .. —	367	264	1,378
Yarn .. —	15,233	14,485	15,815
Fibre .. —	1,337	3,808	3,272
Ebony ..... cwt.	6,535	4,799	3,422
Deer horns ... cwt.	1,182	1,118	645
Arrack ..... gallons.	396	500	....

Value of Imports and Exports, Ceylon, July 24th, 1855.—The value of the imports during the last quarter was £2,597,325, and that of the exports £2,245,288.

Foreign Ships in Coasting Trade.—By order of Council, Nov. 21st, 1855, goods and passengers may be conveyed from one part of the island of Ceylon to another part thereof in other than British ships.—*See* Ceylon.

Columbo-root (Du. *Columbo wortel;* Fr. *Racine de Colombo;* Germ. *Columbo-wurzel;* It. *Radice di Columbo;* Port. *Raiz di Columba;* Sp. *Raiz di Columbo;* Mozamb. *Kalumb*), the root of the plant of that name. It is a staple export of the Portuguese from Mozam-

bique. It is not cultivated, but grows naturally in great abundance. It is imported in circular pieces from ¼ an inch to 3 inches in diameter, generally from ¼ to ⅜ of an inch thick; the bark is wrinkled and thick, of a brownish color without, and a brightish yellow within; the pith is spongy, yellowish, and slightly striped: when fresh, its smell is rather aromatic; it is disagreeably bitter, and slightly pungent to the taste, somewhat resembling mustard that has been too long kept. Choose the largest pieces, fresh, and of a good color, as free from worms as possible, rejecting that which is small and broken. The freight is calculated at 16 cwt. to a ton.—MILBURN'S *Oriental Commerce*.

Columbus, Christopher, the celebrated navigator and discoverer of the Western World, was born in Genoa about the year 1446. Although several illustrious families have contended for his alliance to them, his father Domenico, and his ancestors, appear to have followed the trade of wool-combers or carders, and were of humble, though reputable origin. Columbus received his education at the university of Padua, and, having evinced an early passion for the sea, entered into nautical life at the age of fourteen. The first voyage in which we have any authentic accounts of his being engaged was a warlike expedition fitted out at Genoa in 1459, when, associated with hardy and daring adventurers, he acquired so much distinction as to be intrusted with a separate command. After this, it is supposed, he was employed in various commercial, pious, and predatory expeditions against the Mohammedans and Venetians, in company with a famous corsair of his own name and family, and acquired reputation and experience in his profession. His son Fernando relates that, in an engagement off the coast of Portugal with four Venetian galleys, returning richly laden from Flanders, the vessel on board which he served, and one of the Venetian ships to which it was grappled, took fire. Columbus threw himself into the sea, seized an oar which was floating near him, and by this means, and his dexterity in swimming, reached the shore, although two leagues distant. Proceeding thereafter to Lisbon, he was induced to take up his residence in that capital.

Columbus became acquainted in Lisbon with the most eminent men in science and maritime art, whom the encouragement of Prince Henry of Portugal had attracted around him. At this period (anno 1470) he was in the vigor of manhood, of engaging appearance, grave, courteous, and affable in his deportment, moderate and simple in his diet and apparel, eloquent in discourse, possessing high magnanimity, and a temper which, though irritable, was under the control of a gentle and enthusiastic piety. Here he married Dona Felipa, daughter of Bartolomeo Monis de Palestrello, an Italian cavalier lately deceased, and a distinguished navigator, who had discovered and colonized the island of Porto Santo. Having obtained possession of the journals and charts of this sea captain, and also hearing accounts of his voyages from his widow, Columbus was seized with an irresistible desire of visiting unknown regions. In order to indulge it, he made a voyage to Madeira, and continued during several years to trade with that island, the Canaries, Azores, the settlements in Guinea, and the other places which the Portuguese had discovered on the continent of Africa. By the experience acquired in such a number of voyages, Columbus became one of the most skillful navigators in Europe.

His eminent biographer, Washington Irving, relates that "he divided the circumference from east to west at the equator, according to Ptolemy, into twenty-four hours, of fifteen degrees each, making three hundred and sixty degrees. Of these he imagined, comparing the globe of Ptolemy with the earlier map of Marinus of Tyre, that fifteen hours had been known to the ancients, extending from the Canary or Fortunate Islands, to the city of Thinæ, in Asia, the western and eastern extremities of the known world. The Portuguese had advanced the western frontier one hour more by the discovery of the Azores and Cape de Verd Islands; still about eight hours, or one-third of the circumference of the earth, remained to be explored. This space he imagined to be occupied in a great measure by the eastern regions of Asia, which might extend so far as to approach the western shores of Europe and Africa. A navigator, therefore, by pursuing a direct course from east to west, must arrive at the extremity of Asia, or discover any intervening land. The great obstacle to be apprehended was from the tract of ocean that might intervene; but this could not be very wide, if the opinion of Alfraganus the Arabian were admitted, who, by diminishing the size of the degrees, gave to the earth a smaller circumference than was assigned to it by other cosmographers—a theory to which Columbus seems generally to have given much faith. He was fortified also by the opinion of Aristotle, Seneca, Pliny, and Strabo, who considered the ocean as but of moderate breadth, so that one might pass from Cadiz westward to the Indies in a few days."

On these grounds Columbus formed the vast and daring enterprise which was destined to hand down his name to posterity with unfading honor; and, firmly established in a belief of the successful result of his projects, "he never," says Irving, "spoke in doubt or hesitation, but with as much certainty as if his eyes had beheld the promised land. A deep religious sentiment also mingled with his thoughts, and gave them at times a tinge of superstition, but of a sublime and lofty kind. He looked upon himself as standing in the hand of Heaven, chosen from among men for the accomplishment of its high purpose; he read, as he supposed, his contemplated discovery told in Holy Writ, and shadowed forth darkly in the prophecies. The ends of the earth were to be brought together, and all nations, and tongues, and languages, united under the banners of the Redeemer." The disturbed state of Portugal under Alphonso retarded the progress of discovery. The compass, though in general use, had not gained that reliance which induced mariners fearlessly to brave the dangers of the deep; and the project of a voyage through boundless wastes appeared extravagant and impracticable. Nothing daunted, however, by these disheartening symptoms, Columbus pursued his favorite schemes with ardor, and longed to put them into execution. So perilous an adventure was not, however, to be attempted without the patronage of some sovereign power; and John II., of Portugal, having at this juncture ascended the throne, and being favorably inclined to the cause of discovery, Columbus made his proposals, which were graciously received by the monarch, and referred to a learned junto. The result of their conference therefore was, that they recommended the king to fit out a caravel privately, and attempt the proposed discovery by the designated route, which they ascertained from charts and details craftily obtained from Columbus. John, in an evil hour, had the weakness to adopt this perfidious counsel. The caravel departed, but the pilots had neither the genius nor fortitude of Columbus; their courage failed, and putting back to the Cape de Verd Islands, they returned from thence to Lisbon, execrating the project as extravagant and irrational.

Columbus next carried his proposition to Venice, where he was equally unsuccessful. He also sent his brother Bartholomew to lay his plans before Henry VII. of England, having in the mean time sailed himself for Spain, where he arrived after having spent all his means. Columbus, in this state of abject poverty, set out for the Castilian court at Cordova in the spring of 1486. The moment was unpropitious for such a proposition, the Spanish sovereign being at the time engaged in military preparations against the Moorish kings. At length, through the intercession of Cardinal Gonzalez, he obtained an interview, and submitted

his project to Ferdinand. Worn out with a series of disappointments and delays, and supporting himself by making maps and charts, Columbus, despairing of the Spanish patronage, began to look to other courts, in hopes of meeting more encouragement. He had already made preparations for this purpose, and taken measures for the disposal of his children during his absence, when Juan Perez sollcited him to defer his journey, making application at the same time to Isabella—the result of which was a gracious invitation of Columbus back to court, accompanied with the present of a small sum to equip him for the journey. The monarchs were now pledged to attend to his proposals, and negotiations were set on foot to carry them into execution. He proposed that a small fleet should be fitted out under his command to attempt the discovery, and stipulating that he should be invested with the titles and privileges of admiral and viceroy of all the seas and lands he should discover, with one-tenth of all gains, either by trade or commerce. He further offered to furnish an eighth of the cost, on condition of enjoying an eighth of the profits. His terms were, however, deemed inadmissible; the negotiation broke off, and Columbus, in indignation, mounting his mule, was already on the road to Cordova, with the intention of immediately proceeding to France, when he was overtaken by a messenger from the queen, who had been prevailed upon by the arguments of Quintanilla and St. Angel, two of Columbus' patrons, to favor his undertakings. The negotiations were now completed, and the capitulations were signed by Ferdinand and Isabella at Santa Fé, on the 17th of April, 1492. The articles of agreement were to the following effect: That Columbus should be constituted high admiral in all the seas, islands, and continents he should discover, with similar honors and prerogatives to those enjoyed by the high admiral of Castile in his district. He was also nominated viceroy and governor general over all the said lands and continents; and a tenth of all free profits arising from the merchandise and productions of the countries within his admiralty was granted to him forever. Columbus, or his lieutenant, was to be sole judge of all causes and disputes arising out of traffic between those countries and Spain. He was further permitted to contribute an eighth part of the expense of expeditions to the countries he expected to discover, and was entitled in return to an eighth part of the profits. A principal object of Columbus in this undertaking was the propagation of the Christian faith, to which he was a zealous devotee. Expecting to arrive at the extremity of Asia, he hoped to spread the light of the Gospel among the barbarian nations of the East; and so confident were his anticipations that letters were actually given him by the sovereigns for the Grand Khan of Tartary. Although the royal documents were signed both by Ferdinand and Isabella, her separate crown of Castile defrayed all the expense; and the queen in consequence reserved for her subjects of that kingdom an exclusive right to all the benefits which might accrue from the success of the expedition.

The arrangement being finally completed, Columbus set sail on the 3d of August, 1492, in three small vessels, only one of which (commanded by himself) was completely decked. The two others were commanded by Martin Alonzo Pinzon and Vincente Yañez Pinzon. The expedition had sailed nearly 200 leagues to the westward, when Columbus perceived that the needle of the compass, when night set in, had varied; a circumstance which filled the pilots with consternation. For this phenomenon he was obliged to invent a reason, which, though it did not satisfy himself, yet served to dispel their fears. As the squadron advanced, various indications of land, such as birds flying from the west, the water becoming less salt, and occasionally covered with weeds, animated and supported the courage of the crew; but at length murmurs and fears began to prevail among them. They had sailed for eleven days, wafted by a most propitious breeze, over a tranquil sea, without lowering or shifting a sail. The rude seamen began to be alarmed that no other winds blew but easterly, and that it would therefore be impossible for them ever to return home. A few light breezes from the west allayed for a time their apprehensions, and several small singing birds came in the morning and flew away at night. But the sailors lost all patience, and became so mutinous and refractory that it required the utmost address of Columbus to maintain his authority. The appearances of land, though frequent, were in many instances deceiving; and at last the seamen broke forth into loud clamors, and insisted upon abandoning the voyage. Fortunately, however, on the following day the manifestations of land were such as no longer to admit of doubt. In the evening Columbus perceived a light glimmering at a distance, and the next morning land was clearly seen about two leagues distant. The sailors now burst forth into the most extravagant transports. They threw themselves at the feet of Columbus, implored his pardon, and pronounced him to be a person inspired by Heaven with more than human sagacity and fortitude, to accomplish a design so far beyond the ideas and conceptions of all former ages. At daybreak, says his biographer Spotorno, on the 12th of October, the hero landed, "*e di grand'orma il nuovo mondo imprima*" (and with his great footstep impressed the New World). Columbus and his followers threw themselves on their knees; and rising, the admiral drew his sword, planted the cross, hoisted the royal standard, and in the presence of the astonished natives, who imagined that the Spaniards had dropped from heaven, took possession of these new countries in the names of the Castilian sovereigns, giving the island the name of San Salvador. Having visited several of the West India islands, and settled a colony in Hispaniola, he again set sail for Spain. On the voyage he fell in with the Pinta, which had separated from him for a long time through the wickedness of the captain, who had gone in search of gold. After encountering several violent tempests, Columbus arrived in the Tagus, near Lisbon, on the 4th of March, 1493. He was treated with the most honorable attentions by the court of Portugal, and finally reached the port of Palos on the 15th of March.

The triumphant return of Columbus excited the most unbounded transport. Wherever he went the air rang with acclamations, and he received such honors as are paid to sovereigns. The court was then at Barcelona, and Columbus took care immediately to acquaint the king and queen of his arrival. They were no less delighted than astonished with this unexpected event. The admiral was conducted into the city with all imaginable pomp. The sovereigns received him seated in state under a rich canopy of brocade of gold, surrounded by their principal nobility. When he approached they stood up, and, raising him — he kneeled to kiss their hands, ordered him to be seated in their presence, and give a circumstantial account of his voyage. When he had finished his oration, which he delivered with much modesty and simplicity, the king and queen, kneeling down, offered up solemn thanks to God for the discovery. Every possible mark of honor that could be suggested by gratitude or admiration was conferred on Columbus; the former capitulation was confirmed, his family was ennobled, and a fleet ordered to be equipped to enable the navigator to go in quest of those more opulent countries which he still confidently expected to find.

The successful attainment of the splendid discovery of Columbus, great and manifold as were its advantages to mankind, was the prelude to the dark and troubled epoch of his life. By his second voyage to the Western World he no doubt in part realized his expectations, extended his discoveries, and came back to Spain with substantial proofs of success; but the ostensible purpose of his return was to obtain reparation

of injurious imputations which had been heaped upon him, and generally to have his privileges confirmed and enlarged so as to enable him to exercise his authority over the colonists, who had become refractory and unmanageable. But his third voyage only accelerated his disastrous fate. The newly-discovered possessions were distracted with the horrors of rebellion. The verdant and blooming isles, the expected abodes of peace and happiness, were converted into theatres of sanguinary conflicts and misery; and Columbus found himself an object of fear and execration. It was during this voyage that he landed on the coast of Paria, in South America. Meanwhile his enemies in the Old World were not idle. An investigation into his conduct was instituted under the control of Francisco Bovadilla, who was empowered, should he find the charges of maladministration proved, to supersede Columbus, and assume the government of Hispaniola. The result was, that he and his brothers Diego and Bartolomeo, after having been treated with the greatest indignities, were sent to Spain in chains. From these disgraceful bonds he was immediately on his arrival released by the Spanish monarche; but his complaints were tardily acknowledged; he again sank into obscurity, and was reduced to such straitened circumstances that, according to his own account, "he had no place to repair to except an Inn, and very frequently had not wherewithal to pay his reckoning."

At length he was again employed upon a fourth voyage, with restricted powers; but the result was unpropitious, and he returned to Spain dejected in mind and worn out with bodily infirmities. Death at last relieved him from his earthly afflictions. He expired on the 20th of May, 1506, commending, with his latest breath, his spirit to God. A marble tomb was reared over his dust, bearing the inscription,

A Castilla y a Leon,
Nuevo mondo dio Colon.

Columbus was a man of great and original genius, energetic in his conduct, and possessed of lofty, daring, but noble ambition. "The magnanimity of his nature," says Irving, "shone forth through all the troubles of his stormy career. Though continually outraged in his dignity, braved in his authority, foiled in his plans, and endangered in his person, by the seditions of turbulent and worthless men, and that too at times when suffering under anguish of body and anxiety of mind enough to exasperate the most patient, yet he restrained his valiant and indignant spirit, and brought himself to forbear, and reason, and even to supplicate." His piety, though tinctured with superstition, was genuine and fervent. If on certain occasions his religion displayed itself in harshness and severity, the spirit of the age he lived in must be adverted to in palliation of his conduct. His temperament was deeply imbued with poetic enthusiasm. "It spread," remarks Irving, "a golden and glorious world around him, and tinged every thing with its own gorgeous colors. It betrayed him into visionary speculations, which subjected him to the sneers and cavils of men of cooler and safer, but more groveling minds. It filled his mind with solemn and visionary meditations on mystic passages of the Scriptures, and on the shadowy portents of the prophecies." "His soul," observes a Spanish writer, "was superior to the age in which he lived. For him was reserved the great enterprise of traversing a sea which had given rise to so many fables, and of deciphering the mystery of his age." "With all the visionary fervor of his imagination," adds Washington Irving, "its fondest dreams fell short of the reality. He died in ignorance of the real grandeur of his discovery. Until his last breath he entertained the idea that he had merely opened a new way to the old resorts of opulent commerce, and had discovered some of the wild regions of the East. He supposed Hispaniola to be the ancient Ophir which had been visited by the ships of King Solomon, and that Cuba and Terra Firma were but remote parts of Asia. What visions of glory would have broken upon his mind could he have known that he had indeed discovered a new continent, equal to the Old World in magnitude, and separated by two vast oceans from all the earth hitherto known by civilized man! and how would his magnanimous spirit have been consoled, amid the afflictions of age and the cares of penury, the neglect of a fickle public and the injustice of an ungrateful king, could he have anticipated the splendid empires which would arise in the beautiful world he had discovered, and the nations, and tongues, and languages which were to fill its lands with his renown, and to revere and bless his name to the latest posterity!" It will be remarked that Mr. Irving, in accordance with the generally entertained belief of all his biographers, alludes to Columbus as being the first discoverer of the American continent, which is emphatically so, as far as the commercial world is concerned. It is, however, certain that the continent was visited by the Icelanders in the end of the tenth and the beginning of the eleventh centuries; and Sebastian Cabot discovered Newfoundland and Labrador in June, 1497, nearly a year previous to the visit of Columbus on the coast of Paria. It also seems more than probable that Columbus was aware of Cabot's discovery.

Several controversies have arisen bearing upon the claims of Columbus to the discovery of the Western World; but such disputes, in so far as they affect the discovery of the *Columbian Archipelago*, are proved to be idle and futile, as no doubt now remains of Columbus having been the first navigator of the Old World who reached the island of San Salvador, and the first who visited the shores of the South American continent. One of the most current slanders on our navigator's fair fame, as related by Inca Garcilaso, was that Alonzo Sanchez, sailing to the Canaries in 1484, reached the island of St. Domingo, and communicated his voyage and route to Columbus. Some other Spanish writers notice the event without giving the name of the author of the discovery. Oviedo considers these relations as mere vulgar fables. We are, however, told by Columbus himself that he took advantage of such accounts as were transmitted to him by Spanish and Portuguese mariners, some of whom had sailed westward so far as to perceive what they considered to be indications of land. Gallo and Giustiniani, authors contemporaneous with Columbus, assert that Bartholomew Columbus first conceived the idea of western discovery, and communicated it to his brother; but Columbus has been triumphantly vindicated from these ungenerous aspersions by the unanimous testimony of the Spanish writers, among whom Las Casas, who knew both brothers, and preserved many papers belonging to Columbus, merits especial credence. But if any doubts remained, they are completely removed by the written declaration of Ferdinand and Isabella, who, in a communication dated the 4th of August, 1494, write thus to the admiral: "One of the principal reasons for which your discovery (the first) has caused so much joy to us is, that it is to be ascribed to your genius (por ser inventada), and that it has been commenced and terminated by your own individual endeavors, by your courage, your perseverance, and industry."—E. B.

The discoveries of Columbus were followed, in 1497, by those of Cabot on the northeast coast of America; in 1500 by Cabrul, a Portuguese, who visited the coast of Brazil and the mouth of the Amazon; in 1508 by Pinzon, who is said to have entered the Rio de la Plata. In 1511 Diego Columbus conquered the island of Cuba. In 1518 Balboa crossed the Isthmus of Darien. In 1519 Cortéz landed in Mexico. In 1531 Peru was invaded and conquered by Pizarro.

Colza, Oil of. The oil expressed from the seed of the *Brassica oleracea*, a species of cabbage. Colza oil is much used in France and Belgium for burning in lamps and other purposes.

Commerce. Commerce, in its most general sense, [illegible] the exchange of articles of any kind for money or other articles. The earliest form of such exchanges is by barter, because the use of gold and silver is not adopted until society has made a certain progress. "The armor of Diomed," says Homer, "was plain, and paid for by nine oxen; while the splendid armor of Glaucus cost a hundred." Barter being now disused in all improved countries, commerce is almost always understood to denote the exchange of commodities for money. In France and the south of Europe the words used to designate commerce are derived from the Latin; in Holland, Germany, and other northern countries, a vernacular word is more frequent; but all are alike in meaning, being applied equally to home and foreign trade.

We propose in the present essay to treat of,

I. The principles of commerce, and the evils of interfering with the free course of trade; II. The history of Commerce, particularly in Great Britain, Holland, and America; III. Prominent commercial changes of the nineteenth century.

I. PRINCIPLES OF COMMERCE.—By "principles of commerce," we understand conclusions of two kinds; those deduced from the practice of merchants, and applicable to the management of trade by individuals; and those of a more comprehensive character, which, resulting from the course of productive industry generally, are entitled to the attention of a minister, or officer, of the Department engaged in the task of devising regulations for trade. Most of those conclusions seem so plain as to admit of little question; but it is a fact that several of them have been the result of long, and, in some cases, of dearly bought experience. As a specimen we give the following:

1. *Mercantile Axioms; example of them.*—Short credits and quick returns, however small the commission or profit, are eventually better than long credits and a large commission or charge.

2. The greatest mercantile profit arises from intercourse with populous and long-settled countries, such as Holland, because the inhabitants are in general possessed of capital, and punctual in their payments.

3. Recently-settled countries, like the United States of America, the West Indies, Spanish and Portuguese America, are always bare of capital. There is a perpetual tendency in them to draw it from Europe; and mercantile transactions with these countries, profitable in the outset, often become otherwise, from delays of payment, and ultimate insolvency.

4. Trade should be left as much as possible to its natural course, interference being almost always hurtful. Governments ought merely to remove obstacles and grant facilities. Privileges and monopolies were formerly very general; but these, if necessary in an early age, when individual capital was too scanty for distant undertakings, should be withdrawn as soon as such capital becomes sufficient.

5. Division and subdivision of employment can be carried to only a limited extent in agriculture. In manufactures they may be carried very far, and are productive of the greatest advantage. They afford employment to persons of every age, and they conduce greatly to the finished execution of work. Hence the superiority of towns, in particular of the larger towns.

Rules or observations like these are very seldom met with, either in printed works or in personal intercourse; and the reason is, that while few departments of industry have been followed in practice to so great an extent as commerce, hardly any other has been less an object of study in regard to its principles. There are hardly any books or written compositions for the purpose of instructing the merchant in the practical management of his business, and not many containing statistical or other information connected with trade. To no profession are written precepts considered to be so little applicable; in none is proficiency thought to depend so exclusively on practice. Hence an unacquaintance with principles or general rules, and the commission of grievous errors, as well by merchants in the pursuit of business, as by the government in the enactment of commercial regulations. Of the former we may take as examples the repeated glutting of foreign markets with goods, and the injudicious extension of sugar cultivation in the West Indies; of the latter, the fetters imposed upon the banking system, without stability being given to the system by the control and interest which should be taken by the general government.

The belief that it is for the advantage of a nation to manufacture almost every article it consumes has been the cause of the most serious inconvenience and loss. It is thus that in France the making of sugar from beet-root, and the more serious error of erecting blast furnaces for making iron in districts unprovided with coal fuel, have placed a large amount of capital in a situation whence it can not be withdrawn without heavy loss. In like manner, the privileges so long conferred by act of parliament on the silk manufacture in England frequently tended to produce embarrassment, because they interfered with the natural course of trade. No branch of industry can be of permanent advantage to a nation, unless it can support itself without indirect or artificial aid. Were merchants and manufacturers left to themselves, the natural course of things would point out the branches of productive industry likely to succeed or not in a particular country; and capital would not then be advanced on an insecure foundation. Plain as this appears, it is quite at variance with the creed of our ancestors; a creed which, under the name of "mercantile system," long retained an influence over our traders, and, in some degree, over members of the Legislature.

The Mercantile System explained.—The basis of that system was, that "wealth consisted in the precious metals; that what is gained in trade by one nation must be lost by another; and that our great object in receiving returns for our exports should be to get money instead of merchandise." It followed from such notions, that of all possessions, a mining country, such as Mexico and Peru, was the most desirable; and hence in a great measure the rupture of England with Spain in 1740, which led to the unfortunate British expedition to Carthagena, involved her in a contest with France, and caused her in the course of eight years an immense waste of blood and treasure. The return to a state of peace in 1748 obliged her to desist from attempts on Spanish America, but the influence of the mercantile system continued, and was singularly favored by the annual custom-house returns. These returns exhibit an apparent excess of exports above imports, and give rise to the notion that the balance is sent to this country in the shape of money. Supposing the exports of England to the Continent of Europe to amount for any given year to £20,000,000, and the imports to £14,000,000; the difference, or £6,000,000, is, according to this absurd notion, the amount of profit paid in money. It is clear, however, that the custom-house returns take no notice of some very important items, such as the export of public money for foreign garrisons, the transmission of bills of exchange to foreign merchants, or the import of smuggled goods. Besides, if the quantum of circulating medium remain, as it probably does, very nearly on a par, what becomes of the supposed importation of money? Were England in possession of all the annual balances which the advocates for this system suppose her to have received in money during the last century, her metallic stock would not be below £400,000,000 sterling; that is, ten times its actual amount!

Wealth supposed to consist in Gold and Silver.—When a merchant exports goods, the sale, of course, takes place abroad, and a remittance is made, either by bill or by the return of other merchandise. It hardly ever enters into the contemplation of the exporter that he

would find an advantage by obtaining a return in coin or bullion. Money owes the reputation it has acquired, as an object of national interchange, to its convenience in other respects; to its being the commodity with which we regularly go to market, and to its fitness for the smallest purchases, by the minuteness of its subdivisions. But this recommendation, however important in private business, should have no weight in the intercourse of nations; merchants can be at no loss to dispose of a remittance made in the shape of goods, nor is it any object with them to multiply the means of petty purchases.

Capital defined.—The interest of a commercial country is not to increase the amount of its currency, but to quicken its circulation; the same sum performing double and triple duty when passed expeditiously from hand to hand. Now nothing pr notes circulation so much as exemption from arbitrary interferences, were the effect nothing more than the general preservation of credit. In France, the monstrous abuse made of the paper system in the beginning of the Revolution has long prevented the use of any other circulating medium than coin; the result is an annual loss of three millions sterling to the public, such being the difference between the cost of paper and the precious metals, even after making an allowance for the retention of a portion of the latter sufficient for the purpose of banking. Some people, however, imagine that to increase the amount of the circulating medium is to increase the capital of a country. These persons should recollect that capital is by no means limited to money, but embraces all that mass of property which is devoted to reproductive consumption. When we wish to lend capital, or to employ it in business, we begin by selling the various articles at our disposal: the amount is then in our hand in the shape of money; but this is very transient; the money disappears as soon as we make payment for the new purchases. The public not having time to enter into all this reasoning, judge from first impressions, and take for granted that money is capital, because its agency is required to put capital in motion. Governments, however, might have saved themselves much trouble in providing supplies of metallic currency, since the natural course of business will invariably provide them for itself. The plenty or scarcity of the precious metals depends on considerations altogether different from the imagined balance of trade. Specie was so scarce in England in 1809 that the government was not a little embarrassed to find £200,000 for the Walcheren expedition; yet in that year her custom-house returns presented an apparent balance of above £7,000,000 in her favor.

Losses to England from the Mercantile System.—No country has suffered so much from the errors of the mercantile system as England; partly on account of the influence of traders and manufacturers in her legislature; partly from the temporizing policy of the ministers, who have seldom scrupled to buy the consent of any great body of the community to a new tax, by the grant of some injurious preference. Hence a variety of pernicious regulations in favor of the landed, the shipping, and the manufacturing interests; hence, also, a number of unfortunate measures in the foreign policy.

The 17th and 18th Centuries.—Our English ancestors laid it down as a fundamental rule, that there could be no profit on the one hand, without a corresponding loss on the other. They considered trade as a game of mere transfer, and had no idea how a country could derive wealth by an intercourse between its own inhabitants. Charles II. entered on the war of 1672 with high hopes, imagining that, by destroying the commerce of Holland, England would not only increase her own, but in a manner absorb that of the world. Political reasons led England afterward into close alliance with Holland, and prevented the ebullitions of jealousy in that direction; but the alarming power of Louis XIV. and the prospect of his acquiring the crown of Spain, led her to a closer connection with Portugal, and particularly to the well-known Methven treaty, concluded in 1703, the object of which was to favor the consumption of port wine, in return for a similar preference to her manufactures. The result has been, that she has not scrupled, for more than a century, to import injurious commodities for the sake of an imaginary political advantage; we say imaginary, because France could evidently have agreed to take English manufactures in return for her produce; and if the increase of French trade had, on one hand, the effect of augmenting, to a certain extent, her national power, it would, on the other, have increased her dependence on England, and have rendered a war extremely impolitic and unpopular.

English attachment to Portugal arose, in a great measure, from her not being a manufacturing country, and likely, in the opinion of the calculators of the day, to be so much the more advantageous in the capacity of a customer. This notion has prevailed to a very recent period; the administration of 1808 and 1809 not scrupling to give encouragement to the export of merchandise, on a large scale, to the unproductive occupants of Brazil and Spanish America. Now, the fact is, that the means of extending trade, and consequently profits, with a foreign country, are to be estimated by a quite opposite rule; they depend on the productive power of that country, on its means of affording equivalents for our commodities; in other words, on its capability of paying for that which it suits us to sell to it. Now, what country was ever wealthy without industry? The mines of Mexico and Peru, the richest the world ever saw, fall, in point of annual produce, far short of the annual value of the cotton, the tobacco, the flour, and other less tempting products of the United States. In like manner, the cochineal, the cocoa, the barilla, and even the indigo of Spanish America, form a small amount when put in competition with the exchangeable commodities possessed by the industrious nations, such as France, the Netherlands, or the north of Germany.

Mercantile Policy of other Countries.—If from England's favorite policy we turn our attention to that of Continental states, we find Holland steering a course of impartiality, and guarded from an imitation of these trespasses, not indeed by superior knowledge, but by the characteristic moderation of her government. The northern kingdoms deserve comparatively little attention, their rulers having in general given their thoughts much more to war than to discussions of internal policy. The same thing was long true of a country where the commercial interest has at no time been very considerable; the personal will of the sovereign, and the influence of the *noblesse*, having afforded the grand *raisons determinantes* for public measures. Still the history of France is not without traces of the effects of mercantile prejudices. Among other regulations of the kind, there formerly existed several for the purpose of favoring linen manufactures instead of cotton, because flax was a home product, while the purchase of cotton carried money out of the country.

France.—At last it was found out by some Frenchmen of greater sagacity than the rest, that cotton might be safely admitted to entry, the money required to buy it proceeding necessarily from the employment of French industry in some shape or other. But the extent of popular prejudice was most singularly exemplified at the time when it was proposed to permit the unrestrained use of *toiles peintes*, or printed calicoes; every town that had a chamber of commerce remonstrated against it. A deputation sent from Rouen affirmed, that "the proposed measure would throw its inhabitants into despair, and make a desert of the surrounding country;" Lyons, the centre of the silk manufacture, declared that "the news had spread terror into all its workshops;" Tours "foresaw a commotion likely to cause a convulsion in the body politic;" Amiens asserted "that the proposed act would become the tomb of the manufacturing industry of France;" and Paris declared, "that

her merchants came forward that they might bathe the throne with their tears." The government, however, stood firm; the duty on printed calico was withdrawn, and the inspector-general of manufactures ventured some time afterward to challenge the authors of those elegant effusions to compare their predictions with the result. "Will any of you," he said, "deny that the manufacture of printed calico has been the cause of giving a vast extension to the industry of the country, by employing a number of hands in spinning, weaving, bleaching, and printing? Look only to the branch of dyeing, and say whether this change has not done more for it in a few years than other manufactures would have accomplished in a century."

Commerce of Austria.—In some countries government go much farther, and still act in a commercial or manufacturing capacity, notwithstanding all the admonitions of political economists, or the more home-felt lessons of experience. The Austrian government conducts the gold and silver mines of Hungary to so little account, that the profit realized from these splendid establishments does not exceed a few thousands a year. In the year 1817 the French government, desirous of laying in a stock of corn for Paris, obtained a loan of money, with which they made purchases in various markets both in and out of the kingdom. The result was most distressing; the price of corn rose from 80*s.* to 120*s.* per quarter. The people in the provincial towns became apprehensive of a scarcity, and, though in general submissive to a fault, attempted at Rouen and other places to impede the course of the market, and to prescribe a limit to the price of corn. The alarm, once given, extended through great part of Europe, and gave occasion to a sudden rise, as may be seen by reference to the corn prices at the time in London, Amsterdam, and Hamburg. Nothing is, therefore, more impolitic than the interference of the public treasury with markets, however good the motive; a truth which has been so thoroughly felt in England as to prevent any thing of the kind during the last sixty years, government having confined itself in seasons of scarcity, as 1800, 1810, 1816, to permitting the free import of corn.

Modified State of the Mercantile System.—We are next to advert to the mercantile system in its most limited sense, in the shape which it now bears, after all the modifications of the experience of a century and a half. The predilection for the importation of "hard dollars" has disappeared among a portion of the public, particularly since making the discovery that bank paper can be made to answer the purpose of gold and silver. But even these persons are far from admitting the doctrines of political economists in all their extent; they still cling to the notion that we should discourage the import of a foreign article whenever a corresponding commodity can be raised at home; that we should impede, or even prohibit, all foreign manufactures; and that we should not scruple to encourage certain fabrics of our own by bounties. Such was formerly the creed of the majority of the merchants and manufacturers; such was, forty years ago, the creed of ministers and presidents of boards of trade. It proceeds on the plausible idea, that if we do not provided too much employment, and that our people would be in danger of falling short of work, were we to purchase finished articles at the hands of foreigners. But there is not in the natural course of things any such deficiency of labor as to make it necessary, or even expedient, for us to turn things out of their regular order for the sake of giving employment to our population. Providence has evidently ordained that industry should be at no loss for objects; the interruptions to its peaceful course arise from our own wayward policy; from our restraints, prohibitions, and, above all, from our sudden changes from war to peace, and from peace to war.

Equally erroneous is the notion that it is more for our interest to send abroad manufactures than raw produce or money. If you grant a bounty on an export, you do nothing more or less than bribe a foreigner to make a purchase from you; you withdraw from its natural destination a portion of your capital and labor; for the sake of extending one branch of business, you weaken your means of competition in others. Mr. Hume has justly remarked, that in a question of personal right, the perception of a half-educated man may be sufficiently sound; but that the case is different in regard to matters of general policy, where the real is often different from the apparent result. Now this state of half knowledge has been the origin of almost all mercantile miscalculations; we have listened to first impressions, and have not scrupled to give them a practical operation by acts of government, without ever considering that the remote consequences would be injurious to ourselves.

The true Principles of Commerce.—We may safely discharge from our minds all that has been said, and all that has been written, in regard to the greater relative advantage attendant in trading in this or that particular commodity; we may feel satisfied that profits are much more on an equality than is commonly supposed; that no one would long be a dealer in that which did not afford him advantage, or remain a stranger to that which was throwing an extra gain into the pockets of his neighbor. The same rule is applicable in a national sense, the traffic in one commodity being either directly or indirectly as productive of profit as in another. Even foreign articles of luxury should not be discouraged, since the money required to pay for them must be previously raised by the employment of industry in some useful manner. This affords a new proof of the fallacy of first impressions, and leads to the grand practical conclusion of allowing people to "buy commodities wherever they can be got cheapest, without seeking to favor home produce above colonial, or colonial above foreign."

Merchants should possess unrestricted freedom, not only in regard to the articles they deal in, but in respect to the time of keeping them back or bringing them to market; and this not only from the general title which every one has to the management of his own property, but from a conviction that whatever benefits the individual will be productive of corresponding benefit to the public. This is a point of the last importance, as reconciling the lower orders to a variety of unpopular employments of capital, such as buying up goods to be warehoused, and not brought to market till prices are advanced. Take, for instance, the capitalist who buys a thousand hogsheads of sugar on its arrival from the West Indies in August, for the purpose of selling it in the succeeding March or April. Such a transaction is of use to all parties, affording, in the first instance, a customer for the planter or planter's correspondent; a depository for the public during the season that the article ought in great part to be stored up; and finally a seller, at a time when, without such depositories and such forthcoming of supply, the price might have become exorbitant, and might have continued so until the arrival of the next year's crop.

The more we study the natural progress of commerce, the more we shall be satisfied of the expediency of leaving all its various agents to their uncontrolled management. Business then divides itself, particularly in a large city, into a variety of separate branches, each of which may be carried on to a surprising extent by separate establishments. The commission charged by such persons is small, their dispatch extraordinary; capital does not remain locked up in their hands, and goods find their way to the market whenever prices are encouraging, that is, whenever the consumers are in want of them; they are withheld only when the market is glutted, and when to force sales would be productive of eventual injury to the buyers themselves. The doctrine of the happy medium is nowhere more applicable than in commerce: if you reduce prices for one season below what is necessary to

indemnify the producer, you discourage production for the next, and you expose yourself to the hazard of a dearth.

Monopolies.—Monopoly is now generally admitted to be highly impolitic. No new grants of the kind have been issued in Great Britain for many years, and every renewal of the charter of the East India Company has been marked by a diminution of its restrictive character, till in 1834 its monopoly was abolished. In the United States monopolies have never been permitted, the government having early seen their injurious effects. The public are now aware that a privileged company can not make its purchases abroad on better terms than individuals, and that the chief operation of the privilege is to enhance the sale prices, or, in other words, to put money into the hands of a few at the expense of the nation. They are further aware that the concerns of a large corporation can not be managed with the minute economy and vigilance of the private merchant, and that its grand advantage lies in the intelligence and dexterity acquired by the transaction of business to a large extent by one establishment; an advantage of great importance, but which has nothing to do with the possession of exclusive privileges.

The final conclusions to be drawn from the principles of commerce are of the most comprehensive and beneficent nature. They teach us that every nation finds its account in the prosperity of its neighbors; that it would experience a corresponding suffering from their decline; that to aim at engrossing more trade than *naturally falls to our share*, is sooner or later injurious to ourselves; and that war, even when successful, is attended with the most serious losses. War turns to waste a large portion of our productive means; it leaves us oppressed with a ruinous burden in peace; it impedes the future extension of our exports, for the injury done to our neighbors recoils on ourselves; in short, it is so replete with evil to the public and individuals, as to be justifiable only in an extreme case, such as the defense of national independence, or the overthrow of a tyrannical usurper.

Division of Employment; its manifold Advantages.—Division and subdivision of employment form the great distinction between a backward and an improved state of productive industry. It increases the efficiency of the mechanic or manufacturer to an extent of which no one who has not studied the subject can have an adequate conception. Now, the degree to which employment is subdivided depends mainly on the size of a city or town; and in estimating the state of civilization in a particular country, we can not have a better guide than the proportion of the inhabitants of towns to those of the open country. Flanders and Holland were long the most improved part of the north of Europe, and had the greatest number of towns on a given extent of territory. This they still have, with the exception of the counties (Lancashire and the West Riding of York, England) which are the chief seats of English manufactures. After the Netherlands in town population come the north of Italy and northeast of France, along with the western part of Germany. Prussia and Austria have each a comparatively small number of towns; Poland has still fewer, and Russia is the most deficient of any country in Europe. In England the increase of town population has been progressive during the last eighty or ninety years, and bids fair to go on in an equal or greater ratio.

The division of employment is the result of commerce and of increased population. It is of two kinds: that among individuals, by which a specific task is appropriated to each, and that among nations, by which particular kinds of products are raised to a greater extent in one country than in another. The latter is as yet only beginning to claim the attention of public men, for it has been a frequent error with government to establish, in their respective territories, a variety of manufactures, without sufficiently weighing the local obstacles or disadvantages. Of this France furnishes some striking examples, particularly in the case of iron. The abundance of coal in England, and the ease in conveying it, and other bulky goods, by canals, give to their manufactures of iron and hardware an advantage which France in vain endeavors to equal. Her true policy would be to repeal the very heavy duties on the import of foreign manufactures, and to trust to her means of supplying the world with wine, brandy, and the other natural products of her country to an equal or greater amount.

Principles of Commerce; how far understood.—In point of knowledge of the great doctrines of political economy, Germany, or, to speak more properly, the Protestant part of Germany, particularly Saxony, may be said to take the lead of other countries on the Continent. The Dutch, however exemplary in their practical legislation, have little turn for speculative reasoning; the French have not patience to follow through its various links a chain of philosophical deductions; but their admiration of whatever is humane or liberal makes them wonderfully delighted with the brilliant conclusions of the science. They have the advantage of possessing, in the work of the late J. B. Say, the best arranged general treatise that has hitherto appeared on the subject; and they are by no means ill prepared for a very extensive application of political improvements, such as the abolition of privateering, the repeal of all heavy duties on foreign goods, and the substitution of inland taxes for those custom-house imposts which impede the free communication of nations. The rest of Europe is so much in the dark in regard to the great truths of political science as to see merely through the medium of local governments. Such is the case likewise in Italy, although that country can boast individuals of some note among the writers on the principles of commerce, and the reflecting turn of the people is favorable to such investigations; and even in Britain a large party is still adverse to the unrestricted application of these simple and beneficent principles, but this party is daily diminishing. The happy effects of the free-trade principles, which have been for some time in operation, as proved by the periodical returns of the English Board of Trade, are facts which can not be withstood; and we may safely calculate that a few years will convert the remaining advocates of protection to the free-trade faith.

Speculation in Trade.—Among men of business this expression is applied to incurring extensive hazards in the hope of extensive emolument; in short, to whatever is foreign to the proper business of the individual, or beyond the control of common rules. It is to such undertakings that vulgar credulity ascribes extraordinary profits; and even well-informed men are apt to give way to the assertions so confidently made, of vast occasional gains in this line of business. Dr. Smith himself, after remarking (*Wealth of Nations*, book i. chap. 10) that to make a fortune in a regular line commonly requires a long life of industry and frugality, adds, no doubt on the faith of repeated assurances from mercantile friends, that there are many examples of fortunes realized by speculators in the course of a few years. Now, the men who embark in speculation are, in general, very loose accountants; their estimate of profits applies to the gross, never to the net return; besides, they are almost always adventurers, and adventurers are seldom noted for the observance of truth. Their favorite season of activity is a time like that of 1808, when the sudden stoppage of ordinary intercourse caused a rapid fluctuation in the price of commodities, and when the regular merchants withdrew from the scene. Now, what sober estimate can be formed of loss or gain in such a chaos? Add to this, that these men trade almost always on credit, are in need of all the support which flattering representations, and rumors of sudden profit, can give them. All these rea-

sons seem to justify a deliberate inquirer in doing what is seldom done on such occasions, we mean in withholding his belief from the confident allegations of speculators, so long as they are not supported by collateral evidence.

Frequency of Disappointment.—Our opinion is, that instead of the large profits commonly ascribed to this course of trade, the individuals concerned in it experience little else than disappointments, and maintain a perpetual struggle to keep up a fair appearance to the world. This opinion is founded partly on a knowledge of the actual career and circumstances of speculators, but more on the well-known fact that almost every line of business is in the hands of established merchants, who, of course, are too vigilant to overlook the opportunity of emolument, and who have much better means of information than temporary interlopers. Still, should there remain doubts as to the accuracy of our opinion, the question may be brought to a point by reference to the account-books of any given number of celebrated speculators; their affairs end almost always in bankruptcy; their papers continue open to access for years in the hands of their solicitors or assignees; and we are much mistaken if an inspection of them would show, in one case out of ten, that the parties had at any period succeeded in realizing their boasted profits.

Pernicious Effects of Speculation.—We have been induced to dwell the more on the boasts of speculators, because they are productive of great mischief in unsettling persons in business, particularly young men, and in making them look on their proper line with comparative indifference. It would be endless to attempt an enumeration of the various ways in which the rage for speculation has brought misfortune on merchants and manufacturers. The opening of a new country, such as Buenos Ayres, Brazil, or Caracccas, led to the export not only of a prodigious overstock of merchandise fitted for the country, but of many articles totally unsuited to the climate and habits of the people. Again, in 1814, when the war with France was drawing to a close, goods, both colonial and manufactured, were poured into the Continent of Europe, as if the compass of the markets was unbounded, and as if the calamities of war had produced no decrease of capital.

Holland; its instructive Example.—The country in which trade shone forth in all its splendor; where it was cultivated without the support of arms or prohibitory regulations; where, in short, it developed its beneficial tendency in all its extent, was Holland. If we look to the early enterprises of the Dutch, we find them enabled, by the power of their productive industry, to assert their independence at home, and to assail their enemies in the remotest part of their empire. The Portuguese in the East, and the Spaniards in the West, were each found unequal to the task of resisting these republicans. A proud stand was made by them against the navy of England, and they did not fall into despair even when assailed by English forces in conjunction with those of France. Afterward, when restored to an alliance with England, and when they co-operated with her in the great struggle against Louis XIV., it is surprising how large a proportion both of troops and subsidies was furnished by this apparently inconsiderable state. "No country," says Sir William Temple, "can be found where so vast a trade has been managed, yet the inhabitants have no native commodities toward building vessels, and hardly any that are considerable for traffic with their neighbors. Holland is grown rich by force of industry, by improvement and manufacture of foreign growths." Proceeding to specify more particularly the causes of this mercantile prosperity, Sir William enumerates "the easy communication of water, particularly by the Rhine and Maese; the security of property; the undisturbed liberty of conscience, and the progressive influx of people persecuted for their religious opinions in Flanders, England, France, and Germany." Such were the original causes: those of subsequent operation were the "general habit of industry and economy; the formation of canals; the institution of banks; the low interest of money; the appropriation of particular towns to particular branches of business; application to the fisheries, and, what he regrets much should not exist in England, the practice of keeping an official register of all purchases of land or houses;" a practice introduced into Holland and Flanders in the reign of Charles V., and which at present exists in Scotland, to the incalculable convenience and security of money transactions.

Effects of Trade upon Individuals.—We are now to say a few words on a different topic, namely, the effects of trade in forming the character of individuals; a matter of no little importance in a country like ours, where merchants both constitute so large a portion of the community, and exercise such influence on the proceedings of government. The mercantile character has a number of good points, being exempt from the vacuity and indecision so frequent in fashionable life, as well as from the various vices consequent on idleness, and which are so strikingly exemplified in the gambling and libertinism of the French metropolis. Whatever good is produced by continued activity, and by a pointed attention to the specific objects of one's occupation, may be confidently looked for among commercial men; with the further advantage, in large concerns, of an exemption from petty jealousies and invidious interferences. In such cities as London and Amsterdam, merchants are aware that the field is ample for all; that the prosperity of one is very far from impeding that of others; and that when disappointment and failure occur, their origin will be found in a very different cause than competition. Here, however, we must close our encomium, and, in the spirit of impartiality, proceed to exhibit the opposite side of the picture. The merchant's knowledge is particular, not general; he obtains a habit of understanding individual character, and a dexterity in managing his own affairs; but he has not, and can not, from his course of occupation, acquire the power of reasoning comprehensively on the interests of trade. If he observe in war a tendency to raise prices, or to invigorate particular lines of trade, such as ship-owning or insurance, he will probably be led to the general inference that to a maritime country war is advantageous. The contests of Great Britain from 1770 to 1810 having been attended with the undisputed command of the ocean, nothing more was required to satisfy the majority of traders that her mercantile marine was in a state of equal ascendency. They took *au pied de la lettre* the custom-house reports of annual exports, without observing how much was to be deducted on account of the depreciation of bank paper, or how surely they were laying the foundation of future distress by submitting to enormous taxation. Again, when in 1807 the long continuance of war had given a serious wound to her trade and navigation, a majority of the merchants ascribed it, not to the true cause, but to the undermining competition of the United States. Their range of reflection was not such as to enable them to perceive that, by overturning the prosperity of the latter, they would sap the foundation of their own; and that every million which they prevented us from adding to our capital was so much withdrawn from a fund devoted to the increase of the productive industry of Britain. Hence the unfortunate orders in council, the main cause of the overthrow of her exchanges with the Continent, of the increase of expenses in Spain and Germany, of her war with the United States; in short, of the long continuance of her sufferings since the peace.

Bad Effect of long Credits.—Nothing would, in our opinion, conduce more to the prosperity of trade than the adoption of the plan of doing all wholesale business for ready money, and the relinquishment of that habit

of long credit which prompts to unguarded enterprise, and has for so many years been the principal cause of crowding the columns of the gazettes.

To show the results of long credit, it is necessary to go at some length into practical illustration, and to apprise our readers of the real situation of the majority of our manufacturers and export merchants. A manufacturer on the present footing receives orders in the course of the year from twenty or thirty mercantile houses; the goods to be exported probably to the West Indies, the Spanish Main, or Brazil; the understood term of credit twelve months. The manufacturer does not receive the orders from abroad; he has an intermediate guarantee, that of the exporting merchant. Still the risk is considerable; but he naturally hopes for the best, and is unwilling to decline an order when it comes to him from a quarter of respectability. Now by mercantile respectability our readers are to understand integrity, and the intention of acting up to engagements; but the power of doing so, especially at a remote date, is a very different question, and is, in general, possessed in a much smaller degree than the public imagine. The trader whose capital is large will not scruple to ship goods to the value of 50 per cent. greater than his capital, first in the hope, so general among merchants, of realizing a handsome profit, and next in confidence that, should the foreign market be dull, and should delays occur in obtaining returns within the given time, his credit will procure him indulgence for several months, at the end of which the expected remittances can hardly fail to arrive. He may, and in general does go on for several years without much embarrassment, receiving, indeed, less than he sends out, but informed that all has been well sold, and can not fail to be soon realized. He thus goes on pleasing himself at every balance of his books with the seeming profit, and only regretting that hitherto that profit has not been tangible, since it exists in the shape of a debt due by his correspondents. He continues, however, under a favorable expectation of their making up for past deficiencies, and flatters himself that the delay has resulted from partial or temporary causes. He begins to find himself straitened for funds, but has as yet little difficulty in obtaining relief from a moneyed friend, or a prolonged credit from the manufacturers. His correspondents continue to write in a strain of confidence, and to call for more goods, which if he be of a confiding character, will lead him to extend the annual amount of his shipments; but at all events he is obliged to continue a certain supply for the sake of keeping up the assortment of stock. Still he finds that year after year a larger portion of his capital remains with his correspondents, and that they, however desirous (for we by no means put an extreme case), are unable to prevent an accumulation of debt, because they are in like manner left unpaid by the inhabitants of the country. To go to law would be of no avail, since it is the policy of almost every government in a recently-settled country to favor the debtor, and to give him the means of retaining capital in his hands. Affairs now begin to be serious with the exporter; the manufacturer and other creditors can not or will not give further time, and demand an explanation of his circumstances. This explanation takes place, and serves to show that their debtor is a man of honor, with more assets than debts, but the latter are certain, while the former are at a distance of 3000 miles. The consequence is a grant of time, an allowance to the debtor of two, three, or four years, to act under letter of license, in the hope of accomplishing that which it is evident can not be performed sooner. This is, in general, both the wisest and most liberal course; still it is not often found to succeed, because the foreign debts can seldom be realized in climates where life is held by so uncertain a tenure, where respectable agents are so rarely found, where buyers of goods have so little capital, and, above all, where the law allows them such a length of time for payment. A few of the promised installments are probably made good, but in general the merchant recognizes the impracticability of fulfilling the remainder, and finds it eventually necessary to submit to bankruptcy.

Holland a Country of short Credit.—In Holland we find that in its better days bargains were almost always made for ready money, or for so short a date as six weeks or two months; profits were small in their ratio, but the quickness of returns made them eventually large; failures were rare, even in so distressing an era as the occupation of their country by the French, which began in 1795, and involved from the outset a stoppage of maritime intercourse with all their possessions in India and America. The consequence of this stoppage was a decay of trade, a suspension of various undertakings, a scarcity of work, a miserable dullness in the sale of goods; all leading, in the first instance, to diminished income, and eventually to encroachment on capital; but, amid this distress, the failures were surprisingly few. Another example, equally replete with instruction, was the state of France after the double invasion of 1814 and 1815. There prevailed at that time a general discouragement among the upper ranks, and a great deal of wretchedness among the lower, trade being at a stand, and stocks of goods lying unsold in shops or warehouses for years; still bankruptcy was exceedingly rare. All this shows what a satisfactory prospect we may anticipate when we adopt the plan of transacting the greater part of our business for ready money. Yet we are far from recommending any law or measure to enforce that object; the evident advantage of the plan will not fail to secure its adoption.

II. History of Commerce. *Origin of Commerce.*—It has been an object with many writers to ascertain in what nation of antiquity commerce was first carried to a considerable extent; but as that extent implies a previous population, the more simple inquiry would be, in what country population first acquired density, particularly in towns. The answer is, that mankind first increased their numbers in warm latitudes, especially in situations where irrigation, whether effected by the overflowing of rivers, by the descent of streams from a range of mountains, or by any other means, was so extensive as to counteract the parching effect of heat, and give to vegetation a luxuriance unknown in colder regions. It was thus that the Nile gave fertility to Egypt, the Euphrates to Chaldea, and the Ganges, in the lower part of its course, to Bengal.

The earliest written notice of commercial intercourse is in Scripture, where we read of Joseph being sold by his brethren to a company of Ishmaelites or Arabs, who were going to Egypt with spices, balm, and myrrh, conveyed on the backs of camels. These itinerant traders probably brought back corn, Egypt being, even at that remote period, an occasional granary for Syria and other adjacent countries. The conveying of goods on the backs of animals ought to be remarked as indicative of a primitive state of commercial intercourse—of that which is carried on before the forming of roads or the use of wheel-carriages. Such was the case in England two centuries ago; such at present is the case in Spanish America, and, in some degree, in Old Spain, the mountainous nature of that country making it a matter of some difficulty to form roads.

Phœnicia, Sidon, and Tyre.—But whatever might be the inland traffic of the Arabians, Chaldeans, or Egyptians, they made very little progress in navigation; that was the province of the Phœnicians, who acted as naval carriers to the neighboring nations, in the same way as the Dutch did during the sixteenth and seventeenth centuries to the rest of Europe. This almost exclusive possession of navigation may seem strange in the present age, but the cause was the same in both cases—namely, the difficulty in a rude age of finding men capable of conducting vessels in the open sea.

Seamanship, now so familiar to the inhabitants of almost every port in Europe, was in those days understood by only a limited number, and was carried on with a degree of caution and slowness hardly credible to a modern reader. Thus the seamen of ancient times made it a rule to keep within sight of land, as if trusting for protection to a situation which the mariners of our days look on as attended with considerable risk. This arose from the great difference in the mode of propelling vessels, for which the moderns trust chiefly to the wind, and navigate with comparatively few hands. The small barks of the ancients were fitted out with oars; a method which required a great sacrifice of manual labor, but was attended with the advantage of finding a ready shelter in a bay or creek whenever the sky portended tempestuous weather.

What, it may be asked, was the chief cause of the extension of the navigation of Phœnicia? The vicinity of Egypt, and the quantity of provisions and merchandise exported from that fertile country. The navigation of the Red Sea, also, was conducted chiefly by Phœnicians. History is not sufficiently explicit in regard to the commodities forming the object of traffic along the Red Sea, nor have we any certain knowledge of the era at which the trade with India by that channel commenced. Bonaparte, when meditating his expedition to Egypt, was led, in his sanguine estimate of its advantages, to consider the Red Sea as the fittest line of communication with India, and to ascribe the wealth of Thebes, in Egypt, one of the earliest of commercial cities, to intercourse with the coast of Malabar. But whether the navigators of the Red Sea proceeded at that early date as far as the shores of India, it is evident that an extensive traffic was carried on with Cosseir, or a sea-port on the Red Sea which communicated with Thebes. The epoch at which Homer celebrated the wealth of that city is nearly the same as that at which Phœnician mariners navigated the Red Sea on account of the Jewish government in the reign of Solomon; but no historical investigator has been able to fix with certainty the situation of Ophir and Tarshish, the ports with which these vessels traded. Some confident calculators have considered them to have been in India; but, judging from the limited skill of navigators in that early age, it seems more likely that these harbors were near the eastern or more remote parts of the Red Sea, a part from which there probably was a direct communication with India.

Greece.—Such was the traffic of the Phœnicians with the south and east; it extended also to countries less peopled and in a still more primitive state in the west. The island of Crete seems to have owed to them its early civilization; and after Creto came Attica, Bœotia, the Peloponnesus, in all of which tradition recorded the early introduction of the arts by settlers arriving from Phœnicia or Egypt. These arrivals seem to have taken place about a thousand years before the Christian era, and half of that time elapsed in the gradual attainment of that state of civilization to which Greece had arrived at the period of her political celebrity—the invasion of her territory by the Persians under Darius and Xerxes. Greece is in several respects well fitted for foreign commerce. Her coast is greatly indented by the sea, and presents a number of inlets hardly inferior to the well-known gulfs of Argos and Corinth. Hence an early familiarity with the use of shipping, and the practice of sending out colonies at so early a date as a century after the Trojan war. These colonies proceeded in various directions, to Asia Minor in the east, to Thrace and the Euxine in the north, to Sicily and Italy in the west. The progress made by the inhabitants of these colonial settlements was rapid, particularly at Syracuse, whose capacious harbor soon acquired it extensive commerce and a numerous population. Agrigentum, Messina, Tarentum, were likewise places of considerable importance. It was the custom of these and other colonies to maintain an alliance and mercantile connection with the parent states, such as Athens, Corinth, Argos; and a number of characters eminent in literature and the arts appeared in the colonies at a time when their establishment might have been considered as too recent to afford more than the necessaries of life. But in a newly-settled country, such as the United States of America, various circumstances occur to increase the number and improve the condition of the inhabitants; provisions are abundant, in consequence of the extent of unoccupied land; the connection with the mother country insures a certain extent of trade; while the monopolies and other abuses natural to a long-settled community are in a manner unknown.

Athens.—On the other hand, the inland territory of Greece was not well fitted for commercial intercourse. It is traversed by no navigable river; and being mountainous and rugged, it could not, even in the days of its prosperity, boast of roads, merchandise being in those days, as at present, conveyed, not in carriages, but on the backs of horses and oxen. This deficiency of communication by land was one cause of the different states of Greece so long maintaining their independence, and of the limited ascendency attained by Lacedæmon, which, in extent of military means, was so superior to the other states of the Peloponnesus. Sparta and Thebes being inland towns, and Corinth comparatively a small state, Athens was the chief commercial city of ancient Greece. Her distance from the sea, five miles, was such as to afford her security against a sudden descent from an invading armament, while it was sufficiently near to her harbor, the Piræus, for the easy transmission of merchandise. The trade and shipping of Athens, however small it might appear to a modern reader, was such as to give it an ascendency over the different islands to the eastward of Greece, and to enable it to maintain, in the Peloponnesian war, a long struggle against a strong confederacy. When overcome at last, in consequence of what may be termed an accidental cause, the capture of its fleet by Lysander, its political depression was of short duration; the activity and industry of its inhabitants revived its trade, so that Athens continued for ages the most populous and commercial place in Greece.

Tyre.—Tyre, though at no time a town of great extent, remained long in the enjoyment of considerable trade. From the reign of Solomon, when its commercial activity is described in Scripture, to its capture and destruction by Alexander the Great, there elapsed a period of seven centuries. The formidable resistance it made to the Macedonian arms impressed Alexander with a strong sense of the value of commerce, and of its effect in increasing the sources of national power. Though known to the world chiefly as a warrior, Alexander had considerable claims to the character of a politician. He adopted, and caused his followers to adopt, to a certain extent, the manners of the nations they conquered; and by the expedition of Nearchus from the mouth of the Indus to the Persian Gulf, he discovered a commendable zeal for maritime discovery. Equal judgment was evinced by him in founding his new city of Alexandria in a position such as to command an extensive range of intercourse. The Nile brought to it on one hand the valuable products of Egypt, and afforded on the other a ready inlet to the merchandise imported from Europe. To India, also, the route by Alexandria and the Red Sea was preferable to that of the Persian Gulf, which involved the necessity of a considerable journey by land.

Carthage.—Contemporary with the decline of Athens and the rise of Alexandria, but superior to either in commercial activity, was Carthage, the destruction of which forms one of the foulest blots in the history of the Romans. The situation of Carthage was well adapted for trade; its harbor was good, its range of navigation extensive, both to east and west. Founded by a colony from Tyre, it maintained a friendly intercourse

with Phœnicia; while in the west of the Mediterranean, in Sicily, Spain, and the south of France, it met with no commercial rival. These countries, at that time uncivilized, and almost uncultivated, were greatly indebted to Carthage for the introduction of intelligent settlers, and derived from her the same advantages which Greece, several centuries before, had received from Phœnicia and Egypt. In Spain the fine harbors of Carthagena and Cadiz were rendered the resort of shipping by the Carthaginians; and without calling on our readers to believe the traditional assertions of the extent of their navigation, either to the north of Europe or the south of Africa, we may with confidence affirm that, had not this state unhappily fallen, from the jealousy of the Romans, it would have been the means of diffusing industrious habits over a great part of the west of Europe, and of advancing by several centuries the progress of the useful arts.

Rome.—The policy of Carthage, though not uniformly pacific, was far less pernicious than the perpetual tendency to aggression of a military state like Rome. In navigation the Romans were at no time remarkable. During their conflicts with the Carthaginians they sustained repeated losses, chiefly from the unskilfulness of their seamen, and their inability to cope with the fury of the elements. After they had triumphed over the Carthaginians, and extended their conquests to Macedon and Greece, the Romans were no longer under the necessity of equipping fleets, because no maritime power dared to dispute their supremacy. But the extension of the Roman power was favorable, in several respects, to commerce; piracy was suppressed, and merchant vessels had free access to almost every part of the Mediterranean. Hence a gradual increase in the length of mercantile voyages, which now extended on one hand to the north of France and Germany, on the other to the Indian Ocean, to which it became easy, from the progressive improvement of navigation, to proceed either by the Red Sea or the Persian Gulf. The mariners' compass was still unknown, but the uniform direction of the wind in certain seasons enabled the navigators to and from India to complete their voyages with little difficulty.

The Middle Ages.—It was toward the middle of the fifth century, about a hundred years after the removal of the seat of empire to Constantinople, that the Romans became unable to defend their frontier against the uncivilized tribes who pressed on them from the north and east. The consequence was that the country along the Rhine, the inland provinces of Gaul, and, some time afterward, Spain and the north of Italy, were overrun by these rude assailants. The increase in the population of towns was checked, many places being plundered, others subjected to heavy contributions, and property in general rendered unsafe. There was no longer a central or general government; the territory of the empire was divided into a number of separate states, the rulers of which had no just idea of the importance of commerce. These uneducated governors, accustomed to appeal on almost all occasions to the sword, were not sufficiently enlightened to forego the temptation of a present seizure for the sake of the lasting advantage of mercantile intercourse.

Pisa.—Next to Venice in the history of modern commerce came Pisa, a town built on the banks of the Arno, at a distance of nearly three leagues from the sea. Its trade was chiefly with the western coast of Italy, with Sardinia, Corsica, and Sicily. Its commercial importance was prior by two centuries to that of Genoa, although it never equaled the latter in extent of navigation, nor in the number of distant settlements. Pisa declined from its commercial rank in consequence of Leghorn, which was situated immediately on the coast, being better adapted to foreign intercourse.

Genoa.—Genoa continued flourishing from the year 1000 until its ill-judged hostilities with Venice in the latter half of the fourteenth century. These were injurious to both, yet both recovered from the effects so as to hold, during several centuries, a distinguished rank in trade. They were remarkable also, particularly Venice, for a variety of the finer manufactures. Neither could boast of a supply of the raw materials of almost any manufacture in their respective territories; but their numerous merchant vessels brought a variety of products from a distance, and the amount of the population of either city was such as to render practicable that division of employment which is the soul of manufacture, and which was at that time almost unknown in other parts of Europe.

Constantinople.—Constantinople had the good fortune to remain untouched by the enemies of the empire until the middle of the fifteenth century, a time when civilization had made progress in the west of Europe, and literature was on the eve of receiving a great extension by the discovery of the art of printing. To this fortunate coincidence of the revival of the arts in the west, at a time when the east of Europe was sinking under the pressure of barbarism, we owe the preservation of much that was valuable in the ancient world; and, among other things, that of certain manufactures and branches of commerce. Constantinople had all along maintained a commercial intercourse with Venice and other ports in Italy, and, in general, with Alexandria. The same had been the case in regard to India; for when the occupancy of Egypt by the Saracens prevented the trade to India by the Red Sea, it was kept up by the Caspian and Euxine. But by far the shortest course from the east of Europe to India is by the Euphrates and the Persian Gulf. It was to the extent of intercourse carried on by this channel, some time after the Christian era, that we are to ascribe the wealth and grandeur of Palmyra, a city erected in the midst of deserts. This would have continued one of the chief routes of communication between Europe and India during the Middle Ages, had not the caravans been in perpetual danger from the Arabs after the decline of the civilized governments in this part of Asia.

Venice.—The apprehension engendered by the approach of barbarians from the north and east, led a number of traders and manufacturers settled in the north of Italy to fix their families in the small islands near the mouths of the Po. There the surrounding waters afforded them a degree of protection against invaders, who, however formidable by land, had no means of carrying on hostilities by sea. Such was the origin of Venice, a city situated in the midst of the waters, and destined to acquire extensive trade from the security attendant on her position, and to take a lead amid the mercantile states of the Middle Ages.

The growing trade between Europe and India, though of considerable value, was not extensive enough to be productive of the wealth ascribed to it by Dr. Robertson and other historians, who, unacquainted practically with commerce and its limited gains, are ready to lend an ear to the sanguine statements of early writers. Thus the wealth of Venice, commonly ascribed to its trade with Alexandria and India, was the consequence of a variety of causes, no one being of particular importance, because several centuries were passed in the gradual increase of its population and capital. Venice afforded a secure resort in ages when other countries were in danger of invasion and plunder. It had also a prudent government in times when, in most parts of Europe, there was little idea of a free constitution, or of a regular administration of justice. Venice was in this state when, in the twelfth and thirteenth centuries, the increase of traffic, arising from conveying the crusaders, with their military stores, and the readiness of those zealous combatants to extend the sway of a Christian state, enabled that commercial republic to increase her foreign territories. In general, the foreign policy of Venice was pacific, but she found it difficult to avoid hostilities with the Turks, or to escape from taking a part in the repeated contests which took

place between France and Austria for the territory of the Milanese. Those who take an interest in tracing the gradual extension of industry will find in Venice the origin of several important commercial institutions. In that city was established the first public bank, and there also was first introduced a funded debt transferable from hand to hand. The same thing held in regard to lesser matters connected with the details of mercantile business. Bills of exchange, if not invented by Venetian merchants, were first carried by them to a great extent; and the principles of book-keeping by double entry were there first understood and applied in practice. However familiar those principles may be to merchants of the present day, they were too refined for the rude and primitive state of most parts of Europe in the Middle Ages.

Spain.—Here it may be well to point out the fallacy of a notion general in Spain, and not uncommon in other parts of Europe, namely, that in the Middle Ages Spain was a flourishing country, and possessed, in Tarragona, Tortosa, and Zaragoza, great population and wealth, each of these towns being said to have contained several hundred thousand inhabitants. This singular opinion was widely spread, in consequence of the prominent figure made by Spain in the politics of Europe, in the reigns of Charles V. and Philip II. The public did not take into account the great addition of power conferred on Spain by her possessions in Italy and the Low Countries; nor were there in these days statisticians capable of explaining the very slow manner in which either cultivation or commerce can acquire extension in a country so mountainous, and with so few means of transport, as Spain. Of roads she can boast only the few that are required for the purposes of government, the cross-roads being little more than bridle paths, and the traffic of the country being in general carried on by mules. All this indicates a scanty population and backward state of society, as has been the case in Spain in every age; for there is no truth in the traditionary opinion that her population was greatly thinned by emigration to America. The number of persons who proceeded annually from Spain to America never exceeded the tenth part of those who at present go annually from Ireland to Canada. The truth is, that the power of Charles V. and Philip II. was great only because the power of the other princes of Europe was very limited. The military establishments of that age were quite insignificant compared to those of the present times.

The Hanse Towns.—One of the chief features in mercantile history during the Middle Ages was the association of towns in the north of Europe for the purpose of giving security to mercantile property. At that time the different countries of Europe were very imperfectly governed; there were then no regular posts and very few roads, so that the means of redressing grievances, or of making communications from one part to another, were very imperfect. Too much has been said of the political power exercised by the Hanse Towns, but the association was of great use in protecting individual property. It dated from the middle of the thirteenth century, and originated at Lubeck, a sea-port, which had not in those days more population or wealth than at present, but possessed much more comparative importance, because very few places in Europe could at that time boast of 30,000 or 40,000 inhabitants. The trade between the Baltic and the west of Germany centred in the harbor of Lubeck, in ages when navigators were not sufficiently skilled to proceed to or come from the Baltic by the circuitous route of the Sound. The association of the Hanse Towns consisted first of Lubeck, Hamburg, and Brunswick, but soon extended to other places—to Amsterdam, Dordt, Cologne, on the one side, to Dantzic, Königsberg, Riga, on the other. These and many smaller towns, to the number of sixty and upward, became members of this protecting body, which continued in a state of union during three centuries. At the end of that time it was gradually dissolved, not by any violence or exercise of authority, but by the continued progress of civilization; the different governments in the north of Europe having by that time acquired the power of protecting their mercantile subjects. It is now about two centuries since the association of the Hanse Towns ceased to exist in a comprehensive sense; and for a considerable time the name has been confined to Hamburg, Lubeck, and Bremen. Hamburg took the lead of other trading towns of the north of Germany, by means chiefly of the extent of its river, and the consequent easy communication with the sea on the one hand, and the interior of Germany on the other. It gained also by the improvement of navigation in the fifteenth and sixteenth centuries, when vessels from the south of Europe found it no longer necessary to suspend their voyage at Bruges, but found it practicable, and even easy, to proceed at once as far as the Elbe.

The Netherlands.—The wealth and possession of the Netherlands belong, like the early opulence of Tyre, and the magnitude of the trade of Carthage, to the remarkable phenomena of mercantile history. To judge from the physical aspect of Holland, the general marshiness of the soil, the indifferent climate, and the total absence of mineral products, we should be inclined to consider it among the least favored countries of Europe; but all these advantages were balanced, and more than balanced, by the possession of extensive water communication. No part of Europe equals Flanders and Holland in extent of inlets from the sea, in the breadth of navigable rivers, or in the ease with which canals may be excavated. To these advantages, much more than to civil institutions, we are to ascribe the early prosperity of the Netherlands; for these apparently unpromising countries took a lead in civilization almost as remarkable as the more favored regions of the north of Italy. That they were not so early in the career of improvement, was owing to the comparative barbarism of the countries in the north of Europe with which they held intercourse; while Italy had communication on one hand with Constantinople and the Eastern empire, on the other hand with the south of France, the west of Italy, and various sea-ports which still preserved a portion of ancient civilization.

Flanders; Holland.—The soil of Flanders, without being naturally fertile, was more easily cultivated than the comparatively marshy districts of Holland. Hence the early superiority of the Flemings in agriculture and manufactures. It was in the fourteenth century that the art of weaving the finer woolens was introduced from Flanders into England, and in the sixteenth that we derived from the same quarter many useful imports in agriculture and gardening. The progress of the Dutch in navigation was equally remarkable. The Maese and Rhine enabled them to bring down the bulky produce of the interior, such as timber, corn or cattle, to their own coast, as well as to carry up these rivers to the inland provinces the various articles of merchandise imported from the south of Europe. Hence the increase of Dordt at Rotterdam. The rise of Amsterdam was owing to a different cause; to the extent of the Zuyder Zee; to the easy access which that expanse of water afforded to vessels from the Elbe, the Weser, and the Baltic.

Bruges.—Bruges owed its increase to its adoption as an intermediate port for vessels from the north and south of Europe. A voyage from the Mediterranean to the Baltic was in those days a formidable undertaking; sea-faring men accounted it too long to be performed out and home in one season, and gladly embraced the opportunity afforded by the warehouses of Bruges for landing their cargo from the south, and taking on board another from the north, without the delay of a passage through the Sound. This plan of dividing the voyages to the north continued during the thirteenth and fourteenth centuries; in the fifteenth it in a great

measure ceased, because the improvements in seamanship made it easy for vessels to proceed directly to Hamburg, Copenhagen, and other northern parts.

Antwerp.—Antwerp succeeded Bruges as the station authorized by the Hanse Towns; but its prosperity was mainly owing to the width and depth of the Scheldt, which may be said to surpass any of the maritime inlets in the north of Europe. The time of the chief prosperity of Antwerp was in the sixteenth century; its population and wealth had attained a great height for so unimproved an age, and would have continued to increase, had not the tyranny of Philip II. provoked the inhabitants to insurrection, and exposed them to all the evils of a siege and capture by a military force. The consequence of this misfortune, and of the continued intolerance of the Spanish government, was the removal to Amsterdam of many of the inhabitants, and of a great share of the mercantile business of Antwerp. In the next century the Dutch acquired great political weight, and took advantage of it to prevent the navigation of the Scheldt, that Amsterdam and Rotterdam might possess exclusively the trade with the interior provinces. This singular prohibition, unexampled in the history of commerce, remained in force 150 years; for the Scheldt was not opened to merchant vessels until 1794, when the Netherlands fell under the dominion of France. During all that time Antwerp was deprived of the benefit of foreign trade; its population ceased to increase, and remained stationary at the number, on an average, of 50,000.

Maritime Route to India.—The great object of navigators in the fifteenth century was to reach India by the ocean, and to carry on what was accounted a lucrative traffic without interruption from the Turks or Arabs. The discoveries required for this purpose were made by the Portuguese, who, in situation, were nearer than other Europeans to the western coast of Africa, the line necessarily followed by those who aimed at reaching India by a new course. The Portuguese had in these days more than one prince of the blood disposed to patronize maritime discovery; but their seamen were very unskillful, so that in following their awkward efforts at discovery, we find season after season passed in tracing the unknown part of the coast of Africa to a distance of only fifty or sixty leagues. This inconceivable slowness marked the navigation of the Portuguese in their progress toward the equator, until, in 1481, they ventured to forsake the coast, stood out to the open ocean, and penetrated 1500 miles to the south of the line. From that time a bolder course was taken by these adventurers, and at last the discovery of the route to India by the Cape of Good Hope was accomplished in 1497.

Discovery of America.—The discovery of America was effected in a very different manner. Though accomplished by Spanish vessels, the honor of the enterprise belonged more properly to Italy; for it was only in a country accustomed to navigation, and possessing well-educated mariners, that so distant a voyage could have been accounted practicable. Many years were passed, as is well known, by Columbus in forming his plan, and soliciting the aid required to carry it into effect; but, once embarked in the attempt, the success was speedy, because the mind of the conductor was sufficiently enlightened to persevere in the voyage, instead of returning, as would probably have been done by an inferior navigator before traversing the half of the Atlantic.

We now come to the sixteenth century, the time when the productive industry of Europe received a considerable impulse from the influx of the precious metals from America. At that time the chief trading towns of Europe were in Italy, the Netherlands, and, in a much less degree, in France, England, and Germany. In the latter countries the towns were very small, not being peopled to the extent of one third of their present numbers. Nothing shows more clearly the backwardness of manufactures in that age, the imperfect division of employment, or the limited communication between one province and another. There were in those days few lines of intercourse entitled to the name of roads, or fit for conveying corn or merchandise by wheel carriages. Even in countries comparatively level, such as the south of England, the north of France, the north of Germany, there were no carriage roads, and goods were conveyed on the backs of mules and horses, in the same manner as over the mountainous regions of the Alps. Nor were there in that time post-office establishments for the service of either governments or merchants.

An increase in town population is the best evidence of improvement in agriculture, as in commerce. In a rude state of cultivation, the labor of seventy or eighty persons is required to raise provisions for a hundred; so that three fourths of the inhabitants are obliged to live in country districts, for the mere purpose of raising subsistence. But as machinery and implements become improved, and the art of husbandry is better understood, the farmer can render more effectual the labor of himself and his assistants; there remains a greater surplus of provisions for the support of the inhabitants of towns; and somewhat more of the population are enabled to attach themselves to employments distinct from agriculture, namely, those of mechanics and manufactures. To this improved condition Europe was slowly advancing, when the discovery of the silver mines of America had the effect of materially quickening its progress. This renders it proper to make a few remarks on the supply of gold and silver in early ages.

The precious Metals.—It is somewhat singular that Egypt, a country never remarkable for mines in its own territory, should have been among the first to give an example of mining on a large scale. But the Egyptians had extended their conquests to the southward, where, in the mountains of Nubia, there were extensive mining districts. In these, as in the mines of other parts of the world, masses of ore contained only particles of silver, and the task of raising the ore to the surface was very laborious. This was performed in the Nubian mines with little aid from machinery, and chiefly by manual labor, as is still the case in many parts of Spanish and Portuguese America. The next accounts of mining in ancient history relate to Greece, where, from the mountainous nature of the country, the mines were numerous, though not particularly productive. They were wrought in Attica, Thrace, and several of the islands. The laborers were paid partly in money, partly in provisions; and the accounts handed down to us by Greek writers show that mining, like agriculture, afforded a fair return for the capital and labor employed, but no remarkable profit. Spain in those times, as at present, was remarkable for extensive mining; as were in a less degree Sardinia, Corsica, and the small island of Elba.

Such undertakings were long carried on for the public account; but toward the fifth century of the Christian era, the Roman government withdrew from most of its mining establishments, allowing individuals to carry them on for their own account. The quantity of gold and silver in circulation appears to have subsequently decreased; but we are greatly at a loss for correct information in regard either to the state of mines or the prices of commodities, as represented in money, during the Middle Ages.

Influx of Silver from America.—It is now three centuries since the importation of silver from America, in particular from Mexico and Peru, amounted at first to half a million annually, and increased to one, and afterward to two millions. This sum was such as to affect the prices of corn, labor, and merchandise generally. It caused a gradual rise of prices, carried to the greatest length in maritime districts, in parts connected with each other by navigation. The published works of the sixteenth century contain many notices

of the rise in the price of commodities, and of the inconvenience resulting to the consumers from such rise: the advantages to agriculturists and producers generally were not so clearly perceived, or the humble classes enjoying them had not equal means of stating them to the public. The supplies of gold and silver from America to Europe continued during the seventeenth and eighteenth centuries, and on a much larger scale than during the sixteenth; yet their effect was not so great for several reasons. First, the number of persons among whom silver now circulated was far greater than formerly. Gold also had become more common, and began to form the chief, or almost the sole medium for large payments; and, lastly, the use of silver for plate, jewelry, watches, and other ornamental purposes, increased greatly in consequence of the improved circumstances of the middle and upper classes. There remained thus less silver to add to the coin in circulation.

Bank-notes.—It was in the eighteenth century, particularly after 1750, that the use of bank-notes became general in England, and subsequently in the United States of America. This may be compared in its effect on prices to an additional supply of gold from the mine, because its tendency to raise prices is considerable, though not so great as is vulgarly supposed; because bank paper payable in cash on demand, of which alone we speak, can never be unduly extended. Bank-notes have as yet obtained little currency on the Continent of Europe; but in Great Britain, Ireland, and North America, their effect on prices may be said to have been similar to that of the importation of the precious metals from America. In either case, the consequence was a rise in the money price of corn, and commodities generally. To comprehend the benefit of such rise, we should consider society as divided into two great parts; the producing and the non-producing classes. The latter consist of capitalists, landholders, or fixed annuitants; the former of farmers, especially tenants on lease, manufacturers, merchants, and, in general, all persons who carry on business with borrowed capital. If a tenant on lease continue to pay during twenty-one years the same rent, while the market price of his crops experiences a progressive rise, it follows that his circumstances will improve. Thus, on the augmented importation of silver from America to Great Britain, which began three centuries ago, there took place a slow but steady rise in prices, the effect of which was of great advantage to agriculturists, in particular to those who held land on lease. The yeoman who was cautious and persevering thus laid the foundation of a little property, the next generation added to it, and the third rose from the condition of cottagers to that of farmers. This, or something like this, was the course of circumstances in England, during the chief part of the sixteenth, seventeenth, and eighteenth centuries. If the effect was at no time very great, it was continued and progressive; for we can trace no great or general decline in the price of agricultural produce until the general peace of 1814.

Trade of Great Britain.—The trade and navigation of Great Britain, great as it now is in extent, did not by any means make an early figure in the commercial history of Europe. Of this the principal cause was the thinness of her population compared to that of the north of Italy or the Netherlands, and the consequent insignificance of her towns. The slow progress in trade is also to be ascribed to political causes, to the civil troubles originating with the great barons, the frequent wars with France, and still more to the long and sanguinary contests in the fifteenth century, respecting the rival claims of the houses of York and Lancaster. It was not till the reign of Henry VII., little more than three centuries ago, that the advantages arising from the extent of coast and abundance of fuel began to be brought into active operation. During the reign of his successor, the progress of improvement received little patronage from the court, but a most efficient indirect aid from the introduction of Protestantism. The advantages resulting from that happy change, and the development of national industry, were strongly displayed during the long reign of Elizabeth, under the wise administration of Cecil. At that time, also, was felt the benefit arising to the productive classes, from the augmented import of gold and silver from America.

Exports to North America.—A striking feature in the trade of England, compared to that of France, Germany, and other Continental countries, is the magnitude of its exports to distant parts, such as India, North America, and the West Indies. These different branches of trade employ a number of seamen, and make a conspicuous figure in the list of yearly exports. They are considered as the pillars of commercial prosperity; but those who estimate them so highly have no idea of the large sums of capital that have been withdrawn by each of these countries from England. The United States of America consumed English manufactures largely for nearly a century, but in no one year did we remit back to Great Britain the full value of the articles which we imported. The amount due from the United States to England has exceeded the general estimate, and is known only to the merchants, who feel the deduction thus made from their pecuniary means. A similar drain has long been made by her West India colonies, but in a less degree, until within these fifty years, since which the capital drawn from England has amounted to many millions. With India commercial intercourse was more limited; and the exports, confined to the East India Company and to a few mercantile houses in London, were on a comparatively small scale until the present age, during which the extension of the private trade from Liverpool, and the advance of capital on indigo plantations, made the India business assume a considerable resemblance to that with North America and the West Indies. The real and substantial benefit arising from commerce takes place at home, and shows itself in the extension of manufactures, the increase of towns, the improvement of roads, canals, and harbors.

Of the course of trade in Great Britain during the last half century, the following is a brief summary. After the peace with the United States of America in 1783, her trade suffered for some time by the transition from war to peace, but gradually improved; and in the years 1789, 1790, 1791, 1792, was decidedly prosperous. After this came the war with France, which was at first injurious to trade, but after the abundance of money consequent on the extended circulation of bank paper in 1797, assumed a very different appearance, and seemed to bring a yearly addition to the national wealth. This ostensible increase of profits was kept up during the chief part of the war, but at the peace the state of circumstances underwent a complete change; the transition was great beyond example; prices fell in every department of business, and the year 1816 was among the most gloomy in the commercial history. A revival of trade took place in 1817 and 1818, but it was succeeded by a long depression. In 1823 trade revived once more; in 1824 it became prosperous, and in 1825 afforded a striking example of the abuse of mercantile prosperity; at the end of that year a general fall of prices, and afterward the heavy calls to meet the expenses of the late gigantic railway undertakings, aggravated by the failure of the potato crop of 1846, occasioned the greatest difficulty in procuring pecuniary accommodation, and led to the crisis of 1847.

Effect of War Expenditure.—From the ease with which money was borrowed by the government of Great Britain during the eighteenth century, the wars carried on were both of frequent occurrence and on a scale of great expense. The result was a continued increase of debt and taxation; but the burden did not appear beyond her means, until the unprecedented length to which it was carried by the wars of 1793 and 1803.

Both took place under the ministry of Mr. Pitt, and the extreme to which he allowed expenditure to be carried was the more remarkable when we consider his long experience in finance, and that from the time of his coming into office his attention was given to the state of the trade and revenue. Several of his early measures, such as the commutation of the duty on tea, and the commercial treaty with France in 1786, were entitled to great commendation. A similar opinion is not now entertained of his revival of the sinking fund; and it was in an evil hour that he allowed himself to be diverted from his pacific course by the urgency of the aristocracy and his sovereign to take up arms against the French revolutionists. Unfortunately the atrocities of these men, the endless usurpations of Bonaparte, and, above all, the facilities afforded by the unchecked issue of bank paper, carried the expenditure to an unprecedented height.

In the midst of this hazardous career, the death of Mr. Pitt, and the removal from office of his immediate successors, transferred the management of British finances to the hands of men wholly unequal to the task: of men unconscious of the precarious nature of paper currency, and of the danger of such measures as a stoppage of neutral navigation, or a war with the United States of America. The consequence was a depreciation of the bank paper during five years, an enormous waste of the public money, and a burden on the country of unparalleled amount. A state of war is attended by a great demand for the service of individuals, as well in the army and navy as in the public offices. A great number of persons are thus withdrawn from productive employment, and the consequence is an increase of the wages and incomes of those who remain so employed, as well as bringing into activity a number of persons who in a season of peace would hardly have been accounted worthy of employment. A rise in the price of corn and other produce is another consequence of a state of war; this leads to a rise of rent; a rise of rent to increased expenditure on the part of the landlord; and that to a general activity and continued employment of working classes. Such was the condition of Great Britain during the twenty years from 1794 to 1814, while in the twenty years that followed the peace there was a corresponding decline, and then a gradual return to higher prices. The fall in the price of produce lowered rents, and greatly lessened the income of the upper classes; hence a contracted expenditure, and a want of employment for the lower orders. All this exemplifies the precarious nature of such a rise of prices as took place in the late wars, and will, more than any other argument, confirm the public in an adherence to peace.

Decrease of the precious Metals.—The supply of gold and silver from America to Europe continued regularly to increase until the year 1810, since which the disorders in Spanish America, particularly in Mexico, shortened the supply from that quarter by at least one-half. Mr. Jacob, in his work on the precious metals, calculated the reduction in the quantity of circulating coin, during the twenty years that succeeded the peace of 1814, at not less than 20 per cent. This decrease in the supply of the precious metals must have had some effect in lowering the prices of commodities, but to what extent it is not possible, with our imperfect data, to form an opinion. But the discovery of gold in California in 1848, and in Australia in 1851, has not only made up for any deficiency in the supplies from other quarters, but from these two countries alone there has been furnished more than twice the amount of the entire annual produce of the precious metals from all parts of the world in the most productive periods of their working. The effect of this has been to raise wages and prices very largely both in Europe and America, and to give a great stimulus to emigration from Britain, and especially from Ireland, and to some extent from Germany.—*See* EMIGRATION.

B n

Free Trade.—In 1845 Sir Robert Peel abolished the customs duties on 420 different articles. This measure was a virtual abandonment of the system of protection, which was shortly after followed by the total repeal of the corn laws.

Progress of American Commerce.—The sixteenth century introduced the leading European powers to a minute acquaintance with the continent of America. Adventurous navigation had rescued a world from savage dominion, and there were adventurous spirits enough to people that world, and identify thenceforward their destinies with it. A hundred years after, and civilization planted her abodes through all this waste. Peculiar, indeed, is the feeling with which these infant days of our country are regarded, so like an illusion does it seem—so like a dream of glowing imagery. We look back as to a classic era, and the romance of Pocahontas, and of Raleigh, of Fernando de Soto, and Juan Ponce de Leon, do they thrill us less than the beatific visions of the Greek, recurring to ages long ago, when Ilion resisted the shock of Agamemnon's heroes, and the Argo sailed away to distant Colchis? The dim antiquity seems gathered around both of them alike. But let it pass, all—the romance of our history. They imagined not, the men of that day imagined not the stupendous results which have occurred so soon. They saw not the benign and regenerating influences of a virgin land, preserved for countless ages uncorrupted by tyranny, and ignorant of oppression. Could such a soil have nurtured else than freemen? They saw it not, and do we—even we—see other than darkly yet the great consummation, the mighty destinies of the regions which, three centuries ago, were proclaimed from the mast-head of a crazy ocean bark, a speck upon the distant heaven?

The development of American character is replete with instruction, and solves one of the most remarkable problems in the history of mankind. The untried scenes of a new world, cut off by trackless oceans from contact and communion with the civilization of unnumbered generations, were sufficient to introduce, what might have been predicted of them, results new, striking, and without a precedent. The indomitable will, the stern endurance, the inflexible and hardy spirit of independence, the high daring, the lofty patriotism, the adventurous, unlimited enterprise, the genius resolute, active, intrepid; inexhaustible in resources, elastic in vigor and in freshness, buoyant ever and hoping on, and executing amid every trying scene, every danger, and difficulty, and disaster—triumphing every where and in all things. Philosophy could have argued this complexion for the men whose fathers braved so much beyond the ocean, and would philosophy have won less than the fame of prophecy by her judgment?

But we pause not here to lament the causes which have counteracted these genial influences, and left whole regions of America stagnated, as it were, in the very elements of vitality and yet living hopelessly on. Should we refer to Mexico and the South American States? What is there here of progress to chronicle, and how much of humiliation? Regions blessed by Heaven in every thing but in men. Changing ever their dynasties and their despots in revolution and in blood. In motion always, without progress. In arms, without valor. Loving change rather than hating oppressors. Proclaiming civilization and annihilating its advances. The bitterness of Voltaire's sneer has no cruelty or injustice in its application to many of them, "*en pansant les chevaux de leurs maitres ils se donnent le titre d'electeurs des rois et de destructeurs des tyrans!*" Under Heaven, as it was the destiny of the savage aboriginal, incapable of civilization, and with no law of progress ingrafted upon his nature, to fade away before the steady advances of European arms and policy, so the Anglo-Saxon element of America, by its flexibility and its power, by the new elements which it has taken to itself in the trying, yet triumphant scenes through

which it has passed, will and must, in the inevitable course of events, preside over the destinies of the continent of America, aiding and directing them, adding life and vitality, rousing dormant and sleeping energies, and developing, upon the theatre of the world, movements in comparison with which all that history can furnish before the deluge, before the era of Christ, and since, shall dwindle into insignificance! It needs no ardent temperament to draw a stronger picture.

American Commerce in the seventeenth Century.—The early colonists were exposed for a fearful probation to the most extraordinary vicissitudes and necessities. With the axe in one hand they reduced the sturdy forests into the farm-yard, and with the knife in the other they resisted the approaches of the stealthy and sanguinary savage. A meagre subsistence rewarded the toils that knew no rest, and the charities of the mother country were invoked for men whose determined wills grew stronger as they suffered. This period had its different limits. Fifteen years after the landing of William Sale, we find the proprietary government in England complaining to the Carolinas, "we must be allly indeed to maintain idle men." Thirty-three years after the landing of Bienville in Louisiana, the Western Company threw up their charter in utter hopelessness and despair.

New England's rugged soil yielded a too reluctant tribute to the industry of her sons. They went out early upon the ocean by which they were girt in search of bread that the plow yielded not. To this hardy and daring people the boons of Nature were to be found in her apparent denial of them all.

The seventeenth century affords us, however, but a few particulars of the trade which had been started in the colonies. That it was limited can be readily imagined; that it should be worthy of any regard at all, is the only source of surprise. The materials of this portion of our history are meagre. It is sufficient that, in 1647, a trade had been opened from the Northern ports to Barbadoes and others of the West Indies; that a collector of the customs was appointed at Charleston in 1685, and that the hardy enterprises of the Nantucket whalemen received their first impulse in 1690.

American Commerce from 1700 to the Revolution.—In the year 1731 we find a petition read in Parliament from the American colonies that the African trade be thenceforward laid open to them. In the same Parliament it was conceded that the whole gain of the mother country from the trade of Virginia and Maryland alone amounted annually to £180,000. The Pennsylvanians were exporting corn to Spain and to Portugal, and with the proceeds of their ships and cargoes selecting out merchandise in the English markets. To the Dutch alone they sold 5000 pistoles annually in liquor and provisions. They had their invoices to Surinam, and Hispaniola, the West Indies, Canaries, Newfuundland, and the other colonies, and £150,000 from the proceeds to traffic in Britain. "New York," says a chronicle of this epoch, "sends fewer ships to England than some other colonies do, but those they do send are richer, as dealing more in furs and skins with the Indians, and they are at least of equal advantage to England with those of Pennsylvania. The soil of New England is not unlike that of Britain. It employs about 40,000 tons of shipping, and about 600 sail of ships, sloops, etc., about half which shipping sails to Europe." Now began the parent's jealousy of her offspring. Nothing, it was said in Parliament, nothing is more prejudicial, and in prospect more dangerous to any mother kingdom than the increase of shipping in her colonies. The only use of colonies, added Lord Sheffield, is the monopoly of their consumption and the carriage of their produce. In 1730 the Commons of England struck an ineffectual blow at the American trade with the French and Dutch colonies, it having been represented to them as greatly detrimental to England and *her* colonies.

In 1732 a writer gravely announced that the convenience of the Americans from the plenty of beavers, hare, coney wool, and many other furs, gave them such advantages that, unless restrained, they would soon supply all the world with hats. The Board of Trade of the same year report that there are more trades carried on and manufactures set up in the provinces on the continent of America, northward of Virginia, prejudicial to the trade and manfactures of Great Britain than in any other of the British colonies. In 1750 the Americans were forbidden to work in iron, and Lord Chatham declared not long after in Parliament that the colonies of North America had not even the right of manufacturing a nail. So stringent had become the protective policy.

In 1764 was imposed an onerous burden upon American commerce by the mother country, grown jealous of its too great extension. This commerce had greatly enriched the home as well as the colonial government, but the former was too much blinded by erroneous policy to perceive it. She heeded not the annual purchases made in her markets with the avails of lumber, beef, fish, pork, butter, horses, poultry, live-stock, tobacco, corn, flour, bread, cider, apples, cabbages, onions, etc., disposed of by our traders to the eager West India planters; and Lord Sheffield, in his observations on the commerce of the American States, tells us that at this time the Carolinians, of their exports to Kingston, Jamaica, took back one-half in the produce of that country, the middle provinces one-fourth, New England one-tenth, and the balance in specie dollars. The trade of Britain with the American colonies employed in 1769, 1078 ships, and 28,910 seamen. The value of her imports from them for that year amounted to £3,370,000, and of their imports from her to £3,724,606, showing a large difference in favor of the parent country.

In 1770 the imports of Carolina were £535,714, those of New England £564,034, of Maryland and Virginia £851,140, the exports of Virginia at the same time being double the value of those of either of the others named. Mr. Burke triumphantly announced in the House of Commons, "Our trade with America is scarcely less than that we carried on at the beginning of the century with the whole world! In the six years ending with 1774 there was an average import from the colonies into England of £1,752,142, and an average export to them in turn of £2,732,066. Crippled as our energies were, they could not be repressed. It was a vain effort to confine the enterprise of a people whose views embraced the world itself, into the narrow compass afforded by English ports, and by portions of Europe southward of Cape Finisterre. When the day of reckoning came, as it did at last, for these reckless abuses of power, and they were proclaimed in the bill of rights, not the least of the usurpations for which retribution was demanded is to be found in the clause: 'She has cut off our trade with all parts of the world.'"

In the article COLONIES a table will be found compiled from the most authentic sources, which exhibits the trade of the mother country during the whole of the periods we have been considering; the table is of great interest, embracing as it does in one view almost the entire commerce of America for seventy-six years.

From these statistics we learn the relative commercial position of the different provinces. Dividing the whole time embraced into periods of twenty-five years each, we observe in the *first* period that Virginia, Maryland, and Carolina furnish almost the entire exports, and import much more largely than New England and New York. In the *second* period New York greatly increases her imports, which still fall short of those of New England, or Virginia and Maryland, while her exports are enhanced but little. The whole exports of New York, Pennsylvania, and New England combined did not reach the amount of those of Carolina singly. In the *third* period Pennsylvania imports more

largely than New York, but less than New England; the Southern provinces retain their rank as exporters, Carolina being still greater than New York, New England, and Pennsylvania together; and Georgia, a new plantation, equals New York. Truly is the empire of trade a fickle and inconstant one.

Commerce of the United States under the Articles of Federation.—During the Revolution all foreign enterprise was of necessity suspended, and in struggling for liberty men taught themselves to forget and despise every mere physical want. Leagued together for common defense, the states were able to resist every device of power, and sustain a long and bloody contest. But when that contest was ended and liberty won, the confederation exhibited at once its nervelessness for peace, and for the arts, and policy, and duties of peace. The fabric which could resist the storm crumbled away when the sunshine succeeded. So true is it that the necessities of men are the only durable bond of their union, and that without this union there is no strength.

From the close of the war until the adoption of the Constitution there may be considered to have been no great regulating head in America. No uniformity or system prevailed among the states, and their commerce was consequently exposed to the utmost uncertainty, fluctuation, and loss. Tonnage duties were levied in different ports, as it suited the caprices of the several governments, and as they were more or less desirous of encouraging particular branches of navigation and trade at the expense of others. By a policy more astute than that of her neighbors, New York managed in this way soon to increase largely her foreign trade, and laid the foundation of the empire she now maintains. From 1784 to 1790 our commerce exhibited the most remarkable results. For seven years consecutively the imports into American cities from Britain were never otherwise than twice the amount of the exports to her, and for several years were three and even five times their value. A drain of specie is said to have been the consequence, a very natural, though not necessary one, and great commercial embarrassment and distress.

The following table made up from records of the English custom-house will be found of interest:

Years.	Exports, America to Britain.	Imports, America from Britain.
1784	£749,345	£3,679,467
1785	898,504	2,308,023
1786	443,119	1,608,465
1787	893,637	2,009,111
1788	1,023,784	1,886,142
1789	1,050,118	2,525,298
1790	1,191,071	3,431,778

Commerce of the United States under the Constitution and until 1812.—In this crisis the attention of thinking men and patriots in all parts of the nation was aroused, and there was perhaps nothing which contributed so much in urging the States into a general convention, and into the adoption of a constitutional government and union, calculated to preserve their liberties, their fortunes, and their glory in all the future. One of the first grants of power conceded to Congress under this Constitution was that of "*regulating commerce with foreign nations, among the several states, and with the Indians.*" Referring to the state of things which existed under the articles of federation, an able writer observes, "Interfering regulations of trade and interfering claims of territory were dissolving the attachments and the sense of the common interest which had cemented and sustained the Union during the arduous struggles of the Revolution. Symptoms of distress and marks of humiliation were rapidly accumulating. The finances of the nation were annihilated. In short, to use the language of the authors of the Federalist, each state, yielding to the voice of immediate interest or convenience, successively withdrew its support from the confederation, till the frail and tottering edifice was ready to fall upon our heads, and to crush us beneath its ruins. Most of the federal constitutions of the world have degenerated in the same way, and by the same means."—KENT, vol. i. p. 217.

No more, said a memorial from Charleston, on the adoption of this Constitution—no more shall we lament our trade, almost wholly in the possession of foreigners, our vessels excluded from the ports of some nations and fettered with restrictions in others; our materials, the produce of our own country, which should be retained for our own use, exported and increasing the maritime consequence of other powers. With this memorial before them, and others of a similar character, Congress at its first session appointed a committee to report upon "the expediency of increasing the duty upon foreign tounage carrying American produce to places in America not admitting American vessels; and to frame a bill placing the same restraint upon the commerce of foreign American states that they place upon us."

By the report of Alexander Hamilton in 1790, it appears that the total tonnage of the United States at that time was as follows:

American vessels in foreign trade	363,096 tons.	
Coasters above twenty tons	113,181 "	
In the fisheries	26,252 "	—502,526 tons.
Total foreign tonnage	262,913 "	
United States and British	312 "	
United States and other foreign	338 "	
Total	766,089 "	

The tariff of 1789 was specific and *ad valorem*, and discriminated 10 per cent. in favor of the trade conducted by our own shipping. In this we but imitated the navigation acts of European states, by means of which it has been supposed the enormous maritime consequence of some of them was principally secured. We shall not pause to argue a point in political economy so long mooted among writers of the greatest ability. The jealousies of nations have gone and still go very far. Even the philosophical Voltaire thought that their gain could not otherwise accrue than with each other's loss. England long imposed the most onerous restrictions upon all other commerce than her own, and her advances in consequence, or notwithstanding, have been unprecedented. Her tonnage when she commenced this system was less than that of the United States at the adoption of the Constitution.

There was one department of our maritime industry which demanded the earliest attention of government, and we think its general interest will be sufficient apology for any space we may allot to its consideration—THE FISHERIES. Mr. Jefferson, in 1791, then Secretary of State, furnished an admirable report upon the subject, which we proceed to analyze. As early as 1520 there were fifty ships upon the Newfoundland coasts at a time for cod. In 1577 the French had 150 vessels there, the Spaniards 100, Portuguese 50, and English 15. The French fisheries began early to decline. In 1768 the Americans took but little less than the English, and the French took least of all. In 1789 England obtained double the quantity of America and France together. During the Revolution the American fisheries were almost entirely abandoned, and Mr. Jefferson left it to the wisdom of Congress to decide whether they should not be restored, by opposing prohibitions to prohibitions and high duties to high duties, on the fish of other nations.

The whale fishery was prosecuted by the Biscayans as early as the fifteenth century. The British began its encouragement in 1672 by bounties. The Americans opened their enterprises in 1715. They succeeded early in the discovery in the Southern Seas of the spermaceti whale, which they attacked instead of the Greenland hitherto known to navigators. In 1771 we had 204 whalers. During the war England held out the largest bounties to the trade, and so irresistible were these in the depressed condition of our fishermen, that it is said many of them were on the eve of removing to Halifax, to prosecute the business there, and were only deterred by a letter from Lafayette declaring that

France would abate her duties upon oil. The little island of Nantucket is the great heart of these fisheries. A sand-bar, said Mr. Jefferson, fifteen miles long and three broad, capable by its agriculture of maintaining twenty families, employed in these fisheries, before the Revolution, between 5 and 6000 men and boys, and contained in its only harbor 140 vessels. In agriculture, then, they have no resource, and if that of their fisheries can not be pursued from their own habitations, it is natural they should seek others from which it can be followed, and principally those where they will find a sameness of language, religion, laws, habits, and kindred.

In 1803 Mr. Huger stated to Congress in his report, that it would seem the cod fisheries had gained ground since the Revolution, but that the whale fisheries, on the contrary, had been for some time past on the decline. The war of 1812 was most disastrous to the fishermen, but they soon afterward recovered their prosperity, and on the first of January, 1844, we had 644 vessels engaged at sea, of the value, including catchings, of $27,784,000. On the first of January, 1846, there were 680 ships, 34 brigs, 21 schooners, and 1 sloop; tonnage 233,149; manned by about 20,000 seamen and officers, consuming over three million dollars annually of American produce. Proceeds of whale fisheries $9,000,000 per annum, of which only $2,000,000 are re-exported.

In 1844, Mr. Grinnell stated in Congress:

"This fleet of whaling ships is larger than ever pursued the business before. Commercial history furnishes no account of any parallel. The voyages of those engaged in the sperm fishery average three and a half years; they search every sea, and often cruise three or four months with a man at each mast-head on the look-out, without the cheering sight of a whale. They are hardy, honest and patriotic, and will, as they did in the last war, stand by their country when in danger; they will man our ships, and fight our battles on the ocean."

Mr. Clayton remarked in February, 1846:

"We have at this time a commerce of 2,417,000 tons of shipping, England has 2,420,000 tons; so that we are nearly, nay, it is my opinion, we are completely on a par with her. I doubt, sir, whether England has a greater commercial marine or greater interests to protect. We have more than 700 whale ships in the Pacific, an extensive Indian commerce and a great and daily growing commerce with China."—Brown's *Whaling Cruise and History of the Whaling Fishery*, 1846, p. 589.

At the close of the last century there were many causes which tended to add a vast importance to the commerce of the United States. For several years this commerce enjoyed unparalleled and almost unmeasured prosperity. Scarcely admitted into the family of nations, we found the whole civilized world engaged in the fiercest and most sanguinary conflict. A wise and indeed "masterly" neutrality was of course the true policy of the nation. The carrying trade of the world fell at once into our hands. We supplied the mother countries with the products of their own colonies. The East and West Indies alike were opened to our shipping. Their rich products filled our warehouses, supplying consumption and re-export. Prosperity such as this, however, was fated to be brief. The conflicting powers sacrificed every thing to their mutual hatred, and minded little the rights of a nation they had not even learned to respect. Protestation ended in war, and the rights of our sailors were established on every sea. With the return of peace in Europe, the carrying trade departed rapidly from us.

In 1791 the king and council of England admitted American unmanufactured goods, except fish, oil, blubber, whale fins, certain naval stores, etc., into Britain at the same duties as British American produce. The treaty of commerce of 1794 between the two governments was a reciprocity one, both parties binding themselves to impose no greater restrictions upon each other than they imposed upon others. This treaty regulated our East India commerce, then newly opened and promising a great extension.

From 1790 until 1797 Pennsylvania continued largely the greatest exporter in the Union. In 1791 South Carolina occupied the third rank. In 1797 New York for the first time took a leading position, which she has ever after maintained. The first exports of Tennessee and Mississippi date from 1801, those of Kentucky and Indiana from 1802, of Michigan 1803, Orleans Territory 1804, and Ohio 1806. This we shall see more particularly hereafter. It is sufficient now to indulge the reflections which the facts before us so naturally awaken. Mysterious have been the changes. Old age and premature decay have fallen upon cities once famous for their trade; and the quays, where the flags of all nations floated, have come at last to be comparatively deserted. We look around, and there have started up others like mature creations, full of vigor and stalwort even in their infancy. How hardly can reason realize that these wondrous changes are not all the pictures of a fertile imagination. Where is placed Virginia now, that mother of states, who in 1769 exported to foreign lands four times as much as New York? and where is Carolina, whose exports at the same time doubled those of New York and Pennsylvania together, and were equal to five times those of all New England? If trade grow to colossal stature, its proud empire, hastens also to swift decay.

The difficulties which beset our commerce in the early part of the present century, when the rival hostile powers of Europe, jealous of our prosperous neutrality, strained every nerve to involve us in their disputes, will be called to mind by every one familiar with history. We were made the victims of the policy and arts of these nations, and even as early as 1793 their depredations upon our commerce were considerable. In five months alone of that year it was stated in the House of Peers, that *six hundred American vessels* were seized or detained in British ports for alleged violations of orders and decrees claimed as principles under the law of nations. These aggressions upon our rights were long and extensively practiced, as the following table will exhibit:

Seizures of American Vessels from 1803 to 1812.

By the British	917
By the French	558
By the Neapolitan	47
By the Danish tribunals	70
Total vessels	1592

And this at a time when we were at peace with all the nations on earth! Indemnity for these spoliations has been the subject of numerous treaties; among others, that of England in 1794, France 1803, and Spain in the Florida treaty of 1819. But this whole period, so interesting in our annals, deserves a minute survey.

On the conquest of Prussia in 1806, Bonaparte conceived the idea of crushing the maritime power of Britain, by prohibiting all the world, in his famous *Berlin Decree*, from conducting any trade with her or her numerous dependencies. The retaliatory British *orders in Council* followed at once, and all countries in the world connected in any way with France, or opposed to England, were declared to be under precisely the same restraints as if actually invested in strict blockade by British forces. Incensed by so unexpected and ruinous a measure, Napoleon issued the memorable *Milan Decree*, making lawful prize of all vessels submitting at any time or in any way to British search or taxation. It was natural that these illegal and unauthorized proceedings should excite the utmost interest and concern in the United States so materially and even vitally affected by them. We protested in vain. The administration recommended as the sole remaining alternative of peace an *embargo*, which Congress adopted in 1807. This measure the commercial interests warmly opposed as ruinous to them, and memorials were forwarded from many quarters praying for its repeal. To

these it was replied by government, "The embargo, by teaching foreign nations the value of American commerce and productions, will inspire them with a disposition to practice justice. They depend upon this country for articles of first necessity, and for raw materials to supply their manufactures." Such a view of the matter, however, did not occur to the mind of Napoleon, who regarded the embargo as greatly favorable to France, and aiding him in his warfare against English commerce. "To submit," said he to Mr. Livingston, "to pay England the tribute she demands, would be for America to aid her against him, and a just ground of war."

In 1809, a *non-intercourse* with Britain and France was substituted for the embargo, which the latter power regarded as such an evidence of hostility as to justify her in proceeding at once to condemn millions of American property as lawful prize.

The Congress of 1810 determined upon the admission of the commercial vessels of the powers abovenamed, if the act were preceded by a revocation of their hostile and arrogant decrees. The French government pretended to close in at once with the proposal, but it was nearly one year later before her repealing ordinance was officially promulgated, evidencing a disposition on the part of Napoleon to play with us in bad faith, and to turn the game at any time to his advantage—so humiliating to our pride are the events of this entire era. With England it was long doubtful what relationship we might expect to sustain. Hostile and peaceable alternately, according to her caprices or her interests, she had provoked in American minds a resentment too deep to be subdued, and forbearance longer was regarded a crime. The Orders of Council remaining in force, and the aggressions increasing daily, a non-intercourse act of *sixty days* was resorted to, the prelude only to a solemn *declaration of war*. Then was the hour of severe retribution, and then was the national honor and dignity of America triumphantly vindicated!

Commerce of the United States since 1812.—This has been an era of prosperity and rapid advance, and the great powers of the civilized world seem to have realized for once the rich benefits of a prolonged armistice, or, if another expression be preferred, a protracted, and we hope permanent peace. In commercial rank, the United States of America, subordinate to Britain only, and having outstripped all the world else, is prepared to share a divided sceptre, until that sceptre can be wielded alone by her hand, and the empire of the seas be transferred to her keeping.

The history of our trade for the last thirty years has material enough for many more pages than we can allot to it, even with the greatest condensation. The period has been celebrated by an approach to a more liberal *internationality*, and a *reciprocity* something else than in name. The progress in the last year or two has been most strongly marked toward that *ultimatum*, in the minds of every lover of truth and of human advancement, perceived first by Lord Bacon, and ably, though imperfectly, presented by his followers—*commerce unfettered as the winds that waft it*—free religion, free government, free press, free traffic—freedom every where, and in every righteous thing throughout all the world! When shall nations sacrifice their foolish jealousies, and meet each other on this high, broad and Christian ground? We are no partisan here, but a cosmopolite. We advocate a policy as wide as the earth, and as generous. No single nation can afford to act alone—the movement, if made at all, must be *universal*.

The condition of Europe now, however, argues little for the early triumph of those principles to which we have been referring. The latest British, French, and Austrian tariffs have been restrictive, though in the case of the first-named nation her policy would appear about to be radically changed, as in the late repeal of the corn-laws. The German states maintain the exclusive policy, as do also the Spaniards and Portuguese. Russia was latest in adopting the restrictive system, but we see by her last tariff some evidences of improvement, which neither Sweden nor Denmark furnishes. The duties of the Italian states have been generally moderate, except for Rome and Naples, and we recognize a great improvement in these in the late tariff of his Holiness the Pope. The commercial system of Holland is the most liberal in all Europe, but the South American states appear to be governed by the same spirit as that which dictated the policy of Spain.

In 1824, Great Britain seemed desirous of removing in some degree her restrictions upon the navigation of other powers. She entered into reciprocity treaties with many of them, and in this was soon after imitated by the United States, in the treaties of 1825–6–8–9 with Central America, Denmark, Sweden, Hanse Towns, Prussia, Brazil, Austria, Hungary and Bohemia, Mexico, Russia, Venezuela, Greece, Sardinia, Netherlands, Hanover, and Portugal. We also entered into similar but limited reciprocity treaties with France in 1822, continued afterward, and with England in 1821, 1825, and 1833, and a full reciprocity treaty with Canada in 1854. These treaties were arranged by Mr. Kennedy, Chairman of the Committee of Commerce, into three classes.

1. Those securing mutual privileges of export and import of produce, the growth, produce, or manufacture of the stipulating powers, transported in their own vessels, without discrimination on tonnage.

2. Those providing for a levy of duties not less favorable upon the tonnage of either than are levied upon the tonnage of other powers.

3. Those requiring equality of port charges.

For statistics of the commerce of the United States, see article UNITED STATES.

Commercial Policy of the United States.—The United States have, since the very commencement of their existence as an independent government, ever been willing and ready to reciprocate, to the fullest extent and in the most liberal spirit, all privileges and favors, whether of navigation or commerce, extended to their flag by foreign nations. To this end, and in order to anticipate the usually dilatory process of treaty negotiations, the President of the United States is vested, by act of Congress, with authority to issue his proclamation granting to the vessels of foreign nations equal and similar privileges and favors to those extended to the vessels of the United States in the ports of such foreign nations, on receiving official notice thereof from the accredited agents of such governments.

Vessels belonging to the following nations are admitted, under the provisions of law, treaties of commerce and navigation, or conventions, into the ports of the United States on the same terms as American vessels, with the produce or manufactures of their own or any other country: Argentine Confederation, Austria, Belgium, Brazil, Chili, Denmark,* Ecuador, Great Britain, Greece, New Granada, Guatemala, Hanover, Hanse Towns (Hamburg, Bremen, and Lubec), Mecklenburg-Schwerin, Netherlands, Oldenburg, Peru, Prussia, Russia, San Salvador, Sardinia, Sweden and Norway, Tuscany, Two Sicilies,† Venezuela.

Vessels belonging to the following nations, with which the United States have reciprocal treaties on the footing of the "most favored nations," or with whom reciprocity exists, are admitted into the ports of the United States on the same terms, *as respects tonnage or navigation duties*, as vessels of the United States, with the produce or manufactures of their own or any other country: Bolivia, Costa Rica, Mexico, Muscat, Ottoman Empire, Portugal, and Uruguay.

* The treaty between the United States and Denmark expired on the 14th day of April, 1856.

† By decree of December 18, 1854, equality with the national flag is offered by the government of the Two Sicilies to the vessels of such nations as reciprocate the favor. This equality applies to the direct and indirect trade.

LEADING EVENTS OF A COMMERCIAL CHARACTER IN THE 16TH, 17TH, 18TH, AND 19TH CENTURIES.

Sixteenth Century.—1503. The Portuguese commander Albuquerque, on his way to India, discovered Zanzibar.—1504. Death of Isabella, Queen of Spain, and friend of Columbus, November 26, æ. 53. Columbus returned from his fourth and last voyage. The Venetians, jealous of the new Indian trade of the Portuguese, incite the mamelukes of Egypt to commence hostilities against them.—1505. Francesco de Almeira, Portuguese viceroy, established factories along the coast of Malabar, and his fleets interrupted the commerce of Egyptians and Venetians.—1506. The sugar-cane brought to Hispaniola from the Canaries. The *Great Harry*, the first ship of the English navy, built.—1507. Margaret of Savoy, governess of the Netherlands, concluded a commercial treaty with England. Portuguese settlements formed on Ormus by Albuquerque, and on Ceylon by Almeida. Madagascar visited by Tristan d'Acunha.—1509. The Venetians recover Padua, and rise again in power. Diego Columbus (son of Christopher) governor of Spanish America.

1510–1520.—The Portuguese established themselves at Malacca (1511), which becomes the centre of their trade with the neighboring islands and with China.—1513. Vasco Nunez de Balboa crosses the Isthmus of Darien, and reaches the Pacific.—1515. The Rio de la Plata discovered by Juan Diaz de Sotis.—1516. Death of Ferdinand of Spain, January 23, æ. 64.—1517. The Portuguese trade with China at Macao. Negro slaves brought to Hispaniola. The sweating sickness (cold plague) raged in London.—1518. Silveyra opens the Portuguese trade with Bengal.—1519. Fernando Cortez attacked Mexico. Fernando de Magelhaens sailed on his expedition to the Pacific, and having passed through the Straits now bearing his name, discovered the Ladrones and Philippines, and was murdered by the natives.—1520. Cortez took the City of Mexico.

1521–1530.—After the death of Magelhaens (1521), Cano conducted the squadron to the Moluccas, and (in 1522) returned to Seville, via Cape of Good Hope; having concluded the first circumnavigation of the globe, in 1151 days.—1524. First discovery of Peru, by Pizarro and Almagro.

1531–1540.—Porto Bello and Cartagena (Spanish Main) founded in 1532.—Mines of Zacatecas discovered.—1533. Cortez conquered Cuzco and Quito, the capitals of Peru.—1534. The Sound opened to the Netherland merchants. Canada discovered by Cartier.—1535. The use of tobacco first known in Europe.—1536. Final subjugation of Peru; discovery of California by Cortez.—1537. Conquest of New Granada.—1540. Cherry-trees brought from Flanders and planted in Kent, England.

1541–1550.—The Portuguese admitted (1542) to trade with Japan.—1543. Death of Copernicus: he deferred until his last days the publication of his great work, *De Orbium Cælestium Revolutionibus*.—1545. Discovery of the mines of Potosi.—1546. Rate of interest in England fixed at 10 per cent. (37 Henry VIII.).—1548. Introduction of the orange-tree from China into Portugal.

1551–1560.—The London Steelyard Company (the first commercial company established in England, 1232) deprived (1551) of their privileges.—1552. All loans at usury declared illegal, and subject to forfeiture in England. The King of France (Henry II.) prohibits the export of money.—1558. The Salters' Company, London, established.—1560. Ordinary rate of interest at Antwerp, 12 per cent.; and fixed at the same rate in Germany, Flanders, and Spain, by Charles V. Bourse established at Antwerp.

1561–1570.—Merchant Tailors' School, London (1561), instituted.—1564. The Manillas, ceded by Portugal to Spain, received the name of the Philippines.—1567. The Royal Exchange, London, founded by Sir Thomas Gresham, September 7. Caraccas, in Venezuela, built by the Spaniards.—1568. Some ships, conveying money from Spain to the Duke of Alva, are detained by Queen Elizabeth at Southampton and Plymouth.—1569. Luis de Atalde revives the waning power of Portugal in India. Drawing of the first English lottery.—1570. The Royal Exchange, London, opened by Queen Elizabeth.

1571–1580.—Rate of interest limited in England to 10 per cent.—1571. Large accumulations of gold from America. Manilla built (1573), and made the seat of a Spanish viceroy.—1576. The plague devastated Italy. 70,000 died at Venice. Martin Frobisher sailed, June 11, to seek a northwest passage; failed, and returned.—1577. Drake commenced his voyage round the world, November 15.—1578. The Norwegians attempted to interrupt the English commerce with Archangel. California explored by Drake. First colony planted in Virginia, by Gilbert. Tulips introduced into England.—1579. Queen Elizabeth entered into a treaty of commerce with the Sultan, and established the Turkey Company.—1580. Drake returned from his voyage, November 3; the order of knighthood conferred upon him.

1581–1590.—Correction of the Calendar by Gregory III. (1582); October 5th made the 15th.—1583. Queen Elizabeth claimed the sovereignty of Newfoundland, and fortified St. John's.—1584. Raleigh conducted a second colony to Virginia.—1585. Drake and Frobisher, with a powerful fleet, attacked the Spanish settlements in the West Indies. Davis explored the northeast coast of America. Coaches first used in England.—1586. Success of Drake in Hispaniola, San Domingo, and Florida. Potatoes and tobacco introduced into England. Cavendish sailed on his expedition.—1587. The Scottish Parliament (James VI.) adopted 10 per cent. as the maximum rate of interest.—1588. The Spanish armada sailed from Lisbon May 29, entered the English channel July 19, and was defeated. Lord Burleigh established the first newspaper, *The English Mercury*.—1589. Cavendish returned with great wealth, taken from the Spanish settlements during his voyage round the world. The stocking frame invented by Rev. William Lee, of Cambridge.—1590. The first paper-mill in England established by John Spilman, at Dartford, in Kent.

1591–1600.—English ships pursued the whale-fishery (1591) at Cape Breton. Telescopes improved and brought into general notice by Jansen, of Middleburg.—1593. Whalebone first used in England.—1594. The Falkland Islands discovered by Hawkins.—1595. Oranges first known in England.—1598. Whale-fishery commenced at Spitzbergen.—1600. The English East India Company established.

Seventeenth Century.—1601–1610.—Debate on monopolies (1601), defended by Francis Bacon—abolished by Queen Elizabeth. The first English factories established on the Malabar coast.—1601. The rate of interest in France (Henry IV. and Sully) fixed at 6¼ per cent.—1602. Artichokes introduced into England from Holland; Asparagus from Asia; Cauliflower from Cyprus.—1604. The plague raged violently in London.—1606. English companies chartered for settlements in Virginia. The French established themselves in Canada. New Holland discovered by the Dutch.—1608. Hudson explores the bay now known as Hudson's Bay. Quebec built.—1609. Many Puritans left England for Virginia, with Sir Thomas Gates and Sir G. Somers—the latter driven to the Bermudas (or Somers' Islands). The Dutch, by levying heavy tolls at the mouth of the Scheldt, transfer the commerce of Antwerp to Amsterdam and Rotterdam. Copper coin first issued by the Mint, London. Armistice of twelve years concluded between Spain and the United Provinces.—1610. Batavia settled by the Dutch on the island of Java. The invention of the thermometer ascribed to Fra Paolo, to Sanctorio, and to Drebbel of Alkmaar.

1611–1620.—The United Provinces obtained (1612) from the Turks advantageous terms in their commerce in the Levant.—1613. English factories established at Surat, in India, and at Gombroon, on the Persian Gulf. The buccaneers noted on the coasts of America. —1614. Logarithms invented by Lord Napier.—1615. Coffee in use at Venice.—1616. Baffin explored the bay to which his name was given.—1618. First voyage of the Danes to India, and settlement at Tranquebar. Patent granted for a fire-engine for raising ballast and water, nearly on the principle of the steam-engine.—1620. Silk first manufactured in England. Plymouth colony settled.

1621–1630.—The conquests of the Dutch commenced. First permanent settlement on Manhattan Island (1621) by the Dutch. The colony at Nova Scotia (1622) settled by the Scotch.—1624. The rate of interest in England reduced to 8 per cent. (21 James I.), and in Scotland in 1632.—1625. The culture of silk commenced in Virginia.—1626. French settlements at Senegal and Guyana.—1627. Success of the Dutch admiral, Hein, in Brazil: Essequibo, in Guyana, founded by him.

1631–1640.—Charles I. revived monopolies, sold patents and privileges to new companies, and imposed a stamp on cards.—1632. A colony of Catholics, under Lord Baltimore, settled in Maryland, The Dutch acquired the island of St. Eustatia.—1634. Writ for levying ship-money in England. The Dutch took Curacoa. —1635. Proclamation in England against hackney-coaches standing in the streets. Guadaloupe and Martinique appropriated by France.—1637. The levy of ship-money ...popular.—1640. Ship-money voted to be illegal.

1641–1650.—Tasman discovered Van Diemen's Land (1642), and named it in honor of the Dutch governor of Batavia.—1643. Cayenne colonized by the French. Van Diemen sent De Vries and Schaep to explore the ocean north of Japan.—1645. The greater part of Candia conquered by the Turks.—1647. Huygens invented and applied the pendulum to clocks.—1650. The Dutch took possession of the Cape of Good Hope.

1651–1660.—Quarrel between the English and the Dutch (1651) about the right of fishing; the massacre at Amboyna; and colonial encroachments. Rate of interest reduced by the Rump Parliament to 6 per cent. —1660. Tea used in London.

1661–1670.—Bombay and Tangier ceded to England (1662), and free trade with Brazil.—1663. The profits of the English Post-office and wine licenses, granted to the Duke of York. The finances, manufactures, commerce, marine and colonial system of France, improved under Colbert.—1665. London afflicted by the plague, April 28.—1666. Great fire in London, from September 2 till September 6; property destroyed valued at £8,000,000.—1667. A tax of twelve-pence levied on every ton of coal brought into London, January 18, to aid the rebuilding of London. The first stone of the new Royal Exchange laid (August 23) by Charles II.

1671–1680.—The money in the Exchequer (12th January, 1672) seized by Charles II. Great confusion and commercial distress followed.—1680. The publication of newspapers and pamphlets without a license declared (May 16) to be illegal in England.

1681–1690.—A penny-post first established in London (1683) by a private individual named Murray.—1685. The Pope of Rome, by compulsory process, reduced the rate of interest on the public debt from 4 to 3 per cent.—1688. The Venetians made further progress in Dalmatia.

1691–1700.—Origin of the Bank of England (1694, 25th April), under William III. Stamp duties in England commenced, 28th June.—1695. Commissioners appointed for building Greenwich Hospital.—1697. Charter of Bank of England renewed till 12 months' notice. —1698. Address of the English House of Commons to William III., for the discouragement of the woolen manufacture and the promotion of the linen, 10th June. —1699. Czar Peter introduced the computation of time in Russia by the Christian era, but adhered to the old style. Dampier explored the northwest coast of New Holland.

Eighteenth Century.—1704. The *Boston News Letter* published—the first newspaper in the American colonies.—1708. Bank of England charter renewed, and again in 1713.—1709. Copyright act in England, 8 Anne.—1710. The South Sea Company originated, 6th May.

1711–1720.—A capital of £4,000,000 raised (1711) for the South Sea Company.—1711. Rio Janeiro taken by the French admiral, Duguai Trouin.—1712. The first stamp duty on newspapers levied in England.—1718. The *Clarendon Press* established at Oxford, by the profits of the History of the Rebellion.—1714. The rate of interest in England reduced from 6 to 5 per cent., and all contracts at a higher rate declared void. —1716. John Law originated his banking and Mississippi schemes.—1717. First project of a sinking fund for the liquidation of the English national debt. Law obtained extended privileges for his bank.—1718. Law's Company declared to be the Royal Bank.—1720. The South Sea Company Act, passed 7th April. South Sea stock rose to 890, June 2. Rage for speculative schemes. Seventeen petitions for joint-stock patents refused. South Sea bubble burst, 30th September.

1721–1730.—The directors of the South Sea Company (1721) taken into custody, 24th January. Aislabie, and other members of Parliament implicated, expelled. Walpole, Lord Treasurer and Chancellor of the Exchequer, 2d April. The estates of directors of South Sea Company, amounting to two millions sterling, forfeited.—1723. Act passed to prohibit English subscriptions to the Ostend Company.—1725. Tumults at Glasgow, 25th June, on account of the Malt tax.—1726. Cotton a staple product of Hispaniola.—1729. Fire at Constantinople; 12,000 houses and 7000 people perished. John Law died at Venice, 21st March, æ. 58.—1730. Charter of the East India Company renewed.

1731–1740.—Culture of silk commenced (1732) in Georgia. Parliamentary grant to Sir Thomas Lambe (1732, April 3) for having introduced the silk-engine. —1733. The English government refused to join the Dutch in stopping the East India commerce of the Danes and Swedes.—1733. The Excise law proposed in England, and abandoned by Walpole.—1734. English act passed against stock-jobbing. The new Bank of England building opened 5th June, in Threadneedle Street.—1736. High tide in the Thames. Westminster Hall flooded. Parliamentary debates published in the *Gentleman's Magazine*.—1740. The first circulating library in London established at 132 Strand. Parliamentary debates prepared by Dr. Johnson.

1741–1750.—Charter of Bank of England (1742) renewed. Lord Anson returned (1744) from his voyage round the world, with £1,250,000 in treasure.—1750. A riot at Tiverton against the introduction of Irish worsted yarns, 16th January. Bounties granted, and a company formed, to encourage the British and white herring and cod fisheries.

1751–1760.—An act of Parliament (1751, 24 Geo. II.) orders the Gregorian (or new) style to be used in Great Britain.—1753. Two thousand bales of cotton exported by Jamaica.—1754. Commencement of war between England and France, and military operations under Washington in Virginia, etc.—1759. The Bank of England issued £15 and £10 notes, 31st March.—1760. Culture of silk commenced in Connecticut.

1761–1770.—Opening of the Duke of Bridgewater's Canal (1761) between Manchester and Liverpool.—1762. The island of Cuba surrendered to Lord Albemarle and Admiral Pococke. Martinique, St. Lucia, St. Vincent, and other islands taken from the French.—1764. First improvement of the steam-engine by Watt. Bank of England charter renewed.—1765. Stamp Act for America passed by the British Parliament, March.—1767.

The House of Commons resolved to impose duties on various articles imported into America.

1771–1780.—Arkwright's second patent (1771) for his improvement in cotton spinning. Culture of silk commenced in Pennsylvania.—1772. Commercial panic in London, caused by the failure of Neal, Fordyce, & Company, bankers.—1773. Tea destroyed in Boston harbor, 16th November. The Governor of Bengal made governor of all the British settlements in India.—1774. The petition of the Massachusetts Assembly to Parliament presented (January) by Dr. Franklin, who was then removed from office of deputy postmaster-general for the colonies. Burke's celebrated speech on the tea tax, April 19.—1774. Watt, in partnership with Boulton, founds his steam-engine establishment at Soho. —1776. Captain Cook sailed on his third voyage.—1780. Charter of the first Bank of North America, approved by Congress 26th May.

1781–1790.—Bank of England charter renewed, on making further advances to government of £3,000,000. Necker published his financial statement for France 1781, and retired from office.—1782. National Bank of Ireland established.—1783. Charter granted to the Bank of Ireland.—1784. The Bank of New York chartered, 9th June.—1786. British treaty of commerce with France.—1787. "Pennsylvania Society for the encouragement of Manufactures and the useful Arts" formed. Cotton exported by West India Islands.—1789. Issue of assignats in France, 17th December.

1791–1800.—Vancouver's voyage of discovery (1791). The buckle-makers of Birmingham petitioned Parliament against the use of shoe-strings. Numerous riots at Birmingham.—1793. The first embassador from Turkey arrived in London, December 20. Whitney's cotton-gin invented and first used.—1795. Embargo on all Dutch ships in English ports, 26th January. Warren Hastings acquitted, 23d April.—1797. Suspension of the Bank of England, 26th February. Notes of £1 and £2 first issued, March 11.—1798. Silver tokens issued by the Bank of England, 1st January.—1799. Sugar first extracted from beet-root, by the Prussian chemist Achard.—1800. General diatress and riots in England, caused by the high price of bread, January. Dispute respecting the close of the century. Lalande decided that 31st December, 1800, is the last day of the 18th century. Union of Great Britain and Ireland, 2d July. Bank of England charter renewed until 1833.

Nineteenth Century.—1801–1810.—Embargo laid (January, 1801) on all Russian, Danish, and Swedish vessels in English ports.—1802. Santee Canal, South Carolina, completed.—1803. Louisiana sold by France to the United States for $15,000,000. The first printing-press in New South Wales established at Sydney. Caledonia Canal opened for travel. Trial of steamboat on the Seine by Fulton, 9th August. The first bank in Ohio chartered.—1804. Wilberforce's slave-trade bill rejected by the House of Lords. The Code Napoleon adopted. Ice first exported from the United States to the West Indies.—1805. The Gregorian calendar again adopted in France.—1806. The Cape of Good Hope surrendered to the English. Abolition of the slave-trade by English Parliament, 10th June. The loom invented by Jacquard, a mechanic of Lyons. East India docks opened at London, 4th August.—1807. Milan decrees against English commerce, 11th November. Fulton's first voyage on the Hudson. The Bank of Kentucky chartered. First manufactory of woolen cloths in the United States established at Pittsfield, Massachusetts. Middlesex Canal, Massachusetts, completed. —1808. Manufacturing districts of Manchester, etc., petitioned for peace.—1810. Deaths, by suicide, of Abraham Goldschmidt, Francis Baring, and other English merchants.

1811–1820.—English guineas publicly sold for a pound note and seven shillings.—1811. Mr. Horner's proposition for resumption of cash payments in England rejected. First steamboat built at Pittsburgh.—1812. Serious riots in the manufacturing districts of Lancashire and Yorkshire. Declaration of war by the United States against England, 18th June.—1814. London *Times* first printed by steam, 29th November.—1815. Veto of the United States bank bill by President Madison. Bank rechartered for 20 years.—1816. The new Russian tariff prohibited the importation of nearly all British goods. Bank of England advanced £3,000,000 further to government, making a total of £14,000,000.—1817. Paris first lighted by gas. First steamboat from New Orleans to Louisville.—1818. First Polar expedition of Captain John Franklin left England. Steamboats built on Lake Erie.—1819. Emigration to Cape of Good Hope encouraged by the British government. The steamship *Savannah* arrived at Liverpool from the United States, 15th July. Commencement of the suspension bridge over the Menai by Telford. The first bank in Illinois chartered.—1820. Florida ceded to the United States by Spain. Suspension bridge over the Tweed. First steamer ascended the Arkansas River.

1821–1830.—Captain Parry's and Lyon's expedition to the Arctic Ocean left England 30th March, 1821. Bank of England resumed specie payments.—1822. Funeral of Coutts, the London banker, 4th March. The first cotton-mill in Lowell erected.—1823. Revival of business in the English factories.—1824. Advance in the prices of agricultural produce in England. Act passed for the Thames Tunnel, 24th June. Fauntleroy, banker, hung for forgery, 30th November. Champlain Canal, New York, completed.—1825. Panic in the English money market (December). Failure of numerous country banks. Erie Canal completed.—1826. Mr. Huskisson's free-trade policy advocated in House of Commons by vote of 223 to 40. Coin in Bank of England reduced to £2,460,000, 28th February.—1827. Commercial confidence restored in England, and employment for the poor. "Society for the Diffusion of useful Knowledge," established at the instance of Lord Brougham. Union Canal, Pennsylvania, completed. Quincy Railroad completed.—1828. Delaware and Hudson Canal, Syracuse and Oswego Canal, New York, completed. India rubber goods manufactured in Connecticut.—1829. Increase of silk manufactures in England and reduction of duty on raw silk. Prize awarded to Mr. Stephenson for his locomotive engine on the Liverpool and Manchester Railway. Subscription by Congress to the Chesapeake and Ohio Canal, May 3. Departure of Captain Ross on his voyage of discovery. Chesapeake and Delaware Canal opened, 17th October.—1830. Opening of the Liverpool and Manchester Railway, 15th September. Free navigation of the Black Sea opened to the United States by treaty, 7th May. Charles X. fled from Paris, 31st July. West India trade with the United States opened to British vessels. Independence of Belgium acknowledged. Pennsylvania State Canal finished.

1831–1840.—Parliamentary reform bill introduced in 1831 by Lord John Russell; rejected by the House of Lords, 8th October. Free trade convention at Philadelphia, October 1. Stephen Girard died 26th December, æ. 81. Insurrection in Jamaica, 28th December. —1832. Veto of United States Bank bill by President Jackson, 10th July. New tariff act passed by Congress, July. Ohio State Canal finished. Albany and Schenectady Railroad, Columbia Railroad, Pennsylvania Railroad, Newcastle and Frenchtown Railroad, completed.—1833. Ice first exported to the East Indies from the United States, 18th May. Opening of the China trade to the English. East India Company charter renewed; ceased to be a commercial body. Bank of England charter renewed. Usury restrictions removed in England from all commercial paper having less than three months to mature. Mr. Clay's tariff bill passed by Congress. Removal of the deposits from the United States Bank, September.—1834. The Chinese suspend intercourse with the English at Canton. The

first bank in Indiana chartered. London and Westminster Bank commenced business, 10th March. Resolution of the United States Senate condemning President Jackson for removal of deposits, March. Nomination of Roger B. Taney as Secretary of the Treasury, rejected by vote of 28 to 18. Abolition of slavery in British West Indies. Baltimore and Ohio Railroad opened for travel to Harper's Ferry, 1st December. Bank of Maryland failed, 24th March.—1835. French indemnity bill passed, 18th April. Baltimore and Washington Railroad opened for travel, 23d August. Bank of Maryland riots in Baltimore, 8th August. Loss of $20,000,000 by fire in New York, 16th December. Boston and Providence Railroad, Boston and Worcester Railroad, completed.—1836. Charter of United States Bank expired March 4, and succeeded by Pennsylvania United States Bank. Reduction of the newspaper Stamp duty in England, 15th September. Failure of the Commercial and Agricultural Bank of Ireland. Anthracite coal used for steamboats on North River. Independence of South American republics acknowledged by Spain, 4th December.—1837. Panic in the London market, June. Failures of American bankers in London. Further modifications of the usury laws of England. Failure of banks in the city of New York, May 10. Grand Junction Railway, England, opened 4th July. Revolt in Canada. Mont de Piété, Limerick, established.—1838. Railway opened from London to Southampton, 17th May. Wreck of the *Forfarshire*: heroism of Grace Darling, 5th September. Royal Exchange, London, burned, 10th January. Resumption of specie payments in New York, May. Sub-treasury bill defeated in Congress, June. United States Exploring expedition, under Captain Wilkes, left Hampton Roads, 19th August. Imprisonment for debt abolished in England.—1839. British trade with China stopped, December. Second suspension by the banks at Philadelphia (9th September), followed by bank failures in the South and West. Western Railroad, Worcester to Springfield, opened 1st October. Union Bank, London, commenced business.—1840. Penny postage adopted in England. Antarctic continent discovered by Wilkes, 19th January. First steam vessel at Boston arrived from England, 3d June. First Cunard steamer, (the *Britannia*) arrived at Boston 18th July; and the *Acadia*, 17th August. Fiscal Bank bill vetoed by President Tyler, 16th August. Bankrupt law passed by Congress, 18th August. Bill for distribution of public lands passed by Congress, 23d August. Fiscal corporation bill vetoed by President Tyler, 9th September. Loan of $12,000,000 authorized by Congress.

1841–1850.—The island and harbor of Hong Kong ceded (1841) by the Chinese to England. Pennsylvania United States Bank failed third time, 5th February, and made an assignment 4th September. Union of Upper and Lower Canada, 10th February. Foreign trade of Canton suspended, and hostilities with the English renewed, 21st May. Canton taken 27th. American clocks exported to England.—1842. Anti-corn-law movement in Parliament by Sir R. Peel. Captain Wilkes returned from his exploring expedition, 11th June. Ashburton treaty ratified by the Senate, 20th August. British treaty with China (29th August), by which it was agreed to open five free ports.—1843. Return of Captain Ross from the South Pole, 6th September. Treaty of commerce by Sir H. Pottinger with China.—1841. Treaty of annexation of Texas to the United States rejected by the United States Senate, 8th June. Anti-rent riots in New York, August. Re-charter of Bank of England. Magnetic telegraph between Baltimore and Washington. Cheap postage act of United States went into operation July 1.—1845. Treaty between United States and China ratified by United States Senate, 16th January. Sir John Franklin left England 25th May on his Arctic expedition. Anti-corn-law league at Manchester. Steamship *Great Britain* arrived at New York, 10th August. Treaty of annexation of Texas ratified by United States Senate, 1st March. Loss of $6,000,000 by fire in New York city, 19th July. Peel ministry resigned, 11th December.—1846. Oregon treaty between England and the United States signed in London, 17th July. Second failure of the potato crop in Ireland. Steamship *Great Britain* stranded in Dundrum Bay, 22d October. Declaration of war with Mexico by the United States, 12th May. New tariff bill passed by Congress, 28th July. Veto of French spoliation bill by President Polk, 8th August.—1847. Gold in California discovered. United States ship *Jamestown* left Boston 28th March, and frigate *Macedonian*, 18th July, with provisions for relief of the Irish. Great commercial distress throughout Great Britain, Sept.–Nov.—1848. The State of Maryland resumed payment of interest 1st January. Treaty of peace between Mexico and United States, signed 30th May. Suspension bridge at Niagara Falls, completed 29th July. Edict to incorporate Bank of France with nine branches, 27th April. India rubber life-preservers invented.—1849. Penny postage adopted in Prussia. First experiment of a submarine telegraph at Folkstone.—1850. Lopez invasion of Cuba. £20,000 reward offered by Parliament for discovery of Sir John Franklin, 8th March. Collins line of steamers to Liverpool commenced operations. Steamer *Atlantic* left New York, 27th April. The celebrated Koh-i-noor diamond, valued at $2,000,000, brought to England, July.

1851–1858.—The London exhibition opened 1851, May 1. Contract of Pacha of Egypt with Mr. Stephenson for a railway from Alexandria to Cairo. Railways completed between St. Petersburg and Moscow, Dublin and Galway. Collins steamer *Pacific* arrived in Liverpool, May. Yacht *America* won the race at Cowes, 22d August. Hudson River Railroad opened to Albany, 8th October. Dr. Kane returned from the Grinnell expedition, October.—1852. Construction of French Crystal Palace ordered, February. Expedition of United States naval forces to Japan, March. Dr. Rae returned from his search for Sir John Franklin, February. Ship *Prince Albert* returned from search for Sir John Franklin, 7th October.—1853. Trial trip of the caloric steamship *Ericsson* from New York to the Potomac, 11th January. Second Arctic expedition left New York, 31st May. American expedition arrived at Japan, 8th July. Loss of the steamship *Humboldt*, 5th December.—1854. Combined fleets of England and France entered the Black Sea, 11th January. Loss of the steamer *San Francisco*, 5th January. Steamer *City of Glasgow* lost, March. Declaration of war by England against Russia in behalf of Turkey, 28th March. Commercial treaty between United States and Japan. French loan of 250,000,000 francs, announced March 11, and Turkish loan of £2,727,400. London joint-stock bankers admitted to the clearing-house, June 7. Crystal Palace at Sydenham, opened 10th June. Bombardment of San Juan by ship *Cyane*, 13th July. Loss of steamer *Arctic*, 27th September. Captain M'Clure returns from Arctic discovery, 28th September.—1855. Discovery of Captain Franklin's remains. £10,000 awarded Captain M'Clure by Parliament. Paris exhibition opened 15th May. Submarine telegraph wire laid in Black Sea. Resistance by United States to payment of Sound dues. First railroad train crossed suspension bridge at Niagara, 14th March. French loan of 500,000,000 francs taken, 18th January. Suspension of Page, Bacon, & Company, Adams & Company, San Francisco, 22d February. English loan of £16,000,000 taken by Rothschilds, 20th April. Ships *Arctic* and *Release*, Captain Hartstene, left New York for relief of Dr. Kane and party.—1856. The Arctic discovery-ship, *Resolute*, was delivered to the British authorities at Portsmouth, 30th December.—1857. Trial trip of the United States frigate *Niagara*, 22d April. Suspension of Ohio Life and Trust Company, New York, 24th August. Suspension of the banks at Philadelphia, 25th September; Baltimore, etc., 26th; New York, 14th October.

Commerce, Code de. This was a part of the Code Napoleon known as *Les Cinq Codes* and afterward as *Les Six Codes*. The Code de Commerce was promulgated in January, 1808. It was founded in some measure upon the ordonnances of 1673–'81 of Louis XIV. On account of the many modifications which the code of 1805 had undergone, a new text of the code was promulgated in January, 1841. The Code de Commerce is considered the best part of French legislation. The institution of the commercial tribunals has been of great advantage to France, and has been adopted in other countries. These courts, of which there are 213, consist of a president and two or more judges, all chosen by the merchants among themselves, and for a limited time: they are not paid for their services, but the *greffier* or registrar receives a salary. The *Code de Commerce* consists of four books: the first treats of commerce in general; of the various descriptions of commercial men; of the keeping of books; of companies and partnerships; of brokers, commissioners, carriers, etc. The second treats of maritime commerce; shipping; insurances; bankruptcy, etc. The third concerns bankruptcies; and the fourth treats of the commercial tribunals, their jurisdiction, and proceedings. By a law of April, 1838, appeals in matters above 1500 francs (formerly 1000 francs) are carried to the Cour Royale of the district.—BOHN'S *Cyclopedia*.

The French code is retained in Rhenish Prussia; in the kingdom of Naples with some few modifications; in the Canton of Geneva, in Switzerland, and in Belgium; and formed the basis of the code of Louisiana, suggested or prepared by the late Edward Livingston.

Commercial Treaties. The first treaty of commerce made by England with any foreign nation, was entered into with the Flemings, 1 Edward I., 1272. The second was with Portugal and Spain, 2 Edward II., 1308.—*See* TREATIES.

Commodore, a general officer in the navy, invested with the command of a detachment of ships of war destined on any particular enterprise, and his ship is distinguished from the rest of his squadron by a broad pendant tapering toward the outer end, and sometimes forked. The word is corrupted from the Spanish *comendador*, which signifies both the superior of a monastery and a knight who holds a commandery. Commodore is also a name given to the convoy or leading ship in a fleet of merchantmen, which carries a light in her top to guide the other ships.—E. B. *See* CONVOY.

Companies. In commerce or the arts a company is a number of persons associated for the purpose of carrying on some commercial or industrial undertaking. When there are only a few individuals associated, it is most commonly called a *copartnery*; the term company being usually applied to large associations, like the East India Company, the Bank of England, etc., who conduct their operations by means of agents acting under the orders of a board of directors. Companies have generally been divided into two great classes —exclusive or joint-stock companies, and open and regulated companies.

1. *Exclusive or Joint-stock Companies.*—By an institution of this sort is meant a company having a certain amount of capital, divided into a greater or smaller number of transferable shares, managed for the common advantage of the shareholders by a body of directors chosen by and responsible to them. After the stock of a company of this sort has been subscribed, no one can enter it without previously purchasing one or more shares belonging to some of the existing members. The partners do nothing individually; all their resolutions are taken in common, and are carried into effect by the directors and those whom they employ. According to the common law, all the partners in a joint-stock company are jointly and individually liable, to the whole extent of their fortunes, for the debts of the company. They may make arrangements among themselves, limiting their obligations with respect to each other; but unless established by an authority competent to set aside the general rule, they are all indefinitely responsible to the public.

"In a private copartnery, no partner, without the consent of the company, can transfer his share to another person, or introduce a new member into the company. Each member, however, may, upon proper warning, withdraw from the copartnery, and demand payment from them of his share of the common stock. In a joint-stock company, on the contrary, no member can demand payment of his share from the company; but each member may, without their consent, transfer his share to another person, and thereby introduce a new member. The value of a share in a joint stock is always the price which it will bring in the market; and this may be either greater or less, in any proportion, than the sum which its owner stands credited for in the stock of the company."—*Wealth of Nations*, p. 333.

2. *Utility of Joint-stock Companies.*—Whenever the capital required to carry on any undertaking exceeds what may be furnished by an individual, it is indispensable, in order to the prosecution of the undertaking, that an association should be formed. In all those cases, too, in which the chances of success are doubtful, or where a lengthened period must necessarily elapse before an undertaking can be completed, an individual, though ready enough to contribute a small sum in connection with others, would, generally speaking, be very little inclined, even if he had the means, to encounter the whole responsibility of such enterprises. Hence the necessity and advantage of companies or associations. It is to them that we are indebted for those canals and railways by which every part of the country is intersected, for the formation of so many noble docks and warehouses, for the institution of our principal banks and insurance offices, and for many other establishments of great public utility carried on by the combined capital and energies of large bodies and individuals.

3. *Branches of Industry, for the Prosecution of which Joint-stock Companies may be advantageously established.*—In order to insure a rational prospect of success to a company, the undertaking should admit of being carried on according to a regular systematic plan. The reason of this is sufficiently obvious. The business of a great association must be conducted by factors or agents; and unless it be of such a nature as to admit of their duties being clearly pointed out and defined, the association would cease to have any effectual control over them, and would be, in a great measure, at their mercy. An individual who manages his own affairs reaps all the advantage derivable from superior skill, industry, and economy; but the agents, and even directors of joint-stock companies labor, in most cases, entirely or principally for the advantage of others; and can not therefore, however conscientious, have the same powerful motives to act with energy, prudence, and economy. "Like," says Dr. Smith, "the stewards of a rich man, they are apt to consider attention to small matters as not for their master's honor, and very easily give themselves a dispensation from having it. Negligence and profusion therefore must always prevail more or less in the management of the affairs of such a company." It also not unfrequently happens that they suffer from the bad faith, as well as the carelessness and extravagance of their servants; the latter having in many instances endeavored to advance their own interests at the expense of their employers. Hence the different success of companies whose business may be conducted according to a nearly uniform system—such as dock, canal, and insurance companies, railroad companies, etc.—and those whose business does not admit of being reduced to any regular plan, and where much must always be left to the sagacity and enterprise of those employed. All purely commercial companies, trading upon a joint stock, belong to the latter class.

Not one of them has been able to withstand the competition of private adventurers; they can not subject the agents they employ to buy and sell commodities in distant countries to any effectual responsibility; and from this circumstance, and the abuses that usually insinuate themselves into every department of their management, no such company has ever succeeded, unless when it has attained some exclusive privilege, or been protected from competition.

The Abbé Morellet has given, in a tract published in 1769 (*Examen de la Réponse de M. M.*, p. 35–38), a list of 55 joint-stock companies, for the prosecution of various branches of foreign trade, established in different parts of Europe since 1600, every one of which had failed, though most of them had exclusive privileges Most of those that have been established since the publication of the Abbé Morellet's tract have had a similar fate. But notwithstanding both principle and experience concur in showing how very ill fitted a large association is for the purpose of prosecuting commercial undertakings, there are cases in which they can not be prosecuted except by associations of this sort, and when it may be expedient to grant them certain peculiar privileges. When, owing either to the disinclination or inability of government to afford protection to those engaged in any particular department of trade, they are obliged to provide for their own defense and security, it is obviously necessary that they should have the power to exclude such individuals as may refuse to submit to the measures, or to bear their due share of the expense, required for the common protection of all. The Russian Company, the East India Company, the Levant or Turkey Company, and most of the other great trading companies that have existed, seem principally to have grown out of a real or supposed necessity of this sort. It was not believed that any safe or advantageous intercourse could be carried on with barbarous countries without the aid of ships of war, factories, interpreters, etc.; and as government was not able or willing to afford this assistance, the traders were formed into companies or associations, and vested with such peculiar privileges as appeared to be necessary for enabling them to prosecute the trade without any extrinsic support. "When," says Dr. Smith, "a company of merchants undertake, at their own risk and expense, to establish a new trade with some remote and barbarous nation, it may not be unreasonable to incorporate them into a joint-stock company, and to grant them, in case of success, a monopoly of the trade for a certain number of years. It is the easiest and most natural way in which the state can recompense them for hazarding a dangerous and expensive experiment, of which the public is afterward to reap the benefit. A temporary monopoly of this kind may be vindicated upon the same principles upon which a like monopoly of a new machine is granted to its inventor, and that of a new book to its author. But upon the expiration of the term, the monopoly ought certainly to determine; the forts and garrisons, if it was found necessary to establish any, to be taken into the hands of the government, their value to be paid to the company, and the trade to be laid open to all the subjects of the state."—*Wealth of Nations*, p. 339. It may be doubted, however, whether it be really necessary, even in such a case as that now mentioned, to establish *a joint-stock company* with peculiar privileges, and whether the same thing might not be more advantageously effected by the establishment of an open or regulated company.

4. *Open or Regulated Companies.*—The affairs of such companies or associations are managed by directors appointed by the members. They do not, however, possess a common or joint stock. Each individual pays a fine upon entering into the company, and most commonly an annual contribution: a duty applicable to the business of the company is also sometimes charged upon the goods imported and exported from and to the countries with which they trade. The sums so collected are applied by the directors to fit out embassadors, consuls, and such public functionaries as may be required to facilitate commercial dealings, or to build factories, maintain cruisers, etc. The members of such companies trade upon their own stock, and at their own risk; so that when the fine, or the sum payable on admission into a regulated company, is moderate, it is impossible for its members to form any combination that would have the effect of raising their profits above the common level; and there is the same keen and close competition among them that there is among other classes of traders. A regulated company is, in fact, a device for making those engaged in a particular branch of trade bear the public or political expenses incident to it, at the same time that it leaves them to conduct their own business with their own capital, and in their own way. Should, therefore, government at any time refuse, or be unable to afford, that protection to those engaged in any branch of trade which is necessary to enable them to carry it on, their formation into a regulated company would seem to be the most judicious measure that could be adopted, inasmuch as it would obtain for them that protection which is indispensable, without encroaching on the freedom of individual enterprise. The African and the Levant companies in Great Britain, and some other branches of trade, were for a long time conducted by open or regulated companies. These, however, have been recently abolished: the African Company, by the act 1 and 2 Geo. IV. c. 28; and the Levant Company, by the act 6 Geo. IV. c. 33. The Russia Company still exists.—*See* RUSSIA COMPANY.

In so far as relates to protection, it may perhaps be thought, for the reasons given by Dr. Smith, that a joint-stock company is better calculated to afford it than a regulated company. The directors of the latter having, Dr. Smith alleges, no particular interest in the prosperity of the general trade of the company, for behoof of which, ships of war, factories, or forts have to be maintained, are apt to neglect them, and to apply their whole energies to the care of their own private concerns. But the interests of the directors of a joint-stock company are, he contends, in a great measure identified with those of the association. They have no private capital employed in the trade; their profits must depend upon the prudent and profitable management of the common stock; and it may therefore, it is argued, be fairly presumed that they will be more disposed to attend carefully to all the means by which the prosperity of the association may be best secured. On the other hand, however, it is seldom that the directors of joint-stock companies stop at the proper point; having almost invariably attempted to extend their commercial dealings by force, and to become not only merchants but sovereigns. Nor is this any thing but what might have been expected, seeing that the consideration and extensive patronage accruing from such measures to the directors is generally of far more importance to them than a moderate increase of the dividends on their stock. Whenever they have been able, they have seldom scrupled to employ arms to advance their projects; and instead of contenting themselves with shops and factories, have constructed fortifications, embodied armies, and engaged in war. But such has not been the case with regulated companies. The businesses under their control have uniformly been conducted in a comparatively frugal and parsimonious manner; their establishments have been, for the most part, confined to factories; and they have rarely, if ever, allowed themselves to be seduced by schemes of conquest and dominion.

And hence, considering them as *commercial machines*, it does not really seem that there can be any doubt as to the superiority of a regulated over a joint-stock company. The latter has the defect, for which nothing almost can compensate, of *entirely excluding individual*

enterprise and competition. When such a company enjoys any peculiar privilege, it naturally, in pursuing its own interest, endeavors to profit by it, how injurious soever it may be to the public. If it have a monopoly of the trade with any particular country, or of any particular commodity, it rarely fails, by understocking the home and foreign markets, to sell the goods which it imports and exports at an artificially enhanced price. It is not its object to employ a comparatively large capital, but to make a large profit on a comparatively small capital. The conduct of the Dutch East India Company, in burning spices, that their price might not be lowered by larger importations, is an example of the mode in which such associations uniformly, and, indeed, almost necessarily act. All individuals are desirous of obtaining the highest possible price for what they have to sell: and if they are protected by a monopoly, or an exclusive privilege, from the risk of being undersold by others, they never hesitate about raising the price of their products to the highest elevation that the competition of the buyers will allow them; and thus frequently realize the most exorbitant profits. And yet, notwithstanding these advantages, such is the negligence, profusion, and peculation inseparable from the management of great commercial companies, that even those that have had the monopoly of the most advantageous branches of commerce have rarely been able to keep out of debt. It will be shown in the article EAST INDIA COMPANY, that that association has lost by its trade; and that, had it not been for the aid derived from the revenues of India, it must long since have ceased to exist. To buy in one market; to sell with profit in another; to watch over the perpetually occurring variations in the prices and in the supply and demand of commodities; to suit with dexterity and judgment the quantity and quality of goods to the wants of each market, and to conduct each operation in the best and cheapest manner, requires a degree of unremitting vigilance and attention, which it would be visionary to expect from the directors or servants of a great joint-stock association. Hence it has happened, over and over again, that branches of commerce which proved ruinous to companies have become exceedingly profitable when carried on by individuals.

5. *Constitution of Companies.*—When application is made for an act to incorporate a number of individuals into a joint-stock company for the prosecution of any useful undertaking, care should be taken not to concede to them any privileges that may be rendered injurious to the public. If a company be formed for the construction of a dock, a road, or a canal, it may be necessary, in order to stimulate individuals to engage in the undertaking, to give them some peculiar privileges for a certain number of years. But if other persons were to be permanently hindered from constructing new docks, or opening new lines of communication, a lasting injury might be done to the public. It may be highly expedient to incorporate a company for the purpose of bringing water into a city; but, supposing there were no springs in the vicinity other than those to which this company had acquired a right, they might, unless restrained by the act incorporating them, raise the price of water to an exorbitant height, and make large profits for themselves at the expense and to the injury of the public. In all cases of this sort, and in the case, indeed, of all joint-stock companies established for the formation of canals, railroads, etc., it would be sound policy to limit the rates charged for their services, or on account of the water, ships, goods, etc., conveyed by their means, and also to limit the dividends, or to fix a *maximum* beyond which they should not be augmented: enacting, that if the rates charged by the company produce more than sufficient to pay the maximum rate of dividend, and to defray the wear and tear of the aqueduct, canal, etc., they shall be allowed to reduce them till they only yield this much; and, in the event of their declining to do so, that the whole surplus above paying the dividend shall be applied to purchase up the stock of the association, so that ultimately the charges on account of dividends may be entirely abolished.

6. *Companies en Commandite.*—In France there is a sort of companies denominated *sociétés en commandite*. A society of this description consists of one or more partners, liable, without limitation, for the debts of the company; and one or more partners, or *commanditaires*, liable only to the extent of the funds they have subscribed. A *commanditaire* must not, however, take any part in the business of the company; if he do this, he loses his inviolability, and makes himself responsible for the debts of the association. The names of the partners in such societies must be published, and the amount of the sums contributed by the *commanditaires*. It has been proposed to introduce partnerships of this sort into this country; but it seems very doubtful whether any thing would be gained by such a measure. Partnerships *en commandite* may be very easily abused, or rendered a means of defrauding the public. It is quite visionary to imagine that the *commanditaires* can be prevented from indirectly influencing the other partners; and supposing a collusion to exist among them, it might be possible for them to divide large sums as profits, when perhaps they had really sustained a loss; and to have the books of the association so contrived that it might be very difficult to detect the fraud. This, it is alleged, is by no means a rare occurrence in France.

7. *Civic Companies, or Corporations.*—Exclusive of the companies previously mentioned, a number of ancient companies or corporations exist in most European countries, the members of which enjoy certain political as well as commercial privileges. When the feudal system began to be subverted by the establishment of good order and regular government in the towns, the inhabitants were divided into certain trades or corporations, by which the magistrates and other functionaries were chosen. The members of those trades, or corporations, partly to enhance the value of their privileges, and partly to provide a resource, in case of adversity, for themselves, acquired or usurped the power of enacting by-laws regulating the admission of new members, and at the same time set about providing a fund for the support of such as accident or misfortune might reduce to a state of indigence. Hence the origin of apprenticeships, the refusal to allow any one not a member of a corporation to carry on any business within the precincts of any town corporate, and the various regulations that had to be submitted to, and the fees that had to be paid by the claimants for enrollment in corporations. For a lengthened period these privileges and regulations were very oppressive. Within the last century, however, their influence has been progressively diminishing. In France, where the abuses inseparable from the system had attained to a very great height, it was entirely swept off by the Revolution: and though corporations still exist in Great Britain, they have been stripped of several of their peculiar franchises; and should now, for the most part, be regarded more perhaps in the light of charitable than of political institutions. It would be well, however, were they reduced entirely to the former character, and were the few political and commercial privileges which they still enjoy communicated to the rest of the citizens. At their first institution, and for some time after, corporations, considered as political bodies, were probably useful: but such is no longer the case; and in so far as they now possess any special immunities, they tend to obstruct that free competition that is so advantageous.

The following extract from a *Report on the Commerce and Manufactures of the United States*, drawn up by Albert Gallatin, Esquire, then Secretary of the Treasury, and laid before Congress in 1816, sets the superior

advantages resulting from the unrestricted freedom of industry in a very striking point of view. "No cause," says he, "has, perhaps, more promoted in every respect the general improvement of the United States, than the absence of those systems of internal restrictions and monopoly which continue to disfigure the state of society in other countries. No laws exist here, directly or indirectly, confining men to a particular occupation or place, or excluding any citizen from any branch he may at any time think proper to pursue. Industry is, in every respect, free and unfettered; every species of trade, commerce, and profession, and manufacture, being equally open to all, *without requiring any regular apprenticeship, admission, or license.* Hence the improvement of America has not been confined to the improvement of her agriculture, and to the rapid formation and settlement of new states in the wilderness; but her citizens have extended their commerce to every part of the globe, and carry on with complete success even those branches for which a monopoly had heretofore been considered essentially necessary."

There is in REES' *Cyclopedia*, art. COMPANY, a list of the different civic companies belonging to the city of London, in which the periods of their incorporation, and various other important particulars with respect to several of them, are specified.

Among the earliest commercial companies in England may be named the Steel-yard Society, established A.D. 1232. The second company was the merchants of St. Thomas à Beckot, in 1248.—STOWE. The third was the Merchant Adventurers incorporated by Elizabeth, 1564. There are ninety-one city companies in London; the first twelve are,

	A.D.
1 Mercers	1393
2 Grocers	1345
3 Drapers	1409
4 Fishmongers	1384
5 Goldsmiths	1327
6 Skinners	1327
7 Merchant Tailors	1466
8 Haberdashers	1447
9 Salters	1568
10 Ironmongers	1464
11 Vintners	1467
12 Cloth-workers	1482

Companies, Bubble. Ruinous speculations coming under this name have been formed, commonly by designing persons. Law's Bubble, in 1720-'21, was perhaps the most extraordinary of its kind, and the South Sea Bubble, in the same year, was scarcely less memorable for its ruin of thousands of families. Many companies were established in Great Britain in 1824 and 1825, and most of them turned out to be *bubbles*; and owing to the rage for taking shares in each scheme as it was projected, immense losses were incurred by individuals, and the families of thousands of speculators were totally ruined.—*See* LAW'S BUBBLE *and* BANKRUPTS.

Compass (Germ. *Ein Kompass*; Du. *Zeekompass*; Da. *Söekompass*; Sw. *Sjöcompass*; Fr. *Boussole, Compas de mer*; It. *Bussola*; Sp. *Aguja de marear*; Port. *Compasso de marear*; Russ. *Kompass korabelnüi*), or mariner's compass, an instrument composed of a needle and card, by which the ship's course is directed. The needle, with little variation, always points to the north; and hence the mode of steering by the compass.

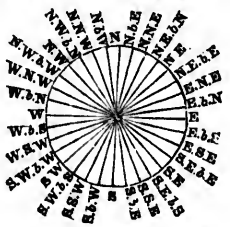
The common opinion is that the compass was invented by Flavio Gioia, a citizen of the once famous republic of Amalphi, very near the beginning of the fourteenth century. Dr. Robertson has adopted this opinion, and regrets that contemporary historians furnish no details as to the life of a man to whose genius society is so deeply indebted.—*History of America*, vol. i. p. 47, 8vo ed. But though Gioia may have made improvements on the compass, it has been shown that he has no claim to be considered as its discoverer. Passages have been produced from writers who flourished more than a century before Gioia, in which the polarity of the needle, when touched by the magnet, is distinctly pointed out. Not only, however, had this singular property been discovered, but also its application to the purposes of navigation, long previously to the fourteenth century. Old French writers have been quoted (MACPHERSON'S *Annals of Commerce*, anno 1200; REES' *Cyclopedia*), that seem fully to establish this fact. But whatever doubts may exist with respect to them can not affect the passages which the learned Spanish antiquary, Don Antonio de Capmany (*Questiones Criticæ*, p. 78-132), has given from a work of the famous Raymond Lully (*De Contemplatione*) published in 1272. In one place Lully says, "as the needle, when touched by the magnet, naturally turns to the north" (*sicut acus per naturam vertitur ad septentrionem dum sit tacta à magnete*). This is conclusive as to the author's acquaintance with the polarity of the needle; and the following passage from the same work—"as the nautical needle directs mariners in their navigation" (*sicut acus nautica dirigit marinarios in sua navigatione, etc.*), is no less conclusive as to its being used by sailors in regulating their course. There are no means of ascertaining the mode in which the needle Raymond Lully had in view was made use of. It has been sufficiently established (see the authorities already referred to, and AZUNI, *Dissertation sur l'Origine de la Boussole*) that it was usual to float the needle, by means of a straw, on the surface of a basin of water; and Capmany contends that we are indebted to Gioia for the card and the method now followed of suspending the needle; improvements which have given to the compass all its convenience, and a very large portion of its utility. But this part of his *Dissertation*, though equally learned and ingenious, is by no means so satisfactory as the other. It is difficult to conceive how mariners at sea could have availed themselves of a floating needle; but, however this may be, it seems most probable that Gioia had considerably improved the construction of the compass; and that, the Amalphitans having been the first to introduce it to general use, he was, with excusable partiality, represented by them, and subsequently regarded by others, as its inventor.

The reader will not consider these details out of place in a work on commerce, which the compass has done so much to extend. "Its discovery," to borrow the language of Mr. Macpherson, "has given birth to a new era in the history of commerce and navigation. The former it has extended to every shore of the globe, and increased and multiplied its operations and beneficial effects in a degree which was not conceivable by those who lived in the earlier ages. The latter it has rendered expeditious, and comparatively safe, by enabling the navigator to launch out upon the ocean free from the danger of rocks and shoals. By the use of this noble instrument, the whole world has become one vast commercial commonwealth, the most distant inhabitants of the earth are brought together for their mutual advantage, ancient prejudices are obliterated, and mankind are civilized and enlightened."

According to the purposes to which the instrument is chiefly applied, it becomes the *mariner's compass*, the *azimuth compass*, the *variation compass*, each particular application requiring some peculiarity of construction; but whatever modifications it may receive, the essential parts are the same in all cases. These are a magnetized bar of steel, called the *needle*, having fitted to it at its centre a cap, which is supported on an upright pivot made sharp at the point in order to diminish the friction as much as possible and allow the needle to turn with the slightest force. The *mariner's compass* has a circular card attached to its needle, which turns with it, and on the circumference of which are marked the degrees, and also the thirty-two *points* or *rhumbs*, likewise divided into half and quarter points. The pivot rises from the centre of the bottom of a circular box, called the compass-box, which contains the needle

and its card, and which is covered with a glass top to prevent the needle from being disturbed by the agitation of the air. The compass-box is suspended within a large box by means of two concentric brass circles or gimbals; the outer one being fixed by horizontal pivots, both to the inner circle which carries the compass-box, and also the outer box, the two sets of axes being at right angles to each other. By means of this arrangement, the inner circle, with the compass-box, needle, and card, always retain a horizontal position, notwithstanding the rolling of the ship.

The notation of the mariner's compass is as follows: The circumference being divided into the four quadrants by two diameters at right angles, the extremities of these diameters are the four cardinal points (*cardo, a hinge*), marked N., S., E., W. (north, south, east, west). Bisecting each of the quadrants, the several points of bisection are denoted by placing the two letters at the extremities of the quadrant in juxtaposition. Thus N.E. (northeast) denotes the point which is half way between north and east; and so with N.W.,



S.E., S.W. (northwest, southeast, southwest). Let the octants next be bisected; the points of division are denoted by prefixing to each of the above combinations first the one and then the other of the two cardinal points of which it is formed. Thus N.E. gives N.N.E. and E.N.E. (north-northeast and east-northeast); and so in respect of the others. Sixteen points have thus been named. Let the distances be again bisected, then each of the points so found is expressed by that one of the preceding points already named to which it is nearest, followed by the name of the cardinal point toward which its departure from the nearest point leads it, the two being separated by the letter *b* (by). Thus the point half way between N. and N.N.E. is N. by E. (north-by-east); that which is half way between N.N.E. and N.E. is N.E. by N. (northeast-by-north), etc. The whole of the thirty-two points are thus distinguished in the figure.

The principal requisites of a compass are intensity of directive force, and susceptibility. The first of these is obtained by constructing the needle of the material and form best suited to receive and retain the magnetic virtue. A number of experiments on this subject were made by Coulomb, and more recently by Captain Kater, an account of which is given in the *Phil. Trans.* for 1821. Captain Kater found that the kind of steel capable of receiving the greatest magnetic force is shear steel; and that the best form is that of a lozenge or rhomboid, cut out in the middle, so as to diminish the extent of surface in proportion to the mass, it being found that the directive force of the needle, when magnetized to saturation, depends not on the extent of surface, but on the mass. Beyond a certain limit (about five inches) no additional power is gained by increasing the length of the needle; and needles exceeding a very moderate length are apt to have several consecutive poles, the effect of which is to produce a great diminution of directive force. On this account short needles, made very hard, are to be preferred.—BRANDE'S *Encyclopedia of Arts.*

Like many other of the most valuable arts of life, the origin of the compass is entirely unknown. By some writers it is ascribed to Flavio Gioia, who lived in the thirteenth century; yet Guyot de Provence, who lived a century earlier, speaks of the loadstone, to which he gives the name of *marinetti*, or mariner's stone, as useful to navigation. Others pretend that it was invented in France; but there seems to be no other reason for this supposition than the fact that from time immemorial the north point of the compass card has been distinguished and ornamented with a *fleur de lis*. For a reason of a different kind, but perhaps of the same degree of weight, Dr. Wallis and others have supposed the invention to belong to England, the name *compass*, which is given to the instrument by most European countries, being used in England to signify a circle. The term *bussola* in Italian and *boussole* in French, has also been supposed to be derived from our term *box*, by which the compass is frequently designated. Gilbert, in his celebrated work *De Magnete*, affirms that Marco Polo brought the invention to Europe from China, about the year 1260. It appears very probable that the Chinese were acquainted with the directive property of the loadstone at an early period.

The *azimuth compass*, being intended to show the bearing of objects in respect of the magnetic meridian, has its circle divided merely into degrees, instead of the rhumbs used in navigation, and is provided with sights to allow the angles to be taken more accurately.

The *variation compass* is designed to exhibit the diurnal changes in the deviation of the magnetic from the true meridian; and the needle is generally made of much greater length than the mariner's compass, in order to render minute variations more sensible.

Compass Variations.—In a recent publication on the danger to which vessels are exposed from compass variations, there was suggested a plan of much importance to commerce: that in all large ports at least, where vessels are equipped, a competent person ought to be appointed, whose duties should be to select in every ship an advantageous position for a standard compass, combining the two requisites in such selection of a manageable local attraction, and of convenient access for navigating the ship—to determine experimentally the local deviations of the standard compass in different azimuths, to instruct the master how to repeat the same on future occasions, and to see that he rightly and thoroughly understands the deduction of the true magnetic courses from those of the standard compass, and of the course by the standard compass corresponding to the true course which he desires to steer.

Self-registering Compass.—The self-registering compass, by M. Delull, is designed to register the changes of direction in a vessel for every three minutes during the twenty-four hours. The marking is made upon a compass card. It consists of a clock movement placed at the centre of the apparatus for causing the point or pivot carrying the needles to move up and down at regular intervals—of an endless screw, furnished with a nut carrying the point, for piercing the paper—and of the compass card, made of three needles fixed to a sheet of mica. The mica is covered with a disk of velvet, firmly glued to it by means of strong glue, and whose tissue has been saturated with a kind of glue that is soft when cold. When the needle is fixed toward the north, the axis or diametral line of the compass card is placed in the line of the axis of the ship, and the punctures made every three minutes indicate the deviation of this axis.

Composition, *in Commerce*, commonly implies the dividend or sum paid by an insolvent debtor to his creditors, and accepted by them in payment for their debts.

Coney Wool (Ger. *Kaninchenwolle;* Du. *Konynhair;* Fr. *Poil de lapin;* It. *Pelo di Caniglio;* Sp. *Conejuna*), the fur of rabbits. This article is extensively used in the hat manufacture; and besides the large supplies raised at home, a great deal is imported. The imports usually range from about 300,000 to about 500,000 skins a year.

Congreve Rockets. Invented by General Sir William Congreve in 1808. The Congreve rockets, first used against Boulogne in 1806, are of various dimensions, and differently armed, as they are intended for the field or for bombardment. Those of the former class carry shells or case-shot; those of the latter are armed with a very combustible material contained in a strong metallic cylindrical case with a conical head. When once inflamed, this substance is unextinguishable, it scatters its burning particles in every direction, and when spent, the ball explodes like a grenade. The rocket is projected horizontally, and makes a loud whizzing noise in its passage through the air. The ammunition used varies from 6 to 42 lbs. and upward. These rockets were certainly a very important invention; but from their liability to deflection and other defects, they are now regarded as less advantageous than the ordinary red-hot shot and bombs. The secret of their composition also is not so great as to defy imitation by foreign artillerists. *Sir William Congreve*, Bart. (1772–1828), inventor of the rocket called by his name, was a general of artillery, and co-operated with the Duke of York in reforming the British army. He wrote an *Elementary Treatise on the Mounting of Naval Ordnance* (Lond. 1812); and a *Description of the Hydro-pneumatic Lock* (Lond. 1815). He died at Toulouse in 1828.—E. B.

Connecticut, the southernmost of the New England States, is situated between lo′. 41° and 42° 2′ N., and long. 71° 20′ and 73° 15′ W., and between 3° 46′ 24″ and 5° 41′ 24″ E. long. from Washington. It is bounded north by Massachusetts, east by Rhode Island, south by Long Island Sound, and west by New York. It contains 4750 square miles, or 3,040,000 acres. Its population in 1790, was 237,946; in 1800, 251,002; in 1810, 261,942; in 1820, 275,248; in 1830, 297,711; in 1840, 300,015; in 1850, 370,792. The capitals are, Hartford, on the right bank of the Connecticut, at the head of steamboat navigation, 50 miles from its entrance into Long Island Sound, and New Haven, at the head of a bay which sets up 4 miles from the sound. It contained, in 1850, eight counties.

The beautiful river from which the State of Connecticut derives its name was first discovered (in the year 1614) by the Dutch Captain Adrian Block, who sailed into it as far up as the present site of Hartford, and who named it "*De Versche Rivier*" (the Fresh River), probably from the fresh appearance of its waters and green valleys. The Dutch from New Amsterdam made some attempts at settlement along this river. But the English colonists and explorers from Plymouth and Boston, on their way to the west, reached it about the year 1630, and became soon the exclusive proprietors of the river and its valley. They adopted for it the original name of the aborigines, which, in its true Indian shape, is said to have been "*Quonehtucut*." The meaning of this word is stated to be "*The Long River*," and it appears to be a designation which the Indians applied often as a river name. Among others, we find also in Long Island a Connecticut River. The name was at first written in different ways. We find, for instance, on one map of the year 1635, the orthography "*R. Conokteook*." At last the orthography "Connecticut" prevailed. The English colonists applied the name of the river for the first time to a territory in the year 1631, when they claimed a tract of land around the present site of Hartford, and intended to erect there a colony, to which the name of "*Colony of Connecticut*" was given. This was an inland country, sometimes also called "*the Colony of Hartford*." In the year 1662 King Charles II. united with this colony that of New Haven, which was planted on the shores of Long Island Sound, and which had existed for some time separately under a particular name. The king named both united colonies "*The Province of Connecticut*;" and in this way this name was extended to the sea-coast. It included then also a great part of Long Island, which had been settled and was claimed by planters and emigrants from the Connecticut valleys. But soon after the conquest of New Netherland by the English (1664) the Duke of York claimed the whole of Long Island, which now was separated from the colony of Connecticut and became a part of the province of New York. In compensation for this loss the boundaries of Connecticut were extended to the west as far as Mormaromek or Byram's River, within thirty miles from New York, so that now the name Connecticut covered nearly the whole of the northern shore of Long Island Sound. These boundaries along the sea-coast have, upon the whole, remained unchanged ever since. —J. G. Kohl.

Though generally hilly and broken, no part of the surface rises to a great height above the sea. The greatest elevation is a range of mountains commencing at a bluff called East Rock, near New Haven, and continuing northward through the state. The hills are generally of moderate size, and occur in quick succession in ranges trending northward, presenting to the traveler an ever-varying aspect. The soil is generally fertile, but better adapted to grazing than tillage. There were in this state, in 1850, 1,768,178 acres of land improved, and 615,701 of unimproved land in farms. Cash value of farms $72,726,422; and the value of implements and machinery, $1,892,541; live-stock: horses, 26,879; asses and mules, 49; milch cows, 85,461; working oxen, 46,988; other cattle, 80,226; sheep, 174,181; swine, 76,472; value of live-stock, $7,467,490.

Manufactures.—There were in the state, in 1850, 106 cotton factories, with a capital invested of $4,012,600, employing 2665 males, and 3313 females, producing 54,370,527 yards of sheeting, etc., and 950,000 pounds of yarn, valued at $4,122,952; 149 woolen factories, with a capital of $2,583,742, employing 1893 males, and 1665 females, producing 8,950,372 yards of cloth, valued at $4,921,152; 12 establishments making pig iron, with a capital of $207,600, employing 120 persons, producing 13,020 tons of pig-iron, etc.; the entire value of products, $379,600; 60 establishments, with a capital of $580,800, employing 949 persons, and making 11,210 tons of castings, etc., valued at $981,400; 18 establishments, with a capital of $529,500, employing 874 persons manufacturing 6325 tons of wrought iron, etc., valued at $667,560; 117 flouring mills, 115 tanneries, with a capital of $360,500, employing 407 persons; value of products, $731,006. Capital invested in manufactures, $23,890,348; value of manufactured articles, $41,897,848.

The state is watered by numerous rivers and streams. Few of the rivers are navigable for more than a short distance from their mouths. The principal is the Connecticut, which rises on the northern border of New Hampshire, and after a course of about 400 miles falls into Long Island Sound between Saybrook and Lyme. Its general direction is south-by-west, separating New Hampshire from Vermont, and afterward passing through the western part of Massachusetts and the central part of Connecticut. Below Middletown it turns to the south-southeast, and continues in that direction to its mouth. It is navigable to Middletown, 30 miles from the sea, for vessels drawing 10 feet, and to Hartford, 20 miles higher, for vessels drawing 8 feet of water. The canals and other improvements recently made to overcome the rapids and falls, have rendered it navigable for small boats as far as Wells River, 250 miles above Hartford. The principal tributary of the Connecticut in this state is the Tunxis or Farmington, which rises in the eastern slope of the Green Mountains in Massachusetts, and flows southward to Farmington, where it abruptly changes its course to the northward. On breaking through the trap range of the Talcott Mountains, it again takes a southerly direction, and falls into the Connecticut opposite East Windsor. The Housatonic rises in the western part of Massachusetts and enters this state near its northwest corner, after which it

has a south and southeast course to the Sound. Its entrance is obstructed by a bar, but there is a sloop navigation for 12 miles. The Thames, formed by the junction of the Quinebaug, Shetucket, and Yantic Rivers near Norwich, falls into the Sound at New London. The mineral wealth of Connecticut is considerable. Iron ore of excellent quality is found abundantly in various parts. The copper mines of Bristol and Plymouth are said to be the most profitable in the United States. According to Professor Silliman, the Bristol vein extends in a southerly direction for more than 30 miles, and if fully worked is capable of affording employment to 30,000 miners. The Plymouth mines are considered to be equally rich. Copper is also found at Granby. Fine marbles of different kinds are abundant, and extensive quarries of freestone exist in the mountain regions, and furnish an excellent building material. Zinc, cobalt, manganese, and plumbago are also found; and the mineral waters of Stafford have long been celebrated.

Connecticut has a larger productive school fund, in proportion to its population, than any other state, amounting to $2,049,482. This originated chiefly from the sale of the Western Reserve, constituting a large part of the northern portion of the State of Ohio included in its original charter, and ceded to it by the United States by way of compromise. In 1852 there were in the state 53 banks, with a capital of $12,509,808. It has no state debt. There is a state prison at Wethersfield, erected in 1826.

The following synopsis of the length, cost, capital, earnings, etc., of the Connecticut railroads, is from the Official Report of the Railroad Commissioners of that state for 1856:

Names.	Total Length.	Length in Connecticut.	Capital Paid in.	Debt Funded and Unfunded.	Cost.	Earnings. 1855.	Net Earnings.	Divi. dends.
	Miles.	Miles.						
New York and New Haven	62½	47½	$9,992,450	$2,888,010	$5,070,979	$958,275	$338,877	....
New Haven and Hartford	72	63	2,350,000	140,000	3,818,992	730,012	552,799	$235,000
Norwich and Worcester	66	54	2,122,300	1,564,589	2,597,153	304,256	88,458	52,787
Hartford, Providence, and Fishkill	122½	96	2,008,110	2,080,665	4,060,868	258,685	119,611	18,141
N. London, Wittimantic, and Palmer	66	57	500,200	1,078,672	1,594,692	124,043	663,330	....
New Haven and New London	50	50	738,538	761,462	1,455,569	88,007	80,818	....
Housatonic	74	74	2,000,000	414,240	2,431,778	339,106	176,520	....
Naugatuck	57	57	1,031,800	524,244	1,580,723	220,459	95,955	....
Danbury and Norwalk	23½	23½	279,050	97,100	373,460	56,241	21,900	13,976
New York, Providence, and Boston	50	6	1,508,000	446,700	2,158,000	250,627	74,884	37,692
New Haven and Northampton	55½	55½	922,500	500,000	1,400,000	145,135	74,054	30,900
Boston and New York Central	74½	8	2,240,300	1,518,671	3,463,818	19,917	8,139	....
Total	772½	590½	$18,702,248	$12,165,356	$29,505,662	$3,534,839	$1,448,412	$364,491

COMMERCE OF THE STATE OF CONNECTICUT (SHOWING ALSO THE DISTRICT TONNAGE IN 1821, 1831, 1841, AND 1851) FROM OCT. 1, 1820, TO JULY 1, 1856.

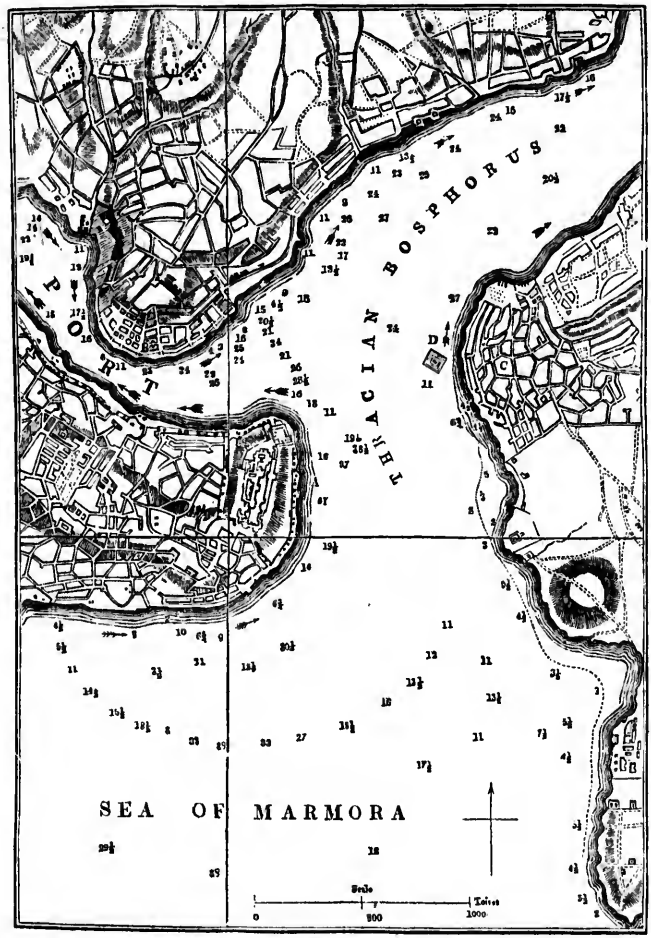
Years ending	Exports.			Imports.	Tonnage Cleared.		District Tonnage.	
	Domestic.	Foreign.	Total.	Total.	American.	Foreign.	Registered.	Enrolled and Licensed.
Sept. 30, 1821	$366,180	$10,007	$376,187	$812,690	14,749	....	74,084	51,720
1822	479,353	5,959	485,312	507,084	17,442	....	....	....
1823	480,941	1,120	492,061	456,463	16,733	103	....	....
1824	570,434	6,218	576,652	581,510	20,946	....	....	....
1825	684,636	4,564	689,270	707,473	24,395	....	....	....
1826	695,454	13,439	708,893	736,104	21,634	....	....	....
1827	567,100	23,175	590,275	630,004	18,078	....	....	....
1828	493,925	27,620	521,545	485,174	17,588	....	....	....
1829	450,965	6,985	457,970	309,538	16,090	....	....	....
1830	385,610	3,901	389,511	209,583	18,285	77	....	....
Total	$5,174,663	$102,008	$5,276,676	$4,995,128	185,940	185	....	....
Sept. 30, 1831	$482,073	$810	$482,883	$405,066	20,139	....	18,068	34,810
1832	430,466	....	430,466	437,715	20,944	867	....	....
1833	427,603	....	427,603	352,014	18,458	606	....	....
1834	421,419	997	422,416	385,720	18,548	204	....	....
1835	487,510	25,460	512,970	459,502	10,528	618	....	....
1836	431,178	7,028	438,199	468,163	20,342	1,542	....	....
1837	523,103	9,487	532,590	318,849	20,399	2,145	....	....
1838	543,610	....	543,610	343,231	19,892	420	....	....
1839	583,226	....	583,226	449,847	26,309	916	....	....
1840	518,210	....	518,210	277,073	24,129	470	....	....
Total	$4,848,396	$43,777	$4,892,173	$3,870,279	198,580	7,207	....	....
Sept. 30, 1841	$599,348	....	$599,348	$295,989	27,886	3,027	26,421	38,858
1842	582,392	....	582,392	335,707	27,253	4,701	....	....
9 mos., 1843*	307,223	....	307,223	230,841	14,113	2,743	....	....
June 30. 1844	798,725	1,291	800,016	323,299	33,381	4,780	....	....
1845	960,810	8,245	969,055	372,075	37,086	2,101	....	....
1846	765,912	10,000	775,912	413,478	31,131	5,937	....	....
1847	598,702	400	599,102	275,823	20,586	1,966	....	....
1848	501,064	....	501,064	229,310	23,500	4,313	....	....
1849	264,000	....	264,000	234,743	20,440	3,719	....	....
1850	241,262	668	241,930	372,390	17,515	9,802	....	....
Total	$5,569,438	$20,604	$5,590,132	$3,083,655	252,841	43,179	....	....
June 30, 1851	$433,894	$184	$434,078	$342,994	22,534	8,127	41,805	74,374
1852	505,904	270	506,174	394,575	27,507	10,237	....	....
1853	497,769	11,665	509,434	548,793	19,942	8,962	....	....
1854	721,307	18,264	739,575	562,977	23,750	7,342	....	....
1855	859,492	19,393	878,874	633,826	21,369	7,879	....	....
1856	860,582	20,292	908,876	741,756	31,417	8,929	....	....

* Nine months to June 30, and fiscal year begins July 1, 1843.

Consolidated Fund. Down to 1816 the exchequers of Great Britain and Ireland were kept separate, certain portions of the public revenue arising in each kingdom being especially appropriated to the discharge of the interest on its own debts, and other peculiar purposes. But on January 5th, 1816, the separate exchequers were consolidated into one; and an act was at the same time passed consolidating certain portions of the joint revenue of Great Britain and Ireland into one fund, hence called the Consolidated Fund, and providing for its indiscriminate application to the payment of the public debts, civil lists, and other specified expenses of both kingdoms. Some portions of revenue are not included in this fund; but it embraces

by far the largest part of the public income. Thus, in 1838, of a total net income of £47,333,460, the Consolidated Fund included no less than £44,144,438: the expenditure on account of the peculiar charges to be defrayed by the fund during the same year amounted to £31,742,918, leaving a surplus of £12,401,570 applicable to other objects.—FAIRMAN *on the Funds*, 7th ed. p. 896; *Parl. Paper*, No. 849. Sess. 1839, etc.

Constantinople, a famous city of southeastern Europe, formerly the metropolis of the Eastern, as it still is of the Turkish empire, on a triangular point of land, on the European side of the Sea of Marmora (Propontis), at the point where it unites with the Bosphorus, or channel leading to the Black Sea, lat. 41° 0′ 12″ N., long. 28° 59′ 2″ E. Population variously estimated at from 300,000 to 600,000, but believed, by the best authorities, to be about 450,000. The situation of this renowned city is, in a commercial point of view, one of the finest imaginable. Standing on the narrow straits uniting the Mediterranean and Euxine Seas, she at once commands and is the *entrepôt* for the commerce between them. The harbor is most excellent. It consists of an extensive inlet, or arm of the sea, stretching along the northeast side of the city, which it divides from the suburbs of Galata and Pera. It has sufficient depth of water to float the largest ships, and can accommodate more than 1000 sail. The strong current that sets through the Bosphorus into the Sea of Marmora strikes against Seraglio Point (*see Plan*); a part of the water, being in consequence forced into the harbor, runs along its southwestern side in the direction marked by the arrows (*see Plan*), till, arriving at its extremity, it escapes by the opposite side. In the middle the water is still. On leaving the port, it is necessary to keep well over to the northern side; for otherwise the ship might be taken by the current,



PORT OF CONSTANTINOPLE.

References to Plan.—A, Seraglio Point; B, Galata; C, Scutari; D, Tower and Light-house of Leander. The arrows show the direction of the currents. The soundings are in fathoms.

and driven on Seraglio Point. It may be worth while, however, to remark that, notwithstanding this inconvenience, the current has been of signal service to the city, by scouring the harbor, and carrying away the filth and ballast by which it must otherwise have been long since choked up. The distance across from Seraglio Point to the opposite suburb of Scutari, on the Asiatic coast, is rather more than an English mile. Within less than a quarter of a mile of the latter is a rocky islet, upon which is a tower and light-house, known by the name of the Tower of Leander. Foreigners reside in Galata, Pera, and the suburbs, on the eastern side of the harbor; and it is there, consequently, that the principal trade of the place is carried on. The quays are good, and ships lie close alongside.

The Bosphorus, or channel of Constantinople, runs in a northeast by north direction about 15 miles, varying in breadth from 1½ to ½ a mile. It is swept by a rapid current, which it requires a brisk gale to stem, and has throughout a great depth of water. The Hellespont, or Strait of the Dardanelles, leading from the Archipelago to the Sea of Marmora, is about 18 leagues in length. Its direction is nearly northeast. Where narrowest, it is little more than a mile across. It also is swept by a strong current, and has deep water throughout.

The subjoined plan of part of Constantinople and its port is copied, without reduction, from the beautiful plan of the city and Bosphorus, drawn and engraved by M. Merzoff Robert of Munich, and published by Mr. Wilde of London.

Nothing can be more imposing than the appearance of the city when seen from the sea, but on landing the illusion vanishes. The streets are narrow, dark, ill-paved, and irregular. Owing to the want of any effective system of police, and of the most ordinary attention to cleanliness, they are extremely filthy; and are infested with herds of dogs, and also with rats, which perform the functions of scavengers. The houses are mostly built of wood, and fires are frequent. Most of these happen designedly; the burning of a few hundred houses being deemed the readiest and most effectual means of making the government aware of the public dissatisfaction, and of procuring a redress of grievances.

Money.—Accounts are kept in piastres of 40 paras, or 120 aspers. The Turkish coin has been so much degraded, that the piastre, which a few years ago was worth 2*s.* sterling, is now worth little more than 4*d.* A bag of silver (*kefer*) = 500 piastres, and a bag of gold (*kiize*) = 30,000 piastres.

Weights and Measures.—The commercial weights are: 176 drams = 1 rottolo; 2·272 rottoli = 1 oke; 6 okes = 1 batman; 7½ batmans = 1 quintal or cantaro = 124·457 (124½ very nearly) lbs. avoirdupois = 56·437 kilogrammes = 116·527 lbs. of Hamburg. The quintal of cotton is 45 okes = 127·2 lbs. avoirdupois.

The pik or pike is of two sorts, the greater and the lesser. The greater, called *halebi* or *arschim*, used in the measurement of silks and woolens, is very near 28 inches (27·9). The lesser, called *endese*, used in the measuring of cottons, carpets, etc. = 27 inches. Hence 100 long pike = 77·498 English yards, and 100 short piks = 75·154 English yards. But in ordinary commercial affairs the pik is estimated at ⅞ths of an English yard.

Corn is measured by the *kisloz* or *killow* = 0·941 of a Winchester bushel 8½ kisloz = 1 quarter. The *fortin* = 4 kisloz.

Oil and other liquids are sold by the *alma* or *meter* = 1 gallon 3 pints, English wine measure. The alma of oil should weigh 8 okes.—Nelkenbrecher *and* Dr. Kelly.

The *Port charges* on account of English vessels in the harbors of the Ottoman empire are fixed by treaty at 300 aspers, neither more nor less.

Trade, etc.—Owing to the vicious institutions of the Turks, and the disorganized state of the empire, the trade of Constantinople is very far from being so extensive as might be supposed from its situation and population. The imports consist of corn, iron, timber, tallow, and furs, principally from the Black Sea; and of cotton stuffs and yarn, coal, tin, tin plates, woolens, silks, cutlery, watches and jewelry, paper, glass, furniture, indigo, cochineal, etc., from England and other European countries. Corn and coffee are imported from Alexandria; but considerable quantities of Brasil and West India coffee are also imported, particularly in British and American bottoms. Sugar is partly imported from the East, but principally from the West Indies. The exports consist of silk, which is by far the most important article, carpets, hides, wool, Angola goats' hair, yellow berries, boxwood, opium, galls, bullion and diamonds, and a few other articles. But the exports are always very much less than the imports; and ships carrying goods to Constantinople either return in ballast, or get return cargoes at Smyrna, Odessa, Salonica, etc., on which places they frequently procure bills at Constantinople. By far the largest proportion of the trade of the city, and of the Levant generally, is in the hands of Greek merchants, who by their superior skill, industry, and knowledge of those with whom they have to deal, have completely distanced their English, French, and other European competitors (denominated Franks). The Armenians only have been able to withstand the competition of the Greeks. Bargains are negotiated by Jew brokers, some of whom are rich.

Constantinople was known as the Stanboli of the Greeks, or Istanboul of the Turks. An attempt was made to change this latter name into Islamboul, that is, the town of Islam or Mohammedanism, and coins were even struck bearing the new name; but the attempt failed, and the coinage again bears the impression "struck at Istanboul." The entire civil and ecclesiastical authority of the Turkish empire is concentrated in the city, where reside the chief pashas, muftis, and ulemas; the patriarch and synod of the Greek Church; an Armenian and a Catholic archbishop. That part of it which is now occupied by the seraglio, and which is separated from the rest by a wall, is understood to have been the Byzantium of the ancients.

Commercial Policy.—It is singular that, as respects commerce, the policy of the Turkish government, whether originating in design or carelessness, is entitled to the highest praise. "No restrictions," says Mr. Thornton, "are laid on commerce, except in the instance of a general prohibition of exporting the articles necessary for the support of human life to foreign countries, especially from the capital, where alone it is rigorously enforced; and this impolitic restraint will no doubt be removed when the Turkish government shall become sensible that what is intended as the means of securing abundance is, in fact, the sole cause of that scarcity which is sometimes experienced. With this one exception, commerce is perfectly free and unfettered. Every article of foreign or domestic growth or manufacture is conveyed into every port, and over every province, without any interference on the part of the magistrates, after payment of the duties. On this subject I speak from actual experience, and may appeal to every foreign or native merchant in Turkey for its general truth."—*Present State of Turkey*, vol. i. p. 82.

The duties, too, are extremely moderate, being only five per cent. on imports, viz., three per cent. on goods when landed, and two per cent. on their being admitted to consumption (*Ubicini*, i. 281), and about three per cent. on most articles of export. Hence, in almost all that relates to her commercial regulations, Turkey is entitled to read a lesson to the most civilized European powers; and this she did in a very able manner, in an official paper published in the *Moniteur Ottoman*, in September, 1832. We extract a few paragraphs from this interesting document.

"Good sense, tolerance, and hospitality have long ago done for the Ottoman empire what the other states of Europe are endeavoring to effect by more or less happy political combinations. Since the throne of the sultans has been elevated at Constantinople, commercial prohibitions have been unknown; they opened all the ports of their empire to the commerce, to the manufactures, to the territorial produce of the Occident, or, to say better, of the whole world. Liberty of commerce has reigned here without limits, as large, as extended as it was possible to be.

"Here every object of exchange is admitted, and circulates without meeting any obstacle other than the payment of an infinitely small portion of the value to the custom-house. The chimera of a balance of trade never entered into heads sensible enough not to dream of calculating whether there was most profit in buying or selling. Thus the markets of Turkey, supplied from all countries, refusing no objects which mercantile spirit puts in circulation, and imposing no charge on the vessels that transport them, are seldom or never the scenes of those disordered movements occasioned by the sudden deficiency of such or such merchandise, which, exorbitantly raising prices, are the scourges of the lower orders, by unsettling their habits, and by inflicting privations. From the system of restrictions and prohibitions arise those devouring tides and ebbs which sweep away in a day the labor of years, and convert commerce into a career of alarms and perpetual dangers. In Turkey, where this system does not exist, these disastrous effects are unknown.

"The extreme moderation of the duties is the complement of this régime of commercial liberty; and in no portion of the globe are the officers charged with the collection of more confiding facility for the valuations, and of so decidedly conciliatory a spirit in every transaction regarding commerce.

"Away with the supposition that these facilities granted to strangers are concessions extorted from weakness! The dates of the contracts termed capitulations, which establish the rights actually enjoyed by foreign merchants, recall periods at which the Musulman power was altogether predominant in Europe. The first capitulation which France obtained was in 1535, from Soliman the Canonist (the Magnificent). The dispositions of these contracts have become antiquated, the fundamental principles remain. Thus, 300 years ago, the sultans, by an act of munificence and of reason, anticipated the most ardent desires of civilized Europe, and proclaimed unlimited freedom of commerce."

Did the policy of Turkey in other respects harmonize with this, she would be one of the most civilized and powerful of nations, instead of being one of the most abject and degraded. Unfortunately, however, this is very far from being the case. Tyranny and insecurity universally prevail. "The cultivator of the soil," says one of her eulogists, "is ever a helpless prey to injustice and oppression. The government agents have to suffer in their turn from the cruelty and rapacity of which they themselves have been guilty; and the manufacturer has to bear his full share of the common insecurity; he is fixed to the spot, and can not escape the grasp of the local governor. The raw material monopolized by a bey or ayan, may be forced upon him at a higher price than he could purchase it himself, and perhaps of inferior quality; fines may be imposed upon him, he may be taken for forced labor, or troops may be quartered on his workshop."—URQUHART *on Turkey and its Resources*, p. 139.

Some vigorous efforts have been made of late years by the Turkish government to reform abuses; but with little or no practical effect. There is, in truth, neither public virtue nor principle in the country to second these efforts. Corruption of every kind is as prevalent as ever; and the rayahs continue to be exposed to every sort of oppression. There are no roads in any part of the empire; and agriculture is everywhere in the most abject condition. Indeed, vast tracts of the most fertile (and of old the most flourishing) districts of Asia Minor are wholly waste and unoccupied; and the evil, instead of diminishing, is continually increasing. The greater density of population in European Turkey, and the little industry found in it, are due to the energies of the Christian population. And when the latter have been long held, by the expulsion of their barbarian task-masters from Europe, the beautiful provinces in which they have been so long permitted to encamp will again become the favorite seats of industry and civilization. But the degradation in which the native inhabitants are involved would have been still more complete, but for the freedom of commerce they have always enjoyed. This has tended to keep alive the seeds of industry, and to counteract to some small extent the destructive influence of oppression and insecurity. Had their intercourse with foreigners been either prohibited or placed under oppressive restrictions, the barbarism of Turkey would have been completed, and it is difficult to suppose that there could have been any thing like wealth or industry in the empire.

"As the Turks do not allow a census to be taken, all statements of the number of inhabitants in their dominions must be doubtful and conjectural. Eton calculates the population of Constantinople at no more than 300,000; while General Andréossy calculated it, without including Scutari, at 597,600; his calculation being founded on the daily consumption of bread. The number of houses is about 88,100. According to Andréossy, the division of the inhabitants is as follows: 300,000 Turks, Tatars, and other Mussulmans; 200,000 Greeks; 50,000 Armenians; 30,000 Jews; and the remainder of the various Frank nations. In 1851, the census of the resident British gave only 200. The mortality is said to be greater than in any other city in Europe; but the recruits that arrive from all parts of the Turkish dominions, and especially the slaves brought for sale, fill up the numbers faster than they fall away by death. Of late years, too, the rayahs seek refuge from the exactions of the provincial pashas in the neighborhood of the seat of government, where the Tanzimat or new constitution is better observed. Although the public slave-market has been shut for a few years, the trade in slaves is still carried on with all its episodes of horror and abomination. The closely latticed windows of the harems of the rich, the prison-like aspect of the better streets, and the caravan of gaunt, shoeless Nubian girls in their cotton wrappers, are part and parcel of the odious system.

"The trade of Constantinople consists chiefly in the supply of the wants of the state officers, and of the military and naval persons who are attracted to the capital; but it is chiefly by foreigners that the handicraft operations are performed. The principal manufactures are those of cotton and silk goods. The Armenians are the chief jewelers and silversmiths. The Jews are perfumers, druggists, and brokers; the Franks are the principal mechanics; and the chief business is transacted at the several bazars.

"The foreign trade of Constantinople is favored by its excellent harbor, capable of containing 1200 ships. It is the medium of intercourse between that part of Asia whence laden camels arrive, and the different divisions of Europe, collecting the drugs and silks of the one, and distributing them among the others. It would require much space to collect and enumerate the ramifications of such a trade as is carried on in minute articles to and from the city of Constantinople. The city is distant 1680 miles from London."—E. B. *See* TURKEY.

Consuls. We propose to divide this article into three parts: I. Consuls, their Origin, and Laws respecting them; II. Duties of Consuls; III. Diplomatic and Consular Law of the United States.

Consul (ὕπατος), the highest ordinary magistrate of the Roman republic. It is probable that the word is compounded of *con* and *salio*, and is formed like *exsul* and *præsul*, so that *consules* signifies those who go together. They were anciently called *prætores*, *imperatores*, or *judices*.

I. CONSULS, THEIR ORIGIN, AND LAWS RESPECTING THEM.—Consuls, in the nineteenth century, are commercial agents, appointed to reside in the sea-ports of foreign countries, with a commission to watch over the

commercial rights and privileges of the nation deputing them. The establishment of consuls is one of the most useful of modern commercial institutions. They were appointed about the twelfth century in the opulent states of Italy, such as Pisa, Lucca, Genoa, and Venice, and their origin has been ascribed to the necessity for extraordinary assistance in those branches of commerce formerly carried on with barbarous and uncivilized nations. The utility of such a mercantile officer has been perceived and felt by all trading nations, and the Mediterranean trade in particular stands highly in need of such accredited persons. Consuls have been multiplied and sent to every part of the world where navigation and commerce can successfully penetrate; and their duties and privileges are now generally limited and defined by treaties of commerce, or by the statute regulations of the country which they represent. In some places they have been invested with judicial powers over disputes between their own merchants in foreign ports; but in the commercial treaties made by Great Britain there is rarely any stipulation for clothing them with judicial authority, except in treaties with the Barbary powers; and in England it has been held that a consul is not strictly a judicial officer, and they have there no judicial power. It has been urged by some writers, as a matter highly expedient, to establish rules requiring merchants abroad to submit their disputes to the judicial authority of their own consuls, particularly with reference to shipping concerns. But no government can invest its consuls with judicial power over their own subjects in a foreign country, without the consent of the government of the foreign country, founded on treaty; and there is no instance in any nation of Europe, of the admission of criminal jurisdiction in foreign consuls. The laws of the United States, on the subject of consuls and vice-consuls, especially authorize them to receive the protests of masters and others in relation to American commerce, and they declare that consular certificates under seal, shall receive credit in the courts of the United States. It is likewise made their duty, where the laws of the country permit, to administer the personal estates of American citizens dying within their consulates, and leaving no legal representative; and to take charge of and secure the effects of stranded American vessels in the absence of the master, owner, or consignee; and they are bound to provide for destitute seamen within their consulates, and to send them at the public expense to the United States. It is made the duty of American consuls and commercial agents to reclaim deserters, and to discountenance insubordination, and to lend their aid to the local authorities for that purpose, and to discharge the seamen cruelly treated. It is also made the duty of masters of American vessels on arrival at a foreign port, to deposit their registers, sea-letters, and passports, with the consul, vice-consul, or commercial agent, if any, at the port. These particular powers and duties are similar to those prescribed to British consuls, and to consuls under the consular convention between the United States and France, in 1788; and they are in accordance with the usages of nations, and are not to be construed to the exclusion of others, resulting from the nature of the consular appointment. The consular convention between France and this country in 1778, allowed consuls to exercise police over all vessels of their respective nations, "within the interior of the vessels," and to exercise a species of civil jurisdiction by determining disputes concerning wages, and between the masters and crews of vessels belonging to their own country. The jurisdiction claimed under the consular convention with France, was merely voluntary, and altogether exclusive of any coercive authority; and we have no treaty at present which concedes even such consular functions. The doctrine of our courts is, that a foreign consul, duly recognized by our government, may assert and defend, as a competent party, the rights of property of the individuals of his nation in the courts of the United States, and may institute suits for that purpose without any special authority from that party for whose benefit he acts. But the courts, in that case, said that they could not go so far as to recognize a right in a vice-consul to receive actual restitution of the property, or its proceeds, without showing some specific power for the purpose from the party in interest. No nation is bound to receive a foreign consul unless it has agreed to do so by treaty, and the refusal is no violation of the peace and amity between the nations. Consuls are to be approved and admitted in the usual form; and if any consul be guilty of illegal or improper conduct, he is liable to have his *exequatur* (a written recognition of his character) revoked, and to be punished according to the laws of the country in which he is consul; or he may be sent back* to his own country, at the discretion of the government which he has offended. The French and American consuls are forbidden to be concerned in commerce, but British consuls are generally allowed to be concerned in trade; and in such cases the character of consul does not give any protection to that of merchant, when these characters are united in the same person. Though the functions of a consul would seem to require that he should not be a subject of the state in which he resides, yet the practice of the maritime powers is quite lax on this point; and it is useful, and thought most convenient, to appoint subjects of the foreign country to be consuls at its ports.

A consul is not such a public minister as to be entitled to the privileges appertaining to that character, nor is he under the special protection of the law of nations. He is entitled to privileges to a certain extent, such as for safe conduct; but he is not entitled to the *jus gentium*. Vattel thinks that his functions require that he should be independent of the ordinary *criminal* jurisdiction of the country, and that he ought not to be molested unless he violates the law of nations by some enormous crime, and that if guilty of any crime he ought to be sent home to be punished. But no such immunities have been conferred on consuls by the modern practice of nations; and it may be considered as settled law that consuls do not enjoy the protection of the law of nations, any more than other persons who enter the country under a safe-conduct. In civil and criminal cases they are equally subject to the laws of the country in which they reside. The same doctrine, declared by the public jurists, has been frequently laid down in the English and American courts of justice. It seems, however, from some decisions in France, mentioned by Mr. Warden, that foreign consuls can not be prosecuted before a French tribunal for acts done by them in France by order of their government, and with the authorization of the French government, and that in general a consul can not be prosecuted without the previous consent of his government.

Consular privileges are much less extensive in Christian than in Mohammedan countries. In the latter, they can not be imprisoned for any cause whatever, except by demanding justice against them of the Porte, and they partake very considerably of the character of resident ministers. They are diplomatic agents under the name of consuls, and enjoy the rights and privileges which the Ottoman Porte recognizes in relation to the foreign ministers resident at Constantinople. By treaty an entire immunity is usually given to the persons, domestics, and effects of the resident consuls, and no consuls reside with the Barbary States but under the protection of treaties.

Considering the importance of the consular functions, and the activity which is required of them in all great maritime ports, and the approach which consuls

* As was the case with the British consuls at New York, Philadelphia, and Cincinnati, in the year 1856. The official exequatur of these gentlemen was withdrawn by President Pierce, and their official functions ceased.

make to the efficacy and dignity of diplomatic characters, it was a wise provision in the Constitution of the United States, which gave to the Supreme Court original jurisdiction in all cases affecting consuls as well as embassadors and other public ministers; and the federal jurisdiction is understood to be exclusive of the state courts.—KENT's *Comm.*, Lect. II.

In the treaty between Sweden and the United States of America, ratified on the 24th of July, 1818, it is stipulated that the consuls appointed by either government to reside within the dominions of the other, or their substitutes, "shall, as such, have the right of acting as judges or arbiters in all cases of differences which may arise between the captains and crews of the vessels of the nation whose affairs are intrusted to their care. The respective governments shall have no right to interfere in this sort of affairs, except in the case of the conduct of the crews disturbing public order and tranquillity in the country in which the vessel may happen to be, or in which the consul of the place may be obliged to call for the intervention and support of the executive power, in order to cause his decision to be respected; it being, however, well understood, that this sort of judgment or arbitration can not deprive the contending parties of their rights of appealing, on their return, to the judicial authorities of their country."

II. *Duties of Consuls.*—The duties of a consul, even in the confined sense in which they are commonly understood, are important and multifarious. It is his business to be always on the spot, to watch over the commercial interests of the subjects of the state whose agent he is; to be ready to assist them with advice on all doubtful occasions; to see that the conditions in commercial treaties are properly observed; that those he is appointed to protect are subjected to no unnecessary or unjustifiable demands in conducting their business; to represent their grievances to the authorities of the place where they reside, or to the embassador of the sovereign appointing him at the court on which the consulship depends, or to the government at home; in a word, to exert himself to render the condition of the subjects of the country employing him, within the limits of his consulship, as comfortable, and their transactions as advantageous and secure as possible.

The following more detailed exposition of the *general* duties of a consul is taken from Mr. Chitty's work on *Commercial Law:* "A consul, in order to be properly qualified for his employment, should take care to make himself master of the language used by the court and the magistracy of the country where he resides, so as to converse with ease upon subjects relating to his duties. If the common people of the court use another, he must acquire that also, that he may be able to settle little differences without troubling the magistracy of the place for the interposition of their authority; such as accidents happening in the harbor, by the ships of his nation running foul of and doing damage to each other. He is to make himself acquainted, if he be not already, with the law of nations and treaties, with the tariff or specification of duties on articles imported or exported, and with all the municipal ordinances and laws.

"He must take especial notice of all prohibitions to prevent the export or import of any articles, as well on the part of the state wherein he resides, as of the government employing him; so that he may admonish all his countrymen against carrying on an illicit commerce, to the detriment of the revenues, and in violation of the laws of either; and it is his duty to attend diligently to this part of his office, in order to prevent smuggling, and consequent hazard of confiscation or detention of ships, and imprisonment of the masters and mariners. It is also his duty to protect from insult or imposition his countrymen of every description within his jurisdiction. If redress for injury suffered is not obtained, he is to carry his complaint by memorial to the minister residing at the court on which the consulship depends. If there be none, he is to address himself directly to the court; and if, in an important case, his complaint be not answered, he is to transmit the memorial to the secretary of state.—BEAWES, WARDEN, etc.

"When insult or outrage is offered by one from his country to a native of the place, and the magistrate thereof complains to the consul, he should summon, and in case of disobedience, may by armed force bring before him the offender, and order him to give immediate satisfaction; and if he refuse, he resigns him to the civil jurisdiction of the magistrate, or to the military law of the garrison; nevertheless *always acting as counselor or advocate at his trial*, when there is question of life or property. But if a subject be accused of an offense alleged to have been committed at sea, within the dominion or jurisdiction of his sovereign, it is then the duty of the consul to claim cognizance of the cause for his country, and to require the release of the parties, if detained in prison by the magistracy of the place on any such accusation brought before them, and that all judicial proceedings against them do instantly cease; and he may demand the aid of the power of the country, civil and military, to enable him to secure and put the accused parties on board such a ship as he shall think fit, that they may be conveyed home to be tried by their proper judges. If, contrary to this requisition, the magistrates of the country persist in proceeding to try the offense, the consul should then draw up and transmit a memorial to the minister at the court of that country; and if that court give an evasive answer, the consul should, if it be a sea offense, apply to the proper authorities, stating the case; and upon their representation, the secretary for the proper department will lay the matter before the king, who will cause the embassador of the foreign state to write to his court abroad, desiring that orders may immediately be given by that government that all judicial proceedings against the prisoner be stayed, and that he be released. —*See Case of Horseman and his Crew*, BEAWES, vol. ii. p. 422.

"The consul is not to permit a merchant ship to leave the port where he resides without his passport, which he is not to grant until the master and crew thereof have satisfied all just demands upon them; and for this purpose he ought to see the governor's pass of a garrisoned town, or the burgomaster's, unless the merchant or factor to whom the ship was consigned will make himself responsible.—BEAWES, *Lex. Merc.*, vol. ii. p. 423. It is also his duty to claim and recover all wrecks, cables and anchors belonging to the ships of his country found at sea by fishermen or other persons, to pay the usual salvage, and to communicate a report thereof to authorities at home. The consuls and vice-consuls are, by express enactment (46 Geo. 8, c. 98, § 99), empowered to administer oaths in all cases respecting quarantine, in like manner as if they were magistrates of the several towns or places where they respectively reside. It is also laid down that a consul is to attend, if requested, all arbitrations where property is concerned between masters of ships and the freighters, being inhabitants of the place where he resides."—CHITTY *on Commercial Law*, vol. i. p. 58–61, and the numerous authorities there quoted.

Any individual, whether he be a subject of the state by which he is appointed, or of another, may be selected to fill the office of consul, provided he be approved and admitted by the government in whose territory he is to reside. In most instances, however, but not always, consuls are the subjects of the state appointing them. Much, however, of the peculiar duties of a consul must always depend on the nature of the intercourse with the country to which he is sent, and of the instructions given him. Consuls are regularly supplied with copies of all acts relating to trade and navigation, quarantine, slave-trade suppression, emigra-

tion, etc., and with the treaties between this and other countries, and must of course shape their conduct accordingly. They are strictly forbidden from corresponding with private parties on public matters. Under the *General Instructions for British Consuls*, "he will bear in mind that it is his principal duty to protect and promote the lawful trade and trading interests of his country by every fair and proper means, taking care to conform to the laws and regulations in question; and while he is supporting the lawful trade, he will take special notice of all prohibitions with respect to the export or import of specified articles as well on the part of the state in which he resides as of his government, so that he may caution all his countrymen against carrying on an illicit commerce to the detriment of the revenue, and in violation of the laws and regulations of either country; and he will not fail to give this Department immediate notice of any attempt to contravene those laws and regulations.

"The consul will give his best advice and assistance, when called upon, to his countrymen, quieting their differences, promoting peace, harmony, and good-will among them, and conciliating as much as possible the subjects of the two countries upon all points of difference which may fall under his cognizance. In the event of any attempt being made to injure his countrymen, either in their persons or property, he will uphold their rightful interests, and the privileges secured to them by treaty, by due representation in the proper official quarter. He will, at the same time, be careful to conduct himself with mildness and moderation in all his transactions with the public authorities, and he will not, upon any account, urge claims on behalf of his countrymen to which they are not justly and fairly entitled. If redress can not be obtained from the local administration, or if the matter of complaint be not within their jurisdiction, the consul will apply to the consul-general, or to his minister, if there be no consul-general in the country wherein he resides, in order that he may make a representation to the higher authorities, or take such other steps in the case as he may think proper; and the consul will pay strict attention to the instructions which he may receive from the minister or consul-general."—*See* M'Culloch's *Dictionary of Commerce*; Kent's *Commentaries*; *Encyclopedia Britannica*, 8th ed. published by Messrs. Little, Brown and Co., Boston; *Manual for United States Consuls*, 1857; Tuson's *British Consul's Manual*, London, 1856. The reader may with advantage refer to the articles on *Consuls* and *Consular Duties* contained in De Bow's *Review*, vol. i. p. 56; Hunt's *Merchants' Magazine*, vol. vi. p. 297, vol. xiii. p. 551, vol. x. p. 447, vol. xii. p. 211, vol. xvii. p. 43, vol. xviii. p. 60; *Foreign Quarterly Review*, vol. xix. p. 106.

Jurisdiction, Privileges, and Immunities of Consuls.—"The jurisdiction of a consul only extends over the subjects of the nation he is nominated by, either resident in, or arriving at, the place in which he has been appointed to reside. In countries where there are embassies as well as consulates the jurisdiction of the latter generally only extends over the sea-faring subjects of our nation, at the same time it watches over her commercial interests. That of a consul-general presides over the consul, and that of a consul, in most instances, over that of the vice-consuls. The consular jurisdiction depends more entirely into what country the consul may be sent. Thus foreign consuls in England have no judicial authority whatever. British consuls, however, in most countries, have judicial power, and consequently their jurisdiction becomes either retrenched or extended, according to the nature of the stipulations of the ratified treaty.

"When the consul is appointed he is always provided with copies of the conventions with the country he is sent to. In regard to the privileges and immunities a consul enjoys, there have always existed doubts whether he may be considered exempt from the civil jurisdiction of the state to which he is nominated; and although many others have laid down to the contrary, still it may be maintained, and in perfect conformity to the law of nations, that where the regular exequatur has been accorded to the consul, he ought to be exempt from the civil jurisdiction of the state to which he is accredited. By the exequatur the sovereign acknowledges him as the consular representative of his empire, bearing her appointment, and protected by her passport; and, as regards the nature of his mission, only resident for a short time at the state. Under these circumstances he ought to be exempt.

"In countries out of Europe, or where there is no embassy, the consul enjoys the same privileges as an embassador, and is *de facto* the embassador or representative of his sovereign, only under another name. He can perform all acts of a notary public, all deeds executed by him being held to be valid, and acknowledged in our courts of law. He can attend all levees of the sovereign after receiving his exequatur and either after having been presented to the sovereign by the embassador, or, in his absence, by the minister of foreign affairs. The consulate is generally considered as the territory of the power by which it is tenanted, and all deeds, acts, and any other documents executed under the seal of the consul are valid in the country from which he has been sent. At the same time, it must be perfectly understood that all acts thus issued by the consul are, with a few exceptions, not valid in the country in which he resides, except there be a special convention to that effect. All documents, required to be valid before the tribunals of the country he is in, ought to be made out by the proper lawyers appointed for that purpose; for it can not be expected that where a consul is only authorized as judicial authority for his own country, that his acts should be acknowledged and received as legal instruments in the tribunals of the country he is accredited to, although his acts should be respected, as it might be possible that they could be grounded upon quite a different *lex mercatoria*, and could not, therefore, be taken in evidence against documents perhaps quite opposite in a legal point of view, and it would be unjust to allow them to be received."—Tuson's *British Consul's Manual*, 1856.

III. *Consular System of the United States.*—The establishment of a consular system in the United States was nearly coeval with that of the general government. In the second annual address of President Washington to the first Congress, he informed that body that "the patronage of our commerce, of our merchants, and seamen, called for the appointment of consuls in foreign countries; that it seemed expedient to regulate by law the exercise of that jurisdiction and those functions which are permitted either by express convention or by a friendly indulgence in the places of their residence." Prior to this period consuls were not allowed salaries, nor permitted to demand fees or receive perquisites.

In each branch of Congress this recommendation of the President was referred to the appropriate committee, and consular bills were reported in accordance therewith. They failed, however, to become laws, the House having stricken out the whole of the Senate bill with the exception of the first section.

In the early part of the second Congress substantially the same bill, probably drawn by Mr. Ellsworth (afterward Chief Justice), was reported to the Senate by a committee to whom the recommendation of the President had been referred; and, subsequently, after the adoption of several amendments, it passed both branches of Congress unanimously, and became, on the 14th of April, 1792, a law of the land.

From this period till the year 1855, with the exception of the act of July 20th, 1840, regulating the shipment and discharge of seamen and the duties of consuls, scarcely any change was made in the laws affecting the consular system.

In the year 1854, Mr. Perkins, of Louisiana, then a member of the House of Representatives from Louisiana, having devoted himself most assiduously to the study of the subject, prepared a bill to remodel the diplomatic and consular systems of the United States.

The bill was advocated in the House, and finally passed by a vote of 148 yeas to 88 nays.

In the Senate it passed unanimously, received the approval of the President on the 1st of March, 1855, and went into operation on the 1st of July, in the same year.

According to the recommendation of Mr. Marcy, Secretary of State, the subject was again brought forward in August, 1856, and a new act passed by a vote in the House of Representatives of 103 to 56, and passed the Senate unanimously on the 16th of that month.

It has rarely happened that a law so important as this has passed Congress with such unanimity—one involving many and important changes in the diplomatic and consular systems of the United States; creating new offices; increasing, reducing, or entirely abolishing the salaries of many consular officers; containing provisions affecting every American merchant and shipmaster engaged in foreign trade, and every American traveler in Europe; repealing provisions of existing laws; enacting others for the regulation of the agents of the government in foreign countries, and of civil officers in the United States; imposing heavy penalties for the violation of the provisions of the statute; and authorizing and requiring the performance of important duties by the highest executive officers of the government. The favor which the bill received in both branches of Congress was doubtless due, in part, to the fact that the near approach of the close of the session left little time for its discussion and amendment, and to the respect entertained by the House for the committee on foreign affairs, which reported the bill, whose chairman, it was understood, had devoted much time and care in its preparation. The law provides for the rate of compensation to be received by all diplomatic and consular officers, of whatever grade; fixes their compensation; permits the latter to transact business, or prohibits them from doing so, in certain places; prescribes the conditions of official bonds; imposes penalties for the violation of the provisions of the law, and indicates the manner in which actions for the recovery of penalties shall be tried; authorizes the appointment of consular pupils, of interpreters, and of additional secretaries of legations; fixes the period at which the compensation of the officers named in the act shall commence and terminate; provides for the filling of diplomatic and consular offices temporarily vacant, and the pay to be received by officers acting *ad interim;* forbids the exercise of diplomatic functions by unauthorized persons; authorizes the President to define the limits of the several consular and commercial agencies, to provide for the appointment of subordinate consular officers and their compensation, and likewise to fix the rate or tariff of fees for consular services, and designate what shall be regarded as official services; requires the consular tariff to be reported to Congress annually, and also the amount of fees received at the several consulates; directs the mode in which the payment of fees shall be made and accounted for, and the coin in which they shall be payable; imposes additional duties upon collectors and shipmasters in respect to consular services, receipts, and invoices; forbids diplomatic and consular officers to be absent from their posts, or to hold correspondence in regard to the public affairs of any foreign government with the press, or private persons, or otherwise than with the proper officers of the United States; forbids consular officers being pecuniarily interested in the receipt or disbursement of the wages of seamen, or in expenditures made for their relief or transportation; provides that no compensation shall be paid to diplomatic and consular officers, unless they shall be citizens of the United States; authorizes the President to supply the legations and consulates of the United States with certain articles necessary for the transaction of the public business, and to prescribe such regulations, and make and issue such orders and instructions, not inconsistent with the Constitution or any law of the United States, in relation to the duties of all diplomatic and consular officers, the transaction of their business, the rendering of accounts and returns, the payment of compensation, the safe-keeping of the archives and public property in the hands of all such officers, the communication of information, and the procurement and transmission of the products of the arts, sciences, manufactures, agriculture, and commerce, from time to time, as he may think conducive to the public interests; requires these officers to conform to such regulations, orders, and instructions; makes it the duty of the Secretary of State to publish official notifications, from time to time, of such commercial information communicated to him by the diplomatic and consular officers as he may deem important to the public interests, and to report to Congress, at least once in each year, a synopsis of so much of the information on all subjects, which shall be so communicated to him, as he may deem valuable for public information; authorizes the granting and issuing of passports, under certain conditions, and the performance of notarial duties by secretaries of legation and consular officers; enacts various provisions in regard to the desertion of seamen, the payment and the forfeiture of wages and extra wages in certain cases, and the settlement of seamen's accounts, and their discharge in foreign countries; provides for the accountability of consular officers for the extra wages of seamen; prescribes the kind of returns and reports to be made by consular officers, and requires all shipmasters to apply to consular officers for the transaction of consular business, and permits the detention of ships' papers till payment shall be made of all demands and wages on account of such ships and vessels; defines the duties of consular officers in respect to all citizens of the United States dying abroad, and the meaning to be affixed to the several titles by which consular officers are designated; imposes heavy penalties for all malfeasance, and for the violation of the provisions of the act; repeals all acts and parts of acts inconsistent with its provisions; and, finally, provides that the act shall take effect on the first of January, 1857. It will thus be seen that the law which now regulates the diplomatic and consular systems of the United States embraces a great number of subjects, and enters into much detail with respect to all matters pertaining to the consular office. Many of its provisions are eminently judicious; the expediency of others must be tested by time and their practical operation. The treaties and conventions of the United States with foreign nations contain many important provisions relating to the duties, rights, and privileges of consuls, especially those which have been negotiated with China and the Ottoman Porte.

But "the most complete consular conventions ever concluded," as remarks Mr. Tuson, the latest writer on the subject of the duties of consuls, "are those between France and the United States, and between the latter country and Holland; the former negotiated at Washington by Mr. Everett and M. Sartiges, and the latter at the Hague, under the instructions of Mr. Marcy. The rules laid down therein are very explicit, and ought to be taken as examples by all other nations. They will be of great utility to all consuls, in showing them what their present duties are, and what they are most likely to become. These conventions are such as are likely to be taken as precedents for future treaties on the same subject." Occurrences which have taken place in the United States and elsewhere, within the last few years, have shown how defective is the legislation of this country in respect to consuls. The subject attracted Mr. Webster's attention, while Secretary

of State; and, at his suggestion, the attention of Congress was called to it. He remarked that no country has a deeper interest in securing the protection of diplomatic and consular agents than the United States. Their commerce spreads over every sea, and visits every clime; and these agents are appointed to protect its interests, as well as to guard the peace of the country, and maintain the honor of its flag. While thus engaged in the discharge of important functions, they should be objects of especial respect and protection, each according to the rights belonging to his rank and station.

As much has been done during the last four years as at any former period in this country, by means of consular conventions, by legislation, and by circulars issued by the Secretary of State, not only to secure these objects, but to perfect the consular system, and to render it useful to the country. In obedience to the circulars issued by Mr. Marcy to consular officers on the 8th of October, 1853, the 15th of March, 1854, the 11th of July, 1855, and also the general and special instructions of the Department of State, a vast amount of information relating to ship-building, shipping, navigation, tonnage, seamen, foreign tariffs, commercial regulations, and other subjects, has been transmitted to the Department by the United States consuls. The matter thus collected is important and valuable; its preparation reflects great credit on the industry and intelligence of the consular corps, and affords a striking illustration of the importance of their services.

At the present time the consular corps of the United States consists of seven consuls-general, one hundred and seventeen consuls, and nine commercial agents, who receive for their compensation fixed salaries; ninety consuls, ten commercial agents, and eighty-five consular agents, who are authorized to retain for their compensation the official fees which they receive. Residing as these officers do in all the principal marts of traffic and commerce throughout the world, and having their duties carefully defined by law and the instructions of the Executive, it may reasonably be expected that all information affecting the commercial relations of the United States with foreign nations will be furnished by them to the Department of State, and published for the benefit of their fellow-citizens.

As an illustration of the value to be placed on the correspondence of consuls, it may be stated that in a debate which took place in 1842, in the House of Commons, Lord Palmerston remarked, that, during the time he had the honor of being at the head of the foreign department, he had read every report and every letter received from the consular officers abroad, from the most elaborate report of the highest consul-general down to the least-important letter of the lowest vice-consul. "Very laborious reading it was," he adds, "but, scattered through the voluminous papers that thus came under my eye, I found many important matters with which it was my duty to be acquainted; and it is quite a mistake to suppose that, because there is a superintendent of the consular department, the Secretary of State does not give the same minute attention to the consular as to the other duties of the office, though the consular correspondence amounts to one-half of the whole correspondence of the foreign office." The perfection to which the consular system has attained in France furnishes an illustration of what may be accomplished by a thoroughly organized consular establishment. The objects contemplated by such a system, as has been well remarked by a writer practically acquainted with the subject, are nothing less than the advancement of the prosperity and power of nations. Deputed to watch over the commercial rights and privileges of their respective countries, consular officers are intrusted with the care of the highest interests, and exercise a more important influence upon mercantile prosperity, the foundation of national greatness, than any other foreign agents of government. Scattered throughout the whole world, occupying an eminent social position in all the mercantile cities of every nation, and performing duties which bring them more or less into collision with the people among whom they reside, they, by their conduct and manners, influence the judgment which is formed of the country they represent, and either add to its dignity or reflect dishonor on its national character.

1. *Nature and Duties of the Consular Office.*—The word "consuls," as used in the Constitution of the United States, designates a class of public officers appointed by their government to reside in foreign countries, and especially in sea-ports and other places of commerce, to discharge administrative and sometimes judicial functions in regard to their countrymen who dwell or may be in the country where they reside; to aid in the authentication of documents abroad, and generally to perform such other duties as may be assigned to them by the laws and orders of their government.

2. *Classes of Consular Officers.*—Accordingly, by various laws of the United States, duties are imposed and rights conferred on this description of public officers, under the names of consuls-general, consuls, vice-consuls, deputy-consuls, commercial agents, vice-commercial agents, and consular agents. It is provided by the 31st section of the act of Congress approved August 18, 1856, that these official designations shall be deemed to have the respective meanings therein assigned to them, namely: "consul-general," "consul," and "commercial agent," shall be taken to denote full, principal, and permanent "consular officers," as distinguished from subordinates and substitutes; "deputy-consul" and "consular agent" to denote "consular officers" subordinate to such principals, exercising the powers and performing the duties within the limits of their consulates or commercial agencies respectively—the former at the same ports or places, and the latter at ports or places different from those at which such principals are located respectively; and "vice-consuls" and "vice-commercial agents" to denote "consular officers" who shall be substituted, temporarily, to fill the places of "consuls-general," "consuls," or "commercial agents," when they shall be temporarily absent or relieved from duty; and the term "consular officer" to include all such officers as are mentioned in the said section, and none others.

3. *Application of Acts of Congress.*—It is further provided by the same section that, in the construction and for the purposes of all other acts and parts of acts which shall remain in force after the act above mentioned shall take effect, defining any of the powers, declaring any of the rights, prescribing any of the duties, or imposing any penalty or punishment for any act of omission or commission of any consul, commercial agent, vice-consul, or vice-commercial agent, or allowing or enjoining the performance of any act, matter, or thing, with or before any such officer, all such acts and parts of acts shall in all these several respects, so far as may be consistent with the subject-matter and context of the same, and with the said act and the treaties of the United States, be deemed and taken to include and apply to all consular officers just as though all such officers were specifically named therein.

4. *Certain Consular Powers.*—The important act of 1792 contains a declaratory provision, which is to be understood as implied in all other acts of Congress, as follows:

"The specification of certain powers and duties, * * *, to be exercised or performed by the consuls and vice-consuls of the United States, shall not be construed to the exclusion of others resulting from the nature of their appointments, or any treaty or convention under which they may act."*

So that the powers and duties of consuls, besides

* Statutes at large, vol. i. p. 257.

being defined by acts of Congress, are indicated by general treaties and consular conventions entered into between the United States and other sovereign powers.

5. *International Law.*—Consuls possess, moreover, by the law of nations, many functions, rights, and privileges, other than such as are defined by convention, by legislative act, or by regulation.

6. *Consular Privileges.*—Their privileges necessarily arise from the character of their appointments; but they are not, like those of embassadors and other public ministers, precisely defined by international law; and, consequently, they may be extended or limited among different nations, either by treaties or the legislative policy of those countries. Although the commissions which United States consuls receive from their government are expressed in the same terms and confer the same authority, yet, as the consular functions are to be exercised in a foreign country, and in accordance with an exequatur issued by its sovereign, they may be more or less restricted. Whenever the immunities, rights, and duties of consuls are prescribed by mutual consular conventions, they are to be enjoyed or exercised in accordance with the stipulations of such conventions. In those countries with which the United States have entered into no consular convention, consular officers may discharge such duties as are allowed or are not forbidden by the laws of those countries, or which are allowed by common usage; and sometimes they are permitted to exercise such privileges as are granted to foreign consuls by the United States within its own territory.

7. *When Obstacles are interposed.*—If the authorities of the places where consuls reside oppose any obstacles to their enjoyment of the privileges which may have been accorded by consular conventions, or which, founded on usage or reciprocity, may have been claimed by themselves, they will refer the subject to the legation of the United States residing in the country, and report the facts, together with their own proceedings and a copy of all their correspondence in relation to the same, to the Department of State, and await its instructions. In no case will they strike the consular flag or abandon their post without the express permission of the Department.

8. *Personal Demeanor.*—One of the first duties of consular officers is to exhibit in their official conduct, and in their intercourse with the local authorities and with the people of the country, a proper respect for the supreme authority.

9. *Style of Official Communications.*—In their communications with official functionaries, they will be careful to set forth their views and opinions courteously but firmly, avoiding in all cases the use of violent or intemperate language. All discussions extending beyond the limits of a just moderation are injurious and defeat their own object.

10. *Influence of Personal Character.*—It is, above all, by their personal influence and character, by circumspect conduct and a conciliatory spirit, that consuls will best succeed in settling difficulties and in the accomplishment of important objects. Commercial intercourse is a common bond of interest among all countries and all men, and it is by arguments drawn from this source, rather than by unreasonable pretensions and disputes, that injurious restrictions can be removed.—De Clercq, tome ii. p. 32 *et seq.*

11. *Duties imposed by Laws.*—The laws of the United States on the subject of consuls and vice-consuls specially authorize them to receive the protests of masters and others relating to American commerce, and declare that consular certificates under seal shall receive faith and credit in the courts of the United States. It is likewise made the duty of consular officers, where the laws of the country permit, to collect and remit the assets of the personal estates of American citizens who may die within their consulates and leave no legal representative, and to take charge of and secure the effects of stranded vessels, in the absence of the master, owner, or consignee; and they are bound to provide for destitute seamen within their consulates, and to send them, at the public expense, to the United States. It is their duty, likewise, to reclaim deserters, to discountenance insubordination and lend their aid to the local authorities for this purpose, to discharge seamen cruelly treated, and to receive from the masters of American vessels, on their arrival at a foreign port, and after the vessel shall have come to an entry, the registers, sea letters, and passports of such vessels. These duties, and some others which are prescribed by legal enactment, are in accordance with the usages of nations [Kent, vol. i. p. 42], and with special treaty stipulations with certain countries.

12. *Variety and Importance of Consular Duties.*—Many of the consular duties arise from peculiar circumstances: such as the character and habits of the nation in which the consul resides, its laws and customs, and the nature of its intercourse with the United States. In the most restricted sense, they are important and multifarious, are quite different from those of other officers employed in foreign affairs, and require for their proper performance an amount of practical information for which the consular officer needs a special training. Consuls are so situated as to exercise t ward their countrymen within their consular jurisdiction the duties of judges, arbiters, and peacemakers; they are the registers of marriages, births, and deaths; they act as notaries, and sometimes as revenue officers; they watch over and verify the sanitary condition of their consulates; and, by their domestic relations, they can furnish a full and accurate idea of the commerce, navigation, and industry peculiar to the country of their residence.

13. *Commercial Regulations.*—The commercial interests of their own country are, in a measure, committed to their care. They are to see whether the stipulations in commercial treaties are observed, and report all changes in commercial regulations and municipal ordinances.

Every law, edict, or regulation of the government where they reside, in any way affecting the commerce of the United States, which comes to the knowledge of consular officers, must be immediately transmitted to the State Department; and, if it be a local regulation, operating only on a particular port, they must also give immediate notice thereof to the minister, if there be one in the country to which the district belongs.

14. *Suggestions.*—Consular officers are expected, in their correspondence, to note all events which bear upon the commerce between the country where they reside and the United States, the establishment of new branches of industry within the limits of their consular jurisdiction, and the increase and decline of such as have been before established. They should also make such suggestions as, in their opinion, may lead to an increase of trade, and point out any circumstances which may have produced a contrary effect, with the means that appear proper for avoiding such a result. When new products of the arts, sciences, or manufactures appear to be valuable either for export or import, and this is not generally known, the fact should be communicated to the Department, and samples sent, if not too bulky, with the consular letters; but if too bulky they may be addressed to the collector of some one of our principal ports. Seeds of plants and grain suitable for cultivation in the United States should also be sent. In general, the duties of a consular officer require an attention to every thing that can promote the commerce and navigation of this country, and the interests of its citizens.

15. *Contentions to be avoided.*—Consular officers are particularly cautioned not to enter into any contentions which can be avoided, either with their countrymen or the authorities of the country in which they reside; referring questions of that nature to the min-

ister or to the Department; using every endeavor to settle in an amicable manner all disputes in which their countrymen may be concerned; and countenancing and protecting them before the authorities of the country in all cases in which they may be injured or oppressed, but withholding from them support when they have been willfully guilty of an infraction of the laws, particularly in any attempt to defraud the revenue. In this last case they will aid the proper officers in checking any such practices.

16. *Foreign Politics.*—All consular officers are forbidden to participate in any manner whatever, direct or indirect, in the political concerns of the countries by whose governments they are severally acknowledged and recognized in their public character; and they will be on their guard against the enlistment of their feelings upon the side of any of the political or sectional parties which may exist in these countries. In their letters upon such subjects, even to this Department, they will confine themselves to the communication of important or interesting public events, as they occur, in a clear and concise form, avoiding all unnecessary reflections or criticism upon the character or conduct of individuals or governments; and will not give publicity, through the press or otherwise, to opinions or speculations injurious to the public institutions of those countries, or the persons concerned in the administration of them; but it is, at the same time, no less their duty to report, freely and seasonably, to their own government, all important *facts* which may come to their knowledge, through authentic channels, touching the political condition of these countries, especially if their communications can be made subservient to, or may affect, the interest and well-being of their own.

17. *Prohibitions.*—All consular officers are prohibited by the 19th section of the act approved August 18, 1856, from corresponding in regard to the public affairs of any foreign government with any private person, newspaper, or other periodical, or otherwise than with the proper officers of the United States, and from recommending any person, at home or abroad, for any employment of trust or profit under the government of the country in which they are located; as well as from asking or accepting, for themselves or any other person or persons, any present, emolument, pecuniary favor, office, or title of any kind, from any such government.

18. *Diplomatic Functions.*—As consuls, excepting in Mohammedan states, are not invested with diplomatic powers, they are not entitled to communicate directly, except under special circumstances, with the government of the country in which they reside. Consular officers are forbidden by the 12th section of the act to exercise diplomatic functions, or hold any diplomatic correspondence or relation on the part of the United States, in, with, or to the government or country to which they shall be appointed, or any other country or government, when there shall be in such country any officer of the United States authorized to perform diplomatic functions therein, unless expressly authorized by the President.

19. *Mode of addressing foreign Governments.*—Whenever application is to be made to such government, it must be done through the minister of the United States, if there be one; if not, and the case should require it, the consul may make the application to the proper department, but in respectful terms, stating the exigency of the case, and that an application to the subordinate officers could not be made, or that it had proved ineffectual.

20. *Privileges.*—A consul is not such a public minister as to be entitled to the privileges appertaining to that character, nor is he under the special protection of the law of nations. In civil and criminal cases, where not otherwise provided by treaty stipulations, he is subject to the laws of the country in which he resides.

21. *Treaties and Conventions.*—It is the duty of consuls to be conversant with all treaties, conventions, and consular conventions, also with the laws and commercial and other regulations relating to their consular functions.—*Manual for Consuls, issued by the Department of State*, Washington, 1857.

An Act to regulate the Diplomatic and Consular Systems of the United States, passed August 10, 1856.—Be it enacted by the Senate and House of Representatives of the United States of America, in Congress assembled, that embassadors, envoys extraordinary and ministers plenipotentiary, ministers resident, commissioners, chargés d'affaires, and secretaries of legation, appointed to the countries hereinafter named in schedule A, shall be entitled to compensation for their services, respectively, at the rates per annum hereinafter specified; that is to say, embassadors and envoys extraordinary and ministers plenipotentiary, the full amounts specified therefor in said schedule A; ministers resident and commissioners, 75 per centum; chargés d'affaires, 50 per centum; and secretaries of legation, 15 per centum of the said amounts, respectively; Provided, that the compensation of the Secretary of the Legation to China, acting as interpreter, shall be at the rate of $5000, and if not acting as such, at the rate of $3000; and that of the Secretary of Legation to Turkey, acting as dragoman, at the rate of $3000, and if not acting as such, at the rate of $2000 per annum.

Schedule A.—Great Britain, $17,500; France, $17,500; Russia, $12,000; Spain, $12,000; Austria, $12,000; Prussia, $12,000; Brazil, $12,000; Mexico, $12,000; China, $12,000; all other countries, each $10,000.

Sect. 2. And be it further enacted, that the President be, and is hereby authorized to appoint for the legations at London and Paris, respectively, an assistant secretary of legation, who shall be entitled to compensation for their services respectively, at the rate of fifteen hundred dollars per annum; for the legation to China, an interpreter, when the secretary of legation shall not be acting as such, who shall be entitled to compensation at the rate of $5000; and for the legation to Turkey, a dragoman, when the secretary of legation shall not be acting as such, who shall be entitled to compensation at the rate of $1000 per annum.

Sect. 3. And be it further enacted, that consuls-general, consuls, and commercial agents, appointed to the ports and places hereinafter specified in schedules B and C, shall be entitled to compensation for their services, respectively, at the rates per annum hereinafter specified in said schedules B and C; and if the President shall think proper to appoint a consul to any port or place named in the said schedules B and C, for a commercial agent, instead of such commercial agent, or *vice versa*, and an appointment shall be made accordingly, the compensation for such consular officer shall be the same in any such case as that fixed for such port or place in the schedule embracing the same; and if he shall think the public interests will be subserved by appointing to any such port or place a consul-general, instead of a consul or commercial agent, and an appointment shall be made accordingly, the compensation for such consul-general shall be the same as that fixed for such port or place in the schedule embracing the same.

Sect. 4. And be it further enacted, that consuls-general, consuls, and commercial agents, not embraced in schedules B and C, shall be entitled, as compensation for their services, to such fees as they may collect in pursuance of the provisions of this act, respectively.

Sect. 5. And be it further enacted, that no consul-general, consul, or commercial agent, embraced in schedule B, shall, while he holds his office, be interested in or transact any business as a merchant, factor, broker, or other trader, or as a clerk or other agent for any such person, to, from, or within the port, place, or limits of his consulate or commercial agency, directly or indirectly, either in his own name, or in the name or through the agency of any other person; and if appointed after this act shall take effect, he shall, in his official bond, stipulate, as a condition thereof, not to violate this prohibition; and if appointed before, and retained in office after this act shall take effect, he shall, within such reasonable time as the President shall prescribe, enter into a new official bond, with such stipulation as a condition thereof; and if any such consul-general, consul, or commercial agent, shall violate such prohibition, he shall be liable to a penalty therefor, for the use of the United States, equal in amount to the annual compensation specified for him in said schedule B, which may be recovered in an action of debt at the suit of the United States, either directly for the penalty, as such, against such consul-general, or consul, or commercial agent, or upon his official bond, as liquidated damages, for the breach of such condition, against such consul-general, consul, or

commercial agent and his sureties, or any one or more of them; and in every such case all such actions shall be open to the United States for the collection of such penalty till the same shall be collected in some one of such actions; and every such penalty, when collected, shall be paid into the treasury of the United States; and such prohibition shall be applicable to all consuls-general, but not to any consul or commercial agent not embraced in said schedule B, except as hereinafter authorized, unless otherwise expressly provided by law.

Sect. 6. And be it further enacted, that the President be, and is hereby authorized to appoint three interpreters of the Chinese language, who shall be entitled to compensation for their services, respectively, at a rate not to exceed fifteen hundred dollars per annum, to be determined by the President, and to assign such interpreters, from time to time, to such consulates in China, and with such duties as he may think proper.

Sect. 7. And be it further enacted, that the President be, and is hereby authorized, whenever he shall think the public good will be promoted thereby, to appoint consular pupils, not to exceed twenty-five in number at any one time, who shall be citizens of the United States, and entitled to compensation for their services, respectively, at a rate not to exceed one thousand dollars per annum, to be determined by the President; and to assign such pupils, from time to time, to such consulates, and with such duties as he may think proper; and before the appointment of any such pupil shall be made, satisfactory evidence, by examination or otherwise, shall be furnished of his qualifications and fitness for the office to the Secretary of State, and by him laid before the President.

Sect. 8. And be it further enacted, that no person appointed, after this act shall take effect, to any such office as is mentioned in the first, second, third, sixth, or seventh sections of this act, shall be entitled to compensation for his services therein, except from the time when he shall reach his post, and enter upon his official duties, to the time when he shall cease to hold such office, and for such time as shall be actually and necessarily occupied in receiving his instructions, not to exceed thirty days, and in making the transit between the place of his residence, when appointed, and his post of duty, at the commencement and termination of the period of his official service, for which he shall in all cases be allowed and paid, except as hereinafter mentioned, and no person shall be deemed to hold any such office after his successor shall be appointed and actually enter upon the duties of his office at his post of duty, nor after his official residence at such post shall have terminated, if not so relieved; but no such allowance or payment shall be made to any consul-general, consul, or commercial agent, contemplated by the fourth section of this act, or to any vice-consul, vice-commercial agent, deputy consul, or consular agent, for the time so occupied in receiving instructions, or in such transit as aforesaid; nor shall any such officer as is referred to in this section be allowed compensation for the time so occupied in such transit, at the termination of the period of his official service, if he shall have resigned, or been recalled therefrom, or for any malfeasance in his office.

Sect. 9. And be it further enacted, that, when to any diplomatic office held by any person there shall be superadded another, such person shall be allowed additional compensation for his services, in such superadded office, at the rate of fifty per centum of the amount allowed by this act for such superadded office; and such superadded office shall be deemed to continue during the time to which it is limited by the terms thereof, and for such time as shall be actually and necessarily occupied in making the transit between the two posts of duty, at the commencement and termination of the period of such superadded office so limited, and no longer.

Sect. 10. And be it further enacted, that for such time as any secretary of legation shall be lawfully authorized to act as chargé d'affaires *ad interim* at the post to which he shall have been appointed, he shall be entitled to receive compensation at the rate allowed by this act for a chargé d'affaires at such post; but he shall not be entitled to receive, for such time, the compensation allowed for his services as secretary of legation.

Sect. 11. And be it further enacted, that for such time as any consular officer shall be authorized, pursuant to the provisions of this act, to perform diplomatic functions in the absence of the regular diplomatic officer in the country to which he shall be appointed, he shall be entitled, in addition to his compensation as such consular officer, to receive compensation for his services while so authorized, at the rate allowed by this act for a secretary of legation in such country.

Sect. 12. And be it further enacted, that no consular officer shall exercise diplomatic functions, or hold any diplomatic correspondence or relation on the part of the United States, in with, or to the government or the country to which he shall be appointed, or any other country or government, when there shall be in such country any officer of the United States authorized to perform diplomatic functions therein, nor in any case, unless expressly authorized by the President so to do.

Sect. 13. And be it further enacted, that every consul-general, consul, and commercial agent, appointed before, and retained in office after this act shall take effect, shall, without unnecessary delay, and every such officer appointed after this act shall take effect, shall, before he receives his commission or enters upon the duties of his office, enter into a bond with the United States with such sureties, who shall be permanent residents of the United States, as the Secretary of State shall approve, in a penal sum not less than one thousand nor more than ten thousand dollars, and in such form as the President shall prescribe, conditioned for the true and faithful accounting for, paying over, and delivering up of all fees, moneys, goods, effects, books, records, papers, and other property which shall come to his hands, or to the hands of any other person to his use as such consul-general, consul, or commercial agent, under any law now or hereafter enacted; and for the true and faithful performance of all other duties now or hereafter lawfully imposed upon him as such consul-general, consul, or commercial agent; and in the cases of consuls-general, consuls, and commercial agents embraced in schedule B, such bond shall contain, by way of further condition, the stipulation required by the fifth section of this act; and all such bonds shall be deposited with the Secretary of the Treasury, and in no case shall the penalty of such bond be less than the annual compensation allowed to the officer entering into such bond; and the President shall be authorized to require a new or additional bond from any such consul-general, consul, or commercial agent, in like form and in such penalty, within the limits aforesaid, in amount, as he shall prescribe, whenever, in his opinion, the public good shall require it.

Sect. 14. And be it further enacted, that the President be, and he is hereby authorized to define the extent of country to be embraced within any consulate or commercial agency, and to provide for the appointment of vice-consuls, vice-commercial agents, deputy consuls, and consular agents therein, in such manner, and under such regulations as he shall deem proper; but no compensation shall be allowed for the services of any such vice-consul, or vice-commercial agent beyond nor except out of the allowance made by this act for the principal consular officer in whose place such appointment shall be made; and no vice-consul, vice-commercial agent, deputy consul, or consular agent, shall be appointed otherwise than in such manner and under such regulations as the President shall prescribe, pursuant to the provisions of this act.

Sect. 15. And be it further enacted, that every vice-consul and vice-commercial agent shall be entitled, as compensation for his services as such to the whole or so much of the compensation of the principal consular officer, in whose place he shall be appointed, as shall be determined by the President, and the residue, if any, shall be paid to such principal consular officer; and every consular agent shall be entitled, as compensation for his services, to such fees as he may collect in pursuance of the provisions of this act, or so much thereof as shall be determined by the President; and the principal officer of the consulate or commercial agency within the limits of which such consular agent shall be appointed, shall be entitled to the residue, if any, in addition to any other compensation allowed him by this act for his services therein; and the President shall have power to subject any consul or commercial agent contemplated by the fourth section of this act, and any vice-consul, vice-commercial agent, deputy consul, or consular agent, to the prohibition as to trade contained in the fifth section of this act, and to require from any of them such bond as is provided for by the thirteenth section of this act, whenever he shall think the public interests will be promoted thereby.

Sect. 16. And be it further enacted, that the President be, and is hereby authorized to prescribe, from time to time, the rates or tariffs of fees to be charged for official services, and to designate what shall be regarded as official services, besides such as are expressly declared by law, in the business of the several legations, consulates, and commercial agencies, and to adapt the same, by such differences as may be necessary or proper, to each legation, consulate, or commercial agency, and such rates or tariffs shall be reported annually to Congress; and it shall be the duty of all officers and persons connected with such legations, consulates, or commercial agencies to collect for such official services, such and only such fees as may be prescribed for their respective legations, consulates, and commercial agencies, and it shall be the duty of the collectors of the several districts, whenever any clearance is granted to any ship or vessel of the United States, duly registered as such, and bound on any foreign voyage, to

annex thereto, in every case, a copy of the rates or tariffs of fees which shall be allowed in pursuance of the provisions of this act, and then in force; and it shall be the duty of all consular officers at all times to keep up in their offices, respectively, a copy of such rates or tariffs as shall be in force, in a conspicuous place, and subject to the examination of all persons interested therein.

Sect. 17. And be it further enacted, that it shall be the duty of all consular officers to give receipts for all fees which shall be collected for their official services respectively, expressing the particular services for which the same were collected; and if any such consular officer shall collect, or knowingly allow to be collected, for any such service, any other or greater fees than such as shall be allowed pursuant to the provisions of this act for such service, he shall, besides his liability to refund the same, be liable to pay to the person by whom or in whose behalf the same shall be paid treble the amount of said unlawful charge so collected as a penalty therefor, to be recovered by such person in any proper form of action, to and for the use of such person, besides costs of suit; and in any such case the Secretary of the Treasury is hereby authorized to retain out of the compensation of such officer the amount of such overcharge and of such penalty, and charge the same to such officer in account, and thereupon to refund such unlawful charge, and pay such penalty to the person entitled to the same, if he shall think proper so to do.

Sect. 18. And be it further enacted, that all fees collected at any of the legations, or by the consuls-general, consuls, and commercial agents mentioned in schedules B and C, and by vice-consuls and vice-commercial agents appointed to perform their duties, or by any other persons in their behalf, shall be accounted for to the Secretary of the Treasury, and held subject to his draft, or other directions; and all such consuls-general, consuls, commercial agents, and consular agents as are allowed for their compensation the whole or any part of the fees which they may collect pursuant to the provisions of this act, and all vice-consuls and vice-commercial agents appointed to perform the duties of said consuls-general, consuls, and commercial agents as are allowed for their compensation the whole or any part of such fees as aforesaid, shall make returns of all such fees as they or any other persons in their behalf shall so collect, in such manner as the Secretary of State shall prescribe; and all such fees as shall be so collected, accounted for, and reported, shall be reported annually to Congress, with the report of the rates or tariffs of fees required by the seventeenth section of this act, with a full list of all consular officers; and if any consul-general, consul, or commercial agent, mentioned in schedules B and C, or any vice-consul, or vice-commercial agent, appointed to perform the duty of any such officer mentioned in said schedules B and C, shall omit to collect any fees which he shall be entitled to charge, pursuant to the provisions of this act, for any official service, he shall be liable to the United States therefor, as though he had collected the same, unless, upon good cause shown therefor, the Secretary of the Treasury shall think proper to remit the same; and every consular officer shall number all receipts given by him for fees received for official services, in the order of their dates, beginning with number one at the commencement of the period of his service, and on the first day of January in every year thereafter; and he shall keep a book, in which he shall register all fees so received by him, in the order in which they shall be received, specifying in such register each item of service and the amount received therefor, from whom, and the dates when received, and if for any service connected with any ship or vessel, the name thereof, and indicating what items and amounts are embraced in each receipt given by him therefor, and numbering the same according to the number of the receipts respectively, so that the receipts and register shall correspond with each other; and he shall, in such register, specify the name of the person for whom, and the date when he shall grant, issue, or verify any passport, certify any invoice, or perform any other official service in the entry of the receipt of the fees therefor, and also number each consular act so receipted for, with the number of such receipt, and as shown by such register; and it shall be the duty of all owners, agents, consignees, masters, and commanders of ships and vessels to whom any receipt for fees shall be given by any consular officer, to furnish a copy thereof to the collector of the district in which such ships and vessels shall first arrive on their return to the United States; and it shall be the duty of every collector to forward to the Secretary of the Treasury all such copies of receipts as shall have been so furnished to him, and also a statement of all certified invoices which shall come to his office, giving the dates of the certificate and the names of the persons for whom, and of the consular officers by whom the same were certified; and every consular officer, in rendering his account or report of fees received, shall furnish a full transcript of the register which he is hereby required to keep, under oath or affirmation that the same is true and correct, and that the same contains a full and accurate statement of all fees received by him, or for his use, for his official services as such consular officer, to the best of his knowledge, during the period for which the same shall purport to be rendered, and that such oath or affirmation may be taken before any person having authority to administer oaths and affirmations at the port or place where such consular officer is located; and if any such consular officer shall willfully and corruptly commit perjury, in any such oath or affirmation, within the intent and meaning of any act of Congress now or hereafter made, he may be charged, proceeded against, tried, and convicted, and dealt with in the same manner, in all respects, as if such offense had been committed in the United States, before any officer duly authorized therein to administer or take such oath or affirmation, and shall be subject to the same punishments and disability therefor as are, or shall be prescribed by any such act for such offense.

Sect. 19. And be it further enacted, that no such officer as is mentioned in the first, second, third, fourth, sixth, or seventh sections of this act shall, nor shall any consular agent, be absent from his post, or the performance of his duties, for a longer period than ten days at any one time, without the permission previously obtained of the President; and no compensation shall be allowed for the time of any such absence in any case, except in cases of sickness; nor shall any diplomatic or consular officer correspond in regard to the public affairs of any foreign government with any private person, newspaper, or other periodical, or otherwise than with the proper officers of the United States, nor recommend any person, at home or abroad, for any employment of trust or profit under the government of the country in which he is located; nor ask nor accept, for himself or any other person, any present, emolument, pecuniary favor, office, or title of any kind, from any such government.

Sect. 20. And be it further enacted, that the compensation provided by this act shall be in full for all the services and personal expenses which shall be rendered or incurred by the officers or persons respectively for whom such compensation is provided, of whatever nature or kind such services or personal expenses may be, or by whatever treaty, law, or instructions such services or personal expenses so rendered or incurred are or shall be required; and no allowance, other than such as is provided by this act, shall be made in any case for the outfit or return home of any such officer or person; and no consular officer shall, nor shall any person under any consular officer, make any charge or receive, directly or indirectly, any compensation, by way of commission or otherwise, for receiving or disbursing the wages or extra wages to which any seaman or mariner shall be entitled who shall be discharged in any foreign country, or for any money advanced to any such seaman or mariner who shall seek relief from any consulate or commercial agency; nor shall any consular officer, or any person under any consular officer, be interested, directly or indirectly, in any profit derived from clothing, boarding, or otherwise supplying or sending home any such seaman or mariner: provided, that such prohibition as to profit shall not be construed to relieve or prevent any such officer who shall be the owner or otherwise interested in any ship or vessel of the United States, from transporting in such ship or vessel any such seaman or mariner, or from receiving or being interested in such reasonable allowance as may be made for such transportation, under and by virtue of the fourth section of the act entitled "An Act supplementary to the Act concerning Consuls and Vice-consuls, and for the further protection of American seamen," approved February 28, 1803.

Sect. 21. And be it further enacted, that no compensation provided by this act for any such officer as is mentioned in the first section of this act, or for any assistant secretary of legation, or for any such officer as is mentioned in schedules B and C of the third section of this act, or any appropriation therefor, shall be applicable to the payment of the compensation of any person appointed to or holding any such office after this act shall take effect, who shall not be a citizen of the United States; nor shall any other compensation be allowed in any such case.

Sect. 22. And be it further enacted, that the President be, and is hereby authorized to provide at the public expense all such stationery, blanks, record and other books, seals, presses, flags, and signs, as he shall think necessary for the several legations, consulates, and commercial agencies in the transaction of their business; and whenever he shall think there is sufficient reason therefor, to allow consuls-general, consuls, and commercial agents, who are not allowed to trade, actual expenses of office rent, not to exceed, in any case, ten

per centum of the amount of the annual compensation allowed to such officer, and to prescribe such regulations and make and issue such orders and instructions, not inconsistent with the Constitution or any law of the United States, in relation to the duties of all diplomatic and consular officers, the transaction of their business, the rendering of accounts and returns, the payment of compensation, the safe keeping of the archives and public property in the hands of all such officers, the communication of information, and the procurement and transmission of the products of the arts, sciences, manufactures, agriculture, and commerce, from time to time, as he may think conducive to the public interests; and it shall be the duty of all such officers to conform to such regulations, orders, and instructions. And it shall be the duty of the Secretary of State to publish official notifications, from time to time, of such commercial information communicated to him by such diplomatic and consular officers, as he may deem important to the public interest, in such newspapers, not to exceed three in number, as he may select, and report to Congress, at least once in each year, a synopsis of so much of the information on all subjects which shall be so communicated to him, as he may deem valuable for public information.

Sect. 23. And be it further enacted, that the Secretary of State shall be authorized to grant and issue passports, and cause passports to be granted, issued, and verified in foreign countries by such diplomatic or consular officers of the United States, and under such rules as the President shall designate and prescribe for and on behalf of the United States, and no other person shall grant, issue, or verify any such passport; nor shall any passport be granted or issued to, or verified for any other persons than citizens of the United States; nor shall any charge be made for granting, issuing, or verifying any passport except in a foreign country; and in any such case the fee allowed therefor shall not exceed the sum of one dollar, nor shall any such charge be made for more than one such verification in any foreign country; and if any person acting, or claiming to act, in any office or capacity under the United States, or any of the states of the United States, who shall not be lawfully authorized so to do, shall grant, issue, or verify any passport, or other instrument in the nature of a passport, to or for any citizen of the United States, or to or for any person claiming to be or designated as such in such passport or verification, or if any consular officer who shall be authorized to grant, issue, or verify passports, shall knowingly and willfully grant, issue, or verify any such passport to or for any person not a citizen of the United States, the person so offending shall be deemed and taken to be guilty of a misdemeanor, and, on conviction thereof, shall be imprisoned, not exceeding one year, or fined in a sum not to exceed five hundred dollars, or both, and may be charged, proceeded against, tried, convicted, and dealt with, therefor, in the district where he may be arrested or in custody; and it shall be the duty of all persons who shall be authorized, pursuant to the provisions of this act, to grant, issue, or verify passports, to make return of the same to the Secretary of State, in such manner and as often as he shall require; and such returns shall specify the names and all other particulars of the persons to whom the same shall be granted, issued, or verified, as embraced in such passport: provided, that in any country where a legation of the United States is established, no person other than the diplomatic representative of the United States at such place shall be permitted to grant or issue any passport, except in the absence therefrom of such representative.

Sect. 24. And be it further enacted, that every secretary of legation and consular officer is hereby authorized, whenever he shall be required or may deem it necessary or proper so to do, at the post, port, place, or within the limits of his legation, consulate, or commercial agency, to administer to or take from any person an oath, affirmation, affidavit, or deposition, and also to perform any notarial act or acts such as any notary public is required or authorized by law to do or perform within the United States; and every such oath, affirmation, affidavit, deposition, and notarial act administered, sworn, affirmed, taken, had, or done, by or before any such officer, when certified under his hand and seal of office, shall be as good, valid, effectual and of like force and effect within the United States to all intents and purposes as if such oath, affirmation, affidavit, deposition, or notarial act had been administered, sworn, affirmed, taken, had, or done, by or before any other person within the United States duly authorized and competent thereto: and if any person shall willfully and corruptly commit perjury, or by any means procure any person to commit perjury, in any such oath, affirmation, affidavit, or deposition, within the intent and meaning of any act of Congress now or hereafter made, such offender may be charged, proceeded against, tried, convicted, and dealt with in any district of the United States in the same manner, in all respects, as if such offense had been committed in the United States, before any officer duly authorized therein to administer or take such oath, affirmation, affidavit, or deposition, and shall be subject to the same punishment and disability therefor as are or shall be prescribed by any such act for such offense; and any document purporting to have affixed, impressed, or subscribed thereto or thereon the seal and signature of the officer administering or taking the same in testimony thereof, shall be admitted in evidence without proof of any such seal or signature being genuine or of the official character of such person; and if any person shall forge any such seal or signature, or shall tender in evidence any such document with a false or counterfeit seal or signature thereto, knowing the same to be false or counterfeit, he shall be deemed and taken to be guilty of a misdemeanor, and on conviction shall be imprisoned not exceeding three years, nor less than one year, and fined in a sum not to exceed three thousand dollars, and may be charged, proceeded against, tried, convicted, and dealt with, therefor, in the district where he may be arrested or in custody.

Sect. 25. And be it further enacted, that whenever any seaman or mariner of any vessel of the United States shall desert such vessel, the master or commander of such vessel shall note the fact and date of such desertion on the list of the crew, and the same shall be officially authenticated at the port or place of the consulate or commercial agency first visited by such vessel after such desertion, if such desertion shall have occurred in a foreign country; or if in such case such vessel shall not visit any place where there shall be any consulate or commercial agency before her return to the United States, or the desertion shall have occurred in this country, the fact and time of such desertion shall be officially authenticated before a notary public immediately at the first port or place where such vessel shall arrive after such desertion; and all wages that may be due to such seaman or mariner, and whatever interest he may have in the cargo of such vessel, shall be forfeited to and become the property of the United States, and paid over for their use to the collector of the port where the crew of such vessel are accounted for, as soon as the same can be ascertained; first deducting therefrom any expense which may necessarily have been incurred on account of such vessel in consequence of such desertion; and in settling the account of such wages or interest no allowance or deduction shall be made except for moneys actually paid, or goods at a fair price supplied, or expenses incurred to or for such seaman or mariner, any receipt or voucher from, or arrangement with such seaman or mariner, to the contrary notwithstanding.

Sect. 26. And be it further enacted, that upon the application of any seaman or mariner for a discharge, if it shall appear to the consular officer that he is entitled to his discharge under any act of Congress, or according to the general principles or usages of maritime law, as recognized in the United States, he shall discharge such seaman or mariner, and shall require from the master or commander of the ship or vessel from which such discharge shall be made, the payment of three months' extra wages, as provided by the act hereinbefore mentioned, approved February 28, 1803; and it shall be the duty of such master or commander to pay the same, and no such payment or any part thereof shall be remitted in any case, except such as are mentioned in the proviso of the ninth clause of the act entitled "An Act in addition to the several Acts regulating the Shipment and Discharge of Seamen and the Duties of Consuls," approved July 20, 1840, and as hereinafter provided, and the extra wages required to be paid by the said ninth clause of the last hereinbefore-mentioned act, and by this section, shall be applicable to the same purposes and in the same manner as is directed by the said act, approved February 28, 1803, in regard to the extra wages required to be paid thereby; and if any consular officer, when discharging any seaman or mariner, shall neglect to require the payment of, and collect the extra wages required to be paid in the case of the discharge of any seaman or mariner, by either of the said acts, as far as they shall remain in force under this act or by this act, he shall be accountable to the United States for the full amount of their share of such wages, and to such seaman or mariner to the full amount of his share thereof; and if any seaman or mariner shall, after his discharge, have incurred any expense for board or other necessaries at the port or place of his discharge before shipping again, such expense shall be paid out of the share of the three months' wages to which he shall be entitled, which shall be retained for that purpose, and the balance only paid over to him: provided, however, that in cases of wrecked or stranded ships or vessels, or ships or vessels condemned as unfit for service, no payment or extra wages shall be required.

Sect. 27. And be it further enacted, that every consular officer shall keep a detailed list of all seamen and mariners shipped and discharged by him, specifying their names and the names of the vessels on and from which they shall be shipped and discharged, and the payments, if any, made on account of each so discharged, and also of the number of the vessels arrived and departed, and the amounts of their registered tonnage, and the number of their seamen and mariners, and of those who are protected, and whether citizens of the United States or not, and as nearly as possible the nature and value of their cargoes, and where produced, and make returns of the same, with their accounts and other returns, to the Secretary of the Treasury; and no consular officer shall certify any invoice unless he shall be satisfied that the person making the oath or affirmation thereto is the person he represents himself to be, that he is a credible person, and that the statements made under such oath or affirmation are true; and he shall, thereupon, by his certificate, state that he was so satisfied; and it shall be the duty of every consular officer to furnish to the Secretary of the Treasury, as often as shall be required, the prices current of all articles of merchandise usually exported to the United States from the port or place in which he shall be located.

Sect. 28. And be it further enacted, that it shall be the duty of every master and commander of a ship or vessel of the United States, whenever he shall have occasion for any consular or other official service, which any consular officer of the United States shall be authorized by law or usage officially to perform, and for which any fees shall be allowed by the said rates or tariffs of fees as aforesaid, to apply to such one of the said officers as may then be officially located at the consulate or commercial agency, if any there be where such service shall be required, to perform such service, and such master or commander shall pay to such officer such fees as shall be allowed for such service, in pursuance of the provisions of this act; and if any such master or commander shall omit so to do, he shall be liable to the United States for the amount of the fees lawfully chargeable for such services, as though the said services had been performed by such officer. And all consular officers are hereby authorized and required to retain in their possession all the papers of such ships and vessels which shall be deposited with them as directed by law, till payment shall be made of all demands and wages on account of such ships and vessels.

Sect. 29. And be it further enacted, that if any citizen of the United States who shall die abroad shall, by any lawful testamentary disposition, leave special directions for the custody and management, by the consular officer of the port or place where he shall die, of the personal property of which he shall die possessed in such country, as contemplated by the act entitled "An Act concerning Consuls and Vice-consuls," approved April 14, 1792, it shall be the duty of such officer, so far as the law of such country will permit, strictly to observe such directions; and if any such citizen so dying shall, by any lawful testamentary disposition, have appointed any other person or persons than such officer to take charge or and manage such property, it shall be the duty of such officer, whenever required by such person or persons so appointed, to give his official aid in whatever way may be necessary to facilitate the proceedings of such person or persons in the lawful execution of such trust, and, so far as the laws of the country permit, to protect the property of the deceased from any interference of the local authorities of the country where such citizen shall die; and to this end it shall be the duty of such consular officer to place his official seal upon all or any of the personal property or effects of the deceased, and to break and remove such seals as may be required by such person or persons, and not otherwise.

Sect. 30. And be it further enacted, that all fees collected for and in behalf of the United States, in pursuance of this act, shall be collected in the coin of the United States, or at its representative value in exchange.

Sect. 31. And be it further enacted, that in the construction, and for the purposes, of all other acts and parts of acts which shall remain in force after this act shall take effect, defining any of the powers, declaring any of the rights, prescribing any of the duties, or imposing any penalty or punishment for any act of omission or commission of any consul, commercial agent, vice-consul, or vice-commercial agent, or allowing or enjoining the performance of any act, matter, or thing, with or before any such officer, all such acts and parts of acts shall in all these several respects, so far as may be consistent with the subject-matter and context of the same, and with this act and the treaties of the United States, be deemed and taken to include and apply to all consular officers as though all such officers were specially named therein; and the said official designations in contemplation of all such acts, and parts of acts, and of this act, shall be deemed and taken to have the respective meanings hereinafter assigned to them—that is to say, "Consul-General," "Consul," and "Commercial Agent," shall be deemed and taken to denote full, principal, and permanent "consular officers," as distinguished from subordinates and substitutes: "Deputy Consul" and "Consular Agent" shall be deemed and taken to denote "consular officers" subordinate to such principals, exercising the powers and performing the duties within the limits of their consulates or commercial agencies respectively, the former at the same ports or places, and the latter at ports or places different from those at which such principals are located, respectively; and "vice-consuls" and "vice-commercial agents" shall be deemed and taken to denote "consular officers," who shall be substituted temporarily, to fill the places of "consuls-general," "consuls," or "commercial agents," when they shall be temporarily absent, or relieved from duty; and the term "consular officer," as used in this act, shall be deemed and taken to include all such officers as are mentioned in this section, and none others; and the term "diplomatic officer," as used in this act, shall be deemed and taken to include all the officers mentioned in the first section of this act, and none others.

Sect. 32. And be it further enacted, that if any consular officer shall willfully neglect or omit to perform seasonably any duty imposed upon him by this or any other act, or by any order or instruction made or given in pursuance of this or any other act, or shall be guilty of any willful malfeasance or abuse of power, or any corrupt conduct in his office, he shall be liable to all persons injured by any such neglect or omission, malfeasance, abuse, or corrupt conduct, for all damages occasioned thereby: and for all such damages by any such officer, he, and his sureties upon his official bond, shall be responsible thereon to the full amount of the penalty thereof, to be sued in the name of the United States, for the use of the person or persons so injured: provided, that such suit shall in no case prejudice, but shall be held in entire subordination to the interests, claims, and demands of the United States, as against such officer, under such bond, for every willful act of malfeasance or corrupt conduct in his office; and if any such officer shall refuse to pay any draft, order, or warrant which may be drawn upon him by the proper officer of the Treasury Department for any public moneys of the United States in his hands, or for any amount due from him to the United States, whatever the capacity in which he may have received or may hold the same, or to transfer or disburse any such moneys promptly upon the legal requirement of any authorized officer of the United States, he shall be deemed and taken to be guilty of a misdemeanor, and on conviction thereof shall be punished by imprisonment not to exceed ten years nor less than one year, or by fine not to exceed two thousand dollars nor less than two hundred dollars, or both, at the discretion of the court; and any such officer so offending may be charged, proceeded against, tried, convicted, and dealt with, in any district in which he may be arrested or in custody.

Sect. 33. And be it further enacted, that the fifth, sixth, and seventh sections of the act hereinbefore mentioned, approved July 20, 1840, and all of the act entitled "An Act to remodel the Diplomatic and Consular Systems of the United States," approved March 1, 1855, and all acts and parts of acts whereby any such fees as are contemplated by the seventeenth section of this act are fixed or allowed, and any usage or law whereby any attaché is or may be allowed to any legation other than such as are provided in this act, or requiring any secretary of legation to be employed otherwise than as provided by this act, and all other acts and parts of acts, so far as the same are inconsistent with this act, be and the same are hereby annulled and repealed; and no attaché shall be allowed, in any case, nor any secretary of legation, otherwise than as provided by this act.

Sect. 34. And be it further enacted, that this act shall take effect on the first day of January, 1857, and not before.

SCHEDULE B.

SALARIES OF CONSULS-GENERAL AND CONSULS OF THE UNITED STATES.

I. *Consuls-General.*—Cuba: Havana, $6000. British India: Calcutta, $5000. British North America: Quebec, $4000. Japan: Simoda, $5000. Turkey: Constantinople, $5000. Egypt: Alexandria, $3500. Frankfort-on-the-Main, $3000.

II. *Consuls—First Class.*—Great Britain: London, $7500; Liverpool, $7500; Melbourne, $4000; Hong-Kong, $3500; Glasgow, $3000; Mauritius, $2500; Singapore, $2500; Belfast, $2000; Cork, $2000; Dundee, $2000; Demarara, $2000; Halifax, $2000; Kingston (Jamaica), $2000; Leeds, $2000; Manchester, $2000; Nassau (New Providence), $2000; Southampton, $2000; Turk's Island, $2000.

France: Havre, $6000; Paris, $6000; Marseilles, $2500; Bordeaux, $2000; La Rochelle, $1500; Lyons, $1500.

Russia: Moscow, $2000; Odessa, $2000; Revel, $2000; St. Petersburg, $2000.

Spain: Matanzas, $2500; Trinidad de Cuba, $2500; Santiago de Cuba, $2500; San Juan (Porto Rico), $2000; Cadiz, $1500; Malaga, $1500; Ponce (Porto Rico), $1500.

Austria: Trieste, $2000; Vienna, $1500.

Prussia: Aix la Chapelle, $2500.

China: Canton, $4000; Shanghai, $4000; Foo-tchow, $3500; Amoy, $3000; Ningpo, $3000.

Turkey: Beyrout, $2000; Smyrna, $2000; Jerusalem, $1500.

Netherlands: Rotterdam, $2000; Amsterdam, $1000.

Belgium: Antwerp, $2000.

Portugal: Funchal, $1500; Oporto, $1600.

Denmark: St. Thomas, $4000; Elsineur, $1500.

Sardinia: Genoa, $1500.

Switzerland: Basle, $2000; Geneva, $1500.

Sicilies: Messina, $1500; Naples, $1500; Palermo, $1500.

Saxony: Leipsic, $1500.

Bavaria: Munich, $1000.

Tuscany: Leghorn, $1500.

Würtemberg: Stuttgardt, $1000.

Hanseatic and free towns: Bremen, $2000; Hamburg, $2000.

Barbary States: Tangiers, $3000; Tripoli, $3000; Tunis, $3000.

Brazil: Rio de Janiero, $6000; Pernambuco, $2000.

Mexico: Vera Cruz, $3500; Acapulco, $2000.

Peru: Callao, $3500.

Chili: Valparaiso, $3000.

Buenos Ayres: Buenos Ayres, $2000.

Nicaragua: San Juan del Sur, $2000.

New Granada: Aspinwall, $2500; Panama, $3500.

Venezuela: Laguayra, $1500.

Sandwich Islands: Honolulu, $4000; Lahaina, $3000.

III. *Commercial Agents—First Class.*—Nicaragua: San Juan del Norte, $2000.

St. Domingo: Port au Prince, $2000; St. Domingo (city), $1500.

SCHEDULE C.

I. *Consuls—Second Class.*—Great Britain: Bay of Islands (New Zealand), $1000; Cape Town, $1000; Falkland Islands, $1000.

Austria: Venice, $750.

Prussia: Stettin, $1000.

Turkey: Candia, $1000; Cyprus, $1000.

Netherlands: Batavia, $1000.

Portugal: Fayal, $750; Santiago (Cape de Verdes), $750.

Denmark: Saint Croix, $750.

Sardinia: Spezzia, $1000.

Greece: Athens, $1000.

Muscat: Zanzibar, $1000.

Brazil: Bahia, $1000; Maranham Island, $1000; Para, $1000; Rio Grande, $1000.

Mexico: Matamoras, $1000; Mexico (city), $1000; Tampico, $1000; Paso del Norte, $500; Tabasco, $500.

Peru: Paita, $500; Tumbez, $500.

Chili: Taicahuano, $1000.

New Granada: Carthagena, $500; Sabanille, $500.

Honduras: Omoa, $1000.

Ecuador: Guayaquil, $750.

Bolivia: Cobija, $500.

Uruguay: Montevideo, $1000.

Society Islands: Tahiti, $1000.

Navigators' Islands: Apia, $1000.

Feejee Islands: Lanthala, $1000.

II. *Commercial Agents—Second Class.*—Portugal: St. Paul de Loanda (Angola), $1000.

Liberia: Monrovia, $1000.

Guinea: Gaboon, $1000.

St. Domingo: Cape Haytien, $1000; Aux Cayes, $500.

Russia: Amoor River, $1000.

Consular Fees of the United States, prescribed by the President, in accordance with the provisions of the act of Congress approved August 18, 1856, regulating the diplomatic and consular systems of the United States:

DEPARTMENT OF STATE, *November* 10, 1856.

The following is the rate or tariff of fees prescribed by the President to be charged by all consular officers for the services herein specified, which "shall be regarded as official services," and the fees therefor collected in American or Spanish silver dollars, or their equivalent.

At the expiration of each quarter the statement of fees must be rendered, in accordance with the printed instructions, by all consular officers entitled to salaries residing at sea-ports and at inland places, to the Secretary of the Treasury, and the amount thereof held subject to his draft or other directions. If the consular officers are not entitled to salaries, the returns must be made to the Secretary of State.

Receiving and delivering Ship's Papers.—For receiving and delivering ship's register and papers, including consular certificates, half a cent on every ton, registered measurement of the vessel for which the service is performed.

Discharging or shipping Seamen or Mariners.—For every seaman, from one to ten, who may be discharged or shipped, including certificates therefor attached to crew list and shipping articles, to be paid by the master of the vessel, 50 cents; but no additional charge shall be made for any number of seamen exceeding ten, who may be discharged from or shipped between the date of the arrival and departure of the vessel.

Protests, Passports, etc.	
For noting marine protest	$1 00
For extending marine protest	2 00
And if it exceed 200 words, for every additional 100 words	1 00
For issuing warrant of survey on vessels, hatches, cargo, provisions, and stores, or either	1 00
For a passport, including seal	1 00
For visèing a passport	1 00
For preparing agreement of master to give increased wages to seamen, attested under seal	1 00
For preparing any other official document or instrument of writing, not herein named or enumerated, if under 100 words	1 00
If exceeding 100 words, for every additional 100 words	0 50
For the following Certificates, viz.:	
Of the deposit of a ship's register and papers, when required by custom-house authorities	0 25
In cases of vessels deviating from the voyage	0 50
When the ship's register is retained entire in the consulate	0 25
For master to take home destitute American seamen	no fee.
Of conduct of crew on board, in cases of refusal of duty and in cases of imprisonment, etc	0 25
Given to master at his own request	0 50
To a seaman, of his discharge	no fee.
Of appointment of new master, including oath of master	1 00
Of the ownership of a vessel	0 50
Of decision and award, in cases of protests against masters, passengers, or crew	2 00
Of roll or list of crew, when required by the captain or authorities of the port	0 50
To bill of health	0 50
To shipping articles	0 50
Of canceling ship's register	0 50
To debenture certificate, including oaths of master and mate	1 25
To invoice, including oath	2 00
To currency	0 50
Of sea letter	2 00
Of indorsement of bottomry on ship's register	0 50
Of indorsement on payment of bottomry on ship's register	0 50
Of indorsement of new ownership on ship's register	0 50
Acknowledgments.	
Of the master to bottomry-bond	1 00
Of the merchant to assignment of bottomry-bond	1 00
Of the vendor to a bill of sale of vessel	1 00
Of the master to a mortgage or mortgage bill of sale of vessel	1 00
Of the master to an order for payment of seamen's wages or voyages, at home, including making up order, if required	0 50
Of one or more persons to a deed or instrument of writing	2 00
Of one or more persons to a power of attorney	2 00
Declarations and Oaths.	
Of declaration and oath of master to one or more desertions, including oaths, attached to crew list and shipping articles, each	0 50
To one or more deaths or losses of seamen overboard at sea, including oaths, attached to crew list and shipping articles, each	0 50
To not being able to procure two-thirds of a crew of protected American seamen	0 50
To ship's inventories or stores	0 50
To the correctness of log-book	0 50
To ship's bills and vouchers for disbursements and repairs	0 50
Authenticating Copies of Papers.	
Of marine note of protest	1 00
Of extended protest	2 00
Of call, warrant, and report of survey on vessel, hatches, cargo, provisions, and stores, or either	1 00
Of inventories and letters, or either, of masters	1 00
Of account of sales of vessel, cargo, provisions, and stores, or either	1 00
Of advertisement for funds on bottomry	1 00
Of advertisement of sale of vessel or cargo, provisions or stores	1 00

Authenticating Signatures.

To reports of survey on vessel or cargo, provisions or stores	$1 00
To estimate of repairs of vessel	1 00
To (auctioneer's) account of sales of vessel or cargo, provisions or stores	1 00
To average bonds	2 00
Of governors, judges, notaries public, custom-house and other officers	2 00
Of merchants and individuals	2 00
For any other consular certificate or services of like character not herein named or enumerated	0 50

Consuls' Orders and Letters.

To send seamen to hospital	no fee.
To send seamen to prison	0 50
To release seamen from prison	0 50
To authorities or captain of the port, in cases of sinking vessels	0 50
Requesting the arrest of seamen	0 50
For any other letter or order of like character	0 50

Filing Documents in Consulate.

Calls of survey on vessel, hatches, cargoes, provisions, and stores, or either	0 25
Warrants of survey on vessels, hatches, cargoes, provisions, and stores, or either	0 25
Reports of survey on vessels, hatches, cargoes, provisions, and stores, or either	0 25
Estimate of repairs of vessel	0 25
Consul's certificate to advertisement for funds on bottomry	0 25
To advertisement of sale of vessel, cargo, provisions, and stores, or either	0 25
Inventories of vessels, cargo, provisions, and stores, or either	0 25
Letter of master notifying consul of sale of vessel, cargo, provisions, and stores, or either	0 25
Of master notifying auctioneer of sale of vessel, cargo, provisions, and stores, or either	0 25
Accounts of sale of vessel, cargo, provisions, and stores, or either	0 25
For filing any other document prepared in or out of the consulate	0 25

Recording Documents.

Calls of survey on vessel, hatches, cargo, provisions, and stores, or either; warrants and reports of ditto, ditto; estimates of repairs; certificates of consuls to advertisements for funds on bottomry, and of sale of vessel; inventories of vessel, cargo, provisions, and stores; letter of master to consul notifying sale of vessel, cargo, provisions, and stores, or either; letter of master to auctioneer, and account of sales of vessel, cargo, provisions, and stores, or either, for every 100 words 0 20

(As the original documents are required to be filed in the consulate, it will not be necessary to record them. Should it ever become necessary, however, to deliver up the originals, they must be recorded before delivery, the party receiving the same paying the record fee, as above mentioned.)

Order and consul's certificate to pay seamen's wages or voyages, at home	0 25
Certificate given to master at his own request, when required	0 25
Appointment of new master	0 25
Application of a citizen of the United States for a sea letter	0 25
Sea letter, for every 100 words	0 20
Bill of sale, when required, for every 100 words	0 20
Consul's letter to captain of port, or authorities, in cases of sinking vessels	0 25
Consul's certificates to masters taking home destitute American seamen	no fee.
Protests of masters and others, other than marine protests, for every 100 words	0 20
Average bonds, when required, for every 100 words	0 20
Powers of attorney, when required, for every 100 words	0 20
Any other document or instrument of writing not herein named or enumerated, prepared in or out of the consulate, and required to be recorded, for every 100 words	0 20

Estates of deceased American Citizens.—For taking into possession the personal estate of any citizen who shall die within the limits of a consulate, inventorying, selling, and finally settling and preparing or transmitting, according to law, the balance due thereon, 5 per cent. on the gross amount of such estate. If part of such estate shall be delivered over before final settlement, 2½ per cent. to be charged on the part so delivered over as is not in money, and 5 per cent. on the gross amount of the residue. If among the effects of the deceased are found certificates of foreign stocks, loans, or other property, 2½ per cent. on the amount thereof. No charge will be made for placing the official seal upon the personal property or effects of such deceased citizen, or for breaking or removing the seals, when required by the person or persons referred to in section 29 of the act of August 18, 1856.

Miscellaneous Services.

For consul's seal and signature to clearance from custom-house authorities	$0 50
For administering oaths, not hereinbefore provided for ..... each	0 25
For consul's attendance at a shipwreck, or for the purpose of assisting a ship in distress, or of saving wrecked goods or property, over and above traveling expenses, a per diem of $4, whenever the consul's interposition is required by the parties interested	4 00
For attending an appraisement, where the goods or effects are under $1000 in value	3 00
For attending valuation of goods of $1000 and upward in value, for every day's attendance during which the valuation continues	5 00
For attending sale of goods, if the purchase-money be under $1000	3 00
For attending sale of goods, if the purchase-money is $1000 and upward, for every day during which the sale continues	5 00
For attending sale of vessel, when required	2 00

Fees for unofficial Services.—As the unofficial acts of a consular officer may be performed by a notary public, and as the compensation charged therefor is regarded as a perquisite of his office, the rate of such compensation may be determined either by agreement or the custom of the place, subject, however, to future instructions.

Exterritorial and other Privileges of Consuls.—According to an elaborate opinion prepared by Mr. Cushing, Attorney-General of the United States, under date July 14, 1855, the United States may, with consent of the government of another country, superadd to the regular duties therein of consul any of those of a minister. There are two great classes of cases in which this fact exists, and might well be systematized, or at least more explicitly recognized, in consular stipulations with foreign governments.

Consular Privileges in Colonial or other Dependencies of Foreign States.—One is, that of the transmarine possessions of sundry of the states of Europe. Here, many cogent reasons dictate that the concession should be granted to our consuls, by such states, of the right to address the colonial or provincial governor. There is nothing in the law of nations to prevent this; it is convenient for all parties; it is a consular right exercised by treaty in the great pashalics of the Turkish empire. The United States have recently made provision to the same effect in treaty with a Christian power, namely, the Netherlands; and that government having thus wisely relinquished its long-subsisting scruples on this point, we may reasonably expect similar liberality in future commercial negotiations with other countries of Europe.

Consular Duties where there is no Diplomatic Representative of the United States.—The other class of cases of this nature is that of a consul residing near a metropolitan government where there is no minister, either because of temporary cessation, or because inducements have not existed for the interchange of diplomatic representatives between such government and the United States. In this case it becomes the office, perhaps it may be said the right, of the consul to place himself, *with the permission of his own government*, in direct communication with the political authority of such government. Here, as in the other case, the fact occurs, and is of common convenience; it is not inconsistent with public law; and so far as regards the United States, it has example in treaties, for instance, in our last consular convention with France. It is a thing of manifest necessity as between the United States and some of the countries of Germany, with which our relations are entirely amicable, without calling for permanent diplomatic representation. The German Bund, though in some features resembling our own federal republic, yet differs essentially in this, that, in the former, the federal authority, in matters of peace and war, acts on states, not individuals, and of course each state retains the power of foreign representation and negotiation. Hence, if we do not see cause to interchange ministers, we may yet well reciprocally enlarge the consular functions, in our relations with such states as

Bavaria, Saxony, Würtemberg, Hanover, the Hessen, the Mechlenburgs, or any other of the members of the Bund.

Derivation of Privileges by Consuls.—Meanwhile, it would not in either of these classes of cases follow, because a consul of the United States in Bavaria, or one of Bavaria in the United States, may be admitted to address the government, that therefore he becomes a diplomatic personage, with international rights as such, and among them that of exterritoriality. If his commission be that of consul only, if his public recognition be an *exequatur*, the foreign consul is subject to the local law in the United States; and our own consul in the foreign country, if invested in any case with quasi-exterritorial rights, does not derive these from the law of nations, but only from the special concession, by general law or otherwise, of the particular foreign government. If, indeed, the United States see fit, in any case, to confer the function of chargé d'affaires on their consul, either with or without limitation of time, as they may lawfully do, that is, to superimpose the office of minister on that of consul, then he has a double political capacity, and, though invested with full diplomatic privilege, yet becomes so invested as chargé d'affaires, not as consul; and the fact of such casual duplication of function does not change the legal *status* of consuls, whether they be regarded through the eye of the law of nations, or that of the United States.

Pagan and Mohammedan Countries.—It has been observed, that "in Egypt, Tunis, Tripoli, China, the islands of the Pacific, the consuls enjoy all the diplomatic privileges. The motive is not only in the difference of law and religion with ours, but also in the absence of other diplomatic representatives." This remark requires qualification. In the case of China and Turkey, for instance, our consuls have not, *qua* consuls, any "*diplomatic* privileges," except such as they might have in France during the absence of a minister; such *exterritorial*, not diplomatic, privileges, as they really enjoy, they enjoy, not because they are consuls, nor because of the absence of proper diplomatic representatives in those countries, for we have them, but because they are citizens of the United States. And the true explanation of the diplomatic rights appertaining to consuls in the Mohammedan states, whether independent ones, like Morocco and Muscat, or subject to the suzerainty of the Porte, like Tripoli, Tunis, and Egypt, and so of the Pacific or Indian islands, is, that they are not Christians, and are not admitted to a full community of international law, public or private, with us, the nations of Christendom.

Institution of the consular Office.—It might be demonstrated historically, what in this place it will suffice to affirm, that the institution of consuls, in their present capacity of international agents, originated in the mere fact of differences in law and religion at that period of modern Europe in which it was customary for distinct nationalities, coexisting under the same general political head, and even in the same city, to maintain each a distinct municipal government.

Consuls in the Levant.—Such municipal colonies, organized by the Latin Christians, and especially by those of the Italian republics in the Levant, were administered each by its *consuls*, that is, its proper municipal magistrates of the well-known municipal denomination of ancient Italy. Their commercial relation to the business of their countrymen was a mere incident of their general municipal authority. Such, also, at the outset, was the nature of their political relation to other coexisting nationalities around them in the same country, and to that country's own supreme political or military power.

In Countries not Christian.—The consuls of Christian states, in the countries not Christian, still retain unimpaired, and habitually exercise, their primitive functions of municipal magistrates for their countrymen, their commercial or international capacity in those countries being but a part of their general capacity as the delegated administrative and judicial agents of their nations.

Origin of the Law of Nations.—This condition of things came to be permanent in the Levant, that is, Greek Europe and its dependencies, by reason of the tide of Arabic and Tartar conquest having overflowed so large a part of the Eastern empire, and established the Mohammedan religion there. But the result was different in Latin Europe, because the modern nations, formed in this quarter out of the broken fragments of the Western empire, being Christian, and thus deriving their religion and their civilization from the same fountain-head of Rome, settled into something of approximation to one great political community, under the influences, potential when combined, of the military power of the Frankish or Germanic emperors, and the moral power of the Papal See. Thus it was that the mass of legal ideas, which we now call the law of nations, came to exist and have authority. It is, in its origin at least, the system of public law of Latin or Western Europe.

Approximate Unity of Public Law.—This imperfect political unity of Western Europe was obstructed at first by the antagonism of the Celto-Romanic and the Germanic races, and was threatened with complete dissolution when that original antagonism reappeared in the separation of some of the Germanic populations from the Papal See, under the popularly assumed religious title of Protestants. But after thirty continuous years of reciprocal devastation and slaughter, the states of the old and new faith concluded a truce at least, if not a peace, and agreed, while acquiescing in the fact of religious difference, to maintain approximate unity of public law, and thus, by subordinating the religious idea to the legal one, to live together in some sort, as they have continued to do, with only occasional spasms of fanatical intolerance breaking out into civil or foreign war. At a late period, Russia, though of Greek faith, came into the European system of public law, with the less difficulty, indeed, for the reason that Latin Europe and Greek Europe alike nourished the legal traditions of the Roman empire, though these be derived in the former case from Rome, and in the latter from Constantinople.

Change in the Nature of the consular Office among Christian Nations.—Thus, by the combination of Romanic law and Christian faith it is that we have come to have a common public law, under whose gradual operation claims of private exterritoriality soon fell into desuetude among the governments of Christendom; Italians in England, and Englishmen in Italy, at length submitted to the local law; foreign colonial nationalities finally ceased to exist of right; their consuls proceeded to sink from the condition of municipal functionaries into that of mere commercial or semi-diplomatic ones; and thus, in process of time, by traditional usage, by positive provisions of local law, and by treaty stipulations, the existing legal character, with its limited rights, was fixed on the foreign consuls mutually accredited in the countries of Christian Europe and America.

In Mohammedan States.—In our relations with nations out of the pale of Christendom, we retain for our own citizens and consuls, though we can not concede to theirs, the rights of exterritoriality. Religion is the chief representative sign, and it is an element of the question of public law. But the critical fact is the difference of law. The legislation of Mohammed, for instance, is inseparable from his religion. We can not submit to one without also undergoing the other. The same legal incompatibility exists, for one reason or another, between us and the unchristian states not Mohammedan.

Institutes and Pandects.—Whereas Christendom, on the other hand, in all its subdivisions of race, nationality, and religion, is the common heir of the political

ideas, and especially the legislation, of the Roman empire; for the Institutes and Pandects themselves, though comprising the sum of the legal science of Rome, were compiled and promulgated at Constantinople, and constitute the broad foundation of the jurisprudence, public and private, of the whole of Christendom.

Unity in Christendom.—When the countries now Mohammedan shall be resubjected to the doctrines of the Roman law, then can they be admitted to the same reciprocal community of private rights with us, which prevails in Christian Europe and America. Until that event happens, Turkey, and other Modern states in Africa or Asia, may, like China or Japan, enter into the sphere of our public law in the relation of government to government, but not in the relation of government to men. That full interchange of international rights is admissible only among the nations which have unity of legal thought, in being governed by, or constituted out of, the once discovered, but since then partially reunited, constituent of the Græco-Roman empire.—*Manual for Consuls, United States*, 1857.

Contraband, in commerce, a commodity prohibited to be exported or imported, bought or sold. Contraband is also a term applied to designate that class of commodities which neutrals are not allowed to carry during war to a belligerent power. It is a recognized general principle of the law of nations, that ships may sail to and trade with all kingdoms, countries, and states in peace with the princes or authorities whose flags they bear; and that they are not to be molested by the ships of any other power at war with the country with which they are trading, unless they engage in the conveyance of *contraband* goods. But great difficulty has arisen in deciding as to the goods comprised under this term. The reason of the limitation suggests, however, the species of articles to which it principally applies. It is indispensable that those who profess to act upon a principle of neutrality, should carefully abstain from doing any thing that may discover a bias in favor of either party. But a nation who should furnish one of the belligerents with supplies of warlike stores, or with supplies of any article, without which that belligerent might not be able to carry on the contest, would obviously forfeit her neutral character; and the other belligerent would be warranted in preventing such succors from being sent, and confiscating them as lawful prize. All the best writers on international law admit this principle; which, besides being enforced during every contest, has been sanctioned by repeated treaties. In order to obviate all disputes as to what commodities should be deemed contraband, they have sometimes been specified in treaties or conventions. (See the references in LAMPREDI *Del Commercio de Popoli Neutrali*, § 9.) But this classification is not always respected during hostilities; and it is sufficiently evident that an article which might not be contraband at one time, or under certain circumstances, may become contraband at another time, or under different circumstances. It is admitted on all hands, even by M. Hubner, the great advocate for the freedom of neutral commerce (*De la Saisie des Bâtimens Neutres*, tom. i. p. 193), that every thing that may be made *directly available* for hostile purposes is contraband, as arms, ammunition, horses, timber for ship-building, and all sorts of naval stores. The greatest difficulty has occurred in deciding as to provisions, which are sometimes held to be contraband, and sometimes not. Lord Stowell has shown that the *character of the port* to which the provisions are destined, is the principal circumstance to be attended to in deciding whether they are to be looked upon as contraband. A cargo of provisions intended for an enemy's port, in which it was known that a warlike armament was in preparation, would be liable to arrest and confiscation; while, if the same cargo were intended for a port where none but merchantmen were fitted out, the most that could be done would be to detain it, paying the neutral the same price for it he would have got from the enemy.

Contraband of War. "Questions of contraband were much discussed during the continuance of our neutral character, in the furious war between England and France, commencing in 1793, and the United States professed to be governed by the modern usage of nations on this point. The national convention of France, on the 9th of May, 1793, decreed, that neutral vessels laden with provisions, destined to an enemy's port, should be arrested and carried into France, and one of the earliest acts of England, in that war, was to detain all neutral vessels going to France, and laden with corn, meal, or flour. It was insisted, on the part of England, that, by the law of nations, all provisions were to be considered as contraband, in the case where the depriving of an enemy of those supplies was one of the means employed to reduce him to reasonable terms of peace; and that the actual situation of France was such as to lead to that mode of distressing her, inasmuch as she had armed almost the whole laboring class of her people, for the purpose of commencing and supporting hostilities against all the governments of Europe. This claim on the part of England was promptly and perseveringly resisted by the United States; and they contended that corn, flour, and meal, being the produce of the soil and labor of the country, were not contraband of war, unless carried to a place actually invested. The treaty of commerce with England, in 1794, in the list of contraband, stated, that whatever materials served directly to the building and equipment of vessels, with the exception of unwrought iron and fir planks, should be considered contraband, and liable to confiscation; but the treaty left the question of provisions open and unsettled, and neither power was understood to have relinquished the construction of the law of nations which it had assumed. The treaty admitted that provisions were not generally contraband, but might become so according to the existing law of nations, in certain cases, and those cases were not defined.

"It was only stipulated, by way of relaxation of the penalty of the law, that whenever provisions were contraband, the captors or their government should pay to the owner the full value of the articles, together with the freight and a reasonable profit. Our government has repeatedly admitted that, as far as that treaty enumerated contraband articles, it was declaratory of the law of nations, and that the treaty conceded nothing on the subject of contraband.

"The doctrine of the English admiralty on the subject of provisions being considered contraband, was laid down very fully and clearly in the case of the *Jonge Margaretha*. It was there observed, that the catalogue of contraband had varied much, and sometimes in such a manner as to make it difficult to assign the reasons of the variations, owing to particular circumstances, the history of which had not accompanied the history of the decisions. In 1673, certain articles of provisions, as corn, wine, and oil, were deemed contraband, according to the judgment of a person of great knowledge and experience in the practice of the admiralty; and, in much later times, many other sorts of provisions have been condemned as contraband. In 1747 and 1748, butter and salted fish and rice were condemned as contraband; and those cases show that articles of human food have been considered as contraband when it was probable they were intended for naval or military use. The modern established rule is, that provisions are not generally contraband, but may become so under circumstances arising out of the particular situation of the war, or the condition of the parties engaged in it. Among the circumstances which tend to preserve provisions from being liable to be treated as contraband, one is, that they are the growth of the country which exports them. Another circumstance

to which some indulgence is shown by the practice of nations, is when the articles are in their native or unmanufactured state. Thus iron is treated with indulgence, though anchors and other instruments fabricated out of it are directly contraband. Hemp is more favorably considered than cordage, and wheat is not considered as so objectionable a commodity, when going to an enemy's country, as any of the final preparations of it for human use. The most important distinction is, whether the articles were intended for the ordinary use of life, or even for mercantile ship's use, or whether they were going with a highly probable destination to military use. The nature and quality of the port to which the articles are going is not an irrational test. If the port be a general commercial one, it is presumed the articles are going for civil use, though occasionally a ship of war may be constructed in that port. But if the great predominant character in that port, like Brest in France, or Portsmouth in England, be that of a port of naval military equipment, it will be presumed that the articles were going for military use, although it is possible that the articles might have been applied to civil consumption. As it is impossible to ascertain positively the final use of an article *ancipitis usus*, it is not an injurious rule which deduces the final use from the immediate destination; and the presumption of a hostile use, founded on its destination to a military port, is very much inflamed, if, at the time when the articles were going, a considerable armament was notoriously preparing, to which a supply of those articles would be eminently useful."

These doctrines of the English prize law were essentially the same with those adopted by the American Congress in 1775, for they declared, that all vessels, to whomsoever belonging, carrying provisions or other necessaries, to the British army or navy within the colonies, should be liable to seizure and confiscation. They were likewise fully adopted by the Supreme Court of the United States, when we came to know and feel the value of belligerent rights, by becoming a party to a maritime war. In the case of the *Commerce*, a neutral vessel, captured by one of our cruisers in the act of carrying provisions for the use of the British armies in Spain, the court held, that provisions, being neutral property, but the growth of the enemy's country, and destined for the supply of the enemy's military or naval force, were contraband. The court observed, that, by the modern law of nations, provisions were not generally contraband, but they might become so on account of the particular situation of the war, or on account of their destination. If destined for the ordinary use of life in the enemy's country they were not contraband, but it was otherwise if destined for the army or navy of the enemy, or for his ports of military or naval equipment. And if the provisions were the growth of the enemy's country, and destined for the enemy's use, they were to be treated as contraband, and liable to forfeiture, even though the army or navy were in a neutral port, for it would be a direct interposition in the war.

"This case followed the decisions of Sir William Scott, and carried the doctrine of contraband, as applied to provisions, to as great an extent. It held the voyage of the Swedish neutral so illegal as to deserve the infliction of the penalty of loss of freight.

"It was the *usus belli* which determined an article to be contraband; and as articles come into use as implements of war which were before innocent, there is truth in the remark that as the means of war vary and shift from time to time, the law of nations shifts with them; not indeed by the change of principles, but by a change in the application of them to new cases, and in order to meet the varying inventions of war. When goods are at once clearly shown to be contraband, confiscation to the captor is the natural consequence. This is the practice in all cases, as to the article itself, excepting provisions; and as to them when they become contraband, the ancient and strict right of forfeiture is softened down to a right of pre-emption on reasonable terms. But, generally, to stop contraband goods would, as Vattel observes, prove an ineffectual relief, especially at sea. The penalty of confiscation is applied, in order that the fear of loss might operate as a check on the avidity for gain, and deter the neutral merchant from supplying the enemy with contraband articles. The ancient practice was, to seize the contraband goods, and keep them on paying the value. But the modern practice of confiscation is far more agreeable to the mutual duties of nations, and more adapted to the preservation of their rights. It is a general understanding, grounded on true principles, that the powers at war may seize and confiscate all contraband goods, without any complaint on the part of the neutral merchant, and without any imputation of a breach of neutrality in the neutral sovereign himself. It was contended on the part of the French nation in 1796, that neutral governments were bound to restrain their subjects from selling or exporting articles contraband of war to the belligerent powers. But it was successfully shown on the part of the United States, that neutrals may lawfully sell, at home, to a belligerent purchaser, or carry, themselves, to the belligerent powers, contraband articles subject to the right of seizure, *in transitu*. This right has since been explicitly declared by the judicial authorities of this country. The right of the neutral to transport, and of the hostile power to seize, are conflicting rights, and neither party can charge the other with a criminal act."—KENT'S *Commentaries*, Lect. VIII.

Contraband articles are said to be of an *infectious* nature, and they *contaminate* the whole cargo belonging to the same owners. By the ancient laws of Europe, the ship also was liable to condemnation when captured. But the modern view, since Grotius, is milder, and latterly the ship is liable to confiscation, and when fraud is detected, the innocent portions of the cargo are also liable.

By the ancient law of Europe, a ship conveying any contraband article was liable to confiscation as well as the article. But in the modern practice of the courts of admiralty of this and other countries, a milder rule has been adopted, and the carriage of contraband articles is attended only with the loss of freight and expenses, unless when the ship belongs to the owner of the contraband cargo, or when the simple misconduct of conveying such a cargo has been connected with other malignant and aggravating circumstances. Of these a false destination and false papers are justly held to be the worst.—(5 ROBINSON'S *Admiralty Reports*, 275.) The right of visitation and search is a right inherent in all belligerents; for it would be absurd to allege that they had a right to prevent the conveyance of contraband goods to an enemy, and to deny them the use of the only means by which they can give effect to such right.—(VATTEL, book iii. c. 7. § 114.) The object of the search is two-fold: *first*, to ascertain whether the ship is neutral or an enemy, for the circumstance of its hoisting a neutral flag affords no security that it is really such; and, *secondly*, to ascertain whether it has contraband articles, or enemies' property, on board. All neutral ships that would navigate securely during war must, consequently, be provided with passports from their government, and with all the papers or documents necessary to prove the property of the ship and cargo; and they must carefully avoid taking any contraband articles or belligerent property on board; and hence, as Lampredi has observed, a merchant ship which seeks to avoid a search by crowding sail, or by open force, may justly be captured and subjected to confiscation.

It has, indeed, been often contended that *free ships make free goods* (*que le pavillon couvre la marchandise*), and that a belligerent is not warranted in seizing the property of an enemy in a neutral ship, unless it be

contraband. The discussion of this important question would lead us into details which do not properly come within the scope of this work. We may, however, shortly observe, that no such privilege could be conceded to neutrals, without taking from belligerents the right, inseparable from a state of war, of seizing an enemy's property if found in places where hostilities may be lawfully carried on, as on the high seas. In fact, were the principle in question admitted, the commerce of a belligerent power with its colonies, or other countries beyond the sea, might be prosecuted in neutral ships, with as much security during war as in peace; so that neutrals would, in this way, be authorized to render a belligerent more important assistance than, perhaps, they could have done had they supplied him with troops and ammunition! But it is surely unnecessary to say, that to act in this way is a proceeding altogether at variance with the idea of neutrality. Neutrals are bound to conduct themselves in the *spirit of impartiality*, and must not afford such aid or assistance to one party as may be better enable him to make head against the other. It is their duty "*non interponere se bello, non hoste imminente hostem cripere.*" And yet it is manifest that the lending of neutral bottoms to carry on a belligerent's trade is in direct contradiction to this rule. The ships or cruisers of a particular power may have swept those of its enemy from the sea, and reduced him to a state of great difficulty, by putting a stop to his commerce with foreigners, or with his own colonies; but of what consequence would this be if neutrals might step in to rescue him from such difficulties, by carrying on that intercourse for him which he can no longer carry on for himself? It is natural enough that such a privilege should be coveted by neutrals; but, however advantageous to them, it is wholly subversive of the universally admitted rights of belligerent powers, as well as of the principles of neutrality; and can not, therefore, be truly said to be bottomed on any sound principle.

In the war of 1756, the rule was laid down by Great Britain, that neutrals are not to be allowed to carry on a trade during war that they were excluded from during peace; so that, supposing a nation at war with Great Britain had, while at peace, prohibited foreigners from engaging in her colonial or coasting trade, neutrals would not have been permitted to engage in it during war. This rule has been much complained of; but the principle on which it is founded seems a sound one, and it may in most cases be safely adopted. The claims of neutrals can not surely be carried farther than that they should be allowed to carry on their trade during war as they had been *accustomed* to carry it on during peace, except with places under blockade; but it is quite a different thing when they claim to be allowed to employ themselves during war in a trade in which they had not previously any right to engage. To grant them this, would not be to preserve to them their former rights, but to give them new ones which may be fairly withheld. Supposing, however, that either of the belligerent powers has *force sufficient to prevent any intercourse between the other and its colonies, or any intercourse between different ports of the other*, she might, in the exercise of the legitimate rights of a belligerent, exclude neutrals from such trade, even though it had formerly been open to them; because otherwise she would be deprived of the advantage of her superior force; and the neutrals would, in fact, when employed in this way, be acting as the most efficient allies of her enemy.

For a full discussion of this important and difficult question, and of the various distinctions to which it gives rise, see the work of Hubner (*De la Saisie des Bâtimens Neutres*, 2 tomes, 12mo, 1757), in which the different arguments in favor of the principle that "the flag covers the cargo," are stated with great perspicuity and talent. The opposite principle has been advocated by Lampredi, in his very able treatise *Del Commercio de' Popoli Neutrali*, § 10; by Lord Liverpool, in his *Discourse on the Conduct of Great Britain in respect to Neutrals*, written in 1757; and, above all, by Lord Stowell, in his justly celebrated decisions in the Admiralty Court; and KENT's *Commentaries*, Lect. III. Martens inclines to Hubner's opinion.—See *Précis du Droit des Gens*, liv. viii. c. 7.

Contracts. An executory contract is an agreement of two or more persons, upon sufficient consideration, to do or not to do a particular thing. The agreement is either under seal or not under seal. If under seal, it is denominated a speciality, and if not under a seal, an agreement by parol; and the latter includes equally verbal and written contracts not under seal. The agreement conveys an interest either in possession or in action. If, for instance, one person sells and delivers goods to another for a price paid, the agreement is executed, and becomes complete and absolute; but if the vendor agrees to sell and deliver at a future time, and for a stipulated price, and the other party to accept and pay, the contract is executory, and rests in action merely. There are also express and implied contracts. The former exists when the parties contract in express words, or by writing; and the latter are those contracts which the law raises or presumes, by reason of some value or service rendered, and because common justice requires it.

Every contract, valid in law, is made between *parties* having sufficient understanding and age and freedom of will, and of the exercise of it, for the *given case*. If the contract be entered into by means of violence offered to the will, or under the influence of undue constraint, the party may avoid it by the plea of duress; and it is requisite to the validity of every agreement, that it be the result of free and *bona fide* exercise of the will. Nor will a contract be valid if obtained by misrepresentation or concealment, or if it be founded in mistake as to the subject matter of the contract. A contract, valid by the law of the place where it is made, is generally speaking valid every where, *jure gentium*, and by tacit consent.

The *lex loci contractus* controls the nature, construction, and validity of the contract; and on this broad foundation the law of contracts, founded on necessity and commercial convenience, is said to have been originally established. If the rule were otherwise, the citizens of one country could not safely contract, or carry on commerce in the territories of another. The necessary intercourse of mankind requires that the acts of parties, valid where made, should be recognized in other countries, provided they be not contrary to good morals, nor repugnant to the policy and positive institutions of the state. Parties are presumed to contract in reference to the laws of the country in which the contract is made, and where it is to be paid, unless otherwise expressed. But if a contract be made under one government, and is to be performed under another, and the parties had in view the laws of such other country in reference to the execution of the contract, the general rule is, that the contract, in respect to its construction and force, is to be governed by the law of the country or state in which it is to be executed; the foreign law is in such cases adopted and effect given to it. Thus, the days of grace allowed upon bills of exchange are to be completed according to the usage of the place in which they are to be paid, and not of the place in which they are drawn, for that is presumed to have been the intention of the parties.

It is essential to the validity of a contract that it be founded on a sufficient consideration. It was an early principle of the common law, that a mere voluntary act of courtesy would not uphold an assumpsit, but a courtesy shown by a previous request would support it. There must be something given in exchange, something that is mutual, or something which is the inducement to the contract, and it must be a thing which is lawful and competent in value to sustain the

assumption. The rule, that a consideration is necessary to the validity of a contract, applies to all contracts and agreements not under seal, with the exception of bills of exchange and negotiable notes after they have been negotiated and passed into the hands of an innocent indorsee. The immediate parties to a bill or note are affected by the want of consideration, and it is only as to third persons, who come to the possession of the paper in the usual course of trade, without notice of the original defect, that the want of consideration can not be alleged.

Of the Contract of Sale.—A sale is a contract for the transfer of property from one person to another, for a valuable consideration; and three things are requisite to its validity, viz.: the thing sold, which is the object of the contract, the price, and the consent of the contracting parties. The thing sold must have an actual or potential existence, and be specific or identified, and capable of delivery, otherwise it is not strictly a contract of sale, but a special or executory agreement. If the subject matter be in existence, and only constructively in the possession of the seller, as by being in the possession of his agent or carrier abroad, it is nevertheless a sale, though a conditional or imperfect one depending on the future actual delivery. But if the article intended to be sold has no existence, there can be no contract of sale. Thus if A sells his horse to B, and it turns out that the horse was dead at the time, though the fact was unknown to the parties, the contract is necessarily void.

The price is an essential ingredient in the contract of sale; and it must be real and not merely nominal, and fixed, or be susceptible of being ascertained in the mode prescribed by the contract, without further negotiation between the parties. Mutual consent is requisite to the creation of the contract; and it becomes binding when a proposition is made on one side and accepted on the other; and on the other hand, it is no contract if there be an error or mistake of a fact, or in circumstances going to the essence of it. In creating the contract the negotiation may be carried on by mail; and the contract is complete when the answer is sent with all due diligence after the receipt of proposal, and is out of the control of the party accepting.

In every sale of a chattel, if the possession be at the time in another, and there be no warranty of title, the party buys at his peril. But if the seller has possession, and he sells as his own and not as agent for another, and for a fair price, he is understood to warrant the title. With regard to the quality, the seller is not bound to answer unless he expressly warrants, or unless he has made a false representation or concealment. The common law requires the purchaser to attend to the qualities of the article he buys, which are supposed to be within the reach of his observation and judgment, and which it is equally his interest and duty to exert.

When the goods are discovered to be unsound the purchaser ought immediately to give notice or return them, and thereby rescind the contract. In the case of breach of warranty, he may sue upon it without returning the goods; but he must return them and rescind the contract before he can maintain an action to recover the price. He can not deal with the goods after discovery of fraud in a sale, without losing his right of action.

If there be intentional concealment or suppression of material facts in the making of a contract, in cases where both parties have not equal access for information, it will be deemed unfair dealing, and will vitiate the contract.

When the bargain is completed, by the terms of sale being agreed upon, the contract becomes binding between the parties and without actual delivery of goods, and the property is at the risk of the buyer; and he is entitled to the goods on payment of price when no conditions have been made. Special conditions may be made as to risk, time of delivery, credit, &c. In the first instance to make the contract valid, there must be a delivery or tender of payment, or earnest given, or a memorandum in writing signed by the purchaser. When goods are to be delivered, delivery to an agent, carrier, or master of a vessel is equivalent to delivery to purchaser. The delivery to agent or carrier must be such as to create responsibility in that agent or carrier, and if insurance is the usage it ought to be done, and also the buyer informed, with diligence, of consignment and delivery. Symbolical delivery will, in many cases, be sufficient, such as transfer of key of warehouse from seller to buyer, or putting private mark by buyer upon the goods. Unless time and place are specified, the common rule is cash payment and place where they are at time of sale.—KENT'S *Commentaries*, Lect. XXXIX.

Convoy, in navigation, the term applied to designate a ship or ships of war, appointed by government, or by the commander-in-chief on a particular station, to escort or protect the merchant ships proceeding to certain ports. Convoys are mostly appointed during war; but they are sometimes also appointed during peace, for the security of ships navigating seas infested with pirates.

Individuals have not always been left to themselves to judge as to the expediency of sailing with or without convoy. The governments of most maritime states have thought proper, when they were engaged in hostilities, to oblige their subjects to place themselves under an escort of this sort, that the enemy might not be enriched by their capture. Acts to this effect were passed in Great Britain during the American war and the last French war. The last of these acts (43 Geo. III. c. 57) enacted, that it should not be lawful for any ship belonging to any of his majesty's subjects (except as therein provided) to depart from any port or place whatever, unless under such convoy as should be appointed for that purpose. The master was required to use his utmost endeavors to continue with the convoy during the whole voyage, or such part thereof as it should be directed to accompany his ship; and not to separate therefrom without leave of the commander, under very heavy pecuniary penalties. And in case of any ship departing without convoy contrary to the act, or willfully separating therefrom, all insurances on the ship, cargo, or freight, belonging to the master, or to any other person directing or privy to such departure or separation, were rendered null and void. The customs officers were directed not to allow any ship that ought to sail with convoy to clear out from any place in the United Kingdom for foreign parts, without requiring from the master bond with one surety, with condition that the ship should not depart without convoy, nor afterward desert or willfully separate from it. The regulations of this act did not extend to ships not requiring to be registered, nor to those licensed to sail without convoy, nor to those engaged in the coasting trade, nor to those belonging to the East India Company, etc.

It is very common, during periods of war, to make *sailing or departing with convoy* a condition in policies of insurance. This, like other warranties in a policy, must be *strictly* performed. And if a ship warranted to sail with convoy, sail without it, the policy becomes void, whether this be imputable to any negligence on the part of the insured, or the refusal of government to appoint a convoy.

There are five things essential to sailing with convoy, viz.: *first*, it must be with a regular convoy under an officer appointed by government; *secondly*, it must be from the place of rendezvous appointed by government; *thirdly*, it must be a convoy for the voyage; *fourthly*, the master of the ship must have sailing instructions from the commanding officer of the convoy; and *fifthly*, the ship must depart and continue with the convoy till the end of the voyage, unless separated by necessity.

With respect to the third of these conditions we may observe, that a warranty to sail with convoy generally means a convoy *for the voyage;* and it is not necessary to add the words "for the voyage" to make it so. Neither will the adding of these words in some instances make the omission of them in any case the ground of a different construction. A warranty to sail with convoy does not, however, uniformly mean a convoy that is to accompany the ship insured the entire way from the port of departure to her port of destination; but such convoy as government may think fit to appoint as a sufficient protection for ships going the voyage insured, whether it be for the whole or only a part of the voyage.

Sailing instructions, referred to in the fourth condition, are written or printed directions delivered by the commanding officer of the convoy to the several masters of the ships under his care, that they may understand and answer signals, and know the place of rendezvous appointed for the fleet in case of dispersion by storm, or by an enemy, etc. These sailing instructions are so very indispensable, that no vessel can have the full protection and benefit of the convoy without them; hence, when, through the negligence of the master, they are not obtained, the ship is not said to have sailed with convoy; and a warranty in a policy of insurance to that effect is held not to be complied with. If, however, the master do all in his power to obtain sailing instructions, but is prevented from obtaining them by any insuperable obstacle, as the badness of the weather, or if they be refused by the commander of the convoy, the warranty in the policy is held to be complied with.

For further information as to convoy, see ABBOT *on the Law of Shipping*, part iii. c. 3; MARSHALL *on Insurance*, book i. c. 9 § 5.

Cook, Captain James. This celebrated navigator was born at Marton, near Stockton-on-Tees, October 27, 1728, and was originally apprenticed to a merchant in Yorkshire; but having a strong predilection for a sailor's life, he succeeded in obtaining his discharge, and immediately entered into new indentures with some coal shippers in the same county. In their employ he became a good seaman, and was promoted to mate, but subsequently entered the British navy as volunteer. In 1755 he was appointed to the mastership of a sloop, and joined the fleet operating against the French, in the St. Lawrence. His judgment, bravery, and great skill in conducting hydrographic surveys, gained for him a lasting reputation and increasing honors; and in 1761 he was appointed marine surveyor of Newfoundland and Labrador. In 1767, on the recommendation of the Royal Society, he was sent to the South Pacific to observe the approaching transit of Venus, and was accompanied by Messrs. Green, Solander, and [afterward Sir Joseph] Banks. All the phenomena were successfully observed at Otaheite, June 3, 1769. Cook then sailed in quest of the supposed southern continent, circumnavigating New Zealand, and after other scientific observations he crossed to Batavia, and thence returned to England in the summer of 1771, and was promoted shortly after. In July, 1772, he commenced his second voyage, which lasted three years, when he was raised to a post-captaincy, with a lucrative appointment in Greenwich Hospital. In 1776 he volunteered to lead the scientific expedition to determine the problem of a northwest passage between the Atlantic and Pacific oceans, and running from the Cape to New Zealand, and thence through the Pacific, he discovered the Sandwich Islands, which he left for further observations, returning, however, to winter at Owyhee. An unfortunate misunderstanding between some of his people and the natives terminated in a fray, in which Cook was killed, after a desperate resistance, February 14, 1779.

Cooperage. This art must be coeval with the dawn of history, and seems to have been early known in every country. The coopers of London were incorporated in 1501.

Copal, a resin which exudes spontaneously from two trees, the *Rhus copallinum*, and the *Elæocarpus copalifer*, the first of which grows in America, and the second in the East Indies. A third species of copal-tree grows on the coasts of Guinea, especially on the banks of some rivers, among whose sands the resin is found. It occurs in lumps of various sizes and of various shades of color, from the palest greenish yellow to darkish brown. Its specific gravity is found to vary in different specimens from 1·059 to 1·071, being intermediate in density between its two kindred resins, animé and amber. Some rate its specific gravity so high as 1·139, which is probably one of the errors with which chemical compilations teem. Copal is too hard to be scratched by the nail, whence the excellence of its varnish. It has a conchoidal fracture, and is without smell or taste. When exposed to heat in a glass retort over a spirit lamp, it readily melts into a liquid, which being further heated boils with explosive jets. A viscid, oily-looking matter then distills over. After continuing the process for some time, no succinic acid is found in the receiver, but the copal blackens in the retort. Anhydrous alcohol boiled upon it causes it to swell, and transforms it by degrees into an elastic, viscid substance. It is not soluble in alcohol of 0·825 at the boiling point, according to experiment. Copal dissolves in ether, and this ethereous solution may be mixed with alcohol without decomposition. Caoutchoucine acts very slightly upon it by an experiment, even at the boiling temperature of this very volatile fluid; but a mixture of it with alcohol of 0·825, in equal parts, dissolves it very rapidly in the cold into a perfectly liquid varnish. Alcohol holding camphor in solution also dissolves it, but not nearly so well as the last solvent. According to Unverdorben, copal may be completely dissolved by digesting one part of it for 24 hours with one part and a half of alcohol (probably anhydrous), because that portion of copal which is insoluble in alcohol dissolves in a very concentrated solution of the soluble portion. Oil of petroleum and turpentine dissolve only one or two per cent. of raw copal. By particular management, indeed, oil of turpentine may be combined with copal.

Fused copal possesses different properties from the substance in its solid state; for it then may be made to combine both with alcohol and oil of turpentine.

Unverdorben has extracted from the copal of Africa five different kinds of resin, none of which has, however, been applied to any use in the arts.

The ultimate constituents of copal by an analysis are, carbon 79·87, hydrogen 9·09, oxygen 11·1; being of hydrogen 7·6 in excess above the quantity necessary to form water with the oxygen.

Much information has been received from various sources concerning this somewhat ill-understood product of late years. It is now known that there are three different kinds of copal in commerce, but nothing is known of their distinguishing characteristics. We have East Indian and West Indian copal, and, under the latter name, two very different substances. The East Indian, called also African, is more colorless, soft, and transparent than the others; it forms a fine surface, and when heated emits an agreeable odor. It furnishes the finest varnish. Fresh essence of turpentine dissolves it completely, but not old. Essence digested upon sulphur will dissolve double its own weight, without letting any fall. Fresh rectified oil of rosemary will dissolve it in any proportion, but if the oil is thickened by age it serves only to swell this copal.

When cautiously melted, it may be then dissolved in good essence of turpentine in any proportion, producing a fine varnish, of little color.

A good varnish may be made by dissolving one part of copal, one of essence of rosemary, with from two to three of pure alcohol. This varnish should be

applied hot, and when cold becomes very hard and durable.

The West India species, or American, comes, not in lumps of a globular form, but in small flat fragments, which are hard, rough, and without taste or smell. It is usually yellow, and never colorless like the other. Insects are very rarely found in it. It is also found in the Antilles, Mexico, and North America. It will not dissolve in essence of rosemary.

The third kind of copal, known also as West Indian, was formerly sold as a product of the East Indies. It is found in fragments of a concavo-convex form, the outer covering of which appears to have been removed. It contains many insects. When rubbed it emits an aromatic odor. It gives out much ethereous and empyreumatic oil when melted. It forms a soft varnish, which dries slowly.

Fusel oil, or amyle spirit, has been lately used as a solvent of the hard copal; but it does not dry into a very solid varnish.

Copal varnish was first discovered in France, and was long known by the name of *vernis martin*. It is applied to snuff-boxes, tea-boards, and other utensils. It preserves and gives lustre to paintings; and contributes to restore the decayed colors of old pictures, by filling up cracks, and rendering the surface capable of reflecting light more uniformly. Copal is liable to be confounded with *gum animé*, when the latter is very clear and good. But it is of importance to distinguish between them, as the animé, though valuable as a varnish, is much less so than the finest copal; the varnish with the former being darker colored, and not so hard. Besides the external appearance of each, which is pretty distinct to a practiced eye, the solubility in alcohol furnishes a useful test, the animé being readily soluble in this fluid, while the copal is hardly affected by it; copal is also brittle between the teeth, whereas animé softens in the mouth.—Rees' *Cyclopedia;* Ure's *Dictionary, etc.*

Copeck (kopeika), a Russian copper coin, so called from the impression of St. George bearing a lance. A hundred of them make one ruble. The value of the copper coin, compared with the assignation-ruble, varies in the different governments.

Copenhagen, the capital of Denmark, on the east coast of the island of Zealand, in the channel of the Baltic called the Sound; lat. 55° 41′ 4″ N., long. 12° 35′ 46″ E. Population, in 1845, 126,787. It is a well-built, handsome city. In going into Copenhagen, the course is between the buoy on the Stubben Bank to the left, and the buoy on the Middle-grounds, and those in advance of the three Crown batteries on the right, west-southwest by compass. From the three Crowns to the roads the course is south-southwest. The water in the channel is from six to four fathoms deep; but it is narrow, and the navigation rather difficult. There is no obligation to take a pilot on board; but if a vessel wish for one, she may heave to abreast of the battery, when he will come to her. Vessels not intending to come into harbor bring up in the roads, at from a quarter to half a mile from shore, in about four fathoms, the town bearing south-southwest. In the harbor, within the boom, the water is from 17 to 18 feet deep. Vessels in harbor load and unload alongside the quay. The anchorage in the roads is good and safe.

Money.—Accounts are kept in rix dollars of 6 marcs, or 96 skillings; the rix dollar being formerly worth about 4*s.* 1*d.* sterling. But in 1813, a new monetary system was adopted, according to which the new or *Rigsbank* dollar is worth 2*s.* 3½*d.*, being half the value of the old specie dollar, and ⅔ of the old current dollar. But the money generally used in commercial transactions is bank money, which is commonly at a heavy discount. The *par* of exchange, estimated by the Rigsbank dollar, would be 8 dollars 7·6 skillings per pound sterling.

Weights and Measures.—The commercial weights are, 16 pounds = 1 lispound; 20 lispound = 1 shippound; 100 lbs. = 110½ lbs. avoirdupois = 134 lbs. Troy = 101 lbs. of Amsterdam = 103 lbs. of Hamburg.

The liquid measures are, 4 ankers = 1 ahm or ohm; 1½ ahm = 1 hogshead; 2 hogsheads = 1 pipe; 2 pipes = 1 quarter. The anker = 10 (very nearly) English wine gallons. A *fuder* of wine = 930 pots; and 100 pots = 25½ wine gallons.

The dry measures are, 4 viertels = 1 scheffel; 8 scheffels = 1 toende or ton; 12 tons = 1 last = 47½ Winchester bushels. The last of oil, butter, herrings, and other oily substances should weigh 224 lbs. net.

The measure of length is the Rhineland foot = 12½ inches very nearly. The Danish ell = 2 feet; 100 ells = 68⅔ English yards.

Trade of Copenhagen.—The trade of Copenhagen has latterly increased considerably, particularly the grain trade with England. At the commencement of 1852, 297 merchant vessels of about 35,000 tons burden belonged to the port. The harbor is large and commodious, capable of containing 500 merchant vessels besides the navy; and by the aid of canals, large vessels can come almost to the centre of the town. The entrance is commanded by the powerful batteries of Trekroner and Sextus. The principal imports are timber, pitch, and tar, chiefly from Norway and Sweden; flax, hemp, masts, sailcloth, and cordage, from Russia; tobacco from America; wines and brandy from France; coal, earthenware, iron, steel, and salt from England; and West India produce. The principal exports are corn, rape-seed, butter, cheese, beef, pork, horses, cattle, wool, hides, skins, bones, grain-spirits.

The manufactures of Copenhagen are not important, but are making considerable advances. There are extensive cloth and calico factories, founderies, and iron-works; also breweries, distilleries, tanneries, sugar-refineries, etc. Piano-fortes, clocks, watches, surgical and mathematical instruments, tobacco, chocolate, porcelain are among its other productions. The royal China factory is celebrated for its models of Thorwaldsen's works in biscuit China. The population of Copenhagen was in 1769, 92,571; in 1801, 100,975; in 1834, 119,292; in 1840, 120,819; in 1845, 126,787; and in 1855, 143,591; of which last about 67,000 were males, and over 76,000 females, including a Jewish population of 2500. The climate is damp, changeable, and unhealthy; which, added to the almost total want of sanatory regulations, renders the mortality greater here, it is said, than in any other town of Europe with the exception of Vienna.

The Port Charges at Copenhagen vary according as the vessel has come from this or the farther side of Cape Finisterre, or from the Indian seas; as she is wholly, or only part loaded; and as she clears out with goods that have been *in transitu*, and are for the most part free of duty, or has on board a cargo of native produce subject to duty. On a ship of 300 tons belonging to a privileged nation from this side Cape Finisterre, unloading and loading mixed cargoes in Copenhagen, the different public charges, including Sound dues, brokerage, &c., would exceed £60; and from the farther side of Cape Finisterre, the charges would be nearly £100. When a ship is not fully loaded, lastage money and light dues are only charged in proportion to the cargo on board. Lastage money is not charged on ships outward bound, laden with transit goods, as tar, pitch, iron, &c. But notwithstanding these deductions, it is obvious that port charges are very heavy, and there can be no doubt that they are a material obstacle to the extension of trade.

Citizenship.—To enable a foreigner to trade as a merchant in Denmark, he must become a burgher, which costs about £100, and it will require about £60 more to free him from the obligation of serving in the militia. The obstacles in the way of a foreigner establishing himself in Denmark as a manufacturer are much greater, on account of the exclusive privileges

enjoyed by the guilds or corporations into which the principal crafts or trades are divided.

Credit.—Goods imported into Copenhagen are commonly sold on credit; three months is the term generally allowed on most sorts of goods, and in a few instances six months. The discount for ready money is 4 per cent. Bankruptcy is of rare occurrence.

Insurance.—Marine insurance is effected, on liberal terms, by a company established in 1746. Many Copenhagen risks are, however, insured at Amsterdam and Hamburg. Copenhagen has good building yards, and is in all respects an eligible place for the repair of ships, and for supplying them with provisions.

General Remarks.—On the whole, the commerce of Denmark used to be in a stationary state; a consequence partly of the peculiar circumstances under which the country is placed, and partly of the policy of government. The latter long exerted itself to bolster up a manufacturing interest, by laying oppressive duties on most species of manufactured articles. Even under the most favorable circumstances, such conduct, though it may benefit a few individuals, is sure to be productive of great national loss. But in the case of Denmark, the circumstances were such as to render the restrictive system peculiarly injurious. All, or nearly all, the branches of industry carried on in the kingdom were subject to the government of guilds or corporations; no person could engage in any line of business until he was authorized by its peculiar guild; and as the sanction of this body was rarely obtained without a considerable sacrifice, the real effect of the system was to fetter competition and improvement, and to perpetuate monopoly and routine. Even the Danish writers acknowledge that such was the influence of the late regulations. "*Nos ouvriers*," say they, "*sont chers, travaillent lentement, et souvent mal et sans goût; leur éducation est négligée. On ne les forme point à penser, et l'apprentif suit machinalement ce qu'il voit faire au maître.*"—Catteau, *Tableau des Etats Danois*, tome ii. p. 260. But within the last few years this system has been quite changed. Industry has been emancipated from many troublesome regulations, and moderate duties have been substituted for prohibitions. But, however favorably situated in other respects, it would be idle to expect that a country without waterfalls, and without coal, should be able to manufacture cottons, woolens, etc., at so cheap a rate as they may be imported from others enjoying greater natural facilities for their production. The staple business of Denmark, her agricultural and rural economy, has been most materially improved of late years; and, as already seen, her exports of raw produce are now of great value and importance. The trade of the country suffers from the too great magnitude of the port dues and of the transit duties; and the Sound duties, being charged on native as well as foreign ships, operate as an inland duty on trade. Considerable improvements have, however, been effected in the commercial legislation of the country during the last dozen years, by the opening of the trade to the East and West Indies, and the abolition and reduction of other regulations and duties; and it may be fairly presumed that the benefits resulting from these measures will pave the way for the introduction of others of a similar character.—*See* Denmark.

Copper (Germ. *Kupfer*; Du. *Koper*; Da. *Kobber*; Sw. *Kopper*; Fr. *Cuivre*; It. *Rame*; Sp. *Cobre*; Port. *Cobre*; Russ. *Mjed, Krasnoi mjed*; Pol. *Miedz*; Lat. *Cuprum*; Arab. *Nehass*; Sans. *Tomro*), a well-known metal, so called from its having been first discovered, or at least, wrought to any extent, in the island of Cyprus. It is of a fine red color, and has a great deal of brilliancy. Its taste is styptic and nauseous; and the hands, when rubbed for some time on it, acquire a peculiar and disagreeable odor. It is harder than silver: its specific gravity varies according to its state, being, when quite pure, near 9·000. Its malleability is great; it may be hammered out into leaves so thin as to be blown about by the slightest breeze. Its ductility is also considerable. Its tenacity is so great, that a copper wire 0·078 of an inch in diameter is capable of supporting 302·26 lbs. avoirdupois without breaking. Its liability to oxydation from exposure to air or damp is its greatest defect. The rust with which it is then covered is known by the name of verdigris, and is one of the most active poisons.—Thomson's *Chemistry*.

It is one of the six primitive metals; its discovery is said to have preceded that of iron. We read in the Scriptures of two vessels of fine copper, precious as gold.—*Ezra* viii. 27. The great divisibility of this metal almost exceeds belief; a grain of it dissolved in alkali, as pearl ashes, soda, etc., will give a sensible color to more than 500,000 times its weight in water; and when copper is in a state of fusion, if the least drop of water touch the melted ore, it will fly about like shot from a gun.—Boyle. The mine of Fahlun, in Sweden, is the most surprising artificial excavation in the world. In England, copper mines were discovered in 1561, and copper now forms an immense branch in the British trade.—Hayden.

If we except gold and silver, copper seems to have been more early known than any other metal. In the first ages of the world, before the method of working iron was discovered, copper was the principal ingredient in all domestic utensils and instruments of war. Even now it is applied to so many purposes, as to rank next, in point of utility, to iron.

Alloys of Copper are numerous and of great value. Those of tin are of most importance. Tin added to copper makes it more fusible, less liable to rust, or to be corroded by the air and other common substances, harder, denser, and more sonorous. In these respects the alloy has a real advantage over unmixed copper; but this is in many cases more than counterbalanced by the great brittleness which even a moderate portion of tin imparts; and which is a singular circumstance, considering that both metals are separately very malleable.

In a pure state, copper is a very brilliant metal, and susceptible of a high polish. It is of a fine red color, differing in this respect from every other metal except titanium. Its specific gravity varies, according to its density, from 8·581 to 8·9.

Copper alloyed with from 1 to 5 per cent. of tin is rendered harder than before; its color is yellow, with a cast of red, and its fracture granular; it has considerable malleability. This appears to have been the usual composition of many of the ancient edged tools and weapons, before the method of working iron was brought to perfection. The χαλκος of the Greeks, and perhaps the *æs* of the Romans, was nothing else. Even their copper coins contain a mixture of tin. The ancients did not, in fact, possess (as has been often contended) any peculiar process for hardening copper, except by adding a small quantity of tin. An alloy in which the tin is from 0·1 to one-eighth of the whole is hard, brittle, but still a little malleable, close grained, and yellowish white. When the tin is as much as one-sixth of the mass, it is entirely brittle; and continues so in every higher proportion. The yellowness of the alloy is not entirely lost till the tin amounts to 0·3 of the whole.

Copper (or sometimes copper with a little zinc), alloyed with as much tin as will make from about 0·1 to one-sixth of the whole, forms an alloy which is principally employed for bells, brass cannon, bronze statues, and various other purposes. Hence it is called *bronze or bell metal;* and is excellently fitted for the uses to which it is applied, by its hardness, density, sonorousness and fusibility. For cannon, a lower proportion of tin is commonly used. According to Dr. Watson, the metal employed at Woolwich consists of 100 parts of copper and from 8 to 12 of tin; hence it retains some little malleability, and, therefore, is tougher than it would be with a larger portion of tin. This alloy being more sonorous than iron, brass guns give a loud-

er report than iron guns. A common alloy for bell metal is 80 parts of copper and 20 of tin; some artists add to these ingredients zinc, antimony, and silver, in small proportions; all of which add to the sonorousness of the compound.—*See* BELL-METAL.

When in an alloy of copper and tin the latter metal amounts to about one-third of the mass, the result is a beautiful compound, very hard, of the color of steel, and susceptible of a very fine polish. It is well adapted for the reflection of light for optical purposes; and is therefore called *speculum metal*. Besides the above ingredients, it usually contains a little arsenic, zinc, or silver. The application of an alloy similar to the above to the construction of mirrors is of great antiquity, being mentioned by Pliny; who says, that formerly the best mirrors were reckoned those of Brundusium, of tin and copper mixed (*stanno et ære mistis*).—*Hist. Nat.* lib. xxxiii. § 9. *See* THOMSON'S *Chemistry*; REES' *Cyclopedia*; Dr. WATSON'S *Chemical Essays*, vol. iv., etc.

British Copper Trade.—Great Britain has various copper mines in Cornwall, Devonshire, Wales, etc., but particularly in the first. Though known long before, the Cornish copper mines were not wrought with much spirit till last century. From 1726 to 1735, they produced at an average about 700 tons a year of pure copper. During the ten years from 1766 to 1775, they produced at an average 2650 tons. In 1798, the produce exceeded 5000 tons; and it now amounts to from 11,000 to 12,500 tons, worth, at £100 a ton, from £1,100,000 to £1,250,000 sterling. In 1768, the famous mines in the Parys Mountains, near Amlwch, in Anglesea, were discovered. The supplies of ore furnished by them were for a long time abundant beyond all precedent; but for many years past the productiveness of the mine has been declining, and it is now almost exhausted. At present the mines of Anglesea, and other parts of Wales, do not furnish 200 tons of copper. Those of Devonshire yield nearly 2000 tons; the quantity produced in the other parts of England being quite inconsiderable. The Irish mines produce about 960 tons. Those of Scotland never were productive, and have been almost entirely abandoned. The entire produce of the copper mines of the empire may, therefore, be estimated at present at from 15,000 to 16,000 tons. In consequence of the greatly increased supplies of copper that were thus obtained, England, instead of being, as formerly, dependent on foreigners for the greater part of her supplies of this valuable metal, became, previously to 1793, one of the principal markets for the supply of others; and notwithstanding the vastly increased demand for copper during the war for the sheathing of ships and other purposes, the exports continued to increase and the imports to diminish; the greater productiveness of the Cornish mines having sufficed not only to balance the increased demand, but also to make up for the falling off in the supplies from Anglesea. Owing to the want of coal in Cornwall, the ores are not smelted on the spot, but are all sent to Swansea; it being found cheaper to carry the ores to the coal than the contrary. The East Indies and China, France, the United States, and Italy, are the great markets for British copper. Thus, in 1851, of the total quantity exported from Great Britain, amounting to 17,555 tons, 3603 went to the East Indies and China, 3183 to France; 3085 to the United States; 1396 to Italy; and 2113 to the Hanse towns and Holland.—*Parl. Paper*, No. 462; Session, 1852.

Foreign Copper.—Copper ores are abundant in Sweden, Russia, Japan, Australia, Cuba, Chili, Columbia, etc. Near Fahlun, in the province of Dalecaria, in Sweden, is the celebrated copper mine of the same name, supposed to have been wrought nearly one thousand years. For a long time it was extremely productive, yielding, toward the beginning of the seventeenth century, an annual produce of about 8,000,000 pounds of pure metal; but it has since greatly declined; and it is most probable that at no distant period it will be wholly abandoned.—THOMSON'S *Travels in Sweden*, p. 221. There are copper mines in other parts of Sweden; but the entire produce of copper in that country does not at present exceed from 750 to 800 tons, of a quality inferior to that of England. The produce of the copper mines of Russia has been estimated at 290,000 poods or 4661 tons (English) a year.—TEGONORSKI, *Forces Productives de la Russie*, i. 300. The copper mines of Japan are said to be among the richest in the world. The Dutch and Chinese export considerable quantities of their produce, which is spread all over the East, and is regularly quoted in the prices current of Canton, Calcutta, and Singapore. It is uniformly met with in the shape of bars or ingots; and when the copper of South America is worth in the Canton market from $15 to $16 per picul, that of Japan is worth from $18 to $20 per picul. Copper, the produce of the Persian mines, is imported into Bombay and Calcutta from Bushire and Bussorah. But, in a commercial point of view, the copper mines of the United States, Cuba, Chili, and Australia are, after those of England, by far the most important. The working of the mines of Cuba, which had been abandoned for a lengthened period, was resumed a few years ago, principally by an English company, which has been eminently successful. Large quantities of Cuba ore are taken to Swansea to be smelted; and large quantities of Chili ore are also taken there for the same purpose. Of the total imports of copper ore in 1851, amounting (including *regulus*) to 42,131 tons, Cuba furnished 20,875 tons; Chili, 8051 tons; and Australia, 7219 tons; the rest being supplied by Spain, Peru, etc. There was a very extraordinary increase in the supplies of copper from Australia during the four or five years preceding the discovery of the gold fields. The produce of the Burra Burra Mine, for example, which in 1846 was 6359½ tons of ore, had swelled in 1850 to 18,692 tons. But since then some of the mines have been abandoned, and the progress of the others checked. Foreign copper imported into Great Britain, and the copper obtained from the smelting of foreign ore, were, previously to 1842, wholly, or almost wholly, re-exported; the duty in Great Britain on the copper ore when it was taken or smelted for home use being so very heavy as to make it be altogether exported in an unwrought state. But in 1842 that duty on copper ores and unwrought copper was very materially reduced; and it was repealed in the course of the year 1853. The presumption, therefore, is, that the imports into Great Britain of ore for smelting will increase, and that considerable quantities of copper derived from foreign ores will be brought into use.

EXPORTS OF BRITISH COPPER IN THE UNDERMENTIONED YEARS.

Years.	Unwrought.	Coin.	Sheets, Nails, etc.	Wire.	Wrought Copper of other Sorts.	Total of British Copper exported.
	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.
1820	41,195	10	58,121	8	22,663	121,958
1825	10	2134	51,427	40	25,002	78,624
1830	56,722	640	66,331	16	56,443	183,154
1835	39,409	....	100,807	49	20,219	161,524
1840	20,255	391	119,266	89	10,427	150,478
1845	195,727	618	154,859	83	9,493	360,781
1850	154,678	148	263,007	357	7,962	426,153
1851	112,245	1510	221,013	715	15,628	351,111
1852	118,266	957	201,887	2424	15,187	338,721

Copper is in extensive demand all over India, being largely used in the dock-yards, in the manufacture of cooking utensils, in alloying spelter and tin, etc. The funeral of every Hindoo brings an accession to the demand, according to his station; the relatives of the deceased giving a brass cup to every Brahmin present at the ceremony: so that five, ten, fifty, one hundred, one thousand, and sometimes more than ten times this last number, are dispensed upon such occasions.—BELL's *Commerce of Bengal*.

A modern, and now a very extensive use of sheet-copper, is for the sheathing of ships. That part of the hull of a ship that is in the water is covered with sheet-copper. This covering preserves the wood from the attacks of the *teredo*, and thereby gives the ship the advantage of passing more rapidly through the water, as the copper bottom remains always smooth; for sea-weed and shells will not take root and attach themselves to copper, as they do to bare planks, owing to the galvanic effect produced by the action of sea-water. As this action, however, produces a rapid decay of copper, it was proposed by Sir Humphry Davy to neutralize it by applying metallic protectors—an object which is accomplished; but as this also deprived the copper of the effect it was intended to produce, and allowed the molluscous tribes to attach themselves, the protecting process was abandoned.

Copper boats are used for fastening the planks and timbers with copper bolts. This is a great improvement in ship-building. A copper-fastened ship or boat is preferable to one with iron fastenings, because the copper bolts remain unaltered by rust, and endure longer than the wood which they hold together, particularly when used in the state of alloy, which preserves it from waste by neutralizing the galvanic action. For the frames of delicate dipping needles and magnetic compasses, copper is employed, as it has been found that the brass generally used in philosophical instruments sometimes contains iron, which of course might affect the magnetic needle. Copper is drawn into wire, used for communication with the bells in houses, and for other purposes. Small pipes for conveying coal-gas from the level of the street to the aperture by which the gas issues were formerly made of copper or of brass, till superseded by tin. These pipes were fitted on an iron cylindrical mandril, and a cylindrical ring drawn over the outside. By this means copper and brass tubes are drawn out. The brass tubes for telescopes are drawn out in the same manner.

Copper may be plated; that is, its surface may be covered with a layer of silver, by rubbing the surface with a mixture of nitrate of silver, muriate of soda, and acidulous tartrate of potass (cream of tartar). But the method practiced at Birmingham is the most permanent and effectual. A plate of copper, with a plate of silver applied to it, and borax placed in the interstice, is heated to a particular degree, which it requires the skill of a workman to know—a degree of heat, in short, near that at which copper and silver melt. The two metals thus heated, and in contact, are then taken out of the furnace and passed through rollers. There is a fusion and combination of the adjacent surfaces; and their adhesion is perfected by the pressure of the rollers. Copper thus plated is manufactured at Birmingham into candlesticks, teapots, buttons, buckles, and a variety of other articles.

Standard silver coins contain a small proportion of copper, for the purpose of giving them hardness. This proportion is regulated by government in the several countries of Europe, and varies in different states. The combination of gold and copper in various proportions is used for making rings and other trinkets. Copper is gilded by applying on its surface an amalgam of gold with mercury. Bronze ornaments are gilded in the same way. Copper united with zinc forms brass; when alloyed with tin it forms bronze. This combination is hard and brittle if the proportion of tin be great; but when the proportion of tin is small, the bronze is soft, and possesses tenacity so as not to be easily broken. The ancients employed hard bronze, containing much tin, in making sword blades, spear heads, hatchets, and cutting instruments. Bronze cramps are found in ancient buildings in Egypt. Statues and bas-reliefs, culinary vessels, and a variety of other articles of soft bronze, are to be seen in different collections of antiquities. In modern times soft bronze is used for casting cannon and statues.

Copper melted with a large proportion of tin constitutes bell-metal, which is hard and brittle. The metal of which the Chinese gongs are made is composed of the same ingredients; and it has the property of being in some degree malleable at a certain stage of its cooling, for their gongs are covered with marks of the hammer. The most common ore of copper, from which the chief supplies of that metal are derived, is the yellow copper ore, or copper pyrites, essentially a combination of copper with sulphur and iron. There are, however, numerous other ores of copper in which the metal is in combination with oxygen, carbonic acid, various other metals, etc. Copper in its varied artificial combinations, as in that of verdegris (acetate of copper), blue vitriol (sulphate of copper), Scheele's green (arsenite of copper), verditer (carbonate of copper), etc., is largely used in the arts of dyeing, painting, enamelling, glass and porcelain coloring, etc. The salts of copper are poisonous; and from the facility with which copper utensils become oxydated, their use should be as restricted as possible. One or two of the salts of copper are occasionally used in medicine: and the sulphate of copper has been found to be one of the most efficacious emetics in croup, checking the disease and preventing the effusion of the fibrinous matter into the trachea. This salt is also used as a lotion in the treatment of ulcers, etc.

American Copper.—Although the copper-mining interest in this country is, as yet, in its infancy, it has already produced results that give promise of its soon standing among the foremost of our mineral products, and of adding greatly to the already diversified resources of wealth and power of our people. Previous to 1840 we were, in common with the rest of the world, entirely dependent upon England for our supply of this useful material.

We are this year, 1856, producing about 5000 tons of it, equal to one-seventeenth of the whole amount required to meet the demand of the world. The copper mines of Cornwall, England, have been worked for centuries, while those of our Lake Superior region have only been opened a few years, and not successfully and systematically worked until within the last five years. The opening of the Sault St. Marie canal, by connecting the navigation of Lake Superior with that of the chain of lower lakes, has given an impetus to the business that will soon make it the great source of supply of copper to our own and foreign countries on account of its great purity and the inexhaustible beds of its ore. Eighteen new stamping mills have been erected the past year, and at least fifty more will be put into operation this year. The total shipments of the Lake Superior copper mines are thus stated:

	Tons.
Ontonagon District	2176
Portage Lake District	[illegible]
Keweenaw Point District	[illegible]
Total	4765

The value of the copper on the wharves on Lake Superior equals $140 a ton; total product, $2,092,200. The increase of the year 1855 over 1854 was about 2000 tons, and it is estimated that in 1856–57, the increase will be 1500 tons over 1855. The government of France has had Mons. Rivot, of the School of Mines in France, examining the Lake Superior copper, in consequence of the supply from Russia being cut off; and the American copper has been tested and found equal, if not su-

perior to the Russian, and far superior to the English. The superior tenacity of the American copper is a strong recommendation.

Copper Busts and Statues.—These consist wholly of copper, in a thin sheet; and the whole of the metal has been reduced or precipitated from a liquid solution. We believe that the first example of this striking production was a bust of the late Dr. Dalton, made by Mr. Cheverton about ten years ago; and the practicability being thus demonstrated, the art may be now followed to any extent. The processes are curious. The bust is first modeled in some kind of clay, which may afterward easily be broken away piecemeal; and on this a thick copper film is deposited by the electro process. The clay core or model being broken away, the copper remains as a hollow shell, the inside of which has ta' en the exact impress (though reversed) of the outside of the bust. This copper shell, on being properly prepared on the inner surface, is made the groundwork on which a second deposition takes place; it is used, in fact, as a mould, from which one or more busts may be procured.

Architects and sculptors are gradually availing themselves of this art in the furtherance of their professional labors. The late Bavarian sculptor, Stiglmayer, who was employed by King Ludwig on so many important works at Munich, devised a mode of casting colossal plaster statues with copper, by the electro process, in a remarkably expeditious way. But one of the most important applications of the art is that which is exhibited in the new and splendid cathedral of St. Isaacs, at St. Petersburg, on which the emperor has expended large sums. Certain parts have been ornamented in a remarkable way. The cathedral has seven very large doors, or rather door-ways, three of which are 44 feet wide by 30 high; they are formed of bronze, but all the adornments are produced by the electro process. These adornments are of a most elaborate nature; they comprise no less than 51 bas-reliefs, 63 statues, and 84 alto-relievo busts. It is not simply as a matter of economy that the electro process has been adopted, for the czar is not a man to entertain scruples on such a point; but there are certain advantages of an artistic character. By the electro process the sculptor is sure to have his model faithfully copied; and the lightness of the material enables him to impart bolder relief to his designs than if they were cast in bronze; while this lightness of weight also justifies him in suspending pendants or bosses from vaulting, of a larger size than would be safe if made otherwise.

Copperas, a term employed by the older chemists, and popularly as synonymous with vitriol. There are three sorts of copperas: the *green*, or sulphate of iron; the *blue*, or sulphate of copper; and the *white*, or sulphate of zinc. Of these, the first is the most important. Sulphate of iron is distinguished in common by a variety of names, as Martial vitriol, English vitriol, etc. When pure it is considerably transparent, of a fine bright, though not very deep, grass green color; and of a nauseous, astringent taste, accompanied with a kind of sweetness. Its specific gravity is 1·834. It uniformly reddens the vegetable blues. This salt was well known to the ancients, and is mentioned by Pliny (*Hist. Nat.* lib. xxxiv. § 12) under the names of *misy*, *sory*, and *calchantum*. It is not made in the direct way, because it can be obtained at less charge from the decomposition of pyrites on a large scale in the neighborhood of collieries. It exists in two states, one containing oxyd of iron, with 0·22 of oxygen, which is of a pale green, not altered by gallic acid, and giving a white precipitate with prussiate of potass. The other, in which the iron is combined with 0·30 of oxygen, is red, not crystallizable, and gives a black precipitate with gallic acid, and a blue with prussiate of potass. In the common sulphate, these two are often mixed in various proportions.

Sulphate of iron is of great importance in the arts. It is a principal ingredient in dyeing; in the manufacture of ink, and of prussian blue; it is also used in tanning, painting, medicine, etc. Sulphuric acid, or oil of vitriol, was formerly manufactured from sulphate of iron.—*See* ACIDS.

Sulphate of copper, or *blue* vitriol, commonly called Roman or Cyprian vitriol, is of an elegant sapphire blue color, hard, compact and semi-transparent; when perfectly crystallized, of a flattish, rhomboidal, decahedral figure; its taste is extremely nauseous, styptic, and acrid; its specific gravity is 2·1943. It is used for various purposes in the arts, and also in medicine.

Sulphate of zinc, or *white* vitriol, is found native in the mines of Goslar and other places. Sometimes it is met with in transparent pieces, but more commonly in white efflorescences. These are dissolved in water, and crystallized into large irregular masses, somewhat resembling fine sugar, having a sweetish, nauseous, styptic taste. Its specific gravity, when crystallized, is 1·912; when in the state in which it commonly occurs in commerce, it is 1·3275. Sulphate of zinc is prepared in the large way from some varieties of the native sulphuret. The ore is roasted, wetted with water, and exposed to the air. The sulphur attracts oxygen, and is converted into sulphuric acid: and the metal, being at the same time oxydized, combines with the acid. After some time the sulphate is extracted by solution in water, and the solution being evaporated to dryness, the mass is run into moulds. Thus, the white vitriol of the shops generally contains a small portion of iron, and often of copper and lead.—LEWIS's *Mat. Medica*; URE's *Dictionary*; REES' *Cyclopedia*.

Copper Money. The Romans, prior to the reign of Servius Tullius, used rude pieces of copper for money. In England, copper money is of extensive coinage. That proposed by Sir Robert Cotton was brought into use in 1609. Copper was extensively coined in 1665. It was again coined by the crown, 23 Car. II. 1672. Private traders had made them previously to this act. In Ireland, copper was coined as early as 1339; in Scotland in 1406; in France in 1580. Wood's coinage in Ireland commenced in 1723. Penny and two-penny pieces were extensively issued in 1797. The half-farthing was coined in 1843.—*See* CENT.

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Coracle, a small kind of boat, constructed of wicker, and covered with leather, or with cloth made waterproof with oil or tar. From its extreme lightness it may be transported on the shoulders from place to place. Coracles are common in Wales. A similar kind of boat has been used in the East from remote antiquity.

Coral (Germ. *Korallen*; Du. *Koraalen*; Fr. *Corail*; It. *Corale*; Sp. and Port. *Coral*; Russ. *Koralli*; Lat. *Corallium*; Arab. *Besed*; Pers. *Merjan*; Hind. *Moonga*), a marine production, of which there are several varieties. It was well known to the ancients, but it was reserved for the moderns to discover its real nature. It is, in fact, the nidus or nest of a certain species of vermes, which has the same relation to coral that a snail has to its shell. As an ornament, black coral is most esteemed; but the red is also very highly prized. Coral is found in very great abundance in the Red Sea, the Persian Gulf, in various places in the Mediterranean, on the coast of Sumatra, etc. It grows on rocks, and on any solid submarine body; and it is necessary to its production that it should remain fixed to its place. It has generally a shrub-like appearance. In the Straits of Messina, where a great deal is fished up, it usually grows to nearly a foot in length, and its thickness is about that of the little finger. It requires eight or ten years to arrive at its greatest size. The depth at which it is obtained is various—from 10 to 100 fathoms or more; but it seems to be necessary to its production that the rays of the sun should readily penetrate to the place of its habitation. Its value depends upon its size, solidity, and the depth and bril-

liancy of its color, and is so very various, that while some of the Sicilian coral sells for eight or ten guineas an ounce, other descriptions of it will not fetch 1*s.* a pound. It is highly prized by opulent natives in India, as well as by the fair sex throughout Europe. The inferior or worm-eaten coral is used in some parts of the Madras coast, in the celebration of funeral rites. It is also used medicinally. Besides the fishery in the Straits of Messina already alluded to, there are valuable fisheries on the shores of Majorca and Minorca, and on the coast of Provence. A good deal of Mediterranean coral is exported to India, which, however, draws the largest portion of its supplies from the Persian Gulf. The produce of the fishery at Messina is stated by Spallanzani (*Travels in the Two Sicilies*, vol. iv.) to amount to 12 quintals of 250 lbs. each.

The manner of fishing coral is nearly the same everywhere. That which is most commonly practiced in the Mediterranean is as follows: seven or eight men go in a boat, commanded by the proprietor; the caster throws his net, if we may so call the machine which he uses to tear up the coral from the bottom of the sea; and the rest work the boat, and help to draw in the net. This is composed of two beams of wood tied crosswise, with leads fixed to them to sink them; to these beams is fastened a quantity of hemp, twisted loosely round, and intermingled with some loose netting. In this condition the machine is let down into the sea; and when the coral is pretty strongly entwined in the hemp and nets, they draw it up with a rope, which they unwind according to the depth, and which it sometimes requires half a dozen boats to draw. If this rope happens to break, the fishermen run the hazard of being lost. Before the fishers go to sea, they agree for the price of the coral: and the produce of the fishery is divided, at the end of the season, into thirteen parts; of which the proprietor has four, the caster two, and the other six men one each; the thirteenth belongs to the company for payment of boat-hire, etc. *See* AINSLIE'S *Materia Indica;* REES' *Cyclopedia; Encyclopedia Metropolitana;* BELL'S *Commerce of Bengal, etc.*

Cordage (Germ. *Tauwerk;* Du. *Touwewerk;* Fr. *Manœuvres, Cordage;* It. *Caolame;* Sp. *Jarcia, Cordaje*), a term used in general for all sorts of cord, whether small, middling, or great, made use of in the rigging of ships. The following table shows how many fathoms, feet, and inches, of a rope of any size, not exceeding 14 inches, make 1 cwt. At the top of the table, marked inches, fathoms, feet, inches, the first column is the circumference of a rope in inches and quarters; the second, the fathoms, feet, and inches that make up 1 cwt. of such a rope. One example will make it plain.

Suppose it is required how much of a 7-inch rope will make 1 cwt.; find 7 in the third column, under inches, or circumference of the rope, and immediately opposite to it you will find 9, 5, 6; which shows that in a rope of 7 inches there will be 9 fathoms 5 feet 6 inches required to make 1 cwt.

Inches.	Fathoms.	Feet.	Inches.	Inches.	Fathoms.	Feet.	Inches.	Inches.	Fathoms.	Feet.	Inches.
1	486	0	0	5¼	16	1	0	10	4	5	0
1¼	313	3	0	5¾	14	4	6	10¼	4	4	1
1½	216	3	0	6	13	3	0	10½	4	2	2
1¾	159	3	0	6¼	12	2	9	10¾	4	1	8
2	124	3	0	6½	11	3	0	11	4	0	3
2¼	96	2	0	6¾	10	4	0	11¼	3	5	7
2½	77	3	0	7	9	5	6	11½	3	4	1
2¾	65	4	0	7¼	9	1	6	11¾	3	3	3
3	54	0	0	7½	8	4	0	12	3	2	3
3¼	45	5	2	7¾	8	3	6	12¼	3	2	1
3½	39	3	0	8	7	3	0	12½	3	2	0
3¾	34	3	9	8¼	7	0	8	12¾	2	7	8
4	30	1	6	8½	6	4	3	13	2	5	3
4¼	26	5	8	8¾	6	2	1	13¼	2	4	9
4½	24	0	0	9	6	0	0	13½	2	4	0
4¾	21	3	0	9¼	5	4	0	13¾	2	3	6
5	19	3	0	9½	5	2	0	14	2	2	1
5¼	17	4	0	9¾	5	0	6				

—*See* CABLE.

Cordwainers or **Cordiners,** the term by which *shoemakers* are designated in the statutes. The word is formed from the French *cordonnier*, which Ménage derives from *cordouan*, a kind of leather brought from Cordova, and used for the upper leather of shoes. Others derive it from *corde*, rope, because shoes were anciently made of cords; as, indeed, they still are in some parts of Spain, under the name of *alpargates*. But the former etymology is evidently more proper.

Corea, a large peninsula of Asia, formed on one side by the Yellow Sea, and on the other by the Sea of Japan. It is situated immediately to the east of China; and its length may be estimated at 400 miles, by 150 in average breadth. A great part of what was formerly supposed to be its western coast was found by Captains Hall and Maxwell to consist of an immense archipelago of small islands, which have since been subdivided into several groups, and are known as Amherst's Islands, the Corean, and Hall's Archipelago. The largest of these is the island of Quelpaert, called by the natives Musa, in the centre of which there is a mountain peak about 6000 feet above the level of the sea. Though rocky and bare, these groups are for the most part inhabited. The peninsula itself is divided from the Japanese Island of Kiusiu by the Straits of Corea, and by a high mountain range called the Shanalin or Champeshan, from the country of the Mantchoos. It embraces an area of about 95,000 miles, with a population of about eight millions. The interior of the country is rugged and mountainous, being intersected by a lofty branch of the northern range, which in turn sends off numerous offshoots to the sea. The principal valleys lie toward the western and southern coasts, and these districts alone enjoy a temperate climate. The eastern coast is bleak and precipitous, while the northern frontier is cold and desolate, and thus subserves the purposes of despotism by cutting off all friendly communication with the main land. The principal products of the country comprise wheat, millet, rice, ginseng, tobacco, silk, cotton, and hemp. The three last are exported both in the raw and manufactured state. Timber and cattle are plentifully supplied from the forests and pasture-grounds, as well as furs from the northern jungles. Its mineral wealth is said to include gold, silver, iron, rock-salt, and coal; and from the tribute sent to the Emperor of China—consisting both of bullion and manufactured articles—the precious metals seem to be wrought to a considerable extent. The Coreans resemble the Japanese and Chinese in dress, habits, and religion, but are said to be as inferior to either of these in mental vigor as they are superior in strength and stature. Their mode of writing is alphabetic, and they are said to possess an extensive literature; but as all ingress into the country is denied to Europeans, and all egress to natives, little is known of these particulars. They keep up considerable commercial intercourse with China and Japan, whence they import pepper, aromatic woods, alum, and goods of Dutch manufacture; but most of the trade is managed by a circuitous overland route, and, being discouraged by the government, is carried on with secrecy and at considerable risk. The kingdom of Corea, although tributary to China, is governed at will by its own king—the Chinese emperor doing little more than formally ratifying his decrees. It is divided into eight provinces, and contains, according to Chinese accounts, 161 towns. The capital, King-ti-tao, stands on the river Kiang, a small stream which flows into the Yellow Sea. It is the residence of the king, and contains, among other things, an extensive library. In modern times a few French missionaries have penetrated into the country, but with little success.

Cork (Germ. *Kork;* Du. *Kork, Kurk, Vlothout;* Fr. *Liège;* It. *Sughero, Surero;* Sp. *Corcho;* Port. *Cortica (de Soreeiro);* Russ. *Korkowoe derewo;* Lat. *Suber*), the thick and spongy bark of a species of oak (*Quercus Su-*

ber, Linnæus) abundant in dry mountainous districts in the south of France, and in Spain, Portugal, Italy, and Barbary. The tree grows to the height of thirty feet or more, has a striking resemblance to the *Quercus ilex*, or evergreen oak, and attains to a great age. After arriving at a certain state of maturity, it periodically sheds its bark; but this valuable product is found to be of a much better quality when it is artificially removed from the tree, which may be effected without any injury to the latter. After a tree has attained to the age of from twenty-six to thirty years, it may be barked; and the operation may be subsequently repeated once every eight or ten years, the quality of the cork improving with the increasing age of the tree. The bark is taken off in July and August; and trees that are regularly stripped are said to live for one hundred and fifty years or more.—POIRET, *Hist. Philosophique des Plantes*, tome vii. 419. Cork is light, porous, readily compressible, and wonderfully elastic. It may be cut into any sort of figure, and notwithstanding its porosity, is nearly impervious to any common liquor. These qualities make it superior to all other substances for stoppers for bottles, in the manufacture of which it is principally made use of. It is also employed as buoys to float nets, in the construction of life-boats, the making of water-proof shoes, and in various other ways. Before being manufactured into stoppers, the cork is charred on each side; this makes it contract, lessens its porosity, and consequently fits it the better for cutting off all communication between the external air and the liquid in the bottle. Spanish black is made of calcined cork. The cork tree, and the uses to which the bark may be applied, were known to the Greeks and Romans. Pliny mentions that the Romans employed it to stop all kinds of vessels; but the use of it for this purpose does not appear to have been common till glass bottles came into general use, which, according to Beckmann, was not till the fifteenth century. Other vegetable productions have been sometimes employed instead of cork; as, for instance, the *spondias lutea*, a tree which grows in South America, particularly in moist places, and which is there called *monbin* or *monbain*. The roots of liquorice are applied to the same use, and on this account the plant is cultivated in Sclavonia, and exported. A tree called *nyssa*, which grows in North America, has been found also to afford a substitute for cork.

Considering it in a politic as well as in an economical sense, seasonable measures should be taken to form in the United States plantations of this tree, sufficient for the future supply of cork, particularly for the increasing demands for that material which are likely to arise from the culture of the vine. As a further argument in showing the importance of fostering this branch of rural economy, it may be stated, that the amount of cork which is yearly imported into the United States, is valued at more than $284,000.

Cork Jacket, an apparatus to buoy up the body in swimming. It consists of pieces of cork inclosed between two pieces of strong canvas, and is shaped so as to be worn like a jacket, but without arms. It is now almost quite superseded by the air belt made of waterproof cloth. The cork jacket appears to be a very old invention; for Plutarch, in his life of Camillus, mentions that the messenger sent by that general to his fellow-citizens when besieged in the capitol, made use of a cork jacket in swimming across the Tiber, the Gauls being in possession of the bridge.

Cork, a city, parliamentary borough, and river port of Ireland, capital of the county of Cork, and a county of itself, on the Lee, eleven miles above the entrance of Cork Harbor, and 137 miles southwest of Dublin. Area of city, 48,006 acres; of the municipality, 2683 acres. Population of county and city, or barony, 106,055; of municipal borough (1851), 84,114. The city proper is built on an island formed by the Lee. Principal manufactures are of leather, iron, and other metallic goods, glass, gloves, and paper, and there are some extensive breweries and distilleries; the woolen and cotton manufactures, formerly extensive, are now all but extinct. The trade is extensive, the exports consist of corn, flour, butter, and other Irish produce; imports consist chiefly of manufactured goods from England; wines, fruits, and salt from Portugal and the Mediterranean; timber from the Baltic and North America. Cork communicates by steam-packets with London, Dublin, Bristol, Liverpool, and Glasgow. *Cork Harbor* is a fine land-locked basin, formed by the estuary of the Lee, which is navigable to 1½ miles above Cork city. It is large and deep enough to contain the whole British navy, and has an entrance one mile across, within which its breadth varies to eight miles. It contains Spike and Haulbowline Islands, on which are artillery barracks and various ordnance works. Lat. 51° 50′ 4″ N., long. 8° 19″ W. On its shores are the towns of Cove and Passage, with quays four miles in length, and which were erected at a cost of £100,000.

Corn (Saxon *Corn*), the grain or seeds of plants separated from the spica or ear, and used for making bread. According to the European interpretation there are several species of corn, such as wheat, rye, and barley, millet and rice, oats, maize, and lentils, peas, and a number of other kinds, each of which has its peculiar qualities and usefulness. Egypt was anciently the most fertile of all countries in corn. This appears both from sacred and profane history. It supplied a considerable part of the people subject to the Roman empire, and was called the *dry nurse of Rome and Italy*. Ceres has the credit of being the first who taught them the use of corn, on which account she was ranked by them as a deity. Some, however, attributed the honor to Triptolemus; while others award the honor to both alike, making Ceres the first discoverer, and Triptolemus the first planter and cultivator of corn. Diodorus Siculus ascribes the whole to Isis; in which, as Polydore Virgil observes, he does not differ from other authors—Isis and Ceres being in reality the same person. The Athenians pretended that it was among them the art of sowing corn took its rise; and the Cretans or Candiots, Sicilians, and Egyptians, also lay claim to the distinction. Some think the title of the Sicilians best supported, Sicily being the country of Ceres; and it is alleged that she did not teach the secret to the Atheninns till she had first instructed her own compatriots. Others say that Ceres passed first into Attica, thence into Crete, and last of all into Sicily. Many scholars, however, maintain that it was in Egypt the art of cultivating corn first began; and it is certain that there was corn in Egypt and the East long before the time of Ceres.—E. B.

Maize, or *Indian Corn*.—Among the objects of culture in the United States, maize, or Indian corn, takes precedence in the scale of crops, as it is best adapted to the soil and climate, and furnishes the largest amount of nutritive food. Where due regard is paid to the selection of varieties, and cultivated in a proper soil, it may be accounted as a sure crop in almost every portion of the habitable globe between the 44th degree of north latitude and a corresponding parallel south. Besides its production in this country, its principal culture is limited to Mexico, the West Indies, most of the states of South America, France, Spain, Portugal, Lombardy, and southern and central Europe generally. It is also cultivated with success in northern, southern, and western Africa, India, China, Japan, Australia, and the Sandwich Islands, the groups of the Azores, the Madeiras, the Canaries, and numerous other ocean isles.

Although there has been much written on the Eastern origin of this grain, it did not grow in that part of Asia watered by the Indus at the time of Alexander the Great's expedition, as it is not among the productions of that country mentioned by Nearchus, the commander of the fleet. Neither is it noticed by Arrian,

Diodorus, Columella, nor any other ancient author. And even as late as 1491, the year before Columbus discovered America, Joan. di Cuba, in his "Ortus Sanitatis," makes no mention of it. It has never been found in any ancient tumulus, sarcophagus, or pyramid; nor has it ever been represented in any ancient painting, sculpture, or work of art, except in America. But in this country, according to Garcilaso de la Vega, one of the earliest Peruvian historians, the palace gardens of the Incas were ornamented with maize in gold and silver, with all the grains, spikes, stalks, and leaves; and in one instance, in the "Garden of Gold and Silver," there was an entire corn-field of considerable size, representing the maize in its exact and natural shape, a proof no less of the wealth of the Incas, than of their veneration for this important grain.

In further proof of the American origin of this plant, it may be stated that it is still found growing in a wild state, from the Rocky Mountains, in North America, to the humid forest of Paraguay, where, instead of having each grain naked, as is always the case after long cultivation, it is completely covered with glumes or husks. It is, moreover, a well-authenticated fact, that maize was found in a state of cultivation by the aborigines on the island of Cuba at the time of its discovery by Columbus, as well as in most other places in America first explored by Europeans.

The first successful attempt of the English in North America to cultivate this grain was made on James River, in Virginia, in 1608. The colonists sent over by the "London Company" adopted the mode then practiced by the Indians, which, with some modifications, has been pursued ever since. The yield at that time is represented to have been from two hundred to more than a thousand fold. The same increase was noticed by the early settlers in Illinois. The present yield, east of the Rocky Mountains, when judiciously cultivated, varies from twenty to one hundred and thirty-five bushels to an acre.

The varieties of Indian corn are very numerous, exhibiting many grades of size, color, and conformation. Among these are, the shrubby reed that grows on the shores of Lake Superior; the gigantic stalks of the Ohio Valley; the tiny ears, with flat, close-clinging grains, of Canada; the brilliant, rounded little pearl; the bright-red grains and white cob of the eight-rowed hematite; the swelling ear of the big white; and the yellow gourd-seed of the South.

From the flexibility of this plant, it may be acclimatized, by gradual cultivation, from Texas to Maine, or from Canada to Brazil; but, in either case, its character is somewhat changed, and often new varieties are the results. The blades of the plant are of great value as food for stock, and form an article but rarely estimated sufficiently, when considering the agricultural products of the southern and south-western states especially.

The increase of production from 1840 to 1850 was 214,000,000 bushels, equal to 56 per cent. The production of New England has advanced from 6,993,000 to 10,377,000 bushels, showing an increase of 3,384,000 bushels—nearly 50 per cent. New York, New Jersey, Pennsylvania, Delaware, and Maryland increased 20,812,000 bushels—more than 50 per cent. In the production of this crop no state has retrograded. Ohio, which in 1840 occupied the fourth place as a corn-producing state, now ranks as the first; Kentucky, second; Illinois, third; Tennessee, fourth. The crop of Illinois has increased from 22,000,000 to 57,500,000 bushels, or at the rate of 60 per cent. in ten years.

Of the numerous varieties, some are best adapted to the southern states, while others are better suited for the northern and eastern. Those generally cultivated in the former are the Southern big and small yellow, the Southern big and small white-flint, the yellow Peruvian, and the Virginia white gourd-seed. In the more northerly and easterly states, they cultivate the golden Sioux, or Northern yellow-flint, the King Philip, or eight-rowed yellow, the Canada early white, the Tuscarora, the white flour, and the Rhode Island white-flint flour.

The extended cultivation of this grain is chiefly confined to the eastern, middle, and western states, though much more successfully grown in the latter. The amount exported from South Carolina in 1748 was 39,308 bushels; from North Carolina, in 1753, 61,580 bushels; from Virginia, for several years preceding the Revolution, annually, 600,000 bushels; from Philadelphia, in 1752, 90,740 bushels; in 1767-'68, 60,205 bushels; in 1771, 259,441 bushels.

The total amount exported from this country in 1770 was 578,349 bushels; in 1791, 2,064,936 bushels, 851,695 of which were Indian meal; in 1800, 2,032,435 bushels, 338,108 of which were in meal; in 1810, 1,140,960 bushels, 86,744 of which were in meal. In 1820-'21, there were exported 607,277 bushels of corn and 131,669 barrels of Indian meal; in 1830-'31, 571,312 bushels of corn and 207,604 barrels of meal; in 1840-'41, 535,727 bushels of corn and 232,284 barrels of meal; in 1845-'46, 1,286,068 bushels of corn and 208,790 barrels of meal; in 1846-'47, 16,326,050 bushels of corn and 948,060 barrels of meal; in 1850-'51, 3,426,811 bushels of corn and 208,622 barrels of meal. More than 11,000,000 bushels of Indian corn were consumed in 1850 in the manufacture of malt and spirituous liquors.

According to the census of 1840, the corn crop of the United States was 377,531,875 bushels; of 1850, 592,326,612 bushels.

States and Territories.	Indian Corn.	
	18 0.	1850.
	Bushels.	Bushels.
Alabama	29,947,004	28,754,048
Arkansas	4,846,652	8,893,939
California	....	12,236
Columbia, District of	39,485	65,230
Connecticut	1,500,441	1,935,043
Delaware	2,090,359	3,145,542
Florida	898,974	1,996,309
Georgia	20,905,122	30,080,099
Illinois	22,634,211	57,646,984
Indiana	28,153,387	52,964,303
Iowa	1,406,241	8,656,799
Kentucky	29,847,120	58,672,591
Louisiana	5,452,912	10,260,373
Maine	950,528	1,750,056
Maryland	8,293,086	10,749,858
Massachusetts	1,809,192	2,245,490
Michigan	2,277,039	5,641,420
Mississippi	13,161,237	22,446,552
Missouri	17,332,524	56,214,537
New Hampshire	1,162,579	1,575,670
New Jersey	4,361,975	8,759,704
New York	10,972,286	17,857,400
North Carolina	23,893,769	27,941,951
Ohio	33,668,144	59,078,695
Pennsylvania	14,240,022	19,825,214
Rhode Island	450,408	539,301
South Carolina	14,732,805	16,271,454
Tennessee	44,986,188	52,376,223
Texas	....	6,028,576
Vermont	1,119,678	2,032,896
Virginia	34,577,591	35,254,319
Wisconsin	379,359	1,988,979
Minnesota Territory	....	16,725
New Mexico Territory	....	365,411
Oregon Territory	....	2,918
Utah Territory	....	9,899
Total	377,531,875	592,326,612

Corn Laws. An adequate supply of breadstuffs is evidently of the very first importance to every country, and should be as regular as is possible, since sudden fluctuations in an article of such universal necessity are injurious, and scarcity, with the consequent high prices, brings distress upon the poorer classes, and is a fruitful cause of discontent and convulsions. The best means of securing a sufficient and steady supply of this article is a subject of some diversity of opinion, and the practice of governments has varied much at different times. One theory, urged by Adam Smith, but questioned by Mr. Malthus and most others, is, that the government should do absolutely nothing in the matter, on the ground that the farmers and corn

merchants, if unchecked, will always form correct views of their own interest, and that their interest will coincide with that of the rest of the community. But broad, sweeping theories of this sort are rarely adopted in the practical administration of affairs; and a government, in making regulations on this subject, as on every other, looks at its internal condition, the character and pursuits of its population, and its foreign commercial relations; and though it may not judge correctly of the best means of securing a steady and sufficient supply, this does not prove that a total neglect of the subject would be the wisest and the safest policy in all countries and at all times. It is certain, however, that very unwise measures have often been resorted to, and sometimes such as tended rather to aggravate the evil than to provide a remedy. One way to guard against a scarcity is that adopted by the king of Egypt in the time of Joseph—the purchasing of corn by the government in time of plenty at home, or importing it from abroad, and storing it in public magazines, to be distributed as the public wants may demand. But this system is attended with great expense, and affords but an uncertain and inadequate provision. Most governments, accordingly, instead of making direct purchases, attempt to provide a remedy by the passage of laws. This subject of grain legislation is by no means entirely modern. The Athenians had laws prohibiting the exportation of corn, and requiring merchants who loaded their vessels with it in foreign ports to bring their cargoes to Athens. The public provision and distribution of corn was an important branch of administration at Rome, and very intimately connected with the public tranquillity. The regulation in the supply of corn, and the trade in the article, has been a fruitful subject of legislation in modern Europe. But it is to be observed, that the public solicitude and current of legislation take this direction only in populous countries, or at least those in which the population presses hard upon the means of domestic production of breadstuffs; for a country of which, like this, the staple exports are breadstuffs needs to take no measures for securing a supply; and, as flour and Indian meal are great articles of exportation in the United States, this country has had no occasion for laws to guard against a famine, since the ordinary course of industry and trade gives the greatest possible security, by producing a surplus in provisions, which a high price at home, in anticipation of any scarcity, will be sure to retain for the supply of domestic wants. In agricultural countries the object of solicitude is to supply the want of arts and manufactures, as in populous and highly improved countries it is to supply the want of food. But the laws directed to this object have been very various, and some of them contradictory; for as in Athens, so in England at one period, the laws prohibited the exportation of corn; whereas, at another period, and for a very long one in the latter country, a bounty was given on the exportation; and both these laws had the same object, viz., the adequate and steady supply of the article. For this purpose the bounty is the measure undoubtedly calculated to produce the effect intended, and the permanent prohibition of exportation must aggravate the scarcity which it is intended to prevent. Such a bounty tends to stimulate a surplus production, and so to give a country, by this factitious encouragement, the same security in respect to a supply as results from the spontaneous intercourse of industry and trade in Poland, the southern part of Russia, and the United States. But the objection to the bounty is its great expense, requiring, as it does, the imposition of a tax, and, at the same time, raising the price of the article to the domestic consumer. To secure the advantages and avoid some of the burdens of this law, Mr. Burke, in 1773, proposed the system of corn laws so long adhered to in Great Britain, according to which no bounty is paid, but the exportation of corn is permitted when it is sold under a certain price in the home market. This price is determined by the average sales in certain specified places for a given time; and when it rises above a certain other fixed price, the importation is permitted. By Mr. Burke's bill, wheat might be exported when the price was under 44*s.* the quarter, and imported when it was over 48*s.* The home grower is, therefore, sure to be free from a foreign competition at any price under 48*s.*, and this gives him confidence in pursuing this species of cultivation. The rates or prices at which exportation and importation have since been allowed, have varied from time to time very materially; but the principles of the laws and their effect are the same.—E. A.

Reform of the Corn Laws of England.—In 1843, a measure was adopted which made a wide breach in the corn laws. In 1842 the Legislature of Canada passed a law imposing a duty of 3*s.* a quarter on all wheat imported into the province, unless from the United Kingdom, stating, in the preamble to this act, that it was passed in the expectation and belief that a corresponding reduction would be made in the duties on wheat and wheat flour imported into the United Kingdom from Canada. And conformably to this anticipation, the act 6 & 7 Vict. c. 29, passed in 1843, reduced the duty on wheat imported from Canada to 1*s.* a quarter, and proportionately on wheat flour. This act met with much opposition from a part of the agricultural interest in England, who contended that it would lead to the introduction of unlimited supplies of corn from the United States, at a duty of only 4*s.* a quarter, or, allowing for smuggling, at perhaps only half that amount. But experience showed that these anticipations were not likely to be realized; for, though the imports from Canada were materially increased, the obstacles in the way of the importation of corn from the United States into Canada, and the danger and expense of the voyage from Montreal or Quebec to England, must necessarily have prevented the importation through this channel from ever becoming of much importance. Still, however, the measure was in so far an abandonment of the corn laws; and if Great Britain was justified in admitting the produce of the United States to her markets in this indirect way, it was not easy to discover satisfactory grounds on which to exclude the produce of other countries.

The success of the measures adopted in 1842 encouraged Sir Robert Peel to attempt still more considerable changes in 1845, when he abolished the customs' duties on about 420 articles, some of which were of very considerable importance. The measures then adopted were equivalent, in fact, to the virtual abandonment of the protective system; and, under such circumstances, it could not be expected that the corn laws, on which so serious an inroad had been made by the Canada act, would be able to maintain their place on the statute-book for any very lengthened period.

They might, however, have been continued for some time longer, had not the unsatisfactory corn harvest, and the failure of the potato crop of 1845, made it necessary to adopt measures for averting the anticipated deficiency in the supplies of food. Under the critical circumstances in which the population was then believed to be placed, the temporary suspension of the corn laws could hardly have been avoided; but, if once suspended, their re-enactment would have been all but impossible, and it was better, perhaps, by at once providing for their repeal, to make an end of the system, and of the dissatisfaction and agitation to which it had given birth, than to endeavor to continue it in any modified shape. Such was the view of the matter taken by Sir Robert Peel; and he fortunately succeeded, despite difficulties that none else could have overcome, in carrying the act 9 & 10 Vict. c. 22, for the immediate modification of the corn laws, and for their total repeal at the end of three years, or on the 1st February, 1849. From that date wheat and other corn were sub-

jected, on importation into Great Britain, to a fixed duty of is. a quarter; and flour and meal, of all sorts, to a fixed duty of 4½d. a cwt.—E. B.

Cornucopia (Lat. *cornu*, a horn; and *copia*, plenty). In the fine arts, an ornament representing a horn, from which issue flowers, fruits, leaves, and the like. The origin of the cornucopia has been variously given. Some authors have traced it to the infant days of Jupiter, whose nurse, Amalthea, when one of her goats had broken off a horn against a tree, presented it to the god wreathed with flowers and filled with fruit. Hence it became the emblem of Plenty among the ancients, in which light it is regarded also by many modern nations. The cornucopia is found in the types of ancient coins, particularly upon those of Sicily.

Corporation is the term generally applied to a body of men by special law endowed with the power and means of acting collectively, with the distinctness and individuality of one man pursuing the dictates of his own will, while their existence is kept up by a perpetual succession, so that the collective body acts like an individual man with a perpetuated vitality. Though the corporation might be deemed, from the admiration bestowed on it by professional writers, to be the peculiar creation of English genius, there is little doubt that the system was derived from the *municipia*, *universitates*, and *collegia* of the Romans; and there is even reason to believe that there are corporations which date their history back to the institutions of the Western Empire. The adage, indeed, expressed by a Roman jurisprudent, that it required three to make a college —*tres facere collegium* (50 *Dieg.* 16, 85)—shows a practical consciousness of the most effective means of strengthening the action of a small corporation, in an adjustment by which equal numbers with the chances of balanced divisions are to be avoided, and that number is selected which always affords a majority of two to one.—E. B. Corporations are stated by Livy to have been of very high antiquity among the Romans. They were introduced into other countries from Italy. These political bodies were first planned by Numa, in order to break the force of the two rival factions of Sabines and Romans, by instituting separate societies of every manual trade and profession.—PLUTARCH.

Corsair (It. *corsaro*). A term used in the south of Europe and some other parts for a pirate or his ship. The corsairs of Barbary were commissioned by their princes to attack the merchant ships of hostile countries.

Corvette, a sloop of war; according to some authorities, an advice-boat with fewer than twenty guns.

Cosmetic (*κοσμέω*, to adorn), any preparation to render the skin soft and white, or to beautify and improve the complexion. The word *cosmetæ* among the Romans was used to denote a class of slaves whose business it was to dress and adorn their mistresses.—E. B. Preparations for improving beauty were known to the ancients, and some authorities refer them even to mythology, and others to the Grecian stage. The Roman ladies painted; and those of Italy excelled in heightening their charms artificially, by juices and colors, and by perfumes. Rouge has always been in disrepute among the virtuous and well-ordered women of England, though some simple *cosmetics* are regarded as innocent, and are in general use.—ASHE. The females of France and Germany paint more highly than most other nations.—RICHARDSON. In Great Britain a stamp was laid on cosmetics, perfumery, and such medicines as really or supposititiously beautify the skin or perfume the person, and the vendors were obliged to take out licenses, 26 Geo. III. 1786.—HAYDN.

Costa Rica, a republic of Central America, bounded on the north by Nicaragua, from which it is separated on the northeast by the river San Juan, on the east and north by the Caribbean Sea, on the east by New Granada, from which it is separated by the river Chirigue entering the Caribbean Sea, and the Chiriqui entering the Pacific, and on the south and west by the Pacific; between lat. 8° and 11° N., and long. 81° 45′ and 84° 40′ W. Area, about 16,300 square miles. It is divided into six districts, viz.: San José, Cartago, Heredia, Alajuela, Guanaceute, and Punta Arenas, and estimated to contain 215,000 inhabitants, of whom 2500 are Indians. It is intersected diagonally by the primary range of the isthmus, which throws off numerous spurs on either side, giving to the surface a continued alternation of abrupt heights and sudden depressions. The principal range has several lofty eminences, and also several volcanoes, both active and dormant, including those of Orosi, Votos, and Cartago; from the summit of the last of which both the Pacific and the Atlantic waters are distinctly visible. Costa Rica contains some exceedingly rich gold mines; hence the origin of its name. The mines, however, are now very little wrought. Silver and copper also exist. With the exception of the sea-coasts, the climate is mild and temperate, never subject to excessive heats or colds, and rarely experiencing any other vicissitudes than those from the dry to the rainy season. It is therefore extremely well adapted to agricultural purposes, and capable of bringing to maturity most of the plants peculiar to the tropics, and many exotics. The soil is remarkably fertile, especially the valleys and the tablelands. The productions are coffee, cacao, Indian corn, tobacco, sugar, and some wheat. The horses of Costa Rica are of an inferior description, but the mules are much esteemed; and cattle, sheep, goats, and hogs are reared in great numbers, and of excellent quality.

Among the principal rivers of Costa Rica are the Tempisque and Grande, falling into the Bay of Nicoya; the Ucus or Macho, which afterward takes the name of Reventason, and falls into the Caribbean Sea; the Matina, formed by the rivers Chirripo and Barbilla; the Escudo de Veragua, dividing Central from South America; the Banana, Tiribee, and Culabra, all falling into the Caribbean Sea; the Chrico Mola or Chrickam Aula, falling into the Bay of Cheriqui; the Costa Rica or San Carlos, and the Sarapiqui, into the San Juan. The Bayo is a canal, believed by some to be natural, and by others to have been cut by the aborigines, commencing at the port of Mola or Salt Creek, and running parallel to the coast as far as Pearl Kay Lagoon, a distance of 180 miles.

Costa Rica produces, in large quantities, mahogany, cedar, Brazil, and various other kinds of timber. On the sea-coast of Nicoya some pearls and large quantities of mother-of-pearl shells are found. Coffee, however, forms the most important product of the republic. Its cultivation, though only introduced about the year 1830, has increased so rapidly, that 3000 to 4000 tons are now exported annually. Tobacco, which is of excellent quality, is a government monopoly, and is exported in small quantities. The other exports are gold, sugar, Brazil wood, mother-of-pearl, ox and cow hides, horns, etc. The imports consist chiefly of manufactured goods. Total revenue in 1852, $454,119; expenditure in the same year, $415,207.

The commercial relations between the United States and Costa Rica are regulated by the treaty of July 10, 1851, and by the local legislation of the country. The treaty guarantees reciprocal freedom of commerce, and places the two countries, with respect to each other, on the footing of the most favored nations.

The local commercial legislation of Costa Rica was completely remodeled and materially modified in the year 1854. The decree by which this was effected bears date August 31, 1854.

The 1st article grants liberty of commerce to the vessels of all nations—specifying certain descriptions of merchandise monopolized by the government, and others prohibited; which are detailed in the tariff of Costa Rica.

The 2d article provides that, at the minor ports, the export of productions of the country only can be permitted, under proper regulations.

Art. 3. At the inland or frontier ports, custom-houses shall be established, under such regulations as the government may deem fit to adopt.

Art. 4. At such ports, inland and export commerce only shall be allowed, except in respect of such merchandise as shall be monopolized by the government or prohibited.

The second chapter of the law contains a specification of free goods, together with a list of prohibited articles; among the former being the personal effects of, or merchandise exported for the use of, diplomatic agents or their suite, but not those of consuls; and in the latter are included rum, fire-arms, and munitions of war, which can be imported only under special authority. The monopolized articles are tobacco (in leaf or manufactured), powder, and saltpetre; which can be admitted only on government account.

This law extends to sixteen chapters; and such parts as apply to navigation and commerce would be translated and inserted at length, were it not understood to have been materially modified by a recent decree, of which a summary is given, with the tariff of Costa Rica.

The United States consul at San José (Costa Rica) communicates the following changes, under date October 8, 1855:

"I have the honor to inclose herewith copies of three decrees issued by this government, numbered, respectively, 1, 2, and 3. No. 1, dated November 24, 1854, is merely proroguing the time fixed for the new tariff (a copy of which has been transmitted), to take effect from the 1st of December, 1854, to the 1st of July, 1855. No. 2, of the same date, requires, article 1st, previous to the landing of merchandise, in addition to the manifest heretofore presented by the master of any vessel arriving at the port of Punta Arenas, that permission to disembark be obtained from the collector of customs, and that in the document soliciting this permission must be expressed the quality and origin of the goods intended to be landed, and also their market value in the port. Article 2 requires, previous to the clearance of a vessel from any port of the republic, the presentation by the consignees of a manifest of the merchandise to be exported, and its value in the port of shipment. Article 3, of the same, requires, in cases where a part only of a cargo has been landed, that the consignees, previous to a clearance, present another 'corrected manifest,' specifying the quality and value of the goods that have been landed. No. 3, dated July 24, 1855, orders that all *distilled* spirits landed in the port of Punta Arenas be deposited in the public stores, and exacts the payment of four cents per pound, gross weight, upon their removal from bond. No further changes have been made in the commercial system of this republic within the time specified."

For the last fifteen years the country has been rapidly progressing, owing to the peaceable and industrious character of the people, and the moderate course pursued by the government. Many internal improvements, principally in common roads, have been completed; and the productions of the country have increased so that the exports now amount to $1,000,000 yearly, while fifteen years ago they amounted only to about $100,000. In the same time the population has been doubled, and may now (1856) be estimated at 180,000 inhabitants. Some few emigrants, principally Germans, have gone into the country; but the difficulties met with on the route to Costa Rica will prevent much immigration. The two principal ports of Costa Rica are Punta Arenas, on the Gulf of Nicoya, and Mattina, on the Caribbean Sea.

Moneys.—The money of account is the peso, or dollar, valued at the same as the United States dollar; but some are coined of base metal, which are worth only 75 cents. At Venezuela and Ecuador, the dollars are similar to those of New Granada. 1 dollar = 8 reals (100 cents); 1 real = 16 quartos = 32 maravedi, also 12 grani.—*Cor. P. J. of T.*

The values of imports and exports between the United States and Costa Rica can not be distinguished from those given for Central America generally. The following statement, exhibiting the general foreign navigation and trade of the principal port of the republic (Punta Arenas), furnishes a fair average annual statement. It may be observed, that the values are given from ships' registers, or invoices, and are, consequently, considerably below the market values.

STATEMENT EXHIBITING THE GENERAL FOREIGN NAVIGATION AND TRADE OF THE PORT OF PUNTA ARENAS, DURING THE YEAR ENDING DECEMBER 31, 1855.

Nationality.	Arrived.			Departed.		
	Number of Vessels.	Number of Tons.	Invoice Value of Cargoes.	Number of Vessels.	Number of Tons.	Invoice Value of Cargoes.
United States	12	2,204	$101,808	12	2,204	$86,650
British	5	1,445	265,650	5	1,445	330,950
French	2	648	17,500	2	648	37,903
Spanish	2	560	8,000	2	560	.....
Hamburg	3	926	25,170	3	926	82,211
Hanoverian	1	160	67,659	1	160	.....
Sardinian	10	1,391	40,906	10	1,391	66,510
Chilian	7	889	88,406	7	889	109,378
Peruvian	7	1,124	15,756	7	1,124	8,882
New Granadian	15	679	49,026	15	679	18,709
Central American	4	52	4,719	4	52	1,916
Costa Rican	15	1,240	64,711	15	1,240	22,638
Total	83	11,027	$609,311	83	11,027	$765,736

Costume. Accounts of magnificent attire refer to very remote antiquity. The costume of the Grecian and Roman ladies was comely and graceful. The women of Cos, whose country was famous for the silk-worm, wore a manufacture of cotton and silk of so beautiful and delicate a texture, and their garments, which were always white, were so clear and thin that their bodies could be seen through them.—Ovid. As relates to costume worn on the stage, Æschylus the Athenian was, it is said, the first who erected a regular stage for his actors, and ordered their dresses to be suited to their characters, about 436 B. C.—*Parian Marbles.* Excess in dress was restrained by a law in England, in the reign of Edward IV., 1465. And again in the reign of Elizabeth, 1574.—Stowe. Sir Walter Raleigh, we are told, wore a white satin-pinked vest, close-sleeved to the wrist, and over the body a brown doublet finely flowered, and embroidered with pearls. In the feather of his hat, a large ruby and pearl drop at the bottom of the sprig, in place of a button. His breeches, with his stockings and ribbon garters, fringed at the end, all white; and buff shoes, which on great court days, were so gorgeously covered with precious stones as to have exceeded the value of £6600; and he had a suit of armor of solid silver, with sword and belt blazing with diamonds, rubies, and pearls. King James's favorite, the duke of Buckingham, could afford to have his diamonds tacked so loosely on, that when he chose to shake a few off on the ground, he obtained all the fame he desired from the pickers-up, who were generally *les dames de la Cour.*—Haydn.

Cott, or **Cot,** a particular sort of bed-frame, suspended from the beams of a ship, between decks, for the officers to sleep in. It consists of a large piece of canvas sewed into the form of a chest, about six feet long, one foot deep, and three feet wide, and is extended by a square wooden frame with a canvas bottom, and used principally in the ward-room of a man-of-war.

Cotton. This article will be considered under the general heads of I. Species and Places of Production. II. Cotton Climate: 1. Of the World; 2. Of the United States; 3. Nile; 4. Algeria; 5. Africa; 6. The Mediterranean; 7. British India. III. Cotton Trade of the United States: 1. History; 2. Statistics. IV. Cotton Trade of the United States with 1. Great Britain; 2. France; 3. Spain; 4. Hanse Towns; 5. Belgium; 6. Sardinia; 7. Switzerland; 8. Russia; 9. Sweden; 10. Portugal; 11. Brazil; 12. Egypt; 13. Mexico. V. Capacity of the Cotton Bale.

Cotton Manufactures will be treated under its proper head.

I. Species and Places of Production of Cotton.—Cotton (*Gossypium*) is a vegetable down of exquisite softness, with beautifully fine fibres, and is an indigenous product of all intertropical regions. Linnæus subdivided the cotton plant into five species: 1. *Gossypium herbaceum*; 2. *G. arboreum*; 3. *G. hirsutum*; 4. *G. religiosum*; 5. *G. Barbadense*.

Other authorities have enumerated as many as ten species, but for all practical purposes the division into three classes will be sufficiently minute. The varieties are exceedingly numerous; yet of those most widely diffused, *herbaceous* cotton, *shrub* cotton, and *tree* cotton need only be especially referred to. The most useful cotton is the herbaceous, which is an annual plant, chiefly cultivated in the United States and in the East Indies. It grows from two to five feet in height, is rich in foliage, and its fibrous fruit is preceded by flowers, of white or pale yellow color, like those of the convolvulus. As the flowers fade, a pod, or capsule is formed of the size of a small walnut, containing the fibres of cotton, and as the pod ripens it expands, and the snow-white fibres burst forth ready to be gathered.

1. *The Herbaceous Cotton.*—This plant grows to the height of eighteen to twenty-four inches, with leaves of dark green, blue-veined, and five-lobed. The flower is a pale yellow, one pistil, five petals or leaves, purple-spotted at the bottom. On the falling of the flower a pod of triangular shape and triple shell is developed. The pod, in course of ripening, bursts, discloses a snow-white or yellowish ball of down, in three locks, inclosing and tightly-adhering to the seeds, which resemble those of the grape, though of several times the size. The seed is planted in spring, and the cotton gathered at fall. The rows in the fields are five or six feet apart; the distance of the holes, in which several seeds are deposited, is about eighteen inches. Much care in weeding, thinning, and pruning, is required during the process of culture. This is the course pursued in the United States, which has the advantage over that pursued in India, by producing a cotton vastly more valuable. A field of cotton at the gathering, says Mr. Haines, when the globes of snowy wool are seen among the glossy dark leaves, is singularly beautiful; and in the hottest countries, where the yellow blossom or flower and the ripened fruit are seen at the same time, the beauty of the plantation is, of course, still more remarkable. The herbaceous cotton is grown to the greatest extent, and said to be cultivated in nearly every country congenial to the gossypium, existing even at Aleppo, in Upper Egypt, Arabia, and Senegal.

2. *The Hirsutum, or Shrub Cotton.*—It is said to grow wherever the herbaceous is found, and to vary according to climate, being biennial or triennial in the West Indies, lasting from six to ten years in India and Egypt, perennial in the hottest climates, and in the mildest cotton regions an annual. The shrub cotton is likened to a currant bush, and is of several varieties. The *hirsutum*, a low shrub already mentioned, the *Indicum*, attaining ten or twelve feet; the *vitifolium*, of the south of France and South America; the *religiosum*, of Surinam and India; the *latifolium* of the West Indies; the *Barbadense* of Barbadoes; and the *Peruvian*. The pod of the shrub cotton differs from that of the herb in being egg-shaped. The Guiana and Brazil cotton is of this kind, and is said to yield, in the hottest countries, two crops a year.

3. *The Arborescent, or Tree Cotton.*—This remarkable plant is of Indian, Chinese, Egyptian, and American growth. The height of the tree varies from fifteen to twenty feet. Marco Polo describes the tree at Guzerat six yards high, and bearing fruit for twenty years. There is a tree described in South America, Indian Isles, West Indies, and on the Guinea coast, of a hundred feet high, bearing a silky cotton, only useful for making quilting and beds. The justly-celebrated *American sea-island cotton* is derived from the *arboreum*. Its fibre is long, strong, silky, and of a yellowish tinge. The seed is black and of Persian origin, though originally introduced into this country from the Bahama Islands, where it had been introduced by the Board of Trade from Anguilla, an island of the Caribbean Sea. This cotton was raised first in Georgia in 1786, and the first bag exported by Alexander Bissel, of St. Simon's Island, two years after. The section of country capable of producing this staple is very limited, being confined to the low sandy islands along the coast of South Carolina and Georgia, from Charleston to Savannah. The quantity grown in 1805 and in 1832 was precisely the same.

In the United States the seed of the herbaceous cotton is sown generally in the months of March and April, and its marketable fruit is usually gathered in the period commencing with August and terminating with the year. Boweds and Orleans cottons constitute the great productions of the United States, and are recognized in the English and European markets as "American cotton." These cottons are chiefly cultivated in the great valley of the Mississippi, the fields of its growth now extending to Texas. The cultivation of cotton in the United States is most scientifically and industriously pursued, and is attended with highly profitable results, the value of the crop being little less than $150,000,000. It is expected that in 1856 the entire crop will amount to 3½ millions of bags, of more than 400 lbs. each. But the skill of the American planter has been most conspicuous in the production of fine sea-island cotton. The seed of this cotton, which is also an annual and herbaceous plant, was obtained in 1786, in the Bahama Islands, where it had been introduced from the West Indies, and was first cultivated in Georgia. The small islands which extend along the American coast from Charleston to Savannah were found, from their sandy soil and contiguity to the sea, to be admirably adapted to the production of exquisitely fine, long, and strong-stapled cotton. This cotton soon acquired great and deserved celebrity. A great demand arose for it; but from the limited extent of the islands upon which it can be grown, and the expense attending its cultivation, it can only be supplied at a comparatively high price. Hence the production of this cotton was not susceptible of indefinite extension like the shorter-stapled cottons of the United States; and from the beginning to the middle of the present century the total yearly amount of the crop has not greatly varied, the annual yield averaging about ten millions of pounds weight. From the circumstance of the seed of this cotton having been first introduced into Georgia, it was consequently called Georgia cotton, though its cultivation had only been successful upon the sea-coast of that state. Its celebrity, however, caused it to be planted upon the high lands of Georgia, where it was found to degenerate; but still the quality, though shortened in staple, was found to be of a desirable class, and it acquired the name of uplands, or bowed Georgia cotton, while the same seed yielded the famed sea-island cotton. Here it may be observed that a humid atmosphere and a sandy soil seem most conducive to the production of good useful cotton; but for the growth of very fine and long stapled cotton an impregnation of salt, both in the soil and in the air, appears to be indispensable.

Without the energy of the American planter, it is difficult to conceive the possibility of the cotton trade of England and of the world attaining the extent and importance which it now possesses. As the colonies of Great Britain—the West Indies in particular—possessed all the natural advantages of soil and climate for producing cotton to an extent much beyond the probable consumption of the United Kingdom, it might reasonably have been inferred that the colonial interests alone would have stimulated the cultivation and production of cotton to supply the certain and increasing home demands of the constantly-enlarging manufactories. Whether the fatality of protection to the English colonies, maladministration of colonial affairs, or supineness on the part of the colonists themselves, produced the indifference which caused an article of increasing importance like cotton to be neglected when remunerative markets were opening for indefinite supplies of it, may be wisely inquired into, not to remedy the past, but for the purpose of ascertaining how far a new and profitable direction may be given for the future to colonial labors and efforts; for the stigma will remain, that while arts and inventions were being developed at home, which became the sources of great national wealth, the cultivation of the material on which to exercise the skill and labor of her working-classes had to be sought and obtained from a foreign source.

In the British East Indies the cultivation and manufacture of cotton have certainly existed longer than in any other country. For five centuries before the Christian era, cotton was largely used in the domestic manufactures of India, and the clothing of the Hindoos then consisted chiefly of garments made from that vegetable product. Earliest in possession of the herbaceous cotton plant, the natives of India were enabled to manipulate its fibres, and to establish a cotton-manufacturing industry which has remained almost unchanged to the present time. More than two thousand years before Europe or England conceived the idea of applying modern industry to the manufacture of cotton, India had matured a system of hand-spinning, weaving, and dyeing, which, during that vast period of time, received no recorded improvement. With a plant indigenous to the soil, and a people remarkable for intelligence when Europe was in a state of barbarism, it is wonderful that no approximation was made to the mechanical manufacturing operations of modern times, and still more strange that the agricultural production of cotton should not within that period have been improved and considerably enlarged. The cotton of India, during its known existence, can only be regarded as a material for manufacture greatly inferior to the like productions of other countries. India unquestionably possesses soil, climate, and all the requisite elements from nature for the cultivation of cotton to an almost boundless extent, and of a quality which might be most useful and acceptable in the manufactures of Europe, and even of America. During a series of years the weight of cotton grown in the East Indies and consumed in Great Britain may have been one-tenth of the whole, while the value can not be estimated at more than one-twentieth of the total cost of home-consumed raw cotton. The British West Indies supply only small portions of the cotton required by the manufacturers of the United Kingdom, though the quality of the cotton there produced is excellent; and would be very largely bought and consumed if it were largely supplied. For a considerable time the British colonies have not supplied more than one-twentieth part of the British consumption of cotton, and yet in the possession of Great Britain there exists a greater extent of land suited to the growth of cotton than in any other dominion. At Port Natal cotton of excellent quality might be grown to any reasonable extent; and in Australia, cotton equal to the finest of the fine might be produced to an almost indefinite amount.

The most remarkable fact is, that although cotton was cultivated in gardens from remote antiquity in China, yet this ingenious people never turned it into any account until the end of the thirteenth century, at which time its manufacture among them began.

The following passages from the narratives of those who have visited India are replete with interesting information on the subject before us. Marco Polo found cotton in Guzerat in large quantities, taken from a tree about six yards high, and bearing for twenty years. The cotton from a tree of this age is adapted only to quilting, but that taken from trees of twelve years is suitable for muslins and other manufactures of extraordinary fineness. Sir John Mandeville, in the fifteenth century, later by fifty years than Polo, says, that in many places the wool of the cotton in India which we call tree wool, is sown every year, and there spring up from it copses of low shrubs on which the wool grows.

A luxuriant field, says another, exhibiting at the same time the expanding blossom, the bursting capsule, and the snowy flakes of ripe cotton, is one of the most beautiful objects in the agriculture of Hindostan. Malte Brun is equally instructive on the point: "The cotton tree grows on all the Indian mountains, but its produce is coarse in quality; the herbaceous cotton prospers chiefly in Bengal and on the Coromandel Coast, and there the best cotton goods are manufactured. Next to these two provinces, Madure, Marawar, Pescaria, and the coast of Malabar produce the finest cotton. The plant is cultivated in every part of India; the finest grows in the light, rocky soil of Guzerat, Bengal, Oude, and Agra. The cultivation of this plant is very lucrative, an acre producing about nine quintals of cotton annually."

Brazil is an extensive cotton-growing country, and sends steady supplies of it to the European markets. The quality of its cotton is every where highly esteemed. Persia, Spain, Italy, Malta, and the adjacent countries, are all capable of producing excellent cotton; but in Africa there are probably greater undeveloped resources for the cultivation of cotton than can be found in any other portion of the globe. The example of Egypt is a great lesson for the governors of those countries whose agricultural resources remain undeveloped. In 1821, Mohemet Ali conceived the possibility of effectually cultivating cotton, and succeeded. From that year to the present time large supplies of that useful and now indispensable raw material have been obtained from Egypt, to the great convenience of the British manufacturer, who has found the quality second only to the sea-island cotton of the United States.

The herbaceous cotton plant unquestionably exhibits all the desirable qualities of cotton applicable to manufactures, as proved by the productions of the United States and of the East Indies. The cottons produced in the West Indies, in Brazil, and in Egypt, are from the shrub; and it is observed that the older the plant the coarser become the fibres. Tree cotton, as a marketable product, is almost unknown; but in Borneo, and in many other tropical regions, the plant on which it grows is found flourishing in a wild state. To insure economy of culture, and of gathering the cotton as it opens and ripens, it is evident that the plant and the shrub are most accessible, and that the tree can not always be either safely or conveniently climbed to obtain its downy fruit.

In Central Africa, cotton has also been a staple growth since the date of our earliest records. It is mentioned by travelers as abundant on the banks of the Senegal, the Gambia, and the Niger, at Timbuctoo, Sierra Leone, the Cape de Verd Islands, on the coast of Guinea, and in Abyssinia. In hot climates, also, says an authority, the cotton plant grows so abundantly, that this is the cheapest material of which cloth can be made. With such recommendations, it can not fail to continue the staple and universal manufacture of Africa.

In modern times, no material on which the industry of mankind is exerted can be compared with the vast importance of that beneficent gift of Providence, cotton. Millions of our fellow-creatures depend upon its cultivation and manipulation for support. Capitalists embark in its production and manufacture, as also in its trading and mercantile distribution. National resources are enlarged and benefited by it; and to Great Britain and the United States it has proved a fountain of wealth, from which streams of prosperity have flowed from the time of its first introduction as an agent of labor and traffic to the present moment.

The upland cotton is a different species from the sea-island, and is separated with such difficulty from the seed, that the expense of cleaning the wool must have put a stop to its further cultivation, had not a machine, by which the operation of cleaning is easily and successfully accomplished, been invented. This machine was invented in 1795 by Mr. Eli Whitney of Massachusetts. There are two qualities of the cotton — the one termed Upland Georgia, grown in the states of Georgia and South Carolina; and the other, of superior quality, raised upon the banks of the Mississippi, and distinguished in the market by the name of New Orleans cotton. A strong prejudice existed for some time against the upland wool, which was thought to be of inferior quality, and not to take a good color in dyeing; but being found suitable to different coarse fabrics, its cultivation was so rapidly extended, that in 1807, 55,018,448 lbs. of upland cotton were exported from the United States.

The cotton of the finest quality ever brought to the English market, or probably ever grown, was that formerly mentioned as having been raised in the island of Tobago, between the years 1789 and 1792, upon the estate of Mr. Robley. That gentleman carried the cultivation of this article to some extent; but the price of cotton falling very low, and the cultivation of sugar becoming extremely profitable in consequence of the destruction of the sugar plantations in the French islands, he was induced to convert his cotton grounds into a sugar plantation. The production of cotton of this very fine description has hardly ever been attempted by any other person, although it is believed that the price it would yield would amply repay its expense.

Until about the year 1815, it was thought that the cotton wool of India, from the shortness of its staple, could not be spun with advantage upon machinery; and, in consequence, the greater part of the Indian cotton was spun upon the common jenny, and used as weft for the coarsest calicoes. It was discovered, however, that by mixing it with the longer stapled wools of other countries, it might be brought into a state fit for the mule and spinning frames.

The United States consul at Naples, in answer to the cotton circular issued by the Commissioner of Patents, says: "The cotton cultivated in the plains near Castelamari, Angri, Scafata, and Nocera, is similar to that of the United States. The plant is small and annual, and is cultivated with so much advantage that various projects by companies have been started to give extension to its cultivation; but without being carried into execution. It has been cultivated for more than ten years. Before the French occupation there was a very limited quantity, but during the Berlin and Milan decrees of Napoleon, the cultivation increased very rapidly, and the price reached a dollar a pound, though it had to be sent by land to Lombardy, Switzerland, and France. The quantity has since decreased. I have not been able to learn whether the French introduced seed, or sowed such as they found here; but the cotton fibre has not deteriorated either as to length, strength, or uniformity. On the contrary, the quality has improved.

"About two millions of pounds are produced here. In Sicily, to the south of the island, the cultivation is greater than in Naples. In past times, small quantities of cotton were shipped to Marseilles, but since manufactures have increased here, it is all consumed in the country. The most extensive manufacturers (Vonwillier & Co.) import annually from the United States two cargoes of cotton, of moderate size, besides quantities indirectly. Much twist is imported from England. Manufactures are improving, but are still far from reaching such perfection as to offer any inducement to export them.

"The price of ginned cotton is about 14 to 15 cents per pound. The cultivation is protected by a duty of $8 per cantar of 196 lbs. English if introduced direct from the United States, and $16 if indirect. It is ginned by the ordinary roller and by hand, as well as by the saw-gin; and 100 lbs of unginned will yield about one-third clear cotton. It is packed with hands and feet, and is not exported, nor is there any fixed number of pounds to the bale. The cost of producing one pound of cotton fibre, well ginned, is from 10 to 12 cents.

"An acre of ground will produce about 600 lbs. of unginned cotton. The value of an acre of cotton land is $450, and the rent is $20 to $25 per annum; but you must take into consideration the annual land tax of from one-fifth to one-fourth of the rent, which must be paid by the owner of the land every two months in equal rates.

"If any causes operate injuriously to the cotton crop, they are to be ascribed more to the social condition of the inhabitants than to any thing else. The relations generally between the landowner and the cultivator are not of the best kind, the bad faith of the latter being characteristic, while the owner barely leaves him enough to miserably subsist on. In some seasons, too, worms do injury to the plants, as well as fogs and mists in July and August."

II. Cotton Climates. 1. *The Cotton Districts of the Globe considered with reference to their Climates.*— On inquiring into the climate best suited to the cultivation of cotton, we must remember that we have to pay attention, not only to the air, but also to the vapor. These may be considered in some respects as forming two distinct atmospheres; the one uniform in quantity, and in the proportion of its ingredients, but ever-varying in temperature; while the vapor varies not only in this respect, but in the quantity in which it is present, and also in its point of deposition, when alone it becomes perceptible as moisture.

Cotton is cultivated in so many countries, that we can not but expect it to be capable of flourishing in considerable diversities of climate. Thus, the rich alluvial lands of the Mississippi differ not only in soil, but also in temperature and dryness, from the sandy fields of Georgia. In dryness, both must differ from the uniformity of moisture which prevails in the islands where sea-island cotton is produced. Some grows naturally in the warmer parts of Mexico, as well as in the countries situated along the east of the Andes; and much is cultivated in the moist parts of Guiana and Brazil. Humboldt has seen it at 900 feet of elevation in the equatorial Andes, and at 5500 feet in Mexico. But here different species may, perhaps, be included, as we know that which yields Pernambuco cotton is cultivated in many parts of South America. In the Old World, we find cotton growing in the interior, both of Africa and of India, where there must be considerable dryness of climate. It is cultivated with some success in Egypt, and also, of late, in Algeria, and near Port Natal, in South Africa; but, in the two former, only by the aid of artificial irrigation. It is produced in various islands of the Indian Ocean, in many parts of China, and in almost every part of continental India. Thence it may be said to extend into Persia, Asia Minor, and to the southern parts of Europe, including the islands of the Mediterranean, whence the English manufacturers received their earliest supplies of cotton.

Within these limits, extending from the equator to forty degrees of latitude, we know that there are considerable diversities of climate; but the heat of summer in many of these localities, does not differ so much as might be expected from their latitudes. The temperature of tropical regions is known to be modified by the amount of moisture, while that of the interior of continents, even in high latitudes, is increased by the greater clearness of sky, which is dependent on the comparative absence of moisture. This cause tends to increase even the cold of winter, from the more free radiation which takes place at night in a cloudless atmosphere. Humboldt has remarked that *Gossypium Barbadense*, *hirsutum*, and *religiosum*, have each their favorite climate, from 0° to 34° of latitude, where the mean annual temperature is from 82° to 68° Fahrenheit, but that *G. herbaceum* is successfully cultivated in the temperate zone, where, with a mean summer heat of 73° to 75°, the mean of winter is not less than 46° or 48°.

But, in taking a general survey of the localities where cotton is chiefly cultivated, we should observe that many of them are in islands, and others in the vicinity of the sea. This is certainly the case with the districts where the finest cottons are produced, and the largest returns to the acre obtained. It has frequently been stated that the beneficial effects of such localities are chiefly due to the presence of salt in the soil, or to its being carried up in the spray, which is transported by winds into the interior. Koster, in his "Travels in Brazil," states, on the contrary, that "the districts which are universally allowed to be the best adapted for the growth of cotton, are far removed from the sea-coast, arid, and oftentimes very scantily supplied with water; also, that the opinion is very general, that the cotton plant will not thrive in the neighborhood of the coast, and also that plantations were yearly receding farther into the interior, the soil preferred being a deep-red earth, which becomes extremely hard after a long interval without rain." Something, no doubt, must be owing to the species which is cultivated, and to the climate of the plantation being more or less moist. Thus, Spix and Martius, in their "Travels," state that "the cotton tree cultivated at Rio de Janiero (*G. Barbadense*—sometimes, but more rarely, the *G. herbaceum*) thrives very well, but is stated not to furnish such durable materials as that in the higher and dryer districts of Minas Novas."

Proximity to the sea has, however, other peculiarities besides the facility of affording saline ingredients to the soil or to the atmosphere. It participates, to a certain degree, in the peculiarities of an insular climate; that is, in greater uniformity of temperature than is found in places farther in the interior, and in the freer circulation of air from the usually alternating land and sea breezes. There is also greater equability of moisture; for air, passing over the surface of the sea, necessarily takes up a larger proportion of water. This it does not immediately deposit on the coast, unless it is backed by hills, because it usually becomes a little warmed by the heated land, and is then capable of taking up more moisture. But, as it reaches the coast in a comparatively moist state, it necessarily rather checks than favors excessive evaporation, and thus does not force the foliage, exposed to its influence, to give up an undue quantity of moisture. This, however, is necessarily the case whenever a dry current of air passes over the surface of the leaves. To the influence of moisture, therefore, we must ascribe the more luxuriant vegetation of some sea-coasts, and of many tropical islands.

Baron Humboldt and Professor Dove have pointed out that, while Europe has a true insular or sea climate, both in winter and summer, North America inclines to a continental one in winter, and, in many parts, to a sea climate in summer; that is, it has a cold winter, with a cool summer, with the exception of certain districts, which are excessively hot. But Northern and Central Asia have a true continental climate, both in winter and summer, or a cold winter and a hot summer. Notwithstanding this, we must also recollect that, though each locality may participate in the characteristic climate of its continent, all places near the coast will have more or less of an insular climate, while those in the interior have such as are of a continental nature, though in varying degrees.

The different varieties of cotton cultivated in the United States are believed to belong to one species; that is, that the "Georgian," or "short-staple," is the sea-island, carried into the interior; and that the "sea-island" itself was originally introduced from the Bahamas, or, more remotely, from Anguilla, one of the West India Islands. The "New Orleans" does not differ specifically from the sea-island cotton, and is admitted by the planters of the South to be identical with the plant of Mexico, whence they procure their finest seeds. It is conjectured that it was from the neighboring coast of Mexico that the indigenous cotton of that country was introduced into the West Indies, and thence taken to the island of Bourbon. Hence we may account for *Gossypium Barbadense* being identical in species with the New Orleans and sea-island, as well as with the Bourbon cotton.

The Mexican plant is not a native of the temperate regions of that country, but of the *tierras calientes*, or hot districts. It is produced, for instance, in the neighborhood of Vera Cruz, and is represented as growing spontaneously near Valladolid, a town situated on the great plain of the Peninsula of Yucatan, described by Humboldt as one of the warmest regions in equatorial America. Mr. Stephens states that the spontaneous growth of cotton around that town had led to the erection of a cotton-factory in the place. Mr. Norman, in his "Rambles in Yucatan," says, "The cotton plantations, or, rather, the districts where the material is raised that is consumed in the manufactory in this city, are to the north, and known as the Tizemen district. The same spot is seldom cultivated for two successive seasons. After the crop is gathered, the ground is suffered to be overrun with weeds and brushwood, which, when years have elapsed, are cut down and burned, and the field is replanted." This rude method of culture is adduced only to show how little attention is paid to the plant in its native country. But, as it is desirable to know something precise respecting the climate of one at least of its native districts, we take from Professor Dove the subjoined notice of the means of observations made at Vera Cruz for thirteen years. This town, situated on the coast, in latitude 19° 12′ north, and in longitude 96° 9′ west, has a mean temperature of 77°.02 Fahrenheit, with a difference of only 12°.42 between the hottest and coldest months, thus:

January	69·98	July	81·50
February	71·60	August	82·40
March	73·40	September	80·96
April	72·17	October	78·44
May	80·48	November	75·38
June	81·86	December	71·06

The Mexican cotton has been introduced into Texas, as well as into Louisiana and Alabama. In the southern parts of Texas, where the climate is very congenial, the plant does not require to be renewed more frequently than once in three or four years, to yield a crop superior in quality and quantity to the annual planting of Louisiana. Cotton planting, in that part of Texas, commences in February, and picking begins at an earlier and continues for a longer period than in the other states; the average return, also, to the acre, is considerably greater in Texas than in the other states, and the expense of cultivation considerably less, in consequence, not only of the greater richness of the soil, but also of the peculiar mildness of the climate. The cotton, moreover, is of a superior quality, and planters of

acknowledged veracity state that it is not uncommon to pick 4000 pounds of seed-cotton from an acre.

Mr. Featherstonhaugh, after crossing into Northern Texas, in about latitude 33° 40', observed that he had never seen the cotton plant growing in greater perfection before; for, in the cotton districts he had passed through, the plant was a low dwarfy bush, not exceeding two feet in height; but here the plants were five feet high, often bearing 300 bolls, and yielding from 1500 to 2500 pounds of seed-cotton to the acre, which gives from 25 to 30 per cent. in weight of raw, marketable fibre.

The most successful cultivation of cotton in the United States, it is well known, is in the lower parts of Georgia, Alabama, Mississippi, Louisiana, and Texas. In these regions there is comparatively little frost, and the winter is always mild, with considerable heat in summer; but this is tempered, to a great extent, by the pleasant and salutary effects of the sea breeze, which sets in from the Gulf or the Atlantic for a great part of the day. There are heavy dews at night, and frequent showers occur, in the spring as well as in the summer. In the interior and more northern portions of these states (which are in some parts elevated from 500 to 1000 feet above the level of the sea), frost is expected in October, and often continues until April; sometimes it occurs even in May, so as to injure, but does not then usually destroy, the plant. The heat of summer, though frequently high, still is tempered by the influence of the ocean or the Gulf of Mexico, and of the numerous great rivers, as well as by the dews and occasional showers. The cultivation of cotton is generally commenced about the beginning of April, when the land is still saturated with the winter rains, and difficulty is sometimes experienced in getting the land sufficiently dry; otherwise, a good shower is essential when cotton is first sown, and it is desirable also to have occasional showers during the planting, plowing, and hoeing seasons. The bolls begin to open about the middle of July, and continue to do so until the appearance of frost, from the middle to the end of October, and the first delivery of the new crop on the sea-board is from the first to the twentieth of August.

In order to have a more precise idea of the climates of the most favorable cotton districts, and for the advantage of comparing them with those of other countries, the subjoined Table is selected from Professor Dove, as published by the British Association:

MEAN TEMPERATURE.

Localities.	Lat. N.	Long. W.	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.	Mean of Year.
Galveston, Texas	29° 18'	95° 10'	60·30	62·53	75·00	73·20	83·53	86·50	88·20	88·50	87·10	64·20	60·10	57·40	74·55
New Orleans, La.	29 58	90 70	56·75	58·99	66·58	72·41	77·26	81·18	82·22	82·12	79·42	69·71	58·71	52·26	69·80
Mobile, Ala.	30 12	87 50	56·40	57·37	65·64	70·00	76·36	82·17	82·41	82·73	78·94	64·97	61·50	55·50	69·92
Baton Rouge, La.	30 26	91 81	55·37	51·86	61·55	68·99	76·58	82·00	80·10	82·04	76·58	66·84	62·47	55·89	68·15
Jackson, La.	30 51	91 10	47·60	49·40	56·60	65·40	70·80	78·70	81·70	79·90	75·10	67·40	50·00	48·49	64·23
Houston, Texas .	31 54	95 50	55·20	60·50	68·70	72·70	85·50	80·10	84·20	81·40	83·50	72·30	62·30	60·00	73·00
Natchez, Miss. ..	31 34	91 15	50·13	50·89	62·20	69·03	72·72	80·62	81·78	80·15	74·99	64·58	55·23	49·03	66·10
Vicksburg, Miss.	32 24	91 00	51·40	53·72	63·99	74·01	76·84	80·65	82·48	80·11	76·40	64·92	55·26	50·01	67·56

To compare with these, we shall further adduce, from the same Tables, the mean temperatures of places on the Atlantic coast, as in Florida, Georgia, and Carolina, as well as in the interior of the last two:

Localities.	Lat. N.	Lon. W.	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov	Dec.	Year.
St. Augustine, Fla. .	29° 50'	81° 27'	60·75	64·97	67·55	70·06	76·89	81·41	82·81	82·67	80·10	73·88	63·5	60·92	72·13
Savannah, Ga.....	32 5	81 10	52·15	53·74	61·19	67·36	73·14	77·89	82·23	82·00	75·96	66·92	57·2	50·50	66·70
Charleston, S. C.. .	32 47	79 57	49 61	52·80	58·34	63·20	75·19	78·85	80·70	80·15	74·30	66·70	58·60	51·80	65·91
Fort Johnston, S. C.	34 0	78 5	51·42	52·19	60·52	65·28	73·70	78·98	81·57	80·39	76·32	69·11	60·13	53·83	66·96
Columbia, S. C....	34 0	80 58	47·70	42·90	47·30	62·20	67·30	72·40	76·10	76·50	66·30	57·20	43·70	39·50	57·09
Augusta, Ga.	33 28	81 54	45·09	47·63	53·66	62·34	69·58	77·72	79·47	75·15	72·96	60·85	54·23	43·45	61·90

2. *Climate of the Cotton Regions of the United States.*—The climate of Georgia is somewhat warmer than that of Carolina, but the low, flat country of both, in summer and autumn, is moist, and somewhat unhealthy. The spring is commonly rainy, and the heat of summer is considerable, but is tempered by the gentle breezes which blow almost daily from the sea. The winds change from southeast to southwest about the end of July, but are variable, from storms of thunder, and the heavy rains of July and August. The cold weather seldom commences before the beginning of December, and terminates in March, but the winter is usually mild, and snow seldom falls near the sea, and soon melts away. The hilly parts, 200 miles from the sea, are agreeable and favorable to health. The winter is colder; snow falls to a depth of five or six inches. Though the preceding tables are sufficient to give a general idea of the climates, it would be desirable, for agricultural purposes, to have also the maxima and minima for the spring, summer, and autumnal months, for a series of years, as a night of frost may destroy the plants, and great heat, with drought, will be equally injurious, from drying them up. Cotton, as before observed, is sown in April; picking commences in July or August, and continues until November, and, on the coast, sometimes even as late as December. The sea-island plant yields about 125 or 130 pounds of clean ginned cotton per acre. Of the short staple, in the hill country, from the Mississippi to the Carolinas, not more than 500 pounds of seed cotton, or 150 pounds of clean cotton, can be obtained to the acre. The short staple cotton is more or less cultivated all the way from the southern borders of Virginia, to the southwestern streams of the Mississippi. The mean quantity over all is estimated at 120 pounds of ginned cotton, of both sea-island and of the short staple, to an acre, but the amount of labor is much greater for the former than for the latter.

In comparing the climates of the cotton regions above described with those of other countries, it is necessary to remember the peculiarity of that of America, with which this subject was commenced, and also how much the best cotton districts are influenced by the Atlantic, or the Mexican Gulf. The climate, to the west of the Alleghany Mountains, is considered more mild than that under the same parallels in the Atlantic states, and, by some, even to the extent of three degrees of latitude. This has been explained as caused by the warm air of the Gulf of Mexico being driven up the basin of the Mississippi and that of the Ohio. The direction of the valley, north and south, no doubt favors the course of the southern winds, while the regions of the Atlantic slopes, being transverse, oppose any such transmission, and also the migration of plants. The majority of the places of which the mean temperatures have been adduced are on the sea-coast, and necessarily participate, to some extent, in the peculiarities of an insular climate; that is, of seasons moderately contrasted. Still, the difference between the hottest and the coldest month of the year is much greater than at Vera Cruz; that is, than 12°; being, at Mobile, Galveston, and New Orleans, 27°·23, 29°·10, and 29°·96, respectively. But in the interior, at Natchez and Vicksburg, the differences are greater, being

82°·69 and 81°·57. In the Atlantic districts the differences are nearly as great as those on the south coast, being 81°·73 at Savannah, and 81°·09 at Charleston, while, in the interior, the differences are much greater, being 36°·02 at Augusta, and 38°·10 at Columbia. In addition to the foregoing, it is desirable to notice some of the general features of the climate, both of the Gulf and of the Atlantic states, as it will then be readily seen how much it is modified by the vicinity of the sea, and by the configuration of the coast:

Mississippi.—Near the Gulf of Mexico, the climate resembles that of the lower parts of Louisiana; the winter is mild, the summer warm, but tempered by the constant prevalence of the breeze from the Gulf, together with the elevation of the surface. At Natchez, however, the thermometer in winter sometimes stands as low as 10° Fahrenheit. In sickly seasons, the inhabitants frequently remove to the high banks of the bay of St. Louis.

Alabama.—In the low and southern parts of this state the heat is very great. The climate of the inland and upper parts resembles that of Georgia, and may be considered remarkably mild. Frost commences generally in October, and continues sometimes as late as the 20th of May, so as to injure, but not destroy, the cotton, in the more elevated parts. During summer, there is usually a prevalence of westerly winds. Those from the southeast are regarded as the sure harbingers of rain. At Mobile, from nine in the morning till evening, the pleasant and salutary effects of the sea breeze are felt. The rich verdure of the earth, with the copious dews that fall during the night, and the elevation of the soil, which, in the upland parts, is from 600 to 1000 feet above the sea, produce a beneficial effect on the climate.

Louisiana.—The climate of most parts of this state is somewhat variable. From the sea to Point Coupée, it seldom snows or freezes, except in the months of December and January, and then when the wind is from the north or northwest. There is less heat and more moisture than in similar latitudes on the Eastern Continent, and the climate is generally very mild. In winter, the thermometer seldom falls more than two degrees below the freezing point. In December, 1800, the thermometer sank to 12° near New Orleans, and snow fell for the first time in twenty years. In January, 1811, the mercury fell from 78° to 10°, and the Mississippi was completely frozen over. At the present time (February, 1856), it is reported as low as 20°, and the Mississippi as frozen quite over with the ice several inches in thickness, and the ground covered with ice and sleet to a depth of six or eight inches.

Georgia.—All the flat country of this state is described as moist and unhealthy during the warmer months, especially the "rice swamps;" the climate is somewhat warmer than that of South Carolina. The winter is the most pleasant season of the year, when the thermometer usually ranges from 40° to 66°, though sometimes a considerable degree of cold has prevailed; snow is uncommon, but frosts have been experienced even as late as April. A strong northeast wind will occasionally blight a promising field of cotton, as insects will sometimes destroy it. The spring is usually rainy, the summer inconstant, with a temperature of from 76° to 90° from June to September. The atmosphere feels springy and enlivening, being refreshed by gentle breezes, which blow almost daily from the seashore. About the 20th of July the summer rains set in, often accompanied with storms of thunder, and severe winds, which, though not tropical in their violence, are often so heavy as to deluge the fields. About the end of July, or beginning of August, the wind usually changes its direction from southeast to southwest. The month of August is the period of most solicitude to the cotton-grower, as heavy rains at that time occasionally cause the plant to part with its young bolls, and even its leaves. The autumn is usually fine and clear; and about the 20th of October frosts are expected, but do not often come before the end of the month. The inhabitants of the hilly tracts, two hundred miles from the coast, enjoy an agreeable climate, which is favorable to health. The winter is colder, snow sometimes falling to a depth of five or six inches. The summer is not so hot, and the winds of autumn are less violent; and the cotton, being less exposed, is allowed to hang longer, so as to become perfectly mature.

South Carolina.—The winter of the lower parts of this state is mild; and the difference between the mildest and severest winter is about seventeen degrees, often with heavy frosts, and sometimes snow, but with a hot sun during the day; though snow seldom falls near the sea. The winter may be considered as terminating in March, when snow and heavy rains usually occur; but April and May are commonly dry months. In the low country the heat of summer is intense; but the climate is liable to sudden changes of temperature, when it is damp with fogs and heavy dews. June, July, and August are generally the wettest months, and the rains consist of heavy bursts and frequent showers, which are liable to occur in spring, summer, and autumn. November is usually fine, even after the coming of frosts, which sometimes do not occur until December. The average quantity of rain, for ten years, was 49·3 inches; the largest quantity, 83·4 inches, and the least, 30·6 inches, in any one year. In the upper country, frost appears earlier and continues later; but the weather is not so variable. In winter the cold is considerable, but does not last very long. The climate of the Santee Hills, which are situated eighty or ninety miles from the coast, is similar in character.

Texas.—The climate of Texas is decidedly more healthy than that of Louisiana, or any other of the Gulf states; still, on the low alluvial coast, intermittents are prevalent during the summer and autumnal months; but the yellow fever is rarely known. Comparatively little rain falls from March to October, though gusts of wind, with thunder, frequently occur, with sufficient rain to make excellent crops. During the rest of the year, hot weather generally prevails. The winters are warm and mild on the coast, and, for some distance inland, snow is seldom seen, except on the higher table-lands or mountains. From April to September, the thermometer, near the coast, usually ranges from 68° to 100°. The greatest heats, however, are tempered by strong and constant breezes, which begin to blow soon after the rising of the sun, and continue until past noon. The nights throughout the middle regions are cool and refreshing during the year.—*Report of the Department of State of the United States.*

In connection with the climate of the United States, it is desirable to take some notice of that in which another species, the "Brazil" or "kidney" cotton, is cultivated. From the observations of the late Dr. Loudon, at Pernambuco, it is found, that the quantity of rain which falls at that place is considerable, and that the air must always be in a moist state. As Koster states that cotton succeeds better from 50 to 150 leagues interior, the climate may still be more moist than that on the coast.

3. *Climate of the Cotton Region of the Nile.*—The soil and climate of Egypt are adapted to the growth of cotton, but the yield depends greatly on the rise of the Nile. When the river is low the crop suffers, as little or no rain falls before December. Almost all the land in Lower Egypt is particularly well adapted to the growth of this product, yet it is not all equally good.

It rains frequently in the vicinity of Alexandria, and but seldom on the Delta.

The culture of cotton in Egypt, on a large scale, is comparatively recent. It was first undertaken by M. Jumel, a Frenchman, who, in 1821, laid before the Viceroy all the advantages and results arising from its production. Previous to that period, the cotton produced in that country was of inferior quality. A few plants

only had been introduced from India, and were to be found in the garden at Cairo, where they served as ornaments. From these the culture was extended on a grand scale, and became one of the principal branches of the agriculture of the Viceroy. Although the soil along the Nile appears to be generally well adapted to the growth of the "Jumel" or "Mako" cotton, it is planted in preference in rich, heavy lands, which retain considerable moisture, and where the plant can acquire sufficient strength to produce well-filled bolls. The grounds where the cotton is cultivated are kept free from the overflowing of the river, as the standing water would rot the plants and cause them to perish. The agricultural labor of the country is performed exclusively by the Fellahs (peasantry), a peculiar race, who labor under a system similar to that of the serfage of Russia. The black slaves (chiefly Nubians and Abyssinians) in the country are occupied exclusively in domestic duties, and live better and labor less than the Fellahs. The latter are not permitted to leave the premises to which they belong, and the reward of their labor is left to the will of the proprietor, and generally is the minimum of subsistence. They live in mud hovels, and are allowed to partake of animal food but once a year, and then as a religious duty. Like the Emperor of Russia, the present Viceroy has made some experiments in making the Fellahs nominal proprietors of small farms; but the exactions of the Turkish officials never leave much margin in their profits. Therefore, having but little interest in the soil they cultivate beyond the merest subsistence, their labor is slovenly, their fields poorly tilled, and, consequently, improvements can not well be introduced. The Fellahs take great care to protect the fields by dikes of earth where they are subject to inundation at the time of the rise of the Nile. Nevertheless the cotton-plants are watered periodically by means of *Sakyiehs*, *Shadoufs*, or water-wheels. In winter, they water them every fifteen days; in the spring, if there is much dew, every twelve days; and in summer, every eight days. It may here be remarked that, in summer and autumn, the dews are very copious. The system of irrigation is admirable. The planters of some of our Southern States might profit by its adoption. In every other respect the culture by the Fellahs is slovenly to the last degree. They begin to prepare the land for culture by flooding it in December, and allowing the water to remain upon it from ten to twenty days. No manure is employed, as the ordure of the animals of burden is used for fuel. The only fertilizer is the deposit of the sediment of the Nile when the land is overflowed. They plant in March and April in Lower Egypt, before which they usually give only one tillage to the ground, if it be rich; but if the soil be indifferent, it is worked two or three times. In the vicinity of the Said, they every where plow to a depth of about fifteen inches. They then run furrows at the distance of about 3½ feet. After plowing they level the ground by breaking the clods, and it requires no further preparation. They then make holes from three to four inches in depth, and 3½ feet apart, in which they deposit from two to four seeds that have been previously steeped in water for twenty-four hours to hasten their germination. In some cases the Fellahs cultivate vegetables, etc., in the intervals between the plants. At the time of the inundation they eradicate the weeds. The first year, they cut the cotton plants with a kind of pruning-knife, and remove all the branches, which they use for fuel. This operation gives more strength to the plants, and protects them from cold, which would otherwise cause the branches to perish. The second year, they only work the ground when making a new weeding, and the plants, which had before acquired a growth of from 3½ to 5 feet in height the first year, now grow only in a less degree.

The cotton begins to flower early in July, and continues to bloom till December, and even into February or March. The period of harvesting varies in different districts. The first year, it commences in July and ends in January, when the season is not too cold. The product of each plant is 1½ pounds in the rough; the second and third years, from 1½ to 2 pounds: but, in the subsequent years, the plants lose their fecundity, and it has been found necessary to renew them every three, and in some instances every two years. They would produce bolls, however, for a long period—say fifty years. At the expiration of three years the plant increases in its shrubby character, producing a very thick foliage with but few bolls.

The yield of cotton varies according to the circumstances under which it is cultivated. That which is sown in winter, called *Baaly*, and which is watered only during the inundation of the Nile, gives, on an average, above 200 pounds to the acre. That watered by means of wheels, and called *Miskawy*, gives about 300 pounds to the acre. The maximum yield has been as high as 700 pounds; but such productiveness is rare.

4. *Climate of the various regions of Algeria.*—The soil of Algeria is generally well adapted to the cultivation of cotton; but the climate is quite the reverse, from the deficiency of rain, the very high winds, the extreme heat of summer, and the almost entire want rains in autumn. Nor is the whole of Algeria suited to the growth of cotton; it is necessary to select those parts which are the most propitious. On the chain of the Atlas, as well as on the plains which crown its heights, the heat, although in summer excessive, does not continue long enough in autumn to permit the complete maturity of the bolls. In the region of Tell, it becomes necessary to abandon its culture at an elevation of 2000, or even 1600 feet above the level of the sea. But, beyond this central and mountainous country, there extend two zones which are declared suitable for the growth of cotton, and it is said that proof has been given to that effect; one is the region of the coast from La Calle to Nemours; the other, that of the Saharian oasis. Another obstacle to its culture is, that cotton, in general, can not be planted before the middle of April without running the risk of the seeds perishing from the excessive moisture of the land. Consequently, it can not arrive at maturity before the prolonged rains of autumn commence, which nearly stop its growth. The province of Oran is reputed to be better adapted to the growth of cotton than the other two, Algiers and Constantine.

Algeria, situated as it is between the 34th and 37th degrees of north latitude, bounded on one side by the Mediterranean, and on the other by the Desert of Sahara, from which it is separated by mountains, possesses a climate, in most parts, similar to the zones bordering on the tropics. It is not, however, strictly a tropical, neither can it be said to be a temperate region. It is particularly remarkable for the uniformity of its temperature throughout the year.

The *Moniteur* contains a report from Marshal Vaillant, addressed to the Emperor, on the subject of the growth of cotton in Algeria. In the document the Minister of War recognized the good effects of the decrees of the 16th of October, 1853, by which an annual prize of 20,000 francs was allotted for five years to the best cotton-grower in the Franco-African colony; and for three years, commencing with 1854, the whole cotton produce of Algeria was ordered to be purchased by the state at a price fixed beforehand, at an advantageous rate to the producer. In consequence of this encouragement the growth of cotton has increased, and it is said the quality is equal to that of American growth.

In the cultivation of cotton in Algeria, stable-dung is sometimes used, though but few farmers pay any attention to their fields. As their cattle are never housed, their means of making manure become very limited. They plant from the 15th of April till the 10th of May, in rows about two feet apart. The crop is hoed four times, and irrigated as often as water can be spared from other plants; and, when abundant, it

is applied every four days. The bolls begin to form in July, and the plants continue in flower from September until the latter part of February. The harvesting also commences in September, and lasts until the following spring.

5. *Climate of the Cotton Districts of other Parts of Africa.*—Cotton of a very good quality has been cultivated for some years at Natal, nearly at the southern extremity of Africa. The coast is low along the region, and, in some parts, even swampy; but the land within ten miles of the sea is considered most favorable to the cultivation of cotton, probably from the constant moisture of the atmosphere and the warmth of the climate; though, no doubt, it may be successfully grown farther in the interior. The country beyond is described as being better adapted to the purposes of grazing. Various attempts have been made to obtain cotton from the west coast of Africa, and the seed of the best varieties have been introduced from the United States. In Liberia, Dahomey, and other places, fine samples have been produced, principally from the green-seeded and kidney-seeded sorts. The climate is represented as favorable, but a different population is required for an extended and profitable production.

6. *Climate of the Cotton Regions and Islands of the Mediterranean.*—Considerable quantities of cotton are cultivated in other countries bordering on the Mediterranean. It is generally the product of the India species, though seeds have been introduced from Egypt and the United States. These are cultivated in Asia Minor, in parts of Greece, and the islands generally known as the Levant. The Italian cottons are produced in Sicily, in Calabria, near Naples, and in Malta. Those of Sicily, Calabria, and Castellamare are the best, and are usually produced from American seed. A Nankin cotton is cultivated in Malta, but is all manufactured for domestic use.

At Naples, the soil and climate are well suited to the growth of cotton, with the aid of artificial irrigation in times of drought. In some seasons, however, the plants receive injury from insects, as well as from fogs and mists, in July and August.

The manure, when employed, is the dung of animals, but no other fertilizer is used. The seed is planted in April, in rows, with sufficient space between them for the passage of water, for the purposes of irrigation. The plants are in flower in June and July; the cotton harvested from September to November; and the yield per acre, unginned, besides other crops between the rows, 600 pounds.

The soil and climate of Sicily are better adapted to the growth of cotton than those of Naples, particularly on the southeast side of the island, and within twenty miles of the sea. Farther inland, the heat is not sufficient to mature the crop. The maximum temperature of the cotton regions, from May till October, is 77° Fahrenheit; minimum, 61½°; the mean 68°. The quantity of rain which falls during the cotton-growing months is generally fully sufficient for the perfection of the plant. The principal injury to the crop is occasioned by long-continued north winds, which, however, but seldom occur.

7. *Climate of the Cotton Districts of British India.*—The British East India possessions embrace an almost boundless extent of territory, extending from the Himalaya range of mountains on the north, to the ocean, including nearly the whole of the peninsula of Hindostan, the island of Ceylon, and that portion of Burmah lying between the 20° of N. lat. and the bay of Bengal. In the peninsula of India, the climate is greatly influenced by the two monsoons—one from the northeast, which blows chiefly on the eastern coast, and the other from the southwest, which is mostly felt in Malabar and the western parts of the country. In some parts, the advantages of both monsoons are enjoyed; but in others, the change from the moisture of the rains to the heat and dryness which succeed them, is nearly as marked in its character as at Saharunpore, and the cotton-plants suffer as much from the transition. Such being the extremes of temperature and of dryness, as well as the shortness of the several seasons in which the plant may be made to grow—that is, during the hot and dry weather, from March to June, or during the steaming moisture of the rainy season, followed, at first, by a hot and moist summer, and then by a cold and dry autumn, succeeded by a bracing winter—a plant must be hardy to sustain uninjured such extreme and sudden vicissitudes. But all India is not identical in climate. In some parts the accession of the rains is earlier, their termination more gradual, and the cold of winter less, or the country enjoys the advantages of a double monsoon; so that there is a longer period of growth.

Temperature, as we have seen, is only one of the elements of climate; and, though a very important one, is yet unable of itself to do any thing toward the growth of a plant, unless water be within the reach of its roots to dissolve and carry into the vegetable cells and vessels the elements of nutrition. It must be decomposed, in contact with air, not too dry, nor yet too damp, but containing its due proportion of oxygen and carbonic acid gas, and illuminated by the light of the sun. There is no doubt that cotton-plants may exist through a long range of temperature, and of moisture and dryness of the atmosphere; but it is equally certain that they will never attain healthy vigor of growth unless there is a due supply of moisture in a moderately warm, or rather hot atmosphere. Though the degree of heat may be measured with a thermometer, moisture is not always indicated by the rain-gauge, for rain may fall and run off the surface, or percolate the soil, and the earth and the atmosphere both be left in a parched state, even during the season of growth. The moisture can only be determined by the hygrometer, or the wet and dry-bulbed thermometer; and, imperfect as the majority of such instruments are, the information obtained from many situations would be invaluable, as we might then be more sure of drawing correct inferences, because, though we might not be able to calculate correctly the exact quantity of moisture contained in the atmosphere, we could see whether this was in a state of saturation, or was capable of taking up a still larger quantity, and thus in the one case checking, and in the other favoring, evaporation from the soil, and from the surface of plants. To the comparative moisture of the air on the sea-coast, and in places within the reach of the moist sea air, must chiefly be ascribed the preference of the cotton-plant for such situations, or, at least, for its successful culture in so many islands and along so many coasts. But to this it may be objected, that a long-stapled cotton is successfully grown in the dry climate of Egypt. In that country, however, copious irrigation produces the same beneficial effects in a warm, dry atmosphere. Excess of moisture in a warm climate, however, may prove as injurious as its deficiency; for then the parts of vegetation may be altogether stimulated, or may be in a state of continual growth, when plenty of branches and leaves are produced, but few flowers and very little cotton.

The seasons of India, over a great part of the country, are divided into the cold, the hot, and the rainy; names which sufficiently indicate the particular characteristics of each. If we take an equatorial climate, like that of Singapore, as a standard of comparison, we shall observe a very great difference between it and that of a northwestern situation in the plains, such as Saharunpore, in 30° of north latitude, the first being remarkable for uniformity, and the latter for a great range, both of the dry and wet-bulbed thermometer. Plants which live throughout the year in the open air at Singapore, will, in most cases, suffer both from the cold and the heat of Saharunpore, though they may flourish in the rainy season almost as well in the one as the other.

Mean Temperature in the Shade, by Fahrenheit's Scale, of several Localities in India, where Cotton has been cultivated.

Localities.	N. Lat.	E. Long.	Height above sea.	January.	February.	March.	April.	May.	June.	July.	August.	Septemb.	October.	Novemb.	December.	Year.
Singapore	1° 21'	103° 52'	sea level.	86·00	88·00	89·00	85·00	85·00	87·00	88·00	86·00	87·00	87·00	86·00	85·00	86·58
Madras	13 4	80 14	sea level.	75·50	77·70	80·80	88·70	86·80	87·70	85·30	84·60	83·70	82·02	78·90	76·30	81·91
Calcutta	22 28	88 28	sea level.	66·20	69·80	80·00	85·40	85·70	83·70	81·80	82·00	82·00	79·20	74·20	66·60	78·05
Benares	25 18	82 55	300 ft.	62·55	72·49	79·07	89·91	94·55	90·28	85·71	85·72	85·99	81·40	72·15	63·45	80·26
Cawnpore	26 29	80 22	500 ft.	63·03	66·05	72·15	88·55	96 05	91·23	86·65	87·04	85·03	78·95	75·25	67·05	80·01
Suronli	28 21	77 13	800 ft.	61·48	65·29	67·22	75·03	82·53	87·75	88·61	88·00	77·83	72·32	60·26	49·35	71·71
Saharunpore	29 57	77 33	1000 ft.	52·05	63·25	68·00	79·00	86·05	89·00	86·75	85·25	78·00	74·00	64·75	56·05	73·51
Deyrah Doon	30 15	78 5	2650 ft.	52·68	59·05	67·00	75·00	81·00	86·00	83·00	81·00	78·05	73·05	57·06	56·05	70·52

Average Quantity of Rain, in Inches and Parts, on the Sites of Experiments in the culture of Cotton, on the Low Lands of the Coast, and on the Table-Land of the Deccan, in India.

Sites.	N. Lat.	E. Long.	Height above sea.	January.	February.	March.	April.	May.	June.	July.	August.	Septemb.	October.	Novemb.	December.	Year.
																hes.
Madras	13° 4'	80° 14'	sea level.	1·35	0·23	0·36	0·65	1·43	2·05	3·20	5·24	4·76	10·09	12·45	3·25	37·20
Bombay	18 53	72 53	sea level.	Konkun, sea coast												68·73
Butnagherry	....	....	150 ft.	" "												111·75
Tanna	19 00	73 00	sea level.	" inland												106·16
Dapoolee	....	....	900 ft.	" "												134·96
Kundallah	....	....	1740 ft.	Western Ghâts												141·55
Mahabuleshwur	17 56	73 30	4500 ft.	" "												274·84
Panuchgunnee	....	....	4000 ft.	" " east branch												76·69
Sattarah	17 10	73 12	2329 ft.	Deccan, table-land												39·20
Colapoor	16 20	73 10	.....	" "												30·74
Poonah	18 00	73 00	1842 ft.	" "												19·02
Nassuck	19 56	73 56	.....	" "												26·72
Belgaum	16 00	75 00	2000 ft.	" "												40·90
Dharwar	15 28	75 8	.....	" "												58·81
Ahmednugger	19 10	73 15	1900 ft.	" "												21·83
Sholapore	....	....	.....	" "												32·16

—*U. S. Patent Office Report*, 1855.

III. Cotton Trade of the United States. 1. *History.*—Cotton, which administers so bountifully to the wants of civilized as well as to savage man, and to the wealth and economy of the countries producing it, stands pre-eminent in the United States, both as regards its superior staple and the degree of perfection to which its cultivation has been brought. One or more of its species is found growing wild throughout the torrid zone, whence it has been disseminated, and become an important object of culture in several countries thereto adjacent from time immemorial. It is mentioned by Herodotus as growing in India, where the natives manufactured it into cloth; by Theophrastus as a product of Ethiopia; and by Pliny as growing in Egypt, toward Arabia, and near the borders of the Persian Gulf. Nienhoff, who visited China in 1655, says that it was then cultivated in great abundance in that country, where the seed had been introduced about 500 years before. Columbus found it in use by the American Indians of Cuba, in 1492; Cortez, by those of Mexico, in 1519; Pizarro and Almagro, by the Incas of Peru, in 1532; and Cabeça de Vaca, by the natives of Texas and California, in 1536.

Of the precise period of the first introduction of the cultivation of this plant into the North American colonies, history is silent. In a pamphlet entitled "Nova Britannia offering most excellent fruits by planting in Virginia," published in London in 1609, it is stated that cotton would grow as well in that province as in Italy. It is also stated, on the authority of Beverley, in his History of Virginia, that Sir Edmund Andros, while governor of the colony, in 1692, "gave particular marks of his favor toward the propagating of cotton, which, since his time, has been much neglected." It further appears that it was cultivated for a long time in the eastern parts of Maryland, Virginia, Carolina, and Georgia, in the garden, though not at all as a planter's crop, for domestic consumption. In another pamphlet, entitled "A State of the Province of Georgia, attested upon oath, in the Court of Savannah," in 1740, it was averred that "large quantities have been raised, and it is much planted; but the cotton, which in some parts is perennial, dies here in the winter; which, nevertheless, the annual is not inferior to in goodness, but requires more trouble in cleansing from the seed." About the year 1742, M. Dubrenil invented a cotton gin, which created an epoch in the cultivation of this product in Louisiana. During the Revolution, the inhabitants of St. Mary's and Talbot counties, in Maryland, as well as those of Cape May county, New Jersey, raised a sufficient quantity of cotton to meet their wants for the time. It was formerly produced in small quantities, for family use, in the county of Sussex, in Delaware, near the head-waters of the Choptank.

The seed of the sea-island cotton was originally obtained from the Bahama Islands, in about the year 1785, being the kind then known in the West Indies as the "Anguilla cotton." It was first cultivated by Josiah Tattnall and Nicholas Turnbull, on Skidaway Island, near Savannah; and subsequently by James Spaulding and Alexander Bisset, on St. Simon's Island, at the mouth of the Altamaha, and on Jekyl Island, by Richard Leake. For many years after its introduction it was confined to the more elevated parts of these islands, bathed by the saline atmosphere, and surrounded by the sea. Gradually, however, the cotton culture was extended to the lower grounds, and beyond the limits of the islands to the adjacent shores of the continent, into soils containing a mixture of clay; and lastly, into coarse clays deposited along the great rivers, where they meet the ocean tides.

Previous to 1794—the year after the invention of Whitney's saw gin—the annual amount of cotton produced in North America was comparatively inconsiderable; but since that period, there is probably nothing recorded in the history of industry, including its manufacture in this country and Europe, that would compare with its subsequent increase.

In the Eastern hemisphere, the growth of cotton is principally restricted to the maritime countries lying between the 40th degree of north latitude and a corresponding parallel south. On the easterly side of the Western Continent, this plant will perfect its growth in most of the districts adjacent to the tidal waters, including the regions bordering on the Mississippi, the Amazon, and the Parana, between latitude 39° north and 40° south; and on the west coast of America, be-

tween the 40th parallel north and a corresponding degree south.

The growth of this staple is chiefly confined to India, China, Japan, Australia, Persia, Turkey, southern Europe, Arabia, Egypt, Algeria, southern and western Africa, the southern section of the United States, British Guiana, New Granada, Venezuela, Peru, Brazil, Uruguay, the West Indies, and numerous other ocean isles.

According to Dr. Royle, who has recently investigated the subject, the different localities of the four varieties or species of cotton (see page 434) may be stated in the following manner:

1. *Gossypium Indicum*, or *herbaceum*—the cotton plant of India, China, Arabia, Persia, Asia Minor, and some parts of Africa.

2. *Gossypium arboreum*—a tree cotton, indigenous to India.

3. *Gossypium Barbadense*—the Mexican or West Indian cotton, of which the sea-island, New Orleans, and upland Georgia, are varieties. It was long since introduced into the island of Bourbon, and thence into India; hence it acquired the name of "Bourbon cotton."

4. *Gossypium Peruvianum*, or *acuminatum*—which yields the Pernambuco, Peruvian, Maranham, and Brazilian cotton, especially distinguished by its black seeds, which adhere firmly together. This variety has long since been introduced into India.

The chief varieties cultivated in the United States are the black seed, or sea-island (*G. arboreum*), known also by the name of "long-staple," from its fine, white, silky appearance and long fibres; the green seed (*G. herbaceum*), called "short-staple," from its shorter, white staple, with green seeds, and commercially known by the name of "upland cotton;" and two kinds of Nankin or yellow (*G. Barbadense*), the Mexican and Petit Gulf. The average yield is about 500 pounds per acre.

The earliest record of sending cotton from this country to Europe is in the table of exports from Charleston, in 1747–'48, when seven bags were shipped; another parcel, consisting of 2000 pounds, was shipped in 1770; and a third shipment of 71 bags was made in 1784, which England seized, on the ground that America could not produce a quantity so great. The amount exported from the United States in 1791 was 189,316 pounds; in 1793, 487,600 pounds; in 1794, 1,601,760 pounds; in 1795, 6,276,300 pounds; in 1800, 17,789,803 pounds; in 1810, 93,261,462 pounds; in 1820–'21, 124,893,105 pounds; in 1830–'31, 276,979,784 pounds; in 1840–'41, 530,204,100 pounds; in 1850–'51, 927,237,089 pounds.

According to the Census returns of 1840, the amount cultivated was 790,479,275 pounds; of 1850, 987,449,600 pounds; showing an increase of 196,970,325 pounds.

It appears that the culture of cotton is rapidly diminishing in Virginia and North Carolina. In those states it is doubtless giving place to other productions of the soil. There has been a very heavy falling off also in Louisiana, and no appreciable increase in Mississippi; but the diminution in the former state, and the failure of any advance in the latter, are accounted for by the terrible inundations of the Mississippi and its tributaries. But for that calamity, it is probable that their increased yield would have equaled that of Alabama, which now occupies the first place as a cotton-planting state, and has almost doubled its production since 1840. Immense as the extent and value of this crop has become, it is not extravagant to anticipate a rate of increase for the current decennial period which will bring up the aggregate for the year 1860 to 4,000,000 bales.

The average annual yield for the five years ending with 1835 was estimated at 1,055,000 bales; for the same period ending in 1840, 1,440,000 bales; for a like period terminating with 1850, 2,270,000 bales. Had no disturbing cause interrupted the progressive advance, the amount of 1850 would have exceeded 3,000,000 bales.

The export of cotton from the United States to the countries of northern Europe commenced some sixty years ago. In the year 1800, Holland, including the territory now known as the kingdom of Belgium, received 79,694 pounds; in 1805 the aggregate quantity exported to the two countries was 17,160,967 pounds. In 1806 Norway and Denmark first imported American cotton, amounting that year to 184,193 pounds; in 1855 the aggregate quantity exported to these two countries, including Sweden, was some 7,000,000 pounds. Prussia and Sweden began importing cotton from the United States in 1804. Russia, in 1809, received cotton from the United States for the first time, and to the amount of half a million of pounds; while in 1853, the year prior to the commencement of the late war, the exportation to that country amounted to more than 21 millions. The Hanse-towns received cotton from the United States prior to the year 1800, and the progress of the trade with those cities, which is exhibited in the subjoined statement, strikingly exemplifies, in connection with the remarks which have preceded, and the general statement which follows it, the rapid and powerful advancement of the king-staple, not of the United States only, but of the commercial world.

At the opening of the present century, the imports of cotton wool into Great Britain were about 75,000 bales per annum; now the consumption of that country is 2,500,000 bales annually, while the rest of Europe, and the United States, that then had no manufactories, use about 1,900,000 more, to say nothing of the consumption of Asia. Of this 4,000,000 bales, five-sixths are the product of this country. The result of the past three years proves, that neither the existence of a war involving the chief nations of Europe, nor the fluctuations in trade consequent on its cessation, have had any effect on the demand for our great southern staple; thus establishing the fact that, the next to the leading articles of human food, it has become a great and fixed necessity.

A document compiled from the very best data, by one peculiarly fitted for the task, was lately read before the Manchester Chamber of Commerce, exhibiting very important facts. The value of the cotton manufacturing industry of the world was estimated at £120,000,000 sterling, or $600,000,000. Of this amount the entire population of Great Britain consumed, in value, about $3·85 per head per annum. England exports to the United States manufactured goods at the rate of 77 cents for each individual in this country, but being ourselves large manufacturers, and in view of the general better condition of the bulk of our population, it is probable that our consumption of cotton goods will exceed that of Great Britain 50 per cent. per head. England exports to her North American colonies cotton goods at the rate of $1·53 per head per annum, for the whole population; to Russia, only at a rate of three-fifths of a cent per head; to France, two cents per head; to her East India possessions, at the rate of 18 cents; but these three last countries manufacture at home, especially France, who mainly provides for her own wants, while Russia receives goods from several sources. Estimating the population of the globe at 850,000,000, the apportionment of the whole value of manufactured goods would be about 70 cents for every inhabitant, man, woman, and child.

The tendency of the age is gradually toward an equalization of the moral and physical condition of the human family. The wealthier and middle classes expend much more than heretofore in articles of taste and luxury, in household and personal adornment, whereby the artisan, mechanic, and laborer are benefited, and their condition improved. The barbarous and debased nations and tribes of the world are fast tending toward the habits, and acquiring the tastes of civilization; the first symptom of which is the exchange of

their former rude and scanty clothing for dresses of our manufactured goods.

Hence it requires neither reflection nor argument to show that a *very small general increase* in the consumption of cotton goods would demand a supply of raw material beyond the *present* ability of the world to afford. A reference to table "General Import of Cotton into Great Britain" will show that the small product of the West Indies is almost stationary—that the same is the case with Brazil, on an average of years; the export thence, last year, was only 135,000 bales, weighing less than 200 pounds each. In Egypt, the product of the past four years has averaged about twice as much as the preceding period; and last year only 115,000 bales came from that source, weighing 250 pounds each; while the average shipments from the East Indies for the past six years is but 340,000 bales per annum, weighing about 380 pounds each.

The main dependence of the world is on this country, which last year furnished 3,500,000 bales out of a total product of 4,200,000. As the new lands of the West come into cultivation, and the progress of our railroads brings the crop within reach of the seaboard, there will be a gradual increase of our production; but to this even there must be a limit, considering the nature of the climate and soil necessary; and the time may not be very far distant when we shall fail to meet the demand. Under this state of things, it is not to be wondered at that the governments of England and France are putting forth every effort to foster the cultivation of cotton in their colonies. We have, certainly, no cause for fear or jealousy in view of these efforts. Not only are we, as producers, interested, but the foreign manufacturer, the political economist, and the philanthropist, alike have taken the matter into serious consideration. We can scarcely contemplate, without emotion, the disastrous results commercially, politically, and socially, that might follow a general failure of *only one* crop in this country. There would be no reserve to fall back upon. The stock in Great Britain on the 1st of January last was but little larger, with a consumption of 2,100,000 bales, than it was in 1841, with a consumption of a little over 1,000,000 bales; and not half so large as the stock on January 1, 1846.

2. STATISTICS OF THE COTTON TRADE OF THE UNITED STATES.

STATEMENT RESPECTING THE TARIFF DUTIES AND CUSTOM-HOUSE REGULATIONS APPLICABLE TO AMERICAN COTTON IN THE PRINCIPAL COMMERCIAL COUNTRIES.

Countries.	Quantities.	Rates of Duty.
Great Britain	.....	Free.
France	220 pounds	In national vessels, $3 72½ in foreign vessels, $6 48.*
Spain	101 pounds	In national vessels, 79½ cents; in foreign vessels, $1 85.
Russia	36 pounds	18½ cents.
Bremen	Ad valorem	½ of 1 per cent.
Sardinia	.....	Free.
Belgium	.....	Free.
Austria	.....	Free.
Sweden and Norway	.....	In Sweden, free; in Norway, nearly ½ cent per pound.
Mexico	101 pounds	$1 50.
Hamburg	Ad valorem	½ of 1 per cent.
Holland	.....	Free.
Two Sicilies	192·060 pounds	$8 00.
British N. A. possess.	.....	Free.
Denmark	.....	Free.
Portugal	101 pounds	2 1-5 cents.
Tuscany	.....	Free.
Papal States	74·86 pounds	10 cents.
Cuba	101 pounds	In national vessels, 19½; in foreign vessels, 27½ per cent. on a valuation of $5 00.

* By the treaty of 1822, United States vessels are equalized with French vessels in the direct importation into France of articles the growth, manufacture, or produce of the United States.

COTTON CROP OF EACH STATE, ACCORDING TO THE UNITED STATES CENSUS.

States and Territories.	Cotton gathered. 1840.	Ginned Cotton. 1850.
	Pounds.	Bales of 400 Pounds.
Alabama	117,158,823	564,429
Arkansas	6,028,642	65,344
Delaware	334	....
Florida	12,110,583	45,131
Georgia	163,392,390	499,091
Illinois	200,947	....
Indiana	180	14
Kentucky	601,456	758
Louisiana	152,505,368	178,737
Maryland	5,673	....
Mississippi	193,401,577	484,292
Missouri	121,122	....
North Carolina	51,920,190	50,545
South Carolina	61,710,274	300,901
Tennessee	27,701,277	194,532
Texas	....	58,072
Virginia	5,494,483	3,947
Total	790,479,275	2,445,793

The above are estimates merely; and the totals vary from the tabular returns on page 445. The quantities consumed where grown will account in part for the discrepancies.

TABULAR COMPARATIVE STATEMENT SHOWING THE AVERAGE QUANTITIES OF COTTON PRODUCED AND EXPORTED IN THE UNITED STATES, WITH THE VALUES OF THE QUANTITIES SO EXPORTED; TOGETHER WITH THE CURRENT PRICES OF COTTON IN THE UNITED STATES AND GREAT BRITAIN, RESPECTIVELY, DURING THE FIRST THREE YEARS OF EACH DECADE, FOR A PERIOD OF SIXTY-THREE YEARS, FROM 1792 TO 1854, BOTH INCLUSIVE. *(a)*

Years.	Produced.	Exported.		Prices in	
		Quantities.	Values.	U. S.	G. B.
	Pounds.	Pounds.	Dollars.	Cents.	Pence.
1792					
1793	5,300,000	743,000	233,000	31½	19 1-6
1794					
1802					
1803	60,000,000	33,600,000	6,900,000	19½	16 4-6
1804					
1812					
1815	73,300,000	22,600,000	2,700,000	12½	20½
1814					
1822					
1823	203,300,000	153,500,000	22,100,000	14·6	8½
1824					
1832					
1833	431,500,000	344,000,000	38,500,000	11·23	7½
1834					
1842	*(b)*				
1843	907,100,000	680,206,000	60,706,000	7·43	5
*(c)*1841					
1852	*(b)*				
1853	1,227,400,000	1,064,200,000	97,000,000	9·12	6 1-7
1854	*(d)*				

(a) This statement, made up with care and labor from sources official and unofficial, and often conflicting, although not perhaps statistically exact, is yet probably enough so for those purposes of general comparison for which it is submitted. For obvious reasons, the aggregate of the exportation and consumption of cotton can not be expected to balance the production in any single year, independently of stocks on hand from preceding years. An average, year with year, of some 70,000 pounds consumed for household and other uses, and of some 3,000,000 pounds lost or destroyed, and of some 500,000 pounds of imported cotton consumed, are also items to be considered in striking this balance; as well, moreover, as the fact that the sums are in round numbers, and that the only figures in the statement which can be viewed as at all statistical are those giving the amounts and values of exportation. The data for quantities, values, and prices, derived from the Treasury reports, do not, it will be perceived, always afford results entirely consistent.

(b) The capacity of the bale is computed, agreeably to usage, at 400 pounds, in changing bales into pounds for this statement, although an average of 450 pounds to the bale would probably be more exact.

(c) Nine months only, the year ending June 30 instead of September 30, as before.

(d) The 7th decade terminates in 1861. The statement may, therefore, be viewed as embracing a period of seventy years, from 1792 to 1861, inclusive.

The following table gives, opposite to each year, the crop of the United States, the number of bales of new crop received in New Orleans up to the 1st of September, with the date of killing frost. The remarks appended are a brief synopsis of the character of the season. Reasoning from cause to effect, the reader will be enabled to form some idea of the causes

operating for or against a large crop, always bearing in mind the gradual increase in the breadth of fresh land planted in the West and Southwest.

Ending Sept. 1.	Crop.	Bales in August.	Killing frost.
1840.....	2,182,000	....	....
1841.....	1,634,900	....	Nov. 19
1842.....	1,683,600	....	Nov. 29
1843.....	2,378,000	1,734	Nov. 18
1844.....	2,030,400	292	Oct. 27
1845.....	2,394,500	5,720	Nov. 14
1846.....	2,100,500	6,846	Nov. 10
1847.....	1,778,600	140	Nov. 20
1848.....	2,346,600	1,089	Nov. 20
1849.....	2,728,600	2,864	....
1850.....	2,096,700	477	Nov. 26
1851.....	2,355,000	67	Nov. 17
1852.....	3,015,000	3,155	Nov. 6
1853.....	3,262,000	5,077	Nov. 27
1854.....	2,930,000	74	....
1855.....	2,847,300	1,391	Nov. 14
1856.....	3,527,800	23,282	Oct. 24

REMARKS.

1839—First large crop. Season remarkably fine throughout.
1840—Unfavorable season. Overflow of Mississippi River.
1841—Western crop good. Severe drought in Alabama, Georgia, Florida, and Mississippi.
1842—Generally good season and early picking.
1843—Late spring, rainy summer, and early frost.
1844—Very good season, and early picking. Partial overflow of Mississippi River.
1845—Mississippi River and Western crop good and early. Drought reduced the eastern crop 300,000 bales.
1846—Late spring, early and general visitation of army worms; the latter destroying 400,000 to 500,000 bales.
1847—Late season, but favorable fall. The occurrence of the French Revolution put down prices, and 200,000 bales were held back to the country.
1848—Summer rainy, but fine fall; 200,000 bales brought forward of previous crop.
1849—Frost in spring, heavy rains in July, partial overflow of Mississippi River; Red River bottoms overflowed in summer.
1850—Backward spring, picking began unusually late. Partial overflow of Mississippi River.
1851—Favorable summer and early picking.
1852—Remarkably fine season, early picking, and late frost.
1853—Late and rainy season.
1854-'55—Backward season. About 250,000 bales kept back by lowness of the waters in Alabama, Louisiana, Arkansas, and Texas.
1855-'56—Fine season. Early picking, sufficiently good to counterbalance an early frost. About 250,000 bales of last crop received, which, in fact, will make the *actual* product of 1854-'55, 3,097,300 bales, and reduce that of 1855-'56 to 3,277,800 bales.

Sea-Island Cotton. The crop of this important staple for the year ending Sept. 1, 1856, was 44,512 bales; 1854-'55, 40,841 bales, and in 1853-'54, 39,686 bales. The receipts in 1855-'56 being, from Florida, 10,900; Georgia, 13,245; South Carolina, 20,367.

The extraordinary crop of the year 1855-'56 in the United States (3,527,300 bales) has passed into the numerous channels of consumption at prices much higher than for five years past, leaving a stock on hand on 1st September last of only 52,000 bales in all the United States ports. This consumption is still going on throughout the British and Continental manufacturing districts; and the increase of machinery added to mills hitherto working, it is estimated, will require in Great Britain alone an additional weekly supply of 4000 bales.

ACCOUNT SHOWING THE DESTINATION OF THE COTTON EXPORTED FROM THE UNITED STATES IN 1847, 1848, AND 1849.

Countries.	1847.	1848.	1849.
	Pounds.	Pounds.	Pounds.
Russia	5,618,525	10,266,911	10,650,631
Sweden and Norway	2,887,993	4,978,024	7,024,160
Denmark	660,732	69,020	4,770
Hanse Towns	10,889,543	17,420,408	18,844,494
Holland	1,978,324	4,951,509	11,887,786
Belgium	10,184,548	15,279,076	28,118,309
England	338,150,564	546,911,182	687,490,911
Scotland	12,683,738	25,091,965	38,171,778
Ireland	424,497	.....	3,968,547
Gibraltar	99,199	133,202	5,725,812
Canada	169,088	22,352	94,357
British Am. Col.	122,567		2,747
France, Atlantic	97,421,966	129,263,272	142,232,509
——— Mediter'n.	4,695,492	7,084,583	6,858,298
Spain	12,313,658	19,823,425	23,285,80
Cuba	3,159,153	4,557,474	1,584,78
Portugal	.....	774	240,895
Italy	8,720,718	6,077,621	10,604,462
Sardinia	4,494,594	2,514,364	6,053,707
Austrian ports	11,780,673	20,463,600	13,279,384
Mexico	.....	.....	2,208,704
Central America	.....	.....	524,721
China and South Seas	848,998	12,958	760,861
Total	527,219,958	814,274,431	1,014,633,010

N.B.—The sea-island, amounting to 11,989,259 lbs., is excluded from the exports in the foregoing table for 1849. Including them, the total exports of that year were 1,026,602,269 pounds.

STATEMENT EXHIBITING THE QUANTITY AND VALUE OF COTTON EXPORTED ANNUALLY FROM THE UNITED STATES FROM 1821 TO 1855, INCLUSIVE, AND THE AVERAGE PRICE PER POUND.

Years.	Pounds of Cotton.			Value.	Average cost per pound.
	Sea-Island.	Other.	Total.		
1821.....	11,544,066	113,549,339	124,893,405	$20,157,484	16·2
1822.....	11,250,635	133,424,460	144,675,095	24,025,058	16·6
1823.....	12,136,688	161,586,582	173,723,270	20,445,520	11·8
1824.....	9,525,722	132,843,941	142,369,663	21,047,401	15·4
1825.....	9,665,278	166,784,629	176,449,907	36,846,649	20·9
1826.....	5,972,852	198,562,563	204,535,415	25,025,214	12·2
1827.....	15,140,798	279,169,317	294,310,115	29,359,545	10
1828.....	11,288,410	199,302,044	210,590,463	22,487,229	10·7
1829.....	12,833,307	252,003,379	264,837,186	26,575 811	10
1830.....	8,147,105	290,311,987	298,459,102	29,674,883	9·9
1831.....	8,311,762	268,668,022	276,979,784	25,289,492	9·1
1832.....	8,743,373	313,451,749	322,215,122	31,724,032	9·8
1833.....	11,142,987	313,535,617	324,698,604	36,191,105	11·1
1834.....	8,085,037	376,601,970	384,717,907	49,448,402	12·8
1835.....	7,752,736	379,636,256	387,388,992	64,961,302	16·8
1836.....	7,849,597	415,721,710	423,631,307	71,284,925	16·8
1837.....	5,286,971	438,964,566	444,211,537	63,240,102	14·2
1838.....	7,286,340	588,615,957	595,952,297	61,556,511	10·3
1839.....	5,107,404	408,526,868	413,634,272	61,233,982	14·8
1840.....	8,779,069	735,161,392	743,941,061	63,870,507	8·5
1841.....	6,237,424	523,966,676	530,204,100	54,830,841	10·2
1842.....	7,254,099	577,462,918	584,717,017	47,593,464	8·1
1843.....	7,515,079	784,782,027	792,297,106	49,119,506	6·2
1844.....	6,099,076	657,534 370	663,633,455	54,063,501	8·1
1845.....	9,580,025	863,516,371	872,905,996	51,739,643	5·92
1846.....	9,388,533	538,169,522	547,558,055	42,767,041	7·81
1847.....	6,293,973	520,025,985	527,219,958	53,415,848	10·34
1848.....	7,724,148	806,550,283	814,274,431	61,968,294	7·61
1849.....	11,989,259	1,014,633,010	1,026,602,269	66,396,967	6·4
1850.....	8,236,463	627,145,141	635,381,604	71,984,816	11·3
1851.....	8,299,656	918,937,433	927,237,089	112,315,817	12·11
1852.....	11,738,075	1,681,492,564	1,093,230,639	87,865,732	8·05
1853.....	11,165,165	1,100,405,205	1,111,570,370	109,456,404	9·85
1854.....	10,486,423	977,346,683	987,833,106	93,596,920	9·47
1855.....	13,058,590	995,366,011	1,008,424,601	88,143,844	8·74
Total lbs.....	320,507,294	18,154,756,946	18,475,264,240	$1,830,247,742	....

TABULAR COMPARATIVE STATEMENT SHOWING THE QUANTITIES OF COTTON EXPORTED FROM THE UNITED STATES TO THE PRINCIPAL COMMERCIAL COUNTRIES RESPECTIVELY, AND THE ANNUAL AVERAGE AMOUNTS THEREOF; AND THE ANNUAL AVERAGE AMOUNTS OF DUTIES DERIVED THEREFROM, FOR A PERIOD OF FIVE YEARS, FROM 1851 TO 1855, BOTH INCLUSIVE. THE DATA FOR THIS STATEMENT ARE DERIVED FROM THE UNITED STATES TREASURY REPORTS, IN WHICH THE COMMERCIAL YEAR CLOSES JUNE 30. THE YEAR IN BRITISH AND FRENCH OFFICIAL DOCUMENTS CORRESPONDS WITH THAT OF THE CALENDAR; HENCE ONE CAUSE OF APPARENT DISCREPANCIES IN FIGURES FOR NOMINALLY THE SAME YEARS.

Countries to which exported.	Pounds of Cotton exported from the United States in the Years					Annual average Amounts of Cotton.	Annual average Amounts of Duties paid.*
	1851.	1852.	1853.	1854.	1855.		
Great Britain	670,645,122	752,573,780	768,590,498	696,247,047	673,498,259	712,512,141	Free.
France	139,164,571	186,214,270	190,226,013	144,428,360	210,113,809	173,829,884	$2,039,300 25
Spain	34,272,625	29,301,928	36,851,042	35,024,074	33,071,705	33,704,292	265,296 06
Hanse Towns	16,716,571	22,318,228	22,071,782	37,710,922	30,809,991	26,611,298	25,795 00†
Belgium	16,335,018	27,157,890	15,404,442	15,980,460	12,219,853	17,037,472	Free.
Austria	17,309,154	23,948,434	17,968,642	14,961,144	9,761,465	16,789,767	Free.
Sardinia and Italy	16,320,406	17,934,208	17,487,984	12,725,810	16,087,064	14,911,110	Different rates.
Russia	10,098,448	10,475,168	21,286,533	2,914,954	448,897	9,044,800	47,018 36
Mexico	845,960	6,700,001	7,463,851	12,146,080	7,527,079	6,936,612	103,018 99‡
Holland	5,508,670	10,259,042	7,088,994	6,048,165	4,941,414	3,759,257	Free.
Sweden and Norway	5,160,974	5,939,025	6,099,517	9,212 710	8,428,437	6,968,132	Different rates.§
British N. A. possessions	25,525	16,528	12,295	72,790	883,204	201,070	Free.
Denmark	.....	37,042	435,169	52,983	209,186	142,876	Free.
Cuba	113,572	204,852	196,392	259,633	9,620	173,014	2 385 42
Portugal	.....	96,235	87,691	121,050	144,066	90,198	19 64
Elsewhere	722,473	141,803	652,395	1,946,895	270,822	746,918	.....
To all countries	927,237,089	1,093,250,639	1,111,670,370	987,883,106	1,008,424,601	1,025,659,156	.....

* The amounts of duties paid are calculated on the customs rates given in the preceding statement (†), although those rates, during the five years designated, have in some instances undergone changes. Belgium, for example, did not admit cotton free until the passage of the law of April 12, 1854.

† The amount is calculated on the medium of the *ad valorem* duty of Bremen and Hamburg, on an assumed valuation of 17 cents per pound.

‡ The amount is calculated on the rates of the existing tariff of January 31, 1856, prior to which cotton was either prohibited or subjected to a duty equivalent to prohibition.

§ United States Treasury reports do not give quantities to Norway distinct from those to Sweden. In the latter, cotton is free; in the former, the duty is nearly half a cent per pound.

EXPORT OF COTTON TO FOREIGN PORTS FROM SEPTEMBER 1, 1855, TO AUGUST 31, 1856.

Where from.		Great Britain.	France.	North of Europe.	Other foreign Ports.	Total.
New Orleans	bales	986,622	244,814	162,675	178,812	1,572,923
Mobile	"	351,690	96,262	29,016	8,067	485,035
Texas	"	19 631	5,105	9,175	.....	34,002
Florida	"	30,869	2,939	2,020	.....	35,828
Savannah	"	162,748	16,857	2,907	2,883	185,320
Charleston	"	150,532	87,393	49,727	53,456	371,111
Virginia and North Carolina	"	106	.....	.....	.....	106
Baltimore	"	424	48	.....	.....	474
Philadelphia	"	178	.....	.....	.....	178
New York	"	181,045	27,155	42,893	5,371	256,464
Boston	"	7,421	.....	5,592	64	13,077
GRAND TOTAL, 1855–'56		1,921,386	480,637	304,005	248,578	2,954,606
Total, year 1854–'55		1,649,716	409,9 1	135,200	149,362	2,244,209
Increase		271,670	70,706	168,805	99,216	710,397

QUANTITY OF COTTON CONSUMED BY AND IN THE HANDS OF MANUFACTURERS NORTH OF VIRGINIA.

Years.	Bales.	Years.	Bales.	Years.	Bales.	Years.	Bales.	Years.	Bales.
1855–'56	652,759	1849–'50	487,769	1843–'44	340,744	1838–'39	270,018	1833–'34	196,115
1854–'55	595,584	1848–'49	518,039	1842–'43	325,129	1837–'38	246,063	1832–'33	194,412
1853–'54	610,571	1847–'48	531,772	1841–'42	267,850	1836–'37	222,540	1831–'32	173,000
1852–'53	671,009	1846–'47	427,967	1840–'41	297,288	1835–'36	236,738	1830–'31	182,142
1851–'52	603,029	1845–'46	422,597	1839–'40	295,195	1834–'35	216,885	1829–'30	126,512
1850–'51	494,108	1844–'45	380,606						

We give below a table of the amount of cotton consumed the past year in the States south and west of Virginia, and not included in the receipts at the ports. We have largely increased the estimate from the year previous, but give it only for what it purports to be, an *estimate*, which we believe approximates correctness.

There are no statistical returns of the quantities of cotton manufactured in the States south of Virginia; but it is well known that the yearly consumption in those States is increasing, as well as in Virginia, Ohio, Illinois, and Missouri. At the last census the capital employed in the manufacture of cotton goods in the Southern States was as follows: Maryland, $2,236,000; Virginia, $1,908,000; North Carolina, $1,058,000; South Carolina, $857,000; Georgia, $1,736,000; Florida, $80,000; Alabama, $651,000; Mississippi, $98,000; Kentucky, $239,000; Tennessee, $639,000; Missouri, $102,000. At this period [1856–7] these sums are probably doubled.

States.	1856.	1855.	1854.	1853.	1852.	1851.	1850.
North Carolina	bales 22,000	18,500	20,000	20,000	15,000	13,000	20,000
South Carolina	" 15,000	10,500	12,000	10,000	10,000	10,000	15,000
Georgia	" 25,000	20,500	23,000	20,000	22,000	13,000	27,000
Alabama	" 6,500	5,500	6,000	5,000	5,000	4,000	6,000
Tennessee	" 7,000	4,000	6,000	5,000	7,000	8,000	12,000
On the Ohio, etc	" 42,000	26,000	38,000	30,000	16,000	12,000	27,500
Total to September 1	117,500	85,000	105,000	90,000	75,000	60,000	107,500

To which, if added (for the past year) the stocks in the interior towns 1st Sept. (say 3500 bales), the quantity now detained in the interior (say 50,000 bales), and that lost on its way to market the past year to the crop as given above, received at the shipping ports, the aggregate will show, as near as may be, the amount *raised* in the United States the past season—say, in round numbers, 3,335,000 bales (after deducting 1800 bales *new crop* received this year to the 1st Sept., and some 250,000 bales detained in the interior Sept. 1st, 1855, by low rivers, etc., which it is fair to suppose came forward the past season, and is already added to the receipts at the ports), against

1855	bales, 3,178,000	1851	bales, 2,453,000
1854	3,000,000	1850	2,212,000
1853	3,500,000	1849	2,840,000
1852	3,100,000	1848	2,357,000

STATEMENT AND TOTAL AMOUNT OF THE COTTON CROP OF THE UNITED STATES FOR THE YEARS ENDING AUGUST 31, 1855 AND 1856.

	Bales.	1856.	1855.
FROM NEW ORLEANS.			
Export.			
To foreign ports	1,572,923		
Coastwise	222,100		
Burned at New Orleans	1,200		
Stock, 1st September, 1856	6,995		
	1,803,219		
Deduct.			
Received from Mobile, Montgomery, etc.	73,573		
Received from Florida	5,186		
Received from Texas	29,601		
Stock, 1st September, 1855	39,425		
	141,785		
MOBILE.		1,661,433	1,232,644
Export.			
To foreign ports	485,035		
Coastwise	196,286		
Consumed in Mobile	1,986		
Stock, 1st September, 1856	5,005		
	688,262		
Deduct.			
Received from New Orleans	5		
Stock, 1st September, 1855	28,619		
	28,524		
TEXAS.		659,738	454 595
Export. To foreign ports	34,002		
Coastwise	83,515		
Stock, 1st September, 1856	623		
	118,140		
Deduct Stock, 1st September, 1855	2,062		
		116,078	80,737
FLORIDA.			
Export.			
To foreign ports—Uplands	35,853		
Coastwise—Uplands	97,738		
Sea-Islands	10,900		
Stock in Apalachicola, 1st September, 1856	74		
	144,570		
Deduct Stock in Apalachicola, 1st September, 1855	166		
		144,404	136,597
GEORGIA.			
Export.			
To foreign ports—Uplands	177,182		
Sea-Islands	8,198		
Coastwise—Uplands	200,426		
Sea-Islands	7,846		
Stock in Savannah, 1st September, 1856	1,650		
Stock in Augusta, 1st September, 1856	1,781		
	396,423		
Deduct.			
Received from Florida—Sea-Islands	2,755		
Uplands	386		
Stock in Savannah, 1st September, 1855	2,130		
Stock in Augusta, 1st September, 1855	1,707		
	6,978		
		389,445	378,694
SOUTH CAROLINA.			
Export from CHARLESTON—			
To foreign ports—Uplands	352,546		
Sea-Islands	18,705		
Coastwise—Uplands	133,451		
Sea Islands	9,286		
Burned at Charleston	761		
Stock in Charleston, 1st September, 1856	3,144		
	517,743		
Export from GEORGETOWN—			
To Northern ports	2,893		
	520,636		
Deduct.			
Received from Florida—Sea-Islands	6,027		
Uplands	678		
Received from Savannah—Sea-Islands	2,089		
Uplands	13,284		
Stock in Charleston, 1st September, 1855	2,085		
	24,060		
NORTH CAROLINA.		495,976	499,272
Export. To foreign ports	9d		
Coastwise	26,009		
		26,098	26,139
VIRGINIA.			
Export.			
To foreign ports	70		
Coastwise, and manufactured (taken from the ports)	20,748		
Stock, 1st September, 1856	842		
	21,660		
Deduct. Received from Mobile	652		
Stock, 1st September, 1855	550		
	1,202		
		20,458	31,000
Received at New York by the New York and Erie Canal		305	377
Received at New York by New York and Erie Railroad		1,781	684
Received at Baltimore and Philadelphia from the West		12,129	6,600
TOTAL CROP OF THE UNITED STATES		3,527,845	2,847,399
Increase from last year		bales,	680,556
Increase from year before			597,848

STATEMENT AND TOTAL AMOUNT OF THE COTTON CROP OF THE UNITED STATES FOR THE YEARS ENDING AUGUST 31, 1856 AND 1857.

	Bales.	1857.	1856.
FROM NEW ORLEANS.			
Export.			
To foreign ports	1,293,717		
Coastwise	223,204		
Stock, 1st September, 1857	7,321		
	1,524,242		
Deduct.			
Received from Mobile, Montgomery, etc.	60,086		
Received from Florida	4,708		
Received from Texas	17,503		
Stock, 1st September, 1856	6,995		
	89,242		
MOBILE.		1,435,000	1,081,433
Export.			
To foreign ports	314,989		
Coastwise	174,055		
Manufactured in Mobile, etc.	2,246		
Burned at Mobile	12,700		
Stock, 1st September, 1857	4,504		
	508,494		
Deduct.			
Received from New Orleans	10		
Shipment to Boston returned	302		
Stock, 1st September, 1856	5,005		
	5,317		
TEXAS.		503,177	659,738
Export.			
To foreign ports	20,007		
Coastwise	68,636		
Stock, 1st September, 1857	962		
	90,505		
Deduct Stock, 1st September, 1856	623		
		89,882	116,079
FLORIDA.			
Export.			
To foreign ports—Uplands	30,580		
Coastwise—Uplands	82,636		
Sea-islands	20,365		
Burned at Apalachicola	2,472		
Stock, 1st September, 1857	56		
	136,413		
Deduct Stock, 1st September, 1856	74		
		136,344	144,404
GEORGIA.			
Export.			
To foreign ports—Uplands	152,228		
Sea-islands	6,611		
Coastwise—Uplands	158,791		
Sea-islands	10,028		
Stock in Savannah, 1st September, 1857	1,926		
Stock in Augusta, 1st September, 1857	2,747		
	332,331		
Deduct.			
Received from Florida—Sea-islands	6,889		
Stock in Savannah, 1st September, 1856	1,550		
Stock in Augusta, 1st September, 1856	1,781		
	10,220		
SOUTH CAROLINA.		322,111	339,445
Export from CHARLESTON—			
To foreign ports—Uplands	212,604		
Sea-islands	16,581		
Coastwise—Uplands	162,541		
Sea-islands	6,905		
Burned and manufactured at Charleston	461		
Stock in Charleston, 1st September, 1857	5,614		
	404,739		
Export from GEORGETOWN—			
To coastwise ports	9,500		
	414,239		
Deduct.			
Received from Florida—Sea-islands	8,307		
Received from Key West and Nassau, N. P. (wrecked)—Uplands	431		
Received from Savannah—Sea-islands	1,589		
Uplands	3,437		
Stock in Charleston, 1st September, 1856	3,144		
	16,908		
		397,331	495,976
NORTH CAROLINA.			
Export. To coastwise ports	27,147		
		27,147	26,099
VIRGINIA.			
Export.			
To foreign ports	269		
Coastwise, and manufactured (taken from the ports)	23,925		
Stock, 1st September, 1857	420		
	24,615		
Deduct. Stock 1st September, 1857	842		
		23,773	20,458
Received at New York from Memphis, Nashville, etc. (Tenn.)		2,022	2,086
Received at Philadelphia from Memphis, Nashville, etc. (Tenn.)		1,236	7,938
Received at Baltimore from Memphis, Nashville, etc. (Tenn.)		1,466	4,191
TOTAL CROP OF THE UNITED STATES		2,930,519	3,527,845
Decrease from crop of 1856			bales, 588,326
Increase over crop of 1855			" 92,180
Increase over crop of 1854			" 69,492

STATEMENT SHOWING THE WEEKLY AND TOTAL RECEIPTS OF COTTON INTO THE PORTS OF THE UNITED STATES; ALSO THE WEEKLY AND TOTAL EXPORTS OF COTTON TO GREAT BRITAIN, FRANCE, NORTH OF EUROPE AND OTHER FOREIGN PORTS; TOGETHER WITH THE STOCK ON HAND IN THE SHIPPING PORTS; DURING THE LAST FIVE YEARS. ARRANGED AND PUBLISHED BY WILLIAM P. WRIGHT, PER J. Y., COTTON BROKER, NEW YORK. (THE FIGURES REPRESENT THOUSANDS OF BALES.)

SEPTEMBER, 1852, TO AUGUST, 1853, INCLUSIVE.																											
DATE.	RECEIPTS.		EXPORTS.																								STOCK.
			Great Britain.		France.		North Europe.		Other foreign ports.																		
	Weekly.	Total.	Weekly.	Total.	Weekly.	Total.	Weekly.	Total.	Weekly.	Total.	Weekly Total.	Grand Total.	Stock on hand.	Weekly.	Total.	Weekly.	Total.	Weekly.	Total.	Weekly.	Total.	Weekly Total.	Grand Total.	Stock on hand.	Weekly.	Total.	Weekly.	Total.	Weekly.	Total.	Weekly.	Total.	Weekly Total.	Grand Total.	Stock on hand.
Sept. 19	0	18	0	12	0	1	0	0	0	1	0	14	64	0	3	0	17	0	1	0	2	0	1	21	21	82	0	18	0	12	0	1	0	2	0	1	21	21	82
" 26	29	47	4	18	1	2	0	0	1	2	6	20	82	16	13	3	25	0	1	1	3	1	2	10	31	85	0	18	0	12	0	1	0	2	0	1	21	21	82
Oct. 3	38	85	6	22	1	3	1	1	0	2	8	28	100	17	35	5	30	0	1	2	5	1	3	8	39	87	0	18	0	12	0	1	0	2	0	1	21	21	82
" 10	47	132	10	32	3	6	0	1	2	4	15	43	130	23	58	5	35	1	2	0	5	0	3	6	45	99	0	18	0	12	0	1	0	2	0	1	21	21	82
" 17	55	187	20	58	1	7	0	1	1	5	23	71	151	27	85	11	46	1	3	1	6	2	5	15	60	108	0	18	0	12	0	1	0	2	0	1	21	21	82
" 24	69	256	10	68	5	12	0	1	3	8	33	89	135	41	126	4	50	2	5	0	6	2	7	13	63	131	0	18	0	12	0	1	0	2	0	1	21	21	82
" 31	81	337	30	98	0	12	3	4	4	12	37	126	224	47	173	7	57	1	6	1	7	3	16	12	80	161	0	18	0	12	0	1	0	2	0	1	21	21	82
Nov. 7	84	421	19	117	5	17	1	5	4	16	29	155	262	50	223	14	71	4	10	0	7	0	10	13	98	177	0	18	0	12	0	1	0	2	0	1	21	21	82
" 14	105	526	48	160	3	20	2	7	3	19	51	206	302	66	289	14	85	0	10	3	10	2	12	19	117	214	0	18	0	12	0	1	0	2	0	1	21	21	82
" 21	109	635	59	219	6	26	1	8	6	25	72	278	324	68	352	15	100	1	11	0	10	3	15	19	136	245	0	18	0	12	0	1	0	2	0	1	21	21	82
" 28	116	751	32	251	9	35	1	9	9	34	51	329	382	70	422	12	112	6	17	2	12	2	17	22	158	278	0	18	0	12	0	1	0	2	0	1	21	21	82
Dec. 5	118	864	54	305	6	41	2	11	1	35	83	392	420	75	497	19	131	10	27	2	14	2	19	33	191	307	0	18	0	12	0	1	0	2	0	1	21	21	82
" 12	138	1,002	55	360	13	54	2	13	4	39	74	466	465	72	569	24	155	8	35	1	15	4	23	37	228	333	0	18	0	12	0	1	0	2	0	1	21	21	82
" 19	125	1,127	44	404	6	60	1	14	1	40	52	518	514	90	659	31	186	10	45	0	15	4	27	45	273	352	0	18	0	12	0	1	0	2	0	1	21	21	82
" 26	117	1,244	46	450	6	66	2	16	0	40	54	572	560	105	764	31	217	7	52	0	15	3	30	41	314	408	0	18	0	12	0	1	0	2	0	1	21	21	82
Jan. 2	114	1,358	66	516	15	81	3	19	2	49	98	665	562	103	872	26	243	5	57	3	18	2	32	36	350	468	0	18	0	12	0	1	0	2	0	1	21	21	82
" 9	135	1,493	49	565	17	98	2	21	10	59	78	743	595	87	959	24	267	18	75	4	22	9	41	55	405	495	0	18	0	12	0	1	0	2	0	1	21	21	82
" 16	101	1,594	76	641	7	105	5	26	9	68	97	840	570	76	1,035	31	298	15	90	1	28	3	44	50	455	496	0	18	0	12	0	1	0	2	0	1	21	21	82
" 23	114	1,708	51	692	5	110	1	27	9	77	66	906	606	77	1,112	34	332	19	109	6	29	5	49	64	519	507	0	18	0	12	0	1	0	2	0	1	21	21	82
" 30	118	1,826	58	750	16	126	9	38	5	82	88	994	621	97	1,209	44	376	12	121	3	32	8	52	69	561	511	0	18	0	12	0	1	0	2	0	1	21	21	82
Feb. 6	120	1,946	70	820	18	139	5	41	5	87	98	1,067	619	120	1,329	31	407	16	187	1	38	4	56	52	638	556	0	18	0	12	0	1	0	2	0	1	21	21	82
" 13	126	3,072	26	846	7	146	4	45	6	93	43	1,180	570	129	1,458	34	441	24	161	1	34	4	60	63	696	605	0	18	0	12	0	1	0	2	0	1	21	21	82
" 20	129	2,201	38	884	11	157	2	47	6	98	56	1,186	701	140	1,598	32	473	4	165	7	41	5	65	48	744	678	0	18	0	12	0	1	0	2	0	1	21	21	82
" 27	136	2,397	28	912	17	174	6	53	8	106	59	1,245	750	107	1,705	44	517	17	182	8	49	4	69	73	817	602	0	18	0	12	0	1	0	2	0	1	21	21	82
March 5	103	2,490	46	958	8	182	12	65	8	109	69	1,814	764	106	1,811	56	573	3	185	7	56	1	70	67	884	721	0	18	0	12	0	1	0	2	0	1	21	21	82
" 12	112	2,549	36	994	11	193	0	65	5	114	52	1,866	823	90	1,901	62	635	6	191	18	74	2	73	88	973	697	0	18	0	12	0	1	0	2	0	1	21	21	82
" 19	99	2,611	41	1,035	17	210	2	67	7	121	67	1,433	774	72	1,973	70	705	20	211	11	85	7	79	108	1,080	645	0	18	0	12	0	1	0	2	0	1	21	21	82
" 26	79	2,690	36	1,071	20	230	8	70	8	124	62	1,495	775	83	2,056	76	781	9	220	8	88	8	87	96	1,176	618	0	18	0	12	0	1	0	2	0	1	21	21	82
April 2	72	2,762	29	1,100	25	255	10	80	0	124	64	1,559	777	72	2,128	59	840	9	229	2	90	2	89	72	1,248	612	0	18	0	12	0	1	0	2	0	1	21	21	82
" 9	59	2,821	41	1,141	8	263	7	87	5	129	61	1,620	787	99	2,227	57	897	4	233	2	92	6	95	69	1,317	637	0	18	0	12	0	1	0	2	0	1	21	21	82
" 16	68	2,884	30	1,221	28	291	9	96	1	130	118	1,793	679	85	2,312	50	947	1	234	4	96	1	96	56	1,378	646	0	18	0	12	0	1	0	2	0	1	21	21	82
" 23	40	2,924	41	1,262	17	308	16	112	1	131	75	1,813	629	87	2,399	47	994	3	237	0	96	8	104	58	1,431	670	0	18	0	12	0	1	0	2	0	1	21	21	82
" 30	51	2,975	48	1,310	27	335	13	125	11	142	99	1,912	568	60	2,459	45	1,039	3	240	5	101	5	109	58	1,489	655	0	18	0	12	0	1	0	2	0	1	21	21	82
May 7	41	3,016	45	1,355	19	354	4	129	6	148	74	1,936	523	56	2,517	29	1,068	6	246	6	107	5	114	46	1,585	645	0	18	0	12	0	1	0	2	0	1	21	21	82
" 14	39	3,055	41	1,396	12	366	10	139	1	149	64	2,050	488	44	2,561	58	1,126	4	250	4	111	10	124	76	1,661	605	0	18	0	12	0	1	0	2	0	1	21	21	82
" 21	21	3,076	39	1,435	11	377	4	143	2	151	56	2,106	439	44	2,605	28	1,154	0	250	7	118	14	128	39	1,650	608	0	18	0	12	0	1	0	2	0	1	21	21	82
" 28	28	3,104	40	1,475	2	379	4	147	3	154	49	2,155	417	35	2,640	57	1,211	11	261	4	122	6	134	78	1,728	547	0	18	0	12	0	1	0	2	0	1	21	21	82
June 4	13	3,117	33	1,508	10	389	4	151	4	158	51	2,206	372	35	2,675	51	1,272	5	266	12	134	6	140	84	1,812	492	0	18	0	12	0	1	0	2	0	1	21	21	82
" 11	18	3,135	30	1,538	13	402	6	157	3	161	52	2,258	330	96	2,711	36	1,308	4	270	2	136	5	145	47	1,859	467	0	18	0	12	0	1	0	2	0	1	21	21	82
" 18	15	3,150	31	1,569	6	402	3	160	2	163	28	2,294	308	97	2,788	27	1,335	8	278	2	138	2	147	89	1,898	456	0	18	0	12	0	1	0	2	0	1	21	21	82
" 25	12	3,162	24	1,593	7	409	2	162	1	164	54	2,328	269	29	2,787	53	1,388	15	293	8	141	3	150	74	1,972	391	0	18	0	12	0	1	0	2	0	1	21	21	82
July 2	10	3,172	25	1,618	4	413	1	163	3	167	33	2,361	244	23	2,790	37	1,425	5	298	4	145	3	153	49	2,021	355	0	18	0	12	0	1	0	2	0	1	21	21	82
" 9	6	3,178	23	1,641	0	413	1	164	2	169	26	2,387	228	11	2,801	26	1,451	8	306	7	152	3	156	44	2,065	316	0	18	0	12	0	1	0	2	0	1	21	21	82
" 16	13	3,191	10	1,651	0	413	3	167	1	170	14	2,401	217	11	2,812	17	1,468	1	307	2	154	2	158	22	2,087	297	0	18	0	12	0	1	0	2	0	1	21	21	82
" 23	2	3,193	30	1,681	5	418	1	168	4	174	40	2,441	172	17	2,829	19	1,487	5	312	2	156	4	162	30	2,117	268	0	18	0	12	0	1	0	2	0	1	21	21	82
" 30	5	3,198	18	1,697	4	422	0	168	5	179	25	2,466	150	10	2,839	33	1,520	9	321	3	159	6	168	51	2,168	217	0	18	0	12	0	1	0	2	0	1	21	21	82
Aug. 6	4	3,202	18	1,715	0	422	0	168	4	183	22	2,488	125	12	2,851	16	1,536	18	337	3	161	2	170	36	2,204	186	0	18	0	12	0	1	0	2	0	1	21	21	82
" 13	3	3,205	10	1,725	0	422	0	168	5	188	15	2,508	112	12	2,863	25	1,561	2	339	2	163	2	172	31	2,235	156	0	18	0	12	0	1	0	2	0	1	21	21	82
" 20	10	3,215	7	1,732	0	422	3	171	0	188	10	2,518	92	11	2,874	12	1,573	10	349	1	164	3	175	26	2,261	128	0	18	0	12	0	1	0	2	0	1	21	21	82
" 27	7	3,222	5	1,737	5	427	2	173	3	191	15	2,528	83	13	2,887	14	1,587	13	362	1	165	1	170	29	2,290	108	0	18	0	12	0	1	0	2	0	1	21	21	82
Correction	41	3,263	0	1,737	0	427	..	171	2	193	0	2,528	107	43	2,930	17	1,604	12	374	0	165	0	170	29	2,319	117	0	18	0	12	0	1	0	2	0	1	21	21	82
Total....		3,263		1,737		427		171		193		2,528	107		2,930		1,604		374		165		176		2,319	117		18		12		1		2		1	21	21	82

SEPTEMBER, 1853, TO AUGUST, 1854, INCLUSIVE.																											
RECEIPTS.		EXPORTS.																									
		Great Britain.		France.		North Europe.		Other foreign ports.																			
Weekly.	Total.	Total.	Weekly.	Total.	Weekly.	Total.	Weekly.	Total.	Weekly Total.	Grand Total.	Stock on hand.	Weekly.	Total.	Weekly.	Total.	Weekly.	Total.	Weekly.	Total.	Weekly Total.	Grand Total.	Stock on hand.	Weekly.	Total.	Weekly.	Total.	Weekly.	Total.	Weekly.	Total.	Weekly Total.	Grand Total.	Stock on hand.
0	3	0	17	0	1	0	2	0	1	21	21	82	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
16	13	3	25	0	1	1	3	1	2	10	31	85	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
17	35	5	30	0	1	2	5	1	3	8	39	87	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
23	58	5	35	1	2	0	5	0	3	6	45	99	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
27	85	11	46	1	3	1	6	2	5	15	60	108	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
41	126	4	50	2	5	0	6	2	7	8	68	131	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
47	173	7	57	1	6	1	7	3	16	12	89	161	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
50	223	14	71	4	10	0	7	0	10	13	98	177	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
66	289	14	85	0	10	3	10	2	12	19	117	214	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
68	352	15	100	1	11	0	10	3	15	19	136	245	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
70	422	12	112	6	17	2	12	2	17	22	158	278	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
75	497	19	131	10	27	2	14	2	19	33	191	307	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
72	569	24	155	8	35	1	15	4	23	37	228	333	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
90	659	31	186	10	45	0	15	4	27	45	273	352	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
105	764	31	217	7	52	0	15	3	30	41	314	408	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
103	872	26	243	5	57	3	18	2	32	36	350	468	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
87	959	24	267	18	75	4	22	9	41	55	405	495	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
76	1,035	31	298	15	90	1	28	3	44	50	455	496	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
77	1,112	34	332	19	109	6	29	5	49	64	519	507	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
97	1,209	44	376	12	121	3	32	8	52	69	561	511	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
120	1,329	31	407	16	187	1	38	4	56	52	638	556	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
129	1,458	34	441	24	161	1	34	4	60	63	696	605	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
140	1,598	32	473	4	165	7	41	5	65	48	744	678	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
107	1,705	44	517	17	182	8	49	4	69	73	817	602	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
106	1,811	56	578	3	185	7	56	1	70	67	884	721	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
90	1,901	62	635	6	191	18	74	2	73	88	973	697	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
72	1,973	70	705	20	211	11	85	7	79	108	1,080	645	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
83	2,056	76	781	9	220	8	88	8	87	96	1,176	618	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
72	2,128	59	840	9	229	2	90	2	89	72	1,248	612	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
99	2,227	57	897	4	233	2	92	6	95	69	1,317	637	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
85	2,312	50	947	1	234	4	96	1	96	56	1,378	646	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
87	2,399	47	994	3	237	0	96	8	104	58	1,431	670	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
60	2,459	45	1,039	3	240	5	101	5	109	58	1,489	655	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
56	2,517	29	1,068	6	246	6	107	5	114	46	1,585	645	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
44	2,561	58	1,126	4	250	4	111	10	124	76	1,661	605	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
44	2,605	28	1,154	0	250	7	118	14	128	39	1,650	608	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
35	2,640	57	1,211	11	261	4	122	6	134	78	1,728	547	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
35	2,675	51	1,272	5	266	12	134	6	140	84	1,812	492	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
96	2,711	36	1,308	4	270	2	136	5	145	47	1,859	467	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
27	2,788	27	1,335	8	278	2	138	2	147	89	1,898	456	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
29	2,787	53	1,388	15	293	8	141	3	150	74	1,972	391	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
23	2,790	37	1,425	5	298	4	145	3	153	49	2,021	355	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
11	2,801	26	1,451	8	306	7	152	3	156	44	2,065	316	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
11	2,812	17	1,468	1	307	2	154	2	158	22	2,087	297	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
17	2,829	19	1,487	5	312	2	156	4	162	30	2,117	268	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
10	2,839	33	1,520	9	321	3	159	6	168	51	2,168	217	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
12	2,851	16	1,536	18	337	3	161	2	170	36	2,204	186	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
12	2,863	25	1,561	2	339	2	163	2	172	31	2,235	156	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
11	2,874	12	1,573	10	349	1	164	3	175	26	2,261	128	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
13	2,887	14	1,587	13	362	1	165	1	170	29	2,290	108	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
43	2,930	17	1,604	12	374	0	165	0	170	29	2,319	117	0	18	0	12	0	1	0	2	0	1	21	21	82	0	18
	2,930		1,604		374		165		176		2,319	117		18		12		1		2		1	21

STATEMENT SHOWING THE WEEKLY AND TOTAL RECEIPTS OF COTTON INTO THE PORTS OF THE UNITED STATES; ALSO THE WEEKLY AND TOTAL EXPORTS OF COTTON TO GREAT BRITAIN, FRANCE, NORTH OF EUROPE AND OTHER FOREIGN PORTS; TOGETHER WITH THE STOCK ON HAND IN THE SHIPPING PORTS; DURING THE LAST TWO YEARS. ARRANGED AND PUBLISHED BY WILLIAM P. WRIGHT, FOR J. Y., COTTON BROKERS, NEW YORK. (THE FIGURES REPRESENT THOUSANDS OF BALES.)

SEPTEMBER 1, 1854, TO AUGUST 31, 1855, INCLUSIVE.															SEPTEMBER 1, 1855, TO AUGUST 31, 1856, INCLUSIVE.													
DATE.	RECEIPTS.		EXPORTS.											STOCK.	RECEIPTS.		EXPORTS.											STOCK.
			Great Britain.		France.		North Europe.		Other foreign ports.								Great Britain.		France.		North Europe.		Other foreign ports.					
	WEEKLY.	TOTAL.	WEEKLY.	TOTAL.	WEEKLY.	TOTAL.	WEEKLY.	TOTAL.	WEEKLY.	TOTAL.	WEEKLY TOTAL.	GRAND TOTAL.	STOCK ON HAND.		WEEKLY.	TOTAL.	WEEKLY.	TOTAL.	WEEKLY.	TOTAL.	WEEKLY.	TOTAL.	WEEKLY TOTAL.	GRAND T.TAL.	STOCK ON HAND.					
Sept. 19	0	8	0	6	0	1	0	2	0	1	10	19	82		0	80	0	19	0	1	0	0	0	1	21	184				
" 26	10	18	8	14	0	1	1	3	1	2	10	29	90		41	73	10	29	2	3	2	2	0	1	14	85	142			
Oct. 3	20	38	5	19	6	7	0	3	0	2	11	31	127		57	128	16	45	4	7	1	3	0	1	21	56	179			
" 10	47	85	14	38	10	17	1	4	0	2	5	56	134		61	189	15	60	8	13	0	3	0	1	21	77	212			
" 17	39	124	8	41	6	23	0	4	2	4	16	72	146		70	259	21	81	5	18	1	4	2	3	29	106	233			
" 24	43	167	8	49	1	24	1	5	1	5	11	83	166		72	331	18	99	3	21	3	7	2	5	26	132	274			
" 31	41	208	6	55	5	29	0	5	1	6	12	95	192		69	400	25	124	3	24	4	11	9	14	41	178	292			
Nov. 7	47	255	18	73	9	38	1	6	1	7	29	124	211		81	481	38	162	9	38	5	16	4	18	56	229	249			
" 14	66	321	22	95	6	44	2	8	4	11	34	158	226		55	536	30	192	19	49	3	19	2	20	45	273	294			
" 21	46	367	17	112	11	55	1	9	2	13	31	189	261		96	632	54	246	24	67	1	20	6	26	85	359	288			
" 28	67	454	25	137	3	58	0	9	4	17	32	221	289		99	724	19	265	12	79	7	27	3	29	41	400	331			
Dec. 5	81	535	39	176	8	61	2	11	2	19	46	267	314		116	840	17	282	17	96	2	29	5	34	41	441	402			
" 12	85	620	47	224	7	68	1	12	3	22	58	325	330		124	964	46	327	18	114	7	36	6	40	76	517	492			
" 19	87	707	39	262	10	78	1	13	1	23	51	376	346		144	1,108	60	387	32	146	7	43	11	51	100	617	464			
" 26	77	784	54	316	7	85	0	13	6	29	67	443	354		144	1,252	28	415	30	156	6	49	8	59	62	679	525			
Jan. 2	70	854	48	364	7	92	1	14	3	32	59	502	364		187	1,389	32	447	12	168	5	54	6	65	55	734	584			
" 9	59	913	47	411	6	98	2	16	1	33	56	558	360		187	1,526	53	500	9	177	2	56	2	67	66	800	640			
" 16	65	978	56	467	11	109	2	25	2	35	78	696	345		100	1,626	29	529	12	189	5	61	6	73	52	852	681			
" 23	70	1,048	58	525	12	121	7	32	3	38	80	716	313		107	1,733	58	587	20	209	4	65	11	84	93	945	677			
" 30	76	1,124	46	571	7	128	9	41	11	49	78	789	314		84	1,817	54	637	15	224	12	77	7	91	84	1,029	647			
Feb. 6	121	1,245	43	614	9	137	5	46	1	50	58	847	365		88	1,905	76	718	8	239	6	88	3	94	93	1,132	655			
" 13	165	1,350	33	647	8	145	10	56	5	55	56	903	398		82	1,987	50	768	28	260	9	92	4	98	91	1,218	598			
" 20	191	1,451	45	692	9	154	5	51	3	58	62	965	408		111	2,098	78	836	20	280	28	120	19	117	110	1,353	554			
" 27	77	1,528	51	743	18	172	2	64	9	67	81	1,046	408		117	2,215	41	877	16	296	14	134	4	121	75	1,428	586			
March 5	77	1,605	48	791	16	188	6	70	2	69	72	1,118	398		151	2,366	43	920	23	319	11	145	10	181	87	1,515	628			
" 12	82	1,687	53	846	7	195	10	80	4	78	78	1,194	387		181	2,497	59	979	4	323	15	160	13	144	91	1,606	650			
" 19	73	1,760	33	879	12	207	2	82	1	74	68	1,242	375		123	2,620	60	1,039	11	334	18	178	4	148	88	1,694	613			
" 26	63	1,823	56	935	28	230	6	88	8	77	88	1,330	317		109	2,729	55	1,094	5	339	13	186	5	153	78	1,772	660			
April 2	80	1,908	28	963	19	249	2	90	0	77	49	1,379	330		97	2,826	40	1,134	16	355	9	195	2	155	67	1,839	670			
" 9	92	1,995	21	984	5	254	2	92	4	81	82	1,411	357		83	2,909	66	1,200	19	365	13	208	5	160	94	1,933	653			
" 16	86	2,081	35	1,019	18	272	1	93	6	87	60	1,471	348		89	2,998	79	1,279	19	375	3	211	6	166	98	2,031	619			
" 23	64	2,145	29	1,048	14	286	0	93	6	93	49	1,520	359		69	3,067	69	1,348	12	387	6	217	4	170	91	2,122	587			
" 30	85	2,230	41	1,089	14	300	3	96	7	100	65	1,585	354		75	3,142	68	1,416	15	402	5	222	8	178	96	2,218	550			
May 7	61	2,311	36	1,125	28	328	4	100	6	106	74	1,659	341		50	3,192	56	1,472	19	421	7	220	19	197	191	2,519	500			
" 14	55	2,366	39	1,164	14	342	0	100	4	110	57	1,716	324		52	3,244	65	1,537	12	433	5	234	7	204	89	2,408	440			
" 21	49	2,406	21	1,185	17	359	2	102	2	112	42	1,758	325		45	3,289	83	1,570	10	443	8	287	2	206	48	2,456	491			
" 28	28	2,434	48	1,233	18	377	4	106	2	114	72	1,830	265		41	3,330	24	1,594	0	449	2	289	5	211	81	2,487	410			
June 4	45	2,479	39	1,272	12	389	4	110	3	122	63	1,893	202		30	3,360	49	1,643	4	447	8	247	3	214	64	2,551	350			
" 11	25	2,504	36	1,308	7	396	1	111	6	128	50	1,943	179		26	3,386	40	1,683	17	464	8	249	2	216	61	2,612	320			
" 18	34	2,538	30	1,338	3	399	3	114	1	129	37	1,980	162		19	3,405	62	1,745	6	470	7	256	1	217	70	2,688	262			
" 25	51	2,589	21	1,362	3	402	0	114	2	131	29	2,009	174		9	3,414	42	1,787	2	472	4	260	5	222	55	2,741	213			
July 2	31	2,620	17	1,379	1	403	1	115	4	135	23	2,032	175		13	3,427	45	1,832	0	472	2	262	3	225	50	2,791	177			
" 9	49	2,669	19	1,398	2	405	1	116	1	136	14	2,046	200		16	3,443	36	1,868	6	478	1	263	1	233	41	2,832	160			
" 16	25	2,694	27	1,416	0	405	4	120	6	142	37	2,083	184		7	3,450	18	1,876	0	478	0	263	0	239	24	2,856	122			
" 23	21	2,715	19	1,435	1	406	2	122	0	142	22	2,105	178		6	3,456	25	1,901	0	478	2	265	5	244	32	2,888	87			
" 30	22	2,737	20	1,455	0	406	4	126	5	147	29	2,134	166		11	3,467	8	1,909	0	478	1	266	5	249	14	2,902	78			
Aug. 6	13	2,750	25	1,480	1	407	2	128	1	148	29	2,183	149		3	3,470	10	1,919	0	478	1	267	3	252	14	2,916	63			
" 13	12	2,762	22	1,502	2	409	4	132	0	148	28	2,191	127		12	3,482	20	1,939	0	478	0	267	1	253	21	2,937	57			
" 20	10	2,772	13	1,515	0	409	0	132	1	149	14	2,205	121		3	3,485	6	1,945	0	478	0	267	0	253	6	2,943	51			
" 27	13	2,785	13	1,528	0	409	1	133	1	150	15	2,220	112		4	3,489	0	1,945	0	478	0	267	0	253	0	2,943	51			
Correction	62	2,847	22	1,550	1	410	2	135	0	150	25	2,245	143		39	3,528	0	1,921	8	481	37	304	0	249	12	2,955	64			
Total....		2,847		1,550		410		135		150		2,245	143			3,528		1,921		481		304		249		2,955	64			

both sides of the Atlantic, are down to a figure which encourages the expectation that quite as much, in the aggregate, will be required for actual consumption, at home and abroad, in the course of the year on which we have just entered. Thus much by way of retrospect.

To revert to details; our market opened steadily in September, 1855, with a fair business, but during the remainder of that month and through October, under the influence of adverse accounts from Europe, and heavy receipts at the South, a gradual decline ensued, prices having fallen upward of one cent on nearly all grades during that period. About the beginning of November, we received advices of a heavy frost in some of the growing regions, which, in connection with the paucity of our stock, caused a reactionary movement: but the response from Liverpool to our first accounts not proving as favorable as was expected, the market again took a downward turn, and prices gradually receded for several weeks, when intelligence arrived of the acceptance by Russia of the proposition of the Allies as the basis for peace. Under the influence of this welcome news, greater animation was manifested in the market, and prices were once more in the ascendant. This feeling continued for several weeks—the market being supported, mainly by

speculative shippers—when prices took another turn, and the improvement obtained on the strength of the peace propositions was quite lost. Subsequently, during a period of many weeks, which brings us down to the last of April, the market was very strong, and a rise of fully one cent was realized. Our domestic spinners were, during nearly the whole of this period, the most heavy operators, taking on an average 12 to 15,000 bales per week. Early in May, a complete change seems to have taken place in the minds of our leading exporters. Large holders, who had been sanguine of such an advance in Liverpool as would enable them to recover their investments in the staple, were disappointed, the market again becoming dull and drooping. The depression was not of long duration, however, for the reduced supply not only here, but in every part of the United States, now began to attract attention, and holders became indifferent about offering their supplies; and as the high prices checked consumption, the market assumed an inactivity unusual for the season, which continued throughout July and August, holders all the time maintaining an unrelenting firmness.

The year closed with a reduced stock, both here and at the South, and the supply in the manufacturers' hands at the eastward being also limited, the inclination of prices was to a higher range.

The trade of New York has *apparently* fallen off; a

COTTON CROP OF THE UNITED STATES, FOR EACH YEAR, FROM SEPTEMBER 1, 1822 TO SEPTEMBER 1, 1856.

Date.	TOTAL CROP RECEIVED IN ATLANTIC STATES.				TOTAL CROP RECEIVED IN GULF STATES.				CROP.
	Georgia.	South Carolina.	North Carolina.	Virginia.	Florida.	Alabama.	Louisiana.	Texas.	Grand Total.
1824	152,785	134,518	46,000	and Virginia	4,500	44,924	126,481	.... *	509,158
1825	138,000	97,000	72,000	"	3,000	58,796	200,453	....	569,249
1826	190,592	111,978	88,480	"	2,317	74,201	251,959	....	720,027
1827	238,920	179,810	112,811	"	4,168	89,707	386,870	....	957,281
1828	153,749	109,788	77,422	"	3,940	71,568	804,186	....	720,598
1829	249,166	168,275	104,821	"	4,146	79,958	264,249	....	870,415
1830	253,117	188,871	86,862	35,500	5,787	102,684	354,024	....	976,845
1831	230,502	185,166	36,540	33,896	13,078	113,186	426,485	....	1,038,848
1832	276,487	173,372	28,461	37,500	22,651	125,921	322,685	....	987,477
1833	271,025	181,376	30,258	30,820	23,641	129,866	403,443	....	1,070,488
1834	258,655	227,359	33,220	44,725	36,768	149,973	454,719	....	1,205,394
1835	292,670	308,166	34,399	33,170	52,065	197,692	511,136	....	1,254,328
1836	270,121	231,287	32,057	29,197	79,762	286,715	481,586	....	1,360,725
1837	262,971	196,377	18,004	28,618	83,703	232,243	600,377	....	1,422,980
1838	804,210	294,334	21,489	32,000	106,171	309,807	731,256	....	1,801,497
1839	205,112	219,171	11,186	22,200	75,177	251,742	584,994	....	1,360,582
1840	292,698	313,194	9,394	23,650	136,257	445,725	958,672	....	2,177,585
1841	148,947	227,400	7,865	20,800	98,552	320,701	814,680	....	1,684,945
1842	232,271	260,164	9,787	19,018	114,416	318,315	727,658	....	1,683,574
1843	299,491	351,658	9,089	12,189	161,088	481,714	1,060,246	....	2,378,376
1844	253,597	304,870	8,618	14,500	145,562	467,990	882,172	....	2,080,409
1845	295,440	426,361	12,487	25,200	188,698	617,196	929,126	....	2,894,508
1846	194,211	251,405	10,687	18,232	141,184	421,966	1,037,144	27,008	2,100,587
1847	242,799	350,200	6,061	19,991	197,892	528,492	705,979	8,817	1,778,651
1848	254,375	361,752	1,518	8,952	153,776	456,396	1,120,733	39,743	2,347,634
1849	291,372	458,117	10,041	17,550	200,186	518,706	1,099,797	38,527	2,725,596
1850	348,635	384,265	11,861	11,500	181,344	350,952	781,886	31,268	2,096,706
1851	322,376	287,075	12,928	19,540	181,204	451,748	933,639	45,820	2,255,257
1852	325,714	476,614	16,242	20,820	189,499	549,449	1,378,404	64,052	3,015,029
1853	349,490	463,308	28,496	25,783	179,476	545,029	1,590,875	85,790	3,262,892
1854	316,005	416,754	11,524	21,986	155,444	538,684	1,946,925	110,825	3,260,027
1855	378,694	499,572	26,189	31,000	136,597	454,595	1,282,644	80,787	2,847,839
1856	389,445	495,976	26,098	20,458	144,404	659,788	1,661,433	116,078	3,627,845

* Texas at this time was not a part of the United States.

FREIGHTS TO EUROPE, RATES OF EXCHANGE, STOCK ON HAND, AND EXTREME PRICES FROM 1823 TO 1856.

Year.	FREIGHTS, From New York, 1st October.		EXCHANGE, At New York, 1st October.		STOCK OR BAND.		Extreme Prices in Liverpool.			
	Liverpool.	Havre.	London.	France.	America.	Liverpool.	Uplands, "Good Ordinary."		Sea Island.	
					1st October.	1st January.	pence.	pence.	pence.	pence.
1821	—1-2d.	— c.	—	—	....	153,000	8 1-2	—10 3-4	22	— 24
1824	3-8 —1-2	—1 1-4	10 1-4	—10 1-2 —525	....	361,000	6 3-4	—10 1-2	22	— 27
1825	3-8 —1-2	1 —1 1-4	10 1-2	—11 —512 1-2	....	321,000	9 1-2	—12 1-2	27	— 42
1826	3-8 —1-2	—1	12	—12 1-2 525 —530	....	311,500	6 3-4	— 8 3-4	20	— 30
1827	1-4 —1-2	1-2 — 5-8	11	—11 1-4 511 1-4—515	....	237,806	6 3-4	— 7 3-4	18	— 20
1828	1-4 —3-8	3-4 —1	10 1-2	—11 510 —512 1-2	....	342,700	6 3-8	— 7 3-8	18	— 22
1829	—1-4	7-8 —1 1-8	9 5-8	— 9 3-4 —522 1-4	....	157,590	6 1-4	— 7	18	— 21
1830	3-8 —7-16	—1	10 1-4	—10 1-4 532 1-2—585	84,895	208,200	7	— 7 7-8	18	— 20
1831	—1-4	7-8 —1	10 3-4	—11 510 —511 1-4	119,423	258,000	6 7-8	— 7 1-4	18	— 18
1832	3-8 —7-16	— 3-4	— 8	530 —532 1-2	41,599	212,350	7	— 8	18	— 18
1833	1-4 —3-8	3-4 —1	7	— 7 1-2 —532 1-2	48,205	197,960	7 7-8	—12 1-2	18	— 22
1834	3-8 —1-2	1-2 — 5-8	7 1-4	— 7 1-2 530 —532 1-2	29,617	180,770	8 7-8	—11	20	— 26
1835	3-8 —7-16	3-4 —1	9	— 9 1-4 522 1-2—525	41,623	145,310	10 1-4	—13 1-4	30	— 33
1836	3-8 —1-2	3-4 —1	8	— 8 1-2 —525	43,341	184,700	10 1-2	—12	30	— 36
1837	1-4 —3-8	3-4 —1	14	—15 —502 1-2	75,820	204,590	7 1-4	—11	30	— 40
1838	1-4 —5-16	1-2 — 3-4	10	—10 1-4 517 1-2—520	40,805	170,820	8 1-4	— 9 1-2	30	— 33
1839	5-16—7-16	3-4 —1	9 3-4	—10 1-4 515 —517 1-2	52,244	248,340	7 1-2	—10 1-4	30	— 36
1840	1-4 —5-16	1-2 — 3-4	8	— 8 1-4 —520	58,412	206,042	6 5-8	— 7 1-4	28	— 36
					1st Sept.					
1841	1-4 —5-16	3-4 —1	9 3-4	—10 —517 1-2	72,479	366,140	7	— 7 3-4	24	— 28
1842	3-16—1-4	1-2 — 3-4	6 3-4	— 7 1-2 —535	81,807	429,830	6 3-4	— 7	24	— 24
1843	3-16—1-4	3-8 — 5-8	9	— 9 1-4 523 3-4—525	94,486	456,600	6 1-2	— 6 1-2	24	— 24
1844	5-16—3-8	3-4 —1	9 3-4	—10 —522 1-2	159,772	653,880	5 1-4	— 6 3-4	24	— 30
1845	1-4 —5-16	1-16— 3-4	9 3-4	—10 1-4 523 3-4—525	98,420	740,580	5	— 5 3-4	30	— 30
1846	1-4 —5-16	5-8 — 7-8	8 1-2	— 9 530 —532 1-2	107,122	885,480	5	— 7 3-4	30	— 30
1847	3-16—1-4	3-4 —1	7 1-2	— 8 527 1-2—528 3-4	214,837	488,970	5 3-4	— 8 1-4	8 —12	1-2—25—30
1848	—3-16	— 5-8	9	— 9 3-8 —520	171,468	368,530	4 3-4	— 6	6 — 8	—20—25
1849	—1-8	— 1-2	9 1-2	— 9 3-4 525 —527 1-2	154,753	393,340	4 7-8	— 7 1-8	6 1-2— 9	3-4—20—20
1850	—1-4	— 1-2	10	—10 1-2 520 —522 1-2	107,980	408,000	7 1-2	— 8 3-4	9 —11	1-2—20—20
1851	—1-8	— 3-8	10 1-4	—10 1-2 511 1-4—512 1-2	128,804	568,895	5 3-4	— 8 5-8	8 —11	—20—22
1852	—1-8	— 1-4	10 1-4	—10 5-8 518 3-4—515	91,176	426,730	5 3-4	— 7	10 —13	—22—28
1853	3-16—1-4	— 1-4	9	— 9 1-2 518 3-4—515	136,643	577,810	6 1-2	— 7 1-4	13 —15	—28—36
1854	—1-8	— 1-2	8 1-4	— 9 3-4 511 1-4—518 3-4	132,608	697,500	6 3-8	— 7	9 1-2—12	—34—36
1855	5-32—3-16	— 1-4	9 5-8	—10 —512 1-2	143,336	551,340	6 3-8	— 7 1-2	8 —10	—30—34
1856	—	—	—	—	64,171					

circumstance which discovers a satisfactory explanation in the large increase of *transitu* business between the principal southern ports and the markets of Europe. These operations are mainly under the control of parties in this city, acting in the capacity of speculators, brokers, agents for foreign spinners, etc. It has frequently happened that, when the stock here was reduced to a comparatively low figure, parties who operate

STATEMENT SHOWING THE ESTIMATED WEEKLY SALES OF COTTON IN THE CITY OF NEW YORK, THE QUOTATIONS FOR "MIDDLING UPLANDS" AND "MIDDLING ORLEANS," WITH THE RATES OF FREIGHT TO LIVERPOOL, AND THE COURSE OF EXCHANGE ON LONDON AND PARIS, FOR THE YEAR ENDING SEPT. 1, 1856.

Date.	Sales.	Middling Uplands.	Middling Orleans.	Freight to Liverpool.	Exchange on London.	Exchange on Paris.
Sept. 4, 1855	10,000	11	11 3-8	3-16— ... per lb.	109 3-4—110	5.12 1-2— ....
" 11	4,000	10 3-4	11 1-8	3-16— 7-32 "	109 3-4—110	5.12 1-2— ....
" 18	10,000	10 1-2	10 3-4	1-4 — 9-32 "	109 7-8—	5.12 1-2— ....
" 24	8,000	10 1-8	10 3-8	5-16— ... "	109 7-8—	5.12 1-2— ....
Oct. 2	5,000	10	10 1-4	7-16— 1-2 "	109 1-2—	5.18 3-4— ....
" 8	5,500	9 5-8	10	3-8 — 7-16 "	109 —109 1-4	5.15 —5.16 1-4
" 16	5,000	9 1-2	9 7-8	3-8 — ... "	108 1-2—109	5.16 1-4—5.18 3-4
" 23	7,000	9 1-4	9 3-4	5-16—11-32 "	109 —109 1-4	5.16 1-4—5.18 3-4
" 30	9,000	9 1-8	9 5-8	5-16— ... "	108 1-2—109	5.17 1-2—5.20
Nov. 6	5,000	9	9 3-8	1-4 — ... "	108 1-2—109	5.17 1-2—5.18 3-4
" 8	9,500	9 1-4	9 5-8	5-32— 3-16 "	108 —108 1-2	5.18 3-4—5.20
" 19	10,500	9 1-2	9 7-8	1-8 — 5-32 "	108 —108 1-4	5.18 3-4—5.20
" 27	9,000	9 5-8	10	5-32— 3-16 "	108 —108 1-4	5.20 — ....
Dec. 8	6,000	9 1-2	9 5-8	5-32— 3-16 "	108 —108 1-4	5.21 1-4—5.20
" 11	14,000	9 1-8	9 1-2	1-4 — ... "	108 3-4—109	5.20 — ....
" 17	7,000	9 1-8	9 1-2	9-32— 5-16 "	108 3-4—109	5.18 3-4—5.17 1-2
" 25	11,500	9 1-4	9 1-2	7-32— 1-4 "	108 1-2—108 3-4	5.20 — ....
Jan. 1, 1856	5,500	9 1-4	9 1-2	3-16— .... "	108 1-2—	5.20 —5.22 1-2
" 11	11,000	9 1-4	9 1-2	3-16— 7-32 "	108 —108 1-4	5.22 1-2— ....
" 18	14,000	9 1-4	9 1-2	1-4 — ... "	108 1-4—108 1-2	5.21 1-4— ....
" 23	10,000	9 1-4	9 1-2	1-4 — ... "	108 —108 1-2	5.21 1-4— ....
" 28	5,000	9 1-4	9 1-2	1-4 — ... "	108 1-4—108 1-2	5.21 1-4— ....
Feb. 5	20,000	9 3-4	10	3-16— .... "	108 1-2—108 3-4	5.21 1-4— ....
" 11	15,000	9 7-8	10 1-4	7-32— 1-4 "	109 —109 1-4	5.21 1-4— ....
" 19	32,000	10 3-8	10 3-4	1-4 — ... "	109 —109 1-4	5.18 3-4—5.21 1-4
" 25	25,000	10 3-8	10 3-4	1-4 — 9-32 "	109 —109 1-4	5.17 1-2— ....
March 4	12,000	10 3-8	10 3-8	3-16— 7-32 "	109 1-4—109 3-8	5.17 1-2— ....
" 10	12,000	10 1-8	10 3-8	1-4 — ... "	109 1-4—109 3-8	5.21 1-4— ....
" 18	16,000	10 1-8	10 3-8	1-4 — 9-32 "	109 1-4—109 3-8	5.20 —5.17 1-2
" 24	16,500	10 1-4	10 1-2	9-32— 5-16 "	109 1-2—	5.20 —5.17 1-2
April 1	28,000	10 3-8	10 5-8	1-4 — ... "	109 1-2—	5.20 —5.17 1-2
" 7	17,000	10 1-2	10 3-4	1-4 — ... "	109 1-2—	5.17 1-2—5.18 3-4
" 15	25,000	10 3-4	11	3-16— ... "	108 5-8—	5.17 1-2— ....
" 21	22,000	11 1-8	11 3-8	1-8 — ... "	109 5-8—	5.17 1-2— ....
" 29	18,000	11 1-4	11 1-2	1-8 — ... "	109 3-4—110	5.16 1-4— ....
May 5	8,000	10 3-4	11	1-8 — ... "	109 3-4—	5.16 1-4— ....
" 13	12,000	10 3-4	11	3-16— ... "	109 3-4—110	5.16 1-4— ....
" 19	9,000	10 5-8	10 7-8	3-16— 7-32 "	110 —	5.16 1-4— ....
" 27	15,000	10 5-8	10 7-8	3-16— ... "	109 3-4—	5.16 1-4— ....
June 2	5,000	10 3-4	11	5-32— 3-16 "	109 1-2—109 3-4	5.16 1-4— ....
" 10	12,000	10 7-8	11 1-8	3-16— 7-32 "	109 1-2—109 3-4	5.16 1-4— ....
" 16	5,000	11 1-8	11 3-8	3-16— ... "	109 3-4—	5.18 1-4— ....
" 24	5,000	11 1-8	11 3-8	3-16— ... "	109 3-4—110	5.17 1-2—5.15
" 30	5,000	11 1-4	11 1-2	3-16— ... "	109 3-4—110	5.17 1-2—5.15
July 8	4,500	11 3-8	11 5-8	5-32— ... "	109 3-4—110	5.16 1-4—5.15
" 14	8,000	11 5-8	11 7-8	5-32— ... "	110 —110 1-8	5.17 1-4—5.15
" 22	10,000	11 3-8	11 7-8	1-8 — 5-32 "	110 —	5.17 1-2—5.15
" 28	8,000	11 5-8	11 7-8	1-8 — ... "	109 5-8—109 7-8	5.17 1-2—5.15
Aug. 5	8,000	11 5-8 nom.	11 7-8 nom.	1-8 — ... "	109 5-8—109 7-8	5.17 1-2—5.15
" 11	3,000	11 5-8 nom.	11 7-8 nom.	1-8 — ... "	109 3-4—	5.16 1-4—5.15
" 19	4,000	11	11 3-8	5-32— ... "	110 —110 1-4	5.12 1-2— ....
" 25	5,000	11	11 3-8	5-32— ... "	110 —110 1-4	5.12 1-2— ....

EXPORTS FROM, AND CONSUMPTION OF COTTON IN, THE UNITED STATES, FROM 1827 TO 1856.

Year.	EXPORTS TO VARIOUS PLACES.				CONSUMPTION AT VARIOUS PLACES.					
	ENGLAND.	FRANCE.	OTHER POINTS	TOTAL.	ENGLAND—weekly. Bales.		FRANCE.	United States north of Virginia.	United States south & west of Virginia.	England, weekly, of all kinds.
	Bales.	Bales.	Bales.	Bales.	Uplands.	Sea Is.	Bales.			
1827	646,189	157,952	49,707	853,798	8,181	754	280,000	103,483	....	12,577
1828	424,743	148,519	26,788	600,000	7,200	360	277,500	120,593	....	14,080
1829	489,001	184,821	66,178	749,000	9,092	369	241,680	104,853	....	14,381
1830	595,178	200,791	42,212	838,716	10,208	618	264,750	126,512	....	16,002
1831	618,718	127,029	27,096	772,783	11,041	635	250,784	182,142	....	16,496
1832	698,148	207,209	46,371	891,728	11,549	589	243,843	173,800	....	17,140
1833	630,145	207,517	29,798	867,455	11,868	460	272,403	194,412	....	16,923
1834	756,291	216,424	55,236	1,027,951	13,094	517	306,000	196,418	....	17,607
1835	722,718	252,470	48,311	1,023,499	13,719	519	279,000	210,888	....	18,348
1836	771,148	266,188	79,267	1,116,603	13,991	665	308,786	236,733	....	19,452
1837	850,786	260,722	56,917	1,168,425	14,661	498	357,212	224,540	....	20,333
1838	1,165,155	321,480	88,994	1,575,629	17,247	354	360,508	246,093	....	23,204
1839	798,418	242,243	34,028	1,074,689	15,879	379	391,408	276,018	....	21,430
1840	1,246,791	447,465	181,747	1,876,003	19,200	310	326,238	295,193	....	24,063
1841	858,742	348,776	165,759	1,373,277	17,279	317	445,685	297,288	....	22,929
1842	935,631	398,129	131,487	2,465,247	16,822	265	361,277	267,850	....	22,915
1843	1,469,711	346,139	194,287	2,010,130	19,978	392	445,086	325,129	....	26,294
1844	1,202,418	282,685	144,507	1,629,490	21,821	296	330,378	316,744	....	27,478
1845	1,432,906	359,357	285,093	1,083,756	24,412	356	390,947	389,066	....	30,277
1846	1,102,369	379,703	284,720	1,666,792	24,260	377	417,851	422,597	....	30,498
1847	890,969	241,486	108,827	1,241,222	16,400	324	413,619	427,967	....	22,265
1848	1,324,265	279,172	254,824	1,858,261	22,448	392	292,407	581,773	75,000	28,116
1849	1,537,901	368,239	321,084	2,227,854	24,111	364	259,102	518,039	110,000	30,516
1850	1,106,771	289,627	193,757	1,590,155	20,238	289	351,672	487,769	107,500	29,125
1851	1,418,365	301,358	269,087	1,988,710	28,746	427	310,612	404,108	60,000	31,988
1852	1,668,749	421,375	358,322	2,448,446	27,748	577	351,857	608,029	75,000	35,790
1853	1,736,560	426,728	364,812	2,528,400	27,514	357	394,612	671,009	90,000	36,618
1854	1,603,750	374,058	341,340	2,319,148	29,188	427	365,786	610,571	105,000	37,829
1855	1,549,716	409,981	284,560	2,244,209	29,798	550	....	598,584	85,000	40,473
1856	1,921,886	480,687	552,583	2,954,606	....	....	....	652,729	117,500	....

in *transitu* cotton were purchasing from twenty to thirty thousand bales per week, and not unfrequently turning the staple over two or three times in the period which used to suffice, under the old system, of making but one fair profit out of it. The theory of certain parties, based upon an incorrect estimate of things as they are, favors the impression that the cotton trade of New York is on the wane, but like all other theories resting only upon the basis of the imagination, it fades away before the recital of the hard facts that stare it in the face.

New York being the centre of the world's trade on this continent—the grand focus of all the latest intelligence from the old world, and all sections of the new; the rendezvous of nearly all the most important lines of ocean steamers, the entrepôt of more than five eighths of the entire foreign commerce of the country, the readiest medium, financially and every other way, between the producer and the consumer, the planter and agriculturist here, and the factor and manufacturer there—New York being all this and much more besides, we repeat, it must continue to control the cotton trade of the country for a century to come. But it is sometimes inferred that the American cotton trade at large is destined to an eventual decline, in consequence of the constant endeavors of Great Britain to seek new fields for its cultivation by means of what is called free labor, near the pyramids of Egypt, and among the sickly malarias of the East Indies. These experiments, we think, have been sufficiently tested to justify the conclusion, that the cotton planter of the United States has nothing to apprehend, for at least a generation to come, from any competition from these sources. Even did the endeavor to cultivate the plant in the Indies succeed to any considerable extent, it must be conceded that the remoteness of the producer from the manufacturer, must always give us such an advantage, as regards low freights and expeditious transit, as would render the colonial speculation comparatively profitless. There are many other considerations and arguments which might be adduced to substantiate this conclusion, but these, we take it for granted, are not required, to allay any serious apprehensions of domestic ruin from this species of foreign competition.

STOCKS OF COTTON ON HAND IN THE UNITED STATES ON 31ST AUGUST. BALES.

	1856.	1855.	1854.	1853.	1852.	1851.	1850.	1849.	1848.	1847.
New Orleans..	6,995	39,425	24,121	10,522	9,758	15,390	16,612	15,480	37,401	23,498
Mobile.....	5,005	23,519	29,275	7,516	2,319	27,797	12,982	5,048	23,584	24,179
Florida.....	74	166	563	528	451	273	1,148	615	507	2,108
Texas.....	623	2,062	2,205	423	317	590	265	452	747	32
Sav'h & Aug'a.	3,331	8,337	11,513	12,984	6,657	34,011	29,069	25,319	36,608	25,020
Charleston	3,144	2,085	17,031	15,120	11,146	10,953	30,698	28,806	14,085	29,655
N. Carolina....	....	....	....	....	....	....	....	....	....	....
Virginia.....	842	550	750	400	450	620	1,000	1,750	444	448
New York.....	34,657	56,846	32,988	67,675	45,796	35,410	60,720	67,035	41,067	53,259
Other N. ports.	9,500	9,846	17,129	20,469	14,282	8,850	15,456	15,250	16,130	26,650
Total.....	64,171	143,336	135,603	135,643	91,176	128,900	167,980	154,758	171,483	214,887

IV. COTTON TRADE OF THE UNITED STATES WITH GREAT BRITAIN. 1. *General Information Respecting the Cotton Trade of the United States.—Great Britain.*—The annual average importation of cotton from all countries into England the last five years has been 838,335,984 pounds, of which quantities, according to British authorities, 661,529,220 pounds, or more than three fourths, were from the United States. The annual average exportation to the Continent and elsewhere has been 122,810,688 pounds, or about one sixth of the total quantity imported, leaving 715,525,296 pounds for the annual average consumption. About one sixth of the whole amount imported was from British possessions.

In 1781, Great Britain commenced the re-exportation of cotton to the Continent and elsewhere. In 1815 the quantity thus re-exported had risen from the annual average of 1,000,000 pounds to that of 6,000,000 pounds. In 1853, the aggregate amount exported exceeded 148,500,000 pounds, of which nearly 83,000,000 pounds were derived from the United States, and more than 60,000,000 pounds from the East Indies. The quantity of American cotton re-exported by Great Britain to the different markets of Europe, when compared with the quantities imported, is much less than of that imported from other countries—a fact which suggests the superiority of the American article, and its better adaptation to purposes of fabrile industry. For example, about one tenth of the cotton imported from the United States is re-exported, against nearly one half of that imported from the East Indies. A comparison between American and East India cotton, shows a difference of 100 per cent. in favor of the former; the cotton of the East Indies containing 25 per cent. of waste, while that of the United States contains only 12½ per cent. The fibre, also, of the latter excels that of the former.

In 1788, the efforts of the East India Company commenced for the promotion of the growth of cotton, and for the improvement of its quality, in British India; and the first exportation of the article to England was made the same year. In 1814 the exportation amounted to 4,000,000 pounds; it now averages 165,000,000 pounds per annum. An area of about 8000 square miles is said to be devoted to the culture. Liverpool is the great mart of the cotton trade of Great Britain and of Europe generally. Thus, while the total imports of the article into the United Kingom, according to British authorities, in 1852, amounted to 2,357,338 bales, the quantity at this port reached 2,205,738 bales. About six sevenths of the cotton received at Liverpool comes from the United States; and of this four fifths is estimated to be imported for the factories of Lancashire and Yorkshire. Since March, 1845, cotton has been admitted into British ports free of duty. Prior to that period the duty was, of and from British possessions, 8 cents; from other places, 70 cents per 112 pounds. The number of spindles in operation in England is estimated at more than 20,000,000. The value of cotton supplied by the United States to Great Britain in 1853 was $57,616,749, being about the average each year the last four. The quantity of cotton exported from the United States to England in 11 months of the fiscal year 1856, is estimated at 2,755,000 bales. It appears from "Commerce and Navigation," that the importation of raw cotton from the British West Indies into the United States has increased, for some years past, in a ratio quite proportional to the decrease of such importation into Great Britain. Thus, the importation of cotton into the United States and Great Britain, respectively, from the British West Indies, from 1851 to 1855, inclusive, was as follows:

Years.	Into the United States.	Into Great Britain.
1851.....pounds..	29,858	446,529
1852..... " ..	6,756	708,696
1853..... " ..	252,893	844,060
1854..... " ..	159,881	205,072
1855..... " ..	880,217	No data.

The average price per pound of cotton from 1851 to 1855, inclusive, in the United States and Great Britain, respectively, is shown as follows:

Years.	In the United States.	At Manchester, G. B.
1851.....	12.11 cents.	12 1-4 cents.
1852.....	8.05 "	11 1-4 "
1853.....	9.85 "	12 4-7 "
1854.....	9.47 "	12 3-4 "
1855.....	8.74 "	12 1-1 "

The following statement shows the quantities of cotton imported into Great Britain, and the countries whence imported, from 1840 to 1855. The figures are derived from a "Statistical Abstract for the United Kingdom, presented to both Houses of Parliament, by command of her Majesty," by Mr. Albany W. Fonblanque, superintendent of the statistical department of the Board of Trade. The commercial year in England begins January 1; in the United States, July 1; hence, seeming discrepancies in figures for apparently the same periods of time. In the following table the column headed Egypt includes Turkey, Syria, and the Mediterranean generally; the East Indies includes British India generally; the West Indies, the West India Islands belonging to Great Britain, and British Guiana:

Years.	Pounds of Cotton Imported into Great Britain from—						
	United States.	Brazil.	Egypt.	East Indies.	West Indies.	Elsewhere.	All countries.
1840	487,856,504	14,779,171	8,824,937	77,011,389	686,157	3,649,402	592,448,010
1841	858,240,964	16,671,348	9,097,180	97,338,158	1,538,197	5,061,518	487,992,355
1842	414,080,779	15,222,898	4,459,017	92,972,649	598,693	4,441,250	581,750,086
1843	574,788,520	18,675,123	9,674,076	65,709,729	1,360,444	8,185,224	679,193,116
1844	517,218,622	21,084,744	19,406,937	88,639,776	1,707,194	5,054,641	646,111,904
1845	626,650,412	20,157,633	14,614,699	58,437,426	1,894,447	725,846	721,979,263
1846	401,949,393	14,746,321	14,278,447	34,540,143	1,201,857	1,140,118	467,856,274
1847	864,599,291	19,966,922	4,814,268	88,984,614	793,987	598,587	474,707,615
1848	600,247,488	19,971,378	7,231,861	84,101,961	640,481	827,096	713,020,161
1849	684,504,050	30,738,133	17,349,843	70,888,515	944,807	1,074,134	755,469,012
1850	493,158,112	30,999,982	18,981,414	118,872,742	228,913	2,000,698	663,576,861
1851	596,688,962	19,389,104	16,950,525	122,626,976	446,529	1,877,658	757,979,749
1852	765,630,544	26,536,144	48,058,640	84,922,432	703,696	3,960,992	929,782,448
1853	658,451,796	24,190,628	28,858,574	181,848,186	344,050	2,078,562	895,266,780
1854	722,151,860	19,708,600	28,858,120	119,829,152	305,079	2,060,800	887,383,104
1855	679,264,096	24,577,952	32,652,688	145,218,576	No data.	8,475,160	889,150,872
Aggregate 5 years	3,422,186,758	114,817,428	149,338,547	654,445,606	1,699,857	17,984,167	4,859,921,953
Average 5 years	684,427,351	22,863,485	29,867,709	130,889,139	424,898	3,596,833	971,984,390

STATEMENT SHOWING THE QUANTITIES OF COTTON EXPORTED BY GREAT BRITAIN TO ALL COUNTRIES, PESPECTIVELY, AND THE COUNTRIES WHENCE IMPORTED, FOR A PERIOD OF FIVE YEARS, FROM 1851 TO 1855, BOTH INCLUSIVE.*

Years.	Exported to all countries.	Of which was imported from—			
		United States.	Brazil.	Egypt.	East Indies.	Elsewhere.
	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.
1851	111,980,400	66,921,344	1,888,880	211,008	42,962,168	....
1852	111,875,456	69,217,120	3,619,840	124,656	38,864,372	49,168
1853	148,569,680	82,701,472	4,786,768	848,416	60,092,064	50,960
1854	125,554,800	55,101,200	1,438,192	369,600	68,645,808	....
1855	124,845,760	56,989,692	759,360	886,064	66,210,704	....
Annual average	144,465,219	66,186,153	2,498,608	407,948	55,352,482	....

* Compiled from the monthly "Accounts Relating to Trade and Navigation," presented to the British Parliament, the only authority at hand from which to ... countries whence the cotton exported was imported could be ascertained. Results gathered from these monthly accounts ... times vary from those given in the "Annual Statement of the Trade and Navigation of the United Kingdom," from which latter document was made up the table that follows.

Countries to which exported.	Pounds of cotton exported from Great Britain in the years—				Annual average.
	1851.	1852.	1853.	1854.	
Russia	35,185,472	45,605,840	43,987,392	208,544	32,484,312
Sweden	2,484,656	3,591,840	4,414,368	5,866,560	4,076,856
Prussia	1,576,064	674,240	1,143,296	23,444,624	6,709,556
Hanse Towns	27,473,040	22,472,016	33,417,440	36,055,264	29,854,440
Holland	22,119,104	15,834,224	28,676,592	24,984,544	23,891,116
Belgium	12,856,480	12,657,680	18,466,672	14,040,768	14,505,406
France	1,965,504	1,923,440	2,403,968	2,759,282	2,188,536
Sardinia	2,742,320	1,238,208	3,860,864	8,621,328	3,165,680
Austria	1,366,064	1,557,088	3,880,288	4,311,856	2,991,824
Other countries	2,647,120	2,824,560	3,418,800	5,888,392	3,443,468
Aggregate	109,765,824	109,581,136	148,569,680	123,826,112	122,810,688

STATEMENT OF IMPORT OF COTTON IN BALES INTO GREAT BRITAIN, DURING THE LAST TEN YEARS.

1845.	Atlantic States.	New Orleans, Mobile, etc.	Total United States.	Brazil.	Demarara and Berbice.	W. Indies, etc.	Egypt.	East Indies.	Grand Total.
Liverpool	620,886	987,594	1,608,480	134,442	1,090	6,844	112,109	279,856	2,142,812
London	207	74	281	620	....	468	40	99,877	100,986
Bristol & Hull	....	....	....	....	....	....	....	655	655
Glasgow	5,726	8,991	14,717	....	....	544	2,878	15,626	33,765
Total, 1855	626,819	996,659	1,623,478	134,762	1,090	7,856	115,018	396,014	2,278,218
" 1854	513,509	1,152,970	1,666,479	107,898	572	8,775	81,085	308,293	2,172,597
" 1853	503,787	1,028,276	1,532,063	132,443	572	8,267	105,398	485,527	2,264,270
" 1852	562,104	1,154,809	1,719,213	144,197	....	12,580	189,985	221,413	2,287,388
" 1851	480,464	918,242	1,398,706	108,721	....	4,877	67,433	328,809	1,908,546
" 1850	510,248	615,646	1,184,194	171,797	....	5,660	79,748	307,901	1,749,295
" 1849	499,250	883,777	1,477,727	163,768	....	9,114	72,651	182,167	1,905,427
" 1848	451,009	673,183	1,375,875	100,201	....	7,389	29,010	227,512	1,739,997
" 1847	274,217	555,489	874,087	110,229	....	4,986	20,729	222,766	1,232,797
" 1846	245,273	636,823	990,996	84,178	....	12,998	60,681	155,140	1,243,987

EXPORT AND CONSUMPTION OF COTTON IN GREAT BRITAIN FOR FOUR YEARS.

1855.	EXPORT.				CONSUMPTION.			
	Liverpool.	London.	Other Ports.	Total.	1854.	1853.	1852.	1851.
American	120,800	350	....	120,650	137,500	176,000	165,960	1,577,948	1,520,589	1,408,963	1,507,765
Brazil	4,700	50	....	4,750	8,200	18,100	14,800	114,472	100,678	119,818	124,464
West India	200	50	....	250	100	600	800	9,056	9,177	10,599	9,465
Egyptian	2,600	50	....	2,650	2,000	3,400	1,000	120,988	105,215	119,648	109,005
East India	106,500	82,100	....	188,600	168,600	151,500	100,740	276,834	207,728	196,587	160,461
Total	234,800	82,600	....	316,900	316,400	349,600	282,800	3,099,298	1,949,397	1,854,610	1,911,558

STATEMENT OF STOCK OF COTTON IN BRITISH PORTS, AT THE CLOSE OF THE LAST SIX YEARS.

Description.	1855.			Total in the kingdom.				
	Liverpool.	London.	Other Ports.	1855.	1854.	1853.	1852.	1851.	1850.
Sea Island	10,240	....	860	10,600	....	....	....	....	....
Stained do	1,590	....	10	1,600	....	....	....	....	....
Upland	84,220	180	880	85,280	311,310	308,870	360,770	245,300	278,900
Mobile and Alabama	33,240	....	330	33,570	....	....	....	....	....
New Orleans	102,300	....	2,550	105,140	....	....	....	....	....
Pernambuco, etc.	22,360	....	....	22,360	....	....	....	....	....
Bahia and Maceio	18,440	60	....	18,500	47,520	49,000	54,610	49,500	68,700
Maranham	21,900	100	....	22,000	....	....	....	....	....
Egyptian	48,290	....	2,080	50,370	58,990	85,120	102,770	25,900	85,100
Surat and Madras	32,220	49,640	880	132,170	202,620	270,650	133,210	172,000	143,400
Bengal and Manilla	140	890	....	1,030	....	....	....	....	....
Other descriptions	3,400	250	....	3,650	4,010	8,940	6,160	1,800	1,800
Total	428,810	51,120	6,540	486,470	624,450	717,580	657,520	494,500	522,400

LIVERPOOL COTTON STATEMENT.

	Bales.	Bales.
Stock, 1st January, 1855		551,800
Import in 1855		2,142,709
		2,694,000
Total quantity sold in 1855, as per weekly returns	3,048,030	
Deduct proportion sold to speculators for re-sale	782,830	
		2,265,200
Stock, 1st January, 1856		428,800
Taken for consumption and export in 1855 [In 1854—2,114,100 or 40,656 bales per week.]	2,265,200, or 43,562 pr. wk.	
Ded. exp. to Continent, 228,500 " Ireland... 5,800	234,300	
Taken for consumption	2,030,900, or 39,056 pr. wk. [In 1854,.. 1,883,300, or 36,250 "]	

LONDON COTTON STATEMENT.

	Bales.	Bales.
Stock, 1st January, 1855		52,300
Import in 1855		101,000
		153,300
Stock, 1st January, 1856	51,100	
Exported to the Continent	82,600	133,700
" Liverpool		
Taken for consumption in England [In 1854..	19,600 or 377 pr. wk. 7,600 " 146 "]	

The above figures show that the past year's consumption was double that of 1840. The aggregate production of the past 12 years sums up 37,297,500 bales, while the consumption has been 38,212,500; the latter being in excess of the former 925,000 bales, thus reducing the stock of new material by that much since 1845—a startling fact in view of the great interests involved.

From a reliable source of intelligence across the water, we learn that new machinery added to mills now working, together with manufactories now in process of erection, will require in 1857 about 4,000 bales of cotton per week more than the consumption of the present year, making an aggregate of nearly 45,000 bales per week. On the Continent, the extension of manufacturing power is supposed to be going on at about the same rate. Consequently prices will advance till they reach a point tending to a diminution of consumption. What that point will be we have yet to learn. Though the stock of cotton, at present, is larger in Liverpool than last year, it will be reduced very rapidly, as the imports up to the close of the year can scarcely be more than half so large as during the latter months of 1845, and perhaps not even that, in consequence of the lateness of the season and diminished receipts at our ports.

2. *France.*—Cotton constitutes in value more than two thirds of the domestic exports of the United States to France. By virtue of the treaty of 1832, it is imported, like all other "articles of the growth, produce, or manufacture of the United States," on the same terms, whether in United States or national vessels; but the importation must be direct, and the origin of the article duly authenticated. A ministerial decree of December 17, 1851, enlarges the provision of the treaty relative to the direct voyage, so far as to extend the equality between the vessels of the two nations when importing cotton, even should the American vessel touch at a British port; but, in that case, the captain is required to exhibit a certificate from the French consul at that port, stating that no commercial transaction there took place. The French government is directing its efforts to the development and extension of the cotton culture in its colonial province of Algeria. To that end, in December, 1853, an aggrgate value of 20,000 francs, in prizes, was offered by the emperor to the most successful cultivator of cotton in that province. The result is announced as most favorable. In December, 1854, the entire sum was divided between three rivals, whose merits were judged equal—two of them being French colonists, and one an Arab—a gold medal to each being also awarded. To the meritorious of the second rank, a silver medal to each was presented. The amount produced in 1854 was 180,552 pounds. Next to Great Britain, France is the largest importer of American cotton; and what Liverpool is to the former, Havre is to the latter. At those two points the importations are concentrated, and thence distributed to the different markets of either empire, or re-exported to foreign countries. The re-exportations of France are chiefly to Switzerland by railway; after which country, in this trade, come Sardinia and Holland; smaller quantities being sent also to Spain, the Zollverein and other countries. Next to the United States, France derives her supplies of cotton from the Levant; and the third place is held by South America. These facts are illustrated by the following statements, made up from the "*Tableau Général du Commerce de la France*," for the year designated. [The quantities are given in kilogrammes, each kilogramme being equal to about 2 1-5 pounds. Kilogrammes multiplied by 9 and divided by 4 will give pounds.]

TABULAR COMPARATIVE STATEMENT SHOWING THE QUANTITIES OF COTTON IMPORTED INTO FRANCE, AND THE COUNTRIES WHENCE IMPORTED, FOR A PERIOD OF THREE YEARS, FROM 1852 TO 1855, BOTH INCLUSIVE.

Countries whence imported.	Kilogrammes of cotton imported into France in the years—		
	1852.	1853.	1854.
United States	76,104,454	79,381,735	77,746,470
Egypt	4,382,575	4,881,572	3,601,327
Turkey	1,027,837	1,871,289	875,884
England	968,907	890,822	1,547,994
Belgium	231,074	608,449	375,850
Brazil	413,563	286,813	127,912
Peru	158,716	233,888	239,688
Venezuela	815,053	169,686	68,064
Hayti	75,697	104,510	77,165
East Indies	47,955	6,674	188,649
Elsewhere	393,091	191,029	206,569
Aggregate	88,989,822	88,065,022	84,555,022

The only country in Europe which can, in any sense, be said to compete with Great Britain in the supply of the extra European demand for cotton goods is France. And when the character and extent of this branch of the French export trade are described it will be seen that this most formidable rival is not yet much to be dreaded.

TABULAR COMPARATIVE STATEMENT EXHIBITING THE QUANTITIES OF COTTON IMPORTED INTO FRANCE FROM THE UNITED STATES, AND FROM OTHER COUNTRIES, INCLUDING BRAZIL, WITH THE AGGREGATES, FROM 1820 TO 1855.

Years.	From United States.	From other Places.	Aggregate.	Years.	From United States.	From other Places.	Aggregate.
	Kilograms.	Kilograms.	Kilograms.		Kilograms.	Kilograms.	Kilograms.
1820.....	11,650,000	8,573,000	20,223,000	1838.....	43,180,000	7,479,000	51,259,000
1821.....	10,155,000	12,432,000	22,587,000	1839.....	34,932,000	5,702,000	40,634,000
1822.....	9,500,000	12,072,000	21,572,000	1840.....	48,581,000	4,361,000	52,942,000
1823.....	12,196,000	8,158,000	20,354,000	1841.....	50,350,000	5,520,000	55,870,000
1824.....	15,749,000	12,281,000	28,030,000	1842.....	52,332,000	4,995,000	57,327,000
1825.....	13,454,000	11,218,000	24,667,000	1843.....	56,135,000	3,865,000	60,000,000
1826.....	21,921,000	9,093,000	31,014,000	1844.....	54,249,000	4,643,000	58,892,000
1827.....	21,830,000	7,304,000	29,654,000	1845.....	56,642,000	4,1[illegible]	60,778,000
1828.....	21,617,000	5,758,000	27,375,000	1846.....	60,760,000	3,4[illegible]	64,227,000
1829.....	25,844,000	5,995,000	31,839,000	1847.....	42,225,000	3,291,[illegible]	45,522,000
1830.....	23,160,000	6,110,000	29,260,000	1848.....	43,249,000	1,660,000	44,909,000
1831.....	22,778,000	5,451,000	28,229,000	1849.....	60,931,000	3,233,000	64,164,000
1832.....	27,382,000	5,253,000	32,636,000	1850.....	54,919,000	4,547,000	59,466,000
1833.....	28,819,000	5,791,000	35,610,000	1851.....	53,914,000	4,570,000	58,484,000
1834.....	31,587,000	5,348,000	36,935,000	1852.....	66,740,000	5,320,000	72,060,000
1835.....	32,523,000	6,437,000	38,760,000	1853.....	70,221,000	4,870,000	75,091,000
1836.....	36,368,000	7,954,000	44,322,000	1854.....	67,453,000	4,141,000	71,594,000
1837.....	36,469,000	7,361,000	43,830,000	1855.....	71,897,000	4,241,000	76,138,000

From the foregoing table it will be seen that the importation of cotton into France from other countries than the United States, including Brazil, from 1820 to 1855, has fallen off more than 50 per cent.; while from the U. States it has increased more than 600 per cent.

The French tariff in 1858 imposed five different rates of duty on raw cotton imported in French vessels, according to where it came from; and three other rates of duty, similarly [illegible] on cotton imported in foreign vessels. The duty most extensively operative —that on American cotton entering in French bottoms —was 20 francs per 100 kilograms, or about sixteen shillings per 220 pounds. And as the whole quantity imported (75,021,000 kilograms) yielded to the revenue 17,276,000 francs, giving an average of 22·23 francs per 100 kilograms, it is probable that by far the greater part of what was imported actually paid this rate of duty.

The bounty on exportation was 25 francs per 100 kilograms of manufactures or yarn. It was allowed in 1855 on 7,117,864 kilograms of manufacture and on 198,604 kilograms of yarn. This, with a moderate allowance for waste of the raw material, though called a bounty, could in effect have been little, if at all, more than a drawback of the import duty.

It would seem that the French exports in this kind are not more than a tenth in value of our own. And where were they sent, and why? The largest customer for these French manufacturers (taking two parts in seven of the whole value) was Algeria; but Algerian consumption may be deemed practically French consumption. The two customers next on the list, when arranged in order of magnitude, are the United States and the United Kingdom. These took between them two other seventh parts of the whole. And the goods sold in the English and American markets are well known to owe their peculiar value rather to the designer and the dyer than to the spinner and weaver. Their consumption does not admit of any very rapid or wide increase. French taste and French chemistry have deservedly won for the French textile fabrics, wherever they are applicable, a superiority as well known as it is incontestable. But this has little effect in determining the locality of the cotton manufacture of the whole. With a few trifling exceptions, of which cotton lace imported from Belgium is the only one worthy of notice, no cotton foreign manufactures were in 1853 admitted to French consumption.

The following table will show the exports of cotton to France for six years, ending with June 30, 1855, and the value; as also the total value of domestic exports to France during the said years, respectively.

Years.	Pounds.	Value.	Total Value domestic Exports.
1850.....	125,834,091	$14,395,449	$17,150,277
1851.....	139,164,571	13,124,512	25,302,485
1852.....	186,214,270	15,488,586	22,190,070
1853.....	189,226,913	19,248,076	25,120,806
1854.....	144,428,360	14,592,712	20,965,252
1855.....	210,113,869	19,035,423	31,623,808

French official documents furnish the following facts relative to our cotton trade with that empire. By the custom-house returns for 1855, it appears that there were received for the following years from all countries:

1852..... 188,400,000 pounds.
1853..... 165,000,000 "
1854..... 157,520,000 "
1855..... 167,200,000 "

The following table shows the quantities of cotton imported into Havre from all countries for a period of four years, ending with 1855:

Years.	From the United States.	From Brazil.	From elsewhere.	Total.
	Bales.	Bales.	Bales.	Bales.
1852.....	374,900	6000	14,400	395,300
1853.....	374,500	2800	12,200	389,500
1854.....	411,000	2000	12,000	425,000
1855.....	406,600	2500	9,000	418,100

TABLE SHOWING THE QUANTITIES OF COTTON RECEIVED AT THE OTHER PORTS OF FRANCE DURING THE SAME YEARS.

Years.	From the United States.	From Egypt.	From elsewhere	Total
	Bales.	Bales.	Bales.	Bales.
1852.....	17,300	36,700	12,500	67,000
1853.....	14,500	35,000	17,000	64,500
1854.....	19,300	21,400	4,300	45,000
1855.....	12,000	30,700	2,800	45,500

From the subjoined table, showing the quantities of cotton received by the United States in the course of trade, during a period of five years, from other countries, it will be perceived that none is imported from Brazil:

TABULAR STATEMENT SHOWING THE QUANTITIES OF COTTON IMPORTED INTO THE UNITED STATES, IN POUNDS, AND COUNTRIES WHENCE IMPORTED, FOR A PERIOD OF FIVE YEARS, FROM 1851 TO 1855, BOTH INCLUSIVE.

Years.	Dutch West Indies.	British West Indies.	Hayti.	New Granada.	Venezuela.	Elsewhere.	All Countries.
	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.
1851.....	.....	29,353	12,000	110,190	6,010	9,204	166,757
1852.....	22,474	6,756	....	69,838	....	145,480	244,548
1853.....	....	252,892	215,799	192,267	61,310	360	722,628
1854.....	150	159,281	196,127	185,023	....	3,644	545,210
1855.....	1,002	1,880,217	189,214	44,859	415	160	2,115,367
Aggregate.....	23,606	2,328,599	613,140	602,582	67,735	158,848	3,794,510
Average.....	4,721	465,720	122,628	120,516	13,547	31,769	758,902

It may be remarked that, with the exception of 42,522 pounds exported to England in 1853, no cotton imported into the United States was exported during the years designated.

TABULAR COMPARATIVE STATEMENT, SHOWING THE QUANTITIES OF COTTON EXPORTED BY FRANCE TO ALL COUNTRIES, RESPECTIVELY FOR A PERIOD OF THREE YEARS, FROM 1852 TO 1854, BOTH INCLUSIVE. [THE QUANTITIES ARE GIVEN IN KILOGRAMMES, AS IN THE PRECEDING TABLE.]

Countries to which exported.	Kilogrammes of cotton exported from France in the years—		
	1852.	1853.	1854.
Switzerland	7,029,667	7,029,099	6,657,608
Netherlands	1,709,004	857,982	688,808
Sardinia	1,554,895	661,924	492,874
Zollverein	193,408	158,687	388,974
Hanse Towns	110,554	182,581	19,264
Austria	17,595	188,636	103,885
England	1,149,966	819,820	77,008
Belgium	75,711	193,041	63,704
Spain	213,863	51,179	58,825
Tuscany	48,915	18,488	1,720
Elsewhere	74,018	30,483	6,493
Aggregate	12,177,086	9,571,840	8,552,558

COMPARATIVE TABULAR STATEMENT SHOWING THE QUANTITIES OF COTTON CONSUMED IN FRANCE, AND THE COUNTRIES WHENCE IMPORTED, FOR A PERIOD OF THREE YEARS, FROM 1852 TO 1854, BOTH INCLUSIVE.

Countries whence imported.	Kilogrammes of cotton consumed in France in the years—		
	1852.	1853.	1854.
United States	66,740,104	70,220,752	67,452,508
Egypt	2,754,662	2,401,497	2,318,665
Turkey	979,313	744,331	571,511
England	8,966	8,412	170,664
Belgium	281,074	561,066	895,176
Brazil	432,899	265,450	105,861
Peru	144,134	219,077	254,414
Venezuela	206,588	161,502	55,263
Hayti	47,866	70,580	57,290
East Indies	296,953	263,374	71,517
Elsewhere	231,448	175,287	141,131
Aggregate	72,008,951	75,091,358	71,598,995

TABULAR COMPARATIVE STATEMENT SHOWING THE QUANTITIES OF COTTON WHICH PASSED IN TRANSIT THROUGH FRANCE, WITH THE COUNTRIES WHENCE IT CAME, AND WHITHER IT WENT, RESPECTIVELY, DISTINGUISHING THE QUANTITIES TO AND FROM EACH, FOR THE PERIOD OF THREE YEARS, FROM 1852 TO 1854, BOTH INCLUSIVE.

Years.	Countries whence.	Quantities.	Countries whither.	Quantities.
		Kilos.		Kilos.
1852	United States	5,060,457	Switzerland	7,027,627
	England	1,255,680	Sardinia	364,315
	Egypt	1,025,128	Zollverein	196,970
	Elsewhere	266,819	Elsewhere	18,613
	Aggregate	7,607,584	Aggregate	7,607,584
1853	United States	4,800,928	Switzerland	7,006,914
	England	761,193	Sardinia	197,115
	Egypt	1,822,372	Zollverein	192,779
	Elsewhere	92,178	Belgium	79,263
	Aggregate	7,476,071	Aggregate	7,476,071
1854	United States	4,628,826	Switzerland	6,601,925
	England	1,402,872	Sardinia	265,387
	Egypt	884,750	Zollverein	373,550
	Elsewhere	386,603	Elsewhere	56,779
	Aggregate	7,297,641	Aggregate	7,297,641

3. *Spain.*—Tabular comparative statement, showing the quantities of cotton imported into Spain, and the countries whence imported, for a period of five years, from 1851 to 1855, both inclusive.

The statistical office has no official Spanish data from which to make up the statement required.

The quantities of cotton exported from the United States to Spain, according to United States' Treasury reports, the year specified, were as follows:

	Pounds.		Pounds.
1851	34,272,625	1854	35,024,074
1852	29,301,928	1855	39,071,705
1853	36,851,042	Average (5 years)	33,704,292

From Cuba, the same years, according to *Balanzas Generales* of that Island, the quantities exported to Spain were as follows:

	Pounds.		Pounds.
1851	13,415	1854	1,489
1852	300,225	1855	No data.
1853	188,625	Average (4 years)	118,438

From Porto Rico, according to official Balanzas of that Island, as follows:

	Pounds.		Pounds.
1851	315,083	1854	No data.
1852	141,807	1855	No data.
1853	245,552	Average (3 years)	234,147

From Brazil, according to the *Proposta e Relatario* of that empire, for the years 1852-'3, and 1853-'4, the quantities of cotton exported to Spain were as follows:

	Pounds.		Pounds.
1852—53	2,291,578	Average (2 years)	2,321,428
1853—54	2,351,279		

Spain, according to the *Cuadro General* of that kingdom for 1849, imported that year, from countries of production, 26,136,881 pounds of cotton; of which quantity the United States supplied 21,669,441 pounds; Cuba, 3,371,830 pounds; Brazil, 832,604 pounds; Porto Rico, 370,881 pounds, and Venezuela 21,316 pounds.

4. *Hanse Towns.*—The states of Germany are supplied with the cotton consumed in their factories chiefly through the Hanseatic cities, Hamburg and Bremen. Bremen sent to the Zollverein, in 1853, cotton imported direct from the United States, to the value of $984,772 14, and to Austria to the value of $156,153 21. The factories of Prussia and Saxony are numerous, and import not only the raw material from the cities, but also large quantities of yarns. The number of spindles in operation in the states composing the Zollverein is estimated at upward of 1,000,000. This is, doubtless, an under estimate, as the industrial enterprise of the Zollverein has made rapid progress since the date of the official document from which these figures are derived. The export of cotton tissues from the Zollverein in 1853 amounted in value to $2,394,497 34, of which amount $2,075,299 68 in value came from the factories of Saxony.

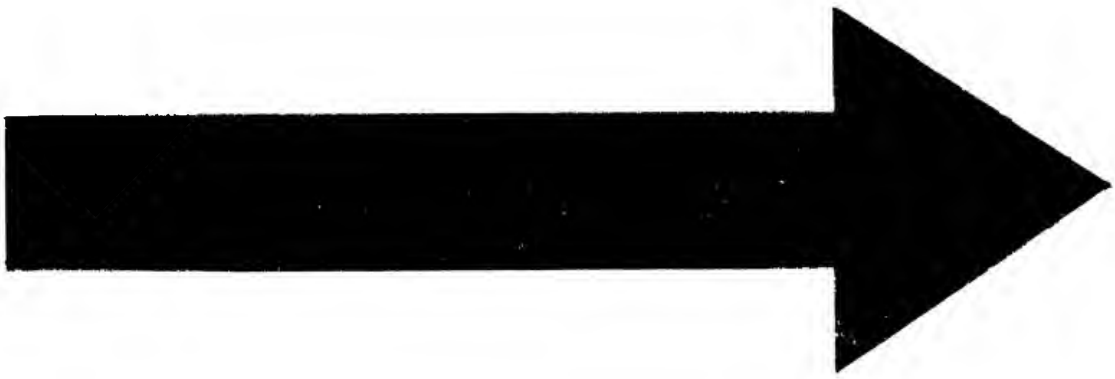
The Hanse Towns, from geographical position, are, and must always continue to be, the great marts from which raw material of all descriptions will be supplied to the states of the Germanic commercial Union. Hence exports of American cotton and tobacco to these points are heavy, and constantly increasing. These commercial cities receive their supplies of raw cotton not only from the United States, in direct trade, as well as from Brazil and other countries of South America, but also in the indirect trade from English ports and other entrepôts of Europe. In 1855, the Zollverein sent through the Hanse ports to the United States cotton fabrics to the value of more than $1,500,000 in return for the raw material.

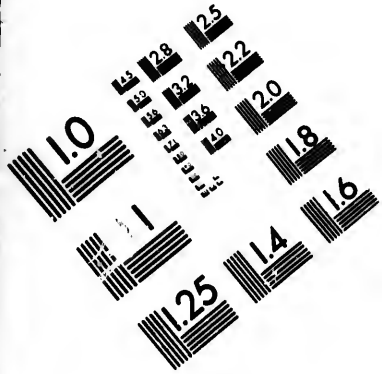
The following statement shows the quantities of cotton exported from the United States to the Hanse Towns every 10 years, for a period of 51 years, from 1805 to 1855:

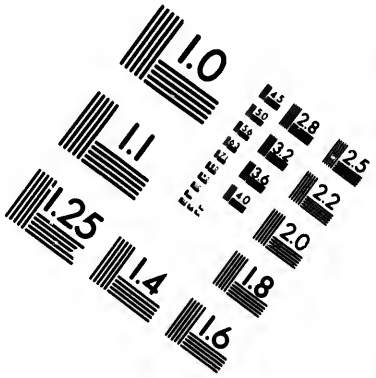
	Pounds.		Pounds.
In 1805	122,008	In 1835	2,688,147
" 1815	1,846,283	" 1845	17,204,094
" 1825	577,109	" 1855	30,809,991

Tobacco is borne in direct voyage from the United States; not so, however, with cotton, in the carrying trade, of which Great Britain has been for many years an active competitor. Entering the ports of the United Kingdom free of duty, her merchant flag can realize a profitable trade in its re-exportation to the various ports of continental Europe. Thus the Hanse Towns receive their supplies of raw cotton not only from the United States in the direct trade, but also in the indirect trade from English ports and other entrepôts of Europe. The annual average quantity of cotton exported from the United States to the Hanse Towns, including Prussia, during the 4 years from 1851 to 1854, both inclusive, was 24,811,626 pounds; while the annual average exports from Great Britain during the 4 years ending Dec. 31, 1854, was 36,563,996 pounds.

The annual average quantities of cotton exported from the same countries, respectively, during the same periods, to the other nations of northern Europe, exhibit similar results. These facts are illustrated by the subjoined statement, and suggest a strong argument for the serious consideration, by the navigation interests of the United States, of such measures as would be likely to promote the direct exportation of our great staple from our own ports, in our own vessels, to those of the countries by which it is consumed.







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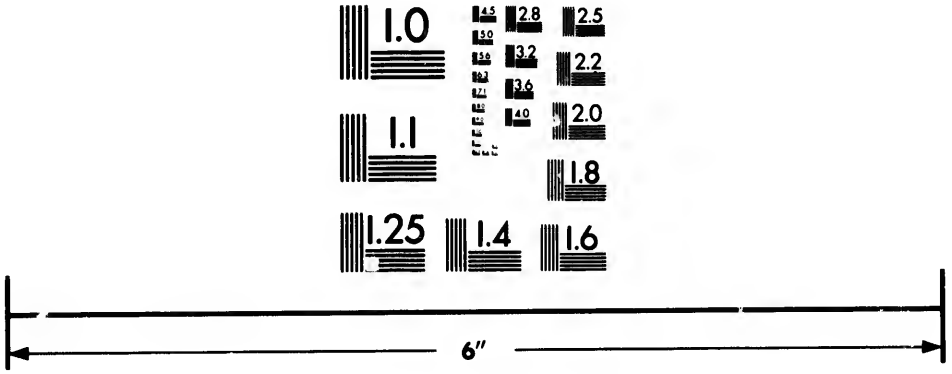

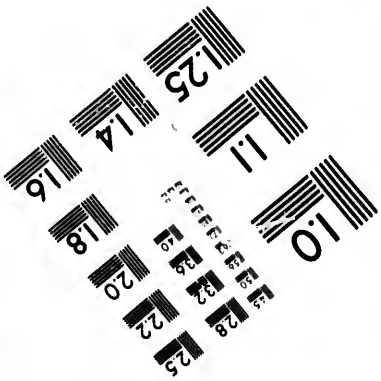

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COMPARATIVE STATEMENT SHOWING THE QUANTITIES OF COTTON EXPORTED TO CERTAIN COUNTRIES OF NORTHERN EUROPE, FROM THE UNITED STATES AND GREAT BRITAIN, RESPECTIVELY, FOR A PERIOD OF THREE YEARS, FROM 1852 TO 1854, BOTH INCLUSIVE.

Countries.	FROM THE UNITED STATES.			FROM GREAT BRITAIN.		
	1852.	1853.	1854.	1852.	1853.	1854.
	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.
Hanse Towns and Prussia	23,138,228	22,671,782	37,719,922	28,146,956	34,560,736	59,499,888
Belgium	27,157,390	15,494,449	13,980,450	19,657,680	18,466,872	14,040,768
Russia	10,475,168	21,286,568	2,974,954	45,605,840	48,987,392	206,544
Holland	10,259,049	7,088,994	5,048,165	15,834,224	28,876,592	26,984,544
Sweden and Norway	5,939,025	6,099,517	9,212,710	3,591,840	4,414,368	5,866,560
Aggregate	75,969,858	72,591,298	69,976,211	100,885,840	135,055,760	106,550,304

5. *Belgium.*—Most of the cotton imported into Belgium is from the United States, and is consumed by her own factories at Ghent, Liege, Antwerp, Malines (Mechlin), etc., which are said to employ a capital of $12,000,000, and more than 122,000 operatives, and to turn out an annual value of $17.000,000 in fabrics, which are in high repute. The *Tableau Général* of Belgium for 1854 gives the importation of cotton into that kingdom as follows:

STATEMENT EXHIBITING THE QUANTITIES OF COTTON IMPORTED INTO BELGIUM IN 1854.

From	Pounds.	From	Pounds.
United States	15,899,266	Hayti	73,055
England	14,208,765	Brazil	19,991
Holland	2,733,259	Other countries	80,594
France	868,516		
Hanse Towns	79,668	Total	32,888,114

Of the above total, 25,783,292 pounds were consumed, and 7,049,828 exported.

The quantity imported by land and rivers was 3,104,851 pounds; by sea, 29,729,263 pounds.

Of the quantity exported, 6,959,965 pounds was by land and rivers, and 89,858 pounds by sea.

	Pounds.
Prussia receiving (by land and rivers)	5,628,136
France " " "	842,881
Holland " " "	488,896
And all other countries receiving (by sea)	134,118
Total by land and rivers and by sea	7,094,083*

The cotton thus exported was imported as follows:

	Pounds.
From United States	5,529,537
" England	1,488,582
" Holland	70,965
" France	4,999
Total	7,094,083

The average annual amount of duties derived by Belgium from cotton for the five years ending with 1854 was upward of $40,000, and, in the latter year, it ranked the thirteenth among articles imported in this regard. The duty under the law of January 31, 1852, was 1 franc 70 centimes per 220 pounds. By the law of April 12, 1854, cotton became free.

In 1854, Belgium exported cotton fabrics in value as follows:

Cotton fabrics	$4,701,572
Belgian manufacture	2,632,586
Foreign manufactures re-exported	$2,068,986

6. *Sardinia.*—Sardinia imports, on an average, some four or five million pounds of cotton each year from England and France, and about the same quantity from the United States; although, in 1855, the importation from the latter country suddenly rose from 1,645,372 pounds the preceding year to 14,777,765 pounds! There seems no sufficient reason why American vessels should not convey the whole quantity required by Sardinia directly to Genoa, as well as for English and French vessels to carry thither a portion of American cargoes landed at Liverpool or Havre. A similar remark is applicable to the other ports of Italy, and to those of Austria on the Adriatic; and the enterprise of establishing lines of ocean steamers between ports of the United States and those of the Mediterranean will, if successful, tend greatly to encourage, if not to secure, such direct importation.

* This is an excess of 44,360 pounds over the amount given above as exported, that quantity having been entered for consumption but subsequently withdrawn.

7. *Switzerland.*—Four fifths of all the cotton consumed by the factories of Switzerland is estimated to be imported at Havre, whence it passes through France by railway, being burdened with heavy charges in the transit. In 1833, the quantity thus received amounted to nearly 6,000,000 pounds. In 1848 it had reached nearly 17,000,000 pounds. The entire receipt of cotton in 1848 was 22,000,000 pounds. In 1851 it amounted to 27,035,725 pounds, of which 13,729,320 pounds were from the United States. In 1852, Switzerland received through France 15,816,775 pounds; in 1853, 15,815,473 pounds, and in 1854, 14,978,257 pounds, according to the *Tableau Général* of France for these years. Imports from the United States into Switzerland are made, for the most part, through the customs frontiers of Berne, Basle, Soleure, and Argovie, bordering on France and the southern part of Germany. A severe restriction on the importation of cotton, and also of tobacco, to Switzerland, as well as on the reception by the United States of Swiss ware and manufactures in return, is the vexatious and expensive transitage, especially through France. The oppression of this system may be inferred from the fact, that the annual average aggregate value of merchandise on which transit tolls are paid, proceeding from Switzerland, is (1858) nearly $30,000,000; and the value of that proceeding to that republic more than half as much. Switzerland sent, in transitu to France, cotton tissues to the value of nearly $3,000,000 in 1852; and to the value of nearly $4,000,000 in 1853. By the French tariff, such fabrics are excluded from France for consumption. Since 1845, Switzerland is stated officially to have quite superseded in the markets of Germany and Austria, the yarns of Great Britain. In 1830 that republic had in operation 400,000 spindles; in 1840, 750,000, and in 1850, 950,000; the number having more than doubled in 20 years.

According to Swiss official custom-house reports, that republic received cotton from the United States as follows, the years specified:

	Pounds.		Pounds.
1850	15,942,740	1852	19,065,200
1851	13,729,320	1853	18,441,830

In return, cotton stuffs, as follows, were sent to the United States:

	Pounds.		Pounds.
1850	3,226,800	1852	4,077,920
1851	3,509,680	1853	5,265,150

In 1855, Switzerland returned to the United States, in exchange for raw cotton, the same article manufactured, to the value of $212,700.

8. *Russia.*—Before the breaking out of the late war, the manufacture of cotton in the Russian empire was progressing with extraordinary activity. The number of spindles exceeded 350,000, producing annually upward of 10,000,000 pounds of cotton yarns. The barter trade with the Chinese at Kiachta stimulates this branch of manufacture in Russia, as the article of cotton velvets constitutes the leading staple of exchange, at that point, for the teas and other merchandise of China. In former years this article was supplied almost exclusively by Great Britain; but the Chinese prefer the Russian manufacture, and hence the steady progress of that branch of industry. Thus the annually increasing importations of the raw material, and consequent diminution in the quantities of cotton yarns imported is accounted for. Were raw cotton

admitted, as in England, free of duty, the United States would, most probably, supply, in the direct trade, the whole quantity consumed in that empire. As it is, the commercial reforms in Russia, already announced officially, and now in progress, comprehending, as they do, the establishment of American houses at St. Petersburg, must necessarily tend to that result. There are at present in Russia, or there were previously to the war, 495 cotton factories, employing 112,427 operatives, and producing annually 40,907,786 pounds of yarns, and corresponding amounts of textiles.

9. *Sweden.*—The importations of cotton in 1851, according to Swedish official authorities, amount to 7,989,4281 lbs. against 1,832,481 lbs. in 1841, and 749,484 pounds in 1831. In 1843, these authorities show an importation of 2,600,000 pounds against 9,888,572 pounds in 1853; which latter amount exceeded that of the importation of 1852 by 1,247,041 pounds, and that of 1850 by more than 5,200,000 pounds, being the largest of any preceding year. In 1848 the amount was 8,074,020 pounds. The value of cotton manufactures exported from Sweden in 1850 was $40,000 against $7,500 only in 1851.

10. *Portugal.*—In the year 1855, the quantity of raw manufactured cotton imported into Oporto amounted to 6,697,454 pounds, the value of which is estimated at $1,516,644, on which the duty paid was $299,579 13. This kingdom imported 1,911,451 pounds of cotton in 1855, of which quantity 144,006 pounds were exported from the United States, and the residue from Brazil. In 1853–54, according to Brazilian official reports, Portugal received thence 2,673,766 pounds of cotton. Her imports of yarn in 1855 were 1,218,157 pounds, valued at $171,817 07, and paying an aggregate of duties of $61,142 84.

11. *Brazil.*—The exportations of cotton from Brazil, in 1843–44 and 1853–54, are stated by Brazilian official authorities as follows:

	Pounds.
1853–54	28,420,820
1843–44	26,056,160
Increase in ten years	2,364,160

The growth and export of cotton from Brazil appear to be nearly stationary. Great Britain, which is the largest customer, imported from Brazil the following quantities:

In 1835	22,600,000 pounds.
In 1855	22,824,000 "

In 1852–53 the exportation amounted to 31,033,050 pounds, of which quantity Great Britain received 26,881,201 pounds, Spain 2,291,578 pounds, Portugal 1,896,286 pounds, and France 889,048 pounds. Of the total exportations in 1853–54, Great Britain received 22,575,122 pounds, Spain 2,851,279 pounds, Portugal 2,673,766 pounds, and France, 543,611 pounds. Exports from Brazil to England began in 1781. There are insuperable drawbacks to the extension of the cotton culture in Brazil, among which may be reckoned the ravages of insects, the peculiarities of the climate, and the expense and difficulties attendant upon its transmission from the interior to the coast. It has long since been ascertained in Brazil that the cotton plant will not flourish near to the sea, and the plantations have, in consequence, receded further inland, as well to avoid this difficulty as to seek new and fresh lands. Pernambuco is the principal cotton-growing province of Brazil. The exports from that province were, according to Brazilian authorities, in

	Bales (of 160 lbs. each).		Bales (of 180 lbs. each).
1828	70,785	1840	85,849
1830	61,152	1842	91,857
1835	52,142	1845	20,502

12. *Egypt.*—The cotton culture in Egypt commenced in 1818, and exportation to England in 1823. The comparative tabular statement subjoined, derived from Egyptian sources, showing the quantities exported at the port of Alexandria, and the countries to which exported, respectively, for a period of 8 years, from 1853 to 1855, both inclusive, would indicate an increase in the culture by no means rapid in successive years:

Years.	Pounds of Cotton exported from Egypt to				
	Great Britain.	France.	Austria.	Elsewhere	All countries.
1853	26,439,900	10,726,500	6,321,000	397,800	43,885,200
1854	24,988,700	7,454,100	10,165,900	988,500	43,546,500
1855	33,980,100	9,451,200	12,774,900	668,100	56,874,300
Total	85,358,700	27,631,800	29,261,100	2,504,400	144,306,000
Average	28,452,900	9,210,600	9,753,700	834,800	48,102,000

If to the aggregate exported be added from 5 to 6 million pounds worked up in the country, a liberal estimate of the annual amount of the cotton crops of Egypt will have been made. The factories established by Mehemet Ali are, it is stated, going rapidly to ruin. The cotton goods manufactured are coarse "caftas," or soldiers' "nizam" uniform. Much cotton is used, also, in making up divans, the usual furniture in Egypt. The Egyptian bale is estimated at Alexandria at 300 pounds. The United States' consul general at that port, in a despatch dated the 1st instant, from which are derived the above facts, says: "The new crop is now coming in, and is supposed to be a little above the average."

13. *Cotton Culture in Mexico.*—The United States' consul at Tampico has furnished the following interesting information, in relation to the varieties, culture, and manufacture of cotton in Mexico, in answer to a circular issued by the Commissioner of Patents in February last: "The greatest production in this country of this article is on the coast of Vera Cruz, and southward from the capital of the State of that name toward Alvarado, and westward toward Flacotalpan and in its neighborhood. A little over seventy-five pounds of seed cotton yields, when ginned, twenty-five pounds of cotton wool. The quality is good, and the whole is sent up the country for consumption in the factories of Jalapa, Orizaba, and Puebla. From Vera Cruz to Matamoras, notwithstanding the territory being so extensive, and so admirably adapted for the growth of cotton, none is produced beyond a little in the neighborhood of Papantle, which the Indians cultivate for their own use, and spin in the same primitive manner as did their ancestors at the time of the conquest, viz., by means of a species of wooden spindle, the point of which is put in a common wooden bowl, and its gyrations given by the fingers. From the yarn thus spun they manufacture a narrow cloth, and this is still the custom in many parts of the country. In the neighborhood of Matamoras cotton is raised, but in limited quantities, and is also cultivated in Monclova. One hundred pounds of seed are required to produce twenty-five pounds of clean cotton. All that is produced in these places is consumed in the factores of Saltillo.

"On the west coast mention may be made of Santiago, a place situated between Tepic and Mazatlan, where a considerable quantity is raised, which is disposed of by the factories of Tepic. Further south, and between the towns of Antlin and Colima, and downward toward the sea, a very rich cotton country is to be seen, and where immense quantities could be raised were there more hands to attend to its cultivation; as it is, however, sufficient is gathered for the supply of the factories of Colima, and some of it even finds its way to Guadalajara, the capital of the State of Jalisco.

"From Colima, a stretch must be made to the neighborhood of Acapulco, where cotton is raised, but by no means in abundance; but all that is gathered in that section of the country is sent to the market at the city of Mexico. That part of the country is called 'Costa Grande,' and is separated from the 'Costa Chica' by the river Papagayo. On the latter, and in the neighborhood of Ayutla, cotton is raised, but in limited quantities, and sent to Puebla for sale. The cotton on the whole of this coast only requires seventy-five pounds of seed to produce twenty-five pounds of cotton-wool when ginned. The whole of the east, as well as

that of the west coast, for about 40 leagues inland, is admirably adapted for the growth of cotton. The country is, however, entirely unpopulated, and considerable difficulty is experienced in getting in the harvest in consequence thereof. There are very few landed proprietors who devote their attention to the cultivation of cotton, except on the coast of Vera Cruz. All the rest is raised by small farmers (rancheros) who are content to get about one half the amount of its value. Such payments are made in a few goods and groceries, in anticipation for which they are charged exorbitant prices. An experiment has been made to raise cotton on a farm about 12 leagues from San Luis Potosi, between 6 and 7 thousand feet above the level of the sea, and the result has been favorable. An enterprising Spaniard is now raising cotton 5 leagues from Tula, with every prospect of a satisfactory return. His farm is about 4500 or 5000 feet above the level of the sea. No care is bestowed on the plant. The seed is put into the ground, and no further notice is taken of it until it is quite ripe and ready for picking. The consequence is, that the staple is not so long, nor the cotton very fine, although quite good enough for the manufactories of this country. The growth of cotton throughout Mexico is perennial."

V. Capacity of the Cotton Bale.—The commercial standard of quantity in the cotton trade is generally the bale. The weight of the bale, however, is by no means uniform. Indeed, scarcely any weight, measure, or standard of capacity may be considered less so. It varies, from different causes, in different countries, and in different sections of the same country, at different periods, and according to the different kinds or qualities of the article. Improvements in pressing and packing, to diminish expense in bagging and freight, tend constantly to augment the weight of the bale. Thus, in 1790, the United States' bale was computed at only 200 pounds. In 1824, the average weight of bales imported into Liverpool was 266 pounds; but, increasing constantly, 12 years later the average was 319 pounds. M'Culloch, however, in considered 300 to 310 pounds a fair average; and in 1 310. At the same time, the upland cotton bale was estimated at 320 pounds, and the sea island at 280 pounds. According to Pitkins, the Egyptian bale weighed at one time but 90 pounds, though it now weighs more than 3 times as many. At the same period the Brazilian bale contained 180 pounds, though it now contains but 160 pounds, while the West Indian bale weighed 350 pounds, and the Colombian bale 101 pounds, or the Spanish quintal. According to Burns, the United States' bale at Liverpool averaged 345 pounds, the Brazilian, 180 pounds, the Egyptian, 220 pounds, the West Indian, 300 pounds, and the East Indian, 330 pounds. At the Lowell factories, in 1831, according to Pitkins, the bale averaged 361 pounds. In 1836, the bale of the Atlantic cotton States was estimated at 300 and 325 pounds, and that of the Gulf States at 300 and 450 pounds. In Liverpool, at the same time, the estimate for the bale of upland or short staple cotton was 321 pounds; for Orleans and Alabama, 402 pounds; for sea island 322 pounds; for Brazil, 173 pounds; for Egyptian, 218 pounds; for East Indian, 360 pounds; and for West Indian 280 pounds; while, according to Burns, bales imported into France were computed at only 200 pounds each. Waterston's *Manual of Commerce*, a reliable British publication (1855), gives the Virginia, Carolina, Georgia, and West Indian bale at 300 to 310 pounds; that of New Orleans and Alabama at 400 to 500 pounds; East Indies at 320 to 360 pounds; Brazil at 160 to 200 pounds; Egyptian at 180 to 280 pounds. Alexander's *Universal Dictionary of Weights and Measures* gives the bale of Alabama, Louisiana, and Mississippi at 500 pounds, that of Georgia at 375 pounds, and that of South Carolina at 362 pounds. At Rio de Janeiro the Brazil bale is estimated at 160 pounds.

Prior to 1855, the United States' "Commerce and Navigation" gave exports of cotton in pounds only. They are now given in bales as well as in pounds—the aggregate amount of the year ending June 30, 1855, being 2,303,408 bales, or 1,008,424,601 pounds: the bale, accordingly, averaging about 438 pounds. Some bales, however, are evidently much heavier, and some much lighter than this. For example, the 210,113,309 pounds of cotton exported to France give 446 pounds to each of the 470,298 bales; and the 955,114 pounds exported to Austria give 492 pounds to each of the 1,939 bales; while the 7,527,079 pounds exported to Mexico give only 290 pounds to each of the 25,917 bales in which they were contained.

Liverpool Weights.—The relative average weights and cubical contents of bales of cotton imported into Liverpool, in 1852, are thus given:

Description of bale.	Av'ge wt. in lbs.	Contents in cu. ft.
Mobile	504	33
New Orleans	455	32
Upland	390	27
Sea Island	388	35
East Indian	388	15
Egyptian	245	27
West Indian	219	25
Brazilian	182	27

These figures show not only the great variety of bales that enter Liverpool, but that the most eligible form of bale is that of the East Indies—double the weight being packed within the same compass as in any other description of bale. In the great cotton marts of Liverpool and Havre, as in those of New Orleans and Mobile, the article is almost invariably treated of by merchants, brokers, and commercial men, by the bale. Thus, a report on the trade of Liverpool gives the import of cotton into Great Britain, in 1852, at 2,857,838 bales. The aggregate of cotton imported in that year is given in the official report by the Board of Trade, at 929,782,448 pounds; the bales averaging, accordingly, 395 pounds each.

Cotton Manufacture. This subject will be considered under the general heads of, I. Origin and Introduction. II. Invention and Improvements. III. Cotton Manufactures of Foreign Countries. IV. Statistics of Cotton Manufacture. V. Origin and Early History of Cotton Manufactures in America. VI. Cotton Manufacture in the United States.

I. Origin and Introduction.—The manufacture of cotton had its origin in the East, where the cotton plant is indigenous, and where the climate renders a light and absorbent fabric a suitable clothing for the people. It has in consequence been long established over every part of Asia, although it was only in India that the fabric was manufactured extensively, with a view to foreign exchange. Arrian mentions cotton cloth among the commodities which the Romans brought from India; but the quantity imported by them was inconsiderable, arising from the preference which they gave to woolen clothing. Dr. Robertson remarks, that the difference between the cargoes imported from India in ancient and in modern times appears to have arisen, not from any diversity in the nature of the goods prepared for sale in that country, but from variety in the tastes or in the wants of the nations with which they have successively traded.

The antiquity of the manufacture of cotton can not be reached by any authentic records. Neither wool, silk, nor linen, can claim a higher antiquity. One thing is pretty certain, that its first manufacture may be traced to India, whence it passed to all the rest of the world. India, indeed, has been the source of many of the arts of civilized life. It was, in all probability, the cradle of mankind, and the source of Assyrian, Egyptian, and Persian civilization.

The Indians have in all ages maintained an unapproached and almost incredible perfection in their fabrics of cotton. Indeed, some of their muslins might be thought the work of fairies or insects rather than of

man; but these are produced in small quantities, and seldom have been exported. In the same province of India from which the ancient Greeks obtained the finest muslins then known, namely, Bengal, these astonishing fabrics are manufactured at the present day.*

We are told by two Mohammedan travelers, who went to India in the 9th century, that "in that country they make garments of such extraordinary perfection, that nowhere else are the like to be seen. They are woven to that degree of fineness, that they may be drawn through a ring of moderate size." Marco Polo, in the 16th century, mentions Coromandel, and especially Masulipatam, as producing "the finest and most beautiful cottons that are to be found in any part of the world;" and this is still the case as to the flowered and glazed cottons, called chintzes.

The Portuguese adventurers who went to India immediately after the discovery of the route by the Cape of Good Hope, speak of "the great quantities of cotton cloths admirably painted, also some white, and some striped, held in the highest estimation, which were made in Bengal." Cæsar Frederick, a Venetian merchant, who traveled in India in 1563, describes the extensive trade carried on between St. Thomé (a port 150 miles from Negapatam) and Pegu, in bumbast (cotton) cloth of every sort, painted, which is a rare thing, because this kind of cloth shows as if it were gilded with divers colors; and the more they are washed, the liveller the colors will become. And there is made such account of this kind of cloth, that a small bale of it will cost 1000 or 2000 ducats.

Tavernier, who traveled in India about 200 years ago, speaks of the white calicoes (so called from the city of Calicut, in India, where they were first seen by Europeans), or muslins woven in Bengal, and rendered so remarkably white by being dipped in lemon juice. He says: "Some calicuts are so fine that you can hardly feel them in your hand; and the thread, when spun, is scarcely discernible." The same writer says that "there is made at Seconge, in the province of Malwa, a sort of calicut so fine, that when a man puts it on, his skin shall appear as plainly through it as if he was quite naked; but the merchants are not permitted to transport it, for the governor is obliged to send it all to the Great Mogul's seraglio and the principal lords of the court, to make the sultanesses and noblemen's wives' shifts and garments for the hot weather. And the king and the lords take great pleasure to behold them in these, and see them dance with nothing else upon them." Speaking of the turbans of the Mohammedan Indians, Tavernier says: "The rich have them of so fine a cloth, that 25 or 30 ells of it put into a turban will not weigh 4 ounces."

Eighteen hundred years ago, according to Arrian, author of the "Periplus," there were thousands of men, women, and children employed at Baroche, in Guzerat, and the adjacent villages, in the manufacture of cotton, from the coarsest sail-cloth to the finest muslins. So that it is a great mistake to suppose that cotton manufactories are of a modern origin. They existed in India centuries before the Christian era.

The ingenuity of the Hindoo cotton manufacturers is truly wonderful. The late Rev. William Ward, a missionary of Serampore, says that "at two places in Bengal muslins are made so exceedingly fine that four months are required to weave one piece, which sells at 500 rupees. When this muslin is laid on the grass, and the dew has fallen upon it, it is no longer discernible." We might cite a great number of creditable authorities in proof of the fineness of India cotton manufactures, and the ingenuity of the Hindoos, but these will suffice. The oriental hyperbole, which describes the muslins of Decca as "*webs of woven wind*," is less poetical than is generally supposed. No modern European manufacturer of cotton at all approaches the Hindoos in respect to the fineness of his fabrics. The extreme of fineness to which yarns for muslins are now spun in Great Britain is 250 hanks to the pound, though cotton yarn has been spun in England making 350 hanks to the pound. This was, however, only an experiment, to ascertain how fine cotton could be spun. No such yarn is or could be used in making muslins, or for any other purpose. The Hindoos are the only ones who have ever woven such yarn into fabrics.—De Bow's *Industrial Resources*.

The implements used by the Indians in the different processes of the cotton manufacture, from the cleaning of the wool to its conversion into the finest muslin, may be purchased for the value of a few shillings, and are so rude and simple a construction as to be evidently the invention of a very early period. With the exception of the loom, none of them deserve the name of a machine, or display the slightest mechanical ingenuity. They spin the yarn upon the distaff; and yet, with all the advantages which we in this country derive from machinery, we have only recently been able to equal, either in fineness or quality, the yarn which is produced by means of this primitive instrument. The well managed use of the finger and thumb of the Indian spinner, patiently and carefully applied in the formation of the thread, and the moisture at the same time communicated to it, are found to have the effect of incorporating the fibres of the cotton more perfectly than can be accomplished by our most improved machines.

The loom is composed of a few sticks or reeds, which the Indian carries about with him, and puts up in the fields under the shade of a tree, or at the side of his cottage. He digs a hole large enough to contain his legs and the lower part of the "geer," and fastens the balance to some convennint branch over-head. Two loops underneath the geer, in which he inserts his great toes, serve as tradles: and he employs the shuttle, formed like a large netting-needle, but of a length somewhat exceeding the breadth of the cloth, as "battoon," using it alternately to draw through the weft and strike it up. The reed is the only part of the weaving apparatus which approaches, in the perfection of its construction, to the instruments we use. The loom has no beam, and the warp is laid out upon the ground the whole length of the piece of cloth. The weavers live entirely in villages, as they could not, if shut up in towns, work in this manner. Upon this rude machine, worked in the way we have mentioned, the Indians produce these muslins, which have long been such objects of curiosity from the exquisite beauty and fineness of their texture.

It is probable that the whole of the implements which we have just described existed as we now find them before the people of India were divided into castes. The transmission of the same employment from father to son (which, although not specially enjoined by the Hindoo code, is the invariable practice in India), while it has the effect of conveying unimpaired the knowledge acquired in any art, tends to check its further advancement. It is the opinion of Mr. Rickards, who so ably advocated the interests of the natives of India in the discussion in the British Parliament on the renewal of the Company's charter (1814), that latterly this form of society, with all its dependencies, habits, and restraints, has been held together chiefly by the oppression of the fiscal exactions, the want of a free trade, and the consequent universal poverty of the people. In support of this opinion, he refers to what the Hindoo population of Calcutta and Bombay have achieved in the pursuits of commerce. We trust, however, that we may now look forward to the speedy abolition of this system, so much opposed to all development of talent; and which, by reducing man to the condition of a machine, has paralyzed the exertions and arrested the improvement of the people of India.

* Baine's History of the Cotton Manufacture, p. 55.

To the same cause, however, which thus prevented improvement in India is to be attributed that dexterity in his particular employment which the Indian artisan possesses. From the earliest age he learns to spin and weave under the direction of his father; and having no hope or desire of advancement in any other line, he gains, through constant practice, that wonderful skill, which may thus be considered almost as a family inheritance. To be able to manage his ill-constructed loom, even in the production of ordinary fabrics, he is obliged to acquire such a sleight of hand, that it is not surprising if, out of the multitude trained in this manner, a few should be found capable of producing those muslins which are said, when spread upon the grass, to appear like the gossamer web. From the superiority of these goods, and from their retaining the beauty of their appearance longer than European muslins, it has been supposed that the cotton of which they are made is of better quality than any known to the European manufacturers. This, however, is a mistake: there is no cotton in India of a quality superior to the best sea islands. The excellence which these muslins possess is to be ascribed wholly to the skilful tact of the workman in the processes of spinning and weaving. The long cloths and fine pullicats are made chiefly within the presidency of Madras, the coarse piece goods and pullicats in Surat, the finest calicoes at Musulipatam, and table-cloths of a superior quality at Patna. Each district varies from the others in the nature of its productions, as may be seen from the different denominations of cotton goods to be found in every consignment coming from India.

An apprehension has sometimes been expressed that the inhabitants of India, in possession of the raw material, may obtain a knowledge of machinery, and by combining with its peculiar advantages their cheaper labor and superior manual dexterity, may be enabled to undersell to such a degree as to ruin and put an end to British manufacture; but in the state of the people of India there are circumstances which render this impossible, without a change being first produced upon their moral condition, their institutions, and their habits. The training which makes the Indian, with such imperfect tools, able to perform his work so well, disqualifies him from doing it in any other way, or with any other implements than those to which he has been familiarized from his infancy. The attempt to introduce machinery into India is, however, now being made. A spinning-mill has been built at Calcutta; and although the private company which commenced the undertaking has failed, the work continues to be carried on. There are at present nearly 700 persons employed in the mill, engaged at the rate of about seven shillings each per month; but these people, it is found, can not continue to work beyond a few hours at a time; and a succession of hands to carry on the operations through the day is required. To train them, in such circumstances, to dexterity and skill is impossible; and, accordingly, the yarn spun is not only of inferior quality, but even with the low nominal wages, costs so much as to disqualify it for competition with the yarn of Great Britain. An attempt is now being made to establish a cotton-spinning mill at Bombay.

The extensive introduction of machinery into Great Britain has, meanwhile, by reducing the price of manufactures, enabled them to maintain a successful competition with the Indian goods at home, by sending cotton manufactures to a large amount to India itself. A complete revolution has in consequence taken place in the nature of the exports from that country to Europe, and, indeed, to all the markets on this side of the Cape of Good Hope. When England first got possession of India, her investments at home were principally (in point of value almost entirely) composed of manufactured produce. They are now, in a great measure, made up of the produce of the soil, indigo, cotton, wool, raw silk, saltpetre, etc., etc.

The following table shows the difference of the cost of cotton yarn produced in India and in Great Britain, and indicates the changeless nature of unaided human labor in the former, whilst by mechanical appliances in the latter, cheapness and plenty result:

COMPARATIVE STATEMENT OF THE COST OF ENGLISH AND INDIAN COTTON YARN IN THE YEARS 1812 AND 1850, FURNISHED BY MR. KENNEDY OF MANCHESTER TO THE COMMITTEE OF PARLIAMENT ON EAST INDIA AFFAIRS, AND CONTINUED TO 1854.

No.	ENGLISH COTTON YARN.												INDIAN COTTON YARN.		
	Hanks per day per spindle.			Price of Cotton and Waste per lb.			Labor per lb.			Cost per lb.			Price of Cotton and Waste per lb.	Labor per lb.	Cost per lb.
	1812.	1830.	1854.	1812.	1830.	1854.	1812.	1830.	1854.	1812.	1830.	1854.	1812, 1830, and 1854.	1812, 1830, and 1854.	1812, 1830, and 1854.
				s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
40	2·	2·75	2·75	1 8	0 7	0 6	1 0	0 7½	0 5	2 8	1 2½	0 11	0 8	3 4	3 7
60	1·75	2·5	2·5	2 0	0 10	0 7¼	1 6	1 0½	0 8	3 6	1 10½	1 3½	0 8¼	5 8½	6 0
80	1·5	2·	2	2 2	0 11½	0 9	2 2	1 7½	1 3	4 4	2 6½	2 0	0 4½	8 10½	9 3
100	1·4	1·8	1·8	2 4	1 1½	0 11	2 10	2 2½	1 8	5 2	3 4½	2 5	0 5	11 11	12 4
120	1·25	1·65	1·65	2 6	1 4	1 3	3 6	2 8	2 0	6 0	4 0	3 3	0 5	16 0	16 5
150	1·	1·33	1·33	2 10	1 8	1 9	6 6	4 11	3 6	9 4	6 7	5 3	0 6	25 0	25 6
200	·75	·9	·9	3 4	2 0	2 6	16 8	11 6	6 0	20 0	14 6	8 6	0 6	44 7	45 1
250	·05	·6	·6	4 0	3 8	3 6	31 0	24 6	18 0	35 0	28 2	21 6	0 8	83 4	84 0

It might have been expected that this change would have produced most distressing effects upon the crowded population of a country such as India, which in all ages has been a great manufacturing and exporting community; but no materially unfavorable consequences have resulted from it. In India, every manufacturer is, at the same time, a husbandman. When not employed in making a web, he supports his family by agricultural labor. It thus happened, that in proportion as the demand for goods for export declined, the natives, without difficulty, and without that distress which generally attends a change of employment in other countries, were able to direct their attention more and more to agriculture; and the result has hitherto been rather an improvement in their condition than otherwise.

The cotton manufacture of China is of immense amount, and is carried on almost entirely for home consumption; but its origin is not of the same remote date as that of India. Indeed, the lateness of its rise, and the slowness of its progress, in a situation so favorable, appear extraordinary. In the accounts of the revenues and of the arts in China during the period of the celebrated dynasty, which commenced about 1100 years before the Christian era, and lasted for some centuries, no mention is made of the cotton plant; nor, indeed, is there any notice of cotton in these records until about 200 years before the Christian era; from which period to the sixth century, the cotton cloth, which was either paid in tribute, or offered in presents to the emperors, is always mentioned as a thing rare and precious.

The cotton-tree was introduced into China at the time of the conquest of that country by the Mogul Tartars, in the year 1280; after which period every encouragement was given by government to the culture and manufacture of cotton. But there were considerable difficulties to be encountered, in the preju-

dices of the people, and in the opposition of those engaged in the manufacture of woolen and linen; and it was not until the year 1368 that these obstacles were altogether surmounted. After that date the progress of cotton manufacture was rapid, and now nine tenths of the population are clothed in its fabrics.

Almost the only cotton goods exported from China are nankeens. Barrow states the production of all the fabrics of the Chinese manufacture at the time he visited the country (in 1792), to be stationary, attributing this to the want of proper encouragement from the government, and to the rigid adherence of the people to ancient usages. To keep a manufacture in a progressive state, there must be a progressive demand for its products; and the Chinese manufacturers having no means of disposing of any surplus quantity, must accommodate the supply to the wants of their own consumption. It is said by travelers who have obtained access to that country, that the people show a great desire for articles of foreign manufacture. How valuable, then, to that country, as well as to others, must be the establishment of a free intercourse, and how conducive, probably, to the increase of the productions of all! The Chinese, over and above the cotton wool which they raise at home, import largely from British India, and from the Burmese territories. This intercourse commenced toward the close of the eighteenth century. A famine, which happened in China about that period, induced the government to direct, by an imperial edict, that a greater proportion of the land should be thrown into the cultivation of grain. Since then, the importation of cotton from India has been considerable, although constituting but a small part of what is consumed in their manufacture. The amount of their importations is stated at 40,000 bales.

Introduction into Europe.—The manufacture of cotton goods in Europe is said to have been first attempted by the commercial states of Italy, before the discovery of the passage to India by the Cape of Good Hope. These enterprising communities were the entrepôts through which the cotton fabrics of India passed to the different markets of the West; and being situated in the neighborhood of countries where the cotton wool was grown, and familiar with manufacturing processes, it is supposed that they were led to attempt the imitation of articles so much valued, and bringing so high a price. Another account assigns the introduction of the cotton manufacture into Europe to a later date, and gives to the people of the Low Countries the honor of having been the first manufacturers of these articles, in imitation of the cotton fabrics which the Dutch, about the beginning of the seventeenth century, began to import from India. But this last account can not be correct; for Guicciardini, in 1560, in a very full list which he gives of the different articles annually imported into and exported from Antwerp,* then the greatest commercial mart in Europe, specifies fustians and dimities of many fine sorts among the manufactured articles imported from Milan, and mentions cottons generally among those brought from Venice. But in the articles exported from Antwerp, although we find linens sent to almost every country, cotton cloth is not once mentioned. Italy, therefore, at that time had a cotton manufacture, which, it is probable, soon after made its way to the Netherlands; for we know it was brought from the latter country to Britain by Protestant refugees about the close of the sixteenth or early in the seventeenth century.

For the introduction and after improvement of many of these articles, Great Britain is indebted to the late Mr. John Wilson, of Ainsworth. This gentleman was originally a manufacturer of fustians at Manchester, but had early engaged in the manufacture of cotton velvets, which by persevering efforts he succeeded in bringing to the utmost degree of perfection. His improvement of the mode of dressing, of finishing, and particularly of dyeing these goods, acquired for them so high a character, that both in the home and foreign market his articles sold in preference to those of every other manufacturer. His plan for cleaning off the loose and uneven fibres, was by the use of razors. He afterward successively employed for this end, singeing by spirits of wine and the application of a hot iron resembling a weaver's drying iron, which last instrument had been introduced for the same purpose in the manufacture carried on in the Manchester House of Correction by Mr. Whitlow, governor of that institution. At a later period, Mr. Wilson effected his object by drawing the goods rapidly over a cylinder of cast iron heated to redness, by which they were in a superior manner cleared of the down or pile which had been raised upon them in the various operations of weaving, washing, bleaching, or dyeing. These successive inventions of Mr. Wilson, for performing this process, give us some idea of the manner in which improvements are introduced into the manufactures, when, fortunately, the efforts of self-interest are directed by intelligence and talent. Mr. Wilson, having a turn for chemical inquiries, investigated the different known processes of dyeing; and, by the improvements he introduced in the application of them to his own manufacture, materially advanced that art. Having succeeded to his satisfaction in dyeing the other rich colors, he procured from the Greeks of Smyrna, the secret of dyeing Turkey red. An account of this process was given by him in two essays, read to the Philosophical and Literary Society of Manchester, and which, on his retiring from business, he printed and distributed among his friends. The many valuable improvements introduced by Mr. Wilson into the different processes connected with the cotton manufacture had the effect not only to establish it more firmly, but rapidly to enlarge its extent.

II. Inventions and Improvements in Cotton Manufacture.—It has been said that the yarn produced a century ago in England, by the one-thread wheel, the only spinning machine known, did not exceed in quantity what 50,000 spindles of the present machinery can yield. To have reared and trained hands sufficient to have doubled this quantity, had it been possible, must have been the work of a length of time, and the amount of manufacture would still have been insignificant. A change in the system, therefore, had become indispensable; and we find that different ingenious individuals had already begun to employ themselves in contriving a better mode of spinning. When we contrast the splendid inventions connected with the cotton manufacture, which from this period burst forth in rapid succession, with the passive acquiescence in the use of imperfect machinery during the long period which preceded, we are apt to ascribe these improvements to the circumstance alone of a number of men of genius having at that moment arisen, and to forget that the ultimate cause exists in the times which called their energies into action. About the year 1750, the fly-shuttle had been invented by Kaye of Bury—one of the most important steps in the progress of the art of weaving; and in the year 1760 improvements had begun to be made in the carding process.

James Hargreaves, a weaver at Stanhill, near Church, in Lancashire, England, an illiterate man, possessed of no great mechanical knowledge, had adapted the stock cards, used in the woolen manufacture, to the carding of cotton, and had besides greatly improved them. By his invention a person was able to do double the work, and with more ease than by hand-carding. In the stock cards, one of the cards is fixed, while the other, being suspended by a cord over a pulley, is worked by the carder; and in this way, two or three cards can be applied to the same stock. This

* See Macpherson's *Annals of Commerce*.

contrivance was soon succeeded by the cylinder cards, or carding engine. It is not ascertained who was the inventor of this valuable machine, but it is known that the father of the late Sir Robert Peel was among the persons who first used it; and that, so early as 1762, he, with the assistance of Hargreaves, erected a carding engine with cylinders, at Blackburn. This machine did not differ materially from that now in use, except that it had no contrivance for detaching the cotton from the cards, an operation which was performed by women with hand-cards.

These successful advantages show that the minds of the manufacturing class had been awakened to discovery, and must have encouraged and stimulated the efforts that were then making to effect corresponding improvements in spinning.

There had been several unsuccessful attempts to improve the mode of spinning before the year 1767, when James Hargreaves, whom we have already mentioned, invented the "*spinning-jenny*." The idea of this machine is said to have been suggested to him by seeing a common spinning-wheel, which had been accidentally overturned, continue its motion while it lay on the ground. If such was the cause, it marks a mind of no common description, which from so casual an occurrence could elicit an invention of so much importance. After several unsuccessful attempts to carry into execution the conception he had formed, he succeeded in producing a rudely-constructed *jenny* of eight spindles, turned by bands from a horizontal wheel. In it the eight rovings were passed between two pieces of wood laid horizontally the breadth of the machine; and these being grasped in the spinner's hand, and drawn out by him, formed the rovings into threads. The structure of this jenny was soon afterward greatly improved, and it was at last brought to work as many as eighty spindles. This machine, although of limited powers when compared with the beautiful inventions which succeeded it, must be considered as the first and leading step in that progress of discovery which carried improvement to every branch of the manufacture —which, as it proceeded, changed the nature and character of the means of production, by substituting mechanical operations for human labor—which caused the manufactured article to become more and more a product of capital. The progress of invention after this was rapid; for when it was seen that, with the aid of the few mechanical combinations we have mentioned, the spinner had been enabled to increase his power of production eightyfold, the attention of those engaged in other branches of manufacture, was awakened to the possibility of introducing changes equally beneficial into their peculiar employments.

Hargreaves' invention occasioned great alarm among those who earned their subsistence by the old mode of spinning, and even produced popular commotion. A mob broke into his house and destroyed his machine; and some time after, when a better knowledge of the advantage of his invention had begun to bring his spinning-jenny into general use, the people rose a second time, and scouring the country, broke to pieces every carding and spinning-machine they could find. Hargreaves himself had by this time removed to Nottingham, where he was engaged in erecting a small spinning-work, about the same period that Mr. Arkwright came to settle there, who had also been driven from Lancashire by the fear of similar violence.

The jenny in a short time put an end to the spinning of cotton by the common wheel; and the whole wefts used in the manufacture continued to be spun upon that machine, until the invention of the "mule-jenny," by which it was in its turn superseded. Hargreaves died, in great poverty, a few years after his removal to Nottingham.

While Hargreaves was producing the common jenny, Mr. Arkwright (afterward Sir Richard Arkwright) was employed in contriving that wonderful piece of mechanism, the spinning-frame, called first the water-frame, and afterward the throstle, which, when put into motion, performs of itself the whole process of spinning, leaving to the workman only the office of supplying the roving or prepared material, and of joining or piecing the thread when it happens to break. In the year 1769, Mr. Arkwright obtained his patent for spinning with rollers, and Mr. Need and Mr. Strutt became his partners in the concerns to be carried on under it. He erected a mill at Nottingham, which he worked by horse-power. But this mode of giving motion to the machinery being expensive, he, in the year 1771, built another mill at Cromford, in Derbyshire, to which motion was given by water. We shall now proceed to give an account of the different machines used in cotton-spinning, invented by Sir Richard Arkwright, and of those afterward invented by others, describing them in the order in which they are employed. In this manner we shall be able to exhibit a view of the present state of the art. The instruments used in the preparation and spinning of cotton-wool, are the following:

The opener; the scutcher, and spreading-machine; the carding-engine; the lap-machine; the drawing-frame; the slabbing fly-frame; the intermediate fly-frame; the finishing fly-frame; the throstle-frame for coarse warps; the self-acting jenny for numbers below 50; and the hand-mule jenny for higher numbers. The first three of these instruments are employed in the rude process of cleansing the raw cotton, and separating its matted flocks. In the carding-machine it is carded and further purified; in the lap-machine it is fashioned in flat folds; and in the drawing-frame it is formed into a loose rope, the fibres of which have a parallel arrangement. In the slabbing-frame it is slightly twisted; and in the intermediate and finishing-frame it is still further twisted, particularly in the higher numbers; but it is not yet yarn. The throstle-frame is chiefly used for coarse warps; while upon the self-acting and hand-mule jennies, both coarse and fine yarns are spun.

This description of the carding-machine is still applicable for numbers of yarn above 100, which are made from sea-island cotton. For numbers above 50, a system of twice carding it is still employed. The engines are generally 36 inches wide. The cotton is partially carded in the breaker or first card; it is then re-formed into a lap; and is lastly passed through the finisher or second card; for the finest yarns, however, combing is substituted.

To make the operations of the various machines just enumerated more plain, we will give the metamorphoses of a bale of cotton, from the time it is brought to the manufacturers until it becomes yarn ready to be made into cloth. Women and girls in the mill take the cotton from the bale by handfuls, and feed with it the opening-machine. The cotton, laid upon an endless apron, is caught between the teeth of revolving rollers, which effectually tear and seperate the locks asunder; the cotton is opened into a light and flocculent mass, and the few remaining seeds and the dirt are expelled. Then the scutching-machine comes into requisition; again is the cotton placed upon an endless apron, and again exposed to the action of revolving rollers; the impurities are yet further separated, and the beautiful downy cotton becomes lapped in a continuous sheet upon a cylinder. These sheets of down —these softest of all soft layers—how do we convert them into delicate yarn? The broad, soft sheets go to the carding-machine, where a number of wire combs, or rather wire brushes, comb the cotton out into straight fibres; and these fibres are dexterously whipped off by a "doffing" apparatus, to assume the form of delicate, narrow ribbons, or *slivers*. Next we see all these slivers joined by another machine, so as to form a continuous lap; and this lap is again carded and doffed, by which the substance becomes equalized

as much as possible. The cotton is thus again brought to the state of a ribbon or sliver; and then are brought into use the machines which convert this ribbon into a yarn or thread. The drawing, the slubbing, and the roving-machines, all have relation to this conversion; we see numerous pairs of rollers, between which the cotton is drawn; the drawing rounds it, equalizes it, and gives it a slight twist; until at length we see the delicate yarn—fine, perchance, as a spider's web—elaborated from the thick but soft ropes of cotton.

More correctly, however, we should say that the cotton does not become yarn till after the spinning. Nothing excites more astonishment in cotton factories than the self-acting mule. The complex carriage, 20 or 30 feet long, with its army of spindles (sometimes as many as 800 in number), travels slowly to and fro, and draws out delicate threads to a state of still greater delicacy and tenuity; the drawing out thins the cotton, the rapid revolution twists it; and thus by drawing and spinning do the Houldsworths and the Bazleys of the nineteenth century produce cotton-yarn whose fineness almost exceeds belief. And while the mule-machine is thus making fine yarn for weft-threads, the throstle-machine, by a different mode of action, produces the stronger yarn for warp-threads; then again, if it be sewing-cotton, or hosiery-cotton that is required, we trace the yarn to the doubling-machine, where two or more are twisted, one around another, whereby a much denser thread is produced. The amount of machinery in the spinning-rooms of some of the mills is astonishing; in some cases 75,000 spindles whirling away at once in one room, each one requiring the co-operation of a number of other delicate little pieces of mechanism.

We have noticed, in speaking of the carding-engine, which Mr. Peel erected in 1762, that at that time the cotton was taken off the finishing-cylinder by means of hand-cards. But by the time Mr. Arkwright began his spinning, this operation was performed by the application of a roller with tin plates upon it like the floats of a water-wheel, which, revolving with a quick motion, scraped off the cotton from the card. This was a rude contrivance, and in its operation injured both the cotton and the cards. Mr. Arkwright substituted for it a plate of metal, toothed at the edge like a comb, which, in place of being made to revolve like the other, was moved rapidly in a perpendicular direction by a crank, and with slight but reiterated strokes on the teeth of the cards, detached the cotton from them in a uniform fleece. He employed narrow fillet-cards, wound round the doffing-cylinder in a spiral form, by which contrivance a continuity of fleece was produced, which, as it left the card, was gradually contracted in its size by being passed through a kind of funnel, and then flattened or compressed between two rollers; after which it was received into a tin can in the state of a uniform, continued carding. The taking off the cotton from the cards in this manner, is one of the most beautiful and curious operations in the process of cotton-spinning; and although the crank, which forms a part of the apparatus, had perhaps been used in some way or other prior to the date of Mr. Arkwright's second patent (as was urged in the action for having it set aside), the comb for taking off the fleece, and the spiral card which produces its continuity, were inventions indisputably his own.

Description of the Mule-jenny.—The mule, in its structure and operation, is a compound of the spinning-frame and of Hargreaves' jenny, from which circumstances it has probably received its name. It contains a system of rollers like that belonging to the twist-frame; but in place of having every four or six of them in separate hands, as is the case in that machine, the whole are coupled together; and the rove being drawn through them, is, in its conversion into thread, received on spindles revolving like those of the jenny. The carriage on which these spindles are placed is movable, and is made to recede from the rollers a degree faster than the thread is given out. After a certain quantity of the roving has been thus delivered by the rollers, they are stopped; but the carriage continues to recede somewhat further; and the spindles continuing also to revolve, the thread is drawn out to the fineness required, and then receives its proper portion of twist. This last operation resembles that performed by the common jenny, and produces a similar effect.

In an account of the means which contributed to that fall in the price of spinning which we have mentioned, we must not omit the progressive improvement in the cultivation of the raw material, and in the application of its different qualities to their most profitable uses. Previous to the year 1793, the cotton used in the coarser articles of the manufacture, with the exception of a small quantity imported from India and from the Levant for the fustian-trade, was wholly the growth of the English and of the French West India Islands. That for the better kind of goods was raised in Demerara, Surinam, and Berbice. The wool for fine goods was grown in the Brazils; and that for the few very fine muslins then manufactured, in the Isle of Bourbon.

In 1787 the descriptions of cotton imported into Britain appear to have been as follows:

	Pounds.
From the British West Indies	6,800,000
From the French and Spanish colonies	6,000,000
From the Dutch	1,700,000
From the Portuguese	2,500,000
From the Isle of Bourbon, by Ostend	100,000
From Smyrna and Turkey	5,700,000
Total	32,800,000

Had Britain continued to derive her sole supply of cotton from these countries, the progress of the manufacture would have been greatly retarded, not only from the difficulty of making the production of the raw material keep pace with the increasing consumption, but from the impossibility of obtaining the qualities of wool suited to the finer descriptions of goods, which the improved machinery enabled us to undertake.

The year 1770 has always been stated as the period at which the planters of the southern States began to turn their attention to the raising of cotton-wool. But we happen to know that in 1764, William Rathbone, an extensive American merchant in Liverpool, received from one of his correspondents in the southern States a consignment of eight bags of cotton. This cotton, on its arrival at Liverpool, was seized by the custom-house officers, on the allegation that it could not have been grown in the United States, and that it was liable to seizure under the shipping-act, as not being imported in a vessel belonging to the country of its growth. When afterward released, it lay for many months unsold, in consequence of the spinners doubting whether it could be profitably worked up. But fortunately, about the year 1770, the planters in the southern States began to turn their attention to raising cotton-wool; and besides carrying the cultivation of the article to a great extent, they produced qualities of cotton before unknown. In 1792 the quantity of cotton exported from the United States was only 138,328 lbs., no manufacture of cotton goods having been attempted in America for many years after that period. In 1831 they exported 619,000 bales to Great Britain, 127,000 to France, and 27,000 to other parts. In 1845 the quantity grown in the United States was 2,100,537 bales, and it is estimated that 3,500,000 bales will be shipped in 1857.

The American cotton-wool first taken to Great Britain was very ill-cleaned, and, in consequence, was indiscriminately applied to the manufacture of the coarser species of goods. It was soon, however, perceived that the cotton raised upon the coast, termed *sea island cotton*, had a finer and longer staple than that grown further back in the country, and known by

the name of *upland cotton*. But it was not for several years, and until after a succession of trials, that this wool was ascertained to be of a quality in every respect superior to the cotton of the Isle of Bourbon. Indeed, it was only in the year 1796 that the finest description of it was applied to the purposes for which Bourbon wool had till then been used, and which it soon entirely supplanted. The second quality of it about the same time supplanted the Brazil wool in many kinds of goods.

The cotton received from Egypt is found to be among the most useful that is grown, and that raised from sea island seed ranks in quality next to American sea island.

III. Cotton Manufacture of Foreign Countries.—Having succeeded in the production of cotton, the Pasha of Egypt thought he might advance another step, and have it spun into yarn and woven into cloth. He accordingly formed establishments for spinning and weaving in Cairo, Bosaco, Rosetta, and other places; and so early as 1826 he had at work 61 mills, moved by the power of buffaloes. The machinery was supplied from France and England, orders in council having been obtained in the latter country to authorize its export. Power-looms were also sent out, but did not succeed. A few years later, the pasha shipped 1,000 bales of yarn to Calcutta for sale; but it was not of a quality to enter into competition with English yarn, and it was found to be unsalable, except at a most disadvantageous price. He ordered it, therefore, to be woven into cloth, in Calcutta, on his own account, and to be re-shipped to Egypt, in a manufactured state. Clapperton and Landers, on their expedition to trace the courses of the Niger, found the inhabitants everywhere clothed in cotton. They mention that cotton-wool is produced in the different districts in the interior, and is spun into cloth on the spot. There exists, therefore, in the heart of Africa, an extensive manufacture of cotton cloth. It is to be regretted that they give no information of the way in which the yarn is spun, and no description of the loom employed to weave it. It would be interesting to know the nature of the instruments used by the natives in these processes, as such knowledge might enable us to trace whence the Africans derive their acquaintance with the art of weaving, and thus perhaps throw some light on African history. It appears that the people of Eboe, and of the countries near the coast, are chiefly clothed in Manchester cotton goods; a circumstance which would lead us to expect, should we succeed in obtaining a commercial intercourse with the interior of Africa, that a valuable market for the manufactures may be found in that country.

Within the last 20 years (1854), the American settlers of Liberia have established a communication across the country to Timbuctoo, and have found there a considerable market for cotton cloths. For more extended information of this trade, see Liberia.

In France, cotton yarn is often made in a different place from cotton cloth. Paris and the northern departments are the chief quarters for the supply of the former article, which is sent in quantities to Rouen, St. Quentin, and other places. In former years, cotton yarn used to be smuggled in great quantities from England; but this is now limited to the finer qualities. The cotton manufactures of the more substantial kind, called *bonneterie*, such as stockings and caps, are carried on in the Ardennes, in Normandy, and the department of the Gard, in Languedoc, is also noted for this manufacture. The exportation of cotton goods from France in 184[illegible], reached 5,000,000 kilogrammes, valued at 105,[illegible],443 francs. The importation of cotton thread from England in 1853, was 90,002 kilogrammes, in value, 1,559,311 francs. That of raw cotton in 1839 was 40,534,278 kilogrammes, in value, 71,204,784 francs; in 1840, 52,941,581 kilogrammes, in value, 94,005,975 francs. The cotton manufactures of France consume between 50 and 60 millions of kilogrammes, annually imported.

	Francs.
Cotton wool consumed in France	94,005,975
Cotton wool in transit	57,191,970
Cotton thread used at home	1,218,084
Cotton thread in transit	883,856
Cotton cloth consumed in France	805,256
Cotton cloth in transit	34,413,978
Total	187,518,569

We shall now resume our account of the progress of the manufacture in Great Britain. From Sir Richard Arkwright having commenced his operations at Nottingham, the seat of the stocking manufacture, and from his connection with Mr. Need, who was largely engaged in it, the whole produce of his spinning was at first devoted to that trade. The cotton yarn for this manufacture requires to be particularly smooth and equal; and to secure these qualities, it is spun by a process differing a little from that employed for ordinary twist. Being from two roves in place of one, it is called double spun twist. The introduction of this article produced a great change upon the stocking manufacture. Hand-spun cotton was entirely laid aside; and stockings made of twist were of so superior a quality, that in a short time they wholly supplanted thread stockings.

The manufacture of cotton stockings in Nottinghamshire, Derbyshire, and Leicestershire, is now of great extent.

About the year 1773, Mr. Need and Mr. Strutt made the important discovery, that the yarn produced by the spinning-frame had sufficient strength to fit it for warp, although its firmness and hardness rendered it less suitable for weft. The weft, therefore, continued to be spun by Hargreaves' jenny; and from this time the calicoes, and other articles in imitation of India goods, which had hitherto been manufactured with linen warp, came to be made wholly of cotton; and the progressive increase of these manufactures, particularly of calicoes, after this time, was unexampled.

After having made a considerable quantity of these goods, Mr. Need and Mr. Strutt discovered that, when printed, they were subject to double the duty charged upon calicoes woven with linen warp, and that their sale was even prohibited in the home market. After a long and expensive application to the legislature, they succeeded in procuring the repeal of those impolitic laws. Nearly about the same period, calicoes entirely of cotton were begun to be made at Blackburn, and also at Preston; which places soon became the seat of their manufacture, and for a long time the great market to which the printers from all parts of the kingdom resorted for their supplies. This branch went on increasing for many years in a most extraordinary degree. About the year 1805, it was calculated that the number of pieces sold annually in the Blackburn market was not less than a million; and by that time the manufacture of this article was not confined to the country around Blackburn, but had spread into the north-west district of Yorkshire, principally about Colne and Bradford, from which part of the country 20,000 pieces weekly are said to have been sent to Manchester.

The *nomenclature* of *Cotton Goods*, and the admission of new names, are among the oddities of the cotton manufacture. What these names mean, it would, perhaps, not be very easy to say; sometimes they indicate a degree of fineness in the goods; sometimes the mode of weaving; sometimes a color, a pattern, a garment for which they are suitable, or a distinguished personage who first wore them; sometimes a foreign product which they imitate; sometimes a country for whose market they are intended, or a town which is the chief seat of their manufacture, or a firm which takes a lead in their production—it matters little what the meaning may be; a new name has a commercial

value; and the Shakesperian dictum concerning "a rose by any other name," etc., is not always assented to in shopkeeping philosophy. Let us run hastily over a bundle of these names. We have dress ginghams and fancy ginghams, and umbrella ginghams, checked and striped ginghams, and ginghams known by the high-sounding names of Camperdowns, Coromandels, matallas, vicuñas, and briolas. We have book muslins, jaconet muslins, bishop lawn muslins, sacharilla muslins, tarlatan muslins, Scotch lawn muslins, Victoria muslins, India and Swiss mull muslins, leno muslins, striped muslins, lappet muslins, spot muslins, sprig muslins, and a number of other members of the muslin family. We have table-cloths, diapers, hucksbacks, jean-stripes, clan tartans, galas, Hungarians, and Derries—all made of cotton. There are sarongs, crossovers, selampores, Granvilles, denims, panes da costa—all, we believe, of the cotton shawl family. There are counterpanes, quiltings, vestings, dimities, swanedowns, moleskins, doeskins, lambskins, velveteens, beaverteens, fustians, long-cloths, shirtings, calicoes, everlastings, nankeens, cantils, and other cotton goods, the enumeration of which would be almost wearisome. A few groupings will show the relations between these goods. For instance, the *gingham* family consists of stout cotton, in which threads of two or more colors are woven together into stripes, etc.; *fustians*, *beaverteens*, *velveteens*, *moleskins*, and several others, are woven on the same principle as velvet, with a nap or pile, which is either cut or left uncut; *damasks*, *huckabacks*, *diapers*, *ticks*, and *cambrics*, are cotton limitations of the similarly-named linen goods; *quilts* and *counterpanes* have downy tufts to increase the thickness and softness; *shirting* calicoes, *sheeting* calicoes, *printing* calicoes, *long-cloth*, and *duck*, are varieties of plain, serviceable cotton goods, varying in stoutness; *chintz* is a stout calico, afterward printed in several colors; *corduroys*, *jeans*, *quiltings*, and many other varieties, are very strong cotton goods, mostly twilled. As for muslins, their variety is almost interminable.

The first attempts to make muslins in Great Britain commenced simultaneously in Lancashire and at Glasgow about the year 1780, but without success. There was no yarn fitted for the weft of these goods, except that spun upon Hargreaves' jenny; and when made of this, it was found they were not of a marketable quality. Recourse was then had to wefts brought from India; and although a better article than the former was by this means produced, it was still not of a quality to compete successfully with Indian muslin. As soon, however, as the invention of the mule jenny enabled the spinner to produce yarns suited to such fabrics, the manufacture of the finest cotton articles became an important branch of trade in Great Britain. That machine, as has been mentioned, came into use at the end of the year 1785, upon Sir Richard Arkwright's patent being cancelled; and it is from that period we ought to date the commencement of this part of the manufacture. So rapid was its progress, that in 1737 it was computed that 500,000 pieces of muslin were in that year manufactured in Great Britain.

Muslin began to be made nearly at the same time at Bolton, at Glasgow, and at Paisley, each place adopting the peculiar description of fabric which resembled most those goods it had been accustomed to manufacture; and in consequence of this judicious distribution at first, each place has continued to maintain a superiority in the production of its own article.

Jaconet, both coarse and fine, but of a stout fabric, checked and striped muslins, and other articles of the heavier description of this branch, are manufactured in Bolton and in its neighborhood.

Book, mull, and lino muslins, and jaconets of a lighter fabric than those made in Lancashire, are manufactured in Glasgow. Sewed and tamboured muslins are almost exclusively made there and in Paisley. A machine of most ingenious contrivance for performing the operation of tambouring, was, in the year 1807, invented by Mr. John Duncan of Glasgow, and a patent taken out for the discovery. Each machine contains about 40 tambouring needles, and is superintended by a girl, who pieces the thread when it breaks. This beautiful and, at first, promising piece of mechanism has never come into general use. At present there are only three or four machines kept at work by the Messrs. Mitchells of Glasgow, who at an early period became proprietors of the patent. What are called fancy goods, woven in the loom, were first made at Paisley, which had been the chief seat of the silk gauze manufacture of this country, In the silk trade, which was then beginning to fall into decay, a body of most ingenious workmen had been bred. By employing them, the taste and invention which had produced the varieties displayed in that beautiful article were immediately transferred to the production of similar fabrics of muslin. From this circumstance, Paisley for a long time retained the exclusive possession of this branch; but being only seven miles distant from Glasgow, the general seat of the cotton manufacture of Scotland, and the mart to which most purchasers of muslin resort, many of its principal manufacturers have been induced to move their establishments to that city, although the weaving of these muslins continues to be executed in Paisley and its neighborhood.

There is a curious circumstance to be noticed with regard to the manufacture of the very fine fabrics of muslins in Scotland—that a great part of the yarn used for them is brought from Manchester, in consequence of the Scotch spinners not having yet been able to produce the very fine numbers of yarn of the best quality. This inferiority does not proceed from a less perfect construction of the machinery employed in Scotland, the mechanics and the machine-makers of Glasgow being admitted to be excellent workmen; neither does it arise from the want of skill in those who conduct the business, or from any difference in the processes employed in the two countries; but it is to be attributed to the same cause which produces the superior yarn of India, namely, an adroitness and mechanical sleight of hand in the operative spinners of Manchester, acquired by a few out of the great multitudes bred there. The manufacture of the thicker cotton fabrics was, at the same time, rapidly rising in importance. The manufacture of dimities has been exclusively confined to the north of England, all attempts to make them in Scotland having proved unsuccessful. Balason handkerchiefs were first manufactured about Preston and Chorley, where they still continue to be made. The manufacture of ginghams was for a long time confined to Lancashire, but for many years it has been extensively introduced at Glasgow, although Lancashire continues to be the chief seat of this branch.

Pullicat handkerchiefs were first made about the year 1785, at Glasgow, where the manufacture of them has been carried on to a great extent. They were not made in Lancashire till some time afterward, and the manufacture of them there has never been to the same amount; Glasgow, therefore, continues to be the principal mart for this article.

Blue and white checks and stripes for exportation were at first of a linen fabric, but were afterward woven with linen warp and cotton weft; and when Sir Richard Arkwright's discovery enabled the spinner to produce cotton yarns of sufficient strength to be used for warps, a great proportion of these goods came to be made wholly of cotton. This manufacture is carried on in Lancashire, and in the county of Fife, and to a small extent at Aberdeen; its chief seat, however, is Carlisle.

The manufacture of cotton cambric was begun about the same period, and was separated into two branches; into cambric to be used in garments in a

white or printed state, and into cambric made in imitation of French linen cambric, to be used for the same purpose as that article. The first is made nearly altogether in Lancashire, where the manufacture of it is carried on to a great extent; and the second, of much less amount, wholly at Glasgow. The Scotch manufacturers have never been able to rival the Lancashire in the first, nor the Lancashire manufacturers to rival the Scotch in the last.

Bandana handkerchiefs, and Bandana cloths for garments, were first made by Mr. Henry Monteith, at Glasgow, about the year 1802, and are now manufactured there to a considerable amount. The cloth is dyed a bright Turkey red, and the color is discharged from those parts which form the pattern or figure, by passing a chemical mixture through them. Glasgow still continues to be the chief seat of this manufacture, and there are in that city several large works for carrying it on. The demand for Bandanas, however, has utterly fallen off, while, in consequence of the repeal of the impolitic duty on printed cloths, the consumption of these has greatly increased; and most of the proprietors of the Turkey-red dyeing establishments have therefore been induced to add calico-printing to their former business.

The value of the present annual production of the cotton manufacture of Great Britain is estimated at £54,000,000 sterling, of which nearly £33,000,000 is the value of goods and yarn made for exportation. The capital invested in buildings and machinery may be calculated at nearly the same as the annual amount of the manufacture, and more than double what it was 30 years ago, while the quantity of goods annually produced is much more than triple; yet, from the improvement of the processes, and consequent diminution of the expense of production, with the reduction which has taken place at the same time in the price of the raw material, this more than tripled quantity of the manufactured article does not represent more capital than was represented by, and required for the bringing to market the lesser amount during the preceding period. In the year 1812, when Mr. Crompton applied to Parliament for a remuneration for his invention, he found by as accurate an investigation as he could make, that the number of mule spindles in the country was between four and five millions; and Mr. Kennedy, in his memoir of Mr. Crompton, has stated, that the number in 1829 had increased to 7,000,000. In 1817, he estimated the number of persons employed in the spinning of cotton in Great Britain at 110,763, and the number of spindles in motion at 6,645,833, and the quantity of yarn produced at 99,687,500 pounds. The quantity of cotton yarn spun in 1832 was 222,000,000 pounds, of which 132,000,000 pounds have been manufactured into cloth, giving employment to 203,378 looms; but in 1833 the yarn spun was 685,440,000 pounds.

IV. Statistics of the Cotton Manufacture.—It is obvious that the home consumption in the United States has always borne a most disproportioned ratio to the entire growth, and that even in the last four years, when it had attained to the highest point which it has yet reached, the quantity reserved for domestic use never exceeded a seventh part of the whole, and generally fell considerably below it. It is deserving of notice, however, that in the period of time which this table comprehends, the internal consumption of the United States has been trebled; but large as this increase may seem in the eye of a native economist, the conclusion from it will not be satisfactory if the collateral circumstances are not considered; and the chief of these is, that it is an increase on small quantities, and indicates no more than the gradual growth of an infant trade, which the cotton manufacture was in North America in 1829. We believe that in this manufacture Great Britain has as yet little to fear from competition; but we are not equally confident that its prosperity may not be exposed to risk from her ill-judged anxiety to secure a monopoly of its advantages. The practice of excluding from her markets the manufactures of other countries is not only contrary to sound political principles, but gives rise to a spirit of hostility unfavorable to her interests, and places her in such a state that when other nations in retaliation, exclude her manufactures from their markets, she has no right to complain.

That we may not decide this question rashly, let us examine what is the danger to which she would be exposed if she were to take the opposite system, and open her ports to the manufactures of other countries. If they can now export annually to the value of about £52,000,000 sterling of cotton goods, which, burdened with freight, charges, and the exporter's profit, they are able to sell in competition with foreign manufacture, can they have any thing to fear from a competition with that manufacture in her home market, where the circumstances of the competing parties would be reversed? So far from the introduction of foreign manufacture into her market being an evil, we are inclined to think that it would be advantageous to her interests; and that, in the interchange of various fabrics which would be the result, the sale of her own manufactures would be increased. Commerce being altogether a matter of barter, it is necessary for every country to purchase in order that she may sell; and, fortunately, even in the same branch of manufacture, there is always room for such exchanges. There are shades of difference in the fabric of every article, upon which taste or fashion, or caprice, never fails to fix an arbitrary value, thereby constituting them into separate commodities capable of being exchanged. But the view we are taking of this important question does not rest altogether upon theory. Happily we have experience in support of it. No one disputes the advantage resulting from the interchange of commodities between Maine and Louisiana, or alleges that it would be for the benefit of either to have the manufacture of the other excluded from its market. Yet these two districts have their dependence upon manufactures which in their general features are the same.

It is well known regarding the commercial treaty with France, in which some approach was made to a free trade between the two countries, that while it lasted, the sale warehouses of London and Manchester were resorted to by purchasers from the different towns of France, with the same freedom, and in nearly an equal proportion of numbers, as from the towns in England. And although in these warehouses French and English commodities of a similar description were to be found, and British shopkeepers were at the same time daily resorting to France to make purchases, in no period were her manufactures in a state of greater progressive prosperity than during the eight years (from 1786 to 1793) that this treaty existed. There is no one, we believe, who has taken the trouble to investigate the matter, that will not say that both were benefited by this treaty, and probably exactly in the degree that the exclusive system in both had been departed from.

In addition to this, it may be proper to notice, that Switzerland and Saxony have always been open to the reception of cotton goods free of duty; and that in no other countries on the Continent is the cotton manufacture in a more thriving state. Might it not, therefore, be a wise measure to withdraw their restrictions against the importation of foreign manufactures, since the interference of these with her own products in the home market, supposing no interchange of the two to take place, never could counterbalance the amount of the sale she may be deprived of by following the opposite policy, and thus inducing the exclusion of her own goods from the foreign market?

Fears have been expressed that the lower wages for which the laborers of other countries that compete

with Great Britain in the manufacture can work, and upon which, from the cheapness of their provisions, they can afford to live, may ultimately enable them to take the manufacture out of her hands. In reply to this, it may, perhaps, be sufficient to recall to our readers the small part of the cost of the commodity which now belongs to the labor of the hand, and the daily diminution which is taking place even of that part, by the introduction of new mechanical substitutes. Thus, for example, in 1767, each spindle required a person to work it; but now one man, with the aid of a few piecers to take up and join his broken ends, can work a thousand spindles. In Lancashire, in 1818, there were not more than 2000 power-looms, and of these not a half in employment; while in 1832, so extensive had been the change from hand-weaving to weaving by power, the number had increased to 80,000.

TABULAR COMPARATIVE STATEMENT SHOWING THE DECLARED VALUE OF COTTON MANUFACTURES OF ALL KINDS, AND COTTON YARNS EXPORTED FROM GREAT BRITAIN FROM 1840 TO 1850, BOTH INCLUSIVE.

Years.	Manufactures.	Yarns.
1840.....	$87,886,550	$35,506,540
1841.....	81,169,550	36,884,840
1842.....	69,539,420	28,857,320
1843.....	81,270,000	35,969,855
1844.....	94,083,320	34,942,920
1845.....	95,750,480	34,516,175
1846.....	88,588,280	30,410,240
1847.....	86,876,225	29,789,900
1848.....	88,766,845	29,639,155
1849.....	100,355,280	33,529,445
1850.....	109,368,485	31,918,530

The following table gives the extreme prices of cotton wool at Liverpool on the 31st December, from 1818 to 1853, showing the progressive reduction of the raw material during that time:

	1818.	1822.	1826.	1828.	1830.	1832.	1834.	1836.	1838.	1840.
	d. d.	d. d.	d. d.	d. d.	d. d.	d. d.	d. d.	d. d.	d. d	d. d.
Sea Island.....	33 —48	14½—24	10 —20	12 —20	11½—20	—18	13½—26	14 —36	14 —[illegible]	10 —36
Orleans.....	16½—21	7 —11	7 — 9	6 — 9	6½— 8	8 — 9	7½—12½	7 —14	5 -10	4½— 9
Upland.....	17 —19½	6½— 8½	5½— 7½	5½— 7	5½— 7½	7 — 8	7½—11	7½—12	[illegible]	4½— 7½
Egyptian.....	— —	—	7½— 8½	7 — 8½	8 — 9½	9 — 9½	12 —16½	11 —18	8½—16½	8 —14
Pernambuco.....	22 —28½	10½—11½	10 —11	7½— 8½	7½— 8½	8½—10½	9½—14½	10 —15½	8½—11	8½—10½
Maranham.....	20 —20½	9½—10½	8½— 9½	7½— 7½	7 — 7½	7½— 9½	8½—18½	9½—14	7 —10	7½—10
Demerara.....	19 —24	8½—11½	8 —11	6½— 9	6½— 9	9½—10	8 —15½	9 —16	8 —13	7 —13
West India.....	17 —18½	7½— 8½	6½— 7½	6 — 7	6 — 7					
Surat.....	8 —14½	5½— 7½	5 — 6½	3½— 5	4½— 5½	4½— 6½	5 — 8½	3½— 9	3½— 6½	3½— 6½
	1842.	1844.	1846.	1847.	1848.	1849.	1850.	1851.	1852.	1853.
	d. d.	d. d.	d. d.	d. d.	d. d.	d. d.	d. d.	d. d.	d. d.	d. d.
Sea Island.....	7½—24	9 —30	9 —30	8 —30	6 —25	6½—20	9 —20	8 —22	10 —28	13 —36
Orleans.....	3½— 9	2½— 8½	3 —10	4½—10	2½— 8	3½— 8½	5½—10	3½— 9½	8½— 8½	4½— 8½
Upland.....	3½— 7	3 — 6½	3½— 7½	4½— 8½	3 — 6	3½— 7½	5½— 8½	3½— 8½	3½— 7	4½— 7½
Egyptian.....	6 —10½	5½— 9	5½—11	5½—11	4½— 8	4½— 9	6 —11	5 —11	5 —12	5 —15
Pernambuco.....	6½— 8	4½— 8	5½— 8½	6 — 9½	4½— 8	4½— 7½	6½— 8½	5½— 9	5½— 8½	6½— 8½
Maranham.....	5 — 7½	4½— 7½	4 — 8	4½— 8½	3½— 7	3½— 5½	5½— 7½	4½— 8½	[illegible] 8	5½— 8
Demerara.....	5½—10½	4½—10	— —	4½— 9	4 — 7	3½— 7½	5 — 9	4½— 8	4½— 9	4½— 8½
Surat.....	2½— 5	2½— 5	2 — 6	2½— 6	2½— 4½	2½— 5½	3½— 6½	2½— 6½	2½— 5½	2½— 5½

The subjoined table contains comparative estimates of the quantities of raw cotton consumed in the chief manufacturing countries during 1840 to 1853, inclusive (in millions of pounds' weight).

Countries.	1840.	1841.	1842.	1843.	1844.	1845.	1846.	1847.	1848.	1849.	1850.	1851.	1852.	1853.	Spindles required in 1850 to produce the quantities into 40's Mule Yarn.
Great Britain.....	473	422	462	531	543	557	604	425	591	627	534	648	745	734	17,975,384
Russia, Germany, Holland, and Belgium...	72	65	78	82	86	96	97	105	112	160	133	118	172	185	4,092,308
France.....	157	154	163	152	448	158	159	126	127	136	142	149	199	194	4,368,230
Spain.....	..	..	..	..	..	..	..	..	..	..	29	34	44	42	892,308
Countries bordering on the Adriatic.....	28	29	38	44	28	38	39	31	20	47	45	45	55	45	838,461
United States of America	111	115	105	131	143	158	175	175	209	205	188	158	237	265	1,334,615
Soudries, Mediterranean, etc.....	..	..	..	..	..	..	..	..	..	..	..	23	29	38	5,784,615
Total.....	841	785	846	940	944	1,047	1,074	862	1,059	1,225	1,182	1,175	1,481	1,503	34,586,921

Looking at the production of the past and the demands for the future, it is not strange that the cotton manufactures should show uneasiness lest their spindles should be idle for want of the raw material. The consumption of raw cotton has rapidly increased during the last few years, and the unusually large crop of last year has been fully used up, leaving no residue, though with the prospect of better prices. As an illustration of the increased consumption for the past year, we give the quantities of raw cotton consumed in Great Britain since 1847. It will be seen, that of the increase for the last year—equal to 15 per cent.—over three fourths, or 11 per cent., came from the United States.

QUANTITIES OF RAW COTTON IMPORTED INTO THE UNITED KINGDOM FROM VARIOUS COUNTRIES.

Year.	The United States.	Brazil.	The Mediterranean.	British Possessions in the East Indies.	British West Indies and British Guiana.	Other Countries.	Total.
	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.
1847.....	364,599,291	19,966,922	4,814,368	83,984,614	799,833	598,587	474,707,615
1848.....	600,247,488	19,971,878	7,381,861	84,101,961	640,437	827,086	713,020,161
1849.....	634,504,050	30,788,138	17,369,843	70,888,515	944,807	1,074,164	755,489,012
1850.....	408,153,112	30,299,982	48,931,414	118,879,742	228,991	2,090,698	663,576,881
1851.....	696,638,962	19,889,104	16,950,525	129,826,976	446,529	1,377,653	757,879,749
1852.....	765,830,544	26,506,144	18,058,640	84,922,492	708,696	3,960,992	929,782,448
1853.....	658,451,796	24,196,828	28,358,575	181,848,160	350,428	2,084,122	895,278,749
1854.....	722,151,946	19,703,800	23,503,093	119,836,099	409,110	1,730,081	887,333,149
1855.....	661,829,424	24,577,959	22,904,153	145,179,216	468,452	6,992,805	891,752,009
1856.....	780,040,000	21,880,000	84,616,000	180,496,000	462,824	6,439,000	1,023,836,528

According to official tables, the cotton industry of Great Britain and Ireland yielded last year about fifty-four millions sterling, and which may be regarded as half the cotton industry of the whole world; but foreign countries, besides taking half of the raw cotton sent to market, receive large supplies of cotton yarns from Great Britain; and in Asia and Africa cotton is still largely spun by hand; hence the world's cotton industry may be valued at 120,000,000, which would afford to every man, woman, and child, on the face of the earth, 2s. 9¾d. worth of cotton manufactures, or about fourteen yards per head per annum of excellent calico.

DECLARED VALUE OF BRITISH AND IRISH COTTON MANUFACTURES AND TWIST AND YARN EXPORTED TO THE UNDER-MENTIONED COUNTRIES IN THE YEAR 1853.

Population of Countries exported to.	Value per head of Exports to each Country.	Countries to which exported.	DECLARED VALUE.			
			Cotton manufactures entered by the yard.	Hosiery, Lace, and Small Wares.	Cotton Twist, and Yarn.	Total.
	£ s. d.		£	£	£	£
67,000,000	0 0 0·625	Russia—Northern ports	84,888	8,592	187,324	180,249
3,000,000	0 0 1·25	" Ports within the Black Sea	2,402	102	4,186	13,750
2,884,831	0 0 4·50	Sweden	7,164	2,176	45,295	54,637
1,050,132	0 1 0·25	Norway	27,303	1,728	25,399	54,436
2,900,000	0 0 8·25	Denmark (including Iceland)	34,989	2,027	64,142	101,158
15,726,820	0 0 0·375	Prussia	537	200	26,508	27,245
20,000	0 0 0·75	Mecklenburg-Schwerin	....	....	60	60
2,003,200	0 1 5·50	Hanover	612	13	146,795	147,420
241,000	....	Oldenburg and Kniphausen	....	....	....	....
384,000	7 19 7	Hanseatic Towns	785,895	202,268	2,076,717	3,064,880
2,000	....	Heligoland	....	2	....	2
2,444,550	0 17 11·50	Holland	473,700	81,425	1,692,043	2,247,178
3,538,538	0 1 8·25	Belgium	62,170	57,390	179,676	299,236
143,126	0 0 6·75	Channel Islands	46,565	1,258	474	48,292
36,897,152	0 0 1	France	65,552	46,574	43,584	155,710
4,530,000	0 3 0	Portugal Proper	611,195	10,858	42,810	664,863
271,416	0 3 7·75	" Azores	47,909	803	1,140	49,852
90,000	0 4 0	" Madeira	16,945	791	18	17,684
14,857,210	0 0 1·25	Spain, Continental, and the Balearic Isls.	73,283	6,897	5,058	85,138
200,000	0 5 6	" Canary Islands	61,389	3,085	401	65,375
17,024	23 14 2·75	Gibraltar	374,289	21,926	7,455	403,670
4,890,000	0 1 3	Italy, etc.—viz. Sardinian Territories	242,213	17,795	46,775	306,783
1,275,000	0 5 9·25	" Duchy of Tuscany	286,676	26,695	104,742	368,113
2,500,000	0 1 3·25	" Papal Territories	80,428	618	78,740	159,776
7,500,000	0 0 11·50	" Naples and Sicily	148,621	13,272	199,630	361,523
7,885,000	0 0 10·46	" Austrian Territories	200,804	6,052	135,113	341,469
120,000	1 3 6	Malta and Gozo	108,445	2,099	30,447	140,991
208,100	0 3 3	Ionian Islands	67,026	628	18,411	86,066
1,000,000	0 2 2	Kingdom of Greece	95,590	807	12,161	108,558
26,100,000	0 1 10·50	Turkish Dominions, exclusive of Wallachia, Moldavia, Syria, and Egypt	1,510,022	18,529	158,368	1,682,919
		Wallachia and Moldavia	77,460	538	75,332	153,330
		Syria and Palestine	242,639	651	33,490	276,780
		Egypt—Ports on the Mediterranean	318,148	7,601	27,795	353,539
100,000	....	Tunis	....	....	....	....
2,000,000	....	Algeria	....	....	....	....
15,000,000	0 0 1	Morocco, etc	63,532	218	60	63,810
10,000,000	0 1 2·75	Western coast of Africa	384,719	1,167	617	386,503
		British possessions in South Africa	207,785	12,714	541	221,040
		Eastern coast of Africa	1,580	....	....	1,580
		African Ports on the Red Sea	....	....	....	....
		Cape Verde Islands	2,737	....	....	2,737
		Ascension and St. Helena	979	486	....	1,465
101,469	1 5 7·25	Mauritius	124,257	5,732	3	129,992
40,000	0 0 3	Aden	535	....	....	535
13,750,000	....	Persia	....	....	....	....
150,000,000	0 0 9	Continental India, with the contiguous Islands:—viz. British Territories	4,447,413	64,892	1,168,264	[illegible]
		" " The Birman Empire	....	....	....	....
5,000,000	0 1 9·50	Islands of the Indian Seas:—Java	412,194	5,727	30,344	448,265
2,500,000	0 2 9	" " Philippine Isls.	333,160	8,855	2,140	344,155
360,000,000	0 0 0·75	China	1,028,074	329	101,396	1,129,799
20,000	13 18 7·50	Hong Kong	177,921	3,024	97,089	278,034
25,000	....	Japanese Islands	....	....	....	....
2,695,000	0 7 8·50	British Settlements in Australia	806,715	225,588	8,218	1,040,521
600,000	0 0 0·75	South Sea Islands	18,704	176	....	18,880
2,456,046	0 6 1·25	British North America	665,695	60,161	23,456	749,352
944,800	0 8 4·25	British W. India Isls. and Brit. Guiana	370,016	24,828	182	395,026
14,000	3 17 10·50	Honduras (British Settlements)	52,400	3,114	1,951	58,465
600,000	0 12 9·75	Foreign West India Isls.:—Cuba	341,294	43,092	78	384,464
461,200	0 0 2·50	" " Porto Rico	4,773	144	....	4,917
120,839	....	" " Guadaloupe	....	....	....	....
135,000	....	" " Martinique	....	....	....	....
31,000	0 7 8·75	" " Curaçoa	11,816	662	....	11,978
	....	" St. Croix	....	....	....	....
8,000	36 19 3·25	" " St. Thomas	275,046	16,879	4,283	295,708
	....	French Guiana	....	....	....	....
236,000	0 0 1	Dutch Guiana	1,010	21	....	1,031
860,000	0 1 9·25	Hayti	73,441	2,953	80	76,474
27,000,000	0 3 1	United States of America	3,524,620	648,001	9,671	4,182,291
		California	82,979	6,944	670	90,593
8,000,000	0 1 10·50	Mexico	473,216	47,720	11,719	532,655
		Central America	116,787	6,801	7,741	131,329
28,000	10 2 9·50	New Grenada	280,994	2,489	248	283,731
1,267,692	0 2 6	Venezuela	152,456	6,385	82	158,923
500,000	0 0 9·25	Ecuador	18,922	622	25	19,569
6,000,000	0 5 11·50	Brazil	1,727,547	60,009	820	1,788,366
860,000	0 6 1·75	Oriental Republic of the Uruguay	253,072	10,988	382	264,442
100,000	2 11 1·75	Buenos Ayres, or Argentine Republic	238,431	17,164	213	255,808
1,500,000	0 7 4·75	Chili	548,413	45,599	4,078	598,085
1,500,000	....	Bolivia	....	....	....	....
2,000,000	0 6 6·75	Peru	623,054	33,780	1,481	658,315
12,000	0 0 4	Falkland Islands	108	100	2	210
20,000	....	Greenland and Davis' Straits	....	....	....	....
825,090,745		Total	£23,901,940	£1,915,809	£6,895,653	£32,712,902
27,512,687	0 15 5	Estimated consumption of Cotton Manufactures in Great Britain and Ireland				21,224,494
853,268,432	0 1 3·173	The amount of British Cotton Manufactures supplied for the whole world				53,937,396

V. Origin and Early History of Cotton Manufactures of America.—Cotton is of indigenous American growth. On the first landing of the Spaniards in Mexico, they found it in considerable perfection. The Mexicans are said to have been solely dependent upon this product, the wool of rabbits and hares, feathers, and a fibrous plant called maguet, for their clothing materials. They had neither wool, hemp, nor silk, and their flax was not used for these purposes. Out of cotton they fabricated webs of exceeding tenuity, and their cloths were woven into beautiful figures. Mantles, bed-curtains, and carpets, they finished elegantly with mingled cotton and feathers. Cortez sent to Charles V. of Spain, "cotton mantles, some all white, others mixed with white and black, or red, green, yellow, and blue, waistcoats, handkerchiefs, counterpanes, tapestries, and carpets of cotton." A peculiar cotton paper was made in Mexico, small cloths of the same material constituted a part of their currency, and their warriors are said to have had cotton cuirasses. The modern Mexicans have lost the perfection of their ancient art of manufacture. The American plant was not confined to Mexico alone; Columbus found it wild in Hispaniola and on the continent of South America, where it had already grown into an article of use for clothing and other purposes. The Brazilians made their beds of it. The Abbe Clavigero says, that of "cotton, the Mexicans made large webs, and as delicate and fine as those of Holland, which were so highly esteemed in Europe. They wove their cloths of different figures and colors, representing different animals and flowers. Of feathers, interwoven with cotton, they made mantles, bed-curtains, carpets, gowns, and other things, not less soft than beautiful. With cotton, also, they interwove the finest hair of the belly of rabbits and hares, after having spun it into thread; of this they made most beautiful cloths, and in particular, winter waistcoats for their lords." Cochineal and indigo being native products of Mexico, they were well supplied with dyeing materials; but the fact of their having carried the arts of manufacturing and dyeing cotton to such a high stage of perfection, is proof that they must have received their knowledge from India, by way of the west.

Magellan, Drake, Cavendish, Dampier, Van Noort, all agree that cotton was one of the articles of dress among the American savages, on the discovery of the country. At St. Salvador the women are described as dressed in cotton coats. Even as far north, says M. Seabrook, as the Mos-chacebe, or Mississippi, the earliest explorers of that river, and its tributary streams, saw cotton growing wild in the pod, and in great plenty. These facts, and they might almost be indefinitely multiplied, are introduced to rebut the opinion founded on the negative testimony of Captain Cook, that the gossypium is not a native of the western hemisphere. That celebrated voyager found no cotton between New Zealand, 36° S., and the Sandwich Islands, 20° N. In addition to flax, and the bark of the mulberry-tree, in which Captain Cook says that the inhabitants of those regions were habited, the nations all over the continent nearly, used as articles of dress, besides cotton, feathers, the wool of rabbits, the maguei, and silk-grass. In 1726, cotton was a staple product of Hispaniola. In 1753, Jamaica exported 2,000 bags. On an average of eight years, from 1740 to 1748, the export of cotton from Barbadoes was 600 bags annually. In 1787, St. Domingo, St. Christopher, Grenada, Dominica, Antigua, Montserrat, and Nevis, and the Virgin Islands, exported the same commodity. In 1803, there were grown five varieties of cotton in Jamaica, the common, the brown-bearded, the Nankin, the French, and the Brazilian. From these facts, Mr. Baines draws the conclusion that the manufacture of cotton must therefore be supposed to be coeval with the original settlement of America; but learned men are much divided as to the date of this event, some carrying it nearly as high as the deluge, and others contending for a much later period. The American manufacture may at all events claim a high degree of antiquity.

VI. Cotton Manufactures in the United States.—*Historical Sketch of the Rise and Progress of the Cotton Manufactories in the United States.*—As early as the year 1787, a society was formed in Philadelphia, under the name of the "Pennsylvania Society for the Encouragement of Manufactures and the Useful Arts," which made some progress in the manufacturing of various kinds of goods, such as jeans, corduroys, fustians, plain and flowered cottons, flax linens, tow linens, etc. But the machinery employed in this manufacture seems to have been of the very rudest kind. A short time before the formation of this society, an attempt to spin cotton-yarn by machinery had been made at Bridgewater and Beverly, in the State of Massachusetts. Two mechanics from Scotland, Alexander and Robert Barr, brothers, were employed by a Mr. Orr, of East Bridgewater, to make carding, spinning, and roving-machines, which they completed; and on the 16th of November, 1786, the General Court of Massachusetts made them a grant of £200, lawful money, for their encouragement, and afterward added to the bounty, by giving them six tickets in the State land lottery, in which there were no blanks.

In March, 1787, Thomas Somers, an English midshipman, constructed a machine, or model, under the direction of Mr. Orr; and, by a resolution of the General Court, £20 were placed in the hands of the latter, to encourage him in the enterprise.

The above remained in the possession of Mr. Orr for the inspection of all disposed to see them, and he was requested by the General Court, to exhibit and give all information or explanation regarding them. It is believed that the above were the first machines made in the United States for the manufacture of cotton.

The Beverly Company commenced operations in 1787, and are supposed to be the first company that made any progress in the manufacture of cotton goods (that at Bridgewater had been on a very limited scale), yet the difficulties under which they labored—the extraordinary loss of materials in the instruction of their servants and workmen—the high prices of machines, unknown to their mechanics, and both intricate and difficult in their construction, together with other incidents which usually attend a new business—were such that the company were put to the necessity of applying to the State legislature for assistance, to save them from being compelled to abandon the enterprise altogether.

In their petition to the Senate and House of Representatives of Massachusetts, presented June 2d, 1790, only three years after they had commenced operations, they state: "That their expenditure had already amounted to nearly £4,000, while the value of their remaining stock was not equal to £2,000, and a further very considerable advance was absolutely necessary to obtain that degree of perfection in the manufacture, which alone could ensure success."

Accordingly a grant of £1,000 was presented them, to be appropriated in such a way as would effectually promote the manufacturing of cotton piece-goods in the commonwealth.

The petition above referred to, and other collateral facts, sufficiently prove that cotton-spinning in this country, further than the hand-card and one thread-wheel, was carried through its first struggles by the Beverly Company in Massachusetts. And from this State the manufacture was carried to Rhode Island—though it must be acknowledged that both States were indebted to foreign emigrants for instruction and assistance in spinning and weaving, as well as in preparing the cotton.

Cotton-spinning commenced in Rhode Island in 1788,

in which year Daniel Anthony, Andrew Dexter, and Lewis Peck, all of Providence, entered into an agreement to make what was then called "home-spun cloth." The idea at first was to make jeans of linen warp spun by hand; but hearing that Mr. Orr, of Bridgewater, and the Beverly Company, had imported some models or draughts of machinery from England, they sent thither and obtained drawings of them, according to which they constructed machinery of their own. The first they made was a carding-machine, which was something similar to those now used for carding wool, the cotton being taken off the machine in rolls, and afterward roped by hand. The next was a spinning-frame, something similar to the water-frame, or rather the common jenny, but a very imperfect machine. It consisted of eight heads of four spindles each, being 32 spindles in all, and was wrought by means of a crank turned by the hand; this, after being tried for some time in Providence, was taken to Pawtucket and attached to a wheel propelled by water; the work of turning the machine was too laborious to be done by hand, and the machine itself was too imperfect to be turned by water. Soon after, these machines were sold to Moses Brown, of Providence; but as all the carding and roving was done by hand, it was very imperfect, and but very little could be done in this way. Such were the rude machines used for spinning cotton previous to 1790; and the wonder is, not that the manufacturers failed in their undertakings, but rather that they were able to persevere. And we can now perceive that from these small beginnings, the present brightened prospects received their foundation.

The first cotton-mill of the United States was erected in Pawtucket, Rhode Island, by the late Mr. Samuel Slater, a native of Belper, Derbyshire, England, in 1790. The machinery was that of the Arkwright patent. There is evidence that Hargreave's jennies were in use in this country previous to 1790, but by whom, and when introduced, is not known. They were worked principally by Scotch and Irish weavers, who produced mixed goods of linen and cotton. Great Britain, at that time, used every means to prevent the introduction of her spinning machinery into other countries. Her law expressly forbid its exportation; and every attempt to import the machinery into America had failed. The Hon. Tench Coxe, of Philadelphia, entered into a bond with a person, who engaged to send him from London complete brass models of Arkwright's patents. The machinery was completed and packed, but was detected by the examining officer, and forfeited, according to the existing laws of Great Britain. No way remained to obtain the benefit of the British inventions but to manufacture them on our own soil. For this purpose Mr. Slater came to America. He had been a pupil of Arkwright, and was perfectly familiar with all his patents. He brought with him neither patterns nor memoranda to assist him in his work, but depended entirely on his memory, a thing which the statutes of Great Britain could not reach. The King of England had frequently made proclamations against any tradesman leaving the kingdom, and had called on his officers for their most vigilant watch against it; but the professions of men leaving the kingdom could not be always detected.

Some of the first yarn made by Mr. Slater in America, and some of the first cotton cloth made from it, was sent to the Secretary of the Treasury, on the 15th of October, 1791; and it is probably in existence now. It is stated that Mr. Clay had some of the first yarn in his possession in 1836. It was as fine as a No. 40.

Mr. Slater was induced to leave his employment under Mr. Arkwright, in England, to come to America, by seeing a premium offered by the Pennsylvania Society for a certain machine to spin cotton.

Mr. Slater labored under the greatest disadvantages for the want of suitable materials, and mechanics of sufficient ingenuity to assist him. The history of his first labors is deeply interesting, for the details of which we must refer the reader to his biographer. His first machine was what is called a water-frame, of only 24 spindles. Such was the humble origin of cotton manufacturing in America. From that first machine the advancement of the cotton manufacture has been truly astonishing. It has caused hundreds of populous villages, towns, and even cities, to spring up as if by magic, where only a few years ago nothing was seen but a barren wilderness. Astonishing as has been the increase of the various manufacturing towns and villages in the United States, Lowell, in Massachusetts, surpasses every thing of the kind that has been witnessed within the memory of man. In 1819 its site was a wilderness, whither sportsmen went to shoot game. The entire population of the territory around it did not exceed 200 souls. It was a poor, barren district, with but a few houses on the spot where the city now stands; and the inhabitants supported themselves principally by fishing in the Concord and Merrimac rivers, at the junction of which Lowell is situated. A company of wealthy men in Boston, seeing the valuable water-privileges of the spot, purchased it for manufacturing purposes. The first cotton mill was erected there in 1822; and in 1830 the population of the place had increased to 6477 persons. In 1840 the population had increased to 20,796; and the value of property there was $12,400,000. In 1856 the number of cotton-mills was 35, spindles 350,548. Thus, what only 30 years ago was a wild pasture-ground has become a large and flourishing city; a proof of what a water-power, seconded by capital and enterprise, can do for a place. Lowell is a splendid example of an American manufacturing city, and excites the attention, and in some measure the jealousy, says Mr. McCulloch, of Manchester and Glasgow. We need no better proof of what manufactures can accomplish than the history of Lowell. The Lowell cotton-mills, owned by twelve manufacturing companies, extend in a continuous line of about a mile, from the Merimac to the Pawtucket Falls.

The rapid growth of the cotton manufacture in this country is unparalleled in the history of industry. The second cotton-mill in America was erected in 1795, at the same place as the first. No more were built until 1803, when a third was erected in Massachusetts, followed by a fourth in 1804. During the three following years ten more mills were erected in Rhode Island, and one in Connecticut, making in all fifteen mills, with 8000 spindles, producing 300,000 pounds of yarn annually. By a report made to the government in 1810, it appears that 87 additional mills had been erected by the end of 1809, of which 62 were then in operation by horse and water-power, running 31,000 spindles. The cotton manufacture continued to spread, and received a considerable impulse from the war of 1812. In that year there were in Rhode Island 33 cotton factories, with 30,063 spindles. In Massachusetts there were 20 mills, with 17,371 spindles.

A report made to Congress in 1816 gives the following statement of the consumption of cotton by our mills, showing how rapidly the cotton manufacture had advanced. The consumption of cotton was, in

	Bales.		Bales.
1800.....	500	1810.....	10,000
1805.....	1,000	1815.....	90,000

The following statement is also officially made in the same report, showing the state of the cotton manufacture at that time:

Capital employed in 1816.....	$40,000,000
Males employed over 17 years old.....	10,000
Women and female children.....	66,000
Boys under 17 years.....	24,000
Cotton cloth manufactured.....yards	81,000,000
Cost of same.....	$24,000,000
Raw cotton, ...90,000 bales,..or lbs.	27,000,000

The subject of protection was then extensively agitated. The importations of cotton goods in 1815 and 1816 were immense, and created great alarm among

manufacturers. The amount of importations of those two years was about $180,000,000. During the years 1817, 1818, 1819, and 1820, great distress prevailed among the manufacturers, but Congress was not disposed to grant their petitions in full.

Tariff laws were passed in 1824, 1828, and 1832, in each of which the duty upon foreign cotton goods imported was 25 per cent. *ad valorem*. These duties, though they did not prevent our markets from being glutted with foreign goods, caused our manufactures to gradually increase.

In 1820, the first cotton mill in Pennsylvania was erected at Manayunk by Captain John Towers. There were then only two small cottages on the spot. It now contains 500 dwellings, 5 churches, 15 stores, and about 30 mills.

Among the numerous towns that have sprung into existence, owing to the influence of manufactures, may be mentioned—Waltham, Paterson, Ware, Fall River, Taunton, Pawtucket, Lowell, Lawrence, Providence, Rhode Island, Saco, Lewiston Falls, Maine, etc.

THE COTTON MANUFACTURES IN TWELVE OF THE STATES, IN 1831.

States.	Mills.	Looms.	Capital.	Number of spindles.	Yards of cloth produced yearly.	Pounds of cloth produced yearly.	Poends of cotton consumed yearly.
Maine	8	91	$765,000	6,500	1,750,000	525,000	588,500
New Hampshire	40	3,530	5,300,000	113,776	29,060,500	7,255,660	7,845,000
Vermont	17	352	295,500	12,892	2,288,400	574,500	760,000
Massachusetts	256	8,981	12,891,000	339,777	70,231,000	21,201,062	24,371,921
Rhode Island	116	5,773	6,202,940	285,753	37,121,681	9,271,481	10,414,573
Connecticut	94	2,609	2,825,000	115,523	20,055,500	5,012,000	6,777,209
New York	112	3,653	3,869,500	157,816	21,010,920	5,297,713	7,061,670
New Jersey	51	815	2,027,044	62,979	5,138,776	1,377,418	5,832,204
Pennsylvania	67	6,801	3,758,500	120,810	21,332,467	4,207,192	7,111,174
Delaware	10	235	334,500	24,806	5,208,746	1,201,500	1,435,000
Maryland	23	1,002	2,144,000	47,222	7,649,000	2,224,000	3,008,000
Virginia	7	91	290,000	9,844	675,000	168,000	1,152,000
Total	801	33,433	$40,612,984	1,246,703	230,461,990	59,514,020	77,457,816

COTTON MANUFACTURES IN 1850.

States.	No. of establishments in operation.	Capital invested.	Bales of cotton.	Tons of coal.	Value of all raw material.	Number of hands employed.		Entire wages per month.		Value of entire products.	Yards of sheeting, etc.
						Males.	Females.	Males.	Females.		
Maine	12	$3,329,700	31,581	2,921	$1,573,110	780	2,959	$22,905	$35,078	$2,596,356	82,852,556
New Hampshire	44	10,956,500	83,026	7,679	4,839,429	2,911	9,211	75,718	124,181	8,830,619	113,106,247
Vermont	9	202,500	2,248	....	114,415	94	147	1,460	1,861	196,100	1,651,000
Massachusetts	213	28,455,630	223,607	46,545	11,229,309	9,203	19,487	212,302	284,514	19,712,461	298,751,892
Rhode Island	158	6,675,000	50,718	13,116	3,484,579	4,959	5,916	92,282	76,656	6,447,120	96,725,612
Connecticut	123	4,219,100	39,483	2,866	2,500,062	2,703	3,473	51,679	41,000	4,257,522	51,780,700
New York	86	4,176,920	37,778	1,589	1,985,978	2,632	3,688	48,244	35,699	3,591,989	44,901,475
New Jersey	21	1,483,500	14,437	4,467	696,645	616	1,096	11,078	10,487	1,109,524	8,122,580
Pennsylvania	208	4,528,025	44,102	24,189	3,152,580	3,564	4,099	63,642	40,656	5,322,262	45,746,700
Delaware	12	460,100	4,790	1,920	312,068	418	425	6,326	4,926	538,489	3,521,636
Maryland	24	2,236,000	23,825	2,212	1,165,579	1,008	2,014	15,540	19,108	2,120,504	27,888,923
Virginia	27	1,908,900	17,785	4,805	828,375	1,275	1,688	12,983	11,791	1,486,884	15,640,107
North Carolina	28	1,058,800	13,617	....	531,903	442	1,777	5,153	7,216	831,342	2,470,110
South Carolina	18	857,200	9,929	....	295,971	399	620	5,565	5,151	748,898	6,568,737
Georgia	35	1,736,156	20,230	1,000	900,419	873	1,399	12,725	10,352	2,135,044	7,209,292
Florida	..	80,000	600	....	30,000	28	67	900	335	49,920	624,000
Alabama	12	651,900	5,208	....	287,081	346	869	4,053	2,946	382,260	3,081,000
Mississippi	2	38,000	490	....	21,500	19	17	270	101	30,500	....
Louisiana	..	....	....	....	....	....	....	....	....	....	....
Texas	..	....	....	....	....	....	....	....	....	....	....
Arkansas	3	16,500	170	....	8,975	13	18	190	100	16,647	....
Tennessee	33	669,000	6,411	3,010	297,500	310	581	3,894	3,780	510,024	363,250
Kentucky	8	239,000	3,760	720	180,907	181	221	2,707	2,070	273,480	1,003,000
Ohio	8	297,000	4,270	2,152	237,060	182	269	2,191	2,584	394,700	280,000
Michigan	..	....	....	....	....	....	....	....	....	....	....
Indiana	2	43,000	675	300	28,220	38	57	495	386	44,200	....
Illinois	..	....	....	....	....	....	....	....	....	....	....
Missouri	2	102,000	2,160	1,658	86,446	75	80	820	800	142,900	....
Iowa	..	....	....	....	....	....	....	....	....	....	....
Wisconsin	..	....	....	....	....	....	....	....	....	....	....
California	..	....	....	....	....	....	....	....	....	....	....
Dist. of Columbia	1	85,000	960	....	67,000	41	103	575	825	100,000	1,400,000
Total	1,094	74,501,931	641,240	121,099	$34,835,056	33,150	59,136	$653,778	$703,414	$61,569,184	763,078,407

TABULAR COMPARATIVE STATEMENT SHOWING THE QUANTITIES AND DECLARED VALUES OF COTTON MANUFACTURES AND YARNS EXPORTED FROM GREAT BRITAIN AND FROM THE UNITED STATES, RESPECTIVELY, TO ALL COUNTRIES, FOR A PERIOD OF FIVE YEARS, FROM 1851 TO 1855, BOTH INCLUSIVE.*

Years.	GREAT BRITAIN.				UNITED STATES.			
	MANUFACTURES.		YARNS.		MANUFACTURES.		YARNS.	
	Quantities.	Values.†	Quantities.	Values.	Quantities.	Values.	Quantities.	Values.
	Yards.		Pounds.					
1851	1,548,101,780	$110,246,010	143,966,106	$33,246,010	No data.	$7,203,945	No data.	$87,260
1852	1,524,256,014	108,242,290	145,478,302	33,273,275	"	7,687,483	"	84,718
1853	1,594,592,659	119,509,760	147,539,302	34,478,265	"	8,740,800	"	22,594
1854	1,692,977,476	116,884,800	147,128,498	33,456,935	"	5,486,201	"	49,315
1855	1,935,816,937	130,623,375	165,499,547	36,152,140	"	5,857,181	"	None.
Aggregate	8,290,835,775	585,506,675	749,611,755	170,606,625	....	$34,981,060	....	$143,887
Average	1,658,167,155	117,101,115	149,922,351	34,121,325	....	6,986,212	....	29,777

* Made up from British and United States' official documents, respectively; the commercial year of the former ending December 31, and of the latter June 30.

† The pound sterling is computed at five dollars.

The articles Cotton and Cotton Manufactures have been compiled principally from the official report of the Statistical Office to Congress in 1856, United States' Patent Office Reports, tables prepared by Mr. W. P. Wright, cotton broker, New York city, Encyclopedia Britannica, eighth edition, and De Bow's Industrial Resources of the United States, the latter now published at Washington, D. C.

STATEMENT EXHIBITING THE FOREIGN IMPORTATIONS AND RE-EXPORTATIONS, DOMESTIC EXPORTATIONS AND HOME CONSUMPTION OF FOREIGN COTTON GOODS, TOGETHER WITH THE CONSUMPTION OF FOREIGN COTTON GOODS OVER DOMESTIC EXPORTATIONS; THE NUMBER OF POUNDS OF SEA-ISLAND AND OTHER COTTON ANNUALLY EXPORTED FROM THE U. S.

Years.	COTTON, MANUFACTURES OF.					COTTON, UNMANUFACTURED, EXPORTED.				
	Foreign imported.	Foreign exported.	Domestic exported.	Home consumption of foreign Cotton Goods.	Home consumption of foreign Cotton Goods over domestic Exportations.	Sea-island.	Other.	Total.	Value.	Average Cost per Pound.
	$	$	$	$	$	Pounds.	Pounds.	Pounds.	$	Cts.
1840	6,504,484	1,108,489	3,549,507	5,400,995	1,851,488	8,779,609	735,161,892	743,941,061	63,876,807	8·5
1841	11,757,486	929,055	9,122,546	10,827,980	7,705,434	6,287,424	523,960,676	530,204,100	54,330,341	10·2
1842	9,578,515	836,892	2,970,690	8,741,628	5,770,938	7,254,099	577,462,918	584,717,017	47,593,464	8·1
1843	2,158,796	314,040	3,223,550	2,644,756	573,724*	7,515,679	784,782,027	792,297,106	49,119,806	6·2
1844	13,641,478	404,648	2,898,780	13,236,830	10,338,050	6,099,076	657,584,370	663,683,456	54,063,501	8·1
1845	13,803,282	502,553	4,827,928	13,300,729	8,862,151	9,389,625	863,516,871	872,905,996	51,739,643	5·92
1846	18,550,625	673,203	3,545,491	12,857,422	9,311,941	9,388,533	538,169,52	547,558,055	42,767,341	7·81
1847	15,192,875	486,135	4,982,523	14,706,740	10,624,217	6,292,973	520,925,985	527,219,958	53,415,848	10·34
1848	18,421,583	1,216,172	5,718,205	17,205,417	11,487,212	7,724,148	806,550,225	814,274,421	61,098,204	7·61
1849	15,754,841	571,082	4,038,129	15,183,759	10,250,630	11,067,250	1,014,633,016	1,025,602,266	66,396,867	6·4
1850	20,108,719	427,107	4,734,424	19,681,612	14,947,188	8,280,468	627,145,141	635,881,604	71,984,816	11·3
1851	22,164,442	677,940	7,241,205	21,486,502	14,245,297	8,299,656	918,937,433	927,237,089	112,315,317	12·11
1852	16,689,490	997,030	7,672,151	15,692,466	8,020,315	11,788,075	1,081,492,504	1,093,280,039	87,965,732	8·05
1853	27,731,318	1,254,363	3,768,894	26,476,950	17,708,056	11,165,165	1,100,405,205	1,111,570,370	109,456,404	9·85
1854	33,949,503	1,468,179	5,535,516	32,481,324	26,945,808	10,480,423	977,246,683	987,383,106	93,596,220	9·47
1855	17,757,112	2,012,554	5,857,181	15,744,558	9,887,377	13,058,590	995,366,011	1,008,424,601	88,143,844	8·74
1856	25,917,999	1,580,495	6,967,309	24,837,504	17,870,195	12,797,225	1,338,634,476	1,351,431,701	128,382,351	9·5
Yearly av.	16,755,418	909,114	5,008,772	15,836,304	11,584,887	9,201,911	857,173,233	866,380,150	72,772,941	8·7-17

* Domestic exportations over home consumption of foreign cotton goods.

STATEMENT EXHIBITING THE POPULATION, TOTAL PRODUCT OF MANUFACTURES OF COTTON AND EXPORTS OF RAW COTTON, MANUFACTURES OF COTTON IN THE UNITED STATES, HOME CONSUMPTION OF DOMESTIC GOODS, HOME CONSUMPTION OF FOREIGN GOODS, AND THE TOTAL HOME CONSUMPTION OF FOREIGN AND DOMESTIC COTTON GOODS, AND THE ALLOTMENT PER CAPITA, FOR THE YEARS 1840, 1850, AND 1855.

	1840.	1850.	1855.
Population	17,069,453	23,191,876	27,185,517
Total product of manufactures of cotton and exports of raw cotton	$110,220,760	$133,853,899	$159,18,556
Allotment per capita of manufactures of cotton and exports of raw cotton	6 45·72	5 17·15	5 85·27
Manufactures of cotton in the United States	46,350,463	61,559,184	70,904,712
Allotment per capita of the manufactures of cotton in the United States	2 71·54	2 66·77	2 61·04
Home consumption of domestic goods	42,800,846	57,134,760	65,107,531
Allotment per capita of the home consumption of domestic cotton goods	2 50·74	2 46·36	2 39·49
Home consumption of foreign cotton goods	5,400,915	10,681,612	15,744,558
Allotment per capita of the home consumption of foreign cotton goods	0 31·64	0 84·86	0 57·91
Total home consumption of foreign and domestic goods	48,201,841	76,816,372	80,852,089
Allotment per capita of total home consumption of foreign and domestic goods	2 82·38	3 31·22	2 97·40

STATEMENT OF THE IMPORTS INTO THE UNITED STATES OF FOREIGN COTTONS AND COTTON MANUFACTURES DURING THE FISCAL YEARS 1854, 1855, AND 1856.

	1854.	1855.	1856.
Raw cotton	$31,318	$131,467	$71,335
Printed and colored cottons	17,423,240	12,563,522	19,110,752
White cottons	2,191,212		
Cottons, tamboured or embroidered	4,045,476	3,000,000	3,000,000
Velvets of cotton	490,442	432,715	565,883
Velvets of cotton and silk	95,343		
Cords, gimps, and galloons	183,639	128,500	194,005
Hosiery and articles made on frames	3,013,664	2,055 595	2,516 848
Cotton, yarn and thread	1,076,987	997,673	1,276,760
Hatters' plush, part silk	102,824	40,081	26,408
Cotton inserting, laces, etc.	853,552	767,055	1,191,019
All other cottons	5,314,622	1,534,026	2,227,383
Total imports of cotton	$34,834,033	$21,655,624	$30,180,353

Summary showing the exports of domestic and foreign unmanufactured and manufactured cotton from, and the imports of manufactured cotton into the United States for the fiscal year ending June 30, 1857. This summary also specifies the countries with which this trade was conducted.

EXPORTS OF THE FOREIGN MANUFACTURES OF COTTON FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Piece Goods.	Velvets.	Cords, Gimps, and Galloons.	Hosiery and Articles made on Frames.	Twist Yarn and Thread.	Manufactures of, not specified.
Asiatic Russia	$1,344	....	....	....	$50	....
Russian Possessions in North America	8,454	....	....	....	....	....
Danish West Indies	486	....	....	....	....	....
Hamburg	1,527	....	....	....	....	....
Bremen	410	....	....	....	....	$276
England	3,795	$230	....	....	....	....
Scotland	1,810	....	....	....	....	....
Canada	13,440	145	$140	$4,215	....	185 583
Other British North American Possessions	6,079	....	....	768	....	3,398
British Honduras	230	....	....	....	....	....
British East Indies	2,066	....	....	....	....	....
Azores	72	....	....	....	....	....
Ports in Africa	86,115	....	....	....	....	19,287
Mexico	17,240	....	2953	2,315	22,566	6,187
Central Republic	2,391	....	....	....	....	....
New Granada	49,638	....	....	4,921	....	....
Venezuela	440	....	....	....	....	....
Brazil	....	....	....	....	....	116
Chili	3,180	....	....	....	....	....
Sandwich Islands	2,356	....	....	....	....	13,310
Whale-fisheries	211	....	....	....	....	....
Total	$305,992	$375	$2403	$11,819	$2,616	$228,107
From warehouse	$185,595	....	$2481	$6,147	$15 561	$155,741
Not from warehouse	119,397	$375	12	5,672	7.255	72,303

EXPORTS OF THE DOMESTIC MANUFACTURES OF COTTON FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Printed and colored.	White other than Duck.	Duck.	Other manufactures of.	Whither exported.	Printed and colored.	White other than Duck.	Duck.	Other manufactures of.
	$	$	$	$		$	$	$	$
Russian Poss. in N. A.	41	1,154	....	....	Cuba	645	17,845	21,257	10,385
Swedish West Indies	505	930	652	....	Porto Rico	3,063	2,950	567	820
Denmark	....	1,727	....	....	Portugal	....	220	....	....
Danish West Indies	4,191	16,334	13,000	3,303	Madeira	....	1,930	....	....
Bremen	757	....	1,530	....	Cape de Verd Islands	2,938	967	....	62
Dutch West Indies	1,027	18,838	3,320	....	Azores	803	3,748	....	1,895
Dutch East Indies	22,679	40,416	....	301	Turkey in Europe	2,400	2,824	....	....
Belgium	....	100	....	....	Turkey in Asia	90,612	45,515	....	800
England	....	8,251	....	1,313	Ports in Africa	121,431	667,280	5,939	126,432
Scotland	....	720	....	....	Hayti	8,772	96,936	8,973	45
Gibraltar	1,047	1,000	67	....	San Domingo	....	1,240	....	....
Malta	9,660	15,520	....	....	Mexico	45,819	171,188	3,937	27,815
Canada	119,245	102,219	3,473	363,733	Central Republic	4,773	11,795	....	24
Other Brit. N. A. Poss.	173,519	158,816	30,834	27,763	New Granada	6,748	51,114	3,760	....
British West Indies	6,850	4,618	8,842	547	Venezuela	2,372	21,773	3,268	1,902
British Honduras	8,167	19,225	1,520	4,189	Brazil	197,692	285,951	2,977	28,857
British Guiana	....	....	1,852	....	Uruguay, or Claplat. Rep.	10,280	18,091	24,890	2,093
British Poss. in Africa	6,105	23,330	92	356	Argentine Republic	19,470	35,392	6,007	420
British Australia	27,866	98,400	64,821	2,205	Chili	272,484	371,028	4,713	1,564
British East Indies	274,524	116,865	7,854	690	Peru	77,632	5,258	1,607	....
France on the Atlantic	....	1,606	991	2,465	Sandwich Islands	40,002	33,984	5,481	5,000
France on the Mediterr'n	....	....	2,097	....	Other islands in the Pacific	4,640	5,549	310	....
French N. A. Possessions	5,816	2,813	3,820	10	China	131,815	975,768	6,435	....
Spain on the Atlantic	....	....	9,545	....	Whale-fisheries	680	635	914	145
Canary Islands	....	....	755	....					
Philippine Islands	5,100	34,535	1,000	....	Total value	1,785,685	3,465,230	252,109	614,153

EXPORTS OF UNMANUFACTURED COTTON, OF HOME PRODUCTION, FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Bales.	Sea-Island.	Other.	Value.
	Number.	Pounds.	Pounds.	
Russia on the Baltic and North Seas	69,892	....	31,938,534	$4,267,234
Prussia	51	....	30,000	3,574
Sweden and Norway	21,303	....	10,038,075	1,240,042
Denmark	2,423	....	1,176,366	154,635
Hamburg	22,720	....	10,524,075	1,311,935
Bremen	71,165	19,125	34,359,561	4,356,418
Holland	21,862	....	10,434,227	1,283,348
Belgium	24,218	100,000	12,147,423	1,429,035
England	1,410,627	9,054,993	647,093,434	81,526,012
Scotland	16,408	278,914	7,070,855	950,282
Ireland	45,217	....	20,553,706	2,612,334
Canada	1,947	680	856,810	12,088
France on the Atlantic	375,870	3 436,073	169,262,352	22,682,187
France on the Mediterranean	3,187	....	1,455,643	180,983
Spain on the Atlantic	8,350	....	3,805,136	474,043
Spain on the Mediterranean	95,704	....	41,751,931	5,601,118
Cuba	4	....	2,000	200
Portugal	132	....	56,439	6,902
Azores	4	335	1,000	220
Sardinia	36,794	....	16,658,272	1,907,522
Two Sicilies	1,275	....	581,587	71,806
Austria	16,137	....	7,014,592	952,924
Mexico	20,269	....	7,958,638	999,747
Total	2,205,688	12,940,725	1,035,341,750	$131,575,859

IMPORTS OF THE MANUFACTURES OF COTTON INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whence imported.	Piece Goods.	Velvets.	Cords, Gimps, and Galloons.	Hosiery, and Articles made on Frames.	Twist Yarn and Thread.	Hatters' Plush of Silk and Cotton.	Manufactures of, not specified.
Russia on the Baltic and North Seas	$1,080	....	....	....	....	....	$785
Hamburg	129,736	$991	$2,518	$304,091	$181	....	53,990
Bremen	318,100	19,379	2,488	1,637,384	178	$3,341	262,450
Other German ports	....	....	....	2	....	....	....
Holland	361	....	83	189	....	....	3,018
Belgium	64,818	1,497	973	20,056	214	....	19,283
England	16,439,037	652,878	200,850	1,112,385	994,926	6,194	1,107,115
Scotland	2,522,295	1,653	81	14,195	397,318	....	66,004
Ireland	3,427	....	....	....	....	....	848
Canada	508	42	....	2	1	....	2,700
Other British N. A. Possessions	27	....	....	....	....	....	4
British West Indies	274	....	....	2	....	....	187
British Possessions in Africa	184	....	....	....	....	....	....
British Australia	228	....	....	....	....	....	....
British East Indies	....	....	....	232	170	....	442
France on the Atlantic	1,914,187	2,556	6,661	59,903	7,720	1,437	221,701
France on the Mediterranean	1,021	....	....	....	737	....	....
Spain on the Mediterranean	4	....	....	....	....	....	....
Philippine Islands	....	....	....	....	....	....	4
Cuba	334	....	....	....	....	....	24
Azores	....	....	....	161	....	....	....
Sardinia	121	....	....	192	....	....	40
Tuscany	....	....	....	....	....	....	5
Ports in Africa	3	....	....	....	....	....	41
New Granada	41,750	....	216	627	....	501	....
Venezuela	19	....	....	....	....	....	....
Chili	383	....	....	....	....	....	....
Sandwich Islands	808	....	....	....	....	....	....
China	2,277	....	....	....	4	....	....
Total value	$21,441,082	$678,294	$213 8 4	$3,210,287	$1,441,153	$11,473	$1,729,613

Cotton Dyeing. (*Teinture de Coton*, Fr.; *Baumwollenfärberei*, Germ.) Cotton and linen yarns and cloths have nearly the same affinity for dyes, and may therefore with propriety be treated, in this respect, together. After they have acquired the proper degree of whiteness, they are still unfit to receive and retain the dyes in a permanent manner. It is necessary, before dipping them into the dye-bath, to give them a tendency to condense the coloring particles within their cavities or pores, and to communicate such chemical properties as will fix these particles so that they will not separate, to whatever ordinary trial they may be subjected. All the colors which it would be desirable to transfer to these stuffs, unfortunately do not possess this permanence. Men of science engaged in this important art, have constantly aimed at the discovery of some new processes which may transfer into the class of fast colors those dyes which are at present more or less fugitive. Almost all the goods manufactured of cotton, flax or hemp, are intended to be washed, and ought, therefore, to be so dyed as to resist the alkaline and soapy solutions commonly used in the laundry. Vitalis distinguished dyed cottons into three classes: 1. the *fugitive*, or fancy-colored (*petit teint*), which change their hue or are destroyed by one or two boils with soap; 2. those which resist five or six careful washings with soap, are *good* dyes (*bon teint*); and those which were still more durable, such as Turkey reds, may be called fast colors (*grand teint*). The colors of Brazil-wood, logwood, annotto, safflower, etc., are *fugitive;* those made with madder without an oily base, are *good;* and those of madder with an oily mordant, are *fast*.

Cotton-wood. (*Populus argentea.*) This species is scattered over a great extent of country, comprising the middle, southern and western States. It is, however, quite rare in the middle States. New York city may be considered as the most northern point at which it grows. It is quite common along the Mississippi river. The cotton-tree grows sometimes to the height of 70 or 80 feet, and 2 or 3 feet in diameter. The leaves, while very young, are covered with a thick, white down, which gradually disappears, leaving them smooth above, and slightly downy beneath. The wood of the cotton-tree is soft, light, and unfit for use, and inferior to that of most of the other poplars. It is appropriated to no particular use in the arts or for fuel.—Browne, *Sylva Americana*.

Counterfeiting. Large sums of money have been expended with a view to devise plans for the prevention of counterfeiting bank notes, bank checks, etc., but thus far no successful plan has been devised. The New England Society for the Prevention of Counterfeiting, has for some years been in operation at Boston, and is aided by the treasury of Massachusetts to the extent of $2,500 per year. This society has been the means of detecting and punishing numerous counterfeiters. Forging of government certificates of United States stock, land warrants, etc., is, by act of Congress, punishable by imprisonment not over 10 years. For counterfeiting a post-office frank, a fine of $10 will be imposed. The counterfeiting of coins of the United States, or of foreign coins, shall be punished by imprisonment between 3 and 10 years, or imprisonment of 5 years and a fine of $1,000.—See Dunlap's *Digest Laws U. S.*, pp. 76, 403, 404, 726, 728, 1002.

Countermark. In Numismatics, a stamp frequently seen on ancient coins, often obliterating a large part of the impression. The countermark is generally a figure or inscription, and some antiquaries have considered that their use was to augment the value of the money; others, that it was only struck on money taken from an enemy.

Coupons, from the French, is a term employed in England and elsewhere, to denote the warrants for the payment of the periodical dividends or interest on public stocks, a number of which being appended to the bonds, are severally *cut off* for presentation as the dividends fall due, generally semi-annually—sometimes quarterly. The practice of appending coupons to bonds is now generally adopted by States and corporations, as they facilitate the collection of the semi-annual or quarterly interest thereon.

Courier (Fr., *courir*, to run), a messenger sent post or express with dispatches. The couriers employed by the ancients were of two kinds; first, those who ran on foot, called by the Greeks *hemerodromi*, or day-runners, regarding whom Pliny, Cornelius Nepos, and Cæsar mention that some of them would run twenty, thirty, thirty-six, and in the circus even forty leagues a day; second, riding couriers (*cursores equitantes*), who changed horses as modern couriers do. Xenophon attributes the first couriers to Cyrus. Herodotus says they were very common among the Persians, and that there was nothing in the world more swift than such messengers. That prince, says Xenophon, proved how far a horse could run in a day, and built stables at corresponding distances; and at each station a courier was always ready with a fresh horse to forward the package to the next stage, and so on throughout the empire. But it does not appear that either the Greeks or Romans had any regular system of couriers till the time of Augustus. Under that prince they traveled in cars, about 24 B.C., though it would appear that they afterward went on horseback. Under the Western Empire they were called *viatores;* and under that of Constantinople *cursores*. Couriers or posts are said to have been instituted in France by Charlemagne, about A.D. 800. The couriers or posts for letters were established in the early part of the reign of Louis XI. of France, owing to this monarch's extraordinary eagerness for news. They were the first institution of the kind in Europe, A.D. 1463.

Court-plaster is a considerable object of manufacture. It is made as follows: Black silk is strained and brushed over ten or twelve times with the following preparation: Dissolve ½ an ounce of balsam of benzoin in 6 ounces of rectified spirits of wine; and in a separate vessel dissolve 1 ounce of isinglass in as little water as may be. Strain each solution, mix them, and let the mixture rest, so that any undissolved parts may subside. When the clear liquid is cold it will form a jelly, which must be warmed before it is applied to the silk. When the silk coated with it is quite dry, it must be finished off with a coat of a solution of 4 ounces of China turpentine in 6 ounces of tincture of benzoin, to prevent its cracking.

Court of Claims. This is a new court, established by act of Congress of the United States, February 24, 1854, having jurisdiction of claims by individuals against the United States, arising from disputed cases at the Treasury. This obviates the necessity of petitioning Congress for indemnity for losses sustained under government contracts, etc. See Dunlap's *Digest Laws U. S.*, pp. 1457—1459.

Coutts, Thomas. This distinguished London banker, whose death caused much excitement in the metropolis, was at one time, in wealth and importance, at the head of the banking and moneyed interest in England. He was at first a partner in the house at St. Mary Axe, London, and afterward admitted it to his brother's banking-house, in the Strand, London. His own bank stands on nearly the centre of the site where stood, many years ago, an exchange, similar to Exeter Exchange. It was then considered one of the best-constructed places of safety in Great Britain, except the Bank of England.

Mr. Coutts died on the 24th of February, 1822, having attained the age of *ninety-one*. His will was read the Sunday evening after his death, in the presence of his family. To the surprise of many, he bequeathed his whole property, to the amount of £900,000, to Mrs. Coutts, formerly Miss Mellon, an actress, at her own

disposal, without mentioning any other person, or leaving a single legacy. This was, probably, to escape the legacy duty, which, if his fortune were left to others, would have amounted to £60,000. The firm of Coutts and Co., said to be controlled by Miss Burdett Coutts, is still among the banking-houses of London.—See *Bankers' Mag.*, N. Y., 11. p. 525 (1848).

Cove. An inlet on a rocky coast. It is a term nearly synonymous with *harbor:* the word cove being generally, though not always, used when the indentation on the coast is too shallow or narrow to admit first-class vessels.

Cowes, West, a seaport-town of the Isle of Wight, at the mouth of the Medina, 4 miles N. of Newport, and 78 miles from London. It occupies a rising ground on the W. bank of the river, presenting a striking appearance from the sea. The streets are narrow and irregular; but many of the modern buildings are handsome, and in the vicinity are numerous elegant villas. It is much resorted to for seabathing, and has numerous hotels and lodging-houses for the accommodation of visitors. The harbor is safe and convenient, and its entrance is defended by a battery. It forms the rendezvous of the Royal Yacht Club, who hold their annual regatta here. It has a very considerable coasting trade. Exports, chiefly agricultural produce and malt; imports, coal, colonial produce, manufactured goods, etc. Shipbuilding is extensively carried on. On the opposite side of the river, which is here about half a mile broad, is East Cowes, where is the custom-house of the port, and near which is Osborne House, the marine residence of her Majesty. Pop. (1851), 4,786.—E.B.

Cowhage, or **Cowitch** (Hind. *Kiwach*), the fruit or bean of a perennial climbing plant (*Dolichos pruriens*, Lin.) It is a native of India, as well as of several other Eastern countries, and of America. The pod is about 4 or 5 inches long, a little curved, and contains from 3 to 5 oval and flattish seeds; the outside is thickly covered with short, bristly, brown hairs, which, if incautiously touched, stick to the skin, and occasion intolerable itching.—AINSLIE'S *Materia Indica.*

Cowries (Ger. *Kauris;* Du. *Kauris;* Fr. *Coris, Cauris, Bouges;* It. *Cori, Porcellane;* Sp. *Bucios Zimbos*) are small shells brought from the Maldives, which pass current as coin in smaller payments in Hindostan, and throughout extensive districts, in Africa. They used to be imported into England previously to the abolition of the slave trade, in which they were subsequently employed. They are an article of trade at Bombay. The best are small, clean, and white, having a beautiful gloss; those that are yellow, large, and without lustre, should be rejected. The freight is calculated at 20 cwt. to the ton.—MILBURN'S *Orient. Com.*

Cozening, tricking, defrauding. In law it denotes an offense where any thing is done deceitfully, either with regard to contracts or otherwise, and which can not properly be defined by any special name. In the civil law it is called *stellionatus.*

Cranberries, or **Red Whortleberries,** the fruit of a moss plant, the *Vaccinium oxycoccus* of Linnæus. The berries are globular, about the size of currants; are found in mossy bogs. Cranberries have a peculiar flavor, and a sharp, acid, agreeable taste; they are easily preserved, and are extensively used in making tarts. They are very abundant in North America, and in the northern parts of Russia; the latter being of a superior quality. It is said that some very fine ones have recently been brought from New South Wales. Considerable quantities are produced in New England on the marshy lands near the coast.

Crank, in sea language, is applied to a vessel when, from too much top weight, or the want of sufficient ballast, or cargo, or from any other cause, she can not bear much sail without danger of oversetting. It also denotes an iron brace for supporting the lanterns of the poop-quarters of the ship.

Crape (Fr. *Crêpe;* Ger. *Flohr, Krausflor;* It. *Espumilla, Soplillo;* Rus. *Flior;* Sp. *Crespon*), a light, transparent stuff, in manner of gauze, made of raw silk, gummed and twisted on the mill, and woven without crossing. When dyed black it is much worn by ladies as a mourning dress. Crapes are crisped (*crepés*) or smooth; the former being double, are used in close mourning, the latter in less deep. White crape is appropriate to young unmarried females, and to virgins on taking the vail in nunneries. The silk destined for the first is spun harder than for the second; since the degree of twist, particularly for the warp, determines the degree of crisping which it assumes after being taken from the loom. It is for this purpose steeped in clear water, and rubbed with prepared wax. Crapes are all woven and dyed with the silk in the raw state. They are finished with a stiffening of gum-water. Crape is a Bolognese invention, but has been long manufactured with superior excellence at Lyons, in France, and Norwich, in England. There is now a magnificent fabric of it at Yarmouth, by power-loom machinery. There is another kind of stuff, called *crépon,* made either of fine wool, or of wool and silk, of which the warp is twisted much harder than the weft. The *crépons* of Naples consist altogether of silk.

Crayons. Colored cylinders used for drawing upon paper; they are usually made of a fine pipe-clay, colored with metallic pigments or carmine. Crayons containing plumbago are styled *solid lead pencils.*

Cream. (Fr. *Crême*). A semi-fluid yellowish substance which collects on the surface of milk, and which is made into butter by the process of churning. When the milk of any animal is allowed to stand for some time, it spontaneously undergoes certain changes —this substance rises to the surface and forms a thin stratum, which is called cream, and which consists chiefly of oily particles; while the milk below, which of course is thinner than it was before the cream separated from it, is of a pale bluish color, and consists of curd, coagulum, or the matter of which cheese is made. When cream is kept for some days it gradually becomes thicker, and partially coagulated; and if put into a linen bag and suspended from the ceiling of a cool room, it will acquire the consistence of cheese; and this is one among other modes of making cream cheeses. When cream is shaken by churning, it is resolved into its component parts, and hence we have butter and buttermilk. In order to make butter it is not always necessary that the cream should be separated from the milk; but whether separated or not, the process is facilitated by allowing the liquid to stand for some time, during which a part of the sugar contained in the serum is changed into an acid, which shortens the process of churning by facilitating the separation of the butter from the milk. When either cream or milk is churned without having previously become sour, the process is much more tedious; and sometimes, from causes not easily accounted for by the dairy-maid, it is unsuccessful, and the milk is said to be bewitched. The true cause, however, is the want of acidity; because it has been found that the addition of a small portion of vinegar will dissolve the charm, and cause the almost immediate appearance of butter. Cream, when separated from milk and kept till it has become acid, is frequently mixed with milk newly drawn from the cow; and this eaten with sugar is one of the most delicious preparations of the dairy. Costorphin cream, so called from a village of that name in the neighborhood of Edinburg, is made by putting the milk of three or four days together with the cream into a vessel, and allowing it to remain there till it has become sour and coagulated. The whey is then drawn off and fresh cream added; and when it is brought to table it is eaten with sugar,

and in the strawberry season, with that fruit. Devonshire cream is simply sour curd, or sour cream eaten with fresh milk, or fresh cream, with or without the addition of sugar. Devonshire scalded or clouted cream is milk and cream heated to the boiling point, and suffered to cool, when the cream will be found to have separated from the milk, and when skimmed off may either be made into butter or eaten with fresh cream and sugar. Common clotted cream is simply milk and cream in a coagulated state, and sour. When the clotted cream is broken and stirred, and the whey drawn off, the mass may be turned into cheese by artificial pressure, by which the whey is separated instantaneously; or by suspending it in a porous bag, in a cool, airy situation, when it will be separated by degrees. *See* BUTTER, CHEESE.—BRANDE'S *Em. of Art.* *See* BUTTER DIARY.

Credentials, Letters of. The instrument, in the form of a letter, from one government to another, which constitutes the evidence of the title of a minister at a foreign court to the power which he exercises. There are two sorts of credentials: the one sealed, drawn up and countersigned by the minister of foreign affairs; the other open, signed only by the government. Unless the minister be mentioned expressly in his credentials as an embassador, he has only a right to the observances due to foreign ministers of inferior rank.

Credit, in the sense in which we generally treat of it, is the trust which is given to a person when he obtains a loan of money, or purchases any article, the payment of which is to be made at an after period. Every sum of credit, therefore, must be founded on a transfer of a corresponding sum of capital; and the whole amount of credit existing at any time can never exceed that of the lent capital. Credit is, in reference to the person who gives it, the power of lending, and to him who receives it, the power of borrowing. The basis of credit is confidence, and this is found to exist extensively only where good faith and punctuality have been allowed to grow into habit, and where laws afford to creditors the easy and certain means of recovering their debts.

In young countries, before dealings have become multiplied, we find people inattentive to their money engagements, when there is no want of property with the debtor, and even when the payment of the debt has been fixed by document to a positive term. But as transactions increase, and population presses more closely together, a knowledge of the circumstances of individuals is rendered difficult, and a necessity for punctuality arises, to prevent doubts being entertained of the ability to pay. And this apprehension of discredit entertained by the debtor, and of its consequences to his future transactions, has more effect to establish and maintain good faith and exactness than the operation of the laws is able to produce. When capital is abundant, relatively to the means of employing it, the competition of capitalists produces a facility of obtaining credit; and parties become enabled to borrow and purchase upon credit who could not do so before. Credit is then said to be high, but it is the value of the capital which, from the overstock, has become low. The capitalist, in these circumstances, grows less scrupulous about his security, that he may bring within the range of his dealings a greater body of borrowers or purchasers, and thereby be enabled to keep up his price.

When the supply of capital continues in this state for any length of time, it gives rise to an imprudence of conduct which lays the foundation of much after evil. Sales and loans are made at credits far beyond the ordinary periods; and those into whose hands the extra capital by this means passes, considering it as a fund with which they may trade, go on also extending their dealings and credits, until the whole system is put upon the stretch. In this situation any interruption to the sale of commodities occasions instant confusion and distress. The confidence which had prevailed gives place to alarm and distrust, and the same effect is produced for the time by the retardment of the circulation that would have been experienced had the capital itself been withdrawn.

By the operation of credit, not only is the circulation of capital facilitated, and its employment increased; but by its means alone certain descriptions of capital can be brought into action. When an article is sold upon credit, the seller places, for the time, a portion of his capital at the command of a party who may have no capital of his own. This person, nevertheless, by another operation of credit, is enabled to sell upon credit also, and still keep his engagement with the party from whom he bought. This he accomplishes by calling in the assistance of the money capitalist, the banker, who advances to him the amount of the sale upon his and his purchaser's joint security, and receives in consideration a rent for the sum advanced. By this process facility and extension are given to circulation, beyond what could take place if the commodity could be exchanged only for immediate value; while an opportunity is, at the same time, afforded of employing a branch of capital which would otherwise remain inactive and without use. It is almost unnecessary to remark, that it is by the operation of credit that a return is got from the capital of persons who are incapable of employing it themselves, and which can be put into a state of useful activity only by lending it to others.

In Scotland, after the disposition to commercial pursuits began to manifest itself, the progress was retarded, by the total want of commercial capital in the country. To get the better of this difficulty, and draw to these employments any little capital that otherwise existed, it became the practice, when a commercial undertaking was to be entered upon, to associate in the adventure some persons of known substance, and upon the joint credit of the parties forming the company, to borrow the capital necessary for carrying it on. The credit which was thus established is called company credit, and is effectual to its proposed end of borrowing or purchasing with advantage, according to the supposed responsibility of the parties of whom the company is composed. Up to the year 1793 a considerable proportion of the manufacturing and mercantile concerns of Scotland were carried on upon this plan; and to give strength to their credit, and encourage those who had money to lend to place it with them, a rule was established, and confirmed by decisions of the courts of law, that, in case of bankruptcy, a creditor of a company should be entitled to claim upon each of the partners' separate estates, in competition with the party's individual creditors, for the balance of his debt unpaid from the company's effects.

When a party purchasing or borrowing capital gives a written obligation for the amount, payable to the order of his creditor at a certain fixed period, he embodies a sum of credit capable of being exchanged again for capital; and the transference of these documents to new parties, who replace to the former creditor the capital he had lent upon them, is what is called a circulation of credit. Indeed, without the use of bills, or of some instrument of similar powers, credit must have been confined to a single operation between first contracting parties, and the circulation of capital limited to what could have been effected in this way. But a transferable document of the sum to be received becomes itself a negotiable or marketable article; and the collective credit of the parties through whose hands it may successively pass continuing to be engrafted upon it, a new facility is gained to circulation by every movement which it makes. The whole of the credit embodied by bills, however, is not brought into circulation; a part only

of the sellers or lenders requiring to have their capital replaced to them by anticipation. But it is according to the expected facility with which payment may be thus anticipated, that credit is at first freely and readily given; and whenever any thing occurs to impede the circulation of credit, there is an immediate disposition in the merchant to withhold or limit it.

Every transfer of capital made upon a buyer or borrower's own obligation of payment creates a new sum of transferable credit; and this is the case, although it should be the same capital that is again and again transferred. But a sale of goods, or an advance of money upon the obligation of a third party, indorsed to the seller or lender, forms no addition to the sum of circulating credit, the transaction being the circulation, not the creation, of a sum of credit. Neither does a succession of purchases or borrowings, effected by means of the same document indorsed from the one party to the other, add to the sum of credit in circulation. For although each of these transactions is the ground of a separate obligation between the parties contracting, there is with the whole but one absolute creditor, the holder of the bill, and one absolute debtor, the acceptor of the bill, the others being merely contingent debtors to the one, and contingent creditors of the other.

Circulated credit is to be classed into that circulated by loan, and that which is circulated by means of sale. The first is the circulation of the credit founded upon the obligation of individuals or private companies, and called private credit; the second, of that founded upon the obligations of the state, or the transfers of the stock of corporate bodies, and called public credit. The documents of these two descriptions of credit possess different and distinct qualities, and are differently negotiable. It may be proper, therefore, to examine how they are employed as means of borrowing or purchasing, what are their separate powers, and what is the probable extent of the circulation of each. We shall begin with those belonging to private credit, which are as follows:

First, Obligations payable to the bearer on demand, and which, being passed without recourse, are employed as money. *Secondly*, Transferable obligations payable at an after date, as notes of hand and bills of exchange, which, being negotiated with recourse upon the preceding obligants, are taken as guarantied pledges of a sum to be received when they become due.

The circulation of obligations, payable to the bearer on demand, or notes employed as money, is the circulation of a credit borrowed by the issuer of the note from the public; the holder of the note at the time is the creditor; and the property he gave in exchange for it is a loan from him to the banker. As it is in the power of the party giving this credit at any time to put an end to it by calling for his money, these notes circulate upon the credit of the issuer alone. No assurance of payment is required from the person from whom they are received, as is the case with bills; the payment of which being at a future date, it is thought necessary to reserve recourse against the parties through whose hands they have passed. The circulation of notes payable on demand is therefore a circulation of what may be termed single credit, and bills a circulation of collective credit.

When bank-notes are issued by a banker in discount of a bill, it may be supposed that a twofold credit is put into circulation: a credit to the party to whom the bill has been discounted, and a counter credit from him to the issuer of the notes. But in this stage of the transaction, no circulation of credit has taken place. Credit is circulated only when exchanged for capital, and in this case it has been but the exchange of one credit for another. The banker, indeed, in giving his notes payable on demand in exchange for a bill payable at a future date, gives what is of a quality different from that which he receives; for what he gives is immediately exchangeable for capital, and to the person receiving it is the same as capital.

But still it is only credit he has parted with, which will not be in a state of circulation until it comes to be exchanged for capital. In as far as relates to circulation, the transaction is the same with that of a person lending his credit to another, by accepting a bill to him without value. A sum of credit is thereby created, but is not circulated until the bill comes to be exchanged for value. The credit that is in circulation from the exchange of bank-notes for a bill, is a credit from the party who at the time has given capital or value for the notes. When the banker "cashes" them, he becomes the creditor, but while they remain in circulation the public is the creditor.

The amount of credit from the circulation of cash notes never can be pushed beyond what would have been the value of the specie that would have been in circulation had the currency been of the precious metals, which the notes only profess to represent. Should the notes cease to be convertible into specie, their amount, indeed, may be augmented at the pleasure of the issuer; but their value, and the credit in circulation from them, will still be regulated by this limit. The increased sum will represent the value which the smaller did before, and each note will be reduced in its value, in the proportion of the increase that may have taken place of the whole. This description of circulating credit is of a quality different from the others. From supplying the place of capital, in its character of currency, it is lent out as capital; but loans from this fund are precarious, its amount depending upon the state of public confidence, and being liable to be diminished by every call upon the banks to replace the notes with specie.

Circulating notes, not convertible into specie, issued under the authority of the state, have been called a fabric of unreal credit. But this currency, however unsuitable to its proper ends, affords a circulation of real credit. It is indeed exposed to constant fluctuation of value, according to the amount of it in the circle; and the party taking it is obliged, for his own safety, to include in the price of what he gives for it, sufficient to cover the difference between it and specie, and the risk of further depreciation while it may remain in his hands. Still, however, an amount of credit, to the value of what has been given for the notes, in the first instance, is put into circulation, and an amount continued in circulation, to the value always of what they are exchangeable for at the time; the holders of them always remaining creditors of the issuer, to the extent of the whole sum which the notes profess to pay. A currency of this description, however, is inapplicable as a measure of value, and therefore unfit to be employed as a circulating medium. And as to the other object, intended by its issuers to supply an amount of funds to the state; the depreciation with which it must be issued at first, and the loss to be sustained from taking it back again at par, render it an expensive means of borrowing.

With regard to obligations payable at a future date, which constitutes the second branch of private credit, and which we are next to consider, the credit founded on them is circulated, either in the transfers of the ordinary capital in sales, as when the credit of indorsed bills is employed to purchase goods, or in the transfers of the banking capital in loans, as when the credit of indorsed bills is employed to borrow money; the transfer under the latter, when the bill is exchanged for money, being often a further circulation of a credit previously circulated under the former, when the bill was exchanged for goods.

A fictitious bill, that is, an acceptance given without value, vests in the person in whose favor it is drawn a sum of transferable credit not less than

would have been the case if it had been the document of a sale, or loan of property. Mr. Thornton, in his treatise on Paper Credit, established the doctrine, till then disputed, that the credit of a bill does not rest upon the nature of the transaction in which it has originated, but upon the conceived ability of the obligants to discharge the debt. The being able to embody in bills every sum of credit, has furnished the means of employing, with incalculable advantage to commerce, a portion of the capital of the country, which otherwise, it is probable, would have remained inactive. The security they afford for the repayment, at a stipulated period, of the sums lent upon them, furnishes the means of an interim employment of money held for after occasions, which the party would not otherwise venture to lend out; of money which formerly lay idle in the hands of parties unacquainted with any safe means of using it; and of the money which traders are daily receiving in the course of their business, but which they do not immediately require. These different sums collected in the hands of a banker, form what is called the banking capital of the country; and which, lent out upon such securities, produces not only a profit to him, but interest to the parties who have placed them at his disposal. The importance of this intermediary fund in the transactions of the country is such, that when, from distrust, at any time, these deposits are withheld or withdrawn from the bankers, the mercantile body is convulsed throughout.

We now come to the second division of credit, that circulated by sale; the documents of the first branch of which are, the negotiable obligations of government, as exchequer bills, navy bills, etc., and the whole of the public funds, constituting what is termed the credit of state. When capital is to be competed for, this credit has an advantage in the market over the former. Its price rises according to the demand; and by that means it is enabled to secure whatever share it may require of the supply. This is not the case with the credit circulated by transfers of capital upon loan, the price or stipulated rent of which can not, whatever may be the demand, rise beyond a prescribed limit. It has the effect, in these circumstances, to force the capital applicable to this part of the circulation to seek the employment of the other; so that the inconvenience produced by an interruption of circulation from a diminution of the general capital, falls entirely upon the circulation of bill credit, the supply for the circulation of the credit transferable by sale being kept full, at the expense of that applicable to the circulation of credit transferable by loan.

The transferable shares of public stock companies, from being occasionally a means of temporary investment of capital, have by some been considered as forming a part of the circulating credit of the country. But this is not the case. The stocks of these companies form a part of the ordinary circulating capital; and of consequence, the transfers of their shares are not operations of credit, but exchanges of capital between the buying and selling parties. The transfers of the premiums, however, paid in the purchase of this description of stock, which, although no part of the capital, form an immediate part of the price, may be fairly considered as a circulation of credit, to be added to the amount of the circulating credit of the country. The mode of circulating this credit being the same with that of the public funds, and its market value rising or falling with the general abundance or scarcity of capital, its circulation, when capital is scarce, immediately interferes with the circulation of credit by simple borrowing.—E. B. See also "Hooper on *Currency*, Boston, 1856. *Bankers' Magazine*, N. Y., 1855–1856. See Hunt's *Mer. Mag.* (C. F. Adams), ii. p. 185. *Democratic Rev.*, ii. p. 167; iii. p. 195; v. p. 147. *Encyclopedia Amer.*

Credit Mobilier. The Crédit Mobilier Bank, according to the provisions of its charter, is a joint-stock company, organised at Paris, for the purpose of developing works of public improvement by consolidating the securities of various enterprises into one common fund. Its capital stock is fixed at 60,000,000 francs, divided into shares of 500 francs each, payable to bearer. It is authorised to subscribe for or acquire public funds, the shares or bonds of any joint-stock company, and more particularly of railways, canals, mining, and other public works, now existing, or hereafter to exist; also to bid for any loan, or for the stock of any kind of public works, and to dispose of and realize the same. It is also authorized to issue its own bonds for an amount equal to its subscriptions and purchases; such bonds may be issued to the extent of ten times its capital (that is, 600,000,000), but they shall not have less than forty-five days to run. This privilege has not yet been availed of, the Government having requested them to postpone the proposed issue of 240,000 bonds (120,000,000 francs) in 1855, in order not to interfere with the forthcoming State loans, as well as to guard against increased embarrassment in the money market. The aggregate amount of money received in account current, and of bonds issued having less than a year to run, can not exceed twice the amount of capital paid in (that is, not over 120,000,000 francs). The company has authority to sell or hypothecate its securities, and to exchange the same for others. It can loan on public funds, shares and bonds, and open credit in account current on the various securities; it can take charge of all collections for account of joint-stock companies, pay their coupons and dividends, and make other disbursements for them. *It is*, however, *expressly understood* (so runs the statute) *that it shall not sell "short" or buy on time.* (*Il est expressément entendu que la société ne fera jamais de ventes à découvert, ni d'achats à prime.*)

The company, which was created in November, 1852, has, thus far, issued but three very condensed and incomplete reports, and extensive as are its operations thus far, it states that from its inability to issue bonds at present, it has not yet been able to show the world the full merits of its working. The reports refer to the operations of the calendar years of 1853, 1854, and 1855, and bear date April, 1854, 1855, 1856.

	1853.	1854.	1855.
	Francs.	Francs.	Francs.
Capital paid in, Dec. 31	58,500,000	60,000,000	60,000,000
Accounts current	65,800,000	64,900,000	103,180,000
Total	122,300,000	124,900,000	163,180,000
Invested (together with profits);			
Stocks and Bonds on hand, Dec. 31	87,260,000	57,460,000	132,060,000
Less Installments not due	.....	.....	31,000,000
			101,060,000
Treasury, City of Paris, and other notes	20,700,000	29,100,000	14,000,000
Railroad and other Bonds	17,100,000	17,200,000	32,500,000
Stock contracts	28,000,000	21,000,000	37,800,000
Total	103,060,000	124,760,000	185,360,000
Total purchases through the year	146,000,000	164,000,000	323,000,000
Total sales through the year	111,000,000	110,000,000	217,000,000

The particular nature of the purchases and sales is not made public. We do not find in the papers before us any reference to the dividends or total profits, except for the year 1855. But the profits or investments and stock transactions at the Bourse alone, amounted to 3,618,000 francs in 1853, and to 6,207,000 francs in 1854; and the profits of all kinds to 26,000,000 francs in 1855. The profits on the "*quick terms*" at the Bourse are set down at 2,000,000 francs in 1853, and

3,400,000 in 1854; there is no means of ascertaining those of 1855, the report being silent on the subject. Full particulars are wanting as to the various transactions of the company relating to subscriptions to the capital stock of new companies, to loans to companies already established, and to the negotiations in which the company, without engaging its fund, acts simply as sponsor and intermediary. But the following comprise the chief transactions which have contributed to give *éclat* to this active corporation: In 1853 it confined itself to previously existing corporations. In 1854 it created the company of the Grand Hotel du Louvre, in the Rue de Rivoli, with a capital of 24,000,000 francs; the Maritime Company (of clippers), with 30,000,000 francs capital; and the Austrian Railway Company, with a capital of 200,000,000 francs, the shares of which were issued in the beginning of 1855. In 1855 it subscribed for a large portion of the new stock of the Saint Rambert Railway, the Western Railroad of France (*Ouest*), and the Central Railroad of Switzerland, and the Elro Canal Company—amounts not mentioned.

In 1853 it took a large amount of the Crédit Foncier bonds, and 30,000,000 francs of the Grand Central Railroad bonds, and 6,000,000 francs of the Viéille Montagne (Zinc) Company's bonds. In the same year it sold out all the Crédit Foncier bonds, and most of the Viéille Montagne; the Grand Central bonds were, most of them, still unsold at the beginning of 1855. In 1854 it took about 5,500,000 francs of the Eastern Railroad (*Est*) bonds, and purchased sixteen thousand bonds of the Dole and Salins Railroad bonds; the amount of these bonds is not mentioned, probably 500 francs each. In 1855 it guarantied the sales of 18,000,000 francs of the Western Railroad stock (*Ouest*), and of 100,000 bonds of the Southern railroads (*Midi*), representing 28,000,000 francs; and it took charge of the loan of 82,000,000 francs for the Austrian Railway Co., which passed rapidly and almost wholly into the hands of German capitalists.

The company acted as sponsor or agent in 1854, for the re-formation of the mines of the Loire, and for the fusion of the several omnibus companies in Paris into one joint concern; and in 1855 for the consolidation of the various Parisian gas companies. It has, moreover, been preparing for two years past the consolidation of the Eastern and Southern Salt Works. It put in a bid for the last government loan of 780,000,000 in behalf of itself and its correspondents, for no less a sum than 625,000,000; but its share was reduced when the bids were adjudicated to 1,281,000 francs of the 3 per cent. rentes. At the close of last year it embarked in grand speculations, which remained unsettled at the date of the last balance-sheet, but they appear there as yielding an estimated loss of 500,000 francs. The amounts received in account current are mostly from large companies, and can only be withdrawn, according to express stipulation, to be expended on their respective works. Individuals are also allowed to make deposits, the company agreeing to take charge of their investment and stock speculation.

In order to fully appreciate the power of this vast machine as a speculative agent, it must be borne in mind that the managers and leading depositors are men in the enjoyment of extraordinary resources of wealth and position, and that in their speculative operations at the Bourse, they and the company all act in concert, thus acquiring a power over the market which nothing, in the absence of extraordinary circumstances, can hope to resist. This power is made the greater from the large amounts employed by the company in carrying stocks for brokers and outside speculators, in the shape of stock contracts, or as the French call them, *reports*, which contracts mostly mature on the same day in each month. The company are thus enabled to depress the Bourse when they wish to buy, by refusing to make new contracts when settlement-day comes, thereby forcing sales on a tight money market; and to promote a rise when they wish to sell, by granting a great increase of facilities to other dealers in stocks.—*N. Y. Times.* See *Bankers' Magazine*, N. Y.: July 1855, July 1856.

Creek (Saxon *creca*, said to be derived from the Latin *crepido*) is a shore or bank on which the water beats, running in a small channel from any part of the sea. It is also applied to any part of a large river which is resorted to as a harbor or landing-place by small craft. In the United States, the term creek is used as synonymous with the English words brook and rivulet.

Creole. (In Spanish *Criollo.*) A name given to the descendants of whites born in Mexico, South America, and the West Indies; in whom the European blood has been unmixed with that of other races. The various jargons spoken in the West India islands by slaves, etc., are called Creole dialects.

Creosote, or the *flesh-preserver*, from κρεας and σωζω, is the most important of the five new chemical products obtained from wood tar by Dr. Reichenbach. The other four, *paraffine*, *eupione*, *picamar*, and *pittacal*, have hitherto been applied to no use in the arts, and may be regarded at present as mere analytical curiosities. Creosote may be prepared either from tar or from crude pyroligneous acid. The tar must be distilled till it acquires the consistence of pitch, and at the utmost till it begins to exhale the white vapors of paraffine. The liquor which passes into the receiver divides itself into three strata, a watery one in the middle, placed between a heavy and a light oil. The lower stratum alone is adapted to the preparation of creosote. Creosote exists in the tar of beech-word, to the amount of from 20 to 25 per cent., and in crude pyroligneous acid, to that of 1¼. It ought to be kept in well-stoppered bottles, because when left open it becomes progressively yellow, brown, and thick. Creosote has considerable power upon the nervous system, and has been applied to the teeth with advantage in odontalgia, as well as to the skin in recent scalds. But its medicinal and surgical virtues have been much exaggerated. Its flesh-preserving quality is rendered of little use, from the difficulty of removing the rank flavor which it imparts.

Cresset, a great light set on a beacon, lighthouse, or watch tower. It also signifies a lamp or torch; a large light or lantern fixed on a pole. Minshen derives the word from the Dutch *keerse*, *kandela*; but it is more probably from the French *croisset*, a little cross—that symbol having been usually placed upon beacons.

Crew, the company of sailors belonging to any ship or vessel. Ready obedience to the lawful orders of their superiors, ability to discharge their duties, and alacrity in their performance, at all times and under the most perilous circumstances, are the distinguishing characteristics of good seamen.—See SEAMEN. See KENT's *Com. Manual for Consuls.* PARSONS' *Mercantile Law.*

Crimea, a peninsula in the Black Sea, forming part of the Russian government of Taurida, with the mainland of which it is connected by the isthmus of Perekop. It is situate between 44° and 46° N. lat., and 32° and 37° E. long. It is of an irregular square, or rhomboid form, measuring diagonally about 190 miles from east to west, and 123 from north to south, and containing an area of about 8,000 square miles. Its south-eastern, western, and north-western coasts, are washed by the Black Sea, and the eastern by a shallow lagoon, called the *Sivash*, or Putrid Sea, which is connected with the Sea of Azoff by a very narrow strait, and separated from it by a tongue of land, consisting of sand and broken shells, about 70 miles in length, and 1 to 1½ in breadth. The eastern part of the Crimea forms a minor peninsula,

stretching eastward to the strait of Kertsh or Caffa, or Jenikaleh, the ancient Cimmerian Bosphorus, which forms the communication between the Black Sea and the Sea of Azoff, but it is not navigable by large or deeply-laden vessels. The most valuable commercial production is salt, which, as already mentioned, is obtained in very large quantities from *tuzlas*, or salt lakes, near Perekop, Koslov, Kaffa, and Kertsh. It is a government monopoly, and yields a considerable revenue. The other principle articles of commerce and exports are wine, honey, wax, leather, hides, wool, and lambskins; of the last of which, called *shumaki*, great quantities are exported yearly to Poland and other neighboring countries. The only manufacture worth notice is what is called morocco leather, which is produced of good quality. The mountains contain masses of red and white marbles, full of cracks and fissures, which make them well adapted for quarrying, if there were a demand.

Criminals. By the laws of the United States, consular officers are required, in cases of the intended shipment of paupers, or pardoned criminals, to the United States, to give timely notice of the fact, both to the Department of State and to the collector of customs of the port to which the vessel having them on board may be bound; furnishing the names of the parties, a description of their persons, the name of the vessel, and the date of sailing, in order that proper steps may be taken for the enforcement of such police regulations as may have been adopted by the several States upon the subject.—*Manual for Consuls.*

Crockery. In use, and made mention of as produced by the Egyptians and Greeks, so early as 1890 B.C. The Romans excelled in this kind of ware, many of their domestic articles being of earthen manufacture. Crockery, of a fine kind, in various household utensils, was made at Faenza, in Italy, about A.D. 1810; and is still called *fayence* in French. Earthenware vessels were in use among the most ancient nations. Various domestic articles were made by the Romans, 715 B.C. The art was revived and improved in Italy, A.D. 1810. Wedgewood's patent ware was first made in 1762. His pottery in Staffordshire was extended to a variety of curious compositions, subservient not only to the ordinary purposes of life, but to the arts, antiquity, history, etc., and thereby rendered a very important branch of commerce, both foreign and domestic.

Cronstadt, or **Kronstadt,** a strongly-fortified seaport town of Russia, and the great naval station of the Russian fleet in the northern seas, is situated on the island of Kotline (frequently also called Cronstadt, from the town), at the head of the Gulf of Finland, 20 miles west of St. Petersburg, in N. lat. 59° 59′ 26″; E. long. 29° 46′ 30″. The population in 1849 was 25,120; but it varies considerably at different times of the year, and in summer generally amounts to about 50,000. The island of Kotline is in general outline an acute triangle, 7 miles in length by about 1 in breadth, with its base toward St. Petersburg, and its apex extending obliquely seaward. The eastern or broad end is occupied by the town of Cronstadt; and 1½ miles from the western point of the island is the lighthouse of *Tolboochin* or Tolbeacon. The streets are regular, and in general well paved; but the houses, with the exception of those belonging to government, are chiefly of one story. The town was originally built of wood, and wooden structures are still numerous; but such buildings are now forbidden by law, and the majority of the houses are now built of brick, and plastered. Cronstadt is divided into two parts—the *Morskaia chast*, sea district, and the *Koopacheskaia chast*, or commercial district—and into four subdivisions. Of the two canals which traverse the town, that of St. Peter, constructed of granite, is 2,160 feet long, by about 80 yards wide. It commences between the Merchant and Middle Harbors, and is in the form of a cross, of which one arm communicates with a dock, where ten ships of the line can be repaired at once. The Catherine canal, 1,880 fathoms in length, communicates with the Merchant Harbor, and thus enables vessels to take their stores, munitions, etc., directly from the store-houses. Between the two canals stood the old Italian palace of Prince Menschikoff, the site of which is now occupied by a large building used as a school for pilots, and educating above 300 pupils. On the northern side of the island the passage is impracticable, except for very small craft, being obstructed by rows of piles and large masses of stone, extending from the island to Lisi Noss, on the mainland. The southern channel is the only practicable passage from the Gulf of Finland to St. Petersburg, and it is strongly defended on both sides by forts and batteries. The principal of these are Forts Alexander, Risbank, Peter, Cronslott, and that of Menschikoff, already mentioned. The Great Road is commanded by Forts Alexander and Risbank, about 1,600 yards apart. The former, on the left side of the passage, consists of a front with 4 tiers of embrasures, and two flanks of 3 tiers each, and a rear wall mounted with guns *en barbette*. It is built of blocks of granite on a foundation of piles in 18 feet of water, and commands the road by 116 8 and 10-inch guns, all in casemates. Fort Risbank, which was not finished last year (1853), on the opposite side, is also of granite, resting on a foundation of piles, in 16 feet of water, and is armed with tiers of guns of the heaviest calibre. Further eastward, on the left, is Fort Peter, or Citadel Fort, with 3 towers or bastions joined by 2 curtains; the first commanding the approach to the rear of Fort Alexander, while the second and third sweep the main channel. These bastions have 28 guns in casemates, and 28 guns above *en barbette*: the curtains have no casemates, but mount 20 guns *en barbette*. To the right of the Little Road is Cronslott, an irregular pentagon, originally built by Peter the Great. It presents to the sea a low line of timber casemates, forming a battery of 40 guns placed *à fleur d'eau*, and disposed in the half of each of two bastions with a connecting curtain. All this work, however, has been destroyed, and last year (1853) the piles had been driven on which a granite fort was to be built, which by this time (October, 1854) is probably complete. The mole forming the western flank of the Merchant Harbor mounts 70 guns, besides 12 mortars; and the channel, between Cronslott and the mole, is only 250 yards wide. Almost all vessels bound for St. Petersburg touch at Cronstadt, and those drawing more than 7 feet of water load and unload here—the goods being conveyed to and from the city in lighters. Vessels of 10 feet draught have, however, been known to go up with high water. The port is ice-bound during the winter, from November to April. Cronstadt was founded by Peter the Great, 1703.—E. B.

Cronstadt is the port through which the foreign commerce of St. Petersburg is principally conducted. The number of vessels cleared in 1848–49, was as follows:

Years.	Entered.	Cleared.
1848.....	1,515	1,470
1849.....	1,570	1,550

In these figures Great Britain held the first rank. The number of British vessels entered and cleared was 920, measuring an aggregate of 209,318 tons. Under the French flag there entered and cleared 58 vessels, of 8,598 tons. The total value of French cargoes imported in 1849, reached about $5,000,000, against $1,000,000 of exports direct to France. Official returns for 1853 exhibit a total of 1,898 vessels, under all flags, having entered during that year; and the following table gives the nationality and number of these arrivals from each nation:

Countries.	No. of vessels.	Countries.	No. of vessels.
England.....	684	Hanover.....	45
Holland.....	284	Oldenburg.....	49
Denmark.....	199	United States..	41
Sweden.....	184	France.....	41
Prussia.....	116	Naples.....	22
Norway	97	Bremen.....	8
Lubec.....	89	Hamburg.....	8
Russia.....	88	Greece.....	1
Mecklenburg..	59		

Cross-trees, in a ship, pieces of oak timber, supported by the cheeks and trestle-trees, at the upper ends of the lower and top-masts to sustain the frame of the tops in the one, and to extend the top-gallant shrouds on the other.

Croton Oil is expressed from the seeds of an euphorbiaceous shrub, the *Croton tiglium*, a native of Hindostan and of the warmer parts of Asia. The fruit is about the size of a hazel-nut, of an ovate triangular shape, and containing three ovate seeds, about the size of a pea. The kernels of these yield, on pressure, about 50 per cent. of oil, which is of a pale amber color, and a thickish consistence, like castor oil. It has no odor, but has a peculiar acrid taste, which is felt most strongly in the back of the palate and throat. Croton oil is a speedy, powerful, and sure cathartic, in small doses, of one to three drops; and it possesses two valuable properties: 1st, that however active and powerful the purgative action may be, it soon ceases, and leaves no debility; and, 2d, that it excites the biliary secretion, more powerfully than any known medicine. In consequence of one or two drops being a dose, and its action commencing very shortly after its administration, it is invaluable in impending apoplexy, and in almost all diseases in which torpor or paralysis exists. In hydrocephalus, even when effusion of water on the brain appears to have taken place, the late Dr. Abercrombie stated that it would often bring about the recovery of the patient. It is a medicine which deserves far more attention than it has yet received.—E. B.

Crown, in *Commerce*, a common name for coins of several nations, which are about the value of a dollar. See COINS, TABLE OF.

Crown Glass, the best kind of window-glass. The hardest and most colorless, is made almost entirely of sand and alkali, and a little lime, without lead or any metallic oxyd, except a very small quantity of manganese, and sometimes cobalt. Crown glass is used in connection with flint glass for dioptric instruments, in order to destroy the disagreeable effect of the aberration of colors. Both kinds of glass are now made in the highest perfection, in Benedictebura, where Riechenbach's famous manufactory of optical instruments is situated.

Crucibles (*Creusets*, Fr.; *Schmelztiegel*, Germ.) are small conical vessels, narrower at the bottom than the mouth, for reducing ores in docimasy by the dry analysis; for fusing mixtures of earthy and other substances; for melting metals, and compounding metallic alloys. They ought to be refractory in the strongest heats, not readily acted upon by the substances ignited in them, not porous to liquids, and capable of bearing considerable alterations of temperature without cracking; on which account they should not be made too thick. The best crucibles are formed from a pure fire-clay, mixed with finely-ground *cement* of old crucibles, and a portion of black-lead or graphite. Some pounded coke may be mixed with the plumbago. The clay should be prepared in a similar way as for making pottery ware; the vessels after being formed must be slowly dried, and then properly baked in the kiln. Platina crucibles are not fusible, but are too costly for general use.

Cruise. (Germ., *kreutzen, to cross.*) A voyage within certain limits, for the purpose of meeting with enemy's ships, pirates, etc., or for mere exercise, or for the relief of vessels in distress.

Cruisers, in naval affairs, vessels, as the name imports, employed on a cruise. The name is commonly given to small men of war, made use of to secure merchant ships and vessels from the enemy's small frigates and privateers. They are generally formed for fast sailing, and well-manned.

Cuba, the largest and richest of the West India islands, and the most important colony of Spain, was discovered by Columbus on the 28th October, 1492, during his first voyage. It was first called *Juana* in honor of Prince John, son of Ferdinand and Isabella; but after Ferdinand's death it received the name of *Fernandina*. It was subsequently designated *Santiago*, from the patron saint of Spain; and still later Ave Maria, in honor of the Virgin. Its present name is that by which it was known among the natives at the time of its discovery. It was then divided into nine independent principalities, under as many *caciques*.

The island of Cuba is long and narrow, somewhat in the form of an irregular crescent, with its convex side toward the north. It divides the entrance to the Gulf of Mexico into two passages: that to the N.W. being 32½ leagues wide at the narrowest part, between the points of Hicacos in Cuba, and Tancha on the Florida coast; and the S.W. passage 88 leagues wide between the Cabo de San Antonio of Cuba, and the Cabo de Catoche, the most salient extremity of the peninsula of Yucatan. Cuba lies between 74° and 85° W. long., and 19° and 23° N. lat. Its length, following a curved line through its centre, is 790 miles, and its greatest breadth (from Cape Maternillos to Mota Cove) is 107 miles. The area is estimated at 31,468 square miles, or, including the other small islands attached to it, 32,807 square miles. The coast of Cuba is generally low and flat, and is surrounded by numerous islands and reefs, which render the approach both difficult and dangerous to those not acquainted with the proper channels. The low nature of the coast subjects it to frequent floods and inundations; and especially on the north side of the island, there are many large lagoons from which a considerable quantity of salt is obtained. No island, however, in proportion to its size, has a greater number of excellent harbors, many of them accessible even to ships of the line. A range of mountains extends from one end of the island to the other, dividing it into two unequal portions, of which the northern is generally the narrower. The highest are those at the S.E. extremity of the island, to the N.W. of Santiago de Cuba, and have, according to Humboldt, an elevation of 1,200 toises, or 7,673 English feet. This Cordillera is one great calcareous mass, resting on a schistose formation. The summits are for the most part rocky and naked, occasionally interrupted by more gentle undulations. The central and western parts of the island contain two formations of compact limestone, one of clayey sandstone, and another of gypsum. The limestone formations abound in caverns. The secondary formations, east of Havana, are pierced by syenitic and euphotide rocks united in groups. The syenite strata are intercalated with serpentine, and inclined to the N.W. In some places petroleum runs out of rents in the serpentine; and abundant springs of this fluid are also found in the eastern part of the island. The rivers in general are necessarily short, and flow toward the north and south. The largest is the Cauto, rising in the Sierra del Cobre, and falling into the bay of Buena Esperanza on the southern coast, after a course of 50 leagues, for 20 of which it is navigable, though at low water obstructed by bars. The Sagua la Grande rises in the Sierra del Escambray, passes Santo Domingo, and falls into the sea in front of the Boca de Maravillas, being navigable for five leagues. The principal of the other rivers are the Sagua la Chica, the North and South Iatibonica, the Cuyaguatoje, Sasa, Agobama, and the Hanabana. On some of the rivers are beautiful cascades, while

several of them flow, during part of their courses, under ground.

The mineral riches of the island have not yet been explored to any considerable extent. Though gold and silver have undoubtedly been found on the island, the quantity has never been sufficient to repay the labor of search. Gold was sent to Spain from this island by the early settlers, but it was more probably the accumulated wealth of the aborigines in previous centuries, wrested from them by tyranny and rapine at the period of the conquest, than the product of honest labor on the part of the colonists. Traces of auriferous sand are found in the rivers Holguin, Escawbray, etc. Some specimens of the finest gold have been obtained in recent times from the workings of Agabama and Sagua la Grande, but at an expense of time and labor that could not remunerate the parties engaged in it. In 1827, silver and copper were discovered in the jurisdiction of Villa Clara, and the first ores gave no less than 7 oz. of pure silver to the quintal (= 107¼ lbs.) of ore; but they have become less productive, probably from not being properly worked. The copper mines near Santiago, in the eastern part of the island, are of great extent, and very rich, employing nearly 900 persons, and yielding an ordinary average of about 27 per cent. of pure metal. They were wrought with some success during the 17th century, but had been abandoned for more than 100 years. About the year 1830, Mr. Hardy, a landed proprietor in the island, happened, when on a visit to that part, to carry off some of the refuse of the old workings in order to subject them to analysis, the result of which was, that the metal was found so rich as amply to repay the expense of sending it to England for smelting. Several other mining companies have since been established; and the amount of copper ore exported in 1850 was 552,288 quintals, or nearly 25,100 tons. Of the 35,683 tons of copper ore imported in 1851 into the United Kingdom, 20,825 tons came from Cuba. Coal of a highly bituminous character, affording a strong heat, and leaving very little solid residue in the form of ashes or cinders, is very abundant. In some places it degenerates into a form resembling asphaltum, and near the coast it is often found in a semi-liquid state like petroleum or naphtha. In the quarries near Havana a thick slate is found, fit for floors and pavements. Marbles and jaspers of various colors, and susceptible of a high polish, are found in many parts of the island, and particularly in the Isle of Pines. It is generally believed that iron exists in various parts of Cuba; and many parts of the great Cordillera undoubtedly contain rocks of a ferruginous nature; but from the difficulty of access, the scarcity of fuel, and the want of capital, no extensive mining operations have been engaged in. Native loadstone, however, has been found in various parts, and chalybeate springs are numerous.

The circulating medium of Cuba, was until lately composed entirely of the precious metals; paper money is now issued by the bank which has just gone into operation. The coins in use are the Spanish doublon, or *onza de oro*, which is a legal tender for 17 hard dollars, and at the ordinary rate of exchange of 8 4-37 per cent., is worth £3 10s. 10d. sterling; and the subdivisions of the doblon, the half, the quarter, the eighth, and the sixteenth—the last being equivalent to a dollar and half a real. The Mexican, Colombian, and other South American doblons are a legal tender for 16 hard dollars, equal to £3 6s. 8d. sterling, and are sometimes in demand for exportation at a premium: their divisions are worth, 8, 4, 2, and 1 dollar respectively. Of silver coins, the Spanish dollar and its divisions, and also Mexican, United States, and South American dollars, are legal tenders at their nominal value.

The principal port is Havana, or Havannah, on the north coast of the island of Cuba, of which it is the capital, the Moro castle being, according to Humboldt, in lat. 23° 8′ 15″ N., long. 82° 22′ 45″ W. The population of the city and suburbs was said to be, in 1851, about 200,000. In 1827, the resident population amounted to 94,023; viz., 46,621 whites, 8,215 free colored, 15,347 free blacks, 1,010 colored slaves, and 22,830 black slaves. The port of Havana is the finest in the West Indies, or perhaps in the world. The entrance is narrow, but the water is deep, without bar or obstruction of any sort, and within it expands into a magnificent bay, capable of accommodating 1,000 large ships—vessels of the greatest draught of water coming close to the quays. The city lies along the entrance to, and on the west side of, the bay. From its position, which commands both inlets to the gulf of Mexico, its great strength and excellent harbor, Havana is, in a political point of view, by far the most important maritime station in the West Indies. As a commercial city it also ranks in the first class. The ports of the island licensed for foreign trade are Havana, Santiago, Puerto Prince, Mutanzas, Trinidad, Baracoa, Gibara, Cienfuegos, and Manzanilla. A bank has been recently established in Cuba, under a royal charter.

It is impossible, from the conflicting accounts of the different writers upon the subject, to arrive at any thing like certainty as to the number of inhabitants on the island at the time of its conquest; but it may be estimated at probably from 800,000 to 400,000. There is little doubt, however, that before 1560 the whole of this population had disappeared from the island. The first census of Cuba was taken in 1775, when the population was 170,862. In 1791 it was 272,140. The following table gives the population since that period:

Year.	Whites.	Free Blacks.	Slaves.	Total.
1811	274,000	114,000	212,000	600,000
1817	290,021	115,691	225,268	630,980
1827	311,051	106,494	286,942	704,487
1841	418,291	152,838	436,495	1,007,624
1846	425,769	149,226	323,759	898,752
1849	457,133	164,410	323,897	945,440
1850	605,560	205,570	436,100	1,247,230

Neither of the last two censuses include the garrison, crews of vessels, or the floating population.

The following is a more minute classification of the people of the island, according to the census of 1850:

Creole whites	520,000
Spaniards	80,000
Troops and marines	28,000
Foreigners	10,560
Floating population	17,000
Total whites, 605,560	
Free mulattoes	118,200
Free blacks	87,370
Total free colored population, 205,570	
Slaves, mulattoes	11,100
Slaves, blacks	425,000
Total slaves, 436,100.	
Grand total	1,247,230

The present population, adding garrison and floating population, is nearly 1,100,000. The census of 1846 gives the population of the principal towns as follows: Havana, 106,968; Puerto Prince, 19,168; Santiago de Cuba, 24,065; Matanzas, 16,986; Trinidad, 13,222. The population of Havana, in 1849, is given at 142,602, and in 1850, at 150,561.

The chief agricultural products of Cuba are sugar, coffee, and tobacco. The cultivation of these has advanced with great rapidity since 1809, when the ports of the island were more freely opened to foreigners. The cultivation of coffee advanced for a time with equal or even greater rapidity than that of sugar; but latterly, from the low prices of coffee, the cultivation of sugar has become the more profitable, and in a great measure supplanted coffee. Among the other productions are Indian corn, rice, beans, plantains, cotton, cocoa, pine-apples, lemons, oranges, limes, figs, melons, etc. Of the manufactures, the principal are the

making of sugar, molasses, rum, and segars, and the preparation of coffee and wax.

The latest and most reliable statistics of the island present the following divisions of agricultural industry, viz.: sugar estates, 1,442; coffee estates, 1,618; tobacco estates, 9,102; and grazing farms, 9,930, on which are reared about 898,199 head of cattle. Besides these, large herds of cattle are also reared on the extensive and fertile prairies of the uncultivated portion of the island.—E. B.

Politically, the island of Cuba is divided into three departments: the Oriental, the Central, and the Occidental; and these are again subdivided into a number of governments, sub-governments, and colonies. The Central and Occidental departments form the civil province of Havana, and the Oriental the civil province of Cuba.

In 1809, the restrictions imposed upon Cuba, of trading to no foreign country whatever, were removed; and from that period to the present, official returns of the population, agriculture, commerce, and revenue of the island have been annually prepared, and, apparently, with great care. These reports, or "Balanzas Generales," exhibit a regular and marked progress in the industrial and commercial movements of Cuba, from the period above specified—its trade with foreign nations steadily advancing, and the supplies of its more prominent staples regularly keeping pace with the increased demands of an enlarged and comparatively emancipated commerce. In 1775, the entire population of the island was 170,370. In 1850, it had risen to 1,247,230, showing an increase during the intervening 75 years of 1,076,860, or about 700 per cent.

Commerce with Cuba.—The increase of the trade of the United States with the port of Havana over that of all other nations, notwithstanding the bad feeling that has existed between the two countries, is truly wonderful. The Havana *Mercantile Report* of the 7th of August, 1855, gives a statement of the number of vessels, their tonnage, and the nations to which they belong, which entered the port of Havana during the first 6 months of the 10 years last past. The increase in the total tonnage for the first 6 months of the year, from 1846 to 1855, is a trifle more than 100 per cent. While the American tonnage has increased more than 200 per cent., the Spanish and British are nearly stationary. For the first 6 months in 1846, the American tonnage employed in this trade was 71,722; the Spanish, 55,528; and the British, 32,969. The total number of vessels which entered that port during the 6 months ending July 1st, 1855, was 1,080, of a tonnage of 364,033; and of these, 570, of a tonnage of 231,484, were American; 58,338 Spanish; 32,165 British. The French tonnage has increased from 1,761, in the first 6 months of 1846, to 8,269, for the same period of 1854, and 23,283, more than two thirds of the British, in 1855. In the tonnage of other nations, Belgian, Dutch, Danish, Bremen, Hamburg, and others, there has been no material increase. Prior to the removal of the restrictions on foreign commerce, there was some trade carried on between the United States and Cuba, by virtue of Spanish grants and occasional relaxations of the law; but it was generally limited to the importation of articles necessary to supply the people of the island with the means of subsistence.

The wars between the mother country and the Spanish American republics having driven the Spanish flag from the ocean, the laws of differential duties remained in abeyance, and the commerce of Cuba, existing chiefly with the United States, was carried on in American bottoms, which even extended their services to Spain, bringing the oil and wine of the Peninsula to the colonists. The gradual settlement of the difficulties with the revolted provinces enabled the flag of Spain again to come upon the sea, and her mercantile marine received a new impulse. During the period that had elapsed since the opening of the ports, the natural increase of the wants of the colonists, attendant upon an exchange of their products with those of foreign countries, opened a market in Cuba for many of the products of mechanical industry, which found their way there through the ports of the United States; so that, at the close of this era, in the year 1830, the foreign commerce of the island was confined almost exclusively to our marts, to which she looked even for those articles which were not produced in this country. This was the season of the most prosperous commerce between Cuba and the United States. The re-birth of the Spanish merchant-marine brought with it clamors for protection, and the tariff of Cuba was altered, imposing a differential duty upon goods imported in foreign bottoms. The object of this duty was to encourage the employment of national vessels in the trade of the island with this country. Spanish ships very soon made their appearance in American ports, and were rapidly obtaining a large share of the carrying trade, which had, before that period, been enjoyed exclusively by American vessels.

About this time, repeated but unavailing representations had been made to the Spanish government of the injustice of its course in imposing such discriminating duties both on the navigation and commerce of foreign countries, and in favor of Spanish bottoms. Negotiations having proved abortive, a system of defensive or retaliatory measures was recommended, as the only means of self-protection, in an elaborate report made by the Committee on Commerce of the House of Representatives, in May, 1834, which concludes thus: "Your committee, therefore, from a view of all the circumstances, have deemed it their duty to report a bill, authorizing the Secretary of the Treasury to collect such additional tonnage duties upon Spanish vessels entering the ports of the United States from Cuba and Porto Rico as shall be equivalent to the discriminating duty that would have been imposed upon the cargoes of such vessels, respectively, if the same had been exported from Havana in American bottoms; and also upon Spanish vessels clearing out from the ports of the United States, such additional tonnage duty as would be equivalent to the discriminating duty payable upon their cargoes, respectively, if imported into Havana in American bottoms."

The bill reported became a law in June, 1834, and conformably to its provisions, the Secretary of the Treasury, in February, 1835, issued to the collectors of the customs his circular, in the following words: "I have to call the attention of the officers of the customs to the accompanying copy of the act of Congress concerning tonnage duty on Spanish vessels, approved the 30th June last, and which goes into operation on the 1st day of March next. Tabular statements are annexed, showing the rate of duty to be levied, in the nature of tonnage duty, on the arrival of Spanish vessels at any port in the United States, coming from the islands of Cuba or Porto Rico, either directly or after touching at any port or place, laden with merchandise subject to discriminating duty when exported from the port of Havana in American bottoms, together with the rate of duty to be exacted from the aforesaid vessels departing from a port of the United States, with a cargo destined, directly or indirectly, to either of the islands before described."

The above extract from the circular contains, in substance, the first 3 sections of the act of 1834. The 5th section shows the purport and scope of the act, and that it was designed by the committee from which it emanated, as well as by Congress in its adoption, to force the government of Spain into a more liberal and just course of legislation in regard to the commerce between the United States and this island, by placing Spanish vessels, with their cargoes, coming into or departing from the United States, in the same

condition, as to imposts of all kinds, that American vessels are subjected to in the colonies of Spain. This equality was demanded as imperatively in behalf of the interests of Cuba and Porto Rico, as in vindication of our commercial rights; and the 5th section expressly limits its continuance and restricts its application to the accomplishment of that end. This section is in these words:

"*And be it further enacted*, That whenever the President of the United States shall be satisfied that the discriminating duties in favor of Spanish bottoms levied upon the cargoes of American vessels in the ports of Cuba and Porto Rico have been abolished, or whenever, in his opinion, a satisfactory arrangement upon the subject of the said duties shall have been made between the United States and Spain, the President is hereby authorized to declare the same by proclamation, and thereupon this act shall cease to have any further force or effect."

In 1849 the Treasury Department ascertained that certain privileges had been accorded on the part of the Spanish government to vessels of the United States entering and departing from ports in the island of Cuba. A circular was immediately issued from that department, which, after citing the provisions of the acts of 1832 and 1834, and specifying the privileges alluded to, says: "It consequently follows, that where no tonnage duty or discriminating duty on the cargoes of American vessels entering or departing from ports or places in the island of Cuba is imposed and collected thereat, Spanish vessels coming from such ports or places are to be similarly treated, as regards tonnage duty, in the ports of the United States. The collectors of the customs are, therefore, instructed to abstain from the exaction of any tonnage duty on Sanish vessels coming from ports or places in the island of Cuba, in ballast, or when laden with cargoes of molasses taken in at either of said ports."

In 1852 a similar circular was issued to collectors, instructing them to admit Spanish vessels arriving from Spanish or any other foreign ports, those of Cuba and Porto Rico excepted [the royal decree of 3d January, 1852, excepted Cuba and Porto Rico from the privileges thus reciprocated], to entry on the same footing as American vessels, as regarded tonnage duty, light-money, and all other dues to the United States, so far as respects vessels. These acts (of 1832–34) have been in force now during a period of 22 years, and, with the exception of the slight privileges which called for the circulars already referred to, have failed to produce the effect contemplated by their enactment. The commerce between the United States and these islands, in the aggregate, has not fallen off; but the increase has not been such as should be expected from the great expansion of our general commerce, and the increased development of the agricultural and industrial resources of Cuba, since that period. The most obvious effect has been to exclude Spanish ships from our ports, and to destroy, in a measure, all that portion of the carrying trade hence to Cuba which comprised articles of foreign product; for the Spanish vessels, no longer permitted to engage in the carrying trade between the United States and Cuba, on more favorable terms than American vessels, were soon driven from our ports, and supplied the wants of the island from the countries where the articles were produced; and thus the hardware, glass, delf, and drygoods of England, that had been previously brought to the United States in American packet-ships, principally, from London and Liverpool to New York, were now directly imported into Cuba; and the same result has attended the carrying trade from France in her silks and fancy wares, and Germany in her cottons, linens, and hosiery.

The following table exhibits the number and nationality of vessels employed in the trade of Cuba during the three years 1826, 1829, and 1834:

Entered.	1826.	1829.	1834.
Spanish	188	896	797
United States	1,106	969	943
All other	365	837	294
Total	1,659	1,702	2,036
Cleared.	**1826.**	**1829.**	**1834.**
Spanish	127	866	717
United States	914	890	910
All other	247	814	290
Total	1,288	1,570	1,917

An analysis of the preceding figures will show an aggregate increase in the number of vessels entered from 1826 to 1829, of 43; and to 1834, of 377; and in vessels cleared, an increase, for the first period, of 282, and for the second, of 629. The increase in Spanish vessels entered from 1826 to 1829 was 208, and to 1834, 609 vessels. The decrease from 1826 to 1829 in the United States vessels was 137, and to 1834, 161; and the decrease in vessels from all other nations, for the first period, was 28, and to 1834, 71 vessels.

Table exhibiting the Value of Imports into Cuba during the three Years 1826, 1829, 1834.

	1826.	1829.	1834.
National commerce.			
National vessels	$409,852	$1,460,041	$3,412,487
Foreign vessels	2,449,440	3,501,002	
Deposit	1,759,621	2,521,442	1,134,407
Foreign commerce.			
National vessels	314,683	844,826	4,970,013
From United States	5,632,808	5,734,765	3,690,101
From France	1,160,451	1,245,947	906,414
From England	1,323,627	1,837,775	1,670,918
From Hanse Towns	1,293,989	1,005,749	562,690
From Italy, Holland, Portugal, Denmark, and East Indies	572,783	544,809	2,210,270
Total	$14,925,754	$18,695,856	$18,568,300

The preceding tables show an increase in the aggregate value of imports into the island in 1829 over 1826 of $3,770,102; while, during the second period, from 1829 to 1834, this trade remained stationary. A minute analysis of the figures, however, will show the significant fact that, while the carrying trade in Spanish bottoms has risen from $844,826 in 1829 to $4,970,013 in 1834, the imports from the United States, during the same period, fell from $5,734,765 to $3,690,101. During the three years compared, the imports into the United States from Cuba remained stationary, being in 1826 $3,894,597; in 1829, $3,191,535; and in 1834, $3,824,724.

Imports of Flour.—During the periods under review—indeed, at all times—provisions form the largest item in the imports from the United States. The enormous discrimination in favor of the national flag on flour has always had the effect of restricting almost exclusively to national vessels the trade in this article. Thus, in 1829 the value of flour imported into Cuba, in Spanish vessels, was $1,582,768, while from the United States it amounted only to $345,335, and from all other places to $13,662; and in 1849, or twenty years after, the value of flour imported in Spanish bottoms was $2,675,262; from the United States, $9,334; and from all other places, $1,725. The acts of 1832 and 1834 can, unquestionably, be traced in this great falling off in the article of flour; but, that other causes also contributed in securing for the Spanish flag so complete a monopoly of the trade in this article is demonstrated by the fact that, while the value of flour imported from all other places (than the United States) in 1829 amounted to $13,662, representing 1,093 barrels, we find this figure in 1849 dwindled down to $1,725, representing only 138 barrels. That the repeal of these acts would largely augment the export as well as the import trade of the United States with Cuba, there can be no question; but, until the discriminations in favor of the national flag are modified or removed, the carrying trade between the United

States and that island would, under their unequal and unjust operation, be almost exclusively monopolized by Spanish bottoms.

Commercial Policy of Spain.—The restrictive policy of Spain, especially as regards the trade of her colonies, is adhered to to-day, in Cuba and Porto Rico, almost as rigorously as when she was mistress of nearly the entire southern portion of this continent; and the stationary condition of the trade between the United States and these islands since 1834 would seem to indicate the fruitlessness of any efforts to force her from this line of policy by measures of retaliation or countervailing acts. So long as the system itself shall continue to be the colonial policy of Spain but little modification in its details need be looked for, whether the influence to that end be countervailing acts or diplomacy. "Be careful," says the instructions of the king and Council of the Indies to Luis de Velasco, viceroy of New Spain, early in the sixteenth century, "Be careful not to foster manufactures, nor to allow the cultivation of vines, inasmuch as there was always ample provision of these things, and the commerce of the kingdom should not be impaired by such colonial products;" and in the year 1610 these royal instructions were repeated, with the addition of the following emphatic language: "Inasmuch as you understand perfectly how much the observance of these rules is necessary for the dependence of the colonies, we charge and command you to see to their faithful execution." The same spirit that dictated this protection for the wine and oil of Spain, and for the exclusive trade in these articles to her American colonies, in 1610, remains unchanged in any degree (because there is no practical distinction between prohibitive discriminations and positive prohibitions) in the commercial policy, which, in 1856, two centuries and a half later, virtually excludes American flour, and many other staples, for which the inhabitants of Cuba must necessarily look to a foreign market.

Until the system itself is abolished, and Spain adopts the more liberal commercial policy which characterizes the present enlightened age; until she follows the example of Great Britain, Belgium, Holland, and other neighboring countries, in removing all unnecessary shackles from commercial enterprise, the commerce of Cuba, not only with the mother country, but with the United States, and all foreign nations, must remain as it has during the past quarter of a century—crippled, restricted, and struggling; incompetent as a source of revenue to the home government—inadequate to meet the expenses of the colonial, and almost powerless, from the restrictions with which it is burdened, in developing the exhaustless resources of the island, or even in supplying the necessary means of comfortable subsistence to the great bulk of its inhabitants, unless at prices far above their scanty means.

If the government of Spain could be induced to propose, or to agree, to a similar commercial reciprocity with the United States to that now existing between the latter country and the British North American provinces, it would not only supersede countervailing acts and retaliatory measures, by establishing the commercial relations between them on a basis of just and liberal reciprocity; but, it is believed that, while in a very short period it would make the island of Cuba the richest in wealth, as it is in natural resources, of any island of the same size in the world, it would also eminently contribute to cement more strongly, if not render indissoluble, the bonds of union between it and the mother country.

IMPORTS OF TOBACCO INTO THE UNITED STATES FROM CUBA, FOR THE YEARS ENDING JUNE 30TH, 1853, 1854, 1855.

	Unmanufactured.		Segars.	
	Pounds.	Value.	M.	Value.
1853	4,295,580	$764,529	177,944	$2,896,020
1854	4,552,187	799,871	171,822	2,760,229
1855	3,719,986	523,112	157,307	2,531,453

The following table exhibits the value of exports from the United States to Cuba during two periods, embracing three years each:

Years.	Value.	Quantity of Flour.	Value.
1834	$8,090,101		
1835	5,406,919		
1836	6,558,281		
1853	6,287,959	1,537 bbls.	$7,730
1854	8,551,752	11,598	82,489
1855	8,004,582	3,428	33,176

It will be seen from this table that the export trade of the United States to Cuba in 1853 is less than it was in 1836, while the increase in 1854 and 1855 is by no means proportionate to the rapid increase of our general commerce, and of the agricultural products of Cuba. Were the discriminations removed, flour would unquestionably become our leading staple export to Cuba. The importations of this article into Cuba in 1847, were 235,243 barrels, of which 175,870 barrels were from Spain, and 59,373 barrels from the United States. In 1848 the number of barrels imported fell to 231,119, of which only 18,175 barrels were from the United States. The most moderate estimate puts the consumption of flour in Cuba, were it admitted at reasonable duties, at from 800,000 to 900,000 barrels. That this trade would be enjoyed almost exclusively by the United States is evident from the fact that flour is among our heaviest articles of export, and European competition with a country within a few days' sail of the island would be out of the question.

The balance of trade between the United States and Cuba is enormously against the former. In 1853, this balance amounted to $12,297,796; in 1855 it was $10,620,757. The value of 500,000 barrels of flour, fixing the price at $5 per barrel, would be $2,500,000; or one fifth of the balance against the United States would be realized on the single article of flour alone. The increased quantities of bacon, pork, lard, and provisions generally, of domestic manufactures, etc., would render the commerce between this country and Cuba more equal, as well as more just; while the exports from Cuba to the United States would be proportionably augmented. One year's trade, if conducted on principles of reciprocity, would be sufficient to demonstrate the advantages which would result to both countries from the adoption of a policy commended alike by the products and wants of each, respectively, and by every principle of commercial economy.

Great as is the productiveness of Cuba at present, some writers assert that under a good government it would be increased fivefold; its mineral resources would then be fully developed, and it would be able fully to take advantage of its admirable position to develop its trade. The continuance of the present line of policy in reference to Cuba must in time lead to a revolution which Spain will be unable to quell.

Since the adoption of the Spanish tariff of the year 1830, in Cuba, several revisions have been made, and the rates of duty from time to time have been materially diminished, to the eminent advantage of the revenue; but there has still been retained, and in many instances increased, the differential duties in favor of Spanish products and national bottoms. The following instances of the operation of these differential duties will sufficiently exhibit their general character.

Lard.—An article of great consumption in Cuba, imported almost exclusively from the United States, is subject to a duty of 4½ cents per pound when brought from this country in American bottoms; the coarser qualities of oil (olive), which are imported for the same purposes, are delivered with a duty of 2 4-5 cents per pound; and the result is, that 10,000,000 pounds of lard, being a vastly superior article, are imported, while 8,500,000 pounds of oil from other countries, far inferior to lard, are enabled to compete with it in the markets of Cuba, because of the difference in price, in its favor, produced by the duty.

Productions.—Aguardiente (tafia, or rum) is distilled from molasses and the refuse of sugar-works. It is sold per pipe of 125 gallons, with or without cask, according to agreement; good tafia is of not less than 20 degrees, clear and transparent, slightly brown in color, and smooth taste. The exports of this article for the year 1856 were about 15,473 pipes, of which 7535 went to Spain; 150 to the United States; 294 to Great Britain; 2091 to Cowes, or Falmouth and a market; 640 to Hamburg and Bremen; 2637 to France; 588 to Trieste and Venice; 1879 to South America and Mexico; and the balance to Italy, Gibraltar, and a market. The exports of 1855 very considerably exceed any previous year, and from the number of extensive distilleries recently established, the article is likely to form a considerable item of exportation in future. It has commanded the last year as high as $45 and $48 per pipe during a portion of it; at the termination of the year it was quoted at $40 to $42, brisk. The number of pipes shipped were 21,102, of which 840 went to the United States; 3499 to Great Britain; 798 to Germany; 2114 to France; 12,787 to Spain; 809 to South America and Mexico; and the balance to Italy and other countries.

Leaf Tobacco.—Tobacco is one of the most important articles of production in the island of Cuba. The planters commence to plant in August or September, after the heavy rains are over, and when the northers may be looked for, which generally come accompanied by a drizzling rain that is favorable to the plant. In February or March, and as late as April, the tobacco is cut and taken to a house or shed, erected for the purpose of affording shade, and at the same time a free circulation of air; it is placed on *cujes* (poles), laid horizontally at some distance from the ground, where it is allowed to become perfectly dry until the spring rains commence, when the humidity seizes the leaf, causes it to swell, and to take the silky appearance peculiar to it. It is then taken from the poles and laid in a heap on the ground, the leaves being slightly sprinkled with water; in this state it undergoes a species of fermentation. After this operation is gone through, the leaves are placed in *manojos* (hands); afterward it is a very common practice to take a quantity of refuse leaves and infuse them in a certain quantity of water, and, in some instances, wine, and even alcohol, or, rather, tafia is used when the tobacco is light colored and weak, and it is desired to give it increased strength. This infusion undergoes a state of fermentation, after which the refuse leaves deposit themselves at the bottom. The tobacco is dipped into this preparation before being hung up in a room almost air-tight, where it undergoes the sweating, to which the name of *calentura* (fever) is given; the process of dipping is performed as many times as the tobacco may require. I am under the impression that this process might be used to great advantage with the Connecticut tobacco. The qualities of Cuba tobacco vary according to the section or district in which it is produced: that grown on the western end of the island is the celebrated Vuelta Abajo tobacco; that raised in other parts of the island, which is very inferior in quality, is known under the name of Vuelta Arriba. There is another class, called *Vara*, from which Puerto Principe cigars are made.

The best Vuelta Abajo tobacco is grown on the margins of certain rivers, which are periodically overflown, and is called *tobacco de rio*, distinguished from other tobacco by a fine sand found in the creases of the leaves. Good tobacco is aromatic, of a rich brown color (this color is preferred by those who are fond of a strong cigar, but there is many a light-colored leaf that is quite as strong), without stains, and the leaf thin and elastic, burns well without bitter or biting taste. There is probably no production of the earth that offers so many disappointments; the raising of it is subjected to many *contretemps*. If I am not mistaken, only one good crop is made in three years on an average. Tobacco is usually divided into five classes, to wit:

Calidad or Libra: this is the best tobacco; the bales always contain 60 hands or *manojos*, of 4 gavillas or fingers, of about 25 leaves each, and marked £60. The strongest cigar is made with this leaf. Infariado Principal or Primera (firsts): has less flavor than Libra, and is generally of lighter color. The leaves should be whole and elastic; 80 hands, of 4 gavillas (of 30 leaves), are in each bale, which is marked B 80. Segundas (seconds): many good wrappers in these; but the majority of the leaves are stained, have a bad color, or have been slightly touched by the worm. This wrapper is weaker than the firsts. This class is put up in bales of 80 manojos, of 4 gavillas, each of these of 85 to 40 leaves, and marked Y 2 *a* 80. Terceras, or thirds, constitute the best fillers, and some wrappers are found among them, especially if the tobacco is new. The bales have 80 manojos, of 4 gavillas, having upward of 40 leaves each; the bales are marked 3 *a* 80. Cuartas, or fourths: the most inferior class, fit only for fillers. The bales contain 80 manojos, of 4 gavillas; no determined number of leaves in the gavillas; marked 4 *a* 80. Vuelta Arriba tobacco is put up in the same, or a similar, manner.

It would be difficult, indeed, for any one to attempt to fix prices for tobacco; they vary from, say $10 to $170 generally, but occasionally fabulous prices are paid for that which is very good in quality, and which offers a fair prospect of yielding a large number of cigars. I have it from a very reliable source, that a little over a month since, the celebrated factory of *La Hija de Cabañas y Carbajal* paid the sum of $10,000 cash for a lot of only 45 bales, none of which exceeded 100 lbs. in weight. By the following quotations, given by our latest price-current, it will be perceived how varied the prices are for tobacco:

$120 to $140	for firsts, seconds, and thirds.	
60 to 80	for fourths.	According to quality, selection, and renown; all is Vuelta Abajo.
40 to 50	for fifths.	
20 to 30	for sixths.	
17 to 20	for sevenths and Capadura.	

When tobacco is shipped, it is generally covered with crash.

Cigars are made of all classes of tobacco, and of various sizes and shapes, and therefore of various values. There is probably no manufactured article so difficult to estimate the true value of as cigars; there are certain well-known brands that can command almost any price; they have a fixed value; such, for instance, as those of *La Hija de Cabañas y Carbajal*, *Cabargas*, *Patargas*, *La Higuera*, etc., and even among those of high reputation, and having apparently fixed prices, cigars are delivered at lower rates than those appearing in the bill of rates to persons that advance them large sums of money for the purchase of tobacco, and receive in payment large quantities of these cigars per month. These celebrated brands are known to be the purchasers of the best and highest priced tobacco; at the same time, it is well known that they purchase cigars from smaller factories, make selections with great care, pack them in their own boxes with their own brands, and obtain for these the same prices as for the cigars made at their own manufactories; and just as good an article may be procured elsewhere for half the price. But very few of the cigars proceeding from those celebrated factories are consumed on the island; and there are even some, but comparatively few of whose cigars are sent to the United States, and there are many whose works all go to the States. I mean, in the above remarks, in the way of trade. It would be quite impossible to give any positive figures in regard to the extent of manufacture of cigars in this island; notwithstanding all my diligence in procuring information, and the various modes employed for the purpose, my efforts have failed. The only mode I could find to

make an approximating estimate of the quantity manufactured is by estimating first the number of smokers in the Island. And here I met one great stumbling-block—"What is the population of Cuba?" It is calculated as low as under one million and as high as one million and a half.

It must be borne in mind that almost every man, and a very large portion of women, in the island smoke cigars; and although it is very true that a large number use the cigarritos or paper cigars, still, it is known that a very large portion of these also consume the other kind, or *puros*. My object has been to ascertain, in the first place, the home consumption. In my efforts to estimate the number of smokers by inquiries from both Spaniards and Germans, I find the estimate varying between 300,000 and 1,000,000. Ten cigars per day is considered about the average quantity consumed by each person. As my basis of calculation, I have put down the number at 400,000. This would give for the consumption of the island the almost incredible amount of 1460 millions of cigars per annum, equal to 1,460,000 boxes of 1000 each. Calculating each thousand to weigh 12 lbs., each smoker consumes 44 lbs. per annum. This, taken in connection with the amount of exports from all parts of the island, that can not be less than the consumption, swells the figures to an extent that is startling, and makes me doubt the basis of my calculation. And yet I am told by many that I am rather under than over the number of smokers, and the quantity they consume per day.—*Consular Report to the Department of State, United States.*

Sugar.—This is considered the greatest staple of the island of Cuba. The grinding of the cane generally commences in the month of December, and the sugars are brought to market from January, and sometimes as early as the middle of December, until July; the greatest quantities come in March, April, and May. There are two kinds made, known as "clayed" and "Muscovado;" the greatest quantity by far is clayed. Of this, the principal division is: Florete, white, yellow, brown, and Cogucho. It is packed on the plantations. The clayed is put in boxes, weighing from 450 to 500 pounds gross; the tare usually is 47 pounds. A merchantable box of sugar must weigh 16 arrobas (of 25 lbs.) net; if a little under, a deduction of 50 cents per box is made; and if much under, the sugar is rejected, as the export duty is upon the box, and it would not be for the interest of the shipper or exporter to accept any box weighing less than 16 arrobas. Muscovado is put in casks, weighing from 1200 to 1500 pounds gross; tare, 10 per cent. Clayed sugar is usually sold in lots, assorted half whites and half yellow or browns, per sample, by licensed brokers; it is examined before received, and that which is not equal to sample rejected. When sugar remains long in store it becomes moist and loses its grain.

The export of sugar from Havana, according to Humboldt, amounted, in the four years, 1760–'63, every year only to about 13,000 boxes. Nine years, 1770–'78, every year only to about 50,000 boxes.

The great increase in the production of sugar in this island commenced about the year 1820, when steam was substituted upon plantations for ox or mule power. Nearly two-thirds of the quantity exported is from Havana, and the largest portion on American bottoms. The official returns of exports can not be considered as correct; for many a vessel has been cleared as laden with a full cargo of molasses when she carried a full cargo of sugars, and thereby not only defrauded the royal revenue of the export duty upon the sugar, but had her tonnage duty not levied or returned to her, and in former years many vessels having a full load of sugars cleared in ballast; but even supposing that they gave the true quantity exported, they certainly give no idea of the extent of the crop. The consumption on the island it is impossible to estimate; the quantity is almost incredible. No country in the world consumes so much sugar as the people of this island in proportion to the population. Rich and poor, every table—almost without exception, exclusive of the negroes upon plantations—is furnished, more or less, with the preserved fruits of the country, and the quantity of preserved fruits sent to all parts of the world is very great. And then is to be considered the sugar that is consumed in a country where every white inhabitant, and a large portion of the colored population also, take coffee three or four times a day. The prospects of the present crop, from all parts of the island, were never more flattering. It is probable that there will be a large increase over the last year's crop. Contracts have already been entered into, paying as high as $22 per box. The boxes and casks are paid for separately, as will be exhibited in the *pro forma* invoices given in continuation. The brokerage upon sugar is 1 per cent., of which the purchaser pays a half per cent. and the seller the other half per cent.—*Consular Returns, United States*, 1854–'55.

Coffee.—The production of this article has rapidly diminished during the last 14 or 15 years on the north part of Cuba, owing to the low prices, scarcity of laborers, and consequent high rates of wages, and the larger profits in the cultivation of the sugar-cane. The berry begins to ripen about August, when the picking is commenced, and continued until December or January next. It begins to flower in February, March, April, or May; the third flower gives the best coffee; the article is brought to market throughout the year; but in December, January, and February, and even as late as March, it comes in greatest quantities. The packing in sacks of from 6 to 8 arrobas of 25 pounds is effected on the plantations; the tare of a sack is 2 pounds. Coffee is sold by regular licensed brokers by sample, and before being received is examined, and if not equal to the sample is rejected. It is usually classed into five grades: Superior, First, Second, Third, and Tréache. There is a class called *Caracolillo*, a round bean, the produce of the first bearing year, when the pods have only one kernel; after the first year the pods have two kernels. Coffee, when a long time in store, loses its aroma, and fades in color; when good, the berries are smooth, equal, and unbroken, free from stones or unpleasant smell, and of a fresh green color. The cultivation of coffee was introduced in the island of Cuba in 1797–'98 by the French emigrants from Hayti. In 1804 the exports were 50,000 arrobas; in 1809, 320,000 arrobas.

It will be observed how sadly the production of coffee has decreased within the last few years. The time is now fast approaching when none will be raised on this side of Cuba, and then the inhabitants will have to depend upon the coffee raised in the district of St. Jago de Cuba, which is still quite large in quantity; and were it not for the immense quantity of beans, corn, and other grain that are roasted and mixed with the real coffee, the quantity of the latter would scarcely suffice for the consumption of a country where it is used in such great quantities. It is believed by many that the time will arrive when the island of Cuba will have to import coffee for the consumption of her inhabitants.—*Consular Returns, United States.*

Custom-house.—Business transacted at the custom-house in Havana is all done in writing, and pretty much all upon stamped paper, mostly at 50 cents a sheet, excepting that for outward register, called *papel de ilustres*, costing $8 the sheet. Vessels that go to outports to load have to pay anchorage and other small fees, averaging some $15 or $16 each. At Cienfuegos every vessel pays the health commissioner $2, and as much more if ordered to quarantine. At Matanzas, besides the charges recovered as here, the government exacts $4, and the royal exchequer $4. At Sagua an extra fee is exacted of $4 if she enters in ballast and leaves with cargo, and $8 if she brings cargo and carries away cargo.

COMMERCE OF THE UNITED STATES WITH CUBA, FROM OCTOBER 1, 1820, TO JULY 1, 1856.

Years ending September 30.	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage Cleared.	
	Domestic.	Foreign.	Total.	Total.	Exported.	Imported.	American.	Foreign.
1821.....	$2,950,055	$1,590,625	$4,540,680	$6,584,849	$265,162	$1,163,258	108,822	8,632
1822.....	3,201,045	1,069,578	4,270,618	6,967,054	221,551	590,169	99,338	6,986
1823.....	3,271,970	2,184,095	5,405,965	6,952,981	353,406	271,764	105,886	4,756
1824.....	3,611,698	2,195,840	5,807,538	7,899,326	269,098	1,102,746	124,888	4,845
1825.....	3,276,556	1,844,146	5,120,702	7,556,412	147,515	545,164	111,208	1,212
1826.....	3,749,658	2,382,774	6,132,432	7,658,759	408,928	410,506	121,754	2,184
1827.....	4,160,747	2,655,341	6,816,088	7,241,949	876,168	478,590	139,881	3,543
1828.....	3,919,997	2,490,994	6,403,991	6,128,195	737,010	579,228	160,618	3,909
1829.....	3,719,363	1,859,096	5,578,889	4,866,924	532,144	803,920	114,599	8,120
1830.....	3,439,060	1,477,675	4,916,735	5,577,230	275,687	862,084	114,054	11,356
Total...	$35,292,844	$19,700,689	$54,993,033	$67,427,519	$4,129,969	$5,867,424	1,165,493	50,493
1831.....	$3,634,144	$1,259,608	$4,893,842	$8,871,797	$800,500	$181,774	132,222	17,816
1832.....	3,631,397	1,630,754	5,812,151	7,068,857	189,152	91,065	126,588	25,632
1833.....	3,966,118	1,706,587	5,672,700	9,754,787	458,228	99,858	133,698	31,051
1834.....	3,692,980	1,859,455	5,852,435	9,096,002	143,469	606,665	129,524	29,954
1835.....	3,917,496	1,589,372	5,506,868	11,846,015	345,175	266,256	151,318	26,783
1836.....	4,601,717	1,803,772	6,405,489	12,784,875	516,142	122,518	166,460	8,329
1837.....	4,303,783	2,063,820	6,367,603	12,447,922	507,147	1,648,110	175,796	18,194
1838.....	4,721,483	1,454,825	6,175,758	11,694,512	235,280	410,794	193,746	16,618
1839.....	5,025,626	1,091,205	6,116,831	12,599,842	178,497	321,814	194,578	12,805
1840.....	5,331,471	979,044	6,310,515	9,835,477	149,570	548,168	192,548	15,679
Total...	$42,876,100	$15,288,082	$58,114,182	$104,950,987	$3,023,160	$4,296,517	1,593,478	191,891
1841.....	$5,107,011	$632,071	$5,739,082	$11,567,027	$156,461	$184,909	194,001	14,168
1842.....	4,197,468	572,981	4,770,449	7,650,429	100,102	235,940	182,456	9,719
1843*....	2,926,922	399,375	3,326,797	5,015,933	128,495	655,365	186,338	4,897
1844.....	4,804,062	984,333	5,238,395	9,930,421	573,910	170,927	224,618	7,588
1845.....	6,203,803	360,946	6,564,754	8,804,414	14,999	592,168	171,892	16,193
1846.....	4,713,966	779,170	5,493,136	8,159,632	329,801	509,991	177,590	12,338
1847.....	6,005,617	972,089	6,977,706	12,394,867	615,774	891,767	248,515	18,498
1848.....	6,432,330	464,333	6,896,713	12,853,472	110,049	763,289	231,251	13,495
1849.....	4,641,145	668,068	5,309,213	10,659,956	318,800	442,598	254,568	19,564
1850.....	4,530,256	460,041	4,990,297	10,292,898	177,355	286,011	254,018	29,703
Total...	$49,062,695	$6,238,107	$55,300,742	$95,328,519	$2,524,446	$4,118,790	2,150,297	146,098
1851.....	$5,239,270	$1,284,847	$6,524,123	$17,046,961	$1,084,064	$389,018	361,782	29,942
1852.....	5,803,196	714,355	6,517,551	17,861,728	371,657	276,112	379,603	22,780
1853.....	5,773,419	514,540	6,287,959	18,585,755	128,830	88,092	365,392	22,730
1854.....	8,228,116	323,636	8,551,752	17,124,839	61,786	126,558	398,049	25,188
1855.....	7,607,119	397,463	8,004,582	18,625,839	49,872	188,487	481,545	31,190
1856.....	7,199,085	610,228	7,809,263	24,435,698	384,062	23,945	483,796	13,336

* 9 months to June 30, and fiscal year begins July 1.

The following table will show the values of lard and oil imported into Cuba, in 1851, 1852, and 1853:

1851	Lard..... $891,748	Olive oil.....	$477,259
1852	" 883,775	"	485,264
1853	" 861,036	"	472,788

Meats.—The existence of a differential duty on meats imported in Spanish bottoms, draws the supply of this article in the markets of Cuba from Buenos Ayres to the extent of 30,000,000 pounds annually; while from the United States it comes to a very limited extent, notwithstanding the quality of the article imported from the United States is far superior to that from South America.

The following table exhibits the quantity of jerked beef imported into Cuba during the years, 1850, 1851, 1852, and 1853, and the countries whence exported. The arroba equals about 25¼ lbs.

Years.	From the United States.		From Spain, Central and South America.	
	Arrobas.	Dollars.	Arrobas.	Dollars.
1850	5,244	8,860	1,208,016	1,633,101
1851	5,377	7,802	1,376,552	1,673,910
1852	4,419	6,236	1,163,241	1,607,322
1853	674	1,058	1,016,695	1,367,140

The following table shows the exports of sugar from Havana and Matanzas, for the years 1853, 1851, and 1855:

EXPORT OF SUGAR IN BOXES FROM HAVANA AND MATANZAS.

To	1853.	1854.	1855.
United States.....	149,574	154,856	197,179
Great Britain.....	14,858	67,410	42,053
Cowes, and a market....	225,518	274,872	213,230
Baltic.....	39,885	15,487	28,968
Hamburg and Bremen...	15,171	44,271	33,683
Holland.....	8,826	7,930	10,092
Belgium.....	11,626	24,908	25,317
Spain.....	81,750	81,880	190,348
France.....	50,630	67,580	118,803
Trieste and Venice.....	29,682	41,866	19,785
Leghorn and Genoa.....	7,567	3,428	5,568
Other Ports.....	5,849	4,737	15,256
Total boxes.....	635,861	787,755	908,177

TABLE EXHIBITING THE VALUE OF FLOUR IMPORTED INTO CUBA FROM 1847 TO 1853, DIGESTED FROM THE "BALANZAS GENERALES" OF THAT ISLAND.

Years.	From Spain.	From the United States.	From England.	From other countries.
1847	$2,187,978	$528,635	$63,684	$14,517
1848	2,650,628	174,405	9,711	25,650
1849	2,672,500	9,382	5,961	125
1850	3,204,928	6,065	1,250	....
1851	3,081,525	26,281	650	....
1852	3,971,909	91,664	2,725	....
1853	2,677,791	29,830	30,149	25

The duty in Cuba on flour imported from Spain is $2 50; on that imported from the United States, in American or other foreign bottoms, is $10 81; the effect of which is to drive the American article entirely from the Cuban market, except at such times as when scarcity may have carried it up to famine point. The tonnage duty that exists on Spanish bottoms is 62½ cents per ton, and on foreign shipping $1 50 per ton, contributing, in combination with other differential duties and restrictions, to the Spanish flag, advantages in the carrying trade of the products of that island to the northern European ports.

The imports of flour into Cuba from the United States, from 1853 to 1856 inclusive, are shown in the following table:

Year ending June 30.	Barrels.	Value.
1853	1,537	$7,730
1854	11,593	82,489
1855	3,423	33,176
1856	8,806	80,066

Board of Trade.—The annual report of the Board of Trade of the island, to the superintendent of the royal treasury, of the general navigation and commercial movements of the island, in the year 1850, sets forth these facts in a manner worthy attention. It shows that in 1850 there had been an increase over the last year of $2,088,226 in the value of goods imported in national vessels, but that the importation in foreign vessels had only increased $574,540; a result to be ascribed to the protective and differential system which

favors Spanish over foreign shipping, and on which the present tariff is based. In regard to exportation, exactly the contrary state of facts will appear. In 1850 the exports in foreign vessels increased $2,748,287, while the increase in national bottoms was only $447,104. These different results are traceable to two causes, namely: as to imports, to the discriminations, both in respect of tonnage and tariff duties, in favor of the national flag; and as to exports, to the advantages which foreign vessels, exporting the products of the island, enjoy as national vessels in the countries to which they respectively belong—advantages which, in general, more than countervail the discriminating export duty in Cuba in favor of the national flag.

In the year 1849 the value of importation was $26,320,460, an increase over the previous year of $885,892—an amount much less, however, than had been expected from the steady progress of the island; and in the same time the importation diminished, as it appears, in many articles of provision. Foreign flour, preserved meats, cod-fish, bacon, jerked beef, lard, butter, and foreign wine (although the national wine increased to an amount, in value, $200,000), fell in the scale of quantity, and the article of rice increased more than 8,000 arrobas over the importation of the last year, in consequence of the cargoes of that article from Manilla; so that had it not been for this, and the increased amount of some other provisions imported, articles of manufacture and coin, the yearly account would have exhibited a still more considerable diminution. This state of things was considered by the Board* to be the result of some evident causes, such as the extreme drought, which affected the crops of the season, and the prevalence of cholera in the ports of Europe and the United States, rendering sanitary measures necessary, which interfered with the natural flow of commerce. But, be these causes what they may, a result of the year was an amount of carrying trade under the Spanish flag to the island, of more than $1,000,000 in the value of effects imported; and if the produce of the Peninsula, brought in national vessels, be taken into account, the increase of this branch of business reached, in twelve months, near $700,000, which was considered to be the result of the differential duties existing.

VALUE OF THE IMPORTATION OF RICE INTO CUBA, IN THE YEARS 1848 AND 1849.

From	1848.	1849.
Spain and her colonies	$228,943	$140,925
Spanish American republics	101,664	51,418
United States	701,118	799,499
Other countries	15,521	41,234
Total	$1,047,246	$1,039,076

From earlier tables, it appears that in the year 1826 the value of Spanish produce, arriving at Cuba in Spanish ships, amounted to only $409,352; in the year 1830 it reached $3,000,000; it exceeded $5,000,000 in 1840, and at the close of 1848 had risen to more than $7,000,000. Foreign produce brought in national vessels in 1825 amounted to $2,449,440, exceeded $5,000,000 in 1840, and reached near $8,000,000 in 1848, when the Spanish flag, in both commercial movements, came to float a value of $14,936,811. The duties arising on importations in the year 1849, were $5,844,783; on exportations, $584,477; making a total of $6,429,260, diminishing, when compared with the preceding year, in the one instance $436,621, and in the other, $124,836; making a total of $561,457. Foreign flours fell off 16,654 barrels, although the Spanish increased 1,121 barrels; and a general increase of importations of national produce had ensued, and a lessening of foreign, which tended greatly to decrease the amount of duties. The commercial action of 1848 and 1849, and of succeeding years, is illustrated by the following tables, made up from the official exhibits compiled, annually, for the government:

* Balanza General del Comercio de la Isla de Cuba, 1849.

COMMERCE OF CUBA WITH FOREIGN NATIONS, FROM 1848 TO 1854. [FROM THE "BALANZAS GENERALES."]

Countries.	1848.		1849.		1850.		1851.		1852.		1853.		1854.	
	Imports.	Exports.	Imports.	Exports.	Imports.	Exports.	Imports.	Exports.	Imports.	Exports.	Imports.	Exports.	Imports.	Exports.
Spain	$7,085,720	$3,927,007	$7,682,757	$3,118,070	$3,640,625	$3,071,094	$2,500,258	$2,896,328	$10,200,499	$3,588,684	$7,756,905	$3,996,571	$9,057,428	$3,015,692
United States	6,983,598	8,285,893	6,578,235	6,301,657	6,653,960	8,329,952	8,149,077	13,222,544	6,552,855	12,076,408	6,729,723	12,181,065	7,467,660	11,641,818
England	4,974,545	7,064,798	5,810,670	7,197,420	6,117,669	7,061,056	7,374,968	7,159,396	5,898,924	5,848,677	6,196,921	8,822,855	6,010,909	11,119,526
France	1,194,201	1,252,466	1,212,969	1,747,590	1,562,596	1,739,368	1,469,168	2,203,354	1,518,968	2,117,222	3,293,289	2,258,196	1,921,464	1,931,464
Germany	1,458,439	1,228,681	1,712,067	2,107,298	1,871,620	1,892,576	1,702,047	2,242,220	1,690,165	1,118,940	1,473,018	1,420,698	1,814,894	1,814,894
Belgium	67,865	402,785	678,562	963,998	818,881	2,759,197	412,848	5,119,982	821,260	1,677,476	994,511	514,531	2,145,570	671,290
Spanish America	3,915,806	508,456	2,197,690	572,083	2,001,664	575,337	748,066	2,144,615	501,160		1,467,346		2,435,276	14,166
Portugal and Brazil	2,166,278	356,774												
Holland	199,067	864,690	194,147	801,365	190,479	748,066	2,759,197	575,337	2,001,664	572,083	2,197,690	963,998	1,571,620	2,107,298
Denmark	105,085	31,894	12,849	14,720	38,892	818,881	963,998	412,848	5,119,982	821,260	501,160	1,677,476	514,531	1,931,464
Russia	478,750	109,831	857,184	590,754	320,200	446,770	1,702,047	2,242,220	1,690,165	1,118,940	1,473,018	1,420,698	1,814,894	1,814,894
Sweden and Norway	....	30,409	....	96,150	....	11,902	1,871,620	1,892,576	1,702,047	2,242,220	1,690,165	1,118,940	1,473,018	1,420,698
America	17,766	1,723	27,818	16,964	13,997	27,148	27,693	94,369	19,580	15,439	941,455	16,809	138,056	16,483
Italy	570,864	1,093,723	590,608	135,198	698,291	570,712	482,856	482,856	32,369	941,455	880,556	69,022	651,275	24,082
Deposit	....	....	....	....	....	....	....	....	....	880,556	977,011	....	....	310,865
Total	$25,435,565	$26,077,965*	$26,320,460†	$24,436,596	$25,938,227	$25,691,945	$23,911,430	$31,841,693	$29,780,242	$27,458,998	$31,789,860	$31,210,405	$31,394,573	$32,658,731‡

NOTE.—The totals in these tables, in some instances, differ from the actual amounts of the sums given; but as the fractional parts of the dollar are omitted, and as it is more likely that typographical errors have occurred in the hands of the printer than in the calculations at the Havana custom-house, the figures found in the Balanzas are in no instance departed from.

* To make this total, add for Prussia, $36,900.

† To make this total, add for Prussia, $120.

‡ To make this total, add for Prussia, $5,958.

STATEMENT OF THE QUANTITIES OR VALUES OF THE PRINCIPAL ARTICLES OF SUBSISTENCE IMPORTED INTO CUBA, DURING THE YEARS 1848 TO 1854.

Yrs.	Rice.	Codfish.	Spanish Flour.	Foreign Flour.	Beef.	Pork.	Ham.	Lard.	Butter.	Cheese.	Jerked Beef.	Bacon.	Spanish Wines.	Foreign Wines.
	Arrobas.	Arrobas.	Barrels.	Barrels.	Pounds.	Pounds.	Pounds.	Arrobas.	Pounds.	Pounds.	Arrobas.	Pounds.	Dollars.	Dollars.
1848	864,278	883,069	212,944	18,176	819,200	1,113,100	2,522,525	873,706	693,473	1,667,270	1,270,677	659,680	1,248,492	103,349
1849	872,806	577,465	214,940	1,597	396,225	763,400	1,776,088	965,024	763,941	1,806,114	1,184,096	525,909	1,474,105	101,343
1850	917,868	445,605	256,606	845	368,040	910,906	1,837,382	894,891	599,688	1,426,406	1,313,260	859,801	1,700,162	75,871
1851	29,069	524,924	240,697	2,826	489,042	624,200	1,655,500	898,401	594,194	1,422,511	1,881,930	849,923	1,580,886	99,260
1852	837,637	541,742	320,922	7,028	775,350	436,787	776,963	294,509	460,419	1,595,670	1,263,613	457,245	1,681,994	173,408
1853	1,168,672	583,585	214,466	5,100	516,050	628,225	1,172,550	286,830	509,140	794,931	1,017,869	497,105	1,542,795	164,692
1854	1,070,240	621,301	281,897	7,237	789,100	687,495	1,569,852	374,817	462,265	1,250,684	1,876,875	696,925	1,265,068	318,866

STATEMENT OF THE QUANTITIES OR VALUES OF THE PRINCIPAL ARTICLES OF SUBSISTENCE EXPORTED FROM CUBA DURING THE YEARS 1848 TO 1854.

Years.	Aguardiente. (Rum.)	Cotton.	Sugar.	Coffee.	Beeswax.	Woods.	Honey.	Molasses.	Copper ore.	Leaf tobacco.	Segars.
	Pipes.	Pounds.	Boxes.	Arrobas.	Arrobas.	Dollars.	Hhds.	Hhds.	Quintals.	Pounds.	M.
1848	16,389	28,590	1,328,718	694,137	50,110	350,205	56,528	228,726	656,191	6,275,680	161,480
1849	11,640	73,655	1,099,884	877,636	35,691	317,304	43,108	246,570	588,310	4,619,133	128,720
1850	4,825	68,475	1,249,618	520,134	54,194	359,128	55,192	269,044	552,238	7,978,148	212,640
1851	9,231	12,445	1,530,994	573,119	57,478	398,811	69,625	318,428	492,882	9,436,591	270,818
1852	11,350	12,009	1,409,012	739,326	58,591	458,945	78,688	262,598	881,470	9,787,443	149,567
1853	14,294	188,625	1,657,192	442,730	45,946	448,439	85,959	308,831		8,039,797	237,850
1854	25,272	87,262	1,685,751	511,498	71,884	547,819	104,812	261,815	549,553	9,809,150	251,313

STATEMENT OF THE QUANTITIES OR VALUES OF THE PRINCIPAL ARTICLES EXPORTED FROM CUBA, 1848–1854.
[MADE UP FROM THE "BALANZAS GENERALES."]

Articles.	1848.	1849.	1850.	1851.	1852.	1853.	1854.
Coffee .....arrobas	694,137	877,636	520,134	575,119	739,326	442,730	511,498
Cotton..... do.	1,143	2,946	3,889	521	12,009	5,545	1,490
Cacao..... do.	3,485	5,170	7,788	7,680	38,614	37,857	18,650
Majagua (ent)..... dollars	7,857	3,864	11,076	28,179	1,458	1,021	59
Beeswax (brown)...arrobas	15,566	16,582	18,234	18,440	27,810	26,406	29,049
Beeswax (white) do.	34,544	19,158	39,960	44,004	31,281	19,540	42,222
Tobacco, leaf.....pounds	6,275,680	4,619,133	7,978,148	9,436,591	9,787,443	8,039,797	9,809,150
Turtle-shell..... do.	2,395	3,678	4,884	30,140	3,848	4,363	2,730
Sugar..... boxes	1,328,718	1,099,884	1,249,618	1,530,994	1,409,012	1,657,192	1,685,751
Molasses..... hhds.	228,726	246,570	269,044	318,428	262,598	308,831	261,815
Copper ore.....quintals	656,191	583,310	552,238	492,882	881,470	345,080	549,553
Guano (palm leaf)...seroons	26,044	36,038	53,811	47,361	42,551	4,283	10,411
Aguardiente ..... pipes	16,336	11,640	11,825	9,221	11,359	14,294	25,272
Segars.....thousands	161,480	123,720	208,212	270,818	180,610	237,350	251,313
Cigarillos & picado. dollars	110,066	89,110	77,299	105,445	54,796	84,595	178,825
Honey..... do.	56,529	48,103	55,192	69,625	78,688	85,959	104,812
Fruits, etc ..... do.	87,967	24,819	54,747	62,044	83,476	69,106	82,628
Woods..... do.	350,205	317,304	359,128	398,811	458,945	448,438	547,819
Metals (old)..... do.	102,688	86,592	84,880	62,254	80,126	103,100	99,198
Mats..... do.	48,483	7,602	6,774	7,188	8,008	50,624	12,693
Manufactures ..... do.	70,143	47,382	41,087	49,587	236,080	151,522	99,136
Liquids & provisions do.	96,284	106,813	131,098	142,058	107,510	88,456	124,277
Hides..... do.	7,988	8,150	9,855	5,849	25,548	21,162	21,185
All other articles... do.	174,972	349,492	231,772	260,383	434,876	395,028	130,724
Total value of *all* exports	$26,077,067	$22,486,536	$25,681,948	$31,341,683	$27,458,936	$31,210,405	$32,688,731

STATEMENT OF THE VALUES OF THE PRINCIPAL ARTICLES IMPORTED INTO CUBA, FROM 1848 TO 1854.
[FROM THE "BALANZAS GENERALES."]

Articles.	1848.	1849.	1850.	1851.	1852.	1853.	1854.
Articles of subsistence.							
Olive oil.....	$563,717	$567,440	$707,974	$477,259	$485 264	$472,783	$488,102
Liquids.....	2,042,042	2,164,920	2,448,561	2,347,786	2,568,308	2,359,058	2,736,874
Meats	2,075,129	1,971,262	1,978,011	1,985,428	1,909,393	1,625,657	2,215,029
Spices.....	58,434	62,984	66,538	80,442	92,065	81,146	97,514
Fruits, nuts, preserves.....	240,304	271,017	259,445	287,586	305,374	275,340	273,742
Rice.....	1,075,636	1,092,597	1,138,744	1,159,656	1,046,604	1,072,685	1,000,221
Cereals, flour, pulse, cacao.	3,220,682	3,067,544	3,410,988	3,644,154	4,404,497	3,127,293	4,388,846
Lard and butter.....	1,176,084	1,200,755	968,072	974,781	948 143	941,408	1,197,643
Cheese.....	160,838	149,751	147,924	171,662	186,245	89,416	153,135
Fish.....	723,602	658,680	521,348	619,205	668,424	599,285	678,323
Ice.....	....	189,753	201,687	199,842	72,717	97,942	119,985
Dry goods.							
Cottons.....	2,177,716	2,487,205	2,595,909	3,021,009	2,661,567	3,080,874	2,595,098
Woolens.....	405,851	497,883	522,422	481,702	359,060	487,187	424,673
Linens.....	2,028,350	2,340,992	3,151,798	3,523,084	2,481,564	2,198,592	2,425,195
Silks.....	486,072	330,943	427,967	529,812	598,747	583,165	654,856
Other manufactures.							
Skins and peltries.....	475,152	483,710	476,801	580,457	635,874	703,802	864,925
Wood.....	2,312,733	1,721,299	1,885,875	2,211,229	2,042,136	1,868,960	2,402,807
Metal.....	188,084	218,266	230,749	280,209	156 985	166,460	167,172
Glass.....	72,284	64,450	95,583	104,504	17 97	217,258	141,510
Iron-ware.....	1,061,893	993,044	1,098,813	1,186,579	1,2.0,095	1,634,585	1,578,945
Soap.....	420,432	518,315	479,525	515,139	581,067	518,220	529,130
Medicines	99,441	96,430	141,007	168,925	137,186	150,423	142,960
Furniture.....	120,091	94,106	107,982	157,628	131,200	169,963	164,084
Perfumery.....	27,982	43,219	50,473	65,141	103,944	171,646	115,388
Candles, sperm, lard.....	123,882	134,672	178,826	183,901	140,844	171,247	127,871
Tobacco of all kinds. *Cuba.*	22,729	22,676	18,223	20,769	27,672	17,852	20,926
Gold and silver	759,191	858,614	1,861,658	2,511,408	989,424	479,560	288,937
Total value of *all* imports	$25,485,565	$26,926,460	$28,983,227	$32,311,430	$29,780,242	$27,789,800	$31,394,578

In 1851 Cuba imported to the amount of $32,311,430, being an increase over the year 1850 of $3,328,203, which exceeded the importations of 1849 nearly two millions of dollars. The only articles that had suffered diminution were liquids, woolens, and materials for railroad cars.

Under the national flag..... $19,899,176
Under foreign flags..... 12,412,254
Total importations in 1851, $32,311,430

NUMBER OF VESSELS ENTERING THE PORTS OF CUBA FROM 1848 TO 1854.

Nation.	1848.	1849.	1850.	1851.	1852.	1853.	1854.
Spanish	875	877	878	883	947	901	928
United States	1,733	1,689	1,596	2,014	1,886	2,807	2,180
English	670	451	493	570	476	368	467
French	85	67	125	116	82	126	100
German	72	58	70	74	60	57	67
Danish	20	11	24	35	32	20	29
Dutch	21	24	20	25	36	24	25
Belgian	23	24	49	61	27	45	24
Span. American	15	9	7	13	11	13	16
Swed. & Norweg.	16	12	25	27	11	17	16
Russian	7	15	22	14	8	7	1
Prussian	2	13	9	7	27	17	4
Sardinian	6	9	11	....	....	....	....
Brazilian	2	8	2	3	2	2	....
Austrian	1	1	18	23	2	8	....
Italian	....	....	2	4	5	6	4
Total	3,548	3,213	3,356	3,369	3,612	3,918	3,911

The imports under the Spanish flag exceeded those of 1850 by $1,444,104—a result that was considered chiefly attributable to the system of duties in force; under foreign flags, the importations, which for several years had rarely exceeded eleven millions of dollars, increased in 1851 to the amount of $1,884,098 over the previous year. The merchandise brought from Spanish ports amounted to more than eight and a half millions of dollars, being $852,181 more than the total imports from the United States; $1,225,300 more than those from Great Britain; $5,740,461 more than those from the former Spanish possessions, and nearly 25 per cent. on the total amount of imports from all countries.

The exports of 1851 exceeded those of 1850 by $5,709,735, which was an increase over 1849 of more than three millions of dollars. The following will shew the relative proportion of the exports in Spanish and foreign bottoms in 1851:

	Imports.	Exports.
In national vessels	$19,899,176	$6,204,653
In foreign vessels	12,412,254	25,137,029
Total in 1851	$32,311,430	$31,341,682

Of the exports this was an increase over 1850 of $184,013 in national ships, and $5,525,721 in foreign ships; which was nearly equal to the value of the increased production and exports of the island over the preceding year. The quantity of sugar exported from the island in 1851 was 281,381 boxes over 1850, which exceeded the previous year nearly 150,000 boxes. The increase of the important staples of molasses, coffee, and tobacco (raw and manufactured), though not so great, was highly important. These facts are significant of the force of foreign reciprocal duties, and forcibly demonstrate that any discriminating export or tonnage duty on foreign vessels, sufficiently effective to give this ontward movement to the Spanish flag, must fatally injure the productiveness, national commerce, and industry of the island.

The amount of shipping which entered the ports of Cuba during 1850 and 1851, was as follows:

	1850.	1851.
Under the national flag	24,112	270,176 tons.
Under foreign flags	99,864	727,814 "
Total	123,976	997,990 "

A comparison of the returns for the year 1845 with those for the year under review gives to the Spanish flag an increase, during that period, of nearly one hundred per cent.

The value of the importations diminished in the year 1852 $2,531,188, and the exportations $3,887,746, below those of the previous year. The falling off in imports was on the articles rice, 91,382 arrobas; pork, 187,413 pounds; hams, 878,532 pounds; lard, 3,891 arrobas; butter, 133,775 pounds; jerked beef, 118,317 arrobas; and in exports, on cotton, 1,036 pounds; sugar, 130,982 boxes; molasses, 55,834 hogsheads; copper, 51,412 quintals; segars, 127,746,000. The great falling off in the item of sugar could not have failed to act in a corresponding manner on the amount of tonnage, and measurably, on the value of imports. The importations in 1853 reached an aggregate value of $27,789,800—an amount exceeded, the preceding year, by $1,990,441. The articles which suffered the greatest diminution were codfish, flour, beef, lard, cheese, jerked beef, bacon, Spanish and foreign wines. While thus the value of imports diminished, that of exports considerably increased. The total increase over 1852 amounted to $3,756,468.

The United States exported to Cuba in 1856 goods to the value of $7,809,263, being a decrease on the exportations of the preceding year of $195,819; and imported to the value of $24,435,693, showing an increase of $5,810,254. The total trade between Cuba and the United States is usually about the third part, or 33⅓ per cent., of the total imports and exports of the island. The total number of vessels entering the ports of Cuba in 1853 was 3,918; total number cleared, 3,827. The following table exhibits the nationality of these vessels:

Nationality.	Entered.	Cleared.
Spanish	901	882
United States	2,307	2,173
British	368	461
French	126	121
Belgian	45	26
Dutch	24	18
German	57	67
Danish	20	23
Swedish	17	22
Russian	7	11
Prussian	17	7
Spanish American	13	11
Italian	6	5
Brazilian	2	....
Austrian	8	....
Total	3,918	3,827

In 1854 the total trade of Cuba ascended to $64,078,309, viz.: imports to $31,394,578, and exports to $32,683,731. This movement exhibited the following result, when compared with the trade of the preceding year:

	Imports.	Exports.
1854	$31,394,578	$32,683,731
1853	27,789,800	31,210,405

An analysis of the returns from which the preceding figures are derived exhibits the following details: Of imports, the increase is perceived especially on the articles codfish, flour (national and foreign), pork, beef, hams, lard, cheese, jerked beef, bacon, and foreign wine; while there was a slight decrease on the articles rice, butter, and Spanish wine. Of exports, the increase fell, chiefly, on rum, sugar, coffee, wax, woods, honey, copper ore, leaf tobacco, and segars; while the articles raw cotton and molasses show a slight falling off. Under the national flag, the increase of importations over those of 1853, was, in value, $2,254,524; in foreign bottoms there was a similar increase of $1,350,453. The increase in exports, under the Spanish flag, was $1,232,759; under foreign flags, $240,566. The exports from Cuba to the United States, during this year, amounted in value to $11,641,813, or more than one third of the exports of the island to all countries; the imports into Cuba from the United States, during the same period, reached, in value, $7,867,680, or over one fourth of the total imports from all countries. Of the imports into Cuba from the United States, only $19,755, in value, was carried in Spanish vessels; while the value of such imports, under foreign flags, reached as high as $7,847,925. The exports from Cuba to the United States were exclusively borne in foreign bottoms—two arrivals, one from Havana, carrying a value of $219; the other from Gibara, with freight amounting to $540: in all, $759—being too insignificant to constitute a noticeable exception.

The following "statements" of revenue collected by the maritime and terrestrial custom-houses of that island in the year 1855, compared with the preceding year, published in the government Gazette, by order

of the superintendent-general of the royal exchequer, indicate increased activity of trade; the excess of revenue collected in December, 1855, over the same month in 1854, being nearly $254,000, and the excess for the whole of 1855 over the whole of 1854 amounting to $350,428 43¾.

STATEMENT OF REVENUE COLLECTED IN CUBA IN 1855 AND 1854, COMPARED.

Administrations.	In the year 1855.		In the year 1854.		Increase in 1855.		Decrease in 1855.	
	Maritime.	Terrestrial.	Maritime.	Terrestrial.	Maritime.	Terrestrial.	Maritime.	Terrestrial.
Havana	$6,456,859	$2,094,971	$6,416,416	$2,083,226	$39,943	$61,745	....	....
Matanzas	869,011	230,900	918,509	205,651	....	25,248	$49,498	....
Cardenas	815,560	86,789	829,954	58,943	....	27,839	14,398	....
Trinidad	260,561	78,719	216,238	68,908	44,328	14,815	....	....
Villa-Clara	....	68,584	....	63,608	....	4,925	....	....
Sto. Espiritu	....	83,084	80,114	69,010	....	14,578	80,114	....
Sagua la Grande	122,511	81,565	113,878	29,010	16,633	2,854	....	....
Cienfuegos	834,279	84,429	359,891	59,650	....	24,779	....	....
Remedios	58,715	87,349	48,822	41,801	10,892	....	....	$4,051
Cuba	626,699	364,520	674,868	296,378	....	68,142	47,668	....
Manzanillo	62,148	34,709	75,585	30,834	....	3,874	13,437	....
Gibara	42,710	7,578	40,170	8,111	2,540	....	....	532
Bayamo	....	50,092	....	37,589	....	12,552	....	....
Holguin	....	30,876	....	24,712	....	6,163	....	....
Baracoa	3,498	11,043	22,910	7,267	....	3,776	14,411	....
Nuevitas	74,451	9,921	95,654	9,818	....	102	21,[illegible]3	....
Sta. Cruz	10,600	630	17,950	685	....	....	7,350	5
Guantanamo	16,961	14,579	12,986	8,525	4,025	6,006	....	....
Pto. Principe	....	183,950	....	177,159	....	6,791	....	....
Lottery departm.	....	1,096,129	....	939,492	....	156,987	....	....
Total	$9,288,761*	$4,601,488	$9,374,891	$4,164,779	$117,868	$441,127	$203,992†	$4,589

Revenue collected in 1855, $13,890,100,‡ and in 1854, $13,539,671, an increase in 1855 of $350,428.

* Error in original: the figures should be 9,284,061. † Error of $5,618—excess. ‡ Error of $4,700—excess.

It may be proper to remark in this place, that the *Balanzas Generales*, from which the preceding and subsequent tables are derived, are not to be considered as giving the precise quantities and values of the commercial exchanges of the island of Cuba with foreign nations. They, doubtless, present the minimum amounts of each, as it would seem to be the policy of the custom-house officials, by whom these annual reports are prepared, to undervalue the foreign trade of the island. As far back as the year 1825, the unreliability of these Balanzas, as authority in statistical compilations, requiring precise accuracy, was noticed by Baron Humboldt, in that portion of his "Personal Narrative" which relates to the island of Cuba. Alluding to them, he observes: "I have examined, in another work, fifteen years since, the basis upon which are founded the tables published under the fallacious title of 'Balanzas de Comerico.'" Since that period, it would seem that but little improvement has been made in the preparation of these annual exhibits of trade; for the Department is officially advised, as late as 1853, that, in respect of values, the amounts stated in the Balanzas are fully one fourth less than the real market value both of imports and exports. However this may be, the statements and tables given are all which are accessible; none other being published or prepared; and for all useful purposes, they will serve the statistician as well as if the greatest accuracy had been attained.

The commerce of Cuba with foreign nations for the year 1854, is fully set forth in the annexed statements, taken from the "Balanzas Generales" for that year. It is followed by two other tables, made up from the Balanzas, designed to illustrate the commercial movements of Cuba during a period of twenty-nine years, from 1826 to 1854, both inclusive; while a third table exhibits a comparative view of the foreign commerce of Cuba and Porto Rico, with the duties received, and the number of vessels entered and cleared, during a period of seven years, from 1848 to 1854.

COMMERCE OF CUBA WITH FOREIGN NATIONS FROM 1826 TO 1840. [MADE UP FROM THE "BALANZAS GENERALES."]

IMPORTS.

Years.	National commerce.	In national vessels.	United States.	England.	Spanish American ports.	France.	Hanse Towns and Netherlands.	Ports of the Baltic.	Italy and Portugal.	Deposit.	Total.
	Pesos.	Pesos.	Pesos.	Pesos.	Pesos.	Pesos.	Pesos.	Pesos.	Pesos.	Pesos.	Pesos.
1826	2,858,798	314,683	5,632,808	1,828,627	....	1,169,451	1,681,125	16,849	218,794	1,759,621	14,925,754
1827	2,541,822	349,728	7,162,695	1,618,871	....	1,472,204	1,640,011	192,826	809,047	2,066,646	17,352,854
1828	4,523,802	481,553	6,599,096	1,770,085	....	1,635,855	2,082,906	176,027	282,584	2,033,508	19,584,922
1829	4,961,048	844,826	5,784,765	1,937,775	....	1,245,947	1,846,875	87,886	115,298	2,521,442	18,695,856
1830	4,739,776	1,051,538	4,791,544	1,745,388	....	721,648	1,701,358	81,958	102,116	1,236,283	16,171,562
1831	4,121,829	1,825,890	4,690,308	1,465,983	....	669,604	1,808,899	20,632	50,582	895,061	15,548,791
1832	8,576,707	3,178,596	3,542,936	1,257,964	....	805,824	1,918,197	38,849	87,884	796,512	19,198,465
1833	3,185,781	4,777,580	4,461,472	1,625,173	1,371,786	927,491	1,145,967	90,931	96,754	824,193	18,511,132
1834	3,412,487	4,970,013	3,690,101	1,676,918	1,747,224	906,414	855,368	19,215	151,151	1,334,407	18,563,300
1835	3,508,349	5,200,955	5,406,919	1,689,465	2,084,552	904,140	619,211	55,687	145,443	1,107,845	20,722,072
1836	4,470,725	5,890,070	6,553,281	1,522,429	1,579,588	817,445	769,959	59,068	92,628	1,009,771	22,551,969
1837	4,659,153	4,966,191	6,548,957	1,873,964	1,099,367	861,360	565,048	28,341	95,450	2,639,521	22,940,357
1838	4,460,987	6,163,152	6,202,002	1,439,800	1,718,650	816,954	916,498	79,198	64,598	2,878,545	24,729,878
1839	5,320,515	7,108,704	6,182,794	1,770,499	1,467,125	714,664	552,078	124,405	86,099	2,087,911	25,217,796
1840	5,295,261	6,634,718	5,654,125	1,497,109	915,541	618,461	1,010,291	47,914	29,492	3,357,172	24,700,189

EXPORTS.

1826	1,992,680	186,878	3,894,597	1,583,474	....	1,162,218	2,998,154	478,228	200,761	1,312,899	13,809,388
1827	2,284,250	184,059	4,107,449	1,605,073	....	1,048,618	2,651,083	487,288	439,402	1,483,966	14,286,192
1828	1,556,224	711,479	3,176,964	1,611,820	....	754,812	2,309,229	783,521	287,259	1,478,020	13,114,362
1829	2,202,580	562,653	3,191,535	1,729,404	....	907,808	2,406,818	904,920	808,540	1,653,247	17,952,405
1830	3,740,747	548,267	4,266,782	1,228,594	....	757,736	2,448,290	1,035,268	834,187	1,521,144	15,870,968
1831	2,193,761	727,338	3,021,592	1,567,720	....	441,058	2,188,299	544,839	443,466	890,644	12,918,711
1832	2,178,587	993,404	3,108,466	2,101,646	....	860,999	2,590,813	1,135,525	893,574	787,009	13,595,017
1833	1,854,714	1,274,040	4,886,885	910,981	19,678	531,821	1,771,881	1,187,774	250,511	858,818	13,996,100
1834	2,074,592	1,491,568	3,824,724	2,080,387	16,214	667,431	2,289,782	1,081,284	101,448	954,615	14,487,955
1835	1,801,092	1,114,695	4,365,569	1,754,678	10,275	603,985	2,076,001	994,771	158,926	1,179,252	14,059,246
1836	2,848,458	917,733	5,518,924	1,700,115	86,185	489,654	1,934,935	1,029,570	264,730	1,132,942	15,388,245
1837	2,919,474	1,294,282	5,792,628	2,990,466	248,324	1,344,698	2,713,586	644,018	523,106	1,875,918	20,346,407
1838	2,092,159	1,532,840	5,574,591	3,083,338	30,502	771,572	2,698,163	1,046,958	866,643	1,674,287	20,471,102
1839	2,719,792	1,951,785	5,528,045	5,141,098	70,985	845,200	3,054,083	266,401	424,905	2,478,848	21,481,348
1840	3,473,630	2,044,441	5,660,739	6,749,438	37,319	908,605	2,885,020	924,898	819,941	2,937,745	25,941,786

COMMERCE OF CUBA WITH FOREIGN NATIONS, 1854.

EXPORTATION.

Ports.	Spain	United States.	Great Britain.	France.	Germany.	Belgium.	Brazil.	Spanish America.	Denmark.	Holland.	Italy.	Sweden and Norway.	Portugal.	Austria.	Deposit.	Total.
	Pesos.	Pesos.	Pesos.	Pesos.	Pesos.	Pesos.	Pesos.	Pesos.	Pesos.	Pesos.	Pesos.	Pesos.	Pesos.	Pesos.	Pesos.	Pesos.
IN SPANISH VESSELS.																
Havana	2,668,190	219	2,425,414	43,488	362,878	378,064	5,636	482,049	....	....	238,664	....	....	....	....	6,605,099
Matanzas	299,288	....	199,879	4,880	48,580	31,588	....	45,229	....	31,881	....	....	....	14,849	....	675,098
Cardenas	21,090	....	17,656	....	....	....	....	....	....	....	....	....	....	....	....	38,746
Trinidad	82,411	....	52,168	6,874	....	....	....	....	....	2,809	....	....	....	....	....	144,258
Cienfuegos	112,259	....	28,016	6,820	....	....	....	....	....	....	....	....	....	....	....	145,096
Nuevitas	84,021	....	12,948	....	....	....	....	....	....	....	....	....	....	....	....	96,969
Sagua la Grande	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
St. Jago de Cuba	253,576	....	53,934	88,357	159,363	....	....	59	968	14,206	....	....	....	....	....	600,460
Gibara	88,449	540	....	....	42,248	....	....	....	....	....	....	....	....	....	....	131,288
Manzanillo	6,405	....	11,171	4,108	5,337	....	....	....	....	12,571	....	....	....	....	....	39,592
Baracoa	....	....	....	....	30,121	....	....	....	....	....	....	....	....	....	....	30,121
Total	3,615,692	759	2,793,684	153,972	684,024	409,602	5,636	527,338	968	61,418	238,664	....	....	14,849	...	8,506,607
IN FOREIGN VESSELS.																
Havana	....	2,829,159	3,688,261	1,099,809	470,092	359,418	....	144,009	299,977	170,892	80,115	23,694	8,550	....	....	9,179,236*
Matanzas	....	2,177,500	2,041,317	250,549	223,551	33,194	....	....	....	14,000	....	....	....	153,604	....	4,893,716
Cardenas	....	1,911,191	124,032	....	....	....	....	....	....	....	....	....	....	....	....	2,035,223
Trinidad	....	566,808	310,019	....	142,793	....	....	....	....	1,877	....	....	....	....	....	1,027,497
Cienfuegos	....	1,770,841	304,115	76,349	6,107	....	....	....	....	....	....	....	....	....	....	2,157,413
Nuevitas	....	219,278	18,962	....	....	....	....	....	....	....	....	....	....	....	....	238,241
Sagua la Grande	....	1,097,093	164,785	....	....	....	....	....	....	....	....	....	....	....	....	1,261,879
Remedios	....	333,757	78,818	....	....	....	....	....	....	....	....	....	....	....	....	412,575
Santa Cruz	...	37,526	33,745	....	10,739	9,665	....	....	....	1,630	....	....	....	....	....	93,306
Santo Espiritu	....	88,086	103,472	....	12,232	....	....	....	....	....	....	....	....	....	....	203,741
St. Jago de Cuba	....	374,771	1,321,356	306,955	142,054	....	....	32	....	1,664	....	....	....	....	....	2,146,834
Gibara	....	14,078	3,913	....	72,375	....	....	....	....	....	....	....	....	....	....	90,367
Manzanillo	....	95,264	88,066	....	60,105	....	....	....	....	....	....	....	....	....	....	243,436
Baracoa	....	87,008	....	....	....	....	....	....	....	....	....	....	....	....	....	87,008
Guantanamo	....	38,788	39,975	33,931	....	....	....	....	....	....	....	....	....	....	....	112,644
Total	....	11,641,054	8,820,842	1,767,594	1,140,050	402,277	....	144,041	299,977	190,064	80,115	23,694	8,550	153,604	....	24,177,123
Total of exports	3,615,692	11,641,813	11,119,526	1,921,567	1,824,074	811,880	5,636	671,380	309,949	251,482	318,779	23,694	8,550	168,453	....	32,683,,31

	IMPORTATION.				EXPORTATION.					DEPOSIT.			
	1854.	1853.	Increase.	Decrease.	1854.	1853.	Increase.	Decrease.		1854.	1853.	Increase.	Decrease.
	Pesos.	Pesos.	Pesos.	Pesos.	Pesos.	Pesos.	Pesos.	Pesos.		Pesos.	Pesos.	Pesos.	Pesos.
National flag	20,675,948	18,421,624	2,254,524	....	8,506,607	7,273,847	1,232,759	....	Importation	706,871	961,715	....	254,844
Foreign flag	10,718,629	9,368,175	1,350,453	....	24,177,123	23,936,557	240,566	....	Exportation	708,229	500,072	208,156	....
Total	31,394,578	27,789,800	3,604,777	....	32,683,731	31,210,405	1,473,325	....	Taken out for consumption	291,259	375,603	....	84,344

* In this sum 5,253 pesos are added for Prussia, omitted in the list.

COMPARATIVE SUMMARY OF THE COMMERCE OF CUBA, FROM 1841 TO 1854. [FROM THE "BALANZAS GENERALES."]

Years.	VALUE OF IMPORTATION.			VALUE OF EXPORTATION.			EXPORTATION OF THE PRINCIPAL PRODUCTIONS OF THE ISLAND.						
	In national vessels.	In foreign vessels.	Total.*	In national vessels.	In foreign vessels.	Total.	Sugar.	Molasses	Brandy.	Coffee.	Copper ore.	Tobacco, raw.	Tobacco, Manufd
	Pesos.	Pesos.	Pesos.	Pesos.	Pesos.	Pesos.	Boxes.	Hhds.‡	Pipes.	Arrobas.§	Quintals.	Pounds.	Segars M
1841	14,113,788	10,967,625	25,081,408	7,148,674	19,625,940	26,774,614	329,492	181,390	11,302	1,285,006	608,060	5,757,517	170,171
1842	14,387,786	10,249,790	24,637,576	6,976,584	19,708,117	26,684,701	317,643	119,188	10,227	1,998,646	788,971	5,942,888	150,289
1843	13,983,741	10,068,854	23,422,096	6,950,988	18,078,908	25,029,712	389,106	191,098	13,810	1,861,782	768,650	7,208,239	257,997
1844	12,218,858	11,887,377	23,056,231	5,592,746	19,872,845	25,426,591	1,009,565	172,431	6,826	1,240,082	1,008,587	4,682,768	128,505
1845*	16,949,796	11,087,764	28,007,560	6,708,501	12,064,310	18,792,872	475,286	121,322	4,120	559,822	869,922	6,674,878	158,581
1846	13,651,329	8,974,069	22,625,398	6,518,832	16,181,707	22,000,568	987,742	208,597	9,062	817,662	695,054	8,896,047	153,356
1847	15,648,870	14,740,948	29,388,119	6,549,857	21,449,415	27,998,770	1,374,811	252,340	19,752	982,154	865,499	9,809,506	244,812
1843	15,222,318	10,218,247	25,485,565	5,045,098	20,081,974	26,077,068	1,228,118	225,726	14,839	894,187	656,491	6,275,690	161,480
1849	14,966,844	9,956,615	26,920,460	5,526,585	16,863,021	22,436,556	1,099,884	246,570	11,640	877,127	598,310	4,013,134	123,730
1850	18,455,071	10,598,155	28,998,227	6,020,649	19,611,308	25,631,948	1,249,618	269,044	4,825	520,184	552,388	7,978,148	212,640
1851	19,899,176	12,412,254	32,311,430	6,204,658	25,187,029	31,341,688	1,589,994	318,428	9,221	575,119	482,882	9,436,591	270,313
1852	20,895,751	9,494,490	29,780,242	7,018,017	20,485,918	27,458,936	1,409,012	262,508	11,859	780,826	881,470	9,787,448	180,610
1853	18,421,624	9,368,175	27,789,800	7,278,847	23,966,557	31,210,405	1,657,199	308,881	14,304	442,780	845,080	8,059,797	237,350
1854	20,675,948	10,718,629	31,394,578	8,506,607	24,177,128	31,688,781	1,685,751	261,815	26,272	511,408	549,558	9,806,150	251,813

Years.	NUMBER OF VESSELS WHICH ENTERED THE PORTS OF THE ISLAND.			AMOUNT OF DUTIES RECEIVED IN THE COMMERCIAL MOVEMENT.		
	National vessels.	Foreign vessels.	Totals.	Tonnage.†	Duties on importation.	Duties on exportation.	Total.
					Pesos.	Pesos.	Pesos.
1841	1,053	1,981	3,034	467,899	5,943,819	1,322,644	7,266,464
1842	884	1,773	2,657	472,106	6,005,682	1,377,714	7,383,396
1843	815	1,770	2,585	477,792	5,896,389	1,590,677	6,987,017
1844	855	2,380	3,235	597,920	6,020,408	1,140,228	7,160,631
1845*	917	1,715	2,632	473,015	5,396,416	574,331	5,970,748
1846	947	2,944	3,091	550,158	5,418,422	739,379	6,152,502
1847	819	2,922	3,7[illegible]	689,770	4,601,236	893,097	7,494,331
1848	873	2,673	3,548	728,285	6,174,588	709,225	6,883,858
1849	877	2,836	3,213	712,572	5,844,788	584,477	6,429,260
1850	873	2,478	3,356	974,014	5,964,147	757,108	6,721,250
1851	838	2,988	3,809	997,990	6,668,849	1,798,992	8,462,834
1852	947	2,665	3,619	622,016	7,225,784	1,647,802	8,873,086
1853	902	3,014	3,916	718,340	7,018,584	1,816,782	8,830,317
1854	928	2,884	3,812	742,794	7,796,652	1,947,048	9,743,696

* From 1841 to 1845, these totals include the value of goods placed on deposit, as well as of those actually imported or exported, and are thus considerably augmented. Prior to 1845, no distinct column was devoted to deposit in the Balanza General; but since that year such distinction has been observed, and the result is perceived in the diminution of the amounts of values.

† Prior to 1845, but one column was devoted to tonnage, no distinction being made between the tonnage of national and foreign vessels in the Balanza; but since that year such distinction has been made, though it is not regarded in this statement.

‡ Of 56 gallons.

§ Arroba=25¼ pounds.

GENERAL COMPARATIVE STATEMENT OF THE AMOUNT AND CHARACTER OF THE COMMERCE OF CUBA AND PORTO RICO FROM 1848 TO 1854, WITH THE AMOUNTS OF DUTIES RECEIVED, AND THE NUMBERS OF VESSELS ENTERED AND CLEARED, AND THE RESPECTIVE TONNAGE OF THE SAME.

[FROM THE "BALANZAS GENERALES."]

CUBA.

Years.	IMPORTATION INTO CUBA.				EXPORTATION FROM CUBA.				DUTIES RECEIVED.	NO. OF VESSELS & TONNAGE.			
	NATIONAL PRODUCTS.	FOREIGN PRODUCTS.		TOTAL IMPORTS.	FOR THE NATIONAL TRADE.	FOR THE FOREIGN TRADE.		TOTAL EXPORTS.		ENTERED.		CLEARED.	
	In Spanish vessels generally.	In Spanish vessels.	In foreign vessels.		In Spanish vessels generally.	In Spanish vessels.	In foreign vessels.			No.	Tonnage.	No.	Tonnage.
	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.				
1848	7,088,780	8,133,567	10,213,247	25,435,593	3,927,007	2,118,086	20,031,974	26,077,068	6,883,858	3,548	728,285	2,949	No data.
1849	7,682,757	8,691,714	9,945,988	26,320,460	3,113,070	2,460,464	16,863,021	22,436,556	6,429,260	3,213	712,572	2,899	Do.
1850	8,040,025	9,324,259	10,518,841	28,983,227	3,071,084	2,957,788	19,602,080	25,631,948	6,721,250	3,356	974,014	3,151	Do.
1851	8,500,258	11,413,927	12,397,245	32,311,430	2,836,328	3,982,787	25,122,567	31,941,683	8,462,834	3,865	997,990	3,793	Do.
1852	10,200,429	10,199,731	9,380,082	29,780,242	3,892,684	3,185,368	20,435,916	27,453,986	8,873,086	3,617	622,016	3,274	Do.
1853	7,756,905	10,791,648	9,241,247	27,789,800	3,293,371	3,974,976	23,936,557	31,210,405	8,830,317	3,916	718,340	3,827	Do.
1854	9,057,428	11,631,852	10,705,298	31,394,578	3,615,693	4,890,914	24,177,123	32,683,731	9,743,696	3,812	742,794	3,567	Do.

PORTO RICO.

1848	1,148,079	1,793,870	1,528,801	4,469,751	666,820	238,816	4,695,500	5,595,136	1,084,239	1,056	118,910	1,129	123,250
1849	1,011,000	2,819,082	1,651,550	4,981,583	464,128	247,923	4,700,419	5,402,371	1,052,307	1,095	124,831	1,126	129,573
1850	1,356,961	1,879,488	1,985,579	5,222,029	298,916	271,886	5,321,542	5,877,319	1,189,001	1,208	182,040	1,179	131,767
1851	1,542,717	2,210,062	2,821,089	6,078,878	502,451	280,840	4,918,682	5,761,974	1,069,418	1,824	160,586	1,269	154,042
1852	2,035,947	2,122,784	2,144,663	6,303,395	409,618	349,178	3,869,602	4,652,339	1,256,178	1,452	175,886	1,352	168,766
1853	1,411,604	2,194,375	1,736,530	5,335,910	440,406	335,090	4,523,881	5,299,327	1,051,887	1,838	151,668	1,225	154,867

General Port Regulations. 1. Ships leaving with a full cargo of molasses are free of tonnage duties.

2. Ships arriving in ballast, and leaving in the same state, pay no tonnage duty; but if they should take return cargoes of the fruits, or other articles of the island (entire cargoes of molasses only excepted), they pay the regular duty.

3. Ships arriving in distress for water, or other necessaries, are free from tonnage duty; but when they discharge the whole or part of their cargo (unless every part is again taken in, and *no more*), or load with produce, foreign or native (molasses excepted), they are subjected to the entire tonnage duty.

4. Vessels, foreign or national, which have left a port of the island, having paid the proper tonnage duty, and which enter any port of the island to repair damages they may have sustained at sea, by reason of storm or other casualty, are exempt from further tonnage duty.

5. Vessels entering the ports of the island with mineral coal, in equal or greater quantity than the number of tons per their register, pay only 50 cents per ton for tonnage duty, even if they bring other merchandise besides. They are also exempt from all other local charges (excepting captain of the port's fees), such as ponton and health dues, custom-house visits, entry and clearance fees, wharfage, stage-hire, etc. Such as bring coal, solely, in less quantity than their tonnage measure, pay 50 cents per ton upon the portion occupied by coal; and the difference between this portion and the number of tons that the vessel may prove to have, by Spanish measurement, will be subjected to the payment of the full tonnage duty; but these vessels are allowed the exemption from all other charges except captain of the port's fees.

Vessels having on board, besides coal in less quantity than their measurement, other cargo, are in the same case respecting the tonnage dues, but are subject to the ponton, health visits, registering and other usual dues. Mail steamers, recognized as such, are permitted to bring and carry 3 tons of cargo without paying tonnage dues. If the cargo discharged exceeds 3 tons, they pay duty on such excess over and above the 3 tons. Vessels going from one port to another of the island, carry a sea-letter of introduction to the custom-house of the other port, stating that the regular charges have been paid. This letter costs $4. By order of November 4, 1854, all vessels having to perform quarantine must go either to Havana or to St. Jago de Cuba for that purpose. Quarantine fee, $1 per day. Besides the foregoing general regulations, which are in force at all the ports of the island, there are others of a more local character, applicable to some, and not to others. These relate more especially to tonnage and port duties, and other charges.

The tonnage duties and other charges at the principal ports are subjoined:

AT HAVANA.

Nature of charges.	Foreign vessels pay	Spanish vessels pay
Health visit, per ton*	$0 08	$0 08
Government interpreter	2 00	....
Captain of the port's fees: on entering	3 00	3 00
" on clearing	3 00	3 00
Translation of manifest	4 00	....
Tonnage duty, per ton†	1 50	0 02½
Light dues, per ton	0 06½	0 06½
Ponton dues, per ton	0 21½	0 21½
Wharfage dues, per ton	0 01½	0 01½
Custom-house fees: Inward visit	5 50	5 50
" Outward visit	5 50	5 50
Annotation fee	2 00	2 00
Extract of Manifest, from	4—6 00	4—6 00
Register dues (for each daily return of cargo discharged, whether one or one thousand packages)	5 50	5 50
For outward register and stamp paper	8 25	8 25
Bill of health, over 150 tons	6 00	6 00
under 150 tons	4 00	4 00

* This fee is received by the boarding physician, and is applied to the general board of health. He receives the bill of health, which must be authenticated by the Spanish consul at the port of departure, under a penalty of being sent to quarantine for seven days, and a fine of fifty dollars.

† Per Spanish measurement; in addition to this duty, one per cent. balanza upon the result of the tons, multiplied by ½, is charged.

Pilotage. It is optional for a vessel to take a pilot, unless she goes into the inner harbor beyond the shoals; in which case, whether she takes one or not, she has to pay $10 coming in as far as the inner harbor, $10 going out, and $10 from any part of the outer harbor into the inner. Foreign men-of-war pay no port charges. If a pilot is taken, the rate charged is the same as paid by Spanish men-of-war.—$7 in, and the same out.

AT BARACOA.

Nature of Charges.	Foreign vessels pay
Tonnage duty	$1 50
Anchorage	12 00
Free pass at the fort	3 00
Health officers' fee for boarding vessels	3 00
Custom-house interpreter's fee	5 00
Custom-house officer's fee to visit on board, to seal and unseal, so long as the vessel is discharging	5 00
Opening vessel's register	3 00
Register of despatch	3 00

AT SAINT JAGO.

Nature of charges.	Foreign vessels pay	Spanish vessels pay
Health visit, per ton	$0 08½	$0 01½
Government interpreter	2 00	....
Custom-house interpreter	4 00	....
" inward visit	5 50	5 50
" outward visit	5 50	5 50
Extract of manifest	0 50	0 50
Custom-house officer, per diem, while vessel is discharging	5 50	5 50
On aggregate amount of tonnage duty, per cent	1 00	1 00
Light-house dues, per ton	0 06½	0 08½
Captain of port's fee	12 50	12 50
Fort pass	0 50	0 50
Pilotage	4 00	4 00
Wharfage per diem, on 100 tons	1 50	0 75
Wharfinger	1 50	1 50
Stamped paper	10 00	10 00
Clearance	8 50	8 50
Telegraph	4 00	4 00
Duty per ton	1 50	0 02½

AT TRINIDAD, MATANZAS, AND CARDENAS.

Nature of charges.	FOREIGN VESSELS PAY		
	At Trinidad.	At Matanzas.	At Cardenas.
On aggregate amount of tonnage duty	One per cent.	....	....
Light dues, per ton	$0 06½	$0 06½	....
Pilotage for schooner, in and out	22 00	Entering and leaving with or without pilot, $12 00..	When drawing 7 to 10 feet, $12. Each additional foot, $2.
" brig, "	29 00		
" bark or ship, "	34 00		
Entering in ballast, per day	8 25	....	....
" with cargo, while discharging, per day	5 50	Whole expense, $28	Anchorage, $6 00.
Clearing in ballast	2 75	Opening register and clearing, $27	....
" with cargo	21 50		....
Governor's fee	3 00	$1 00	....
Health visit, per ton	0 08	0 08	....
Captain of the port	10 00	6 00	....
Fort pass	1 00	$2 50 (and stamps)	....
Mud-machine duty, per ton	0 21½	....	....
Look-out man	1 00	....	....

Mode of Collecting Duties. The collection of the duties is made in a very simple manner. The island of Cuba is divided into customs intendencies, of which Havana is the principal. The intendency is organized into seven branches, viz.: the intendant, the superior counsel of the hacienda, the tribunal of accounts, the accountant-general, the treasurer-general, the administration of the customs, and the administration of the internal revenue. The administration of the customs is comprised of the administrator or collecter, the accountant, and the treasurer. When a vessel arrives at the Havana, she is first boarded by the health officer, after whom comes the revenue officer and the smuggling-preventivo service. A copy of the custom-house regulations, in Spanish, French, and English, is handed to the captain, and a manifest required of him of all the particulars of his vessel and cargo. Every article on board the vessel, omitted in the manifest, is subject to confiscation. Within forty-eight hours after the entry of the vessel, every consignee must deliver detailed statements of the articles coming to him, with their quantities, weights, and measures, all reduced to the legal standard.

All the documents and papers relating to a vessel, are stitched together in a book, with the signatures and seals of all the government officers, through whose hands the several documents pass. A copy of this book is made for the use of the inspectors and appraisers; the latter function being restrained within very narrow limits, by a printed tariff of all articles of import, with a valuation to each, which valuation, in a great degree, defines the duties of the *ad valorem* character. As fast as the inspection and appraisement take place, the consignee is permitted to remove the goods, by procuring the signature of some responsible person to the words inscribed in the book, "I make myself answerable for the duties." The inspection and appraisement being concluded, the book is returned to the accountant's office, where the liquidation of the duties is forthwith made. The payment is then proceeded with. These payments are mostly cash; that is to say, on some articles, whatever may be the amount, cash is required; upon other articles, the duties are cash under $1,000.

If the amount is greater, a credit of one fourth is given for sixty days, and one fourth payable at the end of each succeeding month—making five months' credit in all. The security for this credit consists simply in the promissory note of the consignee, without indorsement, with the power, in case of a failure, to convert every other note of the same individual into a cash debt; the individual to be forever after incapacitated to enter goods, except for cash.

This system has been in force many years, and un-

der it no loss whatever has been sustained by the government.

Formerly, the same credits required the endorsement of a holder of real estate; but this was abandoned on account of its insecurity.—MACGREGOR'S *Statistics; U. S. Com. Dig.* For further information, refer to *Am. Quar. Rev.*, vli. xi., 230; HUNT'S *Mag.*, vi., vii., xvii.-xxi., 519; *North. Am. Rev.*, xxix.: DE BOW'S *Rev.*, viii., p. 313, ix., 164; *Ch. Examr.*, vi., 259, xxiii., 82; FRASER'S *Mag.*, xii.; LITTELL'S *Living Age*, xxii.; *Foreign Quar.*, iii., p. 400; BLACKWOOD, xl.; *Southern Quarterly*, iv., xxi.

Cubebs (German *Kubeben;* French, *Cubebes;* Italian, *Cubebi;* Spanish, *Cubebas;* Russian, *Kubebii;* Latin, *Piper Cubeba;* Arab, *Kebàbch;* Javanese, *Kumankus;* Hindostan, *Cubab-chinie*), the produce of a vine or climber extensively grown in Java. It is a small dried fruit, like a pepper-corn, but somewhat longer. Cubebs have a hot, pungent, aromatic, slightly bitter taste; and a fragrant, agreeable odor. They should be chosen large, fresh, sound, and the heaviest that can be procured.

Cubit. This was a measure of the ancients, and is the first measure we read of; the ark of Noah was made and measured by cubits.—HOLDEN. The Hebrew sacred cubit was two English feet, and the great cubit eleven English feet. Originally it was the distance from the elbow, bending inwards to the extremity of the middle finger.—CALMET.

Cucumber, a tropical plant, of which there are many varieties, largely cultivated in hot-houses in England.

Cucumber-tree. *Magnolia acuminata.* In all parts of the United States where this tree is found, it is known only by the name of *cucumber-tree.* It is a beautiful vegetable, equal in height and diameter to the big laurel. The most northern point at which this tree grows, is near the falls of Niagara, in latitude 43°. It abounds along the whole tract of the Alleghanies, to their termination, in Georgia, over a distance of 900 miles. It is also found on the Cumberland Mountains. The situations peculiarly adapted to its growth are the declivities of mountains, narrow valleys, and the banks of torrents, where the air is constantly moist, and where the soil is deep and fertile. At the distance of forty or fifty miles from the mountains, either way, this tree is met with only accidentally upon the steep banks of rivers, where the atmosphere is constantly refreshed by the evaporation from their surface. We may conclude, then, that this tree is a stranger to all parts north of the river Hudson, and to all the Atlantic parts of the United States, to the distance of 100, 150 and 200 miles from the sea; the nature of the soil, and the extreme heat of the climate in summer, being utterly uncongenial to its growth. It is also rare in the parts of Kentucky and West Tennessee which are most remote from the mountains, where the face of the country is less uneven. The cucumber-tree sometimes exceeds 80 feet in height, with a diameter of 3 or 4 feet. The trunk is perfectly straight, of a uniform size, and often destitute of branches for two thirds of its length. The summit is ample and regularly shaped, and the tree is one of the finest in the American forests. The leaves are 6 or 7 inches long, and three or four inches broad, upon old trees; upon saplings growing in moist places, they are sometimes twice as large.

On old stocks the bark of this tree is grayish, and deeply furrowed. The perfect wood is soft, and of a yellowish brown. It is fine-grained, and susceptible of a brilliant polish.

Being a rare tree, it is only accidentally employed in the arts. Sawn into boards, it serves in joinery for the interior of wooden houses, and for its size and lightness, it is selected for large canoes. Most of the inhabitants of the country bordering on the Alleghanies, gather the cones of this tree about midsummer, when they are half ripe, and steep them in whisky; a glass or two of this liquor, which is extremely bitter, they habitually take in the morning, as a preservative against autumnal fevers.—BROWNE'S *Sylva Americana.*

Cudbear, a purple or violet-colored powder, used in dyeing violet, purple, and crimson, prepared from a species of lichen (*Lichen tartareus* Lin.), or crustaceous moss, growing commonly on limestone rocks in Sweden, Scotland, the north of England, etc. About 130 tons of this lichen are annually exported from Sweden. It commonly sells in the port of London for about 20*l.* per ton; but to prepare it for use it must be washed and dried; and by these operations the weight is commonly diminished a half, and the price, in effect, doubled. Though possessing great beauty and lustre at first, the colors obtained from cudbear are so very fugaceous, that they ought never to be employed but in aid of some more permanent dye, to which they may give body and vivacity. In this country it is chiefly used to give strength and brilliancy to the blues dyed with indigo, and to produce a saving in that article; it is also used as a *ground* for madder reds, which commonly incline too much to yellow, and are made *rosy* by this addition. The name cudbear was given to this powder by Dr. Cuthbert Gordon, who, having obtained a patent for the preparation, chose in this way to connect it with his own name.—BANCROFT, *Philosophy of Colors.*

Culeus, in *Roman Antiquity,* the largest measure of capacity for things liquid, containing twenty amphoræ or 40 urnæ; equivalent to 115 gallons, 1·6 pints English. Culeus also denoted a sack or bag. Parricides were punished at Rome by being thrown into the Tiber in a sack, along with a cock, an ape, and a viper.

Culm (Welsh *cwlm*), a variety of coal. It is difficult of ignition, but burns for a long time, without flame or smoke, but emitting a disagreeable smell. It does not cake, and it leaves but few ashes. Culm is the *bituwen oxygenatum* of Linnæus, and the *glanz kohle* of Werner. It is otherwise known as *anthracite.* —See *Coal.*

Culna, in Hindostan, a town in the British district of Burdwan, presidency of Bengal, on the right bank of the river Hooghly, on the route from Cutwa to the town of Hooghly, 26 miles east of the city of Burdwan. It is the port of the district, and has long been noted for its trade in rice, grain, silk, and cotton. Of late years the traffic of the place has greatly increased, in consequence of its being found a convenient station for steamers plying between Calcutta and the upper provinces. The bazaar consists of 1000 shops, and the population of the town has been stated at 60,000. Lat. 23° 14′; long. 88° 20′.

Culpee, a town of Bengal, district of Hooghly, on the eastern bank of the river Hooghly. It stands 33 miles below Calcutta, at the mouth of a creek that gives shelter to boats from the impetuosity of the tide, which runs there with great violence. Opposite the town is the place of anchorage for large ships which can not get higher up the river. The shores here are a bed of mud, and the banks of the river are covered with thick jungle. Culpee is considered extremely unhealthy, on account of the swamps and woods by which it is surrounded. E. long. 88° 18′; N. lat. 22° 6′.

Cumberland river, a large river of Kentucky and Tennessee, which flows through Kentucky and falls into the Ohio. Its entire length is about 600 miles, and navigable for large steamboats to Nashville, 203 miles, and for boats of 15 tons, 300 miles. Large quantities of cotton, corn, and tobacco, are transported by flat-boats and steamboats from numerous counties on this river, to New Orleans.

Cummin-seed (Ger. *Kumin;* Fr. *Cumin;* It. *Comino, Cumino;* Sp. *Comino;* Arab. *Kemun*), the seeds of an annual plant (*Cuminum cyminum,* Lin.), a

native of Egypt, but extensively cultivated in Sicily and Malta. They have a strong, peculiar, heavy odor, and a warm, bitterish, disagreeable taste. They are long and slender.

Cumnock, or Old Cumnock, a village of Ayrshire, in Scotland, on the Lugar Water, 12 miles east of Ayr. It is noted for the manufacture of snuff-boxes, similar to those of Laurencekirk, the peculiarity of which is the "invisible wooden hinge." See article *Snuff-boxes.*

Cupel, a shallow earthen vessel, somewhat of a *cup* shape, generally made of bone earth. It is used in the assays of the precious metals, which are fused upon a cupel with lead. Cupellation means the refining of gold or silver upon a *cupel.*

Cupellation is a mode of analyzing gold, silver, palladium, and platinum, by adding to small portions of alloys, containing these metals, a bit of lead, fusing the mixture in a little *cup* of bone earth called a *cupel,* then by the joint action of heat and air, oxydizing the copper, tin, etc., present in the precious metals. The oxyds thus produced are dissolved and carried down into the porous *cupel* in a liquid state, by the vitrified oxyd of lead. See *Assay, Gold,* and *Silver.*

Curacoa. This island is situated in the Caribbean Sea, near the coast of Venezuela, and is about 42 miles long, and from 10 to 15 miles broad. The chief staples are tobacco, sugar, indigo, and maize. There are numerous harbors, but that of Santa Anna is considered the best and safest. The principal merchandise exchanged in the coasting-trade of Curaçoa consists of hides, goat-skins, dye-woods, corn, cochineal, sugar, indigo, and hats. The chief article of internal trade is salt, this being the only article manufactured for export. The following table exhibits, in one view, the general commerce of the island with the United States during three years, ending with 1853. It will be seen that the export trade to the United States is yearly increasing, and that in 1853 the increase over 1851 is nearly 100 per cent.

TABULAR STATEMENT OF SHIPMENTS FROM THE ISLAND OF CURACOA TO THE UNITED STATES DURING THE THREE YEARS ENDING JUNE 30TH, 1853. [MADE UP FROM CONSULAR RETURNS TO THE DEPARTMENT OF STATE, WASHINGTON.]

Denomination of merchandise.	1851.		1852.		1853.	
	Number, weight, or measure.	Value.	Number, weight, or measure.	Value.	Number, weight, or measure.	Value.
Aloes	pounds 20,208	$1,420	pounds 11,351	$742	pounds 13,345	$887
Arrow-root	....	....	" 2,084	197	....	....
Balsam	....	....	....	....	pounds 1,710	320
Bay water	dozen 6	14	....	....	puncheon 1	28
Barilla	barrels 400	622	....	....	....	....
Cochineal	pounds 4,852	3,298	pounds 9,746	3,801	pounds 1,285	1,824
Copper	" 9,725	1,495	....	....	....	....
Cotton	....	....	pounds 8,740	982	pounds 108	10
Divi Divi	bags 1,204	1,545	bags 2,231	1,705	bags 921	764
Goat-skins	number 237,000	59,984	number 242,837	95,169	number 247,685	101,599
Guano	....	....	....	....	barrels 27	101
Hats	dozen 1,723	11,461	dozen 5,237	33,928	dozen 15,912	107,313
Hides	number 22,621	39,164	number 20,752	38,894	number 17,521	32,600
Iron	....	....	....	....	pounds 9,200	28
Ivory nuts	....	....	....	....	" 52,315	1,181
Linseed	kegs 3	4	....	....	....	....
Mahogany	....	....	logs 161	375	....	....
Old copper	....	....	pounds 52,012	4,722	pounds 84,110	6,060
Orange peel	....	....	....	....	" 1,600	150
Ox horns	number 9,006	330	number 1,292	24	....	....
Palm leaf	packages 150	11	....	....	bunches 200	112
Peanuts	barrels 11	14	....	....	....	....
Pimento	....	....	bags 104	669	bags 39	212
Rum	....	....	puncheons 120	2,547	....	....
Salt	barrels 19,982	5,372	barrels 11,011	3,105	barrels 43,434	18,185
Segars	boxes 232	1,286	M. 140	562	M. 230	996
Sugar	....	....	pounds 248,856	5,606	pounds 294,247	7,556
Strup	....	....	....	....	gallons 973	360
Tobacco	pounds 8,127	439	....	....	pounds 24,494	1,892
Tortoise-shell	....	....	....	....	" 114	518
Wood	tons 608	6,582	tons 757	9,046	tons 618	9,846
Wool	pounds 7,429	662	pounds 24,270	1,784	pounds 12,745	1,034
		$103,668		$208,866		$300,136

Curacoa, a liquour which derives its name from the island of Curaçoa. It is prepared in great perfection by the Dutch. It derives its flavor from Seville orange peel, with a small quantity of cinnamon and mace.

Curmi (κοῦρμι), in *Antiquity,* a sort of malt liquor or ale, made of barley, and which, according to Dioscorides, was used by many nations instead of wine. That writer also relates that in the western part of Iberia, and in Britain, a similar beverage was in his time prepared from wheat.

Currants (Fr. *Raisins de Corinthe;* Ger. *Korinthen;* It. *Uve passe di Corinto;* Lat. *Passulæ Corinthiacæ;* Rus. *Korinka, Opoek;* Sp. *Pasas de Corinto*), a small species of grape, largely cultivated in Zante, Cephalonia, and Ithica, of which islands they form the staple produce; and in the Morea, in the vicinity of Patras. The plant is delicate; and as 6 or 7 years must elapse, after a plantation has been formed, before it begins to produce, its cultivation requires a considerable outlay of capital. The crop is particularly liable to injury from rains in harvest, and is altogether of a very precarious description. After being dried in the sun, the currants are exported packed in large butts. They are in extensive demand in Europe and the United States, and, when mixed with flour and suet, make a dish that is peculiarly acceptable to the lower classes.

Current (Lat. *currens,* from *curro,* to run, to flow), literally signifies running, flowing, passing. Hence, passing from person to person, or from hand to hand; circulating, as current opinions, current coin. In commerce it is applied in an analogous sense to the price of any commodity: as current value—that is, the ordinary or present value. As applied to time, it is equivalent to now present or passing: as the current month or year. It is applied chiefly to the progressive movement of fluids, especially of air, electricity, and water.

Currents in the ocean arise from various causes, either occasional or constant. They may be occasioned by an external impulsion, for example, a gale of wind; from a difference in the temperature of different parts of the sea; from the inequality of evaporation, the melting of the polar ice, or in short any cause tending to disturb the hydrostatic equilibrium. It is difficult in many cases to trace their causes, or to give any satisfactory theory of their existence; but on account of their importance to navigation they have been observed, especially of late years, with

great care. Among those which have a permanent or general character, there are two which are very remarkable. The first is that of the tropical waters westward round the globe, and the second that which constantly flows from each pole toward the equator. The tropical or westerly current is chiefly confined within the zone, extending to about 30° on each side of the equator, and its velocity is estimated by Humboldt at abont 9 or 10 miles a day. In the Atlantic it separates into two branches, one of which forms the *Gulf Stream;* and the other flows along the coast of Brazil, and passes through the Straits of Magellan. The Gulf Stream flows northward through the middle of the Atlantic, till it reaches the Cape Verd Islands; it then passes through the Caribbean Sea, between Cuba and the peninsula of Yucatan, sweeps round the Gulf of Mexico, and rushes out by the Bahama Channel; then, spreading out to a greater breadth, it continues its course along the shores of the United States to Newfoundland, where it is deflected eastward by a current setting in from Baffin's Bay; and, passing the Azores and Canary Islands, returns in a great measure into itself. Its breadth is 51 leagues in the Bahama Channel, and velocity from 3 to 5 miles an hour. (MURRAY'S *Geography*, p. 186.) The polar currents flow constantly from the poles toward the equator, though it is evident that their sources must he supplied by currents in a contrary direction. Their existence is proved by the great masses of ice which are carried every year from the polar seas to tropical latitudes. Oceanic currents, by carrying with them the temperature of the regions whence they flow, contribute in no small degree to modify the temperature of the atmosphere, and give a character to the climate of the countries to which they are contiguous. On the parallel of New York, Humboldt found the temperature of the Gulf Stream 72° of Fahrenheit, while out of the current, the heat of the ocean at the surface was only 63°. The current which flows along the eastern coast of Africa, and doubles the Cape of Good Hope in a stream 130 miles broad, is from 7° to 8° warmer than the contiguous sea. See *Gulf Stream.*

Currents of water, like currents of air, meeting from various directions, create gyrations, which in some parts of the sea, as on the coast of Norway, assume the appearance of whirlpools, as though the water were drawn into a chasm below. The celebrated Maelstrom is caused by such a conflict of tidal or other streams. Admiral Beechey, R.N., has given diagrams illustrative of many "rotatory streams in the English Channel, a number of which occur between the outer extremities of the Channel le and the stream of the oceanic or parent wave." "They are clearly to be accounted for," says he, "by the streams acting obliquely upon each other." It is not necessary to associate with oceanic currents the idea that they must of necessity, as on land, run from a higher to a lower level. So far from this being the case, some currents of the sea actually run up hill, while others run on a level. The Gulf Stream is of this class. The currents which run from the Atlantic into the Mediterranean, and from the Indian Ocean into the Red Sea, are the reverse of this. Here the bottom of the current is probably a water level, and the top an inclined plane, running *down hill.* Take the Red Sea current as an illustration. That Sea lies, for the most part, within a rainless and riverless district. It may be compared to a long and narrow trough. Being in a rainless district the evaporation from it is immense; none of the water thus taken up is returned to it either by rivers or rains. It is about 1,000 miles long; it lies nearly north and south, and extends from latitude 13° to the parallel of 30° north.

Mediterranean Currents.—With regard to an under current from the Mediterranean, we may remark that there is a current always setting in at the surface from the Atlantic, and that this is a salt-water current, which carries an immense amount of salt into that sea. We know, moreover, that that sea is not salting up; we might infer the existence of an under-current, through which this salt finds its way out into the broad ocean again.

The Currents of the Indian Ocean.—By carefully examining the physical features of this sea, and studying its conditions, we are led to look for warm currents that have their genesis in this ocean, and that carry from it volumes of overheated water, probably exceeding in quantity many times that which is discharged by the Gulf Stream from its fountains. The Atlantic Ocean is open at the north, but tropical countries bound the Indian Ocean in that direction. The waters of this ocean are hotter than those of the Caribbean Sea, and the evaporating force there is much greater. That it is greater, we might, without observation, infer from the fact of a higher temperature and a greater amount of precipitation on the neighboring shores. These two facts, taken together, tend, it would seem, to show that large currents of warm water have their genesis in the Indian Ocean. One of them is the well-known Mozambique current, called at the Cape of Good Hope the Lagullas current. Another of these currents makes its escape through the Straits of Malacca, and, being joined by other warm streams from the Java and China Seas, flows out into the Pacific, like another Gulf Stream, between the Philippines and the shores of Asia. Thence it attempts the great circle route for the Aleutian Islands, tempering climates, and losing itself in the sea on its route toward the north-west coast of America. Between the physical features of this current and the Gulf Stream of the Atlantic, there are several points of resemblance. Sumatra and Malacca correspond to Florida and Cuba; Borneo to the Bahamas, with the Old Providence Channel to the south, and the Florida Pass to the west. The coasts of China answer to those of the United States, the Philippines to the Bermudas, the Japan Islands to Newfoundland. As with the Gulf Stream, so also here with this China Current, there is a counter current of cold water between it and the shore. The climates of the Asiatic coast correspond with those of America along the Atlantic, and those of Columbia, Washington, and Vancouver are duplicates of those of Western Europe and the British Islands; the climate of California (State) resembling that of Spain; the sandy plains and rainless regions of Lower California reminding one of Africa, with its deserts between the same parallels, etc. Moreover, the North Pacific, like the North Atlantic, is enveloped, where these warm waters go, with mists and fogs, and streaked with *lightning.* The Aleutian Islands are almost as renowned for fogs and mists as are the Grand Banks of Newfoundland. A surface current flows north through Behring's Straits into the Arctic Sea; but in the Atlantic the current is from, not into the Arctic Sea; it flows south on the surface, north below; Behring's Straits being too shallow to admit of mighty under currents, or to permit the introduction from the polar basin of any large icebergs into the Pacific.

The Currents of the Pacific.—The contrast has been drawn between the China or "Gulf Stream" of the North Pacific, and the Gulf Stream of the North Atlantic. The course of the China Stream has never been satisfactorily traced out. There is along the coast of California and Mexico, a southwardly movement of waters, as there is along the west coast of Africa toward the Cape de Verd Islands. In the open space west of this, southwardly set along the African coast, there is the famous Sargasso Sea, which is the general receptacle of the drift-wood and seaweed of the Atlantic. So, in like manner, to the west from California of this other southwardly set, lies the

pool into which the drift-wood and sea-weed of the North Pacific are generally gathered, but in small quantities. The natives of the Aleutian Islands, where no trees grow, depend upon the drift-wood cast ashore there for all the timber used in the construction of their boats, fishing-tackle, and household gear. Among this timber, the camphor-tree, and other woods of China and Japan, are said to be often recognized. In this fact we have additional evidence touching this China Stream, as to which, but little, at best, is known. "The Japanese," says Lieutenant Bent, in a paper read before the American Geographical Society, January, 1856, "are well aware of its existence, and have given it the name of 'Kuro-Siwo,' or Black Stream, which is undoubtedly derived from the deep blue color of its water, when compared with that of the adjacent ocean." From this we may infer that the blue waters of this China Stream also contain more salt than the neighboring waters of the sea.

The Cold Current of Okotsk.—Inshore of, but counter to the China Current, along the eastern shores of Asia, is found a streak or layer, or current of cold water answering to that between the Gulf Stream and the American coast. This current, like its fellow in the Atlantic, is not strong enough at all times sensibly to affect the course of navigation; but, like that in the Atlantic, it is the nursery of most valuable fisheries. The fisheries of Japan are quite as extensive as those of Newfoundland, and the people of each country are indebted for their valuable supplies of excellent fish to the cold waters which the currents of the sea bring down to their shores.

Humboldt's Current.—The currents of the Pacific are but little understood. Among those about which most is thought to be known, is the Humboldt Current of Peru, which the great and good man whose name it bears, was the first to discover. This current is felt as far as the equator, mitigating the rainless climate of Peru as it goes, and making it delightful. The Andes, with their snow-caps, on one side of the narrow Pacific slopes of this inter-tropical republic, and the current from the Antarctic regions on the other, make its climate one of the most remarkable in the world; for, though torrid as to latitude, it is such as to temperature that cloth clothes are seldom felt as oppressive during any time of the year, especially after nightfall.

Currents of the Atlantic.—The principal currents of the Atlantic will be described in the article on the Gulf Stream. Besides these, its offsets are the Equatorial Current and the St. Roque or Brazil Current. Their fountain-head is the same. It is in the warm waters about the equator, between Africa and America. The former, receiving the Amazon and the Oronoco as tributaries by the way, flows into the Caribbean Sea, and becomes, with the waters in which the vapors of the trade-winds leave their salts, the feeder of the Gulf Stream. The Brazil Current, coming from the same fountain, is supposed to be divided by Cape St. Roque, one branch going to the south under this name, the other to the westward. This last has been a great bugbear to navigators, principally on account of the difficulties which a few dull vessels falling to leeward of St. Roque have found in beating up against it. It was said to have caused the loss of some English transports in the last century, which fell to leeward of the Cape on a voyage to the other hemisphere; and navigators, accordingly, were advised to shun it as a danger. This current has been an object of special investigation during my researches connected with the Wind and Current Charts, and the result has satisfied me that it is neither a dangerous nor a constant current, notwithstanding older writers. Horsburgh, in his East India Directory, cautions navigators against it; and Keith Johnston, in his grand physical Atlas, published in 1848, thus speaks of it: "This current greatly impedes the progress of those vessels which cross the equator west of 23° west longitude, impelling them beyond Cape St. Roque, when they are drawn toward the northern coast of Brazil, and can not regain their course till after weeks or months of delay and exertion." So far from this being the case, my researches abundantly prove that vessels which cross the equator five hundred miles to the west of longitude 23° have no difficulty on account of this current in clearing that Cape. I receive almost daily the abstract logs of vessels that cross the equator west of 30° west, and in three days from that crossing they are generally clear of that Cape. A few of them report the current in their favor; most of them experience no current at all; but, now and then, some do find a current setting to the northward and the westward, and operating against them at the rate of twenty miles a day. The inter-tropical regions of the Atlantic, like those of the other oceans, abound with conflicting currents, which no researches yet have enabled the mariner to unravel so that he may at all times know where they are and tell how they run, in order that he may be certain of their help when favorable, or sure of avoiding them if adverse.

Under Currents.—Lieutenant J. C. Walsh, in the U. S. schooner *Taney*, and Lieutenant S. P. Lee, in the U. S. brig *Dolphin*, both, while they were carrying on a system of observations in connection with the Wind and Current Charts, had their attention directed to the subject of submarine currents. They made some interesting experiments upon the subject. A block of wood was loaded to sinking, and, by means of a fishing-line or a bit of twine, let down to the depth of one hundred or five hundred fathoms, at the will of the experimenter. A small barrel as a float, just sufficient to keep the block from sinking further, was then tied to the line, and the whole let go from the boat. To use their own expressions, "It was wonderful, indeed, to see this *barrega* move off, against wind, and sea, and surface current, at the rate of over one knot an hour, as was generally the case, and on one occasion as much as 1¾ knots. The men in the boat could not repress exclamations of surprise, for it really appeared as if some monster of the deep had hold of the weight below, and was walking off with it." Both officers and men were amazed at the sight. The experiments in deep-sea soundings have also thrown much light upon the subject of under currents. There is reason to believe that they exist in all, or almost all parts of the deep sea, for never in any instance yet has the deep-sea line ceased to run out, even after the plummet had reached the bottom. If the line be held fast in the boat, it invariably parts, showing, when two or three miles of it are out, that the under currents are sweeping against the bight of it with what seamen call a *swigging force*, that no sounding twine has yet proved strong enough to withstand. Lieutenant J. P. Parker, of the United States' frigate *Congress*, attempted, in 1852, a deep-sea sounding off the coast of South America. He was engaged with the experiment eight or nine hours, during which time a line nearly ten miles long was paid out. Night coming on, he had to part the line (which he did simply by attempting to haul it in) and return on board. Examination proved that the ocean there, instead of being over ten miles in depth was not over three, and that the line was swept out by the force of one or more under currents.—Maury's *Physical Geography*.

Currency. (Lat. *curro*, 1 run.) In Political Economy, a term sometimes used to express the collective amount of the money, and of the bills, checks, and other substitutes for money, employed in selling or buying, or in the distribution of the commodities and services among the different ranks and orders of the community.—See *Articles* Banks, Coinage, Credit, *and* Gold.

Currencies in United States. The Treasury Department of the United States issued, on the 19th of September, 1851, the following instructions to collectors and officers of the customs: "In view of the embarrassments existing at some of the principal ports, and the want of uniformity in the practice of assessing duties upon merchandise invoiced in depreciated foreign currencies, it is deemed proper to establish some uniform regulations on the subject, for the future government of officers of the customs. The law requires invoices of all imported merchandise subject to an *ad valorem* duty to be made out in the currency of the country or place where the importation is made. The basis of value upon which the duties are to be assessed is the true market value in the principal markets of the country at the period of exportation to the United States, exhibited in such foreign currency at its intrinsic value, and converted into money of the United States according to the rates of value at which said currency may have been determined agreeably to law. Congress has fixed the value of some of the foreign currencies at specific rates; but where the invoice cost of goods, wares, or merchandise is exhibited in a depreciated currency issued and circulated under the authority of any foreign government, the President of the United States is duly authorized by law to cause to be established 'fit and proper regulations' for estimating the duties on any such goods, wares, and merchandise. In all cases, therefore, where the foreign currency is depreciated, its value in money of the United States is to be ascertained in the mode prescribed by the circular instructions issued by the Department, by direction of the President, under the dates of the 14th of May and the 16th of August, 1831, and the 16th of October, 1832. Although the consular certificate, required by said instructions, of the value in United States' money of any foreign depreciated currency is ordinarily to be received and taken as evidence of such value, yet it is not to be deemed conclusive in cases where facts or circumstances may exist, producing a rational belief that manifest error attaches to such certificate. Where Congress has fixed the value in American money of any foreign currency, it is to be understood that the value is to attach in all cases in estimating that duty; and, should any of the said currencies become depreciated, either by the issue of government paper money or otherwise, the collectors nevertheless will make no alteration in the value in estimating duties, without the previous authority of the Department, which authority will be promptly given in all cases, so soon as the fact of such depreciation is authentically brought to his knowledge. Such information has been received as regards the Austrian florin, which, until further instructions on the subject, the collectors will consider as depreciated currency, and levy the duty accordingly on invoices stated in it. The foreign currencies alluded to above, the value of which is fixed by various acts of Congress, are noted at foot, for your information and government.

"It frequently happens that invoices stated in the currency of the country of shipment have expressed on the face of them, in the currency of another country, the amount for which bills of exchange may have been drawn in payment of the goods, or for other causes. In cases where both currencies have a specie basis, any difference which may exist between the two amounts thus exhibited is presumed to arise from the interest on the sight of the bill, or a regular difference of exchange between the two points; and where the currency of the country of shipment is depreciated, a similar difference may exist between the specie value of the foreign currency thus expressed on the face of the invoice, and the consular certified specie value of the local depreciated currency in which the invoice is stated. As the law provides that the duties shall be estimated on the specie value of the currency of the country whence the shipment is made, that mode, as a general rule, will therefore be adopted; yet where the difference between the value of two currencies, expressed upon the face of the invoice, is so great as to excite a well-founded belief that either deception or error exists, the appraisers are required to investigate the facts, and if they ascertain that there has been error, either in the consular certificate in giving the specie value of a depreciated currency, or that otherwise the true specie value in currency of the United States has not been correctly set forth, it will become their duty to correct said error by advancing the cost or value given in the invoice or on the entry, either in the price of the goods or the estimated specie value of the depreciated currency."

Curricle (Lat. *curriculum*, a chariot), a carriage with two wheels, drawn by two horses abreast, and supported by a pole connected with a bar across the horses' backs.

Currying of Leather (*Corroyer*, French; *Zurichten*, German) is the art of dressing skins after they are tanned, for the purposes of the shoemaker, coach, and harnessmaker, etc., or of giving them the necessary smoothness, lustre, color, and suppleness. The currier's shop has no resemblance to the tanner's premises, having a quite different set of tools and manipulations. Every kind of tanned leather not intended for soles or such coarse purposes, is generally curried before being delivered to the workmen who fashion it, such as shoemakers, couchmakers, saddlers, etc. The chief operations of the currier are four: 1. Dipping the leather, which consists in moistening it with water, and beating it with the *mace*, or a mallet, upon the hurdle. He next applies the *cleansers*, both blunt and sharp, as well as the head-knife, to remove or thin down all inequalities. After the leather is shaved, it is thrown once more into water, and well scoured by rubbing the grain side with pumice-stone, or a piece of slaty grit, whereby it parts with the bloom, a whitish matter, derived from the oak bark in the tan-pit. 2. Applying the pommel to give the leather a granular appearance, and correspondent flexibility. The leather is first folded with its grain side in contact, and rubbed strongly with the pommel, then rubbed simply upon its grain side; whereby it becomes extremely flexible. 3. Scraping the leather. This makes it of uniform thickness. The workman holds the tool nearly perpendicular upon the leather, and forcibly scrapes the thick places with both his hands. 4. Dressing it by the round-knife. For this purpose he stretches the leather upon the wooden cylinder, lays hold of the pendent under edge, with the pincers attached to his girdle, and then with both hands applies the edge of the knife to the surface of the leather, slantingly from above downward, and thus pares off the coarser fleshy parts of the skin. This operation requires great experience and dexterity; and when well performed, improves greatly the look of the leather.

The hide or skin, being rendered flexible and uniform, is conveyed to the shed or drying-house, where the greasy substances are applied, which is called dubbing (daubing) or stuffing. The oil used for this purpose is prepared by boiling sheepskins or doeskins in cod oil. This application of grease is often made before the graining-board or pommel is employed. Before waxing, the leather is commonly colored by rubbing it with a brush dipped into a composition of oil and lamp-black on the flesh side, till it be thoroughly black; it is then black-sized with a brush or sponge, dried, tallowed with the proper cloth, and slicked upon the flesh with a broad, smooth lump of glass; sized again with a sponge; and when dry, again curried as above described. Currying leather on the hair or grain side, termed black on the grain, is the same in the first operation with that dressed on the flesh, till it is scoured.

Then the first black is applied to it while wet, by a solution of copperas put upon the grain, after this has been rubbed with a stone; a brush dipped in stale urine is next rubbed on, then an iron slicker is used to make the grain come out as fine as possible. It is now stuffed with oil. When dry, it is seasoned; that is, rubbed over with a brush dipped in copperas-water, on the grain, till it be perfectly black. It is next slicked with a good grit-stone, to take out the wrinkles, and smooth the coarse grain. The grain is finally raised with the pommel or graining-board, by applying it to the leather in different directions. When thoroughly dry, it is grained again in two or three ways. Hides intended for covering coaches are shaved nearly as thin as shoe hides, and blacked upon the grain.

Curtains. Window-curtains are now made in great variety, both of materials and manufacture, the principal difference being as to the former, which consist chiefly of 3—silk, wool, and cotton. Silk is employed in *damasks* and *tabarets*, mixed with wool, the former being a flowery pattern of silk on a woolen foundation, whilst the latter is a satin stripe arranged in the same way as regards the composing materials. A species of *terry-velvet* is also now used in which the two materials are blended, and which makes a rich and elegant curtain, this is made also in wool without silk, and then called *repp*. When wool is used by itself, it then forms a *broad-cloth* suited to dining-rooms, or a damask, which is not so beautiful to the eye as the *silk damask*, but still sufficiently so for common purposes, or else *a moreen*, either plain or watered, or a *chalk*, which is a thin trill material, printed with chintz patterns. Cotton is made into a plain article, without any thing but a mere web and woof, which, when printed and glazed, is called chintz.

Customs are duties charged upon commodities on their being imported into or exported from a country. They were collected upon merchandise in England, under Ethelred II., in 979. The king's claim to them by grant of Parliament was established 3 Edward I., 1274. [This is questionable.] The customs were farmed to Mr. Thomas Smith, for £20,000 for several years, in the reign of Elizabeth.—Stowe. They were farmed by Charles II. for £890,000 in the year 1666. —Davenant. The duties collected in England were,

In 1530.....	£14,000	In 1808.....	£9,973,000
In 1592.....	50,000	In 1828.....	11,498,000
In 1614.....	148,000	In 1830.....	17,540,000
In 1622.....	168,000	In 1835.....	18,612,000
In 1642.....	500,000	In 1840.....	19,915,000
In 1720.....	1,555,600	In 1855.....	20,000,000
In 1748.....	2,000,000		

The customs in Ireland were, in the year 1224, viz., on every sack of wool, 3d.; on every last of hides, 6d.; and 2d. on every barrel of wine.—*Annals of Dublin.* Custom-house officers, and officers of excise, were disqualified from voting for the election of members of Parliament, by statute 22 George III., 1782.

Customs duties seem to have existed in every commercial country. The Athenians laid a tax of a fifth on the corn and other merchandise imported from foreign countries, and also on several of the commodities exported from Attica. The *portoria*, or customs payable on the commodities imported into, and exported from, the different ports in the Roman empire, formed a very ancient and important part of the public revenue. The rates at which they were charged were fluctuating and various, and little is now known respecting them. Cicero informs us, that the duties on corn exported from the ports of Sicily were, in his time, 5 per cent. Under the imperial government, the amount of the *portoria* depended as much on the caprice of the prince as on the real exigences of the state. Though sometimes diminished, they were never entirely remitted, and were much more frequently increased. Under the Byzantine emperors, they were as high as 12½ per cent.

Customs duties existed in England previous to the Conquest. They appear to have derived their name from having been immemorially or customarily charged on certain articles when conveyed across the principal ferries, bridges, etc., within the kingdom, and on these and other articles of native and foreign produce, when exported from or imported into the kingdom. In 1206 the entire customs revenue of England, including that derived from tolls and fairs, amounted to only £4,958 7s. 3½d.! It is not, therefore, true, as has sometimes been stated, that the king's first claim to the customs was established in the reign of Edward I. But that able and politic prince, by rendering the levy of the old duties more effectual, and procuring the sanction of Parliament to the imposition of new duties, was the first who made the customs revenue of any material importance. The duties were at first principally laid on wool, woolfels (sheepskins), and leather when exported. There were also extraordinary duties paid by aliens, which were denominated *parva custuma*, to distinguish them from the former, or *magna custuma*. The duties of tonnage and poundage, of which mention is so frequently made in English history, were customs duties; the first being paid on wine by the tun, and the latter being an *ad valorem* duty of so much a pound on all other merchandise. When these duties were granted to the crown, they were denominated *subsidies*; and as the duty of poundage had continued for a lengthened period at the rate of 1s. a pound, or 5 per cent., a subsidy came, in the language of the customs, to denote an *ad valorem* duty of 5 per cent. The *new subsidy* granted in the reign of William III. was an addition of 5 per cent. to the duties on most imported commodities.—*Treatise on Taxation, by* J. R. McCulloch, 2d ed., p. 234.

The various customs duties were collected, for the first time, in a book of rates published in the reign of Charles I.; a new book of rates being again published in the reign of George I. But, exclusive of the duties entered in these two books, many more had been imposed at different times; so that the accumulation of the duties, and the complicated regulations to which they gave rise, were productive of the greatest embarrassment. The evil was increased by the careless manner in which new duties were added to the old, a per centage being sometimes added to the original tax; while at other times the commodity was estimated by a new standard of bulk, weight, number, or value, and charged with an additional impost, without any reference to the duties formerly imposed. The confusion arising from these sources was still further augmented by the special appropriation of each of the duties, and the consequent necessity of a separate calculation for each. The intricacy and confusion inseparable from such a state of things proved a serious injury to commerce, and led to many frauds and abuses.

Customs duties, like all duties on particular commodities, though advanced in the first instance by the merchant, are ultimately paid by those by whom they are consumed. When a government lays a duty on the foreign commodities which enter its ports, the duty falls entirely on such of its own subjects as purchase these commodities; for the foreigners would cease supplying its market with them, if they did not get the full price of the commodities, exclusive of the tax; and, for the same reason, when a government lays a duty on the commodities which its subjects are about to export, the duty does not fall on them, but on the foreigners by whom they are bought. If, therefore, it were possible for a country to raise a sufficient revenue by laying duties on exported commodities, such revenue would be wholly derived from others, and it would be totally relieved from the burden of taxation, except in so far as duties might be imposed by foreigners on the goods it imports from them. Care, however, must be taken, in imposing duties on exportation, not

to lay them on commodities that may be produced at the same, or nearly the same, cost by foreigners; for the effect of the duty would then be to make the market be supplied by others, and to put an entire stop to their exportation. But in the event of a country possessing any decided natural or acquired advantage in the production of any sort of commodities, a duty on their exportation would seem to be the most unexceptionable of all taxes. If the Chinese chose to act on this principle, and had the power, they might derive a considerable revenue from a duty on exported teas, which would fall entirely on the English and other foreigners who buy them. The coal and tin, and perhaps, also, some of the manufactured goods produced in this country, seem to be in this predicament. The revenue derived from the customs duties in 1590, in the reign of Elizabeth, amounted to no more than £50,000. In 1613, it had increased to £148,075; of which no less than £109,572 were collected in London. In 1660, at the Restoration, the customs produced £421,582; and at the Revolution, in 1688, they produced £781,987. During the reigns of William III. and Anne, the customs revenue was considerably augmented, the nett payments into the exchequer in 1712, being £1,315,423. During the war terminated by the peace of Paris in 1763, the nett produce of the customs revenue of Great Br" amounted to nearly £2,000,000. In 1792, it am. ated to £4,407,000. In 1815, at the close of the war, it amounted to £11,360,000. See *Great Britain*. See *Tariff, United States*.

Consular officers are instructed that the following values have been established by the laws of the United States for certain foreign currencies, viz.: dollars of Mexico, Peru, Chili, and Central America, $1; dollar, specie, of Denmark, $1 05; dollar, rix, or thaler, of Prussia, and the Northern States of Germany, 69 cts.; dollar, rix, of Bremen, 78¾ cts.; dollar, specie, of Sweden and Norway, $1 06; ducat of Naples, 80 cts.; franc of France and Belgium, 18 6-10 cts.; florin of Netherlands, 40 cts.; florin of Austria, 48½ cts.; florin of Southern States of Germany, 40 cts.; guilder of Netherlands, 40 cts.; lira of the Lombardo-Venetian Kingdom, 16 cents; lira of Tuscany, 16 cents; lira of Sardinia, 18 6-10 cts.; livre tournoise of France, 18½ cts.; livre of Leghorn, 16 cts.; milrea of Portugal, $1 12; milrea of Azores, 83½ cts.; marc banco of Hamburg, 35 cts.; ounce of Sicily, $2 40; pound sterling of Great Britain, $4 84; pound sterling of British provinces of Nova Scotia, New Brunswick, Newfoundland, and Canada, $4; pagoda of India, $1 84; real vellon of Spain, 5 cts.; real plate of Spain, 10 cts.; ruble, silver, of Russia, 75 cts.; rupee, company, 44½ cts.; rupee of British India, 44½ cts.; tael of China, $1 48.

Invoices of merchandise made out in the depreciated currencies of Austria, Chile, Bolivia, Peru, Porto Rico, and Nova Scotia, with certificates of United States' consuls annexed, will be received by the collectors of the United States.

The depreciated pound sterling of Nova Scotia will be taken, in computation at the custom-house of duties, in the case of invoices of merchandise from that province made out in that depreciated currency, at $3 84, as compared with the silver currency of the United States, provided such depreciation, at the date of exportation, is certified by the United States' consul at the port of shipment.

The value of the Austrian silver florin is fixed by the laws of the United States, and the Austrian paper florin is usually depreciated in comparison with it. Assuming it to be, for example, depreciated 38 per cent., the computation will be made by collectors by proportion, to w as 138 : 100, so is the amount of paper florins stated in the invoice to the value in silver florins. Of course the consular certificate, showing the rate of depreciation, must be produced in such cases.—See *contra*, Act, *Feb.* 1857.

A Table showing the Revenue collected from the beginning of the Government to June 30, 1855, under the head of Customs, and the particular Tariff, under which the Revenue from those sources was collected.

Years.	From Customs.	Date of tariff.	Total receipts.
From March 4, 1789, to Dec. 31, 1791	$4,899,473	July 4, 1789—general; August 10, 1790—general; March 3, 1791—general	$10,210,025
1792	3,443,070	May 2—general	8,740,766
1793	4,255,806	....	5,720,624
1794	4,801,065	June 5—special; June 7—general	10,041,101
1795	5,588,461	Jan. 29—general	9,419,809
1796	6,567,987	....	8,740,329
1797	7,549,649	March 3—general; July 8—special	8,7[illegible],916
1798	7,106,061	....	8,209,070
1799	6,610,449	....	12,621,459
1800	9,080,932	May 13—special	12,451,184
1801	10,750,778	....	12,946,455
1802	12,438,235	....	15,001,201
1803	10,479,417	....	11,064,097
1804	11,098,565	March 26—special; March 27—special.	11,853,840
1805	12,936,487	....	13,689,508
1806	14,667,698	....	15,608,828
1807	15,845,521	....	16,398,019
1808	16,863,556	....	17,062,544
1809	7,296,020	....	7,773,473
1810	8,583,309	....	12,144,206
1811	13,313,822	....	14,431,588
1812	8,958,777	July 1—special.	22,639,082
1813	13,224,023	July 29—special.	40,524,544
1814	5,998,772	....	34,569,586
1815	7,282,942	....	50,961,237
1816	36,306,874	February 5—special; April 27—general.	57,171,421
1817	26,283,348	....	33,833,592
1818	17,176,385	April 20—special.	21,593,986
1819	20,283,608	March 3—special.	24,605,665
1820	15,005,612	....	20,881,499
1821	13,004,447	....	19,573,708
1822	17,589,761	....	20,232,427
1823	19,088,493	....	20,540,666
1824	17,878,325	May 22—general.	24,381,212
1825	20,096,718	....	26,840,858
1826	23,341,331	....	25,260,434
1827	19,712,283	....	22,966,363
1828	23,205,523	May 19—general; May 24—special.	24,763,629
1829	22,681,965	....	24,827,027
1830	21,922,391	May 20—special; May 29—special.	24,844,116
1831	24,224,441	....	28,526,820
1832	28,465,237	July 13—special; July 14—general.	31,865,561
1833	29,032,508	Mar. 2—special; Mar. 2—compromise	33,048,426
1834	16,214,957	....	21,791,685
1835	19,391,310	....	35,430,087
1836	23,409,940	....	50,826,796
1837	11,169,290	....	27,888,859
1838	16,158,800	....	39,019,382
1839	23,137,924	....	33,881,242
1840	13,499,502	....	25,052,195
1841	14,487,216	Sept. 11—general	30,519,477
1842	18,187,908	Aug. 30—general.	34,773,744
June 30, 43	7,046,843	....	20,782,410
1843—44	26,183,570	....	31,198,555
1844—45	27,528,112	....	29,941,353
1845—46	26,712,067	....	29,699,067
1846—47	23,747,864	July 30, 1846—general	55,338,168
1847—48	31,757,070	Mar. 29, 1848—special	56,992,479
1848—49	28,346,738	Aug. 12, 1848—special; Jan. 26, 1849—spec.	59,796,892
1849—50	39,668,686	....	47,649,388
1850—51	49,017,567	....	52,702,704
1851—52	47,339,326	....	49,893,115
1852—53	58,931,865	....	61,500,102
1853—54	64,224,190	....	73,802,291
1854—55	58,025,794	....	65,351,374
1855—56	64,022,863	....	73,918,141
Total.	$1,827,151,091		$1,885,997,256

The value of the specie dollar of Sweden and Norway having been fixed by an act of Congress of the 22d May, 1846, at 106 cents United States' currency, and the rix dollar banco of Sweden and Norway, being a component part of their specie dollar, and in the invariable proportion of 2½ to 1, and consequently equal to 39¾ cents United States' currency; the rix dollar banco of Sweden and Norway is therefore taken, in computations at the custom-houses, at the rate of 39¾

cents, United States' currency, and no consular certificate will be required, unless the currency should be depreciated. All former acts authorizing the currency of foreign gold or silver coins, and declaring the same a legal tender in payment of debts, are hereby repealed; but it shall be the duty of the director of the mint to cause assays to be made, from time to time, of such foreign coins as may be known to our commerce, to determine their average weight, fineness, and value, and to embrace in his annual report a statement of the results therefor.

The certificate of the United States' consul, showing the value of the currency of the country from which the merchandise is imported, and in which the invoice is made out, in United States' or Spanish silver dollars, must be required in every case in which the value of such foreign currency is not fixed by the laws of the United States. And in case the foreign currency in which the invoice is made out, whether its value is fixed by the laws of the United States or not, is depreciated, the certificate of the United States' consul, stating the rate of depreciation, must be produced on the entry, and the officers of the customs are governed by such certificate in computing the foreign market value of the merchandise.

Customs Duties consist for the most part of taxes levied upon goods, and produce brought for consumption from foreign countries; such duties are sometimes collected upon exports made to foreign countries, and upon goods and produce passing from one port to another in the same country.

The earliest statute passed in England, whereby the crown was authorized to levy customs duties, was the 3d of Edward I. The mode long employed in the collection of these duties, was to affix a certain rate or value upon each kind or article of merchandise, and to grant what was called a *subsidy* upon these rates. This subsidy was generally 1 shilling of duty for every 20 shillings of value assigned in the book of rates. The early acts which grant these duties speak of them as subsidies of tonnage and poundage. The word tonnage was applied to a specific duty charged on the exportation of each ton of beer; and the word poundage was applied to other articles valued as already explained.

The first "book of rates agreed upon by the House of Commons" is believed to be that compiled by a committee in 1642, during the reign of Charles I., and published under the authority of the House by Lawrence Blacklock. The next book of rates of which we have any record, was published by order of the House of Commons, in 1660, the year of the restoration of Charles II.—*Nat. Cyclo.* See HUNT'S *M. M.*, v. 145 (J. HOWING), vi. 9 (C. RAGUET), ix. 448 (C. C. WHITTLESEY), iv. (G. TUCKER), xiv. 456 (by C. C. JEWETT). See also *Encyc. Am.*, *Art. Taxes.*

Custom-house, an office established by law in maritime cities or seaports, for the receipt and management of the customs and duties imposed on goods imported or exported.

Customs of Merchants. The law merchant is a peculiar system which prevailed throughout the whole of the Anglo-Saxon times; it was especially recognized in the time of Edward III.; when the staple was ordained, a mayor was to be chosen in each town, skilled in the law merchant to do right to every man according to that law. The modern law merchant is composed of three distinct elements, viz., the *customs* of merchants, the ordinances of foreign states, and the statute law—as art precedes science, so customs precede law. Long are these customs practiced before they are committed to writing. But though not written or declared by the legislative power, they acquire all the authority of law, and are gradually engrafted upon the common law of the country. The customs of merchants are part of the law. Judicial determinations settle what is the custom of merchants, and they become the *lex mercatoria* as to the different questions. In order that a custom be binding, it must be either the usage of the whole mercantile world, or of a particular trade universally known as such. A usage of a particular place, or of a particular class of persons, would not be binding on other persons unless these were acquainted with those usages and adopted them. In all cases, however, no custom can be set against an express statute law. Among the most important customs among merchants are the establishment of boards of trade, the settlement of disputes by arbitrations, and the binding force of the decision of a referee. See LEVI'S *Manual of Mercantile Law.*

Cutlass, a short sword used by seamen. The art of fencing with it is different from that with the small sword or broad sword. A guard over the hand is an advantage. It is, if well understood, a very effectual weapon in close contest; on account of its shortness, it can be handled easily, and yet it is long enough to protect a skillful swordsman.

Cutlery (Fr. *coutellerie*; Lat. *culter*, a knife), generally speaking, includes all cutting tools made of steel. Various countries and cities have at different periods excelled in the manufacture of some particular article, as Damascus for a beautiful sword blade, which has hitherto baffled all attempts at imitation. If this blade is made, as is commonly supposed, by welding together extremely fine wires of iron, steel, and gold, laid alternately on each other, the dexterity required is such as must astonish the most active and experienced workmen of other countries. The peculiar wave, usually called the water, so universally admired, is effected by the application of a weak acid to the polished surface of iron and steel. At Damascus, sulphate of alumine is used; but any dilute acid seems to answer the purpose. The cutlery of England is deservedly held in high estimation in every part of the civilized world. The finer articles, as razors, penknives, scissors, and surgical instruments, are made of cast steel, that is, steel purified and equalized by fusion. Dexterity and nice attention on the part of the workman to a variety of circumstances, as the quality of the steel, nature of the fuel, accuracy in the process of hardening and tempering, and many other minor considerations, are essential to the production of a good cutting instrument. For table-knives, and all cutlery of that description, shear-steel is generally used; the tang and shoulder of the table knife and fork are iron, united to the blade by welding. The celebrated Indian steel called wootz is not used in the manufacture of British cutlery.

The principal seat of the cutlery trade of England is at Sheffield, where all kinds of table cutlery, razors, penknives, scissors, surgeons' instruments, and every variety of cutting instruments, are manufactured. There are also some small manufactures of similar articles in London; but much the greater proportion of the cutlery sold as London-made, is actually manufactured in Sheffield, although bearing the name of London manufacturers. Sheffield cutlery has deservedly obtained a high degree of reputation in almost every part of the civilized world; and it is of the greatest importance to the commercial interests of the country that this high character should be maintained. But here it must not be omitted to be mentioned, that there is also an extensive manufacture of an inferior description of cutlery, principally consisting of table knives and forks, scissors, and pocket-knives, which are professedly made for export to the less civilized portions of the globe, but also retailed in large quantities in this country. It is manufactured by casting from a species of pig-iron. This iron is, from the superabundance of its carbon, highly susceptible of liquidity, and readily casts into the required form. In this state the cast-iron cutlery is extremely hard, and as brittle as glass; but it is reduced from this hardness by decomposition—being subjected to a strong and long-continued fire in close vessels, in contact with

iron ore, oxyd of iron, or any substance containing oxygen, with which the superabundant carbon combines, and flies off in the state of carbonic acid gas. This cast-iron cutlery is, when finished, not always distinguishable in appearance from that made at the forge, and can, of course, be afforded at a much lower price. This very fusible iron may be applied to many purposes. It is hardly necessary to add, that it is quite unfit for any description of edge instrument.

These observations apply generally to every description of knife used in surgery; but the nature of each particular operation should not be considered, in judging of the requisite degree of strength or delicacy of edge. Next in importance to the knives are the saws used in surgery. All of these must be of the best spring temper, which, for the cast-steel blade, is about 570° of Fahrenheit, and for one of Indian steel 600°, or quite the boiling point of mercury. Of another class of instruments, namely, those denominated blunt, it will be sufficient to observe, that what is known by the name of shear-steel is best adapted for the purpose. Case-hardened iron has been most improperly used, this hardening being very superficial. It is, in fact, converting the surface only into steel, by heating it to redness, in a close vessel, in contact with animal charcoal, such as charred bone, leather, or horn, and quenching it when red-hot in a cold fluid. Iron thus treated, will take a beautiful polish; but, except for ornamental purposes, it ought never to be employed. Some instruments are necessarily made of gold or silver; as catheters, and other tubes and probes. When for these ductility is required, the metals should be unalloyed; the extra expense of which, will be more than compensated by the convenience of giving to the instruments, in all cases, the desired curve and form.

The handles of instruments, together with all ornamental parts, must in a great measure depend on the taste and choice of the purchaser. It would be well, however, to avoid such materials as are known to produce chemical action when in contact with polished steel. Ivory, mother-of-pearl, and ebony are much used; but the fine walnut-tree, such as the London gunmakers employ, is perhaps of all the woods the best for the purpose. Sandal-wood answers very well, although it by no means deserves all the credit which has been given to it as a preservative of steel from rust. The instrument-maker who wishes to excel will do well to avail himself of every opportunity of witnessing the operative part of surgery; that he may observe how far the instrument is mechanically and physically adapted to its purpose, and, if necessary, be the better able to make the requisite alteration.—E. B.

The value of hardwares and cutlery exported from Great Britain in 1855, was £2,960,391. In the New England States the manufacture of cutlery is rapidly increasing. In Massachusetts about $400,000 is invested in this branch, with an annual product of about $600,000.

Quietly, but rapidly, we are day by day gaining on the old world, and the time is not far distant when it will be discovered that the majority of our manufactures are actually superior to those of Europe. As an illustration of this, we will venture to assert that there are very few persons, not concerned in the business, who are aware of the degree of excellence which the manufacture of cutlery has attained in the United States, or that, if it were generally known and encouraged, we should in all probability be entirely self-dependent as regards its production. On this subject, Fleischmann, whose work on the "Branches of Industry in the United States" has contributed more than any other book to enlighten Germany as to our country, remarks as follows:

"The manufacturers of cutlery in the United States have far surpassed those of the old world in the manufacture of tools, and that not merely in the excellence of the metal used, but especially in the practical utility of their patterns, and in the remarkable degree of finish of their work."

It is a somewhat remarkable fact that American hardware is every year developing in its shapes a practical economy of material and a straight-forward adaptation to the end in view which are unknown to the greater part of Europe. The American laborer or mechanic, it is well known, even where not gifted with a greater degree of physical ability, will still, as a rule, turn out more work in a day than a foreigner under the same circumstances. With such men, who go directly at their work and stick to it, there is no play and no trifling with labor. A result of this is shown in the fact that the American ax, which, in its well-known form, is entirely a native American pattern, is far more practically useful than the miserable European ax which it has supplanted. And not in axes alone, but in many other implements there has been a marked progress, and a gradual, though unnoticed, communication of practical patterns to English manufactories. In our factories, which are themselves very generally proofs of the same principle of economy and of keeping directly at the object proposed, there is actually more of the first quality English steel used, than in England itself. Of Hoop L, the best quality of English steel, there is annually ten times as much used as in England, though that country manufactures about fifty times as much cutlery as we do.

Could our American mechanics receive the credit so justly their due, for the improvements which they have gradually introduced into the shape of carpenters' tools, and could the world be made aware of the degree to which of late years the English trade has been indebted to them for these improvements, we will venture to state that there are few who would not be amazed. The European—especially the continental—suffers in this respect under a tyranny of "old customs," which no Yankee mechanic would believe. If we look through Paris, if we examine the pattern-plates published, we are amazed at the luxuriance of beautiful and practical forms annually produced, which glitter in shop windows, or are displayed at exhibitions. But go into the country, and we find the same clumsy, unpractical old implements which were used three centuries ago. The seed falls on stony ground.

At the present day, American cutlery is extensively imitated in Germany, even to the marks and names of our manufacturers. This is also done by English goods, but the complimentary fraud has been of late years greatly on the increase as regards our own. We will not assert that there is not, especially in England, a vast amount of inventiveness, nor that a corresponding degree of improvements has not been made. But a practical invention is less likely to die in the birth in America, and we confidently assert, without fear of refutation, that if any one will study the history of cutlery patterns adopted for the last 50 years, including all the allied branches of manufacture, he will find that by far the greater proportion of practical improvements have been of American origin.—HUNT'S *Merchants' Magazine*.

Cutter. A vessel with one mast and a bowsprit, of considerable breadth in proportion to her length. The distinction between a cutter and other vessels of one mast, which are called sloops, is, that in the cutter the jib has no *stay* to support it.

Cutters, Revenue. These vessels are usually about 100 or 150 tons, built as fast sailers, to aid the revenue officers. The captains and lieutenants of revenue cutters of the United States, are appointed by the President. Their reports are made to the Treasury Department; the vessels subject to the direction of the collector of the port. Their officers and seamen are placed upon the navy pension list, when disabled. Congress has recently authorized the construction or purchase of steam revenue cutters, which will furnish material aid to the government officers in extraordinary cases.

Cyclopædia. (More commonly *Encyclopædia*, from the Greek words *ἐν κύκλῳ παίδεια; instructions in a circle.*) A work containing definitions or accounts of the principal subjects in one or all departments of learning, art, or science. Its arrangement may be either according to divisions into the various sciences, etc., or the subjects may be arranged and treated in alphabetical order. The *Encyclopédie Française*, or *Dictionnaire Encyclopédique*, and the *Encyclopædia Britannica*, have been the most celebrated works of this species; but the earliest appears to be the *Lexicon Technicum* of Harris, published in 1706. The great French work, the *Encyclopédie Methodique*, consists, not of one, but of a series of encyclopedias or dictionaries.

Cypress, a forest tree, of which there are many varieties, the species denominated the evergreen cypress (*Cupressus sempervirens*) and the white cedar (*Cupressus Thyoides*) being the most celebrated. The cypress is indigenous to the southern parts of Europe, to several parts of Asia, and to America. It grows to a great size, and is a most valuable species of timber. It is never attacked by worms; and exceeds all other trees, even the cedar, in durability. Hence the Athenians, when desirous to preserve the remains of their heroes and other great men, had them inclosed in cypress coffins; and hence, also, the external covering of the Egyptian mummies is made of the same enduring material. The cypress is said to live to a great age; and this circumstance, combined with its thick, dark, green foliage, has made it be regarded as the emblem of death and the grave. In his *Geography and History of the Western States*, Mr. Timothy Flint has given the following account of the cypress-trees found in the southern parts of the valley of the Mississippi: "These noble trees rear their straight columns from a large cone-shaped buttress, whose circumference at the ground is perhaps 3 times that of the regular shaft of the tree. This cone rises from 6 to 10 feet, with a regular and sharp taper, and from the apex of the cone towers the perpendicular column, with little taper after it has left the cone, from 60 to 80 feet, clear shaft. Very near the top it begins to throw out multitudes of horizontal branches, which interlace with those of the adjoining trees, and, when bare of leaves, have an air of desolation and death, more easily felt than described. In the season of vegetation the leaves are short, fine, and of a verdure so deep as almost to seem brown, giving an indescribable air of funereal solemnity to this singular tree. A cypress forest, when viewed from the adjacent hills, with its numberless interlaced arms covered with this dark-brown foliage, has the aspect of a scaffolding of verdure in the air. It grows, too, in deep and sickly swamps, the haunts of fever, musquitoes, moccasin snakes, alligators, and all loathsome and ferocious animals, that congregate far from the abodes of man, and seem to make common cause with nature against him. The cypress loves the deepest, most gloomy, inaccessible swamps; and south of 33° is generally found covered with sable festoons of long moss, hanging, like shrouds of mourning wreaths, almost to the ground. It seems to flourish best when water covers its roots for half the year. Unpromising as are the places and circumstances of its growth, no tree of the country where it is found is so extensively useful. It is free from knots, it is easily wrought, and makes excellent planks, shingles, and timber of all sorts. It is very durable, and incomparably the most valuable tree in the southern country of this valley." Of whatever materials the building is constructed, the roof is universally covered with cypress shingles, which, if made of trees felled in the winter, last forty years. Cypress boards are preferred to those of pine for the inside of brick houses, and for window-sashes, and the panels of doors exposed to the weather; cabinet-makers also choose it for the inside of mahogany furniture. It is highly proper for the masts and sides of vessels, and wherever it grows it is chosen for canoes, which are fashioned from a single trunk, and are often 30 feet long and 5 feet wide, light, solid, and more durable than those of any other tree. It makes the best pipes to convey water under the ground; especially the black variety, which is more resinous and solid.—Browne's *Trees of America*.

Cyprus (*Kybris*), an island in the N. E. corner of the Levant, lying at about equal distances from the shores of Cilicia and Phœnicia. Its extreme length from the promontory of Dinaretum to that of Acamas is about 140 miles; its extreme breadth, from the promontory of Crommyon to that of Curias, about 70 miles. The area is roughly estimated at about 4,500 English square miles. The greater part of the island is occupied by the central ridge and spurs of the Stavro-Vuno and Santo Croce mountains (the ancient Olympus). The loftiest peaks of this range attain a height of from 8,000 to 10,000 feet above the sea. The northern slopes are rocky and bare, but on the side of the south they are well wooded and highly picturesque, and inclose, in various parts of their course, valleys of unrivaled fertility. Considerable part of the wealth of ancient Cyprus arose from its copper mines, the most important of which were those of Tamasus in the centre of the island, Soli on the north coast, and Amathus and Cyrium on the south coast. In these mines gold and silver were also found. The precious stones of Cyprus were also highly valued. The chief of these were the emerald, agate, malachite, jasper, opal, and the minerals asbestos and rock crystal.

The first settlers in Cyprus appear to have been of Phœnician origin. Under Augustus it became an imperial province, and was governed by a proconsul, with a staff of inferior officers. Before the close of the 1st century of the Christian era, the Jewish population of the island had greatly increased, and in the reign of Hadrian, is said to have risen in rebellion, and slain 200,000 of the other inhabitants. In the 7th century, Cyprus fell into the hands of the Saracens; and in the 9th, it owned the supremacy of the "good" Haroun Al Raschid. At the close of the 12th century, it was conquered by Richard Cœur de Lion, who made it over first to the Knights of the Temple, and ultimately to Guy of Lusignan, titular king of Jerusalem. For three centuries the island remained in the family of Lusignan, till, in 1473, it became an appendage of the Venetian republic. Cyprus was retained by the Venetians till in 1571 it was overrun by an army of Turkish invaders, who stormed Lefkosia and Famagosta, and made a general massacre of the inhabitants. Since that date the island has remained in possession of the Turks, and now forms a pashalic in the Eyalet of Djizaïr. Under the Turkish rule the material prosperity of Cyprus has greatly declined. In the times of the Venetian supremacy, the island maintained a population of 1,000,000; its present population is only about 150,000, of whom the great majority are Greeks. Many parts of the island, formerly healthy and fertile, are now, from malaria and other causes, barren and uninhabitable. Its trade was at one time valuable and important; now the value of its annual imports does not exceed £26,000; of its exports, about £60,000. Besides corn, of which it produces about 120,000 quarters annually, Cyprus yields in considerable quantities cotton, wine, various kinds of fruit, opium, and madder; while the mountain districts furnish olives, pines, and many species of valuable timber. On the island are found great quantities of the *Ferula græca*, which the Cypriote applies to a great variety of domestic purposes. This is the plant whose uses are feigned by the poets to have been taught to mortals of old by Prometheus.

D.

Dacca, the capital of an extensive and rich district in the eastern quarter of the province of Bengal, a large city, and for 80 years the capital of Bengal, of which it is still the third city in point of extent and population. It is situated beyond the principal stream of the Ganges, on the northern bank of a very large branch of that river, called the Boor Gunga, or old Ganges, at the distance of a hundred miles from the mouth of the Ganges. Its position is admirably well adapted for inland trade, as the river which flows past it communicates with all the other inland navigations by a direct course. The present town covers a great deal of ground, extending four miles along the bank of the river, though it is not of proportional breadth. The houses of the wealthy are built of brick, but there are many thatched houses, with very narrow and crooked streets; the bazaars are only tiled or thatched; and as every vacant spot is covered with trees, the town looks from a distance like a grove. Owing to the effects of British competition, the manufactures of Dacca are at this time scarcely deserving of notice; but here were formerly manufactured the most beautiful muslins, which were exported to all quarters of the world, and which had long been famed for their delicacy and beauty. The spinning of the thread was carried on with wonderful nicety. The operation was performed with the fingers on a fine steel spindle by young women, who could only work during the early part of the morning while the dew was on the ground; for such was the extreme tenuity of the fibre that it would not bear manipulation after the sun had risen. Such was the skill of the darners that they could remove an entire thread from a piece of muslin, and replace it by one of a finer texture. From their wonderful fineness these muslins were called Abrawan, or "flowing water," and Shabnam, "evening dew."—E. B.

Daguerreotype. The name given to a process invented by M. Daguerre of Paris, in 1839, by which perfect fac-similes of objects are transferred upon thin copper plates with plated silver. The images are produced by the action of light upon the iodine, through the focus of the camera obscura. An apparatus somewhat kindred in design, was in contemplation about the same time by M. Niepcé, and about five years previously by Henry Fox Talbot of London; the original idea, however, is traceable as far back as the days of Roger Bacon. By means of the Talbotype, a recent improvement upon the above process, pictures in colors are produced both on paper and plates. So important a discovery in the fine arts was the daguerreotype deemed by the French government, that it awarded to its inventor a life pension of 6000 francs.—HAYDN. See SILLIMAN'S *Journal of Science*, xxxvii., p. 69; xl., p. 137; xliii., p. 185; *Foreign Quarterly Rev.*, xxiii., p. 213; *Westminster Rev.*, xxxiv., p. 434.

In 1802 Mr. Thomas Wedgewood and Sir Humphrey Davy succeeded in forming pictures of objects laid on paper prepared with nitrate of silver, and in taking profiles (silhouettes) by means of shadows. They proposed to obtain similar effects by means of the camera obscura, but their paper was not sufficiently sensitive. The effectual bar to their proceedings was, however, this: that they could discover no means of *fixing the shadows* which they had obtained, or preventing the whole surface of the paper from being gradually blackened by exposure to light.

In 1814 J. NICEPHORE NIEPCE, a retired proprietor at Chalons sur Saône, entered into a similar inquiry, but by methods quite different. He employed the solar effect upon resinous bodies, and some, at least, of his pictures were executed upon plates of pewter or of rotted silver. They were mostly copies of engravings, and the light parts corresponded to the lights of the originals. He, however, at length succeeded in fixing impressions of views in the camera obscura, though in an imperfect manner, and after very long exposure. The pictures thus obtained had this in common with more perfect processes, that the luminous impression was first brought into view by a chemical process *subsequent* to exposure in the camera. In 1825 Nicephoro Niepce became associated with Daguerre, who had previously been engaged in the same research; they agreed to communicate the results of their several experiments. The result, as is well known, was the invention of the DAGUERREOTYPE, not improperly called after Daguerre, who seems really to have worked it out almost entirely for himself after the death of Niepce in 1833; while so patient and determined was Daguerre in keeping his secret till brought to perfection, that he did not even show his results until early in 1839, when the numerous specimens he had to exhibit rivaled in delicacy any thing that the art has since produced.—*Ency. Brit. Pre. Dissertation*, by FORBES.

Dahlia. This beautiful flower was imported from China, of which it is a native, early in the present century, and amateurs in flowers have annually laid out hundreds of pounds in England, and thousands of francs in France, in the purchase of it. The Swedish botanist, Professor Dahl, first cultivated and made it known. It soon attracted notice in England, where, from the beauty of its form and variety of color, it became at once an especial favorite. In 1815, about 2 months after the battle of Waterloo, it was introduced into France, and the celebrated florist, Andre Thouine, suggested various practical improvements in its management. The botanist, Georgi, had shortly before this introduced it at St. Petersburg; and hence it is, that to this day the dahlia is known throughout Germany under the name of *Georgina*.—HAYDN.

Dairy. Milk, either in its natural state, or in the form of butter and cheese, is an article of diet so wholesome and so palatable, that the health and comfort of people, especially such of them as dwell in cities, depend much upon their having a pure and plentiful supply of it at all seasons. DAIRY MANAGEMENT, which includes every thing about the production and treatment of milk, is consequently a very important branch of husbandry, and one in which every body feels interested. The physical conditions of the different countries of the world have determined in each case the particular milk-yielding animal most suitable to be there used for dairy purposes. The Laplander obtains his supplies of milk from his reindeer, the roving Tartar from his mares, and the Bedouin of the desert from his camels. In the temperate regions of the earth many pastoral tribes subsist mainly upon the milk of their sheep. In some rocky regions the goat is invaluable for this purpose; and the buffalo is equally so amid the swamps and jungles of tropical climates. The milking of ewes was once a common practice in Great Britain; but it has fallen into disuse because of its hurtful effects upon the flock. A few milch asses and goats are kept for the benefit of infants or invalids; but with these exceptions the cow is the only animal now used for dairy purposes in this country and Europe.

Butter is made either from cream only, or by churning the whole milk and cream together. The best butter is obtained from the cream which rises during the first 12 hours after milking, and the next best by churning the whole milk. In the former case the new milk, after being carefully strained, is poured into

shallow vessels of glazed earthenware, glass, tinned iron, wood, lead, or zinc, of which the 8 first-named sorts are the best. The wooden vessels are objectionable from the difficulty of cleaning them thoroughly; and the last two from the noxious salt which is produced by the action of the acid of the milk on the metal. When it is intended to extract as nearly the whole of the butter from the milk as is practicable, the 1st skimming takes place at the end of 24 hours, and is followed up by one or more skimmings at further intervals. The cream is stored in jars, which should be kept in a place separate from the milk-room, that the milk in the coolers may not be prematurely acidulated by the proximity of the sour cream. The latter is either stirred repeatedly, or poured from one vessel to another, to prevent the formation of a tough coat upon it before enough is accumulated for churning. In large dairies it is usual to churn daily. Three days is as long as the cream can ordinarily be kept with safety to the quality of the butter. When a cow has recently calved, her milk is comparatively rich in butter and poor in curd; but soon the relative proportions of these constituents change places, the cream diminishing and the milk becoming thicker. A very sensible change in the quality also usually takes place when a cow again becomes pregnant. In not a few cases the cream is so affected by this circumstance, that double or treble the length of time is required to churn it that sufficed before, and the butter is at the same time of inferior quality. If cows are flurried and heated, either by gadding in the pasture, or by being overdriven in bringing them home for milking, their milk becomes peculiarly liable to corrupt, the yield of butter is sensibly lessened, and its quality is impaired. The success of the process of churning depends much on the temperature of the cream being nicely regulated. A mean temperature of 60° Fahrenheit seems to be the best. The temperature of the cream usually rises about 10° during the process of churning. About 55° is therefore the desirable starting-point. Advantage is derived from rinsing the churn with cold water in summer and with warm water in winter. The addition to the cream of small quantities of cold or hot water, as the case requires, is also found beneficial. Box or barrel churns are preferred when the cream only is churned, the former being best adapted for small dairies, and the latter for large ones.—E. B. See *Butter and Cheese*.

Damaged Goods, in the language of the customs, are goods, subject to duties, that have received some injury either in the voyage home or in the bonded warehouses.

Damar, a kind of indurated pitch or turpentine, exuding spontaneously from various trees indigenous to most of the Indian islands. Different trees produce different species of resin, which are designated according to their color and consistence. "One is called *Damar-butu* in Malsy, or *Damar-selo* in Javanese, which means hard or stoney rosin; and another in common use, *Damer-Puteh*, or white rosin, which is softer. The trees which produce the damar yield it in amazing quantity, and generally without the necessity of making incisions. It exudes through the bark; and is either found adhering to the trunk or branches in large lumps, or in masses on the ground under the trees. As these often grow near the seaside, or on the banks of rivers, the damar is frequently floated away, and collected in distant places as drift. It is exported in large quantities to Bengal and China; and is used for all the purposes to which we apply pitch, but principally in paying the bottoms of ships. By a previous arrangement, almost any quantity may be procured at Borneo, at the low rate of ¼ dollar per picul."—Crawford, *East. Archip.*, v. i., p. 455, v. iii., p. 420.

Damascus. This city was in being in the time of Abraham.—*Gen.* xiv. It is, consequently, one of the most ancient in the world. From the Assyrians, Damascus passed to the Persians, and from them to the Greeks under Alexander; and afterward to the Romans, about 70 B.C. It was taken by the Saracens A.D. 633; by the Turks in 1006; and was destroyed by Tamerlane in 1400. It was in a journey to this place that the apostle Paul was miraculously converted to the Christian faith, and here he began to preach the gospel, about A.D. 50. Damascus is now the capital of a Turkish pachalic.—Haydn. Damascus is the seat of an extensive trade both with India and with Europe. The productions of India, consisting chiefly of spices, cotton manufactures, coarse and fine muslins, and gold stuffs, are in great demand, and bring high prices. They are brought from India by the Persian Gulf, Bassora, Bagdad, and Aleppo. The manufactures of England are much sought after, and held in very high esteem, particularly light woolen cloths of gay colors, printed cottons and chintzes, and silk and cotton shawls made in imitation of those of Cashmere; also needles, pins, knives, scissors, and fine hardware, as well as china and earthenware, whether English or Indian. These goods being generally imported through Saida, Beirût, and Tripoli, are sold at very high prices. Iron, lead, tin, cochineal, sugar, and other European articles, are also imported through the same channel. Wearing apparel for fashionable persons of both sexes at Damascus, and clothes that have been worn, are brought from Constantinople; and being distributed all over the country, are frequently the means of spreading the contagion of the plague. Among the various manufactures to be found in the bazaars are superb caparisons for horses, of which the Turks, as well as all the other eastern nations, are extremely fond. These are made in European Turkey; and a number of fine bridles, martingales, and silver and embossed breast-pieces, come also from Persia. The firearms are chiefly of French and German manufacture, being prepared in an ornamental style expressly for this market. The sabre blades are almost all of the old Persian or Damascus manufacture. The art of making them, however, is no longer known or practiced in this city; so that they grow daily more valuable, as no modern sword can compare with them in temper and quality. The silk seen in the bazaars of Damascus is principally of Chinese and Indian manufacture; the furs come from Russia, Georgia, Circassia, and Armenia; the velvet from Italy; copper from Asia Minor; the manufactures of Britain through Smyrna; and various other articles of an inferior kind from Germany and France. There are few manufactures in Damascus; and these consist chiefly of silk stuffs, plain, colored, and embroidered with gold; fabrics of plain cotton, and cotton and silk mixed, all for home consumption, and mostly of broad, striped, or wavy patterns, for the caftans of the Turkish dress.

Commerce, as in all other places in the East, is carried on by means of caravans, of which the principal is that which goes with the annual pilgrimage to Mecca. It is conducted by the pasha, who receives the standard of the Prophet from the governor of the castle, and gives a solemn pledge for its restoration. This expedition unites commercial with religious objects. A caravan accompanied by a numerous train of armed men goes thrice a year to Bagdad, the journey occupying 30 days; that to Aleppo travels twice or thrice a month. Besides these, many other caravans go to different ports of Syria, Damascus being a great rendezvous and emporium of trade. Provisions and fruits of all kinds are abundant; also ice and snow, which may always be obtained from the neighboring mountains. Damascus is generally regarded as the oldest city in the world, its history remounting beyond the time of Abraham, whose steward Eliezer was a native of this place. A great era in its history is its conquest by the Saracens.—E. B. See *Am. Whig Rev.*, vol. viii.

Damascus Blades are swords or cimeters, presenting upon their surface a variegated appearance of *watering*, as white, silvery, or black veins, in fine lines, or fillets; fibrous, crossed, interlaced, or parallel, etc. They are brought from the East, being fabricated chiefly at Damascus, whence their name. Their excellent quality has become proverbial; for which reason these blades are much sought after by military men, and are high-priced. The oriental processes have never been satisfactorily described; but of late years methods have been devised in Europe to imitate the fabric very well.

Damask (from *Damascus*, whence first brought), a variegated textile fabric of silk, richly ornamented with raised patterns representing flowers, fruits, etc., woven in the loom. It is also fabricated in woolen stuffs. Woolen damasks and moreens are sold in England at 9d. to 1s. 6d. per yard.

Damask likewise denotes a kind of wrought linen, used chiefly for table-cloths and napkins, and so called because its patterns resemble those of real damask. It was first made in Flanders, but it is now wrought extensively in Britain, particularly at Dunfermline in Scotland, and also at Lisburn and Ardoyne in Ireland. An inferior description has latterly been made of cotton. See *Linen*.

Irish Damasks.—As early as the beginning of the last century, the manufacture of linen damasks was introduced into Ireland from Germany; and there still exist specimens woven in Ireland 130 years ago. The manufacture has gone on increasing in excellence, and it is now considered that the high-class Irish damasks equal any from any other country. Almost all are used in Great Britain, and the better kinds are so costly that none but the wealthy can purchase them. Hand-loom weaving is invariably adopted for the best damasks; but the power-loom is now beginning to be employed for the cheaper damasks and diapers; and it is hoped that this will create a foreign market for them. The Jacquard loom is extensively used for the richer damasks, for which its wonderful action especially adapts it. What a Jacquard loom is, a long and wearisome description would scarcely make intelligible; what it appears like, the thousands who watched the working of the several Jacquard looms at the great exhibition may perhaps remember; what it does is exemplified by specimens of pattern, or damask, or figure weaving, for which it is especially adapted. In designing table-cloths, table napkins, and d'oyleys, for royal personages, city companies, club houses, and regimental messes, the damask manufacturers of Ireland sometimes display considerable taste; and this taste afterward reflects some of its light upon the cheaper and ordinary commercial products. It is yet a disputed point among persons artistically inclined, what kind of ornamentation is best fitted for colorless damasks; human forms and features are seldom damasked satisfactorily, and buildings are very tame affairs when so depicted; at present, heraldic emblems seem to take the lead.

Damask is also applied to a very fine steel, prepared in some parts of the Levant, but particularly in former times at Damascus, whence its name. It is used for sword and cutlass blades, and is very finely tempered.

Damaskeening, or **Damasking**, the art of ornamenting iron or steel, by making incisions on its surface, and filling them up with some other metal, generally gold or silver. It is chiefly used for enriching sword blades, guards, locks of pistols, etc. There are two ways of damasking; the one, which is the finest, is when the metal is cut deep with proper instruments, and inlaid with gold and silver wire; the other is superficial only. This art is of great antiquity, and its invention is attributed by Herodutus (i. 25) to Glaucus of Chios, who lived B.C. 490. It would appear to have flourished at some period in Damascus, whence the name is generally derived.—E. B.

Damassin. A species of woven damask with gold and silver flowers.

Dampier, William, an English navigator, was born at East Coker, Somersetshire, about 1652. Having early become an orphan, he was removed from the Latin school, and placed with the master of a ship at Weymouth. In this ship he made a voyage to Newfoundland; but, disgusted at the cold of that northern climate, on his return he engaged himself as a common sailor in a voyage to the East Indies. He next served in the Dutch war under Sir Edward Sprague, and was present at two engagements; but the declining state of his health induced him to come on shore, and remove to the country, where he remained some time. In the year following he became an under-manager of a Jamaica estate; but only continued a short time in this situation. He afterward engaged in the coasting-trade, and thus acquired an accurate knowledge of all the ports and bays of that island. Having entered on board a vessel bound for the bay of Campeachy, and returning a second time to the same coast, he remained with the logwood-cutters, and engaged himself as a common workman. During his stay in that country he collected the materials for the minute and interesting account which he has given of the laborious life of these people, as well as of the geographical description and the natural history of the country. It appears that he was preparing in 1703 for another voyage. It is mentioned in Woodes Rogers' *Voyage Round the World*, that Dampier had the command of a ship in the South Seas about the year 1705, and along with Captain Stradling, whose vessel foundered at sea. Dampier accompanied Woodes Rogers in his voyage round the world in the years 1708, 1709, 1710, and 1711, but only in the capacity of pilot, which is supposed to be a circumstance due to some remissness in his conduct. During this expedition Guayaquil was taken, and Dampier had the command of the artillery. Nothing further is known of the life of Dampier; and we are equally ignorant of the place and time of his death.—E. B. See *Retrospective Review*, vol. ix., p. 73, for an account of the voyages of Dampier.

Dantzic (in German, *Danzig*), the principal port and commercial city of Prussia proper, and capital of a cognominal government, lies on the left bank of the Vistula, about 4 miles from its mouth. N. lat. 54° 20′; E. long. 18° 38′. Population in 1849, including military, 63,917; of whom 2,369 were Jews, 13,339 Catholics, and 47,723 Protestants. Ramparts, bastions, and wet ditches, which have been vastly strengthened since the war, and gigantic works for laying the country under water, have done what fortifications can to make Dantzic impregnable. The road or bay of Dantzic is covered on the west side by a long, narrow, low, sandy tongue of land, extending from Reserhoft Point (on which is a light-house), in lat. 54° 50½′; long. 8° 23′ 15″, upward of 20 miles in an E. by S. direction, having the small town of Heela or Heel, near its termination. A light-house, elevated 123 feet (English) above the level of the sea, has been erected within about ½ mile of the extremity of this point. The flashes of the light, which is a revolving one, succeed each other every ½ minute. Dantzic lies about S. ¼ W. from the Heel; its port being distant about four leagues. There is good anchorage in the roads for ships of any burden; but they are exposed, except immediately under the Heel, to the north and north-easterly winds. There are harbor-lights at the entrance to the port. All ships entering the Vistula must heave-to about a mile off the port, and take a pilot on board; and pilots must always be employed in moving ships in the harbor, or in going up and down the river. The usual depth of water at the mouth of the river is from 12 to 13 feet (English); in the harbor, from 13 to 14 feet deep; at the confluence of the Motlau with the Vistula, from 9 to 9½ feet; and in

town, from 8 to 9 feet. Moles have been erected on both sides the entrance to the harbor; that on the eastern side, which is most exposed, is constructed of granite, but is not yet completed; the other is partly of stone and partly of timber.

Trade.—Next to Petersburg, Dantzic is the most important commercial city in the north of Europe. It owes its distinction in this respect to its situation; the Vistula, with its important tributaries the Bug, Narew, etc., giving it the command of a great internal navigation, and rendering it the *entrepôt* where the surplus products of West Prussia, Poland as far as Hungary, and part of Lithuania, are exchanged for those imported from the foreigner. The exports of wheat from Dantzic are greater than from any other port, Odessa excepted. There are four sorts of wheat distinguished here; viz., *white*, *high-mixed*, *mixed*, and *red*, according as the white or red predominates. The quality of Dantzic wheat is for the most part excellent; for, though small in the berry, and not so heavy as many other sorts, it is remarkably thin-skinned, and yields the finest flour. The white Polish wheat exported here is the best in the Baltic. Rye is also very superior, being both clean and heavy; the exports of barley and oats are comparatively inconsiderable, and the qualities but indifferent. Very fine white peas are exported. Next to grain, timber is the most important article of export from Dantzic, but latterly the supply has been diminishing, and the quality is said not to be so good as formerly.—*Meek.* The principal supply of fir timber, masts, etc., is brought by the river Narew, which, with its branches, rises in old Prussia and Lithuania, and falls into the Bug near the confluence of the latter with the Vistula. Oak planks, staves, etc., are brought down from the higher parts of the Vistula, and the tributary streams of Dunajetz, Wieprez, etc. Salted pork, weed ashes, linseed and rapeseed, mats, bones, zinc, spruce beer, feathers, etc., are also exported.

Imports.—These consist principally of iron and steel, herrings, wine, sugar, coffee, cotton and cotton yarns, spices, salt, coal, tobacco, dyewoods, spirits, rice, etc.; but their value is seldom more than half that of the exports.

DUTIES ON PILOTAGE AND POLICE PASSPORTS AT DANTZIC.

Duties.	Prussian and privileged foreign flags.			Foreign flags not privileged.		
	th.	sil.	pf.	th.	sil.	pf.
Pilotage Duties.						
Vessel drawing 6 ft. water and under.	1	15	0	2	0	0
" " 7 feet water	2	15	0	3	0	0
" " 8 " "	3	0	0	3	15	0
" " 9 " "	3	15	0	4	0	0
" " 10 " "	4	0	9	5	0	0
Police passport taxes.						
Vessel of 25 lasts, 50 tons, and under.	1	10	0	1	25	0
" 50 " 100 "	1	17	6	2	0	0
" 100 " 200 "	1	25	0	2	5	0
" 200 " 400 "	2	7	6	3	5	0
" above 400 lasts	3	5	0	4	15	0

Money.—Accounts used formerly to be wholly kept in guldens, guilders, or florins of 30 groschen. The rixdollar=3 florins=90 groschen=270 schillings=1,620 pfennings. The florin or guilder=9d. sterling, and the rixdollar=2s. 3d. A new system was, however, introduced into all parts of the Prussian dominions, conformably to the decrees of the 30th of September, 1821, and of the 22d of June, 1823. The Cologne mark (containing 3,609 English grains) is the weight at present used in the Prussian mint in weighing the precious metals. The fineness of the coins is not determined, as previously, by carats or loths, but the mark is divided for this purpose into 288 grains. Accounts are now kept in the public offices in thalers or dollars (R.), silver groschen, and pfennings; 1 dol. =30 sil. gr.=12 pf. The only silver moneys now coined are dollars and ½ dollar pieces; but smaller coins are in circulation, of former coinages. The Prussian silver coins have ½ of alloy; and as the mark is coined into 14 dollars, each should contain 257·68 English grains pure silver, and be worth about 2s. 11½d. sterling; but the assays do not always strictly coincide with the mint valuation. The gold coins are Frederic d'ors, double, single, and half pieces. The mark of 288 grains, having 260 grains of fine gold, is coined in 35 Fred. d'ors. The Fred. d'or is worth from 5 dol. 18 sil. gr. to 5 dol. 22 sil. gr., according to the demand.

Weights and Measures.—The commercial weights are,

32 loths	=	1 ounce.
16 ounces	=	1 pound.
16½ pounds	=	1 lispound.
20 pounds	=	1 small stone.
33 pounds	=	1 large stone.

110 lbs.=1 centner; 3 centners=1 shippound (330 lbs.); 100 lbs. of Dantzic=103·3 lbs. avoird.=46·85 kilog.=94·7 lbs. of Amsterdam=96·6 lbs. of Hamburg.

The liquid measures are, for beer,

5 quarts	=	1 anker.
4 ankers	=	1 ahm.
1½ ahms	=	1 hhd.
2 hhds.	=	1 both.
2 boths	=	1 fuder.
2 fuders	=	1 last=620·4 Eng. wine gals.

In wine measure, which is less than beer measure, the ahm=39¾ Eng. gallons. The pipe=2 ahms.

The last of corn=5¼ malters=60 scheffels=240 viertels=960 metzen; and weighs 4,680 lbs. Dantzic weight in rye. The scheffel=·547 of a hectolitre=1·552 Winchester bushels. Hence the last of 60 scheffels=11 quarters 3 bushels; hence the last of 55½ scheffels=10 quarters 7 bushels.

The Dantzic foot=11·3 Eng. inches, or 100 Dantzic feet=94·16 Eng. feet. The ell is 2 feet Dantzic measure. The Rhineland or Prussian foot=·3138 French metres, or 12·356 Eng. inches; hence 100 Prussian=102·8 English feet. The Prussian or Berlin ell has 25½ Prussian inches=26·256 Eng. ditto. 100 Berlin ells=72·93 Eng. yards; and 137·142 Berlin ells=100 Eng. yards. 14½ Prussian miles are equal to 15 geographical miles.

Oak planks, deals, and pipe staves are sold by the shock of 60 pieces; wheat, rye, etc., are sold by the last of 56½ scheffels.—*Kelly's Cambist; Nelkenbrecher, Manual Universel.*

Corn Trade of Dantzic.—Grain is almost wholly brought to Dantzic by water, in flat-bottomed boats suited to the navigation of the Vistula, Bug, etc. The English consul estimated the expense of the conveyance of wheat and rye, including the duty at Thorn and the charges of turning on the river, till put into the granary, as follows:

	Per Imp. quarter. s. d.	s. d.
From the upper provinces on the Bug, a distance of from 700 to 800 miles	9	2 to 7 10
From the provinces of Cracow, Sendomir, and Lublin, 550 to 850	6	6 " 5 4
From Warsaw and its neighborhood, about 240 miles	4	9 " 8 11
From Wlaclaweck and its neighborhood, about 140 miles	4	2 " 3 5
From Grandenitz, a distance of about 70 miles, no duty at Thorn, and when not turned on the river	0	10 " 0 9

The Bug has many windings, and its navigation, which is tedious and uncertain, can only be attempted in the spring, when the water is high. It is the same, though in a less degree, with some of the rivers that fall into the Vistula before it reaches Warsaw; and toward Cracow the Vistula itself is frequently unnavigable, especially in dry seasons, except in spring, and after the midsummer rains, when the snow melts on the Carpathian mountains. The navigation of the Polish rivers in some seasons is more than usually bad. The corn from the upper provinces does not reach Dantzic till from 2 to 4 months later than usual, and is burdened with a very heavy additional expense. In fact, the supplies of grain at Dantzic depend quite as much on the abundance of water in the rivers, or on their easy navigation in summer, as on the good-

ness of the harvests. "There are," says Mr. Jacob, "two modes of conveying wheat to Dantzic by the Vistula. That which grows near the lower parts of the river, comprehending Polish Russia, and part of the province of Plock, and of Masovia, in the kingdom of Poland, which is generally of an inferior quality, is conveyed in covered boats, with shifting-boards that protect the cargo from the rain, but not from pilfering. These vessels are long, and draw about 15 inches water, and bring about 150 quarters of wheat. They are not, however, so well calculated for the upper parts of the river. From Cracow, where the Vistula first becomes navigable, to below the junction of the Bug with that stream, the wheat is mostly conveyed to Dantzic in open flats. These are constructed on the banks, in seasons of leisure, on spots far from the ordinary reach of the water, but which, when the rains of autumn, or the melted snow of the Carpathian mountains in the spring, fill and overflow the river, are easily floated. Barges of this description are about 75 feet long, and 20 broad, with a depth of 2½ feet. They are made of fir, rudely put together, fastened with wooden treenails, the corners dovetailed and secured with slight iron clamps—the only iron employed in their construction.

"A large tree, the length of the vessel, runs along the bottom, to which the timbers are secured. This roughly-cut keelson rises 9 or 10 inches from the floor, and hurdles are laid on it, which extend to the sides. They are covered with mats made of rye straw, and serve the purpose of dunnage; leaving below a space in which the water that leaks through the sides and bottom is received. The bulk is kept from the sides and ends of the barge by a similar plan. The water which these ill-constructed and imperfectly-calked vessels receive, is dipped out at the end and sides of the bulk of wheat. Vessels of this description draw from 10 to 12 inches water, and yet they frequently get aground in descending the river. The cargoes usually consist of from 180 to 200 quarters of wheat. The wheat is thrown on the mats, piled as high as the gunwale, and left uncovered, exposed to all the inclemencies of the weather, and to the pilfering of the crew. During the passage, the barge is carried along by the force of the stream, oars being merely used at the head and stern, to steer clear of the sand-banks, which are numerous and shifting, and to direct the vessel in passing under the several bridges. These vessels are conducted by 6 or 7 men. A small boat precedes, with a man in it, who is employed sounding, in order to avoid the shifting shoals. This mode of navigating is necessarily very slow; and during the progress of it, which lasts several weeks, and even months, the rain, if any fall, soon causes the wheat to grow, and the vessel assumes the appearance of a floating meadow. The shooting of the fibres soon forms a thick mat, and prevents the rain from penetrating more than an inch or two. The main bulk is protected by this kind of covering, and, when that is thrown aside, is found in tolerable condition. The vessels are broken up at Dantzic, and usually sell for about ⅔ of their original cost. The men who conduct them return on foot. When the cargo arrives at Dantzic or Elbing, all but the grown surface is thrown on the land, spread abroad, exposed to the sun, and frequently turned over, till any slight moisture it may have imbibed is dried. If a shower of rain falls, as well as during the night, the heaps of wheat on the shore are thrown together in the form of a steep roof of a house, that the rain may run off, and are covered with a linen cloth. It is thus frequently a long time after the wheat has reached Dantzic, before it is fit to be placed in the warehouses.

"The warehouses (*speichers*) are very well adapted for storing corn. They consist generally of 7 stories, 3 of which are in the roof. The floors are about 9 feet asunder. Each of them is divided by perpendicular partitions, the whole length, about 4 feet high, by which different parcels are kept distinct from each other. Thus the floors have two divisions, each of them capable of storing from 150 to 200 quarters of wheat, and leaving sufficient space for turning and screening it. There are abundance of windows on each floor, which are always thrown open in dry weather to ventilate the corn. It is usually turned over three times a week. The men who perform the operation throw it with their shovels as high as they can, and thus the grains are separated from each other, and exposed to the drying influence of the air. The whole of the corn warehouses now left (for many were burnt during the siege of 1814) are capable of storing 500,000 quarters of wheat, supposing the quarters to be large enough to fill each of the 2 divisions of the floors with a separate heap; but as of late years it has come down from Poland in smaller parcels than formerly, and of more various qualities, which must of necessity be kept distinct, the present stock of about 280,000 quarters is found to occupy nearly the whole of those warehouses which are in repair, or are advantageously situated for loading the ships. Ships are loaded by gangs of porters, with great despatch, who will complete a cargo of 500 quarters in about 3 or 4 hours."—*First Report.*

Banking Establishments.—There is none such here, excepting a branch of the Royal or Government bank of Berlin. This was founded partly in the view of receiving deposits of money under litigation in the courts of the province; moneys the property of minors and charitable institutions, the former until disposable or placed on good security; and moneys belonging to individuals not merchants, and at times, also, those of the latter. Interest is paid on such deposits as follows, viz.: 3 per cent. on sums belonging to minors; 2½ per cent. on sums belonging to charitable institutions, churches, and sums deposited by the courts of justice, and 2 per cent. on all other deposits.

The principal is demandable at pleasure, unless otherwise stipulated. The bank makes advances on grain and some other kinds of goods at 5 per cent. interest; discounts bills with 3 signatures, not having more than 2 months to run, at 6 per cent., and sometimes, when money is plenty, at a lower rate. It also makes advances at 4 per cent. on deposits of Fred. d'ors and certain foreign moneys; and it occasionally buys bills for account of, and sells bills on, the Berlin Bank. It does not issue notes. The amount of its capital is not fixed; but government guaranties its transactions. It is relieved from the payment of postage on money, and it is not required to use the stamps fixed by law, on bills for its deposit transactions, but only those of 10 s. gr. (about 11¼d.); while individuals must use stamps for such bills of 5 s. gr. for every 400 r. of not longer date than 3 months, and for every 200 r. of longer date. On negotiable bills, however, the bank must use the stamps fixed by law, say of 5 s. gr. (about 5¾d.) for sums of 50 dol. to 100 dol., and at the same rate for every additional sum between 100 dol. and 400 dol. Bills from and on foreign places, negotiated at Dantzic, are not subject to the stamp duty. The affairs of the bank are not made public. Being a government concern, there are no dividends. It is not supposed to be very profitable, at least in the present circumscribed state of trade, although enjoying the advantages of exemption from postage of moneys, and paying less stamp duty. It is true, however, that the direct advantage of the lower stamp duty is enjoyed by the borrower.

Credit, Brokerage, etc.—Very few goods are consigned from abroad for sale, for such consignments rarely turn to good account. Imports are seldom sold for cash, but generally at 1, 2, and 3 months' credit, or longer. The discount allowed for cash payments, when sold on time, is usually 6 per cent., but it varies according as money is plentiful or otherwise. Any

person, being a burgher of the town (which any one of good character may become), may transact business as a commission merchant or factor; but brokers must be chosen by the elders of the corporations of merchants, approved by the regency of the province, and sworn in by the magistracy of the town.

Danube (German, *Donau*; anc. *Danubius* and *Ister*), an important river, and, next to the Volga, the largest in Europe, originates in the *Berge*, a mountain torrent which rises in the E. declivity of the Schwarzwald, in Baden, at an elevation of 2,850 feet above the level of the sea. The stream, when joined by the *Brigach*, and by the waters of a spring from the castle garden of Donaueschingen, takes the name of the Donau. It flows first generally E. N. E., through an alpine country to Ulm, thence E. N. E. and S. E., to Passau, it traverses the plain of Bavaria. From Passau to Vienna, E. S. E., it intersects a hilly region, and the remainder of its course, E. S. E. to Waitzén, S. to Buze, and E. to the Black Sea, is through a country generally flat, except at the defile of the "*iron gate*," E. of Orsova. Length (direct), 1,000 miles; or, including windings, 1,725 miles. It drains a surface of about 250,000 square miles; its average fall is 18 inches per mile, but below Pesth it is only 3 inches; at Ulm it is 1,400, at Regensburg 1,000, at Passau 800, at Vienna 450, and at Pesth 300 feet above the level of the sea. Its breadth at Ulm is 108 feet, and in its lower course 6,000 feet; depth at Ulm, 6 feet; at Passau, 16 feet; and lower down, average 20 feet. It passes Sigmaringen and Ulm in Würtemberg, Dillingen, Hochetädt, Donauwörth, Ingolstadt, Regensburg, and Passau, in Bavaria; Linz, Diernstein, Korneuberg, and Vienna, in Austria; Presburg, Komorn, Gran, Waitzen, Buda, Pesth, Peterwardein, and Carlowitz, in Hungary; Belgrade, Semendria, and Orsova, in Servia; Widin, Nicopoli, Rutschuk, Silistria, and Hirschova, in Bulgaria; Giurgevo and Brahilov in Wallachia. The chief affluents of the Danube are, on the right, the Iller, Lech, Isar, Inn, Ens, Raab, Drave, Save, Morava, Timok, Isker, Vid, and Jantra; and on the left, the Altmühl, Nab, Regen, March, Waag, Gran, Theiss, Temes, Chyl, Aluta, Jalomnitza, Sereth, and Pruth. Near its mouth in the Black Sea, it separates into several branches, the southernmost of which, called the branch of St. George, forms, by the treaty of Adrianople, the boundary between the Ottoman empire and Russia. It communicates by canals with the Elbe, by means of the Moldau, and with the Rhine by the Altmühl. It is navigable for vessels of 100 tons from Ulm. Steam packets were established on the Danube in 1830, and there are 10 steam vessels employed between Presburg, Pesth, and Constantinople, and 2 between Regensburg and Linz.—See FRAZER'S *Mag.*, xxii., 560, 684; QUIN'S *Steam Voyage down the Danube*.

The ports of Baila and Galatz are appointed as ports on the Danube for the commerce of neutral powers, both as regards exportation and importation. The vessels of neutral powers coming from the Black Sea can return freely into that sea after having received their cargoes in the ports above mentioned, on condition always that they abstain, before entering the Black Sea, from touching at any port on the Danube. Consequently these vessels, before quitting the ports of Braila and Galatz, must present their documents to the Russian consular agent, who will furnish them gratis with a certificate showing the destination of the ship, and bearing the formal declaration, that if before entering the sea they should disembark corn or provisions upon any point of the right bank of the Danube, they will, by this contravention, incur sequestration. Neutral vessels which wish to ascend the Danube in order to proceed at once into the Austrian States, and which carry down cargoes destined either for Brila or Galatz, or for exportation by the Black Sea, will be liable to the same formality of a Russian certificate indicating their destination, and prohibiting them, under similar penalties, from entering into any traffic on the right bank of the Danube. Neutral vessels wishing to descend the Danube will not meet with any hinderance, provided that on their passage by Orsova they furnish themselves at the Russian consulate with a certificate, stating that they belong, *bonâ fide*, to a neutral power, and that their cargo is not destined for one of the Turkish ports of the Danube.—P. J. of T. 1856.

Dardanelles (Straits of the), form the communication between the Sea of Marmora and the Archipelago. This channel, through which there flows a constant current out of the Sea of Marmora into the Archipelago, is upward of 50 miles long, and varies in breadth from 1 mile toward its western, to 10 miles at its eastern extremity. It derives its name from two ancient fortresses on either side of the river, of which one is built on the site of the ancient Sestos, and the other on the site of the ancient Abydos. About 20 miles to the west of these are two modern fortresses called the New Castles, and between the old and the new forts are military works of various descriptions. The total number of guns mounted on these fortresses is 689, some of which discharge stone shot, and require a charge of more than 3 cwts. of powder. It derived its ancient name of the Hellespont from the tradition of Phryxus and Helle, and is celebrated in ancient times for the bridge of boats built over it by Xerxes. It is memorable also as the scene of the death of Leander.—E. B.

The gallant exploit of forcing the passage of the Dardanelles was achieved by the British squadron under Admiral Sir John Duckworth, Feb. 19th, 1807; but the admiral was obliged to repass them, which he did with great loss, and immense damage to the fleet, March 2, following; the castles of Sestos and Abydos hurling down rocks of stone, each of many tons' weight, upon the decks of the British ships.—HAYDN. So long as the shores of the Black Sea were exclusively possessed by Turkey, that sea might with propriety be considered a *mare clausum*; and there seems no reason to question the right of the Ottoman Porte to exclude other nations from navigating the passage which connects it with the Mediterranean, both shores of this passage being at the same time portions of the Turkish territory; but since the territorial acquisitions made by Russia, and the commercial establishments formed by her on the shores of the Euxine, both that empire and the other maritime powers have become entitled to participate in the commerce of the Black Sea, and consequently to the free navigation of the Dardanelles and the Bosphorus. This right was expressly recognized by the 7th article of the treaty of Adrianople, concluded in 1829 between Russia and the Porte, both as to Russian vessels and those of other European States in unity with Turkey. The 7th article of the treaty of 1850, between the United States and the Ottoman Porte, provides that merchant vessels of the United States, in like manner as vessels of the most favored nations, shall have liberty to pass the canal of the Imperial Residence, and go and come in the Black Sea, either laden or in ballast; and they may be laden with the produce, manufactures and effects of the Ottoman empire, except such as are prohibited, as well as of their own country.—WHEATON'S *International Law*, p. 241.

Daric. A Persian gold coin (so called by the Greeks, from Darius, the name of several Persian sovereigns), having upon the obverse an archer, crowned and kneeling upon one knee, and on the reverse a quadrata incusa, or deep cleft. The weight of the daric is about 130 grains.

Darien (Isthmus of). "The Isthmus of Darien, or, as it is more commonly styled, the Isthmus of Panama, connects North and South America, and is principally comprised in the republic of Granada. On the northern side is the Caribbean Sea and the Gulf

of Darien; on the south the Gulf of Panama. In length the isthmus proper is about 200 miles, with an average breadth of 40 miles; but in long. 79° it narrows down to less than 30 miles. At this point it is proposed to establish the ship canal. The country is undulating, with chains of small mountains, but very fertile and well timbered. The expense of a commodious ship canal, say 30 miles long and 200 feet wide, would not be less than $50,000,000. When it is considered that one half the world's commerce would in all probability pass through this canal, the expense is trifling. All the India and China trade, instead of doubling Cape Horn, would find passage through the canal. It should be free to all nations who assist in the construction by money or credit."

An appropriation was embraced in the naval appropriation bill of 1853, giving a sum not to exceed $25,000, to be paid to officers selected by the Secretaries of War and Navy "for the purpose of making explorations and verification of the surveys already made of a ship canal near the isthmus of Darien, to connect the waters of the Pacific and the Atlantic by the Atrato and Truando rivers."

Dates (German, *Datteln*; French, *Dattes*; Italian, *Datteri*; Spanish, *Datiles*), the fruit of the palm-tree (*Phœnix dactylifera* Lin.). This tree is abundant in Egypt, Barbary, Arabia, Persia, and the adjacent countries, particularly on the confines of the desert, and wherever there is sufficient moisture. It is a tall, majestic tree; and repeated references are made to it in the sacred writings (Ecclus. xiv. 14), and in the Koran. Mohammed, in one of his sayings, beautifully compares the upright and generous man to the palm-tree: "He stands erect before his Lord; in his every action he follows the impulse received from above, and his whole life is devoted to the welfare of his fellow-creatures." But the veneration in which the palm-tree is held in the East is to be ascribed more to its utility than to its beauty. Dates form the principal part of the subsistence of the inhabitants of many parts of Arabia and Barbary, and they are held in the highest estimation wherever they are met with. "They are," says Burckhardt, "by far the most essential article of food for the lower classes of Medina; their harvest is expected with as much anxiety, and attended with as much general rejoicing, as the vintage in the south of Europe; and if the crop fails, which often happens, as those trees are seldom known to produce abundantly for 3 or 4 successive years, or is eaten up by the locusts, universal gloom overspreads the population, as if a famine were apprehended."—*Travels in Arabia*, vol. iv., p. 214.

There is an endless variety of dates. Generally, however, they may be described as being somewhat in the shape of an acorn, but usually larger, consisting of a thick, fleshy substance, including and freely separating from an oblong stone or kernal, having a furrow on the one side. Their taste is agreeably sweet, accompanied with a slight astringency. The new fruit is called by the Arabs *rutteb*. When the dates are allowed to remain on the tree till they are quite ripe, and have become soft and of a high red color, they are formed into a hard, solid paste or cake, called *adjoue*. This is formed by pressing the ripe dates forcibly into large baskets, each containing about 2 cwt. "In this state," says Burckhardt, "the Bedouins export the adjoue; in the market it is cut out of the basket, and sold by the pound. It forms part of the daily food of all classes of people; in traveling it is dissolved in water, and thus affords a sweet and refreshing drink. During the monsoon, the ships from the Persian Gulf bring adjoue from Bussorah to Djidda, for sale, in small baskets, weighing about 10 pounds each; this kind is preferred to every other. Ships bound from Arabia to India take with them a considerable quantity of adjoue, which is readily disposed of among the Mohammedans of Hindostan."—*Travels in Arabia*, vol. i., p. 57.

The Arabians and Egyptians use the leaves of the trees in the preparation of bags and baskets; the boughs, the outer and inner bark of the trunk, and the fleshy substance at the root of the leaves, where they spring from the trunk, have all their respective uses; and besides this, the kernels of the fruit, notwithstanding their hardness, are used as food for cattle; they are soaked for 2 days in water, when they become softened, and are given to camels, cows, and sheep, instead of barley; they are said to be much more nutritive than that grain. There are shops at Medina in which nothing else is sold but date kernels; and the beggars are continually employed in all the main streets in picking up those that are thrown away.—*Burckhardt*, vol. ii., p. 212. All the refinements of Arabian cookery are exhausted in the preparation of dates; and the Arabs say that a good housewife will daily supply her lord for a month with a dish of dates differently dressed. Palm-trees are raised by shoots; and Dr. Shaw mentions that they arrive at their vigor in about 30 years, and continue so 70 years afterward, bearing yearly 15 or 20 clusters of dates, each of them weighing 15 or 20 pounds; after this period they begin to decline.—*Travels in the Levant*, p. 142, 4to ed.

The best dates imported are said to come from Tunis, but they are most commonly brought from Smyrna and Alexandria. They should be chosen large, softish, not much wrinkled, of a reddish yellow color on the outside, with a whitish membrane betwixt the flesh and the stone. Those that are dry and hard are of little value.

The date-tree is indigenous to Syria, Arabia, and the lower parts of Persia, Egypt, and northern Africa, whence it was introduced into the south of Europe; and it is also more or less cultivated in British India, South Africa, and in some parts of America. Though belonging to the extensive family of palms, which abound and flourish in most tropical regions, it attains perfection only in comparatively high latitudes, and doubtless would be adapted to the soil and climate of the more arid regions of California and of our southern States.

The date is a lofty tree, growing to a height of 60 feet, with a rugged trunk, crowned with leaves 6 or 8 feet long, with pinnæ 3 feet long, and a little more than an inch broad. The flowers of both sexes, which grow on separate trees, come out in very long bunches, from the trunk, between the leaves, and are covered with a spatha, which opens and withers. Those of the male tree have 6 short stamens, with narrow, four-cornered anthers, filled with pollen. The female flowers have a roundish germ, which afterward becomes an oval berry, with a thick pulp, inclosing a hard, oblong stone. This berry is the fruit known as the date of commerce, upon which a considerable portion of the people of Egypt, Arabia, and Persia, almost entirely subsist. A single tree will produce from 100 to 300 pounds of this fruit in the season. They come into bearing at from 6 to 10 years of age, and are fruitful for upward of 200 years.

The extensive importance of the date-tree, in the countries where it occurs, is perhaps one of the most curious subjects to which a traveler can direct his attention. Independent of the use of the fruit as food, the inhabitants make a conserve of it with sugar, and even grind the hard stones, to feed to their camels. In Barbary they form handsome beads of these stones. From the leaves they make couches, baskets, bags, mats, brushes, and fly-traps; the trunk is split, and employed in erecting small buildings, also for fences to gardens; and the stems of the leaves are used for making cages for their poultry. The threads of the web-like integument at the base of the leaves are twisted into ropes, which are employed in rigging small vessels. The amylaceous central part of the trunk is also good to eat, and the buds are esteemed a delicate vegetable; and even the young shoots are said

to resemble asparagus. The sap, which is sweetish when first collected, and may be drunk as a mild beverage, is distilled into a kind of spirit, known in eastern countries by the name of "arrack." It is obtained by cutting off the head of the tree, and scooping out a hollow in the top of the stem, where, in ascending, it lodges. 3 or 4 quarts may be obtained daily from a single palm, for 10 or 15 days.—*U. S. Patent Office Report*, 1855, p. 56.

Davits, beams of wood or iron, with sheaves or blocks at their ends, projecting over a vessel's side or stern, to hoist in the boats.

Days of Grace. These vary in almost all mercantile towns and countries, but the tendency of modern legislation is to abolish them altogether. In France, Belgium, Lombardy, Tuscany, the Two Sicilies, and other States where the French code has been introduced, there are no days of grace. So throughout the German States they are altogether done away. In Great Britain, and Ireland, and the United States of America, there are 3 days; in Denmark there are 8 days; in Sweden, 6 days; in Russia, 3 days for bills at sight, 10 days for bills at a fixed time; in the Canton of Berne, Switzerland, 6 days; in Spain and Portugal, none; and in the Netherlands, none.

The law merchant respects the religion of different peoples. A Jew would not be bound to pay a bill on a day sacred to him. So if the first day of grace should be on Saturday, and Monday Christmas-day, and the maker a Jew, the note would be payable on Friday. The word month means generally a calendar month. A note dated on the 30th of August would end with the corresponding day of the month. In calculating the day when the bill falls due, the day of the date is always excluded; so a bill drawn on the 1st of January at 10 days after date would become due on the 11th, and not on the 10th.—*Manual of Mercantile Law*, by Leone Levi. In New York and other States statutes have been adopted by the Legislature, providing that when a bill falls due on a public holiday (Christmas, 4th of July, Thanksgiving Day, New-Year's Day, and, in New Orleans, January 8th, for instance) the bill shall be payable the day preceding.

Dead-lights, ports or shutters to close in the cabin-windows of a ship in bad weather.

Dead-reckoning, in *Navigation*, the estimation that is made of the place where a ship is situated, without having recourse to observation of the celestial bodies. It is made by observing the distance she has run by the log, and the course on which she has been steered, making allowance for drift, lee-way, etc.

Dead Sea or **Lake Asphaltites** (Arabian, *Bahr-el-Lout*, "Sea of Lot"), a lake of Palestine, celebrated in Scripture as the site of Sodom and Gomorrah, between lat. 31° 5′ and 31° 52′ N., and long. 35° 26′ and 35° 43′ E., its N. extremity nearly 20 miles E. Jerusalem. Mean length N. to S. about 35 miles; average breadth from 10 to 12 miles; but its size varies greatly in different seasons and years.—Robinson. It is inclosed in a valley, bounded by bare limestone mountains, and according to recent researches, its depth is about 350 fathoms, and its surface 1,312 feet below that of the Mediterranean Sea; it being thus by far the deepest known fissure on the earth's surface. The river Jordan enters it on its north side. Its waters are thoroughly impregnated with salt; and it has not been proved that any animal exists in this sea. A mountain of rock salt on its S. W. side, called *Hajr Usdum*, "Stone of Sodom," preserves the name of that city, ruined with others, as described in Genesis xix., 24-28; and traces of towns or buildings are reported, on doubtful authority, to have been seen at certain times in its bed. Asphaltum was thrown to the surface at its southern extremity in large quantities after the earthquakes of 1834 and 1837. Messrs. Robinson and Smith have found the "*Asclepias gigantea*," growing at Engedi, on its western coast, the fruits of which (the famed "apples of Sodom") though inviting in appearance, crumble in the hand into powder.—See *N. A. Rev.*, l., p. 203 (by B. B. Edwards); *Bib. Sac.*, v. 397, vii. (by Dr. Robinson); Silliman's *Jour.*, xlviii viii., 217; *North Brit. Rev.*, ii., p. 261; *Living Age*, xxiii. (same article); so *Lit. Mess.*, xiv. (M. F. Maury); *Methodist Quar. Rev.*, ix., 633; *Living Age*, xxxi., 307.

"In undertaking to explore the physical geography of the sea, I have found myself standing side by side with the geologist on the land, and with him, far away from the sea-shore, engaged in considering some of the phenomena which the inland basins of the earth—those immense indentations on its surface that have no sea-drainage—present for contemplation and study. Among the most interesting of these is that of the Dead Sea. Lieutenant Lynch, of the United States' Navy, has run a level from that sea to the Mediterranean, and finds the former to be about 1,300 feet below the general sea-level of the earth. In seeking to account for this great difference of water-level, the geologist examines the neighboring region, and calls to his aid the forces of elevation and depression which are supposed to have resided in the neighborhood; he then points to them as the agents which did the work. Truly, they are mighty agents, and they have diversified the surface of the earth with the most towering monuments of their power. But is it necessary to suppose that they resided in the vicinity of this region? May they not have come from the sea, and been, if not in this case, at least in the case of other inland basins, as far removed as the other hemisphere? This is a question which I do not pretend to answer definitely. But the inquiry as to the geological agency of the winds in such cases is a question which my investigations have suggested. It has its seat in the sea, and therefore I propound it as one which, in accounting for the formation of this or that inland basin, is worthy, at least, of consideration.

"Is there any evidence that the annual amount of precipitation upon the water-shed of the Dead Sea, at some former period, was greater than the annual amount of evaporation from it now is? If yea, from what part of the sea did the vapor that supplied the excess of that precipitation come, and what has cut off that supply? The mere elevation of the rim and depression of the lake basin would not cut it off. If we establish the fact that the Dead Sea at a former period did send a river to the ocean, we carry along with this fact the admission that when that sea overflowed into that river, then the water that fell from the clouds over the Dead Sea basin was more than the winds could convert into vapor and carry away again; the river carried off the excess to the ocean whence it came.

"In the basin of the Dead Sea, in the basin of the Caspian, of the Sea of Aral, and in the other inland basins of Asia, we are entitled to infer that the precipitation and evaporation are at this time exactly equal. Were it not so, the level of these seas would be rising or sinking. If the precipitation were in excess, these seas would be gradually becoming fuller; and if the evaporation were in excess, they would be gradually drying up; but observation does not show, nor history tell us, that either is the case. As far as we know, the level of these seas is as permanent as that of the ocean, and it is difficult to realize the existence of subterranean channels between them and the great ocean. Were there such a channel, the Dead Sea being the lower, it would be the recipient of ocean waters, and we can not conceive how it should be such a recipient without ultimately rising to the level of its feeder. It may be that the question suggested by my researches has no bearing upon the Dead Sea; that local elevations and subsidences alone were concerned in placing the level of its waters where it is. But is it probable that, throughout all the geological periods, during all the changes that have taken place in th

distribution of land and water surface over the earth, the winds, which in the general channels of circulation pass over the Dead Sea, have alone been unchanged? Throughout all ages, periods, and formations, is it probable that the winds have brought us just as much moisture to that sea as they now bring, and have just taken up as much water from it as they now carry off? Obviously and clearly not. The salt-beds, the water-marks, the geological formations, and other facts traced by Nature's own hand upon the tablets of the rock, all indicate plainly enough that not only the Dead Sea, but the Caspian also, had upon them, in former periods, more abundant rains than they now have. Where did the vapor for those rains come from? and what has stopped the supply? Surely not the elevation or depression of the Dead Sea basin."—MAURY'S *Phys. Geog. of the Sea*, p. 222.

Dead-water. The water that closes in with a ship's stern.

Deals, or **Deal-boards** (German, *Dielen*; Dutch, *Deelen*; Danish, *Dæler*; Swiss, *Tiljor*; French, *Planches minces*; Italian, *Tavole, Piane*; Russian, *Dorski*; Polish, *Tarcice*), a thin kind of fir planks, much used in carpentry. They are formed by sawing the trunk of a tree into longitudinal divisions, of greater or less thickness, according to the purposes they are intended to serve. They are imported from Dantzic, Petersburg, Narva, and many other ports in the Baltic, and from North America; but those from Christiana, the capital of Norway, are the best, and bring the highest price. They are distinguishable from those produced in the contiguous provinces of Norway; their superiority has been said to depend principally on their being more perfectly sawed; but it really depends on the greater care with which the sap-wood and other defective portions of the timber are cut away, and on the quality of the timber. A Russian standard deal is 12 feet long, 11 inches wide, and 1¼ inch thick; 400 feet of 1¼ inch plank make a load. A Christiana standard deal is 11 feet long, 9 inches wide, and 1¼ inch thick. There is another standard of Norway deals at Dram, 10 feet long, 9 inches wide, and 1¼ inch thick.

Debenture, a term used at the custom-house to signify the *certificate* subscribed by the customs officers, and given to the exporter of goods on which a drawback is allowed, bearing that the exporter has complied with the required regulations, and that he is entitled to such drawback.

Debt, in law, is a species of contract, whereby a *chose in action*, or right to a certain sum of money, is mutually acquired and lost; usually divided into debts of record, debts by special contract, and debts by simple contract. A debt of record is a sum which appears to be due by the evidence of a court of record; such as debt on judgment or recognizance. Debt by specialty where a sum is acknowledged to be due, or becomes due, by instrument under seal; such as a covenant, bond, etc. Both these species of debts, being contracted by a man for himself and his heirs, attach on his lands and tenements, and bind them in the hands of his heir or devisee. Debt by simple contract is either by parole or by written obligation unsealed; within which class fall bills of exchange and promissory notes. Debt is also a personal action of contract, in which the plaintiff seeks the recovery of debt; *i. e.* a *liquidated* or certain sum of money alleged to be due to him.

Debt, Imprisonment for. See HUNT'S *M. Mag.*, lv. pp. 72, 538; *N. A. Review*, xxxii. (by A. H. EVERETT); *Am. Almanac*, 1848, 181; *Westminster Review*, lx., xix., xx., xliv; *British and For. Rev.*, v.; *Bankers' Magazine*, iii. p. 88.

Decade (Latin, *decas*, from Greek δεκα, *ten*). A word used by some old writers in a general sense for the number ten, or an enumeration by tens; but more peculiarly appropriated to the number of books into which the history of the Roman empire by Livy is divided, each division consisting of ten books or *decades*. It was also the name given to the space of 10 days, which in the French republican calendar was substituted for the ordinary week. The 10th, or last day, was termed *decadi*. Thus, except in bissextile years, the whole number of decades was 36½: the days of the half decades, falling at the close of the year, were at one time called *sansculottides*, and afterward *complementary*; and dedicated respectively to Virtue, Genius, Labor, Opinion, and Recompence.

Decimal Coinage, a system of monetary calculation advancing to infinity from a fixed standard of value, and performing its multiplications by any increasing progression of tens, and its divisions by a decreasing progression which is also decimal.

This system, whose superiority to all others now in use is universally acknowledged, was first organized and established by the Constituent Assembly of France in 1790. It forms a part of that vast decimal metrical system of weights and measures, which, since the close of the last century, has obtained in France, and is slowly spreading thence into the other countries of Europe and America. The subject was so widely and keenly agitated throughout Great Britain in the opening months of 1853, that the House of Commons appointed a committee to investigate the whole matter. The report of this committee was laid before the House on the 1st of August of that year. This document was introduced with a strong recommendation of the decimal system of coinage, and proposed that the basis of that system when introduced should be the present pound sterling. By the retention of the pound, the decimal system might be introduced with the least possible change. Its 10th part already exists in the shape of the florin or two-shilling piece, while an alteration of 4 per cent. in the value of the present farthing will serve to convert that coin into the lowest step of the decimal scale, which it is necessary to represent by means of an actual coin, viz., the one-thousandth part of a pound. To this lowest denomination it was proposed by the committee to give the name of *mil*, in order to mark its relation to the unit of value. The addition of a coin to be called a cent, of the value of 10 mils, and equal to the 100th part of a pound, or the 10th part of the florin, would serve to complete the list of coins necessary to represent the moneys of account, which would accordingly be pounds, florins, cents, and mils. As to the coins by means of which the decimal system will be developed, it is proposed that some of those now in use be retained, and that new coins be substituted for others of them. The coins thus retained would be the present sovereign (1000 mils), the half-sovereign (500 mils), florin (100 mils), and shilling (50 mils, or 5 cents). The present sixpence, under the denomination of 25 mils, might be retained; and the crown-piece, or a piece of 250 mils, of which few are in circulation, need not be withdrawn. On the other hand, it would be desirable to withdraw the half-crown, and the threepenny and fourpenny pieces, which are inconsistent with the decimal scale. In the United States the decimal system has been introduced into the coinage with great advantage; and an effort is now being made to introduce it into weights and measures, which it is hoped will succeed in a few years.

Decimal Fractions, are fractions which have for their denominator 10, 100, 1000, etc., or in general some power of 10. The use of decimal fractions is merely an extension of the ordinary scale of arithmetical notation. Setting out from the unit's place, the 1st figure to the left (in the expression of any whole number) denotes so many tens, the 2d to the left so many hundreds, the 3d so many thousands, and so on; so that in the number 765, for example, each unit of the 6 is the 10th part of each unit of the 7, and each unit of the 5 a 10th of each unit of the 6. In like manner, in the expression of a decimal fraction, setting out from the unit's place, the 1st figure to the right expresses so many 10th parts, the 2d to the right so

many 100th parts, the 3d so many 1000ths, and so on; so that each figure, as before, expresses parts, which are each 10 times smaller than those expressed by the figure immediately preceding. By expressing fractions in this manner, the operations of addition, subtraction, multiplication, and division, are exactly the same as in integer numbers. In order to distinguish the integral from the fractional part of a numerical expression, a point or comma is placed between them. Various marks have been used for this purpose at different times; but the point is now most commonly employed, and, according to the practice of Sir Isaac Newton, it should always be placed near the top of the figure, thus 2·46, which prevents it from being confounded with the ordinary marks of punctuation. Decimal fractions appear to have been introduced by Regiomontanus, about the year 1464; but Stevinus was the first who wrote an express treatise on the subject in his *Pratique d' Arithmetique*, published in 1582. They are now universally employed in all arithmetical calculations; and it is much to be regretted that a decimal division of weights, measures, money, etc., has not been adopted in all civilized countries, by which the reduction of fractional parts from one scale to another would be obviated, and all the applications of arithmetic to the ordinary purposes of life greatly simplified. A subdivision of weights and measures on this principle was adopted in France at the time of the Revolution, but has not been imitated by other countries.

Decimal Weights and Measures. I. *Introduction of the Decimal System.*—The introduction of the decimal system is so important to all nations, and the advantages so apparent, that any discussion on the subject will be of interest. The facility of transacting every business, and the saving of labor, would be much increased by having a *general* and convenient system of weights and measures. The good result of the introduction of the decimal system into our coinage is so universally admitted, that efforts should be made to carry the system out in all our *standards*. The importance of the clause in the Magna Charta, and expressed in an old English law of older date, is not fully felt, that *there shall be only one measure and one weight throughout the land.* This has never been realized either in England or this country, though many efforts have been made to introduce a common system. Commercial intercourse would be facilitated, and many of the embarrassments and delays would be obviated, could a system be made universal in all maritime countries. There is no bar to the introduction of such a system; for whatever difference there may be in the systems adopted or in the notation used, yet they are all founded on the Arabian numbers. All have the same numerical system for a foundation, though the superstructures are varied. It would be scarcely practicable to introduce into the whole world a general system at once; *but it is practicable* for the principal maritime nations, who are so much interested, to have a congress, and unite upon some complete system that would take the place of the many disjointed and *empirical* ones now in use. The rest of the world would follow in time, from the fact that convenience and advantage are more than equal to custom. However, the principal end would be attained in a short time—*commercial intercourse* would be carried on among nations with one *standard*; having, if necessary, the notation admitted into each country affected by the language, but yet to be equivalent in values. It is a very interesting question what shall be the *standard?* and one where rival claims can be brought forward, each standard of measure, of weight, and of coinage having some advantages; and it may be difficult to decide what are the best. It seems, however, to be admitted that the decimal *division* is the only perfect one. It being stated as a general principle, that for convenience a standard varying but little from some old standard, should, if possible, be used.

II. *The Natural Standard or Unit for the Base of the System.*—In respect to coinage, our standard of a dollar for a unit seems to answer every purpose, and is the most convenient of any in use in the world. So it will, perhaps, be sufficient to examine with respect to weights and measures. The standard or unit for measurement that would seem to be given by nature, is the circumference of the earth taken at a given latitude. We have there an unvarying base, and one always practicable to measure. For convenience, we would naturally take a part of this circle, using any natural division. This is given to us at once by the rotation of the earth on its axis, and the arc a fixed star traverses in a given time, and then dividing by a decimal division this time of rotation, gives a standard of convenient length. Having to call in the aid of astronomy to determine this distance, the notation used in that science, of degrees and minutes, etc., was naturally adopted. It was found that one degree, or 360th part of the earth's circumference divided into 60 parts, was about equal to a mile of the old empirical system. A very small change will be therefore necessary, taking this mile as a unit. From this unit a table is constructed that will give the most convenient measures, with the least possible change from the old system, and one that could be adopted at least by the United States and Great Britain with advantage:

III. 1. *General Table of New Lineal Measure proposed*

10 tenths	=	1 inch.
10 inches or 100 tenths,	=	1 foot.
6 feet or 60 inches	=	1 fathom.
1000 fathoms or 6000 feet	=	1 mile.
60 miles	=	1 degree on the meridian.

Measures of Temperature and Air.—The centigrade thermometer generally used in France and other countries, having its zero at the freezing point—the only invariable point of temperature in nature—and its 100th degree determined by the temperature of boiling water, when the barometer stands at 29½ inches of the new lineal measure proposed to be adopted in preference to Fahrenheit's scale. The barometer to be marked in inches and 10ths of the new measure. The new standard of lineal measure to be the fathom of 6 feet marked on a rod of brass or other metal, and made equal to 6 feet 0·91548 inch of our present measure at the temperature of 62·6 degrees of Fahrenheit, or 17 degrees of the centigrade thermometer. This proportion will make the proposed mile equal to 1012·715 fathoms of our present measure, being the mean length of the minute of a degree of terrestrial meridian, according to Mr. Airy's treatise on the figure of the earth.—*Ency. Metro.* Should more extensive surveys of meridianal areas, since made or in progress, lead to a more accurate value of the said minute, it is proposed that the necessary correction shall be effected, not by changing the standard rod, but by altering the legal temperature to a higher or lower point than 17 degrees centigrade.

For measuring works of architecture and engineering, the foot and its decimal subdivisions will be used, and measurements by 10 feet and 100 feet, and not by the yard or rod.

2. *For Land Measure.*—The fathom to be the unit, and 10th and 100th for fractions, and all square-work to be so measured:

1000 square fathoms	=	1 acre.
1000 acres	=	1 mile

3. *For Solid Measure.*—The foot to be the unit:

1000 cubic inches	=	1 foot.

Liquids to be measured by solid measurements:

10 cubic inches	=	1 pint
100 cubic inches	=	1 gallon.
100 cubic gallons or 10 cubic feet	=	1 barrel.

4. *Measures of Weight Proposed.*

10 tenths	=	1 ounce.
10 ounces	=	1 pound.
100 pounds	=	1 hundred-weight.
1000 pounds	=	1 thousand-weight.
2000 pounds	=	1 ton.

And 1 pound be the weight of 1-60th of a cubic foot of water at 17 degrees centigrade, and the barometer standing at 24½ inches of the new lineal measure. By this arrangement, 100 pounds will be equal to about 108 pounds of the present avoirdupois weight. All the weights for coins, bullion, apothecaries' weights, etc., be regulated by this system, and all customs and duties collected by these tables. This would soon introduce the system without any compulsory measures.

IV. *Some of the Advantages of the New System of Measures and Weights.*—The mile proposed is the nautical or geographical mile, and used exclusively for the purposes of navigation by all the maritime nations, and inserted in all the scales of charts and maps of the world, is the only universal measure now recognized. Also the weights, as well as the measures, are decimal parts of the unit, as far as can be, without a total change of our present systems. The French metrical system has proved a failure practically. Theoretically it is perfect; taking the degree for a unit, and using the decimal divisions throughout. But our whole notation in astronomy and navigation is founded upon the division of the degree into 60 parts, and we can not have a complete change until we manufacture our clocks and watches so as to mark time by decimal divisions, and change our hours and minutes into corresponding 10ths and 100ths; in fact, abandon entirely our present system. This is too great a change ever to be practicable, especially where so many different people have to conform. The system that has been proposed, only introduces the decimal *divisions* into the standards already adopted, and is not only practicable, but the change can readily be made, as in the case of our coinage. It will be sufficient to convince the most skeptical of the necessity of a change, to make an examination of the tables of weights, measures and coins in the world. And as no better time to correct an evil can be had than the present, it is hoped that our government will lead the way in so useful a change. The British government have already taken measures to have an examination and researches made for this object, as may be seen from the following:

"Sir John Wrottesley brought the decimal system of coinage, weights, etc., before Parliament, February 25th, 1824, but it was not till May, 1838, that a commission of inquiry was appointed at the instance of the then Chancellor of the Exchequer, Mr. Spring Rice, since Lord Monteagle; and in June 20, 1843, another commission was appointed; they both consisted of eminent scientific men, and both reported strongly in favor of the change. A committee of the House of Commons reported to the same effect, August 1st, 1853. Mr. Gladstone, however, while admitting the advantages of this system, thought its introduction premature. In June, 1854, an association was formed for the purpose of obtaining the adoption of the system. In July, 1855, the commissioners for inquiry were again appointed." See *Weights and Measures.* See *Bankers' Magazine*, N. Y., 1856; *Bankers' Register*, N. Y., 1857.

Declination of the Needle. Professor Christopher Hansteen, of Christiana, in Norway, is the person who has given, probably, the greatest impulse, in recent times, to the efforts to methodize the facts and laws of the earth's magnetism. M. Hansteen was born September 26, 1783, and is Professor of Astronomy in the University of Christiana, and Director of the Observatory. His dissertation, entitled *Magnatismus der Erdo*, published in 1819, which received a prize from the Royal Danish Academy, recapitulated all the authenticated facts obtained by voyagers and others, from the earliest times. It will be recollected that Halley had represented the magnetic variation at different parts of the globe by lines traced on Mercator's chart, and passing through all the places where the variation (or declination) of the needle from the true north was equal; and being well aware of the progressive (or secular) changes in the course of these lines, he proposed the hypothesis of 2 pairs of magnetic poles interior to the globe, of which 1 pair revolve slowly.

Professor Hansteen also constructed charts of the lines of equal dip. In certain positions between the tropics the dip is nothing, or the freely-suspended magnetic needle remains horizontal. The line connecting these places is called the magnetic equator. It is an undulating line, inclined somewhere near 12° or 13° to the terrestrial equator, and cutting it in 2 points, not exactly opposite, but in about 3° 20′ and 174° 80′ of E. long. from Paris, according to Admiral Duperrey's observations in 1825. The position of these nodes is, however, variable. The north end of the needle (as is well known) dips more and more in the northern hemisphere, until in a certain place it becomes vertical, when therefore the horizontal component of the magnetic force is nothing, and the common compass loses altogether its directive power. Similar phenomena occur in the southern hemisphere. Lines of dip of 10°, 20°, etc., may be drawn, and where the dip is 90° *there* is a true magnetic pole. The best observations serve to show that there is but one such true pole in each hemisphere.—E. B. *Preliminary Dissertation*, by J. D. Forbes, F.R.S.

Deed is a written contract, sealed and delivered. It must be written before the sealing and delivery, otherwise it is no deed; and, after it is once formally executed by the parties, nothing can be added or interlined; and therefore, if a deed be sealed and delivered, with a blank left for the sum, which the obligee delivers up after sealing and delivery, this will make the deed void. A deed must be made by parties capable of contracting, and upon a good consideration, and the subject-matter must be legally and formally set out. The formal parts of a deed are the premises containing the number, names, additions, and titles of the parties, the covenants, which are clauses of agreement contained in the deed, whereby the contracting parties stipulate for the truth of certain facts, or bind themselves to the performance of some specific acts; the conclusion, which mentions the execution and date of the deed, or the time of its being given or executed, either expressly, or with reference to some day and year before-mentioned. Every deed must be founded upon good and sufficient consideration, not upon an usurious contract, nor upon fraud, collusion, either to deceive *bona fide* purchasers, or just and lawful creditors; any of which considerations will vacate the deed, and subject the parties to forfeiture, and in some cases to imprisonment. A deed, also, without any consideration, is void. A deed must be executed by the party himself, or by another for him in his presence, or with his direction; or, in his absence, by an agent authorized so to do by another deed, also under seal; and in every such case, the deed must be made and executed in the name of the principal. A deed takes effect only from the day of delivery; and therefore, if it have no date, or a date impossible, the delivery will, in all cases, ascertain the date of it; and if another party seal the deed, yet, if the party deliver it himself, he thereby adopts the sealing and signing, and by such delivery makes them both his own. The delivery of a deed may be alleged at any time after the date; but unless it be sealed and regularly delivered, it is no deed. Another requisite of a deed is, that it be properly witnessed or attested. The attestation is, however, necessary rather for preserving the evidence than as intrinsically essential to the validity of the instrument. There are four principles adopted by the courts of law for the exposition of deeds, viz.: 1. That they be beneficial to the grantee, or person in whose favor they are intended to operate. 2. That where the words may be employed to some intent, they shall not be void. 3. That the words be con-

strued according to the meaning of the parties, and the intent of the parties be carried into effect, provided such intent can possibly stand on a law. 4. That they are to be expounded consonantly to the rules of law, and reasonably, without injury to the grantor, and to the greatest advantage of the grantee.—E. A.

Degree of Latitude is the space or distance, on the meridian, through which an observer must move to vary his latitude by 1 degree, or to increase or diminish the distance of a star from the zenith by 1 degree; and which, on the supposition of the perfect sphericity of the earth, is the 360th part of the meridian. The length of a degree of a meridian, or other great circle on the surface of the earth, is variously determined by different observers, and the methods made use of are various; and, therefore, without entering into the history of all attempts of this kind, we shall present our readers with the following

TABLES OF THE DIFFERENT LENGTHS OF A DEGREE, AS MEASURED IN VARIOUS PARTS OF THE EARTH, THE TIME OF ITS MEASUREMENT, THE LATITUDE OF ITS MIDDLE POINT, ETC.

Date.	Latitude.			Extent in English miles and decimals.	Measurers.	Countries.
1525	49°	20½′	N.	68·768	M. Fernel.....	France.
1620	52	4	N.	66·091	Snellius	Holland.
1635	53	15	N.	69·545	Norwood.....	England.
1644				75·066	Riccioli.....	Italy.
1669	49	22	N.	68·945	Picard.....	France.
1718				69·119	Cassini.....	
1737	66	20	N.	69·403	Maupertuis.....	Lapland.
1740	49	22	N.	69·121	Cassini & LaCaille	France.
	45	00	N.	69·092		
1744	0	0		68·751	Juan d'Ulloa...	Peru.
				68·782	Bonguer.....	
				68·713	Condamine....	
1752	33	18½	S.	69·076	La Caille.....	C. of G. H.
1755	43	0	N.	68·998	Boscovich.....	Italy.
1764	44	44	N.	69·061	Beccaria.....	
1766	47	40	N.	69·142	Liesganig.....	Germany.
1768	39	12	N.	68·898	Mason and Dixon	U. States.
1802	51	29	54½ N.	69·146	Lieut. Col. Mudge	England.
1803	66	20½	N.	69·292	Swanberg.....	Lapland.
	12	32	N.	68·743	Lambton	Mysore.
1808	44	52½	N.	68·769	Biot, Arago, etc..	France.

Degree of Longitude is the space between 2 meridians that make an angle of 1° with each other at the poles, the quantity or length of which is variable according to the latitude. The following table expresses the length of a degree of longitude in different latitudes, supposing the earth to possess a perfect sphericity:

Lat.	Miles.	Lat.	Miles.	Lat.	Miles.	Lat.	Miles.
0	69·07	23	63·51	46	47·98	69	24·73
1	69·06	24	63·03	47	47·06	70	23·60
2	69·03	25	62·53	48	46·16	71	22·47
3	68·97	26	62·02	49	45·28	72	21·32
4	68·90	27	61·48	50	44·35	73	20·17
5	68·81	28	60·93	51	43·42	74	19·02
6	68·69	29	60·35	52	42·43	75	17·86
7	68·48	30	59·75	53	41·53	76	16·70
8	68·31	31	59·13	54	40·56	77	15·52
9	68·15	32	58·51	55	39·55	78	14·85
10	67·95	33	57·87	56	38·58	79	13·17
11	67·73	34	57·20	57	37·58	80	11·98
12	67·48	35	56·51	58	36·57	81	10·79
13	67·21	36	55·81	59	35·54	82	9·59
14	66·95	37	55·10	60	34·50	83	8·41
15	66·65	38	54·37	61	33·45	84	7·21
16	66·31	39	53·62	62	32·40	85	6·09
17	65·98	40	52·85	63	31·33	86	4·81
18	65·62	41	52·07	64	30·24	87	3·61
19	65·24	42	51·27	65	29·15	88	2·41
20	64·84	43	50·45	66	28·06	89	1·21
21	64·42	44	49·63	67	26·96	90	0·00
22	63·97	45	48·74	68	25·85		

A degree of the meridian on the surface of the globe has been variously determined by different observers. M. Picart measured a degree in the latitude of 49° 21′, and found it equal to 57,060 French toises. But the French mathematicians who examined Picart's operations, found that the degree in that latitude is 57,183 toises. Mr. Norwood measured the distance between London and York, and found it 905,751 English feet, and finding the difference of latitudes 2° 28′, determined the quantity of 1 degree to be 867,196 English feet, or 69 English miles and 288 yards. Maupertuis measured a degree in Lapland, in the latitude of 66° 20′, and found it 57,438 toises. A degree was measured at the equator by other French mathematicians, and found to contain 56,767·8 toises. From these measurements it appears that the earth is not a sphere, but an oblate spheroid.—E. B.

Delaware, one of the middle United States, next to Rhode Island the smallest in the Union, and in population the least, is bounded north by Pennsylvania, east by Delaware River and Bay, south and west by Maryland. It is between 38° 27′ and 39° 50′ N. lat., and between 75° 04′ 42″ and 75° 56′ W. long., and between 1° 13′ and 1° 57′ E. long. from W. It is 92 miles long and 23 broad, and contains 2,120 square miles, or 1,356,800 acres. The population in 1790 was 59,094; in 1800, 64,272; in 1810, 72,674; in 1820, 72,749; in 1830, 76,739; in 1840, 78,085; in 1850, 91,532.

Early History.—That Delaware Bay was already known to the Spaniards a long time before Hudson, there is no doubt. But the question is what they called it. Benson, in his memoir on the names of the State of New York, says that they called it *The Bay of all Saints.* He does not give his authority. In the most ancient Spanish description of the east coast which we have (that of Oviedo), this "Bay of all Saints" is not mentioned all. But Oviedo mentions a *Bahia de S. Christoval* on the east coast, and says that it stands under 39° N. lat. This is nearly exactly the latitude of Delaware Bay, which therefore probably is designated by him under that name. If it is true that the Spanish *Cabo de las Arenas* is our Cape Henlopen, then that large bay which the Spanish maps invariably paint immediately to the north of this cape, must be *Delaware Bay.* The figure which they give to this bay, as well as to the river which they make run into it, corresponds with the configuration of our bay and river. Often we find on the maps the name given by Oviedo—that of *Bahia de S. Christoval* or *Chripstoval* (St. Christopherus Bay), written to it. So for instance on a Spanish map of 1580, so on a French map made after a Spanish original of 1587; but sometimes other names appear here; for instance, that of *Bahia de la Buelta* (Repulse Bay), or that of *Rio de S. Antonio*, probably only because the map-makers confounded all those names in a most irregular way. As to the Spanish navigator who brought home the sketch of our bay, and gave it the name of *St. Christopherus Bay*, there is yet some doubt.

The first navigator whom we can prove to have been at the entrance of the bay, is Henry Hudson, when (1609) he sailed along the coast from Chesapeake Bay toward the north. He looked into the bay, found it full of shoals, did not explore it, gave to it no name, and "*suspected*, from the currents which came out from it, that there was a river leading into it." It is pretty generally said that Lord Delaware, when (in the year 1610) he sailed to Chesapeake Bay, was thrown out of his way and touched at this bay, and that it was therefore called by him, or by his companions, and the first English settlers in Virginia, *Delaware Bay.* This was not only the first English, but upon the whole the first name under which the bay became more generally known in Europe. We see it for the first time mentioned and written in the letter of Captain Argall, of the year 1612, in Purchas' Pilgrims. The old Virginian writers spelled or corrupted the name in very different ways. Sometimes they write "*My Lord Delaware's Bay*," sometimes *Delavar Bay*, and sometimes *Delaware Bay.* Later French mapmakers (for instance Bellin) made of this *Bay Delaware* or *Lawar.* The first map on which we find this name, is a little map of the greater part of the east coast by Captain Smith, of the year 1624. For the first time, pretty well drawn, the bay is to be found on the first map of Maryland, of the year 1635.

After Hudson and Lord Delaware, Dutch skippers and navigators were the first who entered this bay. The Dutch Captain Hendricksén sailed (1618) up into the bay and river as far as Schuylkill river. Captain Cornelius May entered the bay 1623, explored it, sailed up in the river as high at least as the present site of the city of Philadelphia, and built there a fort called "Fort Nassau." The bay was from him called "New Port May." The river was called by the Dutch *Zuydt rivier* (the South river), with respect to the second great river of the New Netherlands to the north (Hudson's river). It is not evident, but it is probable that the Dutch commenced at once after Hudson's discovery to designate the river under that name. The first book in which the name Zuydt rivier is mentioned and printed is the "New World" of Laët, 1624. From the river also the bay was generally called Zuydt Bay, the South Bay, and this name became among the Dutch so common that the other name, New Port May, was soon forgotten. Another Dutch name for the bay was that of Godyn's Bay, from the well-known Amsterdam merchant, Samuel Godyn, who purchased from the Indians Cape May, and a tract of country from this cape along the shores of the bay. Other Dutch names of this river sometimes used were *Nassau rivier*, *Prince Hendrick's rivier*, and *Charles rivier*. This latter name was in use as well among the English as among the Dutch. We find in an English document of the year 1648, the name *Delaware* or *Charles river*. And so we find on the Italian map by Lucini, taken from a Dutch original in about the year 1631, the name *Rio Carlo*. We do not know in honor of which Charles the river was so called. The English claimed the bay and river in consequence of Cabot's and Delaware's discovery, and from different other reasons. The Dutch claimed it from Hudson's discovery, and took possession of it about 1623, through Captain May. In the year 1629 they built another fort there, called *Swanandael*, and 1633 the great navigator, David Pietersz de Vries, entered the bay and river, explored it, and made there also a temporary little settlement, *Fort Upland*.

But all these Dutch settlements disappeared again, and were partly destroyed by the Indians, and the river and bay were without any habitation from 1633 to 1638, when at last the Swedes entered it under Peter Minuit, Minuet, or Menewe. They changed the whole geography of the bay and river. The river was under them called *The New Swedeland Stream*, and the bay *New Swedeland Bay*, and the Swedes erected also new forts and gave Swedish names to the old Dutch forts, which they partly rebuilt. The greater number of the Swedish and Dutch settlements on Delaware river and bay were made on the western shore, and this first Dutch and Swedish population formed from the beginning a peculiarly situated community. What since 1638 was called *New Swedeland*, comprised principally the territory of the present State of Delaware. The Swedes remained 17 years in possession of the river and bay, and one of their engineers, Lindstrom, who accompanied the Swedish governor Rising, in the year 1654, made a minute exploration and the first special map of the whole. In the following year, 1655, however, the Dutch governor of the New Netherlands, Stuyvesandt, appeared with some men of war in the bay, and subdued the whole little New Sweden to the Dutch. They reintroduced the old and some new Dutch names, but retained possession only for 9 years. When the English (1664) conquered this land from the Dutch, it was, until 1681, attached to the great province of New York. But during the same time the founders of Maryland considered it to be comprised under this name and to be a part of their *colony of Maryland*. In this period were formed the 3 counties of which the State still to-day consists, and the whole tract was usually called *the three lower counties on the Delaware*. In the year 1681 William Penn bought these 3 counties from the Duke of York, and they made now a part of Pennsylvania, under the usual name of *The Territories of Pennsylvania*, or the *Three Lower Counties*. They remained in connection with Pennsylvania until 1776, when these territories separated from Pennsylvania and declared themselves independent, under the name of the *State of Delaware*.—J. G. Kohl.

A somewhat elevated table-land passes through a portion of the State from north to south, dividing the waters which fall into Chesapeake Bay from those which flow into Delaware Bay. This table-land contains a chain of swamps in the western part of this State, from which its principal streams originate. The soil in the north is a strong clay. Along Delaware River, and for about 10 miles west of it, the soil is generally a rich clay, well adapted to agriculture; but between this and the swamps the soil is light and sandy. Proceeding toward the south, the soil becomes more sandy, and in Sussex county sand greatly predominates. Kaoline, or porcelain clay, is found in the northern portion, bog-iron ore in the southern, and shell marl throughout the State. There were in 1850, 580,862 acres of land improved, and 375,282 of unimproved in farms. Cash value of farms, $18,880,031; and the value of implements and machinery, $510,279.

Live Stock, etc.—Horses, 13,852; asses and mules, 791; milch cows, 19,248; working oxen, 9,797; other cattle, 24,166; sheep, 27,503; swine, 56,261; value of live stock, $1,849,281; of slaughtered animals, $873,665.

Agricultural Products, etc.—Wheat, 482,511 bushels; rye, 8,066; Indian corn, 3,145,542; oats, 604,518; barley, 56; buckwheat, 8,615; peas and beans, 4,120; potatoes, 240,542; sweet potatoes, 65,443; value of products of the orchard, $46,574; produce of market gardens, $12,714; pounds of butter made, 1,055,308; of cheese, 3,187; molasses, 50 gallons; beeswax and honey, 41,248 pounds; wool, pounds produced, 57,768; flax, 11,174; hops, 348; hay, tons of, 30,159; clover-seed, 2,525 bushels; other grass seeds, 1,403; flax-seed, 904 bushels; and were made 145 gallons of wine; value of home-made manufactures, $38,121.

Manufactures, etc.—There were in the State in 1850, 12 cotton factories, with a capital invested of $585,100, employing 413 males and 425 females, producing 5,205,000 yards of sheeting, etc., valued at $538,439; 5 woolen factories, with a capital invested of $136,500, employing 113 males and 86 females, manufacturing 157,000 yards of cloth, valued at $244,510; 13 establishments making pig-iron, with a capital of $373,500, employing 250 persons, and making 8,630 tons of castings, etc., valued at $267,462; 2 establishments, with a capital invested of $15,000, employing 50 persons, manufacturing 550 tons of wrought iron, valued at $55,000; 70 flouring-mills, 83 saw-mills, 16 tanneries, with a capital of $99,350, employing 108 persons; value of products, $163,742; 8 printing-offices, issuing 2 semi-weekly, and 8 weekly newspapers. Capital invested in manufactures, $2,978,945; value of manufactured articles, $4,649,206.

The principal port is Wilmington, a port of entry, and the principal commercial town of the State, situated between Brandywine and Christiana Creeks, 1 mile above their junction. On Brandywine Creek are some of the finest flouring-mills in the United States, to which vessels drawing 8 feet water can come. Christiana Creek is navigable for vessels drawing 14 feet of water, and gives to Wilmington considerable commerce. The tonnage of the port in 1856, was 13,665 tons. The foreign trade of Delaware is effected chiefly through Baltimore, New York, and Philadelphia, especially the last; so that its direct foreign commerce is very inconsiderable. During 1850, 16 vessels were built, of an aggregate burden of 1,848 tons, viz., 12 schooners, 3 sloops, and 1 steamer. The Chesapeake and Delaware Canal connects these two bays.

FOREIGN COMMERCE OF THE STATE OF DELAWARE, FROM OCTOBER 1, 1820, TO JULY 1, 1856.

Years ending.	Exports.			Imports.	Tonnage Cleared.		District Tonnage.	
	Domestic.	Foreign.	Total.	Total.	American.	Foreign.	Registered.	Enrolled and Licensed.
Sept. 30, 1821	$75,915	$9,330	$85,445	$80,907	2,888	....	667	9,721
1822	159,950	4,642	168,592	216,94.	4,082	145	....	....
1823	85,724	18,113	59,837	60,124	124	....	....	....
1824	18,964	....	18,964	12,080	199	127	....	....
1825	29,801	2,295	31,656	18,698	827	....	....	....
1826	83,818	1,877	85,195	10,009	1,186	....	....	....
1827	9,406	....	9,406	6,993	317	....	....	....
1828	27,028	2,367	29,395	15,260	1,050	....	....	....
1829	7,195	....	7,195	24,179	308	....	....	....
1830	52,258	....	52,258	26,574	902	141	....	....
Total	$453,119	$38,824	$491,943	$471,878	11,843	413	....	....
Sept. 30, 1831	84,514	....	84,514	21,656	799	965	99	13,453
1832	16,242	..	16,242	23,658	699	833	....	....
1833	45,911	....	45,911	9,043	186	....	....	....
1834	51,945	....	51,945	185,943	....	....	....	....
1835	88,826	....	88,826	10,611	....	....	....	....
1836	74,981	....	74,981	107,063	....	....	....	....
1837	40,333	....	40,333	66,841	....	....	....	....
1838	36,844	....	36,844	1,348	....	....	....	....
1839	8,680	....	8,680	....	....	....	....	....
1840	37,001	....	37,001	802	....	....	....	....
Total	$435,277	....	$435,277	$420,960	1,684	1,298	....	....
Sept. 30, 1841	88,585	....	88,585	3,276	1,682	2,202	906	9,150
1842	55,665	....	55,665	3,557	2,587	2,672	....	....
9 mos., 1843*	98,490	192	98,682	4,685	1,940	866	....	....
June 30, 1844	125,771	406	126,177	8,093	3,882	....	....	....
1845	188,195	....	188,195	2,274	4,958	100	....	....
1846	144,045	2,177	146,222	11,215	3,495	....	....	....
1847	235,459	....	235,459	12,722	4,096	839	....	....
1848	83,039	10	83,058	490	2,466	3,612	....	....
1849	87,850	379	88,229	1,400	1,091	1,599	....	....
1850	....	....	....	....	....	....	....	....
Total	$957,099	3,173	$960,272	$47,712	26,101	11,890	....	....
June 30, 1851	....	....	....	....	....	....	663	11,217
1852	....	....	....	....	....	....	....	....
1853	....	....	....	....	....	....	....	....
1854	80,920	....	80,920	....	2,053	....	....	....
1855	63,087	....	63,087	5,821	2,444	....	....	....
1856	76,380	....	76,380	3,053	1,674	....	....	....

* Nine months to June 30, and the fiscal year begins July 1.

Delaware Bay, at the mouth of the Delaware River, is a large arm of the sea, 75 miles long, 20 miles wide between Cape May on the north, and Cape Henlopen on the south, and 30 miles wide in the middle. The navigation is difficult and dangerous, being interrupted by many shoals. Its low and sandy shores were without harbors until the construction of the Delaware Breakwater within Cape Henlopen.

Delaware Breakwater. This breakwater is situated at the entrance into Delaware Bay, near Cape Henlopen. The anchorage ground, or roadstead, is formed by a cove in the southern shore, directly west of the pitch of the cape, and the seaward end of an extensive shoal called *The Shears*. The entrance from the ocean is 1,950 feet in width, and is accessible during all winds from the sea. The depth of water is from 24 to 36 feet deep, at low tide, throughout the harbor. There are two dykes, one of 1,500 feet, and the other of 6,000 feet, giving a secure harbor of seven tenths of a square mile. The objects of this artificial harbor are to protect vessels from winds from east to north-west, by way of north, and against the floating ice of the bay.

Delaware River, a river of the United States, which rises on the west side of the Catskill Mountains, State of New York, and after separating Pennsylvania from New York and New Jersey, falls into the Delaware Bay 5 miles below Newcastle. It is formed by the union of two streams. The Mohawk, or western and main branch, rises from a small lake in latitude 42° 45′ N., at an elevation of 1886 feet above the sea, and flows south-west for nearly 50 miles, when it turns suddenly to the south-east, flowing in that direction for 5 miles to the Pennsylvania boundary line in latitude 42° N. Eight miles below this spot it is joined by the Popaeton branch, which has a previous south-west course of about 50 miles. After the union of these two streams, the river pursues a winding south-east course between New York and Pennsylvania for 60 miles to the north-west corner of New Jersey, where it receives the Neversink River. It then turns south-west, along the base of the Kittaning range, for 35 miles, in passing through which it forms what is called the "Water Gap," a great natural curiosity. The banks here rise precipitously from the water's edge to the height of 1,600 feet, overhung by immense masses of rock, and at the south-east entrance leaving scarcely room for a road. The passage, however, widens toward the north-west. Its entire length is about 2 miles. From this point it pursues a south-east and then a south-west course to Easton, where it receives the Lehigh, a large tributary, from the west. A little below this the river passes through South Mountain, and has a south-east course to Trenton, 60 miles below Easton; having in that distance 25 rapids, with a total fall of 165 feet. These falls are unvigable at high water. The river below Trenton turns to the south-west until near the bay, which it enters in a south-east direction, after an entire course of 309 miles. It is navigable for vessels of the largest class to Philadelphia, 40 miles, and for sloops 85 miles further, to Trenton. Above the falls at Trenton it is navigable for boats of 8 or 9 tons for 100 miles. The Delaware is connected with the Hudson River and the bays of New York by the Delaware and Hudson Canal, the Morris Canal, and the Delaware and Raritan Canal.

Del Credere Commission. All agents who sell goods for their principals, and guaranty the price, are said abroad to act under a *del credere commission*. In the United States, this phrase is seldom used, nor is such guaranty usually given, except by commission merchants. And where such guaranty is given, the factor is still but a surety, so far that his employers must first have recourse to the principal debtor. But his promise is not "a promise to pay the debt of another," within the statute of frauds. Nor does he

guaranty the safe arrival of the money received by him in payment of the goods, and transmitted to his employer, but must use proper caution in sending it. If he take a note from the purchaser, this note is his employer's; and if he take depreciated or bad paper, he must make it good.—PARSONS *on Mercantile Law*, ch. x., p. 159.

In mercantile law, a term derived from the Italian (*credere*, to trust), which denotes a commission granted by a merchant to a factor to dispose of goods; the factor, for the consideration of an additional percentage, agreeing to guaranty the solvency of the purchaser.

Delft or **Delf** (German, *Fayence*, *Unachtes Porzellan*; Dutch, *Delfs porcelyn*; French, *Faienbe*), a course species of porcelain, originally manufactured at Delft, whence its name. It is a kind of pottery of baked earth, covered with an enamel of white glazing, which gives it the appearance and neatness of porcelain. Some kinds of this enameled pottery differ from others, either in their sustaining sudden heat without breaking, or in the beauty and regularity of their forms, enamel, and the painting with which they are ornamented. In general, the fine and beautifully-enameled potteries, which approach the nearest to porcelain in external appearance, are, at the same time, those which least resist a brisk fire; while those which sustain a sudden heat are coarse, and resemble common pottery.

Demand and Supply are terms used in political economy to express the relations between consumption and production—between the demand of purchasers and the supply of commodities by those who have them to sell. The relations between the demand for an article and its supply, determine its price or exchangeable value: the relations between the demand for labor and its supply, determine the amount of wages to be earned by the laborer. For causes explained elsewhere, the price of an article will rarely vary, for any length of time, very much above or below its cost of production; nor will the wages of labor, for any length of time, much exceed or fall below the amount necessary to maintain laborers and their families in such comforts as their habits of life have accustomed them to believe necessary for their subsistence; but bearing in mind that, in the prices of commodities and labor, there is a certain point, determined by causes independent of demand or supply, above or below which prices can not materially vary for any considerable time: all variations of price, if the medium in which they are calculated remain unchanged, may be referred to the proportion which exists between the demand for commodities and the supply of them—between the quantities which purchasers are willing and able to buy, and the quantities which producers are able and willing to sell.

To have any influence upon prices, a demand must be accompanied by the means of purchasing. A demand is not simply a want—a desire to obtain and enjoy the products of other men's labor; for if this were its meaning, there would never be the least proportion between demand and supply: all men would always want every thing, and production could not keep pace with consumption. But an "effective demand," as it is termed by Adam Smith, exists wherever one man is anxious to exchange the products of his labor for that of other men. It is, therefore, of an effective demand only that political economists are speaking when they examine the circumstances of demand and supply in connection with prices.

But although a demand, without the means of purchase, can not affect prices, the universal desire of mankind to possess articles of comfort and luxury suggests other important considerations. As this desire is natural to man, and too often is so strong as to tempt him even to commit crime, it obviously needs no encouragement; men will always gratify it whenever they have the means, and these means consist in the products of their own labor. Hence all that is required to convert this desire of acquisition into an effective demand is ample employment for industry. Increase the production of all commodities and an increased consumption of them is the certain result; for men, having larger products of their own labor to offer in exchange for the products of other men's labor, are enabled to purchase what they are always eager to acquire. Production, therefore, is the great object to be secured, not only as furnishing a supply of commodities necessary and useful to mankind, but also as creating an effective demand for them. When trade is depressed by a languid demand, it is commonly said that increased consumption is all that is required to restore its prosperity. But how is this consumption to be caused? The desire to consume is invariable, and thus any falling off in consumption must be attributed to a diminished production in some departments of industry which causes an inability to consume. When production is restored, an effective demand for all articles will immediately follow; but until the productive energies of the consumers are in a state of activity, it is in vain to expect from them an increased demand.

These considerations lead us to the conclusion that a universal glut of all commodities is impossible. The supply of particular commodities may easily exceed the demand for them, and very often does exceed it; but as the constant desire to obtain commodities needs nothing but the power of offering other commodities in exchange, to become an effective demand, it is evident that a universal increase of production is necessarily accompanied by a proportionate increase of consumption. Men are stimulated by no love of production for its own sake, but they produce in order to consume directly, or because, by exchanging their produce with others, they are able to enjoy the various comforts and luxuries which they are all desirous of obtaining. Active production, therefore, in all departments of industry, causes a general and effective demand for commodities, which will continue to be equal to the supply unless it be checked by war, by restrictions upon commerce, or by other circumstances which prevent a free interchange of commodities.

A country is in the highest prosperity when there is an active and steady demand for commodities and labor, and a sufficient supply of them. Any disturbance of the proportion between one and the other is injurious to the community; and the injury is greater or less according to the extent and duration of such disturbance. When the proportion is well adjusted, the whole community derive benefit from the circumstance, both as producers and consumers; when it is disturbed, they are injured in both capacities.

Having described, thus generally, the nature and causes of demand, and its intimate connection with supply, it becomes necessary to examine the influence of demand and supply upon one another, and upon production, consumption, prices, and profits. This influence varies according to the circumstances of the market, and the nature of the commodities to which its law may be applied. These may be best understood by considering, 1st, the effects of a demand exceeding the supply; and 2dly, of a supply exceeding the demand.

1. The first effect of a demand exceeding the supply of a commodity, is to raise its price. As more persons want to buy the commodity than the producers are able or willing to supply, they can not all obtain what they desire; but must share the supply between them in some manner. But their wants are very much regulated by the cost of gratifying them. One man would purchase an article for a dollar for which he may be unwilling or unable to pay two; while others, rather than forego the purchase, will consent to pay that amount. Those who have commodities to sell, finding that they have more customers than they can

satisfy, immediately infer that they are selling them too cheaply, and that they could dispose of all their stock at a higher price. The price is accordingly raised, when the sale becomes limited to those who are not restrained from buying by the increased price. In principle, though not in outward form, the market is in the nature of an auction. The sellers endeavor to obtain the highest price for their goods; the price rises with the eagerness of those who wish to buy, and the highest bidders only secure the prizes. In the market, however, the competition of the buyers is not perceptible among themselves, except through the prices demanded. Their competition determines the prices, but the sellers judge of its extent, and regulate their demands so as to obtain the greatest possible advantage from it.

Some commodities are positively necessary for the support of the people, of which the supply may fall very short of the demand and be incapable of increase. This is the case when there is a bad harvest in a country which is excluded from a foreign supply by war or by fiscal restrictions. Here the price rises in proportion to the deficiency of the crops. The competition for food is universal. Some, indeed, may be driven to the consumption of inferior articles of food, and others to a diminished consumption; but all must eat. The number of consumers is not diminished, while the supply is reduced; and the price must, therefore, rise and continue high until a fresh supply can be obtained. In a siege the competition is still greater. The prices of provisions become enormous; the rich alone can buy; the poor must starve or plunder.

A similar effect is produced if the supply, without being deficient, be confined to the possession of a small number of persons, who limit it to the consumers in order to secure higher prices. However abundant corn might be in a besieged town, if one man were exclusively authorized by law to sell it, it might rise to a famine price, unless the people broke into the granaries, or the government interfered with the monopoly. Less in degree, but similar in principle, is the effect upon prices of every limitation of the market by fiscal restrictions. When any sellers are excluded, the others are enabled to raise their prices.

These are cases in which the supply can not be increased to meet the demand, or in which the supply is monopolized. But the greater number of commodities may be increased in quantity, and the supply of them is not artificially limited. The price of these also rises when the demand exceeds the supply: but the increased price raises the profit of the producer, and attracts the competition of others in the market. Fresh capital and labor are applied to the production of the profitable article, until the supply is accommodated to the demand, or exceeds it. The prices gradually fall, and at length the profits are reduced to the same level as the profits in other undertakings, or even lower. The encouragement to further production is thus withdrawn, and prices are adjusted so as to secure to the producer the ordinary rate of profits, and no more.

But sometimes the demand for a commodity is diminished, if the supply fall short of it for any considerable time. There are various articles useful and agreeable to mankind, but not essential to their existence, which they are eager to enjoy as far as they can, but for which they are not prepared to make great sacrifices. When the price of an article of this description is raised by a deficient supply, continuing for some length of time, it is placed beyond the reach of many persons who learn to regard it with indifference. They would buy it if it were cheap; but as it is dear, they go without it, or are satisfied with a substitute. In this manner the number of consumers is diminished. Others again, who will not be deprived of an accustomed luxury, enjoy it more sparingly, and consume it in less quantities. But so long as the supply is not increased, the price will continue high, because the consumers who still purchase the article, notwithstanding its price, keep up an effective demand equal to the whole supply; while there is still a dormant demand, only awaiting a reduction of price to become effective.

For the same reasons, a demand for articles is diminished when their price is artificially raised by taxation. The demand is gradually confined to a smaller number of persons, and many consume more sparingly.

In these various ways demand and supply become adjusted through the medium of price, whenever the one exceeds the other. This is the result of natural laws, the operation of which is of the highest value to mankind. If the supply be incapable of increase, it economises consumption; if the supply can be increased, it encourages production. In either case, it is of great benefit to the consumer. To revert, for a moment, to the example of a bad harvest, in a country excluded from all foreign supply. Suppose that prices did not rise, but remained precisely the same as if the harvest had been abundant, what would be the consequence? The whole population would consume as much bread as usual, and use flour in every way that luxury points out, unconscious of any scarcity. Farmers might even feed their cattle with wheat. By reason of this improvidence, the whole of the corn would be consumed before the next harvest, and the horrors of famine would burst, without any warning, upon a people living as if they were in the midst of plenty. This evil is prevented by a rise of prices, which is a symptom of scarcity, just as pain is a symptom of disease. By timely precaution the danger is averted. A high price renders providence and economy compulsory, and thus limits consumption. The supply, therefore, instead of being exhausted before the next harvest, is spread over the whole year. In the case of food, it is true that such economy is painful and presses heavily upon the poor: but this evil is a mercy compared with famine. If no privation had been endured before scarcity became alarming, none but rich men could buy a loaf: for every one who had a loaf to sell, would be risking his own life if he sold it.

These observations are also applicable in some measure to cases in which prices are raised by the supply being confined to one or to a few persons, who have contrived to buy up the whole or nearly the whole of any commodity. But such exclusive possession (sometimes improperly called a monopoly) can not exist, for any length of time, in articles of which the supply is capable of increase. The extreme case has been put of a besieged town, in which the whole supply of corn was monopolized by one man. Under those circumstances of course he would demand a high price; but unless his exclusive supply were upheld by law, it does not follow that the inhabitants would suffer on that account. A most provident consumption of food is absolutely necessary for the defense of a town, and no organization could distribute provisions according to the wants of the people so well as a system of purchase restrained by a high price. It must also be recollected that, without any such exclusive possession, the fact of the siege alone must raise prices by cutting off fresh supplies. If the siege continue, provisions are more likely to last out by the instrumentality of prices than by any other means. At the same time the sole possessor of the corn would be restrained from keeping back the supply beyond the actual necessity of the occasion by many considerations. He would know that if a popular tumult arose —if the town were relieved, the siege raised, a capitulation agreed to, or the place suddenly carried by assault—the value of his exclusive property would be destroyed. His own interest, therefore, is coincident with that of the people. It is better for both that the

supply should be meted out with parsimony; it is dangerous to both that it should be immoderately stinted.

In circumstances less peculiar than these, very little evil can arise from an exclusive possession of any commodity not protected directly or indirectly by law. If the supply be capable of increase, and the demand be sufficient to enable the owner to secure a high price, for reasons already explained, the market would rapidly be supplied from other quarters. If the supply can not be increased, that fact alone would raise the price; and it is probable that the supply would not have been so great without the extraordinary activity of the capitalist who had been able to secure for his country the whole accessible supply to be collected from the markets of the world.

A monopoly, properly so called, is of a totally different character: for, however abundant the supply of an article may be, it may, nevertheless, be inaccessible to the consumer.

When prices are high by reason of the demand exceeding the supply, it is by no means necessary that the profits of those who sell the dear commodities should always be greater than the profits in other branches of trade. It must always be recollected, that where scarcity is the cause of the high price, the sellers who demand it have the less to sell. Where scarcity is not the cause, but the demand is great because the supply, notwithstanding the exertions of producers, can not keep pace with it, the profits are undoubtedly greater than usual, until the supply has been increased.

II. It is now time to consider the effects of a supply exceeding the demand, and this division of the inquiry will require less elucidation, as the effects of such a condition of the market may be stated to be the very reverse of those which we have just been examining. When there is more of a commodity than people are prepared to buy, its price must fall. Its sellers must offer it for sale at the price at which they can induce people to purchase. All is now in favor of consumers. They are no longer bidding against each other: but the sellers are competing among themselves to get rid of their goods. The price falls generally in proportion to the excess of the quantity, but this result is very much qualified by the nature of the article. If there be an excess of supply in perishable goods, there is nothing to prevent the natural fall of prices. When fish is unusually abundant, it must be cheap, or a great part of it will be destroyed: it must be eaten at once, or not at all; and to induce people to eat it, it must be offered to them at a low price. But with articles which may be held back, in expectation of higher prices, their value may be partially sustained. Production may be reduced, and the stock gradually brought into the market, until the supply has been equalized with the demand; and wherever the article is such as to admit of voluntary increase or diminution, the natural result of an excessive supply is to reduce production, until the balance of supply and demand has been restored. This mutual adjustment is in perpetual operation, and is ordinarily effected with such precision, that it may be said, without exaggeration, that a large city is supplied exactly with every thing its inhabitants require—even down to an egg or a pint of milk. There is always enough of every thing, and rarely too much.

Whenever there is an excessive production of any commodity, it is an evil almost as great as scarcity. It is true that the consumer derives benefit from it, but the producing classes are most injuriously affected. In order to raise the value of the produce of their labor, they must cease to produce, or must produce in less quantities. The workmen are thus either deprived of employment altogether for a time, or are employed for a portion of their time only, at reduced wages; while their employers are disposing of their goods at low prices, which scarcely repay the outlay of their capital. Nor does the penalty of over-production fall exclusively upon those engaged in the trade in which supply has exceeded the demand. Their distresses extend to other classes. It has been shown already that it is to production we must look as the cause of sustained consumption, and thus the pressure upon any considerable branch of productive industry must be sensibly felt by those who have the produce of their own labor to sell. Production has falled, and consumption must therefore be diminished.

The ruinous consequences of gluts, in particular staples of trade and manufacture, are too well known, especially in this country, to require any further illustration; but their causes are not always agreed upon. Such gluts are often attributed to the facility with which manufactures are produced by machinery; but we have shown that over-production in all branches of industry is impossible; and if that be true, it is evident that when partial gluts are produced by the aid of machinery, that powerful agent must have been misapplied. It is not contended that nothing can be produced in too great abundance. Whether machinery be used or not, production must be governed by the same laws of demand and supply. Those things only must be produced for which there is a demand, and they must not be produced in greater abundance than the demand warrants. But the more generally machinery is used, the more abundant will be the products which men will have to exchange with each other, and therefore the better will be the market. It follows that machinery can only cause a glut when applied excessively to particular objects, precisely in the same manner as an excessive quantity of labor would cause one if applied where it was not needed by the demands of commerce.

The supply of markets is a very speculative business, and is often conducted with more zeal than discretion. When a particular trade is supposed to be more prosperous than others, capitalists rush into it in order to secure high profits; and in this country the abundance of capital, the perfection of our machinery, and the skill of our workmen, enable them to produce with extraordinary facility. Over-production in that particular trade is the consequence, and all engaged in it suffer from the depreciation in the value of their goods; but if, instead of rushing into the favorite trade, they had distributed their enterprises more widely, their own interest and that of the community would have been promoted. When a ship is wrecked, if all the crew precipitate themselves into one boat, they swamp it; but if they wait till all the boats are lowered, and apportion their numbers to the size of each, they may all reach the shore in safety. And so it is in trade: one trade may easily be glutted, while there is room in other trades for all the capital and industry that need employment.

In proportion to the extent of the market and the variety and abundance of commodities be exchanged, will be the facility of disposing of the products of capital and labor; and this consideration points out as the most probable antidote to gluts, a universal freedom of commerce. When the free interchange of commodities is restricted, not only is a glut caused more easily, but its causes are more uncertain, and dependent upon unforeseen events. With the whole world for a market, the operation of the laws of demand and supply would be more equable, and the universality of the objects of exchange would make gluts of rare occurrence. The market would still be liable to disturbance by bad harvests, by errors in the monetary system, by shocks to public credit, and by war; but apart from these causes of derangement, demand and supply would be adjusted, and the productive energies of all nations called into full activity.—Bohn's *Cyclo. Pol. Econ.*; Adam Smith, *Wealth of Nations*, book i.; M'Culloch, *Principles of Political Economy*, part i., ch. 7, and part ii., ch. 1, 2; Mal-

THUS, *Principles of Political Economy*; RICARDO, ch. 30; MILL, *Essays on Unsettled Questions of Political Economy*, Essay ii.

Demurrage, in commercial navigation, is an allowance made to the master or owners of a ship by the freighter, for detaining her in port longer than the period agreed upon for her sailing. It is usually stipulated in charter-parties and bills of lading, that a certain number of days, called running or working days, shall be allowed for receiving or discharging the cargo, and that the freighter may detain the vessel for a further specified time, or as long as he pleases, on payment of so much *per diem* for such over-time. When the contract of affreightment expressly stipulates that so many days shall be allowed for discharging or receiving the cargo, and so many more for overtime, such limitation is interpreted as an express stipulation on the part of the freighter, that the vessel shall in no event be detained longer, and that if detained he will be liable for demurrage. This holds even in cases where the delay is not occasioned by any fault on the freighter's part, but is inevitable. If, for example, a ship be detained, owing to the crowded state of the port, for a longer time than is allowed by the contract, demurrage is due; and it is no defense to an action for demurrage, that it arose from port regulations, or even from the unlawful acts of the Custom-house officers. Demurrage is not, however, claimable for a delay occasioned by the hostile detention of the ship, or the hostile occupation of the intended port; nor is it claimable for any delay wilfully occasioned by the master, or owners, or crew of the vessel. The claim for demurrage ceases as soon as the ship is cleared out and ready for sailing, though she should be detained by adverse winds, or tempestuous weather. —CHITTY'S *Commercial Law*.

Professor Parsons in his admirable work on Mercantile Law [Boston, 1856], says:

"As time has become of the utmost importance in commercial transactions, both parties to this contract should be punctual, and cause no unnecessary delay; and for such delay, the party injured would have his remedy against the party in fault. The charter-party usually provides for so many 'lay-days,' and for so much 'demurrage.' Lay-days, or working-days, are so many days which the charterer is allowed for loading, or for unloading the vessel. These lay-days are counted from the arrival of the ship at the dock, wharf, or other place of discharge, and not from her arrival at the port of destination, unless otherwise agreed on by the parties. In the absence of any custom or bargain to the contrary, Sundays are computed in the calculation of lay-days at the port of discharge; but if the contract specifies "working lay-days," Sundays and holidays are excluded. If more time than the agreed lay-days is occupied, it must be paid for; and 'demurrage' means what is thus paid. Usually the charterer agrees to pay so much demurrage a day. If he agrees only to pay demurrage, without specifying the sum, or if so many working days are agreed on, and nothing more is said, it would, generally, at least, be considered that the number of lay-days determined what was a reasonable and proper delay, and that for whatsoever was more than this, the party in fault must pay a reasonable indemnity. If, after the lay-days allowed for unloading, have commenced, and, of course, after a safe arrival, but before the cargo is unladen, ship and cargo, or cargo alone, is lost, without the fault of the ship, of the owner, or of the master, the freight or charter-money is due, because that was earned by the arrival.

"If time be occupied in the repairs of the ship, which are made necessary, without the fault of the owner or master, or of the ship itself, that is, if they do not arise from the original unseaworthiness, the charterer pays during this time. Many cases have arisen where the ship was delayed by different causes, and the question occurred, which party should pay for the time thus lost. On the whole, we should say, that no delay arising from the elements, as from ice, or tide, or tempest, or from any act of government, or from any disability of the consignee, which could not be imputed to his own act, or to his own wrongful neglect, would give rise to a claim on the charterer for demurrage.

"Demurrage seems essentially due only for the fault or voluntary act of the charterer; but if he hires at so much on time, that is, by the day, week, or month; then, if the vessel be delayed by seizure, embargo, or capture, and the impediment is removed and the ship completes her voyage, the charterer pays for the whole time. If she be condemned, or otherwise lost, this terminates the voyage and the contract.

"The contract may be dissolved by the parties, by united consent, or against their consent, by any circumstances which make the fulfillment of the contract illegal; as, for example, by a declaration of war on the part of the country to which the ship belongs, against that to which she was to go. So either an embargo, or an act of non-intercourse, or a blockade of the port to which the ship was going, may either annul or suspend the contract of charter-party. And we should say they would be held to suspend only, if they were temporary in their terms, and did not require a delay, which would be destructive to the purposes of the voyage.

"In reference to all these points, it is to be understood, that if the parties know the circumstance, which they make their bargain, and provide for it, any bargain they choose to make in relation to it would be enforced, unless it required one or the other of the parties to do something prohibited by the law of nations, or of the country in which the parties resided, and to whose tribunals they must resort.—PARSONS' *Mercantile Law*, p. 362–367. See KENT'S *Com.*, III., pp. 264, 265.

Denarius, in *Roman Antiquity* the chief silver coin, among the Romans, worth in sterling money, about 7¾*d*, or about 15 cents. It was originally of 62 grains weight; and was considered equivalent to the Attic *drachma*, which, however, weighed 67 grains. It was originally one-seventh, but afterward fell to one-eighth ounce. (See Arbuthnot on *Coins*.) There was also a golden denarius, of which there is a specimen in the British Museum weighing 60 grains, besides others of less weight. As a weight, it was equal to the seventh part of a Roman ounce. Denarius was also used as of the value of an English penny.

Denier, a small French coin—copper coin, of which there were 12 to a sol.

Denmark, a kingdom in the north of Europe, small in extent and scanty in population, but known in history from an early period of the Christian era. There is no authentic account of the origin of the name of Denmark, nor of the quarter from which the country received its early inhabitants. From the similarity of the Danish and German languages, as well as from the general course of migration in early ages, it seems probable that Denmark was peopled by immigrants from the south—from Holstein, Hanover, and Saxony. There are no means of ascertaining whether natives of Denmark formed part of the formidable hordes which passed the Roman frontiers in the fifth and sixth centuries; but the attacks on this empire were probably made by tribes less remote, the expeditions of the Danes being in general maritime. For such expeditions they were remarkable as early as the eighth and ninth centuries, as was proved by their repeated invasions of England, their occasional descents on Scotland, and their conquest, followed by permanent occupation, of Normandy. To cross a sea of three or four hundred miles in breadth was a bold undertaking for men unacquainted with the use of the compass; but the number of islands in Denmark early accustomed the in-

habitants to navigation, and gave them a practical dexterity in it, similar to that acquired by the Dutch from their vicinity to arms of the sea, and to the mouths of great rivers. Both countries proved the advantage of a maritime position, for in those days neither France nor England were capable of sending forth a naval armament.

Denmark is a portion of the great European plain, and may be described as almost uniformly level, with partial inequalities of surface, particularly in Schleswig and Holstein, and the islands of Funen and Zealand. The kingdom consists of two great divisions, the one a long peninsula, extending from the Elbe to the Scaggerrack, and the other a cluster of islands separating the Cattegat from the East Sea. The western coasts of the peninsula are a continuous level of marsh-land; the interior is dry and sandy; and the islands partake of the same characteristics. The soil of the low-land is generally fertile, producing the finest pasture, and excellent corn crops. The climate is milder than the northern situation of the country would indicate; but the sky is very frequently obscured with vapors and moist fogs, and a summer lasts only from June to the middle of August. The climate, however, is not unwholesome. The mass of the population consists of Danes, who occupy the islands, North Jutland, and the northern part of Schleswig. Germans occupy the southern part of Schleswig, Holstein, and Lauenburg; Frisons and Angles live on the islands and other parts of the W. coasts. Agriculture and fisheries are their principal occupations. From 1660 till 1848 the kingdom was an Absolute Monarchy; but in the latter year a constitution was granted by the king; and the legisiative power is now vested in two parliamentary bodies, the *Volksthing* and *Landesthing*, both consisting of elective members; the former resembling the House of Representatives, and the latter the Senate, of the Congress of the United States of North America, rather than the Lords and Commons of Great Britain. Denmark is a small and poor country, and her naval and military power corresponds with her small resources. She possesses in Europe the Faroe Islands, and the large, volcanic, and poor island of Iceland, with a portion of West Greenland.

Lubec and Dantzic.—The chief mercantile intercourse of Denmark in the fourteenth century was with Lubec and the north-west of Germany. To the Baltic Lubec was nearly what Venice was to the Mediterranean, the earliest commercial town of consequence. There was also some traffic from Denmark to the mouths of the Vistula; the name of Dantzic or Danavik (Danish town or port) indicating that a Danish colony, aware of the advantages of the situation, had established itself there. The more remote provinces of Courland and Esthonia were also objects of ambition to the Danes; but they did not find it practicable to keep settlements there. Holstein was more within their control, and much more advantageous, from the comparative civilization of its inhabitants.

Hanse Towns.—During the fourteenth century, the association of the Hanse Towns had acquired considerable strength, and asserted strenuously the freedom of commerce in the north of Europe. Denmark commanding the great entrance into the Baltic by the Sound, was the power most interested in laying merchant vessels under a toll of regular contribution; and the result was repeated contentions, followed at times by open war, between the Danish government and this powerful confederacy.

Shipwrecked Vessels.—The rude habits of the age were strongly marked by the difficulty which the Danish government found in putting a stop to the practice of plundering merchantmen shipwrecked on the coast. Vessels proceeding to and from the Baltic necessarily approached the coast of Jutland, particularly in an age when the ignorance of mariners led to their considering the vicinity of the land in the light of a protection. Shipwrecks were constantly of frequent occurrence there, and were generally turned to the profit of the nobility, who were proprietors of the maritime districts. We may here remark, that the nobles claimed not only the soil, but even the persons of the peasantry; for the principle of personal bondage was until lately maintained in Denmark. The practice was to collect in the vicinity of a wreck such a number of the inhabitants, as to prevent the master or mariners from opposing the seizure of the merchandise. Even bishops residing on the coast, though humane in their treatment of the crews, did not scruple to aid in taking forcible possession of the cargo; so crude were in those days the notions of justice toward merchants. It is a remarkable fact, that a law passed by the king about the year 1521 for the prevention of these practices was abrogated and publicly burned at the instance of the barons and clergy a few years after, when a new sovereign had succeeded to the crown.

Navy.—The following was the state of the Danish navy in 1854:

5 Ships of the Line	3	of 84 guns	= 252	guns.
	1	" 72 "	72	"
	1	" 66 "	66	"
6 Frigates	1	" 60 "	60	"
	1	" 48 "	48	"
	3	" 46 "	138	"
	1	" 44 "	44	"
4 Corvettes	1	" 28 "	28	"
	2	" 20 "	40	"
1 Barque	1	" 14 "	14	"
4 Brigs	2	" 16 "	32	"
	2	" 12 "	24	"
3 Schooners	1	" 8 "	8	"
	2	" 1 "	2	"
90 Gun-boats				
6 Steam-vessels			35	"
1 Cutter			6	"
120			883	"

The financial state of the kingdom will best appear from the following summary of revenue for the whole monarchy, with the exception of Lauenburg, as contained in the Budget for 1854–5:

Domains	£189,748
Surplus from Lauenburg	34,688
Lotteries	5,625
Posts and Telegraph	2,601
Sound Rtver, and Canal Dues	238,208
Customs, Stamps, etc	733,391
Sundries	31,217
Interest on State Capital	154,300
Floating Debt	146,250
Total revenue	£1,536,063

EXPENDITURE, 1854-1855.

Civil List	£70,000
Appanage of the Royal Family	36,133
Privy Council	5,120
Foreign Department	25,942
War "	521,387
Marine "	185,480
Finance "	47,780
Pensions	171,810
Interests, etc	834,660
Extraordinary Expenses	16,751
Total expenditure	£1,935,523

Besides these, there are special estimates for each of the Duchies, and also for Denmark Proper. The total amounts of each for the above year are as follows, viz.:

General Receipts	£1,535,000
Special Receipts of the Kingdom	572,719
" " of the Duchy of Schleswig	236,696
" " of the Duchy of Holstein	238,828
" " of the Duchy of Lauenburg	34,226
Total	£2,017,469
General Expenses	£1,935,523
Special Expenses of the Kingdom	322,095
" " of the Duchy of Schleswig	81,996
" " of the Duchy of Holstein	91,720
" " of the Duchy of Lauenburg	21,720
Total	£2,453,054

The national debt in 1853 amounted to £13,672,500.

Sound Dues.—In 1490 the reigning king of Denmark made a commercial treaty with Henry VII. of England, by which the English engaged to pay the Sound dues on all vessels entering or returning from the Baltic; and in return they were allowed to have mercantile consuls in the chief seaports of Denmark and Norway. By this time the extension of trade had given rise in Denmark, as in England, to a middle class, among whom the sovereign found in each country the means of balancing the political weight of the nobility; hence a grant was made by the kings of Denmark of various privileges to traders, and relief from a number of local imposts on the transit of merchandise. See *Danish Sound Dues.*

The Armed Neutrality.—One of the principal political questions between England and Denmark occurred in the year 1780, in the midst of a war between England, France, Spain, and the North American colonies. During that arduous contest, England, superior at sea, had no difficulty in obtaining, by her own merchantmen, a supply of hemp, cordage, and other naval stores, from the Baltic, while France and Spain trusted to receiving such supplies by neutral vessels. But the British government denied the right of neutrals to carry warlike stores; and the northern powers, headed by the ambitious Catherine of Russia, entered into a compact, called the Armed Neutrality, by which, without resorting to actual hostility, they sought to overawe England, and to continue the questionable traffic. Happily no bloodshed followed this diplomatic menace, and the question fell to the ground in 1782, on the negotiation for a general peace.

The king of Denmark, subject all along to imbecility, became after 1784 quite incapable of governing. His son, the crown prince, was therefore appointed regent, and soon passed several judicious enactments. The peasants living on the crown lands were gradually emancipated—an example followed by a number of the nobility on their respective estates. In the abolition of the African slave-trade Denmark had the honor of taking the lead among the governments of Europe. The crown prince, guided by the counsels of Count Bernstorff, son of the minister already mentioned, long remained neutral in the political convulsions engendered by the French Revolution. He continued to adhere steadfastly to this plan until in 1801 the Emperor Paul of Russia having, as in the case of the armed neutrality, formed a compact of the northern powers hostile to England, a British fleet was sent into the Baltic under the orders of Sir Hyde Parker, with Lord Nelson as his second in command.

It was this fleet which taught the Danes that their capital was not impregnable, and that the long line of men-of-war moored in front of the harbor was an insufficient defense against such enterprising opponents. The attack took place on the 2d of April, 1801; and the resistance of the Danes was spirited, but fruitless. The loss of the English in killed and wounded exceeded 1000 men, but that of their opponents was much greater, and most of their shipping was destroyed. Happily little injury was done to the capital. A cessation of hostilities took place forthwith, and was followed by a treaty of peace. The death of the Emperor Paul, which occurred soon afterward, dissolved the compact between the northern courts.

But no treaty of peace could be regarded as permanent during the ascendancy of Bonaparte. After defeating first Austria, and then Prussia, that extraordinary man found means to obtain the confidence of the Emperor Alexander of Russia, and in the autumn of 1807 threatened to make Denmark take part in the war against England. Although the Danish government discovered no intention to violate its neutrality, the English ministers, eager to please the public by acting on a system of vigor, despatched to the Baltic both a fleet and an army, in order to compel the surrender of the Danish navy upon condition of its being restored at a peace. To such a demand the crown prince gave an immediate negative, declaring that he was both able and willing to maintain his neutrality, and that his fleet could not be given up on any such condition. On this the English army landed near Copenhagen; laid siege to that city; and soon obliged the government to purchase its safety by surrendering the whole of its naval force.

This act, the most questionable in point of justice of any committed by the British government during the war, can hardly be defended on the score of policy. The battle of Trafalgar had ere this been fought; and after that great victory her superiority at sea was so decisive as to exempt her from the necessity of offending foreign powers by adopting extreme measures. The resentment felt on that occasion by the Emperor of Russia was so great as to deprive England during four arduous years of the benefit of his alliance; and the seizure of the Danish fleet so exasperated the crown prince and the nation at large, that they forthwith declared war against England, throwing themselves completely into the arms of France.

The hostilities between England and Denmark were carried on by sea, partly at the entrance of the Baltic, and partly on the coast of Norway. These consisted of a series of actions between single vessels or small detachments, in which the Danes fought always with spirit, and not infrequently with success. In regard to trade, both nations suffered severely; the British merchantmen in the Baltic being much annoyed by Danish cruisers, while the foreign trade of Denmark was in a manner suspended by England's naval superiority.

Population.—The increase and distribution of the population of Denmark will appear from the following table:

	1769.	1834-35.	1845.
Denmark Proper....	814,268	1,228,797	1,350,827
Schleswig.....	249,104	357,378	392,900
Holstein.....	278,963	435,596	479,364
Lauenburg.....	....	....	46,486

The population of Denmark Proper, 1st February, 1850, was as follows:

	Towns.	Rural Dists.	Total.
Zealand and Moen...	170,392	338,068	508,460
Bornholm.....	9,451	18,476	27,927
Funen, etc.....	81,324	156,494	184,818
Laaland and Falster..	11,164	67,853	79,017
North Jutland.....	68,284	536,291	604,525
Total.....	290,565	1,117,182	1,407,747

The population of the principal towns of Denmark Proper (1st February, 1850) was as follows, viz.: Copenhagen, 129,600; Odensee, 11,100; Helsingor, 8,100; Aarhuus, 7,800; Aalborg, 7,700; Randers, 7,300; Horsens, 5,800; Rönne, 4,700; Svendborg, 4,500; Fredericia, 4,300; Viborg, 4,000; Slagelse, 4,000; and Roeskilde, 3,800. In the duchy of Schleswig, the principal towns with their populations on 1st February, 1840, was as follows, viz.: Flensborg, 12,561; Schleswig, 11,204; Hadersleve, 6,165; Eckerns, förde, 4,058; and Apenrade, 4,021. In that of Holstein as follows, viz: Altona, 28,095; Kiel, 12,344; Rendsburg, 10,009; and Glückstadt, 5,939.

The principal ports are Copenhagen and Elsinore. Copenhagen, capital of Denmark, situated on the east coast of the island of Zealand, in the channel of the Baltic called the Sound, in lat. 55° 41′ N., long. 12° 35′ 46″ E. The water in the channel is from 25 to 35 feet deep; but it is narrow, and the navigation difficult. Vessels not intending to come into the harbor bring up in the roads, at from one quarter to one half a mile from shore, in about 25 feet water. In the harbor, within the boom, the water is from 17 to 18 feet deep, and vessels unload alongside of the quay. The anchorage in the roads is good and safe.

Elsinore, or Elsineur (Danish *Helsingör*), a seaport town of Denmark Proper, on the east coast of the isl-

and of Seeland. It stands at the narrowest part of the Sound, opposite the Swedish town of Helsingborg, from which it is three miles distant. All merchant vessels are obliged, under certain reservations depending on the weather, to salute the castle by lowering their top-sails in passing. In the vicinity is Marlenlyst (Mary's delight), till lately a royal chateau, now the property of the corporation, and let to a private family. The towns of Altona and Wansbeck are included under the head of foreign commerce, as standing without the toll-regulations of the kingdom.

The navigation from the north of Germany to Denmark, around the northern point of Jutland, being always tedious, and sometimes dangerous, gave rise to the idea of uniting the two seas by means of a canal, communicating with the river Eyder. The work was commenced in 1777, and finished in the course of seven years, at a great expense. This is the Canal of Kiel, which begins near the town of that name, on the side of the Baltic, and extends eastward about twenty-three miles, when it comes in connection with the Eyder. This canal is nearly 100 feet wide at the surface, and 54 at the bottom; it has six locks, and its least depth of water is 10 feet; it admits vessels of 120 tons burden; and of such small shipping no less than from 2,000 to 3,000 pass in a year. Of no less importance is the Stecknitz Canal, which, along with the railway between Altona, Glückstadt, and Kiel, serves to promote the commerce of the duchies. There are also railways from Copenhagen to Elsinore, and from Copenhagen to Roeskilde; and one has been recently opened from Tonning to Flensburg, with a branch to Rendsburg. Tonning is the port on the east coast, and the length of navigation from there to the Baltic is about 105 miles.

The passage to the Baltic by the Sound continues to be followed by English, Dutch, and other vessels of heavy burden, as well as by Swedes and Norwegians, on account of the vicinity of their respective countries to the Sound; but coasting vessels and other traders from Oldenburg, Hamburg, the mouth of the Elbe, as well as from Tonning and the ports of Schleswig, and still more small Danish barks belonging to the islands, find it a great convenience to traverse the Canal of Kiel. The hazard on the north coast of Jutland arises from extensive sand-banks and a number of currents.—E. B.

The customs regulations of Denmark did not assume any fixed or permanent character until toward the close of the last century. No regular system of commercial policy was pursued; and the regulations which, from time to time, were enforced, were issued more with the immediate view of recruiting the treasury of the crown, than with any regard to the encouragement of the industrial or commercial enterprise of the country. High and prohibitory duties were imposed; exclusive privileges were granted by the crown to such companies as were either rich or favored enough to secure them; competition, so essential to success in every pursuit, was prevented; and the industrial energies of the nation, the only true basis of individual as well as of national wealth, were crushed by the monopolizing spirit and grasping cupidity of these privileged associations. They enjoyed the exclusive right of trading, even with the colonists; of supplying their wants; taking in exchange their surplus productions at such valuations and prices as they thought proper to fix and were willing to pay. About the period already referred to, a better system was gradually introduced. Many of the restrictions which had hitherto contributed to fetter and depress the foreign trade of Denmark were taken off; a new tariff was adopted; and the whole system of regulations was consolidated into the "ordinance 31, Christian VII., dated the 1st of February, 1797, relating to the customs;" which, with the various enactments since adopted, constitutes the basis of the present commercial policy of Denmark.

Under these regulations, a distinction is drawn between privileged and unprivileged nations. The former are those with which, by treaty, convention, or otherwise, a reciprocity and equality of commerce and navigation have been established—such treaty, convention, etc., prescribing the terms on which reciprocity is granted; the latter are subject to extra duties, amounting to as high as 50 per cent. above the rates fixed in the general tariff. To the former class the United States belong, the treaty by which entire reciprocity and equality of commerce and navigation are guaranteed, dating as far back as April, 1826. The following abstract embraces the principal stipulations of this treaty, so far as it relates to commerce and navigation:

No particular favors in respect of commerce or navigation to be granted to other nations, which shall not become common to the other party, on like or equivalent terms. Commerce and navigation between the two countries to rest on the liberal basis of perfect equality and reciprocity; and the citizens and subjects of each to enjoy all rights, privileges, and exemptions, in the territories of the other, which native citizens or subjects do or shall enjoy; Iceland, the Faroe islands, and Greenland, and the places situated beyond the Cape of Good Hope, and the direct trade between Denmark and the Danish West India colonies, being excepted from the operation of the treaty. Duties to be alike on all manufactures or merchandise of any country that can be lawfully imported into either country, whether such importation be made in the vessels of one nation or the other. Similar equality to exist in respect to exportations or re-exportations from either country, and in the vessels of either. The produce and manufactures of each country, when imported into either, to be subject to no other or higher duties than similar produce or manufactures of any other country; and this equality to extend to exports from either country to the ports of the other. Article 5th stipulates that neither the vessels of the United States nor their cargoes shall, when they pass the Sound or the Belts, pay higher or other duties than those which are or may be paid by the most favored nation.

West India Colonies.—In the intercourse between the United States and the Danish West India colonies, it is agreed that whatever can be lawfully imported into or exported from the said colonies, in vessels of one party, from or to the ports of the United States, or from or to the ports of any other foreign country, may, in like manner, and with the same duties and charges applicable to vessel and cargo, be imported into or exported from the said colonies in vessels of the other party. The treaty to continue in force ten years, with the usual stipulation for twelve months' notice if either party should desire to terminate it after that period.

The general foreign navigation of Denmark, in 1844, employed 33,845 vessels, measuring 1,266,417 tons, and, as appears from official returns, floating 765,475 tons of merchandise.

It may be interesting to inquire to what extent the national flag of Denmark participated in this general movement. The total number of vessels which entered and cleared on foreign voyages in 1844 was 33,815, with a tonnage of 1,266,417 tons, and conveying 765,475 tons of freight. Of these vessels, there were under the Danish flag 22,275, with a tonnage of 717,891 tons, and conveying 459,079 tons of freight. Thus, Denmark had,

1st.	In the number of vessels	65.8 per cent.
2d.	In the tonnage	52.7 "
3d.	In the cargoes	60 "

Leaving for all other nations,

1st.	In the number of vessels	34.2 per cent.
2d.	In the tonnage	47.3 "
3d.	In the cargoes	40 "

The aggregate tonnage of vessels employed in the trade between the United States and Denmark in 1844, was 3,458 tons. In 1851, it had decreased to 2,608; in 1856, it was 2,913.

MERCHANT VESSELS OF DENMARK, JANUARY, 1856.

	Denmark.	Schleswig.	Holstein.
Vessels	2,408	1,476	1,275
Steamers	25	11	1
Tonnage of vessels	55,634	27,144	20,898
" of steamers	1,002	212	105
Horse-power	1,678	522	59

Total number of vessels, 5,154; steamers, 37. Tonnage of sailing vessels, 103,171; steamers, 1,819. Horse-power, 2,259. See *Gotha Almanac*, 1857.

From official returns of the foreign trade of Denmark, it appears that in 1847 the imports and exports united amounted to $46,500,000; a sum nearly equally divided between Denmark Proper and its dependencies. In estimating the true relative value of this commercial movement, we must bear in mind that the Danish proper contains a population of 1,850,000 inhabitants, and comprises an area of 683 Danish superficial miles; while the duchies contain a population of 842,000 souls, spread over an area of only 318 Danish miles. The Danish miles are given as found in the authorities from which these facts are condensed, and because they will suffice for the purpose of comparison. Denmark and dependencies in Europe contain an area of 1,031,075 geographical miles, and a population of 2,296,587, exclusive of Greenland, Iceland, and the Faroe islands. Thus, the latter, with a territory less than one half, and a population more than one third less, contributes more than its proportionate share to the general commerce of the country. The importance which Denmark attaches to the sovereignty of the duchies is thus accounted for. They are not only the granaries from which her cereal supplies are obtained, but they also constitute the commercial conduits through which her principal products—live cattle, horses, etc.—pass to a market. The loss of the duchies would, besides, inflict an irreparable injury upon Denmark, by cutting off the enormous revenue which she has so long derived from the Sound dues; as, in the event of a separation, the Schleswig-Holstein Canal would soon become the principal route to the Baltic.

The description and quantities of merchandise which constitute the chief basis of the exchanges between Denmark and foreign countries, for any one year of average commercial activity, will furnish the most accurate standard by which to judge of the present or prospective importance of the trade between that kingdom and the United States. Data from which to calculate, even approximately, the value of importations, are not at hand. A valuation based upon such data as are possessed may, however, be attempted. We find that the duties levied on importations for the year 1847 reached as high as $2,685,654, or, in round numbers, $2,500,000. Allowing 12 per cent. on the imports as the amount of duties, we have as their value for that year over $20,000,000. The value of the exports, as registered in the Danish custom-houses, is more accessible, and will be found under its proper head in the following tables.

Of the $2,685,654 which is found under the column of duties on imports, the portion received in the custom-houses of Denmark Proper, amounted to $1,806,246, and that which was levied in the duchies reached $879,408. While this latter sum is less than 50 per cent. of that received in Denmark Proper, we must not infer that importation into the duchies was in the same proportion. On the contrary, the table which follows will show that, in general, they import more—in some cases 100 per cent. more—than the kingdom proper. The disproportion in the amount of duties results from the operation of different tariffs; that of Denmark Proper being much higher than the tariff applicable to the Duchies of Schleswig and Holstein. Altona, in the Duchy of Holstein, the most important commercial city in Denmark next to Copenhagen, is a free port; and all goods may be landed and stored without any other charges than port dues.

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GENERAL STATEMENT OF IMPORTS INTO DENMARK AND DEPENDENCIES IN 1847, WITH AMOUNT OF DUTIES.

Description of Merchandise.	Measure or quantity.	Total.	Amounts of duties.
Cottons	Kilogs.	1,085,000	$325,500
Sugar and syrups	"	16,074,000	291,090
Woolens	"	556,000	255,878
Wood	Cubic feet.	8,454,000	208,506
Coffee	Kilogs.	6,578,000	159,538
Iron, unmanufactured and manufactured	"	20,562,000	125,178
Wines	"	31,000	124,434
Salt	Hectolitres	16,000,000	88,888
Brandy and other spirits	Kilogs.	23,000	68,886
Tobacco	Tons	3,815,000	77,378
Coal	Kilogrammes of 2.20 pounds.	614,000	51,336
Cloths, linen		612,000	49,476
" silks		37,000	43,338
Cotton, raw and spun		1,374,000	39,060
Tea		338,000	34,596
Glasswares		1,766,000	31,248
Pottery		958,000	28,830
Hemp and flax		2,555,000	23,994
Rice		2,382,000	13,228
Fruits		1,288,000	16,740
Paper		334,000	13,020
Skins and hides tanned		680,000	9,114
Yarn, cotton		162,000	8,184
" woolen		55,000	3,348
Other articles			580,320
Total duties collected			2,685,654

The hectolitre is equal to 26·4178 gallons.

The authorities from which the preceding table is compiled omit the countries from which the different articles were exported. The United States' Treasury Report for 1847, however, furnishes data to supply the omission as respects the United States. From that document the following statements are derived:

American tonnage, entered from Denmark	none.
" " cleared from the U. S. for Denmark	216 tons.
Foreign tonnage, entered from Denmark	717 "
" " cleared from the U. S. for Denmark	2,274 "
Total tonnage entered and cleared 1847	3,207 tons.

The trade of the United States with Denmark is shown by the following exhibit of exports from and imports into the United States.

	Exports.	Imports.	Total.
1828	$345,870	$49,264	$395,134
1836	585,985	48,971	634,956
1846	121,242	1,318	124,555
1856	227,715	1,130	228,845

The total exports of domestic produce to Denmark from the United States for the fiscal year ending June, 1856, were,

In American vessels	$153,994
In foreign vessels	85,966
Total	$195,960
And foreign produce	31,758
Total for the year	$227,718

EXPORTS FROM THE UNITED STATES TO DENMARK FOR THE YEARS ENDING JUNE 30, 1847 AND 1856.

Description of merchandise.	1847 Quantities.	1847 Values.	1856. Values.
Dye woods	....	....	31,753
Tobacco lbs.	2,119	$210	....
Spirits of turpentine gallo.	7,756	2,708	....
Rice tierces	5,629	115,525	40,652
Cotton (raw) lbs.	660,782	62,609	127,790
Rye and other grains	....	6,000	....
Flour bbls.	17	131	....
Rosin and turpentine "	155	455	....
Whale & other fish oil, gls.	33,330	11,238	....
Sundries	....	5,019	3,816
Drugs and medicines	....	....	15,202
Total	....	208,895	227,713

It appears that the United States supplied Denmark in 1847 with all the rice imported into that country, and a large share of the raw cotton, spirits of turpentine, fish-oil, grains, etc. Wines and spirits are chiefly imported from France, either direct or by way of Hamburg, and cottons almost exclusively from England, but in 1855-6, the exportation of tobacco, grain, flour, oils, and turpentine, had ceased.

The following table exhibits the value of exports from Denmark and the duchies to all foreign countries during the years designated. The values are given in francs, each equal to 18·6 cents.

Description of merchandise.	1846.	1846.	1847.
Cereals	41,885,000	46,618,000	55,714,000
Live animals	12,496,000	11,780,000	11,656,000
Butter	8,900,000	11,708,000	9,856,000
Bacon, etc	1,522,000	1,802,000	1,670,000
Hides and skins	2,710,000	1,720,000	1,815,000
Seeds	1,168,000	1,095,000	1,225,000
Wool (raw)	779,000	586,000	1,672,000
Salted provisions	698,000	451,000	780,000
Bones	350,000	263,000	807,000
Total Francs	70,405,000	76,173,000	84,745,000

The following suggestion is found in a commercial report recently issued under the direction of the French government, which may be found useful to others besides the French merchants engaged in the trade with the countries of northern Europe:

"In the northern nations, especially Denmark, Sweden, and Norway, there is an active demand for a beverage extensively used in those countries, which our merchants engaged in supplying them with *liqueurs*, might advantageously imitate. It is a mixture known among the northern people as *gammel Fransk vïin* (old French wine), and composed of white wine, rum, syrup, and spices. This kind of *negus* is highly esteemed by a people who have no relish for liquors, unless they are highly sweetened."

In 1850 there was published, by order of the Danish government, a statistical report of the commerce and navigation of Denmark Proper for the year 1848. From this publication, it appears that though Denmark was involved in difficulties with the Germanic Confederation during the year 1848, the general commerce of the kingdom suffered no sensible diminution. This was mainly owing to the geographical position, as well as to the military marine of Denmark, by means of which she was enabled to blockade most of the German ports, and thus give free scope to her own merchant flag. Cut off from the German markets, from which she usually draws her supplies of articles of first necessity for her manufactures, she sought for new channels through which to supply her wants; and at once found England already waiting to avail herself of the difficulties in which she was embroiled. Hence, the principal foreign trade of Denmark during this year, was carried on with England.

The number of vessels employed in the foreign trade of Denmark in 1848 was as follows:

Entered	Vessels 7,903	Tonnage	333,747
Cleared	" 7,816	"	358,832
Total	14,819	"	692,579

The tonnage of merchandise was 460,240 tons.

From North and South American there entered, during the same year, 61 vessels of 12,820 tons; while there cleared 67 vessels of 15,368 tons, of which there were 18 vessels of 3,736 tons under a foreign flag.

The value of the imports and exports from all countries, in 1848, as compared with 1847, was as follows:

1848.—Imports	$13,021,860	
Exports	8,076,678	
Total trade in 1848		$21,098,538
1847.—Imports	$13,597,716	
Exports	7,015,962	
Total trade in 1847		20,613,678
Increase in 1848		485,460

Of the above figures, the trade of Copenhagen alone absorbed:

1848.—Imports	$9,808,924	
Exports	1,463,262	
Total trade of Copenhagen in 1848		$11,271,786
1847.—Imports	$9,069,360	
Exports	1,815,360	
Total trade of Copenhagen in 1847		10,884,720
Increase in 1848		$387,060

See *Commercial Relations of the U. S.*, 1857.

The following table exhibits the trade between the United States and Denmark during the year 1848

Navigation and Commerce.

Entered the United States from Denmark	1,494 tons.
Cleared from the United States for Denmark	3,488 "
Imports from Denmark	$19,617
Exports to Denmark	131,918

Of the general exports from Denmark during 1848, England received 50 per cent.; and of grains, as high as 65 per cent.; while in 1847 the proportion exported to Great Britain was only 36 per cent. of the whole. The exports to the United States were,

Woolen and worsted yarns	$856
Hosiery	562
Bristles, 3,138 lbs	1,110
Rags, 53,200 lbs	1,614
Coal, 96 tons	410
Unenumerated, paying a duty of 5 per cent	9,457
" " " 20 "	2,594
" " " 30 "	241
Sundries	2,778
Total	$19,617

Copenhagen, as already remarked, absorbs about 80 per cent. of the entire trade of Denmark. In 1851 there entered at this port 821 steam-vessels, propelled by engines of 44,865 horse-power aggregate, and floating 4,700 tons aggregate of merchandise, viz.:

From Prussia	520 tons.
" England	978 "
" Lubec	1,688 "
" Weimar	1,008 "
" Elsewhere	506 "

The chief imports into Copenhagen from foreign countries in 1851, were iron, coal, cabinetmakers' and other wood, fire-wood, and heavy merchandise. From the United States and Cuba there entered 15 vessels, of 3,158 tons' measurement, and with 2,884 tons of merchandise; and from the Danish West Indies, 34 vessels, of 8,670 tons' measurement, and with 8,632 tons' merchandise. The imports of sugar were as follows:

From Danish West Indies	kilogrammes,	5,500,000
" Brazil	"	1,500,000
" Cuba	"	2,750,000
" Java	"	650,000
" Entrepots of Europe	"	100,000
Total	"	10,500,000

Imports of coffee were from Brazil, Hayti, and European entrepots, 5,250,000 kilogrammes; of which there were exported from Copenhagen 500,000 kilogrammes, leaving 4,750,000 kilogrammes for consumption.

The value of the foreign commerce of Denmark for 1853 and 1854 is exhibited in the subjoined table:

Commerce of Denmark and the Duchies of Schleswig and Holstein for the Years 1853 and 1854.

Country.	1853.		1854.	
	Imports.	Exports.	Imports.	Exports.
Hamburg	15,935,373	9,019,752	18,859,656	9,643,775
Great Britain	7,554,040	10,662,224	10,882,868	12,194,060
Altona	4,141,248	3,321,698	4,481,490	5,268,219
Norway	2,179,826	3,058,737	2,246,606	2,553,518
Sweden	2,218,584	1,321,128	3,657,548	1,778,647
Russia	3,565,109	312,750	354,618	49,810
U. States, West Indies, and S. Sea	3,457,458	350,245	2,997,883	142,175
Lubec	2,169,565	1,015,844	2,651,947	1,170,229
Dan. Colonies	1,914,682	886,006	2,860,736	849,500
Prussia	1,263,308	912,129	2,001,549	950,001
Holland	713,090	1,199,444	844,880	2,273,108
Iceland	805,956	507,788	840,783	558,107
Bremen	1,012,164	46,926	1,292,625	74,864
France	563,407	325,905	619,713	178,969
Belgium	252,869	498,449	222,805	572,092
Mecklenburg	377,071	278,299	678,574	269,544
Hanover	165,277	325,012	201,092	815,589
Mediterranean	444,781	14,451	148,965	39,086
E. Indies, China and Guinea	289,020	122,013	278,877	73,440
Greenland	275,362	106,845	43,188	75,748
Faroe Isles	145,163	63,306	105,293	69,411
All others	267,365	424,864	1,096,380	698,530
Total (thalers)	50,350,712	34,268,800	56,861,711	39,088,108

Danish vessels arriving in the United States from the Danish Islands of Santa Cruz and St. Thomas are

not chargeable with tonnage duties in the ports of the United States; the vessels of Denmark and the United States being placed on the same footing, in that respect, under the provisions of the act of Congress of the 31st May, 1830, and the treaty with Denmark of the 26th April, 1826. The following table exhibits the commerce of the United States with Denmark, from the year 1820 to the year 1856, by which it will be seen that this commerce does not assume any additional importance from year to year:

Years ending.	Exports to Denmark.			Imports.	Whereof there was in Bullion and Specie.		Tonnage Cleared.	
	Domestic.	Foreign.	Total.	Total.	Exported.	Imported.	American.	Foreign.
Sept. 30, 1821.....	$185,568	$360,535	$526,103	$16,156	....	....	4,142	....
1822.....	32,023	160,757	192,780	21,239	....	....	1,948	....
1823.....	39,783	53,134	92,917	24,023	....	....	906	257
1824.....	35,487	299,922	335,809	....	....	....	2,416	83
1825.....	214,517	637,146	851,663	46,827	....	....	5,693	200
1826.....	100,582	245,288	345,870	49,264	....	$342	2,651	....
1827.....	148,958	253,983	402,941	40,822	....	....	2,938	....
1828.....	150,979	386,689	537,668	117,946	$500	....	4,289	202
1829.....	78,597	18,166	96,763	32,911	....	....	1,043	1,070
1830.....	76,292	29,048	105,340	5,864	....	....	1,928	....
Total...	$1,037,786	$2,439,568	$3,477,354	$354,670	$500	$342	27,976	1,811
Sept. 30, 1831.....	$178,388	$176,888	$355,216	$575	$10,500	....	8,060	....
1832.....	181,605	350,116	531,720	68,842	18,600	....	4,268	723
1833.....	130,511	112,458	242,964	28,173	7,000	....	2,907	791
1834.....	99,642	313,461	413,104	62,549	5,842	....	[2,528	2,280
1835.....	212,461	110,939	323,390	121,000	4,900	....	3,831	1,292
1836.....	314,268	271,717	585,985	48,971	....	....	3,718	1,190
1837.....	172,260	109,421	281,681	102,819	....	....	1,092	4,797
1838.....	98,081	24,750	122,831	97,118	....	....	880	1,072
1839.....	50,634	38,177	88,811	80,997	....	....	708	961
1840.....	76,183	17,868	94,051	7,501	....	....	824	1,852
Total...	$1,563,979	$1,530,634	$3,094,668	$543,037	$46,842	....	31,811	14,448
Sept. 30, 1841.....	$110,424	$24,864	$134,788	$8,791	....	....	889	1,955
1842.....	70,766	27,819	98,585	....	....	....	725	917
9 mos. 1843.....	74,657	6,510	81,167	....	....	....	465	1,714
June 30, 1844.....	100,859	11,975	112,834	6,063	....	....	481	2,567
1845.....	124,866	20,501	145,167	22,429	....	....	1,040	2,116
1846.....	97,746	23,496	121,242	1,813	....	....	666	1,998
1847.....	198,952	4,943	203,895	475	....	....	216	2,274
1848.....	164,661	17,252	181,913	19,617	....	....	763	2,675
1849.....	55,138	....	55,138	19,204	....	....	....	1,681
1850.....	165,874	20,706	186,580	527	....	....	502	3,282
Total...	$1,163,743	$157,550	$1,321,309	$78,419	....	....	5,817	20,524
June 30, 1851.....	$92,257	$19,540	$111,797	$98,887	....	....	199	2,086
1852.....	93,009	22,643	115,652	16,611	....	....	874	3,916
1853.....	82,903	....	82,903	....	....	....	332	2,174
1854.....	87,870	23,547	111,417	8,097	....	....	714	1,894
1855.....	70,996	8,675	79,671	1,701	....	....	1,216	1,037
1856.....	193,960	31,755	227,715	1,130	....	....	2,197	716

STATEMENT EXHIBITING THE CHARACTER, QUANTITIES, AND VALUES OF DOMESTIC PRODUCTS OF THE UNITED STATES, TOGETHER WITH THE TOTAL VALUES OF FOREIGN PRODUCTS, IMPORTED INTO DENMARK, FROM THE UNITED STATES IN 1854 AND 1855.

Description of merchandise.	1854.	1854.		1855.
	Values.	Quantities.		Values.
Oil, spermaceti.....	$485	gals.	1,920	$2,816
Whalebone.....	1,416	lbs.	8,033	1,218
Candles, spermaceti...	...	"	858	104
Manufactures of wood.	191	....	....	297
Rosin and turpentine..	3,815	bbls.	4,306	18,845
Flour.....	67	....	....	....
Biscuit.....	....	bbls.	8	30
Rice.....	74,974	tierces	770	19,263
Cotton.....	8,840	lbs.	209,186	20,971
Tobacco.....	1,968	....	....	....
Spirits from molasses..	938	....	....	....
Spirits of turpentine...	1,000	....	....	....
Tobacco, manufactured	166	lbs.	11,728	1,741
Shoes, India-rubber...	....	pairs	6,000	4,519
Miscellaneous.....	604	....	....	897
Tot. domes. products	$87,870	....	....	$70,996
Tot. foreign products	23,547	....	....	8,675
Total trade.....	$111,417	....	....	$79,671

The Danish merchants no longer import tobacco from the countries of its production. In 1848 there were 2,032,367 kilogrammes imported, at a value of about $469,666 20, principally from Holland, Bremen, and Hamburg, where select cargoes can at all times be purchased. These markets are supplied chiefly from the United States. From Cuba Denmark imports annually about 12,250 kilogrammes—say 27,000 lbs. of segars. There are no restrictions of any kind on the sale of tobacco in Denmark; and under the moderate duty [leaf or unmanufactured, 89⅓ cents per 110¼ lbs.; manufactured, $3 15 per 110¼ lbs.], direct importations from the United States could not fail to be profitable. In the article of cigars, at least, there is no reason why the United States could not successfully compete with Cuba. The quantities of tobacco exported direct from the United States to Denmark during the four years specified, were as follows:

1852—Unmanufactured.....	15 hhds.;	value,	$1,150
Manufactured.....	3,085 lbs.	"	589
1853—Unmanufactured.....	none		
Manufactured.....	9,243 lbs.	"	1,404
1854—Unmanufactured.....	13 hhds.	"	1,368
Manufactured.....	800 lbs.	"	166
1855—Unmanufactured.....	none		
Manufactured.....	11,728 lbs.	"	1,741

So long, however, as any duty is imposed in Denmark higher than that levied or similar merchandise in Hamburg and the other Hanseatic towns, viz., from ¼ to ½ of 1 per cent., they will continue, more especially Hamburg, to be the entrepots from which Denmark will have to draw her supplies of such colonial produce as her own islands in the West Indies can not furnish. Cereal produce constitutes the leading staple of Danish exports, and forms the chief basis of her exchanges with foreign countries. Indeed, Denmark may be considered an exclusively agricultural and maritime country. Such, at least, is the predominant feature of her national character. In 1851 the entire exports of the kingdom amounted to upward of $7,500,000. Of this sum, cereals appropriated $4,500,000. The commerce of the kingdom and the duchies for the year 1852, imports and exports, reached the sum of $42,450,310 90; and the proportion of cereals in the export trade was about equal to that of the preceding year. During the past 10 or 12 years, however, manufactures have made considerable progress in the kingdom and the duchies; and, were the obstacles removed, with which this branch of national industry

has to contend, the most oppressive of which are royal and privileged monopolies, and heavy consumption duties, that progress would be still more encouraging, and its influence more perceptibly felt in the augmented wealth and increased commercial prosperity of Denmark. The following brief summary of the present state of manufactures in this kingdom is condensed from recent Danish official publications, and is given for the purpose of showing the extent to which Denmark must rely on the workshops of other nations for the necessary supplies for her 2,500,000 subjects.

Woolens.—The woolen manufactures of Denmark are coarse, and of a very inferior quality. The chief factories are those of Neumunster, in the duchy of Holstein. The proportion which these manufactures bear to the quantity annually consumed in the kingdom may be seen from the following statement:

	1846.	1847.
Foreign woolens consumed.....	95,900 lbs.	145,000 lbs.
Neumuoster woolens consumed	86,700 "	88,000 "

Besides these woolen cloths, Denmark consumes large quantities of other manufactures of wool, particularly such as are suitable for women's apparel. These are all important. During the 2 years above-named, this class of imports reached as high as 320,000 lbs. each year, yielding a revenue to the government of nearly $10,000.

Cottons.—The manufacture of cottons was introduced into Denmark about 40 years back, but its progress was slow and inconsiderable until within the past 10 years. At Copenhagen there were manufactured from 1835 to 1840 about 800,000 Danish ells (about 2·26 feet each) per annum from cotton twists supplied from English markets. Since 1840, the custom-house declarations indicate a large augmentation in the quantity of spun cotton (twist) imported. In 1844 it reached as high as 911,000 Danish livres. The Danish livre is a fraction over 1 lb. avoirdupois. The manufacture of printed cottons has been attempted, but the experiment has but indifferently succeeded; indeed, its present continuance is owing to high protective duties. The chief cotton manufactures may, therefore, be said to consist of old-fashioned, heavy, coarse pieces, brought through the loom by a process at once slow and expensive. There is but one factory in the kingdom—that at Nyhavn—where modern improvements are introduced. The success which has so far attended the operations at this factory may eventually create an extensive demand in Denmark for American cotton.

How far these factories fall short of the demands for home consumption may be gathered from the following figures:

COTTON CLOTHS IMPORTED INTO DENMARK PROPER, FROM 1846 TO 1850.

1846....	1,120,000 lbs.	1849....	1,160,000 lbs.
1847....	1,010,000 "	1850....	1,220,000 "
1848....	730,000 "		

These importations were destined for the kingdom proper. The quantities imported for consumption in the duchies can not be ascertained; but their relative consumption of such manufactures considerably exceeds that of the kingdom proper.

Paper.—At Strandmollen and Silkberg there are several flourishing paper-mills; but the prices rule so high, that, despite the protective duties, paper figures largely in the imports from foreign countries. In 1850 there were imported 217,563 kilogrammes, valued at $58,139 88.

Sugar.—Sugar refineries have reached a high state of prosperity in Denmark. Of upward of 12,000,000 lbs. of refined sugar consumed in the kingdom, or exported, but little is imported from foreign countries. Raw sugars, however, constitute an important item in the importations of the country; indeed, it is known, that if we except England, there is more sugar consumed in Denmark, in proportion to its population, than in any other country in the world. In 1850 raw sugar imported reached 18,186,283 kilogrammes, valued at $1,615,931 65. Of this, there were imported direct from the United States only 77,258 lbs., valued at $3,192.

Porcelain.—There is a factory at Copenhagen, under government monopoly, for manufactures of this description. It contributes but little, however, either to the revenues of the country or the wants of the people. The manufactures are of beautiful fabrication and brilliant colors, but they are not considered durable. Notwithstanding a high protective duty, the markets of Denmark are supplied with manufactures of porcelain from France. In 1850 there were about 40,000 lbs. imported.

Distilleries.—This is the most flourishing branch of manufactures, both in the kingdom and in the duchies. Nearly all the spirits produced in these establishments are from grain. The excise duty, or impost, derived from the distilleries, forms a large item in the revenue of Denmark. In 1850 they produced 21,262,678 Danish cans (over 1 quart each) of spirituous liquors. During the same year, 2,492 gallons of spirits from molasses were imported direct from the United States, at a value in the home market of $1,009.

Breweries.—The number in Denmark is not known, officially; but they can not add much to the internal wealth of the kingdom, as their annual consumption of malt does not exceed 700,000 lbs. In 1850 there were imported direct from the United States 14,617 lbs. of hops, valued at $385.

Glass-works.—There are 4 establishments in the kingdom, 4 in Schleswig, and 1 in Holstein. They are chiefly devoted to the manufacture of bottles, of which they produce, annually, upward of 3,000,000.

Ship-building.—The principal ship-yards in the kingdom are at Copenhagen and Elsinore, and are chiefly used in the repair of vessels. At Apenrado, a capacious port opening into the Little Belt, vessels of the largest class are built. In 1846 12 vessels, and in 1847, 15 were built at this place. In the former year, 30 large class vessels, belonging to this port, entered the harbors of Rio de Janeiro and Montevideo.

Foundries.—Prior to the separation of Norway, Denmark drew all her supplies of iron from that country. Since that event, the efforts to obtain sufficient supplies, even for maritime purposes, have not been crowned with success. The geological formation of the country is not such as to furnish minerals; hence, with the exception of building materials, but little is left for the miner to develop. There are, however, founderies at Garlshytte, near Rendsburg, which employ upward of 250 hands, and produce, annually, 200,000 lbs. of iron; one at Copenhagen, of about equal annual produce, from which considerable quantities of anchors, chains, etc., are obtained; and several others, distributed throughout the duchies, at Altona, Kiel, Flensburg, and Ottensen. Near Elsinore there is a foundery for the manufacture of fire-arms, which produces, annually, about 2,000 muskets. Besides the manufacturing establishments above enumerated, there are in the kingdom 200 tan-yards, and 60 tan-mills, yielding annually, the latter 2,500,000 lbs. of ground tan, and the former 8,080,000 tanned hides. In addition to these, there are 88 currying establishments, in which 164,000 lbs. of skins are annually prepared for hosiery and other uses. At Altona 600,000 lbs. of candles are manufactured each year; 100,000 lbs. of refined wax are annually produced in the kingdom and duchies; soap, oils, chemicals, gunpowder, etc., but the manufacture of these last-named articles is so inconsiderable as scarcely to affect importations from foreign countries.

The only manufactures in Denmark which yield a supply equal, or nearly equal, to the home consumption, are those of refined sugars and tobacco. The former is fully adequate to meet the demands of the home market; and the latter, augmented to some ex-

tent by imports from the United States and Cuba, equally so. The quantities annually imported from these countries have already been given. Altona counts 28 tobacco factories, employing 488 hands, and producing, annually, 1,062,068 lbs. of tobacco, 106,487 lbs. of snuff, and 12,000,000 segars. At Copenhagen 425 workmen are employed, and the annual produce reaches 1,000,000 lbs. of tobacco, and 10,000,000 segars. Besides these, there are other tobacco factories, at Flensburg in Schleswig, and Kiel in Holstein, which contribute largely toward the national supply. It has been already shown whence Denmark obtains her supplies of unmanufactured tobacco, and why her manufacturers are forced to purchase it at *second hand* in the neighboring entrepots, instead of importing direct from the countries of production.

It will be easily seen, from the preceding summary, how much Denmark still depends on foreign countries for the supply of her most essential wants. Since she has been induced to profit by the example of England, and other neighboring countries, in abolishing the duty on raw cotton, her spindles have multiplied, and she is now learning to depend on her own capital and industry for the spun cottons which she has heretofore derived, and which, to a great extent, she still derives, from the English spinning-factories. A similar modification in her tariff in respect to unmanufactured tobacco, and other raw material not grown on her soil, would tend not only to augment the importations of such produce from the producing countries, but would eminently contribute to attract investments of her own capitalists, multiply her manufactured productions, and enable her to become an exporter of the same descriptions of merchandise which have so long been an annual drain upon the wealth of the kingdom, and a heavy drawback upon the industry of the people. A more apposite illustration of this truth can not be found than that which the general returns of trade, for any one year, will furnish. Her average annual imports are about $15,000,000 in value, a large portion of which sum is absorbed by manufactured articles, or articles half-manufactured, such as cotton twists, etc.; while her annual exports scarcely cover half that sum (say $7,000,000), two thirds of which are derived from cereals and other agricultural produce. Until the manufacturing industry of Denmark receives greater encouragement from the government, the heavy disproportion between imports and exports which the above figures exhibit, or, in other words, the ruinous balance of trade against Denmark, in her commercial relations with foreign countries, must continue to exist.—*Com. Rel. U. S.*

COMPARATIVE STATEMENT OF THE COMMERCE OF THE UNITED STATES WITH THE DANISH WEST INDIES, EXHIBITING THE VALUE OF EXPORTS TO AND IMPORTS FROM EACH COUNTRY, AND THE TONNAGE OF AMERICAN AND DANISH VESSELS ARRIVING FROM AND DEPARTING TO EACH COUNTRY, DURING THE YEARS DESIGNATED.

YEARS.	COMMERCE.				NAVIGATION.			
	VALUE OF EXPORTS.			VALUE OF IMPORTS.	AMERICAN TONNAGE.		FOREIGN TONNAGE.	
	Domestic produce.	Foreign produce.	Total.		Entered the United States.	Cleared from the U States.	Entered the United States.	Cleared from the U. States.
1845	$838,508	$186,926	$994,429	$760,809	28,812	28,920	1,689	1,437
1846	959,452	166,464	1,125,916	752,614	29,018	27,964	969	1,875
1847	836,679	152,681	989,808	846,748	28,898	22,156	2,900	4,815
1848	876,989	76,874	953,843	585,738	19,781	25,579	1,890	4,065
1849	727,197	54,149	781,846	339,141	12,466	25,397	3,514	5,426
1850	867,140	114,818	981,958	267,459	12,940	19,375	956	2,690
1851	902,687	125,602	1,028,289	235,894	10,886	18,283	5,052	4,175
1852	810,439	120,697	931,136	191,745	14,292	20,403	9,062	6,581
1853	913,481	41,160	954,641	184,497	11,618	14,682	4,965	9,571
1854	928,924	84,026	962,950	280,044	12,749	22,846	6,992	7,984
1855	843,111	45,353	888,464	225,308	12,145	24,247	6,441	5,120

Danish West India Colonies.—Prior to the year 1833, the trade between the United States and St. Croix was not regulated by any law or act of the Danish government. The inhabitants were at first allowed, by the local authorities, a limited quantity of sugar or molasses from their estates, to exchange for provisions. Afterward they were permitted to purchase one half of their supplies in this way; and, finally, the privilege was extended so as to enable them to purchase from foreigners all they needed for the supplies of their plantations. St. Thomas was at the same time opened as a free port for the trade of all countries, and, in consequence, became the emporium of an extensive commerce. The duties upon imports and exports are moderate, not exceeding 1¼ per cent. ad valorem; and port charges do not exceed 19 cents per ton. This does not apply to vessels from European ports, which pay 45 cents per ton. The distinction is, probably, made to encourage the introduction of provisions, rather than the fancy articles and liquors introduced from Europe. At St. Croix, however, vessels employed in the foreign trade, even if they do not take a pilot on board, are compelled to pay half-pilotage. The full charge is $1 per foot of the vessel's draught, in and out. In 1832 an ordinance of the King of Denmark, dated at Copenhagen, prescribed regulations for foreign navigation and commerce with St. Croix. This was superseded by an ordinance of June 30th, 1850, published at St. Croix 15th of August of the same year, and which is now in force.

Section 1 provides that all vessels, native or foreign, both from national and foreign ports, may trade to St. Croix, and there discharge and load at the two ports of entry, Christiansted and Frederiksted. *Section* 2. Vessels belonging to the Danish West India Islands, trading between Denmark and the colonies, shall enjoy, in future, the same rights and privileges as vessels belonging to the mother country. *Section* 9. Every vessel is to pay tonnage dues according to its tonnage, both on entering and leaving, at the following rates: If the vessel discharge or load to the amount of one half its tonnage, and above, per commercial last 30 cents; if it discharge or load from one quarter to one half of its tonnage, per commercial last 20 cents; if it discharge or load less than one quarter of its tonnage, per commercial last 10 cents. All vessels not discharging or loading are exempt from tonnage dues, as well as vessels belonging to the Danish West India Islands, when trading between St. Croix and the other two islands.

If tonnage dues are paid at one of the custom-houses of this island, or at St. Thomas, additional tonnage dues are to be paid only in case the vessel should again discharge or load, during the same voyage, goods to such an amount that, together with the previous amount discharged or loaded, it shall reach a quantity on which a higher tonnage due is fixed. At Christiansted, vessels are further to pay one half the amount of tonnage dues, at the above rate, for keeping the harbor, with wharves and other appurtenances, in repair. The 5th section provides that, within 24 hours after the vessel has been brought to anchor, the whole cargo, whether intended to be discharged or not, shall be entered at the custom-house, specified, and in writing. If the whole cargo is not to be discharged, the remainder shall, on the vessel's clearing out, be entered for export in the same manner. For duties on imports and exports, articles free of duty, and regulations relative to the trade of St. Croix, reference is made to the tariff, in its proper place. (Part II.) For the descriptions of merchandise entering into the trade between the United States and the Danish West India Islands, see Consular Returns, "St. Croix, 14th June, 1851," Part III. The vessels of the United States arriving

at Fredericksted, St. Croix, from July the 1st to December 31st, 1853, were 8 brigs, 3 barks, 2 schooners. The aggregate value of their inward cargoes was $49,902, and that of the outward cargoes, $22,452. There arrived during the same period at Christiansted, 7 brigs and 2 schooners under the American flag. Value of cargoes not stated.

For notice of Danish Exploring Expeditions Round the World, see HUNT'S *Mag.*, xxiii., 406; *Edinburg Rev.*, xliv. (article by Sir JAMES MACKINTOSH); HUNT'S *Mag.*, x., pp. 218, 303; *Edinb. Rev.*, vol. ii., p. 287 (by SYDNEY SMITH); *Westminster Rev.*, l., p. 75, viii., p. 469, xlviii., p. 195; *North Am. Rev.*, xxvii., p. 285 (by HENRY WHEATON).

The Sound Dues.—Connected with the commercial relations which exist between the United States and Denmark, is the question of Sound dues, to which subject the 5th article of the treaty of 1821 relates. It has long been a *vexata questio* between the two governments. It still continues to be a subject of diplomatic discussion; and is fully laid before Congress in a communication from the Department of State, under date of May 30, 1854. (Executive Document No. 108, House of Representatives, 33d Congress, 1st session.)

In 1848, the Danish Minister of Foreign Affairs admitted to our representative near the court of Denmark "that the principle upon which those dues are collected can not be defended;" yet, the final settlement of the question has been put off, from time to time, under various pretexts, although the government of Denmark has been more than once officially notified that "the United States have thus long submitted to the exaction from deference and respect for Denmark; but it can not be expected, great as is our regard for that ancient and respectable power, that we shall submit to it much longer."

The 10th article of the treaty of 1826 stipulates as follows: "The present convention shall be in force for ten years from the date hereof; and further, until the end of one year after either of the contracting parties shall have given notice to the other of its intention to terminate the same; each of the contracting parties reserving to itself the right of giving such notice to the other, at the end of the said term of ten years; and it is hereby agreed between them, that, on the expiration of one year after such notice shall have been received by either, from the other party, this convention, and all the provisions thereof, shall altogether cease and determine."

The notice required by the foregoing article has been given by the government of the United States, and it is believed that no new treaty will be entered into with the government of Denmark, without a special article stipulating that vessels of the United States, in passing and repassing the Sound and the Belts, shall be forever exempt from the payment of any duties, either upon their tonnage or their cargoes. By virtue of a resolution of the Senate, in executive session, March 3, 1855, Mr. Bedinger was instructed by the President of the United States to communicate, and on the 14th April, 1855, did communicate, to the Minister of Foreign Affairs, of Denmark, notice of the desire of the government of the United States to terminate the treaty of 1826, in accordance with the 10th article of the same, and that at the expiration of 12 months from the date of said notice, said treaty "shall cease and determine." In the communication to Congress from the Department of State, already referred to, the history of the Sound dues is thus given:

"The date of the origin of the Sound tolls has never been, so far as is known to this government, authentically ascertained. They are presumed to be the relics of exactions by the Norman pirates of the dark ages. As civilization advanced, they were enforced upon the plea of protecting the lucrative herring-fishery at Schonen. The coasts of the three straits (Skaggerack, Cattegat, and the Sound) were owned by Denmark until 1658 (with the exception of 36 years in the 14th century), when, by the treaty of peace of Rothschild, the east coast of the Great Belt, including the fortifications of Helsinburg, was transferred to Sweden, and is still owned by her. The right of sovereignty upon which Denmark presumed, in consequence of her ownership on either side of this connecting link of ocean water, necessarily ceased after this occurrence, even if it had been before, in the slightest degree, in conformity with national law. But, nevertheless, she persisted at Cronberg, the key to the Sound, in extorting large sums from every bottom that passed. Previous to the treaty with Sweden in the 14th century, the collection of the Sound tolls was resolutely and successfully resisted by the Hansentic League. Then, as now, they came in direct conflict with the interests of all the cities upon the Baltic; and that powerful confederacy, at that time in the meridian of its greatness, obtained free passage for its ships and cargoes through the Sound. In the year 1201, Denmark, perceiving the power of the Hanseatic League held her authority over the Baltic in little contempt, deemed it judicious to invite other nations to engage in the trade of the Baltic; and a convention was entered into with England, and subsequently with Holland, by which their vessels were permitted to pass through the Sound by the payment of mere nominal tolls. In 1515, it appears that the latter country paid no tolls whatever, but stipulated to give a small sum instead thereof. This was, as intended, a blow at the Hanseatic cities; and in their name Lubec demanded the immediate exclusion of the Dutch from the Baltic—a demand, however, that was not complied with. In 1544 a treaty of commerce was concluded between Christian III. of Denmark and Charles V., Regent of the Netherlands, by which the subjects of the high contracting parties were permitted to trade with each other, by paying the sound dues which had been levied 'since days of old.' The Dutch at this period were a great navigating and commercial people, and the stipulations which they entered into imparted dignity to the jurisdiction claimed by the Danes over the Sound. The influence of the Hanse towns began to decline about the beginning of the 15th century, but they exercised a supremacy over the North and Baltic seas until the middle of the 15th. From their unceasing quarrels with Denmark, relative to the Sound tolls, recourse was had to negotiation; and, in 1560, 'the King of Denmark and his subjects on the one part, and the right honorable Hanseatic cities and the merchants thereof on the other part,' concluded the treaty of the Odensee. In 1563, Denmark was involved in a war with Sweden, and she made this circumstance a pretext to increase the Sound tolls against the Hanse towns, notwithstanding her covenant to the contrary three years before, which was still in force; but the Hanse towns, in their declining power, were compelled to submit to this violation of her obligation. In 1570 a treaty was contracted between Denmark and Sweden, at Stettin, by which it was agreed that the latter nation should be exempted from the Sound dues; but this was evaded from time to time by Denmark, in levying the toll upon the wines intended for Queen Christiana's own private use, and by the prohibition of ammunition when Sweden was in absolute want of it for prosecuting the thirty years' war. At length Denmark became so intolerant as to search Swedish vessels, unnecessarily detain them, and, in some instances, convey them to Copenhagen. The Netherlands experienced but little better treatment. The Stadtholder complained, and he was put off with promises. In 1640, the year after the dissolution of the Hanseatic League, the United Netherlands, which had secured their independence, formed a compact with Sweden for the maintenance of their respective rights; and in 1645 a new treaty was concluded between Denmark and Sweden, and on the same day (August 13) one between Denmark and the

Netherlands. In the negotiations which concluded them, the Dutch and Swedish plenipotentiaries demanded free navigation through the Sound for all nations. The Danish plenipotentiaries contended that the Sound was a 'Danish canal,' and that the tolls collected were of a similar character to those exacted at the mouths of certain rivers in Germany and Holland. France, acting as mediator, held the question under consideration, to be decided at a more convenient period; and subsequently she sustained the interests of Denmark, for which she was rewarded by the bestowal of the same advantages to her flag as had been bestowed upon the Netherlands, and without any limit as to duration. In 1654 Great Britain concluded a treaty with Denmark, which was renewed in 1670, by which all the advantages were to be enjoyed by her which had been conferred upon the Netherlands. Previous to 1720 (from 1647), Denmark fixed the toll, in her treaties with other countries, 'in conformity to the terms granted to the Netherlands;' but after that time she placed them upon the footing of 'the most favored nations.' Sweden, in consideration of the restoration of her provinces which had been conquered by Denmark, stipulated to pay, in future, by the treaty of Frederickesburg of June 3, 1720, the same rate of Sound dues that were collected upon the ships and cargoes of the most favored nations, reserving to herself the right to establish a commissary at Elsinore, to prevent impositions upon her navigation and commerce. These conditions and obligations (although several treaties have been made between the two nations since) continue to be observed. During the 18th century, Sweden having been quieted, the Sound tolls seem to have been submitted to by other powers and states without opposition. Denmark concluded several new treaties, but none of them contained provisions prohibitory of the exaction of the dues demanded at Elsinore.

"This was the condition in which Denmark was found when the Congress of Vienna assembled. It was quite naturally expected, at that time, that the Danish Sound tolls would present a legitimate subject for the deliberations of that body, and that, in the settlement of the affairs of Europe, they would be entirely abrogated. But Frederic VI. of Denmark was present at Vienna, and the object of compassion with the representatives of the sovereign most interested, on account of the bombardment of Copenhagen and the destruction of his fleet a few years before; and out of tenderness to him, as it is reasonable to suppose, this question was permitted to remain *in statu quo*. Vague intimations, it is stated, have occasionally been given at Copenhagen, that the Sound tolls were guarantied to Denmark by the Congress of Vienna, as an indemnity for the surrender of Norway to Sweden. Admitting the truth of this, and that every European government was irrevocably bound by such proceedings, the United States were not a party to it in any way, and no obligation is imposed upon them to respect the arrangement. Nothing has been more remote from the purpose of our government, from the day on which it was ushered into existence, than that of surrendering to any power its right of using the ocean as the highway of commerce. This right it claims, and will use all proper means to secure to itself the full enjoyment of it in every quarter of the globe.

"The fact is notorious, that the Sound dues affect us more sensibly than any European nation. Under their operation, Great Britain has a decided advantage over us, as concerns our chief staple. Raw cotton, according to the most reliable statements before the Department, is charged with about three per cent. *ad valorem* in its transit through the Sound; while cotton twist, of which Great Britain ships from 30,000,000 to 50,000,000 lbs. to ports of the Baltic, pays only *one* per cent. *ad valorem!* If we quietly submit to such a tax upon the raw material of our fields, Great Britain, as a matter of profit, can well afford to consent to the comparatively moderate one upon the article manufactured from it, because she can not fail to perceive that, were the dues abolished, we should as certainly gain markets for the raw product, as she should lose them for the manufactures of her spinneries. For the five years terminating the 31st December, 1848, 264 American vessels entered the Baltic, upon the tonnage and cargoes of which the Sound tolls amounted to 570,473 Danish bank rixdollars. Since then, no tabular statements have been received of our vessels passing Elsinore, nor the sums annually paid. The Sound toll levied upon our chief products, which find a market in the countries bordering upon the Baltic and beyond them, according to the most reliable information on the subject, is as follows:

Raw cotton, per 100 lbs..... 20 cents.
Rice, per 100 lbs..... 11 "
Paddy (rice in husks), per 100 lbs..... 3¼ "
Raw tobacco, per 100 lbs..... 17½ "
Whale oil, per bbl..... 6½ "

"Consequently a cargo of 2,000 bales of cotton pays a tax of about $1,720; a cargo of 800 hhds. of tobacco, $1,400; a cargo of 1,000 tierces of rice, $700. In addition to the toll on tonnage, the cost of pilotage for a ship drawing 18 feet of water, from Dragon to Elsinore, varies, according to the season of the year, from $20 to $30."

The following statement exhibits the number of American vessels that passed the Sound at Elsinore, to and from the Baltic Sea, from 1837 to 1843, inclusive:

1837.....	104	1841.....	122
1838.....	158	1842.....	118
1839.....	114	1843.....	152
1840.....	143		

STATEMENT OF THE NUMBER OF VESSELS OF ALL NATIONS THAT PASSED THE SOUND AT ELSINORE, TO AND FROM THE BALTIC SEA, FROM 1838 TO 1843, INCLUSIVE.

Nationality.	1838.	1839.	1840.	1841.	1842.	1843.
American....	158	114	143	122	118	152
Belgian.....	20	34	20	11	6	6
Bremen.....	45	65	58	68	56	86
Danish.....	1,019	1,199	1,045	1,092	1,070	1,410
Dutch.....	955	1,192	950	970	917	1,296
English.....	4,009	4,498	3,972	3,777	3,519	3,515
French.....	268	240	239	218	238	179
Hamburg.....	29	18	23	20	14	27
Hanoverian...	528	819	768	823	765	837
Lubec.....	107	108	96	88	77	76
Mecklenburg.	842	979	958	958	826	840
Neapolitan...	28	44	48	15	51	67
Norwegian...	1,497	1,691	2,082	1,066	1,848	1,635
Oldenburg....	59	125	83	132	142	183
Portuguese...	....	3	4	3	2	3
Prussian.....	2,491	3,045	2,996	2,850	2,811	2,582
Russian.....	750	837	820	831	757	738
Spanish.....	17	20	13	14	4	6
Swedish.....	1,152	1,252	1,284	1,182	1,278	1,451
Total.....	13,983	16,214	15,702	14,780	13,994	14,980

STATEMENT OF SOUND DUES PAID ON GOODS SHIPPED BY AMERICAN VESSELS TO AND FROM THE BALTIC SEA, FROM 1837 TO 1843 INCLUSIVE.

Year.	On goods shipped— To the Baltic Sea.	From the Baltic to Amer. ports.	From the Baltic to foreign ports.	Total Specie Dollars.
1837	75,327	14,230	666	90,224
1838	109,140	17,498	1,526	128,165
1839	74,762	11,238	119	84,119
1840	94,110	18,294	1,010	113,414
1841	72,328	15,937	2,218	90,514
1842	57,254	8,860	1,030	67,144
1843	71,762	7,835	1,916	81,513

The old specie dollar of Denmark is valued in the United States at $1.05. (*United States' Com. Dig.*, 1856-7, p. 300, issued under the orders of Secretary Marcy, of the State Department.)

We find, now and then, full official returns published in the different commercial papers of Europe. From some of these, and from other reliable sources, we have compiled the following tabular statements which will serve to show the amounts of revenue derived by Denmark from the Sound dues, as well as the

proportion assigned to each of the leading commercial countries in the same:

1830.....	$1,074,000	1838.....	$1,144,644
1831.....	1,022,000	1839.....	1,183,329
1832.....	1,149,000	1840.....	1,194,906
1833.....	1,086,000	1841.....	1,129,950
1834.....	983,000	1842.....	1,028,952
1835.....	993,000	1843.....	1,162,500
1836.....	1,060,200	1844.....	1,186,122
1837.....	1,074,708	1845.....	1,208,028
Aggregate.....			$17,490,342
Annual average.....			1,105,646
1858.....			1,175,478

The following table, exhibiting the number of vessels that passed the Sound from 1750 to 1846, is derived from a statistical work recently published in France:

Years.	Vessels.	Years.	Vessels.
1750.....	4,500	1813.....	1,426
1768.....	5,025	1814.....	8,186
1770.....	7,736	1815.....	8,816
1777.....	9,068	1816.....	8,871
1778.....	8,476	1817.....	18,149
1779.....	8,972	1818.....	12,566
1780.....	8,291	1819.....	10,667
1781.....	8,281	1820.....	10,884
1782.....	8,375	1821.....	9,193
1783.....	11,223	1822.....	8,486
1784.....	10,867	1823.....	9,655
1785.....	10,183	1824.....	10,494
1786.....	9,060	1825.....	13,142
1787.....	9,750	1826.....	11,068
1788.....	9,216	1827.....	12,099
1789.....	8,823	1828.....	13,263
1790.....	9,732	1829.....	13,566
1791.....	10,452	1830.....	13,210
1792.....	13.114	1831.....	12,942
1793.....	9,926	1832.....	12,202
1794.....	10,511	1833.....	10,985
1796.....	12,113	1834.....	10,605
1797.....	9,923	1835.....	10,955
1799.....	7,848	1836.....	11,925
1800.....	9,048	1837.....	13,100
1801.....	8,988	1838.....	13,959
1805.....	11,587	1839.....	16.175
1806.....	7,140	1840.....	15,662
1807.....	6,240	1841.....	14,703
1808.....	121	1842.....	13,952
1809.....	879	1843.....	14,940
1810.....	2,898	1844.....	17,833
1811.....	2,898	1845.....	15,955
1812.....	2,475	1846.....	13,710

If we divide the preceding table into periods, we have the following annual average number of vessels for each period:

	Average annual number.		Average annual number.
1750.....	4,500	1811—1820.....	7,949
1768—1770.....	6,380	1821—1830.....	11,502
1777—1780.....	8,525	1831—1840.....	12,781
1781—1790.....	9,545	1841—1845.....	14,583
1791—1800.....	10,204	1844—1846.....	17,833
1801—1810.....	5,257		

From various authorities, the number of vessels that passed the Sound down to 1853 is compiled, as follows:

Years.	From the North Sea.	From the Baltic Sea.	Total.
1847	10,675	10,812	21,487
1848	8,525	8,214	16,739
1849	10,043	8,696	18,739
1850	9,651	9,408	19,059
1851	9,930	9,976	19.906
1852	8,809	8,736	17,545
1853	10,662	10,850	21,512
Annual average number from 1847 to 1853..			19,284

The official reports relative to the navigation of the Sound, in possession of the Department of State, do not come down to a later period than 1853. The annual returns of the foreign commerce of the Hanse towns for 1854, compared with the two preceding years, are, however, at hand; and from these it appears that the number of Hanse vessels which passed the Sound was as follows:

	1854.	1853.	1852.
Hamburg.....	65	83	49
Bremen.....	7	37	24
Lubec.....	109	136	185
Total.....	181	256	208

The late war, of which the Baltic was one of the chief theatres, will explain the diminution in 1854.

The amount of Sound dues paid by the Hanse towns, in the years specified, was as follows:

	Francs.		Francs.
1851.....	108,150	1848.....	61,600
1850.....	66,492	1847.....	98,884
1849.....	96,606	1846.....	115,190

Total, 471,854 francs, equal to $89,557 26; an annual average of 78,309 francs, or $14,926 21.

If we are correctly informed as to the assessment and the bases on which Denmark proposes to raise her revenues under the scheme of capitalization, it would seem quite evident that she has at least taken care of "her own interests" as implicated in this question; and our government, in rejecting the compromise thus tendered, accompanied as it was with the entanglements of the "balance of power in Europe," under whose shield Denmark wishes to place these exactions, pursued the true policy of the country by avoiding any such "dangerous complicity," as Mr. Marcy terms it. The offer of the United States to share liberally in compensating Denmark for her expenditures at Elsinore in the interests of commerce ought, as it seems to us, to satisfy any reasonable demand which she can urge upon our own country or the countries of Europe; and, if all combine to pay a "fair equivalent" for the advantages derived by their commerce from the outlays of Denmark, it should be accepted by her without further delay or protest, and, instead of making the antiquity of her exaction the plea for its continuance, should rather acknowledge the equity of those governments which are willing to meet all her just claims in the future without seeking any indemnity for the past.

The following table exhibits the number of vessels of all nations that have passed the Danish Sound during the years 1854–55:

Nation.	From the North Sea.	From the Baltic.	Total. 1855.	Total. 1854.	Incr'se. 1855.	Decr'se. 1855.
Prussia.....	1,416	1,448	2,864	3,095	....	231
Denmark,..	900	721	1,621	1,898	....	277
Norway.....	1,426	1,414	2,840	3,328	....	488
Sweden.....	1,258	1,205	2,463	2,583	....	120
England....	1,919	1,196	2,415	2,032	383	....
Russia.....	....	7	7	166	....	159
Mecklenburg	858	879	737	873	....	136
Lubec.....	84	36	70	111	....	41
Hamburg....	16	26	43	61	....	19
Bremen.....	16	13	29	11	18	....
Hanover....	341	354	695	497	198	....
Holland.....	798	705	1,503	1,460	133	....
Oldenburg..	74	76	150	79	71	....
France.....	62	63	125	81	44	....
Belgium.....	5	6	11	11	....	....
Italy.....	29	24	53	23	30	....
Spain.....	....	....	....	....	....	....
Austria.....	....	....	....	1	....	1
Portugal....	8	8	16	12	4	....
Peru.....	....	....	....	....	....	....
United States	28	26	54	46	8	....
S. America..	1	1	2	....	2	....
	7,989	7,798	15,787	16,668	891	1,472
Increase.....						891
Decrease in 1855.....						581

It will be seen that the total number of vessels that passed the Sound in 1853 exceeds that of the preceding year by 3,967 vessels. Of the whole number, 18,166 were laden, and 3,346 were in ballast. The countries which contributed most to this augmentation are Prussia, Great Britain, Denmark, Mecklenburg, and Russia. The following table will show the nation, and the number of vessels from each nation, in 1853:

Nations.	No. of vessels.	Nations.	No. of vessels.
England.....	4,668	Mecklenburg.	1,067
Prussia.....	3,472	Hanover.....	743
Norway.....	3,411	France.....	343
Denmark,....	2,094	Oldenburg....	191
Sweden.....	1,996	Lubec	158
Holland.....	1,874	United States.	96
Russia.....	1,202		

For a sketch of the Danish Exploring Expedition around the World, see HUNT's *Merchants' Magazine*, vol. xxiii., p. 406; viii., 469; *Westm. Rev.* i., 75, xlviii., 195; *N. A. Rev.*, xxvii., 285 (by H. WHEATON.)

TABULAR STATEMENT SHOWING THE NAVIGATION OF THE SOUND, THE PRINCIPAL NATIONS PARTICIPATING THEREIN, THE SHARE ASSIGNED TO EACH, AND THE PROPORTION OF EACH PER CENTUM ON THE WHOLE, FROM 1850 TO 1854, BOTH INCLUSIVE.

Years.	England.	Sweden and Norway.	Denmark.	Russia.	Prussia.	Mecklenburg	Hanse Towns	United States.	France.	Holland.
1850.....	5,488	4,595	1,266	1,188	2,891	1,031	175	105	44	1,906
1851.....	4,322	5,177	1,540	1,023	2,650	1,058	235	119	293	2,081
1852.....	3,909	3,129	1,464	946	2,319	771	204	79	280	1,671
1853.....	4,668	5,407	2,094	1,209	3,472	1,067	256	96	843	1,8.
1854..	2,048	5,841	1,929	178	3,108	858	181	42	87	1,398
Aggregate.	20,926	26,080	8,393	4,527	13,935	4,780	1,051	441	1,046	8,900
Average...	4,185	5,216	1,659	907	2,787	956	210	88	209	1,780
Proportion per cent..	28·03	28·9	9·2	5	15·5	5·3	1·2	0·5	1·2	9·9

Regulations observed on passing through the Sound into the Baltic.—If the vessel be laden with cotton for Russia, the captain must be provided with a certificate, properly attested by the Danish consul at the port of departure, verifying that the cotton does not come from Egypt or the Levant. Every vessel not thus protected will be subject to quarantine, and may have her entire cargo put ashore.

Every captain must be able to show legal evidence of the nationality of his vessel; must be provided with a manifest and a clearance from the custom-house officers at his last port. Should the vessel come from France, Holland, Belgium, Portugal, or Hamburg, the captain must exhibit his passport. If from Holland or Belgium, destined for Prussia, the certificate of the Prussian consul at the port of departure will suffice.

If the vessel comes from the United States, laden with cotton, the captain must be provided with a manifest of his cargo, custom-house clearance, register of nationality, and the certificate of the Danish consul attesting that the cotton was actually grown in the United States; or if it come from Brazil or any other country, that it was first landed at a port in the United States, and not transhipped from a foreign vessel.

If the vessel comes from Cuba, the captain must be provided with a register attesting the nationality of his vessel, a manifest, passport, and custom-house receipt; and it would be advisable for him to have, also, a bill of health, attested by the Danish consul at the port of departure.

The papers and certificates referred to in the preceding remarks must be in duplicate; and, when the vessel is destined for Russia, should there be any interlineations, or marginal notes, or addenda, the captain's signature must be affixed to each, so as to give it authenticity.—*Com. Rel. U. S.*

Since the preceding article was in type, a convention was held in reference to the funding of the Sound dues on the part of the several governments interested. For the results of these deliberations, the reader is referred to article entitled "*Sound Dues.*"

Deposit. This term is applied to the sum of money which a man might deposit with the sheriff after he was arrested, instead of putting in special bail. The amount of the deposit was the sum sworn to on the back of the writ. (BLACKSTONE'S *Comm.*) Deposit is also used for any sum of money which a man puts in the hands of another as a kind of security for the fulfilment of some agreement, or as a part payment in advance. The Roman word, depositum, signified any thing which a man put in the hands of another to keep till it was asked back, without any thing being given to the depositarius for his trouble. The depositor was called deponens or depositor. The depositary was bound to take care of the thing, and to make good any damage that happened to it through fraudulent design (*dolus*) or gross neglect (*lata culpa*). The depositor could recover the thing by action; but the depositary was entitled to satisfaction for any loss that he sustained in the matter of the deposit by any default (*culpa*) on the part of the depositor. The depositary could make no use of the deposit, except with the permission of the depositor, either given in express words, or arising from implication. If a man refused to return a deposit, and was condemned in an action of deposit (*actio depositi*), infamy (*infamia*) was a consequence of the condemnation.—DIG., 16, tit. 3; JUVENAL, *Sat.* xiii., 60.

Depot (Fr.), is used to designate a place where all sorts of military stores and provisions are kept, or where recruits are received and trained. It is also applied to that portion of a regiment which remains at home when the rest is ordered upon foreign service. And is used generally to denote any place intended as a place of deposit for merchandise; as the terminus of a railroad. The term station is more proper for places intended merely for passenger accommodation.

Depression of the Horizon, or **Dip of the Horizon,** in Nautical Astronomy, denotes the depression or dipping of the visible horizon before the true horizontal plane, and which arises from the circumstance that the eye of the observer is not placed on the same level with the surface of the sea, but at some distance above it. Hence in observing the altitude of the sun or a star above the horizon with the sextant, the altitude appears greater than it really is. Let a = the radius of the earth, and x = the height of the eye above the horizon; then the cosine of the angle of depression $\frac{a}{a+x}$. At the height of 10 feet this amounts to about three minutes of a degree.

Derrick, in nautical language, used in a variety of meanings, but chiefly for a tackle used at the outer quarters of a mizzen-yard, consisting of a double and single block connected by a fall.

Desert (Lat. *desertum*, participle of *desero, to desert, to leave*), a large tract of barren country; a waste.—E. B. A term generally used to designate an uninhabited place or solitude; in which sense, as has been judiciously remarked, it is equally applicable to the fertile plains watered by the Maranon, and the sandy wastes of Lybia, but applied more particularly to the vast sandy and stony plains of Africa and Asia. In every region of the globe plains are to be found of greater or less extent, which, though marked by strong features of resemblance in their grand outlines, exhibit with the different latitudes in which they are placed a corresponding variety of character, and accordingly the distinguishing peculiarities of each are known by different appellations. Thus we have the *steppes* of Europe, the *deserts* of Asia and Africa, the *savannahs* of the Mississippi and Missouri, and the *pampas* and *llanos* of South America.

The most striking feature of Africa consists of its immense deserts, which have in all ages presented to the speculations of the geographer objects highly worthy of attention. Of these the chief is the *Sahara*, or the *Desert*, so called by way of eminence. This prodigious zone of sand stretches, with few interruptions, from the shores of the Atlantic to the confines of Egypt, and comprehends in its length and breadth a superficies of about 2,200,000 square miles. The sand raised by the burning wind called the simoom is frequently in a state of motion, and as it sweeps along in its career of desolation bears a strong resemblance to the waves of a tempestuous sea. This immense expanse, however, is by no means a uniform surface of loose sand. In many parts the dreary wastes is broken by low hills of naked sand-stone, or by tracts of arid

clay, and occasionally it is enlivened by verdant isles or *oases*, which serve as resting-places for the caravans that traverse these dismal regions. But for these *oases*, indeed, the Sahara would be wholly impassable. It presents, says Malte Brun, no traces of a beaten path, and the caravans that traverse it, directing their way by the polar star, describe a tortuous road in order to profit by the oases, which are represented as brilliant with vegetation, but which probably owe a great part of their reputation to the contrast they form with the absolute barrenness of the desert.

The great deserts of Africa are only separated from those of Asia by the valley of the river Nile, and the Red Sea. But upon this subject we can not refrain from transferring to our columns the remarks of Dr. Traill, who has sketched with a masterly hand the grand outlines of the Asiatic deserts. "Soon after quitting the Nile, the traveler by the route of Suez encounters sand, which is continued into the centre of Arabia, where it forms the desert of Nedsjed, extending to the valley of the Euphrates. The sandy zone then inclines northward, enters Persia, and forms the saline deserts of Adjemi, Kerman, and Mekran; it is turned north-east by the valley of the Indus, passes through Caubul and Little Bukharia, till it joins the vast deserts of Cobi and Shamoo, which occupy so large a portion of Central Asia between the Altaian and Mustag chains, and reach to the confines of China. The sandy zone, thus traced throughout the breadth of the ancient continent from western Africa to the 120° of east longitudo, has been computed to cover an area of 6,500,000 square miles; but the Asiatic portion of this tract includes many chains of mountains and fertile valleys. It is characterized by the occurrence of arid wastes of sand or clay, sometimes with saline incrustations on the surface, and is remarkably deficient in considerable rivers: except the Nile, the Euphrates, the Indus, and the Oxus, there are no large rivers in a region which embraces almost a fourth part of both Africa and Asia. This portion of Central Asia forms a series of elevated plains, 6,000 miles in length from east to west. Some of these plains, says Humboldt, are covered with herbage; others produce only evergreen saliferous plants, with fleshy and jointed stems; but a great number glitter from afar with a saline efflorescence that crystallizes in the semblance of lichens, and covers the clayey soil with scattered patches like new-fallen snow." Under the head Mirage will be found some account of the so-called singular optical illusion so often seen in the desert.

In Scripture, the term desert bears a wholly different interpretation from that usually attached to it in profane writings. It has been fully shown by Reland (*Palest.* l. i. p. 375) that the Hebrew מדבר (midbar), the ἔρημος of the Greeks, and the *desertum* or *solitudo* of the Latins, bear no analogy to each other; the first being appropriated almost exclusively to those thinly-peopled districts of the Holy Land which yielded pasturage for cattle, and were remarkable at once for their beauty and the luxuriance of their vegetation.

"The arid plains and deserts, as well as high mountain ranges, have, it may well be supposed, an influence upon the movements of the great aerial ocean, as shoals and other obstructions have upon the channels of circulation in the sea. The deserts of Asia, for instance, produce a disturbance upon the grand system of atmospherical circulation, which, in summer and autumn, is felt in Europe, in Liberia, and away out upon the Indian Ocean, as far to the south as the equinoctial line. There is an indraught from all these regions toward these deserts. These indraughts are known as monsoons at sea; on the land, as the prevailing winds of the season.

"We perceive how a desert land spreads its influence through the distance upon the winds. The first effects of heating up the plains are necessarily felt by the air nearest at hand, and by that further off at a later period, so that the south-west monsoon influence is in this part of the ocean propagated from the land out upon the sea at the rate before stated. Of course, the vast plains of Asia are not brought up to monsoon heat *per saltem*, or in a day. They require time both to be heated up to this point and to be cooled down again. The monsoon season may be always known by referring to the causes which produce these winds. Thus, by recollecting where the thirsty and overheated plains are which cause the monsoons, we know at once that these winds are rushing with greatest force toward these plains at the time that it is the hottest season of the year upon them. The influence of these heated plains upon the winds at sea is felt for a thousand miles or more. Thus, though the desert of Cobi and the sunburned plains of Asia are, for the most part, north of latitude 30°, their influence in making monsoons is felt south of the equator. So, too, with the great desert of Sahara and the African monsoons of the Atlantic; also, with the Salt Lake country and the Mexican monsoons on one side, and those of Central America in the Pacific on the other. The influence of the deserts of Arabia upon the winds is felt in Austria and other parts of Europe, as the observations of Kriel, Lamont, and others show."—Maury's *Physical Geog. of the Sea.*

Desertion by a Seaman. "Desertion from the ship without just cause, and *animo non revertendi*, or the justifiable discharge of a seaman by the master for bad conduct, will work a forfeiture of the wages previously earned; and this is a rule of justice and of policy which generally pervades the ordinances of the maritime nations. By the English statute law, and by the act of Congress, desertion is accompanied with a forfeiture of all the wages that are due, and an absence of forty-eight hours without leave, is made conclusive evidence of desertion; and whatever unjustifiable conduct will warrant the act of the master in discharging a seaman during the voyage, will equally deprive the seaman of his wages. But the forfeiture is saved if the seaman repents, makes compensation or offer of amends, and is restored to his duty. Public policy and private justice here move together, and the maritime ordinances unite in this conclusion. The master has power to remit a forfeiture, and the penalty of forfeiture is not applied to slight faults, either of neglect or disobedience. There must be either an *habitual* neglect, or disobedience, or drunkenness, or else a single act of gross dishonesty, or some other act of a heinous and aggravated nature, to justify the discharging a seaman in a foreign port, or the forfeiture of wages; nor will the admiralty courts, except in cases of great atrocity, visit the offenses of a seaman with the cumulated load of forfeiture of wages and compensation in damages. They stop at the forfeiture of the wages antecedently earned, and in the application of the forfeiture, the advanced wages are made a charge on the forfeited wages, but the hospital money is apportioned ratably on the wages for the whole voyage. In these regulations the moderation of the courts, and the solicitude which the peculiar condition and character of seamen excite, are equally manifest. So, if the seaman quits the ship involuntarily, or is driven ashore from necessity, from want of provisions, or by reason of cruel usage and for personal safety, the wages are not forfeited, and he will be entitled to receive them in full to the prosperous termination of the voyage. On the other hand, it is the duty of the seamen to abide by the vessel as long as reasonable hope remains; and if they desert the ship under circumstances of danger or distress from the perils of the sea, when their presence and exertions might have prevented damage, or restored the ship to safety, they forfeit their wages, and are answerable in damages. And even when a seaman might well have been discharged in the course of the voyage for gross misbehavior, if the master refuses to discharge him, and

leaves him in imprisonment abroad, he will, in that case, be entitled to his wages until his return to the United States after deducting from the claim his time of imprisonment."—KENT's *Commentaries*, Lect. xlvi. There are, however, at times, extenuating circumstances, which will in part authorize a sailor to leave his ship in a foreign port. This subject is discussed with clearness in the work above-mentioned. Judge Story holds that the voyage of a ship is ended when she arrives at her port of destination, and is safely moored, though her cargo be not delivered; and desertion afterward does not forfeit the wages entire, but a partial forfeiture only as compensation for breach of duty.—*Ibid.* See DISCHARGE OF SEAMEN.

Design (Fr. *dessein*, from Lat. *designo*), a scheme or plan; purpose, intention; a representation of a thing by an outline or sketch, etc. *Design*, in the manufactories, expresses the figures with which the workman enriches his stuff or silk, and which he copies after some pattern. *Design* in *Painting*, is the first idea of a large work, drawn roughly, to be afterward carefully executed and finished.

Design, Schools of, are establishments for instructing pupils in the art of drawing. In some the instruction is confined to what is subservient to the fine arts, but in others, especially in the very admirable establishment at Edinburg, under the Board of Trustees of Arts and Manufactures, not only is attention paid to the instruction of the painter and the sculptor, but design is taught, to perfect the mechanic in the principles of his art, wherever ornamental pattern is required. Such schools have been long opened in France and various parts of Germany, from which important benefit has been conferred on the manufacturing industry of those countries. The Edinburg School of Design appears to have been the first established in Britain for the express improvement of manufacturing industry. It is most ably conducted, and has found its pupils in demand for the chief seats of English manufacturing art. In England, besides the establishment at Somerset House, London, there is a branch school of design in Spitalfields that is well attended. Similar schools are now established in Birmingham, Manchester, Coventry, Nottingham, Leeds, York, Huddersfield, Sheffield, Norwich, Stoke-on-Trent, Newcastle-on-Tyne, Hanley, Glasgow, and Paisley. Several have been established in the cities of New York and Boston, and other portions of the United States, and their utility is clearly demonstrated.—BRANDE's *Enc.*

De-silvering Lead. Nearly all lead ore contains a little silver; and Mr. Pattinson of Newcastle, England, has devised an ingenious and beautiful mode of separating it. His discovery has rendered many lead mines workable which must otherwise have been abandoned. The chief ore whence lead is extracted is galena, a sulphuret of the metal, containing on an average about 80 per cent. of lead and a minute portion of silver; and this silver treasure often determines the working or non-working of the mine. Until recently, 20 ounces of silver to a ton of lead were the least that would pay for the expense of separating; but Mr. Pattinson has enabled the lead smelter to realize a profit from so small a ratio as 3 or 4 ounces to the ton. The lead-smelting at the Allenhead mines, and at the Wanlock lead hills in Dumfriesshire, are both founded on Pattinson's process.

This process is not only scientific in the principle on which it is based, but it is really beautiful to witness. After the ore has been smelted, and the lead run off into the form of blocks or "pigs," these pigs are slowly re-melted in large cast-iron open vessels. The molten lead, while gradually cooling, is stirred uninterruptedly with an iron rod, and crystals of lead gradually form. These crystals, being denser and heavier than the rest of the lead, fall to the bottom, and are thence removed by the aid of a colander or perforated ladle. Now these crystals contain less silver than an equal weight of the uncrystallized lead; and here we begin at once to see the rationale of the process: since none of the silver is actually gone, that which has left the crystals has tended to enrich the remaining portion of the lead. Again are the crystals melted, to get more and more silver out of them; again is the richer lead melted, to increase its richness at the expense of the newly-formed crystals; and thus do the double processes advance until almost every atom of silver is obtained from the lead. But this requires another kind of operation. The very rich lead is brought to an intense heat in a peculiar furnace, and a blast of air is driven upon it; the lead combines with the oxygen of the air to form litharge, while the silver sinks to the bottom in a pure state, forming a slab of delicate silver. A very beautiful appearance presents itself during the process: the molten silver absorbs much oxygen, which escapes again as the metal solidifies; bursting through the gradually hardening surface of the mass, the bubbles of gas force along with them portions of the fluid metal from below. It really affords a very close representation of a volcano; for the same chemical laws are in operation in both cases. This escape of oxygen leaves the surface covered with beautiful and fantastical concretions of pure and brilliant silver—silvery mountains and valleys, formed by a process bearing much analogy with that by which our earth mountains were probably formed. In the recent London Exhibition there was a cake of silver weighing no less than 8000 ounces, obtained from lead in Mr. Beaumont's mines in Northumberland.—*Novelties and Inventions.*

Detroit, a city and port of entry of the United States, capital of the county of Wayne, Michigan, situated on the west bank of the Detroit Strait or River, which connects Lakes Huron, St. Clair, and Erie. Lat. 42° 2′ N., long. 83° 2′ W. The city extends along the river for more than a mile and a half, its central point being 7 miles from Lake St. Clair, and 18 from Lake Erie. The river is here about five eighths of a mile in width; and its depth varies from 12 to 48 feet. The descent from Lake St. Clair to Lake Erie is about 6 feet, or 3 inches per mile; and the velocity of the current at the deepest part, opposite the city, is 2¼ miles per hour. Its shores on both sides are highly cultivated; and from its outlet into Lake Erie to its origin at Lake Huron resemble a continuous village, with fine farms, pleasant villas, groves, gardens, and excellent roads. The town is well and regularly built, extending in the form of a rectangle for about 1200 feet from the river, and afterward terminating in a triangle. Some of the principal streets are 200, others 120, and others 60 feet wide. These generally cross each other at right angles. The houses are mostly of wood, but many of them are of brick. The principal of the public buildings are—the old State House, the United States' Buildings (of polished limestone), the State buildings for the supreme court, public offices, county court-house, county jail, city-hall, and market, the new Catholic cathedral, and the cathedral of St. Anne. Detroit is well supplied with water from the river, by means of hydraulic machinery in the upper part of the town. Ship and boat building is a large and important branch of business; and there are several large steam saw-mills, iron founderies, etc. Detroit has a very extensive trade, for which it enjoys many advantages. The harbor is capacious and secure. It is connected by the Michigan Central Railroad with Chicago via New Buffalo and Michigan City, a distance of 258 miles, and by the Pontiac with the town of that name, 20 miles distant. The Great Western Railroad, constructed through Canada, brings it into direct communication with the New York and other eastern routes. The population in 1801 was only 770, and in 1830, 2222; in 1840 it amounted to 9193, and 1850 to 21,000, while in the summer of 1853 it was 34,400. This, however, includes only those within the corporate limits, beyond which there is a numerous popula-

tion, whose entire occupation and interests are in the city.

Dials. Invented by Anaximander, 550 B. C.—*Pliny.* The first dial of the sun seen at Rome, was placed on the temple of Quirinus by L. Papirius Cursor when time was divided into hours, 293 B. C.—*Blair.* In the times of the emperors, almost every palace and public building had a sun-dial. They were first set up in churches in A. D. 613.—*Lenglet.*

Diamond (Ger. Du. Da. and Fr. *Diamant;* Sw. *Demant, Diamante;* It. Sp. and Port. *Diamante;* Rus. *Almas;* Pol. *Dyamant;* Lat. *Adamas;* Hind. *Hira*), a precious stone which has been known from the remotest ages. Pliny has described it (*Hist. Nat.*, lib. 37, § 4); but his account is, in many respects, inaccurate. It is found in different parts of India, and in Borneo; it is also found in Brazil, on which, indeed, Europe may be said to be at present entirely dependent for supplies of diamonds. Hitherto, however, it has not been met with anywhere except within the tropics. It is the most beautiful and most valuable of precious stones. Its most common colors are white and gray, of various shades. It occurs also red, blue, brown, yellow, and green. The colors are commonly pale. It is always crystallized, but sometimes so imperfectly that it might pass for amorphous. It is the hardest body in nature. External, lustre from splendid to glimmering; internal, always splendid. It is brittle; its specific gravity is 3·5. When rubbed it becomes positively electric, even before it has been cut by the lapidary, which is not the case with any other gem.—THOMSON'S *Chemistry.*

Diamonds were first brought to Europe from the East where the mine of Sumbulpour was the first known; and where the mines of Golconda were discovered 1584. This district may be termed the realm of diamonds. The mines of Brazil were discovered in 1728. From these last a diamond, weighing 1680 carats, or 14 ounces, was sent to the court of Portugal, and was valued by M. Romeo de l'Isle at the extravagant sum of 224,000,000 reals; by others it was valued at 56,000,000. Its value was next stated to be 3,500,000; but its true value is £400,000. The diamond called the "mountain of light," which belonged to the king of Caubul, was the most superb gem ever seen. It was of the finest water, and the size of an egg, and was also valued at 3,500,000. The great diamond of the emperor of Russia weighs 193 carats, or 1 oz. 12 dwt. 4 gr., troy. The empress Catharine II. offered for it £104,166, besides an annuity for life to the owner, of £1041, which was refused; but it was afterward sold to Catharine's favorite, count Orloff, for the first mentioned sum, without the annuity, and was by him presented to the empress on her birth-day, 1772. It is now in the sceptre of Russia. The Pitt diamond weighed 136 carats, and, after cutting, 106 carats. It was sold to the king of France for £100,000 in 1720.—*Haydn.*

According to Mr. Milburn (*Orient. Com.*), the color should be perfectly crystalline, resembling a drop of clear spring water, in the middle of which you will perceive a strong light playing with a great deal of spirit. If the coat be smooth and bright, with a little tincture of green in it, it is not the worse, and seldom proves bad; but if there be a mixture of yellow with the green, then beware of it—it is a soft greasy stone, and will prove bad.

Test of Diamonds. Cutting, etc.—To ascertain whether any specimen is a true diamond or not, a fine file may be used; and if the surface of the stone be the least abraded or scratched by its action, it is not a diamond. The difference will also appear upon close examination without this instrument: the rays of light easily pass through other gems, but in the diamond they are refracted to the surface, which occasions its superior brilliancy. If the specimen under examination be very minute, it may be placed between two half-crowns, or other flat metallic surfaces, and pressed with the thumb and finger: if a diamond, it will not be injured; but if otherwise, it will break and fall to powder. On account of the extreme hardness of the diamond, the art of cutting and polishing it was for a long time unknown in Europe. But, in 1456, a young man of the name of Louis Berghen, a native of Bruges, is said to have constructed a polishing wheel for the purpose, which was fed with diamond powder instead of *corundum*, which the Chinese and Hindoos had been long accustomed to employ. Berghen was led to this discovery by observing the action produced by rubbing two rough diamonds together. Diamonds are cut into brilliants and rose diamonds; the former being, for the most part, made out of the octahedral crystals, and the latter from the spheroidal varieties.—JOYCE'S *Practical Mineralogy;* REES' *Cyclopædia, etc.*

Commercial Value of Diamonds.—In the great or wholesale trade there is but little fluctuation in the price of those diamonds which may be termed *stones in general demand.* I will begin with brilliants from one grain to 2½ grains each. Such brilliants double cut, and what may be termed fine, are worth from £7 to £8 per carat. Needy sellers may take 10 per cent. less for cash; but this is the general average price for a lot of 10, 20, or 50 carats of well-made stones, if the quality be good. Brilliants, from two grains to three, may be bought in lots at from £7 7*s.* to £8 per carat. It is to be understood, that diamonds in a lot are never all quite free from faults; hence there may arise a difference of 10 per cent. in the price. Stones of 3 grains, if fine and perfect, are always in demand at £8 to £9 per carat. Brilliants from 3 grains to 4, if very fine and well proportioned, are worth from £8 to £9 per carat. Those of a carat each, if very fine and well selected, are worth £9 to £10. Three years ago I offered £12 each for 8, and could not obtain them. Brilliants from 5 grains to 6, if pure, are worth, from £13 to £14; if perfectly fine, and of the full weight of 6 grains, they are worth from £17 to £18 each. I have for such paid £20. Brilliants of 2 carats each, are worth from £27 to £30. Stones of this weight, if well proportioned, are considered of a fine size, and well calculated for pins, or the centre of clusters; indeed, well proportioned diamonds, from 6 grains to 2 carats each, are always in demand, and are retailed at from £20 to £25 each, according to their degree of perfection, or as the retailer may think fit to charge them. For brilliants of 3 carats, if fine and well formed, from £70 to £80 may be obtained. Stones of this size, and larger, are more liable to capricious fluctuations of price than the smaller ones before named, being chiefly required for the centre stone of salable necklaces. Brilliants of 4 carats, if fine, are worth from £100 to £130. I have sold stones, single cut, a little *off color*, of this weight, at 80 guineas. I possessed one of 17 grains, perfectly white, having a surface large as that of a 7 carat stone ought to be; it was, consequently, very thin, but being much in request, on account of its great *spread* or surface, it was sold for £160. Brilliants of 5 carats are not frequently met with in general trade, and are valuable in price: as the dealers exact more if they know that such stones are wanted than they would in the regular course of business. The prices may be said to vary from £180 to £200.

Brilliants of 6 carats, as before stated, are not common: they are suitable for centre stones of expensive necklaces and single stone rings. If perfect and well shaped, they sell for £230 to £250, or more. For estimating the value of peculiarly fine diamonds there is no fixed standard. Rough diamonds, selected as fine, and well formed for cutting, may be estimated as follows: Square the weight of the stone, multiply the product by 2, and the result will be the value in pounds sterling. Brilliants, if fine, may be estimated by squaring the weight in carats, and multiplying the product by 8, which will give the amount in pounds ster-

ling. As a very large property, both in Great Britain and in other countries of Europe, is vested in diamonds, it may be interesting to be informed, that not only the price of these gems has for several years been, upon the whole, gradually rising, but that it is likely to continue on the advance. At the present time, indeed, and for the last few years, there has been a dull sale of diamonds in England, nor did the coronation occasion a demand worth notice; but on the Continent the trade has been steady, and rough diamonds have been constantly rising in price. That this advance will be progressive may be assumed from the fact, that the best diamond ground now known, the Serro do Frio in Brazil, has assuredly passed the zenith of its prosperity. I went over the greater part of what is yet reserved, and still remains to be worked, and I conceive that there would be no difficulty in calculating the length of time in which the present number of working may reduce it to a state of exhaustion, like that of the far-famed Golconda. The average annual produce of future years may be estimated by the amount obtained from that portion which has been already worked. Brazil may be said to furnish Europe with 25,000 or 30,000 carats per annum of rough diamonds, which, if reduced to brilliants, may make an influx into the market of 8000 or 9000 carats annually.—MAWE's *Treatise on Diamonds*, 2d ed. pp. 9–14, and p. 60.

The rule stated by Mr. Mawe, and adopted by the jewelers, for estimating the value of diamonds (multiply the square of the weight in carats by 2, and the product is the value in pounds sterling), can only hold in the case of those that are of a small size, or do not weigh more than 20 carats. The value of the largest diamonds, which are exceedingly rare (*non nisi regibus et iis admodum paucis cognitus*, Pliny), can, it is clear, depend upon nothing but the competition of the purchasers. The diamond belonging to the emperor of Brazil is the largest in the world. It is still uncut, and weighs 1680 carats; so that, according to the jewelers' rule, it must be worth the enormous sum of £5,644,800! It may, however, be doubted whether his imperial majesty would have any disinclination to part with it for the odd sum of £644,800. The famous diamond belonging to the emperor of Russia, which the jewelers tell us is worth £4,804,000 did not cost £150,000.

Diamonds are not used exclusively as articles of ornament or luxury. They are frequently employed with great advantage in the arts. "Bad, discolored diamonds," says Mr. Mawe, "are sold to break into powder, and may be said to have more extensive sale than brilliants, with all their captivating beauty. In many operations of art they are indispensable; the fine cameo and intaglio owe their perfection to the diamond, with which alone they can be engraved. The beauty of the onyx would yet remain dormant, had not the unrivaled power of the diamond been called forth to the artist's assistance. The carnelian, the agate, or cairngorm, can not be engraved by any other substance. Every crest or letter cut upon hard stone is indebted to the diamond. This is not all; for without it blocks of crystal could not be cut into slices for spectacles, agate for snuff-boxes, etc." The carat grain used in weighing diamonds is different from the troy grain, 5 diamond grains being only equal to 4 troy grains. See *Westminster Rev.*, xxi., p. 297; HUNT's *Magazine*, xv., p. 600; FRAZER, xv. (by CARLISLE); *Bankers' Magazine*, N. Y., vol. v., 270, 369.

Diaper. (Ger. *Drell*; Du. *Dreil*; Fr. *Linge ouvré*; It. *Tela tessuta a opere*; Sp. *Manteles alemanicos*; Rus. *Salfetotsschnae*), a sort of fine flowered linen, commonly used for table-cloths, napkins, etc., brought to the highest perfection in the manufactories in the north of Ireland, in Germany, and Scotland. It sometimes resembles an inferior kind of damask. It is said to have been originally manufactured at Ypres, in Flanders; whence the term d'Ypres, corrupted into diaper.

Dice (Ger. *Würfel*; Du. *Taarlingen*; Fr. *Des (à jouer)*; It. *Dadi*; Sp. *Dados*; Rus. *Kosti*), cubical pieces of bone or ivory, marked with dots on each of their sides from 1 to 6, according to the number of the face. They are used in various games of chance, by being thrown from a box.

Dicker (probably from *δεκα, ten*), in our old writers, is used to denote the number or quantity of ten, particularly ten hides or skins, of which twenty made a last; and is sometimes applied to other things, as a dicker of gloves or ten pairs, a dicker of iron or ten bars, etc.

Dictionary, in its original acceptation, is the arranging of all the words of a language according to the order of the alphabet, and annexing a definition or explanation to each word. When arts and sciences began to be improved and extended, the multiplicity of technical terms rendered it necessary to compile dictionaries, either of science in general, or of particular sciences, according to the views of the compiler. Hence dictionaries may be said to be of two sorts, of *words*, and of *facts* or *things*; in the former sense, the term *dictionary* being equivalent to *lexicon*, in the latter, to *encyclopædia*. A standard dictionary of the Chinese language containing about 40,000 characters, most of them hieroglyphic, or rude representations, somewhat like our signs of the zodiac, was perfected by Pa-out-she, who lived about 1100 B. C.—*Morrison*. Cyclopædias were compiled in the fifteenth and sixteenth centuries. The first dictionary of celebrity, perhaps the first, is by Ambrose Calepini, a Venetian friar, in Latin; he wrote one in eight languages, about A. D. 1500.—*Niceron*. The *Lexicon Heptaglotton* was published by Edmund Castell, in 1659. Bayle's dictionary was published in 1696, "the first work of the kind in which a man may learn to think."—*Voltaire*. Chambers' Cyclopædia, the first dictionary of the circle of the arts, sciences, etc., was published in 1728. The great dictionary of the English language, by Samuel Johnson, appeared in 1755. Francis Grose's Dictionary of the Vulgar Tongue, was compiled in 1768; and from this period numerous dictionaries have been added to our store of literature. Noah Webster's great American Dictionary of the English language, in two quarto volumes, was first published at New Haven in 1828. It was reprinted in London in 1832. Numerous abridgments and new editions of the whole work have since been published in London and New York.—*Haydn*.

Die (Fr. *dé*), in coinage, is the instrument by which the impressions are given upon the various denominations of coin. The following is an outline of the *die manufacture:* The engraver selects a forged plug of the best cast steel of proper dimensions for his intended work; and having carefully annealed it, and turned its surfaces smooth in the lathe, proceeds to engrave upon it the intended device for the coin. When this is perfect the letters are put in, and the circularity and size duly adjusted; it is then hardened, and is termed a *matrix*. Another plug of soft steel is now selected; and the matrix being carefully adjusted upon it, they are placed under a very powerful fly-press, and two or three blows so directed as to commence an impression of the matrix upon the plug; this is then annealed, and the operation repeated till the plug receives a perfect impression of the work upon the matrix. This impression is of course in *relief*, the original work upon the matrix being indented, and produces what is termed the *punch*. This, being duly shaped in the lathe, is hardened, and is employed in the production of impressions in soft steel or *dies*, which, being properly turned or hardened, are exact *facsimiles* of the original matrix, and are used in the process of *coinage*. When a pair of dies are made of good steel, duly hardened and tempered, and are carefully used, they will sometimes yield from two to three hundred thousand impressions before they become so

far worn or injured as to require to be removed from the coining presses.

Dieppe, a commune and seaport town of France, capital arrondissement, Department Seine Inferieure, at the mouth of the Arques on the English Channel, and 38 miles north of Rouen, and by railroad 125 miles from Paris. Lat. of light-house, 49° 55′ 7″ north, long. 1° 5′ 2″ east. Population 17,000. It is divided into the town proper, and the suburb le Pollet, which communicate by a flying bridge, both being well furnished with water from an aqueduct supplying nearly 200 fountains. Principal edifices, an old castle on a cliff west of the town, 2 churches, the town hall, commune college, theatre, public library, baths, and a school of navigation. The port, inclosed by two jetties, and bordered by quays, can accommodate from 60 to 80 vessels under 600 tons; but it dries at low water, and it is otherwise inconvenient. Dieppe has an active general trade, ship-building docks, manufactories of ivory wares, watches, lace, etc., and it is a packet station, communicating daily, by steamboats with Brighton; the traffic having increased considerably since the opening of the Paris and Rouen Railroad. It is also resorted to by summer visitors; but its inhabitants depend chiefly on its fisheries of herrings, mackerel, and oysters.

Digit, or *Monade*, in *Arithmetic*, any integer under 10, as, 1, 2, 3, 4, 5, 6, 7, 8, 9, and by means of which all numbers are expressed. *Digit*, in *Astronomy*, the twelfth part of the diameter of the sun or moon; a term used to express the quantity of an eclipse. Thus, an eclipse is said to be of six digits when one half of the disk is hid.

Dike, or *Dyke*, in its primary sense, denotes a ditch or drain. The word seems to have been formed from the verb *to dig*; though others derive it from the Dutch *dijk*, a dam, sea-bank, or wall. It is generally used to signify a work of stone, timber, or fascines, raised to oppose the entrance or passage of the waters of the sea, a river, lake or the like. Junius and Ménage conceive the Flemish to have borrowed their word from the Greek τεῖχος, *wall*; but Guichard derives it from the Hebrew *daghah*.

Dimity (French, *Basin*; Italian, *Dobletto*; Spanish, *Dimite*), a species of cross-barred stuff entirely composed of cotton, similar in fabric to fustian. Dimity was originally imported from India. Dr. Johnson calls it *dimmity*, and describes it as a kind of fustian. The distinction between fustian and dimity seems to be, that the former designates a common twilled cotton cloth of a stout fabric, which receives no ornament in the loom, but is most frequently dyed after being woven. Dimity is also a stout cotton cloth, but not usually of so thick a texture; and is ornamented in the loom, either with raised stripes or fancy figures, is seldom dyed, but usually worn white, as for bed and bedroom furniture. The striped dimities are the most common, they require less labor in weaving, than the others; and the mounting of the loom being more simple, and consequently less expensive, they can be sold at much lower rates.

Dime, a silver coin of the United States, weighing, according to the act of Congress of 1853, 38 40-100 grains. The half-dime weighing one half, or 19 20-100 grains; both legal tenders to the amount of five dollars. See Bankers' *Magazine*, *New York*, 1853–1856.

Dipping-Needle, a magnetic needle that dips or inclines to the earth; an instrument for ascertaining the amount of the magnetic inclination at the different points of the earth's surface. This fact was first observed by one Robert Norman, an Englishman, and a maker of compasses for mariners, about the year 1576, who, finding that he was always obliged to counterbalance that end which turns to the north by a bit of wax or such other substance, though the balance had been ever so exact before, published an account of his discovery as a matter of importance. The subject was instantly attended to; and instruments were not only contrived for ascertaining the quantity of the dip, but various speculations were formed concerning the cause of so surprising a phenomenon. The general phenomena of the dipping-needle are, that in the equatorial regions it remains in a horizontal position, but as we recede from the equator toward either pole, it dips; the north end, if we go northward, and the south end, if we proceed southward; and the further north or south we go, the greater is the inclination. Its inclination is likewise found to vary very considerably at different times in different places of the earth.—E. B.

In the most improved form of construction of the dipping-needle, the axis, instead of being a cylinder, is a knife-edge, resting perpendicularly, like the supports of a pendulum, on two agate planes. A needle thus supported, however, must necessarily make small oscillations; consequently it must be so adjusted that when it points in the direction of the magnetic force, the knife edges may be perpendicular to the agate planes. The mean value of the angle of the dip must therefore be known previously to its construction; but it is the best adapted, on account of its delicacy, for ascertaining the minute variations of the dip at the same place. The angle of the dip, like that of the variation, changes its value when at the same place, following, of course, the motion of the magnetic poles, which, from the observations made by Scoresby, Parry, Ross, and others, in high latitudes, appear to have a motion westward, the annual amount of which is about 11′ 4″. In the summer of 1831, Commander Ross, in an excursion from the vessel in which his party were so long detained in the polar seas, reached a spot on the continent of North America, which had been calculated to be the position of the magnetic pole. There he found the dip of the needle to be 89° 59′, within one minute of the vertical; and compass-needles suspended in the most delicate manner possible exhibited no polarity whatever. The latitude of this spot is 70° 5′ 17″ north, and its longitude 96° 46′ 45″ west. For a description of some other forms of the dipping-needle, see Brewster's *Treatise on Magnetism*.

Diplomacy, in its most restricted sense, is used to express the art of conducting negotiations or arranging treaties between nations by means of their foreign ministers, or written correspondence; but in its most extended signification, it embraces the whole science of negotiation with foreign states as founded on public law, positive engagements, or an enlightened view of the interests of each. But, upon this subject, we can not do better than embody in our pages some remarks from the Introduction of Marten's *Manuel Diplomatique*, in which a distinct view is exhibited of the importance and main objects of diplomacy. Diplomacy, says that able statesman, must be placed in the foremost rank of the useful sciences. The fate of nations, in the present state of the world, depends greatly on their relations with others; and these again are materially influenced and determined by the nature of their foreign policy, that is, by the success with which they have cultivated and applied the principles of this science. Diplomacy embraces—1. The law of nations, by which the relations of one state with another are determined both in peace and war. 2. The political principles of individual states, as deduced from a regard to their peculiar interests; and a knowledge of the way in which these interests may be reconciled with, and made subservient to, the law of nations. 3. An acquaintance with the privileges and duties of diplomatic agents. 4. The conduct of negotiations, or the course to be pursued in treating of the interests of different states. 5. The moral and physical statistics of each power. 6. The political and military history of the states having diplomatic relations; and the projects, tendency, and policy of their respective governments. 7. The various sys-

tems of government, supremacy, concession, retention, equilibrium, centralization, confederacy, etc., that may be brought into operation. 8. The art of composing diplomatic despatches. To this multifarious information the diplomatist should unite the powers of calculation and application peculiar to strong minds—the "tact des convenances," which may be felt, but can not be expressed—circumspection, address, and perfect integrity. The combination of these various qualities will procure for the diplomatist such a character for sagacity, rectitude, and straightforwardness, and will, sooner or later, obtain for him an ascendency over the minds of others, and give great weight to his opinions.

It must be remembered that the diplomacy of every nation is more or less within the range of casualties; being subject to the versatility inseparable from human affairs, the fickleness and passions of man, and the uncertainty of events—an unlooked-for death, a change of ministry, treacherous designs, undue influence from any quarter, a false calculation, corruption—each of these causes may change the policy or course of a government; and this will more or less affect every other government, in proportion to the extent of its influence. In addition to these numerous causes of variation, if ambitious projects be entertained by any great power, diplomacy becomes still more intricate and difficult. Every state desires to be protected against the storm which its rulers imagine they can prognosticate, and of whose bursting they are apprehensive. Again, we must remark, that the schemes of a government, how admirably soever contrived, have often miscarried, either from subordinate persons or those intrusted with putting them in execution having misapplied or misunderstood the instructions of their superiors.

From what has been said, it will be easily understood, that in diplomacy, false estimates are frequently formed of the merits of original plans or designs from looking at their results only. The diplomatist is, of course, exempted from all responsibility in regard to operations mixed up with the events of war—he is answerable only for the success of his projects under the conditions on which he proposed them.

A diplomatist of moderate capacity, if favored by circumstances, may accomplish much more than the man of genius who has to contend with adverse fortune; but this difference of success makes no change in their relative ability, and those acquainted with the circumstances readily discriminate between sagacity and accident.

Diplomacy has been practiced in substance ever since mankind have been formed into independent states, though it is difficult to ascertain the precise period at which the term came into use. The system, however, of the regular and uninterrupted residence of foreign ministers during peace at the European courts, as at present practiced, is said to have originated with the Cardinal de Richelieu. Before that time embassies had been only sent on special occasions, but attended with much greater show and retinue than has been the fashion in modern times; while the substantial business of states at the neighboring courts was transacted by agents of a lower stamp and character. Diplomatic agents are now ranked, in Europe, in the following order, according to the regulations of the Congress of Vienna:—1. Ambassadors; 2. Envoys extraordinary and ministers plenipotentiary; 3. Ministers resident; 4. Chargés des affaires; 5. Secretaries of legation and attachés; the latter, however, have no precise diplomatic character, and are only considered by courtesy as attached to the legation.

Among the best works on this important subject are the *Traité complet de Diplomatie, ou Theorie generale des Relations exterieures des Puissances de l'Europe*, par M. LE COMTE DE GARDEN (Paris, 1833), 3 vols. 8vo.; and *De Wicquefort's Ambassadeur et ces Fonctions* (Ed. Opt.) 1746, 12 vols., 4to. See also the *Manuel Diplomatique*, by VON MARTEN (Paris, 1825); FLASSAN'S *Hist. Gen et Raisonn. de la Diplom. Française*, 7 vols. (Paris, 1811), and VON MARTEN'S (senior) *Grundriss einer Diplom. Geschichte der Europ. Staatshandel, etc.*, (Hamburg, 8vo.) BRANDE'S *Enc.* See *N. A. Rev.*, xxxix. 802 (by E. EVERETT); xxiv., p. 82 (by T. PITKIN); *U. S. Lit. Gaz.*, v., p. 1 (by C. CUSHING); FRASER'S *Magazine*, xli., p. 605; *Foreign Quarterly*, xiii., p. 1.

Discharge of Seamen. Whenever a ship or vessel belonging to a citizen of the United States is sold in a foreign country, and her company discharged, or when a seaman or mariner, a citizen of the United States, is with his own consent discharged in a foreign country, it is the duty of the master or commander to produce to the consular officer the certified list of his ship's company, and pay to such consular officer for every seaman or mariner so discharged, being designated on such list as a citizen of the United States, three months' pay, over and above the wages which may then be due to such mariner or seaman, two thirds thereof to be paid by such consular officer to each seaman or mariner so discharged, upon his engagement on board of any vessel to return to the United States, and the other remaining third to be retained for the purpose of creating a fund for the payment of the passages of seamen or mariners, citizens of the United States, who may be desirous of returning to the United States, and for the maintenance of American seamen who may be destitute, and may be in such foreign port. The several sums retained for the seamen's fund are to be accounted for to the Treasury Department by the consular officers receiving the same.—*Statutes at Large*, U. S. See HUNT'S *Mag.*, xi., p. 344; *Ibid.*, p. 230; KENT'S *Commentaries*; PARSONS' *Mercantile Law*.

According to the laws of the United States, consular officers are not to discharge a seaman for slight or venial offenses, and certainly not for a single offense unless of a very aggravated character. If the charge be negligence, drunkenness, disobedience, or dishonesty, the question should be, whether the misconduct was of such a degree as to show a habitual inattention to or unfitness for duty, having always in view the particular station of the party and the nature of his duty. If the allegation be that the seaman is a dangerous person, from a spirit of insubordination, or hostility to the master, it has been held that the master must show that the danger is such as would affect the mind of a man of ordinary firmness. But even in cases of aggravated offenses, or of a continued course of conduct which would justify the discharge of a seaman, if he repents and offers amends, the principle which is always operating in his favor against all kinds of forfeiture, with very rare exceptions, intervenes to restore him to his rights, and he is ordinarily entitled to be received again on board. To deprive a mariner of the benefit of this rule, it should appear that the misconduct amounts to a radical disqualification, as dishonesty and habitual drunkenness in a steward; or that the party is really dangerous to the peace and safety of the ship. These principles receive additional force from the general policy of the laws of the United States, which discountenances the discharge of seamen in foreign ports. The various enactments in respect to destitute seamen sufficiently show the paternal solicitude of the government for the preservation and protection of the seamen of the country.—*Manual for Consuls*. See DESERTION BY SEAMEN.

"The right of the seaman to be brought back to his own home, is very jealously guarded by our laws. The master should always present his shipping articles to the consul, or commercial agent of the United States, at every foreign port which he visits, but does not seem to be required by law to do this, unless the consul desires it. He must, however, present them to the first boarding officer on his arrival at a home port.

And if upon an arrival at a home port from a foreign voyage, it appears that any of the seamen are missing, the master must account for their absence. If he discharges a seaman abroad without his consent, he must pay to the American consul three months' wages, of which the consul gives two to the seaman, and remits one to the Treasury of the United States to form a fund for bringing home seamen from abroad. This obligation does not apply when the voyage is necessarily broken up by a wreck, or similar misfortune. But proper measures must be taken to repair the ship, if possible, or to obtain the restoration, if captured. And the seaman may hold on for a reasonable time for this purpose, and if discharged before, may claim the extra wages. Our consuls and commercial agents may authorize the dicharge of a seaman abroad for gross misconduct, and he then has no claim for the extra wages. They may also send our seamen home in American ships, which are bound to bring them for a compensation not exceeding ten dollars each, and the seamen so sent must work and obey as if originally shipped. Besides this, if a master discharges a seaman in a foreign port, he is liable to a fine of 500 dollars, or six months' imprisonment. And a seaman may recover full indemnity or compensation for his loss of time, or expenses incurred by reason of such discharge."—PARSONS' *Mercantile Law*, p. 393.

Discount, a sum of money deducted from a debt in consideration of its being paid before the usual or stipulated time. The circumstance on which its fairness is founded is, that the creditor, by receiving his money before it comes due, has the interest of the money during the interval. Consequently he should only receive so much as, put out to interest during the period in question, will realize the amount of his debt at the time when it would have become due. For Instance, £100 is to be paid at the end of 3 years; what should be paid now, interest being 4 per cent.? Here it is evident, that if we divide the whole debt into 112 (or 100+3×4) parts, 100 of these parts will make the other 12 in three years (at simple interest), whence the payment now due is the 112th part of £10,000, or £89 5s. 9d. The rule is, *n* being the number of years (a fraction, or number and fraction), *r* the rate per cent, and D the sum due,

$$\text{Present value} = \frac{100\,D}{100+nr};$$

$$\text{Discount} = \frac{D\,n\,r}{100+nr}.$$

In practice, it is usual not to find the real discount, but to allow interest on the whole debt in the shape of abatement. Thus it would be considered that, in the preceding example, three years' discount upon £100, at 4 per cent., is £12, or £88 would be considered as the present value.

In transactions which usually proceed on compound interest, as in valuing leases, annuities, etc., the principle of discount is strictly preserved. The present value in the preceding case is, in its most usual form, $\frac{D}{(1+\rho)^n}$, and the discount $D-\frac{D}{(1+\rho)^n}$; where ρ is the rate per pound (not per cent.: thus it is ·04 for 4 per cent.). But recourse is usually had to the tables of present values which accompany all works on annuities or compound interest.

The name of discount is also applied to certain trade allowances upon the nominal prices of goods. In some branches of trade these allowances vary according to the circumstances which affect the markets; and what is called discount is in fact occasioned by fluctuations in prices which it is convenient to maintain nominally at certain rates. This system is practiced in some branches of wholesale haberdashery business, and we have before us a list of prices furnished to buyers of steam tools by a manufacturer of tools at Sheffield, in which the nominal price of each article is continued the same at which it has stood for many years, while to every different species of tool there is applied a different and a fluctuating rate of discount, this fluctuation constituting in fact a difference of price between one period and another. The rates of discount in this list vary from 5 to 20 per cent. upon the nominal prices of the different articles.

The term discount is also employed to signify other mercantile allowances, such for example as the abatement of 12 per cent. made upon the balances which underwriters, or insurers of sea risks, receive at the end of the year from the brokers by whom the insurances have been effected. The word discount is further used, in contradistinction to premium, to denote the diminution in value of securities which are sold according to a fixed nominal value, or according to the price they may have originally cost. If, for example, a share in a canal company, upon which £100 has been paid, is sold in the market for £98, the value of the share is stated to be at 2 per cent. discount.—BOUN.

Discriminating Duties. The discriminating duty of 10 per cent., under the 11th section of the U. S. tariff law of 1842, is an additional duty of 10 per cent. on the rate of legal duties chargeable on the imports, and not a duty of 10 per cent. on the value of the goods; as, for example, an import chargeable with a regular duty of 20 per cent., and also with the discriminating duty of 10 per cent., under the 11th section of tariff act of 1842, would become chargeable with a duty of 22 per cent., and not 30 per cent.

It has been decided that a discriminating duty exacted on a Spanish vessel clearing from a port of the United States for Cuba or Porto Rico, under the 2d section of the act of 30th June, 1834, "concerning tonnage duty on Spanish vessels," can not be refunded, although the vessel may never arrive at her destination, being wrecked on the voyage.—*Manual for Consuls.*

Dispensary, a place where medicines are made up and distributed; but used more generally for a charitable institution, where the poor are supplied with medicines and advice. Institutions of this nature are of comparatively recent origin; though they are now to be met with in every town of any importance, both in this country and in Europe. To every dispensary there are always attached one or more physicians, surgeons, and apothecaries, whose duty it is respectively to prescribe and dispense medicines to the poor, and to visit them in their own houses in the event of their being too ill to attend personally at the institution. In most cases dispensaries are supported by voluntary contributions.

Distaff, the staff to which hemp, flax, wool, or other substances to be spun, is fastened. The art of spinning with it at the small wheel, first taught to English women by Anthony Bonavisa, an Italian, 20 Hen. VII., 1505.—STOWE. The distaff is used as an emblem of the female sex.—HOWELL. The distaff formerly occupied the place in the drawing-room or *boudoir* of the English ladies that the harp or piano does now.

District of Columbia occupies a space of 60 square miles, and is situated on the left bank of the Potomac River, 120 miles from its entrance into Chesapeake Bay, and at the head of navigation. The territory was formerly 10 miles square, and was ceded by the States of Maryland and Virginia for the purpose of becoming the seat of government of the United States. The portion west of the Potomac was retroceded to Virginia in 1846. The District, which is under the immediate jurisdiction of Congress, contains the cities of Washington and Georgetown, and is entirely comprehended in the county of Washington. Population in 1800, 14,093; 1810, 24,023; 1820, 33,039; 1830, 39,834; 1840, 43,712; and in 1850, 51,687: whites, 38,027; free colored, 9,973; and 3,687 slaves.

In 1850, there were 16,267 acres of land improved, and 11,187 of unimproved land, in farms. Cash value

of farms, $1,780,460; and the value of implements and machinery, $40,320.

Live Stock.—Horses, 824; asses and mules, 57; milch cows, 813; working oxen, 104; other cattle, 123; sheep, 150; swine, 1,635; value of live stock, $71,643.

Agricultural Products, etc.—Wheat, 17,870 bushels; rye, 5,509; Indian corn, 65,280; oats, 8,184; barley, 75; buckwheat, 378; peas and beans, 7,754; potatoes, 28,292; sweet potatoes, 3,497. Products of the orchard, $14,843. Produce of market gardens, $67,222. Pounds of butter made, 14,872; of cheese, 1,500 pounds. Hay, 2,279 tons. Tobacco, 7,800 pounds; wool, 525. Clover seed, 3 bushels. Hops, 15 pounds; beeswax and honey, 550. Wine, 803 gallons. Value of home-made manufactures, $2,075; and the value of slaughtered animals, $9,038.

Georgetown is the principal port, and is a port of entry, situated at the head of the Potomac navigation, 120 miles from the sea, and is divided from Washington by Rock Creek. It is built on a range of hills, and commands a magnificent landscape. The city is one of the handsomest in the country, and the seat of several well-known educational establishments, and is the residence of many persons of distinction. Its manufactures are increasing, and perhaps no other place is so celebrated for its fisheries of shad and herring, thousands of barrels of which are packed in the fishing season. The Alexandria branch of the Chesapeake and Ohio Canal here crosses the Potomac on a magnificent aqueduct, 1,446 feet long, and 86 feet above the ordinary tide. The tonnage of Georgetown in 1856, was 20,966 tons.

Alexandria, formerly in the District of Columbia, is situated 6 miles below Washington. It has a good harbor, and considerable trade in flour and coal. Since 1850 the commerce has nearly doubled. The tonnage in 1856 was 7,221 tons.

The foreign commerce of the District has been decreasing since 1831, and is now confined to the imports of West India produce.

FOREIGN COMMERCE OF THE DISTRICT OF COLUMBIA, FROM OCTOBER 1, 1820, TO JULY 1, 1856. INCLUDING ALEXANDRIA TO JUNE 30, 1846.

Years ending.	Exports.			Imports.	Tonnage Cleared.		District Tonnage.	
	Domestic.	Foreign.	Total.	Total.	American.	Foreign.	Registered.	Enrolled and Licensed.
Sept. 30, 1821	$843,609	$49,843	$893,452	$893,984	15,035	....	8,492	10,268
1822	1,031,475	11,955	1,043,430	470,618	15,025	173	....	....
1823	779,592	21,703	801,295	275,033	12,586	123	....	....
1824	696,858	25,559	722,405	879,958	12,167	221	....	....
1825	749,150	9,208	758,367	277,297	12,342	....	....	....
1826	620,891	3,340	624,231	269,630	11,664	59	....	....
1827	1,182,142	....	1,182,142	327,623	17,349	485	....	....
1828	705,581	1,862	707,443	181,665	18,269	990	....	....
1829	914,285	13,812	928,097	205,021	18,466	261	....	....
1830	746,591	7,382	753,978	168,550	13,808	....	....	....
Total	$8,274,588	$145,247	$8,419,835	$2,955,824	186,706	2,317	....	....
Sept. 30, 1831	1,207,517	13,458	1,220,975	193,555	19,862	878	6,072	8,749
1832	1,146,066	8,408	1,154,474	188,047	14,748	3,089	....	....
1833	981,866	21,450	1,002,816	150,046	12,902	2,140	....	....
1834	806,902	13,492	820,394	196,254	10,792	2,289	....	....
1835	514,571	3,068	517,639	111,195	9,296	1,138	....	....
1836	323,092	3,182	326,874	111,419	4,650	512	....	....
1837	467,766	1,443	469,209	109,225	8,894	3,800	....	....
1838	866,760	6,358	873,118	123,749	4,464	1,068	....	....
1839	497,965	5,752	503,717	182,511	6,693	1,547	....	....
1840	751,429	2,494	753,923	119,552	12,815	2,089	....	....
Total	$7,064,934	$79,100	$7,143,184	$1,427,552	99,681	18,920	....	....
Sept. 30, 1841	764,835	4,496	769,331	77,263	11,472	3,861	8,493	7,916
1842	498,320	2,855	501,675	29,056	7,055	4,197	....	....
9 mos. 1843*	284,763	185	284,948	95,442	5,242	8,001	....	....
June 30, 1844	550,298	9,254	559,552	65,628	9,801	8,983	....	....
1845	509,429	735	510,164	70,529	10,772	2,529	....	....
1846	913,701	1,213	914,914	79,770	15,890	8,502	....	....
1847	124,269	....	124,269	25,049	9,128	293	....	....
1848	88,666	....	88,666	25,983	1,552	....	....	....
1849	111,607	....	111,607	35,668	2,920	....	....	....
1850	80,888	200	80,588	59,819	1,520	200	....	....
Total	$3,921,776	$18,988	$3,940,714	$564,162	66,747	21,071	....	....
June 30, 1851	72,560	....	72,560	80,813	1,859	....	2,908	20,001
1852	79,005	....	79,005	54,142	2,014	....	....	....
1853	75,456	....	75,456	71,494	1,681	....	....	....
1854	87,992	....	87,992	48,103	841	....	....	....
1855	86,143	....	86,143	24,699	912	....	....	....
1856	20,001	....	20,001	55,017	840	....	....	....

* Nine months to June 30, and the fiscal year from this time begins July 1.

Distillation (Lat.), the evaporation and subsequent condensation of liquids by means of a *still* and *refrigeratory*, or a *retort* and *receiver*. The discovery of the art of distillation is generally ascribed to the alchemists; but it was doubtless known in more remote ages to the Arabians, and by them probably derived from nations further east. The process of distillation, though in continual use in the chemical and pharmaceutical laboratory, is carried on upon the most extensive scale for the production of ardent spirits in the *distilleries*. Under the words ALCOHOL, BRANDY, FERMENTATION, WINE, etc., will be found some details bearing upon the nature, sources, and production of spirituous liquors; in the present article, therefore, we shall limit ourselves to an outline of the different processes which are conducted in the distillery. There are two distinct operations in the production of ardent spirits: the one is the conversion of certain vegetable principles into alcohol; and the other, the separation of the alcohol from the other substances with which it is necessarily blended during its production. The vegetable principle which is essential to the formation of alcohol is *sugar*; and this is sometimes used *directly*, as where molasses and analogous saccharine products are subjected to immediate fermentation; or it is *indirectly* obtained by subjecting amylaceous grains to certain processes, by which the starch they contain is first converted into sugar, and then that sugar afterward alcoholized.

In many distilleries the latter alternative is adopted; and various kinds of grain, but chiefly barley, wheat, and rye, with more or less malt, are subjected to the operation of *mashing*. For this purpose the ground grain and the bruised malt are duly mixed, and infused

under constant agitation in a proper quantity of hot water in the *mash-tun;* the wort is then run off, and fresh water added, till the soluble materials of the grain are extracted. In this way the mixed worts or *wash* is obtained, which is afterward to be subjected to fermentation. When the wash is adjusted as to density, it is run into the fermenting-vats, where, mixed with a small quantity of yeast, it is subjected to the process of fermentation, which continues from 6 to 10 or 12 days—the time required for its completion varying. The *proof spirit* of commerce, and that of the Pharmacopœia, is generally stated to be of the specific gravity of 0·920 at 62° and is considered as a mixture of *equal weights of absolute alcohol at the specific gravity of* 0·791 *at* 60° *and of water.* The *rectified spirit* of commerce, or rather that of the Pharmacopœia, is directed to be of the specific gravity of 0·833 at 60°, and may be regarded as a mixture of about 82 parts of absolute alcohol and 18 of water.—BRANDE's *Cyclo.* See also *Ency. Brit.*, 8th edition.

Divan (Arabic *diwan*), among the Arabs, Persians, and Turks, is a word that bears very various significations. It primarily denoted a book of accounts, a muster-roll of troops, etc.; and hence came to be applied to a collection of lyric poems (called *gazelles*) arranged in a kind of alphabetical order. Thus we have the *Divan of Saci*, the *Divan of Hafiz*, etc.; a practice which has been imitated by Goethe in his *Westöstlicher Divan*, a collection of poems in the Oriental style. The word among the Orientals denotes also a council-chamber, a tribunal of justice, and in like manner is applied to the general council of state. Under the khalifs of Bagdad, the diwan was a court of justice over which the khalif presided in person. At Constantinople in the present day the term is used to denote the great council of the empire. It is also a common application among the Turks for a saloon or chamber of reception, or in which business is transacted, or used as a place of occasional repose. The divan more properly is a kind of stage, raised about a foot above the floor of the saloon, covered with rich tapestry, and furnished with a number of embroidered cushions leaning against the wall; and on this the master of the house is seated when he receives visitors. Hence the word is frequently applied by other nations to a kind of public coffee-room, furnished in a manner somewhat similar.—E. B.

Divi Divi, the commercial name of the pod of the *Cæsalpinia coriaria*, a leguminous plant, found in low marshy situations on the north coast of South America, and in some parts of the West Indies. It is used both for dyeing and tanning, but chiefly for the latter purpose. The pod is from 2 to 3 inches in length by ¾ inch in breadth, and when in perfection is of a rich brown color. It contains a few small seeds; but the only valuable portion is a resinous matter, of a bright yellow color, easily pulverized, which lies betwixt the outer skin and the husk that incloses the seed, and contains a large quantity of tannin. About 9-10ths of the imports into England come to Liverpool, where the following quantities were received during the last four years, viz.: In 1849, 3660 tons; 1850, 2700 tons; 1851, 2280 tons; 1852, 2030 tons. It might be supposed from this statement that the article was going out of favor; but such is not the case. When, however, the price in England is under £10 per ton, the imports decrease; and it has latterly been below this limit. Recently, however, its price has risen considerably; and with this rise the imports may be expected to increase. Maracaibo, Rio de la Hache, and Savanilla are almost the only places whence this article is imported. That brought from Maracaibo is the best, that from Savanilla the most inferior. During the last 4 years prices have ranged between £8 10*s.* and £14 per ton for Rio Hache and Maracaibo, and £7 and £10 15*s.* for Savanilla, the highest quotations being now current (September, 1853). Divi Divi is used by dyers, not for the coloring principle which it contains, but for its strong astringent qualities as a mordant. For this purpose it is at present used, to some extent, instead of sumach, which is scarce and dear; and hence the recent high price of the article. In tanning, it accelerates the process, and imparts to the leather a clean and healthy appearance.

Dividend, in commerce, is a word which has two very distinct meanings. In its more general employment it is understood to express the money which is divided, *pro rata*, among the creditors of a bankrupt's estate, out of the amount realized from his assets. The other meaning attached to the word dividend signifies the periodical division of profits among shareholders of insurance, railroad, bank, and other corporations.

Diving-bell. First mentioned, though obscurely, by Aristotle, 325 B. C. The diving-bell was first used in Europe A. D. 1509. It is said to have been used on the coast of Mull, in searching for the wreck of part of the Spanish Armada, before A. D. 1669. Halley greatly improved this machine, and was, it is said, the first who, by means of a diving-bell, set his foot on dry ground at the bottom of the sea. Smeaton applied the condensing-pump to force down air. Mr. Spalding and his assistants going down in a diving-bell in Ireland were drowned, June 1, 1783. The *Royal George* man-of-war, which was sunk off Portsmouth in 1782, was first surveyed, by means of a diving-bell, in May, 1817. Lately, and particularly in 1840, it has been employed in sub-marine surveys. The first diving-*belle* was the wife of Captain Morris, at Plymouth, who descended in one a few years ago.—HAYDN. It is an apparatus by means of which persons are let down and enabled to remain under water, and execute various operations; such as leveling or clearing the bottom of harbors, preparing a foundation for buildings, bringing up sunken materials, etc. The principle of the diving-bell depends on the impenetrability of atmospheric air, and may be illustrated by a very familiar experiment. Bring the edge of an inverted tumbler, or any close vessel, to the surface of the water, and, keeping the mouth horizontal, press it down in the water. It will be seen that, though some portions of water ascend into the tumbler, the greater part of the space remains empty, or only filled with air; and any object placed in this space, though surrounded on all sides with water, would remain perfectly dry. In fact, the quantity of air remains the same, but is compressed into a smaller volume, in proportion to the depth to which it is made to descend. Now, if we conceive a vessel of wood or iron, sufficiently capacious to hold several men, to be suspended by a chain, and lowered, by means of weights attached to it, to any moderate depth under water, it is evident that they may remain there for a considerable time, and perform any operation that could be executed on land in the same confined space. The machine, however, as thus described, is liable to two great defects, which must be obviated by other contrivances before any great advantages can be derived from it. In the first place, as the air by its compressibility allows the water to enter the lower part of the bell, the dry space is not only diminished, but the bottom on which the bell rests, and where the operations are to be carried on, is also covered with water to a proportional depth. In the second place, the air within the bell, by the repeated respiration, soon becomes mephitic, and unfit to support life; so that it is necessary to elevate the apparatus after short intervals to admit a fresh supply.

It is not known at what period the diving-bell was invented. Beckman, in his "History of Inventions," mentions that at Toledo, in the 16th century, two Greeks, in the presence of the emperor Charles V. and several thousand spectators, let themselves down under water in a large inverted kettle, with a burning light, and rose again without being wet. George Sinclair, the author of "Satan's Invisible World Displayed," in his work entitled "Ars Nova et Magna Gravitatis et Le-

vitatis," mentions some attempts that were made about the year 1665 to raise, by means of a diving-bell, the treasure from the ships of the Invincible Armada that went to the bottom near the Isle of Mull, in the Hebrides, and describes the kind of bell that was employed. But on account of the defects to which we have alluded, the diving-bell continued to be of very little use till the time of Dr. Halley, who contrived a means of introducing fresh air into the bell while under water, and of allowing the mephitic or breathed air to escape. The bell he made use of he describes as having been of wood, containing about 60 cubic feet in its cavity, and of the form of a truncated cone, whose diameter at the top was 3 feet, and at the bottom 5. This was coated with lead, so heavy that it could sink empty, and the weight so distributed about its bottom that it could only descend in a perpendicular direction. In the top a clear glass was fixed, to let in the light from above, and a cock to let out the air that had been breathed. To supply the air to the bell, he caused a couple of barrels, of about 36 gallons each, to be cased with lead, so as to sink empty, each of them having a bung-hole in its lower part, to let in the water as the air in them condensed on their descent, and to let it out again when they were drawn up full from below. To a hole in the uppermost part of the barrels a trunk or hose was fixed, long enough to fall below the bung-hole, and kept down by a weight, so that no air could escape by the hose till its end was raised up. The barrels thus prepared were let down by the side of the bell. A man stationed on a stage suspended from the bell was ready to take up the hose; and as soon as their ends were brought to the surface of the water in the barrels, all the air that was included in the upper parts of them, was blown with great violence into the bell, while the water entered at the bung-holes below and filled the barrels. By means of this contrivance the air was not only kept fresh, but another great advantage was gained, namely, that by admitting a sufficient quantity of it the whole of the water was expelled from the inside of the bell, and the bottom of the sea laid dry.

By means of this contrivance for the admission of fresh air, it was now possible to remain for any length of time under water; but the use of the apparatus was still found to be attended with some inconveniences, and even considerable danger. The divers within the bell having no power over it, its rising or sinking depends entirely upon the people at the surface of the water; and as the bell, even when in the water, has considerable weight, there is always a possibility of the chain by which it is raised breaking, which would inevitably be attended with the destruction of the divers. Another danger, still more to be apprehended, is, that if the mouth of the bell, in its descent, should come upon a sunken ship, or a rock projecting abruptly from the bottom, it might be overset before any signal could be given to those above. These defects were obviated by the very ingenious contrivances of Mr. Spalding of Edinburg. In order to avoid the risk of being upset when the bell descends on a rocky or uneven bottom, he suspended a considerable weight, which he called a *balance-weight*, below the bell, by a rope passing over a pulley fixed in the inside; and the other weights attached to the bell being so adjusted that they could not sink it without the balance-weight, as soon as the latter rested on the ground the bell remained suspended in the water. In case of the mouth of the bell being caught by any obstacle, the balance-weight is immediately lowered, till it rests on the bottom; and as the bell, when thus relieved, is buoyant, the divers, having disengaged it from the rock, have it in their power either to descend, by pulling in the rope, or, by allowing it to run, to ascend to the surface. Another contrivance of Mr. Spalding deserves mention. He divided the bell into two compartments, the one above the other, and communicating by means of a stop-cock. The divers are stationed in the lower one, and the weights are so adjusted that when the cavity above is empty, the bell is buoyant; when it is filled with water, the bell sinks. Immediately above the partition are some slits in the sides of the bell; and at the top is an orifice, which can be opened or shut at pleasure. Suppose, now, this orifice being open, the bell is required to be lowered; as it descends, the water enters at the slits, and the air escapes by the orifice. When the apparatus is entirely under water, and the cavity consequently completely filled, let the orifice be shut. The bell will now continue to descend; but if the stop-cock communicating with the upper compartment be opened, the air will rush from the under to the upper, and displace a quantity of the water, and the apparatus will be lightened by the whole of the water so displaced. The divers have it thus in their power to regulate the descent or rise as they please. By admitting a certain quantity of air into the upper cavity, the descent of the bell is arrested; by admitting a greater quantity, it becomes buoyant, and rises to the top. This method of constructing the diving-bell has not, however, been adopted.

The greatest improvement on the diving-bell, since that of Halley, was made by the celebrated Mr. Smeaton, and consists in forcing down a continued stream of air, by means of an air-pump, through a flexible tube; and this plan is now always adopted. In the year 1788, Smeaton constructed a diving-bell, to be used in the operations then contemplated at Ramsgate harbor, on a new and improved plan. Instead of a bell-shaped vessel sunk by weights, his apparatus consisted of a square chest of cast-iron, 4½ feet long, 4½ feet high, and 3 feet wide, affording sufficient room for 2 men under it. It was cast of such a thickness that its own weight was sufficient to sink it; and its thickness was greater near the mouth or lower part, to prevent it from being easily overset. This construction of the diving-bell gave the men within it no power of raising or sinking it; but as the apparatus was made to be used at a place where the nature of the bottom was known, this disadvantage was not considered of great consequence; and, in fact, it is found by experience that it is better to leave the bell to be entirely guided from above. On account of the facility with which water conveys sound, the strokes of a hammer on the inside of the bell can be heard at a great distance; and the sound coming through the water has a peculiar character, which can not be mistaken. By previous arrangement, any directions can be given in this manner. For instance, 1 blow may denote more air; 2, stand fast; 3, heave up; 4, lower down, and so on. With these successive improvements, the diving-bell is found to be a most important machine in all the great operations to be performed under water. It was used with great advantage by Mr. Rennie in the construction of the various harbors he projected; and it has recently been successfully employed in deepening the Clyde between Glasgow and Greenock, and improving the navigation of the river. See the article DIVING-BELL, in the new edition of the *Encyclopedia Britannica*. See *Am. Jour. Science*, xxii., p. 325; *Blackwood*, xvii., 336; LITTELL's *Museum*, vi., p. 515.

Djidda, a town of Arabia, on the Red Sea, about 21 miles from Mecca, of which it is the seaport, in lat. 21° 29′ N., long. 39° 14′ E. It is well built. The streets are unpaved, but spacious and airy; the houses high, and constructed, for the most part, of madrepores and other marine fossils. The supply of water is scanty, and its quality indifferent. Small vessels approach close to the quays; but large vessels are obliged to anchor in the roads, about 2 miles off, loading and unloading by means of lighters. The entrance to the roads is difficult, and should not be attempted without a pilot. Djidda is a place of considerable commercial importance. It is the *entrepôt* in which is centered the greater part of the commerce between India, Egypt,

and Arabia. Many of its merchants possess large capitals: some of them as much as from £150,000 to £200,000. The trade in coffee brought from Mocha and other ports in Yemen, is the most considerable, but it is said also to be the most hazardous. The returns are principally made in cash. The trade with India and the Gulf of Persia is safer than the coffee trade, and is very considerable. Djidda has also a good deal of intercourse with the ports of Cosseir, Souakin, and Massouah, on the opposite coast of the Red Sea. The imports from the last two principally consist of slaves, gold, tobacco, dhourra or barley, hides, butter (of which immense quantities are made use of in Arabia), mats, etc.; in return for which the Africans receive Indian goods suitable for their markets, dresses and ornaments for their women, dates (which are not produced in any part of Nubia), iron, etc. The principal article of import from Cosseir is wheat; and not only Djidda, but the whole Hedjaz, or Holy Land of Arabia, is almost entirely dependent upon Egypt for corn. Coffee is the principal article sent in return. Business is transacted at Djidda with ease and expedition. The number of ships belonging to the port is estimated at 250. Owing to the scarcity of timber, none of them are built at Djidda—those belonging to it being either purchased at Bombay or Muscat, or at Mocha, Hodeida, or Suez. For a considerable period each year, before and after the feast of Ramadhan, when pilgrims come from all quarters to visit Mecca, the town is thronged with strangers, and a great deal of mercantile business is transacted. Djidda is at present, and has been for a number of years, under the government of the Pacha of Egypt. The *moneys*, *weights*, and *measures* of the latter country (for which see ALEXANDRIA) are now generally used in Djidda, the commerce of which has been much improved and extended in consequence of the comparative security and good order enforced by the pacha.—BURCKHARDT, *Travels in Arabia*, v.l. i., pp. 1–100.

Dock, an inclosed place for the reception of ships, either for their security or for the convenience of building or giving them repairs. This word has been derived by some, absurdly enough, from the Greek *δεχομαι*, to receive. That we have it, along with almost the whole of our sea terms, from the northern continental nations, is sufficiently obvious. Thus, in Flemish, it is *dok*; Teutonic, *dock* Swedish, *docka*; Suio-Gothic, *docka*; perhaps originally from *dekken*, to cover, protect, secure, inclose. The *dock* for inclosing the prisoner in a court of justice is evidently from the same origin.

Docks for the reception of ships are of two kinds, *wet* and *dry*. A *wet-dock* may either have gates to retain the water in it, so that ships shall constantly remain afloat, or be left open for the tide to flow into and ebb out of it at pleasure, either leaving it dry at low water, or with a certain depth of water remaining in it, according to its construction and situation with regard to the low-water mark, and to the ebbing of the sea at spring or neap tides. A wet-dock without gates is generally distinguished by the name of a *basin*, which, however, is sometimes indiscriminately applied to a wet-dock, whether with or without gates. A *dry-dock* either becomes dry by the ebbing of the tide when the gates are left open, or by shutting the gates at low water, and pumping out whatever water may remain in it at that time, by the power of men, horses, wind, or by the steam-engine.

Wet-docks.—A *wet-dock* may be defined to be "a basin of water, in which ships may be kept afloat at all times of the tide;" a *dry-dock*, a "receptacle in which every part of a ship can be examined, and its defects repaired." Ships may also be conveniently built in dry-docks, and floated out by opening the gates; though in all dockyards there are places set apart for this purpose, under the name of *slips*. A wet-dock is called by the French *un basin*; a dry-dock, *une forme*; and a slip, *une calle*. The digging out the earth, and building the surrounding walls of masonry to prevent the sides falling in, and the preparation of the mortar and puzzolana, in the construction of a wet-dock, are attended with great labor and expense. The two wet-docks or basins of Cherbourg (see BREAKWATER), which are among the finest specimens that exist in the world, are estimated to have cost £3,000,000 sterling. The labor of excavation may sometimes be spared, and a series of wet-docks or basins conveniently made, by turning the course of a tide-river through an isthmus, and placing a pair of gates at each end of the old channel. In this way, were the new docks of Bristol constructed out of the bed of the Avon. Wet-docks are an improvement in navigation and commerce of the utmost importance, but of very modern date in this country; indeed, they owe their introduction entirely to a spirit of individual enterprise in commercial speculation. Liverpool might still have remained a poor fishing-village but for its convenient docks, which not only produce to the town and corporation a large revenue, but insure to the merchant every possible facility in refitting, loading, and discharging his ships, whatever their burden or their cargo may be, without being exposed to the risk of losing both ship and cargo in a rapid tide-river; and at all events, to an unavoidable delay, occasioned by distance, the weather, or the state of the tides.

London, though unquestionably the first city in the world for its opulence, its commerce, and public spirit, and possessing within itself the powerful internal means of supporting docks, and all other conveniences that trade and shipping may require on the most extensive plans; London was the last to try the experiment of docks, except in the case of two spirited individuals, Mr. Perry, at Blackwall, and Mr. Wells, at Greenland Dock, both private ship-builders. Notwithstanding the total inadequacy of legal quays, which subjected the merchants to incalculable losses and delays, and in many cases proved absolutely ruinous; notwithstanding the effect of the heavy, expensive, and fatal embarrassments experienced regularly on the arrival of the West India fleets, and the annual losses, by plunder in the river, on West India produce, which alone were calculated to amount to £150,000 to the proprietor, and £50,000 to the revenue, and more than the double of those sums, including other branches of commerce; it was not till the year 1799 that prejudices and private interests were so far removed as to enable the merchants concerned in the West India trade to obtain an act of Parliament to carry into execution a plan of docks, quays, and warehouses, for the convenience of that trade on the Isle of Dogs. Since that time the London Docks, St. Katharine Docks, and various others, have been completed, to the incalculable benefit of the shipping interest and the commerce of the metropolis.

The docks of Liverpool were the first of the kind that were constructed in this kingdom, by virtue of an act of Parliament, passed in 1708; and from that period the town of Liverpool has rapidly raised itself from a poor fishing-village, and a port for coasting-vessels, to be the second commercial town and port in the empire; and the improvements carried out for the enlargement and better arrangement of the docks, rendered it, for convenience and appearance, in this respect the very first, not even London excepted.

It appears from a statement, apparently authentic, that in the ten years ending with 1808 the number of ships which entered these docks was 48,497, tonnage 4,954,204; and the dock duties received, £329,566; and that in the following ten years, ending in 1818, the number of ships was 60,200, the tonnage 6,375,560, and the amount of duties, £660,938; while for a single year, ending June, 1853, no less than 20,490 vessels entered the docks, the tonnage of which was 3,889,981, and the amount of duties, £256,702—the

largest amount yet received—the following being the return for the last ten years:

Year.	Number of vessels.	Tonnage.	Amount of duties received.
1843	16,906	2,445,278	£188,286
1844	18,411	2,682,712	185,164
1845	20,521	3,016,581	223,247
1846	19,951	3,096,444	213,428
1847	20,889	3,351,589	244,435
1848	20,311	3,284,963	197,617
1849	20,733	3,630,146	224,224
1850	20,457	3,586,397	211,718
1851	21,071	3,737,666	235,527
1852	21,473	3,912,506	240,686
1853	20,490	3,889,981	256,702

It may also be observed, that this extraordinary increase has taken place since the abolition of the slave-trade, which, it was formerly asserted, would be the ruin of Liverpool.

The *West India Docks*, on the River Thames, were commenced in February, 1800, and opened in August, 1802. They consist of an outward and a homeward-bound dock, and communicate by means of locks with a basin of five or six acres on the end next to Blackwall, and with another of more than two acres at the end next to Limehouse, both of which basins communicate with the Thames. The outward-bound dock is about 870 yards in length, by 135 in width, containing consequently an area of more than 24 acres; the homeward-bound dock is of the same length, and 166 yards in width, its area being little short of 30 acres; and the two together will contain with ease at least 500 vessels of from 250 to 500 tons. The whole are surrounded with a high wall, and, as a security against fire, the moment that a ship enters the dock the crews are discharged, and no person whatever is allowed to remain on board, or within the premises, the gates of which are closed at a certain hour. They are surrounded by immense warehouses, which are estimated to contain nearly 10,000 hogsheads of sugar, and an immense quantity of rum. The sum authorized by Parliament to be raised for completing these docks and warehouses was £1,200,000, and the total expense was probably not far short of £1,500,000; yet on this capital the subscribers have been receiving from a very short period after their opening, 10 per cent., which, by the terms of the act, is not to be exceeded, and the term granted is limited to 21 years; but, like most other property, these docks have been greatly depreciated in value, and at present barely pay 8 per cent.

The next set of docks that were undertaken for the advantage of the trade of the capital were the *London Docks*. These docks are situated in Wapping, and are appropriated for the reception of all ships arriving in the port of London with wine, spirits, tobacco, and rice on board, but not exclusively, ships having on board other cargoes being admitted on the payment of certain fees. The act of Parliament for incorporating the Dock Company was passed in 1800, authorizing them to raise a capital of £1,200,000; but such was the number of houses to be purchased (we believe not less than 1200) occupying the site of the dock, that this capital, by subsequent acts, was extended to £2,200,000, the dividends on which are limited, as in the West India Docks, to 10 per cent. The great dock is 420 yards in length, and 230 yards in width, covering an area of 20 acres. A basin of 3 acres nearly, connects it with the river. The warehouses are very magnificent; and the tobacco warehouse is the grandest and most spacious building of its kind in the world, being capable of containing 25,000 hogsheads of tobacco, and the vaults underneath as many pipes of wine. This single building, under one roof, is said to occupy upward of 4 acres of ground. These docks were opened in February, 1805.

The *East India Docks*, for the exclusive reception and accommodation of the East India ships, were the last in succession. The act for the incorporation of the company was passed in July, 1803, authorizing them to raise a capital of £200,000, which was afterward increased to £600,000, the dividend, as in the case of the two others, to be limited to 10 per cent. These docks are situated at Blackwall. That for the reception of homeward-bound ships is 470 yards in length by 187 in width, containing a surface of rather more than 18 acres; the outward-bound dock is 260 by 173 yards, and is consequently something more than 9 acres. An entrance-basin of 3 acres nearly, and a spacious lock, connect them with the Thames.

Besides these there are the London Docks, the St. Katharine's Docks, and the Victoria Docks, in course of construction; of these, detailed accounts will be found under the article, LONDON.

In other portions of England and Scotland, there have been costly docks constructed of late years, viz.: *Hull* has 5 docks, occupying, with their basins, a water area of 49¾ acres. A timber-pond of 9 acres was constructed in 1853. The tonnage of shipping in 1852 was 799,866 sailing-vessels, and 305,021 steam-vessels; the amount of dock dues, £433,755. *Southampton*, the station for the West India mail and Lisbon and Alexandria steamers, is now constructing extensive docks and quays to accommodate their great and increasing traffic. *Grimsby Harbor* has lately been greatly improved. Wet and dry docks have been constructed, on the most approved principles, at the expense of £250,000, and a canal cut into the Humber calculated to admit vessels of 1,000 tons' burden. *Hartlepool* has also been of late years greatly enlarging its harbor and dock accommodation. *Sunderland* has new docks of 18 acres' extent, which were opened in 1850, and which can accommodate 300 sail. *Dundee* has lately immensely improved her harbor and docks; besides two smaller docks, the wet-dock now constructing will occupy 14½ acres, the lock of which will be 60 feet broad. *Aberdeen* has a wet-dock, where the largest vessels may float in safety; it covers nearly 10 acres, with quay room of about 9,000 feet. *Leith*, the port of Edinburg, has 3 wet-docks, containing about 15 acres of water room. *Detailed accounts of these docks will be given under the names of the respective ports.*

The naval dry-docks of the United States are among the most stupendous mechanical enterprises of the country; they are constructed at the navy-yards of New York, Charlestown, Norfolk, etc. By far the most extensive and magnificent of these structures is the granite dry-dock at Brooklyn; 80,000 tons of stone have been used in its construction; the masonry foundations are 400 feet in length, and 120 in breadth. The main chamber is 286 feet long, and 30 feet broad on the bottom; 307 feet long, and 98 feet broad at the top within the folding-gates; the height of the wall is 36 feet. The work was commenced in 1841, and took 10 years to complete it; the aggregate expenditure was above $2,100,000.

Dry-docks.—A dry-dock, requiring to be perfectly water-tight, demands the greatest care in its construction. It is sometimes lined all around with wood, but more generally with masonry, mostly of hewn granite. The expense is very considerable, as the foundation, by means of piles or otherwise, must be well secured, all leakage prevented, and the culvers or drains properly constructed, to let in and carry off the water without its undermining the quays or piers. The cost of a complete dry-dock will vary probably from £20,000 to £100,000, according to the size of the ships it is intended to admit, and the nature of the ground on which it is to be constructed. A dry-dock may be *single*, or made to contain only one ship; or *double*, to contain two ships; but the former is the most common, because most convenient. As it is of the utmost importance to preserve the water in a wet-dock, and to keep it *out* of a dry-dock, it may be proper to describe the different kinds of *gates* which are in use for this purpose.

Dock Gates.—The most common, and on the whole perhaps the best and most convenient, are swinging-gates, which open in the middle, and lie flat, one part against each wharf or side-wall of the passage leading into the dock or basin. This kind of dock-gate requires to be made of great strength, with sound timber and good iron, and the gudgeons on which the hinges turn to be well secured into the stone abutments. Care also must be taken to make the bottom of the passage and the bottom of the gates perfectly plane and parallel, to prevent leakage, and give facility to their opening and shutting, which is usually assisted by rollers fixed in a groove, and performed by means of a small capstan on each pier. Attached to the top of the gates is usually a foot-bridge with railing, which, separating in the middle, opens and shuts with the gates.

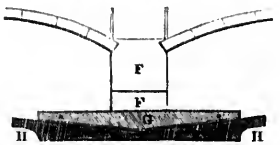
The most simple but by no means the most effective contrivance for keeping out the water, is the wicket-gate. It consists of three parts, which when opened are removed separately. This gate is rarely made use of unless where the abutments are not sufficiently strong, or their foundation sufficiently secure, to bear the weight of a pair of swinging-gates.

A third kind of gate consists of a floating-dam or caissoon, first introduced into this country by General Bentham, and first applied to the great new basin in Portsmouth dockyard. They are built somewhat in the shape of a Greenland fishing-boat, sharp at the two ends, narrow, and deep in proportion to the depth of water at the entrance of the dock. The keel fits into a groove at the bottom of the passage, and the two slanting ends rise and fall in corresponding grooves cut into the two abutments. By letting in the water, the caissoon sinks in the grooves, and acts as a closed gate; and by pumping out the water, or letting it out to a certain depth, the dam floats as the tide rises, and the narrow part, rising to the top, is readily disengaged from the grooves, and easily floated away as a boat. The advantages of these floating-dams, as stated by General Bentham, are, that they are cheaper of construction than the gates heretofore in use for closing docks or basins; that they occupy less space, are more easily repaired, and one and the same dam is capable of being used, as need may require, in different places at different times. These caissoons have also the advantage of serving as bridges of communication for loaded carriages across the entrances they close, and they require much less labor than gates in opening or shutting up passages into docks or basins, since their occasional buoyancy may be obtained without pumping water or unloading ballast.

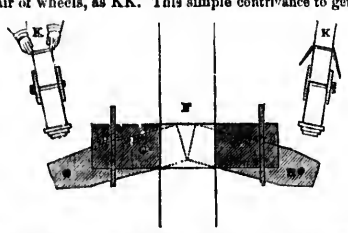
Docking a Ship.—When a ship is brought into a dry or graving dock, she gradually subsides as the water flows out, till her keel rests upon the line of square blocks which are placed to receive it along the middle for the whole length; and on these blocks she is kept steady and upright by a number of shores or poles on each side, one of their ends being placed on the *altars* or steps of the dock, the other under the ship's bends and bottom. As a ship under repair generally requires something to be done to the main or false keel, or at any rate these parts require to be inspected, sometimes to shift the main keel, or to add to the whole length of the false keel, it was always found necessary in such cases to remove the blocks, in order to get at the bottom of the ship; but this operation could not be performed without the more serious one of first *lifting* bodily the ship clear of all the blocks, and suspending her as it were in the air. This process was performed by driving wedges simultaneously under the ends of all the shores that supported the ship; an operation that required from four to five hundred men to enable them to suspend a ship of the first rate. When the San Josef, a large three-decker, required her bottom to be examined in 1800, the assistance of almost every artificer in the dockyard was found necessary to perform this process of lifting her; nor was this the only inconvenience; the ship, thus suspended, suffered very material injury by the pressure of her own enormous weight against the ends of the shores that supported her, such as forcing in her sides, straining the knees and all her fastening, breaking the treenails, etc.

To remedy these glaring inconveniences and very serious injuries that ships thus placed were apt to sustain, and to effect a saving of time and expense in the operation, Admiral (afterward Sir Robert) Seppings, then master shipwright, and afterward surveyor of the navy, contrived, several years ago, an improvement, as ingenious as it simple, by which twenty men will suspend the largest ship in the navy, or rather, which amounts to the same thing, will disengage any one block that may be required, in the space of two or three minutes, without the necessity of suspending her at all; and, as a first rate in dock sits upon about fifty blocks, these twenty men will clear her of the whole of these blocks in about two hours; and as the saving of a day in completing the repairs of a ship is frequently the saving of a whole spring-tide, the docking and undocking of a ship may make, and frequently has made, by this new method the difference of a fortnight in the time of equipping her for sea.

The block of Mr. Seppings, instead of being one solid piece, consisted of three wedges, or, more properly speaking, of one obtuse wedge and two inclined planes, which, when put together and placed under the ship's keel, appear as under, when viewed in the direc-



tion or line of the keel, where G is the wedge on which the keel rests, having its obtuse angle equal to 170°, and HH are the two inclined planes, each having an acute angle of 5°. The wedge is of hard wood, having its two sides lined with iron; the two inclined planes are of cast iron. When one of these blocks is to be disengaged from under a ship's bottom, nothing more is required than a few smart blows alternately on the two sides of the two inclined planes, when they fly out, and the middle part or wedge drops; and the facility of thus disengaging any of the blocks is in proportion to the quantity of pressure upon that block. The strokes are usually given by a kind of catapulta or battering-ram, being a thick spar or pole moving on a pair of wheels, as KK. This simple contrivance to get



at any part of a ship's bottom by removing in succession all the blocks, without the necessity of lifting the ship, which the removal of any one block required to be done by the old method, is now universally adopted in all the dockyards; and the lords of the admiralty marked their sense of the great utility of the improvement, by bestowing on Mr. Seppings a reward of £1000 for the invention.

Roofing the Docks.—Another very material improve-

ment introduced is that of covering the dry-docks and building slips with roofs. The rapid decay of ships of war by that species of disease known by the name of the *dry rot*, attracted very general attention; its effects were well known, but a variety of opinions were entertained as to its causes and its cure. It was quite obvious, however, that exclusion of air and moisture were the two great operating causes in giving activity to the progress of the disease (see DRY ROT); and that a ship in dock, stripped of her planking, and open to the weather in every part, alternately exposed to frost, rain, wind, and sunshine, must at least have her timbers differently affected, some swelled and water-soaked, others shrunk with heat, and others rifted with the wind and frost; and, if closed up with planking in this state, might be expected, at no great distance of time, to exhibit symptoms of decay. The workmen, too, in the open docks or slips, suffered from the vicissitudes of the weather no less than the ships, and their labor was frequently suspended, to the great detriment of the naval service. The measure of roofing over the docks and slips had long and repeatedly been suggested, but, either from prejudice or a false economy, it was only of late years carried into practice, but is now universal in all the yards. These roofs are generally constructed so as to be capable of having the sides and ends occasionally closed, according to the quarter from which the wind may blow; and by this contrivance the timber is prevented from rifting, as it is liable to do, by the action of a thorough draught of wind, and the health of the artificer is prevented from injury. The light is admitted through numerous windows placed in the roof. These roofs are in general supported on a row of pillars, and covered with plates of iron. The same roof, with little or no repair, serves as a covering for eight or ten different ships in succession. General Bentham, who, in his statement of *Services rendered in the Civil Department of the Navy*, seems to claim to himself all the inventions and improvements which have been introduced into the dockyards for the last forty years, carries his invention beyond a mere covering, and proposes to house over the docks and ships so completely as to afford "means of heating, warming, ventilating, and artificially lighting the interior at pleasure; the introduction of boilers or steam-kilns for bending the planks within the inclosure; the introduction of machinery for assisting in various operations, particularly the more laborious ones; the providing room for carrying on all the shipwright's work within the building; besides a variety of lesser works, such as it is found very inconvenient during the building or repairing of a ship to have executed, for example, in a smith's or carpenter's shop at a distance." Such buildings would not only be enormously expensive, but, in the present crowded state of the dockyards, utterly impracticable. With regard to the invention of covered docks and slips, they have been used in Venice from time immemorial; and it appeared from the evidence given by Mr. Strange, the British consul at that port in the year 1792, before the commissioners of land revenue, that two-and-twenty large ships had been under covered slips, some of them for sixty years nearly. At Carlscrona, also, there are several covered docks, and both are strongly recommended for the building of ships under cover.

Hauling up Ships.—Among other experiments which were made in the dockyards for facilitating and expediting the repairs of ships, one may be mentioned, of which many persons were sanguine enough to think that the successful result was likely to be attended with most important benefits to the naval service. It was that of hauling up ships of war, of any dimensions, on building slips, instead of taking them into docks. It is no uncommon practice, at various ports of this kingdom, where there are neither artificial basins, nor natural harbors, to haul vessels of the burden of fifty to two hundred tons, or probably larger, upon the beach, by means of capstans, to give them repairs; in like manner, most of the large fishing smacks are hauled up for security in tempestuous weather; but the practicability of hauling up ships of war, especially of the larger classes, was a matter of some doubt. Several frigates had, at various times, been hauled upon slips, when the docks were all occupied; and the ease with which the operation was performed induced the officers of the dockyard to propose the hauling up of a line-of-battle ship. The *Kent* of 74 guns was selected for this purpose. It was necessary, in the first place, to take her into a dock, to have proper bilgeways prepared, and to be stripped, so as to be made as light as possible; her weight being, according to a calculation made from the water she displaced when afloat, about fourteen hundred tons. To heave up this weight fourteen capstans were employed, and the number of men to work these were as under:

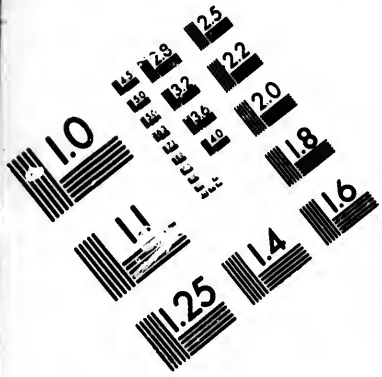
Nine men to each bar and swifter	1,512
Eight men to hold on at each	112
Three men to each capstan, to attend the fall	42
Men on board the ship, and employed in other operations	450
Total of men employed	2,116

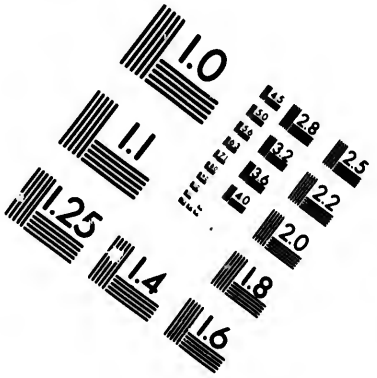
The time occupied in hauling her up, after all the purchases were brought to bear, was forty minutes. The expense of preparing her, and the loss and wear and tear of the materials, was estimated at somewhere about £2,000.

The advantages which slips are supposed to possess over dry-docks are many and important. They can be constructed at one twentieth part of the expense; they occupy less space; they can be constructed on a steep or a shelving shore; and ships can be hauled upon them either in spring or neap tides; whereas a dry-dock can only be made in particular situations, and, when made, ships can only be docked and undocked in certain states of the tides; from which circumstance a considerable delay and inconvenience are frequently experienced. It should be recollected, however, that a large ship must necessarily go into a dock preparatory to her being hauled up on a slip.

It has been considered as not at all impossible, as was suggested some time ago by Mr. Perring, then the ingenious clerk of the check in Plymouth dockyard, that the whole ordinary might hereafter be laid up on slips, which, if housed over, would unquestionably be the best means of increasing their durability, and preserving them from partial decay. Nor is it certain that in the end it would not be the most economical mode of preserving them. The expense, as appears from the *Estimates of the Ordinary of the Navy* for the year 1817, is £187,000 for harbor victuals, harbor moorings and riggings, etc., besides £135,000 for wages; the chief part of both which sums is on account of ships of war laid up in ordinary, none of which would be required by placing them on slips. It would indeed form a singular revolution in naval management, if ships hereafter should be laid up in ordinary on dry land, while the timber of which they are built was considered to be the best preserved under salt water; a process which, from some experiments recently made, promises fair to be the most effectual prevention of, and a probable cure for, the dry rot. (See DRY ROT.) This method of preserving timber has long been practiced at Brest, Carthagena, and several other places on the continent; and the only objection to it in some of our ports appears to be the attack of the worm known to naturalists by the name of *Teredo navalis*, whose bite is almost as destructive as the dry rot.

On the other hand, there are very many and serious objections, even were the measure practicable, of hauling up ships of the line in particular, to be laid in ordinary on slips. In the first place, the length of sea-beach which would be required is greater than probably all the dockyards in the kingdom could furnish. Sec-





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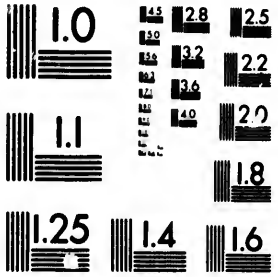

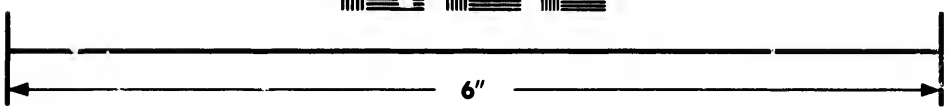

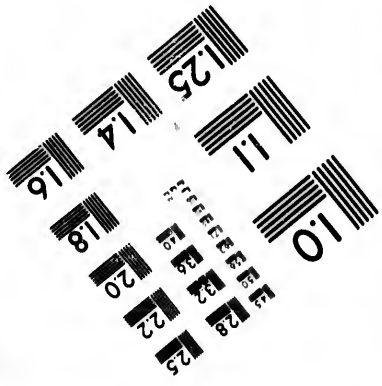

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ondly, the three warrant officers who are now employed in each ship, and who are the best men in the service, being no longer necessary, would be turned adrift, and, in all probability, utterly lost to the navy. Thirdly, no large ship could be hauled on the slips without being previously taken into a dock to have her bilgeways fitted, and her bottom prepared for placing her on the slip. The time taken for this purpose must necessarily interfere with the other works of the yard; and after taking her out, the preparations for heaving her up, the capstans, blocks, purchase-falls, chains, and a variety of other articles, amount to a very large expense, not less, with the expense of the roof to cover the ship, than £10,000 for each ship so hauled up.

Dockyards.—Previously to the reign of Henry VIII. the kings of England had neither navy arsenals nor dockyards, nor any regular establishment of civil or naval officers to provide ships of war, or to fight them. They had admirals, however, possessing a high jurisdiction and very great powerr And it would appear, from a very curious poem in *Hackluit's Collection*, called *The Policie of Keeping the Sea*, that Henry V. had both ships, officers, and men exclusively appropriated to his service, and independently of those which the Cinque Ports were bound, and the other ports were occasionally called upon to furnish, on any emergency. By this poem it also appears that Little Hampton, until as it now is, was the port at which Henry built

——his great *Dromions*
Which passed other great shippes of the commons.

But what these *dromions* were no one can now tell; nor is it easy to conceive how the building and repairing of the Great Harry, which in the reign of Henry VII. was launched at Portsmouth, and cost £15,000, was managed, considering the very rapid strides made at once from the small Cinque Port vessels, manned with 21 men and a boy, to this enormous floating castle. At that time it is well known that they had no docks, nor even substitutes for them.

The foundation of a regular navy, by the establishment of dockyards, and the formation of a board, consisting of certain commissioners for the management of its affairs, was first laid by Henry VIII., and the first dockyard erected under his reign was that of Woolwich. Those of Portsmouth, Deptford, Chatham, and Sheerness, followed in succession; and the last, excepting the new and unfinished yard of Pembroke, was Plymouth, which was founded by William III.

From the first establishment of the dockyards to the present time, most of them have gradually been enlarged and improved by a succession of expedients and make-shifts, which answered the purposes of the moment; but the best of them possess not those conveniences and advantages which might be obtained from a dockyard systematically laid out on a uniform and consistent plan, with its wharfs, basins, docks, slips, magazines, and workshops, arranged according to certain fixed principles, calculated to produce convenience, economy, and despatch.

Neither at the time when dockyards were first established, nor any subsequent periods of their enlargement as the necessities of the service demanded, could it have been foreseen what incalculable advantages would one day be derived from the substitution of machinery for human labor; and without a reference to this vast improvement in all mechanical operations, it could not be expected that any provision would be made for its future introduction; on the contrary, the docks and slips, the workshops and storehouses, were successively built at random, and placed wherever a vacant space would most conveniently admit them, and in such manner as in most cases to render the subsequent introduction of machinery and iron railways, and those various contrivances found in the large manufacturing establishments of private individuals, quite impossible, even in the most commodious and roomy dockyards.

The perfection of a dockyard, independently of the advantages of machinery, which are but contingent, may be considered to depend upon one or more extensive basins, surrounded by spacious wharfs or quays. By means of these a prodigious saving of time, labor, and expense may be saved, in every stage of the progress of fitting out a ship for sea, from the moment she is launched from the slip, or taken out of a dock, as well as in dismantling a ship on returning to port to be paid off and repaired, or laid up in ordinary. For this purpose the docks and slips should occupy one of the sides of the basin, with working-sheds for carpenters and joiners, smiths' shops, saw-pits, and seasoning-sheds between them. The ship, when completed on the slip and launched into the basin, may then be taken immediately into the adjoining dock to be coppered. From this she proceeds to the second side of the basin, in the corner of which is the ballast-wharf. The remainder of the side will probably be occupied by the victualing department, with appropriate stores in the rear for various kinds of provisions, and behind these the bakery, brewery, and slaughter-houses; on the wharf the iron tanks for holding water, now universally used for the ground tier in lieu of wooden casks. These are taken on board next after the ballast, and, together with the superincumbent casks, would be filled in the ship's hold by means of flexible pipes to convey the water into them. The provisions would at the same time be taken on board at the same wharf, in front of the victualing stores. The third side might be appropriated to the ordnance department, with the gun-wharf extending along the whole side, and the gun-carriage storehouses, magazines, etc., in the rear. The fourth side would be occupied as the anchor wharf, with the cable storehouses, the sail-lofts and stores, rigging-loft, and magazines for various stores, in the rear. Behind these, again, on the first side, containing the dry-docks, and building-slips, the ground would be appropriated to the reception, berthing and converting of timber, from whence iron railways would lead to the saw-mills, saw-pits, and workshops, all of which would be placed on that side. On the second side a pond or basin for the victualing lighters and craft, with wharfs communicating with the manufactories and storehouses; the same on the ordnance or third side; and on the fourth side might be placed the ropery, hemp storehouses, tar-houses, with a basin for hemp-vessels, lighters, and the like. Communicating with the great basin on the building side, and also with the river or harbor on the shore of which the dockyard is to be formed, should be a mast-pond, with a lock for the storing of spars. In front the mast-houses, top-houses, capstan-houses, and a slip to launch the masts into the pond. Here also might be placed the boat-houses and boat-pond.

A Systematic Dockyard.—A peninsular situation, having at least three fourths of its shore surrounded with deep water, is peculiarly favorable for some such arrangement as is here mentioned, as any number of locks and canals might be made to communicate with the river, so that ships coming into the basin might not interfere with those going out, nor the lighters and other craft bringing their several species of stores, with either or with one another. By such an arrangement a ship would be equipped for sea at half the present expense, and within half the usual time. A ship fitting out for an anchorage distant from the dockyard, is liable to every inconvenience and delay, as all her guns, stores, provisions, and water, must be carried to her in dockyard lighters and other craft, into which and out of which they must be hoisted and re-hoisted; liable to delay from bad weather and contrary winds; to be stove alongside the ship, to the total loss or damaging of their cargoes. Added to which is the loss of time in going backward and forward, especially to the artificers; the desertion of the men; the accidents from the upsetting of boats; and many other evils, of a

magnitude not easily to be calculated, and exceeded only by the disappointment and vexation that unavoidably occur when ships are preparing for some particular and pressing service; all of which, when ships are fitted out in a basin for sea, are avoided. Here no delay, no embezzlement, no desertion can take place. A ship in returning from sea may be docked and undocked into the basin with all her stores on board; and if to be paid off, instead of keeping the crew on board for weeks, till all the stores have been delivered into the dockyard, the ship, by the proposed plan of basins, would remain securely in the basin, to be stripped at leisure by the riggers and laborers of the yard, and the crew become immediately available for other ships.

Portsmouth Dockyard.—Portsmouth dockyard will always be considered as the grand naval arsenal of England, and the headquarters or general rendezvous of the British fleet. The dockyard, accordingly, is by far the most capacious; and the safe and extensive harbor, the noble anchorage at Spithead, the central situation with respect to the English Channel and the opposite coast of France, and particularly with regard to the naval arsenal at Cherbourg, render Portsmouth of the very first importance as a naval station; and in this view of it, every possible attention appears to have been paid to the extension and improvement of its dockyard. The noble steam-basin, which was opened by the Queen, in May, 1848, with great ceremony, is one of the most important of the recent improvements. The sea wharf-wall of this yard, extending in the direction of north and south, along the western shore of the harbor, is about 3,900 feet in length, and the mean depth may be 2,000 feet; and it incloses an area of more than 100 acres.

In the centre of the wharf-wall, facing the harbor, is the entrance into the great basin, whose dimensions are 380 by 260 feet, and its area 2½ acres. Into this basin open 4 excellent dry-docks, and on each of its sides is a dry-dock opening into the harbor; and all of these 6 docks are capable of receiving ships of the largest class. Besides these, is a double dock for frigates, the stern dock communicating, through a lock, with the harbor, and the head dock with another basin about 250 feet square. There is also a chamber, with a wharf-wall on each side, 660 feet in length, and of sufficient width to admit of transports and merchant-ships bringing stores to the dockyard. In the same face of the yard are 8 building-slips, capable of receiving the largest ships, and a small one for sloops, besides 2 building-slips for frigates on the northern face of the yard, and a smaller slip for sloops. The range of storehouses on the north-east side, and the rigging-house and sail-loft on the south-west side of the chamber, are magnificent buildings, the former occupying nearly 600 feet in length, exclusive of the two intermediate spaces, and nearly 60 feet in width, and the two latter 400 feet. The two hemp-houses and the two sea-store houses occupy a line of building which, with the three narrow openings between them, of 25 feet each, extend 800 feet. The rope-house, tarring-house, and other appendages of the ropery, are on the same scale. The two sets of quadrangular storehouses, and the two corresponding buildings, with the intervening timber-berths and saw-pits, at the head of the dry-docks, issuing from the great basin, are all excellent, and conveniently placed. The smithery is on a large scale, and contiguous to it is an iron-mill, a copper-mill, and a copper-refinery, at which is re-melted and rolled all the old copper which is taken from ships' bottoms; and here, also, are cast bolts, gudgeons, and various articles of copper used in the navy. The number of sheets manufactured in one year of the war, amounted to about 300,000, weighing above 12,000 tons; on which it has been calculated that a saving of at least £20,000 was effected for the public, besides obtaining a good, pure article. Most of these were constructed under the direction of General Bentham. (Bentham's Services.) At the head of the north dock are the wood-mills, at which every article of turnery, rabetting, etc., is performed for the use of the navy, from boring the chamber of a pump to the turning of a button for a chest of drawers. But the principal part of these mills is the machinery for making blocks, contrived by that ingenious artist, Mr. Brunell (see TREDGOLD'S CARPENTRY), which can not be regarded without exciting the highest respect for the talents and skill of the inventor.

The northern extremity of the dockyard is chiefly occupied with seasoning-sheds, saw-pits, and timber-berths, the working boat-house, and boat storehouse. On the eastern extremity are situated the houses and gardens of the superintendent and principal officers of the yard, the chapel, and the royal naval college.

Capacity of a Dockyard.—The capacity of a dockyard for building, repairing, and refitting ships of war, depends upon so many circumstances that it scarcely admits of calculation; chiefly, however, on the facilities afforded by a suitable arrangement of dry-docks, building-slips, and basins, and on the number of shipwrights and other artificers borne on the strength of the yard. In building new ships, where the materials are at hand, and no interruptions occur, the capacity may be ascertained to a tolerable degree of accuracy. To complete the building of a 74-gun ship, it is calculated that the labor of one man would be required for 18,000 days, or of 18 men for 1,000 days, or about 54 men to finish her in the space of one year. A dockyard, therefore, with 500 good shipwrights, might be expected to launch from 8 to 10 74-gun ships every year, if the conveniences of the yard admitted them all to be employed on the building; but this kind of ship is now supplanted by ships of 120 and 130 guns, requiring a relative increase of hands. With regard to repairs, they are so various and so uncertain, that it would be next to impossible to form any calculation that should at all approach to the truth. A writer well versed in naval matters, in attempting to prove the sufficiency of our dockyards, without having recourse to private merchant-yards during war, has stated, that by a uniform system of management, "the annual regeneration of ships-of-the-line may be safely reckoned at *twelve sail*, and that of frigates, at *eight sail*; and that, besides, there might be docked for casual repairs, in the course of one year, *two hundred and sixty-seven sail* of ships and vessels of war." —*Letter to Lord Melville on the General State of the British Navy.*—E. B.

The Brooklyn Navy Yard is the most extensive naval dépôt in the United States, situated on the south side of Wallabout Bay, at the north-eastern part of the city, and contains 45 acres of land. It is inclosed by a substantial brick wall on the land side, and on the left hand, as you enter its gate, there is a flower-garden most tastefully arranged.

This spacious yard affords sufficient room for the residence of the officers, machine-shops, storehouses, etc. The most conspicuous buildings are two large edifices, 250 feet long by 125 feet wide, and 120 feet high, capable of containing the largest ships of war while being built. In time of peace several national vessels are usually to be seen here, either laid up or undergoing repairs. A vast amount of cannon, cannon-balls, bombs, and all kinds of munitions of war, is always on hand at this dépôt. The Brooklyn dry-dock is located at the Navy Yard, and is capable of receiving the largest ships of war. This is a magnificent work, unequaled by any of the kind in America, and scarcely surpassed by any in the world. The foundation is 400 feet long by 120 wide, and the main chamber or basin is 286 feet long by 30 wide at the bottom, and 307 feet long and 98 wide at the top. The weight of the iron folding-gates is 150 tons; the pumps discharge 40,000 gallons per minute. The engine-house is a fire-proof building, containing machinery of

the most perfect kind. The whole occupied 16 years in the course of construction. See APPLETON'S *Dictionary of Mechanics.*

Dogwood (*Cornus Florida*). The wood of this tree is hard, compact, heavy, and fine-grained, and is susceptible of a brilliant polish, from which circumstance it may be substituted for numerous purposes to which boxwood is applied. The sap-wood is perfectly white, and the heart-wood is of the color of chocolate. In the United States, it enters into the construction of many articles, both for utility and ornament, such as the handles of light tools, mallets, toys, etc. It is sometimes used by farmers for harrow teeth, for the hames of horse-collars, and also for shoeing the runners of sleds; but to whatever purpose it is applied, being liable to split, it should never be wrought till it is perfectly seasoned. The shoots, when three or four years old, are found suitable for the light hoops of small casks, and in the Middle States, the cogs of mill-wheels are made of them, and the forked branches are converted into the yokes which are put upon the necks of swine, to prevent them from breaking into inclosed fields. In the parts of the country where it abounds, it serves for excellent fuel. The inner bark of this tree is extremely bitter, and is used as a good substitute for the Peruvian bark. The bark also may be substituted for galls in the manufacture of ink, and from the bark of more fibrous roots, the American Indians obtain a scarlet dye. An infusion of the flowers of this tree is also used by them in the cure of intermittents. The fruit is sometimes taken as a tonic, in the form of a spirituous impregnation, and it likewise forms a favorite repast for various species of birds. In England the sole use of this species is an ornamental shrub, and from its large, white flowers, "emulous of the purity of snow," which finely contrast with the "forest green," it richly deserves a place in every collection where it will thrive.—BROWNE'S *Trees of America.*

Doldrums. Seafaring people have, as if by common consent, divided the ocean off into regions, and characterized them according to the winds; *e. g.*, there are the "trade-wind regions," the "variables," the "horse latitudes," the "doldrums," etc. The "equatorial doldrums" is another of these calm places. Besides being a region of calms and baffling winds, it is a region noted for its rains and clouds, which make it one of the most oppressive and disagreeable places at sea. The emigrant ships from Europe for Australia, have to cross it. They are often baffled in it for two or three weeks; then the children and the passengers who are of delicate health suffer most. It is a frightful grave-yard on the way-side to that golden land. —MAURY'S *Phys. Geog. of the Sea*, p. 209.

Dollar, the name of a silver coin of Spain and of the United States; worth 100 cents. The dollar appears to have been originally a German coin; and in various parts of Germany there are coins of different values so called. This word corresponds to the German *thaler*, the Low-German *dahler*, the Danish *daler*, the Italian *tallero*. All these words, together with our *dollar*, are derived from the name of the Bohemian town *Joachims-Thal* (Joachim's Valley), where, in 1518, the Count of Schlick coined silver pieces of an ounce weight. These, indeed, were not the first of the kind coined; yet, as they were numerous and very good they became generally known by the name of *Joachim's-thaler*, which is the German adjective of *Joachim's thal*, and also Schlickenthaler from the name of the Counts. As these coins were in good repute, *thalers* were also coined in other countries, but of different value; thus originated the *laub-thaler* (leaf-dollar), *Phillipps thaler*, the Swedish copper dollar etc. In Russia, a dollar is called *jephimock*, from *Joachim*. —E. A. See COINS.

Dolphin, in nautical language, a rope or strap fastened round the mast of a ship to give support to the *puddening* (a mass of yarn or oakum used to prevent chafing), where the lower yards rest on the slings. *Dolphin* is also applied to a spar or buoy furnished with a large ring, and anchored, to which a vessel may bend its cable.

Domicil. In regard to the states not Christian, not only the Mohammedan states, but all the rest, the true rule appears to be, that contracts of citizens of the United States in general, and especially the contract of marriage, are not subject to the *lex loci*, but must be governed by the law of the domicil; and that, therefore, in such countries, a valid contract of marriage may be solemnized, and the contract authenticated, not only by an ambassador, but by a consul of the United States. The English authorities come to substantially the same conclusion, for similar reasons. "Nobody can suppose," says Lord Stowell, "that while the Mogul empire existed, an Englishman (in Hindostan) was bound to consult the Koran for the celebration of his marriage." In most of the Asiatic and African countries, indeed, law is personal, not local, as it was in many parts of modern Europe in the formative period of its present organization. Hence, in British India, Hindoos, Parsees, Jews, Mohammedans, Christians, all marry according to the law of their religion. The ecclesiastical law of England goes further than this, for it recognizes the marriage of Englishmen, celebrated according to the English law, that is, by a clergyman, in British factories abroad, though situated in Christian countries, but countries of the Roman Catholic or Greek religion.—*Manual for Consuls, U. S.*

Merchants.—The national character of merchants residing in Europe and America, is derived from that of the country in which they reside. In the eastern parts of the world, European persons, trading under the shelter and protection of the factories founded there, take their national character from that association under which they live and carry on their trade. This distinction arises from the nature and habits of the countries. In the western parts of the world, alien merchants mix in the society of the natives; access and intermixture are permitted, and they become incorporated to nearly the full extent. But, in the East, from almost the oldest times, an immiscible character has been kept up: foreigners are not admitted into the general body and mass of the nation; they continue strangers and sojourners, as all their fathers were. Thus, with respect to establishments in Turkey, the British courts of prize, during war with Holland, determined that a merchant carrying on trade at Smyrna, under the protection of the Dutch consul, was to be considered a Dutchman, and condemned his property as belonging to an enemy. And thus in China, and generally throughout the East, persons admitted into a factory, are not known in their own peculiar national character; and not being permitted to assume the character of the country, are considered only in the character of that association or factory.

But these principles are considered not to be applicable to the vast territories occupied by the British in Hindostan; because, as Sir W. Scott observes, "though the sovereignty of the Mogul is occasionally brought forward for the purpose of policy, it hardly exists otherwise than as a phantom; it is not applied in any way for the regulation of their establishments. Great Britain exercises the power of declaring war and peace, which is among the strongest marks of actual sovereignty; and if the high and empyrean sovereignty of the Mogul is sometimes brought down from the clouds, as it were, for the purposes of policy, it by no means interferes with the actual authority which that country, and the East India Company—a creature of that country—exercise there with full effect. Merchants residing there, are hence considered British subjects."—WHEATON'S *International Law*, Part iv., ch. 1, p. 408.

Dominica, one of the Leeward group of islands in the West Indies, belonging to Britain, and lying between the French islands of Martinique and Guadaloupe, 24 miles north of the former, and about the same distance south of the latter. Dominica was so named by Columbus from his having discovered it on a Sunday (in 1493). It was ceded to England by the peace of Paris, in 1763, but was taken by the French in 1778. At the peace of 1783 it was restored to England, in whose possession it has since remained. Dominica is 29 miles in length from north to south, and 16 in breadth, and has an area of about 186,436 acres. The principal town Roseau, situated on the S.W. side of the island, is in lat. 15° 19′ N., long. 61° 28′ W. The surface is generally rugged and mountainous, interspersed with fertile and well-watered valleys. The highest point is 5,814 feet above the level of the sea. The origin of this island is volcanic, and sulphur and other volcanic products are abundant. The soil is light and well adapted for the growth of coffee. The hills are covered with valuable timber trees of the kinds commonly found in the West Indies. Game is abundant, and the fisheries on the coast are very productive. The principal productions are sugar, molasses, rum, coffee, cocoa, and oranges. The cultivation of cotton has lately been introduced to a small extent, and has been found to answer very well, particularly on land near the sea-coast. The principal staple products exported in the years ending 5th January, 1852, and 5th January, 1853, were as follows:

	1852.	1853.
Sugar	62,168 cwts.	65,788 cwts.
Rum	30,927 galls.	35,794 galls.
Molasses	95,600 "	81,016 "
Coffee	58,063 lbs.	67,594 lbs.
Cocoa	33,884 "	69,296 "
Lime juice	4,280 galls.	5,062 galls.
Arrow root	5,944 lbs.	8,525 lbs.
Oranges	1,019,800	1,354,020
Cotton Wool	2,000 lbs.	3,250 lbs.

The value of exports and imports, and the revenue for the years 1849, 1850, and 1851, were as follows:

	1849.	1850.	1851.
Imports	£50,616	£57,656	£71,828
Exports	48,070	58,265	62,527
Revenue	8,018	10,275	12,901

The population in 1844 was 22,200, of whom 11,604 were females. The principal harbors are Roseau and Prince Rupert's Bay.—E. B.

Dornock is a species of figured linen of stout fabric, which derives its name from a town in Scotland, where it was first manufactured for table-cloths. It is the most simple pattern of all the varieties of the diaper or damask style, and therefore the goods are usually of coarse quality for common household wear. It receives the figure by reversing the flushing of the warp and woof at certain intervals, so as to form squares or oblong rectangles upon the cloth. The most simple of these is a succession of alternate squares, forming an imitation of a checker board or mosaic work. The coarsest kinds are generally woven as tweels of three leaves, where every thread floats over two, and is intersected by the third in succession. Some of the finer are tweels of four or five leaves, but few of more; for the six or seven leaf tweels are seldom or never used, and the eight leaf tweel is confined almost exclusively to damask.

Dort, or **Dordrecht**, an important commercial city of Holland, capital of a cognominal district in the province of South Holland, 10 miles south-east of Rotterdam. It is situated on an island of the Meuse, said to have been separated from the mainland in 1421, by an inundation which swept away 72 villages, and about 100,000 inhabitants. This is one of the oldest cities of Holland, but the period of its rise is uncertain. It was surrounded by walls in 1231 by Florent IV., Count of Holland, who made it his residence, and granted it many important privileges. In 1457, almost the entire town, including the church of Notre Dame, founded in 1366, and other public buildings, was destroyed by fire. It was one of the first towns to embrace the Reformed religion, and to throw off the yoke of the Spanish king. In 1572 a meeting of deputies was held here, when the independence of the United Provinces was first declared; and in 1618 and 1619 sat the celebrated Synod of Dort. The town-hall is a handsome building; and the principal church is an old Gothic structure 300 feet long by 125 feet wide, with a heavy square tower, and numerous monumental stones, some of great antiquity. The hall in which the synod was held is now a public house. The houses are generally of an antique fashion, with the gables turned outward, and many of them date from the period of the Spanish occupation. Dort possesses a good harbor, from which two canals lead to the centre of the town, and thus facilitate the conveyance of goods to the warehouses. It carries on an extensive trade in corn, flax, salt fish, train oil, and timber, brought down the Rhine; and has ship-building docks, saw-mills, sugar and salt refineries, tobacco factories, linen-bleaching and white-lead works. Dort is the birthplace of the brothers De Witt. Population (1850), 20,878.

Doubling, in navigation, the act of sailing round or passing beyond a cape or promontory.

Doubloon, or **Doblon**, a Spanish and Portuguese coin, being the double of a pistole.—E. B. See COINS.

Dover, Strait's of, the narrow channel between Dover and Calais, which separates Great Britain from the French coast. Britain is supposed by many to have been once a peninsula—the present straits occupying the site of the isthmus which joined it to Gaul. "The correspondency of strata," says Mr. Pennant, in his *Arct. Zoology*, "on part of the opposite shores of Britain and France, leaves no room to doubt that they were once united. The chalky cliffs of Blancnez, between Calais and Boulogne, and those to the westward of Dover, exactly tally. The last are vast and continued; the former short, and the termination of the immense bed. Between Boulogne and Folkestone (about 6 miles from the latter) is another memorial of the junction of the two countries: a narrow submarine hill, called the *Rip-raps*, about a quarter of a mile broad, and 10 miles long, extending eastward toward the Goodwin Sands. Its materials are boulder-stones, adventitious to many strata. The depth of water on it, in very low spring-tides, is only 14 feet. The fishermen from Folkestone have often touched it with a 15-feet oar, so that it is justly the dread of navigators. Many a tall ship has struck on it, and sunk instantly into 21 fathoms of water." In July, 1782, the *Belleisle*, of of 64 guns, struck, and lay on it during three hours, but by starting her beer and water, got clear off. These celebrated straits are only 21 miles wide in the narrowest part; from the pier of Dover to that of Calais, 24 miles. It is said that their breadth is diminishing, and that they are two miles narrower than they were in ancient times. An accurate observer for 50 years, remarks that the increased height of water, from a decrease of breadth, has been apparent, even in that space. The depth of the channel, at a medium, in the highest spring-tides, is about 25 fathoms; the bottom is either coarse sand or rugged scare, which have, for ages unknown, resisted the attrition of the currents.—E. A.

Down (Ger. *Dunen, Flaumfedern;* Du. *Dons;* Fr. *Duvet;* It. *Penna matta, Piumini;* Sp. *Flojel, Plumazo;* Rus. *Puch;* Lat. *Plumæ*), the fine feathers from the breasts of several birds, particularly those of the duck kind. That of the elder duck is the most valuable. These birds pluck it from their breasts, and line their nests with it. Mr. Pennant says that it is so very elastic, that a quantity of it weighing only ¼ of an ounce, more than fills the crown of the largest hat. That found in the nest is most valued, and termed *live down;* it is much more elastic than that plucked from the dead bird, which is comparatively little esteemed. The eider duck is found on the western islands of Scotland, but the down is principally imported from Norway and Ireland.

Downs, a bank or elevation of sand, which the sea gathers and forms along its shores, and which serves it as a barrier. The word is formed from the French *dune*, or the Celtic *dun*, a mountain. Charles de Visch (*Compend. Chronolog. Exord. et Progress. Abbat. Clarisa. B. Mariæ, de Dunis*) says, *Vallem reperit arenarum collibus, quos incolæ* Duynen *vocant, undique cinctam*. It is also applied to a large open plain, primarily on elevated land.

Downs is particularly applied to a famous roadstead for ships along the eastern coast of the county of Kent, from Dover to the North Foreland, where both outward and homeward-bound ships frequently make some stay, and squadrons of men-of-war rendezvous in time of war. It affords excellent anchorage, and is defended by the castles of Deal, Dover, and Sandwich.

Dragoman, or Drogueman, an interpreter; a term of general use in the Levant and throughout the East. There are dragomans attached to the embassies and consulates of Christian nations residing at the Porte. The word is formed from the Arabic *targeman* or *targiman*, of the verb *taragem*, "he has interpreted." From *dragoman* the Italians formed *dragomanno*, and, with a nearer relation to its Arabic etymology, *turcimanno*; whence comes *trucheman*, as well as *dragoman* and *drogueman*. See TURKEY.

Dragon's Blood (*Sang dracon*, Fr.; *Drachenblüt*, Germ.) is a resinous substance, which comes to us sometimes in small balls about the size of a pigeon's egg, sometimes in rods like the finger, and sometimes like irregular cakes. Its color, in lump, is dark brown-red; in powder, bright red; friable; of a shining fracture; sp. grav., 1·196. It contains a little benzoic acid, is insoluble in water, but dissolves readily in alcohol, ether, and oils. It is brought from the East Indies, Africa, South America, as the produce of several trees, the *Dracæna Draco*, the *Pterocarpus santalinus*, *Pterocarpus draco*, and the *Calamus rotang*. Dragon's blood is used chiefly for tinging spirit and turpentine varnishes, for preparing gold lacquer, for tooth tinctures and powders, for staining marble, etc. According to Herberger, it consists of 9·07 parts of red resin, 2 of fat oil, 3 of benzoic acid, 1·6 of oxalate, and 3·7 of phosphate of lime.

Drake, Sir Francis, a celebrated English admiral, was born near Tavistock, Devonshire, in 1545. His father, who had been bred a sailor, obtained a naval chaplaincy from Queen Elizabeth, and was afterward vicar of Upnor church, on the Medway. Young Drake was educated at the expense and under the care of Sir John Hawkins, who was his kinsman; and, at the age of eighteen, he had risen to be purser of a ship trading to Biscay. At twenty he made a voyage to Guinea; and at twenty-two he was made captain of the *Judith*. In that capacity he was in the harbor of San Juan d'Ulloa, in the Gulf of Mexico, where he behaved most gallantly in the actions under Sir John Hawkins, and returned with him to England, having acquired great reputation, though with the loss of all the money which he had embarked in the expedition. Having next projected an attack against the Spaniards in the West Indies, to indemnify himself for his former losses, he set sail in 1572, with two small ships named the *Pasha* and the *Swan*. He was afterward joined by another vessel; and with this small squadron he took and plundered the Spanish town of Nombre de Dios. With his men he penetrated across the Isthmus of Panama, and committed great havoc among the Spanish shipping. In these expeditions he was much assisted by a nation of Indians, who were then engaged in a desultory warfare with the Spaniards. Having embarked his men and filled his ships with plunder, he bore away for England, where he arrived in August, 1573.

In 1589, Sir Francis Drake commanded the fleet sent to restore Don Antonio, King of Portugal, the land forces being under the orders of Sir John Norris; but they had hardly put to sea when the commanders differed, and thus the attempt proved abortive. But as the war with Spain continued, a more formidable expedition was fitted out, under Sir John Hawkins and Sir Francis Drake, against their settlements in the West Indies, than had hitherto been undertaken during the whole course of it. Here, however, the commanders again disagreed about the plan; and the result, in like manner, disappointed public expectation. These disasters were keenly felt by Drake, and were the principal cause of his death, which took place on board his own ship, near the town of Nombre de Dios, in the West Indies, January 28th, 1595.—E. B. See *Edinb. Rev.*, lxxx., 197; *Dublin Univ.*, xxiii., p. 551; *N. Am. Rev.* [PEABODY], lix., p. 70; LITTELL'S *Living Age*, iii., p. 289.

Drawback, a term used in commerce to signify the remitting or paying back of the duties previously paid on a commodity on its being exported. A drawback is a device resorted to for enabling a commodity affected by taxes to be exported and sold in the foreign market on the same terms as if it had not been taxed at all. It differs in this from a bounty, that the latter enables a commodity to be sold abroad for *less* than its natural cost, whereas a drawback enables it to be sold exactly at its natural cost. Drawbacks, as Dr. Smith has observed, "do not occasion the exportation of a greater quantity of goods than would have been exported had no duty been imposed. They do not tend to turn toward any particular employment a greater share of the capital of the country than would go to that employment of its own accord, but only to hinder the duty from driving away any part of that share to other employments. They tend not to overturn that balance which naturally establishes itself among all the various employments of the society, but to hinder it from being overturned by the duty. They tend not to destroy, but to preserve, what it is in most cases advantageous to preserve—the natural division and distribution of labor in the society." Were it not for the system of drawbacks, it would be impossible, unless when a country enjoyed some very peculiar facilities of production, to export any commodity that was more heavily taxed at home than abroad. But the drawback obviates this difficulty, and enables merchants to export commodities loaded at home with heavy duties, and to sell them in the foreign market on the same terms as those fetched from countries where they are not taxed. Most foreign articles imported into this country may be warehoused for subsequent exportation. In this case they pay no duties on being imported, and, of course, get no drawback on their subsequent exportation. Sometimes a drawback exceeds the duty or duties laid on the article; and in such cases the *excess* forms a real bounty of that amount, and should be so considered.

Dredging Machine. A machine for clearing out or deepening the beds of navigable rivers, harbors, canals, etc., by the removal of deposited matter.

Dresden China. The fine porcelain ware known as Dresden china was discovered by M. Bœtcher, who was at the time an apothecary's boy, 1700. Services of this ware have cost many thousands of pounds each. A costly service, each piece exquisitely painted, and the battles represented, and subjects all different, was presented to the Duke of Wellington by the King of Prussia, in 1816, and is the finest in England.

Dressing. A term applied to gum, starch, and other articles used in stiffening or preparing silk, linen, and other fabrics.

Drift, in navigation, the angle which the line of a ship's motion makes with the nearest meridian, when she drives with her side to the wind and waves, and is not governed by the helm. It also implies the distance which the ship drives on that line. *Drift*, in mining, a passage cut between shaft and shaft, or a way wrought under the earth.

Drift of Bottles. It is a custom often practiced by seafaring people to throw a bottle overboard, with a paper, stating the time and place at which it is done. In the absence of other information as to currents, that afforded by these mute little navigators is of great value. They leave no tracks behind them, it is true, and their route can not be ascertained. But knowing where they were cast, and seeing where they are found, some idea may be formed as to their course. Straight lines may at least be drawn, showing the shortest distance from the beginning to the end of their voyage, with the time elapsed. Admiral Beechey, R. N., has prepared a chart, representing, in this way, the tracks of more than 100 bottles. From it it appears that the waters from every quarter of the Atlantic tend toward the Gulf of Mexico and its stream. Bottles cast into the sea midway between the Old and New Worlds, near the coasts of Europe, Africa, and America; at the extreme north, or further south, have been found either in the West Indies or the British isles, or within the well-known range of Gulf Stream waters. Of two cast out together in south latitude on the coast of Africa, one was found on the island of Trinidad, the other on Guernsey, in the English Channel. In the absence of positive information on the subject, the circumstantial evidence that the latter performed the tour of the Gulf is all but conclusive. And there is reason to suppose that some of the bottles of the admiral's chart have also performed the tour of the Gulf Stream; then, without being cast ashore, have returned with the drift along the coast of Africa into the inter-tropical region; thence through the Caribbean Sea, and so on with the Gulf Stream again. Another bottle thrown over off Cape Horn by an American master in 1837, has been recently picked up on the coast of Ireland. An inspection of the chart, and of the drift of the other bottles, seems to *force* the conclusion that this bottle too went even from that remote region to the so-called *higher* level of the Gulf Stream reservoir.—Maury, *Phys. Geog. of the Sea.*

Drift-sail, a sail used under water, veered out right a-head by sheets, as other sails are. It serves to keep the ship's head right upon the sea in a storm, and to prevent her driving too fast in a current.

Drift-wood, trees or timber carried out to sea by rivers when in flood; timber drifted or floated by water.

Driving, in sea language, is said of a ship when her anchor fails to hold her fast, and she floats away with the wind or tide. A vessel is also said to drive when she scuds before a gale.

Droits of Admiralty. The perquisites resulting chiefly from the seizure of the property of an enemy at the commencement of a war, and attached to the office of Lord-high-admiral, or to the crown when that office is vacant. These perquisites were originally vested in the sovereign, to enable him to provide for the expense of defending the realm, and clearing the seas of pirates; and their value and importance will be at once perceived from the following brief statement. In 1798, one ship which had been captured brought £55,000; in 1800, another brought £65,000; in 1804, one captured ship was worth £105,000; and in 1806, several taken at once netted £155,000. During the last war, also, the Dutch ships at one seizure brought £1,030,000; the Spanish ships, £2,200,000; and so large were the sums made at one and the same moment in this rich fund, that the crown one year, after paying many hundreds of thousands to captors, and large sums to different branches of the royal family, gave a million out of the residue to the public service. (*Edinb. Rev.*, vol. xxxiii., p. 482.) By the civil list, introduced on the accession of William IV., it was arranged that all droits of admiralty which might accrue during his reign should be paid into the exchequer for the benefit of the public service; and the civil list of her present majesty has made no alteration in that arrangement.—Brande.

Drowned Persons. *Directions for Restoring Persons Apparently Drowned.* From R. B. Forbes, Esq., of Boston, an officer of the Massachusetts Humane Society.—Convey the body to the nearest house, with head raised. Strip, and rub dry; wrap in blankets; inflate the lungs by closing the nostrils with thumb and finger, and blowing into the mouth forcibly, then pressing with hand on the chest. Again blow in the mouth and press on the chest, and so on for TEN MINUTES, or until he breathes. Keep the body warm, extremities also. Continue rubbing. Do not give up as long as there is any chance of success.

Drugs, Inspection of. By an act of Congress, passed June 26, 1848, to prevent the importation of adulterated and spurious drugs and medicines, it was provided, that all drugs and medicines, medicinal preparations, including medicinal essential oils and chemical preparations used wholly or in part as medicine, imported into the United States from abroad, shall, before passing the custom-house, be examined and approved, as well in reference to their quality, purity, and fitness for medicinal purposes as to their value and identity specified in the invoice.

Also, that all medicinal preparations, whether chemical or otherwise, usually imported with the name of the manufacturer, shall have the true name of the manufacturer, and the place where they are prepared, permanently and legibly affixed to each parcel, by stamp, label, or otherwise; and all such medicinal preparations imported without such names, affixed as aforesaid, shall be adjudged to be forfeited.

That if, on examination, any drugs, medicines, medicinal preparations, whether chemical or otherwise, including medicinal essential oils, are found, in the opinion of the examiner, to be so far adulterated, or in any manner deteriorated, as to render them in strength and purity inferior to the standard established by the United States, Edinburg, London, France, and German pharmacopœias and dispensaries, and thereby improper, unsafe, or dangerous to be used for medicinal purposes, a return to that effect shall be made upon the invoice; and the articles so noted shall not pass the custom-house, unless, on re-examination of a strictly analytical character, called for by the owner or consignee, the return of the examiner shall be found erroneous; and it shall be declared as the result of such analysis, that the said articles may properly, safely, and without danger, be used for medicinal purposes.

That the owner or consignee shall at all times, when dissatisfied with the examiner's return, have the privilege of calling, at his own expense, for a re-examination; and depositing with the collector such sum as the latter may deem sufficient to defray such expense, it shall be the duty of that officer to procure some competent analytical chemist possessing the confidence of the medical profession, as well as of the colleges of medicine and pharmacy, if any such institutions exist in the State in which the collection district is situated, a careful analysis of the articles included in said return, and a report upon the same, under oath; and in case the report, which shall be final, shall declare the return of the examiner to be erroneous, and the said articles to be of the requisite strength and purity, according to the standards referred to in the next preceding section of this act, the entire invoice shall be passed without reservation, on payment of the customary duties; but in case the examiner's return shall be sustained by the analysis and report, the said articles shall remain in charge of the collector, and the owner or consignee, on payment of the charges of storage and other expenses necessarily incurred by the United States, and on giving of bond, with sureties satisfactory to the collector, to land said articles out of the limits of the United States, shall have the privilege of re-exporting them at any time within the period of six months after the report of the analysis; but if the said articles shall not be sent out of the United States within the time specified, it

shall be the duty of the collector, at the expiration of the said time, to cause the same to be destroyed, holding the owner or consignee responsible to the United States for payment of all charges, in the same manner as if said articles had been re-exported.

Drugget, a coarse and flimsy woolen texture, chiefly used for covering carpets. It was formerly extensively employed as an article of clothing among the poorer classes, more especially of females; but this and similar fabrics are now almost wholly superseded by cotton goods, which induce greater cleanliness.

Drummond Light. The three angles of the enormous triangles by which a topographical survey is primarily conducted, sometimes 80 or 100 miles asunder, must be visible one from another; but how to produce the visibility? In the earlier surveys, where such daring distances were not attempted, a signal light was in some cases obtained by reflecting the light of the sun from a well-adjusted surface of polished tin, or by Bengal lights being fired at night, or by a powerful Argand lamp being placed behind a lens or before a parabolic reflector; but Lieutenant Drummond, during the progress of the Irish survey, made a happy suggestion which eclipsed in efficiency all others. In what is called the *Drummond* or *Lime Light*, a small ball of lime is exposed to the action of a spirit-flame fed by pure oxygen gas; the flame, in a highly-vivid state, heats the lime to an intense degree, and in its heated state, it emits a light of surprising brilliancy, far exceeding that of any flame yet seen. So beautifully was Drummond's apparatus constructed, that the lamp fed itself with spirit and with oxygen, supplied itself with balls of lime as each one slowly wasted, and reflected its surpassing light from an exquisitely-polished parabolic surface of silvered copper. It was not merely figuratively but literally true, that a piece of lime, not bigger than a boy's marble, emitted a light at Londonderry which was visible at Belfast—a distance in a direct line of nearly seventy miles. On a later occasion Colonel Colby made a lime-light signal visible from Antrim in Ireland to Ben Lomond in Scotland, a straight-line distance of 95 miles. See LIGHT-HOUSES.

Dry Distillation. This term is applied to the distillation of substances *per se*, or without the addition of water: thus if we put wood into a retort or other distillatory apparatus, and subject it to heat, it yields tar, vinegar, water, and various gaseous and other matters. See DISTILLATION.

Drying Machines. The drying process, by centrifugal agency, is of very wide application. Bleachers, dyers, and calico-printers use it. The wet mass of cloth or yarn is put into a hollow cylinder; this cylinder is made to revolve from 1 to 2 thousand times in a minute; the moisture is driven from the cloth with great violence; openings are left to afford an exit for this water into an outer vessel, and in a few seconds the cloth is nearly dry. Nothing but actually witnessing the process, can convey an adequate idea of the rapidity of this drying process. In some of the baths and laundries now established, machines of this kind are employed to supersede the hard necessity of "wringing" the wet linen—a great boon to the poor women who avail themselves of these advantages.

Dry Rot. A most destructive, and apparently infectious disease in timber, which, by decomposing the fibres, deprives it of all strength, and in no great length of time, reduces it to a mass of dry dust; a circumstance from which it seems to have derived its name, which, perhaps, would be better expressed by that of *sap rot*.

Though this disease must from its nature have been co-existent with the timber-trees, it would not seem to have excited much attention, and perhaps was not known, certainly not by its present name, before the middle of the last century; at some period, we rather think, of Sir John Pringle's presidency of the Royal Society of London. But for a long time after this little notice appears to have been taken of it; its ravages being, in all probability, inconsiderable, in comparison with what they have been of late years. Even now, the disease is, in fact, chiefly confined to modern-built houses and modern-built ships, and more particularly to the ships of the navy. The proximate cause of it has, therefore, rightly enough, as it would seem, been ascribed to the unseasonable state of the timber, when placed in certain situations, and under particular circumstances. It could not fail, in the course of the late long-protracted war, to become a matter of general observation, that a more rapid decay than usual had become almost universal throughout the fleet, and especially among the newest and most recently repaired ships. Many anxious inquiries were instituted, and experiments made, with the view of ascertaining the real cause of a decay, the further prevention of which was so highly important to the national welfare and security. The alarm was greatly increased when, in 1810, the *Queen Charlotte*, a first rate ship of war, shortly afterward launched at Deptford, was discovered, after a close examination, to have all her upper works infected with the *dry rot*; or, in other words, the ends of most of the beams, carlings, and ledges, the joinings of the planks, etc., were observed to be covered with a mouldy, fibrous, and reticulated crust, and the parts of the timber so covered to be perfectly rotten. All the newspapers and journals of the day were filled with this alarming fact, and, in consequence thereof, a multitude of *dry rot* doctors proffered their assistance: one having a nostrum for eradicating the disease where it had made its appearance, and another for preventing its further approach. Some of these specifics were expensive and inconvenient, many of them impracticable of application, and most of them futile and objectionable in one way or another. These doctors, in fact, like the physicians for the human body, when the seat of the disease is unknown, were laboring altogether in the dark, having no other guide to direct them than their own whims and fancies, each being ignorant of the effect of the respective experiments which they wished to try on this diseased machine.

Process of the Common Rot.—Authors are at variance among themselves, whether the *common rot* in timber, or the *dry rot*, be not one and the same disease. A little reflection, however, will, we conceive, lead us to consider them as essentially different, both in the symptoms, the progress, and the causes, though the *effect* of destroying the fibre of the wood is pretty nearly the same. If a post of wood, for instance, be driven into the ground, seasoned, or unseasoned, it will speedily begin to decay just at the surface of the ground, or, as it were, between the earth and the air; if driven into the earth through water, as in a pond, the decay will commence at the surface of the water, or, as it is technically expressed, between wind and water, while all above water, and all that is constantly immerged in the water, as well as the part in the earth, will remain sound. Thus, also, a beam of wood let into a damp wall, will begin to rot just where it enters the wall; so will wooden bannisters when they are let through the top and foot-rails. In these, and similar cases, the rot begins externally, and its progress is inward, and is more or less accelerated by the alternate action of wind, heat, and moisture, being *greatest* when the alternatives of exposure to wet and drought are most frequent, and *least* when constantly immersed in water, or constantly preserved in a dry atmosphere. Such we believe to be the usual process of the *common rot* in wood, and it is evidently occasioned by alternate exposure to the vicissitudes of the weather, to moisture and dryness, to heat and cold.

Process of the Dry Rot.—If the same post be well charred, or covered over with a thick coating of paint,

or varnish, or tar, no such effect will be produced *exter ally*, the coating being sufficient to protect it against the action of the weather; but if it should happen to be a green, or unseasoned piece of wood so tarred or painted, in no great length of time the wood will be found to have begun to decay *internally*, while the outer surface appears uninjured, but at length it will also yield to the disease. If this piece of wood had been placed in a warm cellar or close room, where there is little or no circulation of air, and more particularly if the room or cellar were damp, there would be perceived, in no great length of time, a fine mouldy coating spread over its surface, of a brownish yellow or dirty white; and shortly afterward it would be found, on examination, to resemble in its form and structure some of the beautifully ramified *algæ*, or sea weeds: which, in process of time would become more compact, the interstices being so completely filled up as to give the whole mass the appearance and consistence of leather. "At first," says one writer, "its appearance is that of fine fibres running on the surface in endless ramifications, resembling the nervous fibres of leaves; presently the interstices are filled up with a spongy or leather-like substance, assuming the character of cryptogamous plants distinguished by the name of *fungus*."

By Mr. Wade, the general symptoms of *dry rot* are thus described: "The wood at first swells; after some time it changes its color, then emits gases which have a mouldy or musty smell. In the more advanced stages of it the mass arises, and cracks in transverse directions. Lastly, it becomes pulverulent, and forms vegetable earth; and, generally, in some of these stages of decay, the different species of fungus are found to vegetate, on the mass."—*Treatise on the Dry Rot in Timber*, by THOMAS WADE.

These appearances do not invariably take place, the surface of the diseased timber sometimes remaining unchanged, while the process of rotting is going on within; they are, however, pretty constant. But however sound the surface may be, it will appear, on examining the piece of wood, placed in a situation similar to those above mentioned, that the whole of the interior fibres are decomposed, and become a mass of dust inclosed within a thin external shell. No charring of the surface, no paint, tar, or varnish, will prevent this process from taking place, when the seeds of the dry rot exist, and are placed in a situation favorable for their growth, though they may prevent the external character of mouldiness from taking place on the surface.

Characteristic Difference of the two Rots.—The symptomatic difference, then, between the common rot and the dry rot may perhaps be thus defined: *Common rot* is a disease in timber, occasioned by the alternations of the weather acting on its surface, and destroying its fibres externally inward. *Dry rot* is a disease in timber, occasioned by being shut up in warm, close, and moist situations, the effect of which is to destroy its fibres by a process acting internally outward.

Causes of the Dry Rot.—Without stopping to inquire in what manner, and by what agency, chemical or mechanical, or both, the common rot acts on the external fibres of the wood, the effect of alternate exposure to the weather is too well known to require any further proof as to its being the immediate cause. The immediate cause of the dry rot is equally obvious; but the predisposing state of the timber to contract the disease is not so clear a problem. Accordingly, theories without end have been hatched to explain the phenomenon. A writer in a public journal, who has slightly touched on the subject, thus explains it: "It is well known," he observes, "that if a piece of green wood be laid across a fire, the air within, expanded by the heat, will drive out at each extremity a viscous fluid, possessing the property of disposing itself on the surface in reticulated filaments. The same appearance of nervous foliation is not uncommon in the intermediate spaces of the concentric layers of the *alburnum* of wood; and the core or heart of trees, and particularly of the pitch-pine, after its passage in the heated hold of a ship, is often enveloped with a membranous corticle, like that which lies immediately beneath the bark. All these appearances are certain indications of the *dry rot*; and they point out, with sufficient clearness, that the *sap*, or principle of vegetation, brought into activity, is the *cause* of the disease; the *effect*, though infinitely more rapid, is the same as that of the common rot. It is still a problem, in what manner this sap circulates; but there is no doubt that the tubes and cells of the alburnum, or sap-wood, are filled with it in the spring of the year, and that they are empty in the winter; that it is organized matter, developing itself by heat in all the various forms of new bark, leaves, and branches. The stem of a tree cut down, will, on the return of summer, make an effort to push out leaves; a more feeble effort of this organized sap ends in the production of *fungus* only."—*Quarterly Review*, No. xv.

The real efficient cause of the dry rot, is that of the juices of the timber being brought into a state of putrefaction, occasioned generally by exposure to a moderate degree of heat and moisture in a stagnant atmosphere. "To favor this process," says Mr. Wade, "as much as possible, the air and water should not be renewed, as they undergo a decomposition, which takes place very slowly." From the structure of timber being composed longitudinally of an assemblage of pipes or tubes, it is only necessary that one end of a log of wood should be placed in a damp or wet situation, to occasion the moisture to be conveyed to the opposite end by capillary attraction; and hence arises the infectious nature of the disease, which will always spread wherever the moisture finds its way; and even where there is no moisture, it will be created by the filaments of the fungi working their way through the tubes of the dry wood and carrying it with them. Hence, also, the rapid decay in ships of war, from the great internal heat occasioned by the number of men, the moisture, and the close air. Hence, also, in houses, the *dry rot* always first appears in the lower apartments, where the floors, partitions, skirting-boards, etc., are supplied with moisture from the wet walls on the ground. In the London houses there is generally a room on the basement story, called the house-keeper's room, which is boarded, and carefully covered over with an oiled floor-cloth. In such a room the dry rot is sure to make its appearance. The wood absorbs the aqueous vapor which the oil-cloth will not allow to escape, and being assisted by the heat of the air in such apartments, the decay goes on most rapidly; and, as Mr. Wade observes, "if the seed of fungus be present, the plant is developed in all the superfluity of vigor exhibited in a hot-house, where the same means are resorted to, namely, an atmosphere scientifically and artificially heated, and highly charged with aqueous vapor." Timber may, in fact, have the seeds of dry rot within it, and yet by proper treatment be kept sound for a great length of time. Thus, ships laden with particular cargoes, afford remarkable instances of the effects of such cargoes on their duration. The warm moisture created by a cargo of hemp is communicated to the timber, and promotes a rapid putrefaction. Mr. Chapman says, that the ship *Brothers*, built at Whitby, of green timber, proceeded to Petersburg for a cargo of hemp. The next year it was found, on examination, that her timbers were rotten, and all the planking, excepting a thin external skin. A lading of cotton is always injurious to the ship, and even teak is affected by a cargo of pepper. The timber which is brought from America in the heated hold of a ship, is invariably covered over, on being landed, with a complete coating of fungus. It was the too general use of this timber in ships of the royal navy that at one time

increased the disease to such an alarming degree. Those ships, on the contrary, which are employed constantly in the coal and lime-trade, are very durable, and have been known to last for a century. These effects are obviously to be ascribed to the exclusion of air in the one case from, and the free admission of it in the other to, the interior surface of the ship, assisted in the latter instance by the absorption of moisture by the coals and lime from the timber and planking.

Prevention of Dry Rot.—If we arrive at the right conclusion as to the *cause of dry-rot* in timber, we can be at no loss with regard to the mode of treatment for the *prevention* of the disease. The experiments for this purpose have been very numerous, but may be classed under three general heads; desiccation or seasoning; immersion in earth, sand, or water; and impregnation with some foreign matter, which will resist putrefaction.

The most simple and common mode of preventing the decomposition of vegetable matter, is by depriving it of moisture. Various schemes have been put in practice for drying the juices in large logs of timber. Time alone will do it when the wood is placed in favorable situations, that is to say, in a dry atmosphere, and constantly exposed to a free circulation of air; but time will also produce the rot in timber when piled up in stacks in the open air, imbibing moisture from the earth, and exposed to the vicissitudes of the seasons, and the alternatives of weather; scorched at one time by the heat of the sun, at another drenched with rain, and rent and split in every possible way by the freezing of the water which has insinuated itself into the pores and crevices of the wood. It was formerly, and, indeed, till very lately, the practice to let ships of war remain on the stocks *in frame* for two, three, or four years, to *season*, as it was called; but there never was so mistaken a notion. "When a ship," says Mr. Wade, "is built, exposed to the weather, the lower part forms a grand reservoir for all the rain that falls; and as the timbers in that part are placed as close together as possible, the wet escapes very slowly. Those timbers are always soaked with moisture, and, to some distance from the keel, exhibit a green appearance; their green matter, when viewed through a microscope, is found to be a beautiful and completely formed moss, which vegetates at the expense of the timber. If to season timber be only to dry it, the sooner it is dried the better; and when completely dry, it can not too soon be employed in ship-building, when it should be kept dry. It can not answer any end to have seven years' wear out of a ship on the stocks." At length our shipwrights are convinced of this truth, and the plan now generally adopted in ship-building is to protect the vessel by a roofed structure, with the sides open to admit a free current of air, but to exclude all moisture, as well as the rays of the sun (see DOCK-YARDS); a practice which we have tardily adopted from the Swedes and the Venetians. A new system seems also to have been adopted in the piling of the timber stacks. Instead of their being placed on old, useless, and often rotten logs of timber resting on the ground, they are now insulated from the earth on stone or iron pillars; and in place of their surfaces coming in contact with each other, pieces of wood are placed between them so as to admit of a circulation of air. Nothing further appears to be wanting but to protect the tops and the ends of the stocks or piles from the effects of the weather.

Of the various modes of artificial and rapid desiccation, that of charring is perhaps the best; but it is liable to two objections; the first is, that if the surface be completely charred, it diminishes very much the strength of the timber; and, secondly, it the more readily attracts moisture. The juices of timber may be drawn off or hardened by kiln-drying; but this also disturbs the arrangement of the fibres, and deprives the wood of a great part of its strength.

Experiments—Seasoning Timber.—The experiments made by Mr. Lukin for the rapid seasoning of green oak timber, promised at one time much success, but ended in disappointment. He conceived, that if the acid and the watery particles were driven out of a piece of oak timber by some process which should prevent the surface from splitting, the fibres would be brought closer into contact, and whilst the log lost in weight it would gain in strength. With this view he buried a piece of wood in pulverized charcoal, in a heated oven. The log wore a promising appearance; the surface was close and compact; it had lost in its weight and dimensions; but when divided with the saw, the fibres were discovered to have started from each other, exhibiting a piece of fine net-work, resembling the inner bark of a tree.

The bad effects of applying artificial heat to the seasoning of green timber, were strongly exemplified by a practice introduced very generally into our ships of war which had exhibited indications of the dry rot, particularly in the *Queen Charlotte*. Enormous fires were made in stoves placed in various parts of the ship, and the heat led in tubes to the cavities between the timbers, etc. The consequence of which was, as might be expected, an increase of the mischief they were intended to prevent. Every part of the ship was converted into a hot-house, and every part where the seeds of fungi had been deposited began to throw out a luxuriant crop of mushrooms; and where these did not appear, the juices of the wood were thrown into a state of fermentation, and, in the course of a twelve-month, a great part of her upper works became a mass of rottenness. After staving the powder magazines of some of the ships, there appeared under their floors, which are contiguous to much moisture, numbers of large excrescences of a leathery consistence, of the size and shape of a quart glass-decanter; and in all such parts where two surfaces of the wood were imperfectly brought into contact, were whole masses of fungi.

Winter-felled Timber.—Another mode, of very ancient standing, was practiced for getting rid of the juices of timber. This was supposed to be effected by felling the tree in the winter season, when the sap had descended and the vessels were empty. By this practice the bark of the oak, so valuable in the process of tanning, was lost, as it will strip only from the wood in the spring of the year, when the sap is said to be rising. The supposed superior quality of the wood, when winter-felled, and the general practice of felling oak timber at that season, may be inferred from a statute of James I., by which it is enacted, that no person or persons shall fell, or cause to be felled, any oaken trees meet to be barked, when bark is worth 2*s.* a cartload (timber for the needful building and reparation of houses, ships, or mills, only excepted), but between the first day of April and the last day of June, not even for the king's use, out of barking-time, except for building or repairing his majesty's houses or ships.

The *Sovereign of the Seas* is the standing example generally quoted to prove the beneficial effects of winter-felled timber. We are informed by one writer that, when taken in pieces, after 47 years' service, the old timber was still so hard that it was no easy matter to drive a nail into it, and all future writers have taken it for granted that this was owing to its being winter-felled. Mr. Pett, however, who built her, takes no notice of any such circumstance. He merely says he was commanded by the king, on the 14th of May, 1635, to hasten into the north to procure the frame-timbers, plank, and treenails, for the great new ship at Woolwich. But he left his son behind to ship the moulds, provisions, and workmen, in a hired ship, to transport them to Newcastle; that the frame, as it was got ready, was sent in colliers from Newcastle and Sunderland; and that, on the 21st December, *in the same year*, the keel was laid in the dock; and in less than two years after this she was launched. Now, as it was

the middle of May before Mr. Pett received his majesty's commands to procure timber for this ship, and as she was on the stocks the same year, it is not very probable that the timber procured and sent in colliers from Newcastle to Woolwich, was felled in the winter; much less could it have been "stripped of its bark in the spring, and felled the *second* succeeding autumn," as Mr. Wade has it.

Neither is there the least proof of the old *Royal William*, recently broken up, when a century old, being built of winter-felled timber. The fact is, that she was rebuilt half a dozen times, and the only old and original timber remaining in her was in the lowest part of her hull, always immersed in the salt-water externally, and washed with the bilge-water internally; and the wood from this part of her, when broken up, was perfectly sound, but quite black, having the appearance of being charred.

As far as experiments have been made, there is no reason to conclude that timber felled in the winter is at all more durable than that which is felled at the usual time. In the year 1793, the *Hawke*, sloop-of-war, was ordered to be built, one side being of timber that had been barked in the spring and felled in the winter, and the other side with timber felled at the usual time. In 1803 she was reported to be in so bad a state of rottenness, that she was ordered to be taken in pieces, when no difference whatever could be discovered in the state of the timbers of the two sides. It is said, however, in Derrak's *Memoirs of the Navy*, "that the timber had been stripped in the spring of 1787, and not felled until the autumn of 1790," and this is given as an explanation of the failure. Why the barking in the spring should add to the durability of timber, is not easily conceived, if the object be to fell the timber when all the sap-vessels are empty, as, if the sap *descends* at all, which is doubtful, it might be expected to descend more freely when the bark is on than off the tree. This subject has not escaped the attention of the commissioners of the royal woods and forests, and various experiments have been made with a view to throw more light on a subject so vitally important to the British Navy. In France, so long ago as 1669, a royal ordinance limited the felling of timber from the 1st October to the 15th April; and the conservators of the forests directed that the trees should be felled when the "wind was at north," and "in the wane of the moon;" and we find an instruction of Bonaparte, that "as ships built of timber felled at the moment of vegetation must be liable to rapid decay, and require immediate repairs, from the effect of the *fermentation of the sap* in those pieces which had not been felled at the proper season;" the agents of the forests should abridge the time for felling naval timber, which should take place "in the decrease of the moon, from the 1st November to the 15th March."

Immersion in Earth, Sand, or Water.—The facts are so numerous and so strong in favor of the durability of timber when steeped in water, or buried in earth or sand, that no doubt whatever can be entertained of the efficacy of such a practice. At Brest, all the timber used in ship-building is deposited in the narrow creek of the harbor which runs through the middle of the dock-yard, and it is said that the Brest-built ships never had the dry rot. The same practice prevailed at Cadiz and Carthagena. Indeed there is reason to think that steeping in fresh water is a preventive of dry rot, probably by dissolving the juices of the timber. It was an ancient practice, and we believe it is still followed in some parts of England, to place the timber intended for threshing-floors in the midst of a stream of water to *harden* it; and all the oak planks intended for the wainscoating of the old mansions were previously steeped in running water.

It is said, and there seems to be no reason for doubting the fact, that the planks of ships near the bows, which are obliged to be boiled in water or steam in order to bend them, are never infected with the dry-rot: if the water in which they are boiled be strongly impregnated with salt, the effects would probably be more durable and decisive.

In a lecture read by Mr. Ogg, a salt-refiner, to the Plymouth Institution, on the prevention and cure of dry rot in ships of war, common salt is strongly recommended, for its cheapness, its wholesomeness, and its easy application; but he proposes a saturated solution of salt, in which he would steep not only single logs or planks, but the whole frame of a ship, or even the ship itself. "Let every ship in the navy," says the salt-refiner, "be immersed a sufficient time in this fluid, and let every new ship be prepared in the same way, and dry rot would be heard of no more. But how is this to be accomplished? I answer, provide a dock or docks sufficiently capacious to receive five, ten or twenty ships, and the work is done." As common sea-water will answer the purpose equally well, the apparatus of extensive docks and water saturated with salt are wholly unnecessary. But Mr. Ogg, like Mr. Bowden, appears to mistake the real cause of dry rot. "I affirm," says he, "that dry rot is occasioned by the vegetative principle; brine will destroy this principle; then sink the ship in brine." The experiments in the case of the *Resistance* and the *Eden* show that brine is not necessary.

The Dutch having observed that their busses, in which the herrings were caught and stowed away in pickle, lasted longer than any other craft, adopted the practice of filling up the vacancies between the timbers and planks of ships with salt, and of boring holes in the large timbers and cramming them full of salt. The Americans also found, that the chips employed in carrying out salt for their fisheries and domestic purposes, were the most durable; and both they and the Dutch are glad to get a cargo of salt into a new ship, as the surest means of preserving her. The carpenter of the *Franklin*, an American 74 gun ship, when at Spithead, told some of her visitors, that at the junction of the beams, and at the butt end of the timbers, pieces were cut, and the hollow part filled with salt, and covered with felt, for the purpose of preserving those parts where two surfaces are imperfectly brought together, from the dry rot, where it is always most prevalent.

There are, however, very serious objections to the immersion of ships in a strong solution of salt, and the practice of inserting salt in the vacant space between the timbers, which may not, perhaps, apply with equal force to their immersion in sea-water. It is observed by a writer in the *Quarterly Review* for October, 1814, that "the attraction for moisture which salts and acids possess, would keep the whole interior of the ship dripping wet; which would not only destroy the ship with the wet rot, but the ship's company also, whose health, experience has proved, is best preserved by keeping the ship as dry as possible; and thus the remedy would be worse than the disease." These bad effects have unquestionably been experienced, the muriate of magnesia, which exists in sea-water, being one of the most deliquescent salts; but whether the abstraction of moisture from the atmosphere be of long duration, is a fact which remains to be proved. In corroboration of the injurious effects above described, Mr. Strange in his *Evidences*, observes, "that the practice at Venice of the fresh cut timber being thrown into salt water prevents its ever becoming dry in the ships, and that the salt water rusted and corroded the iron bolts." Mr. Chapman also observes that "the *Florida*, a 20 gun ship, taken from the Americans, and subsequently commissioned in the British service, had been salt-seasoned; and the result was, that in damp weather every thing became moist, the iron-work was rusted, and the health of the crew was impaired; in fine," he adds, "vessels so circumstanced are perfect hygrometers; being as sensible to changes of the

moisture in the atmosphere as lumps of rock salt, or slips of fuci, or the plaster of inside walls where sea-sand has been used."

Mr. Chapman, however, is of opinion, that vessels impregnated with bay-salt, or the large grained salt of Limington or of Liverpool, (being pure muriate of soda, without admixture with the bitter deliquescent salts), will possess decided advantages, as would also vessels laden with saltpetre, if it has been dispersed among their timbers; and Mr. Ogg sees no difficulty in refining salt so as to deprive it of its deliquescent quality. But if a very weak solution of salt, or even fresh water, shall be found to answer the purpose, the objection against immersing timber in sea-water seems to be got rid of. That it will immediately destroy all vegetable life in the delicate fibres of the fungus, and also prevent its future growth, is quite clear; and if it shall be found to prevent also the putrefactive process, it may be considered the most advisable way to prepare timber for all purposes of house carpentry, and ship-building.

Impregnation of Timber with Foreign Substances.—A great variety of substances besides common salt, indeed almost any salt or acid, will destroy and prevent the growth of fungus. Sir Humphrey Davy recommends a weak solution of the corrosive sublimate as the most efficient. A solution of sulphate of iron or copperas, is much used in Sweden for hardening and preserving wood for wheel-carriages, etc. It is boiled in this solution for three or four houre, and then kept in a warm place to dry, by which process it is said to become so hard and compact that moisture can not penetrate it. "The wooden vessels," says Mr. Chapman, "in which the sulpho-ferruginous solution is finally placed for the copperas to crystallize, become exceedingly hard and not subject to decay." A solution of alum has been recommended; but Mr. Chapman seems to think that its earthy basis would become a nidus of putrefaction. The wood, however, which is used about alum works, becomes hard and durable, and resists fire in an extraordinary manner. All timber, in fact, when completely saturated with saline matter, is more or less indestructible, and absolutely incombustible. A solution of arsenic has not been found to prevent the dry rot. With regard to the impregnation of oils, there are various opinions, some thinking them beneficial, and others injurious to the durability of timber. It is known, however, that ships in the Greenland trade have their timber and planks preserved as high up as they are impregnated with whale oil from the blubber; and Mr. Chapman says, that one of the masters of a Greenland ship having payed her upper works with twelve or more successive coats of whale oil in hot weather, they became covered with a thin varnish, much harder and more compact than if filled with successive coats of turpentine. Resinous substances, however, are probably better than oil.

After a variety of experiments and sensible observations, Mr. Chapman sums up the three great operations by which timber may be brought to resist the tendency to dry rot. 1. To deprive the timber of its mucilage, which is very liable to fermentation. 2. To impregnate timber with any strongly antiseptic and non-deliquescent matter. 3. To dry timber progressively by the sun and wind, or by the latter alone; and then to close its pores completely with any substance impervious to air and moisture, and at the same time highly repellant to putrescency.

Mr. Wade recommends the impregnation of timber with sulphates of copper, zinc, or iron, rejecting deliquescent salts, as they corrode metals, and would destroy the bolts and metal fastenings of a ship. He observes, that timber impregnated with saline matter is no longer capable of fermentation, and that, of course, the gases necessary for the nutriment of fungi are not evolved. Selenite is recommended as being insoluble, or nearly so, and not liable to any alteration in the ordinary temperature of the atmosphere; but all salts, he observes, composed of barytes, should be rejected, because, though they are plentiful, cheap, and have some qualities eminently fitting them to be employed for this purpose, yet they are, without any exception, very poisonous.

From all experiments that have been made, it appears that the most effectual method of preventing the dry rot, and of giving durability to timber, is that of depriving the sap of its mucilage, more especially in the alburnum, where it most abounds; for though seasoning in the dry way will coagulate and harden the extractive matter of timber, yet when exposed to heat, moisture, and a stagnant air, the process of putrefaction will commance, and all the symptoms of dry rot will speedily make their appearance. It will be preferable, therefore, that such timber as is likely to be exposed to the vicissitudes of weather, should be seasoned by immersion or impregnation, rather than by the dry way.

Cure of the Dry Rot.—In this disease, as in those incident to animal life, prevention is much asier than cure. In fact, there is no other cure for the part affected than excision, and the sooner it is done the better, as the disease spreads most rapidly when fungi are propagated, throwing their minute fibres into the tubes of the contiguous sound wood, and producing that moisture which is a condition absolutely necessary to the putrefactive process. If, however, the fibre of the wood is still sound, and the roots of the fungi extend not beyond the alburnum near to the surface, immersion in sea-water, as in cases of the *Resistance* and *Eden*, or impregnation with some of the solutions above mentioned, may stop the progress of the disease; but the only safe cure, we apprehend, is that of cutting out the infected part. The sinking of the *Royal George* at her moorings has not been the means of preserving her timbers. On being visited in the diving-bell, her oaken sides were broken down into a confused mass of timber and black mud; having, no doubt, been too far gone in decay, when the fatal accident happened; but her fir deck appeared as sound as the day when she sunk.

Miscellaneous Observations.—It is a great mistake to suppose that the ancients were unacquainted with the dry rot or premature decay of timber. Pliny has a number of valuable observations on the preservation of timber, and on its decay occasioned by the juices; and, among other things, recommends that a tree should be cut to the heart all round, in order to let the juices escape, and that it should not be felled until the whole had run out. He knew that the sappy part of oak was more subject to rot, and advised that it should be cut away in squaring. He knew, too, that resinous and oleaginous matter in wood preserved it; observing, that the more odoriferous a piece of timber is, the more durable. He knew that much depended on the close texture of timber, and that box, ebony, cypress, and cedar might almost be considered as indestructible. We also know that cedar, teak, and mahogany, are very durable woods.

The felling of timber while young and full of vigor, making use of the sap-wood or alburnum, and applying it to ships and buildinge in an unseasoned state, have, no doubt, contributed to make the disease of dry rot infinitely more common and extensive than it was in former times, when our ships were "hearts of oak," and when in our large mansions the wind was suffered to blow freely through them, and a current of air to circulate through the wide space left between the panneled wainscoat and the wall. In those old mansions which yet remain, and in the ancient cathedrals, we find nothing like the dry rot, though perhaps

——— perforated sore
And drill'd in holes, the solid oak is found
By worms voracious eaten through and through.

Numerous examples of the extraordinary duration of timber may be produced, both from complete desiccation and exposure to the air, and from the complete exclusion of air and immersion in earth or water. Without adducing the turturbrandt of Iceland, covered with several strata of solid rock, or the logs of wood dug out of peat-moss, the antiquity of which is mere conjecture, we may instance the mummy-cases of Egypt as being in all probability the most ancient timber in existence that has been worked by the hand of man. When Belzoni entered the splendid tomb of the kings of Thebes, in which was the transparent sarcophagus of gypsum, he found two human figures larger than life sculptured in wood, in as good preservation as if it had been worked in his own time; but the sockets of the eye, which had been copper, were entirely wasted away. We are told by Pliny, that the image of Diana at Ephesus, supposed to be of ebony, remained entire and unchanged, though the temple itself was ruined and rebuilt seven times. He adds that, in his own time, the image of Jupiter in the capitol, made of cypress wood, was still fresh and beautiful, though set up in the year after the foundation of Rome 551, nearly three hundred years before. He further says that there was a temple of Apollo at Utica, the timbers of which, being of Numidian cedar, are said to have stood 1188 years. The roof of Westminster Hall, which is constructed of oak, has stood for more than three hundred years, and is probably better now than when newly erected. Similar instances of the long duration of timber have occurred in situations where the atmospheric air has been excluded. In the Leverian Museum was a post said to be dug out of Fleet Ditch, charred at the lower end, having the name of Julius Cæsar cut into it. The foundation on which the stone piers of London Bridge are laid consist of huge piles of timber driven close to one another, on the top of which is a floor of planks ten inches thick, strongly bolted together; on these the stone piers rest, at above nine feet above the bed of the river, and, at low water, may be seen or felt at a very few inches below the surface. These piles have been driven upward of six hundred years, and, from the solidity of the superincumbent weight, it may be concluded that they are perfectly sound. In the old city wall of London, timber is frequently dug out as sound and perfect as when first deposited there. As the last instance of the extraordinary preservation of timber, we may mention that in digging away the foundation of the Old Savoy Palace, which was built about six hundred and fifty years ago, the whole of the piles, consisting of oak, elm, beech, and chestnut, were found in a state of perfect soundness, without the least appearance of rottenness in any part of them, and the plank which covered the pile-heads was equally sound. Some of the beech, however, after being exposed a few weeks to the air, but under cover, had a coating of fungus spread over the surface; which affords a striking proof of the immense length of time that the seeds of this parasite will remain dormant, without parting with the principle of vegetable life, which is called into activity from the moment that they are deposited in a situation favorable to their growth. In this instance we have only to suppose that the indurated juices of the wood became dissolved by its exposure to the moist atmosphere, and the phenomenon of fungous vegetation is capable of receiving a satisfactory explanation.* Communicated to the *Encyclopædia Britannica*, by Sir John Barrow, Bart. See *Am. Jour. Sc.*, ii., p. 114, xxxiv., p. 169; *Westminster Rev.*, x., p. 414; *London Quar.*, xii., p. 227, xxx., 216; *Monthly Rev.*, lxxxvi., 361, xc., 387; Ure's *Dict. Arts*.

Dubber, or **Dupper**, a leathern vessel, bottle, or jar, used in India to hold oil, ghee, etc. Barrels, as already observed, are entirely a European invention. Liquids, in eastern countries, are for the most part packed for exportation in leathern vessels. Dubbers are made of thin untanned goat skins; and are of all sizes, from a quart up to nearly a barrel.

Dublin, the metropolis of Ireland, in the county to which it gives name, and province of Leinster, ranking in importance as the second city in the United Kingdom. It is distant 292 miles W.N.W. from London, 138 miles west from Liverpool, and 60 miles west from Holyhead, in lat. 53° 20′ 38″ N., and long 6° 7′ 18″ W., agreeably situate in the great central limestone district which reaches across the island from the Irish Sea to the Atlantic Ocean on the River Liffey, and extending to the junction of that river with the Bay of Dublin, the waters of which wash its suburban shores.

The population of the city of Dublin was estimated by Rutter, in 1753, at 161,088; in 1798, by Whitelaw, at 182,037, and was ascertained by the census of 1821 to amount at that period to 185,881, and by the census of 1831 to 204,155. The population of the city, according to the most recent enumerations, in 1841 was 232,726, and in 1851 it was 258,361.

In order still further to promote the commercial interests of Dublin, an association was formed about thirty years ago, under the name of the Chamber of Commerce, which soon decayed; but the idea was revived in 1820, when a number of merchants formed themselves into a society under the same name, which still exists. Its objects are the protection and promotion of the manufacturing and commercial interests of Dublin, and of the country in general. The business is transacted by a president, vice-presidents, and committee, instructed to communicate with the officers of government on the subjects of the association. Their office is held in the Commercial Buildings. The Ouzel Galley is another voluntary association of merchants for determining commercial differences by arbitration. It takes its name from that of a vessel, which was the occasion of a complicated and protracted suit, that was ultimately adjusted in an amicable manner by the interference of some of the most respectable merchants in Dublin. The effect of steam navigation on the cross-channel trade has produced a great alteration in the state of commerce in Dublin.

The Bank of Ireland was formed in 1783 in order to give security to commerce. It was opened at first in some old houses in Mary's Abbey, with a capital of £600,000, which was afterward increased to £3,000,000. In the year 1802 the parliament house was purchased by the directors, and adapted to its present destination. This edifice was erected in 1729; and notwithstanding the changes made in it since it was diverted from its original purpose, the exterior has been but little altered. It consists of three fronts. The principal, toward College Green, a colonnade of the Ionic order, formed of a façade and two projecting wings, is much admired for the noble simplicity of its elevation. The western front, a portico of four Ionic columns, was connected with the other by a colonnade of the same order, form-

* The process termed *kyanizing* is similar to that already noticed, as proposed by Sir Humphrey Davy—namely, steeping the timber in a solution of corrosive sublimate. This appears to be one of the best preservatives of wood in so far as dry rot is produced by a fungus. Mr. Bethell's method of preparing wood for fences, railway sleepers, piles, and other wood-work submerged in water, and for various similar purposes, is said to render timber of any description much tougher, and greatly to promote its durability. The process is as follows: The timber is placed in a strong close iron tank, which is filled with oil of tar and other bituminous matters containing creasote, and with pyroligneous of iron; the air is then exhausted by powerful air-pumps; after which more of the saturating fluid is forced in by hydrostatic pumps. When the wood has been subjected for six or seven hours to a pressure of from 100 to 150 pounds on the square inch, the process is complete, and the wood is found to weigh from 8 to 12 pounds per cubic foot heavier than before. It also preserves iron bolts driven into it from corrosion. Wood thus prepared has been used for sleepers on several of the great English railroads, and is said to have proved extremely durable. (See Ure's *Dict. of Arts*, etc., vol. ii., p. 963.)

ing the quadrant of a circle. The eastern front, which was the entrance of the House of Lords, was, by their special order, a colonnade of the Corinthian order, which the architect found great difficulty in uniting with the other parts. The apartment for the lords, a fine room, was hung with tapestry. That of the commons having been burned in 1792 (whether by accident or design has never been fully ascertained), was reconstructed after a more elegant design, in the form of a circle surrounded by pillars, between which was a gallery for hearers. This fine hall was taken down by the bank directors, and converted into a square room, now the cash-office.

The commerce of the port of Dublin had increased so much toward the close of the last century that the accommodation afforded in the river for shipping was found insufficient, and the Irish parliament granted £15,000 for forming docks on both sides of it. The floating and graving docks, communicating with the grand canal on the south side, including a basin covering 40 statute acres, with a fine quay and store frontage of 7,500 feet, were opened in 1796; and St. George's, the latest of the custom-house docks, in 1821. These latter cover an area of 8 acres, having 16 feet depth of water, and 1200 yards of quay; they are capable of accommodating 40,000 tons of shipping, and the stores have space for 8000 casks of sugar and tobacco, and 20,000 chests of tea, with cellarage for 12,000 pipes of wine. The docks on the south side afford commodious wharfage for 100 sail of merchantmen and colliers, exclusive of that supplied by the river quays. The formation of the asylum-harbor at Kingstown, then Dunleary, which was commenced in 1817, gave additional aid to the commerce of the port, by the increased protection it afforded to shipping. The improvements made on the bar, in the erection of the great northern wall or breakwater, and the steam dredging of the bed of the Liffey by the ballast board, by rendering the channel sufficiently deep for the navigation of vessels of 1400 tons, has also contributed greatly to the same effect.

There were in 1852 belonging to the port, including steamers, 454 vessels, of every size, from 15 to 1200 tons; the registered burden amounting to 89,814 tons. Most of those vessels were employed in the coasting or cross-channel trade, there having been but 6 or 8 in that of the West Indies, the same number in that of France and the Spanish Peninsula, and 20 or 30 in the North American timber trade. The amount of customs collected averages about £950,000, and has not varied much during the last twelve years, the reduction of duties having more than balanced the increase in the quantity of articles imported.

"First impressions of Dublin," says Inglis, "are decidedly favorable. Dublin, for its size, is a handsomer city than London. Sackville-street will compare with any street in Europe; Merrion Square and St. Stephen's Green surpass . extent any of the squares in the British metropolis. There are points of view in Dublin, the quays, and some of the finest public edifices, more striking, I think, than any that are to be found in London; and although the Irish capital can boast of no St. Paul's, yet, in the architectural beauty of some of her public buildings, she has just reason for pride. I need but name the Custom House, and the Bank of Ireland with its magnificent yet classically chaste colonnades, in proof this assertion." There is much truth in this description, yet the chief advantage which Dublin has in picturesque beauty lies in the concentration of the objects of interest within a small compass, and further examination does not confirm the first favorable impression. Sir John Forbes, who visited Ireland in 1852, says: "I own myself to have been a good deal disappointed with Dublin as a city. To say nothing of its extent, it is greatly inferior in many other respects, not only to London, but to several towns in England, and some in Scotland. Its site is flat and monotonous, and its streets and squares possess no architectural beauty. The former, to be sure, are often very wide, and some of the latter, as Merrion Square and Stephen's Green, are of immense extent, but there is throughout a general want of elegance and grandeur. Most of the streets seem to want dignity, and the majority of the houses are common-looking, and even mean and dingy. While denying both beauty and grandeur to Dublin as a city, I must join in the universal judgment as to the splendor of many of its public buildings, as the Bank of Ireland—formerly the Parliament House, the Custom House, the Post Office, the Royal Exchange," etc.

Few cities present a more striking picture of the extremes of splendor and destitution than Dublin. A line drawn from the King's Inns in the north of Dublin, directly south, through Capel-street, the castle, and Aungier-street, will, together with the line of the Liffey, divide the whole area into four districts, materially different from each other in appearance and character. The south-eastern district, which comprehends three of the great squares, and the north-eastern, which includes the two remaining squares, are chiefly inhabited by the nobility, the landed gentry, and the liberal professions. These two districts present many symptoms of affluence and luxury. But on proceeding westward the scene suddenly changes. A considerable portion of the south-western district, which included the liberties of St. Sepulchre's and Thomas Court, and was formerly the seat of the silk and woolen manufactures, and also of the north-western portion of the city, are in a state of almost hopeless decay. The squalid misery visible in the ruinous portions of the city is relieved to the eye by the beauty of the environs of the city; and in its immediate vicinity is the Phœnix Park, of which the citizens are justly proud. It comprises an area of 1753 acres, within which are contained the Viceregal Lodge, the usual residence of the lord-lieutenant, with 160 acres of demesne and gardens, the chief and under secretary's lodges, and the lodges of the park rangers and their assistants, with their respective inclosed grounds, the Hibernian school for soldiers' children, the military magazine, the military infirmary, the zoological gardens, the constabulary barracks, etc. Inglis, a good authority on such subjects, pronounced this park as superior, both in extent and diversity of surface, to any public park, promenade, prater, or prado, belonging to any other European city. (Whitelaw and Walsh's *History of Dublin*; Thom's *Irish Almanac*; Gilbert's *History of the City of Dublin*, 1854.)—E. B. *Dublin Univ. Mag.*, viii., xvi., iii., iv., v., vii.

Ducat, a foreign coin, either of gold or silver, struck in the dominions of a duke. The ducat was first coined by Longinius, governor of Italy, who revolted against the Emperor Justin the Younger, and made himself duke of Ravenna, calling himself *Exarcha*, that is, *without lord or ruler*; and he struck pieces of money, of very pure gold, with his own stamp, which, as Procopius relates, were called *ducati*, ducats. According to Du Cange, ducats were coined by Roger, King of Sicily, in the year 1240. The Venetian ducat was first struck by John Dandolo, in 1280, and inscribed with this legend:

"Si Tibi, Christe, datus, quem Tu regis iste Ducatus."

Ducato (Cape), the modern name of the ancient Leucate, a promontory at the south end of Santa Maura, one of the Ionian Islands; celebrated as the rock from which Sappho precipitated herself into the sea.

Ducatoon, a silver coin, struck chiefly in Italy, particularly at Milan, Venice, Florence, Genoa, Lucca, Mantua, and Parma; though there are, also, Dutch and Flemish ducatoons.

Dundee, a seaport town of Scotland, county of Forfar, 42 miles N.N.E. from Edinburg; N. lat. 56° 2′; W. long. 3° 2′. It is situated on the north side of the River Tay, about 12 miles from its mouth. Population (1855) 78,931; and as a considerable increase

has since taken place, it may now be estimated at 90,000 to 100,000. Dundee is thus the third town in Scotland in respect of population. The name applied to it by the earliest writers is Alectum or Taodunum. It was subsequently designated Deidonum, of which the present name is supposed to be a corruption. The early history of the town is involved in obscurity, but it appears to have been a place of importance as early as the 12th century. Frequent mention is made of it in connection with the disputes regarding the succession to the crown of Scotland; and it was the scene of severe conflicts between the English forces, who invaded the country in the reign of Edward I., and the Scotts, under the patriotic Wallace, and the other supporters of Scottish independence.

Dundee was at one time surrounded by strong walls, and portions of them are yet to be seen. The Cowgate port still stands, and is regarded with veneration as a memorial of George Wishart, the Reformer, who is said to have preached from it in the year 1544, when the plague prevailed, the sick being placed on one side of the wall, and the healthy on the other.

The ground on which the town is built slopes gently toward the river, and is bounded on the north by the Law of Dundee and the Hill of Balgay. The former rises to the height of 595 feet, and must in warlike times have been a strong position. The walls of a fortification are still to be traced on its summit. The town in general is irregularly built; but within the last 20 or 30 years several new and spacious streets have been opened up. The principal public buildings are the Exchange Reading-Room; the Royal Arch, erected by public subscription to commemorate the landing of Queen Victoria in 1844, at a cost of nearly £8,000; the Public Seminaries; and the New Baltic Exchange Coffee-Room, a splendid specimen of the Flemish-Gothic style.

Within a comparatively recent period a number of important public undertakings have been completed. The Dundee and Newtyle Railway was opened for traffic in 1826; the Dundee and Arbroath Railway in 1838; and the Dundee and Perth Railway in 1847. By means of these railways, and of the Edinburg, Perth, and Dundee Railway, which joins the Dundee and Arbroath Railway by means of a ferry and branch line at Broughty Castle, four miles east from the town, Dundee has direct communication with all parts of the kingdom. There are two gas-light companies, each of them with a capital of about £50,000 invested in their works and apparatus. The Dundee Water Company was formed in 1846. Its capital is about £130,000. Its reservoirs are situated in the parish of Monikie, about 10 miles distant from the town; and from these an abundant supply of water has been procured.

The most important of the public works are the harbor and docks. Previously to 1815 the harbor was of very limited extent. In that year an act of Parliament was obtained for enlarging it, and erecting a wet-dock of 6¼ acres (King William's), a tide-harbor of 4¼ acres, graving-dock, and other accommodation suitable for the increasing trade of the port. The plan was afterward greatly enlarged, embracing new docks (Earl Grey's of 5¼ acres, and Victoria Dock of 14¼ acres), patent slip, careening-beach, and additional tide-harbors. The Victoria Dock, though for some years open to vessels, is not quite completed. The quays are wide, and afford convenient berthage for about 70 vessels. On the south quay of Earl Grey's Dock, is erected a large crane, capable of raising 30 tons. It is used chiefly for lifting the boilers and heavy machinery of steam-vessels. Besides the ordinary branches of ship-building, the building of iron vessels is carried on at the port. Owing to the increased burden of the vessels now employed in the trade of the place, and the greater depth of water required by them, additional works at the harbor are projected. The cost of the docks and harbor was about £600,000.

The number and tonnage of vessels entered at the harbor for the year ending 31st May, 1854, was as follows:

Vessels in foreign trade,	669	Registered tonnage,		110,637
" coasting do.,	1,755	"	"	158,384
" river do.,	633	"	"	28,262
Total,	3,070			297,283

The following statement shows the progressive increase in the harbor and shipping dues. It was,

In 1780.....	£305	In 1815.....	£4,400
1795.....	965	1835.....	11,908
1805.....	1,972	1854.....	28,402

The staple trade of Dundee is the manufacture of linen and hemp fabrics, chiefly of the coarser descriptions. The manufacture of linens appears to have been introduced from Germany in the beginning of the last century. Insignificant in extent at first, it gradually increased till the close of that century, when, machinery having been applied to the spinning of flax, a great impulse was given to it. Spinning-mills were erected, and of these there are now about 60 in Dundee and its immediate neighborhood. Hand-spinning has been entirely superseded by mill-spinning. The coarser fabrics are still woven in hand-looms; but there are now six or seven large power-loom factories, and some smaller ones. The chief articles of manufacture are sheetings, sail-cloth, drills, dowlas, sacking, and bagging. Nearly one half of the quantity made is sent to London, Manchester, Glasgow, and Leeds, for home consumption. The remainder is exported, either directly or indirectly, to foreign countries. The manufacture of jute carpeting is also now carried on to a large extent. The number of persons employed in the linen trade of the place is estimated to be from 20,000 to 25,000.

The quantity of flax, hemp, codilla, and jute, imported for the year ending 31st May, 1854, was as follows: At the harbor, 54,341 tons; by railway, 11,406 tons; total, 65,747 tons.

The quantity of linen goods sent away for exportation and home-consumption for the same period, was as follows: Linens of all descriptions shipped at the harbor, 421,432 pieces; by railway, 686,110 pieces; total, 1,107,542 pieces.

Assuming the value of the material at £30 per ton, its total value used in manufactures will be £1,872,410. Assuming the value of the goods manufactured to be 60s. per piece, their gross value will be £3,322,628; and on this assumption, the balance of £1,450,216 represents the cost of the manufacture, including wages, the rents of premises, and machinery employed in it, and the profits of the manufacturers. From the foregoing statements, some idea may be formed of the rapid increase of the town in commerce, wealth, and population. Dundee is now the principal seat of the linen-trade of the United Kingdom, and its fabrics are to be met with in all quarters of the world. In proof of the prudential habits of the people, it may be mentioned that a national security savings-bank, opened in 1838, now contains upward of £70,000, lodged by 4,032 depositors.

The country surrounding the town is fertile, and well cultivated; and has shared largely in its prosperity, the rents having increased much, and the value of the land being augmented in proportion. With the natural advantages which it enjoys, and the energy and enterprise for which its inhabitants are distinguished, Dundee may be expected to maintain the position which it now holds among the commercial towns of the British Empire.—E. B.

Dunnage, in commercial navigation, loose wood, consisting of pieces of timber, boughs of trees, faggots, etc., laid in the bottom and against the side of the ship's hold, either, 1st, by raising the cargo when she is loaded with heavy goods, to prevent her from becoming too stiff (see BALLAST); or, 2d, to prevent the cargo, should it be susceptible of damage by water,

from being injured in the event of her becoming leaky. A ship is not reckoned seaworthy unless she be provided with proper and sufficient dunnage.—FALCONER'S *Marine Dictionary*; ABBOTT (Lord Tenterden) on *the Law of Shipping*, Part iii., c. 3.

Duplicate, a copy or transcript of any thing; as of a deed, letter, bill of exchange, etc. Duplication, the act of doubling; the multiplication of a number by 2. Also a folding; a fold.

Dupondius, in antiquity, a weight of 2 pounds, or money of the value of 2 asses.

Dust, or **Dustee**, a river of Persia, flowing from the interior through the province of Mekran, from the southern shore of which it falls into the Indian Ocean. Its course is supposed to extend, under different appellations, about 1,000 miles.

Dutch Gold, the commercial name of a coarse imitation of gold leaf, made of copper, of brass, or of bronze. It is chiefly used for ornamenting toys.

Dyeing (*Teinture*, Fr.; *Färberei*, Germ.) is the art of impregnating wool, silk, cotton, hair, and skins, with colors not removable by washing, or the ordinary usage to which these fibrous bodies are exposed, when worked up into articles of furniture or raiment. We shall here consider the general principles of the art, referring for the particular dyes, and peculiar treatment of the stuffs to be dyed, to the different tinctorial substances in their alphabetical places; such as cochineal, indigo, madder, etc. Dyeing is altogether a chemical process, and requires for its due explanation and practice an acquaintance with the properties of the elementary bodies, and the laws which regulate their combinations. It is true that many operations of this, as of other chemical arts, have been practiced from the most ancient times, long before any just views were entertained of the nature of the changes that took place. Mankind, equally in the rudest and most refined state, have always sought to gratify the love of distinction by staining their dress, sometimes even their skin with gaudy colors. Moses speaks of raiment dyed blue, and purple, and scarlet, and of sheepskins dyed red—circumstances which indicate no small degree of tinctorial skill. He enjoins purple stuffs for the works of the tabernacle and the vestments of the high priest. The ancient Egyptians cultivated this art with some degree of scientific precision, since they knew the use of mordants, or those substances which, though they impart no color themselves, yet enable white robes (*candida vela*) to absorb coloring drugs (*colorem sorbendibus medicamentis*). Tyre, however, was the nation of antiquity which made dyeing its chief occupation and the staple of its commerce. There is little doubt that purple, the sacred symbol of royal and sacerdotal dignity, was a color discovered in that city, and that it contributed to its opulence and grandeur. Homer marks no less the value than the antiquity of this dye, by describing his heroes as arrayed in purple robes. Purple habits are mentioned among the presents made to Gideon by the Israelites from the spoils of the kings of Midian.

The juice employed for communicating this dye was obtained from two different kinds of shell-fish, described by Pliny under the names of *purpura* and *buccinum*; and was extracted from a small vessel, or sac, in their throats, to the amount of only one drop from each animal. A darker and inferior color was also procured by crushing the whole substance of the buccinum. A certain quantity of the juice, collected from a vast number of shells, being treated with sea-salt, was allowed to ripen for three days; after which it was diluted with 5 times its bulk of water, kept at a moderate heat for 6 days more, occasionally skimmed to separate the animal membranes, and when thus clarified, was applied directly as a dye to white wool, previously prepared for this purpose by the action of lime-water, or of a species of lichen called fucus. Two operations were requisite to communicate the finest Tyrian purple: the 1st consisted in plunging the wool into the juice of the purpura; the 2d, into that of the buccinum. 50 drachms of wool required 100 of the former liquor, and 200 of the latter. Sometimes a preliminary tint was given with coccus—the kermes of the present day—and the cloth received merely a finish from the precious animal juice. The colors, though probably not nearly so brilliant as those producible by our cochineal, seem to have been very durable, for Plutarch says, in his *Life of Alexander* (chap. 36), that the Greeks found in the treasury of the King of Persia a large quantity of purple cloth, which was as beautiful as at first, though it was 190 years old. The difficulty of collecting the purple juice, and the tedious complication of the dyeing process, made the purple wool of Tyre so expensive at Rome, that in the time of Augustus a pound of it cost nearly £30 of English money. Notwithstanding this enormous price, such was the wealth accumulated in that capital, that many of the leading citizens decorated themselves in purple attire, till the emperors arrogated to themselves the privilege of wearing purple, and prohibited its use to every other person. This prohibition operated so much to discourage this curious art as eventually to occasion its extinction, first in the western, and then in the eastern empire, where, however, it existed in certain imperial manufactories till the eleventh century.

Dyeing was little cultivated in ancient Greece; the people of Athens wore generally woolen dresses of the natural color. But the Romans must have bestowed some pains upon this art. In the games of the circus, parties were distinguished by colors. Four of these are described by Pliny—the green, the orange, the gray, and the white. The following ingredients were used by their dyers. A crude native alum mixed with copperas, copperas itself, blue vitriol, alkanet, lichen rocellus, or archil, broom, madder, woad, nut-galls, the seed of pomegranate, and of an Egyptian acacia.

But the vast superiority of our dyes over those of former times must be ascribed principally to the use of pure alum and solution of tin as mordants, either alone or mixed with other bases; substances which give to our common dye-stuffs remarkable depth, durability, and lustre. Another improvement in dyeing, of more recent date, is the application to textile substances of metallic compounds, such as Prussian blue, chrome yellow, manganese brown, etc.

The compound or mixed colors, are such as result from the combination of two different colored dye-stuffs, or from dyeing stuffs with one color and then with another. The simple colors of the dyer are red, yellow, blue, and black, with which, when skillfully blended, he can produce every variety of tint. Perhaps the dun or fawn color might be added to the above, as it is directly obtained from a great many vegetable substances.

1. Red with yellow, produces orange; a color which, upon wool, is given usually with the spent scarlet bath. To this shade may be referred flame color, pomegranate, capuchin, prawn, jonquil, *cassia*, chamois, *café au lait*, aurora, marigold, orange peel, *mordoré*, cinnamon, gold, etc. Snuff, chestnut, musk, and other shades are produced by substituting walnut peels or sumach for bright yellow. If a little blue be added to orange, an olive is obtained. The only direct orange dyes are anotto and subchromate of lead.

2. Red with blue produces purple, violet, lilac, pigeon's neck, mallow, peach blossom, *bleu de roi*, lint-blossom, amaranth.

3. Red with black; brown, chocolate, marone, etc.

4. Yellow with blue; green of a great variety of shades, such as nascent green, gay green, grass green, spring green, laurel green, sea green, celadon green, parrot green, cabbage green, apple green, duck green.

5. Mixtures of colors, 3 and 3, and 4 and 4, produce an indefinite diversity of tints; thus red, yellow, and blue, form brown olives and greenish grays; in which the blue dye ought always to be first given, lest the indigo vat should be soiled by other colors. Red, yellow, and gray (which is a gradation of black) give the dead-leaf tint, as well as dark

orange, snuff color, etc. Red, blue, and gray, give a vast variety of shades: as lead gray, slate gray, wood-pigeon gray, and other colors, too numerous to specify.

The following list of dyes, and the coloring substances which produce them, may prove useful:

Red. Cochineal, kermes, lac, madder, archil, carthamus or safflower, brazil wood, logwood, periodide of mercury, alkanet.

Yellow. Quercitron, weld, fustic (yellow wood), annotto, sawwort, dyer's broom, turmeric, fustet (*rhus cotinus*), Persian and Avignon berries (*rhamnus infectorius*), willow, peroxyd of iron; chromate of lead (chrome yellow), sulphuret of arsenic, hydrosulphuret of antimony; nitric acid on silk.

Blue. Indigo, woad or pastel, Prussian blue, turnsole or litmus, logwood with a salt of copper.

Black. Galls, sumach, logwood, walnut peels, and other vegetables which contain tannin and gallic acid, along with ferruginous mordants; the anacardium of India.

Green. These are produced by the blue and yellow dyes skillfully combined; with the exception of the chrome green, and perhaps the copper green of Schweinfurt.

Orange. Annotto, and mixtures of red and yellow dyes; subchromate of lead.

Fawn, Dun, or *Root.* Walnut peels, sumach, birch-tree, henna, sandal wood.—Ure's *Dict. of Arts.*

Indigo and Cochineal.—In 1548 neither of these important dye-stuffs had made their way into Europe. Pliny mentions indigo under the name of *indicum;* but it appears to have been used by the Greeks and Romans only as a paint; yet there can be little doubt that in India it had been employed from time immemorial as a dyestuff. Cochineal could not be known till after the discovery of America. It was used by the Mexicans as a dyestuff. In 1523 Cortez received orders from the court of Spain to multiply this precious insect, to collect it and send it to Spain. Cochineal by itself gives only a *crimson* color; it dyes *scarlet* when mixed with a solution of tin. This fact was discovered accidentally by Cornelius Drebbel about the year 1630. He communicated his observation to his son-in-law Kuffelar, who was a dyer at Leyden. He soon brought the process to perfection, kept it a secret, and brought the scarlet color into fashion. Soon after, the same process was discovered by a German chemist called Keffler, who carried his secret to London in 1643. A Flemish dyer called John Kloeck got information of the process in 1647, and it gradually made its way through every country of Europe. Indigo, though a much more important dye-stuff than cochineal, did not make its way into general use without the greatest difficulty. The use of it was prohibited in England during the reign of Elizabeth; and the prohibition was not taken off till the time of Charles II. It was equally prohibited in Saxony, where it was styled in the prohibition a corrosive substance, and called food for the devil. Restrictions on the use of indigo in dyeing were imposed also in France, though it was not altogether prohibited, as it had been in England and Saxony. See BERTHOLLET, on *Dyeing;* BANCROFT, on *Colors.*

There has been much speculation among philosophical dyers respecting the nature of the coloring matters, and the way in which the different colors are induced by dyeing; but these speculations have not led to any information of much value. There is reason for believing that the coloring matters employed as dye-stuffs are all transparent, and that the color is produced by their action on the light transmitted through them from the white fibres of the cloth. Those coloring matters that transmit all the rays equally leave the cloth white; if the blue ray be transmitted and the rest absorbed, the color of the cloth will be *blue,* and so on. This is all that we know about the mechanical nature of the dyestuffs.

With respect to the aptitude of being dyed, and the brilliancy of the colors thus communicated, there is found to be very great difference in different tissues. Animal substances are much more easily dyed than vegetable substances. Of animal substances, *silk* receives color, and the shades given are brighter and more beautiful than those which can be imbibed by any other tissue. Woolen cloth is also very fit for being dyed, and receives very brilliant colors with avidity; though in this respect it is inferior to silk. Cotton and linen are much more difficult to dye, and can not be made to imbibe such brilliant colors as silk or woolen. Thus the rich scarlet given to cloth by the combined action of cochineal and the oxyd of tin, has never been communicated to cotton cloth or linen. The Turkey-red dye, which is by far the finest and most permanent red that has ever been communicated to cotton cloth, is a crimson, or rather a crimson with a shade of brown. It has not the least approach to a scarlet.—E. B.

Dyke, or **Dike.** When a mass of unstratified or igneous rock, such as granite, trap, or lava, appears as if injected into rents and fissures in the stratified rock, so as to intersect the strata, it is called a *dyke. Dyke* is also the name given to a mound of earth, stones, or other materials, intended to prevent low land from being inundated by the sea, etc.; as the dykes of Holland.

E.

Eagle, in numismatics, a sort of base money which was current in Ireland in the early part of the reign of Edward I., that is, about the year 1272. There were also lionines, rosades, and many other coins of the same sort, named according to the figures with which they were impressed. The current coin of the kingdom at that time was a composition of copper and silver, in determinate proportions; but these were so much inferior to the standard of that time, that they were not worth, intrinsically, half so much as the others. They were imported from France and other foreign countries. When Edward had been a few years established on the throne, he set up mints in Ireland for coining good money, and then prohibited the use of eagles, and other kinds of base coin—making it death, with confiscation of effects, to import any more of them into the kingdom. Eagle is the designation of the principal gold coin of the United States—value equal to 10 dollars.

Earing, in nautical language, a rope attached to the cringle of a sail, by means of which it is bent or reefed.

Earnest, in commercial law, is the sum advanced by the buyer of goods in order to bind the seller to the terms of the agreement. It is enacted by the 17th section of the famous Statute of Frauds, 29 Charles II., c. 3, that "no contract for the sale of any goods, wares, and merchandises, for the prices of £10 sterling, or upward, shall be allowed to be good, except the buyer shall accept part of the goods so sold, and actually receive the same, or give something in *earnest* to bind the bargain, or in part payment, or that some note or memorandum in writing of the said bargain be made and signed by the parties to be charged by such contract, or their agents thereunto lawfully authorised." As to what amounts to sufficient earnest, Blackstone lays it down, that, "if any part of the price is paid down, if it is but a penny, or any portion of the goods is delivered by way of earnest, it is binding." To constitute earnest, the thing must be given as a token of ratification of the contract, and it should be expressly stated so by the giver.—CHITTY'S *Commercial Law,* vol. iii., p. 289.

Ear-ring, an ornament worn at the ear; a pendant or jewel suspended by means of a ring or a hook passing through the pendulous lobe of the ear. The use of this kind of ornament dates from the remotest antiquity, since the first mention of ear-rings occurs in the

book of Genesis. Ear-rings of certain kinds were anciently, and still are, in the East, instruments or appendages of idolatry and superstition—being regarded as talismans and amulets. Such, probably, were the ear-rings of Jacob's family, which he buried with the strange gods at Bethel. This somewhat barbarous species of adornment was used (as it still is in some countries) by both sexes among many Oriental nations; especially by the Lydians, Persians, Babylonians, Libyans, and Carthaginians, as may be gathered from various ancient authors. Among the Hebrews and the Egyptians, their use appears to have been confined to women: but that they were extensively used by the men of various other nations is sufficiently proved by the Egyptian monuments. Among the Greeks and Romans ear-rings were worn only by females, and were sometimes of enormous value. It is a curious fact that the ears of the Venus de Medici, and of some other female statues, are pierced, as if for the purpose of bearing these appendages.

Earth, Figure of the. The determination of the figure and dimensions of the earth is a problem of very great importance in astronomy, inasmuch as it is in reference to the earth's diameter that the distances of the planets from the sun and from each other are estimated. It is also a problem of very great interest and curiosity; and has accordingly attracted the attention of mankind since the earliest dawn of civilization. There are two points of view under which this great question may be considered. The figure of the earth may be regarded as a fact to be determined by investigation and experience, like any other phenomena or law of nature; in which case it is necessary to find, by the actual measurement and comparison of different portions of the terrestrial surface, the nature of its curvature, and the magnitude of its diameters. Under the second point of view, the question is one of pure theory. The earth may be regarded as a congeries of material particles, attracting each other with forces reciprocally proportional to their mutual distances, and endowed with a rotatory motion about a fixed axis; and the problem is to determine the form the whole mass would assume in virtue of the attractive and centrifugal forces by which the particles are impelled. Viewed in this light, the actual figure of the earth becomes one of the series of consequences resulting from the universal gravitation of matter, and depending on the same laws which regulate its motion in its orbit about the sun.

It would be a waste of time to inquire what were the notions of the figure of the earth, which were or might have been entertained by its earliest and most ignorant inhabitants. A very slight attention to the most common phenomena renders the fact of its general roundness almost palpable to the senses. The uniform level appearance of the sensible horizon in every situation in which a spectator can be placed—the depression of the circum-polar stars as he advances toward the south, and their elevation as he proceeds in a contrary direction—the disappearance of a ship standing out to sea—the projection of the earth as seen in a lunar eclipse, and a number of other familiar appearances—put the globular figure of our planet beyond all manner of doubt. Reasoning from such appearances, the earliest astronomers universally regarded the earth as a sphere; and their attention was solely directed, in their various measurements and computations, to ascertain its dimensions. Modern science has discovered that its figure deviates slightly from that of a sphere, being compressed or flattened at the extremities of its axis of rotation; and the object of the astronomer, at the present time, is to determine not only its dimensions, but also the exact amount of its compression.

Attempts to estimate the magnitude of the earth were made at a very early date; for Aristotle relates that the mathematicians prior to his time had found the circumference to be 400,000 stadia. But Eratosthenes appears to have been the first who entertained an accurate idea of the principles on which the determination of the figure of the earth really depends, and attempted to reduce these principles to practice. His results, in consequence of the imperfect data from which they were deduced, were very inaccurate; but his method is the same as that which is followed at the present day, depending, in fact, on the comparison of a line actually measured on the surface of the earth with the corresponding celestial arc. He had remarked, or been informed, that at Syene in Upper Egypt, on the day of the summer solstice, at noon, objects cast no shadows; whence he concluded that the sun was exactly in the zenith at mid-day. On the same day, at Alexandria, he observed the sun's meridional distance from the zenith to be 7° 12′, or a 50th part of the circumference. Then, assuming Syene to be exactly under the meridian of Alexandria (the error in this assumption was about 3°), and the distance between the two places, measured in a straight line, to be 5,000 stadia, he had $5{,}000 \times 50 = 250{,}000$ stadia for the whole circumference of the earth. It is easy to see how very imperfect this operation must have been. Without mentioning smaller errors, the neglect of the solar diameter would alone occasion an uncertainty as to the sun's declination, and consequently as to the length of the celestial arc, amounting to half a degree on the observation at Syene; and there is no reason to suppose that that at Alexandria was more exact. The terrestrial distance between the two places was assumed on equally, or probably still more loose and inaccurate determinations.

The next attempt to ascertain the dimensions of the earth was made by Posidonius. This astronomer adopted a method which differed from that of Eratosthenes only in determining the celestial arc by means of the altitude of a star, instead of the sun's zenith distance. At Rhodes, the bright star Canopus, when on the meridian, barely appears above the horizon. At Alexandria the same star was observed to have a meridional altitude of a $\frac{1}{4}$ of a sign, or $7\frac{1}{2}$ degrees, which, therefore, was the celestial arc intercepted between the zenith of Alexandria and Rhodes. The terrestrial distance between the two places was estimated, like that between Alexandria and Syene, at 5,000 stadia, and they were both supposed to be under the same meridian. Hence, since $7\frac{1}{2}$ degrees is the 48th of the circumference, we have $5000 \times 48 = 240{,}000$ stadia, for the whole circumference of the globe.

It is impossible to form any correct opinion of the degree of approximation attained in these ancient measures, as the length of the stadium is not known with any certainty. That it varied in different places, and at different times, is sufficiently obvious from the statement of Ptolemy, who, in his work on geography, assigns the length of the degree at 500 stadia, and consequently the whole circumference at 180,000, differing from the determination of Posidonius in the proportion of 3 to 4, and still more from that of Eratosthenes. Ptolemy remarked that it was not necessary that the line measured should lie exactly in the meridian: it was sufficient to know its inclination to the meridian, or the azimuthal angle, together with the latitudes of its extreme points, in order to compare it with the meridional arc. The determination of the azimuth is, however, an operation of considerable difficulty; and Ptolemy has given no details of the method by which he proposed to estimate it. He has been equally silent in respect of the means by which the mean length of a degree was ascertained to be 500 stadia, so that the result which he has recorded is still less satisfactory than those of the two more ancient astronomers.

The active curiosity of the Arabians, which was exerted so successfully in promoting practical astron-

omy, did not overlook the measure of the earth. The Caliph Almamoun, who began his reign in the year 814, ordered a company of astronomers to measure a degree on the level plain of Mesopotamia. Dividing themselves into two parties, the one proceeded northward, and the other southward, in the direction of the meridian, through a degree of latitude, and measured with rods the itinerary distance as they proceeded. The perfect agreement of their conclusion with that of Ptolemy, throws it open to great suspicion; and when it is considered that their operation was repeated at a different place, with exactly the same result, there can be no doubt that they blindly adopted the statement of the Greek astronomer, either from inability to execute the task assigned to them, or because they had no confidence in their own determination.

From the time of Alamamoun, the problem of determining the dimensions of the earth was neglected, till the revival of astronomy with general learning in Europe. The first attempt to solve it was made by Fernel, who, about the middle of the 16th century, measured the distance from Paris to Amiens, along the high road, by observing the number of revolutions made by his coach-wheel in the journey between these two cities. Supposing them to be under the same meridian, which is nearly true, and having ascertained the difference of their latitudes, Fernel found by this means the length of the degree to be 57,070 French toises, or about 364,960 English feet. A degree was measured long afterward at the same place by Lacaille, in a far more adequate and scientific manner, and he found it to be 57,074 toises. This agreement is rendered the less extraordinary by the circumstance that the toise of Fernel was not exactly of the same length of that of Lacaille. After all, it must be allowed that Fernel made a fortunate guess. (Delambre, *Astronomie*, tom. iii., chap. xxxv.)

But the first who had the merit of attempting to execute the geodetic operations that are indispensably necessary to effect the accurate measurement of a long line on the surface of the earth, was Willebrord Snell, a native of Holland, and a teacher of mathematics. Having established a chain of triangles between Alkmaer and Bergen-op-Zoom, and observed the angles of each triangle, by means of a quadrant of 5½ feet radius, he measured a base on the frozen surface of the meadows between Leyden and the village of Soetersweud, and determined the distance between the two places by trigonometrical computation. The length of the degree which he found was 28,500 Rynland perches, or about 55,020 toises, which is about 2050 toises too small. This result was published by Muschenbroek, who in fact revised or calculated the observations from the original papers a century after the death of Snell.

Norwood, in the year 1635, attempted to measure a degree in England nearly in the same manner as Fernel. He measured the distance between London and York along the public road, taking the bearings and reducing the direction to the meridian in a rough way. The difference of latitudes he found by observations of the solstice to be 2° 28′, and thence concluded the length of the degree to be 367,176 English feet. Like the measurement of Fernel, this has been found to be a much nearer approximation than the method employed would have led us to expect.

The application of the telescope to circular instruments gave a far higher degree of precision to geodetic operations. Picard, to whom practical astronomy is indebted for this capital improvement, was the first who measured the arc of the meridian with such precautions and care as the delicate nature of the operation requires. He twice measured with wooden perches a base of nearly seven English miles in length; and observed the angles of his triangles with a quadrant, having a telescope adapted to it with cross wires in its focus. He even calculated the error produced by the instrument being placed out of the centre of the station, and determined the zenith distance of a star in the constellation Cassiopeia with a sector, for the purpose of obtaining the differences of latitude. The distance between Amiens and Malvoisine was found to be 78,850 toises, and the difference of latitude 1° 22′ 55″, whence the result gave for the degree at Amiens 57,060 toises; but as the aberration and mutation were unknown at that time, and the refraction was not taken into account—causes of error to which it is indispensably necessary to have regard—a determination which agrees so nearly with the results of recent measur could only have arisen from a fortunate compensation of errors. In fact, his toise was somewhat shorter than that which has since been adopted as the standard; and the error occasioned by this circumstance nearly compensated that which was committed in determining the celestial arc; so that in recalculating all the observations, the degree is found to be very nearly the same as was found by Picard.

French Experiments.—Hitherto geodetic operations had been confined to the determination of the magnitude of the earth; but a discovery made by Richer turned the attention of mathematicians to its deviation from the spherical form. This astronomer having been sent, by the Academy of Sciences of Paris, to the island of Cayenne in South America, for the purpose of determining the amount of terrestrial refraction and other astronomical objects, observed that his clock, which had been regulated at Paris to beat seconds, lost about 2½ minutes daily at Cayenne, and that, in order to bring it to measure mean solar time, it was necessary to shorten the pendulum by more than a line. This fact, which appeared exceedingly curious, and was scarcely credited till it had been confirmed by the subsequent observations of Varin and Deshayes, was first explained in the third book of the *Principia*, by Newton, who showed that it could only be referred to a diminution of gravity arising from one of two causes—a protuberance of the equatorial parts of the earth, and consequent increase of the distance from the centre, or from the counteracting effect of the centrifugal force, occasioned by the rotation of the earth. The former could not, on any reasonable supposition regarding the figure of the earth, be regarded as adequate to produce the effect; but the latter, which would produce a retardation of the pendulum at Cayenne in the ratio of the square of the sine of 6° to that of 49° (the respective latitudes of Cayenne and Paris), might amount to 1·46 seconds. This was the first direct proof of the diurnal rotation of the earth.

From this time the exact determination of the figure of the earth began to assume a degree of importance which had not formerly attached to it. The centrifugal force arising from the diurnal rotation completely set aside the idea of perfect sphericity. Newton, assuming that the earth had been originally fluid, and supposing its density to be the same throughout the whole mass, and supposing, moreover, that its constituent molecules attract one another in proportion to the inverse square of the distance, demonstrated that it would assume, in consequence of the rotation, the form of a spheroid flattened at the poles; and that the proportion of its equatorial to its polar axis would be 230 to 231. But the supposition of the equal density of the earth is obviously very improbable, and consequently the ratio of the equatorial and polar diameters must be different from that now mentioned. Newton erroneously concluded that if the density is greater in the interior of the earth than at the centre, the compression would be greater than in the case of a spheroid of equal density. This mistake was pointed out by Huygens, who, in order to determine the amount of the compression from theory, reasoned in this way. Suppose two tubes to be united at the centre of the earth, forming a right angle with each other at that point, and extending to the surface, one in the plane

of the equator, and the other along the polar axis, and filled with a homogeneous fluid. Now the fluid contained in the polar branch exerts a pressure on the centre equal to the whole of its weight, while the pressure of that in the other tube will be diminished by the centrifugal force. The second column, therefore, if of the same length, will be less heavy than the first; and in order to restore the equilibrium, it is necessary that the equatorial tube shall have gained as much in length as it has lost in weight through the effect of rotation. Hence the sea in the equatorial regions must be higher, or at a greater distance from the centre, than the polar sea, and consequently the earth must have a flattened form. Calculating from the supposition that the density increases regularly from the surface to the centre, where it is infinite, Huygens found the ratio of the diameters to be that of 578 to 579. This investigation is given in his work *De Causa Gravitatis*, published in 1690.

French Theory.—The theoretical determinations of the form of the earth by Newton and Huygens were at variance with the results of geodetic operations that had been carried on in France under the superintendence of the first Cassini, from 1680 till 1716, for the purpose of making a geometrical survey of that country. Cassini found the degree of the meridian to the south of Paris to be 57,092 toises, while on the north of that city it was only 56,960 toises. This result led to the conclusion that the earth is a protracted spheroid, or elongated at the poles; a conclusion entirely inconsistent with the principles of hydrostatic equilibrium, and the deductions of Newton and Huygens. The question, however, was of too great importance to astronomy to be allowed to remain undecided. Accordingly, the Academy of Sciences of Paris determined to apply a decisive test, by the measurement of arcs at a great distance from each other. For this purpose, some of the most distinguished members of their body undertook the measurement of two meridional arcs, one in the neighborhood of the equator, and the other in a high latitude. In 1735, Godin, Bouguer, and La Condamine, proceeded to Peru, where they were joined by two Spanish officers, Don Georges Juan, and Antonio d'Ulloa, and, after ten years of laborious exertion, they measured an arc of above 3 degrees, between the parallels of 2′ 31″ north, and 3° 4′ 32″ south latitude. The other party, consisting of Maupertuis, Clairaut, Camus, Lemonnier, Outhier, and Celsius, were in some respects more fortunate, inasmuch as they completed the measurement of an arc near the polar circle, of 57 minutes, and returned to Europe within 16 months from the period of their departure. The measurement of Bouguer was executed with great care; and, on account of the locality (the extremities being on different sides of the equator), as well as the excellent manner in which all the details were conducted, it has always been regarded as a most valuable determination. The original base was determined twice, and the difference between the two measures was scarcely 2½ inches.

About the middle of the last century several arcs of meridian were measured in various countries, which, though of inferior importance in comparison of the more extensive surveys which have since been undertaken, are nevertheless deserving of enumeration. In 1751 Lacaille measured an arc at the Cape of Good Hope, whither he had gone for the purpose of determining the lunar parallax, and making other astronomical observations. At the latitude of 33° 18½′ he found the degree of the meridian to be 57,037 toises. This result was nearly the same as had been obtained in France, 10° further from the equator; and clearly proved either the existence of great local irregularities in the form of the earth, or the dissimilarity of the two terrestrial hemispheres. As theory recognized no such abnormal condition of figure, and on the other hand, Lacaille's observations, all the details of which had been preserved, appeared to have been carefully made and correctly computed, the result which they gave was for some generations a very *ecxata quæstio* among all geodesists. After the lapse, however, of nearly a century, the arc has been lately remeasured under the auspices of the British government, with all the modern improved means and appliances; and an approximate calculation of the observations shows, that the greater part of Lacaille's anomaly was produced by *mountain attraction* on his plumb-line. (1855).

In 1751 the measurement of a terrestrial arc was undertaken in the Roman states, by the Jesuits Maire and Boscovich. It extended nearly two degrees between Rome and Rimini, and it was found that the degree of meridian between these parallels, namely, 42° and 44°, contained 56,973 toises. The details are given at length by Boscovich, in a work of great elegance, and entitled *De Litteraria Expeditione per Pontificiam ditionem*, etc. Romæ, 1755.

Liesganig, a Jesuit in 1762 also executed two measures of a meridional degree, one in Hungary and the other in the Austrian states; but it has been shown by Baron Zach, in his *Correspondence Astronomique*, vol. vii., that the results merit no confidence, and, in fact, would lead to certain error if employed as elements in determining the figure of the earth.

About the same time, in 1764, an arc of meridian was measured in North America, on the peninsula between the Chesapeake and Delaware bays, by two Englishmen, Charles Mason and Jeremiah Dixon. They employed no triangulation but measured the line with deal-rods along the whole extent of the arc, the mean latitude of which was 39° 12′. Their rods were afterwards compared with the five-feet brass rods made by Bird. The latitudes were determined with a zenith sector. The length of the degree, after the necessary corrections and reductions were made, was found to be 60,625 English fathoms, or 56,888 toises. There is no doubt that great care was bestowed on this operation; it is, however, easy to see that the measurement of so long a line by means of rods is liable to many causes of error from which the method of triangulation is exempt.

In 1762 Beccaria undertook to measure a degree in the plains of Piedmont. He found the degree of the meridian at the latitude of 44° 44′ to contain 57,468 toises; but great uncertainty remained respecting the correctness of the latitudes, the extreme points of the arc being in the near neighborhood of immense ranges of mountains, which could not fail to produce a very considerable deviation of the plumb-line. It was supposed that as both ends of the arc were terminated by mountain ranges, whereas Boscovich's arc had been carried across the Apennines and terminated at the sea coast, the errors of the two measures occasioned by the local attraction, being of opposite kinds, would neutralize each other, and give a correct mean result.

Amid the rapid advances of mathematical science toward the end of the last century, the determination of the figure of the earth was not overlooked. In the year 1783 a memorial was presented to the British government by Cassini de Thury, stating the important advantages that would result to astronomy and navigation, from having the difference of longitude of the Greenwich and Paris observatories determined by a geodetic measurement. Fortunately this proposal was agreed to. The English operations were placed under the superintendence of General Roy, who to active and indefatigable zeal united great skill and experience in practical astronomy and surveying. In the summer of 1784 a base of rather more than five miles was measured on Hounslow Heath. In the measurement of this base, deal-rods were first employed; but as these were found to warp, and be affected with the variations of the hygrometrical state of the atmosphere, glass tubes were substituted; and, in 1791, the same base was measured with a steel chain

carefully made by Ramsden, yet the difference from the former measure was found to be only three inches. The mean result was 27,404·2 feet reduced to the level of the sea, and the scale being taken at the temperature of 62° of Fahrenheit. A chain of 32 triangles, in connection with this base, extended over the country to Dover and Hastings; and two more, stretching across the Channel, connected them with the French signals on the opposite side. The instruments employed in this survey were of the most excellent description, and far superior to any that had ever been employed in similar operations. The angles of each triangle were measured by a large theodolite constructed by Ramsden; and it was this splendid instrument that first exhibited the *spherical excess*, or the minute quantity by which, on account of the sphericity of the earth, the sum of the three angles of a triangle on the earth's surface exceeds 180°.

The French part of this great operation was conducted with equal ability by Cassini (the fourth of that name), Mechain, and Delambre. The angles were measured with the repeating circle of Borda; an instrument of a very different description from the theodolite, but which in geodetic operations may fairly be allowed to give, if not equally, at least sufficiently correct results, while in practice it is much more commodious. The result of the combined measures showed the meridian of Paris to be 2° 19′ 51″ east of Greenwich, or 9″ less than had been determined by Dr. Maskelyne.

Soon after this time, a series of geodetic measurements both in France and England, [and also in the United States, in 1805, for an account of which, see COAST SURVEY,] which, in point of extent, as well as minute accuracy, far surpassed all the operations which had yet been undertaken with a view to determine the figure of the earth. In 1791 the National Convention of France having agreed to remodel the system of weights and measures, determined to adopt a standard taken from nature, which might be universally applicable in all countries, and capable of being restored at any future age, if by accident it should happen to be lost. Two such standards were proposed, namely, the length of the pendulum, which makes a given number of vibrations in a given latitude; and the quadrant of the terrestrial meridian. Of these, the pendulum is by far the most easy to be determined; but it was objected, that as the length of the pendulum varies at different latitudes, and also depends in some degree on the geological character of the country where it is measured, its length, if it should happen to be lost, could not be recovered, without knowing the precise place at which it had formerly been determined. The length of the quadrant of the meridian is, however, invariable, and, if the earth is a regular spheroid of revolution, must be the same at all places. Accordingly the Convention chose the ten millionth part of the meridian from the equator to the pole as the unit of their new scale; and in order that this unit might be determined with the greatest possible precision, it was resolved to remeasure the meridian of the arc of Paris, and to extend it from Dunkirk to Barcelona, a distance comprehending altogether an arc of about nine degrees. The practical execution of this undertaking was confided to two astronomers of distinguished ability, Delambre and Mechain, by whom the requisite operations were carried on during the years 1792, 1793, and 1794, amid all the dangers and difficulties arising from the disorganized state of the country, with a resolution and courage of which the annals of science afford few examples. The triangles amounted to 115 in number. Each of the three angles of every triangle was separately observed with the repeating circle. The different observations, with the original registers and remarks of the observers, were compared by commissioners, among whom were some of the ablest men in France. A form was drawn up, after which all the calculations were made. The calculations of the triangles, as well as of the azimuths, were examined by Tralles, Van Swinden, Legendre, and Delambre himself. The triangles were connected in the neighborhood of Paris with a base of upward of seven miles in length, being 6075·9 toises, at the temperature 16¼ centigrade, or 61¼ of Fahrenheit. A base of verification of 6006.25 toises was measured by Mechain, near Perpignan, at the southern extremity of the arc; and the measured length was found to differ by less than a foot from the length deduced by calculation from the first base, though the distance was more than 436 miles. A line of this length, measured with extreme precision, is obviously quite sufficient to enable us to infer, with all the requisite exactness, the length of the quadrantal arc; but the French astronomers resolved to extend the triangulation still further. Accordingly, Mechain repaired again to Spain, and in the year 1805 continued the chain of triangles from Barcelona to Tortosa, on the coast of the Mediterranean. At this place his labors were prematurely terminated by an epidemic fever. The prolongation of the arc was, however, committed to two philosophers of distinguished reputation, Biot and Arago. An immense triangle, one of the sides of which exceeded 100 miles, connected the coast of Valentia with the island of Iviza, which was joined by another triangle with Formentera, distant no less than 12° 22′ 13″·39 from Dunkirk, the northern extremity of the arc. The result of the whole gave a value of the quadrantal arc, differing somewhat from that determined by Delambre and Mechain, but so little that the length of the metre would be scarcely affected by four times the millionth part of itself. The details of this magnificent operation are given at length in the four volumes of the *Base Metrique*.

The English survey, which had been interrupted by the death of General Roy, in 1790, was resumed in 1793 under the direction of Colonel Mudge. The original triangles between Greenwich and Dover were extended along the coast to Dunnose in the Isle of Wight, and thence through Devonshire and Wiltshire, and connected with a base of verification measured on Salisbury plain. The length of this base was found, after the proper reductions, to be 36574·4 feet, differing scarcely one inch from the length deduced by calculation from the base on Hounslow Heath. So near a coincidence, though probably owing in some degree to a compensation of errors, affords a convincing proof of the extreme accuracy with which every part of the operation had been conducted. In 1802 the triangulation was carried into Yorkshire, and a meridian arc measured from Dunnose to Clifton. The latitudes at the terminal points were determined with Ramsden's zenith sector. The arc was afterward extended to Burleigh Moor, and has since been carried to the Shetlands. It may be remarked that both the French and English arcs present this singular anomaly, that when portions of them at particular places, are considered separately, the length of the degree appears to increase on going southward.

The survey has been continued, up to the present time, and the triangulation has been carried to the remotest parts of Scotland, and a considerable part of Ireland. In the course of the operations, several important improvements, both in respect of the instruments employed, and in the method of conducting geodetic measurements in general, have been introduced into practice. A base of upward of seven miles has been measured near Londonderry; and it now only remains to determine the latitudes of some stations, to give us the elements of a new and greatly prolonged arc.

In the years 1801, 1802, and 1803, Maupertuis' Swedish arc was remeasured by Svanberg, and extended nearly 40′ in amplitude. The methods were the same as had been employed by Delambre. The extremities

of the new arc were at Mallörn and Pahtawara. The distance was found to be 92,778 toises, and the difference of the latitudes 1° 37′ 20″·8; whence 1°=57,196 toises. This agrees much better than the result of Maupertuis (57,422 toises) with other measures; but the difference, which implies an error of 12″ in the latitude of Kittis as determined by the French academicians, has not been satisfactorily accounted for; so that there is still some doubt about the length of a degree in that latitude. See SVANBERG'S *Exposition des Operations faites en Lapponie*, etc. Stockholm, 1805.

Since the beginning of the present century, two arcs of meridian have been surveyed in India. The first was in the neighborhood of Madras, and comprehended only 1° 35′. The second, however, is the longest which has yet been measured. The first, and a large part of the second, was accomplished under the direction of Colonel Lambton; and the instruments and methods of observation and calculation were exactly the same as those that had been employed by Colonel Mudge in the English survey. The south extremity of the second arc was at Punnæ, near Cape Comorin, latitude 8° 9′ 32″·51; and the northern at Daumergidda, latitude 18° 3′ 16″·07. The amplitude is consequently 9° 53′ 43″·56, and the distance between the extremities was found to be 598,629·98 fathoms (about 680 miles), giving 60,495 fathoms, or 362,970 feet, for the length of the degree. Several bases were measured, and the whole of the operations appear to have been conducted with great skill and accuracy. This arc has since been extended by Captain Everest to Kaliana, latitude 29° 30′ 48″·8; so that the whole length now includes more than 21°. The details of Colonel Lambton's operations are given in the different volumes of the *Asiatic Researches* (see vols. vii., x., xii.), and those of Captain Everest, in his "*Account of the Measurement of an Arc of the Meridian between the Parallels of* 18° 3′ *and* 24° 7′," printed at the expense of the East India Company.

Various geodetic operations on a less extensive scale have been recently executed, which are better adapted, perhaps, to give information respecting the local curvature than the general form of the earth. Beccaria's arc has been remeasured by Plana and Carlini: the results clearly demonstrate the existence of some errors in the original measurement, but they are not yet altogether satisfactory, and the country is very unfavorable. The distance between Göttingen and Altona has been measured by Gauss; and the amplitude of the corresponding celestial arc is known with the utmost precision, from observations of the latitude made at the respective observatories of the two places. The amplitude, however, is only about two degrees, and there is some doubt about the exact length of the iron bars with which the base was measured. A more extensive arc has been measured in Russia by Struve. It extends at present to three and a half degrees, and it is understood that it is in contemplation to prolong it still further. Many new methods have been employed in this measurement; and it acquires additional value from its high latitude, and the acknowledged skill and accuracy of the observer.

The above are the principal arcs of meridian, but some arcs of parallel have also been measured. Theoretically speaking, the figure of the earth may be determined from the measurement of arcs of parallel, as readily as from meridional arcs; and the geodetical operations in the one case differ in no respect from those in the other. But the great, and, we fear, insurmountable difficulty, is to determine with sufficient precision the difference of astronomical longitudes. In a subsequent part of this article we shall have again occasion to mention Cassini's measurement of an arc of parallel across the mouth of the Rhone; of the English arc between Beachy Head and Dunnose; and that recently made from Marennes to Padua.

TABLE SHOWING THE LENGTH OF A DEGREE OF LONGITUDE FOR EVERY DEGREE OF LATITUDE, IN GEOGRAPHICAL AND IN ENGLISH MILES.

Lat.	Geo. miles.	Eng. miles.	Lat.	Geo. miles.	Eng. miles.	Lat.	Geo. miles.	Eng. miles.
1	59·99	69·05	31	51·48	59·20	61	29·09	33·48
2	59·96	69·02	32	50·88	58·57	62	28·17	32·42
3	59·92	68·96	33	50·32	57·92	63	27·24	31·35
4	59·85	68·89	34	49·74	57·25	64	26·30	30·27
5	59·77	68·80	35	49·15	56·57	65	25·36	29·19
6	59·67	68·68	36	48·54	55·87	66	24·40	28·09
7	59·55	68·55	37	47·92	55·15	67	23·44	26·98
8	59·42	68·39	38	47·28	54·42	68	22·48	25·87
9	59·26	68·21	39	46·63	53·67	69	21·50	24·75
10	59·09	68·01	40	45·96	52·90	70	20·52	23·62
11	58·90	67·79	41	45·28	52·12	71	19·53	22·48
12	58·69	67·55	42	44·59	51·32	72	18·54	21·34
13	58·46	67·29	43	43·88	50·51	73	17·54	20·19
14	58·22	67·01	44	43·16	49·68	74	16·54	19·04
15	57·96	66·71	45	42·43	48·83	75	15·53	17·87
16	57·68	66·38	46	41·68	47·97	76	14·52	16·71
17	57·38	66·04	47	40·92	47·10	77	13·50	15·54
18	57·06	65·68	48	40·15	46·21	78	12·47	14·36
19	56·73	65·30	49	39·36	45·31	79	11·45	13·18
20	56·38	64·90	50	38·57	44·39	80	10·42	11·99
21	56·01	64·47	51	37·76	43·46	81	9·39	10·80
22	55·63	64·03	52	36·94	42·52	82	8·35	9·61
23	55·23	63·60	53	36·11	41·56	83	7·31	8·42
24	54·81	62·09	54	35·27	40·59	84	6·27	7·22
25	54·38	62·59	55	34·41	39·61	85	5·23	6·02
26	53·93	62·07	56	33·55	38·62	86	4·19	4·83
27	53·46	61·53	57	32·68	37·61	87	3·14	3·61
28	52·98	60·98	58	31·79	36·60	88	2·09	2·41
29	52·48	60·40	59	30·90	35·57	89	1·05	1·21
30	51·96	59·81	60	30·00	34·53	90	0.00	0·00

Our limits do not permit us to enter into details respecting the numerous experiments that have been made of late years to determine the figure of the earth by measuring the variations of gravity at different places by means of the pendulum. The most valuable series of observations of this kind we yet possess, are those of Captain Foster, reduced under the direction of Mr. Baily, and published in the *Memoirs of the Royal Astronomical Society*, vol. vii. But a discovery recently made by Bessel proves that less accuracy has been obtained by this method than was supposed. It has been found, that a pendulum, when vibrating, drags along with it a portion of air, the precise effect of which can be ascertained in no other way than by actual experiment in vacuo with each individual pendulum. The probable correction which it would be necessary to apply to the results that have already been found, can not be satisfactorily determined.

The mean of the pendulum experiments gives rather a higher value of the ellipticity than the results of geodetic measures; but there are many elements, particularly the irregular constitution of the exterior crust of the earth, and the density of the strata surrounding the station, which can scarcely be determined, and which yet affect materially the results of the experiments.

Besides the methods which have now been alluded to, physical astronomy furnishes other means of arriving at a knowledge of the figure of the earth. The precession of the equinoxes, the nutation of the earth's axis, are phenomena depending on the compression of the earth; and as their amount is now ascertained, from astronomical observations, with the utmost accuracy, we can reciprocally deduce from them a knowledge of the compression. They do not, however, give us an absolute value of the amount of compression, but they make known the limits within which it must necessarily be confined. These limits are 1-279 and 1-578. But a more delicate measure of the same element is furnished by some irregularities in the moon's motion to which it gives rise; and as the lunar theory has now attained a very high state of perfection, and as the small irregularities which cause so much perplexity in geodetical measures here entirely disappear, this is perhaps, the most satisfactory method of all of determining the ellipticity of the earth. The equations into which the irregularity question enters, were discovered by Laplace; and the ellipticity necessary to produce the observed effect was found, on calcula-

tion, to be 1-304; confirming, in a most remarkable manner, the deductions from the measurement of arcs and the observations of the pendulum.

The Surface of the Earth, and its General Divisions.—The surface of the earth contains about 196,663,400 square miles. By much the larger portion of this space is water, which is, indeed, more than twice the extent of the land. The surface of the land is exceedingly diversified, almost everywhere rising into hills and mountains, or sinking into valleys, and sometimes stretching out into plains of great extent. Among the most extensive plains, are the sandy deserts of Arabia and Africa, the internal part of European Russia, and a tract of considerable extent in Prussian Poland. But the most remarkable extent of level ground is the vast table-plain of Thibet, in Asia, which is the most elevated tract of level ground on the globe. The principal mountain ridges are the Alps and Pyrenees, in Europe, the Altai and Himalaya Mountains, in Asia, the mountains of Atlas, in Africa, and the Andes or Cordilleras, in South America. The greatest concavities of the globe are those which are occupied by the waters of the ocean; and of those, by far the largest forms the bed of the Pacific Ocean, which, stretching from the eastern shore of Asia and of New Holland to the western coast of America, covers nearly half the globe. The concavity next in extent is that which forms the bed of the Atlantic Ocean, extending between the new and the old worlds; and a third concavity is occupied by the Indian Ocean. The Arctic and Antarctic Oceans fill up the remaining concavities.

Smaller collections of water which communicate freely with the oceans, are called *seas;* and of these, the principal are the Mediterranean, the Baltic, the Euxine or Black Sea, and the White Sea. Seas sometimes take their names from the countries near which they flow; as the Irish Sea, the German Ocean. Some large collections of water, though they have no immediate connection with the great body of waters, being on all sides surrounded by land, are yet called seas; as the Caspian Sea. A part of the sea running up into the land, so as to form a large hollow, is called a *bay* or *gulf*, as the Bay of Biscay, the Gulf of Mexico; but if the hollow be small, it is called a *creek*, a *road*, a *haven*. When two large bodies of water communicate by a narrow pass between two adjacent lands, the pass is called a *strait* or *straits*, as the Straits of Gibraltar, the Straits of Dover, the Straits of Babelmandel. A channel is a wider kind of strait. The water usually flows through a strait with considerable force and velocity, forming what is called a *current;* and frequently this current, as in the case of the Straits of Gibraltar, flows continually in the same direction.

A body of fresh water entirely surrounded by land, is called a *lake;* as the Lake of Genova, Lake Champlain. A considerable stream of water rising inland, and draining a portion of country more or less extensive, discharging its waters into the sea, is called a *river;* a smaller stream of the same kind is called a *rivulet* or *brook*.

Of the land, which forms the rest of the surface of the globe, two portions, of vast extent, are called *continents;* the one the eastern continent, or the old world, comprehending Europe, Asia, and Africa; the other, the western continent, or new world, comprehending North and South America. New Holland is a third portion of land, however, which has by some been also reckoned a continent on account of its great extent.

A portion of land of comparatively small dimensions entirely surrounded by water, is called an *island;* as Britain, Ireland, Jamaica, Madagascar. New Holland is the largest portion of land which is called an island. When a number of small islands lie near each other, they are said to form a *group* of islands. A portion of land which is almost entirely surrounded by water, is called a *peninsula;* as the Peninsula of Malacca, the Morea or Grecian Peloponnesus, etc. The term peninsula is often applied to a large extent of country. Thus we speak of Spain as a peninsula. The narrow neck of land which joins a peninsula to the mainland, or which connects two tracts of country together, is called an *isthmus*. The most remarkable isthmuses in the world are the Isthmus of Suez, which joins Africa and Asia, and the Isthmus of Darien, which connects the continent of North and South America. A narrow tract of land stretching out into the sea, and appearing to terminate in a point, is called a *cape*. The most remarkable capes are, the Cape of Good Hope, at the southern extremity of Africa; Cape Horn, at the southern extremity of South America; and the North Cape, at the northern extremity of Europe. A large portion of land jutting out into the sea is called a *promontory*.

Until of late, in systems of geography, the earth used to be considered as divided into four quarters; Europe, Asia, Africa, and America. A classification in which the whole world is arranged under seven divisions has now, however, been very generally adopted. These divisions are, Europe, Asia, Africa, North America, South America, Australasia, and Polynesia. With regard to the last two, the one, Australasia, or South Asia, comprehends certain of the great islands, particularly New Holland, which are usually considered as belonging to Asia; and the other, Polynesia, signifying many islands, comprehends all the smaller islands which are scattered over the great expanse of the Pacific Ocean. This classification of the parts of the earth's surface is founded on the most obvious points of distinction. We shall now explain two divisions employed by the ancients, which are founded upon different principles; that into zones, and that into climates.

The divisions into zones is suggested by the different degrees of temperature which prevail in different regions of the earth. The temperature of a country depends on a variety of circumstances; but of these, one of the most obvious is the position of the sun with regard to the zenith. The more nearly his rays are received vertically, the higher will be the temperature; and, on the contrary, the more obliquely they fall, the less effect will they produce in raising the temperature. Now to every point of the earth's surface between the tropics the sun is vertical twice in the year. It is in this region, then, that the highest temperature will prevail. Again, within the polar circles the sun's rays at all times fall very obliquely; and for a length of time they do not reach these two regions of the globe at all. Here, then, the temperature must be lower than anywhere else, as all other places enjoy more of the sun's genial influence. In the two regions between the tropics and the polar circles, a medium temperature is found, increasing as we approach the former, and diminishing as we approach the latter. Thus is the earth's surface divided, by the two tropics and two polar circles, into five *zones*, distinguished from one another by the prevailing temperature in each. That between the tropics is called the *torrid zone*, because there the heat is understood to be extreme. This region, which has the equator passing through the middle of it, the ancients, indeed, considered as uninhabitable. The two regions comprehended within the arctic and antarctic polar circles, are called the northern and southern *frigid zones*, on account of the severity of the cold which there prevails. The two regions situated between the tropics and the polar circles, the one in the northern hemisphere, bounded by the tropic of cancer and the arctic circle, the other in the southern hemisphere, bounded by the tropic of capricorn and the antarctic circle, are called the northern and southern *temperate zones*, because there neither the heat nor cold is excessive; but the heat reaches the highest temperature of summer, and the cold sinks to the lowest temperature of winter, without either becoming extreme.

The division of the earth's surface into climates was employed by the ancients for ascertaining the situation of places. They supposed the northern and southern hemispheres to be each divided into small zones, to which they gave the name of *climates*, the breadth of each zone being such as to make half an hour of difference in the length of the longest day at the two parallels of latitude by which the climate was bounded. Proceeding from the equator, where the length of the day is always 12 hours, they thus divided the space between it and each polar circle into 24 climates. Having reached the polar circles northward and southward, where the longest day is 24 hours, they divided the space between each polar circle in such a manner as to make the difference in the length of the longest day at the beginning and termination of each climate, one month. Hence, as the poles are alternately illuminated for six months, there were just six climates within each polar circle.

TABLE OF CLIMATES.

	Climates.	Latitude of the Higher Parallel.		Breadth of the Climate.		Longest Day under the Higher Parallel.	
		Deg.	Min.	Deg.	Min.	Hours.	Min.
Between the equator and either polar circle.	I.	8	34	8	34	12	30
	II.	16	48	8	9	13	0
	III.	24	10	7	27	13	30
	IV.	30	46	6	36	14	0
	V.	36	28	5	42	14	30
	VI.	41	21	4	53	15	0
	VII.	45	29	4	8	15	30
	VIII.	48	59	3	30	16	0
	IX.	51	57	2	58	16	30
	X.	54	28	2	31	17	0
	XI.	56	56	2	8	17	30
	XII.	58	25	1	49	18	0
	XIII.	59	57	1	32	18	30
	XIV.	61	16	1	19	19	0
	XV.	62	24	1	8	19	30
	XVI.	63	20	0	56	20	0
	XVII.	64	8	0	48	20	30
	XVIII.	64	48	0	40	21	0
	XIX.	65	20	0	32	21	30
	XX.	65	46	0	26	22	0
	XXI.	66	6	0	20	22	30
	XXII.	66	20	0	14	23	0
	XXIII.	66	28	0	8	23	30
	XXIV.	66	32	0	4	24	0
Between the polar circle and the pole.						Months.	
	I.	67	23	0	51	1	
	II.	69	50	2	27	2	
	III.	73	39	3	49	3	
	IV.	78	31	4	52	4	
	V.	84	5	5	34	5	
	VI.	90	0	5	55	6	

E. B. (See GEOGRAPHY.).

Earthenware (Ger. *Irdene Waaren*; Du. *Aardegoed*; Fr. *Vaisselle de terre Poterie*; It. *Stoviglie, Terraglie*; Sp. *Loza de barro*; Rus. *Gorschetschnüe possodü*; Pol. *Glinianæ naczynia*), or crockery, as it is sometimes termed, comprises every sort of household utensils made of clay hardened in the fire. Its manufacture is, in England, of very considerable importance, and the improvements that have been made in it since the middle of the last century have contributed powerfully to its extension, and have added greatly to the comfort and convenience of all classes. "There is scarcely any manufacture which is so interesting to contemplate in its gradual improvement and extension as that of earthenware, presenting, as it does, so beautiful a union of science and art, in furnishing us with the comforts and ornaments of civilized life. Chemistry administers her part, by investigating the several species of earths, and ascertaining, as well their most appropriate combinations as the respective degrees of heat which the several compositions require. Art has studied the designs of antiquity, and produced from them vessels even more exquisite in form than the models by which they have been suggested. The ware has been provided in such gradations of quality as to suit every station, from the highest to the lowest. It is to be seen in every country, and almost in every house, through the whole extent of America, in many parts of Asia, and in most of the countries of Europe. At home it has superseded the less cleanly vessels of pewter and of wood, and, by its cheapness, has been brought within the means of our poorest house-keepers. Formed from substances originally of no value, the fabrication has induced labor of such various classes, and created skill of such various degrees, that nearly the whole value of the annual produce may be considered as an addition made to the mass of national wealth. The abundance of the ware exhibted in every dwelling-house is sufficient evidence of the vast augmentation of the manufacture, which is also demonstrated by the rapid increase of the population in the districts where the potteries have been established."—*London Quar. Rev.*

For the great and rapid extension of the manufacture, the English are chiefly indebted to the late Mr. Josiah Wedgwood, whose original and inventive genius enabled him to make many most important discoveries in the art; and who was equally successful in bringing his inventions into use. The principal seat of the manufacture is in Staffordshire, where there is a district denominated the Potteries, comprising a number of villages, and a population which is supposed to amount, at this moment, to above 85,000, by far the greater portion of which is engaged in the manufacture. There are no authentic accounts of the population of this district in 1760, when Mr. Wedgwood began his discoveries; but the general opinion is, that it did not at that time exceed 20,000. The village of Etruria, in the Potteries, was built by Mr. Wedgwood. The manufacture has been carried on at Burslem, in the same district, for several centuries.

East Indies (British). See INDIA.

East Indies (Dutch). See HOLLAND.

East Indies (French). See FRANCE.

East India Company, a famous association, originally established for prosecuting the trade between England and India, which they acquired a right to carry on exclusively. Since the middle of last century, however, the Company's political have become of more importance than their commercial concerns. East Indies, a popular geographical term not very well defined, but generally understood to signify the continents and islands to the east and south of the River Indus, as far as the borders of China, including Timor and the Moluccas, but excluding the Philippine Islands, New Guinea, and New Holland. China and the Philippine Islands were, however, included within the limits of the East India Company's peculiar privileges. See INDIA.

I. EAST INDIA COMPANY (HISTORICAL SKETCH OF).—The persevering efforts of the Portuguese to discover a route to India, by sailing round Africa, were crowned with success in 1497. And it may appear singular, that, notwithstanding the exaggerated accounts that had been prevalent in Europe, from the remotest antiquity, with respect to the wealth of India, and the importance to which the commerce with it had raised the Phœnicians and Egyptians in antiquity, the Venetians in the middle ages, and which it was then seen to confer on the Portuguese, the latter should have been allowed to monopolize it for nearly a century after it had been turned into a channel accessible to every nation. But the prejudices by which the people of most European states were actuated in the sixteenth century, and the peculiar circumstances under which they were placed, hindered them from embarking with that alacrity and ardor that might have been expected in this new commercial career. Soon after the Portuguese began to prosecute their discoveries along the coast of Africa, they applied to the pope for a bull, securing to them the exclusive right to and possession of all countries occupied by infidels, they either had discovered, or might discover, to the south of Cape Non, on the west coast of Africa, in 27° 54′ north latitude: and the pontiff, desirous to display, and at the

same time to extend, his power, immediately issued a bull to this effect. Nor, preposterous as a proceeding of this sort would now appear, did any one then doubt that the pope had a right to issue such a bull, and that all states and empires were bound to obey it. In consequence, the Portuguese were, for a lengthened period, allowed to prosecute their conquests in India without the interference of any other European power. And it was not till a considerable period after the beginning of the war, which the blind and brutal bigotry of Philip II. kindled in the Low Countries, that the Dutch navigators began to display their flag on the Eastern Ocean, and laid the foundations of their Indian empire.

The desire to comply with the injunctions in the pope's bull, and to avoid coming into collision, first with the Portuguese, and subsequently with the Spaniards, who had conquered Portugal in 1580, seems to have been the principal cause that led the English to make repeated attempts, in the reigns of Henry VIII. and Edward VI., and the early part of the reign of Elizabeth, to discover a route to India by a north-west or north-east passage; channels from which the Portuguese would have had no pretense for excluding them. But these attempts having proved unsuccessful, and the pope's bull having ceased to be of any effect in this country, the English merchants and navigators resolved to be no longer deterred by the imaginary rights of the Portuguese from directly entering upon what was then reckoned by far the most lucrative and advantageous branch of commerce. Captain Stephens, who performed the voyage in 1582, was the first Englishman who sailed to India by the Cape of Good Hope. The voyage of the famous Sir Francis Drake contributed greatly to diffuse a spirit of naval enterprise, and to render the English better acquainted with the newly-opened route to India. But the voyage of the celebrated Mr. Thomas Cavendish was, in the latter respect, the most important. Cavendish sailed from England in a little squadron, fitted out at his own expense, in July, 1586; and having explored the greater part of the Indian Ocean, as far as the Philippine Islands, and carefully observed the most important and characteristic features of the people and countries which he visited, returned to England after a prosperous navigation, in September, 1588. Perhaps, however, nothing contributed so much to inspire the English with a desire to embark in the Indian trade, as the captures that were made about this period from the Spaniards. A Portuguese East India ship, or carrack, captured by Sir Francis Drake, during his expedition to the coast of Spain, inflamed the cupidity of the merchants by the richness of her cargo, at the same time that the papers found on board gave specific information respecting the traffic in which she had been engaged. A still more important capture, of the same sort, was made in 1593. An armament, fitted out for the East Indies by Sir Walter Raleigh, and commanded by Sir John Burroughs, fell in, near the Azores, with the largest of all the Portuguese carracks, a ship of 1600 tons' burden, carrying 700 men and 36 brass cannon; and, after an obstinate conflict, carried her into Dartmouth. She was the largest vessel that had been seen in England; and her cargo, consisting of gold, spices, calicoes, silks, pearls, drugs, porcelain, ivory, etc., excited the ardor of the English to engage in so opulent a commerce.

In consequence of these and other concurring causes, an association was formed in London, in 1599, for prosecuting the trade to India. The adventurers applied to the queen for a charter of incorporation, and also for power to exclude all other English subjects, who had not obtained a license from them, from carrying on any species of traffic beyond the Cape of Good Hope or the Straits of Magellan. As exclusive companies were then very generally looked upon as the best instruments for prosecuting most branches of commerce and industry, the adventurers seem to have had little difficulty in obtaining their charter, which was dated the 31st of December, 1600. The corporation was entitled "The Governor and Company of Merchants of London trading to the East Indies;" the first governor (Thomas Smythe, Esq.) and 24 directors were nominated in the charter; but power was given to the Company to elect a deputy governor, and, in future, to elect their governor and directors, and such other office-bearers as they might think fit to appoint. They were empowered to make by-laws; to inflict punishments, either corporal or pecuniary, provided such punishments were in accordance with the laws of England; to export all sorts of goods free of duty for 4 years; and to export foreign coin, or bullion, to the amount of £30,000 a year, £6,000 of the same being previously coined at the mint; but they were obliged to import, within 6 months after the completion of every voyage, except the first, the same quantity of silver, gold, and foreign coin that they had exported. The duration of the charter was limited to a period of 15 years: but with and under the condition that, if it were not found for the public advantage, it might be canceled at any time upon 2 years' notice being given. Such was the origin of the British East India Company—the most celebrated commercial association of ancient or modern times, and which has now extended its sway over the whole of the Mogul empire.

It might have been expected that, after the charter was obtained, considerable eagerness would have been manifested to engage in the trade. But such was not the case. Notwithstanding the earnest calls and threats of the directors, many of the adventurers could not be induced to come forward to pay their proportion of the charges incident to the fitting out of the first expedition. And as the directors seem either to have wanted power to enforce their resolutions, or thought it better not to exercise it, they formed a subordinate association, consisting of such members of the Company as were really willing to defray the cost of the voyage, and to bear all the risks and losses attending it, on condition of their having the exclusive right to whatever profits might arise from it. And it was by such subordinate associations that the trade was conducted during the first 13 years of the Company's existence.

The first expedition to India, the cost of which amounted, ships and cargoes included, to £69,091, consisted of five ships, the largest being 600 and the smallest 130 tons' burden. The goods put on board were principally bullion, iron, tin, broad-cloths, cutlery, glass, etc. The chief command was entrusted to Captain James Lancaster, who had already been in India. They set sail from Torbay on the 15th of February, 1601. Being very imperfectly acquainted with the seas and countries they were to visit, they did not arrive at their destination, Acheen, in Sumatra, till the 5th of June, 1602. But though tedious, the voyage was, on the whole, uncommonly prosperous. Lancaster entered into commercial treaties with the kings of Acheen and Bantam; and having taken on board a valuable cargo of pepper and other produce, he was fortunate enough, in his way home, to fall in with and capture, in concert with a Dutch vessel, a Portuguese carrack of 980 tons' burden, richly laden. Lancaster returned to the Downs on the 11th of September, 1603. —*Modern Universal History*, vol. x., p. 16; Macpherson's *Commerce of the European Powers with India*, p. 81. But notwithstanding the favorable result of this voyage, the expeditions fitted out in the years immediately following, though sometimes consisting of larger ships, were not, on an average, materially increased. In 1612, Captain Best obtained from the court at Delhi several considerable privileges; and, among others, that of establishing a factory at Surat; which city was, henceforth, looked upon as the principal British station in the west of India, till the acquisition of Bombay.

In establishing factories in India, the English only followed the examples of the Portuguese and Dutch. It was contended that they were necessary to serve as *depôts* for the goods collected in the country for exportation to Europe, as well as for those imported into India, in the event of their not meeting with a ready market on the arrival of the ships. Such establishments, it was admitted, are not required in civilized countries; but the peculiar and unsettled state of India was said to render them indispensable there. Whatever weight may be attached to this statement, it is obvious that factories formed for such purposes could hardly fail of speedily degenerating into a species of forts. The security of the valuable property deposited in them, furnished a specious pretext for putting them in condition to withstand an attack; while the agents, clerks, warehousemen, etc., formed a sort of garrison. Possessing such strong-holds, the Europeans were early emboldened to act in a manner quite inconsistent with their character as merchants, and but a very short time elapsed before they began to form schemes for monopolizing the commerce of particular districts, and acquiring territorial dominion.

Though the Company met with several heavy losses during the early part of their traffic with India, from shipwrecks and other unforseen accidents, and still more from the hostility of the Dutch, yet, on the whole, the trade was decidedly profitable. There can, however, be little doubt, that their gains, at this early period, have been very much exaggerated. During the first 13 years, they are said to have amounted to 132 per cent. But then it should be borne in mind, as Mr. Grant has justly stated, that the voyages were seldom accomplished in less than 30 months, and sometimes extended to 3 or 4 years: and it should further be remarked that, on the arrival of the ships at home, the cargoes were disposed of at long credits of 18 months or 2 years; and that it was frequently even 6 or 7 years before the concerns of a single voyage were finally adjusted.—*Sketch of the History of the Company*, p. 13. When these circumstances are taken into view, it will be immediately seen that the Company's profits were not, really, by any means so great as has been represented. It may not, however, be uninstructive to remark, that the principal complaint that was then made against the Company, did not proceed so much on the circumstance of its charter excluding the public from any share in an advantageous traffic, as in its authorizing the Company to export gold and silver of the value of £30,000. It is true that the charter stipulated that the Company should import an equal quantity of gold and silver within 6 months of the termination of every voyage; but the enemies of the Company contended that this condition was not complied with; and that it was, besides, highly injurious to the public interest, and *contrary to all principle*, to allow gold and silver to be sent out of the kingdom. The merchants and others interested in the support of the Company, could not controvert the reasoning of their opponents without openly impugning the ancient policy of absolutely preventing the exportation of the precious metals. They did not, however, venture to contend, if the idea really occurred to them, that the exportation of bullion to the East was advantageous, on the broad ground of the commodities purchased by it being of greater value in England. But they contended that the exportation of bullion to India was advantageous, because the commodities thence imported were chiefly re-exported to other countries from which a much greater quantity of bullion was obtained than had been required to pay for them in India. Mr. Thomas Mun, a director of the East India Company, and the ablest of its early advocates, ingeniously compares the operations of the merchant in conducting a trade carried on by the exportation of gold and silver to the seed-time and harvest of agriculture. "If we only behold," says he, "the actions of the husbandman in the seed-time, when he casteth away much good corn into the ground, we shall account him rather a madman than a husbandman. But when we consider his labors in the harvest, which is the end of his endeavors, we find the worth and plentiful increase of his actions."—*Treasure by Foreign Trade*, p. 50, edition of 1664.

We may here remark, that what has been called the *mercantile system of* political economy, or that system which measures the progress of a country in the career of wealth by the supposed balance of payments in its favor, or by the estimated excess of the value of its exports over that of its imports, appears to have originated in the excuses now set up for the exportation of bullion. Previously to this epoch, the policy of prohibiting the exportation of bullion had been universally admitted; but it now began to be pretty generally allowed, that its exportation might be productive of advantage, provided it occasioned the subsequent exportation of a greater amount of raw or manufactured products to countries whence bullion was obtained for them. This, when compared with the previously existing prejudice—for it hardly deserves the name of system—which wholly interdicted the exportation of gold and silver, must be allowed to be a considerable step in the progress to sounder opinions. The maxim, *ce n'est que le premier pas qui coute*, was strikingly verified on this occasion. The advocates of the East India Company began gradually to assume a higher tone, and, at length, boldly contended that bullion was nothing but a commodity, and that its exportation should be rendered as free as that of any thing else. Nor were these opinions confined to the partners of the East India Company. They were gradually communicated to others; and many eminent merchants were taught to look with suspicion on several of the previously received dogmas with respect to commerce, and were, in consequence, led to acquire more correct and comprehensive views. The new ideas ultimately made their way into the House of Commons; and, in 1663, the statutes prohibiting the exportation of foreign coin and bullion were repealed, and full liberty given to the East India Company and to private traders to export them in unlimited quantities.

But the objection to the East India Company, or rather the East India trade, on the ground of its causing the exportation of gold and silver, admitted of a more direct and conclusive, if not a more ingenious reply. How compendious soever the ancient intercourse with India by the Red Sea and the Mediterranean, it was unavoidably attended with a good deal of expense. The productions of the remote parts of Asia, brought to Ceylon, or the ports on the Malabar coast, by the natives, were there put on board the ships which arrived from the Arabic gulf. At Berenice they were landed, and carried by camels 250 miles to the banks of the Nile. They were there again embarked, and conveyed down the river to Alexandria, whence they were despatched to different markets. The addition to the price of goods by such a multiplicity of operations must have been considerable; more especially as the price charged on each operation was fixed by monopolists, subject to no competition or control. Pliny says, that the cost of the Arabian and Indian products brought to Rome when he flourished (A.D. 70), was increased a hundredfold by the expenses of transit—(*Hist. Nat.*, lib. vi., c. 23); but there can be little or no doubt that this is to be regarded as a rhetorical exaggeration. There are good grounds for thinking that the less bulky sorts of Eastern products, such as silks, spices, balsams, precious stones, etc., which were those principally made use of at Rome, might, supposing there were no political obstacles in the way, be conveyed from most parts of India to the ports on the Mediterranean by way of Egypt, at a de-

cidedly cheaper rate than they could be conveyed to them by the Cape of Good Hope.

But at the period when the latter route to Indi began to be frequented, Syria, Egypt, etc., were occupied by Turks and Mamelukes; barbarians who despised commerce and navigation, and were, at the same time, extremely jealous of strangers, especially of Christians or infidels. The price of the commodities obtained through the intervention of such persons was necessarily very much enhanced; and the discovery of the route by the Cape of Good Hope was, consequently, of the utmost importance; for, by putting an end to the monopoly enjoyed by the Turks and Mamelukes, it introduced, for the first time, something like competition into the Indian trade, and enabled the western parts of Europe to obtain supplies of Indian products for about a third part of what they had previously cost. Mr. Mun, in a tract published in 1621, estimates the quantity of Indian commodities imported into Europe, and their cost when bought in Aleppo, and in India, as follows:

Cost of Indian Commodities consumed in Europe when Bought in Aleppo (or Alexandria).

	£	s.	d.
6,000,000 lbs. pepper cost, with charges, etc., at Aleppo 2s. per lb.	600,000	0	0
450,000 lbs. cloves, at 4s. 9d.	106,875	10	0
150,000 lbs. mace, at 4s. 9d.	35,626	0	0
400,000 lbs. nutmegs, at 2. 4d.	46,666	2	4
350,000 lbs. indigo, at 4s. 4d.	75,833	6	8
1,000,000 lbs. Persian raw silk, at 2s.	600,000	0	0
Total	£1,465,000	19	0

But the same quantities of the same commodities cost, when bought in the East Indies, according to Mr. Mun, as follows:

	£	s.	d.
6,000,000 lbs. pepper, at 2½d. per lb.	62,500	0	0
450,000 lbs. cloves, at 9d.	16,875	0	0
150,000 lbs. mace, at 8d.	5,000	0	0
400,000 lbs. nutmegs, at 4d.	6,666	18	4
350,000 lbs. indigo, at 1s. 2d.	20,416	12	4
1,000,000 lbs. raw silk, at 8s.	400,000	0	0
Total	£511,458	5	8

Which, being deducted from the former, leaves a balance of £953,542 13*s.* 4*d.* And supposing that the statements made by Mr. Mun are correct, and that allowance is made for the difference between the freight from Aleppo and India, the result would indicate the saving which the discovery of the route by the Cape of Good Hope occasioned in the purchase of the above-mentioned articles.—*A Discourse of Trade from England to the East Indies*, by T. M., original ed. p. 10. (This tract, which is very scarce, is reprinted in Purchas's Pilgrims).

In the same publication (p. 37), Mr. Mun informs us that from the beginning of the Company's trade, to July, 1620, they had sent 79 ships to India; of which 34 had come home safely, and richly laden; 4 had been worn out by long service in India; 2 had been lost in careening; 6 had been lost by the perils of the sea, and 12 had been captured by the Dutch. Mr. Mun further states, that the exports to India since the formation of the Company had amounted to £840,376; that the produce brought from India had cost £856,288, and had produced here the enormous sum of £1,914,-600; that the quarrels with the Dutch had occasioned a loss of £84,088; and that the stock of the Company, in ships, goods in India, etc., amounted to £400,000.

The hostility of the Dutch, to which Mr. Mun has here alluded, was long a very formidable obstacle to the Company's success. The Dutch early endeavored to obtain the exclusive possession of the spice trade, and were not at all scrupulous about the means by which they attempted to bring about this their favorite object; the English, on their part, naturally exerted themselves to obtain a share of so valuable a commerce; and as neither party was disposed to abandon its views and pretensions, the most violent animosities grew up between them. In this state of things, it would be ridiculous to suppose that unjustifiable acts were not committed by the one party as well as the other; though the worst act of the English appears venial, when compared with the conduct of the Dutch in the massacre of Amboyna, in 1622. While, however, the Dutch Company was vigorously supported by the government at home, the English Company met with no efficient assistance from the feeble and vacillating policy of James and Charles. The Dutch either despised their remonstrances, or defeated them by an apparent compliance; so that no real reparation was obtained for the outrages they had committed. During the civil war, Indian affairs were necessarily lost sight of; and the Dutch continued, until the ascendancy of the republican party had been established, to reign triumphant in the East, where the English commerce was nearly annihilated.

But notwithstanding their depressed condition, the Company's servants in India laid the foundation, during the period in question, of the settlements at Madras and in Bengal. Permission to build Fort St. George was obtained from the native authorities in 1640. In 1658, Madras was raised to the station of a presidency. In 1645, the Company began to establish factories in Bengal; the principal of which was at Hooghly. These were, for a lengthened period, subordinate to the presidency of Madras.

No sooner, however, had the civil wars terminated than the armies and councils of Cromwell retrieved the situation of our affairs in India. The war which broke out between the long Parliament and the Dutch in 1652 was eminently injurious to the latter. In the treaty of peace, concluded in 1654, it was stipulated that indemnification should be made by the Dutch for the losses and injuries sustained by the English merchants and factors in India. The 27th article bears, "that the lords, the states-general of the United Provinces, shall take care that justice be done upon those who were partakers or accomplices in the massacre of the English at Amboyna, as the republic of England is pleased to term the fact, provided any of them be living." A commission was at the same time appointed, conformably to another article of the treaty, to inquire into the reciprocal claims which the subjects of the contracting parties had upon each other for losses sustained in India, Brazil, etc.; and upon their decision, the Dutch paid the sum of £85,000 to the East India Company, and £3615 to the heirs or executors of the sufferers at Amboyna.—*Bruce's Annals*, vol. i. p. 489.

The charter under which the East India Company prosecuted their exclusive trade to India being merely a grant from the crown, and not ratified by any act of Parliament, was understood by the merchants to be at an end when Charles I. was deposed. They were confirmed in this view of the matter, from the circumstance of Charles having himself granted, in 1635, a charter to Sir William Courten and others, authorizing them to trade with those parts of India with which the Company had not established any regular intercourse. The reasons alleged in justification of this measure, by the crown, were, that "the East India Company had neglected to establish forified factories, or seats of trade, to which the king's subjects could resort with safety: that they had consulted their own interests only, without any regard to the king's revenue; and in general, that they had broken the condition on which their charter and exclusive privileges had been granted to them."—*Rim. Fœdera*, vol. xx., p. 146.

Courten's association, for the foundation of which such satisfactory reasons has been assigned, continued to trade with India during the remainder of Charles's reign; and no sooner had the arms of the Commonwealth forced the Dutch to desist from their depredations, and to make reparation for the injuries they had inflicted on the English in India, than private adventurers engaged in great numbers in the India trade, and carried it on with a zeal, economy, and success,

that monopoly can never expect to rival. It is stated in a little work, entitled "Britannia Languens," published in 1680, the author of which has evidently been a well-informed and intelligent person, that during the years 1653, 1654, 1655, and 1656, when the trade to India was open, the private traders imported East India commodities in such large quantities, and sold them at such reduced prices, that they not only fully supplied the British markets, but had even come into successful competition with the Dutch in the market of Amsterdam, "and very much sunk the actions (shares) of the Dutch East India Company."—(p. 122.) This circumstance naturally excited the greatest apprehensions on the part of the Dutch Company; for besides the danger that they now ran of being deprived, by the active competition of the English merchants, of a considerable part of the trade which they had previously enjoyed, they could hardly expect that, if the trade were thrown open in England, the monopoly would be allowed to continue in Holland. A striking proof of what is now stated is to be found in a letter in the third volume of "Thurlow's State Papers," dated at the Hague, the 15th of January, 1654, where it is said, that "the merchants of Amsterdam have advice that the Lord Protector intends to dissolve the East India Company at London, and to declare the navigation and commerce of the East Indies free and open: which doth cause great jealousy at Amsterdam, *as a thing that will very much prejudice the East India Company in Holland.*"

Feeling that it was impossible to contend with the private adventurers under a system of fair competition, the moment the treaty with the Dutch had been concluded, the Company began to solicit a renewal of their charter; but in this they were not only opposed by the free traders, but by a part of themselves. To understand how this happened, it may be proper to mention that Courten's association, the origin of which has been already noticed, had begun, in 1648, to found a colony in Assuda, an island near Madagascar. The Company, alarmed at this project, applied to the Council of State to prevent its being carried into effect; and the council, without entering on the question of either party's rights, recommended them to form a union; which was accordingly effected in 1649. But the union was, for a considerable time, rather nominal than real; and when the Dutch war had been put an end to, most of those holders of the Company's stock who had belonged to Courten's association joined in petitioning the Council of State that the trade might in future be carried on, not by a joint-stock, but by a *regulated* company; so that each individual engaging in it might be allowed to employ his own stock, servants, and shipping, in whatever way he might conceive most for his own advantage.—*Petition of Adventurers*, 17th of Nov., 1656; *Bruce's Annals*, vol. ii., p. 518.

This proposal was obviously most reasonable. The Company had always founded their claim to a monopoly of the trade on the alleged ground of its being necessary to maintain forts, factories, and ships of war in India; and that as this was not done by government, it could only be done by a company. But, by forming the traders with India into a regular company, they might have been subjected to whatever rules were considered most advisable; and such special duties might have been laid on the commodities they exported and imported as would have sufficed to defray the public expenses required for carrying on the trade, at the same time that the inestimable advantages of free competition would have been secured; each individual trader being left at liberty to conduct his enterprises, subject only to a few general regulations, in his own way and for his own advantage. See COMPANIES.

But notwithstanding the efforts of the petitioners, and the success that was clearly proved to have attended the operations of the private traders, the Company succeeded in obtaining a renewal of their charter from Cromwell in 1657. Charles II. confirmed this charter in 1661; and at the same time conferred on them the power of making peace or war with any power or people *not of the Christian religion;* of establishing fortifications, garrisons, and colonies; of exporting ammunition and stores to their settlements duty free; of seizing and sending to England such British subjects as should be found trading to India without their leave; and of exercising civil and criminal jurisdiction in their settlements, according to the laws of England. Still, however, as this charter was not fully confirmed by any act of Parliament, it did not prevent traders, or interlopers as they were termed, from appearing within the limits of the Company's territories. The energy of private commerce, which, to use the words of Mr. Orme, "sees its drift with eagles' eyes," formed associations at the risk of trying the consequence at law, being safe at the outset, and during the voyage, since the Company were not authorized to stop or seize the ships of those who thus attempted to come into competition with them. Hence their monopoly was by no means complete; and it was not till after the Revolution, and when a free system of government had been established at home, that, by a singular contradiction, the authority of Parliament was interposed to enable the Company wholly to engross the trade with the East.

In addition to the losses arising from this source, the Company's trade suffered severely, during the reign of Charles II., from the hostilities that were then waged with the Dutch, and from the confusion and disorders caused by contests among the native princes; but in 1668 the Company obtained a very valuable acquisition in the island of Bombay. Charles II. acquired this island as a part of the marriage portion of his wife, Catharine of Portugal; and it was now made over to the Company, on condition of their not selling or alienating it to any persons whatever, except such as were subjects of the British crown. They were allowed to legislate for their new possession; but it was enjoined that their laws should be consonant with reason, and, "as near as might be," agreeable to the practice of England. They were authorized to maintain their dominion by force of arms; and the natives of Bombay were declared to have the same liberties as natural-born subjects. The Company's western presidency was soon after transferred from Surat to Bombay.

In 1664, the French East India Company was formed; and 10 years afterward they laid the foundation of their settlement at Pondicherry.

But the reign of Charles II. is chiefly memorable in the Company's annals, from its being the era of the commencement of the tea trade. The first notice of tea in the Company's records is found in a despatch, addressed to their agent at Bantam, dated 24th of January, 1667-8, in which he is desired to send home 100 lbs. of tea—"the best he can get." (Bruce's *Annals*, vol. ii., p. 210.) Such was the late and feeble beginning of the tea trade, a branch of commerce that has long been of vast importance to the British nation, and without which it is more than probable that the East India Company would long since have ceased to exist, at least as a mercantile body.

In 1677 the Company obtained a fresh renewal of their charter; receiving at the same time an indemnity for all past misuse of their privileges, and authority to establish a mint at Bombay.

During the greater part of the reigns of Charles II. and James II., the Company's affairs at home were principally managed by the celebrated Sir Josiah Child, the ablest commercial writer of the time; and in India, by his brother, Sir John Child. In 1681, Sir Josiah published an apology for the company, under the signature of Φιλοπατρις—"A Treatise wherein is Demonstrated that the East India Trade

is the most National of all Foreign Trades"—in which, besides endeavoring to vindicate the Company from the objections that had been made against it, he gives an account of its state at the time. From this account it appears that the Company consisted of 556 partners; that they had from 35 to 36 ships, of from 775 to 100 tons, employed in the trade between England and India, and from port to port in India (p. 23); that the customs duties upon the trade amounted to about £60,000 a year; and that the value of the exports, "in lead, tin, cloth, and stuffs, and other commodities of the production and manufacture of England," amounted to about £60,000 or £70,000 a year. Sir Josiah seems to have been struck, as he well might, by the inconsiderable amount of the trade; and he therefore dwells on the advantages of which it was indirectly productive, in enabling us to obtain supplies of raw silk, pepper, etc., at a much lower price than they would otherwise have fetched. But this, though true, proved nothing in favor of the Company—it being an admitted fact, that those articles were furnished at a still lower price by the interlopers or private traders.

Sir Josiah Child was one of the first who projected the formation of a territorial empire in India. But the expedition fitted out in 1686, in the view of accomplishing this purpose, proved unsuccessful; and the Company were glad to accept peace on the terms offered by the Mogul. Sir John Child, having died during the course of these transactions, was succeeded in the principal management of the Company's affairs in India by Mr. Vaux. On the appointment of the latter, Sir Josiah Child, to whom he owed his advancement, exhorted him to act with vigor, and to carry whatever instructions he might receive from home into immediate effect. Mr. Vaux returned for answer, that he should endeavor to acquit himself with integrity and justice, and that he would make the laws of his country the rule of his conduct. Sir Josiah Child's answer to this letter is curious: "He told Mr. Vaux roundly that he expected his orders were to be his rules, and not the laws of England, which were a heap of nonsense, compiled by a few ignorant country gentlemen, who hardly knew how to make laws for the good government of their own private families, much less for the regulating of companies and foreign commerce." (HAMILTON'S *New Account of the East Indies*, vol. i., p. 232.)

During the latter part of the reign of Charles II. and that of his successor, the number of private adventurers, or interlopers, in the Indian trade, increased in an unusual degree. The Company vigorously exerted themselves in defense of what they conceived to be their rights; and the question with respect to the validity of the powers conferred on them by their charter was at length brought to issue, by a prosecution carried on at their instance against Mr. Thomas Sandys, for trading to the East Indies without their license. Judgment was given in favor of the Company in 1685. But this decision was ascribed to corrupt influence; and instead of allaying, only served to increase the clamor against them. The meeting of the Convention Parliament gave the Company's opponents hopes of a successful issue to their efforts; and had they been united, they might probably have succeeded. Their opinions were, however, divided—part being for throwing the trade open, and part for the formation of a new company on a more liberal footing. The latter being formed into a body, and acting in unison, the struggle against the Company was chiefly carried on by them. The proceedings that took place on this occasion are among the most disgraceful in the history of the country. The most open and unblushing corruption was practiced by all parties. "*It was, in fact, a trial which should bribe the highest; public authority inclining to one or other as the irresistible force of gold directed.*" (*Modern Universal History*, vol. x., p. 127.) Government appears, on the whole, to have been favorable to the Company; and they obtained a fresh charter from the crown in 1693. But in the following year the trade was virtually laid open by a vote of the House of Commons, "that all the subjects of England had an equal right to trade to the East Indies, unless prohibited by act of Parliament." Matters continued on this footing till 1698. The pecuniary difficulties in which government was then involved, induced them to apply to the Company for a loan of £2,000,000, for which they offered 8 per cent. interest. The Company offered to advance £700,000 at 4 per cent.; but the credit of government was at the time so low, that they preferred accepting an offer from the associated merchants, who had previously opposed the Company, of the £2,000,000, at 8 per cent., on condition of their being formed into a new and exclusive company. While this project was in agitation, the advocates of free trade were not idle, but exerted themselves to show that, instead of establishing a new company, the old one ought to be abolished. But, however conclusive, their arguments, having no adventitious recommendations in their favor, failed of making any impression. The new company was established by authority of the legislature; and as the charter of the old company was not yet expired, the novel spectacle was exhibited of two legally constituted bodies, each claiming an exclusive right to the trade of the same possessions!

Notwithstanding all the pretensions set up by those who had obtained the new charter, during their struggle with the old company, it was immediately seen that they were as anxious as the latter to suppress every thing like free trade. They had not, it was obvious, been actuated by any enlarged views, but merely by a wish to grasp at the monopoly, which they believed would redound to their own individual interest. The public, in consequence, became equally disgusted with both parties; or, if there were any difference, it is probable that the new company was looked upon with the greatest aversion, inasmuch as we are naturally more exasperated by what we conceive to be duplicity and bad faith, than by fair undisguised hostility.

At first the mutual hatred of the rival associations knew no bounds. But they were not long in perceiving that such conduct would infallibly end in their ruin; and that while one was laboring to destroy the other, the friends of free trade might step in and procure the dissolution of both. In consequence, they became gradually reconciled; and in 1702, having adjusted their differences, they resolved to form themselves into one company, entitled *The United Company of Merchants of England trading to the East Indies*.

The authority of Parliament was soon after interposed to give effect to this agreement.

The United Company engaged to advance £1,200,000 to government without interest, which, as a previous advance had been made of £2,000,000 at 8 per cent., made the total sum due to them by the public £3,200,000, bearing interest at 5 per cent.; and government agreed to ratify the terms of their agreement, and extend the charter to the 25th of March, 1726, with 3 years' notice.

While these important matters were transacting at home, the Company had acquired some additional possessions in India. In 1692, the Bengal agency was transferred from Hooghly to Calcutta. In 1698, the Company acquired a grant from one of the grandsons of Aurengzebe, of Calcutta and 2 adjoining villages; with leave to exercise judiciary powers over the inhabitants, and to erect fortifications. These were soon after constructed, and received, in compliment to William III., then king of England, the name of Fort William. The agency at Bengal, which had hitherto been subsidiary only, was now raised to the rank of a presidency.

The vigorous competition that had been carried on

for some years before the coalition of the old and new Companies, between them and the private traders, had occasioned a great additional importation of Indian silks, piece goods, and other products, and a great reduction of their price. These circumstances occasioned the most vehement complaints among the home manufacturers, who resorted to the arguments invariamade use of on such occasions by those who wish to exclude foreign competition; affirming that manufactured India goods had been largely substituted for those of England; that the English manufacturers had been reduced to the cruel necessity either of selling nothing, or of selling their commodities at such a price as left them no profit; that great numbers of their workmen had been thrown out of employment; and, last of all, that Indian goods were not bought by British goods, but by gold and silver, the exportation of which had caused the general impoverishment of the kingdom! The merchants and others interested in the India trade could not, as had previously happened to them in the controversy with respect to the exportation of bullion, meet these statements without attacking the principles on which they rested, and maintaining, in opposition to them, that it was for the advantage of every people to buy the products they wanted in the cheapest market. This just and sound principle was, in consequence, enforced in several petitions presented to Parliament by the importers of Indian goods; and it was also enforced in several able publications that appeared at the time. But these arguments, how unanswerable soever they may now appear, had then but little influence; and, in 1701, an act was passed, prohibiting the importation of Indian manufactured goods for home consumption.

For some years after the re-establishment of the Company, it continued to prosecute its efforts to consolidate and extend its commerce. But the unsettled state of the Mogul empire, coupled with the determination of the Company to establish factories in every convenient situation, exposed their affairs to perpetual vicissitudes. In 1715, it was resolved to send an embassy to Delhi, to solicit from Furucksur, an unworthy descendant of Aurengzebe, an extension and confirmation of the Company's territory and privileges. Address, accident, and the proper application of *presents*, conspired to insure the success of the embassy. The grants or patents solicited by the Company, were issued in 1717. They were in all 34. The substance of the privileges they conferred was, that English vessels wrecked on the coasts of the empire should be exempt from plunder; that the annual payment of a stipulated sum to the government of Surat should free the English trade at that port from all duties and exactions; that those villages contiguous to Madras formerly granted and afterward refused by the government of Arcot, should be restored to the Company; that the island of Diu, near the port of Masulipatam, should belong to the Company, paying for it a fixed rent; that in Bengal, all persons, whether European or native, indebted or accountable to the Company, should be delivered up to the presidency on demand; that goods of export or import, belonging to the English, might, under a *dustuck* or passport from the president of Calcutta, be conveyed duty free through the Bengal provinces; and that the English should be at liberty to purchase the lordship of 37 towns contiguous to Calcutta, and, in fact, commanding both banks of the river for 10 miles south of that city.—Grant's *Sketch of the History of the East India Company*, p. 128.

The important privileges thus granted were long regarded as constituting the great charter of the English in India. Some of them, however, were not fully conceded; but were withheld or modified by the influence of the Emperor's lieutenants, or soubahdars.

In 1717, the Company found themselves in danger from a new competitor. In the course of that year some ships appeared in India, fitted out by private adventurers from Ostend. Their success encouraged others to engage in the same line; and in 1722, the adventurers were formed into a company under a charter from his Imperial Majesty. The Dutch and English Companies, who had so long been hostile to each other, at once laid aside their animosities, and joined heartily in an attempt to crush their new competitors. Remonstrances being found ineffectual, force was resorted to; and the vessels of the Ostend Company were captured, under the most frivolous pretenses, in the open seas and on the coasts of Brazil. The British and Dutch governments abetted the selfish spirit of hostility displayed by their respective Companies. And the emperor was, in the end, glad to purchase the support of Great Britain and Holland to the pragmatic sanction, by the sacrifice of the Company at Ostend.

Though the Company's trade had increased, it was still inconsiderable, and it is very difficult, indeed, when one examines the accounts that have from time to time been published of the Company's mercantile affairs, to imagine how the idea ever came to be entertained that their commerce was of any considerable, much less paramount, importance. At an average of the 10 years ending with 1724, the total value of the British manufactures and other products annually exported to India, amounted to only £92,410 12s. 6d. The average value of the bullion annually exported, during the same period, amounted to £518,102 11s. 0d., making the total annual average export £617,513 3s. 10d.; a truly pitiful sum, when we consider the wealth, population, and industry of the countries between which the Company's commerce was carried on; and affording, by its smallness, a strong presumptive proof of the effect of the monopoly in preventing the growth of the trade.

At this period (1773) the total number of proprietors of East India stock, with their qualifications as they stood in the Company's book, were as follows:

	Proprietors.	Stock.
Englishmen, possessing £1,000 stock and upward.....	487	£1,018,398
Foreigners, possessing £1,000 stock and upward.....	325	890,940
Englishmen, possessing £500 stock and upward.....	1,246	634,464
Foreigners, possessing £500 stock and upward.....	95	50,226
Total.....	2,153	£2,594,029

Notwithstanding the vast extension of the Company's territories, their trade continued to be apparently insignificant. During the 3 years ending with 1773, the value of the entire exports of British produce and manufactures, including military stores, exported by the Company to India and China, amounted to £1,469,411, being at the rate of £489,803 a year; the annual exports of bullion during the same period being only £84,933. During the same 3 years, 23 ships sailed annually for India. The truth, indeed, seems to be, that, but for the increased consumption of tea in Great Britain, the Company would have entirely ceased to carry on any branch of trade with the East; and that the monopoly would have excluded us as effectually from the markets of India and China as if the trade had reverted to its ancient channels, and the route by the Cape of Good Hope been relinquished.

In 1781, the exclusive privileges of the Company were extended to 1791, with three years' notice; the dividend on the Company's stock was fixed at 8 per cent.; three fourths of their surplus revenues, after paying the dividend, and the sum of £400,000 payable to government, was to be applied to the public service, and the remaining fourth to the Company's own use. In 1780, the value of British produce and manufactures exported by the Company to India and China amounted to only £386,152; the bullion exported during the same year was £15,014. The total value of the exports during the same year was £12,648,616; showing that

the East India trade formed only *one thirty-second* part of the entire foreign trade of the empire!

The administration of Mr. Hastings was one continued scene of war, negotiation, and intrigue. The state of the country, instead of being improved, became worse; so much so, that in a council minute by Marquis Cornwallis, dated the 18th of September, 1789, it is distinctly stated, "*that one third part of the Company's territory is now a jungle for wild beasts.*" Some abuses in the conduct of their servants were, indeed, rectified; but, notwithstanding, the nett revenue of Bengal, Bahar, and Orissa, which, in 1772, had amounted to £2,126,766, declined, in 1785, to £2,072,968. This exhaustion of the country, and the expenses incurred in the war with Hyder Ali and France, involved the Company in fresh difficulties; and being unable to meet them, they were obliged, in 1783, to present a petition to Parliament, setting forth their inability to pay the stipulated sum of £400,000 a year to the public, and praying to be excused from that payment and to be supported by a loan of £900,000.

During the administration of Marquis Cornwallis, who succeeded Mr. Hastings, Tippoo Saib, the son of Hyder Ali, was stripped of nearly half his dominions; the Company's territorial revenue was, in consequence, greatly increased; at the same time that the permanent settlement was carried into effect in Bengal, and other important changes accomplished. Opinion has been long divided as to the influence of these changes. On the whole, however, we are inclined to think that they have been decidedly advantageous. Lord Cornwallis was, beyond all question, a sincere friend to the people of India; and labored earnestly, if not always successfully, to promote their interests, which he well knew were identified with those of the British nation. During the 3 years ending with 1793, the value of the Company's exports of British produce and manufactures fluctuated from £928,783 to £1,031,262. But this increase is wholly to be ascribed to the reduction of the duty on tea in 1784, and the vast increase that, consequently, took place in its consumption. (See article Tea.) Had the consumption of tea continued stationary, there appear no grounds for thinking that the Company's exports in 1793 would have been greater than in 1780, unless an increase had taken place in the quantity of military stores exported.

In 1793, the Company's charter was prolonged till the 1st of March, 1814. In the act for this purpose, a species of provision was made for opening the trade to India to private individuals. All his majesty's subjects, residing in any part of his European dominions, were allowed to export to India any article of the produce or manufacture of the British dominions, except military stores, ammunition, masts, spars, cordage, pitch, tar, and copper; and the Company's civil servants in India, and the free merchants resident there, were allowed to ship, on their own account and risk, all kinds of Indian goods, except calicoes, dimities, muslins, and other piece goods. But neither the merchants in England, nor the Company's servants or merchants in India, were allowed to export or import except in Company's ships. And in order to insure such conveyance, it was enacted that the Company should annually appropriate 3,000 tons of shipping for the use of private traders; it being stipulated that they were to pay, in time of peace, £5 outward, and £15 homeward, for every ton occupied by them in the Company's ships; and that this freight might be raised in time of war, with the approbation of the Board of Control.

It might have been, and, indeed, most probably was, foreseen that very few British merchants or manufacturers would be inclined to avail themselves of the privilege of sending out goods in Company's ships; or of engaging in a trade fettered on all sides by the jealousy of powerful monopolists, and where, consequently, their superior judgment and economy would have availed almost nothing. As far, therefore, as they were concerned, the relaxation was more apparent than real, and did not produce any useful results. It was, however, made use of to a considerable extent by private merchants in India; and also by the Company's servants returning from India, many of whom invested a part, and some the whole, of their fortune, in produce fit for the European markets.

Notwithstanding the vast additions made to their territories, the Company's commerce with them continued to be very inconsiderable. During the 5 years ending with 1811, the exports to India by the Company, exclusive of those made on account of individuals in their ships, were as under:

1807.....	£952,416	1810.....	£1,010,815
1808.....	919,544	1811.....	1,088,816
1809.....	866,158		

The exports by the private trade, and the *privilege* trade, that is, the commanders and officers of the Company's ships, during the above-mentioned years, were about as large. During the 5 years ending with 1807–8, the annual average imports into India by British private traders only, amounted to £805,496.—*Papers published by the East India Company in* 1813, 4to. p. 56.

The Company's exports include the value of the military stores sent from Great Britain to India. The ships employed in the trade to India and China, during the same 5 years, varied from 44 to 53, and their burden from 36,671 to 45,342 tons.

For some years previously to the termination of the Company's charter in 1813, the conviction had been gaining ground among all classes, that the trade to the East was capable of being very greatly extended; and that it was solely owing to the want of enterprise and competition, occasioned by its being subjected to a monopoly, that it was confined within such narrow limits. Very great efforts were, consequently, made by the manufacturing and commercial interests to have the monopoly set aside, and the trade to the East thrown open. The Company vigorously resisted these pretensions; and had interest enough to procure a prolongation of the privilege of carrying on an exclusive trade to China to the 10th of April, 1831, with 3 years' notice; the government of India being continued in their hands for the same period. Fortunately, however, the trade to India was opened under certain conditions to the public. The principal of these conditions were, that private individuals should trade, directly only, with the presidencies of Calcutta, Madras, and Bombay, and the port of Penang; that the vessels fitted out by them should not be under 350 tons' burden; and that they should abstain, unless permitted by the Company, or the Board of Control, from engaging in the carrying trade of India, or in the trade between India and China. And yet, despite these disadvantages, such is the energy of individual enterprise as compared with monopoly, that the private traders gained an almost immediate ascendancy over the East India Company, and in a very short time more than *trebled* our trade with India!

But besides being injurious to the private trader, and to the public generally, both in India and England, this trade was of no advantage to the East India Company. How indeed, could it be otherwise? A Company that maintained armies and retailed tea, that carried a sword in the one hand and a ledger in the other, was a contradiction; and, had she traded with success, would have been a prodigy. It was impossible for her to pay that attention to details that is indispensable to the carrying on of commerce with advantage. She may have gained something by the monopoly of the tea trade, though even that is questionable; but it is admitted on all hands that she lost heavily by her trade to India. When, therefore, the question as to the renewal of the charter came to be discussed in 1832, the Company had no reasonable

objection to urge against their being deprived of the privilege of trading. And the act 3 and 4 Will. 4. c. 85., for continuing the charter till 1854, *terminated the Company's commercial character;* by enacting, that the Company's trade to China was to cease on the 22d of April, 1834, and that the Company was as soon as possible after that date to dispose of their stocks on hand, and close their commercial business. And the wonderful increase that has since taken place in the trade with the East is the best proof of the sagacity and soundness of the opinions of those by whose efforts the incubus of monopoly was removed.

II. East India Company (Constitution of).—At present the functions of the East India Company are wholly political. She is said to govern India, with the concurrence and under the supervision of the Board of Control, nearly on the plan laid down in Mr. Pitt's act. But, in point of fact, the government is substantially vested in the latter; the Company's directors acting, except on some rare occasions, rather as a council to the President of the Board of Control, than as exercising an independent, or co-equal authority. All the real and personal property belonging to the Company on the 22d of April, 1834, was vested in the crown, and is held or managed by the Company in trust for the same, subject of course to all claims, debts, contracts, etc., already in existence, or that may hereafter be brought into existence by competent authority. The Company's debts and liabilities are all charged on India. The dividend, which is 10½ per cent., is paid in England out of the revenues of India; and provision is made for the establishment of a *security fund* for its discharge. The dividend may be redeemed by Parliament, on payment of £200 for £100 stock, any time after April, 1874; but it was provided, in the event of the Company being deprived of the government of India in 1854, that they might claim redemption of the dividend any time thereafter, upon three years' notice.—(3 & 4 *Will.* 4. c. 85.)—J. R. McCulloch.

East, (Germ. *Ost.*) The point of the horizon at which the sun rises at the time of the equinoxes; or the point determined by a perpendicular to the meridian drawn toward the quarter of sunrise. The *east* is one of the four *cardinal points* of the compas.

East India. See India.

East River communicates with the Hudson in the Bay of New York, and is formed by the narrowing of Long Island Sound, which opens with a broad mouth at the eastern end into, and receives a strong impulse from the tides in the Atlantic. This channel is so called in contradistinction to the North River (the Hudson). As the Sound contracts, to the west of the broad expanse in front of New Haven, and forms what is called *East River*, the oceanic currents act with a force that increases with the diminishing width of the stream; and this causes higher tides here than at any other place around the island, arriving at New York about three quarters of an hour earlier than those by the Narrows. This current drives upward along the east shore of the Hudson many miles in advance of the other, on the west; and thus the Hudson has two tides, which hardly unite their action till they have passed Tappan and Haverstraw bays. Horll-Gate, Hell-Gate, or Hurl-Gate, a dangerous and very crooked strait in East River, eight miles N. E. of New York, was called by the Dutch *Horll-Gatt*, signifying *whirlpool*. The strait is formed by projecting rocks that confine the water to a narrow and crooked channel, occasioning strong eddy currents. There is a sufficient depth of water for any vessels, but the passage of large ships should only be attempted with skillful pilots.—E. A.

Eau de Cologne. This well-known perfume is a solution of different volatile oils in pure strong spirit. The principal condition for the preparation of a fine water is the employment of a spirit quite devoid of fusil-oil (oil of grain), and of all foreign odor. In respect to the proportion and kind of oils employed, we have numerous formulæ. It is of importance that these oils, which are usually purchased of the druggists of the south of France, should be of the finest quality, and that no oil should be used in sufficient quantity to allow of its peculiar odor being recognizable in the mixture. The oils are to be dissolved in spirit, and the mixture allowed to stand for some weeks (or still better for some months), to improve its odor. Distillation does not affect this; on the contrary a fresh distilled water requires to be kept a much longer time. Distillation is indeed objectionable; for on account of the great volatility of the spirit, the oils in part remain behind in the still. Distillation can improve the odor only when the less volatile oil has been used in too great a quantity, and we wish to obtain a better proportion. Before all things, we should employ a pure, old, strong spirit, and not too much of, nor too strongly smelling oil. The different sorts of volatile oil which are obtained from varieties of citrons, oranges, and lemons, in different states of maturity, are the most important; and, therefore, it is most important to ascertain their purity and goodness. Forster gives the following formula for the preparation of fine eau de Cologne: Take of rectified spirit 82 per cent., of Tralles (=sp. gr. 0·855), 6 (wine) quarts; essence of oranges, essence of bergamot, essence of citron, essence of limette, and essence of petits grains, of each, ℥ j; essence of cedro, essence of sedrat essence de Portugal, and essence de neroli, of each ℥ ss; oil of rosemary, ʒ ij; and oil of thyme, ʒ j.

Otto gives the following formula for a good eau de Cologne: Rectified spirit of 86 per cent.; of Tralles (=0·846 sp. gr.), 200 (wine) quarts; oil of citrons, ℔. iv; oil of bergamot, ℔. ij; oil of neroli ½ ℔.; oil of lavender, ℔. ss; oil of rosemary, ¼ ℔.; and spirit of ammonia, ℥ ss. Mix: don't distill.

This preparation has long possessed great celebrity, in consequence chiefly of the numerous virtues ascribed to it by its venders; and is resorted to by many votaries of fashion as a panacea against ailments of every kind. It is, however, nothing more than aromatized alcohol, and as such an agreeable companion for the toilet. Numerous fictitious recipes have been offered for preparing eau de Cologne; the following may be reckoned authentic, having been imparted by Farina himself to a friend.

Take 60 gallons of silent brandy; sage, and thyme, each ʒ vi; balm-mint and spearmint, each ℥ xij; calamus aromaticus, ʒ iv; root of angelica, ℥ lj; camphor, ʒ j; petals of roses and violets, each ℥ iv; flowers of lavender, ℥ lj; flowers of orange, ʒ iv; wormwood, ℥ j; nutmegs, cloves, cassia, lignea, and mace, each ʒ iv; 2 oranges and 2 lemons, cut in pieces. Allow the whole to macerate in the spirit during 24 hours, then distill off 40 gallons by the heat of a water bath. Add to the product; essence of lemons, of cedrat, of balm-mint, and of lavender, each ʒ xij; neroli and the essence of the seed of anthos, each ʒ iv; essence of jasmin, ℥ j; of bergamot, ℥ xij. Filter, and preserve for use.

Cadet de Gassincourt has proposed to prepare eau de Cologne by the following recipe: Take alcohol at 32° B., 2 quarts; neroli, essence of cedrat, of orange, of lemon, of bergamot, of rosemary, each 24 drops; add ʒ ij of the seeds of lesser cardamoms; distill by the heat of a water bath a pint and a half. When prepared as thus by simple mixture of essences, without distillation, it is never so good. There is a curious contest in Germany concerning the veritable Farina, who makes the celebrated eau de Cologne. The contest was carried even into the Crystal Palace, where there were four John Maria Farinas, all claiming to be the original. It appears that speculation is carried to so high a pitch in Cologne, that any child entitled to the surname of Farina is bargained for as soon as

born, and christened Jean Maria. At times this event is even anticipated.

Eau de Luce. A strong solution of ammonia, scented, and rendered milky by the addition of a little mastic and oil of amber. It is considered an effective remedy in India against the bite of poisonous snakes.

Ebony (Ger. *Ebenholz*; Dn. *Ebbenout*; Fr. *Ebène*; It. *Ebano*; Rus. *Ebenowoederewo*; Lat. *Ebenus*), a species of wood brought principally from the East. It is exceedingly hard and heavy, of great durability, susceptible of a very fine polish, and on that account used in mosaic and other inlaid work. There are many species of ebony. The best is that which is jet black, free from veins and rind, very compact, astringent, and of an acrid pungent taste. This species (denominated by botanists *Diospyrus Ebenus*) is found principally in Madagascar, the Mauritius, and Ceylon. The centre only of the tree is said to be valuable. In 1837, 2160 cwt. of ebony, of the estimated value of £1275 were exported from the Mauritius. Besides the black, there are red, green, and yellow ebony; but the latter are not so much esteemed as the former. Cabinet-makers are in the habit of substituting pear-tree and other woods dyed black, in the place of genuine ebony; these however, want its polish and lustre, though they hold glue better. The price of ebony varies in the London market from £5 to £20 a ton. The quantities imported are but inconsiderable.

Ecuador. See EQUADOR.

Eddy (Sax. ed, *water*, and ea, *backward*), is the water of a stream or tide which, in consequence of striking against some obstacle, is thrown backward, and runs in a direction opposite to that of the general current. More frequently, however, the term is used to denote the whirling or circular motion caused by the meeting of two opposite currents; and in this sense it is also applied to a similar motion of atmosphere.

Eel (*Anguilla muræna* of Linnæus), a fish, the appearance of which is too well known to require any description. It is a native of almost all the waters of Europe, frequenting not only rivers but stagnant pools. Eels are, in many places, extremely abundant, particularly in Holland and Jutland. Several ponds are appropriated in England to the raising of eels; and considerable numbers are taken in the Thames and other rivers. But a large portion of the eels used in England are furnished by Holland. Indeed, very few except Dutch eels are ever seen in London; and even Hampton and Richmond are principally supplied by them. The trade is carried on by Dutch traders, who employ in it several small vessels, by means of which the market is regularly and amply provided for.

Effervescence (Lat. *effervesco*). The escape of gaseous matter from liquids, as in the act of fermentation. All liquids from which bubbles of gas rapidly escape, so as to resemble boiling, are said to effervesce.

Efflorescence (Lat. *effloresco*, *I flower*). The spontaneous crumbling down of transparent crystals, in consequence of the loss of water.

Eggs (Fr. *Eufs*; Lat. *Ova*), are too well known to require to be described. They differ in size, color, taste, etc., according to the different species of birds that lay them. The eggs of poultry are those most commonly used as food; and form an article of very considerable importance in a commercial point of view. The eggs of plovers are esteemed a great delicacy, and make, indeed, a perpetually recurring dish at fashionable dinners.

Egypt, a country situated at the north-eastern extremity of Africa, between N. lat. 31° 37′ and 24° 1′, and E. long. 27° 13′ and 34° 12′; bounded on the north by the Mediterranean Sea, on the south by Nubia, on the east by Palestine, Arabia, and the Red Sea, and on the west by the Great Desert. The chief field-produce is wheat (which is more grown than any other kind of corn), barley, several sorts of millet, maize, rice, oats, clover, peas, the sugar-cane, roses, two species of the tobacco-plant, and cotton. The sugar-cane is extensively cultivated, and excellent sugar is manufactured from it. There are fields of roses in the Feiyoom, which supply the market with rose-water. The tobacco produced in Egypt is coarse and strong compared with that which is used by the middle and upper classes, and imported from Syria and Turkey. That of Syria is considered the best. Of textile plants, the principal are hemp, cotton, and flax; and of plants used for dyeing, bastard, saffron, madder, woad, and the indigo-plant. The intoxicating hasheesh, which some smoke in a kind of water-pipe, formed of a cocoa-nut, two tubes, and a bowl, seldom used for any other narcotic, is not, as has been erroneously supposed, opium, but hemp. The effect is most baneful. The leaves of the hinnè-plant, grown in abundance, are used to tinge, of a bright-red color, the palms of the hands, the soles of the feet, and the nails of both hands and feet, of women and children, the hair of old ladies, and the tails of horses. Indigo is very extensively employed to dye the shirts of the natives, of the poorer classes, and is, when very dark, the color of mourning; therefore women, at funerals, and generally after a death, smear themselves with it. Oil is extracted from the seeds of the cotton-plant, hemp, colewort, the poppy, the castor-oil plant, sesame, and flax. The high, coarse grass, called halfeh (*Poa synsuroïdes*) grows in great quantity in waste places and among ancient ruins.

Mr. Lane (1834) estimates the population of Egypt at less than 2,000,000, and gives the following numbers as nearly those of the several classes of which it is mainly composed:

Moslem Egyptians (felláheen or peasants, and townspeople)	1,750,000
Christian Egyptians (Copts)	150,000
Osmánlees, or Turks	10,000
Syrians	5,000
Greeks	5,000
Armenians	2,000
Jews	5,000

and the remainder, exclusive of the Arabs of the desert, about 70,000.

Sir Gardner Wilkinson (1843) computes the total at about 1,800,000; but Clot-Bey (1840), not always an impartial writer, places it much higher, upward of 3,000,000. The following result of the government census, taken in 1847–8, is remarkable as showing the system of falsifying statistics for state purposes. It is copied from an official return:

Middle Egypt	591,294	El-Kuseyr	3,435
El-Gharbeeyeh	529,930	Rosetta	18,405
El-Kalyoobeeyeh	184,240	Damietta	28,922
Upper Egypt	1,190,118	Suez	17,899
Esh-Sharkeeyeh	342,509	El-'Areesh	2,347
El-Geezeh	228,554	Alexandria	143,134
El-Beheyreh	215,810	Cairo	258,541
El-Meneofeeyeh	440,519		
El-Dakahleeyeh	347,347	Total	4,542,620
Shubra	10,110		

Since the conclusion of the Syrian war, until the present struggle, the navy has been totally inactive. At the former period, it numbered 11 ships of the line, 6 frigates (one moved by steam-power), 5 corvettes, 9 brigs (3 being steamers), and 2 cutters. Some of these were constructed in the naval yard at Alexandria, but the larger number were contracted for in Europe. Great care was bestowed on the formation of the navy, and the establishments connected with it at Alexandria, but the Egyptians do not seem to be a maritime people, or, at any rate, their men-of-war have none of the tautness and neatness of European ships of the class.—E B.

The trade with Europe is carried on through Alexandria. The traffic with the interior of Africa is carried on by means of caravans, which bring, in exchange for European and Egyptian products, ivory, gold-dust,

skins, wool, gum, ostrich-feathers, and metals. The chief commercial relations with Arabia and India are carried on by Cosseir and Suez. Since the establishment of regular steam-packets in the Mediterranean and the Indian Ocean, Egypt has become the route to India for all the correspondence of Europe, as well as for the greater portion of travelers. The principal means of communication at present are the Nile, which is traversed by steam-packets, and the canals, many of which have been repaired by Mehemet Ali; but even the best of them are often unnavigable during a great part of the year. The route from Cairo to Suez (180 miles) is traversed by horses and vans, and the mail is conveyed in 18 hours. The project of uniting the Mediterranean with the Red Sea, by re-opening the ancient canal, has been recently revived, but it is surrounded with difficulties, and not likely to be carried into effect. The more practicable and safe plan of a railroad communication between Cairo and Suez has been resolved on, and a portion of it built. This may again render Egypt the principal entrepôt of commerce between the eastern and the western worlds.

Commerce.—The general commerce of Egypt in 1851, reached a total of 144,509,000 francs, or, in round numbers, $28,902,000; which shows an increase, when compared with 1841, of 44,000,000 francs, or nearly $9,000,000.

It is difficult to obtain any accurate returns of the commercial movements of Egypt, except such as are prepared by the foreign consuls residing at the different ports of that country, and transmitted to their respective governments. From such sources the following table is compiled, showing the export trade of Egypt, and vessels employed, during a period of 11 years, ending with 1851:

Years.	Piastres.	Dollars.	Vessels.
1841.....	198,270,150	9,913,507	1,230
1842.....	180,446,600	9,022,330	1,250
1843.....	191,588,400	9,576,920	1,370
1844.....	167,868,430	8,393,421	1,207
1845.....	185,782,200	9,289,110	1,097
1846.....	187,341,080	9,367,054	1,221
1847.....	301,343,500	15,067,175	1,815
1848.....	157,236,546	7,861,827	1,608
1849.....	208,056,282	10,152,814	1,609
1850.....	315,357,800	15,767,890	1,650
1851.....	325,804,695	16,290,234	1,793

The value of the piastre varies. That of Alexandria is reckoned at 5 cents United States' currency; that of Turkey generally is equivalent to 4 cents.

The import trade in 1841, the first year given in the table, reached 187,000,000 piastres=$9,350,000, and ascended in 1851, the last year, to 230,000,000 piastres, or about $11,500,000. The articles which diminished in the import returns during the period, were sugar, linens, certain kinds of silks, and rum; and the diminution was about equal to the increased production of those articles in Egypt. The importation increased in woolens, cottons, French silks, and articles of fashion.

Commerce in 1855 (Value in Pounds Sterling).

Importation, 2,141,000.		Exportation 4,600,000.	
From England..	985,000	To England...	2,600,000
" France...	177,000	" France....	511,000
" Austria...	200,000	" Austria....	444,000

Navigation in 1854 and 1855.

Entered and cleared.	Vessels.	Tonnage.
1854.....	3,952	788,457
1855.....	4,449	913,216

The English flag occupies the first rank in the returns from which the preceding figures are taken, though, since the repeal of the navigation laws of Great Britain in 1850, the importations under the flags of other countries of northern Europe have largely increased.

Alexandria.—The trade of this port has increased rapidly since the opening of the canal which communicates between Alexandria and the Nile at Atfeh. This communication has taken away from the ports of Damietta and Rosetta the extensive commerce formerly enjoyed by them, and for which, from their position on the two mouths of the Nile, they possessed great advantages. The total trade of Alexandria in 1840, amounted in value to $11,997,145, of which there were for imports $6,636,980, and for exports $5,860,165. This trade in 1842 reached in value $21,000,000, an increase over 1840 of over $9,000,000. The treaty of 1838, placing foreign commerce on a more secure basis than had previously existed, and the tranquillity which followed the settlement of the difficulties of 1840, were the causes of this great augmentation in the trade of 1842. Among the exports of this year, raw cotton reached in value $1,800,000, of which Austria received upward of $1,000,000 in value. The trade of 1843 exhibits a falling off from that of the preceding year, aggregating only (imports and exports united) about $19,000,000, of which raw cotton reached in value about $2,000,000. In 1844 the total trade of this port fell again to about $13,000,000; and in 1846 the totals reached nearly $18,000,000, of which, for cotton, there were $2,000,000. In 1849 the foreign trade of Alexandria reached $16,000,000, of which for imports, there were $7,500,000, and for exports, $8,500,000. The raw cotton exported this year reached in quantity 258,000 quintals (the quintal, or cantar, is estimated at 100 lbs.), or 25,800,000 lbs., valued at $2,775,000. The tranquillity which prevailed in Egypt during the ten years anterior to 1850, was highly favorable to the development of its foreign commerce. The treaty of 1838, guarantying the unrestricted circulation through Egypt of European merchandise, and its freedom from the vexatious taxes to which it was subjected before that period, contributed in like manner to the prosperity of this port in 1850. The total trade exceeded in value $19,000,000, a figure which it had never before reached, excepting in the year 1842, when the large augmentation was brought about by causes purely accidental. Of this sum, imports reached nearly $8,000,000, and exports about 11,000,000. Of the latter, raw cotton amounted in quantity to 82,084,500 lbs., and in value to $4,200,000.

The establishment of a national bank in Alexandria, under the title of Bank of Egypt, has already, though not in operation, commenced a revolution in the ideas of the fellaas, or cultivators of the soil, with respect to money matters. It is well known that the fellahs have hitherto hoarded or buried the cash they have received for their produce. Since they have been paid by drafts on the Bank of Egypt, and they find the mode in which those drafts are cashed is so satisfactory, some of the more wealthy have opened accounts with the bank, and deposited their savings there for safe keeping. Should this practice become general, and the many millions which are known to be hoarded by the fellahs be brought into circulation and laid out in profitable investments, it must produce an enormous effect on the prosperity of the country in general.

It is worthy of notice, that, in the voluminous reports from which the preceding statements of the trade, both of Egypt and its principal port, Alexandria, are extracted, the United States does not once appear. A despatch to the State Department, dated Alexandria, May 1, 1856, states that "the increase in foreign traders is very perceptible, but there are few branches of American houses among them." England, France, and Austria, seem to have been the principal foreign countries which participated in this trade. The total trade of 1851 reached $29,000,000, and that of 1852 ascended to upward of $31,000,000, of which a large share is assigned to Turkey and Syria. The quantity of raw cotton exported the latter year was 718,655 quintals, valued at $6,960,249. The whole of this cotton was sent to England, France, and Austria, in the following proportions: to England, 426,118 quintals; to Austria, 159,300 quintals; and to France, 128,030 quintals. These figures, as well as those cu-

ployed throughout this digest, generally, are derived from French official sources, which purport to be based on those of Egyptian authorities. The latter, however, are deemed by no means reliable. The following statement exhibiting the export trade of Alexandria for 1855, transmitted from the United States' Consulate-general at that place, is stated to have been drawn from private sources:

Countries.	Cotton.	Wheat.	Beans.	Flax.	Indian corn.	Wool.	Linseed.
	Cantars.*	Ardebs.†	Ardebs.	Cantars.	Ardebs.	Cantars.	Ardebs.
Great Britain	270,615	1,114,614	392,840	56,425	103,737	19,275	46,994
France	108,248	180,441	700	1,250	....	1,680	1,090
Austria	140,412	27,580	10,952	3,416	13,035	689	724
Other countries	1,611	402,217	40,754	14,258	3,851	1,900	3,180
Total	520,886	1,674,852	445,246	75,349	120,623	23,494	51,988

* The cantar of Egypt is estimated at 100 pounds.

† The ardeb equals 5 bushels.

During the same year, an English house at Alexandria sent two vessels to New York, and an Austrian house two more to the same destination, loaded chiefly with gums, rags, etc. There is no doubt that a profitable trade might be established between the United States and the port of Alexandria, by sending out such merchandise as usually finds a market in Egypt, and receiving in return the rich and varied exports of that extensive emporium.

Cotton.—The cotton culture of Egypt commenced in 1818, and exportation to England in 1823. The seed is said to have been imported by the pacha "from America, the Mediterranean, and Brazil;" and these different kinds of cotton may, therefore, be met in cultivation. The attempt to cultivate the sea island cotton is pronounced a failure—the quality deteriorating rapidly after the first crop—although the best Egyptian cotton, called *Maho* (so called from Maho-Bey, in whose garden, at Cairo, the plant was first discovered, having, probably, been introduced from the Isle of Bourbon during the French invasion), is ranked next to sea island in length of staple. The comparative tabular statement subjoined, made up from consular returns (the bale being estimated at 300 lbs.), shows the quantities of cotton exported at the port of Alexandria, and the countries to which exported, respectively, during a period of three years. The quantity exported in 1852 is stated to have been as follows: to Great Britain, 57,623,400 lbs.; to France, 12,350,100 lbs.; to Austria, 11,429,700 lbs.; elsewhere, 359,100 lbs.; presenting an aggregate of 81,762,300 lbs., and far exceeding that of either of the three ensuing years, as given in the following table:

Pounds of Cotton exported from Alexandria, 1853—1855.

Countries.	1853.	1854.	1855.
	Pounds.	Pounds.	Pounds.
Great Britain	26,489,900	24,938,700	33,980,100
France	10,726,500	7,454,100	9,451,200
Austria	6,321,000	10,165,200	12,774,900
Elsewhere	397,800	988,500	668,100
Total	43,885,200	43,546,500	56,874,300

If to the aggregate exported, be added from five to six millions pounds consumed in the country, a liberal estimate of the annual amount of cotton produced in Egypt—between fifty and sixty million pounds—will have been made. The factories established by Mehemet Ali are, it is stated, going rapidly to ruin. The cotton goods manufactured are coarse "captas," or soldiers' "nizam" uniform. Much cotton is used also in making up divans, the usual furniture in Egypt.—*Com. Relations U. S.* See article Alexandria.

The Egyptian measures are, the "fitr," or space measured by the extension of the thumb and first finger; the "shibr," or span; the common cubit=22⅞ inches, the cubit of about 25 inches, used principally for Indian goods, and the cubit of about 26½ inches, used for European cloth. Of the measures of land, the feddán was equal to about one English acre and one tenth; it is now less than an acre. It is divided into "keeráts," or 24ths, and consists of 333⅓ kasabehs or rods. The kasabeh is 22 "kabdahs," and the kabdah, about 6½ inches, or the measure of a man's fist with the thumb erect. The Egyptian league varies in Upper and Lower Egypt, and is stated to be, in the former, equal to a journey of an hour and a half, and in the latter, to one hour's journey. The "ardeb" is equal to very nearly five bushels, and consists of six "weybehs," and each weybeh of four "rubaa."

Weights.—The weights are the "kamhah" (or grain of wheat), the 64th of a "dirhem," and 4th of a "keerát." It is equal to about ¾ of an English grain. The "habbeh" (or grain of barley) is the 48th of a dirhem and 3d of a keerát, and=127-128th English grain. The keerát, or carat, is the 24th of a "mitkál;" and= from 2 125-128ths to 3 English grains. The dirhem =47 5-8ths to 48 English grains. The mitkál= weight of a deenár=from 71 7-16ths to 72 English grains. The "wukeeyeh," or ounce=from 571¼ to 576 English grains. The "ratl," or pound=from 1 lb. 2 oz. 5¾ dwt. to about 1 lb. 2 oz. 8 dwt. troy. The "wukkah," or oke=from 3 lb. 3 oz. 13¾ dwt. to 3 lb. 4 oz. troy. The "cantár," or 100 weight=from 98 lbs., less 200 grs., to about 98 lb. avoirdupois.

Money.—European sovereigns and dollars are current in Egypt, the former being now equivalent to about 100 piastres, the latter, if French, to about 20 piastres, and if Spanish (pillar-dollars), to about 22 piastres; but the value of these coins is constantly changing. The Spanish doubloon, and Venetian sequin are also current, and so are Constantinople coins. Of native coin, the "faddah," or para, is equal to 6-25ths of a farthing, and there are pieces of 5, 10, and 20 faddahs. The "kirsh," or Egyptian piastre, contains 40 faddahs, and is equal to 2 and 2-5ths pence. These coins are of silver and copper. Of gold coins, there are the "kheyreeyeh," of 4 piastres, and the kheyreeyeh of 9 piastres (but the value of these coins has recently depreciated), and pieces of 5, 10, 20, and 100 piastres. The "riyál beledee," or native dollar, is equal to 90 paras, but is only a nominal money, as is the "kees," or purse, which contains 500 piastres, and the "khazneh," or treasury of 1,000 purses. For the weights, measures, and money, we are indebted to the *Modern Egyptians.*—E. B. See Alexandria.

Eider-duck. The species of duck so-called is one of the largest and most valuable of the *Anatidæ*, and, from certain modifications of the beak and sternum, constitutes the type of a subgenus, called *Somateria.* The common eider (*Somateria mollissima*) frequents, in great numbers, the Orkneys, Hebrides, and Shetland isles. It is defended from the cold of the dreary northern coasts by the development of an unusual quantity of the finest down beneath its dense exterior plumage, which is equally well adapted to form an impenetrable barrier to the wet. The down of the eider constitutes its chief value, as it combines with its peculiar softness, fineness, and lightness, so great a degree of elasticity that the quantity of this material which might be compressed and concealed between two hands will serve to stuff a coverlet. As the female plucks from her own body a quantity of her finest down to line her nest, the Orcadians avail themselves of this instinct, and take an early opportunity to rob the nest of both eggs and down. She then begins to lay afresh, and envelopes her eggs with another layer of down; and if this be removed, the male is said to contribute his own down, when the female can afford no more. Lastly, when the brood of ducklings is hatched, the nest is again visited and

the down removed. Thus a considerable quantity of the valuable material furnished by the eider-duck is obtained independently of that which is plucked from the slaughtered birds. Besides the down and eggs, the islanders turn the skins and flesh of the eiders to profit; while these birds cost them no expense, as they feed entirely on sea-weed and other natural productions of the ocean.

Elastic Bands. (*Tissus Elastiques*, Fr.; *Federharz-zeige*, Germ.) The manufacture of braces and garters, with threads of caoutchouc, either naked or covered, seems to have originated, some time ago, in Vienna, whence it was a few years since imported into Paris, and thence into this country. At first, the pear-shaped bottle of the Indian rubber was cut into long narrow strips by the scissors; a single operative turning off only about 100 yards in a day, by cutting the pear in a spiral direction. He succeeded next in separating with a pair of pincers the several layers of which the bottle was composed. Another mode of obtaining fine threads was to cut them out of a bottle which had been rendered thin by inflation with a forcing pump. All these operations are facilitated by previously steeping the caoutchouc in boiling water, in its moderately inflated state. More recently, machines have been successfully employed for cutting out these filaments, but for this purpose the bottle of caoutchouc is transformed into a disc of equal thickness in all its parts, and perfectly circular. This preliminary operation is executed as follows: 1. The bottle, softened in hot water, is squeezed between the two plates of a press, the neck having been removed beforehand, as useless in this point of view; 2. The bottle is then cut into two equal parts, and is allowed to consolidate by cooling, before subjecting it to the cutting instrument. When the bottle is strong enough, and of variable thickness in its different points, each half is submitted to powerful pressure in a very strong cylindrical mold of metal, into which a metallic plunger descends, which forces the caoutchouc to take the form of a flat cylinder with a circular base. The mold is plunged into hot water during the compression. A stem or rod of iron, which goes across the hollow mold and piston, retains the latter in its place, notwithstanding the resilience of the caoutchouc, when the mold is taken from the press. The mold being then cooled in water, the caoutchouc is withdrawn.

The transformation of the disc of caoutchouc into fine threads is performed by two machines; the first of which cuts it into a ribbon of equal thickness in its whole extent, running in a spiral direction from the circumference to the centre; the second subdivides this ribbon lengthwise into several parallel filaments much narrower but equally thick.—Ure's *Dict.*

Elba, called *Ilva* by the Romans, and *Æthalia* by the Greeks, an island in the Mediterranean Sea lying off the promontory of Populonium, at equal distances from Corsica and the Italian mainland, though somewhat nearer the latter. Its outline is extremely irregular, and its sides are indented by numerous inlets and arms of the sea, reducing its breadth in some places to about 3 miles. The extreme length of the island is about 18 miles; its extreme breadth about 12 miles; and its area about 150 miles. The whole length of the island is occupied by a mountain range, one peak of which (that of Capanna) rises to the height of about 3500 feet above the sea. The mountains of this range, though themselves barren, inclose valleys of considerable fertility. Vines, olives, and mulberries, grow in large quantities in this island, which also produces wheat, Indian corn, and vegetables in abundance. Some of the wine produced in Elba is of excellent quality, and a considerable quantity of it is annually exported. The smaller domestic animals thrive well and are very numerous in the island; but the larger kinds, such as oxen and horses, are somewhat scarce The fisheries off the coast are important.

The iron mines of Elba, in modern, as in ancient times, are extremely valuable. The great facility with which the metal is worked, and the abundance in which it is found, render these mines among the most valuable of their kind in the world. The ore is dug from a hill, 500 feet high and nearly 2 miles in circumference, which is itself almost entirely one mass of ore. When smelted, it is found to contain on an average about 60 per cent. of pure iron. Fuel on the island is very scarce; and the ore is consequently conveyed on shipboard to the adjoining mainland to be smelted. The total quantity of iron ore annually extracted amounts to nearly 20,000 tons, giving employment to 130 miners. The salt mines of Elba are hardly inferior in celebrity to the iron ones. About 4,000,000 pounds are annually produced, giving employment to about 100 workmen. Besides Porto Ferrajo, the capital, and the town of Porto Longone, Elba contains no town of any size or importance. Campo, Capo Liveri, Marciana, and Rio are mere villages or fishing stations. In ancient history, the name of Elba very rarely occurs; and in modern times it is chiefly memorable as having been the residence of the Emperor Napoleon, after his first abdication, from May 1814 till February 1815. From that time till the present, Elba has been an appanage of the Grand Duchy of Tuscany. Pop. (1854) 21,559.

Elbe (the *Albis* of the ancients), a large river of Germany, which rises in the *Riesen Gebirge*, or Giant's Mountains, between Silesia and Bohemia, and is known at its source by the Sclavonic name of *Labbe*. Its principal sources are the White Fountain, at the base of the *Schnee-Kuppe*, and the 11 fountains of the Elbe in the Navarian meadow. To the number of streams which descend into Bohemia from the neighboring mountains it owes its early increase. After its junction with the river Eger, it becomes navigable; and, entering Saxony, it passes successively Dresden, Meissen, Torgau, and Wittenberg. In its course, which is northerly, it receives as tributaries the Muldau and the Saale; and running through the territory of Magdeburg and the duchies of Mecklenburg and Lauenburg, it discharges itself at last into the German Ocean, about 70 miles below Hamburg, after a course of 500 miles. The Elbe has always been an important river in a military point of view. With respect to commerce, it is of inestimable value to the countries of north-west and central Germany, being the channel by which they export their surplus products, and receive their imports from abroad. It gives to Hamburg its command of the navigation far into the interior, although the voyage is difficult on account of the numerous sand-banks with which the estuary and the rivers are encumbered. It communicates with the Havel by the canal of Planen, in the territory of Magdeburg; and at Hamburg it is connected in like manner with the Trave at Lubec. It is also joined to the Weser by a canal running between Vegesak and Stade. By the railway from Leitmeritz to Vienna it communicates with the Danube; and the other railways that touch upon other quarters of the river supply channels for distributing merchandise through the various districts which they traverse. About 40 miles from its source, the elevation of the river above the level of the sea, is only 658 feet; at Schandau it is 341 feet; at Dresden, 279 feet; and at Arneburg in Brandenburg, only 176 feet.

Formerly 9 entrepôts (Pirna, Dresden, and Magdeburg), and 35 tolls, and numerous corporations of privileged watermen, opposed almost insurmountable difficulties to the navigation: the Austrians and the Saxons could alone navigate the Upper Elbe, that is, from Magdeburg to where it ceases to be navigable, and the Prussians and Hamburgers had the sole privilege of navigating the Lower Elbe. But the naviga-

tion of the river was definitely regulated by a convention concluded on the 18th June, 1821, between all the bordering states, viz., Austria, Saxony, Prussia, Hanover, Denmark (for Holstein and Lauenburg), the grand duchy of Mecklenburg-Schwerin, and the three principalities of Anhalt. This convention established the principle of free navigation, allowing every merchant, to whatever bordering state he might belong, with his own vessel and crew to navigate the whole course of the river without interruption; the 35 tolls were reduced to 14; the heavy dues which were levied upon goods of the first necessity were reduced to those which are paid, one for the cargo (*Elbe Toll*), and the other for the ship (*Recognitionsgebühr*); and each state was bound to watch over the portion of river which passed through their territories, and to preserve it from every thing injurious to the commerce or navigation. But notwithstanding these regulations, merchants are still exposed to vexatious burdens and interruptions. Wood, stones, fruits, and earthenware, are the principal articles that are brought down the Elbe. Corn, salt, and colonial produce are the principal articles which are carried up, and on these the greater part of the duties are levied. For a later ordinance relating to the abolishment of all tolls on the Elbe except the ordinary port charges, see article HAMBURG.

El Dorado (Span. *the golden region*). The name given by the Spaniards to an imaginary country, supposed in the 16th century to be situated in the interior of South America, between the Rivers Orinoco and Amazon, and, as the name implied, abounding in gold and all manner of precious stones. After the Spanish conquest of Mexico and Peru, the most exaggerated accounts of the wealth and riches of the newly acquired territory were circulated and believed. A new region was fabled to exist far surpassing the wealth and splendor of Peru; expeditions were fitted out for the purpose of discovering it; and though all such attempts proved abortive, the rumors of its existence continued to be believed down to the beginning of last century. The term has now passed into the language of poetry, in which it is used to express a land of boundless wealth and felicity, like the ancient Elysium or the Mohammedan Paradise. See a learned article on "Sir Walter Raleigh," in vol. lxxii., of the *Edin. Review*, which contains a *resumé* of all the speculations that have been entertained upon this subject.

Electrography. The copying of an exquisite line engraving, from a copper or steel plate to an electro-copper deposit, although now become a very familiar process, is really a wonderful one; for, let the lines of the engraving be as fine and minute as they may, the deposited atoms of copper mark them all distinctly—so infinitely small is each atom or particle compared with any magnitude which human hands can produce. Like many other wonderful and beautiful processes, this is a very simple one. Let us suppose that a large steel or copper engraving is to be so copied. The plate is immersed in a chemical solution of copper, and a thick film is precipitated on it by electro deposit. This film may be easily loosened from the plate, and its surface then presents a reverse to the plate, protuberances instead of engraved lines, and cavities instead of plain or raised portions. The film is employed as a sort of mold; for it is in its turn, immersed in the solution, and made the basis for a second deposition. This second deposition is allowed to continue until a plate as thick as the original is produced; and this plate, when separated from its parent film, is seen to be an exact counterpart of the engraved plate first operated upon. So perfect is the resemblance, that, if the electro-plate be made with care, an inked impression printed from it can be detected from one printed from the original plate only by an experienced judge: to ordinary eyes they are equal in all respects.

To M. Jacobi—almost simultaneously with Mr. Spencer—we are indebted for one of the simplest and most elegant applications of electricity—the galvanoplastic art, or Volatype. In this, advantage is taken of the perfectly metallic state in which the base of a metallic salt is deposited at the negative pole of a volatile combination. In the case, for example, of the decomposition of sulphate of copper, the sulphuric acid unites with the positive wire, or remains suspended, while the metallic copper is slowly and homogeneously deposited on the surface of any object (rendered conducting by the application of black lead or otherwise), of which it forms a perfect mold, from which a fresh cast or *fac-simile* in metal of the original object may be obtained by a repetition of the process. To see the veins of a leaf, or the delicate wing of an insect thus metallized, is certainly an astonishing thing; and the applications to the useful arts are far too numerous to be noticed here. Daniel's invention of the Constant Battery evidently suggested the Volatype.

Elemi, a resin obtained from the *Amyris elemifera*, a tree growing in different parts of America, Turkey, etc. It is obtained by wounding the bark in dry weather, the juice being left to thicken in the sun. It is of a pale yellow color, semi-transparent—at first softish, but it hardens by keeping. Its taste is slightly bitter and warm. Its smell, which is, at first, strong and fragrant, gradually diminishes. It used to be imported in long roundish cakes, wrapped in flag-leaves, but it is now usually imported in mats and chests.—THOMSON'S *Chemistry*.

Elixir (Arab), a term applied in old pharmacy to certain essences or tinctures; a mixture of an aromatic tincture with sulphuric acid was called *elixir of vitriol*. The alchemists applied the term *elixir* to various solutions employed in the art of transmutation.

Ell (Lat. *Ulna*), a measure used chiefly for cloth, and varying in length in different countries. The English and Flemish ells were those most in use in Great Britain. The English ell is 45 inches, while the Flemish ell is only 27 inches or $\frac{3}{4}$ of a yard. In Scotland the ell is 37 1-5 English inches.

Elm (*Ulmus*), a forest tree of which there are several varieties. It attains to a great size, and lives to a great age. Its trunk is often rugged and crooked, and it is of slow growth. The color of the heart-wood of elm is generally darker than that of oak, and of a redder brown. The sap-wood is of a yellowish or brownish white, with pores inclined to red. It is in general porous and cross-grained, sometimes coarse-grained, and has no large septa. It has a peculiar odor. It twists and warps much in drying, and shrinks very much both in length and breadth. It is difficult to work, but is not liable to split, and bears the driving of bolts and nails better than any other timber. In Scotland, chairs and other articles or household furniture are frequently made of elm wood; but in England, where the wood is inferior, it is chiefly used in the manufacture of coffins, casks, pumps, pipes, etc. It is appropriated to these purposes because of its great durability in water, which also occasions its extensive use as piles, and planking for wet foundations. The naves of wheels are frequently made of elm; those of the heavy wagons and drays are made of oak, which supports a heavier weight, but does not hold the spokes so firmly. Elm is said to bear transplanting better than any other large tree.—TREDGOLD'S *Principles of Carpentry*.

The wood of the *Ulmus Americana*, like that of the European elm, is of a dark brown color, and is liable to decay when exposed to the alternations of moisture and dryness; and when cut transversely or obliquely to the longitudinal fibres, it exhibits the same numerous and fine undulations; but it splits more easily and has less compactness, hardness, and strength—weighing, when perfectly dry, only 33 pounds to a

cubic foot. The principal uses to which this timber is applied, are for making naves or hubs to wheels, for piles and foundation-pieces to mills, canal-locks, and for many other purposes where strength is required, and the work is constantly buried in water or mud. In the State of Maine it is occasionally employed for the keels to vessels, for which purpose it is well adapted on account of its size. It is also employed for the swingle-trees of the carriages of great-guns, and in some parts of the country, where more appropriate wood is not to be found, it is used for making ox-yokes, sleds, and other implements of husbandry. The bark, which is easily detached from the tree during 8 months of the year, is sometimes used for making bast-mats, ropes or withes, and for the bottoms of chairs. The wood, when dry, makes excellent fuel, and, when burned, yields a large proportion of ashes, which abound in alkaline salts. In Canada, and in the northern parts of the States of Maine, New Hampshire, Vermont, and New York, a profitable business is followed, especially in connection with clearing the forests, in preparing the salts of ley, for the manufacture of potash.—Browne's *Trees of America*.

Elsineur, or Helsingor, a town of Zealand, on the Sound, about 22 miles north of Copenhagen, lat. 56° 2′ 17″ N., long. 12° 38′ 2″ E. Population about 8,000. Adjacent to Elsineur is the castle of Cronborg, which commands the entrance to the Baltic by the Sound. All merchant ships passing to and from the Baltic were obliged, until 1857, to salute Cronborg castle by hoisting their colors when abreast of the same; and no merchant ship was allowed to pass the Sound without clearing out at Elsineur, and paying toll, according to the provisions in the treaties to that effect negotiated with Denmark by the different European powers. The first treaty with England having reference to this subject, is dated in 1450. The Sound duties had their origin in an agreement between the King of Denmark on the one part, and the Hanse Towns on the other, by which the former undertook to construct light-houses, landmarks, etc., along the Cattegat, and the latter to pay duty for the same. The duties have since been varied at different periods. (See article, Danish Sound Dues.) Ships of war are exempted from the payment of duties. Most maritime nations have consuls resident at Elsineur. The following plan of the Sound is taken from the admiralty chart, compiled from Danish authorities. (See opposite page.)

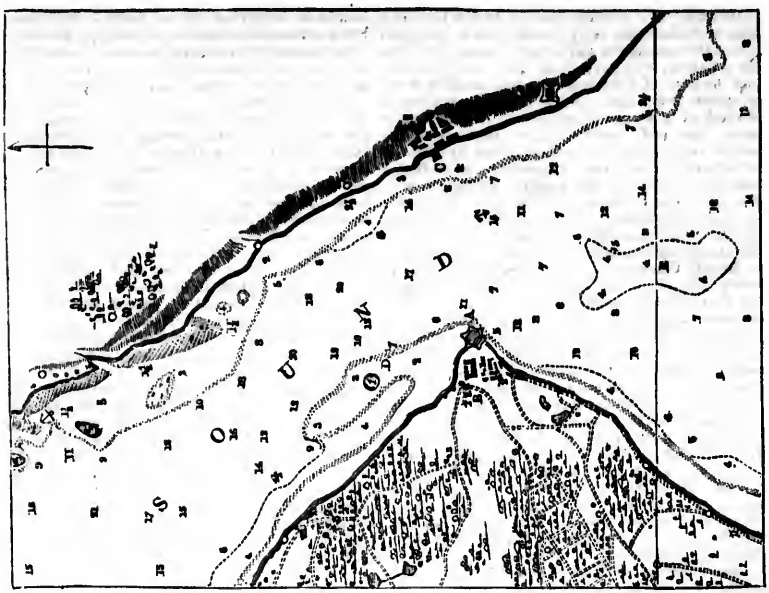
Navigation of the Baltic.—This is exhibited in the following account of the number of ships that have passed (going and returning) the Sound at different periods, from the year 1777 to the year 1852, specifying the countries to which they belonged.

Countries.	1777.	1780.	1785.	1790.	1814.	1816.	1820.	1825.	1830.	1835.	1840.	1851.	1852.
British Islands	2,552	1,701	2,537	3,771	2,819	1,848	3,597	5,186	4,274	2,472	4,071	4,811	3,902
Holland	2,567	2,038	1,571	2,009	551	876	853	690	1,227	654	947	2,060	1,691
Sweden	1,773	1,880	2,186	430	2,759	2,042	1,519	1,319	1,188	991	1,364	2,255	2,100
Denmark	1,110	1,341	1,787	1,586	476	787	792	803	744	752	974	1,518	1,464
Prussia	472	671	1,358	599	1,083	1,014	1,554	2,391	2,253	1,988	2,996	2,664	2,319
Russia	47	43	114	6	495	899	242	335	405	625	814	1,047	946
United States	....	....	20	44	....	168	169	230	152	126	143	134	76
France	21	....	20	123	12	16	63	72	199	146	239	288	283
Spain	10	....	15	32	22	9	....	....	8	7	18	....	6
Hanover	....	....	....	....	55	263	458	418	645	886	768	661	545
Imperial (Austria)	5	30	66	6	....	....	....	....	....	....	....	2	....
Dantzic	231	174	161	248	....	....	....	....	....	....	....	....	....
Mecklenburg	....	....	....	....	....	896	517	602	664	588	969	1,077	771
Oldenburg	....	....	....	24	18	9	47	34	56	46	85	222	183
Lubec	78	82	79	89	28	45	64	121	80	71	96	125	136
Bremen	82	146	176	177	248	111	59	34	79	43	59	33	22
Hamburg	22	31	61	104	36	86	15	31	25	21	23	77	46
Rostock	79	104	101	889	....	....	....	....	....	....	....	....	....
Portugal	12	21	28	28	42	48	2	9	....	....	....	....	....
Courland	2	7	25	22	....	....	....	....	....	....	....	....	....
Venice	....	2	4	(lt.) 6	9	....	....	....	6	....	5	....	2
Norway	....	....	....	....	83	794	946	951	1,202	1,857	2,025	2,894	3,020
Other places	....	....	....	99	....	....	....	....	....	87	78	51	51
Totals	9,053	8,291	10,268	9,742	8,186	8,871	10,926	13,160	13,212	10,255	15,682	19,919	17,563

The statements in this table for the years 1777 and 1780 are taken from the valuable work entitled *Voyage de Deux François au Nord de l'Europe* (i. 860); the other years are taken from the returns sent by the British consul at Elsineur, printed in various Parliamentary papers. We have seen no two returns of the shipping that pass the Sound quite agree, though the differences are not very material. The British consul first began to send returns of the tonnage in 1831.

The Oder, Vistula, and other great rivers which flow into the Baltic, and the many large cities that are built on or near its shores, have made it the theatre of a very extensive commerce. In this respect its importance was much increased by the foundation of Petersburg, the trade of which is now of great extent and value. Raw products, including corn, timber, hemp and flax, tallow, hides, linseed, bristles, wool, etc., constitute the principal articles of export from the Baltic ports; colonial products, manufactured goods, dry stuffs, wine, salt, coal, etc., being among the principal articles of import. The leading ports, setting out from the Sound, are Copenhagen, Lubec, Wismar, Rostock, Swinemunde, Dantzic (which next to Odessa, is the principal European port for the shipment of wheat), Konigsberg, Memel, Riga, Petersburg, and Stockholm. The United Kingdom has by far the largest portion of the foreign trade of the Baltic. This is evident from the fact of the British ships passing the Sound exceeded those of any other country. In 1852 England imported from the Baltic about 818,000 qrs. wheat, 344,000 do. barley, and 628,000 do. oats, exclusive of very large quantities of tallow, hemp and flax, timber, linseed, bristles, etc.

Pilotage, etc.—When ships come into Elsineur roads, or lie wind-bound near the Lappen, watermen come on board to inquire if the master will be carried ashore to clear; and in rough weather it is always best to make use of their services, their boats being generally very safe. The Danish authorities have published a table of rates, being the highest charge that can be made by any boatmen upon such occasions; but captains may bargain with them for as much less as they please. Most ships passing the Sound take on board pilots, the signal for one being a flag at the fore-topmast-head. Those bound for the Baltic take a pilot at Elsineur, who either carries the ship to Copenhagen, or Dragoe, a small town on the south-east extremity of the island of Amack, where she is clear of the grounds. Those leaving the Baltic take a pilot from Dragoe, who carries the ship to Elsineur. Sometimes, when the wind is fresh from the east and south-east, it is impossible for a ship bound for Copenhagen or the Baltic to double the point of Cronborg; and in that case an Elsineur pilot is sometimes employed to moor the ship in the channel toward Kull Point on the Swedish shore, in in lat. 56° 18′ 8″ N., long. 12° 26′ E. But this does



References to Plan.—A, Castle and light of Cronborg; B, Elsineur; C, Helsingborg in Sweden; D, the bank called the Lappen; E, the bank called the Disken. The soundings are in fathoms.

not often happen, as the Danish government employ steam tugs for the special purpose of bringing ships, in adverse weather, round Cronborg Point. The pilots are regularly licensed, so that, by employing them, the captain's responsibility is at an end. Their charges are fixed by authority, and depend on the ship's draught of water. We subjoin a copy of the tariff applicable to pilots taken on board at Elsineur to carry ships to Dragoe, Copenhagen, or Kull Point, with the sums both in silver and in Rigsbank paper dollars.

PILOTAGE FROM THE 1ST OF APRIL TO THE 30TH OF SEPTEMBER.

Ships drawing water.	Dragoe.				Copenhagen.				Kull Point.			
	Silver.		Paper.		Silver.		Paper.		Silver.		Paper.	
	R. b. dr.	Sch.	R. b. dr.	Sch.	R. b. dr.	Sch.	R. b. dr.	Sch.	R. b. dr.	Sch.	R. b. dr.	Sch.
Under 8 feet	11	78	12	18	9	10	9	88	5	72	5	89
Between 8 and 9 "	13	16	13	56	10	6	10	36	6	68	6	83
" 9 " 10 "	14	50	14	94	11	2	11	85	7	58	7	76
" 10 " 11 "	15	84	16	36	11	94	12	84	8	44	8	69
" 11 " 12 "	17	22	17	74	12	91	13	88	9	35	9	63
" 12 " 13 "	18	56	19	16	13	87	14	32	10	25	10	56
" 13 " 14 "	19	90	20	54	14	83	15	81	11	16	11	50
" 14 " 15 "	21	28	21	92	15	78	16	30	12	7	12	43
" 15 " 16 "	22	62	23	34	16	75	17	29	12	93	13	36
" 16 " 17 "	24	65	25	48	18	56	19	16	13	84	14	90
" 17 " 18 "	26	68	27	52	20	37	21	2	15	44	15	90
" 18 " 19 "	28	71	29	61	22	19	22	86	17	8	17	54
" 19 " 20 "	30	74	31	72	24	0	24	72	18	59	19	19
" 20 " 21 "	32	77	33	80	25	77	26	58	20	19	20	80
" 21 " 22 "	34	80	35	89	27	59	28	46	21	74	22	43
" 22 " 23 "	36	83	38	1	29	40	30	32	23	84	24	28

PILOTAGE FROM THE 1ST OF OCTOBER TO THE 30TH OF MARCH.

Ships drawing water.	Dragoe.				Copenhagen.				Kull Point.			
	Silver.		Paper.		Silver.		Paper.		Silver.		Paper.	
	R. b. dr.	Sch.	R. b. dr.	Sch.	R. b. dr.	Sch.	R. b. dr.	Sch.	R. b. dr.	Sch.	R. b. dr.	Sch.
Under 8 feet	14	92	15	40	11	85	11	70	7	53	7	76
Between 8 and 9 "	16	75	17	30	12	61	13	2	8	78	9	8
" 9 " 10 "	18	56	19	16	13	88	14	64	9	92	10	26
" 10 " 11 "	20	37	21	2	15	19	15	64	11	16	11	50
" 11 " 12 "	22	19	22	86	16	47	17	..	12	86	12	78
" 12 " 13 "	24	..	24	72	17	73	18	30	13	55	14	..
" 13 " 14 "	25	77	26	58	19	4	19	02	14	75	15	24
" 14 " 15 "	27	59	28	46	20	29	20	90	15	95	16	48
" 15 " 16 "	29	40	30	32	21	57	22	26	17	17	17	68
" 16 " 17 "	32	12	33	12	24	..	24	72	18	87	18	92
" 17 " 18 "	34	80	35	88	26	39	27	22	20	48	21	14
" 18 " 19 "	37	52	38	68	28	79	29	70	22	57	23	28
" 19 " 20 "	40	24	41	48	31	21	32	19	24	68	25	46
" 20 " 21 "	42	92	44	28	33	60	34	65	26	79	27	64
" 21 " 22 "	45	64	47	9	36	4	37	16	28	83	29	78
" 22 " 23 "	48	36	49	85	38	43	39	62	31	8	32	0

When a pilot is taken on board at Dragoe to carry a ship to Elsineur, the charge is the same as that given under the first head of the above column. (*Archives du Commerce*, tome iii., p. 145.) The *Moneys*, *Weights*, and *Measures* of Elsineur are the same as those of Copenhagen (which see), except that the rixdollar is divided into 4 *orts* instead of 6 marcs; thus 24 skillings make 1 ort; and 4 orts 1 rixdollar. The Sound duties are, however, levied and paid in specie rixdollars of 48 stivers, 9½ such specie rixdollars constituting 1 marc fine silver, Cologne weight. Taking silver at 5s. 2d. an ounce, the value of the specie rixdollar is 4s. 6½d., and taking it at 5s. an ounce, it is worth 52·7d., or 4s. 4½d. nearly. In either case the value of the stiver may be taken at 1·1d. See SOUND DUES.

Email Ombrant. This name, which seems to mean "shaded enamel," has been given by the Baron du Tremblay to a manufacture by which articles are produced, remarkable alike for cheapness, for novel and agreeable effect, and for the ingenuity of the process whereby they are produced. It consists in flooding colored but transparent glazes over designs stamped upon the surfaces of porcelain vessels. A plain surface is thus produced, in which the cavities of the stamped design appear as shadows of various depths—the parts in highest relief coming nearest to the surface of the glaze, and thus having the effect of the lights of a picture. It has been said that "perhaps there is no other process in the ceraunic art by which, at so cheap a rate, designs of high artistic merit can be reproduced in the most harmonious tinting, for dessert or table services, and for other useful domestic purposes."

Embalming (Lat. *balsamum*, balm), a process adopted by the ancient Egyptians, chiefly for the preservation of dead bodies from putrefaction. The term is derived from the use of balsamic substances in the operation; in addition to these, saline substances and tanning materials seem also to have been used.

Embargo, a restraint or prohibition imposed by the public authorities of a country on merchant vessels or other ships, to prevent their leaving its ports. Embargoes are usually imposed only in time of war, or in apprehension of an invasion; in which cases the government employs the ships under embargo in armaments, expeditions, and transportation of troops, etc. When it is found necessary to stop the communication of intelligence between any two places, an embargo is laid upon all ships, both foreign and under the national flag. In England, this power is invested in the crown, but it is rarely exercised except in extreme cases, and sometimes as a prelude to war. The most memorable instances of embargo were those for the prevention of corn going out of the kingdom in 1766; and for the detention of all Russian, Danish, and Swedish ships in the several ports of the kingdom, owing to the Armed Neutrality, January 14, 1801. See ARMED NEUTRALITY.

Embargo in the United States.—Embargo on all vessels in the ports of the United States, passed by Congress with reference to the quarrel with Great Britain after the attack on the United States' frigate *Chesapeake*, 1807. Repealed, and non-intercourse act passed, 1809. Embargo again laid for 90 days, April, 1812. War declared June 19, 1812. An insurance against loss by reason of the acts of one's own government, as an arrest or embargo, is valid. There is no distinction on this point between a foreign and domestic embargo; and if the embargo intervene after the commencement of the risk, it suspends, but does not dissolve, the contract of insurance, and the insured may abandon and claim a total loss. The same principle is incorporated into the new French commercial code, and it pervades universally the law of insurance. It is no objection to the right of recovery by the insured, that the loss happened by the act of the government of his own country, though he and the insurer are subjects of different states.—KENT's *Com.* See also PARSONS on *Mercantile Contracts*, p. 366.

Embassador, or **Ambassador**, a word of disputed origin, but probably adopted into the English language from the French, means, in its general sense, a minister authorized by any state to represent it in some other. In its distinctive sense, as indicating a particular kind of minister so appointed, it means the highest class; and by authority as well as practice, there are states which may be represented at others, yet are understood not to be entitled to appoint so high a representative as an embassador. Messages require to be interchanged by all moderately civilized nations, unless those which, like the Chinese or the Japanese, peculiarly isolate themselves. Hence such messages, and the manner in which they were sent and received, are familiar occurrences in all histories. Some understanding that the persons who undertook such a function should enjoy freedom and safety in the state to which they were sent was absolutely necessary for its performance. The Romans adopted strict rules for the safety of embassadors; but the less definite provisions of other nations were liable to be affected by momentary impulses, and many incidents of ancient warfare arose out of insults or injuries committed on embassadors. It was on the ground of an insult offered to his embassadors that Alexander destroyed Tyre. The Persian invasions of Greece were stimulated by the slaughter of the embassadors of Darius—who, however, demanding earth and water as tokens of dependence, were rather messengers of hostility than embassadors, in any thing like the modern sense of the term. Embassadors now communicate privately with sovereigns or official persons, not with legislative bodies. In Greece, however, embassadors sometimes pleaded the cause of their state in the public assemblies, and in Rome they were formally received by the senate. The *legatus* of the Romans answered pretty nearly to our embassador extraordinary; but the term was also used to mean another and totally different officer who accompanied the proconsul or governor of a province, and was more like a colonial secretary. It became the practice to give honorary legations of this kind on account of the privileges which they conferred on the holder in the province to which he was accredited. There is, however, a distinction of a generic and very characteristic kind between the embassador of modern diplomacy and any ancient representatives of states. The embassador of old was chosen for a particular message or negotiation, and a permanent resident representative of one state within another was unknown, at least as a system. It is not yet intelligible to nations beyond the circle of European diplomacy. The Turks had the inveterate practice, on going to war with a state, of committing its representative to the seven towers; and though the reason assigned for the practice was the safety of the person of the embassador from outrage, even this, if it were sincere, showed that the feelings of hatred indulged against a member of a hostile state would break out too strongly to be controlled even by that despotic government. The Chinese, and their neighbors nearer Hindostan, can look on an embassador or diplomatic agent as merely a dignified spy, to whose presence nothing but necessity compels them to submit. Nor are they entirely wrong, since the European embassies may be counted a mutually tolerated system of espionage. Even Wicquefort calls the embassador an honorable spy, protected by the law of nations; and La Bruyère says epigrammatically, that the embassador's function is to cheat without being cheated. The understanding that an embassador was a person ever ready to do whatever he could with safety to the advantage of his own country, and the injury of that to which he was accredited, became a standing object of sarcasm with the wits of the seventeenth century. Sir Henry Wotton, himself an embassador

when asked to write something in an album at Augsburg, could not resist a sarcasm on the same subject, and spoke of an embassador as a person sent abroad to lie for the good of his country. In its English form, his apophthegm generally involves a pun or equivoke in the words "lie abroad," of which the original Latin is, however, not susceptible. Scioppius published it as a declaration of the morality of English diplomacy, and brought Wotton under temporary disgrace with King James; to whom the jest seemed the more dangerous that it announced that false and treacherous system of diplomacy on which he, with most of the sovereigns of the age, acted when it was safe to do so.

Permanent embassies, with the eminent personal privileges conceded to embassadors, have existed in feudal Europe from an early time. To find the origin of an institution seemingly so much at variance with the selfish and ravenous national habits amid which it arose, we must look to the peculiar sacredness claimed for their persons by the great community of European monarchs. The privileges of the embassador did not arise from principles of jurisprudence founded on general public utility, but from the practice of the sovereign investing his representative with his own sacredness, and the acknowledgment on the part of the brother sovereign of the sufficiency of the investiture. Thus in ages when international law was rude and little respected, embassadors claimed privileges which would in the present day be deemed preposterous; such as total exemption from liability to the laws, civil or criminal, of the country to which they were accredited, and the right to have their official places of residence respected, as sanctuaries for criminals fleeing from justice. Embassadors of old, in fact, thus received concessions which, though claimed by them as belonging properly to their masters as sovereign princes, and descending to themselves only as substitutes, would not practically have been enjoyed by sovereign princes though theoretically conceded to them. The advantage obtained over a state by seizing the person of the sovereign, would have rendered it unsafe for the principal to trust to privileges which, in the less available person of his representative, were scrupulously respected.

It has always been difficult in countries not despotic to preserve the sacredness of embassies when circumstances have made them offensive to the people. Thus it was difficult to keep Gundomar the celebrated Spanish embassador in James the First's reign from violence by the London mob for introducing sedan-chairs, which they called a device for enslaving Englishmen and making them do the work of beasts. In the anti-Popery riots of 1780 the chapels of the Bavarian and Sardinian embassies were burned. It has ever been usual to exact high satisfaction for injuries offered to embassadors, and despotic courts have had no difficulty in conceding the demand where this was rendered prudent by the power of the offended party. Diplomatic difficulties of a serious kind have often occurred, however, in constitutional countries where the asserted privileges of the foreign embassador were found to clash with the undoubted rights of the home citizen. In 1668 the Portuguese minister was imprisoned for debt in Holland, and in 1708 a similar event produced a serious diplomatic difficulty in England. The Russian embassador, having had his audience of leave, was arrested for debt by some tradesmen in the open streets of London. Deeming that he was attacked by bravos, he defended himself, and was not secured without suffering much violence and indignity. The Czar immediately demanded the infliction of capital punishment on those who had been guilty of the outrage. Much parade was made about instituting prosecutions against all the parties concerned in the affair; but it was impossible for the government ultimately to treat it otherwise than as a matter for which unfortunately the law made no provision. All that could be done was to pass an act to remedy the defect; and to soothe the Czar its preamble denounced in very angry terms the unparalleled wickedness of those turbulent and disorderly persons who had outrageously insulted the person of his excellency the embassador extraordinary of his Czarish majesty, emperor of Great Russia, to whom a copy of the act was sent with distinguished pomp. The diplomatic body in general, discontented with the haughty tone of the English court, took up the question. When the bill was passing they objected to some parts of it, and particularly to a condition of the protection of embassadors' retinues, that their names should be recorded with the Secretary of State and the sheriffs of London; but Parliament, then exulting in the continental triumphs of Marlborough, received their demands with haughty silence.

It has been usual since the Congress of Vienna to divide representatives into three great classes—embassadors, envoys, and residents or *chargés des affaires*. The first and second are accredited from the head of the government, and communicate with the head; the third class have instructions from the foreign department of their own government, and communicate with that of the state they are sent to. The term embassador extraordinary having been applied to those sent on temporary missions of high importance, the term extraordinary came to be extended to the permanent embassadors at the courts of the great powers, as it was deemed desirable that no diplomatic rank should be deemed higher than theirs.

The custom of admitting resident ministers at each sovereign's court, was an important improvement in the security and facility of national intercourse; and this led to the settlement of a great question, which was very frequently discussed in the 15th and 16th centuries, concerning the inviolability of embassadors. It became at last a definite principle of public law, that embassadors were exempted from all local jurisdiction, civil and criminal; though Lord Coke considered the law in his day to be, that if an embassador committed any crime which was not merely *malum prohibitum*, he lost his privileged dignity as an embassador, and might be punished as any other private alien, and that he was even bound to answer civilly for his contracts that were good, *jure gentium*.—KENT's *Com.*, vol. i., p. 15.

It sometimes becomes a grave question, in national discussions, how far the sovereign is bound by the act of his minister. This will depend upon the nature and terms of his authority. It is now the usual course for every government to reserve to itself the right to ratify or dissent from the treaty agreed to by its embassador. A general letter of credence is the ordinary letter of attorney, or credential of the minister; and it is not understood to confer a power upon the minister to bind his sovereign conclusively. To do so important an act would require, at least, a distinct and special power, containing an express authority to bind the principal definitely, without the right of review, or the necessity of ratification on his part. This is not the ordinary or prudent course of business. Ministers always act under instructions which are confidential, and which, it is admitted, they are not bound to disclose; and it is a well-grounded custom, as Vattel observes, that any engagement which the minister shall enter into, is of no force among sovereigns, unless ratified by his principal. This is now the usage, although the treaty may have been signed by plenipotentiaries.—KENT's *Com.*, vol. i., p. 48.

A safe conduct or passport contains a pledge of the public faith, that it shall be duly respected, and the observance of this duty is essential to the character of the government which grants it. The statute law of the United States has provided, in furtherance of the general sanction of public law, that if any person shall violate any safe conduct or passport, granted under the authority of the United States, he shall, on con-

viction, be imprisoned not exceeding 3 years, and fined at the discretion of the court.

The same punishment is inflicted upon those persons who infringe the law of nations, by offering violence to the persons of embassadors and other public ministers, or by being concerned in prosecuting or arresting them or their domestic servants. This is an offense highly injurious to a free and liberal communication between different governments, and mischievous in its consequences to the dignity and well-being of the nation. It tends to provoke the resentment of the sovereign whom the embassador represents, and to bring upon the state the calamities of war. The English Parliament, under an impression of the danger to the community from violation of the rights of embassy, and urged by the spur of a particular occasion, carried the provisions of the statute of 7 Anne, c. 12, to a dangerous extent. That statute prostrated all the safeguards to life, liberty, and property, which the wisdom of the English common law had established. It declared that any person convicted of suing out or executing civil process, upon an embassador or his domestic servants, by the oath of the party, or of one witness, before the lord chancellor and the two chief justices, or any two of them, might have such penalties and corporeal punishments inflicted upon him as the judges should think fit. The preamble to the statute contains a special and inflamed recital of the breach of the law of nations which produced it, by the arrest of the Russian minister.

The Congress of the United States, during the American war, discovered great solicitude to maintain inviolate the obligations of the law of nations, and to have infractions of it punished in the only way that was then lawful—by the exercise of the authority of the legislatures of the several States. They recommended to the States to provide expeditious, exemplary, and adequate punishment for the violation of safe conducts or passports, granted under the authority of Congress, to the subjects of a foreign power in time of war; and for the commission of acts of hostility against persons in amity or league with the United States; and for the infractions of treaties and conventions to which the United States were a party; and for infractions of immunites of embassadors and other public ministers.—KENT'S *Com.*, vol. i., p. 186.

A marriage, celebrated in any given place, must be celebrated according to the law of the place, and by a person whom the laws designate, unless the person by whom, or the premises in which, it is celebrated, possess the privileges of exterritoriality. Therefore it may be, according to the opinion of Lord Stowell, that the presence of a foreign sovereign sojourning in a friendly country, or *that of his minister plenipotentiary*, or the act of a clergyman in the chapel or hotel of such sovereign or his embassador, may give legality to marriage between subjects of his, or members of his suite. According to the American view, the courtesy between the United States and foreign nations, in mutually exempting from duty articles imported by certain of their public officers resident abroad, does not extend beyond ministers or *chargés des affaires*, representing their respective governments, and clothed with diplomatic powers and privileges, and does not comprehend attachés or persons belonging to the minister's suite, nor consular officers.—*Manual for Consuls U. S.*, pp. 238, 275.

From the moment a public minister enters the territory of the state to which he is sent, during the time of his residence, and until he leaves the country, he is entitled to an entire exemption from the local jurisdiction, both civil and criminal. Representing the rights, interests, and dignity of the sovereign or state by whom he is delegated, his person is sacred and inviolable. To give a more lively idea of this complete exemption from the local jurisdiction, the fiction of extraterritoriality has been invented, by which the minister, though actually in a foreign country, is supposed still to remain within the territory of his own sovereign. He continues still subject to the laws of his own country, which govern his personal *status* and rights of property, whether derived from contract, inheritance, or testament. His children born abroad are considered as natives. This exemption from the local laws and jurisdiction is founded upon mutual utility, growing out of the necessity that public ministers should be entirely independent of the local authority, in order to fulfill the duties of their mission. The act of sending the minister, on the one hand, and of receiving him, on the other, amounts to a tacit compact between the two States, that he shall be subject only to the authority of his own nation. The passports or safe conducts granted by his own government, in time of peace, or by the government to which he is sent, in time of war, are sufficient evidence of his public character for this purpose.—WHEATON'S *International Law*, p. 283.

Embezzlement, in law, is a felony, consisting of the same class of acts which would in any other case amount to larceny, when committed by one employed as a clerk or servant, and by virtue of his office, on the goods and chattels of his employer.

Embezzlement by Seamen.—Mariners are bound to contribute out of their wages for embezzlements of the cargo, or injuries produced by the misconduct of any of the crew. But the circumstances must be such as to fix the wrong upon some of the crew; and then, if the individual be unknown, those of the crew upon whom the presumption of guilt rests, stand as sureties for each other, and they must contribute ratably to the loss. Some of the cases in the books have established a general contribution from all the crew for such embezzlement, even when some of them were in a situation to repel every presumption of guilt; but neither public policy nor principles of justice extend the contribution or forfeiture of wages for such embezzlements, beyond the parties immediately *in delicto*.—KENT'S *Com.*, vol. iii., sect. 252.

As carriers by water were liable at common law to the same extent as land carriers, and as their responsibility was more extensive, and their risk greater, from the facilities for the commission of acts of fraud and violence upon the water, it was deemed in England a proper case for legislative interference, to a guarded and limited extent. The statute of 7 George II., ch. 15, and 26 George III., ch. 86, and 53 George III., ch. 159, exempted owners of vessels from responsibility, as common carriers, for losses by fire, and provided further that the owner should not be liable for the loss of gold, silver, diamonds, watches, jewels, or precious stones, by robbery or embezzlement, unless the shipper inserted in the bill of lading, or otherwise declared in writing to the master or owner of the vessel, the nature, quality and value of the articles; nor should he be liable for embezzlements, or loss or damage to the goods arising from any act or neglect, without his fault or privity, beyond the value of the ship and freight; nor should part owners in those cases be liable beyond their respective shares in the ship and freight.—KENT'S *Com.*, vol. ii., p. 789.

Embossing, the forming of works in relief upon any substance, whether by cutting, stamping, casting, or any other method. In sculpture particularly, according as the figures are more or less prominent, they are said to be in alto, mezzo, or basso-relievo; or high, intermediate, or low relief.

Embossing of Leather. Beautiful ornaments in basso-relievo for decorating the exteriors or interiors of buildings, medallions, picture-frames, cabinet work, etc., have been recently made by the pressure of metallic blocks and dies, for which invention a patent was obtained in June, 1839, by M. Claude Schroth. The dies are made of type-metal, or of the fusible alloy with bismuth, called d'Arcet's. The leather is beaten

soft in water, then wrung, pressed, rolled and fulled as it were, by working it with the hands till it becomes thicker, and quite supple. In this state it is laid on the mold, and forced into all its cavities by means of a wooden, bone, or copper tool. In other cases the embossing is performed by the force of a press. The leather, when it has become dry, is easily taken off of the mold, however deeply it may be inserted into its crevices, by virtue of its elasticity. A full detail of all the processes is given in NEWTON'S *Journal*, vol. xi., p. 122.

Embossing Wood (*Bossage*, Fr.; *Erhabenes, Arbeit*, Ger.), raised figures upon wood, such as are employed in picture-frames and other articles of ornamental cabinet work, are usually produced by means of carving, or by casting the pattern in plaster of Paris or other composition, and cementing or otherwise fixing it on the surface of the wood. The former mode is expensive; the latter is inapplicable on many occasions. The invention of Mr. Streaker may be used either by itself, or in aid of carving; and depends on the fact, that if a depression be made by a blunt instrument on the surface of the wood, such depressed part will again rise to its original level by subsequent immersion in the water. The wood to be ornamented having been first worked out to its proposed shape, is in a state to receive the drawing of the pattern; this being put on, a blunt steel tool, or burnisher, or die, is to be applied successively to all those parts of the pattern intended to be in relief, and, at the same time, is to be driven very cautiously, without breaking the grain of the wood, till the depth of the depression is equal to the intended prominence of the figure. The ground is then to be reduced by planing or filing to the level of the depressed part; after which, the piece of wood being placed in water, either hot or cold, the part previously depressed will rise to its former height, and will then form an embossed pattern, which may be finished by the usual operations of carving.

Embouchure (Fr.), signifies the mouth of a river: it is used also for the mouth-piece of a musical instrument.

Embroidering Machine. (*Machine à broder*, Fr.; *Steckmaschine*, Ger.) This art has been till of late merely a handicraft employment, cultivated on account of its elegance by ladies of rank. But a few years ago M. Heilmann, of Mulhause, invented a machine of a most ingenious kind, which enables a female to embroider any design with 80 or 100 needles as accurately and expeditiously as she formerly could do with one. A brief account of this remarkable invention will, therefore, be acceptable to many readers. It was displayed at the national exposition of the products of industry in Paris for 1834, and was unquestionably the object which stood highest in public esteem; for whether at rest or in motion, it was always surrounded with a crowd of curious visitors, admiring the figures which it had formed, or inspecting its movements and investigating its mechanism. Two needles were occupied in copying the same pattern with perfect regularity, all set in motion by one person.—URE'S *Dictionary of Arts*.

Embroidery is the name given to the art of working figures on stuffs or muslins with a needle and thread. All embroidery may be divided into two sorts, embroidery on *stuffs* and on *muslin*: the former is used chiefly in church vestments, housings, standards, articles of furniture, etc., and is executed with silk, cotton, wool, gold and silver threads, and sometimes ornamented with spangles, real or mock pearls, precious or imitation stones, etc. The latter is employed mostly in articles of female apparel, as caps, collars, etc., and is performed only with cotton. In Germany this division is indicated by the expression *weisse* (*white* or muslin), and *bunte Stickerei* (*colored* or cloth) *embroidery*. The embroidery of *stuffs* is performed on a kind of loom or frame; that of *muslin* by stretching it on a pattern already designed. The modes of embroidering stuffs or muslins with the common needle are extremely various; but a minute description of these processes would be as difficult as it would be uninteresting to the general reader. They consist for the most part of a combination of ordinary *stitches*; but no limit can be assigned to their number or variety. The art of embroidery was well known to the ancients. As early as the time of Moses we find it practiced successfully by the Hebrews; and long before the Trojan war the women of Sidon had acquired celebrity for their skill in embroidery. At a later period, this art was introduced into Greece, probably by the Phrygians (by some considered as the inventors); and to such a degree of skill did the Grecian women attain in it, that their performances were said to rival the finest paintings. In our own times, the art of embroidery has been cultivated with great success, more especially in Germany and France; and though for a long period it was practiced only by the ladies of these countries as an elegant accomplishment, it is now regarded as a staple of traffic, and furnishes employment for a large portion of the population. In England also it appears to have taken deep root, as it now forms an accomplishment of which almost every lady is in possession. About seven years ago a great impetus was given to the cultivation of this art, both on the Continent and in England, by the invention of a machine which enables a female to execute the most complex patterns with 130 needles, all in motion at once, as accurately as she could formerly do with one. But as no account of this remarkable invention which we might give could be intelligible without the aid of illustrations, which would be out of place in this work, we must refer the reader to Dr. Ure's *Dictionary of Arts*, etc., for full information respecting it. One such machine, with 130 needles, is estimated to perform daily the work of 15 hand embroiderers employed in the ordinary way. Many of them are now mounted in Germany, France, and Switzerland; and in Manchester there is one factory where they do beautiful work. See the *Art of Needlework*, edited by the Countess of Wilton. London, 1840.—BRANDE, *Ency.*

There is one branch of manufacture connected with cotton embroideries to which it would be wrong not to particularly allude, and that is the embroidering of muslins, better known under the common designation of "sewed muslins." This is comparatively a new manufacture, having only being first started in Scotland about the year 1825. At that period there were only two or three persons engaged in the manufacture; now there are fifty or sixty. The importance of this branch may in some measure be estimated from the fact that it gives employment to a vast number of females in the rural districts, for whom no other useful work is provided in the intervals of field labor. In Ireland alone, where it is practiced from the Giant's Causeway to Cape Clear, and from St. George's Channel to the Achill and other remote islands, it is a source of great comfort to the female population, as it enables them to add to the food and clothing of their families without entailing on them any of the evils of the factory system, the work being supplied to them by agents of the large manufacturers scattered over all the country, and executed entirely at their own firesides. As the workers are only engaged a portion of their time at this species of industry, it is impossible to estimate their numbers; but it is computed that the amount paid in the western counties of Scotland and in Ireland, reaches no less a sum than three quarters of a million sterling annually. Like all other fancy trades, it has been subject to its periods of depression, but its progress has been regular, from a total produce of a few thousand pounds a year paid for labor in 1825 to the

amount above stated, the greatest increase having, however, taken place since 1845.

Emerald (Fr. *Eméraude*; Germ. *Smaragd*; It. *Smeraldo*; Lat. *Smaragdus*; Sp. *Esmeralda*), a precious stone in high estimation. It is distinguished from all other gems by its peculiar *emerald green* lustre, varying in intensity from the palest possible tinge to a full and deep color, than which, as Pliny has truly stated, nothing can be more beautiful and pleasing; *nullius coloris aspectus jucundior est.* "It emulates," he continues, "if it does not surpass, the verdure of the spring; and the eye satiated by the dazzling glare of the more brilliant gems, or wearied by intense application, is refreshed and strengthened by the quiet enlivening green of the emerald." In Pliny's time the best came from Scythia. Those met with in modern times do not often exceed the size of a walnut. Some of a much larger size, and perfect, have been found, but they are extremly rare. Nero used one as an eye-glass in surveying the combats of the gladiators. Hitherto it has always been found crystallized. Specific gravity from 2·6 to 2·77.— Pliny's *Hist. Nat.*, lib. xxxvii., chap. 5; Thomson's *Chemistry*.

For the last two centuries and more, the only country known to yield emeralds is Peru, where they occur in Santa Fé, and in the valley of Tunca. Several large stones have appeared in Europe. About two years ago I cut one, exceeding two ounces in weight, for the Emperor of Morocco, but it was full of imperfections. The largest specimen known is a hexagonal crystal, nearly six inches long, and about two in diameter. This gem, however small, is so rarely seen perfect that "an emerald without a flaw" has passed into a proverb. A fine stone of four carats may be valued at £40 or £50, or even more, if very pure. Inferior stones of one or two carats are sold at from 40*s.* to 70*s.* per carat; and if smaller, and defective, at 10*s.* or 15*s.* per carat. Fine emeralds are rare, and in such demand, that a particular suit has been known to have passed into the possession of a series of purchasers, and to have made the tour of Europe in the course of half a century.—Mawe *on Diamonds*, 2d ed., p. 104.

Emery (Fr. *Emeril*, *Emeri*; Germ. *Smiryl*; It. *Smerglio*, *Smeregio*; Sp. *Esmeril*; Rus. *Nashdak*; Lat. *Smiris*). This mineral was long regarded as an ore of iron; and was called by Haüy *fer oxidé quartzifère*. It is very abundant in the island of Naxos, at Cape Emeri, whence it is imported in large quantities. It occurs also in the islands of Jersey and Guernsey, at Almaden, in Poland, Saxony, Sweden, Persia, etc. Its color varies from red brown to dark brown; its specific gravity is about 4·000. It is so hard as to scratch quartz and many precious stones. By Mr. Tenant's analysis, it consists of alumi' a, 80; silica, 3; iron, 4. Another inferior kind yield .32 of iron, and only 50 of alumina. We have recent accounts of emery discoveries in Minnesota; but nearly all that is used at present in the arts comes from Turkey, near ancient Smyrna. Dr. Lawrence Smith, the American geologist, made a discovery of a deposit of emery while residing in Smyrna, and he made an examination of the locality in 1847. Dr. Smith having reported his discoveries to the Turkish government, a commission of inquiry was instituted, and the business soon assumed a mercantile form. The monopoly of the emery of Turkey was sold to a mercantile house in Smyrna, and since then the price has diminished in the market. The mining of the emery is of the simplest character. The natural decomposition of the rock in which it occurs facilitates its extraction. The rock decomposes into an earthy, in which the emery is found embedded. The quantity procured under these circumstances is so great that it is rarely necessary to explore the rock. The earth in the neighborhood of the block is almost always of a red color, and serves as an indication to those who are in search of the mineral. Sometimes, before beginning to excavate, the spots are sounded by an iron rod with a steel point, and when any resistance is met with, the rod is rubbed in contact with the resisting body, and the effect produced on the point enables a practiced eye to decide whether it has been done by emery or not. The blocks which are of a convenient size are transported in their natural state, but are frequently broken by large hammers. When they resist the action of the hammer, they are subjected to the action of fire for several hours, and on cooling they most commonly yield to blows. It sometimes happens that large masses are abandoned from the impossibility of breaking them into pieces of a convenient size.

Emery paper is prepared by brushing the paper over with thin glue, and dusting the emery-powder over it from a sieve. There are about six degrees of coarseness. Sieves with 30 and 90 meshes per linear inch, are in general the coarsest and finest sizes employed. When used by artizans, the emery-paper is commonly wrapped around a file or slip of wood, and applied just like a file, with or without oil, according to circumstances. The emery-paper cuts more smoothly with oil, but leaves the work dull.

Emery-cloth only differs from emery-paper in the use of thin cotton cloth instead of paper, as the material upon which the emery is fixed by means of glue. The emery-cloth, when folded around a file, does not ply so readily to it as emery-paper, and is apt to unroll. Hence smiths, engineers, and others prefer emery-paper and emery-sticks; but for household and other purposes, where the hand alone is used, the greater durability of the cloth is advantageous.

Emery-sticks are rods of board, about 8 or 12 inches long, planed up square; or with one side rounded like a half-rounded file. Nails are driven into each end of the stick as temporary handles; they are then brushed over, one at a time, with thin glue, and dabbed at all parts in a heap of emery-powder, and knocked at one end to shake off the excess. Two coats of glue and emery are generally used. The emery-sticks are much more economical than emery-paper wrapped on a file, which is liable to be torn.

Emery-cake consists of emery mixed with a little beeswax, so as to constitute a solid lump, with which to dress the edges of buff and glaze wheels. The ingredients should be thoroughly incorporated by stirring the mixture while fluid, after which it is frequently poured into water, and thoroughly kneaded with the hands, and rolled into lumps before it has time to cool. The emery-cake is sometimes applied to the wheels while they are revolving; but the more usual course is, to stop the wheel, and rub in the emery-cake by the hand. It is afterward smoothed down by the thumb.

Emery-paper, or patent razor-strop paper, an article in which fine emery and glass are mixed with paper pulp, and made into sheets, as in making ordinary paper; the emery and glass are said to constitute together 60 per cent. of the weight of the paper, which resembles drawing-paper, except that it has a delicate fawn color. The emery-paper is directed to be pasted or glued upon a piece of wood, and when rubbed with a little oil, to be used as razor-strop. See Ure's *Dictionary of Arts*.

Emigration is the act of leaving the country or place in which one has previously resided, in the view of residing in some other country or place. Persons so leaving the place of their residence are called emigrants; and latterly the term immigrants has been employed to designate persons arriving from a distance in some place or country with the intention of settling in it. Persons leaving a country for awhile, to which they intend to return, are not reckoned emigrants. This term is appropriated to those who leave their present habitations to establith themselves permanently elsewhere. The motives which lead to emigration are various in the extreme; but, whatever its immediate cause

may be, all emigrants expect either to avoid some considerable evil, or to improve or amend their situation. The natural multiplication of man and of the animals which he domesticates, and the tendency of both to increase beyond such means of subsistence as may be easily made available for their support, have been in all ages the great cause of emigrations. When the flocks and herds of the occupiers of particular districts began to be so numerous that pasture became deficient, it was an obvious resource, in the event of any unoccupied lands being in their vicinity, for a portion of the tribe to emigrate to them. The Book of Genesis affords a striking illustration of what is now stated. The herds of Abraham and Lot, it is there stated, had so greatly increased, that, there not being room for them both, contests took place between their servants. Whereupon Abraham said to Lot, "Is not the whole land before thee? Separate thyself, I pray thee, from me. If thou wilt take the left hand, then I will go to the right; or if thou depart to the right hand, then I will go to the left. Then Lot chose him all the plain of Jordan, and Lot journeyed east; and they separated themselves, the one from the other." (Chap. xiii. 8-11.)

Female Emigrants.—Owing to causes which are too obvious to need being pointed out, the greater number of emigrants, especially of those who go to new settlements, consist of males; and the want of a proper proportion of females is often productive of the worst consequences. Inasmuch, too, as the female portion of the population in old settled countries is generally that which is most in excess, it is plain that every facility and encouragement should be given to the emigration of women. Nothing, therefore, can be more consistent with sound policy than the efforts which have recently been made by government, and by private individuals, to send out well-conducted females to Australia; and it is to be hoped that they will not relax in their benevolent labors till the wide disproportion which now (1857) exists between the sexes in that continent be materially reduced.

The application of steam to the propulsion of vessels and the other improvements that have been made in the art of navigation, have greatly diminished the cost, risk, and time spent in distant voyages, and have given a proportional extension to emigration. Notwithstanding their great distance, the emigration from Europe to America and Australia, but especially the former, has latterly attained to a magnitude which, previously to the employment of steam in navigation, would not have been conceived possible. For a lengthened period the United Kingdom has furnished the largest supply of transatlantic emigrants; but of late years the emigration from Germany has become very extensive, and promises at no distant period to equal, if it do not surpass, that which is carried on from Great Britain. The vast majority of the German emigrants are destined for the United States, where they occupy extensive districts, and have established themselves in great numbers. The States have also become, since 1835, the principal resort of the emigrants from the United Kingdom, more particularly of those from Ireland; though large numbers of the English and Scotch emigrants, with a smaller number of Irish, continue to resort in preference to Canada. Since the discovery of the gold fields of Australia, great numbers of emigrants have gone to that continent. But its much greater distance, and the consequent length and cost of the voyage, make it difficult for the poorer classes to find, without assistance, their way to this new El Dorado. And we may add, that to the natural difficulties in the way of emigration to Australia have been superadded those which arise from an extravagant *minimum* price of five dollars an acres having been set on all waste land in that continent, even though it should require three, four, or five acres to pasture a single sheep.

Next to the United Kingdom and Germany, China furnishes the greater number of over-sea emigrants. A Chinese population has long been settled in large numbers in many parts of the Eastern Archipelago, where they are distinguished by their industry and good order; and recently many thousands of them have found their way to California and Australia. We subjoin an account of the number of emigrants from the United Kingdom in each year from 1815 to 1853, both inclusive, specifying the countries for which they sailed, and the numbers that sailed for each:

Year.	North American colonies.	United States.	Australian colonies and New Zealand.	All other places.	Total.
1815	680	1,209	....	192	2,081
1816	8,370	9,022	....	118	12,510
1817	9,797	10,980	....	557	20,634
1818	15,136	12,429	....	222	27,787
1819	23,534	10,674	....	570	34,787
1820	17,921	6,745	....	1,068	25,729
1821	12,955	4,958	....	384	18,297
1822	16,018	4,187	....	279	20,429
1823	11,855	5,032	....	163	16,550
1824	8,774	5,152	....	99	14,025
1825	8,741	5,551	485	114	14,891
1826	12,818	7,063	903	116	20,900
1827	12,648	14,526	715	414	28,003
1828	12,084	12,817	1,056	135	26,092
1829	13,307	15,678	2,016	197	31,198
1830	30,574	24,887	1,242	204	56,907
1831	58,067	23,418	1,561	114	83,160
1832	66,339	32,573	3,733	190	103,140
1833	28,808	29,109	4,093	517	62,527
1834	40,060	33,074	2,800	288	76,222
1835	15,578	26,720	1,860	325	44,478
1836	34,226	37,774	8,124	298	75,417
1837	29,884	36,770	5,054	326	72,034
1838	4,577	14,382	14,027	292	33,222
1839	12,658	33,536	15,786	227	62,207
1840	32,293	40,642	15,859	1,058	90,743
1841	88,164	45,017	32,625	2,786	118,592
1842	54,123	63,852	8,534	1,835	128,844
1843	23,518	28,395	3,478	1,881	57,212
1844	22,924	43,690	2,229	1,873	70,636
1845	31,803	58,238	880	2,330	93,501
1846	48,420	82,239	2,347	1,826	129,851
1847	109,680	142,154	4,049	1,487	258,270
1848	31,065	188,233	23,904	4,887	248,089
1849	41,867	219,450	32,091	6,590	299,498
1850	32,961	223,078	16,037	8,773	280,849
1851	42,605	267,857	21,532	4,472	335,966
1852	32,876	244,201	87,424	4,203	368,764
1853	34,522	230,885	61,401	3,129	329,937
Total	1,071,239	2,295,466	371,630	55,144	3,793,529

Average annual emigration from the United Kingdom:
From 1815 to 1853..... 97,209
For the five years ending 1853. 323,002

Emigration to America. Report from the State Department. Department of State, 1856.—In compliance with the act of Congress of March 2d, 1819, regulating passenger ships and vessels, I have the honor to communicate herewith the annual statement of the number and designation of passengers arriving in the United States by sea from foreign countries, during the year ending December 31, 1855, compiled from returns made to this Department by collectors of customs pursuant to provisions of said act.

The measures adopted by the Department in 1853 with a view to obviate the previous absence of uniformity, and to secure accuracy in the returns of collectors, on which the statement is based, and which were referred to in the letter that accompanied the last annual statement, and in that which accompanied the preceding one, have conduced most favorably to the desired end.

Previously to the statement of 1854 but two recapitulations were appended to the returns, namely, one embracing the "arrivals" in each State during the year; the other the number of passengers belonging to each "country." The statement now submitted will be found to embrace recapitulations exhibiting the following facts:

1. Arrival of passengers in 1855.
2. Country where born.
3. Country where they mean to reside.

4. Age and sex.
5. Occupation.
6. Died on the voyage.

7. Comparative statement showing the countries in which were born passengers arriving in the United States from foreign countries, from December 31, 1852, to December 31, 1855.

8. Comparative statement showing the age and sex of passengers arriving in the United States from foreign countries, from December 31, 1852, to December 31, 1855.

9. Comparative statement showing the occupation of passengers arriving in the United States from foreign countries, from December 31, 1852, to December 31, 1855.

10. Comparative statement of the number of passengers arriving in the United States, by sea, from foreign countries, from September 30, 1843, to December 31, 1855.

Attention is once more invited to the fact, that by the act of Congress of 1819, requiring immigration returns, passengers "arriving by sea" seem alone contemplated, and that an amendment of that act, so as to embrace also those arriving by land, seems to be demanded. The attention of collectors at frontier custom-houses, especially on the northern border, has been directed to such immigration by this Department, and the result has been returns from the collector at Oswego, embracing the arrivals of 5,072 passengers during the last three quarters of the year.

Although the returns of collectors of customs of the passengers arriving within their districts have been characterized by greater precision during the past year than heretofore, there is still room for improvement, and the present statement will, like its predecessors for the last two years, be transmitted to them with a view to aid them in causing their returns to conform to the requirements of law.

I have the honor to be sir, your obedient servant,

W. L. MARCY.

Hon. N. P. Banks, Jr., Speaker of the House of Representatives.

Subjoined are the more important tables accompanying the Secretary's letter:

No. I.—ARRIVAL OF PASSENGERS IN THE UNITED STATES IN 1855.

States.	First Quarter.	Second Quarter.	Third Quarter.	Fourth Quarter.	Males.	Females.	Sex not stated.	Total.
Maine	278	1,082	1,134	502	2,147	849	..	2,996
New Hampshire	....	4	14	3	17	4	..	21
Massachusetts	1,362	5,388	6,985	4,293	10,484	7,589	..	17,073
Rhode Island	1	18	51	18	52	31	..	83
New York	19,517	59,516	46,774	40,755	101,765	64,797	..	166,562
Pennsylvania	574	4,119	1,448	1,440	3,909	3,672	..	7,581
Maryland	1,213	1,912	1,914	1,792	3,682	3,138	..	6,820
Virginia	..	3	3	....	3	3	..	6
North Carolina	....	4	....	3	3	4	..	7
South Carolina	208	244	82	243	555	205	12	772
Florida	30	27	81	81	142	77	..	219
Alabama	137	14	2	13	97	69	..	166
Louisiana	7,178	6,254	868	6,593	11,741	7,647	..	26,388
Texas	211	699	135	1,077	1,167	955	..	2,122
California	1,151	2,200	1,064	335	4,457	293	..	4,750
Total	31,850	81,478	60,005	57,143	140,181	90,283	12	230,476

No. II.—COUNTRY WHERE BORN.

Countries.	Total.	Countries.	Total.
England	88,871	Norway & Sweden	621
Ireland	49,627	South America	191
Scotland	5,275	Mexico	420
Wales	1,176	Central America	1
Great Britain	2,251	China	526
British America	7,761	West Indies	887
France	6,044	Azores	175
Spain	951	Society Islands	1
Portugal	205	Sandwich Islands	7
Switzerland	4,433	East Indies	6
Italy	1,024	Australia	4
Sicily	23	Asia	8
Sardinia	5	Madeira Islands	1
Turkey	9	Africa	14
Holland	2,588	United States	29,599
Denmark	528	Not stated	145
Prussia	5,609		
Belgium	1,506	Total	230,476
Russia	13	Citizens of the U. S.	29,599
Germany	66,219		
Poland	462	Aliens	200,877

No. III.—COUNTRY WHERE THEY MEAN TO RESIDE.

United States	205,217
In other countries	6,285
Country of proposed residence not stated	18,974
Total	230,476

No. IV.—AGE AND SEX.

Age.	Males.	Females.	Sex not stated.	Total.
Under 5 years	10,117	9,819	....	19,936
Between 5 & 10	9,200	8,883	....	18,083
" 10 " 15	8,005	7,071	....	15,076
" 15 " 20	20,008	17,302	....	37,310
" 20 " 25	24,154	15,413	....	39,567
" 25 " 30	24,030	10,798	....	34,828
" 30 " 35	15,609	6,099	....	21,708
" 35 " 40	12,777	5,250	....	18,027
40 and upward	15,074	9,281	....	25,155
Age not stated	407	417	12	836
Total	140,181	90,288	12	230,476

English writers say that the late extraordinary emigration from Ireland (1846—1851) has done much to improve its condition.

No. V.—OCCUPATION.

Occupations.	Males.	Females.	Sex not stated.	Total.
Merchants	14,759	....	....	14,759
Mechanics	14,997	....	....	14,997
Farmers	84,698	....	....	84,698
Mariners	1,156	....	....	1,156
Miners	282	....	....	282
Laborers	42,580	....	....	42,580
Lawyers	224	....	....	224
Physicians	247	....	....	247
Clergymen	149	....	....	149
Servants	62	2,536	....	2,598
Other occupations	1,496	315	....	1,811
Not stated	29,586	87,469	12	117,000
Total	140,181	90,263	12	230,476

No. VI.—DIED ON THE VOYAGE.

	Males.	Females.	Sex not stated.	Total.
To ports of Mass	3	5	..	8
" New York	182	150	..	332
" Penn	2	3	2	7
" Maryland	7	2	..	9
" Louisiana	22	20	..	42
" Texas	..	1	4	5
Total	216	181	6	403

No. X.—STATEMENT OF THE NUMBER OF PASSENGERS ARRIVING IN THE UNITED STATES BY SEA FROM FOREIGN COUNTRIES, FROM SEPT. 30, 1854, TO DEC. 31, 1855.

Years ending	Males.	Females.	Sex not stated.	Total.
Sept. 30, 1844	48,897	35,867	....	84,764
1845	69,189	49,220	1,406	119,814
1846	90,973	66,778	897	158,648
1847	134,750	96,747	1,057	232,554
1848	126,128	92,883	472	220,483
1849	179,258	119,915	442	299,610
1850	200,903	113,892	1,038	315,833
Dec. 31, 1850	38,282	27,107	181	65,570
1851	245,017	163,745	66	408,828
1852	....	....	398,470	398,470
1853	286,596	164,181	....	450,777
1854	284,887	175,587	....	460,474
1855	140,181	90,287	12	230,476
Total	1,896,055	1,195,775	404,041	3,492,371

In addition to this government table here—which begins at September, 1843, and does not give the means of comparison between calendar years till 1850, we insert one prepared from the original authorities in a form somewhat more available:

UNITED STATES' RETURN OF ARRIVALS FROM ABROAD.

Years.	Americans and Foreigners.	Of whom were Foreigners.
1820—1830	203,979	....
1830—1840	762,869	....
July, 1840—July, 1841	83,504	....
1842	101,107	....
1843	75,107	....
Jan. 1—Dec. 31, 1844	93,367	....
1845	180,759	....
1846	178,635	....
1847	233,976	....
1848	242,180	....
1849	298,543	....
1850	325,451	284,504
1851	408,828	379,461
1852	868,470	372,725
1853	400,777	368,643
18[illegible]	460,474	427,883
1855	230,476	200,577

We also add the following table, which shows the rapid advance of the German emigration to the United States. Up to 1851, it is from a paper by Dr. Gaebler in Hubner's Statistik; and includes only those who sailed from German ports. The years 1852 and 1853 are from our government returns, and include all arrivals. There is a considerable business done in bringing German emigrants to England for them to take passage thence to America; others sail from Antwerp and Havre. Gaebler's Statistics after 1845 are made up from the returns of different sea-ports:

EMIGRANTS TO THE UNITED STATES FROM GERMANY.

1819	4,700	1838	20,000
1820	2,200	1839	28,000
1821	2,400	1840	28,000
1822	2,500	1841	22,000
1823	2,700	1842	24,000
1824	4,800	1843	28,000
1825	4,800	1844	43,701
1826	11,000	1845	67,209
1827	9,500	1846	106,662
1828	8,000	1847	110,434
1829	15,000	1848	58,511
1830	no return.	1849	65,137
1831	15,100	1850	89,833
1832	24,200	1851	118,199
1833	20,000	From U. S. Reports.	
1834	24,000	1852	144,894
1835	17,000	1853	141,928
1836	24,000	1854	215,000
1837	33 000	1855	71,928

The arrivals from Germany and Prussia in the government tables are here added together.

Ages of Emigrants.—The following table, which was among those sent to Congress by the State Department a few days since, has not till now been published. It gives the details of a matter which has been a good deal discussed, the age and chance of life of the foreigners who arrive here:

COMPARATIVE STATEMENT SHOWING THE AGE AND SEX OF PASSENGERS ARRIVING IN THE UNITED STATES FROM FOREIGN COUNTRIES, FROM DEC. 31, 1852, TO DEC. 31, 1855.

Age.	1853.			1854.			1855.		
	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.
Under 5 years	15,470	14,388	29,858	18,789	17,692	36,481	10,117	9,819	19,936
Between 5 and 10	15,320	14,752	30,072	17,920	16,406	34,326	9,200	8,833	18,033
" 10 " 15	14,506	13,877	27,883	15,589	13,617	29,206	8,005	7,071	15,076
" 15 " 20	29,112	25,105	54,217	43,841	32,033	75,874	20,008	17,302	37,310
" 20 " 25	61,022	37,541	98,563	50,441	32,807	83,248	24,154	15,413	39,567
" 25 " 30	33,053	20,556	53,609	51,940	22,824	74,764	24,930	10,793	34,828
" 30 " 35	26,867	14,081	40,448	30,028	12,376	42,404	15,609	6,099	21,708
" 35 " 40	14,575	7,015	21,590	20,555	9,456	30,011	12,777	5,250	18,027
40 and upward	26,085	17,366	44,051	29,476	17,901	47,377	15,874	9,981	25,155

The following table shows the immigration at New York for the last four years, with monthly comparisons:

Months.	1853.	1854.	1855.	1856.
January	4,901	15,514	7,485	2,344
February	11,958	4,445	6,123	2,224
March	9,085	8,758	2,069	4,584
April	23,283	31,148	10,105	8,295
May	30,212	54,078	24,177	19,006
June	45,578	25,807	19,428	20,024
July	22,898	35,247	15,716	15,846
August	33,632	39,416	9,180	17,253
September	30,288	25,750	11,706	14,078
October	23,201	38,378	13,342	16,086
November	31,485	20,276	7,453	16,746
December	17,824	25,300	9,360	4,287
Total	284,945	319,223	136,233	141,673

The proportion of Irish and Germans arrived during the year 1856 appears from the following table:

Months.	Irish.	Germans.	Total.
January	584	548	2,344
February	220	414	2,224
March	1,040	1,205	4,584
April	3,237	2,220	8,295
May	6,516	6,808	19,006
June	6,015	6,045	20,024
July	5,068	5,005	15,846
August	5,090	7,789	17,253
September	4,286	5,247	14,078
October	5,591	7,515	16,086
November	5,201	7,344	16 745
December	1,338	2,941	4,287
Total	43,996	55,846	141,672

Last year there was an unusually small amount of emigration, owing to the war, the drafts for the army and navy, increased employment at home, and the check given to emigration to the United States by the stringent American regulations and the political objections to Catholics and the Irish, and to naturalization, which had before been freely granted. The employment of many large steamers now disengaged from the transport service and reduced fares, coupled with the prosperous state of Canada and Australia, will lead to an increased emigration in 1857.

Statistics of Emigration to the United States.—The emigration of the past year shows an increase as compared with that of the year 1855, but is much less than any other year since 1848. The following are the figures:

From 1800—1810	70,081	1851	289,601
" 1810—1820	114,006	1852	300,092
" 1820—1830	135,086	1853	284,945
" 1830—1840	570,000	1854	319,223
" 1840—1850	1,678,338	1855	136,233
		1856	141,915

The tide of emigration during the year 1856 did not set in steadily until June and July.

The following shows the number of arrivals and the proportion of emigrants:

Countries.	Arrivals.	Countries.	Arrivals.
Ireland	44,090	Portugal	20
Germany	55,855	Belgium	935
England	28,681	West Indies	225
Scotland	4,678	Nova Scotia	80
Wales	1,876	Sardinia	420
France	2,931	South America	161
Spain	324	Canada	67
Switzerland	2,758	China	8
Holland	8,137	Sicily	10
Norway	488	Mexico	18
Sweden	918	Russia	57
Denmark	471	Turkey	4
Italy	690	Greece	8

From the want of coal, Ireland is ill-fitted for manufacturing industry; and from the nature of its soil and climate, it is much better suited to pasturage than to tillage. In 1854 the further reduction of its population by one or two millions, by emigration, was considered favorable to its well-being.

Months.	Citizens.	Emigrants.	Total.
January	2,002	2,844	4,846
February	2,008	2,244	4,207
March	2,576	4,584	7,154
April	4,184	8,285	12,479
May	6,551	19,006	25,557
June	5,119	25,024	25,148
July	4,931	15,848	20,076
August	3,930	17,258	21,188
September	3,439	14,058	17,497
October	3,978	16,986	20,959
November	3,518	16,745	20,263
December	1,800	4,550	6,350
Total	39,819	141,915	185,234

The following tables, in connection with the above figures, will be found interesting:

THE PER CENT. INCREASE OF POPULATION IN THE UNITED STATES.

1800—1810	7,389,884	Increase about	40	per cent.
1810—1820	9,638,131	" "	30	"
1820—1830	12,858,020	" "	33⅓	"
1830—1840	17,069,458	" "	33⅓	"
1840—1850	23,191,870	" "	34	"

THE PER CENT. INCREASE OF IMMIGRATION IN THE UNITED STATES.

1800—1810	70,801	Increase about	1	per cent.
1810—1820	114,006	" "	1½	"
1820—1830	135,086	" "	1½	"
1830—1840	570,000	" "	3½	"
1840—1850	1,678,338	" "	7	"

The Emigration of 1856.—The following table, showing the destination of emigrants who landed at Castle Garden, New York, during the year 1856, and the amount of cash means they possessed at the time of arrival, is made up from the official table prepared by the Superintendent of the Commissioners of Emigration:

Destination.	Passengers.	Cash means.	Average per head.
Maine	148	$3,986 50	$26 93
New Hampshire	177	2,772 81	15 66
Vermont	250	5,357 50	21 43
Massachusetts	6,494	162,986 23	26 68
Rhode Island	1,354	29,921 60	22 09
Connecticut	2,262	99,581 89	43 44
New York	55,035	2,101,656 80	38 17
New Jersey	3,243	295,490 66	91 12
Pennsylvania	11,749	694,785 48	59 13
Ohio	7,085	681,637 81	96 20
Indiana	1,388	150,184 72	108 20
Illinois	11,664	1,400,482 43	126 62
Michigan	3,296	331,087 38	100 44
Wisconsin	13,827	1,984,125 10	143 88
Iowa	2,380	342,588 75	143 94
California	778	167,608 25	215 48
Delaware	81	4,102 50	40 64
Maryland	1,164	60,704 28	52 15
Virginia	567	25,192 43	44 43
North Carolina	66	8,829 50	58 02
South Carolina	178	8,915 50	50 25
Georgia	47	8,207 00	174 61
Florida	12	668 00	55 58
Alabama	30	1,707 50	56 91
Louisiana	171	10,058 22	58 80
Texas	76	8,325 75	109 54
Arkansas	80	4,709 00	156 66
Missouri	1,064	109,122 19	102 55
Mississippi	14	1,380 00	98 57
Tennessee	178	11,306 50	63 51
Kentucky	460	25,317 75	55 08
District of Columbia	407	34,691 59	85 28
Kansas	11	3,288 00	298 82
Nebraska	2	300 00	150 00
Minnesota	427	56,043 00	131 00
New Mexico	....	....	....
Utah	1,574	32,036 38	22 82
Oregon	....	....	....
Washington	....	....	....
Canada	8,526	652,328 35	76 51
New Brunswick	....	....	....
Nova Scotia	2	15 00	7 50
West Indies	11	1,107 00	100 63
South America	30	1,722 50	57 41
Mexico	12	1,327 56	110 63
Central America	....	....	....
Australia	1	20 00	20 00
Uncertain	2,113	120,979 98	57 25
Unknown	....	....	....
Total	141,625	$9,642,104 00	$68 08

The total number of arrivals during the year is about six thousand more than the previous year, and the proportion of cash means to each passenger is considerable larger than during the last five months of 1855. The account of cash means was not kept until after the first seven months of 1855. The number of vessels bringing emigrants last year was 579, from 21 different ports of Europe, and not one serious accident has occurred during the disembarkation. Some emigrants, ill-advised by interested parties, have declined to avail themselves of the facilities afforded by the Commissioners of Emigration, and have consequently been plundered in various ways, sometimes irremediably. The governments of Hamburg and Bremen have made it a penal offense to solicit or book emigrants for inland travel in foreign countries, and it is to be hoped that other European governments will follow their example.

Since the 22d of August last a system of aiding destitute emigrants has been established, which has proved highly beneficial. Since that date in 1855, 210 families were assisted to the amount of $2,309 25; in 158 the advances have already been repaid, amounting to $1,456 25.

The following is a list of arrivals during two weeks of January, 1857, only.

Date.	Vessel.	Where from.	Number of passengers.
Jan. 1	Henry Clay	Liverpool	219
" 1	Columbia	"	418
" 2	Victoria	London	123
" 2	Fidelia	Liverpool	250
" 2	Palestine	London	119
" 2	Calhoun	Liverpool	280
" 2	Red Rover	Havre	158
" 2	Wm. Nelison	"	303
" 3	Wm. V. Moses	"	280
" 3	St. Nicholas	"	165
" 3	Orphous	Bremen	320
" 5	Switzerland	Liverpool	308
" 5	Northampton	London	115
" 8	Union	Bremen	49
" 13	Germania	Havre	77
" 14	Gauntlet	"	67
			3,250

The Destination of Emigrants.—The following table shows the destination and amount of money possessed by all the emigrants who arrived at New York during the eleven months previous to July 30, 1856:

Destination.	Number of Emigrants.	Amount of their Cash Capital.
Six New England States	8,148	$121,528 01
Fifteen Slave States and D. C.	8,256	194,885 79
New York	80,948	1,291,628 69
New Jersey	2,272	214,955 79
Pennsylvania	9,421	546,088 78
Ohio	5,117	479,633 90
Indiana	1,809	101,861 63
Illinois	7,713	698,456 81
Michigan	2,887	199,360 86
Wisconsin	10,000	1,045,661 38
Iowa	1,855	248,385 40
California	806	165,125 18
Minnesota	805	85,156 00
Kansas	8	128 00
Utah	1,529	55,070 93
Oregon	1	10 00
Total	105,707	$5,398,369 54
Total of the Free States and Territories	102,451	$5,203,480 81

Of late years (1853—1857) there has been more immigration to the State of Texas than formerly, especially by Germans, who have formed large settlements in several counties in the western portions of the State, where land can be had at 50 cents to $1 per acre, and where the climate and soil are favorable.

EMIGRATION AND IMMIGRATION.—The following from HUBNER'S "*Jährbucher*" for 1854, gives the destinations of natives of Germany embarking from the ports of Hamburg and Bremen:

Destination.	1847.	1848.	1849.	1850.	1851.	1852.
United States	32,287	38,559	32,120	31,481	44,531	70,381
British America	7,852	1,322	915	593	647	4,948
All other places	1,671	1,651	1,814	1,244	4,594	4,585
Total	41,810	36,532	34,249	33,268	49,772	80,467

EMIGRATION FROM GREAT BRITAIN.

Years.	To North American colonies.	To the United States.		To Australian Colonies and New Zealand.	To all other places.	Total.
		Number.	Rate per cent. to whole emigration.			
1825	8,741	5,551	37·28	485	114	14,891
1826	12,818	7,063	33·79	903	116	20,900
1827	12,648	14,526	51·87	715	114	28,003
1828	12,084	12,317	49·12	1,056	185	26,092
1829	18,307	15,678	50·25	2,016	197	31,198
1830	30,574	24,887	43·78	1,242	204	56,907
1831	58,067	23,418	28·10	1,561	114	83,160
1832	66,359	32,872	31·87	3,788	196	103,140
1833	28,808	29,109	46·55	4,068	517	62,527
1834	40,060	33,074	43·99	2,900	288	76,222
1835	15,573	26,720	60·07	1,560	925	44,478
1836	34,296	37,774	50·09	3,124	298	75,417
1837	29,884	36,770	51·05	5,054	826	72,034
1838	4,577	14,332	43·14	14,021	292	33,222
1839	12,658	33,586	58·91	15,786	227	62,207
1840	32,293	40,642	44·79	15,850	1,958	90,743
1841	38,164	45,017	37·90	32,025	2,786	118,592
1842	54,123	68,852	49·75	8,534	1,835	128,344
1843	23,518	28,335	49·53	3,478	1,881	57,212
1844	22,924	43,660	61·77	2,229	1,873	70,686
1845	31,803	58,588	62·61	880	2,380	93,501
1846	43,490	82,239	63·33	2,847	1,826	129,851
1847	109,680	142,154	55·04	4,949	1,487	258,270
1848	31,065	188,233	75·87	23,904	4,887	248,089
1849	41,867	219,450	79·27	32,191	6,490	299,498
1850	32,901	223,073	79·43	16,037	8,773	280,849
1851, to March 31st	1,197	53,142	91·57	2,962	736	58,036
Total	842,898	1,536,467	58·55	204,385	40,820	2,624,070

Whether the foreign immigration can be kept up very long at its present high figure must be doubted. The wars in Europe, which it was thought would check the tide, have, however, had no effect as yet. The number arrived in New York for the quarter ending March 31st, 1854, was 29,023, against 29,657 in the corresponding quarter of 1853.

The following table shows the occupations of the emigrants from England in 1854 and '55:

	1854.	1855.
Blacksmiths and farriers	1,574	881
Braziers, tinsmiths, and whitesmiths	818	148
Brick and tile makers, potters, etc	111	82
Bricklayers, masons, plasterers and slaters	3,984	1,814
Builders	69	35
Cabinet-makers and upholsterers	182	81
Carpenters and joiners	5,185	2,541
Carvers and gilders	65	64
Coach-makers, etc	50	25
Coal miners	177	69
Coopers	269	171
Engineers	817	285
Millwrights	86	10
Miners and quarrymen	4,119	1,678
Painters, plumbers, paper-hangers and glaziers	697	661
Sawyers	213	141
Shipwrights	61	15
Smiths (general)	216	258
Surveyors	27	82
Turners	45	25
Wheelwrights	196	106
Mechanics not before specified	3,398	2,545
Total	21,347	11,155

To this statement the following remarks are subjoined: The total number of such adults who emigrated in the two years having been respectively 134,789 and 65,363, it follows that the mechanics and skilled workmen connected with the building and constructive trades, who leave the country, form the proportion of about one sixth of the whole number. Farmers, agricultural and general laborers, and those identified with land, constitute one half of the bulk of emigrants.

The number of foreigners who arrived in the United States, since 1790, may be stated as follows; the arrivals from 1790 to 1820 are given on the authority of Professor Tucker; those subsequent to that period, are obtained from the custom-house reports.

ARRIVALS OF FOREIGNERS IN THE UNITED STATES.

Years.	Arrivals.	Years.	Arrivals.
1790—1800	50,000	1836—1837	78,088
1800—1810	70,000	1837—1838	59,363
1810—1820	114,000	1838—1839	52,163
1820—1821	5,093	1839—1840	84,146
1821—1822	7,929	1840—1841	88,504
1822—1823	6,749	1841—1842	101,107
1823—1824	7,088	1842—1843	75,159
1824—1825	8,532	1843—1844	74,607
1825—1826	10,151	1844—1845	102,415
1826—1827	12,413	1845—1846	147,051
1827—1828	26,114	1846—1847	220,182
1828—1829	24,459	1848 (15 mos.) to Sept. 30,	226,887
1829—1830	27,158	1849, 1 year to "	296,988
1830—1831	28,074	1850, " "	279,980
1831—1832	45,287	1852, (15 mos) to Jan. 1	439,437
1832—1833	56,547	1853 to 1st January	379,725
1833—1834	65,835	1854, " "	368,643
1834—1835	52,899	1855, " "	196,233
1835—1836	62,473	1856, " "	141,950

NATIVITIES OF PASSENGERS ARRIVING IN THE UNITED STATES.

Where born.	Year ending Sept. 30, 1845.			Year ending Sept. 30, 1847.			Year ending Dec. 31, 1852.		
	Male.	Female.	Sex not stated.	Male.	Female.	Sex not stated.	Male.	Female.	Sex not stated.
United States	4,221	1,126	165	8,081	1,408	25	23,053	2,474	....
Ireland	3,858	3,961	822	15,966	18,359	215	85,715	71,808	25
Great Britain and Ireland	32,781	30,183	887	72,429	56,087	222	109,253	88,987	....
Germany	19,713	18,074	....	43,850	29,306	286	84,205	56,624	2,600
Prussia, Austria, Germany and Holland	21,148	14,010	....	45,921	30,705	280	86,695	58,342	2,600
All others	11,088	8,971	419	17,735	11,125	456	15,434	8,704	2,953

Law in Regard to Emigrants.—By the law of the State of New York, passed April, 1857, it is provided that,

No person shall, in any city of this State, solicit emigrant passengers or their luggage for emigrant boarding-houses, passenger-offices, forwarding transportation lines, or for steamers, ships or vessels bound or about to proceed to any port not within this State; or for any person or for any company selling, or offering for sale, passage-tickets, or contracting or offering to contract for passage in any such steamer, ship or vessel without a license for that purpose, which shall expire at the end of one year from its date; such license may be issued and revoked in the discretion of the Mayor of the city where such license may have been granted, except in the city of New York, in which such license may be issued or revoked only by and in the discretion of the Commissioners of Emigration. Such persons receiving such license shall pay the sum of $20, and give a bond, with two sufficient sureties, in the penalty of $500, conditioned for the good behavior and the observance to him of the provisions this act, to the Mayor of the city issuing the same, or to the Commissioners of Emi-

gration, as the case may be. The money thus received or collected on said bonds shall be for the benefit of said city, or of the emigrant fund. Every person so licensed shall wear in a conspicuous place about his person a badge or plate, of such character and in such time and manner as said Mayor, in the city of New York, as such Commissioners shall prescribe, with the words, "Licensed Emigrant Runner" inscribed thereon, with his name and the number of his license. No person who is not of approved good moral character shall be licensed as such runner. Every person who shall solicit alien emigrant passengers or others, for the benefit of boarding-houses, passenger-offices, or forwarding or transportation lines, or for any steamer, ship or vessel bound or about to proceed to any port not within the State of New York, or for any person or company selling or offering for sale passage-tickets, or contracting or offering to contract for passage in any such steam-ship or vessel, upon any street, lane, alley, or upon any dock, pier or public highway, or in any other place within the corporate bounds of any city in this State, or upon any waters adjacent thereto, over which any of said cities may have jurisdiction, without such license, shall be deemed guilty of a misdemeanor, and shall be punished by imprisonment in the county prison or jail not less than three months, nor exceeding one year.

The bonds mentioned in the foregoing sections may be sued by and in the name of the Mayor of the city in which such license may have been issued, and in the city of New York by and in the name of the Commissioners of Emigration in any court having cognizance thereof; and in case of a breach, the Mayor, or the said Commissioners, shall recover the full penalty of said bond.

All personal baggage of emigrant passengers arriving at the port of and destined for the city of New York, shall be landed at the place or pier designated as the landing-place in said city for emigrant passengers; and the captain, owners, and consignees of every ship or vessel arriving at said port with emigrant passengers destined for said city, shall be jointly and severally subject and liable to a penalty of $50 for each and every emigrant passenger, or his personal baggage, landed at any place or pier other than the place or pier aforesaid; which penalty shall be a lien upon such ship or vessel, and may be enforced and recovered by and in the name of the Commissioners of Emigration, either by an action or by warrant of attachment, under and pursuant to article first of title eighth of chapter eighth of the first part of the Revised Statutes.

The Health Officer shall give notice in writing to the owner or owners, consignee or consignees, master, commander or person having charge of every vessel having emigrant passengers on board of such vessel, destined for the city of New York, to land such passengers and their personal baggage, at such pier or place in the said city of New York as has been or may at any time be designated specially by the Commissioners of Emigration for the landing of emigrant passengers and their personal baggage; and it shall not be lawful to land such passengers or their personal baggage at any other pier or place; and the owner and master of any vessel, from which passengers or their personal baggage shall be landed, in violation of the provisions of this section, shall be subject to a penalty of $50 for each and every person or his baggage so landed in violation thereof; which penalty shall be forthwith a lien on such ship or vessel, and may be immediately, upon such violation, sued for, enforced and recovered, with costs of suit, in the name of and by the Commissioners of Emigration, either by an action in any court having cognizance thereof, or by an attachment under and pursuant to article first of title eighth, chapter eighth, of the first part of the Revised Statutes, for which purpose the said Commissioners of Emigration shall forthwith be creditors of such ship or vessel, and having a direct lien on such ship or vessel, for said penalty; the said penalty, when recovered, to be applied and used by the said Commissioners for the purposes for which said Commissioners are constituted.

Eminent Domain. The right of the State to its public property or domain is *absolute*, and excludes that of its own subjects as well as other nations. The national proprietary right in respect to those things belonging to private individuals, or bodies corporate, within its territorial limits, is *absolute*, so far as it excludes that of other nations; but in respect to the members of the State, it is *paramount* only, and forms what is called the eminent domain; that is, the right, in case of necessity or for the public safety, of disposing of all the property of every kind within the limits of the State.—WHEAT. *Inter. Law.* See Corres. between Mr. WEBSTER and Lord ASHBURTON, Dec. 1837.

Empire (Lat. *Imperium*). Originally the territory or extent of land under the command and jurisdiction of an emperor. The dominions under the sway of ancient Rome were the first to which the term empire was applied; they consisted of two grand divisions —the Empire of the East, or, as it was afterward called, the Lower Empire; and the Empire of the West. The former admitted of various subdivisions in reference to the different dynasties to which it was subject; and the latter became, about the end of the 9th century, the German or Holy Roman Empire. In all these cases, the sovereign, or chief person in the empire, was named the emperor. But the term empire has in several instances been employed to designate *a large extent of dominion*, without reference to the title of the ruler or sovereign of a country; thus we hear of the empire of Persia, Hindostan, etc. The dominions of the Queen of England are invariably designated the British Empire; and the epithet "imperial" is officially prefixed to the Parliament of the United Kingdom. The term empire was applied from 1804 to 1814 to the dominions of France, including all the countries then incorporated with it by the conquests of Napoleon.

Emporium, in a general sense, signifies a city or a place where extensive commercial transactions are carried on; but it is more particularly applied to the commercial centre of a country, or the place to which buyers and sellers, from various countries, resort.

Empyreuma (Gr. *ἐμπυρεύω, I kindle*). A burned odor; hence, the oils obtained by distilling various organic substances at high temperatures, are called *empyreumatic oils*.

Enamel (Fr. *émail*) a semi-transparent or opaque vitrified substance, of the nature of glass, but differing from it by possessing a greater degree of fusibility and opacity. The compound which serves as a basis to most kinds of enamel is formed by the fusion of a pure crystal glass or frit, ground up with a fine calyx of lead and tin, in certain proportions; to which is usually added white salt of tartar. The different kinds of enamel are made by the addition of coloring substances, and melting or incorporating the whole by fusion. For white enamel, Neri (*De Arte Vitriar.*) directs only manganese to be added to the matter which constitutes the basis; for azure, zaffer mixed with calx of brass; for green, calx of brass with scales of iron, or with crocus martis; for black, zaffer with manganese or with crocus martis, or manganese with tartar; for red, manganese, or calx of copper and crude tartar; for purple, manganese with calx of brass; for yellow, tartar and manganese; and for violet-colored enamel, manganese with thrice-calcined brass; In making these enamels great nicety is requisite. The general way of making the colored enamel is this: Powder, sift, and grind all the colors very nicely, and first mix them with one another, and then with the common matter of enamels; next set them in pots in a furnace, and when they are well mixed and incorporated, cast them into water; when dry, set them in a furnace again to melt; and when melted, take a proof of the enamel. If too deep-colored, add more of the common matter of enamels; and if too pale, add more of the colors.

Enameling, the art of laying enamel upon metals, as gold, silver, copper, etc. Enamel ornaments for trinkets, in almost endless variety, may be produced by the aid of the blowpipe. The enamel is usually first drawn out into threads, or reduced to thin laminæ, to facilitate the process of fusion; and by the same means the enamel may be laid upon metals. Very elegant ornamental work may be thus produced. Enameling also signifies to paint in enamel.

Enamel Painting is performed on plates of gold or of copper, but seldom on silver, as this metal is apt to occasion imperfections in the surface of the enamel. Copper is the metal most generally used for this pur-

pose, enameled with the white enamel, on which painting is executed with colors which are melted in the fire, where they take a brightness and luster like that of glass. This kind of painting is particularly prized for its peculiar brightness and vivacity, which is permanent, the force of its colors not being liable to be effaced or sullied with time, as in other painting, and continuing always as fresh as when it came out of the workman's hands. This method of painting is almost entirely confined to miniature; larger works being liable to certain accidents in the operation. The most perfect kind of enameling is practiced on plates of gold, the other metals being less pure. Copper, for instance, sometimes scales with the application; and silver turns the yellow white. To obviate the cracking of the enamel, the plates are generally made a little round or oval and rather thin. The operation is usually commenced by laying on a couch of white enamel on both sides of the plate, which prevents the metal from swelling and blistering; and this first layer serves for the ground of all the other colors. The next step is to draw out exactly the subject to be painted with red vitriol, mixed with oil of spike, marking all parts of the design very lightly with a pencil. After this, the colors (very finely ground, and mixed with oil of spike somewhat thick), are to be laid on, attention being given to the mixtures and colors which agree to the different parts of the subject; for which purpose it is necessary to understand painting in miniature. When the colors are all laid, the painting is to be gently dried over a slow fire to evaporate the oil, and the colors are afterward melted to incorporate them with the enamel, making the plate red-hot in a fire such as enamelers use.

Enchasing, or **Chasing**, the art of embossing or making figures in low relief upon gold, silver, and other metals. It is practiced only on hollow thin works, such as watch-cases, tankards, cups, etc. The design having been traced on the exterior surface of the metal, the work is hammered upon steel blocks or puncheons introduced within; and thus the workman proceeds to indent the metal by the successive application of the block and hammer to the several parts of the design; after which the work is cleared with small chisels and gravers. In this simple manner a skillful artist is able to represent foliages, figures, etc., with admirable precision.

Encyclopædia (*ἐν, in, κύκλος, a circle, παιδεία, instruction*), a term nearly synonymous with CYCLOPÆDIA, but sometimes adopted in preference to it, as being etymologically more definite and complete. For, as it has been justly remarked—*Cyclopædia* may denote "the instruction *of* a circle," as *Cyropædia* is "the instruction of Cyrus;" whereas in *Encyclopædia*, the preposition determines the meaning to be "instruction *in* a circle." Vossius, in his book *De Vitiis Sermonis*, observes, "that *Cyclopædia* is used by some authors, but *Encyclopædia* by the best." See CYCLOPÆDIA.

England, the southern, and by far the most fertile division of Britain, corresponds in latitude with Holland and the north of Germany, extending from 50° to 55° 45′ N. Its figure is nearly triangular, and its extent of coast is very great, both from being much indented, and from the sea bounding it on all sides except along a width of 70 miles on the Scottish border. The adjacent seas are the German Ocean on the east, St. George's Channel on the west, and the English Channel on the south. No country can be more fortunately situated; its climate is temperate; its extent is sufficient for its political security; while its insular position not only presents the greatest capabilities of aggrandizement in a commercial sense, but has, by rendering a great military force unnecessary, in all probability been the chief cause of preventing the executive branch from usurping absolute power, as in the countries of the Continent.

Its superficial extent had long been a question of considerable doubt, and the different estimates varied no less than 10,000,000 of acres. Mr. Pitt, on the authority of Arthur Young, assumed, in 1798, the superficial extent of England and Wales to be nearly 47,000,000 of acres; a later calculation by Dr. Beeke, approaching more to accuracy than any preceding one, fixed it at 38,500,000 acres. But according to the census of 1851, the area of the great territorial subdivisions of Great Britian is as follows, viz.: England, 50,922 square miles; Scotland, 31,324; Wales, 7398; and the Islands in the British Seas, 894 square miles; making the area of England and Wales 58,320 square miles, or 87,324,015 imperial acres. The forms of the islands are irregular, and do not approach simple geometrical figures, if we except England, which was not inaptly compared by the ancients to a triangle. The area of Great Britain is equal to a square of 299 miles to the side; England to a square of 226 miles to the side; Scotland to a square of 177 miles to the side; Wales to a square of 80 miles to the side; the Islands in the British Seas to a square of 20 miles to the side. While the area is in the ratio of these squares, or as 51, 31, 7, and 4-10, the population is nearly as 17, 3, 1, and 1-7; England has, on an average, to a square mile 322 persons, Wales 136, Scotland only 92, the Islands in the British Seas 363 persons. While about 21,200,000 acres of territory lie north, and 36,400,000 acres south of 55° of north latitude; the populations on the north and south side of the line are respectively about 3,173,000 and 17,787,000.

Harbors.—Portsmouth, Milford Haven, and Plymouth, are the finest harbors in England, and are surpassed by few, if any, in the world. Of these, Portsmouth is entitled to the pre-eminence. This noble harbor is about as wide at its mouth as the Thames is at Westminster Bridge, expanding within into a capacious basin, almost sufficient to contain the whole navy of Great Britain. Its entrance is unobstructed by any bar or shallow; and it has throughout water adequate to float the largest man-of-war at the lowest tides. The anchorage-ground is excellent, and it is entirely free from sunken rocks, sand-banks, or any similar obstructions. The western side of the harbor is formed by the island of Portsea; and on its southwestern extremity, at the entrance to the harbor, is situated the town of Portsmouth, and its large and important suburb of Portsea. Here are docks and other establishments for the building, repair, and outfit of ships of war, constructed upon a very large scale, and furnished with every convenience. II. Portsmouth harbor has the additional and important advantage of opening into the celebrated road of Spithead, lying between the Hampshire coast and the Isle of Wight, and forming a safe and convenient retreat for the largest fleets. III. Milford Haven deeply indents the southern part of Pembrokeshire. It is of great extent, and has within it many bays, creeks, and roads. The water is deep, and the anchorage-ground excellent; and being completely land-locked, ships lie as safely in it as if they were in dock. IV. Plymouth, which, after Portsmouth, is the principal naval dépôt of England, has an admirable double harbor. The roadstead in Plymouth Sound has been much improved by the construction, at a vast expense, of a stupendous breakwater more than 1,700 yards in length. This bulwark protects the ships lying inside from the effects of the heavy swell thrown into the Sound by southerly and south-easterly winds.

London stands at the head of the river ports of Great Britain. Considering the limited course of the Thames, there is probably no river that is navigable for large ships to so great a distance from the sea, or whose mouth is less obstructed by banks. London is mainly indebted for the unrivaled magnitude of her commerce to her favorable situation on this noble river; which not only gives her all the advantages of an excellent port, accessible at all times to the largest

ships, but renders her the emporium of the extensive, rich, and populous country comprised in the basin of the Thames. The port of London extends from London Bridge to a little below Blackwall, and is divided into the Pool, Limehouse Reach, Greenwich Reach, Blackwall Reach, and Bugsby's Reach. The coasting trade of London is greater than that of any port in the world, and gives it superiority over Liverpool.

Liverpool, the principal seaport of England, lat. 53° 25′ N., long. 2° 69′ W., is situated on the eastern bank of the Mersey river, while on the west side are the docks, warehouses, and other commercial buildings. The area of the wet docks is about 185 acres, and of the dry docks 20 acres. The entrance of the Mersey is impeded by shoals, but at high water may be entered by the largest ships. The docks are the finest in the world, and in connection with its situation and inland communication, give it the position it holds, of the first port in England, and having, next to New York, the largest commercial marine. The Mersey, now the second commercial river in the empire, is more incommoded with banks than the Thames, and is in all respects inferior, as a channel of navigation, to the latter. Still, however, it gives to Liverpool very great advantages; and the new channel which has recently been discovered in the banks promises to be of much importance in facilitating the access to and from the port.

Bristol and Hull are both river ports. Owing to the extraordinary rise in the Bristol channel, the former is accessible even to the largest ships. The Humber is a good deal impeded by banks; but it also is navigable as far as Hull by very large vessels. The Tyne admits vessels of very considerable burden as far as Newcastle, which is one of the most important shipping ports in the empire.

Statistics.—The total length of railways in England and Wales open for traffic at 31st December, 1853, was 5,811 miles. The number of passengers conveyed in that year was 84,222,961, of whom considerably more than one half were first and second class passengers. The receipts from the goods traffic somewhat exceed those from the passenger traffic. The length of lines in course of construction at 30th June, 1853, was 491, while the length authorised was 2,969 miles, nearly 2,500 miles being neither open nor in course of construction. The total amount of capital and loans authorised to be raised by railway companies in the United Kingdom previous to 31st December, 1852 (after deducting amounts proposed for lines subsequently abandoned), was £356,610,456, of which £264,165,680 had been raised: the amount raised in 1852 was £16,398,095. The number of passengers that traveled by railway in the half year ended 30th June, 1854, was 45,060,816; the amount of receipts from passengers was £4,092,661; from horses, carriages, luggage, and mails, £505,116; from general merchandise, cattle, minerals, etc., £4,826,825; total for six months, £9,424,602. See RAILROADS.

Electric Telegraph.—Connected with the railways is the electric telegraph, which is now stretched along thousands of miles across the length and breadth of the land, or sunk in the depths of the ocean, conveying intelligence between distant points with the rapidity of lightning. In 1846, an association under the title of the Electric Telegraph Company, obtained an act of incorporation, and having bought up the various patents for electric telegraphs, they secured the exclusive right of sending intelligence through the kingdom by this means. Since then they have been extending their operations in all directions; but great as are the advantages conferred on the country by this invention, there is reason to expect that they will be vastly increased and extended, as the instrument is capable of still greater improvements; and when the charges for the conveyance of intelligence are reduced to their proper level, the electric telegraph will be much more generally used.

Canals.—The canals of England are extremely numerous; in fact no country except Holland can enter into competition with her in this respect. The English canals are of moderate size, being from 25 to 30, 35, and 40 feet in width, and, in general, from 5 to 6 feet in depth; the barges navigating them are very long, frequently 70 or 80 feet, on a width of 10, 12, or 14 feet; but in many cases their dimensions, at least their width, are necessarily smaller, the less frequented canals being narrower than those we have mentioned. Could the application of steam to navigation have been foreseen, the canals of England would probably have been made wider. For full details with respect to the canals of England, and the recent improvements in their construction, and in traveling by them, the reader is referred to the article CANALS.

Bridges.—The principal bridges in the kingdom are the railway bridges across the Tweed and the Tyne, and the seven erected across the Thames, at London, four of which have been opened since 1817. Of these, two, the Southwark and Vauxhall, are of cast-iron, the one being of three very large arches, and the other of nine arches, each of 78 feet span. The first example of an iron bridge on a large scale, either in England or any other country, was that erected in 1796, at Wearmouth in Durham, the span of which was 240 feet. The chain bridge over the Menai Straits, and the tubular bridge over the same place, are wonderful examples of engineering skill. See article BRIDGES, etc.

The principal crops cultivated in England and Wales are wheat, oats and beans, barley and rye, turnips and potatoes, with clover, hops, flax, etc. It is to be regretted that no estimate, derived from authentic returns, has been formed on which much reliance can be placed, either of the extent of land under different crops, or of the average product per acre. Mr. Caird, in his work on *English Agriculture*, p. 522, gives the following estimate as the result of his survey of England in 1850–51 of the extent of land under the different species of crops, and in fallow, in England:

	Acres.
Wheat	3,416,750
Barley and rye	1,416,750
Oats and rye	2,000,000
Beans and peas	1,139,000
Clover	2,277,750
Roots (turnips, mangold, potatoes, etc.)	2,116,750
Hops, gardens of all sorts, etc	150,000
Fallow and rape	1,800,000
	13,317,000

Mines—Quarries—Iron, Copper, Tin, and Salt Works.—In regard to minerals, England does not yield to any country in Europe in natural abundance, and takes the lead of all in the extent to which these rude treasures have been converted to purposes of utility. England's great superiority lies in her coal mines, which are not only more productive, but more advantageously situated, than those of the Continent. To the mines along the coast a ready conveyance is afforded by her insular position, and to those in the interior by her inland navigation. The consumption of coal in England for domestic use has been estimated at 20,000,000 tons annually. Large as this quantity is, and larger as it must be when we add to it the vast consumption of manufactories, such as iron-works, copper-works, salt-works, glass-houses, and the like, there is no reason to apprehend the exhaustion of this precious mineral; the depth of the coal-beds being very great, and the extent of ground containing them amounting to many hundred thousand acres. The principal coal-beds lie in Northumberland, Durham, Derbyshire, Staffordshire, and Glamorgenshire. The ports for shipping coal in large quantities are Newcastle, Sunderland, and Hartlepool. The motive of the tax on coal exported to foreign countries was thus neither an

apprehension of eventual scarcity, nor even a calculation of revenue, so much as a dread of giving her Continental neighbors the means of rivaling her manufactures. Coal is not wanting in France and Germany, but the mines are at a distance from watercarriage, and as yet very imperfectly wrought; while for the purpose of domestic fuel the inhabitants give a preference to wood. After various changes, the export duty on coal was totally abolished in 1850.

According to the census of 1851 the total number of persons engaged in the coal trade is 239,459.

In 1858 the exports of coal to foreign countries, according to the real or declared value, amounted to £1,602,762. See article COAL.

In quarries, whether of stone or slate, England is not rich, particularly the eastern half of the kingdom; and hence the almost universal use of brick in ordinary buildings. It is not till the traveler reaches Durham that he finds stone commonly used. In the northern counties quarries occur frequently; in the southern, those of Portland and Bath are the most considerable. Still the annual profits of the whole are small.

No branch of industry has increased more rapidly in the present age than iron-works. A century ago it was computed that England required an annual importation of 20,000 tons of foreign iron; an importation, which, for many years seems to have been on the increase, so as, after the middle of last century, to carry the quantity required to 80,000, 40,000, and even to 50,000 tons. This supply was brought from Sweden and Russia, and, though burdened with duty, it was in quantity more than double the native produce. But fortunately, after the year 1780, discoveries were made which increased greatly the supply at home. Bar iron had been manufactured in England as on the Continent, with charcoal fuel only, coal being deemed inapplicable to that purpose. Under that impression, the rapid consumption of the wood in the neighborhood of the different iron-works had necessitated a removal, at a great expense, of materials from one spot to another, and was on the point of causing an alarming decay in the business, when the ironmasters, after long perseverence, succeeded in applying coal to their manufacture. They had to contend with various prejudices, particularly the supposed inferiority of iron so made; but, in the course of years, the manufacture acquired such an extent that there were, in 1805, 220 blast-furnaces, making 250,000 tons of pig iron.

The transition from war to peace did a good deal of injury to some branches of the iron trade; but the effect of the change was not of long duration, and the production of iron in England has since been astonishingly increased. In 1820 the produce was calculated at 400,000 tons. The excitement and speculation of 1824 and 1825 had a wonderful influence on this department. According to careful inquiries made at the time, the furnaces at work in England and Wales in 1827, with their produce, were as under:

	Furnaces	Tons.
Staffordshire	95	216,000
Shropshire	31	78,000
South Wales	90	272,000
North Wales	12	24,000
Yorkshire	24	48,000
Derbyshire	14	20,500
Total	266	658,500

Owing to the failure of various railroad and other projects set on foot in 1825 and 1826, the supply of iron seems to have greatly exceeded the demand; and there was a very heavy fall of prices in 1828, 1829, and 1830, and again in 1850 and 1851. But within the last two years prices have again risen; and the iron trade is, at this moment, in a state of great activity. The produce of the various furnaces of England and Wales, may be estimated at nearly 2,000,000 tons.

ACCOUNT OF THE NUMBER OF FURNACES AND OF THE QUANTITIES OF IRON PRODUCED IN GREAT BRITAIN IN 1825 AND 1848.

	1825.		1848.	
	Total Furnaces.	Produce of Iron.	Total Furnaces.	Produce of Iron.
		Tons.		Tons.
South Wales	107	230,412	196	706,680
North Wales	14	17,756	11	16,190
Northumberland	..	....	36	100,000
Yorkshire	34	39,104	28	66,560
Derbyshire	19	22,679	30	95,000
Staffordshire	107	182,156	158	385,840
Shropshire	48	89,566	34	88,000
Scotland	25	33,540	130	550,000
Totals	354	615,283	623	2,008,200

The quantity of iron of all kinds manufactured and unmanufactured, exported in 1852, amounted to 1,035,884 tons, besides 25,289 tons of cutlery of the declared value of £2,691,697. Now that the railways are nearly completed, it might have been expected that this would have caused a stagnation in its manufacture; but iron is now so extensively used in the construction of steam-vessels, that the demand has been maintained. For more ample details, the reader is referred to the article IRON.

Copper-mines have long been known in England, but they were wrought with very little skill or effect until toward the year 1700. Even at that time the annual produce, after smelting the metal from the ore, was only a few hundred tons of copper; and it hardly exceeded 1000 tons annually, down to the middle of last century. From that time forward, the increase became considerable, as well in Cornwall as in Devon, North Wales, and Derbyshire; in all of which, copper-mines were discovered and wrought. In North Wales, there were two mines, Parys and Mona, which, for some time after the year 1780, yielded annually a large quantity of ore, but they are no longer so productive; the mines of Devon and Derbyshire continue to be wrought, but the great product is from Cornwall; the mines of Cornwall and Devon in 1853 yielded 181,969 tons of copper ore, the metal obtained from which, at the rate of 6½ per 100, produced 11,823 tons of standard copper, which, at the average rate of £140 per ton, amounted to £1,655,220. It is the Welsh collieries which afford to Cornwall, as to Devonshire, the means of smeltiug; and as the ore is less heavy than the coal required for this operation (1 ton of ore requiring from 2 to 2½ tons of coal), the practice is to convey the ore in vast quantities to Wales, particularly to Swansea. In this, as in other minerals, France is greatly behind England. She has various copper-mines, but her coal-mines, at least those hitherto wrought, are at too great a distance to make such undertakings profitable; and she consequently requires an annual importation from England.

In 1854 there were exported of brass and copper manufactures 1,851,689 cwt., of the value of £1,761,878.

Cornwall is also the great seat of the tin-mines of England. A century ago, the average produce of the tin-mines hardly exceeded 1500 tons; it may now be estimated at 5000 tons a-year. From abroad England receives tin principally from her Indian possessions, Holland, and the United States. Of this, was imported in 1853, 49,740 cwt. The value of tin unwrought, and in plates, exported in 1854, was £1,307,246.

The lead-mines of England are principally in Cumberland, Northumberland, Derbyshire, Flintshire, and Salop. In 1852 England and Wales produced 80,790 tons of lead ore, and 57,621 tons of lead. Black lead is found in Cumberland, in the romantic district of Borrowdale. The mine was formerly opened only periodically, in order that the market might not be overstocked, but for a considerable number of years past, it has been constantly open.

There is no country better supplied than England,

both with brine-springs and beds of fossil, or rock-salt. The brine-springs are found in Cheshire, in the southern part of the county, in places contiguous to the river Weaver, and at Droitwich, in Worcestershire. The beds of rock-salt, which are of great thickness, were discovered in the vicinity of Northwich and Lawton. The greater part of the salt produced is obtained from the brine-springs. Formerly considerable quantities were produced by the evaporation of sea-water, but since the abolition of the duties most of the works appropriated to this manufacture have been abandoned. From the brine-springs it is obtained at the rate of one gallon of solid salt from four gallons of liquid, while common sea-water does not yield above one in twenty-eight. The consumption of salt is immense. Necker estimated its consumption in those provinces of France which had purchased an exemption from the gabelle (*pays francs redimées*) at about 19½ lbs. (Eng.) for each individual.—*Administration des Finances*, tome ii., p. 12. From all that we have been able to learn on the subject, we believe that the consumption of the people of Great Britain may be estimated a little higher, or at 22 lbs.; the difference in food and habits, as compared with those of the French, fully accounting for this increased allowance. On this supposition, and taking the population of Great Britain at 21,000,000, the entire consumption will amount to 462,000,000 lbs., or 206,250 tons.

Exclusive of this immense home-consumption, England annually exports about 18,000,000 bushels, which, at 56 lbs. a bushel, are equivalent to 357,143 tons. The Americans are the largest consumers of British salt.

The cheapness of this important necessary of life is not less remarkable than its diffusion. Its present cost may be estimated, at a medium, at from 14s. to 16s. a ton.

Salt has been at all times a favorite subject of taxation. It was first taxed in the reign of William III. In 1798 the duties amounted to 5s. a bushel, but they were subsequently increased to 15s. a bushel, or about forty times the cost of the salt. So exorbitant a duty was productive of the worst effects, and, in particular, occasioned a great deal of smuggling. The duty having, in consequence, become exceedingly unpopular, was finally repealed in 1823.

Fisheries.—At present our space allows no more than a brief notice of the principal branches of the fisheries.

The mackerel fishery is carried on with great vigor on the coast of Kent and Sussex, in May, June, and July. Large as the supply is, it would still admit of augmentation; and herrings also might be caught in vast quantities on the coast of Kent in October and November. The desideratum with the fishermen is not so much a high price as a certain market; and the most effectual way to procure that is, to quicken, by every possible means, the conveyance to London, which has been accomplished by the employment of steamboats and railways.

The pilchard fishery takes place chiefly on the coast of Devonshire and Cornwall, and, though subject to great fluctuations, as well from the seasons as from England's political situation relative to the continent, forms on the whole an important branch, employing a number of seamen both in catching the fish and in carrying it to foreign markets. Its season is generally from June to September.

The herring, the most important of all the fisheries, is happily now in a state of rapid extension. It formed, during the 17th century, the great employment of the Dutch seamen, and was contemplated by their neighbors with very jealous eyes. Accordingly, in the reign of Charles II., particularly after the rupture with Holland in 1672, several acts were passed for the encouragement of the fishermen, and in a spirit of hostility to the Dutch. The subsequent accession of William to the throne, and the long friendship between the two countries, relaxed the exertions of the government; and it was not till after the peace of 1748, that a large bounty was given on the tonnage of the busses, or masted vessels, so employed. Still English fishermen were unable to compete with the experience and patient perseverance of the Dutch, and it was found necessary to raise the bounty from 30s. to 50s. per ton. This had the desired effect, and the number of busses increased; but the additional 20s. being withdrawn in 1771, the fishery again declined. The American war, and, subsequently, the wars of the French revolution, proved extremely adverse to its extension. At last, in 1808, an act was passed carrying the bounty to £3 a ton on the busses, with a further grant of 2s. per barrel on all herrings caught, whether in busses or boats. This act was further confirmed in 1815, and the bounty per barrel raised to 4s., with the qualification that the herrings should be gutted before curing.

In consequence of the encouragement thus afforded, the fishery was materially extended; but this was effected at a great expense, and had, besides, several bad consequences. The bounties given by government tempted persons without capital or skill to enter into the business, to the great injury of the regular fishermen; so that notwithstanding the extension of the business, it was found, as is invariably the case with all departments carried on by means of a bounty, to be in a very unhealthy state. In consequence partly of the circumstances now stated, and partly in consideration of the real and substantial relief given to the fishery by the abolition of the duties on salt, it was resolved gradually to withdraw the bounty, which totally ceased in 1830. And it may be stated, that though the fishery fell off while the bounty was in the course of being withdrawn, it has since been materially increased, and is now in a better situation than at any former period. From the year 1811 to 1830, the year when the bounty ceased, the greatest number of barrels cured in Great Britain was 442,195; and in the year ending December, 1853, they amounted to 778,039, the largest number cured in any previous year. The quantities cured in each year vary considerably, according to the abundance of the shoals that appear upon the coasts in different seasons; but since 1838, the annual quantity cured has never fallen below 500,000 barrels, while for the 25 previous years they would scarcely average 300,000. In 1851 there were exported 239,330 barrels of the declared value of £228,835.

The cod fishery is next in importance to that of the herring. It is carried on in a great variety of places contiguous to the British shores. The finest fish is caught round the edges of the Dogger Bank, but within these few years London has been principally supplied with cod taken between Yarmouth and the Nore. The fisheries in the neighborhood of the Shetland and Orkney Islands, are productive and valuable, but the great bank of Newfoundland is the principal station of the distant cod fishery. About 2,000 men are employed in the sole fishery.

Salmon are rarely caught except in estuaries or rivers, which in most instances are private property. It is found in most English rivers, but in such small quantities as to make the fishing an object of little consequence.

England is chiefly supplied from the fisheries in the Scotch and Irish rivers, but from some cause or other there is a growing scarcity in this fish, probably from the weirs or salmon-traps placed in the rivers and estuaries in the way of the fish when ascending the rivers to spawn.

Greenland was first discovered by the English; but in this, as in other branches of navigation she long allowed the Dutch to take a lead. It was not till after 1750 that, the government having granted a bounty of 40s. a ton on every vessel employed in the

whale fishery, a considerable increase took place in this branch.

In 1750, the vessels employed were only 19; in 1756, they had increased to 67. The war soon caused a decrease of one half; but at the return of peace in 1763 this fishery revived, and in 1770 the vessels employed amounted to 50; in 1773, to 55; in 1775, to 96. The American war again caused a decrease, and in 1782 the vessels so employed were only 38. In 1784 they increased to 89, and in 1785 to 140. After this, they exceeded 200 annually till 1793; but the long continuance of the late wars reduced them below half the number employed previously. In 1852, the whale fishery employed ships, of the aggregate burden of 16,113 tons.

The Newfoundland fishery has been considerable for fully a century past. As a nursery for seamen, it is accounted of such consequence as to have formed the object of a specific article in most of the treaties of peace. The fish caught, particularly in time of peace, is sent less to Britain than to the Catholic countries in the south of Europe; a market subject to all the interruptions attendant on a change of political relations. The number of vessels employed in this fishery at different times was as follows:

In 1731	70
1764	140
1774	254

The American war caused a diminution; but

In 1784 the number was	886
1785 " "	292

At this rate the fishery continued until the war of 1793, after which, particularly after the rupture with Spain in 1797, it fell off greatly; the fishing-vessels in 1798 being only 140.

The continuance of war, and the aggrandizement of the French in Italy, occasioned additional depression; so that in 1810 the number of English vessels employed at Newfoundland did not exceed 92. The peace seemed to promise a revival of this important nursery of seamen; and in the year 1816 the number of vessels which arrived in Newfoundland was 795, manned by 6,000 seamen; but the trade, both then and in 1817 and 1818, proved unprofitable, in consequence of indifferent seasons, of the high duty imposed on fish imported in British vessels into Naples, and of the competition of the French fishermen, supported by a high bounty from their government. The total value of fish exported from the British colonies in North America in 1851, was £827,738.

It is a matter of surprise to foreigners that a maritime nation should not have more effectually cultivated this great means of facilitating the support of the people. The ample supply which might have been afforded by the Nymph Bank, on the south-east coast of Ireland, has been avowedly neglected; and it was only in 1818 that the discovery of a bank of almost equal productiveness in the vicinity of Orkney, was made.

Fish is little known to the mass of the people in the inland counties, though the facilities of transport afforded by the railways is gradually distributing it in larger quantities. London has always been amply supplied. Mr. Mayhew, in his pamphlet on "London Labor and the London Poor," estimates the weight of fish annually consumed in London at above 450,000,000 pounds, besides an enormous quantity of shellfish. Calculating the fish of all kinds at 3d. per lb. on an average, the amount would exceed £5,000,000 sterling. See the article FISHERIES.

Manufactures.—In this great department of English productive industry, we begin with woolens, which, although no longer the largest of these manufactures in point of exportation, nor even in the value annually made, is entitled to the first place from the priority of its establishment, as well as from the substantial basis on which it rests. England, from the extent of her pastures, abounded in wool from a very remote age, and the inhabitants were doubtless capable of manufacturing it into rude clothing; each weaver working in his separate cottage, and with very little aid from machinery. In the 12th and 13th centuries she appears to have had only the most humble fabrics, and to have imported all cloth of finer texture; sending abroad her wool in quantities to Flanders, a country the inhabitants of which were at that period much further advanced than the rest of Europe, with the exception of Italy. It was in the middle of the 14th century that a better system was introduced. Flemish manufacturers were invited over to England, and improved greatly the quality of her home-made woolens. The seats of this branch of industry appear at that time to have been Kent and Essex; afterward Gloucestershire, and subsequently the West Riding of Yorkshire. It occupied at first the southern and more improved districts, and spread afterward to the northward, on account of the cheapness of labor, the abundance of coal, and the convenience of water-falls for the machinery. The general character of the woolen manufacture of England has been that of slow progress, but of little fluctuation; the latter evidently a consequence of its depending more on home-consumption than on exportation. In the long period from 1700 to 1780, the exports experienced a regular, but not rapid rise, amounting in the latter years to about £3,500,000, while the home-consumption increased in proportion to her augmenting numbers. More recently the manufacture has been materially improved by the adoption of various important mechanical inventions in the spinning, weaving, and dressing departments. On the whole, however, improvement has been much less rapid in it than in the cotton manufacture; so that while her exports of cotton stuffs and yarn have increased beyond all precedent, those of woolens have been comparatively stationary.

As we shall enter fully, in the article WOOLEN MANUFACTURE, into the details connected with its history, progress, and present state, it would be useless, even if our limits permitted, to anticipate these here. We shall only observe, therefore, that the entire value of the manufacture is estimated at about £25,000,000. According to the census of 1851, there were employed in the various branches of the woolen manufactures 176,131 males, and 118,642 females. By far the largest proportion of the raw material of the manufacture is the produce of her own flocks; but for many years past she has imported large quantities. Previously to 1800 the average imports did not exceed 3,000,000 lbs., mostly brought from Spain, the wool of which long maintained a high character. In 1800 the imports increased to 9,000,000 lbs. Since then they have gone on increasing, till, in 1852, they reached 93,761,458 lbs., of which 48,197,601 lbs. came from her own dependencies in Australia. In 1831 the exports of woolen manufactures amounted to £5,232,013. Since then they have annually increased, till, in 1852, they reached £8,730,934. For an account of the prices and qualities of wool, etc., the reader is referred to article WOOL.

The cotton manufacture of England is entitled to the greatest attention on different accounts. Of all her manufactures, it affords the largest export, and exhibits the most rapid improvements in machinery. Its introduction, though not remote, is less recent than is commonly supposed. It appears to have taken place early in the 17th century, when it was established at Manchester; but it was long conducted upon a very limited scale. The raw material, imported at first only from the Levant, in particular from Smyrna, began, after 1660, to be supplied by her West India colonies. The quantity imported amounted, about the year 1700, to 3,500 bales; but, increasing with the extended cultivation of her colonies, it averaged, about the year 1720, something more than 7,000 bales. From the colonial conquests of the war of 1756 her import of

cotton received further augmentation; but the manufacture increased very slowly, a great part of her cotton being re-exported to Holland, for the supply of Dutch and German weavers. It was not till after the peace of 1763, and the invention first of the carding machine, and next of the spinning-jenny, that this manufacture became considerably extended. In 1775, the average import of cotton approached 18,000 bales. A variety of inventions, unequaled in the history of manufacturing industry, were now made (see article on the COTTON MANUFACTURE), which gave an astonishing stimulus to the business. Fine calicoes and muslins were introduced; the workmen were withdrawn from their detached dwellings, and collected into large factories; and the price of the finished article experienced a reduction, notwithstanding a rise in the raw material, and in the wages of labor. The period which followed the peace of 1783 is perhaps unexampled for the reduction of price, and the consequent extension of sale that took place in regard to cotton goods. The commencement of hostilities in 1793 gave a pretty severe shock to the business; but the improvements in machinery continuing, the manufacture soon recovered, and has gone on increasing, under many vicissitudes, with a rapidity unparalleled by any other business, either in that or any other country. Neither does there seem to be any ground for fearing that this progress will be speedily checked. On the contrary, her superiority in the majority of what contributes to the advancement of the manufacture is so very decided, that, provided the public tranquillity be preserved unimpaired, she need not fear from the competition of others.

The reader is referred to the article "COTTON MANUFACTURE" in this work for an account of the rise and progress of this great branch of national industry, and for tabular statements, exhibiting the present magnitude and importance of the trade, the sources whence the raw cotton is derived, and the foreign markets for the raw material and manufactured articles.

Hardware.—We have already noticed the surprising increase in the produce of the iron mines of England since 1780. This increase of the raw material, joined in some cases to the command of coal in the vicinity, and in all to a facility of conveyance of coal and iron by canals and railroads, has, in the last 50 years, given a great extension to her hardware manufacture. In no department has the subdivision of employment been carried to so great a length; in none are its effects in cheapening production so conspicuous. Birmingham and Sheffield are the two great workshops for English hardware; the latter is confined to iron and steel, while in the former not only iron and steel, but copper and brass, constitute the materials of labor. Sheffield fabricates articles which are less for ornament than utility, and which possess in general a certain bulk, such as grates, spades, sickles, files, knives, fenders, fire-irons; while in Birmingham there is, in addition to articles of solidity, a surprising variety of toys, fancy goods, and petty manufactures; each trifling, when considered separately, but the whole forming an aggregate of great value. The most insignificant of these, such as a brass cock or a button shank, passes through a number of hands, and each artizan performs only a single operation. He thus acquires an extraordinary dexterity in his limited department, and in the course of a day despatches several hundred, perhaps even a thousand articles, through his particular stage; the result of all which is, that the price, when sold in quantities, is incredibly low. Another and very interesting feature in the situation of Birmingham, is the populousness of its neighborhood. Yet in none of the large towns of England is living less expensive; an advantage owing partly to the abundance of coal, partly to the ready supply of milk and vegetables from the wide space occupied by the population.

Nails.—The nail trade is carried on, not in the town of of Birmingham, but in a part of the surrounding district. It is computed, by the census of 1851, to employ, in England and Wales, 16,965 males, and 9976 females, of whom 7625 are under 20 years of age; for even this heavy article admits of subdivision of employment, which lightens the labor, and enables the workman to avail himself of the aid of his family. Of the two towns, Sheffield is by much the more ancient; the command of coal and iron in the same neighborhood having rendered it, so far back as the 13th or 14th century, a place for the fabrication of the homely articles used in those days by our ancestors. It is about a century since its razors, knives, and files began to take a more delicate shape. Birmingham, however, embraced a wider range, and advanced with much greater rapidity; but Sheffield also has its adjacent district, inhabited by manufacturers, though to a much less extent than the vicinity of Birmingham. This district, called Hallamshire, extends six or seven miles to the west of Sheffield.

Hardware is made in several other places, such as Lilston, Wolverhampton, Dudley, and Walsall. Each of these towns is situated in Staffordshire, and, in point of manufacture, is small only in comparison with Birmingham or Sheffield. Articles apparently very trifling are manufactured to a surprising extent in different places, such as pins at Gloucester, needles at Red-ditch in Worcestershire, watch-movements and main-springs at Prescott in Lancashire. The total value of articles of iron, steel, brass, and copper, including the manufacture from its earliest to its most finished stage, is necessarily fluctuating, but may be computed at £30,000,000 annually; two thirds of which appear to be consumed at home, while the other third is exported to two great markets—the Continent of Europe and the United States of America. The number of persons employed in the hardware manufacture in England in 1851 was about 465,000. In the United States, iron and coal are found, where land and provisions are certainly much cheaper than in Britain; but the scattered state of American population must, during several ages, oppose serious obstacles to the division of employment necessary in all the nicer branches of the hardware manufacture; particularly as the ease with which the Mississippi and Ohio are navigated by steam opens even the Western States to the importation of British goods. Upon the whole, therefore, we look on English hardware manufactures as resting on a solid basis, because in them are combined several advantages:—the raw material, the command of cheap fuel, and the use of machinery, which the more it is adopted, will bring a greater proportion of the work within the compass of women and boys, and thus lessen the proportion borne by wages in the cost of the finished article.

Linen Trade.—Linen has never formed one of the staple manufactures of England, flax having been less cultivated there than on the opposite shore of the Netherlands; a country which, in the 14th and 15th centuries, supplied the rest of Europe with the finest linens and woolens. When England subsequently advanced in manufacturing arts, the abundant supply of wool pointed out the most suitable branch; and she was contented to continue her imports of linen from the Netherlands, from France, and from Germany, or to favor the manufacture of the sister island in a department which did not excited her jealousy. In Ireland, the linen manufacture dates about two centuries ago, and is said to have owed much of its extension to the measures of the unfortunate Wentworth, in the reign of Charles I. The annual consumption of linen in England a century ago was probably not far below that of her double population at present, owing to the very general substitution in our time of cotton articles. At that time the linen manufacture of England was established chiefly in Lancashire and Cumberland, and in a county very remote from these, namely, Dorset-

shire. In 1745, government, apprised of the extension of the manufacture of coarse linen in Silesia and other parts of Germany, and actuated by the fallacious notion of making a monopoly of all kinds of productive industry, granted a bounty of 1¼d. per yard on the exportation of all British linen of a value from 6d. to 18d. per yard; in other words, a premium of 20 or 25 per cent. on the prime cost of all inferior qualities exported. So large a grant soon augmented the manufacture of osnaburgs and other coarse cloths, particularly in Scotland, although the ratio of increase was infinitely smaller than in the case of cotton, where there was no premium, but a rapid improvement of machinery. The demand for bounty in the ten years ending in 1785, was about £88,000 annually. More recently these impolitic issues were greatly increased; but at length the impolicy of forcing a manufacture in this way having become obvious to every one, the bounties, after being gradually reduced, ceased finally in 1830.

The manufacture is principally carried on in the West Riding of Yorkshire, its chief seat being in Leeds and its neighborhood, and in Lancashire, Dorset, Durham, and Salop.

Ireland and Scotland, particularly Dundee, are both superior to England in the manufacture of linen. But some of the flax mills established at Hull are on a more extensive scale than any other in the empire.

	1851.	1852.
The exports of linen manufactures from Great Britain and Ireland in 1851 and 1852 were of the declared value of	£3,822,935	£3,872,491
Thread and small wares	284,461	359,295
Linen yarn	951,426	1,140,565
	£5,058,822	£5,372,351

Silk Manufacture.—In the silk manufacture, as in the linen, England has had to contend with a formidable opposition in other countries, particularly in France and Italy; and she has also had to import the whole of the raw material. It would therefore hardly have been attempted by her countrymen, but for the great profits expected from an article of general use among the higher classes. Its introduction goes back to the 15th century. About the beginning of the 17th it seems to have been carried to a considerable extent, owing certainly not to the luxury of the age, nor to any great proportion of affluent persons in the community, but to silk being almost the only article of apparel in which the vanity of dress could display itself. Toward the end of the reign of Charles II., about the year 1680, raw silk began to be imported in quantities from India; and the English manufacture received a substantial addition by the numbers and ingenuity of the Frenchmen who settled in that country after the revocation of the edict of Nantes in 1683. Various circumstances thus contributed to preserve and extend the manufacture, which continued rather upon the increase till the general substitution of cottons for silks about 1790. This gave a serious shock to the manufacture, from which it recovered only by slow degrees. Its situation had not indeed been at any time prosperous; and the continued complaints of the manufacturers occasioned within these few years a fundamental change in the policy under which it had previously been conducted.

From the first introduction of the manufacture into England down to 1825, foreign silks were either positively or virtually excluded. But the monopoly which was thus secured to the manufacturers produced, what all monopolies invariably do, an indifference to improvement. Instead of trusting to the ingenuity or to the superior skill which they might have called to their aid for preserving their ascendency in the market, the manufacturers depended upon the custom-house regulations, and additional penalties on smuggling. In consequence, invention was quite at a stand. Such, indeed, was the influence of the system in this respect, that in 1826 the member for Coventry (Mr. Edward Ellice) affirmed in his place in the House of Commons that the improved silk looms in use in various parts of the Continent enabled the workman to execute *five* times as much work as he could do in England; while in every business not protected by a monopoly the result was precisely opposite. At length, after a great deal of discussion, it was resolved to adopt a more liberal system. In 1825, a bill was in consequence passed, allowing the importation of foreign silks on payment of an *ad valorem* duty of 30 per cent., accompanied, however, by the effectual reduction of the singularly oppressive duties which had previously been imposed on the imports of raw and thrown silk. This measure, though vehemently opposed at the time, has proved most successful. We think that the silk trade has made more progress since 1826, when the new system was introduced, than it did during the whole of the preceding century. The following quantities of the raw and thrown silk were imported into the United Kingdom in

Years.	lbs.	Years.	lbs.
1822	2,680,568	1850	5,411,934
1832	4,224,897	1851	5,020,979
1849	5,606,242	1852	7,309,917

This table shows conclusively that the manufacture has increased nearly 200 per cent. since the adoption of those sound and liberal measures which have been the theme of so much ignorant invective. It is of importance, too, to observe, that not only the imports of raw silk, but also the exports of manufactured silk goods, are rapidly increasing. The following table shows this:

1822	£384,708	1851	£1,926,778
1832	529,990	1852	1,551,866
1850	1,225,641	1853	2,044,912

It is plain, therefore, that the manufacture is not increasing merely by reason of an increased demand in the home market, but because England is rapidly gaining on her rivals in the markets of foreign countries. This affords unquestionable evidence of the improvement as well as the extension of the manufacture. In 1852 her exports of wrought silks to France amounted to £257,555, and to the United States to £464,590.

Leather, however little it may figure as an article of export, is necessarily one of extensive home consumption in every civilized country, particularly in such a climate as that of England, and where there are so many rich and sumptuous equipages. It is matter of regret that there are so very few data, official or otherwise, on which to form an estimate of the export or import of hides in former ages. Such an estimate would possess interest, as indicating the extent of her pasturage and the number of her cattle in comparison with her population. Whatever may have been the case at a remote date, the custom-house returns, for many years past, show, by the annual imports, that the demand for leather has greatly exceeded the home supply of hides. For a long time this importation took place from the Continent of Europe, and from the least civilized quarters; from countries such as Lithuania and Poland, where the quantity of hides furnished by the cattle materially exceeds that of the leather required by the inhabitants. But since the opening of the trade to South America, it has been found more advantageous to import hides from that continent, where the herds of wild cattle are so numerous as to meet the eye of the traveler in almost every point of the horizon.

On an average, there are imported annually about 2,000,000 hides, tanned and untanned. The quantity of leather annually made in England and Wales may be estimated at about 50,000,000 lbs. The largest tanneries are at Bermondsey, in Southwark; but there are also very extensive establishments of the kind in the country, as in Cheshire, Lancashire, Westmoreland, Cumberland, and also in Lincolnshire. The late war, by its long continuance, and the magnitude of her army and navy, produced great orders from gov-

ernment for her leather manufacture. Shoes were and still are made wholesale in several towns of Staffordshire, Cheshire, and Northamptonshire; but those made in London, by the principal dealers, are, though expensive, by far the best.

Of the annual value of the leather manufactured into shoes, boots, harness, saddlery, etc., there are no means of forming a correct estimate; but we have merely to consider the population of England, and the unavoidable extent of their wants, to be satisfied that from £10,000,000 to £12,000,000 are rather below than above the mark. But while her home consumption is so considerable, her export is comparatively small—in ordinary years not exceeding £800,000; but in 1853 the exports of manufactured leather rose to £1,578,595. This large increase was probably occasioned by the reckless consignments to Australia. The leather shipped to Ireland is merely tanned: to other countries the exports are in a manufactured shape. The duty on leather was wholly abolished in 1830.

Connected with the general manufacture of leather is the glove trade, a branch of no inconsiderable extent, being carried on in several of the midland and western counties, viz., at Woodstock, Worcester, Ludlow, Hereford, Yeovil in Somersetshire, etc. This branch of industry enjoyed for a lengthened period the protection of monopoly, which, however, was abolished in 1825. Many contradictory statements have been made as to the effects of this measure. We believe, however, that the depression so much complained of has not been produced by it, but by the substitution of cotton gloves for those of leather; and we have no doubt that, had it not been for the greater cheapness and improved quality of leather gloves, caused by the abolition of the monopoly, this substitution would have been carried much farther than it has been. The increased imports of the lamb and kid skins, used in the manufacture, show conclusively that it is not declining.

The manufacture of paper, and the trades connected with it, such as printing, bookselling, bookbinding, etc., give occupation to between 60,000 and 70,000 persons. From the excise returns, it appears that the quantity of paper of all kinds manufactured in England in 1852 was 114,522,804 lbs.; and the duty, which is at the rate of 1½d. per lb., plus 5 per cent., amounted to £751,546. It is difficult to say what portion of this was used in printing books, and how much was consumed by the newspapers; but the quantity used by some of the latter is so great, that a single newspaper, *The Times*, is said to consume about 50 tons a week.

We come next to a branch of industry of a very different description, namely, the brewery, the amount of capital and labor invested in browing establishments in England is very large, and particularly striking to those who have lived on the Continent, and have contrasted the situation of England with that of the wine countries of the south of Europe. It is only in Flanders and Germany that breweries are numerous; and in the latter, from the limited capital, and the scattered state of their population, there are hardly any of those large establishments which exist in London.

AN ACCOUNT OF THE TOTAL NUMBER OF QUARTERS OF MALT MADE BETWEEN THE 5TH DAY OF JANUARY, 1852 AND THE 5TH DAY OF JANUARY, 1853, IN THE UNITED KINGDOM; DISTINGUISHING THE QUANTITY MADE IN EACH COUNTRY, AND THE QUANTITY USED BY BREWERS AND VICTUALERS, AND BY RETAIL BREWERS; AND SIMILAR ACCOUNT FOR THE YEAR ENDING THE 5TH DAY OF JANUARY, 1854.

	YEAR ENDING 5TH JANUARY, 1853.				YEAR ENDING 5TH JANUARY, 1854.			
	Quarters of Malt made.	QUARTERS OF MALT USED			Quarters of Malt made.	QUARTERS OF MALT USED		
		By brewers and victualers.	By retail brewers.	Total.		By brewers and victualers.	By retail brewers.	Total.
England	4,485,458	3,445,245	481,007	3,926,252	4,580,730	3,576,166	487,128	4,063,294
Scotland	491,474	150,386	....	150,386	520,479	164,677	....	164,677
Ireland	207,134	160,698	....	160,698	203,759	160,929	....	160,929
United Kingdom	5,134,061	3,756,324	481,007	4,237,331	5,254,968	3,901,772	487,128	4,388,900

Quantities of spirits charged with excise duties in the United Kingdom in

	Gallons.
1850	23,901,432
1851	24,030,933
1852	23,270,202

The quantity of beer brewed in England in 1830 was 4,678,428 barrels. The duty on beer having ceased on the 10th of October, 1830, there are no subsequent accounts of the quantities brewed. There can be no doubt, however, from the increased quantity of malt, that the production of beer has likewise greatly increased.

Spirituous liquors.—Spirituous liquors form one of the branches of manufacture in which England is dependent on her neighbors, as she imports an annual supply of corn spirit from Scotland and Ireland, rum from the West Indies, and brandy from France. It has been generally supposed that the consumption of gin has increased materially in England since 1825, when the duties were reduced. We are, however, inclined to doubt whether such be really the case, and are disposed to believe that the effect is more apparent than real; in fact, that it has resulted rather from a diminution of smuggling than from a positive increase of consumption. That such has been the case in Scotland and Ireland is beyond all question; and there seem no reason to conclude that it is otherwise in England. For tables of the quantity of malt used in 1853, and of the quantities of spirit charged with excise duties in 1850, 1851, 1852, see article BREWING.

To the remaining manufactures the limits allow of little space, though several of them would be accounted of great importance in any other country than England. The extent to which such articles as soap and paper are made in England is amply shown by the excise returns; but the list of her exports is of more consequence to the political economist, not from the vulgar notion that it is by export only that national profit is realized, but as indicative of those commodities for which she possesses, in her soil, her climate, or her colonial possessions—advantages that give them a superiority over their neighbors. Thus, in the case of glass, the abundance and cheapness of her coal enables her to make an annual export of above £500,000. In the manufacture of hats, likewise, her command of wool for the coarser kind, and of furs from her North American colonies for beaver hats, enables her to ship to an extent of nearly 45,000 dozen, or £44,000 a year. In earthenware England has the advantage of clay, of fuel, and of ready communication by canals. These, joined to the taste and ingenuity of individuals engaged in the manufacture, carried it, in the course of the 18th century, to an extent which has rendered it a national object—a tract of 7 or 8 miles in Staffordshire, called the Pottery District, being almost entirely appropriated to it. The population of this tract is about 60,000. The great outlet is Liverpool, and the shipments take place partly to the United States—partly to the continent of Europe. Exports (comprising porcelain) in 1853 reached £1,337,911 in real value.

The stocking manufacture is carried on chiefly in the counties of Nottingham, Derby, and Leicester. It formerly employed great numbers of women in knitting; but in this, as in most other branches, machinery has greatly superseded manual labor. Lace is made in vast quantities in the midland counties; and here also machinery is extensively applied. And so

extraordinary has been the progress of invention in this department, that British lace at present commands a ready sale in all foreign markets, and is largely smuggled even into France.

Commerce and Shipping.—With Ireland the intercourse of England is very great—that country sending them grain, salted and fresh provisions, live cattle, butter, etc., to the amount of £6,000,000 or £7,000,000 annually, and taking largely in return her manufactures, particularly cotton, woolen, and hardware.

North of Europe.—From Russia her chief imports are tallow, hemp, flax, corn, linen, timber, pitch, etc.; from the Swedish dominions, iron and timber; from Poland, wheat, timber, and potash; from Prussia, wheat, timber, and flax. All these countries take her cottons, hardware, and colonial produce.

Central part of Europe.—From Holland her imports are not foreign merchandise, as in the 17th century, when the Dutch were the carriers of Europe, but agricultural produce, as oats, wheat, seeds, hemp, cheese, butter; also gin; the whole to a large amount; in return for which the Dutch take her hardware, cottons, and woolens. From France her imports have long been burdened with heavy duties, but still they are large and increasing, consisting chiefly of wine and brandy, silk, lace, gloves, etc. With Germany, her chief intercourse is through the medium of Holland and Hamburg. With these countries her exports are large, particularly in cottons, hardware, and colonial produce. Her imports are also very various and large, consisting of wool, corn, flax, timber, linen, and wine, from the vicinity of the Rhine.

South of Europe.—Here we enter on countries of much less industry. From Portugal England takes wine in very large, and fruit in smaller quantities, in return for her cottons, her woolens, and her hardware. From Spain she receives wool, wine, brandy, oil, fruits, barilla, etc. Italy, without any commercial treaty, takes a large quantity of her manufactures, and gives in return silk, oil, and fruit. With the Levant her traffic is similar—consisting of an export of manufactures, particularly printed cottons and hardware, and of an import of silk, fruit, and drugs.

The United States are, notwithstanding their tariff, her best customers, receiving from England manufactures of almost every kind to a great amount, and sending her in return vast quantities of cotton, tobacco, rice, and flour; but the merchandise received from the United States being far inferior to the value of English exports, the difference is paid by remittances in money from the continent of Europe, arising from American merchandise sold there. With South America a wide field of commercial intercourse has been opened; at present, however, the chief articles received from that vast region are bullion, hides, skins, indigo, and cochineal. The trade is, and will long be subject to the various disadvantages of a newly-settled country, bare of capital, deficient in industry, and possessing but a small number of consumers of European commodities in proportion to its extent and fertility.

COMMERCE OF THE UNITED STATES WITH ENGLAND, FROM OCTOBER 1, 1820, TO JULY 1, 1856.

Years ending.	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage Cleared.	
	Domestic.	Foreign.	Total.	Total.	Exported.	Imported.	American.	Foreign.
Sept. 30, 1821.....	$16,339,109	$2,125,504	$18,464,703	$28,180,582	$1,933,665	$645,529	123,729	19,546
1822.....	21,072,895	1,029,224	22,101,619	32,103,947	796,218	99,920	151,030	30,238
1823.....	18,968,185	978,474	19,946,659	26,901,270	365,632	282,822	132,042	50,784
1824.....	18,218,841	1,268,282	19,487,123	26,647,922	312,112	149,164	140,125	42,810
1825.....	32,090,390	2,031,186	34,127,576	34,271,510	303,266	82,988	172,409	39,242
1826.....	19,065,185	1,569,023	20,634,208	24,362,203	698,077	122,216	147,455	41,801
1827.....	28,514,421	904,596	24,419,017	28,653,883	200,101	84,111	202,976	63,706
1828.....	18,737,601	2,960,261	21,697,922	30,476,189	2,852,209	20,972	183,358	75,588
1829.....	21,281,894	1,767,457	23,048,791	28,892,763	678,839	89,826	179,849	60,722
1830.....	23,778,020	820,946	24,599,966	22,755,040	112,229	144,231	192,714	58,589
Total...	$218,066,541	$15,461,043	$228,527,584	$272,650,539	$82,47,842	$1,621,679	1,580,676	482,521
Sept. 30, 1831.....	$23,841,430	$2,867,480	$31,208,869	$41,854,328	$1,615,643	$190,880	235,845	83,461
1832.....	26,632,768	2,875,137	29,510,905	41,849,096	1,112,296	88,639	189,579	96,615
1833.....	29,582,678	1,459,763	31,085,441	36,668,815	244	31,908	183,928	87,692
1834.....	38,674,804	2,974,726	41,648,420	45,566,065	270	5,805,618	210,258	89,836
1835.....	47,990,532	945,809	48,936,341	59,066,980	39,037	1,303,488	215,510	89,582
1836.....	53,302,483	1,874,747	55,177,220	75,761,713	2,500	2,322,920	238,817	78,450
1837.....	46,285,102	4,884,768	51,119,870	48,546,757	1,883,070	116,299	268,068	67,125
1838.....	48,899,888	1,545,188	50,445,076	44,191,851	10,185	9,009,846	341,616	76,663
1839.....	54,615,827	3,853,108	58,568,435	64,863,716	3,163,490	1,420,092	289,486	92,685
1840.....	51,951,778	5,096,882	57,048,660	88,114,133	4,893,786	808,806	388,512	129,218
Total...	$426,728,075	$27,970,562	$454,699,237	$479,482,958	$12,160,527	$21,027,886	2,543,397	871,287
Sept. 30, 1841.....	$44,184,357	$3,871,220	$47,555,577	$45,780,007	$3,018,137	$580,330	272,631	130,768
1842.....	36,681,808	2,932,140	39,613,948	33,446,499	1,702,748	205,919	285,479	139,054
9 mos. 1843.....	37,149,095	1,106,064	38,255,159	26,141,118	400	14,305,714	329,035	163,174
June 30, 1844.....	45,814,942	1,125,214	46,940,156	41,470,081	85,706	1,131,959	311,741	192,563
1845.....	41,518,934	4,767,244	46,286,178	44,687,859	3,679,137	180,828	374,846	198,021
1846.....	42,781,619	1,458,489	44,540,108	43,844,160	978,116	482,711	364,149	183,942
1847.....	70,223,777	834,921	71,058,698	65,170,374	8,055	10,312,030	457,598	300,555
1848.....	62,923,024	8,024,291	71,852,315	59,763,502	9,318,633	1,916,952	476,548	258,210
1849.....	69,161,992	1,880,878	71,042,870	58,818,425	764,097	2,071,792	574,018	340,900
1850.....	64,086,959	4,210,271	68,897,230	72,118,971	2,534,185	527,266	440,582	269,078
Total...	$515,131,507	$30,910,732	$546,042,229	$491,196,996	$22,078,208	$41,816,601	3,889,527	2,186,185
June 30, 1851.....	$105,121,921	$8,151,266	$113,273,187	$90,612,238	$17,099,081	$1,098,667	621,566	274,888
1852.....	107,788,657	4,580,185	112,324,842	88,119,859	34,302,284	1,187,484	679,488	306,017
1853.....	112,778,859	3,209,264	115,987,623	125,774,292	18,631,900	284,799	664,892	429,174
1854.....	135,111,708	5,563,691	140,675,399	140,388,793	27,026,393	82,156	858,970	438,246
1855.....	129,475,967	6,158,178	135,629,145	102,436,293	47,858,015	167,481	891,464	293,945
1856.....	152,561,975	1,517,560	154,079,535	118,045,544	34,161,062	421,971	928,617	339,109

For a more extended account of the commerce of England, as well as of Great Britain, see GREAT BRITAIN.

From Asia England imports tea, indigo, cotton, coffee, sugar, piece goods, ivory, drugs, etc. Her principal article of export is cotton goods, for which, how singular soever it may appear, India has, since the opening of the trade in 1814, become one of the very best markets. Besides cotton stuffs and yarn, she sends to Asia woolen goods, copper, and a great variety of other articles.

From Africa England imports drugs, ivory, teak wood, hides, etc. Her exports are but inconsiderable, consisting principally of cotton and linen manufactures. The hopes so frequently entertained, of opening an advantageous trade with the interior of Africa, have hitherto been altogether disappointed, and it is not supposed they will be more successful in future.

The recent discovery of the gold fields in Australia, and the consequent influx of immigrants into that country, have made it an important market for England's produce and manufactures. The declared value of her home produce and manufactures exported to the Australian colonies, including Van Dieman's Land and New Zealand, in 1850, was £1,574,145, while in 1851, 1852, and 1853 it respectively amounted to £2,807,356, £4,222,205, and £14,506,532. The number of ships that cleared from the United Kingdom for the various Australian colonies was 272 in 1851, 568 in 1852, and 1201 in 1853. A return of the exports and imports to the Australian colonies for 1851, 1852, and 1853, shows some curious results. The exports for 1853 exhibit in some instances an extinction, and in almost every article a decline, except wool, and of course gold, which is not noticed in the return; thus tanners' bark, of which 85,894 cwts. were exported in 1852, was reduced to 4776 cwts. in 1853; and tanned hides, of which 642,198 lbs. were exported in 1852, only amounted to 9842 lbs. in 1853; while untanned hides rose from 20,243 cwts. in 1852, to 41,987 in 1853. Flax and hemp, guano, wine, timber, tortoise-shell, whale-fins, etc., all declined or disappeared from the return. So did copper and lead ore; but copper, partly wrought, that is, in bars, rods, or ingots, increased from 373 tons in 1852, to 686 tons in 1853. Quicksilver fell from 14,631 lbs. in 1852, to 6933 lbs. in 1853; and wool rose from 43,197,301 lbs. in 1852, to 47,075,963 lbs. in 1853.

The amount of exports in 1851 being doubled in 1852, and quintupled in 1853, and probably increased still more in 1854, could not fail to cause a glut in the market, which has produced great embarrassment in the colony, and entailed heavy losses on the speculators.—E. B. For complete statistics of Great Britain, see article GREAT BRITAIN.

English Channel (called by the French *la manche*), is that part of the Atlantic Ocean which lies between the north-west coast of France and the southern coast of England. Its eastern extremity is connected with the German Ocean by the Strait of Calais, and on the west it is imperceptibly confounded with the Atlantic Ocean. It lies between lat. 38° 48′ and 51° north, and long. 1° 20′ east and 5° 43′ west. At its termination—on a line drawn from Land's End to the extreme easterly point of the department of Finisterre, in France, it is about 40 leagues wide. On the French coast it forms three considerable bays; the most easterly receives the Severne; the second receives the Seine and several smaller rivers; the third and largest lies on the south-west of the peninsula of Coteulin. On the English coast is Mount Bay, between Lizard Point and Land's End. Between Lizard Point and Start Point is a large gulf, on which are situated Falmouth and Plymouth; the Gulf of Exeter lies to the east of Start Point. The principal islands in the English Channel are, the Isle of Wight, on the English coast, and the Norman Islands, lying on the French coast, the principal of which are Guernsey and Jersey. The prevailing winds are from the west. The Channel, being shallow and confined, is subject, from its communication with the Atlantic, to high and impetuous tides. Its waters contain many fish, of which the most important are the mackerel and the herring. The oysters of Cancal are also famous.

Engraving (Sax. *grafan*, *to dig*). The art of producing by incision or corrosion designs upon blocks of wood, plates of metal, or other materials, from which impressions or prints upon paper or other soft substances are obtained by pressure. Engraving, as an art, seems to have nearly the same relation to design and painting as typography bears to written language; and its utility and great importance must be obvious to every one from its capability of giving a boundless circulation to representations of the most valuable examples of the arts and of objects connected with science. By some authors it is placed among the representations called monochromes (*μονοχρώματοι*). Xylography, or wood engraving, was the earliest method practiced; but its origin is involved in obscurity. If we might rely on Du Halde (*Description, etc., de l'Empire de la Chine*, 4to. 1735), it is possible that it was known in China 1120 years before Christ; though we think its invention is of a much later period, as the Chinese were not acquainted with the art of making paper till 95 B.C. It has been stated that this art was introduced into Europe from China through the intercourse of the Venetian merchants with its inhabitants; for it is proved that engraving on wood had been practiced in that part of Italy which borders on the Adriatic as early as the 13th century. The first wood engravings in Europe of which any thing is known with certainty were executed in 1285, by a brother and sister of a noble family of the name of Cunio. They represent the actions of Alexander; and though doubts of their authenticity are expressed by Heinecken, Mr. William Young Ottley, the author of the elegant and learned *History of Engraving*, to which we are much indebted, thinks otherwise. But for the accidental discovery by a Venetian architect of the name of Temanza of a decree of the magistracy of Venice, in 1441, we might have been without positive proof of the practice of the art in Italy previous to 1467, and the Germans might still have continued to claim the honor of its introduction into Europe. This decree, dated 11th October, 1441, states in substance that the art and mystery of making cards and pointed figures had fallen to decay owing to their extensive importation; and in order that the native artists might find encouragement rather than foreigners, it was ordered that no work of the said art, printed and painted on cloth or paper—viz., altar pieces, or images, and playing-cards, and whatever other work of the said art is done with a brush and printed—should be allowed to be brought into the city, on pain of forfeiting the works, besides a pecuniary penalty. This decree plainly indicates that wood engraving was practiced in Venice as early as the commencement of the fifteenth century. In Germany and the Low Countries, the early block books seem to have existed as early as 1420, and to have given Gutteuburg the hint for using movable types. At Rome, in 1467, a work entitled *Meditationes Johannis de Turrecremata*, issued from the press of Ulric Han, embellished with wood engravings, in which the design and execution of an Italian artist are evident. The decorations of the work of Valturius by Matteo Pasti, of Verona, published five years afterward, exhibit considerable spirit and accuracy; and before the end of the fifteenth century the art had been carried to great perfection, as may be proved by the delicacy and purity with which the designs are engraved in the celebrated Hypnerotomachia of Colonna. At this period, however, the discovery of copper-plate engraving had been made, and to this the more ancient art yielded place. Maso Finiguerra, a goldsmith and sculptor of Florence, and pupil of Masaccio, about the middle of the fifteenth century, seems from the most authentic accounts to have been the person to whom the world is indebted for the discovery. In his time, and for a considerable period previously, it was the practice to decorate church and other plate with works in *niello*, which were designs hatched with a steel point upon gold or silver, then engraved with the burin, and run in, while hot, with a composition called niello—a compound of silver, lead, copper, sulphur, and borax, which was more easily fusible than silver, and of a black color. The superfluous part of this niello which remained above the surface of the plate was then rubbed off with scrapers, and cleaned away with pumice-stone, leaving the engraved design on the plate with all the effect of a print. In order to pre-

serve copies of their designs, the artists were in the habit before filling the design with the niello to take impressions of the plates with earth, over which liquid sulphur was poured, and from which, when cold, the earth was removed. But Finiguerra carried his practice beyond this; for with a mixture of soot and oil he filled the cavities of the engraving, and by pressing damp paper upon it with a roller, obtained impressions on the paper, having, as Vasari says, all the appearance of drawings done with a pen, "veniyano come disignate di penna."

Engraving on Wood, or *Xylography*.—In this branch of the art the material used is a block of box or pear-tree wood, cut at right angles to the direction of the fibres, its thickness being regulated by the size of the print to be executed The subject is drawn on the block with a black-lead pencil, or with a pen and Indian ink, taking care that the whole effect is represented in the lines so drawn. The whole of the wood is then cut away, except where the lines are drawn, which are left as raised parts; in which point it is that this mode of engraving differs essentially from copper-plate engraving, wherein the lines are cut out or sunk in the metal, instead of being raised from it. The impressions from wood blocks are taken in the same manner as from printing types.

Engraving on Copper is performed by cutting lines representing the subject on a copper-plate by means of a steel instrument ending in an unequal-sided pyramidal point, such instrument being called a graver or burin, without the use of aquafortis; which mode will be seen below under the art. ETCHING. Besides the graver there are other instruments used in the process; viz., a scraper, a burnisher, an oil-stone, and a cushion for supporting the plate. In cutting the lines on the copper the graver is pushed forward in the direction required, being held in the hand at a small inclination to the plane of the copper. The use of the burnisher is to soften down lines that are cut too deep, and for burnishing out scratches in the copper: it is about three inches long. The scraper, like the last, is of steel, with three sharp edges to it, and about six inches long, tapering toward the end. Its use is to scrape off the burr, raised by the action of the graver. To show the appearance of the work during its progress, and to polish off the burr, engravers use a roll of woolen or felt called a rubber, which is put in action with a little olive oil. The cushion, which is a leather bag about nine inches diameter filled with sand for laying the plate on, is now rarely used except by writing engravers. For architectural subjects, or in skies, where a series of parallel lines are wanted, an ingenious machine was invented by the late Mr. Wilson Lowry, called a ruling machine, the accuracy of whose operation is exceedingly perfect. This is made to act on an etching ground by a point or knife, connected with the apparatus, and bit in with aquafortis in the ordinary way.

Etching is a species of engraving on copper or other metals with a sharp-pointed instrument called an etching-needle. The plate is covered with a ground or varnish capable of resisting the action of aquafortis. The usual method is to draw the design on paper with a black-lead pencil; the paper being damped and laid upon the plate, prepared as above, with the drawing next the etching ground, is passed through the rolling press, and thus the design is transferred from the paper to the ground. The needle then scratches out the lines of the design; and aquafortis being poured over the plate, which is bordered round with wax, it is allowed to remain on it long enough to corrode or bite in the lines which the etching needle has made. Etching with a dry point, as it is called, is performed entirely with the point without any ground, the burr raised being taken off by the scraper. Etching with a soft ground is used to imitate chalk or black-lead drawings. For this purpose the ground is mixed with a portion of tallow or lard, according to the temperature of the air. A piece of thin paper being attached to the plate at the four corners by some turner's pitch and lying over the ground, the drawing is made on the paper and shaddowed with the black-lead pencil. The action of the pencil thus detaches the ground which adheres to the paper, according to the degree to which the finishing is carried: the paper being then removed, the work is bit in the ordinary way. *Stippling* is also executed on the etching ground by dots instead of lines made with the etching-needle, which, according to the intensity of the shadow to be represented are made thicker and closer. The work is then bit in. *Etching on Steel* is executed much in the same way as in the process on copper. The plate is bedded on common glazier's putty, and a ground of Brunswick black is laid in the usual way, through which the needle scratches. It is then bit in, in the way above described.

Mezzotinto Engraving.—In this species of engraving the artist, with a knife or instrument made for the purpose, roughs over the whole surface of the copper in every direction, so as to make it susceptible of delivering a uniform black, smooth, or flat tint. After this process the outline is traced with an etching-needle, and the lightest parts are scraped out, then the middle tints so as to leave a greater portion of the ground, and so on according to the depth required in the several parts of the work.

Aquatinta Engraving, whose effect somewhat resembles that of an Indian-ink drawing. The mode of effecting this (the design being already etched) to cover the plate with a ground made of resin and Burgundy pitch or mastic dissolved in rectified spirit of wine, which is poured over the plate lying in an inclined position. The spirit of wine, from its rapid evaporation, leaves the rest of the composition with a granulated texture over the whole of the plate, by which means a grain is produced by the aquafortis on the parts left open by the evaporation of the spirit of wine. The margin of the plate is of course protected in the usual way. After the aquafortis has bitten the lighter parts they are *stopt out*, and the aquafortis is again applied, and so on as often as any parts continue to require more depth. Formerly the grain used to be produced by covering the copper with a powder or some substance which took a granulated form, instead of using the compound above mentioned; but this process was found to be both uncertain and imperfect. In the compound the grain is rendered finer or coarser, in proportion to the quantity of resin introduced. This mode of engraving was invented by a Frenchman of the name of St. Non, about 1662. He communicated it to Jean Baptiste le Prince, who died in 1781, from whom it was acquired by Paul Sandby, who introduced it through the medium of Mr. Jukes into England. It has been practiced in this country with much greater success than elsewhere.

Etching on Glass.—The glass is covered with a thin ground of bees-wax: and the design being drawn with the etching-needle, it is subjected to the action of sulphuric acid sprinkled over with pounded flour or Derbyshire spar. After four or five hours this is removed, and the glass cleaned off with oil of turpeutine, leaving the parts covered with the bees-wax untouched. This operation may be inverted by drawing the design on the glass with a solution of bees-wax and turpentine, and subjecting the ground to the action of the acid.

Engraving on Stone, or *Lithography* (λιθος, *a stone*, and γραφειν, *to write or draw*).—A modern invention, by means whereof impressions may be taken from drawings made on stone. The merit of this discovery belongs to Aloys Senefelder, a musical performer of the theatre at Munich about the year 1800. The following are the principles on which the art of lithography depends: First, the facility with which calcareous stones imbibe water; second, the great disposition they

have to adhere to resinous and oily substances; third, the affinity between each other of oily and resinous substances, and the power they possess of repelling water or a body moistened with water. Hence, when drawings are made on a polished surface of calcareous stone with a resinous or oily medium, they are so adhesive that nothing short of mechanical means can effect their separation from it, and while the other parts of the stone take in the water poured upon them, the resinous or oily parts repel it. Lastly, when over a stone prepared in this manner a colored oily or resinous substance is passed, it will adhere to the drawings made as above, and not to the watery parts of the stone. It was formerly thought that England did not possess a sort of stone like that of Germany suitable to the purposes of lithography; this, however, is now known to be erroneous, as the neighborhood of Bath abounds with it, being the white *lias*, which lies immediately under the blue. It is also found in Scotland. The ink and chalk used in lithography are of a saponaceous quality: the former is prepared in Germany from a compound of tallow soap, pure white wax, a small quantity of tallow, and a portion of lamp-black, all boiled together, and when cool dissolved in distilled water. The chalk for the crayons used in drawing on the stone is a composition consisting of the ingredients above mentioned, but to it is added when boiling a small quantity of potash. After the drawing on the stone has been executed, and is perfectly dry, a very weak solution of vitriolic acid is poured upon the stone, which not only takes up the alkali from the chalk or ink, as the case may be, leaving an insoluble substance behind it, but it lowers in a very small degree that part of the surface of the stone not drawn upon, and prepares it for absorbing water with greater freedom. Weak gum water is then applied to the stone, to close its pores and keep it moist. The stone is now washed with water, and the dabbing ink applied with balls as in printing; after which it is passed in the usual way through the press, the process of watering and daubing being applied for every impression.

There is a mode of transferring drawings made with the chemical ink on paper prepared with a solution of size or gum tragacanth, which being *laid on the stone and passed through the press* leaves the drawing on the stone, and the process above described for preparing the stone and taking the impressions is carried into effect. In Germany many engravings are made on stone with the burin, in the same way as on copper; but the very great inferiority of these to copper engravings makes it improbable that this method will ever come into general use. Perhaps one of the greatest advantages of the art of lithography is the extraordinary number of copies that may be taken from a block. As many as 70,000 copies or prints have been taken from one block, and the last of them nearly as good as the first. Expedition is also gained, inasmuch as a fifth more copies can be taken in the same time than from a copper-plate: and as regards economy the advantage over every other species of engraving is very great.

Zincography.—This art, which is of very recent introduction in this country (so much so, indeed, that but few specimens are as yet to be seen), is similar in principle to lithography, the surface of the plates of zinc on which it is executed being bit away, leaving the design prominent, or in relief. We have seen some beautiful examples of this art, but varying little in their appearance from those of stone engraving.—BRANDE'S *Dict. of Science.*

Engrossing, is "the buying up of corn and other dead victuals, with intent to sell them again."—*Blackstone*, book iv. cap. 42. It has been shown how absurd it is to suppose that this practice should have any injurious influence. But, for a long time, most scarcities that occurred were either entirely ascribed to the influence of engrossers and forestallers, or, at least, were supposed to be materially aggravated by their proceedings. In consequence, however, of the prevalence of more just and enlarged views upon such subjects, the statutes that had been made for the suppression and punishment of engrossing, forestalling, etc., were repealed in 1772, in Great britain. But notwithstanding this repeal, engrossing continues to be an indictable offense, punishable at common law, by fine and imprisonment; though it is not at all likely, were an attempt made, that any jury would now be found ignorant or prejudiced enough to convict any one on such a charge.

Entrepot (French), in *Commerce*, a warehouse or magazine for goods; and hence used to designate a seaport or commercial town which exports the productions of a considerable adjacent territory, and imports foreign goods for its supply.

Envoy (Fr. *envoyer, to send*), a person deputed to negotiate a treaty, or to transact other business with a foreign prince or government. Envoys belong to the second order of diplomatic ministers; ranking below embassadors properly so called.

Epaulette (Fr. *épaule, a shoulder*), a kind of shoulder-knot or ornamental badge worn on the shoulder by military men. Officers, both naval and military, wear epaulettes on one shoulder or on both, according to their rank in the service.

Equador, or **Ecuador**, an independent state of South America, lying under the equator, from which it takes its name. It corresponds, with a trifling difference, to the old Spanish province or intendancy, of Quito; but formed anciently the northern portion of the empire of the Incas of Peru, and latterly the south-western province of the now dissolved republic of Columbia. It is situate between S. lat. 6° and N. lat. 2°, and W. long. from Greenwich 70° and 82°—being about 830 miles in length from east to west, and 560 in breadth from north to south—and only contains an area of about 320,000 English square miles. It is bounded on the south by the state of Peru, on the north by New Granada, on the east by Brazil, and on the west by the Pacific Ocean; but the boundaries of the eastern portion of the state are not yet very well defined.

Vegetable Productions.—In the low countries that flank the base of the Andes, the banana, cycas, plantain, cacao, jatropha which produces cassava and manioc, the cotton-tree, indigo, coffee, and the sugar-cane abound; beneath the elevation of 4000 feet, the plants chiefly cultivated for food are the sweet potato, mandioc, yam, and banana, with rice, maize, and some legumes; but above 3100 feet most of these become rare, and thrive only in particular situations. The sugar-cane, however, has been grown so far up as 7500 feet. In some of the valleys are extensive plantations of sugar-cane, cotton, tobacco, and cocoa. The valley of Guayaquil is particularly fertile; the soil is alluvial, and there are few spots even between the tropics which can vie with it in richness and variety of vegetation. It is covered with groves of every kind of tropical fruit, either wild or cultivated, as the pineapple, pomegranate, shaddock, orange, lime, lemon, peach, apricot, cherimoyer, pulta, grandilla, tuna, and pacay. In the same region are found the olive, pepper plant, tomatas, and sweet potatoes, gum copal, copaiba balsam, carana, dragon's blood, sarsaparilla, and vanilla. To these succeed, in the humid and shaded clefts on the slopes of the mountains, tree-ferns and cinchona or Peruvian bark, the finest kind of which is obtained about 8 to 12 miles south of Loja among the mountains of Uritusinga, Villanaco, and Ilumusitana, where the trees that yield it grow in a soil resting on mica-slate and gneiss, at the moderate elevation of 5756 to 7673 feet above the level of the sea. Between the elevations of 6000 to 9000 feet is the region best suited for the European cereals. Wheat

will not form the ear lower than at 4500 feet, or ripen higher than at 10,000 feet; but barley and rye grow at an elevation 2500 feet still higher. To these may be added the guinoa, a most useful production for domestic purposes. In this region also, and a little above it, grow the potato and its congeners, all of which are extensively used as food; the chick-pea, broad-bean, cabbage, and other European vegetables, are likewise abundant. Within the cereal limits are found the oak, elm, ash, and beech, which never descend lower than 5500 feet, and are seldom found higher than 9200 feet above the level of the sea. Higher up, the larger forest trees, except the pine, begin to disappear; and on the mountains of Quito the escallonia mark the highest limit of trees at an elevation 11,600 feet. The bejarias, the highest of shrubs, terminate at 13,400 feet, above which, in rich and beauteous verdure, rises the zone of the grasses. Above these, among the trachyte rocks, only lichens, lecideas, and the brightly-colored dust-like lepraria are met with; and to these, succeed the region of perpetual snow.

Animals.—In some parts of the low country the air swarms with musquetoes and other flies still more tormenting, while the ground teems with snakes, centipedes, and other reptiles. The banks of the great rivers are crowded with caimans or alligators. Bats are exceedingly numerous, and of great size; the forests of the warmer regions abound with armadillocs, monkeys, and cavys; and everywhere are found the jaguar, the puma, the ounce, the ocelot, and several varieties of the wild cat. The pecari and deer are likewise common, as well as that singular animal the ant-eater. The characteristic animals of the Andes are the llama, the guanaco, the vicuña, and the paco or alpaca, some of which are trained as beasts of burden, while others, particularly the vicuñas, run wild among the mountains, where they are hunted by the Indians. Sheep and cattle are reared in great numbers, especially the former, in the valleys of the Andes, and on the declivities of the mountains. Horses, asses, and mules, are reared in sufficient numbers to be articles of export. The chief of the birds is the condor, which is found all along the Andes southward as far as the Strait of Magellan, but nowhere to the north of the equator. The turkey, vulture, and gallinago, are frequently met with, together with many kinds of smaller birds. In some districts, particularly along the coasts, considerable quantities of beeswax are collected; and higher up there are spots in which the cochineal insect is reared. Along the rivers of the great plain turtles are numerous; and their fat, called *manteca* butter, forms a considerable article of trade. Fishing is carried on to some extent along the coasts, and a good deal of salt-fish is prepared. A murex is also found which yields a juice used in dyeing purple.

Mineral Productions.—Equador is less rich in minerals, especially in the precious metals, than any other of the South American states. There are, indeed, several mines of gold and silver, but the yearly produce is inconsiderable. In some places are found lead and quicksilver, but the latter is found, as usual, in combination with sulphur, in the form of cinnabar. Near Azogue, 15 miles north-east by east of Cuença, the ore is found in an immensely thick bed of quartzose sandstone, containing fossil wood and asphalt. Sulphur is prepared in considerable quantities; gold has been washed from the sands of some of the rivers; and salt is obtained from sea-water along the coasts.

Population.—The settled population is composed of Spanish creoles of pure descent, moztisos, mulattoes, and negroes, the greater part of them being agriculturists, graziers, and growers of cocoa. These form about a half of the population. The other half are native Indians, of whom those that live among the mountains are mostly agriculturists, cultivating their lands with much care, and making for themselves coarse stuffs of wool and cotton. The Indians who inhabit the eastern plains are in a much lower degree of civilization. They cultivate only small patches of ground, and apply themselves chiefly to hunting and fishing. Three fourths of the population dwell in the western or mountainous part of the state; and the total number is now estimated at about 800,000.

Manufactures.—The manufactures are unimportant, consisting chiefly of coarse woolen and cotton cloths and other necessary articles. The foreign trade is almost confined to Guayaquil, and is so trifling as scarcely to deserve notice.

Political Condition.—Till 1812, Equador remained a portion of the Spanish Empire of the Indies. It then threw off the yoke of Spain, and in 1821 became a part of the newly constituted republic of Columbia. This union, however, lasted only till 1831, when Equador became an independent state. It has gone through several revolutions; and by the last (1852-3) the democratic party has gained the ascendency, and shown a tendency to adopt the United States of North America as their political model. The state has, in consequence, received a new and more liberal constitution; the Jesuits have been expelled; and laws have been made for the abolition of slavery. The government is vested in a president, with a vice-president and two chambers, all elective; but the constitution is still notably complicated by what has always been its principal characteristic, a predominating mixture of military despotism, the president being always the master of the state. More, perhaps, than any other country of South America, Equador has been slow in the development of her resources and national industry. Frequent revolutions have paralyzed its trade, and prevented the regulation of its finances. No interest has been paid on its public debt since 1826. It is emphatically the country of natural convulsions and political revolutions.

For administrative purposes, the state is divided into the three departments of Equador, Guayaquil, and Assuay; and these are subdivided into the seven provinces, of Quito, Riobamba, Ibarra, Guayaquil, Babahoyo, Cuença, Loja, or Loxa (Loh-ha), and Jaen de Bracamor. The state likewise claims the sovereignty of the Islas de los Galapagos, or islands of land turtles, lying under the equator at a distance of 700 to 900 miles from the mainland. The chief towns are Quito, with from 50,000 to 80,000 inhabitants; Guayaquil, 25,000; Cuença, 20,000; Riobamba, 15,000; Loja, Babahoyo, and Ibarra, about 10,000 each. Quito is beautifully situated in the elevated plain to which it gives its name; and Guayaquil on the banks of a navigable river, opening into the spacious bay, to which it gives its name.

The foreign commerce of Equador is chiefly carried on at the port of Guayaquil, which, with the ports of Manta and San Lorenzo, is open for general importation and the exportation of national produce. The ports open for exportation only are Santa Elena, Caliao, Bahia de Caraccas, Loja, and Ibarra. Guayaquil is the only port of general deposit for re-exportation to foreign ports. The principal articles of export of this republic are cocoa, hides, cattle, tobacco, wool, straw-hats, coffee, orchilla, bark, India-rubber, and an inferior description of cotton. Cocoa is the leading staple, the quantity annually exported reaching over 15,000,000 pounds. The total value of the foreign trade of Equador may be stated at $4,000,000. The countries which participate in this trade are the United States, Mexico, Guatemala, Chili, and Peru, in America; and England, Spain, France, and Hamburg, in Europe.

The commercial relations of the United States with Equador are regulated by treaty and the local legislation of that republic. The treaty with the United States was ratified April 9, 1842, and stipulates for

perfect equality and entire reciprocity of navigation and commerce, both in the direct and indirect trade. The third article has this stipulation: "That whereas, by a law of Equador, March 21, 1837, vessels built in the dock-yard of Guayaquil shall be exempted from various charges; therefore vessels of the United States can not claim this privilege, but shall enjoy it if it should be granted to vessels belonging to Spain or Mexico and to the other Hispano-American republics." The following translation of the decree conferring special privileges on vessels constructed at Guayaquil, bearing date August 23, 1845, is made from *El Comercio de Lima*, October 6, 1846:

"The provisional government considering that the ship-yards of Guayaquil, by reason of its favorable position, and in view of the interests of commerce and of the republic, merit special attention; therefore, in order to advance these interests, and to encourage the construction of ships, it is decreed: Art. 1. Vessels constructed at Guayaquil, and retaining the national flag, shall be exempt from tonnage, anchorage, and other port dues. Art. 2. Such vessels shall be entitled to a reduction of three per cent. on all produce, merchandise, etc., imported into any of the ports of the republic for consumption."

The commerce between the United States and Equador is very limited, owing mainly to the fact that the two great staples of the latter country, cocoa and straw-hats, find but little demand in the United States—the former being of limited consumption, and the latter subject to a duty of 30 per cent. Before the treaty between Spain and Equador, in 1843, United States' vessels carried flour and domestic manufactures direct to the port of Guayaquil, and were generally chartered to transport cargoes of cocoa to Spain. Since that period, however, the high duties on cocoa in Spain, when imported in foreign vessels, have been equivalent to a prohibition. This, together with the annually increasing importation of flour from Chili, has produced a depressing effect on American trade with that republic. The following table will exhibit the condition of this trade during a period of eleven successive years. But little improvement can be expected, it is thought, so long as the present tariff regulations of the United States continue in force. The duties on navigation in the ports of Equador are—tonnage duties, 25 cents per ton; light dues, 6¼ cents per ton. When pilots are employed, the fees are $2 50 per foot of the vessel's depth. See *Com. Relations U. S.*, 1856-7.

Ecuador, which once formed part of the empire of the Incas, was discovered by Pizarro in 1526, and was held under the Spanish crown until the year 1812, when a revolution occurred, which ended in the establishment of a separate republic. In 1821 Ecuador disconnected itself with New Grenada.

COMPARATIVE STATEMENT OF THE COMMERCE OF THE UNITED STATES WITH EQUADOR, EXHIBITING THE VALUE OF EXPORTS TO AND IMPORTS FROM EACH COUNTRY, AND THE TONNAGE OF AMERICAN AND FOREIGN VESSELS ARRIVING FROM AND DEPARTING TO EACH COUNTRY, DURING THE YEARS DESIGNATED.

YEARS.	COMMERCE.			NAVIGATION.			
	VALUE OF EXPORTS.			VALUE OF IMPORTS.	AMERICAN TONNAGE.		FOREIGN TONNAGE.	
	Domestic produce.	Foreign produce.	Total.		Entered the United States.	Cleared from the U. States.	Entered the United States.	Cleared from the U. States.
1846	....	$1,130	$1,130	....	....	....	....	614
1847	$27,253	571	27,824	....	....	....	....	168
1850	24 414	10,511	34,925	$4,673	331	299	825	1,185
1851	....	....	....	76,092	586	219	410	568
1852	....	....	....	70,585	585	....	....	760
1853	....	....	....	12,500	503	226	....	249
1854	....	....	....	57,534	1,981	....	....	192
1855	66,092	....	66,092	12,553	277	1,011	....	....

The following summary statements of the commerce of Guyaquil, condensed from the official reports for the years designated, will convey a general idea of the foreign commerce of Equador, the port of Guyaquil being the principal port of that republic:

TRADE OF GUAYAQUIL FOR 1845.

Countries.	Imports.	Exports.	Total.
Peru	$605,140	$110,770	$715,910
Chili	143,930	170,310	314,740
Spain	87,620	190,000	227,620
Hamburg	....	177,270	177,270
France	24,320	99,750	124,070
Mexico	....	75,620	75,620
Central America	....	85,910	85,910
New Granada	5,130	14,630	19,760
England	....	6,270	6,270
Total	816,140	881,080	1,697,170

The United States does not appear in the list of countries for 1845. Indeed, the foreign trade of Equador is conducted chiefly with the ports of Lima and Valparaiso, the two principal entrepôts for the trade of South America. The following statement affords a description of the merchandise, with its values, imported in 1845, and the countries of origin:

Description of merchandise.	Values.	Countries of origin.
Textiles of cotton	$140,300	Peru.
" wool	94,190	"
" flax	88,120	"
" silk	81,540	"
Wine	79,420	Peru, Spain, France.
Spirits	76,760	Peru, Chili, France.
Flour	42,100	Peru, Chili.
Haberdashery	31,740	" "
Provisions	31,710	Peru, Chili, Spain, France
Hardware	28,760	Peru, Chili.
Paper	21,230	" "
Musical instruments and furniture	18,050	" "
Pottery and glass-wares	16,720	Chili, Peru, France.

EXPORTS.

Description of merchandise.	Values.	Whither.
Cocoa	$566,580	Spain, Hamburg, France.
Straw hats	79,990	Chili, Peru.
Solo leather	22,230	Peru.
Cotton	19,380	Chili.

The following tabular statement exhibits the description of merchandise exported from the port of Guayaquil in the year 1855, with the quantity of each article, respectively:

Exports of merchandise.	Quantities.
Cocoa, ... pounds	15,089,758
Straw hats, ... dozen	88,778
Tanned hides, ... sides	26,246
Tobacco, ... quintals	3,659
Sarsaparilla, ... "	657
Tamarinds, ... "	699
Coffee, ... "	776
Orchilla, ... "	4,000
Bark, ... "	7,739
Timber, ... logs	2,363
Canes, ... pieces	73,551
Manjes, ... "	5,660
India-rubber, ... quintals	765

The countries to which the cocoa specified in the above statement was sent, together with the quantity to each, is exhibited as follows. Each carga equals 81 lbs.:

	Cargas.	lbs.
Spain	80,82	23
Hamburg	36,182	26
France	17,214	62
Peru	14,696	13
Chili	14,507	30
United States	7,544	04
Central America	5,463	69
Mexico	5,410	39
Panama	4,922	78
Total	186,203	20

The following table exhibits the quantities, in pounds, of cocoa, exported from Guayaquil during a

period of ten years, from 1846 to 1855, both years inclusive:

	Pounds.		Pounds.
1846.....	11,202,008	1851.....	9,567,660
1847.....	12,073,615	1852.....	13,956,543
1848.....	21,007,895	1853.....	13,248,024
1849.....	14,234,734	1854.....	10,992,151
1850.....	11,066,056	1855.....	15,089,758

The navigation returns of Guayaquil for 1849, the latest period for which they are at hand, complete, exhibit a total of 169 vessels entered and cleared, with an aggregate tonnage of 46,838 tons, distributed as follows:

Countries.	ENTERED.		CLEARED.	
	Vessels.	Tons.	Vessels.	Tons.
England.....	26	14,810	23	12,805
United States.....	5	935	5	985
France.....	4	1,054	4	1,054
Spain.....	5	1,543	5	1,908
Italy and Germany....	9	1,697	3	1,567
S. American republics.	35	5,266	39	4,269
Total.....	84	24,805	85	22,033

The only commercial legislation in this republic, of recent date, is embodied in a decree given at the capital, Quito, August 15, 1855, by the President, José Maria Urbina, imposing an export duty on bark and India-rubber. The United States' consul at Guayaquil, in communicating this decree, under date of September 30, 1855, says: "Against this injudicious measure of the executive, strong representations will be made to the present Congress by the commercial and industrial classes, as unlawful, and injurious to the present increasing commercial prosperity of the country; and it is probable that it will be modified into renting or selling the lands, or done away with altogether."

A translation of this decree is subjoined: "Considering that the natural productions met with in the uncultivated lands of the republic make part of the national riches, and that that the India-rubber and bark discovered and extracted from said lands are becoming objects of speculation to many persons, and should be made to yield a revenue to the country; therefore, be it decreed: Art. 1. In the ports of the republic where custom-houses are established, there shall be exacted a duty of two dollars on ordinary, and three dollars on refined India-rubber, on every 100 lbs. exported to foreign markets. Art. 2. The bark taken from government lands, and exported to foreign countries, shall pay a duty of two dollars for every 100 lbs. on yellow, three on Callessaya, and eight on red. Art. 3. Those persons who export India-rubber and bark withot presenting the same at the custom-house, or place appointed for the collection of the duties specified in the previous articles, with the intent of avoiding the payment of said duties, shall be judged according to the process detailed in the law of the 21st November, 1853. Art. 4. Every citizen who proposes extracting India-rubber or bark from national lands, shall present himself to the respective governor, who, after hearing his proposal, and satisfying himself that the land is actually government property, shall give to the parties applying the required permission in writing. Art. 5. Those engaged in the collection of India-rubber must not cut down the tree; but, to obtain their object, should bore a small hole in the trunk, at the height of about half a yard from the ground, penetrating the greater part of the thickness of the tree, taking care not to bore through it. Art. 6. Those who are found taking India-rubber or bark from national lands without having complied with the conditions prescribed in articles 4 and 5, shall be treated as smugglers, and the substances collected taken from them and confiscated. Art. 7. The governors of provinces in the lands under their jurisdiction will take all possible measures to discover and apprehend all parties who endeavor to infringe the preceding dispositions. Art. 8. Article 6 applies, also, to those individuals who do not comply with the dispositions of articles 4 and 5, under the pretext that they are collecting the aforesaid substances from their own lands, should it be discovered that the said lands are national property. Art. 9. Those persons who collect India-rubber and bark from their own property, are not subject to any of the duties imposed in the present decree. Art. 10. The Secretary of the Treasury is charged with the due execution of this present decree, of which it is his duty to inform the Congress next ensuing."—*Com. Relations, U. S.* See GUAYAQUIL.

Equator (*æquare*, to make equal), in *astronomy* and *geography*, a great circle of the sphere, equally distant from the two poles of the world, or having the same poles as the world. It is called equator because when the sun is in it the days and nights are equal; whence also it is denominated the *equinoctial*; and when drawn on maps, planispheres, or globes, it is called the *equinoctial line*, or simply *the line*. Every point in the equator is 90 degrees, or a quadrant's distance from the poles of the world; and hence the equator divides the sphere into two equal hemispheres, in one of which is the northern, and in the other the southern pole. Terrestrial longitudes are measured on the equator, or some one of its parallel circles; commencing from some arbitrary point, which different nations assume variously, most of them adopting the meridian which passes through their capital city or principal observatory. Latitudes are counted from the equator along the meridian.

Equinox (Lat. *æquus* and *nox*, night), in astronomy, is the time at which the sun passes through the equator in one of the equinoctial points. When the sun is in the equator, the days and nights are of equal length all over the world, whence the derivation of the term. This happens twice every year, namely, about the 21st of March, and the 22d of September; the former is called the *vernal*, and the latter the *autumnal* equinox. The equinoxes do not divide the year into portions of equal length; for in consequence of the sun being at his greatest distance from the earth during the summer months, and his angular motion in his orbit being consequently slower, the interval from the vernal to the autumnal equinox is greater than that from the autumnal to the vernal. In other words, the sun continues longer on the northern than on the southern side of the equator. At the beginning of the present century, the difference amounted to 7 days 16 hours and 51 minutes. The summer in the northern hemisphere is constantly longer than in the southern by this quantity; and to this circumstance some meteorologists ascribe, in part at least, the higher temperature that is found to prevail in the northern hemisphere under the same parallel of latitude.

Erie (lake), situated north of New York, Pennsylvania, and Ohio, and constitutes a part of the boundary between the United States and Canada. It is 240 miles long, and 60 broad, in its widest part. It receives the waters of Superior, Michigan, and Huron lakes, through Detroit River, and discharges its waters through Niagara River into Lake Ontario. Its surface is elevated 565 feet above tide-water in the Hudson River at Albany. The soundings by the U. S. Engineers show the lake to be divided into three sections of unequal depth, viz., one extends from the head down to Point Pelee Island, and the bottom presents a general level, with a depth of 30 feet in the average. The second is of much larger extent, and stretches to Long Point; is also a level, with a depth of 60 to 70 feet. The third section extends to Niagara River, and is an uneven bottom, with various depths of water, ranging from 60 to 240 feet. The business done on this lake is immense, and increasing. The licensed tonnage of the lake is 138,852 tons, of which a large and increasing proportion is of steam-vessels. The estimated value of the commerce amounts to $220,000,000 annually. There are 26 light-houses and beacons on the American side, and 10 on the Canadian side. A battle was fought near its west end Septem-

ber 10th, 1813, between the American fleet, under Commodore Perry, and the English fleet, in which the latter was captured. See LAKES, *Commerce of*.

Ermine (Ger. *Hermelin*; Fr. *Hermine, Ermine*; Rus. *Gornostai*), a species of weasel (*mustela candida*, Lin.), abundant in all cold countries, particularly Russia, Norway, Lapland, etc., and producing a most valuable species of fur. In summer the ermine is of a brown color, and is called the *stoat*. It is in winter only that the fur has that beautiful snowy whiteness and consistence so much admired. See FURS.

Esparto, a species of rush, the *stipa tenacissima* of botanists. It is found in the southern provinces of Spain; and is particularly abundant on all the sterile, uncultivated, and mountainous districts of Valencia. BECKMANN (*Hist. of Invent.*, vol. ii., p. 288, Eng. ed.) supposes, apparently with good reason, that the *stipa tenacissima* is the plant described by Pliny under the name of *Sparta*, who ascribes its application to useful purposes to the Carthaginians.—*Hist. Nat.*, lib. xix., c. 2. It is still used for the same purposes as in antiquity, being manufactured into cordage, shoes, matting, baskets, nets, matresses, sacks, etc. Cables made of esparto are said to be excellent; being light, they float on the surface of the water, and are not, therefore, so liable as hempen cables to be cut or injured by a foul bottom. They are exclusively made use of in the Spanish navy. Esparto is largely consumed in the manufacture of *alpergates*. These are light shoes worn by the Valencian peasantry, having platted soles made either of esparto or hemp, but principally of the former. They are extremely cheap and commodious in hot climates; and besides being in extensive demand at home, used to be exported in immense quantities to both Indies; but since the emancipation of Spanish America, this trade has greatly fallen off. The Spanish peasantry have attained to wonderful dexterity in the manufacture of esparto. "After having soaked the rush in water, the women and children, without either wheel or spindle, contrive to twist two threads at the same time. This they do by rubbing them between the palma of their hands, in the same manner as a shoemaker forms a thread upon his knees, with this difference, that one motion gives the twist to each thread, and, at the same time, unites them. To keep the threads asunder, the thumb of the right hand is interposed between them; and when that is wanted for other purposes, the left thumb supplies its place. Two threads being thus twisted into one of the bigness of a large crow-quill, 46 yards are sold for little more than ½d., the materials being worth about a fifth part of the price."—TOWNSEND'S *Travels in Spain*, vol. iii., p. 177; see also p. 129; FISCHER'S *Picture of Valencia*, Eng. ed., p. 92, and p. 57, etc.

Essence D'Orient, the name of a pearly-looking matter procured from the blay or bleak, a fish of the genus *cyprinus*. This substance, which is found principally at the base of the scales, is used in the manufacture of artificial pearls. A large quantity of the scales being scraped into water in a tub, are there rubbed between the hands to separate the shining stuff which subsides on repose. The first water being decanted, more is added with agitation till the essence is thoroughly washed from all impurities; when the whole is thrown upon a sieve; the substance passes through, but the scales are retained. The water being decanted off, the essence is procured in a viscid state, of a bluish-white color, and a pearly aspect. The intestines of the same fish are also covered with this beautiful, glistening matter. Several other fish yield it, but in smaller proportion. When well prepared, it presents exactly the appearance and reflections of the real pearls, or the finest mother of pearl; properties which are probably owing to the interposition of some portions of this same substance, between the laminæ of these shelly concretions. Its chemical nature has not been investigated; it putrefies readily when kept moist, an accident which may, however, be counteracted by water of ammonia. See PEARLS.

Essential Oils, or **Volatile Oils**. Under this term are included all those peculiar compounds obtained by distilling vegetable substances with water, and which pass over along with the steam, and are afterward condensed in the liquid or solid form. They appear to constitute the *odorous* principles of vegetables. Their specific gravity fluctuates on either side that of water; they are very sparingly soluble in water, and these solutions constitute the *medicated waters*; rose, peppermint, and other waters being such solutions of the respective essential oils. They dissolve in alcohol and form *essences*, many of which are used as perfumes. When these oils are pure, they evaporate from paper when held before the fire; but if adulterated with fixed oils, they leave a greasy stain, and seldom dissolve perfectly in alcohol. The more expensive of these oils are frequently adulterated with the cheaper ones, and this fraud can only be detected by an experienced nose. Their chief use is in perfumery, on account of their odor, and in medicine they form valuable stimulants. They are inflammable, and are, with few exceptions, compounds of hydrogen, oxygen, and carbon. The essence of turpentine, of lemons, and a few others, are *hydrocarbons*.

Establishment of the Port, a term used by writers on the tides, to denote the interval between the time of high water at any given port and the time of the moon's transit immediately preceding the time of high water, when the moon is in syzygy; that is, at the new or full moon. This interval is influenced by local circumstances, and consequently different at different places. See TIDES.

Estrich, or **Estridge** (Fr. *Duvet d'autruche*; It. *Penna matta di strozzo*; Sp. *Plumazo de avestrux*; Lat. *Struthionum pluma molliores*), is the fine, soft down which lies immediately under the feathers of the ostrich. The finest is used as a substitute for beaver in the manufacture of hats, and the coarser or stronger sort is employed in the fabrication of a stuff which resembles fine woolen cloth. Estridge is brought from the Levant, Italy, and other parts of the Mediterranean.

Ether (Gr. *αἰθηρ*). In chemistry this term is applied to a highly volatile, fragrant, inflammable, and intoxicating liquid, produced by distilling a mixture of equal weights of sulphuric acid and alcohol. When these liquids mutually act on each other, a series of complicated changes ensue, which terminate in the conversion of alcohol into ether.

Euphorbium (Ger. *Euphorbiengummi*; Lat. *Euphorbium*; Fr. *Euphorbe*; Arab. *Akal-nafzah*), the produce of a perennial plant, a native of Africa, and of many parts of India, etc. It is a concrete gum resin; is inodorous; when first chewed has little taste, but it soon gives a very acrid, burning impression to the tongue, palate, and throat, which is very permanent, and almost insupportable. It is imported in serons, containing from 100 to 150 lbs. It is in small, hollow, forked pieces, often mixed with seeds and other impurities.—THOMSON'S *Dispensatory*.

Euphrates, the most considerable river of western Asia, is formed by the junction of two great streams rising in the mountains of Armenia, pashalic of Erzeroum, and uniting in about N. lat. 39°, E. long. 39°. The Frat or northern branch has its principal sources about 20 miles north-east of the town of Erzeroum; and the Murad, on the north declivity of the Arghi-dagh mountains, 45 miles north-east from the nearest point of Lake Van. The Euphrates flows first to the south, but, being driven westward by the Anti-Taurus and Taurus mountains, it works its circuitous way through narrow passes and over cataracts, until, breaking through a defile formed by the eastern extremity of Mons Amanus (Alma-dagh) and the north-western extremity of Mons Taurus, it reaches the

plain country not far from Samosata (Sumeisat). It then winds south and south-east, passing the north of Syria, and the north-east of Arabia Deserta, and at length, after many windings, unites with the Tigris, and thus united, finds its termination in the Persian Gulf. In conjunction with the Tigris, it forms the rich, alluvial lands of Mesopotamia, over which it flows or is carried by canals, and thus diffuses abroad fertility and beauty. At Baghdad and Hillah (Babylon) the Euphrates and Tigris approach comparatively near to each other, but separate again, forming a kind of ample basin, till they finally become one at Kurnah. Although occasionally much more, the breadth of the Euphrates varies between 200 and 400 yards, but for a distance of 60 miles through the Lemlun marshes, the main stream narrows to about 80 yards. The general depth of the Upper Euphrates exceeds 8 feet. In point of current it is for the most part a sluggish stream; for, except in the height of the flooded season, when its flow approaches 5 miles an hour, it varies from 2½ to 3½, with a much larger portion of its course under 3 than above. Its general description for some distance below Erzingan, is that of a river of the first order, struggling through high hills, or rather low mountains, making an exceedingly tortuous course, as it forces its way over a pebbly bed, from one natural barrier to another. As it winds round its numerous barriers, it carries occasionally toward each of the cardinal points a considerable body of water; and is shallow enough in some places for loaded camels to pass in autumn, the water rising to about 4½ feet. The upper portion of the river is inclosed between two parallel ranges of hills, covered for the most part with high brushwood and timber of moderate size, having a succession of long, narrow islands. The principal towns on its banks are Samsat, Haaroum, Roumkala, Bir, Glaber, Deir, Rava, Anah, Hadisa, El Oes, Jibba, Hit, Hillah, Lemlun, Kurnah, and Basrah. The scenery above Hit, in itself very picturesque, is greatly heightened by the frequent recurrence of ancient irrigating aqueducts, beautiful specimens of art, which are attributed by the Arabs to the Persians when fire-worshipers; they literally cover both banks, and prove that the borders of the Euphrates were once thickly inhabited by a highly civilized people. From Hit to Babylon the black tent of the Bedouin is almost the only kind of habitation to be seen. This distance is cultivated only in part; the rest is desert, occasionally interspersed with clusters of date-trees. In descending, the irrigating cuts and canals become more frequent. Babylon is encircled by two streams, one above, the other below the principal ruins; beyond which they unite and produce abundance. For about 30 miles below Hillah both banks have numerous mud villages, shaded by date-trees: to these succeed huts formed of bundles of reeds. The country lower down toward Lemlun, is level and little elevated above the river; irrigation is therefore easy; in consequence, both banks are covered with productive cultivation, and fringed with a double and nearly continuous belt of luxuriant date-trees, extending down to the Persian Gulf. At one mile and a half above the town of Dewania is the first considerable offshoot from this hitherto majestic river; another takes place 22 miles lower; and 9 miles further, at Lemlun, it again separates into two branches, forming a delta not unlike that of Damietta, and when the river is swollen, inundating the country for a space of about 60 miles in width, with a shallow sheet of water, forming the Lemlun marshes, nearly the whole of which is covered with rice and other grain, when the river recedes in June. Below Lemlun the Tigris sends a branch to the Euphrates, which is thus increased in its volume; and turning to the east, receives the chief branch of the Tigris, thence running in a single stream, under the name of the Shat-el-Arab, as far as the Persian Gulf. In this last part the river has a depth of from 3 to 5 fathoms; varies in breadth from 500 to 900 yards, and presents banks covered with villages and cultivation, having an appearance at once imposing and majestic. The length of the entire stream is 1,400 miles. It is very abundant in fish. The water is somewhat turbid, but when purified, is pleasant and salubrious. The Arabians set a high value on it, and name it Morad Sou; that is, Water of Desire or Longing. The river begins to rise in March, and continues rising till the latter end of May. The consequent increase of its volume and rapidity is attributable to the early rains, which, falling in the Armenian mountains, swell its mountain tributaries; and also to the melting of the winter snows in those lofty regions. About the middle of October the Euphrates has reached its lower ebb, and ceasing to decrease, becomes tranquil and sluggish.

The expedition sent out by the British government under the direction of Colonel Chesney, navigated the Euphrates in 1830 from Bireh-jik to its estuary, a distance of 1,117 miles; and besides throwing much light on a country then very imperfectly known to Europeans, proved that there exist no serious obstacles to the navigation of that river by moderate-sized steamers thus far; and even for 88 miles above Bireh-jik to Beles, an important station in a commercial point of view.—E. B.

Europe, one of the great divisions of the globe. On a first view Europe appears to be less favored by nature than the other quarters of the globe over which it has obtained so great an ascendency. It is much smaller in extent; its rocky and mountainous surface does not admit of those noble rivers, like inland seas, which lay open the remotest regions of Asia and of America to the commerce of the world. Its vegetable productions are neither so various nor so exuberant; and it is poorly supplied with the precious metals, and with many of those commodities on which mankind set the greatest value. On the other hand, the climate of Europe, if it nourishes a less luxuriant vegetation, is of an equal and temperate kind, well adapted to preserve the human frame in that state of health and vigor which fits it for labor, and promotes the development of the intellectual and moral powers. The mountains that intersect its surface are barriers which enabled infant communities to protect themselves from violence, and to lay the foundation of arts, knowledge, and civilization. If it has few large navigable rivers, its inland seas and bays are, from their position and extent, the finest in the world, and have been the means of creating and nourishing that commercial spirit which has been one great source of its improvement. Though comparatively deficient in gold and silver, it is abundantly supplied with those useful metals and minerals which minister still more essentially to the wants of civilized life. Its apparent defects have become the source of real benefits, and the foundation of its grandeur. The disadvantages of its soil and climate have excited the industry of its inhabitants, given them clearer ideas of property, kindled a resolute spirit to defend their rights, and called into existence that skill and enterprise, and those innumerable arts and inventions, which have enabled the inhabitants of this apparently barren and rocky promontory to command the riches and luxuries of all the most favored regions of the globe. It is only in Europe that knowledge and the arts seem to be indigenous. Though they have appeared at times among some of the nations of Asia, they have either stopped short after advancing a few steps, or they have speedily retrograded and perished, like something foreign to the genius of the people. In Europe, on the contrary, they have sprung up at distant periods, and in a variety of situations; they have risen spontaneously and rapidly, and declined slowly; and when they disappeared, it was evident they were but crushed for the time by external violence, to rise again when the

pressure had subsided. It is only in Europe, and among colonies of Europeans, that the powers of the human mind, breaking through the slavish attachment to ancient usages and institutions, have developed that principle of progressive improvement of which it is impossible to calculate the final results. The rudest tribe in Europe, in which this principle has taken root, has a certain source of superiority over the most improved nations of Asia and Africa, where society remains perfectly stationary. If these nations are ever destined to advance in civilization, they must borrow from Europe those arts which she has invented, and which belong to civilized life in every climate. But the tenacious adherence of rude nations to the customs and superstitions of their ancestors, will not allow us to hope that the benefits of civilization will be rapidly diffused in this way. It is more probable that colonies from the older states of Europe will multiply as the population becomes more and more redundant; and that these colonies will carry the arts and knowledge, the language and manners, of Europe with them, to the other quarters of the world. From prejudices on both sides, it is found that two races, in very different stages of civilization, do not readily amalgamate; and it is therefore probable that the feebler inhabitants of these countries, like the American Indians, will be gradually displaced by the continual encroachments of the more energetic races of Europe.

Europe is bounded on the N. and W. by the Arctic and Atlantic Oceans; on the S. by the Mediterranean, the Black Sea, and Mount Caucasus; on the E. by the Caspian Sea, the river Ural, and the Uralian Mountains. The greatest length of the continent is from Cape St. Vincent to the Sea of Kara, in the direction of N. E. and S.W., and is 3490 English miles. Its greatest extent from N. to S. is from Cape Matapan to Cape North, 2420 miles. The superficies of Europe, including the Azores, Iceland, Nova Zembla, and all its other islands, is 3,700,000 English, or 2,800,000 geographical square miles; and the length of its coast line is about 16,000 miles.

Climate.—The climate of Europe is distinguished by two peculiarites. It enjoys a higher mean temperature than any of the other great divisions of the world in the corresponding latitudes; and it is not subject to such violent extremes of heat and cold. These advantages it owes chiefly to its numerous seas, inland bays, and lakes, which render its temperature similar to that of islands; and partly also, according to Humboldt, to its situation at the western extremity of the greatest range of dry land on the surface of the globe; the western sides of all continents being warmer than the eastern. Europe lies almost entirely within the temperate zone, not more than one fourteenth part of its surface being within the arctic circle. Only a very small part of it is uninhabitable from cold, and it nowhere suffers from excessive heat. The mean temperature at its southern extremity, in the latitude of 36°, is about 66° of Fahrenheit; and at Cape North, in the latitude of 71°, where the mean temperature is 32°, the cold is not greater than in the latitudes of 55° or 56° on the east coasts of Asia and America. Hence Europe is habitable at a higher latitude by 12° or 14° than either of these continents.

Temperature.—There is a difference of the same kind between the temperature of the sea-coasts of Europe and the interior. In islands, and on the sea-coast, the mean temperature of the year is higher, and the heat is more equally distributed through the different seasons. As we advance from the coast eastward the mean annual temperature diminishes, but the heat of summer and the cold of winter increase. Thus London has the same mean annual temperature as Vienna, but it has the summer of St. Petersburg, and the winter is warmer than at Milan. The Mediterranean, the Baltic, and inland lakes, produce the same effect as the ocean, in an inferior degree. The following table shows, I. The temperature of the year, and the various seasons, in places having the same latitude; II. The different distribution of heat through the various seasons in places having the same mean annual temperature.

PLACES.	MEAN TEMPERATURE						
	Of the Year.	Winter.	Spring.	Summer.	Autumn.	Warmest Month.	Coldest Month.
I. *Lat.* 56.							
Edinburg....	47·8	38·6	46·4	58·2	48·4	59·4	38·3
Copenhagen	45·6	30·8	41·2	62·6	48·4	65·0	27·2
Moscow	40·2	10·8	44·0	67·1	38·8	70·6	6·0
Lat. 48.							
St Malo.....	54·4	44·2	52·2	66·0	55·8	67·0	41·8
Vienna.....	50.6	32·8	51·2	69·2	50·6	70·6	26·6
II. *Lat.*							
Dublin 53·21	49·2	39·2	47·8	59·6	50·0	..	..
Prague 50·2	49·4	31·4	47·6	68·2	50·2	..	..

The mountains of Europe are more numerous in proportion to its extent than those of the other great continents, but they are of less elevation than the mountains of America and Asia. The highest and the most extensive chains in Europe run generally in the direction of east and west, and are placed near its southern shores. The central mass of the Alps, with which all the other mountains in the south of Europe are connected, forms the summit of the continent, and determines the position of the surface and the courses of most of the rivers.

Rivers.—Europe is well watered with rivers, but they are mere brooks compared with the mighty streams of Asia and America, and, from the unevenness of the surface, afford in general no great extent of inland navigation. The Danube, the largest river that is entirely in Europe, is about 1500 miles in length, and drains an area of 370,000 square miles. But the Amazon, though only twice the length of the Danube, drains a surface seven times as large, and equal to four fifths of the continent of Europe; and, as the quantity of rain that falls in tropical countries is much greater than in northern latitudes, it is probable, notwitstanding the increased evaporation there, that the Amazon conveys more water than all the rivers of Europe put together. If we divide the length of the Danube into a hundred parts, the length of the principal rivers of Europe, expressed in these parts, will be as follows: Danube 100; Volga, 130; Dnieper, 72; Don, 69; Rhine, 49; Elbe, 42; Vistula, 41; Loire, 37; Tagus, 32; Oder, 31; Rhone, 30; Seine, 23; Po, 21; Tiber, 10; Thames, 9.

The courses of the great rivers show the fall of the country through which they flow, but it would be absurd to take the average of the fall per mile from the measurements of their whole lengths, for, with the exception of the Volga, and other rivers of Russia, the early parts of their respective courses are among mountains, or in elevated valleys, where, and from which, the fall is very rapid; and it is only when taken from the points where they leave their mountain cradles and reach the plains, that such an average will truly indicate the extent and degree of the general slope of the continent. The source of the Volga is only about 560 feet above the level of the Caspian Sea, into which it flows, and the length of its course being at least 2000 miles, without any serious rapids, the average of its fall is consequently very regular, and little more than three inches a mile; but, the direct distance being only 900 miles, the slope of the country exceeds seven inches a mile. The source of the Danube, in Suabia, is about 2176 feet above the level of the Black Sea; but its fall is in several places very rapid, particularly between Passau and Vienna, and at the *Irongate*, through which it passes from the plains of Hungary to the low level of Wallachia. The average fall, therefore, of such a river would be a most fallacious index of the configuration of the whole length of country through which it flows. Its course is indeed through a series of terraces, separated by deep falls. The sources of the Rhine, in the heart of Switzerland, have an elevation of more than 7000 feet,

but when it reaches the Lake of Constance it has already fallen to 1300. From that lake to Basle, where it leaves the mountains, it falls more than 500 feet, and even further down it still flows with great impetuosity, falling 400 feet more before it reaches Strasburg, a distance of only 70 miles. The average, however, of its fall from the latter city to the sea is only about one foot a mile. The elevation of the *Elbbrunnen*, or sources of the Elbe, in Bohemia, is 4260 feet, but the river falls so rapidly, within a short distance, that, after passing the northern mountain border of Bohemia, its elevation is found to be, at Dresden, only 280 feet. The average fall from that point to the sea is less than a foot a mile. The elevation of the source of the Oder is 1705 feet, but at Breslau it has already fallen to 370, and the average fall of the remainder of its course is likewise about a foot a mile. The elevation of the source of the Vistula we have not been able to learn, but as it is navigable from Podgorze, near Cracow, to the sea, its average fall is probably much the same as that of the Elbe or the Oder.

Few of the rivers of Europe are of much importance as means of communication and transit. The Volga becomes navigable at Rief, about 70 miles from its source, and so continues to the Caspian Sea, a distance of more than 2000 miles, following the course of the river. It is the great highway of Central Russia, so many as 5000 loaded boats annually descending its stream; but as it ends unfortunately in an inland lake, it is of no use for the transport of other foreign wares than the produce of the sandy and barren regions that surround the Caspian.

The Volga is so connected with the other great rivers and lakes of Russia by canals, that there is uninterrupted navigation from the Baltic to the White Sea, the Black Sea, and the Caspian. The Don has a course of 900 miles, but has so many shallows as to be nowhere navigable for large or sharp-bottomed vessels. The Dnieper, the next largest river of Russia, has a course of 1000 miles, and is navigable from Smolensk to Kief; but, further down, its channel is so obstructed with rocks and falls, for a space of 150 miles, that navigable communication between the sea and the inland provinces through which it flows is completely cut off. The Danube becomes navigable at Ulm, 1500 miles from its mouth; but between Passau and Vienna, it flows among mountains, and navigation is rendered difficult by the rapidity of the stream, and the frequent occurrence of rocks, shoals, eddies, and whirlpools; and, in leaving Hungary, through a narrow gorge of 60 miles in length, which it has cut for itself across the mountains that inclose that country, it falls in a series of rapids, the lowest of which is the famous Irongate, through which the stream rushes with great rapidity in a narrow channel, between stupendous rocks, ending in a series of whirlpools, eddies, and smaller falls. Here navigation was considered to be effectually stopped; but we have just learned (January, 1855) that steamboats have at last been constructed so as to be considered capable of passing these rapids in safety, and that they will be immediately put upon the river. It is also proposed to cut a channel through the rocks 1200 yards long, 40 feet wide, and 6 feet deep, which will give plenty of additional depth for the steamers and other loaded vessels. The number of workmen to be employed in this gigantic undertaking is 2000, and the work will extend over a period of 6 years, at a cost of 2,000,000 of florins. So numerous, besides, are the windings of the Danube through the comparatively level plains of Hungary, that between Presburg and the Black Sea, a direct distance of 650 miles, the course of the river actually measures 1200. The Rhine is navigable above the lake of Constance, but the navigation is stopped by the Rheinfall near Schaffhausen. From that point to Basle it is not very easy or always practicable; to Strasburg it is not free from danger; but further down the river becomes a fine navigable stream, not quite free indeed from difficulty and risk, particularly in the deep and narrow gorge which it passes through between Bingen and Coblentz; but below Coblentz the channel is uninterrupted and free from danger. Between the Rhine and the Danube there is a navigable communication by means of the rivers Meyn and Altmuhl, which are connected by the Ludwig's canal in Bavaria. The Elbe, and its tributary, the Moldau, are both navigable even in Bohemia, and from their confluence to the sea there is no serious interruption. The Oder is navigable downward from Silesia, and is of the utmost importance as the channel of conveyance for the productions of that country to the sea. Breslau, Frankfurt, and Stettin, three of the principal commercial towns of Prussia, stand on its banks, and it is connected by canals with the Vistula, the Havel, and the Spree. The Vistula is, like the Oder, the principal channel of transit between the Baltic Sea and the Polish provinces of Austria, Russia, and Prussia, and begins to be navigable at Podgorze, near Cracow.

These are the only rivers that seem to require notice as navigable streams in a general survey of Europe, although there are many others of great importance to the several countries in which they are found, as the Thames, the Tyne, the Clyde, the Rhone, the Po, etc.

The islands of Europe, including Nova Zembla and Iceland, occupy a space equal to 280,000 square miles, or 1-11th part of the surface of the continent; and of this space the area of the British isles amounts to rather less than $\frac{1}{2}$. The Black Sea is the only large sea connected with Europe in which there are no islands worthy of notice.

Seas.—The Mediterranean, the noblest inland sea in the world, forms the southern boundary of Europe, separating it from Africa, and partly also from Asia. It may be considered as the bottom of a vast basin formed by the Pyrenees, Alps, Balkans, Taurus, Libanus, and Atlas. These mountains are everywhere near its shores, which are consequently narrow and much inclined. Hence there are no such extensive plains as Hungary or Poland near the coast of this sea, and hence, also, no very large rivers fall into it except the Nile; and altogether it receives a smaller quantity of water from rivers than the Black Sea or the Baltic, though six times larger than either. Its length is about 2350 miles, its breadth is extremely various, and its surface (exclusive of the Black Sea) is nearly equal to 1,000,000 of square English miles, or something less than $\frac{1}{7}$ part of the continent of Europe. It is generally of great depth; and its numerous islands, which have uniformly a rocky surface, appear to be the summits of marine mountains.

Baltic.—The Baltic, the greatest inland sea that is entirely in Europe, is about 1200 miles long, of very unequal breadth, and presents a surface of 175,000 square miles, exclusive of islands. It occupies the bottom of another large basin, 850 miles in breadth, and 1400 in length, extending from the Norwegian mountains on the north and west, to the Carpathians on the south, and to the high lands on which the Dnieper, the Don, and the Volga rise, on the east. This basin, equal to $\frac{1}{8}$ of the surface of Europe, has a very different character from that of the Mediterranean. The mountains are not very elevated, and are so placed as to leave a large tract of land, very little inclined, between them and the Baltic, over which, especially on the south side, many considerable rivers flow with a gentle current. Hence the country round the Baltic is much more level than round the Mediterranean; lakes are numerous in the low grounds, from the want of declivity; the sea itself is comparatively shallow, and receiving a much greater quantity of river water, it is much less salt. The commerce of the Baltic is annually interrupted by the ice, which endures 4 months in the gulfs of Bothnia and Finland

The whole of this inland sea has sometimes been frozen over for a short time, but this is of rare occurrence. See BALTIC.

Black Sea.—The Black Sea, which belongs only partly to Europe, is 700 miles long and 380 miles broad, and, including the Sea of Azof, presents a surface of 170,000 square miles, being almost of the same magnitude as the Baltic. It derives 4-5ths of its water from Europe, and is curiously distinguished from the other seas of this quarter of the globe, by its being almost totally destitute of islands.

White Sea.—The White Sea is 450 miles in length, of a very irregular figure, and occupies a space equal to 35,000 square miles. It receives some considerable rivers, but is frozen during six months of the year.

Lakes.—The lakes of Europe are numerous, and are of two kinds: those which lie in cavities at the foot of high mountains, and which are generally deep, such as the lakes in the Alps, on the east side of the Norwegian mountains, and among the mountains of England and Scotland; and those which are formed in level countries from the want of a sufficient declivity to carry off the water, such as the lakes in Finland, Poland, and Brandenburg. 4-5ths of the lakes of Europe are in the country round the Baltic.

Vegetable Productions.—The soil of Europe has not the extremes of luxuriance or sterility which belong to the soil of the other great continents. If it does not yield the rich fruits of tropical climates, it is not deformed by burning sands like Africa, or by pestilent swamps like America. It does not pour forth its riches spontaneously, but, soliciting the care and the labor of man, it requites his industry with what is necessary to supply his wants; and, by exercising and sharpening his powers of mind, has given birth to those arts which place the productions of the most favored climates at his disposal. Many of the plants which have been domesticated in Europe are natives of distant countries. The vine, the olive, and the mulberry are said to have been brought from Syria by the Greeks; the Arabians introduced cotton; maize was received from the Indian tribes of America; the walnut and the peach come from Persia; the apricot from Armenia, and the sugar-cane and orange from China. There are not very many plants belonging to the tropical regions that absolutely refuse to grow in Europe, but an enlightened economy finds other productions more profitable. Besides sugar and cotton, the banana, the orange, citron, fig, pomegranate and date, grow in the south of Europe. But the more delicate fruits are confined to southern latitudes, and disappear one by one as we advance northward. And it is worthy of remark, that the zones in which they grow generally follow the lines of equal summer heat, and run obliquely across the continent in the direction of south-west and north-east. If a line be drawn on the map from Brest to Konigsberg, skirting the southern shores of the English Channel and the Baltic, the zones that limit the growth of different plants will run nearly parallel with this line. This holds generally in the south and middle of Europe; but in the extreme northern parts, and especially with regard to plants that require a moderate heat continued for a considerable time, the lines that limit the growth of certain vegetables seem to follow a different course, and decline toward the south as we advance eastward, in consequence of the increasing severity and length of the winter. It is scarcely necessary to say that the zones traced as proper for different plants, only mark the limits within which their cultivation is found advantageous. Most of them will grow beyond these limits; but they either require some peculiar advantages of soil and situation, or they are less profitable than other kinds of produce.

The sugar cane, one of the most desirable tropical plants, grows in Sicily and the south of Spain, in the latitude of 37° and 38°. The culture of it, which was once extensive in the latter country, has not yet been entirely abandoned, even since sugar was procured from the West Indies. Cotton is cultivated in the south of Spain on a small scale; to a greater extent in Sicily, the south-east angle of Italy, and in Greece and its isles, as high as the latitude of 41½°; we find it again at Astracan, in the latitude of 46°. The orange and the lemon come to perfection in the west of Europe, only in the countries to the south of the Pyrenees and Apennines, within the latitude 43° in Spain, and 44° in Italy. The olive does not succeed on the west coast of France in the latitude of 43°, but grows as far north as 44° or 45° on the east of France, and in Italy. Attempts to raise it at Astracan, in latitude 46°, have not succeeded, on account of the rigor of the winter. The fig and the pomegranate, which accompany the olive in the west of Europe, are found in the Crimea in the east, at the latitude of 46°, where the olive will not grow, a proof that these trees bear the winter cold better. The climate proper for maize is found to terminate on the west coast of France at 45½°; on the Rhine at 49°; on the Elbe at 50° or 51°. Rice has nearly the same geographical range, but requires a peculiar soil and situation. The culture of the vine extends as far north as the latitude of 47½° on the Atlantic coast; on the Rhine to 50½°; and on the Oder to 52°. In Russia it grows as far north nearly as 52°, but is not cultivated beyond 50°. The mulberry generally accompanies the vine. The limits of the culture of the common cerealia are not so well defined, as the necessities of man oblige him to raise corn under the most unfavorable circumstances. In a general point of view, however, the parallel of 57° or 58° may be regarded as the northern limit of the cultivation of wheat in Europe. It is raised as far north as 60° or 61° in Finland, but only in some favored spots. In Russia, generally, it is chiefly confined to the provinces under the latitude of 57°. The hardier cerealia, rye, oats, and barley, are cultivated in some sheltered situations on the coast of Norway, as high as the latitude 69° 55′. But on the east side of the Norwegian mountains these grains scarcely ripen in the latitude of 67° or 68°; and farther east, in Russia, it has been found impossible to carry cultivation of any kind beyond the latitude of 60° or 62°. Barley, which accommodates itself better than any other grain to these high latitudes, by shortening the period of its growth, is sown and reaped within the space of seven or eight weeks. But the introduction of potatoes promises to be of vast advantage in these cold regions, as this plant thrives and yields a produce of 30 or 50 fold in places where grain often will not ripen. Peaches and apricots succeed with much care as far north only as the latitude of 50° in Russia: melons as far as 52°. The plum and the cherry grow wild as far north as 55°, but are carried farther by cultivation. Fruit trees and the oak terminate in Sweden, at Gefle, in the latitude of 61°; but the pine and the birch advance within the arctic circle; and the former grows to the height of 60 feet in the latitude of 70°. The blackberry and the whortleberry grow in Lapland, and the gooseberry even in Greenland. Tobacco is extensively cultivated over the greater part of the continent of Europe, from Sicily to Sweden. Flax and hemp have as extensive a range as corn, but they are raised in the greatest perfection between the latitudes of 45° and 60°.

We have stated that the superficial extent of Europe is about 3,700,000 square miles. If we draw a curved line from a point in the Uralian mountains, about the latitude of 60° or 61°, to the west coast of Norway, in the latitude of 69°, passing through the Lake Onega, and a little to the northward of the Gulf of Bothnia, this line will mark the extreme limits of cultivation, and will cut off a space equal to 550,000 square miles, or nearly 1-7th of Europe. The space

cut off, however, is not entirely useless, as a part of it produces pasturage and wood. The cultivation of rye, oats, and barley, is confined to the regions south of this line, and includes more than 5-6ths of Europe; but in the northern parts of this zone only a very small proportion of the land will bear corn. The region adapted to the cultivation of wheat comprehends about 4-7ths of Europe, and includes all the densely-peopled parts. The region of the vine extends over 3-7ths of Europe.

Minerals.—Europe, in propartion to its extent, is probably richer in mineral wealth than the other quarters of the globe. It contains all the metals except platina; and though it affords gold and silver only in limited quantities, iron, copper, lead, with coal and salt, commodities of greater value to society, are abundantly and widely distributed. The mountains, consisting of primary and transition rocks, are the great depositaries of these mineral treasures. Iron is found in all the chains of mountains in Europe. The richest mines are in the Dovrefield, or Scandinavian Alps. But rich mines are also found in the Alps of Styria, Carinthia, and Bavaria; in the Pyrenees, the Vosges, the Cevennes, the coal districts of Britain, the Urals, the Carpathians, the Hartz, and many other places. Copper is also widely distributed, though less abundant than iron. The richest mines are in Hungary, in the Carpathian mountains. It abounds also in the Saxon and Bohemian mountains, in the Dovrefield, the Urals, the north of England, and the Alps; and it is found in the Vosges, the Pyrenees, and other mountains of Spain, in the north of Germany, and in Tuscany.

Lead exists in the Alps, Carpathians, Pyrenees, Cevennes, Vosges, the British mountains, and the Uralian chain. Tin is found only in a few places in Europe. The richest mines are in Cornwall; next to these are the mines in the Erzgebirge. It is also found in Hungary and Spanish Galicia. Mercury, like tin, is confined to a few places. The mines of Idria, in Austria, which yield 8000 or 10,000 quintals per annum, are the most productive in Europe. There are also considerable mines at Deux Ponts, in the Palatinate, in the Spanish province of La Mancha, and in Transylvania. Gold is widely diffused through Europe, but generally in such quantities as not to repay the expense of working. It is wrought, however, in the Carpathians, the Urals, the Dovrefield, and the Alps. Anciently there were rich mines of gold in Spain and Greece. Silver is more abundant than gold, though less widely distributed. There are productive mines of this metal in the Erzgebirge, the Carpathians, the Urals, the Norwegian Dovrefield, and in Sardinia. It is found also in the Alps, the Vosges, and the Sierra Morena.

Of coal, the richest mines are found in the north and west of England. It abounds also on both sides of the middle region of Scotland; in Ireland; in the Netherlands; in one fourth part of the French territory; and occurs more sparingly in Saxony, Hanover, Denmark, Sweden, Russia, Hungary, Bohemia, Moravia, Silesia, Bavaria, Austria, Franconia, Westphalia, Swabia, Catalonia, and some other parts of Spain, in Portugal, and in Sardinia. After Britain, France and Belgium are the countries in Europe best supplied with this mineral.

Salt is procured from the waters of the ocean, and, in the interior of Europe, from numerous salt mines and salt springs. The most productive salt mines in Europe are those in Poland, on the north side of the Carpathians, and those in Salzburg, on the north side of the Alps, both of which belong to Austria. There are also extensive depositories of mineral salt in Transylvania and Hungary; in Valencia, Navarre, and Catalonia, in Spain; in Cheshire, in England; and in Bavaria, in Switzerland. Salt springs are numerous along the sides of primitive mountains in most countries of Europe. The most extensive salt mines of Russia are in Asia; but very large quantities of salt are collected from the *tuzlas*, or salt lakes in the Crimea.

Antimony, cobalt, zinc, manganese, sulphur, alum, and a great variety of other mineral productions, are found in Europe; but it is unnecessary to specify their localities. It is observed that the Alps, Pyrenees, Carpathians, and other mountain chains which run east and west, are richest in metals on the south side; while the Dofrines, Urals, and others which run north and south, are richest on the east side. Of the mountain chains of Europe, the Apennines are the poorest in metals, the Carpathians probably the richest.

The progress of improvement tends to level all distinctions among states, but those founded on the extent of their natural resources. Capital, skill, intelligence, and all acquired advantages, tend to an equilibrium. When Europe was overrun with barbarism, the city of Venice, by its commercial wealth, was a counterpoise to two or three of the great monarchies of the Continent. The discovery of America, and of a passage by sea to the East Indies, gave a new direction to commerce, and undermined the greatness of that city. The Dutch Republic rose by its freedom and industry, and was able, in the time of Charles II., to dispute the empire of the sea with the combined powers of England and France. But England increased her commerce, and improved her constitution; and having a larger and more fertile territory, as well as a greater population, she obtained at length the ascendency over Holland, deprived her of the empire of the sea, and stripped her of most of her colonies. At the beginning of the 17th century, Spain and Turkey were the first powers in the west and east of Europe, and inspired their neighbors with the dread of conquest. Sweden ruled with undisputed sway in the north; and Russia, now so formidable, was scarcely known. Spain, under a better government, might recover a part of her influence; but the Turkish empire seems near its dissolution; and the importance of Sweden and Holland is gone irretrievably, in consequence of the growing strength of the neighboring powers. The extent of territory and the immense natural resources of Russia must, in the end, render her highly dangerous to all the other powers of Europe, if the empire do not fall to pieces from its own weight, or get into discord from the vices of its government, or the barbarism, ignorance, and corruption of its people.—E. B.

By means of steam-vessels, communication between all the maritime regions of Europe has been rendered easy and certain, while the seaboard has been connected with the inland regions by railways running in all directions. During the latter half of the last century, and the earlier part of the present, England was covered with a net-work of canals, forming navigable communication between all her principal towns and rivers. Belgium and Holland have long been famous for their canals. In France, likewise, the great rivers were connected in the same way; and the great canal of Languedoc formed a navigable communication between the Bay of Biscay and the Mediterranean Sea. In Prussia, likewise, and in Russia, the great rivers have been connected by canals; and in Sweden, the Gotha Canal extends from the Cattegat, at Gottenburg, to the Baltic, near Stockholm, through the lakes Wener and Wetter. These very useful means of transport have now, however, been very much, if not entirely superseded by railways. Of these, England is covered with a net-work, as she was with canals; and uninterrupted lines of communication extend from near the Land's End, through Scotland, to the Moray Firth. In Scotland, Ireland, France, and Germany, the principal cities and towns are connected by railways; and in Russia, we understand that one is forming to connect St. Petersburg with Moscow and the Black Sea. In Italy, Milan and Venice are con-

nected, and railways are projected at least in other parts of the country. The later invention of the electric telegraph is likewise extending everywhere across seas and continents; but the whole system of telegraphs and railways will be understood more readily at once by a glance at a map.

AREA AND POPULATION OF EUROPEAN STATES.

Names.	Area in English Sq. Miles.	Population.	Date.
I. EMPIRES:			
French	204,000	35,781,628	1851
Austrian	257,760	36,514,466	..
Russian	2,000,000	54,092,800	1846
Ottoman	123,743	10,500,000	1844
II. KINGDOMS:			
Great Britain and Ireland	121,779	27,621,862	1851
Prussia	106,302	16,935,420	1852
Belgium	12,569	4 359,090	1849
Netherlands	13,890	3,897,851	1853
Spain	176,480	14,216,219	1849
Portugal	34,500	3,487,025	1851
Denmark	22,680	2,206,597	1850
Sweden	170,240	3,482,541	..
Norway	122,460	1,328,471	1845
*Bavaria	29,000	4,559,452	1852
*Hanover	14,600	1,819,253	..
*Saxony	5,705	1,987,832	..
*Wirtemberg	7,568	1,733,263	..
Sardinia	28,830	4,916,084	1848
Two Sicilies	41,521	8,704,472	1851
Hellas or Greece	19,200	1,002,112	1852
III.			
*Electoral Hesse	4,430	735,228	1852
States of the Church	17,048	3,006,771	1850
IV. GRAND DUCHIES:			
*Baden	5,850	1,356,948	1852
*Hesse-Darmstadt	3,761	854,814	..
*Mecklenburg-Schwerin	4,845	541,449	1853
* " Strelitz	707	99,628	1851
*Oldenburg	2,400	282,114	1852
*Saxe-Weimar	1,419	262 524	1853
Tuscany	8,302	1,515,686	1854
V. DUCHIES AND PRINCEDOMS:			
*Nassau, D.	1,757	429,341	1852
*Brunswick, D.	1,507	271,943	1858
*Saxe-Coburg-Gotha, D.	799	150,412	1852
* " Meiningen, D.	888	166,364	1853
* " Altenburg, D.	510	132,788	1850
*Anhalt-Dessau-Coethen, D.	665	171,750	1852
* " Bernburg, D.	340	52,641	..
*Reuss-Griez, P.	145	35,150	1853
* " Schleiz, P.	448	79,824	..
*Waldeck, P.	461	59,697	1852
*Hesse-Homburg, P.	168	24,921	..
*Lichtenstein, P.	53	6,351	1842
*Kniphausen	17	3,035	1852
Parma, D.	2,184	507,881	1853
Modena, D.	2,078	586,458	1850
Monaco, P.	50	6,500	..
Moldavia, P.	16,000	1,400,000?	1844
Wallachia, P.	30,000	2,000,000?	..
Servia, P.	12,000	1,000,000?	..
Montenegro	1,400	100,000?	..
VI. REPUBLICS:			
*Frankfort	91	77,971	1852
*Lubec	142	54,166	1851
*Bremen	106	79,647	1849
*Hamburg	151	200,690	1852
Swiss Confederation:			
Zurich	647	250,698	1850
Bern	2,583	488,901	..
Lucerne	600	132,843	..
Schweiz	350	44,168	..
Uri	420	14,505	..
Unterwalden-Upper	260	13,799	..
" Lower		11,389	..
Glarus	281	30,213	..
Zug	185	17,461	..
Friburg	496	99,891	..
Soleure	256	69,674	..
Basel-City	185	29,698	..
" Country		47,885	..
Schaffhausen	116	35,300	..
Appenzell-Outer	160	43,621	..
" Inner		11,272	..
St. Gall	760	190,625	..
Grisons	2,540	89,895	..
Aargau	499	199,852	..
Thurgau	267	88,908	..
Tessin	1,041	117,750	..
Vaud	1,190	199,575	..
Valais	1,675	81,550	..
Neufchatel	281	70,753	..
Geneva	91	64,146	..
Ionian Islands	1,200	230,297	1852
Saint Marino	27	7,600	1851

Considered in respect to political constitution and civil government, the states of Europe may be arranged in six classes. The first class comprises 4 empires, the sovereigns of which are absolute monarchs; the second, 16 kingdoms, partly absolute and partly constitutional; the fourth, 7 grand-duchies, all monarchies; the fifth, 24 duchies and principalities, likewise all monarchies, partly constitutional and partly absolute; and the sixth, 32 republics. The third class comprises 2 nondescripts, both monarchies indeed; but in the one case the sovereign retains the subject title of Elector of the head of an empire that no longer exists, and the sovereign of the other is at once the spiritual sovereign of the Roman Catholic world and the temporal sovereign of that portion of Italy called the States of the Church. The preceding table contains the names, territorial extent or area, and the population of these several states at the dates attached to them respectively. The grand total of the population, as it is not all of the same year, can only be considered as an approximation to the truth.

In financial importance, Britain stands at the head of all these states; for not only is her annual revenue the largest, excepting that of France, but she enjoys besides the unenviable pre-eminence of being burdened with the largest debt. The bad practice of anticipating revenue by borrowing money is common to them all; and, as will be seen in the table, only some of the less important have escaped the ever-growing evil. Within the last twenty years the debt of Austria has increased more than threefold, and the French emperor has been borrowing largely to pay the current expenses of the war in which he and the British government were engaged with Russia. The governments of Spain and Greece are virtually bankrupt, being neither able nor willing to pay either principal or interest of their large debts. Norway, on the contrary, the poorest country in Europe, has set the bright example of paying off that portion of the Danish debt with which she was burdened when separated from that monarchy in 1814, while the Danish portion has gone on increasing. The Ottoman sultan has escaped, until lately, only by virtue of his want of credit.

REVENUE AND DEBT OF EUROPEAN STATES.

Countries.	Annual Revenue.	Debt.
Great Britain and Ireland	£56,000,000	£760,000,000
France	62,000,000	275,000,000
Austria	25,000,000	180,000,000
Russia	35,000,000	170,000,000
Prussia	15,000,000	32,000,000
Spain	15,000,000	120,000,000
Turkey	6,500,000	8,000,000
Netherlands	6,000,000	100,000,000
Belgium	5,000,000	20,000,000
Denmark	1,500,000	13,750,000
Bavaria	3,000,000	16,146,000
The Two Sicilies	4,500,000	16,800,000
Sardinia	5,000,000	24,000,000
Hanover	1,300,000	5,174,000
Baden	1,680,000	5,185,000
States of the Church	2,381,000	20,000,000
Portugal	2,850,000	18,000,000
Kingdom of Saxony	1,650,000	6,500,000
Sweden	1,040,000	....
Norway	650,000	None
Tuscany	1,250,470	....
Greece	860,000	4,176,000
Modena	340,000	....
Parma	76,000	380,000
Wirtemberg	1,000,000	4,832,000
Smaller German States together	5,500,000	17,000,000
The Swiss Cantons all together	650,000	....

Their annual revenues and the amount of their debts as stated in the above table, in the nearest round numbers, and in sterling money, will give a sufficiently near approximation to sums that are constantly varying, and, in many instances, not certainly known. Though there has been a general peace in Europe for the long period of forty years, yet their mutual jealousies have made it seem necessary, to the Continental governments at least, to maintain large

standing armies. Russia, safe from foreign invasion, has long been preparing large armaments for purposes of aggression on her weaker neighbors, and of domination over all the rest; and at last her overt acts of aggression on Turkey have provoked a war with Great Britain and France, who [1854] armed in defense of their ancient ally, the Sultan, and with the view of not only maintaining the balance of power in Europe, but of effectually checking the undisguised attempts of the czars of Russia at universal dominion. In these circumstances, with all Europe arming, or beginning to arm, any numerical statements of their military forces, however approximately correct when written, may have become quite erroneous by the time they are published. The following table, therefore, contains only the declared numbers respectively of the peace and war establishments of the Continental armies, with the exception of that of France, which gives the actual number of men on foot, as stated in the emperor's address to his Legislative Council in December, 1854.

Countries.	Peace.	War.
Austria	....	670,000
Russia	....	1,500,000
Prussia	129,000	525,000
France	....	581,000
Britain	128,000	....
Spain	70,000	....
Portugal	29,000	58,326
Two Sicilies	50,043	102,932
Sardinia	47,524	....
Belgium	73,998	100,000
Netherlands	57,859	....
Denmark	37,043	....
Sweden	7,692	144,000
Norway	....	23,484
Tuscany	15,189	....
Parma	2,773	4,638
Modena	3,500	14,050
States of the Church	17,365	....
Smaller States of the Germ. Conf.	32,686	224,000
Swiss Confederation	....	108,000
Turkey	....	450,000
Greece	9,548	....

The maritime powers that maintain efficient navies worth notice are, Britain, France, Russia, Austria, Turkey, Sardinia, Netherlands, Denmark, Sweden, and Norway. In December, 1854, the British fleet in commission and actual service, consisted of 142 steamers, and 104 sailing ships, with 63,000 men; that of France, of nearly the same number of vessels altogether, though not so many steamers, with 62,000 men. The Russian fleet, in the spring of 1854 consisted of 52 line-of-battle ships, 48 frigates, and 84 smaller vessels (besides gun-boats), with 9000 guns, and 62,000 men. Austria possessed 104 vessels carrying 712 guns; Turkey, 70 vessels, with 34,000 seamen and 4000 marines; Sardinia, 19 vessels, with 359 guns; the Netherlands, 88 vessels, with 2000 guns and 6180 men; Denmark, 120 vessels, with 883 guns, and 2000 men; Sweden, 74 vessels besides gun-boats; Norway, 19 ships besides gun-boats, with 500 men.

In Europe there are two great national confederacies, the Germanic and the Swiss; but in neither of them is there so close a union of the sovereignties that compose it as there is in the United States of North America. In Germany, indeed, there is no principle or feeling of unity among either princes or people, and their confederation, as such, enjoys neither influence nor respect at home or abroad. In Switzerland, on the contrary, recent circumstances seem to have produced a closer and more intimate union, and given to the federative assembly the authority indispensable to the efficient working of a central government.—E. H.

Exchange, Principles of, by JOHN RAMSAY M'CULLOCH, Esq.

In commercial economy, the term "Exchange" is commonly employed to designate that description of mercantile transactions by which the debts of individuals residing at a distance from each other are liquidated without the intervention of money. The object of this article is to explain the nature of these transactions, and the principles on which they depend. This will be best effected by treating, *first*, of the exchange between different parts of the same country; and, *secondly*, of that between different and independent countries.

I. INLAND EXCHANGE.—Suppose a merchant of London orders his agent in Glasgow to send him a thousand pounds' worth of cottons, and that it does not suit the agent to commission goods of equal value from his London correspondent, the latter may, notwithstanding, be under no necessity of remitting cash to Glasgow in discharge of his debt. Among countries or cities having a considerable intercourse together, the debts mutually due by each other are found, in ordinary cases, to be nearly equal. The Glasgow agent, who has shipped the cottons for London, does not, therefore, transmit the bill drawn by him on his correspondent for their price to London to be cashed, as that would subject him to the expense of conveying the money home to Glasgow; but he gets its value from some other party in Glasgow, who has a payment to make in London on account of tea or some other article bought in that city, and who, unless he could procure such a bill, would be obliged to remit its price in money. The bill on account of the cotton is, therefore, either drawn in favor of the party in London who furnished the tea, or it is drawn in favor of the tea-dealer in Glasgow, and indorsed by him to the former, who, on presenting it to the purchaser of the cottons, receives its value and consequently the price of the cottons, and the price (or part of the price) of his tea, at the same moment. This simple contrivance obviates the expense and risk attending the transmission, first, of money from London to Glasgow, to pay the cottons; and, second, of money from Glasgow to London to pay the tea. The debtor in one is changed for the debtor in the other; and both accounts are settled without the intervention of a single farthing.

The bill drawn and negotiated in such a transaction as this, is termed an *inland* bill of exchange. If the transaction had taken place between London or Glasgow and a *foreign* city, it would have been termed a *foreign* bill of exchange. A bill of exchange may, therefore, be defined to be, "an order addressed to some person residing at a distance, directing him to pay a certain specified sum to the person in whose favor the bill is drawn, or his order."*

The price of bills fluctuates according to their abundance or scarcity compared with the demand. If the debts reciprocally due by London and Glasgow be equal, whether they amount to £100,000, £500,000, or any other sum, they may be discharged without the intervention of money, and the price of bills of exchange will be at PAR; that is, a sum of £100 or £1000 in Glasgow will purchase a bill for £100 or £1000 payable in London, and *vice versâ*. But if these cities be not mutually indebted in equal sums, then the price of bills will be increased in the city which has the greatest number of payments to make, and reduced in that which has the fewest. If Glasgow owe London £100,000, while the latter only owes the former £90,000, it is clear, inasmuch as Glasgow has a larger sum to remit to London than London has to remit to Glasgow, that the price of bills on London will rise in Glasgow because of the increased demand, and that the price of bills on Glasgow will fall in London, because of the diminished demand. A larger sum would, consequently, be required to discharge a debt due by Glas-

* In mercantile phraseology, the person who draws a bill is termed the *drawer*; the person in whose favor it is drawn, the *remitter*; the person on whom it is drawn, the *drawee*, and after he has accepted, the *acceptor*. Those persons into whose hands the bill may pass previously to its being paid, are, from their writing their names on the back, termed *indorsers*; and the person in whose possession the bill is at any given period, is termed the *holder* or *possessor*.

gow to London, and a less sum to discharge an equal debt due by the latter to the former; or, which is the same thing, the exchange would be in *favor* of London, and *against* Glasgow. Bills on London would sell in Glasgow at a *premium*, and bills on Glasgow would sell in London at a *discount;* the premium in the one case being equal to the discount in the other.

On the supposition that the balance of £10,000, due by Glasgow, depresses the exchange on London *one per cent.*, it appears at first sight that it will cost Glasgow £101,000 to discharge her debt of £100,000 due to London; and that, on the other hand, £89,100 would be sufficient to discharge the debt of London to Glasgow. But a very little consideration will serve to show that this would not be the case. Exchange transactions can not take place between different cities until debtors and creditors of the one reside in the other. And hence, when the exchange became unfavorable to Glasgow, the premium paid by its merchants for bills on London would not go into the pockets of their creditors in the latter, but into those of their neighbors in Glasgow to whom London was indebted, and from whom the bills were purchased. The loss to Glasgow would, therefore, be limited to the *premium* paid on the balance of £10,000. Thus, supposing that A, of Glasgow, owes D, of London £100,000 and that C, of London, owes B, of Glasgow £90,000, A will pay to B £91,000 for a bill or order on C to pay D £90,000. In this way the £90,000 of London debt at Glasgow will be cleared off; the premium, which is lost by the debtor to London in Glasgow, being gained by its creditor in the same place. If the business had been transacted in London, C, with £89,100, would have purchased of D a bill for £90,000, payable by A; so that, in this case, the gain would have fallen to the share of the debtor C, and the loss to that of the creditor D, both of London. The complexity of real transactions does not affect the principles on which they are founded. And whatever may be the amount of the debts reciprocally due by different places, the only disadvantage under which any of them could be placed by a fall of the exchange would be the unavoidable one of paying the expense of remitting the *balance* of debt.

The expense of transmitting money from one place to another limits the fluctuations in the exchange between them. If 20s. sufficed to cover the expense and risk attending the transmission of £100 from Glasgow to London, it would be indifferent to a merchant, in the event of the exchange becoming unfavorable to the former, whether he paid one per cent. *premium* for a bill on London, or remitted money direct to the latter. If the premium were less than one per cent., it would be clearly his interest to make his payments by means of bills rather than by remittances; and that it could not exceed one per cent. is obvious, for every individual would rather directly remit money than incur an unnecessary expense by purchasing bills on London at a greater *premium* than would suffice to cover the expense of a money remittance. If, owing to the badness of roads, disturbances in the country, or any other cause, the expense of remitting money from Glasgow to London were increased, the difference in the rate of exchange between them might also be proportionally increased. But in every case the extent to which this difference could attain would be limited by, and could not for any considerable period exceed, the cost of remitting cash.

Exchange transactions become more complex when one place, as is often the case, discharges its debts to another by means of bills drawn on a third place. Thus, though London should owe nothing to Glasgow, yet if Glasgow be indebted to London, London to Manchester, and Manchester to Glasgow, the latter may wholly or partially discharge her debt to London by remitting bills on Manchester. She may wholly discharge it, provided the debt due to her by Manchester exceed or is equal to the debt due by her to London. If, however, it be not equal to the latter, Glasgow will either have to remit money to London to pay the balance of debt, or bills on some other place indebted to her.

Transactions in inland bills of exchange are almost entirely conducted by bankers, who charge a certain rate per cent. for their trouble, and who, by means of their credit and connections, are able on all occasions to supply the demands of their customers. London, because of its extensive correspondence with other parts of the country, occasioned partly by its immense commerce, partly by its being the seat of government and the place to which the revenue is remitted, and partly by its currency consisting of Bank of England paper, for which the notes of the country banks are rendered exchangeable, has become the grand focus in which the money transactions of the United Kingdom centre, and in which they are all ultimately adjusted. These circumstances, but especially the demand for bills on London to remit revenue, and the far superior value of Bank of England paper, render the exchange between London and other parts of the country invariably in her favor. Bills on London drawn in Edinburg and Glasgow were formerly made payable at 40 days' date, which was equivalent to a *premium* of about ½ per cent.; but, owing to the greater facility of communication, this *premium* is now reduced to 20 days' interest, or to about ¼ per cent. Bills for remitting the revenue from Scotland are now drawn at thirty days; previously to 1819, they were drawn at 60 days.

These statements are sufficient to show that, how well soever bills of exchange may be fitted for facilitating the operations of commerce, and saving the trouble and expense attending the transportation of money, mercantile transactions can not be adjusted by their means except in so far as they mutually balance each other. A *real* bill of exchange is merely an order entitling the holder to receive payment of a debt due by the person on whom it is drawn. It is essential to the existence of such bill that an equivalent amount of debt should be contracted. And hence, as the amount of the real bills of exchange drawn on any number of merchants can not exceed the amount of their debts, if a greater sum be owing to them than they owe to others, the balance must either be paid in money or by the delivery of some sort of commodities. If, as in the case referred to, Glasgow owe London £100,000, while London only owes Glasgow £90,000, a reciprocal transfer of debts may be made to the extent of £90,000. But the Glasgow merchants can not discharge the additional £10,000 by means of bills on London; for, by the supposition, London only owned them £90,000, and they have drawn for its amount. This balance must therefore be discharged by an actual money payment, or by the delivery of some species of produce, or by bills on some third party indebted to Glasgow.

It is not meant by this to insinuate that *fictitious* bills of exchange, or bills drawn on persons who are not really indebted to the drawer, are either unknown or very rare. In commercial countries bills of this description are always to be met with; but they are a device for obtaining loans, and can not transfer real debts. A of London may form a connection with B of Glasgow, and draw bills upon him payable a certain number of days after date, which the latter may retire by selling bills upon A. The merchants who purchase, or the bankers who discount these bills, advance their value to the drawers, who, by means of this system of *drawing* and *redrawing*, command a borrowed capital equal to the amount of the fictitious paper in circulation. It is clear, however, that the negotiation of such bills can not assist in transferring and settling the *bonâ fide* debts of two or more places. Fictitious bills mutually balance each other. Those drawn by London on Glasgow equal those drawn by Glasgow on

London, for the one act is drawn to pay the other—the second destroys the first, and the result is nothing.

The raising of money by means of fictitious bills has been severely censured by Adam Smith, who says it entails a ruinous expense on those engaged in it, and is resorted to only by projectors, or persons of suspicious credit. When fictitious bills are drawn at two months' date, it is common to charge, in addition to the ordinary interest, a commission of half or quarter per cent., which must be paid every time the bill is discounted, or, at least, *six* times a year. The total expense of money raised in this way could not, therefore, supposing the transaction to be always on account of the same individual, and interest 4 per cent., be estimated at less than 5¼ or 7 per cent. per annum, *ex* stamps; and the payment of so high an interest on borrowed capital, in a country where the ordinary rate of mercantile profit is not supposed to average more than from *six* to *eight* per cent., could not fail to be frequently productive of ruin to the borrower. But it seldom happens that, in the negotiation of fictitious bills, the charge for commission falls on one individual only. Loans obtained in this way are usually on account of two or more parties. At one time a fictitious bill is drawn by A of London on B of Glasgow; and, in this case, the latter will, before the bill becomes due, draw upon A for its amount, including interest and commission. At another time, the transaction will be on account of B, who in that case has to pay commission to his friend in London; so that each party may, on the whole, as Mr. Thornton has observed, gain about as much as he pays in the shape of commission.

It is often extremely difficult to distinguish fictitious bills from those which have arisen out of real transactions. Neither does it seem to be of any very material importance. The character and credit of the parties whose names are attached to bills, are the only criteria by which merchants or bankers can judge whether they ought to negotiate them. The circumstances of an individual offering accommodation paper for discount, ought unquestionably, if it be known, to excite suspicions of his credit. But unless in so far as the drawing of fictitious bills may be held to be indicative of overtrading, or of a deficiency of capital to carry on the business in which the party is engaged, there does not appear to be any very good reason for refusing to discount them.

Within the last few years, it has been the practice to grant money orders, payable on presentation at the different post-offices, for sums of £5 and under. These orders cost 3d. for sums of £2 and under, and 6d. for sums between £2 and £5 inclusive; and as they are not paid unless the parties in whose favor they are drawn, or other parties well known to the postmasters by whom they are payable, appear to receive payment, there is no risk of the money getting into improper hands. This system has been found to be a very great accommodation to the public, especially to those having small sums to remit, and has been very extensively resorted to. In 1850 7,439,713 money orders were issued in the United Kingdom; the aggregate sum transferred by their agency being £8,494,498.

These observations will, perhaps, suffice to explain the manner in which transactions between different parts of the same country are settled by means of bills of exchange. They are, in general, extremely simple. The uniform value of the currency of a single country renders unnecessary any comparison between the value of money at the place where the bill is drawn and negotiated, with its value where it is to be paid; while the constant intercourse maintained among different parts of the same kingdom, and the usual absence of those occurrences by which the intercourse between distant and independent countries is always subject to be interrupted, prevent those sudden fluctuations which frequently arise in the prices of foreign bills of exchange. We shall, therefore, leave this part of our subject, and proceed to investigate the circumstances which influence the course of exchange between different and independent countries.

II. Foreign Exchange.—The price of foreign bills of exchange depends on two circumstances: *first*, On the value of the currency of the place where they are made payable, compared with the value of the currency of the place where they are drawn; and, *secondly*, On the relation which the supply of bills in the market bears to the demand.

If the value of the different coins and moneys which circulate in nations having dealings with each other were invariable, the exchange would be exclusively influenced by circumstances affecting the supply and demand for bills. But, in addition to variations in its cost in particular countries, the weight and fineness of the bullion contained in their coins are liable to all sorts of variations. And it is almost needless to say that the price of bills, as of every thing else, necessarily varies with these variations, increasing when the value of the money in which they are estimated falls, and falling when it increases. But these, it is plain, are merely nominal or numerical variations. They grow out of changes in the standard employed to measure values, and not in the values themselves. It is otherwise, however, with variations of price occasioned by changes in the supply of bills, or in the demand for them; that is, by changes in the payments a country has to make compared with those it has to receive. These are real, not nominal variations, for they affect the values in bills, and not the money in which these values are expressed. And hence the distinctions of *nominal*, *real*, and *computed* exchange. The *first* depends on alterations in the value of the currencies compared together; the *second* depends on the supply of bills in the market compared with the demand; and the *third*, or *computed* exchange, depends on the combined effects of the other two. For the sake of perspicuity we shall treat of these separately.*

III. Nominal Exchange.—Bullion being everywhere recognized as the standard currency of the commercial world, the comparative value of the currencies of particular countries depends—*first*, On the value of bullion in those countries; and, *secondly*, On the *quantity* of bullion contained in their coins, or on the quantity of bullion for which their paper money, or other circulating media, will exchange.

The value of freely produced commodities being commonly proportioned to the cost of their production, including therein the cost of their conveyance from where they have been produced to where they are to be made use of, it follows, were the trade in the precious metals perfectly open, and the commodities produced in different countries about equally well fitted for exportation, that the value of bullion in one, compared with its value in another, would be chiefly determined by their respective distances from the mines. Thus, on the supposition that neither England nor Poland had any article except corn to exchange with the Americans or Australians for bullion, it is evident that the precious metals would be more valuable in Poland than in England, because of the greater expense of sending so bulky a commodity as corn the more distant voyage, and also of the somewhat greater expense of conveying the gold to Poland. Had Poland succeeded in carrying her manufactures to a higher pitch of improvement than England, her merchants might be able, notwithstanding the disadvantage of distance, by exporting commodities possessed of great value in small bulk, the freight of which would be comparatively trifling, to buy bullion on cheaper terms

* Supposing every country to be in possession of its proper supply of bullion, the exchange may be said to be *nominally* affected by the amount of the difference between the market and mint price of bullion, and to be *really* affected by any deviation from par exceeding or falling short of that difference.

than those of England. But when, as is actually the case, the advantages of skill and machinery are on the side of England, another reason is added to that derived from our less distance from the mines, why gold and silver should be less valuable here than in Poland, and why the money price of commodities should be higher.*

Hence, among nations which have attained to different degrees of excellence in manufacturing industry, the value of bullion does not wholly depend on their distance from the mines. But, whatever variations a different progress in the arts may occasion in its value in different countries, it is always less valuable in those into which it is imported than in those in which it is produced. Like every thing else, it is exported to find, not to destroy, its level. And unless its value in Europe exceeded its value in America and Australia by a sum sufficient to cover the expense of its importation, including ordinary profits to the importers, we should not, though the mines in these quarters were infinitely more productive, import from them a single ounce of bullion in the ordinary course of trade. It is obviously incorrect, therefore, so lay it down as a general proposition, "that the par of exchange between two countries is that sum of the currency of either of the two, which, in point of intrinsic worth, is precisely equal to a given sum of the other; *that is, contains precisely an equal weight of gold and silver of the same fineness.*"† For a given quantity of gold and silver is not always, as is here assumed, of the same intrinsic value in different countries. It may differ but little among nations bordering upon or near each other, and which are all destitute of mines. But though, to use a familiar illustration, the value of sugar approaches nearly to a level in the great trading cities of Europe, it can not surely be maintained that its value in the West Indies is as great as in Bordeaux or Liverpool, or that the exchange would be really at par, if a bill, which cost a hundred hogsheads of sugar in London, only brought a hundred in Jamaica. Now, in respect of principle, this is precisely the case with bullion. Though the values of gold and silver, compared with corn, labor, etc., may, and indeed must, vary very considerably among different nations, these variations are only the necessary result of their different progress in industry, and of the different quality of their cultivated lands, etc. Such differences of price are in the natural order of things; and bullion has not found its proper level till a quantity has been introduced into those countries which excel in manufactories, sufficient to raise the price of their corn and labor. These variations have, therefore, no influence over the exchange. Notwithstanding this difference of price, an ounce of bullion in one country, owing to the facility of intercourse, is very nearly equivalent to an ounce of bullion in another; and supposing the trade in the precious metals to be perfectly free, the exchange will be at true par when bills are negotiated on this footing. But when we compare the values of these metals in distant countries, especially in those where they are produced, with those into which they are imported, there are very considerable differences. Gold and silver, like iron, coal, tin, etc., are necessarily cheaper in countries possessed only of extraordinarily productive mines, than in those possessed only of mines of a secondary degree of fertility, or where they have to be entirely brought from abroad. And the exchange between such places is not a true par, unless adequate allowance be made for this difference of value. Thus if, because of the expense of carriage, the value of bullion in Great Britain be 5 per cent. greater than in San Francisco, 100 ounces of pure gold in the latter would not be worth 100 ounces of pure gold in London, but 5 per cent. less; and the exchange would be at true par when bills for 105 ounces standard bullion, payable in San Francisco, sold in London for 100 ounces.

The different values of the precious metals in different countries do not depend alone on their respective distances from the mines, or on their greater or less progress in the arts. The opinion formerly so very prevalent, that gold and silver were the only real wealth, led most nations to fetter and restrain their exportation, and to adopt a variety of measures intended to facilitate their importation. But these, even, when most vigorously enforced, were singularly ineffectual. The great value and small bulk of the precious metals rendered it not only advantageous, but comparatively easy, clandestinely to export them, whenever their relative value declined.

"When," says Adam Smith, "the quantity of gold and silver imported into any country exceeds the effectual demand, no vigilance of government can prevent their exportation. All the sanguinary laws of Spain and Portugal are not able to keep their gold and silver at home. The continual importations from Peru and Brazil exceed the effectual demand of those countries, and sink the price of those metals there below that in the neighboring countries. If, on the contrary, in any particular country, their quantity fell short of the effectual demand, so as to raise their price above that of the neighboring countries the government would have no occasion to take any pains to import them. If it were even to take the pains to prevent their importation, it would not be able to effectuate it. Those metals, when the Spartans had got wherewithal to purchase them, broke through all the barriers which the laws of Lycurgus opposed to their entrance into Lacedæmon. All the sanguinary laws of the customs are not able to prevent the importation of the teas of the Dutch and Gottenburg East India Companies, because somewhat cheaper than those of the British Company. A pound of tea, however, is about a hundred times the bulk of one of the highest prices, 16s., that is commonly paid for it in silver, and more than two thousand times the bulk of the same price in gold, and, consequently, just so many times more difficult to smuggle."—*Wealth of Nations*, p. 190.

But though ineffectual to prevent their egress, the restrictions on the exportation of the precious metals have, nevertheless, contributed to occasion some slight variations in their value on different countries. The risk formerly incurred by the clandestine exporters of bullion from Spain, is supposed to have been equivalent to about two per cent.; or, which is the same thing, it is supposed that the restrictions maintained such an excess of gold and silver in that country as to sink them two per cent. below their value in countries having a free trade in bullion. In calculating the true par of exchange between different countries, circumstances of this kind must be taken into account. For, to whatever extent bullion in one country may be sunk below its value in those with which it maintains an intercourse, the nominal exchange will necessarily be unfavorable to that extent. All restraints on the exportation of the precious metals was abolished in Great Britain in 1819. Their effect for many years previously could not be estimated at above one fourth per cent.

It consequently results, that whatever occasions a rise or fall in the value of the precious metals in one country affects to the same extent its nominal exchange with other countries. If more coin, or convertible paper, circulated in Great Britain, compared with the business it has to perform, than in other countries, its relative value would be proportionally less. Foreign bills would sell for a premium, the amount of which would measure the excess of the value of the precious metals in the foreign market, caused by their redundancy in the home market. And, on the other hand, in the event of our currency becoming

* Ricardo, *Principles of Political Economy*, etc., first ed., p. 175.

† *Bullion Reports*, London, p. 22, 8vo. ed.

relatively deficient, its value would be proportionally increased; bills drawn on foreign countries would sell at a discount, the amount of which would equal the excess of the value of our currency over that of other countries.

IV. Par of Exchange.—In estimating the quantities of bullion contained in the coins of different countries, a particular coin of one is selected for a standard by which to compare the others, and the proportion between it and them, supposing them to be all of their standard weight and fineness, is ascertained by experiment. A par of exchange is thus established, or rather it is ascertained that a certain amount of the standard currency of one country contains as much gold or silver of the same fineness, as is contained in the coin or integer with which it has been compared. This relation, or *par*, as it is technically termed, is considered invariable; and allowance is made for subsequent variations in the coins of countries trading together, by rating the exchange at so much above or below par. In mercantile language, that country, by a comparison with one or other of whose coins the par of exchange has been established, is said to give the *certain* for the *uncertain*, and conversely. Thus in the exchange between London and Paris, London and Hamburg, etc., London gives the *certain*, or the pound sterling, for an *uncertain* or variable number of francs, florins, etc. Hence, the higher the exchange between any two countries, the more is it in favor of that which gives it the *certain;* and the lower, the more is it in favor of that which gives the *uncertain*.

On the supposition that 25 francs contain the same quantity of standard bullion as a pound sterling (25 fr. 57 cent. is about the exact par), and supposing, also, that the value of bullion is the same in both countries, the exchange between London and Paris will be at par when a bill drawn in the one on the other sells at that rate; that is, when a bill of exchange for 2500, or 25,000 francs, payable in Paris, sells in London for £100 or £1000, and *vice versâ*. It is but seldom, however, that the coins of any country correspond exactly with their mint standard. Unless when newly issued, they are either more or less worn; and whenever this defect becomes sensible, an allowance corresponding to the difference between their actual value and their mint value is made in estimating "the sum of the existing currency of either of two countries which contains precisely the same quantity of bullion as is contained in a given sum of the other." Thus, if our pound sterling were so worn, clipped, or rubbed, as not to contain so much bullion as 25 fr., but 10 per cent. less, the exchange between London and Paris would be at real par when it was nominally 10 per cent. against London;* and if, on the other hand, the pound sterling were equal to its mint standard, while the franc was 10 per cent. less, it would be at par when it was nominally 10 per cent. against Paris and in favor of London. If the currencies of both countries were equally reduced below the standard of their respective mints, there would obviously be no variation of the par; but whenever the currency of countries trading together is unequally depreciated, the exchange is nominally in favor of that country whose currency is least, and nominally against that whose currency is most depreciated.

It is almost unnecessary to refer to examples to show the practical operation of this principle; and we shall content ourselves with selecting the following, from an infinite number of equally conclusive instances.

Previously to the great recoinage in the reign of William III., silver being at the time legal tender, the exchange between England and Holland, calculated by the standard of their respective mints, was nominally 25 per cent. against England. Inasmuch, however, as English silver coins were then, owing to rubbing and clipping, depreciated more than 25 per cent. below their mint value, the real exchange was probably at the time in our favor. And the circumstance of the nominal exchange having become favorable to us as soon as the new coin was issued, tends to confirm this conjecture.*

The guinea was so much worn and degraded, previously to the gold recoinage in 1774, as to be from two to three per cent. under its standard weight. Inasmuch, however, as the coins then circulating in France were nearly of their standard weight and purity, the exchange between London and Paris was nominally from two to three per cent. against the former. We say *nominally*, for as soon as guineas of full weight were issued, the exchange rose to par.

The Turkish government, during the past century, has made successive reductions in the value of its coin. Before the first of these in 1770, the *piastre* contained nearly as much silver as the English *half-crown;* and, in exchange, the par was estimated at *eight* piastres to the pound sterling. But, in the interval, the degradation in the value of the piastre has been such that it is now worth only about 2½d.; and the exchange is said to be at par when Constantinople gives about 109 piastres for £1 sterling. It is needless, almost, to say, that the nominal exchange, estimated by the old *par* of eight piastres to £1, became more and more unfavorable to Turkey with every successive enfeeblement of the coin, though it is doubtful whether the real exchange, or that depending on the balance of payments, was not all the while in her favor.

When one country uses gold as the standard of its currency, and another silver, the par of exchange between them is effected by variations in the relative values of these metals. When gold rises as compared with silver, the exchange becomes nominally favorable to the country which has the gold standard, and *vice versâ*. And hence, in estimating the par of exchange between countries using different standards, it is always necessary to inquire into the comparative values of the metal selected as standards.

"For example," to use the words of Mr. Mushet, "if 34 schillings 11½ grotes of Hamburg currency be equal in value to a pound sterling, or 20-21 of a guinea, when silver is at 5s. 2d. per oz., they can no longer be so when silver falls to 5s. 1d. or 5s. an oz., or when it rises to 5s. 3d. or 5s. 4d.; because a pound sterling in gold being then worth more or less silver, is also worth more or less Hamburg currency. To find the real par, therefore, we must ascertain what was the relative value of gold and silver when the par was fixed at 34s. 11½g. Hamburg currency, and what is their relative value at the time we wish to calculate it. For example, if the price of standard gold was £3 17s. 10½d. per oz., and silver 5s. 2d., an ounce of gold would then be worth 15·07 ounces of silver, and 20 of our standard shillings would then contain as much pure silver as 35s. 11½ grotes of Hamburg currency. But if the ounce of gold were £3 17s. 10½d., and silver 5s. (which it was on 2d January, 1798), the ounce of gold would then be worth 15·57 ounces of silver. If £1 sterling at par, therefore, be worth 15·07 ounces of silver, then at 15·57 it would be at three per cent. premium; and three per cent. premium on 34s. 11½d. is 1 schilling 1 grote and 9-10, so that the par, when gold is to silver as 15·57 to 1, will be 36 schillings 1 grote and 1-10. The above calculation will be more easily

* It is necessary to observe, that it is here supposed that the clipped or degraded money exists in such a degree of abundance as only to pass current at its bullion value. If the quantity of clipped money were *sufficiently limited*, it might, notwithstanding the diminution of weight, pass current at its mint value; and then the par would have to be estimated, not by its relative weight to foreign money, but by the mint price of bullion. This principle must be constantly kept in view.

* *Wealth of Nations*, p. 210.

made by stating, as 15·07 : 34-12½ : : 15·57 : 36-1 1-10."*

As it is their intrinsic worth in bullion which determines the value of coins in exchange transactions, those of equal weight and purity are reckoned equivalent to each other, though some of them may have been coined at the expense of the state, and others charged with a duty or seigniorage on their coinage. The latter may, if not issued in excess, pass current in the country in which they are coined for their value in bullion *plus* the duty; but they will not pass anywhere else, except at their bullion value.†

But the principal source of fluctuations in the nominal price of bills of exchange, is to be found in the varying value of the *paper* currency of commercial countries. The disorders which arose in remoter ages from diminishing the bullion contained in coins of the same denomination have since been [illegible] another form, and often to a still [illegible] in the depreciation of paper currency.

V. Influence of Depreciated Paper Currency on the Exchange.—The [illegible] retaining a comparatively large quantity of coin or bullion, or of paper convertible into coin, in a particular country, limited the issues of the Bank of England previously to the Restriction Act of 1797; and it has equally limited them since the resumption of specie payments in 1821, and sustained the value of the currency on a level with gold. When the bank starves the circulation, or issues less paper than is necessary, bullion is imported, sent to the mint to be coined, and thrown upon the market. And when, on the other hand, the bank issues too much paper, and thereby depresses its value relatively to gold, it becomes profitable to demand payment of its notes, and to export the specie thus obtained either as coin or as bullion. In this way the vacuum is filled up when bank-notes are deficient, the excess removed when they are redundant, and the value of the currency preserved nearly equal. But, from 1797 down to 1821, this principle was suspended. During that period, the bank was relieved from the obligation to pay her notes in gold; while, owing to their being made legal tender, their circulation was insured. Hence, their value exclusively depended on the extent to which they were issued compared with the demand. There is no difference, in its influence over the exchange, between a degraded metallic and a depreciated paper currency. And when a country with either the one or the other, has any dealings with another whose currency is of its full value, the exchange is nominally against her to the extent of the degradation or depreciation. The nominal exchange between any two or more places is, in fact, always adjusted according to the values of their currencies, being most favorable to that whose currency approaches nearest to its standard, and most unfavorable to that whose currency is most degraded or depreciated. The intercourse between Great Britain and Ireland subsequently to the restriction on cash payment in 1797, furnishes some striking proofs of the effect which inordinate issues of paper have in depressing the exchange. The nominal value of the Irish shilling being raised in 1689 from 12d. to 13d.,‡ £108 6s. 8d. Irish money became equal to only £100 of British money, so that the exchange between Great Britain and Ireland was said to be at par when it was nominally 8⅓ per cent. against the latter. In the *eight* years previous to 1797, when the paper currency of both countries was convertible into gold, the exchange between London and Dublin fluctuated from 7½ to 9 per cent., that is from 5-6 per cent. in favor of Dublin to ⅓ per cent. against it. In September, 1797, it was at 6 per cent., or 2½ per cent. in favor of Dublin. The amount of Bank of Ireland notes in circulation in January, 1797, was only £621,917; whereas in April, 1801, they had increased to £2,286,471, and the exchange was then at 14 per cent., or 5⅓ per cent. against Dublin. In 1803, the Bank of Ireland notes in circulation averaged £2,707,956, and in October of that year the exchange was quoted at 17 per cent., that is, 8½ per cent. against Dublin!

The fact of the exchange between London and Dublin having fluctuated so little from par for the eight years previously to the restriction, shows that the circulating medium of Great Britain and Ireland had been adjusted nearly according to the wants of the two countries. But, in these circumstances, it was evidently impracticable, supposing the value of British currency to remain nearly stationary, that the amount of Irish bank-paper could be more than quadrupled in the short space of six years, without rendering the currency of Ireland redundant, and sinking its value below that of England. Had the Bank of England increased its notes in something like the same ratio as the Bank of Ireland, then, as the currency of both countries would have been equally depreciated, the exchange between London and Dublin would have continued at par. While, however, the notes of the Bank of Ireland were increased from £621,917 to £2,707,956, or in the proportion of 1 to 4·3, those of the Bank of England were only increased from £9,181,813 (their number on the 7th January, 1797), to £16,505,272, or in the proportion of 1 to 1·8. But for this addition to its issues by the Bank of England, the exchange, it is plain, would have been still more unfavorable to Dublin.

In the debates on the Bullion Report, it was contended that the increase of Bank of Ireland paper could not have been the cause of the unfavorable exchange upon Dublin, seeing that it had again become favorable after the issues of the Bank of Ireland had been still further increased. But to give this reasoning the least weight, it should have been shown that the currency of Great Britain retained its value in the interim, or that it had not been depreciated to the same extent as that of Ireland. For it is obvious that the depreciation of Irish bank-paper might go on subsequently to 1804, and yet if English bank-paper were depreciated still more rapidly, the exchange would become more in favor of Dublin. This is merely supposing the circumstances which took place in the first six years of the restriction to be reversed in the second six. Let us inquire how the fact stands.

We have seen that, in 1803, when the exchange was nominally 10 per cent. against Dublin, the issues of the Bank of England amounted to £16,505,272, and those of the Bank of Ireland to £2,707,956. And by referring to the accounts of the issues of the latter from 1797 to 1819, published by authority, it is seen that in 1805-1808 they were rather diminished; and that in 1810 they amounted to only £3,251,750, being an increase of not more than £543,794 in the space of seven years, or at the rate of 2 and 6-7 per cent. per annum; but in the same period (from 1803 to 1810) the issues of the Bank of England were increased from £16,505,272 to £22,541,523, or at the rate of 5 per cent. per annum. And this is not all. According to Mr. Wakefield, there were 50 registered bankers in Ireland in 1804, and only 33 in 1810, of which 14 were new houses, 31 of the old establishments having dis-

* *An Inquiry into the effects produced on the National Currency by the Bank Restriction Bill*, etc., 2d ed., *p.* 94.

† Previously to 1817, no seigniorage had for a very long period been deducted from either the gold or silver coins of Great Britain; but in the great recoinage of that year, the value of silver was raised from 5s. 2d. to 5s. 6d. an ounce, or nearly in the proportion of 6¼ per cent. The gold coins, however, are still coined free of expense, and no variation has been made in their standard. The proportion of silver to gold in the coins is now as 14 287-1000 to 1; but their proportion to each other, according to their mint valuation, is as 15 209-1000 to 1.

‡ By a proclamation of James II. The arrangement was continued by the revolutionary government, and was confirmed by proclamation, 29th September, 1737. But in 1825 the currencies of Great Britain and Ireland were assimilated.

appeared; and "I believe," says Mr. Wakefield "for the most part failed." This extraordinary diminution of the country paper of Ireland, for the reduction of the issues was at least proportional to the reduction in the number of banks, could not fail greatly to raise its value, and to countervail a corresponding increase in the issues of the national bank. Now, the reverse of all this took place in Britain. In 1900 there were 386 country banks in this country; and in 1810, this number, instead of being diminished as in Ireland, had increased to 721, having at least three times the number of notes in circulation in the latter as in the former period. It appears, therefore, that when, in the period between 1797 and 1804, the amount of paper in circulation in Ireland was increased, and its value depressed, faster than in England, the exchange between London and Dublin became proportionally unfavorable to the latter; and, on the other hand, it appears, that when, in the six years subsequent to 1804, the paper currency of England was increased more rapidly than that of Ireland, its relative value was diminished, and the nominal exchange became more favorable to Dublin.

This is sufficiently conclusive. But there is still better evidence to show that the unfavorable exchange of Dublin upon London, 1802, 1803, 1804, etc., was entirely owing to the comparative redundancy or depreciation of Irish bank-paper. The linen manufacturers and weavers, with the majority of the other inhabitants of a few counties in Ulster, being at the period of the restriction strongly disaffected toward government, very generally refused to receive bank-notes in payment either of commodities or wages. The landlords having also stipulated for the payment of their rents in specie, a gold currency was maintained in the northern long after it had been banished from the southern parts of Ireland. If, therefore, the depression of the exchange between London and Dublin had been occasioned, as many contended, by an unfavorable balance of trade between Ireland and Great Britain, or by remittances from the former on account of absentees, it would have been equally depressed between London and the commercial towns in the northern counties. But so far was this from being the case, that in December, 1803, when the exchange of Dublin on London was at 16¼ per cent., that of Belfast on London was at 5½; or, in other words, at the very time that the exchange between Dublin, which had a paper currency, and London, was about 8 per. cent. against Ireland, the exchange between Belfast, which had a gold currency, and London, was about 3 per cent. in its favor. And this is not all; for while there was a difference of 11 per cent. in the rate of exchange between Dublin and London, and Belfast and London, the inland exchange between Dublin and Belfast was about 10 per cent. in favor of the latter; that is, bills drawn in Dublin, and payable in the gold currency of Belfast, brought a premium of 10 per cent., while bills drawn in Belfast, and payable in the paper currency of Dublin, sold at 10 per cent. discount!*

It is unnecessary to refer to the history of the French *assignats*, or of the paper currency of the continental powers generally, and of the United States, to corroborate what has been advanced. Such of our readers as wish for further information upon these points may have recourse to the fourth volume of the "Cours d'Economie Politique" of M. Storch,† where they will find an instructive account of the influence of inordinate issues of paper on the price of bullion and the exchange, in almost every country of Europe. They are, in every case, similar to those now stated. It only remains to determine the influence of fluctuations in the nominal exchange over exports and imports.

VI. Influence of Fluctuations of Exchange over Imports and Exports.—When the exchange is at par, the operations of the merchant are regulated entirely by the difference between foreign prices and home prices. He imports such commodities as sell at home for so much more than they cost abroad as will indemnify him for freight, insurance, etc., and yields, besides, an adequate remuneration for his trouble, and for the capital employed in the business; and he exports those whose price abroad is sufficient to cover all expenses, and to afford a similar profit. But when the nominal exchange becomes unfavorable to a country, the premium which its merchants receive on foreign bills has been said to enable them to export with profit, in cases where the difference between the price of the exported commodities at home and abroad might not be such as to permit their exportation with the exchange at par. Thus, if the nominal exchange were 10 per cent against this country, a merchant who had consigned goods to his agent abroad, would receive a premium of 10 per cent. on the sale of his bill; and if we suppose freight, insurance, mercantile profit, etc., to amount to 6 or 7 per cent., it would at first sight appear as if we might, in such circumstances, export commodities, although their price at home were 3 or 4 per cent. higher than in other countries. If, on the other hand, the nominal exchange were unfavorable, or if bills on this country sold at a premium, it would appear as if foreigners would then be able to consign goods to our merchants, or the latter to order goods from abroad, when the difference of prices would not of itself lead to an importation.

But a very little consideration will suffice to show that the fluctuations in the nominal exchange have no such effects. That fall in the value of the currency which renders the exchange unfavorable, and causes foreign bills to sell at a premium, equally increases the price of commodities. And hence, however great, the premium which exporters gain by selling bills on their correspondents abroad, merely indemnifies them for the enhanced price of the goods exported. In such cases, mercantile operations are conducted precisely as they would be were the exchange really at par; that is, by a comparison of real prices at home and abroad, meaning by real prices, the prices at which commodities would be sold provided there were no depreciation of the currency. If these admit of exportation or importation with a profit, the circumstance of the nominal exchange being favorable or unfavorable will make no difference whatever on the transaction.

"Suppose," says Mr. Blake, who has very successfully illustrated this part of the theory of exchange, "the currencies of Hamburg and London being in their due proportions, and therefore, the nominal exchange at par, that sugar, which, from its abundance, in London sold at £50 per hogshead, from its scarcity at Hamburg would sell at £100. The merchant in this case would immediately export. Upon the sale of his sugar, he would draw a bill upon his correspondent abroad for £100, which he could at once convert into cash by selling it in the bill market at home, deriving from this transaction a profit of £50, under deduction of the expenses of freight, insurance, commission, etc. Now, suppose no alteration in the scarcity or abundance of sugar in London or Hamburg, and that the same transaction were to take place after the currency in England had been so much increased that the prices were doubled, and, consequently, the nominal exchange 100 per cent. in favor of Hamburg, the hogshead of sugar would then cost £100, leaving apparently no profit whatever to the exporter. He would, however, as before, draw his bill on his correspondent for £100; and, as foreign bills

* Further information on this subject may be obtained from the Report, 1804, of the Committee of the House of Commons upon the state of the circulating paper in Ireland, its specie, etc., from Sir Henry Parnell's pamphlet on the same subject; and from the pamphlets of Lord King, Huskisson, etc.

† Paris, 1823, 4 vols. 8vo.

would bear a premium of 100 per cent., he would sell this bill in the English market for £200, and thus derive a profit from the transaction of £100 depreciated, or £50, estimated in undepreciated currency—deducting, as in the former instance, the expense of freight, insurance, commission, etc.

"The case would be precisely similar, *mutatis mutandis*, with the importing merchant. The unfavorable nominal exchange would appear to occasion a loss amounting to the premium on the foreign bill which he must give in order to pay his correspondent abroad. But if the difference of real prices in the home and foreign markets were such as to admit of a profit upon the importation of produce, the merchant would continue to import, notwithstanding the premium; for that would be repaid to him in the advanced nominal price at which the imported produce would be sold in the home market.

"Suppose, for instance, the currencies of Hamburg and London, being in their due proportions, and therefore the nominal exchange at par, that linen which can be bought at Hamburg for £50 will sell here at £100. The importer immediately orders his correspondent abroad to send the linen for the payment of which he purchases at £50 a foreign bill in the English market; and on the sale of the consignment for £100, he will derive a profit amounting to the difference between £50 and the expense attending the import.

"Now, suppose the same transaction to take place without any alteration in the scarcity or abundance of linen at Hamburg and London, but that the currency of England has been so augmented as to be depreciated to half its value, the nominal exchange will then be 100 per cent. against England, and the importer will not be able to purchase a £50 foreign bill for less than £100. But as the prices of commodities here will have risen in the same proportion as the money has been depreciated, he will sell linen to the English customer for £200, and will, as before, derive a profit amounting to the difference between £100 depreciated, and £50 estimated in undepreciated money, and the expenses attending the import.

"The same instances might be put in the case of a favorable exchange; and it would be seen, in the same manner, that nominal prices and the nominal exchange being alike dependent on the depreciation of currency, whatever apparent advantage might be derived from the former, would be counterbalanced by a loss on the latter, and *vice versâ*."*

It appears, therefore, that fluctuations in the *nominal* exchange have no effect on trade. A fall in the exchange obliges the country to which it is unfavorable to expend a greater *nominal* sum in discharging a foreign debt than would otherwise be necessary; but it does not oblige it to expend a greater real value. The depression of the *nominal* exchange can neither exceed nor fall short of the comparative depreciation of the currency. If British currency were depreciated 10 or 15 per cent., the *nominal* exchange would be 10 or 15 per cent. against us; and we should be compelled, in all transactions with foreigners, to give them 22s. or 23s. for what might otherwise have been procured for 20s. But as neither 22s. nor 23s. of such depreciated paper is more valuable than 20s. of paper undepreciated, payment of a foreign debt would, it is evident, be as easily made in the one currency as in the other; and mercantile transactions would, in such circumstances, be conducted exactly as they would have been had there been no depreciation, and the *nominal* exchange at par.

VII. Real Exchange.—Having thus endeavored to trace the influence which variations in the value of currencies have over the exchange, we proceed to consider how far it is influenced *by fluctuations in the supply and demand for bills*. To facilitate this inquiry, we shall exclude all consideration of changes in the value of money, and suppose the currencies of the different countries having an intercourse together to be equal in weight and purity to their mint standards, and that each has its proper supply of bullion. When two nations trade together, and each purchases of the other commodities of the same value, their debts and credits are equal, and the real exchange is, of course, at par. But it rarely happens that the debts reciprocally due by any two countries are equal. There is almost always a balance owing on one side or other, which affects the exchange. If, for example, the debts due by London to Paris exceed those due by the former to the latter, the demand in London for bills on Paris will be greater than the demand in Paris for bills on London; and the *real* exchange will, consequently, be in favor of Paris, and against London.

The expense of transferring bullion from one country to another, limits the range within which the rise and fall of the real exchange between them is confined. In this respect, as in most others, transactions between foreign countries depend on the same principles which govern those between different parts of the same country. We have already seen that the fluctuations in the real exchange between London and Glasgow can not exceed the expense of transmitting money between those cities. And this principle holds universally. Whatever may be the expense of transmitting bullion, which is the money of the commercial world, between London and Paris, London and Hamburg, New York, etc., the real exchange of the one on the other, can not for any considerable period, be depressed to a greater extent. No merchant will pay a higher premium for a bill to discharge a debt abroad, than will suffice to cover the expense of transmitting bullion to his creditor.

Hence it appears that whatever obstructs or fetters the intercourse among different countries, proportionally widens the limits within which fluctuations in the *real* exchange may extend. And hence the reason why it varies so much more in war than in peace. The amount of the bills drawn on a country engaged in hostilities is liable, from various causes, to be suddenly increased; though, whatever may be the amounts thus thrown upon the market, the depression of the exchange can not, for any length of time, exceed the expense of conveying bullion from the debtor to the creditor country. But during war this expense, which consists of freight, insurance, etc., is sometimes much augmented. The evidence annexed to the *Report of the Bullion Committee* shows that the cost of conveying gold from London to Hamburg, which, prior to the Revolutionary war, amounted to 2 or 2½, had increased, in the latter part of 1809, to about 7 per cent.; so that the limits within which fluctuations in the real exchange might range in 1809 were about three times as great as those within which they were confined in 1793. Owing to our having the complete command of the sea, and our commerce not being subjected even to the depredations of privateers, the cost of freight and the conveyance of bullion between this country and others, has not been affected by the war in which we are now (1855) unluckily engaged. The real exchange between neighboring countries is generally, on the principle now explained, less likely to fluctuate than that between distant countries. It costs considerably less to transmit bullion from London to Dublin or Paris, than to New York or Canton. And, as fluctuations in the *real* exchange are limited by its cost, they may evidently extend proportionally further between distant places than between such as are contiguous. We have next to investigate the circumstances which give rise to a favorable or an unfavorable balance of payments, and to appreciate their effects on the real exchange, and on trade in general.

* Paris, 1823, 4 vols. 8vo.

VIII. Balance of Payments.—A very great, if not the principal, source of the errors into which merchants, and the majority of writers on exchange, have been betrayed in regard to the balance of payments, appears to have originated in their confounding the sum which imported commodities fetch in the home market, with their cost abroad. It is obviously, however, by the amount of the latter only, that the balance of payments, and consequently the *real* exchange, is influenced. A cargo of corn, for example, which cost £3000 free on board at Odessa, may be worth £4500 when imported into England; but the foreign merchant would not, unless he sent hither the corn, be entitled to draw on London for more than its original cost, or £3000. It is clear, therefore, on the slighest consideration, that the fact of the imports being more valuable than the exports, does not authorise the conclusion that the balance of payments is against us. A favorable or an unfavorable balance depends entirely on the sum due *to* foreigners for commodities bought from them being less or more than the sum due *by* them for commodities bought from us. It has nothing to do with the prices eventually obtained for the imported or exported commodities.

The *mercantile* system of commercial policy, which continues to preserve a powerful influence in most countries, had for its grand object the creation of a favorable balance of payments, by facilitating exportation and restricting importation. It is foreign to our purpose to make any inquiry in regard to the principles of this system, except in so far as they are connected with exchanges. But it may be easily shown, in opposition to the commonly received opinions, that under ordinary circumstances the value of the imports into commercial countries always exceeds the value of their exports; and that this excess or balance has not, speaking generally, any tendency to render the real exchange unfavorable.

It is the business of the merchant to carry the products of different countries from those places where their value is least, to those places where it is greatest; or, which is the same thing, to distribute them according to the effective demand. There could, however, be no motive to export any article, unless that which was to be imported in its stead were more valuable. When an English merchant orders a quantity of Polish wheat, he supposes it will sell for so much more than its price in Poland as will suffice to pay the cost of freight, insurance, etc., and to yield, besides, the ordinary rate of profit on the capital employed in the transfer. If the wheat did not sell for this much, its importation would be productive of loss. Merchants never export but in the view of importing articles of greater value. Instead of an excess of exports over imports being any criterion of an advantageous commerce, it is quite the reverse. And the truth is, notwithstanding all that has been said and written to the contrary, that unless the value of the imports exceeded that of the exports, foreign trade could not be carried on. Were this not the case—were the value of the exports always greater than that of the imports, there would be a loss on every transaction with foreigners, and the trade with them would either not be undertaken, or, if begun, would be speedily relinquished.

In England, the rates at which exports and imports are officially valued were fixed so far back as 1696. The very great alteration which has since taken place in the value of money, and in the cost of the greater number of the commodities of this and other countries, has rendered this official valuation, though valuable as a means of determining their quantity, of no use whatever as a criterion of the true value of the imports and exports. To obviate this defect, accounts of the *real* or *declared* value of the exports, prepared from the declarations of the merchants, are annually laid before parliament. There is, however, no such account of the imports; and it is, perhaps, impossible to frame one with any thing like accuracy. It has also been alleged, and apparently with some foundation, that merchants have frequently exaggerated the value of articles entitled to drawbacks. But the extension and improvement of the warehousing system, and the decrease in the number of drawbacks, has very materially lessened whatever fraud or inaccuracy may have arisen from that score. The declared value of the exports may now be considered as pretty near the truth, at least sufficiently so for all practical purposes.

If perfectly accurate accounts could be obtained of the value of the exports and imports, there can be no manner of doubt that in all ordinary years the latter would considerably exceed the former. The value of an exported commodity is estimated when it is shipped, before its value is increased by the expense incurred in transporting it to the place of destination; whereas the value of the commodity imported in its stead is estimated after it has arrived at its destination, and been enhanced by the charges on account of freight, insurance, importer's profits, etc.

It is of little importance, in so far at least as the interests of commerce are concerned, whether a nation carries its own imports and exports, or employs other. A carrying nation appears to derive a comparatively large profit from its commercial transactions. But this excess of profit is seldom more than a fair remuneration for the capital it employs, and the risk it incurs, in transporting commodities. Were the trade between this country and France wholly carried on in British bottoms, our merchants, in addition to the value of the exports, would also receive the cost of their carriage to France. This, however, would be no loss to the French. They must pay the freight of the commodities they import. And if English ships sail on cheaper terms than those of their own country, there is no good commercial reason, though there may be others of a different kind, why they should not employ them in preference.

In the United States, the value of the imports, deduced from the custom-house returns, almost always exceeds the value of the exports. And though we have been accustomed to consider the excess of exports over imports as the only sure criterion of an advantageous commerce, the practical politicians of America early discovered "that the real gain of the United States has been nearly in proportion as their imports have exceeded their exports."* The great excess of imports in the Union is in part occasioned by the Americans generally exporting their own surplus produce, and receiving from foreigners not only an equivalent for the exports, but also for the cost of their conveyance to their markets. "In 1811," says the author just quoted, "flour sold in America for $9 50 per barrel, and in Spain for $15. The value of the cargo of a vessel carrying 5000 barrels of flour would, therefore, be estimated, at the period of its exportation, at $47,500; but as this flour would, because of freight, insurance, exporter's profits, etc., sell in Spain for $75,000, the American merchant would be entitled to draw on his agent in Spain for $27,500 more than the flour cost in America, or than the sum for which he could have drawn had the flour been exported on account of a Spanish merchant. But the transaction would not end here; the $75,000 would be vested in some species of Spanish or other European goods fit for the American market; and the freight, insurance, etc., on account of the return cargo would, perhaps, increase its value to $100,000; so that, in all, the American merchant might have imported commodities worth $52,500 more than the flour originally sent to Spain." It is as impossible to doubt that this transaction is advantageous, as it is to doubt that its advantage consists in the value of the imports exceeding that of the

* Pitkin on the *Commerce of the United States*, 2d ed., p. 280.

exports. And it is clear that America might have the balance of the payments in her favor, though such transactions as the above were multiplied to any conceivable extent.

Instead, therefore, of endeavoring to limit the trade with countries from which the imports exceed the exports, we should give it every possible facility. Every man considers that market as the best in which he obtains the highest price for his goods. Why then exclude him from it? Why compel a merchant to sell a cargo of muslins, iron, etc., for $10,500, rather than $11,000 or $12,000? The wealth of a state is made up of the wealth of individuals. And what more effectual method of increasing individual wealth can be devised than to permit buying in the cheapest and selling in the dearest markets?

It would be difficult to estimate the mischief which absurd notions relative to the balance of trade have occasioned in most commercial countries. They have been particularly injurious to Great Britain. The restrictions imposed on the trade in France originated in the prevalence of prejudices to which they gave rise. The great, or rather the only, argument insisted on by those who prevailed on the legislature to declare the French trade a *nuisance*,* was founded on the alleged fact, that the value of the imports from France considerably exceed the value of the exports to her. The balance was termed a tribute paid by England; and it was sagaciously asked, what had we done that we should be obliged to pay so much money to our natural enemy? Those considerate and patriotic persons seem to have supposed that our merchants brought commodities from France for no better reason than that they were French, or to oblige that ingenious people. But they were not quite so disinterested. They imported French wines, silks, and so forth, for the same reasons that they imported the sugar of the West Indies, the teas and spices of the East, and the timber of the Baltic; that is, because there was a demand for them, and because they were worth more in our markets than the native products exported in their stead. The reason assigned for prohibiting the trade affords a conclusive proof of its having been advantageous. There can not, indeed, be a doubt, that an unlimited freedom of intercourse between the two countries would be of great service to both. Supposing it to be so arranged, does any one imagine that we should export or import any commodity to or from France, provided we could either sell or buy it on better terms anywhere else? If restrictions on the trade with any particular country be not injurious, that is, if it be either a losing or a less advantageous trade than that with other countries, we may be assured that the throwing it completely open would not make a single individual engage in it.

Every body knows that these conclusions are not only theoretically true, but have been practically verified. The abolition of the discriminating duty on French wines, the reduction of the exorbitant duty on brandy, the repeal of the prohibition against importing silks, and the opening of our ports to French corn and flour, have all been advantageous. And though it be true that the prejudices of the French, and the high duties which they continue to impose on most articles of British produce, confine the trade within comparatively narrow limits, they have not made it unprofitable, and are more injurious to themselves than to us. It is a curious fact, that notwithstanding the great amount of our imports from France, and our expenditure in that country on account of absentees, the state of the exchanges shows that the balance of payments is usually in our favor. But the partisans of the exclusive or mercantile system may perhaps say, that they do not mean to contend that it is profitable to export more than is imported; but that, by exporting an access of raw and manufactured produce, the balance of payment is rendered favorable, and this balance (which they regard as representing the entire net profit made by the country on its transactions with foreigners) is alway paid in bullion. It may, however, be easily shown that this statement is altogether erroneous; that a balance, whether on the one side or the other, is seldom or never cancelled by means of bullion: and that it is not a measure, and has, indeed, nothing to do with the profit or loss attending foreign commercial transactions.

If the premium on foreign bills, in a country with an unfavorable real exchange, be less than the cost of sending bullion abroad, it would be contradictory to suppose that it should be exported. And though the premium on such bills were to increase, till it became equal to, for it can not exceed, the cost of exporting the precious metals, it does not follow that they will then be exported. That would depend on whether bullion were, at the time, the cheapest exportable commodity; or, in other words, whether a remittance of bullion was the most advantageous way in which a debt might be discharged. If a London merchant owe £1000, or other sum, in Paris, he endeavors to find out the cheapest method of paying it. On the supposition that the real exchange is 2 per cent. below par, and that the expense of remitting bullion is also 2 per cent., it will be indifferent to him whether he pays £20 of premium for a bill of £1000, payable in Paris, or incur an expense of £20 in remitting a £1000 worth of bullion direct to that city. If the price of cloth in Paris and London be such that it would require £1030 to purchase and send as much cloth to Paris as would sell for £1000, he would no doubt prefer buying a bill or exporting bullion. But if, by incurring an expense of £1010 the debtor may send as much hardware or cotton to Paris as would sell for £1000, he would as certainly prefer paying his debt by exporting the one or the other. It would save him 1 per cent. more than if he had bought a foreign bill or remitted bullion, and 2 per cent more than if he exported cloth. Had there been any other commodity which might have been exported with more advantage, he would have used it in preference.

It is obvious, therefore, that the trade in bullion is governed by the same principles which govern the trade in other things. It is exported when its exportation is advantageous; that is, when it is less valuable at home, and more valuable abroad, than any thing else; and it will not otherwise be exported. The balance of payments might be twenty or thirty millions against a country, without depriving it of a single ounce of bullion. No merchant would remit a £1000 worth of gold or silver from England to discharge a debt in Paris if he could invest £970, £980, £990, or any sum under £1000, in any other species of merchandise which, exclusive of expense, would sell in France for that amount. Those who deal in the precious metals are as much alive to their interests as those who deal in coffee, or sugar, or indigo. But who would attempt to discharge a foreign debt by exporting coffee which cost £100, if he could effect the same object by exporting indigo which cost only £95? No bullion will ever be exported unless its value be less in the exporting country than in that to which it is sent; and unless it be, at the same time, the most advantageous article of export.

2. It is in vain to contend that an unrestricted freedom of trade might render some unfortunate country indebted to another so happily situated that it had no demand for any sort of ordinary merchandise, and would only accept of cash or bullion in exchange for its exports. A case of this sort never did, and never will, occur. It is not even possible. A nation which is in want of money must be in want of other things; for men desire money only because it is the readiest means of increasing their command over necessaries and enjoyments. The extreme variety, too, in the

* Prohibition Act, 1st William and Mary.

soils and climates—in the machinery, skill, and industry of the people of different countries—occasion extraordinary differences in their products and prices. Some articles of the highest utility are peculiar to certain districts. And there will ever be a demand, not only for such articles, but also for those which, though they may be produced at home, may be imported of a better quality, or at a lower price. Nor, till the passion of accumulation be banished from the human breast, will there cease to be a desire to send commodities from places where their exchangeable value is least, to those where it is greatest.

3. In treating of the nominal exchange, we endeavored to show that no single country can continue for any length of time to import or export a greater amount of bullion than may be necessary to preserve the precious metals in it in their proper relation to those of other countries; or, which is the same thing, to have the real exchange either permanently favorable or unfavorable. But though this principle be strictly true in reference to its aggregate exchange, it may be incorrect if its exchange with one country only be considered. Great Britain, for example, may generally have the exchange in her favor with America, provided she have it generally, and to a nearly equal extent, against her with the East Indies, or some other country. "She may," to use the words of Mr. Ricardo, "be importing from the north the bullion which she is exporting to the south. She may be collecting it from countries where it is relatively abundant, for others where it is relatively scarce, or where, from some particular causes, it is in great demand. Spain, who is the great importer of bullion from America, can never have an unfavorable exchange with her colonies; and as she must distribute the bullion she receives among the different nations of the world, she can seldom have a favorable exchange with the countries with which she trades." See Reply to Mr. Bosquet's Observations on the Report of the Bullion Committee, p. 17.

On this principle, Lord King successfully accounted for the favorable exchange between this country and Hamburg from 1770 to 1799. He showed that the importation of bullion from Hamburg and other parts was not more than equivalent to the exports to the East Indies and the home consumption; that the demand corresponded to the supply; and that its value remained pretty stationary. The extraordinary influx of bullion into this country from the Continent at the era of the bank restriction in 1797, and the favorable state of the exchange, were undoubtedly owing to the reduction in the issues of bank paper, and to the diminution of the gold currency, caused by the hoarding of guineas. In 1797 and 1798, above 5,000,000 of guineas were coined at the mint; and this extraordinary demand for gold is of itself abundantly sufficient to account for the very favorable exchange of that period, and for the length of time during which it continued. But, at the same time that the demand for gold bullion for the mint was thus increased, the demand for silver bullion, for exports to India, was proportionally augmented.

	Ounces.
In 1795, the quantity exported by the East India Company and private parties amounted to	151,795
In 1796 to	290,777
1797	902,880
1798	3,565,691
1799	7,287,827

From this period the exportation rapidly declined; and in the years in which the exchange was most unfavorable, little or no silver was sent to India.

Instead, therefore, of the extraordinary importation of bullion from Hamburg in 1797 and 1798 affording, as Mr. Bosanquet and others supposed, a practical proof of the fallacy of the opinion of those who contend that it is impossible, for any length of time, to subvert the natural equality in the value of bullion in different countries, it is a striking example of its truth. Without this influx, bullion in this country could not have maintained its proper comparative value. We imported it, because the reduction of the paper currency, and the increased exports of the East India Company, rendered its value higher here than on the Continent, and made it advantageous for the Continental merchants to send it to us, in the same manner as they would have sent corn, or any thing else for which we had an unusual demand. For, however favorable the real exchange between Hamburg and London might have been to the latter, we should not have imported an ounce of bullion, had it not been, at the time, the article with which Hamburg could most advantageously discharge her debt to London.

4. In the absence of other arguments, it would be sufficient to state, that it is physically impossible that the excess of exports over imports, as indicated by the custom-house returns, should be paid in bullion. Every country, with the exception of the United States, has its apparently favorable balance; and, of course, if they really existed, they would have to be paid by an influx of bullion from the mines correspondent to their aggregate amount. It is certain, however, that, previously to the discoveries in California and Australia, the entire produce of the mines, though it had been increased in a ten fold proportion, would have been insufficient for this purpose! This fact is decisive of the degree of credit which ought to be attached to the commonly-received opinions on this subject.

5. In the last place, the profit on transactions with foreigners does not consist in the quantity of bullion imported from abroad, but in "the excess of the value of the imports over the value of the exports." If, in return for exported commodities worth 10 or 20 millions, we import such as are worth 15 or 30, we shall gain 50 per cent. by the transaction, though the exports should consist entirely of bullion, and the imports of corn, sugar, coffee, etc. It is a ridiculous prejudice that would make bullion be imported rather than any other article. But whatever the partisans of the exclusive system may say about its being a preferable product, a *merchandise par excellence*, we may be assured that it will seldom appear in the list of exports or imports, while there is any other thing with which to carry on trade that will yield a larger profit. Thus it appears that the excess of exports over imports, instead of being any proof of an advantageous commerce, is distinctly and completely the reverse; that the value of the imports into commercial countries may, and almost always does, exceed the value of their exports, without rendering them indebted to foreigners; and that when a balance of debt has been contracted, that is, when the sum *payable to* foreigners for imports is greater than the sum *receivable from* them for exports, bullion will not be sent from the debtor to the creditor country, unless it be at the time the most profitable article of export.

IX. Effects of Real Exchange upon Imports and Exports.—We have shown that fluctuations in the nominal exchange do not influence foreign trade. When the currency is depreciated, the premium which an exporter derives from the sale of bills on his correspondent abroad, is barely equivalent to the increase in the price of the exports, occasioned by the depreciation. But when the premium on foreign bills is not caused by a fall in the value of money, but by a deficient supply of bills, there is no rise of prices, and then the unfavorable exchange undoubtedly operates as a stimulus to exportation. As soon as the *real* exchange diverges from par, the mere inspection of price currents is no longer enough to guide the operations of the merchant. If it be unfavorable, the premium which the exporters receive on the sale of bills must be included in the estimate of the profit they are likely to derive from the transaction. The greater that premium, the less will be the difference of prices necessary to make them export. An unfavorable *real*

exchange has, in truth, exactly the same effect on exportation as a bounty equal to the premium on foreign bills.

But for the same reason that an unfavorable *real* exchange increases exportation, it diminishes importation. When it is unfavorable, the prices of foreign products brought to our markets must be so much under their prices here, as not merely to afford, exclusive of expenses, the ordinary profit on their sale, but also to pay the premium which the importer must give for a foreign bill, if he remit one to his correspondent, or for the discount added to the invoice price, if the latter draw upon him. A less quantity of foreign goods will therefore suit our markets when the exchange is really unfavorable; and fewer payments having to be made abroad, the competition for foreign bills is diminished, and the exchange rendered proportionally favorable. A favorable *real* exchange, consequently, operates as a duty on exportation and a bounty on importation.

Hence it is obvious that fluctuations in the *real* exchange have a necessary tendency to correct themselves. They can never, for any considerable period, exceed the expense of transmitting bullion from the debtor to the creditor country. And the exchange can not continue permanently favorable or unfavorable even to this extent. When favorable, it corrects itself by restricting exportation and facilitating importation; and when unfavorable, it produces the same effect by stimulating exportation and obstructing importation. The true PAR forms the centre of these oscillations. And though the thousand circumstances which daily and hourly affect the state of debt and credit, prevent the ordinary course of exchange from being almost ever precisely at par, its fluctuations, whether on the one side or the other, are confined within certain limits, and have a constant tendency to disappear. The natural tendency which the exchange has to correct itself is powerfully assisted by the operations of the bill merchants.

England, for example, may owe an excess of debt to Amsterdam, yet, as the aggregate amount of the debts due by a commercial country, is generally balanced by the amount of those which it has to receive, the deficiency of bills on Amsterdam in London will most probably be countervailed by their redundancy in some other quarter. And, it is the business of the merchants who deal in bills, as of those who deal in bullion or any thing else, to buy them where they are cheap, that they may sell them where they are dear. They, therefore, buy up the bills drawn by other countries on Amsterdam, and dispose of them in London; and, by so doing, prevent any great fall in the price of bills on the former in the countries in which their supply exceeds the demand, and any great rise in Great Britain and the country in which their supply happens to be deficient. In our trade with Italy, the bills drawn on England generally amount to a greater sum than those drawn on Italy. The bill merchants, however, by buying up the excess of Italian bills on London, and selling them in France, Holland, and other countries indebted to England, prevent the *real* exchange from being much depressed.

An unusual deficiency in the supply of corn, or of any article of prime necessity, by causing a sudden augmentation of imports, materially affects foreign debts and credits, and depresses the exchange. In time of war, the balance of payments is liable to be still further disturbed; the amount of the bills drawn on a country carrying on foreign hostilities, being increased by the whole expense of its armaments abroad, and of subsidies to foreign powers. But neither the conjoined nor separate influence of both or either of these causes has any permanent influence over the exchange. A sudden increase in the accustomed supply of bills must, in the first instance, by glutting the market, occasion their selling at a discount; but this effect will only be temporary. The unusual facilities which are then afforded for exportation, and the difficulties which are thrown in the way of importation, never fail speedily to bring the *real* exchange to par.

During a period of peace we may, in the too great ardor of speculative enterprise, export an excess of produce, overload the foreign market, and occasion such a decline in the price of our goods abroad, as to make the imports less valuable than the exports with which they have been purchased. But such a state of things can only be of limited duration. The distress of which it is productive, assisted by the fall of the exchange, occasions a diminution of exports. The supply of our commodities in the foreign markets is rendered more nearly commensurate with the demand; till in no long time the value of the imports again exceeds, as it always ought to do, the value of the exports. But when a country has a large foreign expenditure to sustain, its exports are proportionally augmented. Whatever may have been the foreign expenditure of Great Britain during the late war, it is evident that it could not be defrayed otherwise than by our annually exporting an equal amount of the produce of our land, capital, and labor, for which payment was not received, as in ordinary cases, by a corresponding importation of foreign commodities, but from the treasury at home. This is strictly true, even though the expenditure should have happened to be, in the first instance, discharged by remittances of bullion; for the increased supply of bullion which was thus required, could be obtained only by an equally increased exportation of other products to the countries possessed of mines, or from which it was imported. Foreign expenditure, by increasing exports in proportion to its own amount, has no permanent influence over the exchange.

Thus it appears that an excess of exports, instead of being any criterion of increasing wealth at home, is only a certain indication of commercial losses, or of expenditure abroad. "When," says Mr. Wheatley, "the exports exceed the imports, as they must do when there is a large foreign expenditure, the equivalents for the excess are received abroad in as full and ample a manner as if the produce which they purchased were actually imported and entered in the custom-house books, and afterward sent to the seat of war for consumption. But from the circumstance of its not being inserted in the custom-house entries as value received against the produce exported for its payment, the latter is deemed to constitute a favorable balance, when it is in reality exported to liquidate a balance against us." *

But how conclusive soever this reasoning may appear, it has been said to be at variance with the fact; and the rise of the exchange at the end of the late war, during the suspension of cash payments, has been appealed to as showing that its previous low rate had not been occasioned by any depreciation of the paper currency, but by the excessive amount of the bills drawn upon this country to defray war expenditure. The question, however, is not whether the exchange recovered from its depression during the suspension of cash payments, for the influence of that measure depended entirely on the use made of it, but whether its recovery took place without the amount of bank paper of all sorts, or of the currency, being diminished? The statements made in the article MONEY are decisive upon this point. They show that the currency was very greatly diminished in 1811, 1815, and 1816; and that this diminution occasioned the rise in its value, and in the nominal exchange.

Mr. Francis Horner, the well-informed chairman of the Committee on the High Price of Bullion, made the following statement in regard to this very question in his place in the House of Commons: "From inquiries

* WHEATLEY, *on the Theory of Money*, p. 219.

he had made, and from the accounts on the table, he was convinced that a greater and more sudden reduction of the circulating medium had never taken place in any country than had occurred since the peace of th's country, with the exception of those reductions that had taken place in France after the Mississippi scheme, and after the destruction of the assignats. The reduction of the currency had originated in the previous fall of the prices of agricultural produce. That fall had produced a destruction of country-bank paper to an extent which would not have been thought possible, without more ruin than had actually ensued. The Bank of England had also restricted its issues. As appears by the accounts recently presented, the average amount of its currency was not, during the last year, more than between £25,000,000 and £26,000,000; while two years ago it had been nearer £29,000,000, and at one time even amounted to £31,000,000. But, without looking to the diminution of Bank of England paper, the reduction of the country paper was enough to account for the rise which had taken place in the exchange." Hence it appears that the rise of the exchange in 1815 and 1816 had nothing, or but little, to do with the cessation of hostilities, and was entirely, or mainly, a consequence of the increased value of the currency, caused by the reduction of its quantity. Instead of being at variance with the principles we have been endeavoring to elucidate, this fact affords a strong confirmation of their correctness. And having been sanctioned by the fullest experience, may be considered as beyond the reach of cavil and dispute. An objection of a different sort has been made, to another part of the theory maintained in this section, which it may be proper to notice.

When the exchange becomes unfavorable, the premium, procured by the sale of the bill drawn on a foreign merchant to whom bullion has been consigned, is no greater than would be obtained by consigning to him an equivalent amount of coffee, tea, sugar, indigo, etc. An unfavorable real exchange permits a merchant to export commodities which could not be exported were it at par, or favorable. But the advantage still remains of exporting those commodities in preference, whose price in the country from which they are sent, compared with their price in that to which they are exported, is lowest. Suppose, for example, that the expense of transmitting bullion from this country to France is 3 per cent., that the real exchange is 4 per cent. against us, that the price of bullion is the same in both countries, and that coffee exclusive of the expenses of carriage, is really worth 4 per cent. more in France than in England. In such a case, it is obvious that the exporters of bullion would realize a profit of only 1 per cent., while the exporters of coffee would realize, inclusive of the premium on the sale of the foreign bill, a profit of 7 per cent. And hence the opinion maintained by Colonel Torrens,* that when the exchange becomes unfavorable, those commodities which contain the greatest value in the smallest bulk, or on which the expense of carriage is least, are exported in preference, appears to have no good foundation. The prices of the commodities which nations trading together are in the habit of exporting and importing, are regulated not merely by the cost of their production, but also by the expense of their carriage from where they are produced to where they are consumed. If Great Britain were in the habit of supplying France with cottons and bullion, the average price of cottons in France, because of the expense required to convey them there, would probably be from 5 to 6 per cent. higher than in Britain; while, because of the comparative facility with which bullion may be transported from the one to the other, its value in Paris would not, perhaps, exceed its value here more than 1 per cent. Now, suppose that when the prices of cottons and bullion in England and France are adjusted according to their natural proportions, the real exchange, becomes unfavorable to us, it is clear that its fall gives no greater advantage to the exporters of bullion than to those of cottons. This rise in the price of foreign bills does not increase the expense of exporting the one or the other. It leaves the cost of their reduction and transportation exactly where it found it. During the depression of the exchange, the exporters of both articles get the premium on the bills drawn on their correspondents. But there is no inducement to export bullion in preference to cottons, unless the price of bullion increase more rapidly in France, or decline more rapidly in Great Britain, than that of cottons.

Whatever, therefore, may be the depression of the exchange, the merchant selects those commodities for exportation which, exclusive of the premium, yield the greatest profit on their sale. If bullion be one of these, it will of course be exported; if not, not. But of all commodities, bullion is that of which the value approaches nearest to an equality in different countries, so that it is the least likely to be exported during an unfavorable exchange. The demand for it is comparatively steady, and no great surplus quantity could be imported into one country without reducing, or exported from another, without raising its value so as to unfit it either for exportation or importation. In most cases a small part only of an unfavorable balance is paid in bullion. The operations of the bullion merchants are confined chiefly to the distribution of the fresh supplies obtained from the mines, in proportion to the wants of different countries.

X. Computed Exchange.—Having thus endeavored to point out the manner in which variations in the values of the currencies of nations trading together, and in the supply and demand for bills, separately affect the exchange, it now only remains to ascertain their combined effect, or the computed or actual course of exchange. From what has been already stated, it is obvious, that when the nominal and real exchange are both favorable or both unfavorable, the *computed* exchange will express their *sum*; and that when one is favorable and the other unfavorable, it will express their *difference*. When, for example, the currency of Great Britain is of the mint standard and purity, while that of France is 5 per cent. degraded, the *nominal* exchange will be 5 per cent. in our favor. But the *real* exchange may, at the same time, be either favorable or unfavorable. If it be, also, favorable to the extent of 1, 2, 3, etc., per cent., the computed exchange will be 6, 7, 8, etc., per cent. in our favor. And, on the other hand, if it be unfavorable to the extent of 1, 2, 3, etc., per cent., the *computed* exchange will be only 4, 3, 2, etc., per cent. in our favor. When the *real* exchange is in favor of one country, and the *nominal* exchange equally against it, the *computed* exchange is at par, and *vice versâ*.

A comparison of the market with the mint price of bullion affords the best and readiest means by which to ascertain the state of the exchange. When there are no restrictions on the trade in the precious metals, the excess of the market over the mint price of bullion affords an accurate measure of the depreciation of the currency. If the market and mint price of bullion at Paris and London exactly corresponded, then, inasmuch as the real value of bullion must be very nearly the same in both countries, the *nominal* exchange would be at par; and whatever fluctuations the computed exchange might exhibit, must, in such cases, be traced to fluctuations in the *real* exchange, or in the supply and demand for bills. If, when the market price of bullion in Paris is equal to its mint price, it exceeds it 2 per cent. in London, it is a proof that our currency is 2 per cent. depreciated, and consequently the *nominal* exchange between Paris and London *must* be 2 per cent. against the latter. Instead, however,

* *Comparative Estimate*, etc.

of the *computed* or actual course of exchange being 2 per cent. against London, it may be against it to a greater or less extent, or in its favor. It will be more against it provided the *real* exchange be also unfavorable; it will be less against it provided the *real* exchange be in favor of London, though to a less extent than the adverse *nominal* exchange; and it will be in favor of London, should the favorable *real* exceed the unfavorable *nominal* exchange. Thus, if, while British currency is 5 per cent. depreciated, and French currency at par, the computed or actual course of exchange between Paris and London were 10 or 12 per cent. against the latter, it would show that the *real* exchange was also against this country to the extent of 5 or 7 per cent. And if, on the other hand, the computed exchange were only 2 or 3 per cent. against London, it would show that the *real* exchange was 3 or 4 per cent. in its favor, and so on.

It has been already shown, that in so far at least as the question of exchange is involved, the differences in the value of bullion in different countries are limited by the expense of its transit from one to another. And hence, by ascertaining whether a particular country exports or imports bullion to or from other countries, we may determine its comparative value in these countries. Suppose, for example, that the expense of conveying bullion from this country to France, including the profits of the bullion dealer, is 1 per cent.; it is clear, inasmuch as bullion is exported only to find its level, that whenever our merchants begin to export it to France, its value there must be at least 1 per cent. greater than in England; and, on the contrary, when they import bullion from France, its value here must be, at least 1 per cent. greater than in France. In judging of the exchange between any two countries, this circumstance should always be attended to. If no bullion be passing from the one to the other, we may conclude that its value is nearly the same in both; or, at all events, that the difference of its value is not more than the expense of transit. On the supposition that the entire expense, including profit, of conveying bullion from San Francisco to London is 5 per cent., and that London is importing bullion, it is clear, provided the real exchange be at par, and the currency of both cities at their mint standards, that the *nominal*, or, which in this case is the same thing, the *computed* exchange, will be 5 per cent. in favor of London, but if the currency of London be 5 per cent. depreciated, or, in other words, if the market price of bullion at London be 5 per cent. above its mint price, the *computed* exchange between it and San Francisco, supposing the *real* exchange to continue at par, will obviously be at par. It may therefore be laid down as a general rule, that when bullion begins to pass from one country to another, the expense of transit, provided the mint and market price of bullion in the exporting country correspond, will indicate how much the value of bullion in it is below its value in the country into which it is imported, and will be identical with its unfavorable *nominal* exchange; and that when the market exceeds the mint price of bullion in the exporting country, the expense of transit added to this excess will give the total comparative reduction of the value of the precious metals in that country. The converse of this takes place in the country importing bullion. When its currency is of the mint standard, the expense of transit is the measure of its favorable nominal exchange; but when its currency is relatively redundant or degraded, the difference between the expense of transit and the excess of the market above the mint price of bullion, will measure the extent of the favorable or unfavorable nominal exchange. It will be favorable when the depreciation is less than the expense of transit, and unfavorable when it is greater.

From 1809 to 1815 inclusive, Great Britain continued to export gold and silver to the Continent. During this period, therefore, we must add the expense of its export to the excess of the market over the mint price of bullion, to get at the true relative value of British currency, and the state of the *real* exchange. Mr. Goldsmid stated to the bullion committee that, during the last five or six months of 1809, the expense of transporting gold to Holland and Hamburg, including freight, insurance, exporter's profits, etc., varied from 4 to 7 per cent. But at the time that the relative value of bullion in Britain was at 5¼ (medium of 4 and 7) per cent. below its value in Hamburg, the market price of gold bullion exceeded its mint price 16 or 20 per cent., or 18 per cent. at an average; so that the currency of this country, as compared with that of Hamburg, which differed very little from its mint standard, was depreciated to the extent of about 23¼ per cent. Now, as the *computed* or actual course of exchange varied, during the same period, from 19 to 21 per cent. against London, it is plain the *real* exchange could not be far from par. Had the *computed* exchange been less unfavorable, it would have shown that the *real* exchange was in favor of London; had it been more unfavorable, it would, on the contrary, have shown that the *real* exchange was against London.

Provided an accurate account could be obtained of the expense attending the transit of bullion from this country to the Continent during the subsequent years of the war, it would most likely be found, notwithstanding the extraordinary depression of the *nominal*, that the *real* exchange varied but little from par; and that the exportation of gold and silver was not a consequence of the balance of payments being against us, but of its being advantageous to export bullion, because of its being more valuable on the Continent. None will contend that, in 1809, 1810, etc., gold and silver were so redundant in this country as to sink their relative value. Any such supposition is out of the question. During the period referred to, they were sent abroad, because the depreciation of paper exceeded the cost of the transit of bullion; and it was every body's interest to pay their debts in the depreciated currency, and to export that which was undepreciated to countries where it passed at its full value as coin, or in which bullion was in greater demand. Had our paper currency been sufficiently reduced, the supply of gold in the kingdom in 1809, 1810, etc., compared with the demand which must, under such circumstances, have been experienced, was so very small, that instead of exporting, we should have imported the precious metals from all parts of the world.

The extraordinary exportation of British goods to the Continent during the latter years of the war, has been very generally supposed to have been in great measure owing to the depression of the exchange. But, in so far as this depression was occasioned by the redundancy or depreciation of the currency, it could have no such effect. It is impossible, indeed, to form any opinion as to the influence of fluctuations in the *computed* exchange on export and import trade, without previously ascertaining whether they are a consequence of fluctuations in the *real* or *nominal* exchange. It is only by an unfavorable *real* exchange that exportation is facilitated; and it may be favorable when the *computed* exchange is unfavorable. "Suppose," to use an example given by Mr. Blake, "the computed exchange between Hamburg and London to be 1 per cent. against this country, and that this arises from the *real* exchange which is favorable to the amount of 4 per cent., and a nominal exchange unfavorable to the extent of 5 per cent.; let the real price of bullion at Hamburg and London be precisely the same, and, consequently, the *nominal* prices different by the amount of the *nominal* exchange, or 5 per cent.; now, if the expenses of freight, insurance, etc., on the transit of bullion from Hamburg are 3 per cent., it is evident that a profit would be derived from the import of that article, notwithstanding the *computed* exchange was 1

per cent. against us. In this case, the merchant must give a premium of 1 per cent. for the foreign bill, to pay for the bullion; £100 worth of bullion at Hamburg would therefore cost him £101, and the charges of importation would increase the sum to £104. Upon the subsequent sale, then, for £105 of depreciated currency in the home market, he would derive from the transaction a profit of £1. This sum is precisely the difference between the *real* exchange and the expenses of transit, that part of the *computed* exchange which depends on the *nominal* producing no effect; since whatever is lost by its unfavorable state is counterbalanced by a corresponding inequality of *nominal* prices."* In the same manner it may be shown that, though the *computed* be favorable, the *real* exchange may be unfavorable; and that, consequently, it may be really advantageous to export when it is apparently advantageous to import. But it would be tedious to multiply instances, which, as the intelligent reader will readily conceive, may be infinitely varied, and which have been sufficiently explained in the foregoing sections.

The real cause of the extraordinary importation of British produce into the Continent, in 1809, 1810, 1811, etc., notwithstanding the anti-commercial system of Napoleon, is to be found in the annihilation of the neutral trade, and our monopoly of the commerce of the world. The entire produce of the East and West was at our disposal. The Continental nations could neither procure colonial products, nor raw cotton for the purpose of manufacturing, except from England. British merchandise was thus almost indispensable; and to this our immense exportation, in spite of all prohibitions to the contrary, is to be ascribed.

XI. History and Influence of Bills of Exchange.—It is not easy to discover the era when bills of exchange were first employed to transfer and adjust the mutual claims and obligations of merchants. Their invention has been ascribed to the Arabians and Jews of the Middle Ages. But it seems certain that they were in use in remote antiquity. Isocrates states that a stranger who brought some cargoes of corn to Athens, furnished a merchant of the name of Stratocles with an order or bill of exchange on a town on the Euxine, where money was owing to him; and, because the person who had drawn the bill had no fixed domicile, Stratocles was to have recourse on a merchant in Athens, in the event of its being protested. The merchant, says Isocrates, who procured this order found it extremely advantageous, inasmuch as it enabled him to avoid risking his fortune on seas covered with pirates, and the hostile squadrons of the Lacedemonians.—*De Pauw Recherches sur les Grècs*, i., 258.

There is also good evidence to show that the method of transferring and canceling the debts of parties residing at a distance by means of letters of credit, which are in effect the same as bills of exchange, was not unknown to the Romans. Cicero, in one of his epistles to Atticus,† inquires whether his son must carry cash to defray the expense of his studies with him to Athens, or whether he might not save this trouble and risk by obtaining an assignment for an equivalent sum from a creditor in Rome on his debtor in Athens. It is evident, from a subsequent epistle of Cicero, that the latter method had been preferred, and that the transference of the money had, in consequence, been rendered unnecessary.‡

Macpherson states§ that the first mention of bills of exchange in modern history occurs in 1255. The pope, having quarreled with Manfred, King of Sicily, engaged, on Henry III. of England agreeing to indemnify him for the expense, to depose Manfred, and raise Henry's second son, Edmund, to the Sicilian throne. The enterprise misgave. But the merchants of Sienna and Florence, who originally advanced the money to carry it into effect, or rather to gratify the pope's rapacity, were paid by bills drawn on the prelates of England, who, although they protested that they knew nothing at all about the transaction, were nevertheless compelled, under pain of excommunication, to pay the bills and interest!*

Capmany, in his "Memoirs" respecting the commerce, etc., of Barcelona, gives a copy of an ordonnance of the magistracy, dated in 1394, enacting that bills should be accepted within twenty-four hours after their presentation; a sufficient proof that they were in general use in the end of the fourteenth century.

But whatever be the era of the introduction of bills of exchange, few inventions have redounded more to the public advantage. Without this simple and ingenious contrivance, commerce could have made no great progress. Had there been no means of adjusting the mutual claims of debtors and creditors otherwise than by the intervention of metallic money (for bank paper is only another species of bills of exchange), a very large portion of that capital which is setting productive labor in motion in every quarter of the globe, and ministering to the wants and enjoyments of mankind, must have been employed in effecting those exchanges which are much better effected by the agency of a few quires of paper. Instead of a perpetual importation and exportation of gold and silver, necessarily attended with an immensity of trouble and expense, bills, possessing little or no intrinsic worth, and which are transferred with the utmost facility, suffice to adjust the most extensive and complicated transactions. But the mere setting free of an immense productive power, engaged in a comparatively unprofitable employment, is only one of the many benefits we owe to the use of bills. By cheapening the instruments by which commerce is carried on, they have materially reduced the prices of most articles; and have, in consequence, increased the command of all classes over necessaries and luxuries, and accelerated the progress of civilization, by occasioning a more extensive intercourse and intimate connection between different and independent countries than would otherwise have taken place.

In a political point of view their effects have been equally salutary. They enable individuals imperceptibly to transfer their fortune to other countries, and to preserve it safe alike from the rapacity of their own governments and the hostile attacks of others. The security of property has, in consequence, been vastly augmented. And though we should concede to the satirist that paper credit has "lent corruption lighter wings," it has, at the same time, powerfully contributed to render subjects less dependent on the policy, and less liable to be injuriously affected by the injudicious measures of their rulers. In countries in a low stage of civilization the inhabitants endeavor, by burying all the gold and silver they can collect, to preserve a part of their property from the despots by whom they are alternately plundered and oppressed. This was universally the case in the Middle Ages; and in Turkey, India, Persia, and other eastern, and also in some European countries, the practice is still carried on to a greater or less extent. Some economists have endeavored to account for the long-continued importation and high value of the precious metals in India, by the loss which necessarily attends the practice of hoarding; and undoubtedly this locking-up of capital, while it evinces an extreme degree of insecurity, is a

* Observations, etc., p. 91.

† *Epist. ad Atticum*, xii. 2.

‡ *Epist. ad Atticum*, xii. 27. "De Cicerone, ut scribis, ita faciam: ipsi permittam de tempore; nummorum quantum opus erit ut *permutetur* tu videbis." In his notes on a parallel passage, Grævius remarks, "*Permutatio* est quod nunc barbare *cambium* dicitur."—*Epist. ad Atticum*, xi. 24.

§ *Annals of Commerce*, i. 405.

* Hume's *England*, cap. 12.

main cause of the poverty of these countries. But the security afforded by bills of exchange is infinitely greater than any which can be derived from the barbarous expedient of trusting property to the bosom of the earth. "Pregnant with thousands flits the *scrap* unseen," and in a moment places the largest fortune beyond the reach of danger. Mr. Harris was therefore right in saying, "that the introduction of bills of exchange was the greatest security to merchants, both as to their persons and effects, and consequently the greatest encouragement to commerce, and the greatest blow to despotism, of any thing that ever was invented."

Its extensive commerce, the wealth and punctuality of its merchants, and their intimate connection with all the other great trading cities of the world, made Amsterdam, previously to the peace of 1763, the chief place where the accounts of commercial countries were balanced and adjusted. But the loss of foreign trade, and the other vexations to which Holland was subjected during the ascendency of the French, nearly divested Amsterdam of all share in this business; and it has not since recovered its former superiority. London is now the trading metropolis of Europe and the world, *universi orbis terrarum emporium*. The vast extent of its commercial dealings necessarily renders it the great mart for bills of exchange. Its bill-merchants, a class of men remarkable for their shrewdness and generally possessed of large capitals, assist in trimming and adjusting the balance of debt and credit between the most remote countries. They buy up bills where they are cheap, and sell them where they are dear, and, by the extent of their correspondence and the magnitude of their transactions, give a steadiness to the exchange to which it could not otherwise attain.

The following is a statement of the usance and days of grace for bills drawn at London upon some of the principal commercial cities:

London on	Usance.	Days of grace.
Amsterdam	1 m. d.*	0
Rotterdam	1 m. d.	0
Antwerp	1 m. d.	0
Hamburg	1 m. d.	12
Altona	1 m. d.	12
Dantzic	14 d. s.	10
Paris	30 d. d.	0
Frankfort	14 d. s.	4
Bremen	1 m. d.	8
Barcelona	60 d. d.	14
Geneva	30 d. d.	6
Madrid	2 m. s.	14
Cadiz	60 d. d.	5
Bilboa	2 m. d.	14
Gibraltar	2 m. s.	14
Leghorn	3 m. d.	0
Leipzig	14 d. s.	0
Genoa	3 m. d.	30
Venice	3 m. d.	6
Vienna	14 d. s.	3
Malta	30 d. d.	18
Naples	3 m. d.	3
Palermo	3 m. d.	0
Lisbon	60 d. s.	6
Oporto	30 d. s.	6
Rio Janeiro	30 d. d.	3
Dublin	21 d. s.	3
New York	60 d. s.	3

* m. d., m. s., d. d., d. s., d. a., respectively denote *months after date, months after sight, days after date, days after sight, days after acceptance.*

In France, days of grace were suppressed by the *Code de Commerce*, article 132. In Austria, bills payable at sight or on demand, or at less than 7 days after sight, are not allowed any days of grace. In Petersburgh, bills after date are allowed 10 days' grace, but after sight only 3 days' do.

In the dating of bills, the new style is used in every country of Europe, with the exception of Russia. A proposition is now before the Russian government for introducing the Gregorian calendar.

In London, bills of exchange are bought and sold by brokers who go round to the principal merchants and discover whether they are buyers or sellers of bills. A few of the brokers, of most influence, after ascertaining the state of the relative supply and demand for bills, suggest a price at which the greater part of the transactions of the day are settled, with such deviations as particular bills, from their being in a very high or low credit, may be subject to. The price fixed by the brokers is that which is published in Wittenhall's List; but the first houses generally negotiate their bills on ¼, 1, 1½, and 2 per cent. better terms than those quoted. In London and other great commercial cities, a class of middlemen speculate largely on the rise and fall of the exchange; buying bills when they expect a rise, and selling them when a fall is anticipated.

It is usual, in drawing foreign bills of exchange, to draw them in sets, or duplicates, lest the first should be lost or miscarry. When bills are drawn in sets, each must contain a condition that it shall be payable only while the others remain unpaid; thus, the first is payable only, "second and third unpaid;" the second, "first and third unpaid;" and the third, "first and second unpaid."

Bills of exchange purporting to be drawn at any place out of the United Kingdom are to be deemed to be liable to the stamp-duty on such bills, though they may, in fact, have been drawn in the United Kingdom. (§ 4.) The holders of foreign bills, or bills drawn out of the United Kingdom, are to affix proper adhesive stamps to the same before negotiating them, under a penalty of £50. (§ 5.)

No one acquainted with the fundamental rules of arithmetic can have any difficulty whatever in estimating how much a sum of money in one country is worth in another, according to the state of exchange at the time. The common arithmetical books abound in examples of such computations. But, in conducting the business of exchange, a direct remittance is not always preferred. When a merchant in London, for example, means to discharge a debt due by him in Paris, it is his business to ascertain not only the state of the direct exchange between London and Paris, and, consequently, the sum which he must pay in London for a bill on Paris equivalent to his debt, but also the state of the exchange between London and Hamburg, Hamburg and Paris, etc.; for it frequently happens that it may be more advantageous for him to buy a bill on Hamburg, Amsterdam, or Lisbon, and to direct his agent to invest the proceeds in a bill on Paris, rather than remit directly to the latter. This is termed the ARBITRATION of exchange. An example or two will suffice to show the principle on which it is conducted.

Thus, if the exchange between London and Amsterdam be 35s. Flemish (old coinage) per pound sterling, and between Paris and Amsterdam 1s. 6d. Flemish per franc, then, in order to ascertain whether a direct or indirect remittance to Paris would be most advantageous, we must calculate what would be the value of the franc in English money if the remittance were made through Holland; for it be less than that resulting from the direct exchange, it will obviously be the preferable mode of remitting. This is determined by stating, as 35s. Flemish (the Amsterdam currency in a pound sterling): 1s. 6d. Flemish (Amsterdam currency in a franc):: £1: 10d. the proportion or *arbitrated* value of the franc. Hence, if the English money, or bill of exchange, to pay a debt in Paris, were remitted by Amsterdam, it would require 10d. to discharge a debt of a franc, or £1 to discharge a debt of 24 francs; and, therefore, if the exchange between London and Paris were at 24, it would be indifferent to the English merchant whether he remitted directly to Paris, or indirectly *viâ* Amsterdam; but if the exchange between London and Paris were *above* 24, then a direct remittance would be preferable; while, if on the other hand, the direct exchange were less than 24,

the indirect remittance ought as plainly to be preferred.

"Suppose," to borrow an example from Kelly (*Universal Cambist*, vol. ii., p. 137), "the exchange of London and Lisbon to be at 68d. per milree, and that of Lisbon on Madrid 500 rees per dollar, the arbitrated price between London and Madrid is 34d. sterling per dollar; for, as 1000 rees: 68d.:: 500 rees: 34d. But, if the direct exchange of London on Madrid be 35d. sterling per dollar, then London, by remitting directly to Madrid, must pay 35d. for every dollar; whereas, by remitting through Lisbon, he will pay only 34d.; it is, therefore, the interest of London to remit indirectly to Madrid through Lisbon. On the other hand, if London draws directly on Madrid, he will receive 35d. sterling per dollar; whereas, by drawing indirectly through Lisbon, he would receive only 34d.; it is, therefore, the interest of London to draw directly on Madrid. Hence, the following rules:

"1. Where the certain price is given, draw through the place which produces the lowest arbitrated price, and remit through that which produces the highest.

"2. Where the uncertain price is given, draw through that place which produces the highest arbitrated price, and remit through that which produces the lowest." In compound arbitration, or when more than three places are concerned, then, in order to find how much a remittance passing through them all will amount to in the last place, or, which is the same thing, to find the arbitrated price between the first and the last, we have only to repeat the different statements in the same manner as in the foregoing examples. Thus, if the exchange between London and Amsterdam be 35s. Flemish for £1 sterling; between Amsterdam and Lisbon 42d. Flemish for 1 old crusade; and between Lisbon and Paris 480 rees for 3 francs; what is the arbitrated price between London and Paris? In the first place, as 35s. Flemish: £1:: 42d. Flemish: 2s. sterling = 1 old crusade.

Second, as 1 old crusade, or 400 rees: 2s. sterling:: 480 rees: 2s. 4·8d. sterling = 3 francs.

Third, as 2s. 4·8d. sterling: 3 francs:: £1 sterling: 25 francs, the arbitrated price of the pound sterling between London and Paris.

This operation may be abridged as follows:

£1 sterling.
£1 sterling = 35s. Flemish.
8½s. Flem. = 1 old crusade.
1 old crusade = 400 rees.
480 rees = 3 francs.

Hence $\frac{85 \times 400 \times 8}{480 \times 8\frac{1}{2}} = \frac{4200}{168} = 25$ francs.

This abridged operation evidently consists in arranging the terms, so that those which would form the divisors in continued statements in the Rule of Three, are multiplied together for a common divisor, and the other terms for a common dividend. The ordinary arithmetical books abound with examples of such operations.

The following account of the manner in which a very large transaction was actually conducted by indirect remittances, will sufficiently illustrate the principles we have been endeavoring to explain. In 1804, Spain was bound to pay to France a large subsidy; and, in order to do this, three distinct methods presented themselves: 1. To send dollars to Paris by land. 2. To remit bills of exchange directly to Paris. 3. To authorize Paris to draw directly on Spain. The first of these methods was tried, but it was found too slow and expensive; and the second and third plans were considered likely to turn the exchange against Spain. The following method by the indirect or circular exchange was therefore adopted.

A merchant or *banquier* at Paris was appointed to manage the operation, which he thus conducted: He chose London, Amsterdam, Hamburg, Cadiz, Madrid, and Paris, as the principal hinges on which the operation was to turn; and he engaged correspondents in each of these cities to support the circulation. Madrid and Cadiz were the places in Spain from whence remittances were to be made; and dollars were, of course, to be sent to where they bore the highest price, for which bills were to be procured on Paris, or on any other places that might be deemed more advantageous. The principle being thus established, it only remained to regulate the extent of the operation, so as not to issue too much paper on Spain, and to give the circulation as much support as possible from real business. With this view, London was chosen as a place to which the operation might be chiefly directed, as the price of dollars was then high in England; a circumstance which rendered the proportional exchange advantageous to Spain.

This business was commenced at Paris, where the negotiation of drafts issued on Hamburg and Amsterdam served to answer the immediate demands of the state; and orders were transmitted to these places to draw for the reimbursements on London, Madrid, or Cadiz, according as the course of exchange was most favorable. The proceedings were all conducted with judgment, and attended with complete success. At the commencement of the operation, the course of exchange of Cadiz on London was 36d.; but by the plan adopted, Spain got 39½d., or above 8 *per cent.* by the remittance of dollars to London, and considerable advantages were also gained by the circulation of bills through the several places on the continent.—Kelly's *Cambist*, vol. ii., p. 168; Dunoyer's *Elements of Commerce*, 2d ed., p. 228. See *Bills of Exchange*.

Table specifying the Value of the Moneys of Account of the principal Places with which England has Exchange Transactions, taking Silver at 5s. an ounce, and specifying also the Par of Exchange with such Places on this hypothesis.*

					s.	d.		Par of Exchange.		
Petersburg	100	copecks	=	1 rouble	=	8 1 1-2	giving	6 roub. 40 cop.	=	£1
Berlin	80	sil. groschen	=	1 Prusc dollar	=	2 10 3-4	"	6 doll. 27 s. g.	=	1
Copenhagen	96	skillings	=	1 Rig. dollar	=	2 2 1-3	"	9 doll. 10 sk.	=	1
Hamburg	16	schillings	=	1 mark	=	1 5 1-2	"	13 mks. 10 1-2 sch.	=	1
Amsterdam	100	centimes	=	1 florin	=	1 8	"	11 fl. 97 cents	=	1
Antwerp	100	centimes	=	1 florin	=	1 8	"	11 fl. 97 cents	=	1
Paris	100	centimes	=	1 franc	=	9 1-2	"	25 fr. 57 cents	=	1
Frankfort	24 1-2	guld. or flor.	=	1 mark	=	1 7 7-8	"	12 3-40 guldens	=	1
Vienna	60	kreusers	=	1 florin	=	2 0 4-10	"	9 fl. 50 kr.	=	1
Venice	100	centisimi	=	1 lira Austriaca	=	8·13	"	29 fl. 52 cent.	=	1
Genoa	100	centisimi	=	1 lira Nuova	=	9 1-2	"	25 fl. 57 cent.	=	1
Leghorn	100	centisimi	=	1 lira Toscana	=	7·82	"	30 fl. 69 cent.	=	1
Madrid	8	reals	=	1 dollar of Plate	=	3 1 3-4	"	6 doll. 2 3-4 reals	=	1
Lisbon	1000	reis	=	1 milreis	=	4 8	"	4 mil. 285 reis	=	1
New York	100	cents	=	1 dollar	=	4 2	"	4 doll. 80 cents	=	1
Rio Janeiro	1000	reis	=	1 milreis	=	9 7	"	7 mil. 777 reis	=	1
Havana	100	cents	=	1 dollar	=	4 0 13-222	"	4 doll. 44 cents	=	1

* Abstracted from *Tate's Modern Cambist*, to which the reader is referred for further explanations.

It is easy from this table to calculate the value of any of the above coins, taking silver at 5s. 2d., 5s. 6d. an oz., or any other price, and thence to deduce the par of exchange at such rates. The preceding article on Principles of Exchange, is from the pen of J. R. McCulloch, in the last edition Ency. Brit. See *Bills of Exchange*.

Exchange signifies a place in most considerable trading cities where merchants, agents, bankers, brokers, interpreters, and other persons concerned in com-

merce, assemble on certain days, at a fixed hour, to confer together in regard to matters relating to exchanges, remittances, payments, assurances, freights, etc. In Flanders, Holland, and France, these places are called *Bourses*, or *Places de Change*; and in the Hanse towns, *Borsenhalle*. The most considerable exchanges in Europe are those of London, Paris, and Amsterdam. The ancient Romans had places for merchants to meet in most of the considerable cities of their empire. That which is said to have been built at Rome in the year B.C. 493, was called *Collegium Mercatorum*, of which it is alleged there are still some remains, called by the modern Romans *Loggia*, the Lodge or place of St. George.

Exchequer Bills are bills of credit issued by authority of Parliament. They are for various sums, and bear interest (generally from 1½d. to 2½d. per diem, per £100) according to the usual rate at the time. The advances of the bank to government are made upon exchequer bills; and the daily transactions between the bank and government are principally carried on through their intervention. Notice of the time at which outstanding exchequer bills are to be paid off is given by public advertisement. Bankers prefer vesting in exchequer bills to any other species of stock, even though the interest be for the most part comparatively low; because the capital may be received at the treasury at the rate originally paid for it, the holders being exempted from any risk of fluctuation, except in the amount of the premium or discount at which they may have bought the bills. Exchequer bills were first issued in 1696, and have been annually issued ever since. The subjoined is an account of the unfunded debt in exchequer bills, and of the annual charge thereon, on the 5th of January, 1817, and the 5th of January every subsequent year down to 1855.

In 1853, *exchequer bonds* were issued bearing interest at 2½ per cent. for ten years, thereafter 2½ per cent. for thirty years, or till 1894, to such holders of South Sea, and three per cent. stock as chose to accept the same, a bond for £100 being given for every £100 stock subscribed (16th and 17th Vict., cap. 23). But only a very small sum (£5000) has been invested in such bonds.

This description of temporary loan is unknown in this country, but is a favorite investment by British capitalists. The treasury has the power, by act of Parliament, to issue ways and means bills, or in other words, exchequer bills, to the aid of the ways and means of the year, by issuing them in any one quarter, payable out of the revenues of the following quarter. Independent of these bills of supply, issues are made in exchequer bills to the paymaster-general for the ordinary service, to be sold in the market to meet the public demand. The bills are signed either by the comptroller or by the assistant-comptroller, and every means have been suggested to prevent forgery. Sometimes the bills are issued to the paymaster-general, and sometimes to the bank; and the bank either carries the amount of money for which it has contracted with the government, to the paymaster's account, or to the exchequer account. Then the credit is issued from the exchequer account for the public accountant. About 1500 bills are prepared in one day, and they are signed in even quantities. There are constitutional reasons against the treasury having the issue of exchequer bills. The Constitution of England is founded on a jealousy of the executive government, and therefore checks are required in dealing with the action of the government, which a commercial company like the Bank of England may not in any respect require.

From the 1st of January, 1842, to 15th June, 1847, there were signed by the comptroller-general, and by the assistant-comptroller, 186,707 exchequer bills, for the amount of £197,983,423. From the 1st January, 1845, to 15th June, 1847, there were examined and controlled by the comptroller-general and assistant-comptroller, 288 royal orders of the amount of £92,865,730, and 900 treasury warrants of the value of £283,681,258. From the first of January, 1845, to 10th June, 1847, there were issued and supplied to the paymaster, 90,109 bills of the amount of £54,604,300. The preparation of exchequer bills costs the public for paper-making, £4000; superintendence of ditto, £30; engraving and printing, £180; superintendent, £30; and counterfeits, £10—total, £650. During 1855, there were signed 1455 credits, 1228 acquittances, 427 Irish transfers, 3842 Irish acquittances, 32,444 exchequer bills of £31,827,117; and controlled 214 royal orders of £91,811,111, and 869 treasury warrants of £178,981,985. In 1854, there were signed 22,654 exchequer bonds of £6,009,400.

Years ending Jan. 5.	Amount of Exchequer Bills.	Rate of Interest per Diem.	Charge of Interest per Annum.
1817	£44,650,800	3d. Nov. 22, 1816	£2,173,927
1818	56,729,400	2½d. Feb. 24, 1817	1,891,315
1819	43,208,400	2d. Oct. 11, 1817	2,026,450
1820	35,808,200	....	847,091
1821	30,965,900	....	1,529,131
1822	31,566,550	....	2,009,311
1823	26,281,150	....	1,309,499
1824	34,741,750	1½d. June, 24, 1824	1,111,220
1825	32,898,450	....	1,086,015
1826	27,998,900	2d. Dec. 19, 1825	820,000
1827	24,565,350	....	770,000
1828	27,546,850	....	802,186
1829	27,657,000	1½d. Sept. 30, 1829	860,475
1830	25,490,550	1½d. Dec. 18, 1829	806,076
1831	27,271,650	....	726,465
1832	21,183,350	....	604,365
1833	27,278,000	....	577,320
1834	27,906,900	....	723,596
1835	28,524,550	....	636,417
1836	25,276,600	2d. Sept. 29, 1836	688,701
1837	26,976,000	2½d. Nov. 21, 1836	692,625
1838	24,044,550	2d. Dec. 14, 1837	871,399
1839	24,026,050	1½d. March 18, 1839	641,370
1840	19,965,050	2½d. March 16, 1840	788,707
1841	21,076,350	....	559,130
1842	18,843,850	2d. June 15, 1842	797,046
1843	18,182,100	1½d. March 17, 1843 / 1½d. June 16, 1843	631,601
1844	18,407,300	....	594,051
1845	18,404,500	....	462,363
1846	18,380,200	....	422,654
1847	18,810,700	2d. March 16, 3d. June 16,	1847 419,398
1848	17,946,500	2½d March 16, 2d. June 15,	1848 433,348
1849	17,786,700	1½d. March 15, 1849	787,381
1850	17,758,700	....	605,124
1851	17,756,600	....	402,790
1852	17,742,800	1½d. June 10, 1852	403,476
1853	17,742,500	1d. March 10, 2d. Oct. 11,	1853 402,852
1854	16,029,600	2½d. June 12, 1854	368,414
1855	17,183,000	....	318,513

The interest paid within each year is given in the column of charge, which interest has accrued upon the capital stated in the preceding year.

The interest paid upon the £16,029,600, and upon £1,750,000 of bills issued in April 1854, will be paid in 1855

The interest upon the £17,183,00, will not be payable till 1856, *i. e.*, year ending January 5, 1857.

Excise, the name given to the duties or taxes laid on certain articles produced and consumed at home; but, exclusive of these, the duties on licenses and post-horses are also placed under the management of the excise, and are consequently included in the excise duties. The excise system was established in England by the Long Parliament; was continued under Cromwell and Charles II.; and was organized as at present in the Walpole administration. It was first collected and an office opened in 1643, and was arbitrarily levied upon liquors and provisions to support the parliamentary forces against Charles I. The excise-office was built on the site of Gresham College, in 1774. The officers of excise and customs were deprived of their votes for members of Parliament in 1782.—*Haydn.*

Excise duties had been from an early period established in Holland, and the large revenue which they afforded pointed them out to the leaders of the popular party in the great civil war, as the most likely

means by which they could raise funds to carry on the great contest in which they had embarked. They were consequently introduced by a parliamentary ordinance in 1643; being then laid on the makers and venders of ale, beer, cider, and perry. The royalists soon after followed the example of the republicans; both sides declaring that the excise should be continued no longer than the termination of the war. But it was found too productive a source of revenue to be again relinquished; and when the nation had been accustomed to it for a few years, the Parliament declared, in 1649, that the "impost of excise was the most easy and indifferent levy that could be laid upon the people." It was placed on a new footing at the Restoration; and, notwithstanding Mr. Justice Blackstone says that "from its first original to the present time its very name has been odious to the people of England" (*Com.* book 1. c. 8), it has continued progressively to gain ground; and is at this moment imposed on various important articles, and furnishes a large share of the public revenue of the kingdom.

Amount of the Excise Revenue of Great Britain in the following Years:

1744	Great Britain		£3,754,072
1786	"	"	6,540,114
1806	"	"	19,867,914
1820	"	"	26,864,702
1827	United Kingdom		20,995,324
1830	"	"	18,644,895
1834	"	"	16,877,292
1837	"	"	14,518,142
1840	"	"	12,607,766
1845	"	"	13,585,583

Exhibition (*exhibere*, to exhibit, furnish, maintain, etc.), a showing or presenting to view; a display. In law, delivery of writings in proof of facts; a bill of discovery. In our old writers it is also used for an allowance of meat and drink, a pension or salary; and it is now applied to a benefaction settled for the maintenance of scholars in English universities, not depending on the foundation. In this sense the term is analogous to the Scottish *bursary*. Among physicians, exhibition is a standard and convenient term to express the administering a medicine.

Exhibitions of Works of Fine Art.—A collection of works of fine art, arranged in some suitable place for public inspection, is styled an exhibition. It is organized on a different principle from that of a national gallery or museum; for the works are not permanently conserved, but contributed for a limited period annually, new examples being provided for every successive exhibition.

Exhibitions are comparatively of modern institution. In former times artists were chiefly patronized by the church or the government; and the edifices in which their productions were placed were patent to the public; but now artists rely mainly on private patronage, and generally obtain the sanction of those for whom they execute works to exhibit them publicly for a limited period as specimens of their skill; or if executed for sale, these exhibitions afford an opportunity of disposing of their works, while they themselves are improved in their art by the opportunity of comparing their own efforts with those of other artists.

The members of the Academy of the Fine Arts, founded at Rome in 1593, probably on particular occasions exhibited their works collectively to the public; but it was in France, in 1737, that the members of the Royal Academy of Painting and Sculpture (founded in 1648) first regularly instituted annual exhibitions. These were made biennial in 1745, and were from their commencement confined to works executed by members of the academy; but during the Revolution (by a decree in 1791) all artists, French or foreign, were allowed to participate in the exhibition, which in 1796 was again made annual.

The earliest attempt at an exhibition in England was in 1760; and the efforts of the artists were at length united in the Royal Academy's exhibitions, the first of which was opened in 1769. Since then they have been continued with increasing energy. In 1760, the number of works exhibited was 130, contributed by 69 artists; in 1855 there were 1558 works, contributed by 918 exhibitors. The annual revenue of the academy arises from a fee of one shilling from each visitor, and now exceeds £8000.

The Royal Scottish Academy's exhibition is the second in importance in the United Kingdom. Though, according to its present constitution, it only dates from 1826, those who instituted it had previously organized exhibitions in Edinburg, which had been annually continued, with some few interruptions, since 1808. At the first exhibition, 178 works were sent in by 27 contributors; at the exhibition in 1855, 789 works were contributed by 287 exhibitors. The annual revenue exceeds £2000. Exhibitions are annually opened in Dublin by the Royal Hibernian Academy. These are the only fine-art corporations in Great Britain aided by government, the two first mentioned being accommodated in public galleries, and the last receiving an annual money grant. Besides the above mentioned, the following societies in London have also exhibitions, namely, the British Institution, founded in 1806; the Society of British Artists, in 1824; the National Institution, in 1850; the Society of Painters in Water Colors, in 1805; and the New Society of Painters in Water Colors, in 1835. There are also annual exhibitions in Manchester, Liverpool, Glasgow, Birmingham, Cork, Newcastle, etc. But with the exception of those in London and the Royal Scottish and Hibernian Academies, they are mainly composed of works collected all over the kingdom, but principally in London.

Exhibition of 1851.—The great Exhibition of Works of Industry of all Nations, held in the British metropolis, was publicly announced in October, 1849. Prince Albert, as president of the Society of Arts, offered himself to the public as their leader in the undertaking; and her Majesty's proclamation appointing a commission to promote the project was issued January 3, 1850. The amount of public subscriptions to the Crystal Palace was £67,399 3s. 10d. After much discussion relative to the site proposed, a vast structure was erected on the south side of Hyde Park, from a design of Mr. (afterward Sir Joseph) Paxton. This building (usually called the Crystal Palace from the material of which it was chiefly composed) resembled, upon a great scale, the Victoria Regia plant-house, erected at Chatsworth, after Mr. Paxton's own design. The contract with Messrs. Fox and Henderson was for £79,800—a sum afterward somewhat increased by additions to the plan; or for £150,000, if the building was permanently retained. The exhibition was opened by her Majesty in state, May 1, 1851; and it remained open to the public till 11th October, shortly after which time the Crystal Palace was taken down.

This gigantic structure occupied an area of 21 acres, and was composed entirely of large sheets of glass set in frame-work of iron, except near the ground, where it was boarded. Its length was 1851 feet (a number corresponding to the year of the exhibition); and its width, in the broadest part, 456 feet; the transept intersecting the building at right angles in the middle, was 408 feet long, 108 high, and 72 wide. The entire structure consisted of three tiers of elevation, the central portion being 64 feet high, the adjacent side portions 44 feet, and the outer sides 24 feet high. The materials employed were as follows: 896,000 superficial feet of glass, weighing 400 tons; wrought-iron, 550 tons; cast-iron, 3500 tons; wood, including flooring, 600,000 cubic feet; nearly 2300 cast-iron girders, and 358 wrought-iron trusses for supporting the roof and the galleries (which extended nearly a mile in length); 30 miles of gutters; 202 miles of sash-bars, and 3300 cast-iron columns. The number of exhibitors was about 17,000; of prize medals awarded,

2918; of council medals, 170. The greatest number of visitors in one week was in that ending 11th October, when the number of persons paying at the doors was 478,773. The total amount of entrance fees during the season was £421,418 15s.

The Great Exhibition of 1851 was altogether novel in principle, and unparalleled in magnitude and magnificence; comprehending under one roof, in almost endless variety, specimens of the industrial productions, not only of Great Britain, but of the European states generally, together with those of nearly every part of the habitable globe. An account of these, as well as of the peculiar mode of construction of the Crystal Palace, may be found in the official descriptive and illustrated catalogues and reports of the juries.'

Our limits preclude our entering into the history of national industrial exhibitions, or to make more than a passing reference to the various local exhibitions of works of industry which have taken place from time to time in the United Kingdom; such as those at Cork, Sheffield, Plymouth, and Salisbury in 1852, Dublin in 1853, and in Birmingham in 1849. Similar exhibitions were organized in Belgium in 1830, in the United States in 1853, at Munich in 1854, and especially in France in 1798, 1801, 1802, 1806, 1819, 1844, and on a large scale in 1855. This last is constituted on an entirely different basis from the English Exhibition of 1851; being set on foot by the capital of a commercial company formed for the purpose, and on the prospect of remunerative profits; but the State also takes a distinct and positive share in the risks of the enterprise, as it does with railways and other works of public utility. A certain percentage to the holders of stock is guarantied by the government; and in right thereof an imperial commission is appointed which exercises supreme control. By this arrangement the proprietors are to receive whatever surplus may remain after all expenses are paid; whereas the £170,000 derived from the prices of admission to the London Exhibition stands over as a public trust fund, under royal charter, to be applied to objects in harmony with those for which the exhibition was held.

The French Exhibition is not contained under one roof, nor of the several buildings are all intended to be of a temporary character. The buildings, in the aggregate, will probably include a greater area than the Crystal Palace at Hyde Park. The main building is the Palais de l'Industrie, a permanent edifice of rectangular form, and with considerable pretensions to architectural effect. In this will be exhibited all the higher productions of manufacturing industry. There is also the "Annexe," a shed 4000 feet long, parallel to the Seine, for the exhibition of machinery and raw produce. According to the plan, these two structures are connected by a gallery running across the Champs Elysées, and having in its centre a fine circular space, which is appropriated to the productions of Sèvres, and the other national establishments; and, in addition, there is an extra shed for the exhibition of carriages and other articles of great bulk.—E. B.

The British government, in order to secure an adequate representation of British art and industry in Paris, corresponding to the efforts which the French government had made in 1851, granted £50,000 by a parliamentary vote. The assistance of public associations and local committees was also obtained for the purpose, and special reports were by them published. The number of exhibitors from the United Kingdom was 1555, and from the British colonies 1070. The total number of exhibitors was 20,339, viz.: 10,691 from the French empire, and 10,148 from foreign States, viz.: France, 9790; Algeria, 724; French colonies, 177; the Duchy of Anhalt, 15; the Argentine Confederation, 6; Austria, 1296; Grand Duchy of Baden, 88; Bavaria, 172; Belgium, 686; Brazil, 4; Duchy of Brunswick, 16; Republic of Costa Rica, 4; Denmark, 90; St. Domingo, 1; Egypt, 6; Frankfort-on-the-Maine, 24; Great Britain and Ireland, 1589; British colonies, 985; Greece, 131; Republic of Guatemala, 7; Kingdom of Hanover, 18; Hanse Towns, 89; Grand Duchy of Hesse, 74; Electorate of Hesse, 14; Principality of Lippe-Detmold, 2; Grand Duchy of Luxemburg, 23; Mexico, 107; Duchy of Nassau, 59; Netherlands, 411; New Granada, 13; Grand Duchy of Oldenburg, 13; Ottoman Empire, 2; Sandwich Islands, 5; Papal States, 71; Portugal (including colonies), 443; Prussia, 1313; Principalities of Reuss (Elder and Younger Branches), 2; Sardinia, 198; Saxony, 96; Duchy of Saxe-Altenburg, 2; Duchy of Saxe-Coburg, 6; Duchy of Saxe-Coburg-Gotha, 11; Duchy of Saxe-Meiningen, 3; Grand Duchy of Saxe-Weimar, 1; Principality of Schaumburg-Lippe, 2; Principality of Schwarzburg-Rudolstadt, 1; Spain, 568; Sweden and Norway, 538; Switzerland, 408; Grand Duchy of Tuscany, 197; Tunis, 1; United States, 130; Wurtemburg, 207. Total, 10,148.

New York Exhibition of the Industry of all Nations.—Although America achieved some of the most signal and permanently valuable results which were brought to the knowledge of mankind by the Exhibition in Hyde Park; still there was probably no American who saw our contributions in London that did not feel some regret that they were not a more just and equally sustained exponent of our resources, industry, and arts. But stronger and more controlling than this sentiment was the desire excited to afford the masses in America an opportunity to see the grand total of the world's industry, and the manifold productions and applications of the arts of design brought in one comparative view. It was seen, that while no motive but a proper regard for our own position in the great family of nations could have induced us, as a people, to send our industrial products to Europe, where we find a market only for our great staple raw materials, that the fact of our becoming more and more every day the great purchasers of the products of European skill and labor, expended, perhaps, upon our own products, would induce all the manufacturing states of the old world to embrace, eagerly, an opportunity to expose their products in the New York Crystal Palace. This conviction, strengthened by the sentiments before alluded to, led a few public-spirited citizens of the United States, early in 1852, to contemplate the organization of the effort whose results we see. It was not designed or desired to reproduce the London Exhibition, which, from the very nature of the case, must ever remain unexampled; but to draw forth such a representation of the world's industry and resources as would enable us to measure the strength and value of our own, while it indicated new aims for our enterprise and skill.

There is no humiliation in the acknowledgment, that America has more to gain from such a comparison than any other nation in Christendom—and we believe she is also more willing to avail herself of the suggestions it offers. It was obvious in the outset, that numerous difficulties would embarrass the successful organization of an exhibition of industry in the United States, which should at once be universal in its scope, and devoid of the imputation of local or sectional influence. These difficulties were inherent in the nature of our political institutions. In England, the suggestion of Prince Albert to the Society of Arts was received with enthusiasm, and enlisted not only the cordial support of the queen, but every member of a numerous and wealthy aristocracy joined his hand in setting forward the royal project. The government, however backward and lukewarm they might have been at first, could not resist an influence with which, as men, they were identified. Then the almost supreme power of the London journals came in to swell and direct the popular sentiment, and to make every Englishman feel that he had an immediate personal stake in the suc-

cess—the triumphant and overwhelming success—of an enterprise to which the honor of his sovereign, and of the nation, stood pledged before all mankind.

Under the stimulus of such powerful motives, the universal intellect of the United Kingdom organized itself in councils, committees, and juries. Men whose names are identified with the halls of science, of literature, and of art, left their tripods, and were found heading the various corps of hard-working volunteers in considering or perfecting the several details of the colossal scheme. The rooms of the Royal, the Geological, the Geographical, the Ethnological, and the Statistical Societies, of the Institutions of Civil Engineers and Architects, of the Museum of Economic Geology—and even of the staid and conservative Universities, were for a time deserted to furnish men and mind for the emergency. In looking over the long catalogue of councilmen and chairmen, of commissioners, associates, and jurymen, whose names are connected with the administration of the London Exhibition, it is astonishing to see what an array of talent and learning was gathered to secure its success. Nor was this peculiar to Great Britain; but from all parts of the world, we find in its published lists men whose names are the guaranty of eminent success, not only in their own departments, but in whatever they may undertake. Such was the animus of the London Exhibition. Compared with this royal espousal, and enormous personal influence brought to sustain and carry forward the exhibition of 1851, the simple machinery and resources of an association of private gentlemen, however enterprising, might seem utterly inadequate. Let the results decide. Such an association was formed, and stands committed to the successful prosecution of the plan. All the world has been invited to co-operate in sustaining the effort, and the appeal has met a response as cordial as the design is liberal and catholic.

New York was selected as the locality of the exhibition, because of its great advantages as a commercial centre, and as the chief entrepôt of European goods. Had it been proposed to limit the exhibition to the products of American industry, some place more central, as Washington, Philadelphia, or Cincinnati, might have been justly preferred, but in view of the foreign department of the scheme, New York seemed the only place at all suited for the purpose. The municipal authorities of the city of New York, on the 3d of January, 1852, moved by an enlightened regard for the prosperity of the city, and the interests of its inhabitants, granted a lease for five years of Reservoir-square for this purpose upon two conditions: one, that the building should be constructed of glass and iron, and the other, that no single entrance fee should exceed 50 cents. The Legislature of the State of New York, upon application, granted, on the 11th of March, 1852, the charter under which the Association for the Exhibition of the Industry of all Nations has been organized and carried forward. The act clothed the directors with all the powers needed to carry out its plans, and the Legislature have since that time extended its privileges, so that it can issue stock to the amount of $500,000, in place of the original limitation to $300,000. The Board of Directors first met on the 17th of March, 1852, and organized by the election of Theodore Sedgwick, Esq., President, and William Whetten, Esq., as Secretary. No time was lost in publishing and circulating a general statement of the objects of the enterprise. A call for subscriptions to the stock was met in due time by about 150 persons and firms coming forward to take up the first $200,000. This wide distribution of the interest in a large number of hands completely avoided the obnoxious charge, that the undertaking was a speculation designed for the benefit of a few.

The countenance and co-operation of the general government was sought with a view to the introduction of foreign goods into the Exhibition duty free. And official assurances were given by Mr. Maxwell, the collector of the port of New York, that the building of the association would be made a bonded warehouse, thus entitling the association to receive the goods free of duty while on exhibition. The influence of the general government was also most cheerfully extended on behalf of the association through the kind offices of Mr. Webster, then Secretary of State, who wrote to the representatives of the United States at the principal courts of Europe, stating to them his sense of the importance of the enterprise, and the numerous reasons why in his view they should give to the association all the aid and support in their power. The ministers of foreign powers resident in the United States had previously responded, in terms of entire cordiality, to the general circular of the association which had been addressed to them, stating its plans, and soliciting the co-operation of European nations. They all expressed their convictions that their respective governments would look with favor upon the proposed exposition, and unite in sending to New York their most valued and characteristic objects of industry. The leading foreign newspapers also manifested a most friendly desire to sustain the success of the undertaking, and the records of the office contain the most abundant evidence of their zealous support; while the daily journals in foreign languages in the United States were prominent in lending their services to the cause.

The organization of the foreign relations of the association was effected by the appointment of Mr. Charles Buschek, of London, as its general agent, through whom details were arranged. This delicate and important trust, involving the greatest responsibility, required talents, knowledge, and experience. The association was truly fortunate in finding these qualities combined in one person. Mr. Buschek was the Austrian commissioner at the London Exhibition of 1851, and through him the co-operation of the European manufacturers has been secured to an unexpected extent. At a later period in the history of the enterprise, it was thought to be expedient to send out to Europe Colonel G. W. Hughes, of Maryland, to co-operate with Mr. Buschek in carrying out the plans of the association. This gentleman added to the weight of his official commission the influence of personal qualities, fitting him, in a remarkable manner, for his delicate task of soliciting or directing the countenance and support of European governments in favor of the objects of the New York Exhibition. The result of his labors was the securing from various governments important contributions, which would otherwise have remained unknown in the United States.

Although the "New York Exhibition of the Industry of all Nations" was, as a financial scheme, unsuccessful, yet its effects upon the industry and inventive powers of the country were unquestionably important. These effects will be felt for a century to come, and should confer honor upon those enterprising citizens of the metropolis and State who conceived and carried into effect the plan now described. The exhibition was closed in the year 1855.

Exotic. (Gr. *ἐξωτικὸς, foreign.*) Any thing introduced to one country from some other country. In gardening it is sometimes applied to plants which require protection in winter, or to plants in general which are not natives.

Expectation of life. See INSURANCE.

Exploring Expedition (U. S.) consisting of the *Vincennes*, sloop of war; *Peacock*, do.; *Porpoise*, *Relief*, *Flying Fish*, and *Sea Gull*, smaller vessels, under Lieutenant Wilkes, U. S. N., sailed from Hampton Roads, Va., August 19th, 1838. Antarctic continent discovered, July 19, 1839. Attack on the Fejees for murdering two of the officers, July 25, 1840. The *Peacock* lost on the bar of Columbia River, July 1841

The *Vincennes* (flag-ship) returned to New York, after an absence of nearly four years, June 11, 1842. Captain Wilkes's Narrative of the Expedition, in 6 vols. imp. 8vo. and quarto, was published in 1845. The scientific reports of the expedition form about 20 quarto or folio volumes.

Exportation, in *Commerce*, the act of sending or carrying commodities from one country to another.—*See* IMPORTATION and EXPORTATION.

Express. There is no branch of business in this country more extensive and important than the express service. The ever-busy handmaid of trade, agriculture, and the useful arts, there is no community so small as not to be susceptible to its usefulness. Yet, while agriculture, art, and trade are world-old, the express is comparatively only a thing of to-day. England had no part in creating it. Europe has done nothing to establish it; and twenty years ago it was not dreamed of even in America, where it is now so indispensable. Peculiarly American in its origin and characteristics, it has become so thoroughly interwoven with the daily business of the country, that it seems to constitute an inseparable portion of its muscle and sinew.

The inquiry naturally arises, "If the express service is so indispensable an institution now, how did the American people do without it prior to its creation?" The fact is, that the "expressman" is only an improvement (a great improvement, it is true) upon the "common carrier" of olden times. It was not a very rare thing, at an earlier period, to hear of a special express run for a temporary purpose, such as the transit of news of intense public interest, or intelligence of great private moment. In those cases the enterprise employed one or more riders, with the necessary relays of fleet horses at intervals upon the road. Browning's fine poem, "How they brought the good news from Ghent to Aix," vividly describes an express of this kind, bearing news of peace and safety to that beleaguered city.

But the express service, properly so called, does not date back beyond the origin of American railroads. Prior to that epoch, stage-drivers had performed duties similar to those now discharged by expressmen; and "*baggage-wagons*" (so called, though they carried merchandise as well) served instead of freight-trains. With the innovation of railways, the stage-drivers and wagoners found, like Othello, their "occupation gone." The loss of their services seriously incommoded the public; but the railroad offered no remedy. Years passed; trade and intercommunication between town and country suffering, in the mean while, from this cause. At length, hardly realizing what an improvement he was about to effect, William F. Harnden, then a conductor upon the Boston and Worcester Railroad, started the express business. It was in the spring of 1839. The idea was not original with him; but to him is due the honor of having been the first to put it into execution.

The only through route from Boston to New York at that time (March, 1839) was by railroad to Providence, and thence to this city, by the steamboat *J. W. Richmond*. The Old Line of steamboats ran from Stonington to New York. Harnden had no paid agent in this city at the outset. The messengers (called, during the first year or two, *conductors*) attended to all the business. Harnden himself acted in that capacity, usually making the trip in the *J. W. Richmond*, and carrying his entire express in an ordinary valise. Upon his arrival in New York or Boston he would hasten to deliver the parcels intrusted to him by his customers, who were mostly booksellers and brokers.

The express was run by Harnden some time before he made a contract with the Old Line of boats from Stonington to New York. His messenger paid regular fare, and carried all the packages in a carpet-bag and trunk. After the lapse of six months or a year, he made a contract with the Old Company and the Stonington and Providence Railroad Company to run a car through. Each messenger then carried a season ticket—obtained by holding a few shares of the company's stock. According to the terms of that contract, the Boston and Providence Railroad Company were entitled to one third of the gross receipts of the express for freight; and the Providence and Stonington Railroad Company (including, we presume, the boats) were to receive one third; the residue to be Harnden's. His first contract with the owners of the *J. W. Richmond* was to convey a car or crate for him between Providence and New York. He took five or six shares of the stock, which entitled him or his messenger to a free passage.

The first opposition express was run on the 4th of May, 1840. Alvin Adams made an effort to contract, in its behalf, for privileges on the Norwich and Worcester route from Boston to New York; but Harnden being at that time better known, the directors gave his "well-established express" the preference; so that he was like to have the monopoly of the facilities on both routes. As Adams was not to be defeated in that way, he went to Major Handy, agent for the Stonington line, and purchased two season tickets for himself and partner, to run as often as they pleased between Boton and New York, until January, 1841; with no other privilege, however, than to carry a trunk and valise.

In the spring of 1841, the only express routes in the world were those between New York and Boston; but, with a successful rival competing for the business of those cities, Harnden & Co. thought it due to their own credit, as pioneers, to take another stride or two, and extend their line south to Philadelphia, and west to Albany, in this State.

An express was established 23d April, 1841, between Boston and Albany, and another between Albany and New York, by Harnden & Co.

About that time, Adams & Co. experienced not a little annoyance from their want of regular express facilities from New York to Philadelphia, and they used an infinity of "shifts" to put their parcels through. In the mean time, the Camden and Amboy Railroad directors had quarreled with Harnden & Co. for nonpayment of compensation alleged to be due them, and had stopped their express over that road. Nor were they more favorably disposed to make a similar contract with any one else. Still, at his partner's solicitation, Adams went to Philadelphia to apply for a contract. Stevens, who represented the Board upon that occasion, gave him a very decided refusal at once. Adams then made another proposition; viz., to do the express business over that railroad in connection with the company; the latter to allow Adams & Co. a portion of the avails. This impressed Stevens more favorably, and the immediate result was a contract that Adams & Co. should fill a certain number of crates daily, and deliver the goods, receiving for their trouble a certain portion of the freight money; the railroad company to have the rest.

In 1842 Harnden & Co.'s Boston and Albany Express was bought out by its Springfield agent, the enterprising Colonel Thompson, and called Thompson & Co.'s Express. Messrs. Melcher and Johnson are his partners. Gay & Co. (Gay and Littlefield) started an express between Boston and New York, *via* Stonington, in 1842. They carried only a trunk of parcels, and had no contract. Gay would run one way, and Littlefield the other; and each had the profits which he happened to make upon each day's work, and pocketed the same, without being expected to render an account to his nominal partner. This arrangement, apparently so primitive and simple, did not work well in the long run, and Littlefield retired from it. Kinsley next joined Gay, and the firm was styled Gay & Kinsley. The latter, for some years past president of

a bank at Newport, Rhode Island, has become eminent as an expressman.

In 1844 there were expresses between Boston and Lowell, Boston and Salem, and on one or two other short routes in Massachusetts, and they were increasing. The first express west of Buffalo was established April 1, 1845, under the name of Wells & Co. The members of that firm were Henry Wells, W. G. Fargo, and D. Dunning. For the want of railroad facilities (and when the steamers were laid up), it was a wagon express between Buffalo and Detroit. In February, 1847, W. G. Fargo and William A. Livingston became sole proprietors of the express west of Buffalo, under the style of "Livingston & Fargo." The latter is deserving of honorable mention for his industry, perseverance, and sound sense. Wells & Co.'s line extended from New York to Buffalo, *via* Albany.

W. F. Harnden & Co.'s *Foreign Express* elicited the applause of the community, and gave an *éclat*, at home and abroad, to their already well-known name. Still, it by no means contributed to the advantage of their express in the United States. It only served to divide and weaken their energies. The result was, that the more concentrated efforts of their rivals here met with a larger share of success, and in 1846 Adams & Co.'s business between Boston, New York, and Philadelphia was more valuable than Harnden & Co.'s.

Canada was without an express until Virgil & Rice started one from Troy to Montreal, *via* Lake Champlain, in the summer, and by wagons and stages in the winter. This, we think, was in 1847 or 1848. Subsequently Rice retired, and Messrs. Virgil & Co. contracted with the Saratoga Railroad for a car. The express from New York to Troy was owned by Pullen & Co., who in the year 1849 united with Virgil & Co., under the style of Pullen, Virgil, & Co. Under the management of these experienced and able men, the business was nursed and tended with most praiseworthy perseverance, until it grew to considerable importance.

In 1849 a new order of express service was destined to spring up. The "California gold fever" had broken out, and thousands of young men were thronging to the newly-acquired Golconda, when Daniel Hale Haskell, a highly-esteemed clerk in Adams & Co.'s Boston office, suggested to his employers the expediency of establishing a California express. With characteristic prudence, Adams & Dinsmore at first opposed the proposition; foreseeing that the most important point of operations must necessarily be in San Francisco, many thousands of miles beyond their supervision, and they preferred to have all their business where they could give it their frequent personal inspection. However, they at length yielded to Haskell's solicitations, and he went out to San Francisco in the steamer of September, 1849, to act as their partner in the proposed business. The building which he took for an express-office was a little shanty, of which I. C. Woods was either the owner or the owner's agent. As the business increased rapidly, this building had to be pieced out, or extended in depth every few weeks, to hold the multitudes which thronged to it to hear the news, obtain or send letters, and remit their gold dust. The enterprise compensated beyond the most sanguine dreams of its sanguine projector. Let us give some idea of the prices.

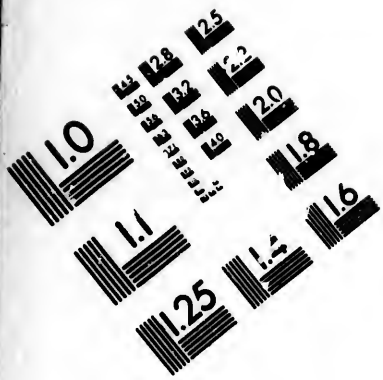
The charge made by Adams & Co. for freight, from New York to San Francisco, was seventy-five cents per pound for packages not exceeding fifteen pounds each; and for parcels of less weight, not bulky, such price was made as could be agreed upon. Three dollars was their price for conveying an ordinary-sized daguerreotype; twelve dollars for a parcel not larger than a common size novel; and this was always exacted in advance. It was paid cheerfully and without any haggling. Since then the prices have fallen about 60 per cent.

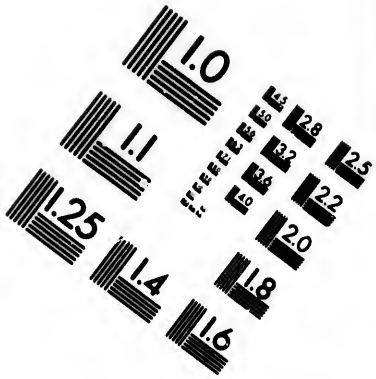
Upon the arrival of the steamer at Chagres with the express, the freight would be sent ashore in boats—a tedious and perilous job, for the sea usually ran high, and the boats were frequently swamped. At Chagres it was transferred to river-canoes, and propelled by natives to Cruces, where it was again transferred and placed upon the backs of mules, which bore it (by a road that would have defied the locomotion of any other kind of beast) to Panama, where the Pacific steamship awaited to convey it to San Francisco. Being liable to be saturated with water in being carried ashore at Chagres, and in crossing the Isthmus, by reason of rains and streams, it was required of shippers to put up their merchandise in water-proof packages. The load of a mule rarely exceeded 800 lbs. Usually he bore two oblong boxes or trunks weighing not over 125 lbs. each.

Another class of messengers to which Adams & Co.'s express in California gave rise were wont to perform their service on horseback between San Francisco (and other towns) and the numerous "diggins." Sometimes they made use of mules; but in either case the beasts must be sure and swift of foot and easy under the saddle, or they were discarded and better procured in their stead. To be able and willing to run fleetly at a word from its rider, was a *sine qua non* in the steed of an express messenger; and there are heard wonderful stories of the *time* made, under the saddle, in this service.

The express companies may be said to influence the domestic exchanges of the country, inasmuch as they transport nearly all the specie and bullion, as well as considerable portions of the bank-notes, bills of exchange, drafts, bonds, and other securities; and the price of exchange between one city and another depends in some measure upon the express charges for conveyance. The rates paid for the transportation of bank-notes is usually fixed by contract in writing, and are low. For instance, between New York and Cincinnati, 900 miles, one dollar per thousand. The total value of the capital employed in the express business was valued in 1856 at ten millions of dollars. Four years ago, the entire number of miles of express routes in America was estimated at 25,000. As facilities have been increased, and express routes extended, the whole distance traveled by express daily is probably not less than 28,000. The multifarious lines stretch in every direction, crossing each other like the threads of the spider's web. And now we find the principal expressmen undertaking the enterprise of conveying the United States mail overland to California. September 15, 1857, Messrs. Butterfield, Dinsmore, Fargo, and others, executed an agreement to that effect. The contract, which is to run six years, is to go into effect twelve months from that date. Six hundred thousand dollars per annum is the price to be paid the contractors. The extraordinary character of the labor thus confidently assumed can hardly be appreciated until the work shall have been accomplished. Certainly the establishment of such a route is an appropriate reward for express enterprise.—For a full history of the express business, see *Bankers' Magazine*, New York, September, 1857.

Extract, or Extractive Matter. The term extract is applied in pharmacy to the brown substance which remains after the evaporation of certain decoctions or infusions of vegetables; thus we have *extract of bark*, *extract of rhubarb*, and so on. These extracts are usually mixtures of gum, starch, sugar, or other soluble matters, along with a certain portion of a peculiar vegetable principle of a brown color, or which becomes so by exposure to air, and which is soluble in water and in alcohol, but scarcely soluble in ether. It combines with alumina, and is often the basis of brown dyes; it is this principle which chemists call *extractive*, and which is frequently closely allied to various forms of coloring matter.





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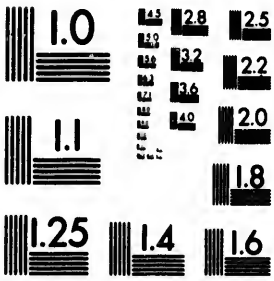

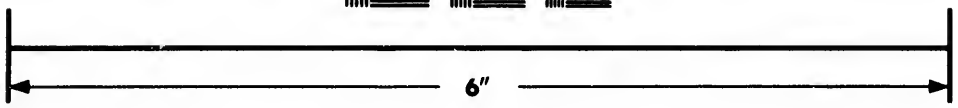

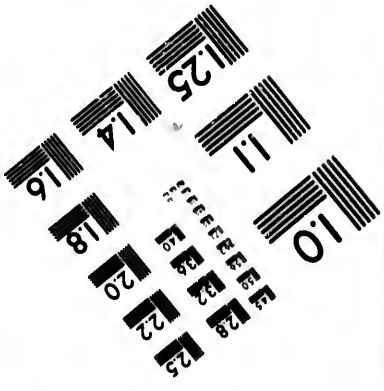

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Fac-simile (Lat. *facere*, to make, and *simile*, like), expressed in French by *fais-semblable*, signifies an exact and faithful copy of any writing, engraving, or other work of art.

Factor, an agent employed by some one individual or individuals, to transact business on his or their account. He is not generally resident in the same place as his principal, but usually in a foreign country. He is authorized, either by letter of attorney or otherwise, to receive, buy, and sell goods and merchandise; and, generally, to transact all sorts of business on account of his employers, under such limitations and conditions as the latter may choose to impose. A very large proportion of the foreign trade of this and most other countries, is now carried on by means of factors or agents. Factors and brokers are, in some respects, nearly identical, but in others they are radically different. "A factor," said Mr. Justice Holroyd, "differs materially from a broker. The former is a person to whom goods are sent or consigned; and he has not only the possession, but, in consequence of its being usual to advance money upon them, has also a special property in them, and a general lien upon them. When, therefore, he sells in his own name, it is within the scope of his authority; and it may be right, therefore, that the principal should be bound by the consequences of such sale. But the case of a broker is different; he has not the possession of the goods, and so the vendor can not be deceived by the circumstance; and, besides, the employing a person to sell goods as a broker does not authorize him to sell in his own name. If, therefore, he sells in his own name, he acts beyond the scope of his authority; and his principal is not bound."

A factor is usually paid by a percentage or commission on the goods he sells or buys. If he act under what is called a *del credere* commission, that is, *if he guaranty the price of the goods sold on account of his principal*, he receives an additional percentage to indemnify him for this additional responsibility. In cases of this sort the factor stands in the vendee's place, and must answer to the principal for the value of the goods sold. But where the factor undertakes no responsibility, and intimates that he acts only on account of another, it is clearly established that he is not liable in the event of the vendee's failing. The sound maxim, that the principal is responsible for the acts of his agent, prevails universally in courts of law and equity. In order to bind the principal, it is necessary only that third parties should deal *bonâ fide* with the agent, and that the conduct of the latter should *be conformable to the common usage and mode of dealing*. Thus, a factor may sell goods upon credit, that being in the ordinary course of conducting mercantile affairs; but a stock broker, though acting *bonâ fide*, and with a view to the benefit of his principal, can not sell stock upon credit, *unless he have special instructions to that effect*; that being contrary to the usual course of business.

A sale by a factor creates a contract between the owner and buyer; and this rule holds even in cases where the factor acts upon a *del credere* commission. Hence, if a factor sell goods, and the owner *give notice to the buyer to pay the price to him*, and not to the factor, the buyer will not be justified in afterward paying the factor, and the owner may bring his action against the buyer for the price, unless the factor has a lien thereon. But if no such notice be given, a payment to the individual selling is quite sufficient. If a factor buy goods on account of his principal, where he is accustomed so to do, the contract of the factor binds the principal to a performance of the bargain; and the principal is the person to be sued for non-performance. But it is ruled, that if a factor enter into a charter-party of affreightment with the master of a ship, the contract obliges *him* only, unless he lade the vessel with his principal's goods, in which case the principal and lading become liable, and not the factor. Where a factor, who is authorized to sell goods in his own name, makes the buyer debtor to himself; then, though he be not answerable to the principal for the debt, if the money be not paid, yet he has a right to receive it, if it be paid, and his receipt is a sufficient discharge; the factor may, in such a case, enforce the payment by action, and the buyer can not defend himself by alleging that the principal was indebted to him in more than the amount.

"Where a factor," said Lord Mansfield, "dealing for a principal, but concealing that principal, delivers goods in his own name, the person contracting with him has a right to consider him, to all intents and purposes, as the principal; and though the real principal may appear, and bring an action on that contract against the purchaser of the goods, yet that purchaser may set off any claim he may have against the factor, in answer to the demand of the principal."

Merchants employing the same factor run the joint risk of his actions, although they are strangers to each other; thus, if different merchants remit to a factor different bales of goods, and the factor sell them as a single lot to an individual who is to pay one moiety of the price down and the other at six months' end; if the buyer fail before the second payment, each merchant must bear a proportional share of the loss, and be content to accept his dividend of the money advanced.—Beawes, *Lex. Merc.*

A factor employed, without his knowledge, in negotiating an illegal or fraudulent transaction, has an action against his principal. On this ground it was decided, that a merchant who had consigned counterfeit jewels to his factor, representing them to be genuine, should make full compensation to the factor for the injury done to him by being concerned in such a transaction, as well as to the persons to whom the jewels had been sold.

The office of a factor or agent being one of very great trust and responsibility, those who undertake it are bound, both legally and morally, to conduct themselves with the utmost fidelity and circumspection. A factor should take the greatest care of his principal's goods in his hands; he should be punctual in advising him as to his transactions on his behalf, in sales purchases, freights, and, more particularly, bills of exchange; he should deviate as seldom as possible from the terms, and never from the *spirit and tenor*, of the orders he receives as to the sale of commodities; in the execution of a commission for purchasing goods, he should endeavor to conform as closely as practicable to his instructions as to the quality or kind of goods; if he give more for them than he is authorized, they may be thrown on his hands; but he is bound to buy them for as much less as he possibly can. After the goods are bought, he must dispose of them according to order. If he send them to a different place from that to which he was directed, they will be at his risk, unless the principal, on getting advice of the transaction, consent to acknowledge it.

A factor who sells a commodity under the price he is ordered, may be obliged to make good the difference, unless the *commodity be of a perishable nature and not in a condition longer to be kept*. And if he purchase goods for another at a fixed rate, and, their price having afterward risen, he fraudulently takes them to himself, and sends them somewhere else, in order to secure an advantage, he will be found, by the custom

of merchants, liable in damages to his principal. If a factor, in conformity with a merchant's orders, buy with his money, or on his credit, a commodity he is directed to purchase, and, without giving advice of the transaction, sells it again at a profit, appropriating that profit to himself, the merchant may recover it from him, and have him amerced for fraud. If a factor buy, conformably to his instructions, goods of which he is *robbed*, or which suffer some unavoidable injury, he is discharged, and the loss falls on the principal. But if the goods be *stolen* from the factor, he will not be so easily discharged; for the fact of their having been abstracted by *stealth*, and not by *violence*, raises a strong presumption that he had not taken that reasonable care of them which was incumbent upon him. If, however, he can prove that the goods were lodged in a place of security, and that he had not been guilty of positive negligence, nor exercised less care toward them than toward his own property, he will not be held responsible even for a theft committed by his servants.—JONES *on Bailments*, 2d ed., p. 76; CHITTY *on Commercial Law*, vol. iii., p. 868.

If a factor, having money in his hands belonging to his principal, neglect to insure a ship and goods, according to order, he must, in the event of the ship miscarrying, make good the damage; and if he make any composition with the insurers after insurance, without orders to that effect, he is answerable for the whole insurance. A principal at the end of a very long letter, directed his agent thus: "Observe, the premium on this value is also to be insured." But the agent, not noticing this sentence, neglected to insure the premium; and being sued, was held liable for the omission. If goods are remitted to a factor, and he make a false entry of them at the custom-house, or land them without entry, and they are, in consequence, seized or forfeited, he is bound to make good the damage to his principal; but if the factor make his entry according to invoice or letters of advice, and these proving erroneous, the goods are seized, he is discharged. It is now a settled point, that a factor has a lien on goods consigned to him, not only for incidental charges, but as an item of mutual account for the balance due to him so long as he remains in possession. If he be surety in a bond for his principal, he has a lien on the goods sold by him on account of such principal, to the amount of the sum he is bound for.

It being the general rule of law "that property does not change while *in transitu*," or in the hands of a carrier, a consignment made *before* the bankruptcy of a consignor, but not arriving till *after*, remains the property of the consignor, except, indeed, where the *delivery* is made *by the order* and upon the account of the consignee, and is a complete *alienation from* the consignor. In the case, therefore, of a consignment to a factor, the property remains the consignor's, and passes into the hands of *his* assignees. When a factor has a lien on goods, he has a right to the price, though received after the bankruptcy. Where general or unlimited orders are given to a factor, he is left to buy and sell on the best conditions he can. And if detriment arise to a principal from the proceedings of a factor acting under such authority, he has no redress, unless he can show that he acted fraudulently or with *gross negligence*. A factor or broker acting against the interest of his principal, can not even receive his commission. If he pay money on account of his principal, without being authorized, he can not recover it back. An agent can not delegate his rights to another so as to bind the principal, unless expressly authorized to nominate a sub-agent.

For further information as to the general powers and liabilities of factors and agents, see KENT'S *Commentaries*; PARSONS *on Mercantile Contracts*; STORY *on Contracts*; BEAWE'S *Lex Mercatoria*, arts. *Factors, Supercargoes*, etc.; CHITTY'S *Commercial Law*, vol. iii., c. 3.; WOOLRYCH *on Commercial Law*; see also the article BROKER.

Under the law with respect to the transactions of factors or agents on third parties that prevailed down to the act 6 Geo. 4, c. 94, it was held, that a factor, as such, had no authority to *pledge*, but only to *sell* the goods of his principal; and it was repeatedly decided that a principal might recover back goods on which a *bonâ fide* advance of money had been made by a third party, without his being bound to repay such advance; and notwithstanding this third party was wholly ignorant that the individual pledging the goods held them as a mere factor or agent. It used also to be held, that *bonâ fide* purchasers of goods from factors or agents not vested with the power of sale, might be made liable to pay the price of the goods a second time to the real owner. The extreme hardship and injurious influence of such regulations is obvious. It is the business of a principal to satisfy himself as to the conduct and character of the factor or agent he employs; and if he make a false estimate of them, it is more equitable, surely, that he should be the sufferer, than those who have no means of knowing any thing of the matter.

"All agents who sell goods for their principals, and guaranty the price, are said abroad to act under a *del credere commission*. In this country, this phrase is seldom used, nor is such guaranty usual. See DEL CREDERE COMMISSION.

"Generally, neither factor nor broker can claim their commissions until their whole service be performed, and in good faith, and with proper skill, care, and industry. But if the service begins, and is interrupted wholly without their fault, they may claim a proportionate compensation. If either bargains to give his whole time to his employer, he will not be permitted to derive any compensation for services rendered to other persons. Nor can either have any valid claim against any one for illegal services, or those which violate morality or public policy.

"A principal can not revoke an authority given to a factor, after advances made by the factor, without repaying or securing the factor.

"The distinction between a *foreign* and a *domestic* factor is quite important. A domestic factor is one who is employed and acts in the same country with his principal. A foreign factor is one employed by a principal who lives in a different country. And a foreign factor is as to third parties, for most purposes, and under most circumstances, a principal. Thus they can not sue the principal, because they are supposed to contract with the factor alone, and on his credit, although the principal may sue them; and a foreign factor is personally liable, although he fully disclose his agency, and his principal is known. But this doctrine is not extended to cases where a contract for personal services is made in the country where the factor is doing business, by a person resident there; but the contract is to be performed or executed in the country where the principal resides. For, if such a contract be made in the name of the principal, he alone is responsible. One who deals with a domestic factor may sue the principal, unless it is shown that credit was given exclusively to the factor. And for the purpose of this distinction, and the rules founded upon it, we hold, on the weight of authority, that our states are foreign to each other.

"Every factor is bound to reasonable care; and he is liable for a loss by fire, or robbery, or other accident occurring without his default, if he had previously done some wrongful act, without which the property might have been safe. And this rule would apply even to a gratuitous agent."—PARSONS' *Mercantile Law*, pp. 158-162.

Factorage, or Commission, the allowance given to factors by the merchants, manufacturers, etc., who employ them: it is a percentage on the goods they

purchase or sell on account of their principals, and varies in different countries, and as it refers to different articles. It is customary for factors, as observed in the previous article, to insure the debts due to those for whom they sell for an additional, or *del credere* commission, generally averaging from 1½ to 2 per cent. Factorage or commission is also frequently charged at a certain rate per cask, or other package, measure, or weight, especially when the factor is only employed to receive or deliver: this commission is usually fixed by special agreement between the merchant and factor.

Factory, in commerce, a place where merchants and factors reside, to negotiate business for themselves and their correspondents on commission.

Fairs and **Markets**. These institutions are very closely allied. A fair, as the term is now generally understood, is only a greater species of market recurring at more distant intervals. Both are appropriated to the sale of one or more species of goods, the hiring of servants or laborers, etc.: but fairs are, in most cases, attended by a great concourse of people, for whose amusement various exhibitions are got up. Fairs and wakes are of Saxon origin, and were first instituted in England by Alfred, A. D. 886.—*Spelman*. They were established by order of Gregory VII. in 1708, and termed *Feriæ*, at which the monks celebrated the festival of their patron saint; the vast resort of people occasioned a great demand for goods, wares, etc. They were called wakes from the people making merry during the vigil or eve. Fairs were established in France and England by Charlemagne and William the Conqueror, about A. D. 800 in the first, and 1071 in the latter kingdom. The fairs of Bancaire, Falaise, and Leipsic, are the most famous in Europe. See E. B. —*Haydn*.

1. *Origin of Fairs.*—Institutions of this sort are peculiarly serviceable in the earlier stages of society, and in rude and inland countries. The number of shops, and the commodities in them, are then either comparatively limited, or they are but little frequented by dealers; so that it is for the advantage of all, that fairs should be established, and merchants induced to attend them. For this purpose various privileges have been annexed to fairs, and numerous facilities afforded to the disposal of property in them. To give them a greater degree of solemnity, they were originally, both in the ancient and modern world, associated with religious festivals. In most places, indeed, they are still held on the same day with the wake or feast of the saint to whom the church is dedicated; and, till the practice was prohibited, it was customary in England to hold them in churchyards!—(*Jacob's Law Dict.*, art. *Fair.*) But since the growth of towns, and the opportunities afforded for the disposal and purchase of all sorts of produce at the weekly or monthly markets held in them, the utility of fairs, in this country at least, has very much diminished; they have also lost much of their ancient splendor; and, though some of them are still well attended, and of real use, a good number might be advantageously suppressed. But it is far otherwise in inland countries, where the facilities for carrying on commercial transactions are comparatively circumscribed. There it is of the utmost importance that certain convenient places and specified periods should be appointed for the bringing together of commodities and dealers. This is not only the readiest and best means of promoting commerce, but also of softening national antipathies, and diffusing a knowledge of the products, arts, and customs of other countries.

2. *Establishment of English Fairs.*—No fair can be holden without grant from the crown, or a prescription which supposes such grant. And before a patent is granted, it is usual to have a writ of *ad quod damnum* executed and returned, that it may not be issued to the prejudice of a similar establishment already existing. The grant usually contains a clause that it shall not be to the hurt of another fair or market; but this clause, if omitted, will be implied in law; for if the franchise occasion damage either to the king or a subject, in this or any other respect, it will be revoked; and a person whose ancient title is prejudiced is entitled to have a *scire facias* in the king's name to repeal the letters patent. If his Majesty grant power to hold a fair or market in a particular place, the lieges can resort to no other, even though it be inconvenient. But if no place be appointed, the grantees may keep the fair or market where they please, or rather where they can most conveniently.

3. *Time of holding Fairs and Markets.*—These are either determined by the letters patent appointing the fair or market, or by usage. The statute 2 Edw. 3, enacts, that the duration of the fair shall be declared at its commencement, and that it shall not be continued beyond the specified time. By statute 5 Edw. 3, any merchant selling goods after the stipulated time is to forfeit double the value of the goods sold.

4. *Effects of Sales in Fairs and Markets.*—A *bonâ fide* sale made in a fair or open market, in general, transfers the complete property of the thing sold to the vendee; so that however vicious or illegal that title of the vendor may be, the vendee's is good against every one, except the king. But the sale, in order to come within this rule, must take place *on the market day, and at the place assigned for the market.* The city of London is said to be a market overt every day of the week, except Sunday; every shop being a market overt for such things as the shopkeeper professes to deal in. The property of goods may, however, be changed, and effectually transferred to the buyer, by a *bonâ fide* sale in a shop out of London, whether the shopkeeper be the vendor or vendee, if the goods are of the kind in which he trades. A wharf in London is not within the custom, and is not a market overt for articles brought there. But a sale in a market will not be binding if it be such as carries with it a presumption of fraud; as, for example, if it take place in a back room or secret place; if the sale be covinous, and intended to defraud the real owner, or if the buyer know that the vendor is not the real owner of the goods, etc. It is very difficult to transfer the property of horses, even when they are sold in an open market, without the consent of the real owner.

5. *Court of Pié Poudre.*—According to English usage, at every fair or market there is incident, even without any express words in the grant, a court of *pié poudre*, in allusion to the dusty feet of the suitors. The steward or mayor may preside. It has cognizance of all questions as to contracts made in the market respecting goods *brought and delivered there*, etc. Formerly *pié poudre* courts were held at every considerable fair, but they are now entirely laid aside.

6. *Principal British Fairs.*—Among these may be specified Stourbridge, in Worcestershire. Bristol has two considerable fairs, one in March and one in September. Exeter December fair, for cattle, horses, and most sorts of commodities. Weyhill fair, in Hampshire (October 10), has, probably, the greatest display of sheep of any fair in the kingdom. Bartholomew fair, in London, used to be of considerable importance, but latterly it was appropriated only to shows of wild beasts, and such-like exhibitions, and has, within these few years, been very properly suppressed. St. Faith's near Norwich (October 17), is the principal English fair for Scotch cattle. They are sold to the graziers and feeders of Norfolk, Suffolk, Essex, etc., by whom they are fattened for the London markets, where they are met with in great abundance. But besides those sold at St. Faith's, large numbers of Scotch cattle are disposed of at Market Harborough, Carlisle, Ormskirk, and other places. Ipswich has two considerable fairs: one in August, for lambs; and one in September, for butter and cheese:

it is reckoned that above 100,000 lambs are annually sold at the former. Woodborough-hill, in Dorset, for west country manufactures, as kerseys, druggets, etc. Woodstock October fair, for cheese. Northampton and Nottingham have each several large fairs, for horses, cattle, cheese, etc. The August fair of Horncastle, in Lincolnshire, is the largest horse-fair in the kingdom, many thousand horses being exhibited for sale during its continuance: it is resorted to by crowds of dealers from all parts of Great Britain, by several from the Continent, and sometimes even from North America. Howden, in Yorkshire, has, also, a very large horse-fair, particularly for Yorkshire hunters. Devizes, in Wiltshire, has several large fairs for sheep and cattle. There is usually a large display of cheese at the Gloucester April fair. A guild, or jubilee, commencing the last week of August, is held every twentieth year at Preston, in Lancashire; the last was held in 1842, and was well attended. The October fair of Market Harborough, Leicestershire, lasts 9 days, and a great deal of business is usually done in cattle, cheese, etc. Woodbridge Lady-day fair is celebrated for the show of Suffolk horses. Falkirk fair, or tryst, is one of the most important in Scotland, for the sale of cattle and sheep. The October fair of Ballinasloe, in the county Galway, is famous for the display of cattle and sheep; by far the largest proportion of these animals raised for sale in Connaught being disposed of at it. The sheep are generally from three to four, the heifers from three to four, and the bullocks from four to five years of age. They are mostly lean; and are kept for a year in Leinster before they are fit for the Dublin or Liverpool markets.

7. *Principal French Fairs.*—Among these may be specified the fairs of St. Germain's, Lyons, Rheims, Chartres, Rouen, Bordeaux, Troyes, and Bayonne; but they are much fallen off. The most important of the modern French fairs, is that of Beaucaire, on the right bank of the Rhone opposite to Tarrascon, 14 miles east of Nismes. It is very favorably situated for an *entrepôt*, being, exclusive of the command of internal navigation afforded by the Rhone, connected by canals with the sea and the *Canal du Midi*. The fair, which commences on the 22d and finishes on the 28th July, was formerly the greatest in Europe, and, though a good deal fallen off, it is still attended by a vast concourse of people, not from France only, but also from Switzerland, Germany, Italy, Spain, and the Levant. Almost every sort of article, whether of convenience or luxury, may then be met with in the town. It is said that the number of visitors still amounts to from 70,000 to 80,000, and the amount of business done to 150,000,000 fr.; but we have little doubt that these estimates are very greatly exaggerated; and that the first would be nearer the mark were it reduced to 50,000 or 60,000. All bills due at this fair are presented on the 27th, and protested on the 28th. A tribunal instituted for the purpose, takes cognizance of, and immediately settles all disputes growing out of transactions that take place at the fair. A military force attends to preserve order, and the prefect of the department, who is always present, entertains the principal merchants and strangers.

8. *German Fairs.*—The principal German, or rather European fairs, are those of Frankfort-on-the-Maine, Frankfort-on-the-Oder, and Leipsic. The concourse of merchants, and the business done at these fairs, are generally very great. They are copiously supplied with the cotton stuffs, twist, cloths, and hardware of England; the silks and jewelry of France; the printed cottons of Switzerland and Austria; the raw, manufactured, and literary products of Germany; the furs of the North; Turkey carpets; Cashmere shawls, etc.; and there, also, are to be found merchants of all countries, those of Ispahan negotiating with those of Montreal for the purchase of furs; and Georgians and Servians supplying themselves with the cottons of Manchester and the jewelry of Paris. There, in fact, are met the representatives, as it were, of every people in the world, laboring, though without intending it, to promote each other's interest, and to extend and strengthen those ties that bind together the great family of the human race. The fairs at Frankfort-on-the-Maine should begin the first on Easter Tuesday, and the second on the Monday nearest to the 8th of September. Their duration is limited to three weeks, but they usually begin from eight to fifteen days before their legal commencement. Accounts are kept in rix-dollars, 1 rixdollar of account = 1½ florin, or 4½ copsticks, or 22½ batzen. The rixdollar = 3s. 1·8d.; so that the par of exchange is 141 batzen per £1 sterling. 100lb. common Frankfort weight = 103lb. avoirdupois. The foot = 11·27 English inches. The fairs at Frankfort-on-the-Oder are three in number, viz.: Remiriscere, in February or March; St. Margaret, in July; and St. Martin, in November. They ought, strictly speaking, to terminate in eight days, but they usually extend to fifteen. The Prussian government gives every facility to those who attend these fairs. Accounts are kept in Prussian money, that is, in rix-dollars of 2s. 11½d. 100lb. Prussian = 103lb. avoirdupois. The foot = 12·356 English inches. The fairs of Leipsic are still more celebrated than those of either Frankfort. They are held thrice a-year—on the 1st of January, at Easter, and at Michaelmas. The first is the least important. The Easter and Michaelmas fairs are famous, particularly the former, for the vast number of new publications usually offered for sale. They are attended by all the principal booksellers of Germany, and by many from the adjoining countries, who adjust their accounts, learn the state of trade in all parts of the world, and endeavor to form new connections. Most German publishers have agents in Leipsic; which is to the literature of Germany, what London is to that of Great Britain. As many as 5000 new publications have been in a single Leipsic catalogue! They are also great markets for Saxon woolens and other goods, British calicoes, French silks, and, in fact, for most descriptions of produce. The fairs ought to close in eight days, but they usually continue for about three weeks. No days of grace are allowed. The holder of a bill must demand payment on the day it becomes due; and, if not paid, he must have it protested on that very day, and returned by the first opportunity. If he neglect any of these regulations, he loses all right of recourse upon the drawer and indorsers. Money of account at Leipsic same as Frankfort-on-the-Maine. 100lb. Leipsic = 103lb. avoirdupois. The foot = 11·11 English inches.—Kelly's *Cambist*; *Manuel de Nelkenbrecher*; Bowring's *Report on the Prussian Commercial Union*, pp. 255, 269, etc. Dr. Bright gives, in his *Travels in Hungary* (pp. 201–223), an interesting account of the fairs held at Debretzin and Pesth. The latter has become the grand centre of Hungarian commerce; most part of which is conducted at its fairs.

9. *Italian Fairs.*—Of these, the most celebrated is that of Sinigaglia, a small, but handsome town of the Papal dominions, on the Misa, near its confluence with the Adriatic. The fair commences on the 20th of July, and should terminate on the last day of that month, but it usually continues eight or ten days longer. The duties on goods brought to the fair are extremely moderate, and every thing is done to promote the convenience of those frequenting it. All sorts of cotton, woolen, and silk goods, colonial produce, iron and steel, hardware, jewelry, brandy and liquors, timber, drugs, spices, etc., are brought here by the English, French, Austrians, Swiss, etc. These are exchanged for the various raw and manufactured products of Italy and the Levant; consisting, among others, of raw, thrown, and wrought silks; oil, fruits, cheese, alum, soda, sumach, sulphur, etc. The value of the imports for the fair of 1841, was estimated at about

£1,700,000. Accounts are kept in scudi of 20 soldi; the scudo = 4s. 4d. very nearly. 100lb. Sinigaglia = 73¼ avoirdupois. The oil or braccio measures 25.33 English inches.—*Manuel de Nelkenbrecher*; MACGREGOR'S *Tariffs, Italy*, p. 121.

10. *Russian Fairs.*—These are numerous, and many of them are well attended. The most important is held at Nijnii-Novgorod, at the confluence of the Oka with the Wolga, lat. 56° 19′ 40″ north, long. 44° 28′ 30″ east. Previously to 1817 this fair was held in a less convenient situation, at Makarieff, lower down the Wolga. But the buildings for the accommodation of the merchants at the latter having been accidentally burnt down in 1816, government took advantage of the circumstance to remove the fair to Nijnii. It is principally carried on within the new bazaars constructed for that purpose on the left bank of the Oka. These, which are divided into parallel rows, or streets, are constructed of stone walls and roofed with iron, having covered galleries in front supported by iron pillars. They are built on piles, and, to guard against inundations, the ground on which they stand has been raised about 20 feet. Being inclosed on three sides by canals, and on the fourth by a navigable iniet of the Oka, there is every facility for the delivery and shipment of goods. The establishment is of great extent, comprising 2524 booths, and is admitted on all hands to be at once the largest and most perfect of its kind that is anywhere to be met with. But, in addition to the above, no fewer than 2506 shops and booths belonging to private parties, and constructed of wood, were occupied during the fair of 1841. The fair begins on the 1st of July, and continues for a month or six weeks.

The total value of the various articles of Asiatic (including Chinese) produce exposed for sale at Novgorod in 1841 amounted to 9,146,719 silver roubles, being more than double the value of the products of western Europe exposed in the same year. Of the latter, indigo, wine, and cottons were the principal articles.—*Journal des Manufactures, Petersburg*, 1842. The stationary population of the town, which may amount to about 25,000, is, during the fair, said to amount to from 130,000 to 160,000, including Chinese, Persians, Armenians, Tartars, Bokharians, etc. Theatrical exhibitions, shows of wild beasts, and other Bartholomew fair exhibitions, add to the attractions of the scene. Another celebrated Russian fair is held in the month of December, at Kiachta, in Mongolia, on the Chinese frontier, lat. 50° 21′ 5″ north, long. 106° 28′ 15″ east. The town is small, the population not exceeding 4000 or 5000; but by far the largest part of the commerce between the Russian and Chinese empires is transacted at its fair, and it is also the centre of the political intercourse between them. The commodities brought hither by the Russians consist principally of Russian and German broadcloths, furs, sheep and lamb skins, leather, coarse linens, worsted stuffs, cattle, etc., with, for the most part, bullion. These they change with the Chinese for tea, raw and manufactured silk, nankeens, porcelain, sugar candy, rhubarb, tobacco, musk, etc., the value of the articles, however, other than tea, being comparatively inconsiderable. The quantity of tea purchased at the Kiachta fairs by the Russians, which has latterly increased very considerably, amounted, in 1850, according to the official returns, to 210,179 poods, or 7,566,444 pounds, of very superior tea, worth about 2s. 6d. per pound, and 85,440 poods (3,076,840 pounds) inferior or black tea. At an average of the six years ending with 1850, the total imports of all sorts of tea into Russia through Kiachta was estimated at 11,748,464 pounds, Eng., a year. According to the same accounts, the total value of the exports to China through Kiachta, in 1850, amounted to 6,916,071 silver roubles, and that of the imports to about the same. The customs duty received at Kiachta in 1848 amounted to £923,554. The Russian trade is in the hands of a comparatively small number of merchants, some of whom are very rich; that of the Chinese is much more diffused. Commodities may be conveyed from Kiachta to European Russia either by land or by water. In the former case the journey takes a year; in the latter, it takes three years, or rather three very short summers; the rivers being for the most part of the year frozen over.—*Schnitzler, Statistique Générale de l'Empire de la Russie*, p. 148, etc.

11. *Turkish Fairs.*—Several important fairs, of which little or nothing is known in this country, are held at various places in European Turkey. Among others may be specified those of Usundji, or Usundjova, in Roumelia; Joanina, in Albania; Stronga on the Lake of Ocrida; Novi-Bazar, in Upper Mœsia; Islivni, in Thrace; Prelip and Nicopoli, in Macedonia; Eski-Djouma, in Bulgaria; and Zeitoun and Pharsalia, in Thessaly. The largest and most important of these fairs is that of Usundji, held at the village of that name, on the Usundji, a tributary of the Maritza, about 44 miles W. by N. of Adrianople. It was visited by M. Blanqui in 1841, and by Mr. Spencer in 1850. The latter says (but statements of this sort are very apt to be exaggerated), that it was attended by from 80,000 to 100,000 people, who had journeyed hither from all parts of European Turkey for the purpose of disposing of their wool, hides, raw cotton, leeches, and other products of the country, and of purchasing in return the manufactures of the West. The show of the latter is very extensive. Sheds are erected in the village by government, which serve as warehouses for the merchants, and every house is converted into a han for the reception of strangers. But by far the greater number of the latter have, notwithstanding, to encamp with their camels, horses, etc., on the surrounding plain. Blanqui speaks in high terms of commendation of the good order that prevailed, in the absence of any thing like police, among the motley population at the fair.—(BLANQUI, *Voyage en Bulgarie*, p. 252; SPENCER'S *Travels in European Turkey*, ii., 346, etc.) This great fair, which lasts for 15 days (Blanqui) is held, like the other fairs, in autumn, immediately after harvest. But though it be largely frequented by German, Swiss, Italian, and Greek merchants, who transact a great amount of business, it is very little, if at all, known in England. This is the more surprising, seeing that we have consuls at Adrianople and other places not very distant from the seat of the fair. And it might have been supposed that these functionaries would have been anxious to send home the most ample details with respect to this and other fairs in their vicinity; describing the products which might be most advantageously bought and sold at these marts; the routes by which they might be most easily reached, and so forth. But if such reports anywhere exist, they have not, at all events, been published. And hence, probably, the fact of the business of these fairs being mostly in the hands of foreigners.

12. *Eastern Fairs.*—The most important fair in the Eastern world is that held at Mecca during the resort of pilgrims in the month of Dhalhajja. It used to be frequented by many thousands of individuals of all ranks and orders, brought together from the remotest corners of the Mohammedan world; and though the numbers attending it have declined of late years, the concourse is still very great. See CARAVAN. Hurdwar, in Hindostan, in lat. 29° 57′ N., long. 78° 2′ E., 117 miles N.E. from Delhi, is famous from its being one of the principal places of Hindoo pilgrimage, and the greatest fair in India. The town, which is but inconsiderable, is situated on the Ganges, at the point where that sacred stream issues from the mountains. The pilgrimage and fair are held together at the vernal equinox; and Europeans, nowise addicted to exaggeration, who have been repeatedly present on these occasions, estimate that from 200,000 to 300,000 strangers

are then assembled in the town and its vicinity. But every twelfth year is reckoned peculiarly holy; and then it is supposed that from 1,000,000 to 1,500,000, and even 2,000,000 pilgrims and dealers are congregated together from all parts of India and countries to the north. In 1819, which happened to be a twelfth year, when the auspicious moment for bathing in the Ganges was announced to the impatient devotees, the rush was so tremendous that no fewer than 430 persons were either trampled to death under foot, or drowned in the river! The foreigners resorting to Hurdwar fair for commercial purposes only, consist principally of natives of Nepaul, the Punjab, and Beshwaur, with Afghans, Usbeck Tartars, etc. They import vast numbers of horses, cattle, and camels; Persian dried fruits, shawls, drugs, etc.: the returns are made in cotton piece goods, indigo, sugar, spices, and other tropical productions. The merchants never mention the price of their goods, but conduct the bargain by touching the different joints of their fingers, to hinder the bystanders gaining any information. During the Mahratta away, a kind of poll-tax and duties on cattle were levied; but all is now free, without impost or molestation of any sort. Owing, also, to the precautions adopted by the British government, the most perfect order is preserved; much to the surprise and satisfaction of the natives; for, antecedent to our occupation of the country, the fairs usually ended in disorder and bloodshed.—(*Private Information*, and the excellent account of *Hurdwar* in HAMILTON'S *Gazetteer*.)

The fairs of Portobello, Vera Cruz, and Acapulco, once so famous, are now totally deserted; that of the Havana is also much fallen off.

In the United States, fairs are principally confined to exhibitions of agricultural and mechanical articles, and also for the sale of fancy articles for charitable purposes, under the control of private companies, and not subject to especial restrictions or laws. In the western States, especially in the stock-growing districts of Kentucky, fairs are held in each county, at the county towns, once every month, for the sale of live stock, etc., subject only to local restrictions. These fairs or sales are of great convenience to the farmers or drovers, by bringing them together at stated times. As an instance of their usefulness, in Paris, Bourbon county, Kentucky, a town of 1500 inhabitants, live stock to the amount of $100,000, on an average, changes hands every court day.

Falkland Islands (Fr. *Malouines*, Sp. *Malvinas*), a group of islands in the South Atlantic Ocean, belonging to Great Britain, and lying about 250 miles east of the nearest mainland of South America, between 51° and 53° S. lat., and 57° and 62° W. long., or in precisely the same latitudes south as London and the midland counties are north. The group consists of two principal islands, East and West Falkland, with several hundred others of different sizes clustered around and in the strait between them. East Falkland is about 85 miles in length by 40 in breadth, and West Falkland 80 miles long by 25 to 30 miles wide. They are separated from each other by Falkland Sound. The other islands range in size from 16 miles by 8 to mere islets of half a mile across. The whole group is deeply indented by numerous harbors and creeks, which, if they diminish the area, produce more than counterbalancing advantages. Very little is known of West Falkland. It is uninhabited, but at certain seasons it is visited by whaling and other vessels. East Falkland is nearly divided into two unequal portions by the estuaries called Breton Sound and Choiseul Sound, the two parts of the island being connected by an isthmus not more than a mile and a half across. The northern portion is crossed by a chain of rugged hills, called the Wickham Heights, extending due east and west from Port William to Port Sussex, and varying in height from 800 to 2000 feet.

There are few wild animals indigenous to the Falklands. The only quadruped is the warrah or wolf-fox (*Canis Magellanicus*), rather taller, but not much heavier, than our fox. The other animals which are found in a wild state are those which have been left there by Europeans, as horned cattle, horses, sheep, wild hogs, and rabbits, all of which are very abundant. There is a plentiful supply of excellent fish in all the creeks, and of small trout in the lakes and rivulets. Hair and fur seals abound, and the black whale is still numerous about these coasts. The wild fowl are also numerous, as swans, geese, ducks, snipes, etc. There are few land birds or insects, and no reptiles. A gigantic sedgy grass, called tussac, of the genus Carex, is very common on most of these islands. Its blade averages seven feet in length by about three quarters of an inch in width, is extremely nutritious, and admirably adapted for fattening cattle. Turnips, carrots, potatoes, and vegetables thrive well, and barley and oats have been successfully cultivated. Furze and other shrubs grow well, but there are as yet no trees. Peat is abundant, and some of it is highly bituminous. Coal has been discovered, but whether it can be profitably worked has not yet been ascertained.

The discovery of these islands has been by many attributed to Amerigo Vespucci, in 1502; but it is more probable that they were first discovered by Davis in 1592. In 1594 Hawkins sailed along their north shore; and in 1690 Strong sailed through the channel which separates East from West Falkland, and called it Falkland Sound, whence the group afterward took its name. During the earlier parts of the eighteenth century these islands were frequently visited by French vessels; and in 1764 a French colony was established at St. Louis, on East Falkland. Two years later the English planted a colony at Port Egmonton, West Falkland. In 1767 the Spaniards took possession of the French settlement, and three years later of the English. In consequence of this step, some negotiations were entered into, the result of which was that the sovereignty of these islands were ceded to the English, who, however, some time afterward abandoned them. Though frequently visited by whaling vessels and others, they continued without permanent inhabitants till 1820, when they were taken possession of by the republic of Buenos Ayres. A settlement was formed at Port Louis, which rapidly increased until 1881, when, in consequence of a dispute with the United States, it was destroyed by the Americans. In 1833 the English again assumed possession of the Falklands, and stationed an officer and boat's crew at Port Louis. In 1840 the government resolved to colonize these islands, and sent out for that purpose a governor and a small establishment, who settled at Port Louis. A more advantageous situation for a settlement was subsequently found on the south side of Stanley Harbor, where, in 1844, a town was laid out. Mr. Lafone, a wealthy merchant, obtained from government an extensive tract of land, and possession of all the wild cattle and other wild stock for six years, from 1st January, 1848, in consideration of a payment by installments of £60,000. Mr. Lafone's interests have recently been purchased by a chartered company, which now possess, in East Falkland, all the southern peninsula called Lafonia, consisting of about 600,000 acres, besides 138 islands and islets, with an aggregate area of about 200,000 acres, until January, 1856. The company possesses absolute right to all the wild cattle or other wild stock which may be found upon any of the islands, but after that period this right ceases except as to stock, etc., then in actual possession of the company. In 1847 the population of the colony was 270. The governor of these islands, in January, 1853, reports the colony to be steadily progressing. In 1851, the number of tons of shipping that entered the port of Stanley was 17,538, and in 1852 it was 22,024, being

an increase of 4,486 tons. This necessarily produces a demand for produce and labor. Unskilled laborers earn from 3s. to 5s. a day, and skilled from 6s. to 10s. Provisions are abundant, and at reasonable prices. "The transference to the Falkland Islands Company of the large interests held by Mr. Lafone, and the commencement by that corporation of a more comprehensive system of operation, supported by a large capital, gives me very favorable hopes of benefit to the colony, and, I trust, to the shareholders." (*Report.*) In 1849, twelve allotments of one acre each, near the town, were put up for sale, and were sold on an average at £6 per acre; and eleven similar allotments, sold in 1852, brought on an average £12 per acre, or six times the usual government price. "The master of a barque, the *Record*, lately in the harbor, publicly notified that he would take passengers to the gold diggings in Australia at £10 per head, and it gives me much pleasure to add that not a person could be found in the colony to accept his proposition." (*Report.*) Being chiefly dependent upon the ships that call here to refit or for refreshments, the opening of a ship-canal between the Atlantic and Pacific Oceans would affect this settlement very much, and might probably lead to its abandonment.—E. B.

Except as commercial and military stations, these islands possess no importance. There is no tonnage duty levied on vessels entering the ports of these islands; nor, indeed, any charges, except for storage, which is effected in bulk, and for which there is a charge of from $5 to $10 per day. In a recent official communication addressed by the present governor of the Falkland Islands, that functionary observes: "I to state that, as regards the precise limit to which Great Britain will limit the right of fishing, I have no instructions. I will, however, communicate with her Majesty's government on the subject by the first opportunity." As American captains cruising about these islands have, on one or two recent occasions, been subjected to considerable inconvenience and expense by the executive authority of the Falkland Islands—so much so, indeed, as in one instance to render the interposition of a United States' vessel of war necessary—it becomes a matter of some importance to American whaling interests to have the question settled as speedily as possible.—*Com. Rel. U. S.*

Fall, the name given in Scotland to a measure both of length and superficies. As a measure of length, the fall is equal to six Scots ells, or 6·1764 English yards; and as a measure of superficies, to 36 square ells.

Fall, the sea term for the rope of any pulley or system of pulleys. To *fall aboard* signifies to run foul of another vessel.

Falling Home. The term applied to the timbers or upper parts of the sides of a ship when they curve inwards. The old ships fell home, or tumbled in (as it is called), much more than the modern ones, which approach more nearly to being *wall-sided*.

Fall River, Massachusetts, 46 miles S. of Boston, situated on the Fall River, at its junction with the Taunton, which falls into Mount Hope Bay, a branch of Narraganset Bay. The harbor on Taunton River is safe and easy of access, and has depth of water sufficient for the largest ships. Fall River has a large coasting trade, and is engaged in the whale and other fisheries. It has extensive cotton and woolen factories, bleaching-works, founderies, etc., and communicates regularly with New York by steamers, and with Boston by railway. Pop. (1855) 12,680.

Falmouth, a seaport town of England, on a branch of the estuary of the Falmouth, 14 m. N.N.E. the Lizard Point. Lat. 50° 8′ 8″ N., long. 5° 2′ 7″ W. The harbor is formed by the estuary of the Falmouth, has numerous creeks, and is about five miles in length and one mile in breadth. The entrance is defended by Pendennis and St. Mawe's castles, both built in reign of Henry VIII., and the former containing large barracks, magazines, etc. Its position at the entrance of the English Channel, has rendered Falmouth for the last 150 years a principal station for the foreign mail-packets, and the great rendezvous for fleets proceeding to the south and west.

False Keel the timber added below the main keel, both to serve as a defense, and also, by deepening the plane surface, to enable the ship to hold a better wind.

Fan, a simple and well-known implement employed to produce coolness by agitating the air. Upward of 3000 years ago the artist of ancient Egypt painted the fan on the walls of the tombs at Thebes, where the Pharaoh sits surrounded by his fan-bearers. These officers acted as generals or marshals, using their fans as standards in war, and in peace they assisted the Pharaoh in the temple, and waved their variegated fans both to produce a cooling breeze, and to guard the sacred offerings from the contamination of noxious insects. The fan is mentioned by Euripides, and its Grecian forms were far more beautiful than the Egyptian. The wings of a bird joined laterally and attached to a slender handle, formed the simple yet graceful fan of the priest of Isis, when Isis became a Grecian deity. It was sometimes formed of feathers of different lengths, spread out in the form of a semicircle, but pointed at the top. This fan, the precise type of the state-fan of India and China of the present day, was waved by a female slave. The fan is mentioned by Terence and Ovid; and was termed indifferently "flabellum" or "muscarium." When the Romans were at meals, it was the duty of certain slaves, when the weather was warm, to cool the room with fans and drive away the flies. The modern Greek church places a fan in the hands of its deacons to guard the officiating priest and the elements from desecration. When the fan was brought to France by Catherine de Medicis, it was so constructed that it could be folded in the manner of those used in the present day. Fans in the luxurious reigns of Louis XIV. and XV., shone with gilding and gems, and were ornamented with the pictures of Boucher and Watteau. At that time no toilet was esteemed complete without a fan, the cost of which was frequently as high as from $60 to $70.

In fan-making, the Chinese and French are the great rivals, and may be said to monopolize the supply of the whole world. In the lacquered fans the superiority of the natives of China is fully admitted. These are unrivaled both in lowness of price and in originality of design, brilliancy of coloring, and in general correctness of workmanship. In China the manufacture of fans is almost entirely confined to Canton, Sontchou, Hang-tchoo, and Nankin. The fans of ivory and bone, and of feathers, are made exclusively for exportation to Europe or America. Those used by the Chinese are of bamboo, polished or japanned, and covered with paper. They are sold at from 20 cents to $3 per dozen, according to the quality of the frame and the design of the leaf.—E. B.

In France, fan-making has arrived at a high degree of perfection, and presents a remarkable instance of the subdivision of labor. About twenty different operations, performed by as many pairs of hands, are necessary to the production of a fan which sells for less than one halfpenny. The processes are not all carried on in the same manufactory, but form four distinct branches of trade, directed by distinct masters; but the operatives usually work at home at their own houses. The frame-work of fans is mostly made in the department of Oise, where 2000 men, women, and children are thus employed. The woods employed are chiefly plum, ebony, lime, and sandal-wood; and the piercings which form such a general decoration to fans, are performed by minute saws, which the workman makes for himself out of pieces of watch-spring.

In one fan there are in some specimens 1600 saw-piercings in a square inch of mother-of-pearl. The printing, the coloring, the mounting, and the finishing of fans are mostly conducted at Paris, where the fan-factories are on a considerable scale.

"The number of fan-makers, or *eventaillistes* (those who finish the fans which have been roughly made in the provinces), in Paris, in 1827, was 15, who employed 1010 work-people (344 men, 500 women, and 166 children), and sold about 1,010,500 francs' worth of fans. According to the *Statistique sur l'Industrie à Paris*, it appears that in 1847 there were 122 fan-makers, comprising chamber-masters, as mounters, feuillistes, painters, and colorers. The value of the fans made was 2,526,316 francs. These masters employed 575 work-people (262 men, 264 women, 29 youths, and 20 girls). The workmen on the average earn 4 francs, and the women 2½ francs per day. The men were for the most part copper-plate engravers and printers, lithographic draughtsmen and printers, painters, and colorers; the women were mounters, illuminators, painters, colorers and overlookers. Thus in twenty years it appears that the produce in fans had increased in value nearly threefold, while the number of work-people had diminished one half. This change is attributed to the employment of machinery, especially of the fly-press, in stamping out and embossing the ribs, and the extensive employment of chromo-lithography, an art not practiced at the former period. By these means the French have been enabled greatly to increase their exports by the production of cheap fans, to compete with those made by the Chinese.

Farina. (Lat. far, *corn*, of which it is made.) Meal or flour, obtained by grinding and sifting wheat and other seeds; hence the term *farinaceous food*.

Faroe, or **Feroe** (Danish, *Färöerne*), a group of islands belonging to Denmark, in the North Sea, between Iceland and the Shetland Islands, about 200 miles north-west of the latter, between N. lat. 61° 20′ and 62° 25′, and between W. long. 6° 16′ and 7° 40′. The group consists of 17 inhabited and several uninhabited islands, the former having an area of 490 square miles, and (in 1850) 8150 inhabitants. The principal islands, with their populations, in 1845, were Strömö, 2162; Osterö, 1909; Söderö, 1156; Vaagö, 649; Sandö, 528; and Bordö, 804. They consist throughout of rocks and hills, rising to a considerable height, and separated from each other by narrow valleys, or rather ravines. Although, however, these hills rise abruptly, there are often on their summits, or at different stages of their ascent, plains of considerable magnitude. They everywhere present to the sea perpendicular cliffs, broken into a thousand fantastic forms, presenting to those who sail along the coast, at every turn, the most picturesque and varied scenery. The highest peak is that of Skellingfell, in the island of Strömö, which rises to about 3000 feet above the sea. The rocks consist generally of trap, and exhibit little variety of composition, though they present some striking geological phenomena. The zeolites and chalcedonies here collected have long supplied the best specimens of these minerals to the cabinets of Europe. Coal is found in Söderö and some of the other islands, and turf is abundant.

The climate is moist and foggy, and violent storms are frequent at all seasons. July and August are the only summer months, but the winters are not very severe. It seldom freezes for more than one month, and the harbors are rarely ice-bound. The only grain crop is barley; and on account of the uncertainty of the weather, it is frequently reaped in a half-ripe condition. Agriculture is in a very backward state, the infield, or cultivated land, being calculated to be to the outfield, or uncultivated, in the proportion 1 to 60. The plow is seldom used, being in fact ill suited to the rugged and uneven surface of the land. The ground is therefore turned up with the spade, care being taken not to destroy the roots of the grass. Horses and cows are few in number, and the latter give very little milk, in consequence, probably, of the very coarse hay upon which they are fed. Sheep are numerous, and form the chief riches of the islanders—some individuals having flocks of from three to five hundred. The sheep are never housed either in summer or winter, and in severe seasons they suffer considerably. The wool is generally coarse, and is torn off the animals in so rough a manner as often to lacerate the skin. The catching of the numerous birds which build their nests upon the face of the cliffs, forms a great source of subsistence to the inhabitants. The persons employed in this hazardous trade display great ingenuity and the most adventurous spirit. Sometimes the fowler is let down from the top of the cliff by a rope fastened to his waist; at other times, where there is any footing at all, he climbs the steepest rocks, or, where that is impossible, he is pushed upward by poles made for the purpose. The puffin (*Alca arctica*) is the most common of these birds, and the elder-duck is here often shot for food. The fisheries are important and valuable.

The monopoly of the trade of the Faroe Islands was for some time in the hands of a mercantile house at Copenhagen; but it has now been assumed by government, and neither Dane nor foreigner is allowed to interfere. The trade is carried on between Copenhagen and Thorshavn. The chief exports are hosiery, tallow, dried and salt fish, train-oil, feathers, skins, and butter. Thorshavn, the capital of these islands, is situated on the south-east side of the island of Strömö, upon a narrow tongue of land, having creeks on each side, where ships may be safely moored. Population about 1500. The houses are built of wood, and roofed with birch bark covered with turf, the greenness of which makes it impossible, at a very short distance, to distinguish the place from the surrounding fields. The character of the people is generally marked by great simplicity of manners, kindness and hospitality. They are well fed and clothed, and seem to be kindly treated by the Danish government. The average duration of life, as stated by Dr. Panum, is 44 2-5 years; while in Denmark it is only 36. The language of the people is a remnant of the old Norse, but that of the courts, churches, and schools is the modern Danish. See *Færoæ and Færoæ Reserata*, by Lucas Jacobsen Debes, translated from the Danish into English, 1675; *Description of the Faroe Islands*, by the Rev. G. Landt, London, 1810; an account of their geology and mineralogy, in the *Trans. of the Royal Soc.*, Edin., vol. vii., by Sir G. S. Mackenzie, Bart., and Thomas Allen, Esq.; *Den Danske Stats Statistik*, vol. iv., 1858; J. Nichol's *Account of Iceland, Greenland, and the Feroe Isles*; Dr. Panum's *Official Report on the Diseases of Feroe*, 1849, of which an abstract in vol. vii. of the *Medico-chirurgical Review*. The scenery of these islands is well illustrated in a work entitled *Cruises of the Yacht Maria*, London, 1855.—E. B.

Farthing, a small English copper coin, amounting to ¼ of a penny. It was anciently called *fourthing*, as being the fourth of the integer or penny. A farthing of gold, equal in value to the fourth part of a noble, or 20d. in silver, is mentioned in statute 9th Henry V., cap. 7.

Fascines (*fascis*, a bundle), in fortification, faggots, or bundles of rods, or small branches of trees, bound together in several places. They are used for various purposes, such as raising batteries, filling ditches, forming parapets, etc., and vary in dimensions according to the purposes to which they are to be applied. Fascines dipped in pitch are sometimes employed to fire the enemy's lodgments or other works.

Fashion (Fr. *façon*; originally from the Lat. *facere*, to make or form), a term used to signify the

prevailing mode or taste in any country, the only recognized quality which it possesses being mutability. It may safely be averred that, in proportion to the influence which fashion exercises in any country may its claim to civilization be vindicated—nothing being so characteristic of a rude and barbarous state of existance as a rigid adherence to the customs of antiquity. The term *fashion* has generally been considered as applicable chiefly to the adornment of the person, in conformity with the prevailing taste as introduced by some individual of consideration in society; but it has a much wider signification, being applied to the most trivial kind of conventional usages, a disregard or ignorance of which is sufficient, in the eyes of the votaries of this tyrannical goddess, to banish the offender beyond the pale of civilized society.

Fat, an oily concrete substance, contained in the cells of the adipose or cellular membrane of animal bodies. Fat also denotes a measure of capacity, but indefinite. Thus a fat of isinglass contains from 3½ cwt. to 4 cwt.; of yarn, from 220 to 221 bundles, etc. Fat, or vat, a large wooden tub or vessel used in breweries and tanneries; also as a measure for malt, containing eight bushels.

Fathom, a measure of length, six feet, chiefly used for measuring the length of cordage, and the depth of water and mines.

Fayal. The Azores, or Western Islands form a range situate in the Atlantic Ocean, extending in an oblique line from north-west to south-east, between 37° and 40° N. lat., and 25° and 32° W. long. It has been a subject of some controversy among geographers, to what division of the globe they ought to be referred; but they are now generally considered as pertaining to Europe. It does not appear that the ancients had any knowledge of the Azores, or of any group in this sea, except the Canaries, to which they finally applied the celebrated appellation of the Fortunate Islands. But the Arabian geographers, Edrisi and Ibn al Vardi, describe, after the Canaries, nine other islands in the Western Ocean. That these were the Azores is highly probable, since their number is exactly nine; and because a species of hawk is specially noticed by these writers as existing there in great abundance—a circumstance that afterward appeared to the Portuguese so remarkable, that they gave them the name of Azores, or Hawk Islands. The climate in which they are placed also makes them north of the Canaries. Some other coincidences also might be pointed out; and, upon the whole, there appears no reason to doubt that the Azores are really the nine islands enumerated by the Arabians. The Arabian writers represent them as having been populous, and as having contained cities of some magnitude; but they state that the inhabitants had been greatly reduced by intestine warfare. At the time of their discovery they were uninhabited, and covered with forests and underwood, which have now entirely disappeared.

The first European discovery of this group is claimed by the Flemings. A Flemish merchant named Van der Berg, is reported, in sailing from Lisbon, to have been driven upon these shores in the year 1439. The intelligence soon reached the court of Lisbon, where it excited considerable interest; and the navigator Cabral was sent to prosecute the discovery. In 1459 the islands began to be planted and colonized, and in so fertile a soil the inhabitants rapidly multiplied. In 1580 they fell, with the other Portuguese territories, under the dominion of Spain. At this time the Azores were the grand rendezvous in the voyage homeward of the fleets, which came laden with the wealth of both the Indies. Hence they became a theatre of that maritime warfare which was carried on with such spirit by the English under Queen Elizabeth against the peninsular powers. In 1586 Sir Walter Raleigh equipped two pinnaces of 35 and 40 tons, the command of which he gave to Captain Whiddon. Having taken two or three prizes, they fell in, off St. Michael, with the great fleet of Spanish galleons, consisting of 24 sail, two of them carracks of 1000 or 1200 tons. They attacked them, however, without hesitation, hoping to cut off some straggling member of this great body, but were unable to make any impression upon it. In 1587, Sir Francis Drake, after having swept the harbor of Cadiz, sailed for the Azores, where he took an East India carrack, richly laden, and the first that had ever fallen into the hands of the English. In 1589 the Earl of Cumberland fitted out a squadron, sailed for the Azores, and made numerous prizes. Under the active administration of Pombal, considerable exertions were made for the improvement of the Azores; but the stupid and bigoted government which followed rather tended to destroy these benefits, and to make the islands take a retrograde course.

Physical Aspect.—The Azores within a recent period attracted some attention as the theatre of contest between the parties contending for the crown of Portugal. The adherents of the constitution, who supported against Miguel the rights of Maria da Gloria, obtained possession of Terceira, where they succeeded in maintaining themselves. After various struggles, Queen Maria's authority was eventually established over all these islands.

The aspect of all the islands is very similar in general characteristics, presenting an elevated and undulating outline, with little or no table-land, and rising into peaks, of which the lowest (that of St. Mary's) is 1889 feet, and the highest (that of Pico) 7613 feet above the level of the sea. Their lines of sea-coast are, with few exceptions, high and precipitous, with bases of accumulated masses of fallen rock, in which open bays, or scarcely more inclosed inlets, form the harbors of the trading towns. The climate is particularly temperate and equable, the extremes of sensible heat and cold being, however, increased by the degree of humidity present in the atmosphere. The range of the thermometer is from 45° Fahr., the lowest known extreme—or 48° the ordinary lowest extreme of January—to 82° the ordinary, or 86° the highest known extreme of July, and near the level of the sea. Between these two points (both taken in the shade) there is from month to month a pretty regular gradation of increase or decrease, amounting to somewhat less than four degrees. (*Geographical Journal*, vol. xv.) They have an aggregate area of 700 square miles, and in 1841 had a population of 214,300. St. Michael, the largest and most populous of these islands, has an area of 224 square miles and (1840) 80,809 inhabitants. Proceeding from east to west, this island presents a considerable variety of surface. The east end rises from a bluff sea-cliff of between 1200 and 1400 feet elevation, to a lofty inland peak from which a central range, varying in height from 9000 to 2500 feet, runs to the westward, terminating in the Serra de Agoa de Pao, 3060 feet above the sea. The sea-coast gradually declines in approaching the last point, where it is not more than about 100 feet high. The part next seen is lower, and its outline, as presented by the summits of numerous volcanic monticules of about 1300 feet elevation, united in a central ridge more undulating; the western extremity being marked by the conspicuous Serra Gorda, 1574 feet above the sea; and its shores on both sides are low, broken, and rocky. Of the remaining part the aspect is that of a vast truncated cone, irregularly cut off at an elevation of about 800 feet, and falling on the north, south, and west sides to a perpendicular coast of between 300 and 800 feet high. The outline is varied by the intervention of peaks, thrown up on the summit and flanks, and round the foot of the mountain. In the higher parts, the surface is generally covered with an undergrowth of heaths, cedar, laurel, laurestinus, and other evergreen shrubs

which give the mountains an exceedingly rich and wooded appearance. Like all volcanic countries, the face of the island is uneven and irregular, being deeply excavated by numerous ravines and roughened by streams of semi-vitrified and scoriaceous lava that resist all atmospheric influences and repel vegetation. Heavy rains falling on the mountains afford a constant supply of water to four lakes at the bottom of extinct craters or subsidences, and a number of minor reservoirs; and through them to small streams running rapidly down on all sides into the sea.—*Geographical Journal*, vol. xv. See HUNT's *Merch. Mag.*, 1855–6; *Com. Rel. U. S.*, pp. 283, 284: pub. by Dep. of State.

In the year 1591 a most tremendous earthquake appears to have been felt all over the Azores, and to have shaken St. Michael for twelve days without intermission. Since that period, there is no record of any such great convulsion, except one in 1757, of which we have no particulars, and it was probably much less formidable; nor are any of its volcanoes at present in a state of action. Hot springs abound in every part of the island, and from almost every crevice vapor is seen issuing. But the most remarkable phenomena are the Caldeiras or boiling fountains, which rise chiefly from a valley called the Furnas, near the western extremity of the island. The water ascends in columns to the height of about 12 feet, after which it dissolves in vapor, forming clouds of various shapes and colors. The heat is such as to boil an egg in two minutes, though the sulphureous impregnation unfits it from being employed in culinary purposes. The ground in the immediate vicinity is entirely covered with native sulphur, like hoar frost. At a small distance is a remarkable phenomenon called the Muddy Crater, the vertex of which, 45 feet in diameter, is on a level with the plain. Its contents are in a state of violent and continual ebullition, accompanied with a sound resembling the waves of a tempestuous ocean. Yet they never rise above its level, unless occasionally to throw to a small distance a spray of the consistence of melted lead. The Furnas abounds also in hot springs, some of which it is impossible to touch without being scalded. There is almost always, however, a cold spring near to the hot one, so that the water can be brought to any temperature that may be desired. These springs, after being long neglected, have, within the last half century, been greatly resorted to, and the cures performed in cases of palsy, rheumatism, and similar maladies, are said to have been very wonderful.

The plains are fertile in wheat, barley, and Indian corn; while vines and oranges grow luxuriantly on the sides of the mountains. They are made to spring even from the interstices of the volcanic rocks, which are sometimes blasted in order that they may receive the plants. Raised in this manner, these fruits are said to be of superior quality; but the great expense originally required in such a mode of cultivation confines it to persons of some capital. The western part of the island yields hemp, which might be raised to a considerable extent. The exports consist of wine, fruit, and provisions. Foreign intercourse used to be confined rigorously to Lisbon; but since the emigration of the court, the inhabitants have assumed the privilege of trading directly with England, America, and other countries. The principal town on the island is Ponta Delgada, which contains about 20,000 inhabitants. It is built with tolerable regularity, the streets being straight and broad. The religious edifices are numerous and elegant. When visited by Captain Bold in 1831, it had six churches, eight monasteries, and four convents; but these last, which were noted for the irregular lives of their vestals, have since been suppressed. The harbor receives only small vessels: those of any magnitude must anchor in an open road, which, though not dangerous, can not be occupied during the prevalence of southerly gales. Its other towns are Villa Franca, Ribeira, Grande, Alagoa, Agoa de Pao, etc.

St. Mary.—St. Mary is a small island immediately adjacent to St. Michael, through the medium of which its trade is conducted, as it has no good harbors of its own. It has an area of 36 square miles, producing wheat in abundance, of which a considerable quantity is exported. It is of trap formation, and contains beds of marine shells. Population in 1840, 4666.

Terceira.—Terceira, though smaller than St. Michael, yet being placed in a more central position with respect to the other islands has been chosen as the seat of government. The port of Angra is also superior to any of those in St. Michael. This island does not exhibit nearly the same extensive traces of volcanic action; and the summits of its mountains are generally level. It is represented by Adanson, however, as entirely composed of volcanic products. The lava, he says, is of a thicker grain than that of Teneriffe. It abounds in grain and cattle; but the wines are inferior, and the fruits are raised merely for internal consumption. The residence of the government renders the society somewhat superior to that which is found in the other islands. The number of inhabitants is estimated at 50,000.

Fayal.—Fayal is the most frequented of all the islands after St. Michael, as it has one of the best harbors in the Azores, and lies directly in the track of vessels that are crossing the Atlantic in any direction. Its principal town is Villa de Horta. Captain Cook found that all sorts of fresh provisions might be obtained there: the bullocks and hogs are good, but the sheep small and poor. The town is defended by two castles and a wall, both in decay, and serving rather for show than strength. The city contains two convents for monks and three for nuns, with eight churches. These are the only good buildings in it, no other having glass windows. The bay is two miles in length and three quarters of a mile in breadth, and the depth of water from 6 to 20 fathoms. Though a good road, it is not altogether free from danger in S.S.W. and S.E. winds. Population 23,000.

Pico.—A considerable quantity of wine is shipped from Fayal under the appellation of Fayal wine, but really the produce of Pico, one of the most remarkable of the Azores. This island is composed of an immense conical mountain, rising to the height of 7613 feet, and bearing every trace of volcanic formation. The soil consists entirely of pulverized lava, and the ground has even been said to sound hollow when struck. All the lower parts of the mountain are in the highest state of cultivation, and covered with vine and orange plantations. The wine, which forms a sort of inferior Madeira, is in considerable demand. Pico produces also a valuable species of wood, resembling and equal in quality to mahogany. Population 26,000.

Graciosa and St. George are two small islands, situated between Fayal and Terceira. Graciosa is chiefly noted for the extreme beauty of its aspect and scenery. About fifty years ago St. George suffered from one of those awful visitations to which the Azores are subject. In 1808 a caldeira, situate in the centre of the island, was observed to be in a state of violent fermentation. It continued during several days to emit subterranean noises, and to cause violent convulsions throughout every part of the island. At length the great crisis came; vast streams of fire issued forth in every direction, with clouds of smoke, which, but for the volcanic light, would have involved every thing in midnight darkness. The principal stream took its direction toward the beautiful town of Ursula, which it seemed on the point of swallowing up; but suddenly changing its direction, it rushed into the sea by a different channel; a happy event, which superstition ascribed to the prayers of the Ursuline nuns. Many hundred acres of fertile land, however, were covered with scoriæ and

ashes; some lives were lost, and general gloom and consternation diffused throughout the island. The inhabitants, however, soon applied themselves to repair the injury which their land had sustained. Population about 20,000.

The two small and most westerly islands of Corvo and Flores seem but imperfectly to belong to the group. They lie also out of the usual track of navigators; but to those who, missing their course, are led hither, Flores affords good shelter in its numerous bays. Its poultry is said to be the finest in the world; and the cattle are numerous, but small. The surplus produce of these islands is not of much importance. Population above 15,000.

Commerce of the Azores with the United States.—A communication to the Department of State, dated Fayal, April 8d, 1857, laments the inability to announce any improvement in the commerce between the Azores and the United States. The vintages of 1855 and 1856 were so much injured by the "odium," both in regard to quantity and quality, that no wine has been shipped abroad, and the quantity yet remaining of former vintages is exceedingly small. From the Island of St. Michaels there were shipped last season, just ended, an amount equal to 200,000 Sicily boxes of oranges, about 40,000 from Terceira, and about 5,500 from this island; and of all that quantity only about 1,500 boxes were shipped to the United States. Shipments have been made on a larger scale, but the results have been unfavorable; the vessels having to contend with almost constant gales of contrary winds, and the fruit being of a more perishable nature than that of Sicily, Spain and Portugal. The importation of cereals will swell the amount of imports, but it will be very ephemeral, and the ports will be closed as soon as circumstances will permit.

The seat of government of the Azores is at Angra, in Terceira. Ponta Delgada, in St. Michaels, is, however, the chief commercial city. The exports of corn from the Azores from 1835 to 1841, principally to Portugal, are given in the following table:

Years.	Quantities.			Values.
	Mdos.	Quarters.	Bushels.	
1835.....	11,675	= 35,025	= 280,200	299,250
1836.....	11,060	= 33,240	= 265,920	272,865
1837.....	5,565	= 16,695	= 133,560	132,710
1838.....	9,580	= 28,740	= 229,920	244,785
1839.....	4,890	= 14,670	= 117,360	112,625
1840.....	12,158	= 36,450	= 291,672	311,025
1841.....	9,000	= 27,000	= 216,000	235,000

The oranges exported in 1801 amounted in value to $50,000; in 1820, to $125,000; and in 1840, to $450,000. For five years, ending with 1840, the average annual value of exports to Portugal was $215,645; to foreign countries, $260,815. Average annual value of imports during the same period, from Portugal, $266,600; from foreign countries, $307,110.

COMMERCE OF THE UNITED STATES WITH FAYAL AND OTHER AZORES, FROM OCTOBER 1, 1820, TO JULY 1, 1856.

Years ending.	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage Cleared.	
	Domestic.	Foreign.	Total.	Total.	Exported.	Imported.	American.	Foreign.
Sept. 30, 1821.....	$36,537	$11,158	$37,695	$137,992	....	$1,070	2,688	....
1822.....	33,160	10,454	43,614	202,445	....	....	2,558	134
1823.....	27,811	15,704	43,515	41,429	$8,500	1,221	1,562	261
1824.....	17,468	4,028	21,486	45,108	....	4,978	939	805
1825.....	33,421	4,695	38,116	61,768	....	3,407	1,751	266
1826.....	14,076	2,495	19,471	86,261	....	5,766	753	....
1827.....	13,487	4,861	18,348	84,203	8,000	21,299	839	....
1828.....	19,559	4,719	24,278	70,328	....	12,773	1,994	....
1829.....	7,949	78	8,027	21,802	....	6,000	672	137
1830.....	6,640	1,534	8,173	32,912	....	11,240	244	137
Total...	$203,342	$59,711	$263,053	$788,728	$16,500	$64,854	13,590	1,780
Sept. 30, 1831.....	$10,549	$6,049	$16,598	$32,092	....	$8,200	475	251
1832.....	23,402	11,363	34,765	45,424	....	7,384	812	....
1833.....	18,887	3,528	21,915	26,281	....	5,250	910	....
1834.....	9,558	8,911	18,469	18,481	....	2,707	760	....
1835.....	12,033	6,400	18,433	26,673	$5,000	4,736	1,179	....
1836.....	7,181	450	7,631	17,874	....	432	691	....
1837.....	13,408	8,581	16,989	29,028	....	2,364	486	....
1838.....	7,556	1,681	9,237	32,746	....	....	569	68
1839.....	9,130	4,739	13,869	15,222	....	....	819	....
1840.....	10,475	5,623	16,094	38,188	....	....	1,089	....
Total...	$121,675	$47,275	$168,950	$281,459	$5,000	$24,073	7,780	319
Sept. 30, 1841.....	$18,137	$5,785	$18,922	$16,098	$2,000	....	1,068	....
1842.....	49,183	19,600	68,783	41,049	....	$1,000	1,622	100
9 mos. 1843.....	8,569	621	9,190	12,783	....	....	742	....
June 30, 1844.....	19,246	6,983	26,229	29,570	2,300	1,515	1,115	....
1845.....	2,831	51	2,882	28,578	....	....	184	....
1846.....	4,925	....	4,225	41,297	....	1,000	152	151
1847.....	9,466	525	9,991	34,564	....	10,500	1,108	....
1848.....	8,660	....	8,660	11,498	....	....	315	....
1849.....	14,204	1,889	16,043	17,052	....	3,500	1,284	....
1850.....	14,421	2,152	16,573	16,328	....	....	908	161
Total...	$188,942	$37,556	$176,498	$248,747	$4,200	$17,515	8,498	412
June 30, 1851.....	$20,240	$1,045	$21,285	$32,852	....	$4,857	1,592	726
1852.....	17,766	1,886	19,152	29,846	....	1,882	1,447	686
1853.....	21,807	4,440	25,747	10,892	....	....	1,777	....
1854.....	10,080	440	10,470	21,584	....	....	560	463
1855.....	13,872	593	14,500	199,111	....	....	1,592	1,980
1856.....	15,959	490	16,449	22,883	....	....	1,718	....

The harbor of Fayal is the best in the Azores, and greater facilities are offered to ships in distress, by affording refuge or supplies. American whalers frequently visit Fayal, and deposit large quantities of oil, to be transhipped to other ports, amounting annually to a value of upward of $300,000, most of which is forwarded to the markets of the United States. The direct imports from the United States to the Azores consist chiefly of timber, staves, heads for hogsheads, etc. The duties on lumber and staves are moderate. On cut nails they exceed 100 per cent., and on window-glass they rise over 300 per cent. American cotton manufactures are in good demand, and during the past few years have competed advantageously with those of Great Britain. The commercial regulations differ but little from those of the mother country. Foreign vessels, bringing the productions of the country to which they belong, and coming from the ports of the same, are admitted on the same footing as Portuguese vessels. When laden with the produce of other countries, they are subject to a differential duty of 15 per cent. There are no

tonnage duties, light, or hospital dues, levied on shipping at the Azores. The entire charges to which a vessel is subject amount to $19 80, which is raised to $28 40 if the vessel has crossed the equator. The navigation of these islands employs about 3,000 tons in foreign and coasting trade. The latter is carried on with Lisbon, Madeira, and the different ports of the islands, and is restricted to national vessels. In 1852, 77 vessels, with a tonnage of 8,780 tons, entered these islands; of which number 8 were American, with an aggregate tonnage of 1,800 tons.

The chief inconvenience to which foreign tonnage is subjected in these islands, arises from the inconsistent and arbitrary sanitary regulations, which emanate from the home government at Lisbon, and which preclude all discretionary power on the part of the local authorities. For instance, should the Portuguese consul at New Orleans notify his government that the yellow fever prevails in that city (say in the month of September), orders are immediately forwarded by the Board of Health at Lisbon to the authorities of the islands to consider that city as infected. These orders, by the ordinary mode of conveyance, will not reach the islands until the following January; and notwithstanding it may be notorious that the fever ceased in October or November, a vessel that should arrive at Fayal, having left New Orleans in January, or later, would not be admitted, even should she be provided with a clean bill of health, certified with all formality, by the very same consul who had reported to his government the existence of the sickness! This regulation frequently exposes American captains to great inconvenience and considerable loss.—*Com. Rel. U. S.*

Feathers, Bed-feathers (Fr. *Plumes*, *Plumes à lit*; Ger. *Federn*, *Bettfedern*; Du. *Bedveern*, *Pluimen*; It. *Piume*; Sp. *Plumas*), make a considerable article of commerce; particularly those of the ostrich, goose, heron, swan, peacock, and other poultry. The feathers of the ostrich have been held in the highest estimation from antiquity downward, and have furnished favorite decorations for the fans and head-dresses of ladies, the helmets of warriors, and the most splendid processions. Many parts of Great Britain supply feathers for beds; and an inferior sort is brought from Ireland. Eider-down, the finest variety of its class, is imported from the north of Europe; the ducks that supply it being inhabitants of Greenland, Iceland, and Norway. The cider-duck breeds in the islands on the west of Scotland, but not in sufficient numbers to form a profitable branch of trade to the inhabitants. Hudson's Bay furnishes very fine feathers, especially for quills. The down of the swan is brought from Dantzic, as well as large quantities of superior feathers.

Ostrich and other Plumes.—The long feathers of the wings and the tail constitute the ordinary ostrich plume. The animal is captured and killed with much care, to prevent any injury to the plumage. The feathers are sorted into various qualities, scoured or cleaned, bleached, dried, shaken, and opened, the ribs scraped with a bit of glass, the filaments made to assume a curly form by scraping, dyed or not, according to circumstances, and adapted for the adjustment of military hats or other garments. Those in England who are versed in the heraldry of pomp and formality would know the ostrich plumes worn by the Knights of the Garter or the Knights Grand Crosses of the Bath from the court plumes adapted for ladies, and the black plumes for officers of the Highland regiments. In recent years, means have been devised for imparting brilliant dyes to ostrich feathers, several different colors to one feather, gradually shaded or blended one into another. Then, besides the ostrich, we have the feathers of the marabout, the ibis, the bird of paradise, the vulture or rhea, the emu, the heron, the plotus, the egret, the pheasant, the peacock, the turkey, the swan, the eagle, and some other birds —all applied as ornaments to dress. Some of these are very costly: some are used almost exclusively for one particular purpose, while others have their fashionable and unfashionable periods in the public favor. Some of the marabout feathers are knotted with gold, to make a costly trimming for dresses. The emu feathers are more worn on the Continent than in England. The heron feathers, worn by the Knights of the Garter, frequently cost 50 guineas the plume, and sometimes above 100 guineas, on account of their scarcity. The large egret feathers are worn by the Hussars.

Fecamp, a seaport town in France, department of Seine-Inférieure, situated on the English Channel, at the mouth of a small cognominal river 28 miles N.N.E. of Havre. Population about 10,000. It occupies the bottom and sides of a narrow valley opening out toward the sea, between two cliffs, on one of which stands a light-house. Its port, though small, is one of the best on the Channel, and has lately been greatly improved by the construction of an inner port, with a fine quay, etc. It carries on a considerable trade in Baltic and colonial produce, brandy, salt, etc.; and sends out vessels to the whale, cod, mackerel, and herring fisheries. The river affords abundant water-power for numerous cotton, oil, and other mills. Fécamp has also sugar refineries, tanneries, building-docks, and manufactures of hardware, candles, soda, etc. The town consists almost entirely of one street upward of two miles in length.

Feejee Islands. These islands constitute a group in the South Pacific Ocean, favorably situated for the whaling interests of the United States, if the habits of the natives did not render it unsafe for whale-ships to enter any of their ports, unless under the protection of a man-of-war. The group consists of 154 islands in all, 65 of which are inhabited, and contains a population estimated at 134,000 souls. The principal islands are Viti Levu and Paou, or Sandal-wood Island; others are Vuna, Kandaboo, Ovolau, Bau, Mathuatu, and Goro; each of the islands containing from 5,000 to 13,000 inhabitants. Sandal-wood was formerly a leading production of this group, but it has now entirely disappeared. The great fertility of the soil, however, and the low price at which vessels could recruit their stores, and obtain supplies of fresh provisions and excellent water, taken in connection with the fact that the whaling interests of citizens of the United States in that quarter involve annually from seven to eight millions of dollars, show how important this group might become to American whalers, if they were only strong enough to prevent or resent acts of piracy and plunder.

An official communication to the State Department, under date of January 1, 1854, says: "The chief and inhabitants of Bau (at present the controlers of this group), causing the destruction of property at Lavuka, live by the fruits of begging, theft, and robbery—one unbroken series of robberies and butcheries. In default of justice, these men escape." When our whalers are fortunate enough to escape from the atrocities above described, they can obtain a full supply of all descriptions of vegetables, pork, poultry, etc., for an entire crew for about $56, in trade. The same communication farther informs the Department, that American vessels are actually driven away from this archipelago, the natives being emboldened in the perpetration of these acts by the absence of American vessels of war in any of their ports. During the past year (1855) an American ship of war, the *John Adams*, visited the Feejee Islands for the purpose of inquiring into, and demanding reparation for, the cruelties and acts of plunder and piracy committed by the natives upon American ships trading and fishing in the Feejee-an archipelago. The result of this visit, it is believed, will put an end to the atrocities of these savages, and secure a safe and commodious retreat for American whalers in those distant seas. It is understood that

this security is guarantied by a convention or treaty agreed to by Tui Viti, the king of the islands. There are no quarantine regulations observed at any of these islands, and consequently no bills of health are required. Passengers are subjected to no port or landing requirements, and are at liberty to go ashore when and as they please.

There are no custom duties, nor are there any light, hospital, or other dues or taxes exacted. For pilots, the charges are such as can be agreed upon. It has been already stated that this group of islands affords a convenient and excellent stopping-place for our whale-ships engaged in their hazardous and laborious toil in the South Pacific seas. It should be added, that our trading ships generally, in that quarter of the globe, could beneficially call at these islands, particularly if freighted with miscellaneous cargoes of cotton goods, weapons of war, cutlery, and other similar wares suited to the barbarous and semi-civilized natives, could they but be taught to pay proper respect to the American flag. During the three years ending with 1853, the exports from the United States to the Feejee Islands amounted, in the aggregate, to $136,000, viz.: In 1851, to $32,000; in 1852, to $54,000; in 1853, to $50,000. The merchandise received in barter for American imports consist of biche-de-mer, tortoise-shell, gums, arrow-root, and cocoanut-oil. The exports from the United States consist of assorted cargoes, and the annual value may be estimated from the preceding figures, as the trade is almost exclusively one of barter, in which the American shippers usually realize 250 per cent. profit on their merchandise. During the last six months of 1855, there arrived at the port of Lanthala five American vessels, including two ships of war (the *John Adams* and the *St. Mary's*), measuring, exclusive of the two latter, an aggregate of 1124 tons. Three whale-ships also touched at the islands during the same period. The inward cargoes of two of the merchant vessels referred to, amounting in value to $4000, consisted of general cargoes, of which was landed, in value, $3000. The remaining vessel was laden with outfits, stores, and whaling-lines, valued at $30,000, none of which was landed at the islands. The outward cargoes consisted of biche-de-mer, 1500 peculs, and shells, 1000 pouds, valued at $41,000. One of these vessels made a voyage to Sydney with yams, cocoanut-oil, and live stock, while the natives were collecting her cargo of biche-de-mer.—C. D.—*Com. Rel. U. S.*

Felt, a kind of stuff resembling coarse cloth, made of hair or wool, without weaving. The fur of the hare, rabbit, seal, beaver, and the wool of the sheep, are the materials chiefly used for making felt. The hairs and loose flocks of wool are thoroughly mixed together by an operation called *bowing*, which depends on the vibrations of an elastic string; when, in consequence of their anatomical structure, they become matted together.

Felted Cloth. This woolen fabric is made without spinning or weaving. *Varnished* or *Japanned Felt* is made by imbuing the stuff of coarse hat bodies with drying oil, prepared by boiling 50 lbs. of linseed oil with white lead, litharge, and umber, of each one pound. The felt is to be dried in a stove, and then polished by pumice-stone. Five or six coats of oil are required. The surface is at last varnished. When the object is intended to be stiff, like visors, the fabric is to be impregnated first of all with flour-paste, then stove-dried, cut into the desired shape, next imbued with the drying-oil, and pumiced repeatedly; lastly, placed, to the number of 20, in a hot iron mold, and exposed to strong pressure. Japanned hats made in this way are sold in France at 1s. 3d. a piece; and they will stand several years' wear.

Felting (Fr. *Feutrage*; Ger. *Filzen*), is the process by which loose flocks of wool, and hairs of various animals, as the beaver, rabbit, hare, etc., are mutually interlaced into a compact textile fabric. The first step toward making felt is to mix, in the proper proportions, the different kinds of fibres intended to form the stuff; and then, by the vibratory strokes of the bowstring, to toss them up in the air, and to cause them to fall as irregularly as possible upon the table, opened, spread, and scattered. The workman covers this layer of loose flocks with a piece of thick blanket stuff slightly moistened; he presses it with his hands, moving the hair backward and forward in all directions. Thus the different fibres get interlaced, by their ends pursuing ever tortuous paths; their vermicular motion being always, however, root foremost. As the matting gets denser, the hand pressure should be increased, in order to overcome the increasing resistance to the decussation. A first thin sheet of soft, spongy felt being now formed, a second is condensed upon it in like manner, and then a third, till the requisite strength and thickness be obtained. These different pieces are successively brought together, disposed in a way suitable to the wished-for article, and united by continued dextrous pressure. The stuff must be next subjected to the fulling-mill.

Felling Timber. In arboriculture, when a full-grown tree is cut down, it is said to be felled; but this term is never applied to young trees or bushes, undergrowth, or hedges, which are said to be rooted out or cut over. Much has been written respecting the proper season for felling trees; some arguing in favor of midwinter, and others in favor of midsummer. The question principally turns upon the quantity and the value of the soft or outer-wood in the trunk of the tree to be felled, known by foresters and carpenters as the sap. As this sap or outer-wood is the only portion of the trunk in which the sap or juices of the tree circulate, it is evident that if no value be set upon it the tree may be cut down at any season, because the truly valuable part of the trunk, the mature timber, is impermeable to the sap in its ascent through the soft wood, and is, therefore, in the same state at every season of the year. On the other hand, where much value is attached to the soft o. outer-wood, where this outer-wood is wished to be made as valuable as possible, or where, as in the case of comparatively young trees, the greater part of the trunk consists of sap-wood, felling ought to take place when there is least sap in the course of circulation. This season is, without doubt, midwinter, which, all other circumstances being equal, is unquestionably the best season for felling timber; the next best being midsummer, when the sap is chiefly confined to the young shoots, the circumference of the soft wood, and the bark; as the worst is the spring, just before the development of the buds, when the tree is fullest of sap, and receiving constantly fresh supplies from the root; and in autumn, immediately before the fall of the leaf, when there is a superabundance of sap, from its being as it were thrown out of employment by the falling of the leaf. In general, all the soft woods, such as the elm, lime, poplar, willow, etc., should be felled during winter; hard woods, like the oak, beech, ash, etc., when the trunks are of large size, and valued chiefly for their heart-wood, may be felled at any time. See articles Dry Rot and Wood.

Felucca (Ital. *feluca*), a little vessel with oars and lateen sales, common in the Mediterranean. It has a rudder at the stem and another at the stern, to be applied as occasion requires.

Ferment (Lat. *fervco*, I boil), the substance which is essential to the process of fermentation. It is either naturally present in the fermentable juice, as in the grape, or it is added, as in the manufacture of beer, where *yeast* constitutes the ferment. Ferments are of an albuminous or glutinous character; the presence of nitrogen seems essential in their composition, hence they are classed by chemists among azotized compounds. Their modus operandi is still unexplained.

Fermentation (Lat.) When certain vegetable substances are dissolved in water, and subjected to a due temperature (between 65° and 85°), they undergo a series of changes which terminate in the production of alcohol or spirit; these changes constitute the phenomena of *vinous fermentation*. Sugar and some ferment are essential to the process; and during the formation of the alcohol the sugar disappears, and carbonic acid is more or less abundantly evolved. The simplest case of fermentation is that of *must*, or of the expressed juice of the grape, which, when exposed, either in close or open vessels, to a temperature of about 70°, soon begins to give off carbonic acid, and to become turbid and frothy; after a time a scum collects upon the surface, and a sediment is deposited; the liquor which had grown warm gradually cools and clears, loses its sweet taste, and is converted into *wine*. The chief component parts of must are water, sugar, mucilage, gluten, and tartar. During the fermentation carbonic acid escapes, the sugar disappears, and with it the greater part of the mucilage; the gluten chiefly forms the scum and a portion of the sediment; and the tartar, originally in solution, is thrown down in the form of a colored deposit. It appears, therefore, that the new products, which are *alcohol* and *carbonic acid*, are principally formed at the expense of the sugar; and Gay Lussac's experiments have shown that 45 pounds of sugar are resolved, in the process of fermentation, into 23 of alcohol and 22 of carbonic acid. Sugar and water alone will not ferment; the ingredient requisite to the commencement of the change is the gluten, which absorbs in the first instance a little oxygen from the air, becomes insoluble, and induces the subsequent changes. The reason why grapes never ferment till the juice is expressed, seems to depend upon the exclusion of air by the husk or membranes; and if grapes be bruised in a perfectly close vessel, carefully excluding oxygen, the juice undergoes no change; so that the mere breaking down of the texture of the fruit is insufficient. But a very short exposure of the pulp to air is sufficient to induce that change in the juice which leads on to fermentation, and which is afterward independent of the further contact of air, the evolution of carbonic acid being exclusively referable to the decomposition of sugar. In *beer* the alcohol is derived from the sugar, original and produced, of the malt. When wine is exposed to air and a due temperature, a second fermentation ensues, which is called *acetous fermentation*, and which terminates in the production of *vinegar*. During this process oxygen is absorbed, and more or less carbonic acid in most cases evolved; but the apparent cause of the formation of vinegar is the abstraction of hydrogen from the alcohol, so as to leave the remaining elements in such proportions as to constitute *acetic acid*. Thus alcohol is theoretically constituted of charcoal, water, and hydrogen, and acetic acid of charcoal and water only; the oxygen of the air, therefore, converts the hydrogen of the alcohol into water, and so effects the change into vinegar.

Fern, or **Farn Islands**, a group of small islets or rocks, 17 in number, lying off the coast of Northumberland, but included in the county of Durham. There are two light-houses on these islands. It was here, in 1838, that Grace Darling and her father, in stormy weather, rescued the passengers of the *Forfarshire* steamer. The Fern Islands are frequented by immense numbers of sea-birds.

Fernando de Noronha, an island in the South Atlantic, lying about 70 leagues from the coast of Brazil. It is about 20 miles in circumference, and the surface is rugged and mountainous. It has several harbors defended by forts, and serves as a place of banishment for criminals from Brazil. N. lat. 3° 56′, W. long. 32° 28′.

Fernando Po, or **Fernao do Pao**, an island on the west coast of Africa, lying in the flight of Benin, about 20 miles from the mainland, in N. lat. 3° 25′, E. long. 8° 50′. It is about 44 miles in length from N.N.E. to S.S.W., and about 20 in breadth. The coasts are steep and rocky, and the interior is mountainous. A ridge of mountains toward the centre of the island rises to the height of 8000 feet, and is terminated at each extremity by a peaked mountain, the one at the northern extremity attaining a height of 10,700 feet. The southern extremity of the island is also intersected by several steep mountains, varying from 1,000 to 3,000 feet. These mountains are covered, most of them to their summits, together with the intervening valleys, with dense forests of shrubs and lofty trees of luxuriant growth. The rocks are of volcanic origin, and the soil is rich and fertile, producing rice, sugar-cane, cotton, tobacco, yams, palms, etc. Sheep, goats, fowls, turtle, and fish, are abundant. The climate is salubrious, though the rainy season lasts from May to December, and is succeeded by a season of dense fogs. The harbors are small, the largest being Port Clarence on the northern shore. This island was discovered in 1471 by a Portuguese navigator, whose name it bears. It was taken possession of by Spain in 1778, but abandoned in 1782. The English in 1827 formed a settlement here, but relinquished it in 1834; the Spaniards resumed possession of it in 1844, and have given it the name of *Puerto de Isabel*. The native population is estimated at about 15,000.

Ferrol, a seaport town of Spain, province of Coruña, and one of the first naval arsenals in the kingdom, is situated on the N. arm of the Bay of Betanzos, 12 miles north-west of the town of Coruña. The harbor, which is one of the best in Europe, is deep, capacious, and secure; but the entrance, which is a strait about two miles in length at the narrowest part, only admits one ship at a time, and is commanded on either side by strong forts. The town is protected on the land-side by a wall, on which 200 cannon might be mounted. The dockyard is divided into two parts, the outer being the smaller, and the whole occupying a space of more than 115,000 square yards. Behind the inner dock are the dwellings of the operatives, and in the north angle are the founderies, rope-walks, and magazines. They are all, however, as well as the arsenal, in a neglected and ruinous condition.

Ferry (Germ. and Sax. *fahren*, to pass over), in law, a right arising from royal grant or prescription to have a boat to carry men and horses across a river, and to levy reasonable toll. The land on both sides ought to belong to the owner of the ferry-boats.

Fescue grass, a valuable grass for meadows and pastures. (*Festuca pratensis*, Lin.) In deep, rich soils, somewhat moist, it is considered as the most bulky and nutritive of all grasses; but in poorer soils it is equaled, if not surpassed, by the rye grass (*Lolium perenne*), and the meadow foxtail grass (*Alopecurus pratensis*). The meadow fescue grows to the height of between 2 and 3 feet; but the sheep fescue (*F. ovena*), and several other species, seldom grow above 6 inches or a foot in height, and are chiefly sown on sheep pastures, and used to lay down lawns and grassy surfaces to be mown in pleasure grounds. All the fescues are perennials.

Fez, an extensive country of Africa, and at one time the most flourishing kingdom in the northern part of that continent. It now, however, forms a province of the empire of Morocco. *Fez*, or *Fas*, the capital of this kingdom, was built in 793, A. D., by a prince named Edris, and having soon risen to be a city of the first magnitude, became the capital of the western Mohammedan states. In the 12th century it is said to have contained 700 temples and mosks, and other public edifices, a number of which were erected upon a magnificent scale, and adorned with a profusion of marble pillars. The manufactures of Fez consist of woolen *haiks*, sashes, and silk handkerchiefs, slippers

of good leather, which they tan remarkably well, red felt caps, some coarse linen cloth, fine carpets, a curious kind of earthenware, weapons of several kinds, saddlers' ware, jewelry, and copper utensils. The arts here find little encouragement, and are, indeed, far inferior to those of Europe, except in the preparation of leather, and in the fabrication of carpets and of hhalks, which the manufacturers know how to weave as fine and as transparent as gauze. They are also expert workers in wax, weapons, and harness. The heat during the summer is very great; but in other seasons of the year, particularly winter, the climate is agreeable. With regard to the number of inhabitants, much difference of opinion prevails among travelers.

Fibre (Lat. *fibra*), a fine thread or filament; a fine slender body, such as those of which flesh, nerves, plants, roots, etc., are composed. In our manufactures vegetable filaments and fibres are among the most important of the whole series of raw produce; furnishing thread, cloth, cordage, and the like. For these purposes the filamentous parts of the *Gossypium Cannabis*, and *Linum*, or cotton, hemp, and flax, are used. The fibres of other plants have been employed in different countries for the same uses. Putrefaction destroys the pulpy matter, and leaves the tough filaments entire. Different kinds of cloth are prepared in the East from the fibres of the bark of certain trees boiled in a strong lye. Some of these cloths are very fine, and approach to the softness of silk, but in durability fall short of cotton; others, again, are coarser and stronger, and much exceed cotton in durability. See FLAX.

Fid, a short bar of wood or iron put through the heel or lower part of a topmast, and resting by its ends on the trestletrees, and on which the mast is therefore supported. When the topmast is to be got down, it is first lifted to take the pressure off the fid, which is then withdrawn.

Fid, or **Splicing-fid**, is also a sharp cone of wood for opening the strands of rope.

Fiddles, or **Violins** (Ger. *Violinen, Geigen*; Du. *Vioolen*; Fr. *Violons*; It. *Violini*; Sp. *Violines*; Rus. *Skripissi*), musical instruments, too well known to need any particular description. The finest-toned violins are those made in Italy; they are usually called Cremonas, from the name of the town where they were formerly manufactured in the highest perfection; $500 and more have not unfrequently been given for a first-rate Cremona violin.

Figs (Ger. *Feigen*; Du. *Vygen*; Fr. *Figues*; It. *Fichi*; Sp. *Higos*; Lat. *Fici, Caricæ*; Arab. *Teen*), the fruit of the fig-tree (*Ficus carica*), a native of Asia, but early introduced into Europe.

It flourishes in Turkey, Greece, France, Spain, Italy, and northern Africa, and even sometimes ripens its fruit in the open air in this country. Figs, when ripe, are, for the most part, dried in ovens to preserve them; and then packed very closely in the small chests and baskets in which we import them. The best come from Turkey; those of Kalamata, in the Morea, are said to be the most luscious.—THOMSON'S *Dispensatory*.

Dried figs form a very considerable article of commerce in Provence, Italy, and Spain; besides affording, as in the East, a principal article of sustenance for the population. In Spain, figs are chiefly exported from Andalusia and Valencia; but they are more or less abundant in every province. In the northern parts of France there are many fig gardens, particularly at Argenteuil.

Figure Head. The figure, statue, or bust, on the projecting part of the head of a ship, called the cutwater.

Figures, in Arithmetic, are the numeral characters, or ten digits, by which numbers are expressed. They are supposed to be of Indian origin, and to have been introduced into Europe by the Moors of Spain in the 13th century; but the date of their introduction is much disputed.

Filbert, or **Filberd**, the well-known fruit of the cultivated hazel nut, or *Corylus avellana*, is a seed-vessel inclosed within an involucre or cupule, which is the part commonly called the husk. This organ is of the same nature as the cup of the oak, and the prickly case in which the nuts of the sweet chestnut and the mast of the beech are inclosed. In the filbert it is much larger than in the common nut; and it is this character, together with the lengthened figure of the nut, which distinguishes the two races of nuts and filberts. The best known varieties of the filbert are the red, the frizzled, and the white, the latter being the kind most commonly grown.

File, Files (Da. *File*; Du. *Vylen*; Fr. *Limes*; Ger. *Feilen*; It. *Lime*), an instrument of iron or forged steel, cut in little furrows, used to polish or smooth metals, timber, and other hard bodies. Files are of various forms, sizes, and cuts, according to the uses to which they are to be applied. When the surface is cut in transverse furrows by a straight sharp-edged chisel and mallet, the instrument is properly called a file; but when it is raised by a triangular punch, it is termed a rasp. This last kind is chiefly employed for rubbing wood and horn. The larger kind of files are made of blistered steel; but the small and fine files of cast steel. Various ingenious machines have been contrived for cutting the teeth of files, but these have not hitherto succeeded so well as to supersede file-making by the hand. After the file has been cut it must undergo the process of tempering. This is said to be well effected in the following manner: A saturated solution of common salt, stiffened to the consistence of cream with ale grounds, or with any cheap farinaceous matter, such as bean-flour (some use well-dried chimney-soot), is to be spread over the file, in order to preserve its surface from oxydation during the process; it is then uniformly heated in a coke or charcoal fire to a cherry-red color; and on its removal from the fire it is to be suddenly quenched in cold and pure spring water. It is subsequently cleaned with charcoal and a rag; after which it is laid up in wheat bran to preserve it from rust. When the file is intended to cut iron or steel, it is found preferable to substitute animal carbon for the grounds or farinaceous matter mentioned above. This will give even to iron a superficial hardness sufficient for any kind of file.

Filigree, or **Fillagree** (Ital. *filigrano*; Lat. *filum*, a thread, and *granum*, a grain), a very delicate kind of ornamental work in gold or silver, wrought in the manner of little threads, or threads and grains intermixed. Filigree work is of eastern origin, and was first introduced into Europe by the Italians. In Sumatra, manufactures of this kind have been carried to the highest degree of perfection, and yet the tools employed are exceedingly coarse and clumsy. These are generally rudely and inartificially formed from any piece of old iron. A piece of iron hoop suffices for making the wire-drawing instrument; an old hammer head, stuck in a block, serves as an anvil; and two old nails, tied together at one end, will suffice for a pair of compasses. The gold is melted in a piece of *preeso* or earthen rice-pot, or sometimes in a crucible of ordinary clay. In general no bellows are used, but the fire is blown with the mouth, through a joint of bamboo; and if the quantity of metal to be melted is considerable, three or four persons sit round the furnace, which is an old broken qualiee or iron pot, and blow together. At Padang, where the manufacture is most considerable, they have adopted the Chinese bellows. The method of drawing the wire differs but little from that which is used by European workmen. When drawn to a sufficient fineness, it is flattened by beating it on the anvil; and when flattened, a twist is given to it by rubbing it on a block of wood with a flat stick. After twisting they again beat it upon the

anvil, and thus it becomes flattened wire with indented edges. The end of the wire is folded down with a pair of pincers, and thus is formed a leaf, or element of a flower, which is cut off. The end is again folded and cut off till they have a sufficient number of leaves, which are laid on singly. Patterns of the flowers or foliage, in which there is seldom much variety, are prepared on paper of the size of the gold plate on which the filigree is to be laid. According to these, they begin to dispose on the plate the larger compartments of the foliage; for which they use plain flattened wire of a larger size, and fill it up with the leaves before mentioned. In order to fix the work, they employ a gelatinous substance made of the berry called *boca sago*, ground to a pulp on a rough stone. After the leaves have been all placed in order, and stuck on bit by bit, a solder is prepared of gold filings and borax moistened with water, which is strewed over the plate, when it is put in the fire for a short time, and the whole becomes united. This kind of work on a gold plate is called *carrang papan*; but when the work is open, it is called *carrang trouse*. In executing the latter, the foliage is laid out upon a card, or soft kind of wood, and stuck on, as before described, with the sago berry; and the work, when finished, being strewed over with the solder, is put into the fire, when the card or soft wood burning away, the gold remains connected. If the piece be large it is soldered at several times. In the manufacture of badjoo buttons, they first make the lower part flat, and having a mold formed of a piece of buffalo's horn, indented to several sizes, each like one half of a bullet mold, they lay their work over one of these holes, and with a horn punch press it into the form of a button; after which they complete the upper part. When the filigree is finished they cleanse it by boiling it in water with common salt and alum, or sometimes lime juice; and in order to give it that fine purple color which they called *sapo*, they boil it in water mixed with brimstone. The manner of making the little balls with which their works are sometimes ornamented, is simple. They take a piece of charcoal, and having cut it flat and smooth, make in it a small hole, which they fill with gold dust, and this being melted in the fire becomes a little ball. They are very inexpert at finishing and polishing the plain parts, hinges, screws, and the like, being in this as much excelled by the European artists as the latter fall short of them in the fineness and minuteness of the foliage. The Chinese also make filigree, mostly of silver, which looks elegant, but wants the extraordinary delicacy of the Malay work. The price of the workmanship depends upon the difficulty or uncommonness of the pattern. In some articles of usual demand it does not exceed one third of the value of the gold, but in matters of fancy it is generally equal to that of the metal.

In India, the articles usually made in gold and silver filigree are bracelets, ear-rings, brooches, chains, groups of flowers, and small boxes and caskets. Mr. Taylor, in his "Account of the Arts in India," says: "The design best adapted for displaying the delicate work of filigree is that of a leaf; it should be drawn on stout paper, and of the exact size of the article intended to be made. The apparatus used in the art is exceedingly simple, consisting merely of a few small crucibles, a piece of bamboo for a blow-pipe, small hammers for flattening the wire, and sets of forceps for interweaving it. The gold and silver wire made by the Hindoos for this and other purposes is of varied character, according to the purposes for which it is intended; thus, the *goolrbatoon* is made at Dacca for the embroidering of muslins and silks; *goshoo* for caps and for covering the handles of chowries; *salmah* for turbans, slippers, and hookah-snakes; and *booiwa* for gold lace and brocades. For some of these purposes it is not strictly wire, but gold thread, that is, silk covered with silver and then with gold."—E. B.

Fill. The sea term for bracing a yard which had been laid aback, so that the wind may act on the after or proper side of the sail.

Finesse (Fr.) may be defined simply as a peculiar aptitude of discovering, in any business, the best means of attaining the object in view; or as the power of embracing in one comprehensive glance the various interests of any subject, together with ingenuity to devise and tact to carry out the plan best calculated to obtain success.

Finland, called by the natives *Suomemna*, the Region of Lakes and Swamps, is a government of Russia, comprising, besides the old Swedish province of Finland, the two Lapmarks of Kami and Torneå, and the district of Wiborg. It lies between N. lat. 59° 50′ and 70° 6′, and E. long. 20° 30′ and 32° 45′ being bounded on the N. by Norwegian Finmark, by Sweden W. and the Gulf of Bothnia, S. by the Gulf of Finland, and E. by the governments of St. Petersburg, Olonetz, and Archangel. It is about 730 miles in length from N. to S., with an average breadth of about 185 miles. The sea-coast of Finland throughout its entire extent presents the same succession of fiords and rocky headlands as characterize the whole seaward frontier of Sweden and Norway. The fiords of Finland, however, are far more limited than those to the west of the Gulf of Bothnia, and seldom exceed a few miles in extent, although their mouths contain an equal number of islands, some of which, as the isles of Sveaborg, have been converted into fortresses of great strength. The coasts of the Bothnian and Finland Gulfs are thickly strewn with rocks of granite and limestone, presenting in some places a labyrinthine archipelago of little islands, rendering the navigation extremely dangerous. The greater portion of the interior is a vast table-land averaging in height from 400 to 600 feet, and interspersed with hills of no great elevation. In the north, however, are the Manselka Mountains, which attain a height of nearly 4000 feet, and stretch southward, though with several interruptions, until they terminate in lofty cliffs on the Gulf of Bothnia. The great mass of mountains is composed of red granite, and vast quantities of the same rock lie in boulders on the lower grounds, and prove a very serious obstacle to their cultivation. Many of the heights are bare, but the greater part of them being of moderate elevation are covered with forests chiefly of pine; and in their combination with the vast number of lakes inclosed by their bases, often form very romantic scenery. The extensive forests are sometimes devastated by the tempests of winter, which seem to find access to their very centres in tornadoes, tearing up by the roots or bending and snapping the largest pines. Frequently also ravages are committed in them by conflagration occasioned often through the carelessness of the peasants. The interior of Finland is also intersected and broken up by a vast number of lakes, throwing out winding arms and branches in all directions, which, while they offer the greatest facilities for inland navigation, render land traveling circuitous and dangerous. Many of the high roads pass over islands on these lakes, the natural strength of whose situation has been taken advantage of, to cover them with batteries; and some of them, as at Wiborg and Nyslot, are considered impregnable, save to fraud or famine. The principal of these lakes are Ladoga, the greater portion of which belongs to this government; Lake Saima, which is crowded with islands and discharges its superfluous waters in a series of cataracts into Lake Ladoga, but which is now connected by means of a canal with the Gulf of Finland near Wiborg; and Lake Enara in the extreme north, covering above 1000 square miles, and having its outlet in the Frozen Ocean. The chief rivers are the Ulea, which is navigated by trading-vessels, though its stream is very rapid; the Cano, which passes Biörneborg; the Aurajoki, which at Abo is about 100 yards broad; the

Kymen, which flows into the middle of the Gulf of Finland; and the Tornea, which discharges itself at the northern extremity of the Gulf of Bothnia, and forms the present boundary between Sweden and Russia. The climate varies much according to the locality. In Lapmark, in the north, it is polar somewhat modified, and the sun disappears during December and January. Further south at Uleaborg, winter begins in October and continues to May, to which month spring is limited. Summer commences in June and lasts three months, which are generally so hot and dry that the crops, particularly where the soil is of a sandy nature, often suffer from drought. The autumn, like the spring, is confined to one month, and may be said to commence and terminate in September. Even in summer the nights are cold, particularly about the middle of August. During summer, however, the progress of vegetation is remarkably rapid; and there have been instances of grain being sown and reaped in six weeks. In the more southern parts the climate is less severe; the winter being of five or six months' duration. Dense fogs are frequent, and heavy rains take place in autumn. The soil is for the most part stony or sandy; but notwithstanding this it is much more productive than the opposite part of the Scandinavian peninsula, and when in the possession of Sweden it was termed the granary of that country. The principal crops are barley and rye, but owing to the nature of the surface and climate a large portion of the land is fit only for pasture. In the north, where vegetation is almost confined to the growth of moss and lichen, other domestic animals are superseded by the reindeer, of which great herds are kept. In addition to timber (chiefly fir), large quantities of potash, pitch, and rosin are obtained, and form the principal articles of export. The mineral productions are chiefly confined to iron, lead, sulphur, slate, and granite. The first is only wrought to a limited extent for the supply of a few furnaces; wrought iron being now principally imported from Sweden. A great number of excellent granite quarries have been opened chiefly on the borders of the lakes or sea-coasts to secure the advantage of water carriage. From these are obtained blocks of extraordinary magnitude and beauty, which are employed for architectural and artistic purposes. One of the finest specimens is the monolith obelisk recently erected in St. Petersburg to the Emperor Alexander. In its rough state it was 12 feet in diameter, and 80 feet in length. The manufactures of Finland are insignificant. Agriculture, the rearing of cattle, and fishing are the principal occupations of the inhabitants. The coasts present many good harbors, but on account of the long winter they can not be extensively used. In winter sledges afford an easy and rapid communication with different parts, and even with Sweden across the Gulf of Bothnia. In March, 1809, Barclay de Tolly crossed over with a division of the Russian army from Vasa to Umea in Sweden.

From official documents the returns of the trade of Finland for the year 1848, were, in silver roubles of the value of about 3s. 2d., as follows:

Exports.

To Sweden and Norway	197,942
To other countries	1,946,994
Export duty on the same	93,704
Total	2,188,640

Imports.

From Sweden and Norway	430,966
From other countries	3,128,590
	3,559,956
Deduct import duty thereon	893,500
Total	2,660,456

Showing an excess in the imports over the exports of 476,816 roubles, which, however, was in part covered by the freight earned by the merchant shipping. The above statements indicate a falling off as compared with former years in the export trade to Norway and Sweden. To these two countries the leading articles of export and their value were—fish, 23,569 roubles; hides, 8616; beef, 24,578; grain, 15,083; tallow, 30,809; tar, 11,483; firewood, 11,483. The imports were—books, 16,200 roubles; fish, 25,228; iron and steel, 250,870; sugar, 66,418; tobacco, 4677; dye-woods and stuffs, 23,990. The exports to other countries were also less than in former years; the chief articles were—potash, 16,733 roubles; butter, 183,409; tar, 324,717; wood and timber, 921,360. The chief imports from other countries were—medicines, 20,914 roubles; cotton, 138,318; arrack, rum, brandy, 169,794; coffee, 597,708; fruits, 106,042; dye-stuffs, 134,550; yarn, 349,993; iron and steel, 89,709; salt, 531,665; sugar, 544,485; wine, 140,528; manufactures woven, 666,145.

In 1831 Finland was divided administratively into eight circles or *läns*, which are subdivided into *fogderier* or districts, and *herads* or bailiwicks. There is a distinct establishment at St. Petersburg for the government of this vast province. The governor-general, who resides at Helsingfors, has the superintendence of the military affairs. Finland has a diet composed of the four orders of the nobility, clergy, citizens, and peasantry, and a code of laws and judicial system similar to that of Sweden, but the diet is rarely convoked, except to consent to the imposition of fresh taxes, a senate more recently established having replaced it in the exercise of its functions. The regiments raised in Finland are not promiscuously intermixed with the general forces of the Russian empire; and their fleet, by far the best manned portion of the Russian navy, forms a distinct squadron under the Finnish flag. None but a native Finlander can hold any office of trust in the country. Almost all the inhabitants are Lutherans under the bishops of Abo and Borgo, except in the circle of Wiborg, where they belong to the Russian church. Public education is in a very backward state. At Helsingfors is a university, transferred from Abo in 1828; and all the towns have schools, but there is a great deficiency of country schools. The majority of the inhabitants are Fins, who call themselves *Suomalans* or *Suomes*, but they are denominated Tschudes by the Russians. They are of middle height, robust, flat-faced, with prominent cheek-bones, light, reddish, or yellowish-brown hair, gray eyes, little beard, and a dull sallow complexion. They are courageous, hospitable, and honest, but obstinate in the extreme, indolent, dirty, and, it is said, revengeful. Their customs and habits have been handed down from time immemorial, and their costume forcibly bears out the supposition of their being of oriental origin. The peasants wear long loose robes of a coarse manufacture, secured by a silken cincture like the *kummerbund* of the Mussulmans. The eight läns with their areas and populations are as follows, commencing from the south and east:

	Area.	Population.
Wiborg	16,700	224,701
St. Michael	9,271	180,281
Nyland	5,876	149,714
Tavastehuus	7,112	182,586
Abo	10,626	250,298
Vasa	15,988	199,497
Kuopio	17,089	156,701
Uleaborg	63,415	125,114
Total	145,477	1,378,727

The chief towns of Finland are Helsingfors, the present capital, Abo, the former capital, Wiborg, Tavestehuus, Vasa, Uleaborg, and Tornea. The Fins were pagans living under their own independent kings till the twelfth century, about the middle of which Finland was conquered by the Swedes, who introduced Christianity. The province of Wiborg was seized by Peter the Great in 1721, and the remainder of the

country was annexed by conquest to the Russian dominions in 1809.—*Athenæum*, 18th March, 1854.

Fire-Arms. Under this designation is comprised all sorts of guns, fowling-pieces, blunderbusses, pistols, etc. The manufacture of these weapons is of considerable importance; employing at all times, but especially during war, a large number of persons. Small arms were contrived by Schwartz, A. D. 1378; they were brought to England about 1388. Fire-arms were a prodigious rarity in Ireland in 1489, when six muskets were sent from Germany as a present to the earl of Kildare, who was then chief-governor. Muskets were first used at the siege of Rhegen, in 1425. The Spaniards were the first nation who armed the foot soldier with these weapons.—*Ulloa*. Voltaire states, that the Venetians were the first to use guns, in an engagement at sea against the Genoese, in 1377; but our historians affirm that the English had guns at the battle of Cressey, in 1346; and the year following at the siege of Calais.

Fire-engine, a species of forcing-pump in which the water is subjected to pressure sufficiently strong to raise it to the required height. Those of the ordinary construction consist of two forcing-pumps, wrought by the reciprocating motions of two transverse levers. The water is forced into an air-vessel, by which means the inclosed air is condensed, and by its reaction it forces the water through a movable pipe, which terminates in a conical form, and is directed upon the flame. Braithwaite's steam fire-engine is an ingenious application of the moving power of steam to the working of fire-engines. The mechanical arrangement of this machine consists of two cylinders of about six inches in diameter, one of them being the steam-cylinder, and the other the water-pump; and they are placed horizontally, so that a parallel motion is easily obtained. An engine of this kind will deliver about 9000 gallons an hour to the height of 90 feet. The time of getting the engine into action from the moment of igniting the fuel (the water being cold), is less than ten minutes. Mr. Miles Greenwood, of Cincinnati, made, in 1852, the first successful practical application of the steam fire-engine; and engines of his construction are now in use in Cincinnati, St. Louis, and many other large cities.

Fire-damp, the explosive carburetted hydrogen of coal mines. See Safety Lamp.

Firelock, or **Fusil.** A musket or small gun, which is fired with a flint and steel; and thereby distinguished from the old musket, or *match-lock*, which was fired with a match. The date of the invention of firelocks is uncertain.

Fire-ships. They were first used in the sixteenth century. Among the most formidable contrivances of this kind ever used, was an explosion vessel to destroy a bridge of boats at the siege of Antwerp, in 1585. The first use of them in the English navy was by Charles, Lord Howard of Effingham, afterward earl of Nottingham, lord high admiral of England, in the engagement with the Spanish Armada, July, 1588.—*Rapin*.

Fireworks. (*Feux d'artifice*, Fr.; *Feuerwerke*, Germ.) The composition of luminous devices with explosive combustibles is a modern art resulting from the discovery of gunpowder. The finest inventions of this kind are due to the celebrated Ruggieri, father and son, who executed in Rome and Paris, and the principal capitals of Europe, the most brilliant and beautiful fireworks that were ever seen. The following description of their processes will probably prove interesting to many of my readers:

The three prime materials of this art are, nitre, sulphur, and charcoal, along with filings of iron, steel, copper, zinc, and resin, camphor, lycopodium, etc. Gunpowder is used either in grain, half crushed, or finely ground, for different purposes. The longer the iron-filings, the brighter red and white sparks they give; those being preferred which are made with a very coarse file, and quite free from rust. Steel-filings and cast-iron borings contain carbon, and afford a more brilliant fire, with wavy radiations. Copper-filings give a greenish tint to flame; those of zinc a fine blue color; the sulphuret of antimony gives a less greenish blue than zinc, but with much smoke; amber affords yellow fire, as well as colophony, and common salt; but the last must be very dry. Lampblack produces a very red color with gunpowder, and a pink with nitre in excess. It serves for making golden showers. The yellow sand glistening mica, communicates to fireworks golden radiations. Verdigris imparts a pale green; sulphate of copper and sal-ammoniac, a palm-tree green. Camphor yields a very white flame and aromatic fumes, which mask the bad smell of other substances. Benzoin and storax are used also on account of their agreeable odor. Lycopodium burns with a rose color and a magnificent flame; but it is principally employed in theatres to represent lightning, or to charge the torch of a fury.

Firkin, a measure of capacity, equal to 9 ale gallons, or 7¼ imperial gallons, or 2538 cubic inches. See Weights and Measures.

Firlot, a dry measure used in Scotland. The Linlithgow wheat firlot is to the imperial bushel as ·998 to 1; and the Linlithgow barley firlot is to the imperial bushel as 1·456 to 1. See Weights and Measures.

Firman (more properly *Fermân*), in the Persian language, signifies a command, and is the name given in Turkey, Persia, and India, to mandates or certificates of the sovereign, issued for various purposes. Those best known to Europeans are given to travelers, and serve as passports. The Fermân has placed at its head in Turkey the cipher of the reigning Sultan, written in a complicated manner, affixed by the chief secretary of the sign manual. In the East Indies, the term firman is used for a written permission to trade.

Fisc (Lat. *fiscus*), in *Civil Law*, the treasury or revenue of a state. Fiscus, in its primary sense, denoted a basket or hanaper used by the Romans for holding large sums of money, and hence was applied to a money-chest or a purse. Under the emperors the term fiscus came to be applied to the imperial revenue or privy purse, in contradistinction to the *ærarium* or public treasury. Ultimately, when the emperors had concentrated in themselves the whole sovereign power, the word fiscus lost its distinctive character, and was used in the same sense as ærarium under the republic. Various officers were employed in the administration of the fiscus; as procuratores, advocati, patroni, and præfecti. From fisc, is derived the word confiscation, which signifies to take the goods of a condemned person and appropriate them to the public treasury.

Fiscal Year. The fiscal year of the United States formerly ended on 31st December, and up to the year 1843, on 30th September; but Congress enacted, August 26, 1842, "That on and after the first day of July, in the year of our Lord 1843, the fiscal year of the treasury of the United States, in all matters of accounts, receipts, expenditures, estimates, and appropriations, shall commence on the first day of July in each year; and the reports and estimates required to be prepared and laid before Congress at the commencement of each session by the Secretary of the Treasury, in obedience to the acts of Congress, of the 2d of September 1789, and of May 10th, 1800, shall be a report and estimate for each fiscal year, commencing as aforesaid, and terminating on the 30th day of June, in the succeeding calendar year."

Fish (Ger. *Fische*; Du. *Visschen*; Da. and Sw. *Fisk*; Fr. *Poissons*; It. *Pesci*; Sp. *Pescados*; Port. *Peixes*; Rus. *Ruh*; Pol. *Rybi*; Lat. *Pisces*), a term used in natural history to denote every variety of animal inhabiting seas, rivers, lakes, ponds, etc., that

can not exist for any considerable time out of the water. But in a commercial point of view, those fishes only are referred to, that are caught by man, and used either as food or for some other useful purpose. Of these, herring, salmon, cod, pilchard, mackerel, turbot, lobster, oyster, whale, etc., are among the most important. See the different articles under these titles.

As the seeds of a plant are numerous enough to insure an immense progeny if even a small percentage of them be properly managed, so do fishes produce eggs in such number as might soon overstock the waters, were there not destructive agencies at hand. It is not improbable that we are on the eve of valuable improvements in the management of fish. It has been found that trout and other valuable fish have declined in some of the French rivers; and on careful investigation it has been made apparent that not one egg in a hundred comes to maturity—the rest being devoured by other fish, washed away, or destroyed by mud. Two French fishermen, observing these facts, resolved on an attempt to collect some of the trout-eggs, and to secure the young fish from the voracity of the larger ones; they did so, and placed the eggs on a layer of gravel, which they deposited in a box full of holes. This box they fixed in the bed of a flowing stream, and covered it with pebbles, thus far imitating the practice of the mother-fish. In due time the eggs excluded, and almost every one was found to be good. Several hundred fish were thus obtained, which were kept in water free of danger, and supplied with food. Applying this operation the next year to a great number of fish, they obtained several thousand trout; and in a year or two more the number had increased to millions. The rivers in many departments of France were supplied from this artificial source; and the French government are now encouraging the system in every way. Not only trout, but salmon, carp, pike, tench, and perch, are thus preserved; and, moreover, the system has enabled fish of different species to be naturalised in strange waters, or removed from river to river.

Fisheries. The fisheries may be divided into deep-sea and shore fisheries. The latter are, of course, under the control of the nation owning the shore along whose line the fish are caught. But the deep-sea fisheries and the ownership of discovered shore-lines, have always given rise to disputes and quarrels. It has, however, been settled that a nation has exclusive control and right over the shore fisheries extending three miles from the coast; giving, sometimes, under certain restrictions, a right for other nations to use the shore for the purpose of curing and packing the fish caught beyond three miles of the shore.

Although fishing is an ancient and honorable employment, fisheries were not of much importance until after the discovery of Newfoundland. Holland had fisheries of some note in the 15th century; but owing to the state of maritime knowledge they were much confined; when, however, Newfoundland was discovered, an almost magical change took place. In the library of Venice there is a map, which authorizes the conjecture that land was found before 1436. But little was known until 1497, when Cabot made his first voyage. From this time voyages were made in pursuit of codfish at irregular periods, until the latter part of the 16th century, when enterprise and capital became plenty. Colonies were formed first at Newfoundland, and afterward at Acadia which comprised Nova Scotia and New Brunswick, and part of Maine. So much importance was given to the fisheries as a nursery of seamen, even at that early age, that laws were enacted in 1853 to prevent persons from eating meat Wednesdays and Saturdays except under a license, so that fisheries might be increased.

The great benefit from the fisheries was from the early colonization of this country. It is questionable whether we should not have been quite a century behind in this, had it not been for colonies founded on our coasts by the fishermen. The first direct voyage made by the English was in 1602, and the vessel catching codfish near the southern cape of Massachusetts, gave the name it yet bears.

The disputes in regard to fishing have disturbed commerce since this country was discovered. A full account of the disputes and treaties settling them, can be found in the able report of Lorenzo Sabine, Esq., to Congress in 1852.

We can notice but one or two affecting our own country. In 1782, Adams, Franklin, Jay, and Laurens were commissioners to negotiate a treaty with Great Britain, which contained this article:

"It is agreed that the people of the United States shall continue to enjoy, unmolested, the right to take fish of every kind on the Grand Bank, and on all the other banks of Newfoundland; also, in the Gulf of St. Lawrence, and at all other places in the sea where the inhabitants of both countries used at any time heretofore to fish; and also, that the inhabitants of the United States shall have liberty to take fish of every kind on such part of the coast of Newfoundland as British fishermen shall use (but not to dry or cure the same on that island), and also on the coasts, bays, and creeks, of all other of his Britannic majesty's dominions in America; and that the American fishermen shall have liberty to dry and cure fish in any of the unsettled bays, harbors, and creeks of Nova Scotia, Magdalene Islands, and Labrador, so long as the same shall remain unsettled; but so soon as the same, or either of them, shall be settled, it shall not be lawful for the said fishermen to dry or cure fish at such settlement, without a previous agreement for that purpose with the inhabitants, proprietors, or possessors of the ground."

Notwithstanding the position taken by Messrs. Adams, Clay, Bayard, and Gallatin, at Ghent, that our treaty rights were not abrogated by the war, the British government revived their pretension to the contrary immediately after the peace. An American vessel was fallen in with by an armed ship, the *Jaseur*, Locke, commander, in June, 1815, when about 45 miles from Cape Sable; and her papers were endorsed, "Warned off the coast, not to come within 60 miles." So extraordinary a procedure was promptly disavowed as unauthorized; but discussions ensued, which were terminated in 1818, by the conclusion of a treaty that embodied a compromise of the adverse views of the two cabinets, and which is still in force. The article is as follows:

"Whereas, differences have arisen respecting the liberty claimed by the United States, for the inhabitants thereof, to take, dry, and cure fish on certain coasts, bays, harbors, and creeks, of his Britannic majesty's dominions in America, it is agreed between the high contracting parties, that the inhabitants of the said United States shall have forever, in common with the subjects of his Britannic majesty, the liberty to take fish of every kind on that part of the southern coast of Newfoundland, which extends from Cape Ray to the Rameau Islands, on the western and northern coast of Newfoundland; from the said Cape Ray to the Quirpon Islands, on the shores of the Magdalene Islands and also, on the coasts, bays, harbors and creeks, from Mount Joly, on the southern coast of Labrador, to and through the Straits of Bellisle, and thence northwardly indefinitely along the coast; without prejudice, however, to any of the exclusive rights of the Hudson's Bay Company; and that the American fishermen shall also have liberty, forever, to dry and cure fish in any of the unsettled bays, harbors and creeks of the southern part of the coast of Newfoundland, hereabove described, and of the coast of Labrador; but so soon as the same, or any portion thereof, shall be settled, it shall not be lawful for the

said fishermen to dry or cure fish at such portion so settled, without previous agreement for such purpose, with the inhabitants, proprietors, or possessors of the ground. And the United States hereby renounce, forever, the liberty heretofore enjoyed or claimed by the inhabitants thereof, to take, dry, or cure fish, on or within three marine miles of any of the coasts, bays, creeks, or harbors of his Britannic majesty's dominions in America, not included within the abovementioned limits: provided, however, that the American fishermen shall be permitted to enter such bays or harbors for the purpose of shelter, and of repairing damages therein, of purchasing wood, and of obtaining water, and for no other purpose whatever. But they shall be under such restrictions as may be necessary to prevent their taking, drying, or curing, fish therein, or in any other manner whatever, abusing the privileges hereby reserved to them."

The distinguishing features of this article, as compared with the stipulations of the treaty of 1783, are obviously two: first, that we gave up the *catching* along certain shores; and, secondly, that our facilities of *drying* and *curing* were increased. The practical construction of *both* governments has been, until a recent period, that our vessels could *fish* everywhere, as under the treaty of 1783, except *within three miles of certain coasts*; in other words, that our rights were not impaired on the southern shore of Newfoundland, between Cape Ray and the Rameau Islands, on the western and northern shores of Newfoundland, from said Cape Ray to the Quirpon Islands, at the Magdalene Islands, between Mount Joly and the Straits of Bellisle, and through these straits to an indefinite extent along the shores of Labrador; *while elsewhere in British America we retained the sea-fisheries, but surrendered the inner, or shore fisheries.*

During the discussions abroad, in consequence of the outrage of the *Jaseur* and other British cruisers, Congress was not unmindful of the fishing interest, both to repair the wrongs of unauthorized captures and to afford protection against foreign competition. The tariff of 1816 imposed a duty of one dollar the quintal on foreign dried or smoked fish imported into the United States, two dollars the barrel on salmon, one dollar and fifty cents the barrel on mackerel, and one dollar the barrel on all other kinds of pickled fish.

So, in 1817, an act was passed which required that all officers, and three quarters of the crews of vessels employed in the cod-fishery, and claiming the bounty or allowance, should be American citizens, "or persons not the subjects of any foreign prince or state;" while no such vessel, it was provided by further enactments, should be deprived of bounty, if prevented from fishing the full time prescribed by law, by reason of detention or seizure by British ships-of-war.

In the revision of the tariff in 1824, there was no change in the rates of duty imposed on foreign fish. These rates were continued also in the tariffs of 1828 and 1832. Thus, in four revisions, the principle of ample protection was preserved, except that the products of the sea, like all other commodities imported, were subject to the provisions of the "compromise" measure introduced by Mr. Clay. In the present tariff, specific duties on fish are entirely abolished, and the uniform rate of 20 per cent. ad valorem substituted, which on some kinds is merely nominal, and on all insufficient. The ad valorem system has proved extremely beneficial to British colonists. In fact, having driven us from the markets of Catholic Europe, they are in active competition with us for our own.

A bounty or allowance has been commonly allowed by governments in consideration of the fisheries being nurseries for seamen, and a chief dependence in time of war to supply the marine.

In 1852, the bounty laws in this country, gave to vessels:

"If measuring more than five tons, and not exceeding thirty tons, $3 50 per ton.

"If measuring more than thirty tons, $4 per ton.

"If the above 30 tons, with crews not less than 10 persons, and having been exclusively employed at sea in the cod-fishery 3½ calendar months, $3 50 per ton.

"The allowance for one vessel during the season, whatever may be her tonnage, can not exceed $860.

"Vessels exclusively employed at sea in the cod-fishery the full time required to entitle them to bounty, and afterward wrecked, may be allowed bounty under the provisions of the act of 26th May, 1824, which requires the evidence of the loss of the vessel to be transmitted to the Comptroller for his decision thereon. Under the act of March 3, 1849, this duty has been transferred to the Commissioner of the Customs, to whom the proof, certified by the collector of the district to which the vessel belonged, should be sent for his official direction thereon.

"Instructions will be given in due season in regard to the mode of payment of bounty allowances, at and after the close of the year. To obviate any responsibility which might otherwise devolve on collectors, should such payments be made upon proof regarded as insufficient under the present instructions, it will be advisable that probable claimants to fishing-bounty allowances be apprized, before the sailing of vessels on their first cod-fishing voyage, of the requirements of these instructions, which are intended to supersede and supply the place of all former instructions on this subject. THOMAS CORWIN, *Secretary of the Treasury.*"

We make the following extracts from Sabine's able Report on the American fisheries:

Cod-fishery of France.—The French were the first European cod-fishers in the American seas. There is a tradition among the fishermen of Biscay that their countrymen visited Newfoundland before the time of Columbus. It is said, indeed, that the great discoverer was informed of the fact by a pilot who had been engaged in the enterprises. The story, improbable as it is, seems to have been treated with respect by some writers of the 16th century, but may be dismissed now as one which rests upon no clear and authentic testimony.

But that the Newfoundland fisheries were known to the Biscayans and Normans as early as the year 1504, is quite certain. When Cabot discovered our continent, Europe, including England, was Catholic; and during the fasts of the church, the pickled herring of Holland was the principal food. The consumption of fish was immense; and the Dutch, having enjoyed the monopoly of the supply, had become immensely rich. The knowledge communicated by Cabot and the voyagers who followed him, that the waters of America contained, not only an abundance, but many varieties of fish, gave rise to an excitement on the subject of fishing hardly less intense than is witnessed at the present time relative to mining. Persons of the highest rank, and not engaged in commercial pursuits, became shareholders in adventures to the new fishing-grounds. And though the Dutch refused to abandon the particular fishery by which they had obtained both wealth and celebrity, vessels wearing the flags of France, England, Spain, and Portugal came annually in search of the cod for nearly a century before a single European colony was founded in America north of the ancient limits of the United States.

We have seen that when, in 1778, France embarked in our revolutionary struggle, her fishermen, absent at Newfoundland, were recalled to enter her ships of war. The same reliance is placed upon them now. War was apprehended in 1841, and M. Thiers followed the example of the statesman referred to; and M. Rodet affirmed that, "without the *resources which were found in the sailors engaged in the fisheries, the expedition to Algiers could not have taken place.*"

These reasons are not only sufficient to justify, but to demand, national encouragement. But it may be urged, in addition, that the open or deep-sea cod-fishery differs from almost every other employment; that in war it is nearly or quite destroyed; that in peace it can not be pursued for more than four or five months in a year; that often skill and industry are insufficient to insure good fares; and that, when success attends severe toil and exposure, the fishermen barely subsist. The effects of a "bad catch" are, indeed, sad and calamitous. The disasters of 1847 afford a recent and a forcible illustration. In that year the French cod-fishery proved a failure. The quantity of fish caught was scarcely a sixth part of that of former seasons; and the fishermen, discouraged, abandoned the business as early as the middle of August. The labor of the summer and the expenses of repairs and of outfits lost, the actual want of food and clothing until another year came round was alone prevented by the bounty allowed by the government.

The manner of fishing is now the only topic that need claim attention. It is to be observed that the principal fishing-grounds are three, and that on each there is a difference in the mode of operations and in the size of the vessels. First, the fishery on the *coasts* of Newfoundland, which has always been considered the most important, as being more certain and employing the greatest number of men. The vessels are of all sizes—from 80 to 200, and even 300 tons. The latter size is, however, rare. When the vessel arrives on the coast, which is generally early in June, she is dismantled. Her boats, with two men and a boy in each, are sent out every morning, when the weather will permit, to fish until night. On the return in the evening, the fish taken are split, salted, and put in "*kenches*" or piles; remaining in piles a few days, they are "washed out" and dried until they are fit to ship. These processes are repeated from day to day until the fare is completed or the season has passed away. Toward the close of September, fishing is suspended, and the vessels depart for France or the West Indies.

The Grand Bank fishery is pursued in vessels of between 100 and 200 tons' burden, with two strong *chaloupes*, or boats, to each. From 16 to 20 men compose a crew. The vessels proceed first to St. Pierre, land the shore fishermen and "curers," and thence take position on the banks, anchoring in 70 or 80 fathoms of water. Every thing in readiness, the chaloupes are launched and sent out at night to place the "ground-lines," to which are attached some four or five thousand hooks. When not too boisterous, these lines are examined every day, and the fish attached to the hooks split, salted, and placed in the hold of the vessel. Meanwhile, the fish caught on board by the men not assigned to the boats are treated in the same way. The first fare is usually secured in June, and carried to St. Pierre to be dried. The second fare is cured at the same place; but the third—if fortunately there be another—is commonly carried to France "green."

This fishing is difficult and dangerous. It requires expert and daring men. It is prosecuted in an open, rough, and often a stormy sea, and frequently involves the loss of boats and their crews.

The third fishery, at St. Pierre and Miquelon, is similar, in some respects, to that between Cape Ray and Cape John, on the coast of Newfoundland. Boats, instead of vessels, are, however, employed in it. The boats of the two islands are between three and four hundred in number, and require two men to each. They go out in the morning and return at night. Thus, as in all shore fisheries, the fishermen always sleep at their own homes. As this is the only business of the islands, nearly all the men, women, and children are engaged in catching or curing. The season opens in April, and closes usually in October.

We have seen the importance attached by France to her immense American domains, and with what pertinacity she maintained her pretensions to the monopoly of the fishing-grounds. It remains to speak more particularly than has yet been done of the two lone, bare, and rocky islands that remain to her as monuments of the vicissitudes of the human condition and of national humiliation.

The situation of St. Pierre and Miquelon commands the entrance of the Gulf of St. Lawrence. The growth of wood is insufficient even for fuel. They produce no food, and the inhabitants are dependent on France and other countries for supplies. The population of St. Pierre in 1847 was 2030, of which about one quarter was "floating," or non-resident. The population of Miquelon at the same time was 625.

There are several Catholic churches and schools, priests, monks, and nuns. In 1848 a hospital, sufficiently commodious to receive upward of 100 sick persons, was erected. The dwellings are of wood. The government-house is of the same material, and plain and old-fashioned. The streets are narrow, short, and dirty. The official personages are a governor, a commissary or minister of marine, a harbor master, and some inferior functionaries. The military, limited by treaty to 50 men, consists of about 30 *gens d'armes*. Upon the station is a single armed ship, though other armed vessels are occasional visitors. The present light-house was erected in 1845, at a cost of 80,000 francs, and, well built of brick, is a substantial edifice.

Such are the TWO ISLANDS—TWO LEAGUES IN EXTENT—which remain to the power that once possessed the whole country bordering on the Mississippi, the limitless regions penetrated by the St. Lawrence; Acadia, from Canseau, in Nova Scotia, to the Kennebec river, in Maine; the island of Cape Breton; and the hundred other isles of the bays of the northern and eastern possessions.

The extent of the French cod-fishery may be estimated from the following statistics:

FRENCH COD-FISHERY.

Years.	No. of vessels.	Tonnage.	Number of men.	Quintals of fish.	Value.
1504	....	....	....	....	....
1527	13	....	....	....	....
1577	150	....	....	....	....
1578	150	....	....	....	....
1615	100	....	....	....	....
1721	400	....	....	....	....
1744	564	....	27,500	1,441,500	....
1745	100	....	....	....	....
1768	259	24,420	9,722	200,000	$861,723
1773	264	24,996	10,128	....	....
1774	....	....	15,137	....	....
1786	....	....	7,000	426,400	....
1787	....	....	6,000	128,500	....
1816	....	30,954	8,108	....	....
1821	184	16,258	3,655	....	....
1824	348	36,999	6,672	....	....
1825	336	35,177	6,911	....	....
1826	341	38,938	7,088	....	....
1827	387	44,868	8,238	....	....
1828	381	45,094	7,957	....	....
1829	414	50,574	9,428	....	....
1830	377	45,086	8,174	....	....
1831	302	35,180	6,243	300,000	....
1833	....	....	10,000	....	....
1834	....	....	10,000	....	....
1835	....	....	....	800,000	....
1839	....	54,995	11,499	....	....
1841	400	....	11,900	....	....
1843	400	....	....	....	....
1847	....	....	12,000	450,000	....

Cod-fishery of Spain.—Participating in the excitement which prevailed in Europe on the discovery in the American seas of varieties of fish not previously known or used in the fasts of the Roman church, Spain was an early competitor with France and England. Vessels of her flag were certainly at Newfoundland as soon as the year 1517. 60 years later, the number of her vessels employed in the fishery there is estimated at 100. The number rapidly diminished. Sylvester

Wyat, of Bristol, England, who made a voyage to the St. Lawrence and Newfoundland in 1593, found only eight Spanish ships in a fleet of upward of 80 sail of French and English vessels. From the remarks of Smith—who became the Father of Virginia—it would seem that in the early part of the 17th century, the Spanish fishery was pursued with greater vigor than at the time last mentioned. But the greater wealth to be acquired in the gold regions of South America soon lured the Spaniards from an avocation of so great toil, and of so uncertain rewards. No controversy between Spain and England as to their respective rights to the fishing-grounds ever arose.

Spain retired from our waters in peace, and at her own pleasure. Little is heard of her in connexion with our subject for quite a century, and until the peace of 1763. Her claim—resting on discovery—ever vague and uncertain at the north, had become almost as obsolete as that of the King of England to the title of King of France. Still, in the definitive treaty concluded at Paris, she formally renounced "all pretensions which she has heretofore formed, or might form, to Nova Scotia or Acadia, in all its parts, and guaranties the whole of it, and with all its dependencies," and ceded and guarantied to England, "in full right, Canada, with all its dependencies, as well as the island of Cape Breton, and all other islands and coasts in the Gulf and River of St. Lawrence; and, in general, every thing that depends on the said countries, lands, islands, and coasts, with the sovereignty, property, possession, and all rights acquired by treaty or otherwise." With this treaty the history of the Spanish fishery in America terminates. Spain relinquished her rights at the peace of 1763, with reluctance, though she had long ceased to exercise them. A letter of Sir Joseph Yorke is quoted in the correspondence of Horace Walpole, in which it is said: "By what I hear from Paris, my old acquaintance, Grimaldi, is the cause of the delay in signing the preliminaries, insisting upon points neither France nor England would ever consent to grant, such as the liberty of fishing at Newfoundland—a point we should not dare to yield, as Mr. Pitt told them, though they were masters of the Tower of London."

Cod-fishery of Portugal.—An account of this fishery may be embraced in a single paragraph. If materials exist by which to ascertain its progress and final extent, I have not been able to find them.

Portuguese vessels were at Newfoundland as early as those of Spain; and in 1577, the number employed there is estimated at 50. These two facts comprise the substance of my information upon the subject, except that Portugal, like Spain, soon abandoned all attention to the claims derived from the voyages of her navigators to the northern parts of our continent, and devoted her energies and resources to colonization in South America, and the acquisition of wealth in the mines of Brazil. The rivers and coasts of Portugal abound in fish; but the fisheries are neglected by the government. The whole number of sailors and fishermen who belonged to the kingdom in 1826, was only 18,700. I find in an official document a statement which shows that during the 24 years ending in 1825, the quantity of dry codfish imported into Portugal was 7,520,000 quintals, of the value of more than $39,000,000! As late as the year 1839, certainly, the government pursued the policy of levying a tax or duty on the produce of the domestic or coast fishery—a fact which enables us to account for the miserable condition of the kingdom, as regards its maritime strength and resources.

English Cod-fishery — Newfoundland. — Newfoundland is the oldest colony of England in America. It is said that in the public library of Venice there is a map, constructed by Andrea Bianco, in 1436, which authorizes the conjecture that it was known to fishermen before the voyage of Cabot, in 1497. The story, to state its substance in a word, is, that the island *Scoraſixa*, or *Stoxaſixa*, on the map, and the island of Newfoundland, are identical, because the codfish is called *stockfish* in the northern languages. The English resorted to Iceland for the cod, previous to the year 1415, but there is no account of their fishing at Newfoundland prior to 1517. Some writers suggest that the French commenced at the same time. But the fact, generally admitted, that the ships from England, France, Spain, and Portugal, to the number of fifty, were employed in 1517, is alone sufficient to show that the fishing-grounds had been visited for several years. Indeed to consider that the French went to Newfoundland for the first time in 1504, and that in thirteen years, and in the infancy of distant and perilous voyages, their adventures had attracted the attention of three other nations to the extent just stated, is to allow an increase of flags and of vessels so rapid as to still require explanation, without a knowledge of the fishing enthusiasm of the period. Besides, some forty or fifty houses for the accommodation of fishermen were built at Newfoundland as early as 1522.

A few miles back from the coast, Newfoundland is almost an unbroken wilderness. The inhabitants, as a body, are as ignorant of the interior of the island as are others. To them, and to all the world, the colony is known for its fisheries, and for these alone. To enumerate St. John's, Ferryland, Fugo, and Burin, and the settlements on the bays of Conception, Trinity, Bonavista, Fortune, Bull's, Placentia, and St. Mary's, is to recall almost every place of note. There was no free port until 1828, and no bank until eight years later. From the discovery of Cabot to the arrival of a bishop of the church, was 343 years. The population in 1806—about two and a quarter centuries after the attempt at colonization by Gilbert—was less than 26,000. It was less than 74,000 in 1836; and but 96,606 in 1845.

It remains to speak of the fishing-grounds; of the manner of catching and curing, and of the habits of the persons who are employed in the fishery. As the vessel or "bank" fishery has been abandoned by the English, an account of it is reserved for the third part of this report. The boats used for the shore fishery require from two to four men each. The number of boats in 1838, was 6159; and in 1845, 9989. The fishing is performed within the harbors, and early in the season, near the land. The men stand while at their toil, and each is able to tend more than one line. At times the fish fasten to the hooks so rapidly, that the fishermen display great activity. A boat is often filled in two or three hours. On the shores are "stages," or buildings erected on posts, and projecting into the sea, to allow boats to come to them as to wharves or piers. The fish are carried to these "stages," where, in the hands of the "cut-throat," the "header," the "splitter," and the "salter," as four classes of the "shoresmen" are called, they are prepared for the "dryer." When sufficiently salted, they are washed, and transported on "hand-barrows" to the "flakes," where they are spread and dried. Once cured, they are piled in warehouses to await sale or orders for shipment. The "salter" and the "dryer" should be careful and expert men; the one to distribute the salt with a skillful hand—the other, that damps and rains do not injure the fish while exposed in the air. Three qualities are usually sorted for exportation, and a fourth, consisting principally of broken and discolored fish, is retained for consumption. Women and children are sometimes employed in the boats, and very frequently assist the curers on shore. During the fishing season there are no idlers of either sex.

The labors of the fishermen and shoresmen are almost incessant. The time devoted to sleep, under circumstances that often occur, is insufficient for the demands of nature; while long abstinence from food is not uncommon.

The fishermen formerly lived in the rudest of structures; but they now occupy comfortable dwellings. Their food is coarse, and their manners rough. Intoxicating drinks were once as common among them as tea or water. Of late years there has been a sensible change for the better; and a large class are moral and temperate. Their habits of life are irregular, from the necessities of their position; but in hospitality and acts of kindness they are not excelled by men of the higher walks of society. They are to be judged in mercy, for their opportunities to improve are few, and their temptations to err are many.

ENGLISH COD-FISHERY, NEWFOUNDLAND.

Year.	No. of vessels.	Tonnage.	No. of men.	No. of boats.	Quintals of fish exported.	Value.
1577	50	....	....	....	....	....
1603	200	....	10,000	....	....	....
1615	250	....	....	....	....	....
1622	400	....	....	....	....	....
1623	150	15,000	5,000	....	....	....
1670	80	....	....	....	....	....
1674	270	....	10,800	....	....	....
1701	121	7,901	2,797	....	....	....
1716	161	9,198	2,119	....	106,958	....
1724	....	....	....	....	111,000	....
1732	....	....	....	....	210,000	....
1750	288	83,619	4,108	....	....	....
1761	177	17,268	2,581	....	493,654	....
1769	354	....	....	....	....	....
1770	368	....	....	....	....	....
1771	369	....	....	....	....	....
1772	506	....	....	....	....	....
1774	264	....	23,652	....	759,877	....
1785	292	....	....	....	591,276	....
1786	280	....	....	....	....	....
1787	306	....	....	....	....	....
1788	389	....	....	....	....	....
1789	304	....	....	....	....	....
1790	259	31,644	....	....	684,421	....
1791	245	34,166	....	....	....	....
1792	276	....	....	....	....	....
1796	....	15,538	1,268	....	....	....
1799	336	38,503	2,410	....	458,337	....
1800	....	....	....	....	882,000	....
1805	....	....	....	....	526,880	....
1814	....	....	....	....	1,200,000	$12,000,000
1815	....	....	....	....	1,180,661	....
1820	....	....	....	....	892,729	....
1825	....	....	....	....	973,444	....
1830	....	....	....	....	766,177	....
1832	....	....	....	....	619,177	....
1833	....	....	....	....	683,586	....
1834	....	....	....	....	674,988	....
1835	....	....	....	....	712,589	....
1838	....	....	....	6,159	794,515	2,420,000
1840	....	....	....	....	915,795	2,880,000
1841	....	....	....	....	1,009,725	3,025,000
1842	....	....	....	....	1,007,980	2,805,000
1843	....	....	....	....	936,202	2,660,000
1844	....	....	....	....	852,162	2,410,000
1845	....	....	....	....	1,000,338	2,980,000
1847	....	....	....	....	887,978	2,450,000
1848	....	....	....	....	920,366	2,455,000
1849	....	....	....	9,989	1,175,167	2,940,000

ENGLISH HERRING-FISHERY, NEWFOUNDLAND.

Year.	Barrels pickled exported.	Value.
1838	15,276	$58,615
1839	20,806	69,200
1840	14,686	45,180
1841	9,965	31,805
1842	13,889	35,595
1843	9,649	22,850
1844	13,410	33,825
1845	20,908	56,170
1847	9,907	25 555

The Newfoundland Seal-Fishery, so called.— This business is of recent origin. The first account of it is in 1795, but it was not prosecuted to any extent until the general peace, in 1814. Seals frequent the coasts of Newfoundland in the spring. They go upon the ice in the polar seas to bring forth their young, and are swept along by the currents to milder regions, where, still upon the ice, hundreds of thousands of them are annually killed. During the passage from the remote north, they apparently live without much food, but yet are quite fat when seen by those who adventure in pursuit of them. The vessels engaged in catching seals are from fifty to two hundred tons, and carry from fifteen to forty men each. They leave Newfoundland in March, and proceed to sea until they meet the ice, and on falling in with it, are forced into it as far as possible, by implements which are arranged for the purpose. Fast imbedded in the vast and seemingly limitless fields of ice the crews disperse in every direction in search of seals, which are inactive, and are generally easily caught. They are killed with fire-arms and with clubs, and often while asleep. Occasionally the large ones resist. The moans of the young during the slaughter are piteous.

The flesh of seals is unfit for food, and they are only valuable for their fat and skins. The common method is, to strip off the skins and fat together, and to carry these parts to the vessels, leaving the remainder upon the ice; but when the weather or other circumstances will not permit this, the carcass is transported whole, and the valuable parts are stripped off subsequently. Seal-catching closes toward the end of April. The most fortunate vessels make two voyages in a season. After the arrival of the vessels in port, the fat is separated from the skins, cut into pieces and put into vats, where, by the warmth of the sun, the oil oozes out. The skins are spread and salted in piles, and when properly cured, are packed in bundles of convenient size. In the whole circle of human employments, few or none are more exciting and perilous than the catching of seals. A storm of sleet and snow in the night is terrible, and the stoutest hearts quail. While the vessels are absent, the greatest anxiety prevails in the ports of departure, and the most distressing rumors prevail: at times, a full month elapses before the arrival of a single vessel, and every imaginable cause is assigned by alarmed families and friends for the delay of tidings from the sealing-ground. North-east gales drive the ice toward the shore, and frequently produce fearful disasters to both life and property. In 1843 the loss of vessels was very considerable, and several entire crews perished. Some vessels were wrecked in 1849.

The year 1827 was uncommonly prosperous. Forty-one vessels laden with seals arrived at St. John's in a single week. They caught 69,814 of the objects of their search. One of these vessels took upward of 3000 in six days, and another, still more successful, about 3500 in the same time. The intense excitement which attended the slaughter of so large numbers, in so short a space, can be readily imagined.

STATISTICS OF THE NEWFOUNDLAND SEAL-FISHERY.*

Year.	Employed.			Exports.	
	Vessels.	Tonnage.	Men.	Seal-skins.	Tuns of oil.
1795	....	....	....	4,900	....
1815	....	....	....	141,874	8,225
1820	....	....	....	221,334	8,234
1825	....	....	....	221,510	7,806
1829	....	....	....	280,618	....
1830	92	6,198	1,965	559,342	12,871
1831	118	8,046	2,578	....	....
1832	158	11,462	3,294	442,683	10,010
1833	106	8,665	2,964	501,496	....
1834	125	11,020	2,910	360,155	9,030
1835	120	11,167	2,912	507,494	11,780
1836	126	11,425	2,955	881,041	....
1837	121	10,648	2,940	252,910	....
1838	110	9,300	2,826	375,381	...
1839	76	6,447	2,029	437,501	...
1840	75	6,190	2,058	631,885	...
1841	72	5,965	2,078	417,115	....
1842	74	6,035	2,054	344,688	....
1843	106	9,025	3,177	651,870	....
1844	121	11,088	3,775	685,580	....
1845	128	11,979	3,998	852,202	....
1846	....	....	....	....	....
1847	324	30,819	9,865	456,831	....
1848	163	16,444	5,497	521,004	....
1849	278	26,123	9,888	806,079	....
1850	....	....	....	400,000†	....

* The vessels were from the port of St. John's, except in 1847, 1848, and 1849.

† Estimated from the several accounts of the catch of that year.

Reference to the table of statistics will afford information as to the general state of this branch of indus

try since the year 1830. It will be seen that the return of vessels fitted out, is from the port of St. John's alone. The number from Conception, Trinity, and Bonavista Bays, and from other parts of the island, is known to be considerable, and in 1845 to have exceeded that of the capital, but I have been unable to procure accurate accounts for any other year.

Fisheries of Nova Scotia.—The original grantee of that half fabulous, never defined country, Acadia, was Pierre de Gast Sieure de Monts, a Protestant, and a gentleman of the bed-chamber of Henry the Fourth of France. In 1603, his royal master, by letters patent, gave him the territory between the 40th and 46th degrees of latitude, and in the following year De Monts came in person to explore and take possession of his domains. Sixteen years before the landing of the pilgrims at Plymouth, he wintered upon an island in the River St. Croix, which, since the adjustment of the boundary-line between the United States and New Brunswick, has been considered within the limits of Maine. This island is claimed by the heirs of the late General John Brewer, of Robbinston. Relics of De Monts' sojourn upon it continue to be found. Annapolis—the Port Royal of the French—was founded before his return, and is the oldest settlement in Nova Scotia. The "lieutenant-general of Acadia, and the circumjacent country," accomplished but little. His patent allowed him to "carefully search after and to distinguish all sorts of mines of gold and silver," and gave him the monopoly of the trade in furs. He seems to have confined his attention to measures to secure the latter; yet fish were caught, cured, and carried to France. A permanent fishery was established at Canseau. Acadia soon passed from De Monts into Catholic hands, while the English grant to Sir William Alexander, in 1621, embraced a large part of it. As the events connected with our subject at this time appear in the account of the French fisheries, there is nothing to demand our attention until after Nova Scotia was permanently annexed to the British crown, by the treaty of Utrecht, in 1713.

Down to the period of our Revolution, Nova Scotia was hardly known except for its fisheries. The resident English population was so small in 1719, that Phillips, the military governor, was compelled to select the council, required by his instructions, from his garrison. Thirty-six years later, the whole number of inhabitants was estimated at only 5000. In 1760, the township of Liverpool was settled by persons from Massachusetts, who designed to prosecute the salmon-fishery, and who, successful in their labors, caught a thousand barrels in a season. They were followed in 1763 by about one hundred and sixty families from Cape Cod, who selected the spot called Barrington, transported thither their stock and fishing vessels, and founded one of the most considerable fishing towns at present in the colony. The whole value of the imports at this period was less than five thousand dollars. In truth, the House of Assembly asserted in 1775, that the amount of money in Nova Scotia was £1200 (or $4800), of which one fifth was in the hands of farmers. Such was the general condition. The settlement of Halifax, the capital, requires a more particular notice. Thomas Coran, a famous projector of the time, whose name occurs often in the history of Maine, engaged in a scheme to commence a town on the site of this city as early as the year 1718, and his petition for a grant of land received a favorable report from the Lords of Trade and Plantations; but the agents of Massachusetts opposed his plans, because they interfered with the freedom of the fisheries, and he was compelled to abandon his purpose.*

* It is said, in Burke's Commoners of England, that Major William Markham (of the family of Markham, of Becca Hall), who was born in 1636, built the first house in Halifax, Nova Scotia.

At the restoration of Cape Breton, in 1745, the founding of a capital for Nova Scotia was undertaken as a government measure. "As a substitute for Louisbourg restored to France," said Mr. Hartley in the House of Commons, "you settled Halifax for a *place d'armes*, leaving the limits of the province as a matter of contest with France, which could not fail to prove, as it did, the cause of another war. Had you kept Louisbourg, instead of settling Halifax, the Americans could not say, at least, that there would not have been that pretext for imputing the late war to their account." The new city was named in honor of the Earl of Halifax, the president of the Lords of Trade and Plantations. "The site," says Haliburton, "about midway between Cape Canseau and Cape Sable, was preferred to several others, where the soil was better, for the sake of establishing in its neighborhood an extensive cod-fishery and fortifying one of the best harbors in America." Thus, Halifax was designed as a fishing capital, and "as a substitute for Louisbourg." Liberal grants of land were made to officers and men who were dismissed from the land and naval service at the close of the war, and Edward Cornwallis was appointed military governor. Horatio Gates then an officer in the British army, and subsequently the victor at Saratoga, was among the first who landed at Halifax, in 1749. The project involved the government in serious difficulties, and the expenditure of enormous sums of money. The amount first appropriated was £40,000. In a few years the cost to the nation was nearly two millions of dollars! The fisheries were neglected, and the colonists, unable to support themselves, petitioned Parliament for additional relief, even after so large an amount of money had been disbursed for their benefit. Omitting details, we may state that five millions of dollars of public money were expended finally in the colonization of Nova Scotia, according to the plan devised by the Board of Trade and Plantations.

United States.—Our continent was discovered in 1497, by Cabot; and from the moment that the chronicler of his voyage made known to the people of England that our waters teemed with fish—that here "were great seals, and those which we commonly call salmons; and also soles above a yard in length, but especially there is a great abundance of that kind which the savages call *baccalos* or codfish"—down to the year 1620, as we have seen in the first and second parts of this report, the intercourse of the French and English with the northerly seas of America was constant; and of all this were not the Puritans as well informed as others? Were they ignorant of what transpired in the New World in the ten years immediately preceding their flight from England, and during the ten years of their residence in Holland? While among the Dutch they were neglected, if not unkindly treated, and became poor and unhappy. Many places to which to emigrate were mentioned, and the advantages and disadvantages of each were amply discussed. As soon as the decision of the little flock was made, some were dissatisfied and withdrew. The question arises, why did they decide to come to America?

I have no space to argue a question which involves so many inquiries, but can not forbear to state that, in a few words, some of the principal incidents which attended their coming to their "wilderness home." Omitting to notice the accounts of Amidas and Barlow, who explored the southern coast of the United States in 1584, under the auspices of Sir Walter Raleigh, and what is said of Sir Richard Grenville's expedition to the same region the year following, as well as the various other enterprises which, in several particulars, are pertinent to the subject, we come at once to the voyage of Gosnold, in the year 1602. He was the first Englishman who sailed directly across the ocean, and the first who attempted to make a settlement within

the limits of New England. The story of his adventures was written by two of his associates, Archer and Brereton, and published in London* immediately after his return. Of Brereton little seems to be known; but Gosnold and Archer were subsequently prominent among the early settlers of Virginia, and between the latter and the celebrated Smith there was a long and a desperate quarrel. From Brereton's narrative, as well as from the tracts appended thereto, it appears that Raleigh was the patron, perhaps the original mover, of the enterprise. As containing the earliest information of Massachusetts printed in England, these papers are of great value. The attention of merchants, of fishermen, and of those interested in colonization hitherto, and for nearly a century, directed exclusively to Newfoundland, was now to be diverted, in some measure, to New England. The results will appear as we progress.

Arrived on our coast, Gosnold anchored near land which he called "Shoal Hope;" but, catching a "great store of codfish," he changed the name to Cape Cod.† While there, says Archer, "we saw sculls of herring, mackerel, and other small fish, in great abundance." Brereton, whose account is more exact and definite, remarks with much earnestness upon most matters connected with our inquiries. "Surely, I am persuaded," he observes, "that, in the months of March, April, and May, *there is upon this coast better fishing, and in as great plenty as in Newfoundland*; for the sculls of mackerel, herrings, cod, and other fish, that we daily saw as we went and came from the shore, were wonderful; and, besides, the places where we took these cods (and might in a few days have laden our ship) were but seven fathoms water, and within less than a league of the shore, when in Newfoundland they fish in forty or fifty fathoms water, and far off."

To pass the observations which were recorded as they continued their explorations, we find in the tracts appended to Brereton the prediction that, "*forasmuch as merchants are diligent inquisitors after gains, they will soon remore their trade from Newfoundland" to New England*, where there is a better climate, greater security against the depredations of pirates, and less expense for outfits, shorter voyages, and safer harbors. The writer, anticipating that a colony would soon be founded, predicted further, that the ships of *all* the nations that "have been accustomed to repair unto the Newfoundland for the commodity of fish and oils alone, will henceforth forsake" that island, "when once we have planted people in these parts; by whose industry shall be provided, for all commerce," the products of the sea, "and many commodities besides, of good importance and value." Eighteen years elapsed; the Pilgrims anchored off the same "Shoal Hope," and settled this very country.

Pring followed Gosnold, and explored the waters of Maine in 1603. He saw and named the Fox Islands, in Penobscot Bay, and found good mooring and fishing. Like Gosnold, he considered the fish which he took superior to those of Newfoundland. He made a second voyage three years later; and Gorges remarks that his discovery of the eastern part of New England was perfect, and his account of it accurate. Waymouth, under the patronage of several English noblemen, and other persons of rank, came in 1605. "A True Relation" of his adventures was written by James Rosier, "a gentleman employed in the voyage," and printed in London in the same year. He agrees with those who had preceded him in every essential particular. As they departed for England, they caught very large fish; and he says that those on board of the ship, who were familiar with the business, "would warrant (by the help of God), in a short voyage, *with a few good fishers, to make a more profitable return from hence than from Newfoundland; the fish being so much greater, better fed, and abundance with them*," etc.*

The Fisheries from the commencement of the Revolutionary Controversy to the Declaration of Independence.—In tracing the origin and progress of the fisheries of New England, we have seen that they furnished our first articles of export, and laid the foundation of our navigation and commerce. It was so in Europe. Of the present maritime powers of the Old World, there is scarcely one that does not owe much of its commercial prosperity to the same branch of industry. Some fugitives from the wrath of the monster Attila fled to the isles of the Adriatic, where, of necessity, they adopted the avocation of fishermen. By this employment, steadily continued, Venice in a few centuries became renowned for her wealth, commerce, and naval strength. The origin of the republic was celebrated for a long period, and the omission or refusal of a Doge to provide the customary banquet, and to submit to the fishermen's embrace, allowed by his predecessors on this national festival, made the name of Contarini hateful, and well-nigh caused the subversion of all legal restraint, and the overthrow of the reigning family. Genoa, too, grew rich and powerful by the same means, and, not content with her own limited fishing-grounds, undertook the conquest of others. Usurping the fisheries of the regions of the Bosphorus, she captured and for a while awed into submission their rightful owners. Amsterdam, from a village of herring-catchers, cabins, and curing-sheds, rose, by the skill of the inmates of these frail structures, by the fame of their commodities in foreign countries, and by the immense consumption of them at home, to unexampled affluence and grandeur; and the sayings everywhere current two centuries ago, that "Amsterdam is founded on herring-bones," and that "Dutchmen's bodies are built of pickled herrings," were hardly more than quaint expressions of historic truth.

So steadily and successfully were the fisheries pursued by the people of Plymouth, Massachusetts, New Hampshire, and Maine, that only fifty years elapsed from the landing of the Puritans, before an English writer of high authority in matters of trade, expressed his apprehension as to the events likely to result, in the following remarkable words: "New England," said he, "is the most prejudicial plantation to this kingdom." And why? Because, "of all the American plantations, his majesty has none so apt for building of shipping as New England, nor any comparably so qualified for the breeding of seamen, not only by reason of the natural industry of that people, but principally by reason of their cod and mackerel fisheries; and, in my poor opinion, there is nothing more prejudicial, and in prospect more dangerous, to any mother kingdom, than the increase of shipping in her colonies, plantations, or provinces." Sir Josiah Child was alarmed too much, probably, at what really was in his own time, but still saw with a prophet's eye what was to be. But the policy of England, from the restoration of the Stuarts down to the Revolution, was in strict accordance with the apprehensions expressed by him, and she not only neglected and declined all support to the navigation and commerce of New England, but directly oppressed and restrained them. Omitting notice of the acts of Parliament which do not relate specially to the subject before us, the first law to claim our attention was passed in 1733, after a discussion of two years. This act, by imposing duties on rum, molasses, and sugar, imported into the colonies from any West India islands other than British, was designed to break up an extensive and valuable trade

* Republished in Collections of Massachusetts Historical Society, vol. 8th of 3d series.

† Prince Charles changed the name to "Cape James," in honor of his father; but Gosnold's appellation has been preserved to the present time.

* With larger livers—of course affording more oil.

with the French, Dutch, and Spanish islands, where these products of the plantations were exchanged for fish. It is said that, previous to the commencement of the trade to these islands, molasses was thrown away by the planters, and that this article, which is now so extensively used in food, was first saved and put into casks to be brought to New England, to be distilled into rum. Certain it is, that on the passage of the act of 1733, the people of the northern colonies insisted that, unless they could continue to sell fish to the planters of the foreign islands, and to import molasses from thence to be manufactured into spirit, for domestic consumption and for trade with the Indians, they could not prosecute the fisheries without ruinous losses. The penalty for violating the act was the forfeiture of vessel and cargo. Yet New England never submitted, though a fleet was sent to enforce obedience; and the interdicted trade with the French, Dutch, and Spanish islands, did not cease until a late period of the controversy which terminated in the Revolution. In fact, therefore, a measure which threatened to ruin the cod-fishery of New England, produced, as I incline to believe, no serious injury to it, for quite thirty years.

But in 1764 the act was renewed, and the collection of the duties it imposed on rum, molasses, and sugar, was attempted by the officers of the crown, in a manner to create the most anxious concern; for, the jurisdiction of the admiralty courts was enlarged, and the people were deprived of the trial by jury in all cases arising between them and the government under this law, and the trade and navigation laws generally.

The most alarming discontents followed the collisions and quarrels which constantly occurred between ship-masters and merchants, on the one hand, and the officers of the customs on the other, in various parts of New England, and especially in Boston, Salem, Gloucester, Falmouth, and elsewhere in Massachusetts; and the impression became general among commercial men, that their business and property were both to be sacrificed to appease the clamors of the planters of the British islands, and to test the ability of the mother country to "raise a revenue in America" under the "sugar and molasses act," as this odious law was called in the politics of the day.

These incidents will serve to show the connection of the fisheries with the questions which caused a dismemberment of the British empire. It remains to speak of the act of Parliament passed in 1775, which, by depriving the people of New England of the right of fishing, was designed to "starve them into submission." The trade arising from the cod-fishery alone, at that period, furnished the northern colonies with nearly half of their remittances to the mother country, in payment for articles of British manufacture, and was thus the very life-blood of their commerce. The fishing towns had become populous and rich. Marblehead, for example, next to Boston, was the most important place in Massachusetts, and was second to the capital only in population and taxable property. A fearful change awaited all. The dispute was now to be determined by an appeal to arms, and every maritime enterprise was to be interrupted and ruined.

We have already given in this article a short historical account of the fishery of the United States, and of the treaties now or hitherto in force respecting the fisheries; so the remainder of this article will be confined to the statistics of our fisheries since our separation from Great Britain.

STATISTICS OF THE COD-FISHERY OF MASSACHUSETTS FROM THE YEAR 1765 TO 1775, AND FROM 1786 TO 1790.

Towns.	From 1765 to 1775.			From 1786 to 1790.		
	Vessels ann'lly empl'd.	Tonnage.	No. of men.	Vessels ann'lly empl'd.	Tonnage.	No. of men.
Marblehead...	150	7,500	1,200	90	5,400	720
Gloucester....	146	5,580	888	160	3,600	680
Manchester...	25	1,500	200	15	900	120
Beverly.....	15	750	120	19	1,235	157
Salem.....	30	1,500	240	20	1,300	160
Newburyport.	10	400	60	10	460	80
Ipswich.....	50	900	190	56	860	248
Plymouth	60	2,400	420	36	1,440	252
Cohasset.....	6	240	42	5	200	35
Hingham.....	6	240	42	4	180	32
Scituate.....	10	400	70	2	90	16
Duxbury.....	4	160	28	9	360	72
Kingston.....	6	240	42	4	160	28
Yarmouth....	30	900	180	30	900	180
Wellfleet.....	3	90	21	....	....	....
Truro	10	400	80	....	....	....
Provincetown.	4	160	32	11	550	88
Chatham.....	30	900	240	30	900	240
Nantucket....	8	320	64	5	200	40
Weymouth	2	100	16	3	150	24
In Maine.....	60	1,000	230	30	300	120
Total.....	665	25,680	4,405	599	19,185	3,292

STATISTICS OF THE FISHERIES OF THE UNITED STATES IN 1840. GENERAL VIEW SHOWING THE PRODUCE, MEN, AND CAPITAL EMPLOYED IN EACH STATE AND TERRITORY.

States and Territories.	Number of quintals of smoked or dry fish.	Number of barrels of pickled fish.	Number of gallons of spermaceti oil.	Number of gallons of whale and other fish oil.	Value of whalebone and other productions of the fisheries.	Number of men employed.	Capital invested
Maine.....	279,156	54,071	1,044	117,807	$2,351	3,610	$526,967
New Hampshire.....	28,257	1,714	....	15,284	....	899	59,680
Massachusetts.....	889,715	124,755	3,630,972	3,864,725	442,974	16,000	11,725,850
Rhode Island.....	4,084	2,908	487,268	633,860	45,528	1,160	1,077,157
Connecticut.....	1,384	6,598	183,207	1,909,047	157,572	2,215	1,301,640
Vermont	....	....	....	....	....	....	....
New York.....	5	22,224	400,251	1,269,541	344,665	1,228	949,250
New Jersey.....	....	1,134	12,000	80,000	74,000	179	98,275
Pennsylvania.....	....	2,012	....	....	15,240	58	16,460
Delaware.....	....	28,000	49,704	142,575	7,987	165	170,000
Maryland.....	....	71,292	....	....	12,167	7,814	88,947
Virginia.....	....	30,815	262	....	4,150	656	28,888
North Carolina.....	2,385	73,850	....	2,887	23,800	1,784	218,502
South Carolina.....	....	425	....	....	....	53	1,617
Georgia.....	....	14	....	....	....	6	....
Alabama.....	2	....	....	....	....	....	....
Mississippi.....	9	....	....	....	....	....	....
Louisiana.....	....	....	....	....	....	....	....
Tennessee.....	....	97	....	....	....	7	242
Kentucky.....	....	....	....	....	....	....	....
Ohio.....	....	3,506	....	14	....	165	12,210
Indiana.....	....	14	....	....	1,150	....	....
Illinois	....	1	....	28	....	....	....
Missouri.....	....	....	....	....	....	....	....
Arkansas.....	....	....	....	....	....	....	....
Michigan.....	....	16,585	....	60	....	458	28,640
Florida.....	69,000	78	....	....	6,000	67	6,000
Wisconsin.....	....	9,021	....	1,500	155	183	61,300
Iowa.....	....	....	....	....	....	....	....
District of Columbia..	....	24,800	....	....	10,500	537	64,500
Total.....	773,947	472,859	4,764,708	7,536,778	1,158,284	36,584	16,429,620

STATISTICS OF THE COD-FISHERY OF THE UNITED STATES, EXHIBITING THE TONNAGE EMPLOYED; BOUNTY PAID TO FISHING VESSELS; IMPORTS OF SALT; EXPORTS OF DRIED FISH, AND THE VALUE OF THE SAME.

Year.	Tonnage.	Bounties.	Salt imported.	Dried fish exported.	Value of exports.	
			Bushels.	Quintals.	Dollars.	
1789	19,185	None.	1,250,255	....	....	
1790	28,348	"	2,855,760	....	....	
1791	32,542	"	1,350,479	383,287	....	
1792	32,060	....	1,779,510	864,898	....	
1793	50,168	$73,965 89	2,027,889	872,825	....	
1794	38,671	93,768 91	2,958,411	436,907	....	
1795	30,934	66,280 47	2,238,186	400,818	....	
1796	34,963	76,889 68	3,077,722	377,718	....	
1797	40,629	80,478 76	2,674,251	406,016	....	
1798	42,746	94,634 80	2,891,453	411,175	....	
1799	29,978	128,605 87	2,471,909	428,495	....	
1800	29,427	87,858 45	3,095,807	392,726	....	
1801	32,381	74,590 92	3,289,064	410,948	....	
1802	41,521	104,447 92	3,564,605	440,925	....	
1803	51,813	117,178 57	3,802,804	461,870	1,620,000	
1804	52,014	145,986 78	3,479,878	567,828	2,400,000	
1805	57,466	152,927 72	3,652,277	514,549	2,058,000	
1806	59,188	162,121 89	3,941,616	587,457	2,150,000	
1807	69,306	161,254 17	4,671,628	473,924	1,896,000	
1808	51,998	142,911 89	1,300,177	155,808	623,000	
1809	31,486	47,166 11	No returns	345,648	1,128,000	
1810	34,828	3,406 44	"	280,864	918,000	
1811	43,233	None.	"	214,387	757,000	
1812	30,459	"	"	169,019	592,000	
1813	20,878	"	"	63,016	210,000	
1814	17,535	"	338,344	31,810	128,000	
1815	36,988	1,811 74	2,020,181	103,251	494,000	
1816	48,126	84,786 26	6,854,821	219,991	935,000	
1817	64,807	119,919 51	2,884,504	267,514	1,008,000	
1818	69,107	148,915 65	3,678,526	308,747	1,081,000	
1819	76,076	161,623 85	3,874,852	280,555	1,052,000	
1820	72,040	197,884 68	4,711,829	321,419	964,000	
1821	62,293	170,052 91	3,943,727	267,305	708,778	
1822	69,225	149,897 83	4,087,881	241,228	666,730	
1823	78,258	176,706 04	5,127,657	262,766	734,024	
1824	77,446	208,924 08	4,401,399	310,189	873,685	
1825	81,462	198,724 97	4,574,202	300,357	830,356	
1826	....	215,859 01	4,564,720	260,809	667,742	
1827	....	206,185 35	4,820,489	247,321	747,171	
1828	94,756	239,145 20	3,962,957	265,217	819,926	
1829	101,797	261,039 94	5,945,547	294,761	747,541	
1830	98,529	197,642 21	5,874,046	229,796	580,690	
1831	106,188	200,428 89	4,182,840	280,577	625,398	
1832	102,454	219,745 27	5,041,424	250,544	749,909	
1833	111,445	245,182 40	6,822,672	249,689	718,317	
1834	117,485	218,218 78	6,688,076	258,132	630,885	
1835	....	222,781 93	5,875,864	287,721	788,895	
1836	63,906	213,054 68	5,088,666	240,769	746,464	
1837	80,552	250,181 08	6,343,706	188,943	588,506	
1838	70,064	314,149 00	7,108,147	206,028	626,245	
1839	72,248	....	6,061,608	208,720	709,218	
1840	70,086	....	8,188,908	211,425	541,058	
1841	66,351	....	6,823,946	252,199	692,810	
1842	54,803	....	....	256,083	567,782	
1843	61,223	....	....	174,220	861,175	
1844	85,224	....	....	271,810	699,833	
1845	76,990	....	....	283,880	803,858	
1846	79,818	....	....	277,401	699,559	
1847	78,280	....	....	258,870	650,629	
1848	89,856	....	....	206,549	609,489	
1849	81,695	....	11,622,163	197,457	419,092	
1850	93,806	....	11,224,185	168,600	365,849	
1851	95,616*	....	8,681,176	151,088	367,729	

* Maine, 45,528; New Hampshire, 1,916; Massachusetts, 39,982; Rhode Island, 871; Connecticut, 6,785; New York, 1,084; Total, 95,616.

The Mackerel Fishery, from the settlement of New England to the year 1852.—It is frequently said that the mackerel fishery is of very recent origin, or that, at least, *vessels* were not employed in it until about the close of the last or the beginning of the present century. Both suppositions are entirely erroneous. The Indians, regardless of the beautiful form and color of the fish, called it *wawcwunnekeseag*, on account of its fatness. There is mention of it in the earliest records of the country. Winthrop relates that in 1633, the ship *Griffin*, two days before her arrival at Boston, lost a passenger by drowning, as he was casting forth a line to catch mackerel. The first settlers must have commenced the fishery soon after, since, to omit several minor incidents, we have the fact that Allerton, one of the Pilgrims who came over in the *Mayflower*, received mackerel for sale at New Haven, on "half profits," in the year 1659. That the business was prosecuted with success is evident from the additional fact, that in 1660 the commissioners of the colonies of New England recommended to the general courts of the confederacy to regulate it, "considering" that "the fish is the most staple commodity of this country." The mackerel fishery at Cape Cod was held by the government of the colony of Plymouth as public property, and its profits were appropriated to public uses. The records show that it was rented from time to time to individuals, who paid stipulated sums; and that a *part of the fund to support the first free-school established by our Pilgrim fathers was derived from it.*—SABINE'S *Report to Congress*, 1853.

The proposition to found and endow a school of this description seems to have been made in 1663, but not to have been adopted until seven years later, when the general court, "upon due and serious consideration, did freely give and grant all such profits as might or should annually accrue to the colony," from this and the bass and herring fisheries, at the same place. In 1689, the "rent of the Cape fishery was added to the appropriation for magistrates' salaries for that year."

STATISTICS OF THE MACKEREL FISHERY OF THE UNITED STATES.

Years.	Tonnage employed.	Mackerel inspected.		
		In Massachusetts.	In N. Hampshire.	In Maine.
		Barrels.	Barrels.	Barrels.
1804	....	8,079	...	....
1805	....	8,936	....	....
1806	....	8,478	....	....
1807	....	10,904	....	....
1808	....	7,738	....	....
1809	....	8,865	....	....
1810	....	18,058	....	....
1811	....	19,682	....	....
1812	....	5,018	....	....
1813	....	3,832	....	....
1814	....	1,949	....	....
1815	....	16,994	....	....
1816	....	80,021	....	....
1817	....	87,982	....	....
1818	....	47,210	....	....
1819	....	105,433	....	....
1820	....	236,248	....	....
1821	....	111,009	....	....
1822	....	160,294	....	....
1823	....	145,006	....	....
1824	....	191,650	....	....
1825	....	254,881	....	33,065
1826	....	158,740	....	....
1827	....	190,310	....	....
1828	....	287,924	....	....
1829	....	225,382	....	....
1830	....	309,462	20,300	....
1831	....	353,559	21,450	....
1832	....	212,452	21,700	....
1833	45,725	212,946	19,375	....
1834	....	252,884	18,200	40,661
1835	....	194,450	15,300	....
1836	....	176,931	9,450	25,228
1837	46,811	188,157	5,225	22,462
1838	50,649	108,538	3,420	24,312
1839	....	73,018	700	....
1840	28,269	50,992	630	....
1841	11,821	55,537	1,100	....
1842	16,096	75,548	1,050	....
1843	11,775	64,451	1,175	....
1844	16,176	86,181	1,240	....
1845	21,413	202,302	1,075	....
1846	26,461	174,064	1,300	....
1847	31,451	232,581	2,008	....
1848	43,558	300,130	2,400	....
1849	42,942	231,856	2,867	....
1850	58,112	....	3,125	....
1851	50,539*	329,242	3,074	31,472
1852	...	197,768	2,140	....

* Maine, 9,858; New Hampshire, 481; Massachusetts, 39,416; Rhode Island, 190; Connecticut, 594; Total, 50,539.

Exact statements as to the progress and extent of the mackerel fishery previous to the Revolution, are hardly to be found; but it is still certain that the people of Rhode Island and Connecticut, as well as those of Massachusetts, were "largely concerned in it;" and that fleets of sloops employed in it were often seen upon the coast and in the harbors. It is certain also that about the year 1770 the town of Scituate alone owned upward of 30 vessels that were annually fitted out as "mackerel catchers;" and that the whole number of vessels in Massachusetts was not less than 100.

Soon after the peace of 1783, a writer in a Boston newspaper, in a series of articles on American commerce, said that the mackerel fishery "was of more value to Massachusetts than would be the pearl fisheries of Ceylon."

ANNUAL RETURN OF THE NUMBER OF BARRELS, HALVES, QUARTERS, AND EIGHTHS OF BARRELS OF MACKEREL AND OTHER PICKLED FISH, ESTIMATED IN BARRELS, INSPECTED IN MASSACHUSETTS, FOR THE YEAR ENDING DECEMBER 31, 1852, AS PER THE RETURNS OF THE DEPUTY INSPECTORS, NOW IN THE OFFICE OF THE INSPECTOR GENERAL.

Where Inspected.	No. of Barrels.
Boston	39,891½
Gloucester	48,012½
Beverly	366½
Rockport	5,845½
Newburyport	11,806
Provincetown	17,640
Truro	2,540½
Wellfleet	11,367½
Chatham	57,649½
Harwich	9,147½
Dennis	19,290½
Yarmouth	2,395
Barnstable	3,198½
Hingham	18,183½
Cohasset	11,616½
Plymouth	67
Salem	14
Total	196,768½
The above includes all except two returns from Provincetown and one from Scituate, estimated at	1,000
Total 1852	197,768½
Reinspected at Boston	19,771½
Total	317,540½
All other kinds of pickled fish	9,254
Total amount of mackerel inspected in 1852	197,768½
Total amount of mackerel inspected in 1851	329,278
Decrease of 1852 from 1851	131,509½

STATISTICS OF FOREIGN MACKEREL IMPORTED INTO AND EXPORTED FROM THE UNITED STATES, AND OF DRIED CODFISH IMPORTED INTO THE SAME.

Year.	Mackerel.		Codfish.	
	Imported into the United States.	Exported from the United States.	Imported.	
	Barrels.	Barrels.	Quintals.	Value.
1821	7	None.	....	....
1822	887	"	....	....
1823	67	"	....	....
1824	790	"	....	....
1825	242	"	....	....
1826	87	"	....	....
1827	89	"	....	....
1828	38	"	....	....
1829	95	"	....	....
1830	391	"	....	....
1831	4,552	"	....	....
1832	82	"	....	....
1833	20	"	....	....
1834	223	....	....	....
1835	8,153	850	....	....
1836	6,087	937	....	....
1837	1,256	850	....	....
1838	182	....	....	....
1839	7,046	....	4,295	$24,808
1840	11,823	....	4,061	19,355
1841	10,987	....	2,433	19,262
1842	....	....	....	....
1843	....	....	....	....
1844	....	....	....	....
1845	....	....	....	....
1846	....	....	....	....
1847	....	....	....	....
1848	....	....	....	....
1849	188,505	23,295	22,520	43,709
1850	75,491	13,577	25,115	45,961
1851	102,688	18,240	14,705	27,709

There is little of interest relating to this branch of industry for several years after the period last mentioned. A highly respectable shipmaster, who is still living, entertains the opinion that the fishery in *vessels* was commenced within 50 years; and that "he was personally engaged in the *first* regular mackerel voyage ever made in New England." His account, as related to me by himself, would occupy too much room. Its substance is, that he engaged in the coasting business for some time between Massachusetts and Maine; he commonly saw and caught mackerel during the summer months in the vicinity of the island of Mount Desert; that believing that they might be taken in quantities, he resolved finally to fit out a vessel for the express purpose; that his success was even greater than he had expected, and that others were induced to follow his example. The mistake of this gentleman probably is, that what he considered the *origin* of the vessel fishery was only a *revival* of it; since we can easily imagine that repeated losses and discouragements had caused a suspension of it.

The Herring Fishery, from its commencement to the year 1852.—We hear of this fishery among the Pilgrims. In 1641 they rented the herring *weir* at Plymouth for three years to three men, "who were to deliver the shares of fish, and receive 1s. 6d. per 1000 for their trouble." We hear of it on the coast of Maine also a few years afterward. Jesselyn says that the "herrin" were "so numerous, they take of them all summer long. In 1670," he continues, "they were driven into Black Point harbor, by other great fish that prey upon them, so near the shore that they threw themselves (it being high water) upon dry land in such infinite numbers that we might have gone half way the leg among them for near a quarter of a mile." He repeats the account in his "Chronological Observations of America;" where he states, that so "wonderful" was the quantity, that "they were half-leg deep for *a mile* together." Of the manner of cooking at that period he remarks, that "we used to qualify a pickled herrin by boiling of him in milk." These incidents are sufficient to show the early origin.

From the fragmentary notices of the fishery which are to be met with, it seems probable that, for a long time, as the *scools* of herrings came to our coasts, the inhabitants on the sea and rivers, from Maine to the Carolinas, generally secured sufficient for consumption fresh; that the more careful provided themselves with salt to cure quantities for future use; and that some, becoming regular fishermen, caught and cured the fish for sale to their neighbors of the interior. And that the practice was continued, substantially, without interruption, until the waters resorted to by the herring for the deposit of its spawn were obstructed by dams and mills, is hardly to be doubted. It is certainly true that on some of the rivers, where the fishery is now nearly extinct, the supply at the revolutionary era was considered inexhaustible; and that farmers and fishermen were in the constant habit of filling wagons and boats with scoop-nets and other simple implements.

The Halibut Fishery.—The halibut fishery on George's Bank is a new enterprise. It was commenced within a few years by the adventurous fishermen of Cape Ann. Pursued in mid-winter, it is as hazardous an employment as can well be imagined.

While the fishery was confined to the coast, the consumption of the fish was very limited. In April, 1843, the *Norfolk Herald* announced that "our market, yesterday morning, was enriched with a delicacy from the northern waters, the halibut—*a strange fish in these parts, known only to epicures and naturalists.*"

The New Orleans *Picayune*, in May of the same year, contained a similar paragraph. At present, the fish, packed in boxes with ice, is sent, sound and sweet, by railroads and vessels, to the most distant sections of the country. Vessels employed on the Bank are absent from port from six to fourteen days. The average catch of halibut is perhaps 200 to a vessel, though some obtain double that number. The weight of the fish is from 50 to 200 pounds. [For nearly the whole of this article we are indebted to Mr. Sabine's valuable *Report on Fisheries*, 1853.]

For some time, dealers in Boston purchased, packed, and shipped the fish almost exclusively; but a company was finally formed at Gloucester for the purpose of transacting this part of the business as well as the

other. The fishermen, however, resort again to Boston; for this company, after losing a considerable part of their capital, relinquished their design.

The growth of the fishery has been rapid. The number of vessels employed in it, owned at Gloucester, was 30 in 1844; 63 in 1848; and about 75 in April, 1852. The present fleet contains many new, well-modeled, and fast-sailing vessels. The value of the halibut caught in 1851 was upward of $60,000.

I can not forbear to add, that had our statesmen stood by the doctrine which was asserted and maintained at Ghent by the American commissioners, *one* source of calamity at least would have been spared to our fishermen. The rights guarantied to us formed a part of, and in their very nature were as perpetual as, our independence as a nation. The first article of the convention of 1818 should never have been agreed to by our government. The third article of the treaty of 1783 ought never to have been stricken from that instrument. It is now too late to correct the mistake.

The earnings of the vessels sent to the Bank are generally ample; but the fishery is not profitable, in consequence of the extraordinary wear and tear of sails and rigging, and the frequent loss of cables and anchors. More than all, hardly a season passes without appalling disasters. Whenever a vessel is lost on George's, all on board perish.

An American citizen may contend, if he will, for the repeal of our bounty laws; he may favor a low duty, or no duty whatever, on foreign fish; but he is bound to honor the courage and perseverance of the halibut catchers of Cape Ann, who, mid the storms and gales of a northern winter, procure for him the luscious *napes* and *fins* which garnish his board.

The statistics of the produce of the United States' fisheries for 1855 and 1856 are shown by the following table, taken from the Report on Commerce and Navigation:

STATEMENT SHOWING THE DOMESTIC EXPORTS OF FISH FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1856.

Whither exported.	Dried or smoked.		Pickled.		
	Cwt.	Dollars.	Barrels.	Kegs.	Dollars.
Swedish West Indies	....	....	....	1	....
Danish West Indies	2,186	8,849	1,208	....	6,678
Dutch West Indies	1,185	4,805	51	....	318
Dutch Guiana	26,249	69,455	2,192	41	11,515
England	....	....	14	....	140
Gibraltar	33	149	50	....	226
Canada	3,454	26,914	1,969	295	17,064
Other British N. American Possessions	849	2,847	286	1	1,246
British West Indies	1,618	5,801	595	1	2,945
British Honduras	1,031	4,857	169	....	1,066
British Guiana	804	2,831	75	....	725
Brit. Poss. in Africa	94	391	360	10	1,004
British Australia	8,337	37,382	4,296	206	24,992
British East Indies	40	168	2	....	15
France on the Atlantic	80	277	1	....	4
French West Indies	1,092	4,171	820	....	4,598
French Guiana	6,128	15,894	962	....	4,490
Cuba	56,854	174,328	1,109	500	5,424
Porto Rico	12,379	39,106	1,937	156	10,120
Madeira	25	120	....	....	....
Cape de Verd Islands	20	64	....	....	....
Turkey in Asia	184	450	....	....	....
Other Ports in Africa	614	2,273	591	196	8,827
Hayti	34,282	145,121	18,089	31	68,883
San Domingo	686	1,978	7	....	51
Mexico	151	794	....	138	620
Central Republic	71	810	17	....	124
New Grenada	983	4,258	180	....	1,501
Venezuela	1,149	4 960	....	....	....
Brazil	4,388	16,651	2	....	32
Uruguay, or Cisplatine Republic	119	450	....	....	....
Buenos Ayres, or Argentine Republic	58	263	4	22	159
Chili	527	2,884	....	....	....
Peru	93	435	18	4	231
Equador	14	72	....	....	....
Sandwich Islands	89	222	177	909	2,844
China	274	1,470	15	1,200	2,690
Whale Fisheries	50	201	64	855	982
Total	168,971	578,011	30,801	4,065	178,989

GENERAL STATEMENT OF DOMESTIC EXPORTS, ARRANGED BY DISTRICTS, FROM THE UNITED STATES, FOR THE YEAR ENDING JUNE 30, 1856.

Districts.	Dried or smoked.		Pickled.		
	Cwt.	Dollars.	Barrels.	Kegs.	Dollars.
Passamaquoddy	868	653	83	....	169
Bath	680	1,721	25	....	300
Portland & Falmouth	10,275	19,888	170	500	1,088
Vermont	179	862	1,181	....	10,654
Newburyport	5,478	15,101	886	156	3,765
Gloucester	11,791	30,363	1,846	....	6,592
Salem	3,725	9,929	404	40	2,472
Boston & Charlestown	84,408	270,978	14,805	471	78,842
Fall River	15	58	7	....	108
Providence	....	....	6	....	53
Bristol and Warren	11	49	....	....	....
Newport	96	314	9	....	79
New London	89	152	110	....	478
New Haven	538	1,940	408	....	1,594
Genesee	....	....	7	....	48
Oswego	1,184	19,726	111	295	1,636
Niagara	180	636	....	....	....
Buffalo Creek	158	971	142	....	1,975
Oswegatchie	201	914	5	....	39
New York	36,769	149,808	10,158	....	58,407
Champlain	....	....	428	....	2,192
Cape Vincent	1,414	8,194	....	....	....
Philadelphia	5,886	18,768	280	10	1,538
Presque Isle	....	....	....	....	....
Delaware	....	....	....	....	....
Baltimore	1,642	6,879	82	....	154
Alexandria	....	....	5	....	48
Richmond	27	525	....	....	....
Newbern	....	....	65	....	350
Beaufort	....	....	2	....	10
Charleston	9	84	17	1	120
Key West	8,835	28,042	....	....	....
New Orleans	6	27	7	184	675
Detroit	120	419	150	....	526
Oregon	....	....	98	....	589
Puget's Sound	....	....	15	....	120
San Francisco	114	1,079	2	2,458	4,533
Total	168,971	578,011	30,801	4,065	178,989

A COMPARATIVE VIEW OF THE TONNAGE OF THE UNITED STATES EMPLOYED IN THE WHALE FISHERY; ALSO THE PROPORTION OF THE ENROLLED AND LICENSED TONNAGE EMPLOYED IN THE COASTING TRADE, COD FISHERY, MACKEREL FISHERY, AND WHALE FISHERY, FROM 1815 TO 1856, INCLUSIVE.

Year	Total tonnage.	Register'd tonnage in the whale fishery.	Tonnage employ'd in steam navigation.	PROPORTION OF THE ENROLLED TONNAGE EMPLOYED IN THE			
				Coasting trade.	Cod fishery.	Mackerel fishery.	Whale fishery
1815	1,368,127	....	....	495,067	26,510	....	1,230
1816	1,372,219	....	....	479,979	37,879	....	1,168
1817	1,399,911	4,871	....	481,458	58,990	....	350
1818	1,225,184	16,135	....	503,140	58,552	....	515
1819	1,280,752	31,700	....	528,556	65,045	....	596
1820	1,280,166	35,891	....	539,030	60,843	....	1,051
1821	1,298,959	26,071	....	559,436	51,851	....	1,924
1822	1,324,899	45,449	....	573,080	58,405	....	3,134
1823	1,336,566	89,918	24,879	566,409	67,621	....	585
1824	1,389,168	93,166	21,610	589,223	68,419	....	180
1825	1,424,111	95,879	23,061	587,273	70,626	....	....
1826	1,534,191	41,757	57,059	666,420	68,761	....	227
1827	1,620,688	45,653	40,198	732,938	74,049	....	329
1828	1,741,892	54,621	39,418	758,922	74,948	....	180
1829	1,260,798	57,284	54,037	508,858	101,797	....	....
1830	1,191,776	88,912	64,472	516,978	61,535	33,978	793
1831	1,267,846	82,816	34,496	539,724	60,978	46,211	482
1832	1,439,450	74,899	99,814	649,627	54,928	47,421	317
1833	1,508,150	101,158	101,850	744,199	62,721	48,725	478
1834	1,758,907	108,060	122,815	783,619	51,404	61,092	864
1835	1,824,940	97,640	122,815	792,801	72,874	61,448	....
1836	1,882,108	144,681	145,556	873,023	62,307	61,425	1,573
1837	1,896,686	127,243	154,765	956,951	80,552	46,811	1,894
1838	1,995,640	119,699	193,414	1,041,105	70,064	56,649	5,230
1839	2,066,479	191,845	204,938	1,158,552	72,259	35,984	446
1840	2,180,764	196,927	201,339	1,176,694	76,036	28,269	....
1841	2,130,744	157,465	175,088	1,107,068	66,552	11,321	....
1842	2,092,891	151,618	229,661	1,045,753	54,864	16,097	377
1843	2,158,608	152,975	246,868	1,076,156	61,224	11,776	143
1844	2,280,095	168,294	278,179	1,109,614	85,225	16,171	321
1845	2,417,092	190,096	326,019	1,190,898	69,826	21,415	267
1846	2,502,085	189,980	347,898	1,289,871	78,516	26,163	440
1847	2,389,046	193,859	404,842	1,452,623	70,178	31,151	....
1848	2,154,042	192,180	427,891	1,620,988	82,652	43,559	433
1849	2,334,015	180,186	462,894	1,736,411	42,976	74,854	....
1850	2,535,454	146,017	525,947	1,755,796	85,646	58,112	....
1851	3,772,409	181,645	583,607	1,854,317	87,476	50,539	....
1852	4,138,410	193,798	643,241	2,008,021	102,659	72,546	....
1853	4,407,010	198,302	514,098	2,184,256	109,227	59,850	....
1854	4,802,908	181,901	676,607	2,273,900	102,194	35,041	....
1855	5,212,001	186,778	770,285	2,491,108	102,928	21,625	70
1856	4,871,652	189,213	673,073	2,211,915	95,816	29,887	248

FISHERIES OF THE UNITED STATES IN 1850.

States.	Fisheries.	Capital.	Value of raw material.	Hands employed.		Entire wages per month.		Annual product.
				Male.	Female.	Male.	Female.	
Connecticut	259	$1,936,800	$19,574	2,961	....	$61,729	....	$1,784,488
Florida	15	18,975	1,280	36	5	1,685	$42	18,676
Maine	263	496,910	19,137	2,783	....	58,210	....	569,876
Massachusetts	598	5,582,650	....	11,523	....	180,885	....	6,606,849
Michigan	69	80,806	....	244	....	5,474	....	72,775
New Hampshire	36	42,700	6,586	300	....	8,000	....	59,281
New York	26	482,100	....	583	....	11,862	....	484,845
North Carolina	76	285,115	....	1,843	424	44,578	4,993	250,025
Ohio	16	11,184	4,979	85	....	1,621	....	27,565
Rhode Island	11	32,500	12,096	109	....	3,708	....	64,480
Virginia	15	40,564	82,942	138	....	2,887	....	95,002
Wisconsin	12	10,940	2,835	47	....	1,010	....	16,875
Total	1,884	$8,966,044	$99,631	20,704	429	$371,599	$5,035	$10,900,182

For a complete account of the political history and present state of the Fisheries, see SABINE'S *Report to Congress*, 1858. For more extended information in regard to the various branches of the fisheries, see articles COD FISHERY, HERRING FISHERY, and WHALE FISHERY; see also *N. A. Rev.*, lvii. and lxii. (by L. SABINE); *Quar. Rev.*, lxix., 228, lx., 268, xxxvii., 845; *Edin. Rev.*, lxxviii., 46, xcii., 174; *Merch. Mag.*, xix., 145 (BALFOUR); *Blackwood*, liii, 640; *Am. Whig Rev.*, vi., 490 (C. LANMAN); NILES'S *Register*, xxix., 377 (LLOYD'S *Rep.*); *Ency. Am.*, *Ency. Brit.*, 1856–7. *Census Rep. U. S.*, 1854.

Reciprocity Treaty between the United States of America and her Britannic Majesty: concluded 5th June, 1854; *ratified by the United States 9th August*, 1854; *exchanged 9th September*, 1854; *and proclaimed 11th September*, 1854.

ARTICLE 1. It is agreed by the high contracting parties that, in addition to the liberty secured to the United States' fishermen by the above-mentioned convention of October 20, 1818, of taking, curing, and drying fish on certain coasts of the British North American colonies therein defined, the inhabitants of the United States shall have, in common with the subjects of her Britannic majesty, the liberty to take fish of every kind, except shell-fish, on the sea-coasts and shores, and in the bays, harbors, and creeks of Canada, New Brunswick, Nova Scotia, Prince Edward's Island, and of the several islands thereunto adjacent, without being restricted to any distance from the shore, with permission to land upon the coasts and shores of those colonies, and the islands thereof, and also upon the Magdalene Islands, for the purpose of drying their nets and curing their fish: provided that, in so doing, they do not interfere with the rights of private property, or with British fishermen, in the peaceable use of any part of the said coast in their occupancy for the same purpose.

It is understood that the above-mentioned liberty applies solely to the sea fishery; and that the salmon and shad fisheries, and all fisheries in rivers, and the mouths of rivers, are hereby reserved, exclusively, for British fishermen.

And it is further agreed, that in order to prevent or settle any disputes as to the places to which the reservation of exclusive right to British fishermen, contained in this article, and that of fishermen of the United States, contained in the next succeeding article, apply, each of the high contracting parties, on the application of either to the other, shall, within six months thereafter, appoint a commissioner. The said commissioners, before proceeding to any business, shall make and subscribe a solemn declaration that they will impartially and carefully examine and decide, to the best of their judgment, and according to justice and equity, without fear, favor, or affection to their own country, upon all such places as are intended to be reserved and excluded from the common liberty of fishing under this and the next succeeding article, and such declaration shall be entered on the record of their proceedings.

The commissioners shall name some third person to act as an arbitrator or umpire in any case or cases on which they may themselves differ in opinion. If they should not be able to agree upon the name of such third person, they shall each name a person, and it shall be determined by lot which of the two persons so named shall be the arbitrator or umpire in cases of difference or disagreement between the two commissioners. The person so to be chosen to be arbitrator or umpire shall, before proceeding to act as such in any case, make and subscribe a solemn declaration in a form similar to that which shall already have been made and subscribed by the commissioners, which shall be entered on the record of their proceedings. In the event of the death, absence, or incapacity of either of the commissioners, or of the arbitrator or umpire, or of their or his omitting, declining, or ceasing to act as such commissioner, arbitrator, or umpire, another and different person shall be appointed or named as aforesaid to act as such commissioner, arbitrator, or umpire, in the place or stead of the person so originally appointed or named as aforesaid, and shall make or subscribe such declaration as aforesaid.

Such commissioners shall proceed to examine the coasts of the North American provinces and of the United States embraced within the provisions of the first and second articles of this treaty, and shall designate the places reserved by the said article from the common right of fishing therein.

The decision of the commissioners and of the arbitrator or umpire shall be given in writing in each case, and shall be signed by them respectively.

The high contracting parties hereby solemnly engage to consider the decision of the commissioners conjointly, or of the arbitrator or umpire, as the case may be, as absolutely final and conclusive in each case decided upon by them or him respectively.

ARTICLE 2. It is agreed by the high contracting parties that British subjects shall have, in common with the citizens of the United States, the liberty to take fish of every kind, except shell-fish, on the eastern sea-coasts and shores of the United States north of the 36th parallel of north latitude, and on the shores of the several islands thereunto adjacent, and in the bays, harbors, and creeks of the said sea-coasts and shores of the United States, and of the said islands, without being restricted to any distance from the shore, with permission to land upon the said coasts of the United States and of the islands aforesaid, for the purpose of drying their nets and curing their fish: provided that, in so doing, they do not interfere with the rights of private property, or with the fishermen of the United States in the peaceable use of any part of the said coasts in their occupancy for the same purpose.

It is understood that the above-mentioned liberty applies solely to the sea fishery; and that salmon and shad fisheries, and all fisheries in rivers and mouths of rivers, are hereby reserved exclusively for fishermen of the United States.

ARTICLE 3. It is agreed that the articles enumerated in the schedule hereunto annexed, being the growth and produce of the aforesaid British colonies or of the

United States, shall be admitted into each country respectively free of duty:

SCHEDULE OF ARTICLES FREE OF DUTY BY RECIPROCITY TREATY WITH THE BRITISH PROVINCES OF N. A. AND THE UNITED STATES.

GRAIN, FLOUR, and BREADSTUFFS, of all kinds.
ANIMALS of all kinds.
FRESH, SMOKED, and SALTED MEATS.
COTTON-WOOL, SEEDS, and VEGETABLES.
UNDRIED FRUITS, DRIED FRUITS.
FISH of all kinds.
PRODUCTS of FISH, and of all other creatures living in the water.
POULTRY, EGGS.
HIDES, FURS, SKINS, or TAILS, undressed.
STONE or MARBLE, in its crude or unwrought state.
SLATE.
BUTTER, CHEESE, TALLOW.
LARD, HORNS, MANURES.
ORES of METALS, of all kinds.
COAL.
PITCH, TAR, TURPENTINE, ASHES.
TIMBER and LUMBER of all kinds, round, hewed, and sawed, unmanufactured in whole or in part.
FIRE-WOOD.
PLANTS, SHRUBS, and TREES.
PELTS, WOOL.
FISH-OIL.
RICE, BROOM-CORN, and BARK.
GYPSUM, ground or unground.
Hewn or wrought, or unwrought BURR or GRINDSTONES.
DYE-STUFFS.
FLAX, HEMP, and TOW, unmanufactured.
UNMANUFACTURED TOBACCO.
RAGS.

ARTICLE 4. It is agreed that the citizens and inhabitants of the United States shall have the right to navigate the River St. Lawrence, and the canals in Canada used as the means of communicating between the great lakes and the Atlantic Ocean, with their vessels, boats, and crafts, as fully and freely as the subjects of her Britannic majesty, subject only to the same tolls and other assessments as now are, or may hereafter be, exacted of her majesty's said subjects; it being understood, however, that the British government retains the right of suspending this privilege on giving due notice thereof to the government of the United States.

It is further agreed, that if at any time the British government should exercise the said reserved right, the government of the United States shall have the right of suspending, if it think fit, the operation of Article 3 of the present treaty, in so far as the province of Canada is affected thereby, for so long as the suspension of the free navigation of the River St. Lawrence or the canals may continue.

It is further agreed that British subjects shall have the right freely to navigate Lake Michigan with their vessels, boats, and crafts, so long as the privilege of navigating the River St. Lawrence, secured to American citizens by the above clause of the present article, shall continue; and the government of the United States further engages to urge upon the State governments to secure to the subjects of her Britannic majesty the use of the several State canals, on terms of equality with the inhabitants of the United States.

And it is further agreed, that no export duty, or other duty, shall be levied on lumber or timber of any kind cut on that portion of the American territory in the State of Maine watered by the River St. John and its tributaries, and floated down that river to the sea, when the same is shipped to the United States from the province of New Brunswick.

Fish-hooks (*Hamecons*, Fr.; *Fishangeln*, Ger.) are constructed with simple tools, but require great manual dexterity in the workmen. The iron wire of which they are made should be of the best quality, smooth and sound. A bundle of such wire is cut in lengths, either by shears or by laying it down upon an angular wedge of hard steel fixed horizontally in a block or anvil, and striking off the proper lengths by the blows of a hammer. In fashioning the *barbs* of the hooks, the straight piece of wire is laid down in the groove of an iron block made on purpose, and is dexterously struck by the chisel in a slanting direction, across so much of the wire as may be deemed necessary. A sharp-pointed little wedge is thus formed, whose base graduates into the substance of the metal. The end of the wire where the line is to be attached is now flattened or screw-tapped; the other end is sharp-pointed, and the proper twisted curvature is given. The soft iron hooks are next case-hardened, to give them the steely stiffness and elasticity, by imbedding them in animal charcoal contained in an earthen or iron box; after which they are brightened by heating and agitating them with bran, and finally tempered by exposure to a regulated temperature upon a hot iron plate. Hooks for salt-water fishing are frequently tinned to prevent them wearing rapidly away in rust.

Fish-ponds are ponds made by art, in which different kinds of fish are bred and fattened. In general this is only attempted with fresh-water fish; but in some places ponds have been formed on the sea shore, and so contrived as to have their waters renewed every tide, and in these sea fish have been kept for use for a considerable time. The fresh-water fish which is the most successfully managed in ponds is the carp.

Fiume, a seaport town of Austria. The commercial movements in the port of Fiume in 1850, including coasting trade, were: imports, 16,604,000 francs; exports, 17,803,000 francs. The coasting trade of Fiume, at all times more important in the general commerce of that port than the foreign trade, amounted in the year 1850 to 6,840,000 francs for imports, and 8,473,000 francs for exports; leaving a total for foreign commerce of 19,094,000 francs. The latter trade was distributed between the Pontifical states, Naples, Ionian Isles, Turkey, England, and France. Total tonnage employed, 342,493 tons; of which more than two thirds under the Austrian flag.

Flag, an ensign or colors; a cloth on which are usually displayed certain devices, and attached to a staff. In the army, it signifies a small banner by which one regiment is distinguished from another; in the marine, a certain banner by which an admiral is distinguished from the other ships of his squadron, or by which the ships of one nation are distinguished from those of another. The flag acquired its present form in the sixth century in Spain; it was previously small and square.—ASHE. The flag is said to have been introduced there by the Saracens; before which time the ensigns of war were extended on cross pieces of wood.—PARDON. The term flag is more particularly used at sea to denote to what country a ship belongs, and the quality of its commander. The honor of the flag salute at sea was exacted by England from very early times; but it was formally yielded by the Dutch in A.D. 1673, at which period they had been defeated in many actions. Louis XIV. obliged the Spaniards to lower their flag to the French, 1680.—HENAULT. After an engagement of three hours between Tourville and the Spanish Admiral Papachin, the latter yielded by firing a salute of nine guns to the French flag, June 2, 1688.—*Idem.*

To lower or strike the Flag, in the navy, is to pull it down upon the cap, or to take it in, as a token of the respect due from all ships or fleets to those which are undeniably their superiors. To lower or strike the flag in an engagement is a sign of submission or surrender. The method of leading a ship in triumph is to attach the flags to the shrouds, or the gallery in the hind part of the ship, letting them hang down toward the water, and to tow the vessels by the stern. Livy relates that this was the mode in which the Romans used the ships of Carthage.

To heave out the Flag, is to display or put abroad the flag.

To hang out the White Flag, is to ask quarter; or, when a vessel has arrived on a coast, it shows that it has no hostile intention, but comes to trade, or the like. The red flag is a sign of defiance and battle.

Flag officers are those who command the several squadrons of a fleet.

Flag of the United States.—The act to establish the flag of the United States was enacted by Congress, April 4, 1818, viz.: "That from and after the 4th day of July next the flag of the United States be thirteen horizontal stripes, alternate red and white; that the

union be twenty stars, white in a blue field. That on the admission of every new State into the Union one star be added to the union of the flag; and that such addition shall take effect on the 4th day of July then next succeeding such admission."

Flail, an instrument for threshing corn, consisting of the hand-staff, or piece held in the thresher's hand; the swiple, or that part which strikes the corn; the caplins, strong leathern thongs which unite the hand-staff and swiple; and the middle-band, a leathern thong or fish-skin that ties the caplins together.

Flambeau, a kind of torch made of thick wicks, covered with wax, and used in the streets at night, at illuminations, and in processions. Flambeaux usually consist of four wicks or branches, about an inch in thickness, and three feet long, made of coarse half-twisted hempen yarn; and these, being suspended by one end, are coated with white or yellow wax, which is poured over them from a ladle until the requisite thickness be obtained.

Flannel, a woolen stuff, composed of a woof and warp, and woven after the manner of baize. Dr. Black assigns as a reason why flannel and other substances of the same kind keep the body warm, that they compose a rare and spongy mass, the fibres of which touch each other so lightly that the heat moves slowly through the interstices, which being filled only with air, and that too in a stagnate state, give little assistance in conducting the heat. From the experiments of Count Rumford, it appears that there is no relation between the power which the substances usually worn as clothing have of absorbing moisture, and that of keeping the body warm. Having provided a quantity of several of these substances (as mentioned below), he exposed them, spread out upon clean china plates for the space of twenty-four hours to the warm and dry air of a room which had been heated by a German stove for several months, and during the preceding six hours he had raised the thermometer to 85° of Fahrenheit; after which he weighed equal quantities of the different substances with a very accurate balance. They were then spread out upon a china plate, and removed into a very large uninhabited room upon the second floor, where they were exposed forty-eight hours upon a table placed in the middle of the room, the air of which was 45° of Fahrenheit. At the end of this time they were weighed, and then removed into a damp cellar, where they were placed on a table in the middle of the vault, the air of which was at the temperature of 45°, and, by the hydrometer, seemed to be fully saturated with moisture. In this situation they were suffered to remain three days and three nights, the vault being all the while hung round with wet linen cloths, to render the air as completely damp as possible. At the end of three days they were weighed, and the weights at the different times were found as in the following table:

	Weight after being dried in the hot room.	Weight after coming out of the cold room.	Weight after remaining 72 hours in the vault.
	Parts.		
Sheep's wool	1,000	1,084	1,163
Beaver's fur	"	1,072	1,125
The fur of a Russian hare	"	1,065	1,115
Elder-down	"	1,067	1,112
Silk: Raw single thread	"	1,057	1,107
Silk: Ravelings of white taffety	"	1,054	1,103
Linen: Fine Lint	"	1,046	1,102
Linen: Ravelings of fine linen	"	1,044	1,082
Cotton wool	"	1,043	1,089
Ravelings of silver lace	"	1,000	1,000

In regard to these experiments Count Rumford observes, that though linen, from the apparent ease with which it receives dampness from the atmosphere, seems to have a much greater attraction for water than any other, yet it would appear, from what is related above, that those bodies which receive water in its unelastic form with the greatest ease, or are most easily wet, are not those which in all cases attract the humidity of the atmosphere with the greatest avidity. "Perhaps," says he, "the apparent dampness of linen to the touch arises more from the ease with which that substance parts with the water it contains than from the quantity of water it actually holds; in the same manner as a body appears hot to the touch in consequence of its parting freely with its heat; while another body which is really at the same temperature, but which withholds its heat with great obstinacy, affects the sense of feeling much less strongly. It is well known that woolen cloths, such as flannels, etc., worn next the skin, greatly promote insensible perspiration. May not this arise principally from the strong attraction which subsists between wool and the watery vapor which is continually issuing from the human body? That it does not depend entirely on the warmth of that covering, is clear; for the same degree of warmth produced by wearing more clothing of a different kind does not produce the same effect. The perspiration of the human body being absorbed by a covering of flannel, it is immediately distributed through the whole thickness of that substance, and by that means exposed, by a very large surface, to be carried off by the atmosphere; and the loss of this watery vapor which the flannel sustains on the one side by evaporation, being immediately restored from the other, in consequence of the strong attraction between the flannel and this vapor, the pores of the skin are disencumbered, and they are continually surrounded by a dry and salubrious atmosphere."—*Philosophical Transactions*, No. 483.

Flannels are much more luxurious productions than they were in years gone by. We knew them formerly only as woolen or worsted goods; but modern ingenuity has devised flannel made of mingled wool and silk. Its inventors claim for it a superiority over ordinary flannels, in being less irritating to the skin; it shrinks less in washing; the silk increases the strength and durability of the texture, and renders it less liable to tear. Such flannels have even been embroidered, and used for ladies' opera cloaks. Then we have choice "Thibet" flannels, made from the finest wool; and flax flannels, in which flax, prepared on Claussen's process, is mixed with wool; and fancy-colored flannels—pink, rose-color, cherry, crimson, blue, orange, and other dainty tints. The philosophy of cheapness has also visited the flannel regions, for some of the low-priced flannels contain a portion, more or less, of cotton. There are striped flannels, and cricketers' flannels, and "anti-rheumatic" flannels, and many other special and oddly-named kinds.

Flax (Ger. *Flachs*; Du. *Vlasch*; Fr. *Lin*; It. and Sp. *Lino*; Rus. *Len*, *Lon*; Pol. *Len*; Lat. *Linum*), an important plant (*Linum usitatissimum*) that has been cultivated from the earliest ages in Great Britain and many other countries; its fibres being manufactured into thread, and its seed crushed for oil. Russia supplies by far the largest portion of the flax imported into England, the principal sorts being Petersburg, Narva, Riga, Revel, Pernau, Liebau, Memel, and Oberland. Petersburg and Narva flax are nearly of the same quality, the latter being but little inferior to the former. Both sorts come in bundles, of 12, 9, and 6 heads. The Riga flax seems to deserve the preference of any imported from the Baltic. It is the growth of the provinces of Marienburg, Druania, Thisenhausen, and Lithuania. The best Marienburg is called simply Marienburg (M), or Marienburg clean; the second quality, cut (GM); and the third, *risten drayband* (RD); of the three other provinces, the first quality bears the name of *rakitzer*; as, *Druania rakitzer* (DR), *Thiesenhausen rakitzer* (TR), and *Lithuania rakitzer* (LR). The cut flax of these three provinces is the second quality; and to the third quality belongs the *badstub* and *badstub cut* (B and BG); the *paternoster*

(PN); and *haft three band* (HD). *Badstub* and *paternoster* are the refuse of the *rakitzer* flax, and the *three band* again the refuse of the former sort, and consequently very ordinary. The Revel and Penau consists of Marienburg, *cut*, *ritzen*, *haft three band*, and *three band*. The Liebau and Memel growths are distinguished by the denomination of *four* and *three band*. These two sorts, as well as the Oberland flax, come from Königsberg, Elbing, etc., and are little esteemed in the British market. Flanders or Dutch flax is well dressed, and of the finest quality. Flax is extensively cultivated in Egypt. Of late years, some of the Italian ports, which used to be supplied from Russia, have been fully supplied, on lower terms, from Alexandria.

The *Phormium tenax*, or New Zealand flax, has been said to exceed every other species in strength of fibre and whiteness; qualities which, if it really posesses them in the degree stated, must make it peculiarly well fitted for being made into canvas and cordage. In point of fact, however, there is a great diversity of opinion as to its real merits, and it fetches at present but a low price. In 1831 and 1832 the imports of New Zealand flax amounted respectively to 15,725 and 15,867 cwts.; but they fell off in 1835 to 7812 cwts., and since then only trifling quantities have been imported. It is alleged that this is in consequence of the imperfect preparation of the flax, which has hitherto been entirely intrusted to the native women. But without presuming to say whether the defects with which it is charged be inherent in the flax itself, or depend on its preparation, it is abundantly certain that unless it be furnished of a superior quality, it will not suit our markets. When flax is brought to the principal Russian ports whence it is shipped, it is classified according to its qualities, and made up in bundles by sworn inspectors (*brackers*), appointed by government for the assortment of that and all other merchandise. These functionaries are said to perform their task with laudable impartiality and exactness. A ticket is attached to every bundle of assorted flax, containing the name of the inspector and owner, the sort of flax, and the period when it was selected or inspected. See HEMP. Good flax should be of a fine bright color, well separated from the tow, codila, or coarser portion of the plant; and of a long, fine, and strong fibre. In purchasing flax, it is usual to employ agents wholly devoted to this peculiar business.

ACCOUNT OF THE QUANTITIES OF FLAX AND TOW IMPORTED INTO ENGLAND DURING EACH OF THE FIVE YEARS ENDING WITH 1851, DISTINGUISHING THE COUNTRIES WHENCE THEY WERE IMPORTED, AND THE QUANTITIES BROUGHT FROM EACH.

Countries.	1847.	1848.	1849.	1850.	1851.
	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.
Russia	681,147	1,085,732	1,852,935	2,240,766	818,676
Prussia	141,845	119,777	180,747	268,971	125,925
Hanse Towns	24,493	24,500	24,445	20,593	14,925
Holland	78,609	101,959	118,786	188,240	83,121
Belgium	89,960	54,149	75,769	107,886	79,978
France	5,177	801	2,274	3,374	3,802
Italy and the Italian Isls.	7,695	4,876	1,250	2,247	1,885
Egypt	57,855	62,094	50,490	46,505	48,088
Brit. Territ. in the E. Ind.	1,800	....	....	....	48
United States	768	....	....	30	6
Other parts	3,226	10,278	5,575	5,556	7,885
Total	1,092,589	1,464,661	1,806,678	1,822,918	1,184,184

Flax has been but little cultivated in the United States, and only for home consumption. Efforts are now being made to increase the production. Linen mills have been erected in Fall River and other places; and the demand will after this equal the supply.

During the last half century various attempts have been made to effect the separation of the fibrous from the woody portion of the flax stem by chemical and mechanical means. In several cases the results at first appeared to be very promising, but in every instance it was soon found that there were insuperable practical objections. Among chemical agents, solutions of sulphuric acid, caustic potash, caustic soda, quicklime, and soft soap, were all in turn tried and discarded; and among mechanical processes, the ingenious contrivances of Mr. James Lee, and Messrs. Hill & Bandy, shared the same fate. Whatever may have been the comparative merits of the two processes of these rival inventors, in the course of a few years both were relinquished and forgotten. Various other ingenious mechanical arrangements have been devised, but hitherto they have had very little success.

Schenck's process, for which he obtained a patent in 1846, is undoubtedly a very important improvement. It consists merely in steeping the flax stems in warm water, heated artificially to the temperature best suited to fermentation. In this simple way the operation is rendered rapid and certain, all uncertainty from fluctuation in temperature and weather is avoided, and the whole process is entirely under the command of the manufacturer. The temperature best suited for this purpose is about 80°, or from 80° to nearly 90°. Above this point the process proceeds too rapidly, and the fibre is almost sure to be more or less injured. The time required is from about 70 to 90 hours. It appears to be generally admitted that the warm-water steeping increases the percentage of fibre obtained from the flax stem over that obtained by the old modes of retting by nearly one fifth; and that, while the fineness and spinning qualities of the fibre are increased, the strength is in no way weakened or diminished, unless the process be permitted to proceed too far—an accident that need never happen, from the complete control over it which the manufacturer has throughout. Although there is no doubt as to the practical value of the use of warm water in flax retting, yet the introduction of Schenck's process is far from removing all the difficulties of the flax manufacturer; much still remains to be effected; and it is by no means improbable that ere long a yet more perfect process may be devised.

It is interesting to observe, that the use of warm water in the preparation of vegetable fibre is not altogether new, it having been employed by the Malays, and by the natives of Rungpoor, in Bengal. The process adopted at Bencoolen is stated by Dr. Campbell to consist of steeping the stems of the hemp in warm water, in which it is allowed to remain for two days and nights. The old German process, called "Molkenröst," sometimes used in preparing the finer sorts of flax, is also, to some extent, an application of the same principle. In this mode of retting, the flax was steeped for four or five days in a warm mixture of milk and water, and thus the desired degree of fermentation in the flax stems was produced. This operation must be distinguished from the more modern one, in which sour milk was used in order to give a good color to linen—a process introduced by the Dutch toward the middle of the last century. The linen was boiled in a weak alkaline lye, and subsequently treated with sour butter-milk, for the purpose of aiding in removing the alkali, and dissolving the earthy impurities present in the fibre. Occasionally, also, salt of sorrel was used for the same purpose; and in 1775 Reuss states that sulphuric and muriatic acids might be used for the same end; but that being too costly, they had not as yet come into general use. Of course all processes in which boiling, or even hot, water is used, are quite different in their mode of action from those in which only warm water is employed. When boiling water is used, it is with a view of dissolving and removing the useless matters which incrust the fibrous parts of the plant; while, on the other hand, warm water is used to soften them, and to aid in their putrefaction or decomposition, through the agency of fermentation. In 1787, much interest was excited in Ireland by the publication of a plan for improving the retting of flax by the action of hot water. In this scheme it was proposed to scald the flax-stems in boiling water to

soften them, and to remove a portion of the extraneous vegetable matters which they contain; and it was conceived that after this treatment the subsequent retting of the flax would be more rapid, certain, and manageable; so that time would be saved, the noisome process of pond-retting be obviated, and the result be to yield a stronger and whiter fibre. The minute and careful experiments of Hermbstaedt on the chemical principles involved in the retting of flax (made about the beginning of the present century) threw much light on the whole subject, and, to some extent, indicated the influence of temperature on the success of the operation.

Flax-cotton is a material prepared from flax, hemp, and other vegetable fibres, and which very nearly resembles the fibre of the *Gossypium* or cotton-plant. M. Claussen's ingenious process for making flax-cotton (patented August, 1850) consists essentially in boiling the cut and crushed stems of the flax, hemp, or other plant, in a dilute solution of caustic soda, containing about 1-2000th part of alkali. The fibrous matter is then removed, and plunged into a bath of dilute sulphuric acid, containing 1-500th part of acid, in which it is boiled for about an hour. It is next transferred into a solution containing about 10 per cent. of carbonate of soda; and, lastly, when it has remained in the latter for an hour, it is plunged into a weak solution of sulphuric acid, consisting of one part of acid to 200 or 500 parts of water; in this it is left for about half an hour, and the process is completed. The effect of these several processes is "to divide and split up" the fibre in a most remarkable manner, so as completely to alter its character. Flax thus treated is converted into a substance very nearly resembling cotton. It is probable that flax-cotton can be advantageously used in the manufacture of mixed fabrics, as it appears capable of being spun with wool, silk, and other fibres; it may, therefore, perhaps hereafter lead to several new and important practical applications.

The idea of modifying the fibre of the flax and hemp, so as to convert it into a kind of cotton, is by no means new. In 1747, Liljikreuzes and Palmquist described a mode of converting flax into "cotton," by boiling it for some time in a solution of caustic potash, and subsequently washing it with soap. In 1775, considerable quantities of refuse flax and hemp were converted into "flax-cotton" by Lady Moira, with the aid of T. B. Bailey, of Hope, near Manchester. The full details of the process employed do not appear to have been published; but from Lady Moira's letters in the *Transactions of the Society of Arts* for 1775, it appears that the fibre was boiled in an alkaline lye, or a solution of kelp, containing carbonate of soda, and subsequently scoured. The result of this was that "the fibres seem to be set at liberty from each other," after which it may be "carded on cotton cards." It appears that at this time flax-cotton "was made and sold at 3d. per pound;" and Lady Moira states, that she believes that it takes colors better than flax. It is curious to observe the fate of Lady Moira's scheme: she says: "I have no reason to be vain of the samples I have sent you: they merely show that the material of flax-cotton, in able hands, will bear manufacturing, though it is my ill fortune to have it discredited by the artizans who work for me. I had, in Dublin, with great difficulty, a gown wove, and three waistcoats; but had not the person who employed a weaver for me particularly wished to oblige me, I could not have got it accomplished."

Subsequently to this, several attempts were made in Germany to convert flax into a fibre resembling cotton. In 1777, Baron Meidinger proposed to convert flax into a sort of cotton, by the action of alkaline solutions, etc. In 1780, a factory was established at Berchtoldsdorf, near Vienna, for the practical working of this process; and similar plans were subsequently brought forward by Kreutzer in 1801, Stadler and Haupfner in 1811, by Sokou in 1816, and by several others. At the factory at Berchtoldadorf, not only was flax converted into cotton, but also a useful cotton-like fibre was prepared from tow and refuse flax; and the same is said to have been done by Hagg, near Pressburg, in 1788, by Göbell in 1803, and Segalla in 1811. Whether these various plans failed from the effects of jealousy and opposition, like that which prevented Lady Moira from introducing her "flax-cotton," is unknown; but it does not appear that any of them were long persevered in. It is probable that in most cases the neighboring manufacturers set themselves against the introduction of flax-cotton; for Beckman, who speaks of its manufacture near Brunswick, states that the work-people determined not to use the new material, though at the same time he observes, that excellent fustians were made, which could not be distinguished from those manufactured with ordinary cotton. The extreme similarity of flax-cotton to ordinary cotton is also remarked by Des Charmes (1799), who states, that if the staple be cut before it is carded, it is not possible to distinguish it from cotton, either in its raw state or when manufactured. The matter was subsequently investigated by Berthollet, by Gay Lussac, and by Giobert, who employed alternately steepings in hot solutions of soap, alkali, and sulphuric or muriatic acid. Berthollet observes, that equally fine cotton is obtained from the commonest refuse tow as from the best flax.

For some valuable information on fibrous materials, the produce of India, which may be cheaply and usefully substituted for Russian hemp and flax, see "The Fibrous Plants of India fitted for Cordage, Clothing, and Paper," by J. Forbes Royle, M. D., F.R.S.: London, 1855; and also an article entitled "Indian Substitutes for Russian Produce," in the *Edinburg Review* for July, 1855.

In 1816, M. Girard found means to apply machinery and to substitute the spindle in the spinning of flax. To France, then, belongs the honor of the discovery, but England was the first to profit by it and put it in practice, and her example was followed, at the interval of some years, by France, Belgium, and Germany, in the order indicated. The progress of this industry was rapid, and the following table presents its present position (July, 1856):

	Spindles.
Great Britain and Ireland	1,480,000
France	540,000
Germany (including Austria)	171,000
Belgium	182,000
Russia	60,000
Other European States	46,000
United States of America	31,000
Total	2,460,000

While the progress of machine-spinning in Great Britain, Germany, and Switzerland, independent of all kinds of protection, except in the case of Prussia, certain premiums paid by the government to those who have established factories, its extension in France and Belgium, and more especially in the former, is due to legislative interference. Let us, then, direct our attention to France, where an extreme import duty exists. Although the duty was made high in 1826, the import of English yarn was progressive, but slow, until 1836, when the rate was considerably reduced. Immediately afterward the quantity increased rapidly. In 1830 France received but 7,500 lbs. of linen yarn from England. In 1835, in spite of a high tariff, the import had increased to 11,700,000 lbs. Under the reduced duties it went on augmenting until, in 1842, it reached 24,750,000 lbs. Then came the establishment of the present excessively protective scale of duty; its consequences are manifest in the rapid extension of flax-spinning in France. In 1840 there were 90,000 spindles; in 1845, the number was 127,000; in 1850, 275,000; in 1855, 490,000. In the mean time the import of yarns from all countries fell from 24,750,000

lbs. to 1,693,000 lbs. If we had only to do with the establishment of a great spinning-trade in France, and the monopoly of the supply of yarn at home, these figures would be triumphant. But unfortunately for the consumer, as well as for the wealth and resources of the nation, the operation of the tariff has been a costly affair. While the capitalists who had placed their money in the spinning-factories rejoiced at the results detailed, and in the large profits which their government had given them a legalized right to derive from the mass of consumers, we may inquire whether every one was equally satisfied with such a system of political economy.—*Report to the Reform Congress of Brussels*, by Mr. J. MACADAM, *of Belfast*, 1856.

Mr. Macadam's conclusions were as follows: I. In all cases I would advocate the free entry of the raw materials, flax and tow. Where natural and social facilities exist for the cultivation of flax, no protection is required, as it only renders the growers careless of improvement. Where these elements of success are wanting, it is evident that the culture should be abandoned. A nation should never be subjected to a tax simply to supply itself with a material which it can have better and cheaper from elsewhere.

II. I would urge a moderate fixed *ad valorem* duty for the exorbitant ones now levied in many States, and fix it for 10 per cent. on the present value of English yarns. If to this rate of duty be added the cost of packing, transport, commission and other charges, the rate of protection would really amount to 15 per cent. French and Belgian spinners may, perhaps, say that this duty would be inadequate to protect them, but I can not admit this. It is true that the cost of fuel is higher in France and Belgium than in the United Kingdom. But, on the other hand, I can prove that in Ireland we pay more in proportion, as compared with Great Britain, than France or Belgium does, as compared with us. For example, while at Leeds coals cost 4s. 8d. per ton, and at Dundee 8s., they cost in Belfast 10s. to 11s. 6d. per ton, making a difference in favor of the English spinners of 140 per cent., and of the Scotch of 80 per cent. At Ghent, coals cost at present 14s., and have been much cheaper. At Lille they cost 15s. 6d.; the difference, therefore, in favor of the Irish spinners, as compared with the French or Belgian, is 50 per cent. We might, consequently, at Belfast, just as well demand protection from the English and Scotch spinners, as the French and Belgians ask it against us. As to the cost of labor, the factories of Ghent and Lille are in a better position than ours. On what, then, do the spinners of France and Belgium base their claim to protection? On the superiority of English machinery? But these machines may enter Belgium free of duty; and lately, in France, great advantages have been accorded in their import. Or is it on the great capital of England, and the smaller rate of interest of money? As well might we, in poor Ireland, ask protection against these, and yet in the face of them, we have progressed more rapidly than either England or Scotland. Further, how does it happen that Prussia and Austria have progressed to such an extent in their spinning without this immediate protection? The first named had, in 1846, but 47,000 spindles, and has now 96,000. The second, which, in 1845, had but 21,000, now numbers 82,000. And 10 per cent. duty, I repeat, is abundantly sufficient to protect the Belgian and French spinners, while it would prove of great benefit to the manufacturers of linen in those countries.

III. A duty of 20 per cent. on unbleached linens might be proposed. When it is remembered that, in almost all parts of the Continent, weaving at present costs less than in the United Kingdom, it will be recognized that the linen manufacturers of the Continent have an advantage over ours. There was a time when weaving cost as little in Ireland as in any other country, and less than in many. But the thinning of the population by the disastrous years of famine which followed the potato disease; the emigration which subsequently took place; the recruitment of able-bodied men for the army; and other causes, have led to different results.

In the United States of America, where the manufacture of linen is on an extremely small scale, and the whole Union only contains 30,000 spindles, a duty of 20 per cent. existed on yarns and linens up to July, 1857. The annual import reaches £1,600,000, so that the nation pays a tax of £320,000 on its yearly consumption. Originally at 5 per cent., the duty was raised to 37½ per cent. in 1812. In 1832 it was abolished, but in 1842 was re-established at 25 per cent., and reduced, in 1846, to 20 per cent. In 1853, the revenue of the United States had so much increased, and the cash in the Treasury was of so great an amount, that Mr. Guthrie, the Secretary of the Treasury, issued a circular to merchants, in which he proposed to reduce or abolish the duties on many articles, and he requested their opinion as to those on which such a change might most beneficially take place, specifying that it should be on such articles as were generally consumed by all classes of the population, and yet not leading items of native manufacture, and the remission of the duty on which would tend to lighten the labors of the custom-house. Now, there could scarcely be an article more fully answering to these requirements than linen; largely consumed by all classes, the native manufacture was quite insignificant, while the disputes as to value, in levying the duties, between the custom-house and the importers, gave endless trouble.

The following table shows the number of bushels of flax-seeds, and the number of pounds of flax produced, in the United States in the year 1850:

States and Territories.	Flaxseed.	Flax.
	Bushels.	Pounds.
Alabama	69	8,900
Arkansas	821	12,200
Connecticut	708	17,900
Delaware	904	11,100
Georgia	622	5,800
Illinois	10,787	160,000
Indiana	36,888	584,400
Iowa	1,959	62,600
Kentucky	75,801	2,100,100
Maine	580	17,000
Maryland	2,446	35,600
Massachusetts	72	1,100
Michigan	519	7,100
Mississippi	26	600
Missouri	18,696	627,100
New Hampshire	189	7,600
New Jersey	16,525	182,900
New York	57,963	940,500
North Carolina	38,196	593,700
Ohio	188,880	446,900
Pennsylvania	41,728	590,300
South Carolina	55	800
Tennessee	18,904	868,100
Texas	26	1,000
Vermont	939	20,800
Virginia	52,318	1,000,400
Wisconsin	1,191	68,300
Total	562,807	7,806,809

We have also compiled the comparative imports of flax and linen goods into the United States from foreign ports during the last three years

	1854.	1855.	1856.
Flax	$250,391	$286,809	$132,461
Linens, blechd. & unblechd.	9,487,846	7,572,865	9,849,600
Hosiery and articles made on frames	2,263	1,409	4,921
Laces, thread & insertings	368,309	318,511	410,591
Articles tamboured or embroidered	59,624	92,749	164,353
Linens not specified	1,363,804	1,062,891	1,334,942
Total	$11,482,236	$9,315,234	$11,896,868

Flax-seed, or **Linseed** (Fr. *Lin, Graine de Lin*; Ger. *Leinsaat*; Du. *Lynzaad*; It. *Linseme*; Sp. *Linaza*; Port. *Linhaca*; Pol. *Siemie, Iniane*; Rus. *Semja len-*

janoe; Lat. *Lini semen*), the seed of flax. It contains a great deal of oil, which it yields by expression; and is cultivated either that it may be used in sowing, or sent to the crushing-mills to be converted into oil. As the quality of the crop depends much on the seed employed, a good deal of care is requisite in selecting the best. Generally speaking, it should be chosen of a bright, brownish color, oily to the feel, heavy, and quite fresh. Dutch seed is in the highest estimation for sowing; it not only ripens sooner than any other that is imported, but produces larger crops, and of the quality that best suits our principal manufactures. American seed produces fine flax, but the produce is not so large as from Dutch seed. British flax-seed is sometimes used instead of Dutch; but the risk of the crop misgiving is so much greater, "that those only who are ignorant of the consequences, or who are compelled from necessity, are chargeable with this act of ill-judged parsimony."—*Loudon's Enc. of Agriculture.* Crushing-seed is principally imported from Russia, but considerable quantities are also brought from India, Italy, and Egypt.

Fleece, the covering of wool shorn from a sheep. See WOOL.

Fleet, a navy or a squadron of ships of war; or a number of ships in company, whether ships of war or of commerce.

Flint, silicious mineral. It consists of 98 silica, 0·50 lime, 0·25 alumina, 0·25 oxyd of iron, and 1·0 loss. This mineral occurs of various colors, but generally yellowish or dark gray, and usually in a compact amorphous body, of various shapes. It is widely dispersed over the world, occurring chiefly in the chalk formations, but especially in limestone. Its principal use is for gun-flints, and for striking light with steel; and it also forms, when reduced to powder, an ingredient in porcelain and glass. The manufacture of gun-flints is very simple, and is performed with an iron mallet and chisel. A dexterous workman will make 1000 in a day.

Flint-Glass, or **Crystal**, a species of glass which derives its name from flint, because that substance was formerly employed in its manufacture. It is very extensively used for domestic purposes; but is chiefly interesting to the philosopher on account of the property which it possesses of causing a greater dispersion of the rays of light which pass through a prism or lens formed of it than any other of the vitreous compounds. This property renders it invaluable in the manufacture of the object-glasses of telescopes and microscopes; for, by combining a concave lens of flint-glass with one or two convex lenses of *crown-glass*, which possesses a much less dispersive power, a compound lens is formed, in which the prismatic colors arising from a simple refraction are destroyed, and the lens rendered achromatic. This construction of object-glasses was first discovered by a Mr. Hall, a country gentleman in Worcestershire, about 1729; but the discovery was forgotten, and no further notice taken of it for nearly 30 years, when it was again brought to light by John Dollond, after a long-continued course of experiments undertaken for the purpose of perfecting the telescope. It is, however, very difficult to prepare flint-glass fit for the purposes of achromatic telescopes. This difficulty arises not from the want of sufficient dispersive power in the substance, but from the want of purity or homogeneity; the slightest impurity or inequality of composition of the glass giving rise to a streaked or imperfect image by reason of the unequal refraction of the rays. The composition of pure flint-glass long remained a secret in the family of the Dollonds, and its manufacture formed a very profitable article of exportation; for, till about the beginning of the present century, no flint-glass of good quality was made on the Continent. Of late years, however, a great change has taken place in this respect, and glass of the best quality has been manufactured, both in France and Germany, in much larger masses than English artists have yet succeeded in obtaining. This result has been mainly produced by the experimental researches of D'Artigues, Fraunhofer, Cauchoix, Guinand, and Korner. Formerly, an object-glass exceeding five inches in diameter could scarcely be produced. Fraunhofer succeeded in making them of 9, and even 11 inches. The object-glass of the large parallactic telescope belonging to Sir James South, at Campden Hill, was manufactured by Cauchoix; it exceeds 12 inches, and is throughout of the utmost purity. The exact proportion of the ingredients which enter into these choice specimens is not known, and probably their excellence depends in part on some accidental circumstances in the preparation. Korner produced some of his best specimens by employing the following ingredients: 100 parts of quartz, first treated with muriatic acid; 80 parts of litharge, or red lead; and 80 parts of the bitartrate of potash. Flint-glass for common purposes is usually made of 120 parts of fine white sand, 40 parts of well-purified pearlash, 85 parts litharge or minium, 13 parts nitre, and a small quantity of the black oxyd of manganese—the latter ingredient being used to correct the green color occasioned by the presence of oxyd of iron in the sand. The principal difference between this and the glass used for optical purposes consists in the much greater quantity of lead in the latter, and which is introduced for the purpose of increasing its dispersive power. There is a valuable paper on the manufacture of glass for optical purposes, containing the results of an extensive series of experiments upon the subject, made in the laboratory of the Royal Institution, by Mr. Faraday, in the *Philosophical Transactions* for the year 1830, vol. CXX. See GLASS.

Floating Breakwater. This marine contrivance may consist of a series of square frames of timber, connected by mooring-chains, or cables attached to anchors or blocks of marble. The framework may be made of logs of yellow pine, from 30 to 50 feet long, and from 18 to 20 inches square, bolted together very firmly, and increased in height as the situation may be boisterous, in order to break the violence of violent waves, and to allow the vessels riding within these quadrangular basins more safety and protection. Such *breakwaters* are admirably adapted to bathing-places and swimming-stations, since they will always produce smooth water, and protect the machines.

Flogging. According to an act of Congress passed September 28th, 1850, it is provided, "That flogging in the navy, and on board vessels of commerce, is hereby abolished from and after the passage of this act."

Floor Cloth. This useful and ornamental manufacture originated in Great Britain about the year 1740, when a manufactory of it was established at Knightsbridge, near London, by Mr. Smith. It was originally made of narrow canvas sewn together like sail-cloth, to which successive coats of paint were applied; but the seams proving inconvenient, a canvas was wove for the purpose, about four yards wide; it was then extended to seven yards in width, and afterward to nine, which is the widest at present made. The manufactory at Knightsbridge, now carried on by Mr. Baber, is the largest establishment of the kind—the common dimensions of the oil cloths produced there being 20 yards by 8, and 30 yards by 7, giving therefore entire pieces of 160 and 210 square yards without seams. These canvases are stretched upon frames, and accessible over their whole surface by stages erected for the purpose: these are the circumstances which render the large dimensions of the manufactory requisite. The canvas being duly strained, is rubbed over with pumice-stone, which renders its surface smooth and even, and then brushed over with a weak solution of size; when this is dry, the first coat of oil color is laid on, not with brushes, but with trow-

els, something in the manner of plastering; when this is dry a second coat follows it; and in this way seven coats of paint are usually applied in succession, three on the back and four on the front. When the cloth in this state, and of one color, is sufficiently dry, it is removed from its frame upon a large roller, and carried to the upper part of the building to be *printed*, that is, to receive its pattern. This was originally effected by a process of penciling; but in the year 1780, Mr. Smith introduced the great improvement of *block-printing*, by which the colors are more correctly laid on, and in greater body and variety. The printing-table, which is about 80 feet long, 4 wide, and 2 feet 6 inches high, is very firmly constructed of deal timbers laid edgeways, and clamped together, the surface being truly planed; the roll of painted cloth is placed underneath it, and as it is unrolled it gradually passes over the table, where it is printed, and is then drawn forward so as to hang perfectly free while drying, the height of the building being such as conveniently to admit of this, without rolling, doubling, or folding the material, which in these stages would of course injure it. The colors, which are the usual oil colors very carefully prepared, are put on in succession with wooden blocks, which are made of pear-tree, box, or holly-wood, and on which the patterns are cut in relief; they are about 18 inches square, and are applied in succession over the whole of the surface of the cloth lying upon the printing-table. Every color is put on by a separate block, and much dexterity is required in so placing them that the patterns may correctly interlace and join each other, without in any case overlapping or interfering. To effect this, the workman is aided by guide-pins, or *pitches*, as they are termed, which direct him in placing the block. The colors are first brushed or tiered upon hard cushions, from which they are transferred to the block and thence to the cloth; and, though many are often required, it is astonishing how much effect is sometimes obtained by the judicious arrangement or mixture of two only, upon a third, which forms the ground. It will be obvious, from what has been stated, that the weight of the finished oil-cloth, as compared with the naked canvas, is no unimportant criterion of its goodness—each square yard, when finished, weighing from 3¼ pounds to 4 or 4½; this distinguishes a good oil-cloth from those which are vamped up and stiffened with size and other perishable materials.

Independent of the common application of oil-cloth, it is not unfrequently advantageously employed as a roofing material, especially for covering verandas and other light structures. When used for this purpose, the canvas should be made of picked long flax, and thoroughly saturated with good oil paint; it will then stand our climate and last for 14 or 15 years.

Florida, one of the southernmost States of the United States of America, lies between 24° 32′ and 31° N. lat., and between 81° 30′ and 87° 35′ W. long. It is 385 miles long, and from 50 to 250 wide, containing 59,268 square miles. Population in 1830, was 34,725; in 1840, 54,447; and in 1850, 87,401. The State was, in 1850, divided into 28 counties.

Early History of Florida.—The name which the country to the north of Cuba had among the Indians of the Lucayan Islands was "*Cautio*," the signification of which is, as Herrera gives it, rather obscure. The Spaniards heard this country "*Cautio*" already spoken of before they saw it. They heard also of the famous and fabulous fountain of youth of which the Indians had a tradition, and which was called the fountain of Bimini. From this fountain the country to the north itself was sometimes called "*Bimini*." On some of the first maps of the 16th century it is also called "*Terra de Cuba*" (the country of Cuba), as if there were, 1st, an *island* of Cuba, and, 2d, a *continent* of Cuba. When Ponce de Leon, in the spring of 1512, discovered this coast, he gave to it the name of "*Florida*" (the florid), from two reasons, as Herrera says: at first because the country presented a very flourishing and pleasant aspect, and then because he saw the coast at that festival-day which the Spaniards call "*Pascua Florida*, which corresponds to our Palm Sunday. This name has since that time always remained to the large peninsula which we to this day call Florida, though the name was sometimes taken in different senses, and though sometimes there have been attempts made quite to do away with it. At first, so long as Florida was supposed to be an island, the name had only a very limited application. When the Spaniards, after the year 1520, discovered, however, the continuation of the coasts on both sides of Florida, they applied this name to the whole western half of North America, from the boundaries of Mexico and from Cape of Florida, toward the north, in *indefinitum*. The so-called "*Government of Florida*" was often given to different Spanish governors within the said limits. The "*Rio de las Palmas*" (Palm River) in Mexico was the south-western boundary of this government.

We see the name of Florida on many maps, with large letters, written through the whole Mississippi valley, throughout the whole area of the United States; and even as late as the year 1723, the Spanish historian Barcia treated, in the work which he calls "*The History of Florida*," also of Canada, and even of the English expeditions for a discovery of the north-west passage. This latter passage the Spanish authors very often style "*a strait through Florida*." Herrera, however, already remarks that the name of Florida was taken in two senses: it had a more extensive and a narrower meaning. In the latter sense the peninsula was called "*Florida par excellence*." Some authors looked upon this peninsula only as upon a large tongue or promontory attached to the great Floridian continent, and named it the "*Promontory of Florida*" (*Promontorium Floridæ*). On many old maps we see this name cover the whole peninsula. Still other names for the whole peninsula grew out, as it were, from its root or from its southern point. At the time of the Spanish governor, Don Pedro Menendez, in the year 1566, the Spaniards discovered near the Cape of Florida an Indian village called Tequesta, or Teguesta, also written Tegesta. This often-spoken-of village the map-makers put down on their maps, and changed it to a "*Provincio de Tegesta*" (a province of Tegesto). Some authors applied this name to the whole peninsula of Florida: thus, for instance, did Lacet, in his work as well as on his maps (A.D. 1633).

When the French discovered and settled the Mississippi valley, and named it Louisiana, they extended this name and their pretensions as far as possible; and on one French map by Nic. de Fer, of the year 1713, we see the name "*Peninsule de Louisiane*" even given to our peninsula of Florida. This was, however, only a single and unfortunate attempt, which had no further consequences, either in geography or politics. The Spaniards, on their side, gave not up their pretensions to claim, under the name of Florida, much more than their neighbors, the British, to the north, and the French, to the west, would allow them. But the Spaniards extended, before 1763, their actual possession and government in Florida, toward the east, not further than Mobile Bay and River, and to the north not further than the St. Mary's River. When, in the year 1763, the Floridas were ceded to Great Britain, and also all the French dominions east of the Mississippi, then the boundaries of the name Florida were extended again. Great Britain established two provinces of Florida, "*East and West Florida*." The first extended as far north as the St. Mary's River, or about the 31st degree of north latitude, and the latter as far west as the Mississippi Delta, to the Lakes Pontchartrain and Maurepas. In the year 1783 Great Britain retroceded the Floridas to Spain, and Spain at

the same time received the possession of the whole of French Louisiana to the west of the Mississippi. Now, for the first time, Spain held in actual possession all the shores of the Mexican Gulf, and all the countries lying around it. Spain adopted the English division in Eastern and Western Florida—*Florida Oriental and Occidental*—and retained also the extension of this name as far as the Mississippi Delta. The 31st degree of north latitude, which runs not much further than 40 miles from the northern shores of the Mexican Gulf, and is parallel to it, was agreed upon as the northern boundary of "*the Floridas*" toward the United States. So, since the year 1763, the name of Florida extended again over half the circuit of the shores of the Mexican Gulf. But soon after the cession of Louisiana to the United States Florida was curtailed again. The United States claimed the western part of it as far east as Perdido River, received the possession of it in the year 1811, and joined it to their "*Territory of Mississippi*," and afterward of "*Alabama*." Since this time (1811) the dominion of the name of Florida has not changed, though the so-called country changed, till 1821, its masters, when Spain ceded it to the United States. It was then at first called "*the Territory of Florida*," and since 1845, "*the State of Florida*." But the limits remained (with some slight exceptions) unchanged—Perdido River in the west, and St. Mary's River and the 31st degree north latitude, in the north. The division into East and West Florida disappeared under the American government.—KOHL.

Physical Features, etc.—The face of the country is uneven, but nowhere elevated over 800 feet above the sea. The whole extent of the coast is indented with bays and lagoons. A large portion of the country is covered with pine forests, the trees of which standing at a considerable distance from each other, without brush or underwood, afford an opportunity for the grass and flowers to spread with luxuriance over the surface of the earth during the whole year. The borders of the streams are usually skirted by hammocks of hard timber entangled with grape and other vines. A large portion of Florida consists of what are usually denominated "pine barrens," and much of it is sterile, though there are extensive tracts of table land, hammock, and swamp of the richest soil, and well adapted to the cultivation of sugar, rice, cotton, Indian corn, tobacco, and fruits. A considerable portion of the pine land is equally rich, and even the barrens afford extensive ranges of growing land, usually intersected with streams of pure water. Many parts of the State abound in yellow pine and live oak timber. The sea coast is generally healthy, and in parts remarkably so, and the interior is equally healthy, unless it be in the neighborhood of extensive marshes. The peninsula, which is the southern portion of the State, presents a singular alternation of savannahs, hammocks, and lagoons, called collectively the Everglades, which extend into the heart of the country for 200 miles north of Cape Sable. They are drained on the north by the St. John River, and on the west by Macao or Charlotte River.

There were in this State in 1850, 349,049 acres of land improved, and 1,246,240 unimproved in farms. Cash value of farms $6,323,109, and the value of implements and machinery $658,795.

Live stock, etc.—Horses, 10,848; asses and mules, 5002; milch cows, 72,876; working oxen, 5704; other cattle, 182,415; sheep, 23,311; swine; 209,453. Value of live stock, $2,880,058; of slaughtered animals, 514,685.

Agricultural Products, etc.—Wheat, 1027 bushels; rye, 1152; Indian corn, 1,996,809; oats, 66,586; buckwheat, 55; peas and beans, 135,359; potatoes, 7828; sweet potatoes, 757,226; rice, 1,075,090 pounds. Value of products of the orchard, $1280; produce of market gardens, $8721. Pounds of butter made, 371,498; of cheese, 18,015; sugar, hhds., 2750; molasses, 352,893 gallons; beeswax and honey, 18,971 pounds; wool, pounds produced, 28,247; cotton, 45,181; flax, 50; silk cocoons, C hops, 14 pounds; tobacco, 998,614; hay, tons of, 251; and were made 10 gallons of wine. Value of home-made manufactures, $75,582.

Rivers, Bays, etc.—There are many bays on the western side of the peninsula, some of which form good harbors. They are Perdido, Pensacola, Choctawhatchee, St. Andrew, St. Joseph, Apalachicola, Appalachee, Tampa, Carlos, and Gallivalns. On the east coast of the peninsula, the inlets afford harbors for coasting vessels. The St. John is the principal river on the eastern coast; it often spreads from three to five miles in width, and at other places it is not more than one fourth of a mile wide. It is exceedingly winding, and flows through a beautiful and healthy country. St. Mary's River rises in Okefinoke Swamp, Georgia, and enters the Atlantic between Cumberland and Amelia Islands. Of the rivers which enter the Gulf of Mexico, the Apalachicola is the principal. It is formed by the junction of Chattahoochee and Flint Rivers, about 100 miles from the Gulf of Mexico. The Chattahoochee branch of this river is navigable for steamboats 280 miles to Columbus, Georgia. The other principal rivers are Escambia, Suwanee, Withlacoochee, Oscilla, Oclockony, and Choctawhatchee. Perdido River forms the western boundary between Florida and Alabama. It is navigable about seven miles above the bay, is a fine mill stream, and its banks are covered with superior yellow pine timber. There are in this State several streams of limpid water which sink into the earth and disappear, and several which rise suddenly from the earth: one in particular (the Wakulla) is navigable from its very source. The quantity of lumber shipped from the St. John River annually is estimated at 50,000,000 feet. Total tonnage of the State in 1853 amounted to 12,124.25 tons.

The principal places in the State are Tallahassee, the capital, Key West, St. Augustine, Jacksonville, Pensacola, and Apalachicola. On the 1st of January, 1856, there were 26 miles of railroad in operation. May, 1856, Congress granted to railroads lands amounting to over 1,000,000 acres, which, if rightly managed, will build all necessary railroads.

Manufactures, etc.—There were in the State in 1850, 1 cotton factory, with a capital of $80,000, employing 28 males and 67 females, producing 624,000 yards of sheeting, etc., valued at $49,920; 8 flouring and grist mills, 48 saw-mills, 4 tanneries, 10 printing-offices, 1 semi-weekly, and 9 weekly newspapers published. Capital invested in manufactures, $547,140; value of manufactured articles, $668,435.

Principal Ports.—Key West is built on an island of the same name, sixty miles south-west of Cape Sable, lat 24° 32′, and long. 81° 52′ W. It is a port of entry, and one of the few populous towns in the State. Its position commands the Florida Pass, and hence it is important also as a naval station; but the principal occupation of the people at the present time is "wrecking," and here is located a special court for the adjudication of salvages. From fifty to sixty vessels are wrecked in the vicinity every year, and upward of $250,000 are paid on salvages. Salt and sponges are the principal exports, but there is a large import trade for the supply of the military stationed here. Steamers plying between the Atlantic ports and Havana generally call here. The town contains about 4000 inhabitants. The tonnage of the port in 1856 was 3668 tons.

Pensacola is a town and port on the west side of Pensacola Bay, ten miles from the Gulf, and has a fine harbor. The United States' government has here a first-rate naval station and a marine hospital. The trade of Pensacola is principally in cotton. The tonnage of the port in 1856 was 1960 tons. A railroad from Pensacola to Mobile is in course of construction.

FOREIGN COMMERCE OF THE STATE OF FLORIDA, FROM OCTOBER 1, 1820, TO JULY 1, 1856.

Years ending.	Exports.			Imports.	Tonnage Cleared.		District Tonnage.	
	Domestic.	Foreign.	Total.	Total.	American.	Foreign.	Registered.	Enrolled and Licensed.
Sept. 30, 1821.....	....	....	....	$18,270	190	....	280	356
1822.....	$1,777	....	$1,777	6,877	983	....	....	....
1823.....	1,510	....	1,510	4,808	568	52	....	....
1824.....	218	....	218	6,986	177	30	....	....
1825.....	2,865	....	2,865	9,218	233	....	....	....
1826.....	200	....	200	16,590	195	....	....	....
1827.....	24,115	$33,371	57,486	257,994	11,010	2,117	....	....
1828.....	60,921	....	60,921	168,292	7,357	1,943	....	....
1829.....	38,166	17,928	56,096	158,642	6,069	7,043	....	....
1830.....	7,570	....	7,570	32,689	1,866	205	....	....
Total....	$136,746	$51,294	$188,040	$664,866	28,178	10,895	....	....
Sept. 30, 1831.....	$28,492	$2,002	30,495	115,710	5,168	610	546	1,940
1832.....	62,696	6,060	68,716	107,787	6,944	901	....	....
1833.....	64,618	192	64,805	85,886	3,915	345	....	....
1834.....	190,185	38,640	228,825	185,798	7,988	1,292	....	....
1835.....	49,009	12,701	61,710	98,179	10,225	1,025	....	....
1836.....	62,076	9,586	71,662	121,745	9,289	645	....	....
1837.....	74,879	28,804	102,677	490,784	8,096	1,520	....	....
1838.....	71,988	50,549	122,582	168,690	6,525	2,721	....	....
1839.....	291,094	43,712	334,806	279,696	12,422	1,239	....	....
1840.....	1,850,709	8,141	1,858,850	190,728	11,163	1,345	....	....
Total....	$2,745,171	$196,907	$2,942,078	$1,794,694	81,125	11,640	....	....
Sept. 30, 1841.....	$93,828	$2,801	$96,629	$145,181	8,829	2,731	2,661	3,333
1842.....	32,606	778	33,384	176,980	6,255	1,068	....	....
9 mos., 1843*.....	760,855	253	760,608	155,692	8,497	2,569	....	....
June 30, 1844.....	991,657	19,759	1,011,416	155,005	10,247	6,099	....	....
1845.....	1,502,867	11,878	1,514,745	107,868	12,885	6,722	....	....
1846.....	137,589	38,909	176,448	140,584	8,159	1,413	....	....
1847.....	1,808,177	2,361	1,810,538	143,298	10,950	2,504	....	....
1848.....	1,896,688	....	1,896,688	64,267	18,206	7,548	....	....
1849.....	2,518,027	....	2,518,027	63,211	20,507	10,922	....	....
1850.....	2,607,968	15,656	2,623,624	95,709	10,022	12,184	....	....
Total....	$12,289,687	$92,495	$12,382,182	$1,251,425	116,557	60,735	....	....
June 30, 1851.....	$3,939,910	$262	$3,940,172	$94,997	20,254	9,049	3,754	5,610
1852.....	2,511,976	....	2,511,976	30,715	24,170	11,508	....	....
1853.....	1,698,206	....	1,698,206	65,434	15,347	10,311	....	....
1854.....	3,964,697	....	3,964,697	28,969	12,895	9,488	....	....
1855.....	1,408,594	....	1,408,594	45,998	41,938	7,985	....	....
1856.....	1,976,823	....	1,976,823	86,014	55,304	10,520	....	....

* Nine months to June 30, and the fiscal year from this time begins July 1.

Florin, a coin first made by the Florentines. A *floren* was issued by Edward III., which was current in England at the value of 6s. in 1337.—CAMDEN. This English coin was called floren after the Florentine coin, because the latter was of the best gold.—ASHE. The florin of Germany is in value 2s. 4d.; that of Spain 4s. 4½d.; that of Palermo and Sicily 2s. 6d.; that of Holland 2s.—ATLAFFE. By mint valuation the florin of the southern states of Germany is worth 40 cents. The florin of Austria and the city of Augsburg, 48½ cents.

A new English coin, by the name of florin, was authorized by acts of Parliament, 1849-1851, of the value of two shillings, or one tenth of the sovereign or pound sterling. This is the first practical attempt at a decimal currency in Great Britain. Up to this time (1857) few of the coins have been issued or put in circulation, and there seems some doubt of its becoming one of general use. The obverse of the new florin has an exquisitely graceful bust of Queen Victoria in left profile—the favorite side in all the coins of the present reign. Unlike all the previous coins of this reign, however, the effigy is crowned—the coronal "round and top of sovereignty" of the kingdom being faithfully copied, with its borders of jewels, its rim of *fleurs-de-lis* and Maltese crosses. The legend, in bold, broad capitals, is "VICTORIA REGINA, 1849."

Floss-Silk (*Filoselle, Bourre de soie*, or *fleuret*, Fr.), is the name given to the portions of raveled silk broken off in the filature of the cocoons, which is carded like cotton or wool, and spun into a soft coarse yarn or thread, for making bands, shawls, socks, and other common silk fabrics. The floss or fleuret, as first obtained, must be steeped in water, and then subjected to pressure, in order to extract the gummy matter, which renders it too harsh and short for the spinning-wheel. After being dried it is made still more pliant by working a little oil into it with the hands. It is now ready to be submitted to the carding engine. See COTTON MANUFACTURE. It is spun upon the flax-wheel. The female peasants of Lombardy generally wear clothes of homespun floss-silk. Of late years, by improved processes, pretty fine fabrics of this material have been produced, both in England and France. M. Ajac, of Lyons, presented at one of the French national exhibitions of the objects of industry, a great variety of scarfs and square shawls of *bourre de soie*, closely resembling those of *cachemire*.

Flota, a name given by the Spaniards to the ships that formerly sailed together, or under convoy, from Cadiz and the other ports of the Peninsula authorized to trade directly with the transatlantic possessions of Spain.

Flotilla (Sp.), literally a little fleet; in which sense, however, it is seldom used, being applied almost invariably to a fleet, how large soever, composed of small vessels. Thus the term flotilla was given to the immense naval force with which Napoleon meditated the invasion of Great Britain, and which consisted of 2,365 vessels of every description, was manned by about 17,000 sailors, and carried 160,000 soldiers, and 10,000 horses. In Spain the name flotilla is given to a number of vessels appointed to announce to the home government the departure and nature of the cargo of the flota or mercantile ships from foreign ports on their homeward voyage.

Flotsam, Jetsam, and Lagan. In order to constitute a legal wreck, the goods must come to land. If they continue at sea, the law distinguishes them by the foregoing uncouth and barbarous appellations: *flotsam* is when the goods continue swimming on the surface of the waves; *jetsam* is when they are sunk under the surface of the water; and *lagan* is when they are sunk, but tied to a cork or buoy to be found again. —(BLACKSTONE, book i., c. viii.)

Flour (Ger. *Feines mehl, Semmelmahl*; Du. *Bloem*; Fr. *Fleur de Farine*; It. *Fiore*; Sp. *Flor*), the meal of wheat corn, finely ground and sifted.

The imports of breadstuffs into Great Britain, our best customer, is fully shown by the following table. It will be observed that three fourths of the flour imported into England were obtained from the United States, in addition to three fifths of the quantity of Indian corn, and more than a fourth of the quantity of wheat.

IMPORTS OF BREADSTUFFS INTO ENGLAND FOR THE YEAR 1856.

Countries whence imported.	Wheat.	Flour.	Indian corn.
	Quarters.*	Cwts.†	Quarters.
Russia, Northern	467,617	24,850	61,336
Russia, Southern	291,842	689	....
Sweden	10,708	....	....
Norway	4,483	....	....
Denmark	177,216	3,014	....
Prussia	222,681	256	....
Mecklenburg-Schwerin	62,625	190	....
Hanover	8,917	2	672
Hanseatic Towns	137,326	133,014	16
Holland	28,179	2,918	2,191
Belgium	34,988	3,470	1,522
France	10,007	69,872	27,658
Portugal	14,809	6,758	1,417
Spain	49,719	460,828	....
Tuscany	2,165	12,850	4,467
Papal Territories	47,974	....	....
Naples and Sicily	21,600	67	....
Austrian Territories	86,634	1,001	80,776
Greece	98,134	....	210,427
Turkey Proper	112,925	5,819	62,711
Wallachia and Moldavia	124,671	....	196,706
Syria and Palestine	36,195	6,298	100
Egypt	534,603	441	9,159
Morocco	4,562	96	61,257
British East Indies	90,963	299	....
British North America	111,819	309,326	29,317
United States	1,379,150	2,902,707	1,000,871
Chili	1,034	36,525	....
Other parts	9,480	11,272	32,960
Total	4,072,883	3,991,367	1,777,813

* Quarters=8 measured bushels. † Cwts.=112 lbs.

Breadstuffs.—The following official statement exhibits the aggregate value of breadstuffs and provisions exported annually from the United States, for each fiscal year, from 1821 to 1856:

	Amount.		Amount.
1821	$12,241,901	1840	$19,067,585
1822	18,986,856	1841	17,196,102
1823	13,767,847	1842	14,902,976
1824	15,050,494	1843	11,204,123
1825	11,684,449	1844	17,970,185
1826	11,809,496	1845	16,748,421
1827	11,685,556	1846	27,701,121
1828	11,461,144	1847	68,701,931
1829	13,181,858	1848	67,472,751
1830	12,075,480	1849	38,155,507
1831	17,538,227	1850	26,051,378
1832	12,424,708	1851	21,948,651
1833	14,209,128	1852	25,857,027
1834	11,594,024	1853	32,985,322
1835	12,009,209	1854	65,941,328
1836	10,614,130	1855	88,595,348
1837	9,588,859	1856	77,187,801
1838	9,636,650		
1839	14,147,779	Total	$798,022,257

EXPORTS OF BREADSTUFFS FROM THE UNITED STATES TO GREAT BRITAIN AND IRELAND, FROM SEPTEMBER 1, 1855 TO AUGUST 31, 1856.

From	Flour.	Meal.	Wheat.	Corn.
	Barrels.	Barrels.	Bushels.	Bushels.
New York	1,106,058	508	6,307,874	3,130,899
New Orleans	95,866	....	688,591	2,429,619
Philadelphia	199,258	4,195	478,633	598,478
Baltimore	198,288	1,100	674,582	428,541
Boston	20,882	1,013	....	28,449
Other ports	21,463	....	107,226	115,863
Total 1856	1,641,265	6,816	7,956,406	6,731,161
" 1855	176,209	4,768	324,727	6,579,138
" 1854	1,846,920	41,746	6,089,408	6,049,971
" 1853	1,600,449	100	4,828,519	1,452,878
" 1852	1,427,442	1,680	2,728,442	1,487,898
" 1851	1,559,584	5,620	1,496,355	2,205,601
" 1850	474,757	6,411	4,1.276	4,758,855
" 1849	1,187,556	82,940	140,194	12,685,260
" 1848	184,588	108,584	241,309	4,399,228
" 1847	3,155,844	844,167	4,000,859	17,157,659
Total 10 years	13,201,609	1,102,742	29,210,290	68,564,450

FLOUR EXPORTED FROM THE UNITED STATES TO SOUTH AMERICAN PORTS, FOR THE PAST NINE YEARS.

Destination.	1856.	1855.	1854.	1853.	1852.	1851.	1850.	1849.	1848.
Rio Janeiro	238,104	211,278	155,580	251,275	218,674	249,230	148,806	156,688	216,872
Pernambuco	82,028	46,502	43,024	72,207	68,212	68,442	55,187	68,265	65,277
Bahia	26,869	26,481	25,415	27,837	23,452	18,183	28,095	28,159	36,118
Rio Grande	44,835	31,465	35,823	46,878	28,882	32,816	31,526	28,054	37,614
River Plate	118,620	22,715	22,855	66,465	40,784	25,699	8,490	8,948	25,909
Total	550,456	338,751	283,677	463,762	390,004	398,925	270,054	290,109	371,517

STATEMENT SHOWING THE ANNUAL AVERAGE EXPORT PRICE OF FLOUR FROM THE UNITED STATES, FROM 1840 TILL JUNE 30TH, 1855.

	1840.	1841.	1842.	1843.	1844.	1845.	1846.	1847.	1848.	1849.	1850.	1851.	1852.	1853.	1854.	1855.
Export price	$5 37	$5 29	$6 00	$4 50	$4 75	$4 51	$5 18	$5 95	$6 22	$5 35	$5 00	$4 77	$4 24	$5 60	$7 88	$10 10
Boston	5 51	5 77	5 67	4 87	5 18	5 32	5 58	7 17	6 48	6 00	6 00	5 25	5 20	6 27	9 25	10 25
New York	6 17	5 89	5 67	5 07	4 61	5 00	5 19	6 80	5 71	4 96	4 86	4 19	4 96	5 51	8 02	9 06
Philadelphia	5 22	5 84	5 47	4 60	4 84	4 69	4 79	6 02	5 67	4 84	4 97	4 38	4 23	5 47	8 14	9 02
Baltimore	5 00	5 31	5 20	4 36	4 81	4 63	4 53	6 21	5 52	4 83	4 89	4 16	4 26	5 39	8 13	9 57
New Orleans	4 98	5 39	4 54	4 18	4 44	4 83	4 88	5 54	4 76	4 61	5 31	4 00	4 10	5 48	7 60	9 86
St. Louis	4 98	4 75	4 56	3 75	4 50	4 93	4 50	4 93	5 25	5 43	6 25	4 88	5 28	5 08	6 09	7 83

The exports of flour from the United States, during the year ending June 30th, 1856, were as follows:

	Barrels.	Value.
New York	1,649,471	$18,692,941
Baltimore	587,993	4,776,175
Philadelphia	314,846	2,496,968
New Orleans	251,501	1,907,872
Boston	175,503	1,555,987
Richmond, Va	150,921	1,526,032
San Francisco	114,572	1,070,121
Other ports	266,318	2,249,602
Total	3,510,626	$29,275,148

Flour of Wheat, adulterations of, to detect.—The first method is by specific gravity. If potato flour be added, which is frequently done in France, since a vessel which contains one pound of wheat flour will contain one pound and a half of the fecula, the proportion of this adulteration may be easily estimated. If gypsum or ground bones be mixed with the flour, they will not only increase its density still more, but they will remain after burning away the meal.

The second method is by ascertaining the quantity of gluten which the suspected sample will afford, by the process prescribed under the article BREAD. The two following chemical criteria may also be employed:

1st. Nitric acid has the property of coloring wheat flour of a fine orange yellow, whereas it affects the color neither of fecula nor starch. 2d. Pure muriatic acid colors good wheat flour of a deep violet, but dissolves fecula or starch, and forms with it a light, colorless, viscous fluid, decomposable by alkalies. It may also be observed, that as fecula absorbs less water than flour, this affords a ready means of detection. The adulteration with bean or pea flour may be detected by pouring boiling water upon it, which develops the peculiar smell of these two substances.

TABLE SHOWING THE PRICE OF FLOUR, MONTHLY, IN PHILADELPHIA, FROM 1785 TO 1856, EMBRACING A PERIOD OF SEVENTY-TWO YEARS.

Year.	January.	February.	March.	April.	May.	June.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
1785	45 0	45 6	45 0	48 0	45 0	45 0
1786	....	42 0	41 6	46 6	40 0	48 0
1787	40 0	40 0	40 0	40 0	40 0	42 6
1788	....	....	35 0	36 9	37 0	37 0
1789	35 0	34 0	35 0	35 0	40 0	42 6
1790	44 6	....	....	....	....	....
1791	45 0	45 6	40 0	.. 0	40 0	40 6
1792	37 6	37 6	37 6	37 6	37 6	37 6
1793	45 0	45 0	....	....	....	45 0
1794	....	45 0	48 9	....	50 0	50 0
1795	....	....	....	75 0	82 6	86 8
1796	$12 00	$13 56	$15 00*	$14 00	$14 00	$12 50
1797	10 00	10 00	10 00 — 9 25	9 00 — 8 50	9 00	8 50
1798	8 50	8 50	8 50	8 50 — 7 50	7 00	6 75
1799	9 50	9 50	9 25	9 25	9 50	9 50
1800	....	....	....	9 50	9 75	10 00
1801	11 50	11 25	11 50 — 9 50	11 00	11 50	11 50
1802	7 00	7 00	7 00	7 00	7 00	7 00
1803	6 50	6 50	6 50	6 00	6 00	6 00 — 6 50
1804	7 50	7 50	7 00	7 00	6 50	6 50 — 7 75
1805	11 00	....	12 00 —13 00	12 00	11 75	11 00
1806	7 50	7 00	7 00 — 6 75	6 50 — 7 00	7 00 — 8 00	8 00
1807	7 50	7 50	7 25	7 25	7 25	7 25 — 7 00
1808	6 00	5 75	5 75	5 18½	5 00	5 00
1809	5 50	7 00	7 00	6 25	7 00	6 50 — 7 00
1810	7 75	8 00	8 25	8 25	9 00	9 00
1811	11 00	10 50	10 50	10 50	10 25	10 12
1812	....	10 12	9 75 — 9 25	9 00 — 7 00	7 25 — 8 50	8 50
1813	11 00	10 50	9 50	9 75 —10 00	8 50 — 7 25	8 00 — 8 50
1814	....	....	....	....	7 50 — 7 00	6 75
1815	8 00	8 00	7 75	7 75	8 50	8 50 — 9 00
1816	9 00	9 00	8 00	7 75	7 87	8 75 —10 50
1817	13 50	18 75	14 00 —14 75	14 00 —14 25	14 50 —14 00	11 50 —11 00
1818	9 25 —10 00	10 50 —10 75	10 50	10 00	10 00	10 25
1819	9 00	8 75	8 00	7 25	6 37	6 00
1820	6 00 — 5 87½	5 50 — 5 12½	5 00 — 4 75	4 75	4 87 — 4 87	4 50 — 4 75
1821	4 00	4 00	†3 62 — 3 75	4 00	4 00	4 00
1822	6 25	6 25	6 25	6 50	7 12	6 75 — 7 00
1823	6 50 — 7 00	6 50 — 7 00	7 00	7 25	7 67	7 50
1824	6 00	6 00	6 00 — 6 50	6 12	6 00	6 00 — 5 75
1825	4 87½	5 12	5 12	5 00	6 00	5 50 — 5 00
1826	4 75	4 62	4 50	4 25	4 25	4 25 — 4 75
1827	5 25 — 6 00	6 00 — 5 75	5 75 — 5 12	5 12 — 5 00	5 00	5 00
1828	5 00 — 4 75	4 87½— 4 75	4 75	4 75	4 75	4 50
1829	8 25	8 25 — 8 00	8 00 — 7 50	7 50 — 6 75	6 50 — 6 75	6 75 — 6 25
1830	4 62½— 4 50	4 50	4 50	4 50 — 5 00	4 75	4 75 — 4 50
1831	6 25 — 6 00	6 00	6 25 — 7 00	6 37 — 7 00	6 50 — 5 50	5 75 — 5 25
1832	5 50	5 50	5 25 — 5 00	5 25 — 5 50	5 50	5 75 — 6 25
1833	5 75	5 00 — 5 19	5 25	5 25	5 50	6 50 — 5 75
1834	5 25	4 87	4 62	4 75 — 5 25	5 25 — 5 50	5 50
1835	4 93½	5 00	5 00	5 18½	6 00	6 25
1836	6 62½	6 75	7 00	6 81½	6 50	6 81½
1837	11 00 —11 25	10 50 —11 00	10 50 —10 75	9 81½	9 00	9 06 — 9 37
1838	8 12½— 8 62½	7 50 — 8 06½	7 50 — 8 00	7 50 — 8 00	7 71 — 7 90	7 50 — 7 75
1839	8 25 — 8 50	8 50	7 50 — 7 62	7 37 — 7 50	7 00 — 7 50	6 12 — 6 32
1840	5 75	5 50	5 00	4 87	4 62	4 75
1841	4 65 — 5 25	4 59 — 5 06½	4 50 — 4 93	4 62 — 5 00	4 65 — 5 00	5 00
1842	6 06½	5 90 — 6 12½	5 62 — 5 81	5 62 — 5 86	5 75	5 50 — 5 62
1843	3 93	3 75 — 3 92	3 79 — 3 91	4 22	4 25 — 4 40	5 00 — 5 12
1844	4 50	4 80	4 75	4 68	4 37 — 4 57	4 10 — 4 30
1845	4 15	4 81½	4 81½	5 38	4 45	4 25 — 4 40
1846	5 31½	4 90	4 83	4 81	4 31	3 91
1847	4 93½	6 17	5 93½	6 87	7 00	8 25 — 8 40
1848	6 06½	5 87½	6 06½	6 93½	5 87	5 44
1849	5 21	5 00	4 75 — 5 12	4 50	4 68	4 55
1850	5 00	4 78	4 79	5 00	6 18	5 27
1851	4 66	4 25 — 4 56½	4 42	4 50	4 26	4 25
1852	4 25	4 50	4 18½	4 06½	4 20	4 20
1853	5 87½	5 20	4 93½	4 90	4 68	4 62
1854	7 50	8 12	7 45	8 08	8 69	8 72 — 8 90
1855	9 18½	8 94	9 06½	10 25	10 75	10 52
1856	8 83	7 31	7 00	6 57½	6 06½	5 94

* Highest price.

† Lowest price—2,000 barrels sold.

The grain of wheat has for a very long time constituted an important article of food, and has, for about three centuries, been the staple grain. The kind usually cultivated is the *triticum sativum*. A bushel of it should weigh, if very good, about 64 pounds. Wheat in the form of flour is sometimes manufactured as macaroni and vermicelli; but its almost universal use is as bread. (See BAKING.) The following is the composition of first-class wheaten flour: Water, 14·0; albuminous compounds, 14·6; oil, 1·2; saccharine compounds, 66·9; cellulose, 1·7; ash, 1·6. The greater part of the ash is made up of phosphorus, potassium, and magnesia. The bran contains much less saccharine matter, but absolutely more oil and more albuminous matter; and "seconds" in this respect stand intermediate between fine flour and bran. The cheaper price of seconds and bran, therefore, appears to be somewhat arbitrary and improper, and brown bread is probably more economical than that made from fine flour. The objection to it is probably that bran does not leaven particularly well. 2. Oats (*Avena sativa*). In Scotland, the climate and soil of which seem particularly adapted to its cultivation, this cereal has long constituted the staple article of diet. This is also the case in the high-lying land in the West Riding of Yorkshire and the adjacent parts of Lancashire. A bushel of good oats weighs about 45 pounds. Oats are made into flour or meal, and before being submitted to the mill they are always kiln-dried, to facilitate the separation of the husks. The proportion of husk

TABLE SHOWING THE PRICE OF FLOUR, MONTHLY, IN PHILADELPHIA, FROM 1785 TO 1856, EMBRACING A PERIOD OF SEVENTY-TWO YEARS.—*Continued.*

Year.	July.	August.	September.	October.	November.	December.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
1785	44 0	44 0	43 6	43 6	43 0	42 0
1786	43 0	43 0	42 6	42 6	42 0	40 0
1787	42 6	36 6	33 0	33 0	....	....
1788	35 0	35 0	35 0	34 6	34 0	35 0
1789	38 8	41 0	42 0	42 6	40 0	42 6
1790	....	53 6	45 0	43 8	43 0	43 0
1791	40 0	35 0	36 0	36 0	37 6	37 6
1792	37 6	37 6	39 0	38 6	38 6	39 6
1793	....	43 6	47 6	47 6	47 6	47 6
1794	54 0	53 0	52 6	50 0	50 0	49 0
1795	36 3	90 0	90 6	$18 00	$18 00	$18 75
1796	$11 75	$11 00	$12 00	12 00	12 00 —11 50	11 50 —10 50
1797	8 50	8 50	8 50	8 50	8 50	8 50
1798	6 75	8 00 — 8 50	8 50	8 50	8 50 — 9 50	9 50 —10 00
1799	10 00 — 9 50	9 50	9 50	9 50 —10 00	10 50 —11 00	10 00
1800	10 25	10 75	10 50 — 9 75	9 50	10 50	11 00
1801	11 50 —11 00	11 00	10 00 — 9 50	9 25	9 00	8 00 — 6 50
1802	7 25	7 25	7 00 — 6 50	6 50	6 50	6 50
1803	7 00	7 00 — 7 75	7 75 — 7 50	7 50	7 50	7 50
1804	7 75	8 00	9 75 —10 00	9 00	10 00 —10 50	11 00
1805	10 75 — 9 00	9 00 — 8 00	8 00	8 00	8 00 — 9 50	8 25
1806	8 00	7 50 — 6 75	7 00	6 75	7 00 — 7 50	7 50
1807	6 75	6 75	7 12 — 7 50	7 25 — 6 75	7 00	6 75
1808	5 00 — 5 75	5 25	5 00 — 6 00	6 00	6 00 — 5 50	5 50 — 6 00
1809	6 12 — 7 00	6 75	6 75 — 7 25	7 25	7 50 — 8 00	7 50
1810	10 00 —11 00	11 00 —12 00	11 00 —10 75	10 75 —11 50	10 25	11 25
1811	10 00 —11 00	10 75 —10 00	9 00	8 50	9 50	10 00
1812	8 50	8 25 — 9 00	9 00 —10 00	10 25 —10 00	11 50 —10 50	10 25
1813	7 50	7 00 — 8 00	8 25 — 8 75	9 25 — 8 25	8 50 —10 00	10 00 — 7 50
1814	7 00 — 7 25	7 25 — 8 50	8 50	8 75	8 75	8 00
1815	8 25 — 8 75	8 62	8 75	9 00	9 50	9 25
1816	11 00	10 75 — 9 50	9 75	10 00 —11 00	11 50 —12 50	12 50 —13 50
1817	10 50 —11 50	11 50 —10 00	9 50	9 00	9 50 —10 00	9 75 — 9 00
1818	10 25	10 50 —10 75	9 75	9 75	9 25	9 00
1819	6 00	6 00 — 6 25	6 50	6 50	6 12	6 00 — 6 25
1820	4 50 — 4 75	4 50	4 50	4 25	4 25	4 50
1821	4 00 — 4 50	4 62 — 5 00	5 25 — 5 50	5 50 — 7 50	7 00 — 6 00	6 00 — 6 50
1822	6 75 — 6 25	6 25 — 7 00	7 00	6 62	6 50	6 50
1823	7 00	6 50	6 50	6 75	6 62	8 25 — 6 00
1824	5 25	5 25	5 12 — 5 50	5 12	5 50 — 5 00	4 75 — 5 00
1825	5 50 — 4 50	5 00	5 00	5 00 — 5 12	5 12 — 5 00	4 87
1826	4 37 — 4 50	4 50	4 50 — 5 00	5 00 — 5 25	5 50	5 27
1827	5 00	5 00	5 00 — 5 25	5 25	5 25 — 5 50	5 00
1828	4 50 — 4 75	5 00 — 5 50	5 50 — 7 00	6 25 — 7 00	7 25 — 9 00	7 75 — 8 25
1829	6 00 — 5 00	5 00 — 5 50	5 50 — 5 75	5 25 — 5 00	5 00 — 5 25	5 25 — 4 62
1830	4 50 — 5 25	5 25 — 5 75	5 50 — 5 25	5 25 — 5 00	5 00	5 00 — 5 02
1831	5 37 — 4 75	4 75	5 25 — 5 50	5 50	5 50 — 5 25	5 25
1832	6 00	6 87 — 6 25	6 37 — 5 50	5 50 — 6 00	6 25 — 6 12	5 75 — 5 50
1833	6 00 — 6 50	6 12 — 6 00	6 00	5 87 — 5 75	5 75	5 50 — 5 25
1834	5 25 — 5 50	5 50	5 50 — 5 25	5 25	5 25 — 5 12	5 00 — 4 80
1835	6 81	6 06¼	6 12	6 06¼	6 87	6 75
1836	7 00	8 37	9 37	9 81	10 62	11 00
1837	9 50 — 9 05	9 00 — 8 53	8 00 — 8 50	8 25 — 9 00	9 31 — 9 81	9 50 — 9 75
1838	6 43 — 7 12	6 12 — 7 12	6 00 — 8 45	8 25 — 8 40	8 00 — 8 12	8 31 — 8 50
1839	5 59 — 6 12	5 75 — 6 12	5 87 — 6 12	5 87 — 6 00	25	5 56¼— 5 90
1840	5 25	5 00	5 00	5 00	5 00	4 75 — 5 25
1841	5 25 — 5 50	6 06 — 6 84	6 62 — 6 87	6 12 — 6 30	6 46¼— 6 98	6 42
1842	5 50 — 5 87	5 25 — 5 46	4 56¼	4 49	4 12 — 4 37	4 37 — 4 62
1843	5 25 — 5 37	4 75 — 5 06	4 44	4 25 — 4 50	4 25 — 4 37	4 25 — 4 50
1844	4 00 — 4 37	3 91 — 4 19	3 89 — 4 38	4 00 — 4 50	4 37	4 29
1845	4 21¼— 4 62	4 18¾	4 00	5 06¼	5 91	6 06¼
1846	3 81	3 83	3 82 — 4 12	5 18	5 10	4 76
1847	5 91	6 06	5 50	6 45	6 31	6 49
1848	5 25	5 22	5 67	5 42	5 25	5 14
1849	4 56¼	4 87 — 5 12	5 02	5 10	5 06¼	4 87
1850	5 06¼	5 12 — 5 37	5 00	4 83	4 85	4 71
1851	4 25	3 97	3 96	4 12	3 91	4 15
1852	4 12	4 20	4 44	4 48	4 90	5 16
1853	5 00	5 33	5 70	6 41	6 90 — 7 45	6 71¼— 7 00
1854	8 06 — 8 29	8 13 — 8 53	8 59 — 8 81	8 33 — 8 58	8 68 — 8 90	9 12½— 9 25
1855	9 81	8 81	7 47	8 37	9 81	8 84
1856	6 56¼	6 [illegible]	6 49	6 69	6 [illegible]	6 50

is perhaps about a quarter per cent. When the husk is separated, but before the grain is ground, the seeds receive the name of groats. When ground, the dust constitutes oatmeal, and it is found in practice that oats afford about half their original weight of meal, the loss being the water expelled by the kiln-drying, the husk, and the chaff. The following is Norton's analysis (the arrangement being altered) of oats that had been dried to 212°. Perhaps in this drying the loss of water would be about 20 per cent. Albuminous compounds, 19·91; saccharine do., 68·68; oleaginous do., 7·33; husk, 2·28; ash, 2·60. The proportion of ash, principally phosphates and sulphates of lime, potassa, and magnesia, is sometimes in much larger quantity. Oatmeal, therefore, contains considerably more nutritious matter than the same weight of wheat flour. The husks consist mainly of cellulose, and are almost never used as human food. 3. Rye (*Secale cereale*) has been cultivated from time immemorial, and was for a long time much used for bread-making in this country, as it still is (constituting the staple) in Russia, many parts of Germany, etc. A bushel of rye weighs about 54 pounds. Rye grain is very coarsely powdered, and the mixture of flour and bran made into fermented bread, which is distinguished from other bread by its black color. The following is an analysis of rye flour, the water having been previously expelled: Albuminous compounds, 10·5; saccharine do., 78·0; oil, 3·5; salts, 6·0, principally phosphates of potassa, soda, and magnesia; loss, 2·0= 100·0. These three cereal grains constitute the basis of the food of the modern European nations.

Flowers (*Fleurs*, Fr.; *Blumen*, Ger.) of benzoin, of sulphur, of zinc, etc., is the appellation given by the older chemists to such substances as were obtained in a pulverulent or rather minutely crystalline form by the process of sublimation.

Flowers, Artificial, Manufacture of. The art of representing by flowers, leaves, plants, etc., vegetable nature in her ornamental productions, constitutes the business of the artificial florist. The Italians appear to have been the first people in Europe who excelled in the art of making artificial flowers; but of late years the French have been most ingenious in this branch of industry. Ribbons folded in different forms, and of different colors, were originally employed for imitating flowers by being attached to wire stems. This imitation soon gave way to that by feathers, which are more delicate in texture, and more capable of assuming a variety of flower-like figures. But a great difficulty was encountered in dyeing them with due vivacity. The savages of South America manufacture perfect feather flowers, derived from the brilliant plumage of their birds, which closely resemble the products of vegetation. The blossoms and leaves are admirable, while the colors never fade. The Italians employ frequently the cocoons of the silk-worm for this purpose; these take a brilliant dye, preserve their color, and possess a transparent velvety appearance, suitable for petals. Of late years, the French have adopted the finest cambric for making petals, and the taffeta of Florence for the leaves. M. de Bernardiere employs whalebone in very thin leaves for artificial flowers; and by bleaching and dyeing them of various hues, he has succeeded in making his imitations of nature to be very remarkable.

The coloring matters used in flower dyeing are the following: For red; carmine dissolved in a solution of carbonate of potash. For blue; indigo dissolved in sulphuric acid, diluted and neutralized in part by Spanish whitening. For bright yellow; a solution of turmeric in spirit of wine. Cream of tartar brightens all these colors. For violet; archil, and a blue bath. For lilac; archil. Some petals are made of velvet, and are colored merely by the application of the finger dipped in the dye.

Flute, a wind-instrument of great antiquity, the older varieties of which are described by Père Mersenne in his *Harmonie Universelle*, Paris, 1636. The *Flute-à-bec* (disused for more than a century) was of various dimensions. The largest was a bass-flute, with a compass from F in the bass-clef, below the first line, up to D below the first line of the treble clef. The next, a tenor-flute, extended from B flat on the second line of the bass clef up to G on the second line of the treble clef; and each of these large flutes was sounded through a bent tube, like the S of a bassoon. The alto-flute reached from F on the fourth line of the bass clef up to D on the fourth line of the treble clef. The treble-flute extended from F in the first space of the treble clef up to F two octaves above. These two had *beaks*, like the bill of a cock. But all these flutes gave way, early in the last century, to the German flute, which, however, was then very imperfect in its intonation, having only one finger-key. By the addition of various finger-keys, for semitones, the German flute has been much improved in the present century. Like the fife, it is blown by an oval side-hole. It consists of four separable tubes, and has a compass of nearly three octaves, from the lowest C in the treble clef upward. Smaller flutes of this kind are called third, fourth, and octave flutes. The octave flute is the *piccolo*, used in modern orchestras and in military music.

Fluke is applied in navigation to the broad part of the anchor which takes hold of the ground.

Flux (Eng. and Fr.; *Fluss*, Ger.), signifies any substance capable of promoting the fusion of earths or metallic ores by heat. White flux is the residuum of the deflagration in a red hot crucible, of a mixture of two parts of nitre, and one of cream of tartar. It is in fact merely a carbonate of potash. Black flux is obtained when equal parts of nitre and tartar are deflagrated. It owes its color to the carbonaceous matter of the tartaric acid, which remains unconsumed; the quantity of nitre being too small for that purpose. The presence of the charcoal renders this preparation a convenient flux for reducing calcined or oxydized ores to the metallic state. Limestone, fluor-spar, borax, and several earthy or metallic oxyds are employed as fluxes in metallurgy.

Flying Fish, a name given to several species of fishes which, by means of long fins, can sustain themselves for some time in the air. The common flying fish of the Mediterranean is thus able to raise itself so far above the surface of the sea as frequently to throw itself upon the deck of a ship; but the extreme limit of its flight is confined to an arch extending about 120 feet, when the drying of its fins necessitates its return to its proper element. See index to Ichthyology, in *Ency. Brit.*, 1856-7.

Fodder (Ger. *futter*), in agriculture, the food given to quadrupeds, which consists of the stems and leaves of plants, such as the culmiferous stems of the grasses, the haulm of legumes, potatoes, etc.; or, in short, whatever is given as the ordinary food is designated fodder; whereas corn, beans, and other articles, which present nourishment in a more concentrated form, are not included under the term fodder, but rather known as solid food.

Fodder is the name of a weight formerly used in the weighing of lead: it was of various magnitudes, but most commonly amounted to about 2400 lbs.

Fog (Dan. *fog*), in meteorology, a dense vapor near the surface of the land or water. Fogs, in general, are the consequence of the nocturnal cooling of the atmosphere. The air, by its rapid cooling, becomes surcharged with moisture; a part of which being precipitated in the form of a cloud, gives rise to the ordinary fog. During the day the heat of the sun generally disperses the fog, because the quantity of moisture which the air is capable of holding becomes more considerable in proportion as its temperature is increased.

In calm weather, the surfaces of rivers, lakes, etc., are frequently in the morning covered with fog. The reason is this. During the night the air is colder than the water; the strata of air in contact with the water are consequently heated, and become saturated with moisture. The mixture of the vapor with the air, together with its elevation of temperature, renders the air specifically lighter. It rises in consequence, and mixing with the cold air in the superior strata, is cooled, and precipitates its moisture. The cloud or fog resulting from this precipitation can only rise to a small height, because the uniformity of temperature is soon restored. Hence, it is easy to see how winds, or a great agitation of the air, prevent the formation of fogs over the surface of water. In the equinoctial regions, fogs sometimes continue during a considerable part of the year. Humboldt relates that Lima is often covered with a fog half the year, especially in the mornings and evenings; and that along the whole of that coast fogs supply the place of rain, which is extremely rare. In the polar seas thick fogs often prevail, even during the warmest months; and they are so dense that objects frequently can not be distinguished at the distance of a few yards.

Sometimes, though rarely, fogs occur of which the cause is not very well understood. In 1783, the whole of Europe was covered with a dense fog during nearly two months. On the 23d of May, 1822, about five o'clock in the afternoon, a fog covered Paris and the neighborhood, which had the odor of nitrous gas; it continued about an hour. Dry fogs, or those in which no moisture is present, are supposed to be the vapors

and ashes ejected by volcanoes, and diffused in the atmosphere by the winds.

Foil (Fr. feuille, or Lat. folium, *a leaf*). This term is generally applied to varnished metal. Common foil is manufactured as follows: a copper plate, covered with a thin layer of silver, is rolled out into sheets under the flatting mill; the silver surface is then highly polished or covered with a colorless varnish. The *colored foils* are similarly prepared with colored varnishes.

Fold (Sax. *fealde*), a temporary inclosure for keeping cattle or other agricultural animals together, either for the purpose of protection during night, or jointly for protection and feeding. Sometimes, also, sheep are folded for the purpose of manuring. The barrier of which folds are constructed is commonly wooden hurdles; but sometimes, when the fold is only to contain ewes and lambs, netting stretched between posts is made use of, there being a strong rope fixed to the lower parts of the posts close to the ground, to which the under edge of the netting is attached, while its upper edge is attached to a rope stretched along the tops of the same posts. The practice of folding sheep on naked fallows, with a view to manuring them, is still common in several parts of England; but the more improved sheep farmers consider that it deteriorates the wool, and impedes the fattening of the sheep, by keeping them for the greater part of the night wholly without food.

Folio (It. *a leaf*), in account-books, signifies page. Thus folio 7—written abridgedly fo. 7—denotes the seventh page; Folio recto, or F° R°, signifies the first page; Folio verso, or F° V°, the second page of a leaf. A book in folio, or simply a folio, is that where the sheet is only folded in two, each leaf making half a sheet.

Foo-Chow, Fou Tchow Fou, or **Fuhchau Fu,** a city of China, capital of the province of Fo-kien, and one of the five ports recently opened for commerce, stands on the north side of the Min River, 34 miles from its mouth, and 9 miles from Pagoda Island, where ships anchor. North lat. 26° 5′, east long. 119° 20′. The walled city is about three miles from the river, but extensive suburbs stretch along both its banks. They are connected with each other, and with a small islet in the river by a stone bridge 420 paces long, lined with shops, and resting on solid stone piers, 40 on the northern, and 9 on the southern side. Several lookout houses are placed over the streets, or upon the roofs of buildings, one of which immediately attracts the attention of the visiter from its height, and its clock-dial with Roman characters. Few vacant spaces occur within the walls of the city, which is everywhere equally well-built. Serpentine canals divide the country around into plats of greater or less extent, and help to drain the city, as well as provide channels for boats to come up from the river. These parts of the landscape are dotted with hamlets and cottages, or, where the ground is higher, with graves and tombstones. The maritime commerce of the city is very considerable, and its manufactures of cotton goods and porcelain ware are extensive. The population of Fou Tchow Fou and suburbs, is estimated at about 600,000.

This port has no direct trade with foreign countries. Vessels enter at other ports, pay duties, and receive a permit to land goods at Foo-Chow. The arrivals and departures of foreign vessels during the year 1855 were over 100, showing a large increase over the year immediately preceding—including, however, coasting vessels in the opium trade, all of which were under the British flag. The trade of the port is said to be rapidly increasing, bidding fair to render it the second port in China as regards foreign trade, Shanghai being the first. It already surpasses Canton in commerce with the United States. The number of American vessels arriving at Foo-Chow during the last six months of 1855 was 13, with an aggregate tonnage of 10,540 tons; clearances 20, with a tonnage of 18,926 tons, and with 15,106,070 lbs. of tea; of which, 7,674,300 lbs. were for New York, 523,200 lbs. for Boston, and 6,908,570 lbs. for London.

A correspondent residing at Foo-Chow writes to the State Department, U. S., that the tea exported in American ships visiting this port during the last quarter, amounted to 4,824,198 lbs., valued at $715,000. "The entire number of American ships which arrived in 1856 was 34, and one ship-of-war, the United States' ship *Levant*. To give an idea of the increase of foreign trade at this port, I would remark that in the year 1853 (the year the port was opened for trade) there were only 6 American ships; in 1854, there were 12 American ships; in 1855, 27; and in 1856, 34. The whole number of foreign ships which entered this port in 1853, was 14; in 1854 there were 50; in 1855, 117; and in 1856, 175. There is very little done in the way of imports, except in opium. In this article there is an immense trade, a single firm selling in one month more than $200,000 worth. Nearly every firm in the port import opium with the full sanction of the Chinese authorities. There is scarcely a day, and never a week in the year, when opium is not landed in open day, within 10 feet of the door of the custom-house, and of course in full view of the officers. There is, I believe, an understanding between the importers of this article and the officials, that the latter are to receive $10 on each chest landed, which amount goes to the custom-house officers, and is divided among them from the collector down to the custom-house boatmen, each receiving according to his rank."

Food. All substances susceptible of digestion and assimilation may come under the denomination of *food*; but the proximate principles of organic bodies on which their nutritive powers depend are comparatively few. Hence, although the articles employed in different countries for the support of animal life are almost infinitely various, their sustaining powers may be referred to certain substances capable of being separated and identified by chemical analyses and tests. Among the proximate elements of vegetable food gluten and its modifications, starch, gum, sugar, and lignin or woody fibre, are by far the most important; and among those of animal food, albumen, gelatin, and their modifications, together with fats and oils, which are common to both kingdoms of nature.

To illustrate the actual simplicity of our food as compared with its apparent multifariousness and complexity, it may suffice to state, that wheat and almost all the esculent grains consist principally of starch and gluten; that the same ingredients are found in many fruits and roots; that sugar, gum, or a relation of gum which is called vegetable jelly, together with minute traces of aromatic principles which give flavor, and more or less abundance of water, and of vegetable acids, are the chief component parts of apples, pears, peaches, currants, gooseberries, and all analogous tribes of fruits; a very few also, contain oil. Then, as regards *animal* food, the muscular fibres of various animals closely resemble each other in composition and nutritive power; in some cases texture merely, and in others minute additions of foreign matters, confer upon them their relative digestibilities, and their different aspects and flavors: albumen or fibrin, and gelatin, small proportions of saline bodies, and a large quantity of water are found in them all.

It often happens that the truly nutritious part of food is so combined with, or protected by indigestible matters, as to escape the solvent powers of the stomach, unless previously prepared and modified by various chemical and mechanical agents. Indurated woody fibre, for instance, or *lignin*, as chemists call it, will often resist the joint action of the stomach and bowels, and pass through the alimentary canal with scarcely any alteration. The husks of many seeds and fruits are composed almost exclusively of this material. This is the case with the kernels of the apple, pear, etc.; the seeds of the currant, gooseberry,

melon, and so on; the skin, or husk of peas, beans, etc., and of wheat, barley, and oats; so that unless the woody part is either broken down by the teeth, or previously removed, the food which it envelops is protected from the solvent action of the secretions of the stomach. This is in some respects a wise and curious provision in nature; for birds in this way become the carriers of seeds, which pass through them not only undigested, but even retaining their vegetative powers; and in this way, uninhabited and sterile portions of the globe may gradually become clothed with verdure, and shrubs, and trees. Bones are highly nutritive; but unless broken into very small fragments by the masticatory powers of the animals which eat them, they too, would elude digestion. In reference, however, to the food of man, much of its digestibility and nutritious power is referable to the important chemical operations preparatory to its use which are carried on in the kitchen: in other words, cookery is essentially a chemical art; and substances totally unfit, in their raw state, for reception into the stomach, are rendered palatable, digestible, and nutritious by the skill of the cook. And here salt, and a variety of *condiments*, as they are called, and which are aromatic and stimulant substances, chiefly of vegetable origin, play an important part; nor must the mere effect of heat be overlooked, for it is most important. Meat, by boiling and roasting, is not only softened in its fibre, but new substances are generated in it. Among these a peculiar extractive matter, and *osmazome*, or the principle which gives an agreeable flavor and odor to dressed meat, are especially recognized. Nor are the changes which vegetables suffer under the influence of heat less obvious.

There is another important point in the history of our food, namely, its *ultimate composition*. We have spoken of starch, sugar, gum, albumen, and other substances as the *proximate* principles upon which we live; but what is the *ultimate* constitution of these secondary products, what are their true *elements*? It is curious that four *elements* only are principally concerned in the production of our food. These are carbon, hydrogen, oxygen, and nitrogen. Among vegetable substances, gluten (including vegetable albumen) is the only one which abounds in nitrogen; gum, sugar, starch, and the rest are constituted of carbon, hydrogen, and oxygen only; and what is very remarkable is, that in all these important principles, and also in lignin, the oxygen and hydrogen bear to each other the same relative proportions as in water, so that they may be figuratively described as compounds of *charcoal* and *water*. Now there are two very curious points in reference to that part of the chemical history of our food, which has been adverted to: the one is, that no animal can subsist for any length of time upon food which is destitute of nitrogen; and the other, that a certain mixture of different kinds of food is absolutely essential. An animal fed *exclusively* on starch, or sugar, or albumen, or jelly, soon begins to suffer in health; peculiar diseases make their appearance, and his existence is painful and brief; but mix these together, and occasionally modify their proportions, and he then thrives and fattens. Magendie's experiments on this subject, together with those of Tiedemann and Gmelin, well illustrate this fact. Thus, geese fed upon gum, died on the 16th day, those fed upon starch on the 24th, and those fed on boiled white of egg on the 46th; in all these cases they dwindled away and died as if of starvation.

Habit, as is well known, will do much in accustoming the stomach to particular descriptions of food; many persons live exclusively, or almost so, on vegetable, others on animal matters, and particular kinds of diet are forced on the inhabitants of many regions of the globe; but, as far as we are concerned, a due mixture of vegetable and animal matter is not only most palatable, but most conducive to health. Nothing is fit for food which has not already undergone organization, and *water*, though an essential part of the food of all animals, is obviously not in itself nutritious, though it performs the extremely important function of dissolving nutritive matter, so as to render it conveyable by the lacteals and other absorbents into the blood. No compound, then, of nitrogen, hydrogen, carbon, and oxygen, which can be formed artificially, can constitute food. Air, water, and charcoal, though involving the *elements* of our nutriment, are themselves unfit for our support; and it is only by passing through the hidden processes which are carried on in the vessels of living things, that they are so recombined and modified as to be rendered capable of supporting animal life. It is the vegetable world which commences this wonderful operation. Plants absorb their nutriment from the air and from the soil; they assimilate inorganic as well as organic matter; they become the food of the graminivorous tribes, and from these man derives the great bulk of his animal food.

In speaking of the composition of food, that of *milk*, the most important of all food, must not be forgotten; in it nature has wonderfully provided a mixture which, though secreted by an animal, partakes also of the nature of vegetable food, and it presents a perfect analogy to that combination of vegetable and animal matter which has been mentioned as most congenial to the palate and stomach. The albumen or *curd* of milk is a highly elaborated animal principle, abounding in nitrogen, yet, from its attenuated and soluble state, easy of digestion. A second principle of milk is what is termed *sugar of milk*; in composition and properties it resembles a vegetable product, and is intermediate between gum and sugar. The third component of milk is *butter*, partaking of the nature of vegetable oil and animal fat; there are certain saline and acid substances in small proportion: and all these matters are either dissolved or suspended in a large relative proportion of water.

I. Table showing the average Quantity of Nutritive Matter in 1,000 Parts of several Varieties of Animal and Vegetable Food.

Blood	215	Carrots	98
Beef	260	Turnips	42
Veal	250	Cabbage	73
Mutton	200	Beet-root	148
Pork	240	Strawberries	100
Brain	200	Pears	160
Chicken	270	Apples	170
Cod	210	Gooseberries	190
Haddock	180	Cherries	250
Sole	240	Plums	200
Bones	510	Apricots	260
Milk	72	Peaches	200
White of egg	140	Grapes	270
Wheat	950	Melon	30
Rice	880	Cucumber	25
Barley	920	Tamarind	340
Rye	792	Almonds	650
Oats	742	Morels	896
Potatoes	260		

The above table represents the relative proportion of solid digestible matter contained in 1000 parts of the different articles of food which are enumerated. When blood, for instance, is evaporated to dryness, at a temperature not exceeding 212°, the residue amounts to 215 parts in 1000, and may be regarded as almost entirely composed of digestible matters; it consists of albumen and coloring matter, with small proportions of saline substances. The different kinds of meat were dried in the same way. The loss of weight during their desiccation is almost wholly referable to water; and the dry residue composed of albumen or fibrin, with some gelatin, and perhaps traces of fat and saline matters, represents the true nutritive value. Upon an average, therefore, the nutritive matter in a pound of meat is not more than four ounces. This, however, only applies to raw meat; for when dressed, a considerable portion of its constituent water is often dissipated. The nutritive matter of wheat is chiefly starch and gluten, and in this species

of grain the gluten is in much greater relative proportion to the starch, than in barley, oats, or rye. In rice there is little else than starch. There can be little doubt that the great value of wheat as an article of food, depends upon this excess of gluten, which is a nitrogenous substance, and has not inaptly been termed the vegeto-animal principle. In the esculent roots, such as carrots etc., but especially turnips, sugar is the leading nutritive matter; and the common fruits contain sugar, gum, albuminous matter, and acids, together with a highly attenuated form of woody fibre, or lignin, which, in that state, is probably digestible.

The following table shows the ultimate composition of those proximate principles which have been above adverted to as constituting the nutritive part of food.

II. Table showing the ultimate Elementary Composition of 1,000 Parts of the following proximate Principles of Animal and Vegetable Food.

	Carbon.	Hydrogen.	Oxygen.	Nitrogen.
Albumen.....	516	76	258	150
Gelatin.....	488	80	276	161
Fat.....	780	122	98	....
Curd of Milk..	609	78	116	208
Sugar of Milk.	454	61	485	....
Starch.....	557	78	220	143
Gluten.....	488	62	500	....
Gum.....	419	68	513	....
Sugar.....	444	62	494	....
Lignin.....	5 0	56	444	....

Yearly Food of One Man.—From the army and navy diet scales of France and England, which, of course, are based upon the recognized necessities of large numbers of men in active life, it is inferred that about 2¼ pounds avoirdupois of dry food, per day, are required for each individual; of this about three fourths are vegetable, and the rest animal. At the close of an entire year the amount is upward of 800 pounds. Enumerating under the title of water all the various drinks—coffee, tea, alcohol, wine, etc.—its estimated quantity is about 1500 pounds per annum. That for the air received by breathing may be taken at 800 pounds. With these figures before us, says the *Medical World*, we are able to see how the case stands. The food, water, and air, which a man receives, amount, in the aggregate, to more than 3000 pounds a-year; that is, to about 1½ tons, or more than 20 times his weight. This enormous quantity may well attract our attention to the expenditure of material required for supporting life. A living being is the result and representation of change on a prodigious scale.

Food, Adulterations of:—It has long been known that very fraudulent, and sometimes very unwholesome, adulterations of food are extensively practiced; but until lately it was not easy in all cases to pronounce decidedly on the nature of the fraud that had been committed. Now, however, by means of the microscope and the chemist's test-tube, there is little difficulty in so doing, and many important disclosures have by their use been made. The proprietors of the London *Lancet* employed Dr. Hassall (one of the most accomplished of the microscopical observers of our day) to thoroughly investigate the subject, and his reports have appeared from time to time in that periodical. As he published the names of the different trades-people from whom he bought spurious or adulterated articles of food, and as none of them have succeeded in disproving (and, indeed, very few have ventured to contradict) any of the statements, the thorough accuracy of the report may be relied upon, and the facts in this article are based upon it. Although Dr. Hassall purchased the articles of food that he examined from London shop-keepers, there can be no doubt that the same adulterations will be found in the provinces. Indeed, the great adulterators are the wholesale houses, who supply indiscriminately London and country shop-keepers.

I. Adulterations of Articles of Food not avowedly of a Manufactured Nature.—Milk, usually supposed to be much adulterated, is comparatively little so. In towns, water is generally added to it, and a portion of the cream is likewise abstracted; but chalk, gum, etc., are very rarely employed (as has often been alleged) to give the appearance of greater strength. Salted butter is frequently melted, and when in that state has water added to it. In this manner 50 per cent of water may, it is said, be incorporated. Lard is mixed up with water, potato flour, and refuse mutton fat, and the amount of the potato starch has sometimes been known to amount to 20 per cent. Oatmeal, in London, and perhaps elsewhere, is extensively mixed with barley meal; the latter, as it contains so much more water, only selling for about half the price of the former; but wheat flour, unless it contains alum, as it perhaps does, seems quite pure. Arrowroot is adulterated to a large extent. Of 50 samples bought from London shops, Dr. Hassall found 22 to be impure; of these, 10 scarcely contained any arrowroot at all, but were made up of sago, tapioca, and potato starch; while in the others there was a considerable admixture of these cheaper articles. Raw sugar has many impurities, among which the immense number of acari with which it swarms are the most disgusting; but it is also extensively mixed with flour, apparently to make impure dark sugar appear like purer and lighter-colored, and perhaps with other foreign ingredients. Loaf-sugar seems sufficiently pure. Tea is in a lamentable state, for it is meddled with by both the Chinese and those through whose hands it passes here. With regard to black tea, Dickson maintains that the Chinese mix with their exportations of tea to this country many millions of pounds of leaves of other plants, which they mix with genuine tea plants. In other respects, however, and even perhaps in this, the Chinese do not adulterate the common black teas, as Congou, Souchong, and ordinary Pekoe; but other descriptions, as scented Orange Pekoe and Caper, are, almost without an exception, impure; the former by being glazed with black-lead, and the Caper by being extensively mixed with Paddy and Lie tea, *i. e.*, an imitation of tea leaves obtained from other plants; or by not containing any tea leaves at all, but altogether other leaves sprinkled with tea dust, and made up into little masses by means of gum, and which masses are glazed with plumbago, turmeric or Prussian-blue, and the whole sprinkled over with mica, etc. But the imitation black teas are also entirely made up of the leaves of indigenous plants of this country, as those of sycamore and horse-chestnut, broken down, sprinkled with catechu (to communicate tannin), dried, and coated with gum. But a still more common imposition is to purchase exhausted tea leaves, which are sold at about 3d. a lb., from hotel-keepers and the like, and attempt to imitate fresh tea by admixture with catechu, gum, sulphate of iron, to strike a dark color with the catechu, Prussian-blue, logwood, black-lead, talc, etc. Some of these adulterations, as the Prussian-blue, for example, are calculated to have serious effects upon the health. Green teas are more adulterated than black ones, a really unadulterated specimen being very rarely to be met with. They are mixed in China with leaves of other plants, and are subsequently glazed with gum, Prussian-blue, turmeric, and various other substances, some of which are very unwholesome. Imitation green teas of home manufacture are also occasionally, perhaps even often, exposed for sale. Coffee, until the government interfered to prohibit the sale of a mixture of coffee and chicory as "coffee," almost invariably contained a large, and sometimes an amazingly large, admixture of chicory. Several contained, in addition, roasted corn, beans, potatoes, sometimes red ferruginous earths, and other impurities. Ground chicory itself, so much employed to secretly mix with coffee, is itself an article extremely adulterated. Nearly a half of the specimens examined

were largely so, the substances employed for the purpose being roasted wheat, ground acorns, mangel-wurtzel, carrots, mahogany sawdust, and ferruginous earths, the two latter for the purpose of communicating color. Cocoa and chocolate are no better, the great majority of samples of them being largely mixed with sugar, and with potato, and other starch; but a worse adulteration is, that they also contain coloring, earthy matter, usually, probably, of a ferruginous nature, but which sometimes, perhaps, have for ingredients red lead and vermilion, two very dangerous ingredients, and tallow and other fats seem to be sometimes mixed with them. The acknowledged substitutes for tea, coffee, and cocoa, as *Revalenta, Semola, Prince of Wales's Food*, etc., etc., are very familiar substances. Du Barry's much vaunted "Revalenta" is a mixture of pounded lentils and barley meal, and the syrup that accompanies it is treacle. Bullock's "Semola" is the gluten of wheat with a little starch; and "the Prince of Wales's Food" is potato flour.

Ground ginger is very commonly, and very largely adulterated. Dr. Hassall found three fifths of his samples to be so, the substances admixed being sago-meal, potato flour, common flour, ground rice, cayenne pepper, and mustard husks, and these generally constituting the greater part of the ...s of the powder. Mustard, *i. e.*, ground, is almost invariably adulterated, the articles employed for the purpose being flour and turmeric, and these sometimes constitute nearly the whole of the article. Pepper is likewise very frequently mixed with linseed meal, pea meal, powdered mustard, and other substances cheaper than itself. Cayenne pepper is scarcely ever sold pure; and as the adulterators employed are bisulphuret of mercury, red lead, and other mineral coloring-matter, cayenne pepper is often a pretty active poison. In like manner, curry-powder, of which four samples out of five were found to be adulterated, frequently contains red lead, and is, therefore, very deleterious. Of the other spices, cinnamon and mixed spices are often impure; but pimento, mace, cloves, and turmeric, are almost always pure. Vinegar was found by Dr. Hassall to vary a good deal in strength, and also in the quantity of sulphuric acid that most of it contains; many samples containing more of this than was formerly allowed when the vinegar-makers were under the control of the excise; but some specimens, and these very good vinegars, were found to contain none of it, and this is a satisfactory proof that the addition of sulphuric acid is by no means necessary to vinegar.

II. Adulterations of Articles of Food avowedly of a Manufactured Nature.—Although some of the above adulterations communicate poisonous properties, yet most of them are frauds merely; some of which, however, must press very severely upon the artisan, to whom a nominally cheap article is almost irresistible. But the adulterations now to be noticed are all of a deleterious nature, and probably produce an immense amount of chronic disease, and sometimes, indeed, speedy death. Every sample of bread—49 in number—examined by Dr. Hassall, contained alum. Indeed, the sale of "stuff," which is a mixture of alum and salt, to the bakers, is carried on on a very large scale. The object of the baker in using it is to take advantage of the affinity that it has for water, and thereby make the bread retain more water than it otherwise would, and thus give his loaves an artificial weight, and also to whiten bad and discolored flour, and make it pass for that of superior quality. Each four-pound loaf contains on an average 82 grains, and a person consuming two such loaves a week, introduces into his system in that period 2 drachms and 44 grains of alum—a quantity which, as alum is a powerful astringent, must be very injurious, and which probably produces a great deal of the dyspepsia of large towns. The unnecessary quantity of salt employed by bakers is also for the purpose of retaining water among the bread in unnecessary abundance. The pickles sold in bottles in the shops are very bad indeed. In the first place, few of them, if we take the definition of pickle as given in the article Food, are pickles at all. The vegetables are greened with copper, preserved with salt and water, and packed into bottles, into which some very weak vinegar and diluted sulphuric acid are poured. Even the vegetables are not always genuine, and white cabbage is dyed to pass for red, slices of turnips made to look like cucumbers, etc. Of 20 specimens examined by Dr. Hassall, the supposed vinegar never contained the proper amount of acetic acid, and in general only about half. All contained oil of vitriol, and, which is still worse, all (16 were tested for this purpose) salts of copper—two in small quantities only, eight in much, one in considerable, three in very considerable, one in highly deleterious, and two in immediately poisonous amount. Of the extremely injurious effects upon the health of those who daily eat these pickles thus contaminated with copper, there can be no doubt. Among the symptoms produced by the continued use of cupreous preparations in small doses, are paralysis, chronic inflammation of the respiratory and digestive apparatus, slow fever, and wasting of the body. The store sauces are extensively adulterated. Of 28 samples of anchovy sauce, 23 contained Armenian bole, a ferruginous earth of a full red color. All the samples of soy were found to consist of treacle and salt, or at least nearly so. Six out of seven bottles of tomato sauce contained coloring matter, in all cases save one Armenian bole; and a very extensively-used fish-sauce contains acetate of lime and chips of charred wood. None of the sauces, however, were found to contain lead or copper. This, however, is not the case with preserves and jams, and 33 of these out of 35 that were tested, were found to be adulterated with copper, and some of them in very large amount. Fruits preserved in bottles, too, nearly all had copper, and French olives in particular contained a large amount. As in preparing bottled fruits no copper utensils are employed, the poison must be deliberately added. This, too, must often be the case with preserves. Articles of sugar confectionery are perhaps most deleterious of all. Besides often containing sulphate of lime, which is not wholesome, the greater proportion of the colors employed are virulent poisons. Among these may be mentioned red oxyd of lead, carbonate of lead, and the chromate of lead, carbonate of copper, arsenite of copper, and bisulphuret of mercury. Accordingly, from time to time, cases of virulent poisoning follow the use of these colored articles of sugar confectionery.—E. B.

It is probably generally understood that organic substances, that is, those of vegetable or animal derivation, can not be distinguished from each other by chemical analysis, as mineral substances can be. They are composed of few elements, carbon, hydrogen, nitrogen, and oxygen; but these combine together in complicated forms among themselves, producing substances of very different properties, even when the elements in the aggregate continue the same. Moreover, some subtle essence, that chemical skill can not detect, often gives peculiar characters to organic substances. But Nature does not leave herself without witnesses in the organic, any more than in the mineral world; and if these are not brought out by chemical researches, they must be by some other. But what these could be has been so little suspected, that as, lately as the year 1850, when repeated remonstrances were addressed to the British government to prohibit the adulteration of coffee with chicory, the chancellor of the exchequer urged in the House of Commons non-interference with the matter, on the ground that neither by chemistry, nor by any other means, could the adulteration be detected. And this

plea, sustained by the report of three of the most distinguished chemists of the day, was successful. But Dr. Hassall finds, by the application of powerful microscopes, that the identity of organic substances can be detected, and that even when these are ground up and mixed together, as different kinds of flour, for example, each kind can be recognized with absolute certainty by the peculiar structure of the fine particles. The principle was known before, and was applied in fossil botany, especially to the determination of genera and species of plants. Even when converted into stone, the delicate organization still remains, and what is more wonderful than all, when fossil organic substances, like anthracite, are consumed, the ashes reveal to the microscope the peculiar forms of the family of plants which produced the coal. Thus faithfully and indelibly does Nature record and preserve the evidences of her operations in the remotest geological epochs. By the investigations of Dr. Hassall, the microscope has become a most convenient and efficient aid to organic analysis, and while greatly adding to its precision, wonderfully simplifies and reduces the cost and labor of the process. Illustrating the completeness and accuracy of his investigation, we find throughout the book numerous diagrams representing the appearance under the microscope of the various substances submitted to his examination. We see the genuine ground coffee and the genuine chicory root, and the mixture of these and roasted wheat, beans, and potatoes, plainly exposed in samples, that had been purchased with such high-sounding names as "*Delicious Family Coffee*"—really one fourth coffee and three fourths chicory; "*Coffee as in France*"—principally chicory; "*Fine Ceylon Coffee*"—very little coffee, a great deal of chicory with some roasted corn (wheat?) "*Celebrated Jamaica*"—very little coffee; principally chicory. "*Fine Java Coffee*"—much chicory and some roasted potato; very little coffee. And so through the various articles of diet, as tea, cocoa, sugar, milk, flour and bread, butter, arrowroot, condiments, pickles, confectionery, bottled fruits, liquors, and drugs. In many of them the results of chemical as well as microscopic examinations are given, each serving to aid the other, and together leaving little to be desired in the thoroughness and exactness of the researches.

Coffee.—Thirty-four samples of this were examined by Dr. Hassall, of which thirty-one were adulterated —all of the thirty-one with chicory—twelve with roasted wheat in addition; one of them contained bean and one potato flour. In many instances the coffee was present in very small quantities; in some it amounted to one fifth, one third, and so on. But coffee is also adulterated with other substances. In 1851 there were offered for sale, at about two cents a pound, by a Scotch house, eighty tons of "*coffina*," a substance imported expressly for the adulteration of coffee, and described as the highly nutritious seed of a Turkish plant. It proved on examination to consist of the roasted seeds of some leguminous plant, probably a lentil, and was no doubt prepared from an importation of 100 tons of lupine seeds, which arrived a little before at Glasgow from Egypt. The same firm, it appears, was offered, about the same time, 500 tons of foreign acorns, at about a cent per lb. for the same purpose, no doubt, of adulterating coffee. Oak bark tan and exhausted tan are also used, and the baked livers of horses and cattle. Horse liver appears to be preferred for coffee to ox liver, and brings a higher price. In London, there are men whose business is to bake and grind these articles. It is stated that these animal mixtures make the coffee go further, and thus increase its value. Chicory is a harmless sort of mixture, unless it operates to produce diarrhea; it is the root of a plant of the dandelion family, contains no active element like that of coffee, and no doubt greatly diminishes the evil effects attributed to the free use of coffee. Perhaps for this reason its use ought to be encouraged; but as it is worth only one fifth or a quarter as much as coffee, the purchaser would naturally prefer to buy the articles separately, and mix them to suit himself. Sir Charles Wood, the chancellor already referred to, appears to have a high opinion of its nutritive properties; but the value of his opinion is somewhat lessened from the question having been raised, whether he was not largely interested in the great crops of chicory grown in Yorkshire, as well as from his zealous efforts to sustain the practice of this adulteration. But Professor Beer, an eminent oculist of Vienna, is of opinion that the continual use of chicory seriously affects the nervous system, and gives rise to blindness from amaurosis. In this city there are many like Sir Charles Wood, who rather prefer chicory; but it is not so extensively used for adulterating coffee as a small variety of dried pea. In the great coffee-roasting establishments this may be seen in large quantities, openly exposed, just as if the mixing a cheap and inferior article with one of considerable value, to sell at nearly the cost of the latter, was an honest business. It is a singular fact that chicory, used to adulterate coffee, is itself adulterated with still cheaper materials. It is sold in powder, and this is found to consist in part of other matters used for adulterating coffee, not excepting the baked livers. Carrots, beets, parsnips, and mangel wurtzel are roasted and ground for the same purpose. One witness before the Parliamentary committee testified to having manufactured in one year 700 tons of carrots into chicory. Burned sugar and Venetian red are used to give the proper color of coffee.

Tea.—Tea is extensively adulterated in China, inferior qualities being made to resemble closely the most valuable, by mixtures of highly deleterious ingredients, and foreign substances introduced, as leaves of trees of various kinds, to take the place of genuine tea leaves. Some of these are candidly sold by the Chinese with the name of "Lie Teas," or when mixed with other teas, the proportion is stated of each. The Souchongs and Congous imported into England are said to be rarely adulterated; but the black Gunpowders, Capers or Chulons and scented Orange Pekoe, are rarely otherwise than adulterated. In detecting the strange leaves and determining ther names, the microscope is particularly useful. The green color of the Twankay, Hyson-skin, Young Hyson, Hyson, Imperial, and Gunpowder imported into England, is stated to be imparted without exception by artificial coloring matters, such as ferrocyanide of iron, Prussian blue, turmeric, and China clay. Indigo and sulphate of lime are also used, the last for fixing the color. The Chinese exhibit great skill in the mixture of the coloring matters to produce the desired shade, and also a remarkable readiness to execute the orders for any tea required, though it amounts to many times the quantity of all this tea grown. It must be admitted also that they are not much more restrained by any conscientious scruples as to the consequences that may result from their poisonous coloring mixture, than those "outside barbarians" who practice similar arts in Christian countries. In England, besides the poisonous prussiates, it appears, from some seizures that have been made by the excise officers, that for the *facing* of tea, or giving the outside gloss to the leaves, the highly-poisonous substances, carbonate and arsenite of copper, and chromate of lead are used. Of the teas purchased in London and examined, it is found that some are made up of exhausted tea-leaves by the use of gum, and these are artificially glazed and colored; that the coloring matters are more injurious than those used by the Chinese, and that it is not uncommon for tea, both black and green, to be fabricated from British leaves, which possess none of the properties of tea leaves. The detection of the adulterations of tea is not very difficult, some being

made by the microscope, and some by chemical processes. Sand, which is added to the Lie tea, is detected by the increased weight of the ashes. These should amount to only from five to six per cent. of the whole weight of the tea, but they are found, in some impure articles, to weigh nearly one half of the whole.

Sugar.—Sugars are very little adulterated, even with sand, as is supposed to be the case. This is easily detected by dissolving the sugar in water, which will also expose any other insoluble foreign substance. But though not mixed with other matters, the brown sugars of commerce are stated to be in general unfit for human consumption, from the numerous acari, or small mites, which infest them. The magnified representations of these upon the pages of Dr. Hassall's book, are pictures of an animal that can be called extremely hideous and disgusting; and our impressions of it do not become any more favorable, when we learn that this *acarus sacchari* is of the same family as the *acarus scabei*, or itch insect, only larger and possessed of a more formidable organization than his brother; and further, as those grocers, who are employed in "handling" sugars, are said to be subject to a peculiar affection of the skin, a disease that is consequently called the "grocer's itch," it is to be feared that the family traits run through all the members, and the appearance of the sugar-loving acarus does not belie his qualities. Sugar would seem to be thickly populated with them, for it is stated that they may "be seen of all sizes, that is, in all the stages of their growth, and in every condition; some alive, others dead; some entire and others broken into fragments; bodies here, legs there." Happily, in the process of refining these sugars and the more impure molasses, such substances, if they do not all turn to sugar, are removed with the scum, and not a trace of their existence is detected in the pure white article.

Milk.—The adulterations of milk are of a more serious character than any of those we have noticed; and there are few, but those who profit by the sinful practice of contaminating the food given to infants and invalids, that will not welcome any new method of detecting and exposing the imposture. It is now some years since public attention in this city was directed to this subject, and a general hope was entertained, that by the hydrometers and lactometers then introduced, the adulterations might be exposed and prevented; but from the difference in the composition and specific gravity of natural milk in its different conditions, the subject was found to be attended with serious difficulties, and we believe the use of the instruments was given up; at least we have heard nothing of the subject for a long time, and the public appear to have relapsed into a state of hopeless indifference and submission to the evil, which appears irremediable. And this when, if we were to judge from the quality of milk served to us at some of the eating-houses of respectable reputation—stuff of thin, bluish consistency, that sends a sickly scum over the surface of the tea or coffee it is poured upon—we might well doubt whether we are in any better condition than the inhabitants of London, when it was estimated that all the cows supplying it with milk were insufficient to give to each person more than about a table-spoonful per day. For if this is noticed in houses of respectable reputation, how is it likely to be in those of the poorer class? and what sort of milk do the children of the poor probably get, that is bought by their parents at those corner groceries where it can be had the cheapest?

The difficulty of detecting the degrees of adulteration in milk is owing to its complex nature and the different properties it possesses, as its ingredients change their condition or are removed, as the cream, for instance, is taken off when it rises to the surface, and the skim-milk is left proportionally heavier than when this lighter substance was mixed with it. If water, which is as heavy as or heavier than the cream, be now made to replace it, the substitution can not be detected by any difference of specific gravity. This test must therefore be employed with another to determine the quantity of cream. This is effected by the use of a graduated tube called a lactometer, in which the cream, by standing some time, collects in the upper end, and its proportion is at once seen to the milk at the lower end. Good milk should show about 9-100ths by measure of cream, and tested by the hydrometer should indicate from 1026 to 1030 specific gravity, water being 1000. To these tests and the more complicated ones of chemical analysis, are now added those of the microscope, by which an idea may be formed of the relative richness of different samples by comparison. Cream is seen to be full of globular fatty bodies, which are of large size and closely collected together; good milk has similar globules, but smaller and not so closely united; while in adulterated milk they are scattered like the stars in a clear night. Foreign substances, as sheep's brains, are indicated by appearances like nebulæ among the stars, intermixed with a multitude of comets. But to follow out this subject, one should turn to the book itself, in which it is fully treated. The result of the examination of twenty-six samples of London milk was that *twelve* were genuine, but of these two showed a deficiency of cream; and that *fourteen* were adulterated, principally with water, which ranged from 10 to 50 per cent. It would be curious to have a series of such examinations of New York milk to compare with this of the London. We are strongly inclined to the opinion that Yankee ingenuity would be found as far ahead of the British in this respect as the British were ahead of the Chinese in adulterating tea. Certainly, we need such an investigation, and we hope it will be had.

Flour.—Flour is probably much more adulterated in England than it is in this country. In this article we are more likely to suffer by short weight than by substitutes of inferior ingredients. It is possible that damaged flour may, however, be mixed with good, or by adulterations with various matters be made to assume the appearance of good flour. The unwise preference, so universal, for flour extremely white, leads to the mixture of alum for the purpose of improving the appearance; and the baker frequently, ignorant that the miller had anticipated his worthy object, adds a second dose of alum to improve the appearance of the loaf. The effect of alum is to make the bread indigestible, causing acidity and dyspepsia—besides, it enables the baker to add other articles, which are themselves cheap substitutes for flour, and cause the bread to take up more water, thus adding to its weight. Liebig remarks upon the indigestible quality of London bread; and he noticed, when in the alum works at Glasgow, quantities of finely-ground alum prepared for the London bakers. Aware of its injurious effects, he recommended a substitute of lime water, which would produce the useful without the injurious effects; and his recommendation has been to some extent adopted. We know nothing of the practices of our bakers in these matters, but the thing might be easily investigated. In the country, particularly in New England, where the bread is almost universally bad, the greatest evil is probably in the free use of carbonate of potash or saleratus. Fifty-three samples of London bread were examined by Dr. Hassall, all of which contained alum. Fraud was detected almost as universally in the weight of the loaves. In Edinburg an excellent police act prevails, requiring the bakers to stamp the weight upon all the loaves they sell. The magnified representations in Dr. Hassall's work of the different flours and their adulterated mixtures, as they appear under the microscope, are highly interesting and instructive.

Various preparations of farinaceous articles for the food of invalids have been largely introduced into the

English market of late years, and many of them have found their way to this country, with the high-sounding names they were christened with there. The most famous and highly esteemed of these are *Wharton's Revalenta*, and *Du Barry's Revalenta Arabica*. They sold in England at 2s. 9d. per pound, or about 67 cents. These, examined under the microscope, prove—the former to be a mixture of the French or German lentil, which is almost precisely the same thing as the common pea, and the remainder a substance resembling Indian-corn meal, but possibly the meal of the Sorghum. The latter was composed of the red, or Arabian lentil, and barley-flour. Another sample of it showed some sugar, and a third some salt, and also appeared to be flavored with celery seed. Edwards Brothers' *Arabian Revalenta*, at 1s. (24 cents) per pound, was ascertained to consist of lentil powder—probably of the red and yellow lentil mixed. Lentils, it seems, being somewhat cheaper than peas, are supplied to the work-houses for the preparation of soup for the paupers. It is certainly a much more profitable operation to convert them into *Revalenta*, and sell them at 67 cents per pound, or export them in this form to this country, where, we believe, by our own experience, when acting, some time since, under medical advice, they cost half a dollar for a small paper, possibly weighing half a pound. In London, where these valuable lentils can be easily procured at 8 cents per quart, the preparation may be made by mixing to a uniform powder red or Arabian lentil flour, 2 pounds; barley flour, 1 pound; salt, 3 ounces. This preparation will contain all the valuable properties of the *Revalenta*, and cost *four cents* per pound. Unfortunately, we have no Arabian lentils; but Dr. Hassall has given another recipe, equally good, designed for such contingences, and of which we can easily avail ourselves, viz.: Pea flour, 2 lbs.; Indian-corn flour, 1 lb.; salt, 3 oz. Mix as before. We do not know whether such choice preparations as *Prince Arthur's Farinaceous Food* and the *Prince of Wales's Food*, would ever be allowed to come to this country to nourish republican babies; but, by great good luck, we possess the materials of this royal diet, as Dr. Hassall's microscope proves the one to be composed entirely of *baked wheat flour*, and the other of *potato flour*. *Maidman's Nutritious Farina* consists entirely of potato flour, artificially colored of a rosy tint.

Spices.—Cayenne pepper is very generally adulterated, and frequently with red lead, in considerable quantity. Vermilion, or the sulphuret of mercury, is sometimes used for the same purpose. As mineral poisons are apt to accumulate in the system, and finally produce very serious consequences, if taken frequently, even in small quantities, this adulteration, as the similar treatment of colored confectionery, is one of the most reprehensible forms of this vile system. Instances of poisoning from these causes are known, and also from cheese poisoned by red lead, which was introduced into the annotto used to color the cheese. This coloring ingredient in cheese and butter is an entirely useless addition to these articles, possessing no good properties of its own; but being frequently made the vehicle of introducing its different adulterating mixtures, its use ought to be abandoned.

Spices are to a considerable extent adulterated, and probably as much so in this country as in England. Of 21 samples of ginger, 15 were thus impure, the mixtures consisting of the meal of sago, tapioca, potatoes, wheat, rice; also, Cayenne pepper, mustard husks, and turmeric powder, which, in the majority of the cases, constituted the principal part of the article. Every one has noticed in cinnamon the hard, tasteless bark, thicker than that which has the genuine flavor, but otherwise much resembling it. This is the bark of the cassia, a tree of the same genus as that which produces the cinnamon bark, but of very inferior quality. It is largely mixed with cinnamon, but, even in the ground state, is easily detected by the microscope. Of 12 samples of whole cinnamon examined, seven proved genuine, and five were nothing but cassia; and of 19 samples of the ground article, only six were genuine—three consisted entirely of cassia, three of cassia adulterated, and seven of cinnamon adulterated. The adulterating mixtures were baked wheat flour, sago, meal, potato-flour, and arrow-root. In his examination of the nutmeg, Dr. Hassall does not appear to have found any of the famous wooden imitations; but a French author he quotes, states, that "nutmegs are sometimes mixed with riddled nuts, eaten by insects, and become brittle; the small apertures are then closed with a kind of cement, formed of flour, oil, and the powder of nutmegs. This paste has even served to fabricate false nutmegs, inodorous and insipid." These qualities without doubt, characterize the Connecticut article also, and will enable any one to detect it. Dr. Hassall's advice to soak them in water, when, of course, they would readily break down, would not apply to these.

To present this subject in its most revolting features, it would be necessary to carry out this description through the long list of liquors and drugs; and the data for this might easily be furnished to considerable extent from materials already at hand of our own operations, without drawing upon those so abundantly provided in the book before us. But enough has already been said to convince the most incredulous (if there be anywhere incredulity on this subject), that whatever we purchase to eat or to drink, or to administer as medicine, we have no security that we obtain the article we ask and pay for. The chance is decidedly against us in all articles, which skillful ingenuity can imitate successfully, even if it be necessary to resort to dangerous poisonous substances. The laws afford little protection, though they recognize the existence of the evil.

But besides the repugnance we naturally feel to being cheated and poisoned, there are evils of greater consequence brought upon the community by the toleration of these practices, that should rouse a higher indignation. These are, that loose state of morals the system encourages, and the lowering of the respect which should attach to the mercantile profession. The encouragement, too, of the unscrupulous trader, by the advantages of profit it gives him over the honest; thus driving the latter out of a business in which competition is not open to him. Then, again, its evil effects upon the poor, who, ignorant of these frauds, fall helplessly into the snares of those who sell at the lowest rates. Judging from the qualities of articles sold by "respectable" traders, it is probable we have little idea of what is palmed off upon the great bulk of the population of a city like this, in the cheap shops frequented by the poorer classes. Our newspapers make frequent mention of the more prominent frauds committed upon unsuspecious strangers by the emigrant runners; but of this under-current, which is filching without cessation the hard earnings of the multitudes, poisoning health and morals alike, reducing the standard of mercantile integrity, and taking from the mouths of the sick and of the infants those most nutritious foods nature has kindly provided for their benefit—of this we hear little mention. The disease lies too deep and works too insidiously for its eradication to be hoped for. But this is not so. There is a cure for it; and this cure is the one adopted by Dr. Hassall. Let those who have the skill, and the time, and the taste for such pursuits, adopt the course he followed. Let purchases of articles likely to be adulterated be made in various places, and the results of their examination be exposed, together with the names of the tradesmen selling them. There is no fear but one would be sustained in this. All honest dealers would encourage it; for it would restore them to their rightful position. The dishonest could not help themselves. Such a

course, steadily pursued by a few individuals, would, we believe, soon produce as marked a change in this city as it has done in London. If one would undertake it, others would be likely to follow. The field is large, and will accommodate many laborers. We wish a commencement might soon be made upon *milk*. —See ADULTERATIONS DETECTED; *or, Plain Instructions for the Discovery of Frauds in Food and Medicine.* By ARTHUR HILL HASSALL, M. D.: London, 1857. H. Baillière, New York.

Foot, a measure of length derived from the length of the human foot, and consisting of 12 linear inches. For its length in different countries, see WEIGHTS AND MEASURES.

Fore. The sea term for the part of the ship near the head.

Fore and Aft implies lying in the direction of the head and stern; also, the whole of the vessel generally.

Forecastle, that part of the upper deck of a ship forward of the foremast; also, in merchant vessels, the forward part of the ship, under the deck, where the sailors live.

Foreigner, the natural-born subject of a foreign state.

Forelock, in nautical language, a flat wedge of iron, driven through the end of a bolt to prevent its drawing.

Foremast, the forward mast of all vessels.

Forestalling, in *law*, is described to be the buying or contracting for any merchandise or victual coming in the way to market; or dissuading persons from bringing their goods or provisions there; or persuading them to enhance the price when there. This, as well as *engrossing*, which is the buying up of large quantities of corn, or other dead victuals, with intent to sell them again, and *regrating*, the buying up of such commodities in any market, and selling them again in the same market, or within four miles of it, was looked upon as injurious to the public, by unnecessarily tending to raise the price of provisions; and accordingly several statutes were passed in Great Britain prohibiting forestalling under severe penalties. Statute 31st Edw. I. enacted that "no forestaller shall be suffered to dwell in any town who manifestly is an oppressor of the poore, a publike enemie of the whole cominaltie and countrie, who meeting grain, fish, herring, and other things coming by land or by water to bee solde, doeth make haste to buy them before other, thirsting after wicked gaine, oppressing the poore, and deceiving the rich." In Great Britain, by the statute of Edw. VI., it was enacted that whoever should buy any corn or grain with intent to sell it again, should, for the first offense, suffer two months' imprisonment, for the second, six months' imprisonment, and forfeit double its value, and for the third, be set in the pillory, suffer imprisonment during the king's pleasure, and forfeit all his goods and chattels. This statute further enacted, that no one could transport corn from one part to another without a license, ascertaining his qualifications as a man of probity and fair dealing.

The very imperfect knowledge of political economy that then prevailed led to the belief that the intervention of a third party between the producer and consumer tended to raise the price of provisions; and that corn would be bought from the farmer cheaper than from the corn-merchant. It may seem somewhat strange that though the law thus compelled the farmer to deal directly with the consumer, yet it in many cases prohibited the manufacturer from selling his own wares by retail, in order that the shopkeepers might not be undersold. The farmer was thus forced to carry on two trades; and part of the capital which should have been employed in the improvement and cultivation of the land, was obliged to be kept in his granaries and stock-yard; whereas the corn-merchant, by affording a ready market for the farmer's produce, enables him to employ his whole capital in cultivation; and the existence of a free competition obliges the corn-merchant to sell his corn as cheap as the farmer could afford to do. The principle here is the same as in manual labor. The workman who is wholly employed in one operation accomplishes a greater quantity of work, and can afford to do it at a cheaper rate, than one who has to carry on several operations; and, in the same way, the dealer whose whole stock is employed in a single branch of business acquires so easy and ready a method of transacting business that, with the same capital, he can carry on a much larger business, and so dispose of his goods cheaper than if his capital and attention were employed in a greater variety of objects. "If," says Adam Smith, "a merchant ever buys up corn, either going to a particular market, or in a particular market, in order to sell it again soon after in the same market, it must be because he judges that the market can not be so liberally supplied through the whole season as upon that particular occasion, and that the price must, therefore, soon rise."—E. B.

Fore-tackle; tackle on the foremast, and also tackle used for stowing the anchor.

Foretop-men; men stationed in the foretop, in readiness to set or take in the smaller sails, and to keep the upper rigging in order.

Forge, a furnace where wrought iron or other metal is hammered and fashioned with the aid of heat. This is called a smith's forge. In ships a very convenient kind is the portable truck forge. Forge is also applied to the blast furnace, in which iron ore is smelted; also, where the production of the blast furnace is fused, and afterwards beaten with enormous hammers, or drawn through cylinders of different diameters, in order to render the metal soft, pure, and more malleable and ductile. Such great workshops are otherwise called *shingling mills*. See IRON-MAKING.

An ordinary smith's forge consists of the hearth or fireplace, which is merely a cavity in masonry or brick-work, lined with fire-clay or brick, and containing ignited fuel, upon which a powerful blast of air is driven through the nozzle of a double-bellows, worked by a hand-lever. There are also portable forges, of small dimensions, but answering all the ordinary purposes of a smith's forge. Such are the traveling forges of armies, those used on board ships, etc.

Forgery (from the French *forger*, signifying *accudere fabricare*, to beat on an anvil, forge, or form) may be defined at common law to be the fraudulent making or alteration of a writing or seal, to the prejudice of another man's right; or it is the crime of imitating the subscription of another, adhibiting it to a deed, and putting that deed to use by acting under it, receiving property in virtue of it, founding on it as a title to sue or to defend, or transferring it to another. In considering forgery, it is necessary to attend, first, to the mode of proof by which the crime is established: and secondly, to the punishment which is inflicted on the perpetrator thereof.

The proof of forgery is either direct or indirect. The direct proof consists in the examination of the writer of the deed, and of the witnesses who sign the deed and attest the subscription. As the subscription of witnesses is an attestation to which the law gives effect to the extent of receiving it on their death as evidence of the regularity of the deed, and as weight is given to the subscription of a witness, even where he does not recollect having adhibited it; so, to cut down a deed regularly attested, the instrumentary witnesses, as they are called in Scotland, must be brought to swear to circumstances of sufficient force to invalidate the evidence given by their subscriptions; a species of proof which the law does not and indeed can not reject. The indirect mode of proof consists in an investigation of all the circumstances from which it may be inferred that the person by whom

a deed is said to be executed actually did not subscribe; as, for instance, an error in the date, an *alibi*, the stamp, the contexture of, or date impressed upon the paper, or a *comparatio literarum*. The comparison of the handwriting is made with genuine subscriptions of the same date as that alleged to have been forged; and where the real subscriptions differ materially from the one founded on, the forgery of the latter may be pronounced on with a considerable degree of certainty. it is an established rule, however, that the proof of forgery by a mere comparison of handwriting is not admissible.

Forgery in England.—The forging of, or giving in evidence forged deeds, etc., made punishable by fine, by standing in the pillory, having both eare cut off, the nostrils slit up and seared, the forfeiture of land, and perpetual pmprisonment.—5 ELIZABETH, 1562. Forgery was first pumished by death in 1634.

Forgery, Remarkable Executions for.—The unfortunate Daniel and Robert Perreau, brothers and wine-merchants, were hanged at Tyburn, January 17, 1776. The Rev. Dr. Dodd was found guilty of forging a bond, in the name of Lord Chesterfield, for £4200: the greatest interest was made, and the highest influence was exerted to save him, but when the case came before the council, the minister of the day said to George III., "If your majesty pardon Dr. Dodd, you will have murdered the Perreaus;" and he was hanged accordingly, June 27, 1777. Mr. Henry Fonntleroy, a London banker, was hanged November 30, 1824. Joseph Hunton, a Quaker merchant, suffered death, December 8, 1828. The last criminal hanged for forgery at the Old Bailey, was Thomas Maynard, December 81, 1829.

Forgery of Sea-Letters.—Congress enacted the following law, March 2, 1803:—"That if any person shall knowingly make, utter, or publish any false sea-letter, Mediterranean passport, or certificate of registry, or shall knowingly avail himself of any such Mediterranean passport, sea-letter, or certificate of registry, he shall forfeit and pay a sum not exceeding $5000 to be recovered by action of debt, in the name of the United States, in any court of competent jurisdiction, and if an officer of the United States, he shall ever thereafter be rendered incapable of holding any office of trust or profit under the authority of the United States."

Fork, a well-known instrument, consisting of a handle and a shaft terminating in two or more points or prongs. The *table-fork* did not come into use in England till the reign of James I., as we learn from a remarkable passage in Coryat, who thus solemnly relates the history of its introduction:—"Here I will mention a thing that might have been spoken of before in discourse of the first Italian townes. I observed a custom in all those Italian cities and townes through the which I passed, that is not used in any other country that I saw in my travels, neither do I think any other nation in Christendome doth use it, but only Italy. The Italians, and also most strangers that are commorant in Italy, doe always at their meals use a little forke when they eat their meate; for while with their knife, which they hold in one hand, they cut the meate out of the dish, they fasten the forke, which they hold in the other hand, upon the same dish, so that whatsoever he be that sitting in the company of any others at meale shall unadvisedly touch the dish of meate with his fingers from which all the table doe eut, he will give occasion of offence unto the company as having transgressed the lawes of good manners, insomuch that for his error he shall be at least browbeaten, if not reprehended in wordes. This form of feeding, I understand, is generally used in all parts of Italy, their forks for the most part being made of yronn, steele, and some of silver, but those are used only by gentlemen. The reason of this their curiosity is, because the Italian can not by any means indure to have his dish touched with fingers, seeing all men's fingers are not alike cleane. Hereupon I myself thought good to imitate the Italian fashion by this forked cutting of meate, not only while I was in Italy, but also in Germany, and often times in England since I came home: being once quipped for that frequently using my fork, by a certain learned gentleman, a familiar friend of mine, Mr. Lawrence Whitaker, who in his merry humor doubted not to call me a table *furcifer*, only by using a forke at feeding, but for no other cause."—E. B.

Formosa (Chinese, *Taewan*, i. e., *Terrace Beach*), an island lying about 90 miles off the coast of China, from which it is separated by the channel of Fo-kien. It is about 250 miles in length from north to south, and 80 in breadth, lying between north lat. 22° and 25° 30′ and east long. 120° 30′ and 122°. A volcanic mountain chain, rising to the height of upward of 12,000 feet, traverses the centre of the island from north to south, and separates the Chinese portion of it on the west from the independent portion on the east. Some parts of the coast present bold headlands; but all the west shore is flat and surrounded with rocks and quicksands, presenting no good harbors, with the exception of Kélung at its northern extremity. The Chinese portion of it is fertile and well watered, and possesses a very salubrious climate. Almost all grains and fruits may be produced on some part of the island, which is familiarly known as the granary of the maritime provinces of China. The rice-trade alone with these provinces employs more than 300 vessels. Among its other articles of trade, are maize, tobacco, sugar, fruits, timber, salt, sulphur, camphor, cotton, hemp, silk, etc. Of the eastern portion of the island little is known; the inhabitants bear no resemblance to the Chinese, but are apparently allied to the Malay or Polynesian tribes. They are of a slender form, olivo complexion, wear long hair, and blacken their teeth. They have no written language, and their religion seems to be confined to a superstitious belief in demons and sorcerers. Many of the aboriginal inhabitants are still to be found on the western portion of the island, living in independent villages; others, however, have become incorporated with the Chinese settlers, or live in villages of their own, under the general supervision of Chinese officers.

Formosa was unknown to the Chinese till about 1403. About 1634 the Dutch established themselves here, and built Fort Zealand on a small island commanding the harbor of the capital Taewan. After retaining possession of it for 28 years, they were expelled by the famous Chinese rebel Coxinga, whose successors ruled in the island till 1683, when it was taken by the Chinese. Taewan, the capital, stands on the west coast in north lat. 23°, east long. 120° 32′; but the entrance of its harbor is now choked up. The population of Formosa is estimated at from 2,000,000 to 3,000,000.

Fort, a small fortified place, environed with a ditch, rampart, and parapet. The use of forts is to secure some high ground, or the passage of a river, to make good an advantageous post; to defend the lines and quarters of a siege, and the like. Forts are built of different figures and dimensions, according to the exigences of the case. Some are provided with bastions, others with demi-bastions; some are of a square form, others pentagonal, and others again are stellated, having five or seven angles.

Forth, one of the largest rivers in Scotland. It is first formed of several small streams rising on the north of Ben Lomond, or flowing from Loch Katrine and the other lakes in the adjacent country. It proceeds easterly in a direct course for above 100 miles, receiving in its progress the tributary waters of the Goodie, the Teith, and the Allan above Stirling, and below it the Devon, the Carron, the Avon, the Almond, the Leith, the Esk, the Leven, the Tyne, and

others; and it discharges itself into the German Ocean in about 56° 10′ of north latitude.

The Forth, like other streams connected with the ocean, ebbs and flows twice in 24 hours, but the flood and ebb run about two hours longer in the middle than at the shore. The tide flows 4½ miles above Stirling shore. At this harbor spring-tides rise 7 feet 9 inches, and at Alloa, 19½ feet.

It was high water, according to Captain Thomas's observations in 1815, at

	H. M.	Spring Tides rise	Neap Tides rise
Elie Harbor.....	2 11 p. m.	14 feet.	6 feet.
Leith & Burntisland	2 15 "	16½ "	7 "
Hopetoun House...	2 30 "	17 "	6½ "

The tides at Leith and Kinghorn rise sometimes as high as 19 feet above low-water mark, the average being 17½ feet.

There are in the Forth, as elsewhere in similar rivers and arms of the sea, particular currents. Among the most remarkable are those known by the name of *Leakies* above the Queensferry, which are particularly observed from Culross to Alloa. These consist in an intermission of the tide at certain places during the flood, and before high water the sea ebbs. On the contrary, while the sea ebbs, and before low water, the ebb intermits, and a flow commencing, continues some time; after which the ebbing is resumed until low water. This is seen during two hours, and the irregularity occupies more or less of the river according as it is spring or neap tide.

The principal obstructions to the navigation of the Forth between Alloa and Stirling, have hitherto arisen in a great measure from the two fords of the river, the one called the Town Ford and the other the Abbey Ford, and from the channel being rendered shallow partly by large boulders and partly by accumulations of peat. The peat accumulations have arisen chiefly from the proprietors above Stirling clearing several thousand acres of their lands for cultivation, by removing the peat which covers them, and moving it into the river in order to be carried away by the current to the sea. This practice has been followed since 1732. The moss covering the soil varies in depth from 14 to 4 or 5 feet, but the greater proportion is 10 feet. Mr. Drummond, of Blair-Drummond, from 1783 to 1839, floated away upward of 1,600 acres of this substance.

The principal sand-banks which obstruct the navigation further down the firth are the Drum-sands, near Cramond, and the Sand-end, on the east of Burntisland harbor. The principal rocks which require to be avoided by the mariner are the South Carr Reef, lying N.N.W. from Dunbar, the North Carr, about a mile and a quarter east of Fifeness, the Ilae to the west of Kinghorn Ness, the Commons to the west of Burntisland, Craig Waugh S. E. one half E. of Inchkeith, and the Gunnet Rock, Pallas Rock, Long Craig, Briggs, and Harwit in its neighborhood; and several miles further west, and nearer Inchcolm, the Oxcares, Carcraig, and Mickry Stone. Many of these rocks are seen at the lowest ebbs; their position, together with the different land-marks, which are necessary to point them out to the mariner, are delineated on the admiralty charts, and the sailing directions for the Firth of Forth, contained in the *Coaster's Assistant*, which is published in Leith. To show their position still better, floating buoys have been placed upon Craig Waugh, the Gunnet, the Harwit, and the Pallas Rocks; and beacons have been erected on the Oxcares, the North Carr, and on the Long Craig, and on most of the other dangerous rocks, and on several shoals and sand-banks. Besides the provisions for aiding the navigation, there are two light-houses on the isle of May, one on the island of Inchkeith, and various other light-houses are now erected on all the harbors and landing-places of importance in the firth.

The anchorage of the Firth of Forth is excellent. Mr. Osborne, in a report to the Lords of the Admiralty on 2d May, 1853, says of it: "Between the Humber and the Frith of Cromarty there is no other harbor or anchorage into which large ships of war can safely run for shelter or rendezvous other than the Frith of Forth, and more particularly in the reach above the Queensferry, where the shelter is complete. But as the Frith of Cromarty is away from all important interests, the Frith of Forth must be considered the only war port north of the Humber, and therefore a most fitting place for a naval arsenal." But besides the great and important anchorage at St. Margaret's Hope, in the reach above the Queensferry, which is more particularly referred to in this Admiralty report, Leith Roads to the west of Inchkeith is another, which is capable of holding a large fleet of ships of war of any size. The minor anchorages in the firth, which are also very good, are at Aberlady Bay, the western part of Largo Bay, Burntisland, St. Davids, Limekilns, etc.

The landing-places or harbors in the Forth are, on the south side the harbors of Dunbar, North Berwick, Port Seton, Morrison's Haven, Fisherrow, Leith, Newhaven, Trinity, Granton, South Queensferry, Borrowstowness, Grangemouth, and Stirling Shore, and on the north side, Crail, Anstruther, Elie, Pittenweem, Leven, Methel, West Wemyss, Dysart, Kirkcaldy, Kinghorn, Pettycur, Burntisland, Starleyburn, Aberdour, St. Davids, Inverkeithing, North Queensferry, Charleston, Crombie Point, Culross, Kincardine, and Alloa. Great improvements and new erections have lately been made at most of these harbors which are of any note; and in particular, the Duke of Buccleuch's magnificent harbor in progress of formation at Granton, and the extension of Leith Pier into deep water, may be referred to. Of less magnitude is the deepening of the channel of the Forth between Alloa and Stirling by commissioners acting under the act of Parliament 6th and 7th Victoria, cap. 47. Since the passing of this act in 1843, a channel of about 500 yards in length has been formed through the Abbey Ford, giving about 3 feet 6 inches greater depth of water than formerly. A channel about 1,000 yards in length has also been formed through the Town Ford, which is not yet fully completed as regards its depth of water. In these operations many thousands of large boulder-stones and the peat accumulations which formed obstructions to the navigation have been removed, and no doubt is entertained by the inspectors, who have reported to government on this subject, but a depth of 16 or 17 feet at spring-tides will be obtained up to Stirling when the works in progress are completed. Upward of £9,000, including the expense of the act and of erecting a quay at Stirling, have already been expended by the Harbor Commissioners on these operations, and £7,000 more is about to be expended upon them. This sum is to be paid to the commissioners by the Town Council of Glasgow for damage likely to arise to the improvements in progress on the Forth, from the liberty obtained by the city of Glasgow to draw a large quantity of water from Loch Katrine. In addition to these sums, the revenue of the Forth Commissioners, which is considerable, will enable them still further to extend their works.

Further, the low-water ferry landing-place at Burntisland, belonging to the Edinburg, Perth, and Dundee Railway Company, is a great improvement at that port; and at Kirkcaldy, Buckhaven, and other harbors, extensive works are in progress under Harbor Commissioners.

The coasting and foreign trade of the Forth is carried on in vessels varying in size from 18 to 500 tons. The principal port to which they belong is Leith; but there are several whalers and large vessels engaged in the Australian, American, Mediterranean, and Baltic trades, which belong to other ports in the Forth.

The traffic in goods and passengers between the ports in the Forth and London, Greenock, Glasgow, Liverpool, Hull, Newcastle, Dundee, Perth, Aberdeen, Inverness, Peterhead, and almost every considerable sea-port in Scotland, is conducted chiefly by vessels of joint-stock companies, which vessels sail periodically. Joint-stock companies are also engaged in the Leith trade with Hamburg and Rotterdam. The Glasgow, Greenock, and Liverpool trade, is chiefly conducted through the Forth and Clyde canal.

The number and tonnage of the vessels belonging to the ports in the Forth in 1855 are as follows:

At Alloa, including the creeks of Kincardine and Stirling, 74 vessels, with a tonnage of	12,402
At Borrowstownness, including the creeks of Charleston and Limekilns, 47 vessels, with a tonnage of	3,781
At Grangemouth, 54 vessels, with a tonnage of	9,283
At Inverkeithing, 23 vessels, with a tonnage of	2,361
At Kirkcaldy, including the creeks of Largo, Leven, Wemyss, Dysart, Kinghorn, Burntisland, and Aberdour, 60 vessels, with a tonnage of	7,637
At Leith, including the creeks of Granton, Fisherrow, Cockenzie, and Dunbar, 176 vessels, with a tonnage of	25,404
Total 434 vessels, with a total tonnage of	60,868

E. B.

Fortified Island, an island in the India seas, lying off the coast of Canara, about a mile from the land, a little way north from the entrance to Lake Onore. The island abounds in cocoa-nut, palm, and plantain-trees, and has plenty of fresh water. It produces the best kind of carl, which is used by the natives in painting their houses. Its name is derived from its fortifications, which were greatly strengthened by Tippoo Saib, from whom it was taken in 1792 by three British frigates. It is upward of a mile in circuit. Long. 74° 27′ E.; lat. 14° 16′ N.

Fothering, a peculiar method of endeavoring to stop a leak in the bottom of a ship while she is afloat, either at sea or at anchor, which is performed by fastening a sail at the four corners, letting it down under the ship's bottom, and then putting a quantity of chopped rope-yarn, oakum, wool, cotton, etc., between it and the ship's side. By repeating the latter part of this operation several times, the leak generally sucks in a portion of the loose stuff, and thereby becomes partly and sometimes wholly stopped. Some persons prefer thrumming the sail, instead of letting down the loose stuff; but in this mode the sail is soon chafed through by the hole if the leak is considerable, without affording sufficient substance to stop it.

Foul, a sea phrase that is used in distinction from clear, and implies entangled, embarrassed. Hence, foul anchor, when the cable is twisted round the stock and flukes; foul bottom, when a bay is covered with weeds, grass, shells, filth, and rocks. Foul hawse means that the cables are turned round each other by the ship having swung the wrong way when moored. Foul rope, a rope entangled and unfit for immediate use. Foul water, is water troubled, and rendered turbid by the ship's bottom rubbing on the ground. Foul wind, is used to express that the wind is unfavorable, or contrary to the ship's course, as opposed to large or fair.

Foundery, or **Foundry**, the art of melting and casting metals. See COPPER; IRON.

Foundery of Small Works, or Casting in Sand.—The sand commonly used for casting small works is at first of a pretty soft, yellowish, and clammy nature; but it being necessary to strew charcoal dust in the mold, it at length becomes of a quite black color. The sand is worked over and over, on a board, with a roller and a kind of knife; and is placed over a trough to receive it, after it has by these means been sufficiently prepared.

This being done, the workmen take a wooden board of a length and breadth proportional to the things to be cast, and putting a ledge round it, they fill it with sand a little moistened, to make it duly cohere. They then take either wood or metal models of what they intend to cast, and apply them to the mold, and press them into the sand so as to leave their impression there. Along the middle of the mold is laid half a small brass cylinder, as the chief canal for the metal to run through, when melted, into the models or patterns; and from this chief canal are placed several others, which extend collaterally to each model or pattern placed in the frame. After this frame is finished, they take out the patterns, by first loosening them all round, that the sand may not give way; then they proceed to work the other half of the mold with the same patterns in just such another frame, only that it has pins, which entering into holes corresponding to it in the other, make the two cavities of the pattern fall exactly on each other. The frame, thus molded, is carried to the melter, who, after extending the chief canal of the counterpart, and adding the cross canals to the several models in both, and strewing mill-dust over them, dries them in a kind of oven prepared for the purpose. Both parts of the mold being dry, they are joined together by means of the pins; and to prevent them giving way, by reason of the melted metal passing through the chief cylindrical canal, they are screwed or wedged up as in a press. While the molds are thus preparing, the metal is fusing in a crucible of a size proportional to the quantity of metal intended to be cast. When the molds have cooled, the frames are unscrewed or unwedged, and the cast work is taken out of the sand, which sand is worked over again for another casting.

Foundery of Statues.—The casting of statues depends on the due preparation of the pit, the core, the wax, the outer mold, the inferior furnace to melt off the wax, and the upper to fuse the metal. The pit is a hole dug in a dry place, somewhat deeper than the intended figure, and made according to the prominence of certain parts of it. The inside of the pit is commonly lined with stone or brick; but when the figure is very large, they sometimes work on the ground, and raise a proper fence to resist the impulsion of the melted metal. The inner mold, or core, is a rude mass, to which is given the intended attitude and contours. It is raised on an iron grating strong enough to sustain it, and is strengthened within by several bars of iron. It is generally made either of potters' clay mixed with cow-hair, or of plaster of Paris mixed with brick-dust. The use of the core is to support the wax and the shell, and lessen the weight of the metal. The iron bars and the core are taken out of the brass figure through an aperture left in it for that purpose, which is soldered up afterward. It is necessary to leave some of the iron bars of the core, which contribute to the steadiness of the projecting part, within the brass figure. The wax is a representation of the intended statue. If it be a piece of sculpture, the wax should be all from the hand of the sculptor himself, who usually forms it on the core; though it may be wrought separately in cavities, molded on a model, and afterward arranged on the ribs of iron over the grating, filling the vacant space in the middle with liquid plaster and brick-dust, by which means the inner core is proportioned as the sculptor carries on the wax. When the wax, which is of the intended thickness of the metal, is finished, small waxen tubes, perpendicular to it from top to bottom, are filled, to serve both as canals for the conveyance of the metal to all parts of the work, and as vent-holes to give passage to the air, which would otherwise occasion great disorder when the hot metal came to encompass it.

The work being brought thus far, must be covered with its shell, which is a kind of crust laid over the wax, and which being of a soft matter, easily receives the impression of every part, which is afterward communicated to the metal upon its taking the place of

the wax, between the shell and the mold. The matter of this outer mold is varied according as different layers are applied. The first is generally a composition of clay and old white crucibles well ground and sifted, and mixed up with water to the consistence of a color fit for painting; and it is applied with a brush, by means of which it is laid on seven or eight times successively. For the second impression horse-dung and natural earth are added to the former composition; but for the third impression only horse-dung and earth are used. Lastly, the shell is finished by laying on several more impressions of this last matter, made very thick, with the hand. The shell, thus finished, is secured by several iron girths bound round it, at about half a foot distant from each other, and fastened at the bottom to the grating under the statue, and at top to a circle of iron where they all terminate.

If the statue be so large that it would not be easy to move the molds with safety, these must be wrought on the spot where it is to be cast. This is performed in two ways. In the first place, a square hole is dug in the ground, much larger than the mold to be made therein, and its inside is lined with walls of freestone or brick. At the bottom is made a hole of the same materials, with a kind of furnace, having its aperture outward; and in this a fire is made, to dry the mold, and afterward melt the wax. Over this furnace is placed the grating, and upon this the mold, formed as above. Lastly, at one of the edges of the square pit is made another large furnace, to melt the metal. In the other way, it is sufficient to work the mold above ground, but with the precaution of a furnace and grating underneath. When finished, four walls are run around it, and by its side a melting furnace is prepared. For the rest, the method is the same in both cases. The mold being finished, and inclosed as described, whether below ground or above it, a moderate fire is lighted in the furnace under it, and the whole covered with planks, that the wax may melt gently down, and run out at pipes, contrived for that purpose, at the foot of the mold, which are afterward exactly closed with earth, as soon as the wax is all carried off. When this is done, the whole is filled up with bricks thrown in at random, and the fire in the furnace augmented, until both bricks and mold become red-hot. The fire is then extinguished, and every thing being cold again, the bricks are taken out, and their place filled up with earth, moistened, and beaten a little at the top of the mold, in order to render it the firmer. These preparatory measures being duly taken, there remains nothing but to melt the metal, and run it into the mold. This is done by means of the furnace above described, which is commonly made in the form of an oven, with three apertures, one to put in the wood, another for a vent, and a third to run the metal out at. From this last aperture, which is kept very close while the metal is in fusion, a small tube is laid, by which the molten metal is conveyed into a large earthen basin, over the mold, into the bottom of which all the large branches of the jets or casts, which are to convey the metal into the different parts of the mold are inserted.

Foundery of Bells.—The metal for casting bells, it is to be observed, is different from that employed for casting statues; there being no tin in the statue metal, whereas in the bell metal there is a fifth or more.

The dimensions of the core and the wax for bells, especially a chime, are not left to chance, but must be measured upon a scale, or diapason, which gives the height, the aperture, and the thickness necessary for the several tones required. It is on the wax that the several mouldings and other ornaments and inscriptions, to be represented in relief on the outside of the bell, are to be formed. The clapper or tongue is not properly part of the bell, but is furnished from other hands. In Europe it is usually of iron, with a large knob at the extremity; and is suspended in the middle of the bell. In China a wooden mallet is used, which is struck by the hand against the bell; and hence the Chinese bells can have comparatively little resonance. The Chinese have a method of increasing the sound of their bells, by leaving a hole under the cannon; but this our bell-founders would reckon a defect.

The proportions of our bells differ very much from those of the Chinese. In ours, the modern proportions are, to make the diameter fifteen times the thickness of the brim, and the height twelve times. The parts of a bell are, first, the sounding bow, terminated by an inferior circle, which grows thinner and thinner; secondly, the brim, or that part of a bell whereon the clapper strikes, and which is thicker than the rest, thirdly, the outward sinking of the middle of the bell, or the point under which it grows wider to the brim; fourthly, the waist or furnitnre, and the part that grows wider and thicker quite to the brim; fifthly, the upper vase, or that part which is above the waist; sixthly, the pallet, which supports the staple of the clapper within; and, seventhly, the bent and hollowed branches of metal uniting with the cannons, to receive the iron keys, by which the bell is hung up to the beam, and which forms its support and counterpoise when rung out.

Fountain-tree, or **Til-tree**, a very extraordinary tree said to have existed formerly in the island of Hierro, one of the Canaries, and to have distilled water from its leaves in such abundance as to satisfy the requirements of those who lived near it. Whether such a tree ever existed is questionable; yet various writers have mentioned the fountain-tree of Hierro in apparently good faith. Glasse, in his *History of the Canary Islands*, published at London in 1764, alludes to it in the following terms:—"Many writers have made mention of this famous tree, some in such a manner as to make it appear miraculous; others, again, deny the existence of any such tree, among whom is Father Feyjoo, a modern Spanish author, in his *Teatro Critico*. But he, and those who agree with him in this matter, are as much mistaken as those who would make it appear to be miraculous. This is the only island of all the Canaries which I have not been in; but I have talked with natives of Hierro, who, when questioned about the existence of this tree, answered in the affirmative."

Frankincense, or **Olibanum tree** (*Boswellia serrata*) is indigenous to the mountains of central India, where it is known under the name of *Salí*, and as producing the olibanum of commerce, or the gum frankincense of the ancients. It is a lofty tree, with the foliage crowded at the extremity of the branches, and is frequent in the forests between the Sone and Nangpur, from which circumstance it may be inferred that it would be adapted to the soil and climate, in favorable locations, in some of our southern States.

Olibanum distills from incisions made in the bark of the tree during the summer months, occurring in the form of semi-transparent masses, or tears, of a pale-yellowish or pink color, solid, hard, and brittle. It has a bitterish acrid taste, and, when chewed, sticks to the teeth, and renders the saliva milky. When heated, it burns brilliantly, and diffuses an agreeable odor, in consequence of which, in the early ages, it was much used as incense in the sacrifices, and, in modern times, the Greek and Roman Catholic churches still retain the use of frankincense, in some of their ceremonies. It is seldom employed for other purposes, except as a perfume in the rooms of the sick, although other gums bearing that name are in more general use, and are by many regarded as identical with it; for instance, Lamarck designates the gum of the Amyris gileadensis by this name; Forskal and Sprengel, that of the Amyris kataf; while Linnæus erroneously thus denominates the resin of the Juniperus lycia.—*Patent Office Report*, 1855.

Franc, a French coin of the value of 18 cents and six mills, by mint valuation.

France. This important part of continental Europe extends from the 43d to the 51st degree of north lat., and from long. 8° 25′ east, to long. 4° 48′ west. The greatest length of France, exceeding 665 miles, is from east to west—from Alsace to Brittany, which projects into the Atlantic like a wedge, and without which France would approach in form to a square. Its breadth from north to south is about 576 miles; and its superficial extent, as stated in the *Statistique de la France*, is 52,768,618 hectares, equal to 204,355 square miles, or 130,787,160 English acres—nearly twice the total area of the British Isles.

Though in point of extent of coast and ready access from the interior to the sea, France is far inferior to Great Britain and Ireland, she is, on the other hand, more fortunate in these respects than the vast inland territories of Austria and Russia. She has the advantage over these countries likewise in strength of natural barriers, the Pyrenees forming a great bulwark on the south-west, the Alps on the south-east, and the Jura and the Vosges Mountains on the east. The Belgian is the only open part of the frontier.

France enjoys, upon the whole, greater natural advantages than any other country in Europe. Her territory is above a half larger than that of Great Britain and Ireland, and both her soil and climate are better—the climate being less equable indeed, but there being a greater amount of summer heat to bring the fruits of the earth to perfection. She has a greater proportion of arable land than any of her neighbors; the natural means of communication throughout her provinces are abundant and easy; she is well provided with all the useful metals except tin; and is better supplied with coal than any other country of Europe, but Britain. Even during the distractions of her great Revolution, though her foreign trade was annihilated, her agriculture and manufactures were extended and improved, her population was increased, and its condition ameliorated. The surface of France contains about 130,000,000 of acres. It is estimated that, of this quantity, the waste land, including roads and rivers, amounts to an eighth part; the arable land to near a half; the wood-land and pasture-land and meadows, each, to about a seventh; the vineyards to a 25th part; wild-land, quarries, buildings, orchards gardens, olive, and other plantations, making up the remainder. In addition to the vegetable productions that grow in England, the climate of France enables her to raise vines, olives, mulberries, and chestnuts. Wine and olive oil are two of her most valuable productions. The cotton trade has been for some time rapidly extending over the northern and eastern provinces; and Lyons has been long famous as the centre of the silk trade of Europe, a branch of manufacture that has been brought to great perfection in that city. The manufactures of woolen cloth, flax, hemp, and iron, are also very extensive, and have been carefully fostered under the protective system, which still prevails here, as elsewhere on the Continent, notwithstanding the example which has been set by Great Britain. Toward the end of the 17th century, the territory of France, then equal, or very nearly equal, to its present extent, appears to have contained about 20,000,000 of inhabitants. In 1791, it was found to be above 26,000,000, and in 1851 nearly 36,000,000. The government always maintains a large standing army, amounting on the peace establishment to about 350,000 men, but actually in December, 1854, to 581,000. Her armed fleet on service is about equal in number of ships to that of Britain, with 62,000 men.

Surface.—The surface of France exhibits, in general, an advantageous succession of high and low ground. Less level than Poland, the north of Germany, or the greater part of European Russia, it is, on the whole, less mountainous than Spain or Italy, and may with great propriety be compared to England, with this distinction, that while in the latter, the mountainous tracts are in the north and west, in France they are in the south and east. Passing over lofty ridges which form the frontier line of France on the side of the Pyrenees, the Alps, the Jura, and the Vosges, and confining our attention to the interior, we find throughout Flanders, Picardy, Normandy, and the countries to the north and south of the Loire, a level tract, diversified occasionally by hills, either insulated or in succession, but by none of the massy elevations entitled to the name of mountains. These we do not meet until reaching the south of Champagne and north of Burgundy, near the sources of the Meuse, the Moselle, the Saône, and the Seine. From this bleak quarter (lat. 47° and 48°), a very long range of mountains proceeds from north to south in a direction parallel to the course first of the Saône, and subsequently of the Rhône, until, on approaching the Mediterranean, they branch off to the south-west and join the Pyrenees. Their greatest height is in Auvergne (about lat. 45°), where this chain, or more properly a lateral branch of it attains, at the mountains called Cantal and Puy-de-Dôme, an elevation of fully 6355 feet, and has its highest ridge covered with snow during the greater part of the year. Another, but a much less lofty range, extends from Bordeaux to the south-east, a distance of 150 miles, until it reaches the Pyrenees. The smaller chains are numerous in the east and south-east of the kingdom—in Lorraine, the Nivernois, Dauphiné, Provence; also in part of the interior, particularly the Limousin and Guienne. They are interspersed with extensive plains, but, on the whole, the south and east of France are rugged and elevated tracts, and may be said to be to that country what Wales and Scotland are to Great Britain.

Rivers.—The course of the great rivers is easily connected with this view of the surface of the territory of France. The Moselle, the Meuse, the Marne, the Aube, the Seine, the Yonne, taking their rise on the northern side of the mountain chain, between lat. 47° and 48°, flow all to the north or north-west, until reaching the sea or quitting the territory of France. From the southern slope of the same range proceed the Saône, the Doubs, and the Ain. These, along with many smaller streams, are all received by the Rhône, which flows almost due south, with a full and rapid current, until it reaches the Mediterranean. The Loire has much the longest course of any river in France. It rises to the southward of lat. 45°, flows in a northerly direction above 200 miles; turns, near Orléans, to the west; is joined by the Cher, Indre, and Vienne from the south, and, after receiving the Sarthe from the north, falls into the Atlantic below Nantes. The Garonne, a river of less length of course, but of a greater volume of water, descends from the French side of the Pyrenees, flows northward, and after receiving from these mountains a number of tributary streams, of which the chief is the Arriège, turns to the westward near Montauban (lat. 44°), and falls into the Atlantic after being augmented by the waters of the Tarn, Aveyron, Lot, and finally the Dordogne—all flowing from the western face of the mountains of Auvergne.

France has very few lakes, either in the mountainous districts of the south, or in the great levels of the north and west. It contains, however a number of maritime inlets, forming inland bays, and communicating with the sea only by a channel of greater or less width. These occur partly in the south-west coast, in Gascony; but more in the south and south-east, in Languedoc and Provence. Their want of depth prevents them from serving as roadsteads for shipping, and they are useful chiefly for fishing, or for the manufacture of bay-salt.

Forests.—France has much less of artificial or ornamental plantation than England, and much more of natural forest, the total extent of ground covered by wood being computed at 17,000,000 of acres, or one

eighth of the territorial surface of the kingdom. Forests are found in almost every department. Lower Normandy contains several of considerable extent. There is a large one at Fontainebleau, only 45 miles from Paris; and a larger one to the north of the Loire, in the vicinity of Orléans. Those situated in the neighborhood of the sea, or of navigable rivers, or of great works, such as glass-houses and iron-founderies, have long been subjected to an improvident consumption, which is likely to be increased by the still heavy though reduced duties imposed on foreign coal, and by the undue encouragements given to the smelting of iron by the heavy duties which were, in 1814 and in 1822, laid on the importation of foreign iron; so that at present the principal forests are at a distance inland, particularly in the east, in the department of Ardennes, and in the long mountainous tract that forms the boundary of France on the side of Switzerland.

Climate.—In a country of so great extent, and of such diversified surface as France, it is difficult to condense a description of the climate under a few comprehensive heads. The most natural division is into the north, south, and central regions. The north, comprehending Flanders, Picardy, Normandy, Brittany, and in general all that part of France which would be bounded on the south by a diagonal line from lat. 47° on the west to lat. 49° on the east frontier, bears a great resemblance, both in temperature and produce, to the south of England, rain occurring frequently, and the country being consequently fit for pasture. There, as with us, the predominent culture is wheat, barley, oats, rye, and such fruit as apples, pears, cherries; also, hemp, flax, and rapeseed. It is here only in France, that the natural pastures are rich and extensive; here, also, the species of wood, oak, ash, elm, bear a close resemblance to ours. The central region may be said to comprehend the country to the south of the Loire, or rather of the diagonal line we have mentioned, until reaching a similar line in lat. 45° on the west and 47° on the east frontier. Here, with the exception of the mountainous parts, the winter is sensibly shorter and milder. Wheat, barley, oats, and rye, are still cultivated, but maize begins to appear, and vines become general. The weather in this great inland tract is much more steady than in the north. In the summer months there is little rain, and storms, when they occur, are frequently accompanied with hail; but, on the whole, the temperature is perhaps the most pleasant in France, being exempt equally from the oppressive heat of the south and the frequent humidity of the north. The third region, comprehending the whole breadth of the French territory from lat. 45° and 46′ to lat. 43°, and in some parts to 42° 30′, approaches in climate to the heat of Spain and Italy, rendering it necessary in the summer to suspend all active exertion during the middle of the day, and to reserve it for the morning and evening. A shaded situation is here the *desideratum* for a dwelling, and a supply of water for agriculture. In this region the heat invariably produces an exuberant crop where an irrigation can be supplied; hence the frequency of wells, which are generally worked by a wheel and some rude machinery. Wheat is partially cultivated; barley, oats, and rye, only on the high grounds; maize is very general, and vines supply not only the main article of export, but the usual drink of the inhabitants. The common fruits are olives and mulberries, and, in a few very warm situations, oranges and lemons. Pasturage is good only on mountainous or irrigated tracts. To pulmonic invalids the climate may be advantageous, but in this respect, also, material distinctions occur from locality, the winter in the south-east of France being at intervals very cold, from the *vent de bise*, a piercing wind that blows from the Alps and the mountains of Auvergne. Here, notwithstanding the latitude, the cold of winter is intense. Brittany, projecting into the Atlantic, is as rainy as Ireland or Cornwall. Normandy, with part of Picardy and French Flanders, may be compared to our inland counties. In the interior of France the rains are less frequent, but far more heavy; so that there is much less difference in the quantity of rain that falls in the course of the year than in the number of rainy days. The atmosphere of France is much less cloudy than that of Britain. The most frequent wind in the north of France, as in Great Britain and Ireland, is the south-west; it prevails, also, but to a less degree, in the central part of the kingdom. In the south of France the more common winds are from the north. The difference of temperature between London and Paris is not considerable, nor is the degree of heat found to be intense along the west coast of France, until reaching or rather passing Poitou. In the interior it is much more perceptible, being strongly felt at Lyons, Bordeaux, Toulouse, and still more in the latitude of Nimes, Aix, Marseilles, and Toulon. On the whole, the variations of climate between the north and south of France are considerably greater than between the north and south of Britain, where the effect of difference of latitude is so much modified by the vicinity of the sea, and where no such variation is known as the very material one indicated by the diagonal line from east to west, the latter being two degrees colder in consequence of the breezes and vapors of the Atlantic.

The harvest begins in the north of France between the 20th and 25th July, in the central part about the middle of that month, in the south about the end of June. September and October are the months of vintage. The great hazard to the corn of the central part of the kingdom arises from violent storms of rain and hail; in the south, from the want of rain in the spring. In the winter, the *vent de bise* often proves destructive to the olives. The great heats are in July, August, and September; a time of much annoyance in the south of France, from musquitoes, gnats, flies, and other insects; while even scorpions are found in that warm latitude.

Soil.—To exhibit a classification of the different kinds of soil is a task of difficulty in any extensive country, and in none more so than in France, where a striking difference prevails, not only in contiguous departments, but in adjacent districts of the same department. In Flanders, Picardy, Artois, Normandy, and the Pays de Beauce, a fertile tract to the south of Paris, the soil consists frequently of a loamy meld; in the central and southern parts of the kingdom it is often lighter; while the greater part of Brittany, and of the departments along the western coast, have a heathy soil, naturally unproductive, but capable of considerable improvement. But these collective estimates are liable to great deductions; and the attempts made by Arthur Young, and other statistical writers, to calculate the proportion of the different descriptions of soil, whether loam, heath, chalk, gravel, or the like, are considered by the French as far from successful; even the more systematic effort made by their own government, in the beginning of this century, to compute the value of land by *masses de culture*, that is, by classing all kindred soils under one head, proved altogether abortive. We shall forbear, therefore, all such vague calculations, and proceed to state the value of annual produce in the different departments, endeavoring to cast the latter in lots, according to their position and relative productiveness.

Harbors, Rivers, Canals, Roads, Bridges.—In this important point France is considerably inferior to England, her long tract of coast washed by the Atlantic and the Bay of Biscay being indifferently provided with sea-ports, and those on the southern shore of the Channel forming a striking contrast to the spacious maritime inlets on the English side. To begin from the north-east, Dunkirk has a small harbor, but improved in the interior of the town, approached on

the Dutch plan by a canal leading from the sea. Boulogne has a roadstead—which, however, has been much deepened and improved—indebted for its celebrity under Bonaparte to the facility of giving protection, by land batteries near its entrance, to a numerous assemblage of small craft. The port of Dieppe is exposed, and of course unsuitable for winter; that of St. Malo is better; while Cherbourg, on which immense sums have been expended, is now a port and arsenal of great utility and importance to the imperial navy. On doubling the projecting part of Brittany, we find, in the south-west of that province, L'Orient. Brittany also possesses Brest, the great maritime port of the Atlantic for the navy. Proceeding further to the south, we find Rochefort, at La Rochelle, a small but secure harbor, and at Bordeaux a river nearly equal in width to the Thames at London. From this there is no sea-port until we reach Bayonne, a place of no easy access. On the Mediterranean, France has the ports of Cette and Marseilles, the latter spacious and secure, and the great maritime port, arsenal, and dockyard of Toulon, which, with Cherbourg, Brest, L'Orient, Rochefort, and Toulon, are called, in ordinary parlance, *ports militaires*.

Nantes, though a large commercial town, adjoins a shallow part of the Loire, and vessels of burden are obliged to load and unload at Palmbœuf. The great dockyards and naval stations of the kingdom are at Brest and Toulon, both excellent harbors, and at Rochefort, which is situated on the River Charente, near its mouth. In all these the accommodation for shipping is the gift of nature; but at Cherbourg the case is very different, that port containing works, of which the labor and expense (see the article BREAKWATER, *Encyclo. Brit.*) have been very great. Its roadstead, extensive but open, has a sea-wall, affording protection from the swell of the sea; and its spacious dock, excavated since the beginning of this century, at an expense of £8,000,000 sterling, is capable of containing fifty sail of the line. Le Havre de Grace, the best mercantile harbor in the north of France, has also been formed at a large expense.

Inland Navigation.—The square form of France, favorable as it is for military defense, subjects the greater part of the country to the want of those ready and economical means of transport by sea which form the great physical advantage of Great Britain and Ireland. Unluckily, this want is very imperfectly supplied by the inland waters, canals being very little extended, and the navigation of the great rivers subject to many obstructions; occurring in one part from rapidity, in another from shallowness; at one season from drought, at another from overflow. The application of steam to navigation has corrected in part this most inconvenient tardiness; but the accommodation which is afforded by the Loire in the interior, the Rhône in the south, the Seine in the north, and the Garonne, with its Canal du Languedoc in the south-west, is but a small portion of what is furnished by our numerous intersections in England, or of what is wanted for so extensive a territory as that of France. The Canal of Languedoc, or the *Canal du Midi*, as it is now generally called, begun in the reign of Louis XIV. and completed in the year 1668, was the first example in Europe of inland navigation on a great scale. It is the most stupendous undertaking of the sort that has been executed in France. Its general breadth is sixty feet, its depth six and a half feet. It has 114 locks and sluices, and in its highest part it is 600 feet above the level of the sea. As a scientific work, it did honor to an age as yet little advanced in engineering; but in a pecuniary point of view it was unproductive, the tolls never having paid the interest of the very large sum (upward of £1,200,000 sterling) expended upon it.* The canal begins at Toulouse on the Garonne, remounts the valley of the Lhers, traverses the chain of the Monts Corbières, which joins the Cevennes to the Pyrenees, descends the valley of the Aude at Carcasonne, which it leaves at Ginestas to pass by Béziers, where it traverses the River d'Orb. Passing through Hérault above and near Agdet, it ends at l'Étang de Thau, at the place called le Port des Onglous. The navigation is however continued to the port of Cette by the canal of Cette, and thus the Atlantic and Mediterranean are united.

The canal of Briare is of earlier date, and of much less extent. The object here was to open a navigation from the Loire on the south to the Seine on the north, by a canal running almost due north, a distance of forty miles. It then receives from the west the canal of Orléans, commenced in 1675, and proceeding also from the Loire; after which the canal is continued to the north, under the name of Canal de l'Oing, till it reaches the Seine. This canal was begun in 1605, in the reign of Henri IV., and was completed in 1642, under Louis XIII. There are, besides this great work, several other important and extensive canals in France. The Canal du Centre unites the Saône and the Loire in the upper part of the course of the latter. It is 72 English miles in length, and was completed in 1791, at an expense of £456,000. Its summit level is about 240 feet above the level of the Loire at Digoin. It has 81 locks, 5½ feet of water, 48 of breadth at the water's edge, and 30 feet at the bottom. The Canal of St. Quentin, 28 English miles in length, was completed in 1810, but the navigation was far from perfect. In 1826 the necessary expenses to render the canal perfect were estimated at 4,000,000 francs. A concession of the canal was made to a Sieur Honorez in 1827, for a period of twenty years. On the 11th of July, 1847, the state entered into full and entire possession of the line which it had conceded. It joins the Scheldt and the Somme. The Canal of Besançon is extensive. It joins the Saône, and consequently the Rhône, to the Rhine. From the Saône it stretches a little above St. Jean de Losne, by Dôle, Besançon, and Mulhausen, to Strasbourg, a distance of 200 miles, where it joins the Rhine. The canal of Burgundy joins the Rhône to the Seine. This canal was opened along its whole line in December, 1832, by way of trial, and in the past year, 1854, it was completely opened. The canal of the Ourcq was dug, not for a commercial purpose, but to convey the water of that little river to Paris for the consumption of the inhabitants. At a village called La Villette, on the north side of Paris, there was some years ago excavated, at the cost of a million sterling, a basin, approaching in size to our London docks, and adapted, when the necessary canals shall be completed, for the deposit of merchandise brought from Havre and Rouen on the one side, and Flanders and Champagne on the other. In the south of France there is a short canal proceeding from the Rhône, near Tarascon, in a south-west direction, to the Mediterranean, called, from its vicinity to a well-known annual fair, *Canal du Beaucaire*. This canal traverses a great extent of marsh, which it has had the effect of draining. This water-way was opened to supply the imperfect navigation of the lesser Rhône, and of the two canals by which the communication from the Garonne to the Rhône was formerly carried on. These are among the chief canals of France. In the year 1836 there were seventy-four canals, having a total length of 3,699,913 metres, nearly equal to 2280 English miles. But since then large sums have been allocated by the state for canalization. In the fifteen years between the 12th July, 1837, and the 28th March, 1852, M. Ernest Grangez, chief-de-bureau at the ministry of commerce and pub-

* The cost of the canal was 17,000,000 francs, representing, according to M. Ernest Grangez (see *Precis Historique et Statistique des voies navigables*, p. 404), according to the present value of money, a sum of 30,000,000 francs.

lic works, tells us that, for this purpose, extraordinary credits have been taken for 241,936,361 francs. Of this sum 227,695,500 francs had been expended on 31st December, 1853. In 1854, a credit of 8,000,000 francs had been granted.

The canalisation of the Mayenne from Laval to Mayenne, of the Vire from the Pont de Gourfaleur to Vire, of Rheims to the Marne, of Bouc to Martigues, from Caen to the sea, from the Charente to Marennes, from La Rochelle to Marans, and from Saint Thébault to the lateral canal of the Loire, is in course of execution. But it is probable that this improved mode of communication may be superseded by the still greater improvement of the railroad, which had to a considerable degree engrossed the public attention in France. There are, however, obstacles to the progress of these improvements, arising partly from the mode of management adopted, and partly also from the high price of the materials required. All great works for the benefit of the community at large, such as canals, railroads, docks, and the like, are carried on at the expense, for the benefit, and under the control of the government. Plans and estimates must be made out and laid before the minister of the interior, who refers them to other public functionaries, namely, the prefect of the department, and afterward to the *bureau des ponts et des chaussées*; and when all these persons are satisfied, a public officer is then appointed to superintend the work. The tedious official routine, through which all public undertakings have to pass, tends to discourage individual enterprise, and accounts perhaps for the comparatively few works of this description which have been undertaken in France. The high price of iron, in consequence of the tax on foreign iron, has likewise operated as a great discouragement to the construction of railroads in France; and thus we have an additional illustration of the ruinous effects of this tax in obstructing the domestic improvements of the country.

Roads.—The great roads in France are managed, not, as with us, by county commissioners, but by government *bureaux*, or boards, the chief of which are at Paris. These boards are all under the direction of the minister of public works. The extent of road under their direction is about 30,000 miles; and the annual expenditure from £1,800,000 to £1,500,000, the whole of which is defrayed without one toll or turnpike. An attempt was made under Bonaparte to levy tolls; but this excited so much clamor in a country where commercial intercourse is carried on almost wholly by land-carriage, that it was found indispensable to seek the necessary funds from another source—a tax on salt. The great roads in France are in general in tolerable condition; but no epithet can convey an idea of the wretched state of the cross roads in almost every departmen[illegible] full of hollows, encumbered with stones, or inun[illegible]ed with water, they receive hardly any repair, b[illegible]ndoned, year after year, to the effects of the [illegible]. Notwithstanding the little done by governm[illegible] ...aver locomotion, the traffic on roads increased [illegible]fold in the thirty years between 1811 and 1841.

The great roads in France are much wider than in England, exhibiting frequently a long straight avenue lined on each side with chestnut or other large trees. Roads in France are classed under three categories—imperial roads 14 metres in breadth, departmental roads about 11 metres broad, and the *chemins vicinaux*. They are often paved like a street for many miles in succession; the art of road-making being as yet too little understood to prevent material injury from the heavy wagons and ill-constructed wheels, without resorting to this unpleasant alternative. Traveling is thus much less agreeable than in England, particularly as the villages want neatness and cheerfulness, while most of the towns along the road are disfigured by narrow crooked streets, in which new stone buildings are often mixed with antiquated wooden structures, such as have disappeared from our provincial towns for nearly a century past. The mails are now conveyed as with us by the railroad, but where there is no rail, in a kind of chariot called a *malle-poste*. The diligences, though somewhat improved in structure, are still clumsy and lumbering.

Railroads.—During the twenty years between 1828 and the 24th February, 1848, the railroad conceded to private companies in France amounted to 2267 miles. The revolution of February put a sudden stop to all enterprises of this kind. There was not a single concession made in 1848, 1849, or 1850. Indeed, some companies, unable to carry on the work confided to them, were either sequestrated or taken possession of by the state. The concession of the line from Paris to Rheims was made on the 10th July, 1851, of the line round Paris on the 11th December, 1851, of the line from Paris to Lyons, 5th January, 1852, of the line from Lyons to Avignon, 3d January, 1852. These and other concessions in 1852 added 2050 miles to the extent of rail. In 1853 the progress continued, and concessions to the extent of 1326 miles were granted. The year 1854 has been consecrated to the execution of the works, and more than 872 miles have been opened between the 1st January and the 31st December, 1854. At the breaking out of the February revolution, the concessions for railways amounted to 2237 miles; in 1854 they amounted to more than 6214 miles. At the end of 1855, 8728 miles additional were opened to the public. The length of lines conceded and executed have thus increased threefold in the space of a few years. About £80,000,000 have been expended on these enterprises. The credit required in the budget of 1856 for railways is equal to that of 1855—namely, 55,435,999 francs. At present (1855) the branch rail from Strasbourg to Rheims, from Ilec d'Allier to Clermont, with a branch to Nevers, from St. Germain des Fossés to Roanne, from Mons to Laval, from Marseilles to Toulon, from Caen to Cherbourg, from Bordeaux to Bayonne, and from Narbonne to Perpignan, are in course of construction. Some of these lines are to be opened this year, some in 1857, and some in 1858.

RAILWAY RETURNS.

		Eng. Miles.
1853.. Value received,	82,644,856 fr.	Length, 2,478
1854.. "	40,145,682 "	2,554

Bridges.—The French have few cast-iron bridges, all their great structures of this description being of stone. Of these, the chief are the bridges over the Loire at Orléans, Tours, and Nantes; those on a smaller scale over the Seine at Paris; and those over the Saône and Rhône at Lyons. The Pont du St Esprit above Orange, over the Rhône, is a long structure of 16 arches. At no great distance from it is the Pont du Gard, one of the most entire, stupendous, and beautiful monuments of Roman architecture, composed of a triple tier of arches, erected for the purpose of conducting an aqueduct over the river Gardon. This magnificent structure is 157 feet in height, 530 feet in length at the bottom, and 872 at the top. Of the lately-erected bridges in France, the most remarkable are those over the Seine at Neuilly near Paris, and over the Oise at St. Maixent, with two of larger dimensions, viz., one over the Garonne at Bordeaux, the other over the Seine at Rouen. Bridges, as well as roads, and all other means of intercommunication are under the direction of the minister of public works; a special school for the formation of engineers of bridges and roads is established at Paris. The territory of France is divided into 16 inspectorships of *ponts et chaussées*. The telegraphic communications are principally made by means of the electric telegraph, of which the government reserves to itself a monopoly, but private persons are allowed to avail themselves of it.

Agriculture.—The agriculture of France is in a very different state from that of England or Scotland, being marked by a degree of backwardness not a little surprising in a country so far advanced in many departments of art and science. The causes of this, however, are not of difficult explanation. France enjoyed for scarcely more than 38 years, *i. e.*, from 1814 to 1848, the advantage of a representative body; and the condition of the peasantry was long far inferior to that of the same class in England. No ecclesiastical reformation had taken place to remove a valuable part of the national territory out of the hands of indolent life occupants; and the *grands seigneurs*, the other great body of landholders, devoted their attention to Paris and Versailles, without bestowing a thought on their lands or their tenantry, except to extract from them the means of defraying their expenses in the capital. To this was added a system of taxation, less heavy, indeed, than that to which we are subjected in England, but extremely crude and impolitic, as evinced in the *gabelle*, or tax on salt used in private families, and in the *corvée*, or obligation on the peasantry to labor on the high roads. To these were joined the humiliating enactments of the game laws, and the more substantial injury of tithes; for the clerical body in France levied this pernicious assessment as in England, though possessing in property, lands of the computed rent of five millions sterling.

Another great drawback on French agriculture was the insignificant size of the occupancies, whether held as farms or as property. A French agriculturist on a small scale has little idea of selling his paternal acres, and converting the amount into a capital for a farm. He is much more likely to go on as the proprietor of eight or ten acres of land, and the cultivator of as many more. The mode of paying rent was equally singular; money rents were general only in the north or most fertile parts of France; they did not, on the whole, exist in more than a fifth or sixth of the kingdom before the Revolution. A more frequent species of tenure was by a grant made under the reservation of a fine, of a quitrent, or of certain servitudes, of which the least burdensome were sending corn to the mill, or grapes to the press, of the proprietor. But of all indications of poverty and backwardness, the most striking was the system of *métaire* (rent in kind); a practice by which a tenant, having little capital of his own, receives from the proprietor the live stock and implements necessary for cultivating his petty tenure, and divides with him its produce. This wretched method was and still is common, not indeed in the north and north-east of France, but in many of the poorer districts of the centre and south. There are, it is to be remarked, several distinctions in this system; the landholder, in some parts, providing only half the cattle and seed, and in others the whole. There is, of course, a corresponding difference in the apportionment of the produce.

Effects of the Revolution.—*La Révolution a été faite pour le cultivateur* is a common saying in France. Indeed, that great convulsion improved so much the situation of the agriculturists, by canceling, at one decisive blow, the tithes, the game-laws, the *corvée*, and other relics of feudal servitude, that, after all the horrors of Jacobinism, and all the tyranny of Bonaparte, a strong attachment to the Revolution survives among this pacific class. Further, the sale of the church lands transferred a valuable mass of property from indolent into active hands. But with this must terminate the eulogy on the Revolution, the farther progress made by agriculture, having been caused less by any political change, than by the gradual effect of experience, and the diffusion of information. The degree of agricultural improvement in France since the first Revolution has certainly been less than in England and Scotland, and in one very material point that memorable convulsion has tended to retard it; we mean by the law suggested by a jealousy of the ascendency of the *noblesse*, which obliges the owner of property, whether in land or money, to make an almost equal division of it among his children. The parent of two children has the free disposal of only one third of his property, and the parent of three children of only one fourth, the residue being shared equally among all. The claim of primogeniture is thus in a manner annulled; and a law which is apparently wise and equitable, proves the source of great injury to agriculture, by multiplying the petty plots of land throughout a country where they were previously far too numerous.

The following table, taken from official documents published by M. Duchâtel, exhibits in hectares the physical and agricultural division of the French territory, which has not materially changed within the last 20 years.

	Hectares.		Hectares.
Cultivable land...	25,559,152	Ground occupied by buildings....	241,842
Meadows.....	4,834,621	Roads, paths, places, etc.....	1,215,115
Vineyards.....	2,134,822	Rivers, lakes, and brooks.....	454,865
Woods.....	7,422,814	Forests and unproductive domains	1,209,432
Orchards and gardens.....	643,699	Cemeteries, churches, and public establishments.....	17,774
Willow and elm plantations, etc.	64,489	Total.....	52,762,698
Pools and watering places.....	209,431	(Acres, 130,772,475.)	
Downs, pastures, and heaths....	7,799,671		
Navigable canals.	1,631		
Diverse cultures..	951,984		

Statement of the Area of France, distinguishing approximately the various kinds of Soil of which the Surface is composed.

Mountainous country.....	4,268,750	Sandy soil.....	5,951,877
Heathy ditto, or landes.....	5,676,188	Soil of clay.....	2,282,885
Soil of rich molds..	7,276,868	Marshy and swampy soil....	284,445
Soil of chalk or limestone.....	9,788,197	Soil of various kinds.....	7,284,242
Soil of gravel.....	3,417,893	Hectares,	52,762,698
Stony soil.....	6,612,348	(Acres, 130,772,475.)	

The surprising proportion of land in France under tillage is owing to the smallness of the occupancies, the cheapness of labor, and the general use of bread instead of animal food by the humbler orders. The last is connected with another remarkable circumstance; the very slender proportion of land under pasture, of which the main cause is the dry climate of the southern and central part of the kingdom. In the proportion of poor and unproductive land France and England are nearly on a par, but the French incur a very heavy disadvantage by using wood instead of coal for fuel, and covering with forests many tracts which might be made available for either pasture or tillage. All France in 1840 gave 13·14 hectolitres per hectare. The total value of cereals in 1813 was 1,780,478,000 fr., or 9387 fr. per hectare, or 59 fr. per head. In 1840 (which was the last account) it was calculated at 2,565,238,000, at 18,900 fr. per hectare, or 77 per head. In 1840 there were 5,586,787 hectares in wheat. In England 2,130,900 hectares. The wheat product in 1840 was 6·07 for 1. In England it is 9 for 1. The total value in the United Kingdom, 978,500,000 fr. at 25 fr.; in France, 1,400,000,000 fr. at 20 fr. the hectolitre. The arable land of France in 1840 was 22,240,090 hectares. The value of the cereals, fallows, and artificial meadows in France reaches 2,351,518,900 fr., and their mean value 106 fr. per hectare. The vines in 1840 covered 1,972,340 hectares. The total return of French cultivation in agriculture reaches:

	France.
Cultivated ground, to the value of....	5,092,116,220
Pasturage, etc.....	646,794,905
Woods and forests.....	283,358,325
Total.....	6,022,169,450

In order to present this subject more fully, we add the following condensed tables of primary and secondary crops throughout France in the year 1853:

PRIMARY CROPS IN 1853.

	Acres cultivated.	Crop, Qrs. per acre.	Value.	Total production.
Potatoes	2,978,880	35·90	£3·462	£7,995,983·3
Wheat	13,305,748	4·28	3·125	43,858,333·3
Spelt	11,696	9·89	2·709	31,948,750·0
Meslin	2,251,044	4·46	2·505	5,788,333·3
Buckwheat	1,609,311	4·78	1·492	2,414,583·3
Rye	6,368,362	3·71	1·823	11,716,666·6
Barley	2,936,186	4·67	1·833	5,462,500·0
Oats	7,414,996	5·43	1·598	11,954,166·6
Maize	1,561,086	4·02	1.799	2,850,000·0
Total	38,237,302	....	....	£128,984,166·4

SECONDARY IMPROVED CROPS IN 1853.

Productions.	Acres.	Qrs. per acre.	Value per acre.	Total production.
Vine land	4,878,984	2·56	£3 363	£18,960,416
Gardens	891,382	....	8·975	6,214,583
Pulse	733,745	1·60	2·778	2,058,333
Mangel-wurtzel	142,493	36·18	7·957	1,147,916
Hops	2,043	·144	18·861	39,583
Rape	468,751	1·80	4·706	2,018,750
Hemp	485,288	1·35	7·755	1,425,000
Hemp-seed	....			
Flax	242,769	1·05	9·768	2,256,250
Flax-seed				
Madder	86,262	87·60	10·080	856,250
Tobacco	19,658	94·84	10·918	197,916
Olives	812,599	24·76	2·850	870,833
Chestnuts	1,125,826	4·08	·470	554,166
Pasture Meads	14,277,564	18·95	1·624	25,799,166
Total	28 561,771	....	....	£61,829,162

NETT RETURN OF LAND IN FRANCE, RECKONED BY THE ENGLISH ACRE, AND CALCULATED FROM OFFICIAL SURVEYS.

	s.	d.
Tillage (average of poor and fertile soils)	11	0
Vines	37	0
Meadow land	37	0
Natural pasturage, chiefly mountainous	3	6
Woods	7	8
Chestnut plantations	7	6
Orchards	15	0
Kitchen garden	45	0
Various kinds of culture, viz., nurseries, hop-grounds, olive-grounds, etc	18	6
General average of all France, per English acre	9	1

We proceed to add a few remarks on French agriculture, with reference to articles less known or less generally raised in England. Buckwheat is cultivated extensively in Brittany, Normandy, and the north of France, partly as green food for cattle, partly for the diet of the peasantry; it is generally sown in June and reaped in the end of September. Wheat and meslin are principally cultivated in the north, but the produce of the south, though less abundant, is generally preferred. Barley and oats are also more common in the north. Rye is raised pretty equally in all parts of France. Rape-seed is very general in French Flanders and Normandy; it supplies oil for the market and food for cattle, either when green or in cakes. Colza (colesced) is raised for the same purposes. Tobacco would be generally cultivated in France, were it not monopolized for the benefit of the State; hence its cultivation is confined to certain licensed districts, which are chiefly in Alsace and Picardy. The quality of the article produced under the royal monopoly is greatly inferior to that produced by private cultivators abroad, while the price being 400 per cent. higher, the latter is smuggled into France in great quantities, notwithstanding all attempts to prevent it. Flax is raised very generally, not merely in French Flanders, Alsace, and Normandy, but in the provinces of the west and south, where the family of almost every peasant rears a little stock annually to be spun by his wife and daughters. Hops are almost exclusively grown in those parts of France bordering on Belgium. Hemp also is raised in many parts of France, particularly in the north. Maize is a plant of great importance, whether for the food of man or of cattle; when intended to stand for harvest, it is planted in rows with very little seed, and yields more than twice the quantity of wheat that would be produced on the same space. During its growth the leaves are stripped regularly for the food of cattle; and in some districts it is sown thick and mown merely for that purpose. Maize and millet are chiefly grown in the south and south-east. Such valuable substitutes have, as yet, prevented turnips from being generally introduced into France. Even potatoes were long very little known, and it is only during the last half century that the dislike to this tuber has disappeared. Potatoes are more cultivated in the east than in any other district. Chestnuts are most common in the central part of France, where they supply no inconsiderable portion of the food of the peasantry. In the south the fruits are chiefly olives, almonds, mulberries, figs, and prunes; oranges are partially cultivated in the south-eastern extremity of the kingdom, on the verge of Italy, but with great uncertainty, for a severe winter is fatal to these trees, and in some measure also to the olives.

Irrigation is little understood in the north of France, but in the south the want of frequent rain renders it a primary object of attention; it in fact determines the *ratio* of productiveness, since the warmth of the sun seldom fails to ripen whatever has received an adequate supply of moisture. According to M. Becquerel, there has been a progressive annual increase in the number of hectolitres produced since 1813. There has been a very decided progress in agricultural improvement in every part of France, but notably in the west and south-west. The increase in productiveness in all manner of grains is estimated at 2,141,217 hectolitres.

The culture of the vine extends more or less over fully the half of France, beginning as far north as Champagne, and spreading over the country to the south and the west. This culture is, however, very limited in Champagne, and even in Burgundy; in Provence, and the lower part of Languedoc, the climate is warmer, and the culture general, though not managed with such skill as along the banks of the Garonne, where the spirit of improvement is excited by a demand for foreign markets. As vines succeed in light and unproductive soils, their culture gives a value to much ground which would otherwise be useless; and the petty subdivisions of land are here less injurious than in the case of corn. From the great variety of soil and climate, the quality of French wines is very various. The amount produced has been considerably increased since 1790, as well from the division of many large estates, as from the quantity of waste land which has been brought into culture. It is, however, remarked by M. Moreau de Jonnès (*Statistique de l'Agriculture de France*, 1848) that the consumption of wine in France has remained stationary since 1791, and that the quantity consumed by each individual is not more than it was half a century ago. Considering the increase of wealth and population, M. Jonnès calculates that the consumption should have increased 50 per cent. It is computed that nearly 5,000,000 acres of land are planted with vines, and that the value of the annual produce is from £28,000,000 to £30,000,000, of which about a tenth or twelfth part only is exported. It is very difficult to say to what extent the vine disease and the excision of vine branches in consequence thereof, has affected the production of wine either in quantity or quality. It has unquestionably had the effect of raising the price of the finer wines from 25 to 35 per cent., and of raising the price of brandy, during the last two years, nearly 300 per cent.

QUANTITY OF WINE PRODUCED IN FRANCE DURING THE FOLLOWING SEVEN YEARS, IN IMPERIAL GALLONS.

	Imp. Galls.		Imp. Galls.
1848	1,125,667,944	1852	636,788,223
1849	782,214,686	1853	408,557,774
1850	988,786,166	1854	237,377,118
1851	867,848,038		

Average annual produce before the oïdium appeared, 924,000,000 gallons, worth £22,516,220 sterling.

NUMBER OF IMPERIAL GALLONS OF WINE DISTILLED DURING THE FOLLOWING SEVEN YEARS INTO SPIRIT OF WINE AND BRANDY, THE PROPORTIONS BEING ABOUT TWO THIRDS SPIRIT OF WINE AND ONE THIRD BRANDY.

	WINE. Imp. Gallo.	SPIRIT. Imp. Gallo.
1848	151,800,000	19,800,000
1849	206,800,000	24,200,000
1850	178,800,000	23,100,000
1851	215,600,000	28,600,000
1852	211,200,000	27,500,000
1853	110,000,000	13,420,000
1854	92,400,000	11,990,000

The exports of wine and brandy from France for the following four years, are as follows:

	WINE. Imp. Gallo.		BRANDY. Imp. Gallo.
1851	50,149,078	1851	
1852	58,991,190	1852	7,488,448
1853	44,180,488	1853	5,898,794
1854	28,808,912	1854	3,412,442

It is a curious fact that the effect of the *oïdium* or vine disease has for the last few years caused an importation of foreign wine into France for home consumption. The following is an account of the imports of foreign wine and spirits into France for the years 1852-4:

	WINE. Imp. Gallo.		SPIRITS. Imp. Gallo.
1852	76,494	1852	285,978
1853	98,494	1853	280,802
1854	2,670,580	1854	1,888,458

It will be observed, that the import immensely increased during the last year, owing to the large quantities used for the supply of the French army in the Crimea.

Of the spirits in the above table, 802,019 gallons were rum imported from England.

A quantity equal to about a sixth of the wine is made into brandy, for brandy is distilled wherever vines are grown; and of it also the best in quality is in the vicinity of the Garonne. This important and staple branch of French industry has been very seriously injured by the prohibitory system of custom-house laws, which were extended and increased in rigor during the reigns of Louis XVIII. and Charles X., and were not much mitigated during the 18 years' reign of Louis Philippe. Many of the leading statesmen of France still evince a most mistaken partiality to the prohibitive system. France, by excluding the produce of other nations, virtually deprives, or greatly limits, by the same laws, the reception of her own produce into foreign countries. It is clear that they must pay for the wines of France with their own produce, which, if France refuse to receive, they have no other equivalent to give her in return; they must procure an equivalent from foreign countries, and the effect of this is to restrict the trade, by raising the price of French wines. Accordingly, it appears that while France exported to England from 16,000 to 20,000 tuns of wine when the population was only 5,000,000, this supply had fallen off, partly owing to the heavy duties imposed in Great Britain, and partly to the prohibitory duties imposed in France on British produce, to 1,800 tuns, while the population of the country had in the mean time greatly increased; a melancholy illustration of the effects of that illiberal policy which pretends to improve commerce by prohibiting the free intercourse of commercial countries.

France is the largest producer of beet sugar in the world. The origin of the manufacture must be traced from the year 1807, but 40 years elapsed before the manufacturer of this article was enabled to cope successfully with colonial sugars. From France the culture spread through the different countries of Europe, even into the interior of Russia; and it is calculated that there is now produced of this kind of sugar on the Continent of Europe not less than 360,000,000 pounds, nearly one half of which is manufactured in France. In the vicinity of Lille, the average yield of the sugar is 16 tons per acre, and at Valenciennes, 19 tons; in some localities 25 tons are produced. The annual manufacture of sugar is about 40,000 tons, and the non-crystallized matter extracted from the lees and dregs, furnishes enormous quantities of sweetening matter to breweries, and also to the wine-doctors and wine-falsifiers of Cette and the Gironde. Nor is this the only use to which beet is turned, as a large quantity of spirit is distilled from it.

The minuteness of the *Cadastral* survey has led to official calculations in France of products which have not yet engaged the attention of other governments. Madder is cultivated on a small scale, partly in the north, partly in the south of France; its chief use is in dyeing woolens and cottons. Woad is used for yellow and green colors; saffron, cultivated formerly to a great extent, is now confined to one district (the Gatinois) in the south of France; hops are raised only in Picardy and French Flanders.

Subjoined are the values of the following articles produced annually in France:

Wine	£23,000,000
Raw silk	800,000
Hemp	1,200,000
Flax	800,000
Madder	200,000
Wood for fuel, and timber of all kinds	5,600,000
Olive-oil, rape-seed, and colza-seed	2,800,000
Tobacco	800,000
Chestnuts	800,000
Totals, 1854	£34,800,000

Of the pasturage ground of France, occupying one eighth of its territory, the chief part is in Normandy, Brittany, and other humid quarters of the north and west. In the south, the natural pasture is confined to particular districts, chiefly mountainous; in the low grounds, the grass, whether natural or sown, is brought forward only by means of irrigation. Clover and sainfoin are cultivated in France, but chiefly in the north and north-east; lucerne is much more general, being raised not merely in the north, but in the central and southern provinces, wherever irrigation is practicable and the soil and climate are favorable. The art of improving cattle by breeding is little understood in France, nor is there much judgment shown in gradually fattening them by a removal to richer pastures. Still the beef and mutton of the north and west are very good, more especially what is called the près salló mutton, *i. e.*, sheep fed on the salt marshes. Their price varies from province to province, but very seldom from year to year; the general rate was 30 per cent. less than in England, but within the last four or five years the price of meat has risen much in France, and closely approximates to the price in England. Butter is made and used throughout the chief part of France, as in England, but cheese comparatively little. In the south, however, even butter is little known, and its place in cooking is supplied by olive-oil, which is largely used throughout southern Europe. One of the latest novelties in French pasturage is the introduction, in 1819, of a large flock of Cashmere goats, which were sent to browse in the eastern Pyrenees, and are said to experience but little inconvenience from the change of climate.

Horses.—In the number of horses, as well as in their size and beauty, France is greatly inferior to this country. In the performance of labor, however, the inferiority is much less conspicuous; large, old-fashioned carriages, drawn by four or six horses, are seen proceeding along a paved road much more easily than we should anticipate from the weight of the vehicle, the knotted harness, and the diminutive size of the animals. The same observation is applicable to the plows, the carts, and the wagons of France, which are awkwardly built, but all dragged on with expedition, the strength of the horses surpassing the promise of their appearance. A French diligence, in the provinces in which such carriages still run, performs only five miles an hour; but this is owing less to inferiority in the horses than to the state of the

roads, and to the general want of dispatch at post-houses. Of the aggregate of horses in France, more than half belong to the northern provinces—Normandy, Brittany, Picardy, Alsace, and the Isle of France. In the central and southern departments a great proportion of the work is done by oxen, which are more suitable to petty farms and mountainous districts.

Sheep.—Sheep are reared in almost every province of France, the gentle elevations of the north and the mountains of the south being alike favorable to them. The mutton is good; but in the art of improving the fleece, the French have as yet much to learn. Merinoes were first brought from Spain in 1787, and formed into a royal flock at Rambouillet. The consumption of meat in the country then was small, and consequently the first desire was to improve the wool. The quality, originally good, has been progressively improved, and distributions of Merinoes have been successively made to proprietors of sheep pastures in all parts of the kingdom. The consequence has been, that in many districts the weight of the fleece has been nearly doubled. The sheep-farming of France appears just now to be in a transition state; its *past* history offers many points of instructive deduction, while from its future we may expect very beneficial results. These imported sheep were used for crossing with the native breeds, to which but little attention had been paid either as regarded the carcass or the fleece. As time advanced, these crossed breeds increased with varied success; in some districts the wool produce was permanently improved by continuing to introduce pure blood; in others it was found more advantageous to develop the physical organization of the animal. The result has been that, notwithstanding the laudable endeavors of the fleck-masters to obtain a breed associating both weight and quality of wool with the production of meat, that end has not been satisfactorily obtained; the flocks still remain in an intermediate condition, neither producing the fine quality of wool of the Saxon, nor the weighty fleece or carcass of the English sheep. To encourage the rearing of sheep, a duty of 20 per cent. was in 1822 laid on foreign wool.

Mules.—Mules are almost as little known in the north of France as in England; but in the central and southern parts they are very generally reared. Poultry, in France, are both larger in size and more abundant than in England, more especially in Normandy and the department of La Sarthe.

VALUE OF PRODUCTIONS OF THE SOIL AT DIFFERENT EPOCHS.

Years.	Inhabitants.	France.	France per head.
1700.....	19,700,000	1,500,000,000	77
1760.....	21,000,000	1,526,000,000	73
1788.....	24,000,000	2,081,233,000	85
1813.....	30,000,000	3,336,971,000	113
1840.....	35,540,000	6,052,169,000	180

with the domestic animals, 7,502,905,000 and 224.

Even in the north and north-east of France, the farms are of small extent. To occupy 200 acres, or to pay a rent of £200 a year, places one in the foremost rank of farmers. Larger possessions are common in pasture districts, that department of agriculture admitting, in France, as in England, of a greater concentration of capital and extension of business than in the case of tillage. But such districts are rare; and in by far the greater part of France the farms under tillage are of fifty, forty, thirty, and often as small as twenty, or even ten acres, there being, it is computed, no fewer than three millions of such occupancies in the kingdom. In the south of France the system of *métairie* (paying rent in kind) is still prevalent, and nearly on the same footing as in Lombardy and Tuscany. That such insignificant occupancies are adverse to all enlarged ideas of farming, is sufficiently obvious; and to their many disadvantages there can only be opposed this single benefit, that no spot of tolerable soil is neglected, even the space given by us to hedges being reserved for culture.

The beneficial effect of long leases is as little understood in France as it still unfortunately is in a great part of England. The common method is to let land for periods of three, six, or nine years. The peasantry, though illiterate, are not slow or phlegmatic. They exhibit, as Frenchmen in general do, no small share of intelligence, of sprightliness, and of activity in the individual, with very little concert or combination in the mass. They are content to hand down the family occupancy from father to son, without any idea of altering their mode of life. The dwellings of the farmers, and still more of the cottagers, are like those of our forefathers half a century ago; the outside having frequently a pool of water in its vicinity, while the inside is miserably bare of furniture. In the comparative trials that were made at the French Exhibition of 1855, the superior character of the English agricultural implements over those of France was made very evident—in none, perhaps, more, than in the plowing trials, when the dynometer showed that while it required only a force equal to 17·01 to turn over a certain quantity of earth in a certain time with the best English plow, it required a force of more than 27 to do the same with the best French one. The diet of the French peasantry is exceedingly simple. Bread and cider, with soup, peas, cabbage, or other vegetables, form its chief ingredients in the northern provinces; while in the central and southern ones the same aliments are in use, with the substitution of thin wine (*vin du pays*) for cider, and of chestnuts for the pears and apples of the north. Butcher-meat is reserved for the tables of the middle and upper classes.

The landholders in France give little or no attention to beautifying the country; its aspect is consequently monotonous, without plantations, seats, or cheerful cottages. The peasantry live in villages, frequently ill built and inconveniently situated. The purchase of land, however, is the favorite mode of investing money in France. It sells, in general, for twenty-five years' purchase; while the public funds seldom fetch above sixteen or eighteen. There is at Paris a society similar to the Board of Agriculture in England, and, forming, like it, a central point for corresponding with the different agricultural societies in the kingdom. It holds its sittings twice a month, and a public meeting annually for the distribution of prizes. The French have also (since 1819) a corn law, permitting imports and exports only when the home market shall be above or below a specific rate. The chief difficulty the French government have to contend with in regard to the corn trade, is the popular prejudice that freedom of export raises the home price.

Timber.—Of the 18,350,093 acres which are covered with wood, in 1836, there belonged to government 2,547,800 acres, which were divided into 1473 forests. A very small part of this is allowed to grow into large timber. The rest is subject to an annual cutting and sale, for fuel; coal being very little used in France, except for forges, glass-houses, and other large works. In the government forests gross mismanagement took place during the disorders of the first Revolution. Extensive tracts were sold for an insignificant consideration, while in those that remained timber was felled with a lavish hand, and without any regard to the ultimate effect on these valuable properties. In 1801, however, a special board, appointed for the care of the forests, introduced the most beneficial regulations. In the years of financial pressure (1815, 1816, and 1817), it was proposed to effect sales of these great domains; but a fair price being unattainable, government continues to keep them. During the monarchy the revenue derived from the wood annually cut and sold amounted to £700,000 or £800,000 sterling.

The administration of the forests is (1855) placed under the direction of the minister of finance. The French territory, comprising Algeria, is divided into 29

arrondissements forestiers, at the head of which is placed a *conservateur* who corresponds with the administration, and who has under his orders a number of inspectors and sub-inspectors. Under these are the *gardes généraux*. Every one employed in the forests must be twenty-five years of age, but this provision may be dispensed with if the employé be a pupil of the *Ecole Forestière*. There are (1855) 32 *conservateurs*, 200 *inspecteurs*, 100 *sous inspecteurs*, and 500 *gardes généraux* of forests in France.

Fuel being comparatively little wanted in the south of France, the forests are confined to remote and rugged situations. These, like most of the forests of the kingdom, harbor a multitude of wolves, which are frequently destructive to the sheep and lambs. Regular officers, called *lieutenants de louvetrie*, are appointed for wooded districts; and on occasions of heavy loss, recourse is had to a general *battue*, which seldom results in any sensible reduction of the number of wolves. Bears also are found in the forests; but they are much more rare, being confined to the elevated districts in the Alps and Pyrenees.

Mines and Quarries.—France yields in this essential article of produce, not only to Britain, but to Germany, to Russia, to Sweden, and to Hungary. According to the most approved works recently published, the mines of France may be classed into five groups, namely, the mines of the Vosges and the Black Forest; those of the central provinces of France; those of Brittany; those of the Pyrenees; and those of the Alps. It is not many years since the mines of the Vosges yielded above 30,000 cwt. of lead, and a small quantity of silver, besides copper mixed with silver. The produce did not, it is probable, repay the expense, as they have since been abandoned. There are now a very few copper mines in the Vosges. In the central part of France there are numerous mines of lead, but they are not productive. They are chiefly situated in the department of La Lozere; and they yield annually, along with the lead, 1600 marcs of silver. The only metallic mines of any consequence in Brittany now are the three great mines of *galère argentifère* of Poullaouen and Huelgoët; and there is one mine of what is called in the divisional nomenclature of the minister of commerce and public works, *plomb argentifère*. In the chain of the Pyrenees there is only one mine of copper, which has long since been abandoned. There are, however, numerous iron mines, which furnish materials for more than 100 forges. The chain of the Alps contains many mines of iron, but is not rich in other metals; it possesses some unproductive mines of lead, and one of silver, which has long been abandoned. There are some appearances of gold in the department of the Isère, but not such as to encourage any trial of their value. If there are few other mines, those of iron are in great abundance, being thirty-eight in number, scattered throughout the country, and of these the produce is every day improving. The whole value of the metallic produce of France was estimated in 1828 to be equal to £3,139,595. The number of mines was estimated in October, 1854, at 824, viz., 448 of coal, 177 of iron, 199 of other substances; and the number of workmen they employed in 1854, at 33,634. (*Travaux Statistiques des Mines de 1847 à 1852.* Imprimèrie Imperiale, Octobre, 1854.) The working of mines is impeded in France by the want of good roads and canals by which to convey the ore and the coal for smelting it. The production of iron has been encouraged by the heavy duties on foreign iron. In 1814 a duty was imposed of fifteen francs per fifty kilogrammes, or 12s. 6d. per 110 lbs. imperial, on all foreign iron imported, which was, in 1822, including the decime or the tenth added to all duties, raised to £1 2s. 11d. on all coal-worked foreign iron. But this prohibition did not bring prosperity to the trade, though by these duties the price of iron in France was £23 9s. 2d. per ton, while English iron was sold at £9 6s. 8d. It is estimated that these heavy duties on foreign iron cost the agriculturists of France, in the additional expense of plows and other implements of agriculture, a sum varying from £1,500,000 to £2,000,000 a year. (See *First Report on the Commercial Relations between France and Great Britain*, p. 78.) Estimating the annual consumption of iron in France to be 160,000 tons, and the difference of price between French and English iron to be £10 per ton, the law of 1814, which imposed a duty on foreign iron, and the law of 1822 which increased that duty, can not have cost the French people less than £30,000,000 sterling of direct loss; while it is scarcely possible to calculate the indirect evil of this monopoly or protecting duty in favor of the iron-masters. One reason of the high price of French iron is the want of coal, an evil which is aggravated by the heavy duty on foreign coal in consequence of which the French are compelled to employ wood in their forges; and it is calculated that one fourth part of the wood cut down in the forests is consumed in the manufacture of iron. Coal has been discovered in more than half the departments of the kingdom (in forty-five departments), and would doubtless be traced in others; but the want of water communication limits the consumption of this article almost to the place where it is produced. In a report to the present Emperor of the French in 1854, by the minister of commerce and public works, that functionary attributes the high price of native coal in France not to the method of working the mines, or to the insufficiency of the machinery, but to the want of better intercommunication both by land and water. (*Resumé des Travaux Statistiques des Mines de 1847 jusqu'a 1852.*) It is a fact that more than half the departments that consume the coal of the Loire pay for it a price four, five, and six times higher than it costs at the mouth of the pit. (*Rapport addressé à l'Empereur par le Ministre ou department de l'Agriculture et du Commerce*, 1854.) One fifth part of the coal consumed in France is used in the department Du Nord. At St. Etienne, near Lyons, are excellent coal mines; but there being no iron mines in the vicinity, nor of course iron-works, there is no consumption of fuel on a large scale. The coal is only used for domestic fuel, and for the manufacture of hardware. M. Costaz, in an estimate contained in his work on the agriculture and commerce of France, makes the coal produced in France to amount to 15,310,687 metrical quintals; the value of which he estimated at between £700,000 and £800,000. The quantity of coal imported from Great Britain amounted in 1831 to 40,000 tons, though subject to a heavy duty of one franc sixty-seven centimes per hundred kilogrammes, or 1s. 4½d. per 220 lbs. imperial; and there were imported from Belgium, the duty being thirty-three centimes per hundred kilogrammes, 440,000 tons. The importation of coal in 1853 rose to 2,224,555 tons, of iron (*fonte brute*), to 73,689 tons. In December, 1853, the importation of iron went on increasing. The heavy duty on coal operates most injuriously on the industry of France. It is a most serious impediment to the working of the iron mines, for the encouragement of which such heavy duties are imposed on foreign iron. But such is always the effect of the prohibitory system. It pulls down with one hand what it builds up with another. The iron-masters and the coal-owners have each a monopoly of the home market. But is it not clear that these two monopolies run counter to each other, and that the iron trade is encouraged by the one, while it is most seriously discouraged by the other, and the whole inhabitants of France are taxed in a much higher price for fuel by the heavy duty laid on the importation of this useful article? Steamboat navigation is also discouraged, so that no steamboats ply regularly between any of the Atlantic ports of France. A steamboat which in England could be navigable at an expense of £2280 for coal, would

cost in France £5700, about 18 per cent. on the capital employed. It is the owners of forest property who are the most zealous supporters of this duty, an impost which benefits them at the expense of the whole of France, and indirectly depresses the national commerce and industry in its most important branches. For many years only a small portion of Paris was lighted with gas, which is ascribed to the high price of iron pipes; and the supply of water is also impeded by the same cause. (An imperial decree of the 22d November, 1853, materially reduces the customs duties on the importation of coal and iron. Coal paid with the *décime* 55 centimes per 100 kilogrammes upon the greater part of the French frontier from the Sables d' Olonne to Dunkirk; upon the remaining portion of the frontier it paid 33 centimes, by the land frontier, except in certain places, by the Meuse, and in the department of the Moselle. Henceforth the great zone from the Sables d'Olonne, and from that by land to Helluin, is to have but one duty—amounting to 33 francs for French, and to 88 francs for foreign vessels. The rest of the maritime frontier is assimilated to the principal part of the land frontier. A double duty to that levied on coal was charged on coke. Henceforth coke is only to pay a half beyond what is levied on coal. As to iron, from the 1st of January, 1855, there is no distinction between iron smelted by coal or wood. The *fonte brute* is to pay 4 francs 40 centimes the larger bars, 11 francs the smaller bars, and steel 33 francs. Rails for railroads are to pay 132 francs. The greatest reduction is on steel.) The mines, like other large undertakings in France, are under the direction of government, being superintended by a board at Paris (*Conseil Général*), and having an *Ecole Impériale* with public teachers, the whole under the control of the minister of the home department. This, however, does not prevent their machinery being in general very clumsy and antiquated.

Turf fit for fuel, or peat, is found in various parts of France, and will be more used as wood becomes progressively scarcer. This article is produced in the departments of Gard, Isère, the Lower Rhine, the Somme, Pas de Calais, Loire-Inferieure, l'Isere, Seine-et-Oise, Oise, Aisne, Doubs, Marne. The cutting and preparation of turf is computed to occupy the labor of from 50,00. to 55,000 workmen on an average of 40 days. The greatest turf-producing department in Fran is La Somme.

Salt is made in various parts of the kingdom. The works corresponding to the salt mines, or rather to the brine springs of Cheshire, are called, from their position, *Salines de l'Est*, and are situated in the small town of Salins in Franche Comté; they are wrought by undertakers on lease, yield about 20,000 tons a year, and afford a considerable revenue to government. The heat of the climate on the south and south-west coast of France is favorable to the evaporation of salt water, and consequently to the formation of bay salt, the name given to salt made, not by the action of fire, but by the heat of the sun, operating on sea water inclosed in a shallow bay. The duty raised from salt in France is nearly £2,000,000, a sum of great importance to the treasury, but attended with fully as much injury to the productive powers of France as was formerly our salt tax to those of England. Since 1818 the *droits* on salt have been reduced two thirds. The first Revolution began by abolishing entirely the odious *gabelle;* and salt being soon afterward made in great quantities, and sold very cheap, became the object of a most extensive consumption, being given to cattle as food, mixed with manure on the fields, or scattered as a stimulant to vegetation at the foot of olive-trees. But this extended use of salt was of short duration. No sooner was the power of Bonaparte consolidated, than he ventured to impose a tax on salt, less impolitic and oppressive indeed than the *gabelle*, but which had the effect of limiting the use of this article to such a degree, that the value of bay salt consumed, instead of amounting to £1,000,000, did not in 1836 exceed £100,000. It was thought that a considerable increase in the consumption of salt would take place from the year 1849. There has no doubt been a certain increase, but it has in no degree corresponded with the diminution of the duty.

In 1847 the quantity of salt produced was 350,210,300 kilogrammes; in 1848, 465,435,700; in 1849, 479,-438,400; in 1850, 495,183,900; in 1851, 599,175,200; but in 1852 the quantity produced fell to 428,037,600 kilogrammes. The price of the metrical quintal of salt in 1847 was 3 francs 47 cen. In 1851 it fell to 1 franc 66 cen. The amount of salt produced from all the salt mines and saline sources in France in 1852 was 724,002 metrical quintals, valued at 2,865,556 francs. The consumption is confined to domestic purposes, and to a trifling export; yet the few cattle which still receive salt as a part of their food are visibly in better condition than those that are deprived of it.

France is in general much better supplied with quarries than England. The vicinity of Paris abounds in quarries of freestone. The case is similar in the mountainous districts, and even in several, such as Lower Normandy, that are comparatively level. The houses are consequently built of stone in those cities which, like Paris or Caen, are in the vicinity of quarries.

Fine variegated marbles are quarried at Campan, in the Upper Pyrenees. It appears from official documents published by the government that in the year 1846 there were 22,000 quarries in course of working, which employed 75,396 workmen. The value of the material sent into the market was 41,047,519 francs. In 1849, 86,379 persons were employed in quarrying; and in 1850, 87,486.

Manufactures.—Our historical notices of French manufactures are very imperfect until toward the year 1600, when the wars of religion were brought to a close, and peaceful industry received encouragement from Henri IV. and his minister Sully; a minister, however, who had a horror of luxury of all kinds, and who was much more favorably disposed to agriculture than to manufactures. It was under the "*roi vaillant,*" however, that the patronage of government was extended to the manufacture of silk, glass, jewelry, gold and silver tissues; also of the finer woolens and linens, the coarser kinds having been established many centuries before. But the great extension of the finer manufactures of France took place after 1668, during the reign of Louis XIV., and the ministry of Colbert. It was then that workmen were invited from Genoa, Venice, and Holland, and induced to settle at Sedan and Abbeville, places still celebrated for their woolens. In the south of France also establishments were formed for making the light cloth suited to the Turkey market; and that toward the year 1700 the manufactures of France, as well of woolens as of other articles, had made considerable progress. Cloth serges were improved under Colbert, and *point de Gênes* and *point de Venise* introduced. In 1656, stocking-weaving, which had been introduced into France from England by two manufacturers of Nimes, was extended and improved. The manual labor of the French workmen was ingenious, the machinery extremely imperfect. The linen, the paper, and in some measure the woolens and hardware, found their way abroad, because in the rest of Europe these manufactures were very backward, and, in particular, because the exports of England were then very limited. The repeal of the Edict of Nantes was a very impolitic measure, but its consequences have been overrated, for England has profited very little by the extension of her silk fabrics; and Brandenburg, the chief resort of the French emigrants, has never become an exporting manufacturing country. Another and a more important error is tha

current notion that French manufactures were formerly (from 1650 to 1750) more extensive and flourishing than at present, also that they underwent an almost total extinction during the Revolution. These, like many other impressions in regard to France, rest on mere loose allegations. Official *data*, far from sanctioning such fluctuations, are decidedly in favor of a progressive though slow increase.

Woolens.—To begin with the oldest and most widely diffused branch, woolens, we find that the relative numbers of workmen at three distinct intervals, and in very different parts of the country, were as follows, viz.:

	1739.	1800.	1812.	1840.
Carcassonne	....	8,000	9,000	7,000
Limoux, Chalabre, etc.	4,400	4,500	6,200	5,000
Clermont, Hérault	....	....	....	4,500
Lodève, Hérault	....	....	....	8,000
St. Afrique, Aveyron, etc.	6,700	8,500	10,000	7,500
Chateauroux	....	....	....	2,000
Roubaix, Nord	alternately in wool and cotton,			30,000
Elbeuf	"	"	"	25,000
Louviers	"	"	"	6,500
Sedan, Ardennes	"	"	"	11,500

Lisieu, also, in the north, had nearly the same number of workmen (5000) throughout. The finest qualities of black woolens are made at Sedan, in Ardennes, and at Louviers, in Normandy. In these the only material is merino wool. At Elbœuf and Darnetal, and in Normandy, the qualities are very various, the price being from 6s. to 28s. the English yard. Carcassone and Limoux owed the origin of their extensive manufactures to the abundant supply of wool from the pastures in the Pyrenees. Since the reduction of their exports to the Levant, an alteration in the quality of their cloths has opened to them a market in the interior of France. The mountainous districts in Languedoc contain great numbers of sheep, and are the seat of the manufacture of serges, tricots, and other coarse woolens, most of which are made, not by workmen collected in a factory, but in the hamlets or villages of the departments of the Tarn and Aveyron. Almost every house has its loom; and during the evenings in winter, or in the daytime when the weather is adverse to country labor, the women employ themselves in spinning, and the men in weaving. A highly finished species of the woolen manufacture, viz., shawls, veils, ladies' cloth, etc., has been introduced in the present age into France. Rheims is the seat of this important branch, and employs in the town and neighborhood no less than 20,000 workmen. Similar articles are made at Paris. The bounties granted on *fils et tissus de laine* in 1852 amounted to 7,500,000 francs.

Shawls.—Shawls became fashionable in France as an indispensable article of female apparel after the expedition of Bonaparte to Egypt. The first lady in France who wore one (in 1801) was Madame Gaudin, the beautiful Duchess of Gaeta, a Greek by birth, whose husband was then a high functionary. Many of the officers who were attached to the army brought back presents of shawls, and they were imported in great quantities from Constantinople, Moscow, Vienna, and London. These shawls, however, brought an enormous price when imported into France, which necessarily limited their consumption to the richer classes. The great demand turned the attention of manufacturers to this important article; attempts were made to imitate the Cashmeres, and specimens were exhibited at the *Exposition* of 1801. Ordinary shawls are now made of merino and other wools. But this was only a step in the progress of the manufacture; and a finer species of wool having been imported from the countries to the north of the Caspian Sea, the ingenious manufacturers with these materials at last produced shawls which rivaled in beauty those of the East, and in which it required the most practiced and skillful eye to discern any difference. In 1819 M. Jaubert proceeded on the part of the shawl manufacturer, Ternaux, to the countries between the Black Sea and the Caspian to buy a numerous flock of Astracan goats, for the purpose of using the wool for shawl-making. The speculation was a complete failure; and the French government, which was interested in it, lost 300,000 francs.

Two towns very remote from each other, Lodève in the south and Vire in the north-west of France, manufactured, under Bonaparte, very largely for the army. French woolens are, in general, much thicker than ours. In the fine qualities the raw material forms (CHAPTAL, vol. ii., p. 131) somewhat more than half the cost. In ordinary qualities it is somewhat less; but it is only in the slight qualities that the price of labor goes considerably beyond that of the materials. The computation for the whole country is, that a value of £4,000,000 sterling in wool becomes converted into a manufactured value of £9,000,000, of which a tenth only is exported. The cloth in France which corresponds to our superfine, and which is worn in general by the upper ranks, is very fine and durable, but heavy, with the exception of the superfine black. The price of the cloths produced at Sedan varies according to a graduated scale, from 15 to 50 francs the yard, and of kerseymeres from 7 to 24 francs. The duty on foreign wool has been very injurious to the French woolen manufacturers; because, by compelling the French to pay a high price for the raw material, it prevented them manufacturing woolen cloth as cheaply as their English competitors, to whom the foreign market, where the raw material had now fallen to a low price, was open.

WOOL AND WOOLENS IMPORTED INTO FRANCE.

	Kilogrammes.		Francs.
1820...	4,912,000	Consumption in value	8,851,000
1830...	7,214,000	" "	12,872,000
1835...	14,845,000	" "	84,219,000
1840...	13,456,000	" "	29,987,000

Belgium, Spain, Germany, Turkey, Barbary, Algiers, and England send wool to France. The exportation of woolen goods in 1839 reached 60,600,000 francs. In 1838 the exportation was 2,578,487 kilogrammes, valued at 65,823,346 francs. The wool produced in France amounts to 20,350,000 kilogrammes of fine wool; 20,000,000 of common; total, 44,350,000—about half that of England.

The wool imported from England in 1853 was 21,537 quintals, in value 9,481,836 francs, and the cloth 231,419 kilogrammes, valued at 5,795,332 francs. The worsted or thread was 19,630 kilogrammes, valued at 385,844 francs. The importation of the Thibet fur or hair was in value in 1839 3,576,480 francs, but has since declined to 2,058,920 francs. This material is spun in Paris, employing 500 or 600 persons. The wool of France is of an inferior quality. Its annual value averages about 120,000,000 francs, being 60,000,000 kilogrammes. There are 5,500,000 sheep of a superior breed, Saxons, Merinoes, and those imported from England; and 24,000,000 of indigenous race. Since 1829 the French sheep have increased nine per cent. The manufacture of merinoes and bombazines employs 17,000 hands: 6000 are employed at Amiens in the manufacture of alèpines, and about 36,000 pieces are made there, about a third of which are exported. The bonneterie in wool employs 15,000 workmen, 800,000 kilogrammes of colored wool, worth 8,000,000 francs, and returns 17,500,000 francs in manufactured goods. Coverlets are made at Rheims, Ronen, Beauvais, Lille, Lyon, Orléans, and at Sommières (Gard). This fabric is valued at 20,000,000 francs, and employs 10,000 hands, besides auxiliary assistance to the extent of 25,000 more.

Carpets.—Carpets are made to the annual value of 3,500,000 francs, the larger part at Aubusson and Felletin, two towns in the department of the Creuse, employing 1800 hands, and producing goods to the value of 1,500,000. Carpets are also made at Abbeville, at Amiens, Turcoing, and Besançon. The finest and

richest velveted carpets, called "de Savonnerie," are made at Beauvais, and at the Gobelins in Paris. These are only made to order, and are not articles of traffic. The exports of woolen goods reach on an average the sum of 65,000,000 or 66,000,000 francs, consuming 2,578,487 kilogrammes of wool. They consist of coverlets, carpets, cloth, cassimeres, and merinoes, varied stuffs, shawls woven or made by hand, bonneterie, ribbon of worsted, and similar light goods, and stuffs of mingled materials. Machinery has been used for spinning wool in place of the hand only since 1809. Rheims is the great centre of French wool-spinning, it being situated in that part of the country where sheep are most numerous. There are at Rheims 275 establishments for spinning carded wool, and nearly 55,000 spindles, or 60 establishments for combed wool. The number of workmen is 50,000. France annually exports woolen yarn to the value of 2,000,000 francs and upward. Neapolitan flannels, English flannels or "bolivars," circassians, lastings, cloths, cassimeres, merinoes, mousseline-de-laine, cuir-de-laine, made at Cartres first in 1819, and poplins, are noted manufactures.

Cotton.—The cotton manufacture was introduced into Amiens in 1773, the raw material being supplied, not from America, but from the Levant, with machines procured from England. In 1784 a privilege was conferred on an inhabitant of Seine and Oise for a manufactory; and soon afterward the manufacture passed to Rouen, St. Quentin, Paris, Lille, and other parts in the north, extending with a rapidity surpassed only by that of England. At present, as for many years past, the great import of cotton is from the United States. In this great department of manufacture the French have only followed in the footsteps of Great Britain, whose machinery, after the lapse of a certain time, the French manufacturers have imitated; and though they have equaled the British manufacture in durability, they have generally been inferior in cheapness. This is, in a great measure, owing to the centre of the manufacture being at Rouen and Paris, places where the support of workmen, including the extra price of fuel, is not less expensive than in Lancashire. The districts most remarkable for the cotton manufacture are Alsace and Normandy. The manufacture of *cotton velvet* was begun at Amiens so early as 1765; and in 1784 M. Martin of Amiens obtained, under the title of "the first importer from England of machines invented there for spinning cotton," the authority to establish a cotton factory, with special privileges. Nimes is celebrated for its fine but not very durable cotton stockings. There are also manufactories of *bonneterie de cotton* at Besançon, Vitry, Ilar le Duc, etc.

The cotton manufacture is prosecuted in many parts of France, and presents a great variety of fabrics and an extensive division of labor. In one place the weaving alone is followed; in other places the manufacture of threads, which are sold to those who weave them into cloth. Such is the case in the department Du Nord, which exports a great quantity of thread to the cloth manufacturers. In other places they bleach the linens, which are afterward dressed and stamped. The workmen employed in the cotton manufacture were estimated 20 years ago at 260,000, and they now amount to 355,000. Still, however, France is decidedly inferior to Great Britain in almost every branch of the cotton manufacture; and the consequence is, that as the importation of English cotton goods is prohibited, they are smuggled into the country in great quantities. Among these, the introduction of cotton twist is most extensive; and as the French mills can not manufacture the higher numbers, from 170 to 200, which are required in the fabrication of bobbinet, it has been found impossible to repress the contraband importation of this article. "It makes its way," say the writers of the Report on the Commercial Relations between Great Britain and France, "both by land and sea, in spite of all interdictions, and to a continually increasing amount." The English can be sold also at half the price of the French article, which presents an additional inducement to the smuggler. The annual value of the manufactures thus illicitly introduced was estimated in 1833 at £500,000 sterling; but smuggling has been reduced more than a fourth since that time. It is difficult to estimate the amount introduced, but very experienced persons in the trade doubt if it much exceeds £250,000. English bobbinet was also smuggled 20 years ago into France to the estimated annual value of £625,000 sterling; but it is questionable whether the amount of illicit traffic now amounts to £300,000, though English bobbinet sells at from seven to eight per cent. above the price of French goods of the same nominal quality. Quiltings, cambrics, and muslins are also largely introduced by the illicit traders; and the delivery of these goods is insured at a premium of from 18 to 50 per cent., according as the risk is greater or less in the case of heavy or of light goods. In 1852, 1,760,000 francs were paid in bounties on *fils et tissus de coton*. The average wages of men employed in the cotton trade is 2 francs 50 per centimes per day; of women 1 franc 20 centimes; children are paid 50 centimes. The value of the cotton fabrics of Normandy is 105,000,000 francs, that of Alsace 80,000,000 francs. In the last district 70,000 hands are employed in weaving; from 12,000 to 15,000 in printing; and 1000 in the bleaching grounds. In Normandy and vicinity, including a part of the Somme, Pas de Calais, Aisne, Eure, and Manche, 129,000 hands are employed namely, 60,000 weavers for the Rouennerie, 20,000 for the calicoes, and 49,000 in other divisions of the labor. Alsace produces principally cotton cloths for printing, and exports a part into Switzerland. The number of pieces of printed cotton and muslins made is calculated at 1,100,000, valued at 40,000,000 francs. They are of three kinds and prices, but are unable to cope in cheapness with the English. Tulles, at first made only in Normandy, are now manufactured wherever cotton fabrics are made; to the extent of 32,725,000 francs, of which 20,000,000 francs is the cost of the embroidery. The most important of this branch of the manufacture is carried on at and near Calais, where from 600 to 700 looms, and 4800 men, women, and children, are in constant employment. The manufactures of muslins are most in arrears of all, owing to the fineness of the thread required, which is not yet made in France, but imported for the purpose. Tarare is the seat of this manufacture, valued at 20,000,000 francs. These muslins are generally embroidered. Blonds and lace are made at Caen, Bayeux, and above all, at Chantilly (Oise) where 70,000 persons are employed. Cotton *bonneterie* is made at Troyes to the value of 7,000,000 francs, employing 10,000 looms, and from 10,000 to 12,000 hands.

In 1803 the import of cotton wool had reached 10,711,665 kilogrammes, and in 1820 had doubled that amount. The cost of the raw material in France, and its manufacture, are enhanced by the expense of fuel and carriage. The profits, deducting all outlay and wear and tear of machinery, and making allowance for every expense, are considered to be about 30,000,000 francs. It appears, that prior to the legal permission to import cotton thread free, when above No. 143, not less than 5,000,000 kilogrammes were smuggled, when the duty was from 70 to 80 francs the kilogramme. This traffic has not yet ceased. The spinners number from 80,000 to 90,000, and the mean wages of adults and children are 1 franc 50 centimes per head, who attend to 3,500,000 spindles. No. 132 of the French thread corresponds to 120 of the English, because of the difference between the English pound weight and the French demi-kilogramme. In the year 1806 the utmost degree of fineness attained in cotton thread was

No. 110. In the year 1809 it had reached No. 150. In general the French thread remains much below the English, but it continually improves. No. 180, which in France sells at 30 francs or 40 francs, costs in England only 18 francs. In the Seine Inférieure, at Rouen, and vicinity, there are about 1,000,000 of spindles at work. In the arrondissement of Lisle 600,000 are worked by 82 steam-engines, of 850 horse-power in all. St. Quentin works 210,000 spindles with 200 horse-power of steam, besides water-power. The spinning in Alsace employs 18,000 persons of all ages. The dyeing of cotton occupies 87 establishments at Rouen and its vicinity alone. The principal part of the weaving takes place in Normandy, Alsace, Amiens, St. Quentin, and Troyes. The looms are above 270,000, and employ 385,000 hands, the mean of whose wages is 75 centimes per day. Many of the looms there are worked by hand. The principal products are calicoes for printing.

In the departments of the Seine Inférieure, Somme, Pas de Calais, Aisne, Eure, and La Manche, the spinners, weavers, dyers, muslin fabricators, machinists, cardmakers, amount to 107,000. The individuals connected with the manufacture in other ways, the whole comprising 150,000 families, carry the total number concerned up to 400,000. Of the workmen immediately designated, the number is 107,000, employed thus:—

Spinners	21,000
Machinists	5,000
Loom weavers	65,000
Dyers	5,000
Muslin fabricants	9,000
Cardmakers and others	2,000
Total	107,000

In Alsace, including the Haut and Bas Rhin, the Vosges, the Meurthe, Haute Saone, and Doubs, above 100,000 persons are employed:

Spinners	17,000—18,000
Loom weavers	70,000
Printers	12,000—15,000
Bleachers	1,000
Total	104,000

The principal places for the manufacture of yarn in Alsace are Mulhausen, Wesselling, St. Mary aux Mines, and Guebwiller. In the other parts of France the principal are St. Quentin, Rouen, Caen, Amiens, Bar le Duc, Lille, Roubaix, Turcoing, Lyons, Paris, Darnetal, Bolbec, Troyes, Gisors, etc. The yarn made in the Seine Inférieure exceeds the whole made in Alsace. In the departments of the Somme, Pas de Calais, Aisne, Eure, and Manche, there are 60,000 weavers of *Rouennerie*, 20,000 of calico, and 49,000 in the other branches of the manufacture.

Linens.—In the extent of her linen manufacture, France is greatly superior to England; not that her soil is better adapted to the growth of hemp and flax, but because England depends on importations of linen from Ireland and Germany, and the spinning of flax does not form the occupation of our female peasantry. In France, particularly in the north, every farmer, and almost every cottager, covers a little spot with hemp or flax to employ his wife and daughters in spinning throughout the year; a stock of linen being the usual dowry of these humble occupants of the soil. The manufacture of this article is not exclusively concentrated in the towns, like that of the other fabrics: many of the weavers reside in villages and hamlets; and the hemp and the flax are spun by the hand. This is a most valuable branch of domestic industry, which gives employment to females under the roof of their parents; but it is destined, in the progress of capital and industry, to be superseded by machinery and great establishments. In Normandy, Lisieux, Dieppe, the neighborhood of Havre, Yvetot, Bolbec, and the more inland towns of Vimoirtiers and Domfront, are all remarkable for one or more branches of the linen manufacture. The more backward province of Brittany manufactures, at Rennes, St. Malo, and Vitré, quantities of coarse linen, canvas, and sacking; but Anjou affords a much superior article; the *toiles de Laval* have long been in repute, and gave employment, in Laval and the contiguous towns, to nearly 25,000 workmen. Lille and its populous district have very extensive manufactures of hemp and flax; for the number of workmen so employed, directly or indirectly, in this part of French Flanders, is not short of 50,000. Since 1790, fine linen has, in France as in England, been in a great measure replaced by fine cotton; and the two together employ, at St. Quentin (in Picardy) and the neighborhood, more than 30,000 workmen. In another part of the kingdom, the province of Dauphiné, there are carried on linen manufactures of various qualities, the prices being from 1 franc 10 centimes to 5 francs the yard. The value of the linen manufacture of France of every kind is no less than 525,000,000 francs. The raw material grown in France is valued at 30,941,840 francs for the hemp, and 19,000,000 francs for the flax. The hemp imported, and the thread together, give 85,699,003 francs value. About 1,000,000 francs is the worth of the flax imported. Total, 20,000,000 francs. The manufacture gives:

	Francs.
For the hemp	107,097,009
" flax	75,000,000
A total of	182,097,009

The manufactures of hemp and linen employ 600,000 workmen. The exports of linen, principally to England, were, in 1840, nearly 6,167,781 kilogrammes. The manufacture has doubled since the first Revolution. Lille, Dunkirk, Essonne, Pont Remy, Bellals, Vernon, and Alençon, are noted places for their linen manufacture. Normandy sends to Paris annually 20,000 pieces of linen. The linens of Brittany are mostly consumed at home. The fine linen cloths called *toiles de mulquinerie* are principally made in the departments of the Aisne and Nord. St. Quentin was once noted for them; now that town, Cambray, Valenciennes, and Solesmes, produce cloths so fine, called *batiste* and *linon*, that 70,000 pieces are exported to England. The beautiful batist embroidery employs 13,000 persons at Nancy. *Coutils*, a cotton cloth crossed with thread of linen, are woven in the department of Mayenne, where 4500 looms are employed upon this article. French linen differs in quality according to the place of manufacture; but in general it is thicker and stiffer than Irish linen, while in whiteness it is inferior to the linen of Flanders and Holland. It is, however, a substantial and durable article. Cambrics, thread, gauze, and lawn, rank among the leading manufactures of the north-east part of France. They are made at St. Quentin, Valenciennes, Cambray, and to a smaller extent at Douai, Chauney, and Guise. Lace is still more general, being made in quantities at Valenciennes, Dieppe, Alençon, Caen, Hayeux, and Argentau. Machinery had, up to 1820, been very little applied to this manufacture in France, and the number of women employed in it was very great. There are considerable manufactures of printed linens; and the dyeing of linen thread gives rise to an extensive commerce. At Rouen, and in the surrounding districts, this branch of industry is carried on; and many stuffs of great variety, and for which there is a brisk demand, are produced. In 1822 the duties on foreign thread and linen were raised by the French government till they were nearly prohibitory; and the annual importation from Germany and Belgium, which formerly amounted to a million and a half, almost entirely ceased. The price of home-made linen rose 25 and 30 per cent.; the consumers had recourse to cotton as a substitute; the French dyeing trade fell off, and also the entrepôt trade in foreign linens, both of them sources of great business.

The value of the hemp annually grown in France may be computed at £1,200,000, the quantity imported at £200,000; together £1,400,000; a value which is doubled in the coarse manufactures, and tripled in the finer. Of this quantity of hemp, the half is made into canvas and thread, a third into cordage, and the remainder into cloth for domestic use. Of the flax annually employed, the value is about £800,000; a sum which is tripled when it is made up into thread, linen, and mixed stuffs, and much more than tripled in the finer qualities.

Iron.—France had in 1855 about 569 furnaces, of which more than 300 are said to be blast-furnaces. It is, however, almost impossible to ascertain the exact number of blast-furnaces, the position of which is regulated by that of the iron mines. They are chiefly in the mountainous departments of the Dordogne in the south-west, and of the Haute Marne, the Haute Saône, and the Côte do'Or, in the east of the kingdom. Of forges for malleable iron, called *forges à la Catalane*, there are eighty-six scattered throughout different departments, but chiefly in the hilly part of Languedoc. There are also a number of wire-works

France, in which, as in the blast-furnaces, there has been since 1790 a progressive but very slow increase, altogether different from the rapid advance of the iron-works of England previously to 1815.

The stationary character of these works has evidently been owing to the deficiency of fuel and of water communication; disadvantages which prevent the hardware manufactures from being concentrated in cities or populous districts, and cause them to be spread over the country in petty towns or villages, with a very limited division of labor, and a consequent inferiority of execution. The result is, that France does not export hardware, and that in nothing is the inferiority of domestic accommodation in that country more conspicuous than in articles which belong to the province of the locksmith and cutler. The amount of pig-iron annually made in France appears to be about 100,000 tons. The value of the hardware of the kingdom, including cutlery, arms, and other articles of nice workmanship, is computed at £8,000,000 or £9,000,000 sterling. Fine cutlery in former times was largely smuggled into France, but now to a much smaller extent. The annual import of iron and steel is only from £2,000,000 to £3,000,000. The high price of iron is a great obstruction to the progress of the hardware manufactures; and this circumstance places in a strong light the impolicy of the heavy duties on foreign iron, by which, notwithstanding the change in the scale of duty in 1838, all those important branches of industry in which iron is used are stunted in their growth. In copper, the importations greatly exceed the home produce. From Great Britain the quantity imported for the last ten years has increased from 200 to 20,000 hundred weight. Of lead, also, the chief part is imported. The manufacture of steel has only been lately introduced into France. Prior to 1786 there was no manufactory of this useful article; and it was only after accounts had been published by scientific persons of the composition of that article, and after repeated experiments, that in 1809 manufactories of steel were established, which have been since extended to several departments, especially to those of the Loire.

Silk.—As regards silk, France possesses, both from physical causes and from the long-established manufacture, a decided superiority. Mulberry-trees were introduced in the fifteenth century, and were first planted, not in the south, but in the central part of the kingdom, near Tours. That town was the seat of the earliest silk manufactures, and it was not till 1600 that the culture of the mulberry was carried southward.

The mulberry thrives in a variety of soils, and may be planted with success in neglected borders or in waste lands.

The manufacture of silk is considered as an important branch of French industry, not only on account of the variety and beauty of the fabrics, but because the raw material is an indigenous product of the country. It was estimated* 20 years ago that the amount of the annual sales to foreigners was 80,000,000 fr.; that the home consumption of the kingdom amounts to £3,333,334; and that the whole annual value of the silk manufacture was equal to £4,598,889. The manufacture of silk is not confined to any particular spot. It is carried on in different parts of the country, in all of which it diffuses prosperity. It has enriched the poor of Nimes, of Avignon, and of Tours. St. Chamond and St. Etienne owe a great part of their prosperity to the manufactura of ribbons, and the town of Ganges to bonneterie. Paris derives immense profits from her manufacture of silk stockings, and other fabrics, either of silk with a mixture of silk, or of wool and cotton. Silk is also the great staple manufacture of Lyons, in which it is carried on in all its branches with astonishing success: and since the Revolution, in addition to fabrics of silk, all sorts of stuffs mixed with silk, and with cotton and wool, have been manufactured; and to these manufactures Lyons is indebted for its riches, having risen not only to be the second town in France, but one of the most opulent and flourishing cities in the world. It was 20 years ago estimated that about 60,000 or 70,000 individuals, young and old, were supported by the silk manufacture in Lyons and the adjacent district; but the number has increased 25 per cent. since 1835. The dyeing of silk being an important branch of the manufacture, many experiments were made to bring it to perfection; and, in particular, a dye of perfect black that would retain its color was a desideratum. This dye was invented by a common dyer at Lyons, who received a pension, beside being made a member of the Legion of Honor. Prior to this, the black dye which was used changed in a few days to a brown, and came off the stuff when it was hard pressed by the hand. Another improvement which was made consisted in producing a silk of a permanent white color. The eggs of the worm which produced this silk were brought from China, not however with the desired success. The worm was afterward purchased from a merchant of Alais, and distributed in the northern department of the country; and the produce of white silk is now very considerable, and of great importance in the manufacture of gauzes, crapes, and tulles. Other inventions were devised for saving labor in the various stages of the silk manufacture, by which, in this branch of industry, France was long enabled to outstrip all her neighbors, though of late years the silk manufacture has made immense advances in Great Britain.

There were in 1829 no less than 9,631,624 mulberry trees in France for the nourishment of the silk-worm. These supplied food for cocoons producing in 1819, according to Chaptal, 5,147,609 kilogrammes of cocoons. In 1835, the product had increased 9,000,000, yielding 278,000 kilogrammes of silk grège, and 161,000 kilogrammes organzine. At present (1855) the quantity of silk furnished amounts to 1,600,000 kilogrammes; which, at 55 fr. per kilogramme, the average price, gives a sum of 88,000,000 fr. as the value of the amount produced. In 1810 the amount was only 4,073,198 kilogrammes of cocoons, at 3 fr. 45 cen. per kilogramme. In 1830 it had risen to 9,097,967, at 3 fr. 02 cen.; while the wound silk (grèges filées), which in 1810 only reached 350,629 kilogrammes, at 45 fr. 12 cen., in 1835 had increased to 876,016 kilogrammes, at 58 fr. 64 cen. per kilogramme. But the home growth not being enough to meet the demand, importations took place to the extent of 1,154,956 kilogrammes, valued at 53,781,528 fr., and they still increase. Italy,

* See Costaz, *Sur l'Agriculture et les Manufactures de l'France.*

Switzerland, Turkey, and Greece, supply the larger part. A small quantity is obtained from Austria and Sardinia. The exportation of silks, plain and flowered, from 1787 to 1789, on a mean of 10 years, was 87½ millions of francs in value. In 1829 it was 111,000,000, and in 1836 206½ millions of francs, consisting of 2,720,934 kilogrammes, under 22 different denominations of goods. The United States, England, Germany, then Belgium, and, lastly, Spain, are the principal outlets for the silks of France; but South America, Russia, and Switzerland, are also considerable purchasers. France exports silks to a large amount in the way of transit. Lyons, Avignon, Tours, and Nimes, are the principal seats of the manufacture of silk stuffs; and St. Etienne, St. Chamond, and Paris, for that of ribbons. In the arrondissement of Lyons and Ville Franche, there are 31,083 looms. The manufacture of ribbons at St. Etienne employs 20,000 workmen and 30,000 looms, producing 27,473,000 fr. value annually. The fabrication is divided into the manufactures *unis* and *façonnés*. Under the first head are those with the prefix *gros*; as, *gros de Naples*; those called *pou de soie*, *fontard*, *crêpes*, which last are subdivided; then satins and the like. The ribbons are, in like manner, distinguished by different appellations, after the nature of the fabric. St. Etienne employs in all 279,000 spindles (*broches*); of which 165,000 work organzines and trames, and 114,000 work the silk intended for crepes and gauze ribbons. The number of looms has been estimated in all at 65,000 for weaving silks, and 80,000 for ribbons.

The raw silk or silk-wool consumed in France in 1840 was valued at 53,731,536 fr.; while the value of the silks in transit reached 40,134,301 fr. Plain and flowered silk consumed at home, = 5,299,490 fr.; that which passed in transit = 37,204,483 fr.; being a total of 136,369,810 fr. A decree of the 18th August, 1852, permits the free importations of silk.

The silk-wool of French production exported in 1840 was valued at 3,788,103 fr.; the foreign grown silk-wool exported at 47,491,154 fr. The value of the export and import together was thus 380,256,696 fr. The following are the most important districts of the mulberry, with the growth respectively, and the cocoons produced in 1840:

Districts.	Hectares.	Cocoons. Kilogrammes.
Gard	14,911	2,696,000
Drôme	6,212	2,585,352
Ardèche	5,602	1,765,121
Vaucluse	3,986	660,600
Hérault	2,592	1,248,972
Isère	2,071	539,507
Bouches du Rhône	1,546	549,780
Rhône	1,295	471,560
Ain	886	74,716
Var	787	491,750
Total	39,770	11,083,358

About 500,000 kilogrammes of cocoons are produced in the other departments. The importation of English woven silk into France in 1853 was 52,702 kilogrammes, in value 5,464,699 fr.

Articles of leather are in France much cheaper than in England.

Jewelry, Porcelain, etc.—Jewelry is made in Paris to the value of 50,000,000 fr. Lyons, Marseilles, Bordeaux, Clermont, and Strasbourg are also famous for jewelry. Watch and clock-making are carried on to a great extent in France, particularly in Paris. A time-piece is there a much more frequent article of ornamental furniture than in England; and the number of clocks and watches made annually in the kingdom is not less in value than 30,000,000 fr., employing 10,000 hands. The works in bronze are chiefly manufactured in the capital, and reach, in their different branches and stages, of which gilding is the chief, a further annual value of 37,000,000 fr.

Paris is remarkable for other fabrics of taste and luxury; in particular, the porcelain of Sèvres, near St. Cloud, and the beautiful but very expensive tapestry of the Gobelines. The materials of the latter are silk and the finest woolen thread; the subjects woven into the work are taken from paintings executed on purpose. Both the establishments have been long conducted by government at a sacrifice, and both are now on a reduced scale, the articles being far too costly for ordinary fortunes. The articles more frequently purchased are *passementerie*, by which is understood artificial flowers, fringes, gold and silver lace, with a variety of trifling but tasteful articles, all sufficiently adapted to a city where so much more is thought of display than of utility.

Soap.—The value of all the soap made in France is computed at 30,000,000 fr. The main ingredient is olive oil; and Marseilles was formerly the seat of this manufacture for almost all France—an advantage owing both to the extent of the olive-grounds in the south-east of the kingdom, and the vicinity of Marseilles to Italy, the Levant, and Spain, whence soda and olive oil were imported in vast quantities. A million of francs were paid for bounties on the export of soap in 1852. The export of soap from France in 1838 was 2,911,631 kilogrammes, valued at 2,941,631 fr. The disorders of the first Revolution, and the establishment of similar manufactures in other parts of France, have caused to Marseilles the loss of a third of its soap works; they are still, however, very extensive. Of the oil used in France, whale oil forms a very small proportion: the great supply is of vegetable oil, viz., that extracted from the rape and cole-seed of the north, and the olive oil of the south.

Beer, formerly little drunk in France, has become of extended consumption since 1790; but even at present, the quantity used does not exceed £2,000,000 sterling, its place being supplied by cider in the north, and by wine in the south. Within the last few years there is a considerable consumption of English bottled stout and porter, and a lesser, though increasing, consumption of English ale. The breweries have increased, and are increasing, in Paris, as well as in the northern departments. The consumption which corresponds to that of English home-made spirits and rum, is in brandy, of which the value annually made is between £2,000,000 and £5,000,000 sterling. The distillation varies in amount with the season. The brandies of Cognac, Jarnac, and Angoulême, are most in esteem. The best brandy is made in a district called Champagne, comprehending a part of Saintes Jonzac and Cognac territory. In Franche-Comté and Alsace, a brandy called Kirsch is made, but little of which is exported. The Hérault, Aude, and Gard, supply the largest quantity of spirit of wine. The best is called that of *trois-six*. The amount varies from 40,000 to 80,000 pipes of 80 veltes, five of which form a quintal. A velte is 7·61 litres = 1·675 gallon. Beer is brewed in the northern and eastern departments, viz.:

	Quantity. Hectolitres.	Value. Fr.
Nord Oriental	3,115,615	41,419,482
Nord Occidental	527,378	9,329,261
Midi Oriental	160,942	5,447,719

Cider is made everywhere; in largest quantity in the Nord Occidental, and the best in La Mancha and Calvados. Some is distilled for brandy. The quantity is estimated at 11,000,000 hectolitres, at 7 fr. 75 cen. Normandy furnishes half. The whole is worth 34,000,000 fr. There is also a considerable distillation of spirit from potatoes, "which," says Chaptal (vol. ii., p. 197), "has been generally approved, and has been brought into competition with brandy.

Lesser Manufactures.—Of hats, the manufactures, formerly concentrated at Lyons and Marseilles, are now diffused throughout several towns; and the value annually made is about 24,000,000 fr. The hat manufacture of Paris is estimated at an annual production of 1,200,000, of the average value of five francs each, and employing 2000 men and 2500 women. Superior

qualities of silk hats are sold to the retail tradesmen at from 9 fr. to 11 fr., for which the latter obtain from 15 fr. to 18 fr. The hat manufacture in France employs 17,000 hands, and yields a value of 19,500,000 fr., in 1159 workshops. The second order of hatters, who finish the hats according to the different tastes required, elevate the value of the trade to 24,375,000 fr. The manufacture of gloves—principally made at Grenoble, though called "Paris gloves"—employs 25,000 persons. In 1839, the value of the gloves made in France was 9,436,000 fr.; in 1840, 5,556,000 fr. The tanneries prepare 33,286,004 kilogrammes of leather, valued at 82,864,706 fr., for boots, shoes saddlery, etc. Perfumery is made extensively in Paris, and in the south, chiefly at Montpellier, where, from the mildness of the climate, aromatic plants are abundant. The value of the manufacture is about 13,000,000 fr. Paper being exempt from the heavy duties of England, is sold in France upon very reasonable terms, while in quality it is equal to our own. The value annually used in printing and in writing is computed at 25,000,000 of francs; and the paper employed in the hanging of rooms is estimated at an equal value. Of glass, the manufacture has been much improved and extended during the present age. Whether for mirrors, for windows, or for bottles, this article in France is good, and of a moderate price. The number of glass-houses in 1818 was 185, and is now over 220. Small mirrors are manufactured much cheaper in France than in England. Bohemia is the country with which the French manufacturers state they can not compete. As to earthenware, it is only since 1790 that English pottery has been successfully imitated in France. It is now made to the value of 29,000,000 fr.; while the coarse earthenware, fabricated in almost every province of the kingdom, is computed at 15,900,621 fr., employing 10,433 hands. French earthenware is very inferior to English. Saltpetre, till lately a monopolized manufacture, is now unrestricted. Sulphuric acid has, since the beginning of the present century, been greatly lowered in price and increased in quantity.

Sugar.—The manufacture of sugar from beet-root was introduced into France during the reign of Napoleon Bonaparte, when, the coasts of France being blockaded by the fleets of Britain, the importation of foreign articles, and among others that of sugar, was rendered dangerous and difficult; and its price was so high as entirely to preclude its consumption by the middle classes of society. Various articles were resorted to as substitutes, such as honey, and juice of raisins, etc., but they were not relished by the taste of the people; and in this case experiments were tried by eminent chemists to extract from beet-root the sugar which it contained. These experiments were successful. There were in 1831 more than 200 establishments, from which were produced annually 7,480,000 pounds of raw sugar; and there were in 1854 303, producing 62,205,600 pounds. The largest sum paid by the administration of the customs has been for refined sugar. It amounted in 1852 to 16,000,000 fr.

Machinery.—The manufacture of machinery has greatly increased. Steam-engines have been introduced into France from Great Britain, where they are now employed in every department of industry. It was in the year 1779, at the village of Chaillot, near Paris, that the first steam-engine was established in France; but, owing to prejudices, and attachment to old customs, it was long before these engines came into very general use. Prejudice, however, gradually faded away before the productive powers and manifest utility of this extraordinary application of science to the business of life, and there are now many establishments for the manufacture of these machines. The scarcity of coal is a great obstruction to the extensive use of steam-engine; and the tax on foreign coal is, in this view, peculiarly impolitic, and injurious to the general interests of the community. The tax, though lately reduced by the Imperial government, requires still further reduction.

In 1836, of 1749 steam-engines in France, 1393 were home made. In 1839 the import surpassed the export. Since that year the reverse has been the case. The metallic castings in France are still very inferior to those of England. Paris is the principal seat of the manufacture of French machinery, then Arras, Creuzot, Rouen, Mulhausen, and Nantes. Locomotive engines are made at Bitschwiller, in the department of the Haut-Rhin; machinery for steam-vessels at Indret. The value of French industry has been estimated in the mean product as follows:

	Francs.
Iron from the ore to the perfect state, minerals, etc.	124,000,000
Copper, zinc, and lead	26,500,000
Glass, crystal, and looking-glasses	47,500,000
Tiles, bricks, lime, plaster	66,500,000
Porcelain, pottery, etc	27,500,000
Chemical manufactures, the products	22,000,000
Hemp and Flax (supposed to be no less than 525 millions of francs)	360,000,000
Cotton	500,000,000
Wool	400,000,000
Silk	230,000,000
Leather and skins	300,000,000
Sugar	45,000,000
Paper, colored and figured	25,000,000
Printed paper, books, etc	25,000,000
Machinery	10,000,000
Clocks and watches	80,000,000
Bronzes	25,000,000
" plated ware	6,000,000
" jewelry and goldsmith's work	50,000,000
Distilleries, breweries	206,000,000
Different branches of industry	185,000,000
Mechanic and domestic arts	250,000,000
	£116,440,000=2,911,000,000

"Labor in Paris is as much dearer relatively to the provincial towns of France, as labor in London is relatively to those of England. It still remains for us to remove from our capital some manufactures which have been most injudiciously established there; but the French have carried this false calculation much further, Paris being the centre not only of ornamental fabrics, such as jewelry, bronze, sculpture, cabinet-making, and the vast variety of elegant trifles comprised under the term "articles de Paris," but of a number of coarser employments, which a very slight change of plan might transfer to a cheaper quarter. Periodical exhibitions of French manufactures are held at Paris every three or four years, at which are present the sovereign, the princes, the nobility, and all eminent men of science. In 1855 was opened in Paris an Exhibition of the Industry of all Nations, similar to that which took place in London in 1851, and in Dublin in 1853. The Parisian exhibition, like the Dublin one, contained a branch dedicated to the fine arts. This exposition continued open from May till the middle of November. It was twice visited by her majesty Queen Victoria between the 20th and 25th August in her nine days' visit to France. There is also in that capital a *Conservatoire des Arts et des Métiers*; a collection, on a large scale, of models of all instruments or machines that relate to arts and manufactures. It is more the practice also in France than in Britain to encourage ingenious inventions in the mechanical arts, by premiums, orders of merit, and other honorary marks of distinction. Yet, with all these advantages, industry has not made the same progress as in this country.

"To prescribe the mode of manufacture was formerly a favorite course with government in England as in France. From the time of Colbert (1660) the French *ordonnances* prescribed peremptorily the length and breadth of serges, of druggets, in short, of every kind of cloth calculated for export, under the plausible idea that all these precautions were necessary to establish a reputation for quality. It is a curious fact, that these rules were desired by the manufacturers them-

selves, and were long considered as the safeguard of French industry. A change was introduced in 1779, and permission given to every manufacturer to follow his own method, provided he distinguished the goods thus made from those which were in conformity with the regulations. But this was of very short duration. The power of habit and prejudice prevailed. New *ordonnances*, issued the succeeding year, revived the former limitations; and the manufacturers of France were now put on an unrestricted footing till the Revolution. Much inconvenience had also been sustained from the absurd law which prevented a workman from settling in business in any town excepting that in which he had served an apprenticeship. This law was abrogated in 1767.

"The manufacturing industry of France is confined, far more than ours, to the home market, whether we look to the supply of the raw material, or to the export of the finished articles. Her imports are large only in cotton and silk; in woolen and iron they are not considerable; while in flax, hemp, and leather, they may be termed insignificant. In exports the limitation is still more striking, her hardware, her linen, her woolens, her cotton, her leather, and, in a great measure, her silk, being confined to the home market; a restriction owing partly to our manufacturing superiority, but more to the capital of our merchants, their ability to give long credit, and to deal with foreign traders and merchants in a liberal and not in a petty retail spirit. The productive industry of France is consequently much less subject than ours to sudden fluctuation. It follows nearly the same routine year after year. On the occurrence of a war, or other political change, the commerce and manufactures of our neighbors, to borrow a phrase of Talleyrand (Letter to Mr. Fox, 1st April, 1806), *se replient sur eux-mêmes*."—E. B.

Commerce, Colonies, Fisheries, Shipping.—In no country in Europe has trade been laid under such galling restrictions as in France; and it is remarkable that this system of restriction has in a great measure been the creation of modern times. The ancient legislation of the kingdom was rather friendly to foreign trade. It encouraged importation in preference to exportation. This latter privilege of export was in 1577 claimed by Henri III. as his royal and seignorial right; and he regulated by his ordonnances the export duty on a variety of articles, while the produce of foreign countries was admitted on payment of an *ad valorem* duty of 2 per cent. Louis XIV. introduced a sort of navigation act, by which he levied a tax of 50 sous on all foreign ships. In 1667 further restrictions were introduced; and in 1687 the exclusive system was established in its full rigor. The statesmen of France seem to have imagined that a flourishing commerce could be created by legal authority, and that domestic industry could only be encouraged by the exclusion of all foreign competition; and hence all the vices and obsolete maxims of the mercantile system will still be found in the commercial policy of our neighbors. The extension of the restrictive system was promoted by the authority of Colbert, a minister who, though he introduced order into the finances, and improved in many particulars the system of taxation, and was indeed a great master of detail, adopted the most erroneous maxims of commercial legislation. It is justly observed, in the report of Villiers and Bowring on the commercial relations between Great Britain and France, that the "whole of the bounties by which he induced adventurers to enter into remote speculations, as well as the excessive duties which he imposed on cheaper foreign articles, were almost uncompensated sacrifices; while, on the other hand, of the manufactures which he transplanted into France, and which he protected by the exclusion of rival productions, scarcely one took permanent root;" and even those which he intended to support by special encouragement would all of them have been more prosperous, but for the regulations with which his mistaken zeal retarded the progress of manufacturing industry. His whole system was an attempt to regulate by law what would have been better left to the sagacity of individuals, and to give a forced and artificial direction to the national capital. Thus he encouraged a trade to the West Indies by granting a bounty of 25s. on every ton of goods exported, and of 41s. 8d. on every ton imported. He boasted of setting up 40,000 looms by virtue of legal enactments, without considering that the capital employed in these establishments would have taken a more natural direction, and been more profitably employed, but for his interference. The restraints also which were thus laid on domestic industry were often enforced by the despotic authority of government. Many of the absurd and pernicious regulations of Colbert were broken down by the first French Revolution; but others remained, and the tariff of 1791 was from beginning to end a system of prohibition, the object of which was to encourage the home manufacturer by freeing him from all foreign competitors. It must be confessed that England set the example of illiberality; and it was no wonder that the French of that day should be jealous of a country which excluded her silks und cambrics, and laid a discriminating duty of 33½ per cent. on French wines; and whose Parliament, under the reign of William III., declared the trade with France to be a nuisance. The commercial treaty concluded with France in 1786 by Mr. Pitt was the earnest of a better system. Since this period the legislature of this country have been impressed with the injurious tendency of all commercial restrictions. But in France the progress of improvement has been slower, and it has besides been retarded by political events. The long and sanguinary war waged between Great Britain and France subjected the latter to the maritime hostility of her powerful opponent, the consequence of which was, that her trade with foreign countries was interrupted, and the supply of many of their staple articles of produce greatly diminished, and raised enormously in price. It became a great object, in this case, to produce these articles at home. In addition to the existing restraints upon the importation of foreign manufactures, special encouragements were given to the production of articles for which neither the soil nor the climate of France was peculiarly fitted. Thus when the maritime blockade of France was raised by the peace of 1814, her industry, partly from ancient and mistaken maxims, partly from the pressure of war, received a very artificial direction, and was oppressed by ruinous and complicated restrictions. At the restoration of the Bourbons in 1814, the tariff of 1791 was the law of the land. It had undergone a few modifications, but these were mostly in the restrictive and prohibitory spirit, and were accommodated to the hostile position which France occupied in regard to surrounding nations. When the barrier to a free intercourse with foreign nations was at length thrown down by the peace of 1814, the exclusive provisions of the tariff of 1791 were brought into full operation; and when the obstacles to the commercial intercourse of France with foreign nations raised up by the war were withdrawn, a no less effectual line of circumvallation was drawn around her commerce by the restrictions and prohibitions of her own erroneous policy. It is remarkable, indeed, that a committee of the Chamber of Deputies, in reporting on the budget in 1832, enters into an exposition and defense of the restrictive system, the principle of which is to encourage domestic industry by the exclusion of the cheaper and better manufactures of foreign nations.

The tariff of 1791 either excluded from France, or laid under heavy duties, almost all the great staple manufactures of other countries. Manufactured iron in every shape, manufactured steel, copper, tin, cut-

lery, and all articles manufactured from any of the metals; all fabrics of wool, cotton, silk, or tissues of hair, saddlery, spirituous liquors, grain, refined sugar, tobacco, toys, and various other inconsiderable articles, are included in this charta of domestic commerce. The inconsistency, and the fallacies on which this system is founded, are well exposed in the report of Villiers and Bowring. The passage, though somewhat long, is replete with instruction.

"It requires merely to state some of the objections to importations in order to show their narrow and anti-commercial spirit. The introduction of manufactured tin, for example, is opposed because it might benefit England, which is rich in tin mines, as if the importation into France could take place without mutually benefiting her. The reasons, too, which are grounded on the superiority of other countries; as, for example, 'dangerous rivalry' in the case of manufactured steel; 'cheapness' of foreign articles in the case of shipping; threatened 'annihilation of the French manufacture' in that of cutlery; 'extra advantages of the English' in plated ware; 'apprehension of the English' in articles of pottery; 'imprudence of admitting English saddlery,' as so many persons, regardless of price, prefer it; 'advantages of machinery' in works of iron; all are modes of announcing the superiority of the foreign articles, and the power which foreigners possess of supplying them on cheaper terms than they can be produced at home.

"There are other grounds of prohibition by which particular French manufactures are avowedly sacrificed to the interest of other branches of French industry. The importation of extracts of dye-woods is disallowed for the purpose of encouraging the importation of the dye-woods themselves; the interest of the dyer, the manufacturer, the consumer, being wholly forgotten. The importation of iron of certain sizes is prohibited, lest small manufacturers should establish fabrics, and supply the markets at a less cost than the larger establishments. Woolen yarn is not allowed to be imported because it can be produced in France, though the high price must be a great detriment to the woolen manufacture; and cast iron of a great variety of sorts is prohibited, on the ground that a sufficiency may be obtained at home, though the cost is notoriously more than double that of many articles of foreign cast iron. Molasses is not allowed to be introduced, because the price in France is so low, and the exportation so large, on the ground that importation will lower the prices still more, though the lowness of price would obviously make importation unprofitable; and the fact of considerable exportation is the best evidence that the average prices are low in France. Rock salt was prohibited in 1791, and the prohibition is now justified on the ground that mines have lately been discovered. The prohibition of refined sugar was supported on the ground that its admission would not benefit the treasury; but it is clear, if the interest of the treasury were kept in view, that all prohibitions would be superseded by a system of duties. While some articles are prohibited because the production is small in France, and requires protection, others are prohibited (dressed skins, for example) because the production is great, and engages a large number of hands."

There is another branch of the French legislation regarding commerce, which is equally exceptionable with the prohibition to import foreign manufactures; namely, the system of drawbacks and bounties on the exportation of domestic produce. Having by special encouragements created a surplus of certain articles at home, and which the high price prevented from being sold to foreigners, the public were called upon to pay the difference between this high price and the price abroad; and thus they were taxed, by the exclusion of the foreign article, in a higher price for what was consumed at home, and also taxed for all that was consumed abroad, in the bounty which was paid on the exportation of the article. This is a double inquity, which has gone on increasing in France. In 1817, the whole amount of what was conceded on this account amounted to £3500 per annum, while in 1830 it amounted to £600,000, nearly one fifth of the nett amount of the whole custom-house revenues of France; and as it was going on progressively, it might soon have absorbed the whole custom-house income, without in the least benefiting, but rather injuring, the general interests of commerce. During the first nine months of the year 1832 premiums or bounties were paid to the amount of 24,448,375 francs, or £1,018,682.

The commerce of France, obstructed by these restrictive duties, has not made the same advances as her agriculture and manufactures. The internal produce of every country necessarily increases with its population; and the inhabitants of France having increased, since 1780 to 1855, to full 36,000,000 (for the census of 1851 makes the population 35,781,628) from 24,800,000 must produce as well as consume more. But in the mean time her commerce has not kept pace with this increase in her population. The value of the imports into France amounted in 1787 to 631,790,700 francs, or about £25,000,000 sterling, and engaged 888,868 tons of shipping; and her whole imports only amounted in 1830 to £25,500,000 sterling, and employed 1,009,454 tons of shipping, which is far from being an increase corresponding to her augmented population. According to the last accounts, the value of imports was in 1853 £65,240,000, of which to the value of £44,120,000 remained for home consumption, and engaged 4,605,000 tons of shipping. The whole trade of France with its own colonies and foreign powers amounted for the year 1853 to an official value of 3,443,000,000 of francs, which was an increase of 12 per cent. on the year 1852, and an increase of 32 per cent. on the average of the years between 1844 and 1848. The foreign commerce of England was, in the year 1787 about 7,000,000 less than that of France, or about £18,000,000 sterling, and employed 1,349,419 tons of shipping. Her population was 9,000,000. In 1830 her foreign trade had increased to £69,700,748, including £17,127,764 to the colonies, which employed 2,866,615 tons of shipping. Thus, while the official value of the commerce of England had nearly quadrupled, and her shipping nearly doubled in forty-three years, not above one fiftieth part was added to the foreign commerce of France; a fact which strongly illustrates the pernicious influence of monopolies in damping the energies of individual enterprise, and thus obstructing the national prosperity.

* Official Value of Imports and Exports.

Years.	Imports. Francs.		Exports. Francs.
1849	1,142,000,000	....	1,423,000,000
1850	1,174,000,000	....	1,531,000,000
1851	1,158,000,000	....	1,629,000,000
1852	1,498,000,000	....	1,632,000,000
1853	1,692,000,000	....	1,861,000,000
Total	6,544,000,000	....	8,126,000,000

The intercourse of France with its colonies and foreign States in 1853, exports and imports united, formed a sum in official value equal to 3,493,000,000 francs, being an augmentation of 373,000,000 francs over 1852. The actual value of the imports in 1853 was 1,217,000,000 francs against 1,006,000,000 francs in 1852, and of the exports the actual value was 1,572,000,000 francs against 1,278,000,000 francs in 1852. The ocean imports were in actual value 1,070,000,000 francs, and those by land 626,000,000 francs. The exports by sea were 1,633,000,000 francs actual value, and those by land, 420,000,000 francs.

Observations on Trade.—During the four years from 1850 to 1854 inclusive, the value of French commerce has augmented 303,329 francs, and the number of seamen employed has increased 19,046. The exports to Russia, owing to the war, were reduced in 1854 to three onward-bound vessels. The commerce with England has increased with great rapidity, having nearly doubled the amount in 1850. With Sweden and Norway the increase has also been considerable. With Austria, on the other hand, there has been a diminution, and also with the Roman States. With China there is an increasing trade, as well as with the United States of America, but with Rio de la Plata and Ecuador there has been a falling off. Most of the other States with which France carries on a commercial intercourse, exhibited an increase which, if small, augmented the general commerce so much as to shew

that the country was entering upon a more active career of traffic.

The tables on the following page contain, from official documents, a comprehensive view of the value and extent of the commerce of France at different periods. The trade between France and Switzerland is carried on by land by Colmar, Strasbourg, St. Louis, Belfort, Nantua, Seyssel, Morteau, Pontarlier, Les Rousses, Montbellard, etc.

IMPORTS OF FRANCE.

	1851.	1852.	1853.
Breadstuffs	£80,000	£200,000	£3,840,000
Coal	1,480,000	1,520,000	1,680,000
Cotton	4,160,000	5,120,000	5,320,000
Raw silk	3,680,000	5,360,000	5,200,000
Wool	1,360,000	2,600,000	1,720,000
Iron	200,000	240,000	440,000
Total	£10,960,000	£15,040,000	£18,200,000

EXPORTS OF FRANCE.

	1851.	1852.	1853.
Breadstuffs	£3,800,000	£2,360,000	£1,160,000
Cotton manufactures	6,600,000	6,000,000	6,560,000
Silk manufactures	8,120,000	9,040,000	11,520,000
Woolen manufactures	5,280,000	5,120,000	5,840,000
Linen manufactures	1,080,000	1,200,000	1,360,000
Gloves and hosiery	3,200,000	3,400,000	3,030,000
Wines	1,480,000	1,480,000	1,800,000
Total	£29,560,000	£28,600,000	£31,270,000

IMPORTS OF COAL AND IRON IN 1852.

	From England.	From Belgium.
	Tons.	Tons.
Coals	664,632	1,792,155
Coke	2,732	169,398
Iron, pig	15,002	26,418
Iron, bar	1,841	....
Steel	270	....

Returns of the customs duties levied on the principal merchandise imported into France during the nine months of 1855 ending on the 1st of October, give an amount of £5,927,030. Compared with those of 1854, they show an augmentation of £1,723,976. The receipts during the month of September were £465,688, or £40,383 less than in the corresponding month of last year. The salt-tax produced during the nine months of 1855, £930,891.

The value of exports in 1853 reached £74,640,000, of which £54,520,000 represented French produce, and £20,520,000 was foreign produce re-exported. The imports for home consumption showed an increase of £4,680,000, and the exports of French produce an increase of £5,200,000 above 1852.

The following is a brief sketch of the trade of France with other countries:

The corn, the hemp, the flax, the tallow, which form such important articles of export from the north of Europe to England, are comparatively unnecessary to France. Their timber and pitch are imported there, but the quantities required by a people where shipbuilding is so limited, are necessarily of little consequence. It would appear, however, that in the progress of the recent war against Russia, many articles imported from the north of Europe have become more necessary to France, and by a decree published in the *Moniteur* on the 20th October, 1855, building-timber, wood for cabinet-making, of a certain thickness, rough castings, bar and sheet iron, hemp, etc., may be imported for three years free from import duty. Pitch, tar, and tallow, when employed in shipbuilding, may be imported at a duty of 10 per cent. if it can be proved they have been used *bona fide* for the purpose within a year. The further articles of import are iron, copper, lead, salt fish, all likewise on a small scale. The returns from France are no longer in the sugar and coffee, which, before the loss of St. Domingo, furnished an annual export to the north of fully £2,000,000 sterling. They are limited to wine and brandy, luxuries of which the consumption is confined to a few large towns, such as Petersburg, Hamburg, Lubec, Stockholm, and Dantzic.

With Germany the exchanges of France are now carried on by steam, canal, and land-carriage, and for lighter articles and *articles de Paris* by railroad, and river navigation.

From Holland are imported spirituous liquors, spices, butter, cheese. The returns from France consist chiefly of wine, silks, brandy, and dried fruit. When the Netherlands were subject to France, this intercourse was very active.

From Italy, France imports raw silk, corn, rice, olive-oil, and fruit, chiefly lemons, oranges, figs, and raisins. The returns, various in kind, but small in quantity, consist of wine, brandy, cattle, woolens, linen, leather, hats, stockings, jewelry, glass, hardware. From the Levant, the imports, though less than formerly, still consist of raw silk, cotton, wool, corn, dried fruits; the exports, manufactured silks, woolens, stockings, and, in a small degree, hardware, paper, liquors, linens, lace. With Spain the intercourse is more extensive; the exports from France consist of corn, flour, salt fish, wines, brandy, also woolens, cottons, silks, leather, linen, lace, hats; all articles which have passed through some process of manufacture, and bear testimony to the industry of the French. The Spaniards, on the other hand, true to their character, make no returns except in produce and raw materials, viz.: wool, silk, fruit, sweet wines, along with some iron and copper. During the years 1854 and 1855 there have been considerable exportations of Spanish wine into France for the use of the French troops serving in the Crimea. With Portugal the trade of France is not considerable, the staple products, wine and brandy, being the same in both countries.

The intercourse between the French and Americans should be great, but the Americans require long credit, and to give credit exceeds the means of the French. The cotton, tobacco, and rice of the United States are paid partly by wine and brandy, but in a slight degree by manufactures. This branch of trade will increase with the population and wealth of the United States. At present the intercourse with England is more considerable than with almost any other country; but a reduction of the custom-house duties would extend greatly the mutual trade of the two countries. Great Britain would supply France in greater quantities with imports, consisting of cottons, hardware, earthenware, copper, tin, iron, coals, etc.; while a corresponding increase would take place in the French exports, of which the staple articles are wine and brandy, the smaller silks, olive-oil, fruit, butter, poultry, corn, and butcher's meat.

The chief commercial business of Paris is necessarily inland; but it is the centre of exchange transactions for France, foreign as well as inland; as London is for England, and Amsterdam for Holland. Havre de Grace is the channel for the maritime intercourse of the capital, the outlet for its exports, and the medium through which it receives colonial produce, raw materials, and foreign manufactures. Bordeaux is a sea-port of great activity, as well for the exportation of wine and brandy, as for the importation of sugar, coffee, and cotton. Marseilles, a larger but a less bustling city, continues the emporium for the trade with Italy and the Levant. Nantes has suffered greatly by the loss of St. Domingo, as well as by the abolition of the slave-trade, of which it was the centre. It still exports to Martinique and Gaudaloupe, linen, hardware, printed cottons; and, like Bordeaux, receives in return sugar, coffee, and raw cotton. Rouen, though accessible to vessels of burden, is, like Lyons and Lille, chiefly remarkable for manufactures.

The mercantile marine of France recently presented the following results, which are remarkable while En-

gland and America are building vessels of such superior tonnage:

MERCANTILE MARINE—1853.

Tonnage.	Vessels.	Total Tonnage.	Tonnage.	Vessels.	Total Tonnage.
700—800	1	717	100—200	1,865	197,947
600—700	3	1,881	60—100	1,561	123,140
500—600	4	2,091	30— 60	1,301	58,740
400—500	35	14,599	30 and below	10,647	81,651
300—400	150	50,866	Total...	15,609	602,500
200—300	538	180,829			

Manned, including the men of the fisheries, by 83,000 men and boys.

The steam and sailing-vessels of France and the nations trading with her from 1848 to 1853 were as follows:

NAVIGATION FOR 1848 TO 1853 INCLUSIVE—FRENCH AND FOREIGN.

Steam and sailing vessels.				Sailing vessels only.			
Years.	French.	Foreign	Total.	Years.	French.	Foreign.	Total.
1848	18,194	13,320	26,514	1848	11,808	9,668	20,966
1849	14,364	14,768	29,132	1849	12,618	16,078	28,596
1850	15,054	16,892	31,926	1850	12,284	13,054	25,338
1851	15,389	19,247	34,636	1851	13,421	13,668	27,089
1852	15,995	19,808	35,093	1852	13,176	14,995	28,171
1853	15,835	20,425	36,260	1853	13,434	14,754	28,188
Mean of first five years.	14,653	16,806	31,461	Mean of first five years	12,761	12,271	25,032

Navy.—The superiority of the English navy over the French existed when her pecuniary means were far inferior; and though, during the middle of the reign of Louis XIV. the French, by financial sacrifices, obtained a numerical superiority, one great battle, that of La Hogue, in 1692, was sufficient to change the ascendancy. The war of 1741, however successful on the part of France by land, was, particularly toward its close, unfortunate to her at sea. In the succeeding interval of peace, great efforts were made to reinstate the French navy; but the war of 1756, though the French admiral, De la Galissonière, boasted of a success over Byng, proved doubly disastrous, and at last swept it almost entirely from the ocean. A very different scene opened in the war of 1778, when France, unembarrassed by a continental struggle, was enabled to direct all her disposable resources to her marine, an object of great care and solicitude to Louis XVI. She was then enabled to keep in an effective state about 70 sail of the line, the crews of which, added to those of the frigates and corvettes, formed a total of 60,000 seamen. The injuries sustained by this force, toward the end of the war were repaired with great diligence during the peace; and to prepare young officers for the sea in preference to the land service became a favorite object in several of the government schools. In 1791, an official report stated the effective French navy at 74 sail of the line, 62 frigates, and 29 corvettes; a state of preparation which accounts for the resistance made by the revolutionary government under all the disadvantages of an unparalleled continental struggle.

TRADE AND NAVIGATION OF FRANCE WITH FOREIGN NATIONS—ACTUAL VALUES.

Nations.	Years.	Imports. Value.	Exports. Value.	Ships.		Tonnage.		Crews.	
				In.	Out.	Entering.	Outward.	Inward.	Outward.
		Francs.	Francs.						
Russia	1850	27,253,165	20,146,540	186	71	19,274	9,225	1,266	758
	1854	58,533,979	3,802,520	43	3	8,930	795	458	62
Sweden	1850	5,540,697	1,265,168	29	5	2,985	857	198	42
	1854	7,707,154	2,578,604	29	12	2,796	1,181	190	81
Norway	1850	18,326,660	2,184,130	15	3	1,529	269	102	19
	1854	19,214,908	1,935,281	42	1	4,147	101	284	7
Denmark	1850	77,709	1,288,977	6	3	412	651	36	50
	1854	7,899,923	4,075,140	4	9	325	997	26	64
England	1850	111,181,981	312,119,028	2,878	3,211	228,218	210,040	21,990	23,880
	1854	201,490,531	536,643,810	3,082	1,646	301,590	115,525	27,998	15,306
German Association	1850	47,324,482	50,983,390	19	19	1,516	1,914	104	128
	1854	103,661,586	62,556,573	6	6	591	235	41	20
Hanse Towns	1850	6,654,524	15,646,264	96	137	9,338	14,048	996	1,207
	1854	7,022,584	18,821,208	64	76	5,119	6,451	890	474
Netherlands	1850	22,801,018	14,911,230	80	98	10,227	12,855	1,830	1,552
	1854	88,984,969	29,272,058	25	82	1,864	2,852	168	242
Belgium	1850	156,620,134	113,690,547	78	143	5,279	10,554	458	819
	1854	267,630,163	153,690,829	55	90	4,683	6,971	345	515
Switzerland	1850	123,777,719	93,047,246	....	....	....	....	....	....
	1854	221,620,584	124,438,776	....	....	....	....	....	....
Portugal	1850	2,414,166	3,898,086	54	18	6,216	1,875	410	170
	1854	4,308,287	9,468,058	135	48	17,826	7,818	1,359	675
Austria	1850	6,932,209	10,357,565	17	20	2,038	2,118	138	141
	1854	6,745,678	10,296,286	6	11	642	1,841	43	95
Spain	1850	48,861,339	56,629,183	361	125	80,198	8,465	2,869	768
	1854	88,211,169	79,505,735	832	269	68,225	21,283	5,533	1,899
Sardinia	1850	91,245,671	71,781,977	606	589	86,018	85,825	4,236	3,711
	1854	117,643,989	87,141,008	623	645	63,160	63,723	5,928	5,666
Tuscany	1850	12,281,181	24,533,550	238	218	18,282	12,183	2,141	2,023
	1854	15,281,113	23,689,080	330	226	33,207	25,634	4,091	3,226
Roman States	1850	3,350,214	5,264,172	58	27	4,141	1,978	321	169
	1854	2,601,095	6,612,661	51	22	4,286	2,275	345	240
Two Sicilies	1850	22,521,432	17,097,039	170	68	24,541	11,235	2,029	1,221
	1854	24,262,548	20,691,260	188	86	28,634	7,122	2,475	1,088
Greece	1850	1,081,081	3,836,596	4	15	502	1,784	31	115
	1854	3,383,181	4,000,061	....	7	....	966	....	89
Turkey	1850	54,266,664	31,677,194	242	200	71,898	47,845	5,896	4,072
	1854	60,189,958	40,608,896	310	250	75,280	76,885	5,609	5,629
Egypt	1850	9,586,161	10,532,807	98	54	21,899	13,400	1,226	937
	1854	17,435,288	7,685,450	103	63	21,206	13,955	1,565	1,112
Barbary	1850	21,808,551	4,937,036	209	121	22,272	14,021	1,911	1,359
	1854	8,579,124	4,492,767	95	62	14,227	9,289	1,098	1,111
Africa, West Coast	1850	4,502,514	2,128,676	89	49	14,981	9,558	891	551
	1854	9,282,228	3,964,868	112	43	23,155	9,418	1,166	486
Mauritius	1850	72,247	5,057,132	....	....	....	....	....	....
	1854	632,962	5,662,509	3	17	1,149	5,793	46	261
Africa, East Coast	1850	287,008	593,612	....	2	....	627	....	24
	1854	2,154,867	3,819,928	6	6	2,245	2,368	93	101
English E. Indies, including Java, Sumatra, and New South Wales	1850	33,374,810	4,287,420	72	18	28,215	5,736	891	284
	1854	52,469,742	5,767,690	98 21	46 3	34,609 6,999	17,593 3,682	819	740 121
Dutch East Indies	1850	5,842,007	1,338,228	....	....	....	....	....	....
	1854	10,664,620	1,706,440	....	....	....	....	....	....
Philippines	1850	1,706,567	129,881	3	3	879	792	42	42
	1854	1,168,517	339,786	....	....	....	....	....	....
China and Cochin-China	1850	1,585,976	396,887	2	....	819	....	89	....
	1854	2,728,584	3,858,397	5	17	2,205	5,600	85	269

TRADE AND NAVIGATION OF FRANCE WITH FOREIGN NATIONS—ACTUAL VALUES—*Continued.*

Nations.	Years.	Imports. Value.	Exports. Value.	Ships. In.	Ships. Out.	Tonnage. Entering.	Tonnage. Outward.	Crews. Inward.	Crews. Outward.
		Francs.	Francs.						
Mexico	1850	3,614,758	21,120,723	48	53	8,986	9,999	432	571
	1854	4,015,878	24,810,946	43	41	9,790	8,645	528	468
United States of America, East	1850	182,180,826	278,854,956	50	39	18,179	7,310	592	393
	1854	190,771,942	892,090,943	34	23	9,562	8,161	464	856
United States, West	1850	44,908	7,586,288	....	38	....	12,906	....	571
	1854	714,288	9,568,985	2	16	699	6,557	34	364
Guatemala	1850	308	408,154	....	....	....	....	....	....
	1854	1,166,738	982,871	4	2	1,148	685	56	25
New Granada	1850	981,133	5,049,735	8	12	1,634	2,252	96	154
	1854	1,147,741	3,494,501	6	6	1,252	1,108	78	67
Venezuela	1850	2,987,081	3,497,615	16	14	2,848	2,488	194	161
	1854	6,492,216	5,792,518	26	21	4,882	3,418	272	222
Brazil	1850	17,087,782	27,234,483	87	90	18,873	19,402	1,084	1,122
	1854	27,270,169	44,048,500	95	87	22,544	21,757	1,361	1,147
Uruguay	1850	987,881	2,220,847	8	16	1,662	3,224	95	208
	1854	5,991,240	10,602,587	16	45	3,656	12,775	215	688
Rio de la Plata	1850	10,758,889	18,580,718	52	63	11,880	18,358	628	729
	1854	10,890,026	28,610,668	26	46	6,288	11,864	336	588
Ecuador	1850	390,990	816,691	1	2	893	592	17	82
	1854	297,428	192,973	....	1	....	244	....	13
Peru	1850	6,881,244	12,603,842	20	14	6,820	4,618	328	215
	1854	7,863,258	18,759,998	34	16	15,118	7,227	629	296
Bolivia	1850	....	49,850	....	....	....	....	....	....
	1854	....	472,251	....	....	....	....	....	....
Chili	1850	4,273,120	14,023,123	5	20	1,662	5,797	78	306
	1854	4,257,504	21,421,197	8	22	2,911	9,934	141	485
Hayti	1850	3,250,901	8,484,770	59	23	11,305	4,114	640	244
	1854	10,150,125	5,331,759	75	92	14,455	5,670	807	327
Span. Amer. Possessions, Isls., etc.	1850	26,894,272	10,330,924	123	32	29,274	8,427	1,502	440
	1854	29,210,484	17,939,202	118	40	28,641	10,812	1,428	557
Eng. Possess. in Amer., Isls., etc.	1850	199,880	622,626	....	2	....	622	....	22
	1854	253,687	3,059,869	9	4	2,512	1,406	133	63
Dutch Possessions in America	1850	153,646	165,095	1	....	303	....	15	....
	1854	3,122	68,663	....	....	....	....	....	....
Danish Possessions in America	1850	105,014	5,003,481	2	17	158	3,662	14	212
	1854	141,754	6,400,481	4	18	880	2,864	48	156
Isle of Bourbon	1850	18,809,419	11,591,023	50	83	15,422	24,242	767	1,251
	1854	29,908,168	18,819,000	81	105	26,918	36,587	1,337	1,677
French Guiana	1850	1,811,401	2,029,840	13	21	2,302	3,775	161	251
	1854	1,156,196	4,571,800	10	28	2,017	5,792	120	317
Martinique	1850	11,045,108	14,805,110	81	104	18,432	24,230	994	1,289
	1854	18,987,405	20,144,217	115	119	28,314	28,482	1,481	1,483
Guadaloupe	1850	9,322,364	11,251,741	51	83	11,246	18,594	589	974
	1854	17,114,518	16,276,198	116	110	22,189	24,352	1,226	1,378
Algiers	1850	6,263,289	67,371,988	704	1,072	74,709	115,125	6,940	9,680
	1854	49,422,025	90,918,877	1,086	946	133,155	121,155	12,262	11,868
Senegal	1850	8,920,745	6,821,551	48	69	6,270	8,569	487	569
	1854	6,932,825	8,744,816	75	84	11,769	154,095	784	879
French India	1850	3,333,342	474,896	6	8	1,637	2,097	84	101
	1854	10,369,437	445,725	19	4	5,320	1,257	272	59
St. Pierre and Miquelon, etc.	1850	19,931,116	5,424,677	....	....	....	....	....	....
	1854	18,902,278	6,148,157	....	....	....	....	....	....
Mayotte, etc., and Madagascar	1850	....	90,036	....	....	....	....	....	....
	1854	404,741	222,756	1	4	208	1,140	13	66

		Ships.	Tonnage.	Men.
Total for 1850...	Outward bound,	7,540	787,560	76,246
	Inward "	7,494	837,526	74,277
	Total.....	15,034	1,625,086	150,523

		Ships.	Tonnage.	Men.
Total for 1854...	Outward bound,	5,726	796,718	73,156
	Inward "	9,307	1,131,702	96,418
	Total.....	15,033	1,928,415	169,569

The proud naval force, however, disappeared progressively at the capture of Toulon, the victory of the 1st June, 1794, and still more in the victory of Aboukir; so that Bonaparte, on his accession to power, found the French marine in a very reduced state. He labored, however, to reinstate it. The years of continental peace, 1801, 1802, 1803, and 1804, were favorable to his efforts; and in 1805 he boasted of having in equipment 60 sail of the line, a force destined to an early diminution at Trafalgar and St. Domingo. The Bourbons, on recovering their crown, found little more than half the force which existed previously to the Revolution. It has since been augmented, and in 1831 it amounted to 35 ships of the line, 40 frigates, 23 corvettes, 57 brigs, 29 galliots and cutters of eight and four guns, 12 steamboats, 16 armed store-ships, 32 armed transports, and two yachts; total, 284; and in 1854, according to the last authentic account, it consisted of

	Guns.
53 vessels—9 carrying 120, 14=100, 19=90, 11=80 or 82 guns. Total.....	5,096
58 frigates—42=50 to 60, and 16=40 to 46.....	3,055
30 corvettes.....	868
101 brigs, schooners, and cutters.....	1,066
39 corvettes de charge and gaberres.....	788
290	11,773

Steam Fleet.

3 vessels of the line, 20 frigates, 30 corvettes, 64 other vessels,	Amounting together to 28,750 guns.
407 (1855)	

In the present year (1855) 14 ships of iron (nine being vessels of the line) have been launched, and 32 new vessels are on the stocks.

On the 1st January, 1855, the officers of the French navy consisted of two amirals, 17 vice-amirals, 37 contre-amirals, 108 capitaines, 238 capitaines de fregate, 658 lieutenants, and 614 ensigns.

Fisheries.—The bounties paid for the cod-fisheries in 1852 absorbed between 6,000,000 and 7,000,000 of francs, which was double the sum paid on the average of the five years between 1820 and 1830. The vessels equipped for the fisheries of Newfoundland, St. Pierre, Miquelon, etc., proceed from the ports of St. Malo, St. Brieuc, and Granville. The vessels proceeding to Iceland sail from Dunkirk. The French fish are of very inferior quality to those caught by the Americans, the latter selling at 47 francs 35 centimes per quintal, while the French cod-fish only brought 26 francs 95 centimes. With all this expense, however, the French fisheries are not adequate to the sup-

ply of the colonies, which receive considerable quantities of fish from foreigners, as will be seen from the following table:

FISHERY AND EXPORT OF COD, FROM 1848 TO 1853.

Years.	Ships.	Men.	Expenses of Shipping.	Exportation from all ports	Total expenses.
			£13,931	Cwts. 311,766	£112,340
1848	354	11,349			
1849	324	10,606	20,000	398,783	123,204
1850	363	11,710	22,202	306,030	117,482
1851	395	12,649	24,140	408,351	154,982
1852	419	13,648	25,094	400,154	145,174
1853	421	13,583	25,347	372,715	138,190

Statement of the whale-fishery from the French ports—Havre, 5 vessels, of 2045 tons and 127 men; return of product, 22,142 cwt. of oil of the whale; 30 cwt. of the cachalot; 1608 cwt. of whalebone.

FRENCH COD-FISHERY IMPORTATIONS AND EXPORTATIONS—FRESH, DRIED, ETC.; AND IMPORTATIONS OF WHALE-FISHERY.

Years.	Cod Fishery.		Whale Fishery.
	Imported.	Exported.	Imported.
	Cwts.	Cwts.	Cwts.
1848.....	412,491	82,964	10,711
1849.....	388,874	88,251	19,047
1850.....	376,132	62,070	20,157
1851.....	403,877	85,410	17,477
1852.....	378,562	54,460	8,889
1853.....	345,541	55,937	12,081

The mean of the first five years is above 391,915 quintals. Vessels of France employed in the fisheries generally—1848, 849; 1849, 685; 1850, 838; 1851, 925; 1852, 959; 1853, 943. The mean of five years is 851 vessels. The total amount of codfish exported in 1853 from all the ports of France amounted to 1,537,971 kilogrammes, or 55,307 quintals. See article FISHERIES.

Whale-fishery.—The whale-fishery was established in France in 1784, by means of encouragements held out by Louis XVI., who ordered that no duty should be collected on the articles exported, and that the produce of the fisheries should pay no import duty. He guarantied the adventurers against loss, and ultimately paid, in addition to £12,590, which he advanced without interest, an additional sum of £6695, being the balance of loss on 17 voyages. Notwithstanding these encouragements, the whole project was abandoned in 1787. In 1816 the offer of bounties attracted new adventurers into this branch of trade. The premium offered by the government was 50 francs (£2) per man, and two thirds of the crews were allowed to be foreigners. In 1819 40 francs were allowed to foreign vessels having a crew half French, 50 francs when the captain and one third of the crew were French; the premium to be doubled if the vessel passed Cape Horn. In 1829 a new ordonnance granted 90 francs per ton on vessels wholly equipped by Frenchmen, 40 francs when only two thirds were Frenchmen, and 30 if the captain was a foreigner. The premium was doubled if the vessel passed Cape Horn. A supplementary premium was allowed to vessels fishing to the south-east of the Cape of Good Hope, and the double premium was given to all vessels fishing at a higher northern latitude than 60°; and as the fishing is seldom or never prosecuted at a lower latitude, this premium of 180 francs per ton (£7 4s.) was invariably paid. The law of 1832, which regulates the whale-fishery of France, established a bounty of 70 francs per ton from March 1832 to March 1833, if the whole crew were French; the bounty to be diminished four francs yearly till it reached 54 francs. If one third of the crew be foreigners, the bounty to be 48 francs per ton, to diminish two francs yearly till it reached 40 francs per ton. A supplementary bounty to be given of 50 francs per ton if the crew be French, decreasing three francs per annum per ton; and 24 francs if one third be foreigners, decreasing one franc per annum, to be paid to vessels doubling Cape Horn, or reaching 62° of south latitude, if returning with less than half a cargo, or after an absence of 16 months; 500 tons to be the minimum for a single whaler.

With these extraordinary encouragements, capital was attracted to this new line of industry; and in 1831 three vessels cleared out for the Greenland whale-fishery, and 13 for the South Sea fishery, which employed 6412 tons of shipping, and were manned by 551 men. Notwithstanding all the bounties given to the whale-fishery, France has very few vessels engaged in it. There were only 17 ships in the trade in 1849, and 7 only re-entered French ports. There were but 5 vessels left Havre in 1853, of a tonnage of 2045 tons, and with a crew of 127 men. The return of the product was 112,435 kilogrammes of the whale, 1589 of the cachalot, and 81,710 kilogrammes of whalebone.

It was estimated by the minister of commerce, in his report on this subject to the Chamber of Deputies in 1850, that the 550 seamen employed in the whale-fishery did not cost the State less than £[illegible] at the rate of £72 12s. per man, or £6 a-month; the bounties granted by the budget to seamen in ordinary ships of war amounted to £1 per month; so that the allowance to the seamen employed in the Greenland fishery is six times the ordinary allowance of seamen in the public service. It is remarkable that France was granting these extravagant allowances for the encouragement of the whale-fishery exactly at the time that Great Britain was withdrawing the bounties by which she had formerly endeavored to promote this branch of trade as a nursery for seamen. Yet, in 1830, the number of vessels that cleared out for the fishery in England was 123, consisting of 40,166 tons, navigated by 5044 seamen; being thus about eight times the quantity of the tonnage employed by France. The government of Louis Philippe, alarmed at the large outlay in bounty, endeavored to lessen it, and to render it transitory and temporary only. M. d'Argout, the minister of commerce, insisted that these bounties exhausted the resources of the State, and decreasing bounties were after a period adopted, but M. Cunin Gridaine, who was minister of commerce, relapsed into the old error by introducing supplemental bounties. The provisional government of 1848, by one decree augmented the bounties, and by a second extended the term of the law to 31st December 1851. On the 22d of July, 1851, the National Assembly voted for the continuance of the bounties to 1861.

Shipping.—France seems destined, by the natural advantages which she possesses, to become a maritime power of the first rank. Her sea-coast exceeds in extent that of any other continental State. On the Atlantic she has 130 leagues of coast, 150 on the Channel, and 90 on the Mediterranean; while her position between northern and southern Europe, and her numerous ports and navigable rivers, are eminently favorable to the extension of her navigation. But in this as in all other branches of the French trade, the prejudicial effects of the restrictive system have been abundantly manifest. France, in forcing a trade with her colonies, containing less than half a million of inhabitants, has sacrificed her trade with other tropical countries and their numerous population, to the great injury of her shipping interest. A great increase has taken place in the tonnage employed in the coasting trade of France, a fact which affords clear and convincing evidence of the extending resources of the country, which would have equally occasioned an increase in the shipping employed in the foreign as well as the domestic trade, if this important branch of industry had not been stunted in its natural growth by the monopolizing system. The navigation of France no doubt suffered grievously during the last war, under the maritime hostility of Great Britain. But in the course of nearly 20 years it would have recovered from this state of depression, if the natural energies of the country had been allowed free scope in this line of industry.

Butcher's Meat.—The Revolution of 1830 did not alter the system prevailing antecedently with respect to the trade in butcher's meat, but modified it. The same may be said of the Revolution of 1848. It did not change the system but modified under certain heads the practice of the trade. The *droits d'octroi et de caisse de Poissy* were at first suppressed, then re-established, but with a radical change in this respect, that the duty was levied by the *weight* of the cattle, and not at so much per head, as before. This alteration had long been ineffectually demanded by the agricultural breeders. Butchers from the interior of France were also to provide stock and meat for the Paris market as well as their brethren of the capital. These regulations and modifications satisfied neither agriculturists nor butchers. In the month of January, 1851, the National Assembly directed an inquiry into the production and consumption of butcher's meat. The commission charged with this inquiry seriously engaged in it, but the events of the 2d December, 1851, prevented it from finishing its task. From the portion of the report, however, that has been printed, we know that it was the opinion of the committee that there should be liberty of commerce in meat, and that the local authorities should, under no pretext whatsoever, be allowed to interfere with this cardinal principle. The committee considered meat, like spice, silk, or cloth, a mercantile commodity, and were of opinion that the police should only interfere as to frauds in reference to quantity or quality, or as to the wholesomeness of the victual as an article of food. This was only returning to the principle professed in the laws of the 14th and 17th June, 1791, and the 1st Brumaire An. VII. On the question of the *octroi* they were of opinion that it interfered with the price and consumption of food, and that it should be abolished from the 1st January, 1860. Since this report was published the price of butcher's meat has increased, and the supply has diminished at Poissy, the great market which supplies Paris. In consequence of this, recourse was had to an expedient which sound political science has proved to be utterly ineffectual. An ordonnance appeared in the *Moniteur* of the 11th and 12th October, 1855, of which the following is the substance:

"On and after the 16th of the present month, butcher's meat shall be sold at prices taxed by the authorities. The prices shall be fixed every fortnight for every kind of meat, according to the returns made at the Caisse de Poissy, and to the weight of meat ascertained to have been sent from the public slaughter-houses of Paris during the preceding fortnight. In the shops established in the markets, meat shall be sold at 10c. at least, per kilogramme (about a half-penny per pound) below the fixed price."

This decree, which violates every sound principle of political economy, appears to have been well received by the poorer classes of the population, who had long complained of the dearness of meat, and of the exorbitant profits of the butchers. But the way to reduce the profits of the butcher is to destroy the monopoly, and to render trade in meat free.

Revenue and Expenditure.—In France, the ancient system of taxation and finance was extremely unequal and oppressive. Her various provinces, though they were united under one head, retained many of their own peculiar laws and privileges, which were absurd in themselves, and opposed to the general interests of the empire. Among these was an exemption from certain imposts, to which some were subjected, and consequently over-taxed; and others, again, contributed a certain quota of revenue to government, which they raised by taxes imposed by their own local authorities. The consequence was, that no uniform system of taxation could be established throughout the country. The taxes on many commodities were higher in one province than in another; and custom-houses were accordingly established on their respective frontiers, to prevent the importation of goods until they had paid the duties. In this manner, owing to the inequality of taxation, commodities could not freely pass from one district of the country to another; and the kingdom was thus broken into separate divisions, to the great interruption of trade. The partiality shown to the privileged orders was another serious grievance to the ancient system of French taxation. The taxes by which the public revenue was raised were, first, the *taille*, a tax on real property, or on income derived from commerce and industry. From this tax the lands of the noblesse and clergy were exempt. "The tax was called *taille*," says Borel, "because the peasant collectors, not knowing how to write, marked down what they had received on a wooden tally." Secondly, the *vingtième* was the tax of 1-20th on property, from which the clergy alone were exempted. This tax was established in 1750, and was levied upon all property of whatever description. In 1754, it was taken off the amount of income arising from personal industry. Thirdly, a poll tax was levied on all classes indiscriminately. Many of the taxes were farmed by rich capitalists, called farmers-general, or *fermiers-generaux*, who paid annually into the treasury a fixed sum, and collected the taxes from the people. Those farmers-general held the monopoly of the manufacture and sale of tobacco and salt; and also the *octroi*, which was a duty on all articles entering Paris and other large towns. The power delegated to these contractors, was the source of grievous oppression to the people. The duties called *aides* were imposed on spirituous liquors and other articles of consumption; they also include duties on all articles worked in gold or silver, on wrought iron, playing-cards, leather, paper, starch, etc. These duties levied by collectors for the benefit of government were abolished by the National Assembly in 1790. The *corvée*, which consisted in so many days' labor annually, of men, horses, oxen, carriages, etc., was nominally applicable to the maintenance of roads. The tax was payable either in money or in labor. The system of taxation, so prejudicial to internal commerce, was, to a certain extent, reformed by Colbert, the minister of Louis XIV., who, though his views in regard to the principles of commerce were narrow and illiberal, yet improved in many particulars the system of taxation, by rendering it more uniform, and thus breaking down the barriers which obstructed the free intercourse between the different provinces. Under his administration the public revenue of France amounted in 1682 to £5,000,000.

The long and expensive wars of Louis XIV. produced a great accumulation of debt (nearly £100,000,000 sterling), which, after his death, was lessened by an appeal to a singular privilege, of which advantage has often been taken in France, viz., that a new sovereign is not bound to pay the debts of his predecessor in full. During the 18th century, the revenue of France increased progressively, but more slowly than that of England: the vicious system of farming the taxes still continued. Necker, appointed to office in 1776, endeavored to teach the French court the value of publicity in financial statements; and exhibited the rare example of a war conducted for several years without new taxes, the supplies being found by loans, the interest of which was provided for by successive retrenchments in the public expenditure. His successor, M. de Calonne, pursued a very different course, and was found altogether incapable of the measures necessary to remedy an annual deficiency of £2,000,000. The revenue of France was then about £22,000,000 sterling. The sum required for payment of the interest of the public debt was nearly 10,000,000 (Report of Camus to the National Assembly in September, 1790), leaving only £12,000,000 for the army, navy, civil list, and other public expenses.

Such was the state of the French finances at the era

of the Revolution of 1789, which was followed by invasion on the frontier, and in the interior by all the confusion consequent on the reign of terror. In this era of confiscation and judicial murder, the national debt could hardly be respected. It was not, however, openly canceled, but the interest was issued in assignats of no value except for purchases of national property. At last, in 1798, on an approximation to regularity in the management of public business, there was passed a law declaring that one third of the old national debt should be sacred, and the interest on it payable in *bons*, or paper receivable in discharge of taxes. This third was called *la tiers provisoire*, but its price in the market continued very low until Bonaparte succeeded to power, and placed Guadin, afterward Duke of Gaeta, at the head of the treasury, when means were found to redeem the public funds from their depression, and to resume the payment of the dividends in cash. The amount of the revenue was greatly impaired by the general confusion of the Revolution. In 1799 the expenditure exceeded the receipt by £8,000,000 sterling. (Gandin, *Notice Historique des Finances de la France.*) A partial reduction of expenditure, and improvements in the collection of the taxes, brought, in 1803, the receipts to £19,500,000, while the expenditure was £20,000,000. In subsequent years both received a progressive augmentation; and in 1813 the revenue derived from France, exclusive of conquered territory, was about 27,000,000. On the restoration of the Bourbons, in 1814, the public debt, funded and unfunded, did not exceed 123,000,000 (Bignon, *Exposé Comparatif de la France*); its interest £7,900,000. France had thus a fair prospect of financial prosperity, when the return of Bonaparte, and a second invasion by the allied troops, overthrew public credit, and produced a national loss and a general derangement of trade. It has been estimated that the return of Napoleon from Elba, which led to the second invasion of France by the allied troops occasioned a loss to the country of 4,000,000,000 of francs. The direct loss, which included the expenses paid to the allied powers, and those incurred by the maintenance of their armies, placed in cantonments throughout France, may be estimated; but the indirect evils occasioned by the ravages inseparable from the invasion of a hostile army, by the confusion and derangement of all commercial relations, and the impossibility of collecting the revenue in such a time of trouble, can not be summed up in money. At the same time there are scarcely any national difficulties which may not be overcome by the energies and industry of a free and intelligent people such as the French. With an inconsiderable addition to her debt, France has defrayed all these heavy expenses, the contributions imposed on her by the allied powers, the expenses of the temporary maintenance of their armies, and her own warlike expenses. For this purpose, however, it became necessary in 1815 to impose additional taxes. In 1817 a loan was required of 332,989,000 francs; and in 1818, to defray the extraordinary contribution of 575,807,197 francs, paid in that year to the allies, the minister had recourse to another loan of 220,510,718 francs; while, by the taxes which had been imposed, the revenue of that year was carried to £35,000,000.

MEAN REVENUE OF FRANCE IN THE TEN YEARS BETWEEN 1832 AND 1842.

	1821.	1842.
	francs.	francs.
Direct Taxes	841,884,457	401,900,935
Registration, Stamps, etc.	181,108,661	230,856,780
Forests, etc.	27,080,175	31,780,000
Customs and Salt	152,875,920	181,107,236
Indirect Taxes	198,188,051	240,568,921
Post Office		47,025,500
Algerian Revenue	49,408,948	4,349,092
Prod. Universitaires		19,127,972
Prod. Eventuels, etc.		2,390,000
Divers Sources	14,018,509	12,519,749
Total	954,105,791	1,174,584,975

The expenditure of 1853 was as follows:

	francs.
Interest on Public Debt, etc.	372,314,577
Dotations—Civil List, etc.	17,268,580
Expenses of various Ministries—Justice, Foreign Affairs, etc.	787,558,516
Expense of Collecting and Paying Taxes, etc	151,095,335
Drawbacks, Discounts, Bounties, etc.	83,949,983
Total	1,412,274,991
Travaux Extroordinaires or Additional Works	72,738,334
Total	1,485,013,325

Besides the public revenue of the empire, the communes raised a revenue for their own local expenses. According to the latest published accounts, this revenue arises partly from *octrois*, which amount throughout France (there being 1436 *octrois*) to 95,176,602 francs, and partly from other sources, the whole of which amounted to 230,633,209 francs in 1850. The total of the ordinary ways and means of France in the *Budget Provisoire* of 1855 amounted to 1,528,110,288 francs. During the administration of M. Vilèle the five per cents. in France were converted into a three per cent. fund, at the rate of 133·33 cents. for every 100 of the five per cent. stock; so that the whole five per cent. stock, bearing an annual interest of 30,574,116 francs, was converted into a three per cent. fund, of which the capital was increased one third. The effect of this transaction was, in reality, to reduce the interest on the five per cent. stock to four per cent., by which he saved annual interest to the amount of 6,000,000, though by a very useless complexity in his operations. The interest on the public debt of France, thus reduced, may be stated as follows: it amounted in 1855 to 418,870,442 francs. The sinking fund, or *caisse d'amortissement*, ceased altogether its operations on the 14th July, 1848. In the 32 years of its operation the *caisse d'amortissement* liberated the country from liabilities to the amount of 1,633,474,090 francs, and placed at the disposition of the treasury, from 1833 to 1848, 1,016,693,856 francs.

Taxation.—The ancient system of taxation in France was subverted by the National Assembly in 1791, and new taxes were substituted in lieu of those formerly in force. These consisted of direct and indirect taxes. The direct taxes are, 1. *Contribution foncière*, or landtax; 2. *Contribution personelle et mobilière*; 3. A tax on doors and windows; 4. *Droits de patente*, or a license duty on particular trades and professions, and a duty on mines.

The *contribution foncière* is raised equally on all lands and houses, in proportion to their nett revenue. There are no longer any exemptions in favor of the nobility since the first Revolution, in 1789. The imperial domains and the property of the State are alone exempted. The *contribution personelle et mobilière* is divided into two parts. The first is a species of poll tax, rated at three days' labor, calculated in money value to be from 10 to 30 sous per day, and levied on all males above 18 years of age. The *contribution mobilière* is a house-tax, levied on rents from 200 to 3500 francs. For the *contribution personelle*, the *octroi*, which is a custom-duty on all goods entering a town, is substituted in Paris and other large cities. The tax on street-doors, gateways, and windows, varies in proportion to the size of the town in which the house is situated, and also in proportion to the size and value of the house, and the number of windows. It is regulated by a tariff, in which are two divisions. The *droits de patentes*, or license duty, is levied on every person following a profession, trade, or business; and is divided into two heads—the proportional tax or the fixed tax, which depends on the extent and population of the town where he exercises his profession. A merchant pays from 40 to 5000 francs per annum, according to the population of the place where he resides, and an additional 10 per cent. on the rent of his dwell-

ing-house. Bankers in all cases pay 510 francs a-year; and there is in like manner a fixed rate for other inferior trades and professions. The duty on mines is in proportion to the extent of the surface, and also to their nett produce.

The law which fixes the amount of the direct taxes also determines the quota which each department is required to pay. This is announced by the minister of finance to the prefect of the department, who communicates it to his sous-prefect and to the mayors. The sum thus assigned by the prefect to each arrondissement is subdivided by the councils of the arrondissement and by the communes; and the amount allotted to each is apportioned among the inhabitants by persons appointed for that purpose, called *repartiteurs* or assessors. These assessors regulate the amount of taxable property, and they fix the scale. The land-tax is, however, very unequally assessed, amounting in some departments to six per cent., while in the department of the Seine it is seventeen per cent. The equalization of the land-tax has always been accounted a capital object in the financial policy of France; and with this view a very minute survey and measurement of all the landed property in France (termed the *cadastre*) was begun in 1808, and finished in 1847. The *cadastre*, accurate as it generally is, can not, however, be considered as the expression of actual facts. The *propriétés imposable*, or taxable property, consists, according to the *cadastre*, of 25,581,658 hectares of cultivable land; 5,159,226 hectares of meadows; 2,050,533 hectares of vines; 628,235 hectares of orchards, nurseries, and gardens; 4,175 hectares of mines; and 17,400 hectares of lakes, ponds, etc. The inequality of the land-tax has long been a subject of loud and just complaint; and various plans have been adopted for a more accurate classification of the land. But these have generally proved inefficient and unsatisfactory.

The indirect taxes consist chiefly of fourteen principal kinds—of the *droits réunis* or excise duties on articles of consumption, of stamp duties, registration duties, duties on carriages, on canals and ferry-boats, on gold and silver plate. A revenue is raised from the monopoly of tobacco and gunpowder; from the post office; the *octroi*, or custom duty on all articles entering large towns, one tenth of which goes to the imperial treasury, the remainder being applied to local expenses. The customs form an important branch of the French revenues. The *droits réunis*, or excise duties, are laid on wine, brandy, etc., which pay 1½ francs per hectolitre of 120 English quarts, on being removed from one place to another. Wine in bottles pays 10 francs per hectolitre on its removal; cider, perry, and mead, pay 80 centimes per hectolitre. Ten per cent. of the above duty is paid on their removal from the wholesale warehouse. Prior to 1830 a duty distinct from the octroi was levied on the entry of all wine or spirituous liquors into communes the population of which amounted to 1500 and upward. All communes whose population does not amount to 4000 are exempted from this tax; and a new tariff has been established, rising progressively from 4000 to 5000 inhabitants, in proportion to the estimated wealth of the departments, which are divided into four separate classes—a very vague, as we should suppose, and uncertain standard of taxation. There is a further duty on wine and liquors sold by retail, which since 1830 has been reduced from 15 to 10 per cent. A reduction of 3 per cent. on this duty is made to dealers, and of 25 per cent. if the wine be grown by the retailer himself. Strong beer pays a duty of 2 francs 40 centimes, and small beer a duty of 12 sous, per hectolitre. Retailers of liquors must take out a distinct license, which varies, in proportion to the size of the town, from 6 to 20 francs. Proprietors of public carriages pay one tenth of the price of each place for passengers, a third being deducted for vacant places, and one tenth of the price received for merchandise. Private carriages are subjected to a moderate duty, according to their size, of 40 francs per annum for a carriage with two wheels, and holding two persons; and of 150 francs per annum for a carriage with four wheels, and holding nine persons. The *enregistrement*, or registration duties, embraces a variety of transactions, where property is conveyed or given away by marriage-settlement or otherwise. There is a duty on gifts *inter vivos*, which increases with the distance of the relation between the parties. It was modified by an ordonnance of Louis Philippe in 1832. The duties payable on registry are either fixed or *ad valorem*; the fixed or certain duties apply to common certificates, those of life or residence, account-books, bills of lading, appointments of arbitrations, valuations of furniture, and the like. The *ad valorem* duty applies to all bonds or obligations, discharges, judgments, deposits or releases of sums of money, and for every transfer of property, etc. The stamp duty applies to receipts, bills of exchange, newspapers, handbills, playbills, admission cards to public places, and upon paper used for civil and judicial *actes*.

The total received from the *impôt direct* in 1854 was 411,273,000 francs. In 1853 the sum received was 420,064,000 francs, which shows a deficit of nearly 9,000,000 of francs in 1854. The total receipts of the *impôts indirects* in 1854 were 847,260,000 francs. The impôt on salt produced in 1854 a sum of 33,270,131 francs. The total of "droits" received in 1854 amounted to 149,337,510 francs.

	Francs.
Land carriage or roulage 31,000,000 of tons, the mean transport at 15 leagues, at the mean price of 1 franc per ton.	465,000,000
The public voitures which travel 18 leagues per day, in place of the common carriages of 8 or 10 leagues, yield, per annum.....	60,000,000
The duty on the public conveyances returns 6,000,000 francs; three fourths are derived from the passengers, and one fourth from the goods they convey.	

The share capital of the French railways in 1848 was £49,044,000 sterling. The total merchandise conveyed per transit in 1844, was in value 229,820,795 francs. In 1854=54,926,640 francs official value. Value of wine, spirits, beer, and cider consumed in France, reckoned at 500,000,000 francs, give 311,000,000 francs wine, 54,000,000 francs brandy, 59,000,000 francs beer, and 76,000,000 francs cidor.

The duties levied on this branch of the French revenues produced £5,483,765 in 1852 and £5,505,686 in 1853. In France these duties are laid on in many cases more with a view to restriction and monopoly than to revenue. France sacrifices a large revenue for the encouragement of the colonial monopoly; paying for the produce of the colonies an exorbitant price, and afterward, as in the case of sugar, the staple article that is imported from the colonies, giving a great portion of the duty as a bounty on its exportation to foreign countries, to indemnify the exporter for the loss that he would incur if he were selling the sugar at its ordinary price in the markets of Europe. In 1830 the gross receipts from the sugar duty amounted to £1,397,340. of which one third, namely, £420,903, were paid back in bounties on the exportation of the surplus. Thus the nett duty only amounted to £976,437, while in 1822, though the quantity of sugar consumed was only 1,086,596 cwts., or 281,075 cwts. less than in 1830, the nett amount of the duty was £1,234,653. The consumption of sugar in France in 1847 only reached to about 2,576,000 cwts. It is by means of heavy custom-duties that the French legislators endeavor to preserve the monopoly of the home market to their own manufacturers, by which policy they compel the French community to buy at a high price the inferior articles of their own manufacture, rather than the better articles of the foreigner at a lower price. The

increased numbers and superior vigilance of the custom-house officers have been still counteracted by the new expedients and persevering ingenuity of the smuggler.

The frontier of France is the scene of this persecution against commerce, where all the illegal, daring, and ingenious resources of the contraband traders are called into activity. Among other expedients, they trained packs of dogs, according to Messrs. Villiers and Bourtry, to carry prohibited goods across the frontier. These dogs being conducted to the frontier, are kept without food for many hours; they are then beaten and laden with goods, and are started on their travels when it begins to grow dark, and reach the abodes of their masters as soon as they can, where they are well treated, and receive a full meal. According to the accounts of the French custom-house, 40,278 of these dogs were destroyed in the year 1830, on which account premiums were paid to the custom-house officers to the amount of 40,278 francs. That the trade, though it may be obstructed, is not prevented, is evident from the circumstance that there are regular rates of insurance on the conveyance of contraband goods into France, varying from 10 to 70 per cent. A revision, and if possible a reduction, of these heavy duties would be the true policy of France. Monopoly was never yet the source of commercial greatness in any country.

National Income and Capital.—Population.—Of the official surveys of the French territory, by far the most minute and accurate is the *cadastre*, a survey which became indispensable from the time it was determined to exchange the taxes on consumption for taxes on produce. A return of the rent of land, such as was made under the property-tax act in England, would not have been practicable in France, where so many thousands of petty lots are cultivated by their proprietors. At first the *cadastre* proceeded on the plan of an estimate *par masses de culture*, or continuous valuation of extensive tracts; but this proving unsatisfactory, it has been conducted since 1807 on a plan of such minute detail, as to give the value of every separate *parcelle* or patch of land. The progress of this minute survey of the landed property in France has been retarded by many causes; and in 1830 not above two thirds of the land had been surveyed. It was estimated in the report of one of the committees of the Chamber in 1832, that it would still require from that period about eight years, and an expense of above £2,000,000 sterling, to complete it. They had only surveyed 31,000,000 of hectares, or 68,000,000 of acres. The annual expense of the survey is £120,000.

The wages of mechanics are so fluctuating and various, that a satisfactory statement of them can scarcely be produced. It may, however, be assumed that they are generally 20 or 30 per cent. lower than in England. The rate of wages of the agricultural population was thus estimated in 1851:

		Fr. cents.		Francs.
6 millions of men,	at	1 50	per diem	1,800,000,000
6 " of women,	"	75	"	900,000,000
6 " of children,	"	25	"	3,000,000
18 " of agricul. laborers paid yearly.				3,000,000,000

Expense of Living.—A quarter of a century ago the difference in the expense of living in France and in England was about a third less in favor of England. As far as regards provisions, this difference was somewhat greater; but it received a counterpoise in the greater cost of fuel. Paris is now as expensive compared to the rest of France, as London is compared to the rest of England. In 1855 prices were generally on a par with prices in London, and in house-rent and the prices of lodgings and fuel, Paris exceeds London.

In the end of the seventeenth century, the territory of France, when very nearly equal to its present extent, appears, from the report of the intendants or provincial governors, to have contained about 20,000,000 of inhabitants. This number was found, by the census made by order of the National Assembly, to have increased nearly a third in the course of a century; the amount, in 1791, being 26,363,600, a number which, by computation, made in 1817, had further increased to above 29,000,000. In the year 1820 the population was 30,451,187: and, according to the ordonnance of January 1832, it amounted to 32,661,678. By the census of 1851 it appears that the population of France was 35,781,628. The marriages in 1832 and 1833 were annually about 236,996, and the deaths about 785,268, of which 395,250 were males, and 388,018 females. The births were 967,533, of which there were 498,707 boys and 468,826 girls. The number of illegitimate children was then 68,081. In 1852, twenty years after the period here spoken of, the total number of births was 965,080, of which 895,236 were legitimate, and 69,844 illegitimate. The number of children still-born in 1852 amounted to 37,901, the number of deaths to 811,695, and the number of marriages to 281,360.

The estimates of population in France, subsequently to 1791, are formed, not by actual survey, but by adding for the period which has intervened, the births, and deducting the deaths, of which an accurate record is kept in the public offices.

Population of Towns with 18,000 Inhabitants and upward in 1832 and in 1851.

Towns.	1832.	1851.	Towns.	1832.	1851.
Paris	774,338	1,053,262	Rennes	29,680	33,066
Marseilles	145,115	185,082	Besançon	29,167	35,345
Lyons	163,715	156,190	Versailles	28,417	29,975
Bordeaux	99,062	128,935	Toulon	28,419	45,510
Rouen	88,986	91,513	Clermont-Ferrand	28,257	30,548
Nantes	77,992	91,803			
Lille	69,078	68,468	Limoges	27,070	37,019
Toulouse	59,630	85,554	Montauban	25,460	29,814
Strasbourg	49,712	63,642	Dunkirk	24,987	36,856
Amiens	45,001	49,189	Grenoble	24,888	26,852
Metz	44,416	48,484	Havre de Grace	23,816	26,410
Nimes	41,266	49,480			
Caen	39,140	40,569	Troyes	23,740	25,636
Rheims	35,971	43,643	Tours	23,295	
Montpellier	35,825	40,222	Poitiers	23,128	23,818
Angers	32,741	43,088	Aix	22,575	24,255
Avigaon	29,889	31,812	Boulogne	20,856	29,188
Brest	29,860	36,492	St. Omer	19,344	19,326
Nancy	29,789	40,289	L'Orient	18,822	22,561

The ratio of the increase of population in France is greatest in the lower classes; the middling and upper ranks have seldom large families. In that country the population evidently increases faster since the adoption of vaccine inoculation.

French Weights and Measures.—The weights and measures of France were reduced, as is well known, to a very simple and uniform scale soon after the first Revolution; but there has been much difficulty in accustoming the inhabitants, particularly in country districts, to the adoption of the new system, which unluckily preserved none of the names with which they were familiar. In 1812 a kind of compromise took place—government sanctioning the retention of the old names, such as pounds, ounces, ells, and bushels; but requiring that their contents should be calculated by a reference to the new standard. It is accordingly on this footing that business is now transacted in France. The new weights and measures are in general larger by a fraction than the old, and the use of the latter is prohibited by law.

The fundamental standard adopted in France for the metrical system of weights and measures, is a quadrant of the meridian—that is to say, the distance from the equator to the north pole. This quadrant is divided into 10,000,000 of equal parts, and one of these parts or divisions is called a metre, which is adopted as the unit of length; and from it, by decimal multiplication and division, all the other measures are derived.

The length of this quadrant was ascertained by MM. Delambre and Méchain, by measuring an arc of the meridian between the parallels of Dunkirk and

Barcelona, and has been found to contain 5,130,740 French toises, or 82,808,992 English feet. This number divided by 10,000,000 gives 8·2808992 English feet, or 39·37079 English inches very nearly, for the true length of the French metre.

In order to express the decimal proportions, the following vocabulary of names has been adopted:

For multipliers the prefix	Deca means	10	times.
" "	Hecto "	100	"
" "	Kilo "	1,000	"
" "	Myria "	10,000	"
For divisors the prefix	Deci expresses	·1	part.
" "	Centi "	·01	"
" "	Milli "	·001	"

It may assist the memory to observe that the prefixes for multiplying are Greek, and those for dividing Latin; thus decametre means 10 metres, and decimetre 1-10th of a metre; hectometre means 100 metres, and centimetre 1-100th of a metre; kilometre means 1000 metres, and millimetre 1-1000th of a metre. The metre (as before stated) is the element or prime unit of long measure, and is equal to 39·37079 English inches.

The are, which is a square decametre (or 100 square metres), is the elemental unit of square or superficial measure. It is equal to 119·6033 square yards, or very nearly 2-81 parts of an acre.

The stere, which is a cubic metre, is the elemental unit of solid measure, and equal to 35·3166 cubic feet English, or nearly 35¼ cubic feet.

The litre, which is the cubic decimetre, is the elemental unit of all liquid measures, and of all other measures of capacity. It is equal to 61·02705 cubic inches, or is very nearly 11-50ths or 22-100ths of an imperial gallon.

Lastly, the gramme, which is the weight of a cubic centimetre of distilled water at its temperature of greatest condensation, is the elemental unit of all weights, and is equal to 15·4325 grains troy, or 13-23ds of an avoirdupois dram nearly.

Tables of French Weights and Measures, with their Values in the English Imperial Standards.

Lineal Measure.

		Inches.			
Millimetre	=	·03937079			
Centimetre	=	·39370?9			
Decimetre	=	3·937079			
			Yards.		
Metre	=	39·37079	=	1·093633	
		Feet.			
Decametre	=	32·80899	=	10·93633	
Hectometre	=	328·0899	=	109·3633	= 5-80 mile.
Kilometre	=	3280·899	=	1093·633	= 18-29 "
Miriametre	=	32808·99	=	10936·33	= 6 3-14 miles.

Superficial Measure.

		Sq. Yards.	Sq. Feet.	Sq. Inches.
Centiare	=	1·196033 =	10·7643	= 1550·059
Deciare	=	11·96033 =		
		Acre.	Acres.	
Are	=	119·6033 =	·0247114 =	1-40 n'rly.
Decare	=	1196·033 =	·247114 =	1-4 "
Hectare	=	11960·33 =	2·47114 =	2 1-2 "
Killiare	=	119603·9 =	24·7114 =	24 7-10 "
Miriare	=	1196033· =	247·114 =	247 1-9 "

Solid Measure.

		Cubic Inches.	Cubic Feet.	Cubic Yards.
Centistere	=	610·2705 =		
Decistere	=	6102·705 =	3·53166	
Stere	=	61027·05 =	35·3166	= 1·30802
Decastere	=	610270·5 =	353·166	= 13·0802

Measure of Capacity.

		Cubic Inches.			
Centilitre	=	·6102705 =			
Declitre	=	6·102705			
Litre	=	61·02705	=	11-50 gallons nearly.	
Decalitre	=	610·2705	=	2 1-5	" "
Hectolitre	=	6102·705	=	22	" "
Kilolitre	=	61027·05	=	220 1-100	" "

Measure of Weight.

		Grains Troy.		
Centigramme	=	·154325		
Decigramme	=	1·54325		
Gramme	=	15·4325		
Decagramme	=	154·325	=	·35275 oz. av.
Hectogramme	=	1543·25	=	3·5275 "
Kilogramme	=	15432·5	=	2·2047 lbs. av.
Miriagramme	=	154325·	=	22·047 "

The following are some nearer approximations to the values of the weights and measures of most frequent occurrence:

Metre	about	1 yard 3 inches.
Decametre	"	11 yards.
Hectometer	"	1-10 mile.
Kilometre	"	5-8 or more nearly 18-29 mile.

One of the old measures frequently used, the toise, is equal to 2 yards 5 inches.

Are about.....	1-40	acre.
Decare.....	1-4	acre or 1 rood.
Hectare.....	2 1-2	acres.
Decistere.....	3 1-2	cubic feet.
Stere.....	1 2-3	cubic yards.
Decastere....	13 1-10	" "
Litre about....	1-5	or 11-50 gallon.
Decalitre.....	2 1-5	gallons.
Hectolitre....	22	gallons or 2 3-4 bushels.
Myrialitre...	3 1-2	quarters.
Gramme.....	5-9	dram avoird.
Decagramme..	1-3	oz. "
Hectogramme.	3 1-2	" "
Kilogramme..	2 1-5	lbs. "
Quintal or 100 Kilogrammes	is 3 1-2 lbs. less than 2 cwt.	

French Money.—The French monetary *unit of value* is the franc, which, in the gold coinage of 20 and 40 franc pieces, is equal in value to 9·525 pence sterling, and in the silver coinage of francs and five-franc pieces, is equal to 9·705 pence; but the common rate of exchange is 25 francs for 1 sovereign, which gives the value of a franc equal to 9 3-5 pence sterling.

	s.	d.	d. farth.	farth.
Centime..... =	0	0·096	= 0 0·384	= 0 2-5 nearly.
Decime..... =	0	0·96	= 0 3·84	= 3 21-25
Franc..... =	0	9 6	= 9 3-5	
Five-franc piece... =	4	0		
Napoleon or 20-franc piece..... =	16	0		

In reducing French money to English, from any number of francs subtract their fifth part, and the remainder will be their value in shillings. Or multiply the francs by four, point off the two right hand figures of the product for decimals, and the result will be their value in pounds and decimals of a pound sterling.—E. B.

Commercial Relations of the United States with France.—Prior to the ratification of the treaty of the 6th of February, 1778, we have no reliable account of the value of our trade with France. The navigation acts and other regulations imposed upon the colonies by the mother country, strongly tended to fetter and embarrass their intercourse with other nations; but, in spite of them, irregular, illicit commerce was carried on to a considerable extent. By the treaty alluded to, the high contracting parties reciprocally bound themselves to grant to each other, in respect to commerce, all the privileges and immunities which either of them might thereafter grant to the most favored nations; to charge no more in imposts, port duties, or other customary burdens of trade, to the subjects or citizens of each, respectively, than should be charged to the subjects or citizens of other powers; and to protect the vessels of each other when within their respective jurisdictions. The subjects or citizens of either were excluded from the fisheries of the other, and the United States became bound not to disturb the subjects of the King of France when fishing at the Banks of Newfoundland. The citizens of the United States were exempted from the *droit d'aubaine*, and were empowered to devise real and personal property, and their heirs were permitted to inherit without becoming naturalized in France; and corresponding privileges were secured to French subjects residing in this country. The doctrine that "free ships make free goods" was recognized, and the articles to be deemed contraband of war were enumerated. The remaining stipulations refer exclusively to contingencies of war, and need not be enumerated. On the 14th of November, 1788, a convention was entered into and ratified, defining the powers and duties of the consuls of the high contracting parties. This convention was

intended the more effectually to secure the faithful observance of the treaty stipulations.

These arrangements were ratified while the Continental Congress had no authority to regulate foreign commerce; and the ratification, therefore, only amounted to a pledge that the States would conform to its provisions, they having the sole power to levy imposts and port and tonnage duties. The arrangements continued in force, however, and were observed for more than 2[illegible] years, and until annulled by the act of the 7th July, 1 98, on the ground of repeated violations of treaty stipulations by the successive revolutionary governments of France. Many of the fetters of trade were removed by this treaty; and, although importations and exportations were, for a time, exposed to the depredations of British cruisers, the enterprise of our seamen opened a commerce of no inconsiderable value. It was estimated that, during the three years immediately preceding the French Revolution, the average annual value of our exports to France was $1,520,000, and of our imports from thence, $380,000; showing an excess of exports of the value of $1,140,000. The imports and exports up to the date of the annulment of the treaty of 1778, were as follows:

Years.	Imports.	Exports.	Excess of exports.
1795.....	$3,671,381	$7,698,683	$4,027,352
1796.....	1,835,066	3,171,759	1,336,693
1797.....	3,045,796	3,825,231	779,435
1798.....	1,871,727	1,476,588	104,861

This statement indicates that, from 1795, there was a rapid decrease of imports and exports, and a decrease of the excess of our exports, attributable, no doubt, partly to the feebleness of federal authority, but chiefly to the convulsed condition of the French nation, the continuance of war in Europe, and the consequent disregard of treaty obligations.

Previous to the annulment of the commercial treaty, Congress passed an act "to suspend the commercial intercourse between the United States and France, and the dependencies thereof," approved June 13, 1798. It was provoked by repeated gross violations of the treaty by the French government and its citizens. The act provided that no vessel should clear from the ports of the United States for France or its dependencies; that no French vessel should enter our ports without a passport from the President, unless in distress; that French vessels found in our ports, and refusing to depart, should be seized and detained; and that the President might dissolve the prohibition of the act whenever he became satisfied that the French government and all under its authority were, in good faith, endeavoring to prevent her citizens from intermeddling with our commerce. This act was continued in force until the end of the ensuing session of Congress, when it expired by its own limitation. Two days subsequent to the annulment of the treaty, another act was approved, "further to protect the commerce of the United States." The President was thereby authorized to instruct the commanders of the naval forces of the United States to capture French armed vessels, which were, by the act, to be forfeited, and to grant letters of marque and reprisal to private citizens. These acts had the desired effect. The French government was in no condition to assume an attitude of open hostility.

On the 30th of September, 1800, a convention was signed by the plenipotentiaries of the United States and France, which was ratified in due time, for the adjustment of all differences, and the regulation of their future commercial intercourse. By its terms, it was to continue in force for eight years. In respect to commerce, it provided that the citizens of each country should enjoy in the ports of the other all the privileges and immunities of the most favored nations; that the citizens of either resident in the other should have the right to devise their property without being naturalized, and their heirs the right of inheritance; that six months should be allowed for the removal of property in case of war; that debts should not be sequestered or confiscated in consequence of war; that consuls and other agents should be appointed; that the traders of each might buy and sell of the enemies of the other, save in ports blockaded; that certain specified articles only were to be considered contraband; that free ships should make free goods, and the ships of either might carry enemy's property, save only contraband articles; that property of either found in enemy's vessels should be confiscated; that ships under convoy should never be examined; and that various minor provisions enumerated in the treaty, as means for the execution of its provisions, should be observed. This was followed by the treaty of the 30th of April, 1803, for the cession of Louisiana, by which the right of navigating the Mississippi and its tributaries was reserved to France for 12 years; and another convention of the same date, providing for the payment by France of debts due our citizens.

The convention of 1800 regulated our commercial intercourse with France until the 24th day of June, 1822. A few facts will show how our trade with that nation progressed during that important period. It must be borne in mind, that nearly all Europe was combined for three fourths of that space of time in waging war upon the French empire and its allies, and that, for a considerable period, the whole of France was declared by Great Britain to be in a state of blockade. It must also be remembered, that in 1812 the Congress of the United States declared war against Great Britain, and that this war was waged with great vigor on both sides, until brought to a triumphant close in 1815. The vast superiority of the naval force of England rendered intercourse of European nations with their colonies very hazardous, if hostile to her. These nations were hence compelled to rely upon neutrals to carry on this branch of trade. For a time, the productions of the French, Spanish, and Dutch colonies could be carried to their mother countries only under a neutral flag. Our vicinity to the West India Islands enabled us to monopolize most of this carrying trade; and, ere the war closed, such was our increase of tonnage, that we obtained a considerable portion of the carrying trade to and from the East Indies. Some colonial productions were carried in American bottoms directly to Europe. The greater part, however, was brought into our ports; whence, after receiving a drawback, it was shipped to Europe in our own vessels. The manufactures of Europe, as well as those of China and the East Indies, were also imported, and again exported, in large quantities, to the West Indies and South America. From 1793 up to 1807, the profits of these advantages were enormous. The exigencies of the war, and the natural jealousies engendered by such a condition of things, involved us in disputes both with France and England. The latter, therefore, issued her celebrated Orders in Council; in retaliation of which, the former, or rather her emperor, issued his Berlin and Milan Decrees, which were so injurious to our trade as to provoke the adoption of the embargo, which was followed by the non-intercourse act, and ultimately by the declaration of war against Great Britain. This annihilated our carrying trade. On the return of peace, we again enjoyed some of it, but to a much more limited extent than formerly.

The tables of exports and imports fully illustrate the operation of the causes enumerated. In 1799 our imports from France were of the value of $901,018. The value of exports is not known. The following table exhibits our exports to France from 1804 to 1820. We have no data on which to estimate the imports for that period. The contrast between $5,461,000 in 1820, and $31,623,000, in the amount of our domes-

tic exports to France, is flattering evidence of the rapidly growing consumption of our principal staples.

Years.	Domestic produce.	Foreign produce.	Years.	Domestic produce.	Foreign produce.
1804	$8,219,712	$5,464,947	1813	$1,780,291	$2,296,453
1805	8,079,862	9,885,602	1814	286,429	30,018
1806	8,226,893	8,197,624	1815	5,088,084	1,858,859
1807	2,715,141	10,315,678	1816	7,852,676	2,222,660
1808	708,607	2,126,396	1817	7,114,535	1,895,232
1809	No data.		1818	8,719,445	6,846,577
1810	16,782	1,672	1819	6,612,499	2,729,549
1811	673,708	1,119,302	1820	5,461,889	2,194,854
1812	402,808	2,485,218			

For the remaining two years of the period of the operation of the convention of 1800, the imports were, in 1821, of the value of $4,989,940; and the exports of domestic produce, $5,168,698, and foreign produce, $359,861. In 1822, the imports were $6,089,940 in value; exports of domestic produce, $4,744,490, and foreign produce, $1,280,870.

About the year 1792, cotton became a staple product of the southern States. The quantity exported to France from 1790 to 1806, was 15,794,800 pounds. The following table exhibits the exports of the staple to that country for the years enumerated:

Years.	Pounds.	Years.	Pounds.
1801	844,728	1809-10	None direct.
1802	1,907,849	1811	do.
1803	3,831,840	1812	018,433
1804	5,946,848	1813	10,200,848
1805	4,504,829	1814	1,661,083
1806	7,082,118	1815	19,978,158
1807	6,114,358	1816	18,024,567
1808	2,087,450	1816—1820	No data.*

* The imports of cotton into France from all countries during this period were: in 1817, 13,370,898 kilogrammes (each 2·22 pounds); in 1818, 16,974,159; in 1819, 17,016,491.

In 1821 the exports of cotton were 495,733 pounds of sea island, and 26,943,275 pounds of upland, the value of the whole being $4,531,861. The fluctuations in quantity during this period are plainly traceable to the wars and confusion in Europe, and to our last war with Great Britain. From 1822 to 1834, the exports of cotton to France were as follows (the figures are compiled from the United States' Treasury Reports on Commerce and Navigation):

Years.	Pounds.	Years.	Pounds.
1822	20,900,000	1829	56,640,800
1823	26,841,200	1830	46,856,000
1824	34,647,800	1831	50,111,600
1825	29,598,800	1832	59,242,000
1826	48,226,200	1833	69,401,800
1827	48,186,000	1834	69,491,400
1828	47,057,000		

Tobacco became an important export of this country at the close of the last century. The following table exhibits our exportations of this article to France during the period we are now considering. The regulations of the two countries in respect to it will be elucidated in another part of this digest.

Years.	Hogsheads.	Years.	Hogsheads.
1800	143	1807	2,876
1801	5,006	1808	556
1802	16,216	1811	569
1803	9,815	1812	142
1804	14,023	1813	188
1805	12,125	1815	2,833
1806	9,182	1816	4,076

In 1809 and 1810 there was no exportation. The same circumstance occurred in 1814. If any was exported, it was so inconsiderable as not to have been noticed by statisticians. From 1817 to 1820 we have no statistical data. In 1821, 3,478 hogsheads were exported to France. These cotton and tobacco tables, like those of general imports and exports, are marked in their character by the course of political and military events. Another period of our trade with France commences with the "Convention of Navigation and Commerce," signed by the plenipotentiaries of the two powers on the 24th of June, 1822, and ratified and declared in operation by the United States on the 12th February, 1823. That convention provides that articles, the growth, produce, or manufacture of the United States, when exported to France in vessels of the United States, shall pay an additional duty, not exceeding 20 francs ($3 75) per ton of merchandise, over and above the duties paid on the like articles exported to France in French vessels; that articles, the growth, produce, or manufacture of France, imported into the United States in French vessels, shall pay an additional duty not exceeding $3 75 per ton of merchandise, over and above the duties paid on like articles imported in vessels of the United States; that no discriminating duties shall be levied upon the productions of France imported in French bottoms into our ports for re-exportation; that a like advantage shall be given, and is given, to the United States; that the following quantities shall be considered a ton for the articles specified, viz.: 4 61-gallon hogsheads, or 244 gallons of 231 cubic inches of wine, American measure; 244 gallons of brandies and all other liquors; 50 cubic feet of silk, American measure, in the United States; and 42 cubic feet, French measure, in France; 804 pounds avoirdupois of cotton; 1,600 pounds avoirdupois of tobacco; 2,240 pounds avoirdupois of pot and pearl-ashes; 1,600 pounds avoirdupois of rice; and for all weighable articles not specified, 2,240 pounds avoirdupois; that the duties of tonnage, light-money, pilotage, port-charges, brokerage, and all other duties on foreign shipping, over and above those paid by the national shipping in the two countries, other than those above specified, shall not exceed, in France, for vessels of the United States, 5 francs (94 cents) per ton of the vessel's American register, nor for vessels of France in the United States 94 cents per ton of the vessel's French passport; that the convention shall remain in force two years from the 1st of October, 1822, and after that time until the conclusion of a definite treaty, or until one of the parties shall have declared its intention to renounce it, which declaration shall precede the renunciation six months; and, finally, that, in case this convention shall not be discontinued by either party, the duties specified, exclusive of tonnage, light-money, pilotage, port-charges, etc., laid upon articles of the growth, produce, or manufacture of either country, shall, at the expiration of two years, be reduced one fourth of the whole amount, and afterward by one fourth of said amount, from year to year, so long as it is not renounced by either party.

Imports from, and Exports to, France, by the U. S.

Years.	Imports.	Exports.	
		Domestic produce.	Foreign produce.
1822	$6,089,940	$4,744,490	$1,280,870
1823	5,666,730	5,001,775	3,699,554
1824	7,188,567	7,851,639	1,846,048
1825	10,868,786	7,525,935	3,852,447
1826	8,579,520	9,348,929	1,799,535
1827	8,527,292	9,187,558	3,380,945
1828	9,990,854	7,698,897	3,878,988
1829	8,888,978	8,834,045	2,854,850
1830	7,722,198	9,901,140	1,092,813
1831	14,065,743	5,635,424	3,529,878
1832	12,175,758	9,942,576	2,677,147
1833	18,431,678	10,866,588	2,965,688
1834	17,141,173	12,715,754	2,708,220
1835	22,915,574	18,087,014	1,714,230
1836	36,915,417	19,608,434	1,830,666
1837	22,083,014	17,350,014	2,849,664
1838	17,771,797	15,715,451	1,200,102
1839	32,531,321	15,966,108	2,264,811
1840	17,572,576	18,019,327	2,922,227
1841	23,993,812	18,410,867	3,356,988
1842	16,974,058	16,015,298	1,150,502
1843	7,657,086	11,570,872	525,279
1844	17,519,481	12,966,912	2,272,188
1845	21,503,125	12,890,171	3,174,283
1846	20,911,202	13,601,650	1,528,925
1847	24,900,811	18,532,531	565,087
1848	24,096,031	15,774,885	4,444,425
1849	24,363,788	12,528,759	2,986,824
1850	27,578,025	17,950,277	1,882,070
1851	31,715,553	25,802,685	2,950,661
1852	25,890,266	22,190,070	1,800,575
1853	33,455,942	25,120,806	1,450,978
1854	35,781,393	30,968,252	1,179,729
1855	31,609,181	31,628,898	1,254,280

The convention with France of July 4th, 1831, only slightly modifies the convention of 1822. The wines

of France, from the ratification of that convention until the passage of the tariff act of 1846, were imported at duties not exceeding the following rates by the gallon, United States' measure, viz.: For red wines, in casks, 6 cents; for white wines, in casks, 10 cents; and for all kinds of wines, in bottles, 22 cents. This stipulation was limited to 10 years, and consequently expired on the 4th of July, 1841. Our trade has, therefore, been since regulated by the convention of 1822, and guarded by the powers and privileges secured to the consuls of each nation by the consular convention of the 28th February, 1853. The results of the operation of the stipulations of these conventions may be traced in the preceding and following tables of imports and exports.

The preceding table is made up from the annual Treasury Reports on Commerce and Navigation of the United States. It will not prove uninteresting, however, to subjoin, for comparison, a similar statement put forth by the French government.

VALUE OF COMMERCE BETWEEN THE UNITED STATES AND FRANCE, FOR THE YEARS SPECIFIED; TAKEN FROM THE OFFICIAL REPORTS PUBLISHED BY THE FRENCH MINISTRY OF COMMERCE.

YEARS.	VALUE OF IMPORTS FROM THE UNITED STATES INTO FRANCE.		VALUE OF EXPORTS FROM FRANCE INTO THE UNITED STATES.		TOTAL.	
	General commerce	Special commerce.	General commerce	Special commerce.	General commerce	Special commerce.
	Francs.	Francs.	Francs.	Francs.	Francs.	Francs.
1831	51,468,000	47,520,000	134,793,000	110,180,000	186,256,000	157,708,000
1832	89,360,000	64,927,000	87,671,000	58,559,000	176,991,000	123,486,000
1833	99,079,000	73,886,000	184,965,000	107,984,000	284,044,000	181,870,000
1834	97,186,000	76,564,000	113,094,000	78,136,000	210,280,000	154,700,000
1835	89,482,000	71,545,000	196,042,000	145,251,000	285,524,000	216,796,000
1836	110,770,000	81,464,000	288,874,000	158,738,000	349,664,000	240,202,000
1837	117,738,000	86,720,000	98,615,000	58,611,000	216,353,000	145,331,000
1838	132,796,000	101,248,000	170,698,000	119,724,000	303,494,000	220,972,000
1839	99,206,000	85,883,000	204,591,000	120,946,000	303,797,000	206,829,000
1840	175,829,000	117,970,000	136,120,000	80,760,000	311,949,000	198,730,000
1841	157,071,000	121,491,000	183,562,000	121,334,000	340,633,000	242,725,000
1842	176,057,000	125,040,000	89,346,000	48,106,000	265,403,000	173,152,000
1843	174,628,000	144,259,000	96,639,000	65,808,000	271,267,000	210,067,000
1844	142,500,000	133,600,000	161,400,000	102,000,000	303,900,000	235,600,000
1845	172,000,000	140,700,000	143,000,000	96,500,000	315,000,000	237,200,000
1846	158,700,000	141,200,000	150,100,000	100,400,000	308,800,000	241,600,000
1847	187,605,000	110,434,000	185,684,000	112,414,000	323,289,000	222,848,000
1848	71,883,000	56,986,000	165,749,000	99,430,000	237,362,000	156,416,000
1849	127,100,000	105,779,000	232,669,000	148,564,000	359,769,000	254,343,000
1850	132,175,000	122,105,000	285,941,000	193,511,000	418,116,000	315,616,000
1851	116,883,000	109,853,000	242,626,000	144,584,000	359,509,000	254,437,000
1852	190,089,000	167,721,000	263,040,000	154,618,000	453,129,000	322,334,000
1853	179,586,000	157,921,000	328,992,000	209,195,000	508,778,000	377,116,000

In these tables it is not difficult to trace the effects of the controversy relative to the re-charter of the Bank of the United States, the temporary expansion of the paper currency, the necessary contraction following the restoration of the constitutional currency, and the addition to the gold circulation of the world made by the mines of California. All these historical facts are of too recent occurrence to need comment in a work such as this. In like manner may be traced the effects of the French revolution of 1830, the 18 years' policy of Louis Philippe, the convulsions of 1848, the temporary ascendancy of republican principles, and the re-establishment of the empire. Causes like these, which affect commerce without a change of international obligations, would require more space for their elucidation in detail, than can be accorded to them in this digest. They are, however, alluded to for the purpose of awakening suggestive trains of reasoning. From 1831 to 1841 the general commerce between the two countries increased 154,377,000 francs, or about 83 per cent. This augmentation falls especially upon the products of the United States imported into France, the amount of which has tripled in this period. In the following years the effect of the high tariff of 1842 will be perceived, especially on the value of exports from France into the United States. The article of cotton has, for a number of years, constituted in value, upon an average, three quarters of all our domestic exports to France. The average annual value of our exports of home products to France from 1830 to 1833, was $9,000,000; and the exports of cotton for the same period, $7,000,000. The following table exhibits the quantities of cotton exported to France for the years enumerated, viz.:

Years.	Pounds.	Years.	Pounds.
1835	71,110,600	1845	124,610,400
1836	80,000,000	1846	121,518,000
1837	80,231,800	1847	125,028,800
1838	96,816,000	1848	107,457,400
1839	76,699,400	1849	157,172,000
1840	106,878,200	1850	129,479,206
1841	110,700,000	1851	118,918,224
1842	115,130,400	1852	167,429,900
1843	123,497,000	1853	174,689,940
1844	119,845,600	1854	144,428,360

The tables from which we extract do not give the *values* of our cotton exports for the years stated above, but, as in some preceding years, we learn from other data, they have been equal to the value of three fourths of our exports of home products. It may be added, that, with the exception of 1854, the above figures have been compiled from French custom-house returns. They are considerably below those given in the annual reports prepared by the United States' Treasury Department, and are not so reliable. The following table, compiled from these annual reports, will show the exports of cotton to France for six years, ending with June 30th 1850, and the value; as also the total value of domestic exports to France during the said years, respectively:

Years.	Pounds.	Value.	Total value domestic exports.
1850	125,834,091	$14,395,449	$17,950,277
1851	139,164,571	18,124,512	25,302,085
1852	180,214,270	15,488,586	22,196,070
1853	189,226,913	19,248,076	25,120,806
1854	144,428,360	14,582,712	30,068,252*
1855	210,113,809	19,085,423	31,628,898

* The export of gold and silver coin and bullion was unusually large this year, amounting to $6,609,000.

Tobacco.—Our other chief export to France is tobacco. In that country, the trade in this article is monopolized by the government. Information on this subject is derived from a recent publication, from the pen of a gentleman who has analyzed and studied our European tobacco trade in the principal markets of the eastern continent. The exclusive right to purchase imported and indigenous tobacco is invested in the *regie*, or commission—an association under the supervision of the Minister of Finance. This *regie* alone can authorize its manufacture, fix the prices at which it is to be sold to retailers, and the prices at which the latter shall sell for consumption. The capital of the *regie*, consisting of houses, offices, machinery, and tobacco in store, is of the value of about $45,000,000. There is usually kept on hand a supply of tobacco sufficient to meet the demand for three years. This enables the *regie* to manufacture it more

perfectly, and to provide against accidental failures of the supply. No one can purchase at wholesale of any one but the *regie;* and no one can retail without a license, which compels the purchaser to sell at prices fixed by that commission. Of late years, however, the system has been so far relaxed as to allow an importation, for personal use, of a certain quantity by individuals, upon the payment, by the importer, of duties equal to the profits reaped by the *regie* upon its sales. One fact is encouraging: while the consumption is constantly increasing, the culture remains in France at a stand. It remains at a stand, because it is also under the supervision of the *regie*, which prescribes the methods of cultivation, and confines its produce to certain departments, and even to certain individuals. There is nothing to stimulate enterprise, or to secure the concurring energy of individual interest.

Up to 1817 purchases were made upon the offers of merchants submitted to the director-general, and communicated by him to the Council of Administration. The number of competitors created embarrassment, and the present system was, after some years, adopted. The system is this: Proposals are published by the *regie* to make contracts for the supply of certain qualities and certain quantities of specified kinds of tobacco. Samples of the kinds and qualities are submitted to the inspection of those who desire to contract, and they thereupon submit their offers to supply at certain prices within a time specified. The samples submitted to the contractors are carefully preserved; and when the cargoes arrive at the various ports, samples of them are forwarded to Paris and compared with the model samples, and the acceptance or refusal depends upon this comparison.

It requires but little reflection to perceive that this system is seriously injurious to our trade. It is a moderate estimate to make, to suppose that, if tobacco were admitted into France as other products are admitted, we should export ten times as much as we do at the present time. The abolition of the system would, therefore, seem to be an object constantly to be kept in view by our government. It has stood so many years, however, and under so many forms of government, and is so productive to the revenues, and so important to the government itself, in the number of persons thus brought under its direct influence, that we can not hope to see it soon materially changed. In addition to the facts already detailed on the subject of this important staple, the following extracts from official dispatches, communicated to the Department of State, are presented as pertinent:

"Tobacco is only permitted to be cultivated in six departments as a staple, and this cultivation is under the most rigid *surveillance* of the government. In the other departments agriculturists are allowed to grow *four* plants for each tenement for medical uses. On the tobacco disposed of by the *regie*, whether imported or produced, the profit realized amounts to 447 per cent. The retail dealers in the article, numbering about 30,000, are under the control of the *regie* inspection, and are allowed a commission on their sales of from 10 to 12 per cent. There are only ten manufactories. They are located at Paris, Havre, Lille, Strasbourg, Morlaix, Tunneins, Lyons, Marseilles, Toulouse, and Bordeaux. Each has its circle of departments to supply, and is restricted to transactions therein. The manufactured article is deposited in magazines, of which there are 357. In the departments adjoining Switzerland, Germany, and Belgium, the price established is vastly below that which rules in the interior. The object of this is to prevent smuggling. Where frontier facilities are afforded for illicit importations, the rate is comparatively moderate. Where none exist, it is enormous. Thus, at Strasbourg a pound is worth only 15 sous (cents), while at Orleans it is worth 8 francs ($1 06). Last year (1848) the receipts from the customs only amounted to about 146,000,000 francs—86,000,000 of which were derived from tobacco, nearly all grown in the United States—under the workings of the *regie*. Were this *regie* abolished, and a moderate import duty substituted, instead of a market of 16,000 or 18,000 hogsheads of tobacco per annum, France would take from us double that quantity immediately thereafter."

At the present time, we export about two fifths of all the tobacco consumed in Europe. Strict attention to its proper culture will enable us to furnish a much greater proportion. From 1827 to 1836, our exports to France amounted, annually, on an average, to 5,727,900 pounds. For many years we have exported from three fourths to four fifths of the tobacco consumed in France. From official reports of the French authorities, we gather the following statistics of our exports and sales to the *regie* in the years specified:

Years.	Pounds.	Years.	Pounds.
1837	10,622,108	1846	17,708,000
1838	11,643,710	1847	15,562,907
1839	13,089,036	1848	13,046,305
1840	17,846,618	1849	16,852,180
1841	21,040,924	1850	18,612,028
1842	19,148,800	1851	12,088,876
1843	27,771,788	1852	32,305,240
1844	20,891,000	1853*	9,741,000
1845	24,318,800		

* United States' Treasury reports give the quantities of tobacco exported to France for the fiscal years ending June 30, 1854 and 1855, respectively, as follows: 1854, 15,102,000 lbs.; 1855, 40,866,000 lbs, besides 2,905 cases, and 879 bales. The excess of the latter year was probably for the army in the Crimea. The French fiscal year ends with that of the calendar.

No values are attached to these quantities, but they may be estimated by the aid of other data. The cost of American tobaccoes, on delivery at the factories of the *regie*, all expenses included, is given by a French legislative report as follows, on an average for several years: Maryland tobacco, 9 5 cents per lb.; Virginia, 8.2 cents; Kentucky, 7.7 cents; Missouri, 7.5 cents. The following statement, also derived from French authorities, shows the nett profits of the *regie*, which, after paying all expenses of purchase, transportation, manufacture, and sale of tobacco, it has paid over to the State treasury, annually, from the 1st of July, 1811 (commencement of the monopoly with the *regie*), to the 1st of January, 1853:

Years.	Francs.	Years.	Francs.
1811	6,000,000	1833	49,230,280
1812	26,000,000	1834	50,848,714
1813	29,355,812	1835	51,700,181
1814	32,000,000	1836	55,629,540
1815	33,124,803	1837	59,026,912
1816	32,855,321	1838	61,682,425
1817	39,182,994	1839	66,001,841
1818	41,705,861	1840	70,111,157
1819	41,412,893	1841	71,989,095
1820	42,210,604	1842	73,804,142
1821	42,279,004	1843	77,908,735
1822	41,954,997	1844	79,490,379
1823	41,584,849	1845	82,534,454
1824	43,129,728	1846	85,961,080
1825	44,230,451	1847	86,301,198
1826	44,993,057	1848	85,271,053
1827	45,728,983	1849	85,186,106
1828	46,885,633	1850	88,915,000
1829	45,632,490	1851	92,233,729
1830	46,782,478	1852	95,344,082
1831	45,920,030		
1832	47,754,597	Total	2,328,201,725

French official documents furnish the following facts relative to our cotton trade with that empire. By the custom-house returns for 1855, it appears that there were received for that year, from all countries, 167,200,000 lbs.; against, for 1854, 157,520,000 lbs.; 1853, 165,000,000 lbs.; 1852, 158,400.00 lbs.

The following table shows the quantities of cotton imported into Havre, from all countries for a period of four years, ending with 1855:

Years.	From the United States.	From Brazil.	From elsewhere.	Total.
	Bales.	Bales.	Bales.	Bales.
1855	406,600	2,500	9,000	418,100
1854	411,000	2,000	12,000	425,000
1853	374,500	2,800	12,200	389,500
1852	374,900	6,000	14,400	395,300

TABLE SHOWING THE QUANTITIES OF COTTON RECEIVED AT THE OTHER PORTS OF FRANCE DURING THE SAME YEARS.

Years.	From the United States.	From Brazil.	From Egypt.	From elsewhere.
	Bales.		Bales.	Bales.
1855	12,000	None.	30,700	2,800
1854	19,300	"	21,400	4,800
1853	14,500	"	33,000	17,000
1852	17,800	"	36,700	12,500

The preceding tables exhibit a total importation of cotton into France, viz.:

	Bales.
In 1855	463,600
" 1854	470,000
" 1853	454,000
" 1852	462,300

The document from which the preceding tables are translated and condensed, adds: "We may further remark, that, while England imports from the East Indies annually 400,000 bales of cotton, and thus finds profitable employment for her commercial marine, France is deprived of the advantages of this trade. The fault is found in the apathy of our cotton spinners and in our custom-house regulations. Cotton from the Indies, imported in the direct trade in French vessels, ought to be admitted free of duty; and the impost on cotton introduced from the entrepôts of Europe should be extremely moderate."

The articles of domestic produce usually shipped from the United States to France, besides cotton and tobacco, are hops, fish, pot and pearl-ashes, whale-oil and whalebone; and those of foreign produce are principally sugar, coffee, teas, cocoa, pepper, and other spices. The principal articles imported into the United States from France are wines, brandies, silks, olive-oil, jewelry of all kinds, and, latterly, some cotton goods. An examination of the details of the trade in these articles could add nothing to the inferences which the general tables, already presented, suggest.

In the year 1793 an act was passed by the National Assembly, interdicting direct commercial intercourse between foreign nations and the French republic. This act, although never formally repealed, has been practically abrogated by the introduction of numerous modifications. Even foreign goods actually prohibited are admitted to entrepôt for re-exportation at the ports of Marseilles, Bayonne, Bordeaux, Nantes, Havre, and Dunkirk, on payment of specified duties; and these goods may be transferred from one bonded warehouse to another. Goods not prohibited may be thus transferred by land, on the terms of the transfer, free of duties. Arles, Port Vendée, and Strasbourg are points where merchandise not prohibited is received in bond, and from which it can be exported by sea only. There is also, at Lyons, a special dépôt to which all the ports of bonding dépôts may transmit merchandise for consumption or exportation.

By the terms of the convention of the 24th of June, 1822, the time for levying discriminating duties has long since expired. The only charges upon commerce, in articles of home produce, which can be made by either country, are duties upon tonnage; and they are specifically limited to 5 francs (or 94 cents) per ton on the vessel's measurement, which is to be calculated according to the American vessel's register, and the French vessel's passport. This tonnage duty exceeds the amount levied by France on every other country, and thus operates injuriously to American interests. Vessels of all other countries except Great Britain, pay 77 cents. British vessels, going direct to France, pay 20 cents; going in ballast from any other country, nothing. Other trivial port charges, such as light-money, permits, certificates, etc., are charged equally to all nations. The special duties on tonnage duties, alluded to, gives great advantages to some nations over both France and the United States. This is the case as regards Austria, the Hanseatic League, and several other countries which by the terms of their treaties with the United States, are permitted to carry on an indirect trade. The vessels of these nations, being subjected to a lower duty than ours in France, and a lower duty than French vessels in our ports, are thus enabled to carry merchandise to and from the United States cheaper than the vessels of either country can do it. In this way they have monopolized no inconsiderable portion of the carrying trade between the two countries.

The reciprocity stipulated in the convention of 1822 extends only to articles of the growth, produce, or manufacture of the respective countries. To admit a cargo from the United States to the advantages secured by the treaty, it must be certified by the French consul at the port of clearance to be of the growth, produce, or manufacture of the United States. The American ship-master is subjected, in a French port, to many small charges for the authentication of certificates, etc., from which the French master is exempt in our ports. Most of these are, probably, sheer abuses, without authority of law. They practically operate as an increase of duties, not warranted by the provisions of the treaty. There is a stipulation in the convention of 1822, by which the products of the United States, carried in American vessels, after a certain period, are to become liable to no higher rate of duty than if imported in French vessels. This does not include tin, the products of the fisheries, or spermaceti, simply pressed. Copper and lead* are also excepted; but, in point of fact, are admitted to the advantages of this provision, if it be shown that they are of American production.

The prospects of future commerce with France depend upon a variety of facts and contingencies. The facts, of a permanent character, which operate upon them, are the natural capabilities of the countries, the populations, and the subdivisions of their labor; the contingencies chiefly arise from their relations to other countries and their legislation. The facts bearing upon the subject, in the United States, are to be found in its history and its census, and are familiar to all. Those respecting the French empire, may be briefly summed up in a suggestive rather than an elaborate form. France proper, to which alone reference is now had, lies between 42° 49′ and 51° 5′ north latitude, and embraces an area of 204,355 square miles, greatly verlegated by mountains, streams, and plains. The soils and their proportions are as follows:

	Parts.		Parts.
Mountain country.	8	Soil of stones.....	13
Lands, or plains...	10½	" sand.....	10
Soil of rich mold...	14	" clay.....	5
" chalk.....	18	" marsh.....	0½
" gravel.....	7	Various soils.....	14

Making an aggregate of..... 100

One half the area of France is cultivable; and of this, 9 parts are meadow; 4½ parts vineyard; 15 parts woods and forests; 15 downs, pastures, and heaths; all the remainder consisting of roads, cities, canals, vegetable gardens, etc. It presents every variety of geological formation, exhibited in almost every variety of known relations. All the departments, 86 in number, contain mineral substances. There are 36 coal-fields in 30 departments. The most important are those of the Loire, embracing an area of 42,000 acres, lying between the Loire and the Rhône, down which their products reach markets. Next to these come those of Nord, Saone, Avignon, Gard, Calvados. The remainder are small. The annual produce of coal exceeds 3,000,000 tons. France is surpassed by England only in the production of iron. There are twelve iron mines in operation. Lead, silver, antimony, copper, and manganese are found, but do not assume commercial importance. Salt is made in several localities, and has become a considerable source of wealth. 300,-

* Circular letter of the Customs Administration, September, 1827.

000 persons are engaged in mining, and their operations show an annual value of $80,000,000.

The population of France, in 1851, was 35,781,628. The increase in the preceding 10 years was nearly 2,000,000. A like increase would give in 1855 a population of fully 37,000,000. A little less than one half are males. Those of them who were old enough to vote under the late republican constitution were employed as follows:

Working class, or paupers	6,585,000
Manufacturing, commercial, and agricultural capitalists	927,000
Learned professions, and independent incomes	425,000
Paid officials, army, navy, and pensions	379,000

About the same distribution of employments yet prevails. Schools are provided for only about one sixteenth of the children. The revenues of France are direct and indirect. The average aggregate annual revenue, from all sources, is about $300,000,000. The national debt is over $1,100,000,000.

The number of acres under vine cultivation exceeds 5,000,000, giving employment, in the cultivation of the vine and the manufacture of wine, to about 2,000,000 of persons (mostly females), and in its transportation and sale, to 250,000. The average home value depends, as does all other produce, on the supply and demand; rarely, however, exceeding 20 cents, or falling below 10 cents per gallon. The vine disease, now more or less prevailing in all wine-producing countries, has increased the average price of wine from 100 to 175 per cent.

The following statements, showing the produce of wine in France, and the exports in 1845 and 1846, were furnished to the *Economist* from which we have taken them, by the authorities in Bordeaux.

Account of the Produce of Wine in France in each Department, in the Order of their Importance.

Departments.	Hectolitres.	Departments.	Hectolitres.
Herault	2,616,000	Aveyron	353,000
Charente Inferieure	2,394,000	Jura	357,000
Gironde	2,020,000	Vendee	319,000
Var	1,635,000	Tarn and Garonne	307,000
Charente	1,152,000	Tarn	344,000
Gers	1,128,000	Haut Rhin	374,000
Gard	1,132,000	Deux Sevres	270,000
Aude	1,011,000	Correze	253,000
Meurthe	912,000	Hautes Pyrenees	268,000
Yonne	856,000	Indre	213,000
Loiret	850,000	Isere	242,000
Dordogne	770,000	Loire	228,000
Rhone	740,000	Ardeche	282,000
Saone an' Loire	644,000	Vaucluse	248,000
Lot et Garonne	617,000	Vosges	212,000
Indre et Loire	628,000	Cher	250,000
Bouches du Rhone	626,000	Aisne	228,000
Haute Garonne	604,000	Moselle	274,000
Aube	602,000	Arriege	166,000
Loire Inferieure	568,000	Allier	195,000
Cote d'Or	538,000	Doubs	172,000
Loire and Cher	527,000	Nievre	170,000
Puy de Dome	536,000	Basses Alpes	114,000
Haute Marne	508,000	Seine	107,000
Maine and Loire	510,000	Eure and Loire	106,000
Seine and Oise	504,000	Sarthe	89,000
Seine et Marne	516,000	Hautes Alpes	86,000
Bas Rhin	539,000	Oise	65,000
Lot	445,000	Haute Loire	62,000
Meuse	459,000	Ardennes	70,000
Vienne	459,000	Haute Vienne	22,000
Basses Pyrenees	325,000	Eure	21,000
Landes	386,000	Lozere	14,000
Marne	381,000	Morbihan	6,000
Haute Saone	343,000	Ile and Vilaine	3,000
Drome	305,000	Cantal	2,000
Pyrenees Orientales	301,000		
Ain	333,000	Total productions	35,769,000

The following table gives a clear exhibit of the exports of wine from France, and shows what countries are the principal consumers of French wine. These statistics exhibit some curious facts, and opposite to the belief of most persons. Algeria imports from France over ten times as much wine as England, and, what is more curious, wine of a higher price. The United States imports from France not quite three times as much as England, but in value more than four times as great.

Account of the Export of French Wines to all Countries in 1845 and 1846.

Countries.	1845.	1846.
	Litres.	Litres.
Russia	3,955,700	3,669,900
Sweden	668,900	516,800
Norway	621,000	272,700
Denmark	1,619,600	1,218,700
Hanseatic Towns	13,589,900	14,597,400
Germanic Zollverein	5,210,600	4,604,000
Hanover and Mecklenburg Schwerin	746,000	337,600
Netherlands	9,689,800	3,775,700
Belgium	10,639,300	6,168,900
England	6,825,600	2,633,000
Portugal	....	....
Austria	256,000	136,800
Spain	421,600	227,900
Sardinia	7,510,700	5,499,200
Naples	....	112,000
Papal States	377,900	167,000
Tuscany	594,600	243,100
Switzerland	18,828,100	15,180,600
Greece	....	....
Turkey	172,300	251,700
Egypt	286,100	268,300
Barbary States	....	....
Algeria	34,579,500	42,538,500
Western coast of Africa	74,600	47,500
Mauritius	5,093,400	5,288,600
Other African countries	....	....
India	480,700	139,140
Dutch Indian Possessions	469,300	126,700
French Indian Possessions	82,000	223,300
Philippine Islands	147,200	9,100
China, Cochin-China, and Pacific Islands	....	....
Hayti	313,600	481,900
United States	8,889,600	10,398,000
British Possessions in America	100,300	107,800
Spanish Possessions in America	528,700	336,000
Danish Possessions in America	624,100	292,400
Brazil	3,062,200	1,473,600
Mexico	304,500	318,400
Guatemala	....	9,500
Venezuela	228,400	113,300
New Granada	26,600	57,000
Peru and Bolivia	309,400	207,200
Chili	1,470,800	1,423,900
Rio de la Plata	3,665,600	375,900
Uruguay	1,028,600	667,900
Texas and Equador	95,200	....
Guadaloupe	2,575,300	2,383,000
Martinique	3,864,300	2,403,700
Bourbon	3,025,600	3,473,300
Senegal	1,181,700	1,107,300
Cayenne	589,400	864,900
French Newfoundland Fishery	573,600	853,500
Total	147,193,100	135,548,139

In 1849 there were produced in France, in round numbers, 925,000,000 gallons of wine. This was an increase over the quantity produced in 1839 of 115,000,000 gallons; but there were half a million of acres more under cultivation. The quantity annually exported averages about 15,000,000 gallons.

	Gallons.
In 1849 there were exported	41,000,000
1850 " "	42,000,000
1851 " "	49,500,000
1852 " "	53,200,000
1853 " "	43,500,000

The quantity exported in 1854 has not been ascertained. About 90,000,000 gallons are annually distilled into brandy, the exportation of which is under special government restrictions. 133,000,000 gallons of wine, in its various forms, are annually exported to foreign countries. The government derives a considerable portion of its internal revenue from the manufacture of wine. The excise duty in 1853 amounted to upward of $22,000. Besides the 90,000,000 gallons converted into brandy, it is estimated that 220,000,000 gallons are manufactured into other kinds of spirits. If this estimate be correct, there will be left for home consumption over 700,000,000 gallons, or about 21 gallons for each inhabitant.

The disease of the vine, during the past few years, has been very destructive in France, Spain, Madeira, and other old wine-producing countries. Should the disease unfortunately continue in these countries which have hitherto supplied the markets of the world

with this beverage, the day may not be distant when the United States shall become the exporter instead of the importer of wine. The vine culture has already attracted attention in the western and southern States. The following table will exhibit the annual value of each of the chief products of France, all which enter into or influence its commerce:

Products.	Quantity.	Value.
Wheat.....bushels	150,000,000	$180,000,000
Rye and mixed corn..... "	85,000,000	70,000,000
Buckwheat..... "	26,000,000	13,000,000
Barley..... "	38,000,000	30,000,000
Peas and Beans..... "	3,970,000	7,500,000
Potatoes..... "	56,000,000	11,500,000
Oats..... "	90,000,000	54,000,000
Indian corn..... "	12,000,000	9,000,000
Wine.....gallons	800,000,000	100,000,000
Hemp.....	...	6,000,000
Raw silk.....	....	8,000,000
Flax.....	...	4,000,000
Madder.....	.	1,000,000
Fuel and timber.....	....	28,000,000
Olive-oil, rape-seed, etc.....	....	12,500,000
Tobacco.....	....	1,500,000
Chestnuts.....	....	1,500,000
Aggregate ann'l val. of products.	....	582,500,000

The wild animals are not numerous enough to have any material influence upon trade. It is not so with those domesticated. The annual value of the wool grown from sheep is about $18,000,000. This branch of industry is very inadequately attended to. There are 14 or 15 different species of beeves, and the total number of all kinds is about 12,000,000. This branch of husbandry is also much neglected. In the southern departments olive-oil supersedes butter. The horse is not as well managed as in England, nor are there as many horses. Hogs are abundant, and so are domestic fowls. The latter are well attended to.

Landed property is more minutely divided in France than anywhere else in Europe, or even than in the United States. In a few departments may be found estates of 200 acres; but they are rare, and daily becoming more so, as the law divides the realty equally among the children. The greater portion of the farms are now less than 20 acres. Improvements in the methods of cultivation progress languidly, and the methods of manuring and rotation of crops, and of employing machinery, continue to be very defective.

Commerce and manufactures may be justly said to have commenced with Charlemagne. They were repressed during the feudal ages, when the barons enslaved the artisans and peasants. They were revived by the return of the crusaders, who brought a taste for the luxuries of the East. Louis XIV. well understood their importance. The death of Colbert and the revocation of the Edict of Nantes again paralyzed them, and the industry of France became subjected to monopolies. They continued enslaved, in a great measure, until the Revolution of 1789 unfettered them. Since that period, legislation has favored them by keeping them free, and giving full scope to individual enterprise and genius. They have only been retarded or disturbed by the intervention of wars. Their progress has, of late years, been wonderfully accelerated by the progress of science and its application to machinery and the useful and ornamental arts. Of scientific stimulants, the most important has been the application of steam-power. To science are also attributable metallurgy; the process of dyeing; the various preparations of animal substances; the weaving of cloths, cashmeres, and damasks; the making of paper, watches, and clocks, and of fine and common pottery; the manufactures of silks and tissues; and numberless other useful and tasteful arts, which have spread wide the wings of commerce.

The average annual value of the exports of France, from 1825 to 1833, was about $81,168,160, and of its imports $79,785,042. The official statement of the imports and exports, for the years 1844 to 1853, estimated in francs, were as follows:

Years.	Imports.		Exports.	
	French vessels.	Foreign vessels.	French vessels.	Foreign vessels.
	Francs.	Francs.	Francs.	Francs.
1844	378,200,000	454,100,000	385,000,000	440,500,000
1845	399,500,000	474,000,000	408,500,000	454,700,000
1846	425,800,000	468,500,000	403,600,000	456,100,000
1847	448,000,000	526,000,000	438,000,000	531,000,000
1848	325,000,000	254,000,000	386,100,000	476,100,000
1849	401,000,000	349,200,000	540,000,000	538,600,000
1850	419,000,000	361,200,000	526,500,000	656,900,000
1851	392,100,000	341,300,000	560,000,000	708,700,000
1852	471,500,000	457,800,000	559,700,000	745,600,000
1853	507,000,000	522,100,000	619,700,000	869,000,000

The number and tonnage of the vessels employed in the foreign trade of France during the same years were as follows:

YEARS.	INWARD.				OUTWARD.			
	FRENCH.		FOREIGN.		FRENCH.		FOREIGN.	
	No.	Ton'ge.	No.	Ton'ge.	No.	Ton'ge.	No.	Ton'ge.
1844	6,392	679,063	10,070	1,359,789	5,869	677,082	6,396	67[illegible]
1845	6,920	746,910	10,775	1,489,820	5,789	651,670	6,813	734,329
1846	8,188	879,808	12,118	1,681,290	5,595	654,972	6,623	709,806

The following table, made up from materials contained in "*Annales du Commerce Extérieur*," brings down this statement of the amount and character of the foreign navigation statistics of France to the year 1853, the entrances and clearances being given in aggregate:

NAVIGATION TABLE CONTINUED TO 1853—THE ENTRANCES AND CLEARANCES UNITED.

YEARS.	FRENCH VESSELS.		FOREIGN VESSELS.	
	No.	Tonnage.	No.	Tonnage.
1847..	9,701	1,047,000	20,794	2,708,000
1848...	10,019	1,049,000	13,920	1,626,000
1849.....	11,200	1,142,000	14,768	1,721,000
50.....	11,808	1,192,000	16,892	2,110,000
51.....	11,668	1,202,000	19,247	2,389,000
1852.....	11,216	1,109,000	19,803	2,546,000
1853.....	12,132	1,339,000	20,425	2,743,000

In 1856 the arrivals and departures were thus distributed:

	Vessels.	Tons.
Entered.....	25,745	4,075,000
Cleared.....	14,475	2,321,000
Total.....	40,220	6,396,000

The great disparity between arrivals and departures is explained by the fact that the larger portion of imports consists of bulky and cumbrous merchandise, destined for our workshops and manufactures, while vessels leaving French ports are usually freighted with manufactured products, the value of which consists in their skillful workmanship rather than in their specific weight or the space which they occupy. This year (1856), especially, the importation of cereals was necessarily heavy.

A comparison of the different flags engaged in this general movement forces us to repeat the remark which we are constrained to make whenever we examine this subject—namely, that the French flag is invariably behind that of other nations in her own commerce. How stands our flag in 1856?

	Vessels.	Tons.
French Flag.....	16,320	2,521,000
Foreign Flags.....	23,898	3,875,000
Total.....	40,218	6,396,000

These figures are of themselves sufficient to show how necessary and urgent it is that the French merchant marine should be placed in a better condition to compete with the flags of foreign countries in her own ports.

The special* commerce of France with foreign countries in 1853, was distributed as exhib-

* By "special" is meant for interior consumption.

ted in the following table, estimated from official sources:

Countries.	Imports into France.	Exports from France.
	Francs.	Francs.
Great Britain	92,000,000	317,000,000
United States	158,000,000	217,000,000
Belgium	140,000,000	123,000,000
Sardinia	104,000,000	67,000,000
Spain	44,000,000	69,000,000
Zollvereia	58,000,000	45,000,000
Switzerland	37,000,000	54,000,000
Russia	68,000,000	11,000,000
Turkey	51,000,000	22,000,000
Brazil	14,000,000	34,000,000

The following tables exhibits the values of the chief articles imported and exported in 1853:

Articles.	Official value in francs.	Articles.	Actual value in francs.
Cotton, raw	155,000,000	Silk cloth	550,900,000
Silks, raw	149,600,000	Cotton cloth	114,400,000
Cereals	140,600,000	Woolen cloth	175,400,000
Silk tissues	137,800,000	Wines	145,500,000
Cotton cloth	75,100,000	Toys & other manufactures of wood	76,300,000
Wool, raw	68,200,000	Silks	55,700,000
Wood, common	45,700,000	Cereals	65,800,000
Stone coal	44,700,000	Skins, worked	63,100,000
Oil seeds	40,700,000	Glassware	21,800,000

The manufacture of cotton was first introduced in 1770, and has increased at an enormous rate. The total number of persons now employed in it is near 300,000. The total value of all the manufactures of France, annually, is 1,600,000,000 francs, and they are rapidly increasing.

The commercial legislation of France, which the tariff, inserted under its appropriate head,* is more especially designed to illustrate, has undergone, during the past few years, several important modifications. The latest, and not the least advantageous to the tonnage interests of the United States, is a decree which allows foreign-built vessels to be naturalized, and to take the French flag with all its privileges, on the payment of 10 per cent. on their assessed value.

This will create a new market, and an active demand for American vessels of 500 to 900 tons, and especially for steamers of 1000 to 1200 tons. A decree has also been promulgated admitting lumber, timber, naval stores, etc., free of duty for three years. Another extends to December 31, 1856, the decree of October 9, 1854, exempting from tonnage duties all vessels wholly laden with breadstuffs, flour, rice, etc.; and if only partially laden therewith, an exemption of tonnage duties proportionate to the quantities of such cargoes. A decree has also been published, reviving an old decree of 1816, exempting from tonnage duties all vessels entering French ports for the purpose of exporting salt, on which article the export duty has been suppressed.

Early in 1855 important movements were made in France, indicating an evident disposition in favor of the introduction and more general consumption of American salted provisions. From 1852 to 1854 the price of salt meats advanced at the extraordinary rate of 40 to 45 per cent. This state of the provision market immediately arrested the attention of the government, and various projects were adopted with a view, not only to prevent a further increase in prices, but also to reduce the rates already raised to so exorbitant a figure. The import duty on foreign cattle was lowered, viz.: from $10 23 to 74 cents per head, on beef; and every means was resorted to likely to encourage the use of salted beef among the general mass of the French people. To this end, the duty on salted meats has been successively reduced from $5 58 to $3 72, and again to $1 86; and in the month of September, 1855, it was further lowered to 9½ cents per 100 kilogrammes (220 pounds). The effect of this reduction of duty has been to open the markets of France to American salted provisions; and the importation has increased, since that period, to such an extent as to render it not at all improbable that this article will, henceforth, become a leading staple of export from the United States to France.

England is now almost exclusively supplied with salted meats by the United States and Ireland—the latter country exporting about an equal quantity with the former. The supply from the United States could be made always to equal the demand; and if France should open her ports to American salted provisions, the consumption in that country would be almost exclusively supplied from the United States. The following brief summary of the trade in salted provisions in France during the past 20 years will exhibit the development which this article of American produce has made in that country.

In 1834, the importation into France of salted meats reached only 3527 quintaux, equal to about 777,844·58 pounds. After a lapse of 21 years—that is to say, in January, 1855, and during that single month—the importation reached as high as 3720 quintaux, exceeding the importation of the whole year of 1852 by 203 quintaux, or 44,769 pounds. Prime pork is imported into France in barrels of 331½ pounds gross, in brine of gray salt, and is usually sold at from $14 80 to $15 81 the barrel. For the English market such pork is exported from the United States in tierces of 304, 320, and 336 pounds, and in barrels of 200 pounds.

American mess pork is too fat for the French market, and seldom finds a purchaser; American sugar-cured hams, however, always find a ready market and a brisk competition among purchasers. Shoulders, well cured, and put up in hogsheads of 994 pounds, are equally in demand, and bring from $18 60 to $19 53 per 220 lbs. A similar feeling is manifested in France in behalf of her colonies. By decree of 10th March, 1855, the duty on salted meats has been reduced as follows: into Martinique, Guadaloupe, Guiana, and Reunion, salted meats of whatever origin, or under whatever flag, pay 9½ cents per 220 pounds. This measure has attracted the attention of pork merchants of the United States, and already heavy freights of this article have been forwarded to those islands. Various other modifications have been decreed, but as they relate mostly to the tariff regulations, they are merely alluded to here for the purpose of noting the tendency to a more liberal commercial policy, which has, of late years been, observable in French legislation. Recent custom-house returns, published in France, show that the revenue to the State during the first six months of 1855, upon 18 different articles, the duties on which have been lowered, was 34,181,574 francs, against 18,258,808 francs, derived from the same description of merchandise during the corresponding six months of 1854.

Such figures supply the best argument in favor of free trade, especially in a country in which a prohibitive and protective system has so long prevailed. The annexed table will also illustrate the wise policy by which, it would appear, that the commercial legislation of France is henceforth to be shaped.

According to the *Journal des Economistes*, during the first six months of the year 1856, the commercial transactions of France exhibit a satisfactory condition; although the receipts for customs, compared with those for the corresponding six months of last year, show a decided falling off, amounting, for the entire period, to 4,364,836 francs. This indicated a decrease in importations, which is to be regretted, but which, all things being considered, should cause no disquietude. The movements in 1855 exhibited, in point of fact, results altogether exceptional: thus the first six months, compared with the corresponding period in 1854, showed an increase in import duties of 21,000,000 francs, of which 5,000,000 were for June alone.

* Part II.

NAVIGATION BETWEEN FRANCE AND FOREIGN COUNTRIES—1855, 1854, AND 1853, COMPARED.

PORTS OR PLACES.	ENTRY OF VESSELS INTO FRANCE.						DEPARTURE OF VESSELS FROM FRANCE.					
	FRENCH.		FOREIGN.		TOTAL.		FRENCH.		FOREIGN.		TOTAL.	
	No. of ships.	Tonnage.	No. of ships.	Tonnage.	No. of ships.	Tonnage.	No. of ships.	Tonnage.	No. of ships.	Tonnage.	No. of ships.	Tonnage.
In the first 10 months of 1855:												
Marseilles	2,214	409,564	2,441	431,262	4,655	840,826	1,527	350,993	1,529	216,200	3,056	597,193
Havre	616	137,889	1,382	383,223	2,005	521,117	311	79,258	624	248,862	935	256,106
Bordeaux	855	99,053	462	108,876	1,315	302,929	391	73,427	166	37,638	557	111,065
Nantes	746	87,688	173	27,061	919	114,749	167	43,757	44	5,586	208	49,423
Rouen	880	28,632	588	61,175	974	89,807	152	17,771	163	13,715	315	31,486
Dunkirk	325	35,980	749	67,578	1,059	102,953	125	12,225	287	27,770	412	39,995
Boulogne	9	1,107	949	152,807	958	153,914	4	494	711	118,378	715	118,872
Calais	410	45,445	871	114,704	1,281	160,149	402	46,414	633	78,889	1,035	125,253
Cette	309	38,081	316	21,251	625	54,282	206	20,720	246	26,879	452	47,599
Other ports	2,185	169,570	3,485	357,957	5,668	527,527	1,605	185,602	2,293	141,641	3,905	277,253
Total 10 months of 1855	8,099	1,047,859	11,884	1,720,899	19,479	2,768,258	4,890	780,711	6,701	883,608	11,590	1,694,237
For 1854	9,285	992,827	9,548	1,378,259	17,828	2,378,626	4,918	681,189	6,895	911,813	11,813	1,593,002
" 1853	7,689	880,293	9,574	1,385,355	17,213	2,265,648	5,845	666,949	7,678	902,601	13,525	1,569,550

The preceding statement exhibits the navigation between France and foreign nations in 1855, as compared with 1854 and 1853. The following statement exhibits the exports of principal manufactured staples in 1855 compared with 1854: by which it may be seen that there has been an increase in the 10 months of 1855:

TABLE OF EXPORTATIONS OF THE PRINCIPAL ARTICLES OF MERCHANDISE FROM FRANCE, IN 1855 AND 1854, COMPARED.

Articles.	French and foreign during the first 10 months of 1855.	French and foreign during the first 10 months of 1854.	Articles.	French and foreign during the first 10 months of 1855.	French and foreign during the first 10 months of 1854.
Drinks:	Gallons.	Gallons.	Cotton tissues:	Pounds.	Pounds.
Wine, ordinary	18,286,000	27,286,500	Unbleached and white	9,368,800	7,062,000
" de liqueur	435,000	344,100	Painted and dyed	3,902,900	6,644,600
Brandy, pure alcohol	2,102,000	3,042,920	Tulle	123,040	156,340
Spirits of wine, pure alcohol	144,100	158,000	Others	4,774,900	4,685,600
	Pounds.	Pounds.	Flax and hemp tissues:		
Machines & mechanical apparatus	1,826,330,000	1,681,000,000	Linen	4,387,700	2,920,200
Modes, millinery, etc	1,962,000,000	1,242,500,000	Cambric and lawn	105,180	96,340
Porcelain, fine and common	7,300,000	9,550,000	Others	204,400	178,360
Soap (perfumed excepted)	13,000,000	10,799,000	Woolen tissues:		
Silk			Cloths, cassimeres, & merinos	5,700,320	4,991,700
"	1,808,560	1,819,360	Others	6,676,000	6,230,900
"	90,180	84,450	Silk tissues	6,572,880	6,185,240
Floss of all sorts	441,000	866,000	Glass and Crystal	48,117,800	41,542,000
Sugar, refined	53,575,000	46,363,000			

In addition to the numerous tables already given, the following statement is submitted, exhibiting the general direct trade between the United States and France during a period of 11 successive years.

COMPARATIVE STATEMENT OF THE COMMERCE OF THE UNITED STATES WITH FRANCE, EXHIBITING THE VALUE OF EXPORTS TO AND IMPORTS FROM EACH COUNTRY, AND THE TONNAGE OF AMERICAN AND FOREIGN VESSELS ARRIVING FROM AND DEPARTING TO EACH COUNTRY, DURING THE YEARS DESIGNATED.

YEARS.	COMMERCE.				NAVIGATION.			
	VALUE OF EXPORTS.			VALUE OF IMPORTS.	AMERICAN TONNAGE.		FOREIGN TONNAGE.	
	Domestic produce.	Foreign produce.	Total.		Entered the United States.	Cleared from the U. States.	Entered the United States.	Cleared from the U. States.
1845	$12,330,171	$3,170,233	$15,500,404	$21,505,425	126,417	141,092	14,104	10,690
1846	13,601,650	1,528,925	15,130,575	23,911,332	118,554	134,679	18,714	12,116
1847	18,592,581	505,087	19,097,618	24,900,841	139,672	160,657	29,535	23,107
1848	15,574,885	4,444,425	19,819,310	28,096,031	156,326	182,546	24,857	27,887
1849	12,523,750	2,986,824	15,510,583	24,863,783	102,017	127,888	33,917	30,388
1850	17,950,277	1,888,070	19,838,347	27,588,025	114,967	128,747	12,592	26,892
1851	25,302,085	2,950,061	28,252,146	31,715,558	142,842	163,707	41,154	23,160
1852	22,190,070	1,800,575	23,990,645	25,890,266	193,242	214,763	46,768	17,602
1853	25,120,806	1,450,978	26,571,784	33,455,942	189,916	201,181	37,966	14,888
1854	30,968,252	1,179,729	32,147,981	35,781,393	233,148	230,052	31,833	18,091
1855	31,623,898	1,254,230	32,878,128	31,609,181	199,695	266,823	28,765	16,063

This important branch of French commerce comprises all the foreign merchandise transported over the French territories to other countries. Its vast increase may be perceived from the following statement for three years:

Years.	Metrical quintals. (220 486 lbs.)	Real Value, France. (18⅝ cents each.)
1853	618,303	863,000,000
1854	782,525	877,000,000
1855	760,434	888,000,000

The countries which supported this transit trade in 1855, were:

Whence.	France.	Whither.	France.
Switzerland	148,000,000	United States	124,000,000
Belgium	102,000,000	England	99,000,000
England	50,000,000	Switzerland	74,000,000
Zollverein	45,000,000	Brazil	11,000,000
United States	16,000,000	Belgium	11,000,000
Sardinia	6,000,000	Sardinia	11,000,000
		Zollverein	10,000,000
		Spain, etc	8,000,000

Statement showing the amount of precious metals, gold and silver (ingots and specie), imported and exported to and from France, during a period of 26 years, from 1830 to 1855:

IMPORTED.

Gold.	Silver.	Total.
France.	France.	France.
1,870,000,000	4,044,000,000	5,914,000,000

EXPORTED.

Gold.	Silver.	Total.
France.	France.	France.
857,000,000	2,229,000,000	3,086,000,000

See article FRANCE, *Ency. Brit.*, 1857; HUNT'S *Merch. Mag.*, viii., 131, xiii., 26, xvi., 476, 547, xviii., 497, xxii., 259, xxiv., 284, v., 105, vii., 301; *Am. Ann. Reg.*, v., vii., viii. (by JOHN Q. ADAMS and W. C. RIVES); *For. Quar.*, iii., 359; *Dem. Rev.*, xxii., 545.

COMMERCE OF THE UNITED STATES WITH FRANCE ON THE MEDITERRANEAN, FROM OCTOBER 1, 1820, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage Cleared.	
	Domestic.	Foreign.	Total.	Total.	Exported.	Imported.	American.	Foreign.
Sept. 30, 1821	$69,855	$10,851	$80,706	$496,023	....	$247,334	816	592
1822	183,191	70,937	253,528	400,998	....	14,546	882	858
1823	223,861	1,171,898	1,495,759	501,457	$933	102,248	10,267	331
1824	265,815	750,431	1,016,246	450,454	6,780	47,875	3,457	....
1825	187,242	726,499	913,741	813,511	20,000	17,065	9,488	....
1826	273,675	483,077	757,352	892,152	1,600	35,088	10,960	....
1827	475,647	781,076	1,256,623	843,874	1,600	60,179	12,664	889
1828	606,688	279,407	886,045	904,426	5,852	2,484	10,496	....
1829	886,122	748,777	1,634,899	590,057	3,380	1,482	18,848	....
1830	717,252	430,888	1,148,140	891,183	5,000	14,517	18,967	1,074
Total	$3,889,198	$5,453,841	$9,443,039	$6,782,636	$45,125	$542,866	100,698	3,245
Sept. 30, 1831	$971,867	$300,626	$972,793	$1,183,766	$14,611	$6,155	15,459	1,477
1832	914,091	1,140,376	2,054,467	1,248,775	12,000	14,888	16,486	3,688
1833	1,036,898	768,826	1,805,724	1,080,052	300	13,414	14,976	3,922
1834	1,032,398	1,352,889	2,385,287	1,327,400	....	4,594	17,846	3,775
1835	2,023,829	554,192	2,578,021	1,468,998	74,000	2,258	15,300	2,311
1836	1,961,742	725,991	2,677,733	1,967,186	1,541	....	15,614	4,675
1837	1,190,947	649,550	1,845,897	1,562,113	24,998	1,554	10,525	5,116
1838	1,433,765	283,135	1,716,900	948,685	9,320	75,229	17,845	6,801
1839	1,046,260	176,196	1,222,446	1,612,871	....	6,505	9,256	1,651
1840	1,178,883	224,202	1,403,085	879,587	....	178,258	10,805	....
Total	$12,486,030	$6,176,273	$18,662,308	$18,279,388	$140,710	$297,245	148,012	31,456
Sept. 30, 1841	$1,512,460	$140,024	$1,652,484	$1,221,580	$1,500	$18,144	15,827	2,375
1842	1,674,570	73,868	1,748,438	958,678	....	3,021	21,944	2,147
9 mos. 1843	1,186,294	83,761	1,269,995	609,149	....	13,433	18,167	418
June 30, 1844	1,204,793	85,104	1,289,897	1,603,319	7,478	11,641	17,568	656
1845	979,739	197,980	1,177,719	1,414,175	1,175	2,400	19,217	660
1846	898,678	191,448	1,090,126	1,302,743	14,600	2,688	14,950	740
1847	1,172,148	56,041	1,228,187	1,001,765	....	....	13,078	4,611
1848	1,215,087	166,266	1,381,353	1,036,317	75,202	8,592	16,484	923
1849	877,147	168,522	1,045,668	1,153,905	....	....	13,853	3,227
1850	1,015,488	158,155	1,173,641	1,702,855	....	2,688	14,158	8,676
Total	$11,736,400	$1,321,108	$13,057,508	$12,004,435	$99,955	$52,497	165,546	24,433
June 30, 1851	$735,018	$135,893	$870,411	$1,926,429	$3,921	....	16,614	10,627
1852	1,896,192	79,184	1,475,326	1,694,352	....	....	26,798	6,517
1853	852,514	70,331	922,845	2,601,393	1,074	....	16,234	5,761
1854	1,218,758	201,374	1,420,160	2,389,372	....	....	17,724	3,166
1855	3,327,604	164,084	3,491,688	2,599,733	....	....	26,880	4,139
1856	3,006,432	185,164	3,191,596	3,515,654	....	....	89,152	3,469

COMMERCE OF THE UNITED STATES WITH FRANCE ON THE ATLANTIC, FROM OCTOBER 1, 1820, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage Cleared.	
	Domestic.	Foreign.	Total.	Total.	Exported.	Imported.	American.	Foreign.
Sept. 30, 1821	$5,098,843	$349,010	$5,447,853	$4,498,017	$12,000	$617,261	798	56,392
1822	4,561,299	1,210,533	5,771,832	5,688,835	519,892	80,356	3,688	....
1823	4,077,014	2,527,656	7,205,570	5,165,273	175,872	36,083	44,401	3,549
1824	7,553,815	1,065,612	8,681,427	6,741,113	....	77,288	58,619	4,610
1825	7,393,693	2,625,968	9,964,661	10,151,871	916,580	7,581	47,967	9,787
1826	9,075,254	1,816,178	10,391,432	7,687,868	202,563	158,981	76,478	11,270
1827	8,712,011	2,555,869	11,267,880	7,684,858	1,563,093	104,168	85,651	10,903
1828	7,091,699	3,095,820	10,187,525	8,486,427	2,306,699	56,559	65,085	8,708
1829	8,008,928	2,105,578	10,114,496	8,248,921	1,620,820	27,570	78,862	7,735
1830	9,183,894	661,925	9,845,819	6,881,016	185,111	47,812	82,521	6,014
Total	$71,334,345	$17,544,150	$88,878,495	$71,178,398	$7,542,580	$1,214,212	538,446	98,957
Sept. 30, 1831	$4,963,557	$3,228,452	$8,192,009	$12,876,077	$2,960,669	$47,949	4,922	3,722
1832	9,028,485	1,536,771	10,565,256	10,931,983	450,779	26,629	79,330	12,769
1833	9,769,688	2,196,812	11,966,497	12,351,626	66,000	46,719	77,127	14,707
1834	11,683,356	1,440,331	13,123,687	15,813,778	70,274	1,650,498	79,820	14,632
1835	16,013,185	1,160,038	17,173,223	21,446,878	556,622	516,788	91,102	9,717
1836	17,656,692	601,675	18,261,367	34,648,281	111,092	4,841,004	96,526	12,869
1837	10,154,567	1,690,114	17,844,681	20,521,496	1,020,609	1,051,503	91,687	20,082
1838	13,089,619	976,947	14,066,616	16,823,112	467,445	2,165,083	108,056	16,108
1839	14,919,848	2,088,655	17,008,503	30,918,450	2,017,798	150,129	83,519	14,752
1840	17,733,743	2,698,025	20,431,768	16,693,289	2,198,698	946,991	132,823	25,409
Total	$131,012,767	$17,620,840	$148,633,607	$193,025,865	$9,919,897	$11,449,293	893,012	144,867
Sept. 30, 1841	$16,897,907	$3,216,364	$20,114,271	$22,712,282	$4,087,199	$207,649	121,534	15,704
1842	15,340,728	1,076,684	16,417,412	16,015,380	1,113,698	232,447	130,865	16,042
9 mos. 1843	10,384,578	441,578	10,826,156	7,050,597	135,008	2,641,057	110,171	44,171
June 30, 1844	11,861,419	2,287,644	14,148,503	15,946,166	2,029,195	683,192	109,927	15,989
1845	11,350,492	2,972,293	14,322,685	20,181,250	3,179,273	184,855	121,815	10,036
1846	12,762,072	1,307,177	14,040,449	22,608,589	1,180,836	108,708	119,729	11,376
1847	17,120,385	449,046	17,562,431	23,989,076	....	1,958,472	147,579	18,496
1848	14,159,798	4,278,159	18,437,957	27,059,744	4,726,676	277,222	116,062	26,495
1849	11,646,612	2,818,303	14,464,915	23,209,878	2,989,124	241,154	114,035	27,161
1850	16,934,791	1,724,915	18,659,706	25,835,170	2,102,992	72,251	114,589	17,616
Total	$188,699,622	$20,601,863	$159,301,485	$264,518,072	$21,508,001	$6,017,007	1,205,706	208,086
June 30, 1851	$24,507,067	$2,814,668	$27,881,735	$29,789,124	$7,471,241	$304,838	147,093	10,533
1852	20,733,878	1,721,441	22,515,319	24,195,914	5,474,496	758,430	137,965	11,085
1853	24,208,292	1,840,647	25,643,939	30,851,549	4,281,808	231,008	184,947	11,127
1854	29,749 466	978,355	30,727,821	32,892,021	6,048,028	26,564	212,324	14,925
1855	28,296,294	1,090,146	29,386,440	29,009,398	3,702,400	2,814	239,943	11,924
1856	38,782,033	497,344	39,229,377	45,500,398	7,172,892	188,183	295,986	19,583

Commercial Decrees—Brandies.—By a decree of the 22d of September, 1854, all foreign brandies are admitted into France, by paying a duty of 15 francs per each hectolitre of pure alcohol.

Wines.—By a decree of the 5th of October, 1854, all wines, such as Madeira, Sherry, etc. ("vins de liqueur"), in casks, leather bottles, or bottles, are subject to the importation duty of 25 centimes per 100 litres.

Salted Meats.—By a decree of the 5th of October, 1854, a duty is fixed upon salted meats, of 50 centimes per 100 kilogrammes.

Medicinal Leaves.—By a decree of the 25th of October, 1854, the importation duty on medicinal leaves is fixed as follows: Orange, Ivy, (stems and branches included); betel; clove; senna (leaves and follenas, whole or broken); and others not enumerated: By French ships, from countries out of Europe, free; by French ships, from entrepôts, 10 francs per 100 kilogrammes; by foreign ships, 20 francs per 100 kilogrammes.

The delay fixed by the decree of the 24th of June, 1855, concerning divers measures relative to alimentary products, to put off till the 31st of July next (decree 21st of October, 1854). These measures are as follows, viz.: 1st. Suppression of navigation dues (surtaxes) upon grain and flour imported by foreign vessels. 2d. Lowering of the entry dues upon those products to the minimum fixed by the law of the 15th of April, 1832. 3d. Reduction to 25 centimes for every 100 kilogrammes of the duties upon rice, dry vegetables, and oat-meal. 4th. Prohibition of the exportation of potatoes and dry vegetables. 5th. Exemption of tonnage duties on foreign ships when they arrive laden with grain, flour, rice, dry vegetables, oat-meal, and potatoes. 6th. Facility for the same ships to effect the transport of the same alimentary products by coasting from one French port to another. 7th. Facilities for foreign ships to effect the transport of grains, flour, rice, and dry vegetables, between Algeria and France. 8th. Prohibition of the exportation of potatoes and dry vegetables from Algeria to foreign destinations, and facility of expediting these products from France into Algeria.

Foreign ships to bring grain.—By a decree of the 19th September, the decree of the 23d June, allowing foreign ships to bring grain, is extended to the 31st December, 1855, and the same in reference to Algerine exportations. By the decree of the 14th February, 1855, the importation duty upon spermaceti from the whale and cachalot of foreign fisheries is provisionally established, as follows: Raw: by French vessels, from countries situated beyond Cape Horn and the Cape of Good Hope, 5 francs per 100 kilogrammes. By French vessels, from elsewhere out of Europe, 7, 50 francs per 100 kilogrammes. By French vessels, from the entrepôts, 10 francs per 100 kilogrammes. By foreign vessels, 15 francs per 100 kilogrammes. Pressed, 20 francs per 100 kilogrammes. Refined, 50 francs per 100 kilogrammes.

By a decree of February 17, 1855, it is provisionally established, that from the 1st of March next the rate of drawback allowed on the exportation of soap shall be as follows: White or mottled soap, composed of alkali and olive oil, or of cleaginous seeds, or mixed with animal fat; 1st. The oil entering by one half, at least, in the mixture of greasy matter, 8,20 francs per 100 kilogrammes. 2d. The oil entering for less than one half, 6 francs per 100 kilogrammes. Soap of animal fat: 3d. Pure, 6 francs per 100 kilogrammes. 4th. Mixed with rosin, 6 francs per 100 kilogrammes. Soap of palm or cocoa oil mixed with animal fat or rosin, 4 francs per 100 kilogrammes.

Cocoa tresses or filaments.—By a ministerial decision of the 22d of February, 1855, filaments of cocoa in the shape of tresses or twists are assimilated to the coarse tresses for matting, and admitted as such at the duty of 2 francs, and 2 francs 20 centimes, according to the mode of importation.

Duties on wines in the French colonies.—By a decree of the 31st January, 1855, "until otherwise ordained," foreign wines of all kinds imported from abroad into the colonies of Martinique Guadaloupe, Guiana, La Réunion, and Senegal, shall pay the following duties: by French vessels, 25 centimes per hectolitre. By foreign vessels, 5 francs per hectolitre.

Icaco.—By a ministerial decision of the 15th March, 1855, the icaco or American prune will in future pay an entry duty similar to the ground and Tauhinouna nut, either 1, 2, 3 francs, or 3 francs 50 centimes the 100 kilogrammes, according to the source from whence it comes and mode of importation.

Salted Meats to the French colonies.—By a decree of the 16th of March, 1855, "salted meats" of all sorts of foreign origin, imported from any country whatsoever, or by any flag, into our colonies of Martinique, Guadaloupe, Guiana, and La Réunion, will pay on entry a duty of 50 centimes per 100 kilogrammes. The importation of these same meats, on the payment of a duty of 50 centimes per 100 kilogrammes, is also permitted into St. Louis (Senegal), but by French vessels only, either direct from abroad or by extraction from the entrepôt at Gorée. Those which arrive at Senegal under a foreign flag will continue subject to the same regulations that exist at present.

Liqueurs from French colonies.—By a decree of the 14th of April, 1855, the duty on "liqueurs" imported from the French colonies is fixed at 45 francs the hectolitre of liquid.

By a decree of the 14th April, 1855, the importation duties on raw wool are now fixed as follows, viz.: Imported direct, by French ship, from countries situated beyond Cape Horn and the Cape of Good Hope: From Australia and the Colony of the Cape, including Cape Town, present duties. From elsewhere, in the grease, 10 centimes per kilogramme. Cold-washed, in whole fleeces, 20 centimes per kilogramme. Offal or refuse, 10 centimes per kilogramme. Hot-washed, in whole fleeces, 30 centimes per kilogramme. Offal or refuse, 15 centimes per kilogramme. From elsewhere, present duties.

Nitrate of Soda and Potash.—By a decree of the 23d of April, 1855, the importation duty on nitrate of soda and of potash is established as follows: By French ships, from countries situated beyond Cape Horn and the Cape of Good Hope, 1 franc per 100 kilogrammes. From other countries out of Europe, 6 francs per 100 kilogrammes. From entrepôts, 8 francs per 100 kilogrammes. By foreign ships, 11 francs per 100 kilogrammes.

Drawback on Nitrate and Sulphuric Acids.—The premiums allowed by the laws of 6th May, 1841, and 11th June, 1845, on exportation of nitric and sulphuric acids, are—For nitric acid, 5 francs the 100 kilogrammes net of acid. For sulphuric acid, 20 centimes the 100 kilogrammes net of acid.

Citric Acid.—By a decree of the 23d of April, 1855, all duty is taken off citric acid of all sorts from the French colonies.

Foreign Vessels loading Salt exempt from Tonnage Duty.—By a decree dated May 16, 1855, the dispositions of the ordinances of 31st July, and 4th December, 1816, allowing foreign vessels to load salt in French ports when coming in ballast, free of tonnage duties, are extended to vessels coming to France *with* cargoes. The exemption from tonnage duties shall be in proportion to the quantity of salt exported.

Locust-trees.—By a decree of the 23d June, 1855, the importation duty on locust-trees is fixed as follows: By French ships, 25 centimes the 100 kilogrammes. By foreign ships, 1 franc the 100 kilogrammes.

Navigation Dues—Exemption to 31st December, 1855.—By a decree of the 5th June, 1855, the exemption of navigation dues accorded up to the 31st July, 1855, on cargoes of grain, flour, rice, potatoes, and dry vegetables, is extended to the 31st December, 1855.

By a decree of the 14th July, 1855, the regulation for the admission of molasses intended for distillation is fixed as follows, until it shall be otherwise ordained: By French vessels, from French colonies, exempt. By French vessels, from the East Indies, exempt. By French vessels, from South America, exempt. By French vessels, from the West Indies, exempt. By French vessels, from elsewhere, 2 francs the 100 kilogrammes. By foreign vessels, 3 francs the 100 kilogrammes.

By a decree of the 3d October, 1854, the duty then existing on the exportation of leeches, of 50 centimes per 1000, was abolished; and on the 5th, a duty of 50 centimes per 100 kilogrammes was imposed on the importation of salted provisions. On the 9th, a decree prolonged the free entry of vessels laden with grain, flour, rice, potatoes, and dried vegetables, from the 31st July, 1854, to the 31st July, 1855. Another decree dated the 25th, permitted the importation of leaves of oranges, ivy, cloves, and senna, intended for medicinal purposes, free of duty. On the 26th the distillation of grain, and all other farinaceous substances whatsoever, was prohibited by an imperial decree, under that date; and on the 6th November, a similar decree allowed the free admission of quercitron bark, imported by French vessels from countries out of Europe, and reduced the existing duty of 40 francs on that article, arriving by French vessels from the entrepôts of Europe, to 20 francs; and from 60 francs to 30 francs when imported by foreign vessels having no commercial treaty with France. On the 16th November, notice was communicated by circular, that, by a treaty concluded between France and Belgium, the former admitted geographical and marine charts, linen, printing-ink, types, thread and hemp yarn, straw plait, slate, stone, and other raw materials, without a certificate of origin—Belgium conceding to France a similar privilege on charts, types, printing-ink, clothes, pasteboard in sheets, paper of all descriptions except colored

or morocco, slates, prepared plaster, Bordeaux, Burgundy, and Champagne wines, and also those of Tours and Bayonne, in cask.

On the 5th December, a declaration was promulgated between the Emperor of the French and the Prince of Monaco, by which the former reduced the then existing duty on olive oil (not exceeding 180,000 kilogrammes in quantity), when imported by French vessels, or those of the Prince of Monaco, to a uniform duty of 15 francs per 100 kilogrammes—the vessels of the principality being assimilated to those of Sardinia for payment of tonnage dues—the duty on French wines imported into the territory of the Prince of Monaco, in cask, being fixed at 3 francs 36 centimes per hectolitre, and at 10 centimes in bottle not containing more than a litre. By another decree, dated the 20th December, molasses from the French colonies, arriving by French vessels, is admitted free; when imported from countries out of Europe, at a duty of 3 francs and from the entrepôts at a duty of 8 francs per 100 kilogrammes. When imported by foreign vessels, it is fixed at 18 francs per 100 kilogrammes.

On the 6th January of the current year, three decrees were published; one permitting the temporary importation of sheet copper into France by French vessels, or direct from the country where it is produced, free of duty; when it is intended for the manufacture of boilers or machinery. Its origin must be certified by the French consul at the place of its departure. Immediately on its arrival, the importer is bound to make a declaration at the custom-house, of the number and weight of the sheets, as well as of their length, breadth, and thickness. The custom-house, after having ascertained the correctness of such declaration, is enjoined to cause a stamp to be put on each sheet, in order to assure the exportation of the same copper; and a charge of 5 centimes for stamping, including the cost of the stamp, is made for every sheet so stamped. Bond must be given that the whole quantity of copper imported shall be used, and re-exported, or placed in the public stores (excepting such parts as may remain from cuttings or corners of sheets, in which the duty must be paid in the same proportion as if they were whole sheets), within six months; and the custom-house is enjoined to assure itself that the articles so manufactured are equal in quantity, kind, and quality, so that, temporarily admitted, sheet copper can only be exported from ports or places having public warehouses, or from places to which such articles are allowed to be sent in *transit*. By another, the temporary introduction of old cast iron belonging to foreign-built steamboats, which may put into France for repairs, is also admitted free of duty—the importers giving sufficient security for replacing in the entrepôts of France within six months, an equal quantity of iron, proper for ships' use, to that which may have been employed in such repairs. Iron imported under this decree, and the article manufactured therefrom, can only be exported from places having government warehouses; and the custom-house is charged to see that the iron imported and not used be broken up in such way as to render it impossible of being used, otherwise.

The third decree subjects foreign vessels at the Island of Senegal to a simple tax of 50 centimes per ton, without the additional 10 per cent., but this is limited to the port of Gorée. A decree relative to French and foreign emigration was promulgated on the 15th of January, a copy of which, in *extenso*, with a translation into English, was forwarded by me to the Department on the 31st of that month. A circular, dated 15th January, exempts from the tax of *stombage*, or *leading*, certain articles of French origin, or foreign goods on which the duty imposed by law has been paid, when they are sent by water from one part of the empire to another, precautions being taken to assure the identity of the goods on their arrival at the port of destination. By a circular, dated 16th January, the decree of 20th December, prohibiting the importation of foreign molasses, extends to such only as is intended for distillation; and the exemption from duty on French molasses equally applies to such as is imported solely for distillation. Molasses so imported is always under the surveillance of the customs till after its completion at the place of distillation.

By another circular of the 27th of the same month, alcohol produced in Corsica, from the distillation of the bulbs of daffodils, figs of the cactus (prickly pears?), juniper and myrtle berries, and all other substances, with the exception of farinaceous (the distillation from which substances the circular continues to prohibit), are added to the number of articles admitted free of duty. A decree of the same date modifies the duty on juniper and myrtle berries, and also on table-fruits, and equalizes the duty on the bulbs of daffodils and figs of cactus. By a decree of the 31st of January, foreign wines of every description are admitted into the islands of Martinique, Guadaloupe, Guiana, La Réunion, and Senegal subject to a duty, when imported by French ships, of 25 centimes per hectolitre, and to that of 5 francs when imported by foreign vessels. A circular of the 1st of February exempts from examination, at the custom-houses of France, the baggage of foreigners arriving from foreign parts, to embark for places abroad; and a decree of the 10th allows the free importation of salt (foreign) intended for the mackerel fishery, which heretofore was confined to that of France, from the 15th February of every year; and another decree of the 14th extends the period for its introduction from the 1st of March to the 15th of June; previously to the date of that decree, it was only admitted between the 10th of March and the 15th of June. A decree of the 14th of February imposes a duty on sperm or whale oil, imported in French ships, from countries beyond Capes Horn and Good Hope, of 5 francs per 100 kilogrammes on the gross weight; from other countries than Europe, 7.50 francs, and by foreign vessels, 15 francs per 100 kilogrammes. By another decree of the same date, flour from Algeria is admitted free of duty into all parts of the empire.

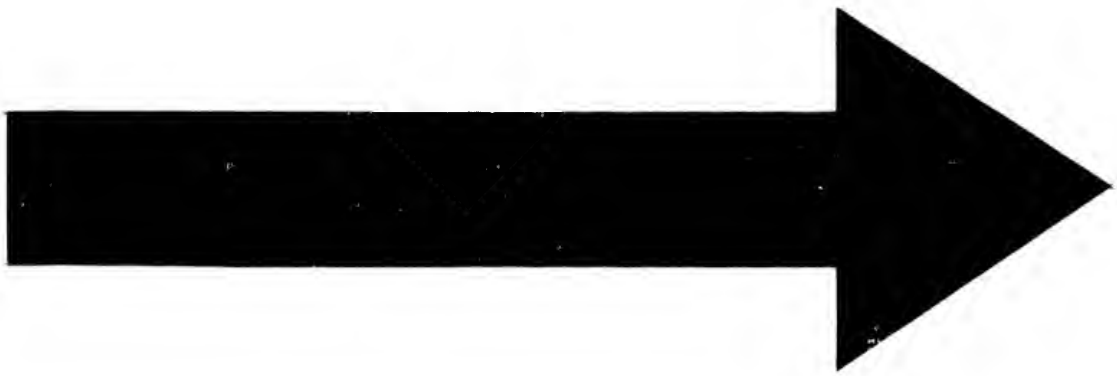
On the 17th of February a decree was issued granting a drawback of 8.20 francs per 100 kilogrammes on white or mottled soap, composed of alkali and olive oil, or from vegetable oil, entering for at least one half in such composition, or for less than half if mixed with animal substances. On soap made wholly from animal substances, a drawback of 6 francs per 100 kilogrammes is allowed, and 4 francs per 100 kilogrammes on soap made from palm or cocoa oil, mixed with animal substances or rosin. A circular of the 28th of February specifies the objects which shall be considered as coming within the meaning of the treaty concluded with Spain on the 15th November, 1853, which are books, dramatic and musical compositions, paintings, drawings, engravings, lithographs, sculptores, geographical maps, and all other similar productions, with the exception of works of art applicable to agriculture and industrial manufactures; prohibits the reproduction of the works of either in the country of the other, and indicates the ports in France by which alone such works can be introduced. A decree of the 10th of March authorizes the introduction into Martinique, Guadaloupe, Cayenne, and La Réunion, of salted provisions of every kind, from whatever country or under whatever flag they may be imported, on the payment of an inward duty of 50 centimes per 100 kilogrammes. The same provisions are allowed to be introduced into Senegal (St. Louis), at the same duty, if imported by French vessels, whether from foreign countries or from the entrepôt at Gorée. No change is made in the law actually in existence, with respect to provisions arriving at Senegal under a foreign flag.

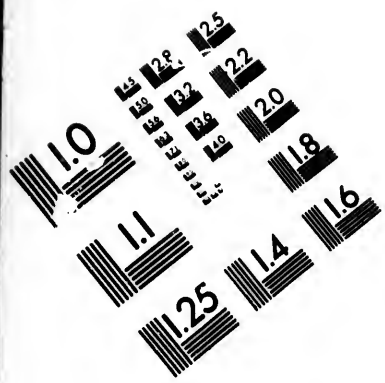
A decree of the 14th of April modifies the inward duty on wools, arriving direct from countries situated beyond Cape Horn and the Cape of Good Hope, when imported by French vessels, but leaving the duty actually existing unchanged when imported from other parts of the world. Another decree of the same date repeals the export duty of 5 centimes per 100 kilogrammes on lime; and by another decree, under the same date, the duty on liqueurs imported from the French colonies is fixed at 15 francs per hectolitre of liquid.

On the 23d of April an allowance of five per cent. for loss in weight, whether from water or decay, was authorized by decree on refined salt, if imported by sea and shipped in bulk at the place of production; and a second decree of the same date establishes the inward duty on nitrates of soda and potashes arriving by French vessels from countries situated beyond Cape Horn and the Cape of Good Hope, at 1 franc per 100 kilogrammes; from places in Europe, 6 francs per 100 kilogrammes; from entrepôts 8 francs per 100 kilogrammes.

Citric acids of all sorts imported from the colonies of France, in French ships, are admitted free of duty; by foreign vessels, at a duty of 11 francs per 100 kilogrammes.

A premium or bounty of 5 francs is allowed on the exportation of every 100 kilogrammes of net nitric acid, and one of 20 centimes on sulphuric acid. On the 24th of April a circular was issued authorizing the temporary free admission into France of machinery, glass (for resilvering), bronzes, and other similar works, and books, when imported separately, or in small quantities, for the purpose of being repaired or finished, on condition of their being re-exported within six months. By a decree of the 28th of April, iron work, in bars or sheets (without distinction of origin) fit for the construction of edifices or dwelling-houses, is allowed to be imported into Senegal by French vessels, free of duty, whether coming from the entrepôts of the metropolis or that of Gorée. Another decree, of the same date, fixes the duty on old worn-out type at 5 francs per 100 kilogrammes. An *arrêté* of May 5th orders the withdrawal from circulation of all gold pieces of the value of 10 francs, bearing the effigy of the





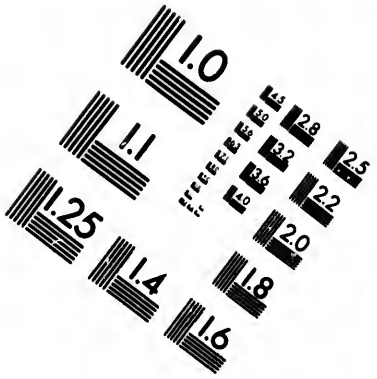
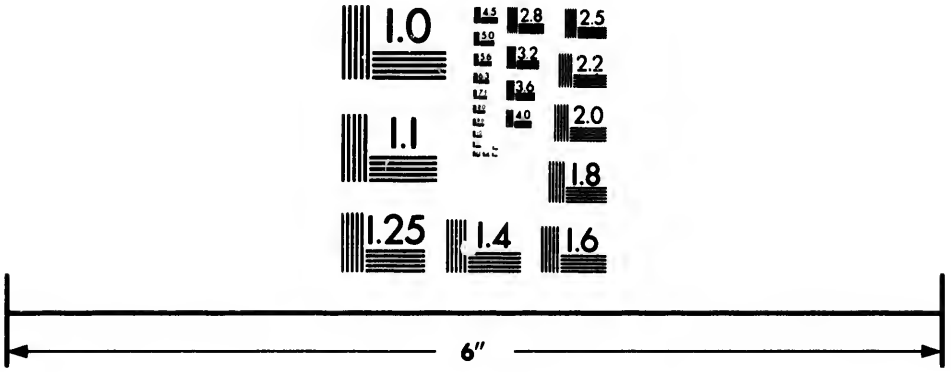
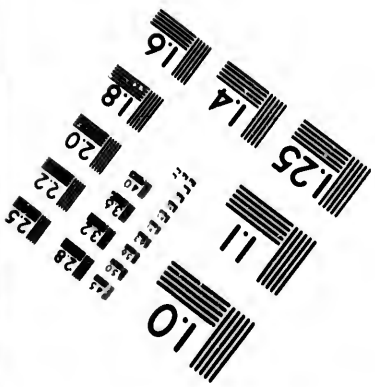
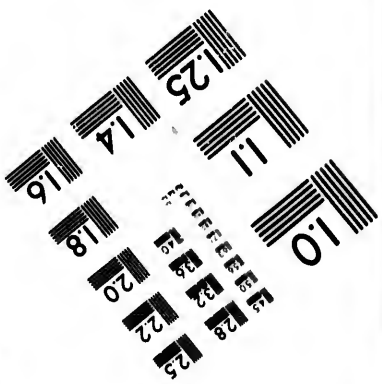


IMAGE EVALUATION TEST TARGET (MT-3)







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present emperor, to take place on the 15th of October, 1855. By *ordonnance* of the 31st July and 4th December, 1816, all vessels arriving in France, in ballast, to take in salt, were exempted from tonnage dues. By a decree of the 10th of May, 1855, foreign vessels arriving with cargo enjoy the same privilege, but only in proportion to the quantity of salt taken by them; and by a circular of the 2d of June the export duty on salt is suppressed.

Alcohol distilled from daffodils in Algiers is admitted into France free of duty, by decree of May 23d. By a decree of the 2d of June, the delay fixed for the introduction of provisions into France is prolonged to the 31st of December, 1855; by another of the 5th, the free admission of ships importing grain, flour, rice, etc., is extended; and by a circular of the 11th, the exportation of these articles is prohibited during the same period. A decree of the 23d of June accords the privilege of transporting grain and flour between Algeria and France to foreign vessels, having left their port of loading on or before the 31st December, 1855. By another decree of the same date the exportation of corn and barley from Algeria, to foreign countries is prohibited, and by a third decree, the importation of carol beans by French vessels is admitted at a duty of 25 centimes per 100 kilogrammes, and of 1 franc per foreign vessels. A decree of the 7th July admits, free of duty, vanilla, imported by French vessels arriving direct from the French colonies, Cayenne and Mayottel. A circular of 10th July imposes a double décime on the amount of all government taxes, to remain in force till the 1st of January, 1856; increases the excise consumption duty on brandies, spirits, liquors, and brandy fruits, from 34 francs to 50 francs per hectolitre of alcohol, and from 50 francs to 66 francs, exclusive of the double décime, the tax on these articles on their admission into Paris, and further imposes a tax of 10 per cent. on the receipts of passenger money by railroad, and also on the conveyance of goods by fast or express trains. By a decree of the 14th July, molasses imported for distillation by French vessels from the colonies of France, India, South America, and the West Indies, is admitted free of duty, and from other ports at a duty of 2 francs per 100 kilogrammes. When imported by foreign vessels, the duty is 3 francs per 100 kilogrammes.

A decree of the 16th July makes many changes and modifications in the tariff of duties. They are too numerous to be imbodied in this communication. They will no doubt be published in one of the supplements to the *general tariff*, which shall be forwarded to the Department when published, with any others which may have preceded it, or by which it may have been followed. The avowed object of these modifications is to give additional encouragement to its maritime commerce by the total repeal of duty on the raw material of certain articles—the produce of distant countries—when imported direct by French vessels, for the purpose of contributing to the progress of their own manufactures, and by totally repealing the duty on certain articles of small productive revenue. Among the most important of these modifications is the alteration of the duty on caoutchouc. The duty on this article of 20 francs per 100 kilogrammes is continued when it is melted solely for articles of manufacture. Until the publication of this decree, when other substances were mixed with caoutchouc, or gutta percha, either for the purpose of giving color or adding strength to the article manufactured, the duty was 200 francs per 100 kilogrammes. This tax is now reduced to 50 francs. The duty of 200 francs will in future be payable only on articles composed of caoutchouc or gutta percha, with which other substances are combined, and when intended for other purposes than that of being melted. A decree of the 31st August accords the free admission of game, poultry, and shell-fish (*tortue*); and one of the 22d September prolongs to the 31st December, 1856, the exemption from tonnage duty of all vessels laden with grain, flour, rice, potatoes and dried vegetables.

The increase in the price of meats in France has been very great since 1848; so much so, that general complaint exists on the subject. From 1852 to 1854 there has been an increase of price from 40 to 45 per cent. The attention of the government of France having been called to this fact, its efforts have been not only to prevent a further increase, but to effect a diminution from present prices. To this end the tariffs have been revised, and very great reductions have been made upon the importation of foreign cattle, to wit: from $10 23 to 74 cents a head on beef, etc. Not only so, but the direct attention of the people of France has been called to the use of salt meat, and the experiment of opening the market is being made with much success. The duty upon this article has been successively reduced from $5 68 to $3 79, to $1 86, and in the month of October last, to 9½ cents the 221 pounds, or 100 kilogrammes. Under these reductions there has been an astonishing development in its importation. In 1854 the importation of meats, fresh and salt, reached only 3527 quintaux, or 777,844 58-100 pounds; while in the first month of the present year, the importation has reached 3720 quintaux, being more than in the whole year of 1853 by 208 quintaux, or 44,769 62-100 pounds. I transmit herewith an extract from the *Echo d'Agricol*, showing the usual mode of importing salt meats, with the respective values of the several qualities: "Prime pork is the most common kind in brine of gray salt; barrels of 331½lbs. gross, or 198 90-100 lbs. net; value from $14 80 to $15 81 the barrel. Mess pork is little imported and does not find a sale, being too fat. Prime mess, first quality, preserved in brine with white salt, from lean hogs, is from $18 60 to $19 53 per barrel. Hams salted, sugared, and smoked, sustain a comparison with the best we have in Europe, and find a ready sale. Shoulders, dry salted, find a good deal of favor in France. They come in dry barrels, of 994 40-100 lbs. net; value from $18 60 to $19 53 the 221 lbs., or 100 kilogrammes. Lard comes in barrels of 265 20-100 lbs., or in firkins of 46 62-100 lbs. net; value $13 the 110½ lbs., or 50 kilogrammes." The foregoing extract will indicate the kinds, manner of importation, and values, for the benefit of importers. By a decree of the 10th of this month (March) the rates of duties on salt meats into the French colonies have been reduced as follows: Into Martinique, Gaudaloupe, Guiana, and La Réunion, salt meats of foreign make, from whatever country imported, and under whatsoever flag, will pay a duty of 50 centimes (9½ cents) per kilogramme, or 221 lbs. The same duty is required at St. Louis, Senegal, but only when imported in French bottoms, either directly from abroad, or by extraction from the entrepôt of Gorée. Those meats imported into Senegal, under a foreign flag, are charged the duty in force before the decree.

French Colonies.

French Colonies.	Sq. miles.	Population.
ASIA.—Pondicherry, in the Carnatic; Karikal in Tanjore; Mache on the Malabar coast; the factories of Yamaon and Chandernagore, in Bengal; etc...	245	167,790
AFRICA.—The establishments on the Senegal, with the Islands of St. Louis and Gorée.....	....	19,678
The Island de la Réunion (Bourbon), 106,682; Ste. Marie at Madagascar, 5,000 inhabitants, etc.....	54	111,682
Algerie, in 1852—Europeans, 194,115; natives, in 1848, 2,243,493.....	5,000	216,538
AMERICA.—West Indies—The lesser Antilles, Martinique, 121,145; Guadaloupe, St. Martin, Marie, Galante, Desirade, and the group called the Saintes, 134,544.....	685	255,689
South America—A part of Guiana, with the Island of Cayenne.....	513	22,010
North America—The Isls. of St. Pierre and Miquelon, near Newfoundland.....	7	1,338
PACIFIC OCEAN.—		
The Marquesas, Tahiti..... (taken possession in 1841.....	24	20,200
New Caledonia..do. in 1853.		
Total.....	6,488	814,925

In Africa the French possess Gorée and some factories near the mouth of the Senegal. In the East they have the Isle of Bourbon, and Pondicherry, Chandernagore, and some smaller factories on the mainland of India; and their vessels are, like the Americans, admitted to trade with Calcutta, Madras, and other British settlements, on payment of moderate dues. The retention of the Mauritius by England, at the peace of 1814, deprived them of the great receptacle for their privateers in the East; and on the continent of North America, they retain nothing since the cession of Louisiana to the United States in 1803. Since 1841, when the sovereign of the island of Mayotte placed himself under the protection of France, this island, situated at the extremity of the Mozambique Channel, is to all intents and purposes a French settlement. Mayotte is capable of feeding a population of 20,000 souls, and of regularly furnishing provisions to a squadron of ships. France also possesses an establishment in Aus-

tralia, for since the 22d of March 1854, Captain Dubouzet has been commandant of the Marchesas and imperial commissary at the Society Islands and New Caledonia. There is also an unimportant French settlement at Madagascar, and an attempt at a penal colony has been made at Guiana, where, to the disgrace of the French government, political prisoners have been mixed with the refuse of the galleys. In the seas of Europe, Corsica is almost the only insular possession of the French. They have no great maritime fortresses, like Gibraltar or Malta, and no dependencies of the nature of the Ionian Islands.

Commerce, etc.—The commerce of France with her colonies is regulated by the same narrow maxims as the other branches of her foreign trade. The colonies and the mother country are mutually bound to trade exclusively with each other. The staple produce of the French West India colonies, as well as the Isle of Bourbon in the East, is sugar; and it appears that the price of this article in the European markets will not repay the expense of its cultivation in those countries. The colonists, therefore, insist that all other sugars shall be excluded by heavy duties from the markets of France; that they shall have the exclusive privilege of supplying these markets; and on a complaint that the duties imposed on foreign sugars were not high enough to give them the monopoly of the home market, an additional duty was, in 1822, on the suggestion of the director-general of the customs, imposed on all foreign sugars. In return, France possesses the exclusive privilege of supplying the colonies with all the manufactures and other European goods which they require. On this principle of mutual monopoly the trade is now conducted. The effect of this system is to levy a tax on the inhabitants of France, in order to indemnify the colonists for the losses which they incur in carrying on an unprofitable trade. They can not furnish a supply of sugar to France at the ordinary rate of the European market; and the price must therefore be artificially raised in that country, in order to enable them to carry on the cultivation of their estates; while, on the other hand, they are not at liberty to buy the goods which they require in the cheapest market, but must take them at whatever price they can be afforded by the mother country.

Another evil of this colonial monopoly is, that the colonies supply more sugar than France can consume. But it can not be sold in other countries at the price which is paid to the colonies by the mother country; and hence it becomes necessary to find out the means of forcing a sale of the surplus which can not be consumed at home. A bounty is accordingly granted on all sugar exported from France; and in 1831, while the duty on the importation of sugar produced £1,636,030, there was paid back for bounties £488,951, which was more than one fourth of the gross receipts. The loss which France has incurred since the peace of 1814 by this erroneous system is estimated in "Bowring and Villiers' Report," at £40,000,000 sterling; and in return for these great sacrifices, the colonies afford but a limited demand for the manufactures of the mother country; in 1852, it amounted to 23,482,000 kilogrammes; in 1853, to 26,481,000 kilogrammes; in 1854, to 33,297,000 kilogrammes.

Colonies.—The colonial possessions of France are quite unsuited to her greatness in other respects. The insurrection engendered by the first Revolution deprived her of the western half of St. Domingo, a rich and beautiful territory, containing formerly more negroes, and exporting more produce, than all the British West Indies together. The French government seems to have relinquished the hope of regaining this country, at least by military means, and to limit its ambition to the remaining colonies, Martinique, Guadaloupe, Cayenne, in the West Indies. The first two are, like most of our West India islands, cultivated to a considerable extent, but capable of much improvement. The petty island of Marie Galante is in a similar state; but Cayenne forms a part of a most extensive tract, of which one corner only is as yet rendered productive, and which may eventually become a great settlement; though on the score of health it is as unpromising as the adjacent colonies of Demerara and Surinam. Before the loss of St. Domingo the annual import into France amounted to 70,000 hhds. of muscovado or brown sugar, 60,000 hhds. clayed, and nearly 20,000 of fine clayed. Of this very large supply there were exported nearly 40,000 hhds. of brown, and above 60,000 hhds. of clayed, forming, exclusively of any duty, an annual value of between £2,000,000 and £3,000,000 sterling, and affording a most acceptable exchange for a number of imported commodities. The sugar thus imported from St. Domingo has long been lost to France, no sugar being now exported from that country.

Algiers.—Among the colonies of France is Algeria, which the government has retained since its conquest in 1830. Of this dependency Algiers is the capital, the seat of government, of a prefecture, and of a bishop's see since 1838. Algiers also possesses a government printing-office, an academy of public instruction, a court of appeal, a tribunal of first instance, a tribunal, and a chamber of commerce. A bank has been recently established. Several newspapers are published at Algiers. The *Moniteur* of Algiers is the official paper. There is also the *Akhbar*, the *Mobacher*, the official journal in Arabic, the *Atlas*, etc.

The population of Algiers, according to the last returns, amounted to 55,682 Europeans, of whom 23,147 were French, and 24,996 natives, of whom 17,858 were Mussulmans, 1380 negroes, and 5758 Jews. A Protestant church was commenced in Algiers in 1846 and finished in 1845. There are at Algiers four large mosques and about thirty lesser ones, two great and twelve lesser synagogues. There are few manufactories in the capital unless of silks, carpetings, woolen tissues, fire-arms, saddlery, jewelry, leather, etc. From the last published official returns there entered Algiers within the year 2279 ships, measuring 209,642 tons; of these 255 were government vessels, 1134 French commercial bottoms, and 120 native; the remaining vessels were under foreign flags. There sailed outward from Algiers, in the last year of which we have any official records, 2297 ships measuring 208,319 tons. Of these 249 were government ships, 1148 French ships, and 117 native. By a decree of the present Emperor of the French, a bourse was created at Algiers on the 16th of April, 1852. For a more detailed account, see ALGIERS.

GENERAL TRADE OF FRANCE WITH ITS COLONIES.

Colonies.	Year.	Importations.	Exportations.
Martinique	1853	£652,441	£765,577
Guadaloupe	1853	423,655	570,434
Bourbon	1853	851,647	694,946
Senegal	1853	287,306	392,369
Cayenne	1853	56,888	184,044
India	1853	669,738	21,884
Algiers	1853	1,182,804	3,695,966
St. Pierre & Miquelon, &c	1853	317,031	278,637
Isles Mayotte and Madagascar	1853	8,627	86,584

The trade to Bourbon island, Guiana, Martinique, and Guadaloupe, out and home, employed in 1848, 492 ships; in 1849, 541; 1850, 486; 1851, 602; 1852, 677; 1853, 583. The mean of the first five years, 560 vessels.

The trade to Algiers, Senegal, India, Madagascar, out and home, in 1848, 1843 vessels; 1849, 1938; 1850, 1902; 1851, 2194; 1852, 2443; 1853, 2177; mean of the first five years, 2064.

All along the north coast of France, the fisheries consist of cod, mackerel, herrings, and pilchards. On the Atlantic, and still more on that of the Mediterranean, are caught great quantities of sardines, a fish

of passage, which appears periodically in shoals, like the herring. The fishery of *sardines* is said to give employment to 8000 seamen, and the sales resulting from the produce amount to between 8,000,000 and 4,000,000 of francs. The tunny, a fish not known in northern latitudes, is found in the Mediterranean in the early part of summer. It varies in weight from 10 to 25 pounds, and is in like manner caught in shoals.

These home fisheries, little calculated for forming seamen, have been left to their natural progress, while repeated attempts have been made by government to extend the fishery in America; a design favored by the early possession by France of Newfoundland and Canada, as well as by the long peace that followed the treaty of Utrecht. Toward the middle of last century the French fisheries in America employed annually about 5000 seamen; but the unsuccessful contest with England in 1756 reduced them greatly, and deprived them of their principal station, Cape Breton. The peace of 1783 was concluded under better auspices. The islands of St. Pierre and Miquelon were ceded to France by the treaty of Versailles, and the rights of fishing and of drying fish from the Cape St. John to Cape Ray. In the Gulf of St. Lawrence her rights were subsequently recognized, by the treaties of 1802 and 1814, at 3 leagues' distance from the coasts belonging to Great Britain; but within the gulf, at a distance of 15 leagues from Isle Royale, and 30 leagues from New Brunswick.

FOREIGN COMMERCE OF FRANCE WITH HER COLONIES AND THE FISHING BANKS.

Years.	ENTERED.					
	FRENCH.		FOREIGN.		TOTAL.	
	Vessels.	Tonnage.	Vessels.	Tonnage.	Vessels.	Tonnage.
1853	9,210	1,065,688	11,569	1,685,011	20,779	2,750,699
1854	9,807	1,181,702	10,982	1,606,837	20,289	2,788,539
1855	9,574	1,247,452	13,442	2,057,313	23,016	3,304,765
	CLEARED.					
1853	6,625	796,850	8,856	1,058,015	15,481	1,854,665
1854	5,726	796,718	7,919	1,059,592	13,645	1,856,305
1855	5,726	934,598	8,054	1,100,057	13,810	2,034,655

For the encouragement of the French fisheries, enormous pecuniary sacrifices have been made. By the law of the 22d of July 1851, bounties are granted to the fisheries till 1861, at the rate of 120 francs the ton. A ship of 600 tons thus receives 72,000 francs bounty, which would be 2000 to 3000 francs per man. The only time they were ever in a prosperous state was, not when they were protected by the artificial encouragement of the mother country, but when the French colonists, being in possession of a large tract of the American sea-coast, were in consequence compelled to trust to prudence and economy alone for the success of their adventures. During the session 1833 of the Chamber of Deputies, a committee, appointed to inquire into this subject, made their report.

French Fisheries.—High bounties have, since the year 1767, been paid to those owning ships, and to men employed in the French fisheries. In pursuance of ordinances dated the 24th of June, and 9th and 12th of July, 1851, the following bounties were granted for the encouragement of the French fisheries. They came into operation on the 1st January, 1852, and are to remain in force until the 30th June, 1861:

"*Cod-fishery.—Premiums for Chartering and Equipping Vessels.*—For every man engaged in the fisheries, having drying or curing grounds, whether on the coasts of Newfoundland, Saint Pierre or Miquelon, or upon the great Newfoundland Bank, 50 francs. For every man engaged in the fisheries, not having drying or curing grounds, in the Icelandic Seas, 50 francs. For every man engaged in the fisheries, not having drying or curing grounds, on the great Newfoundland Bank, 30 francs. For every man engaged in the fisheries on the Dogger Bank, 15 francs.

"*Bounties on the Produce of Fisheries.*—On the importation into the French colonies, whether in America or on the other side of the Cape of Good Hope, of every quintal of dried codfish, the produce of French fisheries on the coasts of Newfoundland, Saint Pierre, or Miquelon, or which may be taken from entrepôts in France, 20 francs. On the importation into the above colonies, of every quintal of dried codfish, the produce of French fisheries, if the fish shall be exported from the French ports without having been there warehoused, 16 francs. On every quintal of dried codfish, the produce of the French fisheries, and imported direct from the same or from French entrepôts, into such foreign Mediterranean ports (except those of Sardinia and Algeria) in which a French consul may reside, 16 francs. On every quintal of dried codfish, the produce of the French fisheries, forwarded direct either from those fisheries or from French ports, and imported into Sardinian and Algerian ports, 12 francs. For every quintal of cod-sounds that the fishing-vessels may bring into France, the produce of their fishery, 20 francs."

Vessels departing for the fisheries with drying grounds, whether on the coasts of Newfoundland, Saint Pierre, Miquelon, or the great Bank of Newfoundland, shall have a crew whose minimum is to be fixed by a royal ordinance.

Whale-fishery.—The bounties granted in pursuance of the laws of 24th June, and 9th and 12th July, 1851, for the encouragement of the whale-fisheries, shall be fixed as follows, to date from the 1st January, 1852, and to continue in force until the 30th June, 1861:

"*Bounties on the Departure of Vessels.*—For every ton of shipping outward bound, with crews composed entirely of French sailors, 70 francs; and for vessels with crews composed partly of French and foreign sailors, agreeably to the provision that the foreigners exceed not one third either of the officers or crew, 48 francs.

"*Bounties on the Return of Vessels.*—On each ton of shipping where the crew is composed entirely of French sailors, 50 francs. On each ton of shipping with a mixed crew, 24·5 francs."

Under the conditions that the vessels shall have fished either beyond Cape Horn, or to the east of the Cape of Good Hope, as far as 62° of latitude, and shall have been out at least 16 months. In addition to the above, there shall be allowed to vessels especially manned for the sperm-whale (*cachalot*) fishery, in the Pacific Ocean, after they have been at sea for the space of at least 30 months, and during which time they may have reached as far as 28° of north latitude, an additional bounty of 15 francs upon the sperm oil, etc., which they shall bring home. The bounty on the produce will only be accorded for an amount not exceeding 600 tons.

Colonial Tariffs.—The navigation between France and her colonies is confined to French vessels measuring not less than 40 tons, in which the officers, and at least three fourths of the crew are French.

French Guiana (*Cayenne*).—The tariff of this colony is established by decrees of the local authority, sanctioned by the metropolitan government.

Duties on Imports.—French merchandise (with the exception of that admitted free), imported direct from ports of France or her colonies, in French bottoms, pays 2 per cent. ad valorem. Foreign merchandise (with the exception of that admitted free) permitted to be imported, both under French and foreign flags, viz.:

"Beef, salted;* butter; codfish, green, dried, and salted; fish-oil; wheat flour, rye flour, and corn meal; lard; vegetables, fresh and dry; lime, slacked; salt pork; rice; salt; staves; stone coal; tallow, and tallow candles; tobacco, in leaves; whalebone and whale-

* By a late decree, salted provisions under all flags and from all countries pay 50 centimes per 100 kilogrammes.

oil; wood, and pitch-pine, pay 5 per cent. ad valorem. All articles not enumerated above, 10 per cent. ad valorem."

The following articles are prohibited importation for consumption, and are only admitted in entrepôt (*entrepôt fictif*).*

"*From French Colonies in French Vessels.*—Cocoa, cinnamon, cloves, coffee; cotton, raw; indigo, and prepared roucou; all spirituous liquors, with the exception of brandy, French and Martinique cordials; Kirschenwasser and gin; nutmegs, pepper; sugar, raw and whitened, and wool.

"*From Foreign Countries and in Foreign Vessels.*—Clothes, ready made, comprising hats and all articles for the feet; cotton, spun; gunpowder; sugar, refined; tissues of cotton, silk, wool, and, hemp."

The following articles are admitted free of duty, without reference to their source, under all flags:

"Animals, living; agricultural instruments imported for trial; machines, and similar articles necessary for colonial industry; specimens of natural history; precious metals in bullion and coin; quick-lime."

By French Vessels Arriving Direct from France.—Utensils and implements of husbandry, especially shovels, hoes, hatchets, plows, pruning-hooks, and harrows; salt beef; boilers for sugar factories; cod-fish and other salted fish; flour and all other farinaceous provisions; vegetables, fresh and dry; salt pork, red herrings.

Duties on Exports.—All products of the colony (except those which are free) exported to France or to French colonies, in French vessels, ½ per cent. ad valorem. The same exported to foreign countries in French vessels, 2 per cent. ad valorem.

The following products of the colony are subject, on exportation, to the following additional duty, called (*contribution foncière*) "ground-tax:"

Denomination of merchandise.	Number, weight, or measure.	In national vessels.	In foreign vessels.
Annatto or roucou.	100 kilos. or 220 lbs.	$0 55·8	$0 55·8
Cocoa	" "	8·33	33·33
Cloves, flowers	" "	43·5	90·7
" stalks	" "	2	7·5
Coffee	" "	46·8	1 02
Cotton	" "	37 2	64 8
Molasses	" "	9·8	9·3
Ox-hides	Each	1	4
Taffia (rum)	1,000 litres=264 gal	9 3	9·3
Segar, raw or white	220 pounds	12·9	24

"Foreign prohibited goods having been seized and re-exported, 2 per cent. ad valorem. Foreign prohibited merchandise on leaving the "*entrepôt fictif*," ½ of 1 per cent. ad valorem."

The following articles are exempt from all exportation duties, whether for France or foreign countries:

"Cinnamon; eggs, fresh; ginger-root, indigo, nutmegs, pepper, pimento, simarouba, specimens of natural history, turmeric, turtles, vanilla, and wood."

Charges for Nationalizing Foreign Vessels.—For a vessel of 100 tons and under, $11 23·5; 101 to 200 tons, $18 88·8; 201 to 300 tons, $16 66·6; over 300 for each additional 100 tons, $2 80·8.

Clearance Duties.—For the long course (foreign voyage) per vessel, $3 70·33; for the great and small coasting trade, $2 80·8; inscription duty (registration free) for changing the proprietorship, $1 11·6.

Pilot Dues.—If the vessel anchors in the roads or in the harbor:—For a vessel under 50 tons, great and small coasting trade, $5 55; 50 to 99 tons, $7 40·7; 100 to 149 tons, $9 80; 150 to 199 tons, $11 28·5; 200 to 299 tons, 13 88; 300 to 399 tons, $16 66·6; 400 tons and upward, for each additional 100 tons, $0 80·8. If the vessel casts anchor in the roads:—Pilots' services in the roads, on demand of the captain, when not retained for conducting the vessel into port, for one tide, $1 86; charges of anchorage in the harbor of Cayenne, $1 11·6; delay of pilot on board of a vessel, either on demand of the captain, or because of quarantine, independent of board, which is to be furnished to him at the expense of the ship, for 24 hours, $1 11·6; pilotage from the harbor of Cayenne to the Point of Moncouria, without respect to the tonnage of the vessel, $5 55·5.

The pilot dues are the same for clearing as for entering the port.

Mayotte and Dependencies.—There are only pilot dues to be paid at Mayotte.

Senegal and Dependencies.—Foreign vessels pay in Senegal 4 francs, or 74·4 cents, and in Gorée only 50 centimes per ton. They can, however, neither export nor import (except through Gorée), as the whole trade is open only to French shipping and French manufactures, and is prohibited to all other nations.

French Settlements in the East Indies.—The ports of these dependencies are free, and therefore open to all nations.—*Navigation Act of September* 21, 1793.

Tariff.—Pondicherry, Karikal, and Mahé, tonnage duty, without distinction of flag, 4 cents per ton. (1847.) Pondicherry alone, light-house dues, without distinction of flag, 3 cents per ton. Pondicherry alone, ferriage dues, without distinction of flag, 88·8 cents for one vessel.

St. Pierre and Miquelon.—Before 1846, American vessels were allowed to import into these islands only such goods as the French trade could not supply, and which were required by the necessities of the population. These restrictions were abolished by a decree of the governor, of May 7th, 1846. American ships sailing direct from the United States for Miquelon and St. Pierre, either in ballast or loaded, enjoy the same privileges as French vessels coming from the United States, and pay no more duty than the said French vessels, with the exception only of a compensation for the interpreter—which, however, by another decree of June 26, 1847, has become entirely optional: that is, if the captain or any one else on board understands the French language, he is not obliged to take an interpreter. The duties for American vessels are, therefore, as follows:

Designation of vessel.	DUTIES. NAVIGATION. Tonnage, per ton.	Pilotage, per vessel.	Light-house, per vessel.	Hospital dues, per vessel.	Custom-house dues on the valuation of cargo.
Under 30 tons	Exempt.	Exempt.	Exempt.	Exempt.	1 per cent. ad val.
30 to 49 "	$0 7½	$2 80·8	$1 86	$1 86	1 per cent. ad val.
50 to 79 "		4 48			
80 and upward		6 48			

Oceanie.—The ports of the French dependencies in the Pacific Ocean are free ports.

Tonnage Duties.—For vessels over 10 tons, 28·0 cents per ton; for vessels under 10 tons, 13·8 cents per ton.

Duties for Nationalizing.—For vessels under 100 tons, $1 67; from 100 to 200 tons, $8 88·8; from 200 to 300 tons, $4 44; for each 100 tons additional, $1 11·6.

Duties for Clearance.—Decked vessels, $1 11·6; without deck, $0 18·6.

These are duties both for American and French vessels coming or going direct from or to the United States, in virtue of the above-mentioned decree. If, however, trading indirectly, they are subjected to the same duties as all other ships, for which, both French and foreign, the duty is as follows:

* "*Entrepôt fictif*," a private storehouse where goods are under the sole supervision of the depositor.

TARIFF OF 1847.

DESIGNATION OF VESSELS.	DUTIES. Pilotage, per vessel.	Tonnage, per ton.	Light-house, per vessel.	Hospital, per vessel.	Custom-house dues.	OBSERVATIONS.
French vessels.						
From 30—49 tons.....	$1 25	$0 04½	$1 86	$1 86		
From 50—149 tons.....	2 08					
150 and upward.....	2 50					
Foreign vessels.						
30 tons and less.....	$3 70½	$0 11½	$1 86	$1 86	1 per cent. on the valuation of the cargo.	French vessels arriving from the ports of the U. S. are subjected to the same duties as American.
31—49.....						
50—79.....	5 55½					
80 and upward.....	7 40					

TARIFF DUTIES ON IMPORTATION OF SPIRITS IN FOREIGN VESSELS, BY A DECREE OF NOVEMBER 14, 1847.

Denomination of merchandise.	Number, weight or measure.	Rate of duty.
Wines, French, in casks.....	Per barrel..	$1 86
" " in bottles.....	Per dozen..	37·2
Liquors, cordials, and all alcoholic wine, in casks.....	1 litre, or 1¼ pint.....	11·25
The same, in bottles.....	Per dozen...	74·4
Absynthe, "	" ...	1 48
Beer, "	" ...	37·2

The same articles pay, in French or Tahitian vessels, only one half of these duties. (1853.)—*Com. Rel. U. S.*

French West Indies.—The French colonial possessions in the West Indies formerly comprised a domain of great extent and value, agriculturally and commercially. The war consequent upon the great Revolution in France terminated in an almost total destruction of her power in the New World. Hayti was then wrested from her. Her necessities compelled her to dispose of Louisiana. At the close of the war in 1815, the naval power of Great Britain had enabled her to seize every one of the French islands, and drive the fleet of France from the seas. By the treaty of peace consummated in 1814, and confirmed in 1815, England released to her some of the captured islands. Her possessions in that quarter now consist of Martinique, Guadaloupe and adjacent islands, and the north side of St. Martin.

The interconrse between the United States and the French islands (San Domingo being then included) was originally regulated by an *arrêté* of the French government, dated the 30th of August, 1784. American vessels of at least 60 tons were admitted into certain ports in these islands, laden with lumber of all kinds, dye-woods, live stock, salt beef, salt fish, rice, raw hides, peltry, rosin, pitch, and tar, which they exchanged for rum and molasses, and goods of French manufacture, paying thereon the local duties, and one per cent. ad valorem on all imports and exports. A further duty of three livres was imposed on ever hundred weight of salt beef and fish, to form a fund for premiums to be given for fish from the French fisheries. The colonial legislatures were authorized, in times of scarcity, to suspend this law. Prior to the French Revolution, the policy of France was in contrast with that of England. That of England was to monopolize the carriage of the articles exchanged; that of France, to monopolize the articles themselves. The former was willing that the United States should have sugar and coffee, provided they were carried in British bottoms; the latter was willing that the United States should supply her sugar and coffee plantations with certain articles she was unable to furnish herself, but would not allow them to receive in return, the most valuable productions of the colonies. They were reserved for consumption in the mother country, and to augment the national wealth. Under these regulations, the United States were prompt in availing themselves of the advantages of the carrying trade to and from the French islands.

In 1786, our exports, domestic and foreign, to the French West Indies, were of the value of 13,263,000 livres; and our imports from thence of the value of 7,263,000 livres;* and the American vessels engaged in the trade had an aggregate of 5095 tons' burden. Upon the declaration of war against Great Britain, in 1793, France opened a free trade with all her colonies. She offered the United States the monopoly of this trade, on condition of a guaranty of her possessions, which was wisely declined. Our trade with the islands during the war was nevertheless much augmented. Our proximity enabled us to seize the advantages in advance of other countries. The following table exhibits the imports from and exports to the French West Indies for the years designated:

Years.	Imports.	Exports.
1795.....	$15,751,758	$4,954,952
1796.....	15,748,774	8,408,946
1797.....	14,080,887	8,565,058
1798.....	15,880,091	5,844,680
1799.....	2,022,929	2,776,694
1800.....	9,885,111	5,129,433
1801.....	18,598,255	7,147,972

The exports of our domestic produce duing the years 1804, 1805, 1806, and 1807, were of the average value of $2,800,000, and of foreign produce between $3,000,000 and $4,000,000. Our imports during the same period were of much greater value; but the principal part of them were re-shipped to France and other countries. About the latter part of the year 1807 the English had become possessed of nearly all the French islands; and they were not restored to France until 1814, and then with the loss of the most important one—San Domingo. Its loss greatly reduced the amount of commerce of those islands with the United States, as is exhibited by the subjoined statement of imports and exports from 1821 to 1833:

Years.	Imports.	Exports.	Years.	Imports.	Exports.
1821..	$900,619	$896,485	1828..	$996,651	$1,024,771
1822..	969,509	961,092	1829..	777,992	1,072,407
1823..	938,613	867,595	1830..	518,687	805,769
1824..	884,084	811,732	1831..	671,842	717,877
1825..	848,968	1,011,956	1832..	578,857	624,975
1826..	973,270	956,174	1833..	511,242	613,719
1827..	921,390	1,040,333			

The conditions of our commercial intercourse with the French West Indies were again changed by a royal ordinance bearing date the 5th February, 1826, and an act of Congress bearing date the 9th May, 1828. By the former, it is ordained that, after the 1st July following, all vessels, either foreign or national, may import into Guadaloupe and Martinique certain articles of merchandise, specified in the table accompanying the ordinance, on paying the duties therein required, without regard to their flags. This ordinance also annuls all then existing tariffs. The act of Congress admits all French vessels "coming directly from the islands of Martinique and Guadaloupe, and laden with articles the growth and manufacture of either of said islands, and which are permitted to be exported therefrom in American vessels," into the ports of the United States, on payment of no higher duty on tonnage or on cargoes than are imposed on American vessels, and on cargoes imported in American vessels. The French ordinance exempts foreign vessels also, importing the articles thus authorized, from any other duties or tonnage, or any port charges, but those to which the vessels of France are subjected. The importation of other ar-

* The livre was a coin of France prior to 1797; 81 livres being equal to 80 francs.

ticles than those specified by the ordinance, by foreign vessels, is prohibited; and articles allowed to be imported can only be re-exported from one colony to another by French vessels. The imports and exports under the seregulations have already been given, up to the year 1833. The following table exhibits them from the year 1844 up to the close of the year 1855, inclusive, embracing a period of 12 years:

Years.	Imports from French West Indies.	Exports to French West Indies.
1844	$374,695	$617,546
1845	415,082	564,108
1846	848,286	685,621
1847	151,366	608,164
1848	127,039	489,924
1849	71,469	194,998
1850	75,684	287,608
1851	22,909	310,281
1852	46,287	455,448
1853	52,304	898,250
1854	161,085	612,027
1855	44,484	409,701

On the 8th of December, 1849, the tariff of 1826 was somewhat modified by slightly enlarging the imports; but the equal conditions upon which national and foreign vessels were placed in respect to tonnage and port charges were not disturbed. The prospects of an increase of our trade with the French West India possessions, and the motives to impel us to strive to obtain it, will be found in a brief summary of their natural resources and the conditon of their population.

The island of Guadaloupe lies between 15° 58′ and 16° 13′ north latitude, 20 miles north of Dominica. Its dependencies are Marie Galante, La Desirade, Les Saintes, and a portion of St. Martin. The aggregate area of the whole of them is 309 square miles, and the populations of all 135,000. The central ridge of Guadaloupe is a chain of volcanic mountains 3000 feet high. From its base a multitude of rivulets descend, watering the low lands to the sea. The Saintes are three small islands situated between Guadaloupe and Marie Galante; Desirade is 10 miles long and five miles broad. Marie Galante approximates to a circle, and is 14 miles in diameter. The soil of Guadaloupe is light, and easy of tillage. The climate is excessively hot, but much tempered by the sea-breeze. About 86 inches of rain falls during the year. About one half its surface is planted in sugar-cane. The improvement in machinery has added much to its productive powers. The live stock consists of black cattle, sheep, and mules. Guinea-grass is the only forage grown. The annual value of all the produce exported averages 25,000,000 francs, and consists chiefly of raw sugars, rum, and molasses, with some coffee, dyewoods, cotton, copper, etc. Nearly all these exports go to France. The imports consist of salt meats and fish; flour, olive oil, cotton, linen, and silk fabrics; wine, perfumery, etc.; the annual value of which equals that of the exports. About 500 vessels, measuring an aggregate of 50,000 tons, enter and depart during the year.

Martinique is situated between latitude 14° 23′ and 14° 52′ north. It is about 28 miles long, and 10 in average breadth, with an area of 290 square miles, and a population of 15,000. Mountains occupy its centre, sloping into plains toward the sea-shore. About one third of the island is level land, and cultivation asceods 1500 feet along the mountain-sides. The staple product is sugar; its other products are like those of Guadaloupe. The annual value of its exports is a little under 20,000,000 francs, and the imports are of a like value. About 750 vessels, French and foreign, are engaged in the trade. Both these islands are divided into arrondissements, and have a governor and legislative council, and judicial tribunals. Slavery was abolished in all the French colonies some years since. The larger portion of their population is black.—*Com. Rel. U. S.*

French vessels from the French islands of Martinique, Guadaloupe, St. Pierre, Miquelon, and Cayenne in French Guiana, were exempted from tonnage duty under the special act of Congress of the 9th May, 1828, and, as to St. Pierre and Miquelon, by the proclamation of the President of the United States, dated the 20th of April, 1847, consequent on the removal by France of the restrictions on vessels of the United States in said islands.

A French vessel bringing fish from the banks of the British colony of Newfoundland, being the product of the waters of that colony, is not exempt from tonnage duties; the act of the 3d of March, 1845, exempts from such duties only French vessels coming directly from the islands of Miquelon and St. Pierre, either in ballast or laden with articles the growth or manufacture of either of said islands, and there is no other provision of law or treaty authorizing an exemption.

French Colonies.—Decree of September 29th, 1856.—The Emperor Napoleon, has decreed as follows:

ARTICLE 1. The extension fixed by the decree of September 19th, 1856, for the operation of the modifications in the tariff of customs in the colonies of Martinique, Guadaloupe, the island of Reunion, and of Senegal, in all that relates to grains, breadstuffs, and dried pulse, is continued to December 31st, 1857.

ARTICLE 2. Our ministers, secretaries of state, etc., will see to the execution of this decree which will also be published in the "*Bulletin des Lois.*" The United States' consul at Paris communicates to the State Department, under date November 10th, 1856, as follows: "I beg to point out to your notice a modification in the duties on wool, as published in the *Moniteur* of the 8th instant (which I herewith inclose), and of which the following is a translation: 'Viewing the law of the 27th July, 1856, which has modified the importation tariff on wool in bulk.'" Considering that it is necessary to place the duties established on the importation of combed and dyed wool in unison with the existing duties on wool in bulk, it is decreed:

ARTICLE 1. The custom-house duties on the importation of combed wool and dyed wool are fixed as follows:

		Fr.
Combed wool	By French vessels, per 100 kilo's	70
"	By foreign vessels, " "	80
Dyed wool of all sorts	By French vessels, " "	100
" "	By foreign vessels, " "	115

"ST. PIERRE, January 22d, 1857.

"Since my last report there has been a considerable change in the duty on tobacco imported from the United States. It has been raised from 20 francs, or about $3 75 per 220 lbs., to the enormous figure of 60 francs, or about $11 25 per 220 lbs., making an augmentation of 200 per cent.

"Some slight ameliorations have been made with respect to the importation of pork and hams, which heretofore had to pass through a French port before admission, but which can now be imported direct from the United States under a duty merely nominal.

"It is much to be desired that the French government should extend this privilege to all articles indiscriminately that could be imported here from the United States.

"The importation of flour from the United States into this island has been much greater this year than during previous years. From the 30th June to the 31st December, 1856, upward of 10,000 barrels have been imported direct from the United States, and about an equal quantity of United States' flour has been imported by way of French ports. This may be accounted for by the duty having been temporarily reduced, and it is much to be regretted the measure is not a permanent one. The new duty (which expires to give place to the old one on the 31st December, 1857) is, on every 220 lbs. of flour, 2 francs, or about 37½ cents. The old one is, on every 220 lbs. of flour, 20 francs, or about $3 75, a duty that of course rendered the importation of flour impossible so long as it

existed. You will observe from the returns, that this island exports almost nothing to the United States. The staple products are sugar, rum, coffee, and these are not allowed to be exported except to France. Some years ago there was a considerable exportation of molasses to the United States; but this branch of commerce has completely died out, owing to the great extension of distilleries in the island and the consequent scarcity of molasses.—*Consular Returns.*

In order to present an English view of the commerce and finances of France of late years, we add from TOOKE's "History of Prices" (vol. vi., London, 1857) the following "Conclusions arising out of the Inquiry as to the Finances and Credit Institutions of France," contributed by WILLIAM NEWMARCH, Esq., to the new volumes of that work.

"That the revolution of February, 1848, occurred at a period when, by the operation of numerous causes, the finances of the French government were already seriously embarrassed; that among the most important of these causes were the laws of 1841 and 1842, under which the State had taken upon itself the responsibilities and the expenditure entailed by the construction throughout France of an extensive net-work of trunk lines of railway; the unproductive expenditure for a long series of years of large annual sums in Algeria; the unproductive expenditure of considerable sums on public works, yielding no adequate return either direct or indirect; and the maintenance for a long period of an excessive annual outlay on the army and marine; and that in immediate aggravation of all these causes of financial disorder, there had occurred in France, in the closing months of 1846, and throughout the greater part of 1847, a commercial crisis (taking its origin in the serious failure of the harvest of 1856) more severe and disastrous than had been experienced in France for 20 or 30 years.

That the suspension of cash payments by the Bank of France, adopted in March, 1848, and maintained for two years and a half, till August, 1850, was a measure wholly unavoidable, in consequence of the prevalence in March, 1848, of extreme internal discredit, which admitted of being met in no other form; that the prevalence, during these two and a half years, of a very low price of corn in France; of a state of the external trade of France which established a large yearly balance in favor of that country; and of the absence of any political causes which rendered it necessary for the government to require excessive advances from the Bank of France, rendered the suspension practically unproductive of any depreciation or inconvenience; and led to its removal in August, 1850, by the spontaneous accumulation in the Bank of France of an amount of treasure quite equal to the amount of notes in circulation.

That among the important circumstances which have contributed to strengthen the position of the Bank of France since 1848, and to aid the government in its plans for fostering credit, has been the extension by £12,000,000 or £14,000,000 sterling of the disposable means of the Bank of France in consequence of the addition of that amount in the form of small notes to the former average circulation of the establishment.

That under the autocratic government, established in December, 1851, there have been introduced into France a set of financial principles; and there have been placed in course of trial a series of financial experiments, distinguished by a novelty which finds no sanction in any successful precedent; by a hardihood which set at naught almost every established canon of finance; and by a disregard of the future, which purchases present popularity at any cost.

That the earliest purposes to which the new financial policy was devoted were the reduction, in March, 1852, of the interest on the French 5 per cent. debt; the imposition on the Bank of France of a new charter which compelled it at once to lower the rate of discount to 3 per cent. and to make large advances on stock-exchange securities; the concessions, on conditions more or less onerous to the State, of a large number of lines of railway; and the introduction of several joint-stock companies, encouraged by every State appliance to foster the application of credit to purposes of speculation.

That between the early part of 1852 and the autumn of 1853, the prosperity and progress which seemed to prevail in France were chiefly the results of the artificial measures.

That the difficulties of various kinds which have occurred in France since the close of 1853; and more especially the difficulties experienced by the Bank of France in the autumns of 1855 and 1856, have arisen in a principal degree—allowing, of course, for the war and the scarcity—from the embarrassments and disorders entailed by the policy which has forced upon France enterprises and speculations disproportionate to its resources of available capital.

That these embarrassments and disorders would have become altogether overwhelming if it had not been for the springing up, since 1849, chiefly in the gold countries, and in consequence of the gold influx, of a demand for French manufactures and produce, so large and continuous that, during the 9 years 1848–'56, the balance of trade in favor of France has amounted to not much less than £80,000,000 sterling.

That neither the apparent success of the reduction of the French 5 per cents. in March, 1852, nor the apparent success for some time of the enforced maintenance of a low rate of discount; nor the setting up of popular discount and loan banks; nor the apparent alacrity with which the subscription lists of the war loans of 60,000,000 were filled up; nor the maintenance for a long period of the schemes of selling bread at an artificially cheap price; nor the multiplication of railway companies by means of guaranteed dividends; nor the apparent prosperity created by public works and credit institutions, afford the smallest support, when examined minutely and fully, to the financial principles and the financial practices which have held the supreme place in France since December, 1851.

That of the two great credit institutions called the Crédit Foncier and the Crédit Mobilier, the former is directed to a useful and laudable object, but is degraded and disfigured by the introduction of elements of gambling, empirical and pernicious; and the latter, the Crédit Mobilier, seeking to obtain large profits by exciting violent fits of stock-jobbing, and to obtain large funds by the issue of obligations practically not payable in specie, approaches, in design and machinery, nearer than any institution of recent times, to the model afforded by Law's Bank of 1716, and the Compagnie des Indes of the three following years.

That as the result of the whole investigation concerning the financial policy of France since 1847, there have been made apparent three principal facts, namely: 1st. That between 1847 and 1851, it was the abundant harvests and low price of food in France, which contributed in the largest degree to preserve order, to restore cash payments, and to re-establish an equilibrium between the income and expenditure. 2d. That between 1851 and 1857, it has been the £100,000,000 sterling, made available to France by the economy of its metallic circulation, and by the demand for its silks and wines in the gold countries, which has so far carried it through the perils of war, scarcity, and extravagance; and, 3d. That the reckless and socialistic financial policy introduced since December, 1851, has already exposed France to failures and perils quite as formidable as any that were threatened by the revolution of 1848, and unless subjected to early and severe restraints, will assuredly produce the most disastrous consequences." See TOOKE's *History of Prices*, vol. vi., London, 1857, pp. 130–134.

Frank, the name by which the Turks, Greeks, Arabs, etc., designate a Christian. It probably originated during the crusades, in which the French (descendants of the German Franks) particularly distinguished themselves. Europe itself, too, was named *Frankistan*, or the country of the Franks.

The Frank language, *Lingua Franca*, is a jargon which is spoken in the Levant, as the common medium of communication between Europeans and the inhabitants of the East. Its chief ingredient is Italian, and it probably originated during the crusades, which brought so many different nations together.

Frankfort-on-the-Maine (Ger. *Frankfurt Am Maine*), one of the four free cities of Germany, and so called to distinguish it from the Prussian town of Frankfort-on-the-Oder. It took its name (*Franken Furt*) from the river being fordable at this point; and is supposed to have been founded by the Franks in the fifth century.

From the earliest times Frankfort has been closely connected with the other free cities of Germany. During the ancient empire the cities formed together one corporation at the Imperial Diet, and enjoyed one vote in the public affairs. Up to the dissolution of the German empire, in the year 1804, there existed a great number of free towns, which had preserved their sovereignty and independence against the surrounding princes, depending only on the empire, and enjoying various privileges granted to them by the emperors. These disappeared, for the greater part, with the events of the Revolution. Of those which had survived the German empire the towns of Hamburg, Bremen, and Lubec were incorporated with the French empire; while Frankfort became the seat of the Grand Duchy of the same, created by Napoleon, and placed under the rule of the Prince Primat Archbishop of Ratisbon. The overthrow of the French conqueror in 1813 restored these towns to their former independence, and they were received as sovereign members of the confederation. The towns of Hamburg, Bremen, and Lubec once belonged to the Hansa, that celebrated league which was formed in the thirteenth century. Its real object was the protection and extension of commerce; but its power and influence increased in such a way that it at length included eighty-five towns; it equipped fleets, and declared war on neighboring States. England and other powers concluded treaties with the Hansa, and were glad to enjoy its friendship. This league, however, was dissolved in 1630, when the last of its diets was held at Lubec; and from that time the three cities of Hamburg, Bremen, and Lubec remained alone, as the properly-called Hanse Towns. These, with Frankfort-on-the-Maine, form the four free cities of the German Confederation. These four free cities are represented in the German Diet by one minister, and have together one common voice. Notwithstanding this joint representation, each one of the four cities has its own particular representative at the seat of the Diet. Hamburg is represented by Mr. Kirchenfrauer, Bremen by Burgomaster Smidt, Lubec by Senator Elder, and Frankfort by DeHarnier, senator and eldest burgomaster. The joint vote of the four cities is alternately intrusted to each of the towns for the period of a year. The free cities likewise have in common a supreme court of appeal for law cases, and political questions, too, sitting at Lubec; and the control over which is alternately exercised by one of the four cities. Besides that, there exists between them a similitude of political institutions. Their form of government is that of a republic, the basis of which (excepting the short period of 1848-'50) has, nevertheless, always been rather more of an aristocratical than of a democratical character. Their interests are closely united; they have the same political friends and opponents.

The chief manufactures are carpets, table-covers, oil-cloth, cotton, woolen, and silk fabrics, jewelry, tobacco, playing-cards, etc. Frankfort was made a free port in 1831, and is also one of the four great emporiums for supplying Germany with merchandise. The river Maine, which is navigable to Bamberg in Bavaria, where commences the Donau-Maine Canal leading to Kelheim on the Danube, and the numerous railways which centre in Frankfort, render it the industrial and commercial centre of the south-west and west parts of Germany. No German city, with the exception of Berlin, is the centre of so great a number of railways. Four great lines, and seven others of a more local character, meet in the city. The Maine-Necker railway leads southward to the Grand Duchy of Baden, whence railways proceed to Switzerland, Wurtemberg, and Bavaria. The Taunus railway leads west and north-west to Mayence, and to Wiesbaden. From Mayence a railway goes to Ludwigshafen, the harbor of the Bavarian Palatinate opposite Manheim, thence to Strasbourg, and therefrom to Paris as well as to Switzerland. Another branch from Ludwigshafen meets the Strasbourg and Paris railway at Nancy. From Wiesbaden a line is now (1855) in course of construction to Coblentz. The Main-Weser railway passes through the greater part of the two Hesses to Cassel, and communicates with Hanover, Bremen, Hamburg, etc. On the right its branches lead to Berlin and Saxony, and on the left a line will soon be opened to Cologne. The Hanau railway connects Frankfort with Hanau and the chief places on the Maine to Bamberg, from which southward with Nuremberg, Augsburg, Munich and Austria, and in another direction with Leipsic, Dresden, and Bohemia. There are also local lines to Offenbach, the chief manufacturing town of Hesse Darmstadt, to Soden, a much-frequented bathing-place, and to near Homburg, one of the famous spas of Germany. Frankfort, however, is chiefly indebted for its great wealth to being the seat of extensive banking, commission, and funding transactions. In proportion to its size, it is probably the richest city in the world. There are about twenty first-class banking houses; among these are the Rothschilds, Grunelius, Metzler, and others, well known in the commercial world. The number of those in the stock and exchange business amounts to at least 200. A city bank, with a capital of 10,000,000 florins, was established last summer, and has just (1855) commenced business operations. The two fairs of Easter and Michaelmas are still much frequented. Goethe was born here in 1749. Civil population (1852) 62,361, being 47,100 Protestants, 10,661 Catholics, and 4600 Jews; military, 5650—1717 being Austrians, 1713 Prussians, 1391 Bavarians, and 829 natives. The population of Frankfort is but slowly increasing, on account of the old illiberal laws still in force as to admission to citizenship. Only such are admitted as can prove their ability to maintain a family; so no merchant can be admitted unless he prove that he possesses at least 5000 florins, and generally persons possessing that sum, or even more, are not admitted unless they marry a citizen's daughter, in which case the law is more favorable. The ancient law is also still in force, that none shall mend a shoe or drive a nail unless he be a master and member of one of the corporations, and he can not become a member unless he be the son of a citizen, or marry a citizen's daughter. The restrictions to which the Jews were long subject have now mostly been removed. They are entitled to vote at the elections of members to the legislative assembly, and may return four of their own number; they are also admissible to all offices not connected with the senate, the permanent assembly of the citizens, law, religion, or education. The inhabitants of Sachsenhausen are mostly of Saxon descent, and distinguished from their fellow-citizens in manners, dress, and language, as well as occupations, being mostly employed in gardening, fishing, etc.

The city, with a small territory of thirty-eight

square miles lying immediately around it, constitutes the free state of Frankfort. The government is vested in a senate, a legislative assembly, and a permanent committee of citizens. The senate, which exercises the executive power, is composed of 44 members, divided into three branches—justices, senators, and counselors, and having two presidents, one chosen from each of the two first-mentioned benches. The legislative assembly is composed of 94 members, of whom 20 are senators, 20 members of the permanent committee of citizens, 45 chosen annually by the citizens collectively, and 9 deputies from the rural districts. The permanent committee consist of 60 members chosen from among the citizens of all ranks. The legislative assembly meets annually in the month of November, and sits for six weeks; and its sanction is requisite to all new laws, the budget, etc. With the free cities of Lubec, Bremen, and Hamburg, Frankfort occupies the seventeenth place in the Germanic Confederation. It enjoys one vote in the general assembly (*Plenum*), and furnishes a contingent of 683 men to the federal army. Population of the State (1852) 77,971.

Frankfort-on-the-Oder, a town of Prussia, province of Brandenburg, and capital of the government of Frankfort, stands on the left bank of the Oder, fifty miles east by south of Berlin, with which, since 1842, it has been connected by railway. The town is regularly built, and surrounded by old walls with towers and ditches. It has three suburbs, one of which stands on the opposite bank of the river, and communicates with it by means of a wooden bridge. The university founded here in 1506 was removed to Breslau in 1810. Frankfort has a Roman Catholic and six Protestant churches, a synagogue, gymnasium, obstetric school, orphan asylum, work-house, theatre, etc. Being the capital of a government, it is the seat of a superior and other judicial tribunals, of boards of taxation, agriculture, etc. Though inferior to its namesake on the Maine, it is a place of considerable commercial activity, being situated on the high road from Berlin to Silesia, and on a navigable river communicating by canals with the Vistula and the Elbe. It has three annual fairs in the months of February, July, and November, attended by merchants not only from Germany, but also from other parts of Europe. It has manufactures of woolen and silk goods, stockings, gloves, leather, tobacco, sugar, brandy, mustard, etc. Immediately beyond the bridge is a monument to Prince Leopold of Brunswick, who was drowned here in 1785 while attempting to rescue an unfortunate family from an inundation of the Oder. At Kunnersdorf, in the vicinity, Frederic the Great was defeated with great loss by the Austrians and Russians on 12th August, 1759. Population (1849) 29,969.

Freebooters (Fr. *flibustiers*), a name given to a class of piratical adventurers of all nations, but especially of France and England, who have obtained a place in history by the courage and intrepidity they displayed in executing the most difficult enterprises. The origin of their history is involved in obscurity, nor has the derivation of their name been precisely determined; but the *flibustiers* of the French historians correspond to the *bucaneers* of our own writers. (See Bucaneers.) The South American islands formed the chief theatre of their exploits; and such was the relentless hostility they exercised against the Spaniards, that during the latter half of the seventeenth century their commerce in those seas was almost utterly ruined. At the commencement of the following century these daring adventurers sustained a series of disasters which sensibly diminished their numbers; and their name, which during a period of 50 years had been so redoubtable and dreaded, ceased to be formidable from that time. The term freebooter has been applied in a general sense to robbers and other plunderers. See Bucaneers.

Free Imperial Cities.—This appellation was bestowed, under the German empire, on certain cities which acknowledged no head but the emperor, and were governed by their own magistrates. Some of these cities, as Worms and Cologne, acquired various privileges and immunities at an early period, in consequence of the assistance they rendered the emperors in repressing the arrogance of the nobles; and commerce and manufactures gradually contributed to their importance. In this manner the imperial cities originated in the middle of the twelfth century. It would appear, however, that there were free cities in Germany which had existed from the time of the Romans, though possessing little in common with those of later times, and which in the beginning of the sixteenth century lost their most valuable privileges, and even the name of free cities, through the ignorance and carelessness of their magistrates. As to the nature of these privileges it will be sufficient to remark that they were such as to constitute them nothing less than independent republics. The cities of Lombardy, enriched by commerce and encouraged by the popes, often ventured to resist their masters the emperors; and their example was followed by those of Germany. In the middle of the thirteenth century two important confederacies were established for common objects—the Hanseatic League in 1241, and that of the Rhenish cities in 1246. The powerful Hanseatic League lasted nearly 400 years, and its dissolution was effected by several causes in 1630. The remnants of this league, with the former confederacy of cities which had its representatives in the German Diet, as well as the free cities of Hamburg, Bremen, and Lubec, were incorporated with the French empire in 1810. As these cities co-operated vigorously in the recovery of German independence, they were acknowledged, together with Frankfort, as free cities by the congress of Vienna; and as such they joined the German confederacy, June 8th, 1815, and obtained the right of a vote in the Diet. See also Hanse Towns.

Free Trade. A nation, possessing all necessary physical resources, but imperfectly developed, like England a century ago, like the United States now, may do one of two things. It may resolve to produce for itself, or resolve to let others produce for it. If it resolve to use its own products, it must resolve not to use the products of other nations. Now, what is a protective tariff, which prevents the sale of foreign products, but this resolution expressed by legislation? Two things are necessary: 1st. Not to use the products of others. 2d. To produce for one's self. The first is protection. Now it is true, that without industry at home, protection from abroad will avail nothing, for there is nothing to protect. And without resources, neither protection nor industry will avail any thing. We admit the necessity, first, of natural resources; second, of industry; we claim, third, the necessity of protection.

Protection, then, is the resolution of a nation *not* to use foreign products; this is the negative side of the policy of home industry. A resolution to produce for itself is the affirmative side, and is necessary to complete it. Such a resolution in a nation is like self-control in an individual, and protection is no more unnatural in the one than self-control in the other.

It is a domestic policy, designed to keep foreign goods out of the home market. Now, a nation may say it will not buy of others. This is protection. It can not say others shall buy of itself. This is beyond the power of protection; and England reached this point years ago, we think as early as the beginning of the century. During the European war she enjoyed the most effectual protection, for we admit the fling of the free-traders, that protection is a sort of war, thus far, that it involves mutual exclusion. England's fleets swept the seas, conveying around the world her merchantmen that carried the raw materials to her fac-

tories, and carried it back manufactured to the ends of the earth. No other nation but the United States pretended to share the carrying trade, and we then, favored by like protection, first began to manufacture.

England commanded the markets of the world. What had she to fear for the market at home? Protection had done its perfect work—it was *functus officio*; and yet, when England, thirty-five years after, when they had become useless, ventures to throw off some of the restrictions that swathed her industry, we are told she had abandoned the principle, convinced it was a mistake.

GROSS REVENUE FROM CUSTOMS OF GREAT BRITAIN, AFTER DEDUCTION OF DRAWBACKS, WITH STATEMENTS OF CUSTOMS DUTIES REPEALED, REDUCED, OR EXPIRED EACH YEAR, AND THOSE IMPOSED, FROM 1815 TO 1855.

YEAR.	CUSTOMS.	ESTIMATED ANNUAL PRODUCE OF CUSTOMS DUTIES	
		Repealed.	Imposed.
1815	£23,488,000	£223,000	£424,000
1816	19,845,000	53,000	90,000
1817	22,111,000	1,000	7,000
1818	22,369,000	....	....
1819	21,952,000	472,000	1,260,000
1820	23,104,000	....	5,000
1821	22,572,000	20,000	....
1822	23,500,000	158,000	....
1823	24,841,000	211,000	....
1824	24,711,000	1,418,000	46,000
1825	24,660,000	2,768,000	....
1826	22,855,000	773,000	139,000
1827	23,202,000	2,000	21,000
1828	22,866,000	36,000	2,000
1829	22,629,000	126,000	....
1830	22,914,000	575,000	85,000
1831	21,612,000	1,068,000	626,000
1832	21,978,000	248,000	23,000
1833	21,253,000	347,000	....
1834	21,564,000	306,000	17,000
1835	22,146,000	38,000	....
1836	23,046,000	143,000	1,000
1837	22,063,000	....	....
1838	22,365,000	....	....
1839	23,184,000	5,000	....
1840	23,342,000	....	1,060,000
1841	23,515,000	27,000	....
1842	22,523,000	1,499,000	161,000
1843	22,647,000	171,000	....
1844	24,197,000	286,000	....
1845	21,706,000	3,608,000	....
1846	22,278,000	735,000	2,000
1847	21,656,000	845,000	....
1848	22,594,000	586,000	....
1849	22,269,000	389,000	....
1850	22,020,000	384,000	....
1851	22,127,000	801,000	....
1852	21,791,000	96,000	....
1853	22,152,000	1,500,000	16,000
1854	22,017,000	983,000	446,000
1855	22,227,000	....	2,226,000

"We have seen that, apart from foreign trade, the population of every country supply their own wants to the extent of from 90 to 99 per cent. of their whole consumption; that the business of furnishing this supply is by extreme division of labor, apportioned among four fifths of a people; that their internal trade consists in distributing these products of industry; that this distribution is substantially an exchange among the whole individuals of a population, of products for products, or products for services, or, in the last analysis, of labor for labor; that this exchange is made by the agency of merchants, and takes the shape of sales and purchases, that is, leaving out of view the medium of exchange, men pay with their own labor for what they need of the labor of others; that all the agency of merchants, brokers, banks, and credit, is merely a means of effecting this exchange, that the commodities or labor thus exchanged, are estimated at prices expressed in money of account, which prices are mainly governed by the price of labor; that upon the regular movement of this exchange, mainly depends the well-being and comfort, the energy and productiveness of labor; that if this movement proceeds rapidly and undisturbed, production and consumption will go hand in hand, until individuals reach the full power of both, and a greater degree of general comfort and competency be enjoyed than has yet been known. We have seen that one of the great disturbing causes of this system of domestic distribution, of the comforts and necessaries of life, was found in the occasional derangement of the commercial agencies by which it is effected; and we have remarked upon the necessity of reforming that agency with a view to the interests of humanity.

"We now proceed to consider another disturbing cause. We remark first, however, that neither the labor nor the products of labor, nor the distribution, nor the means by which it is effected are the primary objects of consideration. The first consideration is the people, then, in their order, their labor, their products, and the distribution of them. The whole object of their industry is their well-being. As they can only purchase by their own labor what they need of the labor of others, it is absolutely necessary for all to work; whatever deprives men of the opportunity of labor, deprives them of bread, and of every other comfort and necessary of life. Men consume freely and largely when they are fully paid for their labor; that is, when they can purchase for their labor an equal quantity of the labor of others; in this case, the nominal rate is of little account, because it is labor for labor. If the 25,000,000 of people in the United States, are consuming $10 worth each of domestic woolen goods annually, upon the manufacture of which 250,000 of the people are dependent for their entire living, and if it be found that these same goods, which cost at home $3, can be purchased at $2 per yard in Europe, then, at first sight, it would seem but reasonable, that the cheaper article should be imported from Europe. To import $250,000,000 worth is impossible, because we can not pay for them, as we are constantly importing more than we can pay for, and that sum is the figure of our whole imports. We import, then, say 10 per cent., or $25,000,000 worth of woolen goods, and sell them in our great commercial marts, where prices are chiefly made, 33 per cent. cheaper than the domestic article. Consumers fly to the cheaper article, and the domestic goods must come down to the same price. The annual domestic product must fall in price 33 per cent., and instead of bringing its manufacturers $250,000,000, it will only bring them $166,000,000; their consumption of the products of others must be reduced one third. The effects of this reduction will extend until they are felt throughout a whole nation. The importation of 25,000,000 of cheaper woolens, would thus inflict a direct loss by reduction of price upon the woolen manufacturers of $83,000,000, and this loss is multiplied many times by indirect results in the reduction of consumption. The average consumption of cotton goods is about the same as that of woolens, and the same illustration is applicable. The introduction of cheaper goods, of a kind which our country must, after all, chiefly manufacture for itself, is introducing against our own labor, the price of which is $1 per day, the labor of other countries, the price of which is less than 50 cents per day. This can not but inflict a serious blow upon the whole system of our internal industry, and if continued, must lead to the utter prostration of the domestic manufacture thus attacked, and the utter poverty and ruin of the hundreds of thousands depending on it for a living. The effect of this in the case of woolen goods, would be a reduction in the average consumption of woolens, of from $10 to $5, for the whole population, and a rise in the prices above the original domestic rates. While, therefore, it may at first sight appear to be very plainly better to import certain goods which can be offered to consumers at lower prices than the corresponding domestic article, several questions must be asked before such a policy is adopted. As, Will the importation seriously injure any home manufacture? Will it throw many people out of employ-

ment? It is a great mistake to suppose that such measures affect only employers: in woolen and cotton manufactories, there are hundreds of men, women, and children, depending upon every employer. If we lessen our domestic production, will not our increased demand produces peculation, and a higher foreign price for the article imported? If we resolve upon importing our whole supply of a necessary article, are we sure that we can increase our exports to a sufficient extent to pay for the additional importation? Are we sure that we shall not, by this policy, deprive the poor of their supply of a needful domestic product, and convert it into a foreign product, chiefly supplied for the consumption of the rich? What mode can be adopted to secure a supply of these needful articles in time of war, or interrupted commercial intercourse? All these, and many more inquiries, should be made and faithfully studied, before any branch of domestic industry is broken up, under the temptation of buying cheaper goods abroad. On the contrary, it should be well understood in every country, that many sacrifices may, with advantage, be endured, to introduce the manufacture of any article of general consumption, even though it can not be made as cheap as elsewhere. A manufacture can only grow and flourish in a country where the people are willing to consume its products, and they can only consume them where their labor will purchase them. A people can consume largely of a domestic product even at a high price, but may not be able to consume even a small proportion of a corresponding foreign article at a low price. Let any one think of the innumerable articles which figure in our internal trade, and which go to pay for, as well as to make up our consumption of home commodities, and he will see the difference betwen purchasing abroad and at home."—List's *Pol. Ec.*, by S. Colwell.

Those who wish to examine the literature of *free-trade*, will find the principles fully discussed in the following works: Hunt's *Mag.*, vol. iv., 227 (S. G. Arnold), 425 (H. Greeley), v., 168 (H. Greeley), vi., 220 (C. C. Haven), viii., 407 (... Woodbury), ix., 161 (J. B. Fisher), x., 399, 522, xi., 227, xxiv., 53 (S. Beman), 569, xxiii., 79, 110, xxii., 635 (Bacon), 406 (Sulley), xxv., 322; *N. Am. Rev.*, xl., 122 (A. H. Everett); *Am. Quar.*, x. 444; *Dem. Rev.*, vii., 341, ix., 329, xiv., 391, 447, xxxiii., 97; *Dublin Univ.*, xxix., 785, xxxv., 270; *Edinb. Rev.* xxxiii., 331, lxxviii., 1, xc., 70; *Am. Whig Rev.*, v., 201, xiii., 233, 329, 443, xii., 518, 633; Niles' *Reg.*, xxviii., 186, xxix., 289, xii., 135, 156; Fraser's *Mag.*, v., 577, viii., 103, 222, 604, ix., 356, vi., 593 (Galt), vii., 106 (Galt), xiii., 716; *Quar. Rev.*, lxxxvi., 80; *For. Quar.*, ix., 261, x., 68; xl., 140; *Westminster Rev.*, xii., 138, xviii., 366, xix., 269, xxii., 226, xl., 1; Blackwood, xvii., 551, xix., 474, xxi., 1, xxiv., 870, xxvii., 553, xliv., 317, lv., 259, 385, lxvii., 94, 222, 447, lxx., 106, 123, 448, 629, lxviii., 123.

Freight, the sum paid by the merchant or other person hiring a ship, or part of a ship, for the use of such ship or part, during a specified voyage or for a specified time. The freight is most commonly fixed by the charter-party, or bill of lading; but in the absence of any formal stipulations on the subject, it would be due according to the custom or usage of trade. In the case of a charter-party, if the stipulated payment be a gross sum for an entire ship, or an entire part of a ship, for the whole voyage, the gross sum will be payable although the merchant has not fully laden the ship. And if a certain sum be stipulated for every ton, or other portion of the ship's capacity, for the whole voyage, the payment must be according to the number of tons, etc., which the ship is proved capable of containing, without regard to the quantity actually put on board by the merchant. On the other hand, if the merchant have stipulated to pay a certain sum per cask or bale of goods, the payment must be, in the first place, according to the number of casks and bales shipped and delivered; and if he have further covenanted to furnish a complete lading, or a specific number of casks or bales, and failed to do so, he must make good the loss which the owners have sustained by his failure. If an entire ship be hired, and the burden thereof be expressed in the charter-party, and the merchant bind himself to pay a certain sum for every ton, etc., of goods which he shall lade on board, but does not bind himself to furnish a complete lading, the owners can only demand payment for the quantity of goods actually shipped. But if the merchant agree to load a full and complete cargo, though the ship be described as of less burden than she really is, the merchant must load a full cargo, according to the *real burden* of the ship, and he will be liable for freight according to what ought to be loaded.

The delivery of goods at the place of destination is in general necessary to entitle the owner to freight; but with respect to living animals, whether men or cattle, which may frequently die during the voyage, without any fault or neglect of the persons belonging to the ship, it is ruled, that if there be no express agreement whether the freight is to be paid for the lading, or for the transporting them, freight shall be paid as well for the dead as for the living: if the agreement be to pay freight for the *lading*, then death certainly can not deprive the owners of the freight; but if the agreement be to pay freight for *transporting* them, then no freight is due for those that die on the voyage, because as to them the contract is not performed. These distinctions have been made in the civil law, and have been adopted into the modern systems of maritime law. Freight is most frequently contracted to be paid either by the whole voyage, or by the month, or other time. In the former case the owners take upon themselves the chance of the voyage being long or short: but in the latter the risk of the duration falls upon the merchant; and if no time be fixed for the commencement of the computation, it will begin from the day on which the ship breaks ground and commences her voyage, and will continue during the whole course of the voyage, and during all unavoidable delays *not occasioned by the act or neglect of the owners or master*, or by such circumstances as occasion a suspension of the contract for a particular period. Thus, the freight will be payable for the time consumed in necessary repairs during a voyage, provided it do not appear that the ship was insufficient at the outset, or that there was any improper delay in repairing her.

In the absence of an express contract to the contrary, the entire freight is not earned until the whole cargo be ready for delivery, or has been delivered to the consignee according to the contract for its conveyance. If a consignee receive goods in pursuance of the usual bill of lading, by which it is expressed that he is to pay the freight, he, by such receipt, makes himself debtor for the freight, and may be sued for it. But a person who is only an agent for the consignor, and who is known to the master to be acting in that character, does not make himself personally answerable for the freight by receiving the goods, although he also enters them in his own name at the custom-house. In some cases freight is to be paid, or rather an equivalent recompense made to the owners, although the goods have not been delivered at the place of destination, and though the contract for conveyance be not strictly performed. Thus, if part of the cargo be thrown overboard for the necessary preservation of the ship and the remainder of the goods, and the ship afterward reach the place of destination, the value of this part is to be answered to the merchant by way of general average, and the value of the freight thereof allowed to the owner. So, if the master be compelled by necessity to sell a part of the cargo for victuals or repairs, the owners must pay to

the merchant the price which the goods would have fetched *at the place of destination*; and, therefore, are allowed to charge the merchant with the money that would have been due if they had been conveyed thither.

When goods are deteriorated during a voyage, the merchant is entitled to a compensation, provided the deterioration has proceeded from the fault or neglect of the master or mariners; and of course he is not answerable for the freight, unless he accept the goods, except by way of deduction from the amount of the compensation. On the other hand, if the deterioration has proceeded from a principle of decay naturally inherent in the commodity itself, whether active in every situation, or in the confinement and closeness of a ship, or from the perils of the sea, or the act of God, the merchant must bear the loss and pay the freight; for the master and owners are in no fault, nor does their contract contain any insurance or warranty against such an event. In our West India trade, the freight of sugar and molasses is usually regulated by the weight of the casks at the port of delivery here, which, in fact, is in every instance less than the weight at the time of the shipment: and, therefore, the loss of freight occasioned by the leakage necessarily falls upon the owners of the ship by the nature of the contract.

Different opinions have been entertained by Valin, Pothier, and other great authorities as to maritime law, with respect to the expediency of allowing the merchant to abandon his goods for freight in the event of their being damaged. This question has not been judicially decided in this country. "The only point," says Lord Tenterden, "intended to be proposed by me as doubtful, is the right to abandon for freight alone at the port of destination; and in point of practice, I have been informed that this right is never claimed in this country."—*Law of Shipping*, part iii., c. 7. Freight being the return made for the conveyance of goods or passengers to a particular destination, no claim arises for its payment in the event of a total loss; and it is laid down by Lord Mansfield, that "in case of a total loss with salvage, the merchant may either take the part saved, or abandon."—*Abbott*, part iii., c. 7. But after the merchant has made his election, he must abide by it.

It often happens that a ship is hired by a charter-party to sail from one port to another, and thence back to the first; as, for example, from London to Leghorn, and from Leghorn back to London, at a certain sum to be paid for every month or other period of the duration of the employment. Upon such a contract, *if the whole be one entire voyage*, and the ship sail in safety to Leghorn, and there deliver the goods of the merchant and take others on board to be brought to London, but happen to be lost in her return thither, nothing is due for freight, although the merchant has had the benefit of the voyage to Leghorn; but, *if the outward and homeward voyages be distinct*, freight will be due for the proportion of the time employed in the outward voyage. "If," said Lord Mansfield, in a case of this sort, "there be one *entire voyage out and in*, and the ship be cast away on the homeward voyage, no freight is due, no wages are due, because the whole profit is lost; and by express agreement the parties may make the outward and homeward voyage one. Nothing is more common than two voyages: *wherever there are two voyages and one is performed*, and the ship is lost on the homeward voyage, freight is due for the first."—*K. B., Trin. Term.* 16 *Geo.* 3.

It frequently happens that the master or owner fails to complete his contract, either by not delivering the whole goods to the consignee or owner, or by delivering them at a place short of their original destination; in these cases, if the owner or consignee of the goods *derive any benefit from their conveyance*, he is liable to the payment of freight according to the proportion of the voyage performed, or *pro ratâ itineris peracti*: and though contracts of this nature be frequently entire and indivisible, and the master or owner of the ship can not, from their nature, sue thereon, and recover a ratable freight, or *pro ratâ itineris*; yet he may do so upon a fresh *implied* contract, for as much as he deserves to have unless there be an express clause in the original charter-party or contract to the contrary. A fresh implied contract is inferred from the owner's or consignee's acceptance of the goods. Many difficulties have, indeed, arisen in deciding as to what shall amount to an acceptance: it is not, however, necessary actually to receive the goods; acceptance may be made by the express or implied directions, and with the consent, of the owner or consignee of the goods, but not otherwise.

It sometimes happens that the owner of the ship, who is originally entitled to the freight, sells or otherwise disposes of his interest in the ship: where a chartered ship is sold *before* the voyage, the vendee, and not the vendor or party to whom he afterward assigns the charter-party, is entitled to the freight. But where a ship has been sold *during* the voyage, the owner, with whom a covenant to pay freight has been made, is entitled to the freight, and not the vendee. A mortgagee who does not take possession, is not entitled to the freight.

The time and manner of paying freight are frequently regulated by express stipulations in a charter-party, or other written contract; and when that is the case, they must be respected; but if there be no express stipulation contrary to or inconsistent with the right of *lien*, the goods remain as security till the freight is paid; for the master is not bound to deliver them, or any part of them, without payment of the freight and other charges in respect thereof. But the master can not detain the cargo on board the vessel till these payments be made, as the merchant would, in that case, have no opportunity of examining the condition of the goods. In England, the practice is, when the master is doubtful of payment, to send such goods as are not required to be landed at any particular wharf, to a public wharf, ordering the wharfinger not to part with them till the freight and other charges are paid. No right of lien for freight can exist, unless the freight be earned. If the freighter, or a stranger, prevent the freight from becoming due, the ship owner or master's remedy is by action of damages.

For further information and details with respect to this subject see the article CHARTER-PARTY; *Abbott* (Lord TENTERDEN) *on the Law of Shipping*, part iii., c. 7; CHITTY'S *Commercial Law*, vol. iii. c. 9, etc.

Freight is a common subject of insurance. In common conversation, this word means sometimes the cargo carried, and sometimes the earnings of the ship by carrying the cargo. The latter is the meaning in mercantile law, and especially in the law of insurance. It includes the money to be paid to the owner of a ship by the shipper of goods, and the earnings of an owner by carrying his own goods, and the amount to be paid to him by the hirer of his ship, and the profits of such hirer, either by carrying his own goods or by carrying for pay the goods of others.

An interest in freight begins as soon as the voyage is determined upon and the ship is actually ready for sea, and goods are on board or ready to be put on board, or are promised to be on board by a contract binding on the owner of the goods.

If a ship is insured on a voyage which is to consist of many passages, and sail without cargo, but a cargo is ready for her at the first port she is to reach and sail from, the owner has an insurable interest in the freight from the day in which he sails from his home port.

If one makes advances toward the freight, he is to pay, and this is to be re-paid to him by the ship-owner; if the freight is not earned, the advancer has no insurable interest in what he advances; but if he

is to lose without repayment, if the ship be lost, or the freight not earned, he has an insurable interest.—Parsons's *Mercantile Law*; Boston: p. 418.

If the hirer takes the whole vessel, he may put the goods of other ship-owners on board (unless prevented by express stipulation); but whether he fills the whole ship or not, he pays for the whole; and what he pays for so much of the ship as is empty is said to be paid for dead freight. This is calculated on the actual capacity of the ship, unless she is agreed to be of specified tonnage. If either party is deceived or defrauded by any statement in the charter-party, he has, of course, his remedy against the other party.—Page 358.

The freight is totally lost when the ship is totally lost or made unnavigable, or is subjected to a detention of such a character as to break up the voyage. If there be a construtive total loss of the ship, the owner may abandon the freight with the ship; but if the ship be actually lost, the freight may not be; for the master has the right, and is under the duty, of transmitting the goods, if he can; and if he does, the owner of the ship is entitled to the whole of his freight, and the expense of the transmission is all his loss. If the master might have done this, and fails to do it, the estimated expense of transmission is still all the loss for which the insurers are responsible.

So, if the ship can be repaired, and go on again and finish her voyage, the owner would have the right to hold on to the goods, and finally carry them, and earn his freight. And he has this right although the delay would be very long, and even if the goods are injured, and it would cost time and money to put them in a condition of safety for the residue of the voyge. Still, the ship-owner, by his agent, may do all this, and then earn his freight; and, therefore, if it can be done, whether it is done or not, all the claim which the insured on freight can make on the insurers is for the expense of doing it. The rule of 50 per cent. applies to freight also. If, therefore, freight *pro ratâ* be paid, it will be a total loss by construction if less than half be paid. So if the ship be injured, and part of the cargo be lost, but the ship may be repaired and carry the remaining goods on, if that part would pay more than half of the whole freight, it has been held not to be total; and otherwise, it is.

Freight is fully earned if the goods remain substantially in specie, and are so delivered to the consignee, although there be a very great deterioration; but freight is lost, and the insurers are responsible, if nothing is left of the goods but the mere products of decomposition, so that they are lost in fact.

If, after some freight is earned, there is an abandonment of the ship, and, after the abandonment, more freight is earned, the American cases hold that the freight earned before the abandonment goes to the insurers on freight, while that earned after the abandonment goes to the insurers of the ship. But the French law is the reverse, and pursues the rule in England.

By the French law, an abandonment of the ship gives to the underwriters the benefits of the freight pending at the time of the loss. In the United States it seems now to be well settled that the freight earned prior to the loss goes to the underwriter on freight, and that earned subsequent, to the underwriter on the ship. Thus it has been decided in the Massachusetts Supreme Court (15 Mass., 346): "Until the loss happens, the property remains in the assured, and the freight, or her earnings, belong to him till that time, if he stands his own insurer for the freight; otherwise, to the insurer on the freight; but after the loss has happened, the insurers, in virtue of the abandonment, become the owners, and are liable for the repairs and expenses, and entitled to the earnings of the ship."—*Ibid*, 478.

Charter.—There are two kinds of contract for the carriage of goods. First, The contract of affreightment by charter-party. Secondly, The contract for the carriage of goods in a general ship. The first is where the whole or the chief part of a ship is let out to hire. There is nothing to prevent this contract from being verbal, but in practice it is always reduced to writing, and the written instrument containing the terms of it is called a charter-party. It may be under seal or not. If so, it takes effect from the day when it was sealed and delivered, unless it appear on the face of it to take effect from the day of date, when that is a different time. The construction of it is to be reasonable and so as to give effect to the intention of the parties and also the usage of trade, both in general and of the particular department in question; and where terms are introduced relating to a usage, evidence of course may be given to prove what that usage is. But this will not admit of a construction being introduced which is not consistent with the plain and obvious meaning of the words. The parties to it are the owners if present where the contract is made, and generally also the master, or the master alone if the owners are absent; and the merchant who hires the ship, or his agent. If the charter-party is by deed and executed by an agent, he should be authorized by deed, or letter of attorney, to sign for his principal, and must sign in his name. If the agent signs in his own name, actions on the charter-party will have to be brought by or against the agent. The merchant hiring is called the charterer or freighter. The letting is for one or more voyages or some period of time: the money to be paid for the hire is called freight. This may consist of one sum for the whole ship or part let, or so much for each ton or each piece of merchandise, etc., the freighter undertaking to find a full cargo.

If the payment is to be made by the ton there should be provision for payment at the same rate for a less quantity. Again, the payment may be by a sum in gross for the whole time of the ship's employment, or at a certain rate per month or other period of time. A month is understood to mean a calendar month. The charter-party expresses the register tonnage of the ship more frequently by both the old and the new modes of measurement; and when the ship is chartered by the month the hire is paid for the number of tons, commonly old measurement, at which she is registered. When the freighter is to pay by the ton, freight is to be paid only for the actual tonnage of the goods without any reference to the register tonnage; but the goods must be in suitable packages, or otherwise the owner can claim for the lost room as dead freight. The words, or thereabouts, are generally understood to mean about 5 tons; but in one case where a ship was described as of the burden of 261 tons or thereabouts, and the freighter undertook to find a full cargo, and no fraud was imputable to the owner, the freighter was held bound to find an actual full cargo, though the ship carried 400 tons. Goods, however, may be packed according to the custom of the loading port, and so may form a full cargo although it may be possible to pack them in less compass. Thus sugar may be packed in hogsheads if such is the custom, though it would take less room in tierces.

A charter-party being an agreement drawn up at the discretion of the parties, they may of course introduce any terms they agree upon. The usual undertakings, however, as said by Lord Tenterden, are on the part of the owners that the ship shall be tight, and strong, furnished with all necessaries for the voyage, ready by a day appointed to receive the cargo, and wait a certain number of days to take it on board. But the obligation to remain the whole of the running days may be dispensed with by a distinct intimation from the merchant that no cargo will be provided, and that it is useless to wait. That after lading she shall set sail with the first fair wind and opportunity, to the destined port (the dangers of the sea excepted), and

there deliver the goods to the merchant or his assigns in the same condition as they were received on board; and further, that during the course of the voyage the ship shall be kept tight, and staunch, and furnished with sufficient men and other necessaries, to the best of the owner's endeavors. If the ship prove not to be tight, staunch, and sufficient, the owners will, nevertheless, be liable although they themselves believed her to be so. The merchant undertakes to load or unload within the time appointed, or within a reasonable time, and to pay the freight. Provisions are also often introduced relative to demurrage, which will be explained hereafter. The ship, and freight, and cargo, are also often bound in a penalty by the owners or master, and the freighter respectively, for the performance of their undertakings. But these clauses seem in this country, at least, to be of no utility, for in an action for the failure of the undertaking the plaintiff would recover to the amount of the injuries he had suffered, and in no case, whatever penalty might be introduced, could he recover more. Neither could these clauses give any direct remedy as against the ship, or freight, or cargo.

If either party be not ready by the time agreed on, the other may seek a ship or cargo elsewhere, and also bring an action for the insufficiency; or if the merchant appears to be insolvent he may safely make up a cargo from other quarters. When the goods have been put on board, bills of lading are signed by the master. These are evidence that the particular goods are shipped as the charter-party is of the contract for conveyance. The ship owner has a lien upon goods in respect of which a payment is due to him, and may therefore detain them till the payment is made. But he can not by virtue either of the general law of lien, or of the clauses above alluded to, detain the goods because of the merchant's failure to perform his undertakings generally, as for instance his undertakings to pay demurrage or port dues, etc. Moreover, a party can have no lien unless he has possession of the property over which he claims to exercise it. An absolute owner, therefore, of a ship who has so completely parted with the possession and control of her as to cause the hirer to become the temporary owner, will not have the right of lien over the goods conveyed on board his ship. Owners ought carefully to consider this consequence, because if they part with the possession of their ship, and the hirer of it be not a responsible person, they will cease to have in their hands one very convenient and direct means of securing remuneration. Special terms of course may be introduced in the contract by which the right of lien may either be entirely released, or it may be extended beyond what is conferred by the general rule of law. Ily the following agreement the owner was held to have created for himself a right of lien for the balance due to him under the charter-party as to all the lading, though part had been transferred by endorsement of a bill of lading independently of the general rule of law, or the question whether he remained in possession of the ship. The agreement between the parties was that ownership of the ship "should remain firmly and be fully vested in the owner, and that he should at all times during the said intended voyage and service, have a full and complete lien upon the lading of the ship as well as for all losses and damage which the said owner might sustain or be put to in consequence of non-payment of any of the bills to be given for freight, etc., and should have full power and authority to hold and retain the said goods until full payment of all such losses, charges, damages, and arrears of freight paid for on account of the charterer, and which he of right ought to pay agreeably to the true intent of the charter-party."

The freighter may either fill the ship with his own goods or relet the whole or part to others. Where a ship has been let to hire at so much a month and the freighter lets at so much a ton, the owner has no right to detain the cargo for the amount the freighter has agreed to give him. The actual shippers are only liable for what they have agreed to give the freighter. The owner, therefore, may have no right to detain the goods of the actual shippers for the freight stated in the charter-party, but he may for that which is mentioned in the bill of lading. And he has a right to that in preference to the freighter. The bankruptcy of the charterer or any pledge or assignment made by him will not affect the owner's right of lien.

Sailing with the first wind, is held to mean sailing without unnecessary delay. "Leave Amsterdam," does not necessarily mean to sail thence on the voyage. But "final sailing" means the final departure from port and being at sea, ready in all respects to proceed on the voyage. (See chapter on Marine Insurance.) If either party be not ready by the time agreed on, the other may seek another ship or cargo and bring action for the damages caused by the delay. A deviation on the voyage will not deprive the owner of his right to freight, though it may subject him to action if it causes a loss of the insurance to the freighter.—*Mercantile and Maritime Guide, London*, 1856.

Freight, in the common acceptation of the term (according to KENT'S *Commentaries*—see vol. iii., chap. xlvii.), means the price for the actual transportation of goods by sea from one place to another, but in its more extensive sense, it is applied to all rewards or compensation paid for the use of ships, including the transportation of passengers. The personal obligation to pay freights rests either on the charter-party or on the bill of lading, by which the payment of freights is made a condition of delivery; and the general rule is, that the delivery of the goods at the place of destination, according to the charter-party, is necessary to entitle the owner of the vessel to freight. The conveyance and delivery of the cargo form a condition precedent, and must be fulfilled. A partial performance is not sufficient; nor can a partial payment or ratable freight be allowed, except in special cases; and those cases are exceptions to the general rule, and called for by the principles of equity.

The amount of freight is usually fixed by agreement between the parties; and if there be no agreement, the amount is ascertained by the usage of the trade, and the reason of the case. If the hiring be of the whole ship, or for an entire part of her, for the voyage, the merchant must pay the freight, though he does not fully load the ship; but if he agrees to pay in proportion to the amount of goods put on board, and does not agree to provide a full cargo, the owner can demand payment only for the cargo actually shipped. If the merchant agrees to furnish a return cargo, and he furnishes none, and lets the ship return in ballast, he must make compensation to the amount of the freight; and this is sometimes termed dead freight, in contradistinction to freight due for the actual carriage of goods.

It is supposed to be the doctrine of the case of *Bell* v. *Pullen*, that the master would be entitled to freight for bringing back the outward cargo, if it could not be disposed of, though the charter-party was silent as to the return cargo. It would stand upon the equity of the claim to dead freight. The French law, in such a case, allows freight for bringing back the cargo because it could not be sold, or was not permitted to be landed. Mr. Justice Story, in the case of the ship *Hooper*, United States' Circuit Court, Massachusetts, May, 1839, 3 Sumner, 542, laid down the general rule that freight for the entire voyage could only be earned by a due performance of the voyage; and that the only acknowledged exception is when there is no default of the carrier-ship to perform the voyage, and the ship-owner is ready to forward them, but there is a default on the part of the owner of the cargo, or he waives a further prosecution of the voyage.

If part of the cargo be sold on the voyage from necessity, the owner, as we have seen, pays the value at the port of delivery, deducting the freight equally as if the goods had arrived. But if the goods be prohibited on entry by the government of the country, and such prohibition takes place after the commencement of the voyage, and the cargo be brought back, the freight for the outward voyage has been held to have been earned; and the case was distinguished (though I think the distinction not very obvious) from that of a blockade of the port of destination, and decided on the authority of the French ordinance of marine. "Nothing can be more just," observes Valin, "than that the outward freight should be allowed in such a case, since the interruption proceeds from an extraordinary cause, independent of the ordinary marine perils. The case of a blockade of, or interdiction of, commerce with the port of discharge, after the commencement of the voyage, is held to be different; for, in that case, the voyage is held to be broken up, and the charter-party dissolved: and if the cargo, by reason of that obstacle, be brought back, no freight is due. The same principle applies if the voyage be broken up and lost by capture upon the passage, so as to cause a complete defeasance of the undertaking, notwithstanding there was a subsequent recapture, as in the case of the *Hiram*. On the other hand, an embargo detaining the vessel at the port of departure, or in the course of the voyage, does not, of itself, work a dissolution of the contract. It is only a temporary restraint, which suspends for a time its performance, and leaves the rights of the parties in relation to each other untouched. If the ship be laden, and be captured before she breaks ground, and afterward recaptured, but the voyage be broken up, the ship-owners are not entitled to any freight, though, by the usages of the trade, the ship was laden at their expense.

It is requisite that the ship break ground to give an inception to freight. It is the same thing with a blockade or hostile investment of the port of departure. Such an obstacle does not discharge the contract of freightment, because it is merely a temporary suspension of its performance; and the ship-owner may detain the goods until he can prosecute the voyage with safety, or until the freighter tenders him the full freight. This was the decision in the case of *Palmer* v. *Lorillard*, in which the doctrine was extensively examined; and it was shown, by a reference to the foreign ordinances, and the soundest classical writers on maritime law, that the master, in the case of such an invincible obstacle, of a temporary nature, to the prosecution of the voyage, is entitled to wait for the removal of it, so that he may earn his freight, unless the cargo consists of perishable articles which can not endure the delay. He stands upon a principle of equity which pervades the maritime law of Europe, if he refuses to surrender the cargo to the shipper without some equitable allowance in the shape of freight for his intermediate services.

When the goods become greatly deteriorated on the voyage, it has been a very litigated question, whether the consignee was bound to take the goods, and pay the freight, or whether he might not abandon the goods to the master in discharge of the freight. Valin and Pothier entertain different opinions upon this question. The former insists that the regulation of the ordinance holding the merchant liable for freight on deteriorated goods, without the right to abandon them in discharge of the freight, is too rigorous to be compatible with equity. He says the cargo is the only proper fund and pledge for the freight, and that *Casaregis* was of the same opinion. Pothier, on the other hand, was against the right of the owner to abandon the deteriorated goods in discharge of the freight; and this is the better opinion, and the one adopted in the case of *Griswold* v. *the New York Insurance Company*. It is in accordance with the ordinances of the marine, and of Rotterdam, and with the new commercial code of France; and the latter puts an end to all further doubts and discussion on the subject in France. The ship-owner performs his engagement when he carries and delivers the goods. The right to his freight then becomes absolute, and the carrier is no more an insurer of the soundness of the cargo, as against the perils of the sea, or its own intrinsic decay, than he is of the price in the market to which it is carried. If he has conducted himself with fidelity and vigilance in the course of the voyage, he has no concern with the diminution of the value of the cargo. It may impair the remedy which his lien affords, but it does not affect his personal demand against the shipper.

If casks contain wine, rum, or other liquids, or sugar, and the contents be washed out, and wasted, and lost, by the perils of the sea, so that the casks arrive empty, no freight is due for them; but the ship-owner would still be entitled to his freight, if the casks were well stowed, and their contents were essentially gone by leakage, or inherent waste, or imperfection of the casks.

Should the cargo consist of live-stock, as is frequently the case in voyages from this country to the West Indies, and some of the horses or cattle, for instance, should die in the course of the voyage, without any fault or negligence of the master or crew, and there be no express agreement respecting the payment of freight, the general rule is, that the freight is to be paid for all that were put on board. But if the agreement was to pay for the transportation of them, then no freight is due for those that die on the voyage, as the contract is not, in that case, performed. The foreign marine law allows freight paid in advance to be recovered back, if the goods be not carried, nor the voyage performed, by reason of any event not imputable to the shipper. The reason is, that the consideration for payment, which was the carriage of the goods, has failed. But the marine ordinances admit that the parties may stipulate that the freight so previously advanced shall, at all events, be retained. In *Watson* v. *Duykinck*, the rule of the marine law was recognized, though it was not applied to that case, because the contract there appeared to be, that the freight was paid for receiving the passenger and his goods on board; and, in such a case, the payment is to be retained, though the vessel and cargo be lost on the voyage. The general principle of the marine law was admitted in the fullest latitude in *Griggs* v. *Austin*; and whether the price previously advanced is to be retained or returned becomes a question of intention in the construction of the contract. The French ordinances require a special agreement to enable the ship-owner to retain the freight paid in advance; and Valin says that many authors on maritime jurisprudence, as Kuricke, Loccenius, and Straccha, will not allow even such a special agreement to be valid. The English law is not so scrupulous, and does not require any such express stipulation, and allows the intention of the parties to retain the previously advanced freight to be more easily inferred. In *De Silvale* v. *Kendall*, the Court of King's Bench adopted a directly opposite principle, and observed, that if the charter-party was silent, the law would require a performance of the voyage before freight was due; but the parties might stipulate that part of the freight be paid in anticipation, and be made free from subsequent contingency of loss by reason of loss of the subsequent voyage. If freight be paid in advance, and there be no express stipulation that it shall be retured in the event of freight not being earned, the inference is that the parties did not intend that the payment of the part in advance should be subject to the risk of the remainder of the voyage; and without some provision of that kind, a new implied contract to that effect could not be raised. See KENT's *Com.*, vol. iii.; PARSONS *on Contracts*, Boston; *Merc. and Marit. Guide*, London, 1857.

Fresco Painting, a method of painting with water-colors on fresh plaster while it is still in a soft state, by which means the colors are incorporated with the plaster, and become as permanent as the material on which they are spread. The Italians, from whom we borrow the term, call it *fresco* (literally *fresh*), either because it is executed upon fresh plaster, or because it is used on walls, alcoves, and other buildings in the open air. Vitruvius (vii. 4) calls it painting *udo tectorio*. Painting in fresco is a very ancient art. It was practiced by the early Greeks, and may be traced even to Egypt. It is generally executed on walls and vaults, the plaster being laid on in successive portions, or so much only at one time as the painter can dispatch before it dries. The design is usually drawn previously on paper, to be chalked and transferred to the wall about half an hour after the plaster has been laid. From the difficulty of making alterations on the work when the colors are once absorbed, the design should be previously prepared with the greatest accuracy. When an alteration must be made, the part is usually cut entirely away, and relaid with fresh plaster. The ancients painted on stucco; and we may remark in Vitruvius what infinite care they took in making the incrustation or plastering of their buildings, to render them beautiful and lasting; though the moderns find a plaster of lime and sand preferable for fresco painting, both because it does not dry so hastily, and on account of its subdued and agreeable tint. The pigments chiefly employed in this kind of painting are earths, because their colors are not liable to be affected by the burning qualities of the lime. White is made of lime slacked some time previously, or of white marble dust; and the other substances used are red and yellow ochre, verditer, lapis-lazuli, black chalk, etc. These only require to be ground and mixed up with water. The brushes and pencils should be long and soft, otherwise they are apt to rake and raise the surface. In order that the work may come out in all its beauty, the colors must be laid on quickly, while the plaster is still moist; nor should they ever be retouched dry with colors mixed up with white of egg, size, or gum, as is sometimes done; because such colors grow blackish, and soon tarnish.

Freshes, in sea language, the increased current of an ebb tide by means of a flood of fresh water flowing out into the sea, by which its waters are often discolored for a great distance from the coast.

Fresnel, Augustin Jean. The inventor of the light now generally used throughout Europe and in various parts of the United States, for light-houses, ile was distinguished for his practical application of optics to the useful arts with which his name will ever be honorably associated. At least as early as 1819 it occurred to him that lenses might be substituted for mirrors, for the purpose of directing parallel rays of light from light-houses, and thus preventing in a great measure the natural weakness, in consequence of its divergence, of light seen at a distance. It further occurred to him that lenses of large size, and of moderate thickness, might be *built up* of segments of lenses. This last idea was not indeed new, for Buffon had proposed to diminish the weight and thickness of lenses by grinding them into zones which should have a common focus; and Condorcet proposed to construct these zones of separate segments. Sir David Brewster suggested, in 1811, a similar construction, unaware, it appears, of what Condorcet had written. But all of these writers described their contrivances as applicable to burning instruments for concentrating the solar rays. Fresnel appears to have been unaware of what his predecessors suggested, but he has the far greater merit of actually applying the suggestion to the important purpose of light-house illumination. It was first carried into effect in France, where *polyzonal lenses* were made by M. Soleil, and have gradually been introduced into other countries, first into Holland, and then into Scotland. See article LIGHT-HOUSES. Not content with this great improvement, Fresnel exerted remarkable ingenuity in contriving further improvements in the mode of distributing light for the purposes of navigation under almost every conceivable circumstance; and he made copious use of the principle of the total reflection of light in glass, which had never before been applied to such purposes. In 1819 he was nominated upon the light-house commission; and in July, 1823, the Corduan Light-house, at the mouth of the Garonne, was completed upon the new plan.—E. B.

He was the author of various works on the *Diffraction of Light*, on the *Influence of Heat on Colors*, on the *Influence of the Earth's Motion*, on the *Mutual Action of Polarized Light*, etc. Through the instrumentality of Messrs. E. and G. W. Blunt, of New York, the Fresnel light was adopted in the United States in the year 1838, and is now in use generally in the light-houses of this country and of Europe.

Fresnel was born May 10, 1788, at Broglie, in the department Ure, Normandy, and died at Ville d'Avray, France, on the 14th July, 1827, aged 39 years.

Frigate (Fr. *frégate* (f); Lat. *aphractus*, a long undecked vessel); a ship of war, usually of two decks, designed for swift sailing. Frigates mount from 20 to 44 guns, and sometimes more. The name was originally applied to a long kind of vessel navigated in the Mediterranean with sails and oars. *Frigatoon*, a Venitian vessel with a square stern and without a foremast, having only a main-mast, mizzen-mast, and bow-sprit.

Frith, or **Firth** (Lat. *fretum*, a narrow sea), is a term chiefly applied to a narrow and deep inlet of the sea upon a river, as the Firth of Forth, in Scotland. This term corresponds to the *fiord* of the Danes and Norwegians, who, in all probability, borrowed it from the English. Both Latin and Teutonic are derived not improbably from the same root, *fahren*, to pass over; whence ferry, ford, furt (Germ.), as in Frankfurt, Erfurt, etc.

Frobisher, Sir Martin, a celebrated English navigator of the sixteenth century, was born (in what year is not known), at Doncaster, in Yorkshire. He was the first Englishman that sailed in quest of the north-west passage to China and the Indies. "Being thoroughly furnished of the knowledge of the sphere and all other skills pertaining to the art of navigation, and being persuaded of a new and nearer passage to Cataya than by Cupo de Buona Speranza, which the Portugals yearly use, and knowing this to be the only thing of the world that was yet left undone, whereby a notable mind might be made famous and fortunate," he applied to various English merchants to assist him in his projected enterprise, but for 15 years without success. At the end of that period he was enabled, through the assistance of Dudley, Earl of Warwick, and others, persons of rank and fortune, to set out on the expedition. He sailed from Deptford, June 15th, 1576, with three small vessels, two of them, the *Gabriel* and the *Michael*, barks of 25 tons each, and the third a small pinnace of 10 tons. As they passed Greenwich, the Queen, who happened to be there with her court, "commended them, and bade them farewell with shaking her hand at them out of the window." After passing the Shetland Islands they came in sight of "Freeseland" (July 11th), where they were unable to land on account of the ice, and on the 28th of the same month they reached that part of Greenland which Frobisher named "Meta Incognita." On the 11th August they sailed through a strait which Frobisher called by his own name. Pursuing their way they passed several islands, to which they gave names, and came on the 18th to Butcher's Island, where they lost a boat and part of their crew through the treachery of the natives. After this they turned their prows homeward, and reached England September 7th. Fro-

bisher had taken possession of the various places he touched at in the name of the Queen; and in token of this he ordered his men to put on board ship whatever they first laid hands on. Among other things thus secured was a lump of black stone, which when Frobisher returned home, was accidentally discovered to contain gold. This discovery was soon noised abroad and in the following spring Frobisher readily found the means to fit out another expedition, partly scientific and partly with a view to prosecuting the search for gold. The Queen lent him from the royal navy a ship of 200 tons, with which, and two smaller barks, he sailed from Harwich, May 31, 1577. On arriving at the scene of their former discoveries they found that little of the gold ore remained, but they opened forthwith communications with the natives for the purposes of traffic. One of these, "a man of large corporature and good proportion," they carried away with them neither in a very just nor handsome manner. They also caught an old woman, "whom they took for a devil or a witch," and stripped off her buskins "to see if she were cloven-footed." After discovering and naming a good many places, and procuring a good deal of ore, he turned his prow southward, August 23d, and reached home in the end of September. The ore when smelted was found to pay the expenses of the voyage and more; a third expedition was fitted out in 1578, which, however, through stress of weather and other circumstances, had no sooner reached the gold country than he was obliged to return from the lateness of the season. This was the last of Frobisher's polar voyages. It is not known how he was occupied during the next seven years, but in 1585 he accompanied Sir Francis Drake on his expedition to the West Indies, and three years later did such good service against the Spanish armada as to be rewarded with the honor of knighthood on board his own ship by the lord high admiral. In 1594, after various exploits against the Spaniards, he was sent to assist Henri IV. of France against the Spaniards, and the members of the league. The enemy had fortified themselves strongly in Croyzon, near Brest; and in an attack on their position Frobisher was mortally wounded. He lived to take his fleet safely home, and shortly after died at Plymouth.—*Biog. Brit.*; Hakluyt's *Collect. of Voyages*; Stow's *Annales*, etc., etc.

Frobisher Strait, an arm of the sea in British North America, between Hudson Strait and Northumberland Inlet. It extends in a westerly direction from the entrance to Davis' Strait.

Fruit (Ger. *Obst. Früchte*; Du. *Ooft*; Fr. *Fruit*; It. *Frutta, Frutte*; Sp. *Fruta*; Rus. *Owoschtsch*; Lat. *Fructum*). This appellation is bestowed by commercial men upon those species of fruit, such as oranges, lemons, almonds, raisins, currants, apples, etc., which constitute articles of importation from foreign countries. Gardening was undoubtedly among the first of the arts to which the attention of man was directed. If we would ascend into remote antiquity, we can have recourse only to conjecture; for although, in the sacred writings, and in the earliest profane authors, allusions to gardens occur, little is told us either of their productions or their culture. Judging, though, from the literature of the present day, we shall scarcely find any art which receives more attention.

Several varieties of fruit are mentioned as having been introduced into Italy, 70 B. C., *et seq.* Exotic fruits and flowers of various kinds, previously unknown in England, were brought thither in the reigns of Henry VII. and VIII. and of Mary and Elizabeth, between the years 1500 and 1578. See Gardening, *Ency. Brit.* Among others of less note, were muskmelons, plum-trees, and currant-plants of sundry sorts, the musk and damask roses, tulips, etc.; also saffron, woad, and other drugs for dyeing, but these last were attempted to be cultivated without success. Hakluyt; Lord Kames. The following are among the fruits whose introduction into England has been traced (Haydn):

Fruits, etc.

	From	A. D.
Almond-tree	Barbary	1548
Apples	Syria	1522
Apple, the custard	North America	1786
Apple, the Osage	" "	1818
Apricots	Epirus	1540
Cherry-trees	Pontus	100
Cornelian cherry	Austria	1596
Currants	Zante	1533
Currant, the hawthorn	Canada	1705
Fig-tree	South of Europe, before	1548
Fig, the Botany-bay	New South Wales	1789
Gooseberries	Flanders, before	1540
Grapes	Portugal	1528
Lemons	Spain	1554
Limes	Portugal	1554
Lime, the American	before	1752
Melons	"	1540
Mock orange	South of Europe, "	1596
Mulberry	Italy	1520
Mulberry, white	China, about	1596
Mulberry, red	North America, before	1620
Mulberry, paper	Japan, before	1754
Nectarine	Persia	1562
Olive, the Cape	Cape	1700
Olive, the sweet-scented	China	1771
Oranges		1595
Peaches	Persia	1562
Pears	Various climes	...
Pine-apple	Brazil	1568
Pippins	Netherlands	1525
Plums	Italy	1522
Plum, the date	Barbary	1590
Pomegranate	Spain, before	1548
Quince	Austria	1573
Quince	Japan	1735
Raspberry, flowering	North America	1700
Raspberry, Virginian	" " before	1696
Strawberry	Flanders	1530
Strawberry	Oriental Levant	1724
Walnut, the black	North America, before	1629

The art of gardening became well understood in England about A. D. 1500; before which time many of our vegetables were imported from Brabant. The era of the art was the reign of Elizabeth; but the modern mode of gardening was introduced about 1700. The following came from the countries respectively named:

Roots and Vegetables.

	From		From
Rice	Ethiopia	Lentils	France
Buckwheat	Asia	Chervil	Italy
Borage	Syria	Celery	Flanders
Cresses	Crete	Potatoes	Brazil
Cauliflower	Cyprus	Tobacco	America
Asparagus	Asia	Cabbage	Holland
Lettuce	Brabant	Anise	Egypt
Artichokes	Holland	Parsley	Egypt
Garlic	The East	Carrots	Flanders
Shallot	Siberia	Brocoli	Cyprus
Horse Radish	China	Beans	Greece
Kidney Beans	E. Indies	Peas	Spain
Gourds	Astrscan		

Flowers.

	From		From.
Jasmin	Circassia	Pink	Italy
Elder-tree	Persia	Provence rose	Marseilles
Tulip	Cappadocia	Convolvulus	Canaries
Daffodil	Italy	Arctopus	Cape
Lily	Syria	Bell-flower	Canaries
Tuberrose	Java, etc.	Passion-flower	Brazil
Carnation	Italy, etc.	Rosemary	Italy
Ranunculus	Alps	Laburnum	Hungary
Damask rose	Damascus	Laurel	Levant
Hops	Artois	Lavender	Italy
Gooseberries	Flanders	Weeping Willow	Levant
Gilly flowers	Toulouse	Fennel	Canaries
Musk rose	Damascus		

The damask rose was brought hither by Dr. Linacre, physician to Henry VIII., about 1510. The musk rose was brought from Italy by Lord Cromwell. The tamarisk plant was brought from Germany by Archbishop Grindal, about 1570; and about Norwich, the Flemings planted flowers unknown in England, as gilly-flowers, carnations, the Provence rose, etc., 1567. Woad came originally from Toulouse, in France; tulip roots from Vienna, 1578.

Fuca, Juan de, Strait of, Washington Territory, including the waters of Admiralty Inlet, Hood Canal,

and Puget Sound, with the Archipelago of Arro up to the 49th parallel, were all surveyed by the United States' Exploring Expedition. The whole is unsurpassed by any estuary in the world. They comprise many fine harbors and safe anchorages, are entirely free from dangers, and cover an area of about 2000 square miles. The country by which these waters are surrounded is remarkably salubrious, and offers every advantage for the accommodations of a vast commercial and military marine, with conveniences for docks, and many sites for towns and cities, at all times well supplied with water, and capable of being provided with all needful supplies from the surrounding country, which is well adapted for agriculture. This strait is 95 miles in length; average width 11 miles (entrance 8 miles in width). No dangers exist, and it may be safely navigated throughout. The winds blow for the greater part of the year from the westward, and at times strongly. The shores are bold, and anchorage is to be found in but few places; at some parts no bottom is to be obtained, even within a boat's length of the shore, with 60 fathoms of line. The north shore (Vancouver Island), is rocky, and composed of conglomerate and a reddish granite. On this side there are several inlets, in which are anchorages: among them Port San Juan and Victoria. Victoria is a snug harbor and a most important position. There is an inner and an outer basin, sufficiently commodious for large ships of war. Vancouver Island rises abruptly, and is very much broken by mountain ranges, but well covered with timber. It is 240 miles long, and 30 miles wide.

The Gulf of Georgia and Johnson Strait are not well adapted for navigation, in consequence of the rapidity of the tides, and the many sunken rocks at the northern outlet. The harbors within them, both on the main land and Vancouver Island, are useless on account of the great depth of water and the perpendicular banks. Not a shoal exists within the Strait of Juan de Fuca, Admiralty Inlet, Puget Sound, or Hood Canal, that can in any way interrupt their navigation by a 74 gun ship. The shores of all the inlets and bays are remarkably bold—so much so, that in many places a ship's side would strike the shore before the keel would touch the ground. Some few of them have creeks emptying into them, with water sufficient to turn mills. These creeks all have extensive mudflats at their entrances, with fertile prairies at their heads and along their banks. The spring tides rise 18 feet, those of the neap 12 feet, affording every facility for the construction of dry-docks, etc. The country on all these salt water inlets is said to be remarkably healthy. The winter is represented to be mild and but of short duration, and the channels and harbors are never obstructed by ice.

Fuel (from the French *feu*, fire, akin to the Latin *focus*, a hearth or fire-place), a word applied to certain substances which are used in the generation of heat, such as wood, peat, coal, etc., and also sometimes applied to the substances employed in generating light, such as oil, spirits of wine, naphtha, etc. In the present article the former application will alone be considered; for information respecting the latter, see GAS, LAMP, etc.

The abundance and consequent cheapness of fuel has a great influence on the prosperity, habits, and manners of a nation. Where fuel is scarce, factories languish, and commerce declines. In cold climates scarcity of fuel is individually a great calamity, for it abridges the hours of labor, causing persons to spend those hours in sleep which under other circumstances would have been turned to profitable account; it also causes persons to crowd together for the sake of warmth in a way that is injurious to health and morals. Abundance of fuel, on the contrary, with good roads and a system of inland navigation for its distribution, forms the basis of national prosperity, not only ministering to the useful arts, but enabling the occupier of every house to create an artificial climate suited to his wants and wishes.

The most common and widely-distributed description of fuel is *wood*, a term applied to the trunk, roots, and larger branches of trees. Recently-felled wood consists chiefly of woody fibre, sap, and water. The woody fibre is a compound of carbon, hydrogen, and oxygen, and forms the chief bulk of plants; both it and the sap are combustible—that is, are capable, at a high temperature, of combining rapidly with the oxygen of the atmosphere and forming gaseous compounds. It is in the act of this formation that heat is generated. The sap, which forms only a small proportion of the bulk of wood, varies in different kinds of trees: the sap of the pine tribe contains resin; that of the oak, tannin; that of the beech and birch, extractive. The quantity of water in wood varies greatly with the kind of tree, and with the time of year when it is felled, it being least in winter. As the water is not combustible, but must be got rid of at the expense of the heat generated by the parts which are so, it is obviously desirable to store the wood in a dry and airy situation before using it as fuel. By this means 100 pounds' weight of wood have been known to lose 20 pounds' weight in 10 or 12 months. Wood, as commonly used for fuel, contains about one third of its weight of water. Wood also contains earthy and alkaline salts in the proportion of 1-30th to 1-70th, and these remain as an incombustible ash.

Wood is distinguished from all other fuel by the valuable property of reproduction, and also by the fact that it often passes through the various stages of beauty and utility to man before it becomes converted into fuel. The heating power of wood is considerable, in consequence of its excess of hydrogen, which, in burning and forming water, requires for equal weights three times as much oxygen as the carbon does in forming carbonic acid; and it gives out in burning nearly four times more heat than the carbon. The lighter woods contain more hydrogen than the heavier, so that they burn with flame longer than they incandesce as charcoal; they also burn more easily and give out their heat more quickly than the hard woods. During the combustion of wood its volatile parts undergo some complicated chemical changes. When wood is burnt out of contact with the air, the carbon is preserved in the form of charcoal (see CHARCOAL), which is a very useful fuel when an incandescent heat free from flame and smoke is required; but when some of the volatile products are to be collected, the wood is placed in iron retorts, which are gradually raised to a red heat. The volatile products form carburetted hydrogen, carbonic acid, carbonic oxyd, and other gases, and also certain vapors which condense into liquid or solid products. Some of the liquids are soluble in water, such as pyroxylic spirit, pyroligneous acid, etc.; the insoluble products form tar and certain oily substances.

In most countries deposits of *peat* occur of greater or less extent. In Holland, the north of Germany, Ireland, etc., peat deposits are of immense extent. The origin of peat has been accounted for in those districts where clay occurs near the surface by supposing muddy pools to have formed, round the edges of which aquatic plants have taken root and gradually extended themselves into the centre, thus forming a bed where mosses accumulate, and new plants take growth, while the old are decaying and becoming compressed into a solid mass below. This process goes on until the pools are filled up with vegetable matter, and the surplus water is discharged over the neighboring lands, where the process is repeated until a peat bog is formed. Even in mountain districts, where the soil is impervious, clouds and mists may supply moisture, and a bog be formed by the growth of one generation of vegetable matter on the ruins of its predecessor. As

the plants which form the peat are in different stages of decomposition at various depths, the character of the peat varies greatly. Near the surface it is light-colored, spongy, and the vegetable character but little changed; lower down it is brown and dense; while at the base of some bogs, which may be as much as 40 feet in depth, the peat is black, almost as dense as coal, and resembling coal in chemical composition.

On the banks of the Rhine, peat is cut by means of a spade into blocks, and exposed to the air to dry, the upper layer being first separated from the lower and denser portion. In Holland the peat is scooped out by means of spades; or if a considerable quantity of water be present, an instrument is used consisting of a sharp iron ring attached to a handle, a net or cloth being fastened to the ring for draining off the water. The muddy peat thus collected is trodden out by the feet of men, raked, and the stones picked out; it is then thrown into shallow wooden boxes, strewed with hay to prevent the peat from adhering, and the remaining water is allowed to drain off. In the course of a few days, when the mass has attained a certain consistence, women, with flat boards strapped to their feet, stamp down the peat until it has attained such a consistency as not to take an impression from a common tread. It is next stamped with beaters, and the cake, which is eight or nine inches thick, is divided by means of long laths into squares of about four inches, which are removed a few at a time from each box. The cakes are then dried by placing the first taken out transversely on the second, the third upon the fourth, reversing the order when the pieces are piled up in store.

The value of peat depends greatly upon its dryness, density and firmness; if porous and brittle, it crumbles during carriage or after it is stacked, and thus becomes nearly worthless. In many cases the value of peat depends on its capability of being alternated with the substances to be heated. Porous and almost valueless peat has been rendered valuable by being passed through a press, in which case a lump of peat may lose as much as one fourth of its weight of water. Peat may be nearly valueless as a fuel from the quantity of ash which it affords, consisting of vegetable salts and the earthy matter of peat, and amounting in some cases to one third of the weight of the peat. When this large quantity of ash occurs in peat it renders the fuel very dusty, and in smelting processes it is objectionable on account of its chemical action. It is remarkable that the carbonates of the alkalies are not found in this ash, but phosphates, sulphates, etc. In some large towns, peat, or *turf*, as it is also called, is imitated by employing the refuse bark of the tan-yard, which is made into flat cakes, and chiefly used as fuel by the poor.

In the sandy plains of the East, camels' dung is dried and used as fuel; it was from the use of such fuel in Egypt that sal ammoniac originated, the salt subliming during combustion. Hakluyt, in his *Voyages*, vol. i., p. 348, says, "We were forced to use for fewell the dung of horses and camels, which we bought deare of the pasturing people." A substance in the form of long sticks, said to be made of camels' dung, is sometimes imported from the East under the name of *chutnee*, and is occasionally used instead of the ordinary match for lighting pipes and segars. It burns slowly without flame, and gives out an odor not unlike that of the burning cuttings of trees and shrubs. Other descriptions of excrement are also used as fuel. The Chinese have long been accustomed to mix cow dung and other refuse vegetable matter with soft clay and the dust of coal to form balls which when dried in the sun become a cheap and useful fuel, burning with very little smoke. These balls are largely manufactured in the coal districts of China, and are distributed over the empire by means of the canals. It is a curious fact that Sir Hugh Platt, in 1594, indicated a method of making coal balls with loam, and that Ray, in 1663, observed this kind of fuel at Liège (*Journey through the Low Countries, etc.*, 1673, p. 58), where they were called *hot shots*, serving to slake the heat of a fire and keep the coals from burning out too fast. We are informed that in some parts of Wales stone coal culm is made into balls with clay, and is a common form of fuel in Pembrokeshire. The combustion is slow, and a long steady heat is kept up, well adapted for lime burning. In 1853 a patent was taken out in England by M. Ducayla of Bordeaux for the manufacture of fire-balls of such materials as cinders or ashes, wood or lignite, anthracite coal, pit coal, animal black, calcareous earth or clay, mold, etc.

The fuel, in every respect the most interesting, and one of the chief sources of wealth and prosperity, is *coal*. The very abundance of this article causes it to be used in so lavish and extravagant a manner, that any general attempts to economize it, and to fix its value as a fuel, scarcely interest the public. There are, however, particular cases in which it is desirable to economize coal as far as possible, as in the case of a steamship of a thousand horse-power, a single journey of which may require upward of 2000 tons of coal, or more than 80,000 cubic feet. Hence it is obvious from the details given of the various descriptions of coal in the article COAL, that some varieties of coal are better fitted for the purposes of steam navigation than others. A few years ago, when the British government was establishing a steam navy, Sir H. de la Beche and Dr. Lyon Playfair were requested to examine and report on the coal suited to the steam navy. The inquiry was conducted with great ability, and has resulted in two reports published in 1848 and 1849, which the reader interested in the subject will do well to consult. We will, however, state a few of the chief points elicited by this inquiry.

Bearing in mind the object of the inquiry, the commissioners considered that the chief test of the value of any coal submitted to their examination was its power of converting water into steam, so that if a given weight of coal in a certain time converted a larger proportion of water into steam than the same weight of another coal in the same time, the evaporative power of the one would be greater than that of the other. It was found, however, that the coal best adapted to steamships of war, should also combine other qualities; for example, the fuel should burn quickly, so that steam may be raised in a short time; it should not be bituminous, lest its smoke should betray the position of the ship when it might be desirable to conceal it; it should have such a cohesive power as not to be broken into fragments by the rolling motion of the vessel; it should have such a density and structure as to bear stowing away in a comparatively small space (a condition which in coals of equal evaporative value was found to involve a difference of more than 20 per cent.); lastly, the coal should not contain a large proportion of sulphur, nor be subject to rapid decay, or it might in either case lead to spontaneous combustion. But it was not found possible to unite all these conditions in the same coal. Anthracite, for example, has high evaporative power, but not igniting easily its action is not quick; it is not easily broken by the motion of the ship, but not being a caking coal, it would not cohere in the furnace, and would escape through the grate-bars during the rolling of the ship in a gale; it gives off no smoke, but from the intensity of its combustion, it causes the iron of the grate-bars and of the boiler to oxydize rapidly; hence, with many advantages, anthracite has a few defects sufficiently prominent to preclude its use under ordinary circumstances. It was thought that a patent fuel might be formed with some of the anthracites of Wales, which should combine the advantages and elude the defects above referred to; but it was found that the cementing tar of the patent fuel burnt so

much more rapidly in the furnace than the anthracite, that the latter accumulated on the bars and obstructed the draft, or escaped through the grate unburnt.

The commissioners found that the qualities which distinguish particular kinds of fuel are very varied, so that it is difficult to deduce general results. But the data furnished by their experiments enables us to contrast the actual value of a particular coal with its theoretical value, supposing its combustion to be attended with no loss of heat. The actual duty obtained by one pound of coal from the boiler employed, may be expressed by the number of pounds raised to the height of one foot, a result which may be obtained by the formula $W\eta+965{\cdot}7\times782=x$, in which W represents water, of which η pounds are evaporated by one pound of coal. This formula is deduced from the fact that η pounds of coal multiplied by 965·7, or the coefficient for the latent heat of steam at 212°, indicates the number of pounds of water which would be raised 1° Fahr.; and the number 782 arises from experiment on the mechanical force denoted by the elevation of one pound of water 1° Fahr.; that force being equal to 782 pounds raised to the height of one foot, according to the experiments of Mr. Joule. The best Cornish engines are said to be capable of raising 1,000,000 pounds to the height of one foot for every pound of coal consumed, but this is only about one eighth of the actual force generated, and only one eleventh or one twelfth of the theoretical force. Experiments on the evaporative power of coal made by different observers give very dissimilar results. Smeaton, in 1772, evaporated 7·88 pounds of water from 212° with one pound of Newcastle coal; Wall, in 1788, evaporated 8·62 pounds; Wicksteed, in 1840, evaporated 9·493 pounds of water from 80° with one pound of Merthyr coal, which is equal to 10·746 pounds from 212°. In some experiments made at the United Mines in Cornwall, it was found, after a trial of six months, that every pound of coal evaporated 10·29 pounds of water from 212°; and according to some experiments made in Cornwall, at the request of the commissioners, it was found that 11·42 pounds of water were evaporated by every pound of Welsh coal of similar chemical composition to that of Mynydd Newydd.

At ordinary temperatures coal undergoes a slow combustion under the action of the oxygen of the atmosphere, evolving carbonic acid, nitrogen, and inflammable gases, and in some cases leading to dangerous explosions. This slow combustion is facilitated by the higher temperature of hot climates, and by the presence of moisture. If the coal contain much sulphur or iron pyrites the chemical action may become so intense as to ignite the coals. In stowing coals it is therefore important that they should be as dry as possible, and such a variety should be selected as is least liable to this progressive decomposition. When coal is kept in iron bunkers, and is liable to be wetted with sea-water, the iron rapidly corrodes from the carbon or coal forming a voltaic circuit with the iron, and thus promoting oxydation.

In the great exhibition of 1851, Messrs. Berard & Co., in the French department, No. 51, exhibited "small purified coals, and residue of the same, the produce of a system for purifying coals, patented in France, England, Belgium, and Germany." This plan appears to be well adapted to the purification of sulphurous coal, or coal containing much iron pyrites; also where the coal deposits are in numerous small seams, and can not be got out without being mixed with slaty and stony matter. The coal used on the Chemin de Fer du Nord was so sulphurous as to injure the locomotives; but by using the purified coal, the evil was for the most part remedied; the quantity of ash was also greatly reduced. The apparatus employed for purifying the coal is similar in principle to the jigging-machine used in dressing ores, which, after being stamped, in order to separate stony matter, are agitated in water and allowed to rest, when the various portions become arranged in layers, according to th " specific gravities. This purified coal yields a very pure coke.

Mr. Grace Calvert, of Manchester, has taken out a patent for purifying coke from sulphur. It consists in mixing the coal, before coaking, with from 1½ to 5½ per cent. of common salt, the proportion varying with the quantity of sulphur. The coking is then conducted as usual. By this contrivance, coal, which was formerly unserviceable in smelting operations, can now be used with effect.

The following table, by Dr. Ure, shows the quantity of water raised from 32° to 212° by one pound weight of the different combustibles enumerated in the first column; it also shows the number of pounds of boiling water, which the same weight of fuel will evaporate, and the quantity of atmospheric air absolutely consumed during combustion. The quantity of air, however, as given in the last column, is much less than would be necessary in practice, where much of the air passes the fuel without coming into contact with it so as to have its oxygen consumed. The heating power also, as represented by this table, can seldom be *practically* attained.

Combustible.	Pounds of water which a pound can raise from 32° to 212°.	Pounds of boiling water evaporated by one pound.	Weight of atmospheric air at 32° required to burn one pound.
Dry wood.....	85·00	6·36	5·96
Common wood.....	26·00	4·72	4·47
Charcoal.....	73·00	13·27	11·46
Pit coal.....	80·00	10·90	9·26
Coke.....	65·00	11·81	11·46
Turf.....	30·00	5·45	4·60
Coal gas.....	76·00	18·81	14·51
Oil, wax, or tallow..	78·00	14·18	15·00
Alcohol.....	52·00	5·56	11·60

As various kinds of fuel afford different amounts of heat, and as heat can not be measured or weighed, and its quantity ascertained by direct experiment, the relative values of fuels are ascertained by comparing them with each other under similar circumstances. The heating power of a fuel is the quantity of effect produced by it in a certain time, and this in conjunction with its market price gives its value as a fuel. One fuel may produce a certain greater or less effect than another fuel, and thus its relative superiority or inferiority may be accurately ascertained, although the actual amount of heat furnished by it may be entirely unknown. Lavoisier and Laplace fixed these values by making the substance under examination act on ice, and the quantity of ice melted gave the value in each case. Count Rumford measured the value of fuel by the increased temperature which it produced in a given quantity of water. Now, as the same quantity of heat which melts one pound of ice at 0° Cent. is sufficient to raise the temperature of as much water 79° Cent., or 0·79 lb. of water 100° Cent., so also an equal weight of aqueous vapor of any given temperature and elasticity is always formed from the same amount of heat, and always contains the same quantity of heat, and the quantity of heat which water at 100° Cent. renders latent in order to become steam is 5·5 times sufficient to heat the same weight of water from 0° to 100° Cent., hence the water converted into vapor by the heat required to melt one pound of ice is the 5·5th part of the same pound, that is, it can convert into vapor 0·154 lb. of water.

It was found by Despretz and Welter that the quantities of fuel which require equal amounts of oxygen for combustion, give out equal quantities of heat; thus, 1 lb. of oxygen in combining respectively with hydrogen, charcoal, alcohol, etc., raised 29 lbs. of water from 32° to 212°. A given weight of the different combustibles has its heating power represented by the number of pounds of water raised in temperature, as in the following table. (See *Journal*

of the Franklin Institute, Philad., 1855–7; also SILLIMAN'S *Journal of Science*, New Haven, Conn., 1854–6.]

	lbs. of water.	
1 lb. of pure charcoal raised...	78 from 32°—212°	
" common wood charcoal	75 " "	
" baked wood.....	36 " "	
" wood holding 20 per cent of water.....	27 " "	
" bituminous coal.....	60 " "	
" turf.....25—30	" "	
" alcohol.....	68 " "	
" oil, wax.....	90 " "	
" ether.....	80 " "	
" hydrogen.....	236 " "	

More recent researches have, however, cast considerable doubt upon the law that any given quantity of oxygen evolves the same quantity of heat with whatever combustible body it may combine. From a series of tabulated results given in GMELIN'S *Hand-Book of Chemistry*, vol. i., p. 292 (Cavendish Society's translation), it would rather appear that oxygen develops a larger quantity of heat the stronger its affinity for the combustible substance.

Such experiments as the above tend to confirm the modern view of combustion which regards oxygen as a combustible as much as the fuel with which it combines (see CHEMISTRY, vol. v., En. Br); so that when oxygen burns by means of any fuel, the heat evolved increases with the quantity of oxygen consumed. It was on this view that Berthier based his process for detecting the quantity of oxygen required for combustion, and the heating power of the combustible in one experiment. His plan is to heat to redness a known quantity of the combustible with a considerable excess of pure litharge until the combustible is entirely consumed by the oxygen of the oxyd of lead. On weighing the lead reduced by this process the amount of oxygen consumed is ascertained, and also the heating power of the fuel under examination. In calculations of this kind, it will be remembered that 6 parts, or 1 equivalent of carbon, require 16 parts, or 2 equivalents of oxygen, for combustion; that 1 part of hydrogen requires 8 parts of oxygen; that by subtracting from the hydrogen a quantity corresponding to the oxygen in the coal, the calculation can be made for the carbon only. Now, 1 part of pure carbon requires for combustion 2·666 of oxygen, and is capable, according to Despretz, of heating 78·15 parts of water from freezing to boiling. By multiplying each part of lead obtained by 2·265, the weight of water is obtained which is capable of being heated between these temperatures by a unit of the coal used in reducing the litharge.

The heating power of a particular fuel is the same, however that fuel may be burnt. It is true, that the power may be more or less economically applied; the power may be expended with greater or less rapidity, greater, for example, in a furnace than in an open grate, but as the fuel during combustion combines with equivalent portions of oxygen, the same amount of heat is liberated whether the combination be rapid or slow. The rapidity of combustion depends not only upon the mode of arranging the draught or supply of air to the fuel, but also on the state of division of the fuel itself. A given weight of wood in the state of shavings will, from the large extent of surface exposed, burn rapidly, and produce its full heating effect in a few minutes, while the same weight of wood, in the form of a log, may keep up a moderate temperature for some hours. The division of a fuel may, however, be carried so far that the air necessary for its combustion can not penetrate it. Such is the case with saw-dust, powdered charcoal, or peat, slack coal, etc. If the powdered coal be of caking quality, it may be burnt into compact coke, and thus be more useful than a fuel which in its first form is compact, but which falls to powder on being heated in the furnace. Small fuel may sometimes be advantageously applied by covering the furnace-bars with pieces of sand-stone or lime-stone for the purpose of preventing the fuel from falling through, and for distributing the supply of air among it. In the roasting of copper ores in South Wales a flaming coal is necessary in the reverberatory furnace where the operation is carried on. But as the flameless anthracite is much more abundant in this district than the bituminous coal, it is turned to account in an ingenious manner. When burnt under ordinary circumstances it crumbles to powder, as already noticed, and either slips through the bars of the grate, or chokes them up. But when anthracite is raised to a very high temperature it forms a vitreous scoria or clinker, which in the ordinary furnace combines with the iron of the bars and chokes up the grate. In the Welsh furnaces, the clinkers themselves are ingeniously arranged so as to perform the office of grate-bars, namely, to support the fuel, and to limit the supply of air from below. The clinkers are supported on iron bars placed at a considerable distance apart, and are arranged in a layer 12 or 16 inches in depth. Above this layer the fuel of the furnace is in full combustion; this fuel consists of anthracite mixed with about one fourth of its weight of small bituminous coal, and also forms a layer of a depth about equal to that of the clinkers: it is in this the hottest part of the fire that fresh clinkers are being continually formed, and while forming they cake with the numerous fragments of bituminous coal heaped up above them. As fresh portions of the fuel come into operation the clinkers descend toward the bottom of the grate, where, meeting with the numerous jets of air which stream up through the bottom, the vitrified mass splits and cracks in all directions, forming new channels for the ascent of the draught, but not large enough to allow the small coal to escape. As the calciner-man heaps up fresh fuel above, he hooks out a few clinkers from the bottom to make way for the descent of others. Under this arrangement the oxygen of the air traversing the multitude of channels formed by the cracks in the clinkers, combines with a portion of the fuel and forms carbonic acid, which is uninflammable, but before reaching the vault of the furnace it is deprived of a portion of its oxygen, and becomes converted into carbonic oxyd which is inflammable. But in order that this gas may undergo combustion, air is admitted through apertures in the sides of the furnace just above the ore, and in this way the whole surface of the ore, occupying an area of nearly 23 feet square, is played upon by a thin sheet of flame, produced from fuel which gives scarcely any flame at all.

Common coal gas is sometimes used as fuel, in which case it is calculated that 1 lb, or 24 cubic feet thereof, in burning, will raise 76 lbs. of water from the temperature of freezing to that of boiling. Extending this comparison to the other forms of fuel, it is stated that 1 lb. of dry wood will similarly heat 35 lbs. of water, but only 26 lbs. if the wood be not dry, or contain moisture to the extent of from 20 to 25 per cent. One lb. of good dry charcoal will similarly heat 73 lbs. of water, but if exposed to the air it absorbs at least 10 per cent. of moisture, and in burning gives a flame of carburetted hydrogen (or rather, probably, a mixture of carbonic oxyd and hydrogen), arising from the decomposition of the moisture. One lb. of good pit coal is said to raise 60 lbs. of water from freezing to boiling, 1 lb. of coke 65 lbs., and 1 lb. of turf or peat from 25 to 30 lbs.—B. E. See COAL.

Fuels, Artificial.— It is curious to note how many new "patent artificial fuels" there now are. As experimenters tell us that different kinds of coal and other natural fuel possess different qualities, an inducement is offered for the exercise of ingenuity in devising various imitative compositions. The hydraulic press is brought into singular requisition in this art. Thus, Azalay's hard shining blocks of artificial fuel are simply formed of coal-dust, subjected to in-

tense compression. Warlich's patent fuel, in large-sized bricks weighing about 12 pennds each, is made by mixing together the dust of various kinds of coal; the bricks are dense and well made; the fuel kindles slowly, but gives off very little smoke while burning. Warlich's series comprises Welsh steam fuel, north-country fuel, household fuel, and locomotive coke-fuel —differing in the kind of coal-dust used, and in the amount of tar with which the dust is agglutinated. Warlich's patents are worked by a company, who have establishments at Deptford, Swansea, and Middlesborough. The Bideford Anthracite Company makes artificial fuel, in brick-form pieces, by a particular mode of treating anthracite. Oram's patent fuel is a condensed mixture of small coal, bitumen, and sand. Williams's fuel is a mixture of dried peat and bitumen. So of numerous other kinds; small coal, bitumen, or peat, or two out of the three, are mixed with various other substances to form a compost fuel. It must be owned, however, that such fuel is not yet much used, even in places where natural fuel is scarce.—*Inventions in Arts.*

Fuhchau, or **Fou-tchow-foo.** See Fou Chow.

Fullers' Earth (Ger. *Walkererde;* Du. *Volläarde;* Fr. *Terre à foulon;* It. *Terra da purgatori;* Sp. *Tierra de batan;* Rus. *Schiffernaia;* Lat. *Terra fullonum*), a species of clay, of a greenish white, greenish gray, olive and oil green, and sometimes spotted color. It is usually opaque, very soft, and feels greasy. It is used by fullers to take grease out of cloth before they apply the soap. The best is found in Buckinghamshire and Surrey. When good, it has a greenish white, or greenish gray color, falls into powder in water, appears to melt on the tongue like butter, communicates a milky hue to water, and deposits very little sand when mixed with boiling water. The remarkable detersive property on woolen cloth depends on the alumina, which should be at least one fifth of the whole, but not much more than one fourth, lest it become too tenacious.—Thomson's *Chemistry;* Jameson's *Mineralogy.*

Fulling, the art of cleansing, scouring, and pressing cloths, stuffs, and stockings, to render them stronger, closer, and firmer. It is otherwise called *milling.* Pliny (vii. 56) relates that one Nicias, the son of Hermias, was the first inventor of the art of fulling; and it appears by an inscription, quoted by Sir G. Wheeler in his *Travels through Greece,* that this same Nicias was a governor in Greece in the time of the Romans. The asperities upon the surface of wool render the spinning of it and the making it into cloth difficult operations. In order to spin wool, and afterward convert it into cloth, its fibres must be covered with a coating of oil, which, filling the cavities, renders the asperities less sensible; in the same way that oil rubbed on the surface of a very fine file renders it less rough. When the piece of cloth is finished, it is carried to the fulling-mill, where it is beaten with heavy stampers in a trough full of water in which some fuller's earth has been mixed, for the purpose of cleansing it from the oil. The clay combines with the oil, which it separates from the cloth, and both are washed away together by the fresh water which is brought to it by the machine. But the scouring of the cloth is not the only object in view in fulling it. The alternate pressure given by the stampers to the piece of cloth occasions (especially when the scouring is pretty far advanced), an effect analogous to that which is produced upon felt by the hands of the hatter. The fibers of wool which compose one of the threads, whether of the warp or the woof, assume a progressive movement, introduce themselves among those of the threads nearest to them, then into those which follow; and thus, by degrees, all the threads, both of the warp and the woof, become felted together. The cloth, after having by this means become shortened in all its dimensions, partakes both of the nature of cloth and of that of felt, and may be cut without being subject to ravel. Lastly, the cloth has acquired a greater degree of thickness, and forms a warmer clothing. Knit worsted also may thus be rendered less apt to run in case a stitch happen to drop.

The fulling of cloths and other stuffs is performed by a kind of water-mill, thence called a *fulling* or *scouring mill.* These mills, excepting in what relates to the mill-stones and hopper, are much the same with corn-mills; and there are even some which serve indifferently for both purposes. The principal parts of the fulling-mill are the wheel, with its trundle, which gives motion to the tree or spindle, whose teeth communicate it to the stampers, which are thereby raised and made to fall alternately, as its teeth catch or quit a kind of latch in the middle of each stamper. The stampers and troughs are commonly of wood; but sometimes the stampers are made of polished iron, and the cloth is exposed during the process to the action of steam; by which means the appearance of the cloth, when finished, is said to be greatly improved. These improvements formed the subject . a patent in 1825. In the course of the operation the fuller sometimes makes use of urine, sometimes of fuller's earth, and sometimes of soap. To prepare the stuffs to receive the first impressions of the stamper, they are usually laid in urine, then in fuller's earth and water, and lastly in soap dissolved in hot water. Soap alone would do very well, but it is expensive, and fuller's earth is scarcely inferior to it; but then it must be well cleared of all gritty particles, else it is apt to make holes in the stuff.

Method of fulling cloths and woolen stuffs with soap. —A colored cloth of about 45 ells is to be laid in the usual manner in the trough of a fulling-mill, without first soaking it in water, as is commonly practiced in many places. To full this trough of cloth, 15 pounds of soap are required, one half of which is to be melted in two pails of river or spring water made as hot as the hand can well bear it. This solution is to be poured by degrees upon the cloth, as it is laid in the trough; and thus it is to be fulled for at least two hours, after which it is to be taken out and stretched. This done, the cloth is immediately returned into the same trough, without any new soap, and there fulled two hours more. It is then taken out and well wrung, to express all the grease and dirt. After the second fulling, the remainder of the soap is dissolved as in the former, and cast four different times on the cloth, which is taken out every two hours to stretch it, and undo the plaits and wrinkles it has acquired in the trough. When it is perceived to be sufficiently fulled, it is well scoured in hot water. With regard to white cloths, these full more easily and in less time than colored ones, and thus require only a third part of the soap.

Fulminating Compounds. — Fulminates are of several kinds, being detonating compounds of the fulminic acid with various bases. Such are the fulminates of gold, mercury, silver, etc. The old fulminating powder is a mixture of nitre, sulphur, and potash. The fulminate of mercury is largely used as a priming to the percussion-caps for guns. See Chemistry, vi., p. 474.

Fulta, a large village of Hindoostan, province of Bengal, on the east bank of the Hooghly, 20 miles S.S.W. in a straight line from Calcutta, but much more by the windings of the river. It has safe anchorage for ships, where they are protected from the swell of the sea, and where the anchors hold fast, the bottom being stiff clay. Lat° 22′ 18., long. 88° 10′.

Fulton, Robert, a distinguished American engineer and mechanician, among the first who successfully applied steam to the propulsion of vessels, was a native of the State of Pennsylvania. At a very early age he gave decided indications of mechanical genius.

While still a mere youth he began life in the city of Philadelphia as a portrait and landscape painter; and in his 22d year, with a view to improving himself in art, he visited England, where he remained for several years under the roof of his countryman West. He states that in 1793 he had conceived the design of propelling vessels by steam, but his numerous engagements prevented him from carrying it into effect at that time. His time was completely engrossed in devising a plane of double incline that should supersede the locks on canals, for which he obtained a patent from the British government in 1794. In the same year he obtained patents for flax-spinning and rope-twisting machines, and various other mechanical inventions, bearing chiefly upon the construction of canals, on which latter subject he published a treatise. In 1797 he removed to Paris, and remained for seven years in the house of Joel Barlow, the American minister at the court of Napoleon I., prosecuting his scientific studies. During that period he projected the first panorama ever exhibited in Paris, and made important experiments on submarine explosives. It was also at this time that he first succeeded, after repeated trials, in propelling a boat through the water by the aid of steam. In 1806 he returned to America, and repeated the experiment on a larger scale and with more decided success. In 1809 he took out his first patent, and seemed to be on the high way to wealth and prosperity, when his rights were disputed, and he became involved in legal proceedings, which embittered the remainder of his existence, and prevented him from reaping the rich harvest to which his industry and genius fairly entitled him. Fulton died February 24, 1815. A minute account of his life and inventions is given in his biography by Cadwallader D. Colden. See STEAM NAVIGATION.

Fulton has, perhaps, contributed more than any other man of the present century, to the progress of commerce throughout the world. The impetus given by his genius to the adoption of steam navigation, has been equally extended (if not more so), to the increase of sailing vessels. At the present day the stock of mechanical and practical knowledge, handed down by tradition, or preserved by means of the press, has become so enormous, that the most brilliant discovery in the useful arts bears but a small proportion to the whole extent of human knowledge. In remote times, the aids, which modern inventors derive from the records of the reasonings, and combinations, and even the abortive attempts of others, were wholly wanting; and if no one of the inventions of antiquity, when taken by itself, can rank in apparent importance with some of modern date, the former were in many instances far more conspicuous as steps in the progress of human improvement. In the dawn of civilization, inventions were usually unexpected, and though often calculated to supply the most pressing wants, excited surprise, because the wants themselves had not been perceived. At the present day discoveries often appear as the almost inevitable result of previous improvement. The highest degree of merit is to be awarded, in the present age, to those who, aware of the wants of the community, or of the world at large, set to themselves as a task the discovery of the means of supplying these wants. If we consider Fulton as an inventor, it may be difficult to say in what exact particular his merits consist; but if we contemplate him in the light of a civil engineer, confidently building a finished and solid structure upon the incomplete foundation left by others, we must rank him, in the extent of his usefulness to mankind, as second to Watt alone. See *Life of Fulton*, by J. RENWICK.

Robert Fulton was born at Little Britain, in Lancaster county, Pennsylvania, in the year 1765. His parents were respectable, though far from affluent; his father a native of Ireland, his mother descended from an Irish family. Fulton himself attached no importance to circumstances of birth, and took pride in being the maker of his own fortune. Except so far as elementary education was concerned, he was under little obligation to his progenitors; being left without patrimony at the death of his father, when three years old. Aware that he was to trust to his own exertions, even for means of subsistence, he cultivated from an early age a taste for drawing, in the hope of qualifying himself for the profession of a painter. From a familiar acquaintance with his performances as an artist at a later date, when he applied to the easel merely as a relaxation, it may be stated that there is little doubt that had he devoted himself to the profession of painting, he must have become highly distinguished as a professor of that art. At the early age of 17 he went to Philadelphia, for the purpose of practicing as a painter of landscapes, and was so successful as not only to support himself, but to lay up sufficient funds to purchase a small farm in Washington county, Pennsylvania, and to aid his widowed mother. His patrons in Philadelphia were at first among the humbler classes, but afterward he formed acquaintances who were both able to appreciate his promise as an artist, and to facilitate his plans of improving himself as a painter. By their advice he went to England, and through a favorable introduction to West, he was treated by that great artist with even more than his usual liberality, and became an inmate of his house, and remained his guest and pupil for several years. After leaving the family of West, Fulton proceeded to Exeter, where he lived two years, during which time his intelligence and ability gained him many useful acquaintances. Among these, the most important were the Duke of Bridgewater and Earl Stanhope. It appears to have been at the instance of the former that he abandoned painting as a profession, and entered that of a civil engineer. We find him next residing in Birmingham, engaged in the construction of canals, though probably in a subordinate station. Fulton's residence in Birmingham brought him into communication with Watt, who had just succeeded in giving to his steam-engine that perfect form which fits it for universal application as a prime mover. While in Birmingham, Fulton issued a number of patented inventions and several published works. In 1793 he took out a patent for the introduction of the inclined plane in inland navigation, and three years later embodied it, with other projects of a similar nature, in a work on Inland Navigation. This work can be quoted as exhibiting a high degree of originality, ingenuity, and talent, but as inapplicable to any useful purpose. To his instrument for destroying vessels of war, he gave the name of the *Torpedo*. It consisted of an oval copper case, charged with gunpowder. To this he proposed to attach a lock, regulated by clock-work, which, after any required time, might cause the lock to spring and thus communicate fire to the charge. But Fulton met with so much opposition in bringing this into practice during the war with Great Britain, that the only proofs of its value we can cite, were the sleepless nights and anxious days of many British commanders, who felt that the vicinity of Fulton's operations was attended with danger which could only be prevented by unremitting diligence and attention.

Before proceeding to the more important subjects which attracted the attention of Fulton, we have to mention some other fruits of his ingenuity. In 1794 he took out patents for a mill for sawing marble; a method of spinning flax and making ropes; and of excavators for digging canals. The latter object may still remain a desideratum in practical mechanics; the two former at least served as steps in the career of improvement, and have been guides and landmarks to subsequent inventors. Fulton undertook the construction of a vessel which might move either at or beneath the surface of the water, and made the passage over the estuary of the Linn with ease and safety.

The art with which Fulton's name is inseparably connected as the principal agent in its creation, is that of navigation by steam. His application of steam was founded on the properties of Watt's double-acting engine, and could not be used until that instrument had received the last finishing-touch of the inventor. When the properties of this engine became known to the public, many hastened to apply it to navigation. Among others, were Miller, of Dalswinton, aided by Symington, who put a boat in motion on the Forth and Clyde, in 1801. In the United States, experiments were made by Fitch and Rumsey; and in 1791, John Stevens, of Hoboken, commenced his researches, which he engaged in for nine years, when he became the associate of Chancelor Livingston and Nicholas Roosevelt; to this association was added Brunel, the inventor of block machinery, and engineer of the Thames tunnel. The efforts of this association were unsuccessful, and were broken up by the appointment of Livingston as embassador to France, where he became intimate with Fulton, and offered to provide him with funds necessary for an experiment, and to aid in introducing the method in the United States, if the experiment were successful. Fulton had confirmed his original impression of the superiority of the paddle-wheel over any other means of propulsion, and, late in the year 1803, commenced building a vessel 66 feet in length and 8 in breadth. To this an engine was adapted, and the experiment so satisfactory, as to leave little doubt of final success. Measures were immediately taken to construct a steamboat on a larger scale in the United States. An engine was ordered from England, from Watt & Bolton, in 1803; its form varied from their usual models in conformity to sketches furnished by Fulton. At the same time, an application made to the Legislature of New York for an exclusive privilege of navigating the waters of that State by steam was granted. Before the engine ordered from Watt was completed, Fulton visited England, and directed the construction of it in person. It was completed at last, and reached New York in 1806; the vessel was finished and fitted with her machinery in August, 1807. An experimental excursion was made, and a few minutes served to convince the most skeptical and doubtful that the long-desired object was obtained. Within a few days of the first experiment, a voyage was undertaken in it to Albany. This city is distant from New York, by the channel of the river, nearly 150 miles. In a few remarkable instances the sloops which navigated the Hudson had performed the passage in 16 hours; but the average time was four days. Fulton's steamboat went up in 36 hours, and returned in 30. Fulton, complying with the wishes of the public, made regular voyages until the end of the season. Many of the minor arrangements for the convenience of passengers, the facility of working, and safety from accident of the machinery, were yet wanting; some of the difficulties were removed at the time, and others remained until the boat should be laid aside for the winter. The next winter of 1807-8 was occupied in remodeling and rebuilding the vessel, to which the name of *Clermont* was given. Fulton provided such accommodations for passengers, as, in regard to convenience and splendor, had never been approached in other vessels of transportation. This was almost improvident liberality; for a debt was contracted which new demands never permitted him to discharge. The *Clermont*, thus converted into a floating palace, commenced her course of passages for the month of April. The first voyage was a complete failure; the boiler, provided by Watt, was not suitable, and Fulton had been persuaded to replace it by one planned by Livingston, composed of wood and copper, which emitted steam from the joints soon after leaving New York, and gave way completely, on the return passage, near that city, after a voyage prolonged for 56 hours. But a few weeks sufficed to build a new boiler, and in June, the *Clermont* was again under way. In the hour of departure from New York or Albany the utmost regularity was observed, which required no little perseverance and resolution at first; but the benefit of this punctuality was soon perceptible, and the same system was copied by other steamboat lines. At the end of the second summer the boat became far too small for the passengers, who crowded to avail themselves of this new mode of transport, and Fulton begun a second boat, called *The Car of Neptune*.

The most formidable opposition made to the privilege of Fulton, for the exclusive navigation of the waters of New York, was founded upon the discoveries of Fitch, who had constructed a boat which traveled between Trenton and Philadelphia. Fulton, assailed in his exclusive privileges, took, for further protection, a patent from the general government in 1809, and another in 1811. Grants were made to Fitch by the State of New Jersey, and as a compromise could not be agreed upon by the two contending parties, the controversy, which often interrupted the communication by steam between Philadelphia and New York, was not adjusted until the grant, made to Fulton by the State of New York, was declared unconstitutional. A form of ferry-boats was soon after invented by Fulton, which, with the substitution of a single hull for the twin boat, has in its arrangement and distribution undergone little or no change. The steamboats on the Hudson were increased in number, before Fulton's death, to five. A sixth was built, under his direction, for the Sound, which plied for some time on the Hudson. In the construction of this boat he had, in his opinion, exhausted the power of steam in navigation—having given it a speed of nine miles an hour.

When death arrested Fulton in his great career, he was engaged in constructing an improved form of submarine vessel, but as he had made no one a confidant in his plans, at his death no person was found willing or able to undertake the completion of the vessel. By exposure in his visits to the Navy Yard, in Brooklyn, he took a severe cold, which his constitution, enfeebled by constant labors and anxieties, could not resist. He died on the 24th of February, 1815. Rarely has it happened that the natural death of any citizen excited so general mourning as that of Fulton. Cut off in the very height of his usefulness, and in the zenith of his reputation, his countrymen felt it as a loss almost irreparable. See Life of FULTON, by JAMES RENWICK, LL.D.; *Anal. Mag.*, v. 394. x. 177; SPARKS's *Am. Biog.*, x. 3; *Quar. Rev.*, x ... 347; LITTELL's *Mus.*, xxxiii. 340; NILES's *Reg.*, xiii. 51, xxxiii. 15; HUNT's *Mer. Mag.*, xv. 468. A suitable monument to the memory of Fulton has not yet been erected either by the United States, by any one State, or by any association. It yet remains for his native State (Pennsylvania), or for the State which fostered his early efforts (New York), to place in some great thoroughfare, an appropriate column in memory of one who has so largely contributed to the growth of commerce throughout the civilized world.

Fumigation is the employment of fumes or vapors to purify articles of apparel, and goods or apartments supposed to be imbued with some infectious or contagious poison or fumes. The vapors of vinegar, the fumes of burning sulphur, and explosion of gunpowder, have long been prescribed and practiced; but they have, in all probability, little or no efficacy. The diffusion of such powerful agents as chlorin gas, muriatic acid gas, or nitric acid vapor, should alone be trusted to for the destruction of morbific effluvia.

Funds. To the Venetians is ascribed the origin of the funding system, in A. D. 1171. Public funds were raised by the Medici family, at Florence, in 1340. The English funding system, or the method of raising the supplies for the public service in England, by anticipation of the public revenues (the origin of the national

debt), was introduced at the Revolution, 1689.—MORTIMER's *Broker*. The funding system is coeval with the commencement of the Bank of England.—ANDERSON. The three per cent. annuities were created in 1726. The three per cent. consols were created in 1731; the three per cent. reduced, 1746; three per cent. annuities, payable at the South Sea House, 1751; three and a half per cent. annuities created 1758; long annuities, 1761; four per cent. consols, 1762; five per cent. annuities, 1797 and 1802; five per cents. reduced to four, 1822. See *National Debt*.

The following table has been calculated in order to show in which of the public funds money may be invested so as to yield the greatest interest. It gives the prices, differing by one per cent. from 50 to 93 for three per cents., etc., at which they all must be to yield the *same* interest; so that supposing the three per cents. to be at 80, a sum invested in them, or in the 3½ per cents., will yield the same interest, provided the latter be at 93½; if the 3½ per cent. be *below* this sum, it will, of course, be more advantageous in so far at least as interest is concerned, to invest in them than in the three per cents.; while, if they be *above* 93½, it will be less advantageous.

To get the *true value* of the different funds at any particular period, in order to compare them accurately together, it is necessary to deduct from each the amount of interest accruing upon it from the payment of the last dividend.

TABLE SHOWING THE PRICES THE DIFFERENT FUNDS MUST BE AT TO PRODUCE AN EQUAL INTEREST; AND ALSO THE ANNUAL INTEREST PRODUCED BY £100 STERLING INVESTED AT ANY OF THOSE PRICES.

3 per cent. price.	3 1-2 per cent. price.	4 per cent. price.	5 per cent. price.	Interest.
£	£ s. d.	£ s. d.	£ s. d.	£ s. d.
50	58 6 8	66 13 4	83 6 8	6 0 0
51	59 10 0	68 0 0	85 0 0	5 17 7
52	60 13 4	69 6 8	86 13 4	5 15 4
53	61 16 8	70 13 4	88 6 8	5 13 2
54	63 0 0	72 0 0	90 0 0	5 11 1
55	64 3 4	73 6 8	91 13 4	5 9 0
56	65 6 8	74 13 4	93 6 8	5 7 1
57	66 10 0	76 0 0	95 0 0	5 5 3
58	67 13 4	77 6 8	96 13 4	5 3 5
59	68 16 8	78 13 4	98 6 8	5 1 8
60	70 0 0	80 0 0	100 0 0	5 0 0
61	71 3 4	81 6 8	101 13 4	4 18 4
62	72 6 8	82 13 4	103 6 8	4 16 9
63	73 10 0	84 0 0	105 0 0	4 15 2
64	74 13 4	85 6 8	106 13 4	4 13 8
65	75 16 8	86 13 4	108 6 8	4 12 3
66	77 0 0	88 0 0	110 0 0	4 10 10
67	78 3 4	89 6 9	111 13 4	4 9 6
68	79 6 8	90 13 4	113 6 8	4 8 2
69	80 10 0	92 0 0	115 0 0	4 6 11
70	81 13 4	93 6 8	116 13 4	4 5 8
71	82 16 8	94 13 4	118 6 8	4 4 6
72	84 0 0	96 0 0	120 0 0	4 3 3
73	85 3 4	97 6 8	121 13 4	4 2 2
74	86 6 8	98 13 4	123 6 8	4 1 0
75	87 10 0	100 0 0	125 0 0	4 0 0
76	88 13 4	101 6 8	126 13 4	3 18 11
77	89 16 8	102 13 4	128 6 8	3 17 11
78	91 0 0	104 0 0	130 0 0	3 16 11
79	92 3 4	105 6 8	131 13 4	3 15 11
80	93 6 8	106 13 4	133 6 8	3 15 0
81	94 10 0	108 0 0	135 0 0	3 14 0
82	95 13 4	109 6 8	136 13 4	3 13 2
83	96 16 8	110 13 4	138 6 8	3 12 3
84	98 0 0	112 0 0	140 0 0	3 11 5
85	99 3 4	113 6 8	141 13 4	3 10 7
86	100 6 8	114 13 4	143 6 8	3 9 9
87	101 10 0	116 0 0	145 0 0	3 8 11
88	102 13 4	117 6 8	146 13 4	3 8 2
89	103 16 8	118 13 4	148 6 8	3 7 4
90	105 0 0	120 0 0	150 0 0	3 6 8
91	106 3 4	121 6 8	151 13 4	3 5 11
92	107 6 8	122 13 4	153 6 8	3 5 2
93	108 10 0	124 0 0	155 0 0	3 4 6

The public debt of the United States, which amounted, at the close of the last war with Great Britain, to $158,713,049, was entirely paid off in 1835. This proceeding, so honorable to the United States, naturally tended to raise the character of American securities in the English market, and enabled the government to contract the loans required to carry on the late war with Mexico on very favorable terms. The debt of the Union, existing on the 20th November, 1851, amounted to $62,560,395, and is at present (1856) about $45,000,000.

But in addition to the debt of the Union, most part of the States, and several, also, of the principal cities, have contracted peculiar debts of a less or greater amount. In most cases these were incurred to promote the execution of some public undertaking, such as the construction of canals or railways, the excavation of docks, the erection of buildings, the establishment of banks or insurance companies, and so forth. Some of the debts so contracted have been advantageously laid out; but a large portion borrowed in 1835, and other periods of wild excitement, were contracted on very disadvantageous terms, and expended on projects some of which have turned out extremely ill. This, however, was the affair of the States themselves, and did not afford so much as the shadow of an excuse for the conduct of those States which have declined to provide for the payment of their debts. It was not, indeed, to be wondered at that in the distress into which the Union was thrown by the crash of 1837, and the depression following thereon, some of the States should have been compelled to suspend payment of their debts; but a necessity of this sort could be temporary only. The indebted States are all rich, and eminently flourishing and prosperous communities, and it might have been expected that they would have made every effort to resume payment in full of their debts at the earliest possible moment. But this, we are sorry to say, has not been the case with some of them.

Fundy, Bay of, an inlet of the Atlantic, sets up between Cape Sable, the south point of Nova Scotia, and Mount Desert Island, in Maine, a distance of 150 miles. From Eastport to St. John, N. B., is 60 miles. The bay is divided, in its north-east part, into two branches, the north called Chignecto Bay, the head of which is 170 miles from Eastport. The south-east part is called the Basin of Mines, 150 miles from Eastport. Passamaquoddy Bay opens into it on the north-west, near its mouth. Gypsum is obtained on the Basin of Mines, and grindstones on Chignecto Bay. This bay is very peculiar; its shores, on both sides, are rocky and abrupt, while near its head, the tide, pressed and confined within diminished limits, rushes with much violence over extensive and wide-spread mudflats, and rises generally 60 feet or more. Its fisheries are valuable and extensive. (See PERLEY's valuable report on its fisheries.) There are 16 light-houses on the coasts of the Bay of Fundy, viz., eight on the New Brunswick side, and eight on the Nova Scotia side.

Furl, in navigation, to roll the sail up, and confine it closely to the yard: the sail being gathered up by the men on the yard, the leech or edge is passed along the yard to the middle or *bunt*, where the body of the sail, the foot and clews, are collected. In this way the sails of a man-of-war are removed nearly out of view in an almost incredible short space of time.

Furlong, an English measure of length, containing the eighth part of a mile.

Furs, in commerce, the skins of different animals, covered, for the most part, with thick, fine hair, the inner side being converted, by a peculiar process, into a sort of leather. Furs, previously to their undergoing this process, are denominated *peltry*.

Beaver fur, from its extensive use in the hat manufacture, is a very important commercial article. That made use of in this country is almost entirely brought from North America. It is gradually becoming scarcer and dearer, being now obtainable only in considerable quantities from the most northerly and inaccessible districts. The fur of the middle-aged or young animal, called cub-beaver, is most esteemed. It is the finest, most glossy, and takes the best dye. Fitch, or the fur of the fitchet or polecat, is principally imported from Germany; it is soft and warm, but the unpleasant smell which adheres to it depresses its value.

Marten and mink, a diminutive species of otter, are principally imported from the United States and Canada. The fur of the musquash, or muskrat, a diminutive species of beaver, is imported in vast quantities from our possessions in North America, which also supply us with considerable quantities of otter-skins. Nutra-skins are principally brought from Buenos Ayres. The more valuable furs, as ermine, sable, etc., come principally from Russia.

Fur Trade.—There is, perhaps, no branch of commerce that has drawn forth a more daring and adventurous spirit, or given rise to a more patient and courageous endurance of personal dangers, privations, and hardships, than the fur trade, as is manifest throughout its whole history. By its means we have become accurately acquainted with nearly three fourths of the continent of North America. The indefatigable exertions of the fur merchant, stimulated by the prospect of large gains from his hazardous pursuits, have made known numerous tribes of men and nations partially acquainted with the arts and refinements of civilized life, who otherwise might have remained many ages, or forever, immersed in heathen darkness, and sunk in barbarity. Nor are the general advantages derived from the fur trade confined to a more accurate geographical knowledge of a vast range of country, and the extension of the arts of peace and social happiness. The adventurous fur trader has often been the precursor of the gospel missionary, and has enabled him to pursue his important labors with comparative security and success.

Whence Furs were Introduced.—The use of furs seems to have been introduced into Europe by the northern invaders of the Roman empire. In the sixth century the skins of sables were brought to Rome from the shores of the Arctic Ocean through the intervention of numerous parties, so that the cost to the consumer was very high. During several centuries after that time, furs were not at all common in western Europe. In 1252, A.D., Marco Polo mentions, as a subject of curiosity, that he found the tents of the khan of Tartary lined with the skins of sables and ermines, which had been brought from countries far north, "from the land of darkness." In less than a century, however, from that time, the wearing of furs as a part of fashionable dress, had become rather prevalent in England, since, in 1337, Edward III. commanded that all persons among his subjects should be prohibited the use of furs unless they could spend £100 per annum.

Arctic Regions.—Early in the 17th century the shores of the Arctic seas were found tenanted by furred animals of great value; and the idea of forming a settlement was suggested by Groseliez, a Frenchman. The suggestion was made first to his own government, but as it was coolly received, he obtained, through the English embassador, an interview with Prince Rupert, before whom he laid his plans. The prince warmly entered into the project, and assisted in fitting out a vessel, which reached, in September, 1668, the river then called Nemisco, to which the adventurers gave the name Rupert, in honor of the prince. After wintering there, with less difficulty and suffering than they had anticipated, they returned, and gave so favorable a report that Prince Rupert, the Duke of Albemarle, the Earl of Craven, Lord Ashley, and others, formed themselves into a Company, and subscribed £10,500 for the purpose of commencing a traffic in furs. A charter of incorporation was granted by Charles II. in 1670, giving to the Hudson's Bay Company full possession of "all the lands and territories upon the countries, coasts, and confines of the seas, bays, lakes, rivers, creeks, and sounds, in whatsoever latitude they shall be, that lie within the entrance of the straits, commonly called Hudson's Straits, that are not already actually possessed by or granted to any of our subjects, or possessed by the subjects of any other Christian prince or state." And the charter proceeds to grant further, that "the whole and entire trade and traffic to and from all havens, bays, creeks, rivers, lakes, and seas into which they shall find entrance by water or land out of the territories, limits, or places aforesaid; and to and with all the natives and people inhabiting, or which shall inhabit within the territories, limits, and places aforesaid; and to and with all other nations inhabiting any of the coasts adjacent to the said territories, limits, and places which are not already possessed as aforesaid, or whereof the sole liberty or privilege of trade and traffic is not granted to any other of our subjects." On Rupert's River the Company immediately formed a settlement; and in 1674 stations were settled on Moose River, and a few years later on the Albany, and soon after two more on the Nelson and the Severn.

French Settlements and Seizures.—By these vigorous measures the French court was awakened to a sense of its neglect, and Groseliez, already detached from the English service, was sent out, in the year 1682, to found a factory on the River Hayes, which he accomplished, and also surprised the British factory on the Nelson. After this time hostilities became frequent between the French and the English settlers; yet notwithstanding immense losses sustained by the Company from 1682 to 1688 (amounting to £118,014), they were able, in 1684, to pay to the shareholders a dividend of 50 per. cent. Again, in 1688, an equal dividend was made, and in 1689, one of 25 per cent. In 1690, without any call being made, the stock was trebled, while at the same time a dividend of 25 per cent. was paid on the increased or newly-created stock. By other captures of their factories by the French in the years 1692, 1694, 1696, and 1697, the Company suffered further loss to the amount of $97,500. At the peace of Utrecht, in 1713, however, these captured factories were restored to the Company, who, by 1720, had again trebled their capital, with a call of only 10 per cent. on the shareholders. Now they strengthened the old forts and formed several new ones in the interior; but in 1749 a question arose in Parliament concerning the rights of the Company, which was decided in their favor. Again, in 1782, several of their factories were taken by the French under La Perouse; still their traffic seems to have continued very lucrative until the invasion of their rights and territories by a strong rival association, designated the North-west Company, whose fierce competition caused much animosity and bloodshed. This was not only very destructive to the fur trade, but most injurious to the Indians.

Management.—The North-west Company consisted of 23 partners, comprising some of the most wealthy and enterprising settlers in Canada, and employed about 2,000 persons as clerks, interpreters, guides, and boatmen (voyageurs), who were stationed over the vast regions of Canada ceded in 1763 by the French to the English. Shareholders who engaged actively in the trade were called agents, some of whom resided at the different ports established by the Company in the Indian territory, and others at Quebec and Montreal, each attending to the affairs of the Company in his appointed district. These active partners met annually at Fort William, one of their stations on Lake Superior, where they discussed matters connected with the affairs of the association, and arranged future plans. The clerks of the North-west Company were mostly young Scotchmen, of respectable families, who were willing to undergo the hardships attendant upon a residence of some years in these inhospitable regions, in order that they might thus secure the advantage of succeeding in turn to a share of the profits of the undertaking, the custom being to take from among the clerks as partners those who had acquired the experience necessary for the management of the business. The hunters of this Company crossed the Rocky

Mountains about the year 1805, and established stations on the northern head-waters of the Columbia. In 1813 they purchased Astoria on this river, which was relinquished by Mr. Astor,* of New York, and his partners, in consequence of the war between the United States and Great Britain. At length the Hudson's Bay Company, being roused by the activity of the North-west Association, exercised for the first time its chartered right to colonize, and sold, in 1812, a tract of land on Lake Winnipeg and the Red River, to Lord Selkirk, who introduced a considerable number of persons from Scotland. The consequence was an open war between the partizans of the rival Companies. After a war of two years, the Red River settlement was destroyed by the massacre of the governor, Mr. Semble, and many of his associates, while the survivors were driven away. But this melancholy and barbarous state of matters was put an end to by the union of the rival Companies in 1821, since which the trade has been peacefully and successfully prosecuted. When the partnership of the North-west Company was about to expire in 1821, the three London representatives of the firm offered to merge their interests in those of the Hudson's Bay Company. This was agreed to, and an act of Parliament was passed (1st and 2d Geo. IV., cap. 66), under which the crown grants to the Hudson's Bay Company and to the three representative partners of the North-west Company in London and Montreal a license of exclusive trade for 21 years in the "Indian territories;" that is, over all those tracts that might not be included in the charter given by Charles II., and also over those tracts which by mutual consent were open to the subjects of England and to those of the United States. The three North-west Company agents merged into the Hudson's Bay Company; the exclusive trading license was surrendered in 1838; and, after careful investigation on the part of the government, the crown granted on the 30th of May, 1838, another license for 21 years of exclusive trade over the Indian and neutral territories.

The affairs of the Hudson's Bay Company are at present conducted by a governor, deputy-governor, and a committee of seven, elected by 239 proprietors, representing a capital of £400,000. Of the 239 proprietors, 55 have more than two votes. £900 of stock must be held for six months by each voter previous to voting, except such stock be acquired by bequest or marriage, and each member of the committee must hold not less than £1,800 stock. The mode of election, oaths to be administered, government, etc., are prescribed by the charter of Charles II. already referred to. Accordingly, the Company has established at the Red River settlement a governor, council, recorder, sheriff, coroner, etc., for the proper government of the affairs of the Assiniboia, or Red River Territory, and for the careful and legal administration of justice throughout Rupert's Land. Though not enjoined by the charter of 1670, trial by jury was introduced by Sir George Simpson under the direction of the Hudson's Bay authorities in England. Crime is comparatively rare in Rupert's Land; and justice is administered under the same safeguards that exist in England.

Traffic.—The traffic of the Company in furs and peltry is regulated by a Deed Poll, dated March 26th, 1821, when the North-west Company and it united; and by another Deed Poll, dated June 6th, 1834, "for ascertaining the rights and prescribing the duties of the chief factors and the chief traders, and for conducting the trade." The business of the Company is superintended by the 25 chief factors at the respective stations; and under them the 28 chief traders carry on the traffic with the Indians. The clerks serve under both the factors and the traders; and the very humblest clerk, by good conduct, may rise to the chief positions in the service of the Company. The salaries of the clerks range from £20 to £100 per annum. Three chief factors and two chief traders are allowed to leave the country annually for one year.

Free Trade in Furs.—The Hudson's Bay Company have no monopoly, as some suppose, of the importation of furs into England; they have to compete with the furs of the United States, of Russia, of Norway, etc.; and if other traders can undersell the Company the public have, of course, the benefit. Beaver and other skins are now much lower in price than formerly, when so much used in the manufacture of hats; and the gradual reduction in price of foreign furs has been chiefly brought about by the steady supply from Hudson's Bay territories. Hence London is the most extensive fur market in the world. The fall in the prices of all furs has been very great; but as beaver constitutes the largest item in value, the reduction of profit to the Company will be seen by comparison with the prices and amount of sales. In 1839 a beaver skin was worth 27s. 6d.; in 1846, 8s. 5d. The number of skins sold in 1839 was 55,486 for £76,312; those sold in 1846 45,389 for £7856. There is also great variety in the prices of articles of similar denomination; but the Company are obliged to pay the same price to the Indians for all skins according to tariff; whether the skins are good or bad, the Company must buy them. Hence the profits of the shareholders are not to be estimated by the difference in price between the cost of a skin at one of the Company's forts in the interior, and its sale price in London. The annual dividend is (1855) about 6 per cent.

The Hudson's Bay Company have now about 140 establishments, besides hunting expeditions and shipping, employing 25 chief factors, 28 chief traders, 152 clerks, 1200 regular servants, besides employing in occasional labor, the services of a large number of the natives; a steam vessel and five sailing vessels of from 100 to 300 tons, all armed. Their forts or stockaded positions extend from the coast of Labrador to the Pacific, and from the northern boundaries of Canada to the shores of the Arctic Ocean. At every large trading establishment there is an "Indian Hospital," from which the natives derive the greatest benefit; and several medical men are maintained by the Company at different forts. Ministers of the gospel of every denomination are encouraged and protected by the Company, and a bishop of the Church of England now presides over the diocese of Rupert's Land.

The fur trade is prosecuted in the north-western territories of the United States by an association called the North American Fur Company, of which the chief managers reside at New York. Its principal station is Michilimackinac, to which are brought all the peltries collected at the other ports of the Mississippi, Missouri, and Yellowstone Rivers, and all over the vast range of country extending thence to the Rocky Mountains. This Company is admirably organized and managed: it employs steamboats for ascending the rivers, which also penetrate with ease to regions which could formerly be explored only through the most painful efforts in barges and keel-boats, or by small parties on foot or on horseback. A great many packages of furs are now brought from that section of the country, and from what is called the Red River of the north, by way of St. Paul in Minnesota, and thence by way of river to St. Louis and other cities. It has been proposed to build a railroad from St. Paul up the valley of the Saint Croix to the valley of the Red River; and for this purpose large grants of land have been set aside sufficient to build this railroad. A road once built to this region would make a wonderful and complete revolution in the fur trade.

Fur Skins Imported.—About 5,000,000 skins of animals applicable as furs, are annually imported into

* A most interesting account of the North-west Fur Company is given by Washington Irving in his ASTORIA.

Britain. The subjoined table gives the imports and exports of fur-skins in the year 1851:

Animals.	Total imported into England.	Exported.	Consumed in England.
Racoon	525,000	525,000	None.
Beaver	60,000	12,000	48,000
Chinchilla	85,000	30,000	55,000
Bear	9,500	8,000	1,500
Fisher	11,000	11,000	None.
Fox, Red	50,000	50,000	"
" Cross	4,500	4,500	"
" Silver	1,000	1,000	"
" White	1,500	500	1,000
" Gray	20,000	18,000	2,000
Lynx	55,000	50,000	5,000
Marten	120,000	15,000	105,000
Minx	245,000	75,000	170,000
Musquash	1,000,000	150,000	850,000
Otter	17,500	17,500	None.
Seal Fur	15,000	12,500	2,500
Wolf	15,000	15,000	None.
Marten, Stone and Baum	120,000	5,000	115,000
Squirrel	3,000,000	100,000	2,900,000
Fitch	65,091	28,276	36,815
Kolinkski	53,410	200	53,210
Ermine	187,104	None.	187,104
Rabbit	120,000	"	120,000
Wolverine	1,200	1,200	None.
Skunk	1,200	1,200	"
Sea-Otter	100	100	"

Fur-Skinned Animals.—The northern and arctic regions abound with races of animals, which are thickly covered with fine hair or fur, and whose skins are very beautiful and valuable as articles of clothing. The animals that are captured for their fur, are:—The Russian Sable, *Mustela zibellina*. This rich and beautiful skin has long been esteemed one of the most valuable and useful furs that have been brought to our country. About 25,000 are annually collected in the Russian territories, of which only a small number is imported into England. The fur is brown, with some gray spots on the head. The darker varieties are the most highly valued, a single skin being frequently sold for £9, though the average value does not exceed £2 or £3. Naturalists are not agreed whether to consider the animal from which the skin is procured as a distinct species. Some are of opinion that the Russian Sable, the Stone and Pine Martens, as well as the Hudson's Bay Sable, are but one species, on which the differences of food and climate have produced some slight variations in form and color. To the furrier, however, the Russian Sable is easily distinguishable, from the length and fullness, as well as the darker color of the fur. The use of this choice variety is necessarily limited to the wealthy, on account of its scarcity. In the reign of Henry VIII., by a law which sought to regulate the expenses of the different classes, and to distinguish them by peculiarity of costume, the use of the Sable was confined to the nobility above the rank of viscount.

Marten.—The Hudson's Bay Sable (*Mustela Canadensis*).—The sable skins next in repute to the Russian are those imported by the Hudson's Bay Company, of which no less than 120,000 are annually brought into Great Britain. As the natural color of the skins is much lighter than the prevailing taste, it is the practice to dye many of them a darker color, and the furs thus treated are scarcely inferior to the natural sable. The Baum, or Pine Marten (*Mustela abietum*).—The Sables imported under this name are the produce of Europe. The animal is found in extensive forests remote from the habitations of man, and preying on birds and smaller animals. They are distinguished from the Stone Marten by the yellow color of the throat; other parts of the skin are brown. When dyed, they have a similar appearance to the best sable. The Stone Marten (*Mustela saxorum*).—This Marten is generally found in mountainous and stony places, though a frequent visitor to farm-yards and homesteads. It is generally distributed through most European countries. The under fur is a bluish-white, with the top hairs a dark brown. The throat of this variety is usually of a pure white, by which character it is generally distinguished. The French manufacturers excel in dyeing this fur, from which circumstance it is frequently called French Sable. It is also dyed in this country, the excellent qualities of the skin adapting it to a great variety of purposes to which furs are applied. The Fisher.—There are about 11,000 of these skins annually brought to this country from North America; they are larger than the sables, and the fur is longer and fuller. The tail is long, round, and full, gradually tapering to a point, and quite black; a few years since it formed the common ornament to a national cap worn by the Jew merchants of Poland, and at that time was worth from 6s. to 9s., but its present value does not exceed 6d. to 9d.

Minx.—The Minx (*Mustela vison*).—There were 245,000 skins of this little animal brought to this country in 1850 from the possessions of Hudson's Bay Company and North America. The fur resembles the sable in color, but is considerably shorter and more glossy. It is a very durable and useful fur, and is exported in large quantities to the Continent. The Ermine (*Mustela erminea*).—This animal is similar in form and habit to the common weasel of this country; but in Siberia, Russia, and Norway, from whence the skins are imported, the little animal, during winter, becomes as white as the snowy regions it inhabits, and is esteemed as the whitest fur known, though its summer dress is a dingy brown. The tail of the skin, of which the lower half is jet black, is generally introduced as an ornament to the purely white fur. It is worn on state occasions, and in the reign of Edward III. its use was restricted to the royal family. The Fitch or Polecat (*Mustela putorius*).—These skins are produced throughout Europe, and in [illegible] place of better quality than in Great Britain. The ground of the fur is a rich yellow, while the top hair is a jet black. This fur is at present very little used in Great Britain, but is much worn in America. It is very durable, but the natural smell of the fur, which is rather unpleasant, is difficult to counteract. The North American Skunk (*Mephitis Americana*).—The skins known under this name are imported by the Hudson's Bay Company. The animal from which they are taken is allied to the polecat of Europe, and, from the fetor it emits when attacked, which has been known to affect persons with sickness at 100 yards' distance, has received the soubriquet of "l'Enfan du Diable." It has a soft black fur, with two white stripes running from the head to the tail, which is short and bushy. The skins, though imported into England in small numbers, are usually re-exported to the continent of Europe. The Kolinkski (*Mustela Siberica*).—The Kolinkski or Tartar sable is of a bright yellow color, and is sometimes used for ladies' dress in its natural state, but it is more frequently dyed brown to imitate other sable, to which it bears a strong resemblance. It is remarkable for the uniformity of its color, having no spot or difference of shade in any part of the body. The tail, which is of the same color, is exclusively used for the best artists' pencils.

Muskrat.—The Musquash or Muskrat (*Fiber zibethicus*).—The animal known under this name is found in great numbers in North America, frequenting swamps and rivers, and, like the beaver, building its habitations of mud with great ingenuity. Dr. Richardson states, that it has three litters of young in the course of the summer, producing from three to seven at a litter. The animal has a peculiar smell, similar to that of musk; but it must not be mistaken for the animal from which the musk of commerce is procured, which is a native of Thibet. About 1,000,000 skins are brought into England annually; the fur resembles that of the beaver, and is used by hat manufacturers. The skins are also dyed by the furrier, and manufactured into many cheap and useful articles.

Nutria.—The Nutria, or Coypou (*Myopotamus coypus*).—This rodent quadruped is an expert swimmer, and frequents the neighborhood of water, where it lives in burrows; it is smaller than the beaver, and considerably larger than the musquash, but has a resemblance to both these animals in its natural habits, and in the qualities of its fur. Until lately this fur was very much used by hat manufacturers, and as many as 600,000 skins have been annually imported from Buenos Ayres and Chili, in which countries the animal abounds. Owing to the wars that continue to be carried on between the different States of Buenos Ayres, and the consequent withdrawal of the trappers from their accustomed occupations, the importations have fallen to 3000 skins, which are dressed and dyed as a substitute for the costly fur seal. The Hamster (*Cricetus vulgaris*).—About 100,000 of the skins of the hamster are annually collected in central Germany, where the animal abounds; it has a poor, short, and coarse fur, and is almost exclusively used for cloak linings by the Greeks; the color of the back is a reddish brown, the belly black, with a few light spots The animal is about nine inches in length, and lives under ground, forming several apartments for storing grain separate from its own hybernaculum. It is so industrious and provident, that when the peasants go "hamster nesting" in the winter, they possess themselves not only of the skin, but of the valuable store of good grain, which is said frequently to exceed two bushels. The Perwitzky.—The skin of this animal is beautifully marked like tortoise-shell, and is brought from the south-eastern territories of Asiatic Russia; the fur is short, giving little warmth, and is chiefly made into cloak linings and used by the Russians. The Beaver (*Castor Americanus*).—Beaver skins are imported by the Hudson's Bay Company in less quantities than formerly; the use of the fur in our hat manufactories has greatly diminished since the introduction of silk hats, and a considerable depreciation has taken place in their value. This beautiful fur is sometimes used for articles of dress. In order to prepare the skin for this appropriation the coarse hairs are removed, and the surface is very evenly cut by an ingenious machine, somewhat similar to that used in dressing cloth. The fur thus prepared has a beautiful appearance, not unlike the costly South Sea otter, and has the advantage of lightness, with durability and cheapness. The white wool from the under part of the beaver still obtains a high price, and is largely exported to France, where it is manufactured into ladies' bonnets. There is no doubt that the beaver was formerly an inhabitant of the British Isles, and Pennant remarks that two or three waters in the principality of Wales still bear the name of Llyn yr afange, or the Beavers' Lake.

Otter.—The Otter (*Lutra vulgaris, Lutra Canadensis*).—The large supply of otter skins used by the Russians and Chinese is derived principally from North America. The quality of the fur is, in most respects, similar to the otter of the British Isles, of which there are about 500 skins collected annually. This animal has frequently been tamed, and from its extreme agility in the water, has been rendered serviceable in catching fish for the use of its owner. The American otter is much larger in size than the European, being about five feet from the nose to the tip of the tail; a smaller variety abounds in the East Indies, the fur of which is very short. The Sea Otter (*Enalhydra marina*).—The sea otter has a very thick, soft, woolly fur, and is most highly prized by the Russians and Chinese, to whom most of the skins are exported. In its habits it is allied to the seal, but has never been met with in large numbers. It is found in the North Pacific, from Kamschatka to the Yellow Sea on the Asiatic coasts, and from Alaska to California on the American coast. The annual production is about 1000 skins, of which 100 are imported into Great Britain by the Hudson's Bay Company.

Seal (*Phoca*).—There are numerous varieties of these animals, some of which are found on the western coasts of Scotland, Ireland, and Wales. They frequent, in immense numbers, the coasts of Newfoundland, Greenland, and Labrador, and the importations into this country frequently exceed 500,000 in one season. The young seals of some species increase in size with great rapidity, and it is asserted by the seal fishers that they double their bulk in eight days. The greater portion are tanned and enameled with black varnish for ladies' shoes; other descriptions are well adapted for fur, especially the seal of the South Seas and the north-west coast of America. Before they can be used as a fur, it is necessary to remove the very coarse hairs which cover a beautifully fine and silky fur. The roots of these hairs are deeply seated in the substance of the thick pelt, while the fur is strongly attached to the upper surface of the skin. By shaving the pelt to half its natural substance the roots of the coarse hairs are cut through, and they easily fall out; but the same effect is produced by a natural process of fermentation, which ensues when the skins are properly prepared and allowed to remain together. The soft curly fur of the seal is now rarely used in its natural state, but is dyed a deep Vandyke brown, and has the appearance of the richest velvet.

The Fox.—Of foxes' skins brought into England there are many varieties; the black and silver foxes (*Vulpes fulvus*, var. *argentatus*) from the arctic regions are the most valuable. Many of the skins when highly dressed are worth from 10 to 40 guineas. They are purchased for the Russian market, being highly prized in that country. The cross and red foxes (*Vulpes fulvus*) are used by the Russians, Turks, and Greeks for cloak-linings and collars. The blue and white foxes are used in this and other countries for ladies' dresses. The white foxes (*Vulpes lagopus*) are represented by arctic voyagers as exceedingly numerous, and migrating in troops over the frozen seas at the approach of the rigorous season. They are easily caught, fifteen having been taken from one trap in four hours. The Wolverine (*Gulo luscus*).—This animal, which is only met with in North America, Norway, and Sweden, is now generally considered by zoologists as identical with the glutton of old writers. It is extremely mischievous to the fur trader, and will follow the marten-hunter's path round a line of traps extending 40 or 50 miles, merely to come at the baits. The fur is generally dark nut-brown, passing, in the depth of winter, almost into black, and is chiefly used in Germany and other northern countries for cloak-lining.

The Bear (*Ursus*).—There are several descriptions of bear-skins used by the furrier. The skin of the black bear of North America (*Ursus Americanus*) is used in this country for military purposes, for rugs, and carriage hammercloths. In Russia it is frequently manufactured for sleigh coverings, and the skin of the cub bear is highly valued for trimmings and coat-linings. That of the grizzly bear (*Ursus ferox*) is applied to similar uses. That of the white polar bear, of which the supply is very limited, is frequently made into rugs, bordered with the black and grizzly bear skins. The fur of the brown or Isabella bear (*Ursus Isabellinus*) has frequently been very fashionable in this country, when its value has been tenfold the present price. It is still considerably used for various articles of ladies' dress.

The Hare.—The wool or under fur of the European gray hare (*Lepus timidus*) is extensively used for manufacturing felt hats, both in Europe and America. A few of these are dressed for the purpose of being worn as a protection to the chest. The white hare of Russia and the polar regions (*Lepus glacialis*) was formerly much worn in its pure white state as a lining for ladies' cloaks, and as a substitute for the white fox,

but the skin being exceedingly tender, its use for this purpose has been discontinued. The white hare is also frequently dyed; it looks exceedingly rich, but is not very durable.

The Rabbit (*Lepus cuniculus*).—The English rabbit, both in its wild and domestic state, affords a very plentiful supply of useful fur. When dressed and dyed in imitation of other skins, it is manufactured into a great variety of cheap and useful articles for the middle classes. The wool has recently been manufactured into a peculiar cloth adapted for ladies' use, but by far the greater number of skins are still used for hatters' purposes. The English silver-gray rabbit was originally a breed peculiar to Lincolnshire, where great attention was paid to it; but warrens have since been formed in various parts of the country. Skins of this variety are continually exported to China and Russia, where they are much esteemed and command a comparatively high price. The Hudson's Bay rabbit is beautiful in the length and texture of its fur, but the skin is so fragile, and the fur so liable to fall off with slight wear, that it has little value as an article of dress. The white Polish rabbit is a breed peculiar to that country; its skin is often made into linings for ladies' cloaks, and being the cheapest and most useful fur for that purpose, the animal is exported in great numbers. The Squirrel (*Sciurus vulgaris*).—This attractive little animal abounds in most countries, especially in Siberia and the north of Europe. It is from the Russian dominions that we derive our principal supply of the skins of this agile creature, which exceeds in number that of any of the fur-producing animals. It is said that 15,000,000 are every year captured in Russia, our supply from thence exceeding 3,000,000 annually. The fur of the squirrel, of which there are several varieties, is light, warm, and durable; some of the lighter colors are dyed in imitation of sable. The color of the Siberian squirrels varies from a pearl-gray to a dark blue-gray; the under parts, which are white, are frequently cut out and made into cloak-linings, remarkable for their lightness; the tails are manufactured into boas for foreign markets; they are also extensively used in the manufacture of artists' pencils.

The Chinchilla (*Chinchilla lanigera*).—There are two chief varieties of chinchilla, the produce of South America: those from Lima are short in the fur, and inferior in quality to those from Buenos Ayres and Arica; the color is a silvery gray, Arica producing the darkest and best-colored skins. The general appearance of the animal places it between the squirrel and the rabbit: in its natural abodes it has the agility of the former, and resembles the rabbit in living in holes and burrows. The extreme softness and delicacy of the fur adapt it only for ladies' use. Though much admired and frequently worn in this country, it is more extensively consumed in France, Germany, and Russia.

The Racoon (*Procyon lotor*).—The racoon is an inhabitant of North America: the skins are imported into this country in immense numbers; but meeting with no demand for our home trade, are exported by merchants who purchase them at the periodical sales. They are used throughout Germany and Russia for lining shubes and coats, and, being of a durable nature and moderate in price, are esteemed among the most useful furs. The Common Badger (*Meles vulgaris*); American Badger (*Meles Labradoria*).—The skin of the European badger, from the wiry nature of its hair, is generally used for the manufacture of superior kinds of shaving brushes; but the skins exported from North America have a soft, fine fur, which renders them suitable for many purposes for which the larger furs are used.

The Cat.—In Holland, the cat (*Felis domesticus*) is bred for its fur: it is fed on fish, and carefully tended until the fur arrives at its greatest perfection; large numbers are also collected in England and many other countries. The wild cat (*Felis catus*) is much larger and longer in its fur, and is met with in extensive forests, particularly in Hungary; the color is brownish-gray, mottled, and spotted with black. The softness and durability of the fur render it very suitable for cloak-linings, and it is also made into wrappers for open carriages and railway traveling. The Canada Lynx (*Felis Canadensis*); Lynx Cat (*Felis rufa*).—The fur of the lynx is long, soft, of a grayish color, and sometimes, as in the Norway lynx, covered with brown spots; the belly is white, silky, and not unfrequently spotted with black. The change of fashion has for some time discarded it from this country; but it is dyed, prepared, and exported in considerable quantities for the American market, where it is much valued and admired. It is generally used for cloaks, linings, and facings, for which purposes it is very appropriate, being exceedingly soft and light.

Preservation of Furs.—The fur of most animals is in its greatest perfection at the approach of winter, and before the animal has attained its greatest age. It is the object of the furrier, by dyeing the inferior skins, to imitate the more perfect specimens. Some difficulty has attended this process, as the nature of the skin will admit of dyes being used only in a cold state; but the method which has been practiced in Paris and London has been so far successful that the permanence of the color in the dyed sable is frequently found of equal durability to that of skins of the natural color. Considerable excellence has been attained also in dyeing rabbit and inferior furs of those colors which are more suitable to the prevailing taste.

The first process of the fur-dresser is to prepare the skins from the raw state, and render them fit for ornamental dress. In this country, the usual practice is to trample them in closed tubs with a little salt butter, turning them over and over for several hours. By this means the skins are made into soft and pliable leather. The next process is to rub them on the flesh side over a blunt iron in order to remove loose pieces of integuments, and to reduce the substance, after which it is necessary to cleanse the fur and skin completely from the grease. For this purpose it is again trampled with saw-dust—usually that from mahogany, which being beaten out and repeated several times, conduces to render the fur glossy and clean, and to fit it for the cutter to fashion into any shape that may be necessary.

Furs are subject to injury by several species of moths, whose instincts lead them to deposit their eggs at the roots of the fine hairs of animals. Linnæus mentions five species that prey upon cloth and furs, of which *Tinea pellionella*, *T. vestionella*, and *T. topetzella* are the most destructive. No sooner is the worm hatched than it eats its way through the fur, and continues increasingly destructive until it arrives at its full growth, and forms itself a silken covering, from which in a short time it again emerges a perfect moth. Another cause of the decay of furs is the moisture to which they are frequently exposed; the delicate structure of the fine under-fur can not be preserved when any dampness is allowed to remain in the skin. This fact is well known to the leather manufacturer, who, having wetted his skins, allows them to remain in a damp cellar for a few days for the purpose of removing the hair, which is pulled out with the greatest facility after remaining only one week in a moist condition. It follows from these observations, that to preserve furs it is necessary to keep them dry, and to protect them from moths; if exposed to damp or rain, they must be dried at a moderate distance from the fire; and when put by for the summer should be combed and beaten with a small cane, and very carefully secured in a dry brown paper or box into which moths can not enter. During the summer they should be examined once a month, to be again beaten and aired, if the situation in which they have been placed be at all damp. With

these precautions, the most valuable furs may be preserved uninjured for many years.

Manufacture of Furs for Felting Purposes.—In the manufacturing of furs for the making of hats, the principal kinds of skins used are the hare, rabbit, beaver, and nutria. All these kinds of skins, in the northern parts of Europe, as well as in America, are divided by furriers into two distinct sorts, viz., the *seasoned* and *unseasoned* skins. The former are those which are taken off the animal in winter, when the fur is at its full growth, and in the highest state of perfection as to fineness; the latter are those obtained in spring, summer, and autumn. The fur in the unseasoned skins is short, coarse, and hairy, and is generally not worth more than a third of the value of furs cut off the best-seasoned skins. The mode of manufacturing both descriptions is, however, the same; of which we shall now endeavor to give a brief account.

Hare-skins.—The first mechanical operation performed on the hare-skin, is to open it with a knife down between the middle of the forelegs, taking great care that the skin be not torn; for there is a considerable waste of the fur if this precaution be not attended to. The skin must now be rubbed with what is called a *rake*, which resembles a common dinner-knife, with teeth like a saw. This is used for the purpose clearing away all impurities and dried blood which may happen to be upon the skin. This clearing is of very great importance; for the smallest particle of dirt or blood will greatly injure the fur for felting purposes. The operation requires to be carefully and judiciously performed for another reason. If the workman be not attentive, he will tear up, along with the bloody and dirty parts, a considerable part of the good clean fur, and thus great loss will be incurred.

Hare-skins, after being thus opened and cleaned, must be damped on the pelt side with a little water, and placed under a heavy weight, pelt to pelt, to press them, so that all ridges and inequalities in the pelt may be removed. The skins are now fit for what is called *shearing*. Their outsides are all covered over with a kind of hair, which possesses no felting properties whatever; and this must be taken off with hand shears. These are of two kinds; the one the common shears used for clipping the wool off sheep; the other kind resembles the cutting shears of tailors, only the bowl is made equally large on both sides for the admission of all the fingers. Some furriers prefer one kind of shears, and some another. Those like tailors' shears make the neatest work when skillfully used; but the others require less time for their management. The shearing of the skins forms a very important part of their manufacture; for if one cuts too far down, he will seriously destroy both quality and quantity of the fur, as well as disfigure its appearance. On this account many furriers confine a part of their work-people to this branch of the business alone; for the greater part of the profits of a master depends upon the manner in which the shearing process is performed.

After a hare-skin has been submitted to the process of shearing, it presents an appearance altogether different from what it did before. A novice would not know it to be the same skin. Previously, it was of a uniform brown color; now, it is down the whole of the back of a most beautiful jet black, which gradually becomes fainter as it approaches the sides of the skin. After it undergoes the process of *rounding*, which consists in taking off all the irregular or angular pieces of skin, and making the pelt smooth and even, it is then fit for the cutting-board.

The cutting-boards of furriers are made of the willow-tree, and are commonly about twenty inches wide, and from two to three feet broad. They ought to be moistened with water at short intervals, when used, to make the wood soft, and prevent the edge of the cutting-knife from being taken off too soon. These knives are sometimes made of common sheet-iron, but more frequently of steel, which are to be preferred to the former, on account of keeping their edge longer, and being much lighter for the hand. A fine edge will not cut the fur off the skins; it must be a rough edge, which is obtained from rubbing the knife about every two or three minutes upon a piece of common free-stone, of not too fine a grain. These knives are from five to six inches in length and three in breadth, and resemble in some measure those knives used by grocers for the cutting up of cheeses. The skins are all, before cutting, split down the middle of the back into halves. The cutting then commences at the head or cheeks of the skin, and always in the line of direction in which the fur lies. The cutting-knife is run quickly backward and forward against the first joint of the finger across the skin: while at every two or three strokes the hand must be lifted up, to gather in the fur that has been cut, and preserve it in as fleecy a form as possible. Care must be taken against *chopping* the fur; because, when this takes place, the felting principle in all furs is considerably weakened, and in some entirely destroyed.

An important point in the getting up of furs for sale is, to keep them in as unbroken or fleecy consistency as possible. This, abstractly considered, is of no consequence to their felting power; but the practice of the trade as to this matter has arisen from a desire to keep the different kinds of fur from being mixed with one another, and thereby in some degree to prevent adulteration. From this cause the above mode of cutting the hare-skin has been long since much improved by the use of instruments made of tin, against which the cutting-knives run, and which are so contrived as to gather in the whole fur off the largest skin with as much ease as the fur of a calf skin could be gathered by the hand when the knife runs against the fingers. This simple invention preserves all the most valuable parts of the skin in one lump or fleece, and enables the workman to sort the fur with more ease and readiness than before.

Rabbit-skins.—The rabbit-skin is cut in precisely the same manner as that of the hare, only there is a considerable difference in the mode of dressing or preparing the former. The rabbit-skin is covered over on the pelt side with large quantities of grease or fat, from which the hare-skin is comparatively free. This must be removed when the rabbit-skin is first opened. The knife used in opening the skin must be pressed down upon that part of the pelt where the fatty substance is, till it gets beneath the cuticle on which it rests, when the whole of the greasy matter may be removed, and a little whitening rubbed on the spot. If this operation be not well attended to, the grease will get mixed with the fur, and damage it considerably. The rabbit, like the hare skin, is covered over with hair upon the top of the fur; but this hair can not be taken off by shearing, as in the case of the former, but must be removed by *pulling* it out. This is done with a short knife about three inches long, which is held so as to grasp the hair between the thumb and it, which is secured from injury by having a piece of buckskin leather placed over it. The hand of the workman ought to fall lightly upon the skin, otherwise the hair will be cut and the fur pulled out also, which will deteriorate its quality and diminish its quantity very considerably.

Beaver-skins.—The skin of the beaver is manufactured in the same way as that of the rabbit. The fat, however, in the former is much greater in quantity and more firmly imbedded in the pelt than in the latter; and of course greater care and trouble are required to remove it. Fullers' earth mixed with whitening is used to imbibe the fatty particles. The pulling the outside hair off is of great importance. The cutting of the beaver has been for some years performed by machines; the thickness and regularity in the pelt affording facilities for this mode of

operation, which the generality of other skins do not.

The fur of the beaver is sorted into three or four different kinds; but that which is cut off the cheek of the skin bears the highest price. White beaver is comparatively scarce, and is much esteemed for fine drab hats.

Nutria-skins.—These are dressed like rabbit-skins, only the hair on the outside of the skins is much stronger than in the rabbit, and requires a sharper knife and greater strength to move it. Nutria-skins are full of fat; and before they are submitted to the pulling process, they must be well washed with soap and boiling water. The skin is laid with the pelt downward, and well scrubbed on the fur side with a brush, till the grease is entirely removed. They must then be well washed in cold spring water, which is extracted from among the fur by a piece of wood made for the purpose. After this they are placed before a stove or hot fire to dry, and are then fit to go through the other manufacturing processes.

Both the beaver and nutria furs, before they are used for hat purposes, must go through the operation of *blowing*. This is done for the purpose of clearing them of those short black hairs which remain among the fur after it is separated from the pelt. A blowing machine consists principally of a cylinder, into which the fur is placed; and by means of a fly-wheel, situated within it, the stuff is thrown up, and the hairs, by reason of their greator specific gravity, fall to the bottom, and leave all the fine fur upon the top. Hare and rabbit furs are also partially used in a blown state for the nap or outside covering of hats.

Though the hare, rabbit, beaver, and nutria furs are the staple articles of hat manufacture, yet there are other furs occasionally used in their stead, or in conjunction with them. These are the furs of the otter, the seal, musquash, and the mole. The otter is fully as fine as the beaver itself; but the principal objection hatters have to its use is, that it does not retain a good black, but acquires a brown or coppery shade. The seal is not so fine as the otter. It finishes dull upon a hat, and, in consequence, is not much used at present. Musquash is a useful fur. The mole is the only skin known to furriers which for felting purposes needs no preparatory dressing before cutting. Its fur is alike fine throughout. But notwithstanding its fineness, it is so very short as to prevent its being extensively used in the hat manufacture.

Within the last century many attempts have been made to apply machinery to the cutting of the various kinds of fur, but, with the exception of the beaver fur, these attempts have hitherto been but partially successful. The great difficulties in the way of machinery for cutting purposes are, the unevenness on the surface, and the inequalities in the thickness of the pelt in different skins. The smallest particles of the fleshy part of the skin getting among the fur will injure it; so much so, that a piece of pelt not larger than a pin's head will destroy the finest hat. This circumstance has greatly increased the difficulty of bringing machinery to bear upon the fur trade. There are, however, at this moment some machines employed in the cutting of hare and rabbit-skins in England; but until they undergo numerous improvements, they are not likely, from the obstacles above adverted to, to realize the expectations of gain at first entertained by those employing them, either in the saving of labor, or in the superior manner in which the fur is manufactured.

Many experiments have also been made to dispense with the usual processes of cutting the different kinds of fur with knives, by applying chemical substances to the pelts, so as to loosen the roots of the fur, and make it leave the pelt upon a slight application of force. Lime has often been tried for this purpose, by using it in the same manner as skinners do in the management of sheep-skins. Some furriers have also tried a partial state of putrefaction; but this, as well as the lime preparation, has proved abortive. The fur obtained off different kinds of skins by such means looks in every respect as well to the eye as if it had been manufactured in the usual manner; but the felting principle is by all such means entirely destroyed.

Carroted Fur.—Sulphuric acid has the property of increasing the felting power of most kinds of fur. When this is applied the fur is called *carroted*, from the color which the acid gives it. The most common kind of fur submitted to this process is that belonging to the rabbit-skin; and it is generally employed in small quantities for the manufacture of all fine stuff hats. Carroted coney wool is made in the following manner:—Mix one part of sulphuric acid with two parts of pure spring water, in a dish of stone-ware; then take and wet the rabbit-skin with a brush all over, making the liquid penetrate as near to the bottom of the fur as possible; care being used, in this process, not to touch the skin with the fingers, lest they be burned, but with a piece of iron hoop doubled so as to resemble a pair of tongs. When the skins are thus wet, they must be placed over a very hot fire to dry; but they must not be placed too near, lest they take fire, which they are very apt to do from the application of the acid. Instead of drying them before the fire in this manner, some run a hatter's finishing iron, heated to a certain degree, over the skins, and allow them to dry gradually in the sun. This is found to be a very good plan. When the skins are dry they ought to be gently beaten with a rod, and moistened on the pelt side with water, previous to their being put under the pressing stone. They are then cut in the usual manner. Skins prepared in this way attract a great quantity of moisture from the atmosphere; and carroted fur always feels to the hand as if partially wet.

The fur off the rabbit-skin improves in its felting capabilities by being kept a moderate length of time after being taken off the skin; but hare fur does not. Great attention ought to be paid by hat manufacturers, who keep considerable stocks of fur on hand, as to the place in which they are deposited. If it be too damp, they will rot; if too dry, they will diminish in weight; therefore a moderately dry and cool place ought to be chosen. The great enemy to all furs is the common moth. This destroys the felting principle. Whenever the slightest appearance in the fur indicates the secure lodgment of this little creature, it ought immediately to be used; or, if this can not be done, it should be taken out of the paper bags, and broken all over with a small switch rod, or, what will answer the purpose still better, a hatter's bow. The same rules apply to the keeping of skins in good condition as to fur. The situation ought to be cool, dry, and well aired. They will seldom keep longer than twelve or eighteen months without running great risk of suffering injury from the moth or black beetle. Too many ought not to be heaped together, and particularly if they be rabbit-skins, because the fat or grease about these skins will get heated, run among the fur, and become of such an acrid nature as to corrode the very pelt itself. It was formerly the practice to keep hare and rabbit skins a long time, under the idea that the fur upon them will increase in length from the moisture left in the pelt. This is an entirely erroneous opinion. Any one who will make the experiment will find that the amount of fur obtained off any given quantity of skins is much greater in weight when manufactured immediately after they are taken off the animal, than after having been kept for six or twelve months.

The qualities of all kinds of furs differ very considerably, from climate and other local circumstances. The best rabbit fur, used for the manufacture of the

finest London hats, is commonly considered as the produce of the east coast of England, particularly from Lincolnshire to Berwick inclusively. The rabbit fur is always stronger in the felting principle when got off rabbits bred on the sea-coast, than in those found in inland places, however favorable in other respects these places may be for the rearing of the animals. The skins along the tract of coast already mentioned seem all of the same size and quality. North of Berwick the rabbit-skin becomes smaller, and the fur weaker and shorter; and the further north, along the coast, the more inferior it is found. Hare fur in Great Britain is superior, for hat purposes, to any in the world.

The skins and furs imported by or for our manufacturers are more varied and more numerous, perhaps, than would generally be supposed. When we consider, too, how many countries must be ransacked to produce this variety—the beaver, the bear, the ermine, the otter, the racoon, the chinchilla, the wolf, the fox, the musquash, the sable, the marten, the squirrel, the fitch, the mink, the seal, and others—it will be plain that the commerce in furs must be considerable. In 1850, the squirrel furs imported exceeded 2,000,000; the musquash, 1,000,000; the racoon, 500,000; while the rest made up the total number to nearly 5,000,000—not hides for tanning, be it remembered, but skins imported for the sake of the fur. The beauty of a fur does, most unquestionably, in the eyes of a purchaser, depend largely on the price he pays for it; and this price depends on the scarcity in the supply. Why else should a black-and-silver fox fur command a price of 30 or 40 guineas, or a sea-otter skin still more? It is true that fashion also tends to determine the price; and it seems that the different tastes of different countries curiously illustrate this. Thus, the black-and-silver fox skins are mostly purchased for the Russians and Chinese; the red-fox skins are in demand in the East for cloak linings and dress trimmings; the otter skin is used in the same regions for caps and collars; the beaver fur, now getting out of use for hats, is being made available as a beautiful kind of cloth for dresses; the lynx, now out of fashion in England, is a favorite in America. The wolf yields a coarse fur, which the Russians employ for cloaks and coats. The sable has long been a favorite in England, and when dark in color commands a high price; the minx (the choicest specimens) is said to be now in high favor in Paris; the musquash is largely used in England, it being made to do duty for more costly furs by a little "doctoring;" the fur of the black bear is chiefly appropriated by military men, for caps, holsters, rugs, hammer-cloths, etc.; the sea-otter fur is a royal fur in China, and a noble fur in Russia, and hence commands high prices in those countries.

Most of the furs named in the above paragraph are procured from North America, through the medium of the Hudson's Bay Company; but there are some European furs which command an extravagant price. The Russian sable, for instance, will sometimes sell for as much as 10 guineas a skin; and so many of these are employed to form a lining for a cloak, that such a lining has not unfrequently involved a cost of 1000 guineas. The corporation of London display their sable-furred gowns or robes on official occasions. The fur called French sable is really that of the stone marten, which the French show much skill in dyeing. The ermine or minever, from Russia and Sweden, is one of the most remarkable of furs, naturally as well as socially. Its beautiful and delicate white can only be insured by killing the animal in winter, when all is white except the tip of the tail. In social dignities, the ermine, perhaps, takes the lead of all furs; for, not only in many countries of the Continent, but in less despotic England, there is a sumptuary law or custom respecting the ermine; the sovereign, the royal family, the peers, the peeresses, and the judges, all wear ermine on state occasions; and this ermine is 'powdered' (as the heralds term it) with small black spots or stripes of some other fur; the number and arrangement of the spots and stripes being indicative of the rank of the wearer, and no deviation therefrom being permitted. For the squirrel fur, which is used in larger quantities in England than any other, we are chiefly indebted to Russia. It is cheaper than any other equal to it in appearance; and some of the white portions are admired for their beauty. The fitch, with its strong and durable fibres, has latterly been passing out of favor. The lamb-skin, at a tender age, has all the beauty of fur; and some of the foreign specimens command a high price. The cat-skin is now used largely in England as a fur, greatly to the danger of the domestic "puss" in general. The rabbit is also an extensively used fur; and the white varieties are made to do duty as substitutes for ermine. The little chinchilla yields a soft and delicate fur, much used in England and France. Angora goat-skin was at one time worn extensively as a fur; but it is now more customary to remove the hair or wool, and manufacture it into cloth. Seal-skins, when to be worn as furs, have the long coarse hair removed, and the rich silky down which lies beneath it is dyed of a brownish color.

When these various furs are gathered together from every quarter of the globe, and consigned to the hands of the furriers, they undergo certain processes, which transform them from quadrupeds' attire into bipeds' attire. The "pelt," or under surface, of each fur has to be converted into a kind of leather, by greasing, and pressing, and scraping, and other processes; and the hairy or downy surface has to be dyed and prepared in various ways, to develop all the beauty which naturally belongs to it, and sometimes to impart extraneous beauty to it.

When the light flocculent down from birds is employed as a fur, it requires much patient labor to adjust all the little fibres to their places, since there is no natural "pelt" or skin attached to the down when removed from the animal. As instances of this kind of work, we may adduce the Persian muff and boa lately made from the down of a bird called the egret: their value was 160 guineas. There had been only three similar sets previously made—for the Empress of Russia, the Princess Adelaide and the Duchess de Berrie.

ACTUAL IMPORT INTO LONDON OF FURS AND SKINS, FROM SEPTEMBER 1, 1850, TO SEPTEMBER 1, 1851—COMPRISING THE ENTIRE COLLECTION OF THE HUDSON'S BAY COMPANY, AND THE ENTIRE COLLECTION FROM CANADA AND THE UNITED STATES (EXCEPT SHIPMENTS MADE DIRECT FROM THE UNITED STATES TO GERMANY, AND SMALL LOTS USED FOR HOME CONSUMPTION, WHICH CAN NOT BE ASCERTAINED). THESE ENTIRE IMPORTS WERE SOLD AT AUCTION IN LONDON, IN JANUARY, MARCH, AND SEPTEMBER, 1851.

Description of skins.	Hudson's Bay Company.	Canada and United States, chiefly United States.	Total.
Beaver	49,635	1,294	50,929
Muskrat	194,592	894,200	1,088,792
Otter	8,216	3,968	12,884
Fisher	6,297	5,016	11,313
Marten	64,857	21,150	85,507
Minx	21,140	210,120	231,260
Lynx	20,338	5,248	25,581
Silver Fox	527	376	903
Cross "	1,980	1,681	3,641
Red "	5,561	34,661	40,222
Gray "	none.	18,450	18,450
White "	899	577	1,476
Kitt "	1,668	none.	1,668
Black Bear	4,826	3,532	8,358
Brown "	1,802	15	1,317
Racoon	1,808	551,246	553,054
Wolf	9,745	20	9,765
Wolverine	1,429	8	1,491
Wild cat	340	10,007	10,347

The *North American Fur Company*, the leading directors of which reside in the city of New York, have

long enjoyed the principal part of the Indian trade of the great lakes and the upper Mississippi. But, with the exception of the muskrat, most of the fur-clad animals are exterminated in the vicinity of the lakes. The skins of racoons are of little value; and the beaver is now scarce on this side of the Rocky Mountains.

AN ACCOUNT OF THE QUANTITIES OF THE PRINCIPAL VARIETIES OF FUR IMPORTED INTO GREAT BRITAIN IN 1851, SPECIFYING THE COUNTRIES WHENCE THEY WERE BROUGHT, AND THE QUANTITY FURNISHED BY EACH COUNTRY.

Countries.	Beaver.	Ermine.	Fitch.	Goat.	Kid.	Lamb.	Marten & Marten tails.	Mink.	Musquash.	Racoon.	Seal.	Sheep.	Squirrel.
	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
Russia	....	138,918	11,570	....	....	5	10,510	....	....	....	12,769	114	2,848,628
Norway	....	....	....	14,148	481	....	32	....	....	....	5,888	806	....
Denmark	....	....	....	15	....	459	....	....	....	2,005	89,601	15	....
Hanseatic Towns.	43	91,430	55,234	15,737	175	53,695	96,616	5,955	40,593	2,902	87,992	1,718	1,729,654
Holland	....	....	3,784	161,379	506	500	....	....	....	....	7,223	3,890	....
Belgium	....	....	7,988	7,988	16,019	....	1,905	....	....	....	48	28	....
France	....	....	7,378	85,478	517,752	54,888	15,805	141	13,865	....	....	20,230	48
Italy	....	....	....	200	27,194	1,272,868	....	....	....	....	....	2,824	....
Turkish Dominions	1	....	....	88	2,197	158,214	2,040	....	....	....	....	16,542	....
Morocco	....	....	....	7,850	....	....	....	....	....	....	....	18,238	....
British S. Africa	....	....	....	118,556	....	....	....	....	....	....	4,468	226,577	....
Brit Ter. in E. I.	....	....	....	334,081	52,430	961	....	....	....	....	....	824,574	4
British N. Amer.	59,692	819	....	23	....	2	86,249	25,822	828,821	2,754	198,669	....	4,141
United States	184	18	....	59,759	....	....	7,496	160,408	1,138,979	457,671	1,928	....	....
Rio de la Plata	....	....	....	....	....	55,474	....	....	....	1	12,008	75,238	....
Greenland and Davis's Straits	....	....	....	....	....	....	....	....	....	....	97,825	....	....
Other parts	89	....	....	35,924	....	4,048	116	8	....	7	2,117	45,915	144
Total	59,959	230,480	65,899	789,955	616,704	1,600,109	220,969	191,729	1,541,268	465,840	769,756	786,204	4,582,619

The Fur Trade in Minnesota.—Four or five years ago the fur trade was the paramount commercial and industrial interest of the Territory. Two or three years further back, and it was not only the paramount but the sole business interest. The population of the Territory was composed almost entirely of its employers and attachés. St. Paul derived its whole importance (a small importance then) from being the dépôt of the Winnebago and Chippewa outfits; while Mendota, the seat of the Sioux outfit, gave laws to the immense region occupied by the Dakotas and chains of trading-posts as far as Lac qui Parle on the Minnesota; and Pembina, on the Red River, held the whole country like a dependent child at the feet of the magnates of the principal agencies of Pierre Choteau, Jr., & Co. The profits of the fur trade even then had begun to decline. The influx of a white population consequent upon the establishment of a Territorial government—the increase of competition in the Indian trade, co curring with the gradual decrease of its products, and causes that lay beyond these, and that have been gradually but surely promoting the decline of the western fur trade in general—all contributed to weaken the efficiency of the Fur Company's organization in our Territory, and to render it undesirable to maintain its expensive establishments any longer than was sufficient for settling its affairs. It has accordingly had no practical existence since the consummation of the Sioux treaty in 1852, from which the traders received a parting token of several hundred thousand dollars in payment of the accumulated back debts of some thirty years. Since then the trade has been carried on entirely by private individuals, foremost among whom, however, are some of the old traders. Two houses alone, Messrs. Forbes & Kittson, and Messrs. Culver & Farrington, are connected at this time with the fur trade in this city. The disorganization of the Indian trade on the Minnesota River, and the diversion of the Indians from hunting, by the pernicious system of annuities, has vastly diminished the productiveness of the fur trade on the Minnesota River.

The trade is almost entirely limited at present to the Pembina or Red River regions, and around the head waters of the Mississippi. The buffalo robes come almost entirely from this source, the buffalo ranges being restricted to the region north of the Cheyenne, and west of the James River. The Minnesota River country has fallen off in buffaloes very considerably—the whole receipts for export from that region not amounting to more than 1200 robes. This does not include, however, the large numbers reserved for home consumption. The table given below, for which we are indebted to N. W. Kittson, Esq., exhibits the total exports of furs from St. Paul for the present year: 64,292 rats, $11,572 56; 8276 minx, $18,621; 1428 marten, $3,570; 1045 fishers, $4702 50; 876 red foxes, $1095; 3400 coons, $2550; 10 wolverines, $25; 364 badgers, $91; 2,082 wolves, $3048; 405 otters, $1417 50; 386 beaver (pounds), $882; 2542 kit foxes, $1271; 610 bear-skins, $6700; 20 cross fox, $100; 8 silver fox, $400; 50 lynx, $125; 7500 robes, $41,200. Total, $96,750 50. A notable feature of the fur trade for the several years past, is the gradual but sure decline of its productiveness—corresponding with a growing demand in Europe and our own country for furs. Each of these causes has assisted the other to enhance the price of furs—and they have grown expensive—and all these causes concurred to advance prices last year to a sum they never before reached in the American market. Nevertheless it will not do to calculate too surely on last year's prices for the products of the present year, as the consumption of furs is, after all, entirely dependent on the evanescent caprices of fashion.

Before closing this article, we will devote a few lines to the character of the men engaged in the fur trade. The character of the hunters and trappers engaged in the fur trade throughout the extreme northwest is peculiar and original. The trade is not carried on now, as in former times, by means of batteaux and canoes, which, under the old French and English systems, enlivened the rivers and lakes of our old Northwestern Territory. The fur-bearing animals have been driven from a great portion of their borders by the advance of emigration, and their shores have become, to a great extent, the sites of substantial farm-houses and prosperous settlements. The canoe has given place to the steamboat, the trading-post to the city. The great bulk of the trade has been transferred to the region of the mountains, whose wild recesses contain no lakes where they can disport their canoes, no streams which can float their furs to market. These traders and trappers transport their goods or furs upon packhorses, or carry them on their own backs to a navigable stream. They move from place to place on horseback, sometimes conveying their traps upon their shoulders through deep ravines, up steep precipices, inaccessible to the horse, in search of places which contain their favorite game. The life of the trapper becomes a scene of toil and privation, and yet of passionate excitement. His views are exaggerated, his habits unsettled, his sentiments, generally, noble and generous, like those of a sailor, for the causes which act upon him are similar in their character; and, like the sailor, he is nowhere contented except when lead-

ing his life of danger and excitement. Such is the life and character of the active agents of the fur trade, the sturdy hunters and trappers of the north-west. See HUNT'S *Mer. Mag.*, iii., 185 (J. H. LANMAN), iii., 252 (H. MURRAY), xiv., 532 (W. STURGIS); *Journal of Science*, xxv., 311; *Edin. Rev.*, i., 142.

Fur-skin Dressing. Fur-skins are usually dressed by placing them in their dried state in tubs, where they undergo a treading operation with men's feet, until they are sufficiently soft and bend easily. The skins, if large, are sewn up, the fur being turned inward; but if small skins, such as ermine, are being dressed, they require no sewing. This sewing is preparatory to the greasing with butter or lard, and is intended to protect the fur from the grease, and to promote the softening in the succeeding treading operation. The skins are next wetted, and their flesh is removed; or they are fleshed and then hung up to dry. They are again subjected to treading in tubs containing sawdust, and afterward in tubs containing plaster of Paris, or whitening, sprinkled between the skins. They are then beaten with a stick and combed: when the dressing is completed. M. Pierre Thirion proposes, in his patent of June, 1845, to soften the skins, not by treading, but by beating-stocks, of a construction like the falling-mill. They are next sewn up, and again fulled in a strong vessel, where they are forced upward by the beaters, turned over and over, and thus speedily softened. They are now fleshed, and then returned to the beating-stocks, and mahogany or other sawdust is sprinkled upon the fur, before the beating is renewed. They are next placed in a heated barrel, furnished within with radial pins for turning the goods over and over, in order that they may be acted upon by various dry substances, which are thrown into the barrel, and absorb the fat from the skins. Through the hollow shaft of the barrel, steam is introduced, which heats the skins, softening the fat, which is then absorbed by sand, flour, or any other desiccative powder. It is proper to take the skins out of the barrel from time to time to comb them. Such as have been sufficiently acted upon may then be set aside. They are lastly freed from the dust by being subjected to a grated cylinder in a state of rotation, and then combed by hand.

Fusel Oil is the German name of the offensive smelling oil which exists in alcohol, as distilled from the fermented infusions of malt, and corn meal of all kinds, as also from the fermented wash of potatoes, and of beets, etc. A like oil occurs in the alcohol distilled from the fermented must of grapes, and the juices of many sweet fruits. This oil is not, however, identical from these several sources; as may indeed be inferred from the diversity in the flavors of the different liquors. But they all agree in being somewhat less volatile than water, and therefore make their appearance chiefly in the spirits toward the end of the distillation process. It is to the presence of this oil that the milkiness of the last, and also sometimes of the first, portions of the spirit that come over, called feints, owe their opalescence and their penetrating odor. When the milky fluid is redistilled, alcohol and water first pass over with very little oil, but if the heat of the still be moderate, the oil may be made a residuum, and obtained in a tolerably concentrated state.

Fustian (Ger. *Barchent*; Du. *Fustein*; Fr. *Futaine*; It. *Fustagno, Frustagno*; Sp. *Fustan*; Rus. *Bumaseа*; Pol. *Barchan*) is a species of coarse, thick tweeled cotton, and is generally dyed of an olive, leaden, or other dark color. Besides the common fustian, which is known by the name of pillow (probably pilaw), the cotton stuffs called corduroy, velverett, velveteen, thicksett, used for men's wearing apparel, belong to the same fabric. The commonest kind is merely a tweel of four, or sometimes five leaves, of a very close stout texture, and very narrow, seldom exceeding 17 or 18 inches in breadth. It is cut from the loom in half pieces, or ends, as they are usually termed, about 35 yards long, and after undergoing the subsequent operations of dyeing, dressing, and folding, is ready for the market.

Of velvet, there are properly only two kinds, that with a plain, and that with a tweeled, or, as it is here called, a Genoa ground, or back. When the material is silk, it is called velvet; when cotton, velveteen; and this is the sole difference. In the same way a common tweeled cloth, when composed of silk is called satin; when of cotton, fustian or jean; of woolen, plaiding, serge, or kerseymere; and in the linen trade is distinguished by a variety of names according to the quality or fineness, or the place where the article is manufactured.

Fustic (Ger. *Gelbholz, Fustic*; Du. *Geelhout*; Fr. *Bois jaune de Brésil*; It. *Legno giallo de Brasilio*; Sp. *Palo del Brasilamarillo*), the wood of a species of mulberry (*Morus tinctoria*), growing in most parts of South America, in the United States, and the West India Islands.

It is a large and handsome tree; and the timber, though, like most other dye-woods, brittle, or, at least, easily splintered, is hard and strong. It is very extensively used as an ingredient in the dyeing of yellow, and is largely imported for that purpose. Of 10,800 tons of fustic imported into Great Britain in 1850, 3395 tons were brought from New Granada, 2076 from the British West Indies, 1639 from Cuba, 945 from the United States, 750 from Mexico, and 669 from Brazil. Fustic from Cuba fetches full 30 per cent. more in the London market than that of Jamaica or Colombia. At present the price of the former varies from £9 to £9 10s. a ton, while the latter varies from £5 5s. to £6 a ton. The consumption amounts to about 6,000 tons a year. The duty on fustic was abolished in 1845.

Zante, or *young* fustic, is really a species of sumach (*Rhus cotinus*, Lin.), and is quite distinct from the *Morus tinctoria*, or *old* fustic; the latter being a large American tree, while the former is a small European shrub. It grows in Italy and the south of France, but is principally exported from the Ionian Islands and Patras in the Morea. It imparts a beautiful bright yellow dye to cottons, etc., which, when proper mordants are used, is very permanent. It is conveniently stowed among a cargo of dry goods, as it may be cut into pieces of any length without injury. Only a small quantity of this species of sumach is imported. Its price fluctuates considerably.—*Trees of America.*

There are several kinds of fustic-trees which might be formed into a peculiar group, from their baccate seeds. The tree fustic of dyers (*Morus tinctoria*) is a large tree 60 feet in height, bearing sweet, edible fruit about the size of a nutmeg, and is a native of Central America, Yucatan, Cuba, Jamaica, etc. The whole plant abounds in a slightly glutinous milk, of a sulphureous color. The wood is yellow, and is much used in dyeing, for which purpose it is chiefly imported into Europe and the United States, under the name of *fustic-wood*. There is a variety of this species, called *Bastard Fustic*, a tree smaller in stature, and less valuable as a dye, and is found from Yucatan to the southern parts of Florida and the Bahama Islands.—BROWNE'S *Trees of America*, p. 460.

Futtocks, in a ship, the timbers raised over the keel, or the encompassing timbers which form her breadth and capacity. *Futtock plates* are iron plates crossing the sides of the top-rim perpendicularly. The dead eyes of the topmast rigging are fitted to their upper ends, and the futtock shrouds to their lower ends.—DANA'S *Seaman's Manual.*

G.

Gaff, in nautical language, a spar to which the head of a fore-and-aft sail is bent. *Gaff-topsail*, a small sail set over a gaff, which serves to spread the foot of the sail.

Gage, a pledge or pawn given by way of security. II. Gage, a challenge to combat; that is, a gauntlet, glove, cap, or the like, cast on the ground by the challenger, and taken up by the accepter of the challenge. III. Gage, in nautical language, the depth of water a vessel draws, *i. e.*, the number of feet she sinks in the water. In a different sense, when a ship is to windward of another, she is said to have the *weather-gage* of such vessel. IV. Gage, among letter-founders, a piece of hard wood variously notched, used to adjust the dimensions, slopes, etc., of the different sorts of letters. In joinery it denotes an instrument to strike a line parallel to the straight side of a board. *Sliding-gage*, among mathematical instrument-makers, a tool for measuring and setting off distances. V. The term *gage*, implying *measure*, as of depth, height, force, quantity, etc., is frequently used in composition to denote particular kinds of instruments; as, sea-gage, tide-gage, wind-gage, rain-gage, etc.

Galacz, or **Galatz**, a town of Moldavia, on the left bank of the Danube, between the confluence of the Sereth and Pruth with that river. Lat. 45° 25′ N.; long. 28° E. It is ill-built and dirty, though in these respects it has latterly been much improved. Population supposed to amount to 25,000. The trade of the town is chiefly carried on by Greek merchants; but, within the last few years, various English and other foreigners have formed establishments in it. Though at a considerable distance inland, Galacz is in the best position for becoming the port of the Danube. At present, however, it is little more than the port of Moldavia, Ibralla, or Brahilow, about 12 miles further inland, being the port of Wallachia. The commercial importance of these ports, and indeed of the Danube, dates only from the treaty of Adrianople in 1829. Previous to that epoch the trade of the principalities labored under the most oppressive restrictions, and was principally carried on by land. But all articles of native produce may now be freely exported either by sea or land, on paying moderate duties; and the duties on imports are also, for the most part, comparatively moderate. The probability, indeed, seems to be that Galacz, "the Alexandria," as it has been called, "of the Scythian Nile," will at no very distant period become a first-rate emporium. The rescuing of Moldavia and Wallachia from Turkish misgovernment has been of signal advantage; and it is to be hoped that they may never again be subjected to its paralyzing influence. The establishment of a regular intercourse by means of steam packets between Vienna and Galacz, and thence by the Black Sea, with Constantinople and Trebizond, has already done a great deal, and will every day do more, to introduce a spirit of improvement into the vast and fertile, but long neglected, countries traversed by the Danube in the lower part of its course. The capacities of this great river as a commercial highway are certainly unequaled by those of any other European stream; and their full development would be of immensurable advantage, not merely to the countries on its banks, but to all commercial nations.

Exports and Imports.—Moldavia and Wallachia are very productive provinces, being fruitful both of corn and cattle. The high prices of corn in France, Italy, and England, in 1846 and 1847, gave an extraordinary stimulus to the export trade of Galacz and Ibraila. The exports of wheat from both ports, in 1847, amounted to no fewer than 570,978 quarters, worth on board ship, £875,603; the exports of Indian corn during the same years, were 937,720 quarters, worth £1,172,150; and among the other exports were about 320,000 quarters of barley, and 42,000 cwt. of tallow, with a variety of inferior articles. The total value of the exports from the two ports during the above year, amounted to the very large sum of £2,368,472, of which about two thirds were from Ibralla. The quality of the wheat, which is partly hard and partly soft, was, a few years ago, very inferior, being generally damp, and having an earthy smell from its being kept in pits dug in the ground. Latterly, however, it has been much improved; and the finer samples now fetch, in Marseilles, Genoa, and Leghorn, within from 3 to 4 per cent. of the price of Odessa wheat. In 1852, we imported 80,140 quarters of Wallachian and Moldavian wheat, with no fewer than 626,714 do. Indian corn. Both provinces fatten large herds of cattle, particularly Moldavia, which annually sends great numbers to the Austrian States. Tallow may be had in large quantities, its annual produce, in Wallachia only, being estimated at about 3,000,000 okes, or 8,500,000 pounds. Until within these few years, the tallow shipped at Galacz was burdened with a heavy export duty, which checked its sale, and consequently, also, its growth. Happily, however, that duty is now reduced to 3 per cent., and the exportation is rapidly increasing. The quality of the Danubian tallow is excellent. Among the other articles of exports are wool, timber, hides, and skins, lard, butter, bristles, bones, jerked beef, linseed, barilla, yellow-berries, coarse cheese, etc. Timber of the finest quality may be had in any quantity; but as it can only be advantageously exported in large ships, which can not when laden make their way over the bar, the trade in it has hitherto been confined within comparatively narrow limits. One, however, would be disposed to think that this difficulty might be obviated by sending down the timber in rafts and loading outside the bar. Notwithstanding the recent period at which the navigation of the Danube has been opened, and the barbarous state of the countries in the lower part of its course, the value of the exports from Galacz and Ibraila probably in 1853 exceeded £1,800,000 a year, of which from £750,000 to £800,000 may be from the former. But, considerable as this is, it is nothing to what it certainly would be were civilization to make any considerable progress in the countries traversed by the Danube after it leaves the Austrian dominions, and still more were the river to become, as it naturally is, the principal channel for the conveyance of products to and from Hungary and Transylvania. The great articles of import are manufactured cotton goods, and cotton twist, principally from England, the demand for which is rapidly increasing; with sugar, coffee, and other colonial products; olives and olive-oil, iron and steel, hardware, etc,

Entrance to Galacz.—Of the three principal mouths of the river, the Soulineh (middle) mouth, in latitude 45° 10′ 30″ N., long. 29° 41′ 20″ E., is the only one accessible by vessels of considerable burden. The depth of water on the bar, at its entrance, half a mile from the shore, varies from 10 to 13 and 14 feet, according to the season of the year, and the direction of the wind. When the latter blows from the east, it is opposed by the current of water flowing from the west, so that the bar is rapidly increased by the deposit thereon of the mud brought down by the river; and when, on the contrary, the current and the wind coincide, the mud is carried out into the sea, and the depth of water on the bar is progressively augmented. The assistance of a powerful dredging-machine, or

machine fitted to stir up the mud, or other deposit forming the bar during the prevalence of westerly winds, would be of great importance; and it is believed that with its agency the channel might be very materially deepened. Great complaints have been made of the state of the navigation of the Danube during the present year (1853). It appears to have been occasioned partly by difficulties arising out of the disputes between Russia and Turkey, and partly by the prevalence of easterly winds. But it would be easy, by erecting a light-house, to mark the entrance to the river, and employing a dredging-machine and steam-tugs, to obviate the physical obstructions to the navigation. From the bar to Galacz and Ibrailla, there is nowhere less than 18 feet of water, and in many places from 60 to 70. Vessels of 300 tons lie close to the quays at Galacz. The shores at the mouth of the river being low and bordered with reeds and shoals, vessels intending to enter the river generally make the small rocky islet of Phidonisi, or Serpent's Isle, in lat. 45° 15′ 15″ N., long. 30° 10′ 30″ E., whence the Soulineh mouth bears west by south, distance 23 miles. According to Mr. Cunningham, the first objects seen, on nearing the shore, are the masts of vessels in the river and the houses in the town of Soulineh, which, however, are very low. Hagemeister says that there is a wooden tower on the south shore at the entrance to the river; but though the contrary has been often affirmed, and its position given in Arrowsmith's map, there is certainly no light-house. When a ship approaches the entrance, a boat from the Russian captain of the port goes off, and by waving a red flag indicates the course to be kept. Lighters are generally stationed without the bar, into which large ships discharge a part of their cargoes; and pilots may generally be obtained from them or other vessels. As the current is sometimes very strong, and difficult to stem, a proper establishment of steam-tugs at the mouth of the river would be a great advantage. An E.S.E. wind carries a vessel from Soulineh to Galacz through all the different reaches of the river; but otherwise the navigation is difficult, and towing is in parts necessary.

Frost usually sets in on the Danube in the month of December, and continues till the month of March; in 1833, however, there was no frost. Freights in the ports of the Danube are always from 20 to 25 per cent. higher than in Odessa; premiums of insurance, on the contrary, are not higher than at the latter, except on such vessels as, on account of their size, are obliged to discharge outside the bar.

Money, Weights, and Measures.—These are mostly the same as at Constantinople, which see. Accounts are kept in piastres and paras. 1 piastre=40 paras.

Galacz.—Ducat blanc=pia. 44. Silver ruble=15 pia. Spanish dollar=19 pia. 32 paras. Turkish yermelik, old coinage=19 pia. 32 paras; Turkish yermelik, new coinage=17 pia. 15 paras. Austrian swanzikers =3 pia. 5 paras. It is to be observed that when exchanges are so high that it is requisite to remit in specie, any of these coins may go to a premium, according as it suits better than others for the remittance; and just now, owing to the want of bills to remit to Austria, the ducat blanc=44 pia. 20 paras.

Ibraila has two rates of currency; the one for charges, which is the same as in Galacz, and the other for the purchase of merchandise, as follows:—Ducat blanc=32 pia.; Spanish dollar=14½ pia.; Turkish yermelik, old coinage=11½ pia.; Turkish yermelik, new coinage=12 pia. 28 paras; swanziker=2 pia. 12 paras. *Note.*—The same as in Galacz, any of these coins may go to a premium.

Galacz and Ibraila.—All duties are paid in both places, in the course of the Treasury, as follows:—Ducat blanc=31½ pia.; silver ruble=10½ pia.; Spanish dollar=14 pia.; Turkish yermelik, old=14 pia.; swanziker=2½ pia.

The ducat blanc weighs 1 Turkish drachm.

Exchanges.—Bills can generally be sold on the following places, and the present (1842) rates are as noted; it must be observed, however, that these rates are very high; and when a great deal of paper is offering, they may go 4 per cent. lower.

		Pias.	Paras.	
Vienna.....	3 m. f. date..	9	16	per florin.
Trieste.....	" ..	9	18	" florin.
Marseilles.....	" ..	3	26	" franc.
Genoa.....	" ..	3	26	" franc.
Leghorn.....	" ..	3	4	" lira.
London.....	" ..	90	20	" pound sterl.
Odessa.....	10 d. f. st....	490	00	" 100 roubles.
Constantinople. 11	"	119	00	" 100 of Galacz

Weights.—Galacz and Ibraila. 400 drams=1 oke. 44 okes=1 cantar.

Measures.—Galacz and Ibraila. 20 banniza=1 kilo. 8 kilo of Galacz=2 kilo of Ibraila.

Correspondence of Weights and Measures of Galacz with those of foreign Places.

89½	okes.....	=	1	cwt. English.
78	"	=	100	kilogrammes.
44	"	=	100	fund of Vienna.
12½	"	=	1	pud of Russia.
100	kilo of Galacz....	=	150	Imperial quarters.
100	"	=	485	hectolitres.
100	"	=	425	staja of Venice.
100	"	=	600	sacks of Leghorn.
100	"	=	280	chetwerts of Odessa.
190	okes linseed.....	=	1	Imperial quarter.
55	"	=	1	hectolitre.
115	"	=	1	chetwert.
1	kilo of Brahilow..	=	2½	Imperial quarters.

Note.—These measures generally measure out somewhat less.

Note of Exports from Galacz by Sea in 1851, in English Weights and Measures, and Value of the same in Sterling Money, free on Board.

Articles.		Quantity.	Value.
Wheat.....	quarters	134,474	£141,198
Indian corn.....	"	350,682	280,545
Rye.....	"	71,024	49,716
Tallow and chervice.....	cwt.	4,849	7,893
Ox hides.....	pieces.	1,547	773
Wine.....	gallons.	86,400	2,880
Planks and deals.....	pieces.	429,515	7,158
Masts and spars.....	rafts.	5	8,500
Sundries.....			3,205
Total.....			£496,368

Destination of Vessels departing loaded from Galacz, and Cargoes of same, in 1851.

Destination.	No. of vessels	Wheat.	Indian corn.	Rye.	Tallow.
		Qrs.	Qrs.	Qrs.	Cwts.
Constantinople.	176	44,984	20,407	6,205	2,424
Trieste & Venice	87	28,281	26,077	37,682	....
Ionian Islands..	5	14	4,332	....	....
Leghorn, Genoa and Marseilles	85	30,427	8,316	840	....
England.....	296	85,868	295,200	15,664	1,925
North of Europe	14	....	1,850	10,633	....
Odessa.....	6	....	....	....	....
Total.....	619	134,074	350,682	71,024	4,349

Note of Exports from Ibraila by Sea in 1851, in English Weights and Measures, and Value of the same in Sterling Money, free on Board.

Merchandise.		Quantity.	Value.
Wheat.....	quarters	283,106	£254,795
Indian corn.....	"	616,617	404,136
Barley.....	"	105,597	52,799
Wool.....	lbs.	129,896	4,330
Tallow and chervice.....	cwt.	30,038	45,057
Butter, or mantecca.....	"	428	856
Cheese, or caskaval.....	"	1,164	758
Staves.....	pieces	550,089	9,167
Bone-ash.....	tons	705	2,291
Sundries.....	....		3,968
Total.....	....		778,157

Port Charges.—In Galacz anchorage is 30 pia., and a guardian for 5 days' observation, 5 pia. per day. In Ibraila anchorage is 17½ pia., and guardian for 5 days' observation, 5 pia. per day.

Quarantine.—Vessels generally remain in quarantine during their stay, as little or no advantage is gained by taking pratique.

Vessels wishing to take pratique may obtain it in 14 to 21 days according to the state of health in Tur-

key, by taking a Health Office guard on board; or the captain alone may take pratique, the same as any passenger, by going into the lazzaret. During the last year, as the health was good in Constantinople and along the Danube, the quarantine was only seven days.

DESTINATION OF VESSELS DEPARTING LOADED FROM IBRAILA, AND CARGOES OF THE SAME, IN 1851.

Destination.	No. of Vessels.	Wheat.	Indian corn.	Barley.
		Qrs.	Qrs.	Qrs.
Constantinople	490	108,144	181,490	104,969
Trieste and Venice	188	34,108	172,105	1,028
Ionian Islands	16	13,273	1,397	....
Leghorn, Genoa, and Marseilles	35	26,993	4,903	....
England	320	100,593	286,882	....
Total	1,049	283,106	646,617	105,597

The total number of vessels departing from Galacz and Ibraila in 1851 was, 1,668, with an aggregate tonnage of 300,845. Of these, 534 were Greek, with an aggregate tonnage of 112,438; 352 were Turkish, with an aggregate tonnage of 50,234; and 304 vessels were English, with an aggregate tonnage of 55,625. There was one vessel from Buenos Ayres.

The export of grain constitutes the leading commercial movement of the port of Galacz. The following table exhibits the grain export trade of the ports of Galacz and Ibraila, during three consecutive years:

Grains.	1849.	1850.	1851.
	Quarters.	Quarters.	Quarters.
FROM GALATZ.			
Wheat	173,797	140,652	184,474
Indian corn	258,763	122,875	350,632
Rye	60,617	52,776	71,024
Total	493,177	316,303	556,130
FROM IBRAILA.			
Wheat	117,436	283,290	283,106
Indian corn	335,532	149,732	646,617
Rye	72,936	44,594	105,597
Total	525,904	577,616	1,035,320

The ports to which these vast quantities of grain are shipped, will be seen from the following return of the export trade during the same years:

YEARS.	CONSTANTINOPLE.		TRIESTE AND VENICE.		MARSEILLES, GENOA, & LEGHORN.		GREAT BRITAIN.	
	No. of vessels.	Quarters.	No. of vessels.	Quarters.	No. of vessels.	Quarters.	No. of vessels.	Quarters.
1848	492	329,022	187	175,515	160	117,280	230	264,591
1849	620	404,315	126	130,976	101	71,556	207	389,774
1850	447	294,507	104	111,026	70	60,006	253	316,019
1851	666	465,789	275	294,376	70	66,479	606	633,707

The port of Galacz is the outlet for the produce of Wallachia and Moldavia. And its imports in 1850 amounted to $2,175,000, its exports, consisting of grain, tallow, preserved meat, wine, and linseed, reach, annually, about $3,877,660. How far American interests might be promoted in the foreign trade of the Danubian and other ports of the Turkish dominions, may be gathered from the following table, exhibiting the articles of foreign and colonial produce exported to Turkey in the year 1851. The table includes, also, the imports into Wallachia, Moldavia, Syria, Palestine, and Egypt:

Description of merchandise.	Quantities.	
Peruvian bark	cwts.	50
Cassia lignea	pounds	17,020
Cloves	"	30,108
Cochineal	cwts.	1,946
Cocoa	pounds	2,908
Coffee	"	620,502
Ginger	cwts.	97
Gum shellac	"	15
Indigo	"	5,927
Iron	"	61
Cotton manufactures	(value)	$4,210
Logwood	tons	76
Nutmegs	pounds	3,621
Opium	"	5,406
Pepper	"	473,504
Pimento	cwts.	720
Quicksilver	pounds	420
Rhubarb	"	1,236
Rice	cwts.	5,049
Silk	pounds	1,246
Taffeties	pieces	6,978
Spirits	gallons	66,961
Sugar	cwts.	5,501
Tea	pounds	197,485
Tobacco	"	39,022
Wine	gallons	5,745
Wool	pounds	4,511

Duties.—An *ad valorem* duty of 3 per cent. is levied on all articles, except provisions, imported into, or exported from, the principalities of Moldavia and Wallachia. Government reserves to itself the power of prohibiting the exportation of any article, but it has to give a month's previous notice of any such prohibition.

Galacz is a free port; that is, a port at which all commodities may be landed, warehoused, re-exported, and consumed in the town, free of duty. Quarantine regulations are strictly enforced, unless performed previously to entering the river.

Ismail and Reni, ports of the Russian province of Bessarabia, are situated on the Danube, and are both, but especially Ismail, a good deal nearer its mouth than Galacz; but they are much less considerable in point of commercial importance. Having little importation, their trade is confined almost entirely to the exportation of corn, and even in this respect they are very inferior to Galacz and Brahilow. They are subject to the Russian duties and regulations. We have gleaned these particulars from a variety of works, but principally from the valuable *Report* by Mr. Cunningham, now vice-consul at Brahilow, printed at Galacz in 1841; the work of Hagemeister, *On the Commerce of the Black Sea*, Eng. trans. pp. 83–95, etc.; *Purday's Sailing Directions to the Black Sea*, p. 193, etc.

ACCOUNT OF THE QUANTITIES AND VALUES OF THE PRINCIPAL ARTICLES IMPORTED INTO AND EXPORTED FROM VARNA IN 1847.

Articles.	Quantities.	Value in £ sterling.
IMPORTS.		
Almonds	cwts	24	60
Carobs	"	10,803	6,000
Coffee	"	14,263	30,000
Cotton twist	packets	130,000	32,000
Cloths, woolen	balcs	200	10,000
Cloths, cotton	"	200	7,000
Figs	cwts	3,000	2,400
Iron	tons	500	7,000
Olive oil	cwts	2,107	5,057
Olives	"	3,000	2,400
Pepper and other spices	pounds	14,500	1,612
Raisins	cwts	10,585	6,322
Sugar	"	5,266	11,585
Soap	"	1,875	4,125
Salt	tons	923	1,800
Tin (in bars)	bands	727	2,000
Spirits	gallons	500,000	75,000
Miscellaneous	....	....	10,000
Total	....	....	£214,561
EXPORTS.			
Wheat	quarters	377,500	£471,000
Barley	"	10,000	5,000
Hides	number	100,000	84,456
Tallow	cwts	92,714	176,800
Butter	"	9,482	21,816
Cheese	"	24,000	63,636
Walnuts	bushels	10,000	1,000
Wool	pounds	112,600	2,000
Dried beef or pasturma	cwts.	56,817	25,000
Miscellaneous, including poultry and eggs	....	....	25,000
Total	....	....	£875,708

The port of Varna is situated on the W. coast of the Black Sea, at the bottom of a rather small bay, about 8 miles N.W. Cape Galata, the latter being in lat. 43°

10′ N., long. 27° 58½′ E. The ordinary anchorage is to the S.E. of the town, in 7 or 8 fathoms, bottom sand and ooze. It is open to all winds between E. and S.S.E. Vessels load and unload by means of lighters, it being dangerous to approach within less than one quarter of a mile of the shore. Both hard and soft wheat are shipped from Varna, the value of the former being from 30 to 40 per cent. greater than that of the latter. An export duty is charged on wheat when exported, and being a fixed duty of about 2s. 8d. a quarter, it is high when prices are low, and low when they are high.

Steam to Galacz.—Steam navigation was first established on the Danube in 1830, since which the undertaking has gone on prospering, so much so, that the communication between Vienna and Constantinople is now maintained by a line of 7 or 8 steam vessels. The Austrian Steam Company, which was the first in the field, have extended their scheme by starting vessels between Vienna and Linz, and a Bavarian Company commenced in 1838 running vessels between Ratisbon and Linz. At present (or very recently) steamboats ply on the Danube as long as the river is free from ice (usually from February or March to November), from Ratisbon to Linz, once a week; Linz to Vienna, 10 hours, once a week; Vienna to Presburg and Peeth, twice; Pesth to Drencova, once a week; Gladova to Galacz, once a week; Galacz to Constantinople, once a fortnight. The voyage from Vienna to Constantinople, including stoppages, is seldom performed in less than 14 days, and sometimes occupies 17; in returning against the stream it takes at least a month, including 10 days' quarantine at Orsova. The fare was lately, first place, 134 florins, about £13; second place, 94 florins.

The navigation of the Danube by steamers is unfortunately interrupted for about 50 miles, between Drencova and Gladova, by rocks and rapids, the lowest and most considerable of which is a sort of cataract, called the "Irongate," about 3 miles below the Hungarian frontier. It is worthy of remark that the most illustrious of the Roman emperors, Trajan, alive to all the advantages to be derived from the easy navigation of the Danube, had with equal industry and sagacity formed a road, or towing path, along the river's edge, for facilitating the operation of towing, of which the remains are still extant, with an inscription commemorative of the completion of the works. It has been proposed to overcome the difficulties in the way of the navigation by renovating the old Roman road, and deepening the channel contiguous to it. But it rarely happens that attempts to improve the navigation in the bed of a river, under any thing like similar circumstances, are even tolerably successful. The better way undoubtedly would be, were it practicable, to construct a lateral canal, or rather a canal from the mouth of the Bereska to Palanka, which would not only avoid the rapids, but also shorten the navigation by getting rid of the bend of the river by Orsova. But the difficulties in the way of such an undertaking, from the nature of the ground, are said to be insuperable; and it is, therefore, probable that the distance of 50 miles along the rapids will continue, if not always, at least for some considerable time, *a portage*. The inconvenience, however, of this break in the navigation has been diminished, as far as possible, by the construction of an admirable carriage road, at great expense, by the Hungarian diet, from Moldova to Orsova. In the extent of excavations in the rock, and terraces of masonry, upon which it is carried, it is not inferior as a specimen of engineering to the finest roads over the Alps. Several steamers have been transported down these rapids at the season of floods, small barges pass them at all times, and little boats, laden with wax and wool, are towed up by men and oxen. The passengers and goods conveyed by the steamers are transferred from Moldova in rowboats, to Gladova, below the Irongate, where they embark on another steamer.—*Geog. Dict.* art. *Danube.* A railroad is completed from Brunn, the capital of Moravia, to Vienna; another railroad diverges, from the Danube at Linz, north to Budweis in Bohemia, where it reaches the banks of the Muldau, and through it communicates with the Elbe.

Junction of the Danube and the Rhine.—The long projected canal to unite the Danube and Rhine, the favorite scheme of Charlemagne, having been undertaken by the Bavarian government, was completed and opened in 1846. It extends from Bamberg, by Erlangen and Nuremberg, to Neumark, joining the Danube at Kellheim, a few miles above Ratisbon. The distance between the Maine near Bamberg, and the Danube, is about 112 miles; but the actual extent of canal is less, the communication being in part effected by the Regnitz, a tributary of the Maine, and the Altmuhl, a tributary of the Danube. There is now, consequently, an internal communication by water throughout all the vast country, stretching from the shores of the Netherlands to the Black Sea; so that produce shipped at Rotterdam or at Galacz may be conveyed from the one to the other in the same vessel.

Galangal (Ger. *Galgant*; Du. and Fr. *Galanga*; Rus. *Kalgan*; Lat. *Galanga*; Arab. *Kusettult*; Chin. *Lauuadon*), the root of the *galanga*, brought from China and the East Indies in pieces about an inch long, and hardly half an inch thick. A larger root of the same kind (*greater galangal*), an inch or more in thickness, is to be rejected. It has an aromatic smell, not very grateful; and an unpleasant, bitterish, extremely hot, biting taste. It should be chosen full and plump, of a bright color, very firm and sound. 12 cwt. are allowed to a ton.—Lewis's *Mat. Med.*; Melburn's *Orient. Com.*

Galapagos, a group of islands in the Pacific Ocean, so called from the Spanish *galápago*, a land tortoise, from their abounding in that animal. They consist of six principal and seven smaller islands, lying between 1° N. and 2° S. lat., and between 89° and 92° W. long., about 700 miles from the continent of South America. The largest, Albemarle Island, is 60 miles in length, by about 15 in breadth. The highest part is 4000 feet above the sea. They are all of volcanic origin; and along their shores black dismal-looking heaps of broken lava everywhere meet the eye. In many places the lava cliffs are very high, while close to them the water is so deep that a ship can not anchor even in a calm. In the interior are some valleys and plains of moderate extent and of great fertility. The land tortoises, called the great elephant tortoises, their feet being like those of a small elephant, are numerous, and grow to a great size, frequently weighing several hundred pounds. A small colony has been established on Charles Island, in a plain about 1000 feet above the sea. They cultivate bananas, sugar-canes, sweet potatoes, and Indian corn, and supply with these articles the whalers who resort to the island. The climate is healthy, and the heat moderate, considering the geographical position of these islands.

Galatz. See Galacz.

Galbanum (Fr. *Galbanum*; Ger. *Mutterharz*; It. *Galbano*; Lat. *Gaibanum*; Arab. *Barzud*), a species of gum resin obtained from a perennial plant (*galbanum officinale*) growing in Africa, near the Cape of Good Hope, and in Syria and Persia. It is brought to this country from the Levant in cases or chests containing from 100 to 300 lbs. each. The best is in ductile masses, composed of distinct whitish tears agglutinated together by a pale brown or yellowish substance. It is generally much mixed with stalks, seeds, and other impurities. The separate tears are considered as the best. When the color is dark brown or blackish, it is to be rejected. It has a strong peculiar odor, and bitterish, warm, acrid taste.—Thomson's *Dispensatory*.

Gale of Wind. The sea term for a continued storm of wind: the lowest degree is the fresh gale, the next a strong gale, and the next a heavy or hard gale.

Galena, a city of Jo Daviess county, Illinois, 280 miles north-west of Springfield, situated on Fever or Bean River, and on the Galena and Chicago Railroad, and the metropolis of the great lead region. It is six miles above the mouth of the river, which is navigable to this place, at all stages of the water, for the largest steamboats. It has an intercourse by steamboat with St. Louis, New Orleans, Louisville, Cincinnati, and other places on the Mississippi and Ohio Rivers. The amount of lead shipped from Galena and vicinity annually is 42,000,000 of pounds, valued at $1,780,000, employing about 2000 persons. The most productive ores of zinc and copper, sulphuret and carbonate of zinc and sulphuret of copper everywhere abound in this region. Thousands of tons of zinc lie upon the surface, and are neglected, because, in the absence of coal, it can not be profitably smelted. It is popularly known there as *Dry Bones and Black Jack*. Sulphate of iron is found in sheets of larger extent, ranging from a few inches to several feet in thickness.

Galena (Fr. *Plomb sulfuré*; Ger. *Bleiglanz*), is a metallic-looking substance of a lead-gray color, which crystallizes in the cubical system, and is susceptible of cleavages parallel to the faces of the cube; specific gravity, 7·7592; can not be cut; fusible at the blowpipe with exhalation of sulphurous vapors; is easily reduced to metallic lead. Nitric acid first dissolves it, and then throws down sulphate of lead in a white precipitate; the solution affording, with plates of zinc, brilliant laminæ of lead (arbor Saturni). It consists of sulphur, 13; lead, 85; with a little iron, and sometimes a minute quantity of silver. This is the richest ore of lead, and it occurs in almost every geological formation, in veins, in masses, or in beds. It is almost always accompanied by sulphuret of zinc, different salts of lead, heavy spar, fluor spar, etc. Galena in powder, called alquifoux, is employed as a glaze for coarse stonework.

Galipot is a name of a white semi-solid viscid resin found on fir-trees; or an inferior sort of turpentine, poor in oil.

Galleons. Certain Spanish treasure-ships with three or four decks, formerly employed in communicating with Peru.

Galley (Fr. *galère*), a low-built vessel propelled by sails and oars, either on a single tier, or on tiers of benches one above the other. The war vessels of antiquity were all galleys. Among the Greeks, those chiefly mentioned are the pentecontori, which appear to have had 50 oars disposed in a single tier; and the trieres (Lat. *triremes*), vessels with three banks of oars, concerning the disposition of which much controversy has taken place. It is commonly supposed that a trireme had three banks of oars, one above the other; but this is rendered improbable by the circumstance of Pliny making mention of galleys having 30, 40, and even 50 banks of oars; for it seems hardly credible that so many could have been arranged directly above each other. Some have suggested that the rows of oars in the trireme were disposed, not horizontally, but obliquely; in which case an increase in the number of banks of oars would augment the length, and probably the height would be increased in proportion. See *Meibomius, De Fabrica veterum Triremium*.

Galleys were likewise chiefly employed by the maritime nations of the middle ages in the Mediterranean. Their use in naval war hardly ceased until the end of the 17th century; and the Venetian republic, down to the period of its extinction, always maintained a number of war-galleys. The Venetian galleys had a single tier only, and all modern galleys followed the same construction. These were formidable vessels in a calm, but unfit for sea, and accordingly found chiefly in the Mediterranean. The Venetians had also a large high-pooped sort of galley called galeazza, whence the word galleass and galliott in old English writers.

The *Deal galley* is a long narrow boat used by the Deal boatmen, and managed, on the most hazardous occasions, in saving the crews of stranded vessels, with consummate skill. It is also used by smugglers, on account of its velocity. The galley is also the kitchen of a ship.

The punishment of the *galleys*, i. e., the employment of condemned criminals in the toilsome employment of rowing them, is said to have originated under the Greek empire, as well as the name Γαλεαροι, or galley-slaves—in French, *galériens*. It was used by all the nations bordering on the Mediterranean. In France, under the old jurisprudence, the punishment of the galleys was the severest after that of death. About the end of the reign of Louis XIV., when galleys themselves began to be disused, the galley-slaves were employed in hospitals, public works, etc.; and the name of the punishment was changed by the Constituent Assembly (1789) to *travaux forcés*, compulsory labor, whence the word *forçat* for a criminal so condemned. Under the code of the empire, the punishment was accompanied with forfeiture of property, infamy, and branding. By an alteration of the law, effected in 1832, the brand was abolished; and the criminals, who had hitherto been intermingled in the three penal fortresses (Toulon, Rochefort, and Brest), were classified. Toulon is now appropriated to those condemned for 10 years and under, Brest to those from 10 to 20, Rochefort to the condemned for life. The name *Bagne*, which is applied in France to prisons in which those condemned to compulsory labor are confined, is derived from the famous Bagnio prison at Constantinople, so called on account of some baths situated there. The principal crimes now punished in this manner by the French law are—some acts of violence against the government or public law, coining and forgery, assaults, followed by death, on legal officers, murder, unless under such aggravated circumstances as are punished by death, cutting and maiming, rape, abduction, burglary, highway robbery, burning of insulated buildings, threatening letters, perjury, etc.

Gallipoli, a seaport town of south Italy, kingdom of Naples, province Terra di Otranto, on the east shore of the Gulf of Taranto, on the rocky islet at the west extremity of a narrow peninsula, to which it is joined by a bridge; lat. 40° 3′ N., long. 17° 58′ E. It is fortified, has a castle, and is well built. Population about 7000 (6709 in 1843). It is the principal port of the Mediterranean for the shipment of olive oil, and has, in consequence, a considerable trade. It is indebted for this distinction partly to its being situated in a country where oil is produced in the greatest abundance, but more, perhaps, to the circumstance of the cisterns cut in the limestone rock on which the town is built, being peculiarly well fitted for the preservation of the oil. They do not differ much in appearance from a common water-tank. They are usually under the houses of the inhabitants; are arched over, with the exception of a circular hole, into which the oil is poured, and through which it is again drawn up. It will keep in these cisterns for an indefinite period; and is materially improved, not only in clearness, but also in flavor. When the oil is to be shipped, it is drawn off from the cisterns into *uteri*, or skins, which are carried on men's backs to the shore, where the casks, being filled, are conveyed in lighters to the ships.

Gallipoli has no harbor, but a bay or roadstead north-east of the town. The latter has from 10 to 12 fathoms water; but it shoals toward the shore; and vessels of considerable burden should not come within less than a musket-shot of the land. Those that come nearest to the shore, moor with their heads to the north-west, with two cables out ahead and two astern, in

from 16 to 20 feet of water. The only danger in entering or leaving the roads is a blind rock at their entrance, about 500 yards N.N.E. from the fort. It has only about from five to seven feet of water; and as it is not marked by any buoy, pilots should be employed by foreigners. A tunny fishery is carried on inside the bay; but the nets are easily avoided. Winds from the north and north-west throw in a heavy sea. About 1½ miles west from the town is the low, flat island of St. Andrea. It is said, in *Norie's Sailing Directions for the Mediterranean*, that there is a light-house on this island. But, though a light-house on it would be of great service to ships making the port, and though it be laid down in some of the charts of this sea, the truth is that none such really exists, nor is there even a tower on the island! There are some lesser islands between St. Andrea and the main-land. There is deep water between the former and the nearest islands, but not between the latter and the town. A dangerous shoal lies about half a mile south of St. Andrea.

Gallipoli Oil is a coarse olive oil, containing more or less mucilage, imported from a sea-port, so named, of the province of Otranto, in the kingdom of Naples.

Galls, or **Gall-Nuts** (Fr. *Galles Noix de Galle*; Ger. *Gallapfel, Gallus*; It. *Galic, Galluze*; Lat. *Galæ*; Arab. *Afis*; Hind. *Majouphal*; Per. *Mazu*), are excrescences produced by the attacks of a small insect, which deposits its eggs in the tender shoots of a species of oak (*Quercus infectoria* Linn.), abundant in Asia Minor, Syria, Persia, etc. Galls are inodorous, and have a nauseously bitter and astringent taste. They are nearly spherical, and vary in magnitude from the size of a pea to that of a hazel-nut. When good, they are of a black or deep olive color; their surface is tubercular, and almost prickly; they are heavy, brittle, and break with a flinty fracture. They are known in commerce by the names of *white*, *green*, and *blue*. The white galls are those which have not been gathered till after the insect has eaten its way out of the nidus and made its escape. They are not so heavy as the others, and are of a lighter color, and do not fetch so high a price. The green and blue galls are gathered before the insect has escaped; they are heavier and darker than the former, and are said to afford about one third more of coloring matter.

Galls are of great importance in the arts, being very extensively used in dyeing, and in the manufacture of ink, of which they form one of the principal ingredients. They are the most powerful of all the vegetable astringents; and are frequently used with great effect in medicine. Galls consist principally of three substances; tannin or tannic acid; yellow extractive; and gallic acid. The decoction has a very astringent and unpleasant bitter taste. The ancients reckoned the gall-nuts of Syria superior to every other, and they still retain their pre-eminence. They are principally exported from Aleppo, Tripoli, Smyrna, and Saïd; those brought from the first come chiefly from Mosul, on the western bank of the Tigris, about ten days' journey from Aleppo. The real Mosul galls are unquestionably the best of any; but all that are gathered in the surrounding country are sold under this name. Those from Caramania are of a very inferior quality. The galls met with in India are carried thither from Persia by Arabian merchants. It is not unusual to dye the whitish gall-nuts blue, in order to increase their value. The fraud is, however, detected by the deeper blue tinge that is thus imparted to them; and by their being perforated and lighter than the genuine blue galls.—Bancroft *on Colors*; Ainslie's *Mat. Indica*, etc.

The Gall-nut Oak (Quercus infectoria), a native of Persia, Asia Minor, Arabia, Egypt, Morocco, and Algeria, in its natural habitat, is an evergreen shrub, with a crooked stem, and seldom attains six feet in height. From the circumstance of its growing near Paris, where it bears the winter quite well in the open air, though losing its leaves in the autumn, it doubtless would be adapted to the climate of our middle and southern States. On this shrub, it may be unnecessary to state, is found the well-known "gall-nuts" of commerce, which are extensively used in the manufacture of writing-ink, and in dyeing. These excrescences are the product of the gall-fly (*Cynips scriptorum*), a small insect of a pale-brown color, which may often be found inclosed in the galls sold in the shops of the druggists, collected before the fly had made its appearance.

Galvanized Iron, is the name given to iron tinned by a peculiar patent process, whereby it resists the rusting influence of damp air, and even moisture, much longer than ordinary tin-plate. The following is the prescribed process: Clean the surface of the iron perfectly by the joint action of dilute acid and friction, plunge it into a bath of melted zinc, covered with sal-ammoniac, and stir it about till it be alloyed superficially with this metal; when the metal thus prepared is exposed to humidity, the zinc is said to oxydise slowly by a galvanic action, and to protect the iron from rusting within it, whereby the outer surface remains for a long period perfectly white, in circumstances under which iron tinned in the usual way would have been superficially browned and corroded with rust.

Galvanized Tinned Iron.—One of the most remarkable advancements in the iron manufacture in recent years has been the introduction of *galvanized tinned iron* for an almost innumerable variety of purposes. This material consists of iron plate coated with tin, not by the ordinary tin-plate process, but by galvanic deposition. It serves as a substitute for plain iron, for tin-plate, for zinc, and for lead, under certain special circumstances. It is stronger and more durable, for many purposes, than lead or zinc; it is better than plain iron where rust is to be avoided; it is superior to lead or zinc in warm climates, inasmuch as it does not expand and contract to so great a degree. Withinside a house and without, in vessels and in utensils, in towns and in the country, in manufactures and in domestic economy, we now find this substance employed. We have galvanized tinned iron corrugated plates for roofing, and for the sides and doors of houses; in another form there are plain plates for the same purpose; roofs for sheds, roofs and sides for store-houses, and many similar purposes. Then, besides the sheet form, there are round and square bars, hoop-iron, wire, tubes, and pipes, nails, rivets, bolts, screws—all formed of iron thus protected by the galvano-tin process. There is this advantage also, which is unattainable by the ordinary tin-plate process, that articles can be tinned after they are made in the proper form of iron, provided they are of small dimensions. The plates are really a combination of three metals; for, in the first place, a layer of tin is precipitated on the iron plates from a solution of chlorid of tin by the galvanic process; and then a layer of zinc is obtained by dipping the sheets into molten zinc.

Galveston, city, port of entry, and capital, Galveston county, Texas, 350 miles from the S. W. Passage of the Mississippi River. Lat. 29° 18′ 32″ N., long. 6° 44′ 38″ W. It is situated on the east end of Galveston island, and is the great commercial emporium of Texas. It was settled in 1837. It contains a bank, capital $300,000, a steam foundery, 4 printing-offices issuing 2 tri-weekly, 1 semi-weekly, and 1 weekly newspaper, 3 cotton-presses, 50 stores, and population, in 1856, about 6000. Tonnage in 1853, 6173 tons.

The bar outside Galveston harbor and bay, between the north-east end of the island and Point Bolivar on the mainland, has not more than 13½ feet of water at the highest springs, and but 10 feet at ebb; hence the smaller class of vessels, or those under 200 or 250 tons are most suitable for the trade of the port, as well as for that of almost all the other ports on the north and east sides of the gulf, the deficiency of water

being all but universal. Though the land be low, the houses of Galveston may be seen from the mast-head at a distance of several miles. Vessels drawing eight feet of water and upward should, however, not approach the bar nearer than six fathoms, without heaving-to and making the signal for a pilot, which is promptly attended to. Vessels drawing less than eight feet of water may approach the bar till the water shoals to four fathoms before heaving-to. Vessels making the port in the night should invariably anchor in five or six fathoms; and the holding ground being excellent, those who are well found in anchors and cables have nothing to fear. Pilot-boats are constantly on the look-out; and ships should on no account attempt crossing the bar till they have got a pilot on board. In the harbor there is from 18 to 30 feet of water. The bay, which stretches about 35 miles from north to south, and from 12 to 18 miles from east to west, has not generally more than nine feet of water, and is intersected by a bar, on which there is only from five to six feet of water.—*Kennedy's Texas*, p. 29. Several very considerable rivers have their embouchures in the bay, so that the town has a considerable command of internal navigation.

The present year (1856), closes an epoch in the growth of sugar in Texas. The almost total destruction of the plant by the unprecedented cold of last winter will reduce the product of the coming year to almost nothing. Should all who have heretofore produced sugar determine to go on, it is doubtful whether the growing crop of cane will afford much more than seed sufficient for a re-commencement. The receipts of Texas sugar and molasses, at this port, for the calendar years named below, were as follows:

Year.	Molasses, bbls.	Sugar, hhds.
1850	2,497	2,782
1851	1,909	1,086
1852	2,578	1,929
1853	6,086	4,076
1854	5,898	4,754
1855	6,728	4,781

For the commercial year ending August 31, 1855, the receipts of sugar were 5375 hhds. against 7570 hhds. for the year just closed; and the receipts of molasses were then 7504 bbls against 8668 bbls. for the year last past. We apprehend that two years will be required to bring the production again up to those figures

The following is a comparative statement of shipments of the leading articles of export from Galveston for each calendar year since 1853:

Articles.	1853.	1854.	1855.
Cotton, bales	60,892	84,173	68,858
Sugar, hhds	4,076	4,754	4,781
Molasses, bbls	6,086	5,898	6,728
Beef Cattle	2,762	5,957	4,861
Hides	14,146	18,224	20,517

STATEMENT OF THE QUANTITY AND ESTIMATED VALUE OF ARTICLES OF MERCHANDISE OF DOMESTIC GROWTH AND MANUFACTURE, EXPORTED FROM GALVESTON, TEXAS, IN THE YEAR ENDING DECEMBER 31, 1855.

Articles.	Total.	Average prices.	Valuation.
Cattle.....number	4,861	$16 00	$69,776
Cotton.....bales	70,953	85 00	2,698,355
Hides.....number	20,517	4 00	82,068
Molasses.....gallons	84,945	25	21,236
Sugar, cane.....pounds	1,934,710	7	135,429
Total			$3,001,864

The value of domestic produce exported from this port during the past two years affords a highly favorable contrast in favor of the season just closed. The amount of shipments was, August 31, as follows:

Years.	Coastwise.	Foreign.	Total.
1856	$2,850,770	$1,492,845	$4,343,615
1855	2,012,604	634,816	2,647,240
Increase	$838,166	$858,029	$1,696,195

The value of the exports, for the year just past, is less than that of the year ending with August, 1854, when the value of exports, coastwise, was $3,637,255, and foreign, $776,248—total, $4,413,498. Texas has not had a favorable season for crops since 1853; and 1856 will add another to the years of short crops, though an improvement over the last two is anticipated.

The number of vessels which arrived at this port, from beyond the district of Texas, during the year 1856, was 269, viz.:

Vessels.	Coastwise.	Foreign.	Total.	1855.
Steamships	97	0	97	90
Ships	11	7	18	14
Barks	46	18	64	59
Brigs	28	1	29	22
Schooners	60	1	61	48
Total	242	27	269	233

Increase—Steamships, 7; ships, 4; barks, 5; brigs, 7; schooners, 12. Total increase, 36.

Of vessels belonging to the port of Galveston the custom-house books of the present year (1856), show that there are:

Year ending Aug. 31.	1856.	1855.
Ships	1	0
Barks	3	1
Brigs	1	3
Schooners	63	64
Steamboats	16	17
Sloops	15	11
Total	99	96

The amount of tonnage of vessels cleared at this port for the year just ended was 106,670 tons against 94,113 the year previous. The number of persons employed on board was 3467—of whom but two were boys—being an increase of but two employed during the year.

There is, we believe, no article grown, for human consumption, in any State of the Union, which is not already, or may not be produced in some portion of Texas, such is the variety of soil, climate, and general circumstances. In the production of the great staples of wheat, corn, beef, cotton, and sugar, no State in the Union approaches it, so great is the extent and productiveness of the soil adapted to these articles. It is estimated that the sugar region is capable of producing a crop of 3,000,000 of hogsheads, or much more than is necessary to supply the inhabitants of the whole Union. 60,000,000 of acres of the lands of the State are situated within the cotton-producing region, and one third of this number are believed to be well adapted in point of soil to the growth of that plant. There is no doubt of the capacity of the country to produce a much larger crop than is now yielded by the whole South, while the expense of production is much less than the general average in other States. —*Galveston Price Current and Census Reports.*

Galway, the county town, formerly designated the Liberties of Galway, and a county in itself, having an exclusive local jurisdiction, extending two miles on every side except the south. It stands on the northern shore of the Bay of Galway, Ireland, on the eastern bank of the river of the same name. It is supposed by some to be the Nagnata of Ptolemy. It certainly was considered a position of much importance from the earliest period, as in the divisions of the island into north and south, at first made by the descendants of Heremen, and afterward repeated by Conn and Eogan, it was fixed upon as the eastern extremity of the line of demarcation, which proceeded eastward to Dublin. Galway is likely to become a place of some note, being the proposed eastern terminus of the submarine telegraph communication between Europe and the United States.

Gama, Vasco da, the first European who reached India by doubling the Cape of Good Hope, was born at Sines, a small sea-port of Portugal. Of his early history so little has been recorded, that even the date of his birth is unknown. On attaining manhood, he found that the success of Columbus had given a powerful impulse to the spirit of maritime adventure.

On the 4th of July, 1497, Vasco da Gama sailed from Lisbon with a squadron of three vessels manned by sixty sailors, bent on making his way to India round the Cape of Good Hope, then known as the Cabo Tormentoso, or Stormy Cape. The hardships and dangers to be encountered were appalling, and led to a mutiny, which was with difficulty quelled by the firmness and prudence of the commander. He doubled the Cape at length, and reached in safety the small town of Melinda, where he secured the services of an Indian pilot. In 23 days they reached Malabar, and on the 20th of May 1498 they came to anchor at Calicut. Gama was well received by the zamarin; whom, though not without difficulty, he convinced of the advantages that would accrue to his country by the establishment of a commercial treaty with Portugal. Gama then turned his prows homeward; and, having touched at various points on the Asiatic and African coasts, he once more cast anchor in the Tagus in the September of 1499, after an absence of 2 years and 2 months. Emmanuel received him with great honors, ennobled him, and gave him the title of admiral of the Indian, Persian, and Arabian seas. The effect of Gama's voyage was soon visible in the ruined trade of the Italian commercial republics, which had hitherto monopolized the traffic of the East. In prosecution of Gama's discoveries, another fleet was sent out to India, under Cabral, who accidentally discovered the Brazils, and on reaching his destination established a factory at Calicut. The natives, instigated by the Moorish merchants, who were jealous of the Portuguese, rose up in arms, and murdered all whom Cabral had left behind. To avenge this cruelty, the Portuguese fitted out a powerful armament, of which the command was given to Gama. The admiral set sail, and devastated those parts of Africa and India where he had formerly been received in a hostile spirit. He executed especial vengeance upon Calicut, which he bombarded and reduced to ashes, at the same time hanging the sailors of the vessels in the harbor which had fallen into his hands. He then sailed away to Cochin, where he established a factory, from which the power of Portugal radiated over India. In 1503 he returned home, and as before was welcomed with honors and titles, but was not immediately reappointed to the command in India. He remained at home in inaction during nearly 20 years; but in 1524 (some years after the death of the great Albuquerque, who had been consolidating the Portuguese power in the East), Gama was appointed viceroy of Portuguese India. Not long after arriving at Cochin, Gama died, in 1525, and was buried there; but 13 years later his bones were disinterred and conveyed to Portugal by order of John III., king of that country.

Vasco da Gama was a man of great ability, courage, and enterprise; but he possessed none of these qualities in a higher degree than many others of his cotemporaries who have long since passed into oblivion. He owes no small portion of his fame to the fact of his being the hero of the national epic of Portugal. The moment of his doubling the Cape of Good Hope, and seeing in the clouds the Spirit of that stormy region, has been often seized by painters as a striking subject for pictorial delineation. One of the most remarkable of these pictures is that by the late David Scott, of Edinburg.—E. B.

Gamboge (Fr. *Gomme gutte*; Ger. *Gummigutt*; It. *Gomma gutta*; Lat. *Gummi guttæ*, *Cambogia*; Arab. *Ossaracewand*; Siamese and Cambojan, *Rong*), a concrete vegetable juice, or gum resin, the produce of the *Cavcinia Cambogia*, a forest-tree of the genus which affords the mangostein, the most exquisite fruit of the East. The districts which yield gamboge lie on the east side of the Gulf of Siam, between the latitudes of 10° and 12° north, comprising a portion of Siam and the kingdom of Camboja, whence its English name. It is obtained by making incisions in the bark of the tree, from which it exudes, and is collected in vessels placed to receive it. In these it assumes a firm consistence; and being formed into orbicular masses, or more frequently cylindrical rolls, it is at once fit for the market. It is of a bright yellow color, opaque, brittle, breaks vitreous, has no smell, and very little taste. Specific gravity 1·22. When taken internally, it operates as a most violent cathartic. It forms a beautiful yellow pigment, for which purpose it is principally used. The Dutch began to import it about the middle of the seventeenth century. The greater part of the gamboge of commerce first finds its way to Bangkok, the Siamese capital, or to Saigon, the capital of lower Cochin China; from thence it is carried by junks to Singapore, whence it is shipped for Europe. Its price at Singapore varies, according to quality, from 30 to 80 dollars per picul. Dark-colored pieces should be rejected.—CRAWFORD'S *Embassy to Siam*, p. 425; THOMSON'S *Chemistry*.

Ganges, the principal river of Hindoostan, through the north part of which it flows from west to east, traversing the centre of the British presidencies, Bengal and Agra, almost in their entire length. It rises by two principal heads, Bhagirathi and Alakananda, in lat. 31° N., and long. 7° E., from an immense mass of snow at an elevation of 13,000 feet; flows at first S.W. to Hurdwar and thenceforward mostly E. S.E. to the Bay of Bengal, which it enters by numerous mouths, its eastmost arm uniting with the Megna or Brahmaputra, and its west branch being the Hooghly River. Total course estimated at 1500 miles. In its course it receives 11 affluents, some of which are equal to the Rhine, and none smaller than the Thames; the principal are the Jumna, Ramgunga, Goomty, Goggra, Sone, Gunduck, Koose, Mahanuddy, and Teesta, which have courses varying from 300 to 600 miles in length. On its banks are numerous cities and towns. Between Hurdwar and Allahabad it is usually from 1 mile to 1¼ miles across; below which its breadth increases frequently to 3 miles, and at 500 miles from the sea it is 30 feet in depth, and so continues to near its mouth, where, however, the quantity of deposit it brings down often forms bars and shoals. In the annual overflow of the river, when it is at its height in July and August, the waters rise to 32 feet. The annual deposit of mud at its delta is estimated at 6,000,000,000 cubic feet. It is crossed by no bridges after it leaves the mountains. The Ganges is the sacred river of the Hindoos, and is so called as flowing through *Gang*, the earth, to heaven.

Gangway, a narrow platform or range of planks laid horizontally along the upper part of a ship's side from the quarter deck to the forecastle, peculiar to ships that are waisted, for the convenience of walking more expeditiously fore and aft than by descending into the waist. It is fenced on the outside by iron stanchions and ropes or rails, and in vessels of war with a netting in which part of the hammocks are stowed. In merchant ships it is called the gangboard.

Gangway is also that part of a ship's side, both within and without, by which persons enter and depart. It is provided with a sufficient number of steps or cleats nailed upon the ship's side nearly as low as the surface of the water, and sometimes furnished with a railed accommodation ladder resembling a flight of stairs projecting from the ship's side and secured by iron braces.

Gangway is also used to signify a narrow passage left in the hold when a ship is laden, in order to enter any particular place as occasion may require, whether to examine the situation of the provisions or cargo, to discover and stop a leak, or to bring out any article that is wanted. Finally, gangway implies a thoroughfare or narrow passage of any kind.

To bring to the gangway; a phrase signifying to punish a seaman by seizing him up and flogging him with a cat-o'-ninetails.

Gantlet, or **Gauntlet** (Fr. *gantelet*, from *gam*, a glove), a kind of iron glove, with fingers covered with small plates; formerly worn by cavaliers when armed at all points, and which used to be thrown down as token of challenge. Gauntlets were introduced about the 13th century.

Garnet, Garnets (Fr. *Grenats*; Ger. *Granaten, Granatstein*; It. *Granati*; Lat. *Granati*; Rus. *Granatnoi kamen*; Sp. *Granadas*). There are two species of garnet, the precious, and the common. The color of the first is red; and hence the name of the mineral, from its supposed resemblance to the flower of the pomegranate; passes from Columbine red, to cherry and brown red; commonly crystallized. External lustre glistening, internal shining, vitreous; transparent, sometimes only translucent; specific gravity 4·08 to 4·35. The color of the common garnet is of various shades of brown and green. Different colors often appear in the same mass: translucent; black varieties nearly opaque: specific gravity from 3·66 to 3·75.—THOMSON'S *Chemistry*. The finest varieties come from India, and some good specimens have been received from Greenland. When large and free from flaws, garnets are worth from £2 to £5 or £6, and even more; but stones of this value are of rare occurrence, and always in demand.—MAWE *on Diamonds*, etc., 2 ed., p. 113.

Gas. This inflammable aeriform fluid was first evolved from coal by Dr. Clayton, in 1736-1739.—*Phil. Trans.* Its application to the purposes of illumination was first tried by Mr. Murdoch, in Cornwall, in 1792. The first display of gas-lights was made at Boulton and Watt's foundery, in Birmingham, on the occasion of the rejoicings for peace in 1802. Gas was permanently used to the exclusion of lamps and candles at the cotton mills of Phillips and Lee, Manchester, where 1000 burners were lighted, 1805. Gas-lights were first introduced in London, at Golden-lane, August 16, 1807. They were used in lighting Pall Mall, in 1809; and were general through London in 1814. They were first used in Dublin in 1816, and the streets there generally lighted in October, 1825. The gas-pipes in and round London extend to 1100 miles.—HAYDN.

Every one must have remarked that most species of coal, when ignited, give out large quantities of gas, which burns with much brilliancy, yielding a great quantity of light as well as of heat. Dr. Clayton seems to have been the first who attempted, about 1736-1739, to apply this gas to the purposes of artificial illumination; but his experiments were upon a very limited scale, and no further attention was paid to the subject till more than half a century afterward. At length, however, Mr. Murdoch, of Soho, instituted a series of judicious experiments on the extrication of gas from coal; and, by his ingenuity and sagacity succeeded in establishing one of the most capital improvements ever made in the arts. Mr. Murdoch found that the gas might be collected in reservoirs, purified, conveyed by pipes to a great distance from the furnace where it was generated; and that it affords, by its slow combustion, when allowed to escape through small orifices, a beautiful and steady light. This great discovery, which places Mr. Murdoch in the first rank among the benefactors of mankind, was first brought into practice at Redruth, in Cornwall. In 1802, it was applied to light Mr. Murdoch's manufactory at Soho; in 1805, it was adopted by Messrs. Phillips and Lee, of Manchester, in the lighting of their great cotton mill; and is now employed in the lighting of the streets, theatres, and other public buildings, factories, etc. of *all* the considerable towns of the empire, and also in most considerable towns of Europe and America.

Gas light is indebted, for its rapid diffusion, not more to its peculiar softness, clearness, and unvarying intensity, than to its comparative cheapness. According to Dr. Thomson (*Encyc. Brit.*, art. GAS LIGHTS), if we value the quantity of light given by 1 lb. of tallow in candles at 1s., an equal quantity of light from coal gas will not cost more than 2¾d., being less than a *fourth part* of the cost of the former. Oil and other substances have been used in furnishing gas for the purpose of illumination, but none of them has answered so well as coal. Most of the oil gas establishments have been abandoned. The construction of gas works on a large scale, and the carrying of pipes through the streets and into houses, etc., is very extensive, and requires a large outlay of capital. Hence most of the gas lights in the different towns are supplied by joint-stock companies. Many of them have turned out to be very profitable concerns.

The first attempt to supply cities in the United States with gas was made at Baltimore in 1821, and at New York in 1823. Both of these attempts were unsuccessful. The New York Gas-Light Company, with a capital of $1,000,000, was incorporated March 26th, 1823. It was reorganized in 1827, and then commenced a successful business. The Manhattan Gas-Light Company was incorporated with a capital of $2,000,000, February 26th, 1830. Upon these two Companies the city of New York is now entirely dependent for gas. The former Company supplies all that portion of the city which is below Grand-street, and the latter Company all that portion which is between Grand-street and Seventy-ninth street. The New York Gas-Light Company has 130 miles of pipes laid through the streets of the city, ranging from 4 to 18 inches in diameter. In 1855 this Company made 300,000,000 cubic feet of gas, consuming about 45,000 tons of coal. It furnished gas to 3,200 street lamps, and to 9,000 private consumers.

The Manhattan Gas-Light Company has 200 miles of pipe laid through the streets of the city, ranging from 3 to 20 inches in diameter. In 1855 this Company made 470,000,000 cubic feet of gas. It lighted 7,148 street lamps, and furnished gas to 17,300 private consumers. These Companies jointly light and keep in order for the city about 10,150 street lamps, for which they are paid $25 per annum for each lamp. This payment nets the Companies, according to their estimate, only $1 50 per 1000 cubic feet of gas consumed in the lamps, which is just one half the sum charged to their private customers for gas, but is doubtless profitable even at that low rate. The gas is manufactured from rich bituminous coals, such as Cannel coal, Newcastle coal, and the Albert coal of Nova Scotia. A chaldron of Newcastle coal, weighing 27 cwt., will yield:

Gas	8,650 cubic feet.
Coke	14 cwt.
Ammoniacal liquor	12½ gallons.
Thick tar	12 "

A chaldron of Cannel coal will yield an average of 12,000 cubic feet of gas. The gas coal used in New York costs about $10 per chaldron. The coke, or shell of the coal after the gas is extracted, is worth about $4 per chaldron, and makes a very pleasant fire in a grate. The bituminous coal is thrown in a hot iron cylinder, or retort, as it is called, whose mouth is closed and sealed tight with soft clay. The vapor of the coal, distilling in the retort, passes through a tube, by which it escapes into a series of vessels called the condenser, where it cools and deposits all its tar and other condensible impurities. Thence it passes through another series of vessels called the purifier, containing quicklime, of the consistency of cream, which cleanses the vapor of its sulphurous intermixtures. From the lime the purified vapor of the coal, or, in other words, the gas, now flows into the gasometer, and is ready for use. From the gasometer it is driven, through main and service pipes, into the consumers' burners.

The machinery of all gas manufactories is the same in principle, and seems now to be almost perfect. The chief improvements made lately in the machinery consist in the manner of applying to the gasometer the pressure which regulates the force of the gas.

THE FOLLOWING TABULAR VIEW PRESENTS THE COMPARATIVE COST OR PRICE OF GAS AT SEVERAL LEADING CITIES OF THE UNITED STATES, SHOWING ALSO THE YEAR OF INCORPORATION OF THE COMPANY, DATE WHEN GAS WAS FIRST USED, COST OF COAL, AND ORDINARY ANNUAL CONSUMPTION, ETC.

Place.	Gas Company incorp'd.	Gas first used.	Capital of Company.	Price of Gas per 1000 sub. Feet, 1857.	Cost of Coal used per Ton.	Annual Consumption of Gas.	Miles of Mains laid.	Description of Coal used.
	Year.	Year.	$	$ Cts.	$ Cts.	Feet.		
Detroit, Mich.	1849	1851	292,000	3 50	5 25	19,118,000	18	Mineral Ridge, Brier Hill, etc.
Wheeling, Va.	1849	1850	715,000	3 00	1 40	8,300,000	7·33	Soft bituminous coal.
Cincinnati, Ohio	1837	1843	800,000	2 50	4 25	98,000,000	40	Youghiogheny, or Pittsburgh, coal.
Louisville, Ky.	1838	1840	461,000	3 00	4 85	83,750,000	30	Kanawha cannel and Youghiogheny.
Cleveland, Ohio	1846	1849	100,000	3 00	4 50	20,000,000	14 50	Pittsburgh coal.
Albany, N. Y.	1840	1845	300,000	3 00	8 75 @ 11 20	40,000,000	20	Newcastle coal, $8 75. Cannel, $11 20.
Rochester, N. Y.	1848	1848	150,000	3 15	5 83	27,000,000	17·25	Anthracite coal.
St. Louis, Mo.	1839	1847	600,000	3 00	7 50	63,500,000	45	Pittsburgh coal only.
Philadelphia, Penn.	1835	1836	2,000,000	2 13	6 50	434,000,000	214	Pittsburgh and Virginia coals.
Washington City.	1846	1848	424,000	3 50	6 00	50,000,000	30	English cannel and Virginia Clover Hill.
New York Gas Co.	1823	1824	750,000	2 50	8 00 @ 10 00	430,000,000	125	English cannel and Newcastle principally, costing $8 to $10 per ton.
Manhattan Co., N. Y.	1830	1835	2,770,030	2 50	8 00 @ 10 00	650,000,000	200	English cannel and Newcastle.
Boston, Mass.	1826	....	1,000,000	2 50	6 00 to 9 00 ch.	190,000,000	70	Pictou coal, $6. English cannel, $16 50 per chaldron of 2000 pounds.

A very careful and accurate analysis and photometric examination of wood gas have been made by two eminent analytical chemists (Dr. Wolcott Gibbs, of New York, and Dr. F. A. Genth, of Philadelphia), whose report of their chemical results furnishes a highly satisfactory explanation of certain curious phenomena that accompany the combustion of this gas.

They examined two varieties of gas, one made from old field pine, the other from small second-growth oak, with the following results:

	Gas from Pine.	Gas from Oak.
Specific gravity	0·668	0 589
COMPOSITION.		
Hydrogen	32·71	30·44
Light carbonic hydrogen	21·50	53·12
Olef. gas and hydro carbon vapors	10·57	6·46
Carbonic oxyd	27·11	26·11
Carbonic acid	4·90	0·48
Oxygen	0·66	None.
Nitrogen	2 55	3 39
	100·00	100·00

These gases were collected at the Ninth Ward Works, and taken to New York for analysis. Their illuminating power was tested and found to be over 26 candles for a five-feet burner.

Mr. Murdoch in 1797 exhibited publicly the results of his more matured plans for the preparation of coal gas. The following year (being then connected with Messrs. Boulton and Watt's engineering work-shop) he constructed an apparatus at the Soho foundery for lighting that establishment, with suitable arrangements for the purification of the gas; and these experiments, Dr. Henry states, "were continued with occasional interruptions until the epoch of the peace of 1802, when the illumination of the Soho manufactory afforded an opportunity of making a public display of the new lights; and they were made to constitute a principal feature in that exhibition."

In 1804–'5 Mr. Murdoch had an opportunity of carrying his plans into effect on a still larger scale, by means of the apparatus erected under his superintendence in the extensive cotton mills of Messrs. Philips and Son of Manchester.

It has been alleged that gas-lights were used in France before they were known in England; but as the earliest exhibition of these lights, on which the claim of priority of discovery is founded, took place at Paris in 1802, it is evident, from the foregoing statements, that the exhibition alluded to was ten years subsequent to the first experiment of Mr. Murdoch on the subject.

The practicability of lighting by means of coal gas having been demonstrated by Mr. Murdoch, a number of scientific men applied their talents to the further development of the art. Dr. Henry, the celebrated chemist, lectured on the subject in 1804 and 1805, and furnished many hints for the improvement of the manufacture. Mr. Clegg, an engineer in the employment of Boulton and Watt, was a worthy successor of Murdoch, and for many years was the most eminent gas engineer of England. A good deal of the machinery of the gas-house in its present form was contrived by Mr. Clegg, and to him, also, we are indebted for the ingenious wet gas-meter. In 1813 Westminster Bridge was first lighted with gas, and in the following year the streets of Westminster were thus lighted; and in 1816 gas became common in London. So rapid was the progress of this new mode of illumination, that in the course of a few years after it was first introduced, it was adopted by all the principal towns in the kingdom, for lighting streets as well as shops and public edifices. In private houses it found its way more slowly, partly from an apprehension, not entirely groundless, of the danger attending the use of it, and partly from the annoyance which was experienced in many cases through the careless and imperfect manner in which the service-pipes were at first fitted up. These inconveniences have been in a great measure, if not wholly, removed by a more enlarged knowledge of the management of gas; and at present there are few private houses in large towns which are not either partially or entirely lighted up by it. As the demand for gas increased, various improvements were from time to time introduced, both in the mechanical arrangements and in the chemical operations of the manufacture. The rapid increase in the population of the metropolis, and of all large towns, has naturally led to an increased consumption of gas; and the application of gas to the purposes of warming and cooking has also further increased the demand for it. Hence it has been not only necessary that new gas-works should be erected for the supply of new districts, but that the resources of old works should be enlarged. It is only a few years ago that a gas-holder capable of storing 250,000 cubic feet of gas was regarded as of enormous size; at the present time gas-holders are made of double that capacity, and we occasionally hear of them of the capacity of upward of a million cubic feet. There is one such at Philadelphia; it is 140 feet in diameter and 70 feet in height. Nor will such dimensions as these be regarded as superfluous when it is stated that some of the large metropolitan works send out each from a million to a million and a half cubic feet of gas in one night in mid-winter.

Gauging, the art of measuring the contents of casks or vessels of any form. Gauging forms a part of mensuration, but is frequently practiced by persons unacquainted with its theoretical principles, who work by certain rules, with the aid of a gauging-rod, and by the sliding rule. The ordinary gauging-rod consists of four rules made of box-wood, each a foot long, and united by brass joints, so that it may be folded together. The term *gauge* or *gage* is applied in various ways, but always with reference to measure or proportion; or, in the literal sense of the word, to that which bounds or confines something else. Thus, in physics, it is applied to several instruments or apparatus for measuring the state of a phenomenon; such as the wind-gage, rain-gage, the barometer-gage for measuring the degree of pressure of the air within the receiver of an air-pump, etc.; in architecture, to the length of a slate below the lap; in railway engineering, to the space between the rails, and the like. See GAGE.

Gazette, a paper of public intelligence and news of divers countries, first printed at Venice about the year 1620, and so called (some say) because *una gazetta*, a small piece of Venetian coin was given to buy or read it. Others derive the name from *gaza*, Italian for magpie, *i. e.* chatterer.—TRUSLER. A gazette was printed in France in 1631; and one in Germany in 1715.—*Nouv. Dict. Hist.*

Gauze. Brass wire-gauze or cloth is now made of such exquisite fineness that the separate threads can only be detected by close inspection. Messrs. Estivant, who carry on the brass manufacture on a scale of great magnitude in France, produce wire of remarkable minuteness. There were in the French department of the late exhibition several specimens of brass gauze, each showing the limit of fineness to which the manufacturers had attained at the date of the several industrial expositions in France. Each date displayed a degree of fineness greater than that of any previous date; and the specimen for 1851 was the finest of all. It almost exceeds belief that metal could be wrought to such an exquisite degree of minuteness as in this web. There were 67,600 meshes in one square inch of this brass gauze, or 260 parallel threads in one linear inch. The wire-drawing in the first instance, and the weaving afterward, must have been very carefully conducted.

Geelong, a township of Victoria colony, South Australia, comprising five contiguous villages, at the head of the west arm of Port Philip, 40 miles southwest of Melbourne, with which it has constant communication by steam. Population in 1846, 2,065. It has an increasing trade in wool and grain, though large vessels can not approach it within seven miles. The river Barwon flows past its west border to the Southern Ocean.

Consignees, Masters, and Lighters at Geelong.—We find the following declaration on the respective rights and duties of consignees, masters, and lightermen, in the proceedings of the Geelong Chamber of Commerce. The motion of which notice had been given by Mr. McKellar, "that the committee consider the subject of the delivery of goods by lighters," was brought under discussion, and after careful examination of the law relating thereto, it was clearly ascertained that it is the duty of the master of the vessel, as soon as the arrival of the ship has been reported, to give notice thereof to the owners or consignees of the goods on board; that he can not escape from his liability by immediately landing goods at a public wharf, without giving such notice, because the delivery at the wharf is not a delivery to the consignee; that if they are landed without such notice being given, and are destroyed upon the wharf by an accidental fire before the consignee has had an opportunity of taking them away, the ship-owners will be responsible for the loss, but that the lighterman or master of the vessel is bound to keep the goods on board or on the wharf at his own risk for a reasonable time, to enable the consignee or his assigns to come and fetch them; and that the lighterman is not released from his responsibility until he has obtained a receipt for the goods upon their delivery to the consignee.

Gelatine (Eng. and Fr.; *Gallert, Leim*, Germ.) is an animal product which is never found in the humors, but it may be obtained by boiling with water the soft and solid parts; as the muscles, the skin, the cartilages, bones, ligaments, tendons, and membranes. Isinglass consists almost entirely of gelatine. This substance is very soluble in boiling water; the solution forms a tremulous mass of jelly when it cools. Cold water has little action upon gelatine. Alcohol and tannin (tannic acid, see GALL-NUTS) precipitate gelatine from its solution; the former by abstracting the water, the latter by combining with the substance itself into an insoluble compound, of the nature of leather. No other acid except the tannic, and no alkali, possesses the property of precipitating gelatine. But chlorine and certain salts render its solution more or less turbid; as the nitrate and bichloride of mercury, the proto-chloride of tin, and a few others. Sulphuric acid converts a solution of gelatine at a boiling heat into sugar. Gelatine consists of carbon, 47·88; hydrogen, 7·91; oxygen, 27·21.

Gelatine Casts.—The beautiful may often be created out of mere refuse; an example of this is afforded by the articles now made of gelatine. The French show peculiar tact in procuring gelatine from the waste remnants of the skins, bones, tendons, ligaments, and other gelatinous tissues of animals. The well-ordered *abattoirs* of Paris and other large towns, afford facilities which we do not possess, for the economical application of all the waste parts of the slaughtered animals. M. Grenet has been the first to fabricate, on a large scale, out of various residues of animal bodies, beautiful and diversified products which have hitherto been made of the more costly material isinglass. He produces different kinds of gelatine, in thin sheets; pure and white films cut into threads for the use of the confectioner; very thin, white, and transparent sheets, called "papier glacé," or ice-paper, for copying drawings; dyed, gilt, and silvered gelatine sheets, adapted to the fabrication of artificial flowers and to the production of an almost endless variety of ornamented articles; and sheets embossed or stamped with elegant patterns. The gelatine is used, too, as a material in the dressing of stuff goods, and also as a refining ingredient in the clarification of wine.

Gem (Lat. *gemma*), in sculpture, a precious stone, used for the purpose of sculpture. The practice of carving gems is of remote antiquity, though it is doubtful whether they were able to cut the diamond or use the emerald and topaz for sculptural purposes. The stones usually selected are rock-crystal of different colors, jasper, chalcedony, onyx, cornelian, and blood-stone. Among the Greeks the art was carried to great perfection; but having fallen with the other arts into disuse, its revival was effected in Italy in the 15th century, and modern masters have more than rivaled some of the ancient productions.

Geneva (Du. *Genever*; Fr. *Genièvre*; Ger. *Gaud, Geaever*; It. *Acqua di Ginepro*; Lat. *Junipera aqua*; Sp. *Agua de Enebro*), a spirit obtained by distillation from grain, rectified with the addition of juniper berries. The latter gives to the spirit that peculiar flavor by which it is distinguished, and are also said to render it diuretic. Geneva is a corruption of *genièvre*, the French term for the juniper berry. By far the best geneva is made in Holland, where its manufacture is carried on to a very great extent. The distilleries of Schiedam have long been famous, and are at present in a very prosperous condition. Schiedam geneva is made solely of spirit obtained from rye and barley, flavored with juniper berries. It becomes milder, and

acquires, as it gets old, an oily flavor disliked by Hollanders; hence nearly the whole of the "Schiedam" is exported, principally to the East Indies. There are no fewer than 100 distilleries in Schiedam, 200 in other parts of Holland, and not more than 40 in Belgium. The entire annual produce of the distillery in Holland is estimated at 2,000,000 ankers, or 20,500,000 wine gallons, of which about two thirds are exported.—CLOET, *Description Géographique des Pays Bas*, p. 32.

Genoa, a maritime city of Italy, once the capital of the famous republic of that name, now of a province of the kingdom of Sardinia, at the bottom of the extensive gulf to which it gives its name; the lighthouse being in lat. 44° 24′ 18″ N., long. 8° 54′ 24″ E. Population in 1848, 100,382. Genoa is one of the finest cities of Europe, and noted as the birth-place of Christopher Columbus, in the year 1441. In general, the streets are inconveniently narrow; but some of the principal ones are moderately wide, and consist almost entirely of public buildings and private palaces erected during the period of her prosperity. Being built on a rising ground, in the form of an amphitheatre, the appearance of the town from the sea is most magnificent, and justifies the epithet given to her of "*la superba*."

Its ancient inhabitants were th ligueres, who submitted to the Romans, 115 B.C., and underwent the revolutions of the Roman empire till A.D. 950. The Genoese revolt against their count, choose a doge and other magistrates from among their nobility, and became an aristocratic republic, 1030 to 1034. Several revolutions occurred up to 1528, when the celebrated Andrew Doria rescued his country from the dominion of foreign powers. Bombarded by the French in 1684, and by the British in 1688 and 1745. Genoa was taken by the Imperialists, December 8th, 1746; but their oppression of the people was such, that the latter suddenly rose and expelled their conquerors, who again besieged the city the next year, August 17, without effect. Genoa lost Corsica, 1780. The celebrated bank failed 1750. The city sustained a siege by a British fleet and Austrian army, until literally starved, and was evacuated by capitulation, May, 1800; but it was surrendered to the French soon after their victory at Marengo. The Ligurian republic was founded upon that of Genoa, in 1801, and the doge solemnly invested, August 10, 1802. Genoa was annexed to the French empire, May 25, 1805. It surrendered to the combined English and Sicilian army, April 18, 1814; and was transferred to the king of Sardinia in 1816. Insurrection against Victor Emmanuel, April 1st; subdued, April 11, 1849.

Port.—The harbor is semicircular, the diameter being about 1000 fathoms. It is artificial, being formed by two gigantic moles having opposite directions. That on the east side, called the old mole (*molo vecchio*), projects from the centre of the city west by south. It is about 260 fathoms in length, and has a battery near its middle. The new mole (*molo nuovo*), on the opposite side of the port, adjoins the southern extremity of the suburb of St. Pietro d'Arena, projecting about 210 fathoms from the shore in an E.S.E. direction. The mole heads bear from each other N.E. by E. and S.W. by W., the distance between them, forming the entrance to the harbor, being about 350 fathoms. The light-house is without the port, on the west side, near the extremity of a point of land, and contiguous to the bottom of the new mole. It is a lofty square tower; and as it stands on a high rock, and is painted white, it is visible in clear weather at a great distance. There is also a harbor light at the extremity of the new mole. There is no difficulty in entering the harbor; the ground is clean, and there is plenty of water, particularly on the side next the new mole; care, however, must be taken, in coming from the west, to give the light-house point a good offing. Moderate-sized merchantmen commonly anchor inside the old mole contiguous to the *porto franco*, or bonded-warehouses, having a hawser made fast to the mole, and an anchor ahead. Men-of-war, and the largest class of merchantmen may anchor inside the new mole, but they must not come too near the shore. Ships sometimes anchor without the harbor in from 10 to 25 fathoms, the light-house bearing N. ½ W., distant 2 or 3 miles. The south west-wind occasions a heavy swell, but the bottom is clay, and holds well. Within the town are two rather shallow basins designed for galleys and small trading-vessels. There is also an arsenal.

Money.—Accounts were formerly kept at Genoa in lire or 20 soldi, each soldo containing 12 denari, and money was divided into *banco* and *fuori di banco*. But since the 1st of January, 1827, the ancient method of reckoning has ceased, and accounts are now kept in lire Italiane, divided into cents. The weight and fineness of the new coins are precisely the same as those of France; so that the par of exchange=25·20 lire per £1, if estimated in silver at 5*s.* 2d. an oz., and 25·54, if estimated in silver at 5*s.* an oz. 6 old lire di banco are equal to 5 new lire very nearly.—*Manuel de Nelkenbrecher.*

Weights and Measures.—Those formerly in use in Genoa are described in the old editions of M'CULLOCH's *Dict.* In 1847 the French system of weights and measures was introduced, the only difference being the substitution of Italian for French names. Thus, the *chilogramma* (kilog.)=2·2 lbs. avoird. (50½ chilog. being very nearly equal to 112 lbs.); the *libbra* (livre) or pondo=½ chilog.=1·1 lb. avoird.; the *quintale centinajo*, or ewt.=220 lbs. avoird.; and the *ettolitro* (hectolitre), liquid measure=22 imp. galls.; ditto, dry measure=2¾ imp. bush.; the *metro* (metre)=39·37 inches, etc. A barrel of oil=59½ chilog.=14½ imp. galls. All tares of usage were abolished at the same time that the French metrical system was introduced.

The *Bank of Genoa*, or of St. George, was one of the most ancient and celebrated banks of circulation and deposit in Europe. Until 1746, when the bank was pillaged by the Austrians, it was customary to make all bills of exchange drawn upon Genoa payable in *banco*; but since then they have generally been made payable in money *fuori di banco*. In 1800, when the French were besieged in Genoa by the Austrians, they took the treasure of the bank to pay their troops. The establishment has never recovered from this blow; some warehouses, and a part of the town's revenue, were assigned to it, but they yield a very poor dividend. It is no longer used as a place of deposit for money.

Trade, etc.—Genoa is the entrepôt of a large extent of country; and her commerce, though inferior to what it once was, is very considerable, and has latterly been increasing. She is a free port; that is, a port where goods may be warehoused and exported free of duty. The exports consist partly of the raw products of the adjacent country, such as olive oil (an article of great value and importance), rice, fruits, cheese, rags, steel, argol, etc.; partly of the products of her manufacturing industry, such as silks, damasks, and velvets (for the production of which she has been long famous), thrown silk, paper, soap, works in marble, alabaster, coral, etc; the printed cottons of Switzerland, and the other products of that country and of the western parts of Lombardy, intended for the south of Europe and the Levant; and partly of the various foreign products brought by sea, and placed in *porto franco*. The imports principally consist of cotton and woolen stuffs; cotton wool, mostly from Egypt; corn from the Black Sea, Sicily, and Barbary; sugar, salted fish, spices, coffee, cochineal, indigo, hides, iron, and naval stores from the Baltic; hardware, and tin plates from England; wool, tobacco, lead (principally

from Spain), wax, etc. Corn, barilla, Gallipoli oil, cotton, valonia, sponge, galls, and other products of the countries adjoining the Black Sea, Sicily, the Levant, etc., may in general be had here, though not in so great abundance as at Leghorn. The abolition of the various duties and custom-house fees formerly charged on the transit of goods through Genoa and the Sardinian territories, has had a very beneficial influence on the trade of this port, particularly as regards the importation of raw cotton for Switzerland and Milan, as well as of the different descriptions of colonial produce.

ACCOUNT OF THE PRINCIPAL ARTICLES OF EXPORT FROM GENOA, WITH THEIR PRICES, FREE ON BOARD, IN ITALIAN AND ENGLISH MONEY, 5TH JUNE, 1858.*

Articles.	Prices in Italian money.		Prices in English money			English weights & measures.
	Livres.		£	s.	d.	
Cheese, Parmesan..50 kil.	125	—130	0	1	0	lb.
Citron, preserved... "	75	— 80	0	0	6 56	"
Cream of Tartar.... "	80	— 0	0	0	7 44	cwt.
Essences: lemon....½ kil	6 50	— 0	0	5	3	lb.
bergamot..... "	8 50	— 0	0	6	5	"
orange..... "	3 50	— 0	0	4	5	"
Galls: Turkey, blue & blue & green..50 kil.	170	— 0	7	5	6	cwt.
Gum Arabic: picked..½ kil	1 50	— 2	8	11	0	"
in sorts.....50 kil.	75	— 0	3	4	0	"
Hemp: Bologna...100 kil.	106	—108	46	12	7	ton.
2d and 1st..... "	104	—105	45	19	8	"
cordage, 1st..... "	96	— 98	41	19	4	"
" 2d..... "	91	— 93	39	15	10	"
Ferrara cordage. "	76	— 88	33	0	9	"
Piedmont, 1st... "	60	— 0	28	8	0	"
combed..... "	130	—140	59	19	0	"
Linseed, Sicily and Sardinia..... "	28 50	— 29	2	4	2	Imp. qr.
Black Sea..... "	25	— 26	1	19	8	"
Egyptian..... "	25	— 26	1	19	8	"
Liquorice paste, Calabria.....50 kil	86	— 88	3	15	7	cwt.
Sicilian ..... "	52	— 53	2	5	6	"
Manna, in flakes.....½ kil.	7 50	— 0	0	5	9	lb.
in sorts..... "	3	— 0	0	2	4	"
Madder roots, Levant "	50	— 0	2	2	0	cwt.
Opium, Turkey ..... "	15	— 0	0	11	6	lb.
Oil, Genoa, super.....bar.	115	— 0	88	3	0	252 gal.
Gallipoli..... "	72	— 0	55	3	0	"
Tunis..... "	75	— 78	58	4	0	"
Sicily..... "	73	— 0	55	18	9	"
Sardinia..... "	92	— 93	71	4	0	"
Paper, Fioretta, 14 lbs. p 10 reams	44	— 47	0	3	11	475 shts
Paper — Al Masso, p. 10 lb. reams	86	— 88	0	3	2	"
Quicksilver.....½ kil	72	— 74	0	6	3	"
Rags, linen, 1st.....50 kil.	4 25	— 0	0	3	3	lb.
" 2d..... "	31 90	— 0	3	0	3 20	"
" " 3d..... "	26 25	— 0	0	0	2 53	"
Rice, Italian..... "	22 20	— 0	0	0	1 86	"
Silks, raw Genoa and Piedmont.....½ kil.	18	— 18	0	15	11	cwt.
white and yellow "	33	— 34	1	7	3	"
Organzina 18—20.. "	40	— 41	1	12	0	"
" 20—22.. "	38	— 39	1	11	6	"
" 22—26.. "	36	— 38	1	10	6	"
Trama, 1st..... "	33	— 34	1	7	0	"
" 2d and 3d.. "	30	— 32	1	15	8	"
Sewing, black..... "	26	— 0	1	0	10	"
assorted..... "	27	— 0	1	1	7	"
Waste, 1st and 2d. "	3 50	— 5	0	4	1	"
Wools, viz:						
Morocco, washed..50 kil.	100	—110	0	0	10 10	lb.
Tunis..... "	127	—131	0	1	0 06	"
Tangarock & Odessa "	95	—102	0	0	9 38	"
Russia merinos half washed.... "	114	—125	0	0	11 20	"
Bengasi..... "	64	— 76	0	0	6 27	"
Morocco unwashed "	66	— 68	0	0	5 69	"
Tunis..... "	57	— 61	0	0	5 35	"
Grains, viz.:						
Wheat, Polish soft..hect.	16 50	— 17	2	0	4	Imp. qr.
Galacz and Braila.. "	15	— 15	1	16	10	"
Barletta..... "	18 50	— 19	2	5	2	"
Romelia..... "	14 50	— 15	1	15	7	"
hard Tangarock.... "	17	— 17	2	1	6	"
Marianople..... "	16 50	— 0	1	19	2	"
Indian Corn, Galacz "	12	— 12	1	9	7	"

* From the Circular of Grants, Balfour & Co., Leghorn.

Gentian (Ger. *Enzian*; Fr. *Gentiane*; It. *Genziana*; Sp. *Jenciana*; Rus. *Enzian*; Lat. *Gentiana*), the roots of two alpine plants, *Gentiana lutea* and *Gentiana purpurea*, found growing in Switzerland and Austria, the Apennines, the Pyrenees, and in North America. Those brought to this country come from Germany. They are in pieces of various lengths and thickness, twisted, and wrinkled on the outside, and covered with a brownish-gray cuticle. They have no particular odor; and the taste is intensely bitter, without being nauseous.—THOMSON'S *Dispensatory*.

Geodesy (Gr. *γη*, and *δαιω*, *I divide*), literally signifies the *division of the earth*, in which sense it is synonymous with land-surveying; but it is usually employed in a more general sense to denote that part of practical geometry which has for its object the determination of the magnitude and figure either of the whole earth, or of any given portion of its surface. In this sense it comprehends all the geometrical or trigonometrical operations that are necessary for constructing a map of a country, measuring the lengths of degrees, etc. In order to construct an accurate map, or determine the form and dimensions of a country, it is necessary, in the first place, to determine the absolute distances between the several stations or points; secondly, to determine the azimuths of the lines thus measured, that is, their situation with respect to the meridian; and thirdly, the differences of latitude and longitude of the stations. The operations necessary for determining the absolute distances, comprehending the measurement of a base, the observation of angles, the computation of the sides of the triangles, and their reduction to the same level, are called the *geodesical* or *geodetical* operations; while those which are required for determining the azimuths and latitudes are called the *astronomical* operations. The determination of the figure and dimensions of the earth is a problem of very great importance to astronomy and geography, and has accordingly at all times been a subject of much interest to mathematicians; but it is only since toward the middle of the last century that operations on an adequate scale for its solution have been undertaken in different parts of the world. For the results of the more important of these operations, see DEGREE.

Geography. The first correct record we have of geographical knowledge is from Homer. He describes the shield of Achilles as representing the earth, surrounded by the sea.—*Iliad.* He accurately describes the countries of Greece, islands of the Archipelago, and site of Troy. The priests taught that the temple of Apollo at Delphos was the centre of the world. Anaximander of Miletus was the inventor of geographical maps, about 568 B. C. Hipparchus attempted to reduce geography to mathematical bases about 135 B. C. It was first brought to Europe by the Moors of Barbary and Spain, about A. D. 1201.—LENGLET. The invention of the mariner's compass is the important connecting link between ancient and modern geography. The modern maps and charts were introduced into England by Bartholomew Columbus to illustrate his brother's theory respecting a western continent, A. D. 1489.—HAYDN. The term Geography, derived from two Greek words, *γεα*, *the earth*, and *γραφω*, *I write*, signifies *a description of the earth*. The description to which this title is applied may be more or less general; either embracing such truths as only belong to the earth considered as one whole, or extending to particulars which belong to and distinguish the several countries spread over its surface. In whichsoever of these two aspects the subject be regarded, a vast field opens to the view of the observer. In order to give a full and accurate description of the earth, it would be requisite to consider it in reference to its motion, figure, and magnitude; in reference to its relation to the other bodies of the universe, and more especially to the planetary system of which it forms a part; in reference to its surface, as diversified by land and sea, mountains and valleys, lakes and rivers; in reference to the materials which compose its crust, and to its internal structure; in reference to the constitution

of the atmosphere with which it is surrounded, and the effects arising from the variations in atmospherical pressure, temperature, and humidity. Nor would it be enough to consider the earth only as a mass of inert and unorganized matter; it would be necessary to regard it in its relations to vegetable and animal life; and to trace the phenomena which these, in their endless variety, present in its various divisions and provinces. It would still further be necessary to view it as the abode of man himself, and as modified by his existence; divided into states and kingdoms; adorned with cities, and all the noble monuments of civilized life.

Such is an outline of the picture which geography, in the most unlimited meaning of the term, should exhibit of the globe. To fill up this picture in all its parts, it would evidently be necessary to call in the aid of the whole circle of the sciences. But the description is usually of a less extended character, being confined chiefly to the more obvious and striking features of the various regions and countries of the earth.

In the wide range which the subject presents, several divisions and subdivisions are suggested by the different views in which the earth may be considered. The three following divisions are the most important:

1. *Mathematical Geography*, which illustrates, on astronomical principles, the figure, magnitude, and motion of the earth; teaches how to determine the positions of places on its surface; explains the construction of globes, with their application to the solution of problems; and shows how the whole or any portion of the earth's surface may, on the principles of projection, be delineated on a map or chart.

2. *Physical Geography*, which treats of the mutual relations of the diversified objects found on the surface of the earth, including the atmosphere by which it is surrounded; and explains the causes, whether of a chemical or mechanical description, that produce the modifications and changes which are continually taking place in them.

3. *Political*, or *Historical Geography*, which describes the earth as divided into countries, occupied by various nations, and improved by human art and industry. It traces the circumstances and character of the different races and tribes of mankind, explaining their social institutions, and ascertaining the place which each occupies in the scale of civilization.

From this general arrangement of the subject, it is evident that geography depends for its rank as a science on its intimate connection with various branches of knowledge, which, taking their rise from investigations instituted in reference to the nature and mutual relations of the objects on the earth, or connected with it, furnish those accurate views which must be obtained before any thing like a precise description can be given of the globe we inhabit, or of any portion of it. With regard to what belongs to Physical Geography, we must refer the reader to the articles PHYSICAL GEOGRAPHY, MINERALOGY, METEOROLOGY, etc., in the new edition of the *Encyc. Brit.* What belongs to Political or Historical Geography will be found under the names of the respective countries. The following article will be limited to a view of the progress of Geographical Discovery.

Progress of Geographical Discovery.—There are many circumstances in the condition of man which connect him so closely with the globe which he inhabits, as to render absolutely necessary to his existence a knowledge of at least the neighborhood of the spot where his lot is cast. It is from the earth that he must derive the means of subsistence and accommodation, the materials on which his industry is to be exerted, and those objects in the exchange of which commerce consists. In every stage of his progress, therefore, from barbarism to civilization, he must employ some attention and observation, in order to discover in what respects the objects with which he is surrounded are qualified to contribute to the supply of his wants, and to his comfort and convenience. Even while he roams the forest in the savage state, he must make himself acquainted with many circumstances, a knowledge of which is necessary either to give him success in the chase, or to direct him in retracing his steps to the place where he has fixed his dwelling. But it is not until men have united in society, and that neighboring communities have begun to hold mutual intercourse, that those feelings and passions are effectually aroused which stimulate to the arduous pursuits of geographical discovery. Commerce and war, with the spirit of adventure which usually accompany them, have, without doubt, been among the first causes of geographical research. In the train of these have followed the workings of avarice and the aims of ambition. As the human mind has advanced in its career of improvement, curiosity, with an enlargement of views and desires, has been called into action; and voyages have been undertaken for the express purpose of discovering new countries and exploring unknown seas.

In tracing the effects which these causes have produced in the gradual increase of geographical knowledge, it will contribute to distinctness to keep in view a threefold division, which the subject naturally assumes, namely, *ancient* geography, extending from the earliest period of history down to the time when, the Roman empire having been overrun by barbarous nations from several quarters, Europe was overwhelmed in the darkness which preceded the revival of learning; the geography *of the middle ages*, extending from the revival of letters to the fifteenth century, when the discoveries of the Portuguese began to lay a wider foundation for the science; and *modern* geography, which embraces the most recent discoveries, and is progressively improving by the accessions which it is receiving from the labors and science of modern travelers and navigators.

The Phœnicians are the earliest commercial people of whose discoveries we have any correct accounts. This people seem first to have explored the coast of the Mediterranean. Their navigators at length extended their voyages through the Straits of Gades, now called the Straits of Gibraltar, entered the Atlantic Ocean, and visited the western coasts of Spain and Africa. In many places to which they resorted they planted colonies; and sought, by instructing the inhabitants, in some measure, in their arts and improvements, to open a wider sphere for their commerce. The learned Bochart, led by the analogy between the Phœnician tongue and the oriental languages, has endeavored to follow the tracks of the Phœnicians, both along the shores of the Mediterranean and those of the Atlantic. These analogies are not always sure guides; but there seems no reason to doubt that Cadiz was originally a Phœnician colony, and it is not likely that this was the only one formed by that enterprising people.

The Arabian Gulf, or Red Sea, offered to the Phœnicians another field of naval and commercial exertion, to the improvement of which the distance of Tyre, the emporium of their trade, was the only obstacle. This induced them to make themselves masters of Rhinocura or Rhinocolura, the port in the Mediterranean nearest to the Red Sea. Commodities purchased in Arabia, Ethiopia, and India, were landed at Elah, the safest harbor in the Red Sea toward the north; thence they were conveyed overland to Rhinocolura; and being there reshipped, they were carried to Tyre, whence they were distributed over the world.

The wealth and power which accrued to the Phœnicians from their being in the sole possession of the lucrative trade of the East, incited the Jews, their neighbors, under the prosperous reigns of David and Solomon, to desire a participation in its advantages. Their conquest of Idumea, which stretches along the Red Sea, put it in the power of Solomon to fit out a fleet;

while his alliance with Hiram, king of Tyre, enabled him to command the skill of the Phœnicians for the conducting of the voyage. Passing through the Straits of Babelmandel, they carried on commerce in the Indian Ocean; and so distant were the countries to which they traded, that the voyage occupied no less than three years. But though the Jews thus for a time engaged in the pursuits of trade, yet the tendency of their institutions, which were expressly designed to preserve them a separate people, was unfavorable to the development of the commercial spirit which their monarchs wished to foster among them. This, joined with the division of the kingdom on the death of Solomon, proved fatal to their rising greatness as a commercial people, and excluded them from ranking among the nations who have contributed to the advancement of geographical knowledge. It is perhaps impossible to fix with certainty the limits which bounded the geographical researches of the Phœnicians, on account of the difficulty there is of assigning the precise places marked out by the names then given to the countries to which they traded. The length of time occupied in the voyage, and the nature of the cargoes brought home, with a few other circumstances of the same vague kind, are the only particulars afforded to direct us in the determination. Thus, the country of Ophir, to which the Phœnicians navigated the ships of Solomon, must be ascertained by the facts that the voyage thither and homeward occupied three years, and that the cargo consisted of "gold, and silver, ivory, and apes, and peacocks." Among the various opinions which have been entertained respecting the position of this distant country, the most probable appears to be that it was situated on the eastern coast of Africa, as far south as Sofala. To this quarter every indication seems clearly to point; and whatever objections may appear to stand in the way, in consideration of the remoteness of the region, and the difficulties to be encountered, these admit of being answered by a reference to the length of time required for the voyage, and to the wealth, naval skill, and ample resources, at the command of the monarchs engaged in the traffic.

The regions always spoken of in Scripture as the most remote with which the Hebrews and Phœnicians were acquainted, are Tarshish, Ophir, the Isles Sheba and Dedan, the rivers Gog, Magog, and the North. Without entering into any discussion, we may give what appear to be the most probable conclusions with regard to the positions of the countries to which these names were applied. Tarshish is a country from which two voyages are spoken of in Scripture as being made; one by the Mediterranean, bringing iron, silver, lead, and tin, the produce of Spain and Britain; the other by the Red Sea, bringing gold, ivory and other productions of tropical Africa. These two voyages, though at first they appear incongruous, if supposed to be made to the same country, may be reconciled by supposing that Tarshish is fundamentally Carthage, which monopolized almost entirely the commerce of Spain and Britain, and was the medium through which the commodities of the West were distributed; and that the name of this great African metropolis was extended to the whole of the continent of Africa. The Isles are the whole southern coasts of Europe, consisting either of real islands or peninsular tracts. Sheba is the southern portion of that part of the coast of Arabia which borders on the Red Sea; while Dedan lies upon the opposite coast, that borders on the Persian Gulf. These countries rose to commercial importance in consequence of the valuable commodities which were imported into the former from the African coast, and into the latter from India. Thence arose the traffic carried on by "the companies of Sheba," or caravans, and by "the traveling companies of Dedanim." The River was the name always applied to the Euphrates. Gog, Magog, and the North, appear to be the high table-land in the interior and north of Asia Minor, Phrygia, Galatia, Cappadocia, and Paphlagonia, regions in which may be recognized the peculiarly rude and formidable aspect which belonged to the countries to which in ancient times the names in question were applied. See *Encyclopædia of Geography*, by H. Murray, Esq.

The Carthaginians, a Phœnician colony, retained in full vigor the commercial spirit of the parent State. They did not, however, attempt to divide with Tyre the wealth and power which she derived from the monopoly of the trade carried on in the Arabian Gulf. They directed their efforts to the opposite quarter, and sailing through the Straits of Gades, pushed their researches far beyond the bounds which had been reached by the mother country in this part of the globe. They visited not only all the coast of Spain, but likewise that of Gaul, and penetrated at length as far as the south-western coast of Britain, where they obtained tin from the mines of Cornwall or in traffic with the natives. Nor was it only toward the northward that they directed their efforts; they explored also the regions southward of the Straits, and sailing along the western coast of Africa almost as far as the northern tropic, they planted colonies, as the Phœnicians of Tyre had formerly done, with a view to prepare the natives for carrying on commercial intercourse. The Atlantic Ocean was destined to conceal for ages from the inhabitants of the old world the immense regions which lie beyond it. But the Carthaginians extended the boundary of navigation westward by the discovery of the Fortunate Islands, now known by the name of the Canaries.

The enlargement of views gradually generated by this spirit of commercial enterprise led at length to voyages of which discovery was the special object. The circumnavigation of Africa was one of the earliest attempts of this kind made by the ancients. The direction which the coast takes beyond the Mediterranean on the one hand, and the Red Sea on the other, suggested the idea of a peninsula which it might be possible to sail round. This voyage was first undertaken by the Egyptians; a people exceedingly averse to engage in naval affairs, but who at this time were ruled over by Necho, a monarch whose active spirit prompted him to engage some Phœnicians to descend the Arabian Gulf, and, coasting along Africa, to endeavor to return by the Straits of Gades. Herodotus narrates in a few words the result of this enterprise, which was undertaken about 604 years before the Christian era. He says, "the Phœnicians, setting sail from the Red Sea, made their way into the southern sea; and when autumn approached they drew their vessels to land, sowed a crop, and waited until it was grown; when they reaped it, and again put to sea. Having spent two years in this manner, in the third year they reached the Pillars of Hercules, and returned to Egypt, reporting what does not find belief with me, but may perhaps with some other person; for they said that in passing Africa, they had the sun on their right hand. In this manner Libya was first known." This passage has given rise to much controversy among the learned. But the voyage here so briefly described does not seem to involve any impossibility, notwithstanding the then infant state of navigation; and the circumstances which the historian objects to as incredible, is the very point, which, from its coincidence with what we know should have happened, renders the story more worthy of belief.

Xerxes, king of Persia, according to Herodotus, gave a similar commission, about 480 years before the Christian era, to one of his satraps, named Sataspes, who, for a heinous offense, had been condemned to die. If successful in the accomplishment of this voyage, Sataspes was to escape a cruel death. But the difficulties were too great to be surmounted by a navigator brought up amid the luxury and indulgence of the Persian court. Having

procured from Egypt a vessel and crew, he passed through the Straits of Gades, entered the Atlantic Ocean, and, bending his course toward the south, coasted the continent of Africa, until, after several months, he probably reached the coast of Sahara. The frightful and desolate shores along which he sailed, and the tempestuous ocean which beat against them, combined to fill his mind with alarm and to shake his resolution. He retraced his course to the Straits; and hoping, perhaps, that the labors he had undergone in the partial accomplishment of the task imposed on him would be accepted by his royal master as a sufficient atonement for his offense, or that the offense itself might in a great measure be forgotten, he returned home and presented himself before Xerxes. The cause which he assigned for the failure of the ultimate object of his mission was, that he had encountered a sea so full of herbage that his passage was completely obstructed. This reason (the grounds of which have never been satisfactorily explained, though it *has* been alleged that obstacles of this description occur in that part of the sea which lies between the Cape Verd Islands, the Canaries, and the coast of Africa) appeared so ridiculous to Xerxes, that he ordered the sentence of death by crucifixion, which had been pronounced upon Sataspes, to be immediately executed.

But the most celebrated voyage of antiquity undertaken for the purpose of discovery was the expedition under Hanno, fitted out by the authority of the Senate of Carthage, and at the public expense, and that with a view of attempting a complete survey of the western coast of Africa. Of all the voyages performed by the Phœnicians and Carthaginians, this is the only one of which we have an authentic narrative. Mercantile jealousy prevented these two great commercial states from communicating to other nations the knowledge which they acquired of the remote regions of the earth; and from this cause, when the maritime power of the former was annihilated by Alexander's conquest of Tyre, and the empire of the latter was overthrown by the Roman arms, all monuments of their great skill in naval affairs appear in a great measure to have perished. Even the account of the voyage of Hanno (*Periplus Hannonis*) has been considered by its learned editor, Mr. Dodwell, as a spurious work. But the arguments of M. de Montesquieu and of M. de Bougainville appear fully to establish its authenticity, which the learned world now generally admit.

Hanno set sail with a fleet of 60 vessels, so constructed that, according to the mode of ancient navigation, he could keep close in with the coast. We are told that, in twelve days after leaving the Straits of Gades, he reached the island of Cerne; that proceeding thence, and following the direction of the coast, he arrived, in 17 days, at a bay, which he called *The West Horn*. From this he advanced to another bay, which he named *The South Horn*. The objects which are described as having been seen by Hanno in his progress belong to tropical Africa. But in attempting to ascertain the places which he visited, or the utmost distance which he sailed southward, much difficulty and uncertainty are experienced. Bougainville supposes Hanno to have reached the Gulf of Benin, and contends that this limit, distant as it is, can not be regarded as beyond what may be conceived to have been accomplished by the most skillful navigator of antiquity. Major Rennell shortens the distance considerably by conceiving the voyage to have been extended no further southward than Sherbro Sound, a little beyond Sierra Leone. He thus obtains the advantage of avoiding a difficulty involved in the hypothesis of M. de Bougainville, namely, the supposition of ancient ships having sailed upward of 70 geographical miles in a day. At the same time, the arguments which support the one hypothesis are equally applicable to the other.

According to the views of M. Gosselin, however, the voyage must be confined to much narrower limits southward than even those assigned by Major Rennell. He supposes it to have terminated about the River Nun—an opinion which he supports by alleging that, in such a voyage, the progress must necessarily have been slow. The Carthaginian navigator had to encounter all the obstacles and dangers incident to a course held along a shore, and in a sea, which were equally unknown. He must have found himself impeded by the requisite examination of every part of the coast, as well as by the many precautions which the safety of the fleet under his command must have rendered constantly necessary. With regard to the circumstances given in the narrative which appear to point to tropical Africa, M. Gosselin supposes that the same aspect of life and nature may, at that distant period, have belonged to Morocco, then thinly peopled by the rude native tribes, which is now specially characteristic of the more southern regions.

Amid such diversity of opinion among the learned, it is not easy to decide in reference to a subject beset with so many difficulties. If we assume either of the more remote distances assigned for the termination of the voyage, Cerne must be identified with the isle of Arguin; and, on Major Rennell's hypothesis, the Gulfs of Bissago and Sherbro present those numerous islands described by Hanno, to which there are no islands corresponding on any other part of the coast. On the whole, however, the most limited distance seems preferable, if we admit that part of M. Gosselin's hypothesis which assigns to Morocco features of man and of nature that are usually held to be characteristic of tropical Africa.

The circumnavigation of Africa was an enterprise which in ancient times not only called forth the naval efforts of the most powerful maritime States, but which also awakened the ambition of private adventurers. Eudoxus, a native of Cyzicus, being sent on a mission to Alexandria, at that time the seat of naval enterprise and geographical knowledge, his ardent mind, naturally biased to these pursuits, was aroused to action by the spirit which prevailed in that city. He began his career under the auspices of Ptolemy Euergetes, the reigning Egyptian monarch, who fitted out a fleet, and placed it under his command. According to the destination assigned him, Eudoxus descended the Arabian Gulf, and proceeded probably as far as the southern shore of Arabia. Thence he appears to have returned after a prosperous voyage, with a valuable cargo of aromatics and precious stones. But of this wealth he appears to have been deprived by Euergetes. After the death of this monarch, which in a short time took place, his widow Cleopatra sent Eudoxus on another voyage, in the course of which he was driven by unfavorable winds on the coast of Ethiopia, where he was kindly received by the inhabitants, and carried on with them an advantageous traffic. After other vicissitudes of fortune, he was induced by circumstances which occurred in his adventurous life to leave the court of Egypt, and repair to the commercial city of Cadiz, in Spain, and there to fit out an expedition for the purpose of African discovery. At Massilia (Marseilles), and other maritime places which he passed on his way to Cadiz, he took care to make known his views and hopes of success, and to invite all who were actuated by any spirit of enterprise to accompany him. He succeeded in fitting out a ship and two large boats, on board of which he carried not only goods and provisions, but artisans, medical men, and even players on musical instruments. This was no doubt proceeding on a magnificent scale; but his crew was ill calculated to second his bold undertaking. To avoid the danger of stranding, Eudoxus was anxious to keep the open sea. His companions, however, alarmed at the swell, forced him to adopt the usual mode then followed of sailing along the shore—a measure which led to the disaster which he had anticl-

pated. With one vessel of a lighter construction, on board of which was put the more valuable part of the cargo, Eudoxus pursued his voyage until he reached a part of the coast inhabited by a race of people that appeared to him to speak the same language with those whom he had found on the opposite side of the continent. Judging from this circumstance that he had ascertained the main object of his voyage, he returned and endeavored to obtain the assistance of Bocchus, king of Mauritania. Suspecting, however, treachery on the part of that monarch, he again had recourse to Spain. Here he was again successful in equipping another expedition, consisting of one large vessel fitted for the open sea, and another of smaller size for the examination of the coast. This was a judicious preparation for the accomplishment of the object in view; but with regard to the issue of the voyage no accounts of any authority have been preserved.

Such are the leading circumstances connected with the voyages of Eudoxus, which are narrated by Strabo; and, notwithstanding the skepticism and severe criticisms of that geographer, there is really nothing to which the candid reader can reasonably refuse his belief. Prejudices, founded, for the most part, on his own want of information, led Strabo to treat likewise as fabulous the relation of the only ancient voyage having Europe, and more particularly the British isles, for its object, of which we have any detailed account.

Pytheas, a Massilian navigator, undertook an expedition about 320 years before the Christian era. He steered northward; and after examining the coasts of Spain and Gaul, he sailed round the island of Albion; and, stretching still further to the north, he discovered an island, the *Ultima Thule* of the ancients. What island this was, the learned are not agreed. It has been supposed to be the modern Iceland; but this implies too great an extent of open sea for an ancient navigator to traverse; and besides, six days, the period during which he is said to have navigated to the northward of Albion before he made his discovery, is too short a time to admit of his reaching Iceland. Others, among whom is Malte-Brun, have considered Jutland as Ultima Thule. But it should be kept in view that Pytheas uniformly regarded Thule as British, a character which he could scarcely conceive to belong to Jutland, seeing he could have reached that peninsula only by a long course along the coasts of Germany, which must have impressed on his mind the idea that he had left far behind him every thing belonging to Britain. On the whole, Shetland seems best entitled to be considered as the ancient Thule, and suits well with the appellation which Pytheas gives it, when he expressly calls it the "furthest of the Britains."

Strabo endeavors to throw discredit on the statements of Pytheas, by starting objections long known to be of the most groundless description; and it is an advantage which the traveler and navigator possess who describe faithfully the grand features of nature, that, however prejudice may dim their reputation for a time, yet will their accuracy as well as veracity at length, in the progress of knowledge, appear, and secure for them the respect and applause of mankind. At the same time, it must be admitted that, in describing what he saw beyond his Ultima Thule, the statement given by Pytheas, as reported by Strabo, assumes a somewhat fabulous character. He asserted, it seems, that beyond Thule there commenced what was neither earth, sea, nor air, but a confused blending of all the three. But even here some allowance is to be made for the workings of imagination under very peculiar circumstances, and a readiness, not unnatural, to believe reports which represented him to have reached the extremity of the habitable globe. If his language is not too literally interpreted, it will be found to convey a strongly figurative, but not altogether imperfect, description of the state of the sea and sky in those climes, which have been so little favored by nature.

The conquests of Alexander the Great, by making known the East, enlarged the bounds of geographical knowledge. Though the course of his expedition was for the most part by land, his mind was equally intent on commerce and maritime discovery. Checked as he had so long been in the career of his victories by the opposition and efforts of the republic of Tyre, he had an opportunity afforded him of observing the vast resources of a maritime power, and at the same time of forming a judgment respecting the immense wealth to be derived from commerce, especially from that carried on with India, which he found to be wholly in the hands of the Tyrians. With a view to secure this commerce, as soon as he had completed the conquest of Egypt, he founded the city of Alexandria, and thus established for it a station preferable in many respects to Tyre. After his final victory over the Persians, his march in pursuit of Bessus, who had carried off Darius into Bactriana, often led him near to India, and among people accustomed to much intercourse with it, from whom he learned many things concerning the state of the country, that served so to confirm and inflame a desire which he had long cherished, of extending his dominion over those regions, that he was induced to conduct his army from Bactria, for the purpose of invasion, across that ridge of mountains which form the northern barrier of India. After passing the Indus, Alexander directed his march to the Ganges, which, from the accounts he heard of it, and of the countries through which it flows, he was eager to reach. The route which he found it necessary to follow, in consequence of being successively engaged in hostilities with various native princes, led him through one of the richest and best-peopled countries in India, now called Punjab. In his ultimate object, however, he failed. His march being performed during the rainy season, his troops had already suffered so much, that, notwithstanding the high degree in which he possessed all those qualities that secure an ascendancy over the minds of soldiers, he was unable to persuade them to advance beyond the banks of the Hyphasis, the modern Beyah, which was accordingly the utmost limit of Alexander's progress in India.

By this expedition, Alexander first opened the knowledge of India to the people of Europe; and as he was accompanied, wherever he went, by skillful surveyors, Diognetes and Baeton, who measured the length and determined the direction of every route taken by the army, he furnished a survey of an extensive district of it, more accurate than could have been expected from the short time he remained in that country. The memoirs drawn up by his officers likewise afforded to Europeans their first authentic information respecting the climate, the soil, the productions, and the inhabitants of India.

Though Alexander did not penetrate to the Ganges, his expedition prepared the way to the knowledge of that magnificent stream. For soon after, Seleucus, one of his successors, sent Megasthenes as his embassador to Palibothra, the capital of a powerful nation on the banks of the Ganges. The site of Palibothra was probably the same as that of the modern city of Allahabad, at the junction of the River Jumna with the Ganges. This embassy brought new and opulent provinces of India into view, an acquaintance with which served to raise still higher the idea generally entertained of the value and importance of the country.

The island *Taprobane*, so celebrated among the ancients, which appears, notwithstanding some great mistakes with respect both to its extent and position, to be the modern Ceylon, seems not to have been known in Europe even by name before the age of Alexander. In consequence, however, of the enlightened and active

curiosity with which he explored every country which he subdued or visited, some knowledge of it was at length obtained; and, after his time, it is mentioned by almost every ancient geographer. While Alexander was attempting to penetrate into India, a numerous fleet was assembled by officers whom he had left on the banks of the Hydaspes, the modern Behat or Chelum, with orders to build and collect as many ships as they could. The destination of this fleet was to sail down the Indus to the ocean, and from its mouth to proceed to the Persian Gulf, with a view of opening a communication between India and the centre of his dominions.

When Alexander reached the banks of the Hydaspes on his return, he committed the conduct of this expedition to Nearchus. The voyage down the Indus derived splendor from the greatness and magnificence of the armament, which consisted of an army of 120,000 men, and 200 elephants, and of a fleet of nearly 2000 vessels. Alexander himself accompanied Nearchus in his navigation down the river, with one third of the troops on board; while the remainder, in two divisions, one on the right and the other on the left of the river, accompanied them in their progress. Having reached the ocean after the lapse of nine months, Alexander left Nearchus and his crew to pursue their voyage, and conducted his army back by land to Persia. A coasting voyage of seven months brought Nearchus, with the fleet, in safety, up the Persian Gulf into the Euphrates. It was at the mouth of the Indus that the Greeks witnessed for the first time, and that with astonishment and terror, the ebb and flow of the sea; a phenomenon scarcely perceptible in the Mediterranean, to which their navigation had formerly been confined. In the progress of the voyage they were also struck with surprise on observing phenomena belonging to the midsummer of the tropics. At noon objects were observed to project no shadows, or to project small shadows declining to the south. Their attention was still further attracted by the new appearance of the sky. Stars which they had been accustomed to see high in the heavens were now seen near the horizon. Some stars to the north disappeared, while other stars formerly invisible were seen in the south.

The opening of a communication between the Red Sea and the Persian Gulf was with Alexander another great object of ambition. But though with this view he seems to have sent expeditions down both seas, he failed in his attempts to accomplish this project. Among the Romans, navigation and commerce, the handmaids of geographical science, were never made objects of pursuit, except in so far as they were found to be necessary to forward their schemes of universal dominion. Their conquests opened indeed the West, as those of Alexander had made known the East; and it might be truly said of that great people, that as they were the conquerors, so they were the surveyors of the world. Every new war produced a new survey and itinerary of the countries which were the scenes of action; so that the materials of geography were accumulated by every additional conquest. Some fragments of the itineraries thus composed still remain. The most memorable is that which bears the name of Antoninus, and which may be described as a mere skeleton road-book, exhibiting nothing more than the names of places, and their distances from each other. The Jerusalem itinerary, which details minutely the route from Bordeaux to that holy city, is of the same description.

A more remarkable monument, however, is the *Peutingerian Table*, which forms a map of the world, constructed on the most singular principles. The map is twenty feet long and only one foot broad, so that we can easily conceive how incorrectly the proportion of the different parts is exhibited. Along the high road which traverses the Roman empire in the general direction of east and west, objects are minutely and accurately represented; but of those objects which lie to the north and south of it, only some general notion is conveyed. The Peutingerian Table serves as a specimen of what are called *Itinera Picta*, the "painted roads" of the ancients, intended for the clearer direction of the march of their armies.

While the Romans by their surveys contributed much to increase the mass of materials out of which the structure of geographical science was to be reared, they never attempted themselves to combine these materials into one harmonious system. They imbibed in no degree the commercial spirit of the great maritime States of the ancient world, Carthage, Greece, and Egypt, which their valor and discipline obliged to submit to their dominion. But while the trade of the conquered countries continued to be carried on through nearly the former channels after they were reduced to the form of Roman provinces, the wealth accumulated in the capital of the world gave rise to a demand for luxuries of every description. This, combined with the comparative peace and security which for a long time prevailed after the complete establishment of the Roman dominion, gave new vigor to commercial enterprise. Alexandria continued the great centre of naval affairs. Obstacles which in the time of Alexander were deemed insurmountable, were completely overcome. Trade with India through Egypt acquired new energy, and was carried on to a greater extent. Continued intercourse with the shores of India at length made known to navigators the periodical winds which prevail in the Indian Ocean; and taking advantage of these, pilots were emboldened to abandon the slow and dangerous course along the coasts, and to make the open sea their highway. This course was from Ocelis, at the mouth of the Arabian Gulf, to Nelkunda (Nelisuram), on the western shores of the Indian continent (the coast of Malabar), which seems to have been the utmost limit of the ancient navigation in that quarter of the globe. The extensive regions which stretch beyond this to the east were very imperfectly known by the reports obtained from a few adventurers who visited them by land.

If we now bring into one view the amount of information possessed by the ancients respecting the habitable globe, we shall find that it was extremely limited. It was at those places on the earth where the human mind displayed greatest activity and enterprise that this knowledge was naturally accumulated. Proceeding from these stations, the boundary which separated the known from the unknown part of the world was gradually enlarged; but the regions comprehended within it constituted still but a small portion of the whole. In Europe the extensive provinces in the eastern part of Germany were but little known, while the whole of that vast territory which now forms the countries of Denmark, Sweden, Prussia, Poland, and Russia, was buried in the deepest obscurity. The inhospitable and dreary climes within the arctic circle were yet unexplored. In Africa, little was known beyond the countries stretching along the Mediterranean Sea, and those bordering on the western shore of the Arabian Gulf. In Asia, the rich and fertile countries beyond the Ganges, whence the commerce of modern times has drawn the most valuable commodities for the comfort and embellishment of civilized society, were known, if known at all, only by the most vague and uncertain report. The immense regions on the north occupied by the wandering tribes called in ancient times by the general names of Sarmatians or Scythians, and which are now inhabited by various tribes of Tartars, and by the Asiatic subjects of Russia, seem never to have been penetrated. Add to this, that the fertile and populous regions within the torrid zone were imagined to be uninhabitable; and we have ample proof that the geography of the ancients was very imperfect.

Having thus far given a succinct view of the pro-

gressive steps by which the earth's surface, considered merely as tracts of territory inhabited by men, gradually became known, it will be proper next to trace briefly the advances made toward arranging into a systematic form the materials accumulated. Science required that the relative positions of places, with their distances from each other, should be ascertained in such a manner as to furnish fixed principles on which the whole, or any portion, of the surface of the earth might be represented or delineated with due regard to its figure and dimensions.

The first rude attempt made by the early geographers to determine the position of places appears to have depended on the division of the earth into *climates*, distinguished by the species of animals and plants produced in each. Thus the appearance of the negro, the rhinoceros, and the elephant, suggested to them the line of division where the torrid zone began toward the north, and ended toward the south. But instead of this very vague method, another was soon adopted, which consisted in observing at places the length of the longest and shortest day. This was determined with some accuracy by means of a *gnomon*, a method of observation much used by the ancients. An upright pillar of a known height being erected on a level pavement, by observing the lengths of the meridian shadows, they were enabled to trace the progress of the sun from tropic to tropic. The most ancient observation with the gnomon which we meet with is that of Pytheas, in the days of Alexander the Great. Pytheas observed at the summer solstice at Marseilles, that the length of the meridian shadow was to the height of the gnomon as 213½ to 600; an observation which makes the meridian altitude of the sun at Marseilles on that day 70° 27′. The merit of the invention of the gnomon in Greece is ascribed to the astronomical school of Miletus, and particularly to Anaximander and Anaximenes. There is reason, however, to believe that this method of observation was originally invented by the Egyptians; and that Thales, who traveled into Egypt, carried thence the knowledge of it into Greece. It has even been conjectured that the Egyptian pyramids and obelisks were intended for the same purpose with the gnomon; and, though it would be extravagant to imagine that this was their sole use, this opinion appears to be countenanced by the fact of their being placed in the direction of the four cardinal points.

The determination of the length of the meridian shadow at the solstices for different parts of the earth, by observations made with the gnomon, is important as being the first step toward connecting geography with astronomy; and, when combined with just conceptions of the globular figure of the earth, leads, by a simple train of thought, to the motion of latitude by which the position of a place is fixed relatively to north and south. The position with regard to east and west is the only other element necessary for fixing the absolute situation of the place on the surface of the earth. It might have been supposed not to be more than a reflecting mind could easily accomplish, to reach the conception of both these elements, and to apply them to use. Yet so slow was the progress toward the apprehension of the principles on which an accurate system of geography might be founded, that from the days of Thales and his immediate successors, who flourished in the sixth century before the Christian era, there appears to have been little done for the improvement of geography, as a science, until the establishment of the famous astronomical school of Alexandria. Pythagoras had indeed maintained the true system of the world, by placing the sun in the centre, and giving the earth both a diurnal and annual revolution; but this doctrine was so much in advance of the age in which he promulgated it, that it was soon lost sight of.

Eratosthenes was the first who reduced geography to a regular system, and laid its foundations on clear and solid principles. Under the patronage of the Ptolemies, he had access to the materials collected by Alexander, his generals and successors, as well as to the immense mass of documents accumulated in the Alexandrian library. At an early period of the history of astronomical science, the vulgar opinion that the earth is a flat surface, with the heavens resting upon it as a canopy, was rejected; but it was not at once that distinct conceptions of its globular figure were acquired. It was only as astronomical observations increased that the doctrine of its sphericity was fully established. This point had been gained when Eratosthenes began his labors; and what he endeavored to accomplish was to delineate, in strict conformity with this principle, the known parts of the earth's surface.

With this view, founding his system on the use of the gnomon, he supposed a line to be traced through certain places, in all of which the longest day was known to be exactly of the same length. This line would evidently be a parallel to the equator. But though his method was correct in principle, the want of accurate observations rendered it uncertain in practice. The line was supposed to comprise all the leading positions which lay near it, though they did not actually come within its range. Its western extremity was the Sacred Promontory of Iberia (Cape St. Vincent); thence it passed through the Straits of Gades. Proceeding eastward, it passed through the Sicilian Sea, and near the southern extremity of the Peloponnesus, and was continued through the island of Rhodes, and the Bay of Issus; whence entering Cilicia, and crossing the Euphrates and the Tigris, it was extended to the mountains of India, and terminated at the remote city of Thinæ, situated on the Eastern Ocean. The parallel thus drawn was understood to pass through all those places where the longest day was 14½ hours. It stretched the whole length of what was supposed to be the habitable world, and measured about 70,000 stadia; a distance corresponding, according to the estimate of Eratosthenes, to about 140 degrees, which is rather more than one third of the circuit of the globe.

This first parallel drawn through Rhodes was ever afterward preferred as the basis of ancient maps; inasmuch as it was traced through the middle of the Mediterranean, along the coasts of which were situated the principal nations of antiquity. Following out the same happy thought which he had thus successfully made the groundwork of his system, Eratosthenes was induced not only to trace other parallels at certain intervals from the first, as one through Alexandria, another through Syene, and a third through Meroe; but also to trace, at right angles to these, a *meridian*, passing through Rhodes and Alexandria southward to Syene and Meroe. As the progress which he thus made toward the completion of what he had so skillfully conceived, naturally tended to enlarge his ideas concerning geographical science, he attempted what seemed a still more difficult undertaking, namely, to determine the circumference of the globe by the actual measurement of a segment of one of its great circles. The method he pursued has been clearly pointed out in the article Astronomy, *Ency. Brit.* There is a difference among ancient authors respecting the result obtained by Eratosthenes. The great majority, however, state it to be 252,000 stadia, which give exactly 700 stadia for a degree of the equator, and 555 stadia for the degree of longitude upon the parallel drawn through Rhodes.

The knowledge of the circumference of the earth is a necessary element in the construction of maps; and hence the most eminent of the ancient astronomical geographers made repeated endeavors to determine it with accuracy. Possidonius, by an astronomical observation, determined the arc of the meridian between

Rhodes and Alexandria to be a forty-eighth part of the whole circumference. With regard to the distance between these two places, 5000 stadia were the reputed distance; but Eratosthenes had made it only 3750 stadia upward of 170 years before, and betwixt these two Possodonius had to make choice. The former number gives 240,000 stadia for the whole circumference, the latter 180,000 stadia. Of this last result, which gives 500 stadia for a degree of the equator, Possidonius is reported by Strabo to have approved. For want of the knowledge of the true length of the stadium, it is now impossible to judge of the actual quantity assigned either by Eratosthenes or Possidonius as the measure of the earth's circumference; but the great uncertainty about the distance between the points of observation in the case of the determination of the latter astronomer renders his conclusion of no value.

Notwithstanding the soundness of the principles which had now been laid down for the delineation of the globe, much remained to be done, in the way of observation, before an accurate representation of the whole, or a portion of the earth's surface, could be given. Both the latitudes and longitudes of the ancients are erroneous; more especially the latter. This is what might be expected at that early period. But in setting out from the Sacred Promontory of Iberia, the meridian of which the ancients made their first meridian, the hours in longitude accumulate, as we advance eastward, with a regularity, as well as rapidity, which is very surprising. The regularity of their increase induced M. Gosselin to conclude that they were to be attributed, not to the imperfection of independent observations, but to some general cause, which he endeavored to assign by imagining that Eratosthenes had access to some early map, found probably by Alexander or his generals in some country in the East, where astronomy had been successfully cultivated; and that misapprehensions respecting the principle of delineation employed, which M. Gosselin supposes to have been that on which the plane chart is constructed, had led him into a regular system of errors. In the plane map the length of a degree of longitude is supposed to be the same at all distances from the equator. By taking for granted that Eratosthenes took his distances from a map of this kind, on which the parts of the globe had been accurately laid down, but that he divided the stadia expressing these distances, not by 700, the number of stadia in a degree at the equator, as he ought to have done, but by 555, the number corresponding to the parallel of Rhodes, M. Gosselin obtains results which have a wonderful coincidence with the positions actually given by Eratosthenes. These results, however, are deduced from a hypothesis which is unsupported by any evidence, except what may be supposed to arise from this coincidence. A more probable solution seems to be that Eratosthenes determined his longitudes from the itinerary measures, which he reduced to degrees at the rate of 700 stadia to a degree at the equator, and of 555 to a degree at the parallel of Rhodes; and that the errors are the consequences of the exaggerated accounts which merchants and travelers of that age gave of the distances over which they passed; their exaggerations, of course, bearing some proportion to the length and hardships of the journeys undertaken.

The knowledge as yet possessed by geographers with regard to the outline of the habitable globe was far from being such as to enable them to delineate it with any degree of precision. This circumstance, combined with the unavoidable errors in latitude and longitude, produced very great distortions in the representations given of the countries on the surface of the globe. Under the guidance of sound principles of science, however, it was now certain that these imperfections would gradually disappear.

The improvements introduced into geography by Eratosthenes were perfected in principle by Hipparchus. This celebrated astronomer, who flourished between 160 and 135 years before the Christian era, was the first who undertook the arduous task of forming a catalogue of the stars, and fixing their relative positions. His object was to transmit to posterity a knowledge of the state of the heavens at the period of his observations. The extremities of the imaginary axis round which the heavens perform their diurnal revolution suggest two fixed points by which the position of the great circle of the celestial sphere called the equator is determined. If a great circle be supposed to pass through these points and any star, the position of the star will be ascertained if we measure in degrees and parts of a degree the arc of the meridian circle intercepted between the star and the equator, and also the arc of the equator intercepted between a given point in it, and the meridian circle passing through the star. Upon this principle did Hipparchus arrange the stars according to their places in the heavens, a work in which he appears, however, to have been in some measure anticipated by Timocharis and Aristillus, who began to observe about 295 years before the Christian era. The great improvement which he introduced into geography consisted in this, that he applied to the determining of the position of any point on the surface of the earth the same artifice which he had already so happily introduced in the arrangement of the constellations; and thus furnished the means of ascertaining the relative situations of places with a precision which no itinerary measurements could possibly attain. If we suppose the earth to be a globe concentric with the celestial sphere, and intersected by the planes of the celestial equator and meridian, the principle on which the application of this artifice to the terrestrial sphere depends becomes at once obvious. Hipparchus made a considerable number of observations of latitude, and pointed out how longitudes might be determined by observing the eclipses of the sun and moon. Great as this improvement was, its importance seems not to have been duly estimated until the days of Ptolemy; for none of the intermediate authors, such as Strabo, Vitruvius, and Pliny, have given the least hint of the latitude and longitude of any one place in degrees and minutes, though all of them have given minutely the geographical positions of places according to the length and shadows of the gnomon. Strabo, indeed, even justifies his neglect of the astronomical principles introduced by Hipparchus. "A geographer," says he, "is to pay no attention to what is out of the earth; nor will men engaged in conducting the affairs of that part of the earth which is inhabited, deem the distinction and divisions of Hipparchus worthy of notice."

The true principles of geography being pointed out by the application of latitude and longitude to places on the earth, the way was opened for the improvement of maps, which, with the single exception of the map drawn by Eratosthenes, had hitherto been little more than rude outlines and topographical sketches of the different countries. No maps more ancient than those formed to illustrate Ptolemy's geography have reached modern times; but the earliest of which there is any account are those of Sesostris, of whom it is said, that having traversed great part of the earth, he caused his marches to be recorded in maps; and that he gave copies of these maps not only to the Egyptians, but to the Scythians, whose astonishment he thus greatly excited.

Some have imagined that the Jews made a map of the Holy Land when they gave the different portions to the nine tribes at Shiloh. For on that occasion, as we are informed by the sacred historian, men were sent "to walk through the land, and to describe it;" and when they had accomplished the object of their mission by describing "it by cities into seven parts, in a book," they returned unto Joshua. What is here said,

however, does not fully determine whether their mensuration of the land was only recorded in numbers, or regularly projected and digested into the form of a map. The first Grecian map on record is that of Anaximander, mentioned by Strabo, which some have conjectured to have been a general map of the then known world. It has further been imagined to be the same with that referred to by Hipparchus under the designation of *The Ancient Map*, and which in some few particulars he preferred to that of Eratosthenes.

But some idea of the nature of the maps of those early days will be best obtained from the map of Aristagoras, king of Miletus, which is minutely described by Herodotus. The historian tells us that this map, which was traced on brass or copper, Aristagoras showed to Cleomenes, king of Sparta, in order to induce him to attack the king of Persia, even in his palace at Susa, for the purpose of restoring the Ionians to their ancient freedom. It contained the intermediate countries to be traversed in that march. We must not interpret, however, the words of Herodotus too literally, when he describes it as containing "the whole circumference of the earth, the whole sea or ocean, and all the rivers." Keeping in view the state of geography at that period, it may justly be concluded, that notwithstanding this pompous form of expression, *the sea* meant only the Mediterranean, and therefore *the earth* or land the coasts of that sea, and more particularly Asia Minor, extended toward the middle of Persia; by *the rivers* must be meant the Halys, the Euphrates, and the Tigris, which Herodotus mentions as necessary to be crossed in the expedition in question. The map contained one straight line, called *the royal highway*, embracing all the stations or places of encampment between Sardis and Susa, so that it was properly an itinerary.

The principle on which Eratosthenes constructed his map we have already considered. With regard to its extent, it seems to have contained little more than the States of Greece, and the dominions of the successors of Alexander, digested from the surveys of the marches of that great general. He had some faint idea respecting the western parts of Europe, which he had acquired from the voyage of Pytheas; but not such a conception as to enable him to delineate their outline on a chart. According to the report of Strabo, he was quite unacquainted with Spain, Gaul, Germany, and Britain; he was equally ignorant of Italy, the coasts of the Adriatic, Pontus, and of all the countries toward the north. His errors with regard to the distances of places were in some instances enormous. The distance of Carthage from Alexandria he represents at 15,000 stadia, instead of 9000.

It was not until Ptolemy commenced his labors that the improvements pointed out by Hipparchus were effectually applied to perfect the system which Eratosthenes had so happily begun. Ptolemy composed his system of geography, which escaped amid the general wreck that consumed so many other ancient books of science, in the reign of Antoninus Pius, about 150 years after the opening of the Christian era. At this period the Roman empire had reached its utmost extent, and all the provinces had been surveyed, and were well known. The materials then in existence, and in the possession of Ptolemy for completing his great work, were the proportions of the height of the gnomon and its shadow, at the time of the equinoxes and solstices, taken by different astronomers; calculations founded on the length of the longest days; the measures or computed distances of the principal roads contained in the surveys and itineraries; and the various reports of travelers and navigators, whose determinations of the distances of places often rested, however, on no better foundation than hearsay and conjecture. Among these various particulars, there evidently existed considerable differences in point of authority. But Ptolemy undertook the difficult and laborious task of comparing and reducing into one system, which should possess the order and beauty of science, this apparently incongruous mass. He converted and translated the whole into a new mathematical language, expressing in degrees and minutes the latitude and longitude of each place, according to the principles laid down by Hipparchus, but which had been allowed by geographers to lie useless for upward of 250 years. It is in Ptolemy's work, which consists of eight books, that we find for the first time the mathematical principles of the construction of maps, both general and particular, as well as of several projections of the sphere.

Notwithstanding that the light of accurate science thus directed the steps of the first geographer of antiquity, he was far from reaching the precision at which he aimed. This arose from the imperfection of the original materials upon which his work is based in reference to its details. With regard to the remoter boundaries of the then known world, in all its quarters, a wonderful advancement in knowledge had been made since the days of Eratosthenes and of Strabo. But still that additional information was not fitted to make up for the want of astronomical observations, by which alone accuracy could be secured. Besides, in relation to places situated beyond the limits of the Roman empire, and therefore out of the range alike of astronomers and surveyors, it was almost impossible for Ptolemy not to commit mistakes. Thus his errors arose from the ignorance of the age; and are of such a character as to admit of being removed only as opportunities are afforded of obtaining the requisite data by the strict application of the principles derived from mathematical and astronomical science.

Ptolemy adopted the measure of a degree at 500 stadia, according to the standard of Possidonius, instead of following the measurement of Eratosthenes, which gives 700 stadia to a degree. But M. Gosselin has accused him of an error of a more serious kind; because, if really committed, it would have indicated a strange neglect of what a geographer should make his first care. This error consists in assuming one measure for the degree of latitude (the measure of Eratosthenes, 700 stadia) and another for the degree of longitude at the equator. Such a hypothesis would evidently be inconsistent with the globular figure of the earth. It may reasonably be doubted, however, whether M. Gosselin's accusation is well founded; for, though it seems supported by the fact, that while Ptolemy has changed materially all the longitudes of Eratosthenes, the latitudes along the great line remain the same, and are in general correct, this circumstance may be accounted for sufficiently from other causes. Rhodes, and several other points of this great line, were fixed with regard to latitude by observations approximating to the truth, while the elements for determining the longitudes were derived entirely from the itineraries. To the north and south of the great central line, which alone was fixed upon sound data, errors in latitude accumulate as rapidly as those in longitude are found to do in proceeding eastward.

One of the most remarkable errors in the geographical work of Ptolemy is the great length assigned to the Mediterranean. Reckoning from the Straits of Gades to the bottom of the Bay of Issus, where Alexandretta, or Scanderoon now stands, he makes the difference of longitude no less than 62 degrees, which is upward of 20½ degrees above the truth. This amazing error, which affected all our maps more or less until the beginning of the last century, was produced in consequence of his having put too much confidence in the supposed surveys of different persons of reputation recorded by Strabo, and who appeared to confirm the accuracy of each other's computation. According to their united testimony, the whole length of the Mediterranean was about 26,500 stadia, which, being converted into degrees of longitude according to the

method of Ptolemy, of allowing 400 stadia to a degree of longitude on the parallel of Rhodes, give about 66° 15′. This is 4° 15′ more than what are given by Marinus, whom in this particular Ptolemy strictly follows.

Pliny quotes from Agrippa a computation of the length of the Mediterranean, which makes it 3,440 Roman miles; but in quoting it he adds a suspicion that there is an error in the numbers. When converted into degrees of longitude, the result of this computation gives 58° 20′. As, however, the length given by Strabo amounted, as we have seen, to 66° 15′, Ptolemy seems to have chosen a middle path between these two erroneous computations, and to have adopted 62° for the difference of longitude in question. But there is another ancient computation quoted also by Pliny from Polybius, according to which the length of the Mediterranean is stated to be 2,440 Roman miles. Had Ptolemy followed this estimate, he would have obtained for a result 41° 4′, which is not far from the truth. Thus we see that the circumstances under which Ptolemy wrote, rendered it impossible for him to avoid mistakes, and that he might be misled even when more accurate results were within his reach.

The great obstacle with which the ancients had to contend, was the finding of the longitude with accuracy, a problem for the solution of which it was long before there was discovered any method sufficiently exact. This accounts for the erroneous longitudes of Ptolemy, and more especially for the length of time, even many centuries, during which the remarkable error, with regard to the length of the Mediterranean, remained undiscovered and uncorrected.

We have now traced the history of geography from the earliest period of which we have any information, to the time when it assumes a scientific character. We shall conclude our account of ancient geography by shortly noticing the principal geographers of antiquity, some of whom have not yet been mentioned, while others have only been quoted in tracing the rise and progress of the science.

The intimate connection between geography and the science of geometry and astronomy, rendered the former an object of attention to many who anciently cultivated the latter. We have already mentioned Anaximander and Anaximenes, of the school of Miletus. Democritus, Eudoxus of Cnidus, and Parmenides, are also reported to have improved geography; and to the last is attributed the division of the earth into zones. These were followed by Eratosthenes, who lived about 240 years before the Christian era; by Hipparchus, about 80 years afterward; by Polybius, Geminus, and Possidonius. Eratosthenes wrote three books on geography, some passages of which Strabo criticises, though he frequently defends him against Hipparchus, who appears to oppose his opinions with some degree of affectation. Polybius also wrote on geography; as did likewise Geminus and Possidonius, who are frequently quoted by Strabo. Polybius, according to Geminus, argued with considerable acuteness for the possibility of the torrid zone being inhabited; and he even adduced plausible arguments to prove that the countries under the equator enjoy a more temperate climate than the countries do that are situated near the tropics.

We must not here omit a geographer and geometer who lived about the time of Alexander the Great. This was Dicearchus of Messina, a disciple of Theophrastus, who wrote a description of Greece in iambic verses, of which some fragments yet remain. But what chiefly renders him remarkable is, that he measured geometrically several mountains, to which an excessive height had been before assigned. With Dicearchus we may notice another geometer, Xenagoras, a disciple of Aristotle, mentioned by Plutarch in his life of Paulus Æmilius, who occupied himself in the measurement of mountains. He found the height of Mount Olympus to be 15 stadia. In some of the latter periods which preceded the Christian era, there were several writers on geography, as Artemidorus of Ephesus, who wrote a geographical work of eleven books, of which nothing remains; Scymnus of Chio, author of a description of the earth in iambic verses, which remain in a very mutilated state; Isidorus of Charax, who gave a description of the Parthian empire; and Scylax of Caryades, author of a voyage round the Mediterranean, which is still extant.

The works of all these geographers are, however, but small in comparison with the geography of Strabo; a work in 17 books, which has come down to us entire. This is one of the most valuable works of antiquity, both from the spirit of discussion which runs through it, and the number of curious particulars which the author has collected from different geographers and navigators who preceded him, and of whose works nothing remains except these extracts. Strabo lived in the reigns of Augustus and Tiberius, and was nearly cotemporary with Pomponius Mela. This latter geographer wrote a work *De Situ Orbis*, which, though little more than a bare summary, is valuable, as it gives us a sketch of what was known in his time respecting the state of the habitable globe. Besides Mela, Rome produced, in the most flourishing era of its literature, another eminent geographer, Pliny. He devoted two books of his extensive work on natural history, to a system of geography. His intimate connection with the imperial family, and with many of the most eminent commanders of the time, appears to have given him access to all the military measurements, as well as to the general survey of the Roman empire. Thus furnished with a greater store of authentic materials than any former writer, he has introduced a great number of itinerary details, which are for the most part accurate and valuable. Julius Solenus has also treated of geography in his *Polyhistor*, a compilation sufficiently valuable from the number of curious particulars which are there collected. Marinus of Tyre, was another geographer who appears to have been distinguished, though his works have perished. Even under the Roman empire Tyre continued to be the seat of an extensive commerce; indeed the commercial relations of her citizens appear to have extended over a wider portion of the earth's surface than ever. The enlarged materials furnished by the lengthened journeys of his countrymen, which brought them even to the confines of China, Marinus collected, and sought to apply to them the astronomical principles of Hipparchus, so that he might give to geography a new and more accurate form. Ptolemy, whom Marinus preceded by a short time, employs a great part of his first book in discussing the means employed by the Tyrian geographer for fixing the relative position of places; and from the references and extracts it appears that the system of Marinus partook largely of the imperfections of a first effort.

The enlarged and scientific views of Ptolemy we have already considered. Some time after Ptolemy lived Dionysius, commonly called the *Periegetic*, from the title of a work in verse composed by him, namely, his *Periegesis*, or Survey of the World. This work was translated into Latin verse by Priscianus, and afterward by Avienus. There is, besides, a description by Avienus, of the maritime coasts, in iambic verses, of which there remain about 700. The difficulty of procuring the small and scattered pieces of most of these authors, with those of a few others not here enumerated, induced the learned Hudson to collect them into one work, consisting of four volumes octavo, which were published in the years 1698, 1702, 1712, under the title of *Geographiæ veteris Scriptores Græci minores*. The originals are accompanied with Latin translations, and notes and dissertations on each by Dodwell. This is a very valuable collection.

We now proceed to consider the progress of geography during the middle ages. From the days of Ptolemy until the revival of letters in Europe, little was done for its solid improvement. The calamities that ere long overwhelmed the Roman empire, were followed by a general intellectual darkness which settled down on the world and extinguished even the imperfect knowledge possessed by the ancient geographers. While barbarous nations poured in from several quarters, art and science ceased to be cultivated. The union by which the Roman power had bound together mankind being now dissolved, Europe was divided into small and independent, and, for the most part, hostile communities, which had but vague conceptions respecting the situation of each other, while no intercourse subsisted between their members. With regard to remote regions all knowledge was lost; their situations, their commodities, and almost their names, were unknown.

Amid this ignorance there were but few channels open through which knowledge could be obtained. One circumstance, however, prevented commercial intercourse with foreign nations from being altogether suspended. The opulence and luxury of imperial Rome had long given life and energy to commercial enterprise; that stimulus was now withdrawn; but Constantinople still remained, the last refuge of ancient arts, and taste, and elegance, when the rest of Europe was overspread with barbarism. Fortunately that city had escaped the destructive rage of the fierce invaders, and there, under the cherishing influence of a demand for foreign productions and luxuries, commerce continued to flourish. Alexandria continued to be the emporium whence were imported the commodities of the East Indies, until Egypt, falling under the power of the Arabians, ceased to be a province of the Roman empire. After this event the industry of the Greeks succeeded in discovering a new channel by which Constantinople might still be supplied with the productions of India. These were first conveyed up the Indus as far as that river is navigable, thence by land-carriage they were brought to the Oxus, and were carried down the river to the Caspian Sea. Entering there the Volga, they were conveyed up it, and thence were again transported by land until they reached the Tanais, down which they were conveyed to the Euxine Sea, where vessels from Constantinople awaited their arrival. By this circuitous route was a channel of intercourse kept open with the most distant countries of the East; and an extensive knowledge of remote regions was still preserved in the capital of the Greek empire, while the rest of Europe was sunk in the grossest ignorance.

The missions sent for the conversion of the northern pagans to Christianity, served somewhat to illustrate the geography of Europe; though there is sufficient proof that the monks employed were, in many instances, themselves grossly ignorant, some not even knowing the capital of their own country, or the cities nearest to their own. Something was also done by the great sovereigns of Europe toward dispelling the prevailing ignorance of the age on matters connected with geography. Nor did the piratical exploits of the Danes and Norwegians under their great sea-kings fail to make them acquainted with the seas and maritime coasts where they carried on their devastations. But it was in the East that a gleam of light and knowledge began now to appear, which was the harbinger of the noon-day splendor of science that was destined to succeed the darkness of ignorance which had so long oppressed the human mind. Under the influence of a fanaticism which prompted them to own no law but the Koran and the sword, the followers of Mohammed had rushed from the heart of Arabia, and had carried their conquests over half the world. At length, however, under a race of humane and polished princes, having contracted a relish for the sciences of the people whose empire they had contributed to overturn, they stood for some time distinguished as the most learned of nations. They translated into their own language the books of several of the Greek philosophers. The valuable work of Ptolemy was one of the first; and hence the study of geography became an early object of their attention. But the advancement which the science made in their hands toward precision was slow; for they copied and retailed all Ptolemy's principal errors. Still, in all the countries that were under Mohammedan dominion numerous observations were made, which, though not always strictly correct, were entitled to be considered as a step beyond the calculations made merely from the itineraries by the Alexandrian geographers. In the beginning of the ninth century, under their caliph Almamon, who may rank among the most distinguished patrons of science that ever filled a throne, they measured a degree of latitude on the plains of Sinjar, or Shinjar, near Babylon, with a view to determine the circumference of the earth. The tables of Abulfeda and Ulug Beg, and of Nazir Eddin, edited by Grævius, and republished by Hudson, furnish materials that are still of use in the construction of the maps of the interior of Asia.

The progress and success of the Moslem arms removed the obscurity in which many countries had until then been concealed, as well as the barbarism in which they had been sunk. And even beyond the limits of the Mohammedan world they pushed their researches, by sending missions both to the east and to the west, which they explored to their remotest limits. At that time Europe remained ignorant of the improvements made by the Arabians, though she was destined in subsequent ages to perfect their discoveries.

At length the long period of barbarism which accompanied and followed the fall of the Roman empire, during which the traces of whatever had embellished society, or contributed to the comfort and convenience of life, were almost entirely effaced, drew to a close. Industry began again to shed its blessings on mankind; and Italy was the country where its benign influences were first perceptible. Having from the operation of various causes again obtained liberty and independence, the Italians soon began to feel the impulse of those passions which serve most powerfully to arouse men to activity and enterprise. The reviving demand for the comforts and luxuries of life led to the revival of foreign commerce. The valuable commodities of the East were at first obtained at Constantinople. But the exorbitant price demanded at that mart, in consequence of the circuitous route by which they were conveyed thither, induced the Italians to resort to other ports, as Aleppo and Tripoli, on the Syrian coast, and at length to Egypt itself. After the Soldans had revived the commerce with India in its ancient channel by the Arabian Gulf, Venice, Genoa, and Pisa, rose from inconsiderable towns to wealthy and populous cities. Their trade extended to all the ports in the Mediterranean, and even beyond the Straits to the towns on the coasts of Spain, France, the Low Countries, and England; and from these points they diffused through Europe a taste for the luxuries and enjoyments of civilized life, which they at the same time furnished the means of gratifying.

It was not long ere an event occurred, the most extraordinary, perhaps, in the history of human society, which gave a new impulse to the European mind, and forcibly directed its view eastward, to the regions of Asia. Under the influence of a high-wrought enthusiasm, the martial spirit of the Europeans was aroused, and vast armies, composed of all the nations of Christendom, marched toward Asia on the wild enterprise of delivering the Holy Land from the dominion of Infidels. The crusades, however blind the zeal from which they took their rise, had a very favorable influence on the intellectual state of Europe, and prepared

it for receiving the light of science which was soon to dawn upon it. Interesting regions, known hitherto only by the scanty reports of ignorant and credulous pilgrims, were now made the object of attention and research. Not only was the way opened for the European nations acquiring a correct knowledge of the Holy Land, with the kingdoms of Jerusalem and Edessa, founded by the victorious crusaders, but the extensive regions over which the Saracens and the Turks had extended their empire began to be explored. Search was now made in the writings of the ancient geographers; nor is it improbable that some light was derived even from the Arabian writers. Religious zeal, the hope of gain, combined with motives of mere curiosity, induced several persons to travel by land into remote regions of the East, far beyond the countries to which the operations of the crusaders extended. Prompted by superstitious veneration for the law of Moses, and by a desire of visiting his countrymen in the East, whom he hoped to find possessed of wealth and power, Benjamin, a Jew of Tudela, in the kingdom of Navarre, set out from Spain in the year 1160, and traveling by land to Constantinople, proceeded through the countries to the north of the Euxine and Caspian Seas. He then journeyed toward the south, and traversed various provinces of the further India, until, having reached the Indian Ocean, he embarked and visited several of its islands; and at length, after 13 years, returned by the way of Egypt to Europe. In his progress he had acquired much information respecting a large portion of the globe, until then altogether unknown to Europeans.

Various missions were sent by the pope and by Christian princes, for purposes which led them to traverse the remote provinces of Asia. Father John de Plano Carpini, at the head of a mission of Franciscan monks, and Father Ascelino, at the head of another mission of Dominicans, were, in the year 1246, sent by Innocent IV. to enjoin Kayuk Khan, the grandson of Zengis, who was then at the head of the Tartar empire, to embrace Christianity, and to cease from desolating the world by his arms. In fulfilling the commands laid upon them by the head of the Christian church, the mendicants had an opportunity of visiting a great part of Asia. Carpini, having taken his route through Poland and Russia, traveled through the northern provinces as far as the extremities of Thibet, while Ascelino, who appears to have landed somewhere in Syria, advanced through the southern provinces into the interior parts of Persia.

Father William de Rubruquis, a Franciscan monk, having been sent in the year 1253 on a mission by St. Louis of France, in search of an imaginary personage, a powerful khan of the Tartars, who was reported to have embraced the Christian faith, made a circuit through the interior parts of Asia more extensive than that of any European who had hitherto explored them. He had the merit of being the first modern traveler that gave an account of the Caspian, which had been correctly described by the early Greeks as an inland separate sea; but a notion afterward prevailed that it was connected with the Northern Ocean. Rubruquis ascertained that it had no connection with the ocean or any other sea. The account of his journey was so little read, however, that the old error was repeated in books of geography long after his time.

While the republics of Italy, and, above all, the State of Venice, were engaged in distributing the jewels, the spices, and the fine cloths of India over the western world, it was impossible that motives of curiosity, as well as a desire of commercial advantage, should not be awakened to such a degree as to impel some to brave all the obstacles and dangers to be encountered in visiting those remote countries where these precious and profitable commodities were produced. A considerable number of persons accordingly are recorded as having penetrated a greater or less depth into the interior of Asia. But the fame of all the other old travelers is eclipsed by that of Marco Polo, who has always ranked among the greatest discoverers of any age. This extraordinary man was a noble Venetian, whose family, according to the custom of his country, engaged in extensive commerce. Nicolo Polo, and Maffeo Polo, the father and uncle of Marco, were merchants, who, in partnership, traded chiefly with the East; and, in pursuit of their mercantile speculations, had already visited Tartary. The recital of their travels on their return fired the youthful imagination of Marco, then between 17 and 18 years old. Having, when in the East, gained the confidence of Kublai Khan, the great conqueror of China, at whose court they had resided for a long time, they were sent back by him to Italy, accompanied by an officer of his court, that they might repair to Rome as his embassadors to the pope, of whom and the potentates of the western world, they had given him an ample account. After many delays, they were now, about the year 1265, to set out on their return to the court of Kublai, bearing the papal letters and benediction; and it was resolved that young Marco should accompany them. After a journey that occupied no less than three and a half years, and in the progress of which they passed through the chief cities in the more cultivated parts of Asia, they reached Yen-king near the spot where Pekin now stands, where they were honorably and graciously received by the grand khan. Struck with the appearance of young Marco, the khan condescended to take him under his protection, and caused him immediately to be enrolled among his attendants of honor. By prudence and fidelity Marco gained so high a place in the esteem and confidence of his protector, that for 17 years, during which he remained in his service, he was employed in confidential missions to every part of the empire and its dependencies. He made more than one voyage on the Indian Ocean, and traded with many of the islands. Besides what he learned from his own observation, he collected from others many things concerning countries which he did not visit. Considering the very favorable circumstances in which he was placed for geographical research, as well as his passion for traveling, which seems to have increased with his opportunities of gratifying it, it is not surprising that, after the long period of his wanderings in Asia, he should have returned to Europe possessed of the knowledge of many particulars, until his time unknown, respecting the eastern parts of the world. Marco, being afterward made a prisoner by the Genoese, was induced, with a view to beguile the tediousness of his confinement, to dictate a narrative of his travels. His information was so far in advance of the age, that his veracity was exposed to the most injurious suspicions. But, if we make allowance for some tincture of credulity, characteristic of the times in which he lived, his narrative is supported in all its essential points by modern information.

While great accessions were thus made to the stock of knowledge possessed by the nations of Europe respecting the habitable globe, there ideas were, at the same time, gradually enlarged; and an adventurous spirit was generated, which prepared them for attempting further discoveries. Still their efforts were limited by certain bounds, in consequence of the imperfect state of navigation. Whatever conceptions a daring mind might venture to form respecting the existence of unknown regions, separated from the known continents by the mighty expanse of the Atlantic Ocean, mankind had not yet so obtained the dominion of the sea as to be able to bring such conceptions to the test of experiment. It was not until the fortunate discovery of the polarity of the magnetic needle, and the consequent construction of the mariners' compass, that man was enabled to visit every part of the globe which he inhabits. This important discov-

ery was made by Flavio Gioia, a citizen of Amalfi, a town of considerable trade in the kingdom of Naples, about the year 1302. Encouraged by the possession of this sure guide, by which, at all times and in all places, he could with certainty steer his course, the navigator gradually abandoned the timid and slow method of sailing along the shore, and boldly committed his bark to the open sea. At the commencement of the 15th century, however, navigation appears to have advanced very little beyond the state which it had reached before the downfall of the Roman empire. But it was now destined to make rapid progress. The growing spirit of enterprise, combined with the increasing light of science, had prepared the States of Europe for entering upon that great career of discovery, of which the details constitute the materials for the history of modern geography.

Portugal took the lead in this new and brilliant path. Her first attempt was to discover the unknown countries situated along the western coast of Africa. Notwithstanding the vicinity of that great continent, and the strong inducement afforded in the fertility of the countries already known in it, to its further exploration, Cape Non had hitherto limited the researches of the Portuguese, and had been regarded as an impassable barrier. In the year 1412, however, ships sent out for discovery doubled this formidable promontory, and reached Cape Bojador, 160 miles to the southward, which became in its turn the boundary of Portuguese navigation; and it continued to be so for upward of 20 years. Under the coasting system, which still continued to be practiced, it was not likely that the obstacles presented by its rocky cliffs, which stretch a considerable way into the Atlantic, would soon have been overcome. But a sudden squall of wind having driven out to sea the vessel next dispatched, this event fortunately led to the discovery of the small island Porto Santo; whence, in a little time, Madeira was discovered, being first mistaken for a small black cloud in the horizon; and at length, when the Portuguese, by their voyages thither, had gradually become accustomed to a bolder navigation, Cape Bojador was doubled. Thus, by repeated efforts, the Portuguese navigators gradually approached the northern boundary of the torrid zone. Here their progress was for some time arrested, not by any physical difficulties, but in consequence of the influence which the opinion of the ancient mathematicians and geographers whom they had hitherto followed as their guides, had upon their minds, by leading them to believe that excessive heat rendered the middle regions of the earth uninhabitable. Experience, however, at length enabled them to triumph over ignorance and prejudice. A powerful fleet, fitted out in 1481, after discovering the kingdoms of Benin and Congo, advanced about 1500 miles beyond the equator. Their intercourse with the natives enabled them to obtain information concerning those parts of the country which they had not visited. Not only had they detected the error of the ancients in reference to the torrid zone, but they found also that the direction of the coast was very different from what the description given by Ptolemy had led them to expect. They saw reason to conclude that the continent gradually became narrower as they proceeded southward; so that there was room to believe that the ancient accounts respecting the circumnavigation of Africa were really founded in truth. New and more extensive prospects were thus opened to them; and the finding of a passage to India by sailing round the southern extremity of Africa became a favorite project. In the year 1488, the lofty promontory which terminates that continent was descried by Bartholomew Diaz; but it was not until about 10 years afterward that it was doubled, and the coast of Malabar reached, by Vasco de Gama.

Mean while the Cape de Verd Islands, which are said to have been known to the ancients, but afterward lost sight of, had been discovered in 1446; and soon afterward the Azores Isles. When we consider the distances at which these two groups of islands lie from the land, the former being upward of 300 miles from the coast of Africa, and the latter distant 900 miles from any continent, it may be concluded that the Portuguese, when they entered so boldly into the open seas, had made no inconsiderable progress in the art of navigation.

But brilliant as is the lustre which these discoveries shed around the Portuguese name, their glory would have been still more dazzling had they seconded the profound views of Christopher Columbus, which led him to the discovery of the New World. That illustrious man and skilful navigator, by revolving in his mind the principles on which the Portuguese had founded their schemes of discovery, and carried them into execution, was led to conceive that he could improve on their plan, and accomplish discoveries which they had hitherto attempted in vain. From the time that they had doubled Cape de Verd, the great object at which the Portuguese aimed was to find a passage by sea to the East Indies. The direction in which their efforts were made implied necessarily a long and hazardous voyage, should they even be successful in accomplishing their design. But as the Atlantic Ocean stretches westward to an unknown distance, was it not possible that it might reach the shores of those very countries to which it was thought so desirable to find a naval route? This supposition was perfectly consistent with the known globular figure of the earth; and it was evident, on the same principle, that the further India stretches to the east, the nearer it must approach to the western shores of Europe and Africa. Such was the idea suggested to the mind of Columbus, by the knowledge which he possessed of navigation and geography, both in theory and practice. While he found his views confirmed by a careful comparison of the observations of modern pilots with the hints and conjectures of ancient authors, he became thoroughly convinced that the navigator who should have the boldness to cross the Atlantic Ocean would have his toils rewarded by the most important discoveries.

These ideas had presented themselves to the mind of Columbus as early as the year 1474; but it was not until the year 1492, after several years of fruitless solicitation, and of discouragements and disappointments of the most vexatious kind, that he obtained the patronage of Ferdinand and Isabella, who then governed the united kingdoms of Castile and Arragon, and was by them put in possession of the means of carrying his schemes of discovery into execution. With no more suitable an armament for his great enterprise than three small vessels, having 90 men, mostly sailors, on board, and victualed for 12 months, he sailed from the port of Palos in Andalusia on the 3d day of August, and steered for the Canaries. Taking then his departure from Gomera, one of the most westerly of these islands, he stretched into unknown seas; and holding his course due west, reached Guanahani, one of the Bahama Islands, on the 12th day of October. After employing some time in making further discoveries, he returned to Spain to announce the success of his undertaking, the fame of which soon spread over Europe, and excited general attention. It was no easy matter to determine what relation the newly discovered countries bore to the regions formerly known. Columbus's own views on the subject were in strict conformity with the idea which had taken so firm a hold of his mind, namely, that India might be reached by sailing toward the west. He imagined that the islands he had visited were some of those which were said to lie contiguous to the remote shores of Asia. In this opinion he was confirmed by the coincidence which he thought he could trace between certain names given to places by the natives and the appellations known to belong to countries sit-

uated in India. He thought he could recognize, in the answer given to his inquiries after the situation of the mines which yielded gold, the name *Cipango*, by which Marco Polo and other travelers in the East designated the island Japan. Ignorant of their language, and unaccustomed to their pronunciation, he even supposed that they spoke of the great khan; and hence concluded that the kingdom of Cathay or China, described by Marco Polo, was not far off. The same erroneous opinion was still further riveted in his mind, by what he supposed an identity between the animal and vegetable productions of the East Indies and those of the countries which he had discovered.

His second voyage led to the discovery of several more of the group of islands now called the West Indies, a name given them in conformity with the original notions of the discoverer. It was on his third voyage that he discovered the vast continent of America. Having unexpectedly found the island of Trinidad, with the neighboring land, he encountered, before he was aware of danger, the adverse currents and tumultuous waves occasioned by the resistance which the waters of the Orinoco oppose to the tides in the ocean. His attention was thus forcibly called to the immense body of water which is here poured into the Atlantic. This he was convinced was vastly too great to be supplied by any island; and hence he concluded that he had now reached the continent which he had sought through so many dangers.

The American continent, in its northern portions, had been discovered in or before the eleventh century. Toward the close of the ninth century a Norwegian pirate, while attempting to reach the Faroe Islands, which had already been visited by the Irish, was driven by storms to the coast of Iceland. This led to the first settlement of the Norwegians in Iceland in 875. From that time the Faroe Islands and Iceland may be regarded as intermediate stations and starting-points for attempts to reach the northern shores of America. Greenland was early seen; but it was not until 983 that it was peopled from Iceland. Colonization was carried through Greenland in a south-western direction to the new continent, and for some length of time an inconsiderable intercourse was maintained with the newly colonized countries. But a strong line of separation must be drawn between this early discovery of some parts of the high northern latitudes of America, and the discovery of its tropical regions by Columbus in the close of the fifteenth century. In consequence of the uncivilized condition of the people by whom the former discovery was made, as well as the nature of the countries to which it was limited, it produced no important or permanent results in relation either to commerce or science; the latter, on the other hand, has been attended with events of the utmost importance to mankind, as it has proved the opening of a new source of wealth, glory, and knowledge. The discovery of the new continent in the west, like the original discovery of its northern regions, may be said to be accidental, inasmuch as the object which Columbus had in view was to find a western passage to India. But the expedition under Columbus possessed this distinguishing feature, that it manifested the perfect character of being the following out of a plan sketched in accordance with the principles of science, and intelligently conducted to a successful issue.

The tenacity with which an ingenious and enterprising mind adheres to a scheme which it has once proposed to itself as an object of pursuit, was strikingly evinced by Columbus, whose thoughts still dwelt with eagerness on his original and favorite plan of opening a new passage to India. It was not enough that he had astonished mankind by finding a new continent; he conceived the idea that beyond it there might lie a sea extending to the coasts of Asia, and that by diligent search some strait might be found which would conduct him into this sea, or some narrow neck of land, by crossing which it might be reached. To determine this important point, though hitherto his services had met with the most unworthy returns, though years crept upon him, though worn out by fatigue and broken with infirmities, he still undertook with alacrity another voyage. By a lucky conjecture he directed his efforts toward the east of the Gulf of Darien; but he searched in vain for a strait; and though he frequently went on shore and advanced into the country, he never penetrated so far as to enable him to descry the great Southern Ocean.

After the first steps had been taken, the progress of discovery over the globe was astonishingly rapid. No expense or danger deterred even private adventurers from fitting out fleets, crossing oceans, and encountering the rage of savage nations in the most distant parts of the earth. Before Columbus had reached the continent at the mouth of the Orinoco, Newfoundland had been discovered by Cabot, a Venetian by descent, but sailing under the auspices of England. He had also coasted along the present territory of the United States, perhaps as far as Virginia. In the next two or three years, the Cortereals, a daring family of Portuguese navigators, began the long and unavailing search of a passage round the northern extremity of America. They sailed along the coast of Labrador, and entered the spacious inlet of Hudson's Bay. Two of them unfortunately perished in this enterprise. In the year 1501 Alvarez Cabral, a Portuguese navigator, destined for India, having stood out to sea in order to avoid the variable breezes and frequent calms which he was sure to meet with on the African coast, to his surprise, came upon the shores of an unknown country, the coast of Brazil, which he claimed for Portugal. Amerigo Vespucci, a Florentine gentleman, who had already sailed along a great part of Terra Firma and Guiana, now made two extensive voyages along the Brazilian coast. Soon after his return he drew up and transmitted to one of his countrymen an account of his adventures and discoveries, in which he insinuated that to him belonged the honor of having first discovered the continent in the New World. His performance, which was the first description published of the new-discovered countries, circulated rapidly, was read with admiration, and became the means of procuring for its author the high honor of giving his name to the whole continent. Not many years elapsed before the conjecture of Columbus respecting the existence of an ocean beyond the continent which he had discovered was found to be true; and his favorite project of opening a passage to India by steering westward was actually accomplished. By crossing the narrow isthmus of Panama, Nuñez Balboa reached the Pacific Ocean in the year 1513; and in 1521 Magellan discovered and sailed through the famous straits which bear his name. After 20 days occupied in navigating this dangerous channel, he beheld spread out before him the boundless expanse of the great Southern Ocean. Directing his course to the N.W., he continued his voyage for nearly 4 months without discovering land. From want of provisions and from sickness, he and his crew suffered dreadful distress. But when about to sink under their sufferings, they fell in with the Ladrone Islands, where they found refreshments in abundance. From these isles he proceeded on his voyage, and was not long in discovering the Philippines. Here, in an unfortunate quarrel with the natives, he was slain, with several of his principal officers. But his surviving companions, pursuing their voyage, and returning to Europe by the Cape of Good Hope, solved the great problem of the circumnavigation of the earth.

After the discovery of the Pacific Ocean by Balboa, the investigation of the western coasts of America went speedily forward. Expeditions were soon sent out both northward and southward; so that nearly a

full view was obtained of the immense range of coast which the American continent presents to the Pacific Ocean, and at the same time of its great interior breadth. On the other hand, discovery in the Eastern World was no less rapid. Within 20 years from the time that Gama reached India by the way of the Cape of Good Hope, all the coasts of Hindoostan, those of eastern Africa, of Arabia, and Persia, had been explored. Navigators had penetrated to Malacca and the Spice Islands. They had learned the existence of Siam and Pegu; and it was only the characteristic jealousy of the rulers of the Celestial Empire that prevented them from entering the ports of China.

The scientific geographer had now abundance of materials to arrange and digest into one systematic whole. He was now called upon to give such a delineation of the earth's surface as should connect together the ranges of eastern and western discovery, and should exhibit the true outline and relative positions of countries, as these had been demonstrated by the astronomer and navigator. The ancient system of geography, to which the Arabs seem closely to have adhered, was founded on the idea of the whole earth being surrounded by an ocean as by a great zone. This the Arabians characterized as the "Sea of Darkness," an appellation most usually given to the Atlantic; while the northern sea of Europe and Asia, as inspiring still more gloomy and mysterious ideas, was styled the "Sea of Pitchy Darkness." Such notions could not now keep possession of the human mind, though it was only by degrees that mankind could be expected to be enlightened by doctrines which were not only new, but seemed likewise to be contradicted by the evidence of sense. The fundamental principles of a systematic arrangement had, as we have already seen, been known from the time of Hipparchus, and had been reduced to practice by Ptolemy. But the want of astronomical observations, or even of accurate surveys, which navigators seldom furnished, and for which science had not indeed yet provided suitable instruments, placed it still beyond the resources of modern geography to give any thing like a just representation of the two hemispheres. The Venetian geographers were the first who attempted a systematic arrangement of the immense regions recently discovered, adjusting them to each other, and to the mass of information previously possessed. But a series of Venetian maps, preserved in the king's library, show how much their skill was counteracted by the difficulties with which they had to contend. Instead of exhibiting the vast ocean which separates the east coast of Asia from the west coast of America, the two continents are represented either as meeting, or as separated only by a narrow strait. The voyage of Magellan across the Southern Ocean had not shown with sufficient distinctness the presentation of the opposite coasts, to enable the geographers of the time to avoid this error. When maps of different dates are compared, we find, as we descend toward modern times, a gradual progress toward accuracy in the representations given of the earth's surface. This is what might be expected; for all maps should be considered as unfinished works, in which there will always be something to be corrected, or something new to be inserted.

At the period of the revival of letters in Europe, the latitudes and longitudes as given by Ptolemy were universally received with implicit confidence. When checked, however, by actual observation, they were found to differ materially from the truth. The latitudes in many instances were found very erroneous; that of Ilyzantium, for example, exceeded the truth by two degrees. As nearly the same excess was found to exist in some other cases, many geographers, unwilling to renounce the authority of Ptolemy, concluded that this difference had arisen from a change having taken place in the position of the earth's axis, in consequence of which the latitudes of all the places in Europe were increased. The progress of observation showed that this opinion was untenable, and that before geography could rest on a sure basis, a general revision of ancient graduation was indispensably necessary. The only observations employed by the ancients for determining longitudes were those of the eclipses of the moon; but it was found that the results derived from this source could not be depended on. In the year 1610, Galileo, having discovered three of Jupiter's satellites, pointed out the use which might be made of their eclipses for finding longitudes. But this method, which gives the greatest degree of accuracy, was turned to little account, until 1668, when Cassini published his tables of the revolutions and eclipses of these satellites. Three years afterward, by means of simultaneous observations made by him and Picard at Paris, and by Tycho-Brahe at Copenhagen, the difference of longitude of these two important points, which had been long a matter of dispute, was finally determined. Since that time, other accurate methods of finding the longitude have been discovered; and the instruments employed in observation have been brought to a high degree of perfection. The refinements and improvements of modern science have been brought to bear upon the great problem of determining the figure of the earth, which, though nearly, is not exactly spherical. (See FIGURE OF THE EARTH.) The labors of scientific men to obtain accurate results on this subject, have contributed much to the improvement of geography. The expeditions sent out under Maupertuis to the arctic circle, and under Condamine to the equator, afforded an opportunity of making various observations of latitude and longitude in regions of which no delineation resting upon proper data had hitherto been given. Within the last 50 years, trigonometrical surveys of France and England have been executed, which have nearly completed the delineation of these countries.

Much advantage has accrued to geographical science, in point of accuracy and precision, from the application in modern times of a sound and judicious criticism to the immense mass of materials which had been accumulating for ages. The labors of M. d'Anville, in the 18th century, were employed with great success in this department. He undertook the revision of the whole system on which the delineation of the world, and of the countries into which it is divided, had hitherto been made; and by unhesitatingly rejecting every particular that did not rest on positive authority, he removed many false or uncertain features, and clearly distinguished the known from the unknown parts of the globe. Major Rennell has skillfully arranged and illustrated the important materials collected respecting India. Various authors have in modern times cultivated another interesting field of inquiry, the comparison between ancient and modern geography, and the tracing of the rise and progress of early discovery. These researches were diligently pursued by Vossius, Bochart, and other learned men of the 17th century, and with still more success by Rennell, Vincent, and Mannert, who appear to have pushed them as far as they admit, though much darkness still rests on some parts of the inquiry. Gosselin, notwithstanding that he has applied to the subject a great extent of investigation, as well as much skill and force of criticism, has failed, on account of the peculiar views in which he indulged, to make any solid addition to the science.

The discoveries made by the Spaniards and Portuguese had greatly increased the stock of geographical information. Still much remained to be done. The desire of finding a short and convenient route to India continued to supply a stimulus to exertion in the way of discovery. The English and Dutch made extraordinary efforts, and encountered fearful dangers and

disasters, with the expectation of finding a passage by the north-east, along the northern shores of Asia. A coast beset with the ices of the polar seas presented, however, obstacles too formidable to be overcome; though recent researches show that no barrier of land intervenes. But there was still another quarter where an attempt might be made; and to this point the commercial nations of Europe failed not to direct their efforts. The jealousy of Spain long prevented the other European States from visiting the north-western coast of America, so that they remained ignorant of the vast breadth to which the continent spreads out as it advances toward the north. They adopted, indeed, the opinion that, like the southern extremity, the northern terminated in a point or cape. This left room to hope for a north-western passage into the Pacific Ocean, by sailing round the imaginary cape. The English took the most decided lead in the exploratory voyages to which these views gave rise. In the reign of Queen Elizabeth, Frobisher and Davis were sent out on three successive voyages, which led to the discovery of the entrance into Hudson's Bay by the former navigator, and of the entrance into Baffin's Bay by the latter. These two capacious basins were afterward discovered by the intrepid navigators whose names they bear. In sailing round the great sea which he had discovered, Baffin mistook the great opening into Lancaster Sound for a mere gulf—a misapprehension which checked for a time any further attempts in that quarter, as navigators were led to expect success only through the channel of Hudson's Bay. In 1631 Fox explored a part of that great opening on the north of Hudson's Bay, called Sir Thomas Roe's Welcome, which seemed now to hold out almost the only hope of accomplishing the object sought. The assertion of Middleton, an officer in the service of the Hudson's Bay Company, that he had discovered the head of the Welcome to be completely closed, and the circumstance of two other navigators, who were sent out the following year, failing to effect any thing, produced an impression on the public mind that the passage so long sought had no existence.

The discoveries of Cook in the North Pacific Ocean, where he found the American coast stretching away in a north-westerly direction, joined to the circumstance that, when he penetrated through the strait discovered early in the last century by Behring and Tchirikof, which separates America from Asia, the coast appeared there to extend indefinitely to the north, seemed not only to confirm the conclusion that no passage into the North Pacific Ocean was here to be expected, but also that the American continent extended northward in one unbroken mass, perhaps even to the pole. The groundlessness of these views became apparent when, in the year 1771, Mr. Hearne, who had been dispatched by the Hudson's Bay Company to explore the limits of the coast in this direction, sailed down the Copper-mine River, and discovered its entrance into the sea; and again, when, in 1780, Sir Alexander Mackenzie traced also to the sea another river about 20 degrees further to the west. Thus were there furnished strong grounds to believe that the pole was surrounded by an ocean which separated the northern coasts of Asia and America, making these two continents altogether distinct from each other; and that through this ocean lay the long-sought course which would certainly conduct the navigator who should succeed in forcing his way through the ice and storms of the polar regions, from the Atlantic into the North Pacific Ocean.

The determination of this great geographical question, so long agitated, has recently called forth the utmost efforts of the British government. In 1818 an expedition was sent out to Baffin's Bay under the command of Captain Ross, without leading to any important result, as he was led to conclude that no opening existed. Lancaster Sound had, however, forcibly attracted the attention of the late Sir Edward Parry, at that time lieutenant and second in command; and on returning with a new expedition under his immediate command, he succeeded in penetrating through Lancaster Sound, which he found gradually to widen till it opened into the Polar Sea. He found a chain of large islands to lie parallel to the American coast; and among these he continued his navigation until the accumulation of ice in the straits and channels through which he had to pass stopped his further progress. This circumstance induced him to make his next attempt through Hudson's Bay, by the channel of the Welcome, which had as yet been but imperfectly explored. Here he succeeded in reaching a point considerably beyond that at which Middleton had represented the bay as terminating. He found at length a narrow strait communicating with the Polar Sea, but so incumbered with ice as to preclude the hope of its ever affording an open passage. He was therefore again sent out to renew his efforts in the first direction, where he had already obtained partial success. But the obstacles which he had formerly been unable to overcome still continued, and prevented him from making any material addition to his former discoveries. While these skillfully-conducted voyages were in progress, Sir John, then Captain Franklin, was sent out at the head of two successive expeditions by land, and, by actual survey, ascertained three fourths of the boundary coast—his operations terminating at a point beyond the 149th degree of west longitude. On the other hand, an expedition under Captain Beechy, sent to meet Captain Franklin on his second toilsome journey, passed the Icy Cape of Cook, and penetrated nearly as far as the 156th degree of west longitude, leaving only seven degrees, or 160 miles, between the farthest point thus reached and the utmost limit reached by Captain Franklin. The results of this investigation appeared to prove that the whole of the northern coast of America extends in a line not varying much from the parallel of the 70th degree of north latitude. The problem of a passage between the Atlantic and Pacific Oceans, to the north of the American continent, has now been finally solved; but this discovery, so well fitted in itself to afford satisfaction to the British nation, which has always taken the lead in such enterprises, has been made under circumstances of a very saddening kind. In 1845 Sir John Franklin and Captain Crozier were sent out on a voyage of discovery to the Arctic Seas. No tidings having been received of this expedition, it became, after two or three years, a subject of painful anxiety and suspense. Hence various expeditions were fitted out and sent in search of the missing voyagers, to succor them if still within reach of human aid, or, if otherwise, to ascertain their fate.

In the course of these praiseworthy endeavors, Captain M'Clure was appointed to command the *Investigator*, under Captain Collinson of the *Enterprise*, and proceeded with that officer to Behring's Straits in the early part of 1850. When on the eve of sailing, Captain M'Clure emphatically declared that he would find Sir John Franklin and Captain Crozier, or make the north-west passage. The latter part of this pledge he has, geographically speaking, redeemed; but the impenetrable mystery which from the first enveloped the fate of these gallant commanders, remains the same. Captain Collinson failed in his attempts to penetrate the pack ice that season, and so was separated from Captain M'Clure, who, notwithstanding a signal of recall from Captain Kellett of the *Herald*, the chief officer on that station, dashed onward with a bold determination to force a passage to the north-east—taking on himself all the responsibility of disobeying orders. Fortunately his daring has been crowned with success. He rounded Point Barrow on the 5th August, 1850; continuing his course eastward along the coast, he reached Cape Parry on the 6th Septem-

ber, whence he steered through a channel called Prince of Wales's Strait; which, running north-east, appeared a most promising course for reaching the sea south of Melville Island. Near the northern extremity of this strait, the *Investigator* was frozen in from the 8th of October, and remained stationary during the winter. Parties being sent out to explore, it was soon ascertained that the channel opened into Barrow's Strait; and thus was the existence of a north-west passage established. On the 14th July, 1851, the *Investigator* was again fairly afloat, the ice having opened without any pressure. The great object now to be gained was to pass through the strait; but notwithstanding their utmost exertions, the expedition was completely arrested by strong north-east winds, driving great masses of ice to the southward. Thus baffled, Captain M'Clure resolved on running to the southward of the island forming the western boundary of Prince of Wales's Strait, which he had named Baring Island, and then to sail northward along its western side. This navigation, in which he was subjected to many delays and encountered many formidable obstacles, he accomplished, and succeeded in reaching the north side of the island on the 24th of September. Had open water existed to the east the rest of the passage might have been easily perfected in this way, for Barrow's Strait lay before them, the navigation of which, from their position to Lancaster Sound, was known to be practicable. The hopes of this intrepid navigator were destined again to be disappointed. On the night of the above-mentioned day the *Investigator* was frozen up, and at this point, in latitude 74° 6′ N., and longitude 117° 54′ W., they had their winter quarters in 1851, 1852, 1853. In April, 1852, a party crossed the ice to Melville Island, and deposited there a document giving an account of their proceedings, and of the position of the *Investigator*. This document was happily discovered by the officers of Captain Kellett, who had been the last person with whom Captain M'Clure held communication when he entered the ice on the west, and was now, singularly enough, the person to rescue him at the expiration of three years on the side of Melville Island on the east. Steps were immediately taken to communicate with the party in their ice-prison, Lieutenant Pim being appointed by Captain Kellett to the service. Eventually it was found necessary that Captain M'Clure and his gallant companions should abandon their ship, however unwillingly; so that the navigation of the north-west passage has not yet been accomplished.

The discovery of a new continent greatly enlarged, as we have seen, the views of mankind respecting the constitution of the globe. But imagination, no longer limited in its range by the notion of a circumambient ocean that could not be passed, soon gave rise to the belief of a southern continent, which was supposed necessary to balance the land in the northern regions of the earth. The immense body of water that was found to occupy so large a portion of the known regions of the southern hemisphere gave ample room for supposing this unknown continent to be of vast dimensions. It was imagined that it might equal in extent, as well as in wealth, the American continent. Nor was it considered necessary to exclude it from the map of the world till its existence should be proved. It appears in all the early maps as an immense mass of land surrounding the south pole, and presenting to the ocean one unbroken coast. The discovery of certain great insular tracts in the South Seas, which, from ignorance or their true nature, navigators might mistake for continental promontories or portions of coast, no doubt at first gave some countenance to the belief of the existence of antarctic land. But the delusion was gradually dispelled before the light afforded by further discovery. The Portuguese, in less than 20 years after their passage of the Cape of Good Hope, pushed their researches to the most remote islands in the Indian Ocean, including Java and the Moluccas. They appear also to have observed some part of the coast of New Guinea. The Spaniards, during their early and adventurous career, put forth strenuous exertions to explore the Southern Ocean, and several of the groups of islands scattered over its surface were discovered by their navigators. In 1607, the Dutch having wrested Java and the Spice Islands from the Portuguese, established in them the centre of their Indian dominion. A great maritime power being thus placed so near to the northern shores of the largest portion of land on the globe that is regarded as an island, it became almost impossible that New Holland could long remain unknown. It was discovered early in the 17th century, and was long supposed to form a part of the great southern continent. Van Diemen, the Dutch governor of India, sent out several vessels successively to explore its coasts. Hertog, Carpenter, Nuytz, and Ulaming made very extensive observations on the northern and western shores, but found them so dreary and uninviting that no settlement was attempted. In the year 1642 Abel Jansen Tasman was commissioned to proceed on a voyage to ascertain its extent. On the 14th August he sailed from Batavia, directing his course first toward the Isle of France. He again set sail on the 3d October, and proceeding southward and eastward, beyond the limits reached by his predecessors, he discovered and doubled the southern extremity of Van Diemen's Land, to which he gave its name; but he failed to discover that it is a separate island. Pursuing afterward his course eastward, having reached about 42° 10′ S. lat., and 170° E. long., he found himself in view of a high and mountainous country, which he named Staaten Land, but which is now known as New Zealand. He sailed along the coast toward the north-east, and after being detained by the variableness of the weather, he resumed his voyage and returned home by the Friendly Islands, discovering many islands in his progress. He arrived at Batavia on 15th June, 1643. Tasman's voyage proved that New Holland was no part of the southern continent, even if such a continent should be found to exist. Cook, who had been appointed in 1767 to conduct a voyage into the South Pacific Ocean for astronomical and geographical purposes, sailed southward in 1769 in quest of the unknown continent. Lofty mountains were seen on the 6th October, and it was supposed that the object of their search was found. But the land proved to be New Zealand. This land he circumnavigated, and found that it consisted of two large islands separated by a narrow channel. After six months employed in this manner, he directed his course westward, and reached the eastern side of New Holland early in 1770. By his extensive operations in that quarter—having run down the coast from latitude 38° to its northern extremity at Torres Strait—he left little more to be done there in the way of discovery. Passing down New Holland and New Guinea, he continued his voyage by Timor and the south coast of Java to Batavia; whence, after repairing the ship, he sailed for England, and reached the Downs on the 12th June, 1771, with his crew weakened and reduced in number by the fatigue and hardships of their long voyage. By this voyage it was proved there was no such continent as that supposed to exist to the northward of 40° south latitude. But as many ingenious and well-informed men still adhered to the opinion that there did exist a southern continent, government determined to send out a second expedition under Cook, to make such an exploration of the Pacific Ocean in the higher southern latitudes as should finally and satisfactorily settle this much agitated question.

Cook was instructed to circumnavigate the globe in high latitudes, prosecuting his researches as near to the south pole as possible, and to traverse every part of the Southern Ocean where the supposed continent

could possibly lie. The expedition sailed from Plymouth 13th July, 1772, and quitted the Cape of Good Hope 22d November. Pursuing his course eastward, Cook, during three years, employed the summer months in those regions (corresponding to our winter months), in navigating high latitudes toward the South pole, and the winter months in adding to his discoveries in the South Pacific Ocean. Notwithstanding, however, that he varied his course, and traversed in every direction which he thought afforded the slightest likelihood of finding land, and actually got so far south as 71° 10′ of latitude, he was unsuccessful. Having thus scrupulously and completely accomplished the object for which he was sent out, he directed his course homeward. He had encompassed the globe in high latitudes, and was led to conclude that the southern pole is surrounded only by isles and firm fields of ice, so that the hypothesis of an austral continent had no foundation. He reached the Cape of Good Hope 22d March, 1775, and anchored at Spithead on the 30th July, having, in the space of 3 years and 18 days, sailed 20,000 leagues, mostly in inhospitable climates and unknown seas. In the course of this and his former voyage the same great navigator secured glory to his country and to himself by likewise completing the survey of the great Pacific Ocean. Some of the interesting groups of islands scattered over its vast surface had already been made known by the previous voyages of Byron, Wallis, and Carteret. Cook fully traced the great chain of the Society Islands and the Friendly Islands. He determined also the form and relations, not only of New Zealand, but of New Caledonia and other lands and islands in that region of the globe.

The extensive island of New Holland has recently become doubly interesting from the important relations which now subsist between it and Europe. In the year 1788 the establishment of a British colony on the east coast paved the way for a more complete survey. By the different expeditions undertaken from 1795 to 1799, chiefly under the direction of Bass and Flinders, the east coast, together with Van Diemen's Land and Bass's Strait, which separates that island from New Holland, were adequately explored. In 1801 an expedition was sent out by the British government under the command of Captain Flinders, for the purpose of surveying a large portion of the coast. These surveys were prosecuted with unremitting ardor and perseverance. At the same time that Captain Flinders was carrying on his survey, the French captain Baudin was employed on the same service, and in some parts the discoveries of these navigators intermingle. Some additional observations have more recently been made; and by these various expeditions the whole coast of New Holland and Van Diemen's Land has been accurately surveyed, the position of every point has been ascertained, and every inlet and bay has been traced to its termination.

The strong presumption which the researches of Captain Cook in the Southern Ocean furnished of the non-existence of an austral continent, seemed to leave no room to expect that any further doubt would be entertained on the subject. Lieutenant C. Wilkes, commander of the expedition fitted out in 1838 by the government of the United States, for the exploration of the antarctic regions, has, however, claimed for his country and for himself the honor of at length discovering a continent within the antarctic circle. While this claim is pertinaciously adhered to, no distinct and unequivocal proof is produced that the continent alleged to have been seen by the American expedition has a substantial existence. No continent or island was landed on; and, on the other hand, it is supposed that the British expedition, under the command of Sir James C. Ross, sailed over the very spot in south latitude 66°, and east longitude 163°–166°, where Lieutenant Wilkes supposed he saw mountainous land. This latter expedition was fitted out by the British government, for scientific purposes, in 1839, and arrived in Van Diemen's Land in August, 1840. The French government had likewise sent an expedition into the southern seas, under the command of Captain Dumont d'Urville, about the same time. To avoid interferences with the French and American discoveries, Sir James Ross determined on a more easterly meridian—that of 170° E.—in which to endeavor to penetrate to the south. The expedition sailed from Hobart Town on 13th November, 1840, and on 27th December encountered a chain of icebergs. On the 5th January, 1841, they entered the pack-ice, through which having forced their way, the ice having at the same time somewhat slackened, they found themselves on the 7th January again in a clear sea. Soon after 2 o'clock, A. M., of the 11th January, they discovered land, which, as they advanced southward, was found to extend continuously from the 70th to the 79th degree, with several adjacent islands. This land they called Victoria Land. It presented to their view ranges of mountains whose lofty peaks, covered with eternal snow, rose to elevations from 7 to 10 or even 12 thousand feet above the level of the ocean. The intervening valleys were filled with glaciers, which, descending from near the mountains' summits, projected in many places several miles into the sea, and terminated in perpendicular cliffs. The rocks breaking through in a few places their covering, afforded the only indication that land formed the nucleus of this, to appearance, enormous iceberg. On the 28th January, when they had nearly reached their highest latitude, about 78° S., they found that what appeared when first seen at a distance to be a high island, was a mountain 12,367 feet in height emitting flames and smoke in great profusion. This volcano lies in latitude about 77½° S., and in longitude about 167° E. From the most eastern point of land at a cape not far from the foot of this mountain, an icy barrier was found to extend eastward as far as the eye could discern. This barrier was a perpendicular wall of ice from 150 to 200 feet in height, and stretched 250 miles in one unbroken line, as was found on a second visit to the same interesting locality in February 1842; nor were they able to turn its extremity, so as to reach a higher latitude. At a point where the height of the barrier diminished to about 80 feet, they perceived from the mast-heads that it gradually rose to the southward, presenting the appearance of very lofty mountains perfectly covered with snow, but with a varied and undulating surface. And hence Sir James Ross, with nearly all his companions, felt assured that the presence of land there amounts almost to a certainty. Still, Sir James is of opinion that the recent discoveries in the antarctic regions made by the French and American navigators, and by himself, do not prove the existence of a great southern continent, but rather of a chain of islands.

In tracing the history of geographical discovery, it can not fail to be observed that while discovery by sea admits of being pursued with great advantage, on account of the rapidity of its progress and the extent of its range, it does not supersede the slower and more confined operations of the discoverer by land, which are no less necessary to make known the interior features and circumstances of the different countries.

The British dominion in India has led to much additional information respecting the interior of Asia. Information which is, however, in many respects, only the revival of ancient knowledge. The great mountainous chain which forms the northern boundary of India, has been traced and found in many places to tower to such heights as to exceed the Andes, long supposed to be the highest mountains in the world. The source of the Ganges, and that of the Indus, with the early courses of these great rivers, have been found to be

situated quite differently from what had been supposed to be their position by modern geographers. The mountainous territories of Cabul and Cashmere, the high interior table-land of Thibet, and the vast sandy plains of Meckran, have all been more or less explored. Information of an authentic character has also been recently obtained respecting the formerly celebrated capitals, Bochara and Samarcand. But a wide field still remains for future research.

The continent of Africa, however, is the quarter of the globe which, more than any other, has baffled the efforts of those who would explore its interior. The vast sandy deserts, high mountains, and impenetrable forests which occur on its surface, joined with the unremitting wars carried on between the petty tribes, as well as the deeply-rooted antipathy of the African Mohammedans toward the Franks, have presented obstacles of the most formidable kind. The ancients, whose knowledge of the African coasts was very imperfect, except where they border on the Mediterranean and the Red Sea, were accustomed to penetrate into the inland provinces, and are said to have been acquainted with many parts of it which are now altogether unknown. At an early period of modern history, reports that Prester John, the Christian Prince, who had been sought for in vain in the East, was to be found in the interior of Africa, induced the Portuguese to explore Abyssinia; but the accounts which they gave of the extent of that country were greatly exaggerated. From the western coast they dispatched embassies into the interior in quest of the object of their search; and on one occasion they appear to have reached the city of Timbuctoo, and to have obtained at Benin some information concerning the great interior kingdom of Ghana. The maritime nations of south-western Europe early formed settlements on the west coast of Africa, and, for commercial purposes, were naturally prompted to seek a knowledge of the neighboring nations. But it was not until the formation of the African Association in 1788 that any well-sustained efforts were made in the prosecution of discovery in the interior. There were two objects connected with the interior of Africa which had for a long time fixed the attention and awakened the curiosity of the nations of Europe. These were the city of Timbuctoo and the great central river, the Niger. Timbuctoo has been for many centuries the grand emporium of the central trade of Africa, and hence there has prevailed throughout Europe, ever since the rise of discovery and commercial enterprise, a strong desire to visit it, and to establish with it a friendly intercourse. The discovery of the course and mouth of the Niger has now opened up to commercial speculation what it is hoped will give a ready access to Timbuctoo as well as other places of traffic. The interest with which, in a geographical point of view, however, the Niger has been regarded, has arisen from the remarkable nature of the regions through which it flows, and still more from our ignorance, combined with the various and contradictory rumors which were so long abroad, respecting its course and termination. Herodotus is the earliest author who affords any ideas applicable to this subject. He mentions an expedition into the interior of Africa, undertaken by some Nassamonian youths, who, being made prisoners, were carried to a great city inhabited by negroes, and situated on the banks of a river which flowed from west to east. This stream he conjectures to be the remote source of the Nile, but the particulars given appear to leave little doubt that it was the Niger. A similar hypothesis was adopted by Strabo, Mela, and Pliny, identifying the waters of these two great rivers. But Ptolemy, whose residence in Alexandria afforded him ample means of information, rejects altogether the idea of any communication between them. He describes the Niger as terminated on the west by Mount Masûrus (Mandingo), and as giving rise to several extensive lakes as it proceeds in its course. His statements do not, however, involve any thing positive as to the direction in which it flows. The Saracens or Arabians are the next great source of information; for, in the course of the dissensions which took place among their dynasties in northern Africa, large bodies crossed the desert and founded kingdoms on the eastern part of the shore of the Niger, of which the kingdom of Ghana was the most splendid. According to their testimony, the Niger flows from east to west, and discharges itself into the sea, by which they understood the Atlantic, or great circumambient ocean. With regard to its source, they generally regarded it as the same with that of the Egyptian Nile, identifying the two rivers in the early part of their course. Some were of opinion that the waters of the Niger did not reach the sea; so that they must have supposed them to be discharged into a lake. The system adopted by modern Europeans was derived from Leo Africanus, who retained the delineations of the Niger as flowing from east to west, and falling into the ocean; but, instead of deriving it from the Nile, supposed it to rise from a lake lying deep in the interior of Africa. Following this hypothesis, all the early European navigators, when they saw the two broad estuaries of the Senegal and Gambia, concluded that one or both gave egress to the waters of the Niger. In the beginning of the 17th century, the French and English, having each formed a settlement, the one on the Senegal and the other on the Gambia, were induced by the hope of gain to seek a route up these rivers to the city of Timbuctoo; and in this enterprise they proved the falsity of the opinion which had been so long held. The streams were traced so near to their source as to become little more than rivulets; while the explorers were still far from the great central emporium of Africa, and from the great plain through which the Niger was understood to flow. This result led the two great French geographers, Delisle and D'Anville, to construct maps in which the Niger, after the lapse of so many ages, was again represented as flowing to the eastward. Instead of a single stream pursuing a course across the whole breadth of Africa and falling into the Alantic, D'Anville distinguished three rivers—the Senegal, flowing westward; the Niger, flowing eastward into a lake in Wangara; and another river still further east, and flowing in the opposite direction. The data on which this scheme rests were never fully made public.

Still new doubt was thrown around this subject by the reports collected by Mr. Lucas, who traveled under the auspices of the African Association, and who was assured at Tripoli, by a native merchant, that the river flowed with rapidity in a westerly direction. The time, however, at last arrived, when these conflicting opinions were to be silenced, and when new light was to be thrown on the subject, by the labors of our illustrious modern traveler, Mr. Mungo Park. In his first expedition, in 1795-96, he proceeded from the west coast in the direction of the River Gambia, until at Medina he left it, and turned to the north. Having passed through the kingdoms of Bondou, Kasson, and Kaarta, he reached Sego, the capital of Bambarra, where he beheld "the long-sought majestic Niger glittering in the morning sun, as broad as the Thames at Windsor, and flowing slowly to the eastward," directing his course into the depths of the interior of Africa. This stream, he found, was called by the natives the Joliba, or Great Water. Park advanced beyond this point to another town called Silla on the same river, and acquired also some valuable information respecting the further course of the stream which was the object of his research, as well as respecting the position of Timbuctoo, which he was told was not more than 200 miles from Silla. Following upward the course of the Joliba until he reached Bammakoo, which was stated to be about ten days' journey from its source, he returned to the Gambia by

a more southerly tract. In 1805 this adventurous traveler was sent out at the public expense on his second expedition. After reaching Silla, he embarked at a place in its neighborhood on the Joliba or Niger, with the determination of sailing down the stream until he should reach its mouth, whithersoever its course might conduct him. He is ascertained to have passed successively the cities of Jenné, Timbuctoo, Yaour or Yaouri, and to have reached Boussa, a short distance further down, where he was killed. No part of his journal, however, after he embarked on the river, has been recovered. In the mean time, a strong and general interest being now excited in reference to African geography, information flowed in from various sources respecting the regions in the interior, as well as some parts nearer the coast. Many particulars became known concerning the countries to the east of Timbuctoo, especially the kingdom of Bornou, then the most powerful State of central Africa. The knowledge possessed of the people of the interior was also considerably increased. These circumstances prepared the way for a more successful attempt than any hitherto made to explore the interior of Africa, when Major Denham and Lieutenant Clapperton were sent out in 1822. Setting out from Tripoli with a caravan of Arab merchants, these travelers crossed the desert, and reached the great inland sea or lake called Tchad, which is the receptacle of immense volumes of water collected from the most distant recesses of inner Africa. Major Denham examined the coasts of this lake to the east and south; while Lieutenant Clapperton directed his researches westward, through the kingdom of Bornou and the country of the Feilatahs, until he arrived at Sackatoo, situated on a stream which probably flows into the Joliba. In the course of this journey, Clapperton obtained a great mass of information concerning those hitherto unvisited regions which lie eastward of Timbuctoo; but with regard to the course of the unexplored part of the River Niger (or Quorra, as it was called at Sackatoo), he heard little that could be depended upon. Having returned to England, he was again sent out by the government in command of a new expedition, with instructions that he should endeavor to penetrate to the scene of his former adventures from the coast of Guinea. In the execution of this plan of research he reached the Niger at Boussa, where Park perished; and, after traversing some of the adjoining regions on the further side of the river, as far as the great commercial city of Kano, the capital of Houssa, where he had been in his former journey, he turned again to the west, and having reached Sackatoo, there died. His servant, Richard Lander, with a praiseworthy zeal, embarked on one of the branches of the Niger for the purpose of finally determining, if possible, its termination by sailing down the stream; but he was stopped by the natives, and compelled to turn back. The city of Timbuctoo was in the mean while reached by Major Laing, who succeeded, in August, 1826, in making his way thither across the desert from Tripoli. In this famous city he spent some weeks, but he was murdered in the desert on his return; nor did the results of his inquiries and observations ever reach Europe. Such are the formidable difficulties and dangers which have hitherto encompassed the path of discovery in the interior of Africa. Still, by renewed efforts, the object of research has been gained. The grand question of the termination of the Joliba, Quorra, or Niger, has at length been fully resolved—a discovery which is the result of the fortunate and well-conducted enterprise on which Richard Lander and his brother were sent out in 1830. Having followed nearly the same route which had been taken by Clapperton in his second journey, these two travelers reached Boussa on the 17th June. They first ascended the river as far as Yaouri, and then returned to Boussa. After remaining there for some time, they embarked on the river to follow the stream in its course downward, hoping that it would conduct them to the sea. In this expectation they were not disappointed; for they reached the Bight of Benin by the larger branch, which is there called the River Nun. There is another great branch a little further to the south; and by these two outlets, with several smaller channels, the river known in Europe by the name of Niger discharges its water into the Atlantic.

The zeal for discovery in Africa, which has been so active during the last six years, has sent forth a succession of travelers (missionaries and others) to explore the southern regions of that vast continent. We can mention briefly only the most remarkable results of their researches.

It is now (1856) about six years since intelligence was received in Europe of the discovery of snowy mountains in eastern Africa. The discovery was in itself so remarkable, that the report was not at first universally credited. It was, however, subsequently confirmed. The mountains in question are Kilimanjaro, in about latitude 3½° S., and longitude 37° E.; and Kenia, in about latitude 1° S., and longitude 38½° E. They were discovered by the missionaries Rebmann and Krapf, stationed near Mombas. Kilimanjaro is an isolated and very conspicuous peak, probably connected on its western side with the table-land of inner Africa. The missionaries have become acquainted with its eastern, southern, and northern aspects; but Mount Kenia has been seen only from the south, at a distance of six days' journey, or about 80 geographical miles.

Another important discovery made in the interior of Africa within the same time is that of Lake N'Gami, by the missionary the Rev. Dr. Livingston, accompanied by Mr. Oswell and Mr. Murray. It seems to be situated about 19° south latitude—about 560 miles N.N.W. of Kolobeng, the scene of Dr. Livingston's missionary labors, and the head-quarters of the Bakwain tribe. These and other explorers have made us in some measure acquainted with an extensive system of rivers, between 10° and 22° S. latitude, running eastward, which, when further research shall have made them fully known, may be found capable of being rendered subservient to commercial intercourse with the surrounding countries, and to their consequent civilization. Dr. Livingston has lately returned from his explorations to the north of Lake N'Gami.

An important expedition to central Africa, headed by Mr. James Richardson, left Tripoli in March, 1850. It was sent out under the orders and at the expense of the British government. The object of this mission was to survey Lake Tchad, and to explore the neighboring countries. The scientific interests of the expedition were intrusted to two German gentlemen, Dr. Barth and Dr. Overweg. Instead of traveling from Tripoli across the desert with the great caravan, the mission formed a small caravan of its own, amounting to about 100 persons, and as many camels. The journey from Tripoli to Murzuk and thence to Ghat is less interesting than that from the latter place, where they entered on entirely new ground. But even in the former part of the march many important discoveries were made, as the travelers selected new routes not before explored, and thus rendered every part of the journey subservient to the purposes of the mission. At Ghat their personal danger was increased to such a degree that they found it necessary to trust for protection to the friendship of the sultan of the Kelóes, in whose country they were detained about three months, during which time Dr. Barth made an interesting journey to Agadez, while much valuable information was also collected by Mr. Richardson and by Dr. Overweg, who had remained. At the close of 1850 the party reached Zinder, where the three travelers separated, each proceeding with his followers by another route. Mr. Richardson took the direct way to Kuka,

not far from the shores of Lake Tchad, and the capital of the empire of Bornou. At Kuka all the three hoped again to meet very soon afterward, but this hope was disappointed. Mr. Richardson was of a weak constitution, yet his health appeared to suffer little from the fatigue of crossing the desert; but he sunk before he reached Lake Tchad, which was the termination of his mission, and from which he was to return by direct road to Tripoli. He died in the country of Bornou at Ungurutua, a place six days' journey from Kuka, during the night intervening between the 3d and 4th of March, 1851. Thus was added another name to the large number of those who have fallen a sacrifice to the cause of African discovery.

The two surviving travelers, undaunted by the prospect of danger, proposed as the plan of their operations to approach the Upper Nile, as soon as they had explored the vicinity of Lake Tchad, provided they were supported by the British and Prussian governments; and to be ready even to pursue their researches from Kuka to the Indian Ocean. The route in a straight line to Mombas lies nearly south-east; but from all they could learn, the route more to the south, in the direction of Lake Nyassi, seemed more practicable. The gigantic journey which they thus contemplated, lay through many powerful kingdoms, densely peopled, intersected by numerous rivers, very fertile, and abounding in forests, but where the most formidable obstacles were to be expected from the warlike dispositions of the surrounding nations.

In the mean time they prosecuted with zeal the immediate objects of the mission, embracing every opportunity of collecting information. On the 29th May, 1851, Dr. Barth started from Kuka to visit the kingdom of Adamana, which, from the accounts he had received, he judged to be the most beautiful country of central Africa. He reached Yola, the capital, on the 22d June, where he was permitted to reman only three days. He was kindly received, however, both by the sultan and by the inhabitants, and at his departure was treated with consideration and honor. Four days' journey before reaching Yola, he had to cross at the point of their junction the two principal rivers of Adamana, the Benueh and the Faro, the latter being a tributary of the former. The Benueh he describes as the largest and most imposing stream which he had seen since leaving Europe. He found it half a mile broad and about 10 feet deep. The distance of the source from the point at which he crossed it was said to be nine days' journey. This magnificent river is in fact the upper course of the Tchadda, which itself falls into the Quorra or Niger, not far from its mouth. The discovery thus made of the identity of the two streams, the Benueh and the Tchadda, has opened up a way of access to the very heart of inner Africa, which seems destined eventually to become the line from the west along which the blessings of commerce and civilization are to flow to the surrounding nations. The consideration of the immense importance of following up this discovery, and of the advantages which might be expected to accrue from it, suggested the idea of sending out a steamboat expedition from England to ascend the Tchadda. Former attempts to reach central Africa by ascending the Quorra had been attended with very disastrous consequences. But the expedition which left the British shores in May, 1854, to ascend the Tchadda was eminently successful, while not a single life was lost. It reached the mouth of the Quorra in the beginning of July, and, entering the Tchadda, ascended the stream to within about 50 miles of the confluence of the Benueh and the Faro. Thus it has been fully proved that this important river is navigable to Yola, the capital of Adamana.

While Dr. Barth was prosecuting this journey his fellow-traveler was employed in surveying Lake Tchad. This lake is described as an immense marsh, the only portion fit for navigation being a deep channel formed by the River Shary, which pours into the lake a vast volume of water. What Major Denham has described as small islands, were found to be extensive meadow-lands of much greater surface than the lake itself. The explorations of Dr. Overweg led to results considerably at variance with what had been reported by Denham; but the discrepancies are perhaps more apparent than real, and may find their explanation in the fact that the lake is augmented during the rainy season to an immense body of water; but during the season of drought is so much reduced by evaporation as to appear at times to be almost dried up.

In tha course of the summer of 1852, Dr. Barth, setting out from Kuka, made a journey in a south-easterly direction toward the Nile; and so near did he approach to the eastern boundary of the basin of that great river, that he was able to collect information likely to throw light on some intricate questions connected with it. He succeeded also in exploring a portion of Bagirmi, a powerful kingdom between Lake Tchad and the Upper Nile, which had never before been visited by any European. In uniting, by means of his itineraries, Bagirmi with Dar Fŏr, he has completed a line of direct route across central Africa from the Quorrra to the Nile; and thus from the Gulf of Guinea to the Red Sea and the Indian Ocean.

Dr. Overweg left Kuka at the same time with Dr. Barth, but took a south-westerly direction toward the Quorra. Between the end of March, the time of his setting out, and the end of May when he returned, he successfully performed an important journey, which brought him within 150 English miles of Yacoba, the great town of the Fellatahs. Dr. Barth's journey occupied a considerably longer time; and it appears that Dr. Overweg's anxiety to await the return of his companion, which was not until the 20th August, induced him to remain at Kuka, notwithstanding the danger to be apprehended from too long exposure to the influence of the unhealthy season. The consequence was, that his constitution became so seriously affected that, though he set out immediately after Dr. Barth's arrival, on an excursion to healthier regions, yet the advantage derived proved only temporary. He died on the 27th September, 1852, at Maduāra, about ten miles east of Kuka, and near Lake Tchad.

As it was known that the travelers had expected to be ready to start from Kuka toward the Indian Ocean in August or September, 1853, it was intended by their friends in England, that before they left Kuka they should be joined by an additional fellow-laborer to take a part in their arduous undertaking. Dr. Vogel, an astronomer and botanist, was accordingly sent out accompanied by two chosen volunteers from the corps of the Sappers and Miners. By a singular coincidence, on the very morning on which Dr. Vogel and his companions went on board the vessel which was to take them to Malta on their way to Tripoli, letters from Dr. Barth were received in London announcing the death of Dr. Overweg.

Though now left alone, as being the only surviving member of the mission, Dr. Barth continued to prosecute with zeal the work in which he was engaged. Up to the 23d November, 1852, he was still at Kuka; but he had fixed on the 25th of the same month to leave that place, and to enter on his journey to Timbuctoo. All his journals and papers, arranged and completed up to that date, he intended to forward to Tripoli, there to be deposited with the English consul. By the beginning of March, 1853, he had performed more than one third part of his journey, and had reached the capital of the territories of the Fellatahs, whose friendship and assistance he had secured. After being subjected to the disappointments and delays incident to the traveler in that part of the world, he reached at length the termination of his perilous journey. During his stay at Timbuctoo his life was exposed to

great danger, from the influence of unfavorable climate, and much more so from the hostile disposition toward Christians of the most fanatical Mohammedan population of northern Africa. He thus describes his distressing situation during his sojourn in that magnificent city—the "Queen of the Desert," as it is justly called by the natives:—"Like a helpless vessel on the ocean waves, am I thrown about on a sea of uncertainty, between the power and passion of contending parties. Every day brings something now—now of a satisfactory kind, then again of the reverse. Death, captivity, safe return home, are my visions by turns, and it is yet impossible to say which shall be my fate." To have left Timbuctoo without sufficient protection, would have been to expose himself to certain death. Hence his stay in this place of danger was unavoidably protracted to nearly a year, when he was at last succored by Auáh, the chief of a Tuarick tribe inhabiting the regions east of Timbuctoo, along the Quorra, who came with an escort of a hundred horsemen, and conducted him in safety through his dominions, on his way back to Sackatoo.

The news of Dr. Vogel's having been dispatched from Europe to join him had reached Timbuctoo before Dr. Barth left that place. On the 1st December, 1853, he had the inexpressible pleasure of meeting him at Bundi, a small town situated at about 200 geographical miles due west of Kuka. Once more he looked upon the face of a European—his countryman—and grasped the hand of a friend in whom he could place implicit confidence. Exactly six years had elapsed since he left Europe, in company with Mr. Richardson and Dr. Overweg. Since the decease of the latter he had been isolated from civilized society, and had been left to contend single-handed with manifold hardships and dangers. To revisit Europe he now considered indispensable for the preservation of life and health; and accordingly he moved on to Kuka, whence he intended to proceed homeward without further delay. We are happy to say that he arrived at Marseilles early in September, 1855.

The limits of the great unexplored region of Africa may be roughly indicated as extending between the parallels of 10° north and south of the equator, and from Adamana in the west to the Somauli country in the east. This extensive region has just been touched by the routes of recent travelers. But in all parts of the habitable globe the spirit of research, which has already done so much, is still active; nor is it directed only to the determining of the outlines of continents and countries, or to the marking of the leading features of mountains, rivers, and cities, with their relative positions and distances. These are regarded by the geographical inquirer merely as affording a proper basis on which to rest the description of the earth considered as the habitation of man, and as affording him amply the means of improvement and happiness. The picture can be completed only by the continued labors of the scientific observer, who makes the earth, with its various productions, whether natural or artificial, the treasures hid in its bosom, the animals found upon its surface, and, above all, the human beings who people its different regions (and these in all their mutual bearings and relations), the objects of attentive examination and study.—E. B. See Coast Survey—Latitude—Longitude—The Earth.

Georgetown (formerly *Stabröek*), the capital of British Guiana, is situated on the east bank of the Demerara, at its mouth, which is there about three miles wide, in north lat. 6° 49′ 30″, west long. 58° 11′ 30″. The town itself is one of the prettiest in the West Indies; and its streets are wide and straight, intersecting each other at right angles. The houses are of wood, with open verandahs in front, and neatly painted in cool and quiet colors; they are shaded and almost hidden by trees and shrubs, and look more like a collection of villas than a town. The street along the river side—where all the stores and shops are situated, and where business is chiefly transacted—forms, however, an exception; there every thing is plain, bare, and business-like. The ships lie alongside the wharfs or at a short distance in the stream, which is also crowded with numerous smaller vessels engaged in the island trade, or in bringing produce from the more distant estates. The hall of the legislative council, courts of justice, custom-house, treasury, and all the other public offices, are in one building of considerable extent and architectural beauty, with shady porticos, and marble-paved galleries or verandahs supported on cast-iron columns. The chief of the other public edifices are the cathedral and churches, several liberally maintained hospitals, barracks, market-place, and ice-house. Below the town is the "Fort," as it is called, but which looks more like a green field, with a few guns pointing toward the sea, and a house or two for a single officer and a dozen artillerymen. Population, (1851,) 25,508.

Georgia, lies between 30° 30′ and 35° north lat., and between 80° 50′ and 86° 6′ west long. from Greenwich, and between 3° 52′ and 8° 47′ west long. from Washington. It is 300 miles long from north to south, and 240 broad, containing 58,000 square miles. Population in 1790, was 82,584; in 1800, 162,686; in 1810, 252,433; in 1820, 348,989; in 1830, 516,567; in 1840, 691,392; and in 1850, 909,644. The State in 1850 was divided into 95 counties.

Early History of Georgia.—Until the year 1732, the territory of the State of Georgia was included in the names of Carolana and Carolina. For promoting its settlement, King George II. separated from Carolina the territory between the Rivers Savannah and Altamaha, and erected this territory, by a charter of the 9th of June, 1732, into an independent and separate government, which was called in honor of that king, the province of "*Georgia*." It was probably from the beginning, the intention that this colony should go as far down as the St. Mary's River; for the patent says "it should go so far south as the southernmost branch of the Altamaha River." And on the maps of that time we see that it was then believed that Altamaha River had a southern branch which conducted into St. Mary's River, and the mouth of this river was therefore considered also to be the mouth of the Altamaha. The boundaries were, however, in later times actually conducted so far south. With this exception the limits of the province of Georgia suffered no changes on the coast, though in the interior the changes were great. These interior changes have, however, no relation with our hydrographical researches.—Kohl.

From the ocean, for a distance of seven miles, there is a chain of islands intersected by river, creeks, and inlets communicating with each other, and forming an inland navigation for vessels of 100 tons' burden along the whole coast. These islands consist of salt marsh and land of a gray rich soil, which produces sea-island cotton of a superior quality. The coast on the main land for four or five miles is a salt marsh. Back of this there is a narrow margin of land, nearly resembling that of the islands; these are partially or wholly overflowed at the return of the tide, and constitute the rice plantations. Then commence the pine barrens, which reach from 60 to 90 miles from the coast. Beyond this is the country of sand hills, 30 or 40 miles wide, interspersed with fertile tracts, and extending to the lower falls of the rivers. Black walnut and mulberry-trees grow abundantly in this soil. The forests produce oak, pine, hickory, and cedar. Deposits of iron ore are widely diffused throughout the State; gold is found in the northern part; granite, marble, limestone, are quarried in many places.

There were in this State in 1850, 6,878,479 acres of land improved, and 16,442,900 of unimproved land in farms; cash value of farms, $95,753,445, and the value

of implements and machinery, $5,894,150, according to the official report of the Census, U. S.

Live Stock, Horses, etc.—Horses, 251,331; asses and mules, 57,379; milch cows, 334,228; working oxen, 73,286; other cattle, 690,019; sheep, 560,435; swine, 2,168,617; value of live stock, $25,728,416; of slaughtered animals, $6,339,762.

Agricultural Products, etc.—Wheat, 1,086,534 bushels; rye, 53,750; Indian corn, 30,080,090; oats, 3,820,044; barley, 11,501; buckwheat, 250; peas and beans, 1,142,011; potatoes, 227,879; sweet potatoes, 6,986,428; rice, 88,950,691 pounds; value of the products of the orchard, $92,776; produce of market gardens, $76,500; pounds of butter made, 4,640,559; of cheese, 46,976; sugar, hogsheads, 1642; maple sugar, 50 lbs.; molasses, 216,150 gallons; beeswax and honey, 732,514 pounds; wool, pounds produced, 990,019; cotton, 499,091 bales; flax, 5,387 pounds; silk cocoons, 813; hops, 261 pounds; tobacco, 423,924; hay, tons of, 23,449; clover-seed, 132 bushels; other grass seeds, 428; flax-seed, 622 bushels; and were made 796 gallons of wine. Value of home-made manufactures, $1,838,968.

The rivers are the Savannah, 600 miles long, bounding the State on the north-east, navigable for ships 17 miles to Savannah, and a part of the year for steamboats 250 miles to Augusta; the Altamaha, which is navigable for large vessels 12 miles to Darien, is formed by the junction of the Oconee and the Ocmulgee, and is navigable for sloops of 30 tons by the former to Dublin 300 miles from the ocean; the Ogeechee 200 miles long, and navigable for sloops 40 miles. Flint River, which rises in the north-west part of the State, and after a course of more than 200 miles, joins the Chattahoochee, forming the Apalachicola. The Chatchoochee, on the west border of the State, which is navigable 300 miles by steamboat to Columbus; the St. Mary's River is in the south-west part of the State.

Georgia, in 1856, had 1013 miles of railroad built, and about 300 in construction, being in advance of all the southern States except Virginia.

Manufactures, etc.—There were in the State in 1850, 35 cotton factories, with a capital invested of $1,786,156, employing 873 males and 1,399 females, and producing 7,209,292 yards of sheetings, and 4,198,351 pounds of yarn, valued at $2,135,644; 3 woolen factories with a capital of $68,000, employing 40 males and 38 females, manufacturing 340,660 yards of cloth, valued at $88,750; 3 establishments making pig iron, with a capital of $26,000, employing 188 persons, producing 900 tons of pig iron, etc., valued at $57,300; 4 establishments, with a capital of $35,000, employing 39 persons, and making 415 tons of castings, valued at $46,200; 3 establishments, with a capital of $9,200, employing 27 persons, and manufacturing 90 tons of wrought iron, valued at $15,384; 330 flouring and grist-mills, 389 saw-mills, 49 printing-offices; 5 daily, 3 tri and semi-weekly, 37 weekly newspapers, and 6 monthly publications. Capital invested in manufactures, $5,373,490; value of manufactured articles, $7,084,585. On the 1st of January, 1854, there were 15 railroads, 884 miles of which were completed and in operation, and 445 miles in course of construction.

FOREIGN COMMERCE OF THE STATE OF GEORGIA, FROM OCTOBER 1, 1820, TO JULY 1, 1856.

Years ending.	Exports.			Imports.	Tonnage Cleared.		District Tonnage.	
	Domestic.	Foreign.	Total.	Total.	American.	Foreign.	Registered.	Enrolled and Licensed.
Sept. 30, 1821	$5,979,995	$31,315	$6,011,310	$1,002,044	41,468	14,066	8,285	6,046
1822	5,488,219	1,650	5,484,869	989,591	38,490	9,745	....	....
1823	4,279,885	13,781	4,293,666	670,705	86,434	11,072	....	....
1824	4,619,733	4,229	4,623,982	551,888	86,797	12,064	....	....
1825	4,220,989	1,894	4,222,883	343,856	29,328	5,547	....	....
1826	4,866,630	1,874	4,868,504	330,993	37,905	8,563	....	....
1827	4,260,834	691	4,261,525	312,609	41,519	10,646	....	....
1828	3,104,425	....	3,104,425	308,569	25,514	9,582	....	....
1829	4,980,642	734	4,981,376	330,293	47,468	9,794	....	....
1830	5,336,626	....	5,336,626	282,496	50,894	9,485	....	....
Total	$46,632,978	$56,163	$46,689,146	$5,173,224	374,687	101,164	....	....
Sept. 30, 1831	$3,957,245	$2,568	$3,959,813	$390,940	48,426	20,045	4,892	2,183
1832	5,514,684	1,202	5,515,886	253,417	42,780	21,567	....	....
1833	6,270,040	....	6,270,040	318,990	40,022	28,232	....	....
1834	7,567,827	....	7,567,827	546,802	40,916	21,750	....	....
1835	8,890,674	....	8,890,674	393,049	33,109	25,276	....	....
1836	10,721,700	500	10,722,200	578,222	43,878	24,029	....	....
1837	8,935,041	....	8,935,041	774,349	41,025	22,858	....	....
1838	8,803,839	....	8,803,839	776,068	26,851	20,755	....	....
1839	5,970,443	....	5,970,443	413,987	31,564	19,408	....	....
1840	6,502,959	....	6,502,959	491,428	44,076	48,065	....	....
Total	$78,403,949	$4,270	$78,408,219	$4,941,252	392,647	256,985	....	....
Sept. 30, 1841	$3,696,017	$496	$3,696,513	$449,907	20,196	36,980	9,809	6,888
1842	4,299,151	1,106	4,300,257	341,764	31,450	30,209	....	....
9 mos., 1843*	4,522,401	....	4,522,401	207,482	43,055	42,083	....	....
June 30, 1844	4,298,805	.. ..	4,298,805	305,634	29,574	38,901	....	....
1845	4,557,435	....	4,557,435	206,801	40,410	35,250	....	....
1846	2,708,003	....	2,708,003	205,495	13,498	44,748	....	....
1847	2,712,149	....	2,712,149	207,180	18,157	37,661	....	....
1848	3,670,415	....	3,670,415	217,114	17,871	31,321	....	....
1849	6,857,806	....	6,857,806	371,024	31,150	53,713	....	....
1850	7,551,943	....	7,551,943	636,964	21,039	51,524	....	....
Total	$44,859,125	$1,602	$44,860,727	$3,147,915	260,995	402,840	....	....
June 30, 1851	$9,158,879	$1,110	$9,159,989	$721,547	31,963	34,748	12,302	11,828
1852	4,999,015	75	4,999,090	474,927	32,833	40,042	....	....
1853	7,371,888	....	7,371,888	508,261	38,034	43,448	....	....
1854	4,807,675	700	4,808,375	336,951	25,926	46,454	....	....
1855	7,543,519	....	7,543,519	278,716	65,145	39,228	....	....
1856	8,091,688	....	8,091,688	574,240	63,421	33,310	....	....

* Nine months to June 30, and the fiscal year from this time begins July 1.

Principal Ports of Georgia.—Brunswick, city, and port of entry, lat. 31° 10′ north, long. 81° 35′ west. It has a spacious and commodious harbor, having 13 feet of water on the bar at the lowest tides. It is situated on Turtle River, 14 miles above the bar. The commerce of the port is small, in 1856 being only 754 tons. It is proposed to make this a naval station, and to construct a railroad from this city to Pensacola.

Savannah, city, and port of entry, situated on the right bank of the Savannah River, 17 miles from its mouth, lat. 32° 4′ 56″ north, long. 81° 8′ 18″ west. The harbor is good. Vessels drawing 14 feet water

come up to the city, and larger vessels anchor at Five Fathom Hole, four miles below the city. The commerce of the place ranks next to Mobile, and is the most important port, except Charleston, from Baltimore to Mobile. The greater part of the trade of Georgia centers at Savannah, the principal articles of which are cotton, rice, and lumber. The Savannah River affords great facilities for internal commerce; and this river is connected with the Ogeechee River by a canal 16 miles long, which terminates at Savannah. The tonnage of the port, in 1856, was 31,586 tons. See STEVENS's *Hist. Geo.*; DEBOW's *Rev.*, viii., 39, x. 65, 243, 375; *No. Am. Rev.*, xxiii. 211 (by ANDREW NORTON), xxiv. 466 (J. SPARKS); lxvii. 291 (by C. W. UPHAM); *So. Quar. Rev.*, xiii. 470, xviii. 24, iii. 40; *Ch. Exam.*, xxix. 113.

Germany.—This name was given by the Romans to a country inhabited by various tribes of different names, but nearly alike in manners, customs, language, and religion. But they comprehended under it not only the country now called Germany, but also Denmark, Norway, Sweden, Finland, Livonia, and Prussia. The modern inhabitants call themselves *Deutsch*, and their country *Deutschland*; but, as to the origin, meaning, and primary application of both names (German and Deutsch), German antiquaries are far from being agreed, though most of them seem to be of opinion that *German* is a genuine Deutsch word, compounded of *ger*, or *gerra*, a spear, and *man*, and consequently meaning spearman, or warrior. *Deutsch* seems to have been known to the Carlovingians, and it first occurs in a document of the year 813; but it is only since the time of the Emperor Otto I. (A.D. 936–73) that it has been in use as the general name of the German nation.

The Rhine on the west, and the Vistula on the east, seem to have been generally considered as the boundaries of Germany; while on the north it extended along the ocean and the Baltic Sea, and on the south was terminated by the River Danube. But such boundaries were by no means definite; for many German tribes inhabited the southern banks of the Rhine as far as the Scheldt.

Situation and boundaries.—Germany may be considered in two points of view, either politically, as the country included within the limits of the Germanic Confederation; or ethnologically, as the country inhabited by the people who speak the various branches and dialects of the Deutsch or German language. In the latter respect, the Deutsch or German nations are found to extend in a compact mass along the shores of the German Ocean and the Baltic or East Sea, from a point between Calais and Gravelines, near the Straits of Dover to the Gulf of Riga, and from that long line of boundary southward, with dimensions continually narrowing to the Alps and the Adriatic Sea. Politically considered, Germany is situate between 45° and 54′ 50″ N. lat. and 5° 43′ and 20° 50′ E. long., bounded north by the German Ocean, Denmark, and the Baltic Sea; east by West Prussia, Posen, Poland, Gallicia, Hungary, and Croatia; south by the Gulf of Venice, Italy, and Switzerland; west by France, Belgium, and Holland. Its whole extent, including rivers and lakes, is about 246,770 square English miles, which is about the 16th part of Europe, the 215th part of the whole dry land, and the 800th part of the whole surface of the globe.

Face of the country.—The southern and the central parts of Germany are occupied by numerous ranges of hills and mountains, sometimes separated only by narrow valleys, and elsewhere forming large elevated plains or table-lands, while the northern portion of the country sinks into a wide sandy moorish plain, but little raised above the level of the sea. The Tyrol and the south-eastern provinces of Austria are occupied by branches of the Alps, which present long narrow valleys, dismal precipices, cataracts, and glaciers; and the northern border of this alpine region may be defined by the towns of Bregenz, Southofen, Fuessen, Traunstein, Salzburg, Gmunden, Steier, St. Polten, and Baden. Immediately to the northward lies the valley of the Danube, which stretches almost across the breadth of Germany, declining from an elevation of about 2200 feet, near the source of the river, to about 350, on the borders of Hungary. In passing through Bavaria the valley expands into a plain of considerable extent, which, at Ratisbon on its eastern border, has an elevation of about 1000 feet, and gradually rises as it approaches the mountains that surround it. Further north the middle region of Germany is occupied by various ranges of hills, terminating northward in a line drawn through the towns of Aachen, Duren, Krefeld, Dortmund, Soest, Paderborn, Bielefeld, Teklenburg, Benthelm, Furstenau, Rehburg, Hanover, Braunschweig, Magdeburg, Dessau, Halle, Weissenfels, Wurzen, Meissen, Bautzen, Goerlitz, Liegnitz, Breslau, Ramslau, and Rosenberg. These hills form a series of elevated valleys and table-lands, the most remarkable of which is the valley of Bohemia, which has all the appearence of having been a lake before it was drained by the bursting of its mountain barriers. This region is much diversified by picturesque scenery, and abounds in verdant and well-wooded valleys, watered by clear streams. The banks of the Meyn, the Fulda, and the Moselle, are remarkable for their varied scenery, and the valley of the Rhine unites the grandeur of a fine landscape with the appearance of a highly fertile country. To the northward again of the hilly region, the country sinks into plains, which fall very gradually from an elevation of about 300 feet at the foot of the hills to the level of the sea. These plains extend through Lower Silesia, Lusatia, Brandenburg, Pomerania, Mecklenburg, Holstein, Hanover, and the lower part of Westphalia. To the west of the Elbe the flat country is almost entirely destitute of trees, and presents only a succession of level tracts, covered with heath and juniper, and of moors consisting chiefly of deep beds of turf intersected by rivers which flow in depressions from 100 to 200 feet below the general level of the plains. To the east of the Elbe the country is more sandy, but the sandy tracts are covered with pines, and interspersed with fertile spaces of sometimes considerable extent. The beds of the rivers also are generally wider and less deep than in the western part of the plain. Through the northern part of this plain a higher tract may be traced from west to east, from Oldesle in Holstein to Schweidt on the Oder, about 70 miles from the sea. Eastward of the Oder it continues for some distance due east, then gradually approaches the sea, terminating on the banks of the Niemen near Grodno. It seems to have formed at one time the shore of the sea, and it is on its northern sides that are found those numerous erratic blocks or boulders that have attracted so much of the attention of geologists. Though it does not rise into hills, it forms the water-shed between a number of small streams that run direct to the Baltic, and others that run southward to the Elbe, the Oder, and the Vistula. To the Alpine region belong the territories of Liechtenstein, Tyrol, southern Bavaria, Styria, Salzburg, Carinthia, and Illyria; to the middle region, Baden, Wurtemberg, Hohenzollern, the greater part of Bavaria, the northern portions of Austria, including Bohemia and Moravia, Hessen, Nassau, Luxemburg, Schwartzburg, Reuss, Saxony, and Anhalt; to the low country, Hanover, Oldenburg, Braunschweig, Lippe, Holstein, Mecklenburg, and nearly the whole of Prussia.

The coal measures are widely distributed in many parts of Germany, as Bohemia, Saxony, Silesia, Rhenish Bavaria, and Rhenish Prussia, from the last of which Holland is supplied with coals.

No part of Europe yields a greater variety or abund-

ance of mineral productions, and in no part of the world are the mines worked with so much skill or so much economy. Precious stones are discovered in many parts; rock crystal, amethysts, topazes, are found in Davaria; chalcedony, agate, petchstein, and porcelain-jasper, in Bohemia; barytes in many parts; marbles, gypsum, and alabaster, in Bohemia; alum, near Töplitz; rock-salt and Glauber salts in various parts; and abundance of the earths calculated for making earthenware, from the coarsest description to the finest porcelain. Fossil coal is found in many districts, and much of it is consumed; but the cheapness of wood, and the prejudices of the people against the use of it in their houses, have operated to prevent the mines from being completely explored or worked to any thing approaching the extent of which they are capable. Gold is procured, though in very small quantities, by washing, in Salzburg, in Bohemia, in the Rammelsberg, and in Silesia. Silver and cinnabar are raised from the mines of the Erzgebirge in Saxony. Iron, copper, tin, lead, calamine, bismuth, cobalt, nickel, titanium, arsenic, and almost every other mineral, is more or less raised from the mines. The abundance of mineral substances everywhere scattered, and which it would be difficult to enumerate, has promoted the study of mineralogy, and given birth to the school of Freyburg, whence the pupils of Werner carried the science to every part of the world.

Soil.—The soil is generally productive. The plains in the north have indeed much arid sandy land; but nature has provided some rich and fruitful soils along the borders of the rivers, where the most abundant harvests are gathered. The south has also on its mountains much barren or slightly productive land; but the beautiful valleys and plains among the hills rival in fertility the best alluvial lands on the banks of the northern rivers. In general the soil in the north is heavy, and in the south, light; the former most adapted for corn, and the latter for wines. The best soil is in the middle, between the mountains and the sandy plains. In Bohemia, Silesia, Franconia, Saxony, and on the Rhine, the proportion of good soil is much greater than in the north or the south.

Rivers.—Germany has seven large rivers which pass through it to the sea, and in their course receive about 500 smaller streams, about 60 of which are navigable, either naturally or by means of artificial improvement. These are the Danube, Rhine, Weser, Elbe, Oder, Etsch or Adige, and Ems, some of which will be found described under their own names.

Lakes.—The chief of the German lakes is the *Boden See*, or Lake of Constance, on the borders of Switzerland. (See *Ency. Brit.*) To the eastward, among the valleys of the Alps, are several lakes of inconsiderable dimensions, as the Walchen, Kochel, Ammer, Wurm or Starenberger, Tegern, Schleier, Chiern, Grundel, Hallstadter, Traun or Gmunden See, Mond, and Kammer or Alter, lakes. Along the southern shores of the Baltic or East Sea there is a number of lakes, which form the western portion of an innumerable series, extending through Prussia into Russia and Finland, and occupying comparatively higher ground than the adjoining plains and river channels. Some of these are of considerable extent, as the lake of Schwerin in Mecklenburg and the Spirdling See in East Prussia, the latter, however, beyond the political limits of Germany. At the eastern base of the Harts are the salt and the sweet lakes (*Salzige* and *Süsse Seen*), and to the north of Minden, to the east of the Weser, is a considerable sheet of water called the *Steinhuder Meer;* and to the west of the Weser is a smaller lake called the *Dummer See.*

Climate.—The climate of Germany is very uniform in respect of the degrees of cold or heat experienced in its different regions; for though there is a difference of 9° of latitude between its southern and northern borders, that difference is compensated by the different elevations of the country, the northern part being lowland on the sea, while the midland and southern regions rise to a considerable elevation. This is indicated by the following table of places from north to south.

Places.	Latitudes.	Elevation above the sea in feet.	(Fahrenheit.) Mean temperature of the climate.		
			Year.	Winter.	Summer.
Stralsund.....	54°19'	51	47°	30°	63°
Berlin.....	52 30	140	48	31	64
Gotha.....	50 57	1,010	46	29	60
Baireuth.....	49 57	1,119	46	29	61
Ratisbon.....	49 1	1,260	48	31	64
Munich.....	48 10	1,788	48	34	65
Innsbruck....	47 16	1,905	50	29	64

In the intelligent practice of agriculture some of the Germans are not behind the most advanced of the other countries of Europe. Mecklenburg, in particular, and Holstein are distinguished for their excellent husbandry; and in Hanover, Brunswick, Bohemia, Saxony, and some parts of Prussia and Austria, it is scarcely inferior. Generally speaking, agriculture is the principal occupation of the Germans, particularly in Bavaria, Wurtemberg, Baden, Hesse, Nassau, Hanover, Brunswick, Oldenburg, Prussia, Anhalt, Holstein, and Mecklenburg; while in the Saxon duchies, Schwartzburg, and Reuss, some districts of Prussia, Bohemia, and the kingdom of Saxony, manufactures employ at least an equal, and in some cases even a greater, number of the people. The greatest contrast in respect of agriculture is to be seen in Mecklenburg and Wurtemberg. In the former, farming is conducted on a large scale; in the latter, as well as in other provinces, the land is divided into small parcels, cultivated by small proprietors or tenants, who follow ancestral usages, and are unprovided with means to make any improvements, by draining or otherwise. In the former the *Schlagwirthschaft* prevails, according to which one immense field is covered with wheat, while another is covered with oats, a third with clover, a fourth is being plowed and harrowed, and a fifth is feeding herds of cattle, the common size of farms being so much as 500,000 square *ruthe*, or almost 2000 acres; in the latter, every thing is grown checkerwise, in small patches, more like gardening than farming, the usual size of Wurtemberg farms being only from 5 to 20 square *ruthe*, or from 1-40th to 1-10th of an acre.

There are three systems of husbandry at present practiced in Germany. In the first, called the three-field husbandry, while one field is sown with winter corn, and another with summer corn, a third lies fallow; but sometimes, instead of a fallow the third field is sown with green crops, peas, potatoes, etc. In the second system, called the four-field husbandry, the principle is that the same field shall not be occupied two years together with corn, without at least one fallow intervening; as, for example, one year, rye; second, clover; third, oats, or barley; fourth, potatoes; fifth, again winter corn. This is also called the rotation system (*Fruchtwechselwirthschaft*). The third system, called the *Schlag* or *Koppelwirthschaft*, practiced in Holstein and Mecklenburg, divides a farm into a number of large parcels of equal size (*stuche, koppeln*, or *schlige*), which, after several years' continuous bearing of grain or other produce, are allowed for several years more (3 to 7) to lie fallow, or in grass for summer pasture. For these two countries this system is found very suitable, for the population there is comparatively thin.

In the different provinces of Germany different kinds of corn obtain the preference, and are most cultivated, as in the following list, where the different articles follow each other in the order in which they are named. *Bavaria*—Rye, oats, barley, spelt, wheat. *Wurtemberg and Baden*—Spelt, oats, barley, rye, wheat, maize. *Hesse*—Rye, barley, oats, wheat, spelt,

maize. *Mecklenburg*—Wheat, barley, rye, oats. *Brunswick*—Barley, rye, wheat, oats.

In Germany generally, and in Mecklenburg in particular, the production of grain is greater than the consumption. Assuming the productiveness of the kingdom of Saxony as a standard, Germany could maintain about 54,000,000 of inhabitants, or 12,000,000 more than at present. The cultivation of the potato is now largely extended, particularly in Prussia. In the north-east of Germany, buckwheat is also cultivated; but the cultivation of oil plants, peas, beans, turnips, and other roots, flax, hemp, and hops, is not large enough to dispense with the importation of these articles. About three fourths of the Germans are employed in agriculture; and many parts of the country are crowded with small proprietors or tenants, who necessarily live in a state lower than that of hired laborers. Of the great bulk of the people the food is of the poorest kind—rye-bread or potatoes; and it is chiefly owing to this general misery that Germany can export corn in most years. In bad seasons the distress is sometimes dreadful; the agricultural population having no means of procuring foreign supplies—nothing to give in exchange for bread.

Naturally, in accordance with climate and other physical circumstances, the production of wine and fruits (*Obst-und-Weinbau*) is greater in the south and west than in the north and east. The districts on the Rhine, the Lower Maine, and the Neckar, are the best; but, even in the south of Germany, there are districts, as in Old Bavaria, between the Inn and the Leech, that are less productive of fruit than even Mecklenburg and Brandenburg. In both quantity and quality, however, the south excels the north, where the best kinds of fruit only ripen with difficulty. The principal places for the production of wine have been already noticed. The quantity is estimated at about 3,000,000 of *eimers*, worth about 18,000,000 of *thalers* = about £3,000,000 sterling yearly. The cultivation of forest trees is now more scientifically practiced in Germany than in any other country, and the care of the government is now directed to the restoration of the forests, which, till recently, were completely neglected and left exposed to every kind of destructive agency. In all the States likewise, institutions for the promotion of agriculture, in all its branches, have been or are being formed. The relative proportions of ground occupied in agriculture and other natural productions in the different States is shown in the following table:

State.	Agriculture.	Wine.	Gardening.	Meadows.	Pasture.	Wood and Forests.	Waste.
Austria	34·0	1·2	1·7	5·1	15·5	26·0	15·5
Prussia	48·0	0·5	1·0	6·5	11·0	24·0	9·0
Bavaria	41·0	0·4	1·0	14·0	5·0	30·6	7·0
Wurtemberg	39·0	1·2	3·0	12·8	5·2	30·8	8·0
Baden	35·0	1·6	2·6	9·7	6·4	32·0	11·7
Hesse	50·0	1·2	0.2	11·0	1·2	33·6	5·0
Mecklenburg	75·0	...	0·2	9·0	2·8	8·0	6·0
Brunswick	35·0	...	2·0	6·0	3·0	32·0	2·0
Nassau	39·0	2·0	1·4	9·0	5·0	40·0	2·6
Saxony			7·0			26·0	4·0
Hanover			4·0			15·0	45·0

Germany is suitable for the cultivation of all the kinds of useful plants that belong to the temperate zones; and, owing to the equality of the climate, they are spread over all the country. The highlands of the middle region, as well as the northern lowlands, grow the different species of cereals; and in the eastern part of the latter region there are tracts of land which will bear comparison with those that are called the granary of Europe. Wheat, rye, barley, and oats are the cereals most generally cultivated; but in some districts to these are added spelt, buckwheat, millet, emmer (*Triticum dicoccum*), einkorn (*Triticum monococcum*), and maize. The potato is largely cultivated, not merely for food, but for the purpose of distillation into brandy.

The following table shows the absolute quantities (in English acres) of the ground so occupied:

State.	Agriculture.	Meadows.	Garden-land.	Wine-land.	Woods and Forests.
Austria	15,322,812	5,217,162	362,110	415,732	15,850,837
Prussia	18,867,681	3,074,151	498,958	88,421	8,806,652
Bavaria	8,326,641	2,589,024	218,859	79,487	5,622,176
Wurtemberg	2,045,859	686,969	94,628	64,847	1,498,962
Baden	1,444,628	391,129	84,696	53,807	1,227,641
Elect. Hesse	876,228	256,757	447,906	788	948,153
G. D. Hesse	976,561	266,851	365,895	28,341	685,107
Nassau	488,396	121,123	4,415	2,462	493,827
Saxony	1,888,939	412,578	104,090	4,415	1,131,121
Weimar	494,944	81,380	18,294	473	225,214
Coburg Gotha	278,837	84,666	7,570	....	140,049
Altenburg	212,597	23,972	10,724	....	66,239
Meiningen	249,187	43,798	13,247	....	226,476
Hanover	2,752,419	1,606,154	168,438	....	1,902,082
Brunswick	340,030	74,440	15,771	....	209,655
Oldenburg	464,989	135,190	27,126	....	232,099
Mecklenb'g Schwerin	2,242,261	287,088	40,374	....	872,834
Meck. Strelitz	428,526	43,528	7,570	....	135,633
Luxemburg	281,360	61,828	10,098	1,766	199,294
Limburg	152,666	164,022	8,201	....	82,804
Holstein	1,463,793	316,688	25,234	....	167,807
Lauenburg	178,484	29,650	4,418	....	29,650
Other States	1,186,686	237,201	85,827	1,198	592,727
Total	60,851,618	16,174,454	2,513,944	692,787	40,841,433

Great attention has been paid for the last 30 or 40 years to the breeding and rearing of all sorts of useful animals, and every encouragement and facility have been given by the governments to the improvements of the breeds. The following table, from WINDENLICH'S *Deutschland*, shows the number of the principal kinds of stock in the German States, in or about 1848:

States.	Horses.	Cattle.	Sheep.	Swine.
Austria	572,800	3,981,200	4,774,300	1,205,200
Prussia	909,700	3,548,400	11,856,400	1,271,000
Other States	1,242,500	8,450,400	9,092,300	3,044,800
Total	2,726,000	15,975,000	25,168,000	5,601,000

Metals and Minerals.—The whole Austrian territory produces yearly about 7000 marks of gold, whereof five sixths in Hungary and Transylvania; silver, 180,000 marks, whereof three fifths in Hungary and Transylvania; copper, 15,000 centners, whereof four fifths in Hungary and Transylvania; iron, 2,000,000 centners, whereof only one seventh in Hungary and Transylvania; quicksilver, 6000 centners; lead, 110,000; cinnabar, 1000; zinc, 12,000; tin, 950; coal, 7,500,000; salt, 5,500,000; cobalt and nickel, 20,000; arsenic, 1800; sulphur, 18,000; alum and vitriol, 160,000; graphite, 35,000; and about as much sulphuric acid. Of the German provinces, Bohemia produces silver, tin, iron, vitriol, and coal, the last equal to three fifths of the products of the whole empire; Austria and Styria produce half of the whole quantity of iron; Illyria, the quicksilver and most of the lead; and Gallicia, most of the salt.

Prussia.—No gold; 23,000 marks silver; 40,000 centners of lead; 36,000 of copper; 230,000 of zinc; 7000 of smalt; 3360 of arsenic; 35,000 of vitriol; 4,600,000 of iron; 46,000,000 of stone-coal; 11,000,000 of brown coal; 1,750,000 of salt; and stone quarries to the value of 1,500,000 thalers, = £240,000. Silesia produces zinc, iron, coal, arsenic, vitriol, and sulphur; Saxony, silver, copper, iron, etc.; the Rhine provinces, iron and coal; Westphalia, coal, and some metal and salt. Nearly 3,000,000 tons of coal are extracted yearly from the coal-field on the banks of the Ruhr; and 4 miles above Bonn are the large brown coal mines and alum works of Friesdorf. The produce of the other States amounts to about 60 marks of gold, and 125,350 marks of silver; 1,200,000 centners of iron; and the various other articles above mentioned in comparatively small quantities.

Manufactures.—In many branches of manufacturing industry the Germans have reached a high degree of excellence. German linen is known to the whole

world; and the linens of Bielefield and Silesia in particular are equally valued in America as in Europe. Of late years, however, the introduction of cotton, and the high prices obtained for corn, have tended greatly to lessen the cultivation of flax, which was formerly a principal staple of agricultural industry, and the linen manufacture has suffered in consequence. With the improvement of the breeds of sheep within the last half century, the woolen manufacture has made great progress, the German cloth being now not merely equal but even superior in quality to the cloths of England and Belgium. The chief seats of the cloth manufacture are in Brandenburg, Saxony, Bohemia, Moravia, and the Prussian Rhenish provinces, from which it is exported to all parts of the world. The cotton manufacture has been established and is rapidly extending in Saxony, Austria, and along the Rhine; the silk manufacture is carried on successfully in Vienna, Roveredo, Gorz, Berlin, Elberfeld, Erefeld, and other places. Works in metal, especially iron and steel, are produced in great perfection, and large quantities in Styria, Austria, Rhenish Prussia, Westphalia, and the district of the Hartz; brass work, in Rhenish Prussia, Bavaria, and Brandenburg; gold and silver work in Augsburg, Vienna, and Berlin. Pottery and glass-making have reached a high degree of perfection; the porcelain of Vienna; Berlin, and Meissen, is much in request, on account not only of the fineness of its material, but also for the tasteful elegance of its forms and ornaments. Bohemian glass is to be met with in all parts of the world. The manufacture of leather is particularly extensive in Rhenish Prussia; of soap, tallow wares, and wax, in many places. Paper-making is carried on to a great extent, and of late has been very much improved in quality. Sugar-refining is carried on in Hamburg, Berlin, Potsdam, and other places; brewing of beer, to a great extent in Bavaria; and ardent spirits (Branntwein), to a still greater extent in the north. Ship-building and the connected trades are of little importance; but German industry is much distinguished in the making of mathematical, physical, surgical, and musical instruments; the chief seats of these branches of trade being Munich, Vienna, Berlin, and Cassel. German clocks and wooden articles, manufactured in the Tyrol and other mountain provinces, are exported to all parts of the world. The great progress which the Germans have made in manufacturing industry since 1815 is chiefly the result of extraordinary exertions on the part of the German governments. In every district, industrial schools have been established or extended; and in all the chief towns there are schools and institutions for instruction in the higher branches of art, where pupils are trained in both theory and practice at the expense of the government. Numerous societies also have been formed for the promotion of art and industry.

Commerce.—The commerce of Germany has always been extensive; but the abolition of the innumerable State custom-houses and tolls, and the long-continued peace, have given an immense impulse to its activity. Germany exports corn and timber to England and the Netherlands; linen to Spain, Portugal, Poland, Russia, America, and Africa; woolen cloth to western Asia, and even to China; iron wares to every part of Europe; and lead to France. The exportation of fat cattle to England is also becoming a great trade. The other principal articles of export are horses, glass-wares of all kinds, cobalt, galmei (silicco-carbonate of zinc), potash, porcelain, hides and skins, honey, wax, lime, gypsum, copper, horns, bones, rags, mill-stones, turnip seed, swine's bristles, vitriol, tin, and spirits. The chief articles of import are sugar, coffee, tea, cacao, rice, vanilla, rum, and other colonial produce, spices, drugs, dried fish, cheese, tobacco, olive oil, and southern fruits, French, Spanish, and Portuguese wines and liquors, cotton, raw silk, cotton and silk stuffs, leather, train oil, and many smaller articles. The intercourse within Germany is much facilitated by excellent carriage roads; and all the chief towns are now connected by railways. The principal rivers are also made available for the transport of bulky commodities, and were connected by several canals before the introduction of the far superior method of locomotion by railways.

The principal seats of the inland trade are Vienna, Prague, Reichenberg, Brunn, Olmütz, Troppau, Linz, Steyer, Salzburg, Grätz, Botzen, Roveredo, and others, in the Austrian provinces; Berlin, Breslau, Cologne, Magdeburg, Frankfort-on-the-Oder, Naumburg, Posen, Traustadt, Aachen, Cohlentz, Elberfeld, Erfurt, Munster, Minden, and others, in the Prussian territory; Leipzig, in Saxony; Munich, Augsburg, and Nurnberg, in Bavaria; Frankfort-on-the-Maine, Cassel, Brunswick, Hanover, Mentz, etc. But of all these places four hold the first rank; Vienna for the south-east; Augsburg for the south-west; Frankfort-on-the-Maine for the north-west; and Leipzig for the north-east. Large fairs are held twice or thrice a year in Leipzig, the two Frankforts, Brunswick, and other places; but it is only in those named that these fairs are of much importance. Those of Leipzig are celebrated for the sale and exchange of books. Great wool-markets are likewise held in Berlin, Breslau, Dresden, Magdeburg, Prague, Stettin, etc. See FAIRS.

AN ACCOUNT SHOWING THE PROPORTION OF THE REVENUES OF THE GERMAN CUSTOMS UNION RAISED IN THE DIFFERENT STATES RESPECTIVELY, IN THE YEAR 1851, AND THE DISTRIBUTION THEREOF ACCORDING TO POPULATION.*

States.	Population.	Amount of common gross receipts.	Import duties. Amount of common nett receipts for distribution.	Amount payable to each State according to its population	Export and transit duties payable to each State according to its population	Import, export, and transit duties payable to each State, according to its population.	Balance due to or from the common fund which each State has had	
							To pay.	To receive.
		Thalers.†	Thalers.	Thalers.	Thalers.	Thalers.	Thalers.	Thalers.
Prussia	16,669,153	15,572,929	14,847,476	12,211,383	244,203	11,455,586	3,111,161	....
Luxemburg	189,781	77,114	10,445	127,645	2,241	129,886	....	186,011
Bavaria	4,526,650	1,210,389	904,991	3,044,516	58,463	3,098,009	....	2,166,021
Saxony	1,894,431	2,119,847	1,995,287	1,274,161	29,736	1,303,897	786,761	....
Wurtemberg	1,805,558	348,527	330,237	1,214,387	21,325	1,235,712	....	899,706
Baden	1,360,509	652,625	853,492	915,115	16,070	931,185	....	594,069
Hesse-Cassel	731,584	424,046	342,256	492,051	8,641	500,692	....	157,434
Hesse-Darmstadt	852,917	417,803	402,501	580,383	10,192	590,575	....	191,871
Thuringian States	1,014,954	391,793	391,793	682,640	15,981	698,571	....	306,489
Brunswick	247,679	390,143	229,523	166,175	3,534	169,709	63,389	....
Nassau	425,686	74,829	71,310	286,309	5,028	291,339	....	219,501
Frankfort ‡	....	801,402	636,384	....	....	....	649,541	....
Total	29,728,385	22,545,687	20,005,240	19,994,795	419,364	20,405,159	4,610,752	4,610,752
			§ Less 10,445					
			19,994,795					

* Compiled from the official "Centralblatt der Abgaben," etc., Berlin, 1852. By J. G. Flügel, U. S. Consul, Leipzig.
† The thaler is very nearly worth 70½ cents of our money; more exactly, it is equal to 70·09 cents.
‡ Frankfort is regulated by a specific arrangement, and not by population.
§ A special payment by Prussia, on account of the Union.

The principal commercial sea-ports are Hamburg, Bremen, and Embden, on the North Sea; Lubec, Rostock, Stettin, Dantzig, Königsberg, and Memel, on the East Sea; and Trieste on the Adriatic. Hamburg is one of the principal commercial towns of Europe, and with its neighbors Altona (in Holstein), Bremen, and Embden and the Baltic ports, connects Germany with the countries of the north and west, and with America, India, etc. Trieste forms the communication with the south of Europe and the Levant.

Commerce was not a little impeded by the different money systems of different parts of Germany; but, on the other hand, it was much facilitated by the establishment of banks and exchanges in the principal towns. Of late years also the postal system has been very greatly improved, but the German governments have not yet seen their way to the adoption of the British penny postage. They can not indeed expect, in the circumstances of their country, that enormous increase of the number of letters that would compensate the diminution of rates.

The internal trade of Germany has been greatly facilitated by the formation of the customs unions and commercial treaties, of which an account has been given in the articles EUROPE and HANSEATIC LEAGUE.

The preceding table shows the proportions of revenue drawn by the different States.

Political State.—As settled by the treaty of Vienna, in 1815, Germany was divided into 40 sovereign States, or portions of States; but the number is now reduced to 35, as stated in the following table:

TABLE OF THE THIRTY-FIVE SOVEREIGN STATES.

Names.	Area in English sq. miles.	Population in 1852.	Title of Sovereign.
Austrian provinces	75,979	12,919,300	Kaiser.
Prussian provinces	71,987	12,987,228	King.
Bavaria	31,392	4,559,452	"
Hanover	14,769	1,819,253	"
Wurtemberg	7,632	1,733,269	"
Saxony	5,772	1,987,882	"
Hesse-Cassel	4,489	755,350	Elector.
Baden	5,918	1,356,943	Grand-Duke.
Mecklenburg-Schwerin	4,815	542,763	"
" Strelitz	767	99,750	"
Hesse-Darmstadt	3,761	854,314	"
Oldenburg	2,421	285,226	"
Luxemburg	2,368	394,262	"
Saxe-Weimar-Eisenach	1,419	202,524	"
" Coburg-Gotha	799	156,451	Duke.
" Meiningen-Hildburghausen	888	166,364	"
" Altenburg	510	132,849	"
Holstein and Lauenburg	3,719	550,000	"
Nassau	1,757	429,066	"
Brunswick	1,507	267,177	"
Anhault Dessan-Cöthen	666	111,759	Prince.
" Bernburg	340	52,641	"
Waldeck	461	59,097	"
Lippe-Detmold	437	106,615	"
Schwarzburg-Rudolstadt	410	69,698	"
" Sondersbausen	359	74,956	"
Reuss, elder	145	84,896	"
" younger	448	79,824	"
Schaumburg-Lippe	206	29,000	"
Liechtenstein	58	7,000	"
Hesse-Homburg	166	24,941	Landgrave.
Hamburg	151	211,250	City.
Lubec	142	48,425	"
Bremen	106	88,000	"
Frankfort	91	73,150	"
Total	246,740	48,286,116	

The Saxon princedom of Gotha became extinct in 1826 by the decease of the last grand duke, and his territories were divided by compact among the collateral relatives, the princes of Coburg, Meiningen, and Hildburghausen, the last of whom ceded Hildburghausen to Meningen, and assumed instead the additional title of Altenburg, from the chief town of that portion of the Gotha territory that fell to his share. The prince of Coburg-Saalfeld likewise ceded Saalfeld to Meiningen, and received Gotha in its stead. In 1846, the lordship of Kniphausen was aborbed in Oldenburg; in 1847, Anhalt-Cöthen became annexed to Anhalt-Dessau; and in 1849, the two princes of Hohenzollern abdicated the government of their States in favor of their kinsman, the king of Prussia.

Confederation.—These States exhibit every form of government from absolute autocracy to democracy; but even in those that are constitutional the authority of the sovereign is but feebly limited by his States. They are all united into a *bund*, or confederation, the object of which is the maintenance of the external and internal security of Germany, and the independence and inviolability of the several States. The Confederation is represented by the Diet, which is composed of the plenipotentiaries of all the States, and is the constitutional organ of its will and action; but the Diet has no power of self-action, the plenipotentiaries that compose it acting only according to the special instructions of their respective sovereigns; and there is no central executive government to carry its resolutions into effect. In fact, it has been found that there is no power of insuring the combined action of the members for any object or purpose whatever, either civil or military; though, having many interests in common, and the territories of the smaller States, in multifarious parcels, being so intermingled that with most of them separate action would be impossible, they naturally follow the same course of policy, modified by the influence of the powerful neighbors at whose mercy they would seem to lie. The management of the ordinary business of the bund is intrusted to an ordinary and permanent Diet, at which the plenipotentiary of Austria presides; but there are only 17 votes to be divided among the 35 States, Austria, Prussia, and the larger States having one each, and only six being allotted to the smaller States and cities. When fundamental laws are to be made or changed, when measures are to be taken that relate to the federal act itself, when changes of organic institutions or other arrangements of general interest are to be adopted, when war or peace is to be made, or when a new member is to be admitted, the Diet becomes a general assembly, a *plenum*, in which 70 votes were orginally distributed among the members in classes, Austria, Prussia, Bavaria, Saxony, Hanover, and Wurtemberg, having each 4; five others having each 3; three having each 2; and the smaller States each 1 vote. The Diet holds its sittings at Frankfort-on-the-Maine, and has ostensibly at its disposal, in terms of the federal act, a numerous army, of whose constitution and efficiency we have already given an account in the article EUROPE.

Das Europäische Staaten System, etc., Von Dr. HEINRICH BERGHAUS; vol. iv. of his *Allgemeine Lander und Volkerkunde*; *Das Deutsche Land und seine Bewoher*, Von CARL WINDERLICH, Leipzig, 1852; *Deutschland und das ubrige Europa*, Von Dr. FREIHERR FRIEDRICH WILHELM VON REDEN, Wiesbaden, 1854; *Universal Lexikon*, etc., Von H. A. PIERER, VIERTER BAND, Altenburg, 1850, articles DEUTSCHLAND, etc.—W. J. & J. L.——IE. See HUNT'S *Mag.*, ix., 399, xi., 491, xiv., 159, 227, xv., 225; *Westm. Rev.*, iv., 277; *Edinb. Rev.*, lxxix., 54; *Living Age*, xxx., 283; *For. Quar.*, xxii., 300; *Br. and For. Rev.*, iv., 169; *N. Am. Rev.*, ii. (E. EVERETT), 1, viii., 55.

German Silver, sometimes called white copper, or pakfong, is an alloy composed generally of copper, zinc, and nickel, the proportion varying according to circumstances. When they are intended as a substitute for silver, they are: copper, 50 parts; nickel, 25; and zinc, 25 in the 100. But the proportions in the genuine German silver are as follows: copper, 40.4; nickel, 31.6; zinc, 25.4; iron, 2.6.

Geropiga, or **Jerupiga**, a factitious liquor imported from Portugal, and used in the adulteration of wine. A pipe (about 105 gallons) of this compound is said by Mr. Consul Johnston to contain about 35 gal-

lons of brandy at 25 degrees over proof, the other constituents being coloring and sweetening matters and unfermented grape-juice. But the proportion of spirits and the description of the other ingredients which enter into its composition, and which are sometimes of a very noxious character, vary very widely in different samples. Generally, however, geropiga may be said to be strong, sweet, and high-colored. Besides being mixed with port, sherry, and other wines, it is substituted in various beverages, especially in the United States, for spirits and sugar. This villainous compound is allowed to be imported at the same duty as wine, provided the proof spirits in it do not exceed 33 per cent. of its quantity. It is also permitted to be mixed in the bonded warehouses in the docks with wine in the same proportions relatively to its strength as brandy; that is, when it is only half the strength of the latter, double the quantity may be used, and so on. This license has been much, and, as we think, justly, objected to. There can, of course, be no check, and, perhaps, no good objection, to the compounding of wines in Portugal; but one should think that the facilities for adulteration in the shops of the dealers are here quite enough without legitimating the practice in the docks. It is difficult, indeed, to see what purpose can be served by this indulgence, unless it be to execute and facilitate the commission of fraud. Geropiga being confounded in Portugal with brandy and here with wine, the quantity exported from the former and imported into the latter is not easily ascertained. It appears, however, that in 1848, 481 pipes were shipped from Oporto for England, and 1063 pipes for the United States. See Parliamentary paper, No. 314, Session 1855, etc.

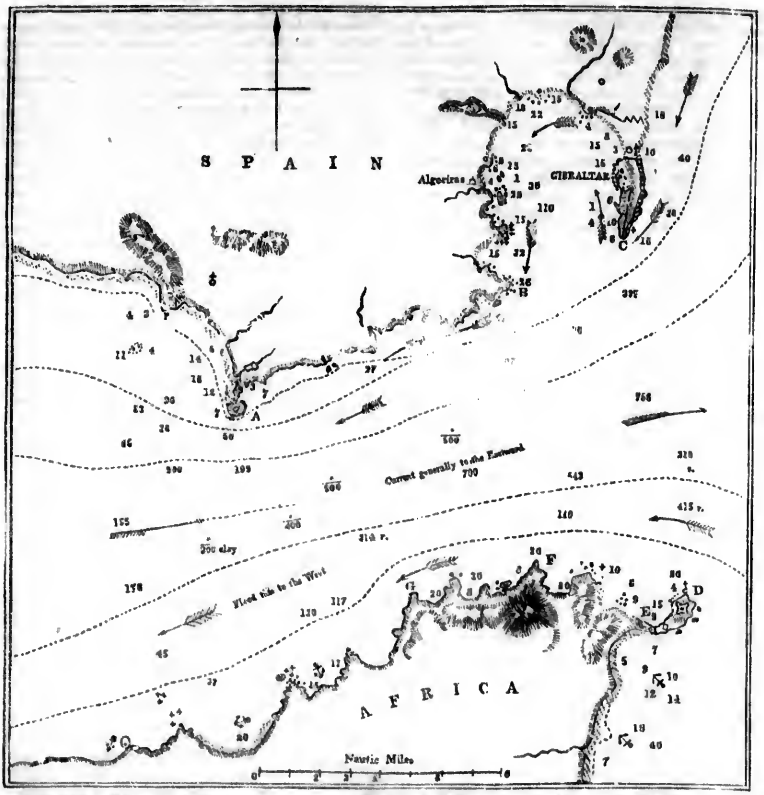
Ghee, a kind of butter much used by the natives of India. It is prepared by boiling fresh-drawn milk (generally that of buffaloes) in earthen pots for an hour or more, and adding, after it has cooled, a little curdled milk called *tyre*, in order to promote its coagulation. When this process is completed, the curdled mass is churned for half an hour, some hot water is added, and the operation of churning continued for half an hour longer, when the butter forms. Its tendency to become rancid may be obviated by boiling it until all the water that may be mixed with it is evaporated, and then adding some tyre and salt, or betel-leaf, and excluding it from the air in closed jars. In this way it may be preserved for many months. Ghee is an article of considerable commercial importance in many parts of India, though from its strong smell and flavor it is considered unpalatable by Europeans. See Butter.

Ghent (Lat. *Ganda*; Fr. *Gand*; Flem. *Gend*; Ger. *Gent*), a city of Belgium, standing on the Rivers Scheldt and Lys, whose numerous branches traversing the town form canals in all directions, and so intersect each other as to partition the town into 26 islands, which are connected by 42 large and 46 small bridges. The number of fine promenades forms another striking and pleasing feature of Ghent. Of these the most remarkable is the Coupure, formed by rows of trees extending along the Bruges Canal. In general, the town is well built, and occupies a larger area than most European towns, in proportion to the number of houses and the population. The general aspect of the city, without being highly picturesque, is very agreeable.

The cotton manufacture is extensively carried on in Ghent, employing about £1,800,000 of capital, engaging upward of 20,000 persons, and annually producing about 1,000,000 pieces of plain and printed calicoes. Sugar-refining is also extensively carried on. The other important manufactures are common and table linens, flannels, serges, woolen cloths, silks, ribbons, lace, thread, hosiery, wax-cloth, oil, chemicals, armor, mathematical, physical, and surgical instrument, hardware, bronze, and crystal, carriages, paper, tobacco, blue, starch, delft, etc. The important branches of trade are in corn, oil, seed, Flemish linens, and wine. About 20,000 pieces of linen are exposed for sale every Friday; and the annual fairs are very numerously frequented, besides the horse-fairs held in mid-lent and on 23d July. The great general fair is held in August. The governor of the province resides in Ghent, which is also the seat of a tribunal of first resort, as well as of a court of appeal, which has jurisdiction over all the province of Flanders. Ghent also gives title to a bishop, and is the head-quarters of the first of the four divisions of the army of Belgium. From 1792 to the overthrow of the power of Napoleon, Ghent was the capital of the department of the Scheldt. In 1814 Flanders became part of the kingdom of the Netherlands; and the same year the treaty of peace was signed here between Great Britain and the United States, which put an end to the war of 1812-'15. In 1815, on the return of Napoleon from Elba, Louis XVIII. took refuge in Ghent; and in the revolution of 1830, this city, with the rest of Flanders was comprised in the new kingdom of Belgium. The city seems now as prosperous as ever, and is increasing in population as well as in all the elements of wealth and power. Ghent is in lat. 51° 3′ 12″ N., long. 3° 43′ 51″ E., at the intersection of the railways connecting Lille with Antwerp, and Ostend with Malines, from which towns it is respectively distant 42, 32, 38, and 33 miles. The population in 1851 was 106,704.

Gibraltar, a famous fortress near the southernmost extremity of Spain, and contiguous to the narrowest part of the Strait, to which it gives its name, joining the Atlantic and Mediterranean. Lat. 36° 6′ 30″ N., long. 5° 21′ 12″ W. It is situated on the west side of a rocky mountain or promontory, the *Mons Calpe* of the ancients, projecting into the sea, in a southerly direction, about three miles, being from one half to three quarters of a mile in width. The southernmost extremity of the rock is called Europa Point. Its northern side, fronting the isthmus which connects it with Spain, is almost perpendicular, and wholly inaccessible; the east and south sides are so rugged and precipitous as to render any attack upon them, even if they were not fortified, next to impossible; so that it is only on the west side, fronting the bay, where the rock declines to the sea, and the town is built, that it can be attacked with the least chance of success. Here, however, the strength of the fortifications, and the magnitude of the batteries, are such, that the fortress seems to be impregnable, even though attacked by an enemy having the command of the sea. It was taken by the English in 1704, but the fortifications were then very inferior to what they are at present. Toward the end of the American war, it was attacked by a most formidable armament, fitted out jointly by Spain and France; but the strength of the place, and the bravery of the garrison, defeated all the efforts of the combined powers. Population about 16,000, exclusive of the troops, which usually amount, in time of peace, to about 3,000.

Trade.—Gibraltar is of considerable consequence as a commercial station. Being a free port, subject to no duties, and few restrictions, she is a convenient entrepôt for the English and other foreign goods destined for the supply, principally through illegitimate channels, of the contiguous Spanish provinces. Its importance, in this respect, increased rapidly during the 10 years ending with 1840; so much so, that while the declared value of the various articles of British produce and manufacture exported to Gibraltar in 1833 amounted to only £385,460, they amounted to £1,111,176 in 1840, and to £1,053,367 in 1841. But since a more liberal system began to be introduced into Spain, the exports of British products to Gibraltar have declined. In 1851 they were valued at £481,286. England also sends to Gibraltar considerable quantities of foreign and colonial merchandise, most part of which are destined for the supply of Spain.



References to Plan.—A, point and light-house of Tariffa, lat. 36° 0′ 30″ N., long. 5° 35′ 15″ W. The light-house was erected in 1813, and the light revolves. B, Cabrita Point. C, Europa Point, the extremity of the rock of Gibraltar. D, town and fortress of Ceuta, on the African coast. E, Little Ceuta Bay. F, Point Leona. G, Point Cires. The soundings and the direction of the currents are marked in the chart. Variation in the Straits, 22° 31′.

The Bay of Gibraltar is spacious; and, being protected from all the more dangerous winds, affords a convenient station for ships. Two moles have been constructed, at a vast expense, for the protection of the shipping. The old mole projects from the north end of the town, N.W. by N. 1100 feet into the sea; the new mole is 1½ miles more to the south, extend ing outward about 700 feet; it has an elbow formed by the shore, and in winter large vessels anchor inside; the furthest out in from five to six fathoms. The plan gives a better idea of the position of Gibraltar, as well as of the Straits, than could be derived from any description. It is taken from Captain Smyth's chart of the Mediterranean.

Gibraltar is of great importance to Great Britain in a military and naval point of view, being, in fact, the key of the Mediterranean, and affording a convenient and secure station for the outfit, refreshment, repair, and accommodation of many ships of war and merchantmen. The revenue collected in the town amounts to from £30,000 to £40,000, which is about sufficient to defray the public civil expenditure of the place. The expense annually incurred in Great Britain on account of the garrison, in time of peace, amounts to about £200,000—a small sum compared with the important political and commercial advantages it is the means of securing.

Money.—The effective or hard dollar = $1 05; the current dollar being estimated at ⅔ hard dollars = 70 cents. Reals and quarters of both hard and current dollars are the same, being, the former, = 4½d., and the latter 1 1-12d.

Accounts are kept in current dollars (pesos), divided into 8 reals of 16 quartos each; 12 reals currency make a cob or hard dollar, by which goods are bought and sold; and 3 of these reals are considered equal to 5 Spanish reals vellon.

Gibraltar draws on London in effetive dollars of 12 reals, and London on Gibraltar in current dollars of 8 reals. The exchange of Gibraltar and Cadiz, and other cities of Spain, is in hard dollars at a per centage, which varies considerably, and mostly in favor of Gibraltar.

Weights and Measures are those of England, excepting the arroba, = 25 lbs. English. Grain is sold by the fanega, 5 of which make 1 Winchester quarter. Wine is sold by the gallon, 100 of which are equal to 109·4 English wine gallons.

The commercial relations between the United States and Gibraltar are regulated by enactment of the imperial Parliament, and are burdened with but few restrictions, beyond the usual port charges, harbor and police regulations, quarantine laws, and a tariff of duties which comprehend not more than five or six ar

ticles of import. Of late years, the general navigation and commerce of Gibraltar have gradually decreased, owing mainly to the fact that the Mediterranean and Levant markets, which heretofore chiefly supplied their wants from Gibraltar importations of East and West Indian and United States' produce, now import direct from the places of growth; thus diverting from that port the large importations which, in former years, constituted Gibraltar the great depôt for all foreign produce destined not only for those markets but also for the markets of Spain and Portugal. Other causes have also contributed to bring about this general decline in the trade and commerce of Gibraltar. In former years, the commercial prosperity of the fortress depended largely on the success of smuggling into Spain and Portugal—a business which for many years gave brisk and highly remunerative employment to a great number of small vessels under 100 tons' burden, and augmented the amount of foreign importation largely beyond the ordinary demands for home consumptions or legitimate commerce. This trade having become too hazardous, is now altogether abandoned, so that the commerce of Gibraltar may be said to be limited to the actual retail wants of the fortress, and the demands of an unimportant trade with the adjacent coast of Barbary. The following table exhibits the tonnage and number of vessels from the United States, arriving at and clearing from Gibraltar during the years 1852, 1853, and 1854:

YEARS.	INWARD.		OUTWARD, DIRECT FOR THE UNITED STATES.	
	Vessels.	Tonnage.	Vessels	Tonnage.
1852.	80	7,321	67	19 767
1853.. ..	25	5,242	None.	None.
1854 .	55	12,189	1	197
Total.....	110	24.752	68	19,964

The value of the exports and imports from and to the United States and Gibraltar, during two years, will be seen from the following table:

Years.	Exports to Gibraltar.	Imports from Gibraltar.
1853... ..	$236,014	$61,784
1854...	527,772	59,673
Total.....	763,786	121,457

It will be perceived from the above tables that our exports in 1854 more than doubled those of the preceding year. This is accounted for by the increasing demand for articles of American produce and manufacture, to keep up the supplies for the coasting trade of Gibraltar, chiefly with the Barbary States and the eastern and western coasts of Spain and Portugal. The merchandise which constitutes the great bulk of our exports to Gibraltar is of the growth and produce of the United States, and, with the few exceptions already adverted to, is admitted free of duty. Yet, notwithstanding this exemption from all import duties, and the great increase of our exports in 1854 over those of 1853, the United States' consul at Gibraltar, in a recent dispatch, informed the Department of State that "Gibraltar does not offer any greater advantages to the merchants of the United States in the sending out of produce, merchandise, or articles of any kind, than other markets of Europe; indeed it has been of late years a very insignificant market, and offers very little encouragement for any extensive operations."

Navigation and Commerce.—The number of sailing vessels entered and cleared at the port of Gibraltar in 1854, either for commercial operations or for supplies, was 3917, with an aggregate tonnage of 698,713 tons.

In 1853, this general movement comprised 4399 vessels, with an aggregate tonnage of 801,975 tons, showing a decrease for 1854 of 482 vessels and 103,262 tons. Compared with 1853, the increase was chiefly with Spain, Morocco, Sardinia, the United States, and Tuscany; and the diminution with all other countries, but more notably with England, Russia, and Turkey. The increase in the movements between Gibraltar, Spain, and Portugal was owing to the fact that many vessels being unable, by reason of political difficulties, to prosecute their voyage to the Black Sea, entered the ports of these two kingdoms freighted only with salt. Besides, the exportation of grain from the ports of Spain was larger than in former years. The increase with Morocco was attributed to the privilege then granted of exporting grain from that regency. The decrease with England, Russia, and Turkey, is explained by the interruption which the war occasioned to the general commerce of the Black Sea. Vessels of the United States, as well as those of all other nations, are exempt from tonnage duties or taxes in the port of Gibraltar. They are subject only to a small impost, called "light duties," of 50 cents each vessel, for support of the light-house erected on Europa Point, and also to the following rates of anchorage dues. [Vessels of war of all nations are exempt from all port charges].

Square-rigged vessel, with three masts...each	$10	00
Brig-rigged vessel.....	"	8 00
Schooner, sloop, etc.....	"	5 00
Small coasting-vessel.....	"	4 00

A particular description of the merchandise imported from the United States, with a corresponding table of duties, will be found annexed. Rum, whisky, spirits, etc., in casks, whether in bottles or otherwise, if the full contents of the casks shall exceed 10 gallons:

	Cents.
Botasa.....each	50
Pipe, or butt, or puncheon..... "	43
Hogshead..... "	21½
Tierce..... "	14
Quarter-cask..... "	10½
Cask less than a quarter-cask, being liable to the wharfage toll..... "	5½

Tobacco, in hogsheads or kegs, as commonly imported from the United States of America, or in rolls, as imported from Brazil, viz.:

	Cents.
Hogshead.....each	43
Keg or roll not exceeding 1½ cwt..... "	8½
Roll or keg, from 1½—2 cwt..... "	5½
Roll or keg, from 2—5 cwt..... "	13½

Kegs exceeding 2 cwt., and rolls exceeding 5 cwt., to pay wharfage each as half a hogshead; and, in case of disputes, the tobacco is to be weighed at the expense of the merchant.

Gibraltar, Bay of, or as it is sometime called, *Algeciras Bay*, is bounded by the rock of Gibraltar on the one side, and the head-land of Cabrita on the other. Its greatest length is about eight miles from north to south, its greatest width about five miles from east to west, and its circuit nearly 40 miles. Its depth in the centre is about 110 fathoms. In spring tides the water rises in the bay about four feet. Algeciras, from whose name the bay is sometimes called, is a fortified Spanish town on the west side of the bay, over against Gibraltar. Near it is the beautiful little island called Isla Verde, Green Isle.

Gibraltar, Straits of, the narrow channel which separates the south of Spain from the north of Africa. The width at the narrowest part, between Cabrita Point and the opposite shore, is 13 miles. We have an excellent chart of the Straits by Don Vincento Tofino de San Miguel, with the additional observations of Captain H. W. Smyth, R. N., from which it appears that there is a continual current flowing from the ocean in the middle of the Straits, which has a velocity varying from three to six miles per hour, and is 3½ miles in breadth. There are two lateral currents, which have a mean breadth each of 2½ miles; but they change their direction with the changes of the tide. At the time of ebb these lateral currents have a velocity equal to that of the central one. The depth of the Strait, in the meridian of Cape St. Vincent, is 100 fathoms; but, in passing upward, the channel regularly and rapidly deepens, until, opposite to Europa Point at Gibraltar, the depth of water is 1000 fathoms. It is

remarkable, that though the oceanic current at the Straits, and that of the Bosphorus at the Dardanelles, continually pour their waters into the Mediterranean, its level is not raised. But Dr. Halley, long ago, showed that the evaporation from its surface was fully equal to maintain it at the same level, notwithstanding those additions, and that of the rivers it received. The current is sufficiently strong to be dangerous to vessels sailing into the Atlantic, and can only be overcome by a brisk wind from the Levant.

COMMERCE OF THE UNITED STATES WITH GIBRALTAR, FROM OCTOBER 1, 1820, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage Cleared.	
	Domestic.	Foreign.	Total.	Total.	Exported.	Imported.	American.	Foreign.
Sept. 30, 1821	$956,111	$513,635	$1,469,746	$1,284,268	$32,190	$608,530	20,954	....
1822	525,708	625,074	1,150,782	490,878	5,000	58,661	15,847	....
1823	875,604	1,028,272	1,903,876	477,769	3,804	181,695	22,985	....
1824	934,402	924,445	1,862,847	693,844	2,110	311,371	27,285	1,102
1825	861,733	941,981	1,803,714	748,546	146,287	161,704	20,368	584
1826	692,396	1,055,525	1,747,921	577,806	10,500	94,688	24,148	921
1827	1,040,999	864,887	1,905,886	828,958	3,000	89,278	26,790	68
1828	899,411	506,719	1,406,130	656,578	36,000	37,891	26,446	91
1829	301,139	160,129	461,268	247,471	10,573	58,798	8,701	....
1830	513,248	370,150	883,398	90,028	58,880	7,860	13,450	....
Total	$7,600,744	$7,000,318	$14,601,062	$6,155,636	$309,343	$1,539,806	205,469	2,766
Sept. 30, 1831	$429,087	$165,786	$594,873	$150,517	$20,000	$8,500	11,703	....
1832	428,833	185,074	613,907	279,358	33,516	8,320	14,989	481
1833	573,076	164,570	737,646	182,508	300	2,900	18,811	1,970
1834	504,708	288,785	790,488	200,691	....	24,947	12,998	580
1835	553,582	265,000	818,582	160,200	74,988	4,460	15,194	460
1836	635,198	225,177	860,375	245,978	6,597	....	14,522	1,120
1837	561,031	208,870	564,901	207,178	17,034	888	10,887	1,871
1838	609,818	152,871	762,189	25,654	9,693	....	11,496	1,911
1839	802,247	148,387	1,050,634	99,178	9,856	....	18,864	2,164
1840	643,344	257,110	900,454	32,567	....	460	11,312	877
Total	$5,642,919	$2,051,130	$7,694,049	$1,584,234	$171,434	$49,875	134,771	10,736
Sept. 30, 1841	$1,020,931	$98,989	$1,119,920	$21,079	....	....	17,568	794
1842	466,987	115,961	582,598	12,263	$15,218	....	12,115	1,758
9 mos 1843	218,251	88,197	256,448	23,915	....	$20,878	6,941	1,568
June 30, 1844	502,462	77,421	579,883	44,274	8,460	13,471	18,878	2,413
1845	426,107	163,564	589,671	92,118	47,890	12,222	11,691	1,097
1846	468,241	129,651	592,892	27,806	44,648	....	....	....
1847	365,860	55,026	420,886	26,969	2,790	....	8,219	1,718
1848	310,400	61,545	371,945	4,445	16,920	....	9,526	773
1849	728,819	74,467	802,286	1,193	13,035	....	13,139	1,540
1850	180,307	60,462	240,769	44,269	42,085	....	7,650	806
Total	$4,688,815	$879,803	$5,568,118	$298,336	$196,036	$46,571	101,022	12,461
June 30, 1851	$177,904	$52,529	$230,433	$78,604	$5,580	....	8,900	1,962
1852	229,302	46,157	275,759	105,853	16,000	....	7,578	1,892
1853	169,444	66,570	236,014	61,784	44,500	....	5,242	1,330
1854	446,445	81,327	527,772	59,673	12,741	....	12,189	624
1855	225,865	123,879	348,744	66,541	....	....	8,063	1,302
1856	372,523	56,493	429,016	38,126	26,400	1,376	10,340	118

Gild, or **Guild**, a company of merchants or manufacturers, whence the halls of such companies are denominated Gild or Guild Halls. See GUILD.

Gilding. First practiced at Rome, about 145 B. C. The capitol was the first building on which this enrichment was bestowed.—*Pliny.* Of gold leaf for gilding, the Romans made but 750 leaves, 4 fingers square, out of a whole ounce.—*Pliny.* It consequently was more like our plating.—*Trusler.* A single grain of gold may now be stretched out under the hammer into a leaf that will cover a house.—*Dr. Halley.* Gilding with leaf gold on *bole ammoniac* was first introduced by Margaritone, in 1273. The art of gilding on wood, previously known, was improved in 1680.—*Haydn.*

Gilding is the application of a superficial coat of gold on wood, metal, and other materials. The beauty and durability of gold render it the most valuable of all ornamental substances; but, on account of its weight and high price, its use in these respects would be exceedingly limited, were it not the most extensible and divisible form of matter, so that it may be made to cover a larger surface than an equal quantity of any other body. Metals are usually covered with gold by the process of *water gilding.* It consists in perfectly cleaning their surface, and then, in the case of silver, for instance, rubbing it over with a solution of gold in mercury, called *amalgam of gold:* the vessel is then heated over a clear charcoal fire, by which the mercury is driven off, and the gold left adhering to the silver surface, upon which it is afterward burnished. The surface of copper or brass is usually prepared by cleaning and rubbing it over with a solution of nitrate of mercury, which amalgamates the surface, and enables the gold amalgam, when subsequently applied, to adhere; heating and burnishing are then resorted to as before. Brass and copper buttons are gilt in this way; and the requisite quantity of gold is so small that twelve dozen buttons of one inch diameter may be completely gilt upon both surfaces by five grains of gold. Other kinds of gilding are performed by gold leaf, which, if intended for outdoor work, is laid on by the help of *gold size,* which is drying oil mixed with calcined red ochre; or, if for picture and looking-glass frames, they are prepared by a size made by boiling parchment clippings to a stiff jelly, and mixed with fine Paris-plaster or yellow ochre. The leaves of books are gilt upon the edges by brushing them over, while in the binder's press, with a composition of four parts of Armenian bole and one of powdered sugar candy mixed up with white of egg; this coating, when nearly dry, is smoothed by the burnisher, then slightly moistened, and the gold leaf applied and burnished. To impress gilt figures on book covers, the leather is dusted over with finely-powdered mastic: the iron tool by which the figure is made is then moderately heated and pressed upon a piece of leaf-gold, which slightly adheres to it; being then immediately applied to the leather with a certain force, the tool makes an impression, and, softening the mastic, transfers and fixes the gold. In gilding glass and porcelain, powdered gold is blended with gum-water and a little borax, and applied by a camel-hair pencil; the article is then put into an oven or furnace; the gum burns off, and the borax, by vitrifying, cements the gold to the surface, upon which it may afterward be polished by the burnisher. Within the last few years nearly all the gilt articles manufac-

tared at Birmingham, such as buttons, neck-chains, ear-rings, and so forth, have been gilt by a process in which, after the articles have been properly cleansed by a weak acid, they are immersed in a hot solution of nitro-muriate of gold, to which a considerable excess of bicarbonate of potash has been added; in the course of a few seconds they thus receive a beautiful and permanent coat of gold.

Gilead-tree, the Balsam of (Amyris gileadensis), is a native of Arabia, and grows spontaneously in the mountains of Yemen. Although not indigenous to Judea, it was cultivated with great perfection many years before Christ, in the gardens of Jericho, on the banks of the Jordan; and it is from Gilead, in that country, whence the merchants brought the resinous product to Egypt, that is derived the appellation of "Balsam of Gilead." This shrub, or tree, which seldom exceeds 1½ feet in height, has a trunk 8 or 10 inches in diameter, with many spreading, crooked, purplish branches, having protuberant buds, loaded with aromatic resin. The great value set upon this drug in the East is traced to the earliest ages. When Alexander the Great was in Judea, a spoonful of the balsam was all that could be collected on a summer's day; and, in the most plentiful year, the great royal park for these trees yielded only six gallons. It was consequently so dear that it sold for double its weight in silver. That of the best quality is said to exude naturally, but the inferior kinds of the present day are extracted by boiling the branches. It is at first turbid and white, of a strong, pungent, agreeable, aromatic odor, and of a slightly bitter, acid taste; upon being kept, it becomes thin, limpid, of a greenish hue, then of a golden yellow, and at length of the consistency of honey. This balsam is highly prized among eastern nations, particularly by the Turks and Arabs, both as a medicine and an odoriferous unguent and cosmetic. It has been highly extolled as a powerful anti-septic, vulnerary, and preventive of the plague. Its great scarcity, however, has prevented it from coming into use among European and American practitioners. It is extremely liable to adulteration, and, from its high price, and difficulty to be obtained, it is believed that not a single ounce of the genuine article can be found in this country, nor even in Europe.—D. J. Browne's *Report, U. S. Patent Office*, 1855.

Gill, a measure of capacity. See Weights and Measures.

Gimbals (Lat. *gemellus, twin*), the two brass rings or hoops within which a ship's compass is suspended in its box, in order to counteract the effect of the ship's motion and keep the card horizontal. These rings move one within the other, each perpendicularly to its plane, about two axes placed at right angles to each other. By this contrivance the compass, having a free motion in two directions at right angles to each other, maintains a vertical position, and consequently the card is horizontal. Gimbals are also applied to other instruments, such as the portable or mountain barometer, etc.

Gimleting the anchor. Turning it by the stock round its shank as an axis, like a gimlet.

Gimp. Silk twist, interlaced with brass or other wire.

Gin. (Fr. *genièvre, juniper.*) Ardent spirit flavored by the essential oil of juniper. It was originally made by the Dutch, and is hence distinguished in this country by the name of Hollands. The liquor bearing the above name in this country is of British manufacture, and is frequently flavored by oil of turpentine, and rendered biting upon the palate by caustic potash. In Holland, the finest gin bears the name of Schiedam, the principal place of its manufacture, and where there are many distilleries.

The English act for laying an excise upon gin passed July, 14th, 1736; it had been found, in the preceding year, that in London only, 7,044 houses sold gin by retail; and it was so cheap that the poor could intoxicate themselves, and be disabled from labor for one penny. The heavy excise of 5 shillings per gallon, and obliging all retailers to take out a license, in a great measure put a stop to this depopulating evil.—*Salmon.* About 1,700 of these houses were suppressed in London in 1750.—*Clarke.*

The Dutch have been long famous for their manufacture of an ardent spirit flavored with juniper, and known by the names of *Hollands, Schiedam, Gin*, and *Geneva*; the last being derived from the word "*genièvre*," the juniper berry, and the word gin being a contraction thereof. The distillers at Schiedam seem for the last 60 years at least to have followed very much the same practice in the manufacture of this spirit, most of the accounts published during that period by individuals who have gone over to study the manufacture, agreeing in the details. Generally 112 lbs. of malt of big, weighing about 37 lbs. per bushel, and 228 lbs. of best unmalted rye from Riga, weighing about 54 lbs. per bushel, are mashed in about 100 gallons of water of the temperature of 162°. The tun is then carefully covered and left undisturbed for about 2 hours. The contents are then well stirred up, when the clearest part of the spent wash of a previous distillation, and as much cold water as will reduce the strength of the wort to about 33 of Dicas's hydrometer, and lower the temperature to about 80° are added. About half a gallon of good yeast is then added; active fermentation is thus excited, the temperature rises to 90°, and the whole is over in two days. The whole wort (grains and all) is then transferred to the still, and the distillation is continued till spirit ceases to come over. A very weak spirit is thus obtained, as used to be the case in this country with the old form of still. This, or the *low wines* as it is termed, is subjected to a second distillation after having mixed with it some juniper berries and hops. Old juniper berries are preferred for this purpose, and they are added in the proportion of 2 lbs. of berries to the 100 gallons of low wines; a quarter pound of salt, and a handful of hops, are often also added. These ingredients give the spirit that peculiar flavor which has led it to be styled genièvre—geneva—gin. The quantity of spirit obtained varies from 18 to 21 gallons per quarter of grain, a quantity fully as great as is yielded by the best conducted distilleries in this country.

According to recent examinations and experiments to detect the adulteration of liquors, gin appears to be generally diluted for the purpose of lowering the price, and various decoctions are subsequently introduced to supply the peculiar properties supposed to belong to the pure spirit. Many of these articles, however, although "possessing very terrifying names, as oil of vitriol, or sulphuric acid, can not in the proportions in which they are used, be looked upon as poisons." It is, for instance, believed that pure gin—that is, alcohol flavored with juniper-berry, is not to be met with, inasmuch as all rectifiers appear to use "gin-flavorings," made from various aromatic and carminative substances, such as orange peel, coriander, etc., which please the palate of the consumer better than pure gin, of which, indeed, the public scarcely know the taste. If a retailer "never sold any thing but absolute alcohol, it could not be drank by the public without their being greatly injured. The publican would then have to dilute it with such a quantity of water as would render it suitable as a beverage." The publican does not profess to sell absolute alcohol, and the public knowing nothing of the nature of the manufacture of gin, are content with what is usually sold under that denomination; the term gin being merely conventional, and applying equally to the mixture sold by the publican as to the spirit sent out by the distiller, and is, in fact, more

generally understood to represent the mixture. For the same reason the revenue does not sustain loss, because no man could drink proof spirits, and if the publican did not dilute the spirit, he "must fall back upon the wholesale dealer and have it made up to the strength he requires, sweetened and all."—*Report to House of Commons*, July, 1856. See LEONE LEVI'S *Annals of British Legislation*, Part ix., Dec., 1856.

Gin, in *Mechanics*, a contrivance for raising heavy weights, driving piles, etc., which consists of three spars set up in a pyramidal form, and furnished at top with a tackle which is worked by a windlass beneath. The name *gin* is also applied to a machine with which the fibres of cotton are disentangled, by means of a series of revolving spikes. This operation is termed *ginning*. See COTTON MANUFACTURE.

Ginger (Ger. *Ingwer*; Du. *Gember*; Fr. *Gengembre*; It. *Zenzero*; Sp. *Jenjibre*; *Agengibre*; Rus. *Inbir*; Lat. *Zingiber*; Pers. *Zungeoeel*; Arab. *Zingibeel*), the roots of a plant (*Amomum Zingiber*), a native of the East Indies and China, but which was early carried to and succeeds very well in the West Indies. After the roots are dug, the best are selected, scraped, washed, and dried in the sun with great care. This is called *white ginger*; while the inferior roots, which are scalded in boiling water before being dried, are denominated *black ginger*. Preserved ginger is made by scalding the green roots, or the roots taken up when they are young and full of sap, till they are tender; then peeling them in cold water, and putting them into a thin syrup, from which they are shifted into the jars in which they come to us, and a rich syrup poured over them. Dried ginger has a pungent, aromatic odor, and a hot, biting taste. It is imported in bags, each containing about a cwt. The white brings the highest price, being more pungent and better flavored. The external characters of goodness in both sorts of dried ginger are, soundness, or the being free from worm holes, heaviness, and firmness; the pieces that are small, light, and soft, or very friable and fibrous, should be rejected. The best preserved ginger is nearly translucent; it should be chosen of a bright yellow color; rejecting that which is dark-colored, fibrous, or stringy.—MILBURN'S *Orient. Commerce*; THOMSON'S *Dispensatory*. The ginger plant could without doubt be grown to advantage in many of the southern States. The amount of ginger annually imported into the United States is valued at upward of $60,000.

Ginseng (Du. *Ginseng*, *Ginsem*; Fr. *Ginseng*; Ger. *Kraftwerzel*, *Ginseng*; It. *Ginseng*; Sp. *Jinseng*; Chin. *Yansam*; Tart. *Orhota*), the root of a small plant (*Panax quinquefolium* Lin.), growing in China, Tartary, and several parts of North America. The latter is what we generally see in England, and is an article of trade to China, which is its only market. Large quantities were formerly exported from this country; but it is now carried direct to China by the Americans. It is sometimes exported crude, and sometimes cured or clarified. Within these few years, is has been discovered in the Himalaya mountains, and small quantities have been thence sent to Canton; but the speculation has not succeeded. It is only about 40 years since it began to be sent from America to China. Previously to the present century, the Chinese drew their supplies from the wilds of Tartary, and the root brought an exorbitant price. Crude ginseng now sells in the Canton market at from 60 to 70 dollars per picul, and prepared at from 70 to 80 dollars. In 1852, there were sent from the United States to China, 158,455 lbs. ginseng, valued at 102,073 dollars.—*Papers laid before Congress*, January 1st, 1853.

Glacier, a name given to masses of ice which descend from snowy mountains into the adjacent valleys, where they obtain a level often far below the upper limit of the surrounding vegetation. The following are the synonyms for a glacier in some different languages and dialects: In French, *glacier*; German, *gletscher*; Italian, *ghiacciaja*; Tyrolese, *fern*; in Carinthia, *kâss*; in the Vallais, *biegno*; in part of Italy, *vedretto*; in Piedmont, *ruise*; in the Pyrenees, *serseille*; in Norway, *iisbræ* or *iisbrede*; in Lapland, *geikna* or *jegna*; in Iceland, *jökull* or *full-jökull*. The characteristic appearance of a glacier can be nowhere better studied than in Switzerland and Savoy. The icy mass of the glacier of Bossons at Chamouni—which descends immediately from the highest part of Mont Blanc, but lies, summer and winter, in the valley at a height of no more than 3500 English feet (the height of perpetual snow being about 9000 feet), where it is embosomed among luxuriant wood, and is almost in contact with corn-fields—exhibits a spectacle which none who have once seen it can forget, and which attracts more interest and curiosity the more carefully it is considered. The lower glacier of Grindelwald, descending to 3400 feet, is another familiar example of the same phenomenon. In the arctic regions true glaciers also exist, which, descending the valleys (often of great width and little inclination), enter the sea, and, breaking off, supply the floating ice-islands or icebergs, which frequently drift into comparatively low latitudes. These glaciers do not essentially differ from those of Alpine countries.

The diminution of temperature as we ascend the slopes of mountains, is indicated by successive zones of vegetation, and finally by the occurrence of perpetual snow. Thus in the high mountains of the Andes and Himalaya, between the tropics, the commencement of perpetual snow is found at from 15,000 to 18,000, or even 19,000 feet, according to circumstances; while in southern Europe, the level is from 8000 to 9000 feet, and in Norway from 5500 to 3000 feet, according to the latitude and the distance from the sea. It was first shown by Baron Humboldt and Von Buch that the limit of perpetual snow depends principally on the temperature of the summer, and not upon that of the whole year. It has been already explained that an accumulation of snow, even frozen snow, does not constitute properly a glacier. A glacier is a mass of ice, having its origin in the hollows of mountains where perpetual snow accumulates, but which makes its way down toward the lower valleys, where it gradually melts, and it terminates exactly where the melting, due to the contact of the warmer air, earth, and rain of the valley, compensates for the bodily descent of the ice from the snow reservoirs of the higher mountains. From this it is evident, without any formal measurements, that A GLACIER IS ICE IN MOTION.

Geographical Distribution of Glaciers.—Glaciers are not peculiar to any country or region of the earth. It may be that there are extensive snowy mountains wholly devoid of them, as is supposed to be the case in tropical South America; but even this exception requires confirmation. There are peculiarities in the form of mountains, and still more in climate, which, as we shall see, favor the formation of glaciers, or may even totally prevent it.

Glasgow, a great commercial and manufacturing city of Lanarkshire, in Scotland, situated on the northern bank of the River Clyde. According to the determination of Dr. Wilson, the latitude and longitude of the Macfarlane Observatory, in the college garden of Glasgow, are 55° 51′ 32″ N., and 4° 17′ 54″ W. Glasgow is therefore nearly eight miles further south, and 1° 1′ further west. The difference between the clocks in Edinburg and Glasgow is 4° 27′ 4″.

Glasgow owes its present greatness to its advantageous situation on a fine river, in one of the richest coal and mineral districts of the empire. Originally, however, the Clyde was much incumbered by fords and shallows, and for a lengthened period it served rather to excite and disappoint expectation, than to confer any real commercial advantage on the city.

In 1662, after several other schemes had failed, the magistrates of Glasgow purchased the ground on which Port Glasgow (16 miles down the river) now stands, where they formed a harbor and a graving dock, the first work of its kind in Scotland. For a considerable period the intercourse between Glasgow and its newly-acquired port was principally carried on by land carriage; but from 1665 attempts were every now and then made to deepen the river. In 1688 a quay was formed at the Broomielaw; but even so late as 1775 no vessel drawing six feet of water could reach Glasgow, except at spring tides. At length, however, a plan, proposed in 1769 by Mr. Golburn, engineer of Chester, for deepening the river to seven feet at neap tides, was adopted, since which time, by the continued use of numerous dredging machines a depth of from 16 to 18 feet of water at high water neaps has been obtained. In the year ending the 30th June, 1854, 25 ships drawing 18 feet of water, and 4 drawing 19 feet, came safely to the Broomielaw, while the largest steam vessel afloat, the *Persia*, of 3,600 tons' burden, was launched in 1855 into the river, about one mile below Glasgow, and came up to the harbor to receive her machinery. The work of deepening and straightening the river is still vigorously prosecuted. Six dredging machines and two diving bells are in constant employment. The river, for seven miles below the city, is very much widened, and forms nearly a straight line—the sloping banks, formed of whinstone, being constructed in imitation of ashlar. The accommodation for shipping at the Broomielaw, or harbor, is now also very greatly extended. It comprises about 48 acres of water. The quays extend about two miles in length, are amply furnished with sheds for goods, cranes, etc., and have the important advantage of being directly connected, by means of the General Terminus Line, with the various railways that centre in the city. The parliamentary trustees for managing the river have, also, acquired ground on the north side of the harbor, on which they have power to construct extensive docks. They may, also, construct a basin on the south side.

The total expenditure on the river and harbor, including works, purchases of ground, etc., down to 1854, was above £2,000,000, of which about £1,500,000 has been raised as revenue. The influence of these improvements on the shipping and trade of Glasgow has been most striking. At present, a greater number of sailing vessels and of steamers belong to Glasgow than to any other Scotch port, and the harbor is constantly crowded with ships from foreign ports, coasting vessels and steamers. The steam-packets belonging to the Clyde that ply to Liverpool, Dublin, and Belfast, are among the finest vessels of their class in the empire. In all, there belonged to Glasgow, on the 31st December, 1854, 601 vessels of the aggregate burden of 192,895 tons.

The Clyde, upon which the city of Glasgow is situated, is one of the principal rivers in Scotland, and has its rise among the mountains that separate the counties of Dumfries and Lanark. The length of this stream, from its source to its junction with the western sea, is about 100 miles. Along its whole course it is beautified by magnificent natural scenery and embellishments of art. Its banks are crowded with the abodes of industry and a thriving population. The site of Glasgow occupies both sides of the river; and though at the distance of above 30 miles from the influx into the sea, the tide, which flows a considerable way above the town, gives it a command of trade and means of ready conveyance for commercial purposes to every quarter of the globe. See articles CLYDE, GREAT BRITAIN, and SCOTLAND.

The first steam-engine in Glasgow connected with cotton-spinning was erected in 1792; but it was not till the beginning of the present century that any considerable quantity of yarn was spun in Scotland. In 1850 the number of spindles employed in cotton-spinning, connected with or dependent on Glasgow, amounted to 1,683,003, and the cotton consumed amounted to about 45,000,000 pounds, or 120,000 bales. At present (1856) the consumption does not appear to have increased. The power-loom was first introduced into Glasgow in 1793 by Mr. James Robertson, who brought two from the Hulks in the Thames. In the following year 40 looms were fitted up at Milton, and in 1801 Mr. John Monteith had 200 looms at work at Pollockshawe, near Glasgow. In 1831 the power-looms in or dependent on Glasgow had increased to 15,187; in 1850 they amounted to 23,564, and produced the daily average of 625,000 yards of cloth; at present (1856) there are about 26,000 or 27,000 power-looms, and consequently the daily produce is not only greater from this cause, but also from an increase in speed. The number of persons employed in the cotton factories throughout Scotland, and which may be said to be all connected with or dependent on Glasgow, in 1850 was 8797 males, and 27,528 females, total 36,325; while the motive power was, steam, 71,005 horse-power; water, 2812. In addition to the cotton spun for weaving, there are several very large manufactories of sewing thread; and to that of power-loom weaving there must be added all the beautiful fabrics that are still made by the hand-loom, and which employ a vast number of persons and a large capital. These consist of muslins, plain and fancy harness-curtains, jaconets, cambrics, ginghams, checks, and colored tissues of all kinds; while, of late years, mixed fabrics, consisting of cotton and silk, cotton and linen, and cotton and wool, have all been manufactured to a great extent. To the many thousand hand-loom weavers that still reside in Glasgow, must be added those who reside in all the villages for many miles round, and even in some of the more distant towns in Scotland and north of Ireland, to form any adequate idea of the extensive and wide-spread textile manufacturing interests of Glasgow. See articles EMBROIDERY, CLYDE, and STEAM NAVIGATION.

The next great branches of industry, of which Glasgow is the central mart, are its coal and iron trades. Although coal, from a pretty remote period, has been wrought round the city chiefly for domestic uses, it has only been since the introduction of the steam-engine, and still more since the discovery of the economical mode of smelting iron by the hot blast, that the vast and closely-packed mineral wealth of its neighboring districts has been at all fully developed and turned to profit.

Steamship-building.—Of all the branches of industry belonging to Glasgow and its harbor, there is none of modern date which has made such rapid progress as that of steamboat-building, and marine engine-making. From the first start of the little *Comet*, in 1812, till 1820, there were at the most only one or two river steamers launched yearly, and of a tonnage so small as to be scarcely worth notice. About that period this manufacture received a new impulse, and began at once fairly to develop itself. From 1821 to 1830 there were 88 steamers built, with a tonnage of 4,200; from 1831 to 1840 there were 94 steamers, with a tonnage of 17,620; from 1841 to 1850 there were 167 steamers, with a tonnage of 81,447; while during the three years from 1851 to 1853 there were 206 steamers, with a tonnage of 141,718. The present magnitude of this industry may, however, be best appreciated from the fact that during the years 1853 and 1854, the then 32 ship-builders on the Clyde had constructed or contracted for no fewer than 266 vessels, including both steam and sailing, having an aggregate tonnage of 168,000, for which also marine engines were constructed or in progress, of 29,000 horse-power; the average of these vessels being 630 tons, and involving the enormous cost of nearly £5,000,000 sterling.

The whole number and tonnage arriving at the har-

bor of Glasgow during the years 1828–1854, were as follows:

Years.	SAILING VESSELS.		STEAM VESSELS.	
	No.	Tonnage.	No.	Tonnage.
1828	4,405	214,815	7,100	481,946
1840	5,887	271,942	11,149	894,987
1850	5,857	891,088	9,195	878,159
1854	6,329	504,008	11,880	1,090,804

The progress and present condition of the river and harbor, however, are probably best exhibited by the following abstract of the revenue of the trust at six different periods:

1800	£3,319	1840	£46,481
1820	6,328	1850	64,248
1830	20,296	1854	86,580

ABSTRACT ACCOUNT OF THE TOTAL NUMBER OF ARRIVALS OF SAILING AND STEAM VESSELS ARRIVED AT THE HARBOR OF GLASGOW, FOREIGN AND COASTWISE, IN THE YEAR ENDING JUNE 30TH, 1854.

Vessels' tonnage.	Sailing vessels.	Steam vessels.	Vessels' tonnage.	Sailing vessels.	Steam vessels.
Under 40	2,844	2,726	300—350	61	65
40— 60	1,462	469	350—400	56	375
60— 80	609	2,586	400—450	33	76
80—100	313	3,402	450—500	36	5
100—150	285	1,545	500—600	48	1
150—200	239	285	600—700	24	6
200—250	186	28	700 &upwd.	84	9
250—300	89	361	Total.....	6,329	11,880

Port Charges, Harbor, or Quay Dues.—On all vessels arriving at the harbor of Glasgow, 2d. per register ton; except on steam-vessels trading on the River Clyde within the Cumbraes, or navigating the Crinan Canal, which are charged 1d. per register ton. On all vessels remaining in the harbor for any period exceeding 24 lawful days, 1d. per ton per week.

Weighing-dues.—Each cart, wagon, or other carriage-load, or weight, not exceeding 12 cwt., 1d. each; exceeding 12 cwt., 8d. each. N. B. Weighing-dues, not exigible when the correct weight of the goods is furnished.

Crane Dues.—Each hoist not exceeding 12 cwt., 3d.; from 12 to 15 cwt., 4d.; from 15 to 20 cwt., 6d. Each ton of machinery, and other articles exceeding 1 ton, 1s.; hemp per ton, 6d.; marble do., 1s.; timber do., 6d. Taking out and putting in machinery, etc., of steamboats, from £2 2s. to £8 8s., according to the number of hoists and trouble. Cranesmen's time per hour, or part of an hour, 6d. Charges for water supplied by the Clyde Trustees to vessels in the harbor, viz.: Vessels under 25 tons register, 6d. each; 25 tons and under 50, 1s. each; 50 tons and under 100, 1s. 3d. each; 100 tons and under 150, 3s. each; 150 tons and under 200, 5s each; 200 tons and under 300, 8s. each; 300 tons and under 400, 9s. each; 400 tons and upward, 10s.

N. B. Steam-vessels regularly supplied oftener than once a week, to be charged half the above rates. Masters of vessels requiring water, will obtain orders, on application, at the weighing-boxes on the quays. *Planks and Stages.*—For loading or discharging vessels, 1s. each plank or stage per week. *Rhones.*—One penny for each wagon of coal loaded, with 1s. extra on each cargo for removing the rhone to and from the vessel. *Ballast.*—The Clyde Trustees remove ballast from vessels on either side the harbor, at a rate not exceeding 1s. per ton, and supply clean stone ballast at 1s. per ton. The River Clyde is divided into three stages, and the following are the tonnage dues exigible upon each, viz.: The first stage extends from Stockwell-street Bridge to the Old Ferry at Renfrew, being about 600 yards to the east of the present ferry, and the dues on goods carried or conveyed thereon, are two thirds of the tonnage dues exigible by the trustees. The second stage extends from the Old Ferry at Renfrew to the mouth of Dalmuir Burn; and the dues exigible thereon are one sixth of the tonnage dues; and the third stage extends from Dalmuir Burn to Newark Castle; and the dues exigible thereon are one sixth part of the tonnage dues.

The above is the whole charge *upon the ship* for the voyage *in* and *out* if a ship sail in ballast. If she loads an outward cargo, the tonnage dues thereon will be charged according to the rates specified above. *The charges for lights* are as follows, viz.: northern lights, 8½d. per register ton; Cambrae lights, 1d. per register ton. The charge for unloading and taking in a cargo is per agreement with licensed lumpers or porters who ply on the quay for hire. There are no fixed rates, but the following charges may be considered pretty near the mark: unloading cotton, 15s. per 100 bales, or about 9d. per ton, and for taking in iron, 9d. per ton. The other items of charge of a public kind affecting the ship are, towing up and down the river, planks and stages for discharging and loading the cargoes, supplying the ship with water and the removal of ballast, if any on board, and ships loaded with cotton usually have ballast. The following is a *pro forma* account of the charges on a ship of 500 tons arriving with cotton, remaining in the harbor for a month, loading iron, and leaving:

Anchorage or harbor dues, 500 tons, at 2d. per ton	£4	3	4
River or tonnage dues inward, say 300 tons cotton, at 1s. 4d. per ton	20	0	0
Shed dues on do. at 1½d. per ton	2	6	9
Lumper's charge for unloading cargo, do. at 9d.	11	5	0
River or tonnage dues outward, say on 700 tons iron at 7d.	20	8	4
Shed dues on do., at 1½d.	3	12	11
Lumper's charge for loading, at 9d.	26	5	0
Northern lights, in and out, on ship 500 tons, at a fraction under 8d.	17	19	2
Clyde lights, in and out, on do. at 1d.	2	1	8
Towing ship up and down river, 9d. each way, at 1s. 6d.	37	10	0
Planks and stages, discharging and loading, say	1	10	0
Supplying ship with water in harbor	0	10	0
Discharging and removing ballast	7	10	0
Total	£154	19	2

On all ships arriving at the Broomielaw, either from foreign ports or coastwise, 2d. per register ton is payable to the River Trustees in name of harbor or quay duty, over and above the river or tonnage rates on the cargo.

Entrance to the River.—As a guide to mariners, it may be mentioned that vessels of 19 feet draft of water can arrive at the harbor of Glasgow, and that vessels drawing 17 feet are considered regular traders. Vessels drawing 15 to 16 feet may always arrive and depart without touching the bottom. At the entrance to the river, vessels are placed under the charge of pilots, who are well acquainted with the channel, which is well marked with beacons and buoys. It may be considered that the river is deepening at the rate of one foot in every five years. A ship on reaching the mouth of the river had best commence ascending at half-tide. There are no particular usages connected with the harbor of Glasgow beyond those adopted on most other rivers and harbors. Lights are permitted in the harbor from 6 A.M. to 10 P.M.

Glasgow may be said to be *cosmopolitan* in her commerce and manufactures, uniting within herself the businesses and trades of almost every other town and city in the United Kingdom. It hence follows that while one branch of manufacture or trade may be dull, another may be prosperous, and accordingly Glasgow does not feel any of those depressions which so frequently occur in places which have only one or two branches of manufacture or commerce. The great industrial occupations of Glasgow are its cotton-spinning and weaving; its collieries and iron manufactures; its iron ship-building and machine-making, and its chemical manufactures. According to Dr. Strang, the consumption of raw cotton in Glasgow in 1854 was above 1,900 bales per week, of from 430 to 440 pounds each, and the number of power-looms dependent on Glasgow was from 26,000 to 27,000, producing daily about 700,000 yards of cloth. In the west of Scotland, of

which Glasgow is the central mart, there were, in 1854, 6,448,000 tons of coal drawn from the pits, of which 2,152,800 tons were consumed in the manufacture of pig iron. 867,200 in the conversion of pig iron into malleable iron, making in all, 2,520,000 tons used in connection with the manufacture of iron, while 926,221 tons were shipped, and 148,812 tons sent beyond the boundaries by railways, leaving for the manufacturing consumption and domestic use of the Glasgow district 2,853,427 tons. The produce of pig iron in the counties of Lanark and Ayr, in 1854, amounted to 717,600 tons, 122,684 tons of which were shipped direct to foreign countries, 294,194 tons were sent coastwise from the Clyde, Port Dundas and the western ports of the Clyde estuary, while 22,865 tons were sent away by railways, and 171,360 tons were converted into malleable iron, leaving the remaining 106,497 tons for foundery and other purposes of the district. Malleable iron during the same year was manufactured to the extent of 122,400 tons. The value of the whole coal and iron business to the district in 1854 may be reckoned at about £4,872,000, of which £1,973,000 was paid in wages to 33,900 persons.

The chemical products of Glasgow are multifarious, consisting of sulphuric, muriatic, nitric, and acetic acids and their various salts; bleaching-powder, soda, soap, cudbear, bichromate of potash, sugar of lead, iodine, salts of ammonia, alum, prussiate of potash, naptha, pitch, oil, animal charcoal, bone tar, cream of tartar, etc., etc. The works of St. Rollox, situate in the north-east quarter of Glasgow, constitute perhaps the largest chemical establishment in the world. They cover about 12 acres of ground, employ above 1000 men, consuming annually about 20,000 tons of common salt, and 80,000 tons of coal, and producing of soda, bleaching-powder, sulphuric acid, and soap, etc., about 25,000 tons. The lofty chimneys of St. Rollox are among the curiosities of the city, one of them being 450 feet high, 50 feet diameter at the base, and 14 feet at the top. While commerce and manufactures had thus given the city a stimulating and onward progress, science and art had also added their mighty aid in effecting improvement. As a proof of this it may be be mentioned that in 1759 the first act for deepening the River Clyde was obtained; and that, in 1764, James Watt made in Glasgow his first model of a steam-engine.

Population.—If the foregoing tables give some idea of the advance of Glasgow as a commercial and manufacturing city, the following table of its progressive population during the present century will render this more apparent:

Years.	Males.	Females.	Total.
1801.....	....	....	83,769
1811.....	....	....	110,460
1821.....	68,119	78,594	147,043
1831.....	93,724	108,702	202,426
1841.....	133,813	147,869	280,682
1851.....	163,731	183,270	347,001

In 1855 the estimated population of Glasgow and its suburbs was about 400,000, having been nearly quintupled in 50 years!

Customs Duties collected at Glasgow, and the Number and Tonnage of the Ships belonging to the Port in the undermentioned Years.

Years ending Jan. 5.	Duties.	No. of ships.	Tonnage.
1796.....	£125	..	....
1806.....	1,826	..	....
1812.....	3,194	35	2,620
1815.....	8,800	59	4,329
1820.....	11,000	85	6,604
1825.....	41,154	111	14,084
1830.....	59,013	238	40,978
1835.....	270,667	291	54,335
1840.....	468,974	351	71,878
1845.....	551,851	472	111,620
1850.....	640,568	507	137,909
1855.....	666,818	601	192,895

Glasgow now ranks as the fourth exporting port in the empire, being in this respect surpassed only by Liverpool, London, and Hull.

Account of the declared Values of the Produce and Manufactures of the United Kingdom exported from Glasgow, Port Glasgow, and Greenock, in 1852, 1853, and 1854, respectively; showing also the Amount of Customs Duties collected at each of these Ports in the above Years.

Ports on the Clyde.	Aggregate value of exports of British and Irish produce and manufactures.		
	1852.	1853.	1854.
Glasgow.....	£3,570,875	£4,968,630	£4,905,557
Port Glasgow.	78,021	107,295	95,438
Greenock.....	418,697	437,522	554,503
Total.....	£4,062,093	£5,513,447	£5,555,498

Ports on the Clyde.	Amount of customs duties collected on imported articles.		
	1852.	1853.	1854.
Glasgow.....	£652,665	£687,974	£666,818
Port Glasgow.	82,411	104,954	90,896
Greenock.....	429,808	426,150	547,754
Total.....	£1,164,884	£1,219,078	£1,305,468

Glass (Ger. and Du. *Glas*; Fr. *Vitre*, *Verre*; It. *Vetro*; Sp. *Vidrio*; Rus. *Steklo*; Lat. *Vitrum*), a transparent, brittle, factitious body. It is formed by mixing together some sort of siliceous earth, as fine sand, or pounded flint, with an alkali, such as soda, pot-ash, or pearl-ash, and subjecting them to a strong heat. By this means they are melted into a transparent, soft, tenacious mass, that may, when hot, be formed into thin plates, bent and shaped in every possible way. When cool it becomes brittle, and is denominated glass. Litharge, minium, borax, the black oxyd of manganese, etc., are sometimes used in the manufacture of glass, according to the purposes to which it is to be applied.

The kinds of glass, and their ingredients, are stated by Dr. Ure as follows:

"There are five distinct kinds of glass at present manufactured: 1. Flint glass, or glass of lead; 2. Plate glass, or glass of pure soda; 3. Crown glass, the best window glass; 4. Broad glass, a coarse window glass; 5. Bottle, or coarse green glass.

"1. *Flint Glass*, so named because the siliceous ingredient was originally employed in the form of ground flints. It is now made of the following composition:

	Parts.
Purified Lynn sand.....	100
Litharge, or red lead.....	60
Purified Pearl-ash.....	30

"To correct the green color derived from combustible matter, or oxyd of iron, a little black oxyd of manganese is added, and sometimes nitre and arsenic. The fusion is accomplished usually in about 30 hours.

"2. *Plate Glass.*—Good carbonate of soda, procured by decomposing common salt with pearl-ash, is employed as the flux. The proportion of the materials is,

Pure sand.....	48·0
Dry subcarbonate of soda.....	25·5
Pure quicklime.....	4·0
Nitre.....	1·5
Broken plate glass.....	25·0—100·0

About 70 parts of good plate glass may be run off from these materials.

"3. *Crown, or fine Window Glass.*—This is made of sand vitrified by the impure barilla manufactured by incineration of sea-weed on the Scotch and Irish shores. The most approved composition is,

	By measure.	By weight.
Fine and purified.....	5	200
Best kelp ground.....	11	350

"4. *Broad Glass.*—This is made of a mixture of soap-boilers' waste, kelp, and sand. The first ingredient consists of lime used for rendering the alkali of the soap-boiler caustic, the insoluble matter of this kelp or barilla, and a quantity of salt and water, all in a pasty state. The proportions necessarily vary. Two of the waste, one of kelp, and one of sand, form a pretty good broad glass. They are mixed together, dried, and fritted.

"5. *Bottle Glass* is the coarsest kind. It is made of soapers' waste and river sand, in proportions which practice must determine according to the quantity of the waste; some soap-boilers extracting more saline matter, and others less, from their kelps. Common sand and lime, with a little common clay and sea salt, form a cheap mixture for bottle glass."

Historical Notices with respect to Glass.—The manufacture of glass is one of the very highest beauty and utility. It is most probable that we are indebted for this wonderful art, as we are for the gift of letters, to the Phœnicians. According to Pliny (*His. Nat.*, lib. xxxvi., c. 26), glass had been made for many ages, of sand found near the mouth of the small River Belus in Phœnicia. "The report," says he, "is, that the crew of a merchant ship laden with nitre (fossil alkali) having used some pieces of it to support the kettles placed on the fires they had made on the sand, were surprised to see pieces formed of a translucent substance, or glass. This was a sufficient hint for the manufacture. Ingenuity (*astuta et ingeniose solertia*) was immediately at work, to improve the process thus happily suggested. Hence the magnetical stone came to be added, from an idea that it contained not only iron, but glass. They also used clear pebbles, shells, and fossil sand. Indian glass is said to be formed of native crystal, and is on that account superior to every other. Phœnician glass is prepared with light dry wood, to which copper and nitre are added, the last being principally brought from Ophir. It is occasionally tinged with different colors. Sometimes it is brought to the desired shape by being blown, sometimes by being ground on a lathe, and sometimes it is embossed like silver." Sidon, he adds, is famous for this manufacture. It was there that mirrors were first invented. In Pliny's time, glass was made in Italy of fine sand on the shore between Cumæ and the Lucrine Bay. If this be a correct description of the glass of India in the age of Pliny, it has since fallen off very much; Indian glass being now about the very worst that is made. At present, the Hindoos manufacture it of fragments of broken glass, quartz, and impure soda, an article found native in many parts of India, particularly in the south. The furnaces are so bad that they can not melt our common bottle glass.—Hamilton's *Mysore*, vol. iii., p. 370. The glass of China is much better than that of India, though still very inferior to that of Europe.

The general term *glass* is employed by chemists to denote all mineral substances which, on the application of heat, pass through a state of fusion into hard and brittle masses, and which, though not always transparent, exhibit a lustrous fracture when broken. The glass of commerce, however, to which our remarks are restricted, or the transparent and artificial substance which is usually distinguished by the generic name, is produced by the igneous fusion of siliceous earth with certain alkaline earths or salts, or with metallic oxyds. The etymology of the word has been much disputed. It is derived by some from the Latin *glacies*, ice, its resemblance to which is thought to have suggested the title. Others have remarked, that the common Latin designation of this substance is *vitrum*; and as the Romans applied this term in common with the word *glastum*, to the plant which we call woad, they have deduced it from the latter of these, either because the ashes of this plant were used in the manufacture of glass, or because it exhibited something of the bluish color which is procured from woad. *Glassum*, the name given to amber by the ancient Gauls and Britons, has also been assigned as the origin of the word. But none of these etymons appear very satisfactory. The most plausible theory is that which derives the term from the Saxon verb *glis-nian*, or the the German *gleissen*, *splendere*, which are probably contractions of the Anglo-Saxon *ge-lixan*, to shine, to be bright. This view is in a great degree confirmed by the sense in which the term glass and its derivatives are employed by our older writers, who frequently apply it to shining or glittering substances, without reference to color or transparency.

In the most remote ages the art of blowing glass into bottles, making it into vases, coloring it to imitate precious stones, melting it into enormous masses to make pillars, rolling and polishing it into mirrors, and tinting it into parts, were all perfectly well known. For its origin we must look to Egypt, the parent of so many collateral arts. The story of the Israelites having set fire to a forest, and the heat becoming so intense that it made the nitre and sand melt and flow along the mountain side, and that they afterward did artificially what had been the result of accident, may be set down as equally fabulous with the story of the pirates, who are said to have landed on the sea beach, and wishing to make their cauldron boil, piled up some vitreous stones and placed on them a quantity of seaweed and blocks of wood, causing so strong a heat that the stones were softened and ran down on the sand, which, melting and mixing with the alkali, became a diaphanous and glassy mass. The fictitious character of both these stories is proved by the simple fact that it requires the most intense furnace heat to insure the combination of the sand with the nitre.

Under these circumstances we are justified in believing that glass-making had its origin at the same time with the baking of bricks and pottery. The smelting of ores, too, required a furnace sufficiently intense to fuse the silicates analogous to glass, and hence it may be safely inferred, that in the age when melting and working metal was known, the art of making glass was also practiced. In the book of Job the most precious things are compared to wisdom, but still more precious are gold and glass. The Hebrews must have become acquainted with glass while in Egypt, and in consequence of their proximity to the Phœnicians; and it is now generally believed that these two nations had the merit of originating and establishing its manufacture. The Athonian embassadors, in order to give an idea of the magnificence displayed at the court of the great king of Persia, said, that they drank in cups of glass and gold. Some writers affirm that the Egyptians in some instances sealed up their dead in a coating of glass, and glass-houses are said not to have been uncommon in that wonderful country. Some authors ascribe, with very plausible reason, the discovery of glass-making to the priests of Vulcan at Thebes and Memphis, the greatest chemists in the ancient world. The Egyptians are also known to have made enamels of divers colors which they applied on pottery, magnificent specimens of which are still extant, and are called Egyptian porcelain. These are chiefly covered with beautiful blue or green, and groups of flowers or designs are traced in black. Glass beads and other ornaments made of that substance, skillfully manufactured and beautifully colored, have been found adorning mummies, which are known to be upward of 3000 years old. It is certain that Tyre, Sidon, and Alexandria, were long celebrated for their glass, and furnished the greater proportion of that used at Rome. Under the Roman empire the Egyptians still preserved their superiority in the art of glass-making, and it is said that Aurelian caused them to pay their tribute in that manufacture. Adrian mentions that he had received drinking-glasses of various colors from a priest of a famous temple in Egypt, and gives instructions that they are not to be used but on the greatest occasions, and on the most solemn feast days. To these places the art was exclusively confined for some centuries, and was an article of luxury, being chiefly in the form of urns or drinking-cups of the most elaborate workmanship, and exquisitely embellished with raised, chased, or ornamented figures. The Barberini or Portland vase, composed of deep blue glass, with figures of a deliete white opaque substance raised in relief, is a splendid specimen, and was found in the tomb of Alexander Severus, who died A. D. 285.

The art of glass-making seems to have been introduced into Italy by the Romans after their conquests in Asia in the time of Cicero, and the first glass-works there were said to have been near the Flaminian Cir-

cus. It is highly probable that these workmen were imported from Egypt. The use of glass seems rapidly to have increased, and to have become very common, for we find an emperor in the third century of the Christian era saying, that he was disgusted with so low and vulgar an object as glass, and that he would only drink from vessels of gold. By this time the manufacture of glass was so considerable that an impost was laid on it, and it was extensively employed in the decorations of buildings, while in glass mosaics were combined the most brilliant colors.

Glass was manufactured at Rome into various articles of convenience and ornament. Pliny mentions that Nero gave 6000 sesterces (£50,000 according to the ordinary method of reckoning), for two glass cups, each having two handles! These, however, must have been of an immense size and of exquisite workmanship; for glass was then in common use for drinking vessels, and was used even in the form of bottles in which to keep wine.—*Mart., Epig.*, lib. ii., 22, 40, and lib. iv., 86.

From the circumstance of colored glass beads and amulets having been found among Druidical remains in this country, it has been argued by Pennant and others that the art of making glass was known in Britain before its invasion by the Romans. It can hardly, however, be believed that a people who had made very trifling advances in civilization, and who, it is known, were entirely unacquainted with any other art, should be found not only conversant with the manufacture of glass, a complicated and highly ingenious process, but should excel in it; for the beads and amulets spoken of are of exquisite workmanship, and beautifully colored in imitation of the rarest and most precious stones. There seems little doubt, therefore, that the ancient Britons procured these in the course of traffic with the Syrians, who visited the island as we do those in the South Seas, to drive a trade with their savage inhabitants in toys and trinkets, giving them these in exchange for skins or other natural productions. By whatever means, however, these ornaments came into Britain, it is certain that they were in extensive use, though principally for religious purposes, long prior to the Roman invasion, as they are found in barrows or tumuli of a much older date. One at Stonehenge, in particular, on being opened was found to be filled with them.

Glain Neidyr, or Druidical glass rings, generally about half as wide as our finger-rings, but much thicker, have frequently been found. The vulgar superstition regarding these was, that they were produced by snakes joining their heads together and hissing, when a kind of bubble like a ring was formed round the head of them, which the others, continuing to hiss, blew on till it came off at the tail, when it immediately hardened into a glass ring. Success was thought to attend any one who was fortunate enough to find one of those snake-stones. They were evidently beads of glass employed by the Druids, under the name of charms, to deceive the vulgar. They are usually of a green color, but some of them are blue, and others variegated with wavy streaks of blue, red, and white.

Glass utensils have been found in Herculaneum, which city was destroyed by an eruption of Mount Vesuvius in the reign of Titus (A. D. 79). A plate of glass also found there has occasioned much speculation as to its uses. Similar plates, to which Pliny gave the name of *vitrea cameræ*, seem to have been employed, in a manner not very well understood by us, as panels for their rooms. It is disputed whether or not glass was used in Herculaneum for windows.

Dion Cassius and Petronius Arbiter concur in their account of the discovery of malleable or ductile glass by a celebrated Roman architect, whose success in the restoration to its position of a portico which leaned to one side, had roused the envy and jealousy of Tiberius, and occasioned his banishment from Rome. Thinking that his discovery would disarm the emperor's wrath, the artist appeared before him bearing a glass vessel, which he dashed upon the ground. Notwithstanding the violence of the blow, it was merely dimpled, as if it had been brass. Taking a hammer from his breast, he then beat it out into its original shape; but instead of giving him the reward which he had expected, the emperor ordered the unfortunate artisan to be beheaded, remarking, that if his discovery were known, gold would soon be held of as little value as common clay. This is probably another version of the story told by Pliny, of an artificer who made the same discovery, and whose workshop was demolished by those who had an interest in preventing the introduction of an article which would lower the value of gold, silver, and brass. Although it might not be justifiable to give unqualified disbelief to these stories, yet the knowledge we at present possess would restrict the possibility of such a discovery within the narrowest limits. The union of the properties of malleability and vitrification seems to be incompatible. Some metallic substances, by the application of intense heat, are reduced to the state of glass, but at the same time lose their malleability; which fact would seem to imply that it is impossible to communicate the latter property to glass. The extraordinary stories above mentioned have, however, been rationally enough explained by modern chemists. It has been observed by Kunckel, that a composition having a glassy appearance, and sufficiently pliant to be wrought by the hammer, may be formed; and by Neumann, that, in the fusion of muriate of silver, a kind of glass is formed, which may be shaped or beaten into different figures, and may be pronounced in some degree ductile. Blancourt in his *L'Art de la Verrerie*, mentions an artist who presented a bust of ductile glass to the Cardinal Richelieu, minister of Louis XIII. But he does not seem to have been more fortunate than his predecessors; for he was doomed to imprisonment for life, for "the politic reasons," as Blancourt with much simplicity observes (we quote from the translation published in 1699), "which, it is believed, the cardinal entertained from the consideration of the consequences of that secret," which no doubt led him to fear lest the established interests of French glass manufacturers might be injured by the discovery. From expressions used by Blancourt in other parts of his work, we think, that by malleable glass, such as was produced by this artist, he understood some composition similar to those which Kunckel and Neumann discovered, and was not very exact in limiting the term to that vitreous substance which we now generally understand when we speak of glass.

The precise period at which the making of window glass came into practice is not now certainly known. The Roman windows were filled with a semi-transparent substance called *lapis specularis*, a fossil of the class of mica, which readily splits into thin smooth lamina or plates. This substance is found in masses of 10 or 12 inches in breadth, and three in thickness; and, when sliced, very much resembles horn, instead of which it is to this day often employed by lantern-makers. The Romans were chiefly supplied with this article from the island of Cyprus, where it abounds. So good a substitute for glass it is said to have been, that, besides being employed for the admission of light into the Roman houses, it was also used in the construction of hot-houses, for raising and protecting delicate plants; so that, by using it, the Emperor Tiberius had cucumbers at his table throughout the whole year. It is still much employed in Russia instead of glass for windows.

There is no positive mention of the use of glass for windows before the time of Lactantius, at the close of the third century. But the passage in that writer which records the fact (*De Opif. Dei*, cap. 8), also

shows that the *lapis specularis* still retained its place. Glass windows are distinctly mentioned by St. Jerome, as being used in his time (A. D. 422). After this period we meet with frequent mention of them. Joannes Philippinus (A. D. 630) states that glass was fastened into the windws with plaster.

The Venerable Bede asserts that glass windows were first introduced into England in the year 674, by the Abbot Benedict, who brought over artificers skilled in the art of making window glass, to glaze the church and monastery of Wearmouth. The use of window glass, however, was then, and for many centuries afterward, confined entirely to buildings appropriated to religious purposes; but in the 14th century it was so much in demand, though still confined to sacred edifices and ornamental purposes, that glazing had become a regular trade. This appears from a contract entered into by the church authorities of York Cathedral, in 1338, with a glazier, to glaze the west windows of that structure; a piece of work which he undertook to perform at the rate of sixpence per foot for white glass, and one shilling per foot for colored. Glass windows, however, did not become common in England till the close of the 12th century. Until this period they were rarely to be found in private houses, and were deemed a great luxury, and a token of great magnificence. The windows of the houses were till then filled with oiled paper, or wooden lattices. In cathedrals, these and sheets of linen supplied the place of glass till the 8th century; in meaner edifices lattices continued in use till the 18th.

The glass of the Venetians was superior to any made elsewhere, and for many years commanded the market of nearly all Europe. Their most extensive glass-works were established at Murano, a small village in the neighborhood of Venice; but the produce was always recognized by the name of Venetian glass. Baron von Lowhen, in his *Analysis of Nobility in its Origin*, states that, "so useful were the glass-makers at one period in Venice, and so great the revenue accruing to the republic from their manufacture, that, to encourage the men engaged in it to remain in Murano, the senate made them all burgesses of Venice, and allowed nobles to marry their daughters; whereas, if a nobleman married the daughter of any other tradesman, the issue were not reputed noble."

The skill of the Venetians in glass-making was especially remarkable in the excellence of their mirrors. Beckman, who has minutely investigated the subject, is of opinion that the manufacture of glass mirrors certainly was attempted, but not with complete success, in Sidon, at a very early period; but that they fell into disuse, and were almost forgotten until the 13th century. Previously to this period, plates of polished metal were used at the toilette; and in the rudeness of the first ideas which suggested the substitution of glass, the plates were made of a deep black color to imitate them. Black foil even, was laid behind them to increase their opacity. The metal mirrors, however, remained in use long after the introduction of their fragile rivals, but at length they wholly disappeared; a result effected chiefly by the skill of the Venetians, who improved their manufacture to such a degree that they speedily acquired a celebrity which secured an immense sale for them throughout all Europe.

Italy.—From Italy the art of glass-making found its way into France, where an attempt was made, in the year 1634, to rival the Venetians in the manufacture of mirrors. The first essay was unsuccessful; but another, made in 1665, under the patronage of the celebrated Colbert, in which French workmen who had acquired a knowledge of the art at Murano were employed, had better fortune. Ten years afterward, this establishment, which was situated at the village of Tourlaville, near Cherbourg, in Normandy, was also threatened with ruin by a discovery or rather improvement in the art of glass-making, effected by one Abraham Thevart. This improvement consisted in casting glass of much larger dimensions than it had hitherto been deemed possible to do. Thevart's first plates were cast at Paris, and astonished every artist by their magnitude. They were 84 inches long and 50 inches wide, whereas none previously made exceeded 45 or 50 inches in length. Thevart was bound by his patent to make all his plates at least 60 inches in length and 40 in breadth. In 1695 the two companies, Thevart's and that at Tourlaville, united their interest, but were so unsuccessful, that, in 1701, they were unable to pay their debts, and were, in consequence, compelled to discharge most of their workmen, and abandon several of their furnaces. Next year, however, a company was formed under the management of Antoine d'Agincourt, who re-engaged the discharged workmen; and the works realized considerable profits to the proprietors, a circumstance which is attributed wholly to the prudent management of D'Agincourt.

France.—Early in the 14th century, the French government made a concession in favor of glass-making, by decreeing that not only should no derogation from nobility follow the practice of the art, but that none save gentlemen, or the sons of noblemen should venture to engage in any of its branches, even as working artisans. This limitation was accompanied by a grant of a royal charter of incorporation, conveying important privileges, under which the occupation became eventually a source of great wealth to several families of distinction.

England.—It has been said that the manufacture of window glass was first introduced into England in the year 1557. But a contract, quoted by Horace Walpole in his *Anecdotes of Painting*, proves that this article was made in England upward of a century before that period. This curious document is dated in 1439, and bears to be a contract between the Countess of Warwick and John Prudde of Westminster, glazier, whom she employed with other tradesmen, to erect and embellish a magnificent tomb for the earl, her husband. John Prudde is thereby bound to use "no glass of England, but glass from beyond seas;" a stipulation which, besides showing that the art of making window glass was known and practiced in England in the 15th century, seems also to indicate that it was inferior to what could be obtained from abroad. The finer sort of window glass was made at Crutched Friars, London, in 1557. In the year 1635, Sir Robert Maxwell introduced the use of coal fuel instead of wood, and procured workmen from Venice; but many years elapsed before the English manufactories equaled the Venetian and French in the quality of these articles. The first flint glass made in England was manufactured at the Savoy House, in the Strand; and the first plate glass, for looking-glasses, coach-windows, and similar purposes, was made at Lambeth by Venetian workmen, brought over in 1670 by the Duke of Buckingham. From that period the English glass manufactories, aided by the liberal bounties granted them in cash upon glass sold for export, became powerful and successful rivals of the Venetian and French manufactories. The bounty on glass exported, which the government paid to the manufacturer, was not derived from any tax by impost, or excise, previously laid; for all such were returned to the manufacturer together with the bounty, thereby lessening the actual cost of the article from 25 to 50 per cent., and enabling the English exporter to compete successfully in foreign markets. This bounty provision was annulled during the premiership of Sir Robert Peel, together with all the excise duty on home consumption.

Scotland.—The art of glass-making was introduced into Scotland in the reign of James VI. An exclusive right to manufacture it within the kingdom for the space of 31 years, was granted by that monarch to

Lord George Hay, in the year 1610. This right his lordship transferred in 1627, for a considerable sum, to Thomas Robinson, merchant-tailor in London, who again disposed of it for £250, to Sir Robert Mansell, vice-admiral of England. The first manufactory of glass in Scotland, an extremely rude one, was established at Wemyss in Fife. Regular works were afterwards commenced at Prestonpans, Leith, and Dumbarton. Crown glass is now manufactured at Warrington, St. Helens, Eccleston, Old Swan, and Newtown, Lancashire; at Birmingham, Hunslet near Leeds, and Bristol. It is also manufactured of excellent quality on the Tyne and Wear. Great improvements have recently been made in the manufacture of crown glass; and we believe this article, as made in England, is superior in quality to that of any other nation.—E. B.

Colored Glass.—It has already been stated that the Romans combined the most brilliant colors in their mosaics; and there can be little doubt that these mosaics gave the first idea of painted or stained glass for windows in the early Christian churches. In all the early specimens of Norman glass, similar coloring and design are to be traced. Starting from the fourth century, there is frequent mention of colored glass windows by Greek and Latin authors. St. John Chrysostom and St. Jerome talk of "windows of divers colors;" and Lactantius says, "that the soul perceives objects through our bodily eyes as through windows garnished with transparent glass." The early basilicas were all adorned with colored glass, and the early Christian poets sung in ecstacies of the effect produced by the windows at sunrise. In the sixth century, Prudentia, speaking of one of these structures, says:—"The magnificence of this temple is truly regal. The pious prince who consecrated it has caused the vaults to be painted at great expense, and has clothed it with golden walls, so that the light of day may repeat the fire of the morning. In the windows is placed glass of various colors, which shine like meadows decked in the flowers of spring." An inscription on Sta. Agnese states, that that basilica, rebuilt by the Emperor Honorius, was decorated with glass, which produced the most magnificent effect. In the sixth century, Santa Sophia, at Constantinople, also received painted windows, which Paul the Silent praises highly, Procopius says, that day seemed to be born under the vaults of the temple; and after such glowing descriptions it can not be doubted that the glass was stained, not colorless. The use of colored glass, however, was not confined to Greece and Italy. It rapidly appeared in Gaul. Gregory of Tours, in the sixth century, also tells us that the church of St. Julien de Brioude, in that town, had colored glass windows; and the Bishop of Poictiers, describing Notre Dame of Paris, admired the effect produced by the light falling upon the vaults and walls after passing through the painted glass, and compares it to the first tints of the morning sun. There are many good reasons for supposing that the art of coloring glass is coeval with the art of glass-making itself. It is certain that the art was known in Egypt at least 3000 years ago. We have already mentioned the beautiful imitations of precious stones, found adorning mummies which are known to have existed for that time. We meet with frequent mention of specimens of eastern workmanship of consummate beauty, upon which great value was placed. The works of Caylus and Winkelmann furnish some striking instances of ancient skill in the formation of pictures by means of delicate glass fibres of various hues, which, after being fitted together with the utmost nicety, were conglutinated by fusion into a solid mass. The art of combining the various colors so as to produce pictures, such as is now practiced, is comparatively of recent date. The earliest specimens of this kind of work discover a fictitious joining of different pieces of glass, differently tinged, and arranged so as, by a species of mosaic work, to produce the figure or figures wanted. The various pieces are held together generally by a vein of lead, run upon the back of the picture, precisely at their junction. See article GLASS, *En. Brit.*; URE's *Dict.*

Painted Glass.—In England, St. Wilfred, who lived early in the 8th century, is said to have been the first to introduce painted glass windows, and for that purpose had workmen brought from France or Italy. The first painted glass executed in England was in the time of King John; previously to this, all stained or painted glass was imported from Italy. The next notice of it occurs in the reign of Henry III. The treasurer of that monarch orders that there be painted on three glass windows in the chapel of St. John, a little Virgin Mary holding the child, and the Trinity, and St. John the Apostle. Some time after, he issues another mandate for two painted windows in the hall. Even at this early period, however, England boasted of eminent native artists in glass painting, among the first of whom was John Thornton, glazier, of Coventry. This person was employed in the time of Henry IV., by the dean and chapter of York cathedral, to paint the eastern window of that splendid edifice; and for the beautiful and masterly workmanship which he exhibited in this specimen of his skill, he received four shillings per week of regular wages. He was bound to finish the work in less than three years, and to receive, over and above the weekly allowance, 100s. for each year; and if the work was done to the satisfaction of his employers, he was to receive, on its completion, a further sum of £10. From this period downward there have been many skillful native artists, although the Reformation greatly impeded the progress of the art, by banishing the ungodly ostentation of ornamented windows from churches; indeed, so serious was this interruption, that the art had nearly altogether disappeared in the time of Elizabeth. Among the most eminent glass painters who first appeared upon the revival of the art, were Isaac Oliver, born in 1616, and William Price, who lived about the close of the seventeenth century. This artist was succeeded by a person at Birmingham, who, in 1757, fitted up a window for Lord Lyttleton, in the church of Hagley. To him succeeded one Pecket of York, who attained considerable notoriety, but who was entirely ignorant of the true principles of the art.

During all this time, however, and indeed until a comparatively recent date, painted glass was regarded as too costly and too magnificent an article to be otherwise employed than in decorating religious edifices or the palaces of nobles; and even in the latter case it was but sparingly used. Modern improvement has placed this beautiful ornament within the reach of very ordinary circumstances; and the art of staining glass is now practiced with great success, and is extensively used in decorating our domestic as well as our palatial and ecclesiastical architecture. The colors of modern artists, we venture to allege, notwithstanding what is often urged to the contrary, equal in variety and richness those of the ancients, and, with the superior knowledge which we now possess of the principles of drawing, and of bringing several colors together on a single sheet, encouragement alone is wanting to attract artists of talent and inventive genius to the pursuit of the art, and to carry it to a greater height of excellence than it has ever reached in the hands of their predecessors.

United States.—The manufacture of glass was introduced into the American States in 1700 by Robert Hewes, a citizen of Boston, who erected a factory in the then forest of New Hampshire. The chief aim of Mr. Hewes was to supply window glass, but he did not succeed. Another attempt was made in 1800, when a factory was built in Boston for making crown window glass; but this was also unsuccessful, till a German named Lint, in 1803, took charge of the works, and

the State of Massachusetts agreed to pay the proprietors a bounty on every table of window glass they made; after which the manufacture was carried on successfully, the glass steadily improving in quality, and becoming famed through all the States as Boston window glass. The same Company, in the year 1822, erected new and more extensive works at Boston. The mystery attached to the art of glass-making, followed it into America. The glass-blower was considered a magician, and myriads visited the newly-erected works, looking on the man who could transmute earthy and opaque matter into a transparent and brilliant substance, as an alchemist who could transmute base metal into gold.

Since the manufacture of flint glass was introduced into the eastern States, there have been above 40 companies formed from time to time, nearly 30 of which have proved failures. There are now 10 in operation, two of which are at East Cambridge, three at South Boston, one at Sandwich, three near New York city, and one at Philadelphia. 48,000 tons of coal, 6500 tons of silex, 2500 tons ash, nitre, etc., and 3800 tons of lead are annually consumed in the manufacture of flint glass. In the vicinity of Pittsburg, in the western States, are nine manufactories of flint glass and 10 of window glass, and in the river towns are 15 window glass factories. The following statement of the imports of glass is from official sources.

IMPORTATIONS OF GLASS AND MANUFACTURES OF GLASS INTO THE UNITED STATES FOR THE FISCAL YEAR ENDING 30TH JUNE, 1856.

Whence imported.	Silvered.	Paintings on glass, porcelain, and colored.	Polished plate.	Manufactures of, not specified.	Glass ware. Cut.	Glass ware. Plain.	Watch crystals.		Bottles.		Demijohns.		Window glass. Broad, crown, and cylinder.	
	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Gross.	Dollars.	Gross.	Dollars.	No.	Dollars.	Sq. feet.	Dollars.
Danish W. Indies	....	....	....	56	....	....	....	....	....	....	....	....	....	....
Hamburg	28,667	15,130	8	8,293	17,917	12,017	....	....	123	588	6,791	1,547	189,284	4,129
Bremen	260,940	8,590	40,515	30,110	9,347	9,007	225	720	4,237	11,294	45,910	10,882	61,819	2,350
Holland	....	200	....	333	178	773	....	....	303	1,692	....	....	....	....
Belgium	25,907	468	87,971	1,044	38,437	22,799	....	....	19	125	....	....	18,207,500	406,361
England	8,887	28,067	130,316	33,746	4,181	11,496	15,042	26,939	1,831	6,778	....	....	1,403,852	55,679
Scotland	....	....	....	821	68	40	....	....	551	2,442	....	....	....	....
Canada	....	....	....	499	60	....	....	....	15	120	1	1	....	....
British N. A. Poss	....	....	....	77	....	....	....	....	....	....	10	8	....	....
British W. Indies	15	....	....	....	....	....	....	....	7	24	....	....	....	....
British Honduras	....	....	....	....	....	....	....	....	7	20	....	....	....	....
France on Atlantic	16,292	1,193	214,963	29,183	16,785	18,789	127	2,350	11,682	69,393	32,927	6,881	643,126	20,074
France on Medit.	....	....	....	25	....	....	....	....	518	1,976	....	....	....	....
Philippine Isls.	....	....	....	56	....	....	....	....	....	....	....	....	....	....
Cuba	....	....	....	....	15	....	....	....	....	....	....	....	12,533	501
Porto Rico	....	....	....	132	....	....	....	....	....	....	....	....	....	....
Portugal	....	....	....	....	....	....	....	....	60	426	....	....	....	....
Tuscany	....	....	....	....	40	5	....	....	42	403	....	....	310	10
Austria	....	....	....	4,296	....	....	....	....	....	....	....	....	....	....
Turkey in Asia	....	....	....	135	....	....	....	....	....	....	....	....	....	....
Hayti	8	....	....	....	....	....	....	....	....	....	....	....	....	....
Mexico	....	....	....	....	....	....	....	....	3	15	....	....	....	....
New Granada	....	....	....	78	....	100	10	7	....	....	....	....	....	....
Venezuela	....	....	....	....	....	....	....	....	2	7	....	....	....	....
Chili	....	....	....	....	....	....	....	....	....	....	1,550	645	....	....
Ecuador	....	....	....	12	....	....	....	....	....	....	....	....	....	....
China	54	....	....	15	....	....	....	....	....	....	....	....	....	....
Total	330,720	43,578	473,203	108,416	80,978	74,976	16,104	30,036	18,902	95,292	87,189	19,414	15,467,901	488,437

Gloves (Ger. *Handschuhe*; Fr. *Gantz*; It. *Guanti*; Sp. *Guantes*; Rus. *Rukawizii*, *Pertschatki*, *Golizii*), well known articles of dress used for covering the hands, usually made of leather, but frequently also of cotton, wool, silk, etc. The leather used in the manufacture of gloves is not, properly speaking, tanned, but prepared by a peculiar process that renders it soft and pliable. Some sorts of leather gloves admit of being washed, and others not. It is, however, impossible to obtain any trustworthy accounts of the numbers produced. Gloves are sometimes sewed by machinery; but this is done only to improve the work by rendering the stitches more correctly equidistant, as it is not cheaper than manual labor. Limerick used to be famous for the manufacture of a sort of ladies' gloves, called chicken gloves. Large quantities of cotton gloves are made at Nottingham and Leicester.

The use of gloves is of high antiquity. There is reason to believe the ancient Persians wore them, since it is mentioned in the *Cyropædia* of Xenophon that on one occasion Cyrus went without his gloves; and we know they were used by the Greeks and Romans in certain kinds of manual labor. During the middle ages, gloves were worn by ecclesiastical dignitaries and others as a mark of distinction; but as civilization advanced they gradually became common to all classes of the community. The glove manufacture has long been an important branch of industry. The materials employed are very various, including the skin of the chamois, kid, lamb, beaver, doe, elk, and other animals, besides cotton, wool, silk, linen thread, etc. Glove-leather is prepared by curing the skins with alum, which renders them soft and pliable. The kid gloves of France continue to maintain their superiority over the kid gloves of British make, and are very largely imported into this country. This also holds true of the ordinary French leather, the durability of which, combined with superiority of style and fitting, has occasioned the French boots and shoes to be preferred to those of British manufacture. Machinery is sometimes employed in sewing and pointing leather gloves, though only on a very limited scale in this country, almost the whole being made by the hand, and for the most part by females; but in Paris it is much used, and is said to have had the effect of reducing the price of gloves 30 per cent. below their former wholesale prices.

Glue, inspissated animal jelly, much used as a cement, especially for wood. It is made from various animal substances, according to the uses for which it is designed. Common glue is prepared from the parings of hides, hoofs, and other offal, which are first digested in limewater to free them from grease and all extraneous matter, then washed in water, and afterward boiled. The viscid solution thus obtained is first strained through a wicker basket, and then gently evaporated to a proper consistence. The heat is generally so regulated as to keep the liquid near the boiling point, without entering into ebullition. The liquid glue is poured into flat molds; and when it has become firm, it is cut up into square pieces, and placed on a coarse net to dry. Glue improves by age, and that is considered as the best which, if steeped in cold water for 3 or 4 days, swells without melting, and resumes its former dimensions after being dried. The clear pale brown glue is the best, though the darker and less pure is often ignorantly preferred. A trans-

parent and beautiful glue is made of the shreds and parings of vellum, fine white leather, or of isinglass. See also GELATINE.

A preparation of glue, convenient on account of the facility with which it is rendered fit for immediate use, is made by adding a small portion of any good spirit, or of wood naphtha, to melted glue. It is to be kept in a well-corked bottle, and when required for use may readily be liquefied by placing the bottle in hot water. It answers all the purposes of ordinary glue.

Indian Glue, as it is called, consists of common glue melted with a little sugar, and molded for convenience into small flat cakes. When used, the edge of the cake is moistened, and rubbed upon the surfaces to be united. It is a slight cement, used only for such purposes as mending prints, etc.

Jeffery's Marine Glue.—This powerful cement has been successfully used as a substitute for pitch in the seams of decks, as well as for strengthening large timbers for naval purposes. It is said to consist of caoutchouc dissolved in coal naphtha, to which shellac (previously dissolved in wood naphtha?) in proper proportions is afterward added. The joinings of built masts secured with this cement are said to have resisted separation by the wedge after ten years' service.

Liquid Glue.—Under this name is frequently sold a cement consisting of shellac dissolved in wood naphtha.—E. B.

Gluten, a viscid, elastic, grayish-colored substance which exists in greater or less quantity in most plants that afford farina, as well as in the leaves of many esculent vegetables (such as the cabbage for instance), but more particularly in wheat, which of all the cerealia appears to contain, in proportion to its bulk, the greatest amount of nutriment, a property derived from its abounding in this substance. Gluten may be readily obtained from wheaten flour by making it into a paste, and then working the mass with the hands below a stream of water, when the starch and other soluble matter are carried away, and the gluten remains in a pure state. In its properties, gluten bears a strong resemblance to animal substances; and, indeed, it is found by chemical analysis to contain a large portion of nitrogen. Hence it may be considered as the most animalized of vegetable products.

Glycerin. Oils and fats, whether of animal or vegetable origin, are compounds of certain acids, such as the stearic, margaric, and oleic, with a base named glycerin. (See OIL.) Fatty substances may, in fact, be represented as salts of glycerin, and as such are capable of being resolved into their proximate elements like other salts. Thus, in the process of soap-making, a fat or an oil is saponified by means of potash or soda; that is, the caustic alkali unites with the stearic, margaric, or oleic acid, and glycerin is set free. If for example, the stearate of glycerin be treated with caustic soda, the stearic acid unites with the soda, and forms stearate of soda, while the glycerin is liberated. A fatty body may also be decomposed by means of oxyd of lead, as in the process for making diachylon plaster (*Emplastrum plumbi*). By boiling a mixture of finely pulverized or newly precipitated oxyd of lead in water with any ordinary fat or oil, the lead unites with the fatty acids, and forms a solid compound, while the glycerin dissolves in the water. The solution contains a considerable portion of lead, which may be separated by passing sulphuretted hydrogen through it, and filtering; the solution is then evaporated to the consistence of syrup, and the evaporation is completed *in vacuo*, in the presence of sulphuric acid, until it ceases to lose weight.

The uncrystallizable inodorous syrup thus obtained has a sweet taste, and was hence termed by Scheele, who discovered it in 1789, the *sweet principle of oils*, or *glycerin*, from γλυκυς, sweet; but it was not until Chevreul undertook the investigation of fatty substances in general that the true chemical relations of this body were understood.—E. B.

Gobelin Tapestry. Tapestry, so called from a noted house in Paris, in the suburb of St. Marcel; formerly possessed by famous wool-dyers, whereof the chief, called Giles Gobelin, who lived in the reign of Francis I., is said to have found the secret of dyeing scarlet, which was from him called the scarlet of the Gobelins; the house and river that runs by it also took the same name. This house was purchased by Louis XIV., for a manufactory of all manner of curious works for adorning the royal palaces, under the direction of Monsieur Colbert, especially tapestry; designs for which were drawn by the celebrated Le Brun, by appointment of the king, A. D. 1666.—*Du Fresnoy.*

Gold (Ger. *Gold*; Du. *Goud*; Da. and Sw. *Guld*; Fr. *Or*; It. and Sp. *Oro*; Port. *Oiro, Ouro*; Rus. *Soloto*; Pol. *Zloto*; Lat. *Aurum*; Arab. *Tibr* and *Zeheb*; Sans. *Swarna*; Malay *Más*), the most precious of all the metals, seems to have been known from the earliest antiquity. It is of an orange red, or reddish yellow color, and has no perceptible taste or smell. Its lustre is considerable, yielding only to that of platinum, steel, silver, and mercury. It is rather softer than silver. Its specific gravity is 19·3. No other substance is equal to it in ductility and malleability. It may be beaten out into leaves so thin that one grain of gold will cover 56½ square inches. These leaves are only 1-282000 of an inch thick. But the gold leaf with which silver wire is covered has only 1-12th of that thickness. An ounce of gold upon silver is capable of being extended more than 1300 miles in length. Its tenacity is considerable, though in this respect it yields to iron, copper, platinum, and silver. From the experiments of Seckingen, it appears that a gold wire 0·078 inch in diameter is capable of supporting a weight of 150·07 lbs. avoirdupois without breaking. It melts at 32° of Wedgwood's pyrometer. When melted, it assumes a bright bluish green color. It expands in the act of fusion, and consequently contracts while becoming solid more than most metals; a circumstance which renders it less proper for casting in molds.—THOMSON'S *Chemistry.*

Gold is, next to iron, the most widely-diffused metal on the face of the earth. It occurs in granite, the oldest rock known to us, and in all the rocks derived from it; it is also found in the vein-stones which traverse other geological formations. From other metals it is readily distinguished by its reddish-yellow color, and from metallic compounds of a similar tint by its high specific gravity, which varies from 19·2 when it is fused, to 19·4 or 19.5 when it is hammered. Its chemical equivalent on the hydrogen scale is generally taken as 98·5, but some prefer to double this and make its atomic weight 197. Its symbol is *Au*, from the Latin *Aurum*. Unlike the great majority of the metals, it does not rust, *i. e.*, oxydize in the air, neither does it, if pure, tarnish by exposure. In this respect, it contrasts strikingly with silver, which, though indifferent to the rusting action of oxygen, is rapidly blackened by the sulphuretted hydrogen of the atmosphere. Exposed gilding tarnishes, but only because it is alloyed with silver and copper, on which this prejudicial gas can act.

Gold is readily crystallizable, and always assumes one or other of the symmetrical shapes, such as the cube, or regular octahedron, which characterizes the simplest crystallographic system. It is softer than silver, and nearly as soft as lead, so that in tenacity it is inferior to copper, silver, iron, and platinum, and a wire 1-10th of an inch in diameter will support, without breaking, only 191 lbs. On the other hand, it is the most ductile and malleable of the metals. One grain can be hammered into leaves sufficient to cover 56½ square inches, and the thickness of the gold-leaf

will not then exceed 1-282000 of an inch. When of this temper it is transparent, and transmits a faint but beautiful bluish-green light. Gold melts at a high white heat, and remains unchanged in the hottest furnaces. In the focus of a lens, however, it is vaporized by the sun's rays; and the oxyhydrogen blow-pipe or a large voltaic battery can also develop heat sufficient to volatillze it. It contracts in the act of solidifying from a state of fusion, and can not, in consequence, be made to receive sharp impressions by casting it in molds. Coins, accordingly, and plate are stamped or embossed, and afterward ebased and carved, if necessary, by cutting tools.

Gold does not dissolve in any of the ordinary acids, such as the nitric, sulphuric, hydrochloric, or acetic, but a rare acid, the selenic, can dissolve it. Its best solvent is a mixture of hydrochloric acid, with some oxydizing agent like nitric acid or oxyd of manganese, which causes the hydrochloric acid to part with its chlorine. If the gold be in leaf, chlorine at once unites with it, and the resulting chlorid is readily soluble in water. Bromine acts in the same way on the metal; and it may also be dissolved by boiling it with sulphur, potash, and water. The older chemists speculated on the possibility of Moses having dissolved the golden calf of the Israelites in this way. Gold is also soluble in mercury, and advantage is largely taken of this property of quicksilver to dissolve the precious metal from its ores. The gold-amalgam resulting from the union of the metals is also extensively employed in gilding. The most important chemical compounds of gold are the following, in referring to which the equivalent of gold is taken as 98·5.

The chlorids are two in number. The sesquichlorid, Au_2Cl_3, is prepared in the mode above mentioned. It forms orange-red crystals, but in aqueous solution appears yellow. It is very easily decomposed by heat, light, organic substances, and all deoxydizing or reducing agents. A solution of this salt in sulphuric ether is sometimes used for gilding steel. The aqueous solution is employed in photography, and from it nearly all the other useful preparations of gold are made. When this salt is heated cautiously to about 392° Fahr., it loses two thirds of its chlorine, and becomes the sub-chlorid Au_2Cl.

The oxyds correspond to the chlorids, and are obtained from them. The only important one is the sesquioxyd Au_2O_3, prepared by precipitating the corresponding chlorid by magnesia, and washing the precipitate with nitric acid and water. This oxyd is of a yellow or brown color, and by solution in potash, in cyanide of potassium, or sulphite of soda, forms a liquid which is used in gilding. A solution of the oxyd in hyposulphite of soda is employed to protect and make more visible daguerreotype portraits on silver. The sulphurets of gold are not important.

Gold is readily identified by chemical tests. When its color and specific gravity can not be appealed to as means of identification, its behavior with the stronger liquor re-agents is had recourse to. It resists the solvent action of the most powerful acids or alkalies taken singly, but at once dissolves in *aqua regia* (a mixture of nitric and hydrochloric acids), or in any similar liquid containing free chlorine. The resulting solution is tested—1. By adding to it a solution of protosulphate of iron. This causes the gold to separate in the condition of a very fine powder, which remains for hours suspended in the liquid, although it is more than nineteen times heavier than water. The finely-divided metal appears brown by reflected, and bluish-green by transmitted light, and if dried and rubbed by any smooth solid, acquires the characteristic color and lustre of the metal in mass. 2. By neutralizing the solution with carbonate of potass or soda, and boiling with excess of oxalic acid, when the gold separates in highly characteristic splendent flakes. 3. By adding to the solution diluted, a few drops of solution of protochlorid of tin, when a rich purple precipitate falls. Very minute traces of gold may be discovered in this way. The precipitate, which has gone for centuries by the name of Purple of Cassius, appears to be a compound of oxyd of gold and oxyd of tin (Au_2O_3 Sn_2O_4). It is used to stain glass ruby-red, and to give to porcelain and enamel a rose-pink, crimson, and purple color.

Gold is found only in the metallic state, sometimes crystallized in the cube, and its derivative forms. It occurs also in threads of various sizes, twisted and interlaced into a chain of minute octahedral crystals; as also in spangles or roundish grains, which, when of a certain magnitude, are called *pepitas*. The small grains are not fragments broken from a greater mass; but they show, by their flattened ovoid shape and their rounded outlines, that this is their original state. The specific gravity of native gold varies from 13·3 to 17·7. Humboldt states that the largest *pepita* known was one found in Peru weighing about 12 kilogrammes (26½ lbs. avoirdupois); but masses have been quoted in the province of Quito which weighed nearly four times as much. Another ore of gold is the alloy with silver, or argental gold, the electrum of Pliny, so called from its amber shade. It seems to be a definite compound, containing in 100 parts, 64 of gold and 36 of silver. The mineral formations in which this metal occurs are the crystalline primitive rocks, the compact transition rocks, the trachytic and trap rocks, and alluvial grounds. It never predominates to such a degree as to constitute veins by itself. It is either disseminated, and as it were impasted in stony masses, or spread out in thin plates, or grains on the surface; or, lastly, planted in their cavities, under the shape of filaments or crystallized twigs. The minerals composing the veins are either quartz, calc. spar, or sulphate of baryta. The ores that accompany the gold in these veins are chiefly iron pyrites, copper pyrites, galena, blende, and mispickel (arsenical pyrites).

In the ores called auriferous pyrites, this metal occurs either in a visible or invisible form; and though invisible in the fresh pyrites, becomes visible by its decomposition; as the hydrated oxyd of iron allows the native gold particles to shine forth on their reddish-brown ground, even when the precious metal may constitute only the five millionth part of its weight, as at Rammelsberg, in the Hartz. In that state it has been extracted with profit; most frequently by amalgamation with mercury, proving that the gold was in the native state, and not in that of a sulphuret.

Gold exists among the primitive strata, disseminated in small grains, spangles, and crystals. Brazil affords a remarkable example of this species of gold mine. Beds of granular quartz, or micaceous specular iron, in the Sierra of Coches, 12 leagues beyond Villa Rica, which form a portion of a mica-slate district, include a great quantity of native gold in spangles, which in this ferruginous rock replace mica. Gold has never been observed in any secondary formation, but pretty abundantly in its true and primary locality among the trap-rocks of igneous origin; implanted on the sides of the fissures, or disseminated in the veins.

The auriferous ores of Hungary and Transylvania, composed of tellurium, silver pyrites, or sulphuret of silver, and native gold, lie in masses or powerful veins in a rock of trachyte, or in a decomposed feldspar subordinate to it. Such is the locality of the gold ore of Königsberg, of Telkobanya, between Eperies and Tokay, in Hungary, and probably that of the gold ores of Kapnick, Felsobanya, etc., in Transylvania; an arrangement nearly the same with what occurs in equatorial America. The auriferous veins of Guanaxuato, of Real del Monte, and of Villalpando, are similar to those of Schemnitz, in Hungary, as to magnitude, relative position, the nature of the ores they include, and of the rocks they traverse. These districts have impressed all mineralogists with the evidence of the

action of volcanic fire. Breislak and Hacquet have described the gold mines of Transylvania as situated in the crater of an ancient volcano. It is certain that the trachytes, which form the principal portions of the rocks including gold, are now almost universally regarded as of igneous or volcanic origin. It would seem, however, that the primary source of the gold is not in these rocks, but rather in the sienites and greenstone porphyries below them, which in Hungary and Transylvania are rich in great auriferous deposits; for gold has never been found in the trachyte of the Euganean Mountains, of the mountains of the Vicentin, of those of Auvergne; all of which are superposed upon granite rocks, barren in metal.

Finally; if it be true that the ancients worked mines of gold in the island of Ischia, it would be another example, and a very remarkable one, of the presence of this metal in trachytes of an origin evidently volcanic.

Gold is, however, much more common in the alluvial grounds than among the primitive and pyrogenous rocks just described. It is found disseminated under the form of spangles, in the silicious, argillaceous, and ferruginous sands of certain plains and rivers, especially in their re-entering angles, at the season of low water, and after storms and temporary floods. It has been supposed that the gold found in the beds of rivers had been torn out by the waters from the veins and primitives rocks, which they traverse. Some have even searched, but in vain, at the source of auriferous streams, for the native bed of this precious metal. The gold in them belongs, however, to the grounds washed by the waters as they glide along. This opinion, suggested at first by Delius, and supported by Deborn, Guettard, Robitant, Balbo, etc., is founded upon just observations. 1. The soil of these plains contains frequently, at a certain depth, and in several spots, spangles of gold separable by washing. 2. The beds of the auriferous rivers and streamlets contain more gold after storms of rain upon the plains than in any other circumstances. 3. It happens almost always that gold is found among the sands of rivers only in a very circumscribed space; on ascending these rivers, their sands cease to afford gold; though, did this metal come from the rocks above, it should be found more abundantly near the source of the rivers. Thus it is known that the Orco contains no gold, except from the Pont to its junction with the Po. The Ticino affords gold only below the Lago Maggiore, and, consequently, far from the primitive mountains, after traversing a lake, where its course is slackened, and into which whatsoever it carried down from these mountains must have been deposited. The Rhine gives more gold near Strasburg than near Basle, though the latter be much closer to the mountains. The sands of the Danube do not contain a grain of gold, while this river runs in a mountainous region; that is, from the frontiers of the bishopric of Passau to Efferding; but its sands become auriferous in the plains below. The same thing is true of the Ems; the sands of the upper portion of this river, as it flows among the mountains of Styria, include no gold; but from its entrance into the plain at Steyer till its embouchure in the Danube its sands become auriferous, and are even rich enough to be washed with profit.

The greater part of the auriferous sands in Europe, Asia, Africa, and America, are black or red, and consequently ferruginous; a remarkable circumstance in the geological position of alluvial gold. M. Napoine supposes that the gold of these ferruginous grounds is due to the decomposition of auriferous pyrites. The auriferous sand occurring in Hungary almost always in the neighborhood of the beds of *lignites*, and the petrified wood, covered with gold grains, found buried at a depth of 55 yards in clay, in the mine of Vorospatak, near Abrabanya, in Transylvania, might lead us to presume that the epoch of the formation of the auriferous alluvia is not remote from that of the lignites. The same association of gold ore and fossil wood occurs in South America, at Moco. Near the village of Lloro have been discovered, at the depth of 20 feet, large trunks of petrified trees, surrounded with fragments of trap-rocks, interspersed with spangles of gold and platinum. But the alluvial soil affords likewise all the characters of the basaltic rocks; thus, in France, the Côze and the Gardon, auriferous rivers, where they afford most gold, flow over ground apparently derived from the destruction of the trap rocks, which occur *in situ* higher up the country. This fact had struck Reaumur; and this celebrated observer had remarked that the sand which more immediately accompanies the gold spangles in most rivers, and particularly in the Rhone and the Rhine, is composed, like that of Ceylon and Expailly, of black protoxyd of iron and small grains of rubies, corindon, hyacinth, etc. Titanium has been observed more recently. It has, lastly, been remarked that the gold of alluvial formations is purer than that extracted from rocks.

Principal Gold Mines.—Spain anciently possessed mines of gold in regular veins, especially in the province of Asturias; but the richness of the American mines had made them to be neglected. The Tagus, and some other streams of that country, were said to roll over golden sands. France contains no workable gold mines; but it presents in several of its rivers auriferous sands. There are some gold mines in Piedmont; particularly the veins of auriferous pyrites of Macugnagna, at the foot of Monte Rosa, lying in a mountain of gneiss; and although they do not contain 10 or 11 grains of gold in a cwt., they have long defrayed the expense of working them. On the southern slope of the Pennine Alps, from the Simplon and Monte Rosa to the Valley of Aoste, several auriferous districts and rivers occur. Such are the torrent Evenson, which has afforded much gold by washing; the Orco, in its passage from the Pont to the Po; the reddish grounds over which this little river runs for several miles, and the hills in the neighborhood of Chivasso, contain gold spangles in considerable quantity.

Ireland.—In the county of Wicklow, in Ireland, a quartzose and ferruginous sand was discovered not long ago, containing many particles of gold, with *pepitas* or solid pieces, one of which weighed 22 ounces. No less than 1000 ounces of gold were collected.

Switzerland.—There are auriferous sands in some rivers of Switzerland, as the Reuss and the Aar. In Germany no mine of gold is worked, except in the territory of Salzburg, amid the chain of mountains which separates the Tyrol and Carinthia.

Hungary.—The mines of Hungary and Transylvania are the only gold mines of any importance in Europe; they are remarkable for their position, the peculiar metals that accompany them, and the product, estimated at about 1,430 pounds avoirdupois annually. The principal ones are in Hungary. 1. Those of Königsberg. The native gold is disseminated in ores of sulphuret of silver, which occur in small masses and in veins in a decomposing feldspar rock, amid conglomerate of pumice, constituting a portion of the trachytic formation. 2. Those of Borson, Schmeitz. And, 3. Of Felsobany; ores also of auriferous sulphuret of silver, occur in veins of sienite and greenstone porphyry. 4. Those of Telkebanya, to the south of Kaschau, are in a deposit of auriferous pyrites amid trap rocks of the most recent formation. In Transylvania the gold mines occur in veins often of great magnitude, six, eight, and sometimes forty yards thick. These veins have no side plates or wall stones, but abut without intermediate gangues at the primitive rock. They consist of carious quartz, ferriferous limestone, heavy spar, fluor spar, and sulphuret of silver. The mine of Kapnik deserves notice, where the gold is associated with orpiment, and that of Vorospatak in granite rocks; those of Offenbanya,

Zalatna, and Nagy-Ag, where it is associated with tellurium. The last is in a clenitic rock on the limits of the trachyte.

Northern Europe.—In Sweden, the mine of Edelfora in Smeland, may be mentioned, where the gold occurs native and in auriferous pyrites; the veins are a brown quartz, in a mountain of foliated hornstone. In Siberia, native gold occurs in a hornstone at Schlangenberg or Zmeof, and at Zemeino-garsk in the Altai Mountains, accompanied with many other ores.

Russia.—The gold mine of Berezof in the Oural Mountains has been long known, consisting of *partially decomposed auriferous pyrites*, disseminated in a vein of greasy quartz. About 1820, a very rich deposit of native gold was discovered on the eastern side of the Oural Mountains, disseminated at some yards' depth in an argillaceous loam, and accompanied with the *debris* of rocks which usually compose the auriferous alluvial soils, as greenstone, serpentine, protoxyd of iron, corundum, etc. The rivers of this district possess auriferous sands. The product of the gold mines of the Oural, in 1845, was 11,808 pounds avoirdupois, and in 1846, 11,827 pounds; that of Siberia, in 1845, 37,576 pounds, and in 1846, 48,863 pounds. In these accounts the pood has been reckoned at 36 lbs. It is believed that in 1847 and 1849 the yield was still larger, but it must since have materially fallen off, as it is stated in *Erman's Archives* that the yield in 1851 will not exceed 20,000 pounds troy.

In Asia, and especially in its southern districts, there are many mines, streams, rivers, and wastes, which contain this metal. The Pactolus, a small river of Lydia, rolled over such golden sands that it was supposed to contain the origin of the wealth of Cræsus. But these deposits are now poor and forgotten. Japan, Formosa, Ceylon, Java, Sumatra, Borneo, the Philippines, and some of the islands of the Indian Archipelago, are rich in gold mines. Those of Borneo are worked by the Chinese in an alluvial soil on the western coast, at the foot of a chain of volcanic mountains. Little or no gold comes into Europe from Asia, because its servile inhabitants place their fortune in treasure, and love to hoard up that precious metal. Numerous gold mines occur on the two slopes of the chain of the Calias Mountains in the Oundès, a province of Little Thibet. The gold lies in quartz veins which traverse a very crumbling, reddish granite.

Africa was, with Spain, the source of the greater portion of gold possessed by the ancients. The gold which Africa still brings into the market is always in dust, showing that the metal is obtained by washing the alluvial soils. None of it is collected in the north of that continent; three or four districts only are remarkable for the quantity of gold they produce. The first mines are those of Kordofan, between Darfour and Abyssinia. The negroes transport the gold in quills of the ostrich or vulture. These mines seem to have been known to the ancients, who considered Ethiopia to abound in gold. Herodotes relates that the king of that country exhibited to the embassadors of Cambyses all their prisoners bound with golden chains. The second and chief exploitation of gold dust is to the south of the great desert of Sahara, in the western part of Africa, from the mouth of the Senegal to the Cape of Palms. The gold occurs in spangles, chiefly near the surface of the earth, in the bed of rivulets, and always in a ferruginous earth. In some places the negroes dig wells in the soil to a depth of about 40 feet, unsupported by any props. They do not follow any vein; nor do they construct a gallery. By repeated washings they separate the gold from the earthy matters. The same district furnishes also the greater part of what is carried to Morocco, Fez, and Algiers, by the caravans which go from Timbuctoo on the Niger, across the great desert of Sahara. The gold which arrives by Sennaar at Cairo and Alexandria comes from the same quarter. From Mungo Park's description, it appears that the gold spangles are found usually in a ferruginous small gravel, buried under rolled pebbles. The third spot in Africa where gold is collected is on the south-east coast, between the 25th and the 22d degree of south latitude, opposite to Madagascar, in the country of Sofala. Some persons think that this was the kingdom of Ophir whence Solomon obtained his gold.

There is little gold [illegible] the northern part of America. In 1810, a mass of alluvial gold, weighing 28 pounds, was found in the gravel of the creeks of Rockhole, district of Lebanon, in North Carolina.

South America.—Previously to the important discoveries in California, Brasil, Choco, and Chili, were the regions which furnished most gold. The only contributor of Chilian objects to the great exhibition was one who forwarded a lump of gold ore weighing 8 cwt., which was brought up from a deep mine on the back of a miner, from a depth of 45 yards beneath the surface.

The gold of Mexico is in a great measure contained in the argentiferous veins, so numerous in that country, whose principal localities are mentioned under the article SILVER. The silver of the argentiferous ores of Guanaxuato contains one 360th of its weight of gold; the annual product of the mines being valued at from 2,640 to 3,300 lbs. avoirdupois.

Oaxaco contains the only auriferous veins exploited as gold mines in Mexico; they traverse the rocks of gneiss and mica slate.

All the rivers of the province of Caracas, to ten degrees north of the line, flow over golden sands.

Peru is not rich in gold ores. In the provinces of Huailas and Pataz, this metal is mined in veins of greasy quartz, variegated with red, ferruginous spots, which traverse primitive rocks. The mines called *pacos de oro*, consist of ores of iron and copper oxyds, containing a great quantity of gold.

All the gold furnished by New Grenada (New Columbia) is the product of washings established in alluvial grounds. The gold exists in spangles and in grains, disseminated among fragments of greenstone and porphyry. At Choco, along with the gold and platinum, hyacinths, zircons, and titanium occur. There has been found, as already stated, in the auriferous localities, large trunks of petrified trees. The gold of Antioquia is 20 carats fine, that of Choco, 21; and the largest lump or *pepita* of gold weighed about 27½ pounds avoirdupois. The gold of Chili also occurs in alluvial formations. Brazil does not contain any gold mine, properly so called; for the veins containing the metal are seldom worked. It is in the sands of the Mandi, a branch of the Rio Dolce, at Cntapreta, that the auriferous ferruginous sands were first discovered in 1682. Since then they have been found almost everywhere at the foot of the immense chain of mountains, which runs nearly parallel with the coast, from the 5th degree south to the 30th. It is particularly near Villa Rica, in the environs of the village Cocães, that the numerous washings for gold are established. The *pepitas* occur in different forms, often adhering to micaceous specular iron. But in the province of Minas Gerães, the gold occurs also in veins, in beds, and in grains, disseminated among the alluvial loams. It has been estimated in annual product, by several authors, at about 2800 pounds avoirdupois of fine metal. We thus see that almost all the gold brought into the market comes from alluvial lands, and is extracted by washing. The gold coin of the ancients was made chiefly out of alluvial gold, for in those early times the metallurgic arts were not sufficiently advanced to enable them to purify it. The gold dust from Bambouk, in Africa, is of 22½ carats fine, and some from Morocco is even 23. The gold of Giron, in New Grenada, is of 23¾ carats—being the purest from America. "For those who traffic in gold,"

says Humboldt, it is sufficient to know the place where the metal has been collected, to know its title."

IMPORTATIONS OF MANUFACTURES OF GOLD AND SILVER INTO THE UNITED STATES, FOR THE YEAR ENDING JUNE 30TH, 1856.

WHENCE IMPORTED.	MANUFACTURES OF GOLD AND SILVER.			GEMS.		
	Epaulets, lace, wings, tassels, etc.	Gold and silver leaf.	Jewelry, real or imitations of.	Set.	Otherwise.	Manufactures of, not specified.
	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.
Hamburg	1,268	232	1,579	....	56	277
Bremen	13,075	10,597	39,140	144	50,433	4,260
Holland	....	....	228	....	28	41
Belgium	....	....	59	....	....	30
England	22,186	624	231,848	2,988	119,982	47,968
Scotland	....	....	70	....	....	25
Canada	....	....	602	....	....	90
France on Atla	18,920	4,943	198,490	2,151	198,211	21,620
France on Med	....	....	29	....	....	....
Sardinia	....	....	169	....	5	204
Tuscany	....	....	1,711	50	1,854	367
Austria	....	....	....	78	2,571	....
Hayti	....	....	....	....	....	14
New Granada	....	4	1,756	1,907	488	729
China	....	....	504	....	877	2,188
Total	54,784	16,402	475,685	7,268	368,955	77,748

NEW GOLD — NINE YEARS 1849-1856, PRODUCTION IN CALIFORNIA, VICTORIA, AND NEW SOUTH WALES.

PRODUCTION OF GOLD IN VICTORIA.

Years.	Ounces Troy.	Ascertained Exports.	Marginal addition of 10 per cent.	Value of Total Produce.
1851	120,000	£440,000	£44,000	£484,000
1852	1,750,000	6,125,000	613,000	6,748,000
1853	2,475,000	8,664,000	866,000	9,530,000
1854	2,360,000	8,255,000	825,000	9,080,000
1855	3,230,000	11,303,000	1,130,000	12,433,000
1856	3,619,000	12,663,000	1,264,000	13,907,000
Total	13,554,000	47,440,000	4,742,000	52,182,000

PRODUCTION OF GOLD IN NEW SOUTH WALES.

Years.	Ounces Troy.	Ascertained Exports.	Marginal addition of 10 per cent.	Value of Total Produce.
1851	134,000	£468,000	£47,000	£515,000
1852	928,000	3,690,000	360,000	3,960,000
1853	1,509,000	1,781,000	178,000	1,959,000
1854	220,000	773,000	77,000	850,000
1855	59,000	210,000	21,000	231,000
1856	29,000	100,000	10,000	110,000
Total	1,979,000	£6,932,000	£693,000	£7,625,000

PRODUCTION OF GOLD IN CALIFORNIA.

Years.	Ounces Troy.	Ascertained Exports.	Marginal addition of 10 per cent.	Value of Total Produce.
1849	460,000	£1,612,000	£161,000	£1,773,000
1850	1,430,000	5,000,000	500,000	5,500,000
1851	2,357,000	8,250,000	825,000	9,075,000
1852	3,343,000	11,700,000	1,170,000	12,870,000
1853	3,571,000	12,500,000	1,250,000	13,750,000
1854	4,029,000	14,100,000	1,410,000	15,510,000
1855	3,830,000	13,400,000	1,340,000	14,740,000
1856	4,000,000	14,000,000	1,400,000	15,190,000
Total	23,020,000	£80,562,000	£8,056,000	£88,618,000

TOTALS—CALIFORNIA AND AUSTRALIA COMBINED.

Years.	Ounces Troy.	Ascertained Exports.	Marginal addition of 10 per cent.	Value of Total Produce.
1848-9	460,000	£1,612,000	£161,000	£1,773,000
1850	1,430,000	5,000,000	500,000	5,500,000
1851	2,617,000	9,158,000	916,000	10,074,000
1852	6,123,000	21,435,000	2,143,000	23,578,000
1853	6,555,000	22,945,000	2,294,000	25,239,000
1854	6,607,000	23,128,000	2,312,000	25,440,000
1855	7,119,000	24,913,000	2,491,000	27,404,000
1856	7,612,000	26,743,000	2,674,000	29,417,000
Total	38,553,000	£134,934,000	£13,491,000	£148,425,000

Of the general results arising from the large increase in the production of gold since 1849, Mr. Tooke, in his *History of Prices* (1857), says:

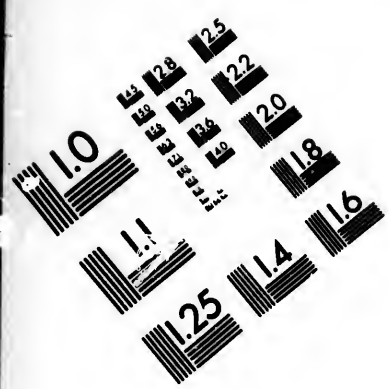
"(1.) That from first to last the whole of the manifold and powerful effects produced by the new gold in the countries of its production, resolve themselves into economical changes springing in rapid succession, and in an infinitude of forms, from the expenditure of trebled or quadrupled incomes obtained by the laborers. And (2.) That hitherto the whole of the complicated processes by which the new gold has become distributed—in the first instance, among the population of the gold regions, and in the second instance, over considerable portions of the commercial world—are to be explained by the application of one simple principle, viz.: That the distribution has taken place in the precise proportion in which the extended demand for commodities, originally proceeding from the earliest laborers who picked up the gold, has gradually set in motion increased numbers of laborers and increased amounts of capital, to supply the requirements, not merely of the population of the gold countries, but also more or less of the population of all the countries producing raw materials or manufactured goods upon which incomes are at present expended.

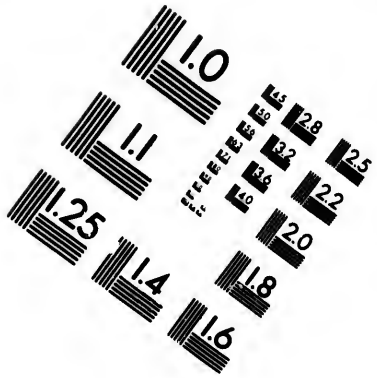
"Springing up around these two general results, there are a multitude of subsidiary, which, if we could thoroughly pursue them to the end of their course, we should discover to be tributaries and offshoots of the two greater principles.

"Foremost in this second category are the proofs and illustrations which meet us everywhere, that the changes flowing from the gold discoveries are principally indebted for the rapidity of their effects to the single circumstance, that of all known substances (silver in some respects excepted) gold is the only commodity which admits of being extracted from the soil in a perfectly marketable state; in large quantities, and by the rudest labor; and of being at once employed as a universal instrument of purchase of intrinsic value. A suddenly-increased supply of no other commodity would produce effects so decided and rapid, for the simple reason that (say) a tenfold quantity of no other commodity could find an instantaneous and impatient market. The Burra-Burra copper mine in South Australia, for example, might have become ten times as productive as it had been previously, without producing any effects more violent or rapid than, first, an increase of dividend to the shareholders; and, gradually, a fall in the price of the kinds of machinery and hardware in which copper is the principal metal.

"In the next place the rise of two or three hundred per cent., which occurred at once in the gold countries in the prices of all kinds of foreign commodities, was speedily corrected by the impulse imparted, almost in a single day, to the resources available for increased production in those foreign countries. And, after the first excitement had abated, the increased production has continued year by year, because the effective demand, in the form of new gold, has continued in the gold countries, year by year. But there has been this most important collateral effect, viz., that, year by year, the circle within which the demand for commodities goes on increasing, is a circle of rapidly-expanding area. Originally, but for a short time only, it included merely the gold countries; it then embraced those particular districts—Lancashire and Birmingham for example—best able to meet the most urgent demands for special articles; it then became extended to the districts which supplied the raw materials of those articles; and pursuing the same order of progression, the area of the increased demand for commodities, or what is a better term, the area within which increased incomes are expended, is necessarily wider in each succeeding month. The same general reasoning applies to the process by which the wages of labor have been reduced in the gold countries by means of immigration.

"The discovery of the new gold was, in its immediate region, the same thing, practically, as rendering labor four times as effective as it had been in the production of those commodities not merely possessing intrinsic value, but instantly exchangeable all over the world for all other commodities possessing intrinsic value. The immigrants drawn to the gold coun-





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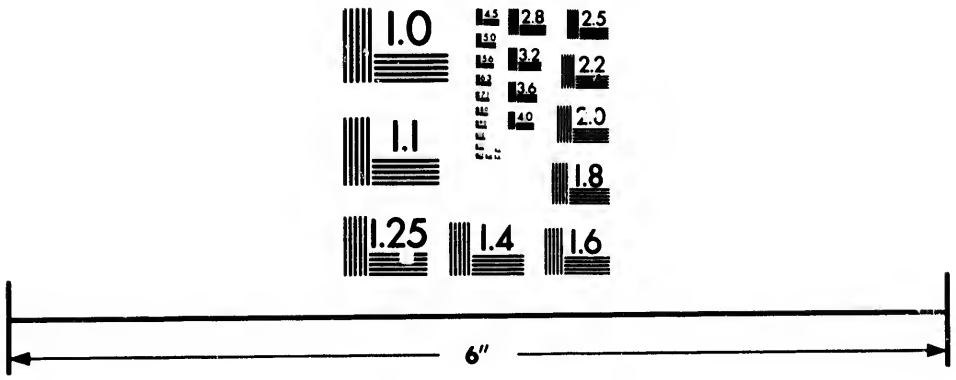

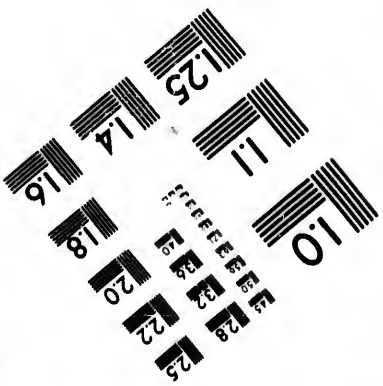

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tries by the prospects of high wages and sudden fortune, transferred, in some specific proportion, the benefits of this increased efficacy of labor to the countries from whence they started; and in two modes, namely: in the first place, by establishing at once, as was seen in this country in 1852–1853, a prodigiously-increased price for emigrant vessels, and therefore for the services of all persons connected with ship-building; and, in the second place, by leaving behind them vacancies which could only be supplied by the absorption of labor previously a burden in some form to the community, as was also seen in 1852 and 1853 by the diminution in the number of destitute persons relieved under the Poor Law.

"We seem to arrive, then, at a further generalization, namely: (1.) That within the gold countries the effects of the discoveries have been to create, rapidly and largely, accumulations of real wealth and real resources. The adult population of those countries has been increased three or four fold within as many years. The erection of houses, the cultivation of the soil, the reclamations of waste lands, the construction of railways, the embellishment of towns, the provision of harbors and docks, the foundation of schools and universities, and, more conspicuous than all, the establishment almost at a single stride of an enormous foreign trade—in a few words, the vigorous prosecution of every enterprise, and the swift advancement of every art which can render a country opulent and powerful—are results which have been nearly all accomplished in the gold countries, by the exportation to other countries, year by year, of the supplies of new gold. (2.) That within those other countries to which the gold has been sent in exchange for commodities, the continuous effective demand for commodities has produced the same effects, but in a limited degree, which have taken place in Australia and California. In the United Kingdom, for example, the continuance, year by year, of an effective demand for commodities, has led to improvements and extensions in the means of production; has led to accumulations of capital as savings out of the larger incomes of capitalists and laborers; and has diminished within the country the pressure of unemployed and destitute persons.

"It is manifest, then, that the influx of the £174,000,000 of gold since 1848, has accomplished something very different from, and something very much beyond, the barren addition of a considerable percentage to the previously-existing amount of metallic circulation in this and other countries, and has also accomplished changes far more important than any barren increase (merely by reason of enlarged quantity) in the prices of commodities. It is, moreover, manifest, unless all the previous facts and reasonings are erroneous, that the real and vital changes which have taken place, are additions to the real wealth of the world, by means of greater production and more active enterprise; and that the elements of circulation and price have so far not been ultimate results, but inferior and intermediate agencies employed." See TOOKE'S *History of Prices* (London, 1857); see, also, COINS and PRECIOUS METALS, *post*; *Bankers' Mag.*, 1851–1857.

Gold-beating. The art of gold-beating is of great antiquity, being referred to by Homer; and Pliny states that one ounce of gold was extended to 750 leaves, each leaf being four fingers square, which is three times the thickness of the ordinary leaf gold of the present time. The ancient Peruvians made very thin sheets of gold, and nailed them together on the walls of their temples of worship; on the coffins of the Theban mummies, specimens of original leaf-gilding are met with where the gold is in so thin a state that it resembles modern gilding. The art seems to have been practiced in India, judging from the rude specimens of gilding at Tippo Saib's palace at Bangalore. In modern times it has been practiced in the capitals of the principal commercial countries of Europe. In England it was confined to London until within the present century. It has been introduced into Scotland and the United States of America within that period. It is now practiced in several towns in England, and to a small extent in Ireland, at Dublin only. The manufacture being attendant upon an advanced state of the arts, it is only found in old established countries, and is not yet practiced in any of the British colonies. From the existence here of some now obsolete tools, similar to those at present in use at Paris, it would appear to have traveled to England from that quarter. The art has nowhere been so perfected as in London; but of late years, from intercourse with English gold-beaters, efforts have been made on the continent, with the aid of English gold-beaters' skin, to rival the extreme fineness of the English product.

The ordinary size of a leaf of gold is 3¼ inches, for the production of 2000 leaves of which from 18 to 19 dwts. of gold were allowed to the workmen fifty years since in London, but now, owing to the improvement in the quality of the skin, and superior skill on the part of the workmen, not more than an average of 16 dwts. are required, and with very skillful workmen it is sometimes accomplished with 14 dwts. This, however, is not to be taken as any test of the extreme malleability of gold; it is only the point to which it is desirable to attain for commercial purposes.

Experiments have been made to ascertain to what degree of thinness gold and silver could be reduced: it was found that one grain of gold was spread to the extent of 75 square inches, and the same weight of silver to the still more extraordinary dimensions of 98 square inches. Taking one cubic inch of gold at 4900 grains, it will be found that the gold was the 367,650th part of an inch in thickness, or about 1200 times thinner than ordinary printing paper. Thus, if this number of leaves of gold were placed on one another, they would constitute a pile an inch high; the same number of leaves of paper would form a pile half the height of the Monument of London. The silver, though spread over a much larger suface, was thickest, owing to the difference in its specific gravity; but, calculated by weight, silver is the most malleable metal with which we are acquainted, considerably exceeding that of gold. This experiment does not, however, determine the extent of the malleability of either metal, as the means employed to test it were found to fail before there was any appearance of the malleability of the metals being exhausted.

The gold used by the gold-beator is variously alloyed according to the variety of color required. Fine gold is commonly supposed to be incapable of being reduced to thin leaves. This is an error. It is objectionable for commercial purposes on account of its greater cost. It also adheres on one part of a leaf touching another, thus causing a waste of labor by the leaves being spolled; but for work exposed to the weather it is much preferable, as it is more durable, and does not tarnish or change color. The specimens of gold leaf exhibited by Mr. E. S. Marshall, gold-beater of London, at the great exhibition of 1851, and for which the prize medal was awarded to him, were twelve in number, and embraced a regular gradation in color from red down to nearly white, viz., red, pale red, extra deep, deep, orange, lemon, deep pale, pale, pale-pale, deep party, party, and fine gold. The deeper colors were alloyed with from 12 to 16 grs. of copper per oz., but without any silver, as any alloy of silver with this quantity of copper would considerably impair the malleability. The middle colors contained from 12 to 20 grs. of silver, and from 6 to 8 grs. of copper to the ounce; the paler golds contained from 2 to 20 dwts. of silver to the ounce, but no copper, for the same reason that the silver was omitted in the red golds.

The process of gold-beating is thus conducted. The gold having been alloyed according to the color desired, it is melted in a crucible, at a higher temperature than is simply necessary to fuse it, as its malleability is improved by exposure to a greater heat; sudden cooling does not interfere with its malleable properties, differing in this property from some other metals. It is then cast into an ingot, and flattened into a ribbon of 1¼ inch wide and 10 feet in length to the ounce. After being flattened it is annealed and cut into small pieces of about 6 grs. each, and placed between the leaves of a cutch, which is about half an inch thick and 3½ inches square, containing about 160 leaves of a tough paper manufactured in France. Formerly fine vellum was used for this purpose. The cutch is beaten on for about 20 minutes with a 17-pound hammer, which rebounds by the elasticity of the skin, and saves the labor of lifting, by which the gold is spread to the size of the cutch; each leaf is then taken out, and cut into four pieces, and put between the skins of a shoder 4½ inches square and ⅓ths of an inch thick, containing about 700 skins, which have been worn out in the finishing process. The shoder requires about two hours' beating upon with a 9-pound hammer. As the gold will spread unequally, the shoder is beaten upon after the larger leaves have reached the edges. The effect of this is, that the larger leaves come out of the edges in a state of dust. This allows time for the smaller leaves to reach the full size of the shoder, thus producing a general evenness of size in the leaves.

Each leaf is again cut into four pieces, and placed between the leaves of a mold composed of about 900 of the finest skins, 5 inches square and ⅓ths of an inch thick; this is the last and most difficult stage of the process; and on the fineness of the skin and judgment of the workman the perfection and thinness of the leaf of gold depend. During the first hour the hammer is allowed to fall principally upon the centre of the mold. This causes gaping cracks upon the edges of the leaves, the sides of which readily coalesce and unite without leaving any trace of the union after being beaten upon. At the second hour, when the gold is about the 150,000th of an inch in thickness, it for the first time permits the transmission of the rays of light. In pure gold, or gold but slightly alloyed, the green rays are transmitted; and in gold highly alloyed with silver, the pale violet rays pass. The mold requires in all about four hours' beating with a 7-lb. hammer, when the gold will have arrived at the ordinary thinness for the gold-leaf of commerce. It is then taken out of the mold, and the rough edges are cut off by slips of the rattan fixed in parallel grooves of an instrument called a wagon, the leaf being laid upon a leathern cushion for that purpose. The leaves thus prepared are placed into a book capable of holding 25 leaves each, which have been rubbed over with red ochre to prevent the gold clinging to the paper, and is used for gilding picture-frames, books, and for numerous other ornamental purposes.

The dryness of the cutch, shoder, and mold, is a matter of extreme delicacy. They require to be hot-pressed every time they are used, although they may be used daily, to remove the moisture which they acquire from the atmosphere, except in extremely frosty weather, when they acquire so little moisture that then a difficulty arises from their over-dryness; the brilliancy of the gold is diminished, and it spreads very slowly under the hammer. On the contrary, if the cutch or shoder be damp, the gold will become that which is technically termed hollow or sieve-like; that is, it is pierced with innumerable small microscopical holes; and in the molds in its more attenuated state it will become reduced to a pulverulent state. This condition is more easily produced in alloyed golds than in fine gold. It is necessary that each skin of the mold should be rubbed over with calcined gypsum (the fibrinated variety) each time the mold may be used, in order to prevent the adhesion of the gold to the surface of the skin in the process of beating.

Dentist Gold is gold leaf carried no further in the process than that of the cutch, and should be perfectly pure gold. By the above process silver is beaten, but not so thin, the inferior value of the metal not rendering it commercially desirable to bestow so much labor upon it. Copper, tin, zinc, palladium, lead, cadmium, platinum, and aluminium can be beaten into thin leaves, but not to the extent of gold or silver.

Shell Gold, used in painting and illuminating, is made by grinding gold leaves with honey, and afterward separating the honey from the powdered gold by means of water. When the honey is washed away, the gold may be put on paper or kept in shells. When used, it is commonly diluted with gum water. The German gold powder, prepared in this manner from the Dutch gold leaf, is generally used; and when it is well secured with varnish, it answers the end in japanners' gilding tolerably well.

Gold Size, for burnished gilding, is prepared of 1½ pounds of pipe clay, ½ an ounce of red chalk, ½ of an ounce of black lead, 40 drops of sweet oil, and 3 drams of pure tallow. The clay, chalk, and black lead are to be ground very fine, separately, in water, then mixed together; the oil and tallow are next added, and the mixture is ground to a due consistence.

Gold Thread is formed of flattened gold wire wrapped closely over a thread of yellow silk, by means of a wheel and iron bobbins.

Gold Wire is made by taking a cylindrical ingot of silver which has been superficially coated with gold, and drawing it successively through a series of holes in a hardened steel plate, each of which is a degree smaller than the preceding hole, and proceeding thus until the requisite degree of fineness is attained. It may be observed that in this process, however fine be the wire, its gilded surface exhibits no flaw even when viewed by the microscope. *Flattened gold wire* is the same wire after it has been passed between rollers of polished steel.

Gold Coast, coast of Africa. The whole coast has been arbitrarily divided into five parts: 1. The Sierra Leone district, from Cape Verga to Cape Mesurado. 2. Malagueta, Pepper or Grain Coast, from Cape Mesurado to Cape Palmas. 3. The Ivory Coast, from Cape Palmas to Cape Three Points. 4. The Gold Coast, from Cape Three Points to the River Volta. 5. The Slave Coast, or Benin district, from the River Volta to the Cameroons.

Gold Coast, a country of Guinea, west Africa, extending along the Atlantic Ocean, from the River Volta on the east, to Cape Lahu on the west, and bounded north by Ashantee. It was discovered by the Portuguese, who founded an establishment at Fort Elmina in 1482. The English first settled here in 1664. The country is fertile; deer are plenty in the interior, and fish along the coast. Legislature of the British settlements composed of a governor and a legislative council of four members. Salary of lieutenant-governor, £800. The principal European establishments are Cape Coast Castle, Accra, Axim, Dixcove, Elmina, and the establishments lately ceded by Denmark to Great Britain.

The following returns to Parliament (as published by the London *Shipping and Mercantile Gazette*), show the increase of exports to the West Coast of Africa, and of importations from the same coast:

Years.	Exports.	Imports.	Total.
1850	£689,499	£605,958	£1,295,457
1851	654,543	794,810	1,449,353
1852	583,725	707,024	1,290,749
1853	901,402	749,373	1,650,775
1854	958,800	905,684	1,864,448

This is independent of the British colonies of Sierra Leone, the trade of which amounted in 1854 to $1,421,865, and of the British possessions on the Gold Coast and the River Gambia, amounting to $1,547,285 more; and of those at the Cape of Good Hope and in south Africa, swelling the amount $8,883,090 more; making in all an aggregate of over $23,000,000 in 1854, for the western coast of Africa entire.

It has of late been urged that a line of steamers should be established between the United States and the western coast of Africa, to afford greater facilities for commercial intercourse; and the planting of settlements in the interior, as now proposed, remote from the malarious influence of the coast, furnish additional reasons for persevering in this laudable design.

Gold Discovery *in California.* In September, 1847, one Captain Suter or Sutter was a bold, prosperous, enterprising, intelligent settler in Upper California. He was a Swiss by birth; he had served Charles X. as one of the Swiss Guard at the Tuilleries; he emigrated to Missouri after the Bourbon revolution of 1830; he removed thence to the Oregon territory in 1836; he made a further advance, in 1839, to California, where he built a fort named New Helvetia on the River Sacramento; he gradually accumulated around him 4000 oxen, 1500 horses and mules, 2000 sheep, a vast acreage of land under grain crops, and two trading vessels in the river; he had his fort supplied with 12 pieces of artillery, and defended by a garrison of 70 men; and he was thus, in all probability, the wealthiest and most influential man beyond the Rocky Mountains. The month above named was an important one to this bold captain, and to the world at large. He contracted with a Mr. Marshall to construct a saw-mill near a pine forest. The supply of water to this mill was so situated as to wash down much mud and gravel from the higher course of the stream; and Mr. Marshall, watching the progress of his works one day, saw some glittering particles in this mud. He formed his own conclusions of the nature of these shining morsels; and having shown some of them to the captain, it was agreed to keep the matter a secret for a time. Such secrets, however, do not keep; they *will* not keep; it was soon noised abroad that GOLD had been discovered at the American fork of the Sacramento, and a gold fever thereupon sprang up. A few laborers collected some of the gold-dust, and took it for sale to San Francisco, at which town the Sacramento enters the Pacific; hundreds flocked up the river; Indians were hired, soldiers and sailors deserted, shop-keepers closed their shops, and San Francisco became almost abandoned.

Golden Fleece, in *Mythology,* the fleece of the ram upon which Phrixus and Helle crossed the sea to Colchis, and which, being sacrificed to Jupiter, was hung upon a tree in the grove of Mars, guarded by two brazen-hoofed bulls, and a monstrous dragon that never slept. The fleece was carried off by Jason and the Argonauts. Many authors have endeavored to show that this fable is an allegorical representation of some real history; while others explain it by the profit of the wool trade to Colchis, or the gold which was gathered in the rivers of that country by means of fleeces.

Gold-Lace. Gold-lace is a thin covering of gold applied to a surface of silver, which again has a foundation of silk. The silken threads for making this material are wound round with gold wire, so thickly as to conceal the silk; and the making of this gold wire is one of the most singular mechanical operations imaginable. In the first place, the refiner prepares a solid rod of silver, about an inch in thickness; he heats this rod, applies upon the surface a coating of gold-leaf, burnishes this down, applies another coating, burnishes this down, and so on, until the gold is about one hundredth part the thickness of the silver. Then the rod is subjected to a train of processes which brings it down to the state of a fine wire; it is passed through holes in a steel plate, lessening step by step in diameter. The gold never deserts the silver, but adheres closely to it, and shares all its mutations; it was one hundredth part the thickness of the silver at the beginning, and it maintains the same ratio to the end.

As to the thinness to which the gold-coated rod of silver can be brought, the limit depends on the delicacy of human skill; but the most wondrous example ever known was brought forward by the late Dr. Wollaston, a man of extraordinary tact in minute experiments. This was an example of a solid gold wire, without any silver. He procured a small rod of silver, bored a hole through it from end to end, and inserted in this hole the smallest gold wire he could procure; he subjected the silver to the usual wire-drawing process, until he had brought it to the finest attainable state; it was, in fact, a silver wire as fine as a hair, with a gold wire in its centre. How to isolate this gold wire was the next point: he subjected it to warm nitrous acid, by which the silver was dissolved, leaving a gold wire one thirty-thousandth of an inch in thickness—perhaps the thinnest round wire that the hand of man has yet produced. But this wire, though beyond all comparison finer than any employed in manufactures, does not approach in thinness the film of gold on the surface of the silver in gold-lace. It has been calculated that the gold on the very finest silver wire for gold-lace is not more than *one third of one millionth part of an inch* in thickness; that is, not above one tenth the thickness of ordinary leaf-gold!

Gold-Leaf is an extremely thin tissue of gold, prepared by beating the gold metal until the requisite degree of fineness has been obtained. It is found that a minute percentage of silver and copper is necessary to give the gold for gold-leaf a proper malleable quality—a percentage of perhaps one in 70 or 80. The refiner manages this alloy, and brings the costly product to a certain stage of completion; he melts the gold and the cheaper alloys in a black-lead crucible; he pours the molten metal into an ingot mold, six or eight inches long; he removes the solidified and cooled ingot from its mold, and passes it repeatedly between two steel rollers until it assumes the thickness of a ribbon; and this ribbon, about one eight hundredth of an inch in thickness, and presenting a surface of about 500 square inches to an ounce, passes next into the hands of the gold-beater.

The working-tools, the process, and the products of a gold-beater, are all remarkable. That puzzling material, "gold-beaters' skin," is an indispensable aid to him; it is a membrane of extreme thinness and delicacy, but yet tough and strong, procured from the intestines of the ox; 800 pieces of this skin, four inches square, constitute a packet with which the gold-beater labors; and thus he proceeds: 150 bits of ribbon-gold an inch square, are interleaved with as many vellum leaves four inches square; they are beaten for a long time with a ponderous hammer on a smooth marble slab, until the gold has thinned and expanded to the size of the vellum. How the workman manages so as to beat all the pieces equally, and yet beat none into holes, he alone can answer; it is one of the mysteries of his craft. The gold is liberated from its vellum prison, and each piece cut into four; the 150 have thus become 600, and these are interleaved with 600 pieces of gold-beaters' skin, which are then packed into a compact mass. Another beating then takes place—more careful, more delicate, more precise than the former—until the gold, expanded like the silk-worm, as far as its envelop will admit, requires to be again released. The leaves are again divided into four, by which the 600 become 2400; these are divided into three parcels of 800 each, and each parcel is subjected to a third beating. Heavy as the hammers are, there are yet degrees of heaviness: first, a sixteen-pounder gives its weighty thumps, then a twelve-pounder, and

in this last operation a hammer of ten pounds is employed. See GOLD BEATING.

Gold-weighing Machine. Mr. Cotton's machine seems, by general consent, to be deemed the most delicate ever yet constructed for weighing gold coin. Its precision is indeed most exquisite. In the transactions between the Bank of England and the public, the weighing of gold coin has been a most anxious and tedious process. As between the bank and the mint, the labor is not so minute; for 200 sovereigns being first accurately weighed, all the rest are weighed in groups of 200. The mint officers are allowed a deviation of 12 grains in about 50 sovereigns; but they generally work to within half of this amount of error; and if the groups of sovereigns are correct within the prescribed limits no closer weighing is adopted. In the transactions between the bank and the public, however, matters must be treated in more detail. Each customer demands that his sovereign should be of proper weight. Hence arises an important part of the daily routine at the bank. Sovereigns which were issued from one counter at the bank as being of full weight, were refused at another counter as being light. The scales may not have been equally delicate, or the liability to error on the part of the weighers may not have been exactly equal. An expert weigher could weigh about 700 sovereigns in an hour by the old balance; but the agitation of the air by the sudden opening of a door, the breathing of persons near the apparatus, the fatigued state of the hand and eye of the weigher—all led to minute errors.

The machine is a pretty, delicate, light affair. There is, in the first place, a small vertical tube, in which a pile of 20 or 30 sovereigns is placed, in single column. The lowermost sovereign rests upon a movable plate; when a handle is turned by the attendant, the plate moves sideways, and the sovereign is brought upon an exquisitely sensitive balance; if the weight is correct, a little lever, arm, or pusher, gives the edge of the sovereign a smart impulse and drives it off into a box; but if the weight be deficient even in the most minute degree, another pusher attacks the sovereign on a different side, and drives it into another box. As the handle is continued in motion, 2 or 3 sovereigns may be in different stages of the weighing process at one time.

As the Bank of England does not take cognizance of gold coins which are too heavy, this machine merely separates sovereigns into two groups, the full and the light; and it does not indicate by how much the light sovereign is deficient. It is therefore only by actual trial that the delicacy of the machine has been tested; if a difference of even a hundredth of a grain existed between 2 sovereigns it is said that this machine would detect it. On a rough average, 30,000 sovereigns pass over the bank counter every day; each machine can weigh 10,000 sovereigns in 6 hours; and there are 6 machines; so that the bank can weigh all its issues of gold by these means, and have reserve power to spare. One of the machines is adjusted for half sovereigns. Between 1844 and 1848 there were 48,000,000 gold coins weighed by these machines at the bank; and bankers and private persons place undoubting reliance on the correctness of the process. Each machine requires an hour's cleaning once a week; the machines cost about £200 each, and are said to be peculiarly free from liability to disarrangement. Besides satisfying the bank, the bankers, and the public, these machines save £1000 a year to the bank in weighers' wages.

Gomuti, or **Ejoo,** a species of palm (*Borassus Gomutus*), growing in the Indian islands. A valuable product is obtained from this palm, resembling *black horse hair;* it is found between the trunk and branches, at the insertion of the latter, in a matted form, interspersed with long, hard, woody twigs of the same color. When freed from the latter, it is manufactured by the natives into cordage. Its fibres are stronger and more durable, but less pliant, than those of the cocoa nut, or coir (see COIR); and is, therefore, fitter for cables and standing rigging, but less fit for running rigging. The native shipping of the eastern islands of all kinds are chiefly equipped with cordage of the gomuti; and the largest European shipping in the Indies use cables of it. It undergoes no preparation but that of spinning and twisting; no material similar to our tar and pitch, indispensable to the preservation of hempen cordage, being necessary with a substance that, in a remarkable degree, possesses the quality of resisting alternations of heat and moisture. The gomuti of Amboyna, and the other Spice islands, is the best. That of Java has a coarse ligneous fibre. Gomuti is generally sold in twisted shreds or yarns, often as low as 1 dollar a picul, and seldom more than 2. Were European ingenuity applied to the improvement of this material, there seems little doubt that it might be rendered more extensively useful.—CRAWFORD's *East. Archip.*, vol. iii., p. 425.

Gondola, a kind of barge used chiefly on the canals of Venice, where gondolas supply the place of carriages. The gondola is flat-bottomed, very long and narrow (averaging about 30 feet by 4), and its two sharply-pointed extremities are curved upward to the full height of a man. It is also provided with a small chamber placed near its centre, and elevated to a convenient height above the line of the gunwale. It is propelled by oars or a pole, by the gondolier, who stands at the stern. The word gondola is derived by Du Cange from the modern Greek *κουντελας*, a *bark* or *little ship;* Lancelot again deduces it from *γονδυ*, a term in Athenæus for a sort of vase. The gondoliers of Venice were formerly an interesting part of the population, and were noted for the practice of whiling away time by singing alternately stanzas of poems, particularly of Tasso's *Jerusalem Delivered,* though with great changes from the original; but this custom has become almost entirely obsolete.

Gong, a Chinese musical instrument of percussion, formed entirely of metal, which yields a very loud and peculiarly harsh sound when struck with force. It is made of an alloy of tin and copper, and in form it nearly resembles the common tambourine. Gongs are much used in China for making loud sonorous signals, particularly on the canals, as well as for adding to the clangor of martial instruments.

Good Hope, Cape of. Strictly speaking, a small promontory, nearly the most southern point of Africa, but it gives its name to the large tract of country which forms the most southern part of that continent, and is now a colony of Great Britain. It lies for the most part between S. lat. 29° and 34½′, and E. long. 18° and 28′. It is bounded on the north by the Orange and the Gariep Rivers, on the east by the River Keiskamma and Kafraria, on the south by the Southern Ocean, and on the west by the Atlantic. Its extreme breadth is from north to south about 450 miles, and its length from east to west about 600 miles, its area containing about 250,000 square miles. The country rises from the sea by a series of terraces, of which the supporting walls are nearly parallel chains of rugged and barren mountains intersected by deep ravines, the beds of streams, feeble or dry in the summer, but rushing down in torrents in the winter. The first of these mountain ranges of which Drackenstein, Hottentots' Holland, and Lange Kloof form a part, runs from the north-west round the colony toward the east, where it terminates in the promontory of Cape St. Francis. Between it and the sea, on the west coast, the country is sandy and sterile, but on the south and east coast it possesses some good soil, and is clothed with vegetation. The second great chain, containing the Karroo Berg, Olphant's River, Cold Bokkeveld, and Zuurbergen

Mountains, runs parallel to the first and terminates near the mouth of the Great Fish River. Its average height is about 4000 feet, and its greatest about 6500. Between this chain and the first the surface is varied, some parts consisting of arid plains and hills, others of good arable soil with a large portion of excellent grazing land. The third great range also runs nearly parallel to the others, and includes the Kammies Bergen, Roggeveld Bergen, Nieuwveld, and Sneeuw-Bergen Mountains. This is the highest part of the colony, and from it the land gradually descends to the Orange River. Between this range and the second is the vast desolate plain called the Great Karroo, nearly 300 miles in length east and west, and about 90 in breadth north and south. Its soil is a sand mixed with clay, and particles of iron: all soil of a similar character in other parts of the colony is called karroo ground. These mountain chains are mostly composed of sandstone resting upon a base of granite, which are the prevailing rocks, the next in abundance being clay slate, grauwacke, quartz rock, and dolerite. In some parts the ironstone is traversed by veins of red iron ore. Deposits of coal are said to have been discovered in Kafirland and Victoria division, and copper ore has been found in some abundance in Namaqualand.

The Rivers, with exception of the Orange River, are small; they all more or less partake of the character of mountain streams, having numerous falls, and being low and feeble in the dry season, but swollen and rapid in the rainy weather. They are of course not navigable, and their mouths are mostly barred with sand. The Knysna, the Cowe, and the Briede are however accessible, for a short distance from their entrance, to small vessels. The chief rivers are, on the west coast, the Orange, the Elephant, and Great Berg Rivers; on the south coast, the Briede Knysna, Sunday, Cantoos, Great Fish, and Keiskamma. The only one of them deserving special notice is the Orange River, which rises in Kathlamba or Drackenberg Mountains, flows for nearly 1200 miles generally in a westerly direction, and discharges itself into the Atlantic, forming the northern boundary of the colony. It is on the whole a noble stream, and in some parts its banks are shaded by huge willows.

The Soil.—It is considered that about two fifths of the colony consist of arid mountain ridges and sandy plains, unfit either for agriculture or pasture. The remainder is not generally fit for agricultural purposes, although it contains some very fertile spots; a large portion of it, however, especially in the eastern part, affords excellent pasturage for cattle and sheep.

The coast is indented by various bays and inlets; few of them, however, afford convenient harbors. Saldanha Bay, on the west coast, is one of the most extensive and secure havens in this part of the world, but it is rendered comparatively useless by the want of a sufficient quantity of fresh water near it for the supply of shipping. Simon's Bay, near the bottom of False Bay, is a good harbor, and is used as a station for the royal navy. Table Bay, though somewhat protected by Robben Island, is little better than an open roadstead. It affords shelter, however, to ships during the summer months, but in the winter, from May to September, it is very unsafe. Algoa Bay is an open roadstead, but it is the chief port of the eastern province, and is much frequented by ships, which in certain winds can lie in it safely. Mossel Bay and the Cowie are also resorted to by small vessels, but they are little better than open roadsteads.

The climate is generally milder and drier than that of England. December, January, and February are the summer months; June, July, and August the winter. In the western part the summer is dry and clear, but in the east it is wet and stormy. In the vicinity of Cape Town, the highest temperature is about 84°, the lowest about 40°, and the mean of the year about 65°. In the mountainous districts and elevated plains, the heat of summer and the cold of winter are greater.

The vegetation of the colony is remarkably rich and varied. Some of the finest botanical specimens that now adorn the gardens of Europe have been derived from this region. In no other place do bulbous plants and heaths exhibit so many beautiful varieties. Besides a number of other ornamental tribes, there are some plants which might be used in medicine and dyeing. The aloe, however, is the only one which has been made an article of export. The most remarkable trees are, the silver-tree, which only grows in the vicinity of Table Mountain; the Protea; and in the eastern province, the Euphorbia. There is on the whole a scarcity of indigenous timber, though there are in some parts extensive forests. Some of the native woods furnish materials for furniture and the wood-work of houses. The oak, fir, and other European forest trees, have, however, been long since introduced, and thriven very well; some of them have attained a great size, and their wood is extensively used. There are few indigenous fruits, but most of the fruits both in the north and south of Europe, such as grapes, figs, oranges, mulberries, apples, pears, peaches, nectarines, and others, are grown in abundance; but strawberries rarely come to perfection, and the gooseberry can not be raised.

In regard to the zoology of the Cape, there is little to distinguish it from the rest of Africa, under the head of which will be found sufficient information on this subject; we may, however, notice the domestic animals of the colony. Sheep, cattle, and dogs, of an inferior breed, were all possessed by the natives on the discovery of the country. Horses, asses, mules, goats, and inferior breeds of cattle and sheep, have been introduced, and thrive well. The Merino sheep, in particular, has proved a valuable acquisition to the colony. Among the game birds are the bustard, called by the Dutch the pcuw, and a smaller kind called the coran, wild duck, teal, snipe, and partridge.

History.—This Cape was discovered by Bartholomew Diaz, the Portuguese navigator, in 1493, who first landed at Algoa Bay, having, after exploring the west coast, been driven out to sea by a storm, and thus accidentally doubling the Cape which he saw on his way back, giving it the name of the Cape of Storms (Cabo Tormentoso). The King of Portugal, however, gave it the more auspicious name it still bears, as its discovery afforded a hope of a new and easier way of reaching India, the great object of all the maritime expeditions of that age.

The great navigator Vasco de Gama doubled the Cape in 1497, and carried the Portuguese flag into the Indian seas. His countrymen, however, attracted by the riches of the East, made no permanent settlement at the Cape, although they frequently touched there on the voyage to India. But the Dutch, who, on the decline of the Portuguese power, established themselves in the East, early saw the importance of the place as a station where their vessels might take in water and provisions. They did not, however, colonize it till 1650, when the Dutch East India Company directed Jan Van Riebeeck, with a small party of colonists, to form a settlement there. The country was at that time inhabited by a people called Quaiquæ, but to whom the Dutch seem to have given the name of Hottentots. The Riebeeck settlers had at first great difficulties and hardships to endure, and their territory did not extend beyond a few miles round the site of the present Cape Town, where they first fixed their abode. They gradually, however, extended their limits, by driving the natives back or reducing them to serfdom. These colonists, although under Dutch authority, were not wholly of that nation, but consisted partly of persons of various nations, especially Germans and Flemings, with a few Poles and Portu-

guese. They were for the most part people of low station or indifferent character; there was, however, a small number of a higher class, from whom was selected a council to assist the governor. About the year 1686 the European population was increased by a number of the French refugees who left their country on the revocation of the edict of Nantes. Our limits forbid our attempting to trace the history of the Cape Colony during the lengthened period it remained under the Dutch government. We may, however, mention some of its prominent incidents, the effects of which are visible in the colony to this hour.

1st. The Dutch, partly by so-called contracts, partly by force, gradually deprived the Hottentots of their country. 2d. They reduced to slavery a large part of that unfortunate people whom they did not destroy. 3d. They introduced a number of Malays and negroes as slaves. 4th. They established that narrow and tyrannical system of policy which they have adopted in other colonies, prescribing to the farmers the nature of the crops they were to grow, demanding from them a large part of their produce, and harassing them with other exactions tending to discourage industry and enterprise. We are of opinion that to this mischievous policy is due the origin of those unsettled habits, that dislike to orderly government, and that desire to escape from its control, which characterize a considerable part of the so-called Dutch boers of the present day, qualities so utterly at variance with the character of the Dutch in their native country, but which were strongly manifested at the Cape long before they came under British rule, and under those influences to which some exclusively attribute the insubordination of those men. The attempts of the boers to escape from the Dutch power, and so form an independent government beyond the borders of the colony, especially in the district since called Graaff-Reinet, are strikingly similar to their proceedings at a later date under the British government. 5th. The Gamtoos River formed the boundary between the Hottentot and Kafir races, and was early adopted by the Dutch as their eastern limit; but about the year 1740 they began to pass this river, and came into collision with the Kafirs, and in 1780 extended their frontier to the Great Fish River.

In 1795 the colonists, having imbibed the revolutionary principles then prevailing in Europe, attempted to throw off the yoke of the Dutch, upon which the British sent a fleet to support the authority of the Prince of Orange, and took possession of the country in his name. As, however, it was evident that Holland would not be able to hold it, and that at a general peace it would be made over to England, it was ruled by British governors till the year 1802, when, at the peace of Amiens, it was again restored to Holland. In 1806, on renewal of the war, it was again taken by the British under Sir David Baird, and has since remained in their possession, having been finally ceded by the King of the Netherlands at the peace of 1815.

Population.—The total population of the colony is stated in the returns as 217,921, of which 118,088 are persons of color. The latter consist of Hottentots (so called) Malays, Negroes, and Kafirs. The white population is chiefly composed of colonial Dutch and British.

The aborigines of the country had originally the generic name of Quæquæ, and received the name of Hottentots from the Dutch. Owing to intermarriages with Malays, negroes, and others, and illicit intercourse with whites, the race has lost much of its distinctive character. Indeed, a pure Hottentot is scarcely to be found in the colony, although the people, in whom the blood of that race preponderates, are still known by that name. There is no return of their number, but we do not think it can exceed 25,000. The Malays were introduced by the Dutch as slaves; their descendants still retain the Mohammedan religion, and most of the distinctive habits and customs of their race. We have no means of ascertaining their number, but it can not be large. They reside for the most part in the Cape division. The negroes are mostly from the eastern coasts of Africa. The Kafirs residing within the colony are chiefly composed of the section of them called Fingoes, who originally came from Natal and its vicinity, whence they were driven by Chaka, king of the Zulus, and took refuge with Kafirs on the frontier of the Cape colony, by whom they were reduced to serfdom, from which they were liberated by Sir Benjamin D'Urban, and have, up to this time, remained faithful allies of the British. Their number may be about 25,000.

The exact proportion which the white population of Dutch descent bears to the British is not known; but there is no doubt that it still greatly preponderates. We have called the people Dutch for sake of convenience, as they speak that language, but many of them are descended from Europeans of other countries—a considerable number from the French refugees. The latter have lost the language, but still retain the names of their forefathers, such as Du Plessis, De Villiers, Marais, and others. The British and their descendants require no special remark.

Trade.—The following table, giving the amount of imports and exports in several years, taken at intervals, exhibits the progress of the commerce of the colony:

Years.	Imports.	Exports.	Shipping.
			Tons.
1836.....	£541,038	£362,280	184,375
1840.....	782,494	775,000	184,442
1849.....	944,585	594,920	204,049
1850.....	1,277,101	637,252	224,126
1853.....	1,651,597	1,064,884	328,884
1854.....	985,266	691,852	

These exports do not entirely consist of colonial produce, but partly of goods re-exported. The value of colonial produce alone exported during 1853 was £732,245, of which £297,346 was from Cape Town, and £435,899 from Port Elizabeth. The amount of tonnage, however, of vessels entering Table Bay is much greater than that entering Port Elizabeth, on account of the larger number of Indiamen and other vessels calling at the former for provisions; but the actual trade of the latter is much greater, as shown by the exports.

The following is a table of the chief articles of colonial produce and manufactures exported during 1853, from Cape Town and Port Elizabeth respectively:

	P. Elizabeth.	Cape Town.		Port Elizabeth	Cape Town.
Aloes.....	£1,250	£1,546	Hides.....	£9,186	£7,304
Argol.....	....	1,161	Horns.....	1,022	1,888
Beef and pork.	2,309	3,709	Horses.....	....	8,414
Butter.....	1,360	642	Ivory.....	12,143	75
Copper ore....	....	3,463	Mules.....	....	894
Corn and meal			Oil.....	....	566
Barley.....	....	1,061	Goat skins....	8,420	12,626
Beans & peas	79	1,577	Seal skins.....	....	69
Bran	....	2,865	Sheep skins...	2,327	11,959
Flour.....	....	29,788	Spirits, brandy	....	3,852
Oats.....	5	18,709	Tallow	1,887	494
Wheat.....	....	250	Wine, Constantia.....	....	66
Feathers.....	1,519	3,809			
Fish (cured)..	393	9,376	Ordinary.....	....	26,799
Fruits (dried).	....	20,274	Wool	390,637	110,498

The most important export is wool, and the following table shows the progress of the export of this article:

	Port Elizabeth.	Cape Town.
1838.....	89,758 lbs.	73,324 lbs.
1843.....	1,220,880	534,377
1853.....	6,160,916	1,703,692

There were imported into London from the Cape territories 22,706 bales of wool in 1853; 22,602 in 1854; and 28,087 in 1855.

By the summary of an official table in the *Cape Government Gazette*, the custom-house returns of goods

imported for the first six months of 1854 and 1855 give the following results: For the first six months of 1854, goods imported, £879,788; for the same months of 1855, £622,218, making for those 12 months, £1,502,006. Goods entered for consumption for the first six months of 1854, £827,702; for the same months of 1855, £643,485—for those 12 months, £1,471,187. The exports of articles the produce of the colony for the first six months of 1854 were valued at £315,579; for the same months of 1855, at £440,816—for those 12 months, £756,395. The excess of imports for consumption over the estimated value of colonial produce exported during the 12 months referred to is thus shown to be £714,792.

In these returns we have the amount of customs duties collected only for the first six months of 1855. They amounted to £31,770 for the first quarter; and to £35,106 for the second; total for six months, £66,876. The two chief articles of export are wool and wine. On both, the increase has been very great. The wool exported during the first six months of 1854 was valued at £221,865. In the same months in 1855, at £297,885. The wine for the same months respectively was valued at £13,425 and £33,169. Wine was once the staple export, amounting in seven years to between £80,000 and £100,000. The quantity produced is supposed to be as great as ever it was, but it has found a more profitable market within the colony. The wool of the eastern and middle districts is indirectly exchanged for the wines, dried fruits, and flour of the western division.

Copper ore is a new article of export. For the first six months of 1854 this export was valued at £4,720; in 1855, at £14,179.

The revenue of the colony is derived chiefly from the customs duties, stamp and auction duties, and a direct tax called transfer dues, at the rate of 4 per cent. on the purchase money of all landed property sold, whether by auction or privately. The expenditure is for payment of salaries of the officials and other disbursements incidental to the support of the civil government. The military expenditure is at present borne by the imperial treasury. The subjoined table shows the progress of the revenue and expenditure:

	Revenue.	Expenditure.
1832	£130,808	£126,889
1842	226,261	226,025
1852	289,482	252,495
1853	308,472	268,111

The construction of good roads of late years, by the judicious employment of the convicts, the establishment of road boards, and other measures for the same object by the late able Colonial Secretary, Mr. Montagu, have tended greatly to develop the resources of the colony, and to increase its commerce and revenue. —E. B.

COMMERCE OF THE UNITED STATES WITH THE CAPE OF GOOD HOPE AND BRITISH SOUTH AMERICAN POSSESSIONS, FROM OCTOBER 1, 1820, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage Cleared.	
	Domestic.	Foreign.	Total.	Total.	Exported.	Imported.	American.	Foreign.
Sept. 30, 1821	....	....	....	....	....	....	....	....
1822	$6,150	....	$6,150	$63,875	....	$3,500	188	....
1823	....	....	....	....	....	....	300	....
1824	....	....	....	....	....	....	....	....
1825	....	....	....	....	....	....	....	....
1826	21,154	$6,433	27,587	46,559	....	....	432	....
1827	....	....	....	5,186	....	....	425	....
1828	....	....	....	....	....	....	....	....
1829	....	....	....	....	....	....	....	....
1830	....	....	....	....	....	....	....	....
Total	$27,304	$6,433	$33,737	$115,620	....	$3,500	1,925	....
Sept. 30, 1831	....	....	....	....	....	....	....	....
1832	....	....	....	....	....	....	....	....
1833	$7,562	....	$7,562	$13,700	....	....	207	....
1834	....	$2,521	2,521	....	....	....	1,500	....
1835	60,565	....	60,565	41,750	....	....	716	....
1836	86,218	4,517	90,735	28,785	....	....	1,550	139
1837	28,898	....	28,898	93,799	....	....	455	....
1838	22,718	....	22,718	12,084	....	....	1,064	....
1839	88,379	5,020	93,399	43,059	$5,020	....	2,278	....
1840	35,816	197	36,013	32,824	....	$756	650	160
Total	$330,156	$12,255	$342,411	$265,401	$5,020	$756	8,420	299
Sept. 30, 1841	$51,824	....	$51,824	$17,155	....	....	958	152
1842	....	....	....	28,815	....	$919	....	....
9 mos. 1843	80,055	....	80,055	81,192	....	....	406	....
June 30, 1844	82,938	....	82,938	29,166	....	....	1,089	....
1845	33,743	....	33,743	26,489	$4,000	....	498	....
1846	23,713	....	23,713	81,686	....	....	2,296	....
1847	106,172	....	106,172	36,041	....	....	2,287	....
1848	100,338	$19,939	120,277	60,431	15,589	....	1,670	....
1849	94,422	....	94,422	71,293	....	....	2,728	....
1850	143,219	....	143,219	72,206	....	....	1,912	....
Total	$665,924	$19,939	$685,863	$449,429	$19,589	$919	14,444	152
June 30, 1851	$161,891	....	$161,891	$123,223	....	$1,800	2,501	827
1852	224,236	$1,718	225,954	190,790	....	....	4,348	612
1853	367,231	3,141	370,372	302,303	....	87,109	4,705	983
1854	299,628	7,330	299,958	448,903	....	....	8,869	881
1855	448,475	8,837	452,312	418,538	....	....	5,656	664
1856	396,780	21,471	418,251	483,594	....	11,581	7,078	202

The commercial relations of the United States with the Cape of Good Hope colony are now dependent on the regulations of a legislative council and a house of assembly. Those bodies assembled, for the first time, during the past year (1854), under the name of the Colonial Parliament of the Cape of Good Hope. Exports from this colony consist principally of aloes, argol, hides, horns, whale oil, goat and sheep skins, wine, and wool. Chief imports from the United States are spirits, soap, stationery and books, sugar, timber, wine, tobacco, hardware and ironmongery, sundries.

Number of American vessels entered the ports of the Cape of Good Hope in 1853: Vessels, 45; tonnage, 16,278. Number of American vessels cleared from the same ports in 1853: Vessels, 22; tonnage, 2,186.

Port Regulations, Duties, etc.—Entrance or clearance of a vessel, $1 44; landing or shipping cargo of a vessel, $3 60; clearance of a coaster, $0 36; manifest of export cargo, $0 36; permit to land or ship mer-

chandise under value of $36, $0 18; above $36, $0 36. A wharfage duty is also charged on all goods, wares, or merchandise landed.

An export duty is charged on all staples shipped from any of the ports of the Cape; but the exporter of any quantity of good Cape wine shall be entitled to enter, duty free, one gallon imperial measure of spirits of the strength of Skye's hydrometer, in respect of every ten gallons imperial measure of wine so exported. For the accommodation of shipping, tank-boats are always in readiness with force-pumps and hose, carrying from 20 to 40 tons of water. A protective duty in favor of British produce and manufactures exists at the Cape ports; and the *ad valorem* of 12 per cent. on all goods to which no specific duty is assigned, is reduced to 5 per cent. in favor of Great Britain.—*Com. Digest U. S.* See CAPE OF GOOD HOPE.

Goodwin Sands, a range of sand-banks lying about four or five miles off the east coast of Kent, between the North and Sonth Forelands. They are about ten miles in length from north to south, and vary in breadth from one and a half to three miles. They are divided into two portions by a narrow channel, navigable by small boats. They are in many places dry at low water, and from their shifting and loose nature are very dangerous for shipping. Between them and the mainland is the roadstead termed the Downs. These sands are said to have at one time formed part of the Kentish land, and to have been submerged about the end of the reign of William Rufus, or the beginning of that of Henry I. Several light-vessels are fixed here as beacons; and during foggy weather gongs are sounded every ten minutes.

Gonaives, a sea-port of Hayti. There entered this port in 1849 and 1850, 182 vessels, measuring in the aggregate 29,801 tons; and there cleared 187, with an aggregate of 30,196 tons. The former prosperity of this port resulted from the immense quantities of ebinisterre (cabinet-maker's wood) and dye-woods, which accumulated at the mouth of the Artibonite from every point of its course, prior to the independence of Dominica; but such is the change that has taken place, that, to-day, it exhibits scarcely the shadow of its former commerce. Its exports, with their average quantities and values, are classified as follows:

Exports.	Quantities. Kilos.	Value. France.
Coffee	5,400,000	640,000
Cotton	150,000	270,000
Acajou	4,500,000	900,000
Campeche, Guyac (lignum-vitæ)	2,500,000	250,000

Formerly large quantities of wax, pitre, and cocoa, were exported from Gonaives; but this trade has of late years greatly declined. The exports at present consist of cereals and coffee, not only from the neighboring *communes*, but from the whole *arrondissement* of St. Marc, which is a closed port. The coffee of this port is of the very best quality, and commands the highest price. Hence it is, that vessels which can not make up their cargoes of coffee at Port-au-Prince, touch at this port for such quantities as they can obtain. The imports in 1850 reached a value of about 3,000,000 francs. Of this, the United States supplied provisions, lumber, and cotton goods to a value of nearly 1,500,000 francs ($279,000), or one half of the whole. England, France, and the German States figure chiefly in the other half—the trade of the two latter seeming rather on the decline. There are at Gonaives 24 foreign merchants; and of the commercial houses, nine are French and four English, while but one is American. The following summary of the trade between the United States and the port of Gonaives during the first six months of 1855 is made up from official returns: Number of vessels (American) entered and cleared, 66, with an aggregate of 4,317 tons. Value of cargoes inward, not given in official returns; value of cargoes outward, $2,033,429 95, Haytien currency—about 16 Haytien dollars being equal to 1 American. Cargoes inward consisted of provisions and lumber. Several vessels touched at the port, laden in part, to complete cargoes. Outward cargoes consisted of coffee, mahogany, and logwood.

Gordonia. (*Gordonia Lasianthus*). A tree known in France as *Gordonia à feuilles glabres*, in Germany as *Langstielige Gordonie*, and in the United States as *Loblolly Bay*. The Gordonia Lasianthus, in its native country, is a beautiful sub-evergreen tree, growing to the height of 50 or 60 feet, with a diameter of 18 or 20 inches. This tree appears to be confined to the maritime parts of the United States, from Virginia to lower Louisiana. According to Michaux, tracts of 50 or 100 acres are met with in the pine-barrens, which, being lower than the adjacent ground, are kept constantly moist by the waters collected in them after great rains. These spots are entirely covered with this species, and are called *bay-swamps*.

The wood of the Gordonia Lasianthus is extremely light, a cubic foot of which, when dry, does not weigh more than 20 pounds. In trunks of these trees which exceed more than 15 inches in diameter, four fifths of the wood is heart; it is of a rosy, or mahogany hue, and of a fine silky texture, which render it very proper for the inside of furniture, though the cypress is generally preferred. When seasoned it is exceedingly brittle, and rapidly decays when exposed to the alternations of moisture and dryness. The bark may be taken off this tree during three months of the year, which shows that the sap is in vigorous motion a much longer period than it is in most other trees. The value of the bark in tanning, compensates, in some measure, for the uselessness of the wood, for which purpose it has been employed in times past, throughout the maritime ports of the southern States and Florida. Although this branch of industry was never so extensively practiced in the southern as in the northern parts of the United States—the regions where this tree abounds do not afford a sufficient quantity of bark proper for tanning, to supply the wants of the inhabitants. Hence, nearly all the leather and articles manufactured therefrom, consumed in the southern States, are carried from the north. A bark suitable for the purpose of tanning, is more valuable in the United States than at first sight might be supposed. Although there are a great variety of oaks, and many of the species profusely multiplied, yet there are but a very few of them that are sufficiently rich in tannin to be worth using.—*Browne's Trees of America.*

Gosport, a fortified sea-port and market town of England, county of Hants, on the western side of Portsmouth harbor, near its mouth, directly opposite and about a mile from Portsmouth, with which it is connected by a floating bridge moved by a steam-engine working on two fixed chains. It forms no part of the borough of Portsmouth, but is governed by trustees under an old act of Parliament. It is fortified on the land side by a line of bastions extending from Weovil to Alverstoke, and having the appearance of being a segment of the fortifications of Portsmouth. Within the fortifications is the Royal St. Clarence Victualing-yard, with brewery, cooperage, powder-magazines, biscuit-baking establishment, and store-houses for various kinds of provisions for the royal navy. To the south is the magnificent Haslar Naval Hospital, capable of containing 2000 patients. Gosport has also an extensive establishment for the manufacture of anchors and chain cables. It communicates with London by the South-western Railway. The coasting-trade is considerable. Population (1851) 7,414.

Gossamer, a fine, filmy substance, like a cobweb, observed floating in the air, especially in autumn. It is often seen in stubble-fields, and upon furze and other low bushes, and is probably produced by a species of spider.

Gotha Canal. The following information relative to the Gotha Canal is extracted from MACGREGOR's *Commercial Tariffs and Regulations of Norway and Sweden*:—"The inlets, lakes, and rivers of Sweden have always afforded great facilities for the transportation of the produce of her forests and mines. A canal, to avoid the long and tortuous navigation of the Sound and Sound dues, was projected at an early period by Sweden. The Maeler, a deep inlet, enters Sweden at Stockholm from the Baltic, and branches north to Upsala, and west 70 miles among a multitude of islands, to within a few miles of the Lake Hielmar. The Arboga Canal, opened during the latter end of the last century, is navigable between the Maeler and that lake; and it was then considered that it might be continued from the Hielmar to the Wettern Lake, but the project was found impracticable; the distance between the Maeler and Sodree Larker, near the confines of Dalecarlia and the mining districts, was opened at the same period by means of the Stroemsholm Canal and the Lake Fredra, and rivers. The Gotha River, which runs from Lake Wenern (the largest in Europe except the Ladoga) into the sea of Gothenburg, though in many parts deep and navigable, was interrupted by falls and islands. These were finally surmounted, after extraordinary difficulties (the whole of the gigantic works having been once swept off by the impetuosity of the water), by the execution of the Trollhaetta Canal in 1800. It is three miles long, and has eight sluices to ascend and descend 112 feet. At one place it was cut 70 feet deep through the rocks. The whole expense was about £80,000. The Lake Wenern was afterward joined by a canal to the Lake Wettern, and finally the canalization of the whole distance to Soderkoping and the Baltic was completed in 1832."

Regulations for Ships passing through the Gotha Canal.—Sec. 1. Ships and cargoes from all countries, and coming from or going to whatever place or places, are permitted, without obstruction, to pass through the canal, unless the nation or nations to which the ships or cargoes belong are known to be in open hostility with Sweden; and the canal transit dues, both on vessels and cargoes, shall be equal for all nations. 2. The canal dues on all shipping are to be paid according to their tonnage, making no difference whatever whether laden or empty. 3. The canal dues on vessels are to be paid at the rate of 12 skillings Swedish banco per last, equivalent to 10 skillings Swedish banco per commercial last of 2 English tons. In this charge is not included pilotage on the lakes, nor payment for the trailing by oxen or horses on the Gotha Canal, which charges are specially fixed by the directors.

4. In calculating the tonnage of vessels passing through the canal, and also the quantity of merchandise, it is to be observed, with regard to the first named, that such vessels as are provided with Swedish measure-bills will pay the dues according to the burden stated in said bills; but such as are without, will be charged pursuant to a table reduced, conformably to usual practice, from the foreign lasts, tons, etc., to Swedish lasts; and, further, as relates to goods, that the weights and measures stated in the tariff of pounds, ship-pounds, barrels, etc., are meant Swedish pounds, and ship-pounds commercial or victuals' weight (excepting iron, and other metals, by which are meant Swedish staple weights), and Swedish barrels containing 32 kappe solid measure; and further, that such foreign pounds, ship-pounds, barrels, lasts, etc., as may be inserted into its bills of lading and ship's papers, are to be reduced to Swedish weights and measures, in conformity to a fixed table to be made out for that purpose.

5. With respect to tare, or the weight of the case or outer covering, no charge will be made. The canal dues are to be paid, according to the tariff, only on the quantity in weight or measure as inserted in the bill of lading or ship's papers, whether specified in gross or net. A barrel of grain, salt, etc., shipped in bulk, or barrels or bags, are charged alike; pipe-clay, coals, etc., in bulk or packed in casks, the same; as also wines and other liquids, whether in larger or smaller casks; and only in such cases where the last-named are in bottles, then the additional duty must be paid for the bottles, according to the tariff, the same as if they were shipped empty, for themselves.

6. If any vessel, entered at the inward custom-houses at Gothenburg or Soderkoping, only to pass through the canal from sea to sea, should discharge any part of her cargo without the most pressing necessity, either in the River Gotha-Elf, or any of the lakes, or on the canal, such vessel to be forfeited, and the master subjected to the penalty of the law for the unlawful importation of goods; and further, to be fined, according to the circumstances, in the sum of 100 rixdalers to 500 rixdalers banco. The same law will be put into executio against all vessels receiving other cargoes or more goods on board, during the passage to and from one or other of the ports of Gothenburg and Soderkoping. Ships' husbands, or owners of goods, convicted of knowing, abetting, and aiding in the illegal loading or unloading of goods, as aforesaid, will be subjected to the same penalties. The value of the confiscated vessel, which shall be determined by sale by public auction, will be responsible for the full payment of all dues which the vessel and cargo would have been subjected to, according to the tariff, for the whole passage from sea to sea; and the surplus of the proceeds then remaining to be divided, two fifths in equal shares to the informer and those who prove the illegal fact, and three fifths to the canal pension fund and the board of customs, also in equal shares.

There are other regulations, exemptions, and privileges applicable to vessels passing through the Gotha Canal, between the Baltic and the North Sea, which, as they are given in full in the "*Digest of the Existing Commercial Regulations of Foreign Countries*," transmitted to Congress from the Treasury Department in 1833, and have been modified but slightly, if at all, since, are not inserted in this volume. They may be found in that work, under the caption "Sweden."

The whole length of this canal is thus estimated:

	Swedish miles.	
From Gottenburg to the Lake of Wenern, through the River Gotha-Elf and the Canal of Trollhaetta	8¼	¼
Across the Lake of Wenern	11	
Through the Gotha Canal		8½
Through the Lakes of Wikan, Bottensjon, and Wettern	5¼	¼
From the Lake of Wettern to the Baltic, and through the Lakes of Boren, Boxen, and Asplaugen	4½	5
Total river and lakes	29½	
Total canal line		9½
Together		88¾

Gottenburg, or, more properly, **Gothaborg**, on the south-west coast of Sweden, at the head of a fiord near the Cattegat, which receives the River Götha, lat. 57° 42′ 4″ N., long. 11° 57′ 45″ E. Population 29,000, and increasing. Vessels do not come close to the city, but lie in the river or harbor, at a short distance from the shore, goods being conveyed from and to them by lighters that navigate the canals by which the lower part of the town is intersected. The depth of water in the port is 17 feet, and there is no tide, bar, or shallow. A vessel entering the Götha must take a pilot on board, whose duty it is to meet her half a league west of Wingo beacon. After Stockholm, Gottenburg has the most extensive commerce of any town in Sweden. Iron and steel, the former excellent, but the latter inferior to that made in England, form the principal articles of export. They are brought from the rich mines of Wermeland, distant about 200 miles; being conveyed partly by the Lake Wenern

partly by the Trollhætta Canal (see CANALS), and partly by the River Gotha. The exports of iron in 1847 amounted in all to 27,447 tons. The original cost of iron is supposed to be increased about five per cent. by the expense of its conveyance to Gottenburg; and the shipping charges, inclusive of the export duty, are about 10 per cent. additional. The next great article of export is timber, particularly deals, which are also furnished by Wermland. Of these, the exports in 1847 were 227,000 dozen, but this is above the average. The other articles of export are, linen, sail-cloth, tar, copper, alum, glass, cobalt, manganese, linseed, oak bark, bones, juniper-berries, cranberries, rock-moss for dyeing, etc. Grain is sometimes imported, and sometimes exported. The principal articles of import are sugar, coffee, tobacco, cotton yarn and twist, salt, indigo, and dye-woods, South Sea oil, rice, herrings, wine, spices, etc. There belonged to the port in 1847, exclusive of river craft, 126 vessels of the aggregate burden of 13,254 Swedish lasts, or about 30,000 English tons; and ship-building has since been going on briskly. The opening of the Gotha Canal, by which Gottenburg comm. dcates with a large portion of the interior of Sweden, has exercised a powerful and beneficial influence over her commerce. She carries on an extensive trade with England, and English is generally understood. Steamers run once a week between Gottenburg and Hull for eight months of the year; but in winter the intercourse with England is kept up by the tedious route of Lubec and Hamburg. The opening of the Gotha Canal has greatly benefited its commerce, by bringing it into communication with a large portion of the interior of Sweden. In 1849, 718 vessels entered, and 1462 cleared in the coasting trade; and 1018 vessels entered and 1011 left for foreign ports, exclusive of steamers, of which the number that entered and cleared out at the port were 88. See GOTHA CANAL.

Herring Fishery.—Gottenburg used, at no distant period, to be one of the principal seats of the herring fishery; but at present this branch of industry is quite extinct, and it has always been very capricious. From 1556 to 1588 great quantities of horrings were taken; from 1588 to 1660, they left the coast; during the next 15 years they were again abundant; but from 1675 to 1747 they entirely disappeared. From 1747 to 1770 they were abundant, 186,614 barrels being taken in 1763, and 151,483 in 1768. From 1786 to 1799 the fishery was very good, from 110,000 to 190,000 barrels being annually exported. In 1804 the export was 79,512 barrels. In 1808 and 1809 fish were very scarce; and in 1812 they entirely disappeared, and have not hitherto returned; so that Gottenburg, instead of exporting, at present imports considerable supplies of herrings.

Both iron and timber pay duties on exportation, but they are not heavy.

Custom-house Regulations and Port Charges.—On arriving in port, no person is allowed to board or to leave a vessel till she be in custody of the officers; who, having inspected the manifest and papers, send them to the custom-house. An officer is appointed to superintend the unloading, and also the loading. The public charges of all sorts on a Swedish ship and on a foreign ship not privileged, each of 300 tons' burden, unloading and loading mixed cargoes at Gottenburg, would be, on the former, £24 5s. 7d.; on the latter, £49 5s. 7d. On a privileged foreign ship the charges are the same as on a Swedish ship.

Warehousing System.—Goods may be bonded for any length of time, on paying one half per cent. ad valorem for the first two years, and one half per cent. annually thereafter.

Commission, Credit, etc.—The usual rate of commission is 2 per cent. Goods are commonly sold on credit. Raw sugar at 9 months' with 3 months' interest to the seller. Other goods at 3, 4, and 6 months.

Banking, etc.—There are no public or private banking establishments at Gottenburg for the issue of notes; but the national bank has two offices here which advance limited sums of money, at five per cent., on security of goods, and in discount of bills. Some of the English insurance companies have agents here, who do a good deal of business.

Sea Stores, Water, etc.—These may be had here of excellent quality, and cheap. Beef, 1½d. per lb., best rye bread, 2½d. per lb., and butter, 6d per lb.

Money, Weights, Measures, etc., same as at Stockholm, which see.

In compiling this article, we have made use of Consular Returns, COXE's *Travels in the North of Europe*, vol. iv., pp. 267–275, and some valuable private communications.

Grace, Days of, in commercial law are certain days allowed by the custom of merchants to be added to the time requisite for presentment of a bill. Thus, if an instrument drawn in this country be payable "a certain time after date," three days of grace are added: a bill drawn on the 27th of August, payable "two months after date," is therefore due on the 30th of October. So if a foreign bill be drawn at one, two, or more "usances," the days of grace are added to the usance. The usance between London and Paris is one calendar month. A bill drawn in London on Paris "at one usance," on the 2d January, is consequently due on the 5th February. The number of days of grace varies in different countries. In France none are allowed. See DAYS OF GRACE.

Grain, the name of the smallest weight in common use It is the 24th part of a pennyweight troy, and the 20th part of the scruple in apothecaries' weight

Grain Markets. There were received at Baltimore during the past year (1856) 3,440,000 bushels of wheat, 4,081,000 bushels of corn, 847,300 bushels of oats, 228,200 bushels of rye. 925,000 barrels of flour were received.

At Buffalo, N. Y., the receipts of flour were 1,143,085 barrels; of wheat, 8,843,117 bushels, and of corn, 9,845,790 bushels.

At Oswego, N. Y., 114,143 barrels of flour, 8,437,027 bushels wheat, 3,543,521 bushels of corn.

At Chicago the receipts of grain of all kinds were 24,000,000 bushels, and the shipments about 20,000,000 bushels.

We give below a table showing the comparative importance of the principal dépôts of the world; from which it will be seen that Chicago and Buffalo rank nearly equal, allowing for the increase of one year in the former place. Enough is shown to make evident the greater importance of some of our new prairie cities over the old established grain dépôts of Europe. Chicago, in 1823, was described by Major Long, in his "Expedition to St. Peters," as a "village presenting no cheering prospect," and one not promising much in commercial importance.

	Wheat.	Indian Corn.	Oats, rye, and barley.	Total.
1854.	Bushels.	Bushels.	Bushels.	Bushels.
Odessa.....	5,000,000	....	1,440,000	7,040,000
Galacz & Braila	2,400,000	5,000,000	320,000	8,320,000
Dantzic.....	3,080,000	....	1,328,000	4,408,000
St. Petersburg.	....	....	....	7,200,000
Archangel.....	....	....	....	9,528,000
Riga.....	....	....	....	4,000,000
Chicago	8,644,860	6,887,899	3,419,551	12,902,310
Chicago ...1855	7,115,250	7,517,025	2,000,988	16,633,813
Baltimore..1856	3,440,000	4,081,000	1,075,500	8,596,500
Buffalo.... "	8,843,117	9,845,790	....	18,688,907
Oswego.... "	8,488,000	2,543,520	....	11,981,520

Grains of Paradise, hot, acrid, aromatic seeds, produced on the coast of Guinea, and supposed to be derived from two distinct species of plants, viz., the *Amomum Grana-paradisi* of Linnæus, and the *A. Melegueta* of Roscoe; perhaps, also, from others. They

are of a glossy dark-brown color, are longer and rounder than the seeds of the true cardamom, and have a slight flavor of camphor. These seeds are much esteemed as a spice among the Africans, but are chiefly employed to give a fictitious strength to beer and spirits. ANCHER'S *Economic Botany*.

Granada, a town of Central America, State of Nicaragua, on the north-west bank of the Lake of Nicaragua. By means of the Lake and the River San Juan, it communicates with the Caribbean Sea, and thus carries on a considerable trade. Population about 12,000.

Granary, a building to store corn in. Granaries are generally built of brick, with quarters of timber wrought in the inside, to which the boards, with which the inside of the granary must be lined, or nailed so close to the bricks that there may be no space left for vermin to harbor in. There is an advantage in having many stories, because the shallower the corn lies the better and more easily it is turned.

The two great requisites in the erecting of granaries are—to make them sufficiently strong, and to give them an exposure to the most drying winds. In many parts of England, particularly in Kent, corn is treated in the following manner: To separate it from dust and other impurities after it is threshed, it is tossed with shovels from one end to the other of a long and large room; the lighter substances fall down in the middle of the room, and the corn only is carried from side to side, or from end to end of it. After this, the corn is screened; and being then brought into the granary, it is spread about half a foot thick, and turned from time to time, about twice a week; the screening of it is also repeated once a week. This sort of management is continued about two months, after which it is laid a foot thick for two months more; and during this time it is turned once a week, or twice if the season be damp, and now and then screened. After about five or six months, it is raised to two feet thickness in the heaps, and then turned once or twice in a month, and screened from time time. After a year, it is laid two and a half or three feet deep, and turned once in three weeks or a month, and screened proportionally. When it has lain two years or more, it is turned once in two months, and screened once a quarter; and however long it be kept, the oftener the turning and screening are repeated the better will the grain be preserved. It is proper to leave an area of a yard wide on every side of the heap of corn, and other empty spaces into which the corn may be turned and tossed as often as required. In Kent, two square holes are made at each end of the floor, and a round one in the middle, by means of which the corn is thrown out of the upper into the lower rooms, and so up again, that it may be the better turned and aired. The screens are made with two partitions, to separate the dust from the corn, which falls into a bag; and when sufficiently full, this is thrown away, while the pure and good corn remains behind. Corn has by these means been kept 30 years; and it has been observed, that the longer it is kept the more flour it yields, in proportion to the corn, and the purer and whiter the bread is, the superfluous humidity alone evaporating in the keeping. At Zurich, in Switzerland, corn has been kept 80 years, or longer, by methods of similar description.

The public granaries at Dantzic are seven, eight, or nine stories in height, and have a funnel in the midst of each floor, to let down the corn from one to another. They are built so securely, that though every way surrounded by water, the corn contracts no damp, and the vessels have the convenience of coming up to the walls to be loaded. The Russians and others preserve their corn in subterranean granaries of the figure of a sugar-loaf, wide below and narrow at top, the sides being well plastered, and the top covered with stones. They are careful to have the corn well dried before it is laid into these store-houses, and often dry it by means of ovens, especially where the summ · dry weather is too short to effect this sufficiently. This method of storing grain has been practiced in many countries from remote antiquity; and in Sicily, in particular, at the present day, many of the granaries are simply excavations in the calcareous rock.

Some recommend that the roofs of granaries should be composed of tiles, because in the worst seasons, when the regular apertures can not be opened with safety, there will always be a considerable inlet for fresh air at their joinings, and also an issue for the exhalations given out by the grain; while others prefer a very close roof, as of lead or zinc, for the perfect exclusion of insects and vermin. If there happen to be any windows to the south, care must be taken to shut them in moist weather, and in the time of the hot southern winds. There must be no cellar or other damp place under a granary, nor should it ever be built over stables; for in either of these cases the corn will certainly suffer by the exhalations—be rendered damp in the one, and ill-tasted in the other.

M. Duhamel and Dr. Halles have recommended various contrivances for ventilating or blowing fresh air through corn laid up in granaries or ships, in order to preserve it sweet and dry, and to prevent its being attacked by weevils or other insects. This may be done by nailing wooden bars or laths on the floor of the granary, about an inch distant from each other, when they are covered with hair-cloth only; or at the distance of two or three inches, when coarse wire-work, or basket-work of osiers, is laid under the hair-cloth, or when an iron plate full of holes is laid upon them. These laths may be laid across other laths, nailed at the distance of 15 inches, and two or more inches deep, that there may be a free passage for the air under them. The under laths must come about six inches short of the wall of the granary at one end, on which a board is to be set edgewise, sloping against the wall; for by this disposition a large air-pipe is formed, which having an open communication with all the interstices between and under the bars, will admit the passage of air below forcibly through a hole at the extremity, and consequently carry off the moist exhalations of the corn. The ventilators for supplying fresh air may be fixed against the wall, on the inside or outside of the granary, or under the floor, or in the ceiling; but wherever they are fixed, the handle of the lever that works them must be out of the granary, otherwise the person who works them would be in danger of suffocation when the corn is fumigated with burning brimstone, as is sometimes done for destroying weevils. Small movable ventilators will answer the purpose for ventilating corn in large bins in granaries, and may easily be moved from one bin to another. If the granary or corn-ship be very long, the main air-pipe may pass lengthwise along the middle of it, and convey air on both sides under the corn. In large granaries, double ventilators, laid upon each other, may be fixed at the middle, and near the top of the granary, that they may be worked by a windmill fixed on the roof of the building, or by a water-mill. The air is conveyed from the ventilators through a large trunk or trunks, reaching down through the several doors to the bottom of the granary, with branching trunks to each floor, by means of which it may be made to pass into a large trunk along the adjoining cross-walls; and from these trunks several lesser trunks, about four inches wide, branch off at the distance of three or four feet from one another, and reach through the whole length of the granary, their further ends being closed. Seams of one tenth or one twelfth of an inch should also be left open at the four joinings of the boards, where they are nailed together, that the air may pass through them into the corn. In some of these lesser trunks there may be sliding shutters, to stop the passage of the air through those trunks which are not covered with iron, or to ventilate one part of the gran-

ary more briskly than others, as there may be occasion. There should also be wooden shutters, hung on hinges at their upper part, so as to shut close of themselves; and these should be fixed to openings in the walls of the granary on their outside; by which means they will readily open to give a free passage for the ventilating air, which ascends through the corn, but will instantly shut when the ventilation ceases, and thereby prevent the admission of damp from the external air. The ventilation should be made only in the middle of dry days, unless the corn, when first put in, be cold and damp.

Granite, a compound rock, constituting the lowest of the geological formations, according to older geologists; but it has lately been found resting even on secondary formations in the Alps. It (essentially) consists of quartz, feldspar, and mica. Its great durability as a material for building is attested by many of the ancient Egyptian monuments, in which the stone exhibits no appearance of decay even after a lapse of 3000 years. There are some granites, however, which shake and crumble down in a very few years, particularly those in which feldspar predominates. This rock becomes refractory to work after it has been some time quarried; and it is usual to keep it for some time under water before it is wrought into ornamental objects.

Granulation of metals, an operation simply performed by slowly pouring the melted mass through an iron cullender into water, which is kept in agitation by means of a bundle of twigs. By this method metals may be reduced to minute grains.

Granville, the ancient *Grannonum*, a fortified seaport town of France, department of La Manche, at the foot of a steep, rocky promontory projecting into the English Channel, 80 miles south-west of St. Lô. It is surrounded by strong walls, and the streets are narrow and steep. The only remarkable building is the parish church, a venerable Gothic edifice. The harbor is spacious and secure, but dry at low water. Works, however, are now in progress for the improvement of the harbor generally, and for the construction of wet docks. The inhabitants are chiefly engaged in the coasting trade, or in the cod and oyster fisheries. Shipbuilding is also carried on. It has a tribunal of commerce, a hospital, public baths, and a naval school. Granville was bombarded and burned by the English in 1695, and partly destroyed by the Vendean troops in 1793. Population, 8347.

Grape-shot, in *Artillery*, consists of a quantity of shot piled round an iron spike which is placed in a strong canvas bag, the whole being firmly corded together so as to form a cylinder adapted to the calibre of the cannon. It differs from canister or case-shot in that the latter kind is composed of balls packed into a tin canister with a wooden bottom.

Grapes (Ger. *Trauben;* Fr. *Raisins;* It. *Grappoli, Grappi;* Sp. *Ubas, Racimos;* Lat. *Uvæ*), a well-known fruit produced from the vine. France, Spain, Portugal, and Italy, as well as some parts of Germany and Hungary, produce grapes which yield wines of various qualities and flavor, many of them excellent. We import green grapes from Lisbon, and other parts of Portugal, Malaga, etc. They are brought packed in jars, and secured from damage by means of sawdust, plentifully strewed between the layers of fruit. The grapes grown in Great Britain in the open air are much smaller, and by no means so luscious, as those of foreign countries; but those raised in hot-houses are quite equal, if not superior, to the latter. Grapes are imported not only in their natural state, but dried and preserved, in which latter state they are denominated raisins. [See RAISINS.] The most valuable grapes grown in the United States are from the Catawba and Isabella vines, which are natives of America. These grapes are of a purple color, and have as luscious a taste as the best grapes of Europe. A smaller grape also abounds, called the fox grape, which, although not as pleasant to the taste, is very much used in a dried state, and is also preserved in large quantities. See WINE.

Graphite (*γράφω*, I write), otherwise called *plumbago*, and often improperly *black lead*, is a mineral carbon with a slight admixture of iron. It may be made artificially by exposing iron with excess of carbon to a violent heat for a considerable length of time, when a real carburet of iron will be formed; whereas in the native specimens the iron and charcoal are only mechanically combined. The finest graphite occurs at Borrodale in Cumberland, and is appropriated exclusively to the manufacture of pencils. The coarser varieties are used for making crucibles and portable furnaces, for which purposes this substance is peculiarly fitted from its infusibility; and it is also much used for giving a gloss to the surface of cast-iron goods, as well as to diminish friction between rubbing surfaces of metal or wood in machinery.

Grapnel, or **Grapling**, a kind of small anchor with four or five flukes or claws, chiefly used to secure small boats.

Grass Cloth. The following extract from the Report of Mr. Nathaniel Wilson, superintendent of the Botanical Gardens at Bath, in Jamaica, describes the successful introduction into that island of the China grass-cloth plant (*the Rhee of Assam*), and the propriety of turning to profitable account their numerous indigenous fibrous-yielding plants, which are at present quite neglected: "I have now the happiness of recording my entire success in the cultivation of the China grass-cloth plant (*Boehmeria nivea*), introduced in 1854, and a more valuable introduction could not have been made. I find the plant thrives here with a luxuriance equal to any of our native plants, and probably with more vigor than it does in its native clime. This plant (as is now well known), produces the best fibre for textile purposes with which we are acquainted, and, according to undoubted authority, is worth in the London market from £80 to £120 per ton; which is surely sufficient to render the plant worthy of all the attention we can bestow on it, if new staples for general and profitable cultivation be desirable. I have no hesitation in saying, that, by its spontaneous and luxuriant growth, a more desirable and appropriate plant for tropical culture has never before been submitted to the notice of the public. I have 36 of these plants ready for distribution, and could, by a small expenditure, increase the number to any reasonable extent.

Gravesend, a municipal borough, river-port, town, and parish of England, county of Kent, on the right bank of the Thames, 20 miles E.S.E. of London. Area of borough, including Milton parish, 1541 acres. Population of Gravesend and Milton, 16,633. The older part of the town, near the river, has narrow streets, the upper town is more open, and has many tasteful rows of houses and detached villas; the summit of hill, on which it is built, is crowned by prospect-towers, commanding views of the Thames, and is a favorite holiday resort. Former trade consisted in supplying ships with stores, vessels from London being obliged, until lately, to clear out here. Its more recent, and still rapidly increasing prosperity dates from the establishment of steamboats, which run to London in two hours, and during summer, especially on Sundays, bring immense crowds of visitors. Many also of the wealthier class of tradespeople reside here. A railroad, to unite with the London and Greenwich line, is in course of formation, and will unite with one which passes through a tunnel, upward of two miles in length, and connects the town with Rochester, distant about seven miles. There is a ferry across the Thames to Tilbury Fort. Market, Wednesday and Saturday. The borough is a polling-place for West Kent. The town was burnt by the French in the time of Richard II. On its west side are the garden and suburb of Rosherville.

Great Britain, the most considerable of all the European islands, is situated between 50 and 58½ degrees of north latitude. It is bounded on the north by the North Sea, on the east by the German Ocean, on the south by the English Channel, and on the west by St. George's Channel and the Atlantic Ocean. From north to south it extends about 580 miles in length; its greatest breadth, from the North Foreland in Kent, to the Land's End in Cornwall, is about 370 miles; and its superficial area is computed at 87,500 square miles. The figure of this island is irregular, somewhat resembling that of a wedge, to which indeed it was compared by the ancients, from its gradually narrowing toward its northern extremity; and its whole line of coast is deeply indented by bays, creeks, and estuaries, which, notwithstanding its boldness and ruggedness in many parts, afford safe and commodious harbors. From its geographical position, therefore, no less than from its natural advantages, this island seems to have been destined by nature to become the seat of a great and powerful nation.

Its eastern coast forms a waving, continuous, and rarely-broken line, but the western coast is extremely irregular, and deeply indented with many bays and arms of the sea, interspersed with numerous islands. The south-east part of Britain is a level, alluvial surface; the centre, undulating and hilly; the western and north-western, mountainous and irregular. In the north and west, primary strata and granite rocks prevail; in the middle districts, coal, lime, salt, and ironstone are abundant; and these are succeeded in England, on its east and south-east valleys, by oolite chalk and the newer geological formations. A mountain range, more or less elevated, extends from south to north of the island, running through Cornwall, Devonshire, Somersetshire, and thence through Wales, varying in elevation from 1500 to 8500 feet. Another branch extends from the Cotswold hills, Gloucestershire, and runs through Derbyshire, Staffordshire, Yorkshire, Cumberland, Westmoreland, and Northumberland, with elevations from 2000 to 8000 feet. Succeeding these are the Cheviots, the Lammermoors, and the great Grampian range, which intersect Scotland, and whose extreme altitude is measured by Ben Nevis on the west, and Ben Macdhui on the north-east, both attaining an elevation of upward of 4300 feet. The most considerable rivers are the Severn, Medway, Dee, Mersey, Clyde, on the west coast, and the Thames, Trent, Humber, Tyne, Forth, Tay, and Spey, on the east coast. The principal lakes are those of Cumberland and Westmoreland in England, and Lochs Lomond, Tay, Maree, etc., in Scotland. The principal bays and estuaries are the Bristol Channel, Cardigan Bay, Lancaster Bay, the Solway Firth, Firth of Clyde on the west, and the Thames' mouth, the Wash, the Humber, the Firths of Forth, Tay, Murray, and Cromarty on the east, while on the south there are Falmouth, Plymouth, Portsmouth, and other important bays and harbors.

The British Islands include Ireland, the Isles of Wight, Anglesea, Man, the Scilly Islands, Bute, Arran, the Hebrides, Orkney, and Shetland Islands. The climate of Britain is greatly modified by its insular situation, the extremes both of summer and winter temperature being much less than that of corresponding latitudes on a continental surface. The mean annual temperature is about 49° Fahrenheit. The extreme summer heat seldom exceeds 80° Fahr., and the winter cold, with rare exceptions, does not extend beyond 25° to 32°. The annual fall of rain averages about 32 inches. Most rain falls on the west side of the island (from 36 to 40 inches), the east coast being comparatively dry (25 inches), but a cold north-east and east wind prevails more on the east coast, while a warm west and south-west blows on the west; from this reason, joined to the nature of the soil and elevation of the surface, the eastern half of the island is more an agricultural, while the west is more a grazing country. Though variable, the climate of Britain is found, from tables of longevity, to be one of the most salubrious in the world, while the very general cultivation and drainage of the soil have removed those maladies that originate in marsh effluvia. Within the last century the average longevity of the population has been greatly increased. In 1800 the average mortality in England was 1 in 32, in 1847 1 in 45. The area of Britain is 90,038 square miles; including Ireland, the total area is 122,550 square miles, or 78,432,648 acres. In 1710 the population of England and Scotland amounted to 6,116,937; in 1801 to 10,942,646; in 1821 the population of the United Kingdom, including Ireland, was 21,202,966; in 1831, 24,410,429; in 1841, 27,019,558; and in 1851, 27,675,824.

The following table shows the population of Great Britain and Ireland, the area in statute acres and square miles, also the number of acres to a person, and the number of persons to each square mile:

	Males.	Females.	Total.	Area.		Acres to a person.	Persons to a sq. mile.
				In statute ac.	In sq. m.		
England	8,281,784	8,640,154	16,921,888	32,590,429	50,922	1·9	332
Scotland	1,375,479	1,513,263	2,888,742	20,047,462	31,324	6·9	92
Wales	499,491	506,290	1,005,721	4,784,486	7,398	4·7	135
Islands in the British Seas	60,854	76,272	143,126	259,000	394	1·8	363
Army, navy, and merchant seamen	162,490	....	162,490	....	....	....	....
Total	10,386,018	10,735,919	21,121,967	57,624,977	90,038	2·7	233
Ireland	3,176,727	3,839,067	6,553,357	20,808,271	32,512	3·2	21
Total Great Britain and Ireland	13,562,775	13,974,986	27,675,324	78,432,648	122,550		

The British population is spread over a great multitude of islands which rise between the Atlantic Ocean and the North Sea, the large Island of Great Britain being the chief of the group. This Island is surrounded by the Isle of Man, Anglesea, the Scilly Islands, the Isle of Wight, the outlaying Channel Islands, the Shetland Islands, the Orkneys, and the Hebrides. 500 islands have been numbered, but inhabitants were only found on *one hundred and seventy-five* islands on the day of the census in 1851. The British Isles extend over 11 degrees of latitude and 10 degrees of longitude; consequently, in the most northerly of the Shetlands, the night in the summer solstice is three hours shorter than in Jersey; and the sun rises and sets on the east coast of England 47 minutes before it rises and sets on the west coast of Ireland.

In the earliest period of our written history, these Islands were peopled by Celts; Britain was their holy island, and the seat of their schools and most sacred groves. The isles of Anglesea and Man, both known under the name of Mona to the Romans, were the seats of the Druidic hierarchy and worship. Iona, or Icolmkill, a small island in the Hebrides, now containing 601 inhabitants, is celebrated as an early seat of Christianity. It was the station of St. Columba, who founded an order of missionaries there, and thus contributed to the diffusion of Christianity over Britain. The celebrated ruins on the island consist of a cathedral, a nunnery, and St. Oran's chapel, together with many ancient tombs and crosses. This island is often visited by tourists to the western Highlands, and is only 10 miles from the far-famed Staffa.

The population of the Island of Great Britain in 1851, was 20,936,357; Ireland contained 6,553,357 inhabitants; Anglesea, the next most populous in the group, had 57,318 inhabitants; Jersey, 57,020; the

Isle of Man, 52,344; the Isle of Wight, 50,324; Guernsey, 29,757; Lewis, 22,918; Skye, 21,628; Shetland, 20,936; Orkney, 16,668; Islay, 12,834; Bute, 9851; Mull, 7485; and Arran, 5857; 17 islands contained a population ranging from 4006 to 1061; 52 had a population ranging from 947 to 105; and the remaining 92 inhabited islands ranged from a population of 92 downward, until at last we come to an island inhabited by one solitary man.

Divisions.—The shire is an important sub-division of the kingdom; each has a lord-lieutenant, who is also keeper of the archives; a sheriff, an under-sheriff, and justices of the peace, all appointed by the crown; each shire has also a county treasurer and a clerk of the peace, each appointed by the lord-lieutenant; and a county coroner, elected by the freeholders. The revenue of the shires is chiefly derived from rates struck by the justices of the peace in counties at quarter sessions, and is for the most part appropriated in maintaining bridges, lunatic asylums, jails, prisoners, and police. The terms "hundreds" and "tythings" had their origin in a system of numeration, but whether they represented persons, families, or holdings, is difficult to determine. In process of time, what was once a *number* became a *name*, and for a long period the terms have ceased to measure either area or population, as is evidenced by the fact that the hundreds in the survey after the Conquest, and the hundreds still remaining, differ widely in both elements, and, moreover, the present hundred is different in extent in the various counties; for instance, in Gloucestershire, the hundred contains on an average 29,000 acres; in Herefordshire, 49,000; and in Shropshire, 63,000. The hide was the lot or share of the first settler.

The sessional divisions existing in all the counties of England and Wales, for the purposes of special and petty sessions, are in general based on the *hundreds* and other ancient county sub-divisions. The justices have power to alter these divisions for the convenience of holding sessions, but they have no authority to alter the ancient hundreds. There are 609 sessional divisions in England and Wales, and for the purpose of assize and jail delivery, eight circuits, beside the jurisdiction of the central criminal court. A Saxon *burgh*, or borough, was a *hundred*, or an assemblage of hundreds, surrounded by a moat or wall. As ancient boroughs fell into decay, new ones sprung up, and many towns not formerly boroughs, have been created boroughs for purposes not very intelligible. The affairs of municipal boroughs are administered by a mayor, aldermen, and other functionaries.

The 196 reformed boroughs in England and Wales contain a total population of 4,345,269 inhabitants; the population of 64 range under 5000; 43 from 5000 to 10,000; 68 from 10,000 to 50,000; 14 from 50,000 to 100,000, 4 from 100,000 to 200,000; and 3 above 200,000. The *city* of London is still unreformed, and therefore not included in these. Scotland contains 83 royal and municipal burghs, having a total population of 752,777 inhabitants; 55 have a population under 5000; 16 from 5000 to 10,000; 11 from 10,000 to 70,000; and 1, 148,000.

The minor sub-divisions of townships, parishes, and manors, were re-distributed by William the Conqueror, after the battle of Hastings, and apportioned among the chieftains in his army. The ecclesiastical districts and dioceses were designed exclusively for spiritual purposes; their boundaries are quite ignored by the general public, and rarely known by any secular officers, while, in many cases, even the clergy themselves, unprovided with maps or plans, are uncertain as to the limits of their respective cures. The division of the country, ecclesiastically, in *Dioceses*, *Archdeaconries*, and *Deaneries*, took place at a very early period. Most of the present bishoprics were founded in Saxon times. The dioceses, on their first formation, had their limits co-extensive with the boundaries of the kingdom of the sovereigns who formed them; but sub-divisions were soon discovered to be necessary, and various princes subsequently made repeated alterations, until at length the whole arrangement settled into its existing shape.

The indigenous vegetation of Britain partakes of the character of that of the contiguous parts of Europe. All the grains and grasses, and the common European fruits, grow in almost all districts and situations, not too elevated, and both agriculture and horticulture have been brought to a great degree of perfection. The breeds of horses, cattle, sheep, and other useful animals, are also of the best description. Of wild animals, the fox, badger, wild cat, stoat, martin, otter, squirrel, hedgehog, dormouse, mole, mouse, hare, and rabbit, are the principal. The wolf, bear, beaver, and wild ox have become extinct for several centuries. The stag and fallow deer are still abundant in several localities. The great bustard and capercallzie are the only birds known to have become extinct in Britain. The bittern, eagle, and other birds of prey are becoming daily more rare. Great Britain is the most favored country in the world for the development of mineral industry. Fuel, the indispensable agent in the treatment of metalliferous ores, and the most powerful element in the production of motive force, is distributed unequally throughout England, Scotland, and Ireland. The coal formation in these three divisions of the British empire, occupies rich and widely-spread basins, several of which, especially those of Newcastle-on-Tyne, Scotland and Wales, being near the sea, are enabled to export the coal to those places where the metalliferous ores exist in abundance, but where, as in Cornwall, the absence of fuel renders their being worked both costly and difficult. The ores of iron, abundantly distributed in several of the coal basins, add greatly to the value of these. Each one so circumstanced has become the centre of a metalliferous district, where numerous works produce iron at a price so moderate as almost to defy competition. The insular position of Great Britain, which facilitates the shipment of coal to the places where it is required, is equally important in transporting the iron by sea to any of the sea-ports of the world. These highly-favorable causes have given great development to the operations of coal-mining and the manufacture of iron, and especially since the application of cast iron for the purposes of constructing railroads. The quantity of cast iron produced in 1850 was 2,250,000 tons. The quantity of coal raised was estimated at 34,750,000 tons. These sources of wealth in coal and iron, which are alone sufficient to place a country at the head of mineral industry, are not the only ones possessed by Britain. Nature has given it mines of copper, tin, and of lead, of great richness. The annual production of copper is 12,000 tons; of tin ore, 11,000 tons; and of lead, 58,701 tons. The coal-beds of England, contained in the carboniferous system, are found in Northumberland and Durham, South Yorkshire, Nottingham and Derby, South Lancashire, Staffordshire, Warwickshire, Anglesea, Flint, Salop, Worcestershire, Gloucestershire, and the northern part of Somerset, South Wales, and near Whitehaven in Cumberland. Iron is found in inexhaustible quantities in all the formations. Lead is found chiefly in the mountain limestone; copper in the granite and older primary stratified rocks; tin in Cornwall and Devon. Salt springs, yielding large quantities of salt, are found in Cheshire and Worcestershire. As to mineral treasures, the eastern counties of England, to the south of Yorkshire, are remarkble for containing no mines, either of coal or metal. These valuable deposits are found in the more uneven districts of the north and west.

The following table presents at one view territory belonging to Great Britain, its area in square miles, and the last census in every portion attainable:

TERRITORY BELONGING TO GREAT BRITAIN.

States, provinces, or colonies.	Area in Eng. sq. m.	Date of census.	Pop. by the last census.
I.—*European Possessions.*			
England	50,922	1851	16,921,888
Wales	7,398	1851	1,005,721
Scotland	31,824	1851	2,888,749
Islands in British seas	894	1851	148,196
The army, navy, and British seamen	....	1851	162,490
Ireland	32,445	1851	6,536,857
Heligoland	5	....	2,230
Gibraltar	1¼	1844	15,008
Malta	95?	1847	108,140
Gozo	27	....	15,180
Total European possessions	122,611¼	....	27,798,822
II.—*African Possessions.*			
Sierra Leone	875	....	45,479
Gold Coast settlement	6,000	....	275,000
Fernando Po	400	....	....
Settlements on the Gambia	12	....	4,857
St. Helena	76	....	7,000
Ascension	44	....	6,957
Cape of Good Hope	110,256	....	261,430
Natal	15,000	....	250,000
Mauritius	708	1849	179,881
The Seychelles	80	....	5,800
Total African possessions	133,451	....	1,036,391
III.—*Asiatic Possessions.*			
Ceylon	24,448	....	1,421,631
Hong-Kong (treaty in 1842)	30	....	23,872
India.			
Bengal and Agra presidencies	306,000	....	71,758,869
Berar, ceded to Bengal, 1853	76,432	....	4,650,000
Madras presidency	144,589	....	16,939,426
Bombay presidency	120,665	....	10,485,017
Punjab	78,447	....	4,100,983
Settlements in Farther India, Singapore, etc	1,575	....	202,540
States dependent on Bengal	477,954	....	39,685,476
" " Madras	50,637	....	4,691,280
" " Bombay	56,320	....	4,613,029
Labuan	25	....	....
Aden	8	....	40,000
Total Asiatic possessions and dependencies	1,356,810	....	159,012,073
IV.—*American Possessions.*			
Hudson's Bay Territory	2,480,000	....	180,000
Canada East	291,989	1852	890,261
Canada West	147,332	1852	952,004
New Brunswick	27,700	1851	193,800
N. Scotia, includ. Cape Breton	18,746	1851	276,117
Prince Edward's Island	2,134	1848	62,678
Newfoundland	35,913	1851	101,606
Labrador (attached to Newfoundland)	5,000	....	100,000
Vancouver's Island	8,000	....	2,000
West Indian Possessions.			
Honduras	62,700	1848	11,066
Bermudas	47	1851	11,092
Jamaica	6,400	1849	379,690
The Bahamas	5,500	1851	25,892
Barbadoes	166	1851	135,930
Grenada	109	1844	28,927
St. Vincent	131	1851	27,248
St. Lucia	225	1850	24,538
Tobago	140	1844	13,027
Antigua	108	1850	36,190
Montserrat	47	1850	7,800
Barbuda	10	....	1,600
Dominica	275	1848	23,200
St. Christopher	70	1850	23,133
Nevis	20	1851	10,200
The Virgin Islands	90	1844	56,689
Turk's Islands	434	1851	6,122
Trinidad	2,020	1848	59,814
Bay Islands	200	....	400
British Guiana	96,500	....	127,695
Falkland Islands	600	....	2,000
Total American possessions	2,993,056	....	3,483,877
V.—*Australian Possessions.*			
New South Wales	34,500	1851	197,168
Victoria	....	1852	200,000
Western Australia	100,000	1850	7,000
Southern Australia	300,000	1850	84,881
Van Diemen Land	25,000	1850	70,164
New Zealand	86,000	1850	22,400
Auckland Islands	....	....	....
Norfolk "	....	....	....
Total Australian possessions	545,500	....	580,765
Grand Total	4,131,383	....	194,997,980

AN ACCOUNT OF THE DECLARED VALUE OF THE EXPORTS TO EACH COLONY AND DEPENDENCY OF THE BRITISH CROWN IN EACH OF THE THREE YEARS ENDED 5TH JANUARY, 1850, 1851, AND 1852.

British colonies and dependencies.	Declared Value of Exports.		
	1850.	1851.	1852.
	£	£	£
Heligoland	857	250	238
Channel Islands	634,193	506,415	618,724
Gibraltar	538,481	888,141	481,286
Malta and Gozo	887,744	814,886	801,443
Ionian Islands	185,805	135,912	223,096
Europe	1,721,580	1,345,104	1,619,787
Possessions on R. Gambia	35,770	48,700	47,197
Sierra Leone	60,290	70,290	94,456
Gold Coast	134,591	67,871	107,658
Fernando Po	3,197	3,668	81,505
Possessions in South Africa	590,961	796,600	752,893
Ascension	4,997	8,868	7,307
St. Helena	18,315	26,695	28,248
Mauritius	234,022	868,726	232,955
Africa	1,012,143	1,400,858	1,296,884
Aden	14,564	18,711	17,184
Territories in the E. Indies	6,140,842	7,242,194	7,022,296
Singapore	494,080	562,189	608,886
Ceylon	159,352	218,332	175,414
Hong-Kong	651,969	598,191	682,899
Asia	7,469,807	8,684,567	8,456,179
West Australia	12,518	36,981	84,726
South Australia	315,648	417,809	375,035
New South Wales	1,330,847	1,005,452	1,201,261
Victoria	....	589,279	604,408
Van Diemen Land	315,021	440,566	420,922
New Zealand	106,434	112,466	171,009
Australia	2,080,468	2,602,253	2,807,356
Sett. of Hudson's Bay Co	61,795	102,225	72,827
Newfoundland	297,850	348,120	334,730
Canada	1,324,981	1,998,511	2,451,584
New Brunswick	279,280	411,151	442,198
Prince Edward's Island	41,421	56,867	57,109
Nova Scotia	276,106	328,177	455,309
Antigua	70,194	65,787	99,708
Barbadoes	319,658	331,594	419,479
Dominica	22,484	26,474	33,595
Grenada	28,848	36,796	45,163
Jamaica	626,085	791,574	700,290
Montserrat	402	63	178
Nevis	1,093	1,641	2,268
St. Christopher	45,448	48,667	58,664
St. Lucia	16,672	15,000	22,974
St. Vincent	58,208	57,870	73,201
Tobago	14,887	18,641	16,820
Tortola	46	221	....
Trinidad	248,213	241,990	275,188
Bahamas	24,709	33,008	32,088
Bermudas	47,188	39,527	32,483
Demerara	279,062	302,974	364,718
Berbice	17,819	21,012	24,366
Honduras, British	206,244	189,352	232,633
Falkland Islands	6,178	1,145	2,841
America	4,913,716	5,449,777	6,250,243
Aggregate value of Brit. and Irish produce and manufactures exported to the British colonies and dependencies	16,597,714	19,482,559	20,430,369

THE PUBLIC FUNDED DEBT OF GREAT BRITAIN AND IRELAND ON THE 5TH JANUARY, 1854, IN POUNDS STERLING AND UNITED STATES' CURRENCY.

	Pounds ster.	Dollars.
Great Britain.		
New annuities..... 2½ per cent	1,815,123	9,075,615
Old sea annuities....3 " "	2,746,677	13,733,385
Debt due H'k of Eng.3 " "	11,015,100	55,075,500
Consolidated annuits..3 " "	367,860,652	1,839,303,260
Reduced annuities...3 " "	114,585,558	572,677,790
Total Great Britain....	714,860,854	3,571,864,270
Ireland.		
New annuities..... 2½ per cent	8,230	40,150
Consolidated annuits.3 " "	6,049,366	30,247,130
Reduced annuities...3 " "	118,758	593,790
Annuities.....3½ " "	31,723,424	158,617,120
Debt due H'k of Irel.3½ " "	2,680,769	11,958,845
New annuities.....5 " "	2,000	10,000
Total Ireland.....	40,582,547	202,662,735
Total United Kingdom, 1854...	754,893,400	3,774,465,000

The national debt at the Revolution in 1688 amounted to £664,263; at the commencement of the American war in 1775, it amounted to £128,000,000. In 1817 it amounted to £840,000,000.

NETT PUBLIC INCOME AND EXPENDITURE OF THE UNITED KINGDOM FOR THE YEAR ENDED 5TH JANUARY, 1858.

INCOME.	
Customs	£22,187,120
Excise	15,791,785
Stamps	6,921,398
Taxes	3,559,627
Property tax	5,632,770
Post office	2,442,827
Crown Lands	358,365
Small branches of hereditary revenue	14,851
Surplus fees of regulated offices	110,097
Money received from the East India Company, and impress moneys, etc	158,776
Other sources	613,704
Total	£57,755,570
EXPENDITURE.	
Public debt	£27,984,533
Civil list	398,588
Diplomatic service	151,656
Courts of justice	1,089,878
Navy	6,625,944
Army	7,018,165
Ordnance	2,491,798
Annuities and pensions	358,709
Salaries and pensions	279,408
Civil services	3,797,813
Miscellaneous	281,014
Kaffir War	370,000
Charges of Collections	4,436,860
Total	£55,229,366
Excess of income	2,526,204
Total	£57,755,570

The revenue for the year ending 1854 amounted to £51,784,118.

Great Britain is less fertile in grain than France, but affords better pasturage, possesses an extensive line of sea-coast, with numerous harbors, a natural and well-defined frontier, which no invading army can pass on foot, a good commercial position, and the largest fields of coal in Europe; but all these advantages have contributed less to her aggrandizement than the excellence of her laws and political constitution. The progress of Britain within the last hundred years, and especially within the last half century, has been wonderfully great. The British isles contain about 76,000,000 of acres, of which about two thirds are in cultivation, and more than one third waste or uncultivated. About half of the waste land is in Scotland, where the cultivated soil forms little more than a fourth part of the total area of the country, while in England it forms about 67 per cent., and in Ireland 70 per cent. of the surface. So great, however, has been the progress of agricultural improvement, that, though the population has doubled itself within the last fifty years, the production of food has fully kept pace with it. The progress of Britain in manufacturing industry has been still more rapid and more remarkable than even in agriculture; and in this respect her natural advantages are more exclusive. She has a good supply within herself of the raw material of her staple manufactures of woolen cloths, iron, and linen; and her means of procuring silk and cotton are equal at least to those of her neighbors. In enterprise and commercial activity, her merchants take the lead among the nations of Europe; and the removal of all restrictions, and the full introduction of the principles of free trade have given such a stimulus to their exertions as transcends all former example. The number of ships employed in her foreign and colonial trade in 1853 was 35,303, with a burden of 7,797,530 tons; and the number of registered British seamen was 253,896.

ACCOUNT OF THE EXTENT OF LAND IN THE UNITED KINGDOM UNDER THE PRINCIPAL DESCRIPTIONS OF CROPS IN 1852-53; THE AVERAGE RATE OF PRODUCE PER ACRE; THE TOTAL PRODUCE; THE AMOUNT OF SEED; THE PRODUCE UNDER DEDUCTION OF SEED; AND THE TOTAL VALUE OF SUCH PRODUCE.

Crops.	Acres in crop.	Produce per acre.	Total produce.	Seed 1-7th of produce.	Produce under deduction of seed.	Price per quarter.	Total value.		
		Quarters.	Quarters.	Quarters.			£	s.	d.
ENGLAND.									
Wheat	3,000,000	3¾	11,250,000	1,607,143	9,642,857	45s.	20,696,428	5	0
Barley	1,200,000	4½	5,400,000	771,428	4,628,572	27s.	6,248,572	4	0
Oats and rye	2,000,000	4½	9,000,000	1,285,714	7,714,286	20s.	7,714,286	0	0
Beans and peas	500,000	3¾	1,875,000	267,857	1,607,143	28s.	2,250,000	4	0
			27,525,000		23,592,858				
Potatoes, turnips, and rape	2,500,000	£7 per acre.	....	....	....	....	26,000,000	0	0
Clover	1,300,000								
Fallow	800,000	....	....	....	....	....	....		
Hops	50,000	£15 per acre.	....	....	....	....	780,000	0	0
Gardens	250,000	£15 per acre	....	....	....	....	3,750,000	0	0
	11,400,000						67,439,286	13	0
SCOTLAND.		Quarters.		Seed 1-8th.					
Wheat	350,000	3½	1,137,500	189,583	947,917	43s.	2,033,021	11	0
Barley	450,000	4	1,800,000	300,000	1,500,000	26s.	1,950,000	0	0
Oats	1,200,000	5	6,000,000	1,000,000	5,000,000	20s.	5,000,000	0	0
Beans and peas	50,000	3	150,000	25,000	125,000	28s.	175,000	0	0
			9,087,500		7,572,917				
Fallow	100,000	....	....	....	....	....	....		
Potatoes	200,000								
Turnips	450,000	£7 per acre.	....	....	....	....	7,700,000	0	0
Clover	450,000								
Flax	5,000	£15 per acre	....	....	....	....	75,000	0	0
Gardens	35,000	£15 per acre	....	....	....	....	525,000	0	0
	3,290,000						17,463,021	11	0
IRELAND.		Quarters.		Seed 1-6th.					
Wheat	400,000	3	1,200,000	200,000	1,000,000	40s.	2,000,000	0	0
Barley	320,000	3½	1,120,000	186,666	933,334	24s.	1,119,999	12	0
Oats	2,200,000	5	11,000,000	1,833,333	9,166,667	20s.	9,166,667	0	0
			13,320,000		11,100,001				
Potatoes	1,400,000	£8 per acre.	....	....	....	....	11,200,000	0	0
Fallow	800,000	....	....	....	....	....	....		
Flax	140,000	£15 per acre.	....	....	....	....	2,100,000	0	0
Gardens	25,000	£12 per acre.	....	....	....	....	300,000	0	0
	4,785,000	....	....	....	....	....	25,886,666	12	0
Total	19,475,000	....	49,932,500	7,666,724	42,265,776	....	110,788,974	16	0

Manufactures.—In the order of their importance, we begin with cotton. The history of this manufacture, which now employs more hands than any other within Britain, and furnishes above one third in value of the whole exports, is remarkable. The raw material is of vegetable origin, and is obtained from the internal coating of the pod or seed of the *gossypium*, of which there are several varieties—some growing as a tree or shrub,

and others as an annual herbaceous plant. It is from the latter that the far greater part of the supply is obtained; and for this supply Britain is entirely dependent on other countries. Cotton grows in India, and would undoubtedly thrive well in many of the colonies; but the present supply is derived from the United States of America. In so far, therefore, as regards the raw material, Britain has no advantage in the market over other competitors; but her superiority heretofore has been in the admirable perfection of the machinery employed. The inventions of Arkwright, Hargreaves, Compton, and Cartwright, have given advantages to a country possessing, like Britain, exhaustless fields of coal, vast accumulations of capital, and a dense and industrious population. For extended information in regard to these inventions see COTTON and WOOL.

ACCOUNT OF THE REAL OR DECLARED VALUE OF THE VARIOUS ARTICLES OF THE MANUFACTURE AND PRODUCE OF THE UNITED KINGDOM EXPORTED TO FOREIGN COUNTRIES DURING EACH OF THE SIX YEARS ENDING WITH 1852, SPECIFYING THE COUNTRIES TO WHICH THEY WERE EXPORTED, AND THE VALUE OF THOSE ANNUALLY SHIPPED FOR EACH, AND SHOWING ALSO THE AVERAGE AMOUNT OF EXPORTS DURING THE SAID SIX YEARS TO EACH COUNTRY, AND TO EACH OF THE FIVE GREAT DIVISIONS OF THE GLOBE.

Countries.	1847.	1848.	1849.	1850.	1851.	1852.	Average annual amount of Exports, 1847-1852.
Europe.	£	£	£	£	£	£	£
Russia	1,844,543	1,925,226	1,566,175	1,454,771	1,289,704	1,099,917	1,580,056
Sweden	179,367	162,813	185,027	151,030	189,319	184,784	175,383
Norway	169,149	150,117	182,836	211,217	257,814	254,276	204,268
Denmark	253,701	296,466	353,599	454,304	445,500	452,486	376,001
Prussia	538,968	404,144	428,748	424,480	508,861	581,884	482,788
Germany	6,286,217	4,859,775	5,649,964	7,083,116	7,190,766	7,908,722	6,888,092
Holland	3,017,423	2,823,253	3,499,937	3,542,632	3,542,678	4,109,976	3,422,650
Belgium	1,059,456	823,968	1,457,584	1,186,237	964,501	1,074,499	1,089,708
France	2,554,283	1,094,521	1,951,369	2,401,956	2,028,463	2,781,286	2,115,296
Portugal proper	889,916	1,175,748	979,597	1,029,204	1,048,856	1,104,218	1,037,589
Azores	42,980	55,360	58,406	47,607	59,685	68,479	54,578
Madeira	33,853	40,822	35,009	41,578	41,941	41,825	39,171
Spain and the Balearic Islands	770,729	616,878	623,186	864,997	1,015,498	1,258,957	857,592
Canary Islands	30,680	45,822	58,878	61,754	49,827	39,641	47,684
Gibraltar	466,845	750,257	583,481	888,141	481,286	510,889	521,817
Italy and the Italian Islands	2,348,707	2,706,882	3,494,849	3,400,691	3,921,025	3,892,286	3,210,740
Malta	193,886	379,467	387,744	314,386	301,443	256,867	305,957
Ionian Islands	143,426	178,881	165,805	135,912	223,096	198,642	164,285
Turkey, Greece and Greek Islands	2,810,909	3,143,018	2,881,093	3,012,653	2,441,951	2,501,973	2,798,597
Isles of Guernsey, Jersey, Alderney, and Man	542,191	599,583	634,125	506,415	613,724	564,468	576,748
Total	24,194,172	22,162,957	25,126,262	26,613,781	26,630,048	27,667,955	25,399,195
Asia.							
Syria and Palestine	415,292	258,186	338,866	303,254	359,671	511,096	364,844
Arabia and Persia	12,417	19,656	17,182	13,711	17,184	20,686	16 798
E. India Company's Territ. & Ceylon	5,470,105	5,077,247	6,803,274	8,024,411	7,807,039	7,852,907	6,755,831
China	1,503,969	1,445,959	1,537,109	1,574,145	2,161,268	2,503,599	1,787,675
Sumatra and Java	358,117	337,585	338,119	507,499	759,698	619,185	494,209
Philippine Isles	104,486	143,897	80,997	193,269	202,900	115,520	140,195
Total	7,864,446	7,282,530	9,159,990	10,616,289	11,307,960	11,123,093	9,559,052
Africa.							
Egypt	598,808	509,876	638,411	648,801	968,729	955,701	709,971
Tripoli, Barbary, and Morocco	30,809	31,130	80,880	51,996	55,242	120,209	61,712
Western Coast of Africa	518,420	571,022	620,371	641,975	658,934	536,358	591,180
Cape of Good Hope	688,208	645,719	520,896	796,600	752,898	1,064,288	744,868
Eastern Coast of Africa	18,751	.....	5,489	.....	224	5,542	4,168
African ports on the Red Sea	505	590	1,200	1,728	788	1,128	1,007
Cape de Verd Islands	4,145	3,824	1,774	3,242	11,094	9,561	5,523
St. Helena and Ascension	31,878	31,728	28,312	30,063	30,553	31,760	29,799
Mauritius	223,563	169,308	234,022	368,726	232,955	229,698	243,045
Total	2,049,087	1,962,696	2,126,445	2,543,131	2,710,921	2,954,245	2,391,088
America.							
British North American Colonies	3,233,014	1,990,592	2,280,886	3,235,051	3,818,707	3,065,864	2,936,352
British West Indies	2,273,524	1,546,929	2,027,890	2,218,881	2,483,665	2,031,358	2,087,725
Hayti	192,089	88,067	109,806	274,918	289,146	251,409	192,489
Cuba and other foreign West Indies	1,817,687	910,518	1,448,092	1,522,896	1,852,340	1,637,178	1,447,270
United States of America	16,974,161	9,564,909	11,971,028	14,891,961	14,362,976	16,567,737	13,055,462
Mexico	100,688	945,937	779,059	451,820	577,902	866,020	536,904
Guatemala	86,993	75,146	117,988	251,073	319,814	260,009	185,275
Columbia	327,885	310,076	519,799	665,198	723,689	779,029	554,278
Brazil	2,568,804	2,067,892	2,444,715	2,544,837	3,518,684	3,464,304	2,768,123
States of La Plata and Uruguay	490,504	605,953	1,399,575	909,280	676,407	1,452,966	922,448
Chili	866,825	667,806	1,069,914	1,156,266	1,201,937	1,167,494	1,074,873
Peru	628,189	853,129	878,251	845,699	1,208,258	1,024,007	905,412
Falkland Islands	2,083	717	6,173	1,145	2,841	7,792	3,459
North West Coast of America	8,193	5,452	7,119	10,628	281	125	4,966
Total Pounds Sterling	23,065,184	19,929,930	25,078,650	28,974,288	30,981,642	32,075,572	26,675,086
Australia							
N. S. Wales, Van Diemen Land, Swan River, and New Zealand	1,644,170	1,463,931	2,050,964	2,602,253	2,807,356	4,222,205	2,470,046
South Sea Islands	25,368	47,401	29,814	18,143	60,795	33,784	35,801
Total	1,669,538	1,511,332	2,109,678	2,620,396	2,868,151	4,255,989	2,505,847

RECAPITULATION.

Europe	24,194,172	22,162,957	25,126,262	26,613,781	26,630,048	27,667,955	25,399,195
Asia	7,864,446	7,282,530	9,159,990	10,616,289	11,307,960	11,123,093	9,559,052
Africa	2,049,087	1,962,696	2,126,445	2,543,131	2,710,921	2,954,245	2,391,088
America	23,065,184	19,929,930	25,078,650	28,974,288	30,981,642	32,075,572	26,675,086
Australia	1,669,538	1,511,332	2,109,678	2,620,396	2,868,151	4,255,989	2,505,847
Grand Total Pounds Sterling	58,842,377	52,849,445	63,596,025	71,367,885	74,448,722	78,076,834	66,530,218

Woolens.—This is the most ancient, and was for centuries the great staple manufacture. The flocks of Britain furnished wool of peculiar excellence, and in abundance for home demand, and a large surplus for exportation. Though the manufacture can not boast of an extension like that of cotton, it holds the next place to it; and besides working up the greater part of the wool grown in Britain, draws largely on other countries for additional supplies. In the finer broadcloths, Britain has formidable competitors in the Belgians, from whose forefathers the Britons may be said to have learned this branch, and also in the Saxons; but in other branches of the woolen manufacture the British superiority is decided. The chief seats of the woolen manufacture in England are Yorkshire, Lancashire, Gloucestershire, and Wiltshire, the latter being the most distinguished for broadcloths; Norfolk for worsted stuffs; Leicestershire and Nottinghamshire for woolen hosiery; blankets and flannels have numerous localities; but for the finer qualities the west of England and several of the Welsh counties are most celebrated. Carpets of every quality and pattern are extensively made at Kidderminster, Cirencester, Worcester, etc., but those of Wilton and Axminster are so superior as to suffer little by comparison with the celebrated fabrics of Turkey and Persia, and the matchless Gobelin Tapestry of France. A particular species of woolen manufacture, in which the resources of modern ingenuity are signally displayed, is that of *shoddy*. Its raw material is woolen rags, which, after various purifying processes, are reduced to their original wool, then re-spun, re-dyed and re-manufactured. Formerly the article produced was so coarse as to be fit only for padding and similar purposes; but now, either alone or with a partial mixture of raw wool, shoddy is made into flushings, drugget, pilot and other great coats, carpets and table covers—some of the last of great beauty. The principal seat of the shoddy trade is Dewsbury, about eight miles from Leeds. The woolen manufacture of Ireland is on a very limited scale, being confined to a few broadcloth factories near Dublin and Cork, and a few blankets and flannels, the former in Kilkenny and the latter at Wicklow. Scotland has made much more progress. The chief seats of the Scotch woolens are, Aberdeen for cloths, chiefly coarse, and the spinning of worsted; Kilmarnock for carpets, bonnets, and shawls; Stirling and its neighborhood for carpets and tartans; Galashiels, Jedburg, and also a number of small towns along the foot of the Ochils, for narrow cloths of several varieties, tartans, shawls, plaids, etc.; Inverness for Tartans; and Hawick for hosiery.

Linen.—In England the spinning of flax is carried on to a great extent, but its manufacture into cloth is comparatively limited. A considerable quantity of damask and diaper is made at Barnsley. Linen is the great staple of Ireland, and was long, in regard to textile fabrics, the staple also of Scotland. In the former, extraordinary means were employed to foster it. It early fixed its seat in the north, particularly near Belfast, and there the great changes which have taken place in the mode of manufacture, by the substitution of spinning-mills and factories for the domestic wheel and loom, appear only to have fixed it more permanently. Almost the only form into which flax is manufactured in Ireland is plain linen, chiefly shirtings. In Scotland the manufacture assumes greater variety. Besides plain linen, it has manufactures of Osnaburghs, sheetings, sail-cloth, sacking, etc., principally at Dundee; and of diaper and damask at Dunfermline. The staples of both towns are by far the most important of their kind in Britain.

Silk.—Here the raw material is, like cotton, entirely of foreign production. This is a great branch of manufacture, in which, at least in liner fabrics, Britain must yield the palm of superiority to the French and Belgians. The number of silk-mills is considerable, and confined chiefly to England. Paisley is almost the only town in Scotland where it is carried on to a great extent, and even there the shawls of unrivaled excellence are generally a mixed fabric of silk and wool. The chief seats of the silk trade in England are, the district of Spitalafield in London, Manchester, and Coventry.

Besides the manufactures already mentioned, there is a great number which, though separately of less importance, absorb immense sums of capital, exhibit many of the most wonderful specimens of human ingenuity, and give subsistence to millions of the population. We can do little more than name the most prominent. Of iron, the first process is converting ores into metals; and thence the additional step of converting it from its first smelted state into malleable iron, whence, by undergoing a new process, steel is produced. Vast processes remain behind, and constitute numerous branches of manufacture under the general name of hardware. Several of the articles produced are of great bulk and magnitude, and many of them are so small as to be almost microscopic. To the former class belong iron bridges—no longer suspension only, but tubular—one of the structures of this kind now spans the Menai Strait; immense steam engines, and machinery of every kind, adapted to all the improvements of the age. Of the minor articles of hardware, the artisans of Sheffield and Birmingham produce a great variety; and of the precious metals, plate, jewelry, and watches are made extensively, but nowhere more perfect than in London. Porcelain, classic in shapes, gorgeous in colors, and exquisite in designs; and the potteries of Stafford are far-famed. The manufactures of glass, too, wrought into numerous forms of beauty and utility in the establishments at Newcastle and South Shields, excite the admiration. Another manufacture is that of paper, of vast extent, and its processes exhibit some of the highest triumphs which human ingenuity has yet attained. In connection with it are various manufactures of which it may be considered as directly or indirectly the source—type-founding, printing books, etc. The manufacture of leather, including its various subdivisions of tanning, currying, shoe, glove, and harness-making, with numerous minor branches in which leather is employed.

The value of the produce and manufactures of the United Kingdom exported from Great Britain and Ireland to foreign parts, according to the real or declared value, amounted in 1832 to..... £38,251,502
In 1851 they had risen to..... 74,448,732
Of which were sent to the U. States.. £14,362,976
To the various British dependencies.. 19,513,960
To Brazil and South American States. 8,229,628
£42,106,564

"From which it appears that the United States of America consume nearly one fifth of our exported produce and manufactures, and that the countries colonized by Great Britain, and those dependent on her, are her customers for nearly half of all the produce and manufactures which she sells to the world. There is every reason to expect that, under the wise and liberal constitution granted to the British colonies, increasingly populous and prosperous nations will extend over the present unexplored wildernesses; and as the United States of America are rapidly enlarging their boundaries to the west and the south, and as their increasing population has been uniformly attended with a proportionate increase of trade, it is obvious that the prosperity of Britain is especially bound up with the prosperity of her colonies and with that of the United States. Britain is not less interested in the increasing wealth and prosperity of the other countries of the world; for the richer and more prosperous they are, the better customers will they be for our goods, and the more will they be able to contribute to our comfort and enjoyment by the produce which they will be able to export to our shores."—*Ency. Brit.*

VALUE OF IMPORTS INTO GREAT BRITAIN AND IRELAND FROM FOREIGN PARTS, CALCULATED AT THE OFFICIAL RATES OF VALUATION, FOR THE YEARS ENDING 5TH JANUARY, 1853–1854.

Species of Imports.	GREAT BRITAIN.		IRELAND.		UNITED KINGDOM.	
	1853.	1854.	1853.	1854.	1853.	1854.
Almonds of all sorts	£26,216	£25,305	£689	£476	£26,905	£25,781
Animals living: viz.:						
Oxen, bulls, cows, and calves	188,830	192,508	....	....	188,830	192,508
Sheep and lambs	56,886	57,691	....	2	56,886	57,693
Annatto	40,101	51,421	....	....	40,101	51,421
Ashes, pearl and pot	199,082	201,151	....	....	199,082	201,151
Bacon	166,408	428,567	....	....	166,408	428,567
Barilla and alkali	2,644	1,621	40,662	39,428	43,326	41,049
Bark, for tanning and dyeing	82,461	79,770	8,715	9,494	91,176	89,264
" Peruvian	254,896	192,784	....	89	254,896	192,923
Beef, salted or fresh	114,710	167,626	8	398	114,718	168,024
Bones of animals and fish	281,907	179,304	290	185	282,197	179,489
Books, bound or unbound	41,787	44,719	11	90	41,798	44,809
Boots, shoes and galoches	90,568	135,[illegible]	10	82	90,578	135,692
Borax	171,091	287,[illegible]	....	....	171,091	287,761
Brimstone	378,047	463,712	11,187	9,425	389,194	473,137
Bristles	86,628	60,695	....	....	86,628	60,695
Butter	410,177	590,980	1	....	410,178	590,980
Caoutchouc	54,900	48,485	....	....	54,900	48,485
Cassia lignea	37,270	16,632	....	....	37,270	16,632
Cheese	442,192	603,387	15	4	442,197	603,391
Cinnamon	106,871	144,356	....	....	106,871	144,356
Clocks	89,283	126,690	98	628	89,356	127,318
Cloves	78,634	120,989	1	....	78,635	120,989
Cochineal, granilla, and dust	1,977,819	910,986	2,274	....	1,979,592	910,986
Cocoa and chocolate	151,086	191,406	4,419	4,488	155,505	195,889
Coffee	8,497,019	8,469,787	148	1,785	8,427,167	8,471,472
Copper ore and regulus	107,609	125,988	....	....	107,609	125,988
Copper, unwrought and part wrought	534,261	583,021	....	....	534,261	583,021
Cork	57,189	67,409	10,618	14,195	67,787	81,604
Corn, meal, and flour	6,928,565	10,559,190	4,848,477	4,276,234	11,272,042	14,835,354
Cotton manufactures of India and China	461,172	588,097	....	....	461,172	588,097
" " of Europe, etc	355,185	478,454	26	25	355,161	478,479
Cream of Tartar	95,200	181,295	724	53	95,924	181,348
Currants	363,628	279,869	1,292	1,469	364,915	281,338
Dye and hardwoods: Barwood	59,777	10,089	....	....	59,777	10,089
" " Brazil wood	8,350	146,193	....	....	8,350	146,193
" " Fustic	48,045	49,298	....	....	48,045	49,298
" " Logwood	224,156	236,701	6,662	3,364	230,818	240,065
" " Mahogany	403,438	241,109	2,586	1,146	406,024	242,252
" " Rosewood	82,475	113,000	....	....	82,475	113,000
Embroidery	74,317	103,678	2	5	74,319	103,683
Figs	24,772	31,392	56	55	24,828	31,447
Flax and tow	1,818,469	3,389,587	141,114	144,774	2,254,583	4,034,361
Ginger	25,872	27,678	....	....	25,872	27,678
Glass, except bottles	166,887	246,581	7	23	166,844	246,554
Guano	1,296,200	1,231,655	2,695	....	1,298,895	1,231,655
Gum, Animi and Copal	70,835	90,646	....	....	70,835	90,646
" Arabic	104,084	182,637	....	290	104,084	182,927
" Lac Dye	74,052	75,811	....	....	74,052	75,811
" Shellac	68,695	119,712	....	....	68,695	119,712
" Senegal	9,844	15,008	....	....	9,844	15,008
Hair, manufacture of	237,559	245,245	....	....	237,559	245,245
Hair, horse	62,274	86,113	....	....	62,274	86,113
Hams	16,810	84,906	70	200	16,880	85,106
Hemp	920,098	1,153,706	20,288	18,968	940,386	1,172,674
Hides, raw or tanned	1,701,856	2,461,209	9,256	13,343	1,711,112	2,474,552
Indigo	1,296,169	972,752	....	....	1,296,169	972,752
Iron in bars, unwrought	824,158	466,006	2,091	....	826,249	466,006
Isinglass	24,678	20,761	....	....	24,678	20,761
Lace	65,758	91,930	2	....	65,760	91,930
Lard	92,985	177,621	....	....	92,985	177,621
Lead, pig and sheet	198,767	260,825	58	1,686	198,825	262,511
Leather gloves	66,393	86,910	....	....	66,393	86,910
Linens	50,559	66,320	294	333	50,853	66,653
Liquorice juice and paste	45,986	53,217	877	392	46,863	53,609
Mace	38,561	51,889	1	....	38,562	51,889
Madder and garancine	1,919,757	2,342,674	160	851	1,919,917	2,343,525
Nutmegs	71,784	60,328	1	....	71,785	60,328
Oil, castor	341,910	258,082	....	....	341,910	258,082
" cocoa nut	304,817	490,596	....	....	304,817	490,596
" olive	298,259	393,930	2,535	12,424	300,794	346,354
" palm	523,812	696,581	....	87	523,812	696,668
" rape seed	128,745	185,482	....	3,912	128,745	189,394
" blubber	873,801	883,071	349	80	874,150	883,151
Oil seed cakes	260,707	350,692	40	61	260,747	350,753
Oranges and lemons	87,077	99,712	3,169	2,542	90,246	102,254
Pepper	110,523	91,605	16	37	110,539	91,642
Pimento	64,155	88,879	....	....	64,155	88,879
Pork, salted or fresh	90,475	144,557	73	....	90,548	144,557
Potatoes	386,104	565,077	7	150	386,111	565,227
Quicksilver	422,637	873,624	....	....	422,637	873,624
Rags, etc., for paper	38,601	52,845	664	1,005	39,265	53,850
Raisins	238,749	304,979	4,761	5,628	243,510	310,607
Rhubarb	53,857	88,773	....	....	53,857	88,773
Rice	770,677	1,151,635	5	2,851	770,682	1,155,986
Rosin	113,310	186,987	1,596	522	114,906	186,509
Safflower	134,529	72,897	....	1	134,529	72,898
Sago	144,881	191,507	....	2,039	144,881	193,546
Saltpetre and nitre	367,050	422,458	....	5	367,050	422,463
Seeds, clover	81,951	128,928	951	1,706	82,902	130,634
" flax and linseed	729,949	966,421	106,393	171,487	836,342	1,137,908
" Rape	151,104	88,257	....	2,074	151,104	90,331

Continued p 853.

VALUE OF IMPORTS INTO GREAT BRITAIN AND IRELAND FROM FOREIGN PARTS, CALCULATED AT THE OFFICIAL RATES OF VALUATION, FOR THE YEARS ENDING 5TH JANUARY.—*Continued.*

Species of Imports.	GREAT BRITAIN.		IRELAND.		UNITED KINGDOM.	
	1853.	1854.	1853.	1854.	1853.	1854.
Continued						
Senna	24,971	14,650	....	....	24,971	14,650
Shumac	62,665	69,624	1,447	1,534	64,112	71,158
Silk, raw and waste	2,729,343	3,208,717	....	5,444	2,729,343	3,214,161
" thrown	550,317	1,054,880	....	....	550,317	1,054,880
" manufacture of India and China	329,866	325,122	308	....	330,174	325,122
" " of Europe, etc.	1,396,489	1,902,941	32	14	1,396,521	1,902,955
Skins and furs	343,986	350,099	....	80	343,986	350,179
Spelter	925,968	1,170,923	....	....	925,968	1,170,923
Spirits, brandy	584,005	666,351	5,142	5,741	589,147	671,992
" Geneva	18,914	24,619	75	264	18,989	24,883
" rum	470,241	353,908	547	755	470,788	356,658
Sugar, raw and refined	9,739,227	10,322,372	732,991	720,469	10,462,218	11,042,841
" molasses	368,872	618,419	44	2	368,416	618,421
Tallow	1,070,668	1,236,216	45,564	14,133	1,116,232	1,250,349
Tar	129,404	144,216	3,246	4,392	132,650	148,606
Tea	6,560,188	7,113,492	75,870	32	6,636,058	7,113,514
Teeth, elephants'	54,396	59,709	....	....	54,396	59,709
Terra Japonica and cutch	115,069	90,317	....	1,837	115,069	92,154
Tin	287,215	248,702	....	....	287,215	248,702
Tobacco and snuff	450,039	638,816	9	196	450,048	639,012
Turpentine	240,733	196,894	....	160	240,733	196,494
Valonia	66,646	93,122	19,292	13,787	85,938	111,909
Watches	146,970	199,729	....	169	146,970	199,898
Wax, bees'	68,694	55,561	....	....	68,694	55,561
Whale-fins	64,205	72,507	....	....	64,205	72,507
Wines	702,502	1,178,589	46,864	67,314	749,366	1,245,903
Wood and timber, viz.:						
Deals, etc., sawn	246,512	305,703	40,362	47,520	287,874	353,223
Timber, not sawn	900,115	1,142,296	146,385	155,185	1,046,500	1,297,481
Teak staves	65,884	94,920	1,974	1,702	67,908	96,622
Wool, cotton	30,811,094	28,881,813	14,478	1,004	30,825,572	28,882,817
" sheep's	2,459,142	3,111,708	3,896	2,859	2,463,038	3,114,567
Woolen manufactures	719,726	1,210,678	51	85	719,777	1,210,763
Yarn, woolen or silk	61,423	128,886	....	....	61,423	128,886
All other articles	4,654,187	6,340,466	76,553	119,457	4,730,740	6,460,923
Total official value of imports from foreign parts	£103,408,895	£117,281,764	£5,987,014	£5,905,071	£109,345,409	£123,186,835

AN ACCOUNT OF THE VALUE OF THE IMPORTS INTO, AND OF THE EXPORTS FROM, GREAT BRITAIN AND IRELAND, DURING EACH OF THE THREE YEARS ENDING THE 5TH OF JANUARY, 1853.

Years.	GREAT BRITAIN.				IRELAND.				UNITED KINGDOM.			
	Value of Imports into Great Britain.	VALUE OF EXPORTS FROM GREAT BRITAIN.			Value of Imports into Ireland.	VALUE OF EXPORTS FROM IRELAND.			Value of Imports into the United Kingdom.	VALUE OF EXPORTS FROM THE UNITED KINGDOM.		
		Produce and manufactures of the United Kingdom.	Foreign and colonial merchandise.	Total exports.		Produce and manufactures of the United Kingdom.	Foreign and colonial merchandise.	Total exports.		Produce and manufactures of the United Kingdom.	Foreign and colonial merchandise.	Total exports.
	£	£	£	£	£	£	£	£	£	£	£	£
1851	93,252,084	175,147,093	21,882,977	197,030,072	5,208,849	290,093	10,190	300,193	100,460,433	175,437,093	21,893,167	197,330,265
1852	103,579,582	190,407,476	28,726,372	214,133,848	7,099,548	250,888	6,831	257,169	110,679,125	190,658,314	28,732,703	214,391,017
1853	103,408,895	195,565,636	23,820,954	219,186,590	5,987,014	350,974	8,135	359,109	109,345,409	196,216,610	23,829,089	219,545,699

Exports, Imports, etc.—In 1800 the annual exports of the British and Irish produce amounted to £35,903,000; the exports of foreign and colonial produce to £7,271,000, being a total of £43,174,000. The imports for the same year amounted to £24,066,000. In 1852, the British and Irish exports to foreign countries were £72,049,367; to the colonies, £20,430,369; total, £92,479,736. The imports for the same year amounted to £103,345,409. The total number of vessels, their tonnage, and number of persons navigating the same, were, in 1852, 34,402 vessels, 1,225 of which were propelled by steam; tonnage, 4,424,392; navigated by 243,512 men and boys. The total length of railroads authorized by Parliament up to the 31st December, 1851, amounted to 11,962 miles; capital, £368,428,000. The total length of railroads completed in Great Britain and Ireland at the end of the year 1853 was 7774 miles; cost of construction, up to July, 1853, £263,636,320, equal to $1,315,000,000. An almost instantaneous communication by electric telegraph has also been established throughout great Britain and Ireland. Of other associated industrial companies, the investments are, in mining companies, £9,978,747; gas companies, £6,415,295; insurance companies, £6,000,000. The gross revenue of the post office for the year ending January 5th, 1852, was £2,422,168; the cost of management was £1,304,163; the net revenue, £1,118,004. The total number of letters in 1851 was 360,647,187, of which 36,512,640 were in Scotland, and 35,982,782 in Ireland. The payment made to the various railroad companies for the conveyance of mails for work done within the year, was £155,575, and £87,272 for work done in previous years. The total number of money orders issued in the year 1851 was 4,661,025; the amount, £8,880,420. In 1851, the persons employed were, in England and Wales, 13,912; in Ireland, 1927; in Scotland, 2190, and in the colonies, 939. The total amount paid to these persons was £727,120.

British Exports in 1855.—A return has just been issued by the Board of Trade of the declared values of British and Irish produce and manufactures exported from the United Kingdom in the year 1855, specifying the amount to each country and colony. From this document the following list has been compiled, showing the order in which the various communities of the world rank as her customers. The total is £95,688,085, against £97,298,900 in 1854, and £98,933,781 in 1853. Owing to the revulsion from over-speculation in the Australian and Canadian trades, the proportion taken by her own possessions, amounting in the two preceding years to about a third of the whole, presents a falling off of £7,000,000, although India, which, from the prosperity consequent on the demand for substitutes for Russian produce and the outlay for railways, exhibited in 1854 an increase of £1,800,000, figures again for an increase of £900,000. With regard to foreign countries, the effects of the chronic pressure which has continued to prevail in the New York money market have again been shown in a diminution of the

VALUE OF THE PRODUCE AND MANUFACTURES OF THE UNITED KINGDOM, EXPORTED FROM GREAT BRITAIN AND IRELAND TO FOREIGN PARTS, ACCORDING TO THE REAL OR DECLARED VALUE THEREOF, FOR THE YEARS ENDING 5TH JANUARY.

Species of Exports.	GREAT BRITAIN.		IRELAND.		UNITED KINGDOM.	
	1853.	1854.	1853.	1854.	1853.	1854.
Agricultural implements	£59,935	£77,809	£16	£70	£59,941	£77,879
Alkali of all sorts	399,236	478,582	....	....	399,236	478,582
Alum	27,543	25,089	....	....	27,543	25,089
Apothecary wares	380,808	588,537	....	79	380,808	588,616
Apparel and slops	1,346,160	2,765,994	517	1,002	1,346,677	2,766,696
Arms and ammunition	398,458	548,927	389	1,547	398,847	550,474
Bacon and hams	47,805	137,021	2,907	1,470	49,613	138,491
Bags, empty	149,771	187,118	523	218	150,294	187,336
Beef and pork, salted	88,578	60,287	4,851	1,588	87,929	61,875
Beer and ale	748,596	1,285,628	6,081	5,784	754,627	1,291,357
Bichromate of potash	25,024	23,867	....	....	25,024	23,867
Bleaching materials	107,609	94,230	284	681	107,893	94,911
Books, printed	289,388	451,711	45	351	289,433	452,062
Brass and copper manufactures	1,704,054	1,853,641	29	690	1,704,083	1,854,331
Bread and biscuit	20,110	41,961	....	....	20,110	41,961
Bricks	45,894	67,350	719	468	46,613	67,818
Butter and cheese	294,845	445,844	98,474	75,812	393,319	520,656
Cabinet and upholstery	131,719	349,560	775	485	132,494	349,995
Caoutchouc and gutta, manufactures of	46,014	72,687	....	....	46,014	72,687
Carriages of all sorts	70,133	159,625	782	165	70,865	159,790
Cement	49,888	64,912	29	5	49,869	64,917
Coals and culm	1,869,625	1,602,762	2,489	1,929	1,872,114	1,604,691
Confectionery	46,476	97,424	2	65	46,478	97,489
Cordage	144,588	221,026	1,886	4,776	145,924	226,402
Corn, meal, and flour	148,407	375,740	12,038	15,925	155,445	391,665
Cotton manufactures	23,221,685	25,807,944	2,847	9,868	23,223,132	25,817,249
" yarn	6,654,655	6,893,658	....	....	6,654,655	6,893,658
Earthenware of all sorts	1,151,790	1,337,911	107	459	1,151,897	1,338,370
Fish of all sorts	849,456	456,008	940	10	850,396	456,018
Fishing tackle	46,566	50,015	....	....	46,566	50,015
Fuel, manufactured	39,741	48,664	146	....	39,887	48,664
Glass of all sorts	378,418	517,842	409	698	378,827	518,540
Haberdashery and millinery	2,074,117	4,156,189	63	355	2,074,180	4,156,494
Hardwares and cutlery	2,691,242	3,668,746	455	1,805	2,691,697	3,665,051
Hats, beaver and felt	48,055	87,388	....	161	48,055	87,549
" of all other sorts	92,460	174,788	....	....	92,460	174,788
Hemp, dressed	31,872	17,351	....	....	31,872	17,351
Hops	29,726	39,591	....	....	29,726	39,591
Horses	98,376	85,887	373	80	98,967	85,967
Iron and steel, wrought and unwrought	6,656,148	10,802,690	28,128	42,782	6,684,276	10,845,422
Lard	6,253	6,582	2,465	1,171	8,718	7,753
Lead and shot	353,165	372,940	15	....	353,180	372,940
" red and white	65,079	66,703	....	....	65,079	66,703
Leather and saddlery	843,322	1,576,253	1,437	2,842	844,759	1,578,595
Linen manufactures	4,230,126	4,756,839	1,660	1,593	4,231,786	4,758,432
" yarn	1,140,155	1,154,989	410	88	1,140,565	1,154,977
Machinery and mill work	1,248,860	1,985,817	8,000	219	1,251,860	1,985,536
Mathematical instruments	44,222	59,441	1	....	44,223	59,441
Molasses	52,409	48,033	....	....	52,409	48,033
Musical instruments	122,918	175,370	40	25	122,958	175,395
Oil, hemp, linseed, and rape	434,899	516,511	60	17	434,959	516,528
" train and spermaceti	49,715	60,505	....	....	49,715	60,505
Painters' colors and materials	240,099	324,169	31	676	240,130	324,845
Perfumery	44,029	69,027	26	279	44,055	69,306
Pickles and sauces	146,830	332,448	50	14	146,880	332,462
Plate ware, jewelry, etc	425,705	727,351	....	35	425,705	727,386
Platting for hats of straw, etc	67,970	54,877	....	....	67,970	54,877
Potatoes	6,349	1,312	415	572	6,764	1,884
Provisions, not described	56,488	189,999	40	1	56,528	140,000
Salt	221,101	271,129	2,875	1,044	223,976	272,173
Saltpetre, refined in United Kingdom	51,395	48,965	....	....	51,395	48,965
Seeds of all sorts	19,893	23,745	777	....	20,670	23,745
Silk manufactures	1,551,846	2,044,289	20	72	1,551,866	2,044,361
Soap and candles	315,649	412,265	8,795	7,614	324,444	419,879
Spelter, wrought and unwrought	83,865	97,328	....	....	83,865	97,328
Spirits	63,618	204,141	2,930	4,300	66,548	208,441
Stationery of all sorts	411,590	618,498	128	384	411,718	618,882
Sugar, refined	300,134	301,027	....	....	300,134	301,027
Tin, unwrought	83,604	140,359	....	....	83,604	140,359
Tin and pewter wares	1,080,725	1,218,619	....	18	1,080,725	1,218,690
Tobacco, manufactured	12,651	19,669	....	....	12,651	19,669
Toys	26,788	46,925	....	....	26,788	46,925
Turnery and turners' wares	30,142	40,094	....	19	30,142	40,113
Twine	54,775	57,637	....	25	54,775	57,662
Umbrellas and parasols	79,777	119,905	....	....	79,777	119,905
Wool, sheep's, and other sorts	792,289	483,812	58,480	700	845,769	484,512
Woolen and worsted yarn	1,430,140	1,456,786	....	....	1,430,140	1,456,786
Woolen manufactures	8,729,609	10,170,788	1,825	1,894	8,780,934	10,172,182
All other articles	1,861,587	2,842,467	52,335	33,423	1,413,922	2,375,890
Total exports	£77,780,591	£98,709,688	£296,263	£224,098	£78,076,854	£98,933,781

exports to the United States. In 1854 there was a decrease of £2,248,052, and a further falling off of £4,092,283 is now observable. The amount to Germany has been swollen by the overland trade to Russia, the augmentation being £1,222,776. France exhibits the extraordinary increase of £2,837,368—equal to 90 per cent.—a result due partly to the purchase of war materials in this country, and partly to modifications in her tariff. To Turkey, as might have been expected, the exports have more than doubled. Russia is of course entirely out of the list, but the consignments to Balaklava and the other ports in her own possession amounted to nearly £500,000. Among the countries which show an improvement are Sweden and Norway, Brazil, and New Granada, the difference in each of these cases being large. The trade with Syria and Palestine, in consequence of the war, has experienced a great development. The exports direct to the Danubian Principalities, which declined from £179,510 in 1853 to £16,402 in 1854, stand in the present return at £45,337. Belgium, Greece, Italy, Mexico, Peru, Venezuela, and China, are all on the favor-

able side. Spain shows a falling off. The River Plate trade experienced a heavy reaction, Buenos Ayres and Uruguay both presenting a great decline. Portugal and Denmark have been stationary:

1. British Possessions:		
East Indies	£10,937,604	
Australia	6,276,966	
British America	2,885,331	
West Indies	1,979,956	
Gibraltar	829,354	
South Africa	791,818	
Malta	625,828	
Ports of occupation in Crimea	493,898	
Channel Islands	468,078	
Hong-Kong	389,265	
Sierra Leone, etc	306,094	
Mauritius	306,173	
Ionian Islands	211,886	
Other possessions	62,544	
		£26,552,375
2. United States, including California		17,818,086
3. Germany:		
Hanseatic Towns	£8,850,298	
Prussia	1,100,021	
Hanover	837,354	
		9,787,673
4. France		6,012,658
5. Turkey		5,689,898
6. Holland		4,558,210
7. Brazil		3,812,723
8. Italy:		
Naples and Sicily	921,220	
Sardinia	853,916	
Lombardy, etc	717,718	
Tuscany	620,807	
Papal Territories	147,013	
		3,260,169
9. Belgium		1,707,693
10. Portugal, including £124,922 to the Azores and Madeira		1,475,713
11. Egypt		1,454,371
12. Chili		1,330,885
13. Peru		1,285,150
14. Spain, including £110,015 to the Canary Isls.		1,268,815
15. Cuba		1,059,606
16. Sweden and Norway		1,032,764
17. Syria and Palestine		946,604
18. China		888,879
19. Western Coast of Africa		830,838
20. Denmark		750,651
21. Buenos Ayres		742,442
22. New Granada		588,985
23. Mexico		585,893
24. St. Thomas		562,789
25. Java		529,815
26. Philippine Islands		398,037
27. Venezuela		378,491
28. Uruguay		294,938
29 Greece		222,460
30. Hayti		164,128
31. Morocco		133,697
32. Wallachia and Moldavia		45,837
33. French Senegambia		11,270
34. Other countries		542,822
Total		£95,688,085

The commercial changes in Great Britain during this year (1856) have not been very important. Among the prominent changes are: I. "An act to amend the laws of England and Ireland affecting trade and commerce." The object of this act is to assimilate the laws of England and Ireland to those of Scotland, and thereby remedy the inconvenience now felt by the commercial community in matters of common occurrence in the course of trade. II. "Treaty of commerce and navigation between the United Kingdom and the republic of Chili." III. "Returns of trade and business to be made up to the 31st of March, the terminus of the financial year, instead of, as heretofore, to the 31st of December." "Treaty of commerce between the United Kingdom and the Swiss Confederation." "Differential duties on the trade and shipping of the Two Sicilies to be abolished." There is an evident want of reciprocity between the two nations, the United States and Great Britain, as relates to shipwrecks, etc. The late navigation act of Great Britain deprives consuls of all authority to protect the property saved belonging to their respective countries, except under treaty stipulations. Our treaty with England does not define the duties and rights of consuls in such cases.

Progress of the British Mercantile Marine since 1842.—The statistical abstract of the United Kingdom for the last fifteen years, which has just been issued by the Board of Trade, contain a series of tables of considerable interest to ship-owners, as showing the progress of the mercantile marine during a period in which has occurred the adoption of free trade and the repeal of the navigation laws. In 1842 the total tonnage of vessels entered with cargoes and in ballast at British ports was 4,500,028 tons, and with cargoes only 3,655,230 tons; the former amount comprised 8,294,725 tons of British and 1,205,303 tons of foreign shipping. In 1856 the total entries with cargoes and in ballast represented 10,553,134 tons of shipping, and with cargoes only 8,241,664 tons. In fifteen years, therefore, the tonnage had more than doubled, but the increase in British and foreign shipping was not at the same rate. The entries with cargoes and in ballast comprised 6,890,715 tons of British and 4,162 tons of foreign shipping. While, therefore, the British tonnage had nearly doubled, the foreign had been multiplied by almost 3½. Down to [illegible] the rate of increase was nearly equal, but slightly in favor of the British flag; in 1849, the British tonnage had increased one half, while the foreign entries show an increase to two thirds. In 1850, the foreign tonnage which entered British ports had doubled, and the entries under the national flag declined, continuing to do so, as compared with 1847, down to 1853. Since the last named date British tonnage has again advanced, though not so rapidly as foreign, which tripled in fourteen years, the entries in 1855 having been 3,680,447 tons. The British entries in the same year amounted to 5,270,795 tons, whereas, if the increase had been at the same rate as foreign shipping, it would have been more than 9,880,000 tons. The return of the number and tonnage of registered vessels, and the number of men employed therein, prepared by the register-general of seamen, commences with 1846, the statistics of previous years not being procurable. The total increase of vessels during the eight years was 1049, of tonnage 1,059,735 tons, and of men 21,307, exclusive of masters. This includes Channel Island vessels, but not those belonging to British possessions abroad. This table is so classified as to show the proportionate increase in each branch of the shipping trade, sailing vessels being distinguished from steamers, and the home trade from the foreign. The whole trade includes the coasts of the United Kingdom, and continental ports between Brest and the Elbo; and the foreign trade all ports beyond those limits. There are many vessels, however, which are engaged partly in the foreign trade, and these are classed separately. In 1849 the number of sailing vessels was 17,807, and of steam vessels 414; in 1856 the former numbered 18,419, and the latter 851. While sailing vessels, therefore, had increased little more than a thirtieth, steam vessels had more than doubled. In 1849 there were 9298 sailing vessels engaged in the home trade, 6612 in the foreign trade, and 1897 partly in one trade and partly in the other. In 1856 the home trade employed 9390 sailing vessels, the foreign trade 8059, while those engaged partly in one trade and partly in the other numbered but 970. This gives an increase of 92 in the first class, and of 1447 in the second, while in the mixed class there was a decrease of 927, or nearly half. The statistics of the steam trade give results very different. In 1849 the home trade employed 312 steamers (exclusive of river vessels), the foreign trade 82, and of those engaged in part in both trades there were 20. In 1856 the numbers were respectively 317, 422, and 42, showing that while the home steam trade had increased scarcely 2 per cent., the mixed class had doubled, and the foreign-going steamers had been multiplied by six. There remains for notice the table giving the number and tonnage of the sailing and steam vessels built and registered in the United Kingdom during the fifteen

A Return of the Shipping employed in the Trade of the United Kingdom, exhibiting the Numbers and Tonnage of Vessels that Entered Inward and Cleared Outward (including their repeated Voyages), separating British from Foreign Vessels, also Steam from Sailing Vessels, and distinguishing the Trade with each Country, in the Year 1858 (in continuation of Parliamentary Paper No. 299, of Session 1856-8).

Countries.		INWARD.				OUTWARD.			
		British.		Foreign.		British.		Foreign.	
		Ships.	Tonnage.	Ships.	Tonnage.	Ships.	Tonnage.	Ships.	Tonnage.
Russia	Steam..	27	18,489	....	....	22	12,225	1	1,800
	Sailing..	1,790	397,775	1,881	377,754	1,853	395,087	1,089	200,010
Sweden	Steam..	88	11,288	2	190	96	10,872	....	....
	Sailing..	223	44,814	1,089	200,187	164	31,216	887	145,817
Norway	Steam..	13	3,185	....	....	16	3,920	....	....
	Sailing..	110	18,624	1,765	264,908	126	19,806	1,649	296,764
Denmark	Steam..	101	44,188	19	4,799	29	11,896	8	2,804
	Sailing..	84	7,966	2,130	157,789	406	75,779	5,084	529,957
Prussia	Steam..	....	....	11	2,688	....	....	10	2,950
	Sailing..	958	154,855	2,578	416,194	817	130,304	1,708	308,725
Germany	Steam..	482	158,096	124	41,629	419	150,254	117	31,965
	Sailing..	1,126	202,124	1,783	164,150	1,146	208,794	1,984	195,484
Holland	Steam..	825	246,027	184	88,566	605	176,056	185	38,434
	Sailing..	958	135,305	1,146	225,598	918	118,076	612	47,740
Belgium	Steam..	290	85,515	126	29,813	289	85,779	121	27,858
	Sailing..	345	40,441	480	70,987	272	18,254	200	23,695
Channel Islands	Steam..	326	51,599	....	....	320	53,818	....	....
	Sailing..	1,026	121,603	38	8,648	1,166	74,798	....	....
France	Steam..	1,576	290,158	15	1,597	1,491	275,308	15	1,597
	Sailing..	2,926	302,449	4,847	420,130	2,651	301,791	4,061	342,092
Portugal, Azores, and Madeira	Steam..	29	9,856	....	....	23	8,451	....	....
	Sailing..	607	62,386	179	22,644	626	68,785	548	94,068
Spain and Canaries	Steam..	1	403	12	2,510	1	560	11	2,279
	Sailing..	516	55,450	252	32,198	1,014	174,401	683	116,421
Gibraltar	Steam..	86	14,247	....	....	87	15,278	2	650
	Sailing..	24	6,766	8	210	174	21,728	67	11,955
Italian States	Steam..	82	14,212	....	....	23	14,877	1	150
	Sailing..	464	66,087	257	57,365	708	130,883	675	130,229
Malta	Steam..	....	....	....	....	2	756	....	....
	Sailing..	88	6,883	16	3,490	170	41,600	172	44,557
Ionian Islands	Sailing..	49	5,778	5	1,212	40	8,183	81	8,636
Greece	Sailing..	68	10,263	23	4,857	21	3,740	65	17,685
Turkey	Steam..	51	30,674	....	....	50	30,408	....	....
	Sailing..	272	56,385	277	68,964	245	53,458	581	153,994
Wallachia and Moldavia	Sailing..	242	42,106	815	55,600	73	12,489	50	6,558
Syria	Steam..	3	968	....	....	5	1,756	....	....
	Sailing..	28	5,677	14	3,146	36	7,944	10	1,997
Africa	Steam..	47	36,410	....	....	44	37,465	....	....
	Sailing..	568	158,438	291	81,098	581	173,109	260	61,931
Asia	Steam..	16	24,172	....	....	41	26,758	....	....
	Sailing..	834	476,988	68	44,390	1,515	739,492	408	214,437
America:									
British Northern Colonies	Steam..	4	1,791	....	....	2	1,281	....	....
	Sailing..	1,877	775,446	448	225,753	1,329	537,767	92	29,548
British West Indies	Steam..	1	321	....	....	1	321	....	....
	Sailing..	690	184,027	42	10,058	612	168,748	44	11,285
Foreign West Indies	Steam..	25	88,527	1	250	26	44,354	....	....
	Sailing..	150	48,224	239	60,926	204	56,949	342	90,229
United States	Steam..	79	86,354	27	37,390	86	88,428	36	49,397
	Sailing..	441	266,408	889	697,857	860	470,848	1,765	982,605
Central and Southern States	Steam..	16	14,781	....	....	16	17,338	....	....
	Sailing..	693	229,399	171	87,830	590	189,282	266	62,910
Falkland Islands	Sailing..	2	562	....	....	3	1,352	1	116
Arctic Regions	Sailing..	....	....	....	....	2	574	....	....
Whale Fisheries	Sailing..	62	16,118	1	113	67	16,982	....	....
Total		21,628	5,055,343	21,248	8,887,763	21,478	5,212,980	23,801	4,234,124

years since 1842. In that year 914 vessels, having an aggregate tonnage of 129,929 tons, were built; in 1856 the number was 1150, and the tonnage 244,578 tons. In 1842 the sailing vessels numbered 956, and the steamers 58; in 1856 the former were 921, and the latter 229. Steamers, therefore, have been nearly quadrupled, while the increase of sailing vessels was only about 7 per cent.

The following returns embrace vessels belonging to the Channel Islands, but not vessels registered in the British plantations. The marked increase in steam vessels should claim the attention of our shipbuilders.

1.—Return of the Number and Tonnage of British Registered Vessels employed solely as Home-trade Ships, in the Years 1849, 1850, 1851, 1852, and 1853, with the Number of Men employed; distinguishing Sailing Vessels from Steamers.

Years.	Sailing Vessels.			Steam Vessels.		
	Number of Vessels.	Tonnage.	Number of Men employed.	Number of Vessels.	Tonnage.	Number of Men employed.
1849	9,298	665,726	40,208	312	54,089	4,442
1850	8,930	666,957	38,527	320	54,196	4,491
1851	8,898	685,641	36,906	368	78,820	6,048
1852	8,776	701,803	35,798	358	66,606	5,182
1853	8,477	689,342	36,051	374	85,471	6,689

2.—Return of the Number and Tonnage of British Registered Vessels employed partly as Home-trade Ships and partly as Foreign-going Ships, in the Years 1849, 1850, 1851, 1852, and 1853, with the Number of Men employed; distinguishing Sailing Vessels from Steamers.

Years.	Sailing Vessels.			Steam Vessels.		
	Number of Vessels.	Tonnage.	Number of Men employed.	Number of Vessels.	Tonnage.	Number of Men employed.
1849	1,897	281,951	12,715	90	5,599	262
1850	1,487	222,341	10,291	20	5,298	396
1851	1,489	242,656	8,570	18	4,926	282
1852	1,063	147,867	6,875	42	15,244	944
1853	970	156,800	7,184	28	7,250	560

3.—Return of the Number and Tonnage of British Registered Vessels employed solely as Foreign-going Ships in the Years 1849, 1850, 1851, 1852, and 1853, with the Number of Men employed; distinguishing Sailing Vessels from Steamers.

Years.	Sailing Vessels.			Steam Vessels.		
	Number of Vessels.	Tonnage.	Number of Men employed.	Number of Vessels.	Tonnage.	Number of Men employed.
1849	6,612	2,040,844	91,242	82	48,698	3,742
1850	7,142	2,142,934	93,212	86	45,186	3,918
1851	7,277	2,287,897	85,801	134	60,995	4,880
1852	7,481	2,365,995	103,618	149	83,369	7,151
1853	9,120	2,665,685	111,821	287	125,589	10,270

4.—Aggregate Returns, 1, 2, and 3, showing the Total Number of British Registered Vessels employed in Trading in, from, and to Great Britain and Ireland, in the Years 1849, 1850, 1851, 1852, and 1853, with their Tonnage and Number of Men.

Years.	Sailing Vessels.			Steamers.*		
	Number of Vessels.	Tonnage.	Number of Men employed.	Number of Vessels.	Tonnage.	Number of Men employed.
1849	17,807	2,988,021	144,165	414	108,821	8,446
1850	17,466	3,062,532	142,730	426	104,680	8,700
1851	17,664	3,216,194	151,277	520	144,741	10,660
1852	17,270	3,215,665	146,286	549	165,219	12,277
1853	17,567	3,511,827	155,006	689	218,260	17,519

* River steamers are not included in this return.

An Account of the Number of Vessels, with the Amount of their Tonnage, that were built and registered in the several Ports of the British Empire, in the Years ending 5th January, 1851, 1852, and 1853, respectively.

	Year ending 5th January, 1851.		Year ending 5th January, 1852.		Year ending 5th January, 1853.	
	Vessels.	Tonnage.	Vessels.	Tonnage.	Vessels.	Tonnage.
England	528	101,666	621	109,311	856	123,082
Scotland	136	20,100	188	33,858	131	41,959
Ireland	25	1,929	13	968	25	2,450
Isles of Guernsey, Jersey, and Man	36	2,835	30	2,026	30	2,933
British Plantations	714	124,953	680	141,116	536	114,804
Total	1,439	202,483	1,852	293,679	1,278	284,728

An Account of the Number of Vessels, with the Amount of their Tonnage (including their repeated Voyages), that Entered Inward and Cleared Outward at the several Ports of the United Kingdom, from and to Foreign Parts, during each of the three Years ending 5th January, 1853.

SHIPPING ENTERED INWARD IN THE UNITED KINGDOM, FROM FOREIGN PARTS.

Years.	Great Britain.				Ireland.				United Kingdom.			
	British and Irish vessels.		Foreign vessels.		British & Irish vessels.		Foreign vessels.		British and Irish vessels.		Foreign vessels.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
1851	21,371	4,454,007	14,253	2,233,860	1,898	246,192	866	166,417	22,709	4,700,199	15,145	2,400,277
1852	21,299	4,682,378	15,056	2,664,574	1,603	306,013	1,250	269,134	22,902	4,988,386	16,286	2,933,708
1853	20,867	4,648,155	15,459	2,771,355	1,897	2 6,708	828	181,229	21,764	4,934,863	16,287	2,952,584

SHIPPING CLEARED OUTWARD FROM THE UNITED KINGDOM, TO FOREIGN PARTS.

Years.	Great Britain.				Ireland.				United Kingdom.			
	British and Irish vessels.		Foreign vessels.		British & Irish vessels.		Foreign vessels.		British and Irish vessels.		Foreign vessels.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
1851	21,808	4,577,222	16,189	2,515,573	681	165,128	761	146,670	21,989	4,742,345	16,900	2,662,243
1852	20,985	4,669,508	16,682	991,883	813	212,982	1,025	283,731	21,798	4,882,490	17,707	3,225,614
1853	20,880	4,822,151	17,154	3,056,224	650	168,955	677	153,872	21,530	5,051,106	17,831	3,191,596

An Account of the Value of the Imports into, and of the Exports from, the United Kingdom, during each of several Years ending 5th January. Showing the Official as well as the Real or Declared Values of these.

Years ending Jan. 5.	Imports into the United Kingdom, calculated at the official rates.	Exports calculated at the official rates of valuation.			Produce and manufactures of the United Kingdom exported, at the real or declared value.
		Produce and manufactures of the United Kingdom.	Foreign and Colonial merchandise.	Total exports.	
1815	£32,620,771	£32,200,580	£19,157,818	£51,358,398	£43,447,375
1833	109,945,409	198,178,601	23,829,089	219,505,690	78,076,854
1851	123,186,835	214,360,489	27,767,733	242,128,222	98,933,781

Decline in the real value of the exports.—The great increase in the official, and the comparative decline in the real or declared value of the exports, since 1815, has given rise to a great deal of irrelevant discussion. It has been looked upon as a proof that English commerce is daily becoming less prosperous, whereas, in point of fact, a precisely opposite conclusion should be drawn from it. The rates according to which the official values of the exports are determined were fixed as far back as 1696; so that they have long ceased to be of importance as affording any criterion of the actual value, their only use being to show the fluctuations in the *quantities* exported. To remedy this defect, a plan was formed during the early part of Mr. Pitt's administration, for keeping an account of the *real* value of the exports, as ascertained by the declarations of the exporters. Those who contend that her trade is getting into a bad condition, argue that the great increase in the official value of the exports since 1815 shows that the *quantity* of the articles exported has been proportionally augmented, while the fall in their real value shows that she is selling this larger quantity for a smaller price, a result which, they affirm, is most injurious. But the circumstance of a manufacturer or a merchant selling a large or a small quantity of produce at the same price, affords no criterion by which to judge as to the advantage or disadvantage of the sale; for, if, in consequence of improvements in the arts or otherwise, a particular article may now be produced for half the expense that its production cost 10 or 20 years ago, it is obvious that double the quantity of it may be afforded at the same price without injury to the producers. Now this is the case with some of the most important articles which are exported from England. Cottons and cotton-twist form a full third or more of her entire exports; and since 1814 there has been an extraordinary fall in the price of these articles, occasioned partly by cotton wool having fallen from about 1s. 6d. per lb. to about 5d. per lb., but more by improvements in the manufacture. Hence, while the official value of the exports of cotton goods and twist has in-

creased from about £18,000,000 in 1814, to about £100,000,000 in 1853, their declared value has risen only from about £20,000,000 at the former period to about £33,000,000 at the latter. Surely, however, this is, if any thing can be, a proof of increasing prosperity; it shows that she can now export and sell with a profit (for unless such were the case, does any one imagine the exportation would continue?) nearly four times the quantity of cotton goods and yarn which she exported in 1814 for about the same price. See COTTON MANUFACTURE.

The commercial interests of England long suffered from the inextricable confusion of her maritime laws. From the Revolution down to 1786 some hundreds of acts were passed, each enacting some addition, diminution, or change of the duties, drawbacks, bounties, and regulations previously existing in the customs. Mr. Pitt has the merit of having first introduced something like order into this chaos. Under his auspices all the separate custom-duties existing in 1787 were repealed, and simple and intelligible ones substituted in their stead.

In the report of the Lords' Committee on Foreign Trade in 1820, it is stated that the laws under which the commerce of the country was regulated amounted to upward of 2000, of which 1600 were in force in 1815. After this report was printed, Mr. Huskeyson introduced great reforms into the laws affecting shipping and navigation. And since his time the repeal of a vast number of custom-duties and the many important and beneficial changes effected by Sir Robert Peel, have vastly simplified the commercial legislation of England. Various improvements have also been introduced by the late chancellor of the exchequer, Mr. Gladstone; and the Customs Consolidation Act of 1853 has brought the various laws relating to the customs into a concise and simple form. It comprises the whole law respecting the importation, exportation, warehousing, smuggling, etc., of goods, with the regulations to be observed in the coasting and colonial trades, etc., and is at once brief, comprehensive, and so clear as to be level to the comprehension of those least acquainted with such matters. Besides condensing and simplifying the various laws respecting the customs, this act has also introduced some most important changes. The merchant is now no longer obliged, when successful in a suit, to pay his own expenses, as was formerly the case; nor are goods in dispute now detained till the point be inquired into and decided, but are given up on the amount claimed being deposited. If the claim is found to have been unjust, the sum overcharged is returned, with interest at the rate of 5 per cent., and the expenses of the suit. The merchant may also, if he consider himself aggrieved by the decision of the board, have the case brought into open court before a commissioner, where he may meet the officer, and learn by examination the real facts of the case. The evidence so taken is reported to the board, who may thereupon confirm or modify their decision; it being optional with the merchant either to abide by it, or to carry the case before a competent tribunal. If the duty or penalty claimed be under £100, or the case be of a simple kind, it may be tried before magistrates, county courts, or other inferior tribunals.

Shipping.—In order to promote the shipping interest in Britain the navigation laws were passed, which were long considered the safeguards of British commerce. By these laws certain enumerated articles, which in fact comprehended every thing that was of importance in commerce, could be brought to her shores only in British ships, or in the ships of the country of which the goods were the produce, or in ships of the country from which the goods were to be brought. Experience proved that these restrictions which were intended for the benefit of British commerce, operated only as fetters upon trade. By the act passed in 1849, the restrictive provisions of the old acts were repealed from and after the 1st of January, 1850. Great alarm was created among the shipbuilders and others, by the change, which, as they apprehended, was fraught with ruin to the trade and commerce of the country; but instead of that, the trade increased more rapidly than before. The amount of tonnage built in 1849 was 121,266, in 1851 it was 149,599, and in 1853 it was 209,171.

The increase has been more remarkable in steam than in sailing vessels: in 1850 the number of steam-vessels built was 36, and their tonnage 3885; in 1853 the number of steam vessels built was 153, and their tonnage 45,215. Another circumstance which is remarkable, is the recent extraordinary substitution of iron for wood in the construction of steam vessels. Of the 158 built in 1853, no less than 117 were iron. Dr. Strang, in a communication made to the British Association in 1852, states, that during the last 7 years there have been constructed, or were constructing, in Glasgow and neighborhood, 123 vessels, 122 of which were iron. At Greenock and Port Glasgow, during the same period, there were constructed 66 steam vessels, 13 of which were of wood and 53 of iron.

The "merchant shipping act, 1854," which came into operation May 1st, 1855, contains some important changes in commercial regulations. Sections 20, 21, 22, 23, and 24, institute new modes of measuring ships; and as all American ships hereafter to be measured in that country must be measured according to one or other of its provisions, and pay dues on the tonnage thus ascertained, it is a change largely affecting our vessels. As far as the present short experience of it denotes, the effect, as a general rule, will be favorable to such as are sharp or with fine lines, and unfavorable to such as are full built; but it may reasonably be supposed that most new vessels will belong to the former class, and it will be seen (section 27) that the measurement of ships already measured is not compulsory, but may be made on application therefor. By the 29th section, the commissioner of customs, with the sanction of the Treasury, may alter or modify the modes of measurement. Section 102 requires from every master, clearing outward, a declaration of the nation to which the vessel claims to belong, and authorizes the detention of the vessel until it is made. Section 329 contains important provisions respecting the shipment and carriage of dangerous goods. Section 353 renders the employment of duly qualified pilots compulsory; but, under section 332, any pilotage authority, by by-law, made with the consent of her majesty in council, may exempt the master of any ships, or classes of ships, from being compelled to employ qualified pilots. Part 8 remodels the law relating to wrecks and salvage, and contains some important provisions, particularly as regards foreign vessels, and salvage services by government vessels. The remainder of the act is composed of laws, or parts of laws previously in force, the object being "not so much a change of laws as bringing existing laws into a consolidated shape." The last of the series of acts which completely changed the commercial system of this country was passed March 23d, 1854, and opened the coasting trade to foreign vessels; and England has obtained by treaty the concession of the coasting trade of Tuscany and Sardinia. By a minute of the Lords of the Treasury, in September, 1856, it was announced that the transfer should then take place of the control of the Commissioners of the Customs to that of the Lords of the Admiralty. Since that period the control has vested in the Admiralty.—*U. S. Consular Returns.*

The subjoined tables give a complete view of the shipping belonging to the different ports of the British empire, and of the navigation with foreign countries, in 1852 and 1853.

A Return of the Number and Tonnage of Sailing Vessels Registered at each of the Colonies of the United Kingdom respectively; distinguishing those under and those above Fifty Tons Register, on the 31st December, 1853; A similar Return of Steam Vessels and their Tonnage.

Ports.	Sailing Vessels.				Steam Vessels.			
	Under 50 tons.		Above 50 tons.		Under 50 tons.		Above 50 tons.	
	Vessels.	Tonnage.	Vessels.	Tonnage.	Vessels.	Tonnage.	Vessels.	Tonnage.
Africa.								
Bathurst	49	923	14	1,970	....	....	....	....
Sierra Leone	11	270	3	746	....	....	....	....
Cape of Good Hope	7	228	46	6,889	....	....	....	....
Mauritius	60	1,747	49	7,344	....	....	2	171
Australia.								
Sydney	150	3,805	141	26,821	6	191	2	1,487
Melbourne	65	1,584	55	7,237	1	44	5	460
Hobart Town	106	2,773	221	21,083	2	69	1	52
Launceston	39	834	32	6,344	....	....	....	....
New Zealand	117	2,400	29	1,918	....	....	....	....
America. (*British Northern Colonies.*)								
Newfoundland	458	18,774	490	49,790	1	40	1	96
Canada	257	8,628	437	73,181	22	789	69	8,564
New Brunswick	428	10,568	875	102,099	10	358	14	1,683
Nova Scotia and Cape Breton	1,167	52,996	1,778	135,989	3	96	....	....
Prince Edward's Island	213	6,009	132	19,881	....	....	1	57
British West Indies.								
Antigua	80	1,191	4	411	....	....	....	....
Barbadoes	26	626	9	788	....	....	....	....
Dominica	16	338	4	248	....	....	....	....
Grenada	46	484	....	....	....	....	....	....
Jamaica	75	1,798	9	1,054	....	....	....	....
Montserrat	1	18	1	59	....	....	....	....
Nevis	11	197	....	....	....	....	....	....
St. Christopher	18	245	....	....	....	....	....	....
St. Lucia	12	382	2	335	....	....	....	....
St. Vincent	35	628	7	656	....	....	....	....
Tobago	8	228	1	97	....	....	....	....
Tortola	34	205	2	182	....	....	....	....
Trinidad	51	886	4	305	1	48	....	....
Bahamas	185	2,9[illegible]	31	2,615	....	....	....	....
Bermuda	14	421	30	2,754	....	....	....	....
Demerara	32	668	2	670	....	....	1	39
Berbice	17	278	2	188	....	....	....	....

An Account of the Number of Vessels, with the Amount of their Tonnage, and the Number of Men and Boys usually employed in navigating the same, that belonged to the several Ports of the British Empire, on the 31st December, 1851, 1852, and 1853, respectively.

	On the 31st December, 1851.			On the 31st December, 1852.			On the 31st December, 1853.		
	Vessels.	Tonnage.	Men.	Vessels.	Tonnage.	Men.	Vessels.	Tonnage.	Men.
England	19,404	2,803,052	145,222	19,600	2,907,999	147,252	20,078	3,150,653	152,184
Scotland	3,587	536,266	29,587	3,450	535,008	29,512	3,451	559,141	29,568
Ireland	2,203	262,411	14,155	2,178	254,997	13,902	2,219	259,364	14,088
Isles of Guernsey, Jersey, & Man	849	60,815	5,798	858	61,274	5,978	860	61,046	5,701
British Plantations	8,201	669,741	46,166	8,816	665,114	46,868	8,701	784,218	52,865
Total	34,244	4,332,285	240,928	34,402	4,424,392	243,512	35,309	4,764,422	253,896

A Return of the Number of Vessels, with their Tonnage, distinguishing Steam from Sailing Vessels, that were Built and Registered in the United Kingdom, distinguishing Timber from Iron Vessels, in the Year 1853.

	Timber.		Iron.	
	Vessels.	Tonnage.	Vessels.	Tonnage.
Sailing vessels	585	146,380	10	8,576
Steam vessels	86	3,305	117	44,910
Total	671	149,685	127	53,486

The following table is an abstract of the number of vessels and tonnage entered inward and cleared outward at each of the 12 principal ports of the United Kingdom during the year 1854, and also a return of the declared value of British and Irish produce and manufactures exported from the respective ports to foreign countries and British possessions during the same year.

Ports.	Inward.		Outward.	
	Vessels.	Tonnage.	Vessels.	Tonnage.
London	10,943	2,667,823	8,174	2,127,419
Liverpool	4,493	2,195,404	4,551	2,161,265
Hull	2,789	584,348	1,884	374,859
Bristol	894	162,538	296	101,278
Newcastle	3,048	441,196	6,671	1,122,126
Southampton	873	262,276	861	279,658
Leith	1,086	130,596	893	71,545
Glasgow	514	125,482	914	256,519
Greenock	377	144,152	179	71,572
Dublin	887	71,602	148	44,793
Cork	401	87,823	825	62,671
Belfast	204	53,857	128	35,988
Total	25,514	6,846,564	24,524	6,697,683

An analysis of the calculations upon which these tables are based would doubtless show that the real difference between Liverpool and London is much less than it appears above, a large proportion of the trade of London being carried on by coasting vessels making short trips. The export returns are thus stated:

London	£22,330,272	Glasgow	£4,905,557
Liverpool	46,719,177	Greenock	554,508
Hull	10,008,122	Dublin	41,478
Bristol	751,718	Cork	148,096
Newcastle	1,521,551	Belfast	28,755
Southampton	2,334,141		
Leith	527,607	Total	£89,866,072

Showing that considerably more than one half the entire foreign trade of the 12 principal ports of Great Britain goes from Liverpool.

From the statistics of Glasgow, published by Dr. Strang in 1855, we learn that the tonnage of steamboats built on the Clyde during 30 years, from 1820 to 1850, amounted to 103,270, while in the 3 years 1851, 1852, 1853, it amounted to 141,718 in 206 vessels, which were almost entirely of iron. And to show the magnitude of this great department of Scottish industry, he adds that, during a period of 12 months, embracing the greater part of 1853, the tonnage of all vessels built in the ports of the Clyde was 64,114 tons, whereas the total tonnage of vessels built in London in 1853 was only 62,745, and in Liverpool, 45,[illegible]32. In the years 1853-4, there were no less than 266 vessels built at Glasgow, including both steam and sailing vessels, with an aggregate of 168,000 tons.

A Return of the Number and Tonnage of Sailing Vessels Registered at each of the Ports of Great Britain and Ireland, including the Isle of Man and the Channel Islands; distinguishing those under and those above Fifty Tons Register, on the 31st December, 1838: also, a similar Return of Steam Vessels and their Tonnage.

Ports.	Sailing Vessels.				Steam Vessels.			
	Under 50 tons.		Above 50 tons.		Under 50 tons.		Above 50 tons.	
	Vessels.	Tonnage.	Vessels.	Tonnage.	Vessels.	Tonnage.	Vessels.	Tonnage.
ENGLAND.								
Aberystwith	121	4,084	138	11,247	....	....	....	....
Arundel	50	1,372	44	5,901	....	....	....	....
Barnstable	51	1,724	29	3,800	....	....	....	....
Beaumaris	189	4,286	118	17,330	....	....	....	....
Berwick	80	1,015	29	3,112	....	....	1	219
Bideford	60	1,891	77	9,061	....	....	1	74
Boston	112	4,176	49	8,286	1	18	....	....
Bridgewater	55	1,965	69	11,476	2	21	....	....
Bridport	8	124	14	1,843	....	....	....	....
Bristol	165	4,974	229	61,854	12	308	18	3,728
Caernarvon	114	3,788	208	28,506	1	49	1	88
Cardiff	28	614	86	6,128	7	179	2	187
Cardigan	128	3,819	92	8,742	....	....	....	....
Carlisle	12	398	20	1,488	1	38	1	291
Chepstow	42	1,155	13	1,096	1	17	1	53
Chester	59	2,219	59	4,068	7	246	4	907
Colchester	191	3,981	69	7,907	1	23	....	....
Cowes	126	3,259	47	5,136	1	22	....	....
Dartmouth	166	4,591	258	28,291	1	19	....	....
Deal	19	346	....	....	....	....	....	....
Dover	48	1,369	21	2,568	....	....	1	54
Exeter	41	1,197	146	19,582	....	....	....	....
Falmouth	50	1,393	73	7,994	1	14	....	....
Faversham	225	4,986	82	10,355	1	9	....	....
Fleetwood	16	480	14	3,424	....	....	5	904
Fowey	88	1,365	109	10,696	....	....	....	....
Folkstone	7	187	7	900	....	....	....	....
Gainsborough	6	257	5	868	1	49	4	807
Gloucester	275	7,687	74	11,200	2	54	....	....
Goole	116	8,824	396	25,041	2	27	7	680
Grimsby	74	2,151	14	1,251	4	71	2	1,030
Hartlepool	3	17	124	26,777	6	124	....	....
Harwich	72	2,170	54	5,171	....	....	....	....
Hull	228	8,223	228	48,438	12	291	30	7,418
Ipswich	51	1,458	112	12,180	5	192	4	441
Lancaster	86	1,389	53	5,479	....	....	7	1,085
Liverpool	232	8,019	1,786	704,849	24	878	102	24,925
Llanelly	40	1,098	36	3,229	3	62	....	....
London	749	24,621	2,209	654,694	116	3,759	291	109,508
Lowestoft	40	1,098	23	1,862	1	17	5	2,121
Lyme	7	217	13	1,754	....	....	....	....
Lynn	55	1,769	122	18,569	2	26	....	....
Maldon	111	3,196	48	4,741	....	....	....	....
Maryport	19	562	88	16,088	1	34	1	199
Milford	73	1,979	70	8,494	1	48	....	....
Newcastle	7	3,164	595	147,782	89	1,624	9	2,226
Newhaven	10	216	15	2,405	....	....	....	....
Newport	19	766	59	11,378	2	67	1	52
Padstow	69	2,558	54	6,846	....	....	....	....
Penzance	27	698	63	7,497	....	....	....	....
Plymouth	250	7,394	200	86,759	4	105	2	266
Poole	38	871	75	13,429	1	22	....	....
Portsmouth	174	4,221	74	8,835	4	142	3	180
Preston	79	3,007	42	3,929	5	145	4	768
Ramsgate	95	2,564	87	8,485	1	10	....	....
Rochester	324	10,091	62	7,745	4	154	1	62
Rye	81	1,848	45	4,657	....	....	....	....
Saint Ives	63	1,880	98	11,088	....	....	4	726
Scarborough	62	1,767	184	32,079	....	....	....	....
Scilly	15	408	45	6,216	....	....	....	....
Shields	17	545	763	201,104	82	1,646	....	....
Shoreham	54	1,027	62	11,277	....	....	....	....
Southampton	136	3,588	85	10,744	8	265	18	1,864
Stockton	22	578	135	27,830	25	555	1	58
Sunderland	98	2,776	832	208,891	38	671	....	....
Swansea	78	2,116	94	14,801	6	141	6	519
Teignmouth	2	60	14	2,638	1	19	....	....
Truro	12	431	38	3,381	....	....	....	....
Wells	120	2,614	79	7,226	2	80	....	....
Weymouth	29	825	55	6,487	1	31	2	122
Whitby	48	1,649	341	59,274	3	85	....	....
Whitehaven	14	402	181	31,359	1	37	4	879
Wisbeach	25	930	79	10,796	3	70	2	482
Woodbridge	30	1,008	38	2,718	....	....	....	....
Workington	3	88	90	18,894	1	18	....	....
Yarmouth	328	9,542	280	82,991	5	87	3	282
Total, England	6,588	204,195	12,443	2,771,806	504	12,514	543	102,138
SCOTLAND.								
Aberdeen	19	539	212	46,411	1	41	7	6,116
Alloa	28	884	51	18,698	1	25	4	892
Arbroath	17	704	94	18,409	....	....	....	....
Ayr	16	486	26	4,472	....	....	1	70
Banff	49	1,666	96	11,343	....	....	....	....
Borrowstounness	29	942	44	4,891	....	....	....	....
Campbeltown	26	883	1	376	....	....	2	259
Dumfries	73	2,927	51	8,437	....	....	....	....
Dundee	84	1,161	284	55,466	8	94	7	1,664
Carry forward	..	..	..	..	..	..	..	..

A RETURN OF THE NUMBER AND TONNAGE OF SAILING VESSELS REGISTERED AT EACH OF THE PORTS OF GREAT BRITAIN AND IRELAND, INCLUDING THE ISLE OF MAN AND THE CHANNEL ISLANDS; DISTINGUISHING THOSE UNDER AND THOSE ABOVE FIFTY TONS REGISTER, ON THE 31ST DECEMBER, 1858: ALSO, A SIMILAR RETURN OF STEAM VESSELS AND THEIR TONNAGE.—*Continued.*

Ports.	SAILING VESSELS.				STEAM VESSELS.			
	Under 50 tons.		Above 50 tons.		Under 50 tons.		Above 50 tons.	
	Vessels.	Tonnage.	Vessels.	Tonnage.	Vessels.	Tonnage.	Vessels.	Tonnage.
Brought forward								
Glasgow	78	2,744	382	152,528	17	610	91	26,968
Grangemouth	8	297	38	7,955	4	81	3	747
Greenock	220	6,209	184	65,677	2	47	12	1,965
Inverness	169	4,195	79	6,536	....	....	2	585
Irvine	41	1,194	77	17,714	....	....	3	476
Kirkcaldy	63	2,020	36	7,096	....	....	1	62
Kirkwall	22	560	21	1,925	....	....	....	....
Leith	79	2,350	102	22,007	13	274	15	3,672
Lerwick	54	1,231	8	755	....	....	....	....
Montrose	10	437	88	14,859	....	....	1	76
Perth	16	316	44	4,262	1	19	2	116
Peterhead	8	246	40	9,485	....	....	....	....
Port Glasgow	38	1,442	16	4,827	1	14	12	2,181
Stornoway	42	1,181	14	1,477	....	....	....	....
Stranraer	5	548	18	856	....	....	....	....
Wick	23	665	16	1,281	....	....	....	....
Wigtown	36	1,236	16	1,543	....	....	1	316
Total, Scotland	1,197	86,418	2,048	478,981	43	1,205	164	42,542
IRELAND.								
Ballina	2	36	1	215	....	....	....	....
Belfast	159	5,428	822	75,536	2	28	10	2,186
Coleraine	11	272	....	....	....	....	....	....
Cork	158	3,696	228	41,626	7	214	16	4,897
Drogheda	7	198	41	5,108	....	....	5	1,787
Dublin	291	8,407	127	21,583	3	119	43	11,656
Dundalk	5	181	18	1,431	1	24	2	844
Galway	12	359	3	502	....	....	....	....
Limerick	59	1,761	40	10,315	....	....	1	300
Londonderry	10	256	14	4,171	3	125	4	1,339
Newry	78	2,401	39	5,293	....	....	8	873
Ross	2	69	16	5,756	....	....	....	....
Skibbereen	94	2,285	8	202	....	....	....	....
Sligo	18	401	19	8,739	1	44	1	67
Strangford	82	1,653	21	2,406	....	....	....	....
Tralee	12	306	4	729	....	....	....	....
Waterford	60	1,524	94	12,904	....	....	19	5,791
Westport	4	87	1	120	....	....	....	....
Wexford	28	1,006	70	7,660	....	....	....	....
Total, Ireland	1,087	29,721	1,961	199,419	17	554	104	29,670
Isle of Man	318	7,422	39	2,947	....	....	5	1,197
Channel Islands	207	5,445	286	43,743	1	21	4	271

Commercial Intercourse between Great Britain and the United States.—The definite treaty of peace between the United States and Great Britain, in 1783, contains only one stipulation in any manner relating to commercial intercourse. Article viii. provides that the navigation of the Mississippi, from its source to the ocean, shall forever remain free and open to the subjects of Great Britain and the citizens of the United States. It was not until 1794 that commercial intercourse between the two nations was defined by treaty stipulations. The treaty of that year regulates trade between the high contracting parties, on the continent of America, in the East Indies, the territories of Great Britain in Europe and in those of the United States. It provides that no other or higher duties shall be paid by the ships or merchandise of the one party in the ports of the other, than such as are paid by the like vessels or merchandise of all other nations; that no other or higher duty shall be imposed in one country on the importation of any articles, the growth, produce, or manufacture of the other, than are or shall be payable on the importation of the like articles being of the growth, produce, or manufacture of any other foreign country; nor shall any prohibition be imposed on the exportation or importation of any articles to or from the territories of the two parties respectively, which shall not equally extend to all other nations; the British government reserving to itself the right of imposing on American vessels entering into the British ports in Europe "a tonnage duty equal to that which shall be payable by British vessels in the ports of America, and also such duty as may be adequate to countervail the difference of duty now payable on the importation of European and Asiatic goods when imported into the United States in British or in American vessels." The other stipulations respecting commerce relate chiefly to the trade with the West Indies. The duration of this treaty, so far as it regulates the commerce between the United States and the European possessions of Great Britain, is limited to 12 years. During the interval which elapsed from the treaty of peace in 1783 to the ratification of the treaty of amity, commerce, and navigation, in 1794, the commercial relations between Great Britain and the United States were regulated by the separate and distinct legislation of the several States on the one side, and by general orders in council on the other. See articles COLONIES and UNITED STATES.

The navigation laws of Great Britain, immediately after the proclamation of peace, were enforced against the vessels and commerce of the United States. The first in the series of these laws was the act of 1651. It provided that no goods or commodities whatever, the growth, production, or manufacture of Asia, Africa, or America, should be imported either into England or Ireland, or any of the plantations, except in English-built ships, and belonging either to England or to English plantation subjects, and of which the master and three fourths of the crew were also English; and that no goods of the growth, production, or manufacture of any country in Europe should be imported into Great Britain, Ireland, or the plantations, except in British ships, or in such ships as were the real property of the people of the country or place in which the goods were produced, and from which they could only be, or were usually exported. This act was never enforced, nor intended to be enforced, in the British North American colonies. It was especially aimed at the Dutch, who were at this period the great carriers of the world. Having but few staples of their own to export to foreign countries, their merchant ships were found in every port, and were even employed in bring-

ing home the products of the British colonies to the mother country.

After the Restoration, the navigation act was re-enacted; with such amendments, however, as seemed still necessary to give more effective protection to British interests, and curb the Dutch yet further. Among the provisions of the new act of 1660, it was declared that no "sugar, tobacco, cotton, wool, indigo, ginger, fustic, or other dyeing woods of the growth or manufacture of our Asian, African, or American colonies, shall be shipped from the said colonies to any place but England, or to some other of his majesty's said plantations." Whatever relaxations were permitted in the operation of these navigation laws in the North American colonies, the United States became subjected to them in all their rigor immediately on assuming an independent existence. In the language of Lord Liverpool, "The connection which had so long subsisted between Great Britain and the countries now forming the United States of America was finally dissolved by the acknowledgment of their independence in the year 1783; the ancient commercial system arising out of that connection *of course ended with it;* and the laws by which the trade of these countries, considerd as colonies, had hitherto been regulated ceased to have effect." The king, by and with the advice and consent of his privy council, was, however, vested with authority to regulate the future commerce between Great Britain and the United States. The first order in council issued after the independence of the United States had been acknowledged by Great Britain, established the following regulations:

First. That any goods, the importation of which into this kingdom is not prohibited by law, being the growth or production of any of the territories of the United States of America, may be imported directly from thence into any of the ports of the kingdom, not only in British ships, owned by British subjects, and navigated according to law, but, also, in ships built in the countries belonging to the United States of America, and owned by the subjects of the said States, and whereof the master and three fourths of the marines, at least, are subjects of the United States. *Secondly.* That any goods, being unmanufactured (except fish-oil, blubber, whale-fins, and spermaceti), and also any pig-iron, bar-iron, pitch, tar, turpentine, rosin, potash, pearl-ash, indigo, masts, yards, and bowsprits, being the growth or production of any of the territories of the United States of America, may be imported directly from thence into any of the ports of Great Britain, upon payment of the same duties as the like sort of goods are, or may be subjected to, if imported from any British island or plantation in America; and that the excepted articles, as well as all others not enumerated, the growth, production, or manufacture of the said United States, shall be admitted on the payment of the same duties as are levied on similar articles when imported from the most favored nation, except such nations only with which treaties of reciprocity have been established. *Thirdly.* It was ordered that goods and merchandise, being the growth, production, or manufacture of the territories of the United States, though imported in ships belonging to the subjects of the said States, should be exempted from the alien's duty. *Fourthly.* It was permitted to be imported into the other American and West Indian possessions, from the ports of the United States, in *British ships only*, such articles of the growth, production, or manufacture of any of the said States (except salted provisions and the produce of the fisheries), as might by law, before the independence of the United States, have been imported from the said States; but prohibiting all intercourse between the United States and the said American and West Indian possessions in ships belonging to citizens of the United States.

The first three orders, it will be perceived, suspend, in favor of the United States, that provision of the navigation laws of Great Britain which enacts "that no goods or commodities whatsoever, of the growth, production, or manufacture of any part of America, are to be imported into any of his majesty's European dominions in any other ship or vessel than such as do truly *belong to* his majesty's subjects, and navigated according to law, in the manner therein described, under the penalty of forfeiting all such goods and the ship or vessel in which they are brought." The commerce of the United States, with respect to certain articles enumerated (and it is admitted that these articles formed a principal portion of the American export trade at that period), was also allowed the same preference as was granted to the remaining American possessions of Great Britain. The privileges conferred on American commerce by this order are shown in the following table:

Merchandise.	Duties, if imported from the United States.	Duties, if imported from other foreign countries.
Potash.....per cwt.	Free.	$0 54
Pearl-ash..... "	Free.	0 54
Iron, bar..... "	Free.	18 48
Pitch,.....per last.	$2 64	2 98
Tar..... "	2 64	2 97
Skins, beaver.....each	0 02	0 16½
Tobacco.....per pound	0 30	0 84

The last regulation operated to exclude United States' vessels from the ports of British possessions in America, including the West Indies, and to restrict the importation of the products or manufactures of the said States in such possessions to *British ships only*, navigated according to law. The order was dictated by a spirit of illliberality and selfishness, universally condemned both in England and the United States; and furnished a prolific subject of diplomatic discussion between the two governments, until the question was definitely and satisfactorily settled toward the close of the year 1830. The following summary exhibits a brief abstract of the separate acts of the different State legislatures affecting British commerce, passed between 1783 and 1789: By laws passed in New Hampshire, Massachusetts, and Rhode Island, vessels owned, in whole or in part, by the subjects of Great Britain, were prohibited from taking on board, in these provinces, any goods or merchandise of the growth or manufacture of these States, or of any other of the United States; and such vessels, so loaded, were, together with their cargoes, made subject to seizure and condemnation. The legislature of Pennsylvania vested in Congress a power to prohibit for 15 years the importation or exportation of all merchandise in vessels belonging to or navigated by the subjects of any nations with which Congress shall not have formed treaties of commerce.

By laws passed in Massachusetts and Rhode Island, Congress was empowered to prohibit the importation of British West India produce in British vessels. Another law was enacted, in Pennsylvania, imposing a duty of 4s. 6d. (currency) per ton on the vessels of every nation with which Congress had not made treaties of commerce. In Maryland, a duty of 1s. per ton was imposed on all foreign shipping except British, and on British a duty of 5s. per ton. In 1788 Virginia passed a law imposing a duty of 6s. per ton on British vessels, and half that amount on all other foreign vessels. In North Carolina the discrimination was still greater; the duties on British vessels entering the ports of that State being 5s. per ton, while that on all other foreign vessels was only 1s. per ton.

The import duties of the different States on British cargoes were equally characterized by a similar spirit of retaliation. New Hampshire, Massachusetts, Rhode Island, Virginia, Maryland, South Carolina, and Georgia imposed discriminating duties, varying from 50 to 100 per cent. on British cargoes over those levied on similar merchandise imported in other foreign vessels.

The effect of these countervailing and retaliatory measures can be traced in the following tables:

Value of British exports into the United States,

upon an average of six years before the war of independence, ending with 1774, $13,118,778; of six years ending with 1789, $11,201,486; annual decrease since the war, $1,912,287. Annual value of exports from the United States to Great Britain, upon an average of six years before the war of independence, ending with 1774, $8,410,281; of six years since the war of independence, $4,361,452; annual decrease since the war, $4,048,829.

A close analysis of the official returns of trade during this period will show that tobacco and rice were the articles upon which this decrease chiefly fell. The quantity of tobacco exported to England decreased annually, upon an average of six years, 44,774,458 pounds, valued at $2,798,390; and the annual decrease in rice exported to England from the United States was 259,035 cwt., valued at $943,326; making a total decrease in tobacco and rice of $3,741,716. The tonnage employed in the trade during the two periods above designated can not be ascertained with accuracy. We are enabled, however, to supply from British authorities the number and tonnage of vessels employed in the trade between the two countries for two periods —of three years before, and subsequent to, the war of independence:

Number and tonnage of vessels annually clearing from Great Britain for the United States, on an average of the years 1770, 1771, and 1772, 628—81,951. Number and tonnage of vessels annually entering British ports from the United States, on a like average, 699—91,510; total, 1327—173,491. Number and tonnage of British vessels clearing from British ports, annually, on an average of the years 1787, 1788, and 1789, 272—55,785. Number and tonnage of United States' vessels clearing, annually, from British ports, on like average, 157—25,725. Number and tonnage of British vessels clearing from the United States for British ports, annually, on an average of the years 1787, 1788, and 1789, 261—52,595. Number and tonnage of United States' vessels clearing from the United States for British ports, annually, on a like average, 163—26,564; total, 853—160,669. Showing a decrease, during the periods compared, of 474—12,822.

Thus, in the very infancy of our commerce, the disastrous effects of restrictions, and of the retaliatory measures which they provoked, were exhibited as well in the spirit of commercial illiberality and antagonism which they engendered between the two countries, as in the general decrease of navigation and trade. That the object as well as the effect of the various orders in council relative to the trade between Great Britain and this county, issued from 1783 to 1794, was to paralyze the efforts even then made in the United States to compete for a portion of that trade which England had, long anterior to this period, wrested from Holland, and now seemed to regard as legitimately her own, can not be doubted. A British statesman (Lord Liverpool), in a work on this subject, published in 1792, remarks:—"That this increase in our shipping is to be ascribed to *our navigation system* may be made to appear from recent experience in the application of it to the trade of the United States. When those countries were part of our plantations, a great portion of their produce was transhipped to Great Britain and our West India Islands in *American bottoms*; they had a share in the freight of sugars from those islands to Great Britain. But since the independence of those States, since their ships have been excluded from our plantations, and that trade is *wholly confined to British-built ships*, we have gained that share of our carrying trade from which they are *now excluded*, and we moreover enjoy a considerable proportion in the carriage of the produce of the United States."

The commercial policy of the United States, from the very infancy of the government, has been to encourage reciprocity, and freedom of commerce with all nations willing to adopt a similar principle. In the report from the Treasury Department on the subject of commerce, submitted to Congress in 1791, the basis of a commercial system was suggested, in which the Secretary argued that duties imposed upon imports would be disadvantageous in building up trade. "Instead," the report adds, "of embarrassing commerce under piles of regulating laws, duties, and prohibitions, it should be relieved from all its shackles, in all parts of the world. Would even a single nation begin with the United States this system of free commerce, it would be advisable to begin it with that nation." In the spirit of this suggestion, the United States, soon after the peace of 1783, proposed to enter into treaties of commerce, not only with Great Britain, but also with France, Spain, and Portugal. Every overture, however, to that end, was, under various pretexts, rejected; and it was not until five years after the adoption of our present Constitution that Great Britain could be induced to listen to any propositions on the part of the United States, having in view the equalization or reciprocity of commercial relations between the two nations.—SEYBERT's *Statistical Annals*, page 58. Under the operation of their navigation laws, the productions of Asia, Africa, and America, could only be imported direct from the places of their growth in British vessels. As respects the United States, this restriction was suspended, as already observed, by orders in council, and proclamations issued in pursuance thereof, until the treaty already cited was ratified.

The following tables exhibit the details of the import and export trade between Great Britain and the United States from 1795 to 1807, and from the latter year to 1815, when a convention of reciprocity was entered into and ratified between the two governments:

Years.	Exports from Great Britain to the U. S.	Imports into Great Britain from the U. S.	Years.	Exports from Great Britain to the U. S.	Imports into Great Britain from the U. S.
1795	$26,270,590	$6,760,680	1801	$37,587,650	$13,532,590
1796	30,270,160	10,404,850	1802	26,647,450	9,617,520
1797	25,283,995	5,877,560	1803	26,864,055	9,570,490
1798	27,901,845	8,913,600	1804	31,992,180	8,257,935
1799	35,282,790	9,094,705	1805	35,733,825	8.882,780
1800	39,427,970	11,789,615	1806	43,065,610	9,999,420

The preceding table is derived from British authorities; and though it exhibits a variance in almost every instance, more or less, from the United States' official reports, it is believed to approximate the actual value of the imports and exports in the English market. From 1803, when the stipulations of the treaty of 1794, relative to commerce, expired, there was no treaty regulating the commercial intercourse between the two countries until 1815. It is true a treaty was agreed to, December 31, 1806, between Messrs. Monroe and Pinckney and the commissioners appointed by Great Britain for that purpose; but so restrictive were some of its stipulations, especially as respecting American commerce with the East Indies, that it was rejected by the President, without having been submitted to the Senate, notwithstanding it contained a stipulation for an equalization of tonnage and other duties in the intercourse between the United States and the dominions of Great Britain in Europe. This principle was recognized and admitted in the commercial convention of July 3d, 1815, entered into between the two countries, with the limitation, however, on the part of England, to her dominions in Europe. Prior to the adoption of this treaty, the United States passed an act repealing all the discriminating duties of import and tonnage in regard to the vessels of such nations as should extend similar favors to the shipping and produce of the United States; thus carrying into practical working, and recommending by legislative example, the suggestion of Mr. Jefferson already quoted, that if "even a single nation would begin with the United States the system of free commerce, it would be advisable to begin it with that nation." We recur, however, before proceeding to trace the operation of

this convention in the subsequent returns of trade, to the tables, resuming at the year 1806:

Years.	Exports from Great Britain to the U. S.	Imports into Great Britain from the U.S.	Years.	Exports from Great Britain to the U. S.	Imports into Great Britain from the U.S.
1806	$48,065,610	$9,999,420	1811	$7,159,145	$11,547,075
1807	39,605,600	14,237,610	1812	20,677,960	6,470,760
1808	19,960,295	4,181,710	1813	Records destroyed by fire.	
1809	25,988,065	11,026,655	1814	86,515	118,105
1810	39,066,585	18,672,025	1815	59,682,505	11,811,440

In Seybert's *Statistical Annals* we find a minute analysis of the trade between the United States and Great Britain during the years designated in the previous tables.

In the year 1793, exports from the United States to Great Britain were estimated, in a report of the Secretary of the Treasury, under date December 23, 1793, at $9,363,416, and the imports into the United States from Great Britain at $15,285,428, leaving a balance in favor of Great Britain of $5,922,012. From 1793 to 1800, the amount of manufactures imported into the United States from Great Britain exceeded in value the amount of similar exports to all the nations in Europe, as will be seen from the following table, taken from British returns:

Years.	Amount of manufactures exported from Great Britain to Nations in Europe.		The United States.
1793	$17,659,280	.....	$16,968,625
1794	22,291,915	.....	17,944,445
1795	21,113,910	.....	24,462,860
1796	22,488,415	.....	29,178,200
1797	18,684,150	.....	24,856,580
1798	19,908,250	.....	26,565,340
1799	22,768,040	.....	33,481,105
1800	37,580,615	.....	32,947,385

The annual value of merchandise exported from the United States to the European dominions of Great Britain, on an average of the years 1802, 1803, and 1804, amounted to $18,665,777; and on a similar average, the annual value of the merchandise imported into the United States from Great Britain amounted to $35,737,030; showing an annual balance of $17,071,253 against the United States. The annual value of British produce and manufactures, and of foreign and colonial merchandise, distinguished in separate columns, exported from Great Britain to the United States, and to all parts of the world, during the years designated, will be seen in the following tables:

VALUE OF THE EXPORTS FROM GREAT BRITAIN.

Years.	TO THE UNITED STATES.		TO ALL PARTS OF THE WORLD, INCLUDING THE UNITED STATES.	
	British manufactures and produce.	Foreign and colonial merchandise.	British manufactures and produce.	Foreign and colonial merchandise.
1805	$55,057,045	$2,177,650	$265,344,710	$50,200,945
1806	61,987,440	2,850,815	216,210,880	48,993,525
1807	59,232,565	1,257,145	202,899,825	50,013,980
1808	26,208,695	805,635	204,408,255	43,440,875
1809	86,292,500	1,014,840	251,218,805	78,874,755
1810	54,606,760	1,484,665	249,878,170	68,668,875
1811	9,206,265	165,820	174,586,405	45,111,695

The aggregate value of British manufactures and produce exported to the United States during the seven years designated above, was $302,588,270, making an annual average of $43,226,896; the aggregate value of British produce and manufactures exported to all parts of the world, including the United States, during the same period, was $1,504,041,650, making an annual average of $214,863,093. The aggregate value of foreign and colonial merchandise exported from Great Britain to the United States during the same period was $8,782,070, making an annual average of $1,254,582; the aggregate value of similar exports to all parts of the world, including the United States, was $382,209,150. The preceding figures exhibit many interesting facts relative to the trade between the two countries, during the period which intervened between 1793 and 1816. The exports of foreign and colonial merchandise from Great Britain to the United States show that England enjoyed but a small share of our carrying trade; while a comparison between the totals of domestic manufactures exported to the United States, and to all other parts of the world, will exhibit the importance to Great Britain of unrestricted commercial intercourse with the United States.

The effect of the restrictive and retaliatory measures which were, at this period, adopted by both countries, is even more fully illustrated in the tonnage employed in this trade by each, respectively, from 1790 to 1816. The number of British vessels which entered and cleared between the United States and Great Britain amounted to 1715, with an aggregate tonnage of 382,552 tons. The number of American vessels which entered and cleared in the same trade, during the same period, was 5245 vessels, with an aggregate tonnage of 516,702 tons. In 1790, 557 British vessels were employed in the commerce between the two countries; in 1800 this number was reduced to 139. In 1790 the American vessels employed in this trade amounted only to 464; in 1800 this number reached as high as 1057. In 1789, 253 British vessels engaged in this trade entered British ports from the United States, while 358 vessels cleared in the same trade. In a period of 10 years, up to 1799, the number that entered from the United States was reduced to 42 vessels, while the number that cleared fell to 57. In 1806, 561 vessels employed in the trade with the United States entered British ports; of these only 56 were under the British flag; and of the 575 vessels that cleared from British ports in the same trade, only 39 were British.

These statistics, which are chiefly compiled from Seybert, show an augmentation of tonnage in the United States, and a diminution in the tonnage of Great Britain engaged in the trade between the two countries, well calculated to excite alarm among the ship-owners in England, and even to arrest the attention of the British government. And when it is considered that it was at that period—if it has not always been—the policy of Great Britain to sacrifice, if necessary, the interests even of commerce and trade to the great object of strengthening her naval power, it will not be a subject of surprise that orders in council and acts of Parliament were issued, in quick succession, avowedly designed to check this rapid progress of American navigation, and drive American ships from the carrying trade, even as respected the exportation of the products of the United States to other countries. "Trade," said the report of the privy council, to whom the subject was, at this time, referred by his majesty's orders, "was considered principally as the means of promoting the employment of ships, and was encouraged chiefly as it conduced to the one great national object—the naval strength of the country."

It was the universal prevalence throughout England of this sentiment, exhibited upward of a century in her navigation laws, in her prohibitions and restrictions, in her differential duties, and, above all, in her colonial system, that emboldened the privy council to recommend to his majesty "that, notwithstanding their (the United States') extreme anxiety for an arrangement on the principle of reciprocity, if Congress should propose (as they certainly will) that the principle of equality should be extended to the ports of our colonies, and that the ships of the United States should be there treated as British ships, it should be answered, that this demand can not be admitted even as a subject of negotiation." Hence, but little could be expected from the treaty of 1794, in which this principle was carried out to the fullest extent of rigorous restriction; and hence, also, the series of regulating orders, acts, and counter-acts, which were made the instruments of commercial warfare between the two countries for upward of a quarter of a century. It would be a tedious task to present even a synopsis of the different restrictive and retaliatory measures adopted by the two governments during this long period. Were it even otherwise, it would be super

fluous to go into minute details, as the legislation of both governments during this period, as well as its effects upon the commerce of the two countries, are succinctly set forth in the former reports issued from this Department.

It will, therefore, suffice to refer to the tables of trade and tonnage already given, as the best illustration that can be offered of the operation of these measures, and of the total inadequacy of restrictions and prohibitions as a necessary means of fostering commercial industry, or of augmenting the naval power of a nation. The ablest pens in England have been employed in demonstrating that it is to other causes than the navigation laws that Great Britain owes her vast commercial greatness, and that naval ascendancy which she has so long maintained (McGregor, Part 15, vol. ii., p. 1370) and it is a question still unsettled whether the adoption by the United States of the navigation laws and the restrictive policy of Great Britain, even as a means of protection or self-defense, was as beneficial in its ultimate results upon the commercial prosperity of the country, as would have been a strict adherence to the maxim of Mr. Jefferson, already cited, that "commerce should be relieved from all its shackles in all parts of the world." Be this as it may, the enlightened policy which now rules the councils of Great Britain—a policy which, at this distant and remote period in British history, received the co-operation and support of two of England's greatest statesmen, Mr. Pitt and Sir Robert Peel—has dissipated the fallacies upon which past legislation was based, and has demonstrated already, in the brief period of five years, that England can best compete with the merchant-marine of the world by placing the trade of every port in her vast dominions, European and colonial, for the ships of all countries, upon the footing of an unrestricted coasting-trade.

A liberal tariff of duties, especially upon articles of prime necessity among the great masses of her people, even should they be classed in the category of luxuries, is all that seems now wanting to perfect the present commercial code of this powerful kingdom. The present duty on raw tobacco is, at least, 1000 per cent. above prime cost. The commercial convention of 1815, between Great Britain and the United States, was limited to four years. The second article of this treaty provides for an equality of duties on imports and tonnage in the ports of the United States and the ports of the British territories in Europe. With respect to imports, this equality of duties applies only to articles being the growth, produce, and manufacture of the respective countries. The intercourse between the United States and the British West Indies and American colonies is not to be affected by any provisions of the convention; "but each party is to remain in complete possession of its rights with respect to such intercourse." Under the stipulations of this convention, the vessels of Great Britain are exempted from the payment of the *extra* tonnage and import duties, only when they arrive from, and their cargoes are of the growth, produce, or manufacture of, the British dominions in Europe; and the vessels of the United States, in like manner, are admitted into British ports on terms of equality as to tonnage and import duties, with British vessels, only when their cargoes consist of merchandise the growth, produce, or manufacture of the United States. The effect of this convention, especially of its restrictive clauses, upon the shipping interests of Great Britain, formed no exception to the general rule, that all shackles upon commerce ultimately recoil upon those by whom they are imposed.

In the practical consequences of this arrangement, as was stated by the celebrated Huskisson, in a speech delivered in Parliament, the adherence of Great Britain to another part of her navigation laws, instead of serving, appeared to that statesman to have shackled the shipping interests of that country. And he thus illustrates his position: "An American vessel, on her voyage to England, is freighted with a cargo wholly produced in the United States. For her return to America, she may load in British ports, with a cargo partly the produce or manufacture of any other country. This a British ship can not do; for if a British ship were to bring to the United States a single cask of brandy, or a pipe of wine, she would be liable to seizure and forfeiture." And yet, at this very period, and up to the year 1830, the representatives of the American government were pressing upon the cabinet of England the justice as well as the policy of unrestricted commercial intercourse between all the ports of the two countries, but without success.

In 1818 another convention was ratified between the two governments, by the 4th article of which that of 1815 was continued in force for the term of 10 years from that date; and in 1827 it was indefinitely extended and continued, either party being at liberty, on giving 12 months' notice to the other, to annul and terminate the said convention. No terms, however, would be acceded to by the British government respecting the trade with her American colonies. A recapitulation of the various acts of Parliament and orders in council, as well as the general history of the commercial antagonism and reciprocal exclusion which marked this period, belongs more properly to the digest of our commercial relations with the English colonial possessions. It is true, it would not be difficult to trace the influence of this controversy in the commercial legislation, more particularly in relation to the tariff regulations of both countries, during the entire period of its continuance. Still, the general subject belongs to a review of our trade with the colonies of Great Britain, and to that portion of this digest reference is made.

It has been already stated that, in the convention of 1827, it was agreed that the provisions of the convention of 1815 should be indefinitely extended and continued; but that it should be competent, nevertheless, to either of the parties, on giving 12 months' notice, to annul and abrogate the said convention. No such notice has been given by either party, and, consequently, the convention still remains in force. Since that period, however, the commercial policy of Great Britain has totally changed. The vast pile of navigation laws which contributed to build up her naval power, and extend her commerce to every corner of the globe, has been swept away by the reforming hand of a more liberal legislation; the whole framework of her tariff policy has been demolished; the heavy duties on the various classes of raw material have been removed; and, with the exception of a few articles on which, for revenue purposes only, heavy duties are still retained, the raw produce of the world is brought to the store-houses of her manufacturers, unincumbered with those custom-house charges which, before this period, absorbed so large a share of the profits of their industry and skill.

The act of 12 and 13 Victoria, chapter 29, passed on the 26th June, 1849, introduced this new era in the commercial history of Great Britain. The leading provisions of this act, as well as of the various acts, orders in council, proclamations, etc., which it superseded, will be found at length in a report from the Department of State in 1853, entitled "Ex. Doc. No. 52, Senate," pages 9–16. Section 21 of this act declares that it shall come into operation on the 1st day of January, 1850. Thus, at length, the limbs of British commerce were freed from the pinions by which it was fettered for upward of two centuries. The visions of Mr. Pitt were realized in the liberal policy of Sir Robert Peel's enlarged and enlightened statesmanship. This act establishes the comprehensive principle of admitting into the ports of Great Britain, or into any British possessions, goods of any sort, in a ship of

any country, from any part of the world. Such prohibitions and restrictions, however, as were, before the passage of this act, deemed necessary either for the safety or for the protection of revenue and mercantile interests, still remain in force. The following is a brief summary of such prohibitions and restrictions, so far as they affect the commercial relations of the United Statas with Great Britain:

Books, wherein the copyright shall be first subsisting, first composed, or written or printed in the United Kingdom, and printed or reprinted in any other country, as to which the proprietor of such copyright or his agent shall have given to the commissioners of customs a notice in writing that such copyright subsists, such notice also stating when copyright shall expire.

Coin, viz.: False money or counterfeit sterling; silver coin of the realm, or any money purporting to be such, not being of the established standard in weight or fineness; extracts, essences, or other concentrations of coffee, chicory, tea, or tobacco, or any admixtures of the same; malt. Prints, indecent, or obscene; paintings, books, cards, lithographic or other engravings, or any other indecent or obscene articles. Snuff-work: tobacco-stalks stripped from the leaf, whether manufactured or not; tobacco-stalk flour.

The following goods prohibited to be imported except in transit, and subject to such regulations and restrictions as the Commissioners of the Treasury may direct, and duly reported as goods in transit: I. Articles of foreign manufacture, and any packages of such articles bearing any names, brands, or marks, being, or purporting to be, the names, brands, or marks of manufacturers resident in the United Kingdom. II. Parts of articles, viz.: Any distinct or separate part of any article not accompanied by the other part or all the other parts of such articles so as to be complete and perfect, if such articles be subject to duty according to the value thereof.

The following goods prohibited to be imported, except subject to restrictions on importation (arms, ammunition, gunpowder, or any other goods, may be prohibited by proclamation or order in council): I. *Silk.*—Manufactures of silk, being the manufactures of Europe, unless into London, Liverpool, Hull, Southampton, Leith, Dublin, or ports appointed by the commissioners, or into Dover or Folkestone, direct from Calais or Boulogne, and unless in ships of 50 tons' burden or upward. II. *Spirits*, not being perfumed or medicinal spirits, unless in ships of 50 tons' burden at least, and in casks or other vessels, each of such casks or other vessels being of the contents of 20 gallons at least, and duly reported, or in glass bottles, or stone bottles, not exceeding the size of three-pint bottles, and being part of the cargo of the importing ship, and duly reported. III. *Tobacco, Snuff, Segars, Cigarillos or Cigarettos.*—Unless in ships of not less than 120 tons' burden, and into ports approved by the Commissioners of the Customs. IV. Tobacco, segars, or snuff, unless in packages each containing not less than 80 pounds' net weight. Tobacco and snuff for private use, in packages under the legal size, may be admitted by special leave of the Board, provided it be for the use of the person to whom it is consigned, and be inserted in the manifest and report, the application and proof being made by such person. V. Cigarillos or cigarettos, unless in packages each containing not less than 75 pounds' net weight. VI. If any goods be imported contrary to the foregoing prohibitions and restrictions, the same to be forfeited.

The following are the only ports into which tobacco and snuff can be imported, viz.:

England.—London, Liverpool, Southampton, Falmouth, Lancaster, Whitehaven, Plymouth, Newcastle, Swansea, Hull, Preston, Cowes, Bristol.

Scotland.—Glasgow, Port Glasgow, Aberdeen, Leith, Greenock.

Ireland.—Dublin, Belfast, Cork, Galway, Limerick, Londonderry, Newry, Sligo, Waterford, Wexford, Drogheda.

The 43d section of 16 and 17 Victoria provides that no goods shall be deemed to be imported from any particular place, unless imported direct from such place, and shall have been there laden on board the importing ship, either as the first shipment of such goods, or after the same shall have been actually landed at such place.

Section 41 (chapter 107) of 16 and 17 Victoria declares that it shall be lawful to import into the United Kingdom any goods not prohibited, and to warehouse such as are subject to duties of customs, in duly approved warehouses, without payment of duty on their first entering; but the duties on the following goods, and such other goods as the Commissioners of the Treasury may, from time to time, direct, shall be paid on the first importation thereof, viz.: corn, grain, meal, and flour, and wood goods from British possessions. No goods except diamonds, bullion, lobsters, and fresh fish of British taking, and imported in British ships, which may be landed without report or entry, shall be unshipped or be landed on Sundays or holidays, nor on any other days except between 8 o'clock in the morning and 4 o'clock in the afternoon from the 1st of March until the 1st of November; and between 9 o'clock in the morning and 4 o'clock in the afternoon from the 1st of November until the 1st of March, or during such other hours as may be appointed by the commissioners; nor shall any goods be unshipped or landed, unless in the presence or with the authority of a customs officer; nor shall they be landed, except at some legal quay, wharf, or other duly-appointed place; nor shall any goods, after having been transhipped, be removed into any other craft, without permission of such officer, under the penalty of forfeiture; and if any goods shall be unshipped for the purpose of being landed after due entry thereof, they shall be forthwith removed to and landed at the place at which the same are intended to be landed; and in default thereof, such goods shall be forfeited, together with the barge or other vessel employed.

The master of every ship, whether laden or in ballast, shall, within 24 hours after arrival from ports beyond the seas, and before bulk be broken, make due report of such ship in the form following,* or to the same effect, embracing the several particulars indicated therein; and if the cargo of such ship shall have been laden at several places, he shall state the names of those places, in the order of time in which the same were laden, oppos te to the particulars of the goods so laden; and failing so to do, or if any of the particulars contained in such report be false, the master shall forfeit £100 ($500). The master of every ship arriving from ports beyond the seas, at the time of making report, if required, shall deliver to the collector or comptroller the bill of lading, or a copy thereof, for any part of the cargo laden on board, and shall answer all such questions relating to the ship, cargo, crew, and voyage, as he shall put to him; and in case of fail-

* Form of Entry.

NAME OF SHIP.	BRITISH OR FOREIGN. (If foreign, country to which she belongs.)	NUMBER OF CREW.			PORT OR PLACE WHENCE ARRIVED.
		British seamen.	Foreign seamen.	Name of master.	

ure or refusal, or to answer truly, or to produce such bill of lading or copy; or if the same be false; or if any bill of lading be uttered or produced by any master, and the goods specified therein shall not have been *bona fide* shipped on board such ship; or if any bill of lading uttered or produced by any master shall not have been signed by him, or any such copy shall not have been received previously to his leaving the place where the goods expressed therein were shipped; or, if after the arrival of any ship within four leagues of the coast of the United Kingdom, bulk be broken, or any alteration made in the stowage of the cargo so as to facilitate the unlading of any part thereof; or if any part be staved, destroyed, or thrown overboard, or any package be opened, in every such case the master shall forfeit £100 ($500).

A perfect entry shall be made before unshipment, by the importer or his agent, of all goods liable to duty and intended for home use on the landing thereof, and the particulars thereof shall agree with those of the report, and any certificate of origin or other document conferring a benefit by the distinction; and whenever the value of any goods is required to be stated in the entry, the importer or his agent shall declare to the same at the foot thereof. It is competent, under the provisions of 16 and 17 Victoria, chapter 107, section 57, for the officers of the customs to detain goods which appear to them to be undervalued; in which case, they shall forthwith give notice in writing to the party entering the same, and stating the value thereof as estimated by them; either delivering such notice in person, or transmitting it by post to the address stated in the entry;* and the commissioners shall, within seven days after the detention of such goods, determine either to deliver them on the entry or retain them for the use of the crown; in which latter case, they shall cause the value, as stated in the entry, together with 5 per cent. additional, and the duty already paid, to be paid to the party entering them, in full satisfaction for such goods; or, on application, may permit such person to amend his entry at such value.

Sections 66 to 73 of the act already cited require that, with each entry, two or more duplicates shall be delivered, in which all sums or numbers may be expressed in figures, and the number of duplicates shall be such as the collector or comptroller may require. Importers or agents willfully failing to comply with these regulations, so far as applicable to the goods entered by them, shall pay £20 ($100). No entry shall be valid unless the goods are properly described therein by the denominations, and with the character and circumstances according to which such goods are charged with duty, or may be imported either for home use, or to be warehoused for exportation only. If any goods or other things shall be found concealed in any way, or packed to deceive the officers, in any package landed in pursuance of any entry, such package and its entire contents shall be forfeited; and if any goods not duly entered shall be taken or delivered from any ship or warehouse, the same shall be forfeited.

It is provided, however, that no entry shall be required in respect of passengers' baggage, which may be landed, examined, and delivered as the commissioners may direct; but if prohibited or uncustomed goods be found concealed therein, either before or after landing, the same shall be forfeited, together with the other articles of the package. Surplus stores, not being merchandise, nor deemed excessive, may be entered for private use, or warehoused for future use as ship stores, although they can not be legally imported as merchandise. At ports where agents for the clearance of ships, goods, or baggage shall be required to be licensed, any person not so licensed, or duly appointed a clerk to a person licensed, acting as such agent or clerk, or, whether licensed or not, making entry of any goods without the authority of the proprietor or consignee, shall for such offense forfeit £20 ($100); but no such penalty shall extend to persons acting for dock companies, or otherwise authorized by law to pass entries, or to any merchant, importer, or consignee of goods, acting himself in respect thereof; or any clerk or servant exclusively employed by him, or by any such person in copartnership. Officers of customs may require of persons applying to transact business on account of others a written authority, and, in default of its production, refuse to transact such business. Officers of customs may take samples of goods for examination, for ascertaining the duties payable thereon, or for such other purpose as the commissioners may deem necessary, and dispose of the same in the manner they may direct.

If within fourteen days after the arrival of the ship (exclusive of Sundays and holidays), the importer shall not make entry of his goods, or, having entered, shall not within that time, or within such further period as the commissioners shall direct, land the same, the officers may convey the same goods to the queen's warehouse; and whenever the cargo of any ship shall have been discharged within fourteen days, excepting only a small quantity, the officers of customs may forthwith convey such remaining goods to the queen's warehouse; and, also, at any time after arrival, may convey any small parcels or packages of goods to the queen's warehouse, there to remain during the remainder of such fourteen days, for due entry; and if the duties on goods so conveyed to the queen's warehouse be not paid within three months afterward, or within such further period as the commissioners may direct, together with all charges of removal and warehouse rent, such goods may be sold, and the proceeds thereof be applied, first, to the payment of freight and charges, next, of duties, and the overplus, if any, shall be paid to the proprietor on his application for the same; but if such goods be of a perishable nature, the commissioners may forthwith direct their sale, and apply the proceeds thereof: provided, always, that, if, 48 hours, or any earlier period after the report, is specified in the bills of lading for the discharge of cargo, the importer, etc., neglect to enter and land the same within such 48 hours, the master or owner of such ship may then himself enter and land such goods. Whenever goods shall remain on board ship beyond the period of 14 days after arrival, or beyond any further period the commissioners may allow, such ship shall be detained by the proper officer until all expenses be paid for watching and guarding such goods beyond the prescribed period, not exceeding 5s. ($1 20) per diem, and for removal to the queen's warehouse, provided they be removed.

If goods be removed from any ship, quay, wharf, or other place, previous to the examination thereof by the proper officer of the customs, unless under the care or authority of such officer; or if goods entered to be warehoused, or re-warehoused, shall be carried into the warehouse, unless with the authority or under the care of the proper officer, and in such manner, by such persons, within such time, and by such roads or ways as the officer shall direct, such goods shall be forfeited. All goods warehoused shall be deposited in the packages in which they shall have been imported, except such goods as are permitted to be shipped* on the quay, or bulked, sorted, lotted, packed, or re-packed in the warehouse after the landing thereof, in which case they shall be deposited in the packages in which they shall be when the account thereof is taken by the

* In cases in which articles shall have been undervalued, or entered under a wrong denomination, and the difference of duty shall not exceed £10 ($50), the collector and comptroller may permit the entry to be amended, on proof that no fraud had been intended, taking a deposit not exceeding £2 ($10) to abide the Board's decision.

* The temporary transfer of goods from one package to another.

proper officer; and if such goods are not so deposited, or if any alteration shall afterward be made in them, or in the packing thereof in the warehouse, or if they shall be removed without the presence or sanction of the proper officer, except for delivering under the proper warrant, order, or authority for that purpose, they shall be forfeited.

All goods deposited in warehouses shall be cleared, either for home use or exportation, at the expiration of five years from the date of warehousing, or within such further period and in such cases as the Commissioners of the Treasury shall direct, unless the owner or proprietor of such goods be desirous of re-warehousing them; in which case they shall be examined by the proper officers, and the duties due on any deficiencies or difference between the quantity ascertained on landing and the quantity then found to exist, subject to such allowances as are by law permitted in respect thereof, together with the necessary expense attendant thereon, shall be paid down, and the quantity so found shall be re-warehoused in the name of the then owner or proprietor thereof, in the same manner as on first importation.

If any warehoused goods shall not be duly cleared, exported, or re-warehoused, and the duties due on the deficiencies shall not be paid down at the expiration of five years from the previous entry and warehousing, or within such further period as shall be directed, the same, if worth the duty, after one month's notice to the warehouse-keeper, shall, with all convenient speed, be sold either for home use or exportation, with or without the consent of the warehouse-keeper, and the proceeds thereof be applied to the payment of the duties, warehouse rent, and charges, and the surplus, if any, be paid to the owner or proprietor, if known; but if he can not be found, the surplus shall be carried to the crown's account, to abide the claim of such party on his appearing and making it good; and if such goods be not worth the duty, then, after one month's notice, the same may be exported or destroyed, with or without the concurrence of the owner thereof, or the proprietor of the warehouse, as the commissioners shall see fit; and the duties due upon any deficiencies not allowed by law shall be paid by the proprietor of the warehouse.

The commissioners of customs may permit any goods to be taken out of the warehouse without payment of duty, for such purpose or for such period as to them shall appear expedient, and in such quantities, and under such regulations and restrictions, and with such security, by bond, for the due return thereof or the payment of the duties, as they may direct. No warehoused goods shall be taken or delivered from the warehouse, except upon due entry for exportation, under the care of the proper officers, or upon due entry and payment of the full duties for home use, except goods delivered into the charge of the searchers to be shipped as stores, in such quantities as the collector or comptroller shall allow, subject to the regulations of the commissioners.

Upon the entry of goods to be cleared from the warehouse for home use, the person entering the same shall deliver a bill of entry and duplicates thereof, in like manner and form, and containing the same particulars, as are herein before required on the entry of goods to be delivered for home use on the landing thereof, as far as the same may be applicable, and shall pay down to the proper officer of the customs the full duties thereon, not being less in amount than according to the account of the quantity taken by the proper officer on the first entry, except as to the following goods, viz.: tobacco, wine, spirits, figs, currants, raisins, and sugar; the duties whereon, when cleared from the warehouse for home use, shall be charged upon the quantity ascertained by weight, measure, or strength, at the time of actual delivery thereof, unless there is reasonable ground to suppose that any portion of the deficiency between the weight ascertained on landing and first examination, and that ascertained at the time of actual delivery, has been caused by illegal or improper means; in which case, the proper officer of customs shall make such allowances only for loss as he may consider fairly to have arisen from natural evaporation or other legitimate cause. When any deficiency occurs in goods chargeable to pay duty according to value, the value thereof shall be estimated, as nearly as conveniently may be, by the officers of customs, according to the market price of the like sort of goods. No duty shall be charged in respect of any deficiency in goods entered and cleared from the warehouse for exportation, unless the officers of customs have reasonable ground to suppose that such deficiency or part thereof has arisen from illegal abstraction.

No entry for home consumption, from and after the passing of this act (customs consolidation act, 16 and 17 Vict., chap. 107), shall be received for any timber or wood goods in bond, for a less quantity, at any one time, than 5 loads, unless such wood goods shall be delivered by tale, in which case the entry may be passed for any quantity not less than 240 pieces; and no less quantity shall be delivered in virtue of any such entry, at any one time, than 1 load of such timber or wood goods, or than 90 pieces, if delivered by tale. No pack or parcel of playing-cards imported into the United Kingdom shall be sold or kept for sale, without being separately inclosed in a wrapper provided by the Commissioners of Inland Revenue, with such device thereon as they may direct, and securely fastened, so that such wrapper can not be opened without being destroyed; and persons selling or offering for sale any pack or parcel of playing-cards not separately inclosed, etc., shall be liable to a penalty of £10 ($50), and the goods to seizure.

The first and immediate effect of these liberal reforms, introduced by the acts and regulations just cited, and briefly condensed so far as they relate to foreign commerce, is, that a large bulk of our trade with France is now carried on by means of *transit* through English ports. This branch of trade in 1851 increased the commerce and shipping of England to the extent of $11,413,195 (£2,282,639), and in 1852 to the extent of $12,822,145 (£2,564,429).* The increase in British tonnage in 4 years after the passage of the act (12 and 13 Victoria, chap. 29), was as high as 700,000 tons, and the number of sailors was augmented to the amount of at least 20,000. Thus Great Britain herself derived the first fruits of a policy so comprehensive and liberal. The only restriction—if we except her tariff duties which bear with special rigor upon one of our leading staples†—which the act of 1849 has left untouched, was that which related to the coasting trade of Great Britain and her colonial dominions.

In 1854 (March 16), Lord Stanley introduced in the House of Lords his bill for the repeal of the regulations which then governed the coasting trade of Great Britain. He was of opinion that it would be a narrow and foolish course of reasoning to make the commerce of Great Britain in any way dependent on the fears or inexperience of other nations. "We should," he remarked, "go on fearlessly and independently in our course of improvement, and show our confidence in the principles we advocated by the sincerity and energy with which we enforced them. By the repeal of the laws of this country with reference to our coasting trade, there was no doubt that America would, in time, see that it was to her advantage to hold out to us the same benefits we extended to her, and other countries would do the same. With regard to the

* Speech delivered by Mr. Cardwell in the House of Commons, February 3d, 1854.

† See Comparative Tariffs, Great Britain, article *Tobacco*.

bill, he had no doubt it would eventually be found to contribute, in most important respects, to the benefit and advantage of all classes connected with, or dependent in any way on, the shipping interests."

The preceding extract is given for the purpose of exhibiting the motives and views of British statesmen in admitting foreign vessels to the coasting trade of European ports of Great Britain. The bill met with but little serious opposition; and by the act entitled 17 Victoria, chapter 5, foreign ships are admitted to the coasting trade, subject, as to stores for the use of their crews, to the same laws and regulations as British ships. The regulations for this trade are prescribed in sections 1, 2, 3, and 4 of the act. The first section empowers her majesty to exercise in respect of ships and merchandise employed and conveyed in the coasting trade, like powers as are conferred in respect of foreign ships and merchandise employed and conveyed in the over-sea trade. Section second subjects foreign ships engaged in the coasting trade, in respect of stores and as to other custom-house regulations, to the same laws to which British ships, when so employed, are now subject. Section third equalizes foreign with British ships as to all dues, duties, and charges whatever, the employment of pilots, and as to all restrictions or extra charges whatever of private persons or bodies corporate. Section fourth subjects foreign steam-vessels, carrying passengers in the coasting trade, to the provisions of the steam-navigation act. The following is a summary of the rules applicable to British vessels engaged in the coasting trade, and, by virtue of the act above cited, also to foreign vessels which may avail themselves of the privileges granted by the act:

"All trade by sea from one part of the kingdom to any other part thereof shall be deemed to be a coasting trade and all ships employed therein shall be deemed coasting ships; and if doubt shall at any time arise as to what or to or from what parts of the coast shall be deemed a passage by sea, the Commissioners of the Treasury may determine in what cases the trade by water from one place to another in the United Kingdom shall or shall not be deemed a trade by sea."

Coasting ships confined to coasting voyage.—No goods shall be laden on board any ship in the United Kingdom, to be carried coastwise until all goods brought in such ship from parts beyond the seas shall have been unladen; and if any goods shall be taken into or put out of any coasting ship at sea or over the sea, or any such ship deviate from her voyage unless forced by unavoidable circumstances, and in either case, if the master shall not declare the same in writing, under his hand, to the collector or comptroller at the port where such ship shall afterward first arrive, he shall forfeit £100 ($500).

Times and places for landing and shipping.—If goods shall be unshipped from any ship arriving coastwise, or be shipped or water-borne to be shipped on Sundays or holidays to be carried coastwise, or unless in the presence or with the authority of the proper officer of the customs, or unless at the times and places appointed, the same shall be forfeited, and the master of the ship shall forfeit £50 ($250).

Master to keep a cargo-book, and penalties for false entries.—The master of every coasting ship shall keep a cargo-book, stating the names of the ship, the master, the port to which she belongs, and, on each voyage, of the port to which she is bound; and at every port of lading, an account of all goods taken on board, stating the descriptions of the packages, the quantities and descriptions of the goods, whether packed or stowed loose, the names of the shippers and consignees, so far as such particulars are known, and at every port of discharge shall note the days on which any are delivered, and the times of departure; and such master shall produce such book on demand of any officer of customs, who may make any remark therein; and if, upon examination, any package entered in the cargo-book as containing foreign goods shall be found not to contain such goods, that package, with its contents, shall be forfeited; or if any package shall be found to contain foreign goods not entered in such book, such goods shall be forfeited; and if the master shall fail to keep such cargo-book, or to produce it, or if at any time there be found on board goods not entered in such book as laden, or any goods not noted as delivered, be not on board, the master shall forfeit £20 ($100).

Account previous to departure to be delivered to collector, and commissioners may grant general transires.—Before any coasting ship shall depart from the port of lading, an account, in duplicate, signed by the master, shall be delivered to the collector or comptroller, and he shall retain the duplicate, and return the original, dated and signed by him, and such account shall be the clearance of the ship for the voyage, and the *transire* (pass) for the goods expressed therein; and if any such account be false, the master shall forfeit £20 ($100).

Provided that the Commissioners of Customs, whenever it shall appear expedient, may permit general *transires* to be given for the lading and clearance, and for the entry and unlading of any coasting ship and goods.

Notice of arrival, excise goods and forfeiture.—Within 24 hours after the arrival of any coasting ship at the port of discharge, and before any goods be unladen, the *transire*, with the name of the place where the lading is to be discharged noted thereon, shall be delivered to the collector or comptroller, who shall note thereon the date of delivery; and if any goods on board be subject to any duty of excise, the same shall not be unladen without the authority or permission of the proper officer of excise; if any goods shall be laden or unladen contrary to any act relating to the customs, such goods shall be forfeited.

Officers may go on board and examine any coasting ship.—Any officer of customs may go on board and search any coasting ship, and examine all goods on board, and all goods then lading or unlading, and demand all documents which ought to be on board such ship; and the collector or comptroller may require that such documents shall be brought to him for inspection; and the master refusing to produce such documents on demand, or to bring the same to the collector or comptroller when required, shall forfeit £20 ($100).

Exemptions from coasting regulations.—Steam vessels and sailing vessels employed in the conveyance of passengers and their baggage coastwise, are to be placed precisely on the same footing, and in neither case are the baggage and effects of passengers to be subjected to coast regulations, or the vessels to tonnage duty; and all articles of apparel and household furniture, liquors, and provisions, taken by passengers for their private use, or small quantities of shop goods taken by tradesmen, passengers on board such vessels, are to be considered as baggage, and exempt from coast regulations; as are also exempt packages, live fish, chippings of granite, cobble stones, whin stones, kelp, Kentish rag stones, flints picked off land, pebbles, gravel, and chalk, faggots or bavins for bakers' use, hay, straw, fresh meat, soap, ashes for manure, coal-ashes, iron-stone, and all stone quarried in the country, bones for manure, bricks and British tiles, slates, native timber, and wood for pit-props and sleepers, also china clay. It is not known positively how many nations have so far reciprocated the coasting trade privileges thus granted by Great Britain to foreign nations. On the 6th day of February, 1855, Tuscany entered into a convention with Great Britain for that purpose. The first article of this treaty stipulates that the subjects and ships of each of the high contracting parties shall enjoy in the dominions

and territories of the other the same rights with respect to the coasting trade, and shall be treated in every case with regard to that trade in the same manner as native subjects and national vessels. A similar treaty was negotiated with Sardinia, March 22d, 1855. So long, however, as the restrictions with respect to the colonial coasting trade continue in force, it is very doubtful whether any of the great commercial nations of the world will be disposed to abolish or relax their present coasting trade regulations. As respects the United States, there would be no equivalent whatever.

The effect of the act of 1854, *opening the coasting trade of Great Britain to foreign vessels.*—During the month ending July 5th, 1852, the tonnage entered inward (in all British European ports), in the coasting trade was 1,044,862 tons. For the same month in 1853, it reached 1,097,472 tons, and in the corresponding month of 1854, it was 1,069,384 tons. The clearances outward (in the same trade), for July, 1852, were 1,131,561 tons; for July, 1853, 1,196,188; and for the same month in 1854, 1,189,513. With but one or two exceptions, the whole of the tonnage given above was British; a fact which a comparison of the figures representing this trade during the same month in 3 consecutive years, as given in the British official returns of trade, will at once exhibit.

The following condensed summary will explain the regulations which must be complied with by every vessel, from the period of arrival in port until her discharge is completed; and with respect to exportations, the necessary proceedings from the entry outward until the vessel's final clearance, will also be indicated. They are presented somewhat at length, so that a comparison between them and the United States' custom-house regulations and laws may be the more easily made.

Importation, as legally defined, takes place immediately the importing ship comes within the limits of the port, and the "time of a ship's arrival" is that at which the report thereof shall or ought to have been made. Exportation is, in like manner, determined to be the time at which goods shall be shipped on board an export vessel; and final clearance, the time of her departure. The master of every merchant vessel, within 24 hours of entering the port of arrival, is bound, under a penalty of £100 ($500), to report his cargo to the chief officer of customs. The chief officer of any ship in commission from her majesty or any foreign State, having foreign goods on board, is required, in like manner, to deliver an account in writing under his hand, and to the best of his knowledge, of the description and particulars of such goods. Before, however, the master is allowed to report, he must declare before some person duly authorized by the postmaster-general, that he has delivered at the post-office all letters that were on board his ship. And, likewise he must, under a penalty of £20 ($100), and the further sum of £10 for each alien not included in the declaration, truly declare to the number of aliens on board, or landed from his ship. At the time of making his report, the master is to deliver, if required, to the collector or comptroller, the bill of lading, or a copy thereof, for every part of the cargo, and to answer such questions as shall be put to him, as to the ship, cargo, crew, and voyage. The master, officer, crew, or passengers retaining letters after the delivery of the ship's letters at the post-office, shall forfeit £5 ($25) for each letter; and for detaining letters after demand by the officer of customs or person authorized by the postmaster-general, £10 ($50) each.

So soon as a vessel has reported, the importers, agents, or consignees of the cargo, having been advised by receipt of bills of lading, or other intimation, may each enter their several goods. A latitude of 14 days is allowed by law for this purpose; but, in order to clear the vessel more *speedily*, eight entries are permitted to the master or owner of any ship lying alongside the legal quays, or sufferance wharves, south of the Thames from London bridge eastward to Dockhead—the regulations and legal provisions given in the summary are those that are followed at the port of London, but the general regulations are the same at other ports—under such general description as is contained in the report, for any goods that shall not have been entered by the owners thereof within forty-eight hours from the day of the report (or earlier, if a briefer limit of time be set forth in the bill of lading), upon condition that perfect entry be made by the proprietor within one month from the date of landing. Goods so circumstanced are only liable to seizure from inaccuracy of entry after the lapse of a month. When a value is required to be stated, the importer or his agent is to subscribe a declaration verifying such value; and false declarations render the party making them liable to a penalty of £100 ($500).

The following tabular statement exhibits the port charges at the principal ports of England, Scotland, and Ireland, condensed from official authorities:

LIGHT DUES.

Names and number of lights.		Coasters.	British and foreign privileged vessels over sea.
Scilly	1	$0 24 per vessel....	$0 00½ per ton.
Eddystone	1	0 48 "	0 01 "
Milford	2	0 24 "	0 01 "
Portland	2	0 24 "	0 01 "
St. Bees	1	....	0 04 "y'rly.*
Foulness	1	0 00½ per ton..†	0 00½ "
Caskets	3	0 12 per vessel...	0 01 "
Nore	1	0 24 per 100 tons.	† 0 24 per 100 tns
Well	1	0 00½ per ton.....	0 00½ per ton.
Flatholm	1	0 24 per vessel...	0 01½ "
Lizard	2	0 48 "	0 01 "
Needles & Hurst..	3	0 24 "	0 01 "
Owers	1	0 24 "	0 01 "
Halsbro'	3	0 00½ per ton.....	0 00½ "
Goodwin	1	0 24 per vessel...	0 01 "
Sunk	1	0 00½ per ton.....	0 01 "
Flambro'	1	0 00½ "	0 00½ "
South Stack	1	0 00½ "	0 00½ "
Fern	2	0 01½ "	0 01½ "
Burnham	1	0 72 per vessel, at Bridgewater‡..	1 00 per vessel, at Bridgewater.§
Lowestoft	4	0 00½ per ton.....	0 00½ per ton.
Air¶	1	0 04 "	0 08 on vessels entering the port of Chester.
Landy	1	0 00½ "	0 00½ per ton.
Spurn	1	0 00½ "	0 00½ "
Bideford Bar	2	0 24 per voyage on limestone vessels	0 03 "
Hardsey	1	0 00½ per ton.....	0 00½ "
Usk	1	0 00½ "	0 00½ "
Lynn Well	1	0 02 "	0 02 "
Beachy Head	1	0 24 per vessel...	0 00½ "
Caldy	1	0 02 per ton.....	0 02 "
Nash	2	0 00½ "	0 01 "
Halsbro'	1	0 00½ "	0 00½ "
North end			
South Sand Head	1	0 00½ "	0 02 "
Forelands	3	0 00½ "	0 00½ "
Falmouth harbor..	1	0 00½ "	0 01 "

Since the 1st of January, 1854, a reduction of 25 per cent in the light dues of the United Kingdom has been allowed.

* Vessels entering the harbors of Whitehaven, Parton, and Workington, and none other.

† But not chargeable on any excess above 500 tons.

‡ At Bristol, 12 cents per vessel.

§ At Bristol, under 100 tons, 72 cents per vessel; 100 tons and under 250 tons, $1 20 per vessel; 250 tons and upward, $1 80 per vessel. ¶ And buoys in the River Dee

Besides the preceding list of light-houses, all of which are under the jurisdiction of the Trinity House, there are others, under the control of private individuals, who have generally obtained a lease of the same from the crown for a definite number of years, with authority to charge certain fees on shipping. These fees, however, are the same on American as on British vessels.

The Scotch, or northern lights, are under the management of a board of parliamentary commissioners.

The act of 6 and 7 William IV., chapter 79, enacts that, from the first of January, 1837, all British and foreign privileged vessels, not wholly in ballast, which shall pass any Scotch light-house, or derive any benefit therefrom, shall pay one cent per ton for each time of passing.

Irish Lights.—Foreign vessels, one cent per ton for each light passed, except harbor lights, which are only chargeable to vessels entering the ports within which they are situated. British and Irish, and equalized vessels, half a cent per ton (quarter cent if in ballast) for each light, except as above, with a duty of 24 cents on every "entry, cocket (a duplicate shipping bill), or warrant," when from foreign ports, but not otherwise. The charters of most of these private light-houses authorized the levying of higher fees from foreign than from British shipping. When England, therefore, entered into reciprocal treaties with foreign powers, the government had to make these light-houses compensation for the diminution that consequently took place in the charges on foreign ships. The Trinity corporation, however, has long since surrendered its right to such compensation, and the act 6 and 7 William IV. forbids such compensation being made thereafter.

Pilotage.—Pilots are established, in various parts of the kingdom, by ancient charters or by particular statutes. The most important of these are those of Trinity House of Deptford Strand; the fellowship of the pilots of Dover, Deal, and the Isle of Thanet, commonly called the Cinque Ports pilots; and the Trinity House of Hull and Newcastle. A corporation for the regulation and licensing of pilots in Liverpool was established by 5 George IV., chapter 73. The law provides, also, that no vessel in the coasting trade is to pay for less than eight feet of water, nor any vessel to pay for odd inches under half a foot. No coasting vessel, inward or outward bound, of the burden of 100 tons and upward (unless she be in ballast), is to refuse a pilot, at option, as the master or owner is to pay full pilotage if one be offered.

Harbor and Dock Dues—Foreign Trade. (Per act 51 George III., chapter 5.)—All parts of Europe to the northward of Cape Finisterre and to the westward of the North Cape, and without the Cattegat and Baltic Sea, and including the islands of Guernsey, Jersey, Alderney, and Sark, the Faro Isles, and Iceland, 18 cents per ton.

All ports within the Cattegat and Baltic, including the whole of Sweden, the White Sea, and all ports to the eastward of the North Cape; all ports in Europe to the southward of Cape Finisterre, without the Mediterranean, Newfoundland, Greenland, Davis's Straits, Canaries, Western Islands, Madeira, and Azores, 24 cents per ton.

All ports on the east coast of North America, the West Indies, the east coast of South America, to the northward of Rio de la Plata, inclusive; all parts of the west coast of Africa, and islands to the northward of the Cape of Good Hope; and all ports within the Mediterranean, including the Adriatic and Black Seas and Archipelago, the islands of the Archipelago, the islands of St. Helena, Ascension, and the Cape Verd Islands, 36 cents per ton.

All ports in South America to the south of Rio de la Plata, in the Pacific Ocean, in Africa and Asia, to the eastward of the Cape of Good Hope, 36 cents per ton.

For more complete information respecting the port charges, etc., of the various countries above mentioned, see articles under the heads of those countries.

Anchorage—Municipal Corporation Grant by Purchase from King Charles the First.—On classes one, two, and three, 24 cents per vessel. Classes four to seven, 30 cents. Vessels wind-bound, exempt from dock-dues only. The preceding table will be better comprehended by giving a *pro forma* statement of port charges for a vessel of 500 tons, entering at and clearing from the port of Liverpool:

Inward.		
Pilotage, 17 feet, at 9s.	£7 18s. 0d.	$36 72
Row-boat hire in the river and warping into dock	1 5 0	6 00
Lights, 5½d. per ton	11 19 7	57 50
Dock dues, 1s. 4½d. per ton	34 7 6	165 00
Discharging cargo, about	20 0 0	96 00
Total	£75 5s. 1d.	$361 22
Outward.		
Loading cargo, supposing ship to carry 750 tons (from 11d. to 1s. per ton), say 1s. per ton	£37 10s. 0d.	$180 00
Lights, 5½d. per ton	11 19 7	57 50
Pilotage, 17 feet, at 4s. per foot	3 8 0	16 32
Clearance	1 1 0	5 04
Total	£53 18s. 7d.	$258 86

Port of London—Tonnage Rates. (Act 4 and 5 William IV., chapter 32.) *First Class.*—For every vessel trading coastwise between the port of London and any place in Great Britain, Ireland, the Orkneys, Shetland, or the Western Islands of Scotland, for every voyage both in and out of the said port, one cent per ton.

For every vessel entering inward, or clearing outward, in the said port, from or to Denmark, Norway, Lapland (on this side of the North Cape), or from Holstein, Hamburg, Bremen, or any other port of Germany bordering on or near the Germanic Ocean, or from or to Holland, or any other of the United Provinces, or Brabant, Flanders, Antwerp, or other ports of the Netherlands, or from or to France (within Ushant), Guernsey, Jersey, Alderney, Sark, or the Isle of Man, for every voyage, both in and out of the said port, one cent per ton.

For every vessel entering inward, or clearing outward, in the said port, from or to France (between Ushant and Spain), Portugal, Spain (without the Mediterranean), or any of the Azores, Madeira, or Canary Islands, or any of the United States of America, or of the British provinces or colonies in North America, or Florida, there shall be paid for every voyage in and out of the said port one cent and a half per ton.

For every vessel entering inward, or clearing outward, in the said port, from or to Greenland, Gibraltar, France, or Spain (within the Mediterranean), or any country, island, port, or place within or bordering on the Mediterranean or Adriatic Seas, or from the West Indies, Louisiana, Mexico, South America, Africa, East Indies, China, or any other country, island, or place within or bordering on or near the Pacific Ocean, or from any other country, island, or place whatsoever, to the southward of 25 degrees of north latitude, for every voyage, both in and out of the said port, one cent and a half per ton.

Among other exemptions, this charge does not apply to vessels going in or out of the port of London when in ballast.

Tonnage Dues charged by the London Dock Company. First class.—Vessels from any port in the United Kingdom, Isle of Man, Jersey, Guernsey, Alderney, Sark, or other European ports outside the Baltic, between the North Cape and Ushant (Hamburg, Bremen, and Embden excepted—see second class), with liberty to reload for any port, 12 cents.

Second class.—Vessels from Hamburg, Bremen, and Embden, with liberty to reload for any port, 12 cents.

Third class.—Vessels from any port in the Mediterranean, with liberty to reload for any port, 18 cents.

Fourth class.—Vessels from all other ports or places whatsoever (with the exceptions after mentioned); with liberty to reload for any port, 18 cents.

Vessels loading for any ports or places in the third or fourth classes, not having discharged their cargoes in the docks, 18 cents.

RATES OF PILOTAGE DEMANDED AND RECEIVED BY PILOTS LICENSED BY THE CORPORATION OF TRINITY HOUSE OF DEPTFORD STRAND, FOR PILOTING VESSELS.

From	To	7 feet and under.	8 feet.	9 feet.	10 feet.	11 feet.	12 feet.	13 feet.	14 feet.	15 feet.	16 feet.	17 feet.	18 feet.	19 feet.	20 feet.	21 feet.	22 feet.	23 feet and upwards.
		£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
The Sea, Orfordness, the Downs, Hooley Bay & places east.	The Nore or Warpe	3 13 6	4 2 9	4 12 0	5 1 3	5 5 9	6 5 0	6 13 6	7 7 3	7 16 6	8 14 9	9 3 6	9 12 6	10 1 6	10 17 0	11 10 0	12 6 6	13 2 6
	Gravesend, Chatham, Standgate Creek, or Blackstakes	4 12 0	4 16 6	5 7 9	6 3 3	6 18 0	7 11 9	8 5 6	8 19 3	9 13 0	10 7 0	11 0 0	11 14 6	12 8 3	13 2 0	13 15 9	14 9 6	15 3 3
	Long Reach	4 16 6	5 2 3	5 12 6	6 8 0	7 2 6	7 18 3	8 14 9	9 8 6	10 2 0	10 16 3	11 10 0	12 3 6	12 17 3	13 11 0	14 5 0	14 18 6	15 12 3
	Woolwich or Blackwall	5 5 9	5 11 9	6 1 6	6 17 0	7 11 9	8 6 3	9 0 0	9 13 6	10 7 3	11 1 0	11 14 6	12 8 3	13 2 0	13 15 9	14 9 6	15 3 3	15 17 0
	Moorings or London Docks	5 16 0	6 1 6	6 7 3	7 1 3	7 16 6	8 11 9	9 6 6	9 18 3	10 12 0	11 5 9	11 19 6	12 13 3	13 7 0	14 0 6	14 14 3	15 8 0	16 1 9
The Nore or Warpe and vice versa.	Gravesend, Standgate Creek, or Blackstakes	1 18 9	2 2 6	2 10 3	2 15 3	3 0 0	3 5 0	3 10 3	3 15 3	4 0 3	4 5 3	4 10 3	4 15 6	5 0 6	5 5 6	5 10 6	5 15 6	6 0 6
	Long Reach or Chatham	2 2 6	2 8 3	2 15 3	3 2 3	3 9 0	3 15 0	4 2 0	4 8 3	4 15 0	5 1 3	5 8 0	5 14 3	6 1 3	6 7 6	6 14 3	7 1 0	7 7 6
	Woolwich or Blackwall	2 15 3	3 2 3	3 9 0	3 15 6	4 2 3	4 9 0	4 15 6	5 2 3	5 9 0	5 15 6	6 2 3	6 9 0	6 15 6	7 2 3	7 8 6	7 15 3	8 2 0
	Moorings or London Docks	3 8 6	3 14 9	4 2 6	4 8 3	4 15 0	5 1 6	5 8 3	5 15 0	6 1 6	6 8 3	6 15 0	7 1 6	7 8 3	7 15 0	8 1 6	8 8 3	8 15 0
Gravesend Reach and vice versa.	Long Reach	1 3 6	1 7 6	1 12 3	1 16 9	2 1 6	2 6 3	2 11 0	2 15 9	3 0 6	3 5 3	3 10 0	3 14 9	3 19 6	4 4 3	4 9 0	4 13 9	4 18 6
	Woolwich or Blackwall	1 7 6	1 11 9	1 16 9	2 1 6	2 6 3	2 11 3	2 16 0	3 0 6	3 5 3	3 10 3	3 15 0	4 0 0	4 4 9	4 9 6	4 14 3	4 19 3	5 4 0
	Moorings or London Docks	2 15 3	2 19 6	3 4 6	3 9 6	3 14 6	3 19 6	4 4 6	4 9 6	4 14 6	4 19 6	5 4 6	5 9 6	5 14 6	5 19 6	6 4 6	6 9 6	6 14 6
	Sheerness, Standgate Creek, or Blackstakes	3 8 6	3 14 9	4 2 6	4 8 3	4 15 0	5 1 6	5 8 3	5 15 0	6 1 6	6 8 3	6 15 0	7 1 6	7 8 3	7 15 0	8 1 6	8 8 3	8 15 0
	Chatham	3 14 6	4 0 3	4 8 0	4 13 9	4 19 6	5 5 3	5 11 0	5 16 9	6 2 6	6 8 3	6 14 0	6 19 6	7 5 3	7 11 0	7 16 6	8 2 3	8 8 0
Long Reach and vice versa.	Woolwich or Blackwall	1 7 6	1 11 9	1 16 9	2 1 6	2 6 3	2 11 3	2 16 0	3 0 6	3 5 3	3 10 3	3 15 0	4 0 0	4 4 9	4 9 6	4 14 3	4 19 3	5 4 0
	Moorings or London Docks	1 18 6	1 23 3	2 2 6	2 7 6	2 12 3	2 17 3	3 2 0	3 7 6	3 12 3	3 17 3	4 2 0	4 7 6	4 12 3	4 17 3	5 2 0	5 7 6	5 12 3
	Sheerness, Standgate Creek, or Blackstakes	2 15 3	3 0 0	3 4 6	3 9 6	3 14 6	3 19 6	4 4 6	4 9 6	4 14 6	4 19 6	5 4 6	5 9 6	5 14 6	5 19 6	6 4 6	6 9 6	6 14 6
	Chatham	3 8 6	3 14 9	4 2 6	4 8 3	4 15 0	5 1 6	5 8 3	5 15 0	6 1 6	6 8 3	6 15 0	7 1 6	7 8 3	7 15 0	8 1 6	8 8 3	8 15 0
Woolwich or Blackwall & vice versa.	Moorings or London Docks	1 3 6	1 7 6	1 12 3	1 16 9	2 1 6	2 6 3	2 11 0	2 15 9	3 0 6	3 5 3	3 10 0	3 14 9	3 19 6	4 4 3	4 9 0	4 13 9	4 18 6
	Sheerness, Standgate Creek, or Blackstakes	2 15 3	3 0 0	3 4 6	3 9 6	3 14 6	3 19 6	4 4 6	4 9 6	4 14 6	4 19 6	5 4 6	5 9 6	5 14 6	5 19 6	6 4 6	6 9 6	6 14 6
	Chatham	3 8 6	3 14 9	4 2 6	4 8 3	4 15 0	5 1 6	5 8 3	5 15 0	6 1 6	6 8 3	6 15 0	7 1 6	7 8 3	7 15 0	8 1 6	8 8 3	8 15 0
	Multiply the pounds by 20, and add in the shillings; multiply the product by 12, and add in the pence; multiply the product by 2, and the results will be cents.	4 2 9	4 9 6	4 16 6	5 3 3	5 10 0	6 6 9	6 13 6	7 0 3	7 7 0	7 13 9	8 0 6	8 7 3	8 14 0	9 0 6	9 7 3	9 14 0	10 0 6

PILOTAGE.

From or to	To or from	per foot.
HULL.—The distance at sea where the North Ness of Dimlington bears west south-west to the northward of Klinses North Cliff	Hawke Roads or Grimsby Roads.	£0 60
	White Booth R'ds.	0 84
	The port of Kingston-upon-Hull.	1 80
The distance at sea where Klinsea North Cliff bears west north-west to the northward of the new sand buoy, or the floating light-vessel at the entrance of the River Humber	Hawke Roads or Grimsby Roads.	0 36
	White Booth R'ds.	0 60
	The port of Kingston-upon-Hull.	0 90
Outward—British and privileged vessels in ballast		0 61
" " " with cargoes		0 96

There are other inconsiderable charges levied at this port for buoyage and beaconage, which are so insignificant in amount, and are equally levied upon British as upon foreign vessels, that they are omitted.

SCOTLAND.

PILOT DUES.

GLASGOW AND GREENOCK.—From any place between the Cumbray light and the Clochet light, or from anchorage at Fandle Roads, Roothessay Bay, or Quarantine Station, Holy Lock or Greenock Roads and moorings, and to the quay or berthing, per ton £0 03
From Greenock to Port Glasgow, per ton 2

LEITH.—Vessels 7 feet and under, per foot 20
" 8 " " 24
" 9 " " 26
" 10 " " 28
" 11 " " 30
" 12 " " 32
" 13 feet and above " 36

IRELAND.

TOWAGE.

DUBLIN.—*Tug Steamer*—There being no fixed rates, the master makes the best terms he can, according to the state of the weather, etc., as follows: From Kingston Harbor or the Bay of Dublin to Custom House Quay, $25 to $50; from the light-house at the entrance of the river to quay, $15 to $25, and in proportion for shorter distances.

PILOTAGE.

DUBLIN.—British and foreign privileged vessels from outside of the banks over bar ..... per foot £0 66½
From inside banks over bar ..... " 44
From bay over bar ..... " 82½
From Poolbeg to basin ..... " 11
Outward ..... " 44½

Vessels in ballast, and vessels under 50 tons register, are exempted. There are other charges and dues payable to the corporation for preserving and improving the port; but as they are small in amount, and equally applicable to British vessels, they are omitted.

PILOT DUES.

CORK.—*From April 1 to October 1.*—Vessels under 80 tons $2 88
Vessels from 80 to 120 tons 3 84
" 120 " 160 " 4 80
" 160 " 220 " 5 28

The largest vessels may get to Passage; vessels drawing 11 feet may get up to Black Rock or Co[illegible] at spring tides; vessels drawing 11 to 12 feet get into Cross[illegible], which is within the entrance of Cork Haven.

Larger vessels must remain at Cork or Passage for pilotage, to which points the same rates are levied on American as on British vessels.

PILOT DUES.

	Foreign trade.	Coasters.
BELFAST.—*From Belfast to Garmoyle or Whitehouse Roads, or vice versa.*—		
Vessels under 100 tons	$9 60	$7 20
Vessels of 100 tons and under 125	10 80	8 40
" 125 " " 150	12 00	9 60
" 150 " " 200	14 40	12 00
" 200 " " 250	16 80	14 40
" 250 " " 300	19 20	16 80
" 300 " " 350	21 60	19 20
" 350 " " 400	24 00	21 60
" 400 " " 450	25 20	22 80
" 450 " " 500	28 80	20 25
" 500 " " 550	31 20	26 40
" 550 tons and upward	33 60	28 80

QUAYAGE.

On vessels from foreign ports, per ton 10
Coastwise 6

Besides the foregoing, there are sundry wharf and other minor port charges, which are equally levied on British as on foreign privileged vessels.

The preceding tables give the principal charges on British and privileged vessels entering at or departing from the ports designated. For minor details, reference

is made to the consular returns from the different ports respectively. The foreign trade of Great Britain, during the year ending January 5, 1854, employed 36,308 vessels, with an aggregate of 7,707,550 tons. The gross amount of custom duties received the same year was £22,410,308 ($112,096,540). The exports of British and Irish produce and manufactures during the same period amounted in value to £87,357,306 ($436,786,530). The official returns for 1854 exhibit the following facts:

Imports to and from Great Britain and Ireland in 1854	£152,501,513 =	$762,957,565
Exports to and from Great Britain and Ireland in 1854	115,833,704 =	579,168,520
Imports to and from the U. S. in 1854 and 1855		$261,468,320
Exports from the United States of foreign goods	$26,158,868	
Exports from the United States of domestic manufacture	30,427,187	
Exports from the United States of other produce	162,328,948	
Exports from the United States of specie and bullion	56,247,843	
Total		$275,156,846

The largest amounts of British imports from foreign countries were from the United States, viz., £29,795,590 ($148,977,950); from France, £10,634,727 ($53,173,635); from China, £9,125,040 ($45,625,200); from Russia, £9,055,503 ($45,277,515); from Holland, £6,750,172 ($33,665,860); and from Spain, £3,594,501 ($17,972,505). The largest amounts exported to foreign countries were to the United States, viz.: £21,127,631 ($105,638,155). In this amount are included only such articles as are the produce of the United Kingdom, exclusive of colonial and foreign products. The like exports to France amounted to £3,175,290 ($15,876,450); to Holland, £4,573,084 ($22,865,170); to Hanse-towns, £7,413,715 ($37,068,575); to Brazil, £2,891,840 ($14,459,200); to Victoria, £5,741,315 ($28,706,575); to New South Wales, £3,648,072 ($18,240,360); to South Australia, £1,146,113 ($5,730,565); and to the East Indies, £9,127,556 ($45,637,780). The principal imports were grain and flour, cotton, wool, wood, timber, deals, and staves; wine, butter, tea, and tallow. The principal exports were cotton goods, cotton yarn, woolen goods, linen, silk, woolen yarn, millinery and haberdashery, apparel, hardware and cutlery, iron, unwrought and wrought, earthenware and pottery, coals and coke, and tin. The number of vessels entered at ports in England during the year 1853 was: British, 10,345, with an aggregate of 1,933,741 tons; foreign, 16,509, with an aggregate of 2,953,048 tons. Of the above, there entered the port of London 3033 British, measuring an aggregate of 561,342 tons; and 5058 foreign, with an aggregate of 910,552 tons. The entries at Liverpool were: British, 1524 vessels, measuring 488,405 tons; and foreign, 1682 vessels, with an aggregate of 787,003 tons. The number of vessels engaged in the foreign trade entered at ports in Scotland during the year 1853 was: British, 1863, with an aggregate of 402,372 tons; foreign, 2503 vessels, measuring in all 289,752 tons. The total number of vessels that entered the ports of Ireland during the year 1853 was: British, 1159, measuring 234,892 tons; and foreign, 1195, with an aggregate tonnage of 237,499 tons. In the ports of the Isle of Man and the Channel islands, there entered during the same year: in the former, British vessels, 7; aggregate tonnage, 992; foreign, 31; aggregate tonnage, 3494; in the latter, British vessels, 1072, with an aggregate tonnage of 48,141; foreign vessels, 213, with an aggregate tonnage of 14,852. The total number of steam-vessels that entered the ports of the United Kingdom during the year 1853 was: British, 3968, with an aggregate of 1,171,911 tons; foreign vessels, 521, with an aggregate of 158,812 tons. The number of steam-vessels that cleared from all the ports of the United Kingdom in 1853 was: British, 3594, with an aggregate of 1,067,381 tons; foreign vessels, 507, measuring in all 158,184 tons. In 1854, the official value of imports into the United Kingdom was £124,338,478 ($621,692,390); and of exports from the United Kingdom £29,821,656 ($149,108,280).

A new system has been introduced into Great Britain of giving in the annual returns of trade, the "real" instead of the "official" value of imports and exports. The standard of the latter having obtained, without any change or alteration, for a period of more than 200 years, could be of but little benefit in computing the value of the foreign trade of Great Britain, and has been adhered to so long solely for the purpose of supplying data for general comparison. The real value of the imports and exports above given is thus stated: imports, £152,501,513 ($762,957,565); exports, £115,833,704 ($579,168,520).

In the preceding pages, the laws, regulations, and customs of a permanent character, which constitute the commercial legislation of Great Britain as respects her intercourse with the United States, have been succinctly stated. Various modifications in tariff duties, navigation laws, etc., have necessarily resulted from such changes in commercial legislation as are invariably incident to a state of war. These have, in substance, been noticed elsewhere, so far as they have come to the knowledge of the Department. They are, however, generally limited in their duration, and are designed either for financial or protective purposes during the continuance of the present difficulties with Russia. It is not deemed necessary, therefore, to lengthen this digest by any detailed enumeration of such modifications, for the reason that it is to be anticipated* that all such temporary modifications, demanded by the exigencies of war, will ere long have been superseded by the permanent commercial legislation of the United Kingdom.

In 1787 there were imported into Great Britain 22,600,000 pounds of cotton, obtained from the following sources:

British West Indies	6,660,000
French and Spanish Colonies	6,000,000
Dutch and Portuguese Colonies	4,200,000
East India, procured from Ostend	100,000
Smyrna and Turkey	5,700,000
From the United States	

The following tables have been compiled from the official reports of the United States' Treasury Department, and are submitted for the purpose of illustrating the commerce between the United States and Great Britain, especially with reference to our leading staples, during a period of 26 years.

The first table exhibits the quantities and value of cotton exported from the United States to Great Britain during the period indicated. Generally speaking, the imports of cotton into Great Britain are concentrated at the port of Liverpool. This is shown by the annexed table, exhibiting the imports of cotton into Great Britain in 1852:

Into	Bales.	Tons.
Liverpool	2,205,738	365,000
London	48,700	8,000
Hull and Bristol	27,200	5,000
Scotland	75,700	13,000
Total	2,357,338	391,000

The imports into Liverpool of raw cotton during a period of 10 years, ending with 1852, were as follows:

Years.	Bales.	Tons.	Years.	Bales.	Tons.
1843	1,557,597	260,000	1848	1,568,000	262,000
1844	1,490,984	248,000	1849	1,732,789	288,000
1845	1,652,781	276,000	1850	1,573,100	263,000
1846	1,134,194	189,000	1851	1,748,946	291,000
1847	1,087,058	182,000	1852	2,205,738	365,000

The countries from which the cotton was imported in 1852 are given in the following table, which will also serve to show the relative importance of Liverpool

* This has been realized since the above was written.

as compared with other British ports, as the great emporium of the cotton trade:

Imported from	BALES OF COTTON. Into Liverpool.	Into London.	Into Hull.	Into Scotland.	Total.
United States	1,715,118	1,800	11,700	60,600	1,789,218
East Indies	149,613	46,300	14,600	11,000	221,418
Mediterranean	186,085	....	....	3,900	189,985
Brazil, etc	144,097	100	....	....	144,197
West Indies	10,880	600	900	200	12,580
Total	2,205,788	48,700	27,200	75,700	2,357,398

Before giving the general table of exports of this staple to Great Britain, the following summary, condensed from a treatise on the cotton crop of the United States, etc., recently published, will prove interesting. Previous to 1791, Great Britain obtained her supplies of cotton from the West Indies, South America, and the countries around the eastern parts of the Mediterranean. In 1784, there were 71 bags shipped from the United States to Great Britain, and there seized, on the ground that America could not produce so much. See COTTON.

In 1853, Great Britain exported upward of 147,000,000 pounds; of this upward of 82,000,000 were derived from the United States, and over 59,000,000 from India.

The returns of trade for 1855 show that notwithstanding the war, the consumption of cotton in Great Britain from 1st January to 31st August was 1,449,980 bales, against 1,289,200 for the same period in 1854, giving the large increase of 160,780 bales. The stock in Liverpool on 31st August, 1855, was 269,320 bales less than on the 31st August, 1854.

From the East Indies, Great Britain imported—

	Pounds.
In 1850	128,200,000
" 1852	84,022,432
" 1853	180,481,496

GENERAL SUMMARY OF THE TOTAL IMPORT, EXPORT, AND STOCK OF COTTON IN THE UNITED KINGDOM, DECEMBER 31, 1853, 1852, AND 1851.

	GREAT BRITAIN. Total.	American.	Surat.		LIVERPOOL. Total.	American.	Surat.
	Bales.	Bales.	Bales.		Bales.	Bales.	Bales.
Stock, Dec. 31, 1852	667,530	360,770	188,210		577,810	388,820	79,570
Import in 1853	2,264,711	1,588,549	485,527		2,028,824	1,461,186	324,777
	2,922,231	1,894,312	618,737		2,606,634	1,799,956	404,347
Export in 1853	349,600	176,000	151,500		259,600	172,100	65,500
Stock, Dec. 31, 1853	2,572,631	1,718,312	467,237		2,347,034	1,627,856	338,847
	717,580	368,870	270,650		597,800	386,170	176,370
Showing the deliveries for home consumption from the ports of Gt. Britain to have been, in 1853	1,855,051	1,409,442	196,587	And from Liverpool	1,749,534	1,241,686	162,477
Or, per week in 1853	35,670	27,110	3,786	Or, per week in 1853	33,640	25,800	3,120
" " 1852	36,770	29,030	3,090	" " 1852	35,100	27,980	2,620
" " 1851	31,970	24,460	3,740	" " 1851	30,140	23,380	3,080
" " 1850	29,140	20,710	3,410	" " 1850	26,670	19,180	2,490
" " 1849	30,520	24,610	2,420	" " 1849	28,340	22,980	1,940

TABLE EXHIBITING THE QUANTITIES AND VALUE OF RAW COTTON EXPORTED FROM THE UNITED STATES TO GREAT BRITAIN AND IRELAND, FROM 1830 TO 1855, BOTH YEARS INCLUSIVE.

Years.	Quantity.	Value.	Years.	Quantity.	Value.
	Pounds.	Dollars.		Pounds.	Dollars.
1830	209,880,421	20,678,688	1843	584,845,504	35,781,117
1831	220,816,846	20,117,355	1844	486,729,222	29,521,851
1832	229,007,272	22,439,050	1845	603,144,736	35,675,859
1833	298,241,746	26,254,970	1846	346,158,967	27,707,117
1834	284,723,808	26,007,564	1847	351,268,799	33,841,265
1835	270,084,400	45,701,411	1848	572,008,127	41,295,558
1836	292,518,707	48,910,846	1849	789,844,905	47,444,899
1837	321,579,868	44,857,118	1850	431,581,091	48,884,458
1838	441,857,943	45,787,687	1851	670,645,120	49,720,854
1839	310,758,950	46,074,579	1852	752,576,780	59,666,209
1840	494,915,090	41,945,354	1853	768,596,498	74,523,910
1841	348,306,248	35,634,005	1854	696,247,047	64,738,401
1842	378,847,649	30,102,417	1855	673,498,939	57,616,749

Tobacco Trade between the United States and Great Britain.—It is ascertained, by British statisticians that the yearly consumption of tobacco in Great Britain and Ireland amounts to 26,000 tons, about one half of which it is supposed is smuggled, owing to the excessive duties (upward of 1000 per cent.) levied on the article under the tariff system of that kingdom. The quantity of segars and snuff imported does not exceed two or three hundred weight per annum. The following table, compiled from parliamentary returns, shows the imports of tobacco into the United Kingdom, and the quantities entered at each port, during the year 1850:

Ports.	Leaf.	Manufactur'd and segars.	Total.
	Tons.	Tons.	Tons.
London	7,658	482	8,120
Liverpool	6,870	146	7,016
Bristol	485	....	485
Glasgow	414	7	421
Leith	200	....	200
Southampton	140	55	195
Other places	8	4	7
Total	15,700	694	16,894

The following return, transmitted to the House of Commons, for the year ending January 5, 1853, shows the annual consumption of tobacco in the United Kingdom, and duty levied on the same:

Ports.	Leaf.	Manufactured and segars.	Total.	Duty. Pounds.	Dollars.
	Tons	Tons.	Tons.	Pounds.	Dollars.
London	4,762	69	4,831	1,752,998	8,764,940
Liverpool	2,759	8	2,768	980,632	4,903,160
Bristol	780	....	780	275,485	1,377,425
Glasgow	681	1	682	238,781	1,193,905
Dublin	604	3	607	215,567	1,077,835
Belfast	877	....	877	188,111	665,555
Newcastle	841	....	841	120,444	602,220
Cork	270	....	270	95,362	476,810
Limerick	258	....	258	91,004	455,020
Leith	288	1	289	84,514	422,570
Preston	179	....	179	68,312	341,560
Chester	158	....	158	55,908	279,540
Shields	147	....	147	52,025	260,125
Waterford	182	....	182	46,070	230,350
Londonderry	116	....	116	40,992	204,960
Southampton	8	5	13	8,195	40,975
Other places, less than 100 tons each	904	3	907	320,771	1,603,855
Total	12,660	90	12,750	4,560,741	22,803,705

The following table, exhibiting the exports of tobacco from Great Britain for 1852, will show the quantities and destination of that article supplied by England to foreign countries, relatively to the quantities imported. Total quantity imported, 15,700 tons, or 35,168,000 pounds.

TOTAL QUANTITY EXPORTED.

	Hhds.		Hhds.
W. coast of Africa	1,725	Christiana	20
Holland	297	Drontheim	17
Malta	184	Senegal	15
San Sebastian	110	Guernsey	14
Alexandria	59	Liberia	10
Bahia	51	Isle of Man	54
Antwerp	44	Sundry places	22
Rio de Janeiro	39		
Gibraltar	96	Total	2,602
Drasman	61		

The foregoing table shows that in 1852 there were exported from Great Britain about 2,602,000 lbs. (allowing 1000 lbs. to the hhd.) out of the 35,168,000 lbs. imported, showing the amount retained for consumption to be 32,566,000 lbs.

TABLE EXHIBITING THE QUANTITIES AND VALUE OF FLOUR, BEEF, TALLOW, HIDES, AND NAVAL STORES EXPORTED FROM THE UNITED STATES TO GREAT BRITAIN, FROM 1830 TO 1855, BOTH YEARS INCLUSIVE.

Years.	Flour.	Value.	Beef.	Tallow.	Hides.	Value.	Tar, pitch, rosin and turpentine.	Value.
	Barrels.	Dollars.	Barrels.	Pounds.	Number.	Dollars.	Barrels.	Dollars.
1830	826,182	1,544,194	200	6,787	28,627	140,408	128,125	251,726
1831	879,430	4,931,951	26	864	283,153	40,766	159,190	315,964
1832	95,958	479,921	117	....	13,420	65,080	172,092	400,054
1833	22,207	121,169	608	....	33,000	161,488	171,388	403,250
1834	19,687	94,834	....	36,153	32,064	129,036	181,921	454,659
1835	5,376	25,841	24	....	12,721	56,856	151,407	429,811
1836	161	1,134	....	....	17,975	90,555	197,824	731,288
1837	....	....	....	....	59,743	199,649	215,190	738,881
1838	8,395	62,510	....	....	25,059	78,444	219,794	579,076
1839	167,585	1,326,627	....	....	5,816	18,696	176,721	506,215
1840	630,919	1,337,848	....	29,580	3,817	17,924	191,448	470,450
1841	208,984	1,008,465	8,610	25,222	4,288	33,507	201,789	482,870
1842	203,024	1,242,787	2,001	1,716,820	6,781	168,597	218,553	575,574
1843	19,426	84,815	6,886	3,653,614	8,882	381,769	145,006	371,526
1844	167,296	745,436	43,717	4,057,200	33,107	777,906	270,317	648,124
1845	35,355	152,382	41,188	5,239,440	41,179	854,234	280,263	689,364
1846	1,015,244	5,186,677	80,880	6,125,462	67,053	1,354,851	305,254	958,275
1847	2,457,078	15,104,574	66,475	5,924,156	24,481	1,269,975	245,779	632,510
1848	958,744	6,119,876	47,061	3,899,469	7,008	606,204	283,026	683,739
1849	953,815	5,077,290	79,850	5,598,297	1,092	1,390,687	317,417	794,690
1850	369,777	1,779,852	60,520	2,254,613	351	828,780	366,990	911,281
1851	1,004,788	4,573,009	54,750	4,195,866	....	895,788	285,785	761,408
1852	1,581,994	6,808,878	81,823	2,421,436	....	764,843	345,417	945,224
1853	1,373,065	6,795,818	80,570	1,481,876	....	1,848,565	341,518	1,099,582
1854	2,026,191	13,715,111	78,537	5,890,288	588	1,644,425	461,528	1,565,683
1855	139,712	1,583,089	8,787*	7,612,622	10,807	2,900,907	421,118	1,183,866

* Also, in 1855, 67,149 tierces.

A VIEW OF THE TRADE BETWEEN GREAT BRITAIN AND THAT PORTION OF HER NORTH AMERICAN COLONIES NOW INCLUDED IN THE UNITED STATES, FROM 1697 TO 1774; AND BETWEEN GREAT BRITAIN AND THE UNITED STATES, FROM 1775 TO 1820—COMPILED FROM BRITISH AUTHORITIES. [W. signifies *war*; P. *peace*.]

Years.	Imports from the United States.	Exports to the United States.	Years.	Imports from the United States.	Exports to the United States.	Years.	Imports from the United States.	Exports to the United States.
W. 1697	$1,403,720	$707,755	W. 1739	$3,757,390	$3,479,345	W. 1780	98,815	4,145,850
P. 1698	1,180,275	2,220,485	W. 1740	3,592,080	4,066,910	W. 1781	499,395	4,278,505
P. 1699	1,276,985	2,019,505	W. 1741	4,561,015	4,427,460	W. 1782	188,900	1,338,650
P. 1700	1,975,105	1,721,705	W. 1742	3,296,140	4,000,265	W. 1783	851,205	5,015,600
P. 1701	1,545,675	1,719,135	W. 1743	3,404,085	4,146,025	P. 1784	3,746,645	18,897,860
W. 1702	1,678,940	934,050	W. 1744	3,337,625	3,204,410	P. 1785	4,467,980	11,541,115
W. 1703	1,021,480	1,481,050	W. 1745	2,772,155	2,676,265	P. 1786	4,215,595	8,017,880
W. 1704	1,609,870	880,445	W. 1746	2,797,505	3,774,885	P. 1787	4,468,190	10,070,540
W. 1705	754,820	1,458,815	W. 1747	2,808,570	3,633,360	P. 1788	5,118,945	9,480,710
W. 1706	985,875	808,455	W. 1748	3,588,180	4,150,870	P. 1789	5,250,995	12,626,500
W. 1707	1,423,995	2,066,235	P. 1749	3,817,620	6,152,930	P. 1790	5,935,880	17,158,890
W. 1708	1,482,175	1,200,925	P. 1750	4,078,845	6,565,420	P. 1791	5,971,160	21,127,235
W. 1709	1,622,080	1,847,885	P. 1751	4,178,260	5,165,840	P. 1792	5,198,535	21,357,090
W. 1710	1,249,080	1,468,800	P. 1752	3,020,915	5,740,945	W. 1793	4,970,900	17,573,405
W. 1711	1,628,490	1,488,185	P. 1753	4,868,700	7,864,780	W. 1794	3,128,665	19,299,355
W. 1712	1,229,865	1,548,455	P. 1754	5,038,810	5,881,400	W. 1795	6,760,680	26,270,690
P. 1713	1,516,110	1,422,785	P. 1755	4,697,770	5,564,990	W. 1796	10,404,850	30,970,160
P. 1714	1,978,875	1,667,220	W. 1756	3,296,785	6,750,890	W. 1797	5,877,560	25,283,995
P. 1715	1,486,285	2,256,340	W. 1757	3,058,420	8,141,750	W. 1798	8,918,600	27,901,845
P. 1716	2,197,945	2,010,225	W. 1758	3,353,600	8,563,445	W. 1799	9,094,705	35,282,790
P. 1717	2,138,450	2,098,335	W. 1759	3,199,545	11,727,970	W. 1800	11,789,615	39,427,970
W. 1718	2,287,855	2,126,675	W. 1760	4,159,725	13,564,785	W. 1801	13,582,590	67,587,650
W. 1719	2,315,275	1,965,010	W. 1761	4,473,155	8,609,485	P. 1802	9,617,920	26,647,450
W. 1720	2,340,940	1,598,525	W. 1762	4,588,070	6,985,080	W. 1803	9,570,490	26,364,005
W. 1721	2,469,355	1,659,595	P. 1763	5,785,645	8,298,745	W. 1804	8,257,885	31,992,130
P. 1722	2,183,480	2,128,625	P. 1764	5,632,255	11,865,625	W. 1805	8,882,780	35,758,825
P. 1723	2,308,810	2,057,965	P. 1765	5,801,495	9,862,565	W. 1806	9,999,420	48,065,610
P. 1724	2,315,405	2,307,930	P. 1766	5,298,045	9,218,215	W. 1807	14,387,610	59,606,600
P. 1725	2,078,250	2,748,465	P. 1767	5,670,260	9,798,990	W. 1808	4,781,710	19,960,995
P. 1726	2,681,625	2,766,540	P. 1768	6,864,295	10,990,090	W. 1809	11,026,655	25,578,065
P. 1727	3,198,925	2,514,645	P. 1769	5,362,820	6,864,985	W. 1810	13,072,025	39,066,585
P. 1728	3,026,625	2,589,315	P. 1770	5,477,425	9,774,675	W. 1811	11,847,075	7,189,145
P. 1729	2,626,290	2,144,795	P. 1771	6,742,100	21,007,875	W. 1812	6,475,760	20,677,960
P. 1730	2,862,980	2,687,305	P. 1772	6,326,585	15,456,900	W. 1813	Records destroyed by fire.	
P. 1731	3,254,815	2,684,345	P. 1773	6,871,605	9,987,295	W. 1814	113,105	36,515
P. 1732	2,595,740	2,956,270	P. 1774	6,902,125	12,995,980	W. 1815	11,851,440	59,682,505
P. 1733	3,34[illegible],175	2,744,450	W. 1775	9,767,005	985,500	P. 1816	11,981,120	38,999,585
P. 1734	3,056,750	2,781,875	W. 1776	528,215	282,150	P. 1817	15,285,000	31,865,140
P. 1735	3,261,635	3,343,820	W. 1777	68,050	293,965	P. 1818	17,184,180	41,917,180
P. 1736	3,499,380	2,794,210	W. 1778	82,970	187,820	P. 1819	13,440,880	21,508,475
P. 1737	3,376,915	2,719,180	W. 1779	1,[illegible]785	1,753,500	P. 1820	18,256,710	19,601,310
P. 1738	3,101,200	3,156,850						

COMPARATIVE STATEMENT OF THE COMMERCE OF THE UNITED STATES WITH GREAT BRITAIN, EXHIBITING THE VALUE OF EXPORTS TO AND IMPORTS FROM EACH COUNTRY, AND THE TONNAGE OF AMERICAN AND FOREIGN VESSELS ARRIVING FROM AND DEPARTING TO EACH COUNTRY, DURING THE YEARS DESIGNATED.

YEARS.	COMMERCE.				NAVIGATION.			
	VALUE OF EXPORTS.			VALUE OF IMPORTS.	AMERICAN TONNAGE.		FOREIGN TONNAGE.	
	Domestic produce.	Foreign produce.	Total.		Entered the United States.	Cleared from the U. States.	Entered the United States.	Cleared from the U. States.
1845	$44,284,379	$4,822,490	$49,056,459	$45,500,908	890,000	890,990	249,761	226,718
1846	44,921,868	1,893,608	46,215,471	43,957,740	358,827	391,120	226,652	191,261
1847	56,266,935	1,028,422	57,295,357	67,597,028	487,978	607,513	444,890	417,251
1848	67,769,741	8,964,012	76,726,753	61,845,119	460,308	598,153	375,285	310,085
1849	76,648,294	1,961,876	78,590,170	61,154,538	600,769	650,951	555,639	491,005
1850	68,783,780	4,486,643	73,173,373	75,159,424	518,766	463,355	554,068	509,826
1851	109,581,612	8,414,406	117,946,018	93,847,886	648,299	642,216	531,847	508,833
1852	110,903,055	4,766,920	115,569,975	90,628,339	776,971	651,460	554,164	421,788
1853	117,878,996	8,478,275	191,802,271	180,267,840	805,081	695,108	558,967	476,748
1854	189,215,287	5,840,452	145,055,839	144,428,587	860,996	890,108	593,054	475,681
1855	132,992,351	6,600,518	139,592,869	106,543,180	905,708	863,065	376,005	292,610

TABLE EXHIBITING THE QUANTITIES AND VALUE OF TOBACCO (RAW), INDIAN CORN, PORK, BACON AND LARD EXPORTED FROM THE UNITED STATES TO GREAT BRITAIN AND IRELAND, FROM 1880 TO 1855, BOTH YEARS INCLUSIVE.

Years.	TOBACCO.		INDIAN CORN.		PORK.	HAMS & BACON.	LARD.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Quantity.	Quantity.	Value.
	Hogsheads.	Dollars.	Bushels.	Dollars.	Barrels.	Pounds.	Pounds.	Dollars.
1880	20,291	1,588,971	51,416	29,425	2,200	1,646	....	20,832
1881	26,785	1,882,336	190,988	139,447	180	2,865	....	1,833
1882	36,393	2,545,450	322	180	2,705	602	....	29,378
1883	25,854	2,259,197	3,240	2,174	921	7,480	600	10,997
1884	30,058	2,937,020	....	....	....	4,994	....	498
1885	27,588	3,400,639	853	230	12	1,815	....	345
1886	38,855	4,593,442	....	....	....	11,461	....	1,293
1887	21,733	1,879,868	12	15	....	400	....	40
1888	25,782	2,857,208	185	110	....	667	....	88
1889	30,330	5,404,967	519	467	10	150	....	241
1840	27,186	3,227,880	104,841	61,569	....	1,061	....	115
1841	43,131	5,114,836	12,548	7,186	4,769	26,894	444,805	80,379
1842	36,999	3,212,207	123,665	75,901	6,000	160,274	3,430,782	237,928
1843	21,059	1,262,616	....	....	3,230	656,328	4,569,484	305,293
1844	39,132	2,900,126	89,073	43,893	10,280	350,189	8,976,805	643,705
1845	26,169	1,985,087	135,088	67,882	14,140	96,807	5,687,675	497,066
1846	27,943	2,423,223	1,192,080	797,170	19,001	580,026	8,211,389	703,236
1847	29,745	2,583,775	15,526,525	18,760,910	78,940	14,867,105	17,798,770	3,471,597
1848	23,501	2,260,937	5,062,220	3,867,418	87,760	29,218,402	27,783,841	5,283,359
1849	21,857	1,771,128	12,396,242	7,496,676	111,885	58,150,465	21,388,265	6,482,194
1850	30,926	3,025,585	5,947,206	3,504,806	44,631	37,377,769	31,692,591	4,881,989
1851	28,698	3,458,885	2,760,329	1,854,879	9,258	14,729,169	6,628,788	1,587,851
1852	17,696	2,012,225	1,894,700	1,110,692	1,632	8,207,998	3,976,124	1,075,299
1853	32,236	3,488,423	1,653,840	983,690	17,156	13,297,879	9,725,186	2,239,094
1854	17,664	2,146,943	5,965,850	4,879,187	43,664	38,890,787	26,715,141	6,193,894
1855	24,203	3,507,760	5,985,284	5,492,420	54,668*	30,240,161	15,349,922	5,915,120

* 5,679 tierces were also exported in 1855.

TABLE EXHIBITING THE IMPORTS INTO, AND EXPORTS FROM THE UNITED KINGDOM OF GREAT BRITAIN AND IRELAND, FROM 1801 TO 1858, INCLUSIVE, DESIGNED TO SHOW THE GENERAL FOREIGN TRADE OF THAT KINGDOM DURING THE PERIOD DESIGNATED.

Years.	Value of imports into the United Kingd.	Total exports.	Years.	Value of imports into the United Kingd.	Total exports.
	Dollars.	Dollars.		Dollars.	Dollars.
1801	158,981,800	176,223,250	1828	225,887,215	333,678,175
1802	149,181,050	191,549,900	1829	219,976,480	834,190,635
1803	133,113,480	142,500,850	1830	231,502,865	848,503,740
1804	139,097,760	158,150,250	1831	248,639,140	357,162,450
1805	142,800,350	155,100,305	1832	228,052,780	850,850,740
1806	124,498,290	147,827,170	1833	229,722,130	392,105,550
1807	133,472,125	155,077,490	1834	246,823,665	426,991,340
1808	133,977,700	131,989,950	1835	245,146,670	455,788,915
1809	158,752,785	221,313,160	1836	286,480,225	488,059,280
1810	195,508,060	217,096,680	1837	278,811,425	428,827,800
1811	182,550,930	188,995,600	1838	306,490,065	525,827,395
1812	130,517,155	195,207,815	1839	310,240,605	510,958,280
1813	Records destroyed by fire.		1840	337,463,550	582,405,075
1814	168,776,330	267,865,935	1841	322,221,840	584,514,435
1815	164,986,980	208,122,750	1842	326,266,430	569,209,010
1816	187,158,020	245,989,250	1843	351,074,560	659,164,785
1817	154,171,495	251,520,555	1844	377,246,570	729,783,270
1818	184,425,910	267,801,690	1845	426,487,540	754,889,510
1819	158,884,050	217,894,900	1846	379,670,110	723,045,280
1820	162,193,250	244,757,685	1847	454,609,330	780,860,040
1821	158,963,980	257,307,165	1848	467,795,670	754,890,200
1822	152,655,705	267,854,495	1849	509,573,695	850,506,970
1823	178,992,165	262,152,560	1850	502,302,165	985,548,880
1824	177,841,395	294,676,260	1851	559,895,625	1,071,924,565
1825	221,044,015	281,600,910	1852	546,727,047	1,097,728,495
1826	189,069,450	255,210,115	1853	615,496,565	1,110,361,120
1827	224,540,865	180,268,775			

TABLE EXHIBITING THE AMOUNT OF GOLD AND SILVER COIN AND BULLION EXPORTED FROM THE UNITED STATES TO GREAT BRITAIN, FROM 1830 TO 1855, BOTH YEARS INCLUSIVE.

Years.	Value.	Years.	Value.
1830	$20,154	1843	....
1831	625,718	1844	....
1832	576,481	1845	$98,112
1833	....	1846	2,312
1834	....	1847	....
1835	1,000	1848	1,065,047
1836	10,000	1849	225,565
1837	629,180	1850	868,657
1838	....	1851	11,572,008
1839	816,790	1852	32,127,879
1840	1,905,957	1853	18,006,581
1841	1,226,719	1854	26,365,899
1842	599,491	1855	46,900,788

Laws and Regulations Relative to Passengers' Baggage in England and the United States, Explained and Compared.—The laws and Treasury orders regulating the admission of baggage, personal effects, etc., into the ports of Great Britain and of the United States, respectively, are based upon principles so totally dissimilar, that a comparative view of both can only be presented by exhibiting a synopsis of each. The policy of Great Britain would seem to be to restrict the privilege of *free entry* to such articles of *wearing apparel* as *have been worn*, and not made up for the purpose of being introduced into the country, free of duty; while the regulations in force at the different ports of the United States exhibit a spirit of the utmost liberality in that regard, enabling passengers, whose "baggage and personal effects" have been honestly made up, and faithfully manifested, to proceed to their destination, without delay or cost, or being subjected to the many thousand vexatious annoyances which a less liberal policy, in regard to "passengers' baggage, personal effects," etc., must inevitably produce. The American policy on this subject is, besides, highly beneficent to the large classes of emigrants who seek an asylum on our shores, literally carrying with them their "bed and baggage," their weaving-looms, spinning-wheels, and other articles and implements of handicraft, all of which are admitted, under the tariff act of 1846, free of duty.

In the United States, the admission of personal baggage, etc., is regulated by schedule one, Tariff Act of 1846, and of various decisions of the Treasury Department subsequently issued. The several provisions of the above-named schedule, and of the Treasury decisions, may be classified as follows: 1. Household effects, old and in use, of persons or families arriving from foreign countries, if used abroad by them, and not intended for any other person or persons, or for sale, free. 2. Wearing apparel, in actual use, and other personal effects, not merchandise; professional books, implements, instruments and tools of trade, occupation, or employment of persons arriving in the United States (provided that this exemption shall not extend to or include machinery or other articles imported for use in any manufacturing establishment, or for sale), free. 3. Personal and household effects (not merchandise) of citizens of the United States dying abroad, free. The exemption from duty contemplated by law in the first clause, above cited, must be confined to such articles as are generally used in housekeeping, and which had actually been in use by the individual or family while living abroad, and not imported for sale, barter, or traffic. The exemption from duty of wearing apparel, and other personal effects, provided for in the second clause quoted, must be confined to such articles as are generally used on or about the person, and not considered as merchandise; the articles admitted under this clause to be limited to an extent not exceeding in number, quantity, or value what is usual for a traveler, or other person, to wear, keep,

or carry with him for his own use. The professional books, implements, instruments, and tools of trade, occupation, or employment, enumerated in the same clause, are limited in number, quality, and value to what the collector may consider reasonable and proper for the person to whom they belong, in his profession, occupation, trade, or employment; but the term "implements and tools of trade," under no circumstance to be considered as comprehending any machine or article to be worked by other than manual power.

Regulations as to Passengers' Baggage, Personal Effects, etc., in Great Britain.—Hours of attendance at the different baggage warehouses as follows: From 1st March to 31st October, from 8 o'clock A. M., until 7 o'clock P. M.; and from 1st November to 28th February, from 9 A. M. until 5 P. M.

After all baggage shall have been landed, those passengers having only *single packages* will be entitled to have them first examined; the remaining passengers will then be called into the examination-room in rotation, according to the list furnished by the captain [passengers themselves must see that their names are properly inserted in the captain's list]. All wearing apparel, after examination, will be immediately delivered, provided it appears that the apparel *has been worn*, and not made up for the purpose of being introduced into the United Kingdom without payment of duty. All dutiable articles forming a part of passengers' baggage will be delivered immediately after examination, on the amount of duties due thereon being deposited with such accredited person as may be authorized to receive the same, and also a small sum for passing the entry. All merchandise brought with baggage is liable to seizure. Such goods must be regularly reported and entered, and the regulations of the law strictly complied with. If any passenger shall, upon being questioned by the proper officer of customs, deny that he or she has any goods liable to duty in his or her possession, and such goods be subsequently discovered, they will be liable to seizure, and the passenger to a penalty of treble the value thereof.

Foreign newspapers found in the baggage of passengers, if bound, are to be charged with duty as "goods manufactured," 10 per cent. *ad valorem;* if unbound, they are duty free. Fowling-pieces, the property of parties returning to England, may be delivered free, upon declaration that they are of British manufacture. A pair of pistols, a single rifle, or a single fowling-piece, brought by a passenger with his baggage, may be delivered duty free, upon a declaration that the same is for private use only.

Duty is not to be charged on any quantity less than a pint of ordinary drinkable spirits, of whatever strength; or half a pint of eau de Cologne, or other cordial water, or any medicated or perfumed spirits or liqueurs, imported for private use. Passengers who are not *frequent visitors*, may include with their baggage, entitled to free entry, an amount of segars or manufactured tobacco under the weight of half a pound. On half a pound and upward the duty on the whole weight is to be charged. Passengers, however, from the West Indies or other long voyages may enter any quantity of segars or manufactured tobacco not exceeding seven pounds' weight. Books and musical instruments, though for private use, are dutiable.

All packages of baggage landed by "sufferance," when not cleared from the examining floor of the station, at which they may have been landed, within six working days, are to be forwarded to the queen's warehouse for security of duties. Passengers who may be unwilling or unable to clear such articles of baggage as may be liable to duty, can either abandon the same, or they may be left in the queen's warehouse for six months, in order to give their proprietors an opportunity of taking them back without payment of duty.—BEKDELL'S *British Tariff*, 1854-'5, pp. 82 to 87.

Regulations relative to the Entry of Vessels into the Ports of Great Britain and of the United States compared.—Vessels entering any ports in Great Britain are subject to the following regulations, viz.: So soon as a vessel has reported, the importers, agents, or consignees of the cargo, having been advised by receipt of bills of lading, or other intimation, may each enter their several goods. A latitude of 14 days is allowed by law for this purpose; but, in order to clear vessels more speedily, *sight entries* are permitted to the master or owner of any ship lying alongside the legal quays, or sufferance wharves, south of the Thames from London Bridge eastward to Dockhead, under such general description as is contained in the report, for any goods that shall not have been entered by the owners thereof within 48 hours from the day of report, upon condition that perfect entry be made by the proprietor within one month from the date of landing. Goods so circumstanced are only liable to seizure for inaccuracy of entry after the lapse of a month, or after the proprietor's perfect entry has been passed. If perfect entry be not made at the end of a month, or a delivery order obtained, the goods may then be sent to the queen's warehouse, and dealt with as if landed by "bill of sight."—B. M., 1st June, 1850.

The master of every merchant-vessel, within 24 hours of entering the port of arrival, is bound, under a penalty of $500, to report his cargo to the chief officer of customs. Before, however, the master is allowed to report, he must declare, before some person duly authorized by the postmaster-general, that he has delivered at the post-office all letters that were on board his ship. And likewise, he must, under a penalty of $100, and the further sum of $50 for each alien not included in the declaration, truly declare to the number of aliens on board or landed from his ship. Goods generally are liable to seizure for being landed without entry; and packages uncleared from the queen's warehouse are sold after the expiration of the following periods, viz.: Merchandise, 3 months; passengers' baggage, 6 months; and ships' surplus stores, 12 months. If, after the arrival of any ship within four leagues of the coast of the United Kingdom, bulk shall be broken, or any alteration made in the stowage of the cargo of such ship so as to facilitate the unlading of any part of such cargo; or if any part be staved, destroyed, or thrown overboard, or any package be opened, unless accounted for to the satisfaction of the commissioners of customs, in every such case such master shall forfeit the sum of $500. For wilfully making a false report, or if the particulars, or any of them, of such report be false, the master shall forfeit the sum of $500. (16 and 17 Victoria, chap. 107.)

By the act of Congress of March 2, 1799, masters of vessels are required to produce a manifest of cargo on board, on the arrival within four leagues of the coast of the United States, to such officer of a revenue-cutter, or other officer of the customs, as shall first come on board such vessel, for his inspection. The law requires that the manifest shall be in writing, signed by the master of such vessel, and shall contain the name, description, build, and true tonnage of such vessel, the place to which she belongs, with the names of the owner or owners, the name of the master, the names of the places where the goods shall have been taken on board, and the places within the United States to which they are respectively consigned, particularly noting the goods destined for each place respectively, and a just and particular account of all the goods so laden on board, whether in packages or stowed loose, of any kind whatever. The names of the passengers on board, specifying the number and description of packages belonging to each, together with the remaining sea-stores, if any, are to be truly stated. If any goods be imported in any such vessel without having a manifest on board, agreeable to the foregoing directions, or which shall not be included therein, or

shall not agree therewith, the master of such vessel shall forfeit and pay a sum of money equal to the value of the goods not included therein; and all such merchandise not included in the manifest, belonging or consigned to the master, mate, officers, or crew of such vessel, shall be forfeited. No addition, erasure, substitution, or alteration whatsoever, can be made in the manifest of the cargo of any such vessel after her arrival within four leagues of the coast of the United States, without subjecting the master of such vessel to the penalty of the law. On any vessel arriving from a foreign port, the master is to report to the collector within 24 hours after his arrival; and within 24 hours thereafter further to report, in form, all the particulars required to be inserted in his manifest, and shall declare to the truth of such manifest. No vessels permitted to enter until the master shall have delivered all letters directed to persons within the United States. Merchandise unladen without permit from the proper officers of the customs to be forfeited; and the master and mate, each, forfeit $1000. Before departure for a foreign port, the master of every vessel must deliver to the collector a manifest of the whole cargo and the value thereof, and obtain a clearance, under the penalty of $500.

Colonial Possessions of Great Britain.—As a necessary preliminary to a clear exposition of the laws and regulations which govern the existing commercial relations between the United States and the colonial possessions of Great Britain, it will be necessary to take a brief retrospective glance at the rise and progress of American commerce, from the earliest settlement of the colonies down to the present period. Although these preliminary remarks will be more especially addressed to the commercial intercourse between the United States and the colonial possessions of Great Britain in North America, they will equally apply to all the other possessions of that power throughout the world, by reason of the general application of that liberal and enlightened system of commercial policy adopted by the British Parliament in 1849, and inaugurated as the future commercial law of that kingdom on the 1st day of January, 1850.

From the earliest settlement of the different colonies on the North American continent by the governments of the Old World, a system of colonial legislation, similar in effect, and oppressive in operation, was commenced by each, respectively, prohibiting all commercial intercourse with any other than the mother country, and reudering the infant colonies dependent on her alone for the supplies necessary for their subsistence and comfort. The effects of such a policy were soon exhibited in the anomalous and destitute condition to which the earlier colonists were reduced. Carrying with them, as they did, into the newly discovered wilderness of the western continent, that adventurous and enterprising spirit which had led them to forsake the homes of their childhood, and to brave the perils of a voyage across the Atlantic, it may easily be imagined, that they did not quietly submit to an illiberal and short-sighted policy, which reduced them to a condition of industrial and commercial vassalage that had well-nigh crushed every effort to develop the abundant treasures which nature had so lavishly spread before them, and which, under a different system, would soon have brought within their reach the rich exchanges of an extensive commerce. They were, in the language of one well acquainted with our earlier colonial history, "prevented from manufacturing for themselves, or from engaging largely in ship-building or commerce; isolating them from the rest of the world, leaving them no trade except to the mother country."

The selfish and monopolizing spirit which governed the British legislature in the enactment, as well as in the rigorous enforcement, of these restrictions on the colonies which she had planted in North America, may be understood from a remark elicited from Lord Chatham by a remonstrance against this oppressive policy, to wit: that "the British American colonies had no right to make even a nail for a horse-shoe." "In and out of Parliament," says the Treasury report of 1832, "as a political right and as a national privilege, an absolute monopoly was demanded for supplying the colonies with every article of consumption, and of transporting the whole of their produce to Europe."

In the charter of Virginia there was an express stipulation empowering the colonists to carry on a direct intercourse with foreign states. This privilege naturally drew their attention to the cultivation of the soil, and to the production of such articles as would be most likely to find a foreign market, and yield them such returns as were most suitable to their condition and their necessities. Accordingly we find them, at a very early period, successfully engaged in the cultivation of tobacco. This article found a ready demand in the markets of Holland, and warehouses were soon established for its reception at several of the principal ports of that republic. This privilege, however, was not long permitted; the British merchants, stimulated by an unworthy spirit of cupidity, soon perceived the advantages which this direct trade between the colonies and Holland conferred upon their commercial rival, and at once adopted active measures to suppress it.

The interests and power of the British government were appealed to, until, with a total disregard to the necessities and claims of the colonists, and in palpable violation of the rights and privileges guarantied to them by solemn compact, they were forbidden to carry their produce to Holland or to any other foreign country, and were compelled to ship direct to British ports, and commit their commercial operations exclusively to the management and control of British merchants.

Several acts of Parliament followed, prohibiting all foreign trade with the colonies, and restricting them to a direct intercourse with the mother country. The first act which indicated the future policy of Great Britain toward her colonies, and bore with much severity upon their industry and enterprise, was that of 1650, restricting their trade to British or colonial-built ships. This was the commencement of the system begun by Oliver Cromwell, and continued with unabated rigor down to the period of the Revolution.

The act of 1650 was followed by another passed during the reign of Charles II. (1660), prohibiting the exportation to any foreign country, of certain enumerated articles, the produce of the colonies, and requiring that vessels laden with such articles should proceed direct from the colonies to a British port. Non-enumerated articles, including fish, salted provisions, grain, flour, etc., could, for a period, be carried direct to any port in the world—a privilege, however, which was subsequently materially abridged; but, lest the dependence of the colonies upon the mother country should be in any degree relaxed, the return cargoes were, with the exception of salt, to be relanded in England for reshipment to the colonies.

The policy which dictated this restrictive measure was rendered still more oppressive by an act passed in 1663, providing that "no commodity of the growth, production, or manufacture of Europe shall be imported into the British plantations, but such as are laden and put on board in England, Wales, or Berwick-upon-Tweed, and in English-built shipping, whereof the master and three fourths of the crew are English."

Under the baneful influence of this system of unwise, unjust, and oppressive legislation, it may seem almost incredible that the colonies should have been able to maintain any advancement in commerce, population, or wealth; yet, if we follow them in their struggles and privations from the commencement of this illiberal and unjust policy, during the Commonwealth under Cromwell, down to the period of the

Revolution, we shall find them steadily, though slowly, increasing in all these elements of a nation's prosperity. This was mainly attributable to the privileges of commercial intercourse between the colonies themselves, continental and insular, which was permitted to them as a part of the British dominions. To this unfettered and profitable trade the American colonies were chiefly indebted for whatever commercial progress they had made prior to the Revolution. The following table exhibits the extent and value of this trade in 1769: Imports, $13,000,000; exports, $12,000,000; total, $25,000,000. Of this aggregate of trade, that with the West Indies stood thus: Exports, $3,700,000; imports, $7,950,000; total, $11,650,000.

At the commencement of the revolutionary war, the colonies enjoyed the privilege of trading with England, the British West Indies, and that part of Europe south of Cape Finisterre; and though oppressed by unjust exactions, and burdened by illiberal restrictions, they not only contributed to the wealth and material prosperity of the mother country, but gave every promise of thriving, and achieving a name of their own.—De Bow's *Review*.

During the revolutionary war, all commercial operations were suspended, and the peace of 1783 found the trade of the new thirteen independent sovereignties in a most feeble and languishing condition. Their independence made them a foreign country to the North American and West India colonies; and by a rigorous system of colonial non-intercourse, they were cut off from all trade with those who were their natural commercial neighbors, and, prior to the Revolution, their most profitable customers.

The exhausted condition to which the several States were now reduced rendered the first few years after the close of the war a period of the most intense solicitude. The confederated States were fully sensible of the absolute necessity of opening a foreign trade, and especially of recovering their lost intercourse with the British West Indies; but every proposition to that end, urged through their accredited ministers, was met by a decided refusal.

As early as 1783, Mr. Pitt, then Chancellor of the Exchequer, proposed a bill in the British Parliament based upon the liberal principle of "admitting to all the ports of the British dominions American vessels loaded with goods, the growth or produce of these [the United] States, on the same terms as British vessels and goods," but the proposition at once startled the fears of the British merchants, who, with the aid of Lord North, Mr. Fox, and Lord Sheffield, succeeded in transferring the whole subject to the discretion of the king and his council. The consequence was, that an order was immediately issued, not only excluding American vessels from all participation in the colonial trade, but prohibiting the exportation from the United States of provisions and fish, even in British bottoms.

Two years after Mr. Pitt's unsuccessful motion for reciprocal trade between the dominions of Great Britain and the United States, John Adams, American minister at the court of St. James, was instructed to renew the proposition; but it met with no more favorable reception than it did in 1783, Lord Liverpool declaring "that it could not be admitted even as a subject of negotiation."

In 1789, another effort was made by the United States to negotiate with Great Britain a commercial treaty, particularly with reference to the colonial trade, based upon principles of a more liberal reciprocity.

Mr. Morris, then in London, was especially instructed to effect, if possible, a negotiation admitting American productions, in American bottoms, into British North American possessions, and bringing, in return, the productions of those colonies to our own ports and markets. The result of these renewed efforts was communicated to the government of the United States by Mr. Morris, in his dispatch of September 18, 1790, and was, in effect, that no arrangement by treaty could be made.

From this period down to the year 1822, the ports of the British American colonies were virtually closed against the commerce of the United States, some slight relaxations having been granted, abating, however, to no perceptible extent, the stringency of the measures adopted by the British Parliament, with a view to confine, within the very narrowest limits, the commercial enterprise of a country in which, even at that early period, she descried a future rival for maritime supremacy. These relaxations permitted a direct trade with the British West India Islands in certain specified articles, and under certain restrictions, but were not accepted by the United States.

During the period which elapsed between the years 1790 and 1822, several efforts were made to place our trade with the British American colonies upon a basis of equality; these efforts proving fruitless, the United States determined to submit no longer to a policy so detrimental to her commercial prosperity, so obstinately persisted in, and hitherto resisted only by the unavailing force of diplomatic remonstrance.

Before resorting, however, to any extreme measures for the proper vindication of our commercial rights, the government of the United States, still anxious to avert, by means of conciliatory legislation, a total suspension of trade and commerce with Great Britain and her American colonies, announced, by act of March 3, 1815, the principles upon which she was desirous of maintaining commercial relations with all foreign nations.

This act repealed all discriminating duties of impost and tonnage on foreign vessels in regard to all countries which should adopt a similar policy in favor of the United States. This fair and liberal proposition was followed by a convention between Great Britain and the United States, in which the provisions of the act referred to were adopted, so far as they were applicable to the trade between the United States and the dominions of that power in Europe, but refusing to place her colonial trade on the same basis. A more extended notice of the provisions of this convention, more properly came under the preliminary remarks on the commercial relations of the United States with Great Britain. It will suffice to observe, in this place, that the restriction respecting colonial trade was made the subject of a special stipulation, in the following words, viz.: "The intercourse between the United States and his Britannic majesty's possessions in the West Indies, and on the continent of North America, shall not be affected by any of the provisions of this article [article 2], but each party shall remain in possession of its rights with respect to that intercourse."

The act of April 18, 1818, was the commencement of the measures of retaliation by which the government of the United States had now determined to force Great Britain into a more just and liberal system of commercial legislation, by excluding from American ports all ships belonging to that nation coming from any colonies to which vessels of the United States were not admitted.

The second section of this act required bonds to be given in the case of all British vessels departing from ports in the United States, conditioned that the cargoes should not be landed in such colonies. This was followed by a similar act, passed in 1820, prohibiting the ports of the United States to British vessels coming by sea, from any ports or places in all the American possessions of Great Britian; and providing further, that no produce should be brought into the United States from such colonies, unless imported direct from the place of production.

The effect of these several retaliatory enactments upon the commercial interests of Great Britain led some of her most sagacious statesmen to bestow upon

the whole subject their serious attention, and repeated efforts were made in the British Parliament to remove the restrictions upon colonial trade, of which the American government so justly complained; and so successful were these efforts, that the United States government was informally advised that the plan proposed by Lord Goderich, for a more liberal colonial policy, would be carried out by the British Parliament. To remove all difficulty on the part of the government of the United States, in giving effect to any plan based upon principles of equality, and, at the same time, to show that the retaliatory measures adopted in 1818 and 1820 were purely defensive, and resorted to only after every means of negotiation had failed, the act of May 2, 1822, was passed, authorising the President to declare the ports of the United States open to British vessels trading to and from the colonies, "on receiving satisfactory evidence that the ports of the islands or colonies of Great Britain have been opened to the vessels of the United States."

This was followed soon after by an act of Parliament fully meeting the contingency provided for in the act of Congress above referred to; and, in August following, the President's proclamation was issued, declaring, in the language of the act of Congress, "the ports of the United States open to British vessels trading to and from the colonies." This act of Parliament, however, in a great measure rendered nugatory by the insertion of a clause restricting American vessels to a direct trade with the colonies, and by the terms of the Treasury circular of 24th September following, subjecting British vessels coming from the colonies to heavy discriminating duties. This course was justified by the government of the United States, on the ground that it became necessary, as a means of countervailing the discriminating duties to which American produce was subjected when imported into the colonies, or from the colonies to Great Britain, in British bottoms. In a subsequent part of these remarks, it will be seen that, in effect, this equality, with some few exceptions, has prevailed since the abolition of imperial duties on colonial importations; but the principle which it involves, that of foreign interference with the colonial tariffs of Great Britain, was never admitted by that government, nor was it ever pressed by the United States. Indeed, the correctness of the views expressed on this subject by the Earl of Aberdeen, in a dispatch to Mr. Barbour, six years subsequently to this period, has never been questioned by the government of the United States; and their application has been continued to this day, in the discriminating duties just alluded to as exceptions, without any objection or remonstrance on the part of the American government. As the policy of these countervailing duties involves a fundamental principle of commercial law, the language of the Earl of Aberdeen in reference to it is not deemed inappropriate in this place:

"It never could be intended to agree that, under no circumstances, should the vessels of the one [the mother country] have no advantage over those of the other; and the undersigned is not aware of any instance in which one country has remonstrated with another country, having colonies, upon the terms on which it has regulated its own intercourse with those colonies. * * *

"The intercourse between a country and her colonies is as absolutely out of the scope of stipulation, negotiation, or remonstrance, as is the intercourse between one island or port of the mother country and another."

The object of Great Britain, during this protracted controversy with the government of the United States, for commercial equality in colonial trade, was avowedly to secure to British navigation all the advantages derivable from an exclusive trade with her colonies, even in the productions and manufactures of the United States—an object easily promoted, if not virtually accomplished, by the naturalization of American productions imported into the colonies, and their exportation thence in British vessels, at the low duties assignable to goods, wares, and merchandise, the produce of the colonies.

It was a part of a system chiefly designed to encourage British navigation, and, incidentally, to quote again from the Earl of Aberdeen, "for extending the commercial transactions of British colonists, giving them the advantages of a trade of deposit, and facilities for collecting a revenue."

Notwithstanding these restrictions, equally injurious to the commerce of both countries, the United States still maintained an active and profitable trade in supplying the West India colonies with her staple productions through the neutral and other colonies with which she was permitted to carry on a direct intercourse. The British interdict of 1826 closed the ports of all the British American possessions, with the exception of the northern colonies, including the Bermuda Islands, to American vessels; still, the statistical returns of that period exhibit a steady and vigorous indirect trade carried on through the circuitous routes just indicated.

The following tables, compiled from official returns, show the value of our exports and imports to and from the British American colonial possessions, from 1821 to 1830, during which period the restrictive and countervailing measures of both governments were, to some extent, relaxed, and our trade with these possessions was relieved from the onerous imposts of indirect and circuitous channels. During a portion of this period, as will be seen by glancing over the following tables, and noting the disparity in the amounts during the years designated, American trade was barely able to struggle through the restrictions and burdens which pressed upon it. The remarks already submitted with reference to the legislation of that period, both in Great Britain and the United States, will sufficiently explain the discrepancies.

STATEMENT EXHIBITING THE VALUE OF IMPORTS AND EXPORTS TO AND FROM THE UNITED STATES AND THE BRITISH AMERICAN POSSESSIONS, DURING THE YEARS SPECIFIED.

YEARS.	BRITISH WEST INDIES.		N. AMERICAN POSSESSIONS.	
	Imports.	Exports.	Imports.	Exports.
1821.....	$927,846	$265,102	$490,704	$2,009,791
1822.....	855,537	452,141	526,817	1,898,873
1823.....	1,844,981	1,627,967	463,779	1,827,208
1824.....	2,758,067	1,771,088	714,144	1,782,969
1825.....	2,497,122	1,647,046	619,884	2,556,032
1826.....	2,204,412	2,110,802	653,950	2,588,795
1827.....	895,207	690,577	445,118	2,830,748

The foregoing tables will exhibit, at a glance, the injurious effects consequent upon the different acts of retaliatory legislation resorted to and enforced by both nations during this prolonged and unyielding contest. Other tables will be introduced in the proper place, showing the value and extent of trade between the United States and the British colonial possessions subsequently to the year 1830, when a policy, based upon the just principles of reciprocal benefit and generous competition, succeeded the illiberal and unwise measures by which the commercial intercourse of both countries had, for nearly half a century, been diverted from its natural channels.

It will be recollected that by the act of Congress of 1828, passed as soon as could be after the Treasury circular of September 14, 1822, already referred to, had been issued, the claim to an equality with Great Britain as to duties on importations into the colonies was reasserted, and the terms of the President's proclamation of August of the same year were affirmed. Great Britain could not be induced to yield this point; her object being to enable her to "protect the staples of her own subjects, by levying discriminating duties on the like productions of foreign countries." With-

out such imposts, the British government contended "that the productions of her North American colonies would be totally excluded from the markets of the West India Islands, as they could not possibly compete with similar productions of the United States."

This determination, and these discriminating duties, led to the refusal by Congress to accept the terms on which the ports of the British colonies were opened to American trade by the act of 1825.

The conditions on which this trade was offered were not deemed admissible, inasmuch as they demanded that the commerce and navigation of Great Britain, and her possessions abroad, with the United States, should be placed on the footing of the most favored nation; while discriminations existed in such colonial possessions, not only unequal as respected Great Britain, but exclusively applicable to the commerce of the United States.

These different acts are recurred to for the purpose of elucidating more clearly the illiberal policy and narrow jealousies which preceded the new era in the commercial policy of both countries, upon which they at length entered.

In 1829, Mr. McLane, the American minister at London, in pursuance of instructions to that effect, proposed to the British cabinet "a restoration of the trade between the United States and Great Britain, with special reference to her American possessions, upon a basis of reciprocal concession, and announced the willingness of his government to accede to the terms prescribed by the act of Parliament of 1825."

In opening this negotiation, Mr. McLane introduced the proposition which he was authorized to submit, by referring to "the misunderstandings and jealousies which had hitherto characterized the commercial relations of both countries," observing, "that it was the interest of both governments to extinguish these causes of mutual bitterness; to correct the errors which may have interrupted the harmony of their past intercourse; to discard from their commercial regulations measures of hostile monopoly; and to adopt instead a generous system of frank and amicable competition." Such, in Mr. McLane's judgment, would be the happy result of the proposition he was instructed by his government to submit, namely, "that the government of the United States would now comply with the conditions of the act of Parliament of July 5, 1825, by an express law opening their ports for the admission of British vessels, and by allowing their entry with the same kind of British colonial produce as might be imported in American bottoms, the vessels of both countries paying the same charges; suspending the alien duties on British vessels and cargoes, and abolishing the restrictions defined in the act of Congress of 1823, on the intercourse between the United States and the British colonies; and that such a law should be immediately followed by a revocation of the British order in council of the 27th July, 1826, the abolition or suspension of all discriminating duties on American vessels in the British colonial ports, and the enjoyment by the United States of the advantages of the act of Parliament of 5th July, 1825."

In submitting this proposition, Mr. McLane distinctly declared that, "whatever may be the disposition which his majesty's government may now be pleased to make of this subject, it must necessarily be final;" a declaration which, doubtless, contributed somewhat to the satisfactory and liberal arrangement which soon followed.

In anticipation of a final and satisfactory adjustment of this question, and, at the same time, to manifest the liberal spirit which animated the government of the United States in its solicitude and willingness at all times to terminate a contest equally detrimental to the commerce of both nations, an act was passed in May, 1830, clothing the President with power, on receiving satisfactory evidence of the willingness of the British government to accede to the proposition submitted by Mr. McLane, to issue his proclamation ratifying the terms of that proposition, and tendering to British vessels engaged in the colonial trade the advantages which it secured.

On the 17th of August following, Mr. McLane was officially notified by the Earl of Aberdeen, that his government was prepared to accept the terms on which it was proposed to relax their colonial system, and permit a direct trade between the United States and the North American possessions, and only awaited the necessary action on the part of that government to promulge the requisite orders to that end. Accordingly, on the 5th day of October following, the President, by virtue of the authority conferred on him by the above-mentioned act, issued his proclamation, declaring that the act "concerning navigation," passed on the 18th day of April, 1818, the act supplementary thereto, passed on the 15th day of May, 1820, and the act entitled "An act to regulate the commercial intercourse between the United States and certain British ports," passed on the 1st day of March, 1823, were absolutely repealed; and that the ports of the United States were, from the date of the proclamation, open to British vessels and their cargoes, from the islands, provinces, and colonies of Great Britain, on or near the North American continent, and north-east of the United States.

These several acts, it will be borne in mind, constituted the whole system of retaliatory measures adopted by the government of the United States, during the continuance of the commercial controversy now brought to a close. Corresponding orders in council were also promulged by the British government, giving full validity to the arrangement, and placing the United States on an equal footing, with respect to colonial trade, with the other nations that had complied with the act of 1825.

The commercial intercourse between the United States and the American colonial possessions was now established on a basis, in some respects, it is true, restrictive, but still sufficiently liberal and broad to inspire with renewed energy the commercial interests of the nation, and direct them in the more equal competition on which they were permitted to enter.

Nearly 50 years before this period, the policy to which Great Britain now gave her assent was suggested and urged with great earnestness by Mr. Pitt, then Chancellor of the British Exchequer. His proposition, already noticed, was to the effect that American vessels loaded with goods, the growth or produce of the United States, should be admitted to all the ports of the British dominions. Every administration, from the formation of this government down to the year 1830, directed its best energies to effect a negotiation with the British government, recognizing this principle; but whether from a real desire to protect and foster its own navigation and commerce, as was avowed, or to repress the spirit of commercial activity which, from the very earliest period, had characterized the United States, every obstacle that diplomacy could create, and every sophistry that ingenuity could supply, seemed interposed whenever the question was pressed upon the attention of the British cabinet.

How disastrous this restrictive policy proved to the commercial interests of both countries, and especially to those of the West India colonies, which naturally looked to the United States for the necessary supplies of subsistence, may be gathered from the tables already given. The increase of the total trade of the United States from this period may be shown as follows:

COMMERCE OF THE UNITED STATES.

	Exports.	Imports.
1830.....	$73,843,508	$70,876,920
1835.....	121,693,577	149,895,742
1840.....	132,085,946	107,141,519

The progress and almost incredible augmentation of this trade under the new arrangement may

be seen from the following comparative statement of imports and exports:

OFFICIAL VALUE OF IMPORTS AND EXPORTS OF THE UNITED STATES TO AND FROM THE BRITISH NORTH AMERICAN AND WEST INDIA POSSESSIONS FOR 1830 AND 1840, RESPECTIVELY; SHOWING, ALSO, THE INCREASE OF TONNAGE DURING THAT PERIOD.

COLONIES.	IMPORTS.		EXPORTS.	
	1830.	1840.	1830.	1840.
Brit. N. Amer. possessions...	$650,806	$2,007,767	$3,786,878	$6,093,250
Brit. W. Indies.	168,579	1,048,165	1,901	2,965,584

From the foregoing table it will be seen that the aggregate trade with the British American colonies increased during the period designated from $4,436,676 to $8,601,917, or nearly 100 per cent.; and the increase in the trade with the British West Indies in the same period was equal to 2400 per cent.

This vast increase in the value of the trade necessarily supposes a corresponding augmentation in the amount of tonnage. As illustrative of the elastic and enterprising spirit of American commerce when freed from the shackles of illiberal restrictions, and permitted a fair competition, on equal terms, in addition to the preceding table, the following statements, exhibiting the augmentation in tonnage under the new arrangement of 1830, will prove interesting.

The average tonnage which entered in the United States from the British, Swedish, and Danish West Indies during the years specified was as follows:

	Tons.
In 1828, 1829, and 1830	88,633
In 1832	114,651
Increase	26,018

The average tonnage which departed from the United States for the British, Danish, and Swedish West Indies, in the same years, was as follows:

	Tons.
In 1828, 1829, and 1830	91,495
In 1832	134,986
Increase	43,491

During the first period, viz., 1828, '29, '30, the principal trade to the British West Indies was indirect and circuitous; during the latter (1832), under the new arrangement, it was direct. Similar results followed the liberal policy of 1830, in the trade of the United States with the North American colonies; and, as we are now approaching a new era in the commercial intercourse between the United States and these colonies, the advent of which was announced by the repeal of the British navigation laws in 1849, the following tables are introduced for the purpose not only of exhibiting the augmentation in that trade during the two periods, but also of indicating its probable future increase under the beneficent effect of the late reciprocity treaty.

The average tonnage entered into the United States from the North American colonies during the years specified, is as follows:

	Tons.
In 1828, 1829, and 1830	96,304
In 1832	182,672
Increase	86,368

The average tonnage departing from the United States to North American possessions, the same years, was as follows:

	Tons.
In 1828, 1829, and 1830	103,370
In 1832	211,348
Increase	107,978

The following is a summary of the foregoing tables:

	Tons.
Increase of tonnage entered in 1832 from the W. Ind.	26,018
Increase of tonnage from North American possessions	86,368
Total	112,386
Increase of tonnage departed to the West Indies	43,551
Increase of tonnage departed to the N. Amer. pos...	107,978
Total	151,529

It will have already been perceived, from the foregoing tables, that so soon as American commerce was liberated from the thralldom of oppressive and prohibitory restrictions, it at once challenged a competition with the flags of all nations in supplying the markets of the British West India and North American possessions, and in maintaining with them a profitable and an extensive trade.

Indeed the benefits resulting from the measures adopted in 1830, not only to the United States and Great Britain, but to the West India and other American possessions, became so manifest, in the vast increase of capital, tonnage, and the value of trade, and the commercial relations between the two nations had become, year by year, so closely united in the bonds of mutual interest and of a more enlightened policy, that it is not surprising that the British nation received with much favor the first advance, taken by Sir Robert Peel, toward the system of free trade, which now constitutes the basis of British commercial legislation, and, in its results upon the general prosperity and wealth of that nation, fully vindicates the wisdom and foresight of its distinguished author.

Prior to 1847, American exports to the British colonies were burdened with double duties—those imposed by the British Parliament, styled Imperial duties, and those prescribed by the local legislatures of the different colonies. The revenue derived from the former was, at all times, inadequate to meet the expenses of the colonial system; and, in consequence, the British civil list was annually increased by large appropriations for colonial purposes. The embarrassed condition of the British finances at this period co-operated very opportunely with Sir Robert Peel's predilections in favor of free-trade policy, in inclining the British government to receive favorably his proposition to abandon all control over colonial tariffs, and throw their foreign possessions on their own resources. This measure was at once adopted; and in the season next succeeding, the Canadian Legislature abolished the discriminating and prohibitory duties on imports inland, thus placing the mother country in the same relative position as foreign nations. The abolition of the British corn-laws next succeeded in this liberal policy; and, in 1849, the crowning act of Sir Robert Peel's life—the repeal of the British navigation laws—consummated the system of measures introduced by that statesman, so far at least as that system affected the intercourse of foreign nations with British colonies throughout the world.

By these several acts of imperial legislation, the comprehensive principle was established of admitting into Great Britain, or into any British possession, goods of any sort, in a ship of any country, from any part of the world, subject only to such prohibitions and restrictions as were deemed necessary, either for the safety of the State, or for the protection of revenue and mercantile interests.

Under the class of absolute prohibitions, the following articles are included, viz.: gunpowder, ammunition, arms, or utensils of war, except from the United Kingdom or any British possession, and base or counterfeit coin. These are prohibited to be imported into the British possessions in America or the Mauritius. Other prohibitions and restrictions will be found especially set forth in Part II., *Com. Rel. U. S.*, 1857.

The only imposts to which the commerce of the United States with the colonies of Great Britain is now subject, are the colonial duties imposed by the local legislatures of the respective colonies; and these apply, with some few exceptions, which are noticed in their proper place, equally to British importations and British bottoms. These duties are generally very moder-

ate, designed solely to meet the necessary expenses of the colonies, and are at least one third less than the duties levied in the United States, on similar descriptions of merchandise, by the tariff act of 1846.

We have noticed the wonderful progress and steady increase in the value and tonnage of American commerce with her colonial neighbors which followed the negotiation of 1830, and the subsequent acts and regulations of the British government. Each successive year brings its tribute of augmented returns and expanding commerce to illustrate the wisdom and the far-seeing sagacity of those statesmen, in both countries, who originated this liberal system.

The commercial intercourse of the United States with the West Indies and the eastern possessions of Great Britain remains unchanged since 1850. Although this intercourse is still dependent on the regulations of the mother country, as a general rule, the impost duties are equal on all bottoms, but slight discriminations existing even in favor of British vessels. With the North American provinces, however—that is, with "Canada, Newfoundland, New Brunswick, Nova Scotia, Prince Edward's Island, and the several islands thereunto adjacent"—a system of the most liberal and unrestricted character has been adopted, which, to a great extent, places commercial intercourse between the United States and those possessions, respectively, on the footing of an unfettered coasting trade. The Reciprocity Treaty of 1854 established a free trade between the colonies above named and the United States, in the principal raw staples of both countries, and concedes to the citizens of the latter among other privileges, "the right to navigate the River St. Lawrence, and the canals in Canada, used as a means of communicating between the great lakes and the Atlantic Ocean," as well as of "taking, curing, and drying fish of every kind on the sea-coast and shoals, and in the bays, harbors, and creeks of Canada, New Brunswick, Nova Scotia, Prince Edward's Island, and of the several islands thereunto adjacent, without being restricted to any distance from the shore, with permission to land upon the coasts and shores of those colonies and the islands thereof, and also upon the Magdalen Islands, for the purpose of drying their nets and curing their fish."

The third article of this treaty provides that the articles enumerated in the following schedule, being the growth and produce of the aforesaid British colonies or of the United States, shall be admitted into each country, respectively, free of duty:

Schedule.—Grain, flour, and breadstuffs of all kinds; animals of all kinds; fresh, smoked, and salted meats; cotton, wool, seeds, and vegetables; undried fruits, dried fruits; fish of all kinds; products of fish, and of all other creatures living in the water; poultry, eggs; hides, furs, skins, or tails, undressed; stone or marble in its crude or unwrought state; slate; butter, cheese, tallow; lard, horns, manure; ores of metals of all kinds; coal; pitch, tar, turpentine, ashes; timber and lumber of all kinds, round, hewed, and sawed, unmanufactured, in whole, or in part; fire-wood; plants, shrubs, and trees; pelts, wool; fish-oil; rice, broom-corn, and bark; gypsum, ground or unground; hewn or wrought or unwrought burr or grindstones; dye-stuffs; flax, hemp, and tow, unmanufactured; unmanufactured tobacco; rags.

Articles of manufacture, it will be perceived, are not embraced in the above schedule; indeed, these possessions, being abandoned by the British Treasury, by the act of 1847, already referred to, are now compelled to support themselves; and their tariff on manufactured articles is the principal source of revenue on which they must depend to meet their heavy loans and support their respective governments.

The same tonnage duties are payable upon ships or boats of the United States of America importing goods into Upper or Lower Canada, as are or may be payable at the same time in the United States of America on British craft entering the harbors of the State from which such goods shall have been imported. (17 and 18 Vict., chap. cxxii., sec. 178.)

The following comparative tables exhibit the value of trade between the United States and British North American possessions during the years 1851, '52, '53, '54, '55. A reference to tables already given will show how largely the totals since 1850 exceed those prior to that period. The figures are taken from the United States' Treasury reports on "Commerce and Navigation."

Exports from Canada in 1851	$7,929,140	
Exports to other British American possessions	4,085,783	
Total		$12,014,923
Imports from Canada in 1851	$4,956,471	
Imports from other British American possessions	1,736,651	
Total		6,693,122
Balance of trade in favor of the United States in 1851	$5,321,801	
Total trade between the United States and British North American possessions in 1851		$18,708,045
Exports to Canada in 1852	$6,717,060	
Exports to other British North American colonies	3,791,956	
Total		10,509,016
Imports from Canada in 1852	$4,589,969	
Imports from other North American possessions	1,520,330	
Total		6,110,999
Balance of trade in favor of the United States in 1852	$4,398,717	
Total trade between the United States and British North American possessions in 1852		$16,619,815
Exports to Canada in 1853	$7,829,099	
Exports to other British North American colonies	5,311,543	
Total		13,140,642
Imports from Canada in 1853	$5,278,116	
Imports from other British American colonies	2,272,602	
Total		7,550,718
Balance of trade in favor of the United States in 1853	$5,589,924	
Total trade between the United States and British North American possessions in 1853		$20,691 860
Exports to Canada in 1854	$17,300,700	
Exports to other British American colonies	7,266,154	
Total		24,566,860
Imports from Canada in 1854	$6,721,539	
Imports from other British American colonies	2,206,021	
Total		8,937,560
Balance of trade in favor of the United States in 1854	$15,639,300	
Total trade between the United States and British North American possessions in 1854		$33,494,420
Exports to Canada in 1855	$18,720,344	
Exports to other British American colonies	9,085,676	
Total		27,806,020
Imports from Canada in 1855	$12,182,314	
Imports from other British North American possessions	2,954,420	
Total		15,136,734
Balance of trade in favor of the United States in 1855	$12,669,286	
Total trade between the United States and British North American possessions in 1855		$42,942,754
Total trade in 1851		18,708,045
" " in 1855		42,942,754
Increase in total trade from 1851 to 1855		$24,234,709

General Remarks on the Commercial Relations of the United States with the British Colonies.—Canada.—The following statement exhibits the condition of trade between the United States and Canada; the description, amount, and value of the principal imports and exports, the balance in favor of either country, etc., during the years 1851, 1852, and 1853, together with certain commercial regulations in force at the different ports in the province of Canada. The figures are taken from the Canadian official reports on "Trade and Navigation." The fact that the fiscal year in these reports ends in December, while that in the United States' Treasury reports ends in June, will account for the apparent discrepancy between this statement and the general one which has immediately preceded.

IMPORTS FROM CANADA IN 1851.

Produce of the mines	$60,273
Produce of the seas	43,784
Produce of the forest	1,283,380
Animals, and produce of animals	565,884
Vegetable food (including $1,617,000 for wheat and flour)	1,909,229
Other agricultural produce	25,783
Manufactures	45,064
Other articles	138,052
Total	$4,071,534

EXPORTS TO CANADA IN 1851.

Principal Articles.—Coffee, sugar, molasses, tea, tobacco (manufactured and unmanufactured), whisky, wine, and salt	1,988,458
Fruits (green and dried), spices	102,865
Horses, grains, cheese, salt meat, pork	49,800
Tanned leather, oil, paper, mess-pork, rice, candles, cotton and leather manufactures, manufactures of India-rubber, iron and hardware, machinery, and wool	4,198,040
Broom-corn, burr-stones, coals, hides, tallow, other articles	645,560
Books, cotton-wool, maize, philosophical apparatus, settlers' goods, wheat (and including $537,000 in bullion)	1,364,028
Total	$8,363,751
Total exports	$8,363,751
Total imports	4,071,534
Balance in favor of the United States	$4,292,217
Total of imports into Canada from Great Britain in 1851, in round numbers	12,000,000
The same from the United States	8,000,000
Difference against the United States	$4,000,000
Imports into Canada from all countries in 1851, in round numbers	21,000,000
Of which from the United States	8,000,000
Difference between the value of imports into Canada from the United States, and from all other countries	$13,000,000

From the foregoing it will be perceived that the imports into Canada from the United States, in 1851, were only one third less than those from Great Britain, and nearly two fifths of the whole imports from all other countries.

IMPORTS IN 1852.

Produce of the mines	$2,156
Produce of the seas	50,288
Produce of the forest	1,840,196
Animals, and their produce	966,200
Vegetable food	3,186,260
Flax, and other seed	94,836
Manufactures	60,376
Other articles	84,200
Total	$6,284,512

EXPORTS IN 1852.

Principal Articles.—Coffee, sugar, molasses, tea, tobacco (manufactured and unmanufactured), whisky, wine, and salt	$2,225,112
Fruits and spices	91,372
Horses, grains, cheese, etc	49,732
Fish, fur, glass, tanned leather, oil, paper, mess-pork, rice, candles, manufactures of cotton, leather, iron, wood, silk, India-rubber, iron and hardware, wood articles (unenumerated), and sundries	4,413,568
Broom-corn, burr-stones, coals, cotton-yarn, flax, hides, tallow, nitre, wool, sundries	$769,216
Books, cotton-wool, Indian corn, settlers' goods, wheat, other articles	864,692
Total	$8,413,692
Total exports	8,413,692
Total imports	6,284,512
Balance in favor of the United States	$2,129,180
Total value of imports into Canada from Great Britain in 1852, in round numbers	10,500,000
The same from the United States	8,500,000
Difference between the value of imports from Great Britain and from the United States	2,000,000
Imports into Canada from all nations in 1852, in round numbers	$20,000,000
Of which from the United States	8,500,000
Difference between the value of imports into Canada, from the United States, and from all other countries	11,500,000

The preceding tables will show, that in 1852 the United States almost equaled Great Britain in her exports to Canada, and furnished more than two fifths of the whole imports into that province.

IMPORTS IN 1853.

Produce of the mines	$75,596
Produce of the seas	73,424
Produce of the forest	2,610,176
Animals, and produce of animals	1,046,852
Vegetable food	4,879,444
Other agricultural produce	98,736
Manufactures	107,882
Other articles	49,920
Total	$8,936,380

EXPORTS IN 1853.

Description of merchandise the same as for 1851 and 1852—total value	$11,782,148
Total exports	$11,782,148
Total imports	8,936,380
Balance in favor of the U. States, in 1853	$2,845,768
Total value of imports into Canada from Great Britain, in 1853	18,489,190
Same from the United States	11,782,148
Difference	$6,706,972
Imports into Canada, from all nations, in 1853, in round numbers	32,000,000
Of which, from the United States	11,782,148
Difference	$20,217,852

Imports into Canada, in 1853, were unusually heavy, exceeding those of the preceding year $12,000,000. The tables will show that Great Britain supplied more than one half of the whole; while the exports from the United States, though exceeding those of the preceding year upward of $3,000,000, did not maintain, with respect to Great Britain, the ratio of 1852.

Imports from Canada up to 30th June, 1854 (according to the United States' Treasury report)	$6,721,539
Exports to same date	17,300,706
Exhibiting a balance in favor of the U. States of	$10,579,167

Before closing these remarks, it is proper to observe that the preceding tables and calculations have been prepared with much care, with a view to furnish accurate data in estimating the benefits secured to American commerce by the Reciprocity Treaty of 1854. The statement exhibiting the value of imports from, and exports to Canada, for 1855, when compared with these tables, will demonstrate the wisdom and policy of that measure.—*U. S. Com. Relations.*

Summary of the Regulations in Force at the Different Ports in Canada.—Merchandise shall not be unladen, except after due entry, at places designated for that purpose, under penalty of forfeiture.

Merchandise shall not be brought or imported into the province, whether by sea, land, coastwise, or by inland navigation, whether dutiable or not, except into some port or place at which a custom-house is, or may be established, under penalty of forfeiture of ves-

sel and goods, if under the value of $1000; if above that sum, then the vessel and goods shall be retained as security for the payment of that amount. This applies, *mutatis mutandis*, to goods brought into the province, by land, in carriages or other vehicles.

Other regulations have reference, principally, to frontier smuggling, and to the duties and powers of the officers charged with its prevention. They convey no general commercial information, and are, therefore, omitted.

Most of the articles on which a discrimination in favor of importations from Great Britain exists, are embraced in the third article ("schedule") of the Reciprocity Treaty.

Foreign vessels are not permitted to carry goods or passengers from one port of any British possession in Asia, Africa, or America, to another port of the same possession; though by the act 17 Victoria, chap. 5, the coasting trade of the United Kingdom is opened to the vessels of all nations.

The foregoing regulations, etc., apply with some slight modifications, to all the other colonial possessions of Great Britain in North America. They will not, therefore, be again referred to.

COMMERCE OF THE UNITED STATES WITH THE BRITISH NORTH AMERICAN COLONIES, FROM OCTOBER 1, 1820, TO JULY 1, 1856; INCLUDING CANADA TO JUNE 30, 1848.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage Cleared.	
	Domestic.	Foreign.	Total.	Total.	Exported.	Imported.	American.	Foreign.
Sept. 30, 1821	$2,021,449	$2,819	$2,024,261	$491,628	....	$89,417	118,097	....
1822	1,881,273	16,286	1,897,559	526,817	....	158,225	90,977	....
1823	1,818,118	8,347	1,831,440	488,374	....	219,742	52,776	12,023
1824	1,778,107	2,017	1,775,724	705,931	....	298,840	58,951	9,130
1825	2,588,224	1,740	2,589,964	610,788	....	218,896	61,520	10,139
1826	2,564,165	24,384	2,588,549	650,815	$462,250	221,994	76,191	10,106
1827	2,797,014	83,660	2,880,674	445,118	1,021,291	154,507	60,878	11,145
1828	1,618,288	56,386	1,674,674	447,669	126,772	179,944	63,801	10,658
1829	2,724,104	40,805	2,764,909	577,542	626,253	241,287	98,645	10,569
1830	3,650,081	136,842	3,786,873	650,303	128,321	252,279	117,171	14,267
Total	$23,385,768	$318,379	$23,704,147	$5,569,485	$2,364,887	$2,035,988	789,507	88,089
Sept. 30, 1831	$4,026,892	$85,446	$4,061,888	$864,909	$25,900	$277,197	79,864	94,776
1832	3,569,902	45,083	3,614,885	1,229,526	16,961	542,745	65,056	146,292
1833	4,390,081	81,009	4,471,084	1,798,893	14,704	817,880	219,408	245,779
1834	3,477,709	57,567	3,535,276	1,548,783	400,500	652,258	195,989	228,120
1835	3,900,545	147,843	4,047,388	1,435,108	688,783	197,400	368,592	415,406
1836	2,456,415	194,851	2,651,266	2,427,571	82,288	546,474	291,981	428,191
1837	2,922,474	296,512	3,218,986	2,252,263	160,000	448,592	382,284	440,009
1838	2,484,987	238,504	2,723,491	1,555,570	420,208	450,712	261,286	338,156
1839	3,418,770	144,684	3,563,454	2,155,146	15,900	431,789	385,506	378,772
1840	5,889,915	204,035	6,093,250	2,007,767	11,500	780,171	857,078	401,805
Total	$36,535,890	$1,445,928	$37,980,918	$17,877,046	$1,746,144	$5,145,216	2,601,874	3,252,299
Sept. 30, 1841	$6,992,290	$364,278	$6,656,568	$1,968,187	$198,100	$475,891	404,472	447,986
1842	5,950,148	240,166	6,190,309	1,762,001	59,078	763,069	323,315	417,409
9 mos. 1843	2,617,005	107,417	2,724,422	857,096	86,334	403,545	202,607	238,092
June 30, 1844	5,861,186	1,854,717	6,715,903	1,465,715	711,244	445,995	696,565	516,231
1845	4,844,966	1,209,260	6,054,226	2,020,065	489,095	914,461	677,985	512,004
1846	6,042,666	1,363,767	7,406,433	1,937,717	251,900	628,043	868,563	578,678
1847	5,819,667	2,165,876	7,985,543	2,248,927	480,275	868,451	657,595	528,515
1848	6,899,959	1,982,696	8,882,655	3,646,467	555,900	960,148	859,791	831,271
1849	3,611,788	257,760	3,869,548	1,845,798	....	47,530	122,641	409,377
1850	3,116,840	501,374	3,618,214	1,358,892	88,044	88,998	75,298	521,112
Total	$50,056,505	$9,547,306	$59,603,811	$18,706,565	$2,864,968	$5,540,726	4,884,077	4,980,690
June 30, 1851	$3,224,553	$801,230	$4,025,783	$1,786,651	$30	$44,677	108,285	502,507
1852	2,650,184	1,181,822	3,791,956	1,520,880	112,558	56,895	122,809	544,518
1853	3,398,575	1,912,968	5,311,543	2,272,602	200,521	83,940	266,481	583,465
1854	4,693,771	2,572,883	7,266,154	2,206,021	48,975	68,148	295,781	587,309
1855	5,855,878	3,229,798	9,085,676	2,954,420	64,212	18,413	276,688	498,822
1856	7,519,909	626,199	8,146,108	3,822,224	4,000	83,807	326,647	471,871

British Provinces.—Under the impetus communicated by the Treaty of Reciprocity, the trade of the United States with the Canadas has greatly increased, notwithstanding the formidable diminution of nearly $6,000,000 in our exportation of foreign goods. The aggregates for the last two years we have arranged as follows, for purposes of comparison:

	1855.	1856.
Domestic produce exported to the Canadas	$9,950,764	$15,194,783
Foreign goods	3,769,580	5,688,453
Domestic produce exported to the Lower Provinces	5,825,878	7,519,909
Foreign goods	3,229,798	626,199
Imports from the Canadas	12,182,314	17,488,197
Imports from the Lower Provinces	2,911,420	3,822,224
Total trade	$42,939,754	$50,389,770
Total trade with the Canadas	$30,909,553	$38,871,488
Total trade with the Lower Provinces	$12,037,069	$11,968,892

The total aggregates of trade during the last five years, are as follows:

1852	$16,519,805
1853	20,691,246
1854	33,494,320
1855	42,939,754
1856	50,389,770

The chief articles of export and their values were for 1855 and 1856:

	1855.	1856.
Oil, soap, and candles	$217,000	$250,000
Fish	20,000	44,000
Manufactures of wood	300,000	230,000
Naval stores	100,000	167,000
Beef, pork, bacon, lard, tallow and hides	857,000	4,523,000
Horses	43,000	103,000
Wheat, flour, and corn	1,568,000	1,769,000
Rice	45,000	52,000
Tobacco and snuff	423,000	513,000
Whisky	187,000	206,000
Molasses	87,000	140,000
Furniture	182,000	323,000
Hats	100,000	116,000
Shoes and leather	289,000	504,000
Glass	65,000	114,000
Books and paper	94,000	148,000
Salt	159,000	303,000
Manufactures of cotton	470,000	914,000
" Iron	960,000	1,517,000
Coal	320,000	402,000

The most notable increase, it will be observed, has taken place in animal products. For more extended information about Great Britain, see ENGLAND, IRELAND, and SCOTLAND. Also COLONIES, COTTON, and FISHERIES.

Great Circle Sailing; the manner of conducting a ship in, or rather pretty near, the arc of a great circle that passes through the zenith of the two places, viz.: from whence she came, and to which she is bound.

Greece. The continent of Greece, including Albania and Macedonia, is nearly shut in on the north by a chain of mountains known anciently by the names of Rhodope, Scomius, and Orbelus; it is bounded on the west by the Adriatic and Ionian Seas, on the south by the Mediterranean, and on the east by the Ægean Sea, or Archipelago. It extends from 36° 10′ to 42° 40′ of north latitude; and from 19° 45′ to 24° 40′ of east longitude from London. Its length, from Cape Matapan to Mount Orbelus, or Argentaro, is 450 English miles; its greatest breadth from Durazzo to Cavale, at the foot of Mount Pangæus (a branch of Rhodope), 235 miles; and it embraces an area of 57,750 square miles, exclusive of all its islands except Eubœa. But, as our ideas of the extent of the country have always a reference to those ancient States which comprised but very minute portions of its surface, it is necessary that its dimensions should be described more in detail.

The country recognized as Greece before the rise of the Macedonian power, comprehended the Morea or Peloponnesus, Attica, Eubœa, Bœotia, Phocis, Doris, Ætolia, Acarnania, Thessaly, and Magnesia; and even several of the States included within these limits had little or no share in those splendid actions which have shed so much glory over the country. The surface of Peloponnesus, which included seven different States, is about 9000 English square miles; that of the countries just named, without the peninsula, including Eubœa, is 14,800; and both together amount to 23,800 square miles—an extent of surface not exceeding two fifths of England, or one fifth of the British Isles. If to this we add 16,000 square miles for Albania or Epiris (including the basin of the Drino), 18,000 for Macedonia, and 1000 for the Cyclades, the whole surface of Greece and its Islands will be 58,800 square miles, which is almost exactly the area of England. While Greece preserved its independence, however, all these territories were never united into one body politic, nor was their confederated force ever applied to the prosecution of any common enterprise. The communities whose warlike achievements and brilliant career in arts and philosophy raised the Grecian name so high, occupied but very minute portions of the country; as the following table deduced from measurements will show:

	Eng. sq. miles.
Attica, including Megaris and Salamis, but not Eubœa.	1,190
Bœotia	1,580
Laconia (without Messenia)	1,720
Achaia (the twelve cities with their territories)	1,140

Attica, besides possessing at one period Eubœa, had many colonies in the Cyclades, Thrace, and other parts; and Sparta held Messenia long in subjection; but, in great struggles, these colonies and dependencies often shook off their allegiance, and the parent State was obliged to rely on its own resources. Such was the energy of these small communities, that Attica, which scarcely supports, at present, a population of 50,000 souls, sent out sometimes colonies of 10,000 men at once (*Diod. Sic.*, lib. ii.); and Sparta furnished 50,000 soldiers to fight the Persians at Platæa. The territories of Corinth, when she formed a separate State were much smaller than any of these; her wealth and power depending chiefly on commerce.

Greece forms a long and rather narrow peninsula, singularly indented on three sides by arms of the sea, and having a greater proportion of its surface occupied by mountains than any other country in Europe of equal extent, except Switzerland. It has been justly observed, that those physical features which distinguish Europe from the other quarters of the world belong, in a peculiar manner, to Greece, and distinguish it in the same proportion from the other parts of Europe. Of these arms of the sea, the most considerable are the Gulfs of Contessa, Salonica, Volo, Ægina, and Nauplia, on the east; those of Kolokythia and Coron on the South; and those of Lepanto and Arta on the west. Of the mountains, the first in order are those which pass along the northern frontier. Mount Argentaro, the ancient Orbelus, placed at the northern extremity of Greece, near the 43d degree of latitude, may be considered as the centre of the whole system of mountains in European Turkey.

Money.—The drachm, which is the unit of the currency, is about 8½d. English money. It is divided into 100 equal parts called lepta. There are copper coins of 10, 5, 2, and 1 lepta, the only Greek money that circulates in the country. The silver coins of 50 and 25 lepta have been melted down or exported. Those of 1 drachm are very rare. Those of 5 drachms are now only to be found in Turkey. The gold pieces of 20 drachms, called othos, also have disappeared.

Weights and Measures.—A very complete scale of weights and measures was established by the government in 1836; but the people adhere for measure of length to the pique = 27 inches. Then for weight—the principal one known, even in the capital, is the oke, a Turkish weight equal to 2 lbs. 12 oz., which is divided into 400 dramia = 1¼ Eng. drams. The cantaar or quintal is generally 44 okes = 121 lbs. The kilo or quilot of corn is 22 okes, or 60 lbs. The land measure is the *strema* equal to about one fourth of an English acre.

Cultivated Land.—It appears that not half the surface is susceptible of cultivation; and at least two thirds of the cultivated, and four fifths of the uncultivated soil belong to the State. One great disadvantage to agriculture is the scanty supply of running water; but the peasants are very dexterous at taking advantage of the smallest rill to irrigate their tillage. Money rent is little known; the lands being farmed on the metuyer system, according to which the landlord receives a certain proportion of the net produce—usually a third. He has frequently to furnish the seed, and sometimes the oxen for tillage, the cost of which, with high interest, is deducted from the profits before any division is made. On this system, there is little inducement for the proprietor to expend capital on improvements; still less is there for the metayer, who has no interest in the land beyond the season. Consequently, inclosure and drainage are scarcely thought of; and the stones having never been removed, lie so thick together that in some places it is scarcely credible that they can have accumulated naturally. The dwellings of the peasants are extremely poor, consisting of stones and fragments of tile and pottery held together by mud. Glass casements are rare even in provincial towns; and in the country cottages the light is most frequently admitted only by the door-way.

Productions.—The arable soil of Greece is devoted chiefly to the cultivation of corn, vines, mulberry-trees, and fruit trees. Wheat, rye, barley, and maize, succeed pretty well in the stony districts where the mold is but a few inches deep. Oats render but a middling crop, and the potato is quite unsuitable. But the leguminæ grow well, and rice might be raised on the wet soils. In many parts of the country cakes of maize flour form the staple article of food. (See *Ency. Brit.*) At the head of all the agricultural productions for exportation are the Corinth grapes, which we corruptly call currants, and which are cultivated from the isthmus to Arcadia, along almost all the northern and western shores of the Morea. This fruit is of a violet color, and hangs in long loose bunches. They are gathered at the same time as other grapes, dried in the sun, and packed. Very few of them are used in Greece, few anywhere except in England. The consequence of this is, that the effect of raising a large crop is merely to lower the price in the London mar-

ket; whereas, if France, America, and Russia, used plum-puddings to the same extent as the English, Greece would have had in this one article an inexhaustible source of revenue. All kinds of grapes succeed well, and the best vintage is that of the island of Santorin, where above 60 varieties are reckoned. The Russians are very fond of Santorin wine, and import £20,000 worth yearly. The art of expressing and fermenting the juice of the grape is quite in its infancy; and unfortunately the Greeks have no wine-cellars, and very few casks. The wine is kept in skins, and rosin is put into it to keep it from spoiling. It is at first exceedingly disagreeable to the taste; but the natives prefer it to the choicest beverages of France and Spain; and even foreigners become reconciled to it with use.

Next to the vineyards as a source of revenue are the mulberry plantations. There is a demand for silk in every market in the world, and the climate of Greece affords facilities for an unlimited extension of this branch of industry. The south of the Morea generally, and all the islands of the Ægean Sea, are adapted for it, and here the house of almost every peasant is in part given up to the rearing of the worm. The spawn or eggs are nestled in the bosoms of the women; and the worms hatched in spring are abundantly supplied with the young mulberry leaves then shooting. The cocoons are placed in the sun, and the heat kills the worms. In 1836 some Greek merchants, who had resided in the silk districts of Italy, introduced Italian workmen with their families into the Morea, to improve the mode of winding; and a few years have greatly advanced this branch of industry and placed it on a firm and extensive basis, giving promise of a lucrative and increasing trade. Two silk-throwing manufactories have been established at Athens with great success. (For further particulars see *Ency. Brit.*) The *Moniteur* of Paris of 16th and 17th October, 1855, pays a high compliment to the quality of the Greek silk in the Paris Exhibition, which gained the first prize.

The olive next claims attention. Being indigenous, the trees are found in a wild state in every direction, and seem only to require grafting to yield excellent fruit. Grafted olive-trees are very numerous; and many people live all the year round on little but olives, indifferently pickled in brine. The oil is extracted in the rudest manner, after which it is either run into cisterns or jars. There is a large consumption of it in the country, nothing else being used for light, and a great deal being consumed in food and cookery; but still there remains a good quantity for exportation. Cotton succeeds well wherever it is sown, especially in the plain of Argos, and in the islands. It does not form an important item in the exports, owing to the large consumption of it in the country. Madder thrives well in the northern districts. Greek tobacco is said to be of good quality, and to have a delicious perfume. It is cultivated at little expense.

The cultivation of fruit trees might be a profitable branch of industry. The figs of Attica have not degenerated since the olden time; the apricots, the pomegranates, oranges, and lemons are delicious.

First among its natural productions may be mentioned valonia, the cup of the acorn of the *Quercus Ægilops*, an oak, of which considerable forests exist in the neighborhood of Marathonisi, Cape Papa, Arcadia; also in Attica, the island of Zéa and other places. The acorn is a powerful astringent, used in tanning and dyeing, and for this purpose is shipped for England and Italy. Another species of oak—the *Quercus coccifera*, commonly called galls—grows in great quantities on Mount Taygetus, and breeds the insect known as kermes. In the process of drying the insect assumes the appearance of a small brittle berry partly filled with powder, which, from time immemorial, has caused some to look upon it as the berry of the plant, while others considered it to be a swelling caused by the puncture of a particular kind of fly. It is used in dyeing the red Tunis caps both of the Greeks and Turks, and a good deal is exported to Tunis and Alexandria. The dried leaves of the lentisk, also, under the name of Σχοινὸ φυγγον, are used by the tanners in Greece and the Levant. Turpentine is obtained in large quantities from the pine forests of Mount Cithæron and other districts.

Notwithstanding the immense clearances made by the ravages of war and other causes, Greece contains 2,800,000 acres of forest, filled with timber trees of the best quality; yet wood is bought abroad for house and ship-building, as for want of roads these forests can not be worked. The shepherds make a practice of setting fire to the coppice woods, in order that their flocks may find some tender sprouts to crop in spring. It is not unusual in the neighborhood of Athens to find large black patches covering half a square league; and if an explanation be required, the answer is, "Only a shepherd who has been making pasturage for his sheep."

The principal places of trade are Syra, Patras, Piræus, Kalamata, and Nauplia. The trade of Patras is chiefly import; Hydra, Spezzia, and Galaxidi, come more properly under the denomination of ship-owning ports. The exports are chiefly the articles we have enumerated, with others of minor importance; the imports are chiefly iron-ware and woven fabrics; besides coffee, sugar, and spices.

The carrying trade is very considerable, especially among the islands. Some of the Greek vessels are between 600 and 700 tons register, and a good many from 300 to 400 tons; but the great majority of them are boats of six or seven tons, having a large hatch in mid-ships. (See *Ency. Brit.*) It is customary for a ship-owner to bargain with a captain and crew, taking up a certain sum at interest, generally secured on bottomry bond; with this money a cargo is purchased on the ship's account, and the profit is divided between the vessel and the crew, the latter sharing among themselves according to their special agreements. In this way the Greeks carry on extensive speculations in corn whenever bad harvests or other circumstances present openings in the ports of Turkey, Italy, Spain, or France. Besides this, they export the various productions of Turkey, Greece, Egypt, Persia, and southern Russia, to London, Marseilles, and Trieste. The great advantage which the Greeks have over foreigners in prosecuting this trade is that of having relations and connections in the interior on whom they can rely for the collection of small parcels; and thus they avoid the impositions of agents and the profits of middlemen. The Greek trader despises nothing, and will gather a few bags of rags, or a ton or two of bones and horns, while he is chartering 50 vessels to load with corn and tallow. Then the same vessels supply Turkey, Persia, and Greece with the manufactures of England and Germany. The extensive Greek establishments at Manchester for purchasing, examining, and packing goods, attest the importance of this branch of commerce. They have almost quite superseded the English traders here, chiefly from their thorough knowledge of the countries to be supplied, and their readiness to execute the smallest as well as the largest commissions for the shopkeepers of the East. The Greek trader slips in everywhere, neglects no business, disdains no expedient, and changes his flag as often as he finds it his interest to do so.

The Greek government does nothing for maritime trade. There is but one light-house on the coasts; and, notwithstanding the shipwrecks that are recorded every winter, the ministers turn a deaf ear to the appeals of the mariners. A similar neglect is shown concerning the means of internal communication. There are only seven roads, amounting in all to a length of 30 leagues, and this is in a country where

the State owns more than half the land, where evictions are easily effected, and where the peasants are willing to lend their hands for works of public utility. There is no highway from Athens to Sparta, or to Corinth, or to Patras, which, owing to the trade in currants, is becoming the commercial capital.

The banking and exchange operations form perhaps the most remarkable part of the commercial system. The national bank was founded at Athens in 1842, the capital being in the first instance fixed at 5,000,000 drachms. Branches have since been opened at Syra and Patras. The exchange operations throughout the country are ruled chiefly by the transactions at Athens, where bills on London, Paris, Marseilles, Trieste, etc., are negotiated with facility. The most serious hinderance to the progress of industry in Greece is the high rate of interest. The legal rate is 10 per cent. for ordinary loans, and 12 per cent. in commercial business. High as this is, most of the loans are effected at still higher rates; and the government can not suppress the usury. From a statement inserted in the *Spectateur de l'Orient* of Athens, it appears that the bank has paid interest to the shareholders, from 1849–54, at 8¼ to 9½ per cent. per annum; that its capital amounts now to 6,000,000 drachms, and a reserve fund of 400,000 drachms to provide against emergencies.—E. B.

The manufactures of Greece are few and simple, the value of the raw material being little enhanced by the labor; yet the peasantry are entirely clothed in cotton and woolen fabrics of their own manufacture. The capotes, not only of the Greeks, but of the whole maritime population of the Mediterranean, are made of a woolen stuff, the peculiar manufacture of the Wallachs; and Kalamata is famous for a silk gauze, highly prized in the East for bed-curtains. Embroidery in gold, silver, silk, and cotton, is brought to great perfection; and marble-cutting and sculpturing have made great progress. At the great London Exhibition of 1851, the embroidered dresses in red and gold, and in blue and silver, were highly praised. The samples of marbles were not in a condition of manufacture to demand much notice as specimens of industry. Commendatory mention is made, in the report, of lithographic stones from Messina, samples of steatite (the French chalk of commerce), of a fine natural cement of puzzolan, of varieties of flexible sponge, and some other objects. In the London Exhibition of 1851, only four medals were given for various productions of art and manufacture from Greece.

The following statistics show that the progress which the Greek nation has made is highly creditable, though at the same time showing that the productive powers of Greece are not fully developed.

Statistics of Greece.

1.—Cultivated Land in 1854.

	Stremata.		Stremata.
For Cereal	3,649,870	For Mulberry-trees	240,000
" Olive-trees	600,000	" Fig-trees	150,000
" Vines	1,000,000		
		Total	5,639,870

Cattle.

Sheep and goats	5,600,000	Mules	30,000
Oxen	150,000	Asses	7,000
Buffaloes	2,000		
Horses	90,000	Total	5,889,000

Produce.

	Kilos.		Okes.
Wheat	2,500,000	Oil	1,600,000
Barley	1,228,650	Wine	16,200,000
Indian corn	2,880,000	Silk	70,000
Maize	281,900	Currants	60,000,000
Oats & other kinds of cereal	1,258,000	Valonia	14,000
		Wool	1,500,000
Total	8,262,500	Total	79,384,000

Persons Employed in Agriculture.

Proprietors	52,500	Other laborers and servants	85,989
Field laborers	111,320		
Shepherds	87,669		

2.—Statistics of Silk.

	Okes.	Drs.	Average price per oke. Drs.
1851	48,282	991,947	= 20·54
1852	66,771	1,969,970	= 29·91
1853	56,770	1,774,063	= 31·25
1854	....	1,858,018	....
1855	70,000	....	....

This proves not only an increase of production, but also an improvement in the quality; for, though the quantity has nearly doubled since 1851, instead of reducing the price, Greek silks are 50 per cent. dearer.

3.—Commercial Navy of Greece.

	Vessels.	Tons.		Vessels.	Tons.
1821	440	61,449	1844	3,414	146,703
1834	2,891	....	1845	3,584	161,103
1835	3,570	....	1848	3,938	205,233
1838	3,269	88,502	1850	4,016	236,201
1839	3,345	89,642	1851	4,337	257,098
1840	3,884	110,690	1852	4,230	247,661
1843	3,469	137,558	1853	4,148	247,991

We have no accounts of 1854; but there is no doubt it will show an increase on 1853, in consequence of the permission of the czar for the Greek flag to enter the Danube.

4.—Population.

1821	675,000	1852	1,002,000
1839	712,000	1853	1,041,000
1848	863,000	1854	1,142,000

5.—Imports and Exports of Greece.

	Exports. Drs.		Imports. Drs.
1851	13,995,195	1851	....
1852	10,402,213	1852	24,982,151
1853	8,988,890	1853	20,209,960
1854	6,799,211	1854	21,270,182

The minister of finance states that the great decrease in exports for the last three years is owing principally to the failure in the currant crops, the result of the disease in the vine.

Of the 13,995,195 drs. exported in 1851, 8,359,196 drs. were of Corinthian currants alone. In 1852 the export of currants were 2,844,058 drs. only, or nearly 6,000,000 less than 1851; in 1853 there is no account of the currants exported inserted; and in 1854 only the small amount of 9046 drs. are included in the amount of 6,799,211 drs.

Countries Trading with Greece.

Countries.	Imports. Drs.	Exports. Drs.
England	5,670,863	7,020,174
America	142,132	135,478
Austria	4,810,124	2,950,235
France	1,812,482	447,350
Turkey	8,055,809	1,266,960
Russia	819,497	300,935
Italy	455,141	365,538
Egypt and Candia	674,922	119,781
Ionian Isles	1,375,000	940,234
Other countries	2,492,170	304,567
Value in drachmas	25,807,090	13,851,202

It will be seen from this exhibit, that England has the largest commerce with Greece of the countries enumerated. Turkey, however, ranking first in amount of imports.

The commercial relations of the United States with Greece are regulated by treaty of December 10, 1837. This treaty is based upon principles of entire reciprocity in navigation and commerce between the two countries. Its principal stipulations are, that the vessels of each nation, whether laden or in ballast, from whatever place they come, shall be treated, in the ports of the other, on their entrance, during their stay, and at their departure, upon the same footing as national vessels coming from the same place, with respect to the duties of tonnage, light-houses, pilotage, and port charges, as well as to the perquisites of public officers, and all other duties or charges levied in the name or to the profit of the government, the local authorities, or of any private establishment whatever. Whatever merchandise may be lawfully imported into either nation by its own vessels, may also be imported in the vessels of the other, from whatever place they

may come, without paying other or higher duties or charges, of whatever kind or denomination, levied in the name or to the profit of the government, the local authorities, etc., than when imported in national vessels. Similar equality is stipulated with respect to exports. No prohibitions to be established in either nation upon the products of the soil or industry of the other, unless such prohibitions shall also apply to similar products, the growth of any other country. All privileges of transit, and all bounties and drawbacks allowed in either nation, shall immediately become common to the other.

Duties in each country, on cargoes imported in vessels of the other, shall be charged only on such portions thereof as may be landed, and erased from the manifest of the importing vessel; but all duties, imposts, or charges whatsoever, which are or may become chargeable upon the vessels themselves, must be paid at the first port where they shall break bulk, or unlade part of their cargoes. It is also stipulated that the vessels of each nation arriving in the ports of the other, provided with a bill of health, granted by an officer having competent power to that effect, at the port whence such vessels shall have sailed, shall be subjected to no other quarantine than such as may be necessary for the visit of the health-officer of the port where such vessels shall arrive; after which, said vessels shall be allowed immediately to enter and unload their cargoes, subject only to such casualties as may have occurred during the voyage. The other stipulations relate to consular privileges, etc. The treaty to continue in force 10 years, with the usual stipulation respecting its duration after that period.

Notwithstanding the liberal stipulations of the treaty, of which the preceding is a summary, the trade between the United States and Greece is very inconsiderable—few American vessels ever making the direct voyage to any port in that country. At the principal port of Greece (Piræus), no American vessel entered from the commencement of 1851 to the close of 1853. During the year first named, there entered that port from all countries, 355 vessels, measuring 42,159 tons; and there cleared 254 vessels, aggregating 30,148 tons; making a total of 609 vessels, with an aggregate of 72,307 tons. These vessels were mostly under the Greek, Turkish, English, or French flags—the latter two numbering, together, only 42 vessels entered and cleared. During the same year, 120 Austrian steam-vessels measuring an aggregate tonnage of 27,000 tons, entered the port of Piræus, viz., 72 from Trieste, and 48 from Turkey.

The value of imports at the port of Piræus in 1851 was $924,420; that of exports a little over $80,000. In 1852 there entered 822 vessels, measuring 41,166 tons; and cleared, 287 vessels, of 45,008 tons; making a total of 609 vessels, with an aggregate tonnage of 89,174 tons. These vessels were under the Greek, Turkish, English, or French flags, ranking in number in the order, respectively, to which they are named.

The imports of all kinds into Piræus in 1851 were $924,420, and in the year 1852, $757,020; showing a decrease in 1852 of $167,400.

The imports into Greece through this port, are, grains, sugar, coffee, yarn of cotton and wool, silks, iron and other metals, timber, cod and other salted fish, wines and spirits, paper, etc.

The countries usually participating in the foreign trade of the port of Piræus, are—

Turkey (imports from, in 1852)			$268,956
Austria	"	"	170,748
France	"	"	106,904
England	"	"	89,094
Tuscany	"	"	19,716
Other places	"	"	101 602
Total imports as shown above			$757,020

Though Austria holds but the second rank in the above table, she usually enjoys the largest share of the foreign commerce of this port. An average calculation for a series of 5 or 10 years would give the following result, without much variation:

	Per cent. of the whole.		Per cent. of the whole.
Austria	34·74	England	14 69
Turkey	22·61	Tuscany	7·84
France	19·87	Other countries	10·02

The next port of importance in Greece, after the port of Athens, is Syra. This port is situated among the Cyclades, on the eastern shore of the Grecian archipelago. Its commerce is rapidly increasing, owing, in a great measure, to its being a principal station of the Mediterranean steamers going to and from Constantinople. The imports average annually about $3,500,000, and the exports about $1,500,000. The flags participating in the foreign trade of this port are Greek, English, Austrian, Turkish, and French, in the order, as to rank, in which they are named. The chief articles of import are, cottons, woollens, manufactures of iron, grains, cotton yarn, coffee, timber, sugar, hides and skins, provisions. Exports of domestic produce are inconsiderable, though an extensive trade is carried on in re-exporting to other ports of the archipelago the imports of foreign nations. The number of vessels entering and clearing at this port annually, is about 6775 measuring 379,000 tons. The merchant marine of Greece in 1853, was 4320 vessels, measuring an aggregate of 247,016 tons. Of these there were—

	Vessels.	Tons.
Under 30 tons	2,855	19,696
30 tons and over, of which 550 were from 200 to 500 tons	1,375	227,965
Total as above	4,230	247,661

Port Charges.—In the ports of Syra, Nauplia, Piræus, Marathonensis, Pylos, Calamatu, Navarino, and Patras—

On vessels under 5 tons		Free.
" of 20 "	9 liptas	=1½ cents.
" above 20 "	12 "	=2 "
In the other ports: on vessels under 5 tons		Free.
" of 20 "	6 liptas	=1 cents.
" above 20 "	9 "	=1½ "
Permit of departure: On vessels of 5—20 tons	50 liptas	= 8½ cents.
" 21—50 "	1 drachma	=16⅔ "
" 51—100 "	2 "	=33⅓ "

For all other charges, port regulations, etc., see Consular Return, "Athens, Greece, February 6th, 1855."—*Com. Relations, U. S.*

The average price at which currants are sold is $122 50 per 1000 pounds; and the average returns, or rather gross receipts, are annually about $700,000. The exportation of olive-oil is another leading source of revenue to the Ionian Islands. The following summary gives a fair average exhibit of exports annually:

	Export 1855.	In stores.	Local consumption.	Total.
	Barrels.	Barrels.	Barrels.	Barrels.
Zante	4,311	62,189	3,500	70,000
Corfu	8,000	188,100	3,000	200,000
Santa Maura, Ithaca, Cephalonia, and Paxo	....	....	....	60,000
Total	12,311	250,289	6,500	330,000

The average annual price is $9 50 per barrel, which would raise the amount derived from olive-oil, if the whole amount were sold, to $3,135,000 per annum. Great efforts have been made to promote the cultivation of tobacco in these islands, but with very doubtful success, owing to the want of soil adapted to the plant. Corfu, Cephalonia, and Santa Maura are the only islands on which it can be raised; but the quality is inferior, and even the quantity is so inconsiderable that cargoes of tobacco are regularly imported to supply the consumption of the islands. Among the articles of import, sugar and coffee are those in which American bottoms could, were the navigation dues equal, successfully compete with the European flags. In 1855

Holland alone imported 900 tons of sugar into the islands. The coffee is usually imported direct from Brazil. In 1855 the quantity imported reached 1,200,000 pounds.

The usual exports of the United States, which reach the Ionian republic, are coffee, rosin, segars, tobacco, and manufactured articles, such as furniture, cottons, etc., the annual value of which can not be accurately ascertained. In 1852, the value of coffee, rosin, segars, and furniture, exported from the United States to one of the Ionian ports (Zante), was $5,499 32, on which the Ionian treasury received, in duties, $766 84.

The exports from the same port to the United States were:

	Lbs.	Value.	Export duty.
1851..Currants.....	870,412	$22,196	$3,903
1852.. "	471,746	16,076	2,721

Under a system of commercial equality with privileged nations, the United States' flag could successfully compete with the flags of all other nations in the importation of wheat, flour, Indian corn, rice, sea-bread, salted meat, and salted fish, tobacco, sugar, coffee, and timber. As regards the quantities of these staples, respectively, which might find a market in the Ionian p..s, there are no data accessible upon which to base any calculation. These staples, however, are always in demand in the different ports of the Ionian republic; and an approximate estimate as to the quantities which might, with safety, be annually exported from the United States to these markets may be formed from an official return from one port (Zante), in the possession of the Department. This return gives the aggregate value of these staples annually consumed in that consular district at $1,539,528. Wheat, Indian corn, cured fish, coffee, rice, and timber occupy the first rank in these staples.

In 1853, there entered at the different ports of the Ionian Isles 1380 vessels, measuring, in the aggregate, 153,552 tons; and cleared 1383 vessels, with an aggregate of 152,768 tons; making a total movement of 2763 vessels, and 306,320 tons. An analysis of the trade in 1853, as compared with that of the preceding year, will show a decrease of, entered, 160 vessels, measuring an aggregate of 25,979 tons; and of cleared, 101 vessels, with an aggregate of 22,750 tons. The number of vessels under the British, Austrian, and Greek flags diminished; the latter showing the greatest diminution.

The value of imports in 1853 was as follows:

	Francs.
For consumption.....	17,073,580
Warehoused.....	6,292,620
Total.....	23,366,200

Value of exports:

	Francs.
Domestic products.....	8,316,330
Foreign "	7,365,970
Total.....	15,682,300

Compared with the trade of 1852, the imports of this year show an increase of 3,777,900 francs, and the exports an increase of 5,286,600 francs; or a total increase of 9,064,500 francs. Of this increase, cereals, sugars, and tissues of cotton and wool, all from England, bore the principal part. In exports, the increase fell almost exclusively on olive-oil and currants, if we except 1,695,300 francs, the value of various kinds of tissues re-exported from the different ports of the islands. The value of soap and wine, also products of the islands, show an increase of 356,000 francs. In remarking upon the chief products of the Ionian Islands, it is stated, in reference to the soap manufactured at Zante and Corfu, that, for some time past, they have used in its preparation a kind of chalk imported from England in the vessels of that kingdom. The use of this earth in the manufacture of soap deteriorates its quality, and will result, unquestionably, in throwing it altogether out of the foreign market. The trade of 1854 gives the total number of vessels entered and cleared at 2,778, measuring an aggregate of 309,387 tons. Compared with 1853, these figures show an increase of, entered and cleared, 15 vessels, with an aggregate increase of 3,067 tons. These all entered, with the exception of 1 vessel of 1,781 tons.

In 1854, the value of trade was:

	Francs.
Imports.—For consumption.....	19,528,000
Warehoused.....	9,306,900
Total.....	28,834,900
Exports.—Domestic products.....	9,339,175
Foreign "	8,529,225
Total.....	17,868,400

The total trade of 1854 was thus 46,703,300 francs. In comparing this with the figures for 1853, an increase is shown in imports of 5,471,700 francs, and of exports, 2,186,100 francs; making a total increase of 7,657,800 francs. In imports, about three fifths of the increase in value fell upon grains, though in quantity there was a decrease of 35,000 hectolitres* compared with 1853. This was occasioned by the high price of grain of all sorts. The remaining two fifths of the increase fell upon cattle, coffee, sugar, tissues of cotton, and miscellaneous articles. The nations that supplied the islands in 1854 were, chiefly, England, Germany, Greece, Turkey, and Russia. France sent crystals, hides, sugar, tissues, wines, and sundries, to an amount, in value, of about 2,000,000 francs. The sugars were shipped from the refineries of Marseilles, and were borne under the Greek flag to Corfu. In exports, olive-oil, soap, wine, and some other secondary products of the soil and industry of the islands, were the chief articles which exhibited an increase over the returns of 1853. Notwithstanding the bad yield of currants in 1854, over 6,000 hectolitres of wine were exported to Trieste, Venice, and Malta. See IONIAN ISLANDS.

The value of the commerce of Great Britain with these islands is thus given:

	Francs. 1853.	Francs. 1854.
Imports.....	2,896,000	2,581,000
Exports, British.....	2,914,000	3,224,000
" foreign & colonial.	669,000	417,000
Total.....	6,479,000	6,202,000

The reader is referred to the subject TURKEY for the comparative statement of the commerce of the United States with Turkey, Levant, etc., exhibiting the value of exports to and imports from each country, and the tonnage of American and foreign vessels arriving from and departing to each country, during the period from 1821 to 1856; and embracing, in the aggregate, all returns given in the Treasury reports for the years designated under the various heads, in different years, of Turkey; Turkey, Levant, etc.; Turkey, Levant, and Egypt; Turkey in Europe and Turkey in Asia; and also of Egypt, Greece, Ionian Islands, and Ionian republic. The reader is also referred to the article TURKEY for an account of the consular relations of the United States with countries on the Mediterranean. See also CONSULS and UNITED STATES.

Green Bay, a large arm or bay on the west side of Lake Michigan, forming a part of the boundary between Wisconsin and the upper peninsula of Michigan. It is above 100 miles long, and from 15 to 35 broad. The epithet "Green" has been applied to it on account of the color of the water, which is said to exceed 500 feet in depth. At the head of the bay, on the right bank of the Neenah, or Fox River, is a thriving town of the same name. The bay and river afford a perfectly secure harbor, and the largest steamers of Lake Michigan stop here, making it the principal place of deposit and transit for the imports and exports of northern Wisconsin. Population (1853) about 2500.

* Each about 2¾ bushels.

Greenland, or **Groenland**, a very large island, or, probably, assemblage of islands, lying to the north-east of North America, and for the most part comprehended within the Arctic Circle. In early times it was supposed to form a part of the American continent; but the discoveries of modern navigators have proved, what indeed the very idea of a north-west passage from the Atlantic to the Pacific Ocean supposed, its insularity. And the latest discoveries have, moreover, shown, or all but proved, the entire separation of the lands on the west side of Baffin's Bay, or rather, what we would now venture to designate *Baffin's Sea*, from those of the opposite shores, so as to limit Greenland to the country on the eastern side of that great channel. From Cape Farewell, in lat. 59° 49′ N., it stretches on the west side in a north-north-westerly direction through Smith's Sound, and then more easterly into a high northern latitude. On the other side, the Greenland coast runs first north-north-easterly, then north-easterly, and finally (so far as yet traced), in a northerly direction, bending eastward in the 75th and 76th parallels of latitude. It expands from Cape Farewell, the southern point, up to latitude 70°, where it attains a width of about 600 miles, which is pretty evenly maintained to the northern extent of our researches on the eastern side. This side of Greenland has been denominated East or Old Greenland, the other West Greenland.

In general, the discoveries which have been effected in this quarter of the globe have resulted from attempts made to discover a north-west passage to India through the Arctic Sea. The existence of such a communication is a subject which from time to time has occupied the attention of the British government for the last three centuries; and although much valuable information had been obtained by means of these voyages, the great problem remained unsolved until the very recent researches after the fate of the lamented voyager Sir John Franklin, when Captain M'Clure, in his researches, *viâ* Behring's Strait, eastward, determined the fact of a sea communication between the Pacific and Atlantic Oceans. This he effected by sailing till within sight of Captain Parry's discoveries at Melville Island, and thence completing the personal transit by ice-traveling and voyaging to the shores whence he had departed. But beyond the determination of the geographical fact, it was found, as had been confidently predicted, that no practical use could be made of a channel so thickly encumbered with impenetrable, or all but impenetrable, ices.

Greenland was first discovered by an Icelander named Gunbiörn, who was driven by storm upon this coast, about the beginning of the 10th century, and carried back intelligence of its existence to Iceland. Toward the end of the same century—according to some writers in 983—an Icelandic chief named Eric Raude, or Eric the Red, having killed another powerful chief, and being obliged to quit the country, determined to follow up Gunbiörn's discovery. After having spent two or three years in exploring the country, he returned to Iceland, giving an exaggerated account of the freshness and verdure of the country, which he called Greenland. In consequence of this, a fleet of 25 sail was equipped and sent out, laden with persons of both sexes, cattle, and other necessaries for forming a settlement. Only about the half of the vessels reached their destination; but other adventurers setting out, not only from Iceland, but from Norway, the Orkneys, and other islands, in a few years a considerable colony was formed, and a regular trade established. The real position of these early adventures has been a subject of much learned investigation and no little controversy. But it seems highly probable that the original colony of Greenland began about the southern promontory, near Cape Farewell, and gradually extended itself along the coast in a north-westerly direction. Beyond this first settlement another proceeded farther to the west. The former was called *Œstre Bygd*, or the eastern settlement, and the latter *Vestre Bygd*, or the western settlement. Christianity having been introduced about the beginning of the 11th century, numerous churches and convents were built, and the country was divided into regular parishes, to which monks and other spiritual instructors were attached. The colonists, although compelled to lead a life of severe privation and hardship, continued to increase, and to extend to the north. The zeal with which the early Scandinavians pushed their settlements to the northernmost parts of Greenland is strikingly attested by a curious monument which was discovered in 1824. It consists of a stone carved with Runic characters, which was found standing erect in the ground on the island of Kingiktorsoak, under the parallel of 73°.

For some centuries the commercial intercourse between Greenland and Norway was kept up; but about the beginning of the 15th century all intercourse ceased, and the unfortunate colonists were cut off from the rest of mankind. The Esquimaux, the natives of the country, whom in derision the Norwegians called Scrœllings, or Dwarfs, on account of their diminutive stature, attacked the western colony, which was compelled to seek assistance from that which lay to the south-east. There can be little doubt that the scanty population was reduced by these savage invaders; but it was more effectually thinned by that dreadful pestilence called the *black death*, which desolated Europe from the year 1402 to 1404, and which extended its ravages even to Greenland. Those who escaped the plague probably soon fell victims to the Esquimaux; at least, nothing is known of them after the commencement of the 15th century. The terms eastern and western being used in reference to the original settlements, naturally led to the belief that the eastern as well as the western side of Greenland had been colonized; and a notion very generally prevailed for a long time that the western settlement only had perished, the eastern one having escaped the calamity, but, from the vast accumulation of ice, had been secluded from all communication with the rest of the world. During the last century the court of Denmark repeatedly dispatched ships to ascertain if any settlers still remained on that part of the coast which is now called East or Old Greenland, but without success. A more recent boating expedition in 1829-30, under Captain W. A. Graah, of the Danish Royal Navy, has, however, in extent of research on the eastern side of Cape Farewell, yielded by far the most satisfactory information. He examined the coast as far north as 65° 45′, but found nothing to indicate that this coast had ever been colonized; and we are thus led to the conclusion that the notion of any of the Norwegians having settled on the eastern shores must be a mistake; a mistake arising from a misapprehension of the words *east* and *west*. In 1721 Hans Egede, a clergyman from Vangen, in Norway, accompanied by his wife and family, left his native country to settle as a missionary in Greenland. He landed at Baals river in N. lat. 64°, and called the place Godthaab, or Good Hope. Since that time the Danes have established numerous settlements upon the western coast of Greenland, lying between 60° and 73′ N. lat. The whale fisheries have greatly contributed to the advancement of the colonies; and from the intimate intercourse which is now kept up with Europeans, their condition is at present more flourishing than at any former period. The seal fishery is also of great importance to Greenland—the flesh of the seal forming their common food; and from their skin is made their boats and clothing. See articles FISHERIES and SEALS.

There are, at present, 13 Danish colonies in Greenland, besides some smaller establishments termed factories. For administrative purposes, they are formed into two inspectorships, called respectively North and

South Greenland. South Greenland lies south of N. lat. 67°, and comprises six colonies as follows:

Colonies.	Founded.	Pop. 1845.	Of whom Danes.
Julianehaab, or Juliana's Hope	1775	2,896	41
Frederickshaab, or Frederic's Hope	1749	650	10
Fiskenæsset, or Fish Point	1754	485	20
Godthaab, or Good Hope	1721	801	25
Lukkertoppen	1775	640	18
Holstenborg	1759	744	10
Total		5,656	124

Julianehaab is the most southern as well as the most important of these. Its district extends to the most southern point of Greenland, Statenhuk, and beyond it for some distance along the east side. At Fiskenæsset the Danes carry on an extensive seal fishery by means of nets, etc. In its vicinity is the Moravian station of Lichtensels, founded in 1758. Godthaab is the residence of the inspector of South Greenland; and in the vicinity is the Moravian settlement of New Herrnhut. Lukkertoppen takes its name from three pointed hills in the vicinity, resembling sugar loaves, and has one of the best and safest harbors in the country. North Greenland lies north of N. lat. 67°, and comprises seven colonies as follows:

Colonies.	Founded.	Pop. 1845.	Of whom Danes.
Egedesminde, or Egede's Memory	1759	767	15
Christianshaab, or Christian's Hope	1734	420	14
Jacobshavn, or Jacob's Haven	1741	975	14
Rittenbenk	1725	495	11
Godhavn, or Good Haven	..	249	17
Omenak	1758	528	21
Upernivik	..	405	18
Total		3,079	110

Egedesminde, in Disco Bay, was founded by Captain Egede, and named in memory of his father, Hans Egede. It comprises a number of large and small islands, but the proper settlement is on the island of Ansiet. Between this and Fox Island (Rævoe) there is a very secure harbor. A great many seals are caught here, especially in nets; but the collecting of eider-down forms the most important branch of industry. Godhaven, or Good Haven, in the southern extremity of the island of Disco, N. lat. 69° 12′, is the seat of the inspector of North Greenland, and has a coal mine, which supplies the other settlements on Disco Bay with that article. Omenak is noted for its extensive seal fishery, which is carried on by the Greenlanders in their kaljaks or small boats, and upon the ice, and by the Danes with nets which are let down the openings between the ice. There are here coal mines which supply the colony. Upernivik is the most northern of these colonies, being in about N. lat. 73°, and though of recent formation, it is already one of the most important in North Greenland. The population of Greenland on the 31st of December, 1845, amounted to 8,735, being 8,501 natives, and 234 Danes; and in 1851, is given at 9,400, of whom 250 were Danes. This includes only those subject to the Danish crown; of those that may be scattered over the country, no conjecture can be formed.

We shall now give a brief outline of the discovery of the various sections of the coasts of Greenland, with occasional references to researches about proximate lands with which those on Greenland were more or less mixed up. This will lead us again to notice the enterprises of the 16th century in search of a passage by the north-west from the Atlantic into the Pacific Ocean.

During the reign of Queen Elizabeth, Frobisher, a distinguished English navigator, made several voyages to this quarter of the globe. In 1577 he discovered the straits which have been called after him. In the year 1585, Davis, another able seaman, came in sight of high land, which he called Mount Raleigh, supposed to lie somewhere on the west of the straits bearing the discoverer's name. In 1610 Hudson discovered the straits and the bay which are called after him, in which he experienced a disastrous termination to his useful career. To certain rocky islands lying about the 64th parallel, he gave the name of Isles of God's Mercy. He also discovered two capes, one of which was called Digge's Cape, and the other Willoughby Cape. In 1616 Baffin, one of the most distinguished of our English navigators, discovered the large expanse northward of the Strait of Davis, now known as Baffin's Bay. Sailing in a little vessel of only about 55 tons' burthen, he effected one of the most extraordinary voyages on record. Under the imperfect appliances of the age for navigation, Baffin, with one small vessel, circumnavigated to Smith's Sound, on the north of that bay or sea which, northward of "Hope Sanderson, the furthest land Master Davis reached, lying between 72 and 73 degrees," was an utterly unknown region; thus adding some 1,100 miles of discoveries, reckoned by the mere coasting-line, to the knowledge of these ice-encumbered shores. His exploration northward reached, it would appear from the brief but graphically-told story of his voyage, as given among the *Pilgrimages* of Purchas, as high as about 77° 47′ of latitude, where he obtained a clear view into Sir Thomas Smith's Sound, which he describes as running "to the north of 78°, and being the greatest and largest in all the bay."

For 200 years from the time of Baffin, the knowledge of this great inlet (excepting some limited and unpublished information obtained by occasional enterprises of the whalers) had not been advanced. In the year 1818, however, in consequence of information, we believe, communicated by Captain Scoresby to Sir Joseph Banks, the admiralty fitted out two expeditions; one of which, under the command of Captain Ross, was destined for the discovery of the north-west passage; and the other, at the head of which was Captain Buchan, had for its object to attempt a voyage across the pole. On the western side of Greenland, the first-named navigator discovered a high mountainous region to the north of Upernivik, to which, from national predilections, he gave the name of the Arctic Highlands. It is little else than a mass of rocks, interminglied with immense blocks of ice. He then proceeded toward the northern extremity of Baffin's Bay, which he explored as far as the ice would permit, looking from a distance into Smith's Sound. He surveyed the coast generally, ascertained the positions and the appearance of the land, the situation of the islands, and the general configuration of the great inlet, from the 78th down to the 65th parallel. The discoveries of Baffin, which some had disputed, were thus signally confirmed; for while the form of the bay, as given mainly from conjectural applications of Baffin's descriptions, was found to be thoroughly erroneous, the several deep inlets and other remarkable features of the coast-line, as noted by this admirable voyager, were not only easily recognized, but the latitudes and more striking particularities were found to be characteristically correct.

But the limited period of a mere summer's voyage having left several points in Ross's course defective and inconclusive, especially as to the supposed closing up of Lancaster Sound by continuous land, another expedition was sent out the year following under Captain Parry, who succeeded not only in passing through this famous inlet of Baffin, but in discovering a navigable channel among islands extending far westward, which was successfully pursued for about 30 degrees of longitude beyond Ross's furthest. But as these researches, with the general body of the discoveries since then made, fall beyond the limits of our present article, we must refer, for an abstract of them, to the general account of the Arctic Ocean. The chief additions to our knowledge of western Greenland which remain to be noticed, consist of certain correc-

tions of the coast-line incidentally made by the westerly exploring expeditions, and more accurate information of Smith's Sound and the coasts immediately beyond, resulting from Captain Inglefield's voyage in the summer of 1852, and from the very successful and interesting American exploration, still further north, under Dr. Kane, in 1853–5.

Captain Inglefield, in the *Isabel*, fitted out by Lady Franklin, having the advantage of an auxiliary steam power, made an advance northward of Baffin's furthest of about 50 miles, reaching within Smith's Sound to 78° 28′ N. lat., and obtaining the view of a sea expanding again considerably beyond.

The exploration of this new expanse into the main Arctic Ocean (with which the Greenland Sea in the east, and Behring's Strait in the west, communicated), by the second American search-expedition under Dr. Kane, completes our sketch of the progress of discovery on the western side of Greenland. This hardy and intelligent adventurer, in a little solitary vessel, the brig *Advance*, pushed his way through Smith's Sound in the month of August, 1853, and crawled along shore within a cram of dangerous ices which all but filled the passage, to a position higher in latitude (about 78° 40′) than had ever before been taken as a wintering station in these western regions by Europeans. In this position the brig was frozen in, early in September, and so remained throughout the succeeding summer, and with so little prospect of release as to occasion her abandonment, after a protracted adherence to her of above 20 months.

From this high position in latitude, explorations (furthered for a time by the effective aid of their Esquimaux dogs) were perseveringly made, and rewarded by results of the most interesting nature in geography, hydrography, and *glaciology*. The coast of Greenland, forming the *eastern* boundary of Smith's Sound, was traced northerly and easterly, until the exploration was diverted by a stupendous glacier of a vast extent, with a precipitous face about 500 feet in height abutting the sea. The geographical discoveries were pushed still further toward the pole, and new lands as high in latitude as 82° 30′ added to our charts. The lands on the two sides of this channel were found to be connected by apparently perpetual ices, having, at the time of the examination, an open sea beyond entirely free from visible encumbrance, whose waves were dashing with sublime action and force against the face of the icy barrier. Here an area of about 3000 square miles was seen entirely free from ice, the commencement and margin, as has been inferred, of an open *unfreezing* polar sea. On this question, however, which comes in more fitly for discussion in our article on the Polar Regions, we here only remark, cautionarily, against a premature conclusion, that Captain Scoresby, in his account of the arctic regions, describes an open sea, which he himself once observed and navigated, to the northward of Spitzbergen, running about E.N.E. and W. S.W. for 360 miles within the latitudes of 80° and 81° 30′, and having an area of from 15,000 to 20,000 square miles, or from five to six times the extent of that traced by Dr. Kane; yet this apparently open polar ocean was found to be but a mid-glacial sea! Besides, the extreme lowness of the temperature in Dr. Kane's case—being the lowest, in the mean, ever observed on the face of the globe—afforded sufficient evidence that there could be no such sea remaining open to the pole, beyond an incidental lake.

It does not come within the scope of our present article to dwell on the particular facts, and incidents, and processes of this admirable research by Dr. Kane, except to notice the falling in with Esquimaux living in a region further north than any they had before met with. Agreeing, as these natives in their general characteristics do, with other Greenlanders, they were found to have incidental peculiarities in their habits and modes of living. They employ dog-sledges of great efficiency and speed, but have no boats or kaijaks. They surround themselves in *winter* with walls of moss, and, at that season, live mainly upon raw walrus flesh—habits of life which, for the season, Dr. Kane and his party found it expedient, and, after a little experience, not unpleasant, to imitate and adopt. Under this new dietary education, raw walrus flesh soon became palatable; and even tallow candles, when they could be *spared* for such a purpose, were pronounced by the chief of the expedition to be very good! Useful and friendly as these natives were in their intercourse with Dr. Kane and his party, they unfortunately possessed the infirmity (shall we call it?) too characteristic of the Esquimaux, of an insatiable habit of self-appropriation—stealing unscrupulously whatever they could manage to secrete, equally regardless of the damage to the owners, or of any possible use of the articles to themselves.

We may add that Dr. Kane, in the *Advance*, started on his expedition from New York on the 31st May, 1853, having along with him, in crew and associates, seventeen men. Three of this number, the cook, the carpenter, and a seaman, died in the arctic regions, and the remainder returned safe to port on the 11th of October, 1855. The party left their vessel still fast in the ice on the 20th of May, and traveled over the ice to the navigable waters of Baffin's Sea, whence by means of their boats they proceeded to the settlement of Upernivik. They there took passage in a Danish trader; and when, in the progress southward, they reached Lievely, in Disco Island, they met with the expedition of Lieutenat H. J. Hartstein, which had been sent out by Congress in search of them.

As to the *eastern side* of Greenland, all our *accurate* knowledge, except a few particulars referring to the coast near Cape Farewell, is of recent attainment. A coast-line, indeed, of the more southern parallels was to be found in our charts of the arctic regions, and in maps by Egede and Crantz, traced to a considerable extent, with an elaborateness of flexure that would indicate real and careful examination; but subsequent researches have by no means verified the supposed configurations.

Northward of the 70th parallel of latitude, all the geographical information we had of that coast previous to the voyage of Captain Scoresby (now the Rev. Dr. Scoresby) in 1822, consisted of the not very definite notification of certain points of land discovered by the adventurous Hudson in 1607, with a few touches on the coast, and notices of land being seen by whalers, chiefly Dutch, in 1654, 1665, and 1670. In 1822, however, Captain Scoresby, while engaged in the Greenland whale fishery, and successfully pursuing the commercial object of his voyage, penetrated the ice westward, as he had previously provided for attempting, to the coast of eastern Greenland. But the position of the coast, and its line of direction, were found to be widely different from those ascribed to them in the charts, whether English or Dutch; for the real place of the land in latitude 74° was found to be from 8° to 15° of longitude further west, and the line of direction from 69° to 74° 30′ N. by E., instead of N.E., or E.N.E., as formerly laid down.

The first land seen by Captain Scoresby, stretching from N.W. by N. to N., extended to about 74° 30′ N., the nearest headland being estimated at 50 miles' distance. This was on the 7th of June, and so early in the season as to prevent any near approach to the coast, from the intervention of a chain of heavy field ice northward of 73°. But after tracing a proximate outline of the more northern part of the coast, Captain Scoresby was gradually enabled to approach the shore as, with the advance of the season, he proceeded southward; and, in the course of the exploration, succeeded in landing on four or five different positions between the 70th and 73d parallels. The coast from 74° 30′ to 69° 10′ was generally surveyed, and names were given to the more particular headlands, islands, and inlets.

Two very remarkable inlets were observed and partially examined, one in latitude 72°, which was named *Davy's Sound*, and the other in 70° 15′, which received the name of *Scoresby's Sound*, on account of the first examination of it ever known to have been made having just been accomplished by the navigator's father. In this way, single-handed and without cost to the country, some 600 miles of new coast line (reckoning its various flexures and inlets) were added to our Greenland charts; and much novel information on the geography, hydrography, and natural history of those regions was communicated to the public in the *Journal of the Voyage*, which appeared in the succeeding spring. One circumstance of geographical interest it may be proper more particularly to notice, viz., the conviction conveyed to the mind of Captain Scoresby by his observations on the current setting into Davy's Sound and Scoresby's Sound, that these fine expanses of water, which, in certain westerly directions, were clear of ice or land to the utmost extent of vision, were actual channels of communication between the Sea of Greenland on the east, and that of Baffin's on the west. Hence the great probability of the supposition already noticed, that Greenland consists of an *assemblage* of islands.

In the year 1823, Captain Clavering, in command of the *Griper* sloop-of-war, under admiralty orders for pendulum experiments, advanced on the same coast as that first approached by Captain Scoresby; and, being about a month later in the season, was enabled to get close in shore, and to enter a considerable bay in lat. 74°, supposed to be that originally discovered by Gael Hamkes, a Dutch navigator, in 1654. The line of the more northerly part of the coast, as laid down by Scoresby, was now corrected, and new coast lines, including Shannon Island, with dottings of headlands reaching from 74° 30′ to 76°, added to our charts. Southward of Gael Hamkes's Bay the coast was traced pretty close along to Cape Parry of Scoresby, and then finally left. The general configuration of the coast, excepting some 10 or 15 leagues in the furthest north, seen by Captain Scoresby only in the distant horizon, was singularly verified by Captain Clavering's inshore researches. For though the first explorer was not able to approach the land between 73° 30′ and 74° 30′ N., nearer than from 40 to 45 geographical miles, the positions ascribed by the two navigators to the headlands of Gael Hamkes's Bay, and other leading points (with Jackson's Island, which had been first laid down at about 30 miles' distance), proved to be all but identical.

This coast presents many remarkable and interesting features. On the Liverpool coast of Scoresby there is a mountainous chain of 3000 to 4000 feet in height, forming precipitous cliffs, which terminate in numerous peaks, cones, pyramids, or series of perpendicular serrated points. In the interior were seen peaks supposed to be almost twice the elevation of the lofty coast. The coal formation of Jameson's Island, in Scoresby's Sound, was among the most interesting of the geographical particulars observed.

The final researches, which terminate our description of the eastern coast of Greenland, were those made by Captain Graah in the years 1829 and 1830, by order of the king of Denmark. The leading object was to search for the lost colonies, and trace the coast, if practicable, in boats, from Cape Farewell up to latitude 69° N., the southernmost point discovered by Captain Scoresby. The expedition consisted of two *women's boats* of the country, rowed by women, carrying the Danes of the party (Captain Graah and three others), and attended by five men in their kaijaks. From the southern island, Cape Farewell, up to latitude 65°, the coast was found to trend about N.N.E.; and from thence, for 60 to 80 miles (as far as they were able to trace it), the line was about N.E. The highest point on Captain Grash's chart extends to 65° 45′, leaving the interval of about 340 miles (in a northeasterly direction) yet uncertified and unknown. The pressing of the ice in close contact upon the land prevented the further navigation of these eastern shores.

Greenock, a sea-port town of Renfrewshire, Scotland, on the south bank of the Firth of Clyde, 22 miles below Glasgow, in N. lat. 55° 57′ 2″, W. long. 4° 45′ 30″. In front of the town there is a fine and extensive bay, formerly known by the name of the Bay of St. Lawrence, from a religious house that anciently stood there. Behind the town the land rises into a picturesque ridge of hills, about 800 feet high, between which and the bay Greenock stretches for upward of 2½ miles along the shore, but its breadth is inconsiderable. Its name is supposed to be derived from the compound Gaelic word *Grianaig- -Grian* signifying sun, and *Aig* port or bay—the bay being directly opposite to the rising sun.

Various acts of Parliament having reference to successive enlargements and alterations of the harbors were from time to time procured, as the increase of trade rendered such necessary, so that now of the original erections scarcely a vestige remains. In 1785 a dry dock was built in the western division of the old harbor, the expense of which was defrayed by subscription; and in 1818 the magistrates and council contracted for and built another, and greatly larger, entering from what is now known as the East India Harbor, and which was finished in 1824 at an expense of £20,000. On the 29th day of May, 1805, was laid the foundation-stone of the East India Harbor; and almost cotemporaneously with this large addition to the dock accommodation of Greenock, a general improvement and renovation of the quays and breasts of the older portions of the harbor were undertaken. These works, which were very extensive, and involved an expenditure of upward of £120,000, were not completed till September, 1819.

The steadily increasing trade of the port rendered a further extension of dock accommodation absolutely necessary; and in 1810 an act was procured for the construction of an entirely new harbor and dock. Six years subsequently the work was commenced on a site directly east of the East India Harbor, and on the 17th October, 1850, the new dock was formally opened under the designation of Victoria Harbor. It consists of a tidal basin, covering an area of about 6 acres, and exceeding 30 feet in depth. The east and west walls are each 563 feet long; and the outer quay wall, divided by the entrance, 150 feet wide, is 176 feet long on the west, and 60 on the east side. The average width of the quays on the east, west, and south, is upward of 85 feet, and on the north, toward the river, it is 70. The depth of water within the basin is 26 feet at high tide, and 14 feet at low water. The whole work, which is of the most substantial character, cost upward of £120,000; and, as a tidal harbor, has not, in respect of its size and depth, its equal in the world. On the east side a massive crane, capable of lifting from 70 to 80 tons, has been erected; and here many of those gigantic steam vessels, for which the Clyde has become universally famous, are fitted with their engines. A crane has also been erected at the East India Harbor capable of lifting 40 tons.

The old graving docks having become altogether inadequate, the harbor trustees have recently purchased, for upward of £30,000, several acres of ground adjoining Albert Quay, and here it is in contemplation to construct a new harbor, with the requisite dock accommodation for repairing the largest vessels. The following measurements show the extent of the existing dock and quay accommodation:

Albert quay and slip	906	lineal feet.	
West harbor and quays	3,940	feet, girthed	
Entrance to harbor	130	"	wide.
Custom-house quay	980	"	"
East Iodia harbor and quays	3,200	"	girthed
Entrance to harbor	170	"	wide.
Victoria harbor and quays	2,200	"	girthed.
Entrance to harbor	150	"	wide.

The earliest trade seems to have been in herrings, and it is still continued, the amount cured annually averaging about 19,000 barrels. Trading in tobacco was also carried on at a very early period. It was first brought from the colonies, and then exported to the continent. The Greenland whale-fishing commenced as far back as 1752, but it never rose to be of any importance, and is now discontinued. The American war greatly interrupted the progress of Greenock, as the principal trade of the port was then with that country; but after the peace in 1783 it speedily revived, and within the seven following years the shipping trade was tripled in amount. At present the principal intercourse is with the East and West Indies, Australia, and North America. Newfoundland and South America have also employed a considerable quantity of shipping. The gradual increase of trade is shown by the following tables:

Account of the Gross Receipt of Customs at the Port of Greenock during 1728, and various subsequent Years.

1728	£15,231	1839	£815,064
1770	57,836	1846	824,477
1802	211,067	1848	407,093
1822	263,464	1851	410,206
1831	502,008	1852	429,535

The stationary state of the duties of late years is ascribed partly to their reduction, and partly to the improvements effected in the navigation of the Clyde, which enable vessels that formerly had to load and unload here or Port Glasgow, to ascend to Glasgow.

Account of the Number of Registered Vessels belonging to the Port of Greenock during the Years 1825, 1834, 1845, and 1853.

	No.	Tons.
1825	241	29,054
1834	367	40,733
1845	428	82,744
1853	418	78,898

Of these last, 14 vessels, with an aggregate of 2012 tons, were steamers.

Account of the Number and Tonnage of Vessels that entered and cleared from and to Foreign Ports in various Years since 1784.

Years.	Inward.				Outward.			
	British.		Foreign.		British.		Foreign.	
	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.
1784	52	6,569	4	530	63	7,297	3	520
1804	165	30,802	25	5,120	155	31,896	20	5,965
1824	188	46,162	11	3,054	188	46,857	9	2,699
1834	277	69,843	10	2,073	284	71,698	8	2,140
1853	274	94,575	44	13,764	153	55,680	45	11,975

In 1830, 681 vessels, of 67,884 tons, entered, and 796 vessels, of 81,988 tons, cleared coastwise at the port. In 1853, 574 sailing vessels, of 38,328 tons, and 214 steam vessels, of 39,511 tons, entered, and 162 sailing vessels of 8662 tons, and 102 steam vessels of 10,752 tons cleared at the port. The opposition to the monopoly of the East India Company originated with the merchants of Greenock in 1812.—E. B.

Greenwich Hospital, Greenwich, England, is a royal foundation, erected by the munificence of William and Mary (originating, as is generally believed, with the queen), by letters patent of the 25th of October, 1691. The hospital occupies the site of the old palace, called *Greenwich House*, which was from very early times a residence of our sovereigns. Edward III. had a palace there. Henry IV. resided much at Greenwich, and his will is dated from his manor of Greenwich. It was granted by Henry V. to the youngest son of John of Gaunt, and reverted again to the crown on his death (25th Henry VI.). Edward IV. took great delight in the palace, and enlarged it at much cost. He granted it to his queen, Elizabeth. It afterward came into the possession of Henry VII., who enlarged and beautified it, and resided much there. Henry VIII. was at great expense to render the palace worthy of his sumptuous court. He called this his manor of pleasaunce, and held there many great banquets and royal ceremonies. Queen Elizabeth made many additions to the building, and resided much there. James I. laid the foundation of the *House of Delight*, which afterward became the residence of the governor of the hospital. Charles I. resided frequently at the palace; and his queen furnished, with extraordinary magnificence, the building begun by his predecessor. At his death it was taken possession of by the officers of the Commonwealth, who excepted it, for their own use, from the general ordinance passed July 16th, 1649, for the sale of the crown lands; but upon their subsequent necessities for the support of the navy, it was ordered by the House of Commons, November 27th, 1652, to be immediately sold for ready money. Preparations to give effect to this order were made, and some small part of the out-buildings was sold. The palace and park were, however (with other of the royal palaces), assigned by the House of Commons for the accommodation of the Lord Protector, and happily reverted to the crown on the restoration of Charles II., by whom the west wing of the present hospital buildings was added, as part of an extensive design. (Hasted's *History of Kent*.) The palace remained in the unfinished state in which Charles II. left it, when it was assigned by the patent of William and Mary to certain of the great officers of the state, as commissioners for its conversion into a hospital for seamen. This was followed in the succeeding year by a patent, dated September 10th, 1695, which recited that the object of the institution was to make some competent provision that seamen who, by age, wounds, or other accidents, should become disabled for further service at sea, and should not be in a condition to maintain themselves comfortably, might not fall under hardships and miseries, but might be supported at the public charge; and that children of such disabled seamen, and the widows and children of such seamen as should happen to be slain in the king's service, might, in some reasonable manner, be provided for and educated. The patent appointed Prince George of Denmark, several of the great officers of state, nobility, bishops, and others, to be commissioners for these purposes; and required them to consider how they might be best carried out, and the palace best converted for the charitable object to which it was assigned, and also to frame for his majesty's approval a charter of foundation. The government of the hospital has been continued in similar commissions in subsequent reigns, and the most distinguished persons have been appointed commissioners. George III., by his charter of December 5th, 1775, incorporated the commissioners, vesting the goods and revenues of the hospital in them, and gave to them and their successors a perpetual succession.

The revenues of the hospital have been derived from several sources. William III., contributed by grant £2000 a year toward perfecting the work, and authorized the commissioners to receive voluntary gifts and subscriptions in aid. Above £50,000 had been expended, on Queen Anne's accession, upon the buildings, which though still very incomplete, were so far in a state of readiness that, in December, 1705, 100 disabled seamen were taken into the hospital. On the 1st of July, 1708, the number amounted to 350, and the income was estimated at £12,000 a year; half of which was applied to the maintenance of the seamen, and the other half to the completion of the buildings.

The revenue of the hospital in 1849 (for which year the latest accounts are printed), was—

Nett produce of the estates	£29,219
Rents in Greenwich	2,531
Interest on invested property	82,491
From consolidated fund, in lieu of merchant-seamen's sixpences	20,000
Freightage of treasure	10,406
Other small contingent receipts, including sale of £3,000 stock to purchase river frontage	3,736
Total	£148,383

And the expenditure for the same year was—

Household and contingent expenses, comprising the maintenance, clothing and allowance to 3,710 pensioners and 97 nurses, with salaries and wages to the subordinate officers and servants, and all works and repairs	£112,875
Charge for the royal naval schools	18,684
Parochial and assessed taxes	1,341
Annuity pursuant to 28th Geo. III., chap. 68, to Lady Newbarg	1,000
Purchase of river frontage and property for improvements	12,800
Other small charges	667
Total	£146,367

It is stated that under the arrangements made pursuant to the acts of 1829 and 1834, the hospital surrendered £42,000 a year of its revenues.—*Parl. Return*, 1850.

Greenwich Observatory. Built at the solicitation of Sir Jonas Moore and Sir Christopher Wren, by Charles II., on the summit of Flamstead-hill, so called from the great astronomer of that name, who was the first astronomer royal here. The English began to compute the longitude from the meridian of this place, 1675; some make the date 1679. This observatory contains a transept circle by Troughton; a transit instrument of 8 feet by Bird; 2 mural quadrants of 8 feet, and Bradley's zenith sector. The telescopes are 40 and 60 inch achromatics, and a 6 feet reflector; and among other fine instruments and objects is a famous camera obscura.

Grenade. A hollow ball of iron about 2½ inches in diameter, charged with gunpowder and furnished with a proper fuse; it is often called a hand-grenade, being thrown from the parapets of besieged places upon the invaders beneath.

Gresham, Sir Thomas, the founder of the Royal Exchange and of the college called by his name in London, was born in 1519. His father had amassed great wealth and attained great eminence as a merchant and bill-broker in the reign of Henry VIII., and resolved to train his son to succeed him in his business. After a thorough education at Caius College, Cambridge, young Gresham was apprenticed to his uncle, a knight and a distinguished member of the Merchants' Company. Under Edward VI., Gresham was employed on the same services as his father had performed for that king's father, and in the course of Edward's short reign he made no fewer than 40 voyages to Antwerp on the royal business. By his financial skill and foresight he rendered great service to the revenues of the English crown, which he rescued from the extortions of Dutch and Jewish capitalists, and introduced with great effect the practice of raising money from native money-lenders, in preference to foreigners, who exacted a ruinous rate of interest. Mary and Elizabeth continued him in his employment, and the latter knighted him in 1559. He had now amassed an immense fortune, and built himself a splendid house in Bishopsgate-street (which, after his wife's death, was used as Gresham College, and the site of which is now occupied by the excise office), where he lived in great state, and where, by command of Elizabeth, he often entertained the ambassadors and visitors of rank that thronged her court. To these circumstances Gresham owed his title of the "Royal Merchant."

During his repeated visits to Antwerp, Gresham had seen and fully appreciated the value of a general place of rendezvous for the merchants of the city. Anxious to introduce something of the kind into London, he offered to build a suitable house if the citizens would furnish a site. A piece of ground was accordingly bought, and a building on the model of the Bourse of Antwerp was erected and ready for use in 1569. In the following year it was opened in state by Elizabeth, who, by a trumpet and herald, proclaimed it "The Royal Exchange." This building was burned down in the great fire of London, but was afterward rebuilt on a larger scale and at a cost of nearly £59,000. In 1838 this edifice was destroyed, like its predecessor, by fire; but on the same site a new exchange, of far greater dimensions and more splendid in style, was opened in 1844 by the Queen, in state.—E. B.

Grindstones, flat circular stones of different diameters and thickness, mounted on spindles or axles, and made to revolve with different degrees of velocity, employed to polish steel articles, to give an edge to cutting instruments, etc. Grindstones not in constant use are commonly turned by winch handles; but at Sheffield and other places, where polished articles and cutlery are extensively manufactured, large numbers of grindstones, being mounted in buildings appropriated to that purpose, called grind or blade mills, are turned by straps, acting on their axles, the moving power being either water or steam. The stone best suited to form grindstones is what is called a sharp-grit, it being chosen finer or coarser-grained according to the purposes for which they are destined. The principal grindstone quarry in England is at Gateshead Fell, in the county of Durham, where they are produced in vast numbers, not only for home use, but for exportation to all parts of the world. But those principally in use at Sheffield are mostly quarried at Wickersley, in Yorkshire. They are classed in 8 different sizes called *foots*, according to their dimensions, as in the following table:

Denominations.	Diameter.	Thickness.	No. in a chaldron.
	Inches.	Inches.	
1 foot.	10	2	30
2 foots.	14	2½	27
3 "	20	4	18
4 "	24	4	9
5 "	35	5	5
6 "	48	6	3
7 "	50	6	1½
8 "	56	8	1

A grindstone foot is 8 inches; the size is found by adding the diameter and thickness together. Thus, a stone 56 inches diameter by 8 thick, making together 64 inches, is an 8-foot stone, of 8 inches each foot. Besides the above sizes, grindstones are made, when ordered, of any intermediate dimensions; many are made much larger than any of the above sizes; some as large as 76 inches diameter, and 14 or 15 inches thick, which are a great weight, a cubic foot weighing 1 cwt. 1. qr. 14 lbs.—Rees's *Cyclopædia*; Bailey's *Survey of Durham*, p. 43. Grinding is an unhealthy and dangerous employment. For some purposes, the stones are made to revolve with an extreme degree of velocity, which makes them occasionally fly in pieces. But the greatest annoyance to which the grinder is exposed is from his inhaling the minute particles of stone, and of iron and steel, that are always flying about, particularly in the process termed dry grinding. Contrivances have been suggested for obviating this serious inconvenience; but whether it be owing to their unsuitableness or to the carelessness of the workmen, none of them have succeeded in practice.—*Treatise on Iron and Steel*, Lardner's *Cyclopædia*, p. 293.

Grinnell Land, a tract of Terra Firma, in the Arctic Ocean, the south coast of which trends in a western, and finally a north-western direction, was discovered by the American Expedition, in search of Sir John Franklin, September 21st, 1850. Of this interesting discovery (which the British explorers in this region modestly claim, and call it "Albert Land"), Dr. Kane, the journalist of the American Expedition, thus speaks:

September, 21, 1850.—We have drifted still more to the northward and eastward. A reliable observation gave us lat. 75° 20′ 38″. Apparently we are not more than 7 miles from the shore, which is still of the characteristic limestone of the lower channel. Terraces of shingle are rising one above another in regu-

lar succession. They follow the curve-like sweep of the indentations. Estimated by eye, the height of the uppermost is about 40 feet above the water line; but I was of course unable at that distance to compare the levels of the successive ledges with those observed between Capes Spencer and Innes on the opposite side. About tea-time, we saw a set of hill-tops to the north by west, apparently of the same configuration with the hills around us. The coast of Cornwallis Island now receded to the westward, and an intermediate space, either of water or of very low beach, separates it from the new land to the north and east of us. Whether this be a cape from a northern Terra Incognita, or a new bend of the opposite shores of North Devon, I am not prepared to say. We took sextant bearings. From this date we may claim the discovery of that land, which we were able afterward to define satisfactorily. "Grinnell Land," as it was afterward named by our commander, was thus discovered nearly 8 months before it was delineated and named by Captain Penny in May, 1851.

September 22.—This day of rest (Sunday), which opened with clear, cold serenity, gave us an opportunity of seeing the unvisited shores of Wellington Channel. Our latitude by artificial horizon was now 75° 25′, or about 60 miles north of Cape Hotham. Cape Bowden on the eastern side had disappeared, and on the west a dark projecting cape from which we took our sextant angles, was seen bearing to the west of south. To the northward and westward low land was seen having the appearance of an Island, although it may have been connected with the shore by an unseen strip. Its eastern termination was more elevated. The bend of the western shore was now clearly to the westward. It was rolling with the terraced shingle beaches before observed, and ended or apparently ended, abruptly. After and beyond these to the north, without visible land intervening, were the mountain tops which terminated our view. These were two in number, one higher than the other. A third summit, more distant than the others, was seen by me from the mast-head, but the bases of all these, as is often the case with distant mountains, could not be traced to the horizon. Without the aid of a known height, and in an atmosphere so deceptive, I could not venture to give their distance in miles. Lieutenant De Haven estimated the middle peak the nearest and most conspicuous, at 50 miles."

Here Dr. Kane is direct and positive He is not compelled to resort to "a division of opinions," nor a "first idea," nor an "if." He is plain and outright. He says—"GRINNELL LAND, as it was afterward named by our commander, was thus discovered nearly 8 months before it was delineated and named by Captain Penny in May, 1851."

Lieutenant Griffin, commander of the *Rescue*, in his narrative of De Haven's voyage, is as clear and positive as De Haven and Kane, as to the discovery: A succession of southerly gales occurring, we were driven, with all the ice in sight, up Wellington Channel, until we reached the latitude 75° 25′. From that position much new land was seen. A range of high mountains very justly received the name of Grinnell. A channel leading to the north-west was named after the distinguished gentleman at the head of the National Observatory, Mr. Maury. Capes and islets never before seen, unless by the missing navigators, were named. By gazing on that which was entirely new to man, the spirit of enterprise became animated—we felt disposed even then to load the sledge, and toil slowly in the direction of the mountain range. Captain Penny, the following spring, without knowledge of our having been ahead of him, gave English names to the above land, calling Grinnell Land, Albert Land; Maury Channel, Victoria Channel, etc. The mistake, as soon as it is explained, I suppose will be corrected on the English charts.

I. I. I.

Lieutenant Griffin erred in his supposition. The "mistake" was sufficiently explained before Penny's, or Arrowsmith's, or any other chart of the Arctic Discoveries in 1850, was published. The Lords of the Admiralty received officially an explanation of the "mistake," more than two months prior to the date of the Admiralty chart, of April 8th, 1852. Their "mistake" has not yet been corrected. They still adhere to the name of "Albert" land.—COLONEL FORCE'S *Pamphlet on Grinnell Land.*

Gripe. The fore part of a ship. *To gripe*, the tendency of a ship to bring her head up to the wind when carrying sail on the wind.

Groat, an old English silver coin, equal to fourpence. Other nations, as the Dutch, Poles, Saxons, Bohemians, and French, have likewise their groats, groots, groschen, gros, and the like. In England in the Saxon times, no silver coin larger than a penny was struck, nor after the Conquest till the reign of Edward III., who about the year 1351, coined grosses or great pieces, which went for fourpence each; and so the matter stood till the reign of Henry VIII., who, in 1504, first coined shillings.

Groats, oats deprived of the husks

Gross, the number of 12 dozen.

Gross Weight, in commerce, the weight of merchandise and goods with the dust and dross, as also of the bag, cask, chest, etc., in which they are contained; and out of this gross weight allowance is to be made for tare and tret.

Guadaloupe, or **Guadeloupe,** one of the leeward group of islands in the West Indies, and one of the most important colonies of France, and situated in north lat. 16° 20′, west long. 62°. It consists properly of two islands separated from each other by a narrow channel, about five miles in length, by from 30 to 100 yards wide, and with depth sufficient for vessels of 60 tons. This channel, called *La Rivière Salée*, or Salt River, runs nearly north and south, and has a large bay at each end, that on the north being called the *Grand Cul-de-Sac*, that on the south the *Petit Cul-de-Sac.* The western or larger island, called Guadaloupe proper, or *Basse Terre*, is 27 miles in length, by 15 in breadth; the eastern, or *Grande Terre* is nearly 30 miles long, by from 10 to 12 broad. Guadaloupe proper is of volcanic formation, and is traversed from north to south by a ridge of hills having a medium height of 2296 feet. Its principal peaks are *La Soufrière*, an active volcano 5108 feet high, and *Grosse-Montagne*, *Deux Mamelles*, and *Piton de Bouillante*, extinct volcanoes. It is copiously watered by numerous small streams, two of which, the *Goyade* and the *Lezarde*, are navigable for small craft. The soil is fertile, and the surface is agreeably diversified by hill and dale, wood and garden. The products, natural and cultivated, are those of the West Indies generally. The principal town, *Basse Terre*, stands on the south-west coast. It is the residence of the governor, and has some fine public buildings, fountains, and gardens, and has about 6000 inhabitants. *Grande Terre*, unlike Guadaloupe proper, is marshy, sterile, and flat, nowhere rising more than 115 feet above the sea. Its chief town, *St. Louis*, or *Point à Pitre*, the former capital of the island, is at the south entrance to the Salt River, and has an excellent harbor. It formerly contained about 15,000 inhabitants, but was almost entirely destroyed by an earthquake on 8th February, 1843, on which occasion 4000 of its inhabitants perished. The climate is humid, and hurricanes and earthquakes are frequent. The rainy season lasts from the middle of July to the middle of October. The chief exports are sugar, molasses, rum, cotton, coffee, dye-woods, and copper. The sugar crop amounts to about 60,000 hogsheads annually. A considerable quantity of fish is taken in the neighboring seas. The government consists of a governor, with a privy council of 6, and a colonial council of 30

members. The government of Guadaloupe comprises besides that island, those of *Marie-Galante*, *Desirade*, *Les Saintes*, and the northern portion of *St. Martin*. *Marie-Galante* lies 14 miles south south-east of Guadaloupe, and is about 12 miles in length by 8 in breadth. It is traversed from north to south by a range of hills running parallel to the east coast, where it presents a front of high and precipitous rocks. The west and north sides of the island are level; and parallel with the former is a narrow lagoon, 7 or 8 miles in length, separated from the sea by a low narrow tract of land. The island abounds in woods, particularly the wild cinnamon-tree. Its principal town, *Grandbourg*, or *Basse Terre*, stands near the south-west point. *Desirade*, or *Deseada*, lies about 4 miles east from the south-east extremity of *Grand Terre*, and is about 8 miles long by 3 wide. It rises from the sea with a steep ascent, and then extends in a table-land, which consists of limestone rocks, in which many caverns occur, but it is without water. The soil in some places is of a deep black mold, and fertile; in others it is sandy and unproductive. The only anchorage is at the *Anse-Galet*, on the east side of the island. *Les Saintes* are a group of rocky islets 6 or 7 miles south of Guadaloupe, and consist of lofty and steep peaks, some of which are united by flat ground and ridges of inferior elevation. The two largest are called *Terre d'en Haut* and *Terre d'en Bas*. *St. Martin* is a small island immediately south of the British island of Anguilla, in north lat. 18° 5′, and west long. 63° 6′. Its form is nearly that of an equilateral triangle, each side being about 7 miles in length, and comprising an area of about 33 square miles. It is deeply indented with bays and lagoons, some of which afford good anchorage. The surface is generally hilly, the highest point being 1361 feet above the sea. It was colonized by the French and Dutch in 1638, but these were expelled by the Spaniards, who themselves abandoned the island in 1750, and the original settlers resumed possession. The southern portion of the island belonged to the Dutch. Guadaloupe was discovered by Columbus in 1493. In 1635, the French established a settlement upon the island, and retained possession of it till 1759, when it was taken by the English. It was subsequently, on several occasions, taken and retaken by these nations, and was finally ceded to France in 1814. Population (1854) 132,810. Slavery was abolished here by a decree of the French Republic in 1848, at which time about 100,000 persons were emancipated.

Guaiacum or **Lignum Vitæ** (Fr. *Gayac*, *Bois Saint*; Ger. *Pockholz*; It. *Guajaco*; Lat. *Guaiacum*, *Lignum vitæ*; Sp. *Guayaco*), the wood of a tree, a native of Jamaica, Hayti, and the warmer parts of America. It is a dark-looking evergreen, growing to from 40 to 50 feet in height, and from 14 to 18 inches in diameter. The bark is hard, smooth, and brittle; the wood is externally yellowish, and internally of a blackish-brown color. Lignum vitæ is the weightiest timber with which we are acquainted, its specific gravity being 1·333. It is exceedingly hard and difficult to work. It can hardly be split, but breaks into pieces like a stone, or crystallized metal. It is full of a resinous juice (*guaiac*), which prevents oil or water from working into it, and renders it proof against decay. Its weight and hardness make it the very best timber for stampers and mallets; and it is admirably adapted for the sheaves or pulleys of blocks, and for friction rollers or castors. It is extensively used by turners. The *guaiac*, or gum, spontaneously exudes from the tree, and concretes in very pure tears. It is imported in casks or mats; the former containing from one to four hundred weight, the latter generally less than one hundred weight each. Its color differs considerably, being partly brownish, partly reddish, and partly greenish; and it always becomes green when left exposed to the light in the open air. It has a certain degree of transparency, and breaks with a vitreous fracture. When pounded, it emits a pleasant balsamic smell, but has scarcely any taste, although when swallowed it excites a burning sensation in the throat. When heated, it melts, diffusing, at the same time, a pretty strong fragrant odor. Its specific gravity is 1·229. See *Vegt. Sub.*, *Lib. of Entert. Knowledge*; THOMSON'S *Chemistry*, etc.

Guano or **Huano** (the Peruvian term for manure), a substance used as a manure, found on certain small islands off the coast of Peru and Bolivia, and on parts of the shore of the main land. It is friable, and easily reduced to powder. Its color varies from a dull red to a dirty white, and it has a strong smell and a fat, unctuous feel. At an average, it may weigh from 50 to 60 lbs. a bushel. Humboldt was either the first, or one of the first, by whom this important substance was brought to Europe; but it was described at a much earlier date by Ulloa (*Voyage au Perou*, i. 481); and has been used as a manure by the Peruvians from the age of the Incas downward. Very different opinions have been entertained as to its nature and origin. Many have supposed that is was a peculiar mineral or earth. Ulloa, however, was clearly of opinion that it consisted of the excrements of the sea-birds which are found in prodigious swarms all along the Peruvian and Bolivian shores; and there is no longer any doubt that such is the case. The localities where the deposit is principally met with being within a rainless region, it is accumulated with a rapidity of which we have no idea. Guano is of very different qualities: some authorities give the preference to the whitish varieties, which are believed to be more recent, while others prefer the red. According to Klaproth, a quantity of guano represented by 100 contained, urate of ammonia, 16 parts; phosphate of lime, 10 do.; oxalate of lime, 12½ do.; silica, 4 do.; common salt, ½ do.; sand, 28 do., and water, organic and combustible matter, 28½ do.; but its composition is found to differ very materially. The best is that which contains the greatest proportion of ammoniacal salts.

Guano has not been long introduced; and there is a good deal of discrepancy in the statements that have been put forth as to its operation. There can, however, be no doubt that it is a most efficient manure, and that about 2 to 2½ cwt. per acre of average guano, mixed with about two thirds the annual quantity of farm-yard manure (which is required to keep the soil loose), will produce, when applied to land that is well drained, nearly double the ordinary quantity of potatoes. In turnip husbandry, splendid crops are produced by the agency of guano only; but in this case from 4 to 5 cwt. per acre should be applied. It has also a powerful influence in improving crops of corn and the pasture following such crops. The effect of guano is very materially increased by its being covered up to some considerable depth as soon as it is laid on the soil; and top-dressing is certainly the most wasteful way in which it can be applied.—(*Private information.*) It is, in fact, the most valuable of manures; and under such circumstances it becomes of importance to learn the probable supply of the deposit, and the price at which it may be imported and sold in Europe.

Unfortunately, however, our information on both these points is less complete than might be desired. Since it began to be largely exported to this and other foreign countries, an apprehension began to gain ground in Peru that the deposits would in no very long time be wholly exhausted; and as this would occasion the ruin of those estates along the coast of Peru, and the department of Arequipa, in which guano has long been extensively used as a manure, government has been called upon to avert this catastrophe by prohibiting its export. We are, however, well convinced that this apprehension is entirely groundless, and that the deposits are in fact all but inexhaustible. At present, guano is principally obtained from the Chincha

Islands, opposite to Pisco, in Lower Peru, in about lat. 18° 55′ S., and long. 76° 30′ W., and the Lobos Islands, opposite to Lambayeque, in Upper Peru, in lat. 6° to 7° S.. and long. 81° W. It has been stated by Sir B. H. Wilson, late English consul at Peru, that though about 800 tons a year are supposed to have been carried for centuries from Chincha, the principal island of the group to which it gives its name, to the opposite coast, there is still upon it the enormous quantity of 17,000,000 tons; and, supposing this estimate to be tolerably accurate, we may safely reckon the entire mass of guano in this group at from 20 to 25 millions of tons! The stock of guano on the Lobos Islands, though not so extensive as that on the Chincha Islands, is yet very large. And, exclusive of these, there are other islands whence guano is shipped for Arequipa, etc. Deposits have also been discovered on the coast of the main land, especially near La Mar or Cobija; so that, making every allowance for exaggeration, the supply of guano may, for all practical purposes, be regarded as inexhaustible.

The islands where the guano is found being uninhabited except by those employed in its shipment, it would, but for the interference of government, cost nothing save the expense of putting it on board and the freight home. But the governments of Peru and Bolivia were either so little aware of the value of the article, and of their duty to their constituents, or so corrupt, that they sold, in 1839, to private parties (Messrs. Quiros, Allier, & Co. of Lima), for a mere trifle ($60,000), the sole right to ship guano for the term of nine years; so that these parties had it in their power to exact any price they pleased for the article. This contract was, however, too ruinous to be allowed to continue, and was canceled by the Peruvian government in 1841, on the ground of enormous public lesion, and of ignorance of the value of the privilege that had been conceded. For some time after this the trade was comparatively free, and large quantities of guano were imported in 1844 and 1845; but the monopoly system has been again revived.

There can not be a doubt that the Peruvian government would gain largely by throwing the trade in guano open under the condition suggested above. And we do not know that any thing could be devised that would be more likely to prove advantageous to our agriculture and shipping than the carrying out of such a plan. Perhaps the best way to effect an arrangement of the sort would be to purchase one or more of the guano islands from the Peruvian government. And if the latter should perversely decline to agree to such a sale, or to modify the present monopoly system, the question of her right to appropriate such valuable deposits, and to deprive others of any equitable participation in their advantages, will force itself on the public attention. Should such be the case, it will probably be found that the claim of the Peruvians to the exclusive possession of the guano islands is of a very questionable description; and that in grasping at all they may not improbably lose all.

Lobos de Afuera is fully 50 miles from the nearest point of the main land. And it seems rather too much for a government like that of Peru, without any thing worthy of the name either of a mercantile or warlike fleet, to pretend to hinder others from carrying away the dung of wild birds from an unoccupied rock at so great a distance from its territories.

No guano has ever been imported equal to that from Peru. And unless it come from a rainless region it is worth comparatively little; for otherwise the ammoniacal salts, which are a most valuable portion, are either partially or wholly washed away by the rains.

Guano is found in the caves frequented by swallows, pigeons, bats, etc., in Java, Sumatra, and other places in the Eastern Archipelago. And not being exposed to the rain, it may very probably be of good quality.

The reader will, perhaps, be surprised to learn that large quantities of guano have, of late years, been imported into Spain. It is principally employed in manuring the *huertas*, or low rich grounds of Murcia and Valencia. Hitherto it has been mostly sent at second-hand from England. But very recently the Peruvians have begun to export it on their own account to Alicant, Valencia, etc., and have established agents in these towns for its sale.

LEGATION OF THE UNITED STATES,
LIMA, *April*, 18, 1856.

SIR: In reply to dispatch No. 45, dated the 18th ultimo, I have the honor to inform you that neither the governments of Spanish America nor their citizens have the privilege of purchasing guano from the Chinchas, or any other islands belonging to Peru, at a certain stipulated price, by treaty, through municipal regulations or sufferance. All the guano exported from Peru is shipped for account of the government and sold in foreign markets, under special contracts, by agents, who receive a commission for chartering vessels, and on the sale of the article. No exception is made in favor of any foreign nation, or its citizens. Peruvian citizens are permitted to take from the Chincha Islands and "Pabellon Pica" without charge a sufficient quantity for the agriculture of the country; but the government is very careful to prevent any portion of it being exported. The following is a translation of the provisions of the "commercial regulations" of Peru in relation to this subject. See Dispatch No. 98, April 18, 1852:

Chapter 1, Article 14th. "It is not permitted to anchor in any of the anchorages at the islands, the property of the Republic, without a written license from the government."

Art. 15. "Vessels which load with guano for abroad will do so only at the Islands of Chincha. Those loading it for the agriculture of the country will take it from 'Pabellon Pica' or from the said islands."

Chap. 14. "Exportation."

Art. 114. "Guano can only be exported in vessels chartered by the government or its agents."

Chap. 23. "Confiscations, fines, and other penalties."

Art. 213. "Vessels anchoring at the anchorages of the islands the property of the Republic, shall be confiscated; and if besides guano should be found on board, their captains and crew shall be delivered over to justice, to be tried as guilty of robbery."

See also the decree of Don Manuel Menendez, acting President of Peru, of the 21st of March, 1842, for the stringent formalities to be observed by Peruvian vessels going to the Chinchas or "Pabellon Pica" to load with guano for the agriculture of the country.—Documents to dispatch No. 114, dated October 25, 1852. A reference to my dispatches, Nos. 159, 164, 172, 187, 218, 240, and 255, will show still further that no favors are granted in the exportation of guano from Peru to other nations not enjoyed by the United States. You will perceive, therefore, that the representation made to the Department mentioned in dispatch No. 45 is entirely erroneous, and must have originated in mere rumor.

I inclose a copy of a letter from a gentleman in Arequipa to a friend in Lima, showing the manner of using guano in the agriculture of that district.

I have the honor to be, sir,
Your obedient servant,
J. RANDOLPH CLAY.

To Hon. WM. L. MARCY, Secretary of State.

AREQUIPA, *March* 20, 1856.

DEAR SIR: We here reply to your note of the 13th instant, asking for information relative to the manner of using guano in this district.

Guano brought from the Chincha Islands to Islay is there sold to the chacreros (farmers) round Arequipa at from four to six reals the fanega: the fanega

weighs five arrobas, or about 125 lbs. The price varies from four to six reals; at present the latter price is asked. This would make the English ton worth about $15, or say £2 10s. in Islay.

It is applied to two crops only, maize (Indian corn) and potatoes, carefully by the hand. The maize, when the plant is about two months old and about three fourths vara high, one half a handful is applied near each root. A larger quantity is said to be prejudicial, by "burning the plant." The guano is then covered with earth, and a small quantity of water (by irrigation) is applied "to fix the guano." If the state of the soil does not absolutely require it, no more water is applied until after six or eight days.

The quantity required for each "topo" of 5000 varas (about 1¼ acre) is four fanegas, or say 500 lbs. For potatoes the quantity required is the same and is applied much in the same manner as regards the age of the plant, and a small quantity of water "to fix the guano." The stalk of the potato is then about one fourth vara in height, and the earth heaped up in ridges the same as in Britain. A person inserts a spade in the top of the ridge beside each plant, while the woman follows pouring about half a handful of guano into the hole thus made, and covering it with earth, so that the ridge remains the same as before the application of the guano.

To wheat the application of guano is not approved, principally, we believe, on account of the rankness it produces in the stalk, thereby delaying the ripening of the grain—a point of great importance in lands where they count on obtaining two crops a year.

THOMAS REUNCY.

The New Guano Islands.—The following gives the results of an analysis of guano from one of the islands of the American Guano Company:

I have analyzed four samples of guano for the American Guano Company, taken by myself from four parcels in a box opened in the presence of the Company. They yield as follows:

No. 1—Top Parcel.		*No. 3—Dark Sample.*	
Sulphate of lime	69·51	Phosphate of lime	46·10
Phosphate of lime	8·00	Sulphate of lime	19·42
Carbonate of lime	1·00	Chlorid of sodium	2·19
Organic matter yielding ammonia	3·16	Carbonate of lime	2·62
Chlorid of sodium	2·80	Organic matter yielding ammonia	11.44
Oxyd of iron	1·22	Silica and alumina	1·14
Water with loss	14·31	Water with loss	17·16
Total	100·00	Total	100·00
No. 2—Large Pieces.		*No. 4—Lowest Sample*	
Phosphate of lime	81·24	Sulphate of lime	64·95
Sulphate of lime	4·84	Phosphate of lime	5·20
Chlorid of sodium	2·06	Carbonate of lime	2·14
Oxyd of iron	·71	Organic matter yielding ammonia	4·25
Organic matter yielding ammonia	6·10	Chlorid of sodium	3·86
Water	3·60	Silica and alumina	3·49
Silica and alumina	1·45	Water with loss	16·11
Total	100·00	Total	100·00

(Signed), JAMES R. CHILTON, Chemist.

NEW YORK, *Saturday, June 7*, 1856.

Birds Forming Guano.—M. A. Raimonde, Professor of Natural History at Lima, was sent, in 1853, by the Peruvian government, to the Chincha Islands, in order to ascertain the quantity of guano existing in these islands. During a sojourn of more than six weeks, he made observations on the origin of the guano deposit, and of the birds to which it owes its existence. In some places the guano deposit is 30 metres in depth. From the bodies of animals, as well as from various manufactured articles found in it, he concludes that the deposit belongs to the present epoch of the earth's history. The birds observed during his visit were—*Pelecanus majus*, Molin; *Carbo Guimardii*, Lesson; *C. Albigula*, Brandt; *Sula variegata*, Tschudi; *Spheniscus Humboldtii*, Meyen; *Plotus anhing*, Lin.; *Rhyncops nigra*, Lin.; *Larus modestus*, Tschudi; *Puffinaria Garnottii*, Lesson; *Sterna inca*, Lesson. These species do not all live constantly on the islands: some of them only appear at the breeding season. The pelicans do not appear to produce much guano, as they almost always inhabit the cliffs, and their excrement falls into the ocean. The same may be said of the species of Carbo. The species of Sula contribute more to the deposit, their numbers being greater, and their habitations being more in the interior of the islands. The species of Plotus and Rhyncops are very rare; those of Larus more numerous. The Sternas only visit the islands to lay their eggs; but their numbers are so very great that they must contribute in a great measure to the formation of guano. The Spheniscus abounds in the southern island, which is inhabited. These birds, not being able to fly, hollow out habitations for themselves in the guano. The birds which produce the largest quantity of guano are the Puffinarias: their number is incalculable.—*Year Book of Facts*, 1857, p. 221.—*Edinb. Phil. Jour.*

The vast deposits of guano (called *huano*—a term of Indian origin—by the Peruvians) on the Chincha Islands, alluded to in the commencement of this article, form the chief basis of the foreign trade of Peru, especially with the United States. It has been deemed not inappropriate, therefore, to append, in detail, such official and other reliable information on this subject as is in the possession of the Government. According to a report made by a commission especially deputed by the Peruvian government in 1853 to survey the Chincha Islands, the quantity of guano in the deposits at these islands was 12,376,100 Peruvian tons, equal to 11,050,068 tons English; the northern island containing 4,189,477 tons, the middle island 2,505,948 tons, and the southern island 5,680,675 tons. This estimate, if correct, would, at the present rate of exportation—say about 300,000 tons per annum—afford to the markets of the world a supply of guano from the Chinchas for about forty years; after which period recourse might be had to the Lobos and other islands. In view of the fact now generally conceded, that land which has been once manured with Peruvian guano, will always require that stimulant, it may be interesting to ascertain what prospect there would be of procuring a permanent supply, sufficient to meet the agricultural wants of the world, at other deposits, or in other countries, supposing that the efforts of science may not succeed in discovering a substitute for that popular fertilizer. The facts bearing upon this inquiry are copied or condensed from official reports of the Peruvian government, or from official communications to the Department of State of the United States, and may, therefore, be viewed as generally correct.

Guano has been found along the coasts of Peru, Bolivia, and Chili; but the principal deposits are upon the three islands of Chincha, near Pisco, and the Lobos Islands, between Lambayeque and Paita, in Peru. The supply of guano at the Chincha Islands, alone, from whence only the exportation is permitted, can not be exhausted during the present century at least. The quantity existing at the Lobos is estimated, from a recent survey made by an American engineer, to be not less than 2,000,000 of tons, and of quality equal to that of the Chincha Islands. Guano is also found in many spots along the coast of Bolivia. Pacquica, in the desert of Atacama, is the principal Bolivian port for shipping it. The guano is, however, so mixed with sand, or so buried and inaccessible, as to be nearly valueless. It is like mining to get it from under the sand, and costs from $11 to $12 per ton to put it on board. The first cargoes sent from there cost about $7 per ton; and only 24,794 tons have been shipped during the last five years, of which 5,926 tons was the quantity exported in 1847. It is becoming daily more scarce and expensive, and may be set down as of little importance, and not likely to interfere with the guano of Peru. The present British contractors with the Peruvian government have also an unexpired contract with Bolivia, under which they hold an ex-

clusive privilege for the further shipment of about 10,000 tons. They pretend that, if the contract were completed, there would be none left. The late Bolivian government, however, endeavored to obtain a small loan on its guano, but no offer was made, upon any terms; thus showing the little esteem in which the article is held, and how little danger there is, for the moment, of competition with that of Peru. Guano, it may be said, does not exist in Chili; the small quantity of inferior quality that was found there, on the borders of the desert of Atacama, being exhausted.

Concerning the situation and character of the deposits of guano (*huaneras*) in the republic of Peru: nearly the whole coast of Peru, from the 6th to the 21st degree of south latitude—the point at which the River Loa empties its waters into the Pacific—affords deposits of guano of excellent quality, in prodigious abundance, and promising immense revenue. The formation of the islands and cliffs on which the guano is accumulated is generally primitive rocks, composed of granite, hornblende, gneiss, quartz, and feldspar. The guano is found in layers or strata, more or less thick, and in a horizontal direction, though sometimes they are so inclined as to become nearly vertical—a phenomenon which, as in the undulating layers, induces the belief that the foundation has undergone subterranean changes subsequent to the formation of the deposits. As it is observable in some of the deposits, that the guano lies under masses of alluvia from 2 to 3 yards in depth, containing impressions of marine shells, which, in their turn, are beneath superposed guano, also covered with sand, it is probable that they are of a date anterior to the deluge, or to the partial cataclysms and commotions that the globe has since experienced. The deposits are, for the most part, covered with a top-crust from 4 to 6 inches thick, though, occasionally, it is even 3 or 4 feet deep—called by naturalists "*caliche*," composed of salt and sand. No experiments have been made to try the effect of this substance upon vegetation, but it probably contains a great proportion of ammonia, and is so intimately connected with the guano, that, although this manure is found in the deposits without the crust, yet the *caliche* is invariably an indication of the existence of guano. The color of guano in the deposits varies from white to bright red, passing through the intermediate shades of light gray, dark gray, and brown; the last of which is mixed with excrement of the seafion, and is of little use to the agriculturist. The specific gravity of guano seems to be in direct proportion with its color and quantity, as the dark gray and reddish are the heaviest. For this reason, it is difficult to ascertain exactly the weight of a cubic vara of guano of different colors. The variation in the experiments having been from 1200 to 1600 pounds, it was determined to assign the weight of half a ton to the cubic vara of guano. To facilitate the examination of the guano deposits, it is proper to divide them into three grand sections; the *southern*, embracing the coast from the boundary of Bolivia to Arica; the *central*, comprising those between Arica and Callao; and, finally, the *northern*, including the remainder between Callao and Paita.

Southern Deposit.—Chipana.—The deposit bearing this name is situated in 21° 22′ S. lat., and consists of a table rock between 25 and 30 varas above the level of the sea. Its greatest length is 357 varas, by 131 varas in breadth, making a superficies of 46,767 square varas. The vara equals 38.381 English inches.

Huanillas.—This deposit lies in 21° 18′ S. lat. It contains four valleys, or *quebradas*, in which the guano is accumulated; the superficies is 158,242 square varas, or 3,825,010 cubic varas of guano.

Punta de Lobos.—A salient point in lat. 21° 6′ S. is called by this name. It is composed of mica and granite. The guano lies in the valleys, or *quebradas*, in layers, whose mean height is from 15 to 20 varas. The length of the deposit is about 1500 feet. The superficies is equal to 138,579 square varas, or 2,921,580 cubic varas of guano.

Pabellon de Pica.—The tent-shaped appearance and proximity of this hill to the village of Pica have given it this name. It is situated in lat. 20° 57′ S. The guano of this deposit is found in crevices of different depths, the superficies being 240,801 square varas, or 5,950,000 cubic varas.

Puerto Inglés (English Port) is at a little upward of a quarter of a mile from the Pabellon, on a small peninsula, the form of which indicates that it was an island in remote ages. The guano in this deposit forms an eminence upward of 500 varas long, by 250 to 300 varas in breadth, giving a superficies of 159,251 varas. Taking these data together, with the mean height of the bank, the quantity may be estimated at 2,585,020 cubic varas of guano.

Islands of Iquique and Patillos.—To the north of the Pabellon and Puerto Inglés, in lat. 20° 46′ south, lie the islands of Patillos and Iquique—the latter in the bay of that name. Both were important deposits in bygone ages, but they are now exhausted, and, as they contain only the small quantity daily left by the birds, it is all new. Notwithstanding the scarcity of the accumulation, the farmers of the neighborhood take all the guano away periodically; and, as the regeneration of the deposits, which, for more than two centuries, supplied the wants of a great part of the country, is thus prevented, it would be well to prohibit all access to these islands, and other islets similarly situated on the coast, so that the birds may resort to them without disturbance, and reserves of manure be created for time of need.

Punta Grande.—The promontory situated in latitude 20° 23′ south, at four leagues' distance from Iquique, is called "Punta Grande," and the guano in this deposit is found in several valleys facing the sea. The nucleus of the locality is composed of quartz, intersected by veins of feldspar, more or less compact, with a calcaerous superficies. Punta Grande, being in proximity to the Morro of Tarapacá, which is a kind of sandy mountain, the guano in the deposit is covered with heavy layers of sand, so that it would require considerable excavations to obtain it. For this reason, these are called "subterranean deposits;" and it is difficult, on that account, to estimate the quantity they contain. Nevertheless, in the opinion of experienced persons, the amount must be immense. There are many reasons, also, for believing that these deposits were used in the time of the Incas; and, notwithstanding the extensive excavations made up to the present time, there are many deposits still untouched. The quality of this guano is very *fair*, the dominant colors being reddish and ashy.

Other Deposits.—Besides those already described, there are smaller deposits of white, fresh guano, upon different rocks and points between Iquique and Punta Grande; and at Pisagua, a small landing-place to the north of the Punta, from which the manure is taken for the use of the coast. There are, also, localities belonging to individuals; but the quantity in them is so inconsiderable as not to merit particular mention. The total quantity of guano in the southern deposits, or *huaneras*, mentioned above, may be estimated at 15,842,814 cubic varas, or 7,921,407 tons of guano, as exhibited in the following table:

Deposits.	Cubic varas.	Tons.
Chipana	561,204	280,602
Huanillas	3,825,010	1,912,505
Punta de Lobos	2,921,580	1,460,790
Pabellon de Pica	5,950,000	2,975,000
Puerto Inglés	2,585,020	1,292,510
Total	15,842,814	7,921,407

Central Deposit.—The three magnificent deposits

formed on the islands of Chincha, at 12° 32′ south latitude—that is to say, at the distance of 12 miles from Pisco—constitute in themselves the middle *huaneras;* for, although some manure is found on the cliffs of Corredas and Viejos, and on the small island of Ballesta, it is found upon points visibly inaccessible, and the entire quantity does not amount to 30,000 tons' weight. As no one is ignorant that the islands of Chincha form the riches of Peru, and that the guano sent to foreign markets is extracted from them, and that the quantity accumulated there is greater than in all the *huaneras* collectively, it is deemed admissible to enlarge somewhat upon the produce of these islands.

The Chincha Islands, when compared one with another, differ very little in their general character. They rise gradually from the sea to a point or ridge which is about 100 varas (or 300 feet) above the level of the ocean. Their geological structure consists of well characterized granite, and the guano is found deposited in parallel layers or strata, varying at times to undulating. The predominant colors are dark gray, light gray, ash colored, dirty white, and reddish brown. The color, however, does not appear to be indicative of the quality of the guano or the same fecundating principle exists, whatever may be the color of the coating. Nevertheless, the lighter-colored guano contains the greater quantity of ammonia. Pure ammonia has been found at the Chinchas, which substance is nearly white.

Notwithstanding that nearly all the *huaneras* are covered with a mechanical crust called "*caliche*" (calculus), those at the Chinchas are an exception to the general rule, as the guano is pure, even at the superfices; and the thousands of birds which produced these veins of wealth built their nests in excavations made by them in the deposits. The deposits in question were measured in 1842, by Don José Villa, and also by Señor Rivero four years later. The former calculated the quantity at 50,000,000 tons; the latter reduced this estimate by two thirds; and to explain the cause of the enormous difference between their calculations, he says: "The mean height of the salient points of the island is 10 varas, and of the parts at the greatest distance from the shore, 20 varas; and it is only in the central parts that the depth of the guano is 40 varas. Señor Villa believed that the amount of the successive cuttings, up to the principal one, was 40 varas, whereas it did not exceed 15; and to this he added 40 more, for the principal cuttings. A grand mistake; for, admitting it as a probable term on which to base a calculation, it were required that this central cutting should extend in a uniform layer to the very shore, presenting a depth of 80 varas. And, not content with this hyperbole, he added that there were points still higher, where, according to his opinion, the guano must be 100 varas deep, or more, when the islands themselves are scarcely as high above the level of the ocean!"

After making these observations, and adding that he had excavated at the bottom of the deepest cutting only three varas before coming to the rock, Mr. Rivero gives the following as an approximate estimate of the quantity of guano contained in the three islands of Chincha:

	Cubic varas.		Tons.
Northern Island	15,200,000	or	7,600,000
Middle	12,900,000	"	6,450,000
Southern	8,400,000	"	4,200,000
Total	36,500,000	"	18,250,000

This statement, therefore, shows that the islands of Chincha contain, upon a reasonable admeasurement, at least 18,250,000 tons of guano.

Northern Deposits.—These are, without doubt, inferior to those already described, as they are, for the most part, upon small islands, very low, and constantly beaten by the winds from every quarter; and the layers of guano are usually not very deep, and are frequently mixed with sand. In their present state, the Northern Deposits would yield barely sufficient guano to supply the foreign demand for a very few years; but the quality is good and they have become the resort of the innumerable clouds of birds which, frightened from the south and centre by the increased commerce along the coast, have taken refuge in those solitary places. This part of the coast is destined to renew the sources of public wealth, when the springs which are used to-day shall be dried up and exhausted. The islands to the north may be divided into four heads, and the Lobos de Sierra are first in importance.

The Lobos de Sierra lie 25 miles south-west of Lambayeque, in latitude 5° 6′ 30″ south. The group consists of one large island, and three (rocky) small islets adjacent to it. The principal island is an immense oval, narrowing toward the centre and north. The rocks are only partially and very unequally covered with guano; the deposits being interrupted by points of rock and ravines. Estimating together all the manure found in different parts of the island, on the point called "Punta Corcobada," and the point opposite t... islet "Felix Gonzales," the quantity is about 150,900 cubic varas, or 75,450 tons. A high promontory upon the island is called the "Punta Corcobada," from its peculiar shape. The superfices is extremely irregular, and contains a large quantity of whitish guano, apparently of recent formation; the stratum is not deep, but is of very fine quality. The structure of this locality is very favorable for the accumulation of guano; and as, in addition to this, it is protected from the winds, and as, moreover, the birds congregate to it in greater numbers than to any other place in the section now being described, there is every reason to hope that it will become, in time, a vein of great importance. The superficial extent of the Punta Corcobada is 113,940 square varas, or 224,760 cubic varas, equal to about 112,380 tons of guano.

Island of Bermeja.—At the distance of 300 yards to the west of the main island, and connected by reefs of rocks which are under water at high tide, lies the islet of Bermeja, in the form of a spatula. Its length is 495 varas; breadth, 220; height, 30 to 35 varas. It is covered with an abundant deposit of guano, of excellent quality, and has the crust of saltpetre, so common in the southern *huaneras.* The area of the Bermeja is 52,926 square varas; its greatest depth, 36 feet, and the quantity of guano found therein is about 317,556 cubic varas: equal to 158,778 tons.

The islet of Felix Gonzales is one mile distant from the Punta Corcobada, to the south-west. It is 90 varas long, 70 broad, and 15 varas above the level of the ocean. The guano found on it is of the very best quality, from 4 to 5 varas in depth. The area is 6550 square varas, or 26,200 cubic varas, equal to 13,000 tons of guano.

Colorado Islet.—This islet is situated to the south-east of the main island, and is 336 varas long, 180 broad, and 25 to 30 varas above the level of the ocean. The rock is entirely covered with guano, to the depth of 39 feet. The color of the guano, as the name of the island indicates, is reddish; but toward the centre of it the layers are gray and ash-colored, with a strong odor of ammonia. Immense flocks of birds congregate at the island, to build their nests in the guano and in the caverns. The superficial measure of the guano is 31,510 square varas, or 236,300 cubic varas, equal to 118,115 tons.

The result of the admeasurement of the principal island, and the rocky islets lying near it, gives the following as the quantity of guano at the Lobos de Sierra:

	Cubic varas.		Tons.
Principal Islands	150,900	or	75,450
Punta Corcobada	224,760	"	112,380
Isla Bermeja	317,556	"	158,778
Felix Gonzales	26,200	"	13,100
Islet Colorado	236,300	"	118,150
Total	955,716		477,858

Lobos de Fuera.—Two islands, lying in 7° 3′ south latitude, are known by the name of Lobos de Fuera. They are separated from each other by a channel not more than 180 feet in breadth, running north-east and south-west. The formation is slate; superficies very irregular. There is an abundance of guano, so all appearance mixed with the excrement of sea-lions, (lobos), which are very numerous. Immense flocks of birds (chiefly divers) frequent these islands. As the northern is not easily accessible, the public engineer could only survey the southern one. According to his estimate, the latter has an area of 292,880 square varas, and the body of guano it contains is 531,736 cubic varas, or 265,743 tons.

Islands of Guañape.—These two islands are situated in 8° 36′ south latitude, at about five miles from the coast. They are of granite, and rise out of the ocean to the height of 500 feet. The northern island contains guano; but being pyramidal in form, great quantities are blown off by the winds. Notwithstanding the periodical loss, there are still about 159,600 cubic varas of guano remaining, or an estimated quantity of 79,800 tons.

Island of Santa.—The island of Santa lies in 9° 11′ 5″ south, and contains only a few tons of guano of recent formation. Although it may not be interesting at present, it is probably destined to become of great importance. According to the reports made by the fishermen who visit this island, the superficies of the island was a bare rock, unfrequented by birds some 15 or 20 years ago. The aspect is different at present. The guano begins to accumulate; clouds of birds resort to the island; and its vast area, not long since silent and deserted, will, without doubt, become the centre of new deposits, prepared by Providence for future generations.

Island of Ferrol: situated in latitude 9° 7′ south, of a triangular form, and contains an area of 61,400 cubic varas.

In addition to the deposits above enumerated, guano is also found in small quantities on the island of Malabrigo, in latitude 7° 49′ south, San Martin, or Doña Maria, 11° 4′; Mazroque, 11° 25′; Pescadores, 11° 46′; Las Hormigas, 11° 56′; El Pelado, 11° 35′.

The quantities of guano contained in the northern deposits is shown by the following table:

Deposits.	Cubic varas.	Tons.
Lobos de Tierra	955,716	477,858
Lobos de Fuera, or de Afuera	531,486	265,743
Guañape	159,600	79,800
Ferrol	61,400	30,700
Total	1,708,202	854,101

It may be added to the foregoing, that, according to the report of a new commission appointed to examine, survey, and report upon the guano deposits, it appears that there were not more than 8,000,000 tons of guano remaining at the Chinchas in 1851. [This estimate, it has been stated, was underrated designedly.] The Peruvian government has not yet officially published this report, but the information has been given in the Peruvian newspapers. If the statement be correct, the quantity accumulated at those islands would be only sufficient to supply the demands of the markets of the United States and England for about 20 years, at the present rate of exportation.

GENERAL TABLE OF THE DEPOSITS OF GUANO.

Sections.	Deposits.	Tons.
Southern	Chipana	280,809
	Huantillas	1,912,505
	Punta de Lobos	1,460,790
	Pabellon de Pica	2,975,000
	Puerto Inglés	1,292,510
Central	North Island	7,600,000
	Middle "	6,450,000
	South "	4,200,000
Northern	Lobos de Tierra	477,858
	Lobos de Fuera	265,743
	Guañape	79,800
	Ferrol	30,700
Total		27,025,508

The following passage, translated from an article in the "*Mensagero,*" a newspaper published in Lima, affords interesting information on the subject of guano deposits, of later date:

"Mr. Rivero examined, scientifically, the principal deposits of guano known on the coast at that time; and his statement in other researches in which he has been engaged having proved correct, reliance may be placed on his report. Since then, other deposits of guano have been discovered, especially in 'Independence Bay,' beyond Pisco, where the quantity is said to equal that of the Chincha Islands. No regular survey has been made of this deposit, and it is surprising that the government should be so dilatory in obtaining minute information in a matter of such vital importance to its credit and—it may be said—to its very existence. Making allowance for any exaggerations in the reports, it can be safely asserted that the quantity of guano existing in the deposits on the coasts of Peru is sufficient to supply the demands of foreign markets for a century to come, particularly as it is probable that the day is not far distant when the researches of science may discover in other substances a fructifying principle, which will serve as a substitute for this singular product."

The guano from the islands of Lobos has been recently analyzed by Mr. Raymondi, an Italian chemist employed by the Peruvian government for the purpose. Annexed is a statement showing its composition as compared with that from the islands of Chincha, from Patagonia, and from Saldanha Bay. The strength and value of guano are estimated by the proportion of ammonia and phosphates it contains. That from the Lobos Islands, therefore, according to the analysis of the three samples, is more valuable for agricultural purposes than that of Patagonia or that from Saldhana Bay. It is the policy of the Peruvian government to discredit the Lobos guano, so that it may be kept out of the market until the deposits on the Chincha Islands shall have been exhausted. The samples employed for the analysis were, consequently, taken from near the top of the Lobos deposits, and are not a fair specimen of the product of the islands. The lower layers are, undoubtedly, of better quality; and although, doubtless, inferior to the best from the islands of Chincha, it is still more valuable than any other manure that can be furnished at the same price:

ANALYSES OF GUANO.

ELEMENTS.	FROM THE CHINCHAS.	FROM THE LOBOS.			FROM PATAGONIA.	FROM SALDANHA BAY.
	By Anderson.*	By Kensington Laboratories.	By Raymondi.†		By Anderson.	By Kensington Laboratories.
Water	13·73	9·80	12·50	16·50	13·35	24·36	14·47
Organic matter and ammoniacal salts	53·16	57·80	22·00	28·50	36·65	18·86	7·85
Phosphates	21·48	23·05	36·00	41·28	11·76	41·87	29·54
Alkaline salts	7·97	9·69	12·25	16·27	36·74	2·70	38·67
Sand	1·66	0·75	12·35	2·50	1·50	7·56	14·47
Lime	....	....	....	....	....	2·94	....
Sulphuric acid	....	....	....	....	....	2·21	....
Proportion of ammonia	17·90	18·87	4·26	4·85	0·42	2·69	0·47

* Chemist of the Royal Agricultural Society of Scotland. † Chemist of Lima.

The following table exhibits the number of tons of Peruvian guano exported to and sold in the United States and Great Britain during the years 1851 and 1852, together with the expenses of agency, freight, etc., and the net proceeds to the Peruvian treasury:

SALES OF PERUVIAN GUANO DURING THE YEARS 1851 AND 1852.

	Tons.	Gross proceeds.	Expenses.	Net proceeds.
In 1851.				
United States..	22,023	$1,015,485	$472,019	$543,456
Great Britain..	88,868	3,974,590	2,126,685	1,847,905
Total.....	110,891	$4,990,075	$2,598,704	$2,391,371
In 1852.				
United States..	47,529	$2,152,961	$945,918	$1,207,04
Great Britain..	141,966	6,315,135	3,339,995	2,975,140
Total.....	189,495	$8,468,096	$4,285,913	$4,182,188

The total importation of guano, into the United States during the eight years ending June 30, 1855, was 495,047 tons. The largest importations were from Peru, and the smallest from Africa. In 1854, the importations of guano nearly quadrupled those of any preceding year, and exceeded those of 1855 by 1888 tons. The number of American vessels and their tonnage dispatched from the Chincha Islands each month in 1853, and each of the first six months of 1854, is stated as follows:

Months.	No. of vessels.	Tonnage.
January, 1853.....	5	2,265
February.....	4	2,005
March.....	8	4,040
April.....	18	10,878
May.....	16	11,144
June.....	18	10,850
Total in six months.....	69	41,182
July, 1853.....	19	14,424
August.....	17	10,596
September.....	19	12,835
October.....	30	22,681
November.....	28	15,474
December.....	26	19,953
Total in six months.....	139	95,953
Total for the year.....	208	137,135
January, 1854.....	28	15,967
February.....	29	16,156
March.....	11	66,471
April.....	11	10,004
May.....	10	7,563
June.....	9	4,552
Total in six months.....	91	120,713

The number and tonnage of foreign vessels from the Chincha Islands to the United States during the same periods, and the countries to which they belonged, is given as follows:

Countries.	No. of vessels.	Tonnage.	Countries.	No. of vessels.	Tonnage.
1853.			1854.		
British.....	26	12,984	British.....	6	3,416
Dutch.....	4	1,013	Swedish.....	1	269
Chilian.....	2	1,003	Norwegian....	1	379
Swedish.....	1	245	Peruvian.....	2	840
Hamburg.....	1	400	Dutch.....	1	545
Total for year	83	15,595	Total 6 mo's.	11	5,449

Sale, exportation, etc., of guano.—As the system of exportation and sale of guano is complicated, and not generally understood in the United States, it has been thought proper to condense, from reliable sources, chiefly official, all the facts relating to the subject which are in possession of the State Department.

The expense of loading guano at the Chincha Islands is about 2 dollars per ton, including the cost of bags for a ground tier in every vessel; but this cost may increase to a maximum of 3 dollars, perhaps, as the distance from the place of deposit to the vessel increases. The freights have been as high as 30 dollars per ton; but the increased navigation in the Pacific, consequent upon the acquisition of California by the United States, has reduced this sum to 20 and 15 dollars, and even to as low as 12 dollars.

The exportation of the article to England first commenced in 1826, but was tried merely as an experiment. It was not until more than 13 years subsequently that guano was considered an article of commerce; indeed, it would seem, that even at that period the great importance and value of this fertilizer were not well understood by the Peruvian government; for it appears that the Chincha Islands, and all the guano found upon them, were then sold for the sum of $60,000—a sale which, had it not been subsequently annulled by judicial proceedings, would have placed the agriculturists of the world at the mercy of an irresponsible monopoly of individual stock-jobbers. The first guano contract was then made with the Peruvian government by the same parties whose purchase of the islands had just been canceled; and in less than a year this contract was merged in another made in February, 1842, providing for a loan of $525,000, in consideration of the exclusive privilege of shipping 126,000 tons within 5 years. In July, 1847 (after the expiration of the first contract), another was made by the same parties, providing for a loan of $600,000 in cash and $100,000 in scrip (equal to $615,000 in cash)—in all, $700,000 good money—in consideration of the privilege of exporting only to Europe 40,000 tons within six months.

In December, of the same year, a third contract was entered into with the same parties who had negotiated the two former, by which, in consideration of the privilege of shipping 100,000 tons of guano, a new loan was effected of $850,000. The principal stipulations of this contract were as follows: The loan was to be paid—$400,000 in cash, and the balance in monthly payments of $50,000, the contractors were to enjoy the exclusive privilege of exporting to any or all parts of the world 100,000 tons, register measurement—equal to nearly 140,000 actual measurement. The time allowed for the shipment of the 100,000 tons was limited to 18 months from June, 1848, allowing an extension of the time (without exclusive privilege), in case a sufficient number of vessels could not be chartered to convey the whole quantity within that period. The guano was to be consigned directly to the contractors in England, or to their agents elsewhere. The guano was to be sold for account of the Peruvian government, the contractors being authorized to charge the usual commission and guaranty (about 4 per cent. on gross sales), and an interest of 5 per cent. upon all expenses, including freights advanced in England or elsewhere. The payment of the loan of $850,000 (the pound sterling being computed at $5), with interest at the rate of 1 per cent. per month, is provided for: first, from the balances of account existing in favor of the Peruvian government on the books of the contractors (that is, balances arising from the former contracts); and second, from the net proceeds of the sales of guano shipped under the contract; one fourth part of the net proceeds to be accounted for in the scrip of the government, at par value, with the interest added. This scrip, with the accruing interest added, cost the contractors, it is stated, about 10 cents to the dollar.

How much the contractors realized from this contract of December, 1847, can not well be known. The following estimate, however, has been made:

Gross sales of 130,000 tons of guano, at $50 per ton ($6,500,000), on which the commission, at 4 per cent., was.....	$260,000
Estimated net proceeds, at $20 per ton, of which one fourth part was accounted for to the government in its own scrip, costing the contractors (with interest added) about 10 cents per dollar, leaving a profit of 90 per cent. on the whole amount—say $650,000.....	585,000
Probable gain in exchange (at $5 per pound sterling) at least 10 per cent. on total net proceeds—say on $2,600,000.....	260,000
Total estimated profit.....	$1,105,000

It appears, then, that the total loans on guano, and

the number of tons contracted for, up to the year 1848, were:

			Tons.
February, 1842.....	$525,000,	with privilege of	126,000
July, 1847.....	700,000	" "	40,000
December, 1847....	850,000	" "	100,000
Total loans.....	$2,075,000	Total guano..	266,000

Subsequently to the contract of December, 1847, another was made, by which the consignment of all guano shipped to England and the continent of Europe from December 18, 1849, to December 18, 1851, was conceded to the same parties, and a still later contract was entered into by the Peruvian minister in England, on behalf of his government, guarantying to the London house of Gibbs & Co. the consignments of all guano shipped to Great Britain and the continent of Europe, with the exception of France and Spain, from December 18, 1851, to December 18, 1855. By these latter contracts, loans were made, at different times, amounting, in the aggregate, to about $2,000,000; the last loan of $1,200,000 being at a reduced interest of 5 per cent. In both the last contracts, the London house of Gibbs and Co. were made the agents for the payment of the Peruvian bonds held in England, amounting in 1850, back interest, etc., to about $20,000,000. For the payment of this debt, one half the proceeds of the guano sold there is now appropriated. The consumption of guano in Great Britain and on the continent of Europe is estimated at about 90,000 tons annually.

The first shipment of guano to the United States was made, it is stated, in 1845. In 1846, the Peruvian government contracted for the building of a war steamer, and appropriated the proceeds of 5,000 tons to the payment thereof. In the contract with Gibbs & Co., of December 22, 1847, it will be remembered that the exclusive privilege of shipping guano to all parts of the world was conceded to that firm. This was the first contract by virtue of which guano was shipped to the United States. Upon its expiration (December 18, 1849), the Peruvian Congress, by an act of January 25, 1850, authorized the Executive to contract for a loan of $384,000, to be paid from the sales made in the United States, and the Minister of Finance advertised for proposals. Bids were immediately sent in from five American houses of undoubted responsibility. One of these bids proposed the purchase of 50,000 register tons of guano at the Chincha Islands, at $20 per ton, to be shipped within 5 years; advancing the loan of $384,000 at 6 per cent. interest, with the usual articles regulating the commissions, exclusive privilege, chartering vessels, etc. This proposal, guarantying to the Peruvian government $20 per ton (all previous contracts not yielding to the government more than $15 net), was the most advantageous that had been made so far; yet it was rejected, through the influence of European competitors, and the loan was advanced by the house of Gibbs & Co., at 6 per cent. interest, to be repaid out of the proceeds of sales in Great Britain.

There had been no formal cession, since the termination (December 18, 1849), of the contract of December 22, 1847, of the right of the market in the United States, until the contract made with Barreda and others. Special licenses have been, from time to time, granted by the Executive to Gibbs & Co.; and this firm have therefore continued, through their agents, to control the consignments as much as ever. The Peruvian government seems unwilling to enter into any arrangements either to sell at a fixed price at the islands, or that the article should be sold in the United States at a fixed price, and that a sufficient supply should be always in the market. The countries to which guano is exported from the islands, by virtue of these several contracts, are: the United States, Great Britain, France, Spain, the Mauritius, China, the West Indies, and Venezuela. In the United States, the agents are Barreda & Brother in Baltimore, and J. W. Riley in New York; Great Britain, Messrs. Gibbs & Co., who also have the agency in Belgium and Sardinia; for the Mauritius, Kendall & Co.; for Spain, Murrieta & Co. of London; for China, Sevilla & Co., of Lima. The agency of the West Indies is intrusted to Barreda & Brother; and that of Venezuela, under a recent contract, to Don Leocadio Guzman, the envoy of that republic in Lima. All these agents are paid commissions, varying from 6 to 7½ per cent., for selling guano, freighting vessels, etc. They are also allowed interest, at the rate of 6 per cent., upon all sums of money advanced to the government.

These contracts claim a general interest in the United States, as throwing light upon the complicated system which regulates the exportation and sale of guano; but the contract for supplying the United States themselves, possesses more immediate interest to the consumers in this country, and demands a brief additional notice—the facts and statements being copied or condensed from reliable sources.

The contract between the Peruvian government and Messrs. Barreda & Brothers, for the exclusive export and sale of guano in the United States during 5 years, was concluded on the 22d of August, 1851. According to its stipulations, the agents are entitled to charge 6½ per cent. commission upon the gross product of the sales, in full for all their services as agents in selling the substance, chartering vessels, guarantics, etc. They are allowed six months to render an account of the different sales made by them; which term is absolute, unless good cause can be shown for delay. They are also authorized to charge 6 per cent. upon all money advanced to the government.

The consumers in the United States have complained that the enormous profits which accrue to those interested in the contracts with the Peruvian government for the sale of guano, have combined with other causes in keeping up the high price of the article. The chief ground of these complaints seems to be, that large profits *beyond* those legitimately incident to these contracts are realized in the shape of interest, premiums, etc., which are paid in the first instance by the Peruvian government, but finally fall upon the consumer of guano. These extra commissions amount annually to a heavy charge upon American shipping, and must necessarily tend to keep up the cost of guano to the consumer. In 1853, for instance, the amount of Peruvian guano exported to the United States, as stated from Peruvian returns* was 137,135 tons register, or about 164,562 tons' weight. The freight on this, at $17 per ton, amounted to $2,797,554. Five per cent. on this would be $139,877 70. This added to about $16,000 commissions, or port agency in Peru, would make a total of $155,887 70 levied as extra commissions, not authorized by the contract, as is complained.

These facts bear materially upon the consumption and sale of this useful fertilizer in the United States. The interest felt upon the subject has been evinced, as is well known, by large and respectable conventions of citizens concerned in agriculture, which have been held in various sections of the country, and by propositions introduced into Congress, having for their object such legislation as would lead to special negotiations with the government of Peru respecting the mode of exportation and sale of her great staple.†

* The United States' Treasury Report on Commerce and Navigation for 1853, gives only 25,852 tons; but for 1854, makes the number of tons 163,062.

† As one of the results of these movements, may be named an act of Congress, approved August 18th, 1856, "to authorize protection to be given to citizens of the United States who may discover deposits of guano."

No deposits of guano, which will at all compare with those of Peru, seem as yet to have been discovered, although most extensive explorations have been prosecuted; nor does science seem yet to have succeeded, though inventive skill has been tasked to the utmost, in manufacturing a substitute which would supersede the use or lower the price of the Peruvian fertilizer. Indeed, the very latest reports exhibit rather an appreciation in its price, and a large increase in its consumption.—*Com. Rel., U. S.*

Guaranty, in law, an obligation undertaken by one party that another shall pay or perform that for which he is or may become liable to a third party. In mercantile transactions in Scotland it may be constituted in any way by which the consent of the guaranty obligant is truly and freely given; but it can only be proved by his oath or writing. The evidence of witnesses is inadmissible, unless the obligation was undertaken as an integral part of a transaction relative to moveables, provable by witnesses, or that something followed on the faith of it, with the knowledge of the guaranty obligant, by which the rights of parties were materially affected. In England it is enacted by statute, that "No action shall be brought whereby to charge the defendant upon any special promise to answer for the debt, etc., of another person, unless the agreement on which such action shall be brought, or note thereof, shall be in writing, and signed by the party to be charged therewith, or some other person thereunto by him lawfully authorized." The construction of all such obligations is never extended beyond their obvious meaning, and they are only understood to apply to future, unless they expressly include past transactions. All their conditions and limitations must be carefully regarded, otherwise they become void. If so expressed or intended, however, such obligations may be of the most unqualified character; they may be unlimited in amount, and indefinite as to time. When the guaranty obligant is compelled to pay, he has an action of relief against the principal debtor; but that party, being primarily liable, must first be sued by the creditor; and whatever he does toward the extinction of the claim of the creditor, or whatever the creditor recovers from him or his estate, goes so far to relieve the guaranty obligant, who can also plead against the creditor any defense which could be competently pleaded by the principal debtor. Where more persons than one are bound together in a guaranty obligation, any of them seeking relief from the others of a share of his loss must communicate to them a share of any security which he may hold over the estate of the principal debtor, or of any abatement he may have obtained from the creditor. A guaranty obligation may be extinguished by the extreme neglect of the creditor; as, for example, by his failing to take advantage of a security in his power, omitting to negotiate a bill, inadvertently giving up funds of the principal debtor over which he had a right of lien or retention, or renouncing any security over his estate. In like manner, if he compound with, or discharge the principal debtor, without the concurrence of the guaranty obligant, the guaranty is at an end; excepting under a commission of bankruptcy in England, or a sequestration in Scotland, where the creditor may, by acquiescence, allow the principal debtor to be discharged, and may accept a composition, without discharging the guaranty, provided the guaranty obligant has previously been duly warned and called on to satisfy the debt.

Guatimala, or **Gautemala**, one of the republics of Central America, occupies most of the table-land of Cautimala, with the mountainous district between it and the Gulf of Honduras, besides a portion of the table-land of Yucatan. Its extreme latitudes are 13° 29′ and 18° 12′ N., and longitudes 88° 10′ and 93° 22′ W. It is bounded on the north by the Mexican State of Yucatan, on the west by Chiapa, on the south by the Pacific Ocean, south-east by the republic of Salvador, east by Honduras, and north-east by the Gulf of Honduras, and the British Honduras, or Belize. The total area of Gautimala is about 49,000 square miles. It is divided into 17 Departments, and contained, according to the returns of 1852, a population of 972,000, distributed as follows:

Departments.	Populations.	Departments.	Populations.
Guatimala	89,500	Totonicapán	84,700
Sacatepec	44,500	Gueguetenango	64,800
Chimaltenango	56,400	Quesaltenango	66,800
Sanmarco	89,100	Chiquimula	73,000
Suchitepec	86,300	Vera Paz	6,200
Escuintla	15,800	Salamá	100,900
Amatitlan	38,000	Isabel	9,000
Santa Rosa	36,000		
Mita	72,800	Total	972,000
Solola	84,200		

The surface of Guatimala is wholly mountainous, the main chain of the continuation of the Andes traversing it from south-east to north-west at an inconsiderable distance from the Pacific shore, and branching off in various ramifications toward the Atlantic; forming many valleys, but inclosing few plains. Along the main chain occur numerous volcanoes, all near the Pacific. The culminating point of the surface is in N. lat. 15° 30′, between the towns of Totonicapáan and Gueguetenango. The eastern border of the plateau descending to the Gulf of Honduras is cut by deep valleys, which extend to a great distance, and in some places advance to the very shores. The country lying to the west and the north-west of the Golfo Dulce is a low plain, while all between the plateau and the Bay of Honduras is a succession of ridges and valleys. In many places the shore is rocky, with rocky barriers lying off it.

Numerous streams drain this State. The most important are, the Lacantun, forming part of the Mexican boundary; the Motagua and the Polochic, which fall through the Dulce into the Bay of Honduras. The most important lakes are, the Dulce, advantageous for foreign trading vessels; the Amatitlan, 18 miles south-east of Guatimala, is 9 miles by 3, of great depth, and is much resorted to as a bathing-place by the inhabitants of Guatimala, from February till April; near it there are several mineral and hot springs; the Atitlan, 80 miles north-west of the city of Guatimala, is about 20 miles long by 9 broad, surrounded by lofty heights, including the volcano of Atitlan, and is remarkable for its very great depth, and being without outlet, though several small rivers enter it; the Paten, near the frontiers with Yucatan, about 30 miles long, and 9 broad.

The climate of the table-land is that of perennial spring, the thermometer scarcely varying throughout the year, and it resembles very much the climate of Valencia in Spain in almost every particular. In the northern part of the State, in what is called *Los Altos*, the highlands, the average is lower than any other part of the country. Snow sometimes falls in the vicinity of Quesaltenango, the capital of this Department, but soon disappears, the thermometer seldom remaining at the freezing point for any considerable time. In the vicinity of the city of Guatimala, the range of the thermometer is from 55° to 80°, averaging about 72° of Fah. Vera Paz, the north-eastern Department of Guatimala, and embracing the coast below Yucatan to the Gulf of Dulce, is nearly 10 degrees warmer. This coast from Belize downward to Isabel and San Tome is hot and unhealthy. From May till October is the rainy season. Thunder prevails in June, and terrific storms from the south-west sweep along the Pacific coast in August and September. Earthquakes are very frequent.

The soil is generally very fertile, producing excellent rice, and all the cereals in great variety and abundance. Agriculture, however, is in a very backward state from the want of enterprise and the igno-

rance of the people, as well as from the want of roads. As articles of commerce, the most important products are cochineal and indigo. Cotton, cacao, sugar, vanilla, tobacco, and coffee, are grown in considerable quantities. The table-land is almost destitute of trees and even bushes, except on the declivities of the hilly ranges which so extensively traverse it. Trees of very large size form extensive forests on the lower lands along the Pacific. These are a source of great natural wealth. Among the trees the most valuable are the cedar, mahogany, Brazil, Santa Maria, pimento, guaiacum, etc.; and abundance of medicinal plants are also found and turned to some account. The vegetation is luxurious and vigorous along the low tract by the Bay of Honduras. Sheep are reared in considerable numbers, especially over the northern districts, and their wool is used for native manufactures. The horse is small, hardy, and handsome, and mules are numerous, being the chief beasts of burden. Pigs and poultry are very abundant, and of excellent quality.

Salt is manufactured along the coast of the Pacific. Jasper, marble, and brimstone, are obtained in considerable quantity in the vicinity of some of the volcanoes. Lead is worked by the Indians in Totonicapán. The manufactures are mostly limited to those for domestic use. The cotton manufacture, once extensive, is now confined to the Departments of Guatimala and Sacatepec. Coarse woolen cloth is now more manufactured, especially *gerga*, which is made into a peculiar black called *poncho*, in which much taste is displayed.—E. B.

Since 1847, Guatimala has been an independent republic, and in 1851 a new constitution was adopted, by virtue of which the President is elected every four years; to whom, in conjunction with an Assembly General, composed of 59 members, the powers of the government are confided. It is divided into 17 Departments, and its capital is Nueva Guatimala. The great commercial staple of the republic is cochineal, of which upward of 20,000 bales are annually produced. In addition to these articles, considerable attention has been given of late to the cultivation of tobacco, sugar, coffee, cotton, vanilla, and indigo. Gold, silver, and other minerals have been found in several sections of the State. The exports consist of cochineal, indigo, segars, sarsaparilla, mahogany, cocoa, hides, dyewoods, and some silver. The total value of exports amounts, annually, to about $1,880,000, and the imports to about $2,000,000.

The commercial relations between the United States and Guatimala are regulated by the treaty of March 3, 1849, and by the local legislation of that republic. The treaty is one of peace, amity, commerce and navigation, and stipulates for perfect equality and entire reciprocity of commerce and navigation. Each nation extends the same privileges to the vessels of the other that are applicable to its own. The right of residence, commerce, and trade is extended to citizens of each in the territories of the other, with the same rights, privileges, exemptions, and restrictions, which apply to native citizens—the coasting trade excepted, which is reserved to the parties, respectively, according to their own separate laws. The high contracting parties moreover adopt, with respect to each other, the principle that free ships make free goods. The treaty is to continue in force during 12 years, and contains the usual provision of one year's notice after the expiration of that period. The local regulations of Guatimala are altered from time to time by decree, sanctioned by the executive officers, and promulgated under authority of the President of the republic. The latest decree of this character, of which our Government is in possession, modifies the tariff of 1837, so far as it relates to tonnage duties. It bears date May 6, 1852, and subjoined is a translation of its provisions:

Article 1. Every vessel which shall anchor in the ports of the republic, no matter whence it may come, shall pay a tonnage duty of two reals (25 cents) for each ton of measurement. This measurement shall be ascertained from the register, the certificate of nationality, the patent or clearance under which it sails.

Article 2. Shall be free of tonnage duty—1st. Small vessels engaged in transporting merchandise from one port to another of the republic; 2d. Vessels which anchor in ballast to take in water, provisions, or fruits of the country, provided they discharge no cargoes; 3d. Vessels of war, and regular mail or steam-packets, provided they do not discharge merchandise over 20 tons; 4th. Merchant vessels which, exceeding 150 tons of registered measurement, discharge not exceeding 20 tons of merchandise; 5th. Vessels which receive on board, for exportation, produce of the country, excepting cochineal, as provided for in decree of March 31, 1849.

Article 8. This decree shall take effect from and after the first day of July, ensuing.

Guatimala, la Antigua, a city of Central America, in the republican State of Guatimala, and about 27 miles W.S.W. from Guatimala la Nueva. It stands in a wide and fertile valley, at an elevation of 5820 feet above the sea-level. The place was abandoned after the earthquake of 1773, which partly destroyed it; but it now contains a population of nearly 20,000. There is collected here a considerable quantity of cochineal; and there are some insignificant manufactories. The city is regularly laid out, but a great part of it is still in ruins. Prior to the earthquake the population amounted to about 60,000.

Guatimala la Nueva, the capital of the republic of Guatimala, in Central America. Its situation is in N. lat. 14° 36′, and W. long. 90° 30′, at the extremity of a plain 22 miles in length by 7 in breadth, with a deep ravine on three sides, and elevated above the sea 4970 feet. The form of the town is quadrangular; and the streets are wide, straight, and clean. On account of the frequency of earthquakes the houses are only one story in height. The Plaza or Great Square measures about 150 yards on each side, and is surrounded on three sides by colonnades. Here are the principal buildings in the town—the cathedral, the archbishop's palace, the old royal palace, the *College des Infantes*, and the various government offices. In the centre stands a large and elegant fountain. The town is well supplied with water brought by pipes from the mountains upward of two leagues distant. Besides the cathedral, there are 26 other churches and chapels; and, beside the Plaza, several other squares, each with a fountain in the centre. At the south side of the city there has recently been erected a fort mounting 20 guns. There are several private schools in Guatimala; and several printing establishments, whence two weekly newspapers are issued.

Thompson, in his *Official Visit to Guatimala*, states that "the mean heat" of the city of Guatimala "during the day, from the first of January to the first of July, is 75° of Fahr.; at night, 63°. In the summer months the average may be taken at 10 degrees higher." Fruits, vegetables, provisions, and all articles of ordinary consumption are abundant, at moderate prices, while many descriptions of British manufacture are as cheap as in Britain. The manufactures are muslins, gauze, cottons, earthenware, porcelain, jewelry, segars, etc.

The inhabitants are courteous and hospitable to strangers, but live very much apart from each other, their only recreation being their incessant religious processions. The suburbs are occupied mostly by ladinos (mulattoes) and Indians. The buildings of this city were begun in 1776, three years after the fearful earthquake of 1773, which completely destroyed Old Guatimala, the former capital. The population is variously estimated from 35,000 to 50,000.

Guava, the fruit of the *Psidium pyriferum* and *P. pomiferum*, nat. ord. Myrtaceæ, the pulp of which is made into a jelly of a peculiarly delicious flavor. This sweetmeat is imported in considerable quantities from the West Indies.

Guayaquil, a city and port of Columbia, on the western coast of South America, lat. 2° 11′ 21″ south, long. 79° 43′ west. Population 20,000. The town is situated on the banks of the river of the same name, about six or seven leagues from the Isla Verde, or nine leagues from the Isla Puña, in the Gulf of Guayaquil, opposite to the mouth of the river. Ships bound for Guayaquil generally call at the Isla Puña, where expert pilots may be had, who carry them up to the town by night or by day, according to the state of the tides. The town is old; but as the houses are of wood, and it has frequently suffered from fires, much of it is comparatively modern, and has a good appearance. There is a dry dock on the south bank of the river, where several ships of a superior construction have been built. The district in which Guayaquil is situated has for a considerable period formed a part of the republic of Ecuador or Æquator. Like the other South American States, it has been subjected to perpetually-recurring revolutions; but Guayaquil has, notwithstanding, continued to enjoy considerable commerce. Its principal article of export is cocoa, of which large quantities are shipped; and next to it are straw hats, timber, tobacco, hides, bark, etc. The principal articles of import are manufactured cottons and hardware, silks, wine, flour, etc. The following tables show the commerce and navigation of Guayaquil:

ACCOUNT OF THE QUANTITIES AND VALUES OF THE PRINCIPAL ARTICLES OF PRODUCE EXPORTED FROM GUAYAQUIL, IN 1849, 1850, AND 1851.

Articles.	1849.		1850.		1851.	
	Quantities.	Values.	Quantities.	Values.	Quantities.	Values.
Cocoa.....lbs.	14,020,446	£139,408	11,171,818	£111,713	9,567,068	£100,000
Straw hats.....doz.	21,101	73,856	26,836	93,894	30,700	107,700
Tanned hides.....sides	22,367	5,871	26,400	8,400	17,113	5,100
Tobacco.....quintals	2,123	2,289	1,522	5,300	2,808	12,400
Timber.....logs	8,243	1,418	7,571	8,510	16,244	16,900
Mangles.....poles	1,419	02	8,458		10,027	700
Flax.....lbs.	17,156	562	7,558	200	860	50
Orchilla.....quintals	706	1,235	1,240	2,100	1,138	2,000
Tamarinds.....	180	229	175	200	367	600
Bark ..... "	714	1,499	1,045	6,500	2,688	14,000
Total value.....	....	£284,020	....	£278,625	....	£287,800

ACCOUNT OF THE NUMBER, TONNAGE, CREWS, AND VALUES OF THE CARGOES OF THE VESSELS OF EACH NATION ENTERED AND CLEARED AT THE PORT OF GUAYAQUIL, IN 1851.

FLAGS.	ENTERED.				CLEARED.			
	Vessels.	Tons.	Crews.	Value of cargoes.	Vessels.	Tons.	Crews.	Value of cargoes.
British.....	7	2,026	107	£38,000	7	2,026	107	£41,900
Ecuadorean.....	51	2,060	350	33,100	51	2,060	350	26,500
Peruvian.....	83	3,700	380	90,000	83	3,700	380	22,000
Chilian.....	8	1,265	70	25,100	8	1,265	70	19,000
New Granadian.....	2	140	11	1,200	2	140	11	6,200
Mexican.....	3	350	28	2,000	3	350	28	3,200
Spanish.....	10	3,100	170	65,000	10	3,100	170	52,000
American.....	9	1,800	80	36,300	9	1,800	80	40,000
French.....	4	900	66	20,000	4	900	66	18,000
Hanseatic.....	2	350	24	16,000	2	350	24	17,000
Danish.....	2	360	25	18,000	2	360	25	18,000
Total.....	181	16,051	1,311	£274,700	181	16,051	1,311	£287,800

The Guayaquil River is the principal in western Ecuador. It is formed by the union of numerous streams from the Andes, and becomes navigable for commercial purposes at Baybahoyo or Caracol, 70 or 80 miles from its mouth—river boats ascending to one or other of these places according to the season. Below Guayaquil the channel is impeded by numerous rocks and small islands, while at its mouth is the larger island of Puna. Where the river falls into the Pacific it is known as the Gulf of Guayaquil, the extreme points of which are 70 miles apart.

Guaymas, a sea-port town of Mexico. See MEXICO.

Guayra, La, the principal sea-port town of the republic of Venezuela, province of, and 11 miles north north-west of Caracas. It is an unhealthy situation, and is closely surrounded by high mountains and rocks. The chain of mountains which separates it from the high valley of Caracas descends almost directly into the sea; and the houses of the town are backed by a wall of steep rocks, leaving scarcely 100 or 140 fathoms' breadth of flat ground between this wall and the sea. The town is poorly built, and contains no edifice worthy of notice. The port is unsheltered, but has good anchorage in from six to thirty fathoms, and is well defended by land batteries. Its chief exports are coffee, cocoa, indigo, and hides, with some cotton and sugar. Population about 8000.

Guiana, Guyana, or **Guayana**, an extensive territory in the north-eastern part of South America, comprehending in its widest acceptation all that extent of country lying between the Rivers Amazon and Orinoco, between lat. 3° 30′ south, and 8° 40′ north, and long. 50° 22′ and 68° 10′ west. It is bounded on the north by the Orinoco and the Atlantic, east by the Atlantic, south by the Amazon and the Rio Negro, and west by the Orinoco and the Cassiquiare. Its greatest length from east to west is about 1200 miles, and its greatest breadth about 850 miles; estimated area 700,000 square miles. This vast territory is divided into Brazilian (formerly Portuguese) Guiana, Venezuelan (formerly Spanish) Guiana, and Colonial Guiana. The two former, comprising about five sixths of the entire region, are now included within the limits of their respective countries; while Colonial Guiana is that to which the general term of Guiana is now commonly applied. It is subdivided into British, Dutch, and French Guiana.

Guiana, British, the most westerly of the three colonies, is bounded on the north and north-east by the Atlantic, east by Dutch Guiana, from which it is separated by the River Corentyn, south by Brazil, and west by Venezuela. It lies between north lat. 0° 40′ and 8° 40′, and west long. 57° and 61°, and has an estimated area of 76,000 square miles; but the possession of much of this has been disputed by Brazil and Venezuela. It is divided into three counties, Demerara, Essequibo, and Berbice, so named from the three principal rivers which drain them. Demerara, situated between the other two, occupies the centre of the seaboard for nearly 90 miles. To the north-west the county of Essequibo stretches along the coast toward the swamps and forests of the western frontier; and to the south-east lies the county of Berbice.

The entire coast of British Guiana is low, and generally bordered with a sandy flat extending far out to sea, so that vessels drawing more than 12 feet of water can not approach within three or four miles of land. The rivers, too, deposit at their mouths large quantities of mud and sand, and are thus inaccessible to vessels of large size. Extending from low-water mark to a distance of five or six miles inland, is a tract of rich alluvial soil of recent formation. This is succeeded by a flat narrow reef of sand running exactly parallel with the present line of coast. Here remains of stranded vessels and anchors eaten through with rust have been found, indicating that within a comparatively recent period it had been washed by the waves of the Atlantic. Running parallel to this reef, at irregular distances, varying from 10 to 20 miles, is a second and higher range, composed of coarse white sand; and which, at a period more remote, probably formed the sea limit. In the wet seasons the intermediate tract between these two reefs becomes the bed of extensive savannahs; for the creeks being then unable to carry off the torrents of rain which fall, overflow their level banks, and inundate the surrounding country to the depth of five or six feet. On the return of dry weather the waters gradually subside, leaving behind them a thick layer of decayed grasses and aquatic plants which had floated and flourished on their surface, and these in time produce a vegetable mold of considerable thickness. Beyond the second reef are swampy plains, intersected by sand-reefs, and extending to the mountainous regions of the interior. The high land does not rise immediately from the plain to a great elevation, but begins with a range of sand hills of from 50 to 200 feet above the plain. Behind these the high land stretches out in level or undulating plains, rising here and there into eminences. About north lat. 5°, a mountain chain, an offset of the Orinoco Mountains, and composed of granite, gneiss, and other primitive rocks, runs from west to east through this territory, forming large cataracts where it is crossed by the rivers, and rising frequently to the height of 1000 feet above the sea. About a degree further south is the Pacaraima chain, which, in like manner, runs from west to east, and is of primitive formation. Its highest point, called by the natives Roraima, in north lat. 5° 9′ 30″, west long. 60° 47′, is 7500 feet above the level of the sea. The plains south of this range are in general level, and form extensive savannahs, covered with grasses and plants. The Sierra Acaraí is a densely wooded chain of mountains forming the southern boundary of Guiana, and the water-shed between the basins of the Amazon and the Essequibo. This chain rises to the height of 4000 feet. The Conocou, or Cannucu Mountains, running south-east and north-west, connect the Pacaraima with the Sierra Acaraí.

The principal river of British Guiana is the Essequibo, which rises in the Sierra Acaraí, and after a course of at least 600 miles discharges itself into the ocean by an estuary 20 miles in width, in north lat. 7°, west long. 58° 40′. In the estuary of the Essequibo are a group of beautiful islands partially cultivated, the principal of which are Varken, or Hog Island about 21 miles in length by 3 in breadth, Wakenaam and Leguan, each about 12 miles by 3, and Tiger Island, about half that size. The entrance is difficult and dangerous, even for vessels of small size, on account of the banks of mud and sand. Its course lies through forests of the most gigantic vegetation. In north lat. 3° 14′ 35″, it forms a great cataract, named by Schomburgk, King William's Cataract. In north lat. 3° 57′ 30″, and west long. 58° 3′, it receives the Rupunoony, which has a course of about 220 miles. At various points of its course it forms rapids and cataracts which impede its navigation. About 60 miles from its mouth occur the last of these, the Falls of Etabally, after which it pursues its course through the low alluvial plain. In this part of its course it receives the united waters of the Cuyuni and the Massaroony. The Demerara, or Demerary rises probably near north lat. 5°, and after a northward course nearly parallel with the Essequibo, of more than 200 miles, it enters the Atlantic near north lat. 6° 50′, west long. 58° 20′. It is navigable for 85 miles, and at its mouth at Georgetown it is more than a mile and a half across. Further east runs the Berbice, whose source is probably about north lat. 3° 40′. It joins the Atlantic by an estuary five miles in width, 10 miles north of New Amsterdam, and in north lat. 6° 21′, west long. 57° 12′. It is navigable for 165 miles from the sea, by vessels drawing seven feet water. The Corentyn which forms the eastern boundary of British Guiana, and probably has its source in the Sierra Acaraí, flows generally northward and falls into the Atlantic in north lat. 5°, west long. 57°. It is navigable for boats for 150 miles. The mineral productions of Guiana are necessarily but imperfectly known. Clays of various kinds, including excellent pipe-clay, are found near the coast. The chief rocks are granite, porphyry, gneiss, clay-slate, sandstone, etc. Traces of iron are found in various parts; and gold has been recently (in 1852) discovered in considerable quantities on the upper Essequibo.

The climate of Guiana is more healthy than that of most places in the West Indies. Its salubrity has been much increased since the occupation of the country by Europeans, the gradual clearing and cultivation of the surface having done much to mitigate those diseases so fatal in a low, marshy, and hot region. The hurricanes so destructive in the West Indies are unknown here, and gales are unfrequent. Thunderstorms occur only during the rainy seasons; but, like the few occasional shocks of earthquakes, are not attended with danger. The year is divided into two wet and two dry seasons. The long rainy season sets in about the middle of April, when light showers begin to fall. The rain increases till the middle of June, when it falls in torrents; in the beginning of July these heavy rains begin to decrease, and in August the long dry season begins, and continues till November. December and January constitute the short rainy season, and February and March the short dry season. The winds during the rains are generally westerly; in the dry season they blow mostly from the ocean, loaded with moisture, and thus render the heat less oppressive than it would otherwise be. The thermometer seldom rises above 90°, and rarely falls below 75° Fah. The mean annual temperature at Georgetown is 81° 2′; the total annual fall of rain averages about 100 inches.

The vegetation of Guiana is most luxuriant. The interior is thickly wooded with valuable timber, with the exception of the swamps of Berbice and the savannahs. The trees are of great size, and many of them are valuable for their timber, or their fruits, or as dye-woods. Medicinal plants, including quassia, gentian, the castor-oil plant, and many others, are abundant. Arnotto, so extensively used in the coloring of cheese, grows wild in profusion on the banks of the upper Corentyn. The largest of the water-lilies, the *Victoria Regia*, was first discovered here by Mr. Schomburgk on the banks of the Berbice. The *hai-arry*, an indigenous plant deserving of notice, is a papilinaceous vine, the root of which contains a powerful narcotic, and is commonly used by the Indians in poisoning the waters to take the fish, which are not thereby deteriorated. The domestic animals are the same as those in England, and the wild animals are those common to tropical South America generally. Black cattle here attain a larger size than in Europe, but their flesh is not so tender nor so fine flavored. The wool of the sheep is converted into hair. Game, chiefly deer, range the upper savannahs. Tigers, little inferior in size to those of Asia, but different in character, being

rarely known to attack man, abound; as do also jaguars, which prey upon the herds of wild cattle and horses that graze on the extensive plains among the mountains. Among the other animals are the tapir, armadillo, agouti, ant-bear, sloth, and a great variety of monkeys. Lizards, snakes, and alligators are numerous. There are several kinds of parrots, macaws, and humming-birds; also the flamingo, muscovy duck, toucan, spoonbill, and vampire bat. Troublesome insects are numerous, as might be expected from the swampy nature of the coast districts. The rivers and coast abound with a great variety of fish.

The cultivated portion of British Guiana is merely a narrow strip along the sea-coast, and for a few miles up the rivers, including a portion of the islands of Essequibo. The whole surface of the coast lands being on a level with high-water mark, when these lands are drained and cultivated they consolidate and become fully a foot below it, so that the estates require to be protected from inundation by dams and sluices. Each estate has, therefore, a strong dam or embankment in front; while a similar erection runs the back, inland boundary, as well as on each side, is required to keep off the immense body of water accumulated on the savannahs during the wet seasons, and which, if not repelled, would rush down to the sea carrying every thing before it. The state of his dams, therefore, requires the planter's unremitting attention; not the slightest hole or leakage is allowed to exist in them, and by law their willful injury is considered felony. One inundation destroys a sugar estate for eighteen months, and a coffee one for six years. "The original cost of damming and cultivating is fully paid by the first crop, and the duration of the crops is from 30 to 50 years; so that though great capital is required for the first outlay, the comparative expense of cultivation is a mere trifle compared with that of the West India Islands, notwithstanding that the expense of works, buildings, and machinery, may be treble or quadruple, being built on an adequate scale for half a century of certain production."—*Geog. Jour.*, vol. iv., 323. Inside, and at the foot of these dams, are trenches 12 to 18 feet wide, and 5 feet deep, running round the whole plantation, and into these, smaller trenches and open drains convey the water that falls upon the land. These large trenches discharge their contents into the sea through one or more sluices, which are opened as the tide ebbs, and shut against the returning flood.

The staple productions of the colony are sugar, coffee, and cotton. From an official table of the exports of British Guiana from 1826 to 1851, we find that in 1827, 15,904 bales of cotton were exported, but from that period this cultivation gradually gave place to sugar, and in 1844 ceases to appear in the table as an article of export. Since 1851, however, it seems to have received more attention, for among the exports from British Guiana into the United Kingdom in 1854 we find 1093 cwt. of cotton. Coffee, from upward of 9,500,000 lbs. in 1830, gradually fell off to only 3198 lbs. in 1851. As to sugar, making a due allowance for the difference of seasons, the quantity exported remained pretty steady from 1826 to 1837, the year preceding the termination of apprenticeships—averaging about 63,000 hhds.; but in the year following that event it fell down to nearly half its former average, being in 1838 only 28,270 hhds. In 1846 it had sunk as low as 24,203 hhds., owing in a great measure to a protracted drought through a great part of that season. In 1851 it was 34,984 hhds. were exported. In proportion to the sugar obtained the quantity of molasses is large, owing partly to the defects of the common process of preparation, but chiefly to the fact that the soil is so rich an alluvium, and so abundant in alkaline and earthy saline matter. Little of the molasses is boiled down into sugar in the colony; it is chiefly made into rum, or sold to the refiners, by whom it is much prized. In 1851 the quantity of molasses exported was 9530 puncheons. Although the rum produced in this colony does not equal in character that of Jamaica, it yet occupies a respectable place in the market. The quantity exported in 1851 was 15,848 puncheons. With respect to the cultivation of the sugar cane, by reason of the lowness of the land and the plan of drainage in use—namely, that known as the open-drain and round-bed method—the system of cultivation remains exactly as in the times of slavery, every part of the operations of culture being performed by manual labor. The following statistics have been compiled from official sources:

COMMERCE OF THE UNITED STATES WITH BRITISH GUIANA, FROM OCTOBER 1, 1833, TO JULY 1, 1856.

Years ending.	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage Cleared.	
	Domestic.	Foreign.	Total.	Total.	Exported.	Imported.	American.	Foreign.
Sept. 30, 1834	$103,214	....	$103,214	$91,424	....	$560	....	....
1835	64,243	....	64,243	5,595	....	198	3,934	380
1836	105,075	....	105,075	92,019	....	1,110	5,611	749
1837	42,885	....	42,885	6,241	....	5,693	4,113	493
1838	145,582	$522	146,054	86,049	....	21,200	6,992	1,761
1839	84,906	218	85,124	14,215	....	6,715	4,392	278
1840	118,896	538	119,434	10,978	....	10,100	6,849	1,233
Total	$616,751	$1,278	$618,029	$196,513	...	$51,811	31,890	5,046
Sept. 30, 1841	$381,332	$1,269	$382,601	$18,228	....	$10,747	8,827	1,613
1842	115,991	2,4[illegible]	118,458	15,004	....	12,205	5,934	3,945
9 mos. 1843	116,145	6.	116,840	48,042	....	41,816	6,115	2,094
June 30, 1844	307,052	2,184	309,236	5,385	....	7,503	10,470	2,868
1845	416,867	1,881	418,748	7,957	$2,800	4,900	12,925	2,801
1846	551,668	1,634	553,302	12,561	....	1,475	17,701	3,564
1847	621,903	1,816	623,719	19,125	....	13,025	18,492	1,843
1848	595,114	1,865	596,479	24,274	....	12,208	16,141	1,225
1849	662,815	3,759	666,074	25,520	....	4,679	15,054	1,578
1850	502,776	22,668	525,489	14,991	20,000	500	11,642	2,587
Total	$4,271,163	$39,728	$4,310,891	$189,667	$22,800	$108,578	117,181	24,008
June 30, 1851	$540,554	$3,734	$544,288	$44,213	....	$24,324	12,001	4,220
1852	742,286	18,881	760,667	43,943	$74,770	28,000	12,128	5,712
1853	798,841	88,803	887,704	64,233	32,500	....	14,420	3,181
1854	718,096	1,153	719,249	47,489	....	1,974	12,181	3,161
1855	824,119	813	824,932	107,180	....	58,477	13,511	1,973
1856	871,766	3,497	875,263	151,574	....	2,000	13,571	3,328

An export duty is charged in the ports of these colonies on their staple productions. Both in Honduras and British Guiana, American vessels enjoy all the privileges extended to the vessels of the most favored nation; and, as the following tables for 1854 and 1853 will show, American commerce is generally on the increase. In 1854 the United States imported from Honduras: Indigo (41,939 pounds), valued at $31,842; mahogany, $83,459; dye-wood, $11,678; hides, $6706; black pepper, $1055. A total of $137,740, or nearly one half of the entire imports from this colony for that year. From British Guiana, the leading imports in

1854 were old and scrap iron, copper, brass, hides, sugar, and rum, amounting to nearly $40,000, of which copper alone reached $15,615. Demerara contains a population of 74,922 whites and free blacks. Berbice contains a population of 21,580, of whom 21,000 are free blacks.

The following comparative statement exhibits the trade between the United States and the two colonies, Demerara and Berbice, of which British Guiana is composed:

	1853.	1854.	1855.
Imports from the U. States	$887,704	$719,249	$824,932
Exports to the U. States	64,533	47,489	107,180
Balance in favor of the United States	$773,171	$671,760	$717,752
Total trade between the U. S. & Brit. Guiana	$902,237	$766,738	$932,112

The following table will show the comparative importance of the trade of the three Guianas with the United States during the year ending June 30, 1856:

	ENTERED INTO U. S.		CLEARED FROM U. S.	
	Vessels.	Tons.	Vessels.	Tons.
British Guiana	9	1,246	23	3,828
Dutch "	4	702	3	665
French "	1	192	..	....

Dutch Guiana.—Dutch, or Surinam, lies between British and French Guiana, being separated from the former on the west by the River Corentyn, and from the latter on the east by the Maroni; on the north it has the Atlantic, and on the south Brazil. It lies between latitude 1° 30′ and 6° north, and longitude 53° 30′ and 57° 30′ west, being about 300 miles in length, from north to south, and 260 in extreme breadth. Area, about 38,500 square miles. In physical geography, climate, productions, etc., it differs but little from British Guiana. The principal river is the Surinam, which flows northward through the centre of the territory, and falls into the Atlantic after a course of nearly 300 miles. It is navigable for large ships for about four leagues from its mouth. Along the coast, and on the banks of the river, are many settlements and plantations; and the higher parts of the country are occupied chiefly by the Maroons, the descendants of runaway negroes. In the last century they were very troublesome to the colonists, but they have now adopted more settled habits. Slavery has been recently abolished here by the Dutch government, but in lieu of compensation, the slaves remain apprenticed, and work without wages to their proprietors for 12 years. The colony is ruled by a governor appointed by the crown, and a council elected by the freeholders. Justice is administered by a supreme court, courts of minor jurisdiction, and a court of inheritance and orphans. The receipts in 1850 amounted to £39,485; the expenditure to £85,564. On 273 plantations, consisting of 36,548 acres, 48,815 acres were under cultivation. The chief productions are sugar, rum, molasses, coffee, cacao, and cotton. Its chief trade is with Holland. Imports, in 1851, £171,395; exports, £286,162. At the close of 1850, the colony numbered 61,080 inhabitants—of whom 12,401 were Europeans and creoles, 8000 bush negroes, 1000 Indians, and 39,679 slaves. Of the religious sects, the Moravians amounted to 17,933, and the Jews to about 680. The live stock consisted of 168 horses, 59 mules, 5564 cattle, 3155 sheep, 454 goats, and 4664 hogs. The army consists of 610 men of all arms; and the navy of 11 vessels, chiefly small. Paramaribo, the capital, is situated on the right bank of the Surinam, about 10 miles from its mouth. It is built in the Dutch style, with wide and straight streets, planted with orange-trees; and the houses are generally two stories in height, and built of wood. Population about 20,000. A little north of the town is the fort of Zeelandia, where the governor resides, and where are also most of the government establishments.

Surinam was declared a free port by proclamation dated May 1, 1848. Accounts are kept in dollars of 8 reals, or 50 stivers (100 cents), and in pounds sterling. Exchange on London, $4 80 to $4 85 per pound sterling. Aves island, one of the leeward group of the West Indies, between 15° and 16° north latitude belongs to the Dutch government. In the year 18[illegible] extensive deposits of guano were discovered on the island of Aves, by two American ship captains, but we do not as yet learn that any shipments have been made from it. Coffee, the product of a possession of the Netherlands direct from such possessions, or from the Netherlands, imported into the United States in a vessel of the Netherlands, is admitted free of duty, under the treaty of August 26, 1852.

COMMERCE OF THE UNITED STATES WITH DUTCH GUIANA, FROM OCTOBER 1, 1832, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage Cleared.	
	Domestic.	Foreign.	Total.	Total.	Exported.	Imported.	American.	Foreign.
Sept. 30, 1833	$92,515	....	$92,515	$49,326	....	$1,744	....	....
1834	27,228	....	27,228	67,579	....	1,236	....	....
1835	30,205	....	30,205	31,420	....	....	8,884	....
1836	59,315	$2,360	61,675	33,471	....	....	10,106	....
1837	54,518	1,595	56,113	44,976	....	....	6,378	2,177
1838	68,775	2,073	70,848	54,354	....	200	4,718	76
1839	58,863	2,803	61,666	49,008	....	....	6,637	....
1840	52,118	....	52,118	37,766	....	....	5,729	....
Total	$443,537	$8,831	$452,368	$367,900	....	$3,180	41,932	2,253
Sept. 30, 1841	$37,900	....	$37,900	$35,793	....	$400	5,496	117
1842	101,055	....	101,055	74,764	....	2,578	5,454	....
9 mos. 1843	24,680	....	24,680	32,583	....	275	3,066	....
June 30, 1844	66,980	$4,792	71,772	49,144	....	....	7,363	....
1845	47,787	1,872	49,659	41,347	....	....	6,740	....
1846	66,845	1,139	67,984	33,674	....	....	4,510	....
1847	43,840	388	44,228	59,935	....	....	4,381	....
1848	115,501	1,517	117,018	51,297	....	....	5,958	317
1849	104,043	22	104,065	58,281	....	416	5,369	1,000
1850	97,014	5,425	102,439	71,043	....	2,418	4,932	364
Total	$705,595	$15,185	$720,750	$507,231	....	$6,087	51,269	1,798
June 30, 1851	$85,401	$5,682	$91,073	$89,673	....	....	4,927	521
1852	83,952	7,282	91,234	86,748	....	....	6,262	944
1853	108,889	17,094	126,083	130,681	....	....	6,218	402
1854	58,745	7,678	61,423	101,236	....	$18,096	2,927	130
1855	237,963	10,644	248,606	206,638	....	22,145	3,114	....
1856	313,661	7,855	321,516	252,793	$12,000	3,162	5,510	665

This colonial territory of Holland comprises an area of 10,400 square miles, and contains a population of nearly 65,000 souls. Its chief products are sugar, coffee, cotton, cocoa, rice, capara, fine woods, gums, drugs, timber, and molasses; the last ranks next to sugar in value as an export. The quantity of sugar

annually exported is stated at about 25,000,000 pounds, and of coffee at about 4,000,000 pounds.

The annual average production of the leading staples of this colony are thus given: Sugar, 28,012,163 lbs.; coffee, 1,355,576 lbs.; cocoa, 151,250 lbs.; cotton, 765,823 lbs.; rum, 92,183 gals.; dram (a kind of brandy), 227,965 gals.; molasses, 1,210,463 gals. Annual average value of leading staples, $1,500,000.

The value of imports into Dutch Guiana in 1853 amounted to $816,474, showing an increase over the imports of the preceding year of $71,473. Of the total amount, there were from the Netherlands, $460,482; from the United States, $179,236; and from other countries, $176,756. The exports amounted to $1,312,-118; showing $101,253 increase over the exports for 1852. Of this sum, $844,103 were sent to the Netherlands, $201,794 to the United States, and $266,221 to other countries. The principal articles imported into Surinam from the United States are salted fish, amounting, in 1853, to $58,892; salted and smoked meat, about $50,000 per annum. The imports into the United States from Surinam are sugar ($131,052 in amount in 1852), molasses ($53,833), and cocoa ($32,026 in 1853). In 1853, there arrived 201 vessels, measuring 36,858 tons. Of these, 56, of 18,960 tons, were under the Dutch flag; and 21, of 8196 tons, American. In the same year there cleared 190 vessels, measuring in the aggregate, 36,858 tons; of which 55, of 17,847 tons, were Dutch; 31, of 15,150 tons, American; and the others under the English and other flags. An analysis of the trade of Dutch Guiana shows that the United States has about one fourth of the whole commerce of the colony.

French Guiana is the smallest and most eastern of the three colonies, known as English Guiana, Dutch Guiana, and French Guiana. It lies between 2° and 6° N. lat., and 51° 30′ and 54° 30′ W. long., being bounded on the north and north-east by the Atlantic, east and sorth by Brazil, and west by Dutch Guiana. It is about 250 miles in length, from north to south, and varies in breadth from 100 to 150 miles. Area, 27,560 square miles. It has a coast line of 200 miles, extending from the Maroni to the Oyapoc. The low alluvial tract along the coast is of great fertility. The mountain chains run east and west, and are almost wholly of granite, but do not attain a great elevation. The country is abundantly watered, and the coast-lands appear to be less unhealthy than in British Guiana. The vegetation of Guiana is very luxuriant, and the interior is thickly wooded with trees valuable for their timber, fruits, and dye-woods. Medicinal plants, including quassia, gentian, the castor-oil plant, and arnetto, used in coloring cheese, are all abundant.

The island of Cayenne, at the mouth of the Oyak, is about 30 miles in circumference, and is separated from the continent by a narrow channel. The roadstead at the mouth of the Oyak, though small, is the best on the coast, having everywhere from 12 to 13 feet of water. The capital, Cayenne, is situated on the northern side of this island, and contains 5,220 inhabitants. The new town is well built, and has good streets; the government house is in the old town. The harbor is protected by a fort and several batteries. The colony is divided into two districts, Cayenne and Sinnamary, and 14 communes. The government is vested in a governor, a privy council, and a colonial council, composed of 16 members, elected by the colonists. The cultivated lands are estimated to be about one eightieth of the whole territory. Besides the staples of British and Dutch Guiana, its productions compriso pepper (including Cayenne, which is so called from the island of that name), cloves, cinnamon, and nutmegs. Trade is chiefly with France and its colonies. In 1854, the official value of the imports into France from French Guiana was £20,000; exports, £192,000. The French first settled in Cayenne in 1604; the British and Portuguese captured the colony in 1809, but restored it to the French in 1814, in whose possession it still remains. It has recently been made a place of banishment for French political offenders; and, in 1852, 2,500 of these were sent out. Population about 22,000, of whom about 15,000 are emancipated slaves.

Cayenne, sea-port, town, and capital of French Guiana, on the north-west extremity of the island of that name, in lat. 4° 56′ N., long. 52° 15′ W. It contains about 500 houses, mostly of wood, and is divided into the old and new towns, the latter clean and well built. It is the seat of a court of assize, and has a handsome church, Jesuit college, government house, and several large warehouses. The harbor is shallow, has two quays, and is protected by a fort and several batteries. Population about 6,000.

French vessels from Cayenne in French Guiana are admitted into the ports of the United States on equal terms, as to duty and tonnage, with vessels belonging to the United States, when direct from Guiana, either in ballast or with articles the growth or manufacture of that country.

Commerce of the United States with French Guiana, from October 1, 1832, to July 1, 1856.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage Cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1833	$4,698	....	$4,698	....	....	....	....	....
1834	2,488	....	2,488	....	....	....	....	....
1835	....	....	....	....	....	....	....	....
1836	3,483	....	3,483	....	....	....	3,121	....
1837	....	....	....	....	....	....	2,500	....
1838	....	....	....	$5,302	....	$938	1,906	....
1839	1,643	....	1,643	....	....	....	2,305	....
1840	....	$100	100	....	....	....	1,925	....
Total	$12,307	$100	$12,407	$5,302	....	$938	11,757	....
Sept. 30, 1841	$45,958	$310	$46,298	$55,416	....	$23,692	1,657	....
1842	44,063	1,030	45,093	50,172	....	18,797	1,512	259
9 mos. 1843	45,374	....	45,374	44,111	....	8,700	787	....
June 30, 1844	56,066	1,033	57,099	28,218	....	2,167	2,322	....
1845	57,632	444	57,496	59,906	....	5,500	1,547	....
1846	69,370	2,131	71,501	71,936	....	8,000	1,890	....
1847	54,287	1,900	56,577	47,775	....	7,400	1,908	....
1848	44,787	1,634	56,421	68,988	....	29,741	1,717	....
1849	44,161	....	44,161	28,417	....	8,720	1,461	89
1850	44,405	1,382	44,787	12,551	....	....	1,384	98
Total	$484,813	$10,034	$494,847	$452,565	....	$102,817	15,485	396
June 30, 1851	$45,698	$615	$46,344	....	....	$11,000	....	....
1852	64,747	1,278	66,025	82,422	....	7,495	1,783	....
1853	64,335	1,104	65,439	17,717	....	7,100	1,275	....
1854	100,148	695	100,883	22,618	....	....	2,234	....
1855	78,672	1,966	80,618	8,546	....	2,500	2,715	....
1856	148,093	....	148,093	27,747	....	16,101	2,161	....

A decree of the French government, issued in 1822, and continued by a decree of the governor of the colony, dated the 23d of December, 1833, gives an advantage to French goods shipped directly from French ports in French vessels, and to French goods and products of French colonies brought in French vessels, over the foreign trade, in the rate of duties they impose. The products of the colony carried to France, in French vessels, have also an advantage over products carried to other countries in foreign vessels. The only duties paid by French or foreign vessels remaining in port over 72 hours, without putting out or taking in any cargo, are pilotage and fees to the custom-house guards.

Cayenne is the most easterly of the three colonies. It extends along the coast from the River Maroni to the Ozapoh, the boundary of Brazil. It lies between 2° and 6° N. lat. Its length, from north to south, is 250 miles, and the breadth varies from 100 to 190 miles, comprising an area of 27,560 square miles, and containing a population of 5,056 whites, and 10,592 blacks. The coast is an alluvial tract of great fertility, and the uplands are also very fertile. There are upward of twenty rivers of tolerable size, which are navigable, from 30 to 60 miles, for small craft. About one eighth part of the surface is occupied; the remainder is left to Indians and wild beasts. The articles cultivated are the sugar-cane, coffee, cotton, cocoa, cloves, annatto, pepper, cinnamon, nutmegs, corn, etc. There are about 40 large establishments for the manufacture of sugar, and about 50 sugar-mills, most of which are worked by steam. The imports are chiefly from France, being about 2,675,000 francs in value. The imports from other countries amount to about 550,000 francs. The exports are of the value of 3,128,000 francs, and are nearly all shipped to France. About 40 French vessels, of the aggregate burden of 7000 tons, usually enter, and about the same number clear from Guiana every year. Some 20 or 30 foreign vessels enter and depart each year. These statistics are not exact, but probably approximate nearly enough for practical legislation in reference to them.

Guild (from the Saxon *guildan*, to pay), signifies a fraternity or company, because every one was *gildare*, that is, had to pay something toward the charge and support of the company. As to the origin of guilds or companies in Britain, it was a law among the Saxons that every freeman of fourteen years of age should find sureties to keep the peace, or be committed. This led to the formation, among neighbors, of associations, each consisting of ten families, which became bound for one another, either to produce him who committed an offense, or to make satisfaction to the injured party; and that they might the better do this, they raised a sum of money among themselves, which they put into a common stock, and when one of their pledges had committed an offense, and fled, then the other nine made satisfaction out of this stock, by payment of money, according to the offense. Because this association consisted of ten families, it was called a *decenary*; and hence arose other kinds of fraternities. But as to the precise time when these guilds had their origin in England there is nothing certain to be found; since they were in use long before any formal license was granted to them for such meetings. It seems to have been about the close of the 11th century, according to Anderson (*History of Commerce*, vol. i., p. 70), that merchant-guilds, or fraternities, which were afterward styled corporations, came first into general use in many parts of Europe. Madox (*Firma Burgi*, chap. i., sect. 9) thinks they were hardly known to our Saxon progenitors, and that they might probably have been brought into England by the Normans, although they do not seem to have been very numerous in those days. The French and Normans might perhaps have borrowed them from the free cities of Italy, where trade and manufactures flourished at a much earlier period, and where such communities appear to have been first in use. These guilds are now companies or associations having laws and orders made by themselves, in virtue of authority from the prince to that effect. See GILD.

Guild in the royal burghs of Scotland, is still used for a company of merchants, who are free men of the burgh. Every royal burgh has a dean of guild, who is the next magistrate below the provost.

Guild, *Gild*, or *Geld*, is also used by ancient writers to signify a compensation or mulct for an offense.

Guinea, a gold coin formerly struck and current in Britain, and so denominated because the gold of which the first specimens were struck (*temp.* Car. II.) was brought from the coast of Guinea; and for a like reason it originally bore the impression of an elephant. The value of the guinea varied greatly at different periods, but latterly it was worth 21 shillings. Its weight was 5 dwts. 9·4125 grs. On the introduction of the *sovereign*—first coined in 1817—the old guinea coinage was gradually superseded.

Guinea, the name assigned to a large tract of country on the west coast of Africa, commencing at Cape Verga, in about 10° N. lat., and terminating with the Cameroon Mountains in the Gulf of Biafra. These are the limits more commonly given to what is called Guinea; by some they are greatly extended, so as to comprise the whole of the Portuguese settlements south of the equator, under the name of Southern Guinea, while the coast north of the equator is called Northern Guinea.

The term Guinea is not of African origin, or at least not among those to whom it is applied. There is, according to Barbot, a district of country north of the Senegal known by the name of *Genahoa*, the inhabitants of which were the first blacks that the Portuguese encountered in their explorations along the coast in the 15th century; and they applied this name indiscriminately afterward to all the black nations which they found further south. In the two succeeding centuries it was applied in a more restricted sense to that portion of the coast which is now better known as the Gold and Slave Coasts; owing to the fact, perhaps, that this region for a time offered a larger number of slaves for the foreign market than any other part of the country. The natives here acknowledge this term as applied to themselves, but it was undoubtedly borrowed in the first instance from the Portuguese.

The physical aspect of the country, as might be inferred from the large extent we have under consideration, is very variable, but is characterized everywhere by excessive richness of natural scenery. In the region of Sierra Leone, Cape Mount, and Cape Mesurado, the eye rests on bold headlands and high promontories covered with the richest tropical verdure. In the vicinity of Cape Palmas there are extended plains, slightly undulating, and covered with almost every variety of the palm and palmetto. On the coast of Drewiss the country rises into table-lands of vast extent, and apparently of great fertility. The Gold Coast presents every variety of hill and dale; and as we approach the equatorial region we are saluted by mountain scenery of unrivaled beauty and surpassing magnificence.

The inhabitants consist chiefly of the following tribes:—The Vais, the Manou or Kru, the Kovakeras or Avekroom, the Inta, the Dahomey, Ashanti, and the Benin. There are no large or extended political organizations, with the exception, perhaps, of the kingdoms of Ashanti and Dahomey, and neither of these has a larger population or greater extent of territory than the smaller kingdoms of Europe. For the most part, the people live together in independent communities, of not more than 8 or 10 villages, and with an aggregate population of from 2000 to 25,000

or 30,000. In these different communities they have no written forms of law, but are governed for the most part by certain traditional usages that have been handed down from generation to generation. Nominally, monarchy is the only form of government acknowledged among them; but, when closely scrutinized, their systems show much more of the popular and patriarchal than of the monarchical element. They are essentially a pagan people; but in their religious notions and idolatrous worship they differ very much from each other. There are many decided traces of the Jewish origin. Among these may be specified the rite of circumcision, which, with the exception of the Kru or Manou family, is, we believe, universal; the division of the tribes into families, and in some cases into the number of 12; bloody sacrifices, with the sprinkling of blood upon their altars and door-posts; the observance of new moons; a formal and specified time for mourning for the dead, during which period they shave their head and wear tattered clothes; demoniacal possessions, purifications, and various other usages of probable Jewish origin.

Respecting the natural products and trading capabilities of the country, the articles exported consist chiefly of ginger, gum, mendobi (Guinea grains, a species of seed), palm-oil, some ivory, a wood used for dyeing, called camwood, and which is worth in England about £15 sterling a ton. Vessels visiting that coast take on board—at Sierra Leone, or on the coast of Malagueta, between Cape Mesurado and Cape Palmas—some black sailors, called krumen, who are of great use in doing the heavy work on board, and for boat service; thus saving the European seaman from exposing themselves too much to the sun's rays, etc. The services of these krumen are recompensed with two or three pieces of cotton cloth per month each. Their chief food is rice, which may be purchased at a very cheap rate on the coast of Malagueta; the price of a "kru" (a measure of capacity weighing about 30 lbs.), being a fathom and a half of cotton cloth, or any other article of proportionate value.

On the coast of Malagueta (Grain Coast), the articles received principally in barter are rice and millet; also ivory, palm-oil, and camwood, especially at Monrovia, the capital of Liberia. At Sierra Leone, the pepper-tree (called malagueta), is cultivated on an extensive scale, and its fruit—Guinea pepper—after being dried, is purchased in large quantities by the Americans, and imported into the United States.

English muskets, gunpowder, rum, and tobacco, are the principal articles of traffic on the whole of the coast as far as Onim at the bottom of the Bight of Benin.

At Jaque Lahoo and Jaque Jaque, two considerable towns, situated at the extremity of the bight formed by Cape Palmas and Cape Three Points, commences the trade in gold-dust; here also a considerable quantity of palm-oil and some ivory are found. After passing these towns, the European settlements commence. The first are Great Bassam and Assine, belonging to France, and situated at the mouths of the rivers of the same names. Five leagues to the west of Cape Three Points, is the small Dutch fort of Axem; and on the other side of the same cape is the English port of Dick's Cove. From Cape Lahoo to Acora, and to all the European settlements on the coast, the monetary standard is the "ake" (ackie) of gold-dust, which weighs half a dram English, and is worth nearly 5s. The kru on this part of the coast is almost double that assigned to it on the coast of Malagueta—averaging £50, more or less.

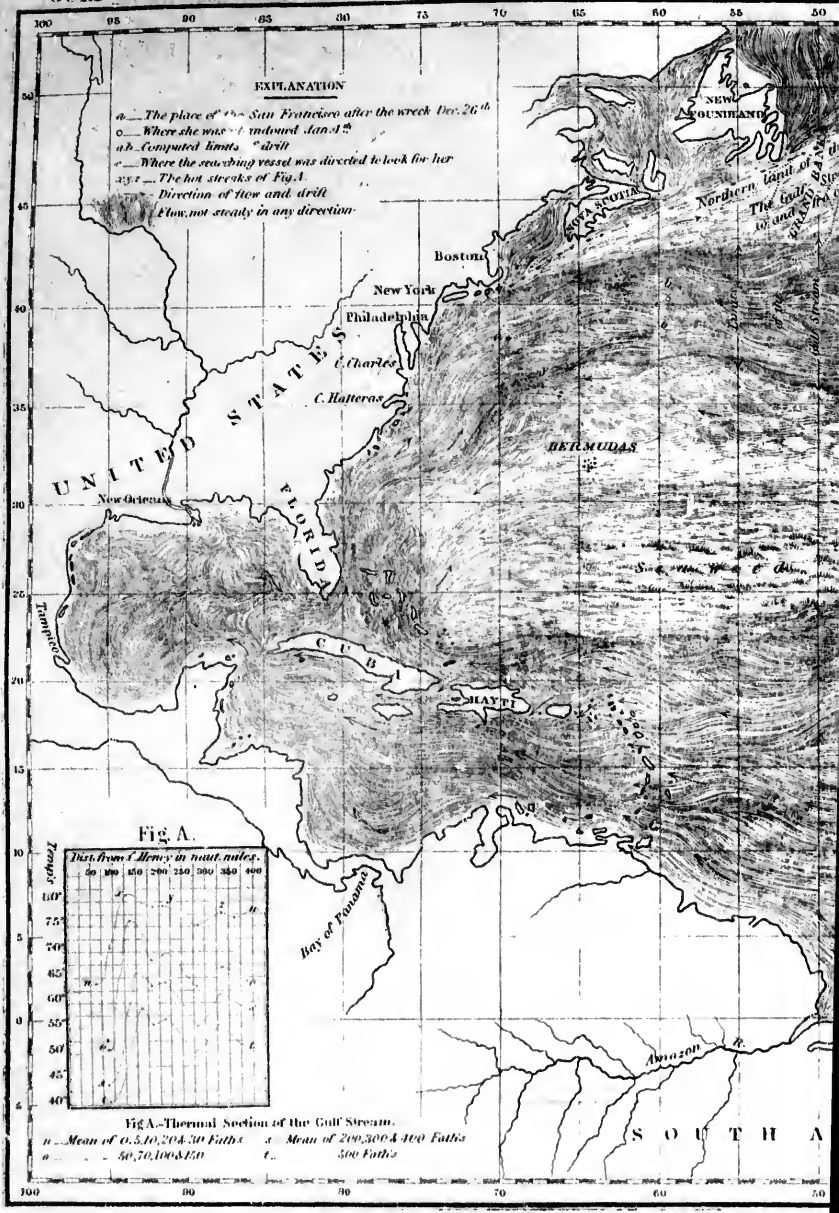
Between Dick's Cove and the castle of St. George of the Mine (S. Jorge da Mina), are situated the small forts of Serunde, Sanca, and Commendo; after which we come to the first large European settlement, viz., the castle of St. George of the Mine, belonging to Holland. The castle is a Portuguese structure, and was formerly the most important of the Portuguese colonies on this coast. Next to it is Cape Coast Castle, belonging to England, and situated in sight of the former. The next place is Annamaboo, a small English fort, formerly abandoned, but where for some years past trade has been again in some degree developed. To this fort succeed others in ruins, as Winebah and Assam. Millet is found in abundance at these places, as well as palm-oil and gold-dust. Proceeding along the coast, we come to the great English settlement of Acora, where there are at present two fortresses. The first, that of St. James, was built by them many years since; the second, that of Christianburg, was purchased from Denmark, together with all its possessions on that coast, in the year 1850. Then follow the small settlements of Ningo; after passing which, Cape St. Paul, a little to the east of Rio da Volta ("Return River"), is doubled.

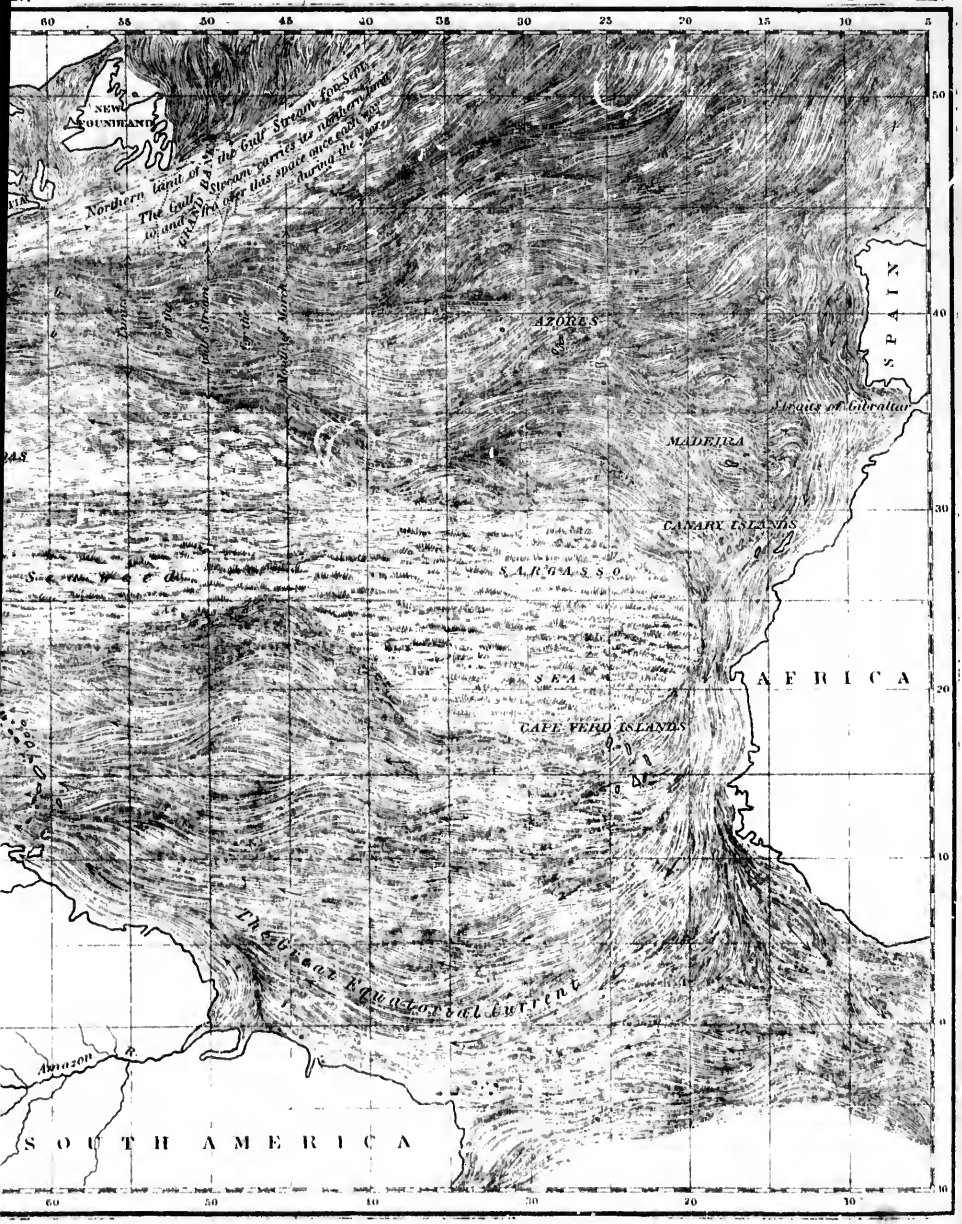
From Cape St. Paul to Onim or Lagos, many negro towns or villages are met with stationed along the coast. These communicate with each other by means of the lake situated at no great distance inland from the beach; and then the ford converges to the principal points, which are Quita, Popo-pequeño, Ajuda, Porto Novo, and Onim. The trade which formerly flourished at all these places was that in slaves; but for some years past that in palm-oil, or *den-den*, has greatly developed itself, the quantity produced amounting annually to more than 7000 tons, which are shipped to England, America, and France. On this section of the coast there are no European establishments, properly so called; but at Ajuda, Porto Novo, and Onim, there are factories; and Europeans are also resident in the country, and traffic with vessels, as they do at those establishments. The trade of the Benin, Brass, Bonny, Calabar, and Cameroon Rivers, is all in palm-oil, and carried on exclusively by the English.

Gulf of Guinea. The Gulf of Guinea forms a caldron and a furnace, and spreads out over the South Atlantic an air-chamber for heating up in winter and keeping warm the extra-tropical regions of South America. Every traveler has remarked upon the mild climate of Patagonia and the Falkland Islands. "Temperature in high southern latitudes," says a very close observer, who is co-operating with me in collecting materials, "differs greatly from the temperature in northern. In southern latitudes there seem to be no extremes of heat and cold, as at the north. Newport, Rhode Island, for instance, latitude 41° north, longitude 71° west, and Rio Negro, latitude 41° south, and longitude 63° west, as a comparison: in the former, cattle have to be stabled and fed during the winter, not being able to get a living in the fields on account of snow and ice. In the latter, the cattle feed in the fields all winter, there being plenty of vegetation and no use of hay. On the Falkland Islands (latitude 51–52° south), thousands of bullocks, sheep, and horses are running wild over the country, gathering a living all through the winter." The water in the equatorial caldron of Guinea can not escape north—the shore-line will not permit it. It must, therefore, overflow to the south, as that of St. Roque does to the north, carrying to Patagonia and the Falkland Islands, beyond 50° south, the winter climate of Charleston, South Carolina, on our side of the North Atlantic, or of the "Emerald Island" on the other.—Maury's *Phys. Geog.*

Gulf of Mexico, a large indentation on the east coast of North America, washing the shores of the United States and Mexico, measuring about 1000 miles from east to west, and 800 miles from north to south; estimated area, 800,000 square miles. It is partly formed by the projection toward each other of the peninsulas of Florida and Yucatan, nearly in a line between which lies the island of Cuba, leaving a communication on its north with the Atlantic, through the Flor-

GULF STREAM AND DRIFT by LIEUT. MAURY U.S.N.




NEW FOUNDLAND
Northern limit of the Gulf Stream for Sept.
The Gulf Stream carries its northern limit to and fro over this space once each way during the year.
GRAND BANK
Limits of the Gulf Stream for the Month of March
AZORES
SPAIN
Straits of Gibraltar
MADEIRA
CANARY ISLANDS
SARGASSO
SEA
AFRICA
CAPE VERD ISLANDS
The Great Equatorial Current
Amazon R.
SOUTH AMERICA

ida Channel and on its south with the Caribbean Sea, through the Channel of Yucatan. The Gulf is free from banks, and contains only a few small rocky islands on the coast of Yucatan, with the Florida Reef near its eastern extremity. The shores are low, and generally lined with flat sandy islands, not far from the land, and numerous lagoons. There are few harbors; and the rivers which fall into it are obstructed by bars at their mouth, which render them all, except the Mississippi, nearly inaccessible for vessels of large draught. A current of water entering the Gulf from the Caribbean Sea is soon divided into two portions, the one running east along the coast of Cuba, the other west, in a curved line through the middle of the Gulf, round toward the Florida Channel, where it meets the other current, and the two united form the Gulf Stream (see ATLANTIC). The temperature of the Gulf of Mexico is 86° in summer, and 6° higher than that of the ocean in the same parallel. At high tide, the Pacific rises several feet above the level of the Gulf, and at low water it falls as far below it.

The depth of the marine basin which holds the waters of the Gulf of Mexico is, in the deepest part, about three quarters of a mile. The officers of the United States' ship *Albany* ran a line of deep sea-soundings from west to east across the Gulf; the greatest depth they reported was about 7000 feet. Subsequent experiments, however, induce the belief that the depth is not quite so great. We should therefore have, by stopping up the channels between the Gulf and the Atlantic, not a sea-level in the Gulf, but we should have a mean level between evaporation and precipitation. If the former were in excess, the level of the Gulf waters would sink down until the surface exposed to the air would be just sufficient to return to the atmosphere, as vapor, the amount of water discharged by the rivers—the Mississippi and others—into the Gulf. As the waters were lowered, the extent of evaporating surface would grow less and less, until Nature should establish the proper ratio between the ability of the air to take up and the capacity of the clouds to let down. Thus we might have a sea whose level would be much further below the water-level of the ocean than is the Dead Sea.—MAURY's *Phys. Geog.*

Gulf Stream. There is a river in the ocean. In the severest droughts it never fails, and in the mightiest floods it never overflows. Its banks and its bottom are of cold water, while its current is of warm. The Gulf of Mexico is its fountain, and its mouth is in the Arctic Seas. It is the Gulf Stream. There is in the world no such majestic flow of waters. Its current is more rapid than the Mississippi or the Amazon.

Its waters, as far out from the Gulf as the Carolina coasts, are of an indigo-blue. They are so distinctly marked that their line of junction with the common sea-water may be traced by the eye. Often one half of the vessel may be perceived floating in Gulf Stream water, while the other half is in the common water of the sea; so sharp is the line, and such the want of affinity between those waters, and the reluctance on the part of the Gulf Stream to mingle with the common water of the sea.—MAURY's *Phys. Geography.*

Various causes of the Gulf Stream have been assigned. At one period, the Mississippi River; but this hypothesis was soon exploded, for it is estimated that it would take 1000 such rivers, as the velocities of the river and Gulf Stream are about equal. The most plausible hypothesis yet advanced, and the one which seems to be entertained now as true, is, that the motive power is due to the difference of temperature between the equatorial and northern parts of the ocean. This difference would give a cause commensurate with such an effect as the Gulf Stream, and is the only one yet advanced where the cause and effect approach equality. It is probable, however, that this is but one of the many forces brought to bear. The forces varying from the potent one mentioned, to others "light as the zephyr." And, in many cases, forces produced by the Gulf Stream react upon it; as, from the difference of temperature of the north and south, *aided* by the Gulf Stream in some cases, are produced the trade winds, so these trade winds have no slight effect upon the Gulf Stream.

To form some idea of the magnitude of the stream, we can take a cross section at Cape Hatteras; approximately, it may be given as 75 miles wide and 700 feet in depth, with a velocity of three knots an hour. The stream becomes smaller in its progress north, yielding portions of its heat on its way, and so allowing portions of the stream to assimilate with the rest of the ocean.

As the Gulf Stream is but a current of water of high temperature from the south to the north, it would be natural to suppose its course would be from south to north. This would be the case were it not for the rotation of the earth to the east, for a current starting from the equator, having a velocity of 1000 miles an hour eastward in common with the earth, when its current reaches latitude 60°, where the velocity of the earth is only 250 miles an hour, it will be so many degrees of longitude east as the difference of velocities would force it, minus the retardations. This would be sufficient to explain why the course should be northeast, independent of the effect of the contour of the continent.

The course and dimensions of the Gulf Stream may be readily seen from the accompanying chart of Maury's. (See Plate II.)

The amount of water forming the Gulf Stream, and going north, must be returned into the fountain-head, the seas near the equator—and so we have streams or oceanic currents going south equally as important in their effect, and giving as interesting phenomena, but not as readily observed, because they are *under*-currents, and not as appreciated because they most affect other parts of the world. The water from the north flows to the south in many comparatively small undercurrents, and rises to the surface at various points, taking for their general course the African shore, and making a circle uniting with the Gulf Stream in the Caribbean Sea. For the same reason that the course of the Gulf Stream is north-east the returning currents are south-west.

One large returning current crosses the Gulf Stream near the Banks of Newfoundland, bringing icebergs which melt in contact with the warm stream. The deposits have formed, and are forming, the Banks of Newfoundland.

The influence of the Gulf Stream, like the distance of the fixed stars, can be conjectured, but we fall as much short in one conjecture as in the other.

Our complaints of a variable climate would not be without foundation were it not for the beneficial influence of streams of water from the tropics giving us warmth and moisture; making the climate of New York in winter equal to a place in a latitude 10° south, and in summer giving the health of a place as many degrees north. Maury says:

"No part of the world affords a more difficult or dangerous navigation than the approaches of our northern coasts in winter. Before the warmth of the Gulf Stream was known, a voyage at this season from Europe to New England, New York, and even to the capes of the Delaware, or Chesapeake, was many times more trying, difficult, and dangerous than it is now. In making this part of the coast, vessels are frequently met by snow-storms and gales which mock the seaman's strength, and set at naught his skill. In a little while his bark becomes a mass of ice, with her crew frosted and helpless; she remains obedient to her helm, and is kept away for the Gulf Stream. After a few hours' run, she reaches the edge, and almost at the next bound passes from the midst of winter into summer heat. Now the ice disappears from her; the

sailor bathes his stiffened limbs in tepid waters; feeling himself invigorated and refreshed with the genial warmth about him, he realizes out there at sea the fable of Antæus and his mother Earth. He rises up and attempts to make his port again." And though he may fail again, he always has the same resource. Nor is this all; it affords an excellent water "landmark," an outside shore of the country, against which no ship is lost; but giving definite longitude to the storm-tossed mariner, and warning him that land is near, saves him often. Commerce itself, defining it as the interchange of commodities, is but an imitation of the Gulf Stream. The Gulf Stream, taking the heat of the tropics to the shivering northmen, and the icebergs of the north to the feverish native of the torrid zone—giving heat to some, food to others, and in some way affecting all.

Gums, Resins, Gum-resins. In commerce, the term gum is not only applied to gums properly so called, but also to resins, and gum-resins. But though these substances have many properties in common, they are yet sufficiently distinct.

I. *Gum* is a thick, transparent fluid, that issues spontaneously from certain species of plants, particularly such as produce stone-fruit, as plum and cherry-trees. It is very adhesive, and gradually hardens by exposure to the atmosphere. It is usually obtained in small pieces, like tears, moderately hard and somewhat brittle while cold; so that it can be reduced by pounding to a fine powder. When pure, it is colorless; but it has commonly a yellowish tinge; it is not destitute of lustre; it has no smell; its taste is insipid; its specific gravity varies from 1·3161 to 1·4317; it readily dissolves in water, but is insoluble in alcohol. Gum is extensively used in the arts, particularly in calico-printing, to give consistence to the colors, and to hinder them from spreading. It is also used in painting, in the manufacture of ink, in medicine, etc.

The only important gums in a commercial point of view, are gum Arabic and gum Senegal; but lac is popularly, though improperly, ranked among the gums.

1. *Gum Arabic* (Fr. *Gomme Arabique;* It. *Gomma Arabica;* Ger. *Arabische gummi;* Arab. *Tolh*), the produce of the *Acacia vera*, a tree growing in Arabia, and in many parts of Africa. The gum exudes naturally from the trunk and branches, and hardens by exposure to the air. "The more sickly the tree appears, the more gum it yields; and the hotter the weather the more prolific it is. A wet winter and a cool or mild summer are unfavorable to gum."—JACKSON'S *Morocco*, p. 84. It is in irregularly-shaped pieces, hard, brittle, and semi-transparent. When pure it is almost colorless, or of a pale, yellowish hue; being insipid, inodorous, and dissolving completely in the mouth. Specific gravity 1·31 to 1·43. It is often mixed with gum Senegal. East India gum Arabic is, though a useful, a spurious article, not being the produce of the *acacia vera*, but of other species of plants. The best gum is either imported direct from Alexandria, Smyrna, Tripoli, Mogadore, Tangiers, etc., or at second-hand from them through Gibraltar, Malta, and other Italian ports. The price depends principally on its whiteness and solubility, increasing and diminishing from £1 15s. to £8 or £9 per cwt., according as the article has more or less of these qualities.—THOMSON'S *Dispensatory*, and *Private Information*.

The *Egyptian Gum Arabic tree* (*Acacia vera*) which affords the finest gum Arabic of commerce, is a native of the sandy deserts of Arabia, Egypt, and the western parts of Asia; it also grows abundantly in Barbary and other parts of Africa, particularly in the Atlas Mountains. In Morocco, or Barbary, where the tree is called *Ashshh*, it rises to a height of several feet, having a crooked stem, covered with a smooth, gray bark, the bark of the branches is of a yellowish-green, with a purplish tinge. At the base of the leaves, there are two opposite awl-shaped spines, growing nearly erect, and having a slight, glandular swelling below. The wood is hard, and takes a good polish. Its seeds, which grow in a hard coriaceous pod, resemble those of the lupine, yield a reddish dye, and are used by tanners in the preparation of leather.

The gum exudes spontaneously from the bark of the trunk and branches of the tree, in a soft or nearly fluid state, and hardens by exposure to the air, or to the heat of the sun. The more sickly the tree, the more gum it yields; and the hotter the weather, the more prolific it is. A wet winter and a cool or mild summer are unfavorable to the crop. It begins to flow in December, immediately after the rainy season, near the time of the flowering of the tree. Afterward, as the weather becomes hotter, incisions are made through the bark, to assist the exudation of the juice. The gum, when new, emits a faint smell, and when stowed in the warehouse, it may be heard to crack spontaneously for several weeks; and this cracking is the surest criterion of new gum, as it never does so when old. Several kinds of gum, yielded by different trees, are occasionally to be met with, but that which is commonly substituted for it is brought from the Island of Senegal, on the coast of Africa, and is called "Gum Senegal."

The *Mastic tree* (*Pistacia lentiscus*), is a native of the south of Europe, the Levant, and the west of Asia, and probably could be cultivated with success in California, and perhaps in some parts of the South. This tree, which seldom exceeds 12 feet in height, with a trunk 10 inches in diameter, is covered with a smooth, brownish bark, and produces the resin known in commerce under the name of "mastic." It is cultivated in various parts of continental Europe, particularly in Italy and Portugal.

2. *Gum British.*—An excellent artificial gum is now largely made for the use of calico-printers and others, and is sold under the name of British Gum, or *dextrine*. It is made by roasting starch, and the manufacture is very skillfully conducted; starch has hence risen in manufacturing importance, while gum Arabic (a much more expensive article) has been to some extent superseded. Not only has starch become thus applied to new purposes, but the starch itself is obtained from a greater variety of sources than heretofore. The old customary mode has been to obtain starch from wheat or other grain, by a process of fermentation, which is not applicable to rice; but excellent starch is now obtained from rice and from sago, by improved chemical methods, and the starch is bleached to a degree of great purity.

3. *Gum Senegal*, principally brought from the island of that name on the coast of Africa, is obtained from various trees, but chiefly from two, one called *Verek*, which yields a white gum; the other called *Nebel*, which yields a red gum; varieties of the *acacia gummifera*. Gum Arabic is very often mixed with gum Senegal. The latter is nearly as pure as the former, but it is usually in larger masses, of a darker color, and more clammy and tenacious. It is the sort of gum principally employed by calico-printers.—THOMSON'S *Chemistry*, THOMSON'S *Dispensatory*, AINSLIE'S *Materia Indica*, etc. The trade in gum Senegal is principally in the hands of the French.

II. *Resins*, for the most part, exude spontaneously from trees, though they are often obtained by artificial wounds, and are not uncommonly, at first, combined with volatile oil, from which they are separated by distillation. They are solid substances, naturally brittle; have a certain degree of transparency, and a color most commonly inclining to yellow. Their taste is more or less acrid, and not unlike that of volatile oils; but they have no smell, unless they happen to contain some foreign body. They are all heavier than water, their specific gravity varying from 1·0182 1.1862. They differ from gums in being insoluble in

water, whether cold or hot; while they are, with a few exceptions, soluble in alcohol, especially when assisted by heat. When heated, they melt; and if the heat be increased, they take fire, burning with a strong yellow flame, and emitting a vast quantity of smoke. Common *rosin* furnishes a very perfect example of a resin, and it is from this substance that the whole genus have derived their name. Rosin is, indeed, frequently denominated resin. The principal resins are *Animi*, *Elemi*, *Copal*, *Lac*, *Labdanum*, *Mastic*, *Rosin*, *Sandarach*, *Tacamahac*, etc.; which see, under their respective names.—THOMSON'S *Chemistry*.

III. *Gum-resins*, a class of vegetable substances consisting of gum and resin. They differ from resins in this, that they never exude spontaneously from the plant, being obtained either by bruising the parts containing them, and expressing the juice, which is always in a state of emulsion, generally white, but sometimes of a different color, or by making incisions in the plant, from which the juice flows. The juice, being exposed to the action of the sun, is condensed and inspissated, till it forms the gum resin of commerce. Gum-resins are usually opaque, or, at least, their transparency is inferior to that of resins. They are always solid, and most commonly brittle, and have, sometimes, a fatty appearance. When heated, they do not melt as resins do, neither are they so combustible. Heat, however, commonly softens them, and causes them to swell. They burn with a flame. They have almost always a strong smell, which, in several instances, is alliaceous. Their taste, also, is often acrid, and always much stronger than that of resins. They are usually heavier than resins. They are partially soluble in water, but the solution is always opaque, and usually milky. Alcohol partially dissolves them, the solution being transparent.

The most common gum-resins are, *Aloes*, *Ammonia*, *Euphorbium*, *Galbanum*, *Gamboge*, *Myrrh*, *Olibanum*, *Sagapenum*, *Scammony*, etc.; which see, under their respective names.—LOUDON'S *Ency. of Agriculture*; THOMSON'S *Chemistry*.

Gum-tree (*Nyssa biflora*), or Twin-flowered Nyssa—known also as the Tupelo-tree, yellow gum-tree, sour gum-tree, Peperidge-tree, wild pear-tree—in an uncultivated state, seldom rises above 40 or 50 feet, with a trunk 15 or 20 inches in diameter. The *Nyssa biflora* begins to appear in the lower part of New Hampshire, where the climate is tempered by the ocean; and, in progressing southward, it is found most abundantly in the easterly parts of New York, New Jersey, and Pennsylvania. But in Virginia and Carolina, it is more sparingly produced, and, as in the north, it always occurs in moist ground or in watery places.

The *Nyssa biflora* holds a middle rank between soft and hard-wooded trees. When perfectly seasoned, the sap-wood is of a slight reddish tint, and the heart-wood is of a deep brown. Of trees exceeding 15 or 18 inches in diameter, frequently more than half of the trunk is hollow. The ligneous fibres which compose the body of most other trees are closely united, and usually ascend in a perpendicular direction. But, on the contrary, the trees of this genus exhibit a constant peculiarity of organization—the fibres being united in bundles, and are interwoven like a braided cord. This property gives it a decided superiority for certain uses. In the parts of the country where it abounds, it is employed for the naves of wheels destined for heavy burdens. It is also employed for the heads of the shafts of wind-mills; and, sawn into boards, it is used for lining carts. Wooden bowls are made of it, which are heavier than those made of the tulip-tree (*Liriodendron*), and are less liable to split. From the irregularity of the fibre, the "gum-tree" is not admitted as evidence in the courts of Pennsylvania, in establishing boundaries to lands, etc., from the number of years which have elapsed since the trees have been blazed. As fuel, this wood burns slowly, and diffuses a great heat.—BROWNE'S *Trees of America*.

Gun-cotton. Cotton is one of the numerous forms of lignine, a compound of carbon, oxygen, and hydrogen; but when it is subjected to the action of nitric acid, nitrogen, which exists in most explosive bodies, enters into its composition. The action of nitric acid on lignine had long attracted the attention of chemists; but the nearest approach to the formation of gun-cotton was made by Pelouze, who, in 1838, writes in the *Comptes Rendus* of the properties of a substance named *Xyloidine*, from ξύλον, wood, discovered by Braconnet in 1833: "It is very combustible, taking fire at 356° Fahr., burning with great rapidity, and almost without residue. This property has led me to an experiment, which I think susceptible of some application, especially in artillery. By plunging paper in nitric acid of sp. gr. 1·5, leaving it there the requisite time for the acid to permeate the paper, which is usually accomplished in two or three minutes, then withdrawing it, and lastly, washing it in water, we obtain a kind of parchment impermeable to moisture, and extremely combustible. "In 1846, Schönbein exhibited to the British Association at Southampton specimens of cotton, which appeared to be as explosive as gunpowder; but it was not till April, 1847, on the enrolment of the patent, that the method of preparing this cotton was known, although, in the interval, Otto of Brunswick, Morel of Paris, and Böttger of Frankfort, published recipes for making explosive cotton. Schönbein's method consisted in mixing three parts of sulphuric acid, sp. gr. 1·85, with one part of nitric acid, sp. gr. 1·45 to 1·50; and when the mixture had cooled down to between 50° and 60° Fahr., clean rough cotton, in as open a state as possible, was immersed in the acid; when well soaked, the excess of acid was drawn or poured off, and the cotton pressed lightly in order to separate the principal portion of the acid. The cotton was then covered over and left for half an hour, when it was pressed and thoroughly washed in running water to get rid of all free acid. After being partially dried by pressure, it was washed in an alkaline solution made by dissolving one ounce of carbonate of potash in a gallon of water. The free acid being thus got rid of, it was put into a press, the excess of alkaline solution was expelled, and the cotton left nearly dry. It was then washed in a solution of pure nitrate of potash, one ounce to the gallon, and being again pressed, was dried at a temperature of from 150° to 170°. It was stated, that three parts of the gun-cotton thus prepared were equal in force to eight parts of Tower-proof gunpowder.

Gun-cotton has also been employed in blasting, especially on the Manchester and Huddersfield railway in Standedge tunnel, and on the works in the Stour Valley, near Birmingham. It has been stated that gun-cotton produces a much greater effect, weight for weight, than gunpowder, in the proportion of five to one. This seems an exaggeration; but the disruptive effect really seems to be greater from gun-cotton; and as it gives no smoke, in confined situations the workmen are enabled sooner to resume their work.

Cotton gains considerably in weight by the above treatment, but is scarcely changed in color or in general appearance, if the process has been carefully conducted; it is, however, harsh to the touch, and gives a crepitating sound when pressed by the hand. It differs from common cotton by its electric excitability, the slightest degree of friction causing it to be powerfully attracted and repelled by other bodies; and also by its action on a ray of polarized light, which it does not depolarize like ordinary cotton. It explodes at a temperature of from 350° to 400°, with such rapidity as to interfere with its practical application, for, if applied to the purposes of artillery, it may burst the gun before it has time to move the shot, and some of

the products of its combustion make it also objectionable for fire-arms. Among these products water may be mentioned, and, should not the cotton have been well washed, nitrous acid. Another great impediment to the use of gun-cotton is its hygrometric condition, for if exposed to a damp atmosphere, it will in an hour or two absorb a considerable portion of moisture. Many attempts have been made to apply it to mining purposes on account of its enormous force, and the small quantity of smoke which it produces; but the objections to its use are numerous, the most fatal objection being its liability to spontaneous ignition.

Nevertheless, gun-cotton continues to be an object of great interest, on account of its application to the beautiful art of photography. When the cotton is prepared in such a way as to burn slowly, it is not liable to spontaneous ignition, and in this state it is perfectly soluble in sulphuric ether, which the more explosive cotton is not. If the etherial solution called *collodion*, be poured on the surface of cold water, a paper is produced which is prepared for the use of the photographer. This paper is a very active electric, and is perfectly soluble in ether. *Collodion* has also been made use of in surgery, by applying the ethereal solution to a wound, when a thin delicate artificial skin is formed by it, which perfectly excludes the air.

In the preparation of gun-cotton, nitric acid is the active agent in the formation of xyloidine; the sulphuric acid has no direct action on the hgnine, its use being to retain the water abstracted from the cotton, and prevent the solution of the compound which takes place to a greater or less extent in nitric acid alone. The purity and exact strength of the acids are matters of great importance. Mr. Hadow found that the best mixture for producing collodion wool is obtained by mixing 89 parts by weight of nitric acid, sp. gr. 1·424, with 104 parts by weight of sulphuric acid, sp. gr. 1·833.

On trying the effects of various reagents on gun-cotton, Mr. Hadow found that it could be perfectly restored to the original cotton, without loss of form, by means of an alcoholic solution of hydro-sulphuret of potassium. On this, and other points connected with the chemistry of gun-cotton, we must refer to Mr. Hadow's paper, published in the *Transactions of the Chemical Society*.—E. B.

Gunpowder (Ger. *Pulver, Schiesspulver;* Du. *Bushruid;* Da. *Krudt, Pulver;* Sw. *Krut;* Fr. *Poudre;* It. *Polvere;* Sp. and Port. *Polvora;* Rus. *Porooh;* Pol. *Proch;* Lat. *Pulvis pyrius*). This well-known inflammable powder is composed of nitre, sulphur, and charcoal, reduced to powder, and mixed intimately with each other. The proportion of the ingredients varies very considerably; but good gunpowder may be composed of the following proportions; viz., 76 parts of nitre, 15 of charcoal, and 9 of sulphur. These ingredients are first reduced to a fine powder separately, then mixed intimately, and formed into a thick paste with water. After this has dried a little, it is placed upon a kind of sieve full of holes, through which it is forced. By this process it is divided into grains, the size of which depends upon the size of the holes through which they have been squeezed. The powder, when dry, is put into barrels, which are made to turn round on their axis. By this motion the grains of gunpowder rub against each other, their asperities are worn off, and their surfaces are made smooth. The powder is then said to be glazed.—THOMSON'S *Chemistry.*

Dr. Thomson, whose learning is equal to his science, has the following remarks with respect to the introduction of gunpowder into warlike operations: "The discoverer of this compound, and the person who first thought of applying it to the purposes of war, are unknown. It is certain, however, that it was used in the fourteenth century. From certain archives quoted by Wiegleb, it appears that cannons were employed in Germany before the year 1372. No traces of it can be found in any European author previously to the thirteenth century; but it seems to have been known to the Chinese long before that period. There is reason to believe that cannons were used in the battle of Cressey, which was fought in 1346. They seem even to have been used three years earlier, at the siege of Algesiras; but before this time they must have been known in Germany, as there is a piece of ordnance at Amberg, on which is inscribed the year 1303. Roger Bacon, who died in 1292, knew the properties of gunpowder; but it does not follow that he was acquainted with its application to fire-arms."—THOMSON'S *Chemistry.*

The invention of gunpowder is by some ascribed to Bertholdus or Michael Schwartz, a Cordelier monk of Goslar, south of Brunswick, in Germany, about A.D. 1320. But many writers maintain that it was known much earlier in various parts of the world. Some say that the Chinese possessed the art a number of centuries before. Its composition, moreover, is expressly mentioned by our own famous Roger Bacon, in his treatise *De Nullitate Magiæ*, which was published at Oxford in 1216.—HAYDN.

Composition of Gunpowder.—The present composition of the Chinese gunpowder corresponds so nearly with our own that the difference is nearly insensible; but whether it had arrived at that degree of perfection in their ancient periods, we have no means of knowing. Neither can we judge of its nature and power as known to the Arabs. But in our own country it was late in arriving at its present state of perfection; nor do the various proportions given by one of the earliest English writers on the subject, argue much in favor of their chemical knowledge. Peter Whitehorne, who wrote in 1573, gives numerous proportions, without seeming to be well aware of their respective values; and, respecting some of them, it is easy to see that they were scarcely fit for squibs, much less for the purpose of projecting shot. Such is nitre, sulphur, charcoal, equal parts; while, in the very opposite extreme, we have nitre 12 parts, sulphur and charcoal, of each 3 parts; and, still worse, nitre 27 to 3 of the other two ingredients; or nitre 48 parts, with 7 of sulphur and 3 of charcoal. Here, such as these compositions are, want of experience can scarcely be pleaded, as they are not better than those given by Nye in 1380. In France, also, the composition, at no very remote period, was—nitre 50, sulphur 16, charcoal 34; from which it varied to, nitre 67, sulphur 13, charcoal 20; and to nitre 84, sulphur 8, charcoal 8; these differences being supposed to be necessary for the larger cannon, and the smaller progressively, the last being their musket powder.

But as we can not afford space to describe the gradual progress of improvement in the composition of gunpowder, we will state the proportions at present in use in different nations. They do not materially differ from each other, although it is unquestionable that they are not all of equal power.

	Nitre.	Sulphur.	Charcoal.
Royal Mills at Waltham Abbey	75	10	15
France, National Establishment	75	12·5	12·5
French, for sportsmen	76·9	9·6	13·5
French, for mining	62	20	18
United States of America	75	12·5	12·5
Prussia	75	11·5	13·5
Russia	78·78	12·63	8·59
Austria (musket)	72	16	17
Spain	76·47	12·75	10·78
Sweden	76	9	15
Switzerland, round powder	76	10	14
Chinese	75·7	9·9	14·4

Without any knowledge of the law of definite proportions, and even before that law was known to exist, each nation had experimentally hit upon nearly the best proportions of the three ingredients, namely, 1 equivalent of nitre, 1 of sulphur, and 3 of charcoal, or 75 per cent. of nitre, 11·77 of sulphur, and 13·23 of

charcoal. In practice the proportions used for the manufacture of 100 lbs. of gunpowder are—saltpetre 77½ lbs., sulphur 10½ lbs., charcoal 16 lbs. = 104 lbs., the extra 4 lbs. being allowed for waste.

The proportions in the *commercial* gunpowder vary indefinitely, according to the views of the manufacturer respecting the markets, the price, and other matters. Cheapness being the leading object where it is only made for sale, and the nitre being the only expensive article, the proportion of this is diminished, and those of the other two ingredients increased. We have never met with any specimen in which there was less than 62 of nitre; but we have reason to believe that some of the inferior kinds do not contain more than 50. For the use of miners it is also made with a low proportion of nitre, producing advantages in mining not intended by the makers, whose only object is to manufacture a cheap article. But the proportions of all the commercial powders are very inconstant, even when furnished *bonâ fide* to the government.—E. B.

Gunny (Hind. *Tăt;* Ben. *Gŭni*), a strong coarse sackcloth manufactured in Bengal for making into bags, sacks, and packing generally, answering at once the two purposes for which canvas and *bast* are used in Europe. The material from which this article is manufactured is the fibre of two plants of the genus Corchorus; viz., *Corchorus olitorius*, and *Corchorus capsularis* (Bengali *pat*); both, but particularly the first, extensively cultivated throughout Lower Bengal. Besides a large domestic consumption of gunny, the whole rice, paddy, wheat, pulses, sugar, and saltpetre of the country, as well as the pepper, coffee, and other foreign produce exported from Calcutta, are packed in bags or sacks made of this article. There is also a considerable exportation of manufactured bags, each commonly capable of containing two maunds, or about 160 lbs. weight, to Prince of Wales Island, Malacca, Singapore, Java, and Bombay. In 1841–42 there were exported from Calcutta 5,359,899 gunny bags, of the value of 499,426 rupees (£49,942), and 95,412 pieces of gunny cloth, worth 433,321 rupees (£43,332).—Wallich, *Roxburg; Review of the External Commerce of Bengal for* 1841–42.

Guns and Fowling-pieces. Three European nations are distinguished for their production of these arms—the English, Belgians, and French. Small arms for war and for the chase are manufactured at Birmingham, the one with due solidity, the other with refinement of workmanship. In respect to Belgium, Liège is the Birmingham of that country, and manufactures guns on a very large scale. The Belgians, on account of cheapness combined with good execution, sell a great quantity of small arms to other nations, particularly to Russia. France, for the manufacture of small arms for war, is now perhaps more advanced than any other nation. St. Etienne is the town principally employed in the manufacture of muskets; but Paris produces the most finished weapons, combining all the perfection that can be required for precision of firing and beauty of ornament. Sharpe's rifles are manufactured in the United States in large numbers, also a variety of small arms.

Gunter, Edmund, an ingenious English mathematician and machinist, was born in Hertfordshire about the year 1581. He was educated at Westminster, and afterward at Christ Church College, Oxford, where he graduated. Though he took holy orders in 1614, mathematics, which had been his favorite study from his youth, continued to engross his attention, and in 1619 he was chosen to the chair of astronomy in Gresham College, where he remained till his death in 1626. Of Gunter's written works the chief are his *Canon Triangulorum*, a table of logarithmic sines and tangents, extended to seven decimal places, and forming a sort of complement to the logarithms of natural numbers by his colleague Brigg.

Gunter's Line, a logarithmic line, usually laid down upon scales, sectors, etc. It is also called the *line of lines* and *line of numbers;* being only the logarithms graduated upon a ruler, which therefore serves to solve problems instrumentally in the same manner as logarithms do arithmetically.

Gunter's Quadrant, an instrument made of wood, brass, or other substance, containing a kind of stereographic projection of the sphere, on the plane of the equinoctial; the eye being supposed to be placed in one of the poles; so that the tropic, ecliptic, and horizon, form the arcs of circles; but the hour-circles are other curves, drawn by means of several altitudes of the sun for some particular latitude every year. This instrument is used to find the hour of the day, the sun's azimuth, etc., and other problems of the globe; as also to take the altitude of an object in degrees.

Gunter's Scale (generally called by seamen the *Gunter*), is a large plane scale, usually 2 feet long by about 1½ inches broad, and engraved with various lines of numbers. On one side are placed the natural lines (as the line of chords, the line of sines, tangents, rhumbs, etc.), and on the other side the corresponding artificial or logarithmic ones. By means of this instrument, questions in navigation, trigonometry, etc., are solved, with the aid of a pair of compasses.

Gunwale (pronounced *gunnel*), the uppermost wale of a ship or boat, or that piece of timber which finishes the upper part of the hull. The raised work above this is called the *bulwark*.

Gutenberg, or Guttemberg, Johann (whose real name was Gensfleisch), was born at Sorgenloch, near Mentz, in 1397. It is now generally admitted that to him is due almost the entire credit of inventing the art of printing by movable types. The respective claims of Fust, Gutenberg and Schoeffer, are fully discussed under Fust.—E.

Gutenberg, after a life of much suffering and hardship, died at Mentz in 1468, in great poverty. Posterity has done him the justice denied him by his cotemporaries. The statue by Thorwaldsen, erected in his honor at Mentz in 1837, furnished an example which has since been followed by many towns in Germany. The Gutenberg Society keeps his name in memory by an annual festival. No books are extant that are known for certain to have been printed by Gutenberg. The famous *Mazarin Bible*, Donatus' *Grammar*, and the *Catholicon* of Janua, are believed to have issued from his press. See Printing.

Gutta Percha. This valuable substance has only been known within the last few years. It is the concrete juice of a large tree (*Isonandra gutta*), growing in certain parts of the Malayan Archipelago—hitherto chiefly obtained from Singapore. The first specimen of the inspissated juice which appeared in England was presented to the Society of Arts in 1843, but two or three years elapsed before a just sense of the importance of the substance began to gain ground. In 1845 the importation of gutta percha into England amounted to only 20,600 lbs.; in 1848 it had reached 3,000,000 lbs.; in 1852 it amounted to 30,580,480 lbs.—a rate of increase which gives serious cause to doubt whether the supply will long be adequate to meet the demand; for it is unfortunately the case that the trees which yield gutta percha are not only limited in their growth to certain districts, and less abundant in quantity than india-rubber trees, but they have been subjected for several years to the barbarous and wasteful mode of cutting down the trees for the sake of the sap. Whatever European industry may be able to do in checking this destructive system, and extending the cultivation of the gutta percha tree, there is yet reason to doubt whether this slow-growing tree can be reared in sufficient quantities to counterbalance the havoc already made. The *Isonandra gutta* belongs to the natural order Sapotaceæ, and is the only tree which yields gutta percha. It rises to the height of 60 or 70

feet, and the trunk is 3 or 4 feet in diameter. The tree flourishes in alluvial soils, at the foot of hills, and sometimes forms the chief part of the jungle in such situations. The foliage is of a pale green on the upper part, and covered with reddish-brown hairs beneath. The wood is soft, fibrous, spongy, pale in color, and traversed by longitudinal receptacles or reservoirs filled with the gum, forming ebony-black lines. This gum has many of the properties of india-rubber, but it has also special properties of its own which admit of its being applied to uses for which caoutchouc is not adapted. It possesses the same indestructibility by chemical agents which makes India-rubber so valuable, and it has also the peculiarity of becoming soft and plastic on being plunged into boiling water. In this state it can be molded into any desired form, which form it permanently retains on cooling. The great convenience and utility of such a substance could not fail to strike the natives of the countries in which it is produced; and accordingly, we find that, long before gutta percha became known to Europeans, it had been fabricated by the Malays into whips, basins, jugs, shoes, etc., thus at length exciting the attention of travelers, and leading to the introduction of some of these articles into Europe under the name of india-rubber, or, earlier still, of *mazer-wood*.

The honor of having drawn attention to its real nature and uses is due to Drs. D'Almeida and W. Montgomerie. The latter, writing from Bengal, remarked on the ordinary name of the plant thus:—"The word is a pure Malayan one—*gutta* meaning the gum or concrete juice of a plant, and *percha* the particular tree from which this is procured. The *ch* is not pronounced hard like *k*; but like the *ch* in the English word *perch*." In 1843 Dr. Wm. Montgomerie, of the Indian Medical Service, observing certain Malay knife and kris handles, inquired the nature of the material from which they were made; and from the crude native manufacture inferred at once the extensive uses to which the gutta percha might be put in the arts of Europe. He purchased a quantity of the raw material, sending from Singapore part of it to Bengal, and part to Europe, and suggesting some of the uses to which he thought it might be applied. The quantity sent to England secured to him at once, as the discoverer, the gold medal of the Society of Arts. The surgical uses of gutta percha were early discovered by Dr. Oxley of Singapore, who declared it to be "the best and easiest substance ever discovered for the management of fractures, combining ease and comfort to the patient, and very much lessening the trouble of the surgeon."

Gutta percha arrives in lumps or blocks of several pounds' weight, but these often contain impurities, such as stones, earth, etc., introduced by the Malays for the sake of increasing the weight. The purification and preparation of this substance on a large scale are conducted as follows:—The lumps of gutta are subjected to the action of a vertical wheel, on the face of which are fixed three knives which, as the wheel revolves at the rate of 300 revolutions per minute, cut the lumps into thin slices. These are then softened in hot water, and thrown into a rotating machine, where they are further reduced by the action of jagged teeth. From this machine they again fall into water, and are further cleansed. They are then kneaded into a paste in hot water, and rolled between heated cylinders. The mass has now become uniform in texture, and is either rolled out into sheets between steel rollers, or is passed in the mass through heated iron cylinders; after which it is ready for use. Gutta percha is scarcely affected by boiling alcohol, but it dissolves nearly completely in benzine and in spirit of turpentine with the aid of heat, and also in naphtha, coal-tar, sulphuret of carbon, and in chloroform. Its solution in sulphuret of carbon or in chloroform may be almost entirely deprived of color by filtering, the process being conducted under a glass jar, in order to prevent loss by evaporation. If this solution be exposed in a flat dish to the air, the solvent will evaporate, leaving a solid cake of white gutta percha, which retains all the properties of the common gutta; and it may be melted by a gradual increase of temperature without acquiring any perceptible color.

The purposes to which gutta percha is applied are too numerous for recapitulation. Only a few of the more important uses can be here mentioned. It resists the action of water, and is at the same time a bad conductor of electricity; it is therefore employed for inclosing the metallic wires used in the electric telegraph. The efficiency of the submarine telegraph is largely due to this valuable substance.

Various other maritime uses have been found for it in the construction of buoys, life-boat apparatus, etc. Manufacturers and agriculturists have applied gutta percha to use in bands and straps for machinery, tubes, buckets, etc. Architects have accepted its aid in the interior ornamental work of houses, such as cornices, centres for ceilings, etc. Scientific men are aided in their electrical experiments by its high insulating power. Miners, railway officials, and others, find the value of speaking-tubes made of this substance; deaf persons are also greatly benefited by its power of conducting sound. Stereotype plates have been made in gutta percha. A mold is taken by pressure of a page of type with woodcuts in gutta percha; from this mold a cast is obtained on a cylinder of gutta percha, and from this last the printing is carried on. The dentist employs gutta percha in fixing or stopping teeth. The chemist is indebted to it in the preservation and conveyance of acids which corrode glass or metallic vessels. It is also extensively used in the manufacture of waterproof clothing, waterproof shoes, etc.

Within the last few years a substitute for gutta percha has been discovered in the juice of the mudlar (*Asclepias gigantea*), a common plant in India, which also affords a valuable kind of hemp. Care is required in the collection of the milky juice, on account of its exceedingly acrid nature; but when exposed to the air it hardens into a substance closely resembling gutta percha, and having many of its valuable properties. It is, however, unfitted for electrical purposes, for it is found to conduct electricity as freely as a piece of untanned hide.—E. B.

Gutta Trap, a substance evidently allied to gutta percha and caoutchouc, employed at Singapore in the manufacture of bird-lime. It is the inspissated juice of an artocarpus; and it is highly probable that there are several similar vegetable productions, such as the mangegatu (*Ficus indica*), from Visagapatam, which might advantageously be introduced into commerce, and employed in the arts for purposes similar to those for which caoutchouc and gutta percha are now so extensively employed.

Guy, a rope used to steady any weighty body while it is being hoisted or lowered; also, a tackle to confine a boom forward to prevent the sail from gybing. Guy likewise denotes a large rope extending from the head of the main-mast to that of the fore-mast, to sustain the tackle used for loading and unloading a ship.

Gybing, the shifting of the boom of a fore-and-aft sail from one side of the mast to the other, either to alter the course of the vessel suddenly, or to accommodate the sail to a change of wind.

Gypsum, or **Sulphate of Lime**, is found in various parts of the Continent, in Derbyshire and Nottinghamshire, and in Nova Scotia, whence it is largely exported. When reduced to a powder, and formed into a paste with water, it is termed *plaster of Paris*, and is much used for forming casts, etc. It is also used for laying floors, and has been advantageously employed as a manure.

H.

Hackney Carriages are carriages stationed in the streets or other public places, and bound to carry such persons as require their services, for certain rates of hire according to the distances traveled. They have generally been licensed by authority, and subjected to certain regulations, intended to exempt strangers, and others using them, from fraud and imposition. It may be doubted, however, whether these regulations have had any good effect; and whether the public would not be as well accommodated, at least in all large towns, by throwing the business open, and trusting to competition to rectify abuses. Hackney coaches are of French origin. In France, a strong kind of cob-horse (*haquenée*) was let out on hire for short journeys: these were latterly harnessed (to accommodate several wayfarers at once) to a plain vehicle called *coche-à-haquenée:* hence the name. The legend that traces their origin to Hackney, near London, is a vulgar error. They were first licensed in 1662, and subjected to regulations, 6 William and Mary, 1694.—*Survey of London.* The number plying in London fixed at 1000, and their fares raised, 1771. The cabriolets are of Parisian origin; but the aristocratic taste of Englishmen suggested the propriety of obliging the driver to be seated on the outside of the vehicle.—HAYDN.

Hainan, a large island in the Chinese Sea, lying south of the province of Canton, to which it is annexed, and separating the Gulf of Tonquin from the Chinese Sea. It is separated from the southern extremity of the province of Canton by the Strait of Luichan, 15 or 16 miles wide, and lies between N. lat. 18° 10′ and 20° 54′, and E. long. 108° 25′ and 111°. It is about 150 miles in length by 100 in breadth, and has an area of above 12,000 square miles. The interior of the island is mountainous; some parts of it rise above the snow line, and it is inhabited by aboriginal tribes. The Chinese inhabitants are mostly descendants of emigrants from Fokien, and are agricultural, trading, or piratical in their vocation, according to circumstances. The soil is mostly sandy, but some of the plains, particularly on the west coast, are of great fertility. Timber constitutes its most valuable product, the sides of the mountains being covered with extensive forests of sandal, rose, brazilletto, ebony, and other trees. Its other products are chiefly rice, sugar, tobacco, indigo, cotton, sweet potatoes, and various fruits. Wax also forms an important article of export; it is produced by an insect called the pelatchung, or white wax insect, when laying its eggs. Hainan is divided into 13 districts. The capital, Kiungchanfu, is a very populous town, at the mouth of the Limu River, on the Luichan, and has an excellent harbor. Several of the other towns are very populous. The island is said to contain about 1,500,000 inhabitants.

Hair, Human (Ger. *Haare, Menschen-haar;* Du. *Hair;* Fr. *Cheveux;* It. *Capelli umani;* Sp. *Cabellos;* Lat. *Capilli*). "Human hair makes a very considerable article in commerce, especially since the mode of perruques has obtained. Hair of the growth of the northern countries, as England, etc., is valued much beyond that of the more southern ones, as Italy, Spain, the southern parts of France, etc. Good hair is well fed, and neither too coarse nor too slender; the bigness rendering it less susceptible of the artificial curl, and disposing it rather to frizzle; and the smallness making its curl of too short duration. Its length should be about 25 inches; the more it falls short of this, the less value it bears."—M.

Hair of Beasts (Ger. *Haare, Hühnare;* Du. *Hair;* Fr. *Poil;* It. and Sp. *Pelo;* Lat. *Pelles*).—The hair of horses is extensively used in the manufacture of chairs, sofas, saddles, etc.; while the hair or wool of beavers, hares, rabbits, etc., is much employed in the manufacture of hats, etc. Hair, in its mechanical nature, may be regarded as a condensed form of cuticle. The feathers of birds may be considered as analogous to hair; while the only two classes of animals that are wholly devoid of any kind of hair are the fishes and reptiles. The variety in the conformation of hair is very great, ranging from the finest wool to the quills of the porcupine, or the horn of the rhinoceros, which last is nothing more than an assemblage of many hairs in one compact mass.

Hair Manufactures.—The various uses to which hair is applied are familiar to every one. The most valuable kind is human hair. It is procured chiefly from the north of France, Belgium, and Germany. The lighter colored hair, which bears the highest value, is the production of Germany; the darker shades are imported from France, where a peasant girl will sell the hair off her head without any sense of degradation; whereas in England this traffic is resorted to only by females of the lowest class. Indeed so common is the practice in France, that agents are employed to traverse certain districts annually at a particular season for the purpose of collecting the crops of human hair which are assiduously cultivated for the sake of the purchase-money, or its equivalent in gewgaws. A head of hair, such as is bought of the peasant girls in the districts above named, weighs from 1½ to 1¾ pounds.

The hair used for weaving consists of the long hair from horses' tails. It is procured principally from South America and from Russia. All the black and gray hair is dyed for the manufacture of black hair-cloth for covering furniture. The white is reserved for dyeing of the brighter hues, such as green, claret, crimson, etc. The quality of the cloth, as well as the brilliancy and permanency of the colors, depend in a great degree on the nature of the warp, which may be either of cotton, linen, or worsted. In the manufacture of hair-cloth, either plain or damasked, the weaver uses a sort of hook-shuttle, which he passes between the threads of the warp, or shed, toward his left hand; the assistant, or "server," places a single hair over the end of the hook, and the weaver draws it through the warp. The placing of the hairs one by one renders this a tedious operation, and one that does not admit of the application of machinery, which is so advantageously employed in fabrics where the shot or weft consists of a continuous thread.

Hair Pencils, or **Brushes,** for painting. Two sorts are made; those with coarse hair, as that of the swine, the wild boar, the dog, etc., which are attached usually to short wooden rods as handles; these are commonly called *brushes;* and hair pencils, properly so called, which are composed of very fine hairs, as of the minever, the marten, the badger, the polecat, etc. These are mounted in a quill when they are small or of moderate size, but when larger than a quill, they are mounted in white iron tubes.

Hair Powder (Ger. *Puder;* Fr. *Poudre à poudrer;* It. *Polvere di cipri;* Sp. *Polvos de peluca*) is used as an ornament for the hair, and generally made from starch pulverized, and sometimes perfumed.

Hake, a kind of fish, the *Gadus merluccius,* common in the Atlantic seas and the Mediterranean, and often prepared as stock-fish. See FISHERIES.

Halifax, a city and sea-port, capital of colony and province of Nova Scotia, founded in the year 1749. Situated on a declivity near the coast, and the centre of the peninsula, and on the west side of a deep inlet of the sea, called Halifax harbor, which extends sev-

eral miles inland; lat. 44° 39′ 42″ north, long. 63° 35′ 30″ west. Including its suburbs it is 2½ miles long, and about one half mile wide. Population 1852, 26,000; 1854, 30,000.

The best mark in sailing for Halifax is Sambro light-house, on a small island off the cape of the same name, on the west side of the entrance to the harbor, in lat. 44° 30′, long. 63° 32′. The light, which is fixed, is 210 feet above the level of the sea; and a detachment of artillery, with two 24-pounders, is upon duty at the light-house, firing at regular intervals during the continuance of the dense fogs with which this part of the coast is very much infested.—*Coulier, Tables des Principales Positions Geographiques*, p. 78. The course into the harbor for large ships, after passing Sambro light, is between the main land on the west, and McNab's island on the east. On a spit projecting from the latter, a light-house has been constructed; and when this is seen, ships may run in the harbor without fear. The harbor is defended by several pretty strong forts. Ships usually anchor abreast of the town, where the harbor is rather more than a mile in width. After gradually narrowing to about one quarter of that width, it suddenly expands into a noble sheet of water, called Bedford Basin, completely land-locked, with deep water throughout, and capable of accommodating the whole navy of Great Britain. The harbor is accessible at all times, and is rarely impeded by ice. There is an extensive royal dockyard at Halifax; which, during war, is an important naval station, being particularly well calculated for the shelter, repair, and outfit of fleets cruising on the American coast and in the West Indies. Mr. M'Gregor has severely, and, we believe, justly censured the project for the removal of the dockyard from Halifax to Bermuda.—*Com. Dict.*, 1856.

Trade, etc., of Halifax and Nova Scotia.—Halifax is the seat of a considerable fishery; but the British colonists seem to be, for what reason it is not easy to say, less enterprising and successful fishers than the New Englanders. The principal trade of the town and province is with the West Indies, Great Britain, and the United States. To the former they export dried and pickled fish, lumber, coals, grindstones, cattle, flour, butter, cheese, oats, potatoes, etc. They export the same articles to the southern ports of the United States, and gypsum to the eastern ports of New England. To Great Britain they send timber, deals, whale, cod, and seal oil; furs, etc. The principal exports of timber are from Pictou on the St. Lawrence. The imports consist principally of colonial produce from the West Indies; all sorts of manufactured goods from Great Britain; and of flour, provisions, etc., from the United States, in part for exportation to the West Indies. In 1826 a company was formed for making a canal across the country from Halifax to the Basin of Minas, which unites with the bottom of the Bay of Fundy. The navigation will be formed, for the most part, by Shubenacadie Lake and River. The legislature gave £15,000 to this undertaking. The excavated part of the canal is 60 feet wide at top, 36 feet at bottom, and will admit vessels drawing 8 feet water. It seems very questionable whether this canal, if constructed, will be profitable to the shareholders; but it will add to the trade of Halifax. There are two chartered banking companies at Halifax. Accounts are kept in pounds, shillings, and pence. The pound being equal to $4 United States' currency; the shilling, 20 cents; and the weights and measures are also the same as in England. About 120 large square-rigged vessels, and about the same number of large schooners, with several smaller craft belong to Halifax. The steamships conveying the mails to British North America, ply between this port and Boston (Mass.), semi-monthly, and Liverpool. The fare to Halifax or Boston from Liverpool, including provisions and steward's fee (but excluding wines and liquors), 140 dollars. On arriving at Halifax, passengers were formerly conveyed by coaches across the peninsula to Pictou, whence they were carried by steamers to Quebec and Montreal. The only commercial changes in the province of Nova Scotia, during the year ending 30th September, 1855, were those caused by the acceptance of the "reciprocity act," or treaty, made between the United States and Great Britain, and agreed to by the provincial legislature in December, 1854, whereby many products of the United States are now admitted in the province from the United States free of duty.

See BACON and PORK trade.

Hamburg, a free Hanseatic city, on the north bank of the River Elbe, about 70 miles from its mouth, lat. 53° 32′ 51″ north, long. 9° 58′ 37″ east. Population in 1836, including the suburbs of St. George and St. Paul, but excluding the territory attached to the city, 148,754. Hamburg is the greatest commercial city of Germany, and, perhaps, of the Continent. The Elbe, which may be navigated by lighters as far as Melnik, in Bohemia, renders her the *entrepôt* of a vast extent of country. Advantage, too, has been taken of natural facilities that extend still further her internal navigation; a water communication having been established, by means of the Spree and of artificial cuts and sluices, between the Elbe and the Oder, and between the latter and the Vistula; so that a considerable part of the produce of Silesia destined for foreign markets, and some even of that of Poland, is conveyed to Hamburg. See CANALS. There is, also, a communication by means of the Steknitz Canal, with the Trave, and, consequently, with Lubec and the Baltic. And she has been connected by means of railways with Berlin, Hanover, Brunswick, Kiel, etc. Vessels drawing 14 feet water come up to the town at all times; and vessels drawing 18 feet may come safely up with the spring tides. The largest vessels sometimes load from and unload into lighters at Cuxhaven. The trade of Hamburg embraces every article that Germany either sells to or buys from foreigners. The imports consist principally of cotton, wool, stuffs, and yarn; wool, woolen, and worsted goods; coffee, which is the favorite article for speculative purchases; sugar, silk, and silk goods; tobacco, hides, iron, and hardware, indigo, wine, brandy, rum, dyewoods, tea, pepper, etc.; very large quantities of coal are imported from the United Kingdom. Being brought from many different places, there is a great variety of quality in the grain found at Hamburg; but a large proportion of the wheat is inferior. Some of the barley is very good, and fit for malting. The oats are feed of various qualities. With the exception of coal, the exports consist of the same articles as the imports, Hamburg not being a centre of consumption, but of distribution. In addition to colonial produce, British manufactured goods and grain of all sorts, they include wool, cloverseed, bark, spelter, cattle, butter, salted provisions, rags, wooden clocks, and toys, linens, and all sorts of German manufactured goods, Rhenish wines, etc. Most sorts of Baltic articles, such as grain, flax, iron, pitch, and tar, wax, etc., may generally be bought as cheap at Hamburg, allowing for difference of freight, as in the ports whence they were originally brought. It will be afterward seen that the total annual value of the import and export trade of the port (including that of Altona, the merchants of which conduct their business on the Hamburg exchange), may be estimated at above £50,000,000 sterling a-year, or upwards; and, as the largest portion of this immense trade is in the hands of the English, it will be necessary that we should be a little fuller than ordinary in our details in regard to this great emporium.

Hamburg was visited by a most destructive fire in May, 1842. But, notwithstanding the heavy losses that were in consequence incurred, and the paralysis it occasioned in trade and industry, the shock was less severe than might have been anticipated. The system

of mutual insurance having been generally adopted, the proprietors of houses, and other property were subjected to a tax, to defray the interest of a loan of 32,000,000 marcs-banco raised to indemnify the sufferers, and to enable them to rebuild their houses. And we are glad to have to state that all traces of the devastation have nearly disappeared; and that here, as in most other places exposed to a similar calamity, it has led to a great improvement of the town, which is now better built, and more commodiously laid out than formerly.

Hamburg owes its commercial distinction principally to its situation. Indeed, the resources of Hamburg, as well as the other Hanse-towns, so far as they are dependent on their territorial limits, are of but little consequence. Their trade is, as it were, passive, depending entirely for its maintenance and activity upon the commercial movements of other countries. The city of Hamburg has but a very limited territory surrounding it, comprising the adjoining district, the towns of Bergdorf and Ritzebuttle, the districts of Vierlänaen (the sovereignty of which is shared by Lubec), Cuxhaven, some islands in the Elbe, and some detached portions of the territory enclosed by the Danish and Hanoverian dominions. These, together, constitute the republic of Hamburg. The area is about 137 square miles, and the population 188,054 souls; of whom 115,866 live in the city; 16,731 in St. George; 16,157 in the faubourg of St. Paul; and 39,300 in the country around.—*Com. Rel. U. S.*

The River Elbe is the chief commercial artery which gives life and energy to the trade of Germany. It rises in Bohemia, near the Carpathian Mountains, and, flowing through that country, receives the Moldau and its tributaries, and the Eger. Leaving Bohemia, this noble river flows by Dresden and Magdeburg, receiving in its course the Mulde, Elster, and Haval; all of which rivers, branching off into different streams, unite their waters with the Elbe immediately below Hamburg. The depth of water admits the largest ships; and, about 75 miles below Hamburg, the Elbe merges into the waters of the ocean. In respect to the navigation of the Elbe, the Stade duties levied by Hanover, at the castle of Brunshausen, were justly complained of, not only as arbitrary, but onerous and oppressive upon the commerce of the world. The principle, says McCulloch, was distinctly laid down by the Congress of Vienna in 1815, that the navigation of the Rhine, the Elbe, and the Weser, etc., should be quite free along their whole course. But, no general tariff of duties being then established, this declaration has, until lately, had no practical effect. On passing Stade every captain or master was obliged to send his papers, including the manifest, bills of lading, and cockets, on shore, that the amount of the duties could be calculated, and certified. These duties were paid at Hamburg, where the Hanoverian government had an agent to receive them; and, until the receipt was produced, the vessel could not proceed to unload. See Elbe River.

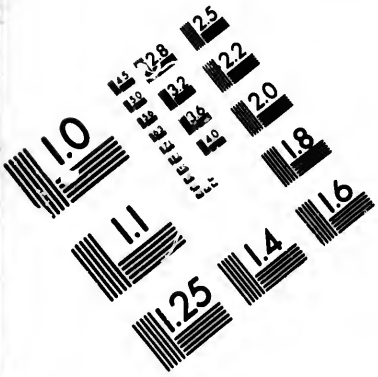
Stade Dues.—An intelligent correspondent of the State Department at Hamburg, who has given much attention to the subject, has furnished the following information concerning the Stade Dues:

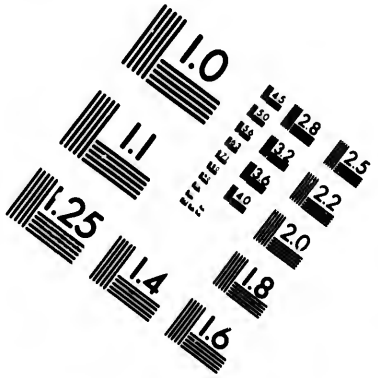
"About twenty-five miles below Hamburg, at a narrow place in the Elbe, the Schromlage, a small river, empties itself, on the banks of which, back a few miles from its mouth, is situated the town of Stade. At this place a 'toll,' under the name of *Brinshausen*, or *Stade Dues*, is levied on all vessels coming from the sea, except on those of Hamburg.

"These 'dues' owe their origin to a grant from Conrad II., Emperor of Germany, who in the year A. D. 1038, granted permission to the Archbishopric of Hamburg to *establish a fair or market* at Stade; and he appropriated the duties which were to be levied thereon, to the benefit of the church at Hamburg, which had been sacked and destroyed by the Pagans, as all outsiders were called in those days. Nothing beyond a market toll, a duty to be levied on goods brought to the market of Stade, was contemplated in this grant. But the Archbishops, particularly after the transfer of the see to Bremen, were not slow in converting, by an arbitrary and unjust interpretation, the Stade market privilege, with the trifling duty attached to it, into a source of lucrative revenue for their treasury, and in place of a simple right of holding a market at Stade, they feigned a privilege of compulsory market, viz., that no vessel sailing upward from the sea had a right to pass, but should lay to and pay a sort of transit, or rather passage duty, for the purpose, as it were, of buying off the right of sale pretended to have been granted at Stade—a right which could be easily enforced, from the circumstance that vessels, as already mentioned, were obliged to sail close by the Stade river, Schwinge. On so groundless a fiction rests the origin of the Stade dues. In the year A. D. 1189 the German Emperor, the great Frederic Barbarosa, granted to Hamburg the privilege which bears his name, besides other privileges and immunities in favor of the trade of Hamburg. The emperor, by this privilege, granted to her citizens, for their ships and merchandise, a free navigation from the sea to the city, with an entire exemption from all dues. At the peace of Westphalia, the territories of the Archbishop of Bremen were ceded to the crown of Sweden; which government, in consequence, claimed the right to levy the dues, as a *customary* right. In A. D. 1691 a treaty between Hamburg and Sweden was formed, wherein the rights of the former were acknowledged in the broadest sense; and a tariff was formed by Sweden for the rest of the world, and fixed the rate at about one sixteenth per cent. Soon after this treaty was formed, Stade, with the Duchies of Bremen and Verdun, was occupied by the Danes, and finally ceded by them in A. D. 1715, to the electorate of Hanover; which cession was brought about by the cabinet of George I., of England, who, at that time, was Elector of Hanover, and for which, the British government paid Denmark £150,000 sterling. These tolls or dues have ever since been collected by Hanover, except for some four or five years during the elder Bonaparte's wars, when Hanover was in possession of the French, none were collected, but the lower Elbe was left as free as any part of the North Sea.

"For a correct understanding of this question it is proper to premise that the Lower Elbe, as it is called, (that is, from Hamburg to the North Sea), is, strictly speaking, a part of the sea, an arm of the sea, and has ever so been considered by all the European nations in their official acts and intercourse. Even at the great Congress of A. D. 1815, when the commerce of all the German rivers was regulated, the Lower Elbe and Stade dues were especially omitted for the reason assigned—that they were *neutral waters*, and the 'dues' were sea tolls. Hence, in my opinion, it rests alone upon the same foundation which the Danish Sound dues do, or which the old Tripolitan tribute did, and no other; and if the former is, and the latter was, illegal and unjust, so are the Stade dues. It should be borne in mind that Denmark has the territory on the right bank of the Elbe below Hamburg, and Hanover on the left bank, except at Ouxhafen, where Hamburg owns some territory. Neither Hanover nor Denmark has ever contributed one dollar to the improvement of the navigation of the Lower Elbe; but, on the contrary, have ever declined to do so, while Hamburg has ever borne the whole burden of making such improvements, and keeps them up at her own expense. In this respect Denmark has decidedly the advantage over Hanover, for she has done something to add to the safety of the navigation of the *Sound*."

A British writer, of great commercial experience,





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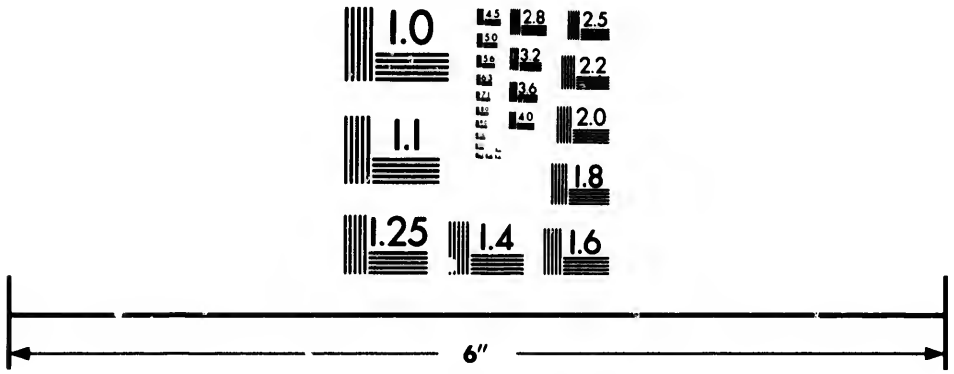

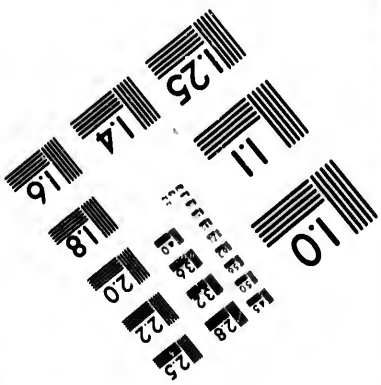

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says, in reference to this Elbe toll, "in equity, the duties levied at Stade should be, hereafter, in amount, only equal to the expenses of light-houses, buoys, and pilotage for maintaining the safe navigation of the Elbe, and should only be imposed for that purpose on the tonnage of vessels, instead of, as at present, on merchandise, and paid into the Hanoverian treasury." This policy, we are glad to say, has been recognized; and the following notification appeared in May, 1855: "With the view of encouraging the shipping interests of Hamburg, Hanover has abolished the Stade dues on the Elbe for all ships and goods entering Harburg seaward." The manufacturing industry of Hamburg, especially its sugar refineries, iron works, and various works in metals and other materials, rope-walks, distilleries, and breweries, give employment to a large portion of its population. Its great importance and wealth, however, are owing to its advantageous position as the chief emporium of the trade of Germany. The principal articles exported from Hamburg to the United States are silk, woolen, and cotton manufactures, including piece goods and hosiery, and the produce and manufactures of the German States generally. The principal articles exported from the United States to Hamburg are cotton, tobacco, rice, coffee, staves and other articles of wood, naval stores, whale and other fish oil, and whalebone.

RAW COTTON IMPORTED INTO HAMBURG DURING TEN YEARS.

Years.	Bales.	Years.	Bales.
1839	40,962	1844	64,097
1840	78,931	1845	67,443
1841	62,119	1846	51,601
1842	61,891	1847	71,457
1843	75,484	1848	47,846

STATEMENT EXHIBITING THE VALUES OF GOODS IMPORTED INTO HAMBURG DURING THE YEARS 1853 AND 1854.

Where from.	1853.	1854.
	Marcs-banco.	Marcs-banco.
U. States, including Br. N. Amer.	9,044,870	11,029,690
Asia	1,189,900	1,863,590
Australia	302,850	6,654,060
Africa	22,172,710	21,404,220
South America	9,512,480	12,729,970
West Indies	9,044,870	11,029,690
Northern part of Europe	13,478,120	17,278,110
Great Britain	142,561,990	149,160,760
Southern part of Europe	13,015,680	13,606,120
From and via Altona	43,564,490	52,488,370
By land routes and rivers	184,545,110	245,013,980
Total	448,882,360	541,996,420
Imports from the U. S. solely	8,765,560	10,449,950

STATEMENT EXHIBITING THE VALUES OF MERCHANDISE EXPORTED BY SEA, BY RIVERS, AND LAND ROUTES, FROM HAMBURG, DURING THE YEARS 1853 AND 1854.

Where to.	1853.	1854.
	Marcs-banco.	Marcs-banco.
U. States, including Br. N. Amer.	15,468,780	18,982,970
Australia	6,284,780	5,624,710
Asia	2,257,460	3,121,790
Africa	582,880	729,590
South America	25,011,940	27,545,470
West Indies	7,296,900	7,879,840
Northern part of Europe	19,163,410	25,812,980
Great Britain	62,080,430	82,323,910
Southern part of Europe	8,874,160	7,071,790
Provisions for vessels	706,000	947,500
To and via Altona	45,894,700	54,588,760
Land and river routes	228,607,800	258,651,830
Total	421,673,490	493,029,840
Exports to the U. S. solely	10,090,700	12,981,270

The following is the official statement of the imports and exports of Hamburg (Germany), from 1850 to 1855:

Years.	Imports. Marcs-banco.	Exports. Marcs-banco.
1850	358,156,670	313,329,250
1851	378,277,940	338,163,870
1852	392,028,820	372,495,450
1853	448,879,518	421,673,490
1854	530,668,080	493,029,840
1855	528,558,190	507,221,600

Hamburg receives supplies of raw cotton not only from the United States, Brazil, and other countries of South America, in the direct trade, but also from English ports, and other entrepôts of Europe. A considerable diminution is perceived in the importation of English twists (spun cotton) at Hamburg. This is attributable to the fact that the manufacturers of Prussia and Saxony have, of late years, ordered their supplies direct from Great Britain.

HAMBURG.—IMPORTATIONS AND EXPORTATIONS IN 1855, IN MARCS-BANCO.*

Countries.	Imports.	Exports.
	Marcs-banco.	Marcs-banco.
Australia	....	2,488,840
China	1,850,990	555,360
Manilla, Philippines	726,170	27,810
Singapore	367,120	1,808,680
Java	974,190	817,850
British East Indies	2,056,890	522,450
Eastern Coast of Africa	490,320	113,490
Cape Town	2,618	200,820
Western Coast of Africa	854,710	188,650
Madeira, Teneriffe, and Azores	117,930	9,800
Western Coast of America	5,078,790	9,858,580
California	....	950,570
Buenos Ayres and Montevideo	1,014,880	3,892,960
Brazil	16,044,810	7,519,900
Dutch Guiana	884,450	129,580
Venezuela and New Granada	3,497,140	2,858,720
Dutch West Indies	40,190	192,060
English West Indies	....	24,450
St. Thomas and Porto Rico	1,299,760	2,686,130
Hayti	2,811,770	413,260
Cuba	7,037,840	8,282,050
Honduras	15,550	15,170
Eastern Coast of Mexico	494,150	2,255,470
United States	8,813,390	6,080,130
Greenland	2,060	....
British North America	....	1,714,460
Sea Stores	....	1,009,400
Islands	....	81,920
Russia	....	....
Sweden and Norway	1,978,550	11,299,870
Prussia	278,230	3,531,910
Mecklonburg	8,770	24,030
Lubec	....	....
Denmark, Schleswig & Holstein	888,190	1,002,110
Heligoland and Cuxhaven	80,260	626,960
Bremen and the Weser	3,158,230	1,792,190
Oldenburg and East Friesland	505,850	594,220
Holland	8,100,950	7,796,980
Belgium	2,754,610	746,890
Great Britain and Ireland	160,494,560	57,049,620
France	4,097,520	4,561,450
Portugal	1,496,420	696,120
Spain	2,824,960	462,950
Gibraltar	52,590	413,570
Sardinia	612,690	312,850
Tuscany	690,510	449,890
Papal States	....	57,640
Naples and the Two Sicilies	1,524,720	6,280
Trieste and Venice	585,380	598,780
Greece and Ionian Isles	297,690	....
Turkey and Levant	296,980	98,690
Altona	56,329,310	56,387,310
Railroad, Schleswig & Holstein	5,604,670	10,482,170
Lubec (by wagons)	1,020	1,221,270
" Steecknitz	898,880	959,420
" Railroad	9,282,150	19,162,470
Railroad, Berlin to Hamburg	86,911,600	135,963,990
Elbe, superior	21,362,780	30,477,860
" inferior	5,096,770	4,197,120
Luneburg	292,600	695,500
Harburg	23,108,900	25,524,320
Post roads, etc	72,709,080	73,299,080
Total	528,558,190	507,221,600
Grand total	1.035,779 790	

* From the Almanac de Gotha, 1857.

COMMERCE IN 1855.

Continents.	Entered,			Cleared.		
	Vessels	Tonnage lasts.	Crew.	Vessels	Tonnage lasts.	Crew.
Europe	4,188	255,490	34,470	4,119	258,119	34,548
America	407	46,489	4,901	370	40,848	4,406
Asia	43	6,124	623	31	4,867	469
Africa	10	809	108	17	1,519	186
Australia	....	....	....	25	4,631	409
Total	4,568	309,092	40,102	4,562	309,984	40,013
Loaded	3,970	284,584	36,718	2,580	189,058	26,876
In ballast	628	24,418	3,880	1,989	120,926	13,137

Foreign Navigation of Hamburg.—1. The most important class of Hamburg packet-ships are those which sail, at stated periods, for Adelaide, Melbourne, and Sydney in Australia, Valparaiso in Chili, and San Francisco in California. They consist of 23 large class ships.

2. Fourteen large-sized vessels ply regularly between Hamburg, New York, New Orleans, Galveston, and Indianola.

3. Five large three-masted ships, owned by a private company, are engaged in the direct trade between Hamburg and New York.

4. Two three-masted ships, also owned by a private company, ply between Hamburg and the ports of North and South America, as they find a market.

TABLE SHOWING THE NUMBER AND TONNAGE OF VESSELS BELONGING TO HAMBURG IN THE YEARS SPECIFIED.

Years.	Vessels.	Tonnage.
1836	146	33,978
1845	205	50,937
1848	249	68,691
1853	408	127,695

STATEMENT EXHIBITING THE NAVIGATION OF HAMBURG DURING SEVENTEEN YEARS, ENDING WITH 1852.

Years.	Vessels entered.	Tonnage.	Years.	Vessels entered.	Tonnage.
1836	2,297	381,814	1845	3,990	584,424
1837	2,601	349,506	1846	3,779	558,061
1838	2,700	374,372	1847	4,178	631,890
1839	2,989	413,998	1848	3,904	593,564
1840	2,937	448,863	1849	3,439	.....
1841	3,694	495,786	1850	4,094	720,569
1842	3,330	520,764	1851	4,169	744,587
1843	3,538	533,949	1852	4,440	840,109
1844	3,260	484,299			

The following statement exhibits, in continuation, the number and tonnage of American vessels arriving at and departing from the port of Hamburg during the six months ending with June 30, 1855. The letter accompanying the consular return contains the following passages: "The direct imports to this port from the United States will show a great falling off from last season; most of our vessels brought cargoes (chiefly sugar) from Cuba, destined, *via* Prussia, for Russia. The exports have also been much less than last year. But few of our ships left for American ports direct; most of them left in ballast for English ports, to load coal or iron; several took, at low rates, long charters for South American ports. The number of emigrants for the United States from this port will hardly reach half as high as last year. There being no American shipping-houses at Hamburg, it will always be difficult for our flag, as the regular Hamburg passenger lines must first be filled, to participate fairly in this trade. In the article of saltpetre, destined for Russia, our flag had the preference when coming from our ports; but, generally, the Hamburg flag and property being exempted from the Stade toll dues, this can not be the case." Number of vessels, barks, 13; tonnage, 5,143. Ships, 4; tonnage, 2,167. Total number of vessels, 17, and total tonnage, 7,310. Cargoes consisted principally of,—

	Vessels.	Tonnage lasts.	Crew.
Belonging to the port, Dec. 31, 1855.	184	9,990	1,844
" " " 1854.	158	10,962	1,955

Inward.—Arrack, seeds, cassia, dye-wood, India-rubber, rice, sugar, tamarinds, pot-ashes, household goods, cotton, honey, ginger, whalebone, tobacco, clocks, segars, preserves, tortoise-shells, gums, rosins, hops, oil, machinery, raisins, shoes, coffee, turpentine, furs, sarsaparilla, piano-fortes, and general merchandise.

Outward.—Passengers, pig-lead, plates of spelter, willow, succory flower, cinnabar, glue, gypsum, rags, tow, worsted yarn, woolens, wormseed, hair cloth, glass-ware, china, hardware, iron-ware, sheet-zinc, musical instruments, bristles, slates, drugs, earthenware, straw goods, and general merchandise.

STATEMENT SHOWING THE NUMBER OF EMIGRANTS, WITH THE NUMBER OF VESSELS CONVEYING THEM, WHICH LEFT THE PORT OF HAMBURG FOR THE UNITED STATES, FROM 1847 TO 1854, BOTH INCLUSIVE.

Years.	No. of vessels.	No. of emigrants.	Years.	No. of vessels.	No. of emigrants.
1847	51	5,499	1851	57	8,533
1848	43	4,741	1852	88	13,886
1849	84	3,777	1853	75	13,898
1850	43	5,600	1854	100	20,835

The tariff is that of December 29, 1851. *Monies.*—1 marc-banco=16 shillings=$0·35 United States' currency. *Duties on Imports.*—These duties amount to not more than ½ or 1 per cent. ad valorem; and the *duties on exports* to not more than one eighth of 1 per cent. ad valorem. The following articles are exempt both from import and export duties: apparel of travelers, brought in by the respective parties, or by a special permit of the Director of Customs, bark unground, barley, bones, bronze metal, buckwheat, copper for sheathing ships, brass, old, also in plates or sheets, coal, stone, gold and silver bullion or coin, open samples of goods under 70 pounds' weight, exported and then re-imported through the same gate, linens, with or without cotton mixture, linen bagging, malt, oats, oil cakes, potatoes, printed matter, musical and scientific maps, rags, woolen or cotton, rape-seed, rye, wool, sheep's and lamb's raw, wheat, zinc, crude. The following articles are free of import duties only: articles not exceeding 5 marcs-banco ($1 75) in value; those also subjected to excise duties not over 20 marcs-banco in value; timber, staves, fire-wood, and turf. Those free of export duties are, all articles under 20 marcs-banco ($7) in value, regardless of quantity; all manufactures of the city of Hamburg; all provisions for the immediate use of vessels lying in the harbor; articles not exceeding 100 pounds in weight, and not of greater value than 100 marcs-banco. *Transit Duties.*—All goods re-exported within three months from the date of arrival, are free of any transit duty, if yet in the hands of original importers.—*U. S. Commercial Digest.*

Money is generally reckoned in Hamburg in marcs, 16s., each of 12 pfennings; and is of two sorts, *banco*, and *current*. The former consists of the sums inscribed in the books of the bank, opposite to the names of those who have deposited specie or bullion in the bank, or got it transferred to them at the rate of 27⅞ marcs-banco to the Cologne marc of fine silver. The value of the marc-banco, taking silver at 5s. an oz., is, consequently, 1s. 5½d., which makes the par of exchange 13 marcs 10⅓s. banco per £1 sterling. Banco is worth about 23½ per cent. more than currency; the agio varying from 120 to 125½. Speaking generally, the value of the current marc may be taken at 1s. 2¼d. or 1s. 2d. sterling. The silver coins current in Hamburg are, specie dollars (of which 9½ are equal to a marc-Cologne, fine silver); Prussian current dollar (14 dollars to the marc fine); new 2s. 3d pieces (18 to the marc fine); Danish grob. current, and Hamburg current (34 to the marc, fine). The gold coins comprise ducats=9s. 4d. sterling, Louis and Frederic dollars. The agios of these different coins, with banco, constantly vary. Hamburg has for many years ceased to coin monies, with the exception of ducats and the smaller coins.

Measures and Weights.—A new regulation of these was effected by an act passed on the 16th January, 1843. There are in Hamburg three different sorts of *pound weights*. 1. The bank or silver weight (formerly the Cologne weight). 2. The commercial weight. 3. The apothecary weight. One pound bank, or silver weight, is=2 marcs; 1 marc (Cologne) is 233·85489 grains, or 4865·57 Dutch As.=100 marcs =62·6554 English troy pounds. The old relation between the commercial weight and bank weight, by which the commercial pound is equal to 33 5-32 oz. bank weight, has been confirmed by the late act. 1 centner=112 com. pounds; 1 pound=32 oz.; 1 oz.= 4 drachms; 1 drachm=4 pfennings. By the *United States' Commercial Digest* the centner is made equal to 119·504 avoirdupois. 100 commercial pounds=106·838 English pounds avoirdupois; 48·4609 kilogrammes; 86·5355 pounds Vienna; 96.9219 pounds German cus-

toms union. One "schiffpfund," in commerce=2½ centners, or 20 "liespfund" of 14 pounds each, or 280 pounds; 1 pfund=1·067 pounds avoirdupois. One "schiffpfund" by land-carriage has 20 "liespfund," each of 16 pfund; is, therefore,=320 pounds. A pipe of oil is 820 pounds; 1 barrel of butter (small willow and hoops) is taken at 224 pounds; but with common hoops, at 280 pounds nett.

Long Measure.—The Hamburg foot, divided into 12 inches of 8 parts each=0·28657 metres=127·056 Parisian lines=11·289 English inches. Hence, 100 Hamburg feet=94·021 English feet; 28·657 French metres; 91·507 Prussian or Rhenish feet; 90·664 Vienna feet. The Hamburg ell (short ell)=2 Hamburg feet. 05·7814 metres=254·072 Paris lines. 100 Hamburg ells=62·681 English yards. The Brabant ell (or long ell) most commonly used in Hamburg, in measurement of piece-goods=27·585 English inches.

Liquid Measure.—1 fuder=6 aums, 1½ aum=4 ankers or 5 eimers; 1 anker=5 viertels; 1 viertel=2 stübchens; 1 stübchen=2 kannens; 1 kannen=2 quarters of Oessel; 1 eimer=4 viertels; 1 hogshead=1½ aums, or 6 ankers, or 30 viertels, each of 8 quartiers or bottles. The stübchen contains 266 Hamburg cubic inches=3·62 litres. 100 Hamburg vietrels=159·89 English imperial gallons; 724·18 French litres; 632·45 Prussian quarters; 511·88 Vienna maass. The full beer barrel contains 48 stübchens, or 192 quartiers; the small barrel only 32 stübchens, or 128 quartiers. The vinegar barrel contains 30 stübchens, or 120 quartiers. The whale and fish-oil barrel contains 32 stübchens, or 128 quartiers; 2 whale-oil barrels=1 quarteel.

Grain Measure.—One lass=60 fass; 1 fass=2 himpten; 1 himpten=4 spint. The wispel of wheat, rye, and peas is 20 fass; but of oats and barley, 30 fass. The scheffel of wheat, rye, and peas, is 2 fass; of barley and oats, 3 fass. The fass contains 3,872 Hamburg cubic inches=52·734 litres, and 2658·45 Parisian cubic inches; and 100 Hamburg fass=18·135 imperial quarters; 52·734 hectolitres; 95·947 Prussian scheffels; 85.765 Austrian hetzen. 10 Hamburg lasts=108·81 imperial quarters. The mode of measuring grain has hitherto been by the metres throwing or pitching it the fass, and striking off the surplus with a wooden roller pressed lightly along the upper edge; but an alteration is expected on a new corn law, now projected, coming into operation; there will probably be a new fass measure (of 4035 Hamburg cubic inches), equal to the Prussian scheffel. In practice, 1 Hamburg last is taken at 11 imperial quarters, 31 hectolitres, 57 Prussian scheffels, 25 Danish barrels, and 16½ Russian chetwerts. The coal barrel contains (when the 1453 Hamburg cubic inches of head or heaped measure is added) 16,438 cubic inches. The Hamburg ship last, or last of commerce, really weighs 6000 pounds, or 3 tons (not 4000 pounds, as is generally stated).

Navigation of the Elbe, Pilotage, etc.—The mouth of the Elbe is covered with sand-banks. The channel leading to Cuxhaven is bounded on the north by the Vogel Sands and North Grounds, and on the south by the Schaarhorn Sands and Neuwerk Island. On the latter there are two light-houses and two beacons, and on the Schaarhorn is another beacon. The light-houses on Neuwerk Island are about 700 yards apart; the most southerly, which is also the most elevated, being in lat. 53° 54′ 57″ N., long. 8° 29′ 40″ E. It is 128 feet high, being twice the height of the other. The channel is, in some places, hardly three quarters of a mile wide. The outer red buoy in the middle of the channel, at its mouth, bears from Heligoland south-east by south, distant nearly 20 miles. But the best mark in entering the Elbe is the floating light, or signal ship, moored two miles north-west by north of the red buoy, in 11 fathoms at low water. This vessel never leaves her station, unless compelled by ice in the winter season. By night she exhibits a lantern-light, 38 feet above deck, and in foggy weather rings a bell every quarter of an hour. A second signal ship is stationed 5½ miles south-east by east from the first, at the westernmost point of a sand-bank dividing the fair way of the river. She is rigged like a galliot, to distinguish her by day from the first signal ship; and during the night she exhibits *two* lights, one 18 feet above the other. The distance from the outer red buoy to Cuxhaven is about 16 miles; thence to Glückstadt the course is east, 28 miles; from the latter to Stade the course is south-easterly, 9 miles; and then easterly to Hamburg, 18 miles. The channel throughout is marked with black and white buoys, which are numbered and specified in the charts. The black ones are to be left, in passing up the river, on the starboard or right-hand side, and the white on the larboard side.

Every vessel coming from sea into the Elbe, and drawing four feet water, is directed to take a pilot on board, and must pay pilotage, though she do not take one. However well the signals, lights, beacons, and buoys, may be arranged, an experienced pilot is very necessary, in case of a fog in the night, or of a storm. To take in a pilot, a vessel must heave to by the pilot galliot, which lies, in good weather, near the red buoy, and in bad weather N.E.N. from Neuwerk, and is known by having at the flagstaff an admiral's flag, and a long streamer flying at the top. If the pilot boat have no pilot on board, or if the weather be so bad that the pilot can not leave her, she lowers her flag, and then the vessel coming in must sail, with the signal for a pilot hoisted, to Cuxhaven, and heave to there, where she is certain of getting one. See Elbe.

There are no docks or quays at Hamburg; and it is singular, considering the great trade of the port, that none have been constructed. Vessels moor in the river outside of piles driven into the ground a short distance from shore; and in this situation they are not exposed to any danger unless the piles give way, which rarely happens. There is a sort of inner harbor formed by an arm of the Elbe which runs into the city, where small craft lie and discharge their cargoes. Larger vessels load and unload from their moorings, by means of lighters. These carry the goods from and to the warehouses which front the various small arms and channels of the river, and the canals carried from it into different parts of the city. The charges on account of lighterage are extremely moderate.

Port Charges.—The charges of a public nature payable by vessels entering the port of Hamburg, unloading and loading, are pilotage and lastage. The separate items of which are given in the following tables:

Pilotage Earned.—The pilotage fees are earned if vessels are brought as far as Freyburgh or Glückstadt, and when from stress of wind or weather, which seldom happens, the Hamburg pilots take the vessel to Wittenberg or Neumühlen, they are to pay, without distinction,

	Marcs currency.	d. sig.
To Wittenberg	1 0	14 0
Neumühlen	1 8	21 0

Pilotage all the way.—For pilotage the whole way from Cuxhaven to Hamburg there is no table of rates, for, generally speaking, the Hamburg pilots do not take vessels up beyond Boesche.

Pilotage and Lastage.—The Hamburg pilots, generally speaking, take charge of vessels only from the Red Buoy to Freyburgh or Glückstadt.

Half Pilotage only.—In case the Hamburg pilots enter a vessel only within the first buoy beyond the Rosshacken, Strangfly, or Cuxhaven, half the above-mentioned pilotage is paid. Also half pilotage must be paid at all events, whether the vessel has taken a pilot from the pilot galliot or not.

From Boesche to Hamburg.—Vessels are generally piloted from Boesch to Hamburg by Danish or Hanoverian pilots, to whom it is customary to pay three marcs.

Lastage and Custom-house Charges.—British and other foreign vessels pay the same as Hamburg vessels. For clearing in and clearing out, no separate charges are made; visiting the port is considered as *one* voyage, and the charges on vessels are paid as follows: For vessels arrived with cargoes from the undermentioned places, viz.:

Places.	Lasts of 6,000 lbs.	£	s.	d.
	Marcs.			
The East Indies	3 0	0	3	6
West Indies, North and South America	2 8	0	3	5
Portugal, Spain, and the Mediterranean	2 0	0	2	4
The rest of the European ports	1 8	0	1	9
Holland, East Friesland, the Weser, Eyder and Jutland	0 12	0	0	10½
For vessels under 20 commercial lasts without distinction	0 4	0	0	3½
Vessels arriving and departing in ballast, of upward of 20 commercial lasts	0 3	0	0	7

It is difficult to determine the exact ratio of a last to a ton; but it may be taken at about 3 or 2¾ to 1. But in Hamburg all vessels are measured by the harbor master; and it is upon his report that the lastage is calculated.

For all vessels laden with coals, wood, or turf, no lastage is paid, provided they do not take return cargoes. Vessels arriving in ballast and departing with a cargo pay half the above lastage, according to their destination. Exclusive of the above dues, which are all remarkably moderate, vessels coming to the port of Hamburg are obliged to pay certain dues to Hanover, called Stade or Brunshausen dues. See *post*.

Custom-house Regulations.—On a vessel's arrival at Hamburg the broker reports her to the custom-house, and gives his guaranty for payment of the duties, and delivers her papers; and, upon a receipt being produced for the Stade duties by the Hanoverian authorities at Hamburg, the vessel is allowed to unload. On clearing, a manifest of the outward cargo, together with the consul's certificate of the regularity of the ship's papers, must be produced at the custom-house by the broker, who obtains in return a clearance certificate, authorizing the vessel to go to sea.

Quarantine.—Ships are visited at Cuxhaven, a Hamburg possession at the mouth of the Elbe. Suspected vessels are generally sent to a station on the Norwegian coast; but vessels which have undergone quarantine in an English port, or come from beyond the Cape of Good Hope or Cape Horn, or direct from the River Plate, are permitted to come directly to Hamburg.

Credit, Brokerage, etc.—Almost all goods are sold for ready money, with an allowance of one per cent. for discount. Sometimes, but not frequently, sales are made at two or three months' credit; and in such cases a higher price is obtained than for cash. Sometimes, sugar is sold to the sugar-baker at this credit.

Brokers are positively forbidden to act as merchants or factors. They are licensed by the Senate, and must conform to the established regulations.

Banking, Insurance, etc.—For an account of the Bank of Hamburg, see BANKS. All sorts of insurances are effected at Hamburg. A municipal regulation compels the insurance of all houses within the city, the rate varying according to the number of fires and the amount of loss. Marine insurance is principally effected by joint stock companies, of which there are several; their competition has reduced the premiums to the lowest level, and the business is not understood to be profitable. The high duties on policies of insurance in this country has led to the insuring of a good many English ships at Hamburg. Life insurance is not prosecuted in Germany to any considerable extent; but some of the English companies have agents here, who are said not to be very scrupulous.

Bankruptcy.—Considering the vast number of merchants and tradespeople at Hamburg, bankruptcy does not seem to be of frequent occurrence. Much of the business transacted at Hamburg being on commission and for account of houses abroad, the failure of foreign merchants is a prevalent source of bankruptcy. Another source of bankruptcy is losses on goods imported or exported on speculation, and occasionally losses in the funds, in which a good deal of gambling goes on here. Expensive living is not nearly so prevalent a source of bankruptcy here as in London and other places. See *Com. Rel. U. S.*; HUNT'S *Mer. Mag.*, xxiii., 177, xv., 177; *Westm. Rev.*, xxxviii., 437.

Hammock or **Hamac**, (Span. *hamáca*—a word of Indian origin), a kind of hanging bed, which is suspended between trees or posts, or two hooks. The true Indian hammock is a long narrow net made of strong cord, and terminated at each end by small ropes for suspending it. The hammock used on board ship consists of a piece of stout canvas, about six feet long and three broad, gathered at the ends and suspended by cords. The sailor's hammock is an oblong piece of hempen cloth; at each end are fastened several small lines, meeting in a grummet or iron ring: these form the *clews*. The whole, having mattresses, pillows, etc., placed in it, is hoisted up into its place by small ropes called *laniards*, between two battens or screws in the beams of the deck over head, about nine feet distant asunder. The hammock is a very agreeable bed, especially in cold weather; but some little practice is requisite at first in getting in and out successfully. During the day, the hammocks, lashed up tight in the form of caterpillars, are stowed in the nettings along the upper edge of the bulwark.

Hampton Roads, Va., a branch of Chesapeake Bay, off the mouth of James River, between Old Point Comfort on the north and Willoughby Point on the south. It is sufficiently deep for the largest ships of war, and is an important naval rendezvous. On Old Point Comfort, there have been ceded to the United States 250 acres;—a fortification called Fort Monroe has been erected, which mounts 335 guns, generally 32 and 48-pounders, 130 of which are under bomb-proof covers. On the opposite point, one mile distant, is Fort Calhoun. The foundation is made by throwing in stones, and it covers about seven acres. This fort is designed to mount 265 guns, 24's and 32's, and nearly all under cover. These completely command the entrance to Hampton Roads. On the north side of the entrance is *Old Point Comfort Light*, lat. 37° 6′, long. 79° 18′ W., showing a fixed light on a white tower, and elevated 40 feet above the surface of the sea. On the south side of the entrance the *Willoughby Spit Light Vessel* shows fixed lights, elevated, the one 32 and the other 41 feet above the sea-level; and here is a fog-bell also. The channel leading from the Capes of Virginia to Hampton Roads is reduced at *Old Point Comfort* to a narrow width. The shoal water, under the action of the sea and the reaction of the bar, is kept in an unremitting ripple; which circumstance has given to this place the name of the *Rip Raps*.

Handkerchiefs. Handkerchiefs, wrought and edged with gold, used to be worn in England by gentlemen in their hats, as favors from young ladies, the value of them being from five to 12 pence for each, in the reign of Elizabeth, 1558.—STOW'S *Chron.* Handkerchies were of early manufacture, and are mentioned in our oldest works. Handkerciefs of the celebrated Paisley manufacture were first made in that town in 1743.

Handspike is a stong wooden bar, used as a lever to move the windlass and capstan in heaving up the anchor, or raising any heavy weights on board a ship. The handle is smooth, round, and somewhat taper; the other end is square, to fit the holes in the head of the capstan, or barrel of the windlass.

Hang-Chau-Fou, an important city of China, capital of the province of Che-kiang, on a plain near the River Tsientang, about 40 miles from its mouth, and 140 miles south-east of Nanking. It is surrounded

by high and strong walls, said to be nine miles in circumference; and adjoining it are very extensive suburbs. The Governor-General of Che-kiang and Fukien resides in this city, and also the governor of the province, which, with their courts and troops, in addition to its great trade, render this one of the most important and richest cities in the empire. A portion of the space within the walls is divided off for the accommodation of a garrison of 7000 troops. The Grand Canal has its southern termination here, in a large irregular basin. The streets are well paved, and the shops and warehouses are large, and well stored with goods. There are numerous rich temples and elegant public buildings; and altogether, this city presents the appearance of great wealth and splendor. It is noted for its silk manufactures, which employ a large portion of its inhabitants. The population is said to be about 1,000,000.

Hanover, a kingdom in Germany, formed out of the duchies which formerly belonged to several families of the junior branch of the house of Brunswick. In the course of the revolutionary war, under the influence of France, the dukedoms of Bavaria, of Saxony, and of Wirtemburg had been raised to the rank of kingdoms; and when the overthrow of Bonaparte was accomplished, the dukedoms which had composed the electorate of Hanover were thought by the allied powers of sufficient consequence to be elevated to the same dignity, as, with the additions then made to them, they were nearly equal in extent and population to the other portions of Germany whose rulers had received that rank. It accordingly assumed that grade in 1814, under George III., and was acknowledged as such by all the powers of Europe.

The kingdom of Hanover lies between lat. 51° 18′ and 53° 52′ N., and long. 6° 43′ and 11° 45′ E.; and is bounded on the north by the German Ocean, north-east by the Elbe, which separates it from Denmark, Hamburg, and Mecklenburg, east and south-east by Prussia and Brunswick, south-west by Hesse-Cassel and Prussia, and west by Holland. The boundaries include the duchy of Oldenburg, which almost completely separates Hanover into two large portions, the connection being maintained by a narrow strip of land, not more than six miles in width, south of the duchy. A small portion in the south is separated from Hanover proper by the interjection of part of Burnswick. The entire area amounts to about 9,464,446 acres, or 14,788 square miles, as follows:

Provinces.	Extent in English acres.	Population in Dec. 1852.	Number of dwelling-houses
Hanover	1,488,698	849,958	48,445
Hildesheim	1,102,080	867,883	52,042
Luneburg	2,769,562	898,764	43,835
Stade	1,674,969	279,894	44,091
Osnabruck	1,540,649	261,965	41,027
Aurich	787,968	185,129	30,024
Clausthal	156,112	85,720	8,392
Total	9,464,446	2,819,258	262,796

The whole of the kingdom of Hanover dips toward the north, and the courses of all the rivers are in that direction. These are, first, the Elbe, which borders a large part of the dominion, and receives into it the Ohre, which rises in the province of Luneburg; the Aland and Jeetze, which come out of Prussia, and are navigable before they terminate in the Elbe; the Ilmenau, which becomes navigable at Luneburg; the Este, which is navigable to Buxtehude; the Lühe, navigable to Hornburg; the Schwinge, by which vessels reach Stade; the Oste, which passes Harburg, and is navigable to Kirchosters; and the Medem, which runs through the Hadeln-land, and admits large vessels as high as Otterndorf; second, the Weser, which enters the dominion of Hanover at Münden, being there formed by the junction of the Fulda and the Werra. It is navigable for barges from the spot at which its name commences; and it receives in its course the Hamel, the Aller, the Oertze, the Leine, the Böhme, the Eyther, the Wümme, which, in the lower part of its course, takes the name of Lesum, the Geeste, and the Hunte; all of which are Hanoverian rivers, and continue their united course till they are lost in the German Ocean, near Bremen; third, the Ems, a river rising in the Prussian province of Westphalia. After entering Hanover, it receives the waters of the Aa, the Hase, the Else, and the Leda. Before reaching the sea, it falls into the Dollart, near Emden, which is the principal sea-port in the kingdom. It is navigable for flat-bottomed vessels from Rheina downward, and for sea-going ships from Halte and Weener. About 1,200,000 thalers ($87,000) have been expended in improving the navigation, and it has become in consequence a very important channel for the inland trade of the country. Fourth, the Vecht, a river of short course, rising in the Prussian province of Westphalia, and terminating in the Zuyder Zee. Its principal importance is derived from a navigable canal, which commences at the city of Münster, and is the channel of some trade through the Vecht to Amsterdam.

Though Hanover is generally a sandy soil, it has some small fresh-water lakes. The Dummersee, in Diepholtz, is about 12 miles in circuit. The Steinhudermeer, in the province of Kalenburg, is about four miles long and two broad; and the Dollart, at the mouth of the Ems, which is rather an estuary than a lake, is 12 miles across. The canals are all of short course. The Aurich Canal, between Aurich and Emden, is 15 miles long; the Bremen Canal, between the Oste and the Schwinge, serves both for draining and for transport; the Papinburg Canal, between Papinburg and the Ems, is unimportant.

Manufacturing industry prevails less in Hanover than in the other States of Germany. Linen yarn and cloth are the principal branches. Woolen cloths are made to a considerable extent in the southern part of the kingdom; and this branch of trade has lately been increasing. In the west stockings and gloves are made. Cotton-spinning has also increased, but is still insignificant, and the same may be said of silk. Potteries, tile-works, and tobacco-pipe works are numerous. There are nine glass-houses, and 52 paper-mills, which produce yearly about 20,000 bales of paper. Wax is bleached to a considerable amount, and there are numerous tobacco factories, tanneries, breweries, vinegar works, and brandy distilleries, the produce of which last has of late very much increased. East Friesland produces gin. The most thriving branch of industry however is that of metal wares. The whole population of the Hartz lives by the mining and forging of metals, excavating coal, and manufacturing wooden articles. Founderies and forges, and works of iron, copper, brass, wire, silver, and lead, vitriol and sulphur, are in the utmost activity. These mines and associated works support about 35,000 persons. About 20,000 workmen were very recently employed in the Hartz, and the yearly value of the produce was 5,000,000 thalers (£750,000 sterling). The latest returns give the following quantity for one year, for Hanover and Brunswick together: gold, 82 oz.; silver, 375,833 oz.; iron, 377,812 cwt.; copper, 540; vitriol, 5400; quicksilver, 540; coal, 2,160,000; salt, 842,000.

As may be supposed from the small quantity of surplus production, the trade of Hanover is not extensive. The principal port, Emden, has some export and import trade; but from the state of the roads between that place and the more populous parts of the kingdom, more of its trade passes through Hamburg and Bremen than through that city. Besides the more considerable articles made from flax, its honey, wax, feathers, and large quantities of timber, are sent to Hamburg and Bremen. Wool, horses, and cattle, wheat and other grain, butter and cheese, tobacco and mineral productions, are among the chief exports. Hops, rape-seed, oil-cake, fruit, hams, and sausages,

form also articles of export of small amount. The imports consist principally of English manufactures, colonial produce, fruits, wines, jewelry, and silks. As the roads to the great fairs of Leipsic and Frankfort pass through Hanover, the transit of goods for these used to create a pretty large commission trade, and give employment to many wagons, horses, and men, as well as to the barge owners. These, however, are now in some degree superseded by railways, the city of Hanover having become a central station, from which these diverge in different directions to Hamburg, Brunswick, Hildesheim, Bremen, and Minden. Hanover has joined the *Zollverein* or General Customs Union from 1st January, 1854.

The commerce between the other States of the German Customs Union and the United States is not of much importance. The linens of Hanover always find a ready market; and, were interposing import duties in both countries modified or altogether abolished, the linens, raw wool, lead, rape-seed, hemp, and flax of this kingdom would be much more extensively exchanged for American rice, sugar, tobacco, and similar produce. The direct exports from the United States to Hanover in 1852 were, besides staves and flour (in value $115), 186 hhds. of tobacco, valued at $5,791. The value of exports from Hanover, via Hamburg and Bremen, in 1853, was $15,841, and the exports from the United States direct to Hanover were 143 hhds. tobacco, valued at $6,290. All other American exports found their way to the markets of Hanover through the ports of Bremen and Hamburg. The value of exports from Hanover in 1855 was $44,277, of which there reached the United States via Bremen $43,409, and via Belgium $868. The tobacco annually produced in the kingdom of Hanover is valued at about $50,000, from which about 2,500,000 lbs. of smoking tobacco is annually manufactured. Were the Zollverein duty on tobacco abolished, as it has been on raw cotton, the cultivation of the inferior quality produced in Hanover would not only cease altogether, but her tobacco manufactories (346 in 1843), would be multiplied, and the manufacturing industry of the kingdom more profitably developed. The principal sea-ports of Hanover are Emden, Harburg, and some minor ports or shipping places on the Weser, in the district of Aurich, or that part of Hanover west of Oldenburg. The Hanoverian trade from the Elbe centres at Hamburg, that of the Weser at Bremen.

The commerce of the port of Harburg, on the Elbe, has, within a few years, assumed considerable importance. In 1849 the number of vessels arriving at this port was only 49. The following exhibits the results of three years, ending with 1854: See Elbe River.

Years.	Vessels entered.	Vessels cleared.
1852	691	574
1853	834	859
1854	1,089	1,027

The preceding summary indicates the rapidly increasing commerce of this port. The vessels chiefly come from the countries of northern Europe, but some even from the Mediterranean. Thus, in 1854, there proceeded from the Mediterranean ports 580 vessels under the Hanoverian flag, 152 under the British flag, 135 under the Danish, 81 under the Dutch, and 3 under the French flag. Of these, 265 entered, and 679 cleared in ballast, or with partial freights. The remaining vessels were laden chiefly with wood, stone, oil-cakes, and sundries. The marine service of Harburg consists of 1 three-master, 6 barks, 3 brigs, 2 brigantines, 1 schooner, and 6 smaller craft; making in all 19 sail, exclusive of one bark on the stocks.

The river (Elbe) arrivals, during the same period, were:

	Batteaux.
In 1849	2,918
1852	4,079
1853	4,226
1854	5,398

Notwithstanding this rapidly increasing prosperity of the port of Harburg, and the commercial facilities which it receives from the Hanoverian government, Hamburg, on the opposite side of the river, is the principal centre of Hanoverian trade. Within the past ten years the number of vessels belonging to Hanover has tripled in this port. In each of the years 1852 and 1853, there arrived 1,100 vessels under the Hanoverian flag, measuring, in the aggregate, a tonnage of about 15,000 commercial lasts, of 6,000 pounds each, or an aggregate of 44,000 tons. In the navigation of Hamburg, Hanover holds the third rank as respects tonnage—the tonnage of the port itself ranking first, and that of England second. The freights in 1853, in Hanoverian bottoms, exceeded those of the preceding year 100 per cent., and many years the freights are threefold greater than those given for the years immediately preceding.

The Hanoverian flag participates proportionally in the general foreign trade, and enjoys a considerable share in the movements with trans-Atlantic countries. In 1854 the number of Hanoverian vessels in the port of Hamburg largely exceeded that of any former year. It reached as high as 1,330 vessels, measuring an aggregate of 20,336 lasts, or nearly 60,000 tons, entered, and 1,317 vessels cleared. The smaller craft, exclusively engaged in the river trade, are not comprised in these totals. The commercial movements at the port of Emden in 1854 present the following results:

	Thalers (gold).
Imports	1,718,050
Exports, direct	1,451,031
" indirect	596,388
Total	3,765,469
3,765,469 thalers equal to	$2,965,806

The thaler (gold), or Bremen thaler, equals 78¾ cents. The import trade employs 5,895 vessels, and 4,107 vehicles for the land trade. The imports consist chiefly of cereals, butter, and cheese; and the exports are mostly of the same character. These latter employ, for the home trade of the port of Emden, 391 vessels. England, Holland, and Belgium are the principal countries to which the exports from this port are destined. The mercantile houses of Emden engaged in the direct trade between that port and the Russian ports of the White Sea, the Baltic and the Black Seas, own about 8,000 tons of the marine service employed in that commerce. The cultivation and manufacture of flax, hemp, etc., yielded, in the export trade of Hanover, in 1853, 8,500,000 francs, or nearly $1,700,000. This sum exceeded the value of similar exports in 1852, namely: of flax exported, 724,000 francs; and of tissues, 1,070,000 francs.

The tissues of Hanover are in high repute in foreign markets; and at the German Industrial Exposition, held at Munich in 1854, they were favorably noticed. As the cultivation and manufacture of flax and hemp constitute the chief agricultural and industrial wealth of the kingdom of Hanover, the annexed table, showing the quantities of tissues manufactured, and their values, from 1840 to 1853—a period of 14 years—is compiled from the official returns of that government:

Years.	Tissues manufactured.		Values.
	Pieces.	Ells.	Thalers.
1840	214,592	18,189,174	1,489,812
1841	217,764	18,295,914	1,551,926
1842	217,244	18,346,133	1,474,730
1843	193,82[illegible]	16,630,619	1,362,355
1844	198,11[illegible]	16,567,666	1,288,522
1845	203,785	17,183,187	1,326,269
1846	192,251	15,568,526	1,311,891
1847	223,608	18,048,585	1,564,776
1848	195,495	16,991,388	1,327,736
1849	233,602	19,223,620	1,588,112
1850	249,448	20,800,677	1,768,595
1851	241,758	19,055,446	1,640,296
1852	219,346	17,875,866	1,460,116
1853	207,094	16,985,678	1,416,555

The ell of 2 feet=22.91 English inches; 12 pfennings =1 groschen; 24 groschen=1 thaler=73 cents.

The tissues and yarns of Hanover are exported directly from Hanoverian ports for Friesland and the countries below the Elbe, Sweden and Norway, Mecklenburg, Holland, and the States of the Zollverein.

From Bremen, for New York, Baltimore, Havana, St. Domingo, Porto Rico, Porto Cabello, Laguayra, Venezuela, Mexico, and the Canary Isles.

From Hamburg, for the cities and countries above designated, and also for Brazil, New Orleans, Cuba, and the West Indies.

Effective merchant marine of Hanover in 1855.—Sailing vessels: total, 701; aggregate tonnage, 64,741 tons. Coasting and river craft: total, 1,839; aggregate tonnage, 33,121 tons. Steam vessels: total, 8; aggregate tonnage, 551 tons.

Effective merchant marine of Harburg in 1855.—Sailing vessels: total, 18; aggregate tonnage, 5,102 tons. Steam vessels: total, 2; aggregate tonnage, 810 tons.

Adjacent to the town of Stade, on the Elbe, stands the castle of Brunshausen, near which a vessel is stationed to receive toll on all vessels passing up the river. American vessels passing up to Hamburg are subjected to vexatious and onerous duties at this point, seriously, and in violation of the treaty of June 10, 1846, with Hanover, affecting American commerce with that port. Hamburg property and the Hamburg flag are exempt from any duty at Brunshausen.

COMMERCE IN 1854.

Arrondissements.	Vessels.	Capacity.	Coasting vessels.	Capacity.
Luneburg.....	12	1,072	124	540
Stade.....	98	4,772	928	10,442
West Friesland.	567	26,257	813	5,921
Total.....	677	32,101	1,865	16,903

The 3d section, article 1, of the treaty of 1846, is in these words: "And further, it is agreed, that no higher or other toll shall be levied or collected at Brunshausen or Stade, on the River Elbe, upon the tonnage or cargoes of vessels of the United States, than is levied or collected upon the tonnage and cargoes of vessels of the kingdom of Hanover." Article 7 is in the following words: "The high contracting parties engage, mutually, not to grant any particular favor to other nations, in respect of navigation and duties of customs, which shall not immediately become common to the other party; who shall enjoy the same freely, if the concession were freely made, or on allowing a compensation, as near as possible, if the concession was conditional." It is proper, however, to add, that it is claimed that the concession is conditional, viz: services rendered to the Hanoverian custom-house in the computation and collection of duties, etc., by the officials of Hamburg. If the flag and property of Hamburgians pass Stade exempt from any toll or duty, the imposition of either on American vessels is clearly in violation of treaty stipulations.

The duchy of Oldenburg is nearly inclosed within Hanover, having, however, a sea frontier of from 40 to 50 miles, and the Weser bounding it on the west. The duchy lies in the basin of the North Sea, and is entirely flat, and in many places marshy, though in several parts it possesses excellent pasturage, on which horses, cattle, and sheep are extensively raised. The soil is not well adapted for agricultural purposes; and, hence, the agricultural productions are not sufficient for the consumption of the inhabitants. Its commerce with the United States is small. In 1852, Oldenburg sent, *via* France and England, to the United States, merchandise amounting to $478. This duchy entered the Zollverein League, January 1, 1854.—*Com. Rel., U. S.*

Hanseatic League, an association of the principal cities in the north of Germany, Prussia, etc., for the better carrying on of commerce, and for their mutual safety and defense. This confederacy, so celebrated in the early history of modern Europe, contributed in no ordinary degree to introduce the blessings of civilization and good government into the north. The extension and protection of commerce was, however, its main object; and hence a short account of it may not be deemed misplaced in a work of this description.

Origin and Progress of the Hanseatic League.—Hamburg, founded by Charlemagne in the ninth, and Lubec, founded about the middle of the 12th century, were the earliest members of the League. The distance between them not being very considerable, and being alike interested in the repression of those disorders to which most parts of Europe, and particularly the coast of the Baltic, were a prey in the 12th, 13th, and 14th centuries, they early formed an intimate political union, partly in the view of maintaining a safe intercourse by land with each other, and partly for the protection of navigation from the attacks of the pirates, with which every sea was at that time infested. There is no very distinct evidence as to the period when this alliance was consummated; some ascribe its origin to the year 1149, others to the year 1200, and others to the year 1241. But the most probable opinion seems to be, that it would grow up by slow degrees, and be perfected according as the advantage derivable from it became more obvious. Such was the origin of the Hanseatic League, so called from the old Teutonic word *hansa*, signifying an association or confederacy.

The Hanse-Towns (so called from the old Teutonic word *hansa*, signifying an association or confederacy), or the free Hanseatic republics of Lubec, Bremen, and Hamburg, are all that now remain of the once powerful confederation which constituted the Hanseatic League. Formed, it is supposed, about the year 1164, partly for mutual protection and safe intercourse by land, and partly for the protection of navigation from the pirates who infested the Baltic and the coasts of the North Sea, this League has become justly celebrated in the early history of the civilization and governments of modern Europe. The first and principal members of this Confederacy were Hamburg, founded by Charlemagne toward the close of the 8th, and Lubec, founded about the middle of the 12th century. "The wild, enthusiastic expeditions of the Crusaders, in the 11th and subsequent centuries, the introduction of the distillery into Europe in the 12th century, and the conquest of the Teutonic Knights of the Cross in Prussia and Livonia, were," says the author of "Lex Mercatoria," "among the causes which originally brought forward the navigation and trade of northern and western Europe, and combined in forming this celebrated association."

The disorders to which most parts of Europe, and particularly the coast of the Baltic, were a prey, during the 12th and following centuries, first invited the cities of Lubec, Hamburg, and Bremen, to unite in this Confederacy. Soon, however, they were joined by most of the trading towns of Europe. The cities which were established along the coast of the Baltic, and in the interior of the countries bordering upon it, eagerly sought admission into a League which guarantied them ample protection against the robber-princes and barbarians by whom they were surrounded. London, Rouen, Bordeaux, St. Malo, Bayonne, Marseilles, Barcelona, Seville, Cadiz, Lisbon, Antwerp, Dort, Amsterdam, Bruges, Rotterdam, Ostend, Dunkirk, Leghorn, Messina, and Naples; Bergen in Norway, Novgorod in Russia; all the towns on the Elbe and Weser; Emden, Cologne, and other cities, successively united with this formidable association, until it was able, in a war against one of the northern powers, in the 14th century, to call into active service 40 ships of war and 12,000 troops, exclusive of seamen. At this period, several of the European powers, especially the kings of France and of southern Europe, becoming alarmed at the extraordinary and formidable progress

of an association, whose merchants, traders, and emissaries were found in every port, city, and village throughout Europe, and whose decrees were proclaimed as the supreme law in their respective dominions, withdrew their towns and their merchants from a League which threatened to annihilate their sovereignty and give laws to the world.

It has been urged, and with much force, that the decline of the Hanse-towns was owing mainly to their having become warlike, instead of remaining altogether commercial. There can be no doubt that this was, at least, one of the causes, and, perhaps, the predominating cause, of their decline. Everywhere they claimed special concessions and special privileges. They demanded and obtained the entire custodianship of *Bishopsgate*, one of the principal entrances to London; and when certain privileges were attempted to be withdrawn from them, they boldly declared war against England, and immediately drove her vessels from the Baltic, until Edward IV. restored them all their privileges, and even exempted them, in maritime cases, from the authority of the admiralty court. Referring to the treaty concluded with the Hanseatic League, at this period, McCulloch remarks: "The privileges of the merchants of the Hanse-towns were renewed, and the King assigned to them, in absolute property, a large space of ground with the buildings upon it, in Thames-street, denominated the Steelyard, whence the Hanse merchants have been commonly denominated the Association of the Steelyard. It was further agreed that the particular privileges awarded to the Hanse merchants should be published, as often as the latter judged proper, in all the sea-port towns of England, and such Englishmen as infringed them should be punished. In return for these concessions, the English acquired the liberty of freely trading in the Baltic, and especially in the port of Dantzic, and in Prussia. This treaty," he adds, "settled the difficulties with the Hanse-towns on terms which were any thing but honorable to the English." In 1641, even when the power of these cities had declined, and their organization had become comparatively dismembered, we again find them converting their merchant vessels into ships of war, and disputing with Denmark her pretensions to tax the commerce of the world at the castle of Cronberg. Indeed, it may be remarked, in passing, that the Hanseatic League never quietly submitted to the pretensions of Denmark in the imposition of the Sound tax upon the commerce of the Baltic.

Prior to the treaty with Sweden in the 14th century, the collection of this toll was successfully resisted by the League. Being then in the meridian of its greatness, it obtained, on its own terms, a free passage for its ships and cargoes through the Sound—a privilege enjoyed until Denmark, perceiving that the Hanseatic League held her authority in utter contempt, deemed it judicious to invite other nations to engage in the trade of the Baltic, permitting the vessels of England and Holland to pass through the Sound on the payment of mere nominal tolls. This was intended to strengthen the arms of Denmark in any conflict in which her abrogation of the privileges enjoyed by the League might involve her. Lubec, in the name of the other Hanse-towns, ineffectually protested against this encroachment upon their long undisputed sovereignty of the Baltic, and demanded the immediate exclusion of the Dutch from that sea. Their power, however, was now declining; their demand was refused, and we find them, in 1560, submitting to a convention with Denmark for the adjustment of the question of the Sound dues, resulting in the treaty of the Odensee between "the king of Denmark and his subjects on the one part, and the right honorable Hanseatic cities and the merchants thereof on the other part." So rapid was their decline from this period, that when Denmark, three years after the conclusion of this treaty, made her war with Sweden a pretext for increasing the Sound dues against the Hanse-towns, in violation of the stipulations of that treaty, the latter, being now shorn of their former power, were compelled to submit. Toward the close of the 17th century, the Hanseatic League may be considered as having ceased to exist in a federal capacity. But, about that period, individual cities which formed the League, especially Hamburg, not only regained their former commercial splendor, but, since that time, have gradually risen in wealth and prosperity.

Notwithstanding, however, the warlike attitude in which the Hanseatic League so frequently appeared, whether in asserting new, or in maintaining old privileges and concessions, other causes, no less fatal to their supremacy, and more certain in result, combined to bring about their dissolution. The progress of civilization in Europe—the discoveries of the passage to India by the Cape of Good Hope, and of America—the rise of Holland, and the consequent rapid commercial progress of the Dutch—these causes combined, opened new and hitherto unknown channels for navigation and commerce, and created changes in the commercial world for which ancient trading establishments were neither adapted nor prepared. Thus we see that the decline of this once powerful League was mainly brought about by that very progress of improvement which it had contributed so much to promote. Its dissolution was but the natural consequence of the improved civilization, and of the development of the commercial spirit which it had fostered and spread throughout the different nations of Europe. The cities of Lubec, Hamburg, and Bremen, were all that continued to acknowledge the authority of the League, and all that now remain to represent its ancient splendor and power. The freedom of these cities was guarantied by the Congress of Vienna, in 1815; and since that period navigation and trade have advanced and prospered, especially the trade of Hamburg and Bremen, without any interruption, until the disastrous fire of 1842, which destroyed so large a portion of the city and property of Hamburg; from which calamity, however, it has now almost entirely recovered. This conflagration commenced on the 5th of May, 1842, and burned 61 streets and 120 passages and courts, and left houseless 19,955 of the population. Since that period a great portion has been rebuilt according to a regular plan.

The Hanse-towns, especially Hamburg and Bremen, have established in every part of the world, possessing any commercial importance, numerous mercantile houses, under the management of merchants of great intelligence and energy. These establishments contribute largely to the prosperity and augmentation of the foreign commerce of the Hanse-towns. Of the 343 houses and *comptoirs* which represent the commerce of Germany in foreign countries, 227, or two thirds, belong to Hamburg and Bremen. In the United States alone, in 1846, there are stated to have been 76 commercial houses of this description, namely: At New York, 35; Philadelphia, 7; Baltimore, 14; New Orleans, 7; Louisville, 2; St. Louis, 5; Texas, 3; Cincinnati, 3. These were exclusive of 61 other German houses in the United States. Since 1846 the increase of commercial houses in the United States, from the Hanse-towns, has been very great.

There are 37 Hanseatic commercial houses in Mexico, of which there are in the city of Mexico, 11; Vera Cruz, 11; Tampico, 4; Mazatlan, 5; other places, 6. In Guatemala, 1; Cuba, 14; Porto Rico, 3; Hayti, 6; St. Thomas, 4; the other Antilles, 6; Venezuela, 23; Peru, 5; Chili, 8; Brazil, 29; other German houses in South America, 21. In the ports of the La Plata—Hanse houses, 2; other German houses, 8. In Ecuador—German houses, 2. In China and Chinese India—Hanse houses, 7; other German houses, 7. In African ports—Hanse houses, 9; other German houses, 2.

STATEMENT EXHIBITING THE NUMBER OF HANSE VESSELS THAT PASSED THE SOUND IN 1851.

Flags.	Whence and whither.	No. of vessels.	Duties paid at the Sound.
			Francs.
Lubec.....	From the North Sea	68	34,976
	" Baltic....	60	12,670
Hamburg. ..	From the North Sea	88	18,844
	" Baltic....	43	12,258
Bremen.....	From the North Sea	19	24,702
	" Baltic....	15	5,900
Foreign	From Lubec.....	16	....
	To Lubec.....	81	....
	From Hamburg....	86	....
	To Hamburg.....	17	....
	From Bremen.....	89	....
	To Bremen.....	100	....

From 1849 to 1851, 445 vessels, under the Hanse flag, passed the Sound, and paid 196,170 francs for the privilege of saluting the castle of Cronberg. The number of Hanse vessels which passed the Sound in the years 1852, 1853, and 1854, is stated as follows:

	1852.	1853.	1854.
Hamburg.....	65	83	49
Bremen.....	7	37	24
Lubec.....	109	186	135
Total.....	181	258	208

The aggregate amount of Sound dues paid by the Hanse-towns from 1846 to 1851, both inculsive, was: francs, 471,354 = $89,557; annual average, francs, 78,559 = $14,926.

In connection with this subject, it is proper to add, that arrangements are now being actively brought toward consummation, which will exercise a marked influence on the foreign commercial movements through the ports of the Hanse-towns. These have for their object the opening of a route between the North Sea and the Baltic: 1st. Across Schleswig, by the construction of a railroad between Tonningen and Husum, on the one side (the west of Schleswig), and on the other, through Flensburg (on the eastern side); and 2. Across southern Sweden, by steam navigation on the Gotha Canal.

It need not be added that either route will supersede the passage of the Sound and the impost which is there levied—yielding to Denmark so large a portion of her Sound-dues revenue—and must necessarily, to a great extent at least, divert from the latter route the transitage through the Hanse-towns destined for the Scandinavian countries and those bordering on the Baltic. The steam navigation of the Gotha Canal has been granted to an English company, denominated "Navigation Company between Hull and St. Petersburg." This company commenced the construction of four steamers in 1853, at the shipyards of Motala, two of which were completed toward the end of that year, and the other two in 1854. These steamers are even now insufficent for the heavy freights offered for transit, and it is understood that others will soon be added to the line. The railroad referred to has also been granted to an English company, which has long since commenced operations. When completed, it will place London within 30 hours' distance of Flensburg.

The commercial relations between the United States and the Hanse-towns are regulated by the treaty of December 20, 1827. This treaty stipulates entire reciprocity of trade and perfect freedom of commerce between the two high contracting parties, no matter from what country or port the vessels and cargoes may come. The sixth article stipulates that it shall be wholly free for all merchants, commanders of ships, and other citizens of both parties, to manage, themselves, their own business, in all the ports and places subject to the jurisdiction of each other, as well with respect to the consignment and sale of their goods and merchandise by wholesale or retail, as with respect to the loading, unloading, and sending off their ships; submitting themselves to the laws, decrees, and usages there established, to which native citizens are subjected; "they, in all cases, to be treated as citizens of the republic in which they reside, or, at least, to be placed on a footing with the citizens or subjects of the most favored nations;" and all favors granted by either party to other nations, to become common to the other party on equal conditions.

The policy of allowing to the Hanse-towns, by treaty stipulation, the privileges of their flag to all vessels *owned* instead of *built* within their dominions, as in the treaty been the Hanse-towns and Great Britain, has been a question of considerable doubt among eminent merchants of the United States. By virtue of this stipulation, the Hanse-towns bring to the United States the productions of the different States of Germany, and carry back, in return, the cotton, rice, and tobacco, with which the store-houses of these towns, especially Bremen, are always supplied. The effect of this privilege has, undoubtedly, been to throw almost the entire carrying trade, from the United States for German markets, into the hands of Hanse ship-owners. This is more particularly true with respect to the port of Bremen, as appears from the following summary of the navigation returns of that port. The vessels engaged in the trade between the United States and Bremen were:

1826—1830	Bremen.....	2-7	United States....	5-7
1831—1835	"	4-7	"	3-7
1836—1840	"	4-5	"	1-5
1841—1845	* Hanse-towns....	5-7	"	2-7
1846—1850	"	4-5	"	1-5
1851—1855	"	6-7	"	1-7

The Cotton Trade.—Cotton and tobacco are the leading imports of the Hanse-towns from the United States. The value of the former imported during the 12 months ending June 30, 1855, was nearly $3,000,000; of the latter, more than $2,500,000; while the value of all other domestic produce imported into Bremen and Hamburg from the United States was upward of $9,000,000. The export of cotton from the United States to the countries of northern Europe commenced some 60 years ago. In the year 1800, Holland, including the territory now known as the kingdom of Belgium, received 79,694 lbs.; in 1855 the aggregate quantity exported to the two countries was 17,160,967 lbs. In 1803 Norway and Denmark first imported American cotton, amounting that year to 184,193 lbs.; in 1855 the aggregate quantity exported to these two countries, including Sweden, was some 7,000,000 lbs. Prussia and Sweden began importing cotton from the United States in 1804. Russia, in 1809, received cotton from the United States, for the first time, and to the amount of 500,000 lbs; while in 1853, the year prior to the commencement of the late war, the exportation to that country amounted to more than 21,000,000 lbs. The Hanse-towns received cotton from the United States prior to the year 1800; and the progress of the trade with those cities, which is exhibited in the subjoined statement, strikingly exemplifies in connection with the remarks which have preceded, and the general statement which follows it, the rapid and powerful advancement of the king-staple, not of the United States only, but of the commercial world. The following statement shows the quantities of cotton exported from the United States to the Hanse-towns every 10 years, for a period of 51 years, from 1805, to 1855:

	lbs.		lbs.
In 1805.....	122,003	In 1835.....	2,688,147
1815.....	1,346,283	1845.....	17,204,094
1825.....	577,109	1855.....	30,869,991

Tobacco is borne in direct voyage from the United States; not so, however, with cotton, in the carry-

* The Hanse-towns are given for this and the following periods; Bremen and Hamburg being united under the official data, under that designation. Bremen, however, averages more than three fourths of the navigation between the United States and the Hanse-towns.

ing trade of which Great Britain has been for many years an active competitor. Entering the ports of the United Kingdom free of duty, her merchant flag can realize a profitable trade in its re-exportation to the various ports of continental Europe. Thus the Hanse-towns receive their supplies of raw cotton not only from the United States, in the direct trade, but also in the indirect trade, from English ports and other entrepôts of Europe. The annual average quantity of cotton exported from the United States to the Hanse-towns, including Prussia, during the four years from 1851 to 1854, both inclusive, was 24,811,626 lbs.; while the annual average exported from Great Britain during the four years ending December 31, 1854, was 36,563,996 lbs.

The annual average quantities of cotton exported from the same countries, respectively, during the same periods, to other nations of northern Europe, exhibit similar results. Those facts are illustrated by the subjoined statement, and suggest a strong argument for the serious consideration, by the navigation interests of the United States of such measures as would be likely to promote the direct exportation of our great staple from our own ports, in our own vessels, to those of the countries by which it is consumed.

COMPARATIVE STATEMENT SHOWING THE QUANTITIES OF COTTON EXPORTED TO CERTAIN COUNTRIES OF NORTHERN EUROPE FROM THE UNITED STATES AND GREAT BRITAIN, RESPECTIVELY, FOR A PERIOD OF THREE YEARS, FROM 1852 TO 1854, BOTH INCLUSIVE.

From the U. States to	1852.	1853.	1854.
Hanse-towns and Prussia	22,188,228	22,671,782	37,719,922
Belgium	27,157,890	15,494,442	13,980,460
Russia	10,475,168	21,266,568	2,914,954
Holland	10,259,042	7,088,994	6,048,165
Swaden & Norway	5,989,025	6,099,517	9,212,710
Total	75,969,353	72,591,298	69,876,211

From Great Britain to	1852.	1853.	1854.
Hanse-towns and Prussia	23,146,256	34,560,736	59,499,888
Belgium	12,657,680	13,466,672	14,040,768
Russia	45,606,840	48,937,392	208,544
Holland	15,834,224	28,676,592	26,994,544
Sweden & Norway	8,591,840	4,414,368	5,866,560
Total	100,885,840	135,055,760	106,560,304

TABULAR COMPARATIVE STATEMENT, SHOWING THE AVERAGE QUANTITIES OF COTTON PRODUCED, CONSUMED, AND EXPORTED BY THE UNITED STATES, WITH THE VALUES OF THE QUANTITIES SO EXPORTED; AND THE AVERAGE QUANTITIES OF FOREIGN COTTON IMPORTED INTO AND EXPORTED FROM THE UNITED STATES; TOGETHER WITH THE CURRENT PRICES OF COTTON IN THE UNITED STATES AND GREAT BRITAIN, RESPECTIVELY, DURING THE FIRST THREE YEARS OF EACH DECADE, FOR A PERIOD OF SIXTY-THREE YEARS, FROM 1792 TO 1854, BOTH INCLUSIVE.

In the years	Produced.	Consumed.	Exported.		Foreign.		Prices in	
			Quantities.	Values.	Imported.	Exported.	United States.	Great Britain.
	Pounds.	Pounds.	Pounds.	Dollars.	Pounds.	Pounds.	Cents.	Pence.
1st period... 1792, 1793, 1794	5,300,000	5,500,000	743,000	238,000	1,900,000	1,600,000	31 1-3	19 1-6
2d period... 1802, 1803, 1804	60,000,000	10,500,000	55,600,000	9,900,000	3,200,000	2,800,000	19 1-3	16 5-8
3d period.. 1812, 1813, 1814	73,300,000	30,000,000	22,800,000	2,700,000	800,000	200,000	12 1-2	20 1-2
4th period... 1822, 1823, 1824	208,300,000	55,000,000	153,500,000	22,100,000	1,000,000	270,000	14·6	8 1-3
5th period... 1832, 1833, 1834	431,600,000	85,000,000	344,000,000	38,500,000	1,500,000	450,000	11·28	7 1-2
6th period... 1842, 1843, 1844	907,100,000	148,600,000	680,200,000	50,700,000	8,000,000	7,600,000	7·46	5
7th period... 1852, 1853, 1854	1,227,400,000	270,800,000	1,064,200,000	97,000,000	500,000	14,000	9·12	6 1-7

This statement, made up with care and labor, from sources official and unofficial, and often conflicting, although not, perhaps, statistically exact, is yet, probably, enough so for those purposes of general comparison for which it is submitted. For obvious reasons, the aggregate of the exportation and consumption of cotton can not be expected to balance the production in any single year, independently of stocks on hand from preceding years. An average, year with year, of some 70,000,000 lbs. consumed for household and other uses, and of some 3,000,000 lbs. lost or destroyed, and of some 500,000 lbs. of imported cotton consumed, are, also, items to be considered in striking this balance; as well, moreover, as the fact that the sums are in round numbers, and that the only figures in the statement which can be viewed as at all statistical, are those giving the amounts and values of exportation; those for the consumption being derived from the unofficial declarations of manufacturers, and those for the production being estimated from all the other items put together. The aggregates, however, of consumption and exportation, for the whole period of 63 years, balance the production and importation within some 6,000,000 lbs. The data for quantities, values, and prices derived from the Treasury Reports, do not, it will be perceived, always afford results entirely consistent. Prior to 1802, foreign cotton was united with domestic in official accounts of exports. The capacity of the bale is computed, agreeably to usage, at 400 lbs., in changing bales into pounds, for this statement, although an average of 450 lbs. to the bale would, probably, be more exact. The unusually large triennial average of cotton imported in 1842, 1843, and 1844, is to be attributed to the fact, that, during those years, Texas was an independent republic. Foreign cotton, from January, 1791, to 1812, paid a duty of three cents per pound; from July, 1812, to April, 1816, six cents; and from April, 1816, to July 30, 1846, three cents, when it was made free. The 7th decade terminates in 1861. The statement may, therefore, be viewed as embracing a period of 70 years, from 1792 to 1861 inclusive.

Tariff Regulations.—Bremen.—The tariff is that of December 23, 1850.

Moneys.—One rixdollar = 72 grotes = 78¼ cents; 1 grote = 1 1-10 cent.

Weights and Measures. One centner = 100 lbs. = 109.8 lbs. avoirdupois; 1 lispund equals 14 lbs. United States' weight; 1 stone of wool equals 10 lbs. do.; 1 stone of flax equals 20 lbs. do.; 1 scheffel equals 2 bushels United States' measure; 1 last equals 80 bushels do.; 1 Bremen foot equals 11.38 inches do.

Import Duties.—These duties consist of two thirds of 1 per cent. ad valorem on the valuation given in the invoices, including at the same time freight and insurance.

Export duties consist of one third of 1 per cent. ad valorem, according to invoices.

Transit Duties.—All merchandise which has been entered at the custom-house as transit goods, is subject to a duty of one grout (1 1-10 cent.) per centner (or 109.8 lbs. avoirdupois), if re-exported within three months from the date of the entrance. From this, however, the following articles are excepted, and pay only one half grote per centner: Alum, asphalt, empty barrels, coal, bomb-shells, boxes, cannons, cheese, copper (crude), earth for coloring, gypsum, hair (cow), herrings, iron in sheets, castings, bars, rods, and balls, juniper berries, lime, linseed, manganese, marble (unmanufactured), metallic earths, mortars, oak-bark (ground or not), ochre, clay pipes, pitch, rags, railroad materials, as rails, wheels, and axles, gutters (roof), rosin, salts, scraps of paper, sea-grass, succory (or chicory), tar, vitriol, waste paper, wrapping material, common manufactures of wood, zinc (in blocks).

The following pay one quarter grote per centner: Ashes (ley), birds, bones, bone-black, sugar-box boards, dye-woods, fresh fruits, grass, hay, iron (old or crude), lead ore, oil cakes, ores, potatoes, slates and pencils, sulphuric earth, timber (hewn), wood, ebony, mahogany, and timber for carpenters.

COMMERCE OF THE UNITED STATES WITH THE HANSE-TOWNS, FROM OCTOBER 1, 1820, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Where there was in Bullion at the Epoch.		Tonnage Cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1821	$1,585,508	$597,086	$2,182,544	$960,165	....	$180,165	17,808	4,091
1822	1,644,226	840,789	2,505,015	1,578,757	....	59,151	15,750	5,157
1823	1,582,354	1,587,085	3,169,439	1,981,026	$1,800	40,572	12,504	11,747
1824	859,868	1,008,890	1,868,278	2,027,880	....	78,920	11,062	9,978
1825	1,144,474	1,976,559	3,121,033	2,799,596	58,050	1,979	17,960	6,488
1826	979,318	1,137,284	2,116,697	2,816,545	....	38,859	18,510	4,981
1827	1,698,971	1,319,214	3,018,185	1,688,558	....	1,965	25,274	5,707
1828	1,804,333	1,190,918	2,995,251	2,844,292	....	12	26,685	11,569
1829	1,998,176	1,278,984	3,277,160	2,274,876	2,000	8,844	21,902	10,894
1830	1,549,782	725,148	2,274,930	1,872,278	....	13,488	14,733	10,262
Total	$14,791,468	$11,677,009	$26,468,477	$21,044,452	$61,850	$490,948	180,088	80,819
Sept. 30, 1831	$1,812,241	$779,991	$2,592,179	$3,466,801	....	$5,698	17,147	17,487
1832	2,493,542	1,652,570	4,088,312	2,865,096	....	5,280	18,458	23,778
1833	2,198,110	793,196	2,991,306	2,227,736	....	2,300	9,296	27,168
1834	2,668,571	2,036,108	4,670,674	5,955,856	....	17,067	16,719	27,127
1835	2,771,890	756,886	3,528,276	3,841,943	....	1,805	....	....
1836	3,152,418	1,211,464	4,363,882	4,994,820	....	1,207	7,208	37,286
1837	2,562,357	1,192,592	3,754,949	5,642,221	$48,616	19,735	9,957	48,565
1838	2,625,802	665,843	3,291,645	2,847,358	12,588	10,911	8,366	34,542
1839	2,067,608	733,459	2,801,067	4,849,150	12,108	6,195	4,892	29,998
1840	2,367,963	890,496	4,198,459	2,591,493	206	893	17,849	42,824
Total	$25,507,092	$10,674,630	$36,181,682	$36,638,964	$68,458	$62,151	106,898	290,220
Sept. 30, 1841	$4,110,655	$450,061	$4,560,716	$2,449,964	$5,800	$89	14,128	16,147
1842	3,814,994	749,519	4,564,513	2,274,019	605	4,062	16,779	54,050
9 mos. 1843	2,898,948	392,984	3,291,932	920,865	....	285,267	18,937	42,075
June 30, 1844	3,174,483	392,204	3,566,687	2,136,886	....	35,204	12,749	50,656
1845	4,106,927	688,098	4,945,026	2,912,587	....	....	14,018	59,007
1846	4,008,815	600,805	4,608,620	3,149,864	....	143	8,143	60,807
1847	4,068,418	266,225	4,334,643	8,022,185	....	....	12,197	56,634
1848	3,856,676	465,109	4,321,785	6,393,290	266,786	6,845	15,737	59,109
1849	2,710,948	604,682	3,314,990	7,742,864	819,775	48,519	23,885	44,264
1850	4,820,780	885,742	5,206,522	8,787,874	112,706	....	21,156	68,016
Total	$37,070,489	$5,644,924	$42,715,903	$40,289,898	$699,179	$379,126	154,152	547,775
June 30, 1851	$5,465,956	$641,491	$6,047,447	$10,008,864	$579,116	$245,996	16,606	69,724
1852	6,195,927	681,080	6,876,957	8,171,411	982,128	59,819	27,521	87,560
1853	7,409,815	610,788	8,020,053	13,848,458	1,867,806	5,144	26,995	85,284
1854	10,641,596	1,444,662	12,086,258	16,966,898	8,558,819	....	28,765	108,220
1855	9,155,169	975,081	10,130,250	12,360,113	1,456,212	10,110	34,686	112,507
1856	13,188,985	1,050,886	14,239,871	14,458,512	1,442,498	7,752	54,493	100,844

The following pay one sixth grote per centner: Ashes (not ley), birch, brooms, blood, bottle cases, bricks, cement, chalk clay (brown or stone), earth (common), earthenware (common), fayence (common), glass (broken), glue, leather, offal of tanneries, gravel, guano, marl, mill-stones, oyster-shells, potters' earth, shell-lime, stones (hewn or not), sugar-bakers' clay, sugar scum, tiles, tomb-stones, trees for planting, turf, fire-wood, hoops, shingles, materials for basket-makers, and posts for fences. Goods not exported after three months, by paying 25 per cent. of the transit duty, may have a further prolongation of three months.

Hamburg.—The tariff is that of December 29th, 1851.

Moneys.—1 mare-banco = 16 shillings = 35 cents.

Weights and Measures.—1 centner = 119.504 lbs.; 1 pfund = 1.067 lbs. avoirdupois.

Duties on Imports.—These duties amount to not more than ½ of 1 per cent. ad valorem; and the *duties on exports* to not more than ¼ of 1 per cent. ad valorem.

The following articles are exempt both from import and export duties: apparel of travelers, brought in by the respective parties, or by a special permit of the director of customs; bark, unground; barley; bones; bronze metal; buckwheat; copper for sheathing ships; brass, old, also in plate or sheets; coal, stone; gold and silver bullion or coin; open samples of goods under 70 lbs. weight, exported and then re-imported through the same gate; linens, with or without cotton mixture; linen bagging; malt; oats; oil cakes; potatoes; printed matter; musical and scientific maps; rags, woolen or cotton; rape-seed; rye; wool, sheep's and lamb's, raw; wheat; zinc, crude.

The following articles are free of import duties only: articles not exceeding 5 marcs-banco ($1 75) in value; those also subjected to excise duties not over 20 marcs-banco in value; timber, staves, fire-wood and turf.

Those free of export duties are: all articles under 20 marcs-banco ($7) in value, regardless of quantity; all manufactures of the city of Hamburg; all provisions for the immediate use of vessels lying in harbor; articles not exceeding 100 lbs. in weight, and not of greater value than 100 marcs-banco.

Transit duties.—All goods re-exported within three months from the date of arrival, are free of any transit duty, if yet in the hands of original importers.

Lubec.—The tariff is that of December 5th, 1851.

Moneys.—1 marc = 16 schillings Lubec courant = 28·79 cents.

Weights and Measures.—1 shlp-pound = 2½ cwt. of 112 lbs. English, each=280 lbs. 1 lispound=14 lbs.

Duties on Imports.—All goods, whether of foreign or home production, pay one half of one per cent. ad valorem, as given in the invoices, except the following articles, which are free of import duties:

Transit goods re-exported within three months after entry; effects of travelers; household furniture used; wool brought for the Lubec fair, and delivered at the wool warehouse; goods on board vessels not consigned to Lubec; wares on board ships entering the port of Travemunde in distress.

Goods where the value can not be ascertained from the invoices, will be estimated at the Lubec market prices. Articles of wood, as timber, boards, shingles, planks, masts and spars, staves, and fire-wood, pay, always, one half of one per cent. on the Lubec market prices. Articles which pay an ad valorem duty, if their value does not amount to 25 marcs ($7), are free; from 25 to 75 marcs ($7 to $21), the duty is levied on 50 marcs ($14); from 75 to 125 marcs ($21 to $35), the duty is levied on 100 marcs (28), and so on. None but citizens, or their agents, have the privilege of clearing goods in the custom-house. American vessels, however, are exempted from this regulation.—*U. S., Com. Relations;* M'CULLOCH'S *Commercial Dictionary;* see, also, *Foreign Commerce United States,* and *Quarterly Review,* vol. vii., p. 130.

Harbor, Haven, or Port, a piece of water communicating with the sea, or with a navigable river or lake, having depth sufficient to float ships of considerable burden, where there is convenient anchorage, and where ships may lie, load, and unload, screened from the winds, and without the reach of the tide.

Qualities of a good Harbor.—There is every variety in the form and quality of harbors. They are either natural or artificial; but, however formed, a good harbor should have sufficient depth of water to admit the largest ships at all times of the tide; it should be easy of access without having too wide an entrance; the bottom should be clean and good; and ships should be able to lie close alongside quays or piers, that the expense and inconvenience of loading and unloading by means of lighters may be avoided. Ships lying in a harbor that is land-locked, and surrounded by high grounds or buildings, are, at once, without the reach of storms, tides, and currents, and may, in most cases, be easily protected from hostile attacks. Bar harbors are those that have bars or banks at their entrances, and do not, therefore, admit of the ingress or egress of large ships except at high water. These are most commonly river harbors—the sand and mud brought down by the stream, and driven back by the waves, naturally forming a bar or bank at their mouths.

The designing of harbors constitutes confessedly one of the most difficult branches of civil engineering. In making such designs, the engineer, in order to avail himself of the advantage which is to be derived from past experience, must endeavor to the best of his power to institute a comparison between the given locality and some other, which he supposes to be in *pari casu*. Perfect identity, however, in the physical peculiarities of different stations, seldom, if ever, exists, and all that can be done is to select an existing harbor, which appears to be as nearly as possible similarly circumstanced to the proposed work.

In considering the subject of the construction of harbors in exposed situations, the first and most important subject deserving our attention is the destructive action of the element with which we have to deal—what are its energies when excited by storms, and what the direction of its forces on the barriers which have been raised to control it?

Smeaton, in his history of the Eddystone, when speaking of the objection that might be raised against the necessity for using joggles in the masonry of that building, says, "When we have to do with, and to endeavor to control *those powers of nature that are subject to no calculation*, I trust it will be deemed prudent not to omit in such a case any thing that can without difficulty be applied, and that would be likely to add to the security." This statement of our greatest marine engineer, indicates the propriety of carefully collecting any facts that may help us to a more accurate estimation of those forces which he regarded as being "subject to no calculation." We shall therefore state a few facts which have been recorded of the destructive powers of the waves in inland lakes, and in the open ocean.

At Port Sonachan, in England, where the fetch is under 14 miles, a stone, weighing a quarter of a ton, was torn out of the masonry of the landing-slip and overturned. Mr. D. Stevenson, in his *Engineering of North America*, describing the harbors in Lake Erie, mentions having seen one stone, weighing upward of half a ton, which had been taken out of its bed in the pier at Buffalo, moved several feet and overturned. The Comte de Marsilli, in his *Histoire Physique de la Mer*, published at Amsterdam in 1725, states that the highest wave observed by him on the shores of Languedoc in the Mediterranean Sea, where the breadth is about 630 miles, was 14 feet 10 inches. At the mouth of a harbor on the German Ocean, with a fetch of about 600 miles, the writer had observed for him the height of the waves during south-easterly gales, and on one occasion the result was 13½ feet from the crest of the wave to the trough of the sea. In deeper water, and with a north-easterly gale, there is no doubt that the waves of the German Ocean will attain a height considerably greater than this. In November, 1817, the waves of the German Ocean overturned, just after it had been finished, a column of freestone 36 feet high and 17 feet base. The diameter at the place of fracture was about 11 feet. In the Atlantic Ocean, Dr. Scoresby stated, in a communication to the British Association in 1850, that during several hard gales he had measured many waves of about 30 feet, but the highest was 43 feet from the hollow to the crest. Waves of such magnitude could scarcely, however, reach our artificial harbors, from the shallowness of the water near the shore. To these facts it may be added, that of a block of 50 tons' weight being moved by the sea at Barrahead, one of the Hebrides; and what is far more extraordinary, blocks of nine tons' weight have been quarried, or broken out of their beds *in situ*, on the top of the Bound Skerry of Whalsey, in Zetland, which is elevated 85 feet above the level of the sea. The Bound Skerry and neighboring rocks, which are in the German Ocean, certainly furnish by far the most wonderful proof that has yet been discovered, of the great force which is developed by the billows of the ocean when suddenly checked by opposing rocks.

It has been stated (in the *Trans. Roy. Soc. Edinburg*) that, from observations which were made with the marine dynamometer (a self-registering instrument designed by him for the purpose) the force of the waves of the German Ocean, during hard gales, had been found to be 1½ *tons per superficial foot* at the Bell Rock; and of the Atlantic Ocean to be 3 *tons per superficial foot* at the Skerryvore Light-house. But these results may still be far short of the maxima. As the marine dynamometer has been often found useful in indicating the force of the waves in situations where harbors were to be built, it may be proper to give such a description of it as will enable any one to have it made.

D E F D is a cast-iron cylinder, which is firmly bolted at the protecting flanges G, to the rock where the experiments are to be made. This cylinder has a circular flange at D. L is a door which is to be opened when the observation is to be read off. A is a circular disc on which the waves impinge. Fastened to the disc are four guide-rods B, which pass through a circular plate C, which is screwed down to the flange

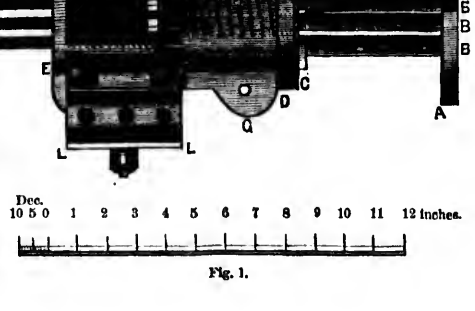


Fig. 1.

D, and also through the holes in the bottom E F. Within the cylinder there is attached to the plate C a powerful steel spring, to the other or free end of which is fastened the small circular plate K, which again is secured to the guide-rods B. There are also rings of leather, T, which slide on the guide-rods, and serve as indices for registering how far the rods have been pushed through the holes in the bottom, or, in other words, how far the spring has been drawn out by the action of the waves against the disc A.

In comparing an existing harbor with a proposed one, in order to ascertain the dimensions which are necessary to insure stability, perhaps the most obvious element is what may be termed the *line of maximum exposure*, or, in other words, the line of greatest *fetch* or *reach* of open sea, which can be easily measured from a chart. But though possessed of this information, the engineer still does not know in what ratio the height of the wave increases in relation to any given increase in the line of exposure.

As this inquiry is one of great moment in the practice of marine engineering, and has not been in any way investigated, the writer has for some time back been making occasional observations on the subject, when favorable circumstances occurred. These observations have been but limited in extent, and can not be regarded as deserving of confidence unless in cases where the two harbors are not far different in their lines of exposure. So far as these experiments have gone, the waves seem to increase in height most nearly *in the ratio of the square root of their distances from the windward shore*.

It does not follow, however, that the line of maximum exposure is in every case the line of maximum effective force of the waves; for this must depend not only on the length of *reach*, but also on the angle of incidence of the waves on the walls of the harbor. What may be termed the line of *maximum effective exposure* is that which, after being corrected for obliquity of impact of the waves, produces the maximum result, and this can only be taken from the chart after successive trials. Let x=the greatest force that can assail a pier, h=height of waves which produce (after being corrected for obliquity) the maximum effect, and which are due to the line of maximum effective exposure. Sin a=sine of azimuthal angle formed between directions of pier and line of maximum effective exposure, radius being unity. Then $x \propto h \sin^2 a$ when the force is resolved normal to the line of the pier; but if the force is resolved again in the direction of the waves themselves, the expression becomes $x \propto h \sin^3 a$.*

It should not be forgotten, in connection with this subject, that there are various qualifying elements to which special attention requires in some cases to be given. The waves, for example, may often be noticed, when approaching the land obliquely, to alter their direction when they get close to the shore (in consequence of the depth changing) so as to strike it more nearly at right angles to the general line of the beach. In this way a swell from the ocean may enter a bay which is not directly exposed to it. It should also be observed, that the lines of exposure can not be directly compared if the depths of the water through which they pass are materially different.

The tides, too, exert in many places a very decided effect on the nature of the billows, in some places causing waves of an unusually dangerous character, while at others they are found to *run down* the sea. If a marine work is situated in a *race* or rapid tideway, such, for example, as those called "roosts" in Orkney and Shetland, the masonry will be exposed to the action of a very trying and dangerous high-cresting sea. As an example of this, we may refer to Port-Patrick in Wigtonshire, where the violence of the waves is, we have no doubt, much due to the rapidity of the tides. If, on the other hand, the race or roost runs in such a direction as to be entirely outside of the harbor, and at some distance off, it will have a decided tendency to shelter the works, and to act as a breakwater. Thus it appears, from observations at Sumburg Head Light-house in Shetland during a south-westerly storm, that so long as the Sumburg roost (one of the most formidable in those seas), was cresting and breaking heavily, one could have easily landed in a small boat at a creek or bay called the West Voe; but no sooner did the roost disappear toward high water than there came in towering billows that totally submerged cliffs of very considerable height. The study of the modifying and intensifying effects of tide-currents on the waves of the sea seems to have been entirely neglected in the late discussions regarding the merits of vertical and sloping walls, which will be referred to in another section of this article.

From careful inquiries, as well as from actual personal experience, of such formidable breaking waters as the Boar of Duncansbay, and the Merry Men of Mey in the Pentland Firth, and several others, we are of opinion that the true cause is the *swell of the sea encountering a tidal current running in a direction more or less opposed to that of the waves*. While it is obvious that two rapid tides may meet each other without any dangerous effects, it is also quite true that when two tides meet each other in a rough sea, as in coming round such islands as Stroma or Swona in the Pentland Firth, the effect of their union being to increase the current at that place, there will be produced a highly dangerous sea; but the fact of their meeting, though calculated to aggravate, is not, we think, the primary cause. The races which occur in open seas, as, for instance, off headlands and turning-points of the coast, are certain portions of those seas in which the waves *break* to a greater or less extent, although the water may be very deep, and there may be no wind at the time. At all such places it will be found that there are rapid tides. The roosts on the west coast of Orkney or of the Pentland Firth, for example, are worst with *ebb* tides and *westerly* swells, because the Atlantic swell and current of ebb are opposed. Those again on the east coast are worst with *flood* tides and *easterly* swells from a similar cause. Thus at the east end of the Pentland Firth the Boar of Duncansbay is well known to rage with easterly swells and a flood tide; whereas, at the west end of the same firth, the Merry Men of Mey are equally well known to be worst with ebb tide and a westerly swell, at which time no boat could enter them without the risk of being overturned. The dangerous surf which exists at the mouths of some rivers is, we believe, not solely due to the want of depth at the bar, but also to the meeting of the outward current with the waves of the sea.

When a swell encounters a rapid opposing current, the onward motion of the waves seems to be arrested, and their width becomes visibly decreased. They get higher and steeper, crest, and at last break, sometimes very partially, and at other times almost as they would on a shelving beach. It appears to us possible that several waves may ultimately combine in such disturbed waters into one mountainous billow; for the wave that has partially broken may have its onward motion so much checked as to allow the wave behind to overtake it, and having thus coalesced, they may, as one large wave, acquire a superior velocity, so as to overtake those in front and be further augmented by the union of other waves which have reflected from the shore.

It is to this cause we are inclined to refer such wonderful effects as that to which we have already alluded, where blocks of 9 tons' weight were quarried out of the solid rock at an elevation of 85 feet above the sea. Were such violent action common to all the shores of the German Ocean, instead of being restricted to one or two similar places, half of the eastern sea-port

* For experimental results *vide* article HYDRODYNAMICS, E.B.

towns in England would, without any doubt, be washed into the sea during the first stormy winter. As a further proof of the great effect of the tides in exasperating the waves, we may mention that the time when most damage is done to sea-works which are in tolerably deep water, is from one to two hours before and after high water, which nearly corresponds to the time when the tide runs strongest outside. We have found this to hold true at many different parts of the English coast, and refer to one well-marked instance. At Peterhead harbor, which projects prominently into the sea on an isthmus, the tides, at but a short distance seaward of the harbor, run very rapidly. On the 10th of January, 1849, there was a very heavy sea, and a crowd of people were down, about *two hours before high water*, helping to secure the whalers and other vessels in the harbor, when three successive waves carried away 315 feet of a bulwark, founded 9½ feet above high-water springs, which had stood for many years. One piece of this wall, weighing 13 tons, was moved 50 feet. After this outbreak of the sea the waves became more moderate, until about *two hours after high water*, by which time the large whalers had taken the ground, when other three enormous waves again swept over the harbor, submerging the quays to the depth of from 6 to 7 feet of solid water, by which 16 people were drowned. These waves filled the harbor to such a depth as to set all the whalers afloat again, and they continued so for several minutes, until the excess of water had run out through the harbor mouth. These gigantic waves were, in our opinion, clearly the result of some such action as has been attempted to be described. We should not have dwelt at such length on this subject were it not that we might again refer to the facts when we come to treat of the subject of vertical and sloping walls for harbors of refuge, where it is of importance to show that even in the deepest water, the waves are not purely oscillatory, but that wherever there is a tide-way the waves will more or less partake of the qualities of waves of translation.

Relation between height of waves and depth of water. Another circumstance affecting the exposure of any marine work is the depth of water in front of it. The great mountainous billows so commonly met with in the Atlantic Ocean can not be generated in the shallower waters of the tiernan Ocean, unless perhaps in such peculiar circumstances as have just been adverted to. It becomes, therefore, of great consequence to ascertain the maximum possible wave in a given depth of water.

Mr. Scott Russell, whose observations on what may be called the marine branch of hydrodynamics are of such great value, has stated that if waves be propagated in a channel whose depth diminishes uniformly, the waves will break when their height above the surface of the level fluid becomes equal to the depth at the bottom below the surface (p. 425 *Brit. Assoc. Rep. on Waves*). This statement, the meaning of which seems doubtful, Mr. Russell elsewhere (*Instit. Civ. Eng.*, p. 136), defines thus: "The author has never noticed a wave so much as 10 feet high in 10 feet of water, nor so much as 20 feet high in 20 feet water, nor 30 feet high in 5 fathoms water; but he has seen waves approach very nearly to those limits." It is presumed that the datum here referred to is the mean level of the surface of the sea. We have had no opportunities of verifying these observations; but as the subject is very important—because the depth of water in front of a work may be said to be the ruling element which determines the amount of force which it has to resist, whatever be the line of maximum exposure—we shall simply state what has come within our own knowledge and observation. We have repeatedly seen at different parts of the coast breaking waves of from 4 to 5 feet, measuring from hollow to crest, in from 7 feet 8 inches to 10 or 11 feet of water, measuring from the bottom up to the mean level; and on one occasion we were told of waves which were estimated at 9½ feet in 13 feet water. It must, however, be borne in mind that these observations, and we conceive also those of Mr. Russell, apply only to common waves of the sea, or those short, steep, and superficial waves which are due to an existing wind, and not to the ground swells which are almost constantly to be found in the open ocean, and which may be the result of former gales, or are the telegraph, as Mr. Russell terms them, of those which are yet to come.

From what has been stated, it would appear that in most cases the heaviest waves should assail any tide-work at high water. This, however, as mentioned in the last section, is not always the case, the greatest damage being often found to occur at the time when the tide runs strongest. Mr. Leslie found that the Arbroath Harbor-works were in general less severely tried by the very heaviest waves than by a class of waves somewhat smaller than these, owing to the outlying rocks, which, from the small depth over them, had the effect of *tripping* up the heavier seas, and thus destroying them before they reached the harbor, while the depth was sufficient to allow the smaller waves to pass over the shoals unbroken. In some cases of severe exposure the waves might to some extent be reduced by dropping very large stones outside of the harbor, so as, by forming an artificial shoal, to cause them to crest and break. One great difficulty connected with the subject of the generation of waves still remains unsolved, viz.:—What are the minimum line of exposure and area of sea which are compatible with the existence of a ground swell? This question, we fear, can not be answered in the present state of our knowledge.

Deep Water Harbors.—Harbors of refuge are distinguished from tidal harbors mainly by the superior depth of water which they possess, and the larger area which they inclose. The requisites are shelter during storms, and easy access for shipping at any time of tide. There has been much discussion as to whether piers for harbors of refuge should be *vertical* or *sloping*. Col. Jones, R.E., has especially advocated the superior merits of the vertical wall; and the discussions on his plan at the Institution of Civil Engineers, and the able protest by Sir Howard Douglas, will be found, from their interest and importance, to merit a careful perusal.

The principle which is asserted is, that oceanic waves in deep water are purely oscillatory, and would occasion no impact against vertical barriers, which would be the most eligible, as they would only have to encounter the simple hydrostatic pressure due to the height of the approaching billow, and would reflect the waves without causing them to break. Were it even admitted that the waves were purely oscillatory, and were reflected by a vertical barrier, would no force, it may be asked, be expended when the motion of the particles was reversed? The reflection of a wave is equivalent to the nearly instantaneous creation of a wave in the opposite direction, for which a very considerable force must surely be required.

We believe, however, that from the effect of tide currents, to which we have already referred, and perhaps from other causes whose action seems to have been overlooked by the advocates of the upright wall, any form of barrier, in whatever depth it may have been erected, must be occasionally subjected to heavy impact. We conceive that the possibility of waves of translation being generated in the deepest water has been already established, if we succeeded in satisfying the reader of the truth of the following assertions:—*First*, That waves break in deep water during calm weather; a fact which is apparent to the eye, and familiar to all sailors: and, *secondly*, and negatively, That to leeward of those races or portions of broken water, which certainly do not reflect the incoming

waves, there is comparatively smooth water both at sea and on the adjoining shores, until such time as the strength of the tide is exhausted, and the roost has disappeared, when violent action is again fully manifested.

It may be argued that these are extreme cases, and that such high velocities in the current of the tide are seldom met with. This objection has, no doubt, truth in it; but still the tendency is shown, and though the velocities may be less in other quarters, there may yet be quite enough to destroy the condition of *stagnation* which the oscillatory theory assumes. The breaking of waves at sea, and the existence of races, seem to prove beyond question that waves of translation are possible in the deepest water. Is it not also a probable case that waves which have been reflected by a vertical wall, and have (irrespective of the question of tide currents) combined with the advancing waves may then become waves of translation, possessing all the elements which endanger the stability of a sea-work? Or, again, how much more damage would result to a vertical wall than to a slope of loose stones, from the sinking of the foundations, or from their getting underwashed by the reaction of the waves? It therefore appears that the method generally resorted to of forming deep water harbors of masses of rubble stone with long slopes, so as to form an artificial beach for the waves to spend on, is, in most circumstances, the best and cheapest kind of construction. We incline, however, to the adoption of an upright wall, founded on the rubble as a basis (similar to that at Cherbourg, about to be described), in preference to long paved slopes, as there is always experienced a great difficulty in founding the toe of such talus walls among the loose rubble. When pitched slopes are adopted, great benefit will be found to accrue from leaving at the bottom or toe of the slope a wide foreshore. Much, however, depends on local peculiarities in selecting the best design for any work; and the nature of the bottom is all-important. Where the bottom is soft, a vertical wall can hardly, if ever, be attempted.

In making these remarks, we must not be understood as condemning the adoption of vertical walls in cases where the foundation is good. All that we assert is the opinion, that waves of translation do exist in deep water, and, therefore, that harbors of refuge will prove failures unless they are built in such a manner as to resist the impact of those waves of translation. The Cherbourg breakwater has been often referred to as a successful instance of the application of a vertical wall, and has been contrasted with the Plymouth breakwater, which has a long slope. But this appeal is quite fallacious, as the profile of that work is, as already hinted, of a composite character, consisting of a talus wall sloping at the rate of 10 horizontal to one perpendicular, surmounted by a plumb wall; so that whatever merit may be supposed to belong to the vertical profile is entirely nullified at Cherbourg by the strong talus wall in front, on which the violence of the waves is much broken. Moreover, the heaviest waves at Cherbourg come from the north-west, and do not assail the breakwater at right-angles to its direction, but come more nearly *end on* to the work, so as to a great extent to run along the outer wall. The north-west waves are propagated from the Atlantic, while the waves which are most trying to the work come from the north, in which direction the line of exposure is only about 21 leagues. These facts we obtained during a recent visit to Cherbourg, undertaken for the special purpose of ascertaining the physical characteristics of the place. The attempt to make out a parallelism between Plymouth, which faces the Atlantic directly, and Cherbourg, which is comparatively land-locked, can not, in our opinion, stand the test of a candid inquiry.

Other comparisons may be referred to which have been advanced on equally untenable grounds. Thus, the old pier of Dunleary, which is vertical, and has stood well, has been compared with the talus walls of Kingstown harbor, which now protect Dunleary, and which have often received much damage. The all-important element of depth of water has been in this instance entirely overlooked; for at Kingstown there is a depth of 27 feet, while Dunleary is all but dry. An able writer on the same *questio vexata*, in comparing different sea walls in the Firth of Forth, has, in like manner, not sufficiently adverted to the great differences in the depths opposite the works to which he refers.

An important advantage of the sloping wall is the small resistance which it offers to the impinging wave, but it should also be borne in mind that the weight resting on the face stones in a talus wall is decreased in proportion to the sine of the angle of the slope. If we suppose the waves which assail a sloping wall to act in the horizontal plane, their direct impulse, when resolved into the force acting at right angles to the sloping surface of the talus wall, will be proportional to the sine of the angle of incidence. The effective force when estimated in the horizontal plane, will be proportional to the square of the sine of the angle of incidence. But if we assume the motion of the impinging particles to be horizontal, the number of them which will be intercepted by the sloping surface will be also reduced in the ratio of the sine of the angle of incidence, or of elevation of the talus wall. Hence the tendency of the waves to produce horizontal displacement of the wall, on the assumption that the direction of the impinging particles is horizontal, will be proportional to the cube of the sine of angle of elevation of the wall.

If it further happens that there is obliquity of action in the azimuthal as well as in the vertical plane arising from the relative direction of the pier and of the waves, there will be another similar reduction in the ratio of the squares or cubes of the angle of incidence according as the force is resolved into that at right angles to the line of the pier, or to that of the direction of the waves.

Let ϕ = vertical angle of incidence or angle of elevation of wall;

ϕ' = azimuthal angle of incidence;

f = horizontal force exerted on unit of surface at right angles to the line of harbor wall;

h = height of greatest assailing waves;

$$f \propto h\,(\sin\phi \sin\phi')^3.$$

The above expression assigns, we think, too great a reduction, as the motion of the particles may not be horizontal, and no account is taken of the effects of friction against the rough surface of the masonry. Experiments are therefore wanting to determine the constant for correcting the theoretical results due to this expression.

Parabolic Profile.—Mr. Scott Russell recommends the parabolic curve as that best suited for the profile where the object is to *break* the waves, and not to reflect them, as is the case in sloping breakwaters. This curve possesses, according to Mr. Russell, the advantages of superior strength, of economy in the materials, of breaking the wave early, and of continuing an uniform action over the longest period of time. When the tide is low, the toe of the slope, which springs out of the foreshore and forms the vertex of the parabola, would, we fear, be found rather weak, and perhaps difficult to form. On the whole, we rather incline in such cases simply to throw in the materials, and to allow the sea to form its own slope.

According to Sir John Rennie (*Account of Plymouth Breakwater*), rubble breakwaters with slopes formed at the angle of repose, were adopted by the Greeks in the moles of Tyre and Carthage, and by the Romans at Athens and Halicarnassus. The same design was also followed at Venice, Genoa, Rochelle, Barcelona, and other places. In this kingdom the first example on a large scale which we find is at Howth. Kingstown, Holyhead, and the noble breakwater at Plymouth, were afterward carried out on the same princi-

ple, and chiefly under the direction of the late Mr. Rennie. The great national harbors of refuge at present in progress in Great Britain, according to Mr. Rendel's designs, at Holyhead and Portland, are on a similar principle; while those under Messrs. Walker, Burgess, and Cooper, at Dover, Alderney, and Jersey, are more nearly vertical.

Forms of Walls for Tidal Harbors.—Having now considered the few facts of which we are in possession, regarding the disputed nature of the impulse of the waves in deep waters, we shall direct the reader's attention to their effects in shallow water. Those in deep water were chiefly *whole waves*, and regarded by many as being purely oscillatory, while those in shoal waters are breaking waves, and therefore regarded by all as waves of translation. We have hitherto been considering breakwaters erected in deep water, and which were constantly exposed to the waves; we now turn to piers and sea-walls which are placed within the range of the surf, and which are exposed to its force for a limited period only, being sometimes left nearly, or altogether dry by the receding tide.

The impulse of the waves against a sea-wall or pier may be resolved practically into four directions:—1st. The direct horizontal force which tends to shake loose, or carry before it, the blocks of which the opposing masonry consists. This force may also blow up the pitching, or overturn the inner or quay-wall by condensing the air, or pressing upon the water which occupies the interstices of the rubble. We know two cases in the German Ocean where, in consequence of want of width in the pier, coupled, in one instance, with insufficient workmanship, the inner or quay-walls were observed first to bulge and fall, before the sea-wall was injured. One of these piers measured 26 feet 4 inches, and the other 24 feet, on the roadway. 2d. The vertical upward force which may act on any projecting stone or protuberance. 3d. The vertical downward force of the water which results either from the wave breaking upon the toe of a talus wall, or from the wave passing over the parapet, and falling upon the pitching behind, so as to plow it up. 4th. The *back-draught*, which tends by reaction from the wall to plow up the soft bottom, and thus to undermine the lower courses of the work, or perhaps by *suction* to pull out the face-work. We may conclude from the above, that the points which require to be carefully attended to are—1st. The contour and quality of masonry of the wall itself; 2d. The parapet, which, if not of sufficient height, or built in a proper direction, leads to damage in the pitching behind it; and 3d. The foundation-courses, in the design and construction of which, if similar precautions be not attended to, underwashing of the bottom may in some situations take place, so as to leave the lowest courses without protection.

We shall in the first place consider how far those remarks are applicable where the bottom is solid rock. Such a supposition will render unnecessary any precautions arising from the wasting of the bottom, and, *cæteris paribus*, there does not seem to be any reason for preferring a talus to a vertical wall. The question of preference in such a case will in the main depend upon the kind of material which can be obtained. Should the stone be scarce or costly, and the quality such as to warrant the introduction of masonry of the best description, the vertical wall may be found to be the most economical. Where freestone is to be used, it is not only desirable that it should be got in large blocks, but that the face stones should possess considerable hardness. This precaution is particularly necessary in selecting the stones, for the lower courses, and especially where the beach consists of hard gravel. For the same reason, it is highly important that all stones which are subject to decay from atmospheric influence should be either entirely rejected or assembled in the upper courses of the parapet.

Where the materials are abundant, but of an unworkable nature, a long talus wall will generally be found most economical. For such walls the rate of slope must depend very much upon the exposure of the place, and upon the plentifulness of rubble-stone hearting. The easily-dressed and naturally flat-bedded materials, which the stratified rocks of the secondary formation very often furnish, are especially applicable for the construction of vertical walls; while the uncouth blocks of the primary and igneous formations are better suited for talus walls. Such rocks as gneiss, the schists, basalts, greenstones, amygdaloids, and the tougher kinds of granite, are best fitted for this purpose. With some of those rocks the angularity of the pieces, and the excessive difficulty of dressing, render it necessary to assemble them without almost any alteration of their shape, by an adaptation of their salient and re-entrant angles, so as to make a kind of random rubble face-work. In this kind of work, mortar is very seldom employed. The parapet generally consists of squared masonry, surmounted by a heavy cope, and it should in every case be set in good lime mortar.

Where the materials are light and of small sizes it is desirable to equalize the action of the sea over the whole work, and not to concentrate it against any particular place. Mr. Russell states that the cycloidal form was recommended for this purpose by Franz Gerstner, of Bohemia. The only instance with which we are acquainted of the adoption of this curve was in a sea-wall erected at Trinity, near Edinburg, by the late Mr. Robert Stevenson, in 1822. It has been already stated that irrespective of the quality of the masonry, the two points in the structure which are weak or dangerous are the top and bottom of the wall. With a rocky bottom the risk of failure at the foundations is removed; on the other hand, where the shore consists of rotten rock, moving shingle, or sand, it is obvious that provision must be made for both those sources of evil. In fact, if we consult the history of our harbors, we shall find that by far the most frequent cause of damage is the reaction of the sea against the shore.

The general slope of a fragmentary beach must depend upon the size and nature of the particles and the force of the sea. The dissimilarity between the slopes of a beach near the levels of high and low water, arises from a decrease in the force of the waves, owing to their being broken before they reach the high-water mark. The great object, therefore, is to design the profile of our wall so as to alter as little as possible the symmetry of the beach. Where isolated rocks or large boulders are seen projecting above the surface of a sandy beach, there will generally be formed around them hollows, corresponding in depth to the kind of obstruction which the rocks present. The principal point in the design, therefore, must be to avoid great and sudden obstructions to the movement of the water. The best form which could be adopted in any situation would of course be the same as the cross section of the beach itself, but this would answer no possible purpose; and, as the wall is to consist of heavy blocks of stone instead of minute particles of sand, it is clear that a much steeper slope may be adopted than *the profile of conservancy* of the coast, provided the lower part of the slope be flattened out so as to rest the sand at a low angle. The action of a bulwark is to arrest the waves before they reach the general high-water mark, and to change the horizontal motion of the fluid particles to the vertical plane, or to compel the waves to destroy themselves on an artificial beach consisting of heavy stones. To prevent underwashing, the two following requisites should therefore be as far as possible secured:—1st. The foundation courses or bottom of the wall should rise at a very small angle with the beach, so that their top surfaces may be coincident with the profile of conservation of that portion of the

beach out of which the wall springs; 2d. The outline of the wall should be such as to allow the wave to pass onward without any sudden check till it shall have reached the strongest part of the wall, which should be as far from the foundation as possible.

Those two requisites show clearly how inapplicable a vertical wall must in most cases be for a sandy beach. Instead of altering the direction of the wave at a distance from its foundation, the whole charge is produced at that very point; and unless the wall be founded at a great depth, its destruction is all but certain. Where the materials are costly, but admit of being easily dressed, we are disposed to think that a horizontal, or nearly horizontal, wall, connected with a vertical one by a quadrant of a circle, may be found suitable. Such a form will prevent, to a considerable extent, the danger of reaction, by causing an alteration in the form of the wave at that part where the wall is strongest and at the greatest distance from the toe or curb-course. Where the materials are abundant and of a rougher nature, a cycloidal wall, with vertical and horizontal tangents, somewhat similar to that erected at Trinity, to which we have already referred, may be adopted with advantage.

A special caution may not be out of place regarding clayey bottoms. Many are apt to suppose that there can be no better foundation than clay; and it is indeed true that some kinds of hard clay form a satisfactory subsoil. But there are others of a softer kind, and permeated by sandy beds, which are extremely treacherous. If there be the slightest dip seaward, there is always a risk of any pier that may be built on such a base slipping bodily into the sea. This holds especially true of inland locks, where the sides very often slope suddenly. In one instance, the particulars of which we got on the spot shortly after the accident, a pier built on a clayey beach, sloping below water at the rate of one in 12½, suddenly began to move, and after two hours it had slipped seaward 150 feet, and had by that time descended bodily a height of 34 feet, the top of the pier being then no less than 23 feet below low-water spring tides.

Construction of Harbors.—Our space will not admit of our going much further into the subject of the construction of harbors than the few remarks we have already made. A knowledge of such matters may, to some extent, be acquired by a careful perusal of the published histories of marine works; but, after all, it must be confessed that the only valuable teacher in this wide practical field is *experience*. It is, in truth, impossible to lay down any general rules of guidance as to matters of this kind. All that can be done within our space is to notice very briefly some of the more important methods of working. And first, with regard to that invaluable piece of apparatus, the diving-bell, we would refer to the article on the subject in this work, and to SMEATON'S *Account of Ramsgate Harbor*, published in 1721, where it was first applied by him to harbor works. The diving-helmet is a most useful and convenient modification of the diving-bell, and is now very generally employed.

Of late years, the use of *beton* as a substitute for backing has been introduced. This artificial concrete is sometimes used in enormous masses. We have seen at Cherbourg blocks of 50 tons prepared in boxes, whose sides and tops are removed after the concrete has set, in order to be again similarly employed. The proportions used at Cherbourg by M. Rebeille were two of sand or fine gravel to one of Portland cement.

We may also mention that the method of assembling stones on their edges, instead of on their beds, which formerly was in use in some old Scottish harbors and sea-walls, as at St. Andrews, Prestonpans, etc., deserves to be more generally known and adopted from its superior strength.

The proposal of Mr. Bremner, of Wick, for putting in the foundations of low-water piers also merits notice. Mr. Bremner proposes to construct, in some adjoining place of shelter, enormous pontoons of timber, on which the under parts of the work are built, and afterward floated to the desired spot in favorable weather, and carefully grounded. Such a plan might, we have no doubt, be found economical and useful in some situations.

Mr. Rendel's Method.—Mr. Rendel has introduced an improved method of assembling the *pierres perdues* or rubble used in the construction of large breakwaters; this method he employed at Millbay Pier, near Plymouth, in 1838, in a depth of 38 feet; and he is at present carrying out the same principle on a still larger scale, in the construction of the breakwaters at Holyhead and Portland. The improvement consists in depositing the rough materials from stagings elevated a considerable height above high water. The stones are brought on the staging in wagons, through the bottoms of which they are discharged into the sea. The principle on which the stagings are designed is that of offering the smallest possible resistance to the sea, the under-structure consisting of nothing more than single upright piles, there being only one line of piles for each roadway.

Harbors of Refuge.—Mr. Rendel states: "I use no timber braces of any kind, as these offer more resistance to the sea than strength to the staging. At Portland, England, where any accident would be a serious evil, owing to our employing convicts in the quarries, we stay the piles with iron guys, fixed to Mitchel's crew moorings, and also truss the outer piles in each row with iron rods. We also fix the piles in the ground with a screw. At Holyhead, however, we only attach to each pile boxes filled with small stones, for the purpose of getting them into a vertical position, and use no stays or guys of any kind. The superstructure consists simply of balks of timber, with rails laid on them to carry the wagons. The piles are placed in rows 30 feet apart; and the ease and certainty with which the staging is constructed is such that a length of 30 feet, including the screwing in of the piles, the laying down of the roadways, and all minor works necessary to make them fit to carry the wagons, never occupies more than one working day and a half, and often less. The length of the piles that we are now using varies from 84 to 90 feet, the depth of water at both Holyhead and Portland being about 11 fathoms.

"Of the strength of the stage you may judge from its carrying on each roadway as much as three wagons, weighing in the gross 12 tons each. The advantages of the staging are obvious. It contributes greatly to the consolidation of the stone, it makes a greater length of breakwater to be under construction at the same time, and it enables the deposits to be carried on without interruption almost in the heaviest weather. As an instance of this, I may remark that my resident at Portland informs me that the wagons and locomotives were engaged yesterday at a time when such a sea was running that large bodies of spray were thrown 55 feet above the water-level. As a proof of the facilities which the stage affords for rapidity of construction, I should state that we have deposited this year at Holyhead, where free labor is employed, nearly 1,000,000 tons of stones. The loss from accident to the stage is comparatively small on its first cost, and when spread over the cost of the whole work it is a mere trifle. I find the sea-slopes are, in the deep water and exposed parts, from five and a half or six to one between six feet above high-water, and from 12 to 15 below low-water, from which point they rapidly become about one to one. The inside slopes are never more than one and a quarter to one, and seldom more than one to one. The materials are excellent for our purpose."

Alderney, Jersey, Dover, and Plymouth.—Mr. Walker has also contributed some facts connected with the construction of the great works now going on at Jer-

sey, Alderney, and Dover. At Alderney, which is a very exposed place, the *base*, up to 12 feet below low-water, is formed by stones thrown, or rather dropped, in from barges. Up to low-water, the work is all done by diving-helmets. The wall is faced with granite, backed with blocks of *beton* made of sand, shingle, and Portland cement. Above low-water it is faced with stone of the island, a kind of millstone-grit, and is backed with blocks of rubble set in Roman cement. The millstone-grit is raised in very large blocks. The profile is to consist of a quay, an esplande, and a parapet. Jersey is much the same as Alderney, but the *pell-mell* work is carried to low-water, having nearly vertical walls of conglomerate built above. Dover has nearly vertical walls, faced with granite from the very bottom, which is now 45 feet below low-water. This work was done with diving-bells. Sir J. Rennie, in his *Account of the Plymouth Breakwater*, says: "From the bottom to within eight feet of low-water springs, we find that the slope is two and a half or three to one. Here the effect of the waves is comparatively small, being neutralized by the mass of water. From thence to low-water of spring-tides the slope increases from three or four to one, but between low-water of spring-tides and high-water, when the effect of the waves is greatest, there we found that the rubble would not lie at less than five to one, while on the inside, the slope stands generally at from one and a half or two to one." The above interesting details regarding these national works show, from the variety which they exhibit, how difficult it is to lay down any general rules for the construction of harbors, and confirm the principle that each work must be judged of *per se*.

Miscellaneous Observations.—The ultimate object of constructing harbors is, by lowering the height of the waves, to preserve the tranquillity of the area of water which is inclosed by the piers; and this property is variously possessed by harbors of different forms, and depends much upon the relative widths of the entrance, and of the interior, the depth of water, the shape of the entrance, and the relation between the direction of its opening and that of the line of *maximum exposure*.

The only formula of which we are aware is that by the writer in this article (*Edin. New Phil. Journal*, 1853), which gives an approximation to the *reductive power*, or is, in other words, a numerical form of expressing how much a wave of given height becomes reduced after it has entered a harbor. Though the results obtained by the formula may not be absolutely correct, this will be no objection where the object is merely to obtain a comparative value; as, for example, in comparing one design for a harbor with another. When the piers are high enough to screen the inner area from the wind, where the depth is uniform, the width of entrance not very great in comparison with the width of the wave, and when the quay walls are vertical, and the distance not less than 50 feet—let

H = height in feet of waves in the open sea.
x = reduced height of waves in feet at place of observation in the interior of the harbor.
b = breadth of entrance to harbor in feet.
B = breadth of harbor at place of observation in feet.
D = distance from mouth of harbor to place of observation in feet.

$$x = H\left\{\sqrt{\frac{b}{B}} - \frac{1}{50}\left(1+\sqrt{\frac{b}{B}}\right)\sqrt[4]{D}\right\}$$

This formula has been found to give good approximations at several harbors where the heights of the waves were registered. When H is assumed as unity, x will represent the *reductive power* of the harbor. In situations where the highest waves cross the harbor mouth at an oblique angle, a further reduction is due to this cause. We have been unable to find any observations that have been made on this subject by others, and for want of better, we shall give three observations made under our directions at Latheronwheel harbor:

Angle of obliquity.	Distances run through by waves.	Height of wave after passing through angle.
0°	16 feet.	1·00
50	32 "	0·68
140	68 "	0·21

These must however be regarded as but approximations. It is obvious that as the wave may be deflected through more than 360°, the curve representing the reduction must be spiral; but more observations are wanted to determine of what kind.

Booms are logs of timber placed across the mouth of a harbor, or the entrance to an inner basin or dock, having their ends secured by projecting into grooves cut in the masonry on each side of the entrance. The booms are dropped into the grooves to the number of from 10 to 20, or as many more as will insure close contact of the lowest one with a sill-piece placed in the bottom of the harbor, without which precaution the swell is found to enter the harbor from below the booms. By this contrivance, which forms a temporary wall, the waves are completely checked and prevented from spreading into the interior basin. The longest booms we have seen are about 45 feet; and in some places, as at Hartlepool and Seaham, in Durhamshire, they are taken out and in by steam-power. Though perfectly successful in their tranquillizing effect (provided they are kept in contact with the sill-piece at the bottom), booms are not suited for the mouths of harbors where there is much traffic, as the shipping and unshipping of so many logs of timber can hardly take less than a quarter of an hour—a delay which might in many cases be attended with serious consequences.

It is very desirable, and in some cases essential, that there be either a considerable internal area, or else a separate basin opposite the entrance for the waves to destroy or *spend* themselves. Such a basin should, if possible, be made so as to preserve a portion of the original shore for the waves to break upon; and when circumstances rendered this impossible, there should at least be a flat talus of two or three to one. Talus walls of one to one, or steeper, will not allow the waves to break fully, but will reflect them in such a manner as might in some cases make the entrance difficult, or even dangerous, of access, and the berthage within unsafe. There are many instances of harbors being materially injured by the erection of a quay-wall across a beach where the waves were formerly allowed to expend their force. It may be observed that when there is an inner harbor or stilling-basin, the elliptical form seems to be the most promising. Let one focus be supposed to be on the middle line of the entrance, and to coincide with the point from which the waves in expanding into the interior radiate as from a centre (which they do approximately); and if the other focus is situated inland of high-water mark, the waves will tend to reassemble at the landward focus, and on their way will be destroyed by breaking on the beach. This appears from the well-known property of the ellipse, that if two *radii vectores* be drawn from the two foci to any point in the curve they will make equal angles with the tangent at that point; and as the angles of incidence and reflection of a wave from any obstacle are practically equal, each wave will be nearly concentrated at the focus opposite to that from which it emanated.

Indiscriminate Deepening.—Another cause of disturbance in harbors, which is often not sufficiently considered, is the indiscriminate deepening of the entrance without a proportionate enlargement of the internal area, or the execution of other works for counteracting the effect. As the depth of the water is more and more increased, waves of greater height become possible at the entrance, so that larger waves gain admission to the interior. The writer has had repeated

proofs of this in the course of his practice. At the port of Sunderland Mr. D. Stevenson recommended the removal of nearly the whole of the south stone pier, and the substitution of works of open frame-work in order to tranquillize the interior. These works, which have been quite successful, were rendered necessary by the frequent dredging of the channel at and near the entrance.

Artificial Scouring.—The preservation of the depth of harbors where there is a tendency to deposit is often attended with great difficulty and expense. Where the deposit of silt is confined to the space between high and low water marks, the scouring by means of salt or fresh water is in general comparatively easy, but where there is a bar outside of the entrance the case becomes most materially changed. The efficacy of the scour, so long as it is not impeded by encountering stagnant water, is kept up for great distances, but soon comes to an end on its meeting the sea. Probably the only way in which this difficulty might to some extent be obviated would be by conducting the water in iron pipes to the bar, a plan which the author proposed in 1843 for Ilynish harbor, but the expense was considerable and the success doubtful. When the volume of water liberated is great compared with the *alveus* or channel through which it has to pass, the objection based on the stagnancy of the water originally occupying the channel does not hold to the same extent as when the scouring is to be produced by a sudden *finite momentum*. In the one case the scouring power depends simply on the quantity liberated in a given space of time, while in the other it depends on the propelling head and the direction in which the water leaves the sluice. Mr. Rendel's scheme for Birkenhead was on the former principle. The first example of artificial scouring in this country seems to be due to Smeaton, who used it effectually at Ramsgate in 1779.

At Bute Docks, Cardiff, Wales, designed by Sir W. Cubitt, the access to the outer basin is kept open most successfully by means of artificial scouring on a gigantic scale. The entrance was cut through mud banks for a distance of about three fourths of a mile seaward of high-water mark. The initial discharge when the reservoir is full, is stated to be 2500 tons per minute. The writer has known even so limited a discharge for an hour or two as one ton a minute, produce very useful effects in keeping a small tidal harbor clear of sand.

Floating Breakwaters.—Many proposals have from time to time been made for mooring in the open sea floating frameworks of timber with the view of sheltering the space inclosed by them. The objections to floating breakwaters are so great and obvious that there seems little chance of their ever being much used. From what was stated on the subject of booms, it will be recollected that it is a requisite that they should fit closely to a sill piece at the bottom, otherwise the *run* is found to extend into the harbor. From what will be afterward stated regarding the liability of timber to speedy destruction from the marine worm, and to iron by chemical action, it is obvious that floating structures of wood, connected by iron and moored by iron chains, can not possibly be of long duration. If to all these sources of evil we add the risk of their being broken by the sea, we think the case may be almost regarded as hopeless. No doubt green-heart might be employed so as to resist the ravages of the worm, but its high specific gravity and its great expense would prove bars to its employment.

Suspension Piers.—In some situations where there is a long shallow beach, a harbor or pier of timber or masonry may be made at or near the low-water mark, which may be connected with the shore by means of a suspension bridge. The inducements to adopt the suspension principle are its economy, and the free passage it affords to the currents which in this way are prevented from forming accumulations of sand, silt, or gravel. These advantages are, however, much reduced by the great wear and tear consequent upon the perishable nature of the structure. The late Sir Samuel Brown erected two chain piers, the one at Brighton, and the other at Newhaven, near Edinburg, both of which are still in existence.

Advantages of two Entrances to a Harbor.—In every situation where it is easily practicable to make two entrances to a harbor, it will be found well worth the extra expense, provided they can be so placed that the one shall be available when the other has become difficult of access. In harbors which have but one mouth, vessels are often detained for a great length of time by the continuance of the wind in the direction which throws a heavy sea into the entrance. Whereas if there are two entrances situated as we have supposed, vessels are at once able to take their departure by the sheltered side. At the port of Peterhead, the north and south harbors were some years ago united by a canal, according to the writer's plans, and there the advantage has been of the most marked description. Vessels can now clear out as soon as loaded, either by the north or south mouth, according to the state of the sea. Some caution is necessary, however, as the *run* is apt to extend from the one harbor to the other unless there be a considerable area.

Harbor Repairs.—There is generally much prudence required in the alteration or repairs of existing marine works. The risk of having the whole structure destroyed by a gale coming suddenly on while there is an open breach in the works, must be obvious; and in one instance, where the exposure of the place was great, and the evil was a hidden one, the writer could not recommend the facework being disturbed. The cause of failure in this instance was supposed to be the decay of the backing, which having deprived the face-stones of support allowed them to be driven inward by the force of the waves. Instead of removing the face-work, the only recommendation that could be given was to inject the whole pier with fluid cement, so as, if possible, to render the mass *monolithic*. An alternative of this kind is obviously of very doubtful success, and can be regarded as nothing short of a last resort, for there is but a small chance of getting the injected fluid to permeate the whole mass of the pier. The system of permeating the masonry with fluid matter could, however, be employed with more chance of success in the *formation* of a pier, while each course lies open to view. In 1844, at a harbor that had stood for very many years, two or three faulty stones had been incautiously taken out of the facework by a mason who intended to replace them by others, when a sudden gale came on, and nearly the whole of the work was leveled with the beach.

As an example of the suddenness with which the eastern coast of England is visited by gales, and as indicating graphically the relative eligibility of the summer and winter months for carrying on harbor works, we give the accompanying diagram of the heights of waves, as observed for the writer, by Mr. William Middlemiss, resident engineer at Lybster harbor. (See next page.)

Timber Piers.—In landlocked bays, where a deep-water landing-place is all that is required, and where the bottom is sandy or soft, timber may be employed with great advantage. Even in exposed situations, timber can also be used, but the fatal disadvantage attending its employment in most places where there is no admixture of fresh water, is the rapid destruction occasioned by marine worms. The damage occasioned to harbors in this way is noticed by Semple in his treatise *On Building in Water*, in 1776, and very probably by much earlier writers. Indeed, the ravages of the *Teredo navalis* are very judiciously described by Hector Boece in his *Croniklis of Scotland*, printed at Edinburg *circa* 1536. In the Atlantic Ocean the *Teredo navalis*, and at many places in the German

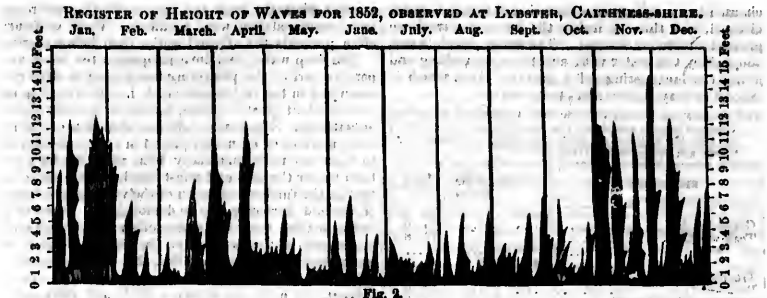


Fig. 2.

Ocean the *Limnoria terebrans*, are the animals which are found to destroy any structure of timber which is exposed to the water. They are found to eat most rapidly between the bottom and low-water mark, but above low-water the damage is not so great; and what is singular, they do not appear to exist at all below the bottom where the pile is covered with sand. These observations do not, however, quadrate with Mr. Hartley's at Liverpool, for he found the parts which were alternately wet and dry to decay faster than the parts which were constantly immersed. Even solid limestone is often destroyed by the persevering efforts of another marine animal called the *Pholas*.

The late Mr. R. Stevenson made several experiments on the ravages of the *Limnoria terebrans* at the Bell Rock, in 1814, 1821, 1837, and 1843, by fixing pieces of different kinds of timber to the rock, and getting regular reports on their decay. From those experiments it appeared that green-heart, beef-wood, and bullet-tree, were not attacked by the worms, while teak stood remarkably well, although suffering at last. The kyanizing fluid and other preparations have been tried, but were not found to be of permanent service. In addition to these experiments on timber, no fewer than 25 different kinds and combinations of iron were tried, including specimens of galvanized irons. Although separate specimens of each were tried in places where they were always under water, and also in places where they were alternately wet and dry, yet all the ungalvanized specimens were found to oxydize with much the same readiness. The galvanized specimens resisted oxydation for three or four years, after which the chemical action went on as quickly as in the others.

Green-heart timber is now generally had recourse to in places where the worms are destructive. It appears to have been first used by Mr. J. Hartley of Liverpool, who published in the *Minutes of Institution of Civil Engineers* an account of its virtues in 1840, as ascertained at the Liverpool Docks. Its cost is considerably greater than memel or than most of the other timbers generally used. Memel logs for the inner piles of piers might, perhaps, from their not being exposed to abrasion from ships, be clad with green-heart planking at those parts which are exposed to the worm. Copper sheathing and scupper nailing are often and successfully employed as protections for piles in exposed situations. *Riveaming* or scorching the wood, and afterward saturating it with train oil, also forms a partial protection.

It is much to be regretted that timber is so expensive in Great Britain, and that some simple and economical specific against the worm has not been discovered for protecting memel and the cheaper kinds of pine. The grand desideratum in the harbor works, which is the *want of continuity in the structure*, would then be supplied. It follows, from the known laws of fluids, that each individual stone in a pier which is equally exposed throughout its whole length, is subjected to a force which it can only resist by its own inertia, and the friction due to its contact with the adjoining stones. The stability of a whole hydraulic work may therefore be perilled by the use of small stones in one part of the fabric, while it is in no way increased by the introduction of heavier stones into other parts. By the use of long logs of timber carefully bolted together a new element of strength is obviously obtained. A pier could be erected almost free of sea risk if constructed of rectangular or other shaped prisms, consisting of logs of timber treenailed and bolted together, so as to form boxes, say 10 feet square and 30 or 40 feet long. The interior of the boxes would be filled with rubble or *beton*. The first layer would be arranged across the pier, so as to fit the irregularities of the bottom, and above that, they might be arranged lengthwise of the pier, so as to form its outer and inner walls, the space between being filled with common rubble or *beton*.

In many ports the original depth has been decressed by the deposit of silt, sand, and gravel. This is, indeed, a great evil, and one which unfortunately is most difficult of cure. So obscure and apparently capricious are the causes which lead to the formation of shoals, that in the present state of our knowledge it would be little short of *quackery* to lay down any general rules for the guidance of the engineer. In fixing on the site for a harbor, all existing obstructions should be examined to ascertain whether there be a tendency to deposit, and the works should be kept as far as possible from places where the tendency is most strongly developed. The agents which occasion bars at the mouths of harbors are the waves, the tide currents, and land streams, where they exist. Rivers are often more pernicious than beneficial in their effects, especially where they intersect a gravelly soil; but in some cases the descending gravel may be successfully intersected by the erection of weirs from which the accumulations must be from time to time removed. We agree with Sir H. De la Beche in believing that the bars at the mouths of rivers are most generally formed by the constant tendency of the waves to preserve the *continuity* of the beach profile. It is, therefore, not to be wondered at, that heavy gales should distort and fill up the narrow trench which the back waters cut in gravelly or sandy beaches. The erection of breakwaters on each side has undoubtedly a good effect in protecting the channel, but still a bar is very apt to form outside of the breakwaters. In some cases the depth of the track might probably be maintained by driving, on each side of the mid-channel, dwarf piles to which contiguous wallings should be attached so as to confine the current at low water. The timber frame-work should not project more than a foot or two above the bottom, which in some cases might be planked. This, however, is but a hint, and has, so far as the author is aware, never been tried. The principle on which the proposal is based is that of contracting the low-water

channel to a smaller width than that of the high-water channel, and thus by fixing the low-water track, to prevent a tortuous channel. The same principle was adopted by the writer with success in controlling and fixing the meanderings of a gravelly river, which is subject to very sudden and heavy freshets.

THE FOLLOWING TABLE SHOWS THE DIFFERENT KINDS OF WOOD WHICH WERE MADE THE SUBJECT OF EXPERIMENT AT THE BELL ROCK IN 1814, 1821, 1837, AND 1843, WITH THEIR RELATIVE DURABILITIES.

Kind of Timber.	Decay first observed.		Unsound and quite decayed.		Quite sound for	
	Yrs.	Mo.	Yrs.	Mo.	Yrs.	Mo.
Green-heart	....		....		13	0
Teak-wood	....		....		13	0[a]
"	5	6[b]	....		....	
"	4	7	12	0	....	
Treenail of locust	....		5	0	3	0
Beef-wood	....		....		13	0
Treenail of Bullet-wood	....		....		5	0
African Oak	4	11	10	0	....	
" "	5	6[c]	....		....	
English "	1	1	3	1	....	
" "	2	4	4	7	....	
British "	1	6	5	0	....	
English " kyanized	4	7	10	0	....	
American Oak	2	11	4	7	....	
" "	1	6	5	0	....	
" " kyanized	4	3[d]	....		....	
Italian "	1	1	3	6	....	
Dantzic "	1	1	2	6	....	
Scotch "	2	4[e]	....		....	
Baltic "	2	4	4	3	....	
Plane-tree	2	11[f]	....		....	
"	1	6	5	0	....	
British Ash	2	0	5	0	....	
Ash	2	11	4	3	....	
English Elm	2	11	4	7	....	
"	1	1	1	6	....	
Scotch "	3	0	5	0	....	
American "	1	9	3	1	....	
Canada Rock Elm	1	1	1	6	....	
Honduras Mahogany	2	1[g]	....		....	
" teak treenails	1	6	5	0	....	
Beech	1	6	5	0	....	
"	1	9	3	1	....	
" Payne's patent process	10	7[h]	....		....	
Cedar of Lebanon	1	1	2	6	....	
Scotch Fir, teak treenails	1	6	3	0	....	
" from Lanarkshire	1	6	3	0	....	
" " "	1	6	3	0	....	
" locust treenails	1	6	3	0	....	
Memel Fir	1	6	5	0	....	
Riga "	1	1	1	6	....	
Dantzic "	1	1	1	6	....	
Norway "	2	4	3	1	....	
Baltic Red Pine	2	9[i]	4	3	....	
" " kyanized	2	4	4	7	....	
Pitch Pine	2	4	4	3	....	
"	1	6[j]	2	6	....	
Virginia Pine	1	1	1	6	....	
Yellow "	1	1[k]	1	6	....	
Red "	1	1	1	6	....	
Cawdie "	1	1[l]	1	6	....	
American Yellow Pine	2	4	3	7	....	
" locust treenails	0	8	3	0	....	
" Red Pine	2	4	3	1	....	
" " kyanized	2	4	4	7	....	
Larch	2	4	4	3	....	
Polish Larch	1	1[m]	1	6	....	
Birch, Payne's patent process	0	10	1	10	....	

[a] Affected in one corner.
[b] Nearly sound 7½ years after being laid down.
[c] Nearly sound 7½ years after being laid down.
[d] Decaying but slowly 5 years and 7 months after being laid down.
[e] Much decayed when first observed.
[f] Decaying but slowly 5 years and 7 months after being laid down.
[g] Nearly sound 8½ years after being laid down. Washed away 6 months later.
[h] A little holed at one end underneath.
[i] A good deal decayed when first observed.
[j] Going fast when first observed.
[k] A good deal gone 18 months after being laid down. Swept away by the sea 7 months afterward.
[l] A good deal decayed when first observed.
[m] Going fast when first observed.

The want of sufficient funds occasions a great national loss in the construction of English harbors. The history of a large majority of those ports which have been erected by private or local enterprise, presents but a record of the building of piers at one period when the funds were small, and of taking them down at another when the trade had increased and more room and accommodation were required. Want of funds often prevents the original works from being carried within deep water, and in consequence the most expensive part of the protecting breakwater is often put down just in the very place which has afterward to be converted, at great expense, into a deep water access or berthage. Sometimes, indeed, a whole line of pier is, from motives of economy, placed in such a manner as to interfere most materially with what might have been by far the best and safest berths for shipping, so that in the further extension of the works a great part of the old harbor has to be demolished. Want of a proper marine survey has also often led to very serious errors in the position of the piers. To such an extent has this system prevailed, that were an engineer called on to value many of the works as they exist at present, his estimate, however fairly and fully made out, would fall lamentably short of the actual cost. This estimate would proceed on a measurement of what he sees, while the actual cost would include the building of piers and jetties which had long since ceased to exist. For these reasons we conceive there could hardly be a more advisable expenditure of the public money than by a system of grants for supplementing the local funds on a liberal scale. With such aid the authorities on the spot would be enabled to protect and improve the existing physical advantages which the shores possess, by preventing the construction of proposed improvements on too narrow a scale. But a comparatively slight increase of the means would, in instances of which the writer is aware, have inclosed a great extra area, and secured a deeper access with superior internal tranquillity, the want of which now cripples the trade, and is the subject of lasting regret to all frequenting the harbors.

For this article we are indebted to the pen of Thomas Stevenson, Esq., Civil Engineer, written for the *Ency. Brit.*, 8th ed., 1857. See vol. xi.

For other subjects connected with harbors *vide* articles on DOCKS and PORTS. Reference may be made to *Brit. Assoc. Rep.*, 1850, SCORESBY; *Min Inst. Civ. Eng.*, 1848, RANKINE; do.,.1847, SCOTT RUSSELL; Do., 1844, BREMNER; SMEATON'S *Reports, passim.*; *Rep. Com. on Waves by Brit. Assoc.*, J. S. RUSSELL, London, 1848; *Researches on Hydrodynamics*, J. S. RUSSELL; *Trans. Roy. Soc. Edin.*, vol. xiv., 1837; *Account of Experiments on Force of Waves of Atlantic and German Oceans*, THOMAS STEVENSON; *Trans. Roy. Soc. Edin.*, vol. xvi., 1845; *On Reduction of Height of Waves after passing into Harbors*, T. STEVENSON; *Edin. New Phil. Journ.*, 1852; *Account of the Plymouth Breakwater*, by Sir J. RENNIE, London, 1848; BELIDON'S *Architecture Hydraulique*, Paris; SEMPLE'S *Treatise on Building in Water*, Dublin, 1776; *Royal Tidal Harbor Commissions' Reports*, Captain WASHINGTON, London, 1845-6; the article on *Tides and Waves* in the *Encyclopedia Metropolitana*, by G. B. AIREY, Astronomer Royal; *Report by Commissioners of Harbors of Refuge*, with the *Protest*, by Sir HOWARD DOUGLAS.

Good harbors are of essential importance to a maritime nation; and immense sums have been expended in all countries ambitious of naval or commercial greatness in their improvement and formation. *British Harbors.*—Portsmouth, Milford Haven, and the Cove of Cork, are the finest harbors in the British islands, being surpassed by very few, if any, in the world. Of these, Portsmouth is entitled to the pre-eminence. This admirable harbor is about as wide at its mouth as the Thames at Westminster Bridge, expanding within into a noble basin, almost sufficient to contain the whole navy of Great Britain. Its entrance is unobstructed by any bar or shallow; and it has, throughout, water adequate to float the largest men of war at the lowest tides. The anchorage ground is excellent, and it is entirely free from sunken rocks, sand-banks,

or any similar obstructions. The western side of the harbor is formed by the island of Portsea; and on its south-western extremity, at the entrance to the harbor, is situated the town of Portsmouth, and its large and important suburb Portsea. Here are docks and other establishments for the building, repair, and outfit of ships of war, constructed upon a very large scale, and furnished with every convenience. The fortifications that protect this great naval dépôt are superior, both as respects strength and extent, to any other in the kingdom. "Thus," to use the words of Dr. Campbell, "it appears that Portsmouth derives from nature all the prerogatives the most fertile wits and most intelligent judges could devise or desire; and that these have been well seconded by art, without consideration of expense, which, in national improvements, is little to be regarded. Add to all this the striking excellence of its situation, which is such as if Providence had expressly determined it for that use to which we see it applied, the bridling the power of France, and, if I may so speak, the peculiar residence of Neptune." Portsmouth harbor has the additional and important advantage of opening into the celebrated road of Spithead, between the Hampshire coast and the Isle of Wight, forming a safe and convenient retreat for the largest fleets. Milford Haven deeply indents the southern part of Pembrokeshire. It is of great extent, and has many subordinate bays, creeks, and roads. The water is deep, and the anchorage ground excellent; and being completely land-locked, ships lie as safely as if they were in dock. Cork harbor has a striking resemblance to that of Portsmouth, but is of larger extent; it has, like it, a narrow entrance, leading into a capacious basin, affording a secure asylum for any number of ships. Plymouth, which, after Portsmouth, is the principal naval dépôt of England, has an admirable double harbor. The roadstead in Plymouth Sound has recently been much improved by the construction, at a vast expense, of a stupendous breakwater more than 1,700 yards in length. This artificial bulwark protects the ship lying inside from the effects of the heavy swell thrown into the Sound by southerly and south-easterly winds.

London stands at the head of the river ports of Great Britain. Considering the limited course of the Thames, there is, probably, no river that is navigable for large ships to so great a distance from sea, or whose mouth is less obstructed by banks. London is mainly indebted for her unrivaled magnitude to her favorable situation on this noble river; which not only gives her all the advantages of an excellent port, accessible at all times to the largest ships, but renders her the emporium of the extensive, rich, and populous country comprised in the basin of the Thames. The Mersey, now the first commercial river in the empire, is more incommoded by banks than the Thames; and is in all respects inferior, as a channel of navigation, to the latter. Still, however, it gives to Liverpool very great advantages; and the channels being well buoyed and marked, the largest ships have little difficulty in reaching the port. The principal channels are laid down in the map of Liverpool and its environs attached to the article Docks, *Ency. Brit.*

Bristol and Hull are both river ports. Owing to the extraordinary rise of the tide in the Bristol Channel, the former is accessible to the largest ships. The Humber is a good deal impeded by banks; but it also is navigable as far as Hull, by large vessels. The Tyne admits vessels of very considerable burden as far as Newcastle. Sunderland, at the mouth of the Weir, is the principal ship-building port in the United Kingdom and has, after Liverpool and London, the greatest amount of shipping. The shallowness of the Clyde from Greenock up to Glasgow has been a serious drawback upon the commercial progress of the latter. Large sums have been expended in attempts to contract the course and to deepen the bed of the river; and they have been so far successful, that ships drawing 19 and even 20 feet have come up to the city at high water. In 1852, 74 vessels drawing 17 feet of water, and 18 drawing 18 feet, arrived at Glasgow, which is now one of the principal commercial ports in the empire. Generally speaking, the harbors on the east coasts, both of Great Britain and Ireland, are, with the exception of the Thames, very inferior to those on their south and west coast. Several harbors on the shores of Sussex, Kent, Lincoln, etc., that once admitted pretty large ships, are now completely choked up by sand. Large sums have been expended upon the ports of Yarmouth, Boston, Sunderland, Leith, Dundee, Aberdeen, etc. Dublin harbor being naturally bad, and obstructed by a bar, a new harbor has been formed, at a great expense, at Kingstown, without the bar, in deep water.—*See* Tides.

Ports.—The reader will find the principal commercial harbors described in this work at considerable length under their respective titles. The principal French ports for the accommodation of men-of-war are Brest, Toulon, and Cherbourg. The latter has been very greatly improved by the construction of a gigantic breakwater, and the excavation of immense basins. Besides Cadiz, the principal ports for the Spanish navy are Ferrol and Carthagena. Cronstadt is the principal rendezvous of the Russian navy; Landscrona, of that of Sweden; and the Helder, of that of Holland.

Number of Harbors in the different States on the Coast, and the principal ones on Rivers to the Head of Tide.

States.	No. of harbors.	States.	No. of harbors.
Maine	52	North Carolina	52
New Hampshire	3	South Carolina	21
Massachusetts	51	Georgia	15
Rhode Island	7	Florida	66
Connecticut	32	Alabama	4
New York	27	Mississippi	10
New Jersey	14	Louisiana	33
Pennsylvania	3	Texas	12
	189		249
Delaware	3		
Maryland	11	Total	438
Virginia	22		

Table Showing the Shore Line of States on the Atlantic Coast and Gulf of Mexico.

States.	Shore line of coast washed by sea.	Shore line of coast washed by bays, sounds, etc.	Shore line of rivers to the head of tide.	Total sea coast, and shores of bays, sounds, etc.	Total sea coast, and shores of bays, sounds, etc., and shores of rivers to head of tide
	Miles.	Miles.	Miles.	Miles.	Miles.
Maine	437	1,589	437	2,026	2,463
New Hampshire	18	37	24	50	74
Massachusetts	209	865	832	1,074	1,906
Rhode Island	55	153	232	208	440
Connecticut	14	239	1,074	253	1,327
New York	114	886	1,057	1,000	2,057
New Jersey	118	702	151	820	971
Pennsylvania	....	....	106	....	106
Delaware	29	136	506	165	671
Maryland	41	1,008	3,401	1,052	4,453
Virginia	148	735	1,690	883	2,573
North Carolina	299	1,549	932	1,848	2,780
South Carolina	192	356	708	548	1,256
Georgia	76	410	468	486	954
Florida	1,020	3,005	860	4,025	4,885
Alabama	32	284	313	317	630
Mississippi	42	206	137	248	385
Louisiana	616	1,595	986	2,211	3,147
Texas	358	1,284	432	1,637	2,069
Total	....	....	14,286	18,851	33,137

	Miles.
Total northern	9,334
Total southern	23,803
Total	33,137

For full description of the various harbors in the United States showing depth of water, accessibility, shoals, lights, etc., the reader is referred to the cities described separately in this work. See article Coast Survey: see, also, Hunt's *Mer. Mag.*, ix., vol. ii., 300; *South. Lit. Mess.*, xx., p. 25, vol. xi.

According to an act of Congress, 1813, the President

of the United States, with the consent of the State authorities, is authorised, for the defense or security of any of the ports or harbors of the United States in time of war, to sink hulks and other impediments at the month of such harbors, to prevent the ingress of the enemy. DUNLAP'S *Digest*, p. 500.

Harburg, a sea-port town of Hanover, province of Luneburg, on the left bank of the southern branch of the Elbe, opposite Hamburg, which stands on the right bank of the northern branch of that river. The distance between Harburg and Hamburg is about 4½ miles, and regular steam communication is maintained between them at least six or eight times a day. Harburg communicates also with Hanover by a railway, and carries on a considerable trade, chiefly transit, between Hamburg and the countries south of the Elbe. It has manufactures of linen, hosiery, soap, starch, refined wax, leather, etc. It is a place of some strength, being surrounded by walls, and defended by a citadel. Population, 5500.

Hardness, that property in bodies by which they resist abrasion from the impression of any other substance. The method pursued in constructing tables of the hardness of different substances is by observing the order in which the articles tried are capable of cutting or scratching one another. The following table, extracted from Magellan's edition of CRONSTEDT'S *Mineralogy*, was taken from Quist, Bergman, and Kirwan:

	Hardness.	Spec. grav.
Diamond, Ormus..	20	3·7
Pink diamond.....	19	3.4
Bluish do.....	19	3·3
Yellowish do.....	19	3 3
Cubic do.....	18	3·2
Ruby.....	17	4·2
Pale Ruby, Brazil.	16	3·5
Ruby spinel.....	13	3·4
D'p blue sapphire.	16	3·8
Ditto paler.....	17	3 8
Topaz.....	15	4 2
Whitish do.....	14	3·5
Bohemian do.....	11	2·8
Emerald.....	12	2.8
Garnet	12	4·4
Agate.....	12	2·6
Onyx..... ...	12	2.6
Sardonyx.....	12	2·6
Occl. amethyst....	11	2·7
Crystal.....	11	2·6
Cornelian.....	11	2·7
Green jasper.....	11	2·7
Red. Yel. do.....	9	2·6
Schoerl.....	10	3·6
Tourmalin.....	10	3·0
Quartz.....	10	2·7
Opatz.....	10	2·6
Chrysolite.....	10	3·7
Zeolite.....	8	2·1
Fluor.....	7	3·5
Calcareous spar...	6	2·7
Gypsum.....	5	2·3
Chalk.....	3	2·7

A similar but shorter table is now generally used, in which diamond is rated at 10.

Hardware (Ger. *Kurze waaren*; Du. *Yzerkramery*: Da. *Isenkraawarer*; Sw. *Järnkram*; Fr. *Clinquaillerie, Quincaillerie*; It. *Chincaglia*; Sp. *Quincalleria*; Port. *Quincalharia*: Rus. *Mjelotzchnue tovarii*) includes every kind of goods manufactured from metals, comprising iron, brass, steel, and copper articles of all descriptions. Birmingham and Sheffield are the principal seats of the British hardware manufactures; and from these, immense quantities of knives, razors, scissors, gilt and plated ware, fire-arms, etc., are supplied, as well for exportation to most parts of the world, as for home consumption. The hardware manufacture is one of the most important carried on in Great Britain, and from the abundance of iron, tin, and copper ores in the country, and the inexhaustible coal mines, it is one which seems to be established on a very secure foundation. The late Mr. Stevenson, in his elaborate and excellent article on the statistics of England, in the *Edinburg Encyclopædia*, published in 1815, estimated the value of all the articles made of iron in Great Britain, at £10,000,000, and the persons employed in the trade at 200,000. Mr. Stevenson estimated the value of all the articles made of brass and copper at £3,000,000, and the persons employed at 50,000; and he further estimated the value of steel, plated, and hardware articles, including toys, at £4,000,000, and the persons employed at 70,000. So that, assuming these estimates to be nearly correct, the total value of the goods produced from different sorts of metals in England and Wales, in 1815, must have amounted to the sum of £17,000,000, and the persons employed to 320,000. There is reason to believe that this estimate, in so far, at least, as respects the value of the manufacture, was at the time decidedly too high; but at this moment it is most probably within the mark. There has been a very extraordinary augmentation of the quantity of bar and pig iron produced within the last 15 years; and the rapid increase of Birmingham and Sheffield, as well as of the smaller seats of the hardware manufacture, shows that it has been increased in a corresponding proportion. We have been assured, by those well acquainted with most departments of the trade, that if to the iron and other hardware manufactures of England be added those of Scotland, their total aggregate value can not now be reckoned at less than £17,500,000 a year, affording *direct* employment, in the various departments of the trade, for at least 360,000 persons.

Fall of Prices.—Owing partly to the reduced cost of iron, but incomparably more to improvements in manufacturing, a very extraordinary fall has taken place in the price of most hardware articles during the last 15 or 18 years. In some articles the fall exceeds 80 per cent.; and there are but few in which it does not exceed 30 per cent. In consequence, the poorest individuals are now able to supply themselves with an infinite variety of commodious and useful articles, which, half a century ago, were either wholly unknown, or were too dear to be purchased by any but the richer classes. And those who reflect on the importance of the prevalence of habits of cleanliness and neatness, will readily agree with us in thinking that the substitution of the convenient and beautiful hardware and earthenware household articles, that are now everywhere to be met with, for the wooden and horn articles used by our ancestors, has been in no ordinary degree advantageous. But it is not in this respect only that the cheapness and improvement of hardware is essential. Many of the most powerful and indispensable tools and instruments used by the laborer come under this description; and every one is aware how important it is that they should be at once cheap and efficient. See CUTLERY and IRON.

Dr. Friedenberg in his German translation of *Babbage's Economy of Machinery and Manufactures* gives some curious information concerning the Berlin castings. Such are the fineness and delicacy of the separate arabesques, rosettes, medallions, etc., of which the larger ornaments are composed, that it sometimes requires nearly 10,000 of them to make a pound weight. The gray iron from which they are made may be taken as being worth about 6s. per cwt.; and the following table drawn up from the price-list of a Berlin manufacturer, a few years ago, will show to what an almost incredible height this value per cwt. is increased:

Articles.	Number to 1 cwt.	Price each.	Price per cwt.
		s. d.	£
Buckles, 3¼ inches long by 2½ broad.	2,640	2 6	330
Neck-chains, 18 inches long by 1 broad, in 40 pieces.....	2,310	6 0	693
Bracelets, 7 inches long by 2 broad, in 72 pieces.....pairs	2,090	8 6	880
Diadems, 7½ inches high by 5½ broad.....	1,100	16 6	907
Sevigne points, 2¼ inches long by 1½ broad.....	9,020	4 6	2,029
Sevigne ear-rings, 3 inches long by ⅝ broad, in 24 pieces.....pairs	10,450	5 8	2,743
Shirt buttons.....	88,440	0 8	2,948

We here find that iron in the form of shirt buttons commanded a market at a price nearly 10,000 times as great as that which it sold for as gray iron! And about the year 1820, when the fashion was at its height, the value was still greater; for these iron ornaments then sold for nearly their weight in gold. The great saleable value of these productions has led to a result similar to that which so many other branches of industry exhibit; obscure manufacturers make molds from the casts which others had been at the expense

of designing and modeling, and produce inferior and cheap specimens from these molds. The real Berlin castings worthy of the name (such we may presume as those which graced the Great Exhibition), must always command a high price if sold at all, from the extraordinary care required in their production.—Dodd's *Curiosities of Industry*, London, 1856.

Harmonica, a musical instrument, consisting of a number of glass cups fixed upon a revolving spindle, and made to vibrate by friction applied to their edges. Mr. Puckeridge, an Irishman, is said to have been the first to use a set of drinking-glasses, fixed on a table, and tuned to form a scale by putting more or less water into each. They were made to sound by passing a wet finger round their edges. These were improved by Mr. Delaval, and still further by Dr. Franklin, and were called "the musical glasses." Their tone is sweet and melancholy, and of a peculiar *timbre*, which produces a painful effect on the nerves of some persons. It appears, however, that the use of musical drinking-glasses was described in a work (*Mathematische und Philosophische Erquickstunden*), published by G. P. Harsdorfer, at Nuremberg in 1677. What was called a harpsichord-harmonica, in which finger-keys like those of a piano-forte were used instead of direct contact of the fingers with the revolving glasses, was invented by Rölling at Vienna, and Klein at Pressburg. Another harmonica was invented by the Abate Mazzucchi, who employed the friction of a hair-bow to produce the sounds of the glasses. A stringed harmonica was invented at Augusta, in 1788, by John Stein, an eminent organ-builder. It consisted of a double stringed (wire) piano-forte, combined with a sort of spinnet, to be used together or separately. Its effects are said to have been remarkable.

Harp. It is traced to the earliest nations. David played on the harp before Saul.—1 *Sam.* xvi. 23. The lyre of the Greeks is the harp of the moderns. The Romans had their harp; so had the Jews, but it had very few strings. The Cimbri or English Saxons had this instrument. The celebrated Welsh harp was strung with gut; and the Irish harp, like the more ancient harps, with wire.

Harpagines (*ἁρπάγη*), in *Antiquity*, grappling-irons which were flung with violence against the rigging of an enemy's ship, and, when entangled there, were used to drag the ship within reach, so that it might be boarded to more advantage, or destroyed.

Harpings, the fore part of the wales which encompass the bow of a ship, and are fastened to the stem, being thicker than the after-part of the wales, in order to strengthen the ship in this place, where she sustains the greatest shock of resistance in plunging into the sea, or dividing it, under a great pressure of sail.

Harpoon, or **Harping-Iron**, a spear or javelin used for striking whales, etc. The *gun-harpoon* is a weapon used for the same purpose, but it is fired from a gun instead of being thrown by the hand. It is formed entirely of metal, and has a chain attached to it, to which the line is fastened. See Scoresby's *Arctic Regions*. *Harpooner*, the man that throws the harpoon in fishing for whales.

Hats (Ger. *Hüte*; Du. *Hoeden*; Fr. *Chapeaux*; It. *Capelli*; Sp. *Sombreros*; Rus. *Schlopü*), coverings for the head in very general use. They are made of very various forms and sorts of material. They may, however, be divided into two great classes, viz, those made of fur, wool, silk, etc., and those made of straw; the former being principally worn by men, and the latter by women. Hat is a term of Saxon derivation, from *hact*, a cover for the head. It is sometimes called *castor*, from its being made of the fur of the castor or beaver. As a piece of dress, the period of its introduction is not certain, although it may with great probability be referred to the early distinctions of Roman Catholic dignitaries. Froissart chronicles, that it was "saide to the cardynals, Sirs, advyse you if ye delyvere us a Pope Romayne, we be content, or els we woll make your heddes reeder than your hattes be;" from which, and from many other documents, it appears that at this period, as well as for some centuries after, hats were generally of a scarlet or red color, and made of "a fine kinde of haire matted thegither." A "hatte of blever," about the middle of the 12th century, was worn by some one of the "nobels of the lande, mett at Clarendom;" and Froissart describes hats and plumes which were worn at Edward's court in 1340, when the Garter order was instituted. In the diary of Henry's secretary, there is "ane scarlet beever hatte" presented on New Year's day, 1443. Even at this early period hats were of various shapes, both in the crowns and the brims—the latter being chiefly broad, sometimes narrowing toward the back, and a little bent up and scooped in front. In Henry's privy purse expenses, during his congress with Francis I. in 1520 or 1521, there is "paid for ' atte and plume for the king, in Boleyn, xv·;" and in Wolsey's inventory, taken on his resigning the great seal to Sir Thomas More, there are no fewer than five mentioned. The fashion of this article was then much more diversely capricious than even now, as will appear from an extract from Stubbs's *Anatomie of Abuses*, published about 1585: "Sometimes they use them sharpe on the crowne, pearking up like the spire or shaft of a steeple, standing a quarter of a yard above the crowne of theire heads; some more, some lesse, as please the fantasies of their inconstant mindes. Othersome be flat, and broade on the crowne, like the battlements of a house. Another sorte have rounde crownes, sometimes with one kind of bande, sometimes with another; now black, now white, now russed, now redde, now greue, now yellow; now this, now that; never content with one colour or fashion two dales to an end. And as the fashions be rare and strange, so is the stuffe whereof their hattes be made divers also; for some are silk, some of velvet, some of taffetie, some of sarsnet, some of wool, and which is more curious, some of a certaine kinde of fine haire; these they call bever hattes, of xx. xxx. or xl. shillings price, fetched from beyonde the seas, from whence great sorte of other vanities doe come besides; and so common a thing it is, that every servyng man, countreiman, and other, even all indifferently, doe weare of these hattes." About the beginning of 1700, the crowns of hats were mostly round, much lower than before, and had very broad brims, resembling what are now occasionally called Quakers' hats, the protusive incumbrance of which soon suggested the convenience of their being turned up in front; fashion dictated the upbending of another side or flap, and ultimately a third, so that by this progress, in 1704, the regular three-cocked hat became the order of the day, when feathers ceased to be usually worn. Near the middle of the 18th century, a round-edged but flat-topped and full-brimmed hat got into very general use, and the flat and other cocked hats now dwindled almost into a mere distinction of real or assumed rank. 25 years after this, a very near approach to that of the present times became fashionable, and, within 10 years, altogether superseded the ordinary use of the cumbrous and antique cock.

Plumes, jewels, silk loops, rosettes, badges, gold and silver bands and loops, have at various periods ornamented this article of dress; metal bands and loops being now esteemed proper only to naval and military "men of honor," and the humble liveried attendants on state, rank, and official dignity. The *opera* or soft-folding hat is the only relic at present in general use of the hats worn by our grandfathers, although it is not improbable that the mutations of fashion may re-introduce the elegant Spanish hat as the precursor, perhaps, of various other styles, as well as the cocked hat, which are not yet entirely discarded.

In the Great Exhibition of 1851 several very novel

styles of hat were introduced by exhibitors. It is remarked in the Jury Report respecting them that "in an article of fashion and of such constant use as hats, it does not appear to be easy to change the habits and tastes of the wearers, or to induce them to adopt a new costume."

Until recent times hats were chiefly produced by the art of felting, an art which some persons suppose to have been practiced by the nations of antiquity. It is thought that *lana coacta*, used for soldiers' cloaks and for Lacedemonian hats, was felted wool, but others state that it was only knitted wool. In Roman Catholic countries, St. Clement is the reputed inventor of felt. This personage is said to have put carded wool into his sandals to protect his feet during a pilgrimage, and that the effect of the moisture, warmth, and friction converted the wool into a felted cloth. The hatters' annual festival is on the 23d November, St. Clement's day.

Hat-making embraces two distinct kinds of manufacture, viz., *of felted* and *covered* hats—the covering of the latter being generally plush. *Felted* hats comprehend two classes, differing chiefly in the materials used in making—the processes being nearly identical. The lower class is marked by inferior ingredients, unmixed with beaver, and embraces *wool*, *plated* and *short nap* hats. *Wool* hats are made entirely of coarse native wool and hair stiffened with glue. Before the emancipation act these hats were largely exported for negroes' wear; but the manufacture is now almost extinct. *Plates* have a *nap* or pile rather finer than their body, and are sometimes *waterproof* stiffened. *Short naps* are distinguished from *plates* by additional kinds of wool, viz., hare's back, seal, neuter or nutria, musquash (Muscovy cat), and are all waterproof stiffened.

The second class may be said to comprehend two orders, called *stuff* and *beaver* hats. The first includes mottled and stuff bodies. The latter term is not used generally, as all *stuffs* are understood to be of this sort when *mottled* is not expressed. *Mottled bodies* are made chiefly of fine Spanish wool, and inferior rabbit down or coney wool. *Stuff bodies* consist of the best hare, Saxony, and red wools, mixed with Cashmere hair and silks. *Stuff* hats are *napped*, that is, covered with pile of mixed seal, neuter, hare's back, inferior beaver, and musquash. *Beaver* hats are, or ought to be, napped with beaver only; the lower-priced qualities with *brown wooms* taken from the back; the more valuable kinds with *cheek* and *white wooms*, such being the finest parts of the fur found on the belly and cheeks of the beaver.

The manufacture of a beaver hat involves a number of curious and interesting processes, the most important of which is *felting*, or the art of combining animal fibres in such a way as to form, without weaving, a thick compact cloth. The felting property of animal fibres depends on their peculiar structure, which, as revealed by the microscope, appears to be notched or jagged at the edges, with teeth directed from the root toward the extremity. Wool in the yolk, or with the natural grease adhering to it, does not readily felt, the jagged portions being smoothed over or filled up with the oil; but when the fibres of clean wool or hair are made to undergo a gentle friction under the influence of moisture and heat, they readily felt together.

Several of the furs mentioned above are used for hats. The beaver has been so assiduously hunted during many years that it is now becoming a rarity, and the fur of other animals is substituted for it. The coypu furnishes nutria skin; the musquash or muskrat, the hare, and the rabbit, yield fur for the nap of the hat, while the body is made of lamb's wool, or of the woolly hair of the llama or vicuna. A beaver hat, properly so called, has a body or foundation of rabbits' fur, with a beaver nap, although the beaver, for the reason above stated, is often mixed with a more common fur. Such a hat has a pleasant softness and plasticity, and readily molds itself to the shape of the head, presenting a marked contrast to the hard, horny, silk hat, which has nearly superseded it. Still, however, there must always be certain persons who, not objecting to the price, will continue to keep alive this, the most interesting branch of the hat manufacture. See FUR TRADE.

STATEMENT OF THE FOREIGN EXPORTS OF HATS FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30TH, 1856.

Whither exported.	Hats, caps, and bonnets, flats, braids, plaits, etc.	Silk and manufactures of silk.		
	Of Leghorn, straw, chip, or grass, etc.	Hats of fur or silk.	Hats of palm-leaf.	Hats and bonnets.
Danish West Indies	....	$205	$2,026	....
Dutch West Indies	$136	256	148	....
Dutch Guiana	....	30	....	....
Belgium	200	....	....	....
England	$3,134	....	1,678	....
Canada	7,878	113,488	2,902	$14,117
Other Brit. N. A. Pos.	....	29,764	645	....
British West Indies	....	1,814	1,789	....
British Honduras	....	1,187	80	....
British Guiana	....	....	320	....
Br. Pos. in Africa	....	2,554	198	....
British Australia	4,444	1,710	....	....
France on the At.	2,872	....	....	....
France on the Med.	160	....	....	....
Fr. Nor. Am. Pos.	....	65	84	....
Cuba	8,699	7,660	19,087	....
Porto Rico	....	....	1,068	....
Portugal	....	....	130	....
Madeira	....	....	189	....
Cape de Verd Isls.	....	47	1,086	....
Por. in Africa	....	....	8,784	....
Hayti	....	1,494	1,473	....
San Domingo	....	....	27	....
Mexico	495	1,456	601	120
Central Republic	709	699	2,866	....
New Granada	2,564	1,005	1,065	....
Venezuela	....	81	1,429	....
Brazil	....	1,042	9,619	....
Uruguay	700	....	879	....
Buenos Ayres	4,608	....	....	....
Chili	2,805	3,947	563	....
Peru	....	935	120	....
Sandwich Islands	3,821	....	....	....
China	....	2,853	40	....
Whale Fisheries	295			....
Total	$60,175			$14,237
From warehouse	$27,847			$14,117
Not from warehouse	32,328			120

STATEMENT SHOWING THE FOREIGN IMPORTS OF HATS INTO THE UNITED STATES FOR THE YEAR ENDING, JUNE 30TH, 1856.

Whence imported.	Silk and manufactures of silk.	
	Hats and bonnets.	Hats, caps, and bonnets, flats, braids, plaits, etc., of Leghorn, straw, chip, or grass, etc.
Danish West Indies	....	$16,634
Hamburg	$28	954
Bremen	2,381	51,468
Holland	....	27
Dutch West Indies	..	101,549
Dutch Guiana	....	2,248
Belgium	454	6,468
England	16,629	381,828
Scotland	275	1,427
Gibraltar	....	3,886
Canada	....	5,262
Other Brit. N. Amer. Pos.	....	48
British West Indies	....	16,965
British East Indies	....	235
France on the Atlantic	79,987	387,798
France on the Mediterranean	282	616
Spain on the Atlantic	....	149
Spain on the Mediterranean	....	15,811
Philippine Islands	....	8
Portugal	....	82
Tuscany	21	51
Other ports in Africa	....	27
Mexico	267	....
Central Republic	....	81
New Granada	2,558	....
China	....	184,769
Total	$102,847	$221,795

Straw Hats.—It is most probable that the idea of *plaiting straws* was first suggested by the making of baskets of oziers and willow, alluded to by Virgil, in his

Pastorals, as one of the pursuits of the agricultural population of Italy. We are ignorant of the period when the manufacture of straw plait first became of importance in that country; but it appears from CORYAT's *Crudities*, published in 1611, that "the most delicate strawen hats" were worn by both men and women in many places of Piedmont, "many of them having at least an hundred seames." It is evident, therefore, that the art of straw plaiting must have arrived at great perfection upward of two centuries since; but it does not appear to have been followed in England for more than 70 or 80 years, as it is within the remembrance of some of the old inhabitants of the straw districts, now alive, that the wives and daughters of the farmers used to plait straw for making their own bonnets, before straw-plaiting became established as a manufacture. In fact, the custom, among the women of England, of wearing bonnets, is comparatively modern. It is scarcely 100 years since "*hoods and pinners*" were generally worn, and it was only the ladies of quality who wore small silk hats. See MALCOLM's *Manners and Customs*.

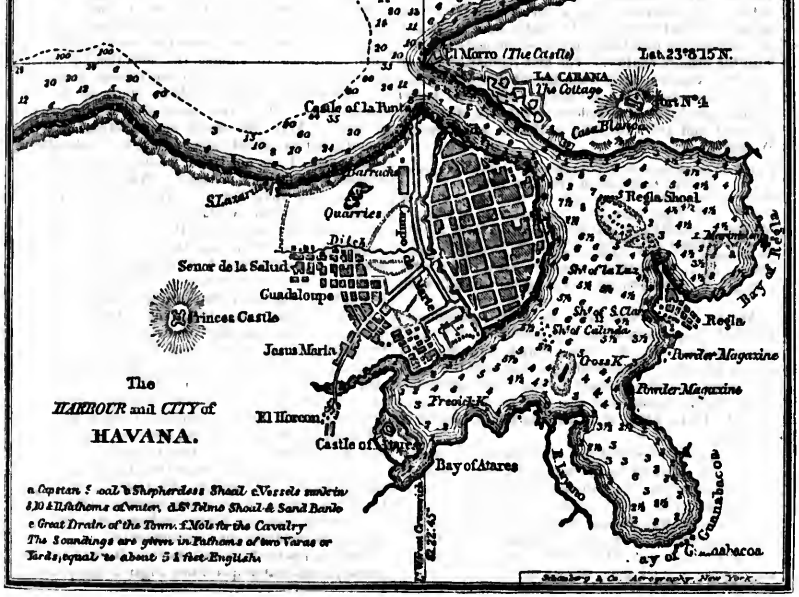
Hatch, in mining, an opening into a mine, or in search of one. The term *hatches* is also applied to the earthen dams used in Cornwall to prevent the water that issues from the stream-works and tin-washes from running into the fresh rivers. *Hatch*, or *hatches*, properly the grate or frame of cross-bars laid over a ship's deck, now denominated "hatch-bars." The lid or cover of a hatchway is also called hatches. Hatch is sometimes applied to the opening in the ship's deck; but this is properly called the hatchway.

Hatchway, a square or oblong opening in the deck of a ship, affording a passage into the hold, or from one deck to another. Hatchway is also applied to the passage through a falling door in the top of a house. In ships, the main-hatchway is placed before the mainmast, and is the largest in the ship; the fore-hatchway is a little abaft the foremast, or at the break of the forecastle; and the after-hatchway between the mainmast and the mizen.

H[illegible]**l**, the sea term for pulling upon a rope directly. *To h*[illegible] *the wind*, to bring a ship to sail close by the wind after running in some other direction.

Havana, or **Havannah**, on the north coast of the noble island of Cuba, of which it is the capital, the Moro castle being, according to Humboldt, in lat. 23° 8′ 15″ N., long. 82° 22′ 45″ W. The population of the city and suburbs is said to be (1851), little short of 200,000. In 1827, the resident population amounted to 94,023; viz., 46,621 whites, 8,215 free colored, 15,347 free blacks, 1,010 colored slaves, and 22,830 black slaves. The port of Havana is the finest in the West Indies, or, perhaps, in the world. The entrance is narrow, but the water is deep, without bar or obstruction of any sort, and within it expands into a magnificent bay, capable of accommodating 1000 large ships; vessels of the greatest draught of water coming close to the quays. The city lies along the entrance to, and on the west side of, the bay.

From its position, which commands both inlets to the Gulf of Mexico, its great strength, and excellent harbor, Havana is, in a political point of view, by far the most important maritime station in the West Indies. As a commercial city, it also ranks in the first class; being, in this respect, second to none in the New World, New York only excepted. For a long period, Havana engrossed almost the whole foreign trade of Cuba; but since the relaxation of the old colonial system, various ports, such, for instance, as Matanzas, that were hardly known 30 years ago, have become places of great commercial importance. The rapid extension of the commerce of Havana is, therefore, entirely to be ascribed to the freedom it now enjoys, and to the great increase of wealth and population in the city, and generally throughout the island.



The suburb Regla is on the opposite side. The Moro and Punta castles, the former on the east, and the latter on the west side of the entrance of the harbor, are strongly fortified, as is the entire city; the citadel is also a place of great strength; the fortifications have been erected on such of the neighboring heights as command the city or port. The arsenal and dockyard lie toward the western angle of the bay, to the south of the city. In the city, the streets are narrow, inconvenient, and filthy; but in the suburbs, now as extensive as the city, they are wider and better laid out. Latterly, too, the police and cleanliness of all parts of the town have been materially improved.

The advance of Cuba, during the last half century, has been very great; though not more, perhaps, than might have been expected, from its natural advantages, at least since its ports were freely opened to foreigners in 1809. It is at once the largest and the best situated of the West India Islands. It is about 605 miles in length; but its breadth from north to south nowhere exceeds 117 miles, and is in many places much less. Its total area, exclusive of that of the numerous keys and islands attached to it, is about 33,000 square miles. The climate is, generally speaking, delightful; the refreshing sea-breezes preventing the heat from becoming excessive, and fitting it for the growth of a vast variety of products. Hurricanes, which are so destructive in Jamaica and the Caribbee Islands, are here comparatively rare; and, when they do occur, far less violent. The soil is of very various qualities: there is a considerable extent of swampy marshes and rocks until for any sort of cultivation; but there is much soil that is very superior, and capable of affording the most luxuriant crops of sugar, coffee, maize, etc. The ancient policy of restricting trade to two or three ports, caused all the population to congregate in their vicinity, neglecting the rest of the island, and allowing some of the finest land and best situations for planting to remain unoccupied. But since a different and more liberal policy has been followed, population has begun to extend itself over all the most fertile districts, wherever they are to be met with. Still, however, only a very small proportion of the best land of the island is under cultivation, and its products and population might be doubled or trebled with the utmost facility. The first regular census of Cuba was taken in 1775, when the whole resident population amounted to 170,370 souls. Since this period the increase has been as follows: 1791, 272,140; 1817, 551,998; and 1827, 704,867; exclusive of strangers. We subjoin a

CLASSIFICATION OF THE POPULATION OF CUBA ACCORDING TO THE CENSUSES OF 1775 AND 1827.

	1775.			1827.		
	Male.	Female	Total.	Male.	Female.	Total.
Whites	54,555	40,864	95,419	168,658	142,398	311,051
Free mulattoes	10,021	9,006	19,027	28,058	29,456	57,514
Free blacks	5,959	5,629	11,588	23,904	25,079	48,980
Slaves	28,774	15,062	44,336	183,290	103,652	286,942
Total	99,309	71,061	170,370	403,905	300,582	704,487

Another census was taken in 1842, according to which the population is said to amount to 1,007,620, viz.: whites, 418,291; free colored, 152,838; and slaves, 436,491. But it is alleged that both the slave and white population, especially the former, is underrated in this census, and that the population is, at present (1851), little, if at all, short of 1,430,000 or 1,450,000.

The rapid increase of the slave population is principally to be ascribed to the continued importation of slaves from Africa. In some years, since the peace of 1815, as many as 40,000 blacks are believed to have been imported into Cuba in a single year. Spain had indeed agreed by treaty in 1820 to abolish the trade; but this treaty was little better than a dead letter, and it is only since 1865, when a more efficient treaty with Spain was entered into that the trade has sustained any considerable diminution. But though it be no longer under the Spanish flag, it is continued, though to a much less extent, under other flags. At present, however, not more than from 2000 to 3000 negroes are supposed to be annually imported. But though it were to be wished, as well for the interests of the island as of humanity, that the further importation of slaves should be put a stop to, we are not of the number of those who think that it would be good policy rashly to agitate the question of the emancipation of slaves in Cuba. Their treatment in that island, as in all the other colonies of Spain, has always been singularly humane; and the results of their emancipation in Hayti and the British islands have not been such as to offer much inducement to the authorities in Cuba to take up this difficult question. It may, no doubt, be forced on their consideration; and the emancipation of so many slaves in their immediate vicinity will materially increase the difficulty of maintaining the existing order of things. Under these circumstances, good policy would seem to suggest that timely provision should be made for the gradual bringing about of that emancipation which is, perhaps, inevitable, coupling it, if that be practicable, with some scheme for insuring the supply of some sort of compulsory labor.

Whatever opinion may be formed of slavery in the abstract, we believe it would not be difficult to show that it has contributed, in no ordinary degree, to the rapid advancement of Cuba. Industry will always be proportioned to the strength of the motives by which it is occasioned; and in countries like Cuba, of great natural fertility and under a tropical sun, where a half or more of the articles indispensable in Europe would be useless, it were absurd to imagine that the inhabitants, supposing them to be free, should exhibit the persevering industry of free laborers in the temperate zone. The *dolce far niente* is in such countries the *summum bonum*; and we believe it will be found that the extensive cultivation of sugar, and of most other commercial products within the tropics, depends on the maintenance of slavery, or of compulsory labor of one kind or other. The people of England may be but little affected, at least directly, by these considerations, and may, therefore, on the principle of *fiat justitia, ruat cælum*, think themselves warranted in using their influence to enforce the abolition of slavery wherever it exists. But to the Cubans, Brazilians, the inhabitants of the southern States of America, and a host of others, this question is of the last importance. Were the slaves emancipated, not in law merely, but practically and in fact, the probability is that neither Cuba nor Brazil would, in a dozen years, export a single cwt. of sugar. Why should they do so any more than Hayti? The blacks, were they really emancipated, would be able to support themselves in that state in which they wish to live, without engaging in any thing like the severe labor of sugar planting; and under such circumstances it would be a contradiction to suppose they should engage in it. But it might be difficult, perhaps, to show what good consequences would result from such a change. It is at all events clear that the commerce of the world and the comforts of all civilized nations would be seriously impaired; and it is by no means clear that the condition of the blacks would be sensibly, or at all, improved. Besides slaves, the planters employ free laborers, mostly of an Indian mixed breed, who work for moderate wages. These, however, are little engaged in the fields, but in other branches of labor, and particularly in bringing sugar from the interior to the shipping ports. The articles principally exported from Cuba are, sugar of the finest quality, coffee, copper ore, tobacco, beeswax, honey, molasses, etc. Of these, the first is decidedly the most important.

But, exclusive of the exports from Havana and Matanzas, considerable quantities sugar is shipped from

Cienfuegos, Nuevitas, Holguin, Manzanilla, and other ports; and a good deal is also shipped without entry or payment of duty. We may, therefore, safely add 10 per cent. to the other quantities for the omissions now referred to; which will make the total exports in 1840, 403,200,000 lbs. or 180,000 tons. Since then the production has considerably increased; and the total exports may at present (1856) be safely estimated at above 335,000 tons. The consumption of the island is supposed to amount to about 20,000, so that its total produce may be taken at from 350,000 to 360,000 tons.

Next to sugar, coffee was the most valuable vegetable production of Cuba. Its cultivation increased, for a while, with unprecedented rapidity. In 1800, there were but 80 plantations in the island; in 1817, there were 779; and in 1827, there were no fewer than 2,067, of at least 40,000 trees each! In 1804, the exportation from Havana was 1,250,000 lbs.; in 1809, it amounted to 8,000,000 lbs.; from 1815 to 1820, it averaged annually 18,186,200 lbs.; and in 1827 it amounted to 35,837,175 lbs.! The exports from the other ports increased with equal rapidity. They amounted, in 1827, to 14,202,406 lbs.; making the total exportation for that year 50,039,581 lbs. But the subsequent low prices, or rather, perhaps, the greater attention paid to the culture of sugar, not only checked the further increase of the coffee plantations, but made several of them be abandoned. More recently, however, the increase in the price of coffee and the low price of sugar has occasioned a reaction, and the culture of coffee is again extending. The exports of it in 1848 amounted to 17,354,425 lbs., to which 10 per cent. may be added for deficient entries.

Tobacco differs much in quality: but the segars of Cuba are esteemed the finest in the world. (See Tobacco). Formerly, the culture and sale of this important plant were monopolized by government; but since 1821, this monopoly has been wholly relinquished, there being no longer any restrictions either on the growth or sale of the article. The cultivator pays a duty, which, however, is to a great extent evaded, of 1 per cent. *ad valorem* upon his crop. In consequence of the freedom thus given to the business, the culture and exportation of tobacco are both rapidly extending; so much so, that the value of the produce of tobacco in 1849 was estimated at above 5,000,000 dollars, being considerably more than double the value of the coffee produced. Molasses, rum (tafia), wax, and honey, are also largely produced, and form important articles of trade. See Cuba.

Statement of Imports at the Port of Havana, from January 1 to September 30, 1855, compared with the same, for the same Periods, in 1854 and 1853. [From Custom-House Returns.]

Countries.		1855.	1854.	1853.		1855.	1854.	1853.
United States	Flour, Barrels.	864	2,808	175	Rice, Quintals.	77,905	93,998	60,089
Spain		109,434	117,519	120,852		93,945	28,420	28,458
Other Countries		....	....	....		29,746	1,474	7,092
Total		110,298	120,327	121,027		201,596	123,892	95,639
United States	Lumber, M feet.	9,635	10,004	8,015	Codfish, Quintals.	19,241	18,199	21,249
British Provinces		1,273	388	109		29,185	23,171	24,940
European		....	....	....		11,737	9,259	10,327
Total		10,908	10,392	8,124		60,163	50,629	56,516
United States	Lard, Quintals.	61,477	68,536	45,636	Jerked beef, Quintals.	....	....	....
South America		....	....	....		185,739	150,477	148,477
United States	Hhd. shooks, Number.	87,319	46,026	49,054	Box shooks, Number.	568,495	385,740	386,732
British Provinces		....	....	....		39,257	12,755	20,092
Total		87,319	46,026	49,054		607,752	398,495	406,824
Spain	Oil, Jars.	365,828	177,786	190,993	Wine, Pipes	26,574	28,294	16,403

Number and Tonnage of Vessels which entered the Port of Havana from Jan. 1 to Sept. 30, 1855.

Nationality.	No. of vessels.	Tonnage.	Nationality.	No. of vessels.	Tonnage.
American	708	299,127	Danish	12	3,049
Spanish	398	87,827	Bremen, &c.	14	4,493
British	92	39,675	Hamburg	4	860
French	110	29,967	Other nations	42	9,819
Belgian	13	5,217	Total	1,406	482,867
Dutch	13	2,812			

The table which we subjoin gives the amount of American, Spanish and English tonnage employed, with the per centage which each comprises of the entire commerce of the port:

Years.	American.	per ct.	Spanish.	per ct.	British.	per ct.
1846	125,833	88	96,535	29	68,206	21
1847	151,174	40	100,868	27	72,275	19
1848	170,817	44	107,707	28	65,214	17
1849	200,069	49	106,135	26	65,274	16
1850	208,299	57	107,230	29	65,136	12
1851	214,016	60	114,216	20	58,308	10
1852	208,120	59	114,338	22	55,127	11
1853	204,188	57	111,029	21	58,324	11
1854	230,998	60	111,821	20	59,556	11
1855	279,327	62	120,881	20	49,903	08

This table shows that the American tonnage employed in the Havana trade, has increased threefold during the last ten years, and that its amount, relative to the entire tonnage, has nearly doubled, while both the Spanish and English proportions have diminished in relative importance, and even the absolute amount of British tonnage employed in this business, has fallen off more than 25 per cent. The only other nation which enjoys any considerable share of this trade is France. The French tonnage in 1846 was 7,213 or 225 per cent. of the whole, and in 1855, 33,522 or 5½ per cent. It would appear from these facts, that the United States are rapidly advancing toward a comparative monopoly of the carrying trade from Havana.

The rates of freights for the last ten years have been subject to great fluctuation, rates to New York varying from 4 rials in September 1849, and August 1855, to 19 rials in March 1854. March a 1 April seem to have been the most favorable months for American freights, and February and March for European. The yearly averages of freight show that while 1854 saw the rates at their highest point, 1855 found them depressed almost to the lowest. From March 1855, when the rate to Cowes and a market was £5 12s. 6d, and to New York 19 rials, there was a regular and rapid fall, hardly checked even by the spring months, until in August 1855, the rate to Cowes was £1 15s., and to New York, 4 rials. At this point rates began to recover.

The price of sugar has fluctuated from 3 3-5 rials in August 1848, to 9 rials in December 1855. From March of last year when the price of brown sugar was 5 3-8 rials, there was a steady rise to the end of the year, so that the average price for the year, 6.65 rials, was higher than for any of the previous years, the lowest yearly average being 4.50 rials for 1848.

Moneys.—One dollar=8 reals plate=20 reals vellon. One doubloon=17 dollars. The merchants reckon 444 dollars=£100, or 1 dollar=4s. 6d. very nearly. There is an export duty of 1¼ per cent. on gold, and 2½ per cent. on silver. It is a curious fact that no description of paper money has ever circulated in Cuba.

Weights and Measures.—One quintal=100 lbs., or 4 arrobas of 25 lbs.; 100 lbs. Spanish=101¼ lbs. English, or 46 kilogrammes. 108 varas=100 yards; 140 varas=100 French ells or aunes; 81 varas=100 Brabant ells; 108 varas=160 Hamburg ells. 1 fanega =3 bushels nearly, or 100 lbs. Spanish. An arroba of wine or spirits=4·1 English wine gallons nearly. A hogshead of sugar=1300 lbs.; a bag of coffee=150 lbs.; a hogshead of molasses=110 gallons; a pipe of tafia or rum=120 gallons; and a bale of tobacco=100 lbs.

The usual commission charged by merchants on the sale of goods is 5 per cent., with a *del credere* of 2½ per cent. If the sales are on credit and guarantied, and a further commission of 2½ per cent. for the returns, whether in bills or produce. On purchases the commission is 2½ per cent., and a further 2½ per cent. if drawn for in bills of exchange. For procuring freight 5 per cent. is charged, and 2½ for insuring the amount. For advances of money the rate is 5 per cent. when no other commission is chargeable. Bill business is done at various rates, from 1 to 2½ per cent. according to its magnitude. These are the rates of the foreign houses; those of the Spanish and Creole merchants are generally higher. There is no obstacle whatever to the establishment of foreigners as merchants in the island. The law says that those who are naturalized in Spain may freely carry on trade with the same rights and obligations as the natives of the kingdom, and that those who have not been naturalized, or have a legal domicile, may still carry on trade under the regulations stipulated in the treaties in force between the respective governments; and in default of such conventional regulations, the same privileges are to be conceded as those enjoyed by Spaniards carrying on trade in the country of which such foreigners are natives. In practice, this last condition is not much attended to; as foreigners are allowed to establish themselves as merchants without any inquiry as to the rights and privileges enjoyed by Spaniards in the country they come from. As to manufacturers and mechanics, the only difficulty that can arise regards their religion. On entering the island every stranger is required to find security in the following terms: "I am responsible and become security in every case for the person and conduct of A. B., arrived from C. in the ship D., binding myself to present him if called on by the government, and to conduct him at my expense to any place that may be designated." This security is easily obtained, and, in fact, encouragement is given to mechanics, and white people of all classes to settle in the island. After landing it is only necessary to apply for a letter of domicile, and to present a certificate that the applicant is of a respectable character, and professes the Roman Catholic religion. Free colored people, however, by a royal order of the 12th March, 1837, are prohibited from landing under any pretense whatever; and so rigorously is this order enforced, that such persons, though acting as seamen, are, on their arrival, taken out of the vessel in which they have come, and are kept in custody until her departure, when they are compelled to proceed again on board and leave the island. The business of a broker is exercised under a royal license, and no foreigner is eligible to the office unless naturalized in the form prescribed by law. In every commercial town a certain number only is allowed, corresponding with the population and trade of the place. In the great cities, the business of merchant is often combined with that of planter; and sometimes, also, the importing merchant keeps a shop or store, where he sells his goods by retail. The foreign merchants are generally regarded as transient visitors, who go there for the purpose of accumulating such a fortune as may enable them to live with some degree of comfort in their own country. As a class they are not considered wealthy, but they are almost all in the full enjoyment of credit. The mercantile capital, as well as the proprietary wealth of the island, may be said to be concentrated in the hands of the Creoles. When the emigrants from the Peninsula make fortunes in the island, they seldom think of returning to Europe. See CUBA.

Haven. (Germ. *hafen.*) The same as *harbor*. See article HARBOR.

Havre, or Havre de Grace, a commercial and strongly-fortified sea-port town of France, on the English Channel, near the mouth of the Seine, on its northern bank, lat. 49° 20′ 14″ N., long. 0° 6′ 38″ E. Population, in 1851, 28,954, to which may be added 5,000 or 6,000 more for the crews of the shipping constantly in the port. It was a saying of Napoleon that "*Paris, Rouen, Le Havre, ne forment qu'une seule ville, dont la Seine est la grande rue.*" Havre being, in fact, the sea-port of Paris, most of the colonial and foreign products destined for its consumption are imported thither. Nearly double the quantity of goods, estimated by weight, is annually imported at Marseilles; but the total value of the imports at Havre amounts very nearly to that of those at the former port. The principal imports are cotton, sugar, coffee, linen thread and linen goods, rice, indigo, tobacco, hides, dyewoods, spices, drugs, timber, iron, tin, dried fish, etc.: grain and flour are sometimes imported and sometimes exported. The principal exports are silks, woolen and cotton stuffs, lace, gloves, and shoes, trinkets, perfumery, champagne and other wines, brandy, glass, furniture, books, etc.

The Harbor, which is the best and most accessible on this part of the French coast, consists of 3 basins separated from each other and from the outer port by 4 locks, and capable of accommodating about 450 ships. A large body of water being retained by a sluice, and discharged at ebb tide, clears the entrance to the harbor and prevents the accumulation of filth, sand etc. Cape de la Heve, forming the northern extremity of the Seine, lies N.N.W. from Havre, distant about 2½ miles. It is elevated 390 feet above the level of the sea, and is surmounted by 2 light-houses 50 feet high. These, which are 325 feet apart, exhibit powerful fixed lights. There is also a brilliant harbor light at the entrance to the port, on the extremity of the western jetty. Havre has 2 roadsteads. The greater or out road is about a league from the port, and rather more than ½ league W.S.W. from Cape de la Heve; the little or inner road is about ½ league from the port, and about ¾ of a mile S.S.E. from Cape de la Heve. They are separated by the sand bank called Leclat; between which and the bank called *Les Hautes de la Rade* is the north-west passage to the port. The Hoc, or southern passage, lies between the last mentioned bank and that of Amfar. In the great road there is from 6 to 7½ fathoms water at ebb; and in the little, from 3 to 3½. Large ships always lie in the former. The rise of the tide is from 22 to 27 feet: and by taking advantage of it, the largest class of merchantmen enter the port. The water in the harbor does not begin perceptibly to subside till about 3 hours after high water—a peculiarity ascribed to the current down the Seine across the entrance to the harbor being sufficiently powerful to dam up for a while the water in the latter. Large fleets, taking advantage of this circumstance, are able to leave the port in a single tide, and get to sea, even though the wind should be unfavorable. See *Plan of Havre*, published by Laurie; *Annuaire du Commerce Maritime; Coulier sur les Phares*, p. 59, etc. The *Chamber of Commerce* of Havre have recently published the following information and instructions for the use of vessels frequenting the port:

"Five buoys have been moored in the shallows Ruvun, under the designation of the Banc de l'Eclat, and Hautes de la Rade.

"These buoys are similar in form, but of different colors, viz.: The first to the northward is white; the

second, white with a black top; the third is black; the fourth is black with a white top; the fifth is red.

"Vessels must always come to anchor at a distance of at least five cables' length outside the line of these buoys, which they may not pass without danger before one hour and a half prior to high water, or four hours after ebb; and they must at all times pass at a distance of five cables' length from the black as well as from the red buoy, both of which are moored on the shallowest parts of these banks. Nevertheless ships may at all hours of the tide frequent the north-western passage, comprised between Cape La Heve and the two northernmost buoys.

"All vessels using the north-western passage, and bound into the inner roadstead (Petit Rade), must steer for the white buoy, the furthest north, and after leaving it a little distance on the starboard hand, should then stand toward the second white buoy, taking care never to come so close to the shore as altogether to lose sight of the lantern of the northernmost light-house on Cape La Heve. When the light of the north-western pier head bears by compass S.E., and the light-houses on the Heve bear by compass N.N.E., the ship may be brought to an anchor.

"Besides the five buoys herein described, one of lesser dimensions has been moored on the shallows of the inner roadstead, at about five cables' length W.N.W. of the north-west pier head. Vessels of light draught of water coming to an anchor in that part of the road, should give this buoy an offing of at least one cable's length."

Most part of the goods imported into Havre are destined for the internal consumption of France. The coasting trade has increased very largely of late years, as is proved by the great increase of French wines, soaps, and other produce imported at Paris from Havre, instead of being sent to the capital by land. The coasting vessels transfer their cargoes partly to steamers and partly to large barges, called *chalands*, which are towed by steam tugs as far as Rouen, and thence by horses to Paris. The foreign trade of the port is also very extensive. There annually enter the port about 800 ships from ports out of Europe. Lines of sailing packets are established between Havre and New York, New Orleans, etc. A regular intercourse by means of steam packets is kept up with London, Southampton, and other ports. The entrances to the basins are too narrow to admit the passage of the largest steamers, which have, in consequence, to remain in the outer port imperfectly sheltered from the winds. Indeed the port is at present inadequate to the proper accommodation of the great and growing trade of which it is the centre, and extensive works have been undertaken for its improvement. There belonged to the port, on the 31st December, 1851, 368 sailing vessels of the aggregate burden of 71,363 tons, and 32 steamers, aggregate burden 4,259 tons. The customs duties which in 1837 produced 18,123,993 francs, had increased in 1851 to 26,164,000 francs. *The Moneys, Weights, and Measures* of Havre are the same as those of the rest of France; for which, see articles Bordeaux, Coins, France, and Weights and Measures.

Pilotage.—From the outer roadstead 28 francs per 1st 100 tons; 25 francs 2d do.; 23 francs 3d do.; and the pilot to be fed. If the vessel be boarded nearer the port the charge is lessened accordingly. Boats, from 9 to 30 francs according to the distance.

Port Charges.—With coals, 75 per cent. per ton in dock; 37½ do. in harbor. General cargo, 2 francs 50 centimes if in dock; 1 franc 65 centimes if in harbor. Salvage dues, 5 centimes, and 10 per cent. Tonnage do. 66⅔ centimes and 10 per cent. No charge for lights, buoys, or beacons.

Ballast delivered alongside.—Clean, 1 franc 95 centimes per ton; common do. 1 franc 14 centimes do. The ton of clean ballast may be estimated to weigh about 15 or 16 cwt. The ton of common ballast, about 20 cwt.; a cart marked ½ metre is one ton; a cart marked 1 metre is two tons. Cost of removal of ballast landed from ship, 64 centimes per ton, without distinction of quality.

Harbor Rules.—1. It is forbidden to have fire, or lighted candle, or to smoke on board ships in the harbor.

2. Vessels coming into and lying in the docks must have the lower and topyards topped up, jib-booms and martingales rigged in, and anchors taken in. The wharf alongside the vessel must be swept every evening.

3. No gunpowder (whatever may be the quantity), is allowed to remain on board, and must be deposited in the gunpowder warehouse.

4. All foreign sailors found away from their ships after 10 o'clock at night, from the 1st of April to the 1st of October, and after 9 o'clock from the 1st of October to the 1st of April, shall be conveyed to prison and fined. Sailors are forbidden to wear sheathing knives ashore.

5. The manifest of the cargo, signed by the captain, must be exhibited to and signed by the custom-house officers before being taken ashore. The vessel must be reported at the custom-house within 24 hours after arrival.

6. Tobacco, snuff, segars loose or in boxes, belonging to the captain, officers, and mariners, to be declared as exactly as possible. All the tobacco, snuff, and segars declared or not declared, to be exhibited to the custom-house officers, when they come and make the visit on board. After such exhibition, if any quantity of tobacco and segars be found on board, it shall be seized, the captain shall be condemned to pay a fine which may be as high as 500 francs, and the ship shall be confiscated.

Port Charges.

	f.	c.	
Pilotage in	28		fr. for the 1st hundred tons.
"	25		fr. for the 2d hundred tons.
"	23		fr. for the 3d hundred tons and above.
"	1	¼	per cent for the head pilot.
Boats of help in	24		fr. outside the banks.
" "	12		fr. outside the piers.
" "	9		fr. in the harbor.
Weighing anchors	2	50	per each cwt.
Weighing chains	0	50	" " " and one third more if there be no buoy ropes.
Haulers	0	80	per man, besides 1 fr. 50 c. for the hawsers.
Bridges	3	60	for each bridge.
Ballast unshipped	0	64	per half metre.
" shipped	1	14	" " for sand.
" "	1	95	" " for clean ballast.
Board of health	2	50	for a vessel of 50 tons' measurement & under. from Europe.
" "	5	0	for a vessel of 51 tons' measurement & above. from Europe.
" "	10	0	for a vessel from other countries.
Tonnage dues	0	66¼	per ton and 10 per cent for vessels with coals only and 1-20th of their cargoes with bricks or grindstones.
" "	0	87½	per ton harbor dues.
" "	0	75	per ton dock dues.
" "	1	65	per ton harbor dues, with other cargoes
" "	2	50	per ton dock dues with other carg's.
" "	0	5	per ton salvage duty, & 10 per ct.
" "	1	25	stamps.
" "			From 3 fr. 85 c. to 18 fr 15 c. for clearances according to his tonnage
Pilotage out			One third of the pilotage in if the vessel is in ballast
"			One half of the pilotage in if the vessel takes goods.
Protest before the court	9	5	
Affirmation before the court	5	50	
Gunpowder shipped and unshipped	8	0	
Brokerage in	0	50	per ton of goods landed.
" out	0	25	" " shipped.
" on ballast	0	12	" " measurement.

ACCOUNT OF THE ANNUAL IMPORTS OF COFFEE INTO HAVRE, WITH THE ANNUAL SALES THEREOF, AND STOCKS ON HAND ON THE 31ST DECEMBER IN EACH YEAR, FROM 1852 TO 1828, BOTH INCLUSIVE, IN ½ KILOG. OR POUNDS.

Years.	Imports.	Sales.	Stock.
1852	32,879,395	30,188,570	5,781,775
1851	26,571,840	26,840,940	3,590,950
1850	24,461,980	26,165,270	3,860,550
1849	25,814,190	25,325,650	5,628,840
1848	20,685,510	19,552,210	5,135,300
1847	26,330,000	24,528,500	4,002,000
1846	17,000,000	18,800,000	2,200,000
1845	18,850,000	18,850,000	3,500,000
1844	22,600,000	22,100,000	3,500,000
1843	16,800,000	17,100,000	3,000,000
1842	19,250,000	20,500,000	3,800,000
1841	17,650,000	15,200,000	4,550,000
1840	28,600,000	28,250,000	2,100,000
1839	14,600,000	15,550,000	1,750,000
1838	19,720,000	20,044,000	2,700,000
1837	18,559,000	20,410,800	3,024,000
1836	17,726,545	15,171,545	4,875,000
1835	15,440,000	16,820,000	2,320,000
1834	15,500,000	13,980,000	3,700,000
1833	14,300,000	15,300,000	4,000,000
1832	16,850,000	13,650,000	5,000,000
1831	8,000,000	9,000,000	1,800,000
1830	13,300,000	13,000,000	2,800,000
1829	13,680,000	13,980,000	2,500,000
1828	16,600,000	18,800,000	2,800,000

ACCOUNT OF THE ANNUAL IMPORTS OF COTTON INTO HAVRE, WITH THE ANNUAL SALES THEREOF, AND THE STOCKS ON HAND ON THE 31ST DECEMBER IN EACH YEAR FROM 1852 TO 1826, BOTH INCLUSIVE.

Years.	Imports.	Sales.	Stock.	Years.	Imports.	Sales.	Stock.
	Bales.	Bales.	Bales.		Bales.	Bales.	Bales.
1852	395,001	393,771	28,830	1838	295,246	292,746	35,500
1851	303,975	229,775	22,600	1837	248,859	261,359	33,000
1850	312,827	308,427	42,400	1836	262,086	233,586	45,500
1849	367,178	348,178	38,000	1835	214,509	217,709	18,800
1848	237,985	260,435	19,000	1834	201,419	213,419	22,000
1847	267,500	251,500	41,500	1833	210,593	193,593	34,000
1846	325,985	350,435	25,500	1832	184,228	185,228	17,000
1845	331,287	334,287	50,000	1831	157,501	164,501	18,000
1844	279,651	326,651	53,000	1830	119,186	165,686	45,000
1843	325,965	333,965	100,000	1829	175,930	185,430	17,500
1842	370,427	352,927	108,000	1828	114,735	161,235	27,000
1841	357,927	344,027	96,300	1827	169,274	166,274	40,500
1840	376,156	356,156	77,000	1826	214,035	183,535	44,000
1839	265,243	242,043	57,000				

ACCOUNT OF THE ANNUAL IMPORTS OF SUGAR INTO HAVRE, WITH THE ANNUAL SALES THEREOF, AND THE STOCKS ON HAND ON THE 31ST DECEMBER IN EACH YEAR, FROM 1852 TO 1828, BOTH INCLUSIVE.

Years.	Imports.	Sales.	Sales.	Years.	Imports.	Sales.	Stock.
	Hhds.	Hhds.	Hhds.		Hhds.	Hhds.	Hhds.
1852	33,127	24,127	12,400	1839	46,350	51,850	1,500
1851	28,208	27,098	1,400	1838	58,590	47,290	7,000
1850	21,740	27,150	290	1837	51,753	42,453	800
1849	36,420	41,720	5,700	1836	45,257	42,757	11,500
1848	33,063	29,065	11,000	1835	55,549	58,549	9,000
1847	67,850	63,350	7,000	1834	69,430	60,430	12,000
1846	53,000	58,500	2,500	1833	50,300	51,800	3,000
1845	66,500	63,500	8,000	1832	46,000	57,000	4,000
1844	49,600	58,600	5,000	1831	58,450	56,450	14,000
1843	54,200	54,200	14,000	1830	49,820	44,820	12,000
1842	64,000	64,000	14,000	1829	60,560	63,560	7,060
1841	54,760	52,260	14,000	1828	60,770	62,270	10,000
1840	51,900	46,900	6,500				

Prices of Commodities, Duty paid and in Bond, Duties, Tares, Commercial Allowances, etc.—These important particulars may be learned by the inspection of the subjoined price current for the 25th of May, 1853. The duties on some of the articles mentioned in it will, most probably, at no very distant period, be varied. But the other particulars embodied in it will always render it an important document.

	Duty paid. Fr. ct. Fr. ct.	In Bond. Fr. ct. Fr. ct.
Ashes, per 50 kil.		
Pot, New York ..... 42 0—43 0	0 0— 0 0	
do. Canan..... 38 0—38 25	0 0— 0 0	
Pearl, American..... 47 0—48 0	0 0— 0 0	

Duty on nett weight: by French vessels from European ports, 9 francs 90 cent.; from elsewhere, 8 francs 25 cent. By foreign vessels, 11 francs 55 cent. See exceptions at Note A.

Commercial and custom-house tare: 12 per cent.

Beeswax, per ½ kil.			
North American yellow.	1 85— 2 0	0 0— 0 0	
West India fair..... ...	1 50— 0 0	0 0— 0 0	
Senegal	1 60— 1 75	0 0— 0 0	

Duty on gross weight: yellow, by French vessels from European ports, 5½ cent.; from elsewhere, 4 2-5 cent. See Note A.

Commercial tare: real.

	Duty Paid. Fr. ct. Fr. ct.	In Bond. Fr. ct. Fr. ct.
Cochineal, per ½ kil.		
silver from ord. to fine.....	0 0— 0 0	4 25— 5 0
black, ditto.....	0 0— 0 0	4 75— 5 25

Duty on nett weight: by French vessels from places out of Europe, 27½ cent.; from elsewhere, 55 cent. By foreign vessels, 82½ cent. See Note A.

Custom-house tare: in casks, 12 per cent.; in seroons, 2 per cent.

Commercial tare: real.			
Cocoa Caraccas, per ½ kil......	0 0— 0 0	0 90— 1 25	
St. Domingo.....	0 0— 3 0	0 35— 0 81	
Maranham and Para by a French vessel		0 50— 0 52	
Maracaibo	0 0— 0 0	0 0— 0 0	

Duty on nett weight: by French vessels from the French colonies, 22 cent.; from countries west of Cape Horn, 27½ cent.; from European ports, 52½ cent; from elsewhere, 30½ cent. By foreign vessels from any port whatever, 57½. See Note A.

Custom-house tare: on casks, 12 per cent.; on bags, 3 per cent.

Commercial tare: on casks, real; on bags, 2 per cent.

Coffee, per ½ kil.			
St. Domingo, from ordinary to fine.....	0 0— 0 0	0 53— 7 0	
Porto Rico.....	0 0— 0 0	0 57— 0 70	
Havana, from ord. to fine..	0 0— 0 0	0 55— 0 60	
Laguyra and Port Cabel....	0 0— 0 0	0 55— 0 72	
Rio, ordinary to fine.....	0 0— 0 0	0 50— 0 70	
Java	1 2— 1 15	0 0— 0 0	
Ceylon, native.....	1 2— 1 7	0 0— 0 0	
Do. plantation.....	1 12— 1 26	0 0— 0 0	
Padang and Sumatra.....	1 7— 1 12	0 0— 0 0	
Mocha.....	1 20— 1 25	0 0— 0 0	

Duty on nett weight: by French vessels from the East Indies, 42 9-10 cent.; from European ports, 55 cent.; from elsewhere, 52½ cent. By foreign vessels from any port whatever, 57½ cent. See Note A.

Custom-house tare: on casks, 12 per cent.; on bags, 3 per cent.

Commercial tare: on casks, real; on bags, 2 per cent.; on Mocha coffee the tare runs from 4½ to 12½ kil. upon bales of 75 to 200 klls.

Copper, American, ½ kil......	1 43— 1 55	0 0— 0 0	
Russian and British.....	1 60— 1 65	0 0— 0 0	

Duty on gross weight: by French vessels from European ports, 1 1-10 cent.; from elsewhere, 11-20 cent. By foreign vessels from any port whatever, 1 13-20 cents. See Exceptions at Note A.

Commercial tare: real.

Cotton, per ½ kil.			
Upland.....	0 77— 1 0	0 0— 0 0	
Mobile.....	0 77— 1 0	0 0— 0 0	
New Orleans.....	0 77— 1 0	0 0— 0 0	
Sea Island.....	1 50— 3 0	0 0— 0 0	
Pernambuco.....	1 0— 1 15	0 0— 0 0	

Duty on nett weight: on long or short staple, by French vessels from the French colonies, 2½ cent.; from European ports (Turkey excepted), 16½ cent.; from the East Indies and countries beyond Cape Horn, 5½ cent.; from other countries, 11 cent. By foreign vessels (except from Turkey), 19½ cent. By French vessels from Turkey, 8½ cent.; by foreign vessels from Turkey, 12 3-5 cent. See Note A.

Custom-house tare: on United States' cotton, 6 per cent.; Brazil cotton, 4 per cent.; on St. Domingo, in bales, 5 per cent.; on Cumana and Caraccas, 7 kil. per scroon above 40 kil., and 6 kil. per scroon, at 40 kil. and under.

Draft: 2 kil. on Sea Island and Bengal; 3 per cent. on Brazil; 3 kil. on all other descriptions in bales exceeding 50 kil., and 1½ kil. upon bales under 50 kil.

Flour, American, per barrel....	0 0— 0 0	27 0— 0 0	
Gums, Senegal, per ½ kil......	0 80— 0 90	0 0— 0 0	
East India, copal scraped...	0 0— 0 0	0 0— 0 0	
Shell-lac, orange	0 65—72 0	0 0— 0 0	
ditto, garnet.....	0 50—70 0	0 0— 0 0	
ditto, liver.....	0 55—65 0	0 0— 0 0	

Duty on Senegal, gross weight: by French vessels from Senegal, 5½ cent.; from European ports, 13½ cent.; from elsewhere, 11 cent. By foreign vessels from any port whatever, 16½ cent. See Note A.

Commercial tare; on casks, real; on bags, 2 per cent.

Duty on copal, gross weight per 50 kil.: by French vessels from the East Indies, 55 cent.; from elsewhere, 11 francs. By foreign vessels from any port whatever, 16 francs 50 cent. See Note A.

Commercial tare: real.

Duty on shell-lac, nett weight: by French vessels from the

East Indies, 27-100 cent.; from elsewhere, 5½ cent. By foreign vessels from any port whatever, 8½ cent. See Note A.

Commercial tare: real.

	Duty Paid. Fr. ct.	Fr. ct.	In Bond. Fr. ct.	Fr. ct.
Hides, per ½ kil.				
Buenos Ayres	0 65	0 100	0 0	0 0
Pernambuco and Bahia, dry-salted	0 55	0 80	0 0	0 0
Rio Janeiro	0 55	0 75	0 0	0 0
Carthagena and Caracoas	0 54	0 75	0 0	0 0
New Orleans, wet salted	0	0	0 0	0 0

Duty on gross weight: by French vessels from European ports, 5½ cent.; from elsewhere 2½ cent. By foreign vessels from any port whatever, 8½ cent. See Note A.

Five bull hides are admitted among 100 hides without allowance, and 1 kil. is allowed for every bull hide above that number to the extent of 12; when more than 12 the allowance is conditional.

Hops, American, 1851	262 50	0 0	0 0	0 0

Duty on nett weight: by French vessels from any port whatever, 33 francs per 50 kil. By foreign vessels, 36 francs 2½ cent. See Note A.

Commercial tare: on bales, 2 per cent.

Horse-hair per ½ kil.				
Buenos Ayres, mixed	0 90	0 115	0 0	0 0
Russia	0	0	0 0	0 0

Duty on gross weight: by French vessels, 55-100 cent. By foreign vessels, 2½ cent. See Note A.

Commercial tare: real.

Indigo, per ½ kil.				
Bengal	0 0	0 0	0 0	0 0
superfine violet and blue	11 25	11 50	0 0	0 0
sup'fine violet and purp.	10 25	10 50	0 0	0 0
fine violet and purple	9 75	10 0	0 0	0 0
good violet	9 25	9 50	0 0	0 0
middle violet	7 75	8 0	0 0	0 0
fine red	8 70	0 0	0 0	0 0
good red	7 0	7 25	0 0	0 0
good to fine copper	6 25	6 75	0 0	0 0
ordinary to low copper	5 50	0 25	0 0	0 0
Java	7 0	11 75	0 0	0 0
Kurpah	5 0	8 0	0	.....
Madras	4 50	6 75	0 0	0 0
Manilla	4 0	6 50	0 0	0 0
Caraccas	4 0	7 0	0 0	0 0
Guatemala flores	6 75	7 25	0 0	0 0
sobre sallente	6 25	6 50	0 0	0 0
cortes	5 0	5 75	0 0	0 0
ordinary and low	4 25	4 75	0 0	0 0

Duty on nett weight: by French vessels from places of growth out of Europe, 27½ cent.; from European ports, 1 franc 65 cent.; from Manilla direct, 22 cent; from elsewhere, 1 franc 10 cent. By foreign vessels from any port whatever, 2 francs 20 cent. See Exceptions at Note A.

Custom-house tare: on chests, casks, and serroons, real, or at the option of the importer, 12 per cent. on chests or casks, and 9 per cent. on serroons.

Commercial tare: on casks or chests, real; on serroons of 100 to 110 kil., 11 kil.; on do. of 85 to 90 kil., 10 kil.; on do. of 70 to 84 kil., 9 kil.; on do. of 50 to 69 kil., 7 kil. Allowance, 1 kil. per chest.

Lac-dye, per ½ kil.	3 0	3 10	0 0	0 0

Duty on nett weight: by French vessels from the East Indies, 13½ cent.; from elsewhere, 41½ cent. By foreign vessels from any port whatever, 55 cent. See Exceptions at Note A.

Commercial and custom-house tare: real.

Lead, American, per 50 kil.			0 0	0 0
Spanish and British	25 0	28 0	0 0	0 0

Duty on gross weight: by French vessels from any port whatever, 2 francs 75 cent. By foreign vessels, 3 francs 85 cent. See Note A.

Pepper, light, per ½ kil.	0 72	0 75	0 0	0 0
half heavy	0 78	0 80	0 0	0 0

Duty on nett weight: by French vessels from the East Indies, and from countries west of Cape Horn, 22 cent.; from elsewhere, 44 cents. By foreign vessels from any port whatever, 57½ cent. See Note A.

Custom-house tare: on bags, 5 per cent.

Commercial tare: on single bags, 2 per cent.

Pimento, per ½ kil.				
Jamaica	0 0	0 0	0 70	0 75
Tobago	0 0	0 54	0 54	0 0

Duty: by French vessels from the East Indies, and from countries west of Cape Horn, 24½ cent.; from elsewhere, 49½ cent. By foreign vessels, 63½ cent.

Tares: as for pepper.

Quercitron, per 50 kil.				
Philadelphia, 1st sort	11 50	14 60	0 0	0 0
Baltimore	10 50	11 0	.....	0

Duty on gross weight: by French vessels from European ports, 8 francs 25 cent.; from other countries, 3 francs 20 cent. By foreign vessels from any port whatever, 4 francs 05 cent. See Note A.

Commercial tare: 12 per cent. on casks; 2 per cent. on bags.

	Duty Paid. Fr. ct.	Fr. ct.	In Bond. Fr. ct.	Fr. ct.
Quicksilver, per ½ kil.	.....		0 0	0 0

Duty on gross weight: by French vessels from any port whatever, 11 cent; by foreign vessels, 12 1-10 cents. See Exceptions at Note A.

Commercial tare: real.

Rice, Carolina, 1833, per 50 kil.	23 50	32 50	0 0	0 0
Bengal, white	15 0	16 25	0 0	0 0

Duty on gross weight: from India, by French vessels, ½ cent.; by foreign vessels, 4 francs 05 cent.; from elsewhere out of Europe, 1 franc 87½ cent.; from European ports, 3 francs 50 cent.

Commercial tare: 12 per cent. on casks, and 2 per cent. on bags.

Saltpetre, E. I., per 50 kil.	0 0	0 0	36 0	37 0
Nitrate of soda	0 0	0 0	23 55	26 0

Duty on gross weight: by French vessels from East Indies or the South Seas, 55 cent.; from European ports, 11 cent. By foreign vessels from any port whatever, 13 francs 75 cent.; by foreign vessels from countries out of Europe, 4 francs 12½ cent.

Commercial tare: 6 kil. per double bale of the customary form, for saltpetre. For nitrate of soda, 2 per cent., and 2 per cent. allowance for dampness of bags.

Skins, deer, each	0 0	0 0	0 0	0 0

Duty per 50 kil. on gross weight: by French vessels from any port whatever, 55 cent. By foreign vessels, 60½ cent. See Note A.

Speller, per 50 kil.	18 0	19 0	.....	

Duty on gross weight: 5½ cents. per 50 kil.

Sugar, per 50 kil.				
Mart. and Guad. bonne 4e.	55 0	55 50	34 0	34 50
Havana, white	0 0	0 0	33 0	34 0
yellow	0 0	0 0	29 0	32 0
brown	0 0	0 0	23 0	28 0
Porto Rico, Cuba b. 4e.	0 0	0 0	28 0	0 0
Brazil, white	0 0	0 0	29 0	31 0
brown and yellow	0 0	0 0	22 0	28 0
Manilla	0 0	0 0	23 0	28 0

Duty on nett weight: foreign sugars by French vessels from the East Indies above type, 31 francs 35 cent.; at and under type, 29 francs 70 cent.; from European ports, 8 francs 30 cent. more; from elsewhere, above the type, 33 francs; at and under type, 31 francs 25 cent. per 50 kil. 10e. included. By foreign vessels above type, 41 francs 25 cent.; at and under type, 39 francs 6 cent.; from everywhere, per 50 kil., 10e included.

Custom-house tare: on chests, 12 per cent.; on single bags, 2 per cent.; on double bags, 4 per cent.

Commercial tare: Havana and St. Yago chests, 13 per cent.; Brazil, 15 per cent.; on casks, 15 per cent.; tierces, 6 per cent.; barrels, 19 per cent.; 2 per cent, on Brazil, and 8 per cent. on Manilla bags.

Tallow, Russian, per 30 kil.	60 0	64 0	0 0	0 0
New York	.....		0 0	0 0
Plata	58 0	60 0	0 0	0 0

Duty on gross weight: by French vessels from any port whatever, 11 francs. By foreign vessels, 14 francs 30 cent. See Note A.

Commercial tare: 12 per cent.

Terra Japonica, per 50 kil.				
brown	46 0	50 0	0 0	0 0
yellow	46 0	50 0	0 0	0 0

Duty on gross weight: by French vessels from East Indies, 5½ cent.; from European ports, 19 francs 80 cent.; from elsewhere, 12 1-10. By foreign vessels, 27½ cent. See Note A.

Commercial tare: real.

Teas, Imperial, per ½ kil.	0 0	0 0	2 10	5 50
Gunpowder	0 0	0 0	2 0	5 50
Hyson	0 0	0 0	2 0	5 0
Young Hyson	0 0	0 0	1 0	2 50
Hyssonskin	0 0	0 0	1 80	2 60
Pekoe	0 0	0 0	3 50	8 0
Souchong	0 0	4 0	1 25	4 50
Pouchong	0 0	0 0	1 0	2 0

Duty on nett weight: by French vessels from the East Indies, 82½ cent.; from China, 66 cent.; from elsewhere, 2 francs 75 cent. By other vessels from any port whatever, 3 francs 30 cent. See Note A.

Custom-house and commercial tare: real.

Tin, strait, and banca, p. 50 kil.	110 0	122 50	0 0	0 0
British	115 0	120 0	.....	
South American	100 0	110 0	.....	

Duty on gross weight: by French vessels from the East

Indies, 5½ cent.; from elsewhere, 1 franc 10 cent. By foreign vessels from any port whatever, 2 francs 20 cent. per. 50 kil. See Exceptions at Note A.

Commercial tare: on casks, real.

	Duty Paid. Fr. ct.	Fr. ct.	In Bond. Fr. ct.	Fr. ct.
Whalebone, per ½ kil.				
South	2 25—	2 17	0 0—	0 0
Polar and north-west	2 57—	2 30	0 0—	0 0

Duty on gross weight: by French vessels from any port whatever, 16½ cent. By foreign vessels, 19½ cent.

Commercial tare: real. Allowance, 2 per cent. on slabs.

Woods, per 50 kil.						
Logwood, Campeachy	10	0—10	50	0	0—	0 0
Honduras	7	50—	0 0	0	0—	0 0
St. Domingo	6	50—	7 50	0	0—	0 0
Fustic Cuba	9	0—12	0	0	0—	0 0
Carthagena	6	50—	7 50	0	0—	0 0
Sta. Martha	18	0—20	0	0	0—	0 0
Pernambuco	60	0—75	0	0	0—	0 0
Jacaranda	0	0—	0 0	0	0—	0 0

Duty on gross weight: Brazil, by French vessels from European ports, 4 francs 95 cent.; from elsewhere, 2 francs 75 cent. By foreign vessels, 6 francs 60 cent. Other dye-woods by French vessels from the French colonies, 44 cent.; from European ports, 2 francs 75 cent.; from elsewhere, 82½ cent. By foreign vessels, 3 francs 30 cent. See Note A. Allowance, 1 to 2 per cent.

Explanatory Remarks.—The above duties include the surtax of 10 per cent.; the custom-house admits the real tare whenever the importer desires it.

Note A.—The treaties of reciprocity entered into with the countries hereafter mentioned, introduce the following deviations from the above rates of duty:

United States.—The produce of the United States, except that of the fisheries, direct from the United States in United States' vessels, pays the same duty as if imported by French vessels from the United States.

Brazils and Mexico.—The produce of the Brazils and Mexico, imported direct in national vessels, enjoys also the above privilege.

England.—The produce of Africa, Asia, or America, imported from any country whatever in British vessels, or from any port of the British dominions in Europe either in French or foreign vessels can only be admitted in bond for re-exportation.

The same regulation is applicable to all European produce (except that of Great Britain and its possessions in Europe) imported by British vessels from other ports than those of Great Britain or its possessions in Europe.

The weight of 50 kilogrammes is equal to 110½ pounds English, or 100 pounds English are equal to 45 35-100 kilogrammes, and the cwt. equal to 50 79-100 kilogrammes.

Credit.—Four and a half months, exception coffee, pimento, peppers, quicksilver, and clayed sugars, which are sold at 3½ months, and wheat at 2½ months.

China, and places beyond the Sunda Islands.—All natural produce, sugar excepted, imported direct, by French vessels, from countries situated beyond the Straits and the Sunda Islands, either to the north of the 3d degree of northern latitude, or to the east of the 106th degree of eastern longitude, is admitted at four fifths of the lowest rates of duty of the tariff, the French colonial duty alone excepted.

Hawkers and Peddlers. It is not very easy to distinguish between hawkers and peddlers. Both are a sort of itinerant retail dealers, who carry about their wares from place to place; but the former are supposed to carry on business on a larger scale than the latter.

Hawse. The part of the bows close to the cables. The cables pass through the *hawse-holes*, which are made in the timbers, and in the *hawse-piece* outside. When the ship has two anchors down, and the cables diverge from each other, the hawse is said to be *clear*; when crossed by the ship turning half round, there is a *cross* in the hawse. Another cross makes an *elbow*; then a *round turn*: in the last two cases the hawse is said to be *foul*. The process of disengaging the cable is called *clearing hawse*. The danger of a foul hawse is, that if it comes on to blow the cables can not be veered from their friction against each other. This term also denotes any small distance a-head of a ship, or between her head and the anchors, employed to ride her; as, a vessel sails athwart the hawse, or anchors in the hawse of another vessel.

Freshening hawse is veering out a little cable to expose a new surface to the friction in the hawse-hole, or across the cutwater.

Athwart hawse implies across the bows of a vessel at anchor.

Hawse-holes, the holes in the bows of a ship on each side of the stem, through which the cables pass.

Hawser, a large rope, intermediate between the *cable* and *tow-line* of the ship to which it belongs. It is used for various purposes, as warping for a spring, etc.

Hay (Ger. *Hew*; Du. *Hoi*; Fr. *Foin*; It. *Fieno*; Sp. *Heno*; Lat. *Fœnum*), any kind of grass, cut and dried for the food of cattle. The great object in preparing grass for hay is to preserve the green color of the grass as much as possible, and to have it juicy, fresh, and free from all sorts of mustiness. The hay and fodder crops, including the dried blades, shucks, and tops of Indian corn, as well as of the succulent corn plants and other green forage, cultivated solely for *soiling*, or for drying into fodder, chopped straw, the haulm of beans, peas, potatoes, etc., which are by no means inconsiderable, are far the most valuable of any in the United States. The culture of hay is at present principally confined to the eastern, middle, and western States, from which the southern markets are mainly supplied in the form of pressed packages or bales. In the earlier settlement of the Atlantic States north of Virginia, the cattle of the inhabitants were chiefly dependent upon the wild, indigenous grasses—such as the white clover, herd's grass (red top), wire grass, Indian grass (*andropogan*), and the coarser herbage of salt marshes, beaver meadows, and other swampy grounds. In the middle and southern colonies they foraged upon the wild herbage of the country, in the same manner as the existing cattle do on the buffalo grass of Louisiana, Texas, New Mexico, etc., as well as on the leaves boughs, and fruit of trees. The principal indigenous grasses which have been successfully cultivated in the United States are—the Kentucky blue grass, the red top (herd's grass of Pennsylvania), the white clover, and the fowl meadow (or bird grass), the latter of which formerly grew in abundance around Massachusetts Bay, and was much relished by the cows, horses, hogs, and goats of the early settlers, and upon which they thrived.

Production of Hay in the United States.

States.	Clover seed.	Other grass seeds.	Hay.	
	1850.	1850.	1850.	1840.
	Bushels.	Bushels.	Tons.	Tons.
Alabama	138	547	32,685	12,718
Arkansas	90	496	3,976	586
Connecticut	13,841	16,628	516,331	426,704
Delaware	2,525	1,409	30,159	22,488
Florida		2	2,510	1,197
Georgia	182	428	28,449	16,970
Illinois	3,427	14,380	601,962	164,932
Indiana	18,920	11,951	403,230	178,029
Iowa	342	2,098	89,055	17,953
Kentucky	3,230	21,481	113,747	88,306
Louisiana	2	97	25,752	24,651
Maine	9,097	9,214	755,889	691,358
Maryland	15,217	2,561	157,956	106,687
Massachusetts	1,002	5,085	651,807	569,395
Michigan	16,989	9,285	404,934	130,805
Missouri	610	4,346	146,925	49,083
New Hampshire	829	8,071	598,854	496,107
New Jersey	28,280	63,051	435,950	334,861
New York	88,222	66,493	3,728,197	3,127,047
North Carolina	576	1,275	145,853	101,369
Ohio	104,197	87,340	1,448,142	1,022,087
Pennsylvania	125,080	59,013	1,842,970	1,311,648
Rhode Island	1,328	3,708	74,118	64,140
South Carolina	376	30	20,925	21,618
Tennessee	5,096	9,118	74,091	31,243
Vermont	760	14,336	866,159	836,739
Virginia	29,727	23,428	869,098	364,708
Wisconsin	483	5,008	275,662	30,998
Total	468,875	416,278	13,805,870	10,248,606

Among the foreign cultivated grasses in this country, the Timothy (herd's grass of New England),

ranks pre-eminent. It is said to have received the name of *Timothy* from its first introducer into Maryland, Mr. Timothy Hanson. It is a native of England, and is cultivated as a favorite in Sweden and other parts of northern Europe. The next in extent of cultivation, among our forage crops of foreign origin, is the common red clover, which is widely naturalized, and is diligently cultivated by all good farmers. The precise period of its introduction is not known; but, on the authority of Watson, in his "Annals of Philadelphia," John Bartram had fields of it prior to the American Revolution; and, according to Dr. William Darlington, it was introduced into general cultivation in Chester county, Pennsylvania, between the years 1790 and 1800. Its congener, the creeping white clover, indigenous or naturalized in Europe, is extensively cultivated in the middle and northern States from imported seed. The other European grasses, which have been only partially introduced into this country, and which have met with favor, are the cock's-foot, or orchard grass, and the perennial ray grass. The latter affords a tolerably good pasture, and makes a handsome sward for a yard or lawn; but as a meadow grass for hay it is regarded as inferior in value to any of the preceding. According to the census returns of 1840, the hay crop of the United States was 10,248,108 tons; of 1850, 13,838,579 tons, showing an increase of 3,590,470 tons.

Hayti, Haiti, San Domingo, or **Hispaniola,** one of the largest and most fertile of the West India Islands, extending in length from east to west 390 miles, and in breadth from 60 to 150 miles, is situated between lat. 17° 37′ and 20° 0′ N., and between long. 68° 20′ and 74° 28′ W. It is called Hayti, or the Highland country, by the natives, from the mountains with which it abounds, especially in the northern part. The country was formerly divided between the Spaniards, who were the earliest European colonists, and the French. The line of demarcation which separated these two divisions commenced on the south side from the Pedernales or Flint River, and extended in a waving direction to the River Massacre on the north side. The country to the west of this line belonged to the French, while that on the east side formed the Spanish part of the island. By far the greatest portion of the country was in the possession of the Spaniards; their division being reckoned 220 miles in length by 120 in breadth, of which, though a considerable part consists of mountains, these are said to be little inferior in fertility to the champagne country, and to be equally capable of cultivation. The French division is of an extremely irregular figure. The land is deeply penetrated by the Gulf of Gonaive, and is in some parts 170 miles in length, while in others it is not 30. It is nearly of the same breadth as the Spanish division.

A great part of the coast of this island is rocky and dangerous, affording but an imperfect shelter to vessels overtaken by storms. Many of the shipping-places on the southern shore are nothing more than open bays, which lie exposed to the storms and hurricanes of the autumnal months. The harbor of San Domingo, formerly thought so commodious and secure, has become too shallow to admit vessels of large burden. There are, however, besides roadsteads and several small harbors, the Bays of Neyba and Ocoa on this coast. Into the former flows the River Neyba, which receives vessels of 30 tons' burden: its stream before entering the ocean divides itself into various channels, which, annually changing, confound the pilot, and render the navigation difficult. Ocoa Bay is a large and convenient watering-place, with several small rivers falling into it. The entrance is two leagues across, and it gradually widens to nearly six. On the east side of this bay is the safe and capacious port of Caldera. On the south-east coast is the great Bay of Samana, which, in point of size and situation, is one of the most important on the island. From Cape Raffael, which forms the southern point of entrance into the Bay of Samana, to the opposite side of the island or peninsula of Samana, the distance is 18 miles, which is closed in by bulwarks of rocks and sand, the entrance only being left clear, with a safe and deep channel between the shore of Samana and several detached islands. This bay is about 60 miles long, and is surrounded on every side by a fertile country, suited to all the purposes of trade. Within the compass of this bay whole fleets might ride at anchor in perfect security. The River Yuna, after being joined by the Cambu, and meandering through the rich plains of La Vega Real, falls into the Bay of Samana after a course of nearly 100 miles. Bahia Ecossaise, or Scotch Bay, which is situated on the north side of the peninsula of Samana, is a dangerous rocky place. Thence to Puerto Plata the coast extends about 60 miles in a north-westerly direction, and in this space stands Balsama Bay, which has only 14 feet depth of water, and is of difficult navigation. The harbor of Puerto Plata was first discovered by Columbus: the entrance is narrow, but safe, and the neighborhood is rich in every species of timber-trees. There are several other small harbors and bays on this side of the island, but the coast is in general rocky and dangerous.

Soil and Surface.—A country of such magnitude as Hayti, containing mountains of great height, with valleys of corresponding extent, necessarily comprises great variety of soil. In general, however, it is fertile in the highest degree, being everywhere drained by copious streams, and yielding in abundance every species of vegetable produce which can minister either to the luxury or comfort of man. The soil consists principally of a rich clay, sometimes mixed with gravel, lying on a substratum of rock. That part of the island formerly occupied by the French is mountainous, but fertile and well wooded, and containing mines both of silver and iron. The Spanish part of the island is mountainous in many parts; while in other parts the country is spread out into extensive plains. These are generally in a state of nature, covered with herbage, or with woods of immense growth and the most luxuriant foliage. The mountains intersect the island in two principal chains from east to west. From these secondary and partial ridges diverge irregularly in different directions, forming beautiful and fertile valleys, with numerous streams. The highest mountains of the interior, particularly those of Cibao, rise to the height of 7200 feet above the level of the sea. To the north of the capital is the valley called Vega Real, or Royal Plain, which is by far the largest and finest in the island. Westward it extends to the old French line of demarcation, and in this part it is drained by the River Yacki; to the east, where the River Yuna flows for the space of 50 miles, it projects to the head of the Bay of Samana, and is drained by numerous smaller streams, which cross it in various directions. This valley may be said to extend in length about 140 miles, and in breadth from 20 to 30. Other plains also, of less extent, but of equal fertility, and of easy access, are everywhere found interspersed among the mountainous tracts. Westward from San Domingo, along the southern coast, is the valley of the River Banis, extending from Nisao to Ocon. Here the pasture is good; but the country is not so well watered as in the other parts of the island; an inconvenience which is sensibly felt by the cattle during the dry months. Further to the westward and to the north other valleys are found; but where the land, as in this island, is everywhere intersected by ranges of mountains, it is impossible, in any general sketch, to describe particularly that continual succession of hill and dale which diversifies the face of the country. Eastward from the capital are those immense plains called *Los Llanos*, which stretch out to a vast extent on a dead level. They are covered with herbage, and the eye wanders unobstructed over the

wide expanse of waving grass, which is occasionally diversified by natural clumps of shrubs. These plains occupy almost one sixth part of the island, extending nealy to its eastern coast, being a distance of more than 90 miles, by about 30 wide. They form an immense natural meadow, covered with pasture for vast herds of cattle which belong to more than 100 different owners.

Climate.—San Domingo has a hot moist climate, but the heat is mitigated by the regularity of the seabreeze, and by the contiguity of the mountains. In the plains the thermometer rises to 96°, sometimes to 99°, but in the mountainous tracts it seldom rises above 78°. In the most elevated part a fire is frequently necessary. In those situations meat may be kept for several days, and in the morning hoar-frost is frequent. The seasons, as in tropical countries, are divided into the wet and the dry. The rains are periodical, and are heaviest in May and June, when the rivers, which at other times scarcely supply water for a continued stream, overflow their banks, and, with an impetuous torrent, sweep over the neighboring plains. The climate of San Domingo is unhealthy to Europeans, owing to the violent heats and heavy rains; and hence all metals, however bright their original polish, soon contract a tarnished appearance. This is more observable on the sea-coast, which is also more unhealthy than the interior of the island. Hurricanes are not frequent, but in the southern parts of the island violent gales of wind, generally preceded by a closeness and sultriness in the atmosphere, frequently occur. These however are not attended with such fatal effects as the hurricanes in the Windward Islands.

Rivers.—The island of Hayti abounds in rivers and smaller streams, which flow from the mountains in the interior, in different directions, to the sea. Of these the principal are the Haina, the Nigua, the Nizao, the Ozama, the Neyba, the Ocoa, the Yane, and the Santiago or River of Monte Christi. Near the south part of the French line of demarcation is the beautiful Lake of Henriquillo, which is about 60 miles in circumference; and though it is about 25 miles from the sea, its water is perfectly salt, and of the same specific gravity as that of the ocean. The same fishes are also found in it, such as the shark, seal, porpoise, etc.

Vegetable Productions.—The fertile soil of Hayti is distinguished by the variety of its vegetable productions, many of which are rare and valuable. The mahogany-tree grows to a great size, and is of very fine quality. The manchineel-tree affords a beautiful species of wood, richly veined like marble, and susceptible of the finest polish. Several species of dye-woods are produced in the forests. There is a tree called the Jagua, the fruit of which is accounted a delicacy by the natives; and of which the juice, as clear as water, makes a stain on linen which is indelible. Different kinds of guaiacum are found, as also of several other woods with the same properties, which grow unnoticed and nameless in those unexplored forests. The sideroxylon or iron-wood, remarkable for hardness, as its name implies, is abundant; and the oak also, which differs in appearance from the European oak, frequently furnishes beams of from 60 to 70 feet in length. On the north side of the island are extensive forests of pine, which is much used for the purposes of shipbuilding; and Brazil-wood is found on many parts of the coast. The satin-wood of this island is heavier than that of the East Indies, and it takes as fine a polish that it does not require to be varnished. The cotton-tree is the largest of all the vegetable productions, and is formed into the lightest and most capacious canoes. Every variety of the palm-tree is found in the woods, of which they form a principal ornament. The palmetto or mountain-cabbage is an erect and noble tree, which grows to the height of 70 feet, with esculent leaves at the top. In the congenial soil of this fertile island the sugar-cane, cotton, and coffee-plants, grow in the greatest luxuriance. There is also the calabash, the fruit of which serves as a substitute for earthenware; the plantain, the staff of life in the West Indies; vanilla, which is found indigenous in the unfrequented woods; quassia or simarouba, which is a tall and stately plant, waving gracefully in the wind; sarsaparilla, indigo, tobacco, turmeric, ginger, and rice-plants. The fruits and nutritive roots of San Domingo are nearly the same as those of Jamaica; but they are more abundant, and extremely fine. Of these may be enumerated the choux caraib, or Indian kale, with a variety of other vegetables that come under the same denomination; the avocato or vegetable marrow, the melon, sapadillo, guava, pine-apple, bread, and jack-fruit, mango, nuts, rose-apple, plums, etc., of many different species. Flowers in endless variety and splendor adorn the wild scenery of the woods, and exhale their fragrance in the desert air.

Little is known of the geological structure of the island, but a limestone containing vestiges of marine shells is the prevailing formation. Mineral springs exist in several parts. The most noted in the eastern part of the island are those of Banica, Yaye, and Pargatal; and in the west, the chalybeate of St. Rose, the saline of Jean Rabel, and the alkaline sulphur waters of Dalmarie. The mineral products are various and rich, and include gold, platina, silver, quicksilver, copper, iron, tin, sulphur, manganese, antimony, rock-salt, bitumen, jasper, marble, opal, lazulite, chalcedony, etc. The gold mines of the Chibon Mountains, which, in the 16th century, were very productive, have been abandoned, and at the present day gold is obtained only from the washings in the northern rivers. None of the mines, indeed, are successfully worked, and hence these sources of wealth are reserved for the industry of future generations.

Animals.—The indigenous quadrupeds of this island were confined to four species, which the Indians called Hutia, Quemi, Mohuy, and Cory. Of these, all are believed to be extinct except the first. Horned cattle, hogs, sheep, goats, horses, mules, and asses, have been introduced from Europe, and have multiplied prodigiously in the wild and extensive pastures of the interior. Wild fowl are abundant, consisting of various species of ducks, pigeons, the flamingo, the wild peacock, the mimic thrush or mocking-bird, the banana bird, the Guinea fowl, the ortolan, and parrots of various species. The rivers abound with fish, some of which are very delicate. Turtle of all kinds are taken, and the land-crab is much esteemed. The serpents are not dreaded; but the centipedes, which are frequent in old buildings, are large and dangerous. The scorpion is rarely seen; but the venomous crab-spider, which is equally dangerous, is sometimes met with.

History.—This island was discovered by Columbus in 1492, and was soon filled with adventurers, who crowded from Europe to the new world for sudden wealth. The natives were reduced to slavery by these settlers, who spread themselves over the island, and by their industry the colony increased rapidly in wealth and prosperity. But as it was chiefly by the desire of gold that settlers were attracted to this distant shore, San Domingo was in its turn abandoned for other countries of greater reputed wealth; and the country gradually declined, and, instead of yielding a revenue, became a burden on the mother country. About the middle of the 16th century the island of St. Christopher was taken possession of by a mixed colony of French and English, who being attacked by the Spaniards, were forced to fly to the barren isle of Tortuga, where they established themselves, and grew formidable, under the well-known appellation of buccaneers. They at last obtained a firm footing in San Domingo, into which they had made only predatory incursions; and by the treaty of Ryswick, that part of the island of which they had obtained possession

was ceded to the King of France, who acknowledged these adventurous colonists as his subjects. The French colony languished for a while under the galling restrictions imposed on its trade by the mother country; but these being removed about the year 1722, it soon attained a high degree of prosperity, and was in a very flourishing state when the French Revolution commenced in 1789.

The revenue of Hayti arises chiefly from customs and port-dues, territorial imposts, sale of lands, etc. In 1850 the customs' receipts amounted to £170,000; and in the same year the expenditure amounted to £216,856. The established religion is Roman Catholic; but other forms of worship are not prohibited. Church affairs are superintended by a vicar-general. In 1854 there were in the State 62 schools and 4 colleges, having in all about 9,000 or 10,000 pupils.

Commerce.—The foreign commerce of Hayti is in the hands of foreign merchants, who are permitted to reside only at certain ports, under irksome and injurious restrictions. The foreign commerce does not now exceed £1,000,000 of annual value. The exports are chiefly mahogany and other timber, dyewoods, coffee, tobacco, and cotton. The imports are British cotton and woolen goods, hardware, cutlery, fire-arms, gunpowder, glass, earthenware, etc. From France are imported brandy, wines, silk, and fancy goods. The population of Hayti is estimated at about 740,000.

The emperor has constituted Cape Haytien, formerly Cape Français, the capital and seat of government of the empire. It stands on the north coast, in N. lat. 19° 46′, and W. long. 72° 10′, and contains about 14,000 inhabitants.

Port-au-Prince, the capital of Hayti, or St. Domingo, in lat. 18° 33′ 42″ N., long. 72° 27′ 11″ W. Population variously estimated—probably from 18,000 to 20,000. It is situated on the west coast of the island, at the bottom of a large and deep gulf. It was founded in 1749, since when, with few intervals, it has been the capital of French St. Domingo, as it is now of the entire island. It is partially fortified—the harbor being protected by a battery on a small island, at a little distance from the shore. The country round is low and marshy; and the heat in the summer months being excessive, the climate is then exceedingly unhealthy. The buildings are principally of wood, and seldom exceed two stories in height. The entrance to the harbor is between White island and the southern shore. The depth of water varies from about 18 feet at ebb tide to about 21 feet at full tide. It is customary, but not compulsory, to employ a pilot in entering the harbor. They are always on the look-out. Ships moor head and stern, at from 100 to 500 yards from shore, loading and unloading by means of boats.

The Dominican republic claims for its territory the whole of the Spanish portion of the island. It is divided into five provinces, and has an area of about 17,500 square miles. The Dominicans are almost entirely an agricultural people. The staples of the southern provinces consist chiefly of the products of the forests. In Seybo, however, the raising of cattle is the chief occupation. But by far the most industrious part is the northern, generally called the Cibao, where the staple article is an excellent quality of tobacco. The articles of export are mahogany, satin-wood, lignum-vitæ, and brazil-wood, tobacco, hides, etc. The imports are chiefly flour and provisions from the United States, and general merchandise from Europe. The constitution of the republic is based on that of Venezuela. The Congress, which assembles annually, consists of 15 deputies—three from each province—who form the Tribunado or Lower Chamber, and five senators—one from each province—constituting the Consejo Conservador or Upper Chamber. The executive power is vested in a President, who is elected for four years, and who must be a Dominican by birth, and at least 35 years of age. The judiciary is exercised by a supreme court and various inferior and local courts, and the French code has been adopted in legal proceedings. In 1852 the revenue amounted to £76,853, and the ordinary expenditures amount annually to about £51,300. No foreign debt is owing; but there exists a large home debt, on which the currency is based, and which is of low and fluctuating value. The army amounts to 12,000 men, and may be raised to 16,000. The navy consists of three corvettes and five schooners equipped as war vessels, and mounted with 44 guns. The prevailing religion is Roman Catholic, but other denominations are tolerated. Population about 136,500.

The chief seats of commerce are San Domingo city and Samana, a small town on a peninsula of the same name. The city of San Domingo is situated at the mouth of the Ozama, on the southern coast, in N. lat. 18½°, and W. long. 70°, and is the oldest European settlement in the New World, having been built by Columbus in 1504. The population is about 14,000, and the town is defended by substantial fortifications. The cathedral is more than three centuries old. The harbor is capacious, but owing to a bar at its mouth, vessels drawing above 13 feet of water are obliged to anchor in the open roadstnad.

Population.—In 1789, the French part of Hayti was by far the most valuable and flourishing colony in the West Indies. The population was estimated at 524,000; of which 31,000 were white, 27,500 people of color, and 465,500 slaves. The Spanish part of the island was much less densely peopled—the number in 1785 being estimated at 152,640, of which 122,640 were free people of all colors, mostly mulattoes, and the rest slaves. The population of the entire island, in 1827, was estimated by Humboldt at 820,000, of whom 30,000 were whites; but there are good grounds for thinking that that estimate was exaggerated, and that the present population does not exceed 600,000 or 700,000.

Exports.—There has been an extraordinary decline in the quantity and value of the articles exported from Hayti since 1789. Sugar, for example, has fallen off from 141,000,000 pounds to almost nothing; coffee from about 77,000,000 pounds to little more than 25,000,000 pounds; cotton from 7,000,000 pounds to perhaps 650,000 pounds; indigo from 758,000 pounds to nothing, etc.! Mahogany is almost the only article the exports of which have increased of late years. The following table illustrates what has now been stated:

A General Table of Exports from Hayti, during the Years 1789, 1801, and from 1818 to 1826, both inclusive.

Years.	Muscovado Sugar.	Coffee.	Cotton.	Cacao.	Dye-woods.	Tobacco.	Mahogany.	Segars.
	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Feet.	
1789	93,573,300	76,835,219	7,004,274	....	....	....	....	....
1801	18,518,572	43,420,270	2,480,340	648,518	6,768,634	....	5,217	....
1818	5,443,567	26,065,260	474,118	434,368	6,819,300	19,140	129,962	....
1819	3,790,143	29,240,919	216,103	370,439	3,094,309	39,698	141,577	....
1820	2,514,502	35,137,779	346,839	556,421	1,919,748	97,600	129,509	....
1821	600,934	29,925,951	820,563	264,792	3,728,186	76,400	55,005	....
1822	200,454	24,835,372	592,368	464,154	8,205,080	588,957	2,622,277	279,000
1823	14,920	38,502,837	382,250	335,540	6,607,308	387,044	2,369,047	393,800
1824	5,106	44,269,084	1,024,045	461,694	3,858,151	718,679	2,181,747	175,000
1825	2,020	36,034,800	815,697	339,937	3,948,190	503,425	2,986,469	....
1826	32,864	32,189,784	620,972	457,592	5,307,745	340,588	2,136,984	179,500

Gum Gualacum, in 1822, 7,338 pounds—1823, 13,056 pounds—1824, 68,692 pounds.

Imports.—The principal articles of import are provisions: such as flour, rice, mess and cargo beef, fish, etc., and timber from the United States; cotton goods of all sorts, Irish and Scotch linens, earthenware, cutlery, ammunition, etc., from England; wines, satins, liqueurs, jewelry, toys, haberdashery, etc., from France, and linens, canvas, gin, etc., from Holland and Germany.

The destruction caused by the excesses which accompanied the revolution explains a part of this extraordinary falling off; but the greater part is to be accounted for by the change in the condition of the inhabitants. The blacks, being no longer compelled to labor, and regarding with abhorrence the culture of sugar and the other occupations in which they had been principally engaged, sunk into a state of idleness and apathy. The condition of all the great branches of industry that were formerly carried on became, in consequence, most deplorable, and the commerce of the island was reduced within the narrowest limits. Its successive rulers have endeavored, though with little success, to bring about a revival of industry. The *Code Rural*, enacted for this purpose by Boyer, 1826, is exceedingly stringent, its principal provisions being in fact copied from the regulations as to slaves embodied in the *Code Noir*. But even this code had little influence; and as a proof of the low state of industry in the island, we need only state that sugar has wholly disappeared from the list of exports, and that the exports of coffee and most other articles seem to be stationary or diminishing. And this result is, after all, only what should have been anticipated. To expect that half-civilized Africans, under a burning sun, and without the wants or desires of Europeans, should be equally industrious, is to expect what is contradictory, and all but absurd.

Commerce with the United States.—There being no treaty between the United States and Hayti, the commerce between the two countries is governed by such local laws and regulations as may from time to time be enacted. These are always subject to changes and alterations, sometimes so sudden—decrees of to-day superseding the laws in force but yesterday—that commercial interests, especially those of the United States, have been, in many instances, most seriously affected. The United States' commercial agent, in a dispatch to the Department of State, written in December, 1849, thus refers to this ruinous uncertainty of Haytien commercial legislation: "There is one subject to which I beg for a moment to draw your attention; that is, the sudden changes in the laws affecting commercial interests. 1. Within the last six months we have had the closing of the ports of Aquire, St. Marc, Miragoane, Port de Paix, and l'Anse Hahnault. 2. An additional duty of five per cent. on coffee, and of seven per cent. on logwood; and, lastly, we have had those modifications in the monopoly law. * * * Almost all these measures were enforced on the day of their publication, merchants only being apprized of the intentions of the government by a vague rumor. With such hasty legislation, the most careful and discreet are entrapped, and thus all calculation defeated, and frequently heavy loss entailed."

Advices more recently received represent but little amelioration in this unsettled state of commercial legislation. It is true, American commerce has been placed on a much better footing than it enjoyed at that period. Up to June 25, 1850, a law was in force subjecting the vessels of all nations that had not acknowledged the independence of Hayti to an additional duty of 10 per cent. The independence of the empire not having been formally recognized by the United States, American vessels were brought within the operation of this law, and could not, in consequence, compete with the vessels of such nations as had satisfied its requirements, even in exporting to Hayti our own staples. In January, 1850, the State Department was officially informed that this reciprocity duty of 10 per cent. additional, was, by a law then lately published, applied to American merchandise brought in vessels of any other nation whatever. This was an advantage to our ship-owners, as one or two vessels, under foreign flags, were then running as packets from the United States to Hayti, and also from the adjacent islands, bringing American goods under the preference of 10 per cent. over American bottoms. It placed the American flag on an equality with that of other nations in the carrying trade of our staples exported to Hayti; and an increased American tonnage engaged in the trade, and a general activity in the commercial movements between the two countries were immediately perceived.

Still, American commerce in this quarter had to encounter a difficulty no less, if not even more, formidable than the discrimination just abolished. This was a decree and accompanying tariff, which took effect January 1, 1850, the 3d article of which was in these words: "The articles designated in the tariff, annexed to the present decree can not be so'd above the prices fixed by said tariff." Articles 4, 6, and 8 ran thus: "There shall be established in each of the ports of Port-au-Prince, Aux Cayes, Cape Haytien, Jacmel, Gonaives, and Jeremie, warehouses, into which shall be put in dépôt, after having regularly passed through the custom-houses, such articles of merchandise as are designated in the tariff annexed to the present decree."

* * * "Coffee shall only be divided among importers of articles included in the tariff, which division shall be made pro rata, according to the acquired rights of each." * * * "The government reserves to itself the right of retaining, out of the quantity of coffee declared for division, a certain portion, to be disposed of according to the necessities of the moment; such portion shall not, however, exceed one fifth of the existing quantity." The low tariff prices fixed upon most American goods, and those to the Haytiens of the first necessity, when contrasted with the more liberal prices assigned to the merchandise of other nations, almost paralyzed for a time American trade. A dispatch from Aux Cayes, written at that period to the Department of State, says: "While the citizens of France are scarcely affected in their importations to Hayti, the Americans here import, and our merchants at home export, scarcely any article that is free." Still, in the face of these annoyances, and despite the embarrassments which they must have occasioned, one half, at least, of the foreign trade of Hayti is in the hands of American merchants. Naturally indolent, and unhappily deprived of all legislative stimulus to industry and labor, the natives have lost that spirit of emulation and agricultural enterprise which conducted them to a comparatively high state of prosperity under the administration of earlier rulers. The degree of this prosperity, thus attained, may be inferred from the following statement, exhibiting the quantities and values of the produce exported from St. Domingo to France, from January 1 to December 31, 1790. The figures and other data are derived from a rare statistical chart, published in France, by the government, that year, entitled "*Tableau de Douanes et du Commerce de la partie Française de St. Domingue.*"

The free population of this portion of the island in 1790 was:—whites, 38,360; blacks, 8370. The number of negroes employed in labor was 455,000. The navigation returns show the number of vessels entered to have been 763, with an aggregate measurement of 55,748 tons; and the number cleared 721, measuring 53,321 tons. The total value of agricultural property, including negroes, stock, etc., in the French division, in 1790, is stated at about $208,297,600. The number of coffee plantations was 2810; of cotton, 705; of indigo, 3097; and of cocoa, 69.

QUANTITIES AND VALUES OF PRODUCE EXPORTED FROM ST. DOMINGO (CHIEFLY FROM THE PORTION NOW COMPRISED WITHIN THE LIMITS OF HAYTI), FROM JANUARY 1 TO DECEMBER 31, 1790, WHILE A COLONY OF FRANCE.

Products.		Quantities.	Values in livres.
Sugar, white	pounds	70,227,708	67,670,781
" brown	"	98,177,512	49,041,567
Coffee	"	68,151,180	51,980,748
Cotton	"	6,286,126	17,572,252
Indigo	"	980,016	10,875,120
Cocoa	"	150,000	120,000
Strup	jars	29,592	1,947,182
Taffia	kegs	808	21,816
Hides, tanned	sides	7,887	78,870
" raw	number	5,186	93,348
Tortoise-shell	pounds	5,000	50,000
Mahogany and Campecho	"	1,500,000	40,000
Value in colonial cur. (livres)		....	199,401,634
Value in British money		....	£8,565,600
Value in dollars		....	$27,828,000

In 1789 Hayti was a colonial possession of France; in 1801 it was under the government of Toussaint; in 1818 and 1819 it was under that of Christophe; and during the residue of the years designated in the statement, it was under that of President Boyer.

The following statement exhibits the quantities of coffee, cotton, cocoa, logwood, and tobacco exported from Hayti from 1835 to 1849 (1842 excepted), both inclusive:

Years.	Coffee.	Cotton.	Cocoa.	Logwood.	Tobacco.
	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.
1835	48,852,871	1,649,717	397,821	13,208,737	2,086,606
1836	37,622,674	1,072,555	550,484	6,767,902	1,222,716
1837	30,845,400	1,018,171	266,024	6,030,298	890,569
1838	49,820,941	1,170,175	458,418	7,887,986	1,995,049
1839	37,889,092	1,635,420	477,414	25,946,068	2,102,791
1840	46,120,272	922,575	442,365	39,288,205	1,725,389
1841	34,114,117	1,591,454	640,016	65,071,391	3,219,600
1843	44,900,554	448,422	708,827	23,569,904	1,715,816
1844	48,884,908	914,835	518,448	47,405,120	171,585
1845	41,092,571	557,480	830,604	68,181,588	5,609
1846	33,508,179	570,061	690,102	59,923,868	576
1847	48,388,699	525,083	1,171,520	92,795,670	....
1848	37,630,435	411,481	905,895	86,340,072	....
1849	30,668,843	544,126	664,516	86,292,580	....
Total	566,898,850	13,026,547	8,657,954	198,740,279	14,336,346

The total quantity of acajou—a species of mahogany—exported during 11 of the years designated was 18,113,272 lbs. The exportation of pitre—a species of aloes, which furnishes a substitute for hemp and flax—appears to have commenced in 1846, and, in the four ensuing years, had amounted to an aggregate of 412,-874 lbs. In 1835, 8500 cigars; 1097 lbs. sugar; 24,951 hides; 31,192 lbs. of rags; 10,993 lbs. of wax; and 8769 lbs. of ginger were exported; while the ensuing year, the figures were, respectively, 33,000, 16,891, 14,891, 275, and 15,509—sufficiently indicative of the great fluctuations to which the foreign trade of Hayti was subject.

A glance at the statements presented will show that a great change took place in the character of the exportation from Hayti during the 60 years between 1789 and 1849. Sugar, indigo, and tobacco, which were staples of export in 1789, had entirely disappeared from the table in 1849; the exportation of coffee and cocoa had (if we except two years) remained nearly stationary, while the exportation of logwood had vastly augmented, and that of cotton had greatly diminished. The quantities of the article last named, imported from Hayti into the United States during the five years ending June, 1855, was as follows:—1851, 12,000 lbs.; 1852, none; 1853, 215,799; 1854, 196,127; 1855, 189,211; exhibiting an aggregate of 613,140 lbs., and an average, each year, of 122,628 lbs.

The quantity of coffee exported in 1850 was about 45,000,000 lbs., while in 1851 it exceeded 50,000,000 lbs.; and in 1852 the quantity produced must have reached 56,000,000 pounds, as the fifth part thereof, claimed by the government, amounted to 11,200,900 lbs. As regards tobacco, since the political division of the island, its culture and its trade are in the hands of the Dominicans. There is, however, considerable

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traffic in this article at some of the ports of Hayti; but it is imported by the coasters from the ports of the republic. In view of the statistics of Hayti, thus presented, it is evident that the movement of the country has been vastly retrograde since it was a possession of France. In 1789 it exported, as we have seen, 150,-000,000 lbs. of sugar, and nearly 1,000,000 lbs. of indigo; in 1849 it exported none; in the former year it exported 77,000,000 lbs. of coffee, and more than 7,000,-000 lbs. of cotton; in 1849 the exportation of the former amounted to less than 31,000,000 lbs., and of the latter, to little more than 500,000 lbs.; while the total value of exportations from Hayti, which, in 1789, are given at 205,000,000 francs, 40 years later were but 3,500,000 francs! A foreign resident at the capital of Hayti, in view of these facts, writes as follows, under recent date:—"This country has made, since its emancipation, no progress whatever. The population partially live upon the produce of the grown-wild coffee plantations, remnants of the French dominion. Properly speaking, plantations after the model of the English in Jamaica, or the Spanish in Cuba, do not exist here. Hayti is the most beautiful and the most fertile of the Antilles. It has more mountains than Cuba, and more space than Jamaica. Nowhere the coffee-tree could better thrive than here, as it especially likes a mountainous soil. But the indolence of the negroes has brought the once splendid plantations to decay. They now gather the coffee only from the grown-wild trees. The cultivation of the sugar-cane has entirely disappeared; and the island that once supplied one half of Europe with sugar, now supplies its own wants from Jamaica and the United States."

The following statement exhibits the general navigation and trade of the port of Cape Haytien during the year 1841, and the share thereof assigned to the United States:

Nations.	No. of vessels.	Value of cargoes inward.	No. of vessels.	Value of cargoes outward.
United States	40	$288,990	42	$211,620
British	19	145,480	16	161,935
Haytien	3	5,145	1	1,120
French	11	135,410	9	182,780
German	11	112,545	10	256,895
Total	84	$682,570	78	813,850

The trade of the port of Gonaives, during the same year, is given as follows:

Nations.	No. of vessels.	Value of cargoes inward.	No. of vessels.	Value of cargoes outward.
British	13	$6,905	12	$91,765
French	10	17,525	10	73,270
Danish	1	Ballast.	1	48,420
Hamburg	1	1,420	2	18,935
United States	30	49,850	27	161,930
Total	55	$75,700	52	$394,320

The British vessels engaged in this trade came from Turk's Island, Nassau, St. Thomas, Trinidad, Barbadoes, and Demerara, and were freighted with dry-goods, hardware, crockery, beer, bricks, and provisions; but, as these islands are supplied chiefly with the articles last named from the United States, it is evident that, unless, under positive prohibitions, or under restrictions equivalent thereto, the United States can at all times control the foreign trade of Hayti in this species of merchandise, which the natural indolence or general aversion to agricultural labor of the Haytiens necessitates them to seek from other nations, and renders as indispensable to their comforts, if not to their very existence, in 1855, as in 1841.

The following table exhibits the foreign navigation of Hayti for a period of six years, from 1847 to 1852, both inclusive:

Years.	Vessels.	Tons.
1847	830	150,478
1848	678	98,376
1849	1,065	155,220
1850	1,160	162,288
1851	897	117,817
1852	995	139,320

TABLE EXHIBITING THE NATIONS TO WHICH BELONGED THE VESSELS EMPLOYED IN THE TRADE OF 1849 AND 1850.

Nations.	1849.		1850.	
	Vessels.	Tons.	Vessels.	Tons.
United States..	486	65,554	610	81,054
Belgium.....	19	4,848	18	2,478
Denmark.....	144	28,707	162	21,409
France.....	114	22,591	84	15,797
Great Britain...	258	31,756	204	30,756
Holland.....	10	580	87	1,688
Hanse-towns...	28	5,036	31	6,922
Other countries.	11	1,648	19	2,734
Total.....	1,065	155,220	1,160	162,238

The navigation of 1851, compared with that given above for 1850, shows a falling off in number of vessels of 260, measuring 44,421 tons; and the returns for 1852 show a like decrease over those of 1850 of 165 vessels, of 22,409 tons, but an increase over those of 1851 of 98 vessels and 22,012 tons.

General Remarks.—The trade between the United States and Hayti is becoming, every year, more important and necessary to both countries. Heretofore, the imports into the empire from the United States consisted almost exclusively, of provisions, for which were exchanged coffee, logwood, mahogany, etc. Articles of apparel, cotton manufactures, and fashionable goods were supplied chiefly from France, England, Germany, etc. Under the discriminating, or, rather, the reciprocity duty—namely, 10 per cent. additional duty upon the cargoes of vessels belonging to nations that have not recognized the independence of Hayti—United States' merchants offered no serious competition to those of the privileged nations, except in regard to such merchandise as was indispensable to the natural wants of the Haytiens, and in respect to which our undisputed monopoly of the trade enabled our merchants to countervail the discrimination, and still maintain a brisk and profitable trade. In cotton and other manufactures, and general cargoes, the British and French held the first rank in the Haytien markets. With the abolition of the reciprocity duty, the United States' flag entered the Haytien ports on terms of perfect equality with those of other nations; and our merchants, at once, disputed the pre-eminence hitherto held by other nations in the general trade of Hayti. American cotton and other manufactures filled the warehouses at the different ports; and, from the superiority of their quality, and the lower price at which they could be sold, were soon generally preferred and sought after by Haytien purchasers. Instead of occupying, as heretofore, the third or fourth rank among foreign nations trading with this country, the United States now claim fully one half of its entire foreign commerce.

The French authority which has already been quoted in this Digest, says: "Favored by their proximity to Hayti, the Americans are determined on reducing the price of their salt provisions, their flour, soap, etc., to so low a figure, that European competition is out of the question. They export from their warehouses at New York,* at low prices, wines, hardwares, hats, caps, French silks, English manufactures, etc. They also furnish the Haytiens with the oils and pastes of Italy, and monopolize the sale of candles, tapers, cheese, and timber for building. They maintain the same superiority in the export trade. They take three fourths of the different woods cut in Hayti, two thirds of all the coffee exported, and are the exclusive exporters of pitre, fustic, and nearly so of tortoise-shell. In fine, the commercial superiority of the United States extends over every part of the empire, and, in its rapid progress, bids fair to exclude altogether the vessels, as well as the merchants of Europe. * * *

* An official return of American trade at one port, "Cape Haytien," for only six months, shows that, during that period, American vessels arrived from 17 different ports of the United States!

"Among the countries with which the United States have commercial intercourse, Hayti holds the ninth rank as respects tonnage. All the States are more or less interested in the Haytien trade. The north-eastern States find a market there for their fish and other merchandise; Pennsylvania, northern Virginia, Maryland, Ohio, Indiana, Kentucky, Illinois, and Missouri, for their salted pork; Vermont, New York, Massachusetts, Illinois, and Ohio, for their salted beef; Philadelphia and Boston, North and South Carolina, Virginia and Kentucky, for their household furniture, their rice, and tobacco. The manufacturers of New England, New York, and Pennsylvania, have already secured an extensive market in Hayti for their cheap cotton textiles, and successfully compete with European manufactures."

The extent and value of the commerce of the United States with the island of San Domingo, in the year ending 30th June, 1856, was as follows:

Imports into the United States.....	$1,924,259
Exports from the United States,	
Domestic produce and manufacture $1,862,823	
Foreign produce and manufacture 263,621	
	2,126,451
Total value of commerce.....	$4,050,710

"The official returns of the United States show that Mexico, with a population of 8,000,000, imported from the different ports of the Union, in 1851, less by $335,507 than Hayti.* The trade of the United States with the latter country is, therefore, more profitable than that with Mexico; indeed, American vessels generally return in ballast from Mexican ports, or go to other States in search of freight; while in Hayti they always find cargoes, if not of coffee, at least of acajou, campeche, and pitre, which are always in abundance. In 1851, the United States exported to Hayti cotton goods valued at $296,000, while the value of similar merchandise exported to Cuba reached only $26,000. The soap exported from the United States to the former country exceeded 1,928,682 boxes; to the latter, only 389,748. Hayti receives from the United States three times as much flour as Cuba, and six times as much salted pork."

With the exception of the errors already noted, and a few others of the press, the article in the French statistical work, of which the preceding summary gives the substance, presents a generally accurate review of the commerce of the United States with Hayti. Notwithstanding the United States has not yet recognized the independence of Hayti, nor entered into any treaty with its government, the restrictions and petty annoyances to which our merchants and citizens in that country have heretofore been subjected are now removed, and the fruits of this more liberal and friendly feeling are witnessed in our annually increasing commerce, and the preponderance of, and preference for, American merchandise in the market of Hayti. This liberal state of things may, however, at any moment, change. In the absence of any commercial treaty between the two countries, our relations with Hayti are dependent on the will or caprice of the emperor. In this respect, France and England are on a safer footing than the United States.

It is stated, on the authority of private letters from Port-au-Prince, that the emperor has recently published an edict prohibiting the further cutting of mahogany, and also the transportation to the sea-board of what wood is now cut in the interior. The reason assigned for this measure is, that his majesty wishes to turn the attention of his people more to the cultiva-

* There is an error in the text in reference to our trade with Mexico for 1851. The book from which the figures are taken, makes this difference $15,189 more than is given above. Thus, total trade with Hayti in 1851, $3,386,652; total trade with Mexico in 1851, $3,386,652; difference in favor of Hayti, $350,096; difference as per text, $335,507; error in text, $15,189.

tion of their fields and the production of provisions, the quantity of which grown in the empire is insufficient for the supply of the inhabitants.

The importation into the United States from Hayti, of mahogany and other cabinet-makers' wood, is diminishing in value. In 1850, it reached $65,331; in 1853, $105,322; and in 1855, it fell to $49,507. In 1856 the amount was larger, and reached $60,679.—*U. S. Com. Digest.*

The commercial statistics of the empire and republic, as supplied by the Register of the United States' Treasury, are not separated, and hence the commerce of the Island with the United States must be considered in the aggregate.

COMMERCE OF THE UNITED STATES WITH HAYTI, FROM OCTOBER 1, 1820, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage Cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1821	$1,740,883	$530,218	$2,270,601	$2,240,257	$60,164	$504,409	46,171	547
1822	1,746,107	378,704	2,119,811	2,251,817	1,525	229,493	43,167	946
1823	1,670,140	708,642	2,378,782	2,392,793	104,697	55,502	37,480	890
1824	1,901,926	403,229	2,305,155	2,217,235	51,462	160,027	46,267	489
1825	1,648,055	406,560	2,054,615	2,065,329	21,100	61,235	30,866	465
1826	1,252,910	166,584	1,414,494	1,511,836	....	126,945	32,209	1,468
1827	1,102,478	169,436	1,331,909	1,781,809	....	47,182	25,720	3,774
1828	1,123,405	209,306	1,332,711	2,160,585	20,553	60,708	24,737	5,863
1829	814,987	160,171	975,158	1,709,809	8,483	46,081	18,164	2,988
1830	714,791	108,887	823,178	1,597,140	....	31,718	19,395	1,748
Total	$13,775,177	$3,291,287	$17,066,414	$20,107,050	$267,989	$1,341,143	333,166	19,118
Sept. 30, 1831	$1,126,698	$191,677	$1,318,375	$1,580,578	$11,092	$95,714	27,807	1,006
1832	1,243,510	425,498	1,669,008	2,053,386	800	16,150	29,990	1,279
1833	1,147,809	280,154	1,427,963	1,740,058	6,395	22,078	28,425	656
1834	1,244,424	192,528	1,436,952	2,113,717	6,965	13,609	32,682	517
1835	1,588,475	277,337	1,865,812	2,347,556	....	11,270	38,274	847
1836	1,054,974	185,065	1,240,039	1,828,019	53,544	67,299	24,263	548
1837	871,938	140,043	1,011,981	1,440,856	38,847	9,940	17,642	1,392
1838	814,421	95,834	910,255	1,275,762	83,373	6,408	15,066	2,014
1839	991,265	181,294	1,172,559	1,577,989	216,458	3,109	21,081	2,047
1840	943,865	81,849	1,027,214	1,252,824	165,510	16,488	20,668	2,818
Total	$10,978,879	$2,001,274	$12,980,153	$17,010,745	$580,324	$202,053	255,843	14,264
Sept. 30, 1841	$1,093,634	$61,923	$1,155,557	$1,809,681	$187,167	$10,900	26,904	763
1842	844,452	55,514	899,966	1,266,997	68,143	86,264	21,115	563
9 mos, 1843	610,706	42,674	653,370	898,447	87,998	87,188	16,606	717
June 30, 1844	1,092,807	45,549	1,138,356	1,441,244	63,016	90,468	20,710	649
1845	1,327,891	77,849	1,405,740	1,886,867	55,544	237,617	27,919	534
1846	1,114,018	43,129	1,157,142	1,542,962	90,001	260,272	23,425	1,642
1847	1,187,017	111,756	1,298,773	1,891,580	39,062	217,725	27,959	2,500
1848	937,586	156,229	1,093,815	1,367,174	18,787	42,955	28,340	2,649
1849	592,577	70,015	662,592	901,724	37,776	42,174	16,556	4,552
1850	1,211,007	139,181	1,350,188	1,544,771	164,687	13,123	29,981	8,127
Total	$9,941,780	$803,719	$10,745,499	$13,550,950	$757,086	$1,088,636	240,515	22,496
June 30, 1851	$1,679,372	$167,918	$1,847,290	$1,889,968	$181,494	$111,183	33,152	7,586
1852	1,479,926	239,577	1,718,903	1,870,672	90,098	87,125	32,865	7,320
1853	1,788,413	209,520	1,998,933	1,985,024	134,609	84,784	31,869	6,124
1854	1,880,187	329,538	2,209,725	2,357,252	45,634	23,845	38,245	4,797
1855	1,929,334	315,718	2,245,052	2,615,525	60,878	10,956	37,193	9,051
1856	1,862,928	263,631	2,126,454	1,924,259	104,095	16,940	34,260	4,750

Port Charges.—The charges on a native and a foreign ship of 300 tons are the same, and as follows:

Tonnage duty	$300 00
Administrator	12 00
Commandante de place	12 00
Commissaire de guerre	12 00
Commandante de port	12 00
Director of customs	12 00
Interpreter	12 00
Treasurer	12 00
Doctor	12 00
Stamps for entry and clearing	16 50
Fountain tax	20 00
Pilotage	2 00
Total, currency	434 50

Custom-house Regulations.—On arrival, the master of the vessel proceeds to the custom-house with the interpreter, where he makes his declaration whether he discharges the cargo in the port. If he discharge, his invoices are translated, and the goods verified in the presence of the consignee, who is allowed to land and store them. On clearing outward, the merchant pays the duties on the cargoes both ways, and exhibits a receipt at the office of the commissaire de guerre, commandante de place, and commandante de port, who sign a certificate that the vessel may depart.

Warehousing.—The warehousing and bonding system is established by law, but there are at present no buildings appropriated to the reception of bonded goods. Until very recently, goods were permitted to be bonded under this law in the merchants' stores; a late order has, however, suspended that indulgence. The rate is 1 per cent. per year, and no allowance made for waste or loss. Goods exported in the same vessel they arrive in, pay, if landed, ½ per cent. and wharfage fees.

Money.—The weight of the dollar is 216 grains; the ½ and ¼ dollar being in proportion. But nearly ½ the weight of the coin consists of tin or other alloy; so that the value of the dollar does not exceed 1s. 6d. sterling.

Weights in Hayti are divided as in avoirdupois and apothecaries' weight; but they are about 8 per cent. heavier than British weights.

Measures.—Same as those used in France.

Regulations as to Trade.—It is enacted, that all persons exercising any trade or profession, excepting that of cultivating the soil, must be provided with a patent or license to carry on such trade or profession; that all strangers admitted as merchants into the republic must, in the first place, procure the permission of the president to take out a patent, which, when obtained, only authorizes them, under heavy penalties, to carry on a wholesale business, not with each other, but with the Haytians, in the open ports, which are Port-au-Prince, Gonaives, Cape Haytien, Port-à-Plate, Santo Domingo, Jacmel, Les Cayes, and Jérémie. The minimum quantities of goods that may be sold are fixed by the same law. The Haytian consignee may be also a retailer, on taking out a corresponding patent.

A charge of 2000 dollars is made for each patent to a foreigner trading to Port-au-Prince; $1800 for Les Cayes, Cape Haytien, and Jacmel; and $1600 for each of the remaining ports.

Duties.—The duties on all imported commodities consigned to foreign merchants are 17½ per cent. on

an established tariff, whether they be brought in native or foreign ships, with the exception of those from the United States, which pay an additional 10 per cent. on the amount of the duties. Goods consigned to native merchants pay only 16½ per cent.

The following articles are duty free in all bottoms: Shot of all sizes, grenades, howitzers, bomb-shells, and other projectiles of artillery; iron and bronze cannon, mortars, muskets and bayonets, carbines, pistols, and cavalry sabres, briquets, or short swords for infantry; machines and instruments for simplifying and facilitating the cultivation of the soil, and the preparation of its products; horses and cattle, mules, asses; gold and silver coin; classical and elementary works, sewed in boards, or bound in parchment, for the instruction of youth.

The following is a list of articles absolutely prohibited, without reference to their place of growth: Mahogany, logwood, lignum vitæ, fustic, coffee, cotton, wool, cacao, raw and clayed sugar, rum, taffia, syrup, molasses; canes, whips, and umbrellas, containing swords, stilettoes, or other arms; books and other works opposed to good morals.

Besides the export, there is also a territorial duty levied equally on the produce of the soil, whether exported in national or foreign ships.

The export of the following articles is strictly prohibited: Gold and silver coin, side and fire-arms, munitions, and other articles of war; old or new iron, copper; horses, brood mares, mules, asses, and wood for ship-building.

The coasting trade is entirely confined to Haytian citizens.

The following tabular statement exhibits the foreign trade, import, and export, of Cape Haytien for the year ending December 31, 1852:

STATEMENT OF IMPORTS AT CAPE HAYTIEN, FROM JANUARY 1, TO DECEMBER 31, 1852.

Flag.	Where from.	Sloops.	Schooners.	Brigs.	Ships.	TOTAL. No. of vessels.	TOTAL. Tons.	Amount invoices, Spanish currency.	Total invoices, Spanish currency.	Duties paid, Spanish currency.
								Dollars.	Dollars.	Dollars.
American	United States	..	28	14	..	37	4,860	211,091 50	220,000 39	46,826 80
English	"	..	..	1	..	1	123	8,308 89		
Hanover	"	..	1	..	..	1	152			
Oldenburg	"	..	..	1	..	1	250			
						40	4,884			
Oldenburg	Bremen	..	4	..	..	4	420	40,910 04	92,966 24	10,485 94
Danish	Hamburg	..	1	..	..	1	109	52,056 20		18,148 45
Hamburg	"	..	..	1	1	2	887			
"	Coastwise	..	..	..	1	1	130	....		
Danish	"	..	..	1	..	1	127	....		
						9	1,178			
French	France	..	..	3	2	5	796	....	55,598 88	10,907 16
"	Coastwise	..	..	..	3	3	610			
						8	1,406			
French	St. Thomas	..	..	1	8	9	2,079	9,888 58	88,770 10	11,368 50
English	"	1	1	1	..	3	209	2,527 00		
Danish	"	2	..	..	1	3	193	22,404 52		
Haytian	"	1	..	..	..	1	49	4,000 00		
Prussian	"	..	..	..	1	1	287	....		
Hamburg	"	..	..	..	1	1	283	....		
						18	3,050			
English	Liverpool	..	..	1	..	1	138	13,786 00	34,452 15	8,623 87
Belgian	"	..	..	1	..	1	141	20,666 15		
English	Coastwise	..	..	2	..	2	317	....		
						4	591			
English	Turk's Island	2	2	..	..	4	165	....	246 00	216 95
Total		6	32	27	18	88	11,269	....	442,033 76	101,527 17

Cape Haytien.—This port has not yet entirely recovered from the affects of the earthquake of 1842, nor has its general commerce regained the high rank which it held prior to that period. Still, its navigation is not unimportant. In 1850 there entered and cleared 55 vessels, with an aggregate of 8509 tons more than in 1849. In 1829 the imports at this port amounted to 2,500,000 francs, and in 1850 to 3,343,168 francs. The large bulk of this trade is in the hands of American merchants. A French statistical work, referring to this fact, offers two explanations of the great preponderance of American trade, not only at this port, but in Hayti generally, as follows: "The United States conduct about one half of the foreign navigation of Hayti. In 1850 their progress was accelerated beyond all precedent, showing an augmentation over 1849 of 124 vessels, with an aggregate of 15,000 tons. The facility with which they open with their neighbors a credit which is often refused them in Europe, together with the efforts of their propagandists of different sects scattered over the island, is eminently favorable to the increase of American influence." If there were even any plausibility in this suggestion, it would prove, perhaps, more than the author intended; for, ambitious as France confessedly is, and has ever been, to extend her commerce, and foster her mercantile interests, even by restrictions and discriminations, which are now almost universally discarded, the assertion of her statistician, above quoted, would imply that this source of American commercial preponderance in Hayti was not available to her; but some other cause must be looked for, in view of the fact, that, while American merchants do sometimes—nay, very frequently—"give credit" to their consignees and purchasers in Hayti, they invariably pay *cash*, or its equivalent, for all their exports. For such articles as are monopolized by the government, the Haytian law is peremptory as to that mode of payment.

The other explanation assigned is more reasonable. It is in these words: "Always on the look-out for new sources of trade, the Americans purchase at Cape Haytien red-peppers, and orange and lemon peel. This new branch of trade, as well as the purchase of rags, has succeeded beyond expectation. Many houses at New York receive full cargoes of these descriptions of merchandise, actually *priceless* in Hayti, on which they realize large profits." This is, at least, a more commercial explanation; and, taking it to be true, as there is no evidence to the contrary, it shows that our

merchants are determined to maintain their present relations with Hayti, even if they must take in part, in exchange for their provisions, their lumber, their hardware, their cotton goods, and their French wines and haberdashery, such *valueless* goods as the raw material for the consumption of their 750 paper-mills, at any one of which their rags will always command a ready sale at four cents per pound, and raw material for the manufacture of bergamot and various useful and costly essences. These 750 mills, the number in the United States in 1852, manufacture 270,000,000 pounds of paper annually, valued at $27,000,000, and consume each year 405,000,000 pounds of rags, for which our seamen have to sail to every quarter of the globe. See article on ITALIAN STATES; see, also, article on PAPER.

STATEMENT OF EXPORTS FROM CAPE HAYTIEN, FROM JANUARY 1, TO DECEMBER 31, 1852.

Flag.	Where for.	Ships.	Brigs.	Schooners.	Sloops.	Total. No. of vessels.	Total. Tonnage.	Logwood.	Coffee.	Cocoa.	Mahogany.	Tobacco.	Duties paid, Haytien currency.
								Lbs.	Lbs.	Lbs.	Feet.	Lbs.	Dollars.
American...	United States...	..	18	24	..	87	4,489	4,433,650	2,616,602	119,191	18,846	....	
English....	"	..	3	1	..	4	505	812,300	171,884	3,620	7,572	....	
		..	..	..	..	41	4,984	5,245,950	2,788,486	122,811	26,418	....	$252,620 42
French.....	France.....	14	5	..	..	19	4,022	6,847,550	1,786,782	56,947	29	140	164,680 21
Haytien....	"	1	..	..	..	1	178						
Oldenburg..	Bremen.....	..	1	5	..	6	751	880,500	898,630	22,886	32,537	15,639	69,812 64
Hamburg...	Hamburg.....	1	2	..	..	3	575						
Danish.....	"	..	1	1	..	2	270	526,550	653,806	16,184	31,808	68,927	48,618 07
Hanover....	"	..	..	1	..	1	152						
English.....	Liverpool.....	..	2	..	..	2	846	82,000	456,096	....	....	....	17,602 49
"	Falmouth.....	..	1	..	..	1	136						
Prussian....	For orders.....	1	..	..	..	1	287						
Danish.....	"	1	1	..	..	2	862	498,800	592,370	17,641	8,080	17,720	32,791 06
Belgian....	"	..	1	..	..	1	141						
English....	Nassau & Inague	..	..	..	2	2	83						
Haytien....	Turk's Island....	..	..	1	..	1	40	4,000	9,382	....	....	....	747 46
English....	St. Thomas.....	..	..	2	1	3	141						
Danish.....	"	..	..	..	2	2	48	179,000	86,874	103	823	....	7,789 03
Haytien....	"	..	..	..	1	1	49						
Total.....	.....	18	30	35	6	89	12,470	13,714,350	7,242,966	236,572	99,195	102,426	594,681 38

Head. The fore extremity of a ship. It generally means the entwnter, which is adorned with a figure. *By the head*, implies that the ship's head is depressed in the water. *Head sails, head yards*, are the sails and yards in the fore part of the ship.

Headland. In Geography, a term nearly synonymous with cape, mull, or promontory; which see.

Heath, or Heather. In a general sense the term *heath* is applied to waste land in which the prevailing plants consist of one or more of the common species of heath—*Calluna* and *Erica*. (*Calluna vulgaris*, Sal. The *Erica communis* of Linnæus.) This plant covers many hundreds of acres in the Highlands of Scotland, Ireland, and in similar climates on the Continent. It attains, in many places, the height of 3 or 4 feet; and is used for thatching houses, making besoms, and for a variety of other purposes. The tender tops form a substitute for mattresses in Highland cottages; and they are also eaten green and in a dried state by horses, cattle, and sheep, in countries where the grasses and clovers do not begin to grow till late in the spring.

Heave, in nautical phrase, to employ force to move great weights by the lever, etc.; as *to heave up* the anchor by the capstan or windlass; *to heave down* the ship, or pull her over on one side to get at a leak; also *to heave taught* (tight), or turn the capstan till the rope or chain applied to it becomes tight.

Hebrides, The, or Western Islands of Scotland, consist of about 200 islands or islets, lying between N. lat. 55° and 58° 51′, and W. long. 5° and 7° 52′. Their ancient name was *Hebudæ* or *Ebudæ*, and the alteration was simply the result of a printer's error in an early edition of the works of the venerable Bede, published in Paris. From the census returns it appears that in 1851 the number of inhabited islands in the Hebrides was 79, having a population of 116,367; from 20 to 30 more are partially inhabited during the summer and grazing season. The most southern of the group are situated on the Firth of Clyde—as Bute, Arran, the Cumbrays, Lamlash, and Inchmarnoch. The geological formation of these islands includes granite, gneiss, slate, trap, sandstone, and limestone. Arran is peculiarly rich in attractions both to the geologist and botanist, and possesses highly picturesque scenery. The other islands are usually divided into the *Outer Hebrides*, or Long Island, and the *Inner Hebrides*. The former consists of the Lewis, Harris, North and South Uist, Benbecula, Barra, and a number of smaller islands—the whole length from Barra-Head to the Butt of Lewis being about 130 miles. The Inner Hebrides include Islay, Skye, Mull, Jura, Coll, Colonsay, Rum, Tiree, Ulva, Linamore, etc.

Heel. The after extremity of the ship's keel; also the foot of a mast. *To heel over*, to incline to one side.

Helena, St., an island in the South Atlantic, belonging to Britain; S. lat. 15° 55′ 26″; W. long. 5° 42′ 30″. It is about midway between Africa and South America, 1800 miles from the Cape of Good Hope, and 600 miles from the island of Ascension. Its extreme breadth is 7 miles; and its greatest length 11 miles; its area is 30,300 English acres. The geology of St. Helena is interesting. The island may be considered as the highest peak of a range of mountains traversing the South Atlantic, and is most probably and extinct tertiary volcano. Geologists have been unable to fix with exactness its chronological position. The volcanic forces which have produced the complicated disturbances so conspicuous throughout the island, must have ceased at a very remote period, as it has evidently retained for ages its existing conformation.

The climate of St. Helena, though within the tropics, is temperate and healthy, and not unfavorable even to European constitutions. In James Town (600 feet above sea-level), the thermometer seldom rises above 80°; but in calm weather the heat reflected from the sides of the valley is often oppressive. In the open country the temperature is more uniform and mild, scarcely so hot and never so cold as in England. During some seasons the highest point of the thermometer during the summer has been only 72° in the interior; and the ordinary range during winter from 55° to 56°.

The soil of St. Helena is clayey, and in many places of considerable depth. Vegetation is very luxuriant in the island, which is abundantly supplied with water from 160 excellent wells. In some parts of the island

iron ore has been found, but the scarcity of fuel prevents it from being smelted. Gold and copper have been observed in small quantities. Concrete limestone is excellent in quality and abundant. The hills are covered with furze and various indigenous shrubs and trees. Of the latter the most abundant is the gumwood, of which there are three kinds, the common, the bastard, and the dwarf gum-tree. Other native trees are stringwood, dogwood, redwood or ebony, and the cabbage-tree, of which the last two are very durable as building timber. Oaks, cypress, and pinaster, have been introduced into the plantations, and thrive well. The ferns of St. Helena are numerous, and the myrtle grows to the height of 30 feet. The cotton plant also thrives very well. Fruits ripen best in the valleys near the coast, but every farm produces in abundance the common fruits and vegetables both of the tropical and temperate zones. The attempts to grow cereals have not succeeded. Of the 756 species of plants now found in the island only 52 are natives. The cattle, sheep, and goats on the island are of English origin.

St. Helena was discovered by the Portuguese in 1501. They succeeded in concealing the position of St. Helena from other European nations till 1588, when it was descried and visited by Captain Cavendish on his way home from a voyage round the world. Soon after this it became well known to the Dutch and Spaniards. In course of time it was abandoned by the Portuguese, and taken possession of by the Dutch, who in turn abandoned it on the establishment of their colony at the Cape of Good Hope in 1651. On their departure the English East India Company formed a settlement upon St. Helena, and about ten years afterward obtained from Charles II. a charter for its possession. In 1665 the Dutch successfully attacked the island, but in a few months were driven out of it by the English. Again, in 1672, the Dutch recaptured it, through the treachery of the planters; but it was almost immediately recovered by an English squadron, under Captain Munden, and again restored to the East India Company. As the trade of the East India Company increased, the importance of the island became daily more apparent.

But the chief historical interest of St. Helena centres in Longwood House, the residence of the exiled Emperor Napoleon from 1815 till his death, May 5, 1821. The house in which the emperor lived has been allowed to fall gradually into decay ever since his body was removed to France in 1841.—Brooke's *History of the Island of St. Helena*; Johnson's *Account of St. Helena*; Beatson's *Tracts relative to the Island of St. Helena, etc.* In 1805, the population was 3078; in 1823, 4381 (composed of 1201 whites, 911 in the civil and military establishments, 1074 slaves, 729 free colored, 442 Chinese, and 24 Lascars); in 1839, 4205; in 1849, the total military force amounted to about 1500 regular troops, besides four volunteer companies of white and black militia. Soldiers are sometimes placed at St. Helena to undergo a seasoning previous to being sent to India; and this island and the Cape of Good Hope are the principal stations to which captured slaves are brought, and employed in public works.

Hell Gate, Helle Gatt, or **Hurl-Gate,** formerly a dangerous pass in the strait called the East River, between Great Barn Island and Long Island, near the city of New York. It is formed by projecting rocks, which confine the water to a narrow and crooked channel, occasioning strong eddy currents, dangerous to vessels at certain times of the tide. The channel has been deepened by blasting the rocks, so that there is now 21 feet of water at low tide throughout it.

Helm, implies the mechanism of the steerage, especially the tiller: as, to put the helm *a-starboard*, is to put the tiller over to the right side; *a-port*, to the left side; *up*, to the weather side; *down*, to the lee side.

Helmsman. The man who steers. A good helmsman opposes in time the tendency of the ship to deviate from her course by a small motion, which he relaxes as soon as the effect is felt, and thus disturbs her sailing as little as possible. A bad helmsman gives her too much helm, and keeps her perpetually yawing from one side to the other. The steerage, therefore, is of the utmost consequence in chase.

Hemlock, the *Conium maculatum* of botanists, is an umbelliferous plant possessing narcotic and powerful poisonous properties. It may readily be distinguished from most other umbelliferous plants by the numerous dark purple spots which cover its *smooth* stem and leaf stocks, and by the strong heavy odor, resembling that of mice, which it exhales. The poisonous properties reside in every part of the plant, and are owing to the presence of a peculiar volatile oleaginous alkaloid, called *conia* or *coneine*, capable of forming salts with acids, which are equally energetic as the conia itself.

Hemp (Ger. *Hanf*; Du. *Hennig, Kennip*; Da. *Hamp*; Sw. *Hampa*; Fr. *Chanvre*; It. *Canape*; Sp. *Canamo*; Rus. *Konopli, Konopel*; Pol. *Konope*), a valuable plant (the *Cannabis sativa* of Linnæus), supposed to be a native of India, but long since naturalized and extensively cultivated in Italy, and many countries of Europe, particularly Russia and Poland, where it forms an article of primary commercial importance. It is also cultivated in different parts of America, though not in such quantities as to supersede its importation. It is stronger and coarser in the fibre than flax; but its uses, culture, and management are pretty much the same. When grown for seed, it is a very exhausting crop; but when pulled green, it is considered as a cleaner of the ground. In Great Britain its cultivation is not deemed profitable; so that, notwithstanding the encouragement it has received from government, and the excellent quality of English hemp, it is but little grown, except in some few districts of Suffolk and Lincolnshire. The quantity raised in Ireland is also inconsiderable.—Loudon's *Encyc. of Agricult.*

Flax was first planted in England, when it was directed to be sown for fishing-nets, A.D. 1533. Bounties were paid to encourage its cultivation in 1783; and every exertion should be made by the government and legislature to accomplish such a national good. In 1785 there were imported from Russia in British ships, 17,695 tons of hemp and flax.—*Sir John Sinclair.* The annual importations of these articles now amount to about 100,000 tons. More than 180,000 lbs. of rough hemp are used in the cordage of a first-rate man-of-war, including rigging and sails. See Flax.—*Haydn.*

Exceedingly good *huckaback* is made from hemp, for towels and common tablecloths. Low-priced hempen cloths are a general wear for husbandmen, servants, and laboring manufacturers; the better sorts for working farmers and tradesmen in the country, and the finer ones, ¾ wide, are preferred by some gentlemen for strength and warmth. They possess this advantage over Irish and other linens—that their color improves in wearing, while that of linen deteriorates. But the great consumption of hemp is in the manufacture of sailcloth and cordage, for which purposes it is peculiarly fitted by the strength of its fibre. English hemp, when properly prepared, is said to be stronger than that of every other country, Russia not excepted; and would, therefore, make the best cordage. It is, however, but little used in that way, or in the making of sailcloth; being principally made into cloth for the uses already stated.

Hemp has been cultivated in Bengal from the remotest antiquity, but not, as in Europe, for the purpose of being manufactured into cloth and cordage.

In the Hindoo economy it serves as a substitute for malt; a favorite intoxicating liquor, called banga, being produced from it! This, also, is the use to which it is applied in Egypt.—MILBURN's *Orient. Commerce, etc.*

The price of hemp fluctuated very much during the war of 1812. In consequence of difficulties in the way of its importation, it stood at a very high level from 1808 to 1814. This was the principal circumstance that originally brought iron cables into use; and the extent to which they are now introduced, has contributed materially to diminish the consumption and importation of hemp.—TOOKE *on High and Low Prices*, 2d ed., p. 345.

We borrow the following particulars, with respect to the hemp trade of Petersburg, from the work of Mr. Borrisow on the commerce of that city:

Hemp forms a very important article of export from Petersburg, and deserves particular notice. It is assorted, according to its quality, into *clean hemp*, or firsts; *out-shot hemp*, or seconds; *half-clean hemp*, or thirds; and *hemp codilla*. Of the first 3 sorts there are annually exported about 2,000,000 poods, the greatest part in English and American bottoms. It is brought to Petersburg, from the interior beyond Moscow, by water; and its quality depends very much on the country in which it is produced. That brought from Karatshev is the best; next to this, that produced in Belev; hemp from Gshatsk is considered inferior to the latter. As soon as the hemp is brought down in the spring, or in the course of the summer, it is selected and made up in bundles; both operations being performed by sworn selectors (*brackers*), and binders appointed by government for this purpose; and it is a well-known fact, that this is done with great impartiality and exactness. A bundle of clean hemp weighs from 55 to 65 poods; ditto out-shot, 48 to 55 ditto; ditto half-clean, 40 to 45 ditto. (1 pood =36 lbs. avoirdupois.) Binding of hemp is paid for at the rate of 2 roubles 50 copecks for *clean*, 2 roubles for *out-shot*, and 1 rouble 60 copecks for *half-clean*, per bundle; one half is paid by the seller, and the other half by the purchaser, and is charged accordingly by their agents. The expense of selecting hemp is 50 copecks per bercovitz (or 10 poods), and is the same for every sort. To every bundle of assorted hemp is attached a ticket with the names of the selector, binder, and owner, and the date and year. Every bundle has also affixed to it a piece of lead, stamped on one side with the name of the selector, and on the other with the sort of hemp and the time when it was selected. The external marks of good hemp are, its being of an equal green color and free from spills; but its good quality is proved by the strength of the fibre, which should be fine, thin, and long. The first sort should be quite clean and free from spills; the *out-shot* is less so; and the *half-clean* contains a still greater portion of spills, and is moreover of mixed qualities and colors.

As a perfect knowledge of the qualities of hemp and flax can only be acquired by experience and attention, agents usually employ men constantly occupied in this business, by which means they are sure of getting goods of the best quality, and have the best chance of giving satisfaction to their principals; because, although the hemp is selected by sworn selectors, yet, owing to the quantity of business and the speed with which it must be executed, etc., there are often great differences in the same sorts. The charges are in this way somewhat increased; but this is trifling in comparison of the advantage gained. The part separated, or picked out in cleaning hemp, is called *hemp codilla;* it is generally made up in small bundles of 1 pood, which are again, when shipped, bound together in large bundles, each consisting of about 30 small ones. Particular care must be taken to ship hemp and flax in fine dry weather; if it get wet, it heats and is totally spoiled. For this reason every vessel taking in hemp or flax is furnished with mats to prevent its getting damp. Hemp, being light and bulky, is, when stowed, forced into the hold by means of winches, which renders the operation of loading rather slow. It may be taken as a general rule, that the prices of hemp are highest in the months of May, June, July, and the early part of August; the demand for this article being then greatest, and the exportation to North America being principally effected at this season. Again, the prices of hemp are lowest in the month of September; the reason of which is, that the less opulent hemp-merchants return at the end of this month to their own country in order to make new purchases for the ensuing year; and rather than be detained, sell the remainder of their stock some roubles below the market price. This causes a general decline; although an unusual demand for the article happening at the same time, or political events or rumors, occasionally produce a contrary effect. Two large warehouses, called *ambares*, are built in Petersburg for the special purpose of housing hemp, where the greatest order is observed.

Hemp (*Manilla*) commonly called Manilla white rope. Mr. Crawford gives the following account of this article: "Of the wild banana, one kind (*Musa textilis*) grows in vast abundance in some of the most northerly of the spice islands. In the great island of Mindanao, in the Philippines, it fills extensive forests. From the fibrous bark or epidermis is manufactured a kind of cloth, in frequent use among the natives. It also affords the material of the most valuable cordage which the indigenous products of the Archipelago yield. This is known to our readers and navigators under the name of Manilla rope, and is equally applicable to cables, and to standing or running rigging."—*Hist. of Archipelago*, vol. i., p. 412.

Hemp (*Indian*), *or Sunn and Jute.*—Sunn consists of the fibre of the *crotolaria juncea*, a totally different plant from the *cannabis sativa*, which, as already stated, is never used by the Hindoos for cloth or cordage. Sunn is grown in various places of Hindoostan. The strongest, whitest, and most durable species is produced at Comercolly. During those periods of the late war when the intercourse with the Baltic was interrupted, and hemp bore an enormous price, large quantities of sunn were imported; but after the intercourse with the Continent was renewed, the importation of sunn ceased for several years. But within the last dozen years it has been again imported to a considerable extent. It is, however, deficient in toughness.

Jute consists of the fibres of two plants, called the choneh and isbund (*Corchorus olitorius* and *Corchorus capsularis*), extensively cultivated in Bengal, and forming, in fact, the material of which gunny bags and gunny cloth are made. It fetches nearly though not quite as high a price as sunn. It comes into competition with flax, tow, and cadilla, in the manufacture of stair and other carpets, bagging for cotton and other goods, and such like fabrics, being extensively used for these purposes in Dundee. But it is unsuitable for cordage and other articles into which hemp is manufactured, from its snapping when twisted, and rotting in water. The quantities imported, and the prices, have fluctuated very greatly during the last dozen years; but from £12 to £15 a ton appears to be a fair average price. When first introduced into this country, in 1815, the price of jute varied from £35 to £40 a ton. It was then, however, very little used, and did not, in fact, begin to come into any thing like general use as bagging till 1827 or 1828.

China-grass.—The attention of practical men has long been directed to the remarkable qualities of the China-grass, very similar to the Calooe hemp or Rhea fibre of India. This grass is very strong and beautiful in the fibre; and a simple but efficacious mode of

preparing it has lately been devised. This method depends chiefly on the solvent powers of a hot solution of carbonate of soda, and is so satisfactory that mixed fabrics are now made with China-grass as one of the component fibres; and there seems scarcely any limit to the probable supply of the grass from India.

Culture in Russia.—Next to the culture of cereals and the rearing of domestic animals, the culture of flax and hemp, both as textile plants and as oleaginous grains, is the most important branch of Russian husbandry. The gross value of these products amounts, at a very moderate estimate, to about 55,500,000 of silver roubles ($43,500,000); and both soil and climate are exceedingly favorable to their culture throughout a great part of the empire. As their production greatly exceeds the wants of the home manufacture, the extension of their culture essentially depends on the facility with which they find an outlet in the foreign market. Flax and hemp have always formed two of the principal exports; and, if to these we add oleaginous grains, which consist principally of the seeds of hemp and flax, we shall find that the export of these three articles, taken as a whole, exceeds in value that of any other product. In the course of 29 years, from 1822 to 1850, inclusive, there were but four, namely, 1830, 1831, 1846, and 1847, in which the value of exported cereals was greater than that of these.

From the custom-house returns, we find that, during the period in question, the total value of exports for European commerce amounted to $1,427,586,225, about 12 4-5 per cent. of which was in flax, 10 1-5 per cent. in hemp, and 8 3-5 per cent. in oleaginous seeds. These figures forcibly show the importance of the culture of these textiles to the foreign commerce of Russia, as well as for her domestic manufactures. In this branch of agriculture, she has not hitherto met with serious competition, as the other countries of continental Europe, in which these articles are produced, not having much land to spare for that purpose, and finding it, from their greater relative population, more profitable to cultivate other crops, do not raise enough for any considerable exportation; for, nowhere in Europe can they be cultivated in such abundance as in Russia. Of other countries, it is the East Indies and the Phillppine Islands that furnish England the largest supplies, say, from 10,000 to 12,500 tons per annum, and the United States, which export at present not over 5000 tons. England, moreover, imports from Egypt and other parts of Africa about 200 tons of flax and hemp, an amount comparatively insignificant.

Notwithstanding the heavy blows continuously dealt out to it, by the increasing use of cotton goods, the linen manufacture still maintains the foremost rank in Russia, in point of extent and importance. It is not, like the cotton manufacture in Great Britain, the United States, and other countries, concentrated in large establishments, which strike the eye by their size, their machinery, and the numbers of workmen collected on the premises; but, conducted within the modest walls of the peasants' cottages, it is diffused over the whole length and breadth of the land. There is scarcely a village within the wide limits of the empire, where the wheel, the distaff, and the loom are not to be found. With regard to the extent of this species of industry, it is averred that linen forms one of those articles of prime necessity which no individual in Russia, rich nor poor, can entirely dispense with. Reckoning only 10 yards, 28 inches in width, for each inhabitant, per annum, it would require for the population of 65,500,000 (including Poland), a consumption of 655,000,000 yards. The culture of flax for commerce is most extensively carried on in the governments of Wologda, Wiatka, Jaroslaw, Wladamir, Novgorod, Pskow, Livonia, Courland, Smolensk, Wilna, and Witebsk, and that of hemp in the governments of Tschernigow, Koursk, Orel, Toula, and Tambow. This important branch of rural economy has attracted the special attention of the Russian government.

Culture in the United States.—During the last half century great efforts have been made in Europe, and, to some extent, of late, in the United States, to increase and improve the production and manufacture of flax and hemp. Formerly they were considered as indispensable crops among our planters and farmers, but their use has been superseded in a measure by the cotton of the South. Common flax is a native of Britain, where it has been cultivated from time immemorial, and from its hardihood and adaptation to a wide range of temperature, it has been grown in almost every country on the eastern continent, from Egypt to the polar circle, and in North America, from Texas to Newfoundland. Hemp, which is supposed to be a native of India, but long since acclimatized and extensively cultivated in Spain, Italy, and several other countries in Europe, particularly in Poland and Russia, as well as in different parts of America, also forms an article of primary importance in commerce, and is of extensive utility. Both of these products were introduced into the North American colonies soon after their settlement by the English. They are mentioned as growing in New England prior to 1632; and bounties were offered for their cultivation in Virginia as early as 1751. Captain Matthews sowed yearly both hemp and flax, which he caused to be spun and woven, prior to the year 1648. In 1662 an edict was passed requiring each poll in Virginia to raise annually and manufacture six pounds of linen thread; but, from the change of the laws and the cessation of the bounties, the culture declined.

In the late Exhibition at London, of the Works of Industry of All Nations, both of these materials held a conspicuous rank. Flax was exhibited, the growth of Great Britain, Ireland, Holland, Belgium, France, Spain, Portugal, Italy, Prussia, Germany, Poland, Russia, Turkey, Egypt, India, Van Dieman's Land, Canada, and the United States, and hemp from all of these countries, except Britain, Ireland, Canada, and Van Dieman's Land. The fibre of flax and hemp has never been produced in this country in sufficient abundance to form much of an article of foreign commerce, but flax-seed was formerly shipped to Europe in large quantities. There were exported from New Jersey in 1751, 14,000 lbs. of hemp; from Savannah, in 1770, 1860 lbs.; from the United States in 1850–'51, 4769 cwt. The amount of flax-seed exported from Philadelphia in 1752 was 70,000 bushels; in 1767, 81,658 bushels; in 1771, 110,412 bushels; from New York in 1755, 12,528 hhds.; from the British North American colonies, in 1770, 312,612 bushels; from the United States, in 1791, 292,460 bushels; in 1800, 289,684 bushels; in 1810, 240,579 bushels; in 1820–'21, 264,310 bushels; in 1830–'31, 120,702 bushels; in 1840–'41, 32,243 bushels; in 1850–'51, 9185 bushels.

According to the census returns of 1840, there were raised in the United States 95,2511 tons of flax and hemp; of 1850, 35,093 tons of hemp and 7,715,961 lbs. of flax. The correctness of the returns as to hemp, in the seventh census, has not yet been fully verified. There has been some doubt whether, in a number of instances, the marshals have not written *tons* where they meant *lbs.* If, however, the returns are all allowed to stand without reduction, it would appear that the cultivation of hemp or flax has materially changed since 1840. In the returns of that year, as stated above, both of these articles were included under the same head. In 1840, those of Virginia gave 25,594 tons of hemp and flax together. In 1850, only 141 tons of hemp and 500 tons of flax were returned. Such a falling off would amount to almost an abandonment of the culture of hemp in that State, which there is no reason to suppose has taken place.

The discovery of new methods for separating the fibrous from the woody parts of the flax plant has

doubtless given a vigorous stimulant to its cultivation in the United States. The process of Chevalier Clausen first attracted general attention among us in 1850. Though considerable quantities of flax have been produced in former years, it has been raised principally for the seed, which commanded a remunerating price. The want of a cheap and speedy process for separating the textile from the refuse parts of the stalk has occasioned a vast annual loss of useful material to the country. Should the attempts which have lately been made to apply Clausen's invention succeed, the production of flax in the United States may become of great importance, and be advantageously used, not only alone, but in the manufacture of mixed fabrics, as it appears capable of being spun with wool, silk, and other fibres.

Native-grown hemp is coming into use very generally. Mr. W. B. Shubrick, Chief of the Bureau of Construction, Navy Department, in a report to the Secretary of the Navy, recommends greater attention to the detail of cultivation, curing, and packing native-grown hemp, which, in the opinion of the bureau, would be found to be very beneficial in effect, and, in course of time, make the navy altogether independent of a foreign market for a material so important for naval purposes. Mr. Gardiner, Superintendent of the Rope-walk of the United States' Navy Yard at Memphis, in a report of his department, further substantiates these views, concluding, that with proper care, "American hemp may, as experiment has proved, be made to equal if not to excel, any foreign importation."

Kentucky and Missouri are our chief hemp-growing States; the former producing superior hemp as a better system of preparation prevails.

PRODUCTION OF HEMP IN THE UNITED STATES IN 1850.

States.	Dew & water rotted. Tons.	States.	Dew & water rotted. Tons.
Arkansas.....	15	Ohio.....	150
Kentucky.....	17,787	Pennsylvania...	44
Maryland.....	63	Tennessee... ..	595
Missouri.....	16,028	Virginia.....	139
North Carolina...	39	Total.....	34,860

EXPORT OF HEMP FROM THE UNITED STATES FROM 1854 TO 1856, INCLUSIVE.

Hemp.	1854.		1855.		1856.	
	Raw.	Manufac.	Raw.	Manufac.	Raw.	Manufac.
	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.
Domestic.	93,699	79,717	121,320	96,508	28,598	25,283
Foreign..	42,614	45,626	255,441	23,718	54,249	83,315
Total...	146,313	125,343	376,761	60,266	82,847	108,548

IMPORTS OF HEMP INTO THE UNITED STATES.

1853.....	$1,920,913	Cwts. 464,070
1854.....	2,209,713	692,174
1855.....	2,158,416	249,488
1856.....	2,345,000	252,730

Hemp-seed (Fr. *Chenevis, Chenevi*; Ger. *Hanfsaat*; It. *Cannapuccia*; Lat. *Semen cannabinum*; Rus. *Konopljanoe Semja*), the seed of hemp. The best hemp-seed is that which is brightest, and will not break when rubbed. It is used either as seed, or for crushing for oil, or as food for fowls. Previously to 1832, it was loaded with a duty of £2 per quarter, which was then reduced to 1s. per ditto, and in 1845 was wholly repealed.

Herat or **Heraut** (anciently *Arid* or *Artacoana*), capital of Shah Mahmood's State, on the west frontier of Afghanistan, 2700 feet above the sea-level, three miles north of the Hury River, in a beautiful and fertile valley. Lat. 34° 22′ N., long. 62° 9′ E.; 360 miles west of Cabool. It is entirely surrounded by an earthen mound, 50 feet high, by two trenches, and a ditch. From the mound rises a wall 25 feet high, and upward of 100 bastions of unburnt brick. At the north end of the town is a strong citadel, defended by a ditch and massive towers. To the north of the town is the huge mound raised by Nadir Shah, and a little farther the gorgeous ruins of the Moosullah of Imaum Reza. As there is no drainage, the town is extremely filthy, although in the 15th and 16th centuries it was one of the finest cities in the world. Commercially, the position of Herat is important. It receives shawls, indigo, sugar, spices, chintzes, muslins, brocades, scarfs, leather, and hides from Afghanistan; tea, sugar, porcelain, glass, silk, cotton, cloth, woolens, carpets, and hardware from Persia, Russia, and Turkey. The Herat carpets are famous. The annual revenue of Herat is estimated at, perhaps, £100,000. It was unsuccessfully besieged by the Persians in 1838. Population less than 45,000.

Herrings, and Herring Fishery. The herring (*Clupea harengus* of Linnæus) is a fish too well known to require any description. It is everywhere in high esteem, both when fresh and when salted.

"Herrings are found from the highest northern latitudes yet known, as low as the northern coasts of France. They are met with in vast shoals on the coast of America as low as Carolina. In Chesapeake Bay is an annual inundation of those fish which cover the shore. We find them again in the seas of Kamschatka; and probably they reach Japan. The great winter rendezvous of the herring is within the Arctic Circle: there they continue for many months, in order to recruit themselves after the fatigue of spawning; the seas within that space swarming with insect food in a far greater degree than those of our warmer latitudes. This mighty army begins to put itself in motion in spring. They begin to appear off the Shetland Isles in April and May. These are only the forerunners of the grand shoal, which comes in June; and their appearance is marked by certain signs, such as the numbers of birds, like gannets and others, which follow to prey on them; but when the main body approaches, its breadth and depth is such as to alter the appearance of the very ocean. It is divided into distinct columns of five or six miles in length, and three or four in breadth; they drive the water before them, with a kind of rippling. Sometimes they sink for the space of 10 or 15 minutes, and then rise again to the surface; and in fine weather reflect a variety of splendid colors, like a field of the most precious gems. The first check this army meets in its march southward, is from the Shetland Isles, which divides it into two parts; one wing takes to the east, the other to the western shores of Great Britain, and fill every bay and creek with their numbers; the former proceed toward Yarmouth, the great and ancient mart of herrings; they then pass through the British Channel, and after that in a manner disappear. Those which take toward the west, after offering themselves to the Hebrides, where the great stationary fishery is, proceed to the north of Ireland, where they meet with a second interruption, and are obliged to make a second division: the one takes to the western side, and is scarcely perceived, being soon lost in the immensity of the Atlantic; but the other, that passes into the Irish Sea, rejoices and feeds the inhabitants of most of the coasts that border on it. These brigades, as we may call them, which are thus separated from the greater columns, are often capricious in their motions, and do not show an invariable attachment to their haunts. This instinct of migration was given to the herrings, that they might deposit their spawn in warmer seas, that would mature and vivify it more assuredly than those of the frozen zone. It is not from defect of food that they set themselves in motion; for they come to us full of fat, and on their return are almost universally observed to be lean and miserable. What their food is near the pole, we are not yet informed; but in our seas they feed much on the *oniscus marinus*, a crustaceous insect, and sometimes on their own fry. They are full of roe in the end of June, and continue in perfection till the beginning of winter when they deposit their spawn. The young herrings begin to approach the shores in July and August, and are then from one half an inch to two inches long. Though

we have no particular authority for it, yet, as very few young herrings are found in our seas during winter, it seems most certain that they must return to their parental haunts beneath the Ice. Some of the old herrings continue on our coast the whole year."—PENNANT'S *British Zoology*.

The herring was unknown to the ancients, being rarely, if ever, found within the Mediterranean. The Dutch are said to have engaged in the fishery in 1164. The invention of pickling or salting herrings is ascribed to one Beukels, or Beukelson, of Biervliet, near Sluys, who died in 1397. The emperor, Charles V., visited his grave, and ordered a magnificent tomb to be erected to his memory. Since this early period, the Dutch have uniformly maintained their ascendency in the herring fishery; but, owing to the Reformation, and the relaxed observance of Lent in Catholic countries, the demand for herrings upon the Continent is now far less than in the 14th and 15th centuries.

It is shown by a parliamentary return of 1856, that the total quantity of herring cured in Great Britain, during 1855, was 766,603 barrels; the quantity branded, 280,581 barrels; and the quantity exported, 442,264 barrels—being an increase over the preceding year of 130,141 barrels cured, 68,737 branded, and 80,567 exported. The quantity caught, but not cured, amounted in 1855 to 830,759 barrels, being an increase of 26,970 barrels over 1854. The total produce of the herring fisheries in 1855 a ..ted to 997,403 barrels, being 157,111 more than in 1854. Of cod and ling, during 1855, 113,561 cwt. was cured dried, and 6316 barrels cured in pickle; total quantity exported being 29,154 cwt. of the former, and 25 barrels of the latter. This was an increase as compared with 1854 of 9597 cwt. cured, and 25 barrels exported. The total quantity caught, but not cured, amounted to 69,539 cwt., being an increase over the preceding year of 5497 cwt., and when added to the quantity cured, makes the produce of the cod and ling fisheries for 1855, 177,100 cwt. and 6316 barrels, being an increase over 1854 of 9373 cwt. and 150 barrels. In 1855, 11,747 boats, manned by 41,502 fishermen and boys were employed in the shore-curing department; and the total number of persons engaged in the fisheries was 94,155, being an increase over the preceding year of 856 boats, 1243 fishermen and 16,321 persons in the total number employed. The value of boats, nets, and lines amounted in 1855 to £618,484, being an increase, as compared with 1851, of £31,064. See FISHERIES.

Hidage (*Hidagium*) was an extraordinary tax payable to the kings of England for every *hide* of land. This tax was levied in money, provision, armor, and other articles; and when the Danes landed in Sandwich in 994, King Ethelred taxed all his lands by hides, so that every 310 hides furnished one jack and one saddle, to arm for the defense of the kingdom. Sometimes the word *hidage* was used to signify exemption from that tax; and this immunity was also called *hidegild*, and interpreted, from the Saxon, a price or ransom paid to save one's skin or hide from beating.

Hides (Ger. *Haüte*; Du. *Huiden*; Fr. *Peaux*; It. *Cuoja*; Sp. *Pellejos, Pieles*; Rus. *Koshi*), signify, generally, the skins of beasts, but the term is more particularly applied to those of large cattle, such as bullocks, cows, horses, etc. Hides are raw or green; that is, in the state in which they are taken off the carcase, or dressed with salt, alum, and saltpetre, to prevent them from putrefying; or they are cured or tanned. The hides of South America are in the highest repute, and vast quantities of them are imported.

During the year 1856 the imports of hide into various ports of the United States were greater than in previous years, as follows:

Imports into New York	$1,751,912
" Boston and Salem	762,741
" Philadelphia and Baltimore	336,577
Total, 1856	$2,851,230
" 1855	2,423,564

GENERAL STATEMENT OF THE FOREIGN IMPORTS OF HIDES INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30TH, 1856.

Whence imported.	Raw hides and skins.	Whence imported.	Raw hides and skins.
Swedish West Ind.	109	Porto Rico	12,090
Danish West Ind..	6,323	Portugal	675
Hamburg	9,858	Cape de Verd Isls.	11,190
Bremen	161	Sardinia	537
Holland	416	Other ports in Af.	133,548
Dutch West Indies	246,324	Hayti	28,996
Dutch Guiana	15,992	San Domingo	13,653
Dutch East Indies	1,715	Mexico	331,574
England	517,030	Central Republic	78,836
Canada	2	New Granada	264,417
Other B. N. A. Pos.	3,988	Venezuela	2,182,591
British West Ind...	21,805	Brazil	1,490,223
British Honduras..	26,079	Uruguay	313,251
British Guiana	5,761	Buenos Ayres	1,460,787
Br. Pos. in Africa..	277,055	Chili	41,854
British East Indies	568,219	Peru	15,940
France on the Med.	950	Sandwich Islands..	30,797
French Guiana	61	China	16
Spain on the At...	2,940		
Philippine Isls.	15,180	Total	$8,083,292
Cuba	9,272		

AN ACCOUNT OF THE WEIGHT OF THE HIDES IMPORTED INTO ENGLAND IN EACH OF THE FIVE YEARS ENDING WITH 1851, SPECIFYING THE COUNTRIES WHENCE THE HIDES WERE IMPORTED, AND THE QUANTITIES BROUGHT FROM EACH.

Countries from which Imported.	Hides not tanned, tawed, curried, or in any way dressed.					Hides tanned, tawed, curried, or dressed.				
	1847.	1848.	1849.	1850.	1851.	1847.	1848.	1849.	1850.	1851.
	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
Russia	9,774	5,119	11,967	18,792	8,822	134,141	31,956	12,433	28,920	56,683
Denmark	202	705	726	1,434	3,792	....	56	4,888	3,700	3,649
Prussia	3,173	1,531	1,622	3,008	4,021	8,876	....	....	....	....
Hanseatic towns	6,192	6,578	3,492	10,415	9,831	49,521	45,590	58,219	40,248	56,111
Holland	4,687	2,786	2,157	5,822	5,789	104,950	104,815	137,200	113,334	197,764
Belgium	1,192	....	268	654	5,640	18,581	17,419	23,431	28,715	19,860
Channel Isls., For. prod.	340	772	214	239	613	16,526	4,795	3,062	19,391	38,332
France	9	332	12	1,164	10,647	350,075	456,065	715,964	519,340	594,205
Morocco	528	364	320	1,409	595	....	....	....	3,510	....
British South Africa	23,520	9,758	9,763	10,053	12,209	....	....	158	207	761
British East Indies	94,794	69,999	71,017	101,193	137,206	23,552	147,158	240,865	553	294,616
French pos. in India	1,421	2,090	734	1,257	419	981	....	....	....	....
Java	2,628	1,963	1,825	926	1,487	....	....	....	....	....
Philippine Islands	9,284	2,364	....	4,876	6,159	....	....	....	....	1,079
British Australia	29,502	21,105	21,244	26,047	31,582	109,711	370,864	549,821	847,591	931,690
British North America	1,351	1,324	824	1,215	500	1,872	....	....	11	202
Br. W Indies & Guiana	7,118	7,182	4,800	3,690	3,045	243	....	....	....	17
United States America	10,781	852	3,339	132	1	366,000	44,115	746	5,746	53,93
Mexico	604	41	233	212	....	....	....	....	....	....
Central America	1,785	186	486	1,906	170	....	....	296	....	....
New Granada	90	1,264	760	438	273	....	....	....	....	112
Venezuela	1,218	290	716	20	....	....	....	....	....	....
Brazil	215,905	179,641	207,199	157,093	150,585	288,594	49,043	45,984	87,132	72,638
Uruguay	163,569	111,987	1,016	3,162	10,246	....	....	....	....	....
Buenos Ayres	4,775	114,477	326,947	232,396	261,653	....	....	....	....	....
Chili	74	461	4,552	2,253	276	112	....	....	....	....
Peru	1,999	2,808	804	5,291	2,014	8,585	....	....	....	9,936
Other parts	4,525	1,558	1,825	2,597	8,692	638	1,046	890	....	2,936
Total	601,381	547,281	678,952	591,931	672,167	1,512,208	1,271,862	1,788,442	1,896,798	2,350,961

STATEMENT SHOWING THE NUMBER AND VALUE OF HIDES EXPORTED FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30TH, 1856.

Whither exported.	Domestic.		Foreign.
	Number.	Value.	Dollars.
Hamburg	848	1,305	1,279
Bremen	1,101	4,379	....
Holland	20	100	....
Belgium	1,267	6,550	....
England	3,791	20,092	631
Scotland	352	610	....
Malta	....	....	430
Canada	25,226	43,726	74,824
Other Br. North Am. Pos.	1,386	2,885	893
British East Indies	510	586	....
France on the Atlantic	4,757	18,256	....
France on the Mediter	....	....	1,500
French North Amer. Pos.	....	....	4,692
Cuba	60	140	....
Austria	....	....	18,175
Austrian Pos. in Italy	1,000	2,000	....
Hayti	426	555	....
Total	40,184	$101,174	$101,924

High Seas. The high seas mean the water of the ocean without the boundary of any country, and they are within the exclusive jurisdiction of the admiralty up to high water mark, when the tide is full. The open ocean which washes the sea-coast is used in contradistinction to arms of the sea inclosed within the *fauces terræ*, or narrow headlands or promontories; and under this head is included rivers, harbors, creeks, basins, bays, etc., where the tide ebbs and flows. They are within the admiralty and maritime jurisdiction of the United States; but if they are within the body of a county of any particular State, the State jurisdiction attaches.

The extent of the jurisdiction of the district courts of the United States, as courts of admiralty and maritime jurisdiction, was very fully examined, and with great ability and research, by the Circuit Court of the United States for Massachusetts, in the insurance case of De Lovio *v.* Boit. It was maintained, that in very early periods the admiralty jurisdiction, in civil cases, extended to all maritime causes and contracts, and, in criminal cases, to all torts and offenses, as well in ports and havens within the ebb and flow of the tide, as upon the high seas; and that the English admiralty was formed upon the same common model, and was co-extensive, in point of jurisdiction, with the maritime courts of the other commercial powers of Europe. It was shown, by an exposition of the ancient cases, that Lord Coke was mistaken in his attempt to confine the ancient jurisdiction of the admiralty to the high seas, and to exclude it from the narrow tide-waters, and from ports and havens. The court agreed with the admiralty civilians, that the statutes of 13 R. II., and 15 R. II., and 2 H. IV., did not curtail this ancient and original jurisdiction of the admiralty, and that, consistently with those statutes, the admiralty might exercise jurisdiction over torts and injuries upon the high seas, and in ports within the ebb and flow of the tide, and in great streams below the first bridges; and also over all maritime contracts, as well as over all matters of prize and its incidents. It appeared, from a historical review of the progress of the controversy for jurisdiction, which lasted for two centuries, between the admiralty and the courts of common law, that the latter, by a silent and steady march, gained ground, and extended their limits, until they acquired concurrent jurisdiction over all maritime causes, except prize causes, within the cognizance of the admiralty. The common law doctrine was, that the sea, *ex vi termini*, was without the body of any country; but that all ports and havens, and all navigable tide waters, where one might see from one land to the other what was doing, were within the body of the county, and under the exclusive jurisdiction of the common law courts. On the sea shore or coast, high and low water mark determined what was parcel of the sea, and what was the line of division between the admiralty and the courts of law; and it was held, that it ought to be so considered by parity of reason, where the tide ebbs and flows, in ports and havens; and that the admiralty jurisdiction extends to all tide waters in ports and havens, and rivers beneath the first bridges. It was admitted, however, that the common law originally had jurisdiction on the high seas, concurrent with the admiralty; and that in cases manifestly within the admiralty jurisdiction, both civil and criminal, the common law now claimed concurrent jurisdiction.—KENT'S *Com.*, vol. i., pp. 399, 400.

Crimes on the high seas, such as piracy and robbery, are, by the laws of the United States, punished with death. Persons charged with such crimes must be tried at the port where they first arrive or are brought. Accessaries shall also suffer death. Concealing a pirate, or harboring property taken by a pirate, is punished by imprisonment not over three years, and fine not over $500. For revolt on shipboard, or abetting a revolt, seamen will be imprisoned not over three years, and fined not over $1000.—DUNLAP'S *Digest*, pp. 75, 76.

Highway. In the civil law, the banks of public rivers and the sea shore were held to be public. *Riparum publicus usus est; littorum quoque usus publicus est jure gentium.* The law of nations was here used for natural right, and not international law, in the modern sense of it; and it is stated in the *Institutes* of JUSTINIAN, that all persons have the same liberty to bring their vessels to land, and to fasten ropes to the banks of the river, as they have to navigate the river itself. These liberal doctrines of the Roman law have been introduced into the jurisprudence of those nations of Europe which have followed the civil, and made it essentially their municipal, law. Thus, in Spain, the sea shore is common to the public; and any one may fish, and erect a cottage for shelter. The banks of navigable rivers may also be used to assist navigation. In the French law, navigable or floatable rivers, as they are termed, have always been regarded as dependencies of the public domain, and the lands on each side subject to the servitude or burden of towing paths for the benefit of the public. Sir Matthew Hale, in his *De Jure Maris*, concludes that individuals had a right to a tow-path for towing vessels up and down rivers, on making *a reasonable compensation to the owner of the land for damage.* In the year 1789 it was decided in England, 3 *Term Rep.*, 253, that there was not, and never had been, any right, at common law, for the public to tow on the banks of navigable rivers. It was admitted, that on many navigable rivers, there was a custom to tow on the banks; but the privilege in that case rested on the special custom, and not on any common law right. The statutes which have given a right of towing on parts of the Severn, Trent, and Thames, are evidence that no such general right before existed. In New York it has been adjudged, after a very able and thorough examination of the question, that the public have not the right to use and occupy the soil of an individual adjoining navigable waters, as a public landing and place of deposit of property in its transit, against the will of the owner, although such user had been continued upward of 20 years, with the knowledge of the owner. On the other hand, it is held in Missouri, that navigators and fishermen are entitled to the temporary use of the banks of navigable rivers in that State, though owned by private individuals, for the purpose of landing and repairing their vessels, and exposing their sails and merchandise. But this use is for transient purposes only, and under restrictions.

It is a settled principle in the English law, that the right of soil of owners of land bounded by the sea, or on navigable water, where the tide ebbs and flows, extends to high-water mark; and the shore below common, but not extraordinary, high-water mark,

belongs to the State as trustee for the public; and in England the crown, and in this country the people, have the absolute proprietary interest in the same, though it may, by grant or proscription, become private property. The public have, at common law, a right to navigate over every part of a common navigable river, and on the large lakes. The public, in cases where the river is navigable for boats and rafts, have an easement therein, or right of passage, subject to the *jus publicum*, as a public highway.—KENT's *Com.*, vol. iii., pp. 524–526.

Each proprietor is entitled to a larger or smaller proportion of the alluvial formation and shore line, according to the extent of his original line on the shore of the river. In the case of rivers not navigable, it belongs to the owners of the adjoining land. This principle of the common law is recognized and prevails in the States of Maine, New Hampshire, Massachusetts, Connecticut, New York, New Jersey, Maryland, Ohio, Virginia, North Carolina, Louisiana. —*Ibid.*, 527.

Himalaya, a Sanscrit word, compounded of "hima," *cold* or *snow*, and "alaya," *place of* (Wilson's *Sanscrit Dictionary*), is the name given to the ranges of mountains which bound India on the north, from the bend of the Indus on the west to that of the Brahmaputra on the east. On the south they are bounded by the plains of India, and on the north by the Tibetan courses of the above-named rivers. A traverse section of the Himalaya nowhere presents the appearance of a simple range, but of several more or less parallel chains, separated by valleys of very great depth and steepness; this is because the secondary ranges that ramify north and south from it are of great length, breadth, and complexity, and from bending to the east or to the west, often run for many miles parallel to one another and to the main range, besides rising into eminences loftier than any on the latter, for which they are sometimes mistaken. The axis of the Himalaya is, moreover, not marked out by any continuous ridge or succession of peaks, but is often broad, open, and low, compared with the neighboring isolated eminences. Hence the line of watershed becomes the only geographically determinable axis; and this, as in all mountain chains of any extent, follows an extremely sinuous course. No doubt this line, which throws the waters in two opposite directions throughout the whole extent of the range (1440 miles), is also that of greatest elevation, or that along which the land is uninterruptedly the most lofty.

Before, however, the real nature and geographical limits of the Himalaya, as above defined, can be rightly understood, it is necessary to consider this range in its relation to the little known mountain systems of Central Asia, of which it perhaps forms a less important part than is usually supposed. On reference to the map of Asia, the watershed of that continent will be found to follow a tortuous line, running diagonally from the peninsula of Gujerat to Behring's Strait. Across the plains of India this line is for the most part indicated by the Arawali chain, north of which it crosses the Himalaya obliquely in a north-east direction to the sources of the Indus and Brahmaputra, whence it trends westerly to the source of the Oxus, and then again north-easterly along the Altai to the south of Lake Baikal, till it becomes the Jablonoi Mountains, and finally terminates in the prolongation of that range which traverses the country of the Tchuktchi. Late and interesting information respecting these plains can be found in Huc's *Travels*, 1845.

All the great rivers of Asia rise in this watershed; those from its western slope flow north into the Polar Sea, west into the Caspian or Aral, and south-west into the Arabian Sea; those from its eastern slope flow east and south-east into the Pacific, and south into the Indian Ocean. Enormous mountain chains branch off to the east and west of this main axis, inclosing the valleys of the rivers; and of these chains the southernmost is the Himalaya.

In their Tibetan courses the Indus and Brahmaputra occupy valleys of great elevation, and the opposite directions taken by them indicates the division of the Himalaya into two portions, the eastern of which stretches from their sources at the peak of Kailas to the bend of the Brahmaputra, and the western terminates at the bend of the Indus. These limits are more natural than is usually supposed, since the prevalent idea that the Brahmaputra enters Assam through a defile caused by a break in the chain is erroneous; on the contrary, the Himalaya gradually declines in elevation in East Bhotan; and the upper valley of the Dihong (as the Brahmaputra at its bend is called), is, according to the best information hitherto procured, broad, open, and hot—rice being cultivated there on the very confines of eastern Tibet. So also the Indus at the western extremity of the chain is usually described as flowing through a defile; but though its valley to the west of Kashmir is contracted and rugged, and overhung by stupendous mountains, it does not in this respect differ materially, if at all, from the remainder of its Tibetan course; nor is the fall of its bed between Iskardo and the plains of the Punjab greater in proportion to the length of its course than it is above that town.

The branches or secondary ranges of the western Himalaya are so long and lofty, that some difference of opinion exists as to which of them should be most appropriately considered as the continuation of the chain between the peak of Kailas and Kashmir; and we have considered the line of watershed between the tributaries of the Indus to the north, and the rivers that flow to the plains of India to the south, to be the axis of the chain, since it both indicates the line of mean greatest elevation, and is the only definable axis in a geographical point of view. Of the secondary chains we shall speak at length in connection with the rivers they inclose. Their direction is often perpendicular to the main chain, but they are so often oblique, and even parallel to the main chain, especially at their upper parts, that where very lofty and heavily snowed, they are frequently taken by local observers for the axis of the Himalaya itself; an error to which may be traced that misconception regarding the relative amount and duration of the snow on the northern and southern slopes of the Himalaya, which has led to so much fruitless controversy in India and Europe.

The general direction of the Himalaya throughout its length of 1440 miles, is east and west, but it trends northward from the centre toward its western extremity, its extremes being respectively in N. lat. 28°, E. long. 95°, and N. lat. 35°, E. long. 73°. Its breadth varies in different parts, but has been accurately ascertained in the western portion only, where it deviates but little from 190 miles.

It has been stated that the mountain ranges of the Himalaya and the Kouenlun have no special existence as chains apart from the general elevated mass of Tibet, and that that rugged country forms the summit of a great or rainy, interior or intermediate, and Tibetan or arid Himalaya. The tropical belt extends from the Terai to 6000, and even 7000 feet in the humid central provinces; and to 3600 to 4000 in the extreme western. It consists of a luxuriant forest of Malayan and insular types of trees in the eastern provinces, which to a great extent disappear to the westward, where they are partially replaced by Persian, Egyptian and Afghanistan types—among these trees the palms, plantains, tree-ferns, sal (*Shorea robusta*), sissoo (*Dalbergia sissoo*), toon (*Cedrela Toona*), and some oaks, are the most conspicuous, and commercially the most important, especially to the eastward.

The temperate belt extends from 5000 feet to the upper limit of forest, which varies from 12,000 to 13,000 feet, according to the dryness of the climate. It

abounds in European, Levantine, and Chinese genera and even species, with but few Malayan mountain ones; of these the European are most abundant in the western provinces, and the Chinese and Japanese in the eastern, where are also a few American genera, and some belonging to the Malayan and insular mountain flora. Among the most conspicuous plants of this region are oaks, birch, maple, apple, hornbeam, poplar, ash, cherry, alder, celtis, pine, juniper, yew, willow, and pines (*Abies*, *Webbiana* and *Brunoniana*), which abound throughout the range; besides which, there are to the westward of Nepal, deodar, *Pinus Gerardiana*, hawthorn, cypress, horse-chestnut, olive, myrtle, evergreen oak, sloe, black poplar, and many other European genera and even species; while to the eastward, laurel, magnolia, rhododendron, larch, *Abies Brunoniana*, and chestnut, more especially prevail.

The alpine belt, which commences above the forest region, ascends in extreme cases to 19,000 feet; it abounds in Siberian, Polar, and European alpine plants throughout the whole extent of the chain, the European species and genera being most prevalent to the west. Several hundred common English plants are also natives of the Himalaya, and especially of the temperate and alpine zones; and the total number of flowering plants inhabiting the whole range probably amounts to 5000 or 7000 species. Cultivation in the Himalaya is carried on as high as 14,000, and even 15,000 feet, where summer crops of wheat and barley exist in Tibet, but quite exceptionally; also buckwheat, turnips, radishes, mustard, potatoes, and various pulses, are grown abundantly between 8,000 and 12,000 feet, as summer crops. Rice, maize, millet, and other tropical cereals, are grown below 6000 feet, with buckwheat, and various species of chenopodium, yams, capsicum, egg-apple, legumes, and sugar-cane.

The Himalayan fruits cultivated by the natives in the eastern and central provinces are plantains, oranges, pine-apples, walnuts, indifferent peaches and apples; in the western, excellent apples, pears, apricots, peaches, cherries, mulberries, grapes, and walnuts. The cultivation of tea is now successfully carried on, on a large scale in the western Himalaya, at elevations of 2000 to 5000 feet, and might probably be pursued with more or less success in all parts of the chain.

The timber trees of the Himalaya are extremely numerous, but few of them are of great value, and some of the best inhabit inaccessible regions. The sal (*Shorea robusta*), is decidedly the most valuable; and, from growing at the foot of the hills, close to water-carriage, is the only one much felled for export. The toon (*Cedrala Toona*), and sissoo (*Dalbergia Sissoo*), are also exported from the same regions; and the deodar and other conifers from the north-western provinces. The other pines, the walnut, oaks, and the chestnuts, mostly produce indifferent timber; but, though there are exceptions, the use of these is principally confined to the neighborhood where they grow. Of ornamental woods, few are known, and none are in general use. Bamboos prevail everywhere, and rattan-canes to the eastward. Owing, probably, to the humid climate, the woods of European genera are, almost without exception, inferior to those of their western allies. Teak is unknown in the Himalaya; and the other woods of eastern Bengal and of both the Indian peninsulas are either confined to the malarious forests of Assam, or are altogether absent. The vegetable economic products are also very few and unimportant—such as spices, gums, resins, oils, waxes, fibres, and other textile materials. Of drugs, the baneful aconite and hemp are the best known; inferior rhubarb, and a few bitters of secondary importance in the pharmacopœia, are also collected for export. Attempts have been made to cultivate drugs for the use of the Indian medical establishments, but hitherto with very limited success. Wild madder is extensively collected and exported, as are bamboos, canes, and a few other products: and latterly potatoes in Sikkim. There is no doubt that the vegetable riches of these extensive regions are but very little known, and are capable of immense extension; but hitherto the efforts have been limited. On the northern or Tibetan parts of the range the trees are extremely few and small, and confined to willows, poplars, junipers, elæagnus, and tamarisk; and of bushes, the well-known dama or furze, that supplies fuel, is the most familiar to travelers.—E. B. See *Quar. Rev.*, xvii., xxii., xxiv.; *Westm. Rev.*, xxxvii., 294; *Monthly Rev.*, xcv., 225, 409.

In mineral products the Himalaya is remarkably poor, so far as at present known. There is nothing which can compare in abundance or value with the mines of the Ural, Andes, or European Alps. Red hæmatite is worked with profit in Kumaon, and copper exists in Nepal and the Sikkim hills. Iron (disseminated), occurs in various places, and graphite is common. Salt, borax, and soda are procured in abundance in the dry climate of Tibet, where they are articles of commerce; there also gold-washing is carried on upon a most limited scale. Gold is known to be extremely abundant in many parts of eastern Tibet, where, however, the jealousy of the Chinese government prevents its being worked. Slates, lime, gypsum, lead, sulphur, and magnesia, are also Himalayan products. There is a surprising and almost total absence of gems, or minerals of rarity or beauty in the Himalaya; garnets, actinolites, and tourmalins, are perhaps the only exceptions of frequent occurrence, and these are of the coarsest description.

Hot springs abound, chiefly at elevations of 10,000 to 18,000 feet; they usually emit sulphuretted hydrogen gas, and maintain temperatures of 100° to 130°. There is no active volcano anywhere in the range, nor any traces of extinct ones. Some of the districts, especially toward the north-west, have been visited by violent earthquakes, but these do not appear to be connected with any endemic phenomena; they have generally commenced far south of the Himalaya, and have been propagated across the range. Remarkable local subsidences and elevations have occurred in the valley of the Jhelum in Kashmir, which have been described by Dr. Thomson.

Hobart Town, situated in the southern part of the island of Van Dieman's Land, on the west side of the River Dennert, near its junction with Storms Bay, in lat. 42° 44′ S., and long. 147° 28 E. The water is deep, and the anchorage is good; and a jetty has been constructed accessible to the largest ships.

Hogs. The prevailing breeds of swine in the middle, northern, and western States, are the Berkshire, the Leicestershire, the Suffolk, the Essex, the Neapolitan, and the Chinese. From these and other varieties various crosses have been produced, the more important of which are the Byfield, the Woburn, the Bedford, the Grass, and the Mackay. The Neapolitans are particularly well adapted for a southern climate. See De Bow's *Rev.*, xii., 67; Hunt's *Mag.*, xiv., 371. See United States—Live Stock of.

We give some statistics showing the number of hogs packed in the West in 1850–51, also another table comparing the number packed in 1855–56 and 1856–57:

Where packed.	1851—52.	1850—51.
Ohio	461,075	443,418
Indiana	359,761	348,754
Illinois	174,671	257,536
Iowa	27,500	70,500
Missouri	58,168	107,274
Kentucky	199,800	205,914
Green and Cumberland Rivers	8,500	24,000
Total	1,288,975	1,457,896
		1,288,975
Total deficiency, 1851-52		182,021

Comparison of the Number of Hogs packed in 1855-6 with the Number packed in 1856-7,

Where Packed.	1855—56.	1854—57.
Ohio	688,697	488,048
Kentucky	428,834	349,212
Indiana	482,581	316,629
Illinois	481,288	368,202
Missouri	189,904	149,244
Iowa	172,378	103,822
Tennessee	62,400	42,811
Wisconsin	39,000	15,000
Grand totals	2,489,502	1,818,468
	1,818,468	
Total deficiency, 1856-57	671,034	

This deficiency, compared with last season, is equal to about 27 per cent.

As regards the falling off in weight, having examined the returns received with reference to this point very carefully, the following is the result.

We obtained the comparative weights from 121 places, and find that the aggregates of similar number of hogs packed at these places, each season, are as follows:

	Pounds.
1855-6	261,621,260
1856-7	243,146,440
Deficiency, 1856-57	18,474,820

Assuming this to be a fair indication of the comparative weight of the whole number packed, according to the returns, we place the falling off in weight at 7 per cent., which is slightly less than the above figures indicate. Adding this to the falling off in number, the total deficiency is swelled to 34 per cent., as compared with the business of the season of 1855-56.

The crop, then, as compared with a few previous seasons, stands as follows: See Pork Trade.

34 per cent less than that of	1855-6
6½ " " " "	1854-5
26½ " " " "	1853-4
4½ " " " "	1852-3

The following figures show the average weight of the hogs packed in Cincinnati during 1856-57 as compared with last:

	Pounds.
1855-6 average weight	204
1856-7 " "	285½

The following table shows the whole number of hogs packed in Cincinnati each season since 1833, being 24 years:

Years.	No.	Years.	No.
1833	85,000	1846	305,000
1834	123,000	1847	250,000
1835	102,000	1848	475,000
1836	123,000	1849	410,000
1837	103,000	1850	398,000
1838	182,000	1851	334,000
1839	190,000	1852	392,000
1840	95,000	1853	361,000
1841	160,000	1854	421,000
1842	220,000	1855	355,736
1843	250,000	1856	405,396
1844	240,000	1857	344,512
1845	196,000		

Hogshead, a measure of capacity, containing 52½ gallons. A hogshead is equal to ½ a pipe. See Weights and Measures.

Holidays are understood to be those days, exclusive of Sundays, on which no regular public business is transacted at particular public offices. They are either fixed or variable. Banks and public offices are only closed on fixed holidays. In England, the holidays observed generally are, Good Friday, Queen's Birth-day, Coronation Day (June 28), Prince of Wales' Birth-day (November 9), Christmas. In the United States, the holidays are, Fourth of July, Thanksgiving Day (November), Christmas. At New York and some other cities New Years' day is also observed, and at New Orleans, January 8th.

Hogue, or Hague, Cape de la, a bold headland of France, forming the north-west extremity of the Department of Manche, 16 miles north by west of Cherbourg. Off this point the combined English and Dutch fleets defeated the French 22d May, 1692.

Hold (Sax. *healdan*), the inside of the bottom of the ship. It is divided into compartments by bulkheads across; and contains the ballast, water, coal, and wood, provisions, and cargo.

Holland is a European kingdom, formed in part of islands, but chiefly of that part of the Continent where the mouths of the Rhine are divided into several branches before it enters the German Ocean. This district is said to have owed the ancient name of Batavia, by which it was known to the Romans, to one Bato; but at what period he flourished is unknown; and the name is now scarcely used excepting among the poets of the district. By accounts collected from the works of Cæsar and Tacitus, we learn that the ancient tribes who inhabited this portion of Europe had been able to maintain their independence in spite of the attempts made to subdue them by the Teutones, the Cimbri, and other nations, who had conquered the rest of what was then called Gaul. The Batavians, says the last of these historians, excelled all the other people on the Rhine in military spirit. When subdued by the Romans, they paid their tribute in soldiers; and from them was formed a cavalry, which composed the most efficient part of the Roman armies. They astonished the Dacians by the dexterity and bravery with which, completely armed, they swam their horses across the Danube to attack these people; and for a long period they formed the guard of the Roman emperors. A body of Batavians accompanied Agricola on his expedition into Britain, and were of great assistance in securing his conquests in the island.

William II. dying in 1849, was succeeded by the present sovereign, William III., born 19th February, 1817. He was married on the 18th June, 1839, to the Princess Sophia Frederiker Mathilda of Wurtemberg. They have two sons, William Nicolas, Prince of Orange, born 4th September, 1840, and William Alexander, born 25th August, 1851.

The kingdom of the Netherlands comprises the territory of the ancient republic of the Seven United Provinces, with some portions of Limburg. It does not include that portion of Luxemburg which the King of the Netherlands possesses, with the title of Grand Duke, as a part of the German Confederation. It is situated between N. lat. 50° 44′ and 53° 34′, and E. long. 3° 30′ and 7° 10′. It is bounded on the east by Germany, from which it is not separated by any natural barriers, on the north and west by the German Ocean or North Sea, and on the south by Belgium.

The greater part of this country has been formed of mud deposited by rivers in the same manner as the Egyptian Delta is formed by the Nile. By tracing the course of these rivers we obtain an idea of its conformation. The Rhine enters Holland at Lobith, a little below Emmerich, where it is 2300 feet broad; and then divides into two branches, the southern receiving the name of the Waal. At Westervoort, the northern branch is again divided, and there its right arm is called the New Yssel. Then the left branch, taking a westerly direction, is again separated at Wyk into two, and the left branch is called the Lek. The right branch flows on to Utrecht, and being there divided for the fourth time, receives for its right arm the name of Vecht; while the left, which still retains the name of Old Rhine, taking a westerly direction by Waerden and Leyden, finally makes its way at Kalwyk to the North Sea.

The Meuse enters the Netherlands' territory above Eyaden in Limburg, and flowing northward, unites with the Waal, near Loevestein; then divides near Dort, forming the island Ysselmonde. The right branch at Krimper is joined by the Lek, then flowing westward by Rotterdam, divides near Flardingen into two branches, and so forms the island Rosenburg. These branches uniting near Brielle, reach the sea at Oostvourn.

The Scheldt touches the kingdom of the Netherlands at Fort-Bath, where it divides, forming the islands of South and North Beveland, and Walcheren. The left branch reaches the sea at Vlissingen. The right branch flows northward between Zeeland and North Brabant; dividing near Bergen-op-Zoom, it forms the island Tholen, and the left arm reaches the sea north of Walcheren. The right branch still separating North Brabant from Zeeland, divides into numerous channels, by which its waters, mingled with those of the left branch of the Meuse, form numerous islands, and finally reach the sea.

To establish a firm footing amid so many rivers, the inhabitants have kept them as far as possible within prescribed channels by embankments, and have formed numerous canals to receive the superfluous waters, and to serve as means of internal communication. The country is thus a net-work of rivers and canals from the one end to the other. The system of drainage, of what would otherwise have been an immense mud-bank, well deserves to be ranked among the wonders of the world. The land thus rescued from the rivers is nowhere much elevated above the sea, and in many places is even below the sea-level, so as to require still more wonderful defenses against the ocean. These defenses are in part supplied by the operation of nature, casting up sand-hills along great part of the coast; but where these have not been formed, their place is supplied by dykes of vast extent, built in the course of ages, partly of huge blocks of granite brought from Norway, and partly of bundles formed of young trees, reared expressly for the purpose. These dykes stretch for hundreds of miles along the coast, and with those which line the rivers and canals, and with the requisite sluices, drawbridges, and hydraulic works of every kind, are estimated to have cost not less than £300,000,000 sterling. They form in so small a country a most astonishing monument of human industry. Yet they are not greater than the situation requires. They are barely sufficient to preserve the country from the dominion of the waters. The motto on the arms of one of the provinces, "Luctor-et-Emergo," still describes the struggles of the invincible Hollanders, requisite for maintaining the ground they stand upon. A destructive inundation occurred so lately as March, 1855. The rivers, augmented by the snows of winter, burst through the dykes in several provinces. A fourth part of Gelderland was submerged. The whole province of South Holland was in the most imminent danger. The embankment of the Rhine having burst in five places in Gelderland, admitted the flood, where it had not extended during 150 years. In Utrecht and North Brabant, the people of many communes had to abandon their property to the waters, and sought refuge for themselves on the roofs of houses and on trees. The neighborhood of Zutphen was very speedily converted into a vast lake, and the villagers hastily betaking themselves to boats and rafts, reached with the greatest difficulty the ramparts of the city. The flood which happily subsided after some days, exhibited, while it continued, the promptitude and energy with which the Hollanders have always contended against the peculiar difficulties of their situation. The king immediately repaired in person to the scene of danger, and took his station in the centre of the inundated country, directing all the operations, and giving every possible assistance. A collection ordered by the king for the sufferers produced £41,667, and private collections reached an equal amount. This sum was immediately distributed among the distressed families, whose habitations and lands had been laid waste. To drain off the remainder of the flood, to rebuild the dykes, to repair the Rhine railway, a considerable part of which had disappeared, could not be so quickly done, but all this the patriotism of the Hollanders has completely accomplished.

The Biesbosch, in the neighborhood of Dort, was formed in 1491, burying 72 villages under water, and drowning 100,000 persons. Of these villages, 34 have been rebuilt, as the progress of drainage permitted. The Dutch method of draining is highly ingenious. A marsh or lake is inclosed with a dyke to prevent any water from flowing into it. Wind-mills are then erected on the edge of the dyke, each of which works an Archimedean screw, and the water thus raised is discharged into a canal, which convey it to the sea. The Lake of Haarlem was the most celebrated of these occasioned by the overflowing of rivers; and its drainage by the application of steam is a great improvement on the old method of draining by wind-mills. See HAARLEM, *Ency. Brit.* Besides these inundations from the rivers, Holland has experienced many others from the sea, which have left large tracts of country submerged, of which the Dollart and the Zuyder-Zee are the most extensive.

The Dollart between Groningen and East Friesland originated in 1277, and was greatly extended in the three following years. One town, 35 villages, and several hamlets were overwhelmed. It has from time to time been much reduced by drainage. The Zuyder-Zee was formerly only a lake, known by the name of Flevo, communicating by two channels with the North Sea. Subsequently the sea covered the lowlands, and the channels of communication were multiplied. Now the expanse of water is 80 miles long, and from 20 to 40 miles broad. Proposals for its drainage have been made to the government, and are under serious consideration. As means of communication between Amsterdam and the North Sea, the Zuyder-Zee has long been unsatisfactory, on account of the Pampus bank and numerous shallows. Sometimes, in consequence of long-continued northerly and easterly winds, its bed is almost dry, and vessels are everywhere lying on the sands. A substitute has accordingly been provided for it in the great North Holland Canal, one of the most stupendous works of the kind in existence. It was begun in 1819, and finished in 1825, at a cost of about £1,000,000 sterling. It is about 50 English miles in length. Its breadth, at the surface, is 124½ English feet, at the bottom 36. The depth is 20 feet 9 inches. Its level is that of the high tides of the sea, from which it receives its supply of water.

While the country possesses abundant means of communication by rivers and canals, it also has excellent roads. The highways in the central provinces are among the best in Europe. They run for miles in a straight line along the summits of the dykes, and are thus at once dry and elevated, commanding extensive views. Between the large cities they are broad, and usually paved with a kind of small hard bricks, called *klinkers*, made of sand, mixed with the clayey mud obtained in cleaning the canals. They are fitted so exactly to each other when laid down that scarcely a crevice is to be seen; and being well covered with sea-sand, they sustain little injury from carriages. Railways have also been made, or are in progress in all directions. Those between Rotterdam and Amsterdam, and between the latter city and Arnheim, have been in operation for several years. Rotterdam is also in communication by railway with Utrecht *via* Gouda, and with Antwerp. There is a branch between Antwerp and Breda. Maestricht in Limburg, is also in communication with Aix-la-Chapelle.

The general aspect of this country is different from that of any other in Europe. The roads and canals are usually lined with willows and other trees, which afford an agreeable shade and relieve the uniformity of the landscape. Innumerable villas are seen decorated with the utmost nicety of art. Spires, church towers, villages admirable for neatness and cleanliness, large and well-built cities, rapidly succeeding one another; meadows in vernal green, varied by sheets of water, cattle in large herds, barges towed by horses, or spreading a sail to catch a favoring breeze—

every thing and every place in the highest order and perfection; such are the sights which Holland supplies in abundance, and in respect of which it has no parallel in any other part of the world.

THE FOLLOWING TABLE GIVES THE STATISTICS OF HOLLAND AS ASCERTAINED BY THE CENSUS, 31ST DECEMBER, 1853.

Provinces.	Population.	Houses.	Acres of cultivated land.	Acres of roads and waters.	Acres of uncultivated land.	Acres of total extent.	Proportion uncultivated.
North Brabant	405,525	3,106	704,901	97,283	458,876	1,268,186	1 : 2·75
Gelderland	387,428	2,895	784,911	51,982	409,713	1,256,105	1 : 2·709
South Holland	391,498	3,067	696,455	108,802	92,296	756,071	1 : 2·426
North Holland	514,755	2,502	421,411	61,895	124,926	616,354	1 : 4·85
Zeeland	165,075	1,721	858,228	8,026	43,968	409,480	1 : 9·31
Utrecht	155,824	1,193	271,587	21,464	48,838	349,114	1 : 7·92
Friesland	259,508	2,184	692,198	66,871	108,248	867,648	1 : 7·92
Overyssel	227,683	1,582	430,922	20,283	379,459	834,450	1 : 2·08
Groningen	197,101	1,860	444,147	28,922	100,599	573,265	1 : 5·74
Drenthe	89,944	603	212,609	5,219	437,120	656,498	1 : 1·50
Limburg	211,401	1,000	852,259	4,942	182,862	545,006	1 : 2·84
Total	3,208,282	21,573	5,218,418	470,629	2,813,845	8,058,172	1 : 3·18

The colonies in Asia—Java, Amboyna, Banda, Ternate, Macassar, with settlements in Sumatra and Borneo, also Desima in Japan, are stated to have a population of..... 16,478,137

The colonies in America—Surinam and the Islands of Curaçoa and St. Eustathius..... 90,581

The colonies in Africa—Elmina, on the coast of Guinea..... 100,000

Total..... 16,668,718

Population of Holland..... 3,208,282

Total subjects of the King of Netherlands.. 19,871,950

The population has increased by 60 per cent. in 57 years at the following rates:

Years.	Population.		
1796—1815	166,422, or annually,		8,760
1815—1830	880,321	"	25,355
1830—1840	236,525	"	23,652
1840—1850	187,887	"	18,788
1796—1858	1,101,368	"	19,322

The number of the inhabitants of 87 cities in 1853 was 1,163,559, and of the country 2,039,673. The population of the principal cities at the same period was the following:

Cities.	Pop.	Cities.	Pop.
Amsterdam	247,730	Haarlem	27,770
Rotterdam	90,888	Maestricht	26,919
The Hague	75,276	Leuwarden	24,461
Utrecht	59,710	Nimegnen	22,009
Leyden	37,106	Dort	21,365
Groningen	35,126	Bois-le-duc	21,862

Climate.—In respect of climate, Holland labors under many disadvantages. In winter it is much colder than England, and the waters are frequently frozen for three months. Even the Zuyder-Zee is sometimes frozen over. The temperature has been sometimes as low as 23° below zero of Fahr., and sometimes as high as 102°. In summer, cold nights often succeed to days of intense heat. The climate generally is variable. The atmosphere, especially in the western provinces, is loaded with moisture, and there agues, dropsies, pleurisies, and rheumatisms, are frequent. Gelderland is the healthiest province, but all the eastern side of the country is comparatively salubrious. Holland is frequently subject to violent gales of wind, which, when they blow from the west or north-west, are apt to cause inundations of the sea.

Agriculture.—This remarkable country largely rewards the skill and labor of the agriculturist. The south and central provinces are the most fertile. As has been shown above in one of the tables, there are still extensive tracts of uncultivated land, although much has been reclaimed of late years. The farms in the best parts of Zeeland vary in extent from 166 to 330 acres each. In South Holland the proportion of pasture to arable land is about 2 to 1. In Friesland the quantity of pasture is more than eight times that of arable land. In Gelderland there are large plantations of apple, pear, and cherry-trees. Tulips and hyacinths are extensively cultivated in the neighborhood of Haarlem in fields of several acres each. Pulse and garden vegetables are everywhere raised in great abundance, also wood and madder. Flax is largely cultivated in the south, and especially in the neighborhood of Dort. Utrecht and Gelderland produce considerable quantities of tobacco. The following are the statistics of the harvest of 1853:

	Cultivated land in acres.	Produce in quarters.
Wheat	177,065	329,267
Rye	448,648	883,036
Barley	108,916	425,866
Oats	211,216	980,595
Buckwheat	157,489	474,055
Cabbage seeds	58,062	108,154
Peas	25,583	78,780
Beans	82,404	340,981
Potatoes	216,074	2,604,954
Carrots	2,617	....
Flax	51,572	....
Tobacco	9,888	....

The rearing of live stock, however, and dairy husbandry, are much more important sources of national wealth than tillage. The lean cattle brought from Denmark and Germany fatten with great rapidity in the Dutch *polders*. Large herds of beautiful cows yield great abundance of the richest milk. Butter and cheese of the best quality are larely exported, and bring great wealth to the peasantry. The Dutch horses are good, and well adapted for draught; the best are those of Friesland. The breeds of sheep, however, are not particularly good.

The statistics of 1853, December 31, give the following numbers for the whole kingdom:

Horses	286,562	Sheep	826,061
Horned cattle	1,236,974	Swine	233,900

In North and South Holland, Groningen, and Utrecht, there are made 140,000,000 lbs. of cheese annually, the home consumption of which does not exceed one twentieth. This large quantity at its average price produces £1,800,000 sterling annually. The value of the butter is about £2,000,000 sterling more, of which their own consumption amounts to one tenth.

Butter and cheese figure among the great articles of the industry and the commerce of Holland. It appears from one of the published tables, that from 1803 to 1850 the export of butter has constantly increased, so as to have been quadrupled in half a century. From 3437 tons in 1803 it arrived at 11,931 tons in 1852. The export of cheese was 9823 tons at the beginning of the century. In 1852 it was 19,646 tons. For 1854, instead of a general statement such as the above, we have found indications regarding particular commodities, the trade in which was very active. The importation of raw sugar in 1854 was 108,546 tons, against 102,101 in 1853. The export of raw sugar rose to 55,536 tons, being 4420 tons more than in 1853. The importation of coffee from Java, on the other hand, was less in 1854 than that of 1853 and 1852. In 1852 it was 1,073,838 bags; for 8353, 938,680 bags; and for 1854, only 928,230 bags. The trade in indigo, however, was progressing. The imports in 1854 were 14,130 chests, against 10,200 in 1853, 8600 in 1852, and 5500 in 1851. The importation of cochineal was equally increasing: 1535 chests in 1851 against 868 in 1851. Tobacco held also a principal place in the imports of 1854. There were received 13,550 barrels

from Maryland, and 3110 from Virginia. Tin from Banca furnished 132,864 blocks. The trade in wool revived, and that in cotton assumed considerable importance. The trade in flax was 1611 tons in 1854. In 1850 it had not reached 344 tons. Thus it had been quadrupled in five years.

The account of exports is not, for the same period, so favorable. It gives, indeed, the first notice of direct trade with Australia; but the result of this new enterprise was not encouraging. Holland exported its agricultural produce, however, in great quantity. In 1854, the export of butter was 14,244 tons against 13,261 in 1853. That of cheese was nearly 25,540, being 982 more than in 1853. That of cattle, 77,198 head of oxen. In 1853 there were 83,074 oxen and 204,148 sheep.

Shipping.—The following account is given of the shipping:

	Cleared inward.		Cleared outward.	
	Ships.	Tonnage.	Ships.	Tonnage.
1850.....	6,941	1,099,671	7,091	1,134,964
1851.....	6,960	1,166,140	7,177	1,216,558
1852.....	7,457	1,249,728	7,712	1,317,425
1853.....	6,883	1,151,296	7,068	1,215,869

The Netherlands' and foreign ships were, 1853, in the following proportion:

Flags.	Cleared inward.		Cleared outward.	
	Ships.	Tons.	Ships.	Tons.
Netherlands...per cent.	49½	44½	47½	43
Foreign..... "	50½	55½	52½	57

To have a full view of the trade of Holland, we must not only learn its state as carried on by sea, but also by the rivers, which carry a great amount of it. Tables have been published of the merchandise which arrived, and was forwarded by way of the Rhine, in 1854. There was an increase above 1853 of 7260 tons from Amsterdam to places on the Rhine, and of 12,328 tons from the Rhine to that city. Coffee, rice, and the oleaginous grains are foremost in this progressive increase. The export of rice to Germany has had a remarkable increase. In 1842–'52 it was only 8666 quarters per annum. In 1853 it was 46,459. The quantity of grain sent from Amsterdam to the Rhine in 1854 was 15,600 tons.

The vessels engaged in the river navigation were in 1853:

	Cleared inward.		Cleared outward.	
	Vessels.	Tonnage.	Vessels.	Tonnage.
Laden.....	15,973	1,134,748	9,844	787,105
In ballast..	2,213	148,680	8,187	521,975

with 127 wood-rafts, measuring 24,328 cubic ells.

The proportion of these belonging to the Netherlands was:

Of laden vessels 8,879 Tonnage 611,578 inward
" 4,615 " 376,009 outward.

The remainder belonged principally to Belgium and Prussia, and, in smaller proportions, to Hanover, Baden, Nassau, Hesse, Bavaria, Frankfort, and Wurtemberg.

On the 31st December, 1853, the merchant fleet of Holland counted in all 2037 vessels = 239,601 lasts burden. There were 142 frigates = 56,142 lasts; 334 barks = 93,091 lasts; 66 brigs = 8439 lasts; 168 schooners = 13,436 lasts; 783 koffs = 46,465 lasts; 250 tjalks = 7259 lasts. The number of steamers belonging to the Netherlands in 1837 was only 30 with 58 engines of 2200 horse-power. In 1853 there were 100 steamers, with 118 engines of 6911 horse-power, not including those of the royal navy. It is stated in the tables that, independently of the Netherlands' trade, there were employed during 1853 in the carrying trade between foreign parts, Netherlands' ships which made no less than 2266 voyages, with 207,204 lasts of lading. The Dutch consuls at foreign ports furnished the data of this enumeration, which was made in 1853 for the first time. In connection with the great emigration to the gold-fields of Australia, more than 50 Dutch ships were freighted in different British ports for that distant country during the first six months of 1854.

To these details, gathered from the statistical publications of the Dutch government, by which it has been attempted to convey an idea of the present state of the trade of Holland, we will only add one remark, that with the exception of the old East India Company's monopoly above mentioned, the commercial policy of Holland for a lengthened period was more liberal than that of any other nation. The same enlightened policy, if partially departed from during recent years, has been again cordially entered into after the recent example of Great Britain. A law enacted on 1st September, 1854 abolished the import duties on a great number of articles of merchandise; and the Netherlands' tariff, thus modified, equals, if it does not even surpass, in liberality all other tariffs in existence. It has evidently been in consequence of this enlightened policy, having for many generations been generally understood and practiced by the Dutch government, that a country not more extensive than Wales, and naturally not more fertile, recovered, indeed, in a great measure from the waters, and kept from being again submerged, by constant watchfulness, and a heavy expenditure; accumulated a population of more than 3,000,000; maintained wars of unexampled duration with the most powerful monarchies; and besides laying out immense sums in works of utility and ornament at home, lent hundreds of millions to foreigners. Notwithstanding their want of native timber and iron, they are abundantly supplied with all the materials of carpentry, ship-building, and manufactures. And though their commerce, notwithstanding its revival in later years, is much diminished from its earlier preeminence, the Dutch, even at this moment, are the richest and most comfortable people of Europe.

The following is a budget of receipts and expenditures of the national revenue for 1856:

Revenue.	
Direct taxes (land tax, provincial taxes, patents)..	£1,597,678
Excise.....	1,895,871
Stamps, registrations, hypothec successions.....	958,525
Import, export, and navigation duties.....	352,664
Duty on pawned gold and silver wares.....	19,158
Domains.....	108,975
Post-office.....	120,533
Lottery.....	33,333
Sporting and fishing licenses.....	7,083
Duty on mines.....	96
Diverse revenues.....	102,475
Interest of national debt contributed by Belgium..	33,333
Interest at the charge of the colonies.....	900,000
Balance derived from colonial administ'n. at home	391,667
Derived from sale of the national domains.....	77,864
Total revenue, 1856.....	£6,099,255

Expenditure.	
King's household.....	£66,667
High departments of state.....	45,688
Department of foreign affairs.....	40,834
Department of justice.....	212,225
Home department.....	471,642
Churches and Jewish synagogues.....	141,180
Roman Catholic church.....	49,246
Department of marine.....	634,715
Interest of national debt.....	2,985,586
Department of finance.....	530,159
Department of war.....	978,750
Colonial department.....	9,645
Incidental expenses.....	8,333
Total expenditure, 1856.....	£6,119,670

The following table gives the receipts and expenditure of the different provincial governments for 1855, and of the communes for 1854:

	Provincial, 1855.		Communes, 1854.	
	Receipts.	Expenditure.	Receipts.	Expenditure.
North Brabant....	£260,925	£263,363	£296,328	£287,563
Gelderland.....	11,258	11,258	119,570	121,698
South Holland....	19,928	19,928	366,725	364,831
North Holland....	20,524	20,525	421,025	424,820
Zeeland	9,848	9,848	75,981	75,037
Utrecht.....	5,604	5,608	59,718	59,687
Friesland.....	28,787	28,777	124,361	130,456
Overyssel.....	16,429	16,429	92,804	89,424
Groningen.....	26,727	26,721	109,684	109,591
Drenthe.....	4,661	4,661	19,863	19,846
Limburg.....	6,869	6,869	51,171	40,979
Total.....	£211,060	£210,482	£1,580,225	£1,524,806

In consequence of the provincial and communal councils having a right to levy taxes as well as the general government, it is necessary to sum up all the three budgets in order to obtain the whole amount of the public revenue and expenditure. This can, however, only be done for 1854, as the communal budgets for 1856 and 1855, and the provincial for 1856, are not given in the latest statistical publications:

	Income.	Expenditure.
National	£6,656,056	£6,936,842
Provincial	176,845	176,665
Communal	1,536,225	1,524,866
Total	£8,368,626	£8,638,813

On the 27th August, 1751, William IV., Prince of Orange, presented to the States General of Holland a remarkable memoir on the state of that republic, which is still preserved in a work entitled "*La Richesse de la Hollande*," published in London in 1788. That prince requested the opinions of several leading merchants, and others of large mercantile experience, on the following questions, viz.: 1st. What is the actual state of commerce? and if the same should be found to be diminished and fallen to decay, then to inquire; 2d. What arrangements and means may support it, and, if possible, restore it to its former prosperity and grandeur? These questions elicited a statement, or, more properly, an elaborate and lengthy report, on the causes by which the trade and navigation of the United Provinces rose and flourished. This report is divided into three heads, viz.: 1st. The natural and physical causes; 2d. The moral causes, and, 3d. The accidental, adventitious, or external causes.

Under the first head are classed the advantageous situation of the country, near the sea, and at the mouths of large navigable rivers; its central situation, which rendered it the general market to which the merchants of northern and southern Europe were accustomed to bring their merchandise, and exchange the same for such goods as they wanted. The sterility of the country, and the consequent want, it is represented, have contributed in animating the spirit, zeal, industry, and genius of the people to seek in foreign countries those things which they most need at home; and this could only be effected by means of trade. This they were enabled to do by the great abundance of fish in the neighboring sea, which furnished an equivalent for the exchange of those things which the barrenness of their own country, and their limited extent of arable lands, denied them at home. Among the moral causes, the report cited the invariable maxim and fundamental law of the State, which permits the free exercise of all religions, and regards toleration in this respect as the most effectual means of attracting foreigners from adjacent countries, and, by that means, to augment the population of these provinces. The constant policy, it is remarked, of this republic has been to make this country a safe asylum for persecuted and oppressed foreigners; and no alliance, no treaty, no solicitation of any potentate in the world has ever been capable of destroying the protection and security accorded to those who have sought its refuge. This fundamental maxim of the republic has caused many people to flee from the oppressions and persecutions exercised in other countries, and to seek refuge, as well as employment, bringing with them not only their money and their valuable effects, but also their industry. They have established many trades, manufactories, and arts, notwithstanding the first materials for the said manufactures were almost wholly wanting in the Netherlands, and only to be procured, at great expense, from other countries.

The constitution and the form of government, and the civil liberty thus extended, furnish another cause to which the growth of trade and the prosperity of commerce are attributed. The wisdom and prudence of the administration, the courage and firmness of the councils, the fidelity with which contracts and engagements were wont to be fulfilled, are also classed among the moral causes under which their commerce had reached so high a degree of prosperity and splendor. Among the accidental or external causes are enumerated the civil wars in France, and afterward in Germany, England, and other countries, which contributed largely to the encouragement of the manufacturing industry of Holland; while the religious persecution in Spain, Brabant, Flanders, and other states and empires, also contributed to the advancement of its commerce. After dwelling at length on these three heads, this celebrated report then discusses the actual state of the trade of the country, and shows that the first two—the natural and moral causes—still remain unchanged; while the third—the accidental and external causes—had almost entirely disappeared. Persecutions in other countries had ceased; indolence and contempt for trade had given place to industry and commercial enterprise; their own example had been imitated by England, which for a century had been straining legislation to attract the trade so long enjoyed by the republic, and which now prohibited the exportation of the wool which formerly fed the factories of Holland; while many other countries had successfully introduced those branches of industry which in former days had flourished in the Netherlands alone.

The great number of shops which had been closed in the principal towns, especially in Amsterdam; the difficulty of procuring seamen to man the ships; the flourishing commerce of Hamburg and other towns, which now supply Germany with all kinds of colonial produce, of which Amsterdam was formerly the great emporium; the extinction of Dutch commercial houses in Spain, and of Dutch trade in the Levant: all of these were cited as proofs of the present decline of the trade and commerce of Holland. This report, of which a brief sketch has thus been given, closes with a recommendation to permit all raw materials to be entered free of duty, as well as all foreign goods placed in entrepôt, or for transit; basing this recommendation upon the maxim, that the lighter the burdens were, the greater would be the trade. Nearly 200 years prior to the date of this report, the revolt of the Netherlands against Spain commenced. The Duke of Alva, then the Spanish governor of the Netherlands, was defeated; all the Spanish ships on the coast of the Netherlands were destroyed; several Spanish towns were taken, and Spanish troops were expelled from the cities and towns of Holland, Zealand, and West Friesland, whose citizens joined in the revolt, and swore allegiance to the Prince of Orange.

In 1579, the famous union of the States of Holland Friesland, Zealand, and Utrecht was formed at the latter place, and a solemn compact entered into to unite as one confederation, and, as such, to advise of peace, war, and taxes, and to maintain personal and religious liberty. Overyssel and Groningen soon after joined the union; and, in a few years, these seven United Provinces became the most powerful republic which the world had seen since the decline of ancient Rome. From this period until the treaty of Westphalia was signed (1648), we find the Dutch growing rapidly in power, commerce, and wealth; sending their ships to every quarter of the globe; successfully resisting the Spanish and Portuguese flags, on whatever sea they chanced to encounter them; capturing their vessels; expelling them from the Moluccas; forming trading establishments in the Persian Gulf, and thence along the coasts and isles of India to Japan, and especially at Ceylon, Java, and the Moluccas. In one of these naval encounters (1658), the Dutch captured a whole fleet of Spanish galleons, bringing home, as the prize of victory, precious metals to the value of 10,000,000 guilders. The vessels and seamen employed in these naval adventures were under the management of the Dutch East India Company, which frequently realized from the rich captures and costly cargoes—

spices, cinnamon, and other East India productions—as high as 62½ per cent. on the capital stock invested.

A West India Company was also organized about the year 1621, originally for the purpose of driving the Portuguese out of Brazil, and the Spaniards out of Peru, in which they were not so successful as in their East India adventures. They captured, however, the Spanish fleet in those seas; scoured and plundered the coasts of Cuba; took possession of Pernambuco and the islands of Curaçoa, St. Eustace, and others, which they still retain.

The first check to this extensive and almost undisputed dominion of the sea, which the Dutch experienced, was the celebrated navigation act of the *Rump* Parliament, enforced by Cromwell, and 10 years afterward legalized by Charles II. The Dutch, at this period, enjoyed a profitable carrying trade between England and her American colonies. By this act, it was provided that no merchandise, the produce of Asia, Africa, or America, should be imported into England in any but English-built ships, commanded by an English master, and navigated by a crew three fourths of whom should be Englishmen; nor any fish exported from or imported into England or Ireland, except of English taking. As might have been, and confessedly was, expected, a war soon after broke out between Holland and England, exclusively naval, which was carried on with the utmost desperation on both sides. After several fierce and bloody engagements, the Dutch were defeated, and were compelled to sue for peace. A treaty followed, imposing the most humiliating terms upon the hardy republic; among others, that "of striking their flag, and lowering their topsails, whenever the Dutch ships should meet any of the ships of war of the English commonwealth in the British seas." Several other wars occurred between the Dutch and English, and, in 1672, between the former and the English and French combined. Toward the close of the war of the American Revolution, hostilities were again declared against Holland by Great Britain, on the pretense that the dockyards and arsenals of France were furnished with munitions of war, and the American troops with supplies, by Dutch vessels. A discovery, accidentally made by the British in the following year, that a secret treaty, recognizing the independence of the United States, had been negotiated in 1778, between Holland and the American Congress, inflamed the already excited animosity of England against the Dutch, to so high a pitch, that war was immediately declared. During the existence of these hostilities the Dutch lost their West India possessions; and, during the subsequent wars of the French Revolution, in which the Netherlands were forced to co-operate with the French, the whole of their East India possessions passed into the hands of the British.

In 1814, the independence of Holland was restored, and Belgium and Holland were erected into one kingdom. In the convention of 1815, Java and all the Dutch colonies were ceded to Holland, with the exception of the Cape of Good Hope, and the settlements of Demerara, Essequibo, and Berbice. The British, also, obtained the cession of the settlement of Cochin and its dependencies, on the coast of Malabar. The possessions of the Dutch in the East Indies are now reduced to the island of Java, the Moluccas, Sumatra (for which they gave Fort Mulneca in return), Macassar, Celebes, Banda, Amboyna, and Ternate. They possess several forts on the coast of Guinea: in the West Indies, Curaçoa, St. Eustace, Saba, and part of St. Martin; and in South America, a portion of Surinam, or Dutch Guiana. The revolution in Belgium in 1830 resulted, as already stated in the article on that kingdom, after a few days' contest, in the separation of Belgium from Holland, and its erection into an independent kingdom. Since 1830, Holland has uninterruptedly pursued the arts of peaceful commerce, industry, and trade. Her navigation is annually extending; and her great commercial marts, Amsterdam and Rotterdam, bid fair to regain their former prosperity.

The United States.—In their commercial relations with the United States, the Netherlands have always manifested a spirit of liberality. Several treaties of amity, navigation, and commerce have been entered into between the two countries—the last bearing date August 26, 1852. This treaty of 1852 is based upon the principle of entire reciprocity and perfect freedom of commerce, and applies, with all its privileges, to the intercourse between the United States and the colonies and dominions of Holland beyond seas. It reserves to Holland the right to levy discriminating duties of import and export in favor of her direct trade with such colonies and dominion but should American vessels engage in such direct trade, they are to enjoy perfect equality with the national flag. The United States is also at liberty to continue to levy the discriminating duty imposed by the tariff of 1846 on tea and coffee, in favor of the direct importation of these articles from the places of their growth, but also without discrimination between the flags of the two countries. This treaty is to continue in force two years, commencing six weeks after its ratification, with the usual 12 months' notice by either party wishing to terminate its action. Before the date of this last treaty, the reciprocity and freedom of commerce between the Netherlands and the United States applied only to the direct trade between the two countries. All restrictions, not only as regards entire reciprocity and perfect equality in the direct trade between the two nations and their flags, respectively, but, as it respects our trade with the Dutch colonies, were by this treaty abolished, and the two flags were assimilated (the coasting trade and fisheries excepted), on every sea, and in every port.

Navigation Laws.—The laws amending the Netherlands legislation with respect to navigation were prepared in 1848, but not proclaimed as in operation until the year 1850, when the abolition of the British navigation acts rendered necessary the immediate adoption of that step. The new system agreed to by both the Chambers of the States General is contained in a collection of rules embodying the legal dispositions and schedules. These are too numerous and lengthy here to be inserted; but the following summary will convey a general idea of their purport, and show how beneficially the liberal spirit, which has of late years guided British commercial legislation, enters into and molds the commercial systems of neighboring countries. Whatever favor the system of "free trade" may hereafter meet with among the commercial nations of the earth, there can be little doubt that the spirit of free navigation has entered upon its beneficent mission, and already shapes the legislation of those nations which have thriven and flourished most by commerce. The countries of Europe which still retain their mediæval commercial policy—and, indeed, those on our own continent which have inherited from their European progenitors similar systems of commercial intercourse with foreign nations—must either abandon their restrictive policy, and adopt, in its widest sense, and with all its privileges and rights, the common-law definitions of *mare liberum*, or find themselves isolated from the rest of the commercial world. When this spirit has already burst through the barriers which, from a time "to which the memory of man runneth not to the contrary," closed China and Japan against every approach of civilized commerce, it can not be doubted that its influence will soon or late be felt and acknowledged by those nations which would erect financial barricades across the highway of nations, and interdict the importation of bread to feed, and fabrics to clothe, their destitute subjects. The present navigation laws of England are but the commencement of a new era in the commercial legislation of

Europe. The example of Holland, of Belgium, of the Hanse-towns, and the Zollverein (though, as regards the latter, there is still much to be done), can not but hasten this liberal reformation in the navigation laws of neighboring governments. The leading features of the new navigation laws of the Netherlands may be gathered from the following summary. It embraces the chief bases upon which they rest:

1. Unconditional repeal of discriminating favors granted to the Dutch flag, by suppression of the rules allowing to this flag preference above foreign flags. 2. Conditional similarity of flag in the navigation to and from the Netherlands colonies. 3. Stipulations by law concerning the trade and navigation in the colonies of the realm, carried on by other nations of the world. 4. Repeal of the interdiction to grant Netherlands registers to foreign-built vessels, by admittance for registry (naturalization) of such vessels at a duty of four per cent. of their value. 5. Diminishing of import duties on principal materials for shipbuilding. 6. Suspension of the *shipping duties* on the Rhine and Yssel. 7. Total abolition of transit duties.

The principal object of all these measures is to promote trade, by relieving navigation, as much as possible, of the impediments against its development which resulted from past legislation. The general system comprehends a plan of establishing, in one general law, instead of by complicated treaties of commerce with the different nations, the principle of immediate and unconditional "free navigation," and, consequently, the general and unconditional assimilation of flags, by granting to the vessels of all nations the privileges enjoyed by those of the Netherlands; reserving, however, the right of retaliation, should circumstances render its exercise necessary, which, in most cases that can happen, will be limited to an augmentation of shipping taxes, or of import duties; and saving, also, certain restrictions and conditions relative to importations from Netherlands colonies. In fine, the navigation laws of Holland are framed so as to open, as far as possible, all Netherlands ports for ships of all nations; "to proclaim," as announced in the official exposition, "a renewed adherence to the liberal commercial policy which the Netherlands was the first nation to adopt, in order to stimulate other nations to abandon all systems of protections and prohibitions; to abolish all exclusive protections of the Netherlands flag, so that our (their) navigation may, with good success, keep pace with that of other nations, and our (their) commerce may not remain behind in the newly-opened competition resulting from the repeal of the navigation laws of England." Under the regulations condensed above, as well as under the treaty with the United States of 1852, the American flag is assimilated to that of the Netherlands in the colonial trade. Indeed, in all respects, without any condition or qualification whatever, the flags of both nations enjoy entire and perfect equality. On the 5th of August, 1844, the then Secretary of the Treasury addressed to collectors and naval officers circular instructions, in which the following paragraphs occurred:

"The chargé d'affaires of his majesty the King of the Netherlands has presented a complaint that the duty of 20 per cent. ad valorem, levied upon coffee imported from the ports of the Netherlands, is in contravention of the subsisting treaties between the United States and the King of the Netherlands; seeing that, by the ninth article of the act of 1842, coffee imported in vessels of the United States, from the place of its growth or production, is exempt from duty.

"By the first article of the treaty of 1839, between the United States and the United Netherlands, it is stipulated that goods and merchandise, *whatever their origin may be*, imported into or exported from the ports of the United States, from or to the ports of the Netherlands *in Europe*, in vessels of the Netherlands, shall pay no other or higher duties than shall be levied on the like goods and merchandise imported or exported in national vessels, etc.

"As coffee imported in the vessels of the United States is exempt from duty, it follows, from the treaty before recited, that coffee imported in the vessels of the Netherlands, from their ports in Europe, is exempt from duty. Therefore, such duties as have been so levied upon coffee, so as aforesaid imported, in vessels of the Netherlands, from their *ports in Europe*, must be refunded; and, in future, coffee so imported must be admitted free of duty."

From these instructions it necessarily followed in practice, that while the coffee of Java, imported in vessels of the Netherlands, from ports of the Netherlands, has been exempted from duty on its arrival in the United States, the same article, when imported in American vessels, from the same ports in the Netherlands, has been subjected, under the provisions of the 10th section of the tariff act of 30th of August, 1842, to the payment of a duty of 20 per cent. ad valorem, as a non-enumerated article. On the 11th of September, 1845, these instructions were countermanded, by Treasury circular of that date, as not warranted by the provisions of the treaty of 1839; the word "so," which qualified the importation or exportation, having been overlooked in preparing the circular first referred to. A different construction would give to the vessels of Holland an advantage over American vessels engaged in the same trade, as already intimated, of 20 per cent.—an advantage which could hardly have been intended to be given by any treaty with a foreign power. All ambiguity or doubt on this subject is removed by the tariff act of 1846. Under the provisions of that act, however, the Netherlands flag still enjoys an advantage over that of the United States in the coffee carrying trade. That act, schedule 1 of the act provides, that "coffee, the growth or production of the possessions of the Netherlands, imported from the Netherlands in American vessels, or in foreign vessels entitled by reciprocal treaties to be exempt from discriminating duties, tonnage, and other charges," shall be free. The export duty on coffee at Java, is 12 per cent., half of which is remitted in favor of direct importation to the Netherlands in national or equalized bottoms. Consequently, a Dutch vessel, carrying Java coffee from Holland into the United States, can undersell the American importer who brings it into port direct from Java, the amount of the differential export duty, or six per cent. on the value of his cargo.

Commerce.—The principal articles imported into Holland in 1853, and their proportion to the total amount of importations, were as follows:

	per cent.		per cent.
Tissues of all kinds	12·61	Grains	6·40
Raw sugar	12·03	Iron	3·98
Yarns	9·00	Raw Cotton	3·49
Coffee	8·47	Dye stuffs	2·99

The principal exports, and their proportion to the total amount of expertations, were:

	per cent.		per cent.
Woven fabrics	8·95	Grains	4·84
Refined sugar	7·29	Raw sugar	4·54
Yarns	7·15	Live animals	4·09
Coffee	6·59	Butter	3·99

The total general commerce of Holland in 1853 (imports and exports united), amounted to $237,000,000, showing a diminution, when compared with the preceding year, of $540,000.

The diminution in exports fell principally upon alimentary products of the first necessity, and was caused by the general bad crops of the year. The share assigned in the commerce of this year amounted to: imports by sea—to the Dutch flag, $49,391,732; to the foreign flag, $42,613,132—giving to the Dutch flag in the import trade, 53⅞ per cent.; and to the foreign flag 46⅛ per cent. In the export trade, the Dutch flag had $29,626,014; the foreign flag, $30,870,144—giving the Dutch flag 49, and the foreign flag 51 per cent.

The total imports of the Netherlands in 1854, as appears from the *Statistical Year Book of Holland*, for that year, amounted to 656,484,000 florins, or $142,593,000; showing an increase over the imports of

1853 of $14,173,000, and over the imports of 1852 of $13,565,000. The total exports the same year, as given by the same authority, amounted to 308,780,000 florins, or $128,512,000; showing an increase over the exports of 1853 of $14,391,654, and over the exports of 1852 of $14,518,000.

IMPORTS AND EXPORTS OF HOLLAND FOR 1854.

Countries.	Imports.	Exports.	Total.
Great Britain	$39,904,000	$30,077,000	$69,982,000
France	4,868,000	5,229,000	1,098,000
Zollverein	27,527,000	46,574,000	74,101,000
Hanse-towns	3,204,000	4,245,000	7,450,000
United States	3,018,000	2,054,000	5,072,000

The value of the total trade between Holland and the United States for 1854, as given in the United States' Treasury Report on Commerce and Navigation, is $4,138,636, or $934,150 less than that given by the Dutch official report.

The chief articles exported from the United States to Holland are cotton tobacco, rice, breadstuffs, etc. The leading imports into the United States from Holland are spirits (principally gin), coffee, madder, spices, pictures, paintings, segars, tin, etc. There entered in 1853, in Dutch ports, from foreign countries, 6392 vessels, measuring 1,064,233 tons; of which number 70, measuring 26,765 tons, bore the flag of the United States; and 18 vessels, under the Dutch flag, sailed direct from our ports with American produce.

During the same year, there cleared from the Netherlands to foreign countries, 4,413 ships, measuring 776,889 tons; of which there were under the American flag, for United States' ports, 22 vessels, measuring 11,333 tons; and for the same destination, 27 vessels belonging to other nations.

In 1853 there entered at the different ports of Holland 1006 steam vessels, laden, measuring in the aggregate, 304,329 tons; 195 steam vessels in ballast, measuring in the aggregate, 72,800 tons; in all, 1201 vessels, tonnage, 377,129.

The vessels in ballast were all under the English flag; those freighted were distributed as follows:

	Vessels.	Tons.
Under the Dutch flag	356	89,641
" English flag	636	210,516
" French flag	13	4,082
" Swedish flag	1	90
Total	1,006	304,329

Since the new navigation laws of Holland came into operation (August 8, 1850), the maritime commerce of that kingdom has been distributed as shown by the following table:

IMPORTATIONS BY SEA.

Flags.	1849.	1850.	1851.	1853.
Dutch	59 per ct.	58 per ct.	53 per ct.	58 per ct.
Foreign	41 "	42 "	46 "	46 "

EXPORTATIONS BY SEA.

Flags.	1849.	1850.	1851.	1853.
Dutch	51 per ct.	56 per ct.	50 per ct.	49 per ct.
Foreign	49 "	44 "	49 "	51 "

COMMERCE OF THE UNITED STATES WITH HOLLAND, FROM OCTOBER 1, 1820, TO JULY 1, 1856.

Years ending.	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage Cleared.	
	Domestic.	Foreign.	Total.	Total.	Exported.	Imported.	American.	Foreign.
Sept. 30, 1821	$1,954,513	$1,739,692	$3,694,205	$1,938,953	$132	$1,852,167	26,048	1,063
1822	2,077,868	1,564,683	3,642,051	854,995	....	178,651	28,683	1,281
1823	2,642,930	2,469,216	5,052,146	754,950	1,990	222,791	53,846	6,769
1824	1,597,514	617,831	2,215,345	1,210,267	....	289,551	24,517	1,452
1825	2,486,468	1,306,889	3,793,307	1,253,369	....	15,085	26,946	678
1826	1,970,199	1,899,857	3,870,056	1,106,408	....	151,380	32,946	1,188
1827	2,230,381	888,950	3,228,331	965,917	710	85,608	33,519	1,712
1828	1,803,767	365,646	2,229,413	1,398,572	4,800	181,283	25,515	6,179
1829	3,095,857	889,330	3,985,187	1,057,854	15,451	17,308	38,872	4,951
1830	3,354,551	675,527	4,030,078	888,403	....	12,197	35,220	4,515
Total	$23,382,548	$12,317,571	$35,700,119	$11,438,693	$22,613	$2,436,021	325,112	29,733
Sept. 30, 1831	$1,707,292	$212,860	$1,920,152	$989,837	$5,000	$16,641	23,168	1,994
1832	2,232,792	2,870,490	5,103,282	1,360,668	....	4,764	38,770	8,372
1833	1,634,353	722,409	2,356,762	1,166,856	26,178	5,440	22,483	6,038
1834	2,365,536	1,258,138	3,623,674	1,123,456	....	60,071	25,819	7,171
1835	2,845,980	187,036	2,533,016	1,590,570	....	50,608	18,946	6,151
1836	2,498,096	686,479	3,184,575	1,282,231	....	....	14,073	11,956
1837	2,035,589	1,322,936	3,358,525	1,886,976	....	32,461	13,745	22,788
1838	2,555,979	398,269	2,954,248	1,180,597	3,612	9,512	18,501	12,029
1840	1,677,352	295,651	1,973,003	2,149,732	260	2,888	11,612	12,881
1840	3,345,264	511,046	3,856,310	1,074,754	800	466	31,747	11,029
Total	$22,898,233	$8,465,314	$30,863,547	$14,852,477	$35,850	$182,851	218,864	101,709
Sept. 30, 1841	$2,237,444	$277,478	$2,514,922	$1,638,022	....	....	24,398	10,838
1842	8,236,338	886,988	8,623,326	1,067,438	....	....	33,889	18,804
9 mos 1843	1,698,827	288,140	1,986,467	490,928	....	$12,730	23,229	2,660
June 30, 1844	2,517,931	181,023	2,698,944	1,310,081	....	236	23,786	16,589
1845	2,753,780	268,267	3,022,047	954,344	....	1,500	27,859	16,547
1846	2,097,691	199,074	2,296,765	1,039,597	....	2,062	23,585	11,582
1847	1,895,898	120,986	2,015,884	1,247,209	....	14,662	17,744	17,143
1848	1,595,450	271,513	1,866,963	1,417,908	$28,900	....	12,347	21,255
1849	2,155,828	242,027	2,397,355	1,501,643	....	....	22,536	16,160
1850	2,188,101	416,564	2,604,665	1,686,967	....	....	14,968	22,753
Total	$22,365,778	$2,611,010	$24,976,788	$12,311,032	$28,900	$31,180	224,051	154,131
June 30, 1851	$1,911,115	$281,054	$2,195,169	$2,052,706	....	....	9,230	26,014
1852	2,292,848	204,681	2,497,529	1,635,516	....	....	18,759	22,923
1853	1,983,728	215,773	2,199,496	1,625,170	....	....	10,802	20,730
1854	2,299,710	142,956	2,442,666	1,695,970	....	....	15,204	15,004
1855	1,920,309	208,615	2,128,984	1,825,700	....	....	15,978	17,263
1856	3,501,110	85,318	3,586,428	2,420,479	....	....	22,557	24 977

The general navigation and trade of Holland, considering its comparatively limited area, presents a spectacle of commercial greatness unequaled in the world. In 1852, its general imports reached $129,087,820, and its exports $108,093,854. In 1853 the imports amounted to $128,420,691, and the exports to $109,120,666. This commercial prosperity nearly equals that which the Netherlands attained in its palmiest days, when Beawes said of it in his *Lex Mercatoria:* "It produces hardly any thing, and yet has wherewith to furnish other people all they can have need of. It is without forests, and almost without wood. There are no mines or metals, and yet there is found as much gold or silver as in New Spain or Peru; as much iron as in France; as much tin as in England; and as much copper as in Sweden. The wheat and other grains that are there sowed hardly suffice for nourishment to a part of the inhabitants; and it is, notwithstanding,

from hence that the greatest part of its neighbors receive them, either for their subsistence or trade. In fine, it seems as if the spices grew there; that the oils were gathered there; that it nourished the precious insects which spin the silk, and that all sorts of drugs, for medicine or dyeing, were in the number of its products and of its growth. Its warehouses are so full, and its merchants seem to carry so much to strangers, or that strangers come to load in its ports, that there is not a day, and it may be said a moment, that ships do not come in or go out, and frequently entire fleets." Such was the picture drawn of the Netherlands in 1670. Its present commercial condition, though different in every other respect from the Netherlands of that period, is quite as prosperous, and rests upon a basis more solid and secure.

TABLE EXHIBITING THE VALUE OF THE COMMERCE OF THE NETHERLANDS WITH FOREIGN NATIONS IN 1853, IN FLORINS [FLORIN VALUED AT FORTY CENTS UNITED STATES' CURRENCY].

Countries.	IMPORTS.		EXPORTS.		
	General imports.	Imports for consumption.	General exports.	Of special commerce.	Transit.
Australia	....	....	694,628	463,061	231,567
Belgium	25,164,698	20,584,254	24,112,314	19,693,723	4,419,091
Brazil	4,573,593	2,149,143	40,366	21,786	18,580
Bremen	1,138,542	760,466	982,639	766,286	216,353
California	....	....	129,940	103,335	26,405
China	1,411,167	893,191	2,502	1,904	598
Cuba	2,847,589	2,017,582	159,730	159,269	461
Curaçoa	127,681	86,408	322,030	269,315	52,715
Denmark	1,963,855	2,028,602	1,007,851	796,035	211,816
France	12,531,116	9,185,854	11,687,590	4,754,005	6,933,585
Greenland, etc.	88,617	88,617	....	....	....
Great Britain	87,896,831	44,869,621	78,968,640	46,493,073	27,475,573
Hamburg	4,919,687	1,977,961	7,814,011	6,174,854	1,139,157
Hanover and Oldenburg	4,125,055	3,687,718	2,389,984	1,625,861	764,623
Java, etc.	68,729,272	52,604,164	21,860,704	18,452,184	3,327,573
Canaries, C. of G. H., E. Indies, Asia	5,356,426	2,996,993	159,724	157,313	2,411
Roman States	19,302	18,492	271,066	269,248	2,718
Coast of Guinea	413,945	413,495	250,892	65,430	185,462
Lubec	79,618	28,630	40,007	17,034	22,973
Mecklenburg	112,771	215,331	132,905	107,124	25,781
The Two Sicilies	1,164,146	227,864	2,800,924	2,723,121	77,803
United States	6,746,580	4,824,610	5,377,239	3,819,546	1,557,693
Norway	4,595,908	3,801,225	681,441	528,926	152,515
Austria	1,220,581	621,960	4,473,060	4,284,994	188,066
Philippine Isles	251,210	73,152	....	....	....
Portugal	511,351	407,589	337,676	220,027	117,649
Russia	15,226,640	14,628,969	3,438,248	2,170,266	1,267,982
Russia (Black Sea)	2,643,588	2,774,889	276,335	274,678	1,657
Sardinia	184,451	91,508	1,809,957	1,716,880	93,077
America	686,066	204,694	573,612	464,704	108,908
Surinam	4,439,665	2,728,145	1,262,320	977,579	284,741
The Zollverein	64,130,562	27,662,831	100,146,833	31,660,595	68,486,238
Tuscany	472,066	302,815	1,693,393	1,536,657	156,736
Turkey, Greece, etc.	1,716,438	1,563,286	3,419,046	3,379,278	39,768
Sweden	422,977	305,152	877,669	239,352	138,317
Spain	687,844	202,527	657,084	281,667	375,417
Not known	....	510	....	....	....
Wrecked	33,551	32,549	....	....	....
Total florins	321,051,720	204,945,136	272,801,666	154,643,160	118,158,506
Or in dollars	128,420,691 60	81,978,054 40	109,120,666 40	61,857,264 00	47,263,402 40

The cultivation of tobacco in the Netherlands is subject to no restrictions, with the exception of the excise duty, to which, like all other products, it is liable. From 1800 to 1900 morgens (equal to from 2600 to 3800 acres) are annually devoted to tobacco. The tobacco land is situated in the provinces of Guilderland, Overyssel, Utrecht, and Zealand. The average quantity of tobacco produced on each morgen is about 4500 lbs. The total crop is estimated at from 8,000,000 to 9,000,000 lbs. per annum. The quantity reserved for home consumption is about 2,000,000 lbs., of which

	lbs.
Smoking tobacco, about	900,000
Snuff	700,000
Covers for segars	400,000

Besides the above, the Netherlands export to foreign countries about 6,000,000 lbs. of tobacco—in the leaf, 5,600,000 lbs., and manufactured, 1,000,000 lbs.

The following table shows the annual tobacco export trade of Holland:

	Kilogrammes.
The Rhenish provinces	580,000
Russia and Great Britain	400,000
Sardinia	250,000
Norway and Denmark	80,000
Naples	50,000
Roman States	50,000
Spain and Portugal	80,000

The total quantity of tobacco grown in the Netherlands is distributed as follows:

	Kilogrammes.
For the manufacture of snuff and chewing tobacco	1,875,000
For segars and segar covers	1,775,000

Average price of the former, from 14 to 32 florins for common; 30 to 90 florins for the best, per 100 kilogrammes. Average price of the latter, from 14 to 32 florins for common; 60 to 90 florins for the best, per 100 kilogrammes. The planters of Arnhem, and some other districts, have, during the past few years, applied themselves to the raising of a very light, clear, yellow tobacco, for segar covering, for which they obtain a very high price. For this purpose they employ a very active fertilizer, with a view to the large and rapid growth of the plant, which they dry by the sun with great skill and management. The average quantity of foreign tobacco annually imported is from 22,000,000 to 25,000,000 lbs., chiefly from the following places:

	Kilogrammes.		Kilogrammes
Maryland	5,600,000	Varinas	120,000
Kentucky	1,750,000	Manilla	75,000
Virginia	1,400,000	Colombia	30,000
Java	800,000	Brazil	30,000
Porto Rico	390,000	Havana	60,000
Cuba	180,000	Tobacco stems	145,000
St. Domingo	120,000		

A third part of the tobacco imported from foreign countries is consumed in the Netherlands, the other two thirds are exported. Germany and Belgium receive the larger portion, which consists altogether of Virginia, Maryland, Kentucky, and some Java tobacco. Besides the imports above designated, Hamburg supplies Holland annually with large quantities of tobacco of American growth. The tobacco manufactories in Holland, of the first class, are numerous. They are chiefly located at Rotterdam and Amsterdam, though many similar factories are scattered

throughout the provinces. The first-class factories employ upward of 1,000,000 operatives. The average consumption of tobacco in Holland is about two kilogrammes (4.408 lbs.) for each individual, or 6,000,000 kilogrammes, or upward of 13,000,000 lbs. for the whole population. Germany offers the principal market for the Dutch tobacco trade, though considerable quantities are exported to the Levant, Italy, Austria, Belgium, Denmark, Surinam, etc.—*Com. Rel. U. S.*

STATEMENT EXHIBITING THE LEADING STAPLES OF THE UNITED STATES, AND THEIR RESPECTIVE VALUES, EXPORTED TO HOLLAND IN THE YEARS SPECIFIED.

Articles.	1854.	1855.
Whale-oil	$8,944	$4,526
Whalebone	6,571	1,805
Wood, lumber, and timber	24,476	77,463
Naval stores	45,101	80,883
Pot and pearl ashes	15,259	84,064
Beef	4,635	1,300
Hams, bacon, and lard	16,642	29,633
Wheat	47,441	....
Flour	59,289	2,662
Rye and other grains	50,276	38,739
Rice	22,299	23,780
Cotton	567,482	418,438
Tobacco	1,350,886	1,068,782
" manufactured	7,816	4,829
Wax	4,959	3,278
Spirits of turpentine	25,619	71,219

The following comparative statement exhibits the effective merchant marine of the Netherlands on the 31st December, 1852 and 1853, respectively:

1852..... No. of vessels 1,971 measuring 448,864 tons.
1853..... " " 2,037 " 479,202 "

The following summary shows the classification of the vessels given in the preceding comparative statement:

	1852.		1853.	
	Vessels.	Tons.	Vessels.	Tons.
Ships	141	111,176	142	112,284
Barks	296	164,200	324	186,182
Brigs	56	14,412	66	16,878
Brigantines	2	488	2	488
Schooners	134	21,554	168	26,872
Other vessels	1,329	133,084	1,310	132,046
Steamboats	13	3,950	15	4,452
Total	1,971	448,864	2,037	479,202

U. S. Foreign Com.

Holly-tree. *Geography and History.*—The *Ilex aquifolium*, or European holly, is indigenous to most parts of the middle and south of Europe, and it is said to be found in China and Japan. It does not appear to be a native either of America or of India, unless the *Ilex opaca* of the United States, and the *Ilex dipyrena* in the Himalayas, should prove, by cultivation, to be varieties of it. According to Pallas, it scarcely occurs within the ancient limits of the Russian empire, though frequent on the southern side of Caucasus, where it forms a low, branching shrub, about 10 feet high. In France it is abundant, more particularly in Brittany. In Germany, it abounds in many forests, especially in the southern and middle States; where, when sheltered by lofty trees, it attains the height of 20 feet; but in exposed situations, it does not exceed a height of 6 or 8 feet. This tree appears to attain a larger size in England than in any other part of the globe. It abounds in that country, more or less, in the remains of all aboriginal forests, and perhaps, at present, it prevails nowhere to a greater extent than in Needwood Forest, in Staffordshire. In Scotland it is found in most natural woods, as an undergrowth to the oak, the ash, and the pine. In Ireland, the holly is not very common; but about the lakes of Killarney it attains a large size.

The wood of the holly is almost of an ivory whiteness, except near the centre of very old trunks, where it is of a brownish hue. It is very hard and compact, with a fine grain, and susceptible of a high degree of polish, which renders it well adapted for many purposes in the arts. When dry, it weighs 47½ pounds to a cubic foot, and is very retentive of its sap, in consequence of which it is liable to warp, unless it is well dried and seasoned before being used. It readily takes a durable color of almost any shade, and hence it is much used by cabinet-makers in forming what are technically called "strings and borders," in ornamental works. When properly stained black, its color and lustre are little inferior to those of ebony. It may be applied to a great number of purposes by joiners, cabinet-makers, turners, engineers, mathematical instrument-makers, and, next to the box and pear-tree, it is the best wood for engraving upon, as it is compact, and stands the tool well. Among its principal uses in England at present, is, when dyed black, to be substituted for ebony, in the handles of metallic teapots, etc. In France, the young shoots and the branches are given to sheep and deer during winter; and the stronger straight shoots, deprived of their bark, are made into whip-handles and walking-canes. The bark of the holly contains an abundance of viscid matter; and, when mascerated in water, fermented, and then separated from the fibres, it forms bird-lime. Medicinally, the bark of this tree is mucilaginous, emollient, and solvent, and is said to possess strong febrifugal powers. The berries are purgative, and 6 or 8 of them when swallowed, will cause violent vomiting; though they are considered as poisonous to men, they form the food of some birds, more especially of the thrushes.

The wood of the American holly resembles that of the European species, except that it is rather browner at the heart. It is compact, heavy, of a fine grain, and is susceptible of a brilliant polish. Its principal use is for inlaying mahogany furniture, and for turning into small boxes for druggists, and for small screws. When perfectly seasoned, it is very hard and unyielding, which renders it well adapted for pulleys used in ships. It may be dyed of various colors, so as to resemble many foreign woods. The back may be employed for making bird-lime, in a similar manner as that of the preceding species. Medicinally it is emetic and cathartic. The berries, taken to the number of 15 or 20, will excite vomiting, and will also act as a purgative.

The emetic holly is found in moist, shady places, from Virginia to the Floridas, and was introduced into Britain in 1770. It was cultivated by Miller in the physic garden at Chelsea, and in several other collections in the neighborhood of London, till the severe winter of 1789, when most of the plants were destroyed. Other plants were afterward raised from seeds in that country, and have ever since resisted the cold of ordinary winters without protection. The leaves and young shoots of the cassena are inodorous, the taste sub-aromatic and fervid, being useful in stomach fevers, diabetes, small-pox, etc., as a mild emetic; but the "black drink" of the Indians is a strong decoction and a violent, though harmless vomitive. At a certain season of the year they often travel a distance of some hundred miles, from parts where this tree does not grow, to procure a supply of the leaves. They make a fire on the ground, and putting a kettle of water on it, filled with leaves, place themselves around it, and with a wooden vessel holding about a pint, commence by taking large draughts, which, in a short time, cause them to vomit freely. Thus they continue drinking and vomiting for two or three days, until they are sufficiently purified, when they return with large quantities of the leaves and boughs, to their homes. The leaves and young shoots of the Ilex cassena and dahoon, and of many other shrubs, appear to be substituted indiscriminately by the Indians for making their "black drink." In North Carolina, it is said, the inhabitants of the sea-side swamps, having no good water to drink, disguise its taste by boiling in it a little cassena, or other plants of a similar nature, and use it constantly warm, as the Chinese do their daily tea. This circumstance gave rise to the opinion

that this species was the Ilex Paraguariensis, and was erroneously called "Paraguay Tea."—Brownn's *Tr. of America.*

Holm. (Sax. and Danish.) An island, or fenny place surrounded by water. Two well-known islands in the Bristol Channel are called the Steep Holm and Flat Holm.

Holy Alliance, The, a league formed by the principal sovereigns of Europe after the defeat of Napoleon at Waterloo. The basis of this alliance was drawn up by Alexander of Russia (September 26, 1815), and received the signatures of Francis of Austria and Frederic William of Prussia. Its name, which was dictated in accordance with the popular religious enthusiasm of the time, was fitly expressive of the vague principles of religious charity and peace on which it professed to be based. It gained strength by the accession of England and France, but thenceforward became an alliance simply for the establishment of existing dynasties in Europe, as may be seen from the declaration of November, 1819, and from the results of the Congresses of Troppau, Laybach, and Verona. After the secession of England and France the holy alliance became practically obsolete. See *North Amer. Rev.*, xvii.; *For. Quar.*, viii.; *Ed. Rev.*, xxxviii., xxxix., xl.; *Westminster Rev.*, i., 18; Niles' *Reg.*, xx., 313, xxiv., 365.

Holyhead (Welsh, *Caer Gybi, i. e.*, fort of Gybi), a sea-port, and market-town of North Wales, on an island at the western extremity of the county of Anglesea. It is connected with the main part of the county by a vast embankment, ¾ of a mile in length, and of an average height of 16 feet, with a bridge near the centre through which the tide rushes with amazing velocity and force. The town, formerly a small fishing village, has acquired importance in consequence of its being the nearest and most convenient place of embarkation for Ireland. It is the point of termination of the great parliamentary roads from London and Chester, and of the Chester and Holyhead railway, in connection with which steam-packets leave the harbor several times a day for Kingston near Dublin. The vast amount of labor and money expended on public works connected with the harbor has materially contributed to attract and support an active and thriving population. Holyhead has been selected by the British government for a harbor of refuge. The works, when completed, will inclose an area of about 816 acres, with a depth of at least 6½ fathoms water. The pier extends nearly 1000 feet, and upon it is an arch of Mona marble commemorative of the visit of George IV. in 1821. At the extremity of the pier is a light-house, exhibiting a white light 50 feet above sea-level. On South Stack an isolated rock 3 miles west, is another light-house connected with the harbor, and of essential service in facilitating the access. The light, which is 212 feet above high-water mark, is produced by 21 lamps with powerful reflectors. The inhabitants are chiefly engaged in the coasting trade and in shipbuilding. The coast is extremely wild and rugged, presenting numerous wave-worn caverns, which form the haunt of innumerable sea-birds.—E. B.

Holy-stone, a large stone used for cleaning ships' decks. It receives its name from the unwillingness of sailors to submit to the drudgery of using it.

Home, in naval language, is said of any thing that is close in its place; it is applied to the sheets of the sails, the shot and cartridge in a gun, and any article of stowage.

Homer, or **Omer,** the largest dry measure among the Hebrews. It was in later times replaced by the *Cor*, and is estimated at 7,886,000 Paris grains.

Honduras, British, *Belize*, or *Balize*, a British settlement on the east coast of Central America, between N. lat. 15° 14′ and 18° 30′, and W. long. 88° and 89° 30′′. It is bounded on the north by Yucatan, west and south by Guatemala, and east by the Bay of Honduras. It has a coast line of about 200 miles between the mouths of the Hondo and Sarstan, and is about 100 miles in breadth. This coast was discovered by Columbus in the year 1502, but little that can be relied upon is known of its early settlement. The abundance and fine quality of the wood, particularly mahogany and logwood, seem first to have drawn attention to it; and at a pretty early period it was occasionally resorted to by wood-cutters. But the first permanent establishment of British woodcutters was made at Cape Catoche by some adventurers from Jamaica, whose numbers increasing, they extended as far south as the River Belize, and as far west as the neighborhood of Campeachy. The Spaniards, however, did not quietly submit to this usurpation of their territorial dominion. Several expeditions were fitted out against the settlers, but they were uniformly unsuccessful; and on two occasions, in 1659 and 1678, so complete was their discomfiture, that the town of Campeachy itself was taken by the logwood-cutters, with only the assistance of the seamen engaged in the trade. This last repulse occurred eight years after a treaty had been concluded with Spain, by which the territorial right of Britain to the occupancy of Honduras was generally, although not specifically, embraced. The successes of the settlers aroused the jealousy of the Spaniards, and led to a renewed discussion of their right to the territory which they occupied. This would appear to have been again generally admitted; but the Spaniards finally succeeded in driving the woodmen from the Campeachy shore, and confining them to the limits of the present settlement. An attempt was again made in 1718 to dispossess the British of the territory on the River Belize; but the firmness of the wood-cutters deterred the Castilians from effecting any thing, except the erection of a fortification, which in a few years they abandoned. In 1754 an expedition was undertaken to exterminate the colony; but by a treaty of peace concluded in the year 1763, the Spaniards were compelled to admit the right of occupancy to the British colonists, which, however, they subsequently attempted to annul. In 1779 the Spaniards again attacked the settlement, and after destroying property to a considerable amount, they took a number of the colonists prisoners, and marched them off in irons to Merida, whence they were shipped to the Havannah, and there confined till 1782. In 1784 Britain obtained from Spain a specific grant of "the lands allotted for the cutting of logwood;" and in 1790 an act of Parliament conferred on Belize all the privileges of a British colony. The last attack on the settlement was made during the war in 1798, but the expedition, which consisted of 3000 men, was gallantly repulsed; and since that period the colony has remained undisturbed by foreign aggression.

The coast of the Bay of Honduras is low, and the shore is studded with a number of low islands or keys, which, however, are verdant. As we recede from the coast, the land rises into a bold and lofty country, interspersed with rivers and lagoons, and covered with gigantic forests. The lagoons or sheets of water, and the falls and rapids of the rivers, constitute sublime and beautiful features in the general aspect of the country. The Hondo River, which forms the northern boundary, is a fine stream. A few miles south of it is the New River, which has its source in an extensive lagoon. The Belize has a north-east by east course of above 200 miles, and discharges itself into the Bay of Honduras by two mouths about 8½ miles apart, the southern branch dividing the town of Belize into two parts. The river and lagoon of Manatee, which is situated 10 leagues south of Belize, is considered as extremely grand. At about a mile from the mouth of the river is the lagoon, a magnificent sheet of water, extending for several leagues in a northerly direction. In many places lofty hills ascend from its margin,

overtopping large valleys and wood ranges of great extent, where the jaguar, capybara, armadillo, large weasel, opossum, racoon, and several species of deer, abound. Among the feathered tribes there are numbers of quails, plovers, pigeons, pheasants, and wild turkeys. The deficiency of streams among the mountain ridges is supplied by the presence of large marshy spots or shallow ponds, the banks of which are frequented by almost every species of water game. Fish abound during a great part of the year in these ponds, but the latter dry up in the season of drought, and then vast flocks of sea-fowl congregate around them to prey upon the fish which have been left dry by the evaporation of the waters. The alligator is also a frequent visitor; and, to partake of this repast thus yearly provided for him, he has been known to traverse trackless wilds, and make long journeys into the interior. The rapids of the Manatee commence about 8 or 10 miles from the lagoon, and the high rocky banks of the river assume a romantic and beautiful appearance. Further on there is a rapid of about a quarter of a mile in length, and of considerable acclivity. A cluster of beautiful caves, through which the river winds its way, and beneath which the traveler must pass, is next reached. They have been described as equally singular and grand. "These magnificent natural excavations of the mountains are semicircular at the entrance, and about five yards in diameter. Within the cave the arch rises to the height of 100 feet, and leads to another low arch, which being passed, a second cavern of large size opens, beyond which is a third with a circular orifice, through which the river enters. During the floods the mouths of the caverns are filled with water, which boils up with prodigious fury, and thus detains travelers many days before they can pass through the caves or tunnels. In the rainy season, as the water increases on the upper or inland sides of the mountains, the river forces its passage through the interstices and openings in its sides with tremendous noise, forming an indescribably grand cascade of from 40 to 50 feet high, issuing from a hundred orifices." Of the other rivers of Honduras little is known.

Productions.—The country is technically divided into the Pine and the Cahoun ridges. The soil of the former has a substratum of loose reddish sand, and its indigenous products consist of those varieties of vegetation the assimilative powers of which are strong and perennial. Extensive prairies expand over this soil, and the pine, from which it derives its name, is extremely abundant. The soil of the Cahoun ridge consists of a deep loam, capable of growing every species of European as well as of tropical ailment. Its fertility occasions the growth of much brushwood, and it is covered with the wild cotton-tree and other giants of the forest. Fruits, spontaneously produced, are exceedingly abundant, and consist of oranges of excellent quality, shaddocks, limes, mangoes, melons, pine-apples, water-melons, avocato pears, cashew, cocoa-nuts, and many others. They are all found in the neighborhood of Belize, but are sometimes brought in large quantities from more elevated plantations. The mahogany and logwood-trees are at present the staples of Honduras. The former is found best in elevated situations; and growing generally solitary, it is discernible at a great distance, from the yellow hue of its foliage. It is cut down at about 12 feet from the ground, and when felled the logs are dragged to the banks of the streams and floated down in rafts. The boughs and limbs are said to afford the finest wood, but it is the size that is principally looked to in commerce. The logwood is found in low swampy grounds, growing contiguous to fresh-water creeks and lakes, on the edges of which the roots, the most valuable part of the wood, ramify. They are felled during the dry season, and carried off when the wet season has laid the ground under water. There is another valuable tree called the *Pinus occidentalis*, which grows to the height of 60 feet, and covers many thousand acres of country. The pine-wood contains an immense quantity of tar and turpentine, and is consequently highly inflammable. In this respect it is very valuable to the poor, who make torches of it. It likewise powerfully resists decay, and is in consequence much used by builders. The cahoun or cohoon-tree yields a valuable oil, which, when unadulterated, is almost colorless, destitute of any disagreeable taste, and when burned as a lamp oil it emits a beautiful polish flame without smoke or smell. There are various other kinds of wood of beautiful vein and close texture, such as iron-wood, clay-wood, rose-wood, palmaletta, and the like. Among minerals, strata of fine marble and formations of alabaster are known to exist. Several valuable specimens of crystals have been found, and gold has occasionally been detected in some of the streams. Laboring Creek, which lies on the Belize, about 100 miles inland, is remarkable for the petrifying properties possessed by its waters. They have also a powerful cathartic effect on strangers, and when applied externally to an ulcer have a healing property. The country abounds with all kinds of animals fit for the food of man. Except in very rough weather, the supply of salt-water fish of excellent quality is abundant. The common green turtle, when in a healthy condition, is a staple commodity in the market. The hawksbill turtle is often five feet long, and weighs from 200 to 250 lbs.

Belize, the capital of the settlement, stands on a low flat shore immediately open to the sea, and guarded by numerous small islands, densely covered with trees and shrubs, and so similar as to render the navigation extremely difficult. It is further divided into two parts by the river, which is crossed by a substantial wooden bridge of 220 feet span and 20 feet in length. The part of the town which is situated upon the south or right bank of the river, along the eastern edge of a point of land, is completely insulated by a canal on its western side, which runs across from a small arm of the sea, and bounds the town on its south side. The houses are about 500 in number, and are in general well built, spacious, and even elegant. They are for the most part constructed of wood, and raised 10 feet from the ground on pillars of mahogany. The streets are regular, and cross each other at right angles. The main one runs in a north-easterly direction to the bridge from the government-house, which is situated on the south-east point or angle of the island on the right bank of the river, and bounded on the south and east by the sea. Behind the government-house is the church, on the east side of the main street. The whole town is embowered in groves and avenues of the cocoa-nut and tamarind-trees. Fort George is situated about half a mile from the river, on a small low islet. In the neighborhood of Belize the natural heat of the climate is tempered by the sea breezes that prevail during nine months in the year, so that, even in the hottest season, the thermometer seldom rises above 83° Fahr., and during the wet season it sinks to 60°. In June, July, August, and September, heavy and frequent rains fall, and these are the most unhealthy months of the year, from the decomposition of animal and vegetable matter in the adjacent lowlands and swamps.

There are various classes of society in the settlement, including Europeans, colored people, Indians, and Mosquito men. The blacks of Honduras are distinct from the aborigines of the country, being of African descent. In general they are inclined to indulge those low propensities which are exhibited in a state of barbarism. Having been derived from various regions, they still retain all their national peculiarities, and keep themselves distinct from every other tribe. The blacks, as a body, have upon the whole little intelligence, and their dullness of comprehension is

remarkable. It is asserted, however, that some of them exhibit an originality of talent and a degree of mental activity little inferior to their European brethren. They are much attached to their country, and with a native of his own land a Honduras black will share his last plantain. The *colored* population has resulted from the intercourse of Europeans with Africans or Indians. They of course, morally speaking, assume a medium status, and partake more or less of the qualities of black and white, according to their distance from either. The *Mosquito Indians* abound in the colony. They are remarkable for a fine muscular formation of body, but in their countenances they exhibit an utter destitution of intelligence, and their habits are most barbarous. They acknowledge the existence of a good and evil spirit; and the little power of thought which they possess is displayed in their conduct toward their deities. The good spirit is neglected, because, say they, his goodness is so great that nothing is to be feared from his wrath, while on the other hand, the evil spirit is propitiated, in order to deprecate his malevolence. The whole wealth of a Mosquito man consists in his canoe, paddle, and harpoon. With these he satisfies the cravings of nature, and his groveling nature asks for no more. The *Indians*, the real aborigines of the place, are a timid, inoffensive race, apparently more under the influence of instinct than of reason. They perform the most astonishing journeys through woods, as trackless as the sea, and impervious to all but themselves with infallible correctness of direction and amazing rapidity. Although free from vindictive or malicious propensities, they are addicted to drunkenness to an excessive degree. The population of the colony is estimated at about 12,000.

Honduras has an increase of 39,600 square miles, and its population in 1855 was estimateed at 350,000, exclusive of the Indian tribes. It is divided into seven departments as follows:

Departments.	Estimated pop. in 1855.	Departments.	Estimated pop. in 1855.
Comayagua.....	70,000	Gracias.....	55,000
Tegucigalpa.....	60,000	Yoro.....	20,000
Choluteca.....	50,000	Olancho.....	45,000
Santa Barbara....	50,000	Total.....	350 000

The rivers of Honduras are numerous, and some of them of great size. The principal are the Chamelicon, Ulua, Aguan or Roman, Tinto or Black River, Patuca, and Wanks or Segovia, flowing into the Atlantic; and the Choluteca, Nacaome, and Goascoran, flowing into the Bay of Fonseca.

The Bay of Fonseca, the greater portion of which belongs to Honduras, is upward of 50 miles in length, by about 30 average breadth, with an entrance 18 miles wide, between the volcanoes of Conchagua (3800 feet in height) and Coseguina (3000 feet in height).—E. H.

The coast alluvions of Honduras are generally densely wooded, the elevated valleys of the interior spread out in broad savannahs, and the mountain plateaux are covered with forests of scattered pines, relieved by occasional clumps of oak. Upon the northern coast, in the broad plain through which the Ulua and Chamelicon flow, the country is so low as to be occasionally overflowed for considerable distances. Here grow immense forests of cedar, mahogany, caiba, India-rubber, and other large and valuable trees, thickly interspersed with palms. Further to the eastward on the same coast the heavy forests are confined chiefly to the river valleys, and give place at short distances inland to sandy savannahs, covered with coarse grass and clumps of pines and acacias. The alluvions of the Pacific coast are also densely wooded, but not extensive. At short distances inland they give place to numerous savannahs, studded with clumps of acacias, and covered with grass; but the pine does not appear here except upon the slopes of the hills, at an altitude of about 1200 feet. The valleys of the rivers on both coasts are thickly wooded; but as they ascend toward the interior, vegetation diminishes, and is reduced to a narrow fringe of trees and bushes upon their immediate banks. These valleys in the high interior country often expand into broad and beautiful plains—half savannahs and half woodland—where the palm and the pine flourish side by side. The mountains which rise around these valleys are ascended by terraces crowned with forests of pines and oaks, and covered with grass. The summits of the mountains sometimes rise in peaks, but generally constitute broad table-lands, more or less undulating, and often spreading out in savannahs, traversed with long ridges of verdure and green belts of trees.

Woods.—Of the vegetable productions of Honduras the mahogany-tree stands first in importance, and, from its vast size and magnificent foliage, is deservedly entitled "king of the forest." It is to be found in nearly all parts of Honduras in the valleys of the various streams. It is, however, most abundant upon the lower valleys of the rivers flowing into the Bay of Honduras, where the *cortes* (cutting) are chiefly carried on by the Spaniards. A fixed sum is paid to the government for each tree cut down. Rosewood is common on the northern coast, where it is beginning to form an article of commerce. Lignum vitæ abounds in the valley of the Ulua, on the river banks in the plain of Comayagua, and in other parts. Among the numerous dyewoods for which Honduras is celebrated, may be mentioned fustic, Brazil wood, yellow sanders, dragon's-blood-tree, Nicaragua wood (a variety of Brazil wood), and the anotta. Among the gum and medicinal trees, are the gum-arabic-tree, copaiba-tree, copal-tree, liquid amber, castor oil, ipecacuanha, and the *Hevea elastica*. Among the more common of the others are the long-leaved or pitch-pine, cedar, *ceiba* or silk-cotton-tree, live oak, mangrove, iron-wood, calabash, various kinds of oak and palm, lime, lemon, orange, cocoa, pimento, citron, tamarind, and guava. Sarsaparilla is obtained in great abundance and of superior quality. The sugar-cane grows luxuriantly on the plains and among the mountains, at elevations of 3000 to 4000 feet. Coffee, indigo, tobacco, maize, wheat, rice, and potatoes are also grown.

The Honduras Inter-oceanic Railway.—At a recent meeting of the Liverpool Chamber of Commere, Mr. William Brown, a member of Parliament, gave many interesting particulars in relation to the Honduras Inter-oceanic Railway. The distance between New York and San Francisco, viâ Panama, is stated to be 5224 miles, whereas the distance viâ Honduras is only 4121 miles. Difference 1103 miles. The distance from Liverpool to San Francisco viâ Panama, touching at Kingston (Jamaica,) is 7712 miles; viâ Honduras, 6881 miles; saving of Honduras over Panama, 831 miles. The distance from Liverpool to Sydney, viâ Honduras, has been calculated with care, and found to be 11,820 miles. At an average rate of steaming of 12 miles per hour, and allowing three days for coaling and trans-shipment, the voyage could be performed in exactly 43 days and 12 hours. We subjoin a table of distances:

	Miles.	From Liverpool	From N. York.
Liverpool to Fayal.....	1,799		
Fayal to St. Thomas.....	1,860		
St. Thomas to Puerto Caballos.....	1,823		
Puerto Caballos to Bay of Fonseca..	160	4,661	
Bay of Fonseca to San Francisco....	2,220	6,881	4,121
" " " Sandwich Islands.	8,960	8,021	5,861
Sandwich Islands to Canton.....	4,920	13,541	10,781
" " " Shanghai.....	4,800	13,121	10,361
" " " Jeddo.....	2,760	11,381	8,021
Bay of Fonseca to Melbourne.....	7,680	12,341	
" " " Sydney.....	7,159	11,820	9,060
" " " Auckland.....	6,604	10,965	7,905
" " " Callao.....	2,859	7,020	4,200
" " " Valparaiso.....	3,670	8,331	5,571
New York to Bay of Fonseca by railway and steamer..	1,001		

The time between New York and San Francisco, viâ Honduras, is estimated at 13 days and 4 hours. This calculation is based on an assumption of 20 miles per hour by rail, and 12 miles per hour by steamer.

Captain Fitzroy, in an official report, alludes to the five distinct lines that have been proposed, and thus proceeds to refer to that by way of Honduras:

"Looking especially to European communication, it may be observed, that a main or trunk line of steamers, calling at Jamaica, in traversing the West India Archipelago, would find a suitable terminus at Port Caballos, in Honduras Bay, where the north end of the railway will be; and that Fonseca Gulf, at the other end, is in the region of steady winds, and well situated for a direct track across the Pacific Ocean, either to China or Australasia. The climate, productions, and population of Honduras, are more in favor of such a work, as a railway from sea to sea, than those of any other part of the great Isthmus, without exception; but, as the length and elevation are great, these difficulties should be well considered.

"1. As to length. This is a question of 160 miles against 40 (other things being equal, which, however, they are *not*), involving first cost, constant expense, and comparative local advantages. The continual outlay on the Panama Railway, consequent on the nature of the locality, and many pile-supported structures, is great; while in Honduras, there will be comparative durability of works. Fuel must be carried to Panama from distant ports, but it abounds near Fonseca Gulf. Rain prevails in the eastern part of the Isthmus of Panama, much more than it does in Honduras, where the climate is such that European trees and fruit thrive on the higher grounds.

"2. With regard to the elevation, which seems at first sight rather deterring, it should be borne in mind that the greatest incline or gradient proposed is 1 in 88, and only for a short interval, in a county where ice or snow is unknown; the general gradients being remarkably easy. Also, that as the country lies favorably, the line running along valleys, near rivers, and without crossings of any consequence, it is likely to be an economical line in this respect. All requisite materials, as well as native labor, are on the spot; and the Honduras wood-cutters are well known."

A company has been fully organized in England with reference to this great enterprise, and among the directors are some of the most prominent citizens of Liverpool and London. For a comparison of the advantages of the different transit routes, see TRANSIT ROUTES.

COMMERCE OF THE UNITED STATES WITH HONDURAS, CAMPEACHY, ETC., FROM OCTOBER 1, 1820, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage Cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	Foreign.	American.
Sept. 30, 1821	$99,895	$106,830	$206,725	$216,075	....	$80,590	6,009	808
1822	123,115	127,943	251,058	....	....	137,664	5,447	479
1823	211,388	100,052	311,435	281,853	....	86,169	7,670	587
1824	157,060	194,365	351,425	217,097	$6,000	51,047	5,290	1,280
1825	57,286	23,543	80,329	249,446	5,560	27,581	1,201	....
1826	....	....	....	88,183	....	17,428	....	....
1827	13,261	1,573	14,834	17,947	....	6,575	....	....
1828	5,950	2,371	8,321	1,760	....	600	....	....
1829	12,693	8,229	20,992	64,847	....	46,117	....	....
1830	25,182	5,402	30,584	....	....	1,472	1,042	....
Total...	$705,775	$570,338	$1,276,113	$1,181,140	$11,560	$454,698	26,559	2,649
Sept. 30, 1831	$46,283	$18,782	$59,965	$44,463	....	$20,503	1,449	223
1832	83,450	17,397	32,856	34,162	....	19,101	2,677	97
1833	70,522	28,724	99,246	101,615	....	58,819	1,527	....
1834	56,672	39,376	95,448	149,599	....	48,529	4,041	807
1835	134,703	37,561	172,264	174,060	....	71,780	11,007	665
1836	109,823	36,015	145,838	215,892	....	39,797	4,236	1,818
1837	99,694	12,158	111,852	202,624	....	79,187	5,085	2,158
1838	89,896	19,300	109,196	201,448	....	114,902	2,406	1,505
1839	181,861	29,389	211,200	164,027	....	76,491	6,434	2,551
1840	182,095	58,871	190,466	158,858	....	111,114	5,048	1,708
Total....	$986,358	$291,978	$1,278,331	$1,446,648	....	$630,006	43,910	11,527
Sept. 30, 1841	$141,864	$61,882	$198,246	$289,244	....	$187,783	6,400	1,010
1842	127,889	36,648	163,987	202,868	$1,600	98,607	5,679	....
9 mos. 1843	92,278	16,304	108,582	186,688	....	74,606	7,425	708
June 30, 1844	197,495	41,524	239,019	248,348	11,920	104,139	7,914	807
1845	188,494	51,421	239,915	204,819	7,599	74,577	3,869	668
1846	325,494	64,588	390,082	207,997	2,079	80,458	9,620	607
1847	261,398	40,519	301,917	197,282	....	91,492	5,948	507
1848	249,648	44,181	293,829	185,084	....	105,429	5,486	1,888
1849	191,847	34,020	225,867	202,417	....	100,005	5,215	898
1850	171,984	16,551	188,535	178,090	5,000	46,744	4,225	1,952
Total....	$1,947,541	$397,688	$2,345,029	$2,056,981	$28,191	$922,777	61,783	8,490
June 30, 1851	$213,806	$28,362	$237,168	$174,526	$15,610	$15,692	3,993	5,125
1852	292,818	69,259	362,073	261,646	17,437	88,294	5,020	2,440
1853	318,325	63,005	381,360	283,298	8,000	22,337	5,111	3,320
1854	203,918	58,728	262,641	288,954	17,000	48,220	4,189	3,537
1855	471,433	51,526	522,959	389,974	4,995	....	5,382	4,562
1856	850,089	33,739	883,739	332,117	2,000	111,928	4,933	2,786

Principal Ports.—The principal ports of Honduras on the Atlantic are Puerto Cabello, Omoa, and Truxillo. Puerto Cabello, the first port established by the Spaniards on the northern coast, is in lat. 15° 49′ north. Cortez, in his expedition into Honduras, founded a settlement here for the purpose of making it the grand entrepôt of New Spain. For upward of two centuries it was the principal establishment on the coast; but, during the time of the buccaneers it was removed to Omoa, because of the large size of the bay, which could not be properly defended. This bay is not less than nine miles in circumference, of ample depth—two thirds of it being from 6 to 12 fathoms—and has secure holding-ground. It is perfectly protected from the N.N.E. and N.W. winds, which are those that prevail on this coast. The port of Omoa, is small but secure, and is defended by a strong fort. The anchorage is good, in from two to six fathoms. Truxillo is situated on the western shore of a noble bay, in lat. 15° 55′ north. Population in 1842, 2500; 1000 whites and Ladinos, and 1500 Caribs.

The chief exports of British Honduras to the United States are mahogany and various descriptions of dye-woods. Copper, scrap-iron, and other old metals. The following statement exhibits the value of the trade between the United States and Honduras during the years 1853, 1854, and 1855, up to June 30th of each year:

	1853.	1854.	1855.
Imports from United States	$1381,860	$262,641	$502,959
Exports to United States...	268,298	288,954	330,974

This trade, although small and irregular, and apparently from this exhibit not increasing in value, is very favorable to the United States, as is shown by the excess of exports to over the imports from Honduras.

Hone or **Hone-slate.** These are various slaty-stones wrought into the form of straight slabs, and used for whetting or sharpening the edges of tools after they have been ground. They consist chiefly of the following: 1. *Norway rag-stone*, the coarsest variety of the hone-slates: it gives a finer edge than the sand-stones. 2. *Charnley Forest stone*, which is used as a substitute for Turkey oil-stone. 3. *Ayr stone, Scotch stone*, or *slate stone*, used for polishing marble and copper plates, but the harder kinds for whetstones. 4. *Idwall* or *Welsh oil-stone*, used for small articles of cutlery. 5. *Devonshire oil-stone*, for sharpening thin-edged broad tools. 6. *Cutlers' green-stone*, from Snowdon, which is very hard and close, and is used for giving the last edge to lancets, etc. 7. *German razor-hone*, used almost entirely for razors. It is obtained from the slate mountains near Ratisbon, where it forms a yellow vein in the blue slate. It is sawn into thin slabs, and cemented to a slab of slate, which serves as a support. 8. *Blue polishing stone*, a dark slate of uniform texture, used by workers in silver and some other metals, for polishing off the work. 9. *Gray polishing stone*, somewhat coarser than the blue. 10. *Welsh clearing stone*, a soft variety of hone-slate used by curriers for giving a fine edge to their broad knives. 11. *Peruvian hone*, for sharpening large tools. 12. *Arkansas stone*, from North America. 13. *Bohemian stones*, used by jewelers.

Turkey oil-stone is superior to every other substance as a whetstone: it will abrade the hardest steel, and is sufficiently compact to resist the pressure required for sharpening a graver. The black variety is somewhat harder than the white. These stones are imported from Turkey in irregular masses, seldom exceeding three inches square, and ten inches long, and are cut up by means of the lapidary's splitting-mill and diamond-powder, then rubbed smooth with sand or emery on an iron plate, inlaid in wood, and secured by glazier's putty. Sperm or neats'-foot oil, or some oil which does not readily thicken, should be used with them. Oil-stone powder is used for grinding together the brass or gun-metal fittings of mathematical instruments, and also instead of pumice-stone for polishing superior brass-work.

The following analyses throw an interesting light on the nature of polishing-stones:

	Alumina.	Silica.	Lime.	Iron.	Water.	Magnesia.	Carbonic acid.
Polish. slate.	4·0	83·5	8·5	1·6	9·0	..	..
" "	7·0	66·5	1·25	2·5	19·0	1·5	..
Bohemian st.	1·0	79·0	1·0	4·0	14·0	..	..
Turkey hone	3·33	73·0	13·33	..	..	..	10·33

Honey (Du. *Honig, Honing*; Fr. *Miel*; Ger. *Honig*; It. *Mele*; Lat. *Mel*; Rus. *Med*; Sp. *Miel*), a vegetable juice collected by bees. "It varies according to the nature of the flowers from which it is collected. Thus, the honeys of Minorca, Narbonne, and England are known by their flavors; and the honey prepared in different parts even of the same country differs. It is separated from the comb by dripping and by expression: the first method affords the purest sort; the second separates a less pure honey; and a still inferior kind is obtained by heating the comb before it is pressed. When obtained from young hives, which have not swarmed, it is denominated *virgin honey*. It is sometimes adulterated with flour, which is detected by mixing it with tepid water: the honey dissolves, while the flour remains nearly unaltered."—Thomson's *Dispensatory*.

Comparative Table of the Product of Beeswax and Honey in each State, 1840 and 1850, according to the United States Census.

States and Territories.	Beeswax and Honey, lbs. of.	Wax, lbs. of.
	1850.	1840.
Alabama	897,021	25,220
Arkansas	192,388	7,079
Columbia, District of	550	44
Connecticut	96,804	8,807
Delaware	41,248	1,088
Florida	18,971	75
Georgia	732,514	19,799
Illinois	869,444	29,178
Indiana	995,929	89,647
Iowa	321,711	2,182
Kentucky	1,158,012	98,445
Louisiana	95,701	1,019
Maine	189,618	3,723
Maryland	74,802	8,674
Massachusetts	59,508	1,106
Michigan	850,282	4,588
Mississippi	397,460	6,885
Missouri	1,328,972	56,461
New Hampshire	117,140	1,845
New Jersey	156,694	10,061
New York	1,755,890	52,795
North Carolina	512,289	18,923
Ohio	804,275	88,950
Pennsylvania	889,509	33,107
Rhode Island	6,347	165
South Carolina	216,281	15,857
Tennessee	1,036,572	50,907
Texas	380,825	....
Vermont	249,422	4,660
Virginia	880,767	65,020
Wisconsin	131,005	1,474
Minnesota Territory	80	....
New Mexico "	2	....
Utah "	10	....
Total	14,855,800	618,303

Honfleur, a sea-port town of France, Department of Calvados, and arrondissement of Port l'Evêque, on the southern shore of the estuary of the Seine, eight miles south-east of Havre, with which it has regular steam communication. The town is old and ill built. The harbor is accessible only at high water, and is chiefly frequented by fishing or small coasting craft. The herring, mackerel, and whiting fisheries are actively prosecuted; and numerous vessels sail annually for the cod, whale, and seal fisheries. Honfleur sends weekly to England about 7000 dozen of eggs, besides butter, fruit, etc. Its commerce, formerly considerable, has been almost entirely absorbed by Havre. The chief manufactures are hosiery, lace, chemical products, and hardware. There are also ship-building yards, rope-walks, and saw-mills. The chapel of Notre Dame de Grace, on the hill above the town, is much frequented by sailors, and filled with their votive offerings. Population 9580.

Hong Kong, a small island, now a British colony, lying off the coast of China, at the mouth of the Canton River, about 40 miles east of Macao, in lat. 22° 16′ 30″ N., long. 114° 14′ 45″ E. It is about nine miles in length by eight in breadth, and is separated from the main land by a narrow strait, varying from less than a mile to four or five miles in width. The appearance of the island is barren and unprepossessing. It consists for the most part of ranges of rocky hills, rising sometimes to the height of 1700 or 1800 feet above the sea. The highest peak is 1825 feet in height. There are no trees of any size on the island, and few valleys of any extent. The rocks of Hong Kong consist of granite intermixed with quartz, mica, and felspar, affording excellent materials for building. Among the vegetable productions of the island are mango, lichee, longan, orange, pear, rice, sweet potatoes, and yams. A small quantity of flax is grown and prepared for household uses by the villagers. Since the occupation of the island by the English, the potato of Europe and the fruits of Canton and Macao have been introduced, and, lately, many European seeds have been sent out. The land-tortoise, a few small deer, and armadillos, and several kinds of snakes, are found on the island. The climate of Hong

Kong, like that of Macao, is not generally unhealthy, though from the numerous deaths that occurred in 1842 and 1843, this was supposed to be the case. Subsequent years, however, have shown that the climate here is no more prejudicial to health than that of various other eastern tropical possessions. Hong Kong was first ceded to Britain in January, 1841, and again by the treaty of Nankin, in August, 1842. The government is administered by a governor, aided by an executive council of three members, including the commander of the troops. There is also a legislative council, presided over by the governor. The government offices are at Victoria. The following table exhibits the progress of Hong Kong from 1848 to 1853, inclusive:

Years.	Population, exclusive of troops	Revenue.	Parliamentary grant.	Expenditure.
1848	21,514	£25,091	£25,000	£62,658
1849	29,507	28,617	25,000	38,286
1850	33,292	28,526	20,000	34,314
1851	32,993	23,721	15,500	34,115
1852	37,058	21,331	12,000	34,765
1853	39,017	24,700	9,200	36,418

With reference to these six years, the governor remarks, "that the call on the home government for a parliamentary grant has been reduced from £25,000 to £8500 (£9200 ?) for the currrent year; that the expenditure has been reduced from £62,658 to £36,418; that the number of square-rigged vessels frequenting the port has increased from 700 to 1163, while the tonnage is nearly double; and that the population has in like manner advanced 82 per cent. drring the past six years. In conclusion, I have no hesitation in saying, that were this colony taxed in the same way as are the settlements in the Straits, under the government of the East India Company, it could in a year or two be made to pay its own expenses without the efficiency of the government being impaired."—E. B. See HUNT's *Mer. Mag.*, x., 459.

A parliamentary document relating to Hong Kong has lately been printed, which possesses considerable interest, as it describes the exact position and prospects attained by the colony shortly before the breaking out of the war. It consists of a dispatch from Sir John Bowring, inclosing a copy of the last annual report made to him by the Colonial Secretary on the progress of the island. It appears that the place has benefited not only by the increase of the Chinese trade during the past few years, but by the effects of the rebellion in promoting emigration from Canton. A consequent improvement was observable in the character of the Chinese population; and many of the natives, growing in wealth, had also grown in respectability. The increasing disposition to settle on the island was manifested especially among the better class of traders; and the general tendency to prosperity was further stimulated by many of the chief commercial houses in China, both British and American, having lately made Hong Kong their central point of establishment. "The development of steam navigation," it is said, "the rapid extension of trading relations with Australia and California, the increase of trade on the coasts of China, the opening of Siam, and the security which the flag of Great Britain offers against piratical attacks, are among the causes which have led to these results." The population, which in 1848 was only 24,000, amounted, at the beginning of 1856, to 72,600. Owing to the happy fact of the absence of any custom-house, there are no means of furnishing statistical details of the imports and exports, but the signs of an active and rapidly-increasing trade were everywhere visible, and were corroborated by the rate of interest being as high as 36 per cent. per annum; although the latter circumstance is partly to be attributed to the comparatively needy condition of the small Chinese traders. The government-house has just been completed, at a cost of £15,000, and many other public improvements were in progress. Although the existing jail buildings are pronounced totally inadequate, it was only because larcenies and petty offenses had increased with the influx of population, crime of the more serious kind being rare. The impression as to the unhealthiness of the colony seems to be disappearing; and notwithstanding the large increase in the number of inhabitants in the year 1855, the town of Victoria was found very favorable for foreigners. The Chinese consider the place not more inimical to health than the towns on the main land. Many improvements remain to be effected, which would doubtless add much to its safety; but the revenue, even at its recent rate of increase, would admit only of moderate undertakings. To meet all requirements, the Colonial Secretary revived a suggestion for the imposition "of a differential duty of, say, 1d. per lb. on teas shipped for England from Hong Kong." Sir John Bowring, however, in harmony with the views now universally established among commercial men, declined to support the recommendation.

Honiton, a municipal and parliamentary borough and market-town of England, county of Devon, near the left bank of the Otter, 16 miles north-east of Exeter. It consists of one wide and well-paved street, along which runs a small stream, supplying the town with water. The houses have generally a neat and respectable appearance, having been mostly built since the destructive fires of 1745 and 1765. The parish church, about half a mile from the town, was built by Courtney, Bishop of Exeter, about 1482, and is remarkable for a curiously carved screen. A modern Gothic church stands in the centre of the town. It has a free grammar school, national school, hospital, and several charities. The serge manufacture was formerly extensively carried on here, but now its chief manufacture is Honiton lace. Honiton is governed by a portreeve, and returns two members to Parliament. Population in 1851, 3427.

Honolulu, or **Honoruru**, the principal town of the Sandwich Islands, and the residence of the king, is situated on the south side of the island of Wouhoo, in lat. 21° 18′ 12″ N., long. 157° 55′ W. It forms an entrepôt for European and Indian goods, whence they are reshipped to America. It is also a general rendezvous of whaling vessels; and sometimes 80 sail of them, each from 300 to 500 tons, are at anchor here together. In 1851, 446 merchant ships arrived at the port; in 1852, 235; and in 1853, 194. The imports in 1853 amounted to $1,240,976, and the exports to $272,588. Population about 7000. See SANDWICH ISLANDS.

Hooghly, an extensive district in the province of Bengal formerly called Santgong, situated principally between the 22d and 23d degrees of north latitude, and extending a considerable distance along the right bank of the River Hooghly. It is bounded on the north by the district of Burdwan, on the south by the district of Hidjelee, on the east by the River Hooghly, and on the west by Midnapoor. This district consists of low flat land, very fertile; but that part which is nearest to the sea is very thinly inhabited; it is called the Sunderbund, is swampy, covered with wood, and remarkably unhealthy. The right of the East India Company to the district originated in the treaty concluded with Meer Cosin in 1760.

Hooghly, an ancient, and formerly a large town in the province of Bengal, situated on the western bank of the Hooghly, nearly 26 miles above Calcutta, and supposed to have been founded by the Portuguese about the year 1538. During the Mogul government, it was a town of great consequence, being the port of the western arm of the Ganges, where the duties on merchandise were collected. It very soon drew away all the trade from Saatgong, which had been before the government port of Bengal. During the prevalence of the Portuguese dominion in India, Hooghly was for-

tified, and continued to flourish till the year 1632, when it was attacked by order of the emperor Shah Jehan, and, after a siege of three months and a half, was taken by the Mogul troops, 1000 of the Portuguese being killed, and 4400 men, women, and children, taken prisoners. From this period Hooghly became the imperial port. After this period every encouragement was given to commerce; and Hooghly, which was called Bukhshy Bunder, became a great commercial emporium between Europe, Persia, Arabia, and India. In 1686 hostilities commenced between the English and the Nawaub. An action ensued, in which the Nawaub's troops were defeated; and at the same time the town of Hooghly was cannonaded, and 500 houses burned. In 1700 the East India Company's factory was transferred from Hooghly to Calcutta. The population of Hooghly is now estimated at 12,000. The town is situate on the line of railroad recently constructed from Calcutta to Burdwan. E. long. 88° 22′, N. lat. 22° 54′.

Hooghly River, properly the Bhagirutty, a river of Bengal, formed by the junction of the two westernmost branches of the Ganges, the Cossimbazar, and the Jellinghy. This is the port of Calcutta, being the only branch of the Ganges that is navigated by large vessels; yet the entrance to the river is rendered extremely dangerous and difficult, by reason of numerous sandbanks in it, which are frequently shifting. There is indeed a rumor afloat that the river is gradually silting up, and must eventually cease to be navigable. This would prove a fearful blow to the trade of Calcutta, and the proposed remedy is to connect the River Mutwal with the capital by railway or ship canal. During the prevalence of the south-west monsoon, when a strong current sets in from the Bay of Bengal, the extraordinary phenomenon, termed by Europeans the "Bore," occasionally presents itself. It rises in waves 12 or 15 feet high, and rushes in at the rate of 20 miles an hour. It commences at Hooghly Point, where the river first contracts itself, and is perceptible above Hooghly town; and though the distance is above 70 miles, it traverses this space in about four hours, running along the opposite bank to the Calcutta side, whence it crosses at Chitpoor, about four miles above Fort William, and rushes with great violence past Barnagore, Duckingsore, etc., frequently oversetting boats and driving ships from their anchorage. At Calcutta it sometimes occasions an instantaneous rise of five feet. The tide does not rise more than 30 miles above Calcutta; and during the rainy season its influence is checked by the large body of water that comes down the river. The Hooghly contains several kinds of good fish, particularly *Cíprinus Anjana*, the mango fish, or *Polynemus paradoxus*, and prawns; and it abounds also in crocodiles and sharks. It is about three quarters of a mile broad at Calcutta, and 8 or 10 miles wide at the mouth. It is only navigable for ships as high as the tide reaches, and the upper part of it is nearly dry during the hot season; yet there are few rivers that can boast of a more extensive commerce, its banks being studded with numerous towns and villages. It is esteemed by the Hindoos to be the most sacred branch of the Ganges, and it is on this account that those who can not afford to bury their dead throw them into the Hooghly.—E. B. See CALCUTTA.

Hookah, an oriental pipe used chiefly in Turkey, by which the smoke of the tobacco is made to pass through water in order to cool it and render it more grateful to the mouth.

Hoorn, a fortified sea-port town of Holland, province of North Holland, on the Zuyder-Zee, 20 miles north by east of Amsterdam. It carries on a considerable trade, though in this respect it is much inferior to what it once was. The exports are chiefly butter, cheese, cattle, herrings, and other kinds of provisions. The manufactures comprise woolen cloths, carpets, etc. Ship-building and the herring fishery are extensively carried on. It has a naval college. Hoorn was the birth-place of Schouten, who in 1616 discovered Cape Horn, and named it after his native town; and of Tasman, the discovarer of Van Dieman's Land and New Zealand. Population about 9000.

Hops (Ger. *Hopfen*; Du. *Hoppe*; Fr. *Houblon*; It. *Luppoli, Bruscandoli*; Sp. *Oblon*; Rus. *Chmel*; Lat. *Humulus Lupulus*). The hop is a perennial rooted plant, of which there are several varieties. It has an annual twining stem, which, when supported on poles, or trees, will reach the height of from 12 to 20 feet or more. It is a native of Britain, and most parts of Europe. When the hop was first used for preserving and improving beer, or cultivated for that purpose, is not known; but its culture was introduced into England from Flanders in the reign of Henry VIII. Hops are first mentioned in the Statute Book in 1552, Edward VI.; and it would appear from an act passed in 1603 that hops were at that time extensively cultivated in England. Walter Blithe, in his *Improver Improved*, published in 1649, has a chapter upon improvement by plantations of hops, in which there is this striking passage. He observes, that "hops were then grown to be a national commodity; but that it was not many years since the famous city of London petitioned the Parliament of England against two nuisances; and these were, Newcastle coals, in regard to their stench, etc., and hops, in regard they would *spoyl the taste of drink*, and endanger the people; and had the Parliament been no wiser than they, we had been in a measure pined, and in a great measure starved; which is just answerable to the principles of those men who cry down all devices, or ingenious discoveries, as projects, and thereby stifle and choke improvement." After the hops have been picked and dried, the brightest and finest are put into the pockets or fine bagging, and the brown into coarse or heavy bagging. The former are chiefly used in the brewing of fine ales, and the latter by the porter brewers. A *pocket* of hops, if they be good in quality, well cured and tight trodden, will weigh about 1½ cwt.; and a *bag* of hops will, under the same conditions, weigh about 2½ cwt. If the weight of either exceeds or falls much short of this medium, there is reason to suspect that the hops are of an inferior quality, or have been badly manufactured. The brighter the color of the hops, the greater is the estimation in which they are held. Farnham hops are reckoned best. The expense of forming hop plantations in Great Britain is very great, amounting in some instances to from £70 to £100 an acre; and the produce is very uncertain, the crop being frequently insufficient to defray the expenses of cultivation.

According to Anderson's *Annals of Commerce*, hops were introduced from the Netherlands into England A.D. 1521, and were used in brewing; but the physicians having represented that they were unwholesome, Parliament was petitioned against them as being a wicked weed, and their use was prohibited in 1528. At present there are between 50,000 and 60,000 acres, on an average, annually under the cult e of hops in England. They are grown chiefly in H eford, Kent, and Worcestershire.—HAYDN.

Hops produced in the United States.—A gratifying increase has taken place in the culture of this useful article. The gain has been nearly 200 per cent. Almost the whole of the increment, however, has been in the State of New York, which, from less than half a million of pounds in 1840, now produces more than two and a half millions, which exceeds five sevenths of the whole crop of the United States. In connection with this circumstance, it may be mentioned that New York also stands foremost in the production of ale, beer, and porter, in the manufacture of which the larger part of the hops raised is consumed. The breweries of this State produced 645,000 barrels of ale, etc., in 1850, being more than a third of the quantity

said to be produced in the whole Union. See *Patent Office Rep. U. S.*; HUNT'S *Mag.*, xiv., 395. See also articles ALE and BEER BREWING.

States and Territories.	lops, pounds.	
	1850.	1840.
Alabama	276	625
Arkansas	157	....
Columbia, District of	15	28
Connecticut	554	4,578
Delaware	348	746
Georgia	261	778
Illinois	8,551	17,742
Indiana	92,796	38,591
Iowa	8,242	89
Kentucky	4,809	742
Louisiana	125	115
Maine	40,120	30,340
Maryland	1,870	2,857
Massachusetts	121,595	254,795
Michigan	10,663	11,881
Mississippi	473	154
Missouri	4,180	780
New Hampshire	257,174	243,425
New Jersey	2,133	4,581
New York	2,536,299	447,250
North Carolina	9,246	1,063
Ohio	68,731	62,195
Pennsylvania	22,986	49,481
Rhode Island	277	118
South Carolina	26	93
Tennessee	1,032	850
Vermont	288,028	48,187
Virginia	11,506	10,597
Wisconsin	15,930	133
Total	3,496,950	1,238,502

Horizon (*ὁρίζω, I bound*), the plane of a great circuit which divides the upper or visible from the lower or invisible hemisphere. See GEOGRAPHY.

Horn (Du. *Hoorn;* Fr. *Corne;* Ger. *Horn;* Lat. *Cornu*), a substance well known to manufacturers. Horns are of very considerable importance in the arts, being applied to a great variety of useful purposes. They are very extensively used in the manufacture of handles for knives, and in that of spoons, combs, lanterns, snuff-boxes, etc. When divided into thin plates, horns are tolerably transparent, and were formerly used instead of glass in windows. Glue is sometimes made out of the refuse of horn.

The projecting weapons on the head of the ox, the sheep, the antelope, and the rhinoceros, consist of a sheath of horn on a core of bone. Horn is composed chiefly of coagulated albumen, gelatine, and a small portion of phosphate of lime. It is essentially distinct from bone and ivory; the antlers of the stag, although sometimes called horns, consist entirely of bone. Modifications of horns may be noticed in the scales of the armadillo, the plate armor of the tortoise, the spines of the porcupine and hedge-hog, the quills of birds, and the hoofs, claws, and nails, of animals. For manufacturing purposes, the horns and hoofs of the bull and cow are in request, and there is a large import of these from South America, southern Africa, and from Russia. The horns of the bison and buffalo, the chamois and the antelope, are used for the better kinds of work.

The manufacturer first detaches the horn from the bony core, by macerating the horn in water for a month or six weeks, when the membrane by which the horn is attached to the core putrifies and allows the two to be separated. The ash of the cores makes excellent cupels for the assay of gold and silver. The solid tips of the horn are sawn off, and are used for handles for knives, for buttons, etc.; the other portion of the horn is cut into short lengths, or soaked whole in boiling water, or heated at a fire, the effect of which is to soften it, and allow it to be spread out nearly flat. The *flats* are next pressed between warm and greased iron plates, the pressure varying according to circumstances. If intended for lanterns, the pressure is continued until the horn separates into distinct plates; these are placed on a board covered with hide, and scraped with a knife having a wire edge. Some of the shavings which come off are sometimes dyed and cut into various forms, and are so sensitive as to curl up by the warmth of the hand. They are sold at toy-shops under the name of "sensitive leaves." After the scraping, the sheets of horn are polished with a woolen cloth dipped in charcoal dust and water, next with rotten-stone, and lastly with horn shavings.

The effect of heat and pressure on light-colored horn is to render it transparent; but most of the articles made of horn are colored artificially by boiling the horn in infusions of coloring matter. If the horn be intended for combs, the pressure must be moderated, or the teeth will be brittle; if intended for drinking cups, the horn is cut into lengths, scalded, roasted, and molded in a cone of wood, and a wooden plug is driven into it for pressing the horn into the required shape. After this, the cup is turned and polished at the lathe, and a groove is cut to receive the bottom; this cut out of a flat piece of horn by means of a crown saw, and the bottom of the cup having been softened at the fire, the disk is forced into the groove, and the horn contracting in cooling makes a water-tight joint. For knife-handle and similar works, the horn is cut nearly to the required form, and is molded in dies with the assistance of heat and a powerful screw-press. The work is finished by scraping and buffing with Trent sand and oil, or rotten-stone and oil. Horn is sometimes used as a vehicle for applying polishing powders to the flat works of the watchmaker. In the Great Exhibition of 1851, there were sundry small articles of chamois horn, consisting of brooches, shirt-buttons, rings, and watch-keys, by a Swiss exhibitor; there were also some transparent horn paintings from Hamburg, and a pair of polished ox-horns from Port Natal, with the head complete, measuring from tip to tip 8 ft. 4 in., and 21 in. circumference. The best collection of articles in horn-work was, however, from Turkey.—E. B.

Horn Manufactures. Horn is employed for all the purposes of tortoise-shell; and its much greater cheapness gives it a more extended application. Knife-handles, buttons, umbrella-handles, whip-tops, bell-pulls, drawer-knobs, sides of lanterns, and combs, are among the numerous articles made of horn. For the larger bulk of these manufactures in England, ox-horns are chiefly used; but those of the ram, the antelope, the buffalo, the deer, etc., are employed for special purposes. To show how enormous the consumption must be, it is sufficient to state that Liverpool imported, in 1850, no less than 120 tons of buffalo tips, 200 tons of buffalo horns, 280 tons of deer horns, and 700 tons of ox and cow horns. Horn is brought into manufactured forms by processes bearing some analogy to those employed in the gutta-percha manufacture, by heat and moisture; a higher temperature being, however, required for the horn.

Horn, or Hoorn, Cape, commonly considered the southern extremity of America, is not a part of that continent, but the most southerly point of a small island of the Tierra del Fuego group. S. lat. 56° 58′ 40″, W. long. 67° 16′. It consists of a lofty, precipitous, bare black rock, running far out into the sea; and was formerly considered dangerous to pass on account of the strong westerly gales that prevail in its neighborhood during summer, but as these are restricted to the vicinity of the cape, vessels avoid the difficulty by sailing in a higher latitude. It was discovered in 1616 by the Dutch navigator Schouten, who named it after his native town, Hoorn. See CAPE HORN.

Horse-chestnut. The horse-chestnut is a tree of the largest size, with an erect trunk, and a pyramidal head, sometimes attaining a height of 90 or 100 feet. The leaves are large, of a deep green, and singularly interesting and beautiful, when first developed. When inclosed in the bud, they are covered with a pubescence, that falls off, as they become expanded, which

occurs sooner or later, according to the dryness or moistness of the season.

Geography and History.—The native country of the common horse-chestnut, Mr. Royle observes, "is yet unknown, though stated in some works, to be the north of India." He says that he never met with it, though often visiting the mountains of that country, where, if anywhere, it was likely to be found, and where the Indian horse-chestnut was found in abundance.

According to M. Bon de Saint-Hilaire, the horse-chestnut passed from the mountains of Thibet to England in 1550, and thence to Vienna, by Clusius, and afterward to Paris, by Bachelier. It is also stated by Clusius, in his "Rariorum Plantarum Historia," that there was a plant of this species at Vienna, in 1588, which had been brought there 12 years before, but which had not then flowered. It has also been said that this tree was first raised in France, from seeds procured from the Levant, in the year 1515, by one Bachelier. Parkinson, in 1629, says, "Our Christian world had first a knowledge of it from Constantinople." The same author placed it in his orchard, as a fruit-tree, between the walnut and the mulberries. We afterward find it mentioned in Johnson's edition of Gerard's "Herbal," in 1633, as then growing in Mr. Tradescant's garden, at South Lambeth. From this period till the time of Miller, it appears to have attracted great attention, and acquired a high reputation as an ornamental tree, as he represents it in 1731, as being very common in England, and extensively employed in the formation of avenues and public walks.

The wood of the horse-chestnut is white and very soft, and according to Loudon, when dry, weighs from 35 to 37 pounds to a cubic foot. It is unfit for use where much strength and durability in the open air are required; nevertheless, there are many purposes for which it is applicable, when sawn into boards; such as for flooring, lining to carts, packing-cases, etc. In France, sabots, or wooden shoes, are made from it; and it is said to be used by carvers, turners, etc. Boutcher says, that it is suitable for water-pipes that are to be kept constantly under ground; and it is also recommended for this purpose by Du Hamel. The charcoal made of this species may be used in the manufacture of gunpowder; and the ashes of every part of the plant, more especially of the fruit, afford pot-ash in considerable quantity. The bark, which is very bitter, is employed for tanning, and also for dyeing yellow; and it has been used medicinally as a substitute for Jesuit's bark. In Turkey, the nuts are ground, and mixed with horse-food, especially when the animals are broken-winded; and in their crude state, they are eaten by goats, sheep, deer, and hogs. They are used in Ireland to whiten linen, and for this purpose are rasped into water, in which they are allowed to macerate for some time. The saponaceous juice which they contain is very useful, not only in bleaching, but in washing linens and other stuffs. The nuts must be peeled and ground, and the flour of twenty of them is sufficient for ten quarts of water; and either linens or woolens may be washed with the infusion, without any soap, as it effectually eradicates spots of all kinds. The clothes, however, should afterward be rinsed in clean water. The nuts, when ground into flour, and mixed in the proportion of one third with the flour of wheat, are said to add to the strength of bookbinder's paste; and when steeped in hot water, and mixed with an equal proportion of bran, it makes a nutritious food for pigs and poultry. M. Vergaud has proposed to change the starch contained in the flour, into sugar, and afterward employ it in distillation.—Browne's *Trees of America.*

Horse (Ger. *Pferd*; Du. *Paard*; Da. *Hest*; Sw. *Hast*; Fr. *Cheval*; It. *Cavallo*; Sp. *Caballo*; Rus. *Loschad*; Pol. *Koń*; Lat. *Equus*; Gr. Ἵππος), a domestic quadruped of the highest utility, being by far the most valuable acquisition made by man among the lower animals. The people of Thessaly were excellent equestrians, and probably were the first, among the Greeks at least, who rode upon horses, and broke them in for service in war; whence arose the fable that Thessaly was originally inhabited by centaurs. And Soloman had 40,000 stalls of horses for his chariots, and 12,000 horsemen.—1 *Kings*, iv. 26. The power of the horse is equal to that of five men.—Smeaton. A horse can perform the work of six men.—Bossuet. The Greeks and Romans had some covering to secure their horses' hoofs from injury. In the 9th century, horses were only shod in the time of frost. The practice of shoeing was introduced into England by William I., 1066. In England there are 2,000,000 draft and pleasure horses, and 100,000 agricultural horses, which consume the produce of 7,000,000 acres. The horse-tax was imposed in 1784, and was then levied on all saddle and coach horses in England. The existing duty upon "horses for riding" only, in England, amounts to about £350,000 per year.—Haydn. It may be fairly estimated that there are in Great Britain from 1,300,000 to 1,400,000 horses employed for various purposes of pleasure and utility. They may, probably, be worth at an average from £10 to £12, making their total value from £13,000,000 to £16,800,000 sterling, exclusive of the young horses.

In the United States, there were, in the year 1850, 4,335,358 horses, the largest number (463,000) being in the State of Ohio. See *Census Report U. S.* See also, United States, *Live Stock of; Living Age*, x., 305, xxi., 411; *Quar. Rev.*, xxviii., 26. The most reliable and valuable work on the horse, is by Frank Forester, 8vo., New York, 1857.

The first animals brought to America from Europe were imported by Columbus, in his second voyage, in 1493. He left Spain as admiral of 17 ships, bringing a collection of European trees, plants, and seeds of various kinds, a number of horses, a bull, and several cows. The first horses brought into any part of the territory at present embraced in the United States, were landed at Florida, by Cabeça de Vaca, in 1527, 42 in number, all of which perished or were otherwise killed. The next importation was also brought to Florida, by De Soto, in 1539, which consisted of a large number of horses and swine, among which were 13 sows, the progeny of the latter soon increasing to several hundred. The principal breeds of horses, adapted for specific purposes, in the middle, northern, and western States, are the Norman, the Canadian, the Morgan, the Conestoga or Pennsylvanian, the Virginian, and the Kentuckian. For carriages of heavy draught the Conestogas are regarded by many as the best. For the saddle, draught, and other useful purposes, the Morgans are highly prized, especially in New York. For roadsters, the Normans and Canadians are frequently sought. For blood, the Virginians and Kentucklans generally take the lead.

Horse Latitudes. On the polar side of the zones of calms, bordering the north-east trade-winds on the north, and bordering the south-east trade-winds on the south, there is a broad band extending up into the polar regions, the prevailing winds within which are the opposites of the trade-winds, viz., south-west in the northern and north-west in the southern hemisphere. The equatorial edge of these calm belts is near the tropics, and their average breadth is 10° or 12°. On one side of these belts the winds blow perpetually toward the equator; on the other, their prevailing direction is toward the poles. They are called the "horse latitudes" by seamen. These calm zones vibrate up and down with the trade-wind zones, partaking of their motions, and following the declination of the sun. Along the polar borders of these two calm belts (§ 190) we have another region of precipitation, though generally the rains here are not so constant as they are in the equatorial calms. The

precipitation near the tropical calms is nevertheless sufficient to mark the seasons; for whenever these calm zones, as they go from north to south with the sun, leave a given parallel, the rainy season of that parallel, if it be in winter, is said to commence. Hence we may explain the rainy season in Chili at the south, and in California at the north.—MAURY's *Phys. Geog.*

Horse-power, a unit of force introduced by Watt to enable him to determine what size of engine to send to his customers to supersede the number of horses which the new power was to replace. Watt ascertained at one of the London breweries that the average force exerted by the strongest horse was sufficient to raise 33,000 lbs. one foot high in a minute; thus, an engine of 200 horse-power would be a force equal to that of 200 horses, each lifting 33,000 lbs. one foot high per minute. Watt had two methods of estimating and comparing his engines—viz., by the *power*, and by the *duty*. By the power is meant the quantity of work which an engine can effect in a given time; by the duty is meant the quantity of work which it can effect by a given expenditure of fuel. Now, it is evident that without any change in the size of an engine, but simply by increasing the pressure of the steam, the power of an engine may be greatly increased—that is, the load remaining constant, the speed of the piston may be increased, the number of strokes may be increased, and, consequently, the work done per minute will be increased also. Hence it is difficult to apply a limit to the power obtainable from the smallest cylinder, provided the boiler be large enough to evaporate the increased quantity of water, and strong enough to resist the increased bursting pressure. In fact, no size of cylinder can be reckoned as having a particular power, since the power depends not on size but on strength. Nevertheless, in modern engineering the term *horse-power* refers rather to the size of the cylinder than to the power exerted, and the value of the unit has undergone many changes; so that in a modern engine, a horse-power may imply 52,000 lbs., or 60,000 lbs., or 66,000 lbs., one foot high per minute. The plan now adopted for ascertaining the performances of different engines is by an instrument called an *indicator*. This consists of a small cylinder fitted with a piston, which is pressed down by a spring. By the height to which this piston rises against the spring the steam pressure within the cylinder of the engine is indicated; and the number of pounds pressure on the square inch multiplied into the number of square inches in the area of the cylinder, and by the number of feet traveled through by the piston per minute, gives the impelling power; deduct in large engines about one tenth for friction, and the remainder is the efficient moving power, which, divided by 33,000, gives the actual horse-power.—E. B.

Hospital, Hospitale, in cloisters, the place of shelter for strangers, whether rich or poor; thus equivalent to our hotel, the *Xenodocheion* of the Greeks, the *Hospitium* of the Romans. The *hospitalia* of the Romans corresponds with our inns. They were small erections on the right and left of the main house. In Greece, a person who had done any great public service might be rewarded with money and provisions, but he required to look after a place of abode himself. Bearing some resemblance to our present hospitals were the public buildings for the aged women of Delos, built on the island called Rhene; and those buildings which, at a later period, were erected near the temple of Æsculapius, for sick persons coming in search of health. It was possibly a similar institution which Antonius built at Epidaurus. Another appears to have existed on the island of the Tiber at Rome, to which sick slaves were brought to be healed. *Bethesda* (house of mercy), with five porches, was a place in Jerusalem to which the sick were brought to await the moving of the waters.

Also the *Taberna Meritorum* at Rome appears to have been a hospital for invalids. Hospitals for the poor and sick are prominently characteristic of Christianity. So early as the Council of Nice, A. D. 325, they are spoken of as commonly known. The first celebrated hospital was that of Cæsarea, A. D. 370–380, richly endowed by the Emperor Valens. It was of immense dimensions. After it followed the hospital of Chrysostom, at Constantinople. In the ninth century there were 24 hospitals in Rome alone. A foundling hospital was first established at Milan, A. D. 787; a lazaretto about the same time in Constantinople; and an orphan hospital in the same city, A. D. 1090, by Alexius I. Hospitals are now universally established in all parts of Christendom, and appropriated for all classes of the community, and for all kinds of diseases. See GREENWICH HOSPITAL. See *Living Age*, xviii., 174; *Fraser's Mag.*, xxxvii., 539; *Dublin Univ.*, vii., 222.

By the laws of the United States, foreign seamen arriving in the United States pay each 20 cents per month to the collector of the port, as hospital money, and pay 25 cents per day when in hospitals under medical treatment. Marine hospitals are erected by the United States at New York, New Orleans, Boston, and other ports, for the accommodation of disabled and sick seamen, under the supervision of the Treasury Department. For disabled naval officers and seamen, navy hospitals have been erected at Philadelphia, Brooklyn, N. Y., Norfolk, and other sea-ports, supported by grants by Congress, and from contributions of one ration per day from each inmate.—DUNLAP's *Digest Laws U. S.*, 320, 449, 822.

Houssa is the name of an extensive portion of Central Africa, which, along with Bornou, bears the general name of Soudan, or Land of the South. It consists of various petty kingdoms or states, which occupy territory stretching east and west from the upper course of the Yeou nearly to the Niger, the boundaries of which on the south, and north, and west have now for the first time been determined by Dr. Barth. This region appears in several respects to be superior to the countries on either side of it. It is less sultry, an advantage which it probably owes to its higher elevation. The face of the country bears marks of greater cultivation, the fields being covered with large crops of several kinds of Indian corn, two of which are annually produced; and, to prevent the grain from being destroyed by insects, it is secured in granaries raised on poles. The soil is well watered by the Rivers Sokoto, Maradi, Zyrmie, Bugga, Zoma, and others, which, with several tributaries, flows westward to join the Niger. On its eastern quarter it is traversed by the Yeou, and on its southern by the Benuch or Chadda. Besides these natural supplies of water, artificial irrigation is diligently practiced.

The dominant people in Houssa are the Fellatas, this country forming, in fact, a considerable portion of the empire of Sokoto, which again comprises the eastern part of the Fellata dominions.

In the western tracts of Houssa there are few towns of any importance: some were visited, and have been described by Captain Clapperton.

Kano, the capital of a province of the same name, and the principal commercial city of Houssa, is situated in N. lat. 12° 0′ 19″, and E. long. 8° 30′. It may contain between 30,000 and 40,000 inhabitants, of whom a great proportion are slaves. This number is exclusive of strangers, who crowd thither during the dry months from all parts of Africa. The city is of an irregular oval shape, about 15 miles in circumference, and surrounded by a clay wall 30 feet in height, having a dry ditch on both sides of it. There are 14 gates made of wood, and covered with sheet iron, and these are regularly opened and shut at sunrise and sunset. A platform inside, with two guard-houses below it, serves to defend each entrance. The houses

within the walls do not occupy more than one fourth of the ground inclosed, the remaining space being laid out in fields and gardens. The city is almost divided into two parts by a large morass, which stretches from east to west. This swamp is crossed by a small neck of land, which is overflowed during the rainy season, but in the dry season the market is held upon it.

The great market is held upon the neck of land which intersects the morass. Here streets consisting of sheds or stalls of bamboo are regularly arranged, different places being allotted to those who traffic in different commodities. The latter consist of cattle, vegetables, fruits, the fine cotton fabrics of the country, gora or kolla nuts, which are called African coffee, and crude antimony, with which every eyebrow in Houssa is dyed. The Arabs also dispose of sundry commodities, such as various dresses. The slaves, who constitute the staple article of trade, have a special market appropriated to them, consisting of two long ranges of sheds, one for males and the other for females. Here these poor creatures, drawn up in regular array, and dressed in attractive attire, are inspected and scrutinized by purchasers, in much the same manner as horses are in the cattle-markets of this country. The market of Kano is under the superintendence of a sheik, who regulates the police, and is said also to possess the exorbitant power of fixing the prices. The medium of exchange consists of the small shells called cowries, 480 of which make a shilling, so that paying a large sum is here rather a tedious process. Kano is celebrated all over Central Africa for the dyeing of cloth, for which process there are numerous establishments. Some ingenuity is displayed in the manufacture of leathern jars, which are fashioned upon a clay mold out of the raw hide. The inhabitants are also acquainted with the art of tanning. The negroes here are very polite and ceremonious, especially to those advanced in years. A part of the city is appropriated to the use of those who are afflicted with blindness, which is a prevalent disease.

By the most correct accounts, it would appear that the Fellatas are an off-shoot from the Foolahs of western Africa, and may be identified with them. They are a mixture of Moors, Arabs, Berbers, and probably other races of men, and are gradually extending their authority over central Africa. They are much superior to the native negroes, with whom they very rarely mix their blood. Captain Lyon, speaking of the Fellatas, observes, "their complexion being of a much lighter hue than that of the other tribes, they call themselves white; their color resembles that of our gypsies in England. Many female slaves are brought to Mourzouk from their nation, and are very handsome women." Other observers describe their complexion as being very dark, and of a shade intermediate between that of the deepest African and the Moors. The fact seems to be, that their color varies in a very remarkable manner, from being nearly white to nearly black. Both men and women pay considerable attention to their dress, which among the wealthy inhabitants is rather showy. In their domestic habits they are regular, orderly, and cleanly, and the slaves are generally well treated. The Mohamedan is the predominant religion, and considerable attention is paid to keeping up an appearance of it. Prayers are regularly said five times a day in the Arabic language, which both the male and female children of the better sort of Fellatas are taught to read and write. Their marriages are celebrated without any pomp or noise, and such contracts are of a less arbitrary nature than we find them to be among the inferior races of mankind. Captain Clapperton makes the following remarks regarding Houssa:—"The government of the Fellatas in Soudan is in its infancy. The governors of the different provinces are appointed during pleasure; and all their property, on their death or removal, falls to the sultan. The appointment to a vacancy is sold to the highest bidder, who is generally a near relation, provided that his property is sufficient to enable him to bid up to the mark. All the inferior offices in the towns are sold in like manner by the governors, who also succeed to the property of those petty officers at their death or removal. A great deal of marketable property is claimed by the governor, such as two thirds of the produce of all the date-trees and other fruit-trees, the proprietor being allowed only the remaining third. A small duty is also levied on every article sold in the market; or, in lieu thereof, a certain rent is paid for the stall or shed. A duty is also fixed on every *tobe* that is dyed blue, and sold. On grain there is no duty. Kano produces the greatest revenue that the sultan receives; it is paid monthly, in horses, cloth, and cowries. Adamowa pays yearly in slaves; Yacoba in slaves and lead ore; Zegzeg in slaves and cowries; Zamfra the same; Hadeja and Katagum in horses, bullocks, and slaves; Cashna in slaves, cowries, and cloth; Ader, or Tadela, in bullocks, sheep, camels, and a coarse kind of cotton cloth, like what is called by us a counterpane." Of the number of negroes and Fellatas who inhabit the country of Houssa no correct idea can be formed. Much additional and more precise information on these countries may be expected from the pen of Dr. Barth, that energetic traveler, who has so thoroughly explored these regions.

The exports are principally civet and blue check *tobes* called *sharie*, which are manufactured by the slaves from Nyffi, of whom the men are considered as the most expert weavers in Soudan, and the women as the best spinners. The common imports are brought from the borders of Ashanti; and coarse calico and woolen cloth, in small quantities, with brass and pewter dishes, and some few spices, from Nyffi. The Arabs, from Tripoli and Ghadamis, bring unwrought silk, ottar of roses, spices, and beads. Slaves are both exported and imported. A great quantity of Guinea corn is taken every year by the Tuaricks, in exchange for salt. The market is extremely well supplied, and is held daily from sunrise to sunset. On the north side of Sokoto there is a low marsh, with some stagnant pools of water, between the city and the river; this, perhaps, may be the cause of the great prevalence of ague, as the city stands in a fine airy situation."

Sokoto is described by Dr. Barth as forming nearly a regular square, and having 8 gates, not 12, as formerly supposed. Sokoto has a mixed population, the Zoromana forming the chief portion of the inhabitants. They are, unlike the tribes of pure Fullo or Fellan origin, very industrious, and are excellent workmen in leather, iron, and gebbega or cotton-stripes. The articles of iron made at Sokoto are the best in all Soudan; and Dr. Barth purchased some specimens of beautiful workmanship. The Zoromana are the principal inhabitants of the town, while the Sylleibana, a very interesting tribe, different from, but united with the Fellatas from time immemorial, inhabit the villages round the town.—E. B.

Houston, a city of Texas, United States of North America, capital of Harris county, and the second commercial city in the State. It is situated on Buffalo Bayou, at the head of its steamboat navigation, and 45 miles above its mouth in Galveston Bay. It is the principal shipping port for the cotton, sugar, and maize, of the adjacent counties. Pop. (1853) estimated at 6000.

Huallaga, a river of Peru, rises in the Andes, near lat. 11° 30′ south, and at 13,200 feet above the sea, flows mostly northward, and joins the Amazon, near lat. 5° south, and long. 75° 40′ west, after a total course estimated at 500 miles. From Chasuta, 50 leagues above its entrance into the Amazon, and 3000 miles above the mouth of the Amazon, there is water

enough to float the largest vessels, for more than six months in the year. See AMAZON RIVER.

Hudson, Henry, a distinguished and ill-fated navigator of the 17th century. His early history is quite unknown, and he did not emerge from obscurity till the year 1607, when he was sent out by a company of rich London merchants in quest of a shorter passage to China, than that by the Cape of Good Hope. In that year he penetrated as far as the 82d degree, beyond which his passage was barred by the ice. In the following year, he altered his course, eastward, and, coasting along Spitzbergen, reached the Straits of Waygatz. Unable to force his way any further, in that direction, he again returned home without effecting his purpose. In 1609 a company of Dutch merchants supplied him with the means of again attempting a north-east passage. Again the ice stopped his progress, and Hudson, abandoning his original plan, sailed away to America, where he discovered the great river which now bears his name, and at the mouth of which New York is situated. Scarcity of provisions drove him once more to England, which he reached on the 7th November. In the following year (1610), he sailed from London on the forlorn quest of the north-west passage. In the end of May his sailors mutinied, and the revolt was only quelled with great difficulty. In June he entered the strait and bay now called by his name, and was in high hopes that he had at last solved the mystery that had baffled so many inquirers. Stricter investigation, however, showed him that he had been caught in a cul-de-sac, and as summer was now drawing to a close, he found himself compelled to winter on those inhospitable shores with a mutinous crew, and a very scanty stock of provisions. Commander and sailors were alike out of temper at the bad success of the whole expedition, and heart-burnings and dissensions embittered the winter bivouac. On the way home in the summer of 1611, the crew again mutinied, and taking possession of the ship, they turned adrift Hudson and such of the crew as remained faithful to him in an open boat, and with a scanty supply of provisions. What was the fate of the boat and her crew is unknown; nothing was ever heard of them. The details of Hudson's progress are given at length in PURCHAS'S *Pilgrim*, and in HARRIS'S *Voyages*. See SPARKS'S *Am. Biog.*, vol. x.

Hudson's Bay, a large sea of North America, lying between 51 and 69 degrees of north lat., discovered in 1610 by Henry Hudson. See HUDSON, HENRY, and POLAR REGIONS. A charter for a company, incorporated under the name of the *Hudson's Bay Company*, was obtained in the year 1670. See FUR TRADE.

Hudson's Bay Territory. The first internal explorers of the vast region surrounding Hudson's Bay were traders from Canada while it was yet in the possession of France. Canadian traders had, previous to the conquest, ascended the St. Lawrence and Ottawa Rivers to their sources, and had formed establishments on the great lakes. From the north-western end of Lake Superior, they threaded the intricate communication which leads by lakes, streams, and portages to Lake Winnipeg, and thence penetrated some distance up the Saskatchewan River, where their most distant establishment was situated, in north lat. 53°, west long. 103°. These enterprises were, in a great measure, suspended by the struggles which ended in the conquest of Canada by Great Britain. In 1767 a party headed by a British subject, again penetrated to the Saskatchewan. The Missinipi, or Churchill River, was visited by Mr. Joseph Frobisher in 1775, and Lake Isle-a-la-Crosse, in 1776. In the year 1781, the fur trade had reached the limits of Lake Athabasca, nearly 1000 miles beyond the most distant point attained by the French. These explorations were greatly extended by the establishment, in 1783, of the North-West Company of Montreal—an association formed of the leading individuals engaged in this traffic—who, in the energetic pursuit of the fur trade, extended their establishments to the Arctic Circle and the Pacific Ocean. The charter of the Hudson's Bay Company, conferring the exclusive right of trade with the Indians, having been granted without the sanction of Parliament, has generally been held invalid; and it was probably the dread, owing to this defect, of attracting public observation to their proceedings that induced the Company for many years to confine their trading stations almost entirely to the coast. In 1769, a century after the date of their charter, their farthest advance was about 400 miles inland. In that year, however, being desirous of obtaining information regarding some mines of copper described by the natives as existing near a river flowing into the sea to the northward, called the Coppermine River, they directed Mr. Hearne, a gentleman in their service, to proceed overland for that river which he had orders to survey, if possible, down to its embouchure—an enterprise in which, after two unsuccessful attempts, he succeeded, reaching the sea at the mouth of the Coppermine River on the 13th July, 1771, having been thus the first to establish the existence of a great Northern Ocean, washing the shores of North America. Mr. Hearne's Journals and charts were, however, withheld from the public for nearly 20 years after the date of his journey. On the capture of Fort Churchill by the French these documents fell into the hands of La Perouse, who commanded the French squadron, and were restored to the Company only on condition of their being published. It was doubtless owing to this circumstance that Hearne's claims to this important discovery were for many years discredited; although the existence of a Northern Ocean was confirmed by Sir Alexander M'Kenzie, who, in 1789, descended the river issuing from Great Slave Lake, which bears his name, it was not until the overland expeditions of Franklin and Richardson in 1820 and 1825, that Hearne's merits as a discoverer were fully recognized. To the expeditions last named we owe the first accurate geographical delineation of this extensive region, from the shores of Hudson's Bay as far as M'Kenzie's River. Of the country west of this stream, and extending as far as Russian America, a careful survey has been more recently executed by Professor A. K. Isbister of London, and published in the journal of the Royal Geographical Society, for 1846. To this gentleman we owe also an elaborate geological map of the entire region, published in 1856 by the Geological Society of London.

The new association, which retained the name of the Hudson's Bay Company, obtained in 1821 a license of exclusive trade for 21 years, renewed in 1842 for a similar period, over the territories west of the Rocky Mountains—the country on the east side being considered sufficiently protected from rival traders, by the establishments of the two Companies already formed there, and such vague rights as might be claimed under the charter of 1670. Grave doubts existing as to the validity of this charter, and numerous complaints having arisen from the arbitrary exercise of the powers claimed under it by the Company, an address to the crown has been recently moved by the House of Commons, for an inquiry (which is now pending) into the legality of the very wide and anomalous powers at present exercised by the Company.

The territory embraced within the present operations of the Hudson's Bay Company may be roughly estimated at nearly 4,000,000 of square miles, or somewhat greater than the entire extent of Europe. This vast area, which is covered by a net-work of about 100 trading-posts, scattered at distances of about 300 or 400 miles apart, is divided into four large departments —1st. The Montreal department, which includes all the establishments situated between the River St. Lawrence and the great lakes of Canada, and along

the north shore of the Gulf of St. Lawrence and the coast of Labrador; 2d. The Southern department, which includes the country along the north shores of Lake Superior and the southern shores of Hudson's Bay; 3d. The Northern department, which comprehends all the establishments north of this as far as the shores of the Polar Sea; and 4th. The Columbia department, including the territory watered by the Columbia and other rivers west of the Rocky Mountains. The departments are divided into a number of districts, each under the direction of a superior officer; and these again are subdivided into numerous factories, forts, posts, and outposts.

In a geographical view the Hudson's Bay territories may be divided into four great natural regions—1. The Columbia or Oregon Territory, a county of varied features, extending from the Rocky Mountains to the Pacific; 2. The wooded region, occupying the country from Canada northward along the shores of Hudson's Bay, and extending along the valley of the M'Kenzie and Peace Rivers nearly to the Arctic Ocean; 3. The prairie region, situated between the forementioned divisions, and occupying the valley of Saskatchewan and Red Rivers, and the upper waters of the Missouri and Mississippi; 4. The strip of sterile country along the northern shores of Hudson's Bay and the coast of the Polar Sea, familiarly known as the Barren Grounds. Of these divisions the wooded region is the most extensive and the most valuable for the purposes of the fur trade; all the finer skins which find their way to the London market, being obtained from it. It has, in consequence, been long occupied and thoroughly worked by the trading-posts and agencies of the Company. The Indians inhabiting it are in general a mild, inoffensive race. Long familiarity with the whites, and the habits of trade, have produced a friendly feeling among them toward Europeans; and their desire to supply them with the commodities of trade renders them by far the most valuable and industrious class of the population of the Hudson's Bay territories. The relation of the Company toward them is an extremely simple one: the Indians hunt and trap for the furs which the Company receive, giving in exchange such articles as are suited to the simple wants and tastes of the natives. Trade is carried on by means of a standard valuation, based on the market price of a beaver-skin, and hence denominated a *made beaver*. This is to obviate the necessity of circulating money, which is quite unknown in any part of the Indian country. A beaver-skin is considered, in the Indian trade, equivalent to two, three, or more skins of inferior value. The rates at which the skins can be obtained under the complete monopoly enjoyed by the Company render the fur trade probably one of the most lucrative species of traffic in the world.

It is difficult to form an estimate approaching to accuracy of the population of the Hudson's Bay territories. From 40 to 50 different tribes, speaking distinct dialects, have been enumerated; but the discordant estimates even of the oldest and most experienced residents in the Indian country forbid all idea of arriving at any accurate estimate of their numbers. They probably do not exceed 150,000. Their numbers are, by the most trustworthy accounts, rapidly diminishing. Through the benevolent exertions of the Church Missionary and other Societies, missions and schools have been established in various parts of the country east of the Rocky Mountains. These missions, supported entirely from the funds of benevolent bodies in England and Canada, afford the only means of education hitherto available to the inhabitants of those remote regions.

The climate and soil of the Hudson's Bay territories, except in the extreme northern districts, differ little from those of Canada, and are equally adapted for colonization. On the banks of the Red River, flowing into Lake Winnipeg, a small settlement has been formed, consisting chiefly of retired servants of the Company, with their families. The colony now numbers a population of about 10,000 souls; but from its isolated position, the bulky nature of such exports as could be furnished, and the long and dangerous navigation to Hudson's Bay, there is but little probability of its rising to commercial importance.

The necessity for creating a new penal colony for England has caused attention to be directed to the advantages which some portions of Hudson's Bay possess for such a purpose; and at the same time it is urged that these sections of country would be thereby brought within the circle of civilization, and the resources of the whole region opened out for man's enterprise; while it would be the means of subverting that exclusive monopoly of the Hudson's Bay Company, which has proved so prejudicial to every British interest, and is antagonistic to the spirit of the age in which we live.

At this moment it is unnecessary to pronounce whether such a colony, located in some northern portion of Hudson's Bay, would be prejudicial to the interests of Canada.

It is urged by the Canadians that, under the charter, the Hudson's Bay Company originally only claimed around Hudson's Bay, and did not extend their claims beyond its limits until about 100 years after the date of their charter, which was made in 1670, between that year and 1690. The Company discovered that the charter was illegal and unconstitutional, and petitioned the imperial Legislature for the confirmation of that charter. An act of Parliament was passed, conferring it for a period of seven years, *and no longer*. In 1697 the charter had ceased to exist, and has never again been renewed. Nevertheless, under color of that charter, about the year 1800, they set up a claim to the possession of all that country lying this side of the Rocky Mountains. Let our readers choose the epithet which will most truly characterize the monstrous imposition, which has the audacity now to claim possession of a country which the very words of the charter itself excluded from the operation of the supposed grant—and which only professed to give such "lands, territories, etc., as were not *possessed by the subject of any Christian prince or State*. 34 years prior to the date of this charter, Louis XIII. of France granted a charter to a company called the Company of New France, granting them the exclusive trade over that very country which the Hudson's Bay Company now assume to claim under the illegal and invalid charter of Charles the Second, and the French possessed, enjoyed, and traded throughout that country, which was always recognized as within the dominion of France until 1763, when Canada was ceded to the British crown; and it was not until about 40 years after, that the Hudson's Bay Company had the presumption to set up a claim to that country which had been won by British blood. Canada maintains that the whole country is a portion of Canada, and as such should be thrown open to her people. See *Blackwood*, lxiii., 869; *Monthly Rev.*, lxxxvii., 66; *Dem. Rev.*, xii., 345; *Living Age*, xxiii., 588.

Hudson, a river of the State of New York, though less in its length and in the amount of water which it discharges than many others, is one of the most important in the United States. The Hudson, proper, rises by two branches in the Adirondack mountains. The eastern branch from the north passes through Schroon lake, and is sometimes called Schroon branch; and the western has a circuitous course from the north-west, and is considered as the main branch or Hudson. About 40 miles from the source of each, they unite in Warren county. After a course of 15 miles south, the Hudson receives the Sacandaga, on the line between Montgomery and Saratoga counties. The Sacandaga rises in Hamilton county, and first runs south-east and then north-west and west to its junction below Jessup's Falls. The Hudson then runs

to the east of south, 15 miles to Hadley Falls; it then turns to the north-east 20 miles to Glen's Falls. Its direction is then nearly south to its entrance into New York Bay. 40 miles below Glen's Falls it receives from the west the Mohawk, its greatest tributary. From the junction of the Mohawk to its mouth, is about 170 miles. The length of the Hudson, from its entrance into New York Bay, is a little over 300 miles. So straight is this river between Albany and New York, that the distance is less by water than by land. The tide flows to a little above Albany. It is navigable for the largest ships 118 miles, to Hudson, and for sloops and large steamboats, 145 miles above New York to Albany. Small sloops also proceed to Troy, and through the dam and lock to Waterford, about 8 miles further. Through a considerable part of its course the banks are elevated, and in some parts high, rocky, and precipitous; particularly in its passage through the Highlands, 53 miles above the city of New York. The scenery on the banks of the Hudson is highly picturesque. The city of New York owes much of its prosperity, and its pre-eminent advantages, to this noble river, connected as it is by the Erie Canal with the great lakes, and by the Champlain Canal with the St. Lawrence River. By no other route can an equally favorable water communication be had with the great West. There are many large and flourishing towns on the Hudson. The principal on the east side are Troy, Hudson, and Poughkeepsie; and on the west side Albany, Catskill, and Newburg; besides many others on both sides. Its waters were the theatre of the first *successful* attempt to apply steam to the propelling of vessels by Fulton and Livingston, in 1807–1808. As a navigable medium of commerce this river is unrivaled. During the year 1850 there passed *from the interior* through its channel, or by railroad conveyance along its basin, products of the forest valued at $10,000,000; agriculture, $38,000,000; manufactures, $4,000,000; merchandise $563,000; and various other articles, $2,800,000; showing a grand total of about $54,000,000. The total value of the various kinds of property sent from the seaboard, via the Hudson River, in 1850, amounted to $74,000,000, and in 1851, to $80,000,000, while that of the year 1856 is estimated at $150,000,000. See LAKE TRADE.

Hudson River Navigation.—Table showing the opening and closing of the Hudson River in each of the past 15 years:

Years.	Opened.	Closed.	Days open
1842	February 4...	Nov. 28.....	308
1843	April 13...	Dec. 10.....	242
1844	March 16...	" 17.....	278
1845	Febr'ry 24...	" 3.....	283
1846	March 18...	" 14.....	275
1847	April 7...	" 25.....	268
1848	March 22...	" 27.....	292
1849	" 19...	" 26.....	286
1850	" 10...	" 17.....	282
1851	Febr'ry 25...	" 14.....	293
1852	March 28...	" 23.....	270
1853	" 26...	" 21.....	274
1854	" 17...	" 8.....	266
1855	" 27...	" 20.....	268
1856	April 10...	" 17.....	251

Hulk, the name given to an old ship laid up as unfit for further service.

Hull, the body of a ship, exclusive of the masts, rigging, etc.

Hull down, expresses that the hull of the ship is concealed by the convexity of the sea.

Hull, or **Kingston-upon-Hull**, one of the principal commercial towns of England, is situated on the north bank of the Humber, at the mouth of the River Hull, 35 miles south-east of York. It is a municipal and parliamentary borough, and though locally in the East Riding of Yorkshire, is a county in itself. The ancient name of this town was Wyke, or Wyke-upon-Hull. For more than a century previous to 1269 it was a place of considerable mercantile importance, and possessed from the Abbot of Meaux, who was lord of the manor, the privilege of holding a weekly market and a yearly fair. The town of Hull is admirably situated for trade. Vessels of the largest size can come up to the town; while the Hull, Ouse, and Trent, affluents of the Humber, with their tributary streams and canals, afford facilities for trade with a large extent of country. It is also connected by railways with all parts of the kingdom. These advantages have been improved by the activity of the inhabitants, so that Hull ranks as the third port in the kingdom, the value of its exports being inferior only to those from Liverpool and London. The site of the old fortifications is occupied by docks, and thus the old town is surrounded with water from the Hull to the Humber. The old harbor was that part of the River Hull which faced the old town; but, as it was found to be inconvenient for the shipping, an act was passed in 1774 for forming a dock, now called the old dock, which has its entrance at the upper end of the old harbor. It is 1703 feet in length, 254 in breadth, and 24 in depth. Between 1805 and 1809 another dock was erected, called the Humber dock. It communicates with the Humber by a lock, and is 914 feet in length, 342 in breadth, and 81 in depth. The accommodation becoming insufficient for the increasing trade, another dock was constructed between 1828 and 1829, called the Junction dock, from being formed on the land that intervened between the old and the Humber docks, and thus forming a connection between them. It is 914 feet in length, 342 in breadth, and 81 in depth. The locks are 120 feet long, 86 broad, and 25 deep. The two bridges across the locks are of cast iron, and 24 feet wide. The railway dock, near the terminus of the Hull and Selby railway, and the Victoria, to the east of the citadel, are of recent construction. The following table exhibits the area and cost of the different docks:

Docks.	Area. a.	r.	p.	Cost.
Old dock.....	10	1	11	£73,330
Humber dock.....	9	3	24	233,036
Junction dock.....	6	0	5	165,033
Railway dock.....	2	3	9	115,000
Victoria dock.....	20	1	3	470,000
Total.....	49	1	12	£1,056,449

A considerable quantity of shipping is also accommodated within the old harbor, which may be computed at 10 acres of tidal water. A timber pond of 9 acres was constructed in 1853. The quays around the docks are spacious, and are entirely surrounded with warehouses and deal yards. Hull has of late years become a principal steam-packet station. Steamers sail regularly to and from London, Leith, Aberdeen, Newcastle, Yarmouth, Hamburg, Rotterdam, Copenhagen, Antwerp, etc. Hull is the principal entrepôt of the Baltic timber trade on the east coast of Britain. The staple imports are timber, deals, grain, and seeds, sheep's wool, tallow, hemp, flax, hides, iron bars, green fruit, bones, madder, bark, turpentine, cattle, sugar, etc. The chief articles of export are cotton stuffs and twist; woolen goods and woolen yarn; iron and hardware; linens and linen yarn; earthenware; machinery and mill-work; coal, salt, and more recently raw cotton, brought from Liverpool and Manchester. The whale fishery was formerly extensively carried on. In 1819 it employed 64 vessels, but from that period it rapidly declined to 1837, and in that and the seven subsequent years employed only one vessel annually. More recently, however, a reaction has taken place, and from 1846 to 1852, inclusive, from 12 to 14 vessels have annually set out for this fishery. The number and tonnage of vessels registered at the port on 31st December, 1854, were as follows: Sailing vessels—under 50 tons, 238, tonnage, 8822; above 50 tons, 195, tonnage, 42,861. Steam vessels—under 50 tons, 10, tonnage, 324; above 50 tons, 36, tonnage, 9924. The following table gives the ships and ton-

nage (including both sailing and steam vessels), employed in the colonial and foreign trade, for 1854, and the three preceding years:

YEARS.	INWARD.				OUTWARD.			
	BRITISH.		FOREIGN.		BRITISH.		FOREIGN.	
	Ships.	Tonnage.	Ships.	Tonnage.	Ships.	Tonnage.	Ships.	Tonnage.
1851	1,186	295,859	1,488	219,709	848	235,781	1,031	173,868
1852	1,087	285,957	1,220	175,755	758	223,260	950	139,198
1853	1,107	283,641	1,758	269,212	776	217,411	1,285	190,591
1854	1,042	256,731	1,747	247,627	705	197,550	1,179	177,009

The number and tonnage of vessels that entered and cleared coastwise during 1854, were: Entered, sailing vessels, 716, tonnage, 52,414; steam vessels, 424, tonnage, 76,406; cleared, sailing vessels, 1162, tonnage, 117,279; steam vessels, 468, tonnage, 84,072. In 1852 the amount of dock duties paid was £34,961; the amount of customs revenue, £324,819; and the value of British manufactured goods exported, £9,915,414. The staple articles of import being subject to low duties, or altogether free, the customs revenue is smaller than that of less important ports. The port charges of Hull have been reduced in the aggregate about £18,000 per annum. The industrial establishments of Hull are chiefly connected with the building and equipment of ships, comprising ship-building yards, rope-walks, and manufactories of canvas, chains, chain cables, and steam machinery. Population in 1851, 84,690.—E. B.

Humber, a large river or rather estuary of England, formed by the junction of the Ouse and Trent, and separating Yorkshire from Lincolnshire. It flows first east for about 18 miles to Hull, and then south-east for 22 miles to its mouth between the Spurn-head on the north, and the opposite coast of Lincoln on the south. Its average breadth is from two to three miles, but near its mouth it widens to six or seven. By means of its numerous tributaries it drains about 10,000 square miles, comprising some of the most fertile and populous districts of England. Vessels of considerable burden can ascend to its head, and those of the largest size to Hull.

Hungary. The kingdom of Hungary consists of Hungary Proper, Sclavonia, Croatia, Hungarian Dalmatia on the sea-coast, Transylvania, and the Military Frontier. It is situated between 46° and 50° N. lat., and between 15° and 25° E. long. It is bounded on the north by Galicia, on the east by the Danubian Principalities, on the south by Servia, Bosnia, and the Adriatic, and on the west by Styria, Lower Austria, Moravia, and Silesia. The north-eastern frontiers are formed by the Carpathians, which jut out in different branches toward the banks of the Danube, and inclose Transylvania in the form of a double crescent. A no less natural boundary is the Danube, separating southern Hungary from the Turkish provinces. The least marked frontier is the western, separating Hungary from Lower Austria: it is in part formed by the small March River. The exact extent of Hungary and its dependencies has not yet been precisely ascertained. According to the Austrian official statistics, published by Czoënig, the superficial area amounts to 125,037 English square miles; more recent Austrian tables reduce that number, whereas the Hungarian statist, Alexius Feuyes, reckons the superficial area at 130,910 English square miles, of which Transylvania occupies about one sixth, or upward of 20,000 miles. The Hungarian kingdom is thus larger than Great Britain and Ireland by about 10,000, and than Prussia by 20,000 square miles. The physical aspect of Hungary Proper is sharply marked by the contrast between the northern Carpathians, forming large plateaus, and the vast level land intersected by the Danube, Theiss, and Marosh; while in Transylvania, where the Alpine character predominates, the sudden diminution of the mountains, allows only of undulating table-land, alternating with narrow valleys. The greatest part of Croatia, and part of Sclavonia, likewise consist of mountainous land, formed by the outlines of the Alps, the level land in the latter lying to the north.

Rivers.—Turning to the hydrographic survey of the country, the Danube, the largest European river next to the Volga, first claims notice. Reaching the Hungarian territory at Presburg, where the Carpathians begin to rise on its left bank, the Danube pursues a south-easterly course, dividing into three branches, which receive the waters of the Layta, Raab, and the Waag, embracing, moreover, the two Schütt Islands about Comorn, and then the St. Andrew Island at Waitzen, after which its direction becomes more southerly, and, after leaving Buda and the Csepel Island, it rolls along the Hungarian plain and the Banat, its right banks reaching the Turkish territory at Semlin. There, where its course becomes retarded by the Servian Mountains, it receives the waters of the Save, leaving the kingdom at Orsova, after forcing its impetuous waves through the *Iron Gate*. The breadth of the Danube varies in different parts, being, about Presburg, 900 feet; at Foldvar, 1800 feet; between the former and Vanek, 4000 feet; at Petervardein, 3500 feet; at Belgrade, 508 feet, and at the Iron Gate between 158 and 80 feet. The depth varies between 20, 40, 60, and 120 feet. The greatest tributary of the Danube, the Theiss (Tibiscum), rises from a double source in the county of Marmaros, near Galicia, reaches the level land at Nagy Szöles, and winds its course through the large plain as far as Titel, where it flows into the bed of the Danube. The chief tributaries of the Theiss, remarkable for richness in fish, are the Hernad, Sajo, Bodrog, Szamos, Körös, and the Marosh, which is the chief river in Transylvania. The Drave, which rises in the Tyrol, flows through Styria into Croatia, and, dividing it from Hungary, falls into the Danube near Essek. The Save, rising in Carinola, winds its course through Croatia, is fed by the Unna and Kulpa, forms part of the frontier toward Bosnia and Servia, and falls into the Danube at Belgrade. The Morosh, which ranks next to the Theiss, falls into the latter at Szegedin, after having received the Aranyos, famous for its gold washings, and the Kokel or Kükülö. The Alt or Aluta rises likewise in the Transylvanian Mountains, entering Wallachia through the Red-Tower Pass. All the Hungarian rivers flow into the Black Sea, with the exception of the Popard, which rises in the Zips from the Kongsberg, and flows into the Vistula.

Lakes.—Among the lakes the largest is the Plattensee or Balaton, situated between the countries of Zala and Schumeg. Its length is about 50 miles, and its breadth between eight and nine miles; and with the surrounding marshes, it occupies about 500 square miles. Its principal feeder is the Zala, and its only outlet is the March Sio. The Neusiedler-see, in Hungarian Ferto, between the counties of Wieselburg and Oedenburg, fed by the Vulka, is 70 miles long and 10 miles broad; its shallow waters are impregnated with salt, and exhibit an ebb and flow, as yet unexplained. The Palver-see is, properly speaking, a marsh, resembling many which are formed by the Theiss and Lower Danube. The Star-ret, in Bihar, the Eeseder, in Szathmar, the Feketels, in the Banat, are the largest marshes. The marshes covered with aquatic plants, such as Eeseder, are generally distinguished by the name *lap*. The only canal of importance is that in the county of Bacs, called the Francis Canal, cut from Monoster to Foldvar, and uniting the Danube with the Theiss. It is about 60 miles long, and shortens the passage by about 200 miles. The Bega Canal, near Temesvar, is rather a river than a canal. The Adriatic touches only the south-western extremity of the Hungarian kingdom, the sea-coast being variously called Hungarian Dalmatia or Illyria, the principal ports being Fiume, a flourishing town inhabited chiefly by Italians, Buccari, Port-re-Zengg St. George, Tablonz, and Carlopago. The whole coast is mountain-

ous, and in some parts steep, and exposed to violent south winds.

The climate of Hungary varies greatly. In the counties of Arva, Liptau, Zips, and Marmaros, winter continues for fully six months, whereas in southern Hungary the trees blossom as early as March, and in June the heat becomes burdensome, reaching its culminating point in July. From the partial meteorological observations that have been made, it appears that the highest temperature in Buda is 30°·6 R., and in Klausenburg, in Transylvania, 32°·6; and the mean is, in Buda 15°·19, and in Klausenburg 53°. This, however, is far from giving an idea of the climate in the different parts of the country, and especially in the level land in the south, or the larger plain, where, at mid-day, the heat is at times almost African; and yet in those very parts, as a geographer observes, even quicksilver was frozen in the unusually severe winter of 1816. The heat of the smaller or western plain is much tempered by the Bakonywood. The first half of January marks the minimum, and the second half of July the maximum of the temperature; while April and the first part of October coincide with the mean temperature. Blasts and the falling of hail happen most frequently among the Carpathians.

At the end of the great war in the beginning of the present century, the population of Hungary, Transylvania included, was 12,000,000; and according to the last census, before the late war of 1848, it amounted to about 14,500,000. Of this number, 2,200,000 belong to Transylvania, and 490,267 to Croatia; the population of the military frontier being estimated at more than 1,000,000. With regard to the different races, the proportion is as follows:

Magyars	5,418,778	Russniaks	459,870
Slovaks	1,722,038	Wallachians	2,686,492
Rascians	1,208,995	Germans	1,278,677
Croats	948,995		

MINOR NATIONALITIES.

Jews	244,000	Greeks	5,000
Wends	40,000	Armenians	3,000
Bulgarians	12,000	Montenegrins	2,000
French	6,000	Clementines	1,600

The number of the Gypsies is variously estimated at 40,000 and 60,000. The different confessions are represented in the following approximate numbers:

Roman Catholics	6,500,000	Calvinists	1,700,000
Greek Catholics	800,000	Lutherans	820,000
Non-United Greeks	1,800,000		

IN TRANSYLVANIA.

Roman Catholics	221,400	Calvinists	358,800
Greek Catholics	605,800	Lutherans	220,400
Non-United Greeks	725,700	Unitarians	44,600

The character of the races is as different as their origin. The Magyars, both nobles and peasants, are marked by their Oriental pride and nobleness; by their love of liberty, hospitable customs, conviviality, and warlike spirit. Clinging with filial love to his superiors, the peasant—a gentleman in language and bearing—is, at the same time, alive to the sense of his own worth. In the field of labor and horsemanship, the Magyars surpass all the rest. The Sclavonians of north-western Hungary are mild, frugal, and industrious. The southern Sclavonian or Raitzen are, in character, very much like the Greeks, being, moreover, merry, warlike, and of a fierce disposition. The Croats partake more of the character of the Raitzen than of that of the north-western Sclavonians; and, as to the Germans, they preserve their usual traits of industry and peaceableness. The most neglected race is, perhaps, the Wallachians. Strongly resembling in physiognomy the Italians, a fact clearly verifying their intermixture with the Romans, they, like the Sclavonians, are bony, and of tall stature, and are considered as one of the least active races. The town population is estimated to form one eighth of the inhabitants, a circumstance sufficiently proving the backward state of the country. The total number of towns in Hungary and Transylvania is 146; of boroughs, 891; and of villages, 16,450. The population in the principal towns and boroughs was, in 1851, as follows:

Pesth	106,379	Kronstadt (Transylvania)	24,401
Buda (united to Pesth by a suspension bridge)	50,127	Mako	22,611
Debrecin	60,906	Temeswar	21,881
Presburg	42,178	Grosswardein	21,221
Szegedin	50,344	Arad	19,564
Vasarhely	33,000	Klausenburg (in Transylvania)	19,346
Keeskemet	32,808	Komorn	19,118
Csoba	28,049		

The fertility of the Hungarian soil, and the variety of its produce are universally known. Beside the different species of corn and maize, raised in great quantities, Hungary produces hemp and flax, various kinds of delicious apples, pears, and plums; two sorts of melons, rich crops of tobacco, and lastly a great variety of wines; while the vast pastures and oak woods afford ample sustenance to herds of horned cattle, sheep, and swine. It is assumed, that with the aid of modern improvements in agriculture, and a little more industry, it could abundantly sustain a population twice as large as it actually possesses. The badness of the roads, the neglected state of the rivers, which, besides being closed to navigation, entail great losses by annual inundations, no less than the feudal institutions, and prohibitive system of Austria, all contribute to keep agriculture in a backward state, so that the vast produce may be said to come from the hand of nature alone. The home of the wheat is the Banat, and the counties of Bacs, Baranya, Simia, Arad, and Borsod. Rye is raised chiefly in the north among the Slovaks; barley, oats, and maize, in different parts. The last occupies an important place in the Hungarian harvest. With some of the Sclavonian population, such as the Croats and Rascians, and the Wallachs, maize bread is a great favorite. Melons are raised in gardens and the open field, occupying sometimes continuous tracts of land of 100 acres. Of the water-melons the most famous are those of Heves, of more than two feet in diameter. The yellow or sugar melons are generally of a much smaller size. Tobacco grows almost everywhere, and greatly varies in flavor; the Csetneker of the county of Gömör, the Verpeleter and Debroer of Heves being the most highly prized. The annual crop is upward of 650,000 cwts. Potatoes form but a secondary article in Hungarian economy.

Wines.—Among the vine-hills and gardens, cultivated since the thirteenth century, and which occupy no inconsiderable part of the Hungarian soil, the most valuable is the Hegy-alja, or southern promontory of the Carpathians, and which comprehends the Tokay mountains situated round the town of that name. The whole promontory occupies above 50 English square miles, of which only one third is under cultivation. The Tokay wine is of a crystalline yellow, and sometimes greenish color, and is known under two names, the *Ausbruch*, the stronger, containing more of the essence, and the *Maslas*. The whole annual produce is 180,000 gallons. Next in rank to the Tokay is the Menes, a red wine of the county of Arad; and inferior to it, though by no means inferior to Burgundy, are the red wines of Erlau, Szekaard, Villany, and Buda. Among the yellow table-wines, particular mention may be made of the Nesmeler, Somloer, Badacsoner, and Ermeleker. The county of Simia is, moreover, particularly famous for its red wines, the most known of which is found on the Fruska Gora mountain. No less famous are some of the Croatian wines, marked by a spirituous flavor, as as well as the wines of Transylvania. The total produce of wine, Transylvania not included, is estimated at 328,748,000 gallons.

The animal kingdom exhibits no less abundance. The Hungarian oxen are the largest breed in Europe. They have a grayish white skin and long straight horns. The largest herds graze on the wide pastures

situated between the Theiss and the Danube. The original Hungarian horse, marked by its middle size, broad neck, and compact build, is now only to be found in some parts of Transylvania. The introduction of English full-blood stallions by several of the magnates, has of late years ennobled the breed, and the general improvement has been hastened by the royal studs at Mezö-hegyes and Babolna. Of late years much progress has been made in the breeding of sheep, though the first step dates from the reign of Maria Theresa, when the Merino was, for the first time, imported into Hungary. The oak-woods pasturage large herds of swine, part of which arrive annually from Servia, Bosnia, and the Danubian Principalities, for the purpose of being fattened, and thereafter exported to Austria. Mules, asses, buffaloes, and goats, are only to be found in very small numbers. As the war of 1848 made a great havoc in the animal kingdom the census of 1850 can not afford a fair representation of the capabilities of the country. We shall therefore give here the statistics of the year 1847, which stood as follows: Horses, 1,000,000; horned cattle, 4,260,000; sheep, 17,000,000; hogs, 7,000,000. In Transylvania, the numbers were these: Horses, 397,388; horned cattle, 800,000; sheep, 2,000,000; hogs, 350,000. To this abundance must be added a great number of domesticated fowl, especially geese and turkeys, and a variety of game, such as ducks, partridges, pheasants, etc. The rivers abound in carp, pike, and sturgeon—the Theiss being reckoned the richest; the peculiar Hungarian fish called *fogas*, is only found in the Balaton Lake, or Platten-see. Some of the waters yield trout, and large quantities of leeches.

The approximate amount of the productive soil, both in Hungary and Transylvania, in the latter of which the forests form more than one half, is, according to the Austrian official tables, 40,200,000 *joch*, or 57,204,600 English acres, of which 10,431,760 belong to Transylvania. The relative division is as follows, in English acres:

	Acres.		Acres.
Soil under tillage	22,651,439	Pastures	5,662,299
Vineyards	1,659,962	Forests	15,880,680
Meadows	5,711,778		

In the above numbers is not included the military frontier, the productive soil of which occupies about 6,000,000 acres; the forests forming one third. The produce in corn is—Hungary, 281,000,000 bushels; Transylvania, 30,000,000; military frontiers, 12,000,000; total, 323,000,000 English bushels. The value of the natural products is estimated at £29,000,000, while the value of the crops in England and Wales is estimated by M'Culloch to be only £83,656,071.

Minerals.—The mountains, which are partly worked by the government and partly by private enterprise, contain metals of almost every kind viz., gold, silver, iron, copper, lead, antimony, zinc, alum, orpiment, tellurium, and many other minerals, besides coal and salt. In the neglected state in which the gold mines are kept, the produce is only about 2400 marks. The silver mines yield 65,000 marks. Of great importance are the copper mines in the Banat; the richest vein, however, is at Schmölnitz. Those in Transylvania, at Damokos and Deva, yield 1200 cwts. The produce of lead is estimated at 26,000 cwts. The iron mines are found chiefly in the counties of Gömör, Sohl, Ung, and Zips; the average produce of the former being 250,000 cwts. The richest rock-salt mines are in the county of Marmoros, and the total produce amounts to upward of 800,000 cwts., a quantity which, however great, is far from sufficient for the wants of the country. Several places yield also soda, saltpetre, alum, and potash. Pit coals, which, till very lately, and before the introduction of railways, had been entirely neglected, lie deep in formations almost unwrought. The total produce is 1,000,000 cwts. The value of the mineral produce in Hungary is £872,000, that of Transylvania, £169,000; the military frontiers yield almost nothing in this respect. It must be added that Hungary possesses also precious stones and marble of various descriptions.

Manufactures.—The chief articles of manufacture are cloth, linen, and silk stuffs, carpets, leather, iron wares, and chemical products, including alum, saltpetre, and potash manufactures. All these are as yet in an incipient state, especially cloth manufacture, if it be considered that in wool Hungary is the richest country in Europe. Linens are chiefly manufactured in the north. The county of Zips produces about 6,000,000 yards. The largest silk manufacture is at Pesth, giving employment to between 400 and 500 men. Of greater extent are the leather manufactures; but even of this article much is imported. The most productive iron-works are in the county of Gömör, among which are particularly distinguished the manufactories of Polorela, and Voroske, belonging to the Prince of Saxe-Cobourg. The whole iron produce of Hungary is estimated at 500,000 cwts. per annum, half of which belongs to Gömör. In several districts there are potteries and glass-works, some of which, as at Debreczin and Papa, produce 20,000 bowls weekly. Soap is chiefly manufactured in Szegedin, Kecskemet and Debreczin, the last of which produces 7000 cwts. annually. The distilleries are mostly in the north among the Sclavonic population; and the breweries, 300 in number, are situated round the large towns of mixed population, as beer is no favorite drink with the Magyars. Sugar refineries have also of late risen in several parts of the country; but this article also requires importation. The segar manufactories, introduced within a very recent period, had imparted a new impetus to the cultivation of tobacco; but the introduction of the tobacco monopoly at the end of the late war, at once extinguished this branch of industry.

Trade.—The inferiority of the roads, only compensated to some extent by two railway lines, and steam navigation on the Danube and Theiss, but especially the restrictive commercial system of Austria, sufficiently accounts for the insignificance of Hungarian commerce, both foreign and internal. The centre of commerce is the capital, Pesth, situated on the banks of the mighty artery of the kingdom, the Danube. The chief feature of internal trade is the exchange of products between the northern and southern districts; the former sending to the south minerals and timber, and the latter carrying to the north grain and cattle, an intercourse facilitated by the great number of rivers navigable to vessels and boats of small freight. The annual fairs held at Pesth mark the culminating points of commercial activity, the chief marketable article being wool, of which, according to Fenyes, upward of 120,000 cwts. are sold annually. The other towns of commercial importance are—in the south, Ilecse, exporting to Austria; Fiume, the Hungarian littorale, and Semlin, communicating with the Turkish provinces; in the west, Waitzen and Presburg; in the north, Koshua and Eperies.

The following details, collected by Fenyes, will give a general idea of the extent and progress of the foreign commerce during the five years immediately preceding the late war:

EXPORTS.

	1840. Cwts.	1845. Cwts.
Wheat	1,818,626	2,408,118
Rye	190,770	942,018
Barley	401,194	884,614
Oats	488,639	782,812
Wool	237,740	214,446
Tobacco	353,478	211,625

The number of exported cattle in 1845 was 106,230, that of hogs, 352,440. The total value of exports that year was estimated at 71,735,683 florins, which, at the rate of 10 florins to a pound, is equal to £7,173,568.

Imports.—The value of imports, both from Austria and other countries, was, in the same year, 68,514,437 florins, or £6,851,443. Foreign countries, it must be added, enter only for one fourth of this intercourse, the rest belongs entirely to the Austrian dominions. Since the end of the late war the custom-duties between Hungary and Austria have been abolished. In how far this change has hitherto affected the commerce of the former, is not known, in consequence of its abnormal political state, is difficult to decipher, even if the requisite data had been made public. As difficult it would it be to form a correct estimate of the revenue and expenditure of Hungary since the late war, as both rest on momentary arbitrary measures undertaken either as precautions against revolution or in consequence of the periodical sickness of the Austrian finances. Ample data, however, are extant as to the public revenue and expenditure of Hungary before 1848. The chief sources of revenue up to that date were—the house-tax, war-tax, the toll duties, the crown and fiscal domains, and salt revenues, which, with the minor sources of income, such as the lottery, the post-office, and the mines, yielded, according to Fenyes, £3,400,000, a sum less than that of Lombardy, but more than sufficient to cover public expenses, in consequence of the internal organization of the counties, where the salaries of the constitutional officials were but nominal. In the new *régime* a not unimportant item in the public revenue is the tobacco monopoly introduced into the Hungarian dominions by an imperial edict of November, 1850. By this edict no one may cultivate tobacco, except by previous permission, specifying the place and mode of cultivation, each owner being obliged to deliver up his produce to the government, which determines its value. The monopoly in itself, no less than the domiciliary visits to which it gave rise, greatly injured this thriving branch of Hungarian industry. A great many, indeed, have in consequence of this given up its cultivation, dispensing even with its use.—E. B.

For commerce of Hungary, see HUNT'S *Mag.*, xxi., 191 (CASSALI); DE BOW'S *Review*, xiii., 433; *Races of Hungary*; *Nor. Am. Rev.*, lxx., and lxxii.; *Ch. Exam.*, xlviii., 44.

Huron, Lake, one of the five great lakes of North America, lies between Lake Superior on the north-west, Lake Michigan on the west, and Lake Erie and Lake Ontario on the south and south-east. Its shape is so irregular that it is difficult accurately to determine its exact dimensions. Its length from north to south is 260 miles, and 160 miles in breadth from east to west, in its widest part, but exclusive of the bay on the north-east, it is only 90, and its circumference 1100 miles. Its principal indentations are Saginaw Bay, extending into Michigan, and two others; one immediately north of Manitou Islands, and the other south-east of them. The latter, called Georgian Bay, is about 170 miles long, by 70 broad; almost a separate sheet of water, divided from Huron by a nearly continuous series of islands which are closely connected by the great peninsula of Cabot's Head, and with Point de Tour, the easternmost cape of northern Michigan. Manitou (or Great Spirit) Island is the largest of the group, and Drummond Island separates another sheet of water from the main lake, 80 miles long and 20 broad. The boundary between the United States and Canada passes along the middle of the main Huron 225 miles, and between Lesser Manitou and Drummond Islands, by what is called the Middle Passage, and curves round to the north and west 25 miles, to the entrance of St. Mary's river. The elevation of the surface of Lake Huron above the surface of the ocean is 574 feet, or less than that of Lake Superior by 53 feet, or than that of Lake Michigan by 4 feet. The greatest depth toward its west shore is at least 1000 feet, and its mean depth 900 feet, or about 300 feet below the level of the Atlantic. See LAKES.

Hurricane (Sp. *Huracan*), a violent storm, generally accompanied by thunder and lightning, and distinguished from every other kind of tempest by the vehemence of the wind, and the sudden changes to which it is subject. Hurricanes prevail chiefly in the East and West Indies, the Isle of France, and in some parts of China. The following graphic description of the usual phenomena attending the West Indian hurricanes, from the pen of Edmund Burke, may be interesting to the reader: "It is in the rainy season, principally in the month of August, more rarely in July and September, that they are assaulted by hurricanes, the most terrible calamity to which they are subject from the climate. This destroys at one stroke the labor of many years, and frustrates the most exalted hopes of the planter, and often just at the moment when he thinks himself out of the reach of fortune. It is a sudden and violent storm of wind, rain, thunder, and lightning, attended with a furious swelling of the sea, and sometimes with an earthquake; in short, with every circumstance which the elements can assemble that is terrible and destructive. First they see, as a prelude to the ensuing havoc, whole fields of sugar-canes whirled into the air, and scattered over the face of the country. The strongest trees of the forest are torn up by the roots and driven about like stubble. Their wind-mills are swept away in a moment. Their works, their fixtures, the ponderous copper boilers and stills of several hundred weight, are wrenched from the ground and battered to pieces. Their houses are no protection; the roofs are torn off at one blast, while the rain, which in an hour rises six feet, rushes in upon them with an irresistible violence. There are signs which the Indians of these islands taught our planters, by which they can prognosticate the approach of a hurricane. It comes on either in the quarters, or at the full or change of the moon. If it will come on at the full moon, you being at the change, observe these signs. That day you will see the sky very turbulent. You will observe the sky more red than at other times. You will perceive a dead calm, and the hills clear of all those clouds and mists which usually hover about them. In the clefts of the earth, and in the wells, you will hear a hollow, rumbling sound, like the rushing of a great wind. At night the stars seem much larger than usual, and surrounded with a sort of burs. The north-west sky has a sort of menacing look, and the sea emits a strong smell, and rises into vast waves, often without any wind. The wind itself now forsakes its usually steady easterly stream, and shifts about to the west, from whence it sometimes blows with intermissions violently and irregularly for about two hours at a time. You have the same signs at the full of the moon. The moon itself is surrounded with a great bur, and sometimes the sun has the same appearance."

Hydrographical Charts or **Maps**, usually called sea-charts, are projections of some part of the sea or coast for the use of navigation. In these, are laid down all the rhumbs or points of the compass, the meridians, parallels, etc., with the coasts, capes, islands, rocks, shoals, shallows, etc., in their proper places and proportions.

Hydrography, the art of measuring and describing the sea, rivers, canals, lakes and the like. With regard to the sea, it gives an account of its tides, countertides, soundings, bays, gulfs, creeks, and also of the rocks, shelves, sands, shallows, promontories, and harbors; the distance and bearing of one port from another, with every thing that is remarkable, whether out at sea or on the coast.

I.

Ice. The sale of ice and snow preserved in the caverns of Vesuvius and on the more elevated parts of Ætna, has long been a considerable branch of trade in Naples, Catania, and the adjoining towns; but it was reserved for the Americans to carry the trade in ice to an extent which could not previously have been anticipated. The extreme heat of the summer in the New England States occasions a natural demand for ice, which the extreme cold of the winter gives the means of supplying. The fresh water lakes adjoining Boston and other large towns being deeply frozen in winter, large ice-houses are filled with the ice taken from them, which is retailed in summer at a low price. The practice had not, however, been long established till it occurred to some ingenious speculators to attempt to realize a profit by shipping ice to the southern parts of the Union and the West Indies: and the speculation having succeeded, the trade was subsequently extended to the Spanish Main and South America, and more recently to Europe, India, and China! The business has, in fact, become of the first importance; numerous companies and a very large amount of tonnage being now engaged in the ice trade from Boston. And owing to the greater skill and economy with which the business is at present conducted, the ice which used a few years ago to cost 6 cents per lb. in New Orleans and Havana, may now be had for 1 cent; and there has been a like fall in its price in India and other more distant places. An immense warehouse has recently been constructed at Calcutta for the reception of the ice brought by the ships, whence it is supplied in the quantities required for the public accommodation. This singular fabric has triple walls, five distinct roofs, incloses about three fourths of an acre, and is fitted to hold upward of 30,000 tons of ice! It is said that a similar dépôt is about to be formed at Canton.

The Ice Trade of the United States.—The ice trade of the United States was commenced by Mr. Frederic Tudor, of Boston, in 1805. This gentleman, having previously sent agents to the West Indies to procure information, determined to make his first experiment in that region. Finding no one willing to receive so strange an article on shipboard, he was compelled to purchase a vessel, the brig *Favorite*, of about 130 tons, which he loaded with ice from a pond in Saugus, Massachusetts, belonging to his father, and sent to St. Pierre, Martinique. This first enterprise resulted in a loss of about $4500, but was, nevertheless, followed up until the embargo and war put an end to the foreign trade, at which period it had yielded no profit to its projector. Its operations had been confined to Martinique and Jamaica. After the close of the war with England in 1815, Mr. Tudor recommenced his operations by shipments to Havana under a contract with the government of Cuba, which enabled him to pursue his undertaking without loss, and extend it, in 1817, to Charleston, South Carolina; in the following year to Savannah, Georgia; and in 1820, to New Orleans. In the mean time it had been tried again (by other parties) at Martinique and St. Thomas, and failed, and by Mr. Tudor at St. Jago de Cuba, where it also failed, after a trial of three years.

On the 18th May, 1833, the first shipment of ice was made to the East Indies by Mr. Tudor in the ship *Tuscany*, for Calcutta, and since that period he has extended his operations to Madras and Bombay. Previously to 1832 the trade had been chiefly confined to the operations of the original projector, although several enterprises had been undertaken by other persons, and abandoned. The increase of shipments to this period had been small, the whole amounting, in 1832, to 4,352 tons, which was taken entirely from Fresh Pond, in Cambridge, and shipped by Mr. Tudor, who was then alone in the trade. Up to this time the ice business was of a very complicated nature. Shipowners objected to receive it on freight, fearing its effect on the durability of their vessels and the safety of voyages; ice-houses at home and abroad were required, and the proper mode of constructing them was to be ascertained. The best modes of preparing ships to receive cargoes were the subject of expensive and almost endless experiments. The machines to cut and prepare ice for shipping and storing, and to perform the operations of hoisting it into store-houses and lowering it into the holds of vessels, were all to be invented, involving much expense and vexation. Many of these difficulties have now been overcome, and since 1832 the trade has increased much, and appears destined to a still more rapid increase for some years. It has also been divided among many parties, and its methods have been further improved, and a knowledge of them more widely diffused.

The ice has been chiefly taken from Fresh and Spy Ponds, and since 1841 mainly transported on the Charlestown Branch Railroad, which was constructed for that purpose. Quite recently, ice establishments have been made at most of the ponds near Boston, and it is probable that in a few years the products of all these waters may be required to supply the trade. In the year 1839 the great quantity of ice cut at Fresh Pond, and the consequent difficulties which had arisen among the proprietors, as to where each should take ice, induced them to agree to distinct boundary lines which were settled by three commissioners, viz., Simon Greenleaf, Levi Farwell, and S. M. Felton, esquires, on the principle of giving to each the same proportion of contiguous surface of the lake, as the length of his shore-line was to its whole border. This settlement was made by partition deed, executed by all the owners, and recorded in the registry of deeds of Middlesex county. Published maps were also placed in public institutions and private hands. These maps show the direction and length of the boundary lines of each owner, and the area. This arrangement has been of great advantage to the parties, and enabled them to secure more ice than could otherwise be taken from a pond of equal extent.

The shipments of ice from Boston coastwise for the year ending December 31st, 1847, amounted to 51,887 tons. The ice shipped to foreign ports during the same period amounted to 22,591 tons, and was sent to the following places, viz.; Havana, Matanzas, Trinidad, St. Jago, Cuba, Martinique, St. Thomas, St. John's, Mayaguez, Porto Rico, Guadaloupe, Barbadoes, Trinidad, Antigua, St. Vincent, Nassau, Jamaica, Pernambuco, Demerara, Honduras, Vera Cruz, Rio de Janeiro, Mauritius, Isle of Bourbon, Manilla, Calcutta, Madras, Bombay, Ceylon, Hong Kong, Whampoa, Batavia, and Liverpool.

The freight paid during this year is supposed to have averaged as high as $2 50 per ton, at which rate it would amount, on the 74,478 tons shipped abroad and coastwise, to $186,195. There is a great variation in the cost of securing ice and stowing it on board vessels, caused by winters favorable or otherwise for securing it, and by the greater or less expense of the fittings required for voyages of different duration, or by difference of season when the shipments are made. Taking all these contingencies into consideration, the cost of ice when stowed on board may be estimated to average $2 per ton, which would give for the quantity shipped $148,956. There were in 1847 upward of 29 cargoes of provisions, fruits, and vegetables shipped in

ice to ports where otherwise such articles could not be sent—say to Barbadoes, Trinidad, Demerara, Antigua, St. Vincent, Guadaloupe, St. Thomas, Honduras, and Calcutta—the invoiced cost of which at Boston would average about $2500 each, $72,500. To these items may be added the profits of the trade to those engaged in it, $100,000. Total returns, $507,651.

The ice trade has been without doubt one of the main stays which preserved the Calcutta trade almost exclusively to Boston, and it would do so for China if that country were in a more quiet condition. The freights paid to India by Mr. Tudor for ice amount to from 10 to 15 per cent. of the earnings for the whole run of the ship out and home, and it is earned without cost or deduction to the charterer or ship-owner.

It is probable that the commercial marine of the United States has been materially increased by the operation of the ice trade. A large portion of the vessels formerly engaged in the freighting trade from Boston sailed in ballast, depending for remuneration on freights of cotton, rice, tobacco, sugar, etc., to be obtained in more southern latitudes, often competing with the vessels of other nations which could earn a freight out and home. Now a small outward freight from Boston can usually be obtained for the transportation of ice to those places where freighting vessels ordinarily obtain cargoes. The ice trade has generally been unsuccessful to places where profitable return freights can not be obtained, because to such places a heavy freight must be paid on the ice, which it can not bear; and also because southern places which do not produce valuable exports, are usually unable to consume expensive luxuries.

The methods and materials for preparing vessels for the transportation of ice have been various. Formerly their holds were sealed up at the sides, bottom, and top, with boards nailed to joist ribs secured to the skin of the vessel, and with double bulkheads forward and aft. The spaces thus formed were filled with refuse tan, rice-hulls, meadow-hay, straw, wood-shavings, or like materials. These spaces were made of a thickness proportionate to the length of the voyage, and with reference to the season. The immediate surface of the ice was covered with the same materials, excepting tan. At the present time saw-dust is used almost exclusively for voyages of considerable length. It is placed immediately between the ice and the skin of the vessel. This material is obtained from the State of Maine, and before its use for this purpose was entirely wasted at the water-mills, and, falling into the streams, occasioned serious obstructions. During the year 1847, 4600 cords were brought to Boston, at an average value of $2 50 per cord, delivered. The lumber is also wholly from the State of Maine. The value of it is, however, small, in the present mode of fitting vessels. Almost the whole value of the returns of the ice trade, including freight, is a gain to this country. The ice itself, the labor expended on it, the materials for its preservation, and the means of its transportation, would be worthless if the trade did not exist. The prices at which ice sells in places where there is competition vary constantly. In Havana, where it is a monopoly, it is sold at 6¼ cents per pound, and there the trade has not increased since 1832, when the shipments were 1112 tons, while at New Orleans, where it has been sold at from half a cent to three cents per pound, it has increased during the same period from 2310 tons to upward of 28,000. At Calcutta the trade commenced, in 1833, with a shipment for that year of 201 tons, and the price has never been above 6 cents per pound, and is now about 2½ cents. The export to that place had increased in 1847 to 3000 tons, but probably less than one fifth of that quantity is actually sold, owing to the great length of the voyage.

Ice being shipped and used at all seasons, large storehouses are required to preserve it. Exclusive of ice-houses on the wharves at East Charlestown and East Boston, in which ice is stored for short periods, there had been erected in 1847, and previously:

	Tons.
At Fresh Pond, in Cambridge, ice-houses capable of containing	66,732
At Spy Pond, in West Cambridge	28,000
At Little Pond " "	2,400
At Wenham Pond	13,000
At Medford Pond	4,000
At Eel Pond, in Malden	2,000
At Horn Pond, in Woburn	4,000
At Sumner's Pond	1,200
Total	141,332

The ice-houses now in use are built above ground. In southern countries, where ice is most valuable, they are constructed at great expense, usually of brick or stone, and the protection to the ice consists in air spaces, or in dry, light vegetable substances inclosed between two walls. In this vicinity, on the borders of the lakes, where ice is least valuable, they are usually built of wood, in which case they are of two walls, formed by placing two ranges of joists upright, framed into plates at the top, and placed in the ground at the bottom, or framed into sills; these two ranges are ceiled with boards secured to that side of each range which is nearest the other, and the space between the two boardings filled with refuse tan wet from the yards. This wet tan is frozen during the winter, and until it is thawed in the spring and summer, little waste occurs; afterward the waste is more rapid, but, as a large portion of the ice is shipped or otherwise used before this takes place, the loss in quantity is small, and, occurring before the expenses of transportation have been paid, is of less pecuniary moment.

In one instance, brick has been used in the construction of an ice-house which covers 36,090 feet of land, and the vaults of this ice-house are 40 feet in depth, and its walls are four feet thick from outside to inside, inclosing two sets of air-spaces. Such a construction is more costly, but has the advantage of durability and safety from fire, to which ice-houses are much exposed from the frequent juxtaposition of railroad-engines and the light, dry material used about them to cover and otherwise preserve ice. At first, the implements of husbandry only were used in securing ice, but as the trade became more important, other machines and different methods were adopted, and abandoned when better were brought forward, or when the increased magnitude of the business required greater facilities. More ice is now secured in one favorable day than would have supplied the whole trade in 1832. Ordinarily, before there has been cold enough to form ice of suitable thickness, snow falls on its surface. If this occurs when the ice is four or more inches in thickness, and the snow not heavy enough to sink the ice, it can be removed by using horses attached to the "snow-scraper;" and under such circumstances this is the method in common use. But if snow falls so heavy as to bring the water above the surface of the ice, it is removed, after it has congealed into snow-ice, with the "ice-plane," which takes off about two inches deep and 22 inches wide of its surface. This machine is drawn by two horses, and is guided by inserting its "guides" into grooves previously made with the "ice-cutter." The chips made by it are scraped off in the same manner as dry snow. These preliminary expenses are often very great; frequently, after much expense has been incurred to remove a body of snow or snow-ice, the weather becomes warm and spoils the ice on which so much has been expended. And, on the other hand, if it is not done and the cold continues, there will be little or no increase of thickness to the ice, which is equally a disaster.

When ice has been formed of sufficient thickness, and freed from snow and snow-ice, it is reduced to blocks of uniform size, ordinarily 22 inches square, by the "ice cutter." This machine is similar to a car-

penter's plow, except that it has a series of cutting-chisels, one succeeding another, and deepening the groove. It is drawn by a horse, and cuts at one passage about two inches deep, and if the ice requires to be planed to remove snow-ice, the guides of the "snow-plane" are used in grooves of this depth, but when grooves are required to split from, the "ice-cutter" should be drawn two or three times through each. These grooves should be parallel to each other, and to make them so, the "ice-cutter" has a guide, which is placed in the last groove made. When the grooves in one direction have been made, others at right angles with them are produced in the same manner. After this has been done, one groove at the end is opened, and also the two outside grooves; a wedging-bar is then stricken into the groove next the end one, and at several places along its length, which detaches it easily from the mass; then the same bar is forced, with a slight blow, into the transverse grooves, which reduces the ice to very uniform square blocks. The blocks of ice thus formed are brought to the receiving-doors of the ice-houses (which are built on the immediate borders of the ponds), either by placing them on sleds, or floating in canals cut through the ice. Various modes of elevating the ice are in use; the endless chain, in combination with the inclined plane, has been successfully used, and also the common pile-driving steam-engine; but at present horse-power is more used than any other. The ice is placed in the houses in regular courses, every block exactly covering the next below it. When a vault has been filled, it is immediately covered with wood-shavings and the receiving-doors fitted up, to prevent waste, until the contents are required for shipment abroad or use at home. The weight of ice for shipment is usually determined at the wharves, immediately before being put on shipboard, on scales which have been constructed for the purpose; and this single operation settles the weight to be paid for by the party for whose account the ice is shipped; the amount due for freight on shipboard, for transportation on the railroad, and that which is to be received by the owner of the ice.—*American Almanac, year* 1849.

The aggregate of freights paid for ice shipped in Boston in 1856, was $2 50 the ton, clean and clear to the ship-owner; therefore he received from this trade last year $365,000 (a large interest), and probably more profit than any other interest whatever in the business. Railroads and wagons were paid $100,000; laborers, $160,000; towns, for taxes of ice privileges and ice in store, $1500; and wharves $20,000 to $25,000. There are 93 wagons and about 150 horses employed in distributing ice in Boston and vicinity; 60,000 tons are thus retailed, supplying 18,000 families, hotels, stores, and factories.

The tons of ice prepared for market, its value, capital invested, and number of persons employed in this business in Massachusetts, in the year 1855, are shown in the annexed summary:

Counties.	Tons prepared for market.	Value annually.	Capital invested.	Hands employed.
Bristol	16,200	$10,000	$16,000	10
Essex	43,900	76,200	25,000	65
Middlesex	356,200	550,400	660,700	362
Plymouth	800	2,500	3,000	8
Total	397,100	$639,100	$704,700	445

The annual domestic consumption of ice in the chief cities of the United States is estimated as follows:

	Tons.		Tons.
Boston	60,000	Charleston	15,000
New York	300,000	Mobile	15,000
Philadelphia	200,000	New Orleans	40,000
Baltimore	45,000	St. Louis	25,000
Washington	20,000	Cincinnati	25,000

In the smaller towns, especially in those where water is introduced by reservoirs, the consumption of ice is about two thirds as great in proportion to their population as in the larger cities.

New York, up to this time, has exported but little ice, being chiefly engaged in procuring an amount sufficient for its domestic supply. New York city and vicinity is, for the most part, supplied with ice by four or five joint-stock companies. The amount of ice placed in storage for the winter of 1856–7, by these various companies, is estimated as follows:

	Tons.
Knickerbocker Ice Co.	250,000
New York and Brooklyn Co.	40,000
People's Co	30,000
Independent Co	20,000
Passaic Co	7,000
Total	387,000

The Knickerbocker Company, which engrosses a large proportion of the business, is a consolidation of three separate concerns into one company, with a capital of $300,000. Its supply of ice is derived from Rockland and Highland lakes. The New York and Brooklyn Company obtains its supply from the Hudson River at Athens; the Independent from the same place; the People's from the same river at Catskill; and the Passaic from the reservoir at Jersey City.

Export Trade.—The export of ice during the year 1856, from Boston, has been as follows:

	Tons.		Tons.
East Indies	14,880	Port Spain	704
Peru	1,194	Pernambuco	257
Callao	6,744	Martinique	211
Melbourne, Australia	596	South America	875
Sydney, N. S. W.	520	Cuba	314
Valparaiso	614	Bahia	375
Guyaquil	1,028	Porto Rico	181
Ceylon	467	Mansanilla	57
Rio Janeiro	1,762	Nassau, N. P.	180
Havana	5,801	Remedios	10
Demerara	1,100	Bermuda	40
Montevideo	893	Rio Hache	10
Kingston, Ja.	1,594	Southern ports	81,395
Aspinwall	557		
Cardenas	422	Total, 1856	125,514
St. Thomas	773	" 1855	98,080
Buenos Ayres	580	" 1854	115,815
Brazil	43	" 1853	82,792
Barbadoes	877	" 1852	96,482
St. Jago	445	" 1851	99,587
Matanzas	605	" 1850	69,623
New Granada	890	" 1849	66,908
Laguira	218	" 1848	57,507
Porto Cabello	50	" 1847	54,625

The total capital invested in the ice business is $700,000, and the total quantity gathered 397,000 tons, about one third only of which is exported.

EXPORTS OF ICE FROM THE UNITED STATES, FOR EACH YEAR ENDING JUNE 30TH, 1853, 1854, AND 1855.

Countries.	1853.		1854.		1855.	
	Value.		Value.	Tons.	Value.	
Danish West Indies	$2,059		$4,099	1,528	$3,823	
Dutch East Indies	7,705		....	2,180	6,478	
England	4,500		585	781	3,000	
Gibraltar	520		....	....	....	
British East Indies	62,046		108,819	9,084	90,327	
British Guiana	69		683	927	2,252	
British West Indies	22,052		12,236	3,880	14,471	
Australia	1,191		4,409	495	1,606	
French West Indies	3,416		1,575	428	1,070	
Spain on the Mediter	960		369	271	900	
Manilla	8,189		1,500	997	3,200	
Cuba	33,402		25,278	7,645	21,161	
Spanish West Indies	2,522		916	....	....	
Portugal	843		900	285	573	
Mexico	1,055		2,450	56	770	
Central Republic	245		....	20	320	
New Granada	4,630		4,768	180	470	
Venezuela	68		134	....	....	
Brazil	8,523		11,671	3,109	9,272	
Peru	14,186		16,286	5,881	17,449	
Chili	2,902		4,905	1,587	6,547	
China	900		858	....	....	
Africa	2,965		....	....	....	
Canada	....		12	....	....	
British Amer. colonies	....		675	506	1,520	
France	....		....	54	175	
Porto Rico	....		....	197	395	
Cape de Verd Islands	....		....	600	2,000	
Buenos Ayres	....		....	238	600	
Ecuador	....		....	808	2,424	
Total	$175,056	$202,118		41,117	$190,793	

From this statement it would appear that the British East Indies absorb the largest quantity of ice from this region. Cuba next, and Peru the third in import-

ance. At present the aggregate is very trifling, but as fast as the article becomes known in southern climates, it will be more appreciated, and will become a permanent article of export from Boston, where the shipments are principally made. For Ice-houses, see CAREY'S *Mus.*, xii., 175. Ice Trade, etc., see HUNT'S *Mag.*, v., 444, xi., 377; *Jour. of Sci.*, iii., 179, ix., 136, xlvi., 179, xlviii., 373; *Bankers' Mag.*, iii., 406; *Am. Eclec.*, iii., 307, 512 (LOUIS AGASSIZ), iv. 1.

Icebergs. The accumulation upon elevated situations of frozen snow, produces those moving masses of ice called *glaciers*. In the Alps, and in Norway, these glaciers coming down to a mild region melt away; but in the arctic regions, they often flow into the sea and produce icebergs. While floating about, these masses may increase indefinitely in size, from receiving fresh accessions of snow, or by the freezing of the water continually splashed against them, as well as by the sudden freezing of the water which falls as rain. They are of all sizes, from mere fragments to upward of half a mile in diameter, and of all weights, from a few pounds to 100,000 tons. They rise sometimes 150 feet above the water, and this is but an eighth of the whole mass. They float about in hundreds, and are often driven by winds far into the ocean, and become exceedingly dangerous to navigation. Icebergs from each pole have approached nearer the equator than 40° north and south latitude; they have been met with in the neighborhood of the Cape of Good Hope. Many of these icebergs originating on land, present the same phenomena as glaciers. Hence, upon near inspection, they are found to be loaded with the debris which, as glaciers, they scraped off the mountain sides, past which they flowed to the sea. This debris contains masses of greenstone, clay-slate, gneiss, granite, etc. In the polar circle, where the floating masses reach to many hundreds of miles in length, they are called *ice islands*. When two of these approach each other, any vessel which happens to be between them is almost certain to be crushed to pieces. The larger of the two, by its greater momentum, urges itself beneath the smaller, which is thus tilted up on the shoulders of the larger, whose mass it goes to increase. The *iceblink* is an appearance produced on the horizon by these ice islands when stationary, and which indicates the existence of an ice-island before it is itself visible.

Ice-boats, boats so constructed as to sail upon ice, and which are very common in Holland. They go with incredible swiftness, sometimes so quickly as to affect the breath, and are found very useful in conveying goods and passengers across lakes and great rivers. Boats of different sizes are placed in a traverse form upon a 2½ or 3 inch deal board. At the extremity of each end are fixed irons, which turn up in the form of skates. Upon this plank the boat rests, and the two ends serve as outriggers to prevent oversetting, whence ropes are fastened that lead to the head of the mast in the nature of shrouds, and others passed through a block across the bowsprit. The rudder is made somewhat like a hatchet with the head placed downward, which being pressed down, cuts the ice, and serves all the purposes of a rudder in the water, by enabling the helmsman to steer.

Ice Islands, a name given by sailors to a great quantity of ice collected into one huge solid mass, and floating about the seas near or within the polar circles. The motion of the lesser pieces is as rapid as the currents; the greater, which are sometimes 200 leagues long, and 60 or 80 broad, move slowly and majestically; often fix by the tide, immovable by the power of the ocean, and then produce near the horizon that bright white appearance called the *ice-blink*. The approximation of two great fields produces a most singular phenomenon; it forces the lesser (if the term can be applied to pieces of several acres square), out of the water, and adds it to the surface: a second and often a third succeeds, so that the whole forms an aggregate of a tremendous weight. These float in the sea like so many rugged mountains, and are sometimes 500 or 600 yards thick; but the far greater part is concealed beneath the water. These are continually increased in height by the freezing of the spray of the sea, or the melting of the snow which falls on them. Those which remain in this frozen climate receive continual additions; others are gradually wafted by the northern winds into southern latitudes, and melt by degrees by the heat of the sun, till they waste away, or disappear in the boundless element.

Iceland, one of the largest islands in Europe (being little inferior, in point of superficial extent, to Ireland), is situated in the north part of the Atlantic Ocean, between N. lat. 63° 23′ 30″, and 66° 32′; and W. long. 13° 32′ 14″, and 24° 34′ 14″; the north point being thus very near to the arctic circle, but not passing beyond it, as all maps but a recent authoritative one have represented it. Its extreme length from east to west is about 280 miles, and its breadth from north to south varies from 180 to 200 miles.

The precise period at which this island was discovered and first colonized is unknown; but from the Landnamabok, an ancient Icelandic chronicle, and a work generally relied upon as authentic, we learn that the Norwegians were the first settlers upon its coasts. Naddodr, a famous pirate of that adventurous nation, was, on his return to the Faroe Islands from a predatory excursion, about the year 860, driven by a tempest upon the coast of Iceland. He ascended to the summit of a mountain, but observing around him neither the vestige of a human residence, nor aught else than vast and trackless fields of snow, he immediately abandoned it. Probably aware of this discovery, Gardar Svarfarson, a Swede, followed the same track a few years afterward, and succeeding in circumnavigating the country, discovered it to be an island. He there spent the winter; but finding little inducement to make it a permanent residence, he, in the following spring, returned to Norway. The third adventurer on this coast was one Floki, another celebrated Norwegian pirate, who, during the two seasons, explored a considerable portion of the southern and western coasts. His attempt at forming a permanent settlement proved, however, like that of his predecessors, a failure; his cattle died, his expected crops were ruined, and, after experiencing innumerable distresses and hardships from the inclemency of the weather, he determined to repair to a warmer region, and gave to the island at his departure the name by which it has ever since been known. That this name, and the report which he spread on his return of the inhospitable nature of the island, were principally the effect of prejudice and disappointment, is evident from the contradictory account given of it by his companions, one of whom thought he could only convey an adequate idea of its richness and fertility by declaring that butter dropped from every plant.

The ancient Icelanders possessed, as is still the case with their posterity, few of the luxuries or refinements of life; and were occasionally exposed to severe privations, from the nature of their soil, and the climate under which they lived. There is reason, however, to believe, though the fact can not with perfect accuracy be ascertained, that the climate of Iceland was once less austere than it now is; and that not only trees and shrubs, but even corn, were grown upon the island. Of the ancient existence of the former, the trunks occasionally discovered in the bogs afford pretty satisfactory evidence. Grain of any description is not now a native of this island; and a few birches, not rising much more than a yard in height, afford the only approach toward timber. Like the present inhabitants, the ancient Icelanders were much dispersed over the country, their habitations being seldom

grouped together, but placed wherever the situation and nature of the soil appeared suitable. Their occupations and modes of life appear also to have borne much similitude. The produce of the farm, and the capture of fish, afforded them, as they do the present inhabitants, the principal means of subsistence; and their traffic with foreign countries made a valuable addition to their domestic comforts.

Population.—The population of Iceland has undergone considerable vicissitudes through the operation of epidemics. At 50,444 in 1703, it had sunk, in 1769, to 46,261, nor did it rise much above this point throughout the remainder of the century. In 1850 it was 59,157. This is small for an island whose surface is to that of Ireland as four to five; but that surface, both from its own nature, and the character of the climate, is perhaps as unfavorable as any which exists between the limits of the two arctic circles. Deducting the areas of the numerous fiords with which it is intersected, the square contents of the land may be calculated at 37,388 statute miles: but as the centre of the island consists entirely of snowy and uninhabited mountains, the peopled portion can not be considered more than 25,000 square miles; and the population therefore will not much exceed two persons to each square mile. At present the population must be increasing with great rapidity, if we may judge from the proportion of births to deaths, the respective numbers in 1852 being 2435 (of which 333 were illegitimate) and 1437. The whole population is employed either in farming, which occupies about three fourths of the men, or in fishing. Other employments do not exist, nor is there any other class of people or townsmen, save the small number of merchants in Reikiavik and the other trading establishments. Every branch of industry is therefore domestic, and confined chiefly to articles of clothing, such as coarse cloth, gloves, mittens, and stockings. The peasantry are generally ingenious, and manufacture such simple pieces of furniture as their cottages require; some also aspire to make trinkets of silver, and articles from the walrus' tusks. The trade of Iceland has never, till the present time, been managed in what modern science points out as the most advantageous way. The Danish government long had a monopoly of the business of this remote dependency. For many years, while this was abolished, Danish merchants had a preference to trading, by virtue of higher duties exacted from those of other countries. It was not until 1856 that the foreign merchant was encouraged to come to Iceland by a perfect equality of terms. The only place in the island entitled to be considered as a port is Reikiavik; only a few trading stations exist elsewhere. There is an annual export of from 1,000,000 to 1,200,000 pounds of raw wool, besides about 200,000 pairs of knitted stockings, and 300,000 mittens, or gloves without fingers. The Iceland sheep have remarkably fine fleeces of wool, which the farmers, in the spring of the year, take off whole; their weight being usually from four to five pounds. The other principal branch of industry in Iceland is fishing, which must be considered as in a thriving state. The fishing-banks around the island abound in cod and other species, and the number of boats engaged in the business in 1853 amounted to 3506, being an advance of nearly 50 per cent. in 20 years. Fish-oil, whale-blubber, skins, eider-down, feathers, and the *Lichen Islandicus*, for medicinal purposes, may also be included among their list of exports. These the natives dispose of to the Danish merchants in exchange for coffee, sugar, tobacco, snuff, a small quantity of brandy, rye and rye-bread, biscuit, wheaten flour, salt, soap, and such other small articles as are in constant use for domestic purposes. Those who can afford it, purchase a supply of linens and cottons, which of late years have become of more common use, and which must tend greatly to cleanliness, and the prevention of those diseases which woolen clothing worn next the skin tends to engender. The traffic thus occasioned takes place in the early part of summer, and while it lasts creates a kind of fair, with no little bustle and business in the capital. All the articles brought from the interior for sale at the sea-ports, and all those taken back for winter consumption, are transported on pack-horses. There is not, in fact, in all Iceland such a machine as a wheel-carriage; before any such can be used, there must be roads, of which, up to the present time, none exist. The lines of transit along the country are mere tracks, cut deep by use where the ground is soft, and encumbered by blocks where it is hard. Yet full as these paths are of difficulties, it is surprising at what a pace the small, hardy, sure-footed horses of the country will proceed. For foot traveling they are in general impracticable.

The revenue of the island, arising from crown property, commercial charges, a small tax on transference of property, etc., amounted in the year ending 31st March, 1854, to 29,949 rix-dollars (£3119), while the expenditure for officers' salaries, educating the clergy, and other items, was 56,743 rix-dollars, or more than double the income, the excess being supplied by the central government. The income, however, appears to be increasing in proportion.

The scanty produce of the land is, however, to a great degree compensated for by the abundance of fine fish which occurs on the coast. In several parts of the island, particularly on the north and north-west, the shark fishery is a regular occupation. Strong hooks fastened to chains are baited and anchored a little way out to sea, and the fish when caught are thus towed to shore. Of the skin, shoes are made; a considerable quantity of oil is extracted, and some parts of the flesh are occasionally smoked and used by the natives for food The cod is very plentiful; the haddock grows to a large size; ling, skate, flounders, and halibut, are likewise very common; the herring, too, frequents the fiords in vast shoals, but this branch of the fishery has hitherto been little attended to. The salmon in the rivers are said to be very fine, and no country in the world produce them in greater quantity. Seals are particularly numerous on the shores of the Breide-fiord and the western coast. See *Ed. Rev.*, iii., 331 (Sydney Smith), xix., 416; *Quar. Rev.*, liv., 185, xix., 291, vii., 43 (R. Southey); *Westm. Rev.*, lii., 261; *North Am. Rev.*, xxxv., 75 (O. W. B. Peabody); *For. Quar.*, ix., 41.

Illinois, one of the United States, is bounded north by Wisconsin, east by Lake Michigan and Indiana, from which it is separated for a third of its length by the Wabash River, south by the Ohio, which separates it from Kentucky, and west by the Mississippi. It lies between N. lat. 37° and 42° 30′, and between W. long. 87° 49′ and 91° 28′. Greatest length from north to south 378 miles; greatest breadth, 212 miles; average breadth, 140 miles. Its area is estimated at 55,409 square miles, being only about 3000 square miles less than that of England and Wales. According to the census of 1850, little more than a sixth part of the State was under cultivation.

Illinois is one of the most level States in the Union. With the exception of a range of low hills in the south, and a good deal of broken land in the north-west, as well as a few elevations near the Illinois, and some lofty bluffs along the Mississippi, the State may be regarded as an extensive table-land, gently inclining toward the south-west. At the mouth of the Ohio the soil is only about 340 feet above tide-water in the Gulf of Mexico, and the highest elevation in the whole State does not exceed 800 feet above that standard. Its surface is occupied almost entirely by prairies, which are popularly distinguished by the names, "wet" and "dry," "alluvial" and "rolling." The wet prairies are peaty, indicating that they have once been morasses. Those of an alluvial nature are dry,

with a rich black loam, and exceedingly fertile. They are covered with a coarse kind of grass, which grows to an enormous size. The soil of the high and "rolling" prairies is, in general, only of second-rate quality, and abounds in springs. Grape-vines are abundant. The prairies furnish an inexhaustible summer range for cattle. From the exceeding flatness of some of the plains, the rains that fall are allowed to stagnate, and thus render the situation unhealthy. The Grand Prairie, which is the largest tract of this description, is probably the highest table-land between the Mississippi and the Wabash. It extends from the county of Jackson, in a north-east direction, to the Iroquois county, and varies in breadth from 1 to upward of 12 miles. Although passing under one name, it does not consist of one single tract of land, but is broken up into several reaches of prairie ground, with strips of wood running between them. It is rich and fertile, and several settlements have been located on its border, which is everywhere skirted with wood. The prairies, generally, are not plentifully supplied with timber, most of them being only interspersed with groups of trees, or skirted with strips of forest. Much of the young wood is destroyed by the annual winter burning of the coarse grass, which covers at least two thirds of the prairie land. In spring the prairies again become profusely decked with the greatest variety of beautiful and delicate flowers of every hue.

Illinois is distant from the sea, but is well provided with rivers. Nearly three fourths of its boundary is formed by navigable rivers; and on the north-east it has Lake Michigan for upward of 60 miles. The Mississippi, which forms its entire western, and the Ohio, which forms the southern boundary, give commercial access to those valleys which bear their names. The Wabash, a noble stream which bounds the State on the east for more than 100 miles, is navigable for more than that distance. For internal communication, the Illinois, which belongs entirely to this State, is navigable at all seasons for steamboats for 260 miles, to La Salle, where navigation is stopped occasionally by the little rapids, and where a canal branches off, connecting the river with Lake Michigan. The principal tributaries of the Illinois, which is itself formed by the junction of the Kankakee and the Des Plaines, are the Fox River, which rises in Huron Territory, and has a course of 200 miles before it joins the Illinois; the Vermillion River, which falls into it from the south-east; the Sangamon from the east, the Mackinaw from the north-east, and the Spoon River from the north-west. These are almost all navigable for considerable distances. The Sangamon is navigable for 140 miles. The Little Wabash and the Embarrass, which flow into the Wabash, are likewise navigable for upward of 150 miles. The Rock River, which rises in Wisconsin, and falls into the Mississippi, after a course of about 300 miles, is navigable for some distance, but its upper course is impeded by rapids.

The climate of Illinois, extending as it does over a space of 5½ degrees of latitude, must necessarily be varied. The natural difference of temperature between the northern and the southern parts is, however, increased, by the numerous and large rivers which bound and intersect the country, and by its state of cultivation. Everywhere the winters are severe, the summers hot and long, and the temperature subject to frequent and sudden changes. In the southern parts of the State the summer heat is very oppressive and enervating; and is only occasionally relieved by fresh breezes from the prairies. In winter the snow falls to a considerable depth, and lies occasionally for three months; and many of the rivers remain frozen for the same length of time. In some parts of the State only a few inches of snow falls, and it quickly disappears.

Illinois possesses a vast extent of arable land. The soil, although varied, is generally highly productive, and for agriculture, it has been considered as unsurpassed by any State in the American confederacy. The soil in "the bottoms," or along the river valleys, such as those of the Rock River, the Sangamon, and Kaskaskia, consists chiefly of rich alluvial deposits, and is so productive as frequently to yield 40 bushels of wheat or 100 bushels of Indian corn to the acre. Nearly all the tracts adjacent to the rivers are of this character. "The American Bottom," as it is called, is the richest river alluvium, and has been cropped without deterioration for a century. It extends along the Mississippi for 90 miles; but in consequence of its liability to inundation, much of it is uncultivated. The prairies, although less productive, are still very fertile, and on account of their greater salubrity are preferred for farms, wherever wood is to be obtained. In 1850, there were 76,208 farms in Illinois, containing 5,039,-945 acres of improved ground.

Important and valuable minerals abound in this State. Bituminous coal occurs in almost every county; and in some instances may be obtained without excavation. Vast beds are found on the bluffs adjacent to the "American Bottom;" and it has been reported that anthracite coal has been found in the county of Jackson. But the great coal region is an extensive tract which extends quite across the State from Missouri to Indiana, and from Iowa to Kentucky. Iron has been found in the southern part of the State, and is said to be plentiful in the northern. The great lead region is shared between Illinois, Iowa, and Wisconsin. Galena in the north-west is nearly supported by this mineral. Silver has also been found in the west part of the State, and copper is obtained in several places. The other minerals found here are, zinc, gypsum, quartz, crystals, etc.

Manufactures, etc.—There were in the State in 1850, 16 woolen factories, with a capital invested of $154,500, employing 124 males and 54 females, manufacturing 306,995 yards of cloth, and 137,000 pounds of yarn valued at $206,572; 2 establishments making pig iron, with a capital of 65,000, employing 150 persons, producing 2,700 tons of pig iron, etc., valued at $70,200; 29 establishments with a capital of $260,400, employing 332 persons, and making 4,160 tons of castings, etc., valued at $441,185; 280 flouring and grist mills, 487 saw mills; 94 printing offices, 10 daily, 4 tri-weekly, 94 weekly, 2 semi-monthly, 7 monthly, and 1 quarterly publications. Total value of manufactured articles, $5,200,000. There were in January, 1856, 2,215 miles of railroad in operation, and 1,945 miles in course of construction.

The internal trade of this State is becoming considerable, and increasing in proportion to the means of internal communication. Its direct foreign commerce is small, and is chiefly with Great Britain.

Commerce of the State of Illinois, from October 1, 1847, to July 1, 1856.

YEARS.	EXPORTS.		IMPORTS.	TONNAGE CLEARED.	
	Domestic.	Total.	Total.	American.	Foreign.
1847	$52,106	$52,106	$266	1,262	352
1848	41,835	41,835	4,365	807	....
1849	88,117	88,117	9,766	914	2,796
1850	17,669	17,669	15,705	....	....
1851	114,336	114,336	4,657	2,093	215
1852	51,925	51,925	4,882	3,403	218
1853	79,139	79,139	7,559	2,288	....
1854	256,946	257,046	79,344	8,044	703
1855	547,054	547,058	54,509	31,434	2,016
1856	1,345,223	1,345,223	277,484	76,960	19,511

Illinois consists of 100 counties, which contain a number of thriving towns, many of which are increasing very fast in population. Chicago is much the largest, and has connected with it the greater part of the traffic of the State. Population in 1850, 29,963. In 1853 it is said to have increased to upward of 60,000. In 1856 the population was estimated at 100,000. The capital of the State is Springfield.

The following table shows the decennial increase of the population in the State since 1810:

Years.	Whites.	Free colored.	Slaves.	Total.
1810	11,501	613	168	12,282
1820	53,733	506	917	55,211
1830	155,061	1,637	747	157,445
1840	472,254	3,589	331	476,188
1850	846,104	5,366	None.	851,470

The astonishing growth of the State of Illinois and its promising condition, in 1855, may be seen from the following returns transmitted to the Auditor of the State:

Articles.	Number.	Value.
Horses	95,692	$90,864,812
Neat cattle	1,175,838	14,619,529
Mules and asses	19,523	1,106,094
Sheep	811,827	1,044,181
Hogs	1,689,687	2,512,815
Carriages and wagons	188,654	4,756,459
Clocks and watches	124,494	743,244
Pianos	1,227	156,158
Merchandise		8,423,819
Bankers' property		2,515,534
Manufactured articles		884,951
Money and credits		14,871,340
Bonds, stocks, etc.		600,840
Unenumerated property		22,908,937
Deductions		3,755,886
Personal property		95,927,285
Town lots		82,805,905
Lands		202,194,178

The progress which the State has made, even within a single year, may be seen from the following comparisons of totals for the last two years:

	Personal property.	Lands.	Personal property. Lands and lots.
1855.	$95,927,235	$202,194,170	$334,398,425
1854.	79,545,953	121,451,384	252,756,568
Increase	$16,381,282	$79,742,845	$81,641,857

Its internal improvements for some years past have been very great. Canals have been formed to compensate for the natural barriers to navigation in some of its rivers, and recently its great canal from Chicago to Peru, on the Illinois River, has been completed, uniting the waters of Lake Michigan with the Mississippi; thus opening direct communication between the whole of the Lake district in the north, and the river navigation on the south. The system of railroads, projected on a grand scale upward of 20 years ago, and which had been temporarily suspended, has been resumed some years ago on a still greater scale, and is being carried on with vigor. Chicago, its principal commercial city, is connected with Rockford, St. Charles, Aurora, Peru, and many other places within the State, and beyond it, either directly or indirectly, with Detroit, Cincinnati, New York, Philadelphia, and Boston. Besides these there were railroads uniting Springfield with Jacksonville, and Naples, Alton, and Quincy, with Columbus. When its railroads under construction are finished, Illinois will be surpassed for its railroad communication by but few States in the Union.

Immigration. *Progress and Extent of Immigration to the United States.*—We will review the progress and extent of immigration to the United States of America prior to 1819, the year in which the present official history begins. As, on this point, no authentic information exists, it must be determined by such evidence as statisticians of that period possessed, and by the relations then existing between the United States and the countries from which persons emigrated. The current of emigration commenced its flow from England, Ireland, and Scotland, and from Germany through the French and British ports. It was subject to many fluctuations during a part of this time, but continued with considerable uniformity, it is believed until 1806. Mr. Samuel Blodget, a statistician of more than ordinary research and accuracy, wrote in 1806, while every fact in regard to immigration was fresh in the minds of the people, that from "the best records and estimates at present attainable" the immigrants arriving in the United States did not average, for the 10 years from 1784 to 1794, more than 4000 per annum. During 1794, 10,000 persons were estimated to have arrived in the United States from foreign countries. In 1818, Dr. Adam Seybert, member of the House of Representatives from Pennsylvania, in his exceedingly valuable "*Statistical Annals*" of the United States, wrote to the following effect: "Though we admit that 10,000 foreigners may have arrived in the United States in 1794, we can not allow that they did so, in an equal number, in any preceding or subsequent year until 1817;" and he assumes that 6000 persons arrived in the United States from foreign countries in each year from 1790 to 1810; to him, and to the authorities he consulted, this average seemed a generous one.—SEYBERT'S *Annals*, pp. 28, 29.

During the 10 years from 1806 to 1816, extensive immigration to the United States was precluded by the unfriendly relations at that time existing between Great Britain, France, and the United States. England maintained the doctrine, and, for a while enforced it with success, that "a man once a subject, was always a subject." This deterred many from emigrating to the United States from the British empire. Numbers had previously come for the purpose of entering the merchant-service, and numbers might still have come whom the fear of British impressment frightened from carrying out their design. Another influence retarded immigration: in 1806 Great Britain issued a decree declaring the coasts of France in a state of blockade. A retaliatory decree was, in November of the same year, issued by France declaring the British Isles in a state of blockade. To these restrictions on commerce, and, consequently, on the unobstructed passage from Europe, succeeded the British orders in council, and the Milan decree of Napoleon. In March, 1809, the United States' law was passed prohibiting, for one year, intercourse with Great Britain or France. In 1810, the Napoleonic decrees were annulled, and the commerce of the United States had, in 1811, fairly commenced with France, but only to have their vessels fall into the hands of the British. Preparations were now making for active hostilities, and, on the 18th of June, 1812, war was formally declared by the United States to exist with Great Britain.

The German emigration sensibly felt this unfavorable condition of affairs, inasmuch as the Germans embarked principally at the ports of Liverpool and Havre; facilities for migrating thence to this country being more numerous, and the expense of the voyage less onerous. Thus, from 1806, was the stream of emigration pent up at its fountain. In February, 1815, peace was concluded between the United States and Great Britain; and after several months requisite to restore tranquillity, and to secure the confidence of those desiring to leave the Old World, the tide returned to its flow, and, with a speed greatly accelerated; as, from authentic information, collected principally at the several custom-houses, it appears that, during the year 1817, not less than 22,240 persons arrived at ports of the United States from foreign countries. This number included American citizens returning from abroad.—SEYBERT'S *Annals*, p. 29. In no year previous to that had one half so many foreign passengers reached our shores. Many sufferings were incident to a voyage across the Atlantic in a crowded emigrant vessel; and there were no laws of the United States either limiting the number of persons which a passenger ship or vessel should be entitled to carry, or providing any measures for the health or accommodation of the passengers. The subject seemed to deserve the immediate attention of Congress. In 1818 (March 10), Mr. Louis M'Lane, of Delaware, reported to the House of Representatives a bill "regulating passenger ships and vessels," which was read twice and referred to a committee for inves-

tigation into the subject. In December, 1818, the subject was brought before Congress by Mr. Thomas Newton, of Virginia, who explained the necessity of its passage. It was read a third time and passed by the House. After receiving amendments from both the Senate and House, it was finally passed and approved March 2, 1819. In compliance with a requirement of this act, collectors of the customs have reported quarter-yearly to the Secretary of State the number of passengers arriving in their collection districts, by sea from foreign countries; also, the sex, age, and occupation of such passengers, and the country in which they were born. Annual reports embracing that information, have, in conformity with the same act, been communicated to Congress by the Secretary of State; and, as before indicated, from these reports chiefly, this historical sketch has been compiled. The country having the largest emigration is, doubtless, Ireland; for, in addition to the 747,930 persons arriving from the United Kingdom, known to have been born in Ireland, it is safe to assume that of the 1,348,682 others, born as indefinitely stated in "Great Britain and Ireland," arriving in the United States, 1,000,000 at least, were born in Ireland alone; thus making 1,747,930 as the total Irish emigration. See EMIGRATION.

Next in numerical order comes Germany; England, third; and France, fourth. The emigration of Chinese to this country, was very inconsiderable until 1854; previous to which year, the aggregate number known to have arrived was only 88. In that year, however, 13,100 came to the United States; and in 1855, 3526; all of whom, with the exception of a single passenger, landed at the port of San Francisco; 15,950 were males, and were designated in the returns of the collector as "laborers."

As regards passengers from British America, the fact may be deemed worthy of mention, that many of them, especially of those arriving during the last four years are known to have come with the intention of returning, and not of residing in the United States. The number of such can not, however, be determined. Finally, to the 4,212,624 passengers of foreign birth arriving in the United States since September 30, 1819, may be added 250,000 as the number of immigrants who arrived prior to that date; making the total foreign arrivals from the close of the Revolutionary War to December 31, 1855, 4,462,624.—BROMWELL'S *History of Immigration*. New York: 1856. To this large number may be added, as variously estimated, from 500,000 to 1,000,000, who emigrated to the western States through Canada.

TOTAL NUMBER OF PASSENGERS, DISTINGUISHING ALIENS FROM OTHERS, ARRIVING IN THE UNITED STATES BY SEA, FROM FOREIGN COUNTRIES, FROM SEPTEMBER 30, 1819, TO DECEMBER 31, 1856.

Years ending		TOTALS.				OF WHOM WERE ALIENS.			
		Males.	Females.	Sex not stated.	Total.	Males.	Females.	Sex not stated.	Total.
September 30,	1820.....	6,147	2,680	1,184	10,311	4,871	2,393	1,121	8,385
	1821.....	6,866	1,938	2,840	11,044	4,651	1,636	2,840	9,127
	1822.....	5,818	1,149	2,082	8,549	3,816	1,013	2,082	6,911
	1823.....	5,813	1,044	1,908	8,265	3,598	848	1,908	6,354
	1824.....	6,253	1,561	1,813	9,627	4,706	1,393	1,813	7,912
	1825.....	9,206	3,329	324	12,858	6,917	2,959	323	10,199
	1826.....	10,218	3,633	57	13,908	7,702	3,078	57	10,837
	1827.....	14,165	6,479	1,133	21,777	11,803	5,389	1,133	18,875
	1828.....	19,446	10,677	61	30,184	17,261	10,060	61	27,382
	1829.....	12,938	5,470	6,105	24,513	11,303	5,112	6,105	22,520
	1830.....	7,544	3,575	13,748	24,867	6,439	3,135	13,748	23,322
	1831.....	15,917	7,963	....	23,880	14,909	7,724	....	22,633
	1832.....	35,599	18,752	....	54,351	34,596	18,583	....	53,179
Dec. 31 (3 mos.),	1832.....	4,691	2,512	100	7,303	4,691	2,512	100	7,303
	1833.....	42,548	17,377	....	59,925	41,546	17,094	....	58,640
	1834.....	40,730	23,180	4,038	67,948	38,796	22,540	4,029	65,365
	1835.....	30,752	17,791	173	48,716	28,196	17,027	151	45,374
	1836.....	51,459	28,889	824	80,972	47,805	27,553	824	76,182
	1837.....	59,403	24,700	2,850	84,939	48,837	27,658	2,850	79,345
	1838.....	28,504	14,900	1,755	45,159	28,474	13,085	1,755	33,314
	1839.....	48,200	26,454	12	74,666	42,932	25,125	12	68,069
	1840.....	58,998	33,158	51	92,207	52,883	31,132	51	84,066
	1841.....	59,815	33,814	176	87,805	48,082	32,681	176	80,289
	1842.....	67,124	43,475	881	110,980	62,277	41,907	881	104,565
Sept. 30 (9 mos.),	1843.....	33,172	23,354	3	56,529	30,069	22,424	3	52,496
	1844.....	48,897	35,867	....	84,764	44,431	34,184	....	78,615
	1845.....	69,179	49,311	1,406	119,896	65,015	48,115	1,241	114,371
	1846.....	90,974	66,778	897	158,649	87,777	65,742	897	154,416
	1847.....	139,107	99,325	990	239,482	136,086	97,917	965	234,968
	1848.....	136,128	92,883	472	229,483	133,906	92,149	472	226,527
	1849.....	179,256	119,915	512	299,683	177,232	119,280	512	297,024
	1850.....	200,904	113,392	1,038	315,334	196,331	112,635	1,038	310,004
Dec. 31 (3 mos.),	1850.....	88,282	27,107	181	65,570	32,990	26,805	181	59,976
	1851.....	245,017	103,745	66	408,828	247,181	162,219	66	379,466
	1852.....	293,731	160,174	1,438	397,343	222,469	157,696	1,438	371,908
	1853.....	296,702	161,178	72	460,952	207,958	160,615	72	368,645
	1854.....	284,887	175,587	....	460,474	250,177	174,656	....	427,833
	1855.....	140,181	90,288	12	230,476	115,307	85,567	3	200,877
	1856.....	135,308	89,188	....	224,496	115,816	84,590	....	200,406
Total.....		2,819,239	1,809,393	48,701	4,707,931	2,660,926	1,763,726	48,408	4,413,060

Legal Rights of Naturalized Citizens in the United States.—Aliens naturalized agreeably to the acts of Congress, are not prohibited by the Constitution of the United States, the enjoyment of the same rights, and to the same extent as natural-born citizens, with the single proviso that no person shall be eligible to the office of President or Vice-President, except a citizen native-born, or a citizen of the United States at the time of the adoption of the Federal Constitution. Congress can make no law to prohibit the free exercise of their religion; nor to abridge their freedom of speech. The right of security in their persons, houses, papers, and effects, against unreasonable searches and seizures, is not denied to them; nor are they prohibited the purchase and occupation of lands owned by the government. The Constitutions of the several States concede to those naturalized citizens, who take up their residence within the States, in general the same rights as are enjoyed by persons born therein. Among these rights may be mentioned that of voting and of being elected to office. See EMIGRATION, BROMWELL'S *Sketch of Immigration*. See *No. Am. Rev.*, xl., 457 (by A. H. EVERETT); *Am. Whig Rev.*, vi., 455, 633, vii., 419 (by O. C. GARDINER); NILES'S *Register*, xiv., 380, xviii., 157. Upon the subject of German emigration, see *No. Am. Rev.*, ii., 1 (by EDWARD EVERETT); xx., 191 (by J. SPARKS). Immigration to the United States, see DE BOW'S *Review*, v., 243,

xiii., 455, HUNT'S *Mer. Mag.*, viii., 157, xiv., 293; FRAZER, xvi., 562, 683, xxviii., 426; *Edin. Rev.*, vii. 185, xiv., 49, xlvii., 204, xcii., 258, xxxix., 315; *Westminster Rev.*, lii., 449, vi., 342, xxxv., 131, xl., 53, 101; *Quar. Rev.*, liv., 215, xxxvii., 539, xxiii., 373; *Blackwood*, xv., 433, xx., 470, xxi., 377, xxiii., 191, 615, v., 523, vi., 78; *Knick.*, xvi., 589.

Importation and Exportation, the bringing of commodities from and sending them to other countries. A very large portion of the revenue of a commercial country is derived from customs duties, or from duties on commodities imported from abroad; and drawbacks being given on many, and bounties on a few, articles exported; the business of importation and exportation is subjected to various regulations which must be carefully observed by those who would avoid incurring penalties, and subjecting their property to confiscation. See articles TARIFF and UNITED STATES for the imports and exports of this country.

Impressment, the forcible taking away of seamen from their ordinary employment, and compelling them to serve, against their will, in national ships. See *Ed. Rev.*, xli., 154; *Westm. Rev.*, xx., 489; *Blackwood*, xx., 745.

Indemnity, is where one person secures another from responsibility against any particular event; thus a policy of insurance is a contract of indemnity against any particular loss. Where one person also becomes bail for another, a bond of indemnity is frequently executed; and where a bond or bill of exchange has been lost or mislaid, the acceptor or obligee would not act prudently in paying it, without being secured by a bond of indemnity.

India, or **Hindoostan**, has from the earliest ages been celebrated as one of the most highly-favored countries on the globe, and as abounding in the choicest productions both of nature and art. In ancient times, this distant region was very imperfectly known to the Greeks and other nations of the west; but they imported its most valuable produce, its diamonds, its aromatics, its silks, and its costly manufactures. The country which abounded in those expensive luxuries was naturally reputed to be the seat of immense riches, and every romantic tale of its felicity and glory was readily believed. In the middle ages an extensive commerce with India was still maintained through the ports of Egypt and the Red Sea; and its precious produce, imported into Europe by the merchants of Venice, confirmed the popular opinion of its high refinement and its vast wealth. After the discovery of a passage to India by the Cape of Good Hope, the same ideas still prevailed; and the maritime states of Europe contended with their fleets and armies for the dominion of the Asiatic seas, and for the commerce of the country. The Portuguese, and afterward the Dutch, made important conquests, and carried on an extensive trade. In later times, Great Britain and France appeared on the field as competitors for the prize of Indian commerce and dominion, and were allowed to establish factories on the coasts for the reception and the store of goods. These were gradually converted into military posts, defended by soldiers and cannon; and in due time those two powers were ranged on opposite sides in all the wars and politics of India. This contest terminated in the triumph of the British arms. France lost her pre-eminence on the continent of India, and her great rival, enlarging her powers on every side, gradually rose to greatness and dominion, and now [illegible] undisputed sway from the Himalaya Mountains to Cape Comorin. This vast extension of the British power in the East has opened the way into the interior of India. It has tended greatly to enlarge our knowledge of this ancient region; and our researches and inquiries have explored the marvelous tales of its [illegible] within the bounds of sobriety and truth. Hindoostan is the seat of industry, of commerce, and of the arts, when Europe was sunk in barbarism, the scene of many eventful revolutions, from the Mohammed invasion till its conquest by the armies of Britain, and inhabited by a people of peculiar manners, laws, institutions, and religion, still presents a wide field for interesting inquiry and speculation.

In the following account of this interesting country, we propose to describe—I. Its geography and natural features; its produce, its animals, its manufactures, and commerce; the numerous races by which it is inhabited, with their manners, religion, and policy; and the wars and political revolutions which have terminated in establishing the sway of Great Britain over nearly the whole continent of India.

I. The ancient geographers had no precise ideas of the extent of Hindoostan or India, terms which we mean to use synonymously in the following article; and they accordingly extended its frontier westward as far as Persia, and eastward to China. In after ages its limits often fluctuated with the events of war, and served only to mark out the course of conquest, with little or no attention to geographical accuracy. Yet in no part of the earth has nature pointed out, in the great features of the country, more distinct and magnificent boundaries. On the north it is separated from the elevated table-land of Thibet by the precipitous wall of the Himalaya Mountains, the highest land of the Asiatic continent; on the west the Suliman range, a continuation of the Sufeid Koh Mountains, separates it from Afghanistan and Beloochistan; its east boundary is formed by parallel offshoots from the opposite extremity of the Himalayas, and by the continuous ranges of forest-covered hills, which, skirting the Bengal district of Chittagong, stretch southward to the recently-acquired province of Pegu, and separate the British dominions from the territory of Burmah. The Indus and the Ganges discharge themselves into the ocean on the western and eastern coasts of Hindoostan, in about north latitude 24° and 22°; and to the south the country is contracted into an irregular triangle, projecting into the Indian Ocean to within eight degrees of the equator, or about 1000 miles, and on all sides inclosed by the sea. The extensive region situated within these limits is nearly comprehended between the 8th and 35th degrees of north latitude, and between the longitudes 66° and 99° east; and its length from the northern barrier of the Himalaya Mountains to Cape Comorin is about 1900, while in breadth it may be estimated at 1800 miles, though, owing to the irregularity of its figure, it does not exceed 1,484,367 English square miles.

Hindoostan is of an extremely diversified aspect, and comprehends within its bounds all the varieties of climate, of soil, and of natural scenery, from the bare and naked rock, and lofty mountain buried under eternal snows, to the low and fertile plain, scorched by the tropical sun, and the seat or luxuriant vegetation. This diversity in the aspect of the country has given rise to the following territorial divisions, namely: 1. Northern Hindoostan, which comprehends the Himalaya Mountains on the north, with their lower ranges of hills stretching southward to the plains of the Indus and the Ganges, and extending from Peshawur and Cashmere on the west, to Bootan and Assam on the east. 2. Hindoostan Proper which extends southward as far as the Nerbuddah River, where the Deccan commences, and which includes the lower provinces of Bengal, the north-western provinces, together with Oude, Malwa, or Central India, the Punjab, Guzerat, Sinde, and Cutch. 3. The Deccan, bounded on the north by the Nerbuddah River, and on the south by the Rivers Krishna and Toombudra, comprehends the larger portion of the presidency of Bombay, together with Orissa, the Nizam's dominions, and the territory of Nagpore. 4. India south of the Crishna River, comprehending the territories under the administration of the government of Madras, together with the native states of Cochin, Travancore, and the Mysore.

The Himalaya Mountains contain the sources of the great rivers which flow through the burning plains of Hindoostan. The deep valleys between the mountains are the channels through which the waters flow from the higher grounds; and, by the melting of the snow, those streams, suddenly swollen into torrents, and rushing down the declivity, work out a deep and narrow channel among the rocks, where, imprisoned as it were between steep and perpendicular rocks, they roar and foam amid precipices, or in dark and unfathomable glens, exhibiting, in the conflict of their troubled waters, all the great phenomena which belong to rivers, namely, the cataract, the rapid, the boiling eddy, and the dangerous whirlpool, and only subside into smoothness when they break out and spread over the plains. Huge rocks were seen by Dr. Gerard whirled along with frightful velocity; nothing visible but an entire sheet of foam and spray, thrown up and showered upon the surrounding rocks with loud concussion, and re-echoed from bank to bank with the noise of the loudest thunder. Across these streams are thrown rude bridges made of ropes or of wood, the usual expedient by which rivers are crossed in all mountain countries. Where the breadth of the river is small, the passage is effected by one or two fir spars laid across from rock to rock; but where the space is wider, a bridge of ropes is constructed, on the principle of the chain-bridge. In attempting the passage by one of these rude bridges, a carrier who accompanied Fraser in his journey to the sources of the Ganges unfortunately lost his footing and fell into the water. He was instantly swept down the stream to its junction with the Bhagiruttee, about 50 yards, "when his head," says the traveler, "appeared for a moment, and his load floating beside him; but the foaming current of the Baghiruttee here tumbling over large rocks with a mighty roar, seized him and hurried him along with its tremendous torrent."

Northern Hindoostan varies in its climate and in its aspect with the height of the ground. The lower ranges of mountains, though they scarcely reach the level of perpetual snows, still retain the sublime features of alpine scenery; namely, the rugged and bare mountain, the craggy rock, white, gray, red, or brown, springing up in fantastic forms above the general mass; and the deep and suddenly descending chasm, with the foul torrent foaming over its rocky bed. The luxuriant foliage is wanting which embellishes the lower hills; the rich and smiling valley is not so often seen; while the forests of dark brown fir fringing the mountains and the hollows impart a sombre and unvarying appearance to the scene. At a lower level the country improves; and though it still exhibits the mountain and the precipice, the intervening valley is clothed with verdure, and the lower hills with the most magnificent forests of large and lofty trees, the open country with roses, jasmines, and other lovely or odoriferous shrubs, and with the most luxuriant alpine plants. The valleys through which flow the head waters of the Indus and the Ganges, namely, the Sutlej, the Pabur, the Jumna, the Baghiruttee, the Alkananda, with their tributaries, exhibit all the varied and sublime scenery of this romantic country. The valley of the Sutlej is hemmed in by brown and barren mountains, steep and rocky, without the grandeur of lofty precipices or fringing wood. The hollows through which it receives its tributary streams are dark chasms, without cultivation; the heights crowned with forts, but without any neat villages surrounded with trees to relieve the adjacent desert. The banks of the Jumna, on the other hand, though rocky and wild, are wooded and green, and the sloping faces of the hills fertile and well cultivated; and even at its source, the country, however wild and picturesque, is still not nearly so dreary as the valley of the Bhagiruttee. The features of the landscape are here lofty, ragged, and inaccessible, with less of the beautiful than of the sublime and terrible. A pleasing contrast to this wild scenery is presented by the smiling valley through which the Pabur meanders, checkered as it is with pasture and crops, and the banks and the hills clothed with cultivation, villages, and wood. Such is the usual aspect of the lower valley of northern Hindoostan, the height of which is for the most part from 3000 to 6000 feet above the plains. The difference between the northern and southern exposures of this mountainous country is remarkable, not only in the formation and structure of the hills and rocks, but in the vegetation. The country on its southern face is of a brown and dusky color; the grass short and parched; the hills rough and lumpy, with rocks standing through the ground; the lower parts bare of wood; and above, the Weymouth pine, with a few stunted larches sprinkled among the rocks; while the higher parts are spread over with oak, holly, and alder, their leaves of brownish green, harmonizing with the burned appearance of the hills, and giving a sombre hue to the whole scene. On the northern exposure a rich color of dark green is diffused over the whole landscape; the rocky sides of the glens are bolder and grander; and they are clothed with noble forests of larch, silver and spruce firs, which shroud from the view the highest and steepest cliffs. "All," says Fraser, "was rich and dark; and here and there a glade opened, or a high slope extended from the base of the rock, or projected between two streams, of a bright beautiful green shining through the sombre forest." This difference between the northern and southern exposures is strongly marked all over the hills.

That strip of flat country, about 20 miles in breadth, which lies at the base of the great Himalaya range, dividing it from the plain of the Ganges, is called Terrae or Terreeana. It is covered with thick forests and low swamps, and, though fertile, it is so unhealthy that it is little cultivated. Bishop Heber graphically describes it as a long, black, level line, extending at the foot of the lowest hills; "so black and level," he adds, "that it might seem to have been drawn with ink and a ruler." This flat does not extend further north-west than through a portion of Rohilcund, where the healthy cultivated country reaches to the foot of the hills, which rise abruptly from the sandy flat beneath. These low hills are watered by streams from the higher mountains, that rise to the level of 1500 or 5000 feet, from which the lower range is frequently separated by fine valleys of some length, which are called *doon* by the natives, answering to the Scottish name of *strath*. The hills which rise beyond this lower range, to the height of about 5000 to 7000 feet, are lofty and majestic, and broken into numerous ridges, divided by deep shaggy dells. This appearance Fraser ascribes to the quality of the rock of which they are composed, which consists of a strongly indurated clay, with a mixture of siliceous matter, forming a rock exceedingly hard, though easily destructible by exposure to the air, and splitting into variously-sized fragments leaving hard marbly masses staring through the scanty soil. It may be finally remarked of this singular and interesting country, that though it appears from the plains to be divided into distinct ranges of terraces, it is really a vast collection of mountains heaped in masses one above another, without any order or plan that can be discovered, until the height of land is reached at the great Himalaya ridge which extends from beyond the sources of the Indus in a continuous chain far into China.

The following are the chief rivers of Hindoostan, with the length of their respective courses to the sea: Indus, 1700 miles; Brahmapootra, 1900; Ganges, 1500; Jumna (to its junction with the Ganges, 780), 1500; Sutlege (to the Indus, 900), 1490; Ghylum (to the Indus, 750), 1250; Gunduck (to the Ganges 450), 980. In the Deccan, and south of India, the Godavery,

850; Kistna, 700; Nerbuddah, 700; Mahanuddy, 550; Tuptee, 460; Cavery, 400. There are few coasts of such extent so destitute of islands and harbors as that of Hindoostan. With the exception of emerged sea-banks and mere rocks, Ceylon is the only island near its shores; and on the eastern coast, Masulipatam, which admits vessels of 300 tons burden, is the only harbor for large vessels between Trincomalee, in the island of Ceylon, and the Ganges, which is free from raging surf. To this inconvenience Madras, though an important British settlement, is peculiarly liable. On the western coast, the only harbors capable of admitting large vessels are Bombay and Kurachee, in Scinde; Mangalore admits no vessels drawing more than 10 feet.

Hindoostan comprehends within its bounds the opposite extremes of heat and cold. The plains are burnt up with intense heat; while winter, with every intermediate variety of temperature, prevails in the mountains. Philosophers have in vain endeavored to fix the point of perpetual congelation under different degrees of latitude. They have, indeed, framed a graduated scale of the respective heights at which, according to calculation, this point should begin at corresponding distances from the equator; but theory is here at variance with actual observation. The climate of mountainous tracts depends so much on localities, and the particular course of the winds, as to baffle all general speculation. Hence, on the Himalaya Mountains harvests of grain are found, where, according to hypothesis, the ground should be buried under deep snow; and trees are seen to flourish in the regions of perpetual winter. Captain Webb, in ascending the Himalaya range, saw around him, at the height of 11,630 feet above the level of Calcutta, rich forests of oak, pine, and rhododendra, the ground covered with vegetation as high as the knee, strawberry-beds in full flower, and currant-bushes in blossom; and in 1818, at the Niti Pass, 16,814 feet in height, philosophy was again at fault, as the ground was free of snow, though above the line of perpetual congelation, and many quadrupeds were feeding on the grassy banks of the Sutlege. It was remarked by Dr. Gerard that vegetation attained a higher level on the northern than on the southern face of the Himalaya ridge, where the extreme height of cultivation is 10,000 feet; the limit of the forest, 11,800 feet, and 12,000 feet that of bushes. On the northern side cultivation rises to the height of 11,400 feet; in other places to 13,600 feet; birch-trees to 14,000 feet; and tama-bushes, which form excellent fuel, to the height of about 17,000 feet. In northern Hindoostan, great and sudden changes of temperature occur, which is the cause of pulmonary affections. During summer, the thermometer, which is often in the morning at 32° or under it, rises to 70°, 75°, and 80°, or upward, during the day; the winters are, however, uniformly severe. In this also, as in other hilly countries, the traveler may be fainting today under a tropical sun, and shivering to-morrow amid the rigor of perpetual snows. From the banks of the Sutlege, where the thermometer frequently stands at 100° and 108°, three days' climbing will carry him into the regions of winter.

In the plains of Hindoostan, the heat during the greater part of the year is unintermitting and intense, except where it is modified by the ranges of mountains, or the table-lands toward the west. The seasons here are commonly divided into the hot, cold, and rainy. The spring and the dry season throughout the valley of the Ganges last about four months, the heat gradually increasing with the season, until, in May and June, the thermometer rises to 104° and frequently, in the interior, to 108° and 110°, when it is almost intolerable even to the natives, and still more so to Europeans, who resort to various modes of alleviation, such as the *cuscus tatty*, which is a frame of wood interwoven with twigs, between which is distributed a layer of a particular kind of sweet-scented grass. This being hung before an open window, in the quarter of the prevailing wind, and constantly moistened on the outside by a water-carrier, diffuses a refreshing coolness.

Vegetable produce.—Hindoostan comprehends all the known varieties of the vegetable tribes. The mountainous tracts of northern Hindoostan produce all the Alpine plants, and the various species of European grain, fruits, and flowers. Deep woods cover those lower ranges of mountains, in which are found the pine-tree of various species, "the tallest, straightest, and most magnificent," says Fraser (Fraser's Journal of a Tour through the Himalaya Mountains p. 436), he ever beheld, the larch, the silver, and the spruce-fir, from the bark and twigs of which resin exudes in abundance; the yew-tree, several species of oak, holly, alder, sycamore, and birch, with mulberry and chestnut-trees. Here is also found the mimosa-tree, from which is made the catechu or India-rubber: the resinous part of this fir, cut into slips, answers the common uses of the lamp. These noble forests extend over immense tracts, and would afford inexhaustible supplies of timber if they could be transported to the proper market. Fruits in great variety are also produced in this elevated region, such as apricots, peaches, and grapes, apples, pears, currants, raspberries, blackberries, and strawberries; roots, such as turnips, carrots, garlic, and onions; flowers and plants, as roses, both red and white, lilies of the valley, jesmines, butter-cups, yellow, blue, and white, cowslips, and sweet-briar, with numerous other beautiful and fragrant plants. The valleys exhibit, according to their altitude and temperature, the productions of Europe or of the tropical countries. At the height of 6000 feet appear the oak and the pine; at that of 5000 feet rattans and bamboos of enormous dimensions; in some parts the pine-apple, the orange, and the sugar-cane, grow to maturity; in others, barley, millet, and similar grains are produced. The lower part of these hills is the seat of the saul forests. The lower valleys yield rice, sown broad-cast, maize, wheat, barley, pulse of various kinds, sugar-cane, cotton, Indian madder, a large species of cardamum, besides other productions. The pastoral tribes of northern Hindoostan feed considerable flocks on the lower hills and valleys; in summer they climb the Alpine country, and browse on the herbage adjacent to the region of perpetual frost.

Rice is the great staple of agriculture throughout Hindoostan, in the plain of the Ganges as well as in southern India. It is sown at the approach of the rains, and it is gathered during the rainy season, about the end of August; the last crop is sown during the same season, and is gathered in the beginning of December. It is esteemed the best, not being equally liable with the other to decay. The diversity of soil and climate, and the several seasons of cultivation, have given rise to infinite varieties in this species of grain. When the rains fail throughout Hindoostan, which occasionally happens, the rice crops are apt to be deficient to a degree altogether unknown in the well-regulated agriculture of Europe, where the severest scarcity hardly ever rises the price of corn more than three times its usual rate. But the famines of Hindoostan leave thousands without subsistence, and fill the land with scenes of misery and death. In the great famine of 1769 it was estimated that 3,000,000 of the people perished; the air was so infected by the noxious effluvia of dead bodies that it was scarcely possible to stir abroad without perceiving it, and without hearing also the frantic cries of the victims of famine, who were seen in every stage of suffering and death; whole families expired, and villages were desolated; and when the new crop came forward in August it had no owners. Bengal has been less liable to famines since this period, but they have frequently occurred in other parts of India. Rice thrives well in the inundated

track of the Ganges, and in southern Hindoostan, especially on the low lands of the sea-coast; higher up the Ganges, wheat and barley are more generally cultivated, also in the high grounds and elevated table-lands of southern India. Other kinds of grain are cultivated, such as Indian corn; and great varieties of pulse and coarse grains, such as peas, beans, chiches, gram, vetches, and raggy, which is the most important crop raised in the dry field, and in some parts of southern India is the subsistence of all classes, in others of the poorer classes. These are important articles of cultivation, as they have each their particular season, and thrive even on poorer soils. Maize is the general produce of poor soils in hilly countries, and is commonly cultivated in the more western provinces. Millet and other grains are also cultivated, and vegetating rapidly, in every season they fill up profitably for the farmer the short intervals between the other modes of cultivation in lower Hindoostan. Sugar is everywhere cultivated, and at little expense by the Hindoo cultivator; and as the sugar of India is no longer subjected in the United Kingdom to an unequal import duty, there is reason to hope that the produce of India may compete not only with the sugars of British colonies, but those also of Cuba, Brazil, Siam, and Manilla. Though formerly unknown in Europe, sugar has been produced in India from the remotest times, and was thence transplanted into Arabia, whence it has been introduced into Europe, Africa, the West Indies, and America. It grows luxuriantly throughout all the valleys of the Ganges, and in the plains of southern India, and could be produced, with the help of European skill and capital, to meet any demand. It thrives more especially in Bahar and Benares, and in particular districts of Bengal. Opium is the peculiar and staple produce of the province of Bahar, and is also extensively cultivated in Malwah, and in other parts of Hindoostan. It is a precarious crop, producing alternately high profits and heavy losses. The liquor extracted from the poppy is collected as it exudes, and is then placed in pots, where it is dried and formed into lumps, in which process it loses from one tenth to one eighth of its weight. The opium produced in Bahar and Bengal being monopolized by the East India Company, and bought at a fixed price, is a contraband article of trade, and its cultivation is confined to certain districts. Within Bengal no one is allowed to cultivate the poppy, except for the government. In Malwah a treaty was entered into with the different rulers and chiefs, by which the monopoly was extended to that country, and all that was produced delivered to the Company, at the rate of three rupees a seer, which is two pounds. But so great was the discontent excited by this extension of the monopoly, that, at the desire of the chief, the treaties were rescinded in 1819, 1820; and the trade in opium and its cultivation is now free in that province, and everywhere throughout India, except in the Company's dominions; but as Malwah is completely surrounded by British territory, a large revenue is derived from the high duty levied on Malwah opium, in transit to Bombay for exportation to China. Malwah opium equals that of Bengal, and is brought into competition with the Company's opium in all the foreign markets, and especially in China (see appendix to the report on the East India Company's affairs, p. 15). The cotton plant has from time immemorial been one of the staple products of Hindoostan, and is indigenous from Ceylon in the south to the Himalaya Mountains. It is cultivated extensively throughout Bengal, and in the interior provinces, on the banks of the Jumna; also in the Deccan, and in southern India, whence it is imported into Bengal, and into Mirzapoor, and the district of Benares, where it is manufactured. Flax and hemp are also cultivated in several districts both in the north and in the south of India. Silk was long the exclusive product of India and China. Silk-worms are now reared principally in the district of Burdwan, and in the vicinity of the Bhagirati and the Ganges, and for about 100 miles down their streams. Four crops of mulberry-leaves are obtained in the year, the last in December. A considerable quantity of silk, of a coarse kind, is obtained from wild silk-worms, which do not feed on the mulberry, and are found in the forests of Silhet, Assam, and the Deccan. Indigo was originally a product of India; and the plant was afterward carried to South America, whence Europe was for a long time supplied with this dye. The manufacture, on which the quality of the indigo depends, was very unskillfully conducted until the year 1783. Since this period it has been so much improved by the skill and capital of Europeans that it is now a staple article of commerce; and in Bengal the value of the produce in 1854 amounted to £1,701,206. Indigo is produced generally throughout the plain of the Ganges, and in southern India, but chiefly in Bengal. Tobacco, formerly unknown in India, and introduced from America probably about the beginning of the 17th century, is now extensively cultivated in every part, chiefly however in the northern provinces, and more rarely in the south. The tobacco grown in the Mahratta territories is most esteemed, particularly that which is produced near Bilsea, a town in Malwah. Bengal does not yield good tobacco; but the Company's territories in Guzerat, being principally of a rich black soil, are considered as peculiarly suitable to its cultivation (see letter of the Secretary to the Court of Directors, to the Secretary of the India Board, 5th September, 1828). The Hindoos having been already in the habit of inhaling the smoke of hemp-leaves and other intoxicating drugs, readily adopted tobacco as a more agreeable substitute, and it soon came into general use. Their recent knowledge of it appears from their having no name for it which is not a corruption of some European term. Pepper, though of inferior consequence, is a valuable product of southern India, especially of Malabar. It is produced from a species of vine, which is made to twine around the jack-tree. It bears fruit about the third or fourth year, amounting to from three to seven pounds' weight, and yields two crops in the year. The areca-nut and betel-leaf, universally chewed by the natives, thrive in the low grounds, where water is abundant; and cardamoms, a spice in great repute. The universal and vast consumption of vegetable oils in Hindoostan, for food, or unguents, or for the lamp, is supplied by the extensive cultivation of mustard-seed, linseed, sesamum, palma, christi, besides what is procured from the cocoa-nut. The first ripen in the cold season, the sesamum during the rains, or soon afterward.

The forests in the low plains of Hindoostan, of southern India, and those which cover the western range of the Ghauts, and more sparingly the eastern Ghauts, abound in the most valuable trees, applicable to many important uses. The extensive woods in southern India supply the teak-tree, valuable for shipbuilding; and in Malabar, extensive tracts of waste land have within the last few years been converted into teak plantations by the government. Saul, sissoo, toon, and bamboo-trees abound; the last of which yield a medicine much used by the native doctors, and which sells for its weight in silver. There are many species of the palm-tree, with its luxuriant and spreading leaves, of which the produce is extremely useful. The cocoa-nut-tree is, in some provinces, an important article of culture. The kernel is used for food by the richer natives, either in the raw state, or dressed after various fashions; and it yields by far the finest oil in India, if the nut be fresh, and the oil quickly used. Extensive tracts, many miles in length, are planted with the cocoa-nut and betel-nut palms. Many other species of timber are found in the deep recesses of the woods, of which Dr. Buchanan, in his account of Mysore, gives a particular description, with the botan-

local names of the different trees, and to his work we refer; observing, generally, that the woods consist of every description of timber, black, heavy, and strong, and adapted for the beams and posts of houses; other kinds are white, hard, and durable, and adapted to all the purposes for which strong materials are required; some are beautifully grained, and take a fine polish, and are well suited for furniture, or exude resins and gums of a sweet scent, that are used in temples for incense; the wood of some kindles readily into a clear light, and is used for torches (see Journey from Madras, through Mysore, Canara, and Malabar, vol. i., p. 25). Other kinds of wood are employed for dyeing. The sandal-wood is valuable for its perfume, and for the essential oil which it yields. It requires a strong soil, and it is 12 years before it attains the proper size for being cut. The billets of wood are prepared by being buried in the dry ground for two months, when the ants eat up all the outer wood, leaving the heart, which is the sandal. The deeper the color, the higher the perfume. The best sandal-wood of Hindoostan is now in possession of the rajah of Mysore, who succeeded to a small portion of Tippoo's dominions.

Animals.—Hindoostan, from the great extent and inequality of its surface; its stupendous and snow-clad mountains, and its vast and wooded plains, lying under a burning sun, comprehends all the most interesting forms of animal life, more especially those animals of the tropical regions remarkable for ferocity or size, which have been the subjects of scientific research as well as of popular curiosity in all ages, and which find ample cover in the deep woods and jungle-covered wastes of those tracts of the country which have been desolated by tyranny or war.

However much the following statistics of the financial concerns of the British Eastern empire may be at variance with the exaggerated ideas entertained respecting it as well by a large proportion of the people of England as by foreigners, it will excite no surprise in the mind of any one who has ever reflected on the subject. It is due, indeed, to the directors, to state, that though they have occasionally acted on erroneous principles, they have always exerted themselves to enforce economy in every branch of their expenditure, and to impose and collect their revenues in the best and cheapest manner. But though they have succeeded in repressing many abuses, it would be idle to suppose that they should ever entirely succeed in rooting them out. How can it be imagined, that strangers sent to India, conscious that they are armed with all the strength of government, placed under no real responsibility, exempted from the salutary influence of public opinion, fearing no effectual exposure through the medium of the press, and anxious only to accumulate a fortune, should not occasionally abuse their authority? or that they should manage the complicated and difficult affairs of a vast empire, inhabited by a race of people of whose language, manners, and habits they are almost wholly ignorant, with that prudence, economy, and vigilance, without which it were idle to expect that any great surplus revenue should ever be realized?

India Company, the East.—The first commercial intercourse of the English with the East Indies, was a private adventure with three ships fitted out in 1591; only one of them reached India, and after a voyage of three years, the commander, Captain Lancaster, was brought home in another ship, the sailors having seized on his own; but his information gave rise to a capital mercantile voyage, and the Company's first charter, in December, 1600. Their stock then consisted of £72,000, and they fitted out four ships, and meeting with success, have continued to trade ever since. India stock sold at £500 for a share of £100, in 1683. A new Company was formed in 1698; and both were united in 1702. The India House was built in 1720, and enlarged in 1799. Board of Control instituted 1784. See EAST INDIA COMPANY.

Railroads in India.—There are several railroads going forward in different parts of India, which promise to be productive of a great increase in the trade of that country, though it is more questionable whether for some years to come they will afford a very ample income to the proprietors, for the heavy cost of the construction. One of the lines first undertaken is the East Indian, extending from a navigable part of the Ganges toward Delhi. This road is already partially opened, and the report of its operations for the first six months of the year 1856, contained a return of 432,821 passengers transported, and 38,010 tons of freight. The work from Allahabad to Cawnpore was going forward successfully at the date of this report, but it had been since retarded beyond the expectations that had been entertained, by the difficulty in carrying forward the materials. The earth-work was nearly completed at that time. Allahabad is near the junction of the Jumna with the Ganges, 600 or 700 miles above Calcutta. The work was to be extended from Cawnpore to Delhi under the officers of the Company, without contractors. We have lately seen an account of the total loss of a costly locomotive, destined for this road, by being sunk in the Ganges. A portion of the Great Indian Peninsular road, beginning at Bombay, has also been opened, and a location for the extension of the line has been recently made, from Nagpore to Jubbulpore, where it will unite with the East Indian, thereby forming an entire line of railand communication following, in part, the course of the Ganges, from Bombay to Calcutta.

The Scinde Railway, another important work designed for opening the trade of the great valley of the Indus, has already made considerable progress. It will extend from Hyderabad to the port of Kurrachee, a distance of 110 miles, it being rendered necessary on account of the difficult navigation of the mouths of that river. As an appendage to this work, a more extensive one called the Punjaub Railway has been lately projected, and a prospectus of it is now advertised in the London papers. It is to be 230 miles in length, beginning at Mooltan on the Indus 470 miles above Hyderabad, and running thence to Lahore and Umritsir, through a country of remarkable equality of surface. It is to form, in connection with the Scinde Railroad, and an improved system of steam navigation on the intermediate portion of the River Scinde or Indus, between Hyderabad and Mooltan, a connected line of communication from Kurrachee, which is destined to be the principal port for western India, to Lahore the capital of the Punjaub. From Lahore it will be further extended 36 miles to Umritsir, the commercial capital of a very large and productive trading district, making in all, by railroad and steam navigation, 810 miles. For the Punjaub railroad alone it is proposed to raise a capital of £2,500,000, of which two fifths of the shares are reserved to the shareholders in the Scinde Company, in the proportion of two shares of the former to one held of the latter. The prospectus advertised in the London papers contains the following description of the region of country through which this line of communication will pass, extending nearly the whole length of the valley of the Indus:

"A railway from Mooltan to Lahore and Umritsir will not only afford an outlet to the impeded traffic of Punjaub and neighboring territories, but would of necessity greatly enhance the importance and value of the line from Kurrachee to Hyderabad Scinde and the Punjaub (including the States under control) cover an area of 130,000 square miles, with a population of nearly 25,000,000. The flower of the European and native army occupies these provinces, and numbers 70,000 men, more than 15,000 of whom are Europeans."

The following further description of this region of country, is from the *Calcutta Englishman:*

"Lahore, situated on the Ravee, is the capital of the Punjaub and the seat of its political administration. The town is very extensive, and carries on a brisk internal trade. The civil station of Anarkullee, and the large military station of Meean Meer, are likewise attached to it. Umritsir, the commercial capital of the Punjaub, distant 36 miles, is at least equal, if not superior, to Delhi in population and wealth. The intervening country is level, and without even a nullah of any size, and an intercourse of so great an extent is maintained between them, that the road is literally thronged day and night with every description of wheeled vehicles, horses, camels, etc., and foot passengers; in short, more resembling the street of a town than a mere communication between two cities so far apart. Umritsir is the grand entrepôt for the commerce of the cis-Sutlej States—the rich and mountainous regions eastward to Kote Kangra—the horses, fruits, and woolens of Cabul and Bokhara, the shawls and other produce of Cashmere, Yarkhand, and the mountainous country toward the north-east—in fact, of the whole Punjaub and the countries encircling it, are here concentrated. Mooltan is a large town and military station on the Sutlej or Gharra, so termed after its conjunction with the Beas. It is quickly becoming an important emporium, for it is the connecting link to the trade of northern with south-western India, or rather Bombay and Europe. Kurrachee, situated at the mouth of the Indus, is fast advancing into prosperity and into notice as a sea-port; it will probably soon be known as the first in the empire, being superior to Calcutta, Madras, or even Bombay."

The distance between Calcutta and Bombay in a direct line is a little more than a thousand miles. By the indirect route which must be pursued by the Peninsular line, to find one adapted either to steam navigation or to the construction of a railroad—that is, by following the course of the Ganges, so far as the route is eligible, and from the point thus reached, by selecting the line best adapted to the construction of a railroad, taking into consideration the comparative evenness of surface, and the production, resources and population of the country to be traversed, the distance will not be less than 1600 miles, exclusive of the minor sinuosities of the route, which can not be accurately estimated until the line is definitively laid down. It is already ascertained that easterly from Nagpore, coal of an excellent quality for the making of coke at a low cost is found in abundance. Extensive as these railway routes are, it will be perceived that they bear no comparison, in point of extravagance, and hopelessness of execution, with the vast routes projected between the Mississippi and the Pacific in various directions, traversing regions uninhabited and uninhabitable, and passing over mountain ranges, which almost bid defiance to the power of the locomotive. In one case, the projected routes pass through countries already covered by an immense population, and affording valuable products adapted to become the objects of a profitable trade, and consequently capable of contributing to the support of the line throughout every part of it. In the other case, nearly the whole country to be traversed, by the most favored of the projected routes, is destitute not only of the means of affording even a partial support to the route when constructed and put in operation, but in a great measure incapable of furnishing even the timber necessary for its construction and repairs, the fuel necessary for locomotives, or provisions for the men who must be employed in running them.

The great lever, however, by which England will, in a greater ratio than ever, increase her power in the East, will be *the railroad system.* And in this policy rapid strides and important results have been already accomplished. As early as August, 1855, it was stated in the House of Commons that the East India Company had sanctioned the construction of one road 590 miles in length, to be completed in the year 1856, with a guaranty of 5 per cent. dividend by the Company. In other words, private capitalists having subscribed the required capital, the Company therefore gave a guaranty of 5 per cent. income, upon a capital of $20,000,000. Other roads have been projected, and are now in course of construction, with an aggregate line of over 3000 miles. From one extremity of British India to the other, the magnetic telegraph is in full operation. The intelligence carried from England to Bombay, was, as far back as April, 1855, transmitted to Calcutta by telegraph. The three grand trunk railroads are:

	Length, miles.
1. From Calcutta to Peshawur	1,423
2. " Calcutta to Bombay	1,002
3. " Bombay to Agra	734
Total	3,159

4000 miles of telegraph wire are now set up in India, and in constant use. In the construction of this immense line of wire, 70 large rivers were crossed. In one case the cable over a river measures 15,840 feet, and in another over two miles in length.

In order to carry out the views of the British government and of the East India Company especially, a standing army of 289,000 men (European and native), is maintained. It requires little foresight to show that it is in India (at present) and in China (hereafter) that the British power will for many years be developed to an extraordinary degree. With the aid of capital, now abundant in India, and with the further aid of railroads, manufacturing machinery, steamships and steamboats, the magnetic telegraph, and cheap labor, the commercial and political power of Great Britain will soon overshadow all others. The subject furnishes points of inquiry and consideration, which should be duly weighed by the statesman, the merchant, and the philanthropist.

We have all looked with astonishment upon the vast commercial changes that have transpired in the world within the past 20 or 30 years. Science, genius, enterprise, and capital are yet at work transforming, modifying, creating. America has witnessed great transformations within that period. It would seem that Asia is likely to undergo equally important changes, through the means of the British government and its thousand agents. There is no reason why the United States, availing themselves of the newly-enlarged field of operations in the East, should not find a profitable market for their manufactures, and further employment for their shipping.

Metals.—From the wild and inaccessible nature of the country in many parts of Hindoostan, its metallic products are but imperfectly known. It is found to produce all the metallic ores, as well as diamonds and precious stones, and other mineral substances. Gold is generally found in the sands of the mountain streams, and is extracted by washing. The head streams of the Ganges bring along with them particles of gold, which in Rohilcund are collected by a particular caste of people. It is found in various parts of Mysore, particularly nine miles east of Boodicotta, where the country is impregnated with it; also in the Nielgherry Mountains; and in great quantities in all that tract of country that lies west; and in the adjoining Koondanad and Ghaut Mountains. This whole tract, including the mountains, and comprising a space of 2000 miles, contains gold. Unrefined gold is regularly exchanged by many of the mountain tribes of the north for the produce of the plains. It is estimated that about 1000 men are continually employed in collecting this precious metal. Copper is produced in the province of Delhi, which the natives collect either on the surface or with very slight excavations; also in the Rajpoot principality of Jeypoor in the province of Ajmeer,

and in other parts of the same province, there are copper mines, and in the Carnatic, about 40 miles north-east from Cuddapah. The metal is found in layers about two inches, and occasionally two feet thick; they are coated with ochre, and are in general flat, as if they had undergone compression. The ore exists in nearly a metallic state, without any admixture of sulphur, arsenic, or any other substance that requires separation. The best ores yield 50, and the worst 6 per cent. of pure metal. The granitic mountains of Nepaul and northern Hindoostan contain much iron, lead, and copper, with a little gold in the river courses. The copper mines are quite superficial, the ore being dug from trenches entirely open above, so that the work is laid aside in the rainy season. Iron ore is found in many parts of Hindoostan. There are mines of iron in Lahore and in Ajmeer. In Orissa many of the natives are iron smelters, and most of the iron sent from Balasore to Calcutta is produced in this district. In Bejapoor the working of iron furnishes employment to many of the inhabitants, who extract it by a very rude process. At Porto Novo, in the British district of South Arcot, in the presidency of Madras, extensive iron-works have been erected by a joint-stock association called the East India Iron Company; to whom also belong the iron foundery works at Beypoor, in Malabar, on the opposite coast of the peninsula. The ore smelted at these establishments is found in great abundance and of excellent quality in their respective vicinities. The Mysore country abounds in iron. There are also forges for manufacturing steel, which are minutely described by Dr. Buchanan in his account of the Mysore country.* In Coimbatore and in Malabar the iron mines give employment to a considerable number of persons. The process and machinery for extracting the iron are very imperfect. Iron mines were formerly worked in the district of Boglipoor, but they have been long neglected. Rich iron ores are abundant in Cutch. The ore is gathered in baskets from the surface of the earth, and yields 22 per cent. of iron; and the steel which is made from this ore is the finest in the world. Lead is produced in various parts; also antimony, plumbago, sulphur, alum; and there are inexhaustible supplies of coal, though the mines are not worked with any effect. Coal is raised in Burdwan in considerable quantities and of a fine quality. Saltpetre is produced in Bengal and Bahar, though its manufacture does not go beyond the eastern limits of the latter province. It might, however, be attended with success in Bengal, where the tendency of the soil to its production is very great; and there might be manufactories of salt in almost every part of the country, but they are restricted by the Company's monopoly. In the Mysore plains the wells are salt, and the ground is frequently covered with a saline efflorescence. A range of hills, extending from the Indus to the Hydaspes, yields the famous rock-salt of Lahore, of which they are almost entirely composed.† Many quarries are found in the hilly districts, which produce fine stone, that is cut by the inhabitants into pillars, flags, statues, and used for other ornamental purposes. Dr. Buchanan saw several fine-grained specimens of granite, also a black stone used in the construction of Hyder's monument, and a beautiful green stone which takes on a marble polish. The hills of Guzerat contain marbles exhibiting many colors and qualities; and marbles are seen in the various tombs and monuments of ancient art still remaining in the country, finely ground and of different colors, white and yellow with red veins, and green clouded with yellow and black, of which the quarries have never been discovered.

Diamonds are no longer found in the celebrated mines of Golconda, but they are still gathered in the bed of the Krishna, and in the province of Gundwana. Near the confluence of the Hebe and the Mahanuddy, 13 miles beyond the town of Sumbhulpoor, after the rains, the natives find diamonds in the red earth washed down from the mountains. The matrix containing them is a clay which has a red appearance like burned bricks. There are diamond mines in the south of India, about 7 miles north-east of Cudhapah, on both banks of the Pennar River. These mines have been worked for several hundred years, and occasionally yield large diamonds, which are either found in the alluvial soil, or are recognized by their sparkling among the gravel after it is washed and spread out, or in rocks of the latest formation. The grounds are leased on behalf of the government to private speculators at a moderate rent. In Bundelcund, also, the table-land which surrounds Pannah, wherever the ground is of a gravelly nature, produces diamonds. The soil is from two to eight cubits deep, and diamonds are found intermixed with small pebbles, though not adhering to them. A very few diamonds in the course of a year repay the labors of the workmen. The diamonds found are mostly under the value of 500 rupees, or £50, though some reach the value of from 500 to 1000 rupees. They are weighed and sold to the merchants residing at Pannah, and are by them carried to all parts of the country. The workmen are allowed three fourtos, two thirds, or a half the diamonds they find, according to their size, and any man is at liberty to dig; but the business is less prosperous than formerly, and the workmen are poor. The diamond grounds are strictly guarded against the contraband trader, and the least delinquency draws down the prompt and barbarous vengeance of the rajah. These are supposed to be the diamond mines mentioned by Ptolemy. Their annual produce was estimated, in the reign of Achar, at eight lacs of rupees. In 1750 it had fallen off to one half; the amount, comparatively insignificant, is divided between the rajahs of Pennah, Banda, and Chirkaree.

The other varieties of precious stones found in India are the ruby from the table-land of Mysore, the beryl, the topaz, the chrysolite, garnet, cat's eye, etc. There are cornelian mines in the province of Guzerat, in the wildest parts of the jungle. They consist of numerous shafts worked down perpendicularly, about four feet wide, and several of them to the depth of fifty feet. Some of them extend at the bottom in a horizontal direction, though not to any distance; the heavy rains cause the banks to fall in, so that new openings are always made at the end of the rainy season. The nodules weigh from a few ounces to two or even three pounds, and lie close to each other in abundance, not in distinct strata, but scattered about. They are of various colors when they are found—of a blackish olive, like common dark flints; others of a lighter hue, with a slight milky tinge: though it is quite uncertain what appearance they will assume after the process of turning. They are carried to Cambay, where they are cut, polished, and formed into the fine ornaments for which that city is so highly celebrated. Beautiful jaspers and agates are also found in this district, and in other parts of India.

Manufactures.—In every country the nature and quality of the manufactures must depend on the condition of the consumers, and among the despotic States of Asia these naturally consist of two classes. 1st, of the great and powerful, in whose hands the property of the country is accumulated, and who are comparatively few; and, 2dly, of the mass of the people, oppressed under native rule, and sunk in poverty. Such, accordingly, has been from time immemorial the state of Hindoostan; and its manufactures, which are necessarily adapted to the use of these two classes, have always consisted of exquisitely fine fabrics of cotton,

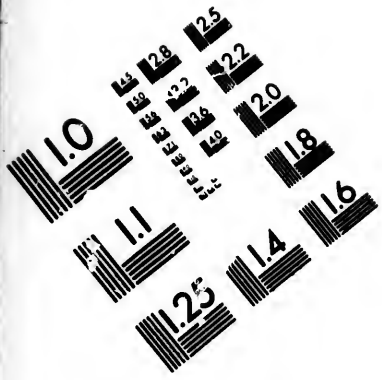
* *Journey from Madras*, vol. i., pp. 170, 180; vol. ii., p. 139.

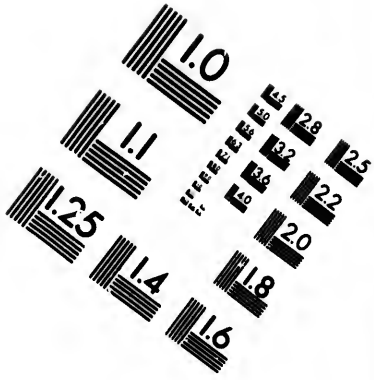
† See the observations of Lieutenant Bornes on the commercial relations of the Punjaub.

for the use of the imperial court or of the rajahs and princes of the country, or of coarse stuffs for the common people; and to such perfection have they attained, that the modern art of Europe, with all the aid of its wonderful machinery, has never yet rivaled in beauty the product of the Indian loom. Yet the Hindoo workman has no advantage from capital, from machinery, or from the division of labor; he prepares the raw material with his own skillful hand, in all the various stages of its manufacture; his loom and all his implements are of the rudest construction; and yet, by patience, perseverance, and unusual skill, he produces an article which is prized all over the world for its inimitable richness and beauty, as well as for its durability. The native artisan distinguishes at once these fine fabrics from all counterfeits, by the eye, the touch, and the smell. In the district of Dacca are chiefly fabricated plain muslins, variously denominated, according to the closeness or fineness of the texture; also flowered, striped, or checkered muslins, denominated from their patterns; and the thinnest sort of muslins, for the manufacture of which the province is much celebrated, as is Coromandel in southern India for its calicoes and other piece-goods, of the most brilliant and durable colors. Other kinds more closely woven are fabricated in the western parts of Bengal; and another sort, of a more rigid texture, in every district. Coarse muslins, in the shape of turbans, handkerchiefs, etc., are made in all parts of Hindoostan; and in its northern provinces, plain and flowered muslins, but of inferior quality to the beautiful fabrics of Dacca. In Moultan are manufactured silks which possess a strength of texture and brilliancy of hue that have secured for them a preference in the Indian market. They are woven into shawls and scarfs, which are in great demand, and which the Indian manufacturer in other parts has never been able to rival, either in color or durability. Carpets are also manufactured in this province, though they do not equal those of Persia. Various articles of calico are made, which still retain their Indian denominations, as khasahs, which are manufactured north and east of the Ganges; cloths of nearly the same quality are made near Tanda in Oude. Near Luckipoor, on the western frontier of Benares, in the neighborhood of Allahabad, and also in the province of Bahar baftaes are manufactured; sanaes in Orissa, and in the district of Midnapoor; and a similar cloth under the same denomination in the eastern parts of the province of Benares; woven silk and taffeta, both plain and flowered, in the neighborhood of Moorshedabad; tissues, brocades, and ornamented gauzes, at Benares; plain gauzes for domestic use in the west and south of Bengal; and at Mouida, Boligpoor, and at several towns in the district of Burdwan, mixed goods of silk and cotton. Sackcloth is manufactured from packthread in many places, especially in the northern provinces, for the clothing of the mountaineers. Cotton is made into canvas in the neighborhood of Chittagong, Patna, and other places; and blankets everywhere for common use. A coarse cotton cloth dyed red with cheap materials is very generally used, and is chiefly manufactured in the country between the Jumna and the Ganges. Fine and coarse calicoes are dyed with permanent and fugitive colors for common use in the province of Benares, the city of Patna, and the neighborhood of Calcutta. This art appears to have had its origin in India, and to have been there perfected to a degree never surpassed by Europeans. Dimities of various kinds, and damask linen, are made at Dacca, Patna, Tanda, and various other places.

In Mysore, near Bangalore, silk is manufactured into different articles of dress, into strong cloths, which men, women, or boys wrap round them, and into turban pieces. These cloths are of a rich fabric, variously figured, and the pattern, if ordered, is elegantly wrought in gold thread. Turbans are made of cotton and silk. Thin white muslins with silk borders ornamented with gold and silver, and plain green muslins, with silk borders, are manufactured for female dresses; also striped and checkered muslins; cloth like the khasahs of Bengal, for wrapping round the shoulders of men, sometimes with striped or silver borders. Handkerchiefs with red borders, a coarse thick white cotton cloth with red borders, and turbans ornamented with silver and gold thread at the ends, are also made in this district; and the dyeing of cotton cloth, cotton thread, and silk, is carried on by a set of people who act as tailors, cloth-printers, and dyers. Tanneries are established, and manufactories of oil. At Chennapattana there are manufactories of glass-ware and of glass rings, universally worn as bracelets by the women of the Deccan. Steel wire is also made here for the strings of musical instruments. At Vizigapatam, in the northern Circars, the inhabitants are very expert in carving curious little boxes of ivory and bone. Throughout southern India manufactories of cotton silk are generally established. In the northern Circars the principal part of the East India Company's investment of piece-goods was formerly provided. This country, extending about 500 miles along the coast of Coromandel, from the River Kistnah to the borders of Cuttack, has from very early times been the seat of an important and extensive manufacture of cotton piece-goods, of which the description of calicoes known as Madras long cloths and salempores are the chief, and, with Masulipatam dyed handkerchiefs, and other kinds of goods for the African and West India trade, have, until lately, been in great demand. Masulipatam goods have, however, for some years been entirely superseded by the manufactures of Manchester and Glasgow; and in all appearance the northern Circars will at no distant period of time be deprived of the manufactures of white calicoes also. A great change has indeed been brought about in the manufactures of India by the introduction of British goods, which, in many branches, have supplanted those of the country; the poor Hindoo, notwithstanding the low rate at which he works, is thus undersold in his own market by the manufacturers of Manchester and Glasgow; and this competition of British goods nearly ruined the native manufacturers of India, deprived the workmen of employment, and reduced them to great distress; so that the directors remark concerning the Indian trade, that "it exhibits the picture of a commercial revolution, productive of much present suffering to numerous classes in India, and hardly to be paralleled in the history of commerce."

Commerce.—Hindoostan, from its great extent, and the diversity of its soil and climate, supplies the materials of an extensive commerce. Its internal trade is great, while its rare and precious products are exported to the remotest regions of the world. An extensive commerce takes place between Bengal and the other maritime districts, and the western provinces of Hindoostan, consisting in the exportation of grain from the corn districts, in exchange for salt, a great staple; for betel-nut, sugar, raw silk, silk and piece goods. From the native States of central India Malwah opium is sent down to Bombay for exportation to China. In Bengal the culture and manufacture of opium are conducted under a State monopoly, and the produce is transmitted to Calcutta, where it is disposed of by public sale. The holy city of Benares is a great mart of trade, in which are exchanged the shawls of the north for the diamonds of the south, and for the muslins of Dacca and the eastern provinces: and it has besides, very considerable silk, cotton, and fine woolen manufactures of its own, the produce of which is exchanged for other commodities. Through the northern provinces of Delhi and Lahore a great trade is carried on between the hill countries and the plains. The inconsiderable town of Hurdwar or Hardiwara, being a celebrated place of Hindoo pilgrimage, is a





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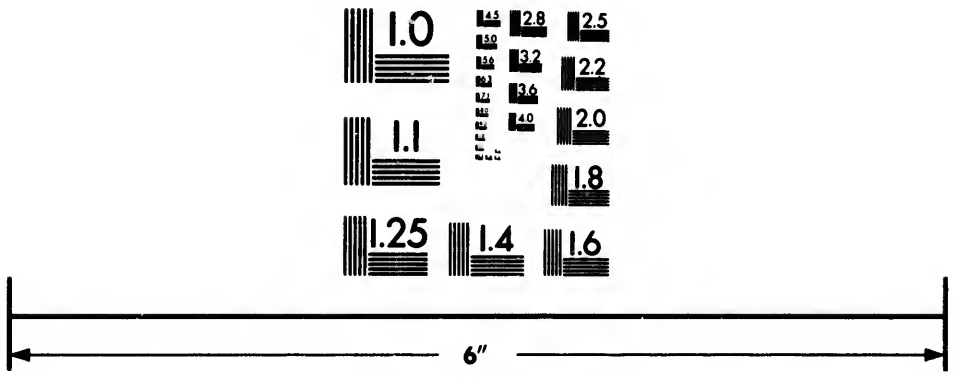

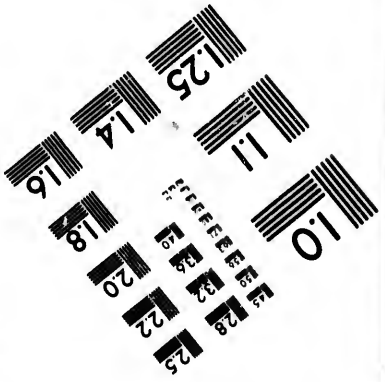

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great commercial emporium, to which multitudes resort for the purposes of trade, as well as [illegible]pletely. This great annual concourse takes place in the spring, when the produce of the northern and western countries is exchanged for the manufactures of the lower provinces. The principal articles brought here for sale from Cabul, Candahar, Moultan, and the Punjaub, are horses, mules, camels; some of these from Balk, Bokhara, and the countries on the northern side of the Hindoo Coosh Mountains; a particular species of tobacco, antimony, assafœtida, dried fruits, such as apricots, figs, prunes, raisins, almonds, pistachio nuts, and pomegranates; from Cashmere and Amritsir, shawls, dootas, and pattoos; spotted turbans, looking-glasses, toys, with various manufactures in brass and ivory from Jeypoor; shields from Rohilcund, Lucknow, and Silhet; bows and arrows from Moultan and the Doab; rock-salt from Lahore; baftas and piece-goods from Rahn, a large city in the Punjaub. The country of Marwar also supplies many camels, and a species of flannel called loo. In exchange are brought from the British provinces Kharwa muslins, mushroo or sarsnet, and woolen cloths, the coarsest of which only find a market. In this fair, Dutch and Venetian coins are current; and some toys of European manufacture were seen exposed to sale by Mr. Webb. The northern merchants by whom it is frequented assemble at Amritsir in caravans about the end of February, and pursue their route in an easterly direction through the territories of the protected Seikh powers. Still further to the north and west the provinces of Lahore and Moultan export to the countries to the west of the Indus, sugar, rice, indigo, wheat, and white cotton cloths, hides, etc. The imports are swords, horses, fruit, lead, and spices; and into all these countries European goods are imported from the lower provinces. The southern provinces export to Bengal, pepper, betel-nut, sandal-wood, and cardamums, teak timber, etc.; while they receive in return salt and rice, cotton cloths, and articles of European manufacture.

A very considerable coasting trade is carried on between the different parts of Hindoostan. Bengal exports to Madras and the coast of Coromandel, grains of different descriptions, sugar, saltpetre, molasses, ginger, long pepper, oil, silk wrought and unwrought, muslins, spirits, and provisions. The returns are salt, red wood, fine long cloth, izarees, and chintzes. From the Malabar coast the imports are sandal-wood, coir rope, pepper, cardamums; and the returns are generally in the annual supplies which Bombay receives from Bengal. From Bombay are brought teak timber, elephant's teeth, lac, etc.

From the reputed wealth and precious produce of India foreign nations were always desirous to participate in its trade. Prior to Alexander's expedition to the East it was scarcely known to the Greeks, nor is it certain that they had ever seen its productions. But we know that these were brought to Rome, especially silk, which so allured the vanity of the Roman ladies that it sold for its weight in gold. Other valuable commodities of India, such as calicoes, muslins, aromatics, ivory, diamonds, pearls, and other gems, precious aromatics, the pepper of Malabar, turtle shell, etc., and some dry sugar and indigo, were also imported into Alexandria, the chief emporium of eastern commerce, and were naturally attracted to the great metropolis of the ancient world. This trade was carried on from Myos Hormos, the chief port on the Red Sea, whence, after the conquest of Egypt by the Romans, the annual fleets, sometimes of 120 vessels, set sail, and, under the propitious influence of the south-west monsoon, boldly stretched across the Indian Ocean for the western coast of Hindoostan, which they reached in about 40 days; and afterward extended their voyage round Cape Comorin to the coast of Coromandel and the mouths of the Ganges. The high price received for these eastern luxuries in Rome encouraged the merchants to provide larger vessels, and a band of archers to defend them against the pirates, who then, and until very lately that they were extirpated by British ships of war, infested the western shores of India. The commodities of the East being landed at Myos Hormos, were carried on camels to Coptos, the seat of a flourishing trade, and thence by sea to the Nile, whence they reached Alexandria by water carriage, and were re-shipped to the different ports on the Mediterranean. The produce of India was also brought to Europe by other routes—namely, by the way of Palmyra, then a flourishing city, and thence to Rome and other western countries, through the ports of Syria: or across the Himalaya Mountains to the Oxus, thence to the Caspian, and afterward to the Black Sea, and finally to its ulterior markets in Europe. But though there was a demand in Europe for the produce of India, there was no demand in India for the produce of Europe; and bullion was the only article that could be sent out in exchange. The annual drain of gold from Rome and its provinces for Indian goods was estimated by Pliny at 500 sestertia, equal to about £400,000. In the convulsions which followed the decline of the Roman empire, the trade of the East was successively engrossed by the Persians and Arabians. The latter, in the year 636, built the city of Bassora, which soon grew into a great commercial mart; and to this place, and to Ormus, long celebrated for its vast riches and its trade, the spiceries and merchandise of India were brought, and distributed through the various ports of the Mediterranean. After the expulsion of the crusaders from Syria and Egypt, Alexandria again became the chief entrepôt of eastern produce, whence it was carried to Italy by the Venetians and others, and distributed throughout Europe. But the discovery of a passage to India in 1495 by the Cape of Good Hope changed the course of this trade, which now entirely left the Italians, and was engrossed by the Portuguese for nearly a century without any molestation from European rivals. At length the Dutch and the English became their competitors, and established joint-stock companies, with the exclusive privilege of the eastern trade. But their anticipations of profit were not realized. The great distance of Europe from India, and the want of an equivalent for its produce, precluded any extensive intercourse; the trade accordingly bore a very small proportion to the trade of the country; and being besides cramped by monopolies, it never attained its natural growth. In 1773 the average exports of Britain to India amounted to about £489,000 a year; in 1793, on a like average, to about a million a year; and it does not appear that a greater trade was carried on with India from any other part of Europe. The commerce of nations is limited to the surplus produce which they can mutually exchange; and, from the great distance between India and Europe, this surplus produce was long confined to those few articles which, containing a great value in small bulk, could bear the expense of a long voyage. The demand was also altogether on the side of Europe, and its trade with India consisted merely in the purchase, with bullion, of a small quantity of precious articles for the consumption of the rich. The progressive improvment of industry in Europe, together with the entire opening of the trade to India and China since the year 1834, has occasioned not only a greater exportation of British goods, but a change also in the nature of the trade. It is not so much the produce of the labor as of the climate and soil of India, which no ingenuity can supply, that is in demand in Britain; and, accordingly, while the import of Indian manufactures has fallen off, that of the raw material, and many varieties of vegetable produce, has increased. Thus the importation of cotton piece-goods—namely, white calicoes and muslins—which amounted in 1814 to 1,266,608 pieces had de-

creased in 1853 to 428,294 pieces; while within the same period the importation of cotton wool had increased from 2,850,818 lbs. to 181,869,994 lbs., and the exportation of cotton manufactures in a similar ratio. Even the incomparable muslins of Dacca are in less demand since the introduction of British goods. Thus, in the progress of the trade between India and Europe, the former country, notwithstanding its boasted wealth and superior industry, has taken the lowest place, exporting her rude produce for the manufactures of the richer country. This is the nature of the trade carried on between Britain and America and the countries in the north of Europe, and is a sure index to the respective progress of the two countries in wealth and improvement. Those countries which can not manufacture their own rude produce send it to Britain, which abounds in capital, and still more in art and industry; and both countries are benefited, the poorer country exchanging its surplus produce for a supply of manufactures of which it is in want, and the richer country the produce of its overflowing capital for a supply of the raw material which its own soil does not afford. This is now the relative condition of Great Britain and India. The former having outstripped the latter country in industry and wealth, sends out a supply of cheaper goods than the native workman can furnish; and so prodigious have been the improvements in machinery, that the raw material of cotton is imported from India, and being manufactured in Britain, is re-exported and sold at a cheaper rate than it can be made at home, though loaded with the expense of a double voyage across half the globe; and thus it has become an important staple in the trade of Great Britain with the East. A notion was long and successfully propagated by the advocates of the monopoly, that the Hindoos, from their poverty and their simple habits, would never become extensive consumers of European goods, and that the demand was amply supplied by the exports of the East India Company. Evidence to this effect was given before the committee of the House of Commons in 1810 by Sir Thomas Munro and other eminent servants of the Company. But such statements have been completely refuted by the rapidly increasing exportation of British goods to India since the complete opening of the trade in 1834. This will appear from the following table, showing the exports from Hindoostan for a period of 18 years:

VALUE OF EXPORTS FROM GREAT BRITAIN TO HINDOOSTAN, EXCLUSIVE OF BULLION.

Years.	Exports.	Years.	Exports.
1835.....	£3,185,410	1844.....	£7,952,179
1836.....	3,830,504	1845.....	6,477,143
1837.....	3,210,663	1846.....	6,420,404
1838.....	3,505,980	1847.....	5,790,928
1839.....	4,289,489	1848.....	5,512,110
1840.....	4,014,389	1849.....	7,578,930
1841.....	5,489,564	1850.....	8,327,992
1842.....	5,354,901	1851.....	9,226,729
1843.....	6,347,349	1852.....	7,235,078

IMPORTS OF HINDOOSTAN.

YEARS.	MERCHANDISE.						TREASURE.			
	Bengal.	Madras.	Bombay.	TOTAL. United Kingdom.	TOTAL. Other countries.	Total merchandise.	Bengal.	Madras.	Bombay.	Total.
	£	£	£	£	£	£	£	£	£	£
1834—35	1,999,180	503,290	1,758,685	2,682,221	1,578,884	4,261,106	646,224	153,115	1,093,683	1,893,023
1839—40	3,341,591	693,807	1,806,837	4,289,489	1,541,747	5,831,236	1,926,786	112,406	606,071	1,045,264
1844—45	5,933,999	1,046,894	3,778,181	7,952,179	2,801,886	10,754,065	1,551,365	188,561	1,982,545	3,752,471
1849—50	5,268,170	908,004	4,110,718	7,578,930	2,720,907	10,299,838	1,214,965	121,497	2,060,505	3,396,807
1850—51	6,115,201	897,823	4,545,764	8,327,992	3,230,795	11,558,788	1,189,484	260,110	2,362,214	3,811,808
1851—52	7,037,406	906,435	4,246,647	9,226,729	3,013,760	12,240,490	2,308,470	297,898	2,448,190	5,052,559
1852—53	4,993,674	840,581	4,236,655	7,235,078	2,835,783	10,070,861	3,303,937	576,854	2,860,586	6,831,377

EXPORTS OF HINDOOSTAN.

YEARS.	MERCHANDISE.						TREASURE.			
	Bengal.	Madras.	Bombay.	TOTAL. United Kingdom.	TOTAL. Other countries.	Total merchandise.	Bengal.	Madras.	Bombay.	Total.
	£	£	£	£	£	£	£	£	£	£
1834—35	4,092,048	886,107	3,015,263	3,056,978	4,936,447	7,993,420	66,554	106,877	21,308	194,740
1839—40	6,800,925	1,228,467	2,889,352	5,909,951	4,892,793	10,862,745	200,017	127,446	143,059	470,523
1844—45	9,822,197	1,641,462	5,126,552	7,240,819	9,849,592	16,590,212	396,543	65,053	645,248	1,106,840
1849—50	10,148,088	1,272,884	5,891,876	7,026,470	10,285,328	17,312,299	854,205	72,687	544,400	971,244
1850—51	9,997,527	1,566,976	6,599,845	8,104,016	10,060,188	18,164,149	276,829	104,140	160,313	541,289
1851—52	10,428,970	1,658,808	7,796,474	7,188,883	12,740,517	19,879,258	250,588	215,768	452,732	919,088
1852—53	10,788,554	2,121,618	7,604,464	8,428,295	12,086,338	20,464,633	476,875	86,892	542,472	1,055,229

The goods exported, as they are enumerated by Mr. Rickards in his valuable work on India, consist of all the staple manufactures of Britain. "Woolens and cottons," he mentions, "of every variety and value; manufactured silks; hardware of all descriptions; iron, copper, lead, tin, and spelta, in large quantities; marine and military stores; machinery for various uses; glass-ware of the metal specimens, down to articles of the commonest use; china-ware or porcelain, the same; jewelry of all sorts; gold and silver plate and ornaments; clocks, watches, furniture, carriages, harness, haberdashery, hosiery, stationery, books; in short, every article of luxury, comfort, or convenience, which British industry can produce." According also to all the most correct observers of Indian manners, the taste for European fashions, luxuries, and comforts, is rapidly extending among the Hindoos. Bishop Heber, in his interesting journal of a tour through India, strongly confirms this fact. "The wealthy natives," he observes, "now all affect to have their houses decorated with Corinthian pillars, and filled with English furniture; they drive the best horses and the most dashing carriages in Calcutta. Many of them speak English fluently, and are tolerably read in English literature; and the children of one of our friends I saw one day dressed in jackets and trowsers, with round hats, shoes, and stockings." At Benares he found "English hardware, swords, shields, and spears, from Lucknow and Monghyr; and those European luxuries and elegancies, which are daily becoming more popular in India, circulate from hence through Bundelcund, Gorruckpoor, Nepaul, and other tracts which are removed from the main artery of the Ganges." At Nusseerabad, in the province of Berar, the same traveler mentions that "English cotton cloths, both white and printed, are to be met with commonly in wear among the people of the country, and may, I learn to my surprise, be bought best and cheapest, as well as all kinds of hardware, crockery, writing desks, etc., at Pallee, a large town and celebrated mart in Marwar, on the edge of the desert, several days' journey west of Joudpoor, where, till very lately, no European was ever known to have penetrated." In short, it appears that British and other European manufactures, from their quality and cheapness, are everywhere in demand. They penetrate into the remotest districts of Asia; and now that the termination of the East India Company's

monopoly, which took place in 1834, has laid open Hindoostan to the capital and enterprise of Britain, experience proves that an equal demand for them may be anticipated in that country. The preceding tables contain a view of the extent and value of the trade of India to all parts of the world. The excess of exports over imports arises from the necessity of making annual remittances to Great Britain to defray the interest of debt, and to meet the expenditure of the home government.

ACCOUNT OF THE PRINCIPAL IMPORTS INTO GREAT BRITAIN FROM INDIA IN THREE YEARS, FROM 1851-52 TO 1852-53.

Articles.	Quantities.		Value in sterling.	
	1851—2.	1852—3.	1851—2.	1852—3.
			£	£
Coffee.....lbs.	6,894,495	4,944,845	93,429	61,029
Cotton, raw..... "	81,104,228	131,960,994	1,171,280	3,525,136
Grain.....cwt.	624,167	1,157,985	105,385	177,459
Indigo.....lbs	8,198,236	6,778,160	1,444,705	1,186,887
Ivory.....cwt.	5,149	8,875	85,949	51,078
Lac..... "	30,448	52,548	58,041	104,043
Pepper.....lbs.	1,918,978	1,206,945	16,385	10,479
Piece-goods				
Cotton.....pieces	208,728	428,550	71,071	136,622
Silk..... "	408,804	502,947	224,830	267,855
Shawls..... "	7,498	11,211	113,848	179,410
Rum.....gallons	224,463	171,984	10,814	8,447
Silk, raw.....lbs.	1,437,638	1,881,308	680,587	664,454
Saltpetre.....cwt.	254,570	389,444	190,848	258,787
Sugar..... "	1,506,051	1,856,680	1,589,158	1,603,821
Wool.....lbs.	7,056,718	12,000,999	100,606	171,169
Miscellaneous.....	....	....	1,111,108	1,070,069
Total merchandise.	....	....	7,188,889	8,428,295
" treasure.....	....	....	7,051	128,919
Grand total.....	....	....	7,145,940	8,557,214

ACCOUNT OF THE QUANTITIES AND DECLARED VALUE OF THE PRINCIPAL ARTICLES EXPORTED FROM GREAT BRITAIN TO INDIA IN THREE YEARS, FROM 1851-52 TO 1852-53.

Articles.	Quantities.		Value in sterling.	
	1851—52.	1852—53.	1851—52.	1852—53.
			£	£
Apparel.....	....	....	250,981	256,218
Books, stationery, etc..	....	....	118,712	118,601
Cotton, twist and yarn.	....	....	1,878,949	1,102,500
" piece-goods....	....	....	4,662,086	3,578,349
Fruits.....	....	....	943	121
Jewelry.....	....	....	56,384	28,564
Malt liquor.....	....	....	146,947	151,870
Machinery.....	....	....	11,541	28,126
Metals, manufactured..	....	....	230,105	182,944
" Copper....cwt.	44,004	24,798	216,842	114,631
" Iron..... "	688,722	838,795	267,432	140,065
" Lead..... "	....	....	27,929	17,992
" Spelter.... "	58,758	9,070	55,738	8,748
" Tin..... "	....	....	6,955	1,668
Salt.....	1,158,968	837,946	552,366	399,302
Silken goods.....	....	....	81,405	88,804
Spices.....	....	....	....	....
Spirits.....gallons	96,863	68,526	49,648	33,482
Tea.....	....	....	....	....
Tobacco, segars.....	....	....	913	534
Timber.....	....	....	1,086	1,252
Woolen goods.....	....	....	200,495	114,794
Wines.....gallons	255,125	175,101	200,658	144,761
Miscellaneous.....	....	....	764,204	781,817
Total merchandise...	....	....	9,226,729	7,235,078
" treasure.....	....	....	1,041,015	2,340,947
Grand total.....	....	....	10,267,744	9,576,025

The following table shows the several territories which have been annexed, or have been proposed to be annexed, to the Indian possessions of Great Britain since the year 1848:

Territories annexed.	Date of annexation.	Reasons.	Area.	Population.	Gross Revenue.	Nett Revenue.
			Square miles.		Rupees.	Rupees.
Jeitpore (Bundelcund).....	1849	Failure of heirs.....	165	16,000	64,180	Not known.
Sambulpore (south-west frontier Bengal).....	1849	Failure of heirs.....	4,693	274,000	98,000	Not known.
Baghat (Cis-Sutlej Hill States)	1850	Failure of heirs.....	80	8,420	7,000	Not known.
Part of Sikkim (north-eastern India).....	1850	Insult to the British Government in seizing the person of its representative.....	1,670	61,766	32,037	
Oodeypore (south-west frontier of Bengal).....	1852	Failure of heirs.....	2,306	133,000	16,480	Not known
Pegu.....	1852	Conquered from the Burmese during the last war.....	20,000	1,000,000	Not known.	Not known
Territory resumed from Meer Ali Morad, one of the Ameers of Scinde.....	1852	Forgery of a treaty, whereby he acquired certain districts which belonged to the British Government.....	5,412	Not known.	483,658	261,043
County of Tularam Sonaputtee in northern Cachar.....	1853	Misconduct and breach of engagement with the British Government...	2,160	5,015	1,208	1,017
Nagpore Territory (Ihansi)...	1854	Failure of heirs.....	86,000	4,000,000	4,000,000	Not known.
Buudelcund.....	1854	Failure of heirs.....	2,582	200,000	618,889	Not known.
Boodawal (Candeish).....	1855	Failure of heirs.....	....	910	2,727	Not known

The cases in which annexation has been proposed by the government in India, are—Kerowlee (Rajpootana), in 1852, 1800 square miles, having a revenue of 511,402 rupees; Adjy ghur (Bundelcund), in 1855, 340 square miles, 45,000 inhabitants, and a revenue of 175,000 rupees; Inchulkurunjie (Colapore), in 1856, 800 square miles, 43,547 inhabitants, with a revenue of 15,000 rupees; Tanjore Fort and ground adjacent in 1856. See *Annals of British Legislation*, by LEONE LEVI, July, 1856; *Ency. Brit.*, eighth edition; *Com. Rel. U. S.*, 1856-7.

Revenues of British India 1849-1855.—An abstract statement of the revenues and charges of India, including the charges disbursed in England, for the years 1849-50 to 1854-55 (the last year partly estimated), showing the surplus or deficit in each year converted into sterling money, at the established rate of two shillings the sicca rupee:

Years.	Gross Revenue.	Allowances in accordance with treaties.	Net Revenues.	Charges of collection.	Civil, judicial, military, and marine charges.	Total charges in India.	Charges disbursed in England.	Total charges.	Surplus.	Deficit.
	£	£	£	£	£	£	£	£	£	£
1849—50	25,698,046	2,309,207	23,388,839	3,242,286	17,041,820	20,284,565	2,750,987	23,034,502	354,337	....
1850—51	25,833,150	2,582,083	23,801,067	3,860,015	16,808,000	20,168,015	2,717,186	22,885,201	415,866	....
1851—52	26,092,718	2,447,565	23,645,153	3,817,657	16,789,854	20,607,511	2,506,377	23,113,888	531,265	....
1852—53	26,221,038	2,265,608	23,455,435	4,104,156	17,229,534	21,333,690	2,697,488	24,031,178	424,257	....
1853—54	26,675,197	2,426,181	23,949,066	4,243,936	18,486,988	22,730,804	3,262,289	25,993,183	....	2,044,117
1854—55	26,651,071	2,412,593	24,241,478	4,507,466	19,258,875	23,766,841	3,018,847	26,785,188	....	2,543,710

The British possessions in India are intermixed with the dominions of various native governments, with which political relations, varying in nature and degree, are maintained. The following table exhibits the relative area and population of the presidencies of Bengal, Madras, and Bombay, and those also of the native States of Hindoostan, and also giving the area and population of the separate provinces of the presidencies.

AREA AND POPULATION OF THE BRITISH PRESIDENCIES AND THE NATIVE STATES OF INDIA.

British Presidencies.	Divisions.	Area in square miles.	Population.
Bengal	Lower Provinces	119,083	37,262,163
	Saugur and Nerbudda Territories	15,388	1,929,587
	Jalonn	1,878	176,297
	British Mhairwarrah	282	87,715
	Umballah, Loodianah, and Territory lately belonging to Seikh chiefs	4,559	2,311,969
	North-eastern frontier, including Assam, etc.	29,900	1,180,985
	Arracan	15,164	321,522
	South-west frontier, including Sumbalpore, Chota Nagpore, etc.	80,589	2,627,456
	Nagpore or Berar	70,432	4,650,000
	The Punjaub and Kooloo Territory	78,447	9,153,209
	Tenasserim Provinces	29,15[illegible]	115,431
	Jhansi	2,382	200,000
	The Sunderbunds, etc.	6,500	Unknown.
	North-western Provinces, including Delhi, Agra, Banares, etc.	72,052	30,271,885
	Butty Territory, Dayrah Dhoon, Kumaon, Gurhwal, etc.	18,599	600,881
	Total	496,118	90,889,050
Madras	Regulation Provinces	116,245	19,847,305
	Non-Regulation Districts	19,441	2,454,392
	Total	135,692	22,301,697
Bombay	Regulation Provinces	57,723	9,015,584
	Non-Regulation Districts	62,342	2,093,583
	Total	120,065	11,109,067
The eastern settlements of Singapore, Prince of Wales' Isl'd. and Malacca		1,575	202,540
Native States within the Presidency of Bengal	Oude, Hyderabad, Bhopal, Bhurtpore, Scindias, and Holkar's Dominions, etc.	503,554	38,259,862
Do. Presidency of Madras	Cochin, Mysore, Travancore, etc.	51,802	4,752,975
Do. Presidency of Bombay	Guzerat, Cutch, Colapore, etc.	60,575	4,460,370
Foreign European possessions	French (Pondicherry, etc.)	188	171,217
	Portuguese (Goa)	1,066	313,262

ABSTRACT OF THE FOREGOING.

		Area in square miles.	Population.
British Possessions	Bengal	496,118	90,889,050
	Madras	135,692	22,301,697
	Bombay	120,065	11,109,067
	Eastn. Settlements	1,575	202,540
Native States	Bengal	503,554	38,259,862
	Madras	51,802	4,752,975
	Bombay	60,575	4,460,370
Foreign European States	French	188	171,217
	Portuguese	1,066	313,262
Total of	India	1,370,635	172,410,040

Notwithstanding the ravages committed by incessant wars and revolutions, as well as by famine and pestilence, their usual concomitants, India has from the earliest times been a densely-peopled country. In different states of society, the law of the increase of mankind will vary according to their relative circumstances and position; and the same, or nearly the same, principle will be found to apply to those classes who are placed in the opposite extremities of the scale. Among the people who are possessed of affluence, or the means of commanding the necessaries and comforts of life, the exercise of moral restraint is unnecessary; among those who are reduced to a mere physical subsistence, without the possibility, and consequently without the desire, of improving their condition, it will be disregarded; and hence the same results will follow from causes in their own nature diametrically opposite. But in India the great mass of the population have for ages been placed in a situation which excludes all idea of improvement; and religion has lent its powerful aid to obstruct the operation of those natural causes which, in other countries, have served to ameliorate the condition of the people. It may, however, be permitted to hope, that though India always has been, it will not always be, what it now is; that the extension of commerce, under the protection of a vigorous and impartial government, will awaken new ideas in the minds of the people; that security to person and property will give a strong stimulus to industry; that the habitual contact with a higher and more rational form of civilization will serve to mitigate their prejudices, and, in time, to destroy the influence of a debasing superstition; and that, in proportion as their wants are multiplied, their efforts to ameliorate their condition will be increased.

Calcutta is the principal city of the province of Bengal, the capital of the British dominions in India, and, with the exception, perhaps, of Canton, the greatest emporium to the eastward of the Cape of Good Hope. Its citadel is in latitude 22° 34′ 49″ N., longitude 88° 27′ 16″ E. It is about 100 miles from the sea, being situated on the eastern bank of the western branch of the Ganges, denominated by Europeans the Hooghly River, which is the only arm of the Ganges navigable to any considerable distance by large ships. At high water, the river opposite to the town is about a mile in breadth; but, during the ebb, the side opposite to Calcutta, exposes a long range of dry sand-banks. Owing to the length and intricacy of the navigation from the sea, it can not be undertaken without a pilot; so that, even if it did not exceed our limits, it would be useless to attempt any description of it in this place. The principal merchants and traders consist of British and other Europeans, Portuguese, born in India, Armenians, Jews, Persians, from the coast of the Persian Gulf, commonly called Parsees, Moguls, Mohammedans of Hindoostan, and Hindoos; the latter usually either of the Brahminical or mercantile castes, and natives of Bengal. The native Portuguese and Armenian merchants have of late greatly declined in wealth and importance. On the other hand, the Persian merchants have increased in numbers and wealth, several of them being worth £250,000 sterling. The large fortunes of the Hindoo merchants have been much broken down of late years by litigation in the courts, and naturally through the law of equal coparcenary among brothers. To counterbalance this, there has been, since the opening of the free trade in 1814, a vast augmentation of the number of inferior merchants, worth from £20,000 to £50,000 sterling. There are but few Hindoo merchants at present whose wealth exceeds £200,000 sterling. See CALCUTTA.

The sale of opium the last five years at Calcutta alone stand thus:

	Chests sold.	Proceeds realized by sale. Rupees.
1849—50	35,383	35,492,079
18 0—51	84,400	82,250,339
1852	88,501	87,245,135
1853	89,463	88,848,083
1854	48,319	36,727,584

The price paid to the cultivator is about 240 rupees a chest, the rupee being worth 46 to 50 cents.

This revenue from opium amounts to one seventh of the total income of the empire. Of the £4,000,000 which it represents, £1,000,000 in round numbers is produced by a duty levied in Bombay, and £3,000,000 by the monthly sale of opium in Calcutta. For some years past the average production in Bengal has been 36,000 chests, and the average price of each chest 1050 rupees, or 300 per cent. advance. Two or three years ago, however, the government removed certain restrictions on cultivation. Any body might grow it, to any extent he pleased, though he must still sell it at a

fixed price, settled beforehand, and never altered to the opium agent. The profit on this price is so great that the peasants will cultivate it wherever it will grow. The result was an increase of production, which increased the sales to abont 56,000 chests. Opium fell: the chests which had brought 1050 rupees sold for 630 rupees, and the difference in quantity no longer compensates for the difference in price. The taste of opium, like the taste of tobacco, never leaves its votaries.

ABSTRACT VIEW OF THE EXTERNAL COMMERCE OF BENGAL.

Countries.	IMPORTS, 1851—52.			EXPORTS, 1851—52.		
	Merchandise.	Treasure.	Total.	Merchandise.	Treasure.	Total.
	Rupees.	Rupees.	Rupees.	Rupees.	Rupees.	Rupees.
Great Britain	5,59,79,792	91,74,544	6,51,53,336	4,78,20,145	78,053	4,78,98,198
France	9,89,681	4,28,850	13,68,881	48,07,481	....	48,07,481
North America	9,99,658	2,21,090	12,21,748	76,84,224	....	76,84,224
Madras Coast	9,24,333	18,06,558	27,32,891	12,52,690	1,47,924	14,00,614
Ceylon	80,681	1,80,225	1,60,906	1,50,240	57,100	2,07,340
Maldives and Laccadives	1,36,292	....	1,36,292	60,632	....	60,632
Malabar Coast	17,75,800	8,47,880	21,23,180	29,71,501	....	29,71,501
Arabian and Persian Gulfs	7,29,205	1,80,722	9,09,927	12,51,597	....	12,51,597
Singapore	14,69,491	16,25,031	30,94,462	44,04,137	540	44,04,677
Penang and Malacca	6,12,029	1,34,681	7,47,260	5,44,759	7,148	5,51,907
China	16,00,846	89,12,898	1,05,13,244	3,22,17,277	....	3,22,17,277
New Holland	12,66,255	16,452	12,82,707	8,16,544	....	8,16,544
Java and Sumatra	37,152	2,497	39,649	68,971	....	68,971
Pegu	5,34,963	3,51,063	8,86,026	14,43,883	15,96,174	30,40,057
Mauritius	24,929	8,61,998	8,84,816	15,95,297	56,370	16,51,667
Bourbon	20,056	7,38,905	7,58,963	6,06,865	....	6,06,865
Cape and St. Helena	35,675	35,850	71,525	2,68,585	2,500	2,71,085
Hamburg	1,49,014	....	1,49,014	2,27,950	....	2,27,950
Cadiz	1,18,996	....	1,18,996	....	....	....
Amsterdam	1,568	....	1,568	....	....	....
Trieste	....	....	....	83,063	....	83,063
Genoa	35,956	....	35,956	4,21,838	....	4,21,838
Other places	96,602	....	96,602	2,66,278	....	2,66,278
Total, Company's rupees	6,75,14,750	2,49,63,184	9,24,77,934	10,84,68,897	19,45,809	11,04,09,706

The other principal ports are—Bombay, a sea-port on the western coast of British India, lat 18° 56′ N., long. 72° 57′ E. It is situated at the south-easterly extremity of a small island of same name, separated from the main land by an arm of the sea, forming, with the contiguous islands of Colabah, Salsette, Butchers' and Curaigah, one of the best harbors in India. The entrance is nearly three miles wide, and has a depth of from 35 to 40 feet.

Madras is the second British Indian presidency, and principal port on the western coast of the Bay of Bengal. It is without port or harbor, lying close to an open roadstead, and the shore having a constant surf. A rapid current runs along the coast, and typhoons are common. Large ships anchor about two miles from shore, in the roads, in from 40 to 60 feet of water, and lighters are used to load and unload freight.

Singapore, a British settlement on an island of the same name, at the eastern extremity of Malacca, lat. 1° 17′ 22″ N., long. 103° 51′ 45″ E.

United States and the East Indies.—The commercial intercourse of the United States with the territories of the East India Company is regulated by the different local governments thereof, under the supreme control and approval of the Governor-General of India in council. The regulations prescribed by these authorities are not of a permanent character, being liable to modifications and changes whenever, in their opinion, such become necessary. To present, however, the true basis upon which this intercourse rests, it will be necessary to refer briefly to the treaty stipulations subsisting between the governments of the United States and Great Britain; premising, that prior to the convention of London, signed on the 3d of July, 1815, between the United States and Great Britain, the commercial intercourse of the former with the East India possessions was regulated, as was that of other foreign nations, by a general clause in the Company's charter, providing that "vessels of countries in amity with Great Britain may import into, and export from, the British possessions in India, such goods and commodities as may be specified in rules to be prescribed by the East India Company; provided that such rules shall not be inconsistent with any treaty now [then] made, or which may be made between Great Britain and any foreign State in amity with her, or with any act of Parliament for regulating the affairs of India." By the convention above referred to, and the subsequent convention of October, 1818, continuing the former, it was stipulated:

1st. That vessels of the United States shall be admitted and hospitably received at the principal settlements of the British dominions in the East Indies, viz.: Calcutta, Madras, Bombay, and Prince of Wales' Island; and the citizens of the United States may freely trade between the said settlements and the United States, in all articles of which the importation and exportation, respectively, to and from the said territories, shall not be entirely prohibited; and, 2d, it was provided, that the citizens of the United States shall pay for their vessels, when admitted, no higher or other duty or charges than shall be payable on the vessels of the most favored European nation. And they shall pay no higher or other duties or charges on the importation or exportation of the cargoes of said vessels than shall be payable on the same article when imported or exported in the vessels of the most favored nation; and, 3d, it was expressly agreed, that the vessels of the United States shall not carry any article from the said settlements to any port or place, except to some port or place in the United States of America, where the same shall be unladen.

This convention is still in force, and regulates the commercial intercourse of the United States with the East India possessions, except as to paragraph 3, which has been superseded by the repeal of the British navigation laws in 1849; the effect of which has been to open the ports of Great Britain, and of all her colonial possessions abroad, to "goods of any sort, in a ship of any country, from any part of the world." By an act of the imperial Parliament, entitled 13 Victoria, chap. xxix., secs. 3, 4, 5, 6, the Governor-General of the East India possessions was clothed with full powers to admit, whenever he should deem it advisable so to do, to the coasting trade in the East Indies, the vessels of all foreign nations. This privilege is now enjoyed by every flag. With these two exceptions, the convention of 1818 is still in full force, and constitutes the only guaranty which the United States possesses of equal privileges with the most favored nation in its intercourse and commerce with the East India possessions. Notwithstanding the express stipulations contained in the treaty above referred to, that the East India Company should prescribe no regulations "inconsistent with any treaty now made, or which may be made, by Great Britain, with any nation in amity

with her," it has, on more than one occasion, been represented to the Department of State that the officers of this Company do not consider themselves bound by the commercial treaties which exist between the United States and England." The dispatch from which the foregoing extract is taken further says, that "the speedy settlement of this question is deemed of paramount importance to the commercial interests of the United States." No case, however, having been presented to the Department, beyond the naked assertion of the *quasi* independent sovereignty by the officers of the East India Company, the necessity has not yet arisen for an examination of the grounds upon which this claim is based. As the question may, however, hereafter embarrass the commercial relations of the United States with this portion of her Britannic majesty's possessions, it has been deemed proper to present the facts in relation to it, which have come to the knowledge of the Department. See *Commercial Relations U. S.*

COMMERCE OF THE UNITED STATES WITH THE BRITISH EAST INDIES, FROM OCTOBER 1, 1820, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage Cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1821.....	$89,089	$1,984,190	$1,966,279	$1,580,799	$1,884,949	....	3,027	....
1822.....	67,979	1,968,865	2,036,844	3,279,217	1,980,376	....	3,347	....
1823.....	10,042	307,738	318,380	3,265,961	283,052	....	895	....
1824.....	84,954	927,716	962,070	441,867	782,986	....	2,920	....
1825.....	206,480	784,629	991,079	1,756,484	665,528	....	4,124	....
1826.....	24,226	418,042	442,268	2,510,606	354,557	....	2,030	....
1827.....	32,717	1,018,733	1,051,450	560,056	872,188	....	2,430	....
1828.....	54,199	795,682	849,881	1,542,786	650,080	....	3,441	....
1829.....	69,070	477,629	546,699	1,229,569	297,801	....	3,050	....
1830.....	93,731	553,126	646,857	1,373,297	160,641	$500	4,029	....
Total....	$625,457	$9,185,850	$9,811,807	$17,492,502	$7,881,048	$500	29,293	....
Sept. 30, 1831.....	$132,442	$675,990	$807,889	$1,544,278	$436,027	$83	6,481	....
1832.....	189,213	339,285	528,453	2,598,938	212,886	11,000	5,916	....
1833.....	184,156	188,843	324,999	1,382,059	80,910	2,700	6,735	....
1834.....	199,602	206,941	406,543	2,293,012	147,825	872	5,655	....
1835.....	364,417	389,641	754,058	1,697,893	529,128	....	10,889	....
1836.....	289,315	435,461	724,776	2,954,476	351,025	....	10,520	....
1837.....	120,591	82,967	208,558	3,041,842	18,850	1,290	3,487	....
1838.....	320,505	258,402	578,907	675,531	279,021	....	8,334	....
1839.....	240,845	337,597	584,442	2,185,152	391,725	....	10,557	....
1840.....	280,404	351,791	632,195	1,952,461	315,007	1,597	5,742	....
Total....	$2,279,495	$3,266,268	$5,545,763	$20,665,637	$2,758,699	$17,541	78,816	....
Sept. 30, 1841.....	$532,834	$430,867	$963,201	$1,286,641	$378,850	$40	12,647	....
1842.....	399,979	288,825	688,804	1,530,804	202,560	2,951	9,079	1,129
9 mos. 1843.....	237,576	140,186	377,712	689,777	87,889	....	5,415	....
June 30, 1844.....	338,413	337,553	675,966	892,792	274,107	50	10,479	....
1845.....	297,331	134,067	431,398	1,276,584	76,168	....	10,814	....
1846.....	270,600	99,772	370,372	1,361,345	73,920	1,479	10,979	706
1847.....	237,783	135,454	373,237	1,646,457	100,132	2,300	12,294	....
1848.....	510,284	156,715	666,999	2,069,632	56,398	....	15,854	642
1849.....	393,962	76,562	469,524	2,036,254	249	....	21,020	997
1850.....	502,613	156,846	659,459	2,683,016	35,400	....	29,389	2,138
Total....	$3,659,375	$1,951,797	$5,611,672	$15,414,812	$1,285,823	$6,820	136,970	4,942
June 30, 1851.....	$512,906	$175,484	$688,390	$3,836,835	$80,571	....	49,216	2,964
1852.....	565,188	39,860	604,498	4,225,041	550	....	52,763	7,780
1853.....	503,856	64,542	567,398	3,581,720	45,727	....	50,461	6,809
1854.....	567,193	69,219	636,412	5,378,321	29,721	....	45,812	585
1855.....	714,119	198,144	912,263	5,457,378	65,424	....	80,729	4,742
1856.....	691,993	75,631	767,629	7,005,911	30,700	....	68,255	9,483

The whole number of arrivals in the United States from the East Indies during the year 1856 were 226. In 1855, 168. At Boston, 133; New York, 82; Salem, 7; Philadelphia, 2; Providence, 1; Savannah, 1.

At Boston, in 1856, 133. In 1855, 100. From Calcutta, 77; Manilla, 22; Cape Town, 9; Singapore, 4; Padang, 4; Penang, 2; Batavia, 2; Mauritius viâ London, 1; Foo Chow Fow, 2; Whampoa, 1; Hong Kong viâ New York, 1; Padang viâ New York, 1; Singapore viâ Rotterdam, 1; Canton, 1; Canton viâ London, 1; Sumatra, 1; Shanghae viâ New York, 1; Calcutta viâ London, 1.

At New York, in 1856, 82 (of which 50 belonged to Boston and ports east of New York). In 1855, 59. From Manilla, 15; Shanghae, 14; Singapore, 12; Foo Chow Fow, 9; Calcutta, 9; Hong Kong, 6; Whampoa, 5; Penang, 5; Canton, 4; Calcutta viâ London, 1; Foo Chow Fow viâ Havana, 1; Swatow viâ Havana, 1.

At Salem, in 1856, 7. In 1855, 6. From Zanzibar, 5; Penang, 1; Manilla, 1.

At Philadelphia, in 1856, 2. In 1855, 4. From Calcutta, 1; Calcutta viâ London, 1.

At Providence, 1 from Zanzibar.

At Savannah, 1 from Calcutta viâ Liverpool.

Clearances.—The whole number of clearances in the United States for the East Indies were 161. In 1855, 172. At Boston, 96; New York, 40; Salem, 8; New Orleans, 6; Providence, 3; Philadelphia, 2; Baltimore, 2; Mobile, 2; Portland, 1; Newburyport, 1.

At Boston, in 1856, 96. In 1855, 75. For Calcutta, 28; Batavia, 10; Cape Town, 14; Manilla, 6; Bombay, 5; Hong Kong, 4; Calcutta viâ Buenos Ayres; 5; Madras and Calcutta, 3; Akyab, 3; Madras, 3; Sumatra, 2; Singapore, 4; Calcutta viâ London, 2, Calcutta viâ Liverpool, 1; Zanzibar viâ Providence, 1; Pedang, 1; Columbo, 1; Whampoa, 1.

At New York, in 1856, 40 (of which 24 traded from Boston and ports east of New York). In 1855, 50. For Hong Kong, 9; Calcutta, 5; Shanghae, 4; Cape Town, 3; Canton, 3; Batavia, 2; Calcutta, viâ Bue nos Ayres, 3; Sumatra, 2; Bombay, 2; Mauritius, 1; Singapore, 1; Anjier, 1; Akyab, 1; Siam, 1; Padang, 1.

At Salem, in 1856, 9. In 1855, 8. For Zanzibar, 7; Batavia, 1; Penang, 1.

At New Orleans, 6. Last year, 24. For Calcutta viâ Liverpool, 5; Bombay viâ Liverpool, 1.

At Providence, 3 for Zanzibar. Last year, 1.

At Philadelphia, 2. Last year, 4. For Calcutta, 1; Manilla, 1.

At Baltimore, 2 for Capo Town. Last year, 3.

At Mobile, 2 for Calcutta. Last year, 0.

At Newburyport, 1 for Calcutta. Last year, 0.

At Portland, 1 for Calcutta viâ Buenos Ayres. Last year, 1. See *Annals Brit. Leg.*, July, 1856, p. 25, "Territories Annexed."

The British East India possessions embrace an almost boundless extent of territory, extending from the Himalaya range of mountains on the north to the ocean, including nearly the whole of the peninsula of Hindoostan, the island of Ceylon, and that portion of Burmah lying between 20° of north latitude and the Bay of Bengal. These vast possessions are supposed to contain a population of 152,000,000 of souls. The East India Company's possessions comprise the several presidencies of, 1st, the Bengal presidency; 2d, the Bombay presidency; 3d, the Madras presidency; 4th, the Agra presidency; and the several dependencies of each of these presidencies.

Bengal.—The commerce of the United States with the East Indies is principally confined to the presidencies of Bengal and Bombay, and to a few of their dependencies. The leading exports from the East India possessions to the United States are wool, oil-seeds, hides, medicinal drugs, sandal-woods, gums, spices, horns, indigo, ivory, coir, saltpetre. The principal exports from the United States to the East Indies are, tobacco, naval stores, provisions, ice, and miscellaneous merchandise, copper, pitch, tar, rosin, pine-boards, and spars. Number of American vessels entered the port of Calcutta in 1852, 65; tonnage, 34,849. Number of vessels cleared from Calcutta in the same year, 101; tonnage, 59,340. In 1853, 109 vessels from the United States entered this port. See CALCUTTA, BENGAL, and GREAT BRITAIN.

Imports from Calcutta, 1851–1853, $9,676,072; value of exports during the same period, $1,490,399; apparent balance against the United States, $8,185,673. This heavy balance apparently against the United States is accounted for by the large discriminating duties on all its manufactures, in favor of similar merchandise imported from the mother country. American vessels usually enter the ports of Calcutta and Bengal in ballast, for the purpose of taking in a homeward cargo.

Bombay.—Exports from Bombay the same as from Calcutta. The same description of merchandise is imported from the United States. The following market prices at Bombay will show that the articles specified might enter advantageously into American exports, not only to that port, but to the other ports in the East Indies: Copper sheathing sells at 55 rupees, or $27 25 per cwt.; duty, 10 per cent; annual imports, 400 tons. Copper bolts sell at 50 rupees, or $25 per cwt., duty, 10 per cent.; annual imports, 700 tons. Pitch, 4 rupees = $1 60 per barrel; annual imports, 1000 barrels; duty 10 per cent. Tar, 4 rupees = $2 per barrel; annual imports, 620 barrels; duty, 10 per cent. Tonnage duty in Bombay, 1-16 rupee, or nearly 3 cents per ton. Light-house dues on ships from 15-20 rupees = from $7 50 to $10, according to the nature of the cargo and time of the year. The rupee is valued by Pope at 46 cents: consular returns from Bombay value it at 50 cents.

Pilotage is regulated by the season, and is as follows:

Vessels of		From Sept. to June.		From June to Sept.	
Tons.	Tons.	Rupees.	Dollars.	Rupees.	Dollars.
100—	300.....	50 =	25 00	75 =	37 25
300—	400.....	55 =	27 25	80 =	40 00
400—	500.....	60 =	30 00	85 =	42 25
500—	600.....	65 =	32 25	90 =	45 00
600—	700.....	70 =	35 00	95 =	47 25
700—	800.....	75 =	37 25	100 =	50 00
800—	900.....	80 =	40 00	105 =	52 25
900—	1,000.....	85 =	42 25	110 =	55 00
1,000—	1,100.....	120 =	60 00	145 =	72 25
1,100—	1,200.....	130 =	65 00	155 =	77 25
1,200—	1,300.....	140 =	70 00	165 =	82 25
1,300—	1,400.....	150 =	75 00	175 =	87 25
1,400—	1,500.....	160 =	80 00	185 =	92 25
1,500—	1,600.....	170 =	85 00	195 =	97 25

The above rates are regulated by the local government of the Company's possessions, and the pilots are regularly licensed. See articles BOMBAY and EAST INDIA COMPANY.

The following table exhibits the trade of the United States with the East Indies generally:

Exports to East Indies:	1853.	1854.
Domestic manufactures.....	$508,856	$567,198
Foreign "	63,542	69,219
Total.....	567,398	636,417
Imports from.....	8,581,726	5,878,321
Excess of imports over exports.	8,014,328	4,741,909

For Commerce, etc., of East India, see *Ed. Rev.*, xlviii., 312, 336, lxxii., 181, lxx., 157 (MACAULAY), xxix., 335; *Chr. Exam.*, xlviii. (E. PEABODY); *Westm. Rev.*, ii. 326; *For. Quar.*, xxiii., 93 ("British Usurpation"), xxxv., 382, xxxvi., 306.

Indian Ocean, *Indicum Mare*, a vast oceanic basin, separated from the Pacific on the east by the Asiatic Archipelago and Australia, bounded on the south by a line drawn from the Cape of Good Hope to Bass' Strait, divided from the Atlantic by Africa on the west, and inclosed by the countries of Asia on the north. It communicates with the Chinese Sea by the Strait of Malacca, Sunda Strait, and the Strait of Flores. Principal inlets, the Bay of Bengal, the Sea of Oman, the Persian Gulf, and the Red Sea. Chief straits, the Channel of Mozambique, and Palk's Strait. The most important islands are Madagascar, Mauritius, Bourbon, the Comoro Islands, Seychelles, and Socotra, belonging to Africa; the Laccadives, Maldives, Ceylon, the Andaman and Nicobar Islands, to Asia. Its principal affluents are, in Asia, the Salwen, Irrawadi, Brahmaputra, Ganges, Godavery, Kistna, Nerbudda, Indus, and the Shat-el-Arab, formed by the junction of the Tigris and Euphrates; in Africa, the Zambeze. The chief sea-ports are, Calcutta and Bombay in India; Malacca, in the Asiatic Archipelago; Aden, Mocha, and Muscat, in Arabia; Zanzibar, etc., in Africa. Steam-packets are established between the principal ports. The monsoons, or periodical winds, prevail in the north part of the ocean, blowing from the south-west between April and October, and south-east from October to April. Tempests are general at the periods of change, and between lat. 5° and 40° S. violent hurricanes frequently occur.

Indiana, one of the United States of North America, is bounded east by the State of Ohio, south by the River Ohio, which separates it from Kentucky, west by Illinois, from which it is partly separated by the Wabash River, and north by Michigan and Lake Michigan. It lies between 37° 51′ and 40° 46′ N. lat., and 85° 49′ and 88° 2′ W. long. Extreme length from north to south, 276 miles; greatest breadth, 175 miles. Area, 33,809 square miles.

Indiana may be generally characterized as a great plain, inclining toward the south-west. A range of hills extends along the Ohio from the mouth of the Great Miami to Blue River, and the shore of Lake Michigan is lined by large sandy hills, which rise to a height of 200 feet. In some other parts are to be found "knobs," but these are seldom of great extent or elevation. The surface of the country naturally divides itself into several extensive river valleys. The valley of the Ohio, comprising an area of about 5500 square miles, is a limestone tract, and was originally covered with forests. About one third of it is rugged and broken, so as to be unfit for cultivation. The White River Valley, extending through the centre of the State, from the Wabash to the Ohio, contains about 9000 square miles. This district is almost uniformly level, and richly wooded, except in the west, where there are some ranges of low rugged hills, and several patches of prairie ground. The soil is of the richest kind. The Wabash Valley is much larger than the others, and contains upward of 12,000 square miles. The eastern portion equals the White River Valley in fertility, but the other parts are not so productive. The northern part of the State, watered by the St. Joseph and the Kankakee Rivers, is somewhat more

swampy than the Wabash Valley; and a large tract, comprising the sand-hills on Lake Michigan, is covered only with stunted pines and burr oaks.

The State is well watered by numerous beautiful streams and rivers, but with the exception of the Ohio and Wabash, few of them are navigable. The Wabash is the largest river that has its course mainly within the State, and, together with its branches, drains three fourths of the entire surface. It rises in the west of Ohio, and flows first in a north-west direction, and then south-west till it meets the boundary of Illinois, which it follows southward for more than 100 miles, till it falls into the Ohio, after a course of upward of 500 miles; for 400 of which it is navigable for steamboats at high water. The Ohio forms the entire southern boundary of the State. The other principal rivers of Indiana are tributaries of the Wabash. The White River, the most important of these, is formed by the West and East Forks—two rivers, respectively about 300 and 200 miles long—which unite about 100 miles above its confluence with the Wabash. The Miami is formed by the St. Joseph and St. Mary in the north-east, and falls into the Ohio. The Upper St. Joseph, with its tributaries, passes through the northern counties, and falls into Lake Michigan.

Indiana resembles the other western States north of the Ohio in climate. They are generally milder than those on the Atlantic coasts, but very subject to sudden changes. The winter is very severe in the northern parts, but more genial in the southern. Except in the neighborhood of wet prairies and swamps, the climate is everywhere healthy. Dr. Owen, speaking of the geological position of Indiana, remarks, that "it possesses all the elements of extraordinary fertility." The richest soil is that of the river bottoms, where it is very deep and exceedingly fertile. The most productive are those inclosed by the river hills, which run parallel to the Ohio and other rivers. The extensive valley of the Wabash is a tract of this description. Behind the river hills, a table-land spreads out, forming what may be called the interior of the country, and here, instead of the bottom-lands, or river valleys, there are vast prairies. The soil of these is not so luxuriant, but is such as amply to repay the expense of culture. Even the wet and marshy parts of the State admit of being brought under cultivation. Indiana ranks fourth of the States of the Union in the absolute amount of Indian corn raised. It also produces large quantities of wheat, oats, and Irish potatoes, as well as a fair proportion of the other productions common to the western States.

The number of farms in Indiana under cultivation in 1850 comprised 93,896 acres, and the extent of improved land was 5,046,543 acres; of unimproved, 7,746,879 acres. The value of the farms returned was $135,090,000. The orchard produce was estimated at $322,000, and market-garden products, $71,000.

The chief minerals of Indiana are coal, iron, lime, marble, freestone, and some copper. Of these the first is by far the most important. It has been estimated that the coal beds of Indiana cover 7700 square miles, and are capable of yielding 50,000,000 bushels to the square mile. One coal deposit commences in Perry county, and extends north-west into the county of Vermilion upward of 150 miles.

The manufacturing capital of Indiana in 1850 amounted to $7,941,602. The value of raw material, etc., consumed in the year had been $10,214,337. The products were valued at $18,922,651. There were on June 1, 1850, 4326 industrial establishments, producing annually to the value of $500 and upward. Of these, 2 were cotton factories, 23 woolen factories, 19 iron works, and 358 tanneries.

Indiana has no direct foreign commerce, but it has a considerable transit trade, and exports large quantities of agricultural produce. The facilities for internal communication are great, and rapidly increasing. The principal canals are the Wabash and Erie Canal between Evansville, on the Ohio, and Toledo, on Lake Erie, 467 miles, of which 379 miles are in Indiana; and the White Water Canal, 68 miles long, uniting Lawrenceburg, on the Ohio, with Hagerstown. In 1853 the State had 755 miles of railroad completed, and 979 in course of construction. The principal railroads centre in Indianapolis, and radiate from that city in all directions. See Dr Bow's *Rev.*, i., 512, vii., 246; *Bankers' Mag.*, iii., 164; Hunt's *Mer. Mag.* xxi., 147.

Indian Ink. A species of ink used in Europe for the lines and shadows of drawings. It is principally manufactured in China, and there used for writing. From the experiments of Dr. Lewis, it appears to be a compound of fine lampblack and animal glue. See Ink.

India-rubber. Also called caoutchouc, first brought to Europe from South America. Several plants produce various kinds of elastic gum; but that in commerce is chiefly the juice of the *Siphonia Elastica*, or syringe-tree. Incisions in the bark of this tree give vent to a liquid which forms India-rubber. No substance is yet known which is so pliable, and at the same time so exceedingly elastic; it oozes out under the form of a vegetable milk, from incisions made in the tree, and is gathered chiefly in the time of rain, because it flows then most abundantly.—*M. Macquer.*

The most astonishing and useful discovery of the 19th century, after the practical application of steam and electricity, is the employment of India-rubber for manufacturing purposes. The first knowledge of it is due to La Condamine, a French philosopher, who in 1730 was sent by his government to Peru to measure an arc of the meridian. The tree which produces rubber or *caoutchouc* (as it is called by the natives of South America), is found in the tropics of both hemispheres. It rises to the height of 50 or 60 feet, without branches, and is crowned or tufted with rich foliage. The leaves are a deep green, thick and glossy, six or seven inches in length; the bark is smooth, and the fruit consists of white almonds, of an agreeable flavor, much liked by the natives. In order to obtain this substance, the natives of the valley of the Amazon make a longitudinal gash in the bark of the tree with a narrow hatchet; a thick, white and oily liquid (a sort of vegetable milk) flows out, a wedge of wood is inserted to keep the gash open, and a small clay cup is stuck to the tree beneath the gash. In four or five hours the milk ceases to run, and each wound has yielded from three to five table-spoonfuls. The "seringero," or rubber gatherer, then empties the contents of the cups into an earthen vessel and commences the operation of forming it into shapes and smoking it. This must be done at once as the milk soon coagulates. A fire is made on the ground, of nuts of the wasson palm tree, over which is placed, inverted, an earthen pot with a hole in the bottom whence issues a jet of pungent smoke. Molds are made either of clay or wood, which are dipped into the milk, and then passed slowly through the hot smoke. When the required thickness is obtained, the molds are cut or washed out. Smoking changes the color of the rubber very little, but by exposure to the sun and atmosphere it becomes brown, and in time black. The superiority of the rubber imported from the valley of the Amazon is said to be owing to the peculiar properties of the smoke of this nut, no other smoke producing a similar effect upon the gum. A belt of forest trees extends 10 degrees each side of the equator, which yield India-rubber of various kinds; so the supply is literally inexhaustible. The gum from India and the Pacific coast of South America is obtained by allowing the sap to flow down the side of the tree, and is then gathered with the loose bark and dirt into *cerons* or bundles for shipment. For a long time this substance was valued simply as an object of curiosity, to be preserved

in collections of natural history, and ... rst practical application was as an eraser of pencil marks.

STATEMENT SHOWING THE EXPORTS OF INDIA-RUBBER FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30TH, 1856.

WHITHER EXPORTED.	DOMESTIC MANUFACTURES OF INDIA-RUBBER.			FOREIGN INDIA-RUBBER.	
	India-rubber shoes.		Other manufactures of.	Manuf.	Unmanufactured.
	Pair.	Dollars.	Dollars.	Dollars.	Dollars.
Russia on the Baltic and North Seas	....	....	750	....	....
Danish West Indies	3,856	2,608	569	....	....
Hamburg	422,646	257,589	182,788	10,119	4,448
Bremen	43,000	30,566	88,187	....	....
Other German ports	300	210	....	....	....
Holland	4,486	3,300	8,096	....	....
Belgium	9,705	6,440	25,163	....	....
England	187,161	82,841	168,848	3,949	10,687
Scotland	700	482	2,806	....	....
Gibraltar	1,248	1,194	449	....	....
Malta	....	....	78	....	....
Canada	8,892	8,241	9,911	185	26,547
Other Br. N. Am. pos.	27,218	19,198	7,668	4,127	....
British Honduras	288	230	128	....	....
British Guiana	157	140	8	....	....
British pos. in Africa	....	....	8,529	....	....
British Australia	....	....	2,842	....	....
France on the Atlantic	10,000	6,462	85,151	....	79,020
France on the Med.	500	344	1,052	....	100
French N. Amer. pos.	24	42	....	....	....
Spain on the Atlantic	....	....	120	....	....
Cuba	....	....	3,184	....	....
Porto Rico	278	204	553	....	....
Portuguese	....	....	890	....	....
Turkey in Europe	7,500	5,000	11,619	....	....
Hayti	....	....	444	....	....
Mexico	2,102	1,378	22,934	....	....
Central Republic	....	....	2,872	....	....
New Granada	1,168	592	9,158	....	....
Venezuela	428	294	189	....	....
Brazil	7,045	4,966	11,870	....	....
Buenos Ayres	1,714	1,083	7,585	....	....
Chili	....	....	4,179	....	....
Peru	300	207	5,592	....	....
Total	685,220	427,986	665,602	18,379	120,802

STATEMENT SHOWING THE IMPORTS OF INDIA-RUBBER INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30TH, 1856.

Whence imported.	Manufactured.	Unmanufactured.
	Dollars.	Dollars.
Danish West Indies	....	4
Hamburg	88	2,548
Bremen	922	....
Holland	....	9,047
Dutch West Indies	....	6
Dutch East Indies	....	41,800
England	82,982	37,469
Canada	1,690	....
Other British North American pos.	....	761
British West Indies	....	1,174
British Honduras	....	128
British possessions in Africa	....	3,753
British East Indies	....	89,494
France on the Atlantic	12,104	461
Other ports in Africa	....	5,878
Hayti	....	344
Mexico	....	777
Central Republic	....	239
New Granada	....	70,274
Venezuela	....	11
Brazil	....	771,326
Chili	....	10,045
Peru	....	47
Total	97,796	1,045,576

About the year 1821, Charles Macintosh of England, having learned how to dissolve the gum in spirits of turpentine, commenced manufacturing the goods which now bear his name, by spreading the gum so dissolved between two layers of cloth. The rude overshoes made by the natives in South America from the natural gum, were beginning to be worn, and in 1823, 500 pairs of shoes were imported into Boston. At a later date gum-elastic became the subject of scientific investigation and many persons commenced experimenting with it. In 1832, the considerable manufacture of it was commenced in Massachusetts, by John Haskins and Edwin M. Chaffee, who, in connection with others, started the celebrated Roxbury India-rubber Company, which was shortly after incorporated with a capital of $400,000. For this Company Mr. Chaffee invented the famous mammoth machine for spreading rubber without a solvent—the machine itself costing nearly $80,000. Similar machines are now required by all manufacturers of rubber goods. The apparent prosperity of this Company induced the starting of factories in Boston, Chelsea, Woburn and Framingham, Mass., New York city, Staten Island, and Troy, N. Y., with capitals of from $50,000 to $500,000. These Companies made their goods by dissolving the rubber in camphene or other solvents, then mixing lamplack with it, and while in the form of paste spreading it on cloth from which coats, etc., are made. The goods were then dried in the sun or in a warm room until the solvent evaporated, leaving a coating of rubber. See GUTTA PERCHA.

Indies, Dutch. See JAVA.

Indigo (Fr. *Indigo*; Ger. *Indigo*; Sans. *Nili*; Arab. *Neel*; Malay, *Tarcom*), the drug which yields the beautiful blue dye known by that name. It is obtained by the maceration in water of certain tropical plants; but the indigo of commerce is almost entirely obtained from leguminous plants of the genus *Indigofera*; that cultivated in India being the *Indigofera tinctoria*; and that in America the *Indigofera anil*. The Indian plant has pinnate leaves and a slender ligneous stem; and when successfully cultivated, rises to the height of three, five, and even six feet. Before the American colonies were established, all the indigo used in Europe came from the East Indies; and until the discovery of a passage round the Cape of Good Hope, it was conveyed, like other Indian products, partly through the Persian Gulf, and partly by land to Babylon, or through Arabia and up the Red Sea to Egypt. The real nature of indigo was so little known in Europe, that it was classed among the minerals, as appears by letters-patent for erecting works to obtain it from mines in the principality of Halberstadt, dated December 23, 1705; yet what Vitruvius and Pliny call *indicum* is supposed to have been our indigo.—BECKMANN. The first mention of indigo occurs in English statutes in 1581. The first brought to Europe was procured from Mexico. Its cultivation was begun in Carolina, in 1747. It appears pretty certain that the culture of the indigo plant, and the preparation of the drug have been practiced in India from a very remote epoch. It has been questioned, indeed, whether the *indicum* mentioned by Pliny (*Hist. Nat.* lib., xxxv., c. 6), was indigo, but, as it would seem, without any good reason. Pliny states that it was brought from India; that when diluted it produced an admirable mixture of blue and purple color (*in diluendo misturam purpure cæruleique mirabilem reddit*); and he gives tests by which the genuine drug might be discriminated with sufficient precision. It is true that Pliny is egregiously mistaken as to the mode in which the drug was produced; but there are many examples in modern as well as ancient times, to prove that the possession of an article brought from a distance implies no accurate knowledge of its nature, or of the processes followed in its manufacture. Beckmann (*Hist. of Inventions*, vol. iv., art. INDIGO), and Dr. Bancroft (*Permanent Colors*, vol. i., pp. 241, 252), have each investigated this subject with great learning and sagacity; and agree in the conclusion that the *indicum* of Pliny was real indigo, and not, as has been supposed, a drug prepared from the *isatis* or woad. At all events, there can be no question that indigo was imported into modern Europe, by way of Alexandria, previously to the discovery of the route to India by the Cape of Good Hope. When first introduced, it was customary to mix a little of it with woad to heighten and improve the color of the latter; but, by degrees, the quantity of indigo was increased; and woad was, at last, entirely superseded. It is worth while, however, to

remark, that indigo did not make its way into general use without encountering much opposition. The *growers of woad* prevailed on several governments to prohibit the use of indigo! In Germany, an imperial edict was published in 1654, prohibiting the use of indigo, or "*devil's dye*," and directing great care to be taken to prevent its clandestine importation, "because," says the edict, "the trade in woad is lessened, dyed articles injured, and money carried out of the country!" The magistrates of Nuremberg went further, and compelled the dyers of that city to take an oath once a year not to use indigo; which practice was continued down to a late period. In 1598, upon an urgent representation of the States of Languedoc, at the solicitation of the woad growers, the use of indigo was prohibited in that province; and it was not till 1737, that the dyers of France were left at liberty to dya with such articles, and in such a way, as they pleased.—BECKMANN, vol. iv., p. 142. Let not those who may happen to throw their eyes over this paragraph, smile at the ignorance of their ancesters—*Mutato nomine, de te fabula narratur*. How much opposition is made in most countries at this moment to the importation of many important articles, for no better reasons than were alleged in the 16th century against the importation of indigo!

Indigo is produced in Bengal, and the other provinces subject to the presidency of that name, from the 20th to the 30th degree of north latitude; in the province of Tinnevelly, under the Madras government; in Java; in Luconia, the principal of the Philippine Islands; and in Guatemala, and the Caraccas, in Central America. Bengal is, however, the great mart for indigo; and the quantity produced in the other places is comparatively inconsiderable.

Raynal was of opinion that the culture of indigo had been introduced into America by the Spaniards; but this is undoubtedly an error. Several species of *indigofera* belong to the New World; and the Spaniards used it as a substitute for ink, very soon after the conquest. (HUMBOLDT, *Nouvelle Espagne*.) For the first 20 years after the English became masters of Bengal, the culture and manufacture of indigo, now of such importance, was unknown as a branch of British industry; and the exports were but trifling. The European markets were, at this period, principally supplied from America. In 1788, however, the attention of the English began to be directed to this business; and though the processes pursued by them be nearly the same with those followed by the natives, their greater skill, intelligence, and capital give them immense advantages. In their hands, the growth and preparation of indigo has become the most important employment, at least in a commercial point of view, which can be freely carried on in the country, the culture and preparation of opium being a monopoly. The indigo made by the natives supplies the internal demand; but a portion of that which is raised by them, with all that is raised by Europeans, is exported. In the Delta of the Ganges, where the best and largest quantity of indigo is produced, the plant lasts only for a single season, being destroyed by the periodical inundation; but in the dry central and western provinces, one or two *rattoon* crops are obtained; and owing to this circumstance, the latter are enabled to furnish a large supply of reed to the former.

STATEMENT OF THE QUANTITY AND VALUE OF INDIGO SHIPPED FROM CALCUTTA IN 1830—31, 1840—41, 1851—52.

Countries.	1830—31.		1840—41.		1851—52.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Fy. maunds.	Rupees.	Fy. maunds.	Rupees.	Ind. maunds.	Rupees.
Great Britain	68,741	68,74,100	84,205	1,63,81,074	80,679½	1,27,18,127
France	23,151	23,15,100	20,260½	40,86,266	24,791½	39,68,162
North America	5,899	5,89,900	4,822½	9,45,368	3,751½	5,97,297
Arabian and Persian Gulfs	10,989	10,98,900	5,053½	9,64,414	5,887½	8,31,104
Bombay	550	55,000	637	1,27,409	207½	22,795
Sweden	248	24,800	....	....	....	....
Bremen	....	....	206½	41,256	....	....
Elsewhere	33	3,300	78½	15,775	1,687½	2,78,961
Total	1,26,556	1,26,55,600	1,15,263½	2,27,11,602	1,17,004½	1,82,16,536
Being in pounds	9,444,241½	....	8,601,557½	....	9,633,371	....
	Tons. cwts. lbs.		Tons. cwts. lbs.		Tons. cwts. lbs.	
" tons	4,216 3 65½	....	3,839 19 69½	....	4,300 12 27	....
Shipped for Britain only	2,856 8 86½	....	2,895 5 88½	....	2,965 8 95	....

It deserves to be remarked, that since the opening of the trade, Indian capitalists have betaken themselves to the manufacture of indigo on the European method, and that at present a considerable part of the whole annual produce is prepared by them. The culture of indigo is very precarious, not only in so far as respects the growth of the plant from year to year, but also as regards the quantity and quality of the drug which the same amount of plant will afford even in the same season. Thus the produce or 1825–26 was 41,000 chests, while that of 1826–7 was but 25,000 chests; and in 1842 the produce was only 79,000 maunds, while that of the following year was no less than 172,249 maunds! The price of indigo in India, increased for a while, in a far greater ratio than the quantity. In 1813–14, the real value of that exported from Calcutta was £1,461,000; but in 1827–28, although the quantity had increased but 20 per cent., the value rose to £2,920,000, or was about doubled. There was no corresponding rise in the price in Europe, but, on the contrary, a decline; and the circumstance is to be accounted for by the restraints that were then placed on the investment of capital in the production of colonial articles suited to the European market, the consequent difficulty of making remittances from India, and an unnatural flow of capital to the only great article of Indian produce and export that was supposed capable of bearing its application. The consumption of indigo has varied but little in England during the last 10 years, having been, at an average of that period, about 2,000,000 lbs. a year. This stationary demand, notwithstanding the fall in the price of the drug and the increase of population, is principally to be ascribed to the decreasing use of blue cloth, in the dyeing of which it is principally made use of. Its consumption in France is about as great as in Britain. Besides the exports to Great Britain, France, and the United States, a good deal of Bengal indigo is exported to the ports on the Persian Gulf, whence it finds its way to southern Russia. It is singular that it is not used by the Chinese, with whom blue is a favorite color. The indigo of Bengal is divided into two classes, called, in commercial language, *Bengal* and *Oude;* the first being the produce of the southern provinces of Bengal and Bahar, and the last that of their northern provinces and of Benares. The first is, in point of quality, much superior to the other. This arose at one time, in a considerable degree, from the practice which prevailed in the northern provinces, of the European planter purchasing the wet fecula from the Ryot or native manufacturer, and completing the processes of curing and drying the drug. This is at present in a great measure discontinued; and the Oude indigo has, in consequence, considerably improved in quality. Its

inferiority is probably more the result of soil and climate, than of any difference in the skill with which the manufacture is conducted.

The following is believed to be a pretty accurate estimate of the annual production of indigo in India, in maunds of 82 lbs.:

	1842.	1843.	1844.	1845.	1846.	1847.	1848.	1849.	1850.	1851.	Average.
	Maunds.	Maunds.	Maunds.	Maunds.	Maunds.	Maunds.	Maunds.	Maunds.	Maunds.	Maunds.	Maunds.
Bengal.....	42,120	108,388	97,046	80,584	68,977	72,010	88,420	82,500	70,566	74,000	77,491
Tirhoot.....	12,010	41,470	23,472	21,816	11,413	18,880	27,419	22,200	21,950	31,000	23,168
Benares.....	18,980	12,878	16,869	16,712	18,783	14,060	10,113	9,850	12,000	11,000	13,775
Oude.....	5,890	9,666	6,960	9,300	7,855	7,450	5,690	6,600	8,012	9,000	7,525
Total....	79,000	172,949	148,907	127,892	101,828	110,000	126,585	121,970	112,522	125,000	121,809

In addition to the exports from India, indigo is exported from Java, the Philippine Islands, Central America, and other places. In 1815 the exports from Batavia amounted to 1,653,869 lbs., and, we believe, they have varied but little in the interval. In 1850 the exports from Manilla were estimated at about 450,000 lbs. According to Humboldt, 1,800,000 lbs. of indigo were exported from Guatemala in 1825. But if so, its production must have fallen off greatly in the interval. It does not now probably exceed 500,000 lbs. in all Central America. Indigo is also produced in some of the West India islands, but in small quantities. Good indigo is known by its lightness or small specific gravity, indicating the absence of earthy impurities; by the mass not readily parting with its coloring matter when tested by drawing a streak with it over a white surface; but above all, by the purity of the color itself. The first quality, estimated by this last test, is called, in commercial language, *fine blue*; then follow *ordinary blue, fine purple, purple and violet, ordinary purple and violet, dull blue, inferior purple and violet, strong copper*, and *ordinary copper*. These distinctions refer to the Bengal indigo only, the Oude being distinguished only into *fine* and *ordinary*. The indigo of Madras, which is superior to that of Manilla, is about equal to ordinary Bengal indigo. The indigo of Java is superior to these.

We subjoin an account of the prices of Bengal indigo of medium quality, at the quarterly sales in London, from 1847 to 1851, both inclusive:

Years.	February.	May.	July.	October.
	s. d.	s. d.	s. d.	s. d.
1851.....	5 2	5 2	4 10	4 4
1850.....	4 8	4 6	4 9	5 6
1849.....	3 9	4 0	4 0	4 0
1848.....	4 1	3 7	3 5	3 7
1847.....	4 8	4 4	4 0	5 8

For further information as to indigo, see COLEBROOKE'S *Husbandry of Bengal*, p. 154; MILBURN'S *Orient. Com.*; WILKINSON'S *Commerce of Bengal*; WILSON'S *Review of do.*; evidence of Gillian Maclaine, Esq., East India Committee, 1830–31, etc. The fixed capital required in the manufacture of indigo consists of a few vats of common masonry for steeping the plant, and precipitating the coloring matter; a boiling and drying-house; and a dwelling-house for the planter. These, for a factory of 10 pair of vats, capable of producing, at an average, 12,500 lbs. of indigo, worth on the spot about £2500, will not cost above £1500 sterling. The buildings and machinery necessary to produce an equal value in sugar and rum, would probably cost about £4000. This fact, therefore, without any reference to municipal regulations, affords a ready answer to the question which has been frequently put, why the planters in India have seldom engaged in the manufacture of sugar in preference to that of indigo.

Cultivation of American Indigo.—At the present moment, and for the past two years, the supply of the first quality indigo has not been equal to the demand for it, and that demand is constantly increasing. Some very excellent indigo, well adapted for making chymic, used to be obtained from Guatemala, but the kind most esteemed is the first quality of Bengal, for which we are dependent on a colony of Great Britain. About 12 years ago the best Bengal indigo could easily be obtained, but at present it is almost unknown in the market. A spurious article, however, much resembling it, is abundant, but it does not possess one half the coloring matter of the genuine, and yet it is sold at a retail price varying from 6s. to 14s. per pound. Our object is to direct the attention of our southern planters to the cultivation of the indigo plant, and the manufacture of the best kinds of indigo, for the inferior kinds are by far too plenty. About 60 years ago, and within that period, some very fine qualities of indigo used to be cultivated in South Carolina; its character was much higher than the finest Guatemala or the best Bengal, but it is now unknown in the arts, to the great regret of calico-printers, dyers, and leather-dressers. In the fermentation of the indigo-plant so much oxygen is absorbed, that its manufacture was found to be very injurious to the health of the negroes on the plantations. This was one reason for giving up its culture; and another, and perhaps the strongest, was the higher profits derived from the cultivation of cotton. It appears to us now, however, that with exercise of sufficient care, the health of the negroes may be maintained as well as in the rice culture: also that the price which could now be obtained for it would be very remunerative. There are hundreds of persons in our country who would rather pay $2 per pound for the best kind of indigo—that quality which was manufactured at one time in South Carolina, or the kind that was sold for the best Bengal 12 years ago—than that which is now sold for 75 cents per pound. We think these considerations ought to induce some of our planters to engage in the cultivation of the finest qualities of indigo. See HUNT'S *Mer. Mag.*, xiii., 227; *Jour. of Sci.*, xviii., 237; *Ency. Brit.*

STATEMENT SHOWING THE EXPORTS OF INDIGO FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30TH, 1856.

Whither exported.	Pounds.	Value.
Danish West Indies.....	236	$130
Hamburg.....	28,289	21,544
Bremen.....	34,660	21,761
England.....	14,071	18,071
Gibraltar.....	764	802
Canada.....	796	352
Other British North Amer. pos...	8	10
British West Indies.....	5,543	1,909
Canary Islands.....	200	219
Cuba.....	3,505	2,448
Turkey in Europe.....	1,037	984
Hayti.....	1,180	852
San Domingo.....	105	72
Mexico.....	568	661
Uruguay.....	1,017	1,051
Total.....	92,529	$70,866
From warehouse.....	43,324	$40,542
Not from warehouse.....	49,205	30,324

STATEMENT SHOWING THE IMPORTS OF INDIGO INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30TH, 1856.

Whence imported.	Pounds.	Value.
Holland.....	261	$194
England.....	508,193	368,273
Canada.....	590	345
Other British North Amer. pos...	224	138
British Honduras.....	42,629	32,210
British East Indies.....	622,108	416,122
Philippine Islands.....	407,899	123,421
Cuba.....	408	402
Mexico.....	1,000	1,028
Central Republic.....	1,923	1,484
New Granada.....	5,510	4,857
Venezuela.....	146,870	115,198
China.....	175	10
Total.....	1,782,290	$1,063,743

Indorsement.—*The Law of Indorsement, and the Rights and Duties of an Indorser.*—Only a note or bill payable to a payee or order, is, strictly speaking, subject to indorsement. Those who write their names on the back of any note or bill, are indorsers in one sense, and are sometimes called so. The payee of a negotiable bill or note—whether he be also maker or not—may indorse it, and afterward any person, or any number of persons may indorse it. The maker promises to pay to the payee or his order; and the indorsement is an order to pay to the indorsee, and the maker's promise is then to him. But if the original promise was to the payee or order, this "or order," which is a negotiable element, passes over to the indorsee, and he may indorse, and so may his indorsee, indefinitely. Each indorser, by his indorsement, does two things; first, he orders the antecedent parties to pay to his indorsee; and next, he engages with his indorsee that if they do not pay, he will. What effect an indorsement of a negotiable note or bill, by one not payee, before the indorsement by payee, should have, is not quite certain. Upon the whole, however, we should hold, with some reason and authority, that where such a name appears, as it may be made to have the place of a second indorser whenever the payee chooses to write his name over it, it shall be held to be so intended, in the absence of evidence; and then, of course, it gives the payee no claim against such a party, because a first indorser can have none against a second, but the second may have a claim against the first. But evidence is receivable to prove that the party put his name on the note for the purpose of adding to its security, by becoming responsible for it to the payee. And then, if he indorse the note before it was received by the payee, the consideration of the note attaches to him, and he may be held either as surety for consideration or as a maker. If he wrote his name on the note after it was made, and, at the request of the payee or other holder, he is bound only as a guarantor or surety, and the consideration of the note being exhausted, he is bound only by showing some new and independent consideration. No one who thus indorses a note not negotiable can be treated or considered precisely as a second indorser, whatever be the names on the paper before his own; but any indorser of such a note or bill may be held to be a new maker or drawer, or a guarantor or surety, as the circumstances of the case indicate or require; but either the original consideration or a new one must attach to him to affect him with a legal obligation.

If the words "to order," or "to bearer," are omitted accidentally and by mistake, it seems they may be afterward inserted without injury to the bill or note; and whether a bill or note is negotiable or not, is held to be a question of law. By the law-merchant, bills and notes which are payable *to order* can be effectually and fully transferred only by indorsement. This indorsement may be *in blank* or *in full*. The writing of the name of the payee—either the original payee or an indorsee—with nothing more, is an indorsement in blank, and a blank indorsement makes the bill or note transferable by the delivery, in like manner as if it had originally been paid to bearer. If the indorsement consists not only of the name, but of an order above the name, to pay the note to some specified person, then it is an indorsement in full, and the note can be paid to no one else; nor can the property in it be fully transferred, except by the indorsement of such indorsee; and he may again indorse it in blank or in full. If the indorsement is paid to A B *only*, or its equivalent words, A B is indorsee, but can not indorse it over.

Any holder for value of a bill or note indorsed in blank, whether he be the first indorsee or one to whom it has come through many hands, may write over any name indorsed an order to pay the contents to himself, and this makes it a special indorsement, or an indorsement in full. This is often done for security, that is to guard against the loss of the note by accident or theft. For the rule of the law is, that negotiable paper, transferable by delivery (whether payable to bearer or indorsed in blank), is, like money, the property of whoever receives it in good faith. The same rule has been extended, in England, to exchequer bills, to public bonds payable to bearer, and to East India bonds; and we think it would extend here to our railroad and other corporation bonds; and, perhaps, to all such instruments as are payable to bearer, whether sealed or not, and whatever they may be called. If one has such an instrument, and it be stolen, and the thief passes it for consideration to a *bonâ fide* holder, this holder acquires a legal right to it, because the property and possession go together. But if the bill or note be specially indorsed, no person can acquire any property in it, except by the indorsement of the special indorsee. It is said, however, that this precaution protects only the party who has thus made himself a special indorsee, and that the former parties remain liable in the same way as if the indorsement continued blank.

At one time this acquirement of property in negotiable paper was defeasible by want of proof of care; that is, if a holder lost his note and a thief or finder passed it off to a *bonâ fide* holder, the property did not pass, if the circumstances were such as to show negligence on the part of the purchaser, or a want of due inquiry. But this question of negligence seems now to be at an end, and nothing less than fraud defeats the title of the purchaser.

The written transfer of negotiable paper is called an indorsement, because it is almost always written on the back of the note; but it has its full legal effect if written on the face. Joint payees of a bill or note, who are not partners, must all indorse. An indorser may always prevent his own responsibility by writing "without recourse," or other equivalent words, over his indorsement; and any bargain between the indorser and indorsee, written or oral, that the indorser shall not be sued, is available against that indorsee, but not against subsequent indorsees, without notice. A bill or note may be indorsed conditionally, and an acceptor of a bill so indorsed, who paid it before such condition is satisfied or complied with, has been held to pay it again after the condition is performed.

Every indorsement and acceptance admits conclusively the signature of every party who has put his name upon the bill previously in fact, and is also previous in order. Thus an acceptance admits the signature of the drawer, but not the signature of one who actually indorses before acceptance, because *acceptance* is in its nature prior to indorsement. If a holder strike out an indorsement by mistake, he may restore it; if on purpose, the indorser is permanently discharged. If the plaintiff, in his declaration, derives his title through all the previous indorsements, all must be there, and proved. But a holder may bring his action against any prior indorser, and fill any blank indorsement, specially to himself, and sue accordingly; but then he invalidates subsequent indorsements. The reason is, that he takes from them all right to indorse; thus, for example, if A makes a note to B, and B, C, D, E, and F, indorse it in blank, and G, the holder, writes over C's name, "pay to G," it is as if C had written this himself, and then G only, could indorse, and, of course, D, E, and F could not, as they were mere strangers. And a holder precludes himself from taking advantage of the title of any party whose indorsement is thus voided. Nor can he strike out the name of any indorser prior to that one whom he makes defendant; for, by so doing, he deprives the defendant of his right to look to the party whose name is stricken out, and this discharges the defendant.

One may make a note or bill payable to his own order, and indorse it in blank; and this is now very

common in our commercial cities, because the holder of such a bill or note can transfer it by delivery, and it needs not his indorsement to make it negotiable further.

A transfer by delivery, without indorsement, of a bill or note payable to bearer, or indorsed in blank, does not generally make the transferrer responsible to the transferree, for the payment of the instrument. Nor has the transferree a right to fall back, in case of non-payment, upon the transferrer, for the original consideration of the transfer, if the bill were transferred in good faith, in exchange for money or goods; for such transfer would be held to be a sale of the bill or note, and the purchaser takes it with all risks. But it seems not to be so where such a note is delivered either in payment or by way of security for a previously existing debt. Then if the transferrer has lost nothing by the reception of the note by the transferree—because if he had continued to hold the note, he would have lost it—there seems to be no reason why the transferree should lose it. We have no doubt that such a transferrer may make himself liable, without indorsement, by express contract; and that circumstances might warrant and require the implication that the bill or note so transferred remained, by the agreement and understanding of both parties, at the risk of the transferrer. And every such transferrer warrants that the bill or note (or bank-note) is not forged or fictitious.

An indorsement may be made on the paper before the bill or note is drawn; and such indorsement, says Lord Mansfield, "is a letter of credit for an indefinite sum, and it will not lie in the indorser's mouth to say that the indorsements were not regular." The same rule applies to an acceptance on blank paper. So, an indorsement may be made after or before acceptance. If made after a refusal of acceptance, which is known to the indorsee, he takes only the title of the indorser, and is subject to all defenses available against him. A bill or note once paid at or after maturity ceases to be negotiable, in reference to all who could be prejudiced by its transfer. So, where a bill drawn payable to a third person, by whom it is indorsed, is dishonored and taken up by the drawer, it ceases to be a negotiable instrument; for the drawer has no title to indorse it. But if one draw a bill payable *to his own order*, and indorse it over, and, upon the bill being dishonored, take it up, he may indorse it again, and this last indorsee can recover against the acceptor. And if a bill or note is paid before it is due, it is valid in the hands of a subsequent *bonâ fide* indorsee.

A portion of a negotiable bill or note can not be transferred so as to give the transferree a right of action for that portion in his own name. But if the bill or note be partly paid, it may be indorsed over for the balance. If an action be brought on a bill or note, no transfer during the pendency of such action gives to the transferree a right of action, unless he was ignorant of the action; otherwise the transfer is valid. After a holder's death his personal representative should transfer. But it seems that if a note needing indorsement was indorsed by the holder, but not delivered, the executor can not complete the transfer by delivery. The husband who acquires a right to a bill or note given to the wife, either before or after marriage, may indorse. One who may claim payment of a bill or note, and of whom payment may also be demanded, or one who is liable to contribute for the payment of a note, can not sue upon it. But if only the technical rule—that the same party can not be plaintiff and defendant—prevents the action, it may be avoided by indorsement over to another before maturity.—PARSONS' *Elements of Mercantile Law*, ch. ix. See articles BILLS OF EXCHANGE; STORY *on Bills*; KENT'S *Commentaries on American Law*; *Banker's Mag.*, vols. v., vi., vii.; *Ency. Brit.*, article EXCHANGE; BAYLEY *on Bills*; *Manual for Notaries Public*.

Indus. This great river of Asia has its rise in Thibet, at the north of the Kailas mountain, regarded in Hindoo mythology as the mansion of the gods, in about lat. 32° long. 81° 30′. It first takes a northwesterly direction for about 460 miles, when it is joined by the river of Dras, which, rising in the mountains of Cashmere, and receiving several streams both from the east and west, discharges a considerable volume of water at its confluence. At Makpon-i-Shagaron, in lat. 35° 48′, long. 74° 30′, the Indus emerges from the mountainous region, and turning south (a course which it thenceforth continues to the sea), takes its way through the country north of Attock. Close above this last-mentioned town, and at the distance of 870 miles from its source, the Indus receives on the western side the great river of Cabool. Both rivers have a large volume of water, and as they meet amid numerous rocks, the confluence is turbulent, and attended with great uproar. The town of Attock is situate about 1000 feet above the sea-level, and about 17,000 feet below the source of the Indus, which falls, therefore, 16,000 feet in 870 miles, or at the average rate of about 19 feet per mile. The length of its channel from Attock to the sea is 942 miles, and, consequently, in that lower part of its course, it falls little more than 1 foot per mile. For about 10 miles below Attock, the river, though in general rolling between high cliffs of slate rock, has a calm, deep and rapid current; but for 100 miles further down to Kalabagh, it becomes an enormous torrent. Lieutenant Wood, describing this section of its course, observes, "It here rushes down a valley, varying from 100 to 400 yards wide, between precipitous banks from 70 to 700 feet high." From Kalabagh southward, to Mittunkote, distant about 350 miles, the banks, either right or left, are in several places so low, that the first rise of the river covers the country round with water, extending, as the inundation advances, as far as the eye can reach. On entering the plain, the water loses its clearness, and becomes loaded with mud. Two or three miles below Mittunkote, and about 490 miles from the sea, the Indus receives the waters of the Punjnud, the channel which conveys the collected stream of the Punjaub. Above the confluence, the breadth of the Indus is less than that of the other river, but in consequence of the greater depth and velocity, the former has the greater volume of water. Wood found that the Indus, near the confluence, had a breadth of 608 yards, a velocity of about five miles an hour, a depth of 12 or 15 feet, and discharged 91,719 cubic feet per second. The Punjnud had a breadth of 1766 yards, a velocity of about two miles an hour, a depth of 12 or 15 feet, and discharged 68,955 cubic feet per second. Below the junction, the Indus in its lowest state is 2000 yards wide. Its aspect in this part is well described by Major Boileau. He says, "At the place where we crossed the Indus, almost immediately below its junction with the Punjnud, its stream is 2047 yards, or nearly a mile and a quarter in breadth, at a place where its width is unbroken, either by islands or sand-banks. The banks are very low, and the water very muddy, having just began to rise from the melting snow at its sources, nor is the stream of very great depth, except in the main channel; but with all these drawbacks, it is a magnificent sheet of water, a very prince of rivers." Below Mittunkote, the river passes in succession the towns of Sukkur, Bukkur, Schwan, Hyderabad, and Trical. The last mentioned of these towns is situate in lat. 25° 9′, long. 68° 21′, and here the delta commences; all the country below it, and contained between the Fulailee branch on the east, and the extreme western branch of the river, being, with little exception, alluvial, and obviously deposited by the stream. At about five miles below Tatta, and 60 miles from the sea, the Indus divaricates into two great branches, the Boggaur, which flows westward, and the Sata, which maintains the previous course of

the Indus southward, and is, in strictness, the continuation of that river. The lower part of the delta is intersected by rivers and creeks in almost every direction, like the delta of the Ganges; but it so far differs from the latter, that it has no trees on its surface, the dry parts being covered with brushwood, and the remainder, by much the largest part, being noisome swamps or muddy lakes. It is remarkable that the influence of the tides is not felt at a greater distance than 60 or 65 miles from the sea. At the mouths of the different branches, the rush or influx of the tide is high and dangerous, running, as has been estimated, at the rate of four miles an hour, though varying greatly at different places. From the sea up to Hyderabad, the Indus is in general about a mile in breadth, varying in depth from two to five fathoms. The river begins to swell in the middle of July, from the melting of the snow, and continues to increase until the end of August. The most eastern of the estuaries connected with the Indus is the Koree Mouth, from which, proceeding westward, the remaining creeks or estuaries most worthy of notice, occur in the following order: The Seer, Mull, Kaha, Kookewarree, Kedywarree (discharging the waters of the Sata), Hujamree, Jooa, Durbar, Pitteeanee, Ccondee, Pitty, and Gizree. The spring-tide rises nine feet. The length of the navigable part of the river from the sea to Attock, has been ascertained by measurement to be 942 miles, that of the upper part is about 870 miles, making a total length in round numbers of 1800 miles. The average declivity of the water-course from the locality of the source to Attock is, per mile, 19 feet; from Attock downward to Kalabagh, a distance of about 110 miles, it is 20 inches; from this place to Mittunkote, a distance of about 350 miles, it is eight inches, and thence to the sea six inches. The Indus appears destined to become an important channel of commercial communication.—E. T.

Ingot, a mass of gold or silver melted down and cast in a mold, but not coined or wrought. A large portion of the gold received from California at New York is put into this shape for more convenient export.

Ink (Du. *Ink*, *Inkt*; Fr. *Encre*; Ger. *Dinte*; It. *Inchiostro*; Lat. *Atramentum*; Rus. *Tschernilo*; Sp. *Tinta*; Sw. *Blak*). Every liquor or pigment used for writing or printing is distinguished by the name of ink. Common practice knows only black and red. Of black there are three principal kinds: 1. Indian ink; 2. Printers' ink; and 3. Writing ink. The Indian ink is used in China for writing with a brush, and for painting upon the soft flexible paper of Chinese manufacture. It is ascertained, as well from experiment as from information, that the cakes of this ink are made of lampblack and size, or animal glue, with the addition of perfumes or other substances not essential to its quality as an ink. The fine soot from the flame of a lamp or candle received by holding a plate over it, mixed with clean size from the shreds of parchment or glove-leather not dyed, will make an ink equal to that imported. Good printers' ink is a black paint, smooth, and uniform in its composition, of a firm black color, and possesses a singular aptitude to adhere to paper thoroughly impregnated with moisture.

The ancient black inks were composed of soot and ivory black, and Vitruvius and Pliny mention lampblack; but they had likewise various colors, as red, gold, silver, and purple. Red ink was made by them of vermilion and various kinds of gum. Indian ink is brought from China, and must have been in use by the people of the East from the earliest ages, most of the artificial Chinese productions being of very great antiquity. It is usually brought to Europe in small quadrangular cakes, and is composed of a fine black animal glue.—BECKMANN.

Black Ink.—Nutgalls, sulphate of iron, and gum, are the only substances truly useful in the preparation of ordinary ink; the other things often added merely modify the shade, and considerably diminish the cost to the manufacturer upon the great scale. Many of these inks contain little gallic acid, or tannin, and are therefore of inferior quality. To make 12 gallons of ink, we may take 12 lbs. of nutgalls, 5 lbs. of green sulphate of iron, 5 lbs. of gum senegal, and 12 gallons of water.

The bruised nutgalls are to be put into a cylindrical copper, of a depth equal to its diameter, and boiled, during three hours, with three fourths of the above quantity of water, taking care to add fresh water to replace what is lost by evaporation. The decoction is to be emptied into a tub, allowed to settle, and the clear liquor being drawn off, the lees are to be drained. Some recommend the addition of a little bullock's blood or white of egg, to remove a part of the tannin. But this abstraction tends to lessen the product, and will seldom be practiced by the manufacturer intent upon a large return for his capital. The gum is to be dissolved in a small quantity of hot water, and the mucilage thus formed, being filtered, is added to the clear decoction. The sulphate of iron must likewise be separately dissolved, and well mixed with the above. The color darkens by degrees, in consequence of the peroxydisement of the iron on exposing the ink to the action of the air. But ink affords a more durable writing when used in the pale state, because its particles are then finer, and penetrate the paper more intimately. When ink consists chiefly of tannate of peroxyd of iron, however black, it is merely superficial, and is easily erased or effaced. Therefore, whenever the liquid made by the above prescription has acquired a moderately deep tint, it should be drawn off clear into bottles, and well corked up. Some ink-makers allow it to mold a little in the casks before bottling, and suppose that it will thereby be not so liable to become moldy in the bottles. A few bruised cloves, or other aromatic perfume, added to ink, is said to prevent the formation of moldiness, which is produced by the ova of infusoria animalcules. I prefer digesting the galls to boiling them.

The operation may be abridged, by peroxydizing the copperas beforehand, by moderate calcination in an open vessel; but, for the reasons above assigned, ink made with such a sulphate of iron, however agreeable to the ignorant, when made to shine with gum and sugar, under the name of japan ink, is neither the most durable nor the most pleasant to write with. From the comparatively high price of gall-nuts, sumach, logwood, and even oak bark, are too frequently substituted, to a considerable degree, in the manufacture of ink. The ink made by the prescription given above, is much more rich and powerful than many of the inks commonly sold. To bring it to their standard, a half more water may safely be added, or even 20 gallons of tolerable ink may be made from that weight of materials. Sumach and logwood admit of only about one half of the copperas that galls will take to bring out the maximum amount of black dye. Chaptal gives a prescription in his *Chimie appliquée aux arts*, which, like many other things in that book, are published with very little knowledge and discrimination. He uses logwood and sulphate of copper, in addition to the galls and sulphate of iron; a pernicious combination, productive of a spurious fugitive black, and a liquor corrosive of pens. It is, in fact, a modification of the vile dye of the hatters. Lewis, who made exact experiments on inks, assigned the proportion of 3 parts of galls to 1 of sulphate of iron, which, with average galls, will answer very well; but good galls will admit of more copperas.

Gold Ink is made by grinding upon a porphyry slab, with a muller, gold leaves along with white honey, till they be reduced to the finest possible division. The paste is then collected upon the edge of a knife or

spatula, put into a large glass, and diffused through water. The gold by gravity soon falls to the bottom, while the honey dissolves in the water, which must be decanted off. The sediment is to be repeatedly washed till entirely freed from the honey. The powder, when dried, is very brilliant, and when to be used as an ink, may be mixed up with a little gum water. After the writing becomes dry, it should be burnished with a wolf's tooth.

Silver Ink is prepared in the same manner.

Indelible Ink.—A very good ink, capable of resisting chlorine, oxalic acid, and ablution with a hair pencil or sponge, may be made by mixing some of the ink made by the preceding prescription, with a little genuine China ink. It writes well. Many other formulæ have been given for indelible inks, but they are all inferior in simplicity and usefulness to the one now prescribed. Solution of nitrate of silver thickened with gum, and written with upon linen or cotton cloth, previously imbued with a solution of soda, and dried, is the ordinary permanent ink of the shops. Before the cloths are washed, the writing should be exposed to the sunbeams, or to bright daylight, which blackens and fixes the oxyd of silver. It is easily discharged by chlorin and ammonia. A good permanent ink may be made by mixing a strong solution of chlorid of platinum with a little potash sugar, and gum to thicken. The writing made therewith should be passed over with a hot smoothing iron to fix it.

By decomposing vanadate of ammonia with infusion of galls, a liquid is obtained of a perfectly black hue, which flows freely from the pen, is rendered blue by acids, is insoluble in dilute alkalis, and resists the action of chlorin. Whenever the metal vanadium shall become more abundant, as it probably may ere long, we shall possess the means of making an ink, at a moderate price, much superior to the tannate and gallate of iron. To prepare the above vanadic salt cheaply, the cinder or hammerschlag obtained from the iron made at Ekersholm, in Sweden, or other iron which contains vanadium, being reduced to a fine powder, is to be mixed with two thirds of its weight of nitre, and one third of effloresced soda. The mixture is to be ignited in a crucible; cooled and lixiviated, whereby solutions of the vanadates of potash and soda are obtained, not pure, indeed, but sufficiently so for being decomposed, by means of sal ammoniac, into a vanadate of ammonia. This being rendered nearly neutral with any acid, constitutes an excellent indelible ink.

Indelible Ink may be prepared by adding lampblack and indigo to a solution of the gluten of wheat in acetic acid. This ink is of a beautiful black color, at the same time cheap, and can not be removed by water, chlorin, or dilute acids. M. Herberger gives the following directions for its preparation: Wheat-gluten is carefully freed from the starch, and then dissolved in a little weak acetic acid; the liquid is now mixed with so much rain water that the solution has about the strength of wine vinegar, *i. e.*, neutralizes 1-16 of its weight of carbonate of soda. 10 grs. of the best lampblack and 2 grs. of indigo are mixed with 4 ozs. of the solution of gluten, and a little oil of cloves added. This ink may be employed for marking linen, as it does not resist mechanical force.

Ink, indelible, of Dr. Traill, is essentially the same as the above. French indelible ink consists of Indian ink diffused through dilute muriatic acid, for writing with quills, and through weak potash lye for writing with steel pens.

Red Ink.—This ink may be made by infusing, for three or four days in weak vinegar, Brasil wood chipped into small pieces; the infusion may be then boiled upon the wood for an hour, strained, and thickened slightly with gum arabic and sugar. A little alum improves the color. A decoction of cochineal with a little water of ammonia, forms a more beautiful red ink, but it is fugitive. An extemporaneous red ink of the same kind may be made by dissolving carmine in weak water of ammonia, and adding a little mucilage.

Green Ink.—According to Klaproth, a fine ink of this color may be prepared by boiling a mixture of two parts of verdigris in eight parts of water, with one of cream of tartar, till the total bulk be reduced one half. The solution must be then passed through a cloth, cooled, and bottled for use.

Yellow Ink is made by dissolving 3 parts of alum in 100 of water, adding 25 parts of Persian or Avignon berries bruised, boiling the mixture for an hour, straining the liquor, and dissolving it in 4 parts of gum arabic. A solution of gamboge in water forms a convenient yellow ink.

By examining the different dye-stuffs, and considering the processes used in dyeing with them, a variety of colored inks may be made.

China Ink.—Proust says, that lampblack purified by potash ley, when mixed with a solution of glue, and dried, formed an ink which was preferred by artists to that of China. M. Merimée, in his interesting treatise, entitled *De la peinture à l'huile*, says, that the Chinese do not use glue in the fabrication of their ink, but that they add vegetable juices, which render it more brilliant and more indelible upon paper. When the best lampblack is levigated with the purest gelatine or solution of glue, it forms, no doubt, an ink of a good color, but wants the shining fracture, and is not so permanent on paper as good China ink; and it stiffens in cold weather into a tremulous jelly. Glue may be deprived of the gelatinizing property by boiling it for a long time, or subjecting it to a high heat in a Papin's digester; but as ammonia is apt to be generated in this way, M. Merimée recommends starch gum made by sulphuric acid (British gum) to be used in preference to glue. He gives, however, the following directions for preparing this ink with glue. Into a solution of glue he pours a concentrated solution of gall-nuts, which occasions an elastic resinous-looking precipitate. He washes this matter with hot water, and dissolves it in a spare solution of clarified glue. He filters anew, and concentrates it to the proper degree for being incorporated with the purified lampblack. The astringent principle in vegetables does not precipitate gelatin when its acid is saturated, as is done by boiling the nut-galls with lime-water or magnesia. The first mode of making the ink is to be preferred. The lampblack is said to be made in China, by collecting the smoke of the oil of sesame. A little camphor (about 2 per cent.) has been detected in the ink of China, and is supposed to improve it. Infusion of galls renders the ink permanent on paper.

Sympathetic Ink.—The best is a solution of muriate of cobalt.

Printers' Ink. See URE's *Dict.* for full details.

Blue Ink.—Mr. Stepheus's patent blue ink is made by dissolving Prussian blue in a solution of oxalic acid. The blue should be washed in dilute muriatic acid. M. Hornung has given the following as the best formula for blue ink: Mix 4 parts of perchlorid of iron, in solution, with 7·50 parts of water, then add 4 parts of cyanid of potassium dissolved in a little water; collect the precipitate formed; wash it with several additions of water; allow it to drain until it weighs about 200 parts; add to this 1 part of oxalic acid, and promote the solution of the cyanid by shaking the bottle containing the mixture. The addition of gum and sugar is useless, and even appears to exercise a prejudicial effect on the beauty of the ink. It may be kept without any addition for a long time.—URE's *Dictionary of Manufactures.* See INDIAN INK.

Inkle, a sort of broad linen tape, principally manufactured at Manchester and some other towns in Lancashire.

Inlaid work. There are many pretty and varied kinds of inlaid work manufactured from small fragments of material. There is the *Marquetrie* or inlaid cabinet-furniture of France, consisting in inlaying woods of a great variety of tints, in the form of flowers, ornaments, etc. The *Buhl*, or Boul-work, is also of French invention, wherein metals are inlaid upon a ground of ebony or tortoise-shell. The elaborate German cabinets, made of ebony, are inlaid with precious stones and various woods and metals. There is the *Mosaic inlay*, in which the pieces inlaid are extremely small, and of which exquisite boxes are made by the Hindoos; witness, too, the marvelous Spanish table at the Great Exhibition of London in 3,000,000 of pieces. The *Parquetrie*, or inlaid flowering, which differs from Marquetrie chiefly in the bolder scale of the designs; woods of different colors being cut to pattern, and inlaid. There is the novel and beautiful process of inlaying articles of furniture with porcelain; the inlaid portions are not merely pannels and pilasters, but painted porcelain flowers and other ornaments. The *Pietra Dura* is a kind of art carried to great perfection in Tuscany: its cultivation in that country has for a long period supplied most of the palaces of Europe with works in pietra dura, which rank among the finest examples of decorative furniture.

Insolvency and Bankruptcy. The first Insolvent Act in England was passed in 1649, but it was of limited operation; a number of acts of more extensive operation were passed at various periods, and particularly in the reign of George III. The benefit of the act known as the Great Insolvent Act was taken in England by 50,733 insolvents from the time of its passing, in 1814, to March, 1827, a period of 13 years. Since then, the acts relating to insolvency have been several times amended. Persons not traders, or, being traders, whose debts are less than £300, may petition the Court of Bankruptcy, and propose composition, and have *pro tem.* protection from all process against their persons and property, 6 Vict., 1842. Act amended, 8 Vict., August, 1844.—HAYDN.

Bankruptcy.—Blackstone defines a bankrupt—"A trader who secretes himself, or does certain other acts tending to defraud his creditors." But an intention to defraud is not now held to be essential to constitute a bankrupt; who may be either simply an insolvent, or a person who is guilty of certain acts tending to defraud his creditors.

INSOLVENCY.—*Analysis of the Laws of Bankruptcy.*—In Great Britain, insolvency is applied *to every class of persons*, while bankruptcy is exclusively applied *to traders*. In foreign countries, insolvency is the general denomination. Bankruptcy is declared when there is any degree of criminality. The law of bankruptcy of England is consolidated in the 12 and 13 Vict., c. 106. In America, various attempts were made for a general enactment for all the States, but with no success. The act of Congress on the subject, passed in 1841, was repealed in 1843. Special insolvency laws exist, of which an abstract is given hereafter. In Scotland, the bankrupt law is included in the 2 and 3 Vict., chap. 41. The French law of the 28th of May, 1838, has modified the Code of Commerce of 1807. Article 437 permits declaration of the insolvency of a trader after his decease. The law of Scotland authorizes the sequestration of estates of a deceased debtor. The same is permitted in Portugal. In England a Court of Bankruptcy is instituted, which may adjudge the creditor a bankrupt. In Scotland the same is placed with the Lord Ordinary. In France the same authority is given to the tribunal. Acts of bankruptcy may be committed in England in various ways. All acts made previous to adjudication of bankruptcy are valid, if they are entered into *bonâ fide* on the part of the contracting party. In France, the following acts, made within 10 days preceding the opening of the insolvency, are void: 1st. Acts transferring property gratuitously; 2d. Payment of debts not due, and of those due settled otherwise than with commercial effects; 3d. All mortgages, antichrese, or security, consented to for anterior debts; and, lastly, all acts whatever made by the debtor with a third party who was cognizant of his having stopped payment. Articles 53 to 54 of the Prussian code contain also similar instructions. The Spanish code fixes 30 days; the Portuguese code, 40 days; the Dutch code, two months previous to the insolvency as the time during which the insolvent could not alienate his property gratuitously, or endow his children, or transfer or mortgage his real estate.

The Dutch code declares void the donations made by the insolvent at any time where he knew his affairs embarrassed, although the donatee was *bonâ fide*. The Russian code prohibits the wife and children of the insolvent to reclaim the donations made to them. By Article 1451, the property engaged by the insolvent, and not yet sold, may be redeemed, and form portions of the assets. As to the administration of the insolvency in England, assignees are chosen by the creditors, under the supervision of the Court. In Scotland, creditors are to elect an interim factor and a trustee, and also three commissioners. In France, the agents created by the code 1807 have been suppressed, and at present there are no more than provisionary assignees, who continue their functions till the confirmation of the settlement, or till the formation of the contract of union. The Tribunal of Commerce of Paris has formed a fixed number of assignees, to whom is confided the management of all bankruptcies.

In Spain, the tribunal designates a commissioner, nominates a trustee for the property of the insolvent, and calls the creditors, who choose some assignees, who are to be taken from among the creditors, or their attorneys. In England, the commissioners of bankruptcy are judges, elected by the Lord Chancellor, one for each district. All legislation provides for the remuneration of the assignees, trustees, or administrators: these remunerations are fixed by Art. 1078, Spanish code, Portuguese code, Russian code, etc., etc., either upon a determined share, or the receipts which they have realized, or by remuneration, valued by the tribunal. The Spanish code prohibits an attorney from representing more than one creditor; and the Portuguese code prohibits a creditor from representing another creditor at the meetings.

In order that an insolvent may obtain a settlement, there need be, in France and in Russia, a majority of the creditors and three fourths of the debts. In Scotland, a majority and three fifths of the debts. In Spain, one more than the half of creditors and three fifths of the debts. The wife of the insolvent has no deliberative voice there in the resolutions relative to the settlement. In Holland, in Portugal, in Wurtemburg, and according to the ordinance of Bilboa, the two thirds of ordinary creditors and three fourths of debts, or the three fourths of the creditors and two thirds of the debts must be added together. The Prussian code, which divides the creditors into six classes, exacts the majority on sum and classes; in case of division of classes, the settlement may be adopted by the one and rejected by another; but if the division is impracticable, the declaration of division shall be equivalent then to a refusal. With respect to the confirmation, both in France and in Spain, it can only be pronounced eight days after the settlement has been obtained. The dissenting creditors, according to the Spanish code, can not form opposition to it, unless on account of defects in the forms of calling the meetings, on account of collusion, or of want of legitimate rights in the parties voting, or of fraudulent exaggeration of their debts; and in Holland, when the assets exceed the sum entered in the settlement. The Dutch code and the French law render the confirmation obligatory upon all the creditors both absent and

present, and even upon those who have not been called.

The rights of foreign creditors are generally regulated by treaties, Prussia, or by the right of reciprocity, Austria. By the French code of civil procedure, two months are granted to creditors residing in England to prove their debts. By the Sardinian code, such delay is three months.—*Com. Law of the World*, by LEONE LEVI. London, 1856. 2 vols.

United States.—There is not any bankrupt system in existence under the government of the United States. An act of Congress was passed on the subject in 1841, but it was repealed in 1843. The several States are left free to institute their own bankrupt system Insolvent laws prevail throughout the Union. In the States of Maine, New Hampshire, Massachusetts, Virginia, and Kentucky, they are confined to the relief of debtors charged in execution. In New Jersey, Delaware, Maryland, Tennessee, North and South Carolina, Georgia, Alabama, Mississippi, and Illinois, the insolvent laws extend to debtors in prison on mesne or final process. In New York, Connecticut, Rhode Island, Pennsylvania, Ohio, Indiana, Missouri, and Louisiana, they are still more extensive, and reach the debtor whether in or out of prison. The following is an abstract of the laws of the several States in reference to summary attachment against insolvents:

I. *Alabama.*—Original attachments, foreign and domestic, are issued by judges of the circuit or county courts, or justices of the peace. An attachment may issue, although the debt or demand of the plaintiff be not due; and shall be a lien on the property attached, until the debt or demand becomes due, when judgment shall be rendered and execution issued. A non-resident plaintiff may have an attachment against the property of a non-resident defendant; provided he gives good and sufficient resident security in the required bond; making oath that the defendant has not sufficient property within the State of defendant's residence to satisfy the debt or demand.

II. *Arkansas.*—An attachment may be issued against the property of a non-resident; and also against a resident of the State when the latter is about to remove out of the State; or is about to remove his goods or effects; or about to secrete himself so that the ordinary process of law can not be served on him.

III. *California.*—1. Creditors may proceed by attachment when the defendant has absconded, or is about to abscond from the State; or is concealed therein to the injury of his creditors. 2. When the defendant has removed, or is about to remove, any of his property out of the State, with intent to defraud his creditors. 3. When the defendant fraudulently contracted the debt, or incurred the obligation, respecting which the suit is brought. 4. When the defendant is a non-resident. 5. When he has fraudulently conveyed, disposed of, or concealed his property, or a part of it; or intends to convey the same to defraud his creditors. In California the real estate shall be bound, and the attachment shall be a lien thereon, although the debt or demand due the plaintiff be not due—In case the defendant is about to remove himself or his property from the State. The law of attachment applies in California, *when the contract has been made in that State, or when made payable in that State.*

IV. *Connecticut.*—Attachment may be granted against the goods and chattels and land of the defendant; and likewise against his person when not exempted from imprisonment on the execution in the suit. The plaintiff to give bonds to prosecute his claim to effect.

V. *Delaware.*—A writ of domestic attachment issues against an inhabitant of Delaware when the defendant can not be found; or has absconded with intent to defraud his creditors; and a writ of foreign attachment when the defendant is not an inhabitant of this State. This attachment is dissolved by the defendant's appearing and putting in special bail at any time before judgment.

VI. *Florida.*—An attachment issues when the amount is actually due, and the defendant is actually removing out of the State, or absconds or conceals himself.

VII. *Georgia.*—A judge of the superior court, or a justice of the inferior court, or a justice of the peace, may grant an attachment against a debtor whether the debt be matured or not, when the latter is removing without the limits of the State, or *any county*, or conceals himself. The remedy by attachment may be resorted to by non-resident as well as by resident creditors. The necessary affidavit may be made before any commissioner appointed by the State to take affidavits. Indorsers of notes, obligations, and all other instruments in writing, are entitled to the same remedy as provided for securities. In all cases the attachment first served shall be first satisfied. No lien shall be created by the levying of an attachment, to the exclusion of any judgment obtained by any creditor, before judgment is obtained by the attaching creditor.

VIII. *Illinois.*—Attachments are issued by the clerks of the circuit court, when affidavit is filed that the defendant has departed, or is about to depart, out of the State, or conceals himself, so that process can not be served upon him.

IX. *Indiana.*—The property of an inhabitant of the State may be attached, whenever he is secretly leaving the State, or shall have left the State with intent to defraud his creditors. The property of a non-resident is liable to attachment as in other States.

X. *Iowa.*—The plaintiff may cause any property of the defendant, which is not subject to execution, to be attached at the commencement, or during the progress, of the proceedings, whether the claim be matured or not; provided an affidavit is filed to the effect that the defendant is a foreign corporation, or acting as such, or that he is a non-resident of the State, or (if a resident) that he is in some manner about to dispose of or remove his property out of the State.

XI. *Kentucky.*—1. The plaintiff may have an attachment against the property of the defendant when the latter is a foreign corporation, or a non-resident of this State; or, 2, who has been absent therefrom four months; or, 3, has departed from the State with intent to defraud his creditors; or, 4, has left the county of his residence to avoid the service of a summons, or conceals himself that a summons can not reach him; or, 5, is about to remove his property, or a material part thereof, out of the State; or, 6, has sold or conveyed his property with the intent to defraud his creditors, or is about so to sell or convey. Such attachment is binding upon the defendant's property in the county from the time of the delivery of the order to the sheriff.

XII. *Louisiana.*—A creditor may obtain an attachment against the property of his debtor upon affidavit: 1, when the latter is about leaving permanently the State before obtaining or executing judgment against him; 2, when the debtor resides out of the State; 3, when he conceals himself to avoid being cited to answer to a suit, and provided the term of payment have arrived. In the absence of the creditor, the oath may be made by his agent or attorney, to best of his knowledge and belief.

XIII. *Maine.*—In this State, an original writ may be framed either to attach the goods or estate of the defendant, or for want thereof to take his body. All goods and chattels may be attached by the creditor and held as security pending any suit against the debtor. Such a writ will authorize an attachment of goods and estate of the principal defendant, in his own hands, as well as in the hands of trustees. Real estate, liable to be taken in execution, may be attached.

XIV. *Maryland.*—A creditor may obtain an attachment, whether he be a citizen of Maryland or not, against his debtor, who is not a citizen of this State, and not residing therein. If any citizen of the State, being indebted to another citizen thereof, shall actually run away or abscond, or secretly remove himself from his place of abode, with intent to evade the payment of his just debts, an attachment may be obtained against him. An attachment may be laid upon debts due the defendant upon judgments or decrees rendered or passed by any court of this State, and judgment of condemnation thereof may be had, as upon other debts due the defendant.

XV. *Massachusetts.*—Original writs may be framed, either to attach the goods or estate of the defendant, or for want thereof to take his body; or, there may be an original summons, either with or without an order to attach the goods or estate. All real estate, or goods and chattels that are liable to be taken in execution, may be attached upon the original writ, in any action in which any debt or damages are recoverable, and may be held as security to satisfy such judgment as the plaintiff may recover.

XVI. *Michigan.*—The grounds of attachment in this State are, 1, that the defendant has absconded, or is about to abscond, or has concealed himself; 2, that he has assigned, or concealed, or is about to remove, his property with a view to defraud; 3, that he fraudulently contracted the debt, or incurred the obligation, about which the suit is brought; 4, that he is not a resident of the State, or has not resided there three months immediately preceding the suit; 5, that the defendant is a foreign corporation.

XVII. *Mississippi.*—An attachment against the estate, including real estate, slaves, goods, chattels, etc., of a debtor, when it is shown that he has removed, or is about removing or absconding from the State, or privately conceals himself. Attachment also lies against the property of non-resident decedents. It may be obtained before the debt is due for which it issues, when the creditor has ground to believe that the debtor will remove with his effects out of the State, or has removed.

XVIII. *Missouri.*—An attachment may be issued here when the debtor is not a resident of the State; or, if a resident, when he absconds, absents, or conceals himself; or is about to remove his property, or fraudulently convey it, with a view to hinder or delay his creditors; or, 2, where the debt was contracted out of the State, and the debtor has secretly removed his effects into this State with intent to defraud.

XIX. *New Hampshire.*—In this State a writ of attachment may be issued upon the institution of any personal action; and will hold real and personal property, shares of stock in corporations, pews in churches, and the franchise of any corporation authorized to receive tolls, until the period of thirty days from the time of rendering the judgment.

XX. *New Jersey.*—An attachment may issue at the instance of a creditor (or in his absence, of his agent or attorney), against the property of a debtor when the latter is about to abscond from the State, or is not a resident of the State, or is a foreign corporation.

XXI. *New York.*—Any creditor to the amount of $25 may compel the assignment of their estates by debtors imprisoned on execution in civil causes for more than 60 years. If the debtor refuses to be examined, and to disclose his affairs, he is liable to be committed to close confinement. If he refuses to render an account inventory, and make an assignment, he will not be entitled to his discharge; though the officer having jurisdiction in the case is authorized to make the assignment for him. The proceedings, and the effect of the discharge, when duly obtained, and the duties of the debtor, and the rights of the creditors, are essentially the same as in the case of proceedings with the assent of two thirds of the creditors.

2. Every insolvent debtor may also petition the proper officers for leave voluntarily to assign his estate for the benefit of his creditors; and the same proceedings and checks are substantially prescribed as in other cases of insolvency. His discharge, obtained in such a case, exempts him from imprisonment, as to debts due at the time of the assignment, or previously contracted; and as to liabilities incurred by making or indorsing any promissory note or bill of exchange. But the discharge does not affect or impair any debt, demand, payment, or decree against the insolvent; and they remain good against his property acquired after the execution of the assignment; and the lien of judgment and decree is not affected by the discharge.

3. The creditor at whose suit the debtor is imprisoned, may require him, after the expiration of three months, to make the assignment, and his refusal will forever bar him from his discharge under this provision.

4. Corporations being creditors, may petition by a director, or other officer, acting under the corporate seal; and such director or officer, may make the requisite affidavits. So one joint partner may act as a creditor for the firm; and provision is made for the accommodation of non-resident creditors.

5. Debts purchased below the nominal amount entitle the creditor to act to the amount of the sum actually and bonâ fide paid; nor is a creditor having a security permitted to become a petitioner unless he relinquishes his security for the common benefit of the creditors. The assignments and discharges in these insolvent cases are to be recorded by the clerk of the county in which they were executed. No debt or duty to the United States is affected by any such discharge, not even as to the remedy by imprisonment; but debts and duties to the State, except taxes, are placed upon the same footing as debts to individuals.

6. The assignment of the insolvent passes all his interest, legal and equitable, existing at the time of executing the assignment in any estate, real or personal; but no contingent interest passes unless it shall become vested within three years after making the assignment, and then it passes. Probabilities coupled with an interest are assignable; but not bare possibilities, such as the expectancy of an heir. The assignment does not affect property held by the debtor in trust; nor does the assignment by the insolvent husband affect the property settled to the separate use of the wife free and clear of her husband.

7. The insolvent discharges apply only to debts existing when the petition, inventory, and schedule of debts are presented, and not so as to cover debts contracted between that time and the time of the discharge.

8. The property assigned is distributed ratably among all the creditors, subject, nevertheless, to existing legal liens and priorities existing before the assignment; and under the New York insolvent laws, a creditor can not become a petitioning creditor in respect to any debt secured by a legal lien, unless he previously relinquishes that lien for the general benefit of the creditors.

9. The attachment-law of New York is a legal mode, by which, a title to property may be acquired by operation of law. When the debtor, who is an inhabitant of New York, absconds, or is concealed, a creditor to whom he owes $100, or any two, to whom he owes $150, or any three, to whom he owes $300, may, on application to a judge or commissioner, and on due proof of the debt, and of the departure or concealment, procure his real and personal estate to be attached; and on due public notice of the proceeding, if the debtor does not within three months return and satisfy the creditor, or appear and offer to contest the fact of having absconded, or offer to appear and contest the validity of the demand and give the requisite security, then trustees are to be appointed who become vested with the debtor's estate; and they are to col-

lect and sell it, and settle controversies, and make dividends among all his creditors, in the mode prescribed.

10. From the time of the notice, all sales and assignments by the debtor are declared to be void. If the debtor resides out of the State, and is indebted on a contract made within the State, or to a creditor residing within the State, although upon a contract made elsewhere, his property is liable to be attached and sold in like manner; but the trustees are not to be appointed until nine months after public notice of the proceedings.

11. Perishable goods, other than vessels, when attached under the Absconding Debtor Act, may be immediately sold and converted into money; and if the sheriff, under the attachment, seizes property claimed by third persons, he is to summon a jury and to take their inquisition as to the title to the property claimed.

12. If any American vessel belonging to the debtor be attached under these proceedings, it may be released on the claimant of the vessel giving security to pay the amount of the valuation of the vessel to the trustees, or to the debtor, as the case may be; and if it be a foreign vessel claimed by a third person, the attaching creditor must give security to prosecute the attachment, and to pay the damages if it should appear that the vessel belonged to the claimant.

13. A creditor, having an unliquidated demand resting on contract, is a creditor within the Absconding Debtor Act, and competent to apply for the attachment. Any creditor may proceed against an absconding or concealed debtor, being an inhabitant of the State, or against any non-resident debtor, if the contract was made in New York; but if the contract was made elsewhere, then the creditor must be a resident of the State.

14. Attachment-laws against the property, real and personal, of absconding and non-resident debtors prevail throughout the several United States, but those statute laws are not uniform on this point.

XXII. *North Carolina.*—An attachment may issue on the complaint of a creditor, his agent, attorney or factor, against the property of a debtor when he has removed, or is about to remove, privately from the State, so that the ordinary process of law will not reach him.

XXIII. *Ohio.*—1. A creditor may procure, before or after the maturity of the claim, an attachment against the property of a debtor, where the latter is a foreign corporation or a non-resident; or, if a resident, when he has absconded, or left the county of his residence, or conceals himself; or is about to remove or convert his property, with a view to defraud his creditors. 2. When the debtor fraudulently contracted the debt, or incurred the obligation.

XXIV. *Pennsylvania.*—In this State the writ of domestic attachment issues against any debtor, being an inhabitant of the State, if he has absconded from his usual place of abode; or shall have remained absent from the State, or shall have confined himself in his own house, or concealed himself elsewhere, to defraud his creditors. No second attachment will be issued against the same property, unless the first be not executed, or be dissolved by the court. A writ of attachment may be also issued against the property of a foreign corporation or a non-resident. In the latter case, the attachment inures to the benefit of the attaching creditor only. In the former case, it is for the benefit of creditors at large.

XXV. *Rhode Island.*—In this State a writ of attachment is first levied against the body of the defendant; and if he can not be found, then against his goods and chattels. The property of foreign corporations and debtors is also liable to attachment, at the suit of a creditor.

XXVI. *South Carolina.*—A writ of attachment will issue, at the instance of a creditor wherever residing, against a debtor when he is a non-resident—or against a citizen who has been absent more than a year and a day; or when he absconds or is removing out of the county; or conceals himself so that the ordinary process of law can not reach him.

XXVII. *Tennessee.*—When a debtor has removed, or is about to remove out of the county privately, or absconds or conceals himself, an attachment may be obtained against his property, at the suit of a creditor, or his agent, attorney, or factor. In the case of non-resident debtors, having any real or personal property in the State, it is required, in order to obtain an attachment, to file a bill in chancery.

XXVIII. *Texas.*—Original attachments are issued against the property of a debtor when he is not to be found in the county; and the property attached shall remain in custody until final judgment. Attachment will also lie when the defendant is a non-resident; or when a resident is about to remove out of the State; and whether the debt be matured or not.

XXIX. *Vermont.*—Writs of attachment may issue against the goods, chattels, or estate of the defendant, or for want thereof, against his body, before or after the maturity of a claim. Actions against non-residents, or when the defendant has absconded from the State, may be commenced by trustee process.

XXX. *Virginia.*—The property of the defendant, if a non-resident, or a resident who is about to remove himself or effects from the State, is liable to attachment. An attachment in such cases will hold before the claim is due and payable.

XXXI. *Wisconsin.*—An attachment will hold against the property of a debtor when he has absconded, or is about to abscond, from the State; or has fraudulently assigned, disposed of, or concealed his effects; or removed his property from the State; or when the defendant is a non-resident or a foreign corporation.

XXXII. *Minnesota.*—A warrant of attachment may be issued against the property of a defendant when a foreign corporation; or, when not a resident of this Territory; or, 3, has left the Territory with intent to defraud his creditors.

Thus it will be seen that in all the States the property of non-residents and foreign corporations is liable to attachments at the suit of creditors, before judgment is rendered; likewise against domestic debtors when they have absconded from the State, or have fraudulently conveyed, or are about to convey, sell, assign, or secrete their effects. In some few States, however, even this condition is not essential before a writ of attachment will issue.

In the States of Alabama, Massachusetts, Connecticut, Maine, New Hampshire, Vermont, and Rhode Island, the creditor may have a writ of attachment against the property of the debtor at the first institution of a suit; and without any ground of fraud or fraudulent intent—such property being held by the attachment until the termination of the suit, or until judgment; the plaintiff in such cases giving bond or security to indemnify the defendant for any loss or damage sustained, should the case be decided in favor of the latter. Generally, the property is liable only when actually levied upon; but in the State of Kentucky only, the property is liable from the moment of the delivery of the order to the sheriff.

The reader will find the American law on this subject fully illustrated in "A Treatise on the Law of Suits by Attachment in the United States. By CHAS. D. DRAKE, of the St. Louis Bar." 8vo. Published by Messrs. Little & Brown, Boston; to which work we are indebted for the present abstract. On the subjects of insolvency and bankrupt laws, see HUNT'S *Mer. Mag.*, v., 360, iv., 22, vi., 419, vii., 261, 352, viii., 294, xxi., 513, xxii., 64, 195, 311; *N. Y. Rev.*, vii., 440; *Am. Reg.*, ii., 74; *Westminster Rev.*, xlvi., 500, lii., 419; *Dem. Rev.*, xiii., 286; *No. Am. Rev.*, vii., 25; NILES'S *Register*, xix., 403, xxi., 243, 382 (JOHN SERGEANT), 407 (ANDREW STEVENSON).

Insurance, a contract of indemnity, by which one party engages, for a stipulated sum, to insure another against a risk to which he is exposed. The party who takes upon him the risk, is called the *Insurer, Assurer*, or *Underwriter;* and the party protected by the insurance is called the *Insured*, or *Assured;* the sum paid is called the *Premium;* and the instrument containing the contract of indemnity is called the *Policy*.

Insurance on Ships and Merchandise.—Suetonius conjectures that Claudius was the first contriver of it, A.D. 43. Insurance was in general use in Italy in 1194, and in England in 1560. Insurance policies were first used in Florence in 1523. The first law relating to insurance was enacted in 1601. Insurance of houses and goods in London began in 1667. This was the year following that of the great fire of London. An office was then set up for insuring houses and buildings, principally contrived by Dr. Barton, one of the first and most extensive builders of the city of London. The first regular office set up in London was the *Hand-in-Hand*, in 1696. A duty was laid on insurances of 1s. 6d. per £100 insured, in 1782: this duty was increased in 1797, and was variously altered since. The date of the first insurance office in the United States has not been ascertained.—HAYDN.

This article has been divided under the general heads of: I. Insurance (General Principles of). II. Insurance (Marine). III. Insurance (Fire). IV. Insurance (Life).

I. INSURANCE (GENERAL PRINCIPLES OF).—It is the duty of government to assist, by every means in its power, the efforts of individuals to protect their property. Losses do not always arise from accidental circumstances, but are frequently occasioned by the crimes and misconduct of individuals; and there are no means so effectual for their prevention, when they arise from this source, as the establishment of a vigilant system of police, and of such an administration of the law as may be calculated to afford those who are injured a ready and cheap method of obtaining every practicable redress; and, as far as possible, of insuring the punishment of culprits. But, in despite of all that may be done by government, and of the utmost vigilance on the part of individuals, property must always be exposed to a variety of casualties from fire, shipwreck and other unforeseen disasters. And hence the importance of inquiring how such unavoidable losses, when they do occur, may be rendered least injurious. The loss of a ship, or the conflagration of a cotton-mill, is a calamity that would press heavily even on the richest individual. But were it distributed among several individuals, each would feel it proportionally less; and provided the number of those among whom it was distributed were very considerable, it would hardly occasion any sensible inconvenience to any one in particular. Hence the advantage of combining to lessen the injury arising from the accidental destruction of property: and it is the diffusion of the risk of loss over a wide surface, and its valuation, that forms the employment of those engaged in insurance.

Though it be impossible to trace the circumstances which occasion those events that are, on that account, termed accidental, they are, notwithstanding, found to obey certain laws. The number of births, marriages, and deaths; the proportions of male to female, and of legitimate to illegitimate births; the ships cast away; the houses burned; and a vast variety of apparently accidental events, are yet, when our experience embraces a sufficiently wide field, found to be nearly equal in equal periods of time; and it is easy, from observations made upon them, to estimate the sum which an individual should pay, either to guaranty his property from risk, or to secure a certain sum for his heirs at his death. It must, however, be carefully observed, that no confidence can be placed in such estimates, unless they are deduced from a very wide induction. Suppose, for example, it happens that during the present year one house is accidentally burned, in a town containing 1,000 houses; this would afford very little ground for presuming that the *average* probability of fire in that town was 1 to 1,000. For it might be found that not a single house had been burned during the previous 10 years, or that 10 were burned during each of these years. But supposing it were ascertained, that, at an average of 10 years, 1 house had been annually burned, the presumption that 1 to 1000 was the real ratio of the probability of fire, would be very much strengthened; and if it were found to obtain for 20 or 30 years together, it might be held, for all practical purposes at least, as indicating the precise degree of probability.

Besides its being necessary, in order to obtain the true measure of the probability of any event, that the series of events, of which it is one, should be observed for a rather lengthened period, it is necessary, also, that the events should be numerous, or of pretty frequent occurrence. Suppose it were found, by observing the births and deaths of 1,000,000 individuals, taken indiscriminately from among the whole population, that the mean duration of human life was 40 years; we should have but very slender grounds for concluding that this ratio would hold in the case of the next 10, 20, or 30 individuals that are born. Such a number is so small as hardly to admit of the operation of what is called the *law of average*. When a large number of lives is taken, those that exceed the medium term are balanced by those that fall short of it; but when the number is small, there is comparatively little room for the principle of compensation, and the result can not, therefore, be depended upon. It is found, by the experience of all countries in which censuses of the population have been taken with considerable accuracy, that the number of male children born is to that of female children in the proportion nearly of 22 to 21. But unless the observations be made on a very large scale, this result will not be obtained. If we look at particular families, they sometimes consist wholly of boys, and sometimes wholly of girls; and it is not possible that the boys can be to the girls of a single family in the ratio of 22 to 21. But when, instead of confining our observations to particular families, or even parishes, we extend them so as to embrace a population of 500,000, these discrepancies disappear, and we find that there is invariably a small excess in the number of males born over the females.

The false inferences that have been drawn from the doctrine of chances, have uniformly, almost, proceeded from generalizing too rapidly, or from deducing a rate of probability from such a number of instances as do not give a fair average. But when the instances on which we found our conclusions are sufficiently numerous, it is seen that the most anomalous events, such as suicides, deaths by accidents, the number of letters put into the post-office without any address, etc., form pretty regular series, and consequently admit of being estimated *à priori*. The business of insurance is founded upon the principles thus briefly stated. Suppose it has been remarked that of *forty* ships, of the ordinary degree of sea-worthiness, employed in a given trade, *one* is annually cast away, the probability of loss will plainly be equal to *one fortieth*. And if an individual wish to insure a ship, or the cargo on board a ship, engaged in this trade, he ought to pay a premium equal to the 1-40th part of the sum he insures, exclusive of such an additional sum as may be required to indemnify the insurer for his trouble, and to leave him a fair profit. If the premium exceed this sum, the insurer is overpaid; and if it fall below it, he is underpaid.

Insurances are effected sometimes by societies, and sometimes by individuals, the risk being in either case diffused among a number of persons. Companies formed for carrying on the business have generally a large subscribed capital, or such a number of propri-

ctors, as enables them to raise, without difficulty, whatever sums may at any time be required to make good losses. Societies of this sort do not limit their risks to small sums; that is, they do not often refuse to insure a large sum upon a ship, a house, a life, etc. The magnitude of their capitals affords them the means of easily defraying a heavy loss; and their premiums being proportioned to their risks, their profit is, at an average, independent of such contingencies.

Individuals, it is plain, could not act in this way, unless they were possessed of very large capitals; and besides, the taking of large risks would render the business so hazardous, that few would be disposed to engage in it. Instead, therefore, of insuring a large sum, as $20,000, upon a single ship, a private underwriter or insurer may not, probably, in ordinary cases, take a greater risk than $200 or $500; so that, though his engagements may, when added together, amount to $20,000, they will be diffused over from 40 to 100 ships; and supposing one or two ships to be lost, the loss would not impair his capital, and would only lessen his profits. Hence it is, that while one transaction only may be required in getting a ship insured by a company, 10 or 20 separate transactions may be required in getting the same thing done at Lloyd's, or by private individuals. When conducted in this cautious manner, the business of insurance is as safe a line of speculation as any in which individuals can engage. To establish a policy of insurance on a fair foundation, or in such a way that the premiums paid by the insured shall exactly balance the risks incurred by the insurers, and the various necessary expenses to which they are put, including, of course, their profit, it is necessary, as previously remarked, that the experience of the risks should be pretty extensive. It is not, however, at all necessary, that either party should inquire into the circumstances that lead to those events that are most commonly made the subject of insurance. Such a research would, indeed, be entirely fruitless: we are, and must necessarily continue to be, wholly ignorant of the causes of their occurrence.

It appears, from the accounts given by Mr. Scoresby, in his valuable work on the Arctic Regions, that of 586 ships which sailed from the various ports of Great Britain for the northern whale fishery, during the four years ending with 1817, eight were lost (vol. ii., p. 131), being at the rate of one ship out of every 73 of those employed. Now, supposing this to be about the average loss, it follows that the premium required to insure against it should be 1·70 per cent., exclusive, as already observed, of the expenses and profits of the insurer. Both the insurer and the insured would gain by entering into a transaction founded on this fair principle. When the operations of the insurer are extensive, and his risks spread over a considerable number of ships, his profit does not depend upon chance, but is as steady, and may be as fairly calculated upon, as that of a manufacturer or a merchant; while, on the other hand, the individuals who have insured their property have exempted it from any chance of loss, and placed it, as it were, in a state of absolute security.

It is easy, from the brief statement now made, to perceive the immense advantages resulting to navigation and commerce from the practice of marine insurance. Without the aid that it affords, comparatively few individuals would be found disposed to expose their property to the risk of long and hazardous voyages; but by its means insecurity is changed for security, and the capital of the merchant, whose ships are dispersed over every sea, and exposed to all the perils of the ocean, is as secure as that of the agriculturist. He can combine his measures and arrange his plans as if they could no longer be affected by accident. The chances of shipwreck, or of loss by unforeseen occurrences, enter not into his calculations. He has purchased an exemption from the effects of such casualties; and applies himself to the prosecution of his business with that confidence and energy which nothing but a feeling of security can inspire. "Les chances de la navigation entravaient le commerce. Le système des assurances a paru; il a consulté les saisons; il a porté ses regards sur la mer; il a interrogé ce terrible élément; il en a jugé l'inconstance; il en a pressenti les orages: il a épié la politique: il a reconnu les ports et les côtes des deux mondes; il a tout soumis à des calculs savans, à des théories approximatives; et il a dit au commerçant habile, au navigateur intrépide: certes, il y a des désastres sur lesquels l'humanité ne peut que gémir; mais quant à votre fortune, allez franchissez les mers, déployez votre activité et votre industrie; je me charge de vos risques. Alors, Messieurs, s'il est permis de le dire, les quatre parties du monde se sont rapprochées."—*Code de Commerce, Exposé des Motifs*, liv., ll.

Besides insuring against the perils of the sea, and losses arising from accidents caused by the operation of natural causes, it is common to insure against enemies, pirates, thieves, and even the fraud, or, as it is technically termed, *barratry*, of the master. The risk arising from these sources of casualty being extremely fluctuating and various, it is not easy to estimate it with any considerable degree of accuracy; and nothing more than a rough average can, in most cases, be looked for. In time of war, the fluctuation in the rates of insurance is particularly great; and the intelligence that an enemy's squadron, or even a single privateer, is cruising in the course which the ships bound to or returning from any given port usually follow, causes an instantaneous rise in the premium. The appointment of convoys for the protection of trade during war, necessarily tends, by lessening the chance of capture, to lessen the premium on insurance. Still, however, the risk in such periods is, in most cases, very considerable; and as it is liable to change, very suddenly, great caution is required on the part of the underwriters.

Provision may also be made, by means of insurance, against loss by fire, and almost all the casualties to which property on land is subject. But, notwithstanding what has now been stated, it must be admitted that the advantages derived from the practice of insuring against losses by sea and land are not altogether unmixed with evil. The security which it affords tends to relax that vigilant attention to the protection of property which the fear of its loss is sure otherwise to excite. This, however, is not its worst effect. The records of our courts, and the experience of all who are largely engaged in the business of insurance, too clearly prove that ships have been repeatedly sunk, and houses burned, in order to defraud the insurers. In despite, however, of the temptation to inattention and fraud which is thus afforded, there can be no doubt that, on the whole, the practice is, in a public as well as private point of view, decidedly beneficial. The frauds that are occasionally committed raise, in some degree, the rate of insurance. Still it is exceedingly moderate; and it is most probable that the precautions adopted by the insurance offices for the prevention of fire, especially in great towns, where it is most destructive, outweigh the chance of increased conflagration arising from the greater tendency to carelessness and crime.

The business of life insurance has been carried to a far greater extent in Great Britain than in any other country, and has been productive of the most beneficial effects. Life insurances are of various kinds. Individuals without any very near connections, and possessing only a limited fortune, are sometimes desirous, or are sometimes, from the necessity of their situation, obliged annually to encroach on their capitals. But should the life of such persons be extended beyond the ordinary term of existence, they might be totally unprovided for in old age; and to secure themselves

against this contingency, they pay to an insurance company the whole or a part of their capital, on condition of its guarantying them, as long as they live, a certain annuity, proportioned partly, of course, to the amount of the sum paid, and partly to their age when they buy the annuity. But though sometimes serviceable to individuals, it may be questioned whether insurances of this sort are, in a public point of view, really advantageous. So far as their influence extends, its obvious tendency is to weaken the principle of accumulation; to stimulate individuals to consume their capitals during their own life, without thinking or caring about the interest of their successors. Were such a practice to become general, it would be productive of the most extensively ruinous consequences. The interest which most men take in the welfare of their families and friends affords, indeed, a pretty strong security against its becoming injuriously prevalent. There can, however, be little doubt that this selfish practice may be strengthened by adventitious means; such, for example, as the opening of government loans in the shape of life annuities, or in the still more objectionable form of tontines. But when no extrinsic stimulus of this sort is given to it, there do not seem to be any very good grounds for thinking that the sale of annuities by private individuals or associations can materially weaken the principle of accumulation.

Luckily, however, the species of insurance now referred to is but inconsiderable compared with that which has accumulation for its object. All professional persons, or those living on salaries or wages, such as lawyers, physicians, military and naval officers, clerks in public or private offices, etc., whose incomes must of course terminate with their lives, and a host of others, who are either not possessed of capital or can not dispose of their capital at pleasure, must naturally be desirous of providing, so far as they may be able, for the comfortable subsistence of their families in the event of their death. Take, for example, a physician or lawyer, without fortune, but making, perhaps, $1000 or $2000 a-year by his business; and suppose that he marries and has a family: if this individual attain to the average duration of human life, he may accumulate such a fortune as will provide for the adequate support of his family at his death. But who can presume to say that such will be the case?—that he will not be one of the many exceptions to the general rule?—And suppose that he were hurried into an untimely grave, his family would necessarily be destitute. Now, it is against such calamitous contingencies that life insurance is intended chiefly to provide. An individual possessed of an income terminating at his death, agrees to pay a certain sum annually to an insurance office; and this office binds itself to pay to his family at his death, a sum equivalent, after deduction of the expenses of management and the profits of the insurers, to what these annual contributions, accumulated at compound interest, would amount to, supposing the insured to reach the common and average term of human life. Though he were to die the day after the insurance has been effected, his family would be as amply provided for as it is likely they would be by his accumulations were his life of the ordinary duration. In all cases, indeed, in which those insured die before attaining the average age, their gain is obvious. But even in those cases in which their lives are prolonged beyond the ordinary term, they are not losers—they then merely pay for a security which they must otherwise have been without. During the whole period, from the time when they effect their insurances, down to the time when they arrive at the mean duration of human life, they are protected against the risk of dying without leaving their families sufficiently provided for; and the sum which they pay after having passed this mean term is nothing more than a fair compensation for the security they previously enjoyed. Of those who insure houses against fire, a very small proportion only have occasion to claim an indemnity for losses actually sustained; but the possession of a security against loss, in the event of accident, is sufficient motive to induce every prudent individual to insure his property. The case of life insurance is in this respect different. When established on a proper footing, the extra sums which those pay whose lives exceed the estimated duration is but the value of the previous security. In order to adjust the terms of an insurance that the party insuring may neither pay too much nor too little, it is necessary that the probability of his life falling in each subsequent year should be determined with as much accuracy as possible.

To ascertain this probability, various observations have been made in different countries and periods, showing, out of a given number of persons born in a particular country or place, how many complete each subsequent year, and how many die in it, till the whole be extinct. The result of such observations, when collected and arranged in a tabular form, are called Tables of Mortality; being entitled, of course, to more or less confidence, according to the number and species of lives observ ; the period when, and the care with which, the observations were made, etc. But supposing these tables to be formed with sufficient accuracy, the expectation of life at any age, or its mean duration after such age, may be readily learned from them; and hence also the value of an annuity, or the assurance on a life of any age. Thus, in the table of mortality for Carlisle, framed by Mr. Milne, of the Sun Life Office, and which is believed to represent the average law of mortality in England with very considerable accuracy, out of 10,000 persons, born together, 4000 complete their 56th year; and it further appears, that the number of such persons who die in their 66th year is 124; so that the probability that a life now 56 years of age will terminate in the 10th year hence is 124-4000. But reckoning interest at 4 per cent., it appears (Tables Interest and Annuities), that the present value of $100 to be received 10 years hence is $67·556; consequently if its receipt be made to depend upon the probability that a life now 56 years of age will fail in the 66th year, its present value will be reduced by that contingency to $\frac{124 \times 67{\cdot}556}{4000} = \$2{\cdot}094$. The present value of $100, receivable upon the life of a party now 56 years of age, terminating in the 57th or any subsequent year of his life, up to its extreme limit (which, according to the Carlisle table, is the 105th year), being calculated in this way, the sum of the whole will be the present value of $100, receivable whenever the life may fail; that is, of $100 insured upon it, supposing no additions were made to it for the profits and expenses of the insurers.

More compendious processes are resorted to for calculating tables of insurances at all ages; but the above statement sufficiently illustrates the principle on which they all depend. In practice, a life insurance is seldom made by the payment of a single sum when it is effected, but almost always by the payment of an *annual premium* during its continuance, the first being paid down at the commencement of the insurance.* If the Table of Mortality adopted by the insurers fairly represent the law of mortality prevailing among the insured, it follows that when a party insured does not attain to the average age according to the table, the insurers will either lose by him, or realize less than their ordinary profit; and when, on the other hand, the life of an insured party is prolonged beyond the tabular average, the profits of the insurers are proportionally increased. But if their business be so extensive as to enable the law of average fully to apply, what they lose by premature death will be balanced by the payments received from those who lives are

* For the method of calculating these annual premiums see Interest and Annuities.

prolonged beyond the mean duration of life for the ages at which they were respectively insured; so that the profits of the society will be wholly independent of chances.

The relief from anxiety afforded by life insurance very frequently contributes to prolong the life of the insured, at the same time that it materially augments the comfort and well-being of those dependent on him. It has also an obvious tendency to strengthen habits of accumulation. An individual who has insured a sum on his life, would forfeit all the advantages of the insurance were he not to continue regularly to make his annual payments. It is not, therefore, optional with him to save a sum from his ordinary expenditure adequate for this purpose. He is compelled, under a heavy penalty, to do so; and having thus been led to contract a habit of saving to a certain extent, it is most probable that the habit will acquire additional strength, and that he will either insure an additional sum or privately accumulate.

The practice of marine insurance, no doubt from the extraordinary hazard to which property at sea is exposed, seems to have long preceded insurances against fire and upon lives. We are ignorant of the precise period when it began to be introduced; but it appears most probable that it dates from the end of the 14th or the beginning of the 15th century. It has, however, been contended by Loccenius (*De Jure Maritimo*, lib., li., c. 1), Puffendorff (*Droit de la Nature et des Gens*, lib. v., c. 9), and others, that the practice of marine insurance is of much higher antiquity, and that traces of it may be found in the history of the Punic wars. Livy mentions, that during the second of these contests, the contractors employed by the Romans to transport ammunition and provisions to Spain, stipulated that government should indemnify them against such losses as might be occasioned by the enemy, or by tempests, in the course of the voyage.—*Impetratum fuit, ut quæ navibus imponerentur ad exercitum Hispaniensem deferenda, ab hostium tempestatisque vi, publico periculo esset.*—Hist., lib. xxiii., c. 49. Malynes (*Lex Mercatoria*, 3d ed., p. 105), founding on a passage in Suetonius, ascribes the first introduction of insurance to the emperor Claudius, who, in a period of scarcity at Rome, to encourage the importation of corn, took upon himself all the loss or damage that it might sustain in the voyage thither by storms and tempests. —*Negotiatoribus certa lucra proposuit, suscepta in se damno, si qui quid per tempestates accidisset, et naves mercaturæ causâ, fabricantibus, magna commoda constituit.*—c. 18. It is curious to observe that this stipulation gave occasion to the commission of acts of fraud, similar to those so frequent in modern times. Shipwrecks were pretended to have happened, that never took place: old shattered vessels, freighted with articles of little value, were purposely sunk, and the crew saved in boats; large sums being then demanded as a recompense for the loss. Some years after, the fraud was discovered, and some of the contractors were prosecuted and punished.—Lib. xxv., c. 3. But none of these passages, nor a similar one, in Cicero's Letters (*Ad Fam.*, lib. ii., c. 17), warrant the inferences that Loccenius, Malynes, and others have attempted to draw from them. Insurance is a contract between two parties; one of whom, on receiving a certain premium (*pretium periculi*), agrees to take upon himself the risk of any loss that may happen to the property of the other. In ancient, no less than in modern times, every one must have been desirous to be exonerated from the chance of loss arising from the exposure of property to the perils of the sea. But though, in the cases referred to, the carriers were exempted from this chance, they were not exempted by a contract *propter aversionem periculi*, or by an insurance; but by their employers taking the risk upon themselves. And it is abundantly obvious that the object of the latter in doing this was not to profit, like an insurer, by dealing in risks, but to induce individuals the more readily to undertake the performance of an urgent public duty.

But with the exception of the instances now mentioned, nothing bearing the remotest resemblance to an insurance is to be met with till a comparatively recent period. If we might rely on a passage in one of the Flemish chroniclers, quoted by the learned M. Pardessus—see his excellent work, *Collection des Lois Maritimes*, tome i., p. 356—we should be warranted in concluding that insurance had been effected at Bruges so early as the end of the 13th century; for the chronicler states that, in 1311, the Earl of Flanders consented, on a requisition from the inhabitants, to establish a chamber of insurance at Bruges. M. Pardessus is not, however, inclined to think that this statement should be regarded as decisive. It is evident from the manner in which the subject is mentioned, that the chronicler was not a cotemporary; and no trace can be found, either in the archives of Bruges, or in any authentic publication, of any thing like the circumstance alluded to. The earliest extant Flemish law as to insurance, is dated in 1527; and none of the early maritime codes of the North so much as alludes to this interesting subject.

Beckmann seems to have thought that the practice of insurance originated in Italy, in the latter part of the 15th, or early part of the 16th century.—*Hist. of Invent.*, vol. i., art. Insurance. But the learned Spanish antiquary, Don Antonio de Capmany, has given, in his very valuable publication on the History and Commerce of Barcelona (*Memorias Historicas sobre la Marina, etc., de Barcelona*, tomo ii., p. 383), an ordinance relative to insurance, issued by the magistrates of that city in 1435; whereas, the earliest Italian law on the subject is nearly a century later, being dated in 1523. It is, however, exceedingly unlikely, had insurance been as early practiced in Italy as in Catalonia, that the former should have been so much behind the latter in subjecting it to any fixed rules; and it is still more unlikely that the practice should have escaped, as is the case, all mention by any previous Italian writer. We, therefore, agree entirely in Capmany's opinions, that, until some authentic evidence to the contrary be produced, Barcelona should be regarded as the birth-place of this most useful and beautiful application of the doctrine of chances.—Tom. i., p. 237.

A knowledge of the principles and practice of insurance was early brought into England. According to Malynes (*Lex Mercat.*, p. 105), it was first practiced among us by the Lombards, who were established in London from a very remote epoch. It is probable it was introduced some time about the beginning of the 16th century; for it is mentioned in the statute 43 Eliz., c. 12, in which its utility is very clearly set forth, that it had been an *immemorial usage* among merchants, both English and foreign, when they made any great adventure, to procure insurance to be made on the ships or goods adventured. From this it may reasonably be supposed that insurance had been in use in England for at least a century previous. It appears from the same statute, that it had originally been usual to refer all disputes that arose with respect to insurances to the decision of "grave and discreet" merchants appointed by the Lord Mayor. But abuses having grown out of this practice, the statute authorized the Lord Chancellor to appoint a commission for the trial of insurance cases; and in the reign of Charles II. the powers of the commissioners were enlarged. But this court soon after fell into disuse; and, what is singular, no trace can now be discovered of any of its proceedings.—Marshall *on Insurance*, Prelim. Disc., p. 26.

Few questions as to insurance seem to have come before the courts at Westminster till after the middle of last century. The decisions of Lord Mansfield may, indeed, be said to have fixed, and in a consider-

able degree formed, the law upon this subject. His judgments were not bottomed on narrow views, or on the municipal regulations of England; but on those great principles of public justice and convenience which had been sanctioned and approved by universal experience. His deep and extensive information was acquired by consulting the most intelligent merchants, and the works of distinguished foreign jurists; and by carefully studying the famous French ordinance of 1681, the most admirably digested body of maritime law of which any country has ever had to boast. Hence the comprehensiveness and excellence of his lordship's decisions, and the respect they have justly commanded in all countries. In his hands the law of insurance became, in a far greater degree than any other part of English law, a branch of that national or public law, of which Cicero has beautifully said, "*Non erit alia lex Romæ, alia Athenis, alia nunc, alia posthac, sed et omnes gentes et omni tempore una lex et sempiterna, et immortalis continebit, unusque erit communis quasi magister et imperator omnium Deus.*"—*Fragm.*, lib. iii., *de Republicâ.*

Insurance against fire and upon lives is of much later origin than insurance against perils of the sea. The former, however, has been known and carried on among us, to some extent, at least, for nearly a century and a half. The Amicable Society, for insurance upon lives, was established by charter of Queen Anne, in 1706; the Royal Exchange and London Assurance Companies began to make insurances upon lives, in the reign of George I.; and the Equitable Society was established in 1762. But the advantages of life insurance, and the principles on which the business should be conducted, were then very ill understood, and the practice can hardly be said to have obtained any firm footing among us, till the Equitable Society, by adopting the judicious suggestions of Dr. Price, began its career of prosperity about 1775. Notwithstanding the example of England, life insurance has made comparatively little progress on the Continent. It was, indeed, expressly forbidden by the French ordinance of 1681 (liv. iii., tit. 6, art. 10); by the regulations as to insurance issued at Amsterdam in 1612 (art. 24); and it is doubtful whether the practice be not inconsistent with the 334th art. of the *Code de Commerce*, though it be now extensively carried on in France. But we are inclined to think that the want of security, more than any positive regulations, has been the principal cause of the little progress of life insurance on the Continent.

II. Insurance (Marine).—There are few persons who are not acquainted, in some degree, with fire and life insurances. The security which they afford to individuals and families is a luxury which nobody, in tolerably comfortable circumstances, is willing to be without. Hence the great increase, in our days, of companies professing to afford this security; and hence the knowledge, on the part of the public generally, of the nature and principles of the engagements into which these companies enter. But marine insurance is a subject which is of immediate interest only to merchants and ship owners; unless, indeed, we should refer to that small portion of the community who have occasion to transport themselves beyond seas with capital and effects for purposes of colonization, or to fill some official situation. Hence the comparative indifference, on the part of the public, as to this subject. The general principles, however, of all insurance are the same; and in treating of marine insurance, it will be necessary to notice little beyond such topics as are peculiar to that branch of the business.

Individual Insurers, or Underwriters.—The first circumstance that can not fail to strike the general inquirer into the practice of marine insurance in this country, is that, while all fire and life insurances are made at the risk of companies, which include within themselves the desirable requisites of security, wealth, and numbers, a large proportion of marine insurances is made at the risk of individuals.

Prohibition of Companies.—Till 1824, in Great Britain, all firms and companies, with the exception of the two chartered companies, the Royal Exchange and London, were prohibited by law from taking marine insurances. Toward the latter end of that year, the prohibition was removed, and the business of marine insurance was placed on the same legal footing as other descriptions of business. While the restriction lasted, the two chartered companies did so little business that marine insurance might in fact, be said to be wholly in the hands of individuals. These companies were so much higher in their premiums, and so much more exclusive in the risks they were willing to undertake, than their individual competitors, that even those merchants and ship owners, who would cheerfully have paid some trifling consideration to obtain the greater security of a company, were obliged to resort to individuals. And it was only when the repeal of this absurd restriction was proposed, that the companies showed, by defending it, that they set any value upon their privilege. The underwriters at Lloyd's joined them in this opposition; and pamphlets were written and speeches made, to demonstrate how much merchants and ship owners would suffer, were the law to allow them the free use of their discretion in insuring their property; and how much more conducive to their interests it was, that they should be forced up to Lloyd's, to pay premiums to individuals rather than companies. But these pamphlets and speeches are forgotten; and we should be sorry to wound the feelings of their authors, or to trespass on the patience of our readers, by referring to them more particularly.

Mode of conducting Business.—We shall now give an account of the arrangement in England for conducting the business of marine insurance, as well by individuals as the companies.

Lloyd's.—The individual underwriters meet in a subscription room at Lloyd's. The joint affairs of the subscribers to these rooms are managed by a committee chosen by the subscribers. Agents (who are commonly styled Lloyd's agents) are appointed in all the principal ports of the world, who forward, regularly, to Lloyd's, accounts of the departures from and arrivals at their ports, as well as of losses and other casualties; and, in general, all such information as may be supposed of importance toward guiding the judgment of the underwriters. These accounts are regularly filed, and are accessible to all the subscribers. The principal arrivals and losses are, besides, posted in two books, placed in two conspicuous parts of the room; and also in another book, which is placed in an adjoining room, for the use of the public at large. The rooms are open from 10 o'clock in the morning till 5 o'clock in the afternoon, but the most considerable part of the business is transacted between 1 and 4. Those merchants and ship owners who manage their own insurance business, procure blank policies at the government office, or of their stationers, which they fill up so as to meet the particular object in view, and submit them to those underwriters with whom they are connected; by whom they are subscribed or rejected. Each policy is handed about in this way until the amount required is complete. The form of the policy and of a subscription is subjoined to this article. The premium is not paid to the underwriter in ready money, but is passed to account. Nor does the underwriter debit the account of the person to whom he subscribes a policy with the whole amount of the premium, but with the premium less 5 per cent. Whenever losses occur which more than absorb the premiums on any one account, the underwriter is called upon to pay the balance. But should the underwriter's account be what is called good, that is, should the premiums exceed the claims, he sends round, during

the spring and summer, to collect from his various debtors either the balance of his last year's account, or money on account, according to his judgment; but upon what he receives, he makes an allowance of 12 per cent. An underwriter, if prudent, therefore, before he consents to receive, will not only look to the goodness of his account, but to the probability of its continuing so.

Insurance Brokers.—Many merchants and ship owners do not transact their own insurance business. They give their orders for insurance to others, who undertake it for them, and are responsible for its proper management. These latter persons are called insurance brokers; and some of them manage the business of a number of principals. To them, likewise, are transmitted the orders for insurance from the outports and manufacturing towns. They charge the whole premium to their principals, and their profits consist in 5 per cent. upon the premium, 12 per cent. upon the money that they pay to the underwriters, and ½ per cent. that they deduct from all the claims which they recover from the underwriters. It is proper to remark that this is the established or regular profit; but competition has occasioned numerous deviations from it by the brokers, many of whom consent to divide this profit with the principals who employ them. The insurance brokers are not unfrequently underwriters also; and as some insurances are considered far more lucrative than others to underwriters, and as the brokers have particular facilities, in some respects, of judging of the goodness of their own risks, so likewise have they an inducement to play into one another's hands, and they do so accordingly. See BROKERS.

Payment of Losses.—Losses are paid at all the offices promptly, and without deduction. In England, a month's credit is allowed to the underwriters; and another month, and sometimes two months, are given to the broker, to collect from the underwriters, and pay over to his principals.

Clubs.—Besides the individual underwriters and companies above noticed, there are clubs or associations formed by ship owners, who agree, each entering his ships for a certain amount, to divide among themselves one another's losses. These clubs are institutions of long standing; but, since the alteration of the law in 1824, appear to be on the decline. Their formation originated in a twofold reason: first, that the underwriters charged premiums more than commensurate with the risk; and secondly, that they did not afford adequate protection. To avoid the first of these two evils, instead of paying a fixed premium, they pay among themselves the actual losses of their several members as they occur; and to avoid the second, they lay down certain principles of settlement in accordance with their views of indemnity. Each member of one of these clubs gives his power of attorney to the selected manager; and this manager issues a policy for each ship, which policy is subscribed by him as attorney for all the members, the premium inserted in the policy being understood to be nominal. These clubs are open to the leading objections that apply to individual underwriters; for the members are not collectively, but only individually, liable to those of their number who happen to sustain a loss; and the delay of settlement is such, that more than 12 months have been known to elapse before the payment of a loss has been obtained from all the members.

Rate of Premium.—But little need be said upon the circumstances that influence the rate of premium demanded by the insurers. It must be self-evident that premiums will vary according to the seasons, the quality of the vessel, the known character of the captain, the nature of the commodity, and the state of our political relations. All these, of course, are matters upon which each individual must exercise his own discretion, partly from general experience, and partly from particular information; exaggeration of risk, and consequent exorbitancy of premium for any length of time, being out of the question, where so many individual underwriters, in addition to the companies, are in competition with one another, and where the merchants have the means at hand of effecting their insurances abroad. We have already taken notice of the intelligence of which Lloyd's is the focus. In addition to this there is a subscription register book for shipping maintained by the principal merchants, shipowners, and underwriters. This book professes to give an account of the tonnage, build, age, repairs, and quality of almost all the vessels that frequent our ports; and, although exceedingly defective in many respects, is a material assistance to the insurers, who have no means of ascertaining by their own observation the particulars of one in a hundred of the ships they are called upon to insure.

Contract of Insurance.—Having thus given a general outline of the mode of transacting business between the insurers and insured, and the means used to enable both parties to come, as near as possible, to a due estimate of the risk to be insured against, our next step will be to explain the nature of the contract, and the bearing of its more important clauses.

It is unnecessary to state that the object of those who are engaged in commerce, or in moving articles of merchandise from one part of the world to another, is to *buy* at such a price that, after paying all the expenses of transport, the *sale* price may leave them a surplus in the shape of profit. If there were no such contrivance as insurance, merchants would be obliged to calculate upon the probability of the occasional loss of their property, and to regulate their transactions accordingly; but it must be obvious that enterprise, under such circumstances, would be very much crippled. Now, insurance, in as far as it approaches perfection in guarantying the merchant against all loss, except that of the market, substitutes a fixed charge for uncertain and contingent loss, and enables him to confine his attention exclusively to price and quality, and to charges of transport; in which latter, of course, the premium of insurance is included. As, however, in practice, insurance is by no means a perfect protection, either to the merchant or ship owner, against all loss that may occur *in transitu*, there is, even after insurance, some contingencies remaining to be taken into consideration; and we do not know that we can do better, by way of explaining the contract of insurance, than state, as briefly and succinctly as possible, what are the losses against which the merchant and ship owner are not protected by an insurance effected in this country.

1. *Acts of our own Government.*—All losses arising from the acts of our own government. Thus, if an embargo were laid on vessels about to sail for a particular quarter, and the merchant obliged to unload his goods; or if his goods were condemned to be destroyed in quarantine; or purposely destroyed at sea by some of our cruisers; no part of his loss would be made good by the insurer. The insurer in this country, although liable for the acts of foreign powers, is not liable for such acts directed against the property of their own subjects. Thus, if French property, insured in this country, were confiscated by the French government, the owner would have no remedy against his insurer.

2. *Breaches of the Revenue Laws.*—All losses arising from a breach of the revenue laws. It may be observed, that if the owner of the ship, by his act, expose the goods of the merchant to loss, the merchant so injured, although he can not recover from his insurers, may claim from him. It may also be observed, that if the captain of the vessel, by his act, to which neither the owner of the ship nor the merchant is a party, expose the ship and cargo to loss, the insurers, in such case, are bound to make good the loss; the

insurers being liable for all damage arising from illegal acts of the captain and crew, supposing the owner of the ship not to be accessory. The illegal acts of the captain and crew, contrary to the instructions and without the consent of the owners, are termed "barratry" in the policy. See BARRATRY.

3. *Breaches of the Law of Nations.*—All losses arising from a breach of the law of nations. Thus, if any port is declared by a foreign power to be in a state of blockade, and such blockade is acknowledged by our government; and if a ship, in defiance of that notification, attempt to break the blockade, and is taken in the attempt; the insurer is not liable for the loss. It will often happen, when a port is under blockade, that the profit is so great upon goods introduced in defiance of the blockade, as to tempt adventurers to break it, and to enable them to afford a very high premium to insure against the risk. But as policies for such an object are not acknowledged in our courts of law, when effected, they are understood to be *policies of honor*. The same kind of policy is adopted by underwriters, to protect foreign merchants who prefer insuring in this country against capture by our vessels.

4. *Consequences of Deviation.*—All losses subsequent to any deviation from the terms of the policy. Thus, if a merchant, in a policy on produce from the West Indies to London, warrant the ship to sail on or before the 1st of August, and the ship sail after that day and be lost, the insurer is exonerated. Or, if a merchant insure from London to Lisbon, and the ship call at Havre and is afterward lost, the insurer is not liable. It will be understood, of course, that the owner of the ship is liable to the merchant for any breach of contract on his part, as well as that the insurer is liable for the barratry of the master; a deviation on the part of the master, not intended for the benefit of the owner, and contrary to his instructions, being considered barratry. Should the owner of the goods neglect to describe accurately the voyage for which he wishes to be insured, the loss would be a consequence of his own negligence.

There is a doctrine connected with barratry which it will here be proper to notice. A captain, owner or part owner of the ship in which he sails, can not commit an act of barratry. In other words, the insurers are not, in such a case, liable for an act of his which would otherwise be barratrous. The equity of this doctrine, as far as regards the interests of the captain himself, can not be called in question; but it is difficult to understand why the merchant who ships goods on board such a captain's vessel should not be permitted to insure, among other risks, against the captain's illegal acts. We have heard that a clause has occasionally been introduced into policies to protect merchants against captain-owners, and we do not suppose that our courts of law would refuse to enforce such a clause. Indeed, we can not discover any reason why every party, saving the captain, should not have the power of insuring against the consequences of illegal acts of the captain. We believe, that among the life offices which protect themselves from loss by suicide and the hands of justice, there are some which make a distinction in favor of those who merely hold policies on the lives of others as a collateral security. The propriety of such a distinction must strike every body.

5. *Unseaworthiness.*—All losses arising from unseaworthiness. Unseaworthiness may be caused in various ways, such as want of repair, want of stores, want of provisions, want of nautical instruments, insufficiency of hands to navigate the vessel, or incompetency of the master. It might be supposed, at first sight that insurance affords a much less perfect security than it really does, seeing on how many pleas it is possible for the insurer to dispute his liability; but when it is considered that the proof of unseaworthiness is thrown upon the defendant, and that the leaning of the courts is almost always in favor of the insured, it will be easy to suppose that no respectable insurers would ever plead unseaworthiness unless they could make out a case of more than ordinary strength and clearness. The degree of uneasiness felt by merchants and ship owners at their liability to be involved in loss by cases of unseaworthiness, may be guessed from the fact that although the Indemnity Insurance Company at one time precluded themselves from pleading unseaworthiness by a special clause in their policy, not only did they obtain no additional premium in consequence thereof, but they did not even obtain a preference over other companies and individuals at the same premiums. At least, this fact must be either admitted as a proof of the absence of uneasiness on this head, or of that inveteracy of habit which seems to lead the great bulk of mankind always, if possible, to continue undeviatingly in those courses to which they are accustomed, even where the benefits to be derived from a deviation are undeniable.

6. *Protraction of the Voyage.*—All loss arising from unusual protraction of the voyage. Thus, if a ship meet with an accident in the Baltic, and the repairs detain the vessel till the close of the season, when the passage home is rendered impracticable by the ice till the opening of the ensuing season, no payment is made to the merchant, in mitigation of his loss from interest of money, loss of market (if the market fall), or deterioration in the quality of his goods (unless arising from actual sea damage); nor to the ship owner, in mitigation of his loss from the extra wages and maintenance of his crew. In most foreign countries the ship owner is remunerated by the insurers for the wages and maintenance of his crew while his ship is detained in consequence of any loss for the making good of which they are liable.

7. *Liability for doing Damage to other Vessels.*—All loss to which the ship owner is liable when his vessel does damage to others. According to our laws, the owner of every ship not in charge of a pilot, that does damage, by negligence of the master and crew, to any description of craft or vessel, is liable to make good the same to the extent of the value of his own ship and freight: for beyond this he is not liable. The common policy in use among the underwriters at Lloyd's and the companies does not protect the ship owner from this loss. But the clubs or associations before mentioned almost universally take this risk. Indeed, this is one of the purposes which gave rise to their formation. But even they limit their liability to the amount of the policy; so that if a ship insured with them were to run down another, and to sink herself in the concussion, the owner would only receive the value of his own vessel from the club, and still be liable to the owner of the other vessel. The Indemnity and Marine Companies, by a clause in their policies, make themselves liable for three fourths of the loss which the owner of the vessel insured with them may sustain from damage done by his vessel to those of others. If such a case as the one just supposed should occur under their policy, the insured would receive the value of his own vessel and three fourths of the loss to be made good by him to the owner of the other vessel. The policies of these companies approach in this respect the nearest of any to perfect protection to the ship owner. But the loss from running down other vessels, although serious, may sometimes ruinous, seldom occurs; and many ship owners trust so confidently that it will never fall upon them, that they are as well satisfied to be without as with this protection. The Supreme Court of the United States has confirmed a decision, to the effect, that where a collision takes place without fault in a port where the local law divides the whole loss (thereby opposing the general maritime law), the insurers were liable for it. This is opposed to the English decisions.

8. *Average Clause.*—The next description of loss of which we shall treat, against which the insured are

not protected, is described in the following clause of the policy: "Corn, fish, salt, seed, flour, and fruit, are warranted free from average, unless general, or the ship be stranded; sugar, tobacco, hemp, flax, hides, and skins are warranted free from average under 5 per cent., unless general, or the ship be stranded; and all other goods, also the ship and freight, are warranted free from average under 3 per cent., unless general, or the ship be stranded." The language employed in this clause, being technical, requires explanation to render it intelligible to the general reader. Average is a name applied to certain descriptions of loss, to which the merchant and ship owner are liable. There are two kinds of average, general and particular. *General Average* comprehends all loss arising out of a voluntary sacrifice of a part of either vessel or cargo, made by the captain for the benefit of the whole. Thus, if a captain throw part of his cargo overboard, cut from an anchor and cable, or cut away his masts; the loss so sustained, being voluntarily submitted to for the benefit of the whole, is distributed over the value of the whole ship and cargo, and is called "general average."

Particular Average comprehends all loss occasioned to ship, freight, and cargo, which is not of so serious a nature as to debar them from reaching their port of destination, and when the damage to the ship is not so extensive as to render her unworthy of repair. Losses where the goods are saved, but in such a state as to be unfit to forward to their port of destination, and where the ship is rendered unfit to repair, are called "partial or salvage loss." The leading distinction, between particular average and salvage loss is, that, in the first, the property insured remains the property of the assured—the damage sustained, or part thereof, as the case may be, and as will hereafter be explained, being made good by the insurer; and in the second, the property insured is abandoned to the insurer, and the value insured claimed from him, he retaining the property so abandoned, or its value.

Particular Average on Goods.—A few cases illustrative of the method of stating a claim for particular average will best explain the nature of this description of loss, and will at the same time show the reader what the practical distinction is between particular average and salvage loss.

The property insured we shall suppose to be a *ton of hemp*, the cost of which at Petersburg is $150, for which sum it is insured from New York to London, and that the duty, freight, and charges to which the merchant is subject on landing at London are $50. We shall likewise suppose that the hemp, on its arrival, is so damaged as not to be worth more than half what it would have fetched had it been sound. The insurer would then be called upon to make good to the insured $75, or 50 per cent., upon the sum insured. But it does not follow that this payment of $75 would indemnify the merchant, or that it would not more than indemnify him, for the loss sustained.

If the hemp upon arrival in that country would have fetched in a sound state....	$250 00	
Less duty, freight, and charges.....	50 00	
		$200 00
But in its damaged state is only worth...	125 00	
Less duty, freight, and charges.....	50 00	
		75 00
The merchant's loss by the damage is.....		$125 00

Whereas he only receives from the insurer $75. Upon the principle of a salvage loss he would also receive $75.

If the hemp would have fetched in a sound state.....	$100 00	
Less duty, freight, and charges.....	50 00	
		$50 00
But in its damaged state is only worth...	50 00	
Less duty, freight, and charges.....	50 00	
The merchant's loss by the damage is.....		$50 00

Whereas he receives from the insurer $75. Upon the principle of a salvage loss he would receive $150.

If the hemp would have fetched in a sound state.....	$150 00	
Less duty, freight, and charges.....	50 00	
		$100 00
But in its damaged state is only worth...	75 00	
Less duty, freight, and charges.....	50 00	
		25 00
The merchant's loss by the damage is.....		$75 00

And he receives from the insurer $75. Upon the principle of a salvage loss he would receive $125.

It will be observed that the merchant's loss by the damage of his goods varies with the state of the market. It may also be observed, that in general the merchant will not receive from the insurer the whole amount of the loss that he sustains. Whenever his market is a profitable one (and that it must usually be so will be obvious to every body), whenever, indeed, his market is not a decidedly losing one, his policy does not afford him a complete protection.

The argument in favor of this mode of settling claims for particular average—and it should be observed that the subject has been discussed, and the principle acknowledged in the courts of law—is, that the insurer's liability is to be guided by the amount upon which he had received a premium or consideration; that he is not to be affected by the rise or fall of markets; but that the *gross* market price of the *sound*, and the *gross* market price of the *damaged* goods, are to be the test by which the rate of damage upon the amount insured is to be adjusted; the insurer being liable, besides, for all the extra charges arising out of the damage.

In the first case stated, the merchant's loss by damage is $25 upon $40, or 62½ per cent.; in the second, $10 upon $10, or 100 per cent.; in the third, $15 upon $20, or 75 per cent. If the duty, freight, and charges were diminished in proportion to the diminished value of the goods, the loss in each case would be 50 per cent. upon the nett price, as it is 50 per cent. upon the gross price. As far as the duty is concerned, government, upon many articles, reduces it in proportion to the diminution in the value of the goods; and if the freight were reduced in a similar manner, the merchant would always be indemnified for his loss by the insurer. But the practice with regard to freight in this country admits of no such arrangement; freight being paid according to the quantity delivered.

To make the principle upon which claims for particular average are adjusted, and its bearing, still clearer, we shall illustrate it by a few more cases. Suppose two packages to be insured at cost price—a cask of rice and a cask of sugar—each weighing 10 cwt.; the cost of each at the port of shipment $50, the freight of each 250 cents per cwt. at the port of delivery, both articles free from duty, and to arrive at a market where no more than the cost price is realized; assuming that both packages are damaged 50 per cent.—the rice by loss of quality, the sugar by loss of weight—the statement will be as follows:

10 cwt. of rice, had it arrived sound, would have produced.....	$75 00	
Less freight on 10 cwt.....	25 00	
		$50 00
But being damaged did only produce.....	37 50	
Less freight on 10 cwt. at 250 c. per cwt.	25 00	
		12 50
Merchant's loss.....		$37 50
10 cwt. of sugar, if sound, would have produced.....	$75 00	
Less freight on 10 cwt at 50 c. per cwt.	25 00	
		$50 00
The barrel, being damaged, did only weigh 5 cwt. and produce.....	37 50	
Less freight on 5 cwt. at 250 c. per cwt.	12 50	
		25 00
Merchant's loss.....		$25 00

In each case the merchant is entitled to recover from his insurer $25, or 50 per cent., upon $50, the sum insured, which, although an indemnity to him for

his loss on the sugar, is far from being so for his loss upon the rice. If the merchant would contrive so to shape his contract with the ship owner for freight as to reduce the freight in proportion to the depreciation in the value of the damaged commodity, he would be completely protected. The ship owner might, on his side, protect himself by insurance from loss by reduction of quality, as he now does from loss by reduction of quantity. But we have already more than once adverted to the difficulty of breaking in upon established practices. The merchants go on from year to year complaining of the losses to which they are subjected from this awkward contrivance, while no steps are taken to improve it. To show that the principle is equitable as between the merchant and his insurer, we subjoin one more statement, where the damage is taken at 100 per cent.

10 cwt. of rice, if sound, would have produced	75 00	
Less freight on 10 cwt.	25 00	
		$50 00
Being totally spoiled did produce nothing.		
The merchant being still liable for the freight		25 00
Making his loss		$75 00
He receives $50 only from the insurer.		
10 cwt. of sugar, if sound, would have produced	$75 00	
Less freight on 10 cwt.	25 00	
		$50 00
The barrel being washed out produces nothing.		
The merchant, however, not being liable to pay freight		
His loss is only		$50 00

Which he recovers from the insurer.
It will be observed, that in each case the insurer pays $50, or the full sum upon which he receives the premium.

When whole cargoes, or parcels of goods of considerable value, are insured, the clause in the policy which protects the insurer from particular average under a certain percentage is often partially set aside. Thus, if a cargo of 500 hogsheads of sugar, valued at $10,000, were damaged to the extent of $460, the merchant, supposing the protecting clause to remain in force, would recover nothing from the insurer, the loss not amounting to 5 per cent. The additional written clause, by which it is the practice to modify the printed clause, is as follows: "Particular average, payable upon each 10 hhds. sugar, 10 casks and 50 bags coffee, and 10 bags cotton, following numbers, and upon each package of manufactured goods, chest of indigo, bag of wool or silk, the same as if separately insured." Such clauses may be, and are, introduced *ad libitum* by mutual consent of insurer and insured, the premium or consideration being arranged accordingly. The protecting clause is considered, on the other hand, by the insurers, exceedingly unsatisfactory in some respects; and they, as occasion requires, insist upon additional protection. Thus, saltpetre, hides, cocoa, and tin plates, are generally warranted free from particular average, unless the ship be stranded; and upon tobacco, it is customary for the insurers to make themselves liable only to such part of the particular average as exceeds 5 per cent., throwing 5 per cent. upon the merchant.

Particular Average on Freight.—The clause, as far as it affects "freight," calls for no particular comment. Particular average upon freight can only arise, according to prevailing practice, from loss of weight; and whenever the loss of weight amounts to 3 per cent. or upward, the ship owner is entitled to recover from his insurer. The ship owner, upon the arrival of the ship at its port of destination, is entitled to hold the goods as security until the freight is paid. If the owner of the goods should prove insolvent, and the goods should be entirely spoiled by sea damage during the voyage, and the ship owner thus lose his freight, he has no claim upon the insurer; because, although his collateral security is destroyed by a peril of the sea, his right to receive freight remains unimpaired, and it is against the loss or impairing of this right that the insurer protects him.

Particular Average on Ships.—Particular average upon ships is a subject somewhat more beset with difficulties. There is scarcely a ship that makes a voyage of any length that does not sustain some damage. The clause in the policy warranting the ship free from particular average under 3 per cent., unless stranded, protects the insurer from the constant recurrence of petty claims; but in addition to this, it is the practice to class the damage that a ship sustains in the prosecution of her voyage under two heads; ordinary damage, or wear and tear; and extraordinary damage, or particular average. The splitting of sails, the breaking of anchors and cables, the upsetting of windlasses, are losses that come under the first head. The carrying away of masts and bulwarks, damage to the copper sheathing and hull from striking on rocks, come under the second. When a ship sustains damage, if she be on her first voyage, the whole expense of the repairs is made good by the insurers. But if she be not on her first voyage, it is the established custom that the insurer pays no more than two thirds of the repairs, the owner of the vessel having, as it is thought, an equivalent for the one third which falls upon him, in the substitution of new work for old. Where the nature of the damage is such as to require that the copper should be stripped off the ship's bottom, the insurer pays the difference between the price of the old and the new copper on the weight of the old copper stripped off; the excess in weight of the new over the old copper is paid for by the ship owner; and the labor of stripping and replacing the copper is paid for on the principle already mentioned. In any general rule of this kind, it must be obvious that the ship owner will sometimes gain and sometimes lose by an accident. As soon as the ship owner, or his captain, learns that his vessel has met with an accident, as soon after as possible, he summons regular surveyors to examine his vessel and report all defects, discriminating between those defects that have arisen from perils of the sea and those from wear and tear. The first only are made good by the insurer, together with all charges, such as surveyors' fees, dock dues, etc., caused by the necessity of undergoing repair. It has been already observed, that when a ship is obliged, in the progress of her voyage, to put into port for the purpose of repair, although the owner of the ship be subjected to great expense for the wages and maintenance of his crew during the detention, he can recover no part of this expense from the insurer; the doctrine being, that the owner of the ship is bound to navigate his vessel, and that the insurer does not undertake to guaranty that the voyage shall be completed within any specific time. Such is the doctrine, at least, in this country, and the practice is founded upon it; but in all other countries the doctrine and practice are the reverse. For in them allowance is made to the ship owner for the wages and maintenance of the crew during the whole period that the ship is under repair. Where a vessel sustains damage and undergoes repair in the progress of her voyage, and is subsequently lost, the insurer is liable both for the particular average and a total loss. Or the owner of the ship may, if he please, insure the amount expended in repair; and then, in the event of subsequent loss, the insurer is liable for the total loss only; but in the event of subsequent safe arrival, the average is augmented by the charge of insurance. The operation of the clause warranting the ship free from average under 3 per cent., unless general, or the ship be stranded, may now be clearly seen. If a ship be insured and valued at $50,000, and the repairs of the vessel do not, after all the deductions above referred to, amount to 3 per cent., there is no claim upon the insurer, unless the vessel shall have been stranded. See AVERAGE.

Stranding.—The term stranded is not well chosen, admitting of more than one construction; and the clause of which it forms a part is imperfectly conceived. And in settlements of accounts, when differences arise, the parties who discuss them are more apt to strive for that interpretation of terms and clauses which is favorable to their interests, than for that which is best adapted for general purposes. It is commonly understood that merely striking the ground and coming off is not a stranding; it being necessary, in order to fall within that term, that the ship should remain on the ground or rock, as it may happen, and that efforts should be made to float her. Striking on an anchor and leaking dangerously is not a stranding. We shall only adduce two illustrations, for the purpose of showing how ill adapted this clause is as a means to an end. Corn and other such articles are warranted free from particular average, unless the ship be stranded, because the insurers, considering these articles to be peculiarly susceptible of damage, will not consent to take that risk, except on some extraordinary occasion. A ship laden with corn, makes a very stormy passage from the Baltic to London, and damages the whole of her cargo. Upon arrival off the coast she is stranded, but got off without straining or sustaining any damage. The Insurer is held to be liable for the damage to the corn, under the clause of the policy. On another occasion, after a very favorable passage to the coast, a ship strikes upon a shoal, but is not stranded, sustaining, however, so much damage that she arrives at London with 6 feet of water in her hold, and her cargo almost wholly spoiled. The insurer is held not to be liable under the clause of the policy.

General Average.—The insurer is bound to make good all general average without exception, however trifling the amount. General average is treated as though altogether unconnected with particular average; and damage to the goods not amounting to 3 per cent. is not payable by the insurer, although there may be also a general average, and the general and particular average together may amount to more than 3 or 5 per cent. General average is a charge which must be paid by the merchant and ship owner, even if uninsured; although when insured, he transfers, as it were, in virtue of his insurance, the charge from himself to his insurer. All the elements that can by possibility enter into general average may be classed under four heads:—1. Sacrifice of part of the ship and stores; 2. Sacrifice of part of the cargo and freight; 3. Remuneration of services required for general preservation; 4. Expense of raising money to replace what has been sacrificed, and to remunerate services.

1. When any part of the ship is sacrificed for the general benefit, the owner is entitled to receive (deducting, of course, his share of contribution), the amount of his outlay in the replacing of such sacrifice; allowance being made, on the principle stated above, where old works and materials are replaced with new. The deduction of one third, however, does not invariably apply. For instance, one sixth only is taken off the price of an iron cable that is slipped from for the general benefit, because iron cables are calculated to last for a great number of years; and no reduction is ever made from the price of anchors. The charge of replacing the loss may amount to considerably more than the value lost, computing the value at the place where the ship was originally fitted. Thus, the cost of replacing an anchor and cable slipped from in the Downs, is frequently double the value of the anchor and cable at London. But whatever the charge may be, such charge forms the basis of settlement.

2. Sacrifice of the cargo and freight takes place in jettison, or where part of the cargo is flung overboard to lighten the vessel. Upon arrival in port, after such jettison, the owner of the goods jettisoned is entitled to receive (deducting his share of contribution), what the goods would have produced nett to him, supposing them to have arrived sound; and the owner of the ship is entitled to receive (deducting his share of contribution), the freight to which he would have been entitled upon the same delivery of the goods.

3. Remuneration of services and other charges. When a ship loses her anchors and cables, very large sums are frequently awarded to boatmen who venture off to her with new ones at the imminent hazard of their lives. A ship disabled at sea is towed into port by another, and remuneration for such service is awarded according to the value saved, the detention occasioned, and the loss sustained. The ship rendering the service may be laden with fish or fruit, that may be totally spoiled by the detention, or may be in ballast. A ship captured by the enemy may be recaptured by a man of war or armed merchant vessel; here, again, salvage is awarded according to the circumstances of the case. All these charges are general average; that is to say, must be distributed over ship, freight, and cargo. When a ship, with her cargo, is driven on shore, the expense of attempting to get her off is general average. If she can not be got off without discharging, the expense of discharging is general average; but the expense of getting the ship off after the cargo has been taken out falls exclusively upon the ship. The warehousing of the cargo, and other expenses incurred for its preservation, are charges exclusively upon the cargo. The expense of reloading is borne by the freight. When a ship puts into port in distress, the pilotage inward is general average; the pilotage outward is a charge upon the freight. This distribution of charges has settled into a tolerably well established practice; and upon this principle claims are settled at the offices.

4. The money required to meet the above charges is sometimes attainable without expense. If the accident happen near home, and the ship owner be respectable, he advances the money and recovers from the various parties concerned so soon as the accounts can be made up; or if the accident happen in a foreign port, where the owner of the ship is well known, the captain's bill upon him will sometimes be received in payment of the charges incurred. But where such facilities do not exist, the captain is empowered to pledge his ship, freight, and cargo, as security to any one he may prevail upon to supply the necessary funds. This pledge is termed a bottomry bond. By it the captain admits the receipt of the money; consents to the payment of a premium (which varies with the distance of the port of destination, the risk of the voyage, the respectability of the owner, and the necessities of the captain); and assigns the ship, freight, and cargo, as security for the repayment of the money advanced and the stipulated premium. Should the captain consider the bottomry premium demanded of him exorbitant, or should he deem it preferable in other respects, he may sell a portion of the cargo for the purpose of raising such money as he may stand in need of toward the prosecution of his voyage. The expense of raising the requisite funds, whether by commission, by bottomry premium, or by loss on the sale of the cargo, is charged to those parties for whose interest the money is required. Thus, if a ship, having struck upon a rock, puts into port in distress, and is obliged to unload to repair; supposing the particular average upon the ship to amount to $500; the general average, consisting of assistance into port and expense of unloading, $200; particular charges on freight, consisting of expense of reloading and pilotage outward, $100; and particular charges on cargo, consisting of warehouse rent and repair of packages, $200; and the expense of raising money should be 20 per cent.;—these sums would be severally increased by this addition, and would be raised to $600, $240, $120, and $340. See Bottomry, Respondentia.

It still remains to be inquired in what proportion the general average is to be paid by the different owners of the cargo, and the owner of ship and freight. Almost all general averages are adjusted at the ship's port of destination, and the values of the ship and cargo are taken at what they would produce in their actual state upon arrival, and the freight, according to what is actually receivable, less the wages of the captain and crew; the general average being distributed in proportion to these values. Should the cargo be altogether worthless, it can not be made to contribute; and should the wages of the crew exceed the freight, then the freight is not liable to contribute. In case of jettison, the party whose property has been sacrificed for the general benefit receives indemnity on the same principle; the value to which he is entitled being what his property would have produced *nett*, supposing it to have been sold on the arrival of the vessel—the same value serving for the basis of his proportion of contribution. Some few cases occur where the general average is adjusted at the port of departure. Thus, if a ship, outward bound to the British colonies, cut from an anchor and cable in the Downs, or incur other general average on our own coast, the insurances being principally effected in this country, it is the custom to adjust it on the spot, by which means both delay and expense are avoided. On these occasions, the values at the port of shipment are taken as the basis of contribution. A total loss, subsequently to a general average, does not exonerate the insurer from his prior liability; and although it is customary with the ship owner, or his agent, specifically to insure the money expended in average, for the purpose of protecting the insurer against any greater liability than 100 per cent., he is not absolutely obliged to do so. When the average fonds are raised by bottomry, the party advancing them takes the ship, freight, and cargo, as security, and charges a premium to cover the risk of the ship's non-arrival at her port of destination. And thus, on such an occasion, a subsequent total loss relieves the insurer from all liability to average. The law and customs by which averages are adjusted vary in different countries; but the insurer in this country is only liable for the averages adjusted according to our laws. The merchant, however, whose goods arrive at a foreign port, is obliged to submit to the laws of that port. He may thus be a considerable loser; paying general average according to one law, and receiving from his insurer according to another. And he never can be a gainer, because, before he is entitled to recover from his insurer, he must prove that he has paid to the owner of the ship. This is one of the many inconvenlences to which mercantile men are exposed, which can not be removed without, what it may be hoped will gradually take place, an assimilation of the commercial laws of different countries.

Proof of Loss.—The policy of insurance is the instrument under which the merchant and ship owner claim indemnification for all losses that are not specially excepted. The proof that the loss has been sustained must also be exhibited; such as the title to the vessel and cargo, and the evidence of the captain and crew to establish the circumstances out of which the claim arises. If A were to insure his vessel for the space of 12 months, and at the expiration of 6 months were to sell his ship to B: A's interest in the vessel having ceased, so also does his insurer's liability; and B, if he wish to be protected, must make a new insurance. Proof of ownership, therefore, is an essential preliminary to the recovery of a claim. In general practice, no difficulty arises from this, because the fact of ownership is sufficiently notorious. The bill of lading is, in most cases, satisfactory proof that the cargo was on board, as well as of the amount of freight.

Valued and open Policies.—If an insurance for $10,000 be effected upon 100 hhds. of sugar, valued at $100 per hhd., the bill of lading, showing that the vessel had 100 hhds. on board, establishes the interest at $10,000, and the policy is termed a valued policy. But if an insurance for $10,000 be effected on 100 hhds. of sugar, and nothing be expressed as to value, the bill of lading only establishes that 100 hhds. are on board, without establishing the amount of interest. The production of the invoice, showing the cost of the goods, is necessary to that end, the policy being termed an open one.

Return of Premium for short Interest.—In a valued policy, when the whole of the property insured does not appear to have been shipped, the difference between the quantity insured and the quantity shipped is termed short interest. Thus, if $10,000 be insured upon 100 hhds. of sugar, valued at $100 per hhd., and 80 hhds. only be shipped; as the insurer's liability does not extend beyond $8,000, so he is obliged to return the premium upon $2,000 to which no risk attaches. This return of premium is called a return for short interest.

For Over-Insurance.—In an open policy, where the value shipped is not equal to the value insured, the difference is termed over-insurance. If a merchant insures in London for £5,000 upon goods, without specifying any value, from Calcutta to London, the premium being £3 and the stamp duty 5s. per cent., the amount of interest that attaches to the policy is so fixed, that he is neither to gain nor lose by the transaction in the event of the vessel's loss, supposing his insurance to be sufficient. To entitle him to recover a profit, the profit to be insured must be stipulated in the policy. The expense of insurance upon £100 being 3.25, it is clear that every £100 insurance covers 96.75 original cost, that is to say, protects the merchant from loss to that extent in case of the loss of the vessel. If then, we assume the invoice of the goods shipped to be 40,000 rupees, or, at the exchange of .10c. per rupee, £4,000, the interest attaching to the policy is ascertained as followss:—If 96.75 cost is insured by £100 insurance, what will £4,000 cost be insured by? Answer, £4,135. Under such circumstances, although a policy exists for £5,000, the insured is not able to prove interest for more than £4,135; and consequently, the insured being entitled to recover no more than that sum in case of loss, the insurer is called upon to make a return of premium for over-insurance upon £865.

Although we have treated separately of returns for short interest and over-insurance, we should observe that these terms in practice are used indiscriminately; and, indeed, we can not say that we perceive much advantage in making the distinction, or preserving the distinctive appellations. It sometimes happens that the property expected in a vessel is not all insured at one time or in one policy. But this makes no difference in the principle of settlement according to our law: although, according to the laws of most other countries, the policies take precedence of one another according to their dates, the whole short interest falling upon the policy or policies last effected. The foreign law, in this instance, appears to us the more equitable and reasonable of the two; and that our reason for thinking so may be intelligible, and thus gain assent or meet with refutation, we shall state a case of short interest upon a number of policies, such as not unfrequently appears. A merchant, A, orders his correspondent at Calcutta to ship for his account a quantity of sugar, not exceeding 1,000 tons, at a price not exceeding £200 per ton. In due time he receives a letter from his correspondent acknowledging the receipt of his order, and expressing confident hopes of being able to purchase the quantity, or the greater part of it, at the limits prescribed, and promising to advise as he proceeds. A, on receipt of this letter, say on the 1st of January, makes a provisional insurance for £50,000 upon sugar valued at £200 per ton.

Continuing without further advices, and fearing lest his correspondent's letter should have miscarried, and that he might have property afloat uninsured, on the 1st of February, 1st of March, and 1st of April, he effects similar insurances, thus covering the whole 1,000 tons. He subsequently receives advice that his correspondent had not been able to purchase more than half the quantity ordered, at his limit, and recovers from his insurers half the premium upon each policy. Now, it was not at all improbable that he might have received advice from his correspondent, as he expected, much sooner. And if he had received advice in the middle of February, of the shipment of 500 tons, and that the ship which contained them was totally lost in the river Hooghly, the insurers upon the two first policies would have been liable for a total loss. And it appears to us a defective arrangement, by which a party, who is at one time exposed to a total loss, should at another be compelled to return half his premium. It is true that the merchant may, if he please, insert in his policies a clause by which the policies shall be made to succeed one another; but we should say that the law, in insurance cases, as in the disposal of the property of deceased persons, ought to be the best general disposition, leaving to individuals the right of modification according to particular circumstances.

Return for Double Insurance.—Besides returns for short interest and over-insurance, there are returns for double insurance. They are, in fact, to all intents and purposes, the same thing. Double insurance exists where the party, through forgetfulness, makes an insurance upon his property twice over; or where the shippers and consignees of goods, when uncertain of one another's intentions, effect each an insurance upon them; or where the captain of a vessel in foreign parts, fearing lest his advices should not reach his owner, effects an insurance upon it, and the owner at the same time, acting with equal caution, effects one also. The observations already made upon returns for short interest, and upon the difference between our laws and those of other countries, apply with equal force here.

We have now gone over all the principal topics connected with marine assurance. Those who peruse this article with ordinary attention will, we hope, gain a tolerably clear insight into the principles and practice of the business. But a perfectly familiar acquaintance with it can only be acquired by those who are daily conversant with its details.

Analysis of the General Law of Insurance.—The invention of maritime insurance is due to Italy, and it came into use at the close of the 12th or the beginning of the 13th century. The term "policy" is derived from the Italian *Polizza*, which signifies any note or memorandum in writing, creating an evidence of a legal obligation. At that time the Italians were the carriers of Europe, and by their means insurance was introduced into other countries. A colony of Lombards was settled in London in the 13th century, and conducted for a long time almost exclusively the foreign trade of the kingdom; and it is to them that the tradition of England attributes the introduction of insurance. In the reign of Elizabeth a court was constituted to treat of causes relative to policies of insurance in a summary way. The court was formed of the judge of admiralty, the recorder of London, two doctors of civil law, two common lawyers, and eight merchants, empowering any five of them to hear and determine all such causes arising in London. But the court, on account of its restricted character and other causes, fell into disuse, and cases of insurance are now decided by trial in the courts of common law. The contract of insurance is essentially a contract of indemnity against the perils of the sea. The various codes differ in the objects prohibited to be insured. Thus the French code, ordinance of Bilboa, Spanish code, Danish, Two Sicilies, Roman States, Ionian Islands, Lombardo-Veneto, Sardinia, Hayti, and Greece, prohibit insurance on freight of goods on board, excepted profits, wages of seamen, and maritime interest on loans on bottomry. While Great Britain, Holland, Portugal, Prussia, Malta, United States, and Hamburg, permit them. Re-insurance is prohibited in Great Britain. In Great Britain mariners are forbidden to insure their wages; but a captain of a ship can insure his wages, or any interest as part owner. An insurance on money lent to the captain, payable out of the freight, is illegal. So are wager policies; and it is the same in Massachusetts.

Article 335 of the French code authorizes the assurance on the whole or on a part of the objects which may be insured; but in Spain and Denmark the goods can not be insured for more than nine tenths of their value, and in Spain, no more than four fifths can be insured on the value of a ship; at Malta the insurance can not exceed seven eighths; in Prussia it may be made for the cost price, or for the value of the ship; but in Holland and in Portugal the entire value may be insured after the vessel has set sail. In Great Britain no policy can be made for a longer time than for 12 calendar months.

The duration of risks for a ship continues in Great Britain until 24 hours after she has moored at anchor in safety. The same in the United States and at Malta.

According to the Prussian code, payment ought to be effected within two months after the notice of the damages; after this time interest commences to run. The law of Great Britain being mostly similar to that of America, it has been thought necessary to vary the mode of treating the various subjects; so illegal insurance, rights of agents, concealment, and representations have been enlarged on in the law of America, while for these, as well as for all others, the reader is particularly referred to the law of Great Britain. The general spirit of the law of insurance is beautifully illustrated in the following language of the French jurists at the close of their report to the council of State on the title of insurance in the code of commerce, and rendered by Duer in his work on insurance: "Marine insurance may justly be deemed one of the noblest creations of human genius. From a lofty height it surveys and protects the commerce of the world. It scans the heavens; it consults the seasons; it interrogates the ocean; and, regardless of its terrors or caprice, defines its perils and circumscribes its storms. It extends its cares to every part of the habitable globe; studies the usage of every nation; explores every coast, sounds every harbor. To the science of politics it directs a sleepless attention; it enters the council of monarchs—watches the deliberations of statesmen—weighs their motives, and penetrates their designs. Founding on these vast materials its skillful calculations, secure of the result, it then addresses the hesitating merchant: 'Dismiss your anxiety and fears; these are misfortunes that humanity may deplore, but can not prevent or alleviate. Such are not the disasters you dread to encounter. Trust in me and they shall not reach you. Summon all your resources, put forth all your skill, and, with unfaltering courage, pursue your adventures. Succeed—your riches are enlarged; fail—they shall not be diminished. My wealth shall supply your loss. Rely on me, and, for your sake, at my bidding, the arm of your enemies shall be paralyzed, and the dangers of the ocean cease to exist.' The merchant listens, obeys, and is rewarded. Thousands, tempted by his success, follow his example. Those whom it had long separated, the ocean now unites. The quarters of the world approach each other, and are bound by the permanent ties of mutual interest and mutual benefits."—Levi's *Com. Law of the World.*

We extract from Duer's Marine Insurance the following Law of Insurance in the United States:

"1. Insurance is a contract of indemnity against the perils of the sea. 2. A policy must specify, 1st, the parties between whom, and on whose account, the insurance is made; 2d, the consideration or premium paid; 3d, the subject insured; 4th, the amount insured; 5th, the risk insured against; and, lastly, the voyage or period of time during which the insurance is to continue in force. 3. Form and execution of the contract. The uniform and general practice of merchants may be considered as evidence of the legal necessity of a written contract. A specification of the risks is an essential part of the contract. 4. The policies used in the different States of the Union differ materially; and in New York the forms of the policy in use for the different subjects of insurance are distinct and separate. 5. The subscription of the insurer is alone sufficient. When the insurance is made by an incorporated company, the execution of the policy must be attested by the officers designated for that purpose by its charters or by its laws. 6. When a policy has in fact been executed, and notice of its execution has been given to the assured, its actual delivery is not essential to the completion of the contract. 7. The insurer, whether an individual or an incorporated company, would not be allowed to retract a consent thus confessed to have been given; but would be considered as holding the policy for the benefit of the assured, and bound to deliver it at his request. Should a loss occur, and the policy then be withheld from the assured, he would have a complete remedy in an action at law. 8. When an application for insurance is accepted by the insurer, the rate of premium and the date inserted, and the writing signed by the parties, it constitutes in equity a valid insurance, and in law a valid agreement to insure: it gives to the assured an immediate right, upon the tender of the premium, or premium note, to demand from the insurer the execution and delivery of the policy. The validity of an agreement to insure may be proved by the correspondence, but the evidence of the assent of both to all the terms proposed must be clear and unequivocal. 9. An offer to insure made by letter is a valid undertaking that the party will be bound by it, if in due season a favorable answer be returned. But although the insured is necessarily bound by his offer during the interval that has been stated, it must not be inferred that the applicant has the right, under all circumstances, to accept the offer when he receives it. 10. The policy, from the time of its execution, constitutes the sole evidence of the agreement of the parties; nor, subject to some exceptions, can any previous letters or communications between them, nor even the written application or agreement, be used to vary or control its interpretation. 11. When a policy refers to any other document or paper, the contents of the document or paper become a part of the contract as fully as if they were recited or incorporated in the policy. 12. A policy of insurance, when executed, may not only be cancelled by the consent of the parties, but is subject to any change or modification of its terms that they may choose to adopt. When an alteration is made in the body of the policy by the assured, without the assent of the underwriters, if it change the sense, or affect in any degree the substance of the contract, it renders the whole instrument void. 13. The date is one of the principal requisites in the policy. The date, however, is only presumptive, not conclusive, evidence of the facts that it attests. 14. Wager policies are established and admitted to be illegal.

Of the Construction of the Policy.—15. The construction of a policy, with the exception of cases in which parole evidence is admitted, is a question of law, the determination of which belongs exclusively to the court. As a contract of indemnity to the assured, the policy is to be liberally construed in his favor. An exception from the risks of the policy is to be construed strictly against the insurer. 16. When a discrepancy, apparent or real, is found to exist between a written and a printed clause of the policy, it is the writing that controls the interpretation. 17. Extrinsic proof, by the testimony of witnesses or otherwise, is received to control or aid the interpretation, in order, 1st, to fix the application of general or indeterminate words; 2d, to correct an error of description, by showing the identity of the subject to which it relates; 3d, to remove a latent ambiguity; and, lastly, to explain the meaning of foreign or technical words. 18. Parole evidence shall never be received to show that the intention of the parties was directly opposite to that which their language expresses, or substantially different from any meaning that the words they have used, upon any construction, will admit or convey. Parole evidence may be admitted to show that particular words, upon the construction of which a controversy turns, have acquired, by the known usages of trade, a peculiar meaning, wholly distinct from their ordinary and popular sense. 19. When the interpretation of words, or the construction of a clause in the policy, that may be understood in a sense more or less extensive, has not been fixed by judicial decisions, parole evidence may be admitted to show whether they have obtained, by use and practice between the assurers and the assured, any, and what, known and definite import. The usage, if proved, will govern the construction. 20. If by a general practice, the voyage or trade to which the insurance relates has been pursued in a certain course or manner that the terms of the policy, in their ordinary interpretation, would not embrace parole, evidence may be admitted to prove the existence of the usage. 21. A usage that can alone be allowed to control the interpretation of the policy, or vary the legal rights of the parties, must be general, uniform, notorious, reasonable, and consistent with the terms of the policy, and, to a certain extent, with the rules of law.

Of Illegal Insurances.—Breach of Municipal Laws.—22. The invalidity of an insurance, as an implied violation of the laws of trade, may arise from the character of the goods exported or imported, the nature of the trade, or the breach of some statutory provision relative to the navigation of the ship or conduct of the voyage. 23. When the exportation or importation of the goods shipped is prohibited, the illegality affects not only the policy upon the goods themselves, but equally those upon the ship and freight, since the voluntary reception of the goods by the master is as much a violation of law as their shipment by the owner. When the prohibited act renders the subsequent voyage or trade illegal, it vacates the policy. 24. The illegality of a voyage, arising from the transportation of prohibited goods, is never permitted to affect a distinct policy upon the lawful goods of a different owner. 25. Where the goods insured by one policy are all of them lawful, the insurance is valid, even when the assured, as owner or otherwise, is interested or concerned in the transportation of unlawful goods by the same vessel, but otherwise when included in an entire policy. 26. The contract is entire when the goods insured (whether the insurance be general or specific) are included in one gross valuation; but where an insurance is specific upon different kinds of goods, and a separate value is affixed to each denomination, the contract is distinct. So where the policy is open upon different kinds of goods. 27. An insurance in one policy for the owners of a ship is not devisable; but the illegal act of one without the knowledge or privity of the others, has the same effect in voiding the entire contract as if all had concurred. But the contract will not be regarded as entire when the insurance is made by a common agent on account of several persons whose interests are several and distinct. 28. When an entire voyage is illegal at its inception, the illegality runs through and infects every part of it. 29. When a particular trade is prohibited by the express terms of a treaty to

which the State within whose jurisdiction the policy is effected is a party, the effect of the prohibition, whether general as to trade or limited to particular commodities, is precisely the same as if it were by a municipal law, an act of Parliament, or of Congress. Every voyage in contravention of the treaty is illegal, and every insurance upon such a voyage, whatever be the subject or terms of the policy, is necessarily void. 30. The defeat of the voyage by an embargo after the policy has attached, is not considered as a dissolution of the contract, but as a loss by a peril insured against, entitling the insured, upon an abandonment, to a recovery of the whole sum insured. 31. The contingent expectation of the parties that an existing law will be repealed interdicting a voyage or trade meant to be covered by the policy, is not sufficient to render the insurance valid when the expectation is not realized, and the voyage is undertaken and prosecuted in defiance of the provisions of the law.

Section II. *Enemy's Property.*—32. Every insurance upon property liable to confiscation as prize of war by the government of the country to which the insurance belongs, is of necessity invalid. An insurance made in a belligerent country upon the property of the subjects of an opposite belligerent, is void. 33. Goods in the course of transportation from a neutral country to a belligerent, if they are to be delivered to, and become the property of, a belligerent immediately on their arrival, are considered as his goods during the voyage (*in itinere*), and as such are subject to capture and confiscation.

Section III. *Enemy's Property—Domicile.*—34. A merchant is a political member of the country into which, by his residence and business, he is incorporated; he is a subject of the government that protects him in his pursuits, that his industry contributes to support, and of whose natural resources his own means are a constituent part. 35. When the property of a foreigner who, at the time of its shipment was living in a hostile country, is seized as that of an enemy, the captors are not bound to prove in the first instance that his place of residence was his actual domicile. The presumption of law is in their favor. The *animus manendi*, the intention to remain, the law imputes to him, and to redeem his property from the noxious imputation, he must give such evidence of his intention and plans as shall be effectual to destroy it. 36. The national character of persons who reside in a foreign country, in a public or representative capacity, is not changed or affected by their residence, whatever may be its duration, or by whatever circumstances indicative of the intent to render it permanent it may be accompanied. But if a foreign consul engage in commerce, he is immediately stamped, with respect to that commerce, with the national character of the country in which he resides, and from which his trade is conducted. His character of consul affords no protection to his mercantile adventures. 37. A native subject can not acquire a foreign domicile by an emigration from his own country during the existence of hostilities (*flagrante bello*) so as to protect his trade during the war, either against the belligerent claims of his own country or against those of a hostile power. His native character is wholly unchanged by his change of residence. 38. The nature of the traffic or business in which an individual is engaged, may stamp upon him a national character wholly independent of that which his place of residence would alone impose.

Section IV. *Trade with the Enemy.*—39. The property of a subject is in all cases liable to confiscation in a court of prize when it is found engaged in an unlawful trade or intercourse with the ports, territories, or subjects of the public enemy; and the property of a subject of a State allied in the war is liable under the like circumstances to the same penalty. 40. To render the importation of goods from an enemy's port an illegal trading, it is not requisite that they should be the fruits of any purchase, barter, contract, or negotiation in the enemy's country, after hostility had commenced. The sailing of the vessel with the goods on board after the party had knowledge of the war, completes the offense, stamps the cargo with an illegal character, and subjects it, during its transportation, to a rightful seizure. 41. To render a trade with the enemy unlawful, it is not necessary that the communication with the enemy's country should be immediate and direct. A circuitous trade is liable to the same abuses, and involves the same political dangers as a direct one, and therefore equally falls within the interdiction and penalty of the law. 42. If an American vessel, during a war, even when destined to a neutral port, prosecutes her voyage under a license from the government of the enemy, both ship and cargo, while they remain under the protection of the license, are liable to capture, and if captured, are lawful subjects of confiscation. 43. A license granted by the sovereign power is not subject to transfer or assignment, but its legitimate use is confined to those for whose benefit it was originally granted. A license to an alien enemy, whether by name or general words, removes all his personal disabilities. 44. The goods for which the protection of a license is claimed, must correspond with those that the license enumerates or describes. When a license authorizes the importation of goods from an enemy's country in an enemy's ship, the protection intended to be granted, although confined in terms to the goods, by the just construction of the law is extended to the vessel. The national character of the ship, as described in the license, is, in most cases, a condition necessary to be fulfilled to secure the protection that is desired.

Section V. *Breach of Neutrality.*—45. The duties of a subject or citizen of the neutral State are, 1. To abstain from every act that tends to the assistance of either of the belligerents in the prosecution of the war. 2. To abstain from every act that tends directly to relieve one of the belligerents from the pressure and effect of the opposite hostilities. 3. To offer no resistance to the full exercise of the belligerents' rights of visitation and search, and to resort to no means for eluding and defrauding the rights of capture. 46. From the moment that a ship, with contraband articles on board, quits her port on a hostile destination, as a general rule the offense is complete and the capture legal. To justify the capture, it is enough that the immediate object of the voyage is to supply the enemy, and that the contraband is certainly destined to his immediate use. 47. Articles of contraband are all the munitions and instruments of war; all manufactured articles that in their actual state are fitted for military and naval use, and more especially for the building and equipping of ships of war. Pitch, tar, and hemp are contraband; but they enjoy exemptions if directed to a mercantile port. Provisions are not contraband, but they may be rendered so by their special destination and intended use. 48. An insurance upon goods liable to confiscation as contraband of war—if made in the belligerent country whose rights are violated—is wholly void. 49. A blockade is a naval circumvallation intended to prevent and cut off all communication with the port that it incloses, and to cause an entire suspension of its commerce. The breach of a blockade subjects all the property so employed to confiscation by the belligerent power whose rights are violated.

Of the Parties to the Contract—Of the Legal Competency of the Parties.—50. All persons of full age and otherwise capable of contracting, have the right to insure and be insured. 51. In order to render a party capable of insuring, it is not necessary that he should have any interest in the property insured at the time the insurance is effected, unless the risks as described in the policy have already commenced. When the contract is perspective, it is valid and effectual if the

interest meant to be covered exists when the policy attaches. When a party effects an insurance after the risks have commenced, if he has an interest at the time in the subject-matter of the policy, the contract may be so framed as to entitle him to recover for a loss that had in fact occurred before his own title was acquired by insuring the goods "lost or not lost." 52. An agent employed to procure an insurance can not himself become the insurer.

Of the Description of the Parties in the Policy.—53. The names of the immediate parties to the contract, that is, of the individual or company agreeing to assume the risks, and of the person effecting the insurance, must be mentioned in the policy. 54. When the insurance is made by an agent, the parties really assured may be described by general words; nor is even a general description necessary, if the party effecting the insurance describes himself as "agent" in the policy. Where the person effecting the insurance describes himself as the agent of a particular person, the policy, by its necessary construction, inures only to protect an interest of the party thus named as the principal. 55. When an agent effects a policy in his own name on account of a third person, who is named, or describing the assured by general words, an action on the policy for the recovery of a loss may be maintained in the name of the agent, or in that of the party really interested. But where the agent is a naked trustee, having no lien in the policy, and no interest of his own that was meant to be protected, he will not be allowed to maintain the action in his own name, if it appear that previous to the commencement of the suit his authority as agent had been countermanded or revoked. 56. Although each partner has a right to insure the partnership property in the name or on account of the firm, yet where the insurance is expressed to be on his sole account, it must be limited in its application to his individual share. When the separate interest of a partner, separately insuring, is equal to the amount insured, he can have no motive for averring or attempting to prove a partnership property. 57. When the interest of the party in whom the interest is averred is proved, and an authority from him to insure, or his adoption of the contract is also proved, it is an inference of law from the terms of his policy that the insurance was effected on his account. But when the proof establishes that his interest was not intended to be covered, it forms an insuperable bar to a recovery. 58. The interpretation of every policy that is effected by an agent under previous instructions, must be controlled by the intention of the principal in every case where evidence of the intention can properly be received to determine the construction. The general words of a policy describing the assured, have always received a liberal interpretation. 59. The policy may be so framed that the insurance shall be inseparably attached to the property meant to be covered, so that the successive owners, during the continuance of the risks, shall become in turn the parties really assured.

Of the Assignment of the Policy and of the Rights of the Assignee.—60. Although a policy of insurance in its usual form is not assignable in law so as to enable the assignee to maintain an action upon the contract in his own name, it is in all cases assignable in equity, and vests in the assignee a beneficial interest, varying in its extent according to the purpose for which the assignment is made. 61. Although the rights of the assignee of a policy are equitable in their nature, it is not in a court of equity, when a loss has occurred to which he claims to be entitled, and the underwriters refuse to pay, that he must seek relief. He has a full remedy in an action at law, in the name of the assurer. 62. The assignment in writing of a policy of insurance does not vest in the assignee a perfect title, except as against the assigner, unless it is accompanied by an actual delivery of the instrument itself. The policies in use in Boston contain special clauses restricting their assignment.

Of Insurance effected by an Agent.—Of the Authority of an Agent to Insure.—63. The necessity of proving either the original authority of the agent, or the subsequent adoption of his contract, is expressly affirmed, or necessarily implied, in every case in which a question as to the authority of the agent has arisen. A prior authority conferring on the agent the right to insure, is either express or implied. An express authority may be written or verbal. 64. The authority of a single partner, and of each partner, to insure the partnership property in the name or by general words on account of the firm, or to direct such an assurance to be made, is established and undoubted. 65. The right of a part owner to insure is limited to his own individual share. 66. The master of a ship has no general authority, but has an implied authority in special cases. 67. When a consignee has an interest, he may insure the entire property consigned to him; but a consignee who has no interest, and no lien whatever, upon the goods consigned to him for sale, has no right to insure them on behalf of the consigner, unless specially instructed. 68. A general agent may insure on behalf of his principal, unless restricted in his discretion by the express instruction of his principal. The authority of the agent, express or implied, may be revoked by the principal at any time before the terms of the insurance have been settled by an agreement with the underwriters. 69. In the United States a usage prevails to cover all shipments by a general standing time policy on goods, so as to embrace not only all outward and home shipments made on their own account, but all shipments made to them from foreign ports, upon which they are directed to effect insurance. When there is a subsisting policy in the above form, a direction to insure, once given, is in its nature irrevocable. 70. When an agent accepts an order to insure, or omits to give notice of his refusal, he is of course bound to its execution. When the principal has funds or effects in the hands of his correspondent, the application of which rests in his own discretion, he is justified that they will be applied by his correspondent to procure the insurance that he directs. 71. When the agent has no funds or effects of his principal on hand, but, by an established course of dealing, has been in the habit of executing the orders of his principal to effect insurance, and of advancing the premium, he is bound to execute all similar orders that he may receive from him, until he has given him notice that this course of dealing must be discontinued. 72. When a consignee receives a bill of lading, with an order to insure its contents, if he accepts the consignment, he must execute the order. The law regards the transaction as entire, and the acceptance of the benefit as a tacit promise to discharge the duty. 73. These rules are subject to exceptions. The agent can never be bound to effect an insurance that, from circumstances that could not have been known or anticipated when the order was given, instead of securing an indemnity to his principal, would tend to his certain prejudice and loss. When the agent, when he receives the order, knows, or has just grounds for believing that his correspondent is insolvent, or is threatened with insolvency, the acceptance of the trust rests in his own discretion. Yet, should his apprehension prove to be groundless, he should be called to justify his conduct, by proving that the information on which he has acted was credible and trustworthy. The obligation to insure that arises from a previous course of dealing, can only apply to insurances similar to those that the agent had been in the habit of effecting. 74. The confidence reposed in an agent is strictly personal; and he can not delegate to a third person an authority that, by the intention of his principal, was meant to be executed by himself alone.

SECTION III.—*Of Insurances by voluntary Agents, and their Adoption.*—75. Although the adoption of a voluntary insurance is necessary to render the contract valid against the principal, and proof of its adoption to warrant the recovery of a loss against the insurer, we are not to infer that the agent who effects the policy is at liberty to rescind his own contract, upon proof either of his want of a previous authority, or of the refusal of his intended principals to ratify his act. 76. There are, however, two cases in which, as exceptions from the general rule, the voluntary agent, when his insurance has been rejected, may justly claim to recover back the premium he has paid: 1st. When he discloses to the underwriters that the insurance is made without authority, and they agree that it shall be cancelled, if not adopted; and 2dly: Where the insurance is rejected for reasons that would have rendered the contract valid, if adopted. 77. The contract of the voluntary agent may be ratified and appropriated by the principal, even with knowledge of a loss, unless the power to adopt the insurance under these circumstances, is excluded by the express provisions of the policy. When an abandonment of the property insured is necessary to justify a claim for a total loss, an adoption of the contract, with the right to enforce the claim, is of necessity limited to the period within which, either by the provisions of the policy or by the general rule of law, the abandonment must be made to render it valid; and a claim for partial loss is just as liable to be barred by the lapse of time, as if it arose under a policy duly authorized. The party for whom the insurance was intended can have no right to adopt and enforce a contract that would not have been valid if made by his express direction. 78. When the agent merely exceeds a given authority, the principal is concluded if he fail to give notice of his dissent within a reasonable time after receiving the information.

Of the Duties of Agents in their Relations with their Principals, and with the Insurers.—79. Every agent who is entitled to receive a compensation for his services, is bound to exercise not only the same care and diligence that he is accustomed to employ in his own private affairs, but all the care, and diligence, and skill that the transaction of the particular business with which he is intrusted, according to its nature, may be reasonably construed to require. 80. A person who undertakes to effect an insurance for another, should make proper inquiries as to the circumstances and standing of the insurers to whom he wishes to apply, and to be careful to select those whose credit is established and undisputed; but when he acts in good faith in making the selection, and has exercised the necessary caution, he is not, generally speaking, responsible for the ultimate solvency of those who subscribe that policy, unless he receives a *del credere* commission. From this rule the voluntary agent is not exempted. 81. When the agent employs a broker to effect the policy, as he is always justified in doing, when such is the usage of the place where the contract is made, it is to the discretion of the broker that the choice of the insurers is intrusted; and for his fraud or neglect in the execution of this trust, the agent is not responsible where no want of good faith, or of proper diligence, is justly imputable to him. 82. An agent who has effected a policy in conformity to the orders of his principal, has the power when the first insurer becomes insolvent, even of rescinding the contract when the interests of his principal plainly demand the measure, so long as the policy remains in his hands. But the agent ought never to cancel a subsisting policy when the partial security that it affords is preferable to a return of the premium, unless with the certainty that he will be able to pay a new contract fully, to protect the interest of his principal. The subsisting policy being rescinded, if the order was special and limited, he will still be bound to follow its provisions and observe its limits; but if within its limits, and according to its terms, it is the duty of the agent to effect a second insurance. 83. Where an increased premium is demanded, the execution of the order can no longer be regarded as a positive duty, but will rest in the sound discretion of the agent. Where, from the lapse of time, or other circumstances, the alteration of the risk is so material that the premium demanded is much larger than the principal when he gave the order to insure could have contemplated as necessary to be paid, the agent may be partly excused who declines to exercise his authority; and, on the other hand, whatever may be the change in the risk, and the increase of the premium, if there are reasonable grounds to believe that a second insurance will tend to the advantage of the principal, the agent, proceeding in good faith to effect it, will be protected. 84. It is the duty of every agent to communicate to the underwriters all the facts and circumstances of which he has any knowledge or information; to represent truly all the facts he discloses, and to answer truly all the proper inquiries of the insurer; for the concealment or misrepresentation of the agent, whether intentional or undesigned, has the same effect on the validity of the contract as that of the party really assured. 85. Although an agent to whom no fraud or neglect is imputable, is not responsible for the concealment and misrepresentation of the sub-agent whom he is authorized to employ, yet when he employs a broker to effect the policy, he is bound to give him all the necessary instructions and all material information that he himself possesses, and this duty attaches even on an agent who acts gratuitously, who may be rendered liable for the damages resulting from his omissions. 86. When the omission or act of the agent that vitiates the contract can be justly imputed to his fraud or his neglect, he is personally liable for the resulting damage; but where it proceeds from his want of the requisite skill, there are cases in which equity demands some distinctions. 87. A mercantile agent who was neither authorized to insure nor has effected an insurance, may yet render himself liable as an insurer, by a false representation, not to the underwriter, but to his principal, if the nature of the misrepresentation is such as to invalidate a policy founded on it, effected by the principal, or on his behalf. The most important and responsible duty of every agent in effecting an insurance, is to take care that the policy shall be so framed as effectually to cover the property and risks, which he is directed to insure, or which, when not acting under a previous order, he believes and represents himself to have insured. 88. When an agent acts under clear and positive instructions, and violates them in the term and form of the insurance that he effects, his negligence, it is manifest, is still more culpable and renders the agent personally liable. But when the order is plain, the good faith of the agent will not protect him. 89. Even when an agent acts gratuitously, without the hope or expectation of a reward, yet, if he enters on the execution of an order to insure, he must follow its terms, and by his omission to cover all the property or risks that he is directed to insure, will become responsible for a loss that the insurance of property effected would have embraced. The mistake of the agent where the practice is unsettled and the law uncertain, affords no evidence of the want of reasonable skill and ordinary diligence, for which, alone, he is responsible. 90. The agent is not responsible if his mistake arose not from his want of requisite diligence and skill, but from the imperfect and confused manner in which the instructions of his principal were expressed. 91. All prior verbal communications are superseded by the written instructions which constitute the proper and sole evidence of the intentions of the party directing the insurances. 92. If the agent

finds it impracticable to effect an insurance according to the terms of his instructions it is his duty to give immediate notice of his failure to his principal. When an agent has separate orders to insure on the same voyage, and against the same risks, the property of several persons whose interests are several, should he elect to cover the whole property in one policy, he must be careful so to frame the contract as to secure to each of his constituents the same indemnity to which he would have been entitled had his property and interest alone been covered. 93. An order to insure is either discretionary or positive, and when positive, is either general or limited. The order is discretionary when the election to insure or not to insure, is committed absolutely to the discretion of the agent; and in such a case if the agent determines not to insure he is responsible only for his good faith. The order when positive is general when it describes the property and voyage, but gives no direction as to the risks to be covered and imposes no limitation as to the premium. When the order is thus general the duty of the agent is fully discharged by his obtaining an insurance in the usual form of the policy at the place where the insurance is made. 94. When the order to insure contains no direction or restriction as to the amount of the premium to be paid, it is the duty of the agent to effect the insurance at all events without regard to the premium; and if by limiting himself to a smaller premium he defeats an insurance, he is liable, with the exception, however, that where the funds he has or he is to advance should not permit him to enhance the premium sufficiently, he would be excused. 95. Special instructions must be exactly followed by the agent. When an agent is directed to insure a certain amount, it is his duty to procure an insurance, if possible, to the full extent of the sum required; but if he can not, he must execute the order as far as he can. 96. An insurance is not wholly void when the agent exceeds the premium to which he was limited. A contract made by an agent who in its terms exceeds his authority, is never wholly void if the excess may be readily ascertained and separated. 97. As a general rule the order unless otherwise expressed, may be construed as intended to refer in its execution solely to the place of the agent's residence; but circumstances may doubtless create an exception and impose a duty that the order does not in terms require. 98. Where an agent who has effected a policy retains its possession with the consent of his principal, his agency is continued. His general duty is to enforce the rights and protect the interests of his principal in all matters arising out of the contract. If a loss, partial or total, has occurred he must collect, arrange, and submit the necessary proofs, adjust and settle its amounts, demand and receive its payment. If in order to sustain the claim of the assured for a total loss, an abandonment is necessary, he must take it on behalf of his principal, must take care that it is properly expressed and is delivered in due season, and he must be careful to preserve the requisite evidence of all his transactions. 99. The most important and responsible of the subsequent duties of the agent is to collect, receive, and pay over the losses that may occur and fall due under the policy, and by his negligence in the discharge of his duty he may readily incur a heavy liability since he is necessarily bound to pay all losses, that but for his neglect and delay might have been recovered from the underwriters. Payment to the agent to discharge the underwriters must be an actual payment made in good faith, not the allowances of a credit. 100. An insurance agent or broker who is authorized to receive a loss, has no authority to accept a credit in lieu of a payment in money, nor can the underwriter in such a case allege his own ignorance of the trust that is violated. When the agent is a creditor of the assured and the nature of his debt gives him a lien on the policy, that lien will attach on all moneys that he may receive from the underwriter under the policy, and he has a perfect right to retain such moneys to his own use so far as may be necessary to satisfy his claims, by giving due credit to the assured for the amount. The credit given by the agent extinguishes the debt to the assured, and discharges the insurer. 101. A settlement on account between the underwriter and the agent is conclusive on the agent himself. 102. The agent should transmit to his principal, full and just accounts of all his transactions on his behalf, keep him advised of all occurrences connected with the insurance by which his interests may be affected, and deliver over to his principal, on request, the policy effected on his behalf, provided his own claims, if such as give him a lien on instrument, are first satisfied. The policy is in all cases the property of the party really assured. He may maintain an action of trover for its recovery, not only against his agents, but against every person into whose hands it may have passed, and by whom in violation of his rights it may be withheld. 103. In the United States it is not unusual to insert a provision in the policy by which all losses are made payable only to the person in whose name the insurance is effected. 104. If the agent intends by the insertion of the special clause to extend his lien so as to cover advances or a balance of accounts, to which the privilege is not annexed by law, the extension, if not authorized by the principal, is a fraud upon his rights; and where no such intention exists a provision limiting the payment of a loss to the agent alone may operate to embarrass or delay the remedy of the assured, and should therefore, without his consent, never be inserted.

Of the Rights of the Agent.—105. An agent has a lien on the policy; and moreover, has authority to maintain an action in his own name for the recovery of a loss under the policy. 106. An insurance broker has a lien on the policy against his immediate employer, not only for his commissions and premiums, but for the general balance of his insurance account. If the broker, when he effected the policy knew, or had reasonable ground to believe, that the insurance was on the account of a third person, his lien as against the party really assured, will be confined to the premium and his commission in the particular transaction. 107. A broker who has received moneys under a policy that he effected in ignorance that his employer was an agent, is liable to the party really assured. 108. A mercantile agent has a lien on the policy that he is directed to effect, not only to the premium and his commission in the particular transaction, or extended only to advances made by him on account of the property assured, but also to the general balance due to him, or becoming due while the policy is in his hands in his account with his principal. The privilege of lien embracing claims arising from other distinct transactions does not extend to the necessary, the voluntary or the gratuitous agent. A general lien is not limited to moneys actually paid by the agent or then due to him, but embraces all his outstanding liabilities on behalf of his principal arising out of his agency. 109. But a general lien, unless by a special agreement, does not embrace all the existing demands and liabilities of the agent against his principal, but only such as relate to the business or employment in which the agent is engaged, and have grown out of the relation in that employment between him and his principal. 110. The obligation of the lien attaches equally on all moneys received by him under the policy. The agent waives his lien when he voluntarily delivers the policy to his principal or to his order, or when he parts with the possession wrongfully, as by pledging the policy as his own property. So he may waive his lien by an express or implied agreement. When the policy comes again into his possession, his lien is revived in all its original extent. The lien of a mercantile agent attaches on the policy in the possession of the broker

whom he had employed to effect the insurance. 111. The Revised Statutes of New York limit the right of set-off to a defendant to whom the demand proposed to be set off is due in his own right, either as the original creditor and payee or as the assignee and owner, and the provision, if literally and strictly construed, would exclude a set-off by an agent in any case whatever. The courts, however, may adopt as a reasonable construction, that an agent who in his own name is a party to the contract, and has a lien on the policy and its proceeds, is to be considered as an original creditor, or, in judgment of law, as the assignee and owner of the demand. So long as the premium-note remains in the hand of the underwriter, a return premium on the same policy is its necessary appendage; where the return is entire, it extinguishes the note; where it is partial, it operates pro tanto as a satisfaction.

Of the Extent of the Liability of the Agent.—112. The liability of the agent is simply to make good to his principal the actual damage that the specific breach of duty with which he is charged has directly occasioned. The liability of an agent arising from the insolvency of an underwriter from whom a loss was due that he might have collected, is probably of the same nature as that of an agent under a del credere commission not immediate, but secondary. 113. The first remedy of the principal is against the estate of the bankrupt, and the agent is answerable only for the sum that the estate may be deficient to satisfy. And when an agent has received the amount of a loss, he is not permitted to dispute the title of his principal, his duty is to pay over the moneys he receives. 114. To fix the liability of the agent an actual damage resulting to his principal, must be proved. Where an agent, from his neglect to insure, has rendered himself liable as an insurer, he is entitled to avail himself of every defense which, had the necessary insurance been made, might have been urged by the underwriters themselves. 115. The liability of the agent is not in all cases determined, even where it appears that the principal had parted with all his interest in the subject to be insured previous to the happening of the loss. The liability of an agent is not in all cases to be limited to the sum that his principal would have been entitled to claim as an indemnity from the underwriters had an insurance been properly effected. Where the principal has been defeated in an action against the underwriters on the policy, owing to the breach of duty of the agent, the costs and expenses are chargeable to the agent. 116. An agent acting under a del credere commission is liable only as a surety for the ultimate solvency of the party with whom he contracts for his principal. A del credere agent has no immediate remedy against the underwriter. When the policy is effected in the name of the del credere agent, he may maintain an action in his own name on the policy itself, but not when his own name is not on the face of the policy. A del credere commission is not within the statute of frauds. See DEL CREDERE.

Of Insurances by an Agent of the Underwriters.—117. The authority of the agent to sign a policy may be proved by his habit of subscribing policies on behalf of the defendant, although such proof is incomplete unless it embraces some positive act of the defendant amounting to a recognition of the authority. Where the agent subscribes the policy in his own name and omits that of his principal, he becomes responsible. 118. An agent whose original authority to sign the policy as such has been proved or admitted, has an implied authority to perform every subsequent act on behalf of his principal; and this implied authority extends to the adjustment of a loss, the acceptance of an abandonment, and the payment of a loss. An insurance broker is not the agent of the underwriter to admit or to pay a loss; and if such a payment is made by him, it is regarded as purely voluntary. 119. Agents of insurance companies in the United States are usually intrusted with an authority not merely to transmit applications, but, under certain restrictions, to perfect insurances in the name and on the behalf of their constituents. If the restrictions to which the agent is subject in the exercise of his authority are private and confidential in their nature, their existence as between the principal and his agent is not permitted to be alleged. So far as the rights of third persons are concerned, unless disclosed, they are inoperative and void. The ostensible or apparent authority of a general agent is his real authority in respect to all who deal with him in ignorance and good faith. It is the custom of the underwriters at Lloyd's and of the principal insurance companies in the United States, to appoint agents in nearly all the ports of the world, but the powers of these agents are circumscribed by very narrow limits. They can not bind their employers by any positive act so as to create a liability to the assured that would not otherwise exist, nor are the acts which they are authorized to perform of such a nature as to mislead the public as to the real extent of their authority. When a question arises as to the validity of their acts, it is solely by a reference to their written instructions that it must be determined.

Of Concealment.—120. Each is bound to communicate to the other all facts within his personal knowledge that tend to show the true character and value of the risks that are meant to be covered, and each, in his own communication to the other, is bound to state the exact and the whole truth in relation to the facts that he represents, or, upon inquiry, discloses. A misrepresentation or concealment of material facts, whether it resulted from design or from ignorance, mistake or inadvertence, vitiates that mutual consent essential to its validity. 121. The materiality of facts concealed or misrepresented is not to be determined by the event, but results solely from their probable influence on the estimated value of the risks at the time they were assured. The question is not whether the loss that is claimed is attributable in any degree to the risks that were concealed, but whether, had the facts been known, the underwriter would have subscribed the policy or would have limited himself to the premium that he received. The obligation of a frank and full disclosure attaches equally upon both the parties, the underwriter as well as the assured.

Facts that the Assured is bound to disclose.—122. It is the duty of the assured to communicate all facts that are material to the risks, and which are not known, or presumed to be known, to the underwriter. The assured is bound to disclose all the intelligence that he has received, and all the information that he possesses, that relate to facts which are material to the risks, although the information may be of a doubtful character, and may ultimately prove to be untrue. 123. So if the intelligence received by the assured relates not to a fact, but to mere expectation or belief of the person from whom it was received, if the expectation refers to an event that, had it occurred, would be material to the risks, it must be communicated; nor will the suppression be excused by evidence that the expectation, although entertained and expressed in good faith, was not realized in the event. When it is certain, however, that the assured acted with an entire good faith, circumstances not disclosed by him are not to be deemed material simply on the ground that if communicated they might have excited a suspicion of danger in the mind of the insurer. 124. The assured will not be allowed to protect himself against the charge of an undue concealment by evidence that he had disclosed to the underwriter, in general terms, the information that he possessed. Where his own information is specific, it must be communicated in the terms in which it was received. The information possessed by the assured may not be material in itself,

separately considered, yet may be of such a character that it would probably lead to further inquiries on the part of the underwriter; and if the result of the inquiry would show the information to be material, it must be communicated. Its concealment, whether fraudulent or innocent, will vitiate the insurance. 125. When the insurance is "on ship or ships," omission to disclose the name will not avoid the policy unless the concealment was rendered material by other facts. The voluntary ignorance of the assured, whether the result of fraud or of gross negligence, will not be allowed to excuse him, but as evidence of a concealment vitiating the policy, will have the same effect as his actual knowledge. 126. Where the assured employs an agent to effect the policy, it is his duty to communicate through him all the facts that are requisite to be disclosed. The duty of the principal is the same whether the authority of the agent be general or special. The concealment of a loss by an agent who is bound to give the intelligence, violates the implied understanding on which the contract is founded, as a similar concealment by the principal. Concealment of material facts when the policy is altered, renders the policy void. 127. Where an underwriter seeks to protect himself by a re-assurance, he is bound to communicate not only all the representations made to himself when he subscribed the policy, but all the knowledge and information he had subsequently acquired. In England and in the United States the knowledge of the assured, or of his agent, is never presumed, but must be established, in all cases, by positive evidence. 128. The information usually necessary to be given, may be distributed under the following general heads: 1. The state and condition of the ship or property insured. 2. The nature and extent of the interest insured; and, lastly, the extraordinary perils arising from extreme causes to which the property has been or will probably be exposed. The assured is not bound, in the first instance, to make any representation as to the condition of the ship at the commencement of the risks to which the policy relates. 129. Although not by the terms of the contract, yet in judgment of the law, stipulates that the vessel was or shall be seaworthy, and it is on the truth of this implied stipulation, and not of any representation of the assured, that the underwriter relies, and the policy is founded. Hence, a policy, where the ship is unseaworthy, and the fact is known to, and suppressed by the assured, is conclusive evidence of a meditated fraud. The same disclosures must be made by the assured if any facts are known to him which would justify a reasonable suspicion of the honesty of the master. As the warranty of seaworthiness relates solely to the condition of the ship at the commencement of the risks that are covered by the policy, if the assured has received any advices relating to the state and condition of the ship since the commencement of the voyage insured, he is bound to communicate them. 130. Condition and quality of the goods. When no inquiry is made by the underwriter, the assured is not bound to disclose the state and condition of the goods when shipped, nor where the insurance is on goods generally, is he bound to disclose, in the first instance, the particular character and description of the goods that are meant to be covered. Goods lashed on deck are not at the risk of the underwriter. Whether they were insured in special or general terms, they are not protected unless the fact that they are thus transported is stated in the policy, or unless the mode of transporting is sanctioned by a usage of trade, the existence of which the underwriter is bound to know. When goods laden, or to be laden, are insured in a time policy, such a disclosure is not necessary to be made. The same when the insurance is on successive cargoes on a trading voyage to successive ports, the choice of the port at the discretion of the assured.

Title or Interest of the Assured.—131. The assured is not bound to communicate to the underwriters the particular nature of his interest in the property insured; but in some cases, as when the insurance is on freight, bottomry, respondentia, etc., the nature of his interest must be specified in the policy, and in others, its disclosure to the underwriter is necessary, in order that the terms of the policy may be construed to embrace it. The decisions on this subject in the American courts are very conflicting. 132. When letter-marques are intended to be used, although for the limited purpose of chasing and capturing vessels that may be met in the course of the voyage, it must be disclosed. 133. Information of the fact, or of the day of sailing, although known to the assured, is not in all cases to be given to the insurer. When the ship is known to have performed a part of the voyage insured, she may not be out of time when the policy is effected in reference to the whole voyage, yet may be so in reference to the accomplished portion; and, in such a case, it is the duty of the assured to communicate not merely the original time of sailing, but all the information he had received relative to the course and progress of the voyage. 134. However material may be the facts known to the assured, it is plainly unnecessary to communicate them to the insurer, if they are in fact already known to him. Proof, therefore, of the actual knowledge of the underwriter is in all cases a complete answer to a charge of concealment. The assured is not bound to make any communication in the first instance respecting facts which the underwriter ought to know, and of which, for this reason, the law imputes to him the actual knowledge. The presumption of law in the cases comprehended in this rule, is conclusive and absolute. The insurer is bound to know all the general causes that are open to his inquiry, that may by their operation affect either the political or natural perils that are intended to be covered by the policy. 135. The political perils usually covered by the policy, are the risks of capture, seizure, and detention; therefore the assurer is bound to know the general and public facts upon which a loss arising from such risks may occur. 136. The natural perils of a policy are such as wholly arise from physical causes, and in a limited, but not in an unusual sense of the words, are aptly denominated "perils of the sea," or "sea risks." The underwriter is bound to know all the general causes by which they may be occasioned, increased, or varied. The usages of trade are equally presumed to be known to the underwriter. In all these cases the presumption of knowledge attaches equally upon both parties. 137. To fix the presumption of knowledge upon the underwriters, it is the duty of the assured to communicate all the circumstances within his personal knowledge that are necessary to be known to enable the underwriter to apply the presumption to the particular risks that are meant to be covered. The assured is not bound to communicate material facts if the underwriter expressly or impliedly waives the information. 138. Where, from the facts communicated to the underwriter, he is bound to infer the existence of other facts not disclosed, his omission to make the inquiry is an implied waiver of a more explicit disclosure. The underwriter, by the nature and terms of the contract, may waive all special information as to the actual and probable existence of the particular risk that he agrees to assume. When he thus consents to assume the risk in its most aggravated form, he can not justly complain that facts showing that such was its real extent were not disclosed to him. 139. The assured is not bound in the first instance to communicate any facts that are covered by a warranty express or implied. He is not bound in the first instance to communicate facts that are only material, as showing the existence of a risk which is excepted from the policy. He is not bound to communicate facts that tend to diminish the risks

as they would otherwise be understood by the insurer. 140. The insurer has the right, upon inquiry, to be informed of all facts within the knowledge of the assured, that in the exercise of his own judgment he may deem material to the risks, or important to be known, as a guide to his own discretion. Where the insurer is not to be charged with an equal knowledge, the assured, either without, or upon inquiry, is bound to communicate all the facts, that his knowledge or information embraces, that are material to the risks, or may be deemed material by the insurer, but he is not bound to communicate his own conclusions from the facts that he must disclose. 141. The following are cases in which the effect of a concealment is not to vitiate the entire contract, but merely to exonerate the insurer from a loss resulting from the risk concealed: 1st. National character of the insured. 2d. Liability of the property insured to capture and detention. 3d. Liability to seizure from breach of foreign laws of trade. 4th. Want of necessary documents. 5th and lastly, the use of false or simulated papers.

National Character of the Assured.—142. Where the insurance is made in a neutral country, a full disclosure of the national character of the assured in the first instance is necessary, not to give validity to the contract, but to cover the risk, so as to charge the underwriter with a resulting loss. The assured may be the subject of a neutral State, and legal owner of the property insured, yet, an equitable interest, rendering the property liable to hostile capture, may be vested in a belligerent subject. As such an interest creates a risk not contemplated by the parties, it must be disclosed. 143. Even when the policy contains a warranty of neutrality, and describes the assured by general words, facts not disproving the warranty, yet showing that the property is liable to seizure as enemy's property, are necessary to be disclosed. 144. Liability of property to capture or detention: The voyage or trade to which the insurance relates may be interdicted by the law of nations, by the special provisions of a treaty, or by an unjust ordinance or decree of the belligerent power, or by arbitrary rules or decisions that prevail in the courts of prize. 145. Where the voyage or trade on which the insurance relates, is prohibited by the municipal laws of the foreign country to which the ship is destined, or where the risks are to commence, a concealment of such an extraordinary risk discharges the insurer from a consequent loss, without affecting in other respects the validity of the contract. 146. The rules that determine the validity of an insurance, embracing the risks of an illicit trade, or trade in violation of the municipal laws of a foreign country, are substantially the same as in respect to an insurance on goods contraband of war.

Of Representations.—147. A representation is a statement of facts, circumstances, or information tending to increase or diminish the risks, as they would otherwise be considered made, prior to the execution of the policy by the assured or his agent, to the insurer, in order to guide his judgment in forming a just estimate of the risks he is desired to assume. It is usually made by parole, or by a writing not inserted in the policy; but when the intention as to the construction is sufficiently declared, may be expressed in the policy. 148. Representations relate either, 1st, to facts; 2d, to the information; or, lastly, to the intentions, expectations, or beliefs of the assured. A representation of facts is a positive representation, which is divided into affirmative and promissory: when affirmative, they assert the past or present existence of the facts to which they relate; when promissory, that the specified event will happen, or act be performed. 149. The evidence of a positive representation of facts, may properly be received in all cases. The rules of evidence in respect to the admissibility of a representation, are substantially the same as in respect to a usage; and, in many cases, the representation, when proved, becomes, like the usage, a part of the contract. The words of the representation are to be strictly and literally construed, but are to be understood in their plain and obvious meaning, in that which it is most probable they were suggested to the mind of the insurer. It will be construed to embrace all the facts, the existence of which, from the terms used, would reasonably and probably be inferred. 150. When a representation is so ambiguous in its terms, that it may be understood with equal propriety in two different senses, it is the duty of the insurer to seek an explanation; and when such a representation is understood by him in a sense different from that intended by the assured if he had omitted to inquire, he will not be permitted to aver its falsity. A representation of future facts, although positive in its terms, may in some cases be justly interpreted, not as an undertaking for the truth of the facts, but as referring solely to the expectation or belief of the party. When a representation of future facts is inconsistent with the terms of the policy, it is not to be rejected. The policy remains the sole evidence of the agreement; but the representation may be operative, by construing it to refer to the intentions of the assured at the time of making it. 151. The words of a representation must be construed in reference to the usages of trade, or in their technical and commercial sense. A representation may supersede a usage and an implied warranty. Where there are several underwriters on the same policy, a representation to the first is construed to extend to all, so that each, when it proves to be false, may avail himself of the defense. This rule is strictly confined to the cases in which the representation is made to the underwriter whose name stands first on the policy. The terms of the rule are restricted to underwriters on the same policy, and it is confined to cases in which the representation to the first underwriter was favorable to the risk, and to such cases the rule exclusively applies. 152. Where the subscription of the first underwriter is obtained under a secret agreement that it is not to be binding, and for the sole purpose of decoying others to insure, the exhibition of the policy thus subscribed is the assertion of a falsehood, and the contract is void. A representation once made is binding on the party, unless it is altered or withdrawn before the insurance is effected. The completion of the policy is therefore the time to which the representation is construed to refer. 153. A representation, to be binding, must be material, and, to discharge the insurer, must be false wholly or partially, and, according to the character of the representation, false in fact or in the event. It is not necessary that the facts represented should be material to the risk, that is, should affect or change the value of the risk, considered in themselves. The materiality required is not absolute, but relative, and its test is the actual or probable influence of the facts represented on the mind of the insurer. In judgment of law a representation is false when it fails to correspond with the facts that it affirms or stipulates; and hence its falsity is either intentional or accidental. 154. When the representation, whether affirmative or promissory, is made with an intent to deceive, the fraud in all cases vitiates the contract; nor to produce this effect is it requisite that the falsity should be entire: partial falsity, when intentional, is equally a fraud; and an inquiry into the materiality of the charge, as affecting the character and value of the risks, would never be allowed. 155. When the falsity of the representation is accidental, its effect upon the contract will depend, first, upon the nature and extent, and next upon the period of time to which it is to be referred. The falsity of the representation, when entire, in all cases discharges the insurer; but such is not its necessary consequence when it is only literal or partial. The substantial falsity of a representation, in cases exempt from fraud, does not always render the con-

tract wholly void. When the representation is false when made, or at the commencement of the risks, such is the necessary effect, but when the policy has attached, and the representation is falsified by a subsequent event, the breach does not, by a retro-active force, render the policy void in its origin. 156. When the assured has no personal knowledge of the facts he desires to represent, and is unwilling to bind himself by a positive statement, he may qualify the representation by adding, that it is made from the information of others, or may submit the information in its whole extent to the insurer. When the assured submits the information in extenso to the insurers, he is not answerable for the actual or eventual truth of the facts that it embraces, nor, in any case, for the accuracy of the conclusions that the insurers may draw from it. It would be different if the information proceeds from an agent of the assured whose duty it is to give the intelligence. 157. The assured is responsible when the policy is induced by a false representation of his own agent. Where the assured, or his agent in his name, declares that he intends to pursue a certain course, or perform certain acts favorable to the risks, he has entire liberty to change the intentions so declared; but if the representation is made with an actual intent to deceive, the fraud vitiates the contract. Where the party seeking the insurance declares his own expectation, or that of his principal, in regard to the existence or happening of a fact or event that, if true, would diminish the risks, the effect of the representation must depend upon its just interpretation. The same will be for a representation of a belief of a material fact. It is from the character of the party, and his relation to the subject, that such representation acquires strength.

Of the Right and Duties of the Insured in case of Loss. Section I.—Of Abandonment.—158. A total loss, within the meaning of the policy, may arise either by the total destruction of the thing insured, or, if it specifically remains, by such damage to it as renders it of little or no value. A loss is said to be total if the voyage be entirely lost or defeated, or not worth pursuing, and the projected adventure frustrated. It is a constructive total loss if the thing insured, though existing in fact, is lost for any useful purpose to the owner. In such cases the insured may abandon all his interest in the subject insured, and all his hopes of recovery to the insurer, and call upon him to pay as for a total loss. 159. In cases of abandonment the insurer stands in place of the insured, and takes the subject to himself, with all the chances of recovery and indemnity. A valid abandonment has a retrospective effect, and does of itself, and without any deed of cession, transfer the right of property to the insurer, to the extent of the insurance; and if, after an abandonment duly made and accepted, the ship should be recovered and proceed and make a prosperous voyage, the insurer as owner would reap the profit. 160. As soon as the insured is informed of the loss he ought (after being allowed a reasonable time to inspect the cargo, and for no other purpose), to determine promptly whether he will or will not abandon; and he can not lie by and speculate on events. If he elects to abandon, he must do it in a reasonable time, and give notice promptly to the insurer of his determination, otherwise he will be deemed to have waived his right to abandon, and will be entitled to recover only for a partial loss, unless the loss be in fact absolutely total. If the thing insured exist in specie, and the insured wishes to go for a total loss, an abandonment is indispensable. The main general doctrines respecting abandonment being entirely incorporated into the English law, it would be useless to insert them at length. 161. An abandonment once rightfully made is binding and conclusive between the parties, and the rights flowing from it become vested rights, and are not to be divested by subsequent events. The right to abandon is to be tested by the actual facts at the time of the abandonment, and not upon the state of the information received. Upon a valid abandonment, the master becomes the agent of the insurer, and the insured is not bound by his subsequent acts, unless he adopts them. 162. It is the same thing with the assignee of the cargo. On an accepted abandonment of the ship, the freight earned previous to the disaster is to be retained by the owner or his representative, the insurer of the freight, and apportioned *pro rata itineris*, and the freight subsequently to be earned goes to the insurer on the ship.

Section II. Of the Adjustment of Partial Losses.—163. In an open policy, the actual or market value of the subject insured is to be estimated at the time of the commencement of the risk. 164. There are two kinds of indemnity that may lawfully be obtained under a contract of insurance. The first is to pay what the goods would have sold for if they had reached the place of their destination; and the value there consists of the prime costs and expenses of the outfit, the freight and expenses at the port of delivery, and the profit or loss arising from the state of the market. This puts the insured in the same situation as if no loss had happened. The other kind of indemnity is to pay only the first cost of the goods and the expenses incurred; and this places the insured in the situation he was before he undertook the adventure. 165. The actual or market value at the port of departure may frequently be different from the invoice price or prime cost, and when that happens, or can be ascertained, it is to be preferred. 166. If goods arrive damaged at the place of destination, the way to ascertain the quantity of damage, either in open or valued policies, is to compare the market price or gross amount at which the same goods would have sold if sound. There is a material difference between the adjustment of a partial loss and of a general average, since the former is adjusted according to the value at the time and place of departure of the vessel, and the latter according to the value at the foreign port. 167. In settling losses under the memorandum in the policy which declares articles free of average under, say 4 per cent., if a partial loss to an article be found on survey and sale to have been 5 per cent., the insurer pays the damages and the expenses. If under 5 per cent., he pays nothing, and the insurer bears the expenses. The expenses are like costs of suit, and fall upon the losing party. The expenses are not taken to make up the 5 per cent. 168. With respect to leakage, the rule in cases free from special stipulations is, that the insurer is not liable for waste occasioned by ordinary leakage, and only for leakage beyond the ordinary waste and produced by some extraordinary accident. The practice is to ascertain in each case what amount of leakage is to be attributed to ordinary cases, or the fault of the insured, or bad stowage, and what to the perils of the sea; and, in pursuing his inquiry, the season of the year, the nature of the articles, the description of the vessel, the length of the voyage, and the stowage, are all to be considered. 169. An adjustment of a loss can not be set aside or opened except on the ground of fraud or mistake of facts not known. In making the adjustment in the case of a partial loss, the rule is to apply the old materials toward the payment of the new, and a deduction of one third new for old is made whether the vessel be new or old. 170. The insurer is liable for all the labor and expenses attendant upon an accident which forces the vessel into port to be repaired; and in consequence of the general permission in the policy for the insured to labor for the recovery of the property, the insurer may be rendered liable for the expenses incurred in the attempt to recover the lost property in addition to the payment of a total loss.

Of the Return of Premium.—171. The premium paid by the insured is in consideration of the risk which the insurer assumes, and if the contract of insurance be void ab initio, or the risk has not been commenced,

the insured is entitled to a return of premium. If the insurance be made without any interest whatsoever in the thing insured, and this proceeds through mistake, misinformation, or any other innocent cause, the premium is to be returned. So if the insurance be made with short interest, or for more than the real interest, there is to be a ratable return of premium. If the risk has not been run the premium must be returned. 172. If the interest has not been run, whether it be owing to the fault, pleasure, or will of the insured, or to any other cause, the premium must be returned for the consideration for which it was given fails. 173. If the vessel never sailed on the voyage insured, or the policy became void by a failure of the warranty, and without fraud, the policy never attaches; but if the risk has once commenced, though the voyage be immediately thereafter abandoned, there is no return or apportionment of premium. 174. And if the premium is to be returned, the insurer retains ½ per cent. by way of indemnity for his trouble and concern in the transaction. 175. The insurer retains the premium in all cases of actual fraud on the part of the insured or his agent. So if the trade be in any respect illegal, the premium can not be reclaimed. If the voyage be divisible, there may be an apportionment of the premium, but not unless the risk were divisible and distinct in the policy. If the voyage and premium be entire, there can be no apportionment. It is requisite that the voyage, by the usage of trade or the agreement of the parties, be divisible into distinct risks; and, in that case, if no risk has been run as to one part, there may be an apportionment of premium.—See Duer on *Marine Insurance*.

Losses of the Boston Stock Insurance Companies.—According to the annual report of the insurance commissioners, the following were the issues of the various stock insurance companies of Boston for the year ending November 1, 1856:

Companies.	Fire.	Marine.	Total
American	$5,076 08	$137,179 70	$142,255 78
Boston	....	197,628 80	197,628 80
Boylston	8,044 88	823,440 06	441,484 94
City	17,583 08	....	17,583 08
Eliot	18,924 45	....	18,924 45
Tremont	32,472 95	....	32,472 95
Franklin	9,864 57	26,535 25	35,900 82
Hope	....	188,013 44	188,013 45
Manufacturers'	27,599 23	90,801 27	117,870 50
Merchants'	17,851 68	138,241 94	156,093 57
Merchants' Marine	....	123,718 56	123,718 56
National	17,718 89	131,218 28	148,931 67
Neptune	12,253 93	433,405 04	445,658 97
Shoe & L. Dealers'	107 92	3,929 20	4,037 12
Suffolk	40 00	118,631 28	118,671 28
United States	880 00	73,442 62	74,322 62
Warren	693 56	101,288 91	101,985 47
Washington	1,292 06	235,909 05	237,201 11

As the commissioners observe, the past year or two have been unusually disastrous to the marine insurance companies, who, in most cases, pay a portion of their losses from the reserved funds of more favorable years. The North American Company reports no losses, either fire or marine. The annual report of the Boston Board of Trade represents the following losses, etc., for the year 1856:

Class of disasters.	Ships.	Barks.	Brigs.	Schooners.	Steamers.	Total.	Boston ships.	Others.
Missing vessels	1	2	1	6	..	10	8	7
Aban'd or cond'd	4	5	11	16	..	36	14	22
Returned in dist'a	10	8	5	4	1	28	20	8
Arrived damaged	9	17	11	7	1	45	23	22
Stranded	26	24	25	44	..	119	46	72
Collisions	6	10	9	24	3	52	19	33
Put in leaky	24	24	37	39	..	124	66	64
Dismantled	1	3	1	5	..	10	6	4
Sunk by ice	1	2	..	1	..	4	4	..
Burned or injured	1	1	..	..	..	2	2	..
Struck by light'g	1	2	1	1	..	5	5	..
Total	85	98	101	146	5	435	202	233

Rates of Insurance in the United States.

Ports.	Rate.
Atlantic ports, from, to ports in Europe, not in the Northern Sea	1½—3
" " " " in the Northern Sea	2½—4½
Africa, to or from, general liability	1½—2
" out and home	3 — 4
Apalachicola, to and from	1½—2½
Bermuda, to or from	1 —1½
Brazils, to any port	1½—2
Buenos Ayres, direct	2 —
" " and Montevideo	1½—17
Bahamas, to or from	1½— 2
Batavia, or any one port in the Indian Ocean	1½— 2
" out and home	3½—3½
Cautou, direct	2 — 2½
" out and home	3½—4½
Cuba, any one port	1 — 2
Calcutta, out	2½—2½
" out and home	3 — 4
Cadiz	1½—2½
Charleston, Savannah, and Darien, to or from	½— 1
Denmark	2½—3½
Demerara or Surinam, out or home	1½— 2
France, to or from	1 — 2½
" out and home	2½—3½
Great Britain or Ireland, to any port, out or home	1½— 3
" north of the Thames	3 — 5
" and back to the United States	2½—3½
" Dry goods, home	2 — 2½
" Hardware, home	2½—
Gibraltar	1½—2½
Halifax, to or from	1½—2½
Honduras, to or from	2 — 3½
Laguayra	1½—1½
Lisbon, to or from	1½—3½
Madeira and Western	1½—2½
Cape de Verd Islands	2 — 2½
" " " out and home	4 — 4½
Malaga	1½—3½
Trieste	1½—3½
" and back to the United States	3½—4½
Manilla, out and home	2 — 2½
Mobile	1½—2½
New Orleans	1½—2½
Mobile or New Orleans, from either	1½—
" " " to ports in Europe not in the North Sea	1½— 1½
" " " in the North Sea	2 — 2½
Ocracock Bar (over)	1½— 4
Porto Cabello	4 — 1½
Rio Janeiro	1½— 1½
Pernambuco	1½— 1½
Russia, different seasons	1½— 6
St. Domingo, out or home	1½— 2
San Francisco	3½— 4½
Smyrna or Constantinople	1½— 2½
Spanish Main, any one port, or between the Orinoco and the Sabine	1½— 2
" " out and home	2½— 3½
Sumatra, port or ports in, to or from	3 —
St. Croix and St. Thomas, to or from	1½— 1½
Turks Island and back	4 — 4½
Valparaiso, out or home	2 — 2½
" out and home	4 — 4½
Vera Cruz	2½— 3
Tampico	3½— 4
Wilmington, N. C., to or from	1 — 1½
To the coast of Patagonia, per annum	8 —10
To the Pacific, voyage round	4½— 5½
North of Guayaquil, and not north of S. Francisco	3½— 5
To the Brazil Banks, " " " "	2½— 3
Windward Islands	1½— 1½
" " out and home	2½— 3
California	3½— 5
Oregon	4½— 5
Coastwise Risks.	
To or from any port ... Maine, not east of Portland	1 —
" " " east of Portland	1 — 1

II. *Fire Insurance.*—It is impossible to estimate too highly the value and importance of insurance, and the benefits conferred on mankind by the invention, whether it be considered in its original character as a protection to the merchant who adventured his property on the bosom of the treacherous deep—against its many perils—or in its more modern applications, as a guaranty against loss by *fire*, and its further interesting adaptation to the assuring of *life*. Considering that maritime insurance was well known, and insurance on *life* understood and practiced, to a certain extent, in several mercantile countries by the middle of the 16th century, it appears extraordinary, when we call to remembrance the devastations and distress oc-

casioned by *fire* in Great Britain, that some means should not have been adopted at an earlier period to render such calamities less ruinous to individuals, particularly when a plan, which appears eventally to have formed the basis of the present insurance companies, was suggested so early as 1609.

In that year, a person proposed to Count Anthony Gunther von Oldenburg, that, as a new species of finance, he should insure the houses of all his subjects against fire, on their paying so much per cent. annually, according to their value; but the prospect of gain so tempting to most persons, could not induce the Count to adopt the plan. He thought it good if a company was formed of individuals to insure each others' houses, but he doubted that it could by him be "honorably, justly, and irreproachfully instituted without tempting Providence—without incurring the censure of neighbors, and without disgracing one's name and dignity," adding that "God had without such means preserved and blessed, for many centuries, the ancient house of Oldenburg, and He would still be present with him through his mercy, and protect his subjects from destructive fires." This plan appears not to have been again thought of until the fire of 1666 had laid the city of London in ashes.

In consequence of this calamitous event, the citizens began to see the importance, and indeed necessity, of erecting their buildings of a material less susceptible of fire than hitherto; also of adopting a regular system of precaution against future accidents, as well as of devising some scheme for mutual pecuniary protection and relief. Various proposals were accordingly submitted to the Court of Common Council of the city of London, between 1669 and 1680, for the mutual relief of such as might have their houses destroyed by fire—the most notable and acceptable of which was by one of their own body, Mr. Deputy Newbold. But if we may judge from the length of time that elapsed ere the worshipful committee made their report to the court, we should conclude the adopting of the proposal to have been attended with serious difficulties, and in verification of the old proverb that "delays are dangerous," during the period between the first presentation of Mr. Newbold's proposals to the Lord Mayor, and the final report of the committee, to whom the matter was referred by the Court of Common Council, several private individuals associated themselves together, and submitted to the good citizens of London a "design for insuring houses from fire," and on the 16th September, 1681, a notice or advertisement was issued from their "*office*, on the *back side* of the *Royal Exchange*," offering to insure *brick* houses against fire for *sixpence*, and *timber* houses for *twelvepence* in the *pound*—being at the rate of £2 10*s*. *per cent*. for the brick houses, and of *£5 per cent*. for timber.

Subsequently, on the 13th October, 1681, the Court of Common Council did "agree and resolve to undertake ye insuring all houses within this city and libertyes from fire, and execute ye same with all expedition," and thereafter "resolved forthwith to engage a sufficient fund, and undoubted security by the chamber of *London*, in lands and good ground rents, for the performance thereof." Much amusing pamphleteering and advertising in the *Gazette* took place between the advocates of the corporation scheme, and the "interested" in the sole insurance office on the back side of the Royal Exchange.

The journals of the Court of Common Council in 1681, 1682, and 1683, record the signing of many policies, and bear amusing evidence of the zeal and prudence of the fire insurance committees in promulgating the benefits of the corporation scheme, and combating the antagonistic pamphlets issued by their competitors.

As the fruit of this pamphleteering agitation, the subject was brought under the most serious consideration of the court on the 13th November, 1682, as appears by a minute of that date; when the court evinced a much greater anxiety to relinquish than they had to undertake the design, and directed the discharge of existing contracts, with the prepayment of the money which had been advanced.

Notwithstanding this resolution, however, contained in the foregoing minute, we find several policies subsequently passed the common seal, on the 6th March and 3d May, 1683.

After this, the city discontinued issuing policies, and having had a *quo warranto* brought against their charter, every exertion was used to obtain a surrender of the existing policies, and thus release the city lands from the incumbrances thereon.

The last matter taken into consideration, was the petition of Mr. Newbold, the author of the design which turned out so unsuccessful for remuneration, for the time, trouble, and expense he had been at, which was referred to a committee who reported on the 13th October, 1696, and on the 8th December following it was "resolved to give him the benefit of making two persons free of this citie by redemption, paying to Mr. Chamberlain to the citie's use of forty-six shillings eight pence a-piece, the said persons to be first presented and allowed of by this court." This was the fate of the "City's Design and Undertaking for the insuring of Houses from the evil of Fire." The "interessed" in the rival office became, of course, greatly elated, and their success led to the formation of several other companies or mutual insurance societies, for protection against fire.

In 1696, the *Hand-in-Hand Fire* Office was established by about 100 persons, who afterwards formed a deed of settlement, enrolled in Chancery January 24, 1698. This office is remarkable at the present day for its *age*, and is the *only* surviving one of those of that period.

Up to the year 1706, the protection afforded by fire insurance societies was limited entirely to houses (*buildings*), but in that year the *Sun Fire Office* was projected by one Charles Povey, for insuring merchandise and household goods (as well as houses) from fire, and was the first office to extend the benefits of insurance beyond the confines of London. This office has for very many years stood first on the list in amount of business.

There is also a stamp duty of 1*s*. on each policy.

By far the greater number of the above are joint-stock companies, who insure at their own risk and for their own profit, and are represented by agents in all the principal towns of the kingdom; the remainder are joint-contribution, or mutual insurance societies, in which every insurer participates in the profit or loss of the concern.—E. B.

Practice of Fire Insurance.—The advantages of *fire* insurance are too well known to require any very elaborate description. A manufacturer or private individual can, by the payment of an annual sum (premium) proportioned to the risk, secure himself against loss in the event of his manufactory or dwelling-house, or their contents, being destroyed by fire.

The Law of Fire Insurance in the United States—Of the usual subject and form of this insurance.—We have seen that fire is one of the perils insured against by the common marine policies. It is usual, however, to insure building and personal property which is not to be water borne, against fire alone; and this is what is commonly called fire insurance. The general purposes and principles of this kind of insurance are the same as those of the marine insurance; and the law in respect to it differs only in those respects and in that degree in which the difference is made necessary by the subject-matter of the contract. It will be proper, therefore, to confine ourselves in this chapter, mainly to the statement of these differences and to consider those general principles which have already

been discussed, only so far as this may be necessary for the comprehension or illustration of the peculiarities which belong to fire insurance. This kind of insurance is sometimes made to indemnify against loss by fire, of ships in port; more often of warehouses, and mercantile property stored in them, still more frequently of personal chattels in stores or factories, in dwelling-houses or barns, as merchandise, furniture, books, and plate, or pictures, or live stock. But by far the most common application of this mode of insurance is to dwelling-houses. Like marine insurance, it may be effected by any individual who is capable of making a legal contract. In fact, however, it is always or nearly always in this country, and we suppose elsewhere, made by companies. There are stock companies, in which certain persons own the capital, and take all the profits by way of dividends. Or mutual in which every one who is insured, becomes thereby a member, and the nett profits, or a certain proportion of them, are divided among all the members in such a manner as the charter or by-laws of the company may direct. Or both united, in which case there is a capital stock provided, as a permanent guaranty fund, over and above the premium received, and a certain part or proportion of the nett profits is paid by way of dividend upon the fund, and the residue divided among the insured. PARSONS *on Contracts.*

Of late years the number of mutual fire insurance companies has greatly increased in this country, and probably by far the largest amount of insurance against fire is effected by them. The principal reason for this is undoubtedly their cheapness; the premiums required by them being in general, very much less in fact than in the stock offices. For example, if the insurance is effected for seven years, which is a common period—an amount or percentage is charged about the same as, or a little more than is charged as the stock companies. Only a small part of this is taken in cash; for the rest a premium note or bond is given, promising to pay whatever part of the amount may be needed for losses, which shall occur during the period for which the note is given. More than this, therefore, the insured can not be bound to pay, and it frequently happens that no assessment whatever is demanded; and sometimes where the company is well established, and does a large business upon sound principles, a part of the money paid by him is refunded when the insurance expires, or credited to him on the renewal of the policy if such be his wish. The disadvantage of these mutual companies is, that the premiums paid, and premium notes, constitute the whole capital or fund, out of which losses are to be paid for. To make this more secure it is provided by the charter of some companies, that they should have a lien upon the land itself on which any insured building stands to the amount of the premium. But while this adds very much to the trustworthiness of the premium notes, and so to the availability of the capital, it is, with some persons, an objection, that their land is thus subjected to a lien or incumbrance.—*Ibid.*

There is another point of difference which recommends the stock rather than the mutual company. It is that the stock company will generally insure very nearly the full value of the property insured, while the mutual companies are generally restrained by their charters from insuring more than a moderate proportion, namely, from one half to three fourths of the assessed value of the proverty It would follow, therefore, that one insured by a mutual company can not be fully indemnified against loss by fire; and may not be quite so certain of getting the indemnity he bargains for, as if he were insured by a stock company. But this last reason is, practically, of very little importance, and the lowness of the premiums effectually overcomes the other. The method and operation of fire insurance have become quite uniform throughout the country, and any company may appeal to the usage of other companies to answer questions which have arisen under its own policy; only, however, within certain rules, and under some well-defined restrictions. In the first place, usage may be resorted to for the purpose of explaining that which needs explanation, but never to contradict that which is clearly expressed in the contract. And no usage can be admitted, even to explain a contract, unless the usage be so well established and so well known, that it may reasonably be supposed that the parties entered into the contract with reference to it. Thus if under a policy against fire on a vessel in one part of this country, an inquiry is raised as to the local usage, the policy is not to be affected by proof of usage upon any particular matter in other parts of the world, or even of the United States. And not only the terms of the contract must be duly regarded, but those of the charter; thus if this provides that "all policies and other instruments made and signed by the president or other officer of the company, shall bind the company," an agreement to cancel the policy should be signed; although it can not be doubted that a party insured might otherwise give up his policy, or renounce all claim under it, and that a valid agreement to that effect between him and the company would not be set aside for his benefit, on the ground of a merely formal defect.—*Ibid.*

In regard to the execution of a fire policy, and what is necessary to constitute such execution—as, for example, whether delivery is necessary or a signed memorandum be sufficient, or indeed an oral bargain only, and whether this insurance may be effected by correspondence, and if when the proposition and assent complete the contract—we are not aware of any material difference on any of these points, between the law of fire insurance and that which has already been presented as applicable to marine. It has been held in an action on a fire policy, as doubtless it would be on a marine policy, that a memorandum made on the application book of the company by the president, and signed by him, was not binding, when the party to be insured wished the policy to be delayed until a different adjustment of the terms could be settled, and after some delay, was notified by the company to call and settle the business, or the company would not be bound, and he did not call; because there was here no consummated agreement. So, too, a subsequent adoption or ratification is equivalent, either in a fire or marine policy, to the making originally of the contract; with this limitation, however, that no party can by his adoption, secure to himself the benefit of a policy, if it had not been intended that his interest should be embraced within it. It is quite common to describe the insured in marine policies, by general expressions—as, "for whom it may concern," or, "for owners" or the like; but such language is seldom if ever used in fire policies, the insured being specifically named in them.—*Ibid.*

It may be remarked, that the effecting of a fire insurance is not so often done through the agency of a broker, as that of marine insurance; nor is it so usual to pay nothing down, but to give a note for the whole premium. If, however, the insurance company has an express rule to that effect, it may be waived; and this waiver may be express or implied, from the conduct of officers of the company who have the right to act for it; and their admissions bind the company.—*Ibid.*

On the Interest of the Insured.—As to what interest in the insured is sufficient to support an insurance, the principle is the same in fire as in marine insurance. Any legal interest is sufficient; and if it be equitable in the sense that a court of equity will recognize and protect it, that is sufficient; but a merely moral or expectant interest is not enough. Hence, one who has only made an oral bargain with another to purchase his house, can not insure it; but if there be a valid contract in law, or if by writing, or by part perform-

ance, it is enforceable in equity, the purchaser may insure. So he may, although there be a stipulation, the breach of which has made the contract void by its terms, if the other party might waive the condition and enforce the contracts. So if a debtor assign his property to pay his debts, he has an insurable interest in it until the debts are paid, or until the property be sold. This was so held where it appeared that the property would pay the debts, and leave a surplus for the assignor; but we should expect the same ruling where this was not the case, although, in this instance, there had been previously a verdict for the plaintiff, and a new trial for want of evidence of such surplus.—*Ibid.*

Of Reinsurance.—Reinsurance is equally lawful in fire policies as in marine policies, and in general is governed by the same rules. The reinsurance is an insurance, not of the risk of the insured, for that is a merely ideal thing, but it is an insurance of the property originally insured, in which the first insurers have an insurable interest. If a common policy be used, with no other change than the word reinsurance used instead of insurance, all its requirements are in force. If, for example, in case of loss, this property requires a certificate from a magistrate, as to character, circumstances, etc., that must be furnished by the reinsured. But if a suitable certificate were given by the party first insured to the original insurer, and he transmit the same forthwith to those who insure him, that is enough; and so it would be with notice, preliminary proof, and all similar requirements. And an insurer who obtains reinsurance, is bound to communicate (in addition to whatever else should be stated by one asking insurance), all the information he has concerning the character of the party originally insured; and a material concealment on this point would avoid the policy.—*Ibid.*, page 516.

Of Double Insurance.—Double insurance, although sometimes confounded with reinsurance, is essentially different. By this, the party originally insured becomes again insured; but by reinsurance, the original insurer is insured, and, as we have seen, the original insurer has no interest in, and no lien upon, this policy. If, by a double insurance, the insured could protect himself over and over again, he might recover many indemnities for one loss. This can not be permitted, not only because it is opposed to the first principles of insurance, but because it would tempt to fraud, and make it very easy. This effect may be obviated in two ways: one, by considering the second insurance as operating only on so much of the value of the property insured, as is not covered by the first; and then, as soon as the whole value is covered, whether by the first or by subsequent policies, any further insurance has no effect. A second way is, by considering the second insurance as made jointly with the first; then only as much would be paid on any loss, on many insurances, as on one only; but this payment is divided ratably among all the insurers. All the policies are considered as making but one policy; and therefore, any one insurer who pays more than his proportion, may claim a contribution from others who were liable.—*Ibid.*

In this country fire policies usually contain express and exact provisions on this subject. They vary somewhat; but, generally, they require that any other insurance must be stated by the insured, and indorsed on the policy; and it is a frequent condition, that each office shall, in that case, pay only a ratable proportion of a loss; and it is often added that, if such other insurance be not so stated and indorsed, the insured shall not recover on the policy; and it has been held that such a condition applies to a subsequent as well as a prior insurance. Nor will a court of equity relieve if sufficient notice and indorsement have been made. But it has been held that a valid notice might be given to the agent of the company, who was authorized to receive applications and survey property proposed for insurance.—*Ibid.*

Of the Risk incurred by the Insurers.—At the time of the insurance the property must be in existence, and not on fire, and not at that moment exposed to a dangerous fire in the immediate neighborhood, because the insurance assumes that no unusual risks exist at that time.—*Ibid.*

The U. S. *Insurance Gazette* for March contains the report of the insurance commissioners, appointed by the comptroller to inquire into the affairs of the fire insurance companies of New York and Brooklyn. The leading features of the report are contained in the annexed table. The examinations were made from March to December:

Name of Company.	Value of bonds and mortgages.	Value of loans on stocks.	Amount of annual premiums.	Amount of re-insurance f'd after last dividend.
	Dollars.	Dollars.	Dollars.	Dollars.
Aster	162,650 00	8,200 00	50,571 50	19,500 00
Arctic	243,500 00	17,550 00	87,152 11	16,778 85
Atlantic (Br.)	155,200 00	26,266 46	78,810 33	37,192 00
Ætna	202,100 00	17,250 00	86,539 39	24,000 00
Broadway	173,414 00	10,000 00	50,666 37	42,045 00
Beekman	203,230 00	26,740 00	66,880 51	27,404 00
Brooklyn (Br.)	93,497 20	4,300 00	62,186 00	....
Continental	508,250 00	127,500 00	190,376 53	105,513 41
Corn Exchange	194,850 00	41,700 00	146,617 20	43,177 17
Commonwealth	249,450 00	20,610 00	72,194 06	25,485 12
Clinton	257,400 00	24,300 00	48,540 97	19,234 13
City	251,350 00	11,000 00	84,009 17	101,783 34
Commercial	218,551 00	17,800 00	77,278 72	88,169 17
Columbia	195,500 00	30,800 00	40,718 05	17,603 69
Citizen's	216,045 12	9,500 00	81,455 96	104,574 90
Empire	199,500 00	26,250 00	48,178 17	40,081 13
East River	122,750 00	39,450 00	27,265 81	14,874 80
Excelsior	216,506 00	2,250 00	90,671 91	28,675 65
Eagle	283,410 54	56,550 00	74,120 17	96,778 65
Fulton	158,602 60	15,041 00	82,567 51	24,164 54
Firemen's	223,102 00	39,000 00	99,095 87	54,860 00
Grocers	209,456 00	30,000 00	42,835 91	26,107 26
Greenwich	210,351 00	....	87,240 09	61,979 32
Home	470,000 00	194,800 00	383,292 50	204,606 85
Harmony	159,986 00	19,350 00	70,594 95	26,868 53
Hanover	152,800 00	22,700 00	41,801 00	24,911 07
Howard	249,400 00	30,900 00	174,800 00	97,000 00
Hamilton	113,104 00	....	58,978 38	....
Irving	200,650 00	43,500 00	52,597 03	32,250 88
Indemnity	130,050 00	6,000 00	....	....
Jefferson	297,000 00	11,000 00	77,722 48	100,302 06
Knickerbocker	220,129 50	7,000 00	58,008 43	47,600 00
Lorillard	216,650 00	23,800 00	71,446 36	40,209 02
La Farge	97,633 25	2,075 00	66,602 77	....
Lenox	182,240 00	26,887 27	61,423 00	10,764 00
L. Island (Br.)	204,365 00	82,150 00	70,303 78	100,000 87
Merchants'	214,144 00	20,700 00	80,154 00	84,350 00
Market	203,900 00	39,900 00	69,165 28	49,000 00
Metropolitan	308,437 58	19,800 00	70,243 18	26,199 44
Mechanics'	211,420 00	25,050 00	58,725 10	49,355 24
Manhattan	298,575 60	49,100 00	108,543 67	60,803 16
Mercantile	208,916 67	25,400 00	54,557 12	40,429 63
Niagara	212,900 00	33,740 75	78,322 73	58,888 11
New Amsterdam	211,600 00	24,400 00	74,500 92	37,971 41
Nassau	149,200 00	25,600 00	44,066 31	40,265 75
North River	375,800 00	10,700 00	63,980 79	54,445 72
North American	265,748 11	13,000 00	54,786 81	82,624 21
National	251,720 00	20,100 00	79,052 67	106,014 00
N. Y. Bowery	316,600 00	65,460 00	69,004 27	103,000 00
N. Y. Equitable	254,100 00	55,250 00	102,634 86	81,474 29
New York	194,180 00	10,295 00	77,996 01	80,000 00
Park	196,234 00	15,800 00	54,481 91	7,000 00
Pacific	193,987 00	41,450 00	90,281 49	28,814 00
People's	137,125 00	28,050 00	49,885 59	34,072 78
Peter Cooper's	144,881 00	21,250 00	29,246 91	20,167 43
Phenix	200,961 00	45,000 00	78,160 05	57,289 90
Republic	174,850 00	14,500 00	57,920 64	86,809 61
Rutger's	172,519 00	2,200 00	66,159 71	31,291 88
Relief	131,200 00	83,233 00	51,740 00	21,500 00
St. Nicholas	114,400 00	12,607 00	67,049 50	....
St. Mark's	170,710 00	900 00	55,996 16	25,000 00
Stuyvesant	199,446 00	18,011 50	47,207 53	30,060 57
Security	201,900 00	10,000 00	....	....
United States'	287,350 00	10,500 00	51,416 46	40,092 00
Washington	219,653 07	86,280 00	88,988 79	48,220 52
Williamsb. city	160,300 00	24,200 00	56,819 00	40,727 09

Of Adjustment and Loss.—Insurers against fire are not held to pay for loss of profits, gains of business, or other indirect and remote consequences of a loss by fire; we do not know, however, why profits may not be specifically insured against fire, where it is not forbidden by, or inconsistent with, the charter of the in-

surers. There is one wide difference between the principle of adjustment of a marine policy, and of a fire policy. In the former, if a proportion only of the value is insured, the insured is considered as his own insurer for the residue, and only an equal proportion of the loss is paid. Thus, if on a ship valued at $10,000, $5000 be insured, there is a loss of one half, the insurers pay only one half of the sum they insure, just as if some other party had insured other $5000. But in a fire policy, the insurers pay in all cases the whole amount which is lost by the fire, provided only that it does not exceed the amount which they insure. It is said that general average clauses or provisions are inserted in fire policies in England, but are not known here. Still, in one case, the principle of general average was applied. Blankets were used by the assured, with the consent of the insurers, to protect the building from a near fire; they did this effectually, but were themselves made worthless, and an action by the insured against the insurers, for this loss, was sustained by the court.—*Ibid.*, p. 637.

Life Assurance.—It is curious to observe that life assurance, which has so favorable a bearing on our social and moral welfare, may be said to have originated from the study of the laws of chance, as observed in the experience of the gambler. It will be remarked, however, that the one is the very antithesis of the other. In life assurance, the individual is freed from risk by union for mutual protection with his fellowmen. The gambler takes the single risk upon himself, and his average, if he obtain it, can only arise from the duration of his play. In fact, the man who has the opportunity of assuring his life, and does not do it, is the gambler, taking the single risk upon himself.

That the one practice took its origin, however, from the observation of the other, there can be no doubt; the earliest mathematical publication on probabilities, being a little tract of Christian Huygens, written in Dutch, but afterward translated into Latin, and appearing under the title "De Ratiociniis in Ludo Aleæ," in the *Exercitationes Geometricæ* of Francis Schooten, printed at Leyden, 1657. Two other mathematicians, however, who preceded Huygens, really laid the foundation of the science, although he wrote the first systematic treatise on the subject. We refer to the famous Pascal, and Fermat his friend, a magistrate of the Parliament of Toulouse. But as the history of the general doctrines of probabilities is given under that head, we must confine our remarks to the history of that doctrine as applied to the duration of life, and the progress of life computations.

It has been usual to commence the history of life contingencies with the little volume of "John Graunt, citizen of London," who published observations on the bills of mortality in 1662; but Mr. Hendriks has given the means of more remote speculation on the subject.

The practice in the days of Herodotus was to reckon three generations equivalent to a century, and the census of Vespasian, as noticed in Pliny, distinguished cases of extreme longevity. But we do not find any thing like an observation on the subject until we come to the calculations of the Prætorian præfect, Ulpianus, one of the most eminent commentators on the Justinian Code, who gave a table of the estimated present worth of life annuities, with reference to the requirements of the Falcidian law, which rendered it necessary to put a value on life-rents and other similar provisions. Ulpianus, however, took no account of interest, so that his calculations are more expectations of life than life annuities, and in that view Mr. Hendriks says, "The old Roman jurisprudence gave far more correct views of the comparative value of life at different ages than the moderns possessed, in a popular way, until nearly the close of the 17th century." Ulpianus's calculations (*Pandect*, 35–2·68), compared with certain Swedish observations given by Dr. Price, are as follows:

Ages.	Stockholm life. Dr. Price. Expectation of		Ages.	Expectations Male and female, Roman life, Ulpianus.
	Males.	Females.		
Birth.	14·25	18·10	Birth—20.....	30
5	31·05	37·12	20—25.....	28
10	30·00	36·59	25—30.....	25
15	26·74	33·43	30—35.....	22
20	23·35	30·01	35—40.....	20
25	21·40	26·80	40—41.....	19
30	19·42	23·98	41—42.....	18
35	17·58	21·02	42—43.....	17
40	15·61	19·25	43—44.....	16
45	13·78	17·17	44—45.....	15
50	11·95	15·12	45—46.....	14
55	10·30	12·89	46—47.....	13
60	8·69	10·45	47—48.....	12
65	7·39	8·39	48—49.....	11
70	5·81	6·16	49—50.....	10
75	4·09	4·39	50—55.....	9
			55—60.....	7
			60 and upward.	5

It seems abundantly evident that Ulpianus's estimate must have been based on actual observations in some form, but the Romans must have had a miserable chance of life in old age.

From that period we have nothing to attract attention till the 16th century, when Dr. (or Sir) Thomas Wilson, who died in 1581, published his *Discourse upon Usurie*, which contains illustrations of endowment transactions on the lives of children, but the life contingency portion seems merely incidentally introduced with reference to questions as to usury.

In 1661, M. Cleirac, the author of *Les us et Coutums de la Mer*, notices the *Guidon*, "a French production, formerly compiled for the benefit of the merchants trading in the noble city of Rouen." This work is nearly 300 years old, its author's name is unknown, but it is a most curious document, in consequence of the reference it makes to assurance matters. From Mr. Hendriks we give the following translation, omitting Cleirac's notes:

"1. In other countries, where the bodies of people may be captured and reduced to bondage, there are various usages for the insurance of the body and life of men, whether they be of free condition, or slaves, which customs will not be mentioned here, because in France, men of whatsoever nation are of frank and free condition.

"2. Notice only will be taken of what is practiced in this country by those who undertake distant voyages, as to the coast of Italy, Constantinople, Alexandria, or other like voyages in the Mediterranean and Atlantic seas, on account of the fear which they have of the galleys, *fustes*, and frigates of the army of the Turk, or Corsairs, who make a traffic of the sale of Christians, whom they capture as well on sea as on land; which creates occasion for the masters and captains of this country, when they undertake such voyages, to stipulate with their merchant freighters, or others, for the restitution of their persons, in case they are captured; and this they can do even for the people of their crew.

"3. In such a case, the master must, in the policy, estimate his ransom, and that of his companions, at so much per head; declare the name of the ship, the stay or touchings which it will make, the duration of each stay, and to whom the ransom is payable. The insurer is bound to pay the sum insured for the ransom 15 days after verification and certification of the captivity, without waiting for the usual two months' delay; and without other formality of seeing freightage, bill of lading, or charter party, it will suffice to produce the attestation of capture and policy.

"4. Pilgrims going to the Holy Sepulchre of Jerusalem, or on other distant voyages, may effect insurance for their redemption, valued at a given amount. Description shall besides be made of their persons, names, surnames, country, abode, age, and rank; and,

moreover, limit shall be made as to within what time they undertake to make and accomplish the voyage: the longest period shall be of three years inclusive, tion whatsoever. In imitation of the preceding, those without admitting excuse of illness, or other detenwho undertake journeys or vows for a lengthened period, or a passage from one country to another, may insure for their ransom.

"5. Another kind of insurance is made by other nations upon *the life of men, in case of their decease upon their voyage*, to pay certain sums to their heirs or creditors. Creditors even may insure their debts, if their debtor *remove from one country to another*; the same can be done by those having rents or pensions, so as in case of *their decease, to continue to their heirs such pension or rent as may be due to them*. Which are all stipulations forbidden, as against good morals and customs, from which endless abuses and deceptions arose, whence they have been constrained to abolish and prohibit the said usages; which is also to be prohibited and forbidden in this country."

The most remarkable feature of these times was the condemnation of, and legislation against, the practice of assurance in many countries. Not only in France was it assumed unrecognizable by law, but in the Netherlands' ordinance of Philip II., and in the civil statutes of Genoa (1588), in which last it is declared that "securities, bonds, or wagers may not be made, without the license of the Senate, upon the life of the pope, nor upon the life of the emperor, nor upon the life of kings, cardinals, dukes, princes, bishops, nor upon the life of other lords or persons, in constituted dignities, ecclesiastical or secular. Neither may they be made upon the acquisition, loss, or change of lordships, governments, kingdoms, provinces, duchies, cities, lands, or places . . . nor upon any other transaction having the species or form of a bond, security, or wager (*vadimonii securitatis, seu partit*); but all are understood and are forbidden." The 24th article of the Amsterdam ordinance of 1598 prohibits insurance of the life of any person, and likewise wagers upon any voyage or frivolous purpose; and the Rotterdam ordinances of 1604 and 1635 repeat the latter injunctions. The 10th article (*Titre* 6), of the great French marine ordinance of Louis XIV., dated 1681, says, "We forbid the making of any insurance on the life of men;" but the 11th article excepts those who redeem captives, and gurantees the price of the redemption assured upon the persons, if the redeemed on his way back perish *by other means than natural death*. "Even later than the 17th century," adds Hendriks, "life insurance was regarded in France as obnoxious. In 1783, there remained a spirit of opposition to it. Emerigen, whose work on assurance comprises more than 1300 quarto pages, devotes *one page* to the subject of life assurance, and that short space to the purpose of attacking the system."

But we must now pass on to a more interesting period, when we are called on to consider the conflicting claims of great names, with reference to the origination and practical application of the doctrine of annuities, as derived from the study of the laws of chance or probability.

John de Wit, the grand pensionary of Holland, submitted to the States-General of Holland, in 1671, a treatise on the valuation of life annuities, and on the basis of that document, it was resolved to grant life annuities for the purpose of raising funds. This treatise Mr. Hendriks characterizes as "the first known production of any age treating in a formal manner of the valuation of life annuities,' and the scientific world are much indebted to him for the restoration of this document, which was inserted in the resolutions of the States of Holland and West Friesland of the year 1671, and which had remained as good as lost for 180 years.

In the preparation of this document De Wit was no doubt aided by the preceding labors of Pascal, Fermat, and Huygens, and he had no doubt the advantage of observations on the duration of life among persons to whom the States of Holland had previously granted annuities; but, independently of the originality of the design, we must give him the entire credit of having discovered a correct principle on which the value of a life annuity might be calculated.

De Wit's treatise is headed, "Value of Life Annuities in Proportion to Redeemable Annuities." He commences with pointing out the difference between a "redeemable annuity," as he terms it, at 4 per cent., that is a perpetuity at 25 years' purchase, or perpetual investment at 4 per cent., and a life annuity; estimating the value of the latter in the most favorable circumstances as "really not below, but certainly above 16 years' purchase." He then gives some preliminary observations on the doctrine of chances, and afterward applies the principle to the calculation of an annuity value at a particular age. His calculations are simplified and explained as follows by Mr. Hendrike:

"*First*, Out of 128 lives, aged say 3 years, 1 is supposed to die in every half year of the first 100 half years, or 2 per annum for 50 years, leaving 28 alive, aged 53 years, at the end of the term; out of whom 1 dies in every 9 months, being 0·66 per half year during the next 20 half years, or 1·33 per annum for 10 years, leaving 15·66 alive, aged 63 years, at the end of the second term; of whom 1 dies in every year for 10 years, being 0·5 per half year during the next 20 half years, leaving 5·66 alive, aged 73 years, at the end of the third term; of whom 1 dies in every year and a half for 7 years, being 0·33 per half year during the next 14 half years, leaving 1 alive, aged 80, at the end of the fourth term; which survivor does not live over another half year. *Secondly*, Out of the 128 lives, those who die in the respective half years between the ages of 3 and 80, will receive an annuity certain in half-yearly instalments, for a term equal in continuance to the number of completed half years elapsed between age 3 and the date of their death; therefore, the sum of the present values of half-yearly annuities certain, for the corresponding terms multiplied in the numbers *dying* within such respective terms, gives the present worth of all the annuities which will be enjoyed by the 128 lives, 1-128 of which represents the present value of the single life annuity at age of, say 3 years."

We have dwelt at some length on the discovery of De Wit, as it has not been available previously in any account given of the progress of life calculations, our best writers in this country, from the absence of any precise knowledge in regard to it, having passed it over with a slight notice. On the continent, however, the labors of De Wit have been more highly appreciated. The Marquis of Condorcet, in his *Discours Preliminaire*, gave him the credit of being "the first mathematician who thought of applying calculation to political questions." "*It was he who first essayed to fix the rate of life annuities according to the probabilities of life given by the tables of mortality.* Upon politics, upon the true interests of nations, upon the freedom of trade, he had very superior ideas to those of his age; and we may say that his premature death was a misfortune to Europe as well as to his country."

We can not conclude our notice of De Wit without mentioning the name of his fellow-laborer, if we may so term him, the Burgomaster Hudde. We had at one time rather a painful impression left on our mind, arising out of the terms of Hudde's certificate to the report of De Wit to the States-General, and other observations by Mr. Hendriks, but we are glad to find, from the correspondence subsequently brought forward, that they were fellow-laborers in the same field, and that Hudde himself was a man of science.

We have now to mention the first published work in which an attempt is made to form tables of mortality. We allude to the work of John Graunt, whose name has been already mentioned. It was published in 1662, and is the first book on the subject of life observations, as a distinct treatise. It is entitled, *Natural and Political Observations, mentioned in a following index, and made upon the Bills of Mortality*, by JOHN GRAUNT, *citizen of London* (afterward described in the fifth edition as "Captain John Graunt, F.R.S"). A century previous to the publication of this little volume, viz., on 1st January, 1562, the first register of burials was commenced in London, the necessity for the inquiry arising from the great mortality occasioned by the plague at that time. From that time the bills of mortality were kept at irregular intervals, according to the appearance and disappearance of the plague, but from 1603 the records were continued uninterruptedly. Graunt paid particular attention to these weekly returns, and, with a sagacious appreciation of their value, reduced the results into tables, "in order to the more ready comparing of one year, season, parish, or other division of the city." He analyzes the bills themselves, and draws certain conclusions with great adroitness, giving the first semblance of a table of mortality in the arrangement of deaths in decades. The work passed through five editions, the last under the superintendence of his relative Sir William Petty, who himself paid some attention to the subject, having published *Essays on Political Arithmetic concerning the People, Housings, etc., of London and Paris*; *Essay concerning the Multiplication of Mankind, and the Growth of the city of London*; *Observations on the Dublin Bills of Mortality, etc.*; and *Discourse on Duplicate Proportion*, read before the Royal Society, 1674.

From this time till 1693, when the celebrated Dr. Halley's investigations and calculations appeared, there is little to attract attention. A set of tables was published during this interval, entitled, *Tables for Renewing and Purchasing of the Leases of Cathedral Churches and Colleges*, etc.; also *Tables for Renewing and Purchasing of Lives*, etc., bearing the imposing title of "*Sir Isaac Newton's Tables*;" but we learn from Mr. Edwin James Farren's historical *Essay on the Rise and Early Progress of the Doctrine of Life Contingencies in England*, that Sir Isaac Newton being then at Cambridge (Lucasian Professor *vice* Barrow), it appears to have been thought politic to obtain his sanction or *imprimatur* as to the correctness of the tables, and "his original cognizance of the work appears to have been to merely confirm the (Q.E.D.) correctness of a single table relative to the established usage of renewing college leases."

In No. 196 of the *Philosophical Transactions*, 1693, Dr. Halley published the result of his investigations under the following title: "An Estimate of the Degrees of Mortality of Mankind, drawn from curious Tables of the Births and Funerals at the city of Breslau, with an attempt to ascertain the price of Annuities upon Lives, by E. Halley, R.S.S."—E. B.

Additional information will also be found in the *Actuarial Tables* of W. T. Thomson, F.R.S.E., 1853, and in the very valuable *Tables and Formulæ for the Computation of Life Contingencies*, of Mr. Peter Gray, published in 1849. In conclusion, the names of Edward Sang, Peter Hardy, Samuel Brown, Charles Jellicoe, William Wood, William Orchard, and B. H. Todd, may be selected for special notice from the long list of calculators who have advanced various departments of the science. Much valuable information on the subject will also be found in the *Assurance Magazine*; the *Reports of the Registrar-General*; and in the *Evidence ... on before the House of Commons*, in 1843, on Joint Stock Companies, and in 1853, on Assurance Associations. The evidence on Friendly Societies will also be found interesting.—E. B. See INTEREST and ANNUITIES.

The following summary of the plan of operation and condition of the Mutual Life Insurance Company of New York, is given to show the state of life insurance in the United States. This Company is the largest and one of the best managed in the country; and its condition may, therefore, be taken as a fair exponent of the others, and shows clearly to the insurers the safety of their policies.

Mutual Life Insurance Co., N. Y.—It will be perceived by the statement following that there have been issued in the past year (1856) 2,041 policies, amounting to $5,878,457, being a net increase in policies of 1,016, and in amount of insured of $3,119,902. The cash receipts have been $1,045,235 17; the increase of investments on bonds and mortgages has been $555,562 11, and the entire net increase $610,749 94, irrespective of the items of interest accrued, and deferred premiums, which are not estimated. Total assets, $3,787,945 76. The loans are at 7 per cent. interest. Aggregate amount of loans, May 1, 1856, $3,187,858 36.

Securities.—Value of lands mortgaged, $5,009,415; value of improvements thereon, $3,513,650; aggregate value of mortgaged property, $8,523,065.

Collaterals.—Policies of fire insurance, assigned or made payable, in case of loss, to the Company, $1,702,636 85; personal guaranties to a considerable amount, say $200,000. Total amount of securities, $10,425,701. It will thus be seen that the value of the mortgaged property is more than twice and a half the amount of the loans they are intended to secure. These securities are fortified by collateral policies of fire insurance to the amount of $1,702,636. The following schedule of the predicted losses by the tables, and the actual losses for the past 14 years, has been prepared by the Actuary:

A COMPARATIVE TABLE OF THE PROBABLE AND ACTUAL NUMBER OF DEATHS AND LOSSES, ACCORDING TO THE LIFE TABLE OF THE MUTUAL LIFE INSURANCE CO. OF NEW YORK.

Year.	Probable No. of deaths.	Probable amount of losses.	Number of deaths.	Actual amount of losses.
1843....	2·96	$11,461	..	....
1844....	7·72	29,708	5	$18,000
1845....	15·35	54,830	7	18,100
1846....	24·96	80,485	23	69,400
1847....	33·67	107,017	29	71,450
1848....	44·37	140,495	27	91,200
1849....	56·81	174,608	64	175,950
1850....	67·61	200,827	71	151,640
1851....	72·48	214,350	50	166,600
1852....	76·56	229,729	68	206,100
1853....	83·59	258,043	71	207,200
1854....	92·44	289,921	85	281,500
1855....	100·75	317,581	80	267,850
1856....	113·56	362,639	75	264,225
Total	798·08	$2,471,889	655	$1,991,915

In the above table the second column shows the probable number of deaths, according to the mortality tables now used in the United States. The third column represents the amount of such losses, whereas the fourth and fifth columns show the actual results in a business of 14 years. In none of these years has the Company lost the full amount called for in its tables.

But it must be borne in mind that life insurance is only in its infancy in this country, and that full 30 years must elapse before we can calculate results with any degree of certainty.

FOURTEENTH ANNUAL STATEMENT FOR THE YEAR ENDING 31ST JANUARY, 1857,

RECEIPTS.

For premiums and interest	$1,045,235 17

DISBURSEMENTS.

Paid claims by death and expenses	$434,485 23
Net increase of assets during the year	$610,749 94
Net assets 31st January, 1856	3,177,195 82
Total net assets 31st January, 1857	$3,787,945 76
Number of policies issued during the year	2,041
Amount insured by the same	$5,878,457 00
Number of policies in force 1st of February, 1857	9,794

The following is the division of the country into classes, showing the rates charged:

1. In the United States, north of the southern lines

of Virginia and Kentucky (except within 10 miles of the Mississippi and Missouri Rivers, between 36° 30′ and 40° north latitude); in the interior of North Carolina, from the coast; in Tennessee, except within 50 miles of the Mississippi River; and in British North America. All to be east of the 100th meridian of longitude west from Greenwich.

2. *Additional Rates.*—Residences within 10 miles of the Mississippi and Missouri Rivers, between 36° 30′ and 40° north latitude, ½ per cent. The United States, south of the southerly line of Virginia and Kentucky, and north of the 32d degree of north latitude, except on the Mississippi River (east of the 100th meridian of west longitude), from 1st July to 1st November, for acclimated persons, ½ per cent.

3. The United States, south of the 32d degree of north latitude (east of the 100th meridian west longitude), from 1st July to 1st November, for acclimated persons, 2 per cent. Acclimation is only deemed complete when the party has had the yellow fever.

4. Upper California, Oregon (except those engaged in mining), Australia (with similar restriction) China, Philippine Islands, and Sandwich Islands, for residence, 1 per cent. For South America, West Indies, East Indies, and other parts of the world not mentioned, rates will be named at the office corresponding with the risks, except in places prohibited.

5. Voyages and trips to and from California and Oregon, 1 per cent.; round the world, 2 per cent. Other voyages subject to special contract at this office. Master mariners and sea-faring men are taken at rates of premium graduated to the risk of the particular trade in which they may be engaged. The conditions as to voyages in such class are applicable to time of peace only, an additional rate being charged in time of war, if the risk of war should be taken by the Co.

Military and naval men are not protected when engaged in actual warfare; but if regularly called into actual service, and dying thereby, the Company will consider said death, under such circumstances, as a tender of their policy to the Company, and will pay the same value therefor as if surrendered by sale. Persons engaged in military corps are not held to come under military conditions, except in the event of foreign invasion.

Persons passing from one class to another.—Persons insured, who pass from a class where the risk is smaller to one which is greater, must apply at the office, and pay the enhanced premium. Persons coming from a class where the risk is greater, to where it is less, will commence to pay the reduced premium when the next renewal premium becomes due, should the extra premium be taken off. But where the health and constitution have become impaired by said residence, the extra premium will not be taken off. All reductions of the extra premiums charged, must be made at the office.

Acclimation for the purpose of life insurance is obtained, 1. By birth and continued residence in the place where insurance is sought. 2. By long continued summer residence, and during the season when and where epidemic and endemic diseases prevail. 3. By having had the disease incident to the climate or locality. 4. Acclimation against yellow fever is not considered complete unless the party has had it, and has continued since to reside in places where it is epidemic.

Rates for Insurance.—The rates adopted by this Company have been formed on the most correct observations which now exist, as to the duration of life at the different places where we insure. We believe that these rates can not be safely reduced, and that any attempt to do it, with the present limited experience in life insurance in this country, would evince a recklessness of results which would justly cost any Company which should attempt it, the withdrawal of the confidence of all who are conversant with the science and principles upon which this business is based.

THE RATES OF ASSURANCE OF ONE THOUSAND DOLLARS ON A SINGLE LIFE, FOR THE WHOLE CONTINUANCE THEREOF.

Age.	Quarterly payments for life.	Semi-ann. payments for life.	Annual payments for life.	Annual payments for 10 y'rs.	Annual payments for 5 years	In one payment.
14	3 77	7 48	14 71	38 49	57 68	254 59
15	3 88	7 68	15 11	34 18	58 86	259 89
16	3 98	7 89	15 52	34 89	60 05	264 98
17	4 09	8 11	15 94	35 62	61 27	270 16
18	4 20	8 33	16 38	36 35	62 51	275 58
19	4 32	8 56	16 83	37 11	63 78	280 99
20	4 44	8 80	17 30	37 87	65 07	286 56
21	4 56	9 05	17 78	38 66	66 28	292 28
22	4 69	9 30	18 28	39 45	67 72	298 00
23	4 82	9 56	18 80	40 27	69 08	303 88
24	4 96	9 84	19 34	41 10	70 48	309 87
25	5 10	10 12	19 89	41 95	71 89	315 97
26	5 25	10 41	20 47	42 82	73 35	322 20
27	5 41	10 72	21 07	43 71	74 83	328 55
28	5 57	11 04	21 70	44 62	76 34	335 03
29	5 73	11 37	22 35	45 55	77 88	341 64
30	5 91	11 71	23 02	46 51	79 46	348 38
31	6 09	12 07	23 73	47 48	81 07	355 26
32	6 28	12 45	24 47	48 48	82 72	362 29
33	6 47	12 84	25 23	49 50	84 41	369 46
34	6 68	13 24	26 03	50 55	86 13	376 78
35	6 89	13 67	26 87	51 62	87 89	384 26
36	7 12	14 12	27 75	52 72	89 70	391 90
37	7 36	14 59	28 67	53 86	91 55	399 71
38	7 61	15 08	29 64	55 02	93 44	407 70
39	7 87	15 60	30 66	56 21	95 38	415 87
40	8 14	16 14	31 73	57 45	97 37	424 23
41	8 43	16 72	32 84	58 72	99 41	432 79
42	8 74	17 32	34 05	60 03	101 51	441 54
43	9 06	17 96	35 30	61 38	103 66	450 49
44	9 40	18 64	36 68	62 78	105 87	459 66
45	9 76	19 35	38 14	64 24	108 15	469 08
46	10 14	20 11	39 53	65 74	110 49	478 62
47	10 55	20 92	41 11	67 31	112 91	488 41
48	10 98	21 77	42 78	68 92	115 39	498 37
49	11 43	22 66	44 55	70 59	117 92	508 49
50	11 91	23 61	46 42	72 31	120 51	518 75
51	12 42	24 62	48 39	74 08	123 15	529 15
52	12 95	25 69	50 49	75 91	125 85	539 68
53	13 52	26 82	52 71	77 81	128 61	550 36
54	14 13	28 02	55 07	79 78	131 44	561 17
55	14 77	29 29	57 58	81 84	134 34	572 12
56	15 46	30 65	60 25	83 98	137 32	583 19

THE RATES OF ASSURANCE OF ONE THOUSAND DOLLARS ON A SINGLE LIFE, FOR A TERM OF YEARS.

Age.	On a policy for 7 years.			For 5 yr's.	For 2 y'rs.	For 1 year.
	Quarterly payments.	Semi-ann'l payments.	Annual payments.	Annual payments.	Annual payments.	Annual payments.
11	2 00	3 97	7 80	7 60	7 28	7 18
15	2 06	4 09	8 03	7 82	7 50	7 39
16	2 12	4 21	8 27	8 05	7 72	7 61
17	2 18	4 33	8 51	8 28	7 95	7 83
18	2 25	4 45	8 75	8 52	8 18	8 06
19	2 31	4 58	9 00	8 77	8 41	8 30
20	2 38	4 71	9 26	9 02	8 66	8 53
21	2 44	4 85	9 53	9 28	8 91	8 79
22	2 51	4 99	9 80	9 55	9 17	9 05
23	2 59	5 13	10 08	9 82	9 43	9 31
24	2 66	5 27	10 37	10 10	9 70	9 57
25	2 74	5 42	10 66	10 38	9 97	9 83
26	2 82	5 58	10 97	10 68	10 25	10 11
27	2 90	5 74	11 29	10 99	10 55	10 40
28	2 98	5 91	11 62	11 31	10 85	10 70
29	3 07	6 08	11 96	11 64	11 17	11 01
30	3 16	6 26	12 31	11 98	11 49	11 33
31	3 25	6 45	12 67	12 33	11 81	11 65
32	3 35	6 64	13 04	12 69	12 18	12 01
33	3 45	6 83	13 43	13 07	12 53	12 36
34	3 55	7 04	13 83	13 46	12 90	12 71
35	3 66	7 25	14 25	13 86	13 28	13 10
36	3 77	7 47	14 69	14 28	13 68	13 48
37	3 89	7 70	15 14	14 71	14 09	13 88
38	4 01	7 95	15 62	15 17	14 51	14 30
39	4 14	8 20	16 13	15 65	14 96	14 78
40	4 28	8 48	16 66	16 15	15 43	15 19
41	4 43	8 77	17 25	16 69	15 92	15 67
42	4 59	9 10	17 89	17 26	16 43	16 18
43	4 77	9 46	18 59	17 89	16 99	16 71
44	4 97	9 85	19 36	18 58	17 57	17 28
45	5 18	10 28	20 21	19 36	18 21	17 88
46	5 42	10 75	21 13	20 22	18 91	18 55
47	5 68	11 27	22 15	21 17	19 79	19 36
48	5 96	11 83	23 24	22 20	20 71	20 24
49	6 26	12 42	24 42	23 30	21 71	21 21
50	6 59	13 06	25 67	24 48	22 79	22 25
51	6 94	13 75	27 03	25 74	23 93	23 37
52	7 31	14 50	28 50	27 09	25 15	24 54
53	7 72	15 31	30 10	28 56	26 46	25 81
54	8 17	16 20	31 81	30 10	27 86	27 15
55	8 66	17 18	31 76	31 90	29 39	28 69
56	9 20	18 25	35 87	33 83	31 06	30 21

Life insurance in the United States is as yet in its infancy, as far as regards the *science*, but the practice is rapidly gaining favor with all classes of the community, and the number availing themselves of its benefits in this country are daily increasing. Statistics of life and mortality are the foundation upon which the science of life insurance is erected, and reliable information regarding the relative value of life in different climates and at each age is of the greatest importance to a life company, in order to prosecute its business successfully. In Great Britain this information is obtained from two sources, viz., the experience obtaining each year among the companies themselves; and, secondly, from the reports of the registrar-general which are annually made to Parliament. From the comparatively small area of the British Isles, and the excellent system of appointments by the government of its scientific men, great advantage is derived. The decennial census of Great Britain is taken in *one day*, which at once eliminates one of the most fruitful sources of error; and by having a registrar and corps of assistants in his office regularly educated and trained, a perfect system is adopted; and thus we have in their reports a mass of reliable, interesting, and valuable information which can nowhere else be obtained. Unfortunately, in the United States it is different. From the immense area of territory, embracing every variety of soil, climate, and physical configuration, it would be almost impossible, even if we had as perfect a system of registration as they have in England, to complete the enumeration of the census in a day, or even a few days.

For the tables of mortality upon which to determine the rates of premium to be charged for assurances upon lives, the American companies are entirely dependent upon European observations; and it is found by the experience of companies in this country, that the rate of mortality in Great Britain will very fairly represent that in the New England and Middle States. But in the Southern States and California it is very different. We have as yet no sufficient data for the determination of the relative mortality among residents of the different States in the Union; consequently, when a life company is called upon to insure the life of a person residing in the South or California, a sum is charged, in addition to the regular premium, for the increased risk in those climates, which is entirely arbitrary. Yet it has been shown in the report by the actuary of the experience of the Mutual Life Insurance Company of New York for ten years ending February 1, 1853, that the annual mortality among every 10,000 persons insured was as follows:

In the whole company	109
New England and Middle States	89
Western States	107
Southern States bordering on the Atlantic	127
" " " " Gulf	160
California	430

The experience of the company has also been computed since 1853, and will be published in 1858, which will include a period of fifteen years in the history of that company.

The following table is taken from the report of Dr. E. Barton, of New Orleans, to the president of the above company, on the relative mortality from yellow fever of persons from various parts of the world who emigrate to New Orleans. The table is an answer to the question, *What is the relative mortality between natives and strangers, American and European?*

Reply.—The answer to this must necessarily be twofold, viz.: 1st, in relation to the acclimated, and, 2d, the unacclimated. Of the first, the following table, with precise details of each nation and people, foreign and domestic, and from different latitudes, was made from the data furnished during the disastrous epidemic of 1853, this having been the most extensive and malignant yellow fever that ever occurred in New Orleans. This table was most carefully and laboriously compiled by myself, and is, I believe, the only one made that can furnish any reply to this most important question, and should be deemed a fair exponent of the general liabilities, as the greater should embrace the less.

TABLE SHOWING THE LIFE COST OF ACCLIMATION OR LIABILITIES TO YELLOW FEVER AS DERIVED FROM OR INFLUENCED BY NATIVITY, PER 1000 OF THE POPULATION.

Class.	From.	Per 1000.
1, 2.	New Orleans and the State of Louisiana	3·58
	Southern Slave States.	
3.	Arkansas, Mississippi, Alabama, Georgia, and South Carolina	13·22
	Northern Slave States.	
4.	Virginia, Maryland, Tennessee, Kentucky; and of this class of States, the largest mortality existed among those coming from Tennessee and Kentucky	30·09
	Northern States.	
5.	New York, Vermont, Massachusetts, Maine, Rhode Island, Connecticut, New Jersey, Pennsylvania, and Delaware	32·83
	Northwestern States.	
6.	Ohio, Indiana, Illinois, and Missouri	44·23
7.	British America	50·24
	General average in America	20·14
8.	West Indies, South America, and Mexico	6·14
9.	Great Britain	52·19
10.	Ireland	204·97
	North of Europe.	
11.	Denmark, Sweden, and Russia	163·26
	Middle Europe.	
12.	Russia and Germany	132·01
	Lower Western Europe.	
13.	Holland and Belgium	328·94
	Mountainous Europe.	
14.	Austria and Switzerland	220·68
15.	France	48·13
16.	Spain and Italy	22·03
	General average from European countries	146·45

The total liabilities, in passing through the acclimating process in New Orleans, in 1853, was to their respective population 60·56.

From this table it will appear, 1st, that liabilities to yellow fever exist (in relation to America) pretty much in proportion to increase of latitude; and, 2dly, by their *cold* moisture, so diametrically opposite in its effects on the constitution to *warm* moisture; and, above all, their personal habits of crowding into cheap and filthy dwellings, and the immigrants being of a low class, and the predominance of intemperance. The comparatively small mortality occurring in those from Great Britain arises from the fact of these immigrants being of a higher class of subjects.

From these remarks it will be seen that life insurance companies in this country must depend in a great measure upon the results of their own experience.

Something, however, has been added to vital statistics by individual States, particularly Massachusetts, New York, Maryland, and Kentucky; and there is no reason why these individual States, as well as the United States, should not have as complete a system of registration of births, marriages, and deaths, as they now have in Great Britain, and thereby give full and accurate statistics of the life and mortality of the country.

The reports of the six life insurance companies of New York, for the year 1857, show that the large sum of $798,000 has been paid to the representatives of policy holders, and that their aggregate premiums, losses, and assets were severally as follow:

	Prem. and Inter. 1857	Losses. 1857.	Assets. 1857
Mutual Life Ins., N. Y.	$1,146,000	$317,000	$4,488,000
Mutual Benefit Co.	690,000	207,000	2,743,000
N. Y. Life Ins. Co.	474,000	151,000	1,402,000
Manhattan Life Ins. Co.	312,000	57,000	606,000
U. S. Life Ins. Co.	184,000	58,000	430,000
Knickerbocker Ins. Co.	40,000	8,000	....
Total	$2,846,000	$798,000	$9,669,000

—See *Bankers' Magazine*, 1856 '57; also JONES ON *Life Annuities*; LEONE LEVI'S *Com. Law of the World.*

Interest is the annual sum or rate per cent. which the borrower of a capital agrees, or is bound, to pay to the lender for its use. "Interêt; loyer d'un *capital* preté; ou bien, en termes plus exacts, achat des services productifs que pent rendre un capital" (*Say*, tom. ii., p. 480, ed. 4me). It was generally supposed, previously to the middle of the last century, that, in the event of all legislative enactments regulating the rate of interest being repealed, its increase or diminution would wholly depend on the comparative scarcity or abundance of money; or, in other words, that it would rise as money became scarce, and fall as it became more plentiful. But this opinion has been successfully controverted, first by Mr. Joseph Massie, in a tract published in 1750, entitled "An Essay on the Governing Causes of the Rate of Interest;" and, second, with better effect in Hume's Essay on Interest, in 1752. And it has been shown that the rate of interest in advanced communities is not determined by the abundance of the currency, but by the average rate of profit derived from the employment of capital. No doubt it most frequently happens that loans are made in currency; but this is of no consequence. There is obviously no substantial difference between A furnishing B with 100 bushels of corn, or 100 yards of cloth, to be repaid at the expiration of a specified period by the delivery of 104 or 105 bushels, or 104 or 105 yards, or with as much money, at 4 or 5 per cent., as would purchase the corn or cloth. And it is easy to perceive that, as crowds of passengers may be successively conveyed by the same carriage, so the same sum of money may serve to negotiate an infinity of loans. Suppose A lends to X £1000, with which the latter buys from B an equivalent amount of commodities; that B, having no use for the money, lends it to Y, who pays it away for produce to C, who again lends it to Z, and so on. It is plain that X, Y, Z have received loans of commodities or produce from A, B, C worth *three* times (and they might have been worth 30 or 300 times) as much as the money employed in settling the transactions. According as the supply of currency, compared with the business it has to perform, is g reater or less, we give a greater or less number of guineas or livres, notes or assignats, for the article we wish to obtain. It is not, however, by the fact of the price of such articles being high or low, but by the advantage or profit which the borrowers expect to derive from their possession, that the interest or compensation to be paid to the lenders for their use is determined. It may, perhaps, be supposed, in the case of goldsmiths and jewelers, that when the quantity of metallic money is increased, they will obtain the raw material of their business with greater facility. But this is not always the case; and though it were, it would not in any degree affect the rate of interest. No coins are ever sent to the melting-pot unless the currency be degraded or depreciated; that is, unless it be deficient in weight, or relatively redundant in quantity. And it is plain that the inducement to offer a high or a low rate of interest for loans of money, which it is intended to work up into plate or other articles, will not depend on the supply of such money, but on the profit to be derived from its conversion into goods—a circumstance wholly unconnected with the scarcity or abundance of coin.

It therefore appears that, speaking generally, the rate of interest depends on the profit that may be made by employing capital in industrious undertakings, and not on the price paid for the articles of which it consists. The latter are affected by every change in the value of money, whereas the former is little, if at all, affected by these changes, and is determined by the productiveness of industry. A low or a high rate of profit is uniformly accompanied by a high or low rate of interest. Money, as every one knows, is cheaper in the United States and in Australia than in England; but the ordinary rate of profit being higher, interest, despite the lower value of money, is also higher. Extraordinary as it may seem, it is nevertheless true, that during the half dozen years ending with 1856, the current rate of interest in San Francisco, where bullion is so very abundant as to be almost a drug, has varied from 1½ to 2 and 3 per cent. a month, or from 18 to 24 and 36 per cent. per annum. And though it were allowed that from a third to a half of this rate should be viewed as a premium to compensate the insecurity prevalent in California, still the residue would amount to three, four, or five times the ordinary rate of interest in England. In further corroboration of these statements we may mention, that the low rate of interest in Holland during the greater part of the 17th and whole of the 18th century, was not owing to any peculiar abundance or cheapness of money, but to the high rate of taxation, and the difficulty of investing capital with profit. And to this latter circumstance we owe the low rate of interest in this country toward the middle of last century, and at several later periods. It is not, in short, by the amount or value of the currencies of different countries, but by the means which they respectively enjoy for the profitable employment of capital or stock, that their profit and interest are governed.

That a rise or fall in the value of money can have no direct influence over interest is plain from the fact of the interest being itself paid in the money that has risen or fallen. But, at the same time, a sudden increase in the supply of money may undoubtedly have a temporary effect in depressing interest. Importers of bullion may not be able to lay it out advantageously in purchases, and may, in consequence, be disposed to have it coined and lent, though at a low rate. We incline, however, to think that the influence of considerations of this sort is but inconsiderable. Lenders will not take less for loans than the borrowers are willing to offer, and the offers of the latter must be determined not merely by the amount of money seeking investments, but partly also, and in a still greater degree, by the profit that may be made by its employment. When there is a rapid influx of money, loans for short periods are usually obtainable at low rates. This, however, is not generally the case with loans for lengthened periods. The lenders are willing to accept a reduced interest for a short term, till they can look about for some more profitable means of investment. But the interest on loans on mortgages, or for lengthened periods, is always proportioned to the rate of profit at the time; and, supposing the security to be unexceptionable, is but little affected by any thing else.

The profits made in industrious undertakings are, for the most part, distributed into *gross* and *nett* profits. Thus, if from the total returns, whether annual or otherwise, obtained in any business or employment, we deduct all sorts of outlays necessarily incurred in carrying it on, including the wages or remuneration due to the undertakers for their skill and trouble in superintending the business, and a sum to compensate the risks provided against by insurance, the residue is the *nett* profit of, or return to, the capital employed. And it is on this latter portion that interest depends, or rather with which it is usually identical. Lenders having nothing to do with the employment of capital, are not entitled to any peculiar advantage that may arise from it. But they are entitled to all that can fairly be considered as the return to the capital they have lent, after the risks, salaries, and necessary emoluments of those who undertake its employment are deducted; and this much, speaking generally, they will get, and no more. Whatever else may be realized by the employment of capital in industrial pursuits belongs to the borrowers, and forms the fund out of which they are remunerated. In coming to this conclusion, we are supported by the authority of Mr. Tooke. "The rate of interest," says he, "is the

measure of the nett profit on capital. All returns beyond this on the employment of capital are resolvable into compensations, under distinct heads, for risks, troubles, or skill, or for advantages of situation or connection." (Considerations on the State of the Currency, p. 12.) Whatever, therefore, may at any time occasion a sudden glut of money or capital may lower the rate of nett profit and interest. But that very circumstance, by increasing the demand for capital, will eventually raise the rate to its proper level; and the glut having disappeared, profits on interest will depend on the productiveness of industry.

Besides such variations as are proportioned to variations in the ordinary rate of profit, and which equally affect all loans, the rate of interest varies according to the security for the repayment of the principal and the duration of the loan. Hence the powerful influence which the character of the borrower, the purpose for which he borrows, and the nature of the business in which he is engaged, have over interest. Careful, skillful, and intelligent parties always borrow, *ceteris paribus*, on lower terms than those of an opposite description. The spendthrift, the idle, and the unskillful, can with difficulty obtain loans on any terms; and those who deal with them, and stipulate for a high rate of interest to cover their risk, frequently find that their guaranty is inadequate, and that they would have better consulted their own advantage by lending to respectable parties on the usual terms. The nature of the employment in which borrowers are engaged has also, as now stated, a powerful effect in determining the rate of interest. Wherever there is risk, it must be compensated. A sum lent on mortgage over a valuable estate is not exposed to any risk. But a sum lent to a manufacturer or a merchant engaged in a hazardous business, is exposed to a high degree of risk; and the interest payable on the latter, inasmuch as it must include a premium to compensate this extra risk, may be twice or three times as much as that paid on the mortgage.

We should mistake, however, if we supposed that this circumstance places those who carry on particularly hazardous businesses in a comparatively disadvantageous situation. Competition will not permit, taking every thing into account, a greater or a less amount of nett profit to be permanently obtained in one branch of industry than in another. The produce realized by those who engage in employments of more than ordinary hazard is generally sold at prices that yield the ordinary rate of profit, with a surplus sufficient to guaranty their stock against the extra risk to which it is exposed. Were it otherwise, every body would decline placing their property in a state of comparative danger, and undertakings of a hazardous nature would not be entered into. But it very frequently happens, that the manager of a hazardous branch of industry, paying from 10 to 12 per cent. for loans, realizes larger nett profits than the purchaser of an estate with money borrowed at 3 or 4 per cent.

Supposing the security to be equal, capital lent for a fixed and considerable period always fetches a higher rate of interest than that which is lent for short periods, or which may be demanded at the pleasure of the lender. There are but few modes of safely employing loans of which the duration is so uncertain, so that they are frequently worth very little; and hence the rate of interest is, in the majority of cases, in part at least, determined by the length of the loan; for, when that is considerable, it may be productively employed in a variety of businesses, in which it would not otherwise be prudent to invest it, at the same time that the borrower has time to prepare for its repayment. But this principle has only a slight influence over loans for terms beyond three, or, at most, five years; for a loan for either of these terms, but especially the latter, may be employed in a great variety of ways, and would bring nearly as much interest as it would do were it for 10 or 12 years. It is further to be observed, that large classes of borrowers prefer the less interest which they get for advances at short dates to the higher rate which they might get were they for longer terms. Most people wish to have the full command of their capital. Merchants and manufacturers who lent on mortgage would in so far deprive themselves of the means of extending their business, and of speculating. And though sometimes, perhaps, this might be for their advantage, yet the flattering opinion which most people entertain of their own sagacity and good fortune, would but seldom permit them to doubt that it was a very serious disadvantage. Hence the low rates at which banking companies who pay the sums deposited with them on demand, and governments overwhelmed with debt are able to borrow. A stockholder's mortgage, or claim on the revenue of a country, may be immediately converted into cash at the current prices. And, however much the majority of the creditors of a deeply indebted country may be impressed with a conviction of its inability to discharge the various claims upon it, each individual, confident in his own good fortune and foresight, flatters himself that *he*, at all events, will foresee the coming tempest, and be able to sell out before a public bankruptcy.

It is evident, from these statements, that in addition to the security for loans and their duration, the rate of interest will, to a considerable extent, depend on the facilities afforded for enforcing or carrying out the stipulations in contracts. And hence a main cause of its reduction as society is more and more improved. Generally, it may be said that a speedy, cheap, and effectual process for securing the payment of debts, has a powerful tendency to lower—and a slow, costly, and ineffectual process, to raise—the rate of interest In most countries, extraordinary means are taken to compel payment of bills; and this is a principal cause of the low rate at which they are commonly discounted. The easy enforcement of contracts constitutes, in truth, an important portion of the security for a debt. By a good security, is not meant a guaranty that a loan will ultimately be made good, but that it will be punctually paid when due; or, if the loan be of a kind that a little delay in its payment is usually given, that that delay will not be exceeded, and that it will be paid within the customary term. A security which should insure the final payment of a debt, but which should not insure its payment when due, or shortly thereafter, is not a good, but a bad security. It is indispensable to the transacting of business safely, cheaply, and expeditiously, that there should be as little doubt as possible either in regard to the payment of loans or the term when they are to be paid. If either of these points be doubtful, the lender will insist on an indemnity for the consequent risk. And it therefore appears that the summary proceedings taken to enforce payment of bills, and such like debts, are in truth and reality more for the advantage of the borrowers than of the lenders. They reduce the rate of interest; and the hardship, such as it is, which they occasionally inflict on the borrower, does not occur in one case out of five hundred; while their powerful influence in depressing interest tells in every case.

Greece.—In Greece the rate of interest was not regulated by law; and it consequently varied with all the causes of variation above alluded to. Generally, however, it was what we should reckon very high, amounting, in most cases, to from 10 to 18 per cent., and upward. This high rate of interest was not occasioned by a high rate of profit, but by the uncertainty of the laws, and the facilities which they afforded to fraudulent debtors to defeat the just claims of their creditors. The interest on money lent on *bottomry*, or on the security of the ship or cargo, or both, was rated at so much per voyage. It therefore depended on the place to which the ship was to sail, the season of the year,

the chance of meeting pirates or enemies' ships, etc. Usually it was extremely great, varying from 30 to 50 or 60 per cent. The bankers and money-lenders of Athens, though of low origin, being mostly freedmen or aliens, appear to have been considered as eminently trustworthy, and entitled to the public confidence. But they were, notwithstanding, quite as unpopular, and for no better reasons, as the Jews and Lombards of the middle ages. We are surprised that so learned a writer as Boeckh should have been so imbued with the vulgar prejudice against them as to state that they drew upon themselves "the merited hatred of all classes." He should have known that it has not been the covetousness of bankers, but that bad laws administered by interested judges, by making loans insecure, and driving parties of the highest respectability from the banking business, have been alone to blame for the exorbitant usury of ancient as well as of modern times. Had contracts been properly enforced, the probability is that interest would have been as low in Greece as in England.—Boeckh's *Public Economy of Athens*, vol. i., pp. 164–191.

Attempts to limit the rate of interest have raised it.—Instead, however, of leaving the rate of interest to be adjusted by the free competition of the parties, on the principles thus briefly explained, or endeavoring to reduce it by facilitating the enforcement of contracts, most governments have interfered, either entirely to prohibit the taking of interest, or to fix certain rates which might be legally exacted, while any excess over them was declared to be *usury*, and prohibited under the severest penalties. In the ages in which these enactments had their origin, the precious metals were the only species of money, and were considered quite peculiar. Being used in a double capacity—as standards by which to ascertain the values of different articles, and as the equivalents for which they were most frequently exchanged—they acquired a factitious importance in the estimation, not merely of the vulgar, but of persons of the greatest discernment. The fact, that to buy and to sell is merely to barter one commodity for another, to exchange a quantity of corn, or cloth, or beef, for a quantity of gold or silver, and *vice versa*, was entirely overlooked. The attention was gradually transferred from the money's worth to the money itself. And the wealth of states and of individuals was not measured by the amount of their disposable produce, or by the quantity or value of the articles with which they could afford to purchase the precious metals, but by the quantity or value of these metals actually in their possession. For these and other reasons, money has been considered as a *merchandise par excellence*. And we need not, therefore, be surprised at the measures to which the prevalence of such exaggerated opinions almost necessarily led; or that vigorous efforts should have been made to protect those who were unprovided with so powerful an instrument from becoming a prey to their more fortunate neighbors. Individuals might freely dispose of their corn, cattle, land, etc. But it was supposed that the demand for money might be so great, as to enable the lenders, unless restrained in their exactions, to ruin the borrowers, and engross the whole property of the country.

Another cause of the prejudice against stipulating for interest grew out of the dislike entertained to accumulation. It is a consequence of economy, or of a saving of income; and this, in rude ages, is considered indicative of a sordid disposition, and as being positively hurtful. Prodigals and spendthrifts were long, and perhaps still continue to be, the favorites of the public. Before the nature and functions of capital were properly understood, it was believed that it could not be increased without injury to individuals, and that whatever advantage it might give to one party must occasion an equal disadvantage to others. Our ancestors did not know that those who, by their economy, accumulate stock, add to their own wealth, without diminishing that of any one else; nor did they know that, when expended, as is almost always the case, in the support of productive industry, this stock affords the means of producing an increased income. But reckoning, as they did, that the savings of individuals were so much withdrawn from income in which the public would otherwise have participated, it was natural enough that they should endeavor to limit the advantage derivable from their employment.

Much, also, of the prejudice against bargaining for interest, prevalent in the middle ages, may be traced to the authority of certain texts of Scripture, which were understood to prohibit its exaction. It is doubtful, however, whether, they will really bear that interpretation. And supposing that they did, nothing could be more irrational than to regard the municipal regulation of a people placed in such peculiar circumstances as the Jews, as general and fixed principles, applicable in all ages and countries. (Michaelis *On the Laws of Moses*, vol. ii., 336. English translation.) It is a remarkable fact that the famous reformer Calvin was one of the first to emancipate himself from the prejudices formerly so prevalent, especially among religious people, against taking interest. He comments as follows on the statement of Aristotle, that as money did not produce money, no return could be equitably claimed by the lender:—"Pecunia non parit pecuniam. Quid mare? quid domus, ex cujus locatione pensionem percipio? An ex tectis et parietibus argentum proprie nascitur? Sed et terra producit, et mari advehitur quod pecuniam deinde producat, et habitationis commoditas cum certâ pecuniâ parari commutarive solet. Quod si igitur plus ex negotiatione lucri perelpi possit, quam ex fundi cujusvis proventu: an feretur qui fundem sterilem fortassè colono locaverit ex quo mercedem vel proventum recipiat sibi, qui ex pecuniâ fructum aliquem perceperit, non feretur? et qui pecuniâ fundum acquirit, annon pecuniâ illa generat alteram annuam pecuniam? Unde vero mercatores lucrum? Ex ipsius, inquies, diligentiâ atque industriâ. Quis dubitet pecuniam vacuam inutilem omnino esse? neque qui à me mutuam rogat, vacuam apud se habere à me acceptam cogitat. Non erga ex pecuniâ illâ lucrum accedit, sed ex proventu. Illæ igitur rationes subtiles quidem sunt, et speciem quandam habent, sed ubi propius expenduntur, seipsa concidunt. Nunc igitur concludo judicandum de usuris esse, non ex particulari aliquo Scripturæ loco, sed tantum ex æquitatis regulâ." Quoted by Dugald Stewart in his Notes to his *Preliminary Dissertation* to the *Encyclopædia Britannica*.

But, whatever may have led to the efforts so generally made to limit or suppress interest, it is abundantly certain that, instead of succeeding in their object, they had an opposite effect. If a borrower consider it for his advantage to offer 6, 7, or 8 per cent. for a loan (and otherwise he would not make the offer), why should the legislature prohibit him from offering, and the lender from receiving, more than 3, 4, or 5 per cent.? An interference of this sort, besides being uncalled for and unnecessary, is in a high degree prejudicial. Restrictive laws, instead of reducing, uniformly raise the rate of interest. They can not be so framed as to prevent borrowers from engaging underhand, to pay a higher rate of interest than is fixed by statute. And if the lenders had implicit confidence in the secrecy and solvency of the borrowers, they might accommodate them with the sums wanted, without requiring any additional interest, because of the illegality of the transaction. But cases of this sort are extremely rare. Gratitude, and a sense of benefits received, are but slender securities for honorable conduct. Numberless unforeseen events occur to weaken and dissolve the best cemented friendships; and a transaction of this kind would afford an additional source of jealousies and divisions. In such

matters, indeed, men are more than usually sharp-sighted, and are little disposed to trust to moral guarantees for the security of their property. But though neither the threatenings of the law, nor the inducements which it held out to dishonest debtors to recede from the stipulations into which they had entered, were able to prevent, or even greatly to lessen, what are termed *usurious* bargains, they rendered them more oppressive. They obliged the lenders to demand, and the borrowers to undertake to pay a rate of interest sufficient to yield the current rate of nett profit at the time, with a further sum to balance the risk of entering into what the law made an illegal transaction. This latter sum being, of course, proportioned to the greater or less magnitude of the risk to be provided against, it increased or diminished according as the laws for the prevention of usury were enforced or relaxed. Whenever, under the old system, the market rate of interest rose above the statutory rate, the free transfer of capital was obstructed. Parties could no longer look merely to their own advantage. And loans which might have been obtained for 6, 7, or 8 per cent., had there been no hazard from anti-usurious statutes, were raised, on its account, to 8, 10, and 12 per cent. It is, therefore, plain that if the means taken to put down usury were not wholly responsible for its existence, they, at all events, added largely to its amount.

These conclusions do not rest on theory only, but are supported by a wide and uniform experience. In Rome, during the republic, the ordinary rate of interest was excessively high. The debtors, or plebeians, were every now and then threatening to deprive their creditors, who were generally of the patrician order, not only of the interest, but of the principal itself. Repeated instances occurred to show that these were not mere empty threats; and the patricians indemnified themselves, by a corresponding premium, for the dangers to which they were exposed. "Des continuels changements," says Montesquieu, "soit par des loix, soit par des plébiscites, naturaliserent à Rome l'usure; car les créanciers, voyant le peuple leur débiteur, leur legislateur, et leur juge, n'eurent plus de confiance dans les contrats. Le peuple, comme un débiteur decrédité, ne tentoit à lui prêter que par des gros profits; d'autant plus que, si les loix ne venoient que de temps en temps, les plaintes du peuple étoient continuelles, et intimidoient toujours les créanciers. Cela fit que tous les moyens honnôtes de prêter et d'emprunter furent abolis à Rome, et qu'une usure affreuse toujours foudroyée, et toujours renaissante, s'y établit. Le mal vencient de ce que les choses n'avoient pas été ménagés. Les loix extrêmes dans le bien font naître le mal extréme: il fallut payer pour le prêt de l'argent, et pour le danger des peines de la loi."—*Esprit des Loix*, liv. xxii., c. 21.

In Mohammedan countries, notwithstanding the prohibition in the Koran, the ordinary rate of interest is at least three or four times as great as its ordinary rate in Europe. "L'usure augmente dans les pays Mahometans à proportion de la sévérité de la defense: le prêteur s'indemnise du péril de la contravention." Ibid., liv. xxi., c. 19. During the middle ages, when interest was excessively high, the rate of profit was probably little, if at all higher than at present. But it should be observed that a very great majority of the loans of these ages were but little influenced by its amount. They were not made to be invested, but to be spent. The great barons and other landed proprietors were the principal borrowers. And in 19 out of every 20 instances, the sums which they borrowed were expended in the maintenance of crowds of idle retainers, in warfare, or in prodigalities of some sort or other. And while the borrowers belonged generally to what we should now call the spendthrift class, and there were no efficient means of compelling them to abide by their engagements, the lenders were but few in number, and mostly Jews and Italians, the objects of the most unreasonable prejudices. Under such circumstances, it would be folly to suppose that the rate of interest should depend in any considerable degree on the rate of profit. The numbers, position, and character of the borrowers, compared with the fewness, position, and character of the lenders, and the risk to which the latter were exposed in entering into such transactions, occasioned the excessively high rate of interest. Of the 50 and even 100 per cent. which borrowers then frequently engaged to pay as interest, not more than 10 or 12 per cent. can properly be said to have been given for the productive services of loans. The rest must be considered as occasioned partly by the extreme scarcity of disposable capital and the carelessness of the borrowers, and partly, and principally, as a *bonus* to compensate the lenders for the imminent hazard of losing the principal.

England.—In England, as in most other countries, Christians were, after the Conquest, absolutely prohibited, both by the civil and the ecclesiastical law, from bargaining for interest. But as Jews, according to the Mosaic law (Deuteronomy, chap. xxiii., v. 20), were allowed to lend at an interest to a stranger, its exaction by them was first connived at, and subsequently authorized by law. And the same privilege was afterward extended to the Italian or Lombard merchants. In consequence of this exemption, many Jews early settled in England, and engrossed a large share of the trade of the kingdom. But despite their industry and general good conduct, the prejudices against them, and against the business in which they were mostly engaged, were so very strong that they and their families were regarded as slaves of the crown, by whom they were plundered, to an extent and under pretenses which would now appear incredible. To such an extreme, indeed, were these oppressive practices carried, that a particular office, called the *exchequer of the Jews*, was established, for receiving the sums extorted from them in fines, customs, tallages, forfeitures, etc. They were, in consequence, obliged to charge an enormous rate of interest, or, as Madox expresses it, "to fleece the subjects of the realm as the king fleeced them." (Madox's *History of the Exchequer*, vol. i., pp. 221-261, 4to, 1769.) And hence, while only from 7 to 10 and 12 per cent. interest was paid in countries where sounder principles prevailed, the rate charged in England was 3, 4, and even 5 times as great. At Verona, in 1228, the interest of money was fixed by law at 12½ per cent. Toward the end of the 14th century, the republic of Genoa paid only from 7 to 10 per cent to her creditors; and the average discount on good bills at Barcelona, in 1435, is stated to have been about 10 per cent. But while interest in Italy and Catalonia, where a considerable degree of freedom was allowed to the parties bargaining for a loan, was thus comparatively moderate, it was, despite its total prohibition, incomparably higher in France and England. Matthew Paris mentions that, in the reign of Henry III., the debtor paid 10 per cent. every two months. And this, though impossible as a general practice, may not have been very far from the average interest charged on the few loans that were then contracted for. (Hallam's *Middle Ages*, vol. iii., p. 402.)

But in the end the disorders occasioned by this ruinous system became so obvious, that, notwithstanding the deeply-rooted prejudices to the contrary, a statute was passed in 1546 (37 Hen. VIII., cap. 7), legalizing interest to the extent of 10 per cent. per annum: because, as is recited in the words of the act, the statutes "prohibiting interest altogether have so little force, that little or no punishment hath ensued to the offenders." In the reign of Edward VI., the horror against interest seems to have revived in full force; for, in 1552, the taking of any was again prohibited, "as a vice most odious and detestable," and "contrary

to the word of God." But, in spite of this denunciation, the rate of interest, instead of being reduced, immediately rose to 14 per cent., and continued at this rate until, in 1571, an act was passed (13th Eliz., cap. 8), repealing the act of Edward VI., and reviving the act of Henry VIII., allowing 10 per cent. interest. In the preamble to this act it is stated, "That the prohibiting act of King Edward VI. had not done so much good as was hoped for; but that rather the vice of usury hath much more exceedingly abounded, to the utter undoing of many gentlemen, merchants, occupiers, and others, and to the importable hurt of the commonwealth." This salutary statute was opposed, even by those who should have known better, with all the violence of superstitious fanaticism. Dr. John Wilson, a man famous in his day, and celebrated for the extent of his learning, informed the House of Commons, of which he was a member, that "it was not the amount of the interest taken that constituted the crime; but that all lending for any gain, be it ever so little, was wickedness before God and man, and a damnable deed in itself, and that there was no mean in this vice any more than in murder or theft." To quiet the consciences of the bishops, a clause was inserted, declaring usury to be forbidden by the law of God, and to be in its nature sin, and detestable. This statute was limited to a period of five years; but, "forasmuch as it was, by proof and experience, found to be very necessary and profitable for the commonwealth of this realm," it was, in the same reign, made perpetual (39th Eliz., cap. 18).

In the 21st of James I., the legal rate of interest was reduced to 8 per cent., by an act to continue for seven years only, but which was made perpetual in the succeeding reign (3d Car. I., cap. 4). During the Commonwealth, the legal rate of interest was reduced to 6 per cent., a reduction which was afterward confirmed by the 12th Car. II. And, finally, in the reign of Queen Anne, a statute (12th Anne, cap. 16) was framed, reducing the rate of interest to 5 per cent., at which it stood till 1839. In the preamble to this statute, it is stated that, "whereas, the reducing interest to 10, and from thence to 8, and thence to 6, in the hundred, hath from time to time, by experience, been found very beneficial to the advancement of trade and the improvement of lands, it is become absolutely necessary to reduce the high rate of interest of 6 per cent. to a nearer proportion to the interest allowed for money in foreign States." It was for these reasons enacted, that all bargains or contracts stipulating for a higher rate of interest than 5 per cent. should be utterly void. And "that all persons who should after that time receive, by means of any corrupt bargain, loan, exchange, chevizance, or interest, of any wares, merchandise, or other thing whatever, or by any deceitful way or means, or by any covin, engine, or deceitful conveyance for the forbearing or giving day of payment, for one whole year, for their money or other thing, above the sum of £5 for £100 for a year, should forfeit, for every such offense, the *treble* value of the moneys or other things so lent, bargained," etc.

Scotland and Ireland.—In Scotland previous to the Reformation no interest could be legally charged. But that great event, by weakening the force of those religious prejudices which had chiefly dictated the prohibition of interest, led to the adoption of more liberal opinions on the subject, and to the enactment of the statute of 1587 (11th Parl., Jac. VI. cap. 52), which legalized interest to the extent of 10 per cent. In 1633 the legal rate was reduced to 8 per cent., and in 1661 to 6 per cent. The statute of Anne, reducing the rate of interest to 5 per cent., extended to both kingdoms. The statutes prohibiting the taking of interest in Ireland were not repealed until 1635, when the statute 10th Car. I., cap. 22, gave liberty to stipulate for any rate not exceeding 10 per cent. In 1704 this rate was reduced to 8 per cent.; in 1722 it was reduced to 7 per cent.; and in 1732 it was further reduced to 6 per cent.

France.—In France the rate of interest was fixed at 5 per cent. so early as 1665; and this, a few short intervals only excepted, continued to be the legal rate till the Revolution. Laverdy, in 1766, reduced it from 5 to 4 per cent. Instead, however, of the market rate being proportionally reduced, it was raised from 5 to 6 per cent. Previously to the promulgation of the edict, loans might have been obtained on good security at 5 per cent.; but an additional per cent. was afterward required to cover the illegality. This caused the speedy abandonment of the measure.* The same thing happened in Livonia in 1786, when the Empress Catherine reduced interest from 6 to 5 per cent. Hitherto, says Storch (*in loco citato*), those who had good security to offer were able to borrow at 6 per cent.; but thenceforth they had to pay 7 per cent. or upward. And such will be found to be invariably the case, when the legal is less than the market rate of interest.

It has been observed by Adam Smith, that the statutory regulations, reducing interest in England, were made with great propriety. Instead of preceding, they followed the fall which was gradually taking place in the market rate of interest, and, therefore, did not contribute, as they would otherwise have done, to raise that which they were intended to reduce. Sir Josiah Child, whose treatise, recommending a reduction of interest to 4 per cent., was originally published in 1668,† states, that the goldsmiths of London, who then acted as bankers, could obtain as much money as they pleased, upon their servants' notes only, at 4½ per cent. The supposed insecurity of the revolutionary establishment, and the novelty of the practice of funding, occasioned the payment of a high rate of interest for a large portion of the sums borrowed by the public in the reigns of William III. and Anne. But private persons, of undoubted credit, could then borrow at less than 5 per cent. During the reign of George II. the market rate of interest fluctuated from 3 to 4 and 4½ per cent.‡ Smith mentions that the increased means of profitably investing capital acquired during the war, terminated by the peace of Paris in 1763, raised the market rate of interest to a level with the statutory rate, or perhaps higher. But it was not until the subsequent European war that any very material or general inconvenience was found to result from the limitation of interest to 5 per cent.

It is necessary, however, to observe, that this remark applies exclusively to loans negotiated by individuals who could offer unexceptionable security; for, since the act of 1714, persons engaged in employments of more than ordinary hazard, or whose character for prudence and punctuality did not stand high, or who could only offer inferior security, were unable to borrow at 5 per cent., and were consequently compelled to resort to a variety of schemes for defeating or evading the enactments in the statute. The most common device was the sale of an annuity. Thus, supposing an individual whose personal credit was indifferent, and who had only the life-rent of an estate to give in security, wished to borrow, he sold an annuity to the lender sufficient to pay the interest stipulated for, which, because of the risks and odium attending such transactions, was always higher than the market rate, and also to pay the *premium* necessary to insure payment of the principal at the death of the borrower. It is curious to observe, that though the sale of an *ir-*

* Storch, *Traité d'Economie Politique*, tom. iii., p. 187.

† A second edition, very greatly enlarged, was published in 1690.

‡ On the 18th December, 1752, the 3 per cents. brought the highest price they have hitherto reached, namely, 106¾ per cent. On the 20th of September, 1797, the day on which the failure of Lord Malmesbury's attempt to negotiate with the French republic transpired, consols fell to 47½, being the lowest price at which they have ever been sold.

redeemable life annuity, at a rate exceeding legal interest, was not reckoned fraudulent or usurious, yet, so late as 1743, Lord Hardwicke held that, in their less exceptionable form, or when they were *redeemable*, their sale could be looked upon in no other light than as an invasion of the statute of usury, and a loan of money.* But the extreme inexpediency of this distinction soon became obvious, and the law was changed. The great extension of the traffic in annuities, and the advantage of giving as much publicity as possible to such transactions, led to various inquiries and regulations respecting them in the early part of the reign of George III. In consequence, the sale of irredeemable annuities became nearly unknown; and it was ruled, that the sale of a redeemable annuity could not be impeached, though it appeared on the face of the deeds that the lender had secured the principal by effecting an assurance of the borrower's life.

During the greater part of the French revolutionary war, the usury laws operated to the prejudice of all classes of borrowers. The greater extent and high interest of the public loans, the facility of selling out of the funds, the regularity with which the dividends were paid, and the temptations to speculation arising from the fluctuations in the price of funded property, diverted so large a portion of the floating capital of the country into the coffers of the treasury, that it was next to impossible for private individuals to borrow at the legal rate of interest, except from the trustees of public companies, or through the influence of circumstances of a very peculiar nature. Hence, the proprietors of unencumbered freehold estates, of which they had the absolute disposal, were very generally obliged, when they had occasion for loans, to resort to those destructive expedients which had formerly been the resource only of spendthrifts and persons in desperate circumstances.

Committee on Usury Laws.—The evidence annexed to the "Report of the Committee of the House of Commons, in 1818, on the Usury Laws," sets their impolicy and pernicious influence in a clear light. Mr. Sugden, now Lord St. Leonard, stated that when the market rate of interest was above the legal rate, the landed proprietor was compelled to resort to some shift to evade the usury laws. He had "known annuities granted for *three* lives, at 10 per cent., upon fee-simple estates, unencumbered, and of great annual value, in a register county. He had also known annuities granted for *four* lives; and more would have been added, but for the danger of equity setting aside the transaction on account of the inadequacy of the consideration. Latterly, many annuities were granted for a term of years certain, not depending upon lives." On being asked whether, were there not laws limiting the rate of interest, better terms could or could not have been obtained, he answered, "I am decidedly of opinion that better terms could have been obtained: for there is a stigma which attaches to men who lend money upon annuities, that drives all respectable men out of the market. Some leading men did latterly embark in such transactions, but I never knew a man of reputation in my own profession lend money in such a manner, although we have the best means of ascertaining the safest securities, and of obtaining the best terms."

"The laws against usury," says Mr. Holland, of the house of Messrs. Baring Brothers and Company, "drive men in distress, or in want of money, to much more disastrous modes of raising it than they would adopt if no usury laws existed. The man in trade, in want of money for an unexpected demand, or disappointed in his returns, must fulfill his engagements, or forfeit his credit. He might have borrowed money at 6 per cent., but the law allows no one to lend it to him; and he must sell some of the commodity he holds, at a reduced price, in order to meet his engagements. For example, he holds sugar which is worth 80s.; but he is compelled to sell it immediately for 70s. to the man who will give him cash for it, and thus actually borrows money at 12½ per cent., which, had the law allowed him, he might have borrowed from a money dealer at 6 per cent. It is known to every merchant that cases of this kind are common occurrences in every commercial town, and more especially in the metropolis. A man in distress for money pays more interest, owing to the usury laws, than he would if no such laws existed; because now he is obliged to go to some of the disreputable money-lenders to borrow, as he knows the respectable money-lender will not break the laws of his country. The disreputable money-lender knows that he has the ordinary risk of his debtor to incur in lending his money, and he has further to encounter the penalty of the law, for both of which risks the borrower must pay. If no usury laws existed, in common cases, and where a person is respectable, he might obtain a loan from the respectable money-lender, who would then only have to calculate his ordinary risk, and the compensation for the use of his money."

The committee admitted the force of this evidence by agreeing to the following resolutions: "1st. That it is the opinion of this committee, that the laws regulating or restraining the rate of interest have been extensively evaded, and have failed of the effect of imposing a maximum on such rate; and that, of late years, from the constant excess of the market rate of interest above the rate limited by law, they have added to the expense incurred by borrowers on real security, and that such borrowers have been compelled to resort to the mode of granting annuities on lives; a mode which has been made a cover for obtaining a higher rate of interest than the rate limited by law, and has further subjected the borrowers to enormous charges, or forced them to make very disadvantageous sales of their estates. 2d. That it is the opinion of this committee, that the construction of such laws, as applicable to the transactions of commerce as at present carried on, have been attended with much uncertainty as to the legality of many transactions of frequent occurrence, and consequently been productive of much embarrassment and litigation. 3d. That it is the opinion of this committee, that the present period, when the market rate of interest is below the legal rate, affords an opportunity peculiarly favorable for the repeal of the said laws."

In spite, however, of the recommendation of the committee, and the cogent evidence on which it was founded, the popular prejudice continued so strong, that it was not till 1839 that a statute was passed, the 2d and 3 Vict., cap. 37, which exempted all bills of exchange and promissory notes, not having more than twelve months to run, and all contracts for sums above £10 from the operation of the usury laws. It was supposed, or at all events argued, that the repeal of the usury laws would tempt such individuals as had money to lend, to indulge in those mean and discreditable practices which characterize the lowest class of money-dealers. But it was more reasonably contended, that in the event of the rate of interest being left to be adjusted by the free competition of the parties, there would be little employment for inferior dealers. Except when the *market* rate of interest was below the *legal* rate, the usury laws prevented all persons, whose credit was not extremely good, from obtaining loans from capitalists of the highest character, and forced them to have recourse to those who were less scrupulous. Supposing the market rate of interest to be 6 or 7 per cent., an individual in ordinarily good credit may, now that the usury laws are abolished, easily obtain a loan at that rate. But when the law declared that no more than 5 per cent. should be

* "*Considerations on the Rate of Interest*," by E. B. Sugden, Esq., *Pamphleteer*, vol. viii., p. 278.

taken, and, consequently, affixed a species of stigma to those lenders who bargained for a higher rate, the rich and more respectable capitalists being excluded from the market, borrowers were obliged to resort to those of an inferior character, who, in addition to the premium for the risk of entering into an illegal transaction, received an indemnification for the *odium* which, in such cases, always attaches to the lender. It is idle to attempt to secure individuals against the risk of imposition in pecuniary more than in any other species of transactions. And, although the object had been desirable, it could not be obtained by such inadequate means. The usury laws generated the very mischief they were intended to suppress. Instead of diminishing, they multiplied usurious transactions, and aggravated the evils they were designed to mitigate or remove.

Nothing can be more unreasonable than the clamor against money-lenders, because of their exacting a comparatively high rate of interest from prodigals and spendthrifts. This is the most proper and efficient check that can be put upon extravagance. Supposing the security of a prodigal and an industrious man to be nearly equal, and this is but seldom the case, the capitalist who lends to the latter in preference to the former, confers a service on the community. He prevents those funds which ought to be employed in supporting useful labor, and in adding to the public wealth, from being wasted in frivolous or pernicious pursuits.

But perhaps it will be said that this is mistaking the object of the usury laws; that they were not intended to force capitalists to lend to spendthrifts on the same terms as to industrious persons, but to protect the prodigal and unwary from the extortion of usurers, by making any stipulation between them for more than a given rate of interest null and void. But why all this solicitude about the least valuable class of society? Why fetter the circulation of capital among those who would turn it to the best account, lest any portion of it chance to fall into the hands of those who would squander it away? If the prevention of prodigality be of sufficient importance to justify the interference of the legislature, prodigals should be put under an *interdict*; for this is the only way in which it is possible to restrict them. It is not by borrowing money at high interest, but by contracting debts to dealers, on whose charge there is no check, that spendthrifts run through their fortunes. Bentham has justly observed, that so long as a man is looked upon as one who will pay, he can much more easily get the goods he wants than the money to buy them with, though he were content to give for it twice or three times the ordinary rate of interest. How contradictory, then, to permit prodigals to borrow (for it was really borrowing) the largest supplies of food, clothes, etc., at 20, 30, or even 100 per cent. interest, at the same time that we prohibited them, and every one else, from borrowing money at more than 5 per cent.? Instead of being of any service, this restriction was evidently injurious to the prodigal. It narrowed his choice, and drove him to a market where no disgrace is attached to the exaction of the most exorbitant interest, and where he could scarcely escape being ruined.

The outcry which is sometimes raised against capitalists for taking advantage of the necessities of industrious individuals, is seldom much better founded than that which is raised against them for taking advantage of the prodigal or simple. Parties borrow according to their character for sobriety, and punctuality in meeting their engagements, and according to the presumed state of their affairs at the time. To say that a capitalist takes advantage of the necessities of individuals, is, in most cases, equivalent to saying that he refuses to lend to persons in suspicious or necessitous circumstances on the same terms he would do were they in good credit, or were there no doubt of their solvency. And were he to act otherwise, would he be considered fit to be intrusted with the management of his affairs?

But, as already seen, whatever may be the extortion of lenders, the usury laws did not check it. On the contrary, they compelled the borrowers to pay, over and above the common rate of interest, a *premium* to indemnify the lenders for the risks incurred in breaking them. They attempted to remedy what was not an evil, and what, consequently, should not have been interfered with; and in doing this, they necessarily created a real grievance. The wisdom of an act of Parliament which should compel the underwriters to insure a gunpowder magazine and a salt warehouse on the same terms, would not be very evident. Yet it would not be more absurd than to enact that the same rate of interest shall be charged on capital lent on good, on indifferent, and on bad securities. "It is in vain, therefore," to use the words of Locke, "to go about effectually to reduce the price of interest by law, and you may as rationally hope to set a fixed rate upon the hire of houses or ships, as of money. He that wants a vessel rather than lose his market, will not stick to have it at the market rate, and find means to do it with security to the owner, though the rate were limited by law; and he that wants money, rather than lose his voyage or his trade, will pay the natural interest for it, and submit to such ways of conveyance as shall keep the lender out of reach of the law." ("Considerations of the lowering of interest and raising the value of money, 1691," works, vol. ii., p. 7, 4to, 1777.) The case of Holland furnishes a striking proof of the correctness of the theory we have been endeavoring to establish. The rate of interest has been, for a very long period, lower in Holland than anywhere else in Europe; and yet it is the only country in which usury laws have been altogether unknown, where capitalists are allowed to demand, and borrowers to pay, any rate of interest. Strictly speaking, this applies only to the state of Holland previously to the revolution in 1795. The enactments of the Code Napoleon were subsequently introduced; but it appears, from the report of the Parliamentary Committee on the usury laws, that they have not been acted upon. Notwithstanding all the violent changes of the government, and the extraordinary disturbance of her financial concerns since 1790, the rate of interest in Holland has continued comparatively steady. During the whole of that period, persons who could offer unexceptionable security have been able to borrow at from 2 to 5½ per cent.; nor has the average rate of interest charged on capital advanced on the worst species of security ever exceeded 6 or 7 per cent., except when the government was negotiating a forced loan. But, in this country, where the law declared that no more than 5 per cent. should be taken, the rate of interest for money advanced on the best landed security varied, in the same period, from 5 to 16 or 17 per cent., or above *five* times as much as in Holland.

In France the usury laws were abolished at the Revolution; and it is stated that their abolition was not attended by any rise of interest.—Storch, *Economie Politique*, tom. iii., p. 187. According to the Code Napoleon, only 6 per cent. is allowed to be charged on commercial loans, and 5 per cent. on those made on the security of real property. There is, however, no difficulty in evading the law. This is usually done by giving a *bonus* before completing the transaction, or, which is the same thing, by framing the obligation for the debt for a larger sum than is really advanced by the lender. None of the parties particularly interested can be called to swear to the fact of such *bonus* being given; so that the transaction is unimpeachable, unless a third party, privy to the settlement of the affair, be produced as a witness.—E.B. The reader is referred to M'Culloch's *Essay on Interest and Exchange*, pub. in *Bankers' Mag.*, New York.

TABLES OF INTEREST AND ANNUITIES.

I.—Table showing the Amount of $1 improved at Compound Interest, at 3, 4, 4½, 5, 6, 7, 8, 9, and 10 per Cent., at the end of every Year from 1 to 35.

Years.	3 per cent.	4 per cent.	4 1-2 per cent.	5 per cent.	6 per cent.	7 per cent.	8 per cent.	9 per cent.	10 per cent.
1	1·030000	1·040000	1·045000	1·050000	1·060000	1·070000	1·080000	1·090000	1·100000
2	1·060900	1·081600	1·092025	1·102500	1·123600	1·144900	1·166400	1·188100	1·210000
3	1·092727	1·124864	1·141166	1·157625	1·191016	1·225043	1·259712	1·295029	1·331000
4	1·125508	1·169858	1·192518	1·215506	1·262476	1·310796	1·360488	1·411581	1·464100
5	1·159274	1·216652	1·246181	1·276281	1·338225	1·402551	1·469328	1·538624	1·610510
6	1·194052	1·265319	1·302260	1·340095	1·418519	1·500730	1·586874	1·677100	1·771561
7	1·229873	1·315931	1·360861	1·407100	1·503630	1·605781	1·713824	1·828039	1·948717
8	1·266770	1·368569	1·422100	1·477455	1·593848	1·718186	1·850930	1·992562	2·143588
9	1·304773	1·423311	1·486095	1·551328	1·689478	1·838459	1·999004	2·171893	2·357947
10	1·343916	1·480244	1·552969	1·628894	1·790847	1·967151	2·158925	2·367363	2·593742
11	1·384233	1·539454	1·622853	1·710339	1·898298	2·104851	2·331639	2·580426	2·853116
12	1·425760	1·601032	1·695881	1·795856	2·012196	2·252192	2·518170	2·812664	3·138428
13	1·468538	1·665073	1·772196	1·885649	2·132928	2·409845	2·719624	3·065304	3·452271
14	1·512589	1·731676	1·851944	1·979931	2·260908	2·578534	2·937158	3·341727	3·797498
15	1·557967	1·800943	1·935282	2·078928	2·396558	2·759031	3·172169	3·642482	4·177248
16	1·604706	1·872981	2·022370	2·182874	2·540351	2·952164	3·425943	3·970305	4·594972
17	1·652847	1·947900	2·113376	2·292018	2·692772	3·158815	3·700018	4·327633	5·054470
18	1·702433	2·025816	2·208479	2·406619	2·854339	3·379932	3·996019	4·717120	5·559917
19	1·753506	2·106849	2·307860	2·526950	3·025599	3·616527	4·315701	5·141661	6·115909
20	1·806111	2·191123	2·411714	2·653297	3·207135	3·869684	4·660957	5·604410	6·727499
21	1·860294	2·278768	2·520241	2·785962	3·399563	4·140562	5·033833	6·108807	7·400249
22	1·916103	2·369919	2·633652	2·925260	3·603537	4·430401	5·436540	6·658600	8·140274
23	1·973586	2·464715	2·752166	3·071523	3·819749	4·740929	5·871463	7·257874	8·954302
24	2·032794	2·563304	2·876014	3·225099	4·048934	5·072366	6·341180	7·911088	9·849732
25	2·093777	2·665836	3·005434	3·386354	4·291870	5·427432	6·848475	8·623080	10·834705
26	2·156591	2·772469	3·140679	3·555672	4·549382	5·807353	7·396353	9·399157	11·918176
27	2·221289	2·883368	3·282009	3·733456	4·822345	6·213867	7·988061	10·245082	13·109994
28	2·287928	2·998703	3·429699	3·920129	5·111686	6·648838	8·627106	11·167139	14·420994
29	2·356565	3·118651	3·584036	4·116135	5·418387	7·114257	9·317274	12·172182	15·863093
30	2·427262	3·243397	3·745318	4·321942	5·743491	7·612255	10·062656	13·267678	17·449402
31	2·500080	3·373133	3·913857	4·538039	6·088100	8·145112	10·867669	14·461769	19·194342
32	2·575083	3·508058	4·089981	4·764941	6·453386	8·715270	11·737083	15·763328	21·113776
33	2·652335	3·648381	4·27408.	5·003188	6·840589	9·325339	12·676049	17·182028	23·225154
34	2·731905	3·794316	4·466361	5·253347	7·251025	9·978114	13·690132	18·728411	25·547670
35	2·813862	3·946089	4·667347	5·516015	7·686086	10·676581	14·785344	20·413967	28·102436
36	2·898278	4·103932	4·877378	5·791816	8·147252	11·423942	15·968171	22·251225	30·912680
37	2·985226	4·268089	5·096860	6·081406	8·636087	12·223618	17·245625	24·253835	34·003948
38	3·074783	4·438813	5·326219	6·385477	9·154252	13·079271	18·625275	26·436680	37·404343
39	3·167026	4·616365	5·565899	6·704751	9·703507	13·994820	20·115207	28·815981	41·144777
40	3·262037	4·801020	5·816364	7·039988	10·285717	14·974457	21·724521	31·409420	45·259255
41	3·359898	4·993061	6·078100	7·391988	10·902861	16·022669	23·462483	34·236267	49·785181
42	3·460695	5·192783	6·351615	7·761587	11·557032	17·144256	25·339481	37·317531	54·763699
43	3·564516	5·400495	6·637438	8·149666	12·250454	18·344354	27·366640	40·676109	60·240069
44	3·671452	5·616515	6·936124	8·154150	12·985481	19·628459	29·555972	44·336529	66·264076
45	3·781596	5·841175	7·248248	9·085007	13·764610	21·002451	31·920449	48·327286	72·890483
46	3·895044	6·074822	7·574419	9·539258	14·590487	22·472623	34·474085	52·676741	80·179532
47	4·011895	6·317815	7·915268	9·995971	15·465916	24·045707	37·232012	57·417648	88·197485
48	4·132251	6·570528	8·271455	10·491269	16·393871	25·728906	40·210573	62·585237	97·017234
49	4·256219	6·833349	8·643671	10·921333	17·377504	27·529929	43·427418	68·217908	106·718957
50	4·383906	7·106683	9·032636	10·467399	18·420154	29·457025	46·901612	74·357520	117·390852
51	4·515423	7·390950	9·439164	12·040769	19·525363	31·519016	50·658741	81·049096	129·129938
52	4·650885	7·686588	9·864864	12·642808	20·696885	33·725347	54·706040	88·344169	142·042931
53	4·790412	7·994052	10·307788	13·274948	21·938698	36·086122	59·082524	96·295144	156·247225
54	4·934124	8·313814	10·771586	13·938696	23·255020	38·612150	63·809126	104·961707	171·871947
55	5·082148	8·646366	11·256308	14·635630	24·650821	41·315001	68·913856	114·408261	189·059142
56	5·234613	8·992221	11·762849	15·367412	26·129340	44·207051	74·426964	124·705005	207·965056
57	5·391651	9·351910	12·292169	16·135783	27·697101	47·301545	80·381121	135·928455	228·761562
58	5·553400	9·725986	12·845117	16·942572	29·358927	50·612653	86·811611	148·162016	251·637718
59	5·720003	10·115026	13·423356	17·789700	31·120463	54·155399	93·756540	161·496598	276·801490
60	5·891603	10·519627	14·027407	18·679185	32·987690	57·946426	101·257063	176·031291	304·481639
61	6·068351	10·940412	14·658641	19·613145	34·966952	62·002676	109·357528	191·874108	334·929803
62	6·250401	11·378029	15·318280	20·593802	37·064969	66·342864	118·106280	209·142777	368·422783
63	6·437913	11·833150	16·007602	21·623492	39·288·67	70·986864	127·554738	227·965628	405·265062
64	6·631051	12·306476	16·727944	22·704667	41·646199	75·955945	137·759117	248·482584	445·791568
65	6·829982	12·798735	17·480702	23·839900	44·141971	81·272861	148·779846	270·845002	490·370725
66	7·034882	13·310684	18·267864	25·031895	46·793649	86·961961	160·682284	295·222009	539·407797
67	7·245928	13·843112	19·089864	26·283490	49·601290	93·049298	173·536818	321·792688	593·348577
68	7·463306	14·396836	19·948385	27·597664	52·577367	99·562749	187·419758	350·753876	652·683435
69	7·687205	14·972709	20·844062	28·977548	55·732209	106·532152	202·413338	382·321173	717·951778
70	7·917821	15·571618	21·784385	30·426425	59·076500	113·989302	218·606405	416·730086	789·746956
71	8·155356	16·194483	22·764121	31·947746	62·620485	121·968619	236·094918	454·235793	868·721652
72	8·400017	16·842262	23·788820	33·545134	66·377715	130·506455	254·982511	495·117015	955·593817
73	8·652017	17·515952	24·859617	35·222390	70·360378	139·641906	275·381112	539·677340	1,051·153199
74	8·911578	18·216591	25·977964	36·983510	74·582000	149·419140	297·411601	588·244525	1,156·268519
75	9·179025	18·945254	27·146996	38·832685	79·057020	159·878749	321·204509	641·186991	1,271·895571
76	9·454298	19·703064	28·368611	40·774320	83·800834	171·067340	346·900892	698·895073	1,399·085128
77	9·737929	20·491187	29·645198	42·813036	88·828885	183·042054	374·652963	761·798900	1,538·993040
78	10·030059	21·310834	30·979232	44·953688	94·158557	195·854998	404·625200	830·360801	1,692·892739
79	10·330961	22·162268	32·373298	47·201372	99·807541	209·564848	436·995216	905·092273	1,862·182013
80	10·640890	23·040799	33·830096	49·561441	105·795994	224·234387	471·954884	986·551068	2,048·400214
81	10·960117	23·971791	35·352450	52·039513	112·143753	239·950794	509·711221	1,075·541814	2,253·240236
82	11·288990	24·930662	36·943111	54·641488	118·872378	256·746950	550·488118	1,172·122086	2,478·564259
83	11·627588	25·927889	38·606760	57·373563	126·004720	274·696766	594·527168	1,277·613020	2,726·420685
84	11·976416	26·965004	40·346910	60·242241	133·565004	293·925540	642·089841	1,392·588192	2,999·062754
85	12·335709	28·043604	42·158455	63·254353	141·578904	314·500328	693·456488	1,517·922029	3,298·969029

TABLES OF INTEREST AND ANNUITIES.

II.—TABLE SHOWING THE PRESENT VALUE OF $1 RECEIVABLE AT THE END OF ANY GIVEN YEAR FROM 1 TO 85, RECKONING COMPOUND INTEREST, AT 3, 4, 4½, 5, 6, 7, 8, 9, AND 10 PER CENT.

Years.	3 per cent.	4 per cent.	4 1-2 per cent.	5 per cent.	6 per cent.	7 per cent.	8 per cent.	9 per cent.	10 per cent.
1	·970873	·961538	·956937	·952380	·943396	·934579	·925925	·917431	·909090
2	·942595	·924556	·915729	·907029	·889996	·873438	·857338	·841679	·826446
3	·915141	·888996	·876296	·863837	·839619	·816297	·793832	·772183	·751314
4	·888487	·854804	·838561	·822702	·792093	·762895	·735029	·708425	·683013
5	·862608	·821927	·802451	·783526	·747258	·712986	·680583	·649931	·620921
6	·837484	·790314	·767895	·746215	·704960	·666342	·630169	·596267	·564473
7	·813091	·759917	·734928	·710681	·665057	·622749	·583490	·547034	·513158
8	·789409	·730690	·703185	·676839	·627412	·582009	·540268	·501866	·466507
9	·766416	·702586	·672904	·644608	·591898	·543933	·500248	·460427	·424097
10	·744093	·675564	·643927	·613913	·558394	·508349	·463193	·422410	·385543
11	·722421	·649580	·616198	·584679	·526787	·475092	·428883	·387533	·350493
12	·701379	·624597	·589663	·556837	·496969	·444011	·397118	·355534	·318630
13	·680951	·600574	·564271	·530321	·468839	·414964	·367697	·326178	·289664
14	·661117	·577475	·539972	·505067	·442300	·387817	·340461	·299246	·263331
15	·641861	·555264	·516720	·481017	·417265	·362446	·315241	·274538	·239392
16	·623166	·533908	·494469	·458111	·393646	·338734	·291890	·251869	·217629
17	·605016	·513373	·473176	·436296	·371364	·316574	·270268	·231073	·197844
18	·587394	·493628	·452800	·415520	·350343	·295863	·250249	·211998	·179858
19	·570286	·474642	·433301	·395733	·330513	·276508	·231712	·194489	·163507
20	·553675	·456386	·414642	·376889	·311804	·258419	·214548	·178430	·148643
21	·537549	·438833	·396787	·358942	·294155	·241513	·198655	·163698	·135130
22	·521899	·421955	·379700	·341849	·277505	·225713	·183940	·150181	·122845
23	·506691	·405726	·363350	·325571	·261797	·210946	·170315	·137781	·111678
24	·491933	·390121	·347708	·310067	·246978	·197146	·157699	·126404	·101525
25	·477605	·375116	·332730	·295302	·232998	·184249	·146017	·115967	·092296
26	·463694	·360689	·318402	·281240	·219810	·172195	·135201	·106392	·083905
27	·450189	·346816	·304691	·267848	·207367	·160930	·125186	·097607	·076277
28	·437076	·333477	·291570	·255098	·195630	·150402	·115918	·089548	·069343
29	·424346	·320651	·279015	·242946	·184556	·140563	·107327	·082154	·063039
30	·411986	·308318	·267000	·231367	·174110	·131367	·099377	·075371	·057308
31	·399987	·296460	·255502	·220359	·164254	·122773	·092016	·069147	·052098
32	·388337	·285057	·244499	·209866	·154957	·114741	·085200	·063438	·047889
33	·377026	·274094	·233971	·199872	·146186	·107234	·078888	·058200	·043056
34	·366044	·263552	·223895	·190354	·137911	·100219	·073045	·053394	·039142
35	·355388	·253415	·214254	·181290	·130105	·093663	·067634	·048986	·035584
36	·345039	·243668	·205028	·172657	·122740	·087535	·062624	·044941	·032349
37	·334982	·234296	·196109	·164435	·115793	·081808	·057985	·041230	·029408
38	·325226	·225285	·187750	·156605	·109238	·076456	·053690	·037826	·026734
39	·315758	·216620	·179665	·149147	·103055	·071455	·049713	·034702	·024304
40	·306556	·208289	·171928	·142045	·097222	·066780	·046030	·031837	·022094
41	·297628	·200277	·164525	·135281	·091719	·062411	·042621	·029208	·020086
42	·288959	·192574	·157440	·128839	·086527	·058328	·039464	·026797	·018260
43	·280549	·185168	·150660	·122704	·081629	·054512	·036540	·024584	·016600
44	·272371	·178046	·144179	·116861	·077009	·050946	·033834	·022554	·015091
45	·264438	·171198	·137964	·111296	·072650	·047613	·031327	·020692	·013719
46	·256736	·164618	·132023	·105996	·068537	·044498	·029007	·018983	·012479
47	·249258	·158288	·126338	·100949	·064658	·041587	·026858	·017416	·011339
48	·241998	·152194	·120897	·096142	·060998	·038866	·024869	·015978	·010307
49	·234950	·146341	·115691	·091563	·057545	·036324	·023026	·014658	·009370
50	·228107	·140712	·110709	·087208	·054288	·033947	·021821	·013448	·008518
51	·221463	·135300	·105942	·083051	·051215	·031726	·019741	·012338	·007744
52	·215019	·130096	·101380	·079096	·048316	·029651	·018279	·011319	·007040
53	·208750	·125088	·097014	·075329	·045581	·027711	·016925	·010384	·006400
54	·202679	·120281	·092836	·071742	·043001	·025898	·015671	·009527	·005818
55	·196797	·115655	·088839	·068326	·040567	·024204	·014519	·008740	·005289
56	·191086	·111207	·085013	·065072	·038271	·022620	·013435	·008018	·004808
57	·185471	·106930	·081352	·061974	·036104	·021140	·012440	·007356	·004371
58	·180069	·102817	·077849	·059022	·034061	·019757	·011519	·006749	·003978
59	·174825	·098862	·074497	·056212	·032138	·018465	·010665	·006192	·003612
60	·169738	·095060	·071289	·053535	·030314	·017257	·009873	·005680	·003284
61	·164789	·091404	·068219	·050986	·028598	·016123	·009144	·005211	·002985
62	·159989	·087888	·065281	·048558	·026979	·015078	·008466	·004781	·002714
63	·155329	·084508	·062473	·046216	·025452	·014087	·007839	·004386	·002467
64	·150805	·081258	·059780	·044013	·024011	·013165	·007259	·004024	·002243
65	·146418	·078132	·057205	·041946	·022652	·012304	·006721	·003692	·002039
66	·142148	·075127	·054742	·039949	·021370	·011499	·006223	·003387	·001852
67	·138009	·072238	·052385	·038046	·020160	·010746	·005762	·003107	·001685
68	·133983	·069459	·050129	·036234	·019019	·010043	·005335	·002851	·001532
69	·130086	·066788	·047970	·034509	·017943	·009386	·004940	·002615	·001392
70	·126297	·064219	·045904	·032866	·016927	·008772	·004574	·002399	·001266
71	·122618	·061749	·043928	·031301	·015969	·008198	·004235	·002201	·001151
72	·119047	·059374	·042036	·029810	·015065	·007662	·003921	·002019	·001046
73	·115579	·057090	·040226	·028391	·014212	·007161	·003631	·001852	·000951
74	·112218	·054895	·038494	·027039	·013408	·006692	·003362	·001699	·000864
75	·108945	·052785	·036836	·025751	·012649	·006254	·003113	·001559	·000786
76	·105772	·050758	·035250	·024525	·011938	·005845	·002882	·001430	·000714
77	·102691	·048801	·033732	·023357	·011257	·005463	·002669	·001312	·000649
78	·099700	·046924	·032279	·022245	·010620	·005105	·002471	·001204	·000590
79	·096796	·045119	·030889	·021185	·010019	·004771	·002288	·001104	·000537
80	·093977	·043384	·029559	·020176	·009452	·004459	·002118	·001013	·000488
81	·091239	·041715	·028286	·019216	·008917	·004167	·001961	·000929	·000443
82	·088582	·040111	·027068	·018301	·008412	·003895	·001816	·000853	·000403
83	·086009	·038568	·025902	·017429	·007936	·003640	·001682	·000782	·000366
84	·083497	·037085	·024787	·016599	·007486	·003402	·001557	·000718	·000333
85	·081065	·035658	·023720	·015809	·007068	·003179	·001442	·000658	·000303

TABLES OF INTEREST AND ANNUITIES.

III.—Table showing the Amount of an Annuity of $1 per Annum, improved at Compound Interest, at 3, 4, 4½, 5, 6, 7, 8, 9, and 10 per Cent., at the end of each Year from 1 to 85.

Years.	3 per cent.	4 per cent.	4 1-2 per cent.	5 per cent.	6 per cent.	7 per cent.	8 per cent.	9 per cent.	10 per cent.
1	1·000000	1·000000	1·000000	1·000000	1·000000	1·000000	1·000000	1·000000	1·000000
2	2·030000	2·040000	2·045000	2·050000	2·060000	2·070000	2·080000	2·090000	2·100000
3	3·090900	3·121600	3·137025	3·152500	3·183600	3·214900	3·246400	3·278100	3·310000
4	4·183627	4·246464	4·278191	4·310125	4·374616	4·439943	4·506112	4·573129	4·641000
5	5·309136	5·416323	5·470710	5·525631	5·637093	5·750739	5·866601	5·984711	6·105100
6	6·468410	6·632975	6·716892	6·801918	6·975319	7·153291	7·335929	7·523335	7·715610
7	7·662462	7·898294	8·019152	8·142008	8·393838	8·654021	8·922803	9·200435	9·487171
8	8·892336	9·214226	9·380014	9·549109	9·897468	10·259805	10·636628	11·028474	11·435888
9	10·159106	10·582795	10·802114	11·026564	11·491316	11·977989	12·487558	13·021036	13·579477
10	11·463879	12·006107	12·288209	12·577893	13·180795	13·816448	14·486562	15·192930	15·937425
11	12·807796	13·486351	13·841179	14·206787	14·971643	15·783599	16·645487	17·560293	18·531167
12	14·192080	15·025805	15·464032	15·917127	16·869941	17·888451	18·977126	20·140720	21·384284
13	15·617790	16·626838	17·159913	17·712983	18·882138	20·140643	21·495297	22·953385	24·522712
14	17·086324	18·291911	18·932109	19·598632	21·015066	22·550488	24·214920	26·019189	27·974983
15	18·598914	20·023588	20·784054	21·578564	23·275970	25·129022	27·152114	29·360916	31·772482
16	20·156881	21·824531	22·719337	23·657492	25·672528	27·888054	30·324283	33·003399	35·949730
17	21·761588	23·697512	24·741707	25·840866	28·212880	30·840217	33·750226	36·973705	40·544703
18	23·414435	25·645413	26·855084	28·132885	30·905653	33·999033	37·450244	41·301338	45·599173
19	25·116868	27·671229	29·063562	30·539004	33·759992	37·379065	41·446263	46·018458	51·159090
20	26·870374	29·778079	31·371423	33·065954	36·785591	40·995492	45·761964	51·160120	57·274999
21	28·676486	31·969202	33·783137	35·719252	39·992727	44·865177	50·422921	56·764530	64·002499
22	30·536780	34·247970	36·303378	38·505214	43·392290	49·005739	55·456755	62·873338	71·402749
23	32·452884	36·617889	38·937030	41·430475	46·995828	53·436141	60·893296	69·531939	79·543024
24	34·426470	39·082604	41·689196	44·501999	50·815577	58·176671	66·764759	76·789813	88·497327
25	36·459264	41·645908	44·565210	47·727099	54·864512	63·249038	73·105940	84·700896	98·347059
26	38·553042	44·311745	47·570645	51·113454	59·156383	68·676470	79·954415	93·323977	109·181765
27	40·709634	47·084214	50·711324	54·669126	63·705766	74·483823	87·350768	102·723135	121·099942
28	42·930923	49·967583	53·993333	58·402583	68·528112	80·697691	95·338830	112·968217	134·209936
29	45·218850	52·966286	57·423033	62·322712	73·639798	87·346529	103·965936	124·135356	148·630930
30	47·575416	56·084938	61·007070	66·438848	79·058186	94·460786	113·283211	136·307539	164·494023
31	50·002678	59·328335	64·752388	70·760790	84·801677	102·073041	123·345868	149·575217	181·943425
32	52·502759	62·701469	68·666245	75·298829	90·889778	110·218154	134·213537	164·036987	201·137767
33	55·077841	66·209527	72·756226	80·063771	97·343165	118·933425	145·950620	179·800315	222·251544
34	57·730177	69·857909	77·030256	85·066959	104·183755	128·258765	158·626670	196·982344	245·476699
35	60·462082	73·652225	81·496618	90·320307	111·434780	138·236878	172·316804	215·710755	271·024368
36	63·275944	77·598314	86·163966	95·836323	119·120867	148·913460	187·102148	236·124723	299·126805
37	66·174223	81·702246	91·041844	101·628139	127·268119	160·337402	203·070320	258·375948	330·039486
38	69·159449	85·970336	96·138205	107·709546	135·904206	172·561020	220·315945	282·629783	364·043434
39	72·234233	90·409150	101·464424	114·095023	145·058458	185·640292	238·941221	309·066463	401·447778
40	75·401260	95·025516	107·030323	120·799774	154·761966	199·635112	259·056519	337·882445	442·592556
41	78·663298	99·826536	112·846688	127·839763	165·047684	214·609570	280·781040	369·291865	487·851811
42	82·023196	104·819598	118·924789	135·231751	175·950545	230·632240	304·243523	403·528133	537·036992
43	85·483892	110·012382	125·276404	142·993339	187·507577	247·776496	329·583005	440·845665	592·140692
44	89·048409	115·412877	131·918442	151·143006	199·758032	266·120851	356·949646	481·521775	652·640761
45	92·719861	121·029392	138·849665	159·700156	212·743514	285·749311	386·505617	525·858634	718·904837
46	96·561457	126·870568	146·098214	168·685164	226·508125	306·751763	418·426067	574·186021	791·795321
47	100·396501	132·945390	153·672633	178·119422	241·098612	329·224386	452·900152	626·862762	871·974853
48	104·408396	139·263206	161·587902	188·025393	256·564529	353·270009	490·132164	684·280411	960·172318
49	108·540648	145·833734	169·859357	198·426663	272·958401	378·999000	530·342737	746·865648	1057·189552
50	112·796867	152·667084	178·503028	209·347996	290·335905	406·528929	573·770156	815·083556	1163·908529
51	117·180773	159·773767	187·535685	220·815495	308·756059	435·965955	620·671769	889·441076	1281·299382
52	121·696197	167·164718	196·974769	232·856165	328·281422	467·504971	671·325510	970·490778	1410·429320
53	126·347082	174·851306	206·838394	245·498974	348·978308	501·290319	726·031551	1058·834949	1552·472252
54	131·137495	182·845359	217·146372	258·773922	370·917006	537·416442	785·114075	1155·130998	1710·719477
55	136·071620	191·159173	227·917959	272·712618	394·172027	575·925593	848·923201	1260·091796	1883·041425
56	141·153768	199·805540	239·174268	287·348249	418·822348	617·240394	917·837058	1374·500067	2069·650567
57	146·388881	208·797762	250·937110	302·715692	444·951689	661·456646	992·264092	1499·205003	2277·615624
58	151·780688	218·149672	263·229280	318·851445	472·648790	708·752191	1072·645144	1635·133518	2506·377186
59	157·334434	227·875659	276·074507	335·794017	502·007718	759·364844	1159·456755	1783·295382	2756·014905
60	163·054437	237·990685	289·497054	353·583718	533·128181	813·520388	1253·213296	1944·792183	3031·816395
61	168·945040	248·510313	303·523362	372·262904	566·115872	871·466810	1354·470360	2120·823425	3334·998035
62	175·013591	259·450725	318·184008	391·876049	601·082924	933·469487	1463·827988	2312·697538	3667·497838
63	181·263798	270·828754	333·502283	412·469851	638·147739	999·812851	1581·934227	2521·840811	4032·659622
64	187·701707	282·661904	349·509856	434·093344	677·436661	1070·799216	1709·489366	2749·986949	4435·925585
65	194·332758	294·968581	366·237831	456·798011	719·082861	1146·755161	1847·248088	2998·285474	4879·767758
66	201·162741	307·767116	383·718388	480·637912	763·227832	1228·028022	1996·027959	3269·131430	5367·077975
67	208·197628	321·077800	401·985667	505·669807	810·021502	1314·989983	2156·710161	3561·852585	5903·785773
68	215·443551	334·920912	421·075291	531·953298	859·622792	1408·039282	2330·246977	3880·414621	6493·364351
69	222·906858	349·317749	441·028617	559·550963	912·200160	1507·602022	2517·666745	4226·969000	7142·717787
70	230·594064	364·290450	461·869680	588·528511	967·932170	1614·134474	2720·080074	4619·223180	7857·489566
71	238·511886	379·862077	483·653815	618·954936	1027·008100	1728·123566	2938·686480	5085·953266	8677·216525
72	246·657142	396·056560	506·418237	650·902683	1089·628586	1850·092216	3174·781899	5490·189060	9545·938177
73	275·067252	412·898825	530·207057	684·447817	1156·006301	1980·598671	3429·763910	5985·806075	10501·581995
74	263·719217	430·414776	555·066875	719·670208	1226·366679	2120·240578	3705·145023	6524·928622	11552·685195
75	272·630856	448·631367	581·044862	756·653718	1300·948880	2269·657419	4002·556624	7113·232148	12708·953714
76	281·799781	467·576621	608·191358	795·486404	1380·005801	2429·538488	4322·761151	7754·423041	13979·849085
77	291·264075	487·279686	636·559969	836·260725	1463·805997	2600·606779	4670·662047	8453·921115	15377·833991
78	301·001997	507·770874	666·205168	879·073761	1552·634298	2783·648834	5045·315011	9215·120015	16915·927390
79	311·082057	529·081708	697·184401	924·027449	1646·792450	2979·497431	5449·940211	10045·480817	18607·520143
80	321·363919	551·244977	729·557699	971·228921	1746·599891	3189·062630	5886·935428	10950·574090	20474·002140
81	332·003909	574·294716	763·387795	1020·790262	1852·395885	3413·297067	6358·890263	11937·125798	22522·402360
82	342·964026	598·266567	798·746246	1072·829775	1964·539338	3653·227862	6868·601464	13012·467077	24775·642596
83	354·252947	623·197280	835·688557	1127·471264	2083·412016	3909·953812	7419·089002	14184·589114	27252·206756
84	365·880586	649·125119	874·269317	1184·844827	2209·416787	4184·650579	8013·616770	15462·202134	29980·627542
85	377·856952	676·090124	914·632836	1245·087069	2342·981741	4478·576120	8655·706112	16854·800326	32979·690296

IV.—Table o… of Y…

Years.	8 per cen…
1	1·0…
2	2·0…
3	3·2…
4	4·5…
5	5·8…
6	7·3…
7	8·9…
8	10·6…
9	12·4…
10	14·4…
11	16·6…
12	18·9…
13	21·4…
14	24·2…
15	27·1…
16	30·3…
17	33·7…
18	37·4…
19	41·4…
20	45·7…
21	50·4…
22	55·4…
23	60·8…
24	66·7…
25	73·1…
26	79·9…
27	87·3…
28	95·3…
29	103·9…
30	113·2…
31	123·3…
32	134·2…
33	145·9…
34	158·6…
35	172·3…
36	187·1…
37	203·0…
38	220·3…
39	239·0…
40	259·0…
41	280·7…
42	304·2…
43	329·5…
44	356·9…
45	386·5…
46	418·4…
47	452·9…
48	490·1…
49	530·3…
50	573·7…
51	620·6…
52	671·3…
53	726·0…
54	785·1…
55	848·9…
56	917·8…
57	992·2…
58	1072·6…
59	1159·4…
60	1253·2…
61	1354·4…
62	1463·8…
63	1581·9…
64	1709·4…
65	1847·2…
66	1996·0…
67	2156·7…
68	2330·2…
69	2517·6…
70	2720·0…
71	2938·6…
72	3174·7…
73	3429·7…
74	3705·1…
75	4002·5…
76	4322·7…
77	4670·6…
78	5045·3…
79	5449·9…
80	5886·9…
81	6358·8…
82	6868·6…
83	7419·0…
84	8013·6…
85	8655·7…

TABLES OF INTEREST AND ANNUITIES.

IV.—TABLE SHOWING THE PRESENT VALUE OF AN ANNUITY OF $1 PER ANNUM, TO CONTINUE FOR ANY GIVEN NUMBER OF YEARS, FROM 1 TO 85, RECKONING COMPOUND INTEREST, AT 3, 4, 4½, 5, 6, 7, 8, 9, AND 10 PER CENT.

Years.	3 per cent.	4 per cent.	4 1-2 per cent.	5 per cent.	5 per cent.	7 per cent.	8 per cent.	9 per cent.	10 per cent.
1	·970874	·961538	·956938	·952381	·943396	·934579	·925926	·917431	·909091
2	1·913470	1·886095	1·872668	1·859410	1·833393	1·808018	1·783265	1·759111	1·735537
3	2·828611	2·775091	2·749064	2·723248	2·673012	2·624316	2·577097	2·531295	2·486852
4	3·717098	3·629895	3·587526	3·545951	3·465106	3·387211	3·312127	3·239720	3·169865
5	4·579707	4·451822	4·389977	4·329477	4·212364	4·100197	3·992710	3·889651	3·790787
6	5·417191	5·242137	5·157872	5·075692	4·917324	4·766540	4·622880	4·485919	4·355261
7	6·230283	6·002055	5·892701	5·786373	5·582381	5·389289	5·206370	5·032953	4·868419
8	7·019692	6·732745	6·595886	6·463213	6·209794	5·971299	5·746639	5·534819	5·334926
9	7·786109	7·435332	7·268790	7·107822	6·801692	6·515232	6·246888	5·995247	5·759024
10	8·530203	8·110896	7·912718	7·721735	7·360087	7·023582	6·710081	6·417658	6·144567
11	9·252624	8·760477	8·528917	8·306414	7·886875	7·498674	7·138964	6·805191	6·495061
12	9·954004	9·385074	9·118581	8·863252	8·383844	7·942686	7·536078	7·160725	6·813692
13	10·634955	9·985648	9·682852	9·393573	8·852683	8·357651	7·903776	7·486904	7·103356
14	11·296073	10·563123	10·222825	9·898641	9·294984	8·745468	8·244237	7·786150	7·366687
15	11·937935	11·118387	10·739546	10·379658	9·712249	9·107914	8·559479	8·060688	7·606080
16	12·561102	11·652296	11·234015	10·837770	10·105895	9·446649	8·851369	8·312558	7·823709
17	13·166118	12·165669	11·707191	11·274066	10·477260	9·763223	9·121638	8·543631	8·021553
18	13·753513	12·659297	12·159992	11·689587	10·827603	10·059087	9·371887	8·755625	8·201412
19	14·323799	13·133939	12·593294	12·085321	11·158116	10·335595	9·603599	8·950115	8·364920
20	14·877475	13·590326	13·007936	12·462210	11·469921	10·594014	9·818147	9·128546	8·513564
21	15·415024	14·029160	13·404724	12·821153	11·764077	10·835527	10·016803	9·292244	8·648694
22	15·936917	14·451115	13·784425	13·163003	12·041582	11·061241	10·200744	9·442425	8·771540
23	16·443608	14·856842	14·147775	13·488574	12·303379	11·272187	10·371059	9·580207	8·882218
24	16·935542	15·246963	14·495478	13·798642	12·550358	11·469334	10·528758	9·706612	8·984744
25	17·413148	15·622080	14·828209	14·093945	12·783356	11·653583	10·674776	9·822580	9·077040
26	17·876842	15·982769	15·146611	14·375185	13·003166	11·825779	10·809978	9·928972	9·160945
27	18·327031	16·329586	15·451303	14·643034	13·210534	11·986709	10·935165	10·026580	9·237223
28	18·764108	16·663063	15·742874	14·898127	13·406164	12·137111	11·051078	10·116128	9·306567
29	19·188455	16·983715	16·021889	15·141074	13·590721	12·277674	11·158406	10·198283	9·369606
30	19·600441	17·292058	16·288889	15·372451	13·764831	12·409041	11·257783	10·273654	9·426914
31	20·000428	17·588494	16·544891	15·592811	13·929086	12·531814	11·349799	10·342802	9·479013
32	20·388766	17·873552	16·788891	15·802677	14·084043	12·646555	11·434999	10·406240	9·526376
33	20·765792	18·147646	17·022862	16·002549	14·230230	12·753790	11·513888	10·464441	9·569432
34	21·131837	18·411198	17·246758	16·192904	14·368141	12·854009	11·586934	10·517835	9·608575
35	21·487220	18·664613	17·461012	16·374194	14·498246	12·947672	11·654568	10·566821	9·644159
36	21·832252	18·908282	17·666041	16·546852	14·620987	13·035208	11·717195	10·611763	9·676508
37	22·167235	19·142579	17·862240	16·711287	14·736780	13·117017	11·775179	10·652998	9·705917
38	22·492462	19·367864	18·049990	16·867893	14·846019	13·193473	11·828869	10·690820	9·732651
39	22·808215	19·584485	18·229656	17·017041	14·949075	13·264928	11·878582	10·725523	9·756956
40	23·114772	19·792774	18·401584	17·159086	15·046297	13·331709	11·924613	10·757360	9·779051
41	23·412400	19·993052	18·566109	17·294368	15·138016	13·394120	11·967285	10·786569	9·799137
42	23·701859	20·185627	18·723550	17·423208	15·224543	13·452449	12·006699	10·813366	9·817397
43	23·983902	20·370795	18·874210	17·545912	15·306173	13·506962	12·043240	10·837951	9·833998
44	24·254274	20·548841	19·018383	17·662773	15·383182	13·557908	12·077074	10·860505	9·849089
45	24·518713	20·720040	19·156347	17·774070	15·455832	13·605522	12·108402	10·881197	9·862808
46	24·775449	20·884654	19·288371	17·880067	15·524370	13·650020	12·137409	10·900181	9·875280
47	25·024708	21·042936	19·414709	17·981016	15·589028	13·691608	12·164267	10·917597	9·886618
48	25·266707	21·195131	19·535607	18·077158	15·650027	13·730474	12·189136	10·933575	9·896926
49	25·501657	21·341472	19·651298	18·168722	15·707572	13·766799	12·212163	10·948284	9·906296
50	25·729764	21·482185	19·762008	18·255925	15·761861	13·800746	12·233485	10·961883	9·914814
51	25·951227	21·617485	19·867950	18·338977	15·813076	13·832479	12·253227	10·974021	9·922559
52	26·166240	21·747582	19·969330	18·418073	15·861393	13·862124	12·271526	10·985040	9·929599
53	26·374990	21·872675	20·066345	18·493403	15·906974	13·889836	12·288432	10·995125	9·935999
54	26·577660	21·992957	20·159181	18·565146	15·949976	13·915735	12·304103	11·005252	9·941817
55	26·774428	22·108619	20·248021	18·633472	15·990548	13·939039	12·318614	11·013998	9·947107
56	26·965464	22·219810	20·333034	18·698545	16·028814	13·960360	12·332050	11·022012	9·951915
57	27·150936	22·326749	20·414387	18·760519	16·064919	13·979701	12·344491	11·029369	9·956286
58	27·331005	22·429567	20·492256	18·819542	16·098980	14·008459	12·356010	11·036118	9·960260
59	27·505831	22·528430	20·566788	18·875754	16·131113	14·021924	12·366676	11·042310	9·963878
60	27·675564	22·623490	20·638022	18·929290	16·161428	14·039181	12·376559	11·047991	9·967157
61	27·840358	22·714894	20·706241	18·980276	16·190026	14·055309	12·385696	11·053203	9·970143
62	28·000348	22·802788	20·771523	19·028834	16·217006	14·070383	12·394163	11·057984	9·972857
63	28·155678	22·887291	20·833993	19·075080	16·242458	14·084470	12·402003	11·062371	9·975325
64	28·306473	22·968540	20·893778	19·119124	16·266470	14·097635	12·409262	11·066395	9·977568
65	28·452891	23·046682	20·950979	19·161070	16·289123	14·109940	12·415983	11·070087	9·979607
66	28·595040	23·121810	21·005722	19·201019	16·310493	14·121439	12·422207	11·073475	9·981461
67	28·733049	23·194048	21·058107	19·239066	16·330654	14·132186	12·427990	11·076582	9·983147
68	28·867088	23·263507	21·108286	19·275301	16·349673	14·142230	12·433305	11·079433	9·984679
69	28·997194	23·330296	21·156207	19·309810	16·367617	14·151617	12·438245	11·082049	9·986071
70	29·123491	23·394515	21·202112	19·342677	16·384544	14·160389	12·442820	11·084449	9·987333
71	29·246040	23·456264	21·246040	19·373973	16·400518	14·168588	12·447055	11·086650	9·988479
72	29·365087	23·515639	21·288077	19·403788	16·415578	14·176251	12·450977	11·088670	9·989535
73	29·480667	23·572730	21·328303	19·432179	16·429791	14·183412	12·454608	11·090528	9·990487
74	29·592881	26·627625	21·366797	19·459218	16·443199	14·190104	12·457971	11·092228	9·991351
75	29·701826	23·680408	21·403634	19·484970	16·455848	14·196350	12·461084	11·093782	9·992138
76	29·807598	23·731169	21·438884	19·509495	16·467781	14·202205	12·463967	11·095218	9·992852
77	29·910290	23·779968	21·472617	19·532853	16·479039	14·207668	12·466636	11·096526	9·993502
78	30·009990	23·826888	21·504899	19·555098	16·489659	14·212774	12·469107	11·097730	9·994098
79	30·106786	23·872008	21·535785	19·576284	16·499679	14·217516	12·471396	11·098835	9·994639
80	30·200768	23·915392	21·565345	19·596460	16·509131	14·222005	12·473514	11·099849	9·995118
81	30·292008	23·957108	21·593632	19·615677	16·518048	14·226173	12·475476	11·100773	9·995562
82	30·380586	23·997219	21·620700	19·633978	16·526460	14·230069	12·477298	11·101632	9·995965
83	30·466583	24·035787	21·646603	19·651407	16·534396	14·233709	12·478975	11·102414	9·996332
84	30·550066	24·072879	21·671390	19·668007	16·541883	14·237111	12·480532	11·103132	9·996666
85	30·631151	24·108561	21·695110	19·683816	16·548947	14·240291	12·481974	11·103791	9·996969

In Hamburg the rate of interest is quite unrestricted; or, if there be a written law restraining it, it has become obsolete. The rate, therefore, varies according to circumstances. Occasionally it has been at 7, 8, and even 10 per cent.; and in 1799, a period of great mercantile embarrassment and insecurity, it was as high as 14 per cent. Generally, however, the rate of discount on good bills does not exceed 3 or 4 per cent.—*Report on Usury Laws*, p. 46.

In Russia the legal rate of interest is 6 per cent. But as Russia is a country capable of much improvement, and where there are very great facilities for the advantageous employment of capital, the market rate of interest is invariably higher than the statute rate, and the law is constantly and easily evaded.—*Report on Usury Laws*, p. 46; and STORCH, tom. iii., p. 207.

The previous statements apply only to the cases of interest arising out of loans made by one party to another. But there are cases in which interest may become due without being stipulated for, by unnecessary or unjustifiable delays in the payment of debts, or by trustees, agents, or other parties coming into possession of property belonging to others, etc., and in these it is necessary to obviate litigation, that the interest to be charged should be fixed by law. This legal rate had better be somewhat below the ordinary market rate, and may be adjusted from time to time as circumstances may require. But, except in cases of this sort, there is no more reason for interfering to regulate the rate of interest, than there is for interfering to regulate premiums of insurance.

Distinction of Simple and Compound Interest.—When a loan is made, it is usual to stipulate that the interest upon it should be regularly paid at the end of every year, half year, etc. A loan of this sort is said to be at simple interest. It is of the essence of such loan that no part of the interest accruing upon it should be added to the principal to form a new principal; and though payment of the interest were not made when it becomes due, the lender would not be entitled to charge interest upon such unpaid interest. Thus, suppose £100 were lent at simple interest at 5 per cent., payable at the end of each year; the lender would, at the end of three or four years, supposing him to have received no previous payments, be entitled to £15 or £20, and no more.

Compound Interest.—Sometimes, however, money or capital is invested so that the interest is not paid at the periods when it becomes due, but is progressively added to the principal; so that at every term a new principal is formed, consisting of the original principal and the successive accumulations of interest upon interest. Money invested in this way is said to be placed at *compound interest*. It appears only reasonable, when a borrower does not pay the interest he has contracted for at the period when it is due, that he should pay interest upon such interest. This, however, is not allowed by the law of England; nor is it allowed to make a loan at compound interest. But this rule is easily evaded by taking a new obligation for the principal with the interest included, when the latter becomes due. Investments at compound interest are also very frequent. Thus, if an individual buy into the funds, and regularly buy fresh stock with the dividends, the capital will increase at compound interest; and so in any similar case.

Calculation of Interest.—Interest is estimated at so much per cent. per annum, or by dividing the principal into 100 equal parts, and specifying how many of these parts are paid yearly for its use. Thus 5 per cent., or 5 parts out of 100, means that £5 are paid for the use of £100 for a year, £10 for the use of £200, £2 50 for the use of £50 for the same period, and so on.

Many attempts have been made to contrive expeditious processes for calculating interest. The following is one of the best: Suppose it were required to find the interest upon £172 for 107 days at 5 per cent. This forms what is called in arithmetical books a double rule of three question, and would be stated as follows:

L. Days. *L.* *L.* Days.
100×365 : 5 : : 172×107=the interest required.

Hence to find the interest of any sum for any number of days at any rate per cent., multiply the sum by the number of days, and the product by the rate, and divide by 36,500 (365×100); the quotient is the interest required. When the rate is 5 per cent., or 1-20th of the principal, all that is required is to divide the product of the sum multiplied by the days by 7300 (365, the days in a year, multiplied by 20). Five per cent. interest being found by this extremely simple process, it is usual in practice to calculate 4 per cent. interest by deducting 1-5th; 3 per cent. by deducting 2-5ths; 2½ per cent. by dividing by 2; 2 per cent. by taking the half of 4, and so on.

In calculating interest upon accounts current, it is requisite to state the number of days between each receipt or payment, and the date (commonly the 31st of December) to which the account current is made up. Thus, £172 paid on the 15th of September, bearing interest to the 31st of December, 107 days. The amount of such interest may, then, be calculated as above explained, or by the aid of tables.

The 30th of June is, after the 31st of December, the most usual date to which accounts current are made up, and interest calculated. It is desirable, in calculating interest on accounts current, to be able readily to find the number of days from one day in any month to any day in any other month. This may be done with the greatest ease by means of the following table:

TABLE FOR ASCERTAINING THE NUMBER OF DAYS FROM ANY ONE DAY IN THE YEAR TO ANY OTHER DAY.

Jan.	Feb.	March	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.
1	32	60	91	121	152	182	213	244	274	305	335
2	33	61	92	122	153	183	214	245	275	306	336
3	34	62	93	123	154	184	215	246	276	307	337
4	35	63	94	124	155	185	216	247	277	308	338
5	36	64	95	125	156	186	217	248	278	309	339
6	37	65	96	126	157	187	218	249	279	310	340
7	38	66	97	127	158	188	219	250	280	311	341
8	39	67	98	128	159	189	220	251	281	312	342
9	40	68	99	129	160	190	221	252	282	313	343
10	41	69	100	130	161	191	222	253	283	314	344
11	42	70	101	131	162	192	223	254	284	315	345
12	43	71	102	132	163	193	224	255	285	316	346
13	44	72	103	133	164	194	225	256	286	317	347
14	45	73	104	134	165	195	226	257	287	318	348
15	46	74	105	135	166	196	227	258	288	319	349
16	47	75	106	136	167	197	228	259	289	320	350
17	48	76	107	137	168	198	229	260	290	321	351
18	49	77	108	138	169	199	230	261	291	322	352
19	50	78	109	139	170	200	231	262	292	323	353
20	51	79	110	140	171	201	232	263	293	324	354
21	52	80	111	141	172	202	233	264	294	325	355
22	53	81	112	142	173	203	234	265	295	326	356
23	54	82	113	143	174	204	235	266	296	327	357
24	55	83	114	144	175	205	236	267	297	328	358
25	56	84	115	145	176	206	237	268	298	329	359
26	57	85	116	146	177	207	238	269	299	330	360
27	58	86	117	147	178	208	239	270	300	331	361
28	59	87	118	148	179	209	240	271	301	332	362
29	..	88	119	149	180	210	241	272	302	333	363
30	..	89	120	150	181	211	242	273	303	334	364
31	.	90	..	151	.	212	243	..	304	.	365

By this table may be readily ascertained the number of days from any given day in the year to another. For instance, from the 1st of January to the 14th of August (first and last days included), there are 226 days. To find the number, look down the column headed January, to No. 14, and then look along in a

parallel line to the column headed August, you find 226, the number required. To find the number of days between any other two given days, when they are both after the first of January, the number opposite the first day must, of course, be deducted from that opposite to the second. Thus, to find the number of days between the 13th of March and the 19th of August, deduct from 231—the number in the table opposite to 19 and under August—72, the number opposite to 13 and under March, and the remainder, 159, is the number required, last day included. In leap years, *one* must be added to the number after the 28th of February.

When interest, instead of being simple, is compound, the first year's or term's interest must be found, and being added to the original principal, makes the principal upon which interest is to be calculated for the second year or term; and the second year's or term's interest being added to this last principal, makes that upon which interest is to be calculated for the third year or term; and so on for any number of years. But when the number of years is considerable, this process becomes exceedingly cumbersome and tedious, and to facilitate it tables have been constructed, which are subjoined to this article.

The first of these tables (p. 1074) represents the amount of $1 accumulating at compound interest, at 3, 3½, 4, 4½, up to 10 per cent. every year, from 1 year to 85 years, in dollars and decimals of a dollar. Now, suppose that we wish to know how much $500 will amount to in seven years at 4 per cent. In the column marked 4 per cent., and opposite to 7 years, we find $1·31.5931, which shows that $1 will, if invested at 4 per cent., compound interest, amount to $1·31.5931 in 7 years; and, consequently, $500 will, in the same time, and at the same rate, amount to $500×1·31.5931, or $657·96.6. For the same purpose of facilitating calculation, the present value of $1 due any number of years hence, not exceeding 85, at 3, 3½, 4, 4½, up to 10 per cent., compound interest, is given in the tables, pp. 1074–1077. The use of these tables is precisely similar to the one above. Let it, for example, be required to find the present worth of $500 due 7 years hence, reckoning compound interest at 4 per cent.; opposite to 7 years, and under 4 per cent., 75·291781, the present worth of $1 due at the end of 7 years; and multiplying this sum by $500, the product being $379·95.89, is the answer required. These tables are in part from *Tables of Interest, Discount, and Annuities*, by JOHN SMART, Gent., 4to., London, 1726. They are carried to eight decimal places, and enjoy the highest character in England and on the Continent, for accuracy and completeness. The original work is now become scarce.

ANNUITIES. 1. *Annuities certain.*—When a sum of money is to be paid yearly for a certain number of years, it is called an annuity. The annuities usually met with are either for a given number of years, which are called *annuities certain;* or they are to be paid so long as one or more individuals shall live, and are thence called *contingent annuities.*

By the amount of an annuity at any given time, is meant the sum to which it will then amount, supposing it to have been regularly improved at compound interest during the intervening period.

The present value of an annuity for any given period, is the sum of the present values of all the payments of that annuity.

See JONES on *Annuities*, London, 2 vols., 8vo; *Ency. Brit.*, 8th ed.; BANKERS' *Mag.*, vols. v., vi., vii., New York, 1854–1857; J. R. MCCULLOCH, *Essays on Exchange, Interest, etc.*, New York, 1857; *Assurance Magazine*, London, 1854–1857; *Report to British Parliament on Usury Laws;* STORCH, *Economie Politique*, iii.; MADOX, *History of the Exchequer; Considerations on the State of the English Currency;* HUME'S *Essay on Interest; Essay on the Governing Causes of the Rate of Interest.*

The uses of these tables are numerous, and they are easily applied. Suppose, for example, it were required to tell the amount of an annuity of $50 a year for 17 years, at 4 per cent., compound interest.

Opposite to 17 (Table, p. 1074) in the column of years, and under 4 per cent., is 23·69751,239, being the amount of an annuity of $1 for the given time at the given rate per cent.; and this multiplied by 50 gives $1184·87.56195, the amount required.

Suppose, now, that it is required what sum one must pay down to receive an annuity of $50, to continue for 17 years, compound interest at 4 per cent.?

Opposite to 17 years (Table, p. 1076) and under 4 per cent., is 12·16566,886, the present value of an annuity of $1 for the given time and at the given rate per cent.; and this multiplied by 50, gives $608·28.3443, the present value required.

When it is required to find the *time* which must elapse, in order that a given sum, improved at a specified rate of compound interest, may increase to some other given sum, divide the latter sum by the former, and look for the quotient, or the number nearest to it, in table No. I., under the given rate per cent., and the years opposite to it are the answer: thus,

In what time will $523 amount to $1087·27.94, at 5 per cent., compound interest?

Divide 1087·27.94, etc., by 523, and the quotient will be 2·0789, etc., which under 5 per cent. in table I., is opposite to 15 years, the time required.

If it had been required to find the time in which a given annuity, improved at a certain rate of compound interest, would have increased to some given sum, the question would have been answered by dividing, as above, the given sum by the annuity, and looking for the quotient (not in table No. I., but) in table No. III., under the given rate per cent., it would be found on a line with the time required; thus,

A owes $1000, and resolves to appropriate $10 a year of his income to its discharge; in what time will the debt be extinguished, reckoning compound interest at 4 per cent.?

1000 divided by 10 gives 100, the number in table No. III. under 4 per cent, and nearest to this quotient is 99·8265, etc., opposite to 41 years, the required time. Had the rate of interest been 5 per cent., the debt would have been discharged in somewhat less than 37 years. This example is given by Dr. Price (*Annuities*, 6th ed., vol. ii., p. 289); and on this principle the whole fabric of the sinking fund was constructed. Of the abstract truth of the principle there can not, indeed, be a doubt. But every thing depends on the increasing sums annually produced being immediately invested on the same terms; and this, when the sum is large, and the period long, is altogether impracticable.

Let it next be required to find an annuity which, being increased at a given rate of compound interest during a given time, will amount to a specified sum: in this case we divide the specified sum by the amount of $1 for the time and rate given, as found in the Table III., and the quotient is the answer.—Thus, What annuity will amount to $1,087, 27.94 in 15 years at 5 per cent. compound interest? Opposite to 15 years in Table III., and under 5 per cent., is 21·5785, etc., the amount of $1 for the given time and rate; and dividing 1087·2794, etc., by this sum, the quotient 50·387, etc., is the annuity required. *Deferred annuities* are those which do not commence till after a certain number of years; and *reversionary annuities*, such as depend upon the occurrence of some uncertain event, as the death of an individual, etc. The present value of a deferred annuity is found by deducting, from the value of an annuity for the whole period, the value of an annuity to the term at which the reversionary annuity is to commence.—Thus, What is the present value of an annuity of $50 to continue for 25 years, commencing at 7 years from the present time,

interest at 4 per cent.? According to Table No. IV., the value of an annuity of $1 for 25 years at 4 per cent. is 15·62207,995, and that of $1 for 7 years is 6·00205,467, which being deducted from the other, leaves 9·62002,528, which multiplied by 50 gives $481, the answer required. Supposing the annuity, instead of being for 25 years, had been a perpetuity, it would have been worth $1,250, from which deducting $300 10c., the value of an annuity for 7 years at 4 per cent., there remains $949·90, the value of the reversion. For a selection of problems that may be solved by Table of annuities certain, see SMART'S *Tables*, pp. 20–109.

2. *Life Annuities.*—After what has been stated in the article on INSURANCE (GENERAL PRINCIPLES OF), respecting tables of mortality, it will be easy to see how the value of a life annuity is calculated. Supposing—to revert to the example given before INSURANCE, that it were required to find the present value of $1, the receipt of which is dependent on the contingency of a person, now 56 years of age, being alive 10 years hence, taking the Carlisle table of mortality, and interest at 4 per cent. Now, according to that table, of 10,000 persons born together, 4000 attain to 56, and 2894 to 66 years of age. The probability that a person, now 56 years, will be alive 10 years hence, is, consequently, 2894 ÷ 4000; and the present value of $1, to be received certain 10 years hence being $0·675564, it follows, that if its receipt be made to depend on a life 56 years of age, attaining to 66 years, its value will be reduced by that contingency to 2894 × $0·675564 ÷ 4000 = $0·43877. If, then, we had to find the present value of an annuity of $1, secured on the life of a person now 56, we should calculate in this way the present value of each of the 48 payments, which, according to the Carlisle table, he might receive, and their sum would, of course, be the present value of the annuity.

This statement is enough to show the principle on which all calculations of annuities depend; and this also was, in fact, the method according to which they were calculated, till Mr. Simpson and M. Euler invented a shorter and easier process, deriving from the value of an annuity at any age, that of an annuity at the next younger age. There is a considerable discrepancy in the sums at which different authors, and different insurance offices, estimate the present value of life annuities payable to persons of the same age. This does not arise from any difference in the mode of calculating the annuities, but from differences in the tables of mortality employed. These can only be accurate when they are deduced from multiplied and careful observations made, during a long series of years, on a large body of persons; or when the average numbers of the whole population, and of the deaths at every age, for a lengthened period, have been determined with the necessary care. It is to be regretted, that governments who alone have the means of ascertaining the rate of mortality by observations made on a sufficiently large scale, have been singularly inattentive to their duty in this respect. And until a very few years since, when Mr. Finlayson was employed to calculate tables of the value of annuities from the ages of the nominees in public tontines, and of individuals on whose lives government had granted annuities, all that had been done in this country to lay a solid foundation on which to construct the vast fabric of life insurance, had been the work of a few private persons, who had, of course, but a limited number of observations to work upon.

The celebrated mathematician, Dr. Halley, was the first who calculated a table of mortality, which he deduced from observations made at Breslau, in Silesia. In 1724 M. de Moivre published the first edition of his tract on *Annuities on Lives*. In order to facilitate the calculation of their values, M. de Moivre assumed the annual decrements of life to be equal; that is, he supposed that out of 86 (the utmost limit of life on his hypothesis) persons born together one would die every year till the whole were extinct. This assumption agreed pretty well with the true values between 30 and 70 years of age, as given in Dr. Halley's table; but was very remote from the truth in the earlier and later periods. Mr. Thomas Simpson, in his work on *Annuities and Reversions*, originally published in 1742, gave a table of mortality deduced from the London bills, and tables founded upon it of the values of annuities. But at the period when this table was calculated, the mortality in London was so much higher than in the rest of the country, that the values of the annuities given in it were far too small for general use. In 1746 M. Deparcieux published, in his *Essai sur les Probabilités de la Durée de la Vie Humaine*—a work distinguished by its perspicuity and neatness—tables of mortality deduced from observations made on the mortuary registers of several religious houses, and on lists of the nominees in several tontines. In this work, separate tables were first constructed for males and females, and the greater longevity of the latter rendered apparent. M. Deparcieux's tables were a very great acquisition to the science, and are decidedly superior to some that are still extensively used. Dr. Price's famous work on *Annuities*, the first edition of which was published in 1770, contributed powerfully to direct the public attention to inquiries of this sort, and was, in this respect, of very great utility. Of the more recent works, the best are those of Mr. Baily and Mr. Milne, which, indeed, are both excellent. The latter, besides all that was previously known as to the history, theory, or practice of the science, contains much new and valuable matter; and to it we beg to refer such of our readers as wish to enter fully into the subject.

The table on which Dr. Price laid the greatest stress was calculated from the burial registers kept in the parish of All Saints, in Northampton, containing little more than half the population of the town. There can be no doubt, however, as well from original defects in the construction of the table, as from the improvement that has since taken place in the healthiness of the public, that the mortality represented in the Northampton table is, and has long been, decidedly above the average rate of mortality in England. Mr. Morgan, indeed, the late learned actuary of the Equitable Society, contended that this is not the case, and that the society's experience shows that the Northampton table is still remarkably accurate. But the facts Mr. Morgan disclosed in his "Views of the Rise and Progress of the Equitable Society," p. 42, published in 1828, are quite at variance with this opinion; for he there states, that the deaths of persons insured in the Equitable Society, from 50 to 60 years of age, during the 12 years previously to 1828, were 339; whereas, according to the Northampton table, they should have been 545! And Mr. Milne has endeavored to show (Art. *Annuities*, new ed. of *Ency. Brit.*) that the discrepancy is really much greater.

The only other table used to any extent in England for the calculation of life annuities, is that framed by Mr. Milne, from observations made by Dr. Heysham on the rate of mortality at Carlisle. It gives a decidedly lower rate of mortality than the Northampton Table; and there are good grounds for thinking that the mortality which it represents is not very different from the actual rate throughout most parts of England; though it can not be supposed that a table founded on so narrow a basis should give a perfectly fair view of the average mortality of the entire kingdom.

In life insurance, the first annual premium is always paid at the commencement of the assurance, and the others at the beginning of each year, so long as the party assured survives. Hence, at the beginning of the assurance, the whole of the annual premiums payable for it exceed the value of an equal annuity on life by one year's purchase. And, therefore, when the value of an assurance in present money is given,

to find the equivalent annual premium during the life, the whole present value must be divided by the number of years' purchase an annuity on the life is worth, increased by 1. Thus, for an assurance of $100 on a life of 40 years of age, an office, calculating by the Carlisle table of mortality, and at 4 per cent. interest, requires $53·446 in present money. Now, according to that table and rate of interest, an annuity on a life just 40 years of age is worth 15·074 years' purchase, so that the equivalent annual premium is $\frac{53·446}{15·074+1}$ = $3·325. The annual premium may, however, be derived directly from the value of an annuity on the life, without first calculating the total present value of the assurance. See Mr. Milnes *Treat. on Annuities*, or art. *Annuities*, in new edition of *Ency. Brit.*

"In order to exhibit the foundation upon which tables of life annuities and insurance have been founded in this and other countries, we have given, in a portion of the preceding tables, the rate of mortality that has been observed to take place among 1000 children born together, or the numbers alive at the end of each year, till the whole become extinct, in England, France, Sweden, etc., according to the most celebrated authorities. The rate of mortality at Carlisle, represented in this table, is less than that observed anywhere else: the rates which approach nearest to it are those deduced from the obervations already referred to, of M. Deparcieux, and those of M. Kersseboom, on the nominees of life annuities in Holland. In order to calculate from this table the chances which a person of any given age has of attaining to any higher age, we have only to divide the number of persons alive at such higher age, given in the column of the table selected to decide the question, by the number of persons alive at the given age, and the fraction resulting is the chance. We have added, by way of supplement to this table, Mr. Finlayson's table (No. VI.) of the rate of mortality among 1000 children born together, according to the decrement of life observed to take place among the nominees in government tontines and life annuities in this country, distinguishing males from females. The rate of mortality which this table exhibits is decidedly less than that given in the Carlisle table; but the lives in the latter are the average of the population, while those in the former are all picked. The nominees in tontines are uniformly chosen among the healthiest individuals; and none but those who consider their lives as good ever buy an annuity. Still, however, the table is very curious; and it sets the superiority of female life in a very striking point of view. Tables VII. and VIII. give the *expectation of life*, according to the mortality observed at Northampton and Carlisle; the former by Dr. Price, and the latter by Mr. Milne. The next table, No. IX., extracted from the *Second Report of the Committee of the House of Commons on Friendly Societies*, gives a comparative view of the results of some of the most celebrated tables of mortality, in relation to the rate of mortality, the expectation of life, the value of an annuity, etc. The coincidence between the results deduced from M. Deparcieux's table and that for Carlisle, is very striking. And to render the information on these subjects laid before the reader as complete as the nature of this work will admit, we have given tables (Nos. X.–XV.) of the value of an annuity of £1 on a singe life, at every age, and at 3, 4, 5, 6, 7 and 8 per cent., according tot he Northampton and Carlisle tables; we have also given tables of the value of an annuity of £1 on 2 equal lives, and two lives differing by five years, at 3, 4, 5, and 6 per cent., according to the same tables. It is but seldom, therefore, that our readers will require to resort to any other work for the means of solving the questions that usually occur in practice with regard to annuities; and there are not many works in which they will find so good a collection of the tables. We subjoin one or two examples of the mode of using the tables of life annuities. Suppose it were required, what ought a person aged 45, to give to secure an annuity of $50 a year for life, interest at 4 per cent., according to the Carlisle table? In Table No. XI., under 4 per cent., and opposite 45, is 14·104, the value of an annuity of $1, which being multiplied by 50 gives $705·20, or the value required. According to the Northampton table, the annuity would only have been worth $614 15. The value of an annuity on two lives of the same age, or on two lives different by five years, may be found in precisely the same way. Some questions in *reversionary* life annuities admit of an equally easy solution. Thus, suppose it is required to find the present value of A's interest in an estate worth $100 a year, falling to him at the death of B, aged 40, interest 4 per cent., according to the Carlisle table? The value of the perpetuity of $100 a year, interest 4 per cent., is $2500; and the value of an annuity of $100 on a person aged 40, interest 4 per cent., is $1507 40, which, deducted from $2500, leaves $992 60, the present value required. A person aged 30 wishes to purchase an annuity of $50 for his wife, aged 25, provided she survives him; what ought he to pay for it, interest at 4 per cent, according to the Carlisle table? The value of an annuity of $1 on a life aged 30 is $16·852; from which subtracting the value of an annuity of $1 on two joint lives of 25 and 30, 14·339, the difference, 2·513 × 50 = 125·650, the sum required. For the solution of the more complex cases of survivorship, which do not often occur in practice, recourse may be had to the directions in Mr. Milne's *Treatise on Annuities*, and other works of that description. To attempt explaining them here would lead us into details quite inconsistent with the object of this work." See *Com. Dict.*, art. INTEREST, by J. R. M'CULLOCH; *Bankers' Mag.*, N. Y., 1853–6; the Interest Tables now in use in New York city, are by Delisser, Six and Seven per Cent. 4to $4; PRICE, 8vo; OATES, 8vo.

Invoice, an account of goods or merchandise sent by merchants to their correspondents at home or abroad, in which the peculiar marks of each package, with other particulars, are set forth.

The revenue laws of the United States require two consular certificates only to invoices of foreign merchandise imported into this country (the owners of which reside abroad)—one authenticating the invoice, the other as to the value in Spanish or American dollars of the currency in which the invoice is made out. Where consular certificates to invoices of goods destined for the United States are required, they are to be granted only by the consular officer within whose consular jurisdiction such goods have been manufactured or prepared for exportation. A practice, it is understood, has extensively prevailed of transmitting invoices to a consular officer at the port of shipment for the usual consular certificates, whose certificate must often necessarily be given without due knowledge of their accuracy or details. Thus, invoices of goods manufactured or prepared for shipment in Switzerland have sometimes heretofore been sworn to at Havre; invoices from Lyons have been verified at Marseilles; and those from the Prussian provinces of the Rhine, at the ports of Holland and Belgium. It is manifest that great abuses must spring from such a practice, the meaning and intent of the law being to require those who have an accurate knowledge of the contents of invoices, and the prices of goods comprising the same, personally to depose to their valuation. All consular officers of the United States are strictly enjoined to conform to this rule, and report to the Treasury Department any violation of it which may come within their knowledge. Under the provisions of the act of Congress of 1st March, 1823, the invoices of all imported goods subject to *ad valorem duty* belonging to persons not residing in the United States, must be sworn to and verified by consular certificates; the oath must be taken by the owner or manufacturer

of the goods, or a member of the firm owning or manufacturing them, and not by a clerk or other subordinate.

In all cases where the oaths to invoices are not taken before the United States' consul, but before some public officer duly authorized to administer oaths in the country where the goods shall have been purchased, the official certificate of such officer must be authenticated by a consular officer of the United States. If there be no consular officer of the United States in the country from which the merchandise shall have been imported, the authentication must be executed by a consul of a nation at the time in amity with the United States, if there be any such residing there. If there be no such consul, the authentication must be made by two respectable merchants, if any such there be, residing at the port from which the merchandise shall have been imported.

It is proper that the oath taken by foreigners should be administered to them, not only in their own language, so that they may fully understand the nature and import of it, but also in the form practiced in their own country, which would probably be considered by them as more solemn and of a more binding nature than if administered in a form to which they have not been accustomed. The attention of consular officers is also directed to the 8th and 11th sections of the act of Congress of the 1st March, 1823, in which it will be seen that a consular certificate is required in all cases of invoices of goods exported by the *manufacturers* thereof, in whole or in *part* for their account, notwithstanding another owner in part may reside in the United States. This provision of the law of 1823, there is reason to believe, has been hitherto overlooked in many instances. If a consular officer ascertains and has reliable evidence of the falsity of an oath, administered either by himself or by a local magistrate whose certificate he has authenticated, he should notify the Treasury Department, which will transmit to him the original invoice and oath, to be used, if deemed expedient, in a prosecution for perjury.

It is to be remarked that, by the act of 3d March, 1801, invoices of all goods imported into the United States *subjected to a duty ad valorem* are required to be "made out in the currency of the place or country from whence the importation shall be made; and shall contain a true statement of the actual cost of such goods in such foreign currency or currencies, without any respect to the value of the coins of the United States, or foreign coins which now are, or shall be, by law, made current within the United States in such foreign place or country." Hence, invoices of free goods are not required to be made out in the currency of the country from whence the goods may be imported; but whenever invoices of such goods may be made out in the currency of the country, and said currency is depreciated, and its value not fixed by any law of the United States, a consular certificate of the value of such currency must, as before intimated, accompany the same.

There is nothing in the law or instructions of the Treasury Department to prohibit invoices of free goods from being made out in the currency of the United States, or that of any other country where its value is fixed by our laws. Invoices of ad valorem or free goods, when made out in a foreign depreciated currency, or a currency the value of which is not fixed by the laws of the United States, whether the importer or owner resides in this country or abroad, must in each case be accompanied by a consular certificate, showing the value of such currency in Spanish or United States silver dollars. Applications are frequently made to the Treasury Department for permission to enter merchandise where the invoices are not accompanied by the needful consular certificates in the cases where such certificates are by law required. That Department has heretofore acted with great leniency and indulgence in such cases, but experience has shown the necessity for a more rigid course in future; and, in all cases where such consular certificates should accompany the invoices, any penalty which may be incurred for want of them will be regularly enforced.

Consuls abroad, by due attention and vigilance, can do much toward checking and preventing the numerous frauds which are undoubtedly practiced upon the revenue, if they will report to the collectors of the customs of the United States all those invoices where, in their opinions, undervaluations have been made, and by otherwise keeping the collectors or this Department generally and fully advised on this subject; and they are earnestly requested to do so, and to consider it one of the most important services which they can render in connection with the faithful collection of the revenue. An erroneous impression exists with many foreign shippers of goods to the United States, that the consuls before whom the oath to invoices is either taken or verified have no power to examine the details of such invoices, but simply to verify the fact of such oath being taken before them, or by an officer in authority known to them as such. This is not the fact; and consular officers are expected before verifying invoices to satisfy themselves of their correctness.

For the purpose of carrying out a particular system of revenue duties, the government of the United States requires that the accuracy of certain invoices should be ascertained and verified; and a reasonable time for consuls to accomplish that object, by an examination of such invoices, can not be justly denied to them. Consular officers are not supposed to be practically acquainted with the market prices or value of all merchandise within their district, or of the precise weights, tares, measures, bounties, etc., included therein; but inquiry and experience will soon enable them to render efficient aid to the revenue officers of the United States, by ascertaining errors or frauds, and promptly informing the Treasury Department, as well as the collector of the port to which the goods may be destined, of every instance where an exporter persists in refusing to correct his invoice, when apprised of its defects, and that it will be subject to revision at the custom houses of the United States.

CERTIFICATE TO INVOICE.

Foreign Owner's oath, where goods, wares, or merchandise, have been actually purchased.

I, ——— ———, do solemnly and truly swear, that the goods, wares, or merchandise described in the invoice now produced and hereunto annexed, were actually purchased for my account, or for account of myself and partners in the said purchase: and that said invoice contains a true and faithful account of the actual cost thereof, and of all charges thereon; and that no discounts, bounties, or drawbacks, are contained in the said invoice but such as have been actually allowed on the same.

———,

Sworn to and subscribed before me, at ———, the — day of ———, A.D., 18—, and of the independence of the United States the ———: and I do further certify, that I am satisfied that ——— ———, who subscribes the foregoing oath, is the person he represents himself to be; that he is a credible person; and that the statements made by him under said oath (or affirmation, as the case may be) are true.

———,

[L. S.] *U. S. Consul.*

CERTIFICATE TO INVOICE.

Foreign manufacturer or owner's oath, in cases where goods, wares, or merchandise, have not been actually purchased.

I, ——— ———, of ———, do solemnly and truly swear, that the invoice now produced, and hereunto annexed, contains a true and faithful account of the goods, wares, or merchandise therein described at their market value at ———, at the time the same were (procured or manufactured, as the case may be), and of all charges thereon; and that the said invoice contains no discounts, bounties, or drawbacks, but such as have been actually allowed.

——— ———,

Sworn and subscribed before me, at ———, the — day of ———, A.D. 18—, and of the independence of the United States of America the ———; and I further certify, that I am satisfied that ——— ———, who subscribes the foregoing

oath, is the person he represents himself to be; that he is a credible person; and that the statements made by him under said oath (or affirmation, as the case may be) are true.

[L. s.] *U. S. Consul.*

Consular Certificate of the value of currency.

I, ——— ———, consul of the United States of America, do hereby certify, that the true value of the currency of the ——— of ———, in which currency the annexed invoice of merchandise is made out, is ——— cents, estimated in American or Spanish silver dollars.

Ionian Islands, the name given to the islands of Corfu, Paxo, Santa Maura, Ithaca, Cephalonia, Zante, Cerigo, and their dependent islets. With the exception of Cerigo, which lies opposite to the south-eastern extremity of the Morea, the rest lie pretty contiguous, along the western coasts of Epirus and Greece; the most northerly point of Corfu being in lat. 39° 48′ 15″ N., and the most southerly point of Zante (Cape Kieri, on which there is a light-house) being in lat. 37° 38′ 35″ N. Kapsali, the port of Cerigo, is in lat. 36° 7′ 30″ N., long. 28° E. The area and population of the different islands may be estimated as follows:

Islands.	Area in sq. miles 15 to a degree.	Population in 1852.
Corfu	10·76	79,581
Cephalonia	16·20	70,870
Zante	5·60	41,992
Santa Maura	4·25	18,960
Ithica and Calamos	3·32	11,264
Cerigo and Cerigotto	4·50	12,886
Paxo and Antipaxo	1·90	5,111
Total	47·12*	240,620

* This is equal to 1001·3 English square miles of 60·15 to the degree.

Soil and Climate.—These are very various. Zante is the most fruitful. It consists principally of an extensive plain, occupied by plantations of currants, and having an air of luxuriant fertility and richness. Its climate is comparatively equal and fine, but it is very subject to earthquakes. Corfu and Cephalonia are more rugged and less fruitful than Zante; and the former, from its vicinity to the snowy mountains of Epirus, and the latter from the Black Mountain (the Mount Ænos of antiquity) in its interior, are exposed in winter to great and sudden variations of temperature; the frost sometimes damaging to a great extent the oranges and vines of these islands and those of Santa Maura. The latter is, in the hot season, exceedingly unhealthy—a consequence of the vapors arising from the marshes and the shallow seas to the north-east. Cerigo is rocky and sterile; it is subject to continued gales, and the current seldom permit its waters to remain unruffled.

These islands have undergone many vicissitudes. Corfu, the ancient Corcyra, was famous in antiquity for its naval power, and for the contest between it and its mother state Corinth, which eventually terminated in the Peloponnesian war. Ithaca, the kingdom of Ulysses; Cephalonia, sometimes called Dulichium, from the name of one of its cities; Zante, or Zacynthus; Santa Maura, known to the ancients by the name of Leucas or Leucadia, celebrated for its promontory, surmounted by a temple of Apollo, whence Sappho precipitated herself into the ocean; and Cerigo, or Cythera, the birth-place of Helen, and sacred to Venus;—have all acquired an immortality of renown.

For upward of 400 years these islands remained subject to Venice, constituting the Venetian Levant. By the treaty of Paris, 5th November, 1815, between England and Russia, it was agreed that the Ionian Islands should regulate their own internal organization, with the approbation of the protecting power, which should be represented by a lord high commissioner; that the merchant flag of the new States should be acknowledged as that of a free and independent State; and that Austria should enjoy equal commercial privileges with Great Britain in its commerce with the republic. This treaty was acceded to by all the representatives of the allied powers, then negotiating at Paris, and by the Grand Sultan and the King of the Two Sicilies. The ports of the islands are Corfu, Cephaloni, Zante, Santa Maura, Ithaca, Cerigo, and Paxo. These are free ports, at which all kinds of merchandise may be stored in designated warehouses, free of any duties or charges, except rent, portage, and other minor expenses, which are regulated by special tariffs. There is no treaty between the United States and the Ionian republic, and the commercial intercourse between the two countries is subject to the various restrictions which apply to non-equalized vessels. The restrictions are higher tonnage duties, light duties, port charges, etc.

The following items will illustrate these discriminations: Charges for clearance, including bill of health, muster-roll, anchorage, and light duties, on an Ionian or equalized vessel of from 250 to 300 tons, $8 10; charges, etc., including as above, for a non-equalized vessel of from 250 to 300 tons, $10 84.

Other restrictions and discriminations exist in favor of equalized flags, especially in the transhipment of merchandise from one port to another, which confer such advantages on vessels coming under this category, as to preclude all competition on the part of those belonging to the other class. Merchandise transhipped, as above, in the former, is exempt from every extra charge; in the latter, three fourths of the original duty is exacted on all merchandise paying specific duties, and five per cent. on such as pay ad valorem duties. These discriminating duties amount, in the aggregate, to about 14 per cent. against non-privileged vessels. There entered, in the year 1851, into all the Ionian ports, 1435 vessels, measuring 169,144 tons; and there cleared 1401 vessels, measuring 164,780 tons; making, in all, 2836 vessels, measuring 333,924 tons.

The flags of these vessels represented 14 different nations, among which the United States is not included. Indeed, it is but seldom that a United States' vessel is found in any of the Ionian ports, nor can we look for any direct trade between the two countries so long as the present restrictions exist. Their removal can be effected by treaty or convention only; and negotiations to this end, under the constitution of the Ionian republic, must originate at London, as all diplomatic questions and conventions between these islands and foreign States must be conducted by the government of the protecting power.

Manufactures, etc.—These islands possess few manufactures properly so termed. The wives of the villani, or peasants, spin and weave a coarse kind of woolen cloth, sufficient in great part for the use of their families. A little soap is made at Corfu and Zante. The latter manufactures a considerable quantity of silk gros-de-Naples and handkerchiefs; the art of dyeing is, however, too little studied, and the establishments are on too small a scale. The peasantry, in general, are lazy, vain, delighting in display, and very superstitious. Those of Zante and Cephalonia are more industrious than the Corfiotes; in the first, particularly, their superior condition is probably to be ascribed, in part at least, to the nobles residing more on their estates in the country, and contributing, by their example, to stimulate industry. In Corfu, the taste for the city life, which prevailed in the time of the Venetian government, still operates to a great degree. The Corfiote proprietor resides but little in his villa; his land is neglected, while he continues in the practice of his forefathers, who preferred watching opportunities at the seat of a corrupt government, to improving their fortunes by the more legitimate means of honorable exertion and attention to their patrimony. In this respect, however, a material change for the better has taken place during the last 20 years.

Imports of Grain, etc.—Great part of the land is

held under short tenures, on the *metayer system*, the tenant paying half the produce to the landlord. Owing to the nature of the soil, and the superior attention given to the culture of olives and currants, the staple products of the islands, most part of the grain and cattle required for their consumption is imported. The hard wheat of Odessa is preferred, and large sums are annually sent to the Black Sea in payment. The Parliament, in March, 1833, repealed the duties on the introduction of corn; and the grain monopoly of Corfu, which had been established in favor of government, in order to provide against the possibility of a general or partial scarcity, was then also suffered to expire. These two sources of revenue, while they existed, did not probably produce less than £20,000 annually. They are similarly dependent upon Greece and Turkey for supplies of butcher's meat; a small number only of sheep and goats being bred in the islands. Oxen, whether for agriculture or the slaughter-house, are principally brought from Turkey. The beeves eaten by the troops are six weeks or two months walking down from the Danube, and the provinces that skirt it, to the shores of Epirus, where they remain in pasture until fit for the table.

Exports.—The staple exports from these islands are oil, currants, wine, soap, salt, and Valonia. The first is produced in great abundance in Corfu and Paxo, and in a less quantity in Zante, Santa Maura, and Cephalonia. Corfu has, in fact, the appearance of a continuous olive wood; a consequence, partly, of the extraordinary encouragement formerly given to the culture of the plant by the Venetians. Although there is a harvest every year, the great crop is properly biennial; the tree generally reposing for a year after its effort. (In France and Piedmont the period of inactivity is two and three years.) During five or six months, from October till April, the country, particularly in Corfu, presents an animated appearance, persons of all ages being busily employed in picking up the fruit. The average price may be abont £1 11s. per barrel. Under the old Venetian system, the oil could only be carried to Trieste. It is charged with an *ad valorem* duty of 18 per cent., payable on the export. The quality might be much improved by a little more care in the manufacture, the trees being generally finer than in any other country. *Currants*, originally introduced from the Morea, are grown in Zante, Cephalonia, and Ithaca, but principally in the first. The plant is a vine of small size and delicate nature, the cultivation of which requires much care. Six or seven years elapse after a plantation has been made before it yields a crop. In the beginning of October, the earth abont the roots of the plants is loosened, and gathered up in small heaps, away from the vine, which is pruned in March; after which the ground is again laid down smooth around; the blight called the "brina," and rainy weather in harvest produce great mischief. The currants are gathered toward September, and after being carefully picked, are thrown singly upon a stone floor, exposed to the sun in the open air. The drying process may occupy a fortnight or longer, if the weather be not favorable. A heavy shower or thunder-storm (no unfrequent occurrence at that season), not only interrupts it, but sometimes causes fermentation. The fruit is then only fit to be given to animals. Should it escape these risks, it is deposited in magazines called "*scraglie*," until a purchaser casts up.

The exports of these islands are raisins, olives, olive-oil, honey, soap, silk, and wine; and the imports are coffee, sugar, wines, brandy, grain, cured fish, manufactures of wood, wool, cotton, iron, etc. Currants and raisins constitute the heaviest articles of export from these islands, the annual produce of currants amounting to some 12,000,000 pounds; but of late years the producers have had to contend with diseases called "the blight," for which sulphur has proved to be the only efficient remedy. Notwithstanding the partial failure of the crops from this cause, for four consecutive years, the exports of currants in 1855 show an active and remunerating trade. The following summary for this year will give some idea of the extent of the currant trade of the republic:

	Exported to		Distilled.	Existing in stores.	Total.
	England.	Trieste.			
	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.
Zante	701,981	85,867	1,002,702	....	1,790,000
Cephalonia	4,868,400	425,486	576,113	120,000	5,999,999
Ithaca	....	46,000	4,000	....	50,000
Santa Maura	....	....	....	....	10,000
Total	5,570,381	566,858	1,582,815	120,000	7,849,999

Salt may be obtained in considerable quantities in Corfu, Zante, and Santa Maura, for exportation; the latter island alone produced it until the late act of Parliament, which provided that government should let the salt-pans in all the islands to those bidders who should offer, by sealed tenders, to supply it at the lowest rate to the consumer, paying at the same time the highest price to government. No export duty is charged upon it. These statements show that heavy duties are levied upon the exportation of the staple products of the islands—an objectionable system, and one which, if it is to be excused at all, can only be so by the peculiar circumstances under which they are placed. There is no land-tax or impost on property in the Ionian Islands, such as exists in many other rude countries; and, supposing it were desirable to introduce such a tax, the complicated state of property in them, the feudal tenures under which it is held, and the variety of usages with respect to it, oppose all but invincible obstacles to its imposition on fair and equal principles. At the same time, too, a large amount of revenue is required to meet the expenses of the general and local governments, to maintain an efficient police, and to prevent smuggling and piracy. However, we can not help thinking that some very material retrenchments might be made from the expenditure; and it is to this source, more, perhaps, than to any other, that the inhabitants must look for any real or effectual relief from their burdens.

The Duties on Exports from the Ionian Islands are regulated by acts dated 8th June, 1835, 25th April, 1837, and 29th May, 1847. Oil and currants pay 18 per cent. *ad valorem*. Wine (excepting that of the Cephalonia Wine Company), 6 per cent. *ad valorem*. Soap, 8 per cent. *ad valorem*. Valonia, 6 per cent. *ad valorem*. All other articles free. N. B.—Oil shipped in vessels under Ionian colors for the purpose of being conveyed from one island to another of the States must pay only 7 per cent. *ad valorem*.

ACCOUNT OF THE REVENUE OF THE IONIAN ISLANDS IN 1851 AND 1852, SPECIFYING THE DIFFERENT ITEMS, AND THE AMOUNT OF EACH.

Duties.	Revenue in 1851.	Revenue in 1851.
Customs	£30,040	£22,113*
Export duty—		
On olive oil	20,735	11,106*
" currants	84,491	13,618*
" Island wines	454	670
Import duty—		
On foreign wines and spirits	1,872	1,120
" tobacco	2,909	2,583
" grain	23,504	22,141
Stamp duties	12,431	10,360
Sale of gunpowder (monopoly)	725	379
Receipts for tariff dues—		
Health Office	4,749	4,216
Post Office	2,205	2,048
Executive Police	2,683	2,251
Judicial	1,076	571
Free port warehouse rents	1,208	1,223
Mortgage and registration dues	507	398
Printing office receipts	343	263
Freights of gov't steam packets	2,250	1,823
Receipts for public instruction	1,599	1,581
Miscellaneous	311	538
Total	£144,086	£99,031

* The diminution of the duties was wholly owing to the failure in the crops of oil and currants.

ACCOUNT OF THE EXPENDITURE OF THE IONIAN ISLANDS IN 1851 AND 1852, SPECIFYING THE DIFFERENT ITEMS, AND THE AMOUNT OF EACH.

Heads of expenditure.	1851.	1852.
Military protection (paid by Eng.)	£25,000	£25,000
Lord H. Commissioner's civil list.	14,448	18,000
Legislative Assembly	311	4,720
Civil establishment	42,618	40,460
Judicial establishment	15,620	15,866
Education	11,804	11,499
Rents of public offices	1,858	1,662
Public works	2,381	722
Packet service, coals, repairs, etc.	4,580	2,643
Collection of revenue, including paper for stamps	1,889	432
Health office, lazarettos and light-houses	1,822	1,830
Post offices	337	338
Executive police	1,460	1,949
Courts of justice	1,858	2,009
Contingent expenditure of general and local governments	26,028	14,434
Total	£145,596	£136,119

ACCOUNT OF THE QUANTITIES AND VALUES OF THE PRINCIPAL ARTICLES EXPORTED FROM THE IONIAN ISLANDS IN 1852.

Articles exported.	Quantities.	Value.
Olive oil.....bar. of 16 imp. gal	27,178	£61,652
Currants.....lbs	7,883,908*	75,014
Wine.....barrels	89,062	9,512
Spirits..... "	720	554
Salt.....bushels	109,797	1,145
Hides.....number	6,087	1,788
Casks of currants..... "	8,779	2,882
Barrels for oil.....tns. butts	6,240	982
Soap.....lbs.	1,291,687	16,693
All other articles	13,977	8,963
Foreign manufactures	....	8,717
Total	....	182,872
Merchandise in transit	.. .	223,454

* A very bad season. In favorable years the exports amount to 15,000,000 or 16,000,000 lbs.

ACCOUNT OF THE QUANTITIES AND VALUES OF THE VARIOUS ARTICLES IMPORTED INTO THE IONIAN ISLANDS IN 1852.

Articles.	Quantities.	Value.
Produce, sugar.....lbs.	1,885,807	£30,738
Coffee..... "	695,983	15,617
Drugs, gums, etc.....£	....	10,286
Manufactures.....£	....	114,468
Raw silk.....lbs.	95	38
Raw cotton..... "	50,555	1,256
Wool..... "	23,824	280
Hemp and flax..... "	52,583	1,143
Staves for large casks.....No	398,572	5,795
Hoops " " ..... "	346,070	
Iron.....lbs.	296,880	2,410
Timber.....£	....	17,251
Firewood.....pass.	9,541	3,703
Wheat.....kilogs.	928,332	201,646
Indian corn..... "	167,928	28,189
Barley and oats..... "	78,558	6,751
Beans and other pulse... "	18,644	3,248
Potatoes.....lbs.	1,181,084	4,337
Rice..... "	891,727	9,219
Maccaroni..... "	271,544	2,543
Flour..... "	372,817	3,252
Biscuits..... "	81,528	818
Cheese..... "	474,452	5,754
Butter..... "	71,767	2,885
Salt meat..... "	28,745	823
Stock fish and baccala..... "	1,088,519	9,192
Bottarga and Caviare..... "	59,018	4,230
Sardinias and anchovies..... "	1,244,826	16,964
Onions and garlic.....mil.	9,614	2,559
Dried fruits.....£	....	4,862
Poultry.....No.	17,197	952
Wines, foreign.....barrels	682	4,299
Spirits..... "	1,154	3,200
Horned cattle.....No.	9,966	32,741
Horses, mules, and asses.... "	2,028	2,678
Sheep, goats, and pigs..... "	816	2,071
Tobacco.....lbs.	89,142	5,394
Rye.....kilogs.	290,821	6,328
All other articles.....£	....	12,873
Total	....	585,283
Value of merchandise in transit	....	198,128

Ports.—The principal ports in the Ionian republic are Cerfu and Zante, in the islands of the same names, and Argostoli in Cephalonia. The city and port of Corfu lie on the east side of the island, on the canal or channel between it and the opposite continent, which is here about five miles wide. The citadel, which projects into the sea, is furnished with a light-house, 240 feet high; the latter being in lat. 39° 37′ N., long. 19° 56′ E. The town is but indifferently built. Population about 18,000, exclusive of the military. The fortifications are very strong, both toward the sea and the land. The canal has deep water throughout; its navigation, which is a little difficult, has been much facilitated by the erection of a light-house on the rock of Tignoso in the northern entrance, where the channel is less than a mile in width; and by the mooring of a floating light off Point Leschine, in the southern entrance. Ships anchor between the small but well-fortified island of Vido and the city, in from 12 to 17 fathoms water. The port, or rather gulf, of Argostoli in Cephalonia, lies on the south-west side of the island. Cape Aji, forming its south-western extremity, is in lat. 38° 8′ 40″ N., long. 20° 28′ 30″ E. Cape San Nicolo, forming the other extremity, is about 4¼ miles from Cape Aji; and between them, within about 1½ mile of the latter, is the small islet of Guardiani, on which is a light-house. From this island the gulf stretches N. ¾ W., from seven to eight miles inland. The town of Argostoli lies on the west side of a haven on the east side of the gulf formed by Point Statura. The situation is low and rather unhealthy. Population about 5000. Its appearance and police, particularly the latter, have been much improved since its occupation by the English. There is deep water and good anchorage ground in most parts of the gulf. The best entrance is between Cape San Nicolo and Guardiani, keeping rather more than a mile to the eastward of the latter, on account of a reef that extends N. E. and S. W. from it nearly that distance. The port and city of Zante are situated on the eastern side of the island, in lat. 37° 27 N., long. 20° 54′ 42″ E. The city, the largest in the Ionian Islands, extends along the shore for nearly 1½ mile, but it is nowhere above 200 yards in breadth, except where it ascends the hill on which the citadel is erected. The style of building is chiefly Italian; and the interior of the city displays every where great neatness, and even a certain degree of magnificence. Population estimated by Dr. Burgess at about 20,000. It has a mole or jetty of considerable utility, at the extremity of which a light-house is erected; and a lazaretto, situated a little to the south-west. The harbor is capacious. Ships anchor opposite the town at from 500 to 1000 yards' distance, in from 12 to 15 fathoms, availing themselves of the protection of the mole when the wind is from the north-east. When the troops took possession of Zante, in 1810, the fortifications were fuund to be in very bad repair; but immense sums have since been expended upon their improvement and extension.

In 1853 566,817 tons of shipping entered the ports of the Ionian Islands, of which 27,916 were English. The others were Ionian, Greek, Turkish, etc.

Money.—Accounts are kept in sterling money, or in Spanish dollars and oboli, 100 oboli being = 1 doll. = 4s. 4d.; a doubloon = 1 dollar.—TATE'S *Cambist.*

Weights.—English weights and measures are sometimes made use of, though with Italian denominations; but the following are most generally used: The pound *peso grosso*, or great weight of 12 oz. = 7384 grains Troy; 94·8 lbs. = 100 lbs. avoirdupois. The pound *peso sottile*, or small weight used for precious metals and drugs, is 1-3d lighter than the foregoing; 12 oz. peso sottile corresponding to 8 oz. peso grosso.

The oke, used in the southern islands, weighs about 18,900 grains Troy, or 27·10 lbs. avourdupois. The Levant cantar, or quintal, should contain 44 okes. The migliajo (1000 lbs.), for currants in Zante, is 1 per cent. lighter than for other articles.

Measures of Length.—The Venetian foot is 12 onu6 = 13¼ inches English. Passo = 5 Venetian feet. Braccio, for cloths, etc., = 27 3·16 inches English.

Do. for silks, = 25 3·18. Land is measured by the *misura* or 1·8 of a moggio, or bacile, 400 square *passi* being 1 misura, or bacile, about 3·10 of an acre English. Vineyards are measured by the *zappade*; 8 zappade (a computed day's work) being 1 misura. Firewood is measured by the square passo, usually, however, only 2 feet thick, this depending on the quality of the wood. Stone is measured by the passo cubo.

Measures of Capacity.—*Corn.*—Corfu and Paxo: moggio of 8 misure, about 5 Winchester bushels. Cephalonia: bacile should contain 80 lbs. peso grosso, best quality wheat. Santa Maura: cado of 8 crivelli, 4 = 3 mog.; 1 cado = 3¾ bushels English. Ithaca: 5 bacile = 1 moggio. Cerigo: chiló, the measure of Constantinople, = 1 bushel English.

Wine.—Corfu and Paxo; 32 quartucci = 1 jar, and 4 jars = 1 barrel = 18 English wine gallons. Cephalonia and Ithaca: 2 quartucci = 1 boccale; 4 boccali = 1 secchio; 6 secchio = 1 barrel = 18 English gallons. Zante: 13 1·8 quartucci = 1 lire; 40 quartucci = 1 jar; 3 jars = 1 barrel = 17 5·8 English wine gallons. Santa Maura: 32 quartucci = 1 stamno; 6 stamni = 1 barrel = 18 English wine gallons. Cerigo: 2 agosten = 1 boccia; 30 boccie = 1 barrel = 18 English wine gallons.

Oil.—Corfu and Paxo: 4 quartucci = 1 miltro; 6 miltri = 1 jar; 4 jars = 2 barrel = 18 English wine gallons. Cephalonia: 9 pagliazzi = 1 barrel = 18 English wine gallons. Zante: 9 lire, or 3 jars of 46 quartucci each = 1 barrel 5·8 English wine gallons. Santa Maura: 7 stamni = 1 barrel = 18 English wine gallons. Ithaca: 13 pagliazzi = 1 barrel = 18 English wine gallons. Cerigo: 24 bozze = 1 barrel = 14 0·5 English wine gallons. *Salt.*—Centinajo, about 4000 lbs. Venetian peso grosso. *Lime.*—Corfu, measure of 4 English cubic feet.

In compiling this article, we have consulted, besides the works referred to above, the *Voyage Historique Pittoresque*, etc., by SAINT SAUVEUR—a diffuse but valuable work. The account of Zante, in the last volume (tome iii., pp. 101-278), is particularly good. We have also looked into the *Voyage en Grèce* of SCHOPANI, 3 tomes, Paris, 1801; the *Archives du Commerce*; the *Papers laid before the British Finance Committee*, etc. See *Westm. Rev.*, xxxvii., 413; *Monthly Rev.*, lxxxiii., 225, cli., 138; *Quar. Rev.*, xxix., 86; *Chris. Rev.*, xiv., 625; *Com. Rel. U. S.*, vol. i., 457, vol. ii., 171.

Iowa, one of the United States of North America, lies between north lat. 40° 40′ and 43° 30′, and west long. 90° 12′ and 96° 53′. It is bounded north by Minnesota Territory, east by the Mississippi River, which separates it from the States of Illinois and Wisconsin, south by Missouri, and west by the Missouri and the great Sioux Rivers, the former of which separates it from the Indian Territory, and the later from Minnesota. Greatest length from east to west, 307 miles; greatest breadth, 196 miles; area, 50,914 square miles.

The surface of Iowa is somewhat elevated and generally undulating. It has no mountains, nor even hills, of any great height. Table Mound, a conical elevation with a flat summit, three or four miles from Dubuque, is perhaps 500 feet high. On the borders of the rivers there are frequent "bluffs" which are generally from 40 to 180 feet high. The highest ground in the State is a plateau in the north-west, called *Coteau des Prairies*, which enters it from Minnesota. The southern part of the State abounds with grassy lawns and verdant plains, intersected by numerous rivers, the chief of which are the Des Moines, the Skunk, the Iowa, and the Red Cedar (a branch of Iowa) Rivers which flow in a south-east direction into the Mississippi. The banks of almost all of these rivers are skirted with belts of wood. The distinguishing feature, however, of Iowa is its unique and admirably diversified prairies, sometimes spreading out into vast plains. The entire State is named "a rolling prairie" by the settlers, from the resemblance its surface bears to the rolling swell of the ocean. From the absence of wood, the scenery becomes wearisome and tame.

The soil of Iowa is in general fertile. Near the confines of the Coteau des Prairies the country is hilly and desolate; the high lands being covered with gravel and port but a scanty vegetation, while the low grounds are marshy. It appears, however, from the surveys which have been made, that no State in the Union has a smaller proportion of inferior land. Dr. Owen, in his geological report, remarks that "the soil of Iowa is generally excellent, and of easy cultivation. The valleys—especially of the Red Cedar, Iowa, and Des Moines Rivers—present a body of arable land, which, taken as a whole, for richness in organic elements, for amount of saline matter, and due admixture of earthy silicates, affords a combination which belongs only to the most fertile upland plains." The climate is generally more healthful than most of the new States. The openness of the country renders it less liable than is usual to the influence of malaria; the air on the upland prairies is buoyant, and rendered free from all pernicious influences by the refreshing breezes that blow periodically over them. The rapid flow of its rivers also carries off in the valleys those miasmatic influences which otherwise tend to the production of disease. The winter is occasionally severe, but the severity is not so great as is usual in the same latitudes. The summer, also, is less oppressively hot.

Iowa is strictly an agricultural country. Its fine prairies and rich natural pastures afford peculiar facilities for rearing cattle and sheep. Wool-growing has accordingly become one of the staple employments of the settlers. The raising of hogs is an occupation equally common and profitable. The value of live stock in 1850 was estimated at $3,660,000, and slaughtered animals at $810,000. The amount of wool produced was 373,898 pounds. Considerable progress has recently been made in agriculture, as shown by the increase of various productions of the State. For instance, in 1840 there were only 154,693 bushels of wheat grown; in 1850, there were 1,540,581; in 1840, 216,385 bushels oats; in 1850, 1,524,345; in 1840, 1,406,241 bushels maize; in 1850, 8,656,799. All the other productions common to similar latitudes are grown in Iowa, and have increased in an equal or greater proportion.

Manufactures have, until recently made little progress in the State. Having only existed for little more than 10 years as an independent State, time has not been afforded to develop its manufacturing resources. Possessing within itself abundance of the two grand elements for manufacturers—coal and water power—there can be no doubt that Iowa will yet be distinguished as a manufacturing State. In 1850 the number of manufacturing establishments, producing each to the value of $500 annually and upward, was 482. Of these there were three for the manufacture of cast iron, 14 tanneries, and one woolen factory. The others are chiefly employed in the manufacture of articles for ordinary and domestic purposes and agricultural implements. The home-made manufactures in the year ending 1st June 1850, were valued at $220,000.

The minerals of Iowa are not of great variety. The vast bituminous coal-field of the State occupies most of its central and southern portions. For upwards of 200 miles the River Des Moines passes through this great deposit, the area of which has been estimated at about 20,000 square miles embracing a country equal in extent to more than one half of the State of Indiana. The beds of coal, which are 100 feet in thickness, lie near the surface, and may be worked at small expense. The lead mines of Iowa are a continuation of those of Illinois and Wisconsin. The workings are

old and have been very productive. They occur in the north-east part of the State, Dubuque, one of the oldest settlements in North America, being the chief town of the lead-mining district. Dr. Owen, in his *Geological Survey*, remarks that the lead-mines of Iowa produce as much of that metal as the whole of Europe, except Great Britain, and that their capabilities are unbounded. Zinc is found chiefly in the form of electric calamine, in cellular masses in connection with the lead. This mineral occurs in some "diggings" also, in a state of carbonate, and in others, as a sulphuret. Copper is found in the same localities as zinc. It has recently been discovered in Cedar county in considerable quantities. Iron-ore is abundantly distributed, but as yet, only a small quantity of it has been converted into metal. In the geological survey of the State above referred to, it is affirmed that its resources and capabilities are such that 10,000 laborers and miners might be profitably employed within its boundaries. Iowa has no direct foreign commerce, but its trade with the ports of the Atlantic and the Mexican Gulf is very considerable, and rapidly increasing. The exports consist of agricultural and mining products. The home traffic of this State is also very considerable. The facilities which it possesses, both for internal trade and foreign commerce are very abundant, and in a short time will be greatly increased. A railroad of 180 miles in length has been projected between Dubuque, the capital of the lead-mining district, and Keokuk, the chief port of the State for foreign trade. Keokuk, Davenport, Lyons, and Dubuque will also shortly be connected by railroads with the interior. Besides these, which will radiate through the State in various directions, the grand trunk line is proposed to be carried from this city westward to Council Bluffs on the Missouri, and will form a part of the great Pacific line which is to terminate at San Francisco, in California. Through Iowa will also pass a branch of the great chain of north and south railroads connecting St. Louis with the extreme settlements of Minnesota Territory. When these are completed, both the home and foreign commerce of the State will be indefinitely increased. Congress has given 1,300,000 acres for the improvement of the Des Moines River, as far as Des Moines City—to be made navigable for large steamboats. In July, 1856, there were 108 miles of railroad finished, and 1110 proposed, for which Congress, in May, 1856, appropriated 4,320,000 acres. The valley of the Des Moines River contains at present half the population, as well as half the agricultural wealth of the State, and its prosperity may for some time depend as much upon the improvement of navigation on this river, as upon the execution of these projected railroads. The Des Moines rises in the Coteau des Prairies, in the south-west of Minnesota, and flowing through the State in general in a south south-east direction, divides it into two nearly equal sections, and after a course of 400 miles, falls into the Mississippi at the south-east extremity of the State, about four miles below Keokuk. Iowa has many other interior rivers which are navigable for various—some of them for considerable—distances. The Skunk is more than 200 miles in length, and flows through a fertile country. It pursues a course of 150 miles in a south-east direction nearly parallel to Des Moines. The Iowa, from which the State takes its name, has, in general, a south south-east direction, and after a course of upwards of 300 miles, discharges itself in the Mississippi by two mouths, forming a delta, the sides of which are about six miles long. It is navigable by steamboats at all seasons, to Iowa City, 80 miles from its mouth, and for boats of light draught much farther up. The Red Cedar (a branch of the Iowa), is navigable for 60 miles. The Wapsipinicon, the Makoquete, Turkey, and Upper Iowa Rivers have courses varying in length from 100 to 200 miles, and are navigable for distances of 20 to 60 miles. They flow in an east or south-east direction into the Mississippi. The Great Sioux, an important tributary of the Missouri, forms the north-west boundary of the State; its length is estimated at 300 miles. The tributaries of the Missouri in this State are of minor importance. The Mississippi borders the State for its whole length on the east, and is navigable in time of high water for steamboats, to the mouth of the St. Peters, in Minnesota.

Ipecacuanha (Fr. *Ipecacuanha*; Ger. *Americanische brechwurzel*; It. *Ipecoacanna*; Port. *Cipo de camaras*, *Ipecacuanha*; Sp. *Ipecacuana*, *Raiz de oro*), the root of a perennial plant (*Cephaëlis ipecacuanha*), growing in Brazil and other parts of South America. It is from its color usually denominated *white*, *gray*, or *ash-colored*, and *brown*. Little of the first variety is found in the shops. The gray and brown varieties are brought to this country in bales from Rio Janeiro. Both are in short, wrinkled, variously bent, and contorted pieces, which break with a resinous fracture. The gray is about the thickness of a small quill, full of knots and deep circular fissures, that nearly reach down to a white, woody, vascular cord that runs through the heart of each piece; the external part is compact, brittle, and looks smooth; the brown is smaller, more wrinkled, of a blackish-brown color on the outside, and whitish within: the white is woody, and has no wrinkles. The entire root is inodorous; but the powder has a faint disagreeable odor. The taste is bitter, sub-acrid, and extremely nauseous. In choosing ipecacuanha, the larger roots, which are compact and break with a resinous fracture, having a whitish gray, somewhat semi-transparent appearance in the outside cortical part, with a pale straw-colored medullary fibre, are to be preferred. When pounded, ipecacuanha forms the mildest and safest emetic in the whole materia medica. Though probably employed in America from time immemorial, it was not introduced into Europe till the time of Louis XIV., when one Grenier, a French merchant, brought 150 pounds of it from Spain, with which trials were made at the Hôtel Dieu. Helvetius first made known its use in dysentery, for which Louis XIV. munificently rewarded him by a douceur of 25,000 francs.—THOMSON'S *Dispensatory*; THOMSON'S *Chemistry*.

Ireland, one of the largest of the European islands, is situated to the west of Great Britain, from which it is separated by a narrow channel called the Irish Sea and St. George's Channel on the east, and is bounded on its other sides by the Atlantic Ocean, through which it can maintain a direct communication with the continents of Europe, Africa, and America. The advantageous position, the fertility of the soil, and the salubrity of the climate, have conferred upon Ireland commercial facilities which are capable of being greatly increased. How far these natural advantages have been made available toward the internal improvement of the island itself, and the general benefit of the empire of which it forms an important part, may be best ascertained from the following details of its history and statistics.

Ireland is rhomboidal in shape, and placed at the eastern extremity of the Atlantic Ocean, which washes its northern, western, and southern shores, while its eastern coast is separated from the adjacent island of Great Britain by the Northern Channel, which at one point is only 13½ miles wide, the Irish Sea, about 130 miles in width, and St. George's Channel, which is 69 miles wide between Dublin and Holyhead, and somewhat less at its southern extremity. Its geographical position is between N. lat. 51° 26′ and 55° 21′, and W. long. 5° 20′ and 10° 26′, comprising, therefore, 3° 55′ of lat., and 5° 6′ of long.—the degrees of latitude being the same as those under which are situated the dissimilar climates of Berlin, Hamburg, Rotterdam, Leipzig, Warsaw, part of Hudson's Bay, the Straits of Belleisle, and Petropaulowski, in Kamts-

chatka, which latter is nearly under the same parallel of latitude as Wicklow. The largest diagonal line that can be drawn within the island, viz., from Tor Head, in Antrim, to Mizen Head, in Cork, measures 302 miles; and the shorter, from Carnsore, in Wexford, to Erris Head, in Mayo, is 210 miles in length. The breadth of the country, from Dundalk to Ballyshannon is 85 miles; from Dublin to the head of Galway Bay, 110 miles; and the indentations of the coast by harbors, arms of the sea, and mouths of rivers are so numerous, that scarcely an acre of land in the country is more than 50 miles from the sea or good navigation. The territorial divisions, and the arcable extent of Ireland, which, next to Great Britain, is the largest island in Europe, appear in the following table:

Territorial Divisions.			ARCABLE EXTENT, According to the Ordnance Survey and Census Report.						Annual amount of Griffith's Valuation.
Provinces.	No. of Baronies.	No. of Parishes.	Of arable land.	Of uncultivated land.	Of plantations.	Of towns and villages.	Of water.	Total area.	
Leinster.....	124	1,008	3,[illegible]1,188	731,886	115,044	15,569	51,624	4,876,311	£4,305,418
Munster.....	75	324	3,[illegible]14,618	1,898,477	130,415	14,698	151,881	6,004,579	3,247,177
Ulster.....	70	391	3,407,589	1,764,870	79,783	8,790	214,956	5,475,488	2,585,265
Connaught.....	47	809	2,220,960	1,906,002	48,840	3,877	219,864	4,392,043	1,859,720
Total.....	316	2,532	18,464,300	6,295,785	374,482	42,929	680,825	20,808,261	11,489,575

Several coal-fields exist in Ireland, resting on a limestone basis. In Ulster, the district of Coal Island, in the county of Tyrone, produces coal of good quality, extensively used in the neighborhood; the small coal-field at Ballycastle in Antrim, is of no economical importance. The province of Connaught affords beds of coal in Leitrim, Roscommon, and Sligo, but rarely exceeding three or four inches in thickness. The Munster coal-fields are in the counties of Cork, Kerry, and Limerick. The chief coal-district, however, is that of Leinster, in Carlow, Kilkenny, and the Queen's County. This coal, as well as that of the Munster district, is anthracitous; that of Connaght is bituminous. The native coal is only used in the districts where it is raised, and neither the quantity nor the quality has been found such as to interfere with the importation of coal from Great Britain, which probably exceeds 1,000,000 of tons annually.

More notable in Ireland are the unstratified igneous rocks, of which many varieties are found. Trap-rocks exist in various parts of the country, but more especially in Antrim, where they are found in great variety. The basaltic columns of Fairhead and the Giant's Causeway form one of the most interesting geological districts in the British empire. The trap-rocks often repose on the indurated chalk of Antrim, especially in Rathlin Island and at Cushendole. At the latter place beds of trap and the chalk alternate. Of quartz rock, the chief development in Ireland is in Mayo and Donegal; it appears, also, in the peninsula of Howth and Dublin, the summits of the Sugar-Loaf Mountains, and Bray Head, in Wicklow, and in the district of Forth, in Wexford. No tertiary formation has been discovered in Ireland, except the clays containing lignite or wood-coal on the southern shore of Lough Neagh.

The elevation of the surface of Ireland is stated in the following table from the Land Tenure Commissioners' map:

	Square miles.
Between sea-level and 250 feet in height....	12,242½
" 250 and 500 feet.....	11,737½
" 500 " 1000 "	5,797½
" 1000 " 2000 "	1,589½
Above 2000 feet in height.....	82½
Total	32,509½

The highest peaks in the chief mountain groups are:

	Feet.
Carntual, M'Gillicaddy's Reeks, Co. Kerry....	3,414
Lugnaquilla, Wicklow.....	3,039
Slieve Donard, Mourne Mountains, Co. Down.	2,796
Mairea, Co. Mayo.....	2,688
Comeragh, Co. Waterford.....	2,597
Errigal, Co. Donegal.....	2,462
Trostan, Co. Antrim.....	1,810

If the possession of numerous fine bays and harbors made a country great as a commercial and maritime power, Ireland would be second to none in Europe. Pre-eminent even in Ireland is the magnificent harbor of Cork, securely land-locked, protected by strong batteries, and used as the only naval station on the Irish coast. Baltimore Harbor, Skull, Cape Clear, Crookhaven, Dunmanus and Bantry Bay, are all of sufficient depth and capacity for large vessels. On the western coast are Berehaven, Kenmare River, Valentia, Ventry, Smerwick, Brandon Bay, the estuary of the Shannon, Galway Bay, Roundstone Bay, Ardbear or Clifden, Ballynakill and Killery Harbors, Clew, Blackrod, and Killala Bays, with many others of less importance. On the northern coast are Milroy Harbor, and the fine gulfs of Lough Swilly and Lough Foyle. The eastern coast has been less favored by nature, and furnishes only one bay, with sufficient depth of water for the largest vessels, that of Strangford. The Bay of Dublin, which is much exposed, contains the fine artificial Harbor of Kingstown. Belfast, Newry, Drogheda, Wicklow, Arklow, and Wexford, have all been converted into ports, but are naturally deficient in the requisites for good harbors. Between Wexford and Cork is the fine Estuary of Waterford, formed by the confluence of the Rivers Suir, Nore, and Barrow. Altogether, Ireland possesses 14 harbors for the largest ships, 17 for frigates, from 30 to 40 for merchant vessels, with many good summer roadsteads, and an infinity of small harbors for fishing-boats. The Islands off the coast of Ireland are numerous, but generally of small size; the largest are Rathlin and Tory in the north; Achill, Clare, the South Arran Islands, and Valentia, in the west; and Whiddy and Cape Clear in the south.

Lakes.—The lakes in Ireland are numerous. Lough Neagh, in Ulster, is the largest inland lake in the United Kingdom, and is only exceeded in Europe by Lake Ladoga in Russia, Lake Vener in Sweden, and the Lake of Geneva. According to the Ordnance Survey it covers 98,255 statute acres. The River Bann, passing through it, affords the means of lowering its surface, which is 48 feet above the sea at low water; but as its deepest part is beneath the level of low water, total drainage would be impracticable. Tradition states that it was once dry land, and that the tops of buildings may at times be seen in it—a legend which has been made use of by Moore in one of his melodies. Lough Neagh contains but one islet, Ram Island, remarkable only for a round tower, and as contributing to break the sameness of the surface of the lake, which, being surrounded by shores almost as level as itself, and generally bare of wood, has little or none of the picturesque beauty which renders Lough Erne and Killarney so delightful. Its vicinity to the five counties of Ulster, Antrim, Down, Armagh, Tyrone, and Londonderry, each of which its waters touch, presents great advantages for internal trade by inland navigation; steam vessels have been placed upon the lake, and, in conjunction with Coal Island, Newry, Ulster, and Lagan Canals, Lough Neagh, with its 100 miles of coast, promises to increase in importance as a centre of internal traffic. Lough Erne, the next in size, lies wholly within the county of Fermanagh. Its total length is upward of 40 miles, but its greatest breadth is not more than 8. Strictly speaking, it consists of two lakes, about 5 miles apart; the more inland measuring about 14 miles in length, and that nearer the

sea, 25. They are connected with each other by a fine river flowing from the upper or southern, into the lower or northern lake. On the island formed by the division of this river into two branches, the chief part of the town of Enniskillen is built. The upper lake covers 9278 statute acres, and contains about 90 islands; the lower and larger lake contains nearly 28,000 statute acres and numerous islets. Its coasts are studded with numerous seats and villas of much beauty. Lough Corrib and Lough Mask, in the west of Connaught, are separated from each other by an isthmus not more than 3 miles broad. The former of these lakes covers an area of 43,484 acres, and the latter, 22,219. It discharges its waters into Galway Bay by a short but broad and rapid river, which skirts the town of Galway. Its level is but 14 feet above that of the sea, and works have long been in progress to connect the navigation of the bay with [illegible] of the two great lakes above it. Means of connecting them by water communication has not yet been effected. Further north, and about 3 miles from Ballina, is the narrow lake of Lough Conn, 12 miles long. The lakes of Killarney, in Kerry, have long been celebrated for their picturesque scenery. They are small as compared with the larger lakes of Ireland; the lower lake covers 5001 acres, the middle lake 680 acres, and the upper lake only 430 acres. Lough Derg, in the south of Donegal, is small, but of great celebrity from an islet in it, called St. Patrick's Purgatory, which has been resorted to from time immemorial as a place of penance by pilgrims of the Roman Catholic persuasion. This lake is not to be confounded with the great Lough Dearg lying on the course of the Shannon, which contains 29,570 acres. Lough Gill, in Sligo, Lough Shellin to the north of Meath, and Lough Oughter, in Cavan, are also worthy of notice for their scenic beauties. There are many other lakes of small size in most parts of Ireland, but chiefly in the counties of Cavan, Westmeath, and Longford.

Ireland contains not only the largest lake, but also the largest river in the United Kingdom—the Shannon, which, rising in the mountains on the confines of Fermanagh and Leitrim, flows through Lough Allen, and thence in a south-western direction, separating Connaught from Leinster, till, arriving at Limerick, it turns westward, and discharges itself into the Atlantic, through a fine estuary, which, at its entrance between the Capes of Loophead and Kerryhead, is 8 miles wide. It is navigable for large vessels to Limerick, and for vessels of smaller tonnage to within 5 miles of its source in Lough Allen. Its centre length measures 240 miles, and in consequence of the small amount of its fall, which does not exceed 150 feet, its current is very slow and often imperceptible. During its passage from Lough Allen to Limerick it expands into the large lakes of Lough Reagh, 15 miles, and Lough Dearg, 21 miles in length, and studded with numerous islets. The Blackwater rises near Charleville, and, flowing south-eastward, discharges itself into the Atlantic at Youghal, after forming the boundary between the counties of Cork and Waterford. Between the latter county and that of Wexford is the estuary of the Suir, the Nore, and the Barrow, all of which have their sources not far from each other in the central range of the Slievebloom Mountains; and, after diverging so that their streams enrich a great portion of the provinces of Leinster and Munster, unite again near the city of Waterford. The Slaney rises in the mountains of Wicklow, and empties itself into St. George's Channel at Wexford. The Boyne, famous for its historical recollections as well as for its natural advantages, has its sources in the central elevated plain of Leinster, and, flowing north-eastward, falls into the Irish Sea at Drogheda. The Bann rises in the Mourne Mountains, flows northward through Lough Neagh, and, after separating the counties of Londonderry and Antrim, flows into the Atlantic at Coleraine. The Foyle is formed by the union of the streams of the Poe, the Mourne, the Finu, and the Derg, which, flowing from different parts of the interior of Ulster, discharge their combined waters into Lough Foyle near Londonderry. The Erne, which flows from Lough Erne, has a short but rapid course to the Atlantic westward, and discharges its great body of waters into Donegal Bay, over a ledge of rocks rising 10 feet above the level of the ordinary tides. The other rivers, though numerous, amounting nearly to 100, are small, and mostly confined to the counties that give them birth. The Liffey, which rises in the mountain-land of Wicklow, and, after a circuitous course through Kildare, discharges itself into the Irish Sea, is remarkable for nothing except that the metropolitan city of Dublin is seated on its banks.

The extent of country forming the basin from whence each of the principal rivers derives its supply, is as follows:

	Sq. miles.		Sq. miles.
Shannon	4·544	Lee	·785
Barrow, Nore, and Suir	3·400	Liffey	·568
Galway, includ. Loughs Corrib and Mask	1·374	Blackwater, N.	·526
Erne	1·585	Maine and Inney	·511
Foyle	1·473	Feale and Galle	·479
Bann and Maine	1,266	Roughty	·475
Blackwater, S.	1·219	Ovoca	·281
Boyne and Blackwater	1·086	Bandon	·228
Moy	1·033	Lagan	·227
Slaney	·815	Avonmore	·200

Ireland was once so thickly covered with timber as to receive the name of the Island of the Woods. During the early periods of its connection with England, its extensive and impenetrable forests formed a main obstacle to the progress of the English troops. Westminster Hall is said to be roofed with oak cut in the woods of Shillelagh. Numerous trunks of large trees are constantly found in the bogs. Even in mountain tracts, devoted for a long succession of years to the pasturage of sheep, timber trees shoot up spontaneously wherever the land is secured from the intrusions of cattle. Many places, where the vestige of a plantation is not to be seen, retain names of which the word "wood" forms a component part; and in localities where the most attentive culture will not suffice to keep any tree or shrub alive on account of the western blasts, large trees are found imbedded in the bogs. The different kinds of timber found in the bogs of Ireland are confined to oak, fir, yew, holly, sallow, and birch. Two centuries ago, when Ireland was covered with forests, there were numerous small iron-works, in which wood charcoal was employed, and vast quantities of wood used until the country was gradually stripped of its supply, and the working of iron was consequently abandoned. The extension of agricultural improvement, and more especially the timber act, which gives the tenant at the expiration of his lease, a pecuniary interest in the trees he has planted, are gradually removing this defect, the consequence of ages of disturbance and desolation; but trees in large quantities are generally found in Ireland only in the vicinity of the residences of the gentry, except in some favored spots, which are well wooded.

Minerals.—Ireland is reputed to contain much lead, copper, and iron, but notwithstanding many attempts to work the metallic mines discovered in the country, few have been found sufficiently productive to repay the necessary outlay of capital. Toward the close of the last century, gold was discovered, accidentally, in the streams flowing from the Mountain of Croghan Kinsela, on the confines of Wicklow and Wexford. The metal was found in lumps and small pieces down to the minutest grain. Many of the peasants having ruined themselves by leaving their proper occupations to join the search, the government, to put an end to the fruitless quest, took up the enterprise, and only relinquished it after satisfying the seekers of its worthlessness. "The gold is associated with magnetic iron-stone, sometimes in masses of half a hundred weight;

also iron pyrites, brown and red hematite, wolfram, manganese, and fragments of tinstone in crystals, together with quartz. From the nature of these attendant minerals, of which most are known to occur in the quartz veins of the adjacent mountain, it was hoped that by tracing up the rivulets to their sources, and laying bare in various directions the underlying rock, the metalliferous veins might be discovered, from the disintegration of which the sand and soil of the bed of the streams had been produced. All such trials proved useless, and the question as to the source from whence the gold in those streams in Wicklow has been derived, remains still unanswered."—Sir R. Kane's *Industrial Resources of Ireland*. Copper ores are distributed throughout the clay-slate districts in a great number of localities more or less abundantly. The principal mines are those of Ballymurtagh, Conoree, Cronebane and Tigroney, and Ballygahan, in Wicklow county; the Knockmahon, Kilduane, Bonmahon, and Balinasisla, in the Waterford district; Allihies or Berehaven, Audley, and Coaheen, and Skull, in the south-western district; and the mines of Hollyford and Lackamor, in the western district.

The total quantity and value of copper ore from Ireland, sold in Swansea, where it is smelted, were, in

Years.	Tons.	Value.	Years.	Tons.	Value.
1836.....	21,819	£163,863	1847.....	14,857	£96,380
1840.....	19,580	127,911	1848.....	12,808	82,039
1843.....	17,509	117,025	1849.....	10,425	68,794
1844.....	18,507	77,622	1850.....	10,021	69,594
1845.....	18,490	97,122	1851.....	10,577	77,718
1846.....	17,471	106,078	1852.....	12,171	104,822

Lead is more extensively diffused through Ireland than copper. The granitic district of Wicklow contains numerous veins; the principal are those of Glendaleugh, Gleninalur, Glendasane or Luganure, and Ballycorus. The clay-slate districts also yield numerous indications of this metal, but few of the mines have proved profitable. Those still worked are at Clonligg, Newtownards, and Rathmullen, in Down county; Bend and Newry, in Armagh county; Castleblayney, in Monaghan county; Kenmare, in Kerry county; Kilbricken and Ballyhickey, in Clare county; Shallee, in Limerick county; and Bantry, in Cork county. A vein at Clontarf, near Dublin, was worked until the mine was filled with water by the ingress of the sea. At Ballycorus, where the lead ores from the mines of the Mining Company of Ireland are smelted, the quantities of ore worked up in 1851 from Luganure mines was 674 tons, which produced 160 tons of lead, equal to nearly 69 per cent. The proportions of silver to a ton of lead are generally found to be, from the mine of Luganure, 8 oz.; Calmo 12 oz., Ballyhickey, 15 oz.; Shallee, 25 oz.; Kilbricken, 120 oz.; Tollyratty, near Strangford, 10 oz. The average of silver extracted from the lead ore raised by the Mining Company of Ireland in 1851, was 7 oz. to the ton of lead; the total quantity 3860 oz.; producing £1029 6s. 8d.

Native silver was found in a bed of iron ochre in Cronebane, but the deposit has been long since exhausted. Sulphuret of silver was found in the lead ore at Ballycorus some years since, and the Mining Company of Ireland have resumed operations to prove this valuable discovery. Tinstone has been found in the auriferous soil of Wicklow, but no veins or workable deposits have been discovered. Other minerals, useful in manufactures and the arts, and found in quantities in various parts of the country, are manganese, antimony, zinc, nickel, iron pyrites, alum, clays of various kinds, building stone, marble, flags, and roofing slates. Mineral springs, chiefly chalybeate, are numerous in many parts of the country. Those of chief note for their medicinal qualities are at Mallow, in Cork, resembling the hot walls of Bristol; Ballynahinch, in Down; Swanlinbar, in Cavan; Castleconnel, near Limerick; and Lucan, near Dublin.

The following is the result of the different estimates and census inquiries into the number of the population of Ireland at various periods:

Year.			Pop.
1659	Sir William Petty		850,000
1672	"	"	1,320,000
1686	Captain South		1,034,102
1712	Thomas Dobbs		2,099,094
1718	"	"	2,169,048
1726	"	"	2,317,374
1726	"	"	2,309,106
1731	Established Clergy		2,010,221
1754	Tax Collectors		2,372,634
1760	De Burgho, Hibern. Dominican		2,317,854
1767	Tax Collectors		2,544,276
1777	"	"	2,690,556
1785	"	"	2,845,932
1788	Gervais P. Bushe		4,040,000
1791	Tax Collectors		4,206,612
1792	Dr. Beaufort		4,088,226
1805	Thomas Newenham		5,395,456
1811	Parliamentary return		5,937,856
1821	"	"	6,801,827
1831	"	"	7,767,401
1834	Commissioners of Public Instruction		7,943,940
1841	Parliamentary return		8,175,124
1851	"	"	6,552,386

Few countries in the world have increased in population so rapidly as Ireland during the first 40 years of the present, and the conclusion of the last century. Arthur Young, in his *Tour through Ireland*, in 1766, observed that it everywhere evinces the marks of a rapid increase of population. It is generally supposed that the number of the people increases in the ratio of food and comforts, and that an increase of population is a convincing proof of the advancing prosperity of a nation. The effect of the failure of the potato crop in depopulating the country would show that the population of Ireland had outstripped the progress of wealth, and the increase of industry, and had reduced their wants to the lowest point without procuring an addition to the comforts of life corresponding to the increase of the population.

The following table exhibits the population of each portion of the country, according to the census of 1821, 1831, 1841, and 1851, together with the house accommodation at the latter period:

Provinces.	1821.	1831.	1841.	1851.			Families.	Houses in 1851.			
				Males.	Females.	Total.		Inhabited.	Uninhabited.		Total.
									Built.	Building.	
Leinster.....	1,757,492	1,909,718	1,973,731	813,462	859,129	1,672,591	321,991	258,082	17,566	592	276,160
Munster.....	1,935,612	2,227,152	2,396,161	904,657	952,755	1,857,412	320,250	267,110	19,360	473	286,949
Ulster.....	1,998,494	2,286,622	2,386,373	976,283	1,035,478	2,011,756	380,781	351,873	20,647	534	373,054
Connaught...	1,110,229	1,343,914	1,418,859	496,105	514,106	1,010,211	184,080	169,808	7,605	245	177,193
Total.....	6,801,827	7,767,401	8,175,124	3,190,507	3,361,468	6,551,970	1,207,002	1,046,294	65,178	1,884	1,113,356

The chief impediment to improvement in the condition of the people of Ireland during the present century has been the redundancy of the population. In a country almost wholly dependent on the cultivation of the soil, there were in 1841 as many as 335 persons to each square mile of arable land. Perhaps, with the exception of China there was no other country in the world so densely peopled, and certainly none where the population was so disproportioned to the means of employment. This great density of population was necessarily accompanied by an extreme competition for land and employment, with the absence of all inducements to the acquirement of skill, and in consequence of the low rate of remuneration for labor, and high rents, the impossibility of any accumulation of capital in the hands of the cultivators of the soil. The following table shows the density of the population in 1841, and its remarkable decrease in 1851:

TABLE SHOWING THE DENSITY OF POPULATION IN 1841, AND ITS REMARKABLE DECREASE IN 1851.

Provinces.	Rural population.		No. of persons to the square mile.								
			Of arable land.			Of the entire rural district.			Of the entire area (including the town population).		
	1841.	1851.	1841.	1851.	Decrease between 1841—51.	1841.	1851.	Decrease between 1841—51.	1841.	1851.	Decrease between 1841—51.
Leinster	1,581,106	1,191,634	247	189	58	202	157	45	259	220	39
Munster	2,009,229	1,466,099	332	218	114	212	155	57	258	196	57
Ulster	2,180,898	1,749,707	466	280	126	253	205	48	279	235	44
Connaught	1,338,635	926,269	386	241	145	195	135	60	207	147	60
Total	7,089,659	5,333,709	335	236	99	217	164	53	251	202	49

NUMBER OF PERSONS BY OCCUPATIONS IN 1841 AND 1851, CLASSIFIED ACCORDING AS PRODUCERS, MANUFACTURERS, AND TRADERS.

Occupations.	1841.	1851.
Ministering to food:		
Producers	1,854,141	1,461,776
Manufacturers	18,905	18,035
Traders	35,925	52,103
Total	1,904,071	1,531,914
Ministering to clothing:		
Cloth manufacturers	669,224	278,223
Leather-workers	57,893	49,990
Clothes-makers	167,998	267,225
Traders	6,209	11,184
Total	901,324	606,582
Ministering to lodging, etc.:		
Workers in stone	30,204	27,177
" wood	64,086	48,195
" metal	44,197	45,083
Miscellaneous	23,786	20,749
Traders	2,003	5,265
Total	164,886	146,469
Ministering to health	6,871	7,148
" charity	253	1,808
" justice	19,541	26,862
" education	16,814	17,407
" religion	7,192	8,398
Total	50,671	61,713
Unclassified:		
Ministering to arts	3,495	2,074
" trade	59,549	54,470
" traveling	18,975	43,743
Miscellaneous	409,409	394,208
Total	491,428	494,995
General total	3,511,860	2,841,923

Ireland is naturally, both from soil and climate, a pastoral country, and it was not until the commencement of the last century that efforts were made to introduce an attention to tillage on an extended scale. Primate Boulter, when one of the Lords Justices, pressed strongly on the British government the necessity of enforcing a tillage system; and for this purpose proposed a law, in 1727, to compel landlords to till five acres out of every hundred in their possession, exclusive of meadows and bogs; and also to release tenants to the same extent from the penal covenants against tillage, inserted in their leases. Mr. M'Culloch observes, in his *Statistical Account of the British Empire*, that the luxuriance of the pastures in Ireland and the heavy crops of oats raised, even with the most wretched cultivation, attest the extraordinary fertility of the soil. Strong retentive clay soils, sandy soils, chalky and gravelly soils, and several other descriptions of soil common in England, are seldom or never met with in Ireland, which affords no great diversity as compared with Great Britain. Mr. Wakefield describes the soils of Ireland as follows:—"A great portion of the soil of Ireland throws out a luxuriant herbage, springing from a calcareous subsoil without any considerable depth. This is one species of the rich soil of Ireland, and is found throughout Roscommon, in some parts of Galway, Clare, and other districts. Some places exhibit the richest loam I ever saw turned up with a plow; this is the case throughout Meath in particular. Where such soil occurs, its fertility is so conspicuous, that it appears as if nature had determined to counteract the bad effects produced by the clumsy system of its cultivators. On the banks of the Fergus and Shannon, the land is of a different kind, but equally productive, though the surface presents the appearance of marsh. These districts are called *caucasses:* the substratum is a blue silt deposited by the sea, which seems to partake of the qualities of the upper stratum, for this land can be injured by no depth of plowing."

The prevalent soil is a fertile loam, resting on a rocky substratum, chiefly of limestone. The depth, though in general not great, is in some parts such as to admit of a fresh vegetable mold being repeatedly thrown up by successive plowings to a greater depth. This occurrence is most striking in Meath, and in the district of the counties of Tipperary and Limerick, long distinguished by the name of the Golden Vale, from its extraordinary fertility. In some parts, particularly in Galway, the rock shows itself above the surface in ridges like waves, the interstices being filled with rich mold, which produces a thick, close sward, extremely grateful to sheep. Large tracts of grazing land similar to the Downs in England are unusual; the only tract of any extent of such description is the Curragh of Kildare, which has been used, time immemorial, for a sheep walk. The mountains are capable of tillage to a considerable height; and their summits, with the exception of a few of the very highest, are fit for pasturage in summer.

The quantity of arable land in 1841, according to the return of the Census Commissioners, was 13,464,300 acres, and in 1851, 14,202,581 acres; and the proportion per cent. of cultivated and uncultivated surface, etc., at those two periods was as follows:

Provinces.	Total area in statute acres.	Division of surface.									
		Arable land.		Uncultivated.		Plantations.		Towns.		Water.	
		Proportion per cent.		Proportion per cent.		Proportion per cent.		Proportion per cent.		Proportion per cent.	
		1841.	1851.	1841.	1851.	1841.	1851.	1841.	1851.	1841.	1851.
Leinster	4,876,211	81·26	82·80	15·01	13·67	2·38	2·09	0·32	0·38	1·06	1·06
Ulster	8,064,579	63·89	71·08	31·22	24·48	2·15	1·71	0·24	0·28	2·50	2·50
Munster	5,475,438	62·24	72·95	32·22	21·89	1·46	1·07	0·16	0·16	3·93	3·93
Connaught	4,392,043	50·57	56·01	43·99	38·12	1·10	0·98	0·09	0·09	4·85	4·85
Total	20,808,271	64·71	71·14	30·25	24·14	1·20	1·47	0·21	0·22	3·08	3·08

The laws which prohibited the exportation of Irish woolens to foreign countries, and to the British colonies, were repealed in 1779. By the Act of Union, the duties on woolens imported into either island were confined to those called "old and new draperies;" and the high duties of Charles II. were reduced to 8½d. per yard on the old, and 2½d. on the new draperies. By the same act, England relaxed her monopoly so far as to permit the export of wool and woolen yarn duty free to Ireland. Previous to the Union, when the import of English wool was prohibited, the manufacture of Ireland was confined to the coarsest description of goods, for which alone the Irish wool was suited. Previous to the introduction of carding machinery the

manufacture of woolens was inconsiderable, but immediately after the Union, machinery worked by water power became general, and the trade increased, but the combinations of workmen and protecting duties rendered the Irish manufacturers unable to compete with those of Great Britain, and the trade continued limited to the demand for home consumption. Flannels are made in Wicklow, and blankets in Kilkenny. Frieze of the coarsest kind is in some parts manufactured by the peasantry for domestic consumption, and the supply of the adjoining district.

TABLE SHOWING THE EXTENT OF LAND UNDER CROPS FOR EACH COUNTY AND PROVINCE IN IRELAND, IN 1854 AND 1855, AND THE NUMBER OF ACRES UNDER EACH SPECIES OF CROP.

Provinces.		Wheat.	Oats.	Barley, bere, rye, beans, and peas.	Potatoes.	Turnips.	Other green crops.	Flax.	Meadow and Clover.	Total extent under crops.
Leinster	1854	Acres. 169,925	Acres. 558,556	Acres. 127,341	Acres. 204,920	Acres. 96,745	Acres. 31,868	Acres. 2,820	Acres. 479,629	Acres. 1,665,599
	1855	187,698	553,077	115,585	203,005	105,790	30,848	2,142	502,544	1,705,684
Increase or decrease in Leinster		Inc. 18,373	Dec. 479	Dec. 11,756	Inc. 3,185	Inc. 9,045	Inc. 520	Dec. 678	Inc. 22,915	Total Inc. 40,085
Munster	1854	151,570	864,479	100,699	256,449	114,912	25,425	5,452	360,088	1,879,024
	1855	157,766	880,246	93,857	254,944	124,948	25,595	4,294	385,771	1,426,921
Increase or decrease in Munster		Inc. 6,196	Inc. 15,767	Dec. 7,842	Dec. 1,505	Inc. 10,036	Inc. 170	Dec. 1,158	Inc. 25,783	Total Inc. 47,897
Ulster	1854	85,592	841,372	89,803	330,896	85,334	25,871	139,402	263,726	1,811,496
	1855	70,127	890,171	89,425	318,167	100,372	24,274	87,904	284,964	1,815,404
Increase or decrease in Ulster		Inc. 4,535	Inc. 48,799	Dec. 378	Dec. 12,729	Inc. 15,038	Dec. 1,097	Dec. 51,498	Inc. 1,238	Total Inc. 3,908
Connaught	1854	24,737	285,891	19,811	197,495	82,179	16,618	3,729	184,471	714,491
	1855	29,918	294,461	19,198	200,418	85,387	14,882	2,766	188,458	734,988
Increase or decrease in Connaught		Inc. 5,121	Inc. 8,570	Dec. 113	Inc. 2,918	Inc. 3,208	Dec. 2,236	Dec. 963	Inc. 3,987	Total Inc. 20,492
Total	1854	411,284	2,545,298	287,154	989,660	329,170	98,777	151,403	1,287,864	5,570,610
	1855	445,509	2,117,955	267,065	981,529	366,497	95,094	97,106	1,311,737	5,682,992
Increase or decrease in Ireland		Inc. 34,225	Inc. 72,657	Dec. 19,589	Dec. 8,131	Inc. 37,327	Dec. 3,683	Dec. 54,297	Inc. 53,873	Total Inc. 112,382

Linen.—The same legislative measure which was intended to discourage the woolen manufacturer stated, that "if the Irish turned their industry and skill to the settling and improving of the linen manufacture, they should receive all the countenance, favor, and protection for its encouragement, and promotion to all the advantage and profit they might be capable of deriving from it." This declaration should not lead to the inference that the manufacture had been previously unknown or disregarded in Ireland. On the contrary, the use of linen was so prevalent among the higher orders, that sumptuary laws were enacted to check its excessive use. The unfortunate Earl of Strafford seems also to have anticipated the views of the British manufacturers on the subject. Instead of extinguishing the woolen trade by exclusive duties, he labored to foster that of linen. He imported flax seed in large quantities from Holland, and held out premiums to induce Flemings and Dutchmen acquainted with the manufacture to settle in Ireland. On these laudable objects he spent upward of £30,000 of his private fortune; and his example was followed by the Duke of Ormond. Still, however, the woolen manufacture prevailed, particularly in the south and west, where the climate and extensive pasturage for sheep insured a copious and cheap supply of the raw material. In the same spirit, an act was passed by the English Parliament in 1696, to encourage foreign linen manufacturers to settle in Ireland; and with that view all articles made of flax or hemp in this country were admitted into England duty free—a privilege which is estimated to have given that branch of trade an advantage of 25 per cent. over other nations in the English market. The Irish Parliament responding to the sentiments and wishes of that of England, promised that "it would heartily endeavor to establish the linen and hempen manufacture, so as to render it useful to both kingdoms;" adding, that "it hoped to find such a temperament in respect to the woolen trade here, that the same may not be injurious to England." The "temperament" here announced was evinced most affectually by laying prohibitory duties on the export of its own woolens, thus accepting the compact on the part of Ireland, and giving the country an incontrovertible claim upon England for a perpetual encouragement of that branch which was to be nurtured in lieu of the natural staple of the country. In furtherance of the measures mutually agreed on between both kingdoms, a board of trustees for the encouragement of the linen manufacture was established in 1710, consisting of a number of individuals of influence in each province. Under its control a code of regulations was devised and maintained, which extended to the most minute particulars of the processes, and had the effect for many years of securing the fabric a decided preference both in the home and foreign market. A large sum was annually granted to this board for premiums and the supply of wheels and other implements, which was continued till the year 1830, when the grants were discontinued, and the board ceased to act. The flax seed is chiefly imported. Little is grown in the country, as, notwithstanding all the exertions made by the grower, the plant raised from it is considered of inferior quality.

Flax.—The first flax-spinning machinery erected in Ireland was at Cork in 1805. About 1825, English and Scotch yarns were first imported into Ireland, and undersold the spun article. The use of machinery gradually increased, and the linen manufacture soon became extinguished in the south and west, and concentrated in the north. In 1821 the yarns were all made by hand. With one or two trifling exceptions, not a spinning factory was to be seen. In 1819 there were upward of 70. In 1819, with the existence of bounties on the export of linens, and heavy duties on the admission of foreign flax and linen fabrics, only 40 millions of yarns were exported from Ireland. In 1849 those exports had increased to 75 millions. The question became not as to whether the employment of linen-weavers by extensive manufacturers, and confining them to the mere process of weaving, was or was not more advantageous than the old system, where the producer of the raw material, the weaver of the cloth, and the merchant who disposed of it, were the same individual; but whether it would be more profitable to alter the system or lose the trade.

The following tables show the value of the brown or unbleached linen sold in the several linen markets

in Ireland during a period of four years, as furnished by the returns of the seal-masters and inspectors of the Linen Board to Parliament in 1825. The sums stated in the former of these tables are the first cost paid to the manufacturer by the country purchaser; the value of most of the linen sold is afterward considerably increased by the process of bleaching and other treatment.

TOTAL OF BROWN OR UNBLEACHED LINEN SOLD IN IRELAND.

Years.	Leinster.	Ulster.	Munster.	Connaught.	Total.
	£	£	£	£	£
1822	285,854	2,066,122	68,870	117,664	2,538,010
1823	336,698	2,127,529	82,202	130,914	2,677,343
1824	207,638	1,968,180	95,195	140,856	2,411,869
1825	192,888	2,109,809	110,420	168,090	2,580,707
Total.	1,022,578	8,271,140	356,687	557,524	10,207,929

Since 1825 no returns have been kept. The number of yards of linen exported from Ireland was:

Year.	To Great Britain.	To foreign parts.	Total.
1800.....	No separate returns.		35,676,908
1801.....	34,622,998	5,288,704	37,911,602
1809.....	33,018,884	4,147,515	37,166,399
1813.....	35,018,884	3,926,731	38,945,615
1817.....	50,290,321	5,940,254	56,230,575
1821.....	45,519,509	4,011,680	49,531,189
1825.....	52,560,926	2,553,589	55,114,515
1835.....	....	....	60,916,592

The apparent amount of exports of linen from Ireland is now small, arising from the fact, that nearly all is sent by cross-channel steamers to the English and Scotch ports, whence it is transhipped to foreign countries. The entire export from Ireland to Great Britain and all foreign countries reaches about 106,000,000 yards; value, £4,400,000. The following table shows a comparison of the production and value of the yarns made, and amount of wages paid, in an interval of ten years:

	Bundles of yarn produced.	Value.	Wages paid.
1840.....	5,000,000	£1,500,000	£208,000
1850.....	7,400,000	1,942,500	317,000

The cotton manufacture was introduced in 1777, and became an object of attention to the Irish Parliament, which endeavored to secure a monopoly of the home market by high import duties and bounties. The first cotton mills were erected at Prosperous, in the county of Kildare, and in Belfast, about the year 1784. From that period till the Union, it throve, in consequence of the measures adopted to prevent foreign competition. At the Union it was arranged that the then existing duties should continue for eight years, after which they were to be gradually lowered, by eight annual reductions, in such manner that, after the year 1816, they should stand at 10 per cent. *ad valorem*. The progress of the manufacture has been very slow as compared with that of Great Britain. The alteration of the scale of duties materially affected the home demand, and the immense capital and great superiority of the British artist have contributed much to secure to his manufacture a preference in the foreign market. In 1822 the quantity of cotton wool imported was 3,755,024 lbs., and of cotton yarn, 1,197,294 lbs.; leaving a total quantity of 4,576,816 lbs. of cotton yarn consumed, after allowing 10 per cent. for waste, etc., on the cotton imported.

Silk and Lace.—The silk manufacture was introduced into Ireland in 1693, by French emigrants after the revocation of the Edict of Nantes. Its seat was the city of Dublin, where it was maintained by the aid of protecting duties. Some feeble attempts to fix it in the country parts failed completely. The last of these was so lately as 1825, when a company was formed for the purpose of fixing the trade on a secure basis in the south of Ireland, by rearing the silk-worm there, and thus having the benefit of the raw material for the labor of producing it; but after considerable expense had been incurred for the purchase of ground and the planting of mulberry-trees, the scheme was relinquished as hopeless. One branch of the manufacture, a fabric of mixed worsted and silk, known by the name of tabbinet, or Irish poplin, is in considerable demand, both at home and elsewhere, for the richness and beauty of the texture. It is almost the only branch now flourishing. The general trade has been nearly annihilated by the removal of the protecting duties in 1821, after which, in consequence of the combination of the workmen to keep up the rate of wages, the Irish manufacturer became unable to compete successfully with the English trade. The manufacture of lace is carried on to some extent in Limerick, and of late years a great source of employment for females has been introduced in the working of patterns on muslin with the needle.

Metals.—Manufactures in metal exist only to a small extent; and the making of glass, which was once carried on largely, has declined.

Provisions.—The provision trade, together with the exportation of the agricultural produce of the country, has always been, and will probably long remain, the principal commercial business carried on in Ireland. This export trade is mainly with Great Britain, to Liverpool, Bristol, and Glasgow, from Belfast, Dundalk, Drogheda, Newry, Waterford, Limerick, and more particularly from Cork and Dublin. In 1825, 181,276 barrels of beef and pork, 362,278 cwt. of bacon and hams, 474,161 cwt. of butter, and 35,279 cwt. of lard, were exported. Since that period the provision trade has vastly increased; but in consequence of the cessation of the duties on the cross-channel trade, there are no means of accurately ascertaining the present extent of the trade.

The following table shows the number of gallons of Irish spirits brought to charge since 1840, and the amount of duty:

Years.	Gallons.	Duty.
1840.....	10,515,709	£1,261,882
1841.....	7,401,051	936,126
1842.....	6,485,448	864,725
1843.....	5,290,650	904,908
1844.....	5,546,488	852,418
1845.....	6,451,197	880,151
1846.....	7,605,196	1,014,026
1847.....	7,952,076	1,060,276
1848.....	5,787,687	804,984
1849.....	8,126,507	948,057
1850.....	6,973,333	929,777
1851.....	7,408,086	987,774
1852.....	7,550,518	1,006,735
1853.....	8,208,256	1,094,434
1854.....	8,136,862	1,273,151

The principle of extracting the largest possible amount of revenue from the duty on spirits having been adopted, the rate was raised in 1855 to 6s. 2d. per gallon, when the number of gallons brought to charge declined to 6,228,856, and the maximum rate of duty productive to the revenue appears to have been attained, if not exceeded. There are breweries in most of the large towns in Ireland, the produce of which has superseded the use of beer imported from Great Britain, and also furnishes a quantity sufficient for a large export trade, which has of late years much increased.

The external trade of Ireland branches out into two great divisions, the cross-channel trade with Great Britain, and the commerce with foreign nations. The relative importance of each port, as respects its commercial character, will appear from the first and second tables following, which contain a specification of the number and tonnage of vessels that entered and cleared out coastwise, from and to the British colonies and foreign countries in 1853, in each of the ports of Ireland; while the progress of domestic navigation will appear from the third and fourth tables, containing a summary, in triennial periods, of the tonnage of ships belonging to and registered at the different ports in Ireland, and of the number and tonnage of those employed in the cross-channel trade.

NUMBER AND TONNAGE OF SAILING VESSELS AND STEAM VESSELS THAT ENTERED AND CLEARED OUT COASTWISE AT EACH OF THE PORTS IN IRELAND IN THE YEAR 1853.

PORTS.	SAILING VESSELS.				STEAM VESSELS.			
	Inward.		Outward.		Inward.		Outward.	
	Vessels.	Tonnage.	Vessels.	Tonnage.	Vessels.	Tonnage.	Vessels.	Tonnage.
Belfast	5,168	470,665	1,180	198,561	1,477	419,511	1,399	412,604
Cork	2 [illegible]89	170,291	1,518	94,769	265	104,876	257	107,326
Drogheda	559	42,462	265	19,757	208	80,240	256	94,142
Dublin	5,110	396,392	2,510	129,787	1,486	440,446	1,608	498,132
Londonderry	588	69,000	256	15,920	468	148,815	464	147,693
Newry	697	42,987	198	11,791	145	40,689	185	83,266
Waterford	905	72,891	736	50,955	169	49,971	177	50,400
Other ports	2,999	183,877	1,912	127,358	690	201,896	896	122,844
Total	18,101	1,417,465	8,570	648,198	4,860	1,484,827	4,692	1,459,410

NUMBER AND TONNAGE OF SAILING VESSELS THAT ENTERED AND CLEARED OUT FROM AND TO THE COLONIES AND FOREIGN PORTS AT EACH OF THE PORTS OF IRELAND (INCLUDING THEIR REPEATED VOYAGES), DISTINGUISHING BRITISH AND IRISH FROM FOREIGN VESSELS, IN THE YEAR 1853.

PORTS.	FROM AND TO BRITISH COLONIES.						FROM AND TO FOREIGN PLACES.					
	Inward.			Outward.			Inward.			Outward.		
	British & Irish.		Foreign.	British & Irish.		Foreign.	British & Irish.		Foreign.	British & Irish.		Foreign.
	Ves.	Ton'ge.	Ves. Ton'ge.	Ves.	Ton'ge.	Ves. Ton'ge.	Ves.	Ton'ge.	Ves. Ton'ge.	Ves.	Ton'ge.	Ves. Ton'ge.
Belfast	57	17,968	24 [illegible]	[illegible]	[illegible]	12 [illegible]043	160	22,603	205 33,157	69	16,340	211 40,569
Cork	89	14,869	5 [illegible]	[illegible]	[illegible]	16 [illegible]338	157	28,665	224 50,104	61	11,422	207 49,216
Dublin	61	20,542	22 344	[illegible]	[illegible]	18 3,905	157	21,786	175 31,598	51	18,836	181 84,838
Limerick	39	11,206	.. ..	[illegible]	[illegible]	2,418 5	99	22,656	98 24,994	20	6,878	71 18,952
Waterford	22	6,029	.. ..	25	8,274	17 [illegible]846	51	10,819	90 20,736	24	5,149	83 18,622
Other ports	78	70,709	2 2,837	43	13,923	[illegible] [illegible]15	226	38,007	337 58,166	85	23,626	202 39,101
Total	369	90,356	60 13,344	220	69,953	69 17,[illegible]7	850	144,536	1,135 218,155	319	74,251	945 201,628

ACCOUNT OF THE TONNAGE BELONGING TO AND REGISTERED AT THE IRISH PORTS AT DIFFERENT TRIENNIAL PERIODS, WITH THE INCREASE BETWEEN THE FIRST AND LAST PERIODS.

Name of Port.	Years. 1840, 1841, 1842.	Years. 1843, 1844, 1845.	Years. 1846, 1847, 1848.	Years. 1849, 1850, 1851.	Increase between first period 1840—42 and last period, 1849—51.
	Tons.	Tons.	Tons.	Tons.	Tons.
Ballina	....	....	....	162	....
Belfast	149,809	154,402	202,011	226,414	213,352
Coleraine	....	....	2,795	1,080	....
Cork	101,349	115,658	145,127	149,465	136,041
Drogheda	14,507	14,692	19,287	20,524	17,528
Dublin	94,742	105,101	120,288	123,182	89,697
Dundalk	....	....	7,971	8,918	....
Galway	....	....	11,443	12,170	....
Limerick	42,247	42,487	43,155	39,646	36,256
Londonderry	20,155	23,507	27,544	23,383	20,527
Newry	32,120	35,018	35,714	30,743	18,251
Ross	....	....	25,824	28,871	....
Skibbereen	....	....	....	8,649	....
Sligo	13,690	9,353	14,296	13,112	12,766
Strangford	....	....	....	5,626	....
Tralee	....	....	979	3,189	2,649
Waterford	60,846	66,547	81,926	66,287	60,303
Westport	....	....	735	624	....
Wexford	26,098	21,583	25,318	27,089	20,305
Other ports	8,251	40,288	11,230	....	....
Total	569,294	681,981	781,948	791,525	647,571

NUMBER AND TONNAGE OF VESSELS EMPLOYED IN THE INTERCOURSE BETWEEN GREAT BRITAIN AND IRELAND, WHICH ENTERED INWARD AND CLEARED OUTWARD WITH CARGOES, AT THE PORTS OF THE UNITED KINGDOM DURING FOUR YEARS.

	1851.		1853.		1854.	
	Vessels	Tonnage.	Vessels	Tonnage.	Vessels	Tonnage.
Inward	9,496	1,702,197	9,840	1,931,939	10,606	2,042,146
Outward	18,676	2,409,905	19,244	2,594,555	20,685	2,819,395

These tables exhibit the great preponderance of the cross-channel trade, which has been greatly augmented since the introduction of steam navigation. The earliest attempts at establishing a company for this purpose were made in Dublin about the year 1816. Two small vessels were fitted up, but the construction of their machinery was faulty, their dimensions were too small, and the effort proved abortive. The cross-channel trade, with the exception of that in coal, is almost wholly carried on by means of steam-vessels; but since 1825, when the trade between Great Britain and Ireland was placed upon the footing of a coasting trade, no separate returns have been made out at the custom-house of the quantity and value of the exports and imports.

Fisheries.—The coasts of Ireland abound with fish; and Sir William Temple observed, "that the fishery of Ireland, if improved, would prove a mine under water, as rich as any under ground." Arthur Young also remarks, "that there is scarcely a part of Ireland but what is well situated for some fishery of consequence; and that her coasts, of innumerable creeks and river mouths, are the resort of vast shoals of herrings, cod, ling, hake, and mackerel.

Revenue.—Before the arrival of the English, the revenues of Ireland were paid in cattle; and even after that period the custom prevailed for several centuries in the parts less subject to foreign influence. Traces of it have been met with so late as the reign of Elizabeth. The new government, under the English, introduced the method of raising money by subsidies. John exacted a subsidy from the Irish clergy, and established the court of exchequer for the general management of the revenue. The same method was continued during the reigns of Henry III., and the first Edwards; but the income thus extracted from the people proved so inadequate to meet the expenditure, that recourse was had to the legalized extortion of coygne and livery, which was the levying of man's meat and horse's meat for the soldiery in time of service. The amount of the regular revenue, in the reign of Edward III., is stated by Walsingham and Holingshed to have been £39,000; but Sir John Davis, who collected his information from the pipe-rolls, and other authentic sources, reduces it to £10,000. The most remarkable financial measure of Richard II. was a tax upon absentees. In 1433, the eleventh of Henry VI., the revenue was reduced to £2,339 18s. 6d., while the expenses of the government were £2,348, 16s. 11½d., thus exceeding the income by £18, 17s. 5½d. At the latter end of the same reign, the Duke of York, when sent over as lord-lieutenant with extraordinary powers, not only obtained the whole revenue, but stipulated for an additional supply from England of 4,000 marks for the first year, and £2,000 for every year thereafter. Edward IV. raised money by the imposition of duties on all merchandise sold in Ireland except hides. In the 15th year of Henry VII. a duty of one shilling in the pound was laid on all merchandise imported and exported, except wine and oil; and

a tax, by way of subsidy, of 13s. 4d. on every hide of land. During this reign the revenue seldom exceeded £5000. Henry VIII. increased the revenue by the suppression of monasteries. The laws against absentees were also enforced. During the first 15 years of Elizabeth, the revenue was £120,000, or £8000 per annum, while the expenses amounted to £490,779, 7s. 6½d. In 1599, at the close of Tyrone's rebellion, £600,000 were spent in six months; and Sir Robert Cecil affirmed that Ireland had cost the queen £3,462,000 in ten years' time. In the pacific reign of James the customs increased from £50 to £7,000, and at the close of his reign to £9700. The wardships and other feudal rights produced about £10,000, notwithstanding which the income was inadequate to the expenditure. To defray the expenses of the army, an order of baronets was established by which £98,500 were raised, in addition to which £247,433 were remitted from England to clear off the debts incurred by Elizabeth. The Irish Parliament granted the same king a subsidy of 2s. 8d. in £1 on every personal estate of £3 annual value, and 4d. in £1 on every real estate of £1 value; an act of liberality with which James was so much pleased, that he declared "he would hereafter hold his Irish subjects in equal favor with those of his other kingdoms." In the succeeding reign Stratford raised the customs to four times their previous amount. In the same reign the first mention is made of an excise tax. Thurloe, however, in his state papers, mentions that the revenue for two years ending in 1657, amounted to £137,558, while the expenditure was £142,509. When the Irish Parliament met after the Restoration, it granted, first, an hereditary revenue to the king, his heirs, and successors; second, an excise for maintaining the army; third, the subsidy of tonnage and poundage for the navy; and, fourth, a tax of 2s. each on hearths, in lieu of the feudal burdens, which were then abolished. After the Revolution, the information respecting this important element of national statistics becomes more precise and satisfactory. The revenue, from the landing of Schomberg in 1689 till the end of the reign of William, was as follows, the total on the previous military expenditure of the war with James having amounted to £3,851,655:

Year.	Revenue.	Year.	Revenue.
1689	£8,884	1696	£513,584
1690	93,919	1697	545,967
1691	274,949	1698	691,846
1692	396,926	1699	701,932
1693	444,188	1700	766,620
1694	430,584	1701	697,955
1695	488,804	1702	581,256

During the earlier part of Anne's reign the income exceeded half a million, but in her latter days it was less productive. In the reign of George I. the state of the revenue continued nearly as in the preceding reign. In that of George II. there was a surplus, which was applied, not always judiciously, to public works. The national debt of Ireland, incurred by an excess of expenditure beyond the income of the country, increased with great rapidity toward the close of the last century and till the year 1817, when it ceased to form a separate item in the public accounts, in consequence of the consolidation of the British and Irish exchequers. Its progressive increase since the Revolution is exhibited in the following table:

PUBLIC DEBT OF IRELAND.

1718	£18,106	1770	£628,883
1720	87,511	1780	1,067,565
1730	220,730	1790	1,586,067
1740	296,988	1800	22,245,196
1750	205,117	1810	75,240,78
1762	223,438	1817	134,602,7[illegible]

The following table gives an account of the gross revenue levied in Ireland, in each year from 1840 to 1853; distinguishing the expenses of collection and the other payments out of the revenue in the way to the exchequer; also an account of the amount of repayments into the exchequer on account of advances for public works, employment of the poor, fisheries, etc., in Ireland, for the like period.

GROSS REVENUE LEVIED IN IRELAND, IN EACH YEAR FROM 1840 TO 1853.

Years.	REVENUE.			CHARGES.				Total Charges.	Payments on account of Public Works, etc.	Payments on account of Revenue.
	Balances outstanding.	Gross revenue.	Total income.	Charges of collection.	Payments to the Exchequer.	Payments on account of Revenue.	Balances at the end of the year.			
1840	£220,509	£4,107,866	£4,328,375	£542,716	£35,808	£3,559,462	£190,389	£4,328,375	£353,688	£3,913,100
1841	190,389	4,118,689	4,309,078	537,015	35,643	3,536,122	199,628	4,309,078	433,441	3,969,638
1842	199,628	4,156,892	4,356,520	536,707	37,256	3,562,492	220,065	4,356,520	371,877	3,934,369
1843	220,065	4,099,062	4,319,127	534,833	36,550	3,574,917	172,827	4,319,127	384,794	3,959,711
1844	172,827	4,406,509	4,579,336	528,700	35,438	3,845,260	169,938	4,579,336	420,470	4,265,730
1845	169,938	4,667,462	4,837,400	539,124	54,654	4,096,830	166,792	4,837,400	294,985	4,491,158
1846	166,789	4,919,622	5,086,391	538,851	54,017	4,339,821	179,203	5,086,391	370,283	4,716,104
1847	179,203	4,454,402	4,633,605	546,499	35,560	3,840,920	210,686	4,633,665	514,481	4,355,401
1848	210,686	4,591,958	4,782,644	566,701	35,764	3,970,448	159,731	4,732,644	357,117	4,327,565
1849	159,731	4,291,807	4,451,538	545,958	38,141	3,711,804	156,135	4,451,538	621,135	4,332,459
1850	156,135	4,257,686	4,413,820	618,744	36,813	3,613,911	144,351	4,413,820	505,021	4,118,992
1851	144,352	4,382,000	4,526,352	561,821	34,072	3,672,883	157,574	4,526,351	860,195	4,642,195
1852	157,574	4,424,785	4,582,359	561,207	33,019	3,820,186	167,946	4,582,359	466,329	4,286,515
1853	167,946	4,752,238	4,886,444	580,718	30,460	4,118,449	156,821	4,886,444	445,889	4,564,338

NET REVENUE OF IRELAND IN EACH YEAR FROM 1840 TO 1854, DISTINGUISHED UNDER THE DIFFERENT HEADS OF REVENUE.

Years.	Customs.	Excise.	Stamps.	Property and Income tax.	Post Office.	Miscellaneous.	Imprest and other Moneys.	Repayments of Advances for Public Works.	Total.
1840	£2,060,159	£1,177,407	£432,722	....	£6,664	£6,929	£5,581	£353,688	£4,013,100
1841	1,999,257	1,097,918	425,771	....	....	7,411	5,835	433,441	3,969,638
1842	1,949,884	1,110,842	491,851	....	3,000	5,248	2,216	371,878	3,934,369
1843	1,960,498	1,082,722	521,981	....	3,000	5,059	1,677	384,794	3,959,731
1844	2,126,119	1,117,940	545,898	....	10,000	6,590	2,483	420,470	4,265,730
1845	2,091,651	1,408,471	558,569	..	22,000	6,947	9,816	381,988	4,478,702
1846	2,258,948	1,497,660	578,767	....	29,000	6,063	5,888	353,642	4,392,468
1847	2,009,138	1,152,982	567,996	....	59,000	5,698	46,160	484,924	4,325,844
1848	2,069,778	1,321,915	532,924	....	39,000	4,835	2,000	304,927	4,275,875
1849	1,941,122	1,281,548	502,073	....	26,000	6,633	3,928	621,155	4,382,459
1850	1,827,289	1,312,198	462,691	....	....	5,744	6,063	505,021	4,118,992
1851	1,854,268	1,348,911	451,584	....	5,000	9,000	4,476	327,499	4,000,682
1852	1,856,160	1,478,092	474,374	....	....	7,732	3,829	466,329	4,286,515
1853	1,924,511	1,708,621	474,430	27,976	....	7,206	3,681	475,445	4,621,870
1854	1,852,108	2,208,580	458,812	549,011	10,000	5,202	4,812	351,281	5,434,807

The circulating medium in Ireland was, until lately, subject to a great variety of alterations. Without entering into the disputed question of the existence of a mint in Ireland established by the Ostemen or Danes, the first certain account of a mint there is that established in 1210, by King John, who caused pennies,

halfpennies, and farthings to be coined and made current by proclamation. Further coinages were made by Henry III. and by Edward I., who added the title of DOMINUS HIBERNIÆ to that of REX ANGLIÆ on his Irish coinage. It consisted of groats, halfpence, and farthings. The first important alteration as to value was in the latter part of the reign of Edward III. who caused the ounce of silver to be cut into 26 deniers or pennies, instead of 20, as before, which caused the depreciation of 8⅓ per cent. in the Irish, as compared with the British currency, which existed until the final assimilation of the two currencies in 1825. Henry VI., or rather the Duke of York, his lieutenant in Ireland, had mints in Dublin and Trim, in which both silver and copper money were coined.

In the beginning of the subsequent reign of Edward IV. the value of silver coins was raised to double their previous amount. The consequence was an enormous increase of price in all the necessaries of life; to remedy which, the Irish Parliament enacted, that the master of the mint should strike, in the Castles of Dublin and Trim, and in the town of Drogheda, five kinds of silver coins; the gross (or groat), the demi-gross, the denier (or penny), the demi-denier, and quadrant (or farthing); eleven groats to weigh an ounce troy, and each, unclipped, to pass for fourpence. A few years afterward, the price of silver was again raised so excessively, that the difference between the Irish and English groat was 50 per cent. in a pound of bullion. In the reign of Henry VII. the difference between the two coinages was one third. Soon after the accession of Henry VIII. the coin in Ireland was so clipped, defaced, and scarce, that the Earl of Surrey, then lord-lieutenant, sued for his recall, in consequence of the want of money to carry on the war against the Irish. Elizabeth ordered the ounce of silver to be cut into 60 pennies, so that the coin of that name was reduced in weight from the 20th to the 60th part of an ounce. The total value of the money coined in Ireland by that princess, is said to have been £94,577 10s. 6d. English, which, at the rate of 16d. Irish, for a shilling English, amounts to £118,222 9s. 4½d. Irish. The Irish shilling, or harp, as it was called, from the impression on its reverse, was worth ninepence English. By a proclamation issued in the fifth year of James I. the same proportion of values was continued. In 1718 English money was current in Ireland at an increased value; the English five-shilling crown-piece passing for six shillings and eightpence, and the other coins in proportion. The exchange between Dublin and London was 21s. Irish for 15s. English, with 6d. or 8d. per pound extra, payable in London. By a proclamation in 1637, the name of Irish money was ordered to be abolished, and all payments were reduced to English sterling money. About 1672, small change was so scarce in Ireland, that towns and private dealers were obliged to issue copper tokens. Jame II., on his arrival in Dublin in 1688, issued a proclamation, by which the English guinea was to pass current at £1 4s., the crown-piece at 5s. 5d., and all lesser coins in the same proportion. In 1690, he depreciated still further the value of the coin, by the issue of pieces of base metal, which were to pass at a nominal value far above their intrinsic worth; so that the coins issued of the nominal value of £965,375 according to some, but, according to others, of £1,596,799, were really worth no more than £6495, estimating the metal at 4d. per pound. On the accession of William, this coinage was cried down. In 1725, the new gold coin of Portugal was made current in Ireland, the largest coin, or Portugal piece, being rated at £4. About the same time, in consequence of the scarcity of small change, Wood obtained his patent for the issue of a copper currency, which was prevented by the literary exertions of Dean Swift in his celebrated publications called the *Drapier's Letters*. In 1760, the acts of Parliament prohibiting the carrying of gold or silver into Ireland were repealed. At that time the value of precious metals in circulation as specie, or hoarded, was estimated at £3,000,000 Irish. No further legislative change took place until the assimilation of the Irish and English currency in 1825, previously to which, however, the want of a metallic circulation was so severely felt, particularly during some periods of the French war, that private bankers and traders issued notes or tickets for small sums, from 5s. down to twopence-halfpenny; and also copper tokens. The evils of this combined pressure of the scarcity of legal and the abundance of counterfeit coin, was ultimately remedied by the issue of stamped dollars estimated at 6s., and by silver tokens of 10d. and 5d., by the bank of Ireland, which circulated freely until they were replaced by the issue of a pure standard coinage of silver from the royal mint.

The amount of subscriptions raised in England for the relief of sufferers by the famine of 1822 having exceeded the expenditure, the surplus was intrusted to a committee in London, and was retained under the name of the Irish Reproductive Loan Fund, as a permanent fund for organizing loan societies, ultimately originated the present loan fund system, under which small sums are advanced to industrious individuals of the working classes, to be repaid by instalments, with interest, and which was placed under the control of a commission in 1836 by the Act 6th and 7th Will. IV., chap. 55. The rate of discount on loans, made chargeable by it at 6d. in the pound, has been reduced to 4d. in the pound by the Act of 6th and 7th Vict., c. 91, which placed the general control over all charitable loan societies and charitable pawn or deposit offices under the superintendence of the "Loan Fund Board." The number of funds, with their capital and circulation since the commencement of the system, has been

Years.	No. of funds.	Capital.	Circulation.
1838.....	50	.....	£180,526
1839.....	224	.....	816,473
1840.....	215	.....	1,164,046
1841.....	268	£270,507	1,438,598
1842.....	300	124,920	1,691,871
1843.....	298	403,843	1,650,963
1844.....	259	417,584	1,702,918
1845.....	255	444,427	1,857,457
1846.....	250	408,842	1,770,397
1847.....	228	270,613	863,647
1848.....	177	217,119	717,865
1849.....	160	180,187	649,934
1850.....	132	182,501	602,794
1851.....	123	186,940	712,073
1852.....	113	186,271	739,056
1853.....	112	212,886	842,803
1854.....	115	214,785	870,024

Pawn offices, on the plan and under the name of the French *Monts de Piété*, were opened in several towns of Ireland in 1841, with the object of advancing money on pledges at rates more moderate than those of the licensed pawnbrokers; but all have since been discontinued. By means of navigable rivers and canals, Ireland possesses extensive inland navigation. For the details of the various canals, see CANALS. The railway from Dublin to Kingstown, which was opened at the latter end of 1834, was the first, and for several years the only railway in Ireland.

Banks.—The entire banking business of Ireland, until 1783, was in the hands of private individuals, who often issued notes to an amount not only far beyond their respective capitals, but exceeding, in a great degree, what the wants of the country required, or its credit could support. To remedy the evil effects of a system so pernicious, a national bank was established in that year, with similar privileges to those of the Bank of England in respect to the restriction of more than six partners in a private bank. The injury that Ireland has sustained from the repeated failure of banks may be mainly attributed to this injudicious regulation. The loss that the country has suffered by the failure of banks may be described in a few words. On the ex-

piry of the Bank of Ireland's charter in 1838, it was continued by act of Parliament from year to year until 1845, since which time it has been regulated by the new Banking Act, 8th and 9th Vict., c. 37, according to the following principles:—The bank to continue the banker of government, which is to pay for the 10 subsequent years 3½ per cent. on the debt it owes to the bank. The proceedings of the establishment to be under the same rule which has been applied by Parliament to other banking institutions, and to make weekly returns, similar to those of the Bank of England under the new act, containing a full development of its affairs, the amount of its bullion, and the variations in the quantity. The joint-stock banks now doing business are as follows. Those marked (*) do not issue their own notes:

Name.	When instituted.	No. of branches.	Capital.	Capital paid up.	Paid up per share.	Reserved fund.	Fixed issue.
Bank of Ireland	1783	28	£8,000,000	£8,000,000	£100	£1,144,000	£3,788,428
*Hibernian Joint-Stock Co., Dublin	1824	2	1,000,000	250,000	25	68,000	....
Provincial Bank of Ireland	1825	38	2,000,000	540,000	25	162,215	927,667
Northern Banking Co., Belfast	1825	11	500,000	150,000	30	59,778	243,440
Belfast Banking Company	1827	22	500,000	125,000	25	....	281,511
National Bank	1835	45	1,000,000	450,000	22½	40,826	761,757
Ulster Banking Company, Belfast	1836	18	1,000,000	187,000	2½	....	311,079
Clonmel National Bank	1836	2	80,000	16,225	2½	....	26,428
Carrick-on-Suir National Bank	1836	..	40,000	4,969	2½	....	24,084
*Royal Bank, Dublin	1836	..	1,044,250	209,175	10	60,000	....

The Annual Average of the several Banks of Issue in Ireland for the Years 1846 to 1854.

Years.	Certified issue of all the banks.	Notes of £5 and upward.	Notes under £5.	Total issue of all the banks.	Gold held.	Silver held.	Total specie held by all the banks.
1846	£6,854,494	£3,121,259	£4,144,461	£7,265,721	£2,100,004	£334,253	2,440,266
1847	6,854,494	3,844,040	2,986,375	5,830,425	1,268,517	491,958	1,755,475
1848	6,854,494	2,439,191	2,389,568	4,823,992	1,088,919	502,975	1,586,898
1849	6,854,494	2,204,474	2,105,802	4,816,283	1,080,476	528,783	1,541,094
1850	6,854,494	2,197,117	2,815,401	4,512,443	1,017,036	875,822	1,815,439
1851	6,854,494	2,118,077	2,349,870	4,462,909	937,408	818,574	1,255,985
1852	6,854,494	2,215,503	2,602,985	4,818,288	994,548	249,028	1,243,576
1853	6,854,494	2,517,570	3,132,883	5,650,455	1,808,867	192,720	1,576,600
1854	6,854,494	2,872,007	3,423,597	6,295,607	1,745,829	213,711	1,959,043

Commerce of the United States with Ireland, from October 1, 1820, to July 1, 1856.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage Cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1821	$889,577	$4,069	$893,646	$686,154	$198	$2,883	12,812	2,201
1822	770,176	....	770,176	806,024	....	5,978	18,158	2,047
1823	714,087	37,644	751,681	547,738	1,125	....	12,932	2,479
1824	918,582	8,673	922,205	431,875	....	238	20,541	1,761
1825	1,247,350	20,869	1,268,219	612,272	....	....	19,483	1,321
1826	775,137	6,684	781,821	672,994	....	....	14,496	1,359
1827	697,120	....	697,120	550,129	....	....	8,247	1,899
1828	394,450	810	895,260	711,041	....	....	5,026	3,730
1829	827,728	866	828,094	802,511	....	....	4,833	2,502
1830	261,687	....	261,687	881,333	....	....	4,594	2,570
Total	$6,930,994	$78,915	$7,009,909	$5,702,071	$4,618	$8,899	117,657	21,868
Sept. 30, 1831	$589,941	....	$589,941	$261,564	....	....	7,838	2,306
1832	152,918	$4,115	157,028	491,891	....	....	1,791	....
1833	120,482	....	120,482	152,280	....	....	1,406	1,343
1834	189,914	189	190,103	274,712	....	....	2,620	245
1835	403,604	....	403,604	542,890	....	....	4,372	760
1836	843,845	3,854	847,699	508,356	....	....	2,885	240
1837	9,898	....	9,898	181,776	....	....	551	184
1838	88,585	....	88,585	75,162	....	....	472	166
1839	330,719	....	330,719	150,689	....	....	1,882	392
1840	217,762	....	217,762	98,349	....	....	2,732	851
Total	$2,397,608	$8,158	$2,405,766	$2,687,669	....	....	25,929	5,927
Sept. 30. 1841	$60,879	....	$60,879	$81,921	....	....	1,891	....
1842	49,968	....	49,968	102,700	....	....	631	854
9 mos. 1843	208,502	1,180	209,682	43,535	....	....	982	2,197
June 30, 1844	42,591	....	42,591	88,034	....	....	191	786
1845	108,471	....	108,471	104,857	....	....	1,412	987
1846	1,077,008	5,463	1,082,471	85,774	....	....	14,748	6,804
1847	12,397,598	31,488	12,429,186	590,240	....	$52,171	124,600	101,067
1848	2,279,291	1,303	2,280,594	415,923	....	116,045	17,410	34,779
1849	2,916,842	29,526	2,946,368	376,798	....	....	58,901	46,165
1850	1,025,081	42,693	1,067,724	298,783	....	....	10,014	22,972
Total	$21,260,774	$104,658	$21,365,427	$2,188,610	....	$199,116	225,280	216,637
June 30, 1851	$598,888	$1,260	$599,888	$225,908	....	....	3,142	12,618
1852	578,250	100	578,350	159,583	....	....	4,116	9,460
1853	613,912	59,272	623,084	158,118	....	....	8,492	14,955
1854	1,006,017	86,485	1,092,502	222,385	....	....	9,120	14,432
1855	1,209,633	332,851	1,542,484	152,293	....	....	12,927	25,562
1856	4,800,021	74,709	4,874,730	89,682	....	....	35,735	19,089

Savings-banks were introduced into Ireland in 1810. The greatest amount deposited was in 1845, previous to the years of distress consequent on the famine; and the fluctuations which have since taken place appear in the annexed table:

Years.	Depositors.	Amount.	Years.	Depositors.	Amount.
1845	99,422	£3,921,551	1850	47,987	£1,291,798
1846	93,553	3,355,927	1851	49,554	1,347,617
1847	80,851	2,410,120	1852	52,142	1,447,915
1848	48,512	1,384,996	1853	55,630	1,586,010
1849	45,543	1,200,278			

The internal traffic of the country is carried on chiefly by wheel-carriage roads. Their condition, both as to lines of direction and mode of construction, is excellent. Materials for the construction and repairs of roads are very generally distributed throughout the whole island, either in quarries, ridges, and masses of gravel, or in the beds or channels of rivers and streams. The limestone, which is the general substratum of the greater part of the country, is the best material for their formation; and the system known

under the name of macadamizing was long and successfully practiced on many of the leading lines of road in Ireland before it was thought of in Great Britain.

The progress and condition of the Irish railway system from 1836 to 1854, inclusive, may be seen in the following tables, compiled from the Board of Trade Returns:

Years ending 30th June.	Miles open on the 1st January in each year.	No. of passengers.	Receipts.		
			From passengers.	From goods.	Total.
1836 (15 mos.)	6	1,297,800	£20,816	£105	£20,921
1837.....	6	1,184,498	31,901	44	31,945
1838.....	6	1,243,972	33,318	270	33,588
1839.....	6	1,341,208	34,409	307	34,716
1840.....	18½	1,358,761	36,171	414	36,590
1841.....	18½	1,629,024	41,002	466	41,468
1842.....	18½	2,046,908	54,819	2,260	56,789
1843.....	31½	2,074,444	56,548	6,862	63,350
1844.....	31½	2,588,696	62,606	8,286	71,494
1845.....	65	3,481,767	104,762	14,986	119,898
1846.....	65	3,610,506	105,469	18,274	123,743
1847.....	120½	3,866,294	149,584	35,000	184,584
1848.....	209½	4,374,749	211,598	60,215	271,808
1849.....	428	6,059,947	290,004	127,462	418,066
1850.....	515	5,495,796	339,076	174,959	514,035
1851.....	580	5,663,608	365,608	198,459	564,067
1852.....	666	6,166,127	425,910	243,609	669,519
1853.....	771	7,074,475	587,259	249,816	837,589
1854.....	805	6,711,170	521,871	352,806	874,677

E. B.

Iris, or Orris-Root Plant (*iris florentia*), a perennial, native of Carniola, and common in the gardens of Europe, the root of which is remarkable for communicating an odor like that of violets, and produces the orris of the shops. The flowers, which put forth in spring, are noted for the graceful curve of their petals, as well as for the brilliancy of their hues. It has a thick, tuberous, creeping stem, usually called its root, which, externally, is brown and yellowish, is white within, and sends out numerous fibres—the true roots—from the lower part. When these are pared off, the stem appears full of round spots. Independent of the value which would be derived from the roots of this plant, it would be highly desirable to cultivate it for the purposes of ornament, in all parts of the country where it would thrive.

Iron (Dan. *Jern;* Du. *Yzer;* Fr. *Fer;* Ger. *Eisen;* It. *Ferro;* Lat. *Ferrum, Mars;* Pol. *Zelazo;* Por. *Ferro;* Rus. *Scheleso;* Sp. *Hierro;* Sw. *Jern;* Gr. Σίδηρος; Sans. *Loha;* Arab. *Hedeed;* Pers. *Ahun*), the most abundant and most useful of all the metals. It is of bluish-white color, and when polished has a great deal of brilliancy. It has a styptic taste, and emits a smell when rubbed. Its hardness exceeds that of most other metals; and it may be rendered harder than most bodies by being converted into steel. Its specific gravity varies from 7·6 to 7·8. It is attracted by the magnet or loadstone, and is itself the substance which constitutes the loadstone. But when iron is perfectly pure, it retains the magnetic virtue for a very short time. It is malleable in every temperature, and its malleability increases in proportion as the temperature augments; but it can not be hammered out nearly as thin as gold or silver, or even copper. Its ductility, is, however, more perfect; for it may be drawn out into wire as fine at least as a human hair. Its tenacity is such, that an iron wire 0·078 of an inch in diameter is capable of supporting 549·25 lbs. avoirdupois without breaking. *Historical Notice.*—Iron, though the most common, is the most difficult of all the metals to obtain in a state fit for use; and the discovery of the method of working it seems to have been posterior to the use of gold, silver, and copper. We are wholly ignorant of the steps by which men were lead to practice the process required to fuse it and render it malleable. It is certain, however, that it was prepared in ancient Egypt, and some other countries, at a very remote epoch; but it was very little used in Greece till after the Trojan war. (See the admirable work of M. Goguet on the origin of Laws, Arts, etc.) Iron was found on Mount Ida by Dactyles, owing to the forests of the mount having being burnt by lightning, 1432 B. C.—*Arundelian Marbles.* The Greeks ascribe the discovery of iron to themselves, and referred glass to the Phœnicians; but Moses relates that iron was wrought by Tubal-Cain. Iron furnaces among the Romans were unprovided with bellows, but were placed on eminences with the grate in the direction of the prevailing winds. Swedish iron is very celebrated, and Daunemora is the greatest mine of Sweden. British iron was cast by Ralph Page and Peter Baude, in Sussex, in 1543.—*Reymer's Fœdera.* Iron-mills were first used for slitting iron into bars for smiths by Godfrey Rochs, in 1590. Tinning of iron was first introduced from Bohemia in 1681. There are upward of 800,000 tons of iron produced annually in England.—*Hayda.* There are many varieties of iron, which artists distinguish by particular names; but all of them may be reduced under one or other of the three following classes; *cast* or *pig iron, wrought* or *soft iron,* and *steel.* 1. Cast or pig iron is the name given to this metal when first extracted from its ores. The ores from which iron is usually obtained are composed of oxyd of iron and clay. The object of the manufacturer is to reduce the oxyd to the metallic state, and to separate all the clay with which it is combined. This is effected by a peculiar process; and the iron, being exposed to strong heat in furnaces, and melted, runs out into molds prepared for its reception, and obtains the name of cast or pig iron. The cast iron thus obtained is distinguished by manufacturers into different varieties, from its color and other qualities. Of these the following are the most ramarkable:

White cast iron, which is extremely hard and brittle, and appears to be composed of a congeries of small crystals. It can neither be filed, bored, nor bent, and is very apt to break when suddenly heated or cooled.

Gray or *mottled* cast iron, so called from the inequality of its color. Its texture is granulated. It is much softer and less brittle than the last variety, and may be cut, bored, and turned on the lathe. Cannons are made of it.

Black cast iron is the most unequal in its texture, the most fusible, and least cohesive, of the three.

Wrought or soft iron is prepared from cast iron by a process termed a refinement or finery. The wrought iron manufactured in Sweden is reckoned the finest in the world.

Steel consists of pieces of wrought iron hardened by a peculiar process. The Swedish iron imported into this country is mostly used in the manufacture of steel.—THOMSON'S *Chemistry.*

Uses of Iron.—To enumerate the various uses of iron would require a lengthened dissertation. No one who reflects for a moment on the subject can doubt that its discovery and employment in the shape of tools and engines has been of the utmost importance to man; and has done more, perhaps, than any thing else to accelerate his advance in the career of improvement. Locke has the following striking observations on this subject: "Of what consequence the discovery of one natural body and its properties may be to human life, the whole great continent of America is a convincing instance: whose ignorance in useful arts, and want of the greatest part of the conveniences of life, in a country that abounds with all sorts of natural plenty, I think may be attributed to their ignorance of what was to be found in a very ordinary despicable stone—I mean the mineral of iron. And whatever we think of our parts or improvements in this part of the world, where knowledge and plenty seem to vie with each other, yet to any one that will seriously reflect upon it, I suppose it will appear past doubt, that, were the use of iron lost among us, we should in a few ages be unavoidably reduced to the wants and ignorance of the ancient savage Americans, whose natural endowments and provisions came no way short of those of the most flourishing and polite nations; so that he who first

made use of that one contemptible mineral, may be truly styled the father of arts and author of plenty."—*Essay on the Understanding*, book iv., c. 12.

Iron, on account of its abundance, working qualities, and tenacity, is probably the most useful and valuable of metals. According to Dr. Ure, "it is capable of being cast into molds of any form, of being drawn into wire of any desired length or fineness, of being extended into plates or sheets, of being bent in every direction, of being sharpened, or hardened, or softened at pleasure. Iron accommodates itself to all our wants and desires, and even to our caprices. It is equally serviceable to the arts, the sciences, to agriculture, and war. The same ore furnishes the sword, the plowshare, the scythe, the pruning-hook, the needle, the graver, the spring of a watch or of a carriage, the chisel, the chain, the anchor, the compass, the cannon, and the bomb. It is a medicine of much virtue, and the only metal friendly to the human frame." In its primitive position it is commingled with the earth's strata in bountiful profusion; it is found in various combinations and conditions in every formation, and it is a constituent element of both animals and vegetables.

History.—Malleable iron appears to have been known from a remote antiquity. Its obvious utility and great superiority over the softer metals, then commonly used, combined with the expense of its reduction, caused it to be highly prized, though the extreme difficulty of working it by the rude methods then employed, greatly restricted its application. There are notices in Homer and Hesiod of the arts of reducing and forging iron; but cast-iron was then unknown—an imperfectly malleable iron being produced at once from the ores in the furnace. It is probable that the Greeks obtained most of their iron through the Phœnicians from the shores of the Black Sea, and from Laconia. It would be interesting to trace the gradual advances which have been made in the reduction of iron, from its discovery to the present time; to inquire into the circumstances which led to the successive changes in the processes, and into the principle on which those changes were founded; to examine into the differences in the products which from time to time ensued, and to notice the influence of these conditions on the extent and progress of the manufacture. Our knowledge of these changes, however, is scanty and imperfect, and we can only conjecture what was probably its early progress. The furnaces which were first employed for smelting iron were probably similar to those now called *air-bloomeries*. They were probably simple conical structures, with small openings below for the admission of air, and a large one above for the escape of the products of combustion, and would be erected on high grounds in order that the wind might assist combustion. The fire being kindled, successive layers of ore and charcoal would be placed in it, and the heat regulated by opening or closing the apertures below.

The process of reduction would consist of the deoxydation of the ore and the cementation of the metal by long continued heat. The temperature would never rise sufficiently high to fuse the ore, and the product would therefore be an imperfectly malleable iron, mixed with scoriæ and unreduced oxyd. It would then be brought under the hammer, and fashioned into a rude bloom, during which process it would be freed from the greater portion of the earthy impurities. By such a process as this the Romans probably worked the iron ores of our own island; scoriæ, the refuse of ancient bloomeries, occur in various localities, in some cases identified with that people by the coincident remains of altars dedicated to the god who presided over iron. Mungo Park saw a rude furnace of this kind used by the Africans, and, indeed, with some modifications, it is still retained in Spain, and along the coasts of the Mediterranean, where rich specular ores are worked. The advantages of an artificial blast would soon become manifest, and a pair of bellows, or a cylindar and piston would soon be applied to the construction mentioned above. Homer represents Hephæstus as throwing the materials from which the shield of Achilles was to be forged into a furnace urged by 20 pairs of bellows (*φύσαι*). The inhabitants of Madagascar smelt iron in much the same way, their blowing apparatus, however, consisting of hollow trunks of trees, with loosely-fitting pistons.

The furnace corresponds to the *blast*-bloomery, and has, by successive improvements, developed into the blast furnace, now almost universally used, and into the *Catalan forge*, still employed in some districts. The application of the blast would offer considerable advantages; it would obviate the necessity of an elevated site, place the temperature more immediately under the direction of the smelter, and render the whole process more regular and certain. The method of reduction remained the same as before, but the product would differ considerably, for whenever the blast was sufficiently powerful, the iron would be *fused*, a partial carburation would take place, and the resulting metal would be a species of steel, utterly useless to the workmen of those days; hence, it seems necessary to infer, that a rude process of refining was invented, the metal being again heated with charcoal, and the blast directed over its surface, the carbon would be burnt out, and the iron become tough and malleable. The processes might perhaps form two successive stages of one operation, as at present practiced with the Catalan forge.

The increasing demand for iron, and the progress of internal communication, would lead the smelter to increase the size and height of his bloomery, and this, probably, would lead to a very unexpected result. The greater length through which the ore had to descend, would prolong its contact with the charcoal, and a higher state of carburation would ensue, the product being cast-iron—a compound till then perhaps unknown.

From the time that cast-iron became the product of the smelting furnace, the refining would be made a separate process, requiring a separate furnace and machinery. It would soon be found also that, as the furnace increased in height, the pressure of the superincumbent mass would render the materials so dense as to retard the ascent of the blast, and thus cause it to become soft and inefficient; hence the internal buttresses called *boshes* were first introduced to support the weight of the charge, relieving the central parts from the pressure, and permitting the free ascent of the blast. While the good quality of the iron and the regularity of the process were thus insured, increase of quantity was the result of improvements in the blowing apparatus, which was now enlarged and worked by water-power. With these modifications, the furnace was the same essentially as the blast-furnace now employed, though not so large; indeed until the introduction of coke at a much later period, the blast-furnace seldom exceeded 15 feet in height by 6 at the widest diameter. The more perfect operation of the blast-furnace allowed the reduction of the heaps of scoriæ, which had been gradually accumulating during the period that the blast-bloomeries had been in operation, and which contained 30 to 40 per cent. of iron. A new species of property was thus created; extensive proprietorships of Danish and Roman cinders were formed; large deposits of scoriæ, which for ages had lain concealed beneath forests of decayed oak, were dug up, and in Dean Forest it is computed that 20 furnaces, for a period of upward of 300 years, were supplied chiefly with the bloomery cinders as a substitute for iron ore.

At what period the complete transformation of the blast-bloomery into the blast furnace was effected, it is impossible to say. It was probably in the early part

of the 16th century, as we find that in the 17th the art of casting had arrived at a considerable degree of perfection, and in the reign of Elizabeth there was a considerable export trade of cast-iron ordnance to the Continent. In the forest of Dean are the remains of two blast furnaces, which formerly belonged to the kings of England, but they have been out of blast since the commencement of the struggle between Charles I. and his Parliament. Calculating from the quantity of scoriæ accumulated in their immediate neighborhood, which appear to have lain undisturbed for the last two centuries, Mr. Mushet has attempted to deduce the period of their erection, which he conceives to have been about the year 1550, in the time of Edward VI. Up to this period wood charcoal was the only material employed in smelting operations, but the wants of a constantly increasing population, not less than the great consumption of the blast furnaces themselves, created a scarcity of this essential material, and gave a check to the manufacture. To such an extent had the wood been destroyed, that the cutting down of timber for the use of the iron-works was prohibited by special enactments; and the forests of Sussex alone appear to have been exempt from the general decree of conservation. The number of furnaces in blast decreased three fourths, and the annual production, which but a short time before is said to have been 180,000 tons, was in 1740 reduced to only 17,350 tons.

James I. granted patents to iron-masters in various parts of the kingdom for using pit-coal in the manufacture of iron. The obstacles to its introduction, however, were numerous, and not easily overcome. The comparatively incombustible nature of coke, and its feebler chemical affinities, rendered a more powerful blast and a longer subjection to the heat indispensable to its successful adoption. Ignorance of the causes of failure operated long and seriously, but all difficulties were at length surmounted. An enlargement of the height of the furnace prolonged the contact of the ore and coke, and at last the employment of the steam-engine and improved blowing apparatus rendered the blast much more powerful and regular, and gave that impetus to the manufacture which has caused Great Britain to take the first rank in this branch of industry.

The first great improvement in the blowing apparatus was the substitution of large cylinders, with closely fitting pistons, for the bellows. The earliest of any magnitude were probably those erected by Smeaton at the Carron Iron-Works, in 1760. In 1783-4, Mr. Cort, of Gosport, introduced the processes of puddling and rolling, two of the most important inventions connected with the production of iron since the employment of the blast furnace. (See Addenda, A.) About this time the steam-engine of James Watt came into use, and along with it commenced a new era in the history of the iron trade and every other branch of industry. Its immense power, economy, and convenience of application, brought it at once into general employment. It was soon applied to pumping, blowing, and rolling; it enabled the mines to be sunk to a greater depth; refractory ores to be reduced with facility, and the processes of rolling, forging, etc., to be effected with a rapidity previously unknown. Of late years Scotland has made considerable progress in the iron manufacture. The introduction of railway communication, and the invention of the hot-blast, have given a stimulus to the trade which has raised Glasgow into importance as an iron district, and few towns possess greater facilities for the sale of their produce, than this central dépôt of the mineral treasures of the country by which it is surrounded.

The hot-blast process, for which a patent was taken out by Mr. Nelson in 1824, has effected an entire revolution in the iron industry of Great Britain, and forms the last era in the history of this material. This simple but effective invention has given such facilities for the reduction of refractory ores, that between three and four times the quantity of iron can be produced weekly, with an expenditure of little more than one third the fuel; and, moreover, the coal does not require to be coked, or the ores to be calcined. In conclusion, we may add that there appear to have been five distinct epochs in the history of the iron trade.

The *first* dating from the employment of an artificial blast to accelerate combustion. The *second* marked by the employment of coke for reduction, about the year 1750. The *third* dating from the introduction of the steam-engine, and on account of the facilities which that invention has given for raising the ores, pumping the mines, supplying the furnace with a copious and regular blast, and moving the powerful forge and rolling machinery, we may safely attribute this era to the genius of James Watt. The *fourth* epoch is indicated by the introduction of the syatem of puddling and rolling, very soon after the employment of the steam-engine. The *fifth*, and last—though not the least important epoch in the history of this manufacture—is marked by the application of the hot-blast—an invention which has increased the production of iron fourfold, and has enabled the iron-master to smelt otherwise useless and unreducible ores; it has abolished the processes of coking and roasting, and has given facilities for a large and rapid production, far beyond the most sanguine anticipations of its inventor. Manufacturers taking advantage of so powerful an agent, have not hesitated to reduce improper materials, such as cinder-heaps and impure ores, and by unduly hastening the process, and attending to quantity more than to quality, have produced an inferior description of iron, that has brought the invention into unmerited obloquy.

The Ores.—The ores of iron are found in profuse abundance in every latitude, embedded in or stratified with every formation. They occur both crystallized, massive, and arenaceous, lying deep in strata of vast extent, filling veins and faults in other rocks, and scattered over the surface of the ground. Sometimes, but rarely, found native; usually as oxyds, sulphurets, or carbonates, more or less mingled with other substances. Of these ores there are perhaps twenty varieties, many of which are, however, rare; others are combined with substances which unfit them for the manufacture of iron, so that the remainder may be classed under the following general heads; their composition, however, varies greatly:

1. The magnetic oxyds, in which the iron occurs, as $Fe_3 O_4$ or $Fe_2 O_3 + Fe O$. This is the purest ore which is worked: the best Swedish metal is manufactured from it. It is found in primitive rocks, and is widely diffused over the globe. 2. Specular iron ore, peroxyd of iron, $Fe_2 O_3$. This is rich and valuable, and has been worked from a remote antiquity in Elba and Spain. It is found chiefly in primary and transition rocks. 3. Red and brown hæmatites, hydrated peroxyd of iron. These ores occur in botryoidal radiating masses, in Cumberland, Ireland, America, and other places. 4. Carbonate of iron. This ore occurs mixed with large quantities of argillaceous, carbonaceous, and silicious substances, forming the large deposits of clay-iron-stone and blackbands, from which most of the iron of this country is obtained. These strata are generally found in close proximity to the coal measures. All the above ores are more or less mixed with silica, alumina, oxyd of manganese, etc., and it may not be uninteresting to glance at their geographical distribution in Europe and America.

The United Kingdom.—Great Britain possesses peculiar and remarkable advantages for the manufacture of iron. The ores are found in exhaustless abundance, usually interstratified with the coal for their reduction, and in close proximity to the mountain limestone,

which is used as a flux. In few countries do these three essential materials occur in such abundance, or so near together as to give the necessary facilities for a large and profitable production. The ores principally employed are the clay-ironstones and carbonates of blackbands, which are found interstratified with the coal fields of Ayrshire, Lanarkshire, Shropshire, South Wales, and other parts, and these vary in richness in different localities, according to position and the amount of silica, clay and other foreign matter with which they are associated. The chemical composition of three varieties of the ore used in Lanarkshire is given by Colquhoun, as follows:

	No. 1.	No. 2.	No. 3.
Protoxyd of iron	58·08	47·83	35·22
Carbonic acid	35·17	33·10	32·53
Silica	1·40	6·63	9·58
Alumina	0·63	4·90	5·34
Lime	3·33	2·00	8·62
Magnesia	1·77	2·20	5·15
Peroxyd of iron	0·23	0·33	1·16
Bituminous matter	3·03	1·70	2·18
Sulphur	0·00	0·22	0·62
Oxyd of manganese	0·00	0·13	0·00
Moisture and loss	1·41	2·26	0·00
Total	100·00	100·00	100·37

The carbonic acid in the above ores may be partly combined with the lime as carbonate of lime, as well as with the protoxyd of iron. M. Berthier gives, according to Dr. Ure, the following analysis of the English and Welsh ironstones of the coal measures:

	Rich Welsh Ore.	Poor Welsh Ore.	Dudley Rich Ore or Gubbin.
Loss by ignition	30·00	27·00	31·80
Insoluble residuum	8·40	22·03	7·06
Peroxyd of iron	60·00	42·66	58·33
Lime	0·00	6·00	2·66
Total	98·40	97·69	99·85

Calculating the amount of carbonate of iron and metallic iron indicated by the above analyses, we have:

Carbonate of iron	88·77	65·09	85·26
Metallic iron	42·15	31·38	40·45

The richness of the above ironstones would be about 33 per cent. of iron. In the process of roasting, 28 per cent. of the ore is dissipated. Mr. Mitchel gives also the following assays of clay-ironstone and blackband ore, as under:

	Clay Ironstone, Leitrim, Ireland.	Blackband Carbonate Ore.
Protoxyd of iron	51·658	20·924
Peroxyd of iron	8·742	·741
Oxyd of manganese	·976	1·742
Alumina	1·849	14·974
Magnesia	·284	·987
Lime	·410	·884
Potash	·274	Trace.
Soda	·372	Trace.
Sulphur	·214	·098
Phosphoric acid	·284	·114
Carbonic acid	31·142	14·000
Silica	6·640	26·179
Carbonaceous matter	2·160	16·910
Loss		2·420
Total	100·000	100·000

In North Lancashire and Cumberland, the red hæmatite ores are now extensively worked, and great quantities are yearly shipped from Whitehaven, Ulverstone, etc., to Staffordshire, South Wales, and Scotland, for mixing with the poorer argillaceous and blackband ores. In Cumberland, North Lancashire, no less than 546,998 tons were raised in 1854 for this purpose, and the greater portion was exported from those districts. In addition to these exports, about 25,000 to 30,000 tons are smelted by the hot blast at Cleator, in the neighborhood of Whitehaven. It produces a strong and ductile iron, considered highly valuable for mixing with the weaker irons. These ores have been carfully analyzed, and contain:

Peroyd of iron	99·3
Silica	5·0
Alumina	3·0
Lime	trace.
Magnesia	trace.
Water	6·0
Total	104·3

Or about 62 per cent. of metallic iron.

The following table gives the state of the trade in 1856; the particulars are extracted from the Mining Records, published under the direction of Mr. R. Hunt, in connection with the Museum of Practical Geology, London. The importance which Scotland has assumed in reference to the iron manufacture is especially worthy of notice:

Counties.	No. of Works.	No. of furnaces erected.	No. of furnaces in blast.	Total produce in tons.
ENGLAND:				
Northumberland, Durham, and Yorkshire	87	106	80	343,444
Derbyshire	18	33	25	127,500
Lancashire & Cumberland	2	5	3	20,000
Staffordshire	72	203	166	347,600
Shropshire	13	34	23	124,800
Gloucestershire	4	7	5	21,990
WALES:				
Flintshire, Denbighshire	7	11	9	32,900
Glamorganshire, Anthracite district	14	35	21	750,000
Glamorganshire and Monmouthshire, Bituminous district	84	184	100	
SCOTLAND:				
Ayrshire	9	41	30	249,600
Lanarkshire	13	88	72	468,000
Other counties	10	27	16	79,040
Total	223	724	555	3,069,874

In connection with the above, we insert the following table from Mr. Kenyon Blackwell's paper on the Iron Industry of Great Britain, read before the Society of Arts. It gives the estimated production of crude iron in the various countries:

	Tons.		Tons.
Great Britain	3,000,000	Sweden	150,000
France	750,000	Various German States	100,000
United States	750,000		
Prussia	300,000	Other countries	800,000
Austria	250,000		
Belgium	200,000	Total	6,000,000
Russia	200,000		

In referring to the above, it will be seen that Great Britain produces as much crude iron as all other countries put together; and a great portion of that iron being converted into bars and plates, indicates a large and important article of production. An article of immense value to the country—of great demand at home and abroad—and justly entitled not only to improvements and economy in its manufacture, but to the generous support of a liberal and an enlightened government.

Previously to 1845, the imports of foreign iron into Great Britain usually varied from 20,000 to 25,000 tons a year. But at that epoch the duties on foreign iron (20s. a ton on iron in bars) were repealed; and there has since been an increase in the imports of Swedish bar-iron, which is especially well fitted for being made into steel. The imports of all sorts of foreign iron amounted, in 1849, to 29,396 tons, whereof 25,039 tons were from Sweden.

Perhaps in nothing has the fall of price, consequent on the diminution of the cost of production, that has taken place since the peace of 1815, been more conspicuous than in hardware. At an average, articles of hardware are at present (1857) full 50 per cent. lower than in 1820. And it may be safely affirmed that there are very few descriptions of articles to which a fall of price would have been so advantageous.

ACCOUNT OF THE DIFFERENT DESCRIPTIONS OF IRON (INCLUDING UNWROUGHT STEEL) EXPORTED FROM THE UNITED KINGDOM DURING 1850, SPECIFYING THE QUANTITIES SENT TO THE DIFFERENT COUNTRIES.*

Countries to which exported.	Pig iron.	Bar iron.	Bolt and rod iron.	Cast iron.	Iron wire.	Wrought iron, viz.				Old iron for re-manufacture.	Unwrought steel.
						Anchors grapnels, etc.	Hoops.	Nails.	Of all other sorts (except ordnance).		
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Russia	512	449	3	516	264	192	6	9	368	....	576
Sweden	230	463	....	410	3	98	....	0	75	10	7
Norway	1,460	171	142	95	41	588	82	1	292	....	14
Denmark	7,571	2,263	422	30	46	675	867	7	847	952	85
Prussia	16,959	1,422	98	6	10	166	69	65	942	5,665	214
Mecklenburg	21	264	114	0	12	49	139	1	100	....	5
Hanover	1,393	529	470	1	27	78	898	1	344	....	7
Oldenburg	313	273	69	2	....	3	80	....	93	....	....
Hanseatic Towns	7,870	7,868	1,091	1,809	581	950	1,512	121	6,201	171	897
Holland	18,108	8,786	417	707	153	811	1,821	94	4,763	....	478
Belgium	28	21	100	25	573	48	....	0	120	....	618
Channel Islands	512	592	42	869	3	227	58	152	198	6	16
France	11,718	1,085	846	65	29	216	470	0	1,086	17	183
Portugal, Azores, and Madeira	887	4,649	2,232	64	12	200	1,462	68	632	....	4
Spain and the Canaries	4,641	1,812	375	1,020	282	727	1,878	41	1,020	1	117
Gibraltar	....	351	9	12	2	197	60	89	21	....	3
Italy	7,400	22,184	4,888	1,583	255	1,067	3,415	83	2,384	1,188	812
Malta	8	1,996	160	18	....	168	142	1	100	10	1
Ionian Islands	....	305	....	20	....	5	102	1	10	....	....
Greece	....	1,081	146	14	....	206	146	5	149	....	....
Turkish dominions, exclusive of Wallachia, Moldavia, Syria, Palestine, and Egypt	861	9,060	3,557	80	18	558	223	215	758	....	3
Wallachia and Moldavia	70	1,608	658	5	6	....	297	22	320	....	....
Syria and Palestine	....	165	141	3	....	22	5	1	26	....	....
Egypt	....	879	....	42	17	13	120	8	192	....	....
Algeria	100	958	16	....	....	....	16	....	51	....	....
Tunis	....	282	....	13	....	....	5	....	10	....	....
Morocco	....	161	....	....	2	....	6	3	....	....	....
Western coast of Africa	....	2,745	....	804	....	5	449	26	160	....	....
British possessions in S. Africa	5	1,588	11	407	2	237	289	130	669	4	8
Cape Verd Islands	....	....	....	5	....	....	....	....	6	....	....
St. Helena and Ascension Isls.	....	1	....	....	....	....	....	4	4	....	....
Mauritius	....	517	52	353	1	57	100	253	461	....	5
British territories in East Indies	530	32,319	4,848	1,341	80	735	3,818	569	8,978	....	100
Java	260	1,916	468	208	62	187	140	56	198	....	....
Philippine Islands	....	345	160	7	....	52	75	10	212	....	6
China, including Hong Kong	820	508	2,207	85	53	15	191	18	28	25	....
British settlements in Australia	1,102	4,865	208	1,498	33	488	916	1,577	1,606	....	62
South Sea Islands	....	18	....	....	....	8	2	3	3	....	....
British North Amer. colonies	10,994	45,898	388	2,895	65	2,588	1,930	2,016	6,354	8	476
British W. Indies and Dr. Guiana	16	812	27	1,543	20	102	878	1,112	1,063	....	9
Foreign West Indies	269	6,475	487	1,808	12	123	819	804	752	3	14
United States of America	57,021	260,841	1,400	1,476	1,205	12,882	7,349	697	10,894	7,679	6,325
Mexico	....	1,781	19	83	19	4	200	46	82	....	70
Central America	....	191	2	29	....	4	9	23	61	....	17
New Granada	....	1,965	12	25	....	18	23	78	56	....	11
Venezuela	4	70	....	49	2	2	18	50	26	....	....
Ecuador	10	65	....	5	....	7	....	31	14	....	....
Brazil	1,660	2,942	147	990	12	729	590	480	840	....	40
Oriental republic of Uruguay	....	14	....	28	....	14	24	19	57	....	....
Buenos Ayres	....	1,545	28	479	32	156	331	166	489	....	5
Chili	280	6,446	49	864	8	178	141	155	412	....	17
Peru	50	846	8	124	2	37	34	52	277	....	6
Falkland Islands	....	....	....	....	....	....	....	....	7	....	....
Russian settlements on the north-west coast of America	....	....	....	....	....	12	....	....	....	....	....
Total	141,972	442,998	26,435	21,092	4,634	25,927	30,605	9,267	54,808	15,688	10,592

* Cwts. and lbs. are omitted in this table, but are allowed for in the summing up.

In Ireland there are vast deposits of iron ore of great richness, though as yet but little worked. Some of these, such as the ores worked at the Arigua mines, and the Kidney ores of Balcarry Bay, yield as much as 70 per cent. of iron. If these mines were worked more extensively, and if peat fuel were used in the smelting operations, the iron would probably be of the very best quality, and might rival the famed Swedish charcoal metal. Of this there is now every reason to hope, as the establishment of railway communication, with almost every part of Ireland, will open out the immense peat bogs of that country, and facilitate the introduction of vegetable fuel for the reduction of the ores, and create a large and important addition to other branches of Irish industry.

France possesses an abundant supply of iron ore, but on account of the scarcity of coal, the manufacture has been greatly restricted in extent. The introduction of railway communication is, however, rapidly removing this difficulty, and the operations of smelting are greatly on the increase. The railroad has enabled the French iron-master to substitute coal for charcoal in the reduction of the iron ores, and in consequence at immense increase has taken place in the production of pig and manufactured iron. The ores are found in beds or strata in the Jura range; accumulated in kidney-shaped concretions in the fissures of the limestone; or dispersed over the surface of the ground, and but slightly covered with sand or clay. They are found in the Departments of the Yonne, the Meuse, and the Moselle, and indeed may be traced from the Pas de Calais on the north to the Jura on the south, indicating throughout an abundant and ample supply. The present increased production of iron in France is chiefly due to the introduction of coal in smelting, but it may also be traced in some measure to the encouragement given by the government to that branch of industry, and to the enterprise of such men as M. de Gallois and M. Dufrénoy, who have exerted themselves to extend its manufacture in that country. M. de Gallois resided in England for several years, immediately subsequent to the peace of 1815, and having obtained admission into the different iron-works here, he returned to France and established the works at St. Etienne, now probably the largest and most extensive in that country. The universal exhibition of last year (1855) fully justifies the remarks in reference to the great increase of the iron

trade of France. Any person in the least conversant with the imperfect machinery and processes of the iron manufacture as it existed in France some years since, could not have been otherwise than struck with the improved character of those exemplified in the Paris Exhibition. In no country (probably not excepting even this) has so great progress been made in so short a time, in advancing from a state of comparative rudeness to one of considerable perfection, as in France. The production of crude pig-iron in France is now little short of 1,000,000 tons annually, but the demand for railways, rolling-stock, bridges, iron ships, girders, and other constructions is so great that large quantities of iron are still annually imported from this country.

German Iron Manufactures.—The increase in the production and manufacture of iron in Germany, within the last few years, is remakable. In Prussian Westphalia alone, no less than 16 mining and smelting companies have been formed since 1848—12 of them since 1854. In 1853, this province produced but 603,525 cwt. pig iron, and 118,064 cwt. cast iron ware; while in 1854 the product was 709,110 cwt. pig iron, and 332,061 cast iron ware; showing an increase of 78 per cent. in one year. In 1855 the same province produced 1,513,039 cwt. pig iron, and 1,126,025 cwt. bar iron. The product of iron ore in all Prussia in 1853, was 1,496,516 tons, and in 1854, 2,144,149 tons; increase, 647,633 tons. The product of all the furnaces in the kingdom of Saxony, in 1852, was 168,175 cwt.; in 1858, 170,637 cwt. Bavaria produced in 1850, 668,167 cwt.; in 1853, 1,074,317 cwt. Austria, in 1830, produced 1,437,836 cwt. pig iron, and 151,637 cwt. cast iron ware in 1854, 4,151,505 cwt. pig iron, and 582,446 cwt. cast iron ware. The product of all the furnaces in the States of the Zollverein was: In 1851, 4,612,102 cwt.; in 1852, 5,187,821 cwt.; in 1853, 6,126,458 cwt.; in 1854, 7,501,470 cwt.; showing an increase from 1851 to 1854, of 64 per cent. At this rate of increase, the production of iron will soon exceed its consumption in Germany. But little railroad iron is now imported into Germany. The rolling-mills on the lower Rhine, in Berlin, and in Silesia, supply Prussia; the rolling-mill of Zwickau meets the demand of Saxony, and that of Burglengenfield supplies Bavaria. Austria, too, is supplied by domestic mills. German rails are more expensive than English, but are also said to be more durable.

In regard to machinery, Germany is also making rapid progress, and already outstrips England in the building of locomotives. Not a single locomotive is now sent from England to Germany on German account, while numbers of them are sent from Germany to France and Switzerland. Extensive iron-founderies and machine-shops are to be found in Berlin, Vienna, Munich, Augsburg, Eslingen, Carlsruhe, Aix-la-Chapelle, Ruhrort, Hanover, etc. Up to January 1, 1854, one establishment in Berlin had alone turned out 500 locomotives, and 1300 have been built in all in Germany since 1841. German cutlery is likewise beginning to compete with the English, especially in the West India and South American markets. The sugar plantations of the West Indies, which formerly obtained their harvesting implements from England, now import them direct from Germany.

Prussia.—Valuable deposits of the blackband and clay carbonate ores are found interstratified with the great coal-field of Ruhr; and the bog-iron and hæmatite ores are found in considerable profusion in Rhenish Prussia and other parts. In Upper Silesia, on the Vistula and the Oder, large deposits of coal and iron are found in juxtaposition, and are worked to a considerable extent.

The consumption of iron is not so great as in France, though it is increasing rapidly, as may be seen from returns recently given by the British Chargé d'Affaires at Berlin. These returns show that the amount of iron ore raised in Prussia has increased from 1,495,516 tons in 1853, to 2,144,509 tons in 1854; this has taken place in nearly all the producing districts, but chiefly on the Rhine, where the demand has increased from 719,684 to 1,068,656 tons; in Westphalia, from 146,320 to 330,014 tons; in Silesia, from 563,739 to 650,369 tons; in lower Saxony and Thuringia, from 51,963 to 70,676 tons; in Prussian Brandenburg, from 8,084 to 12,731 tons; and in the Upper Zollverein from 6,736 to 12,063 tons.

In *Austria*, all the iron is smelted with charcoal or carbonized peat, and is, in consequence, of the finest quality; it may be applied to every description of manufacture, from the most ductile wire to the hardest steel. The production is, however, small. The ores are found in Hungary, Styria, Moravia, and Upper Silesia.

In *Belgium*, both coal and iron are found in equal abundance, and are worked at Charleroi, Liege, and at other places. The ores, which are chiefly hæmatite, are derived from the limestone at the base of the coal measures.

The superiority of the *Swedish* iron has long been acknowledged, and till recently it has been unrivaled. This arises not only from the purity of the ore—the magnetic oxyd of iron—but in consequence of its being smelted with charcoal only. The quantity is, however, restricted, as the iron-masters are allowed by law only a certain number of trees per annum, in order that the forests may not be totally destroyed. Coal does not exist in either Sweden or Norway.

In 1844 some experimental researches were undertaken by Mr. Fairbairn of Manchester, at the request of the Sublime Porte, in regard to the properties of iron made from the ores of Samakoff in Turkey. The ores were strongly magnetic, and contained, according to Dumas and others, 62 to 64 per cent. of iron. They consisted of:

One atom iron	28	one atom oxygen	8	= 36
Two atoms iron	56	three atoms oxygen	24	= 80
Iron....	84	Oxygen.....	32	116

Some of these ores have been smelted with charcoal, and some very fine specimens of iron and steel produced. The manufacture is, however, in a langnid state in Turkey, and although smelting furnaces, blowing apparatus, forges, rolling mills, etc., were prepared and sent out from this country, they are to a great extent useless among a people who have deeply rooted prejudices and habitual inactivity to overcome, and every thing to learn in all those habits of industry which indicate the rising prosperity of an energetic and an active people.

America.—Both the magnetic, hæmatite, and clay-ironstones abound in the United States. The magnetic ores worked in New England, New York, and New Jersey; the hæmatite in Pennsylvania, New York, New Jersey, and other localities; but the greater part of the manufacture must eventually establish itself in the valley of the Mississippi, west of the Alleghany range, where vast deposits of coal and iron exist, though at present but imperfectly known or developed. The ores in most of these districts are smelted with a mixture of charcoal and anthracite, and the usual limestone flux, and produce a very excellent quality of iron. In another portion of this article (see p. 1105) a full account of the iron ores of the United States is given.

In Nova Scotia some of the richest ores yet discovered occur in exhaustless abundance. The iron manufactured from them is of the very best quality, and is equal to the finest Swedish metal. The specular ore of the Acadian mines, Nova Scotia, is said by Dr. Ure to be a nearly pure peroxyd of iron, containing 99 per cent. of the peroxyd, and about 70 per cent. of iron. When smelted, 100 parts yield 75 of iron, the increase in weight being due to combined carbon. The red

ore Dr. Ure states to be analogous to the kidney ore of Cumberland, and to contain:

Peroxyd of Iron	85·8	84·4
Silica	8·2	8·0
Water	6·0	7·6
	100·0	100·0

The Acadian ores are situated in the neighborhood of large tracts of forests, capable of supplying almost any quantity of charcoal for the manufacture of the superior qualities of iron and steel. Several specimens of iron from these mines have been submitted to direct experiment, and the results prove its high powers of resistance to strain, ductility, and adaptation to all those processes by which the finest description of wire and steel are manufactured. The difficulties which the government have had to encounter, during the last two years, in obtaining a sufficiently strong metal for artillery, are likely to be removed by the use of the Acadian pig-iron. Large quantities have been purchased by the War Office, and experiments are now in progress, under the direction of Lieutenant-Colonel Wilmot, Inspector of Artillery, and of Mr. Fairbairn, which seem calculated to establish the superiority of this metal for casting every description of heavy ordinance. There are also some very rich ores at the Nictau mines, as the following analyses by Dr. Jackson show. They contain impressions of Silurian tentaculites, spirifers, etc.:

	Brown Ore, somewhat magnetic.	Red Iron Ore.
Peroxyd of Iron	70·20	64·40
Silica	14·40	19·20
Carbonate of lime	5·60	5·40
Carbonate of magnesia	2·80	3·20
Alumina	6·80	1·20
Oxyd of manganese	·40	4·40
Water	·00	2·40
	100·20	100·20
* Gain from oxygen.	·20*	·20†
† Clear-run, probably carbonic acid from carbonate of lime.	100·00	100·00

As our limits are circumscribed, it will not be necessary to extend this section further; suffice it therefore to observe, that in all countries nature has, with a beneficent purpose, interlaid and interstratified the whole surface of the globe with this useful and indispensable material, and it would ill bespeak that high intelligence with which man is endowed if he did not avail himself of, and turn to good account, the immense stores of mineral treasures which are so profusely laid at his feet.

Fuel.—The inquiry into the properties and composition of the ores of iron, and the processes employed for their reduction and subsequent conversion into bars and plates, would be incomplete unless accompanied by descriptive analyses of the fuel by which they are fused. Indeed the results of the operations of smelting, puddling, etc., are so intimately dependent on the quality of the fuel employed, as to render a knowledge of its constituents essential to the manufacture of good iron.

Charcoal was at first universally employed in the manufacture of iron, and on account of its purity compared with other kinds of fuel, and its strong chemical affinities and consequent high combustibility, it is of very superior value where it can be obtained in large quantities at a moderate cost. This, however, is rarely the case, and hence its use is restricted within very narrow limits in most countries. Charcoal is the result of several processes, in each of which the object is to increase the amount of fuel in a given bulk. The wood being cut to convenient lengths, and piled closely together, in a large heap, the interstices being filled with the smaller branches, and the whole covered with wet charcoal powder, is then set on fire. Care is taken that only sufficient air is admitted to drive off the gaseous products of the wood, so as to maintain a high temperature without needlessly consuming the carbon. After the whole of the gaseous products have been separated, and the carbon and salts only are left, the access of air is prevented, and the heap allowed to cool.

Another and better process is to throw the wood into a large close oven or furnace, heated either by the combustion within it, or by a separate fire conducted in flues around it. By this process, not only is the yield greater and of better quality, from the slower progress of the operation, but the products of the distillation may be preserved and employed for a great variety of purposes. The following results of some experiments by Karsten, show the difference in yield of very rapid and very slow processes:

Wood.	Charcoal produced by quick carbonisation.	Charcoal produced by slow carbonisation.
Young oak	16·54	25·60
Old oak	15·91	25·71
Young deal	14·25	25·25
Old deal	14·05	25·00
Young fir	16·22	27·72
Old fir	15·55	24·75
Mean	15·88	25·67

These, on the average, give for the quick processes 15·3, and for the slow 25·6, being in the ratio of 1: 1·67, or 0·67 in favor of the quick process.

Peat—This material seems likely to come into use for smelting iron in countries such as Ireland, where neither coal nor wood are found in abundance. It is purer and less objectionable than coal, and if properly dried, compressed, and carbonized, would prove a very valuable fuel for the reduction of such ores as we have already described in the section on the iron ores of Ireland. It is carbonized in the same way as the charring of wood.

Coke.—Before the introduction of the hot-blast, this material was used to a very great extent in the manufacture of iron; it is prepared from coal in the same way that charcoal is prepared from wood, the operation being called the coking or desulphurizing process. The heaps do not require so careful a regulation of the admission of air as those of charcoal, on account of the comparatively incombustible character of the coke. Sometimes the heaps are made large, with perforated brick chimnies, to increase the draught through the mounds; at other times they are formed into smaller heaps, and the conversion takes place without the intervention of flues. The more usual and economical plan is, however, the employment of close ovens, by which process a great saving is effected, the yield being from 30 to 50 per cent. in the one case, and from 50 to 75 in the other, according to the nature and quality of the coal.

The following table of the heating power of various kinds of fuel, from Knapp's Chemical Technology, is not without interest; in practice, however, only a portion of the absolute heating power is made available:

Fuel.	Authority.	Pounds of water heated from 0° to 100° centig. by 1 lb. of fuel.
Charcoal, Average	Berthier	68·0
Peat from Allen in Ireland, Upper	Griffith	62·7
" " " Lower		56·6
" " " Pressed		28·0
Peat charcoal, Essone		50·7
" Framont & Champ de Feu	Berthier	58·9
Coke, St. Etienne	Berthier	65·6
" Besseges		64·3
" Rive de Gier		58·9
Coal, brown, mean of 7 varieties	Berthier	50·3
" cannel, Wigan	Berthier	64·1
" cherry, Derbyshire		61·6
" cannel, Glasgow		56·4
" " Lancashire		54·2
" Durham		71·6
Gas coke, Paris	Berthier	50·3
Anthracite, Pennsylvania	Berthier	69·4
" mean of 5 varieties		67·4

Coal.—The hot-blast has enabled the iron-masters to use raw coal in the blast furnaces, the great heat of

the ascending current of the products of combustion coking it as it falls in the furnace. The sulphur however, and other deleterious ingredients, do not appear to be so completely got rid of as when the coal is used in the shape of coke; and it appears probable, that even with the hot-blast, the separate process of coking might be advantageously used, on account of the greater purity of the iron produced.

The following tables, selected from various sources, give the composition of the different kinds of fuel, all of which are applicable to the reduction and fusion of the iron ores:

Fuel.	Locality.	Specific gravity.	Carbon.	Hydrogen.	Oxygen and Nitrogen.	Ashes in 100 parts.	Authority.
Splint Coal		1·290	75·00	6·25	18·75	....	Thomson.
"		1·266	70·90	4·30	24·80	....	Ure.
"	Newcastle, Wylam	1·302	74·823	6·180	5·085	13·912	Richardson.
"	Glasgow	1·307	82.924	8·491	10·457	1·128	
Cannel coal		1·272	64·72	21·56	13·72	....	Thomson.
"		1·223	72·22	8·93	23·85	....	Ure.
"	Lancashire, Wigan	1·319	83·753	5·460	8·089	2·545	Richardson.
"	Edinburg (parrot coal.)	1·312	87·597	5·405	12·432	14·568	
Cherry coal		1·293	74·45	12·40	13·15	....	Thomson.
"	Newcastle, Jarrow	1·266	84·846	5·048	8·490	1·676	Richardson.
"	Glasgow	1·286	81·208	5·452	11·923	1·421	
Caking coal	Newcastle, Garesfield	1·280	87·252	5·289	5·416	1·998	
"	Durham, South Hetton	1·274	83·274	5·171	8·086	1·519	
"		1·269	75·28	4·18	20·54	4 670	Thomson.
Anthracite	Swansea	1·343	92·56	2·380	2·530	1·720	Regnault.
"	"	1·270	90·58	2·000	4·100	....	Jacquelin.
"	South Wales	....	94·05	3·380	2·570	....	Overman.
"	Pennsylvania	1·462	90·45	2·480	2·450	4·670	Regnault.
"	"	....	94·89	2·550	2·560	....	Overman.
"	Massachusetts, Worcester	....	28·35	0·920	2·150	68·65	
Peat	Vulcaire	....	57·03	5·630	31·760	....	Regnault.
"	Long	....	58·09	0·980	31·870	....	
"	Champ de Feu	....	57·79	6·110	30·770	....	
"	Cappage	....	51·05	6·85	39·55	2·55	Dr. Kane.
"	Kilbeggan	....	61·04	0·67	30·46	1·83	
"	Kilbakan	....	51·13	6·33	34·48	8·06	

According to Knapp, peat contains from 1 to 33 per cent. of its weight of ash. In coal we have the following from Mr. Mushet's analyses:

	Specific gravity.	Carbon.	Ashes.	Volatile matter.
Welsh furnace coal	1·337	88·068	3·432	8·300
" " "	1·393	89·709	2·300	8·000
" slaty "	1·409	82·175	0·725	9·100
Derbyshire furnace coal	1·264	52·882	4·288	42·830
" cannel "	1·278	48·362	4·638	47·000

And again the analyses, from Overman, of the ash of coal, may be quoted, as showing the constituents contained in the ashes derived from combustion:

Sulphate of lime	80·3	3·6
Lime	3·8	2·5
Silex	14·2	85·7
Oxyd of iron	1·7	0·0
Alumina	0·0	8·2
Total	100·0	100·0

Malleable Iron.—The greatly extended application of wrought iron to every variety of construction renders an investigation of its properties peculiarly interesting. It is now employed more extensively than cast iron; and on account of its ductility and strength nearly two thirds of the weight of material may in many cases be saved by its employment, while great lightness and durability are secured. Its superiority is especially evident in constructions where great stiffness is not required, but on the other hand any degree of rigidity may be obtained by the employment of a tubular or cellular structure, and this may be seen in the construction of wrought iron tubular bridges, beams, and iron shops. The material of malleable iron which is making such vast changes in the forms of construction, can not but be interesting and important, and considering that the present is far from the limit of its application, we shall endeavor to give it that degree of attention which the importance of the subject demands. From the forge and the rolling-mill we derive two distinct qualities of iron, known as "*red-short*" and "*cold-short*." The former is the most ductile, and is a tough, fibrous material, which exhibits considerable strength when cold; the latter is more brittle, and has a highly crystalline fracture almost like cast-iron; but the fact is probably not generally known, that the brittle works as well, and is as ductile under the hammer, as the other, when at a high temperature.

United States.—Iron was first made in America in the province of Virginia, about the year 1715, and the example was quickly followed by the provinces of Maryland and Pennsylvania. This opening of a new source of wealth was a subject of great satisfaction and importance to those who were interested in the prosperity of the colonies, presenting to their view, at no distant date, a prospect of independence of foreign countries for the supplies of those most essential articles, iron and timber.

Exports of Iron from the American Plantations.

Years.	Tons.
1717, 1718 together	7
1729—1735, average	2,111
1739—1748 "	2,423
1750—1755 "	3,805
1761—1776 "	4,045

Imports of Iron.

Years.	Tons.
1711—1718, average	1,732
1729—1738 "	2,312

No further returns were published.

In 1810, Mr. Gallatin, the Secretary of the Treasury of the United States, presented to Congress a report on the manufactures, in which, among many other branches, iron, and the manufactures of iron, are mentioned as being firmly established, supplying, in several instances, the greater, and in all, a considerable portion of the consumption of the United States.

"The furnaces, forges, and bloomeries of the United States, amount to 530, of which the State of New York furnishes 69. The annual value of iron and its manufactures is estimated at $12,000,000 or $15,000,000. The average value of imported metal, in bar-iron and steel, at $1,000,000. The Franconia Iron Works, in New Hampshire, established in 1810, employ a capital of $100,000. The Vergennes Iron Works, in Vermont, promise to be very important. The price of bar-iron at this establishment is $140 per ton, the ore $3, charcoal $4 50 per 100 bushels; 19,000 muskets are annually made at the two public armories of Springfield and Harper's Ferry. There is now a considerable surplus of small arms."

Some of the ores of iron are found in every State in the Union; and, about the period of Mr. Gallatin's report, mines of this metal were worked in New Hampshire, Vermont, Rhode Island, New York, Connecti-

cut, New Jersey, Pennsylvania, Virginia, and North Carolina.

According to the "Statistical Annals of the United States," by Adam Seybert, founded on official documents, the manufacture of iron in the year 1810 was as follows: 153 furnaces, making 53,908 tons of iron; 330 forges, making 24,541 tons of bar-iron; 316 trip-hammers; 34 rolling and slitting-mills, which required 6500 tons of iron; 410 nailries, in which 15,727,914 lbs. of nails had been made. Manufacture of iron, value, $14,364,526.

From abstracts of reliable statements it appears that the whole quantity of iron made in the year 1830, computed in pig-iron, amounted to 191,536 tons, produced from 239 furnaces, two fifths of which were made in Pennsylvania.

The average quantity of hammered iron imported from 1821 to 1830, was about 26,200 tons, and of rolled iron about 5600 tons, making together 31,800 tons, valued at $1,762,000. The whole quantity of hammered and rolled iron consumed in the United States in 1830, may be estimated at about 144,666 tons.

The value of the various foreign manufactures of iron consumed, on an average, from 1821 to 1830, was about $4,000,000, making the whole amount of foreign iron and its manufactures annually consumed, about $5,762,000.

Iron Manufactures of the United States in 1850, from the "Report of the Superintendent of the seventh Census," printed by order of the House of Representatives.—Pig-iron.—Number of establishments in operation, 377. Capital invested, $17,346,425. Materials used, and value,

Ore	tons	1,57[illegible] 809
Coal	"	645 242
Coke and charcoal	bushels	54,165,'36

} $7,005,289

Number of persons employed, 20,448. Average wages per month, $20 76. Pig-iron made, 564,755 tons; value, $12,748,777.

Castings.—Number of establishments in operation, 1891. Capital invested, $17,416,861. Materials used, and value,

Pig iron	tons	845,558
Old metal	"	11,412
Ore	"	9,850
Coal	"	190,891
Coke and charcoal	bushels	2,418,750

} $10,346,355

Number of persons employed, 23,589. Average wages per month, $27 38. Castings made, 322,745 tons; value, $25,108,155.

Wrought-iron.—Number of establishments in operation, 422. Capital invested, $14,495,220. Materials used, and value,

Pig metal	tons	251,491
Blooms	"	[illegible],344
Ore	"	18,787
Coal	"	588,063
Coke and charcoal	bushels	14,510,828

} $9,698,109

Number of persons employed, 13,257. Average wages per month, $25 41. Wrought-iron made, 278,044 tons; value, $16,747,074.

Imports of British Iron.

Years.	Tons.
1815–1819, average	15,097
1820—1824 "	11,892
1825—1829 "	17,491
1830—1834 "	43,680
1835—1839 "	74,346
1840—1844 "	64,099
1845—1849 "	181,662
1850	307,862
1851	464,559
1852	501,158

Imports of British Hardware and Cutlery.

Years.	Declared value.
1840—1844, average	$498,534
1845—1849 "	803,608
1850	1,049,903
1851	1,098,487
1852	968,492

This table shows the imports to have reached the maximum in 1851.

n Manufactures of the United States in 1840.

States.	Cast-iron. No. of furnaces.	Cast-iron. Tons produced.	Bar-iron. Bloomeries, forges, and rolling mills.	Bar-iron. Tons produced.	Tons of fuel consumed.	Men employed, including mining operations.	Capital invested.
Maine	16	6,122	1	....	285	48	$185,950
New Hampshire	15	1,820	2	125	2,104	121	98,200
Massachusetts	48	9,332	57	6,004	199,252	1,097	1,232,875
Rhode Island	5	4,126	..	....	227	29	22,250
Connecticut	28	6,495	44	3,623	16,933	895	577,300
Vermont	26	6,743	14	655	388,407	788	664,150
New York	186	29,088	120	53,603	123,617	3,456	2,103,418
New Jersey	26	11,114	80	7,171	27,125	2,056	1,721,820
Pennsylvania	213	98,895	169	87,244	355,903	11,522	7,781,471
Delaware	2	17	5	440	971	28	56,200
Maryland	12	8,876	17	7,960	21,422	1,782	795,650
Virginia	42	18,810	52	5,886	86,588	1,742	1,246,650
North Carolina	8	968	43	968	11,598	468	94,961
South Carolina	4	1,250	9	1,165	6,334	248	113,300
Georgia	14	494	29	....	630	41	24,000
Alabama	1	80	5	75	757	80	9,500
Louisiana	6	1,400	2	1,866	4,152	145	357,000
Tennessee	34	16,129	99	9,078	187,453	2,266	1,514,736
Kentucky	17	29,206	13	3,637	35,501	1,108	449,000
Ohio	72	35,236	19	7,466	104,812	2,268	1,161,900
Indiana	7	810	1	20	787	103	57,700
Illinois	4	158	..	....	240	74	40,300
Missouri	2	180	4	118	300	80	79,000
Michigan	15	601	..	....	451	99	60,800
Wisconsin	1	8	..	....	1	8	4,000
Total	804	286,903	795	197,283	1,528,110	30,197	20,432,181

It is not easy to strike the true medium, the best policy, between the proper fostering care by protection, due to the iron manufacturer, and, at the same time, not to restrict the construction of railroads, and, as a consequence, the growth of new States, by confining by high duties the supply of iron to the production of our own mills. The reduction of duty on iron, by the new tariff, from 30 to 24 per cent., will, undoubtedly, have some effect on our iron manufactures; but rather to limit the profits, than to reduce the production or number of mills; the present prices are ample to give large profits to home manufacture, even if a small decline follows the reduction of duty. The iron manufacture of the United States is only a question of time, and no very great amount of that cash article is now required to bring it to that point where it will take the lead of the world, and become the staplest and most profitable branch of American industry. A great deal of instruction is to be derived from the reports of the iron manufacture in England. The following is an extract from one of the most recent:

"Thanks for the most part to the demand from the United States, the iron trade of south Staffordshire

may be reported as much more healthy than it was a month ago. By the last two or three American mails there have been brought specifications which, in their number and value, form a striking contrast to those received during many months past. These show that the American mills are able to supply only a very small portion of the demand of the States; and are demonstrative that with bars at £8 instead of £9, a trade might be carried on with America to an extent that would be restricted by nothing else than the powers of production attaching to the British works. The *Persia*, whose letters were delivered on Saturday last, was especially valuable in respect of such specifications. In the past fortnight, however, the 'make' of south Staffordshire has not been by any means so large as under such circumstances might have been expected. This has been occasioned by the unusual circumstances of large masses of machinery at several works having been stopped by breakages, which have all happened within a few days of each other. By the end of this week the preparations that have ensued will be completed, and if there should not be a recurrence, the next fortnight will be characterized by the utmost animation at the works of the principal iron-masters of the district. The large American demand will make the inconvenience greater than is now being felt by most of the makers of malleable iron, from the exceedingly short supply of hæmatite ore of sample sufficiently fine for the purposes of the puddling furnace. If this deficiency should last much longer, it will cause some little anxiety in cases where those descriptions of iron are in demand, in the manufacture of which pounded calcined cinder is not an efficient substitute. There are no complaints of a shortness of supply of those coarser samples of red ore used in the blast furnace."—*London Engineer, Feb.*

The supply of the best quality of iron is decreasing in England, whereas in this country we are but beginning to develop and become acquainted with our best ores. "Iron Mountain" and "Pilot Knob" in Missouri, contain iron in immense quantities, and of a purity of ore not to be found but in two or three mines, and limited in amount, in Sweden. And Kentucky has undeveloped iron ores to a great extent, and of uncommon purity. We ought to export rather than import iron; and in less than twenty years we shall do so, unless some wonderful mineralogical discoveries are made in the British Isles.

No State in the Union is so vitally interested in the iron trade as Pennsylvania. Iron, in all its different varieties, forms one of the chief sources of State wealth. The ore abounds in several sections of this commonwealth, while furnaces dot the hill-sides and valleys, giving employment to numerous laborers, and producing thousands of tons of iron, which are transported to other States, and serve to enrich all who are interested in its manufacture. Each year science applies iron to more of the common uses of every-day life. It supplies the material for ships; enters largely into the construction of houses; forms part of all the new and improved agricultural implements; and thus becomes a rival to timber in the mechanical department of our country. This increasing consumption, of course, must increase the demand in a parallel degree, and if Congress will but legislate wisely, and in favor of home labor and capital, as exhibited in the iron trade, it must prosper in the future. It is surely the policy of our country to foster this branch of her productive industry. It is by wise, judicious legislation, that comparatively young countries are enabled to compete with older and more practiced ones, where capital is abundant and labor cheap. This is the kind of legislation demanded by the iron trade of this State and country, and we hope that such will be extended by our national legislature.

Since the commencement of the present year, the iron market of this country has been marked by peculiar circumstances. East of the Alleghany mountains the production of pig iron exceeds the quantity manufactured during the same period of any previous season. A still greater increase is also looked for during the remaining months. There is now on hand a considerable quantity of the stock of 1855, accumulated in consequence of the severity of the winter preventing iron from being delivered when ordered, But a singular fact is, that with all these apparent drawbacks, the price steadily and firmly advanced to the highest quotation, and sales have been greater in the early months of this, than in the same months of any other year. More than 60,000 tons were contracted for in this city, in the month of April, to be delivered during the year. This is a very heavy business to be perfected so early in the season, and since then the quantity has been swelled to a much higher figure. Importations of pig iron, especially Scotch, have been decreasing for the past year or 18 months. During the six months ending December 31st, 1855, the importation of pig iron from all foreign ports only reached 29,839 tons. This is less than *one third* of the amount imported during the previous 12 months. This is a cheering indication, and the decrease in the importation of foreign pig iron will give a fresh impetus to our home manufacture, which is much needed in many sections of the Union.

The long and severe winter prevented shipments of bar iron from Pittsburg in the usual quantities, consequently there has been a heavy accumulation of that particular stock at that place. It was estimated that in the month of April, there were 35,000 tons of bar iron waiting sale and transportation at Pittsburg. In despite of these facts, however, the various mills are in full operation, depending upon the heavy trade to carry them through the season. The general prosperity of all the western interests must keep up the demand for iron, and if so the stock will not be too heavy. It is computed that 280,000 tons of pig iron will be produced in the West during the present year —this, of course, includes west[illegible]nsylvania. From the districts of Alleghany, Hanging Rock, and Clarksville, about 200,000 tons will be sent to market. There will be a decrease of charcoal pig iron in the present year, when compared with the production of 1855, of 55,000 tons. The product of new coke and raw bituminous coal furnaces will, however, make good at least 15,000 tons of this deficit. The amount of anthracite pig iron consumed in the West in 1855, was 33,000 tons. There will be an increased amount needed during the present year, if we may judge from the contracts made for supplies from Susquehanna. We give below an interesting article from the "Iron Masters' Review," showing the amount of pig iron consumed in the places named in the West; and also the quantity and value of railroad iron imported into the United States, from the 30th June, 1839, to the 30th June, 1855. It is well worthy an attentive perusal by all those who are interested in the iron trade of the United States.

In the lower part of the Susquehanna district, the furnaces have mostly produced for the western market. There has been considerable irregularity in their operations, partly on account of deficiency of coal and the late opening of navigation. The new furnaces—Dudley, Keystone, No. 2 Cornwall—and several furnaces which worked little, if any, in 1855, will probably increase the product of the district this year by 25,000 tons. Circumstances do not admit of a comprehensive survey of the product of this district, nor of the demands that may come from the West.

In the Lehigh district, at this date, the stock of pig iron, which is nearly all No. 1, amounts to 34,150 tons. The contracts already made, for iron of this district, for this year's delivery, approximate to 37,600 tons. There are 17 furnaces now in blast, one to be put in blast by the middle of May, and one in July

The 17 furnaces are producing weekly an average of 2100 tons, making for the remaining 3¾ weeks of 1856, 78,750 tons, which, added to the present stock, gives an aggregate of 112,900 tons. In this estimate we omit the product of the two furnaces soon going into blast, to make up for the possible deficiencies that may result from accidents. If we allow for next year's market the production in four weeks of December, during which the product may be closed in by winter, we have 104,500 tons for the market for this year, less than already contracted, 37,600 tons; leaving unsold for this year's delivery 66,900 tons. In these estimates no account is taken of the small sales in the district, nor of a few small shipments by railroad, made in 1856 prior to this date. The sales of iron from this district in 1855, approximated to 105,000 tons—equal to a reduction of stocks, of 19,000 tons. The stocks on the 1st of January last approximated to 20,700 tons, and on the 1st of January, 1855, to 39,000. The total production in this district in the year 1856, will approximate to 106,000 tons; assuming as a basis the data above given, which will prove reliable, save as it may be affected by accidents in manufacturing, or by a change in the market. The production in the 14 weeks past has not averaged 2100 tons—several furnaces having but recently been put in blast.

The consumption of rails within the past nine months has greatly increased over the average of the previous year. The importation in the six months ending December 81, 1855, amounted to 89,854 tons; or 50 per cent. more than in the average of the previous 12 months. In the six months named, American mills produced about 70,000 tons. As the returns of last year's harvest are now exerting their greatest influence upon the general prosperity of the interior, railroad enterprises are much encouraged. If the promised peace of Europe is fully re-inaugurated, there is no doubt that with an average harvest the present year, our railroad extensions will be greater than in any period heretofore. In addition to the requirements for new roads and extensions, the older roads are progressively needing a greater amount of rails for renewals, where in most instances heavier rails are put down. It is worthy of note, that a large portion of the old rails taken up is used in other manufactures, to which this description of iron is regarded by many as being better adapted. The increasing amount of this stock, which comes in competition with pig iron, is worthy of special consideration. Capital is wanted in Pennsylvania, Maryland, Virginia, Missouri, Tennessee, and other States, for the more vigorous and more profitable workings of the extensive iron ores of those States.

PRODUCTION OF PIG IRON IN THE UNITED STATES, ACCORDING TO THE CENSUS OF 1850.

STATES.	Establishments in operation.	Capital invested.	Ore used.	Mineral coal used.	Coke and charcoal used.	Value of raw material, fuel, etc.	No. of hands employed. Males.	Females.	Entire wages per month. Males.	Females.	Average wages per month. Males.	Females.	Pig iron made.	Value of other products.	Value of entire products.
		Dollars.	Tons.	Tons.	Bushels.	Dollars.			Dollars.	Dols.	Dol'rs.	Dols.	Tons.	Dollars.	Dollars.
Maine	1	214,000	2,907	....	213,970	14,939	71	..	1,562	..	22 00	..	1,484	....	36,610
N. Hampshire	1	2,000	500	....	54,000	4,900	10	..	180	..	18 00	..	200	....	6,000
Vermont	3	62,500	7,676	150	326,437	40,175	100	..	2,208	..	22 08	..	3,200	....	68,000
Massachusetts	6	469,000	27,909	....	1,455,800	185,741	263	..	7,238	..	27 52	..	12,387	....	295,121
Connecticut	18	225,600	35,450	....	2,870,000	289,225	148	..	3,967	..	26 80	..	18,420	20,000	415,6 0
New York	18	665,000	46,885	20	3,000,074	321,027	505	..	12,625	..	25 00	..	21,022	12,800	567,920
New Jersey	10	967,000	51,256	20,865	1,021,000	332,707	600	..	12,720	..	21 20	..	24,081	....	560,544
Pennsylvania	180	8,570,425	877,283	316,060	27,505,186	3,732,427	9,285	9	201,039	46	21 65	5 11	285,702	40,000	6,071,513
Maryland	18	1,420,000	99,866	14,088	8,707,500	560,723	1,370	..	27,595	..	20 14	..	48,641	96,000	1,056,400
Virginia	29	513,800	67,319	39,982	1,811,000	158,807	1,115	14	14,232	96	12 76	6 86	22,163	....	521,024
N. Carolina	2	25,000	900	....	150,000	27,900	26	5	208	22	8 00	4 40	400	....	12,500
Georgia	3	26,000	5,189	....	430,000	25,840	135	3	2,955	15	17 44	5 00	900	28,000	57,900
Alabama	3	11,000	1,838	....	145,000	6,770	40	..	700	..	17 50	..	522	5,000	22,500
Tennessee	23	1,021,400	88,810	177,167	160,000	254,900	1,713	109	21,938	558	12 81	5 11	30,420	41,900	676,100
Kentucky	21	824,700	72,010	....	4,576,269	260,152	1,845	10	37,335	47	20 23	4 70	24,245	10,000	604,037
Ohio	35	1,193,000	140,610	21,730	5,428,800	630,037	2,415	..	59,129	..	24 48	..	52,658	....	1,255,850
Michigan	1	5,000	2,700	....	185,000	14,000	25	..	875	..	35 00	..	660	6,000	21,000
Indiana	2	12,000	5,200	....	310,000	24,400	88	..	2,200	..	26 00	..	1,856	....	58,000
Illinois	2	14,000	5,500	....	170,000	15,500	150	..	3,810	..	22 06	..	2,780	....	70,200
Missouri	5	619,000	37,000	55,180	....	97,367	331	..	8,112	..	24 28	..	19,250	....	314,600
Wisconsin	1	15,000	3,000	....	150,000	8,250	60	..	1,800	..	30 00	..	1,000	....	27,000
Total	377	17,846,425	1,579,809	645,242	54,165,236	7,005,269	20,298	150	421,435	784	....	..	564,755	259,700	12,748,777

PRODUCTION OF WROUGHT IRON IN THE UNITED STATES, 1850.

STATES.	Establishments in operation.	Capital invested.	Pig metal.	Blooms used.	Ore used.	Mineral coal.	Coke and charcoal.	Value of raw material used	Number of hands employed. Males.	Females.	Average wages per month. Males.	Females.	Wrought iron made.	Value of other products.	Value of entire products.
		Dollars.	Tons.	Tons.	Tons.	Tons.	Bushels.	Dollars.			Dols.	Dols.	Tons.	Dollars.	Dollars.
N. Hampshire	2	4,000	145	....	....	....	50,000	5,600	6	..	32 00	..	110	....	10,400
Vermont	8	62,700	750	525	2,625	....	347,000	66,194	57	..	31 05	..	2,045	....	163,986
Massachusetts	6	610,800	7,030	....	....	11,022	78,500	221,194	260	..	22 50	..	6,720	....	428,320
Rhode Island	1	208,000	3,000	....	....	6,000	....	111,750	220	..	26 00	..	2,650	....	222,400
Connecticut	18	529,500	7,081	1,644	....	5,062	783,600	358,780	874	..	31 59	..	6,325	5,000	667,560
New York	60	1,131,300	8,530	....	44,642	18,908	5,554,150	838,314	1,037	..	26 00	..	13,696	195,000	1,423,968
New Jersey	53	1,016,843	10,430	....	14,549	4,567	1,994,180	320,950	593	..	27 78	..	8,162	....	629,273
Pennsylvania	131	7,620,066	163,702	20,405	....	325,967	3,939,993	3,488,891	6,764	7	27 68	7 50	182,596	219,500	8,962,907
Delaware	2	15,000	510	60	....	....	228,000	12,500	50	..	24 79	..	550	....	55,000
Maryland	17	780,650	10,172	3,389	....	10,455	246,000	439,511	568	..	28 33	..	10,999	....	771,431
Virginia	39	791,211	17,296	2,530	....	66,315	103,000	591,448	1,225	..	23 62	..	15,328	....	1,254,955
North Carolina	19	103,000	....	....	4,650	....	857,964	28,114	173	14	10 37	5 28	850	....	66,980
Georgia	3	9,200	100	....	....	....	76,000	5,086	26	1	11 25	5 00	90	....	15,384
Alabama	1	2,500	120	....	....	....	80,000	3,000	14	..	20 00	..	100	....	7,500
Tennessee	42	755,650	11,696	825	9,151	62,038	....	385,616	731	55	15 20	5 00	10,848	88,800	670,618
Kentucky	4	176,000	2,000	1,600	....	....	280,000	180,000	183	..	32 06	..	3,070	....	299,700
Ohio	11	620,860	13,675	2,900	....	22,755	466,900	604,493	708	..	33 61	..	14,416	....	1,077,192
Indiana	3	17,000	50	....	3,150	....	85,000	4,425	22	2	27 45	4 00	175	....	11,760
Missouri	2	42,100	1,204	....	....	9,934	....	24,509	101	..	30 00	..	963	....	68,700
Total	422	14,435,220	251,491	33,344	78,787	538,063	14,510,828	9,698,109	13,178	79	....	..	278,014	458,300	16,747,074

PRODUCTION OF IRON CASTINGS IN THE UNITED STATES, 1850.

STATES.	Establishments in operation.	Capital invested.	Pig iron.	Cast metal.	Ore.	Mineral coal.	Coke and charcoal.	Value of raw material, fuel, etc.	Number of hands employed. Males.	Females.	Average wages per month. Males.	Females.	Castings made.	Value of other products.	Value of entire products.
		Dollars.	Tons.	Tons.	Tons.	Tons.	Bushels.	Dollars.			Dols.	Dols.	Tons.	Dollars.	Dollars.
Maine	25	150,100	3,591	245	....	1,819	14,000	112,570	248	1	29 00	5 00	3,691	....	265,000
N. Hampshire	26	282,700	5,678	500	....	1,680	20,500	177,060	374	..	33 05	..	5,764	27,700	371,710
Vermont	26	290,720	5,279	274	....	1,066	198,400	160,668	381	..	28 27	..	5,000	67,770	460,881
Massachusetts	68	1,499,050	31,134	3,361	....	12,401	3,500	1,057,904	1,596	..	30 90	..	32,074	....	2,285,635
Rhode Island	20	428,800	8,918	....	....	4,670	4,000	258,267	800	..	29 63	..	8,558	119,500	728,705
Connecticut	60	580,800	11,890	337	....	7,592	30,600	351,369	942	7	27 92	8 00	11,210	70,000	581,400
New York	328	4,622,482	108,945	3,212	....	22,755	181,100	2,393,768	5,925	..	27 49	..	104,588	....	5,921,980
New Jersey	45	598,250	10,666	350	....	5,444	175,800	301,048	806	..	24 09	..	10,259	....	696,480
Pennsylvania	320	9,422,924	66,501	319	....	49,228	976,855	2,372,467	4,782	1	27 55	6 00	57,810	661,160	5,854,881
Delaware	13	373,500	4,440	....	....	4,967	....	158,852	250	..	23 36	..	3,680	55,000	267,462
Maryland	16	350,100	7,320	....	....	5,000	80,000	259,190	701	..	27 50	..	6,244	60,000	685,000
Virginia	54	471,160	7,114	205	....	7,878	71,000	297,014	610	9	19 91	9 44	5,577	....	674,416
N. Carolina	6	11,500	192	....	....	....	6,375	8,241	15	..	23 46	..	172	....	12,367
S. Carolina	6	185,700	169	....	2,800	....	405,560	29,128	153	2	18 59	4 00	1,286	....	37,688
Georgia	4	85,000	440	....	....	100	9,800	11,350	39	..	27 48	..	415	....	46,200
Alabama	10	216,625	2,348	....	....	....	31,300	102,085	212	..	30 05	..	1,915	....	271,126
Mississippi	5	100,000	1,197	....	....	248	92,000	50,370	112	..	37 91	..	924	2,800	117,400
Louisiana	8	253,500	1,660	....	....	3,205	....	75,860	347	..	35 60	..	1,570	4,000	312,500
Texas	2	16,000	250	....	....	250	....	8,400	35	..	43 43	..	200	15,000	55,000
Tennessee	16	139,500	1,682	....	5,050	24,690	13,200	90,035	201	8	17 96	4 50	3,384	....	264,825
Kentucky	20	502,200	9,731	....	....	2,649	482,750	295,583	558	20	24 89	4 15	5,888	....	744,816
Ohio	183	2,063,650	37,555	1,843	2,000	30,006	855,120	1,199,790	2,758	..	27 32	..	37,399	208,700	3,069,550
Michigan	63	193,450	2,494	....	....	901	16,200	91,865	337	..	28 68	..	2,070	23,616	279,697
Indiana	14	82,900	1,968	5	....	132	29,800	66,918	149	..	25 74	..	1,757	....	149,450
Illinois	29	260,400	4,818	50	....	1,412	12,500	172,380	332	..	28 50	..	4,160	89,250	441,185
Missouri	6	187,000	5,100	200	....	2,598	....	133,114	297	..	19 63	..	5,200	....	336,495
Iowa	3	5,500	81	....	....	....	200	2,524	17	..	32 35	..	71	2,600	8,500
Wisconsin	15	116,850	1,371	15	....	595	2,700	86,930	228	..	26 78	..	1,342	64,025	216,195
California	1	5,000	75	....	....	25	....	8,530	8	..	23 33	..	75	....	20,740
D. of Columb.	2	14,000	545	....	....	80	....	18,100	27	..	27 05	..	512	11,000	41,696
Total	1,391	17,416,861	345,553	11,416	9,850	190,891	2,418,750	10,846,355	23,541	48	....	..	322,745	1,524,121	25,108,155

Appearances indicate that iron will grow more and more into request—in architecture, ships, and rigging. Wire ropes are now used at many of the mines in the midland and northern counties; and an attempt is being made to introduce them in Devon and Cornwall. At equal strength, a wire rope is lighter by one third than a hemp rope, and by two thirds than a chain; an important fact, especially where mines are deepest. Then we are to have metallic life-boats, pontoons, army-wagons, if the result of experiments made at Woolwich and Rochester may be trusted. The boats, we hear, can not be broken or overset, let them be used ever so roughly; and the pontoons are models of lightness. And again—the United States' Congress have recommended three lines of railway to California: northern, central, and southern, each about 2000 miles in length. The lands granted to the three comprise 131,865,000 acres—a truly gigantic encouragement! What a demand there will be for rails! Then we are to have the often-talked-of railway to India by the Euphrates valley; the route is to be forthwith surveyed. And there is talk of a railway from Honduras across to the Pacific—161 miles, the estimated cost $7,000,000, and the expectations of a profitable traffic, fair. To say nothing of the trade from ocean to ocean, there are forests of mahogany and other woods to supply timber-freight for centuries. According to a report in the *Journal of the Society of Arts*, the Honduras government "agrees to give a bounty of 50 acres of land to unmarried, and 75 acres to married laborers who shall go to the country to work on the road, and who shall declare their intention to become citizens."—*Chambers' Journal*. We now subjoin an official summary of the export trade of the United States from 1847 to 1856:

FOREIGN IRON TRADE OF UNITED STATES FOR TEN YEARS.

Years.	American exported.	Foreign consumed.	Excess in foreign consumed.
1847	$1,167,484	$8,717,656	$7,550,172
1848	1,259,632	12,428,559	11,168,927
1849	1,096,173	13,722,384	12,626,212
1850	1,917,320	16,232,399	14,821,079
1851	2,235,698	17,206,410	14,950,712
1852	2,908,819	18,523,056	16,510,237
1853	2,499,052	26,993,082	24,493,430
1854	4,210,350	28,545,908	32,433,558
1855	3,758,472	21,415,205	17,661,733
1856	4,161,008	21,618,718	17,457,710

STATEMENT SHOWING THE EXPORTS OF FOREIGN MANUFACTURED IRON FROM THE UNITED STATES, FOR THE YEAR ENDING JUNE 30TH, 1856.

Whither exported.	Muskets and rifles. No.	Muskets and rifles. Dollars.	Fire-arms not specified. Dollars.	Needles. Dollars.	Cutlery. Dollars.	Other manufactures and wares of, not specified. Dollars.	Side-arms. Dollars.	Cap or bonnet wire. Pounds.	Cap or bonnet wire. Dollars.
Hamburg	....	....	....	....	....	450	....	....	....
England	....	....	24,614	....	....	4,770	....	....	....
Canada	....	....	5,895	5,550	45,646	181,906	....	4,200	448
Other Br. North American pos.	....	....	....	....	150	3,602	....	....	....
British West Indies	....	....	....	....	82	618	....	....	....
British Australia	....	....	200	....	....	3,091	....	....	....
British East Indies	500	1,200	....	....	....	....	....	....	....
France on the Atlantic	....	....	....	....	....	472	....	....	....
French North American posses.	....	....	....	....	....	172	....	....	....
Cuba	....	....	....	....	1,883	1,522	....	....	....
Other ports in Africa	3,296	10,589	....	....	819	1,187	485	....	....
Mexico	334	1,026	1,157	506	1,745	7,726	877	....	....
Central Republic	100	413	....	....	....	563	....	....	....
New Granada	....	....	292	....	....	574	....	....	....
Peru	....	....	....	....	....	341	....	....	....
Sandwich Islands	....	....	350	....	....	3,666	....	....	....
Total	4,230	13,228	30,508	6,056	50,225	210,605	1,362	4,200	448
From warehouse	3,494	11,194	5,544	5,832	25,129	120,043	1,356	....	....
Not from warehouse	736	2,034	24,964	224	25,096	90,562	6	4,200	448

STATEMENT SHOWING THE EXPORTS OF FOREIGN MANUFACTURED IRON FROM THE UNITED STATES, FOR THE YEAR ENDING JUNE 30TH, 1856—*Continued.*

Whither exported.	Bar Iron.		Rod Iron.		Hoop Iron.		Sheet Iron.		Pig Iron.	
	Cwts.	Dollars.	Cwts.	Dollars.	Pounds.	Dollars.	Pounds.	Dollars.	Cwts.	Dollars.
Bremen	250	1,250	....	....	....	....	....	....	....	....
Holland	....	....	....	....	....	....	....	....	1,600	1,981
England	....	....	....	....	....	....	....	....	440	716
Canada	3,976	11,287	827	4,494	22,160	619	447,101	14,901	890	752
Other British North Amer. pos.	866	2,593	....	....	....	....	18,076	972	100	150
British Australia	....	....	....	....	....	....	87,882	2,229	....	....
Cuba	515	1,590	....	....	58,480	2,563	....	....	600	770
Other ports in Africa	....	....	....	....	16,686	739	....	....	....	....
Hayti	24	96	....	....	22,136	981	....	....	....	....
Mexico	3,576	13,885	....	....	6,920	302	3,468	183	125	400
New Granada	120	462	....	....	....	....	....	....	....	....
Brazil	11	45	....	....	....	....	....	....	....	....
Chili	637	1,119	....	....	....	....	....	....	3,500	5,300
Sandwich Islands	35	219	....	....	....	....	6,860	239	....	....
China	20	50	....	....	....	....	....	....	....	....
Total	9,970	32,546	827	4,494	125,932	5,454	512,881	18,684	6,755	10,069
From warehouse	6,371	17,465	827	4,494	71,888	2,859	447,961	14,986	2,600	4,100
Not from warehouse	3,599	15,081	....	....	54,044	2,601	64,980	3,698	4,155	5,969

STATEMENT SHOWING THE EXPORTS OF FOREIGN MANUFACTURED IRON FROM THE UNITED STATES, FOR THE YEAR ENDING JUNE 30TH, 1856—*Continued.*

Whither exported.	Nails, spikes, tacks, etc.		Chain cables.		Mill-saws, cross-cut, and pit-saws.		Anchors, and parts thereof.		Axels, and parts thereof.	
	Pounds.	Dollars.	Pounds.	Dollars.	No.	Dollars.	Pounds.	Dollars.	Pounds.	Dollars.
Russian pos. in North America	....	....	21,400	642	....	....	....	....	....	....
England	70	11	....	....	....	....	8,955	197	....	....
Canada	4,840	209	22,986	565	558	1,833	4,697	208	....	....
Other British North Amer. pos.	9,000	420	64,786	3,377	....	....	21,016	1,419	....	....
British Australia	3,000	154	....	....	305	1,407	....	....	....	....
Philippine Islands	....	....	14,892	630	....	....	8,894	220	....	....
Other ports in Africa	....	....	5,376	289	....	....	....	....	....	....
Hayti	....	....	1,788	85	....	....	....	....	....	....
Mexico	6,800	561	....	....	....	....	....	....	550	66
New Granada	....	....	17,000	969	....	....	....	....	....	....
Chili	....	....	1,121	59	....	....	810	160	....	....
Sandwich Islands	....	....	215,339	6,685	....	....	125,701	6,452	8,700	365
Whale Fisheries	8,200	730	....	....	....	....	....	....	....	....
Total	31,410	2,085	364,188	13,301	863	3,240	159,073	8,656	9,250	431
From warehouse	18,810	1,008	307,089	10,859	858	3,065	33,356	1,716	8,700	365
Not from warehouse	12,600	1,077	57,149	2,442	5	175	125,717	6,940	550	66

Iron Mountain.—Iron Mountain is situated in St. Francis county, Mo. The land on which it lies was a grant by the Spanish government, when this portion of the south-west was in possession of that government. The grant was confirmed by the Congress of the United States in 1836; but on account of the difficulty of transportation, and of the impression that the ore could not be smelted, this inexhaustible supply was permitted to remain unproductive until 1851, when the Iron Mountain Company was formed and proceeded to the erection of furnaces. The mountain is a flattened, conical shaped hill, with an average elevation above the surrounding valleys of 228 feet, the base of which covers an area of about 500 acres. The ore is the specular iron ore, and is remarkably pure; its average yield, in the furnace, being 56 per cent. From surface indications, and from all explorations made, the whole Iron Mountain seems to be made of iron ore. Almost the entire surface of the mountain is covered with iron ore, the particles increasing in size as you ascend toward the top, until on its summit are found disconnected masses, many tons in weight, and often six or eight feet in diameter. To what depth the iron ore extends below the base of the mountain, has never yet been ascertained. An artesian well was attempted to be bored by the company, at the base of the mountain, and after attaining the depth of 180 feet, most of the way through iron ore, the work was abandoned. When the boring ceased, the ore rested in a solid mass of ore; so that there is ore under the ground, as well as above it.

Imports of Iron into the United States.—The United States, next to England, may be considered among the leading iron producing countries in the world—England producing 3,600,000, and the United States 1,000,000 tons per annum. Assuming the average price of iron to be $27, or even $30, we produce annually to the value of $27,000,000 or $30,000,000. From the following table it will be seen that our imports of iron and steel manufactures have gradually reached nearly the same sum. The imports were in

1849	$15,068,961	1853	$30,925,738
1850	17,665,898	1854	31,819,184
1851	18,876,764	1855	25,573,865
1852	20,661,592	1856	24,580,262

STATEMENT SHOWING THE IMPORTS OF MANUFACTURES OF IRON INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30TH, 1856.

Whence imported.	Cap or bonnet wire.		Nails, spikes, tacks, etc.		Chain cables.		Mill-saws, cross-cut and pit-saws.		Anchors, and parts thereof.	
	Pounds.	Dollars.	Pounds.	Dollars.	Pounds.	Dollars.	No.	Dollars.	Pounds.	Dollars.
Swedish West Indies	....	....	....	....	9,650	275	....	....	....	....
Hamburg	....	....	6,300	327	....	....	....	....	....	....
Bremen	3,167	99	1,960	91	....	....	....	....	....	....
Belgium	8,311	246	1,125,465	48,008	12,855	447	....	....	....	....
England	120,698	3,854	1,104,232	76,940	15,509,722	476,994	20,838	54,972	844,290	87,150
Scotland	....	....	2,400	338	80,100	2,840	....	....	9,966	507
Canada	2,176	87	14,910	1,225	57,415	1,807	3	....	600	22
British West Indies	....	....	6,375	275	86,118	2,475	2	8	62,690	2,043
British Honduras	....	....	....	....	4,065	81	....	....	....	....
France on the Atlantic	21,030	696	17,554	521	....	....	....	....	....	....
Portugal	....	....	....	....	....	....	....	....	3,000	119
Mexico	....	....	....	....	....	....	....	....	577	25
New Granada	....	....	....	....	20,450	529	....	....	....	....
Peru	....	....	....	....	11,518	118	....	....	....	....
China	....	....	3,000	154	....	....	....	....	....	....
Total	155,376	4,892	2,292,696	127,879	15,850,788	485,568	20,843	54,988	921,123	89,866

STATEMENT SHOWING THE IMPORTS OF MANUFACTURES OF IRON INTO THE UNITED STATES, FOR THE YEAR ENDING JUNE 30TH, 1856.—*Continued.*

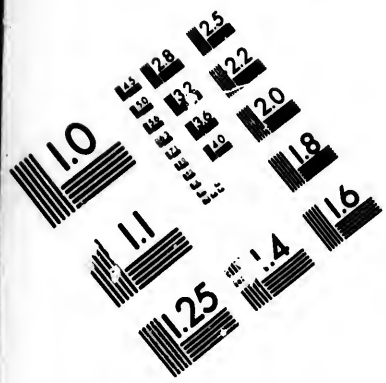
Whence imported.	Muskets and rifles.		Fire-arms, not specified.	Side-arms.	Needles.	Cutlery.	Other manufactures and wares of, not specified.
	No.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.
Sweden and Norway	....	....	....	....	....	....	96
Danish West Indies	....	....	....	....	....	....	297
Hamburg	6	41	3,626	....	818	3,369	19,179
Bremen	1	25	11,162	1,204	21,020	119,518	121,662
Holland	....	....	10	....	342	210	1,960
Dutch Guiana	....	....	....	....	....	....	20
Belgium	122	654	265,406	420	1,486	12,017	147,788
England	7,606	39,824	264,959	468	174,221	1,489,382	8,602,115
Scotland	....	....	....	....	....	467	14,080
Gibraltar	....	....	....	....	....	....	424
Canada	4	42	117	....	....	406	7,652
Other British North Amer. posses.	....	....	....	....	....	25	1,274
British West Indies	....	....	289	....	....	....	784
British Guiana	....	....	564	....	....	....	....
British possessions in Africa	....	....	....	....	....	....	212
France on the Atlantic	84	349	27,974	928	48,195	69,014	259,380
Spain on the Mediterranean	....	....	....	....	....	....	10
Cuba	....	....	....	....	....	478	152
Tuscany	....	....	....	....	....	....	102
Austria	....	....	....	....	....	....	202
Turkey in Asia	....	....	....	....	....	....	93
Hayti	....	....	....	....	....	....	62
Mexico	....	....	....	....	....	....	584
Central Republic	....	....	....	....	....	....	10
New Granada	5	11	2,828	....	28	2,431	9,436
Chili	....	....	....	....	....	....	188
Sandwich Islands	....	....	....	....	....	....	585
China	....	....	....	....	....	882	3,350
Total	7,778	40,946	576,435	3,015	246,060	1,698,094	4,191,147

STATEMENT SHOWING THE IMPORTS OF THE MANUFACTURES OF IRON INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30TH, 1856.—*Continued.*

Whence imported.	Anvils and parts thereof.		Bar iron.		Rod iron.		Hoop iron.		Sheet iron.	
	Pounds.	Dollars.	Cwts.	Dollars.	Cwts.	Dollars.	Pounds.	Dollars.	Pounds.	Dollars.
Russia on the Baltic and North Seas	....	....	1,449	2,796	....	....	7,636	255	1,038,058	42,250
Prussia	....	....	....	....	....	....	....	....	16,775	875
Sweden and Norway	....	....	277,905	850,609	....	....	....	....	....	....
Hamburg	....	....	48,316	110,166	120	233	....	....	....	....
Bremen	....	....	10,246	26,672	....	....	....	....	....	....
Belgium	....	....	989	1,958	....	....	....	....	400,055	12,186
England	958,700	46,764	1,805,194	4,303,581	193,579	477,994	13,157,698	343,087	29,851,191	755,756
Scotland	....	....	10,918	39,136	121	295	50,820	1,482	25,984	564
Ireland	....	....	57	93	....	....	....	....	....	....
Canada	....	....	5,901	12,933	....	1	482	21	55,295	2,761
British West Indies	....	....	1,405	2,706	....	....	....	....	....	....
France on the Atlantic	2,109	64	464	1,509	....	....	6,937	208	....	....
Cuba	....	....	155	436	....	....	....	....	....	....
Central Republic	....	....	....	....	....	....	126	41	....	....
China	....	....	20	50	....	....	....	....	....	....
Total	960,809	46,828	2,163,449	5,352,785	193,820	478,523	13,223,639	345,094	31,387,358	814,342

STATEMENT SHOWING THE IMPORTS OF THE MANUFACTURES OF IRON AND STEEL INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30TH, 1856.

Whence imported.	Pig iron.		Old and scrap.		Railroad iron.		Cast, shear, and German steel.		All other.	
	Cwts.	Dollars.	Cwts.	Dollars.	Cwts.	Dollars.	Cwts.	Dollars.	Cwts.	Dollars.
Prussia	4,031	3,500	....	....	....	....	....	....	....	....
Sweden and Norway	....	....	....	....	....	....	2,685	20,150	....	....
Swedish West Indies	....	....	8	5	....	....	....	....	....	....
Danish West Indies	....	....	2,710	1,481	....	....	6	53	....	....
Hamburg	4,392	4,037	....	....	....	....	225	2,355	....	....
Bremen	500	554	....	....	....	....	161	1,474	....	....
Holland	....	....	....	....	....	....	3,980	36,484	....	....
Dutch East Indies	....	....	57	42	....	....	....	....	....	....
Belgium	....	....	....	....	....	....	47	420	....	....
England	852,170	359,133	78,033	81,663	2,922,585	5,790,337	158,295	1,633,285	103,578	828,921
Scotland	749,415	738,188	53	55	....	....	....	....	....	....
Ireland	89,879	87,967	6,050	4,742	....	....	....	....	....	....
Canada	20,702	28,605	40,016	25,475	187,089	388,687	12	142	224	672
Other Br. N. Amer. pos.	8,090	6,884	20,121	13,572	242	256	98	528	....	....
British West Indies	....	....	44,874	27,049	....	....	....	....	59	361
British Honduras	....	....	171	97	....	....	....	....	....	....
British Guiana	....	....	9,584	4,407	....	....	....	....	....	....
British pos. in Africa	....	....	1,202	905	....	....	....	....	....	....
British Australia	....	....	223	84	....	....	....	....	....	....
France on the Atlantic	1,060	2,177	4,986	3,075	....	....	....	....	58	552
Cuba	....	....	12,964	7,125	....	....	....	....	....	....
Porto Rico	....	....	17	8	....	....	....	....	....	....
Cape de Verd Islands	....	....	84	102	....	....	....	....	....	....
Sardinia	....	....	....	....	....	....	....	....	55	433
Austria	....	....	1,244	782	....	....	885	3,469	1,211	9,029
Other ports in Africa	....	....	176	121	....	....	....	....	....	....
Hayti	....	....	405	247	....	....	....	....	....	....
San Domingo	....	....	2,260	1,238	....	....	....	....	....	....
Mexico	....	....	18,185	9,862	....	....	....	....	....	....
New Granada	....	....	1,950	940	....	....	....	....	....	....
Brazil	....	....	98	31	....	....	....	....	....	....
Peru	....	....	162	144	....	....	....	....	....	....
Sandwich Islands	....	....	2,610	1,860	....	....	....	....	....	....
China	....	....	....	....	....	....	....	....	....	....
Total	1,180,239	1,171,085	247,769	185,112	3,109,916	6,179,280	165,894	1,608,855	105,185	839,968



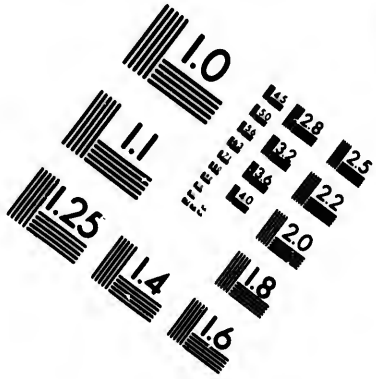
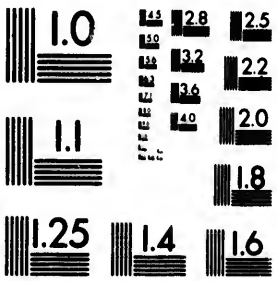
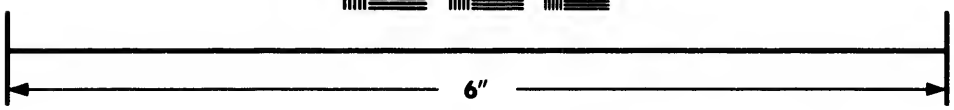
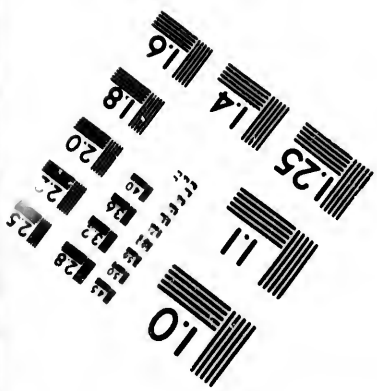
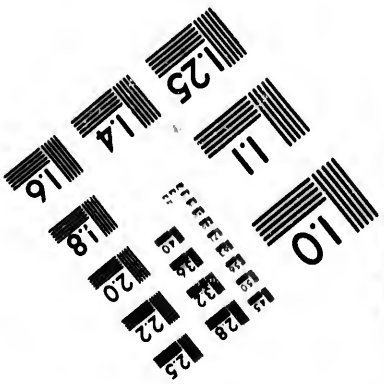


IMAGE EVALUATION TEST TARGET (MT-3)









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STATEMENT SHOWING THE EXPORTS OF DOMESTIC IRON (RAW AND MANUFACTURED) FROM THE UNITED STATES, FOR THE YEAR ENDING JUNE 30TH, 1856.

Whither exported.	Pig.		Bar.		Nails.		Castings.	All other manufactures of.
	Cwts.	Dollars.	Cwts.	Dollars.	Pounds.	Dollars.	Dollars.	Dollars.
Russian possss. in North America	....	....	....	....	6,100	310	....	622
Swedish West Indies	....	....	....	....	....	....	....	2,880
Danish West Indies	....	....	....	....	53,450	2,487	....	3,562
Hamburg	....	....	....	....	....	....	....	11,763
Bremen	....	....	....	....	....	....	....	6,638
Holland	....	....	....	....	....	....	250	247
Dutch West Indies	....	....	....	....	2,500	100	....	1,208
Dutch Guiana	....	....	3	15	....	....	....	906
Dutch East Indies	....	....	....	....	....	....	....	88
Belgium	....	....	....	....	....	....	....	51,241
England	....	....	100	500	500	23	20	115,178
Scotland	....	....	....	....	....	....	....	19,725
Gibraltar	....	....	....	....	60,800	2,590	698	1,488
Malta	....	....	....	....	6,000	258	180	691
Canada	15,528	26,565	3,545	19,611	547,417	22,771	175,899	1,311,633
Other British North American pos.	....	....	102	422	415,374	19,825	61,190	88,555
British West Indies	....	....	....	....	80,425	1,888	565	15,334
British Honduras	....	....	....	....	9,000	397	26	2,702
British Guiana	....	....	....	....	....	....	....	298
British possessions in Africa	....	....	....	....	68,480	3,167	2,224	7,593
British Australia	....	....	....	....	10,000	420	36,382	294,897
British East Indies	....	....	....	....	....	....	105	13,401
France on the Atlantic	....	....	....	....	....	....	....	17,848
France on the Mediterranean	....	....	....	....	51,000	2,295	....	360
French North American possessions	....	....	....	....	42,500	1,766	179	149
French West Indies	....	....	....	....	7,500	312	....	23
French Guiana	....	....	....	....	9,200	396	....	52
Spain on the Mediterranean	....	....	....	....	40,000	2,000	....	640
Canary Islands	....	....	....	....	....	....	....	59
Philippine Islands	....	....	....	....	....	....	....	300
Cuba	200	350	4	25	1,837,450	73,959	1,814	589,809
Porto Rico	....	....	....	....	70,740	2,797	101	119,405
Portugal	....	....	....	....	....	....	....	373
Madeira	....	....	....	....	2,500	114	....	50
Cape de Verd Islands	....	....	....	....	14,100	589	....	126
Azores	....	....	....	....	25,600	1,160	80	....
Austrian possessions in Italy	....	....	....	....	10,000	575	....	....
Turkey in Europe	....	....	....	....	....	....	800	2,852
Turkey in Asia	....	....	....	....	....	....	....	2,806
Other ports in Africa	....	....	....	....	58,712	2,568	247	16,417
Hayti	....	....	22	111	148,900	6,405	28	29,925
San Domingo	....	....	....	....	11,500	472	244	....
Mexico	....	....	78	497	185,762	8,721	1,362	208,539
Central Republic	....	....	....	....	8,500	367	....	18,011
New Granada	....	....	....	....	58,400	2,632	....	173,006
Venezuela	....	....	....	....	48,900	1,966	....	84,226
Brazil	....	....	....	....	42,100	1,758	422	26,565
Uruguay	....	....	....	....	30,244	1,097	....	31,967
Buenos Ayres	....	....	....	....	65,800	2,798	....	23,861
Chili	....	....	24	100	1,356,225	52,539	2,414	63,778
Peru	....	....	....	....	267,900	2,363	278	53,320
Ecuador	....	....	....	....	1,600	72	150	....
Sandwich Islands	....	....	18	101	112,720	5,871	1,949	105,504
China	15	300	....	....	8,500	730	1,000	76,639
Whale Fisheries	....	....	....	....	7,681	800	....	34,411
Total	15,788	27,215	3,896	21,882	5,736,580	238,383	288,316	3,585,712

Iron-Wood (Ger. *Eisenholz*; Du. *Yserhout*; Fr. *Bois de fer*; It. *Legno di ferro*; Sp. *Plo hierro*; Lat. *Sideroxylon, Lignum ferreum*), a species of wood of a reddish cast, so called on account of its corroding as that metal does, and its being remarkably hard and ponderous—even more so than ebony. The tree which produces it grows principally in the West India Islands, and is likewise very common in South America, and in some parts of Asia, especially about Siam.

Irrawadi (*Erivati*, "the great river"), one of the great rivers of south-eastern Asia, is supposed to rise in Tibet, near lat. 28° north, long. 97° 30′ east, flows generally southward, traversing the Burmese Empire throughout, and enters the Indian Ocean (Bay of Bengal) by numerous mouths, east of Cape Negrais, in lat. 16° 20′ north, long. 96° east. Principal affluents, the Ning-thee, Mogouny, Bhamo, and Lungtchuen Rivers. In lat. 17° north, it separates into numerous arms, which cover the whole kingdom of Pegu with net-work of ramifications, and the Rangoon and Bassein branches form the east and west boundaries of its delta, a region comprising upward of 10,000 square miles, covered with teak forests and grass jungles, interspersed with some rice-grounds. The main stream from the head of the delta to Yedan, above Ava, varies from one to four miles in breadth, and may always be ascended to Ava from the sea by vessels of 200 tons, which, during the rains, can reach the influx of the Mogouny River, 800 miles from the ocean. It is usually navigable for canoes as high as Bhamo, besides which town and Ava, Amarapura, Sakaing, Yandabo, Pagahm Mew, Prome, Henthada, Bassein, and Rangoon, are the principal places on its banks.

Isinglass (Ger. *Hausenblase, Hausblase*; Fr. *Colle de poisson, Carlock*; It. *Cola di pesce*; Rus. *Klei rubii, Karluk*), one of the purest and finest of the animal glues. A variety of gelatine, sometimes called *ichthyocolla*, or fish-glue (from *ἰχθύς, a fish*, and *κόλλα, glue*), prepared from the air-bag, swimming-bladder, or sound of various fishes. The Russian and Siberian isinglass is most esteemed; it is chiefly obtained from sturgeons, a family of cartilaginous fishes of the genus *Acipenser*. The swimming-bladder is cut up, washed, and then exposed to the air, with the inner silvery membrane upward. When dry, this membrane is removed by beating and rubbing; the sound is then prepared in various ways. For forming what is called *leaf* isinglass, it is merely dried; for *lump* and *short staple*, it is twisted between three pegs, into the shape of a horse-shoe, harp, or lyre; for *book* isinglass, it is folded like the sheets of a book; for *ribbon* isinglass, it is rolled out. The swimming-bladder of *A. sturio* of the Caspian Sea furnishes leaf isinglass of three qualities, known as *fine-firsts, firsts*, and *seconds*. *A. güldenstadtii* of the Caspian and Black Seas and their tributary rivers, furnishes *caviare* from its roe or ovary, while the swimming-bladder yields *staple* and *leaf* isinglass. The varieties of staple are *Patriarch Astra-*

khan, and *Astrakhan firsts*, *seconds*, and *thirds*. The varieties of *leaf* are also *firsts*, *seconds*, and *thirds*—the firsts forming the finest leaf known in commerce. *A. rufinus* and *A. stellatus* also yield isinglass. There is a kind known as *Samovey leaf*, from Tanganrod, but this is inferior; there is also the *sisane leaf*, said to be obtained from a small fish, and *krotki isinglass*, which is made into small membranous disks. Isinglass is also procured from *Siluris glanis*. For *purse*, *pipe*, and *lump* isinglass, the swimming-bladder is dried unopened, and the variety known as *Siberian purse*, of moderately good quality, is greatly in demand.

Brazilian isinglass is obtained from Para and Maranham, but the fishes which produce it have not been named. For the variety known as *pipe-Brazil*, the swimming-bladders are dried unopened, and made into pipes 10 or 12 inches long, and from 2 to 2½ inches broad, and are sometimes distended with air. *Lump* isinglass is formed by placing two swimming-bladders side by side, and for *honey-comb* isinglass, the largest lump isinglass is split open. There are also varieties of isinglass from New York, from Hudson's Bay, and from the East Indies. In Moldavia a variety is prepared from the skin, stomach, intestines, and swimming-bladder of the sturgeon. These are cut small, steeped in cold water, and simmered. The jelly thus produced is spread out into thin layers, and dried into a kind of parchment, which, on being softened with water, is rolled into cylinders, or extended into plates, and forms an inferior isinglass. Cod sounds are also used for a similar purpose. The *patent gelatin* prepared from glue-pieces or cuttings of hides, etc., after the manner of glue, is also used as a substitute for isinglass. A solid gelatin in thin plates and strings is prepared from bones, and is chiefly of French manufacture.

Isinglass is prepared for sale by being picked and cut. This was formerly done by hand, but is now effected by steam machinery; the thin filaments thus produced should be whitish in color, dry, semi-transparent, nearly tasteless, and quite devoid of smell. Isinglass differs from glue in being tough, fibrous, and elastic, instead of brittle. On boiling, it should completely dissolve, and on cooling, should form a white jelly, soluble in weak acids, but separable from them by alkalies. With milk and sugar it is used as a diet for invalids, and it is also used in the preparation of blanc-mange, jellies and creams, and for enriching soups and sauces. Isinglass is no longer considered to be highly nutritive; it is even less digestible than the flesh or muscular part of animals. The great consumer of isinglass is the brewer, who uses it as a fining material, for which purpose lump isinglass is chiefly used. This is deeper in color, and inferior in solubility to the better varieties. On mixing it with the liquor to be fined, it partly combines with some of those matters which render the liquor cloudy, and entangles in its meshes those which are mechanically suspended, the whole then rising to the surface can be removed; and the liquor be left clear. Wine, coffee, and other liquids are also clarified by isinglass, but sole-skins and hartshorn shavings are often used as substitutes for it. Isinglass forms the adhesive material in court-plaster, for which purpose a solution of isinglass, mixed with tincture of benzoin, is brushed over black sarsenet. Isinglass dissolved in spirits of wine or common gin, and gently simmered by placing the bottle in a vessel of boiling water for about an hour, forms *diamond cement*, or *white fish-glue*; gum ammoniac is sometimes added. Panes of isinglass, instead of glue, are used in France instead of horn, for lanterns, and also for lamp-shades, etc.—E. B.

Isle of Bourbon. Merchandise from Europe, or any country facing the Mediterranean, is inadmissible to the established entrepôt of this island, unless directly imported from French entrepôts, or the place of production; but merchandise of any other origin may be imported under any flag. This island is situated in the Indian Ocean, between latitude 20° 50′ and 21° 24′ S., 440 miles east of Madagascar. It is of an oval shape, greatest length 40 miles, greatest breadth 27 miles. Population about 109,000. Area, 900 square miles. It is intersected by two mountain ridges, with volcanoes. There are many small rivers, but none navigable. The valleys of any considerable size are not numerous. It has no safe harbor. The climate is healthy and pleasant. From December to May is the hot and rainy season. The soil is very fertile. In 1836 the surface was distributed into about 65 parts of cultivated land, 14 parts of pasturage, 55 parts of wood, and 97 parts of waste lands. The cultivated parts encircle the island, and press up the sides of the interior mountains. The articles produced are the sugar-cane, coffee, cloves, cocoa, tobacco, and grain; of these, the sugar-cane, grain, and coffee are most largely produced. The fisheries are excellent. They employ about 500 persons. The fish taken sell in the island for about $80,000 per annum. In 1848 the population consisted of 108,000 souls. They have numerous brick and lime kilns, tanneries, forges, founderies, tin-ware factories, breweries, and manufactures of palm-leaf bagging. The principal articles of export are raw sugar, coffee, cloves, dye-woods, cabinet-wood, and saltpetre. The staples are enumerated in the order of their importance, and are of the annual value of about $5,000,000. The chief imports are rice, wheat, oil, wines, cattle, timber, salt, glass, porcelain, and cottons and other manufactured goods. The total value of the imports is about $2,800,000.

Isothermal (Gr. *ισος* and *θέρμη*, *heat*). In physical geography, *isothermal lines* are those which pass through those points on the surface of the earth at which the mean annual temperature is the same. *Isothermal zones* are spaces on opposite sides of the equator, having the same mean temperature, and bounded by corresponding isothermal lines. On account of the irregular form and disposition of the continental masses, by which the climate of different places is greatly influenced, the isothermal curves are not parallel to the equator, excepting in the very low latitudes. According to Humboldt, the isothermal line, which corresponds to the temperature of 32° Fahrenheit, passes between Ulea, in Lapland, lat. 66°, and Table Bay, on the coast of Labrador, lat. 54°. The isothermal line of 41° passes near Stockholm, lat. 59½°, and St. George's Bay, Newfoundland, lat. 48°. The line of 50° passes through the Netherlands, lat. 51°, and near Boston, in the United States, lat. 42½°; that of 59° between Rome and Florence, lat. 43°, and Raleigh, in North Carolina, lat. 36°. In all these cases we see that the isothermal lines, in passing from the western side of the continent of Europe to the eastern coast of America, deviate very considerably toward the south; the deviation in one case amounting to 11½° of latitude. In passing over the American continent they again recede to the northward; and in California, and to the north of that peninsula, along the western side of the continent, the annual temperature is nearly the same as under similar latitudes in the west of Europe. From the western to the eastern side of the old continent the flexure of the isothermal curves and the diminution of the mean annual temperature under the same parallels, are not less conspicuous. The isothermal line of 55° passes through Nantes, lat. 47°, and Pekin, lat. 39½°. Edinburg, and Kasan, in the east of Russia, have the same latitude; but the mean annual temperature of the former is 48°, while that of the second is below 38°. For the different causes which affect the parallelism of the isothermal lines, or which produce the differences of the mean annual temperature of the places under the same parallel of latitude.

Humboldt gives the name of *isotheral lines* (*ισος*, and *θερος*, *summer*) to the curves passing through those

places at which the mean summer heat is the same; and of *isochimenal* (ισος, and χειμων, *winter*) to those which pass through the places at which the mean temperature of winter is the same. The isotheral and isochimenal curves deviate much more from the parallels of latitude than the isothermal. The latitudes of places having the same winter temperature sometimes differ so much as 18° or 20°. The winter of Scotland is as mild as that of Milan. The mean temperature of the winter months at Edinburg is about 38½°; of Kasan, under the same parallel, only 2°. The winter of Pekin is as rigorous as that of Stockholm.—Humboldt's *Fragmens Asiatiques.*

Isthmus, a narrow neck or slip of land which connects two continents; or joins a peninsula to the terra firma, and separates two seas. The most celebrated isthmuses are, that of Panama or Darien, which joins North and South America; that of Suez, which connects Asia and Africa; that of Corinth, which unites the Morea with western Greece; that of Crim Tartary, otherwise called *Taurica Chersonesus;* and that of the Peninsula Romania, and Erisso, or the isthmus of the Thracian Chersoneus, twelve furlongs broad, being that which Xerxes undertook to cut through.

Italy. The name *Italia* was originally applied to the extreme end of the peninsula, south of a line drawn from the Gulf of Squillace, *Sinus Scylaceus*, to that of Sta. Eufemia, *Sinus Terinæus.* By the time of Thucydides, in the 5th century B.C., the appellation had already extended to Metapontum on the east, and the Posidonian Gulf on the west coast, thus including the whole of modern Calabria, and great part of the provinces of Basilicata and Salerno. The further extension of the name was cotemporary with the progress of the Roman power, and at the time of Pyrrhus it included apparently the whole peninsula, except Liguria and Cisalpine Gaul. In the 7th century of Rome, though both Liguria and Cisalpine Gaul were still, in official usage, distinct from *Italia*, yet the latter name, as we gather from many passages in the classics, was already employed, in common acceptation, to designate the whole country from the Alps to the Sicilian Straits. The official acceptation was dropped as soon as Augustus, in his division of Italy, incorporated Liguria, Cisalpine Gaul, Venetia, and Istria.

The origin of the name has been referred to various sources, all equally uncertain. Greek and Roman tradition deduced it from the eponymous hero Italus, a supposed Œnotrian or Pelasgic chief; while Timæus, followed by Varro and Gellius, derived it from *Italos*, which in old Greek signified an *ox*, from the quantity of cattle bred in the country. *Græcia, enim antiqua, ut scribit Timæus, tauros vocabat Ἰταλούς, a quorum multitudine et pulchritudine et fictu vitulorum, Italiam dixerunt.** The word *Vitulus* (calf) and *Italus* were, according to Festus, synonymous; and on the *denarii* struck by the Sabellian nations during the Social War, B.C. 90–88, there occurs the word *Vitelu* for Italy.

In early times Italy was also called *Saturnia* from the Latin god Saturnus, *Œnotria* from an ancient chief Œnotrus, and *Ausonia* from the Ausones, the *Aurunci* of the Romans, who occupied the centre of the peninsula. All these names, however, seem to have belonged to particular districts, and to have been applied to the whole country only by the Latin and later Greek poets; indeed *Œnotria* would appear from Antiochus to have been synonymous with *Italia* in its original acceptation. The Greek poets applied to it sometimes the name *Hesperia*, on account of its being to the westward of their country. The Germans called it *Waelshland*, because the parts nearest to them were inhabited by the Gaules or Walles; and in their present language the name of Waelshland is still retained by the common people.

The loftiest range of mountains in Europe on the north-east, north, and north-west, and the sea on every other side, form the natural boundaries of Italy. The Alpine chain, extending in a semicircular form from the Julian Alps at the head of the Adriatic to the Maritime Alps on the Gulf of Genoa, divides it on the north-east from Illyria and the Tyrol, on the north and north-west from Switzerland, and on the west from France, where the River Var (*Varus*) forms its boundary. From this Alpine range, which may be called its basis, Italy projects south-east in a peninsular form, and nearly in the shape of a boot, far into the Mediterranean Sea, which takes the different names of—Adriatic, *Mare Superum*, on the east coast—Ionian, *Mare Ionium*, on the south-east coast, from the Cape of Sta. Maria di Leuca to the Straits of Messina—and of Tyrrhenian, *Mare Inferum* vel *Tyrrhenum*, on the west coast. According to these physical barriers, Trieste and the province of Istria on the east, and Nice on the west, would be excluded from Italy; but ever since Augustus extended its limits to the Var on the west, and the Gulf of Quarnero (*Sinus Flanaticus*) on the east, they have been reckoned as part of Italy. In the present political division of the Austrian empire, however, neither Istria nor Trieste is included in the Lombardo-Venetian kingdom, the limits of which are at the Isonzo, north-east of Aquileia. Along the north and north-west frontier the limits of Italy have at different times undergone various, though insignificant changes; for the Alps, though presenting an unbroken line on a distant view, are so deeply indented with valleys as to make a natural boundary possible only by following the watershed, a course never or seldom adopted in political arrangements. But even the watershed would not mark the limits of different nationalities, as valleys which, by this criterion, should not belong to Italy, are inhabited by an Italian race; and German or French is spoken in districts which should be included in Italy.

The Italian peninsula is situated between the parallels of N. lat. 46° 30′ and 37° 54′, and E. long. 6° 38′ and 18° 32′; if the islands are included, the southernmost parallel of lat. is 35° 40′. Its length in a direct line from the foot of the Alps near Aosta to the Capo di Sta. Maria di Leuca (*Iapygium Promontorium*) is about 600 miles, and to the Capo dell' Armi (*Leucopetra*) a little more than 660. Its breadth varies greatly. From the mouth of the Var to the head of the Adriatic, near the Isonzo, it is 300 miles; and if the line be carried to the head of the Gulf of Quarnero, near Fiume, it is more than 350. It narrows rapidly as it descends south; and from Viaroggio to Cervia is only 95 miles. Further south it expands a little; and from Piombino to Ancona the breadth is 138 miles, and 150 from Capo di Licosa to Brindisi. From Diamante to the mouth of the Crati, in Calabria, it is 29 miles, and only 18 between the Gulfs of Sta. Eufemia and Squillace. It is surrounded by many islands, the principal of which are: on the east coast the group of the Tremiti, north of Monte Gargano, and S. Pietro and S. Paolo in the Gulf of Taranto; on the south, Sicily, the largest of all, the Lipari group, Pantelleria, Malta, and Gozo, 58 miles from Sicily; on the west, Capri, Procida, and Ischia, at the two extremities of the Gulf of Naples; the Ponza group opposite Gaëta, Giglio near Monte Argentaro, the two large islands of Sardinia and Corsica; and between the latter one and the coast of Tuscany are Pianosa, Elba, and Caprala. The most important of these are noticed under their respective heads in this work.

The sea coasts of the peninsula, on the Tyrrhenian side, are, for the most part, protected by lofty acclivities, but on the Adriatic and the Ionian they are generally flat. The most remarkable capes and promontories of the peninsula are: Delle Melle, Manara,

* Varro, *De Re Rustica*, ii. 5.

Piombino, Argentaro, Circello, Miseno, Campanella, Licosa, Vaticano, Delle Armi, on the west shore; Spartivento, Rizzuto, Nau or Colonne, Alice, Leuca, Gargano, on the south-east and east shore.

The extent and population of Italy, including its islands, are shown by the following table, which is to be considered as merely approximative. In some of the States, the returns of population are not much attended to; and, with regard to their area, there is great discrepancy between the various authorities. This table, however, has been compiled from the most authentic data.

Names of the States.	Episcopal sees.	Extent in square miles.	Jews.	Population.	Capital cities.
Kingdom of the Two Sicilies:					
Naples	83	24,962	2,500	6,845,855	Naples.
Sicily	14	9,556	....	2,285,580	Palermo.
Kingdom of Sardinia:					
Piedmont and Riviera	26	15,397	4,250	3,946,450	Turin.
Island of Sardinia	11	8,228	....	552,665	Cagliari.
Lombardo-Venetian Kingdom	20	18,208	7,000	5,503,478	Milan.
Papal States	68	12,120	12,800	3,065,000	Rome.
Grand Duchy of Tuscany (including Lucca)	21	6,784	7,180	1,817,500	Florence.
Duchy of Modena	4	1,629	2,680	606,800	Modena.
Duchy of Parma	4	1,712	680	508,800	Parma.
Republic of S. Marino	..	18	....	7,800	S. Marino.
Total	251	93,614	37,040	25,148,928	
Corsica, belonging to France	1	2,850	....	236,251	Ajaccio.
Malta and Gozo, belonging to England	1	114	....	123,361	Valetta.
Total	253	96,578	....	25,508,585	

The most densely inhabited State is that of Lucca, which contains 525 individuals for every square mile; next to it come the Lombard provinces. The most thinly inhabited parts are the Campagna of Rome and the Island of Sardinia. Italy has more populous towns than any other State of Europe of the same extent. Naples has more than 400,000 inhabitants; Milan, Turin, Rome, and Palermo, each more than 150,000; Florence, Venice, and Genoa, more than 100,000; Leghorn, Messina, Verona, and Bologna, more than 60,000; Parma, Padua, and Catania, more than 40,000; Mantua, Bergamo, Brescia, Ferrara, Modena, Piacenza, Ancona, and Bari, more than 30,000, etc.

The division of Italy into northern, central, and southern, is neither political nor strictly geographical, but is adopted sometimes as a convenient designation of some parts of the country. According to the general acceptation in the peninsula, northern Italy is understood to include Piedmont and the Riviera, Lombardy, the Venetian, Parma, Modena, and the States of the Church, as far as an imaginary line from the Gulf of Spezia to Ravenna; central Italy includes Tuscany and the rest of the States of the Church; and southern Italy the kingdom of Naples. The division in more common use among natives is into upper and lower Italy, the former applying to the portion north of the Apennines and to the Riviera, the latter to all the rest of the peninsula.

The face of the country is much diversified by mountains, of which those forming its northern and northwestern boundary have been described in this work under the article ALPS. A second range of mountains, running through its whole length, determines its configuration and its physical character. From the earliest historical times they were called *Apennines*—a name supposed to be of Celtic origin, from its containing the root *Pen*, which in Celtic dialects signifies height or head.

The Apennines may be regarded as a great offshoot of the Alps, from which they branch off near the Gulf of Genoa; but as there is no regular break in the chain, much difference of opinion has prevailed as to the point of their real commencement. Polybius extends the Apennines nearly as far as Marseilles; Strabo, on the contrary, extends the Maritime Alps to Vado, and states that the Apennines begin near Genoa. The latter opinion has been adopted by the best modern geographers, who fix the junction of the Maritime Alps and the Apennines in the valley of the Bormida, west of Savona, where the range, which does not exceed the height of 1300 feet, presents the nearest approach to a break.

All the rivers of Italy are subject to sudden and very heavy floods, and with the exception of the Po, the Adige, and the Tiber, have their volume of water greatly reduced in summer. The insignificant amount of tide in the Mediterranean renders most of them useless for navigation.

In a country extending through 10 degrees of latitude there must be great differences of climate, and consequently of vegetation and agriculture, from position alone. Besides that, however, the climate of Italy is modified to such a degree by the ranges of the Alps and Apennines, and by the air of the sea along its coasts, as to render useless any division into regions according to the classification of Saussure. In the plains of Lombardy and Piedmont, and the other territories to the north of the Apennines, which are inclosed by mountains on every side but the east, Fahrenheit's thermometer in winter descends to 10°; snow lies sometimes a fortnight on the ground, the lagoons at the mouths of the rivers are frozen, and slight night frosts appear early in November, and some years as late as April. Delicate plants do not thrive except in sheltered situations, but the mulberry-trees flourish, rice is grown, and the pastures are rich. South of the Apennines, that part of Tuscany and the States of the Church which is near their main range is subject to great cold, but westward, and along the Riviera, the temperature grows mildor, snow seldom lies long on the fields, and the climate is suitable to the growth of the olive and the orange. But it is when we reach the central range of the Apennines that we find the coldest districts of Italy. In all the upland valleys of the Abruzzi and of Sannio, snow begins to fall early in November, and heavy storms occur often as late as May; whole communities are shut out for months from any intercourse with their neighbors, and some villages are so long buried in snow that regular passages are made between the different houses for the sake of communication among the inhabitants. The district extending from the south-east of Lake Fucinus to the Piano di Cinquemiglia, and inclosing the upper basin of the Sangro and the small lake of Scanno, is the coldest and most bleak part of Italy south of the Alps. Heavy falls of snow in June are not uncommon, and it is only for a short time toward the end of July that the nights are totally exempt from light frosts. Yet, less that 40 miles east of this district, and even more to the north, we find the olive, the fig-tree, and the orange, thriving luxuriantly on the shores of the Adriatic from Ortona to Vasto. In the same way, while in the plains and hills round Naples snow is rarely seen, and never remains long, and the thermometer seldom descends to the freezing point, 20 miles east from it in the fertile valley of Avellino, of no great elevation, but encircled by high

mountains, light frosts are not uncommon as late as June; and 18 miles further east, in the elevated region of S. Angelo de' Lombardi and Bisaccia, the inhabitants are always warmly clad, and vines grow with difficulty and only in sheltered places. But nowhere are these contrasts so striking as in Calabria. The shores, especially on the Tyrrhenian Sea, present almost a continued grove of olive, orange, lemon, and citron-trees, which attain a size unknown in the north of Italy. The sugar-cane flourishes, the cotton-plant ripens to perfection, the date-trees are seen in the gardens, the rocks are clothed with the prickly-pear or Indian-fig, the inclosures of the fields are formed by aloes and sometimes pomegranates, the liquorice-root grows wild, and the mastich, the rosemary, the myrtle, and many varieties of oleander and cistus, form the underwood of the natural forests of arbutus and evergreen oak. If we turn inland but five or six miles from the shore, and often even less, the scene changes. High districts covered with oaks and chestnuts succeed to this almost tropical vegetation; a little higher up, and we reach the elevated table-lands of the Pollino and the Sila, covered with firs and pines, and affording rich pastures even in the midst of summer, when heavy dews and light frosts succeed each other in July and August, and snow begins to appear at the end of September or early in October.

The cerealia form, as elsewhere in Europe, the chief aliment of the inhabitants; in Italy, however, the lower classes, who are the most numerous, subsist much on maize and beans, which require little preparation to render them fit for food. In some of the southern parts wheat is made use of by the same class, both in the form of bread and in that of macaroni, which is manipulated with great facility. Wheat and maize are, on the average of years, about equal to the consumption, but little can be spared for exportation; and in many of the ports are dépôts of foreign wheat kept to meet the variations of seasons, or to be used as articles of commerce with other countries.

As Italy produces abundance of wine, and consequently needs neither beer nor corn-spirits, no barley is needed for these drinks, and scarcely any is cultivated. Oats are but little grown, but abundance of beans of various kinds are produced. Rye, the common bread-corn of the far greater portion of Europe, is only raised in a few spots in the very northernmost parts of Italy, where it is made into bread for the poor; while those of the higher classes there, as well as throughout the whole peninsula in the cities, make use of wheaten bread. Rice grows in many parts, in fact wherever there is a sufficiency of water to insure a good produce, at such distance from towns as not to be injurious to the health of the inhabitants. It is a part of almost every meal in families in easy circumstances, but is scarcely used by families who are in circumstances that require the practice of great parsimony. A great variety of lupines are used as food, especially in the soups. In some parts of the mountainous regions, chestnuts are a substitute for corn as long as they last. Fruits are plentifully used, particularly figs, grapes, and melons, as food; while the cheapness of onions, garlic, tomatoes or love-apples, and capsicums, render them valuable as condiments. The potato, which in the other parts of Europe has been so much extended of late years, has been but partially introduced into Italy; and, where it is cultivated, it occupies a very small proportion of the soil. Lettuces, asparagus, endive, artichokes, and several kinds of turnips and of carrots, are everywhere grown.

Animal food is far from being extensively used. The oxen yield in some parts excellent, in other very indifferent meat. The mutton is neither good nor abundant, but has been much improved of late years. Swine furnish a plentiful supply during the winter months: they are also prepared as bacon or hams, and above all as sausages, the fame of which latter has reached unto England under the name of the city of Bologna, where they were early and extensively prepared. The large dairy farms in Lombardy, in which the cheese known by the name of Parmesan is made, and the oak and chestnut forests of Calabria, furnish the most and best swine's flesh.

The fisheries contribute largely to the supply of food in Italy, though from the number of fasts still countenanced by the Catholic church, not sufficient for the consumption; and the deficiency is procured by commerce with the English, French, and Americans, who convey to the sea-ports the salted cod-fish from the banks of Newfoundland. Their own fisheries on the coast give much occupation; the most considerable are those for the tunny, a very large fish, and for the anchovy, a very small one. These are conducted upon a large scale by joint-stock companies. The lakes and the rivers also yield some, though not a great proportion, of that kind of food which ecclesiastical restrictions render indispensable. The sugar-cane is not cultivated in the south of Italy, as it is found, that in point of strength, as well as of cost, the sugar made from it does not succeed in a competition with that substance when imported from the West Indies. The products of agriculture are sufficient for the clothing of all the inhabitants; for though wool is neither good nor plentiful, yet hemp and flax are grown everywhere, are manufactured at home, and, from the nature of the climate, linen can be substituted for woollen dress during most of the months of the year. Some raw wool is, however, imported to supply the manufactures, and some cloths, both from England and France, together with (in Lombardy) those from the other Austrian provinces, especially from Bohemia. Some cotton is grown in the southern divisions of Italy, but not sufficient to furnish materials for their very insignificant manufactures of that article.

The chief product of Italian agriculture is the silk. It is produced from every part, and much of it is converted into articles of dress or of furniture where it is collected; but the chief production of it is in Sardinia, Naples, and Lombardy, whence the looms of England, Prussia, Austria, Russia, and Germany are supplied. The value of this commodity exceeds that of all the other productions of Italy which are exported to foreign countries. The manufacture has of late years made great progress, which it is still steadily maintaining. The great increase which has taken place in the propagation of the mulberry-tree has, within the last 30 years, increased the quantity of raw silk to an extent that had never before been dreamed of.

Another very important Italian product, which is used partly as food, partly employed in home manufactures, and extensively exported as an article of foreign commerce, is the oil of the olive-tree. It is used as a substitute for butter in the south, is much appropriated to the manufacture of many kinds of soap, and is exported to England for the use of our various fabrics, chiefly those of wool, and as a luxury at our tables. The planting and watching cost but little labor or expense, and in a few years the income more than recompenses the labor. The best olive oil is produced near Genoa, in Lucca, in Tuscany, and in Calabria; but it is plentiful throughout the whole of Italy, except in Lombardy and in Piedmont.

The wines of Italy are not very highly valued in other countries, and almost the whole that is produced is consumed at home. Those of the north are for the most part disagreeably acid, and scarcely any of them are or can be preserved beyond one year. The vines are not so much grown in vineyards as in the hedge-rows; a system which doubtless injures the quality of the wine. In the southern parts, however, where the vines are grown in low vineyards as in France, the wines are of a more fiery quality, and though prepared with little care, they only require to be better known to be esteemed by foreigners.

The minerals of Italy are of small value; and though mines of gold, silver, and copper were once wrought, the veins have long been exhausted. Some alum is found in the Papal dominions and the Neapolitan territory, some vitriol and antimony in Parma, and sulphur in the island of Sicily. In many places there are excellent marble quarries, the best near Verona and Carrara. Alabaster is found in many of the mountains. The salt manufactured on the seashore, and from saline springs, is more than is required for the home consumption, and a large quantity might be exported.

Direct trade between the United States and Italy is conducted through the ports of Leghorn, Genoa, and Palermo, to which may be added the Austrian port of Trieste. Exports to Sicily, Sardinia, and Tuscany, in 1854, amounted to $469,148; while to Trieste they reached, during the same year, $1,751,766. The value of cotton exported to Sicily, Sardinia, and Tuscany, during the same year, was $179,098; to Trieste, it reached $1,370,402. The value of tobacco exported to Sicily, Sardinia, and Tuscany, in 1854, was $144,082; to Trieste, it reached the sum of $259,252. A large portion of the exports to Trieste, however, are purchased there for the German markets, that port possessing unusual facilities as a leading entrepôt for many of the States of Germany. Many American vessels clear from the ports of the United States with cargoes destined for the markets of "Italy generally;" at least such would seem to be their mode of clearance, from the custom-house returns; and the average annual value of cargoes thus destined, exceeds the whole amount of cargoes for designated points in the Italian peninsula, except Trieste. The following table exhibits the value of this triangular trade for a period of 36 successive years:

Commerce of the United States with Italy (including Malta to October 1, 1833), from October 1, 1820, to July 1, 1856.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage Cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1821	$410,171	$689,496	$1,099,667	$973,463	....	$355,211	8,802	....
1822	560,714	889,470	1,450,184	1,562,038	....	271,944	10,056	....
1823	115,994	951,911	1,067,905	1,369,440	....	215,197	6,057	....
1824	76,868	587,480	664,348	1,029,489	....	70,998	5,111	461
1825	66,605	578,434	645,039	1,454,022	....	100,684	7,015	....
1826	81,622	448,599	530,221	1,120,749	....	74,259	5,208	....
1827	74,417	535,804	610,221	1,018,126	....	102,592	5,391	....
1828	279,520	641,230	920,750	1,607,417	$25,000	67,582	6,515	767
1829	289,155	611,267	901,019	1,409,588	33,592	1,200	7,081	....
1830	326,239	414,121	740,860	940,254	....	2,570	6,626	418
Total	$2,281,905	$6,847,802	$8,629,707	$12,479,581	$58,592	$1,201,432	67,812	1,646
Sept. 30, 1831	$371,515	$323,010	$694,525	$1,704,264	....	$37,988	9,120	....
1832	178,507	509,056	687,563	1,619,795	$660	4,400	6,042	....
1833	70,364	801,822	872,186	999,134	....	1,300	6,055	892
1834	103,786	387,771	491,557	1,422,063	....	18,305	4,482	426
1835	178,545	107,296	285,841	1,457,977	....	14,004	4,544	206
1836	189,478	524,586	664,059	1,970,246	....	2,514	5,863	258
1837	205,268	418,409	623,677	1,827,181	....	....	2,637	3,581
1838	819,536	141,857	456,393	944,238	....	38,018	3,041	1,810
1839	315,899	122,753	438,152	1,182,297	....	6,728	1,016	1,835
1840	1,189,888	288,847	1,478,185	1,157,200	....	57,672	8,071	2,602
Total	$3,073,281	$3,119,507	$6,192,788	$14,284,895	$660	$180,769	50,871	11,000
Sept. 30, 1841	$781,411	$130,907	$912,318	$1,151,286	$3,750	$3,841	6,282	1,267
1842	515,577	304,940	820,517	987,528	16,000	1,414	7,367	1,402
9 mos. 1843	541,500	186,721	728,221	894,564	....	....	3,350	1,117
June 30, 1844	818,566	258,257	576,823	1,096,926	....	1,561	2,340	941
1845	587,569	230,352	817,921	1,801,577	....	2,400	5,984	914
1846	942,263	424,652	1,366,915	1,189,786	....	....	1,195	....
1847	1,056,022	93,333	1,149,355	1,279,936	....	18,475	....	....
1848	1,101,118	159,488	1,260,601	1,618,100	....	7,719	....	....
1849	811,450	293,419	1,104,869	1,550,896	....	8,000	....	....
1850	1,567,166	239,904	1,807,070	2,105,077	....	4,028	....	....
Total	$8,172,637	$2,371,973	$10,544,610	$12,678,626	$19,750	$42,288	26,519	5,641
June 30, 1851	$1,736,334	$127,406	$1,864,240	$2,051,597	....	....	....	....
1852	1,573,852	205,342	1,779,194	1,234,905	....	....	....	....
1853	2,173,745	159,833	2,333,578	958,714	....	....	....	....
1854	1,598,927	165,439	1,751,766	971,723	....	....	....	....
1855	506,457	42,736	549,393	1,774,433	....	....	2,598	237
1856	457,497	5,893	463,020	1,635,565	....	....	4,179	763

The commerce of Italy has suffered from the derangement of the government; and although favorably situated for a large trade, the merchant marine is small, and confined almost entirely to coasting vessels.

	Value, Scudo.
Imports in 1852	10,213,426
Exports	10,474,018

The Scudo=$1 08 of United States' currency.

Value of the Imports and Exports of Leghorn.

Year ending October.	Imports. Francs.	Exports. Francs.
1852	85,520,000	54,600,000
1853	115,400,000	71,220,000
1855	142,200,000	....

Navigation of the Ports of Civita Vecchia and of Ancona (1852).

Vessels.	Entered	Tonnage.	Crew.	Cleared	Tonnage.	Crews.
Roman	1,080	67,006	7,489	1,082	66,679	7,393
Foreign	1,231	187,798	20,117	1,210	185,318	19,729
Total	2,311	254,824	27,556	2,292	251,992	27,122

The mercantile marine numbered at the close of the year 1854, 1,893 vessels (of which 210 were vessels of war), having a total tonnage of 31,637 with 9711 men.—*Foreign Com. U. S.*

Ivory, the name given to the teeth or tusks of the elephant, and of the walrus or sea-horse. Each male elephant come to maturity has two tusks. These are hollow at the root, tapering, and of various sizes, depending principally on the age of the animal. Color externally, yellowish, brownish, and sometimes dark; internally, white. The best are large, straight, and light-colored, without flaws; not very hollow in the stump, but solid and thick. The most esteemed come from Africa, being of a closer texture, and less liable to turn yellow, than those from the East Indies. The trade in London thus divide them:—First sort, weighing 70 pounds or upward; second sort, weighing 56 lbs. to 60 lbs.; third sort, weighing 38 lbs. to 56 lbs.; fourth sort, weighing 28 lbs. to 37 lbs.; fifth sort,

weighing 18 lbs. to 27 lbs. All under 18 lbs. are called *scrivelloes*, and are of the least value. In purchasing elephants' teeth, those that are very crooked, hollow, and broken at the ends, or cracked and decayed in the inside, should be rejected; and care taken that lead or any other substance has not been poured into the hollow. The freight is rated at 16 cwt. to the ton. —MILBURN's *Orient. Com.*

Supply of Ivory.—The imports of elephants' teeth, in 1840 and 1841, were, at an average, 5556 cwt., of which 4520 cwt. were retained for consumption. The medium weight of a tusk may be taken at about 60 lbs.; so that the yearly imports of 1840 and 1841 may be taken at 10,372 tusks; a fact which supposes the destruction of at least 5186 male elephants! But, supposing the tusks could only be obtained by killing the animal, the destruction would really be a good deal greater, and would, most probably, indeed, amount to about 7000 elephants. Occasionally, however, tusks are accidentally broken, one lost in this way being replaced by a new one; and a good many are also obtained from elephants that have died in the natural way. Still it is sufficiently obvious, that the supply from the sources now alluded to can not be very large; and if to the quantity of ivory required for Great Britain, we add that required for the other countries of Europe, America, and Asia, the slaughter of elephants must, after every reasonable deduction is made, appear immense; and it may well excite surprise, that the breed of this noble animal has not been more diminished. The western and eastern coasts of Africa, the Cape of Good Hope, Ceylon, India, and the countries to the eastward of the Straits of Malacca, are the great marts whence supplies of ivory are derived. The imports from western Africa into Great Britain, in 1840, amounted to 1933 cwt.; the Cape furnished only 97 cwt. The imports during the same year from India, Ceylon, and other eastern countries, were 2418 cwt. The Chinese market is principally supplied with ivory from Malacca, Siam, and Sumatra.

The chief consumption of ivory is in the manufacture of handles for knives; but it is also extensively used in the manufacture of musical and mathematical instruments, chess-men, billiard-balls, plates for miniatures, toys, etc. Ivory articles are said to be manufactured to a greater extent, and with better success at Dieppe, than in any other place in Europe. But the preparation of this beautiful material is much better understood by the Chinese than by any other people. No European artist has hitherto succeeded in cutting concentric balls after the manner of the Chinese; and their boxes, chess-men, and other ivory articles, are all far superior to any that are to be met with anywhere else.

STATEMENT SHOWING THE IMPORTS OF IVORY INTO THE UNITED STATES FOR THE FISCAL YEAR ENDING JUNE 30TH, 1856.

Where imported.	Manufactures of.	Unmanufactured.
Russian Posses. in N. America	....	$893
Bremen	$2,018	....
England	9,858	46,553
British Possessions in Africa	....	21,945
France	4,867	205
Portugal	....	188
Ports in Africa	....	250,278
China	2,180	178
Other places	102	33
Total	$18,520	$320,100

Historical Notice.—It is a curious fact, that the people of all Asiatic countries in which the elephant is found, have always had the art of taming the animal and applying it to useful purposes, but that no such art has ever been possessed by any native African nation. Is this owing to any difference between the Asiatic and African elephants, or to the inferior sagacity of the African people? We incline to think that the latter is the true hypothesis. Alexander the Great is believed to have been the first European who employed elephants in war. It appears pretty certain that the elephants made use of by the Carthaginians were mostly, if not wholly, brought from India; and that they were managed by Indian leaders. Some of the latter were captured by the Romans, in the great victory gained by Metellus over Asdrubal. See, on this curious subject, two very learned and valuable notes in the *Ancient Universal History*. BUFFON's *Article on the Elephant* is a splendid piece of composition.

Rendering Ivory Soft.—The various mechanical and chemical processes connected with the manipulation of ivory, are among the most interesting peculiarities of art. In rendering it soft and transparent, small pieces of the article are laid in strong phosphoric acid until they become transparent, then rinsed in water, and dried in pure linen. When dry it is translucent and hard, but softens as often as it is dipped in warm water or milk. The time of immersion in the acid differs with different pieces of ivory. If certain parts are to retain their original character, they are covered with a varnish before immersion. The acid probably acts by forming an acid phosphate of lime out of the buric phosphate which constitutes three fourths of ivory. The process of hardening ivory, which has become pliable by age, consists in boiling it for some time in a solution of gelatin.

Vegetable Ivory is now imported chiefly from the River Magdalen into Europe and the United States of America; in some years no less than 150 tons of it have been imported into England. The "nuts" may be purchased in the toy-shops of the British metropolis for a few pence each, but when bought in large quantities, they are obtained at a much cheaper rate. In August, 1854, 1000 "nuts" were sold in London for 7*s.* 6*d.* The ivory plant is confined to the continent of South America, where it grows between the 9th degree of north, and the 8th degree of south latitude, and the 70th and 79th of west longitude. It inhabits damp localities, such as confined valleys, banks of rivers and rivulets, and is found not only on the lower coast region, as in Darien, but also on mountains at an elevation of more than 3000 feet above the sea, as in Ocana. Among the Spaniards and their descendants, it is known by the name of *Palme de Marfil* (ivory palm); while its fruit is called by them *Cabeza de Negro* (Negro's head); and its seed, *Marfil vegetal* (vegetable ivory). The Indians on the banks of the Magdalena term the plant *Tagua*, those on the coast of Darien *Anta*, and those of Peru, *Pullipunta* and *Homero*. It is generally found in separate groves, seldom intermixed with other trees or shrubs, and where herbs are rarely met with.—*Botanical Magazine*, May, 1856.

Ivory Black. The mixture of charcoal and phosphate of lime obtained by burning bone, is sold under this name, and, like other forms of animal charcoal, is very effective in depriving certain substances of their color.

J.

Jack, in nautical language, is a flag of colors used in making signals. See FLAGS.

Jacmel, a sea-port of Hayti. This port, considering the scantiness of its supplies for foreign export, enjoys a considerable share of the navigation of Hayti. It forwards to Port-au-Prince most of the merchandise it imports, especially the large quantities of flax and silk textiles which it receives by the British steam-packets. The first rank in the commerce of this port, formerly held by the British, is now transferred to the United States. In the movements of 1850 there were under the American flag 60 vessels, out of a total of 151; under the English flag, 45 (including their regular royal mail steamers); and under the French flag only 5. The trade and navigation between the United States and the port of Jacmel during the last six months of 1854 is given as follows:—Number of vessels, 30; average tonnage of each, 140 tons; value of cargoes inward, $661,599 32; value of cargoes outward, not given in official returns. Cargoes inward consisted of provisions, lumber, shingles, and assorted goods. Cargoes outward of coffee, logwood, lignum-vitæ, fustic, braziletto.

Jacobus, a gold coin, worth 25s., and so called from King James I. of England, in whose reign it was struck. There are two kinds of *Jacobus*, the old and new; the former valued at 25s., weighing six pennyweights ten grains; the latter, called also *Carolus*, valued at 23s., and in weight five pennyweights twenty grains.

Jacquard, a peculiar and most ingenious mechanism, invented by M. Jacquart of Lyons, to be adapted to a silk or muslin loom for superseding the employment of draw-boys, in weaving figured goods. Independently of the ordinary play of the warp threads, for the formation of the ground of such a web, all those threads which should rise simultaneously to produce the figure have their appropriate healds, which a child formerly raised by means of cords, that grouped them together into a system, in the order, and at the time desired by the weaver. This plan evidently occasioned no little complication in the machine, when the design was richly figured; but the apparatus of Jacquart, which subjects this manœuvre to a regular mechanical operation, and derives its motion from a simple pedal put in action by the weaver's feet, was generally adopted soon after its invention in 1800. Every common loom is susceptible of receiving this beautiful appendage. It costs in France 200 francs, or $40 in this country.

Jade, an ornamental stone, of which there appear to be two varieties, *common jade* or *nephrite*, and *saussurite* or *jade tenace*. Common jade is a silicate of magnesia, oxyd of iron, alumina. Its specific gravity varies from 2·9 to 3·0; hardness 7·0. Its color is leek green, passing into gray. It is very tough, and scarcely fusible before the blow-pipe. Nephrite was formerly worn as a charm, and was supposed to be a cure for disease of the kidney, whence the name from νέφρος, *kidney*. From its toughness it has been used for the blades of hatchets by the New Zealanders, and other savage nations. Humboldt speaks of jade stones being an article of trade among the natives of the north and south sides of the Orinoco. Jade is much used in Turkey and Poland for the handles of knives, daggers, swords, etc.; and in India, ornaments and trinkets, delicately worked, are made of it. In China, the jade is of a whitish color, and is called *yu*. It is formed into vases, rings, and other articles. A great variety of jade ornaments from India and China appeared at the Great Exhibition of 1851. Such articles are very costly, on account of the extreme difficulty of working this refractory substance, but it has been suggested that mortars, pestles, and some other objects required by chemists, could be manufactured of jade of larger size than can now be made of agate, and, from the simplicity of the forms, at moderate cost. Jade is polished by carnelian, but it takes only a greasy, not a brilliant polish.

Saussurite is a double silicate of magnesia, lime, and oxyd of iron, with silicate of alumina; specific gravity 3·2 to 3·4, hardness 5·5. Its color is greenish-white, or ash-gray; its cleavage is in two directions, meeting at an angle of nearly 120°. Its lustre is pearly, resinous, or vitreous; it is extremely tough, and is fusible before the blow-pipe.—E. B.

Jaffa, or **Yaffa** (the ancient *Joppa*), is a sea-port town of Palestine, in north lat. 32° 3′, east long. 34° 45′. It is situate on an eminence projecting into the sea, about 40 miles north-west of Jerusalem. It is mentioned in the Old Testament as the port at which the timber for Solomon's Temple was unshipped. During the wars of the Maccabees, its shipping was set on fire by Jonathan; and it was again pillaged during the wars between the Romans and the Jews, 3400 of its inhabitants being put to the sword, and the town burned. Having subsequently become the refuge of pirates, the place was utterly destroyed. Gradually, however, it seems again to have risen to importance, for, during the reign of the Christian emperors, it was made the seat of a bishopric. In A. D. 636 it was taken by Omar. In the crusades it was taken by Baldwin I., and in 1186 retaken by Saladin. In more recent times it was stormed by Napoleon in 1797, when 500 Turkish prisoners were put to death. The harbor of Joppa has always been dangerous, owing to its exposure to the sea, and, being now nearly choked up with sand, vessels are obliged to keep at a distance from the shore. Notwithstanding all the danger and difficulty of landing, Joppa has for many centuries been the resort of pilgrims on their way to Jerusalem. The town chiefly faces the north. The buildings are surmounted by flattened domes, which rise in rows above one another like terraces, on the steep face of the eminence on which the town is built. The summit of the height is crowned with a castle; but though the general situation of the town is thus somewhat picturesque, its appearance on closer inspection is mean and comfortless. A wall 12 feet high defends the town on the landward side, and two forts protect the harbor. Joppa carries on trade in cotton, soap, fruit, coral, etc. The fruits, consisting of watermelons, oranges, lemons, etc., grow well in the sandy soil of the numerous neighboring gardens. It imports rice from Egypt. The inhabitants consist of Turks and Arabs, Romanists and Greeks, with some Armenians, as may be inferred from the three mosques, three churches, and three Armenian convents to be seen in the town. A British consul resides here. Population 4000.—E. B.

Jafna, the capital of the district of Jafnapatam. It stands at some distance from the sea, but communicates with it by a river navigable for large boats, and which falls into the sea near Point Pedro. The town is fortified and possesses a good citadel, which, though small, is exceedingly well built; but it was given up in 1795, after a short resistance, to the British troops. The situation is salubrious, and living is cheap; on which account many families have removed to this place from Columbo. The greater part of the inhabitants are of Mohammedan extraction, and are divided into several tribes, known by the names of Lubbahs, Moplays, Chitteea, and Cholias. The foreign settlers are more numerous than the native inhabitants. There are

manufactures of coarse cotton cloths, calicoes, handkerchiefs, shawls, stockings, etc., and there are also many artificers, such as goldsmiths, jewelers, joiners, and cabinet-makers.—E. B.

Jalap, or **Jalop** (Ger. *Jalapp;* Fr. *Jalap;* It. *Sciarappe;* Sp. *Jalapa*), the root of a certain convolvulus, so named from Xalapa, in Mexico, whence we chiefly import it. The root, when brought to this country, is in thin transverse slices, solid, hard, weighty, of a blackish color on the outside, and internally of a dark gray, with black circular striæ. The hardest and darkest colored is the best; that which is light, spongy, and pale colored, should be rejected. The odor of jalap, especially when in powder, is very characteristic. Its taste is exceedingly nauseous, accompanied by a sweetish bitterness.—Lewis's *Mat. Med.;* Brande's *Pharmacy.*

In Mexico, from 4000 to 6000 feet above the sea level, grows the plant which yields true jalap, and which has been called by botanists *Convolvulus purga*, and *Ipomœa purga*, the latter name being adopted by De Candolle. It has since, however, been placed in the genus *Exogonium*. The true jalap (*Exogonium purga*) has a tuberous perennial root, a smooth, twining, annual stem, a salver-shaped corolla, with long cylindrical tube, a calyx of five small, unequal sepals, and herbaceous stems. Its leaves resemble the ivy, and its beautiful red flowers open only at night. The dried tubers of this plant supply the drug jalap; these, as found in commerce, rarely exceed 1 lb. in weight; they are oval in form, and covered with a dark skin or cuticle. Internally they are yellowish gray, with deep brown concentric circles, and are hard and difficult to powder. Inferior sorts are more irregular in form, and are called *spurious jalap*, or, from their shape, *cocked-hat jalap*. Some roots are much *worm-eaten*, and are so called; but as the insects do not touch the resinous portions, such roots are available for extracts. Four kinds of jalap are known in commerce, two genuine and two spurious; first, dark, heavy, resinous tubers; secondly, lighter colored and less resinous; thirdly, *white* or *false jalap*, pieces of which are occasionally mixed with the true; and, fourthly, *jalap-stalk* or *woody jalap*, the slices of which are more fibrous and woody than the genuine. There are about 200,000 lbs. of the pure jalap annually exported from Vera Cruz on the Gulf of Mexico, the sea-port of Jalapa.

Jalapa, or **Xalapa**, a town of Mexico, capital of a cognominal department, in the State of Vera Cruz. It is situated on a small plain at the foot of a range of hills 55 miles north-west of the town of Vera Cruz, and about 4500 feet above the sea level. On account of its exhilarating climate it is a favorite resort of the inhabitants of Vera Cruz when the *vomito prieto* is prevalent there. The only building of importance is an old church, which is believed by the people to have been founded by Cortez. Cotton is manufactured, but its trade has greatly diminished. In the neighborhood grows the creeping-plant, *Exogonium purga*, or, as it is called from this town, *Jalap*. The population of the department is estimated at 45,000, and the town at 16,000 persons.

Jamaica, an island lying off the Bay of Honduras, between the Caribbean Sea and Gulf of Mexico, within N. lat. 17° 40′ and 18° 30′, and W. long. 76° 10′ and 78° 30′, about 4000 miles S.W. of England, 80 S. of Cuba, 90 W. of St. Domingo, and 515 miles N. of Chagres, the Atlantic port of the Isthmus of Panama. It is the most southern of that group, which is called by some the Greater Antilles, by others the Leeward Islands. The latter name, however, is now generally applied to the smaller islands on the north-east, and sometimes to those on the south of the Caribbean Sea. It is the largest, and was formerly the most valuable of the British West Indies, being 140 geographical miles in length, by 50 in extreme breadth, and containing about 4,080,000 acres, or 6400 square miles. Within its government are comprised, besides the three small islands called the Caymanas, Belize, or British Honduras, on the main land of Central America, with Ruatan and other islands in the Bay of Honduras. These places, though distant respectively 600 and 460 miles, have been called the dependencies of Jamaica, and are ruled by superintendents appointed by the governor. The title of Britain was disputed by Spain in the early part of the last century, and the Bay Islands were given up to that power by the treaty of London in 1786, but were re-occupied by the British during the subsequent war. Having, with the Mosquito Territory, formed the subject of dispute between Great Britain and the United States, arising out of the Clayton-Bulwer Treaty, they have (1856) been constituted as free territory under the republic of Honduras, with provisos against alienation, the erection of forts, and the introduction of slavery.

Jamaica was discovered by Columbus on the 3d of May, 1494, while coasting along the south of Cuba, during his second voyage. He called it St. Jago, after the patron saint of Spain, but it is now generally known by its Indian name Jamaica, a word signifying the Isle of Springs, according to the best authorities, though Long derives it from a kind of fruit. It is sometimes written Xaymaca by the Spaniards. On approaching the shore, Columbus called the nearest land after his first ship, Santa Maria, a name still preserved in Port Maria. He effected a landing a little to the westward, at Ora Cabessa, where, after a slight opposition from the natives, he took possession of the country, with the usual formalities, for the king of Spain. The inhabitants were the same mild, inoffensive race as those of Cuba and Hayti. Like the Arowaks of Trinidad and Guiana, they were probably offshoots of the great Mexican stock, and very different from the fierce Caribs of the Windward Islands. After a short stay, Columbus quitted Jamaica, which remained undisturbed for nine years. In June, 1503, on his fourth and last voyage, he was driven by a tempest, in which he lost two ships, to a bay on the north side of the island, which he named Sta. Gloria (now St. Ann's Bay), where he ran his remaining vessels ashore in a small inlet still called Don Christopher's Cove. The shipwrecked mariners were received with the greatest kindness by the Indians, and here Columbus remained upward of a year awaiting the return of messengers he had dispatched to Ovando, governor of Hispaniola, as Cuba was then called. During this time he suffered much from disease, as well as from the mutiny of his followers, whose gross misconduct alienated the Indians, and provoked them to withhold their accustomed supplies, until he dexterously worked upon their superstition by prognosticating an eclipse.

By Esquivel the natives were treated, according to Herrera, with unusual humanity. That his successors did not imitate him in this respect is proved by the astounding fact that of the Indian population, at this time estimated at from 60,000 to 100,000 souls, not a descendant of either sex existed in 1655, when the island fell into the hands of the English, nor, is it supposed, for nearly a century before. After a short sway, Esquivel died in Sevilla d'Oro, a town founded by himself on St. Ann's Bay, which is supposed by some to have been deserted on account of the ravages of ants, by others to have been destroyed during an insurrection of the Indians. Its premature fall was, however, most probably owing to the attacks of French filibustiers, or pirates, who for a long period infested these coasts. The site of the town may still be traced by mounds of earth, as well as in the names of certain fields belonging to the Seville sugar plantation. Melilla, near Port Maria, or, according to another opinion, at Martha Brae, near Falmoth, shared the same fate.

About the year 1523, Diego Columbus, visiting Jamaica from Hispaniola, founded on the River Cobre,

inland to the south of the mountain range, St. Jago de la Vega, St. James of the Plain, which gave the title of marquis to his descendants, and is still the official capital, under the name of Spanish Town. At some distance westward, on the coast, was built Oristan, which is now called Bluefields. Down to 1596 the history of Jamaica is only a record of the rapid disappearance of the Indians, under the Spanish yoke, and of intrigues at the court of Spain, having for their object the dispossession of the descendants of Columbus, whose rights were, however, successfully defended, and eventually centred in an heiress, through whom they passed by marriage to the house of Braganza, reverting afterward to the Spanish crown, in consequence of the revolution of 1640, which placed John, duke of Braganza, on the throne of Portugal. Long anterior to this last event, the union of the crowns of Spain and Portugal, under Philip IV., in 1580, occasioned an influx of Portuguese colonists into Jamaica, who contributed much to its strength and prosperity, but were usually on indifferent terms with Spanish settlers. Attention had at an early period been paid to agriculture, the cotton-plant was extensively cultivated, and the sugar-cane, vine, and various kinds of corn and grass had been introduced; and whereas a small species of dog, called the aleo, was the only domestic quadruped known to the aborigines, horses, horned cattle, and swine had been imported from Hispaniola, which multiplied amazingly, and a flourishing trade sprang up in lard and hides, as well as tobacco, sugar, and ginger.

The population, according to the return of 1855, consists of 181,633 males, and 195,800 females; but this is based upon the last census, that of 1844, when the population was returned at 380,000, of whom 16,000 were white, 68,000 colored, and the rest black, of whom about 1200 were maroons. Since then upward of 40,000 people have died from cholera and small-pox, and about 2000 have emigrated to Navy Bay to work on the railway over the Isthmus of Panama, a portion of whom only have returned. The careless treatment of children by the negroes, and their almost invincible repugnance to pay doctors' fees, which has necessarily reduced the number of medical practitioners, prevent the natural rate of increase; and the waste of public money during the protracted dispute between the Council and House of Assembly, has caused the number of immigrants imported to fall very short of other colonies. We find, in consequence, that while 49,000 arrived in British Guiana between the years 1840 and 1852 only 14,000 were brought to Jamaica. The following returns have been made by the Emigration Commissioners of Immigrants introduced into Jamaica from 1848 to 1855, both inclusive:

Emancipadoes from Havana	276
Sierra Leone	1,870
St. Helena	2,198
Madeira	379
China	472
Total	5,195

Besides which there were still in the island 1684 coolies who had arrived before 1847, and a considerable number of recaptured Africans. The criminal returns of this population are remarkably favorable; the number in prison throughout the island on the 31st December, 1855, was only 583; and Sir H. Barkly reports that the numbers convicted of crimes in Jamaica when compared with British Guiana were as 18 to 33.

The revenue of Jamaica was estimated, in a calculation made in 1830, on an average of ten years, at £490,000 currency, or about £327,000 sterling. This was independent of that raised by the vestries for parochial purposes, which amounted to about £300,000 currency, or £200,000 sterling. The public revenue of 1841 was £226,959, 18s. 8d.; the parochial, £177,491, 12s. 10d. sterling. The public expenditure, £291,415, 16s. 0d.; the parochial, £150,857, 16s. 8d. In the year 1854, owing to the suspension of the import and rum duties, and consequent large accumulation of taxable articles which had paid nothing to the treasury, the revenue fell to £96,624 sterling, while the expenditure was £197,636. In 1855 the following return was made: *Income.*—Ordinary revenue, £199,647; casual revenue, £26,771; total, £226,419. *Expenditures.*—Ordinary expenditure, £198,461; casual expenditure, £49,643; total, £248,105. In the same year the local or parochial taxes amounted to about £80,000. In the budget for 1856, the following estimates of the revenue and expenditure for the current year were presented to the Jamaica Legislature:

Income.	
Import dues	£125,000
Rum duties	30,000
Stamps	11,000
Tonnage dues	11,000
Fees	1,000
Stock and hereditaments	16,000
House tax (disallowed)	6,000
Land tax	5,000
Interest on guaranteed loan in Colonial B'k	1,000
Total income	£206,000

Expenditure.	
Collection of revenue	£20,105
Parochial items transferred	14,058
Church establishment	29,808
Administration of justice	20,292
Police	23,455
Governor and Privy Council	4,450
Legislative Council	2,064
House of Assembly	3,845
Executive committee	2,820
Sanitary establishment	10,120
Education (disallowed)	6,000
Printing	4,000
Public works	3,500
Light-houses	1,000
Prisons	17,700
Insolvent deposits	2,000
Interest on loans	38,411
Miscellaneous, including £300 for militia, £300 to geologist	3,546
Total expenditure	£206,765

By an act of the Assembly in 1854, the Council fund of £6000 a year, originally granted in 1728, ceased, and it was provided that £25,000 should be raised annually as a permanent civil list, for the purposes of the government of the island, and a further sum of £30,000 for the interest on, and repayment of the guaranteed debt.

It is difficult to fix the value of the movable and immovable property in Jamaica, once estimated at £50,000,000. The latter, however, that is, the land with the buildings on it, is periodically valued for taxation, and the hereditament tax is raised upon a sum equal to 6 per cent. on such valuation—that being, according to an arbitrary assumption, the nett revenue of the land. Though the tax is paid upon many properties on which the cultivation has been given up, and which produce no revenue at all, this sum was fixed in 1850 at £693,382, 4s. 3d., on an estimated value of about £11,500,000. Since then the decline has been rapid; and when it is remembered that the fall in ratable property in the next year exceeded £2,000,000, there can be little doubt that the difference in value since the prosperous days of Jamaica amounts to at least 80 per cent. For many once valuable estates no purchaser could now be found on any terms. It is on record that 231 sugar estates have been abandoned, besides 243 coffee plantations, and 132 grass pens. It is notorious that the paper circulation, which amounted to £258,816 in 1844, has dwindled to £70,000 in 1855. It is clear, therefore, that though the public and parochial taxation has been reduced from about £800,000 currency to less than £300,000 sterling, it is much more burdensome to the tax payer now. Indeed, when it is considered that the value of articles exported, expensive as they are to produce, does not reach £1,000,000, it is evident that the estates in the

aggregate yield no rental at all, but are maintained by non-resident proprietors possessed of other means, who are unwilling to abandon the hope of future improvement. Even supposing the whole money expended in raising these articles of export amounted to little more than double the public revenue of the country, a proportion, highly taxed as the island is admitted to be, quite beyond belief, it would follow that after payment of production, expenses, and taxes, little or no surplus would remain for the proprietor; but such expenses must in reality far exceed £600,000, and can only be provided, as before observed, by those proprietors who have other funds at their disposal.

It is necessary to explain the two forms of calculation to which reference has been made—currency and sterling. The former was an arbitrary mode of reckoning, unrepresented by any coinage, employed until the year 1840, by which £140 currency equalled nominally £100 sterling; but a premium of about 18 per cent. was paid in addition to place this sum in England, so that upward of £166 in Jamaica were needed to pay £100 in England. In 1840 an act passed establishing the English computation, fixing the pound sterling at $5, or £1, 13s. 4d. currency, and making English money the legal tender. Spanish and Portuguese coins are still current, the highest being the doubloon, or ounce, worth about £3, 6s. 8d. Before this date, a "fivepenny," worth 3d, sterling, was the lowest coin. There is still no copper, and the lowest coin is the silver three-halfpence, coined especially for Jamaica, and called a prædial, as intended for the payment of agricultural laborers. In former days, the only paper currency consisted of island checks issued by the treasury. There are now two banks of issue, a branch of the Colonial Bank, and the Bank of Jamaica. A third, the Planters' Bank, has been given up since the trade of the colony declined. The present issue is usually from £70,000 to £80,000. Savings banks have also been established in the island.

The commerce of Jamaica depends almost entirely on its agriculture. It has gradually lost the greater portion of the transit trade in consequence of the revolt, and subsequent disorganization of the Spanish colonies on the mainland, the establishment of St. Thomas as a free port, and the rapidity of steam communication between Europe and the American coast, which diminished the advantages of an emporium in the West Indies. Its agricultural prosperity has declined in equal proportion, though, from different causes, the value of its staple having been depreciated by successive acts of the Imperial Government, whereby the differential duties, under the protection of which the scheme of emancipation was originally intended to be carried out, were discontinued. In 1840 East India sugar was admitted on equal terms into the British market. Four years afterward the same advantage was conceded to foreign sugar, the produce of free labor; and in 1846 to slave-grown sugar. Protection has also been removed from molasses, coffee, and cocoa. Under these circumstances, the want of adequate labor has prevented Jamaica competing with those countries in which, from slavery and other causes, there is a sufficient supply.

The following tables illustrate these observations:

Years.	Value of imports.	Value of exports.
1809	£4,068,987	£2,093,294
1810	4,808,337	2,809,579
1853	864,094	837,276
1854	408,520	932,816

The exports consist of her own products only; the imports include those intended for re-exportation, as well as those taken for home consumption, which explains why, in the flourishing era of the transit trade, the balance should be apparently so much against Jamaica. The exports, too, are entered at their value in the place of growth, while to imports are added charges for freight, etc. The small imports of 1854 were partly owing to the goods imported in anticipation the year before, when the duties were not levied. The same cause accounts for the small quantity of rum exported in 1853, and the excess of the two following years, enough for two years' home consumption having been entered in the same year duty free. The following table gives the trade and navigation report for 1855:

Arrivals in Jamaica in 1855.

From	No. of ships.	Tonnage.	Men.	Value of imports.
Great Britain	192	49,029	....	
United States	94	18,784	....	Brit. £494,019 15 6
Colonial	145	15,435	....	For. 405,487 12 4
Foreign	127	11,804	....	
Total	488	84,052	4,822	£899,507 7 10

Departures from Jamaica in 1855.

To	No. of ships.	Tonnage.	Men.	Value of exports.
Great Britain	123	38,997	....	£1,008,835 9 5
United States	77	13,702	....	of which
Colonies	63	8,347	....	953,123 10 0
Foreign countries	240	26,014	....	represented island
Total	503	86,860	4,462	produce.

Of the ships in this list 40 were ships of war, 44 steamers, and 38 colliers.

Imports into Great Britain from Jamaica of the Principal Articles of Native Produce in 1817 and 1855.

Year.	Sugar.	Rum.	Molasses.	Coffee.	Cocoa.	Cotton.	Pimento.	Ginger.	Arrow-root.	Logwood & fustic.	Mahogany.	Indigo.	Bees' wax.	Honey.
1817	Cwts. 1,400,500	Galls. 2,706,969	Cwts. 95	Lbs. 14,658,588	Cwts. 260	Lbs. 1,021,674	Lbs. 1,627,612	Lbs. 340,378	Lbs. *	Tons. 11,819	Tons. 1,996	Lbs. 32,011	Lbs. a	Galls. a
1855	450,282	2,109,291	..	5,657,103	..	280	7,666,580	799,796	87,900	11,544	Feet. 147,929	...	81,536	6,487
	Dec. 950,218	Dec. 597,678	Dec. 95	Dec. 8,996,485	Dec. 260	Dec. 1,021,394	Inc. 6,038,968	Inc. 459,423	....	Dec. 275	....	Dec. 32,011	....	....

* No return.

The largest sugar crop was in 1805, which exceeded 150,000 hhds.; that of 1855 did not reach 30,000 hhds.; that of 1856 had fallen to 20,000 hhds. The largest coffee crop was in 1814, and exceeded 34,000,000 lbs. The great increase of pimento is unfortunately accounted for by the rapid spread of the tree, which grows wild in Jamaica, over lands formerly under cultivation. Since 1852 a small quantity of copper ore has been exported, amounting in 1854 to 37 tons. Besides these principal articles, there is exported a small quantity of tamarinds, cocoa-nuts, succades, shrub, ebony, lignum vitæ, and lancewood. There are five mining companies in Jamaica, all in their infancy—the Clarendon Consols, and Wheal Jamaica, in Clarendon; the Port-Royal and St. Andrews, and the Ellersie and Bardowie, in St. Andrew; the Portland Mining Company in Portland. Of these the first two are at present the most promising. The principal imports into Jamaica are salt pork and beef, salt fish and oil, butter, lard, cheese, corn, corn-meal, oatmeal, flour, biscuits, rice, tobacco, wine and beer; hardware, cutlery and ironmongery; ready-made clothes, boots and shoes, and dry goods of all sorts; soap, candles saddlery, and harness; shingles, lumber, wood-hoops, and coals.

Imports into the Island of Jamaica from the United States in 1854.—Flour, 13,825 barrels; candles, 7941 boxes; butter, 2378 kegs; lard, 2577 kegs; pork, 1433 barrels; hams, 20 barrels, 15 casks, 11 tierces; cheese, 108 boxes; meal, 2614 barrels; corn, 2191 bags;

bread, 977 barrels; beef, 241 barrels; coals, 3801 tons; lumber, 33,186 feet; rice, 1542 bags. Approximate value, $409,515.

American vessels engaged in trade with Jamaica in 1852, 194; in 1853, 164; from all European ports, in 1852, 119; in 1853, 155.

The commercial resources of this island may be seen from the following tables of exports for three years, 1850-1852:

	1850.	1851.	1852.
Sugar.....hhds.	36,030	40,298	34,414
Rum.....puncheons	15,591	18,492	15,560
Molasses.....casks	9	40	11
Ginger.....lbs.	799,000	1,176,000	994,000
Pimento..... "	4,059,000	4,489,000	5,488,000
Coffee..... "	127,000	5,595,000	7,127,000

Port Regulations.—On every vessel entering Jamaica, there is levied under the customs-tonnage act, a port duty of 24 cents per ton. Light-house duty, 6 cents per ton. Hospital tax—vessels from out of the tropics, 8 cents per ton; from within the tropics, 4 cents per ton. Health officer's fees—on a ship or bark, $2 88; on a brig or brigantine, $2 16; on a schooner or sloop, $1 44. Harbor dues—ship or bark, $7 68; brig or brigantine, $5 76; schooner or sloop, $3 84. Jamaica embraces an area of 5520 square miles, and contains a population of about 36,000 whites, and 312,000 free blacks. Total population, 348,000.

Pilot dues in the ports of Kingston and Port Royal.—*In*—350 tons and over, $23 04; 250 tons and over, $17 28; 150 tons and over, $14 40; 100 tons and over, $11 52; 100 tons, $5 04.

Out—250 tons and over, $15 36; 250 tons and over, $13 44; 200 tons and over, $11 52; 150 tons and over, $9 60; 100 tons and over, $7 68; 100 tons, $6 72. These charges are reduced when the vessel enters or clears from Port Royal only.

There is a steam communication between England and Jamaica, and *vice versa*, twice a month, in 19 days. The Royal Mail Steam-packet Company's ships leave Southampton on the 2d and 17th of each month, calling at St. Thomas, Porto Rico, and Jacmel, in Hayti, and reach Kingston on the 21st and 6th. They leave again for England on the 27th and 12th, making the course of post about 44 days. They also sail once a month between Jamaica and Honduras; course of post 10 days. There are frequent opportunities between Jamaica and Havana, and the United States. In the island there is a post twice a day between Kingston and Spanish Town, and a communication twice a week between these capitals and the country districts; besides expresses, on the arrival and departure of the mail packets. Jamaica being on the direct route from England to Nicaragua, can scarcely fail to share in the growing importance of the States of Central America.

Emancipation.—Hitherto its history, since emancipation, has been discouraging to the friends of liberty. The negro on whom the cultivation of the island depends, has gradually retired from labor, and retrograded in the social scale. This does not arise from any hostile feeling toward the whites, with whom he usually lives on the most amicable terms; it is the natural result of removing all restraint from a people low in civilization, and consequently with few artificial wants, in a country where land is superabundant. The Jamaica negro can earn enough on a sugar plantation in a few weeks to buy a small patch of freehold land. The wood upon it forms his cottage; the vegetables which grow almost spontaneously support him in tolerable comfort. When his little property does not require his care, he works from time to time for hire; but as plantation after plantation is abandoned, and the country returns to its primeval forest, he is confined more and more to the society of his own race; and though not more addicted to crime, is rapidly receding into a savage state. During slavery the dissenting ministers possessed great influence over him; he now prefers the established church, because it costs him nothing, but he cares little for either. Not feeling the want of education, he does not seek it for his children, whom he prefers employing in his own service. Hence, neither churches nor schools are wanted in Jamaica, but congregations and scholars. These observations are confirmed by the last returns, which fix the diminution of children in the schools in 1854, as compared with the previous year, at 2000, and show this decrease to be less conspicuous in those belonging to the established church of England and Scotland, than in those of the Baptists and Independents. We can scarcely blame the negro for following the bent of his inclination; but it is evident that under these circumstances, unless there is a large and immediate supply of immigrants, to meet the expense of whose introduction, averaging at least £10 per head, there are no available funds, all society will come to a speedy end, and the island become a second Hayti. Already the enormous depreciation of property has caused the ruin of so many, that the name of Jamaica proprietor, once used proverbially to indicate wealth, is now associated with poverty and distress.

Jamaica is of a long oval shape, and has been compared to a seal with the head pointed to the west. Its surface is beautifully diversified with hills and valleys. An elevated range, called, in the eastern or highest part, the Blue Mountains, and terminating in Dolphin Head, to the west, runs longitudinally through the island, and other high ridges intersect this chain. On the south the mountains are generally steep, with gigantic spines or buttresses rising from the plain at an average distance of 12 miles from the sea. Though difficult of access they are traversed by bridle-roads in various directions to the height of nearly 6000 feet; and several passes, or gaps, as they are called, of great altitude, connect the two sides of the island. On these elevated ranges the coffee attains the greatest perfection, and above, dense forests ascend to the highest peak, composed chiefly of beef-wood, as it is called from its color, and satin-wood. Under their shade the tree-fern grows to the height of 15 feet, and the flute-like note is heard of the solitaire, a bird only found in these wildernesses. On the north side the mountains approach the sea closely, but more gradually, their conical forms are gently rounded, and in St. Ann and Trelawny the lower slopes are shaded by pimento woods, the indigenous growth of the island, and elsewhere by orange groves, mango, and cedar forests, above which frequently towers the gigantic silk-cotton tree. The shady valleys between were once occupied by cacao walks, now destroyed; and on the lowlands, near the sea, were formerly the indigo-works, long since abandoned. Here are now the sugar estates, in which the dark green of the cane is varied by the golden tint of the guinea grass, and the cabbage and cocoa-nut palms shoot up in long lines close to the water's edge, from which they are separated by a fringe of mangroves, growing below high-water mark, and the beautiful but poisonous manchineel. The waving field of canes is broken at intervals by the white cluster of buildings composing the sugar-works. The mill, the boiling-house, with its tall chimneys, and the stables, stores, and bookkeepers' houses surround a large court-yard. Above, on an eminence, is usually the proprietor's mansion, and close by, though completely buried in the broad foliage of the plantain and banana, the negro village. On these plantations during crop the scene is most animated. Bands of negroes, with cutlasses, attack the rows of canes which tower above their heads; wagons, drawn by oxen or mules, in endless succession, carry the canes to the mill; women and children hurry with the dry stalks to feed the fires; and the shouts, without which a negro seldom does any thing, announce afar off, in this clear atmosphere, the neighborhood of a sugar estate. It is here, too, that the traveler sees most clearly the

decline of the country. At each end of the island, in the parishes of Hanover and Portland, he may journey for miles through deserted plantations. Ridges, overgrown with guava bushes, mark the site of the corn fields; rank vegetation fills the court-yard, and even bursts through the once hospitable roof. A curse seems to have fallen upon the land, as if this generation were atoning for the sins of the past. For while we lament the ruin of the present proprietors, we can not forget the unrequited toil which in times gone by created the wealth they have lost, nor that hapless race, the original owners of the soil, whose fate saddens the darkest page of history.

The sugar estates resemble generally those of the other islands, but Jamaica has a feature peculiar to itself. In the centre of the island, and toward the south and west, are large plains, or table-lands, at an elevation of about 1000 feet, covered with a luxuriant growth of guinea grass, dotted with groves of tall trees, and, at greater intervals, with white houses and villages. From an eminence the whole country resembles a series of English parks. These are the pens, or grazing farms, where horses and cattle of most excellent quality are bred. They are chiefly in St. Ann, Manchester, St. Elizabeth, St. James, and Hanover. The climate, at this elevation, is well suited to a European population, who can not work on the sugar plantations, but may with safety be employed on the light and healthy duties of the farm. From one of the many points of view on the mountain range the country presents an aspect of beauty and grandeur scarcely to be surpassed. Above tower the lofty peaks, with clouds on their summits—around are magnificent forests—beneath are the peculiar hollow basins, called cock-pits—below them deep ravines, or wider valleys; through these flow rivers or mountain torrents, occasionally falling from the rocky ledges in cascades which would attract notice in any part of the world. At a greater distance the wide plains are spread out like a map, checkered with towns and villages; and the deeply indented coast, terminating to the east in lofty cliffs, is washed by the glittering waters of the Caribbean Sea. The view of the island from the sea has long been celebrated. Soon after leaving Cape Tiburon, the western point of Hayti, the Blue Mountains are in sight, and along the south coast of Jamaica, from Point Morant to Kingston, the inhabited plains, sloping gradually up, till cultivation terminates in forest, present an aspect of no common beauty. From Fort Nugent, which is conspicuous under a steep hill, to Port Royal, runs a narrow sandy promontory, called the Palisades. Here is the great cemetery where so many victims to yellow fever lie buried that the name has become proverbial; and this neck of land incloses the harbor of Kingston, which is entered by a most intricate channel between Port Royal and Port Henderson, and beyond which the capital is seen stretching northward toward the amphitheatre of the Liguana Hills, and protected by the great range of the Blue Mountains. The heights of the principal peaks have been computed as follows: Blue Mountain Peak, 7770 feet; the Portland Gap ridge, 6501 feet; Portland Gap, 5640 feet; and St. Catherine's Peak, 4970 feet. It is stated, however, by some authorities, that the three highest peaks on the grand ridge of the Blue Mountains, called Coldridge, have their respective summits 8184, 7656, and 7576 feet above the level of the sea.

The soil is in most places deep and fertile, and for the growth of sugar, pimento, and ginger, and, as some think, of coffee, has never been surpassed. On the north there is a reddish yellow soil. The brick mold, reckoned the best in the West Indies for the cane, is a deep warm hazel mold, easily labored, and requiring little manure. The black shell mold owes its fertility to the mineral salts and exuviæ which it contains. On the south side are large natural salt ponds, which of late years have been neglected. The principal soils in the interior are a red clay, a yellowish clay, a red grit, a loose conchaceous mold, a black mold or clay or marl, a loose vegetable mold on rock, a fine sand. The red sandstone of the lower mountains resembles much the porphyrite conglomerate of the higher, and both produce coffee; but while that grown on the former has been driven out of the market by the cheaply grown coffee of Ceylon, the latter retains its value, being considered by many superior to the Mocha which springs from a similar soil. Among minerals are—argillaceous dark purple schist; gneiss; steatite, and even serpentine; sienites, highly micaceous; and the hard lamellated amianthus, resembling petrified wood; white freestone; quartz of different kinds; limestone, and a kind of marble. Rich lead ore, impregnated with silver is found in St. Andrew; radiated antimony and rich copper ores, abounding in mulachite, are found chiefly in Clarendon, Portland, and St. George; magnetic iron and cobalt in St. George and Metcalf; anthracite coal in Portland and St. George; but neither gold nor pure silver have been found, though the Indians possessed ornaments of both when discovered by the Spaniards. A species of marl, common in Jamaica, was eaten by the negroes during slavery, so much to the detriment of their health and value that the practice was made penal. The honeycomb limestone rock, of which a great part of the island is composed, contains no minerals, but is hollowed into innumerable caverns and fissures. Many of these are beautifully ornamented with stalactites, particularly one on the Roaring River estate, near Savaña in Mar. In some of these fissures called "sinks," rivers suddenly disappear to rise again at a considerable distance. On the Sweet River estate several springs rise like fountains with great force in one field. On the road from Falmouth to Maroon Town, a considerable stream pours from an opening in the solid rock several feet above the ground, and the Rio Bueno streams at once from the foot of a perpendicular rock in St. Ann. There are fewer traces of fire in Jamaica than in the other islands; but the Burnt Hill, near Hope Bay, seems to be an extinct volcano. There is great variety of climate; the medium heat at Kingston is about 80°, and the minimum 70° Fahrenheit, throughout the year. At an elevation of from 4000 to 5000 feet, the average range is from 55° to 65°; the minimum in winter being 44°. On the Blue Mountain Peak, in August, the writer found the temperature 44° at sunrise, and ice of some thickness has been formed there in March. Snow has never been known to fall. The alternation of temperature is from 8° to 10° on the south side, and more on the north, but the transitions are not so sudden and detrimental as in many parts of the continent of North America. The grand compensation for excess of temperature is afforded by the breezes which regularly every morning set in from the sea to the land, and every evening from the land to the sea, to preserve the equilibrium which the noonday sun has disturbed; when these are sometimes interrupted the heat is intense, the thermometer rising to 100° Fahrenheit, and the island becomes unhealthy. There is no striking variety in the length of the day, or in the seasons, except the alternations of wet and dry. Storms of thunder and lightning are prevalent, and sometimes very mischievous in autumn. The hurricane season ranges from July to October The periodical rains, which last ordinarily for six weeks, are called the May and October seasons, but there is great irregularity in the time of their falling. The north side usually suffers less from drought than the south, but even there the rains are sometimes very capricious, following the course of a river, or being stopped by a ridge of hills. The parishes of Vere and St. Dorothy, on the south side, have sometimes been more than a year without rain, to the destruction of vegetation and cattle.

Some parts of Jamaica, particularly near morasses, are extremely unhealthy, and there few escape intermittent fevers, or "fever and ague," as it is called; but in general the climate is favorable to those who live carefully, though when the yellow fever comes as an epidemic, which happens every seven or eight years, it carries off all alike. It is, however, rarely known at an elevation of 1000 feet, and in some of the hilly districts, especially the Santa Cruz Mountains and Pedro Plains, there are remarkable instances of longevity among the English settlers. The annual mortality among the white troops for twenty years ending 1837 was 130 in the 1000, or a seventh of the entire force. Since they have been fed on fresh provisions, and more especialy since they have been encamped on high ground, this has been reduced to 34 per 1000. Of late years the cholera has made its appearance, and committed extraordinary havoc; and since emancipation, small pox has been more prevalent, on account of the negroes neglecting the vaccination of their children. The vegetable productions of Jamaica are far too numerous to be described. There are forest trees fit for every purpose, from ship-building to cabinet-making, among which the ballata, rosewood, satinwood, mahogany, lignum vitæ, lancewood, and ebony, are conspicuous; but the scarcity of labor makes it cheaper to import planks ready sawn from America. The logwood, the trunk of which resembles the clustered columns of Gothic architecture, and the fustic, are largely exported for dyeing. The Jamaica cedar (*Cedrela odorata*), with ash-like leaves, is valuable for the interior of houses, as its scented wood keeps off insects. The silk-cotton tree (*Ceiba Bombax* or *Eriodendron*) is one of the largest in Jamaica; its silky pods are used to stuff pillows, but, from want of adhesion in the fibres, is useless for manufacture. The pimento is indigenous, and furnishes the allspice. The bamboo, the coffee, the cacao or chocolate tree, are well known productions; the last, however, is disappearing, and the export has ceased. Several species of palm abound, the macca, the fan palm, and screw palm, but the noblest is the palmetto royal (*Areca oleracea*), the green top of which is called the mountain cabbage, and eaten as a vegetable. The cocos-nut is the most valuable of all this tribe. The mango, which overspreads the island, forming a splendid forest tree, and affording food for man and beast, was introduced by Rodney, who took it from a French ship; the bread-fruit by the famous Bligh in 1793. The papaw has the peculiar property of rendering meat tender. The lace-bark tree, found near Maroon Town, has an inner bark of so delicate a texture that ladies' dresses have been made of it. The guava, from which the delicious preserve is made, is a weed of the country, and the fruit when raw scarcely eatable. The palma christi, from which castor oil is made, is a very abundant annual. A new species of silkworm (the *Bombyx Cynthia*), which feeds on its leaf, has lately been introduced from India, by the Jamaica Society of Arts, founded by Sir C. Grey. The sunflower is sometimes cultivated for oil. A variety of the *Cactus Opuntia*, on which the cochineal feeds, is common, and from which, as well as from the insect, recent experiments have proved that a dye may be obtained. English vegetables grow in the hills; while the plains produce the plantain, cocoa, yam, cassava, ochra, beans and peas of various sorts, ginger, and arrowroot. Maize and guinea corn are generally cultivated, and the guinea grass, accidentally introduced in 1750, has overspread the whole island, and forms the most wholesome and strengthening food for horses and cattle. The principal fruits are the orange, the shaddock, the lime, the grape or cluster fruit, the pinesapple, noseberry, granadilla, star-apple, custard-apple, mammee sapota, mango, banana, grapes, melons, the avocado pear, the bread-fruit, and tamarind, though the last three would be more correctly ranked among vegetables. There is a botanic garden near Kingston, and a finer one at Bath, where many now naturalised exotics were first planted. The sarsaparilla is erroneously supposed to grow in Jamaica, though it is classed in the customs' returns there among the imports. It is brought from the Spanish main, and re-exported by the Jamaica Jews, in whose hands the trade is; hence it is called Jamaica sarsaparilla. The sugar-cane was cultivated at an early period in Jamaica by the Spaniards, and was so much extended by the English that, in 1671, we read of sugar works scattered over the whole island. There are several varieties, the most valuable being the one brought from Bourbon in 1799, which is of a bright yellow; and the Mont Blanc, of three sorts, white, violet, and blue. Besides which is the ribbon-cane, beautifully striped with various colors, which is coarse and dry, but more hardy than the other sorts. The statistics of the sugar and coffee cultivation have been given elsewhere. There are many beautiful flowers in the island, the most remarkable of which are the aloe, the yucca, the datura, the mountain pride, the portlandia; the cactus and cereus tribe, the various kinds of convolvulus and ipomœa, and two beautiful descriptions of plumeria, called the tree jasmine. Innumerable varieties of ferns grow in the mountains, and orchids in the woods. The pastures are infested by that interesting mimosa, the sensitive plant. It is eaten by sheep, but is armed with minute thorns, which make troublesome wounds in their feet. There are many beautiful insects, among which the fire-flies are most remarkable. There are fourteen sorts of *Lampyridæ* or fire-flies, besides the *Elateridæ* or lantern beetles, which are larger and more luminous; but neither in flowers nor insects is Jamaica so rich as more southern islands. To compensate for this it has no venomous serpents, though abounding in harmless snakes and lizards. A large lizard, the iguana, is considered a delicacy, as are the land-crab and tortoise. The scorpion and centipede are poisonous, but not very common or dangerous. Ants, mosquitoes, and sandflies swarm in the lowlands. Bees, among which is a stingless variety, are numerous in the woods, and produce excellent honey. It is a popular error that in the tropics flowers have no scent and birds no song. The datura and orange are among many instances to the contrary in the former case; and as to the latter, Goss enumerates some twenty different song birds in Jamaica, among which may be mentioned the Jamaica nightingale, a kind of mocking-bird (*Merula Jamaicensis*), and a species of humming-bird (*Mellisuga humilis*). Parrots and pigeons are common, and the wild guinea fowl; also a species of goatsucker, called the mosquito hawk, and a great variety of waterbirds, among which is the pelican and a sort of albatross. The crane, heron, plover, snipe, ortolan (or rice-bird of Carolina), and quail, are migratory. The aura vulture, or turkey buzzard, called the John Crow, is numerous, and valuable as a scavenger. By its instinct the concealed body of a murdered man has more than once been traced in Jamaica. The sea and rivers swarm with fish; among the larger ones are the shark, the nurse shark, the bonito, the sword and saw-fish; besides the snapper, mullet, king-fish, Spanish mackerel, the flying-fish, etc. The cachalot is found. Turtles abound; and the seal and manatee, or river cow, are sometimes found, and the crocodile (called erroneously alligator). Jamaica, when discovered, contained but few species of animals. Besides the aloo, there was the utia or Indian cony, the musk rat, the armadillo, monkey, agouti, peccary, opossum, and raccoon. At present the only wild animals are the wild hog (an African variety, introduced from the Canaries), a kind of deer (the carlacou), goats, rats, and mice. The rats commit serious ravages among the canes, and those which feed only in the cane-fields are by some esteemed a delicacy. This species, called the

Charles Price rat, was introduced to destroy a smaller kind; but the remedy seems to have proved worse than the evil. The breed of oxen has been much improved by judicious crossing, and can scarcely be surpassed. The horses have much of the Arab blood. They are small but fleet, and at the island races have often beaten English racers, particularly some taken out by the Marquis of Normanby, when governor. The Cleveland bay has lately been introduced from England, with a view to size and bone. The mules are large, hardy, and sagacious, and much used for mountain-riding, as well as for carrying baggage and working on the estates. The sheep and pigs are of excellent quality, and the pork of Jamaica is considered much more wholesome than that of England, being frequently recommended to invalids. Goats are much reared by the negroes, but they are very mischievous in sugar and coffee plantations. The Cuba bloodhound is used as a watch-dog, being the species which thrives best in a hot climate; the English hound and terrier, which have frequently been introduced, soon degenerate and die. Poultry succeeds well, particularly the turkey, the Guinea fowl, and Muscovy duck.

The principal publications relating to Jamaica are: LONG'S *History*, 1774; BRYAN EDWARDS' *History*, 1809, with an Appendix, 1819; RENNY'S *History*, 1807; MATHISON, 1811; HOWARD'S *Laws of Jamaica*, 1827; BECKFORD'S *History*; DALLAS' *Maroon War*; STEWART'S *Jamaica*; MONK LEWIS' *Tour*; MADDEN'S *Jamaica*; MONTGOMERY MARTIN, 1836; PHILIPPO'S *Past and Present State of Jamaica*, 1843. The earlier histories are scarcely applicable to the present day, while many of the later publications are mere vehicles for conveying the authors' views for or against slavery. By far the best and most reliable information is contained in the dispatches of successive governors, published in the Parliamentary Blue Books; many of which, and particularly those of Sir Charles Grey, contain admirable expositions of the state of the country, and causes of its decline. The natural history of Jamaica has also been the theme of many writers—Sloane, in 1692; Brown, 1754; Barham, 1794; Lunan, 1814. These authors have a most able and enthusiastic successor in Gosse, whose *Journal of a Naturalist in Jamaica*, 1851, and *Birds of Jamaica*, 1847, are delightful books. For vivid pictures of scenery and life in Jamaica, *Tom Cringle's Log*, and *The Cruise of the Midge*, by MICHAEL SCOTT, a Kingston merchant, are unrivaled.

The Caymanas, or Cayman Isles, are three small coral islands or keys, in N. lat. 19° to 19° 20′, and 30 to 40 leagues west north-west from Point Negril, Jamaica, and about the same distance south of Cuba. Grand Cayman lies off the centre of the Yucatan Passage; Cayman-Braque or Brac, and Little Cayman, are near each other, and about 34 miles north-east from Grand Cayman. They were discovered by Columbus, but no settlement was ever made by the Spaniards. Grand Cayman, the only one occupied, is about a mile and a half long by a mile broad, and contains about 1000 acres. It is very low, entirely without springs, and overgrown with low stunted shrubs. These islands are favorite breeding-places for turtles, immense shoals of which animals frequent the low sandy shore for the purpose of depositing their eggs.

James, Capt. Thomas. This English navigator was employed by a company of merchants of Bristol, in connection with one Luke Fox, in 1631, on a voyage of exploration for the discovery of a north-west passage. Sir Thomas Roe presented him to Charles I., who greatly encouraged the enterprise. He sailed from the port of Bristol on 3d May, and wintered on an island in Hudson's Bay, in latitude about 52°, from whence he proceeded northward as far as 65½°, when his further progress was prevented by the great accumulation of ice, and he returned to England, where he arrived 22d October, 1632. During the ensuing year, he published his "Strange and Dangerous Voyage for the Discovery of a North-west Passage to the South Sea." He made some discoveries on the coast of Hudson's Bay, to the western side of which country he gave the name of *New Wales*, in honor of the prince, afterward Charles II. His journal contains much curious and interesting matter connected with the sufferings of himself and his companions during their sojourn on the Isle of Charlton.

Japan. The empire of Japan consists of a chain of islands lying off the eastern coast of continental Asia, and extending south-east and north-west between north lat. 31° and 48°, and east long. 129° and 150°. Inclosed between this chain of islands and the opposite coasts of Corea and Manchu Tartary, is the Sea of Japan, which communicates by means of straits with the Chinese Sea on the south, the Pacific Ocean on the east, and the Sea of Okhotak on the north. To the east, Japan has no nearer land than California, 5000 miles off; the nearest part of China is about 420 miles, and of Kamschatka 270 miles distant. The term Japan is probably a corruption of the Chinese name, *Ji-pun-qua*—*i. e.*, Kingdom of the Source of the Sun, or Eastern Kingdom. Marco Polo, who was the first to bring intelligence of this country to Europe, and who acquired his information in China, calls it *Zipangu*. The Japanese name is Nipon, or Nifon—*i. e.*, Sun-source.

The empire is divided into Japan proper—consisting of the three large islands of Nipon, Kiu-siu, and Sitkokf, and the numerous small islands. Nipon, the largest and most important of the group, and that which gives name to the whole empire, has an estimated area of 100,000 square miles; its length being more than 900 miles, while its average breadth exceeds 100. It is thus about one fifth larger than Great Britain. Its form is that of a curve or crescent, with the concave side toward the main land. South of Nipon, and separated from it by a narrow channel, is the island of Kiu-siu, or Ximo, about 200 miles in length and about 80 in average breadth, thus containing an area of about 16,000 square miles. Lying north-east of Kiu-siu, and eastward of the southern extremity of Nipon, is the island of Sitkokf, or Sikoko, about 150 miles in length by 70 in average breadth. It is separated from Nipon by a long strait in some parts not more than a mile in width; and from Kiu-siu by Bungo Channel, which is about 30 miles broad. North of Nipon, and separated from it by the Sangar Straits, is the large Island of Yesso, a conquest and colony of the empire. Its form is that of an irregular triangle, and its area is computed at 30,000 square miles. The southern portion of the island of Krafto, or Sagalien, which is separated from Yesso by the Strait of Perouse, and the three southernmost of the Kurile Islands—Kunashir, Iturup, and Ourop—belong to Japan.

The small islands which surround these are generally rocky and barren, but occasionally rich and fruitful. The entire number of islands composing the empire of Japan is estimated at above 1000, and the area of the whole empire at not less than 170,000 square miles. The coasts are difficult of access, not only from the multitude of rocks and islets which beset the passages, but also from the severe gales which, more than any other part of the ocean, agitate these narrow seas. Several dangerous whirlpools also occur among the rocks. Kæmpfer remarks, that nature seems to have designed these islands to be a sort of little world, secluded and independent from the rest, as well by rendering it dangerous to approach their shores, as by endowing them plentifully with every thing necessary for luxury and comfort, and thus enabling them to subsist without any commerce with other nations. The Japanese policy, which rigidly

forbids all intercourse with strangers, in other circumstances impracticable, has been greatly facilitated by the interposition of these natural barriers.

Climate.—The climate of Japan must vary considerably between its northern and southern extremities; but, except at a few points, we possess very little information on the subject. In the southern part of the empire, it is said in many respects to resemble that of England. At Nagasaki, in the island of Kin-siu, lat. 33°, the average temperature in the month of January was 35°, and in August 98° of Fahr. At this point the weather is very changeable. Rain is frequent at all seasons of the year, but especially in the months of July and August. In December and January the ground is covered with hoar frost, and occasionally with snow, except in very mild winters. In summer the land is cooled by the sea-breeze, which blows from the south during the day, and from the east at night. At Simoda, on the island of Nipon, in north lat. 34° 39′ 49″, east long. 138° 57′ 50″, we learn, from the account of the American expedition (1852–54), that "the climate is more or less variable in the winter and spring. The presence of snow upon the lofty peaks, although there is seldom frost or snow at Simoda itself, and the not unfrequent rains, with the ever necessary fogs, give an occasional humidity and rareness to the atmosphere, which are chilling to the senses, and must be productive of occasional inflammatory diseases, such as are frequent in the spring and winter with us. The change of wind alternates often between the warm sea-breezes from the south, and the cold blasts from the snow-capped mountains inland, and produces the usual effects, doubtless, of such variations. In summer it is occasionally very hot in the daytime, but the nights are refreshed by the sea-breezes. From April 19 to May 13, a record of the thermometer gives 72° as the highest, and 58° as the lowest point; and of the barometer, 29° 88′ and 30°. As the season advances the mercury rises, no doubt, much higher, reaching probably 85° of Fahr., or more." Golownin, a Russian naval officer, who was for two years a prisoner at Hakodadi in Yesso (north lat. 41° 49′, east long. 140° 47′), describes its climate as follows:—"The ponds and lakes freeze, snow lies in the valleys and plains from November till April, and falls in as great abundance as at St. Petersburg. Severe frosts are indeed uncommon, yet the temperature is often two degrees below the freezing point. In summer the rain pours in torrents at least twice a week, the horizon is obscured by dark clouds, violent winds blow, and the fog is scarcely ever dispersed. Apples, pears, and peaches hardly attain ripeness, and the orange and lemon will not bear fruit." Of the climate of the still more northern part of the empire we have no precise account; but the same writer informs us that on the coast of Sagalien which is but little further north than Paris, the sea is not clear of ice so early as the Gulf of Finland. Fogs are also, as might be expected, very prevalent in Japan, and thunderstorms are frequent.

Surface.—The surface of the principal islands is in general very irregular, though in the interior some plains of considerable extent occur. In many places hills descend close to the sea-shore, or leave only a narrow strip of land between the water and their bases. The highest mountain is said to be Fusi, an extinct volcano, on the island of Nipon, westward of the Bay of Yeddo. Its summit is clad in perpetual snow, thus indicating a height of not less than 12,000 feet above the level of the sea. Several mountains of considerable elevation are seen to rise in the northern part of Nipon, in Yesso, and in Sagalien, and some of them are active volcanoes. Besides the outbursts of frequent volcanic eruptions, no country is more frequently visited by destructive earthquakes. Kæmpfer enumerates six active volcanic mountains. "Earthquakes," says he, "are so frequent that the natives regard them no more than Europeans do ordinary storms." In 1586 a succession of earthquakes took place and lasted for 40 days, causing the destruction of the best part of the city of Yeddo, and the death, it is alleged, of 200,000 of its inhabitants. In 1783 the eruption of a volcano in the island of Kiu-siu, accompanied by violent earthquakes, destroyed in a single province 27 villages. Another volcanic eruption took place in the same island in 1793, accompanied by earthquakes which continued from March to June, and caused, according to official returns, the death of 53,000 persons, with a proportional destruction of property. On 23d December, 1854, an earthquake occurred which was felt on the whole coast. Of the town of Simoda only a few temples and private edifices, that stood on elevated spots, escaped destruction. The fine city of Osaca, on the south-eastern side of Nipon, was completely destroyed, and the capital Yeddo did not escape without injury. On 10th November, 1855, an earthquake at Yeddo is said to have caused the destruction of 100,000 dwellings and 54 temples, and the death of 30,000 persons.

Rivers.—The rivers are numerous, but short, shallow, and rapid. They are not navigable for vessels of burden, but some of them may be ascended by small boats for some miles from the sea. The principal lake of Japan is that of Oitz, in the southern part of the island of Nipon. It is about 60 miles in length, but of inconsiderable breadth.

Geology.—Little is at present known of the geological formation of the Japanese islands. The volcanic formation appears to prevail, but by no means to the exclusion of the plutonic and sedimentary. The useful mineral products, so far as yet known, are gold, silver, copper, quicksilver, tin, lead, iron, coal, sulphur, and salt. With the exception of tin and iron, these seem to be all very abundant. The gold is found in many parts of the empire, sometimes as ore, and sometimes from the washings of the earth or sand. Silver is equally plentiful with gold, and it is probable that the quantity of these metals annually exported from the country, when the trade was open, amounted in value to a million and a half sterling. Copper abounds through the whole group, and sometimes of a quality not to be surpassed by any in the world. The natives refine it, and cast it into cylinders about a foot long and an inch thick. A specimen analyzed by Dr. Percy gave 0·13 per cent. of nickel, 0·03 per cent. of iron, and extremely minute traces of tin and gold. The coarser kinds they cast into round lumps or cakes. Iron ore rich enough for the purpose of smelting appears to be confined to three provinces, and the metal is consequently dear. "Iron," says Kæmpfer, "is much of a price with copper, iron tools being full as dear, or rather dearer, than those of copper or brass." The same is stated with respect to the proportional value of iron and copper by Golownin. Lead and quicksilver are said to be abundant, but they have never been articles of export. Tin has been discovered in small quantities, and of a quality so fine and white that it almost equals silver; but of the extent to which it may be procured little is known, as the Japanese do not attach much value to it. Zinc, according to Kæmpfer, is not produced in Japan, and in his time calamine used to be imported from Tonquin for the manufacture of brass wares. Zinc, however, is expressly stated by the governor-general Baron Van Imhoff to be an article of export as well as brass. This was 50 years after Kæmpfer's time. Sulphur, as might be expected in a region so volcanic, is very abundant. In some places it lies in broad deep beds, and may be dug up and removed with as much ease as sand. A considerable revenue is derived by the government from this source. Coal appears to be found in many parts of the country, and is used for fuel. Siebold speaks of it as being in common use throughout the country, and on visiting one of the mines he

saw enough to convince him that it was skilfully worked. Being bituminous, it is, for domestic purposes, generally converted into coke. Rock-salt seems to exist in some parts of the country, but does not appear to be much used, the culinary salt in use being made from sea-water by an unskilful and expensive process. By saturating masses of sand with sea-water in the sun, a strong lye is obtained, which is afterward boiled in earthen vessels, and yields an expensive and impure muriate of soda. No diamonds have been found, but agates, carnelians, and jaspers are met with, some of them of great beauty. Pearls, frequently of great size and beauty, are fished up on nearly all parts of the coast.

Vegetable Productions.—The vegetable productions of Japan are, for the most part, those common to temperate regions. Timber is, however, so scarce, that no one is permitted to cut down a tree without permission from the magistrate, and only on condition of planting a young one in its stead. The most common forest trees are the fir and cedar—the latter growing to an immense size, being sometimes more than 18 feet in diameter. In the northern parts of the empire two species of oak are found which differ from those of Europe. The acorns of one kind are boiled and eaten for food, and are said to be both palatable and nutritious. The mulberry grows wild in great abundance, and the varnish-tree (*rhus vernix*) abounds in many districts. In the south, the bamboo cane, though a tropical plant, is found either in the wild or cultivated state, and is largely used in the manufactories. The camphor-tree is of great value here, and lives to a great age. Siebold visited one which Kæmpfer had described as having been seen by him 135 years before. It was healthy, and covered with foliage, and had a circumference of 50 feet. The country people make the camphor from a decoction of the root and stems cut into small pieces. Chestnut and walnut trees are both found. Among the fruit trees are the orange, lemon, fig, plum, cherry, and apricot.

Animals.—Extensive cultivation leaves no room for wild animals; and tame animals, not being used for food, are not multiplied beyond the felt necessity for their use. The horses are small, but hardy, active, and of good bottom. William Adams, an English mariner of the time of James I., describes them as "not tall, but of the size of our middling nags, short and well trust, small headed and very full of mettle, in my opinion far excelling the Spanish jennet in pride and stomach." Oxen and cows are only used in plowing and carriage, milk and butter not being used as articles of food. Buffaloes of an extraordinary size, with hunches on their backs, like camels, are used to draw carts and carry heavy goods on their backs. Sheep and goats were formerly kept at Firan do by the Dutch and Portuguese, and might be bred in the country to great advantage if the natives were permitted to eat their flesh, or knew how to manufacture their wool. They have a few swine, kept chiefly for trading with the Chinese, among whom they are in great demand. Dogs are to be found in large numbers in the half domesticated state in which they generally exist in the East. This is not true, however, of one species, resembling somewhat an English spaniel, which is considered so valuable as to form part of every royal Japanese present. It is conjectured that the English variety may have sprung from some presented by the emperor to the king of England. The wild animals are bears, wild boars, foxes, monkeys, deer and hares. Rats and mice are very common, as well as two small species of weasel or ichneumon, which live, half tame, under the eaves of houses.

Wild fowl are very abundant, consisting chiefly of geese and ducks, which migrate in great numbers to the shores of Japan in winter. Numerous species of pigeons are to be found, and woodcocks, pheasants, snipes, larks, etc., are common. There are two species of pheasant, and one of peacock, peculiar to Japan. Domestic poultry are kept by the natives almost solely for ornament or amusement. Some of the reptilia are of large size, and, along with the insect tribes, are dreaded for their deadly and destructive powers.

The shallow bays and creeks around the islands swarm with shoals of fish, which, indeed, constitute nearly the whole animal food of the Japanese, and furnish them plentifully with oil for domestic purposes. In their coarse taste, the intestines of the whale, and even the refuse of blubber, are considered good enough for food. The Japanese are the boldest and most expert of all Asiatic fishermen. Their fishing voyages extend to the rigorous seas of Sagallen and Kuriles in pursuit of herring, with which they manure their cotton fields. They are the only Asiatic people that pursue the whale. The women are said to be expert divers for shell-fish, with which the shores of Japan abound.

Natives.—The Japanese are described as an active, vigorous people, of the middling size, and their bodily and mental powers more closely assimilated to Europeans than Asiatics. The common people, according to Thunberg, are of a yellow color, which sometimes borders on brown, and sometimes on white. The laboring classes, from the exposure of the upper parts of their bodies in summer, have their naturally fair complexion deepened into brown. Their dark brown eyes are oblong, small, and sunk deep in the head. The eyelids forming a deep furrow gives them the appearance of being keen-sighted. Their heads are large, and their necks short, their hair black and glossy with oil. Their noses, without being flat, are yet rather thick and short. Dr. Ainslie gives a somewhat different account of their complexion. He represents them as perfectly fair, and indeed blooming, though this seems to apply chiefly to the women. Thunberg also mentions that the descendants of the oldest and noblest families of the princes and lords of the empire are somewhat majestic in their shape and countenance, being more like Europeans; and the ladies of distinction, who seldom go out in the open air without being covered, are perfectly white. Siebold, speaking of the inhabitants of Klu-siu, corroborates this view, and says that "the women who protected themselves from the influence of the atmosphere have generally a fine and white skin, and the cheeks of the young girls display a blooming carnation." The married women of Japan dye their teeth black, by means of a corrosive composition, so powerful that by mere touch it burns the flesh into a purple gangrenous spot, and in spite of the utmost care in its application, invariably taints the gums, destroying their ruddy color and vitality. "The Japanese women, always excepting the disgusting black teeth of those who are married, are not ill-looking. The young girls are well formed, and rather pretty, and have much of that vivacity and self-reliance in manners which come from a consciousness of dignity, derived from the comparatively high regard in which they are held. In the ordinary mutual intercourse of friends and families the women have their share, and rounds of visiting and tea-parties are kept up as briskly in Japan as in the United States."—*American Expedition.*

Language.—Superficial observation led to the belief that Japan was colonized by the Chinese; but a more accurate knowledge of the physical characteristics and language of the people has rendered this opinion untenable. Indeed, the Japanese themselves consider it a high disgrace to be compared with the Chinese. Dr. Ainslie states that the only occasion on which he saw a Japanese surprised into a passion, and, forgetting his habitual politeness, lay his hand on his sword, was on a comparison being made between the two nations. The structure of the languages of the two countries is essentially different, that of Japan being polysyllabic, while all the dialects of the Chinese are monosyllabic.

It is true that, like the Latin in Europe during the middle ages, the mandarin dialect of the Chinese is in use among the learned here, as in Corea, Tonquin, and elsewhere; and hence many Chinese words have been introduced into the Japanese; but the introduction of these only makes the structural difference the more strikingly apparent. The *Yomi*, or primitive language of Japan, is used in poetry and works of light literature. The *Koye*, or Chinese language, slightly varied in pronunciation, is employed by the *bonzes* or priests in their religious books. The vulgar language of the country is a mixture of the two. Close affinities have not been traced between the *Yomi* of Japan and any other Asiatic language. By some, at least, it is thought to be most analogous to the languages of the Tartar race, to which, in spite of diversity in physical characteristics, it is now most commonly believed that the Japanese belong.

Population.—In regard to the population of Japan, all our information rests merely on conjecture. Some authorities estimate it at more than 10,000,000, while others make it more than four or five times that amount. All travelers who have visited the country bear testimony to the populousness of the parts visited by them. Thus, Kæmpfer, who passed four times over that part of the country between Nagasaki and Yeddo, says—"The country is populous beyond expression, and one would scarce think it possible that, being not greater than it is, it should nevertheless maintain and support such a vast number of inhabitants. The highways are an almost continued row of villages and burghs. You scarce come out of one but you enter another; and you may travel many miles, as it were, in one street without knowing it to be composed of different villages but by the different names that were formerly given them, and which they afterward retain though joined to one another. It has many towns, the chief whereof may vie with the most considerable in the world for largeness, magnificence, and the number of inhabitants."

The men of all classes are exceedingly courteous, and although inquisitive about strangers, never become offensively intrusive. The lower people are evidently in great dread of their superiors, and are more reserved in their presence than they would be if they were left to their natural instincts. The rigid exclusiveness in regard to foreigners is a law merely enacted by the government from motives of policy, and not a sentiment of the Japanese people. Their habits are social among themselves, and they frequently intermingle in friendly intercourse. "The Japanese," says Kæmpfer, "are very industrious and inured to hardships. Very little will satisfy them. They generally live on plants and roots, tortoises, shell-fish, sea-weeds, and the like. Water is their common drink. They go bare-headed and bare-legged. They wear no shirts; they have no soft pillows to lay their heads on, but sleep on the ground, laying their heads, instead of a pillow, on a piece of wood, or a wooden box somewhat depressed in the middle. They can pass whole nights without sleeping, and suffer all manner of hardships." The following apparently very correct picture of this people is given by an anonymous writer of the reign of Elizabeth: "The inhabitants show a notable wit and an incredible patience in suffering, labor, and sorrows. They take great and diligent care lest either in word or deed they should show their fear or dullness of mind, and lest they should make any man (whosoever he be) partaker of their troubles and wants. They covet exceedingly honor and praise; and poverty with them bringeth no damage to nobility of birth. They suffer not the least injury in the world to pass unrevenged. For gravity and courtesy they give not place to the Spaniards. They are generally affable and full of compliments. They are very punctual in the entertainment of strangers, of whom they will curiously inquire even trifles of foreign people, as of their manners, and such like things. They will as soon lose a limb as omit one ceremony in welcoming a friend. They used to give and receive the cup at one and the other's hands, and before the master of the house begins to drink, he will proffer the cup to every one of his guests, making show to have them begin. Fish, roots, and rice are their common junkets; and if they chance to kill a hen, duck, or pig, which is but seldom, they will not, like churls, eat it alone, but their friends will be partakers of it. Although essentially an abstemious and sober people, they are not averse occasionally to strong potations."

The Japanese laws are very short and intelligible, and the proceedings under them are as simple as the laws themselves. There are no professional lawyers, every man being deemed competent to plead his own cause. If a party is aggrieved, he appeals to the magistrate, who summons the other party before him. The case is then stated by the complainant in his own way, and the accused is heard in reply. The magistrate examines witnesses, and is said frequently to display great acuteness in the detection of falsehood. He passes sentence, from which there is no appeal, and it is carried into execution *instanter*. If the matter in dispute be of great importance, the magistrate may refer it to the emperor in council. Sometimes in trifling cases he orders the parties to go and settle the matter privately with the aid of their friends, and it is well understood that the matter must be settled, or unpleasant consequences will result. See *Ency. Brit.*, 1856; De Bow's *Review*, ix.

Revenue.—The great source of revenue in Japan is the rent of land, with an impost on houses, in the manner of a ground rent. There appears to be no tax on articles of consumption, no capitation tax, and no transit duties. The cultivators of the soil appear to be mere villeins, simply occupants cultivating as metayers. In lands belonging to the crown, the proportion of the crop considered rent is four parts in ten, and in the rest six in ten, most commonly the latter. These proportions apply to every kind of crop—corn, pulses, and cotton. The land, in order to determine the rent, is surveyed by sworn appraisers twice a year, once before the seed is sown, and again immediately before harvest. Those that cultivate untilled ground have the whole crop for two or three years. Among their many excellent laws relating to agriculture, one is, that whosoever does not cultivate his ground for the term of one year forfeits his possession. It would appear, from the proportion of crop taken as rent, that the impost on the land does not materially differ from that assumed as land-tax under the Mohammedan government of Hindoostan, and continued in some places by ourselves. This will enable us to make an approximate estimate of the rental of Japan—that is, of the principal source of its public income. This, of course, will suppose a similar condition of society and rate of population in Japan and the country with which it is compared. Let us take, therefore, the same Indian territories by which we have attempted to estimate the population. These have, in round numbers, a population of 46,000,000, and yield a land-tax of £10,000,000. This proportion would give to Japan, with its estimated population of 40,000,000, a rental of nearly £8,700,000 to be divided between the imperial governments, feudatory princes, hereditary nobles, and the soldiery.

To the rent of lands is to be added the ground-rent of the houses, which is said to be at the rate of 1s. 8d. for each fathom of frontage, without regard to depth, unless it exceed 15 fathoms, when the rate is doubled. Whether the impost applies to all houses, wherever situated, or only to those in towns, is not stated; but if the former be the case, estimating each house to have an average of five inhabitants, and also five fathoms of frontage, would give the income from this source at more than £3,300,000, or, adding this to the land-rent,

would make the annual revenue of the empire about £12,000,000.

The Japanese being chiefly dependent on the soil for subsistence, have arrived at a high state of perfection in the arts of agriculture. Though a great part of the country is hilly or mountainous, and the soil in general rather poor, yet almost every available foot of land is cultivated, and very abundant crops are raised. Where the land is inaccessible to the plow it is cultivated by manual labor. Like the Chinese, they pay great attention to manuring and irrigation. As animal food constitutes hardly any part of their subsistence, no pastures or meadows are to be seen. Rice constitutes the main object of agriculture, as it forms the bread corn of the people from one end of the empire to the other. Its cultivation extends to the island of Yesso, and as far north as 45 degrees of latitude. The rice of Japan is known to excel every other in Asia, and this may not be owing exclusively to its skillful cultivation, but partly to the climate and the distance of Japan from the tropics. From it the inhabitants distil a drink called *saki* (a kind of rice beer), in very general use. Wheat and barley are grown, but the former is not in much use, and the latter is the chief provender of cattle. Rye, maize, panic, millet, and the *Cynosurus coracanus* are also raised. Beans and peas of different kinds are cultivated in great abundance, particularly the bean *Dolichos soja*, from which *soy*, a kind of sauce, prepared by boiling and fermentation, is made. Among esculent roots and pot-herbs the following are successfully cultivated: the bata, the potato, carrot, turnip, cabbage, radish, lettuce, gourd, melon, and cucumber. The fruits are generlly those of Europe, as the orange, lemon, peach, fig, pear, chestnut, walnut, and cherry.

The tea-plant in Japan, as in China, takes the place of the vine in the temperate regions of the west, and of the coffee in tropical countries. "The tea shrub," says Kæmpfer, "is one of the most useful plants growing in Japan, and yet it is allowed no other room but round the borders of rice and corn fields, and in other barren places unfit for the culture of other things." In a few places the plant, according to Siebold, receives more attention; generally, however, hardly as much as our hawthorn hedges, and thus the leaves are unfit for the consumption of strangers. Its use, however, is universal among the natives. It was introduced into this country from China in the ninth century. Tobacco was first introduced by the Portuguese in the early part of the 16th century, about the same time that it was introduced into England, and it is remarkable that the Japanese emperor instituted a persecution against its growers and smokers at the same time that King James issued his *Counter Blast*, and with as little effect in arresting its use. The plants cultivated in Japan for textile purposes are cotton and hemp in the northern islands. The mulberry is grown for the silk-worm. In husbandry cotton ranks next in importance to rice, and furnishes materials for clothing the great mass of the people.

Manufactures.—In the manufacture of cotton fabrics the Japanese display considerable skill, but in this respect they do not equal the Hindoos. Their best silk is said to be superior to that of China. In the manufacture of porcelain, too, they are said by some to excel the Chinese. Specimens of great beauty and delicacy, at least, have been produced, though some assert that, owing to the exhaustion of the best clay, such articles can no longer be manufactured. Like the Chinese the Japanese have long practiced the manufacture of paper and glass. Formerly they did not know how to make the flat pane for window glass, and probably what they do make is of an inferior quality, as they still purchase thick mirror glass from the Dutch, to grind into lenses. Paper they manufacture in great abundance, as well for writing and printing as for tapestry, handkerchiefs, etc. It is made of very various qualities, and some of it is as soft and flexible as cotton cloth. Indeed, that used for handkerchiefs might be mistaken for cloth, so far as toughness and flexibility are concerned. This paper is made of the bark of the mulberry (*Morus papyrifera*) by means of the following process: In December after the tree has shed its leaves, they cut off the young shoots, about three feet in length, and tie them up in bundles. They are then boiled in a lye of ashes in a covered kettle, till the bark is so shrunk that half an inch of the wood may be seen projecting at either end of the branch. When cool the bark is stripped off, and soaked in water for three or four hours until it becomes soft, when the exterior black cuticle is scraped off with a knife. The coarse bark, which is full a year old, is then separated from the fine, which covered the younger branches, and which makes the best paper. The bark is then boiled again in clear lye, continually stirred with a stick, and fresh lye from time to time added, to make up for the evaporation. It is then carefully washed at a running stream, by means of a sieve, and incessantly stirred until it becomes a fine pulp. For the finer kinds of paper this process is repeated, a piece of linen being substituted for the sieve. After being washed, it is beaten with sticks of hard wood on a wooden table, till it is brought to a pulp, which is put into water and dissolved and dispersed like meal. This is put into a small vessel with a decoction of rice and a species of *Hibiscus*, and stirred until it has attained a tolerable consistence. It is then poured into a larger vessel, whence it is taken out, and put in the form of sheets in mats or layers of grass straw. These sheets are laid one upon another, with straw between, and pressure is applied to force the water out. After this they are spread upon boards in the sun, dried, cut, and gathered into bundles for sale and use. The well-known lacquer ware to which Japan has given name, is unequaled for beauty and durability by that of any other nation. We have ourselves of late years imitated, but certainly not equaled it. They display considerable skill in working the metals. In wood work, caskets, cabinets, and the like, they are unsurpassed. Some of their swords are said to be equal to the finest Damascus blades; and Golownin states that their carpenters' and cabinet-makers' tools are equal in temper to those of a similar kind in England. They are exceeding quick in observing any improvement brought in among them by foreigners, and copy it with great skill and exactness. Clocks, watches, and astronomical instruments are made by them, copied from European models.

Arts.—In certain branches of the fine arts the Japanese have attained no small skill. They are ignorant of anatomy and perspective, and therefore barbarous in their sculptures and landscapes; but in the representation of a single object they manifest great accuracy of detail, and a truthful adherence to nature. Architecture, as an art, can hardly be said to have an existence—their temples, palaces, and private houses being all low and temporary structures, generally of wood; and the frequency of earthquakes leads them to bestow less care on their buildings than in other circumstances they might do.

Trade.—The Japanese carry on a large internal traffic, which, from the peculiar characteristics of their country, is in a great measure by coasting. The numerous straits and creeks, with their shallow waters, though generally unfit for ships of burden, are sufficiently commodious for the small craft of the Japanese, which rarely exceed 60 tons burden. The inland transport is by horses, oxen, and porters, there being very little river or canal navigation. Kæmpfer, who, however, refers to the busiest parts of the country, that between the chief port Osaco and the two capitals, speaks of its commercial activity as follows: "How much is carried on between the several provinces of the empire! How busy and industrious the

merchants are everywhere! How full their ports of ships! How many rich and mercantile towns up and down the country! There are such multitudes of people along the coasts and near the sea-shore; such a noise of oars and sails and numbers of ships and boats, both for use and pleasure, that one would be apt to imagine the whole nation had settled there, and all the inland parts were left quite desert and empty." This was said 160 years ago, and it may be safely assumed that the uninterrupted peace which the country has since enjoyed has not impaired its commercial prosperity. That the Japanese are a commercial people may be inferred from the order, neatness, and propriety with which every thing connected with their trade is conducted. They have gold, silver, and copper money, as well as bills of exchange. Their shops have signs, and their goods are packed and labeled with a truly mercantile care and neatness.

The foreign intercourse of Japan was, more than two centuries, and till within the last few years, solely confined to the Dutch and Chinese. Even with these the trade was limited, being with the Dutch for a considerable time restricted to a single ship annually, and with the Chinese to ten junks. The exports and imports were even limited as to value, and the sales and purchases fixed by a tariff of the Japanese government. The Dutch were confined to the small island of Dezima, in the harbor of Nagasaki, which is only about 640 feet in length by 240 in extreme breadth. A small stone bridge connects the island with the town of Nagasaki, and a strong Japanese guard was always stationed here, no one being allowed to pass either to or from the island without license. The whole island is surrounded with a high fence, on the top of which are placed iron spikes. On the north side are two water-gates, which were kept always shut, except to admit or let out the Dutch vessels. When a ship arrived her guns and ammunition were first taken out, and she was afterward searched in every part, and an exact list made of every thing on board. The crew were then permitted to land on the island, where they were kept, as long as the ship remained, under the inspection of guards. Every Japanese official at the Dutch factory was bound twice or thrice a year to take a solemn oath of renunciation and hatred of the Christian religion, and was made to trample crosses and crucifixes under his feet. The Dutch were at all times surrounded by Japanese spies, whom they were obliged to employ as interpreters, clerks, servants, etc.

As the empire is again in some measure thrown open to foreign intercourse, it may not be unprofitable to speculate on the nature and value of a trade with it. The commodities which have been chiefly in demand in Japan, are iron, steel, lead, tin, quicksilver, cinnabar, sapan-wood, black pepper, cloves, nutmegs, sugar, putchuk, deer-skins, ivory, Chinese and Tonquin raw silk, Indian cotton goods, cotton yarn, mirrors and other glass ware, and English woolens. At one time or another all these articles found a market in Japan, and most of them are imported by the Dutch and Chinese at the present time. In a free trade, or any approach to it, with Japan, we may suppose that iron and steel, high-priced commodities there, would become staple imports. The climate would give rise to a consumption of woolens; and although the Japanese are clothed in their own cotton, judging from what has taken place in India, where both the raw and wrought articles are cheaper than in Japan, we may infer that cotton fabrics might be imported with advantage. Cotton yarn or twist has long been one of the regular articles of import, although it was long the high-priced manufacture of Java spun with the distaff that was imported. Mirrors and glass ware would, no doubt, find a ready mart. Sugar would certainly be in demand, as Japan produces none; and the same may be said of nearly all kinds of spiceries and dye-woods. Even cotton wool and rice might be occasionally imported, as they are regularly into China. According to M. Caron, whose information refers to 1636, or the period preceding the last persecution, the European nations imported annually into Japan from 540,000 to 675,000 lbs. of Chinese raw silk, 200,000 deer-skins, and 100,000 other kinds of peltry.

With respect to the exchangeable products from Japan, gold, silver, and copper were largely exported when the trade was open. While the Dutch were carrying on their trade at Firando, and still unrestricted, they exported annually gold to the value of £470,000, and silver to from £830,000 to £885,000. But the Spanish and Portuguese trade was free at the same time, and these nations are stated to have exported more largely, so that we may conclude that a million and a half of the precious metals were, from near the beginning to near the middle of the 17th century, exported from Japan. Of copper, the Dutch exported in some years as much as 1800 tons. Most important, however, in this part of the world will be the supply of coal, which the islands are said to furnish abundantly. It will also be seen from what we have already said of the productions of the country, that there are many things among them that may become valuable as exports, while a demand for other articles will no doubt lead to their introduction as subjects of trade.

After the expulsion of the Portuguese in 1639, and before the restrictions were so stringent as they afterward became, the entire value of the foreign trade was estimated by the Dutch governor-general, the Baron Van Imhoff, at £833,000; while in his own time (1744) it had declined to £264,588, of which one third only was Dutch, the rest being Chinese. In 1805 the cargoes of two ships laid in at Batavia, were sold in Japan for £35,416, with which, or rather with the balance after deducting heavy local charges, copper and camphor were purchased, which in Batavia sold for £195,733. The adventure of next year was neither so large nor so prosperous, for the outward cargo brought in Japan only £24,825, and the return cargo of copper and camphor produced when sold in Batavia only £101,644. These favorable speculations however, arose entirely from the enormous war prices for copper and camphor. Since then the trade has become still smaller, and, as already stated, is confined to a single ship. In the earlier period of its trade Japan was not only free to all the world, but was not even burdened with imposts on either ship or cargo; presents, however, required to be made to the emperor, the provincial governors, and one or two other parties.—E. B.

Money.—Accounts are kept in taels, mace, and candarines; 10 candarines make 1 mace, and 10 maces 1 tael. The Dutch reckon the Nangasaki tael at 3½ florins, equal to about 6s. 2d. The gold coins current are the new and old itjih and cobangs, or copangs; the silver coins are, the nandiogin, itaganne, and kodama. They are in general very simple, struck plain and unadorned, the greatest part of them without any rim round the margin, and most of them without any determined value. For this reason they are always weighed by the merchants, who put their chop or stamp upon them, to signify that the coin is standard weight and unadulterated. The new cobangs are oblong, rounded at the ends and flat, about 2 inches broad, scarcely thicker than an English farthing, of a pale yellow color; the die on one side consists of several cross lines stamped; and at both ends there is a rectangular figure, with raised letters on it, and, besides, a moonlike figure, with a flower on it in relief. On the other side is a circular stamp, with raised letters on it; and within the margin, toward one end, two smaller sunk stamps with raised letters, which are different on each cobang; they are valued at 60 mace.

There are old cobangs occasionally met with, which are of fine gold, somewhat broader than the new. The old cobang weigh 371 Dutch asen, or 275 English grains, and the gold is said to be 22 carats fine, which would give 44s. 7d. for the value of the old cobang. But the Japanese coins are reckoned at Madras only 87 touch, which is 20, 22, 25 carats; this reduces the old cobang to 41s. 10d. The new cobang weigh 180 grains; the gold is about 16 carats fine, and the value 21s. 3d. The oban is thrice the value of the cobang. The itjib is called by the Dutch golden bean, and is made of pale gold, of a parallelogramical figure, and flat, rather thicker than a farthing, with many raised letters on one side, and two figures or flowers in relief on the other; the value of this is half of a cobang. There are old itjibs also to be met with; these are thicker than the new ones, and in value 22 mace 5 candarines. Nandiogin is a parallelogramical flat silver coin, of twice the thickness of a halfpenny, 1 inch long and ½ inch broad, and formed of fine silver. The edge is stamped with stars, and within the edges are raised dots. One side is marked all over with raised letters; and the other on its lower and larger moiety, is filled with raised letters, and at the same time exhibits a double moonlike figure. Its value is 7 mace 5 candarines.

Itaganne and kodama are denominations by which various lumps of silver, without form or fashion, are known, which are neither of the same size, shape, nor value. The former of these, however, are oblong, and the latter roundish, for the most part thick, but sometimes, though seldom, flat. These pass in trade, but are always weighed in payment from one individual to another, and have a dull leaden appearance. Seni is a denomination applied to pieces of copper, brass, and iron coin, which bear a near resemblance to our old farthings. They differ in size, value, and external appearance, but are always cast, and have a quare hole in the middle, by means of which they may be strung together; and likewise have always broad edges. Of these are current, sjumon seni, of the value of 4 common seni, made of brass, and almost as broad as a halfpenny, but thin. The common seni are the size of a farthing, and made of red copper; 60 of them = 1 mace. Doosa seni is a cast iron coin, in appearance like the last, of the same size and value, but is so brittle that it is easily broken by the hand, or breaks in pieces when let fall on the ground. The seni are strung 100 at a time, or as is most commonly the case, 96 on a rush. The coins in one of these parcels are seldom all of one sort, but generally consist of 2, 3, or more different kinds; in this case, the larger ones are strung on first, and then follow the smaller; the number diminishing in proportion to the number of large pieces in the parcel, which are of greater value than the smaller. The schuit is a silver piece of 4 oz. 18 dwts. 16 grs. Troy, and is 11 oz. fine, which gives its value £1 5s. 3d. The name is Dutch, referring, probably, to its shape, like a boat.

Weights.—These are the candarine, mace, tael, catty, and picul, thus divided:

10 candarines	=	1 mace.
10 mace	=	1 tael.
16 taels	=	1 catty.
100 catties	=	1 picul.

The picul = 125 Dutch lbs., or 133⅓ lbs. avoirdupois. It is, however, said to weigh only 130 lbs.

Measures.—The revenues of Japan are estimated by two measures of rice, the man and koif; the former contains 10,000 koifs, each 3000 bales or bags of rice. The long measure is the inc, which is about 4 Chinese cubits, or 6½ feet English nearly; and 2½ Japanese leagues are computed to be about 1 Dutch league.—MILBURN'S *Orient. Com.*

The principal, or more important towns of the empire, are Yedo (or Jeddo), Mijako (or Kio), etc.; Nangasaki, Saga, Kokura, etc.; Simoda, Kotsi, Takamutsi, etc.; Hakodade, Matsumae, etc.

Commercial Intercourse.—At an early period the Portuguese founded a settlement, and established trade with the Japanese, having succeeded in winning the favor of several of the native princes, through the instrumentality mainly of Christian missionaries. In 1542, Fernando Mendes Pinto, a Portuguese, embarked in a junk from Macao to Lew-Chew; but encountering adverse winds, he was driven to one of the western islands of the Japanese archipelago. About the same period, the celebrated Xavier arrived at Goa, and, proceeding soon after to Koyosima, made so favorable an impression on the Prince of Satsuma that an active and profitable intercourse at once sprung up between the western ports of Japan and Macao. This intercourse continued uninterrupted during a period of nearly 40 years, when an edict was issued permitting the Portuguese to continue their trade as before, but forbidding them to bring any more missionaries, or even to speak on religious subjects. In 1635, under the reign of Yeyo Mitson, a prison was constructed off Nangasaki, and all the Portuguese found in the country were there confined, and the commercial privileges which they had so long enjoyed were transferred to the Dutch, who were generally believed to be the instigators of the severe measures put in force against the Portuguese. A sanguinary battle between the Portuguese and native Christians, amounting to 38,000 men, on the one side, and the Dutch, and such of the natives as sympathized with them in their hostility to the Portuguese, on the other, was the result of these rigorous measures. The former fortified themselves in Simabara, and the latter made their attack under the command of the Dutch director Kockebecker. The fortress was soon reduced, and the Portuguese, rather than submit to their rivals, to whom they attributed all the misfortunes that had befallen them, perished to a man. An edict was immediately published, forbidding the Portuguese to enter the country. The intelligence of these proceedings soon reached Macao, and four of the most distinguished citizens were sent to conciliate the favor of the government of Japan. They arrived at Nangasaki in 1640, and were immediately put under arrest, and condemned to death for entering the country in violation of the edict. The following inscription, written, it is said, by the Dutch director, Kockebecker, was placed on their grave: "So long as the sun shall warm the earth, let no Christians be so bold as to come to Japan; and let all know, that the King of Spain himself, or the Christian God, or the Great Saca, if he violate this command, shall pay for it with his head." The Portuguese have never since been permitted to renew their intercourse with Japan.

The first formal edict in favor of the Dutch was issued in 1611, and the privileges of trade which were then conceded have continued, modified at various times, to the present day. In the earlier period of this trade, return cargoes consisted chiefly of silver and gold, Japanese copper being then but little known in Europe. This latter article, however, soon became one of the leading staples of Japanese export trade. In a work, entitled "Notes of the Voyage of the Morrison from Canton to Japan," published in 1839, the following reference to the Dutch trade at this period is made: "The Dutch were now left in sole possession of the trade with Japan; and, since that time, it is well known, their monopoly has never been disturbed. Their subsequent political intercourse has been limited to an occasional mission from Batavia, and the visits of the Dutch chief of the factory to Yedo, formerly made annually but now once in four years. Charlevoix mentions embassies in 1664, 1656, and 1659. It was while the second of these missions was at Yedo, that two thirds of that city and 100,000 of its population were destroyed by fire. It remains to trace, briefly, the use the Dutch have made of the monopoly to which they have so long aspired. Of the assortment

and value of their import cargoes, in the 17th century, we have little or no account. Their returns had been in silver, chiefly, until 1641, when the directors of the Company suggested returns in gold. Japanese copper was at this time in little estimation in Europe, because little known; but afterward, on a rise in value, it became an important return. The first order for 20,000 piculs was sent out in 1655."

Various restrictions and prohibitions have been, from time to time, imposed upon Dutch commerce by the Japanese authorities. The imports and exports were limited, and the number of vessels was finally restricted to four, three, and two, as before the late treaty. The profits realized by the Dutch from this trade have never been accurately ascertained. The author already cited, referring to the restrictions imposed by the Japanese government, remarks: "Under these circumstances, the trade, which had yielded an annual profit of 500,000 to 600,000 florins for the 80 years previous [to 1714], would no longer pay the charges." Efforts have been made, at different periods, by the English and French governments, as well as by that of the United States, to open commercial intercourse with Japan; but, with the exception of the very limited concessions granted by the treaty of 31st March, 1854, between the United States and Japan, and concessions nearly similar allowed to the British, by treaty, subsequently ratified, and the privileges granted to the Dutch by the treaty of 1855, without success. Some years since, Russia endeavored to establish commercial relations with Japan; but the proposal was declined, and the envoys were ordered not to return again on pain of death.

The treaty, already referred to, between the United States and Japan, which was concluded March 31, 1854, ratified August 7, 1854, exchanged February 21, 1855, and proclaimed June 22, 1855, is as follows: "The United States of America and the empire of Japan, desiring to establish firm, lasting, and sincere friendship between the two nations, have resolved to fix, in a manner clear and positive, by means of a treaty or general convention of peace and amity, the rules which shall in future be mutually observed in the intercourse of their respective countries; for which most desirable object the President of the United States has conferred full powers on his commissioner, Matthew Galbraith Perry, special embassador of the United States to Japan, and the august Sovereign of Japan has given similar full powers to his commissioners, Hayashi, Daigaku-no-kami, Ido, prince of Tsus-Sima, Izawa, prince of Mima-saki, and Udono, member of the board of revenue. And the said commissioners, after having exchanged their said full powers, and duly considered the premises, have agreed to the following articles: Article I. There shall be a perfect, permanent, and universal peace and a sincere and cordial amity between the United States of America on the one part, and the empire of Japan on the other part, and between their people respectively, without exception of persons of places. Article II. The port of Simoda, in the principality of Idzu, and the port of Hakodade, in the principality of Matsmai, are granted by the Japanese as ports for the reception of American ships, where they can be supplied with wood, water, provisions, and coal, and other articles their necessities may require, as far as the Japanese have them. The time for opening the first-named port is immediately on signing this treaty; the last-named port is to be opened immediately after the same day in the ensuing Japanese year. [*Note.*—A tariff of prices shall be given by the Japanese officers of the things which they can furnish, payment for which shall be made in gold and silver coin.] Article III.—Whenever ships of the United States are thrown or wrecked on the coast of Japan, the Japanese vessels will assist them, and carry their crews to Simoda, or Hakodade, and hand them over to their countrymen appointed to receive them; whatever articles the shipwrecked men may have preserved shall likewise be restored, and the expenses incurred in the rescue and support of Americans and Japanese who may be thus thrown upon the shores of either nation, are not to be refunded. Article IV.—Those shipwrecked persons and other citizens of the United States shall be free as in other countries, and not subjected to confinement, but shall be amenable to just laws. Article V.—Shipwrecked men and other citizens of the United States, temporarily living at Simoda and Hakodade, shall not be subject to such restrictions and confinement as the Dutch and Chinese are at Nangasaki, but shall be free at Simoda to go where they please within the limits of seven Japanese miles (or *ri*) from a small island in the harbor of Simoda, marked on the accompanying chart hereto appended; and shall in like manner be free to go where they please at Hakodade, within the limits to be defined after the visit of the United States' squadron at that place. Article VI.—If there be any other kind of goods wanted, or any business which shall require to be arranged, there shall be careful deliberation between the parties in order to settle such matters. Article VII.—It is agreed that ships of the United States resorting to the ports open to them shall be permitted to exchange gold and silver coin and articles of goods for other articles of goods, under such regulations as shall be temporarily established by the Japanese government for that purpose. It is stipulated, however, that the ships of the United States shall be permitted to carry away whatever articles they are unwilling to exchange. Article VIII.—Wood, water, provisions, coal, and goods required, shall only be procured through the agency of Japanese officers appointed for that purpose, and in no other manner. Article IX.—It is agreed that if at any future day the government of Japan shall grant to any other nation or nations, privileges and advantages which are not herein granted to the United States and the citizens thereof, that these same privileges and advantages shall be granted likewise to the United States and to the citizens thereof, without any consultation or delay. Article X.—Ships of the United States shall be permitted to resort to no other ports in Japan but Simoda and Hakodade, unless in distress or forced by stress of weather. Article XI.—There shall be appointed by the government of the United States consuls or agents to reside in Simoda, at any time after the expiration of 18 months from the date of the signing of this treaty: provided that either of the two governments deem such arrangment necessary."

The harbor of Simoda is near the south-eastern extremity of the peninsula of Idzu, and affords a safe and capacious anchorage. Hakodade lies on a spacious and beautiful bay of that name, and, for accessibility and safety, is one of the finest in the world—capable, says the *Hong Kong Register*, of holding all the fleets of the Pacific in security.

Port Regulations of Simoda.—Three natives have been appointed pilots for American vessels entering or departing from the port of Simoda, and the following rates of pilotage have been established by the proper authorities, viz.: Vessels drawing over 18 feet, pay $15; over 13 feet, and less than 18 feet, $10; under 13 feet, $5.

"These rates shall be paid in gold or silver coin, or their equivalent in goods; and the same shall be paid for piloting vessels out, as well as into port. When vessels anchor in the outer roads, and do not enter the inner harbor, only half the above compensation shall be paid to pilots. A look-out place shall be established at some convenient point, from which vessels appearing in the offing can be seen and reported; and when one is discovered, making apparently for the harbor, a boat shall be sent to her with a pilot. And in order to carry this regulation into full effect, boats of suitable size and quality shall always be kept in

readiness by the harbor-master, which, if necessary, shall proceed beyond Rock Island, to ascertain whether the vessel in sight intends entering the harbor or not. If it may be the desire of the master of the said vessel to enter the port, the pilot shall conduct her to safe anchorage, and, during her stay, shall render every assistance in his power in facilitating the procurement of all the supplies, he may require. The prices for supplying water to American vessels at Simoda shall be 1400 cash* per boat-load (the casks being furnished by the vessel). And for wood delivered on board, about 7200 cash per cube of 5 American feet."

The foregoing is a full summary of the concessions granted to American intercourse by the treaty with Japan of March 31st, 1854. As a means of opening commercial relations with that empire, its provisions have proved inefficient; but, before submitting any notice of facts that have come to knowledge of the Department relative to this subject, it is deemed appropriate to give the leading provisions of the treaty entered into by Great Britain with Japan. The first article of this treaty opens the ports of Nangasaki and Hakodade to British vessels to repair and obtain supplies only. It opens all parts of these ports; but, as respects anchorage, vessels must conform to the instructions of the local government. Safe and commodious places are to be designated for the repair of vessels. Workmen, material, and other necessary supplies to be furnished by the local government, in accordance with a tariff to be agreed upon, which shall regulate the manner of payment. All officicial communications to be conducted in the English language, as soon as the Japanese shall have acquired a knowledge of that language. A place to be reserved as a burial-ground for the English at Medauma Sima, which will be inclosed by a stone wall and suitably protected. The second article stipulates that at each of the ports of Nangasaki and of Hakodade, the regulations of the port shall be observed; but the Japanese government will see that these regulations shall be such as to create no difficulties and interpose no obstacle whatever to the general object of the treaty, which is essentially designed to facilitate amicable relations between Great Britain and Japan.

The third article declares that only vessels in distress or dismantled can enter other ports than Nangasaki and Hakodade, without permission of the Japanese government; but ships of war possess, as a necessary attribute of their public character, the general right to enter all the ports of friendly powers; while, however, this right shall suffer no prejudice or restriction, the vessels of war of her Britannic majesty will not enter any other than open ports, without necessity, nor without offering proper explanations to the imperial authorities. The fourth article provides that British ships and subjects in Japanese ports shall conform to the laws of Japan; and that if any subordinate British subjects commit offenses against the laws, they shall be delivered to their own officers for punishment; and that if superior officers, or commanders of ships, shall break the laws, it will lead to the closing of the ports specified: but it is not intended by this article that any acts of individuals, whether high or low, previously unauthorized or subsequently disapproved of by her majesty the Queen of Great Britain, can set aside the convention entered into with her majesty alone by his imperial highness the Emperor of Japan. The fifth article secures, in the fullest sense, to British ships and subjects, in every port of Japan, either now open or hereafter to be opened, an equality, in point of advantage and accommodation, with the ships and subjects or citizens of any other nation, without prejudice, however, to any peculiar privileges hitherto conceded to the Dutch and Chinese in the port of Nangasaki. If, therefore, any other nation or people be now, or hereafter, permitted to enter other ports than Nangasaki and Hakodade, or to appoint consuls, or to open trade, or to enjoy any advantage or privilege whatever, British ships and subjects shall, as of right, enter upon the enjoyment of the same. The sixth article declares that the convention shall be exchanged at Nangasaki, on behalf of her majesty the Queen of Great Britain, and on behalf of his highness the Emperor of Japan, within 12 months from the 14th day of October, 1854.

The governor of Nangasaki communicated, in October, 1854, to Sir James Sterling, the following standing port regulations: ARTICLE 1. Ships shall anchor within two sima, and there await the direction of the governor. 2. No fire-arms are to be discharged. 3. No person to land on any of the islands. 4. No soundings to be taken, nor boats to be pulling about. 5. Should any communications be desired, a boat of the upper officers shall be called; but no communication shall be held with merchant boats, and no exchange of articles take place, or trading of any sort.

The above being, according to the law of Great Japan, all commanders and other officers shall obey the same, and orders shall be given to the crew that the aforesaid law shall not be broken.

An arrangement, made subsequently to the convention with Great Britain, requires that British ships, intending to visit Japan, shall be provided with a document in proof of their nationality, and as a check upon the conduct of vessels in Japanese ports; and her majesty's government has directed a form of certificate of registration to be adopted, which has been accepted as satisfactory by the Japanese authorities; and merchant ships arriving in Japanese ports are to submit their certificate of registration to the officers to be appointed by the Japanese authorities, and to permit them to make such extracts from it as may seem good to them, before such ships can be admitted to obtain repairs and supplies. Her majesty's ships of war are not to be provided with such documents; but the officers in command, upon proper application, will afford all reasonable information regarding their ships.

Holland has also recently formed a provisional treaty with Japan, but it is stated that the Dutch government withholds it from publication. The Singapore papers give the following summary of its provisions: "The Dutch are no longer limited to Decima, but may freely resort to Nangasaki and the immediate neighborhood. The island of Decima is placed at the disposal of the Dutch, and the buildings thereon sold to Holland. This island will serve as an entrepôt for the Dutch, where they can land their goods without payment of duties or search. The keys of the water-gates and of the entrepôt warehouses will remain with the Dutch chief factor. The usual duties will not be exacted until goods are brought to Nangasaki. The trade with the Dutch government remains on the former footing. Free exercise of religion and right of burial is conceded to the Dutch. There shall exist, henceforward, freedom of communication with other ships entering or departing from the roads. A definitive treaty is to be hereafter concluded; but, until that takes place, the present agreement is to be considered in force."

The above is, in substance, all that has been published relative to the convention between Holland and Japan; but, until the definitive treaty, alluded to in the last paragraph, shall have been entered into, the intercourse between the two countries will be of the same limited character that has hitherto existed. Indeed, the Japanese evince an almost invincible repugnance to opening their ports to foreign commerce, and, in their interpretation of treaties, concede nothing beyond what is specifically granted. Thus, the term "temporary residence" in the treaty with the United States, is so strictly interpreted that citizens of this country, who desired to land at one of the open ports,

* 600 copper cash are equal to 43 cents (arbitrary value). The currency of Japan is similar to that of China, in which 1 tael = 10 mace = 100 candareens = 1000 cash = $1 48 U. S. currency.

were required, before being permitted to go ashore, to state how long they intended so to reside; and intimations were given that "four or five days" would be sufficient to satisfy the words of the treaty. In one case, the applicants, whose object appeared to have been to reside permanently at one of the open ports, for the purpose of establishing a dépôt for the supply of whaleships, were informed that, until they stated the exact number of days they intended to stay on shore for "temporary residence," they would not be permitted to sleep one night from their vessel.

On the 17th August, 1855, the American schooner *Wilmington*, Brown master, of New London, Connecticut, arrived at Simoda from Hong Kong, with a miscellaneous cargo, supposed to be suitable for trade at that port. Shortly after casting anchor, some 15 or 20 officers came on board, and desired to know on what business the vessel came into port. They were informed that she brought a cargo of American commodities, which the captain wished to sell or exchange for goods of Japanese manufacture. They then informed the captain that they could not trade; that the people at large would be much pleased to do so, but that the emperor had positively prohibited all commercial intercourse, under penalty of death to the offenders. A letter was addressed to the governor of the city of Simoda, which was returned in the same envelope, with a verbal message to the effect that he would not be permitted to land a single article for trade, nor could he present any for trade on shipboard. Wood and water (the former at $5 per cord) were offered; but fresh provisions, it is stated by the captain, were refused. The vessel was, night and day, surrounded by guard-boats until she cleared from the bay. The *Wilmington* then proceeded to Hakodade, where she met with more liberal treatment, but permission to trade was refused, as at Simoda. The only provisions to be purchased consisted of beans, turnips, scallions, and such vegetables. The cattle the Japanese look upon as sacred, and will neither sell nor kill them. The captain and crew were permitted to go ashore and visit wherever they pleased. They were also exempted from the vigilance of guard-boats, as well as from the constant attendance of guards, as at Simoda.

It seems evident, therefore, so far as appears, that, under the present treaty, the Japanese government will not permit any trade to be carried on; nor is there much probability of the treaty receiving any more liberal interpretation than that given to it by the officials at Simoda. It is, as the Japanese aver, a treaty of peace and amity only, strictly guarded against any concession or clause under which American citizens could claim the privileges of general trade.—*Com. Rel. U. S.*

To America undoubtedly belongs the credit of having been the first to re-establish commercial relations with Japan. The increased traffic in this part of the world, particularly between eastern Asia and northwestern America, and the importance of the whalefishery in the Japanese seas, had rendered it very desirable to have free access to at least some of the ports of Japan. Repeated attempts had been made by England, Russia, and the United States, but without success, when at length the United States' government resolved to make an effort worthy of the object, and accordingly fitted out an expedition under the command of Commodore M. C. Perry. The commodore sailed from Norfolk in the *Mississippi* war-steamer, on the 24th of November, 1852, to be followed as soon as possible by the other vessels of the expedition. He arrived in the Bay of Yeddo on the 8th of July, 1853, with four vessels, two war-steamers, and two sloops of war, and after some negotiations he delivered the letter of the President, promising to return for an answer in the spring. The rest of the year was spent at Loo Choo and China, and on the 12th of February, 1854, the squadron reappeared in the Bay of Yeddo, having by this time been increased to nine vessels, three steam-frigates, four sloops of war, and two store-ships. A treaty was concluded on the 31st of March, in terms of which the ports of Simoda in the island of Nipon, and Hakodade in Yesso, are opened for the reception of American ships, where they will be supplied with wood, water, provisions, coal, and other articles, so far as the Japanese possess them. Ships in distress, or from stress of weather, may enter other ports; and seamen shipwrecked on any part of the coast are to be aided and carried to either Simoda or Hakodade. Shipwrecked seamen and others temporarily residing at these ports, are, at Simoda, free to go anywhere within the limits of 17 English miles from a small island in the harbor, and in like manner at Hakodade within 12 miles. Ships of the United States are also permitted to trade under such regulations as shall be temporarily established by the Japanese government for that purpose. All the privileges that may hereafter be granted to any other nation are to be accorded to the United States. On the 7th of September following, an English squadron, consisting of a frigate and three steamers, under the command of Rear-Admiral Sir James Sterling, entered the harbor of Nangasaki. The primary object of this visit to Japan was to search for Russian vessels, but it was also intended to attempt to establish friendly relations between the two nations. A treaty was entered into, the effect of which is to open absolutely and at once to British ships of every description, for effecting repairs and obtaining fresh water, provisions, and other supplies, two of the most convenient harbors in Japan—Nangasaki and Hakodade; to open inferentially to British ships in distress any other port in Japan it may be expedient for them to seek shelter in; to secure eventually to British ships and subjects in every port of Japan which may hereafter be open to foreigners, equal advantages with the ships and subjects of the most favored nation, excepting only the advantages at present accorded to the Dutch and Chinese. It imposes in return for these concessions, no other obligation on British ships and subjects than that of respecting the laws and ordinances of the ports they visit. More recently the Russians have succeeded in obtaining a similar footing in Japan. See *Ency. Brit.*, 8th. edition; HUNT'S *Mer. Mag.*, i., 298, xxxi., 234, 626, xxxiv., 120, 742; *Nor. Am. Rev.*, x., 33 (by N. HALE); *Quar. Rev.*, xxii., 107, lii., 159, vi., 357; PERRY'S *Japan Exped.*, 1854; *Living Age*, x., xiv., xxiii.; DE BOW'S *Rev.* ix., 444.

Japanned Wares (Ger. *Japanische ware;* Du. *Japansch lakwerk;* Fr. *Marchandises de Japan*), articles of every description, such as tea-trays, clock-dials, candlesticks, snuff-boxes, etc., covered with coats of Japan, whether plain, or embellished with painting or gilding.

Japanning, a species of lac-varnishing, in imitation of the lacquered ware of Japan, which, with that of China, is esteemed the best in the world. The ware may be lacquered upon wood, metal, or *papier-maché* grounds. A description of the process as practiced in China may serve to explain the sources of superiority. The article, if of wood, being made very dry, light, and smooth, is primed with a mixture of ox gall and rottenstone, which is rubbed smooth before the varnish is applied. The varnish is composed of 605 grains of gum-lac in 1200 grains of water, to which are added 38 grains of oil of *Camellia sasanqua*, pig's gall, and 19 grains of rice vinegar. The ingredients are well mixed in full daylight, when the varnish gradually deepens into a brilliant black. A very thin coat of this varnish is applied with a flat hair brush. The article is left in a steamy heat, and is then rubbed down in water with very fine pumice. A second coat of lac-varnish is next applied, and the polishing is repeated, which two operations are continued until a perfectly even and brilliant surface is

attained, a finer quality of lac being used for the later coats, of which there are never less than three, nor more than 18. The object is ornamented by an artist, who draws the design in white lead, engraves it, and fills up the details. The article is next painted with the camphorated lac of Kouang-si, which serves as a basis for the gilding. It is completed by varnishing.

In our method of japanning, the wood intended for the best works is thoroughly dried, since any warping or shrinking would be fatal to the finished surface; for which purpose well-seasoned wood is cut nearly into the required forms, and exposed for several days to a gradually increasing heat in the japanner's stove. The articles are then finished as to form, and are again stoved, after which the cracks are stopped with putty or white lead. For black japanned works, a ground of ivory-black mixed with dark-colored animè varnish is applied. This is dried in the stove, and coated with varnish three or four times, the work being stoved between every two coats. For colored grounds, the varnish mixed with the proper color is laid on in one or two coats, and the work is completed by several successive varnishings and dryings. Ordinary painters' colors ground with linseed oil or turpentine and mixed with animè varnish are employed for various black or brown surfaces with gilt edges, imitations of marble, fine-grained woods, tortoise-shell, etc. The colors mostly used are flake-white or white lead, Prussian-blue, vermillion, Indian-red, king's yellow, verdigris, lamp-black, and the various tints produced by their admixture. The varnishes used are copal, seed-lac, animè, and mastic. The lac varnish is the best for hardness, but its color prevents its use for delicate grounds, so that for such purposes it is either mixed with gum varnish, or copal varnish is used instead. Copal or animè varnish made without driers is applied, in from two to six coats, after the color has been laid on. See VARNISH.

Japanners sometimes use a priming of size and whiting, which is laid on with a brush, and left for a day or two to dry; it is then made smooth by rubbing with rushes and a wet cloth. When this is quite dry, the grounds are laid on, and finished by varnishing and polishing with rottenstone, or in the case of a white ground, with putty or starch, and oil. It must, however, be remarked, that a priming, or artificially perpared ground, is objectionable, the japanning being more liable to crack than when executed on the actual surface of the object itself. A gold ground is formed by varnishing the work with japanner's gold size, and when nearly dry, but still clammy, covering it with gold dust applied on a piece of wash-leather; the effect of such a ground when highly varnished is very brilliant. Japan work is ornamented with drawings or engravings, on the principle of transfer, for which purpose the engraving is printed, or the drawing executed on fine paper previously prepared with a coat of isinglass or gum-water. When this is dry it is placed face downward upon the japan ground, which is covered with a thin coat of copal varnish. A sponge dipped in warm water is then applied to the back of the paper, which dissolves the isinglass, loosens the paper, and leaves the print on the work. Another method is to execute the print on an elastic composition of glue, etc., which receives the impression well, and can be laid down at once on the japanned surface. The whole of the processes require so much drying, that stoves are requisite to hasten the work.

The great demand for japanning is for works in *papier maché*, to which article we must refer for further information on the subject. Common articles of furniture are sometimes said to be japanned, thereby implying that they are more durable than common painted articles. The term as thus used is, however, incorrect, since the colors employed on such common works are only mixed with turpentine instead of oil. For japanning works in metal, they are cleaned with turpentine to get rid of grease or oil, unless the oil should be linseed, in which case the articles are stoved until the oil becomes quite hard. Japanning is then performed in the usual manner.—E. B.

Jasper (Ger. *Jaspis*; Du. *Jasis*; Fr. *Jaspe*; It. *Diaspro*; Sp. *Jaspe*; Rus. *Jaschma*). This stone is an ingredient in the composition of many mountains. It occurs usually in large amorphous masses, sometimes in round or angular pieces; its fracture is conchoidal; specific gravity from 2 to 27. Its colors are various; when heated it does not decrepitate; it is usually divided into four species, denominated Egyptian jasper, striped jasper, porcelain jasper, and common jasper. It is sometimes employed by jewelers in the formation of seals.

Java, the first in importance, although only the third in magnitude of the islands in the Indian Archipelago, lies between east long. 105° 12′ and 114° 4′, and south lat. 5° 52′ and 8° 40′. In form it is long and narrow, being 666 miles in length from east to west, by from 56 to 136 miles in breadth. Area 50,260 square miles. To the north-west it is parted from Sumatra by a strait, at its narrowest part only 14 miles wide, and with islands between; and to the east from Bali, by a strait of no more than two miles broad. On its low, and in some measure sheltered north coast, Java has a good many islands, by far the largest and most important of which is Madura, separate from it by a strait at one part only about a mile wide. On the bold precipitous south coast there are very few islands, and only two of a considerable size, Baron and Kambanagan. The coast line of Java, which is about 1400 English miles in extent, has many bays on its northern coast, but it is not deeply penetrated by any one of them, so that it has properly no harbor but one, that of Surabaya, formed between the main island and Madura, where the strait that divides them is still narrow. The southern coast is still less indented. Here there are two harbors only, Pachitan—inconvenient and unsafe—and Chalachap, formed between the main island and Kambangan, both out of the way of intercourse, and little frequented. On other parts of the south coast there is no safe anchorage, while dangerous surge rolls in on the shore in all seasons. With the single exception named, the ports of the northern coast are but open roadsteads, with good anchoring ground; but the want of land-locked harbors is not felt so near the equator, where hurricanes are never experienced, and where the weather is only occasionally tempestuous at the change of the monsoons.

The physical outline of Java may be divided into five different sections of various breadths. Beginning from the western end and following the line of the northern coast, the first section ends with the eastern side of the bay of Batavia. This is about 75 miles in average breadth. The second extends east as far as Cheribon, in long. 108° 36′, and is about 95 miles broad. Both these divisions are mountainous, the mountains being of less elevation than in the other parts of the island, but more crowded, and with narrower valleys. They constitute the proper country of the Sundas, who speak a distinct language, and are less advanced in civilization than the Javanese, the nation which occupies all the rest of the island. The third section extends from Cheribon to the western side of the promontory of Japara, in about long. 110° 30′, and its breadth does not exceed 50 miles, the island being greatly narrowed by the bay which extends for 140 miles from the point of Indramaya to that of Sapara. The fourth section extends from the promontory of Japara to that portion of the island which is opposite to the western end of Madura, and this has an average breadth of 100 miles. The fifth section embraces the remainder of the island, and is no more than 50 miles in breadth. In the three last sections, the mountains are of greater elevation, the

plains more spacious, and along their northern coasts there runs generally a belt of alluvial land varying from 5 to 15 miles in depth.

The geological formation of Java is eminently volcanic. A range of mountains runs in a longitudinal direction through the centre of Java, the peaks of which vary from the height of near 4000 to near 12,000 feet above the level of the sea. No fewer than 46 of those peaks are volcanoes, 20 of which are in a state of greater or less activity. The craters are sometimes of great extent, and their walls illustrate the structure of the mountains, which is either vertical and irregularly columnar, or disposed in oblique or horizontal strata.

Java has no extensive collection of water, salt or fresh, and no large lagoons connected with the sea. There exist, however, a few beautiful mountain lakes. One of those lies within the mountain Wilis ("the green"), which parts the plains of Madiyun and Kadiri, and is known by the name of *Gôbal*. There is a second in the province of Cheribon, known by the Sanscrit name of Tâlaga, or the reservoir; and a third is in the province of Pasuruhan and called Bañunila, or the blue water. In Java, however, there are several extensive marshes, which, in the season of the rains, become lakes, are navigated, and have fisheries. The rivers of Java, especially on its northern side, are numerous; but from the form of the island, they are of small size. None of them are navigable for vessels of burden, and few even far boats beyond the reach of the tide. They are all, more or less, obstructed by mud or sand-bars at their mouths. Though of little utility for trade, they are excellently adapted for irrigation. Few of the rivers of Java have specific names, but take their appellations generally from the places they pass by, and change them with every new one, a circumstance which may, perhaps, be owing to their small size and great number. There are, however, a few exceptions, in some of the larger, as the Sârsya, a river of the province of Bañumas and the Praga, with its tributaries the Elos Rivers of Kadu, all debouching on the southern coast.

Climate.—The climate of Java is what may be expected in a narrow sea-girt country between five and eight degrees south of the equator, having plains almost on a level with the sea, and inhabited land 5000 feet above it. The wet season begins with October and ends with March, and the dry with April and ends with September. The monsoons are those of the southern hemisphere, the north-western corresponding with the wet season, and the south-eastern with the dry. The setting in of these monsoons is irregular, and, even during their prevalence, there is some dry weather in the wet, and not unfrequently rain in the dry. At the equinoxes, when the monsoons change, the weather is very unsettled, and most tempestuous at the commencement of the winter solstice in September and October. Thunder-storms are then frequent, and often destructive to life. Land and sea-breezes are experienced within 15 miles of the northern and southern coasts, and in particular localities of its eastern and narrowest extremity the south-eastern monsoon blows with great force across the whole island. The temperature, so far as the seasons are concerned, is equable,. Near the level of the sea, which is that of the great alluvial band, which runs along the northern side of the island, and of the wide plains of the interior, Fahrenheit's thermometer seldom falls below 70°, and seldom rises above 90°. According to the elevation of the land, every variety of temperature is experienced from this last to 5° below the freezing point. Snow never falls, even on the highest peaks; but on these at the height of winter, in July and August, ice a few lines thick is formed, and hoar frost is seen every morning, called by the natives, poison-dew (âmbun-upas), from its pernicious effect on vegetation. In the inhabited mountain valleys, at the height of 4000 feet, the thermometer is usually about 20° below what it is at the level of the sea. Here is experienced a climate agreeable and congenial to the European constitution; and here, the corne, fruits, flowers, and esculent vegetables of temperate regions, have long been acclimated. In point of salubrity, the climate of the high lands of Java is unexceptionable, and that of the low, containing the mass of the population, is generally equal to that of any other tropical country. In a few spots of the alluvial band of the northern coast, such as Batavia and Cheribon, deleterious malaria have occasionally prevailed, arising from the neglect of canals and water-courses, or from these being obstructed by volcanic débris; but these are exceptions, as are also a few forest tracts of the interior of the island. The extensive cultivation of rice by irrigation might have been expected to generate malaria, but such is not the case, nor has it ever been alleged to have done so in the country itself.

The elephant is not found in Java, nor does there exist any evidence of its ever having been indigenous, and this is the more remarkable as it is abundant in Sumatra. The animal, however, was known to the Javanese for ages, and was probably imported occasionally for the use of its princes. Java has one rhinoceros peculiar to itself, and differing even from those of Sumatra. It is an animal easily tamed, and when so, gentle in its habits. Besides the domesticated hog, Java has two wild species, the *Sus verrucosus* and *Sus vittatus*. Both are very numerous, and their depredations are a serious impediment to agriculture.

A wild ox is found in the forests of Java, the same as that found in the peninsula and Borneo, but which is wanting in Sumatra. It is the *Bos sondaicus* of naturalists. The Dutch naturalists inform us that all attempts to tame it have been vain, as in the case of the buffalo of the American prairies. According to the Javanese, however, it will pair with the domesticated cattle, producing a fertile offspring, to which they attribute the largest breed of their oxen. The buffalo, *Bos bubalus*, is found wild in many of the forests of Java, but considered by naturalists to be derived from individuals in the domestic state that had escaped from servitude. The horse nowhere exists in Java in the wild state, but the numbers of this animal and of horned cattle in the domestic state throughout the island are very large, the Dutch returns reckoning the first at 320,000, and the last at about 2,000,000.

Fish are plentiful along the whole northern coast of Java, and a few species are of excellent quality, but, upon the whole, the abundance and the quality are not equal to those of the shores of the Straits of Malacca. The fresh water fish are all of very inferior quality and no migratory species frequent the rivers for spawning as they do on the rivers of the eastern side of Sumatra. Shell-fish are very abundant on the northern coast, especially oysters of excellent quality, and prawns, the last being much used by the people in the shape of the condiment called by the Javanese *trasi*. The fisheries of the exposed southern coast of the island are unimportant.

Java, whether the inhabitants be of the Javanese or Sunda nation, is peopled by the same race, the Malayan. This is characterized by a short and squat person, the stature being about two inches less than that of the European, the Chinese, the Hindoo, the Persian, or Arabian. The face is round, the mouth wide, the cheek-bones high, the nose short, small, never prominent as with the European, and never flat as with the African negro. The eyes are always black, small, and deep-seated. The complexion is brown, with a shade of yellow, not so dark as with the majority of Hindoos, and never black as with some of them. Fairness is, indeed, in estimation with the Javanese and others of the same race. The hair of the head is abundant, always black, lank, and harsh, or at

least never soft or silky. The hair on other parts of the body is either scanty or altogether wanting. The beard consists only of a few short straggling hairs, and there is none at all on the breast or limbs. The Javanese, personally, are not an agile people, and make very indifferent runners or wrestlers. As to moral character, the Javanese of the present day may be described as a peaceable, docile, sober, simple, and industrious people. The practice of running a muck, so frequent with the other cultivated nations of the Archipelago, is of very rare occurrence with them. Java was populous, and to a considerable degree civilized for many ages before it was known to Europeans. De Barros describes the Javanese, at the arrival of the Portuguese, as what they still are, "the most civilized people of these parts" (*gentes de mais policia*). They were then found carrying on trade from Sumatra to the Molucas; they furnished breadcorn and manufactures to the less advanced nations in return for their rude productions, and they had effected conquests or settlements in Malacca, Palembang in Sumatra, and in the two fertile islands of Bali and Lomboc. In fact, it is certain that the Javanese were, at this time, a far more civilized, probably even a more numerous people than either the Mexicans or Peruvians, who became known to Europe nearly at the same time. The essential part of Javanese civilization seems to be of native origin and to have sprung up in the island itself, although it subsequently received considerable accessions by intercourse with Hindoostan.

With the exception of the people of Bali and Lomboc, the Javanese are the only nation of the Archipelago that can be said to be almost exclusively agricultural. With the exception of the fishermen of the northern coast, and a small proportion of artisans, the computed ten millions of the population of the island is directly or indirectly engaged in agriculture, and have made a respectable progress in it. To regulate the processes of agriculture, the Javanese have a rural calendar still in use. This consists of a year of 360 days, beginning with the winter solstice of the southern hemisphere in the end of June, and divided into twelve seasons of unequal length, varying from 23 to 41 days each. It details the times for clearing and preparing the land, for sowing, for transplanting, and for reaping the different crops. The native terms by which the seasons are named, are, for the most part, the ordinal numbers of the vernacular language, while the adaptation of the seasons to the latitude of Java sufficiently show that this calendar is a Javanese invention, and not borrowed from strangers. Irrigation, in so far as the rice crop is concerned, multiplies the productive powers of the soil from five to tenfold, according to the abundance of water, and the facility of using it, and has been carried to such an extent in Java that the majority of the arable land of the island consists of rice fields. The perennial streams and rivers, as they descend from the mountains, are, by means of embankments and trenches, diverted into small fields surrounded by low dikes, which can be flooded or drained at pleasure. The process of forming such lands is expensive and laborious, but when once formed, they are easily preserved. When the water for irrigated lands is sufficiently abundant and continuous, two crops of rice are raised within the year, and in some cases even three within fifteen months, the sun being hot enough to ripen rice in every season. The husbandman may follow his convenience as to the time of sowing, and in contiguous fields may be seen at once sowing and reaping rice, with every intermediate stage of the growth of the plant. When the water is not sufficiently copious for two crops, the rice is sown in the wet or hot season; and in the dry, or cold, crops considered of secondary value are produced, such as pulses, oil-giving plants, and cotton. No manure is ever applied to irrigated lands, nor are fallows practiced.

Dry or upland arable is of small value compared to irrigated land. On the best dry lands rice is occasionally grown, but more generally these lands are used for such crops as pulses, oil-giving plants, cotton, sugar-cane, and tobacco, and on the mountain-slopes, at an elevation of 2000 and 3000 feet, for coffee. In the most fertile parts of Java, which, from the neighborhood of the high mountains, are usually also the most picturesque, the scenery is at once agreeable and magnificent, and certainly for grandeur and beauty excels all that may be seen, even in Italy, that country which in summer bears the nearest resemblance to Java. In such situations we have mountains 10,000 feet high, cultivated to half their height, the valleys below having all the appearance of a well-watered garden.

When Java first became known to Europeans, its principal agricultural products were rice, pulses, sesame, ground-pea, and other oil-giving plants, indigo and cotton, with palms and indigenous fruits. European intercourse has added to these, maize, tobacco, and coffee. The quantity of its great staple, rice, which it produces, can only be estimated. With the exception of a small quantity of maize, rice is the only bread-corn of the Javanese; and, therefore, if we take the consumption per head at a quarter, or 448 lbs., this, on a computed population of 10,000,000, will make the total annual produce the same number of quarters. The export is, at present, too inconsiderable materially to affect this computation, for in 1848 it amounted to no more than 217,000 quarters. From the first appearance of Europeans, and no doubt for many ages before, Java was the greatest granary of the other countries of the Archipelago. Recently the extensive culture by corvée labor of such products as sugar, coffee, and indigo, under an idle and pernicious hypothesis that some peculiar commercial advantage to the State belonged to their culture, has greatly interfered with the production of corn. The export of it has consequently diminished, and the price materially risen; the consequence of which has been, that countries immemorially supplied by Java, now draw their corn from other places, such as Bali, Lomboc, Siam, and Arracan.

Mechanic Arts.—The state of the mechanic arts among the Javanese is far below that of their agriculture, but still in advance of that of the other nations of the Archipelago; and with the exception of textile fabrics, not below that of the Hindoos. About thirty different crafts may be enumerated as practiced among them, the most important of which are the blacksmith or cutler, the carpenter, the kris-sheath maker, the coppersmith, the goldsmith, and the potter. Both bricks and tiles are, at present, largely made; and excellent bricks are found in the remains of many ancient temples, proving that the art of manufacturing them has been known for many ages. Coarse unglazed pottery, similar to that of Hindoostan, is also made; and the names of the different sorts all belong to the vernacular language. Beyond the manufacture of this coarse article, the Javanese have not advanced —all their better pottery having been for ages received from China. Their skill in carpentry is displayed in house and boat building, in the fabrication of agricultural implements, and of the hilts, shafts, and scabbards of warlike weapons. The ordinary dwellings of the peasantry consist of a rough frame of timber, thatched on the coast with the leaves of the nipa palm, and in the interior with grass; having walls and partitions of split, flattened, and plaited bamboo work. They are always built on the ground. The dwellings of the upper classes differ, chiefly, in their greater size, with the exception of the palaces of the princes and higher nobility. Boat-building is an art extensively practiced all along the northern coast of Java. Their boats vary in form and size from mere fishing canoes to vessels of fifty tons. The building

of ships is, at present, carried on under the direction of Europeans, the workmen, however, being all Javanese. When Europeans became first acquainted with the Javanese, they were possessed of vessels of large size, well entitled to the name of ships. The agricultural implements of the Javanese are, like those of nearly every other Asiatic people, simple and rude.

The Javanese of the present day have no architecture that deserves the name, and apart from the temples of their ancient worship, no relics remain of any kind of domestic architecture, of bridges, of reservoirs, or of embankments of rivers, such as are found in the country of the Hindoos. The remains of the remarkable edifices connected with the Hindoo religion are abundant; but it is singular that an improved architecture ceased with that religion, and that no Mohammedan structure of solid materials or beauty has been constructed since the adoption of the Mohammedan religion toward the end of the 15th century.

It is in working the metals, however, that the Javanese have most excelled, and as they acquired this comparative excellence without possessing any of the metals themselves, but having all of them imported, the fact may be considered as evidence of comparatively advanced civilization. According to the Javanese, the first rank among artisans is to be ascribed to the blacksmith, or at least to the cutler. The most esteemed product of his skill is the dagger, the well known kris. Every man, and boy of 14, wears at least one kris as part of his ordinary dress, and men of rank two, and sometimes four. Even ladies of high rank occasionally wear one. Swords are used only in native warfare, and are much less esteemed than the kris, the national weapon. The Javanese spear, a plain pike with an iron head, is a formidable weapon, from its long shaft of from 12 to 14 feet. Some of the Javanese krises, from their antiquity, are highly appreciated, and when sold bring enormous prices. The Javanese had also, before the arrival of the Portuguese, a knowledge of gunpowder and artillery. De Barros, in describing an expedition which invaded Malacca in 1513, says, "that it was furnished with much artillery, made in Java, for," adds he, "the Javanese are skilled in founding or casting, and in all work in iron, besides what they have from India."

The Javanese, although they manufacture gold and silver ornaments of considerable beauty, execute nothing equal to the filigree work of Sumatra. In works in brass, their chief excellence consists in the fabrication of musical instruments, a full band of which is known throughout the Archipelago by the Javanese name of *gamilan*. The instruments consist chiefly of bars, constructed after the manner of the staccata, or of the gong, a word which has found its way into our dictionaries and is genuine Javanese. Some of these gongs have been made three feet in diameter. Musical instruments of this description are still manufactured in Java, and form an article of exportation, as, indeed, they are said to have done on the first arrival of the Portuguese.

The only textile material of native produce is cotton, rather a coarse article, and the only kind of cloth made from it is a stout durable calico, the muslins and other fine textures of continental India being unknown as manufactures. The processes of cleaning and preparing the cotton, of spinning, weaving, and dyeing, are all carried on by women, and are purely domestic operations, as is the case with all the other nations of the Archipelago. The usual mode of giving variety of colors to the web is the simplest possible, consisting in weaving the previously colored yarn in stripes, checkered or tartan patterns, so frequent with the other tribes, being against the taste of the Javanese. Another mode peculiar to this people consists in covering with melted wax the part of the cloth not intended to be dyed before putting it in the vat, the process necessarily requiring repetition in proportion to the number of colors intended to be given. The only material, besides cotton, from which cloth is made by the Javanese is silk, and as the art of rearing the silk-worm has never been successfully introduced into Java, the raw material has always been imported. At present it is imported from China, an inferior silk, from which a coarse cloth is wrought with the same implements as that of cotton. Paper is a manufacture peculiar to the Javanese. It is of the nature of the papyrus of the ancients, and not of the beautiful and ingenious fabric which the nations of Europe acquired from the Arabs of Spain, and so long known to the Chinese.

Two languages are spoken in Java, of the same general structure, belonging to the same class of tongues, ad having many words in common, yet essentially differing from each other. These are the Javanese and Sunda. The Javanese has been immemorially a written language, and its alphabet has extended to the Sunda language. Inscriptions on stone and brass carry us back in its history to the 12th century. The written character is of two descriptions, that found in ancient inscriptions, and that at present current. They seem, however, to be essentially the same, and not to differ more than black letter from modern manuscript.

History.—Java was unknown even by name to the civilized nations of ancient Europe, and even to those of the middle ages. It is first named by Marco Polo, who, in his junk voyage from China to the Persian Gulf, passed through the northern part of the Archipelago about the close of the 13th century. He gives the name as Ciaua or Java, but his information being mere hearsay, is in other respects erroneous. Thus, mistaking probably the products of its con... ce for its indigenous productions, he enumerates among the latter cloves and nutmegs, and gold in quantity "exceeding all calculation and belief," although it produces none at all. No sooner had the Portuguese reached India by the Cape of Good Hope than the name became familiar enough to Europeans. L. Barthema visited the island and remained fourteen days in it, but his account is obviously false or worthless, for he describes parents as selling their children to be eaten by the purchasers, and himself as quitting the island in haste for fear of being made a meal of. Edoardo Barbosa, although he had not visited it, describes its productions, its trade, its manufactures of arms, and the persons, dress, and manners of its inhabitants, with much accuracy. Pigafetta, although his information respecting it was derived, as he tells us, himself, from the old pilot who accompanied him from the Moluccas, is even more correct than Barbosa. How very little, however, was really known of Java by the early Portuguese of India, is to be seen from what De Barros, master of all the Indian archives, says of it in his Third Decade, published in 1663, no less than 52 years after the conquest of Malacca, and several years after his countrymen had visited China, discovered Java, and traded with both. He makes it consist of two islands, Java and Sunda; and his work contains a rude map, in which a great river, or rather a strait of the sea, is represented as dividing them. This he calls the River Chiamo, which may possibly be the Chitando of the Sundas, a considerable stream at the eastern boundary of their country, and which, in their language, signifies, "boundary water or river."

It was in the reign of the second prince of this dynasty, that the Dutch made their first appearance in Java, under Houtman, in 1595. In 1610 they obtained permission from the Sunda prince of Jacatra, to build a fort near the spot on which now stands the city of Batavia. In 1619 this fort was besieged by the joint forces of the princes of Jacatra and Bantam, aided and abetted by the English. It was relieved by a Dutch fleet under admiral Koen, and the assailants defeated

and driven off. It was after this event that the name of Batavia first given to the fortress was bestowed on the town. In 1628 Batavia was besieged by a numerous army sent against it by the reigning prince of Mataram, with the hope of expelling the Dutch from the island; but by the skill and courage of the European garrison, the rude and disorderly host was baffled and routed. From this time the history of Java is properly that of its European conquerors. No considerable territorial acquisition, however, was made until 1677, when the Dutch obtained a cession of the principality of Jacatra. From that time up to the year 1830, every war carried on by them with the native princes, whether as principals or auxiliaries, invariably ended in a cession of territory to the former; so that, at present, hardly one fourteenth part of the island is in possession of native rulers, and even that is entirely tributary and dependent. From the year 1674 to 1830, the Dutch, as principals or auxiliaries, have been engaged in no fewer than four great wars, all of long duration; one of which, begun in 1674, lasted for 34 years; one in 1718, lasted for 5 years; one in 1740, for 15 years; and one in 1825, for 5 years; so that, of one third part, at least, of a period of 156 years, civil war raged in the island. The Dutch have divided their possessions in Java into 20 provinces or residences, each of which is administered by a resident or prefect. Six of these belong to the country of the Sundas, and 14 to that of the Javanese. The two remaining native States, although administered by their own princes, are virtually Dutch provinces, and placed under the control of an officer, with the same title as those of the provinces under direct Dutch rule.

Population.—Attempts have been made at various times to estimate the total population of Java. The first of these was by the historian Valentyn, who estimates the population in his time (1726) at 3,199,750; and including Madura, 3,591,500. This estimate was made shortly after a civil war of five years' duration. In 1755, immediately after the finest parts of the island had been the theatre of a civil war of 15 years, an estimate was made which gave Java only 1,941,911, or including Madura, 2,001,911. This would seem to show that in less than 30 years a decrease had taken place exceeding a million and a quarter. At the close of the last century, estimates of the population were made, which raised the joint population of Java and Madura to 3,559,611. This was after a continued peace of 45 years; and shows, compared to the last estimate, an increase exceeding a million and a half. In 1808 another estimate was made, and by this, the number was made 3,730,000. In 1815 a census was attempted during the temporary occupation of the English, which raised the population of Java to 4,390,661, or including Madura, to 4,615,270. In 1826 a census was taken which gave the population at 5,403,786. 10 years later, another was taken, and this raised the number to 7,861,551; and consequently gave a decennial increase at the rate of about 44 per cent. The census of 1845 made the joint population of Java and Madura 9,530,781, or of Java alone, 9,235,033. The last census is that of 1852, and this made the joint population of Java and Madura 9,943,075. The population was estimated as being, on 31st December, 1854, 10,290,000.

Revenue.—The revenue of the European government of Java is that of the whole island, including Madura; excepting as to some taxes on consumption, the territories are subject to the two remaining native princes, embracing an area of 2229 square miles, and a reputed population of 850,000. It is derived from multifarious sources, and may be briefly described, taking the figures from the public accounts of 1843, as given by Mr. Temminck. These may be sufficient for a general view, as no material change has since been made in the fiscal system.

During the five years' temporary occupation of Java by the British government, from 1811 to 1816, nearly the whole ancient system of monopolies, forced deliveries, and corvée labor was overthrown, and free culture, open trade, and free labor substituted for them. The merit of this great revolution in the administration of the island belongs to the late Sir Stamford Raffles, the British lieutenant-governor of Java, under the supreme government of India; and he carried his bold and valuable innovations into effect with a courage, industry, and perseverance entitled to the greatest praise. The financial system which he adopted, however, was not so happy, in so far as the land-tax was concerned, for it proceeded on the principle of the States entering directly into an arrangement with each individual occupant of a few acres, in the case of Java probably not fewer than half a million. Under this system, the tax was paid either in money or in kind, at the option of the occupant; and being generally paid in the latter, it followed that the government was converted at once into warehouse-keepers, and corn-merchants. As in other territories on the continent of India, the new system was found mischievous and impracticable. The land was over-assessed, and the hypothetical land-tax could not be realized.

After two years' trial, the Dutch commissioners who received charge of the island, judiciously abandoned the Ryotwarrie system of 1814, and arranged with the heads of the village corporations for the land-tax, leaving its distribution among the occupants to these corporations themselves. This natural and simple system, the only one suited to such a state of society as that of Java, after being in operation for 14 years, was partially relinquished in 1832, and the old system of forced deliveries of certain agricultural products, and of corvée labor in raising them, was, to a large extent, restored. The pretext for this was the hope of greater gain, and the assumption that, by the immemorial usage of the country, the State was entitled to take, at its option, its tax in money, in kind, or in corvée labor. Under this system, a considerable portion of the tax on rent is remitted, and some of the best land with the labor of its peasantry has been appropriated to the cultivation of products deemed peculiarly fitted for the markets of Europe, such as coffee, sugar, and indigo, with tea, cinnamon, and cochineal, and the last three expressly introduced into the island for this special purpose. By this impolitic measure, the Dutch government has become, once more, a cultivator, a trader, and necessarily, from its position, to a certain extent, a monopolist trader. The evil effects of such a system on that wealth, which is the only source of public revenue, must be obvious to every enlightened statesman.

The actual amount of the tax on rent or land-tax remaining to the Dutch government, after deducting exemptions, was, in 1843, allowing 20d. to the florin, £835,551. To this, however, is to be added a sum of £26,215 for the quit-rents of land sold at various times in fee-simple to Europeans, with other items of the nature of a land-tax, as the rents of certain fish-ponds, or stews, amounting to £27,302, making the total land-tax realized £889,128. No account is rendered of remissions on account of land appropriated to the culture of produce for government, but a few facts are stated which will give a tolerable notion of the extent to which this very barbarous system is carried. The number of Javanese families from which corvée labor was exacted for the culture of coffee, in 1841, was 453,289, and for that of sugar, indigo, and cinnamon, 450,955, making the total number, exclusive of those employed in the cultivation of tea and cochineal, which is not stated, 704,244 families, equivalent to a population exceeding three millions and a half, or 10 parts in 100 of the entire population of the European portion of the island. The quantity of land set aside for the cultivation of sugar, indigo, and cinnamon, amounted in 1841 to 317,635 acres, and this consisted of the richest irrigated lands of the island, usually yielding two

yearly harvests, and equal in value to 10 times that of the average of all dry lands. The quantity of land, of an inferior description, appropriated to the culture of coffee and tea, all peculiarly fitted for the growth of maize, is not stated, but some notion of it may be formed from the number of families employed, as above given, and from the number of trees, which amounted in 1841 to 336,922,460.

The taxes on consumption are multifarious, consisting of monopolies, excises, customs, transit and market duties, taxes on fisheries, and on the slaughter of cattle. The chief monopolies are those of the vend of opium and salt. In 1843 the first of these amounted to £796,630, and the last to £384,159. The monopoly of opium is at once productive and unexceptionable in principle. That on salt is, of course, a poll-tax, which amounts to about 4s. on each family, and is only less onerous than our own in Bengal, from the salt of Java, the produce, chiefly by solar evaporation, of its northern coast, being better, cheaper, and more economically distributed to the consumers than that of Bengal. Another monopoly is that exercised in certain caves producing the esculent swallow-nests, and this, as the birds are the chief manufacturers, and strangers the chief consumers, is an unexceptionable source of revenue. In 1843 its amount was £24,271. The sale of timber from the teak forests, which are the exclusive property of the government, constitutes another monopoly, of which the produce in the same year was £42,141. These different items make the total revenues arising from monopolies £1,247,201. In the public accounts the monopoly of the tin of Banca is set down as Javanese revenue, and stated at the sum of £250,000. As the revenue of Java alone supplies the funds with which the mining and smelting is carried on, this branch is therefore correctly enough included in the financial resources of that island.

The export and import duties of Java in 1843, including port charges, amounted to £460,840; and the market, transit, and ferry dues, came to £262,672. The tax on the slaughter of cattle was £39,341, and that on fish and fisheries £27,911. It is not necessary to add that the two last, as taxes on necessaries of life, are injurious imposts. A strange want of attention to an obvious principle is evinced by the European government of Java, connected with the slaughter of cattle. The slaughter of the buffalo is expressly prohibited, with the avowed object of increasing the number of this animal for the benefit of agriculture. The certain effect of the prohibition, however, must of course be the very reverse of what is intended, for the rearing of these animals, is surely discouraged, not promoted, by depriving the owners of a market for the old, imperfect, or superfluous ones.

The expenses of the government of Java in 1843, were given at the sum of £6,291,606. Thus, then, the expenditure exceeded the amount of the taxes by the enormous sum of £3,082,249, to be made good by the contingency of profits on produce remitted to Europe. The civil charges came to £827,825, the military to £720,319, the naval to £138,846, and the extraordinary expenditure, on account of Sumatra, to £220,076. The expense of dispatching government produce, exclusive of freight and charges, amounted to £75,212, while the interest of the public debt, nearly all incurred in 27 years' time, came to £1,018,463, or about half of that of British India, with 120,000,000 of inhabitants, and which it has taken a century to incur.

Trade.—The internal trade of Java embraces that of all the Netherland possessions in India, as it is the entrepôt for the whole of it. It includes also a large remittance for the public revenue in the shape of produce, as coffee, sugar, indigo, tin, and spices. Java and the other Dutch possessions were delivered over by the English in 1816, with a considerably improved commerce, and certainly, at all events, with a clear field for the establishment of a liberal system. The opportunity has assuredly not been taken advantage of. Double duties have been imposed on all goods imported under a foreign flag, and other contrivances of the exploded mercantile system have been had recourse to, in order to give trade a direction to Holland, a costly expedient, injurious to the colony, and of no substantial value to the mother country. In 1824, and within eight years after the restoration, a new East India Company was set up as one of these contrivances, the Handel Maatschapij or trading association. This association is merchant, shipowner, agent, for the sale of the government produce in Europe, carrier of this produce, and farmer of some branches of the public revenue of Java. Originally, there was guaranteed to it a fixed and certain interest on its capital stock, and even the sovereign of the Netherlands was a sleeping partner of it. The false hypothesis on which this retrograde policy was adopted, was a supposed necessity for encountering what was called the overgrown capitals and enterprise of England and America, as if the free capital and enterprise of Holland, which, under greater difficulties had achieved much greater things, was unequal to carry on the trade of its own colony without pillowing and bolstering.

The values of the exports from Java, and their destination, in 1846, 1836, and 1826, were as follows:

Countries.	1846.	1836.	1826.
	Florins.	Florins.	Florins.
Netherlands	39,603,848	27,292,588	6,518,525
Indian Archipelago	9,326,548	6,708,153	4,357,783
Great Britain	2,365,987	189,592	349,098
China, Macao, etc.	1,886,708	3,318,706	1,976,192
France	1,326,149	1,944,145	42,232
America	1,199,644	1,002,529	211,281
Hamburg	615,041	108,142	63,334
Sweden	845,949	258,959	57,172
Other places	711,868	369,315	959,785

The previous statements show that the produce and trade of Java have increased during the last 12 years with a rapidity unknown in any other colony, Cuba, perhaps, excepted; and if the resources and capabilities of this noble island be fully developed, it is quite impossible to say how much further her trade may be extended and her resources developed.

Principal Port.—Batavia, a city of the island of Java, the capital of the Dutch possessions in the East Indies, and the principal trading port of the Oriental Islands, lat. 6° 8′ south, long. 106° 50′ east, on the north-west coast of the island, at the mouth of the Jacatra River, on an extensive bay. The harbor lies between the main land and several small uninhabited islands, which, during the north-western monsoon, afford sufficient shelter and good anchorage. Population in 1842, 53,860, including about 3000 Europeans; the rest are Chinese, Javanese, Malays, etc. It is built on marshy ground, and intersected by canals in the Dutch style. It is defended by a citadel and several batteries, and has a considerable garrison and marine arsenal. Other authorities represent the population of Batavia, in 1832, at 118,000; viz., Europeans, 3000; Chinese, 25,000; Aborigines, 80,000; Moors, 1000; Arabs, 9000. Batavia has a bank, with branches at Samarang and Surabaya. This place was long considered very unhealthy, but has been much improved by drainage. Mean temperature of year, 78°.

The Jacatra is navigable by vessels of 40 tons two miles inland; ships of from 300 to 400 tons anchor in the bay, 1½ miles from shore. Batavia is the great commercial emporium of the Asiatic Archipelago, and absorbs by far the greatest proportion of the trade of Java and Madura; the annual exports of which islands amount to 60,300,000 florins ($25,123,000), and the imports to 30,000,000 florins ($12,000,000).—E. B.

See *Quar. Rev.*, vi., 487, xvii., 72; Hunt's *Mer. Mag.*, ii., 328, xxxiii., 369; *Ed. Rev.*, xxxi., 395.

In 1853 the foreign commerce of Java and Madura amounted to $17,712,241 for general imports, and to $28,677,183 for exports. The imports and ex-

ports during this year exceeded those of the preceding year—the former $1,596,164, or 9.9 per cent.; the latter $6,294,489, or 21.83 per cent.; thus exhibiting the most practical illustration of the increasing trade of these rich and fertile islands. The share assigned to the Netherlands in the general trade of 1853 represented, for imports, 42.23 per cent of the whole; and for exports, 76.09 per cent. The trade with the United States with these islands, during the same year, was 1.89 of the whole.

COMMERCE OF THE UNITED STATES WITH THE DUTCH EAST INDIES, FROM OCTOBER 1, 1820, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Whereof there was in Dollion and Specie.		Tonnage Cleared.	
	Domestic.	Foreign.	Total.	Total.	Exported.	Imported.	American.	Foreign.
Sept. 30, 1821	$183,610	$1,581,803	$1,714,813	$134,866	$1,257,995	....	5,610	....
1822	124,441	999,571	1,121,012	353,144	877,641	$2,300	5,256	....
1823	151,120	1,750,981	1,902,101	419,680	998,940	240	4,990	....
1824	61,669	638,616	700,285	147,458	419,818	....	3,814	....
1825	168,022	1,364,884	1,527,906	188,402	669,553	24,808	7,558	1,284
1826	57,506	374,957	432,463	518,556	273,069	....	3,282	....
1827	38,850	127,749	166,608	286,447	96,222	2,067	1,143	....
1828	83,710	313,277	396,987	173,462	265,480	2,000	3,028	....
1829	62,074	176,818	238,892	121,848	149,550	8,898	1,985	....
1830	63,278	107,298	170,506	181,848	52,600	10,000	1,501	220
Total	$935,084	$7,485,449	$8,871,183	$2,409,714	$5,060,868	$44,808	37,695	1,454
Sept. 30, 1831	$128,884	$631,442	$760,326	$310,395	$480,975	$4,527	6,498	....
1832	24,516	503,504	528,020	668,974	426,598	....	7,456	680
1833	93,852	680,989	774,841	750,290	477,983	10,281	7,477	1,488
1834	115,011	466,138	581,149	582,159	386,875	1,615	8,523	316
1835	230,608	1,213,682	1,444,290	800,338	1,106,493	925	20,476	....
1836	172,691	906,831	1,079,022	1,477,906	706,746	224	16,958	447
1837	208,250	845,224	548,474	1,019,769	235,928	....	5,441	7,340
1838	166,214	329,747	495,961	576,896	308,184	8,742	11,430	....
1839	86,619	396,934	483,553	692,196	378,626	626	9,234	663
1840	182,751	202,552	385,303	817,897	176,724	21,619	1,828	485
Total	$1,414,396	$5,616,543	$7,030,939	$7,705,870	$4,685,082	$48,559	95,141	11,449
Sept. 30, 1841	$178,876	$224,150	$403,026	$266,425	$208,500	$8,000	5,824	....
1842	85,578	193,580	279,158	741,048	178,271	....	794	....
9 mos. 1843	90,239	103,742	193,981	121,524	89,577	....	2,890	....
June 30, 1844	98,813	261,070	359,383	995,984	244,325	11,950	4,656	....
1845	129,151	72,007	201,158	538,608	68,516	121	4,592	....
1846	40,700	42,842	83,542	480,353	38,440	....	3,679	....
1847	91,902	108,238	200,140	894,982	106,120	....	5,870	....
1848	143,905	107,954	251,859	249,246	92,634	....	4,575	....
1849	280,823	54,118	334,941	354,528	32,000	....	6,688	1,433
1850	180,533	262,952	443,485	444,404	219,400	1,800	4,070	3,320
Total	$1,310,020	$1,430,653	$2,740,678	$5,027,202	$1,272,483	$21,871	42,638	4,753
June 30, 1851	$204,230	$43,140	$247,370	$410,148	$31,500	....	3,016	5,651
1852	142,997	181,185	324,182	1,015,994	154,490	....	3,689	14,022
1853	202,822	180,884	383,706	884,583	149,800	....	3,526	6,605
1854	109,203	75,576	184,776	1,041,609	68,500	2,386	5,638	4,313
1855	287,987	53,836	341,823	1,032,270	37,170	....	8,406	8,453
1856	120,444	89,712	210,156	1,399,289	71,000	17,000	10,377	2,141

Tariff.—The tariff regulations of Java are divided into six different classes, viz.: Class 1 relates to duties on wines and spirits, etc.; class 2 relates to duties on cotton and woolen goods; class 3 relates to sundry imports from Europe, America, and the Cape of Good Hope; class 4 prescribes the duties on the products of the Indian Archipelago; class 5 relates to merchandise being the produce of countries east of the Cape of Good Hope, not included in any of the foregoing classes; class 6 prescribes the export duties levied on the products of Java. All these classes recognize a discrimination in favor of the Dutch flag; but, under the treaty of August 26, 1852, between the United States and Holland, these discriminations do not apply to the American flag when importing or exporting *from or to the same places* as the national flag. The article, by virtue of which the vessels of the United States are equalized with those of Holland, reads thus: Art. II. "The above reciprocal equality in relation to the flags of the two countries is understood to extend also to the ports of the colonies and dominions of the Netherlands beyond the seas, in which goods and merchandise, whatever their origin may be, imported or exported from and to any other country in vessels of the United States, shall pay no higher or other duties than shall be levied on the like goods and merchandise imported or exported from and to the same places in vessels of the Netherlands. The bounties, drawbacks, or other privileges of similar denomination, which may be there granted on goods and merchandise imported or exported in vessels of the Netherlands, shall also, and in like manner, be granted on goods and merchandise imported or exported in vessels of the United States."

TABLE EXHIBITING THE NAVIGATION OF THE ISLANDS OF JAVA AND MADURA IN THE YEARS SPECIFIED.

Nationality.	Vessels entered.		Vessels cleared.	
	1852.	1853.	1852.	1853.
Dutch	1,858	1,886	1,819	2,068
English	56	77	48	85
French	19	14	16	13
Belgian	....	3	....	3
Hamburg	10	17	10	15
Bremen	10	9	10	12
Prussian	1	1	3	1
Swedish	12	13	17	12
Russian	1	1	1	1
Danish	4	5	5	2
American	7	28	10	23
Portuguese	2	3	1	3
Chinese	1	1	2	1
Siam	19	2	12	19
Other Asiatic countries	51	100	58	52
Total	2,046	2,170	2,012	2,280

From the preceding table it appears that in 1853 the United States just trebled in one year the number of vessels bearing their flag in that remote corner of the globe. This is to be ascribed to the liberal commercial treaty of 1852, equalizing the United States' and the Dutch flags in the colonial trade. The subjoined tariff of duties of the island of Java has been prepared from a copy printed at Batavia in 1844, with modifications and changes down to June, 1855, transmitted from the United States' consulate at that port:

Port Charges at Java.—The harbor dues are one half a rupee per ton; but a ship having once paid this charge can touch either at Samarang, Soerabaya, or go to a foreign port and return, if within six months from date of payment, without further expense. Ships can

anchor and remain in the roads, and can communicate with the shore, receive provisions, water, etc., without charge of anchorage fees. The roads are south of a line drawn from the Rhoneland to the Neptune shoal. All letters must be immediately delivered at the custom-house, except consignees' letters, and such as may be intended for the captain or supercargo. There are no pilots for Batavia or Samarang. For Soerayaba pilots can be had at Point Pauka coming from the west, and at Passaroeng coming from the east. Filtered water is sent alongside in government tanks, with a force-pump and hose, at a charge of 57 cents per hogshead, and in the outer roads at 66 cents. When a blue flag is flying at the main-mast head of the guard-ship, or at the signal staff of the lookout-house at the head of the canal, it is unsafe to attempt entering the river.

Tariff of Duties for the Island of Java.—By Dutch vessels are meant vessels belonging to Holland, and no others. Under the Dutch flag are comprehended the flags of Asiatic princes which are placed on the same footing as the Dutch flag. The pound in this tariff is the old Amsterdam pound. To the duties in the tariff, 5 per cent. is added for breakwater.

DUTIES ON COTTON AND WOOLEN GOODS IMPORTED INTO JAVA.

Articles.	Rate of duty.	Remarks.
Dutch	25 per cent.	
In Dutch vessels, with certificates of Dutch origin	12½ "	
European and American, if from countries between which and Holland friendly relations subsist	25 "	On appraised value, according to tariff of prices, corrected every three months.
From countries between which and Holland friendly relations do not subsist	50 "	
From Dutch India and favored States in the Indian Archipelago	25 per cent.	On appraised value, according to the market price of the day.
From do. in Dutch Indian vessels, provided they have not touched at any foreign port	12½ "	
All other countries east of the Cape of Good Hope, except Chinese goods in Chinese junks	25 "	On invoice value, with addition of 30 per ct., or appraisement according to market prices.

IMPORT DUTIES ON SUNDRY GOODS THE PRODUCTS OF EUROPE, AMERICA, AND THE CAPE OF GOOD HOPE.

Articles.	Rate of duty.	Remarks.
Beef, salted, smoked, etc.	24 per cent.	In Dutch vessels, with certificate of Dutch origin, 12 per cent.
Books, music, maps, and charts	6 "	As above, free.
Butter	24 "	
Cheese	24 "	As above, one half these duties.
Candles, wax	$0 10 per lb.	
" spermaceti	0 10 "	
Clothing, wool and cotton	25 per cent.	Direct from Holland in Dutch vessels, 12 p. ct.
" silk and linen	12 "	In Dutch vessels, with certificate, etc., 6 p. ct.
Copper and copper ware	24 "	As above, 12 per cent.
Coal	Free.	Direct from Holland, in Dutch vessels, free.
Corks	12 per cent.	In Dutch vessels, with certificate, etc., 6. p. ct.
Carriages	24 "	As above, 12 per cent.
Cards, playing	24 "	As above, 12 per cent.
Cordage	24 "	As above, 12 per cent.
Casks, new	24 "	
Cattle, as cows, sheep, etc.	Free.	
Drugs and medicines	12 per cent.	Direct from Holland, in Dutch vessels, 6 p. ct.
Flour	24 "	Dutch flour packed according to the tariff of 1828, 12 per cent.
Furniture	24 "	In Dutch vessels, with certificate, etc., 12 p. ct.
Glass, china, and earthenware	24 "	In Dutch vessels, with certificate, etc., 12 p. ct.
Gold and silver plate, lace, thread, and military ornaments	24 "	As above, 12 per cent.
Gold and silver coin	Free.	
Gold and silver bullions	"	
Hams	24 per cent.	As above, 12 per cent.
Horses and mules	Free.	
Hats	24 per cent.	As above, 12 per cent.
Iron, in bars, pigs, rods, etc.	12 "	Direct from Holland, in Dutch vessels, 6 p. ct.
Iron ware and machinery	24 "	In Dutch vessels, with certificate, etc., 12 p. ct.
Jewelry, pearls, and precious stones, set or not, if real	Free.	
Lumber	12 per cent.	Direct from Holland, in Dutch vessels, 6 p. ct.
Leather, and articles of leather	24 "	In Dutch vessels, with certificate of Dutch origin, 12 per cent.
Lead	24 "	
Linen of hemp or flax	24 "	
Musical instruments	6 "	As above, free.
Naval stores, except cordage	12 "	Direct from Holland, in Dutch vessels, 6 p. ct.
Opium, prohibited		
Provisions, other than those named in this tariff	24 "	Direct from Holland, in Dutch vessels, 12 p. ct.
Paper	24 per cent.	In Dutch vessels, with certificate, etc., 12 p. ct.
Perfumery	24 "	Direct from Holland, in Dutch vessels, 12 p. ct.
Paints, linseed oil, etc.	12 "	In Dutch vessels, with certificate, etc., 6 p. ct.
Pictures, plates, and prints	12 "	As above, 6 per cent.
Pork, salt, smoked, etc.	24 "	As above, 12 per cent.
Steel in bars, etc.	12 "	Direct from Holland, in Dutch vessels, 6 p. ct.
Steel ware	24 "	In Dutch vessels, with certificate, etc., 12 p. ct.
Stone for building	12 "	As above, 6 per cent.
Marble tiles	12 "	Direct from Holland, in Dutch vessels, 6 p. ct.
Flints, prohibited, unless especially permitted	12 "	As above, 6 per cent.
Segars, Havana	$0 80 per lb.	Direct from Holland, in Dutch vessels, $0 40.
All other kinds, European and American	0 40 "	In Dutch vessels, with certificate of origin, one half these duties.
Snuffs of all kinds	0 16 "	
Saddles and harness (same as leather).		
Soap	12 per cent.	Direct from Holland, in Dutch vessels, 6 p. ct.
Silver. (See Gold.)		
Silk and silk goods	12 "	As above, 6 per cent.
Salt, prohibited.		
Tin and tin ware	24 "	In Dutch vessels, with certificate, etc., 12 p. ct.
Tobacco leaf, manufactured	$0 06¼ per lb.	Direct from Holland, in Dutch vessels, one half of this duty.
Tar. (See Naval stores.)		
All goods not mentioned in this tariff, the products of Europe, America, and Cape of Good Hope	12 per cent.	As above, 6 per cent.

JAVA TARIFF—EXPORT DUTIES.

Articles.	Rate of duty.	Remarks.
Arrack	Free.	
Birds' nests	12 per cent.	Under Dutch flag, 6 per cent.
Camphor, Japan	$2 80 per tub.	To Holland, in Dutch vessels, $1 40.
Cotton goods, Japanese	4 per cent.	Under Dutch flag, 2 per cent.
Coffee	Per picol of 125 lbs., 12 p. ct.	To Holland, in Dutch vessels, 6 per cent, giving bond for the difference.
Copper, Japan	$2 80 per picol	Under Dutch flag, $1 40.
Copper coin, Dutch	Free.	
Gold and silver coin, by Chinese, to China	5 per cent.	In sums less than $200, for owner's use, free, provided permission be obtained.
In other cases	4 "	
Gold and silver not coined, and Japan cobangs	4 "	Under Dutch flag, one half these duties.
Horses	$16 00 each	To Holland, in Dutch vessels, one half these duties.
Hides, cow	3 20 per 100.	
" buffalo	2 40 p. picol	
Indigo	4 per lb.	
Jewels, pearls, and precious stones	Free.	
Oil, cocoanut	$1 20 per picol	
Ratans	12 "	
Rum, Java	4 80 p. legger	Under Dutch flag, one half these duties.
Rice	4 per picol	
Spices, cloves	7 60 "	To Holland, in Dutch vessels, one half these duties.
" mace	8 00 "	
" nutmegs	7 60 "	
" wild nutmegs	4 per cent.	
" pepper, black	80 cts per picol	
Sugar, Java, 1st and 2d sorts	6 per cent.	As above, free.
" brown, and molasses if, in the opinion of the collector, not suitable for export to Europe or America	20 cts. per picol	Under Dutch flag, free.
Salt	Free.	
Tortoise-shell	4 per cent.	Under Dutch flag, 2 per cent.
Tobacco, Java	4 "	
Tin	$1 60 per picol	To Holland, in Dutch vessels, 80 cents.
Tripang	4 per cent.	Under Dutch flag, 2 per cent.
Wax	4 "	
Wood, sandal wood	40 ct. per picol	Under Dutch flag, one half this duty.
sapan wood	8 " "	To Holland, in Dutch vessels, one half this duty.
Goods not mentioned above, being the products of the Indian Archipelago	4 per cent	Under Dutch flag, 2 per cent.
Goods, the maximum import duty on which is 25 or 24 per cent	4 "	As above, free.
All other goods	4 "	As above, 2 per cent.

Jeddo, Jedo, or **Yedo,** the capital of Japan, and the largest city in that empire, is situate on a gulf, on the western side of the island of Nipon, in N. lat. 35° 32′, E. long. 140°. It stands on a large plain at the head of the gulf, which is here so shallow that vessels generally discharge their cargoes a league or two below the city. Jeddo is said to be 7 miles in length by 5 in breadth, and to have a circumference of 20 miles. It is not inclosed by walls, but is intersected by numerous broad canals and ditches, having on each side high embankments, on the top of which are planted rows of trees. A river of considerable size flows through the town into the harbor. The houses are small and low on account of the frequency of earthquakes. They are built of wood with thin clay walls, and are divided into rooms by paper screens. The floors are covered with mats, and the roofs with shavings of wood. Being thus entirely composed of combustible materials, fires are frequent and destructive. As the families of princes, lords, and nobility of the empire are obliged to reside continually at Jeddo, there are numerous houses of a superior class. These, however, are only one story in height, and have no towers. They are distinguished from the other houses by large court-yards, stately gates, and fine varnished steps leading up to the door. There are besides numerous temples, monasteries, and other religious buildings. The imperial palace is near the middle of the town, and is said to be more than eight miles in circumference. It consists of several palaces or castles, with large gardens and orchards. Besides being the residence of the court, Jeddo contains flourishing manufactures, and carries on an extensive commerce. The population is variously estimated from 700,000 to 1,500,000, and even more. See JAPAN.

Jeremie. This is the smallest port in the island of Hayti open to foreign commerce. The anchorage at Jeremie is so dangerous that scarcely a year passes without one or more shipwrecks, or other serious casualties, being recorded. In 1849 there entered and cleared 76 vessels, with an aggregate of 8200 tons; and in 1850 there entered and cleared 91 vessels, measuring 11,536 tons. The following summary exhibits the general trade of this port for 1850:

Countries.	Value of Imports.	Articles and quantities of exports in 1850.	
	Francs.		Pounds.
United States	1,064,000	Coffee	4,583,919
France	244,000	Cocoa	641,871
Great Britain	248,000	Campeche	6,429,059
Denmark	118,000	Guyac	54,500
		Wax	3,128

Jersey, the largest and most important of the English Channel Islands, is situate in the Bay of St. Michael, 13 miles west of the nearest coast of France, and 85 miles from the nearest point on the English coast; N. lat. (St. Helier's) 49° 11′ 3″, W. long. 2° 7′. It is 12 miles in length, from east to west, and 7 in breadth from north to south, and has an area of about 40,000 acres. The north coast of the island is rocky, bold, and precipitous, rising sometimes to the height of more than 200 feet above the sea. The Channel Islands are considered as belonging to the crown, but as forming no part of the realm, so that they are not represented in Parliament; and Acts of Parliament, as such, have no legal force as regards them, unless they are therein specially named, or unless the acts, in virtue of an order of council, are registered on the records of the islands. In their institutions, customs, and laws, the people still retain much that is Norman; and, in this respect, Jersey has retained considerably more of the old institutions and of their free spirit than the sister island of Guernsey. The people appear to have at all times enjoyed much freedom and great privileges.—E. H.

Jet, or **Pitch Coal** (Du. *Git, Zwarte barnsteen;* Fr. *Jais, Jayet;* Ger. *Gagat;* It. *Giogata, Lustrino;* Lat. *Gagus, Gagates*), of a black velvet color, occurs massive, in plates; sometimes in the shape of branches of trees, but without a regular woody texture. Internal lustre shining, resinous, soft; rather brittle; easily

frangible; specific gravity 1·3. It is used for fuel, and for making vessels and snuff-boxes. In Prussia it is called black amber, and is cut into rosaries and necklaces. It is distinguished by its brilliancy and concholdal fracture.—THOMSON'S *Chemistry*.

Jetsam. See FLOTSAM.

Jettee, the border made round the stilts under a pier, in certain old bridges, being the same with starling; consisting of a strong framing of timber filled with stones, chalk, or other materials, to preserve the foundations of the piers from injury.

Jetty-head, a name usually given in the royal dockyards to that part of a wharf which projects beyond the rest; but more particularly the front of a wharf, the side of which forms one of the cheeks of a dry or wet dock.

Jewelry. Worn by most of the early nations. So prodigious was the extravagance of the Roman ladies, that Pliny the elder says he saw Lollia Paulina wearing ornaments which were valued at $1,605,000. Jewels were worn in France by Agnes Sorel, in 1434. The manufacture was extensively encouraged in England in 1685. See GOLD.

Jib, a large triangular sail, between the fore-topmast head and the boom (thence called jib-boom), which projects beyond the bowsprit.

Jidda, or **Djidda,** a sea-port town of Arabia on the Red Sea, 64 miles west from Mecca, of which it is the port; N. lat. 21° 29′, E. long. 39° 15′. It stands on a gentle elevation, rising from the sea, while the surrounding country is a bare desert. Jidda, as respects cleanliness and regularity of plan, is superior to most eastern towns. The streets, though unpaved, are comparatively well laid out and wide. The houses are built of coralline stone, from the shores of the Red Sea, and from the perishing nature of this material, are not very durable. In the suburbs, the houses are mere huts constructed of reeds and bushwood.

Jidda has long been famous as the commercial emporium of Arabia, and indeed is solely dependent for its existence upon its trade. Situate about the middle of the east coast of the Red Sea, only about 120 miles distant from the opposite shore of Nubia, and within two days' journey of Mecca, it is peculiarly fitted for the importation of foreign goods as well as for the exportation of home produce. The harbor, however, like most of the other ports on the Red Sea, is inconvenient, and the entrance rather intricate. On account of the shallowness of the harbor, large ships are obliged to discharge their cargoes in the offing about two miles from the shore. The imports from Egypt and Abyssinia comprise corn, rice, butter, sugar, clothing, oil, tobacco, musk, and incense; from India, muslins, shawls, spices, and cocoa-nuts; while the Malay islands and the Mozambique coast send hither slaves. The imports are conveyed by ships to Suez, whence they find their way to the Mediterranean ports, or by caravans to Mecca and Medina, from which cities they are dispersed to Syria, Asia Minor, and Turkey. Dates, and the celebrated balm of Mecca, are brought from the interior for shipment. Next to grain, the most important article of trade is perhaps coffee, which is obtained in large quantities from Mocha. The number of vessels belonging to the port is estimated at about 250. The government of Jidda is in the hands of the Pasha of Egypt, and the town is garrisoned by Egyptian troops, amounting usually to about 400. The population is very fluctuating; the permanent population does not probably exceed 10,000, while, on the arrival of the merchant fleets, and during the feast of Ramadthan, there may be as many as 20,000 strangers within its walls.—E. B.

Jobber, a person who undertakes jobs, or small pieces of work. In some statutes, jobber is used to signify a person who buys and sells for others. See BROKER.

Jobbing is the business of a jobber.

Stock-jobbing denotes the practice of trafficking in the public funds, or of buying and selling stock, with a view to its rise or fall. The term is commonly applied to the practice of buying and selling stock for time, or of accounting for the differences in the rise or fall of any particular stock for a stipulated time, whether the buyer or seller be possessed of any such real stock or not.

Joint-stock Companies are, in England, a species of partnership in which a number of persons contribute funds or "stock" for the accomplishment of some trading or other profitable object. The peculiarity from which the term is derived is the contribution of stock apart from joint management. In an ordinary partnership the members bring more or less of their own personal management into the affairs of the company; and although, in peculiar circumstances, a partner may abstain from any interference, such a person, called in the trading world "a sleeping partner," is treated by the law in all respects as if he participated in the privileges and responsibilities of his working brethren. The distinctive peculiarity of the joint-stock company is, that their members throw their stock into the venture without directly participating in the management, which may be either in the hands of a selected number of the shareholders, or in that of persons who do not contribute at all to the undertaking. The subject thus presents considerations stretching far beyond the boundary of the mere laws affecting the rights and obligations of individual partners into the field of politics and history. It is at once obvious that these arrangements, by which the wealth of indefinite numbers can be concentrated in the hands of a few, are capable of creating a political influence which will have more or less the character of a ruling or governing power, according to the strength of the otherwise constituted authorities with which it may come in contact. It was by this sort of concentration of the wealth of many in the hands of a few that some of the religious societies of the middle ages became formidable rivals of the monarchies; the Society of the Knights Templars rising conspicuously above all others, and threatening to establish a sort of corporate empire, presiding over the European monarchies. Subsequently the Jesuits, in their government of Paraguay, afforded evidence of the power at the command of clever men regulating a common fund, which alarmed crowned heads no less than the usurping tenor of their doctrines. The great union of the Hanse Towns, before which the robber monarchies and aristocracies of central Europe fell, was again an instance of the power of concentrated wealth when measured against pure monarchical and aristocratic authority; and the expanding resources of the republic of Venice, and of other wealthy oligarchies, seemed to be raising a new ruling power which would gradually absorb and supersede the old dynasties, whether autocratic or aristocratic, by which nations were ruled. The expansion of trade by the discovery of America and a new passage to India, and still more perhaps the recasting of the political state of Europe by the Reformation, broke up these great concentrated masses, and distributed the power of collective wealth into smaller groups. Still the influence of joint-stock associations has ever, from time to time, arisen in formidable rivalry with other forms of political power, sometimes creating an effectual barrier to political oppression, but at others threatening the liberties and just rights of communities by a spirit of aggrandizement and rapacity. Perhaps the most curious single instance of a struggle between concentrated wealth and a ruling dynasty will be found in the history of Russia. The merchants of Novogorod increased in wealth and influence until they became a virtual republican government, gradually absorbing under their influence the surrounding territory. "Who can resist God and the great Novogorod?" became a saying of

the 15th century. The Grand Dukes of Muscovy commenced a systematic war against the royal company of merchants, and it seemed for some time a question whether Russia should be ruled by a commercial company or an autocracy. After many scenes of cruelty and rapacity, the latter prevailed. But the influence of Novogorod was not entirely extinguished until the foundation of St. Petersburg drew the northern trade of Russia into a new channel, where it came effectually under imperial control.

British history affords many memorable instances of the influence of joint-stock operations. It became the policy of the crown, from Queen Elizabeth's reign downward, to cherish commercial combinations, as a balance against the power of the aristocracy, and sometimes the body thus started with a stock of exclusive privileges acquired an influence dangerous alike to the authority of the crown and to the rights of the subject. The Russian Company, which had been licensed just before the accession of Elizabeth, acquired so much influence under her fostering care as to spread its transactions into Persia on the one hand, and embark in the whale fishery of Spitzbergen on the other. This potent body was in use to send embassadors to the Grand Duke of Muscovy. But his successors, the czars, were not inclined to encourage such fellowship, and gradually enfeebled the haughty corporation by restricting its foreign privileges, and encouraging the rival company of Holland. The celebrated Turkey or Levant Company was chartered in 1581. Just 18 years afterward was formed, under far less pompous auspices, that East India Company which has been destined to rule over a greater empire than that of Julius Cæsar or Charlemagne. See INDIA. Many African and American companies were formed in the 17th century, and created much excitement by their aggressions and rivalries. The Scots, excited by witnessing the enterprise and prosperity of England, in which the invidious navigation law of Charles II. prohibited them from participating, resolved to establish a great national joint-stock company for themselves. In 1695 they formed the "African Company," better known as the Darien project, subscribing a capital of four millions, the greater portion of which was paid up. This was held in its day to be a marvelous pecuniary effort for a portion of the empire which, a century and a half later, entered on railway projects involving in one year an outlay of sixteen millions. The company obtained from the Scottish Parliament more absolute power than even the great corporations of England; being authorized to hold a monopoly of certain trades, to occupy and govern territories, and to make peace and war. It commenced the execution of a variety of projects on a grand scale, and their disastrous result was a signal instance of that unscrupulous spirit of aggrandizement and oppression to which trading corporations are so liable. The Scottish company, probably, like many of the other bodies of adventurers, committed some questionable acts, but none sufficient to justify the rancorous hatred of the English rival companies, which, while the Scots were prevented, as an alien nation, from having their share in the English companies, denounced the corporation set up by the nation, which they thus counted separate and independent, for an infringement of a monopoly purely English. King William was too dependent on the moneyed power in England to hold an even balance of justice between opponents so unequally matched, and the Scottish colony was ruined.

Among the English companies of that age, several were successively established for trading with Africa and America. Their chief object and source of gain was one that would be fortunately held in detestation by the greater portion of British speculators at the present day—the supply of captured negroes to the plantations, foreign as well as British. The culmination of these projects in the great South Sea scheme of 1719 is a well-known chapter in English history. The names of the many preposterous satellite schemes by which it was surrounded have often been cited as instances of folly calculated to tax the credulity of soberer periods, as projects in which the inhabitants of the wisest of nations actually embarked. If it were any consolation to find their neighbors guilty of greater follies than their own, the British of that age might find such consolation in a view of the French Mississippi scheme. The corporate power thus created not only professed to absorb the trade, finance, and banking of France, but projected the creation of a transatlantic empire, which, from its centre in Louisiana, should gradually absorb the American continent.

Since the passing of the Patents Act in the reign of James I., the crown alone was precluded from granting powers of trading monopoly in royal charters, and the companies which, since that period, have obtained any monopolies in England beyond those created by the simple instance of their large capital, have held their powers from Parliament. The crown continued to grant monopolies in foreign trade till 1693, when, in the celebrated question of the old East India Company, the practice was condemned by a vote of the House of Commons. A remarkable instance lately occurred of an attempt by some enterprising men to carry out a project something like that of the East India Company, independently of authority either from the crown or Parliament. It was represented that the islands of New Zealand were admirably suited for colonization, and should be immediately attached to the British colonial empire by the right of occupancy. There was, however, a strong disinclination on the part of British statesmen at that period to encumber the imperial government with the management of additional colonies. The adventurers conceived the idea of occupying the islands with independent British emigrants. The novelty of their views, and the energy and eloquence with which these were enforced, attracted a number of ardent spirits around them, who were taught that in these happy islands, possessed of all the advantages of our British climate without its drawbacks, they were to found that empire of Anglo-Saxon origin, by which the southern portion of the world was to be eventually ruled. It seemed hard that the government, declining to occupy the colonies, should discourage this project; but there were many grounds for dreading from it evil consequences, among which the most obvious and immediate was, that when the colony began slightly to prosper, it would attract the cupidity of some other European power, from which it could not be protected without an interference which might involve the British government in formidable disputes. Hence, in the year 1840, the British flag was hoisted in New Zealand, and although "The New Zealand Company" was incorporated, and afterward became the medium for the disposal of large tracts of land, its position was so humble in comparison with the splendid visions entertained by its promoters, that after a long series of intricate disputes, they resigned their charter to the government in 1850.—E. B.

The chief objects for which joint-stock companies have lately been constituted are banking, insurance, works [illegible] the supply of cities with water and gas, canals, shipping, and harbors, and, at the head of all, railways. The railway system, indeed, is the form in which both the government and the people have of late felt the pressure of joint-stock power, and known the influence of which it is susceptible. The history and effect of the railway system will be found under its proper head.

Jonk, Jonque, or **Junk,** in naval affairs, is a kind of small ship, very common in the East Indies. These vessels are of various dimensions; and differ in the form of their building, according to the different

methods of naval architecture used by the nations to which they belong. Their sails are frequently made of mats, and their anchors of wood.

Journal, a day-book, register, or account of what passes daily. *Journal*, in merchants' accounts, is a book in which every particular article is posted out of the waste-book, and made debtor. This is to be very clearly worded and fairly engrossed. *Journal*, in *navigation*, a sort of diary or daily register of the ship's course, winds and weather, together with a general account of whatever is material to be remarked in the period of a sea voyage. In all such journals, the day, or what is called the 24 hours, terminates at noon, because the errors of the dead-reckoning are at that period generally corrected by a solar observation. The daily compact usually contains the state of the weather; the variation, increase, or diminution of the wind; and the suitable shifting, reducing, or enlarging the quantity of sail extended; as also the most material incidents of the voyage, and the condition of the ship and her crew; together with the discovery of other ships or fleets, land-shoals, breakers, soundings, and the like.

Juan Fernandez, or **Mas-a-tierra**, a rocky island in the Pacific Ocean, about 400 miles off the coast of Chili, of which it is a dependency. Lat. 33° 45′ S., long. 79° 2′ W. It is 18 miles long and 6 miles broad, rises to 3,000 feet above the ocean, has steep shores, and a desolate appearance from the sea; but in its north half, in which is Cumberland Bay, are some fertile valleys, producing figs, grapes, and sandal wood, cork, and other timber trees, and it is leased from the Chilian government by settlers from the United States and Tahiti. The solitary residence here for four years of a Scotchman, named Alexander Selkirk, is supposed to have formed the basis of Defoe's well-known tale of "Robinson Crusoe." Mas-a-fuera is another rocky and precipitous island, lying to the west. Lat. 33° 49′ S., long. 80° 27′ W.

Juniper. The juniper-tree belongs to the natural order *Coniferæ*, and is useful both for its wood and its berries. The Virginian species, which is called *red cedar*, affords a light and durable material valuable in ship-building. It attains the height of about 30 feet, and grows well in barren soil. The berries used for flavoring gin are obtained from the *Juniperus communis*, and about 200 tons of them are annually imported to this country. They are also used for imparting pungency to beer. When roasted and ground, they afford a substitute for coffee. The oil of juniper is an important ingredient in varnish for pictures, woodwork, etc. The berries have also a diuretic property, and are used in medicine. The heavy duty to which they were subject in England was abolished in 1845.

Junk, in nautical language, a name given to any remnant or piece of old cable, which is usually cut into small portions, for the purpose of making points, mats, gaskets, sennets, and the like. See JONK.

Jute. Jute is a remarkably beautiful fibre—soft, silky, and easily spun; and if to its other advantages were added those of strength and durability, it would probably supersede all other fibrous materials. But it is as rapid in its decay as in its growth, and is, in reality, the most perishable of fibres. From the period of its first production in the clear state, it slowly, and of its own accord, changes its color, losing the beautiful pearly white, which at first distinguishes it, and assuming successive shades of fawn-color and brown. At the same time, its strength proportionately diminishes. Circumstances hasten or retard this decay, and moisture is particularly injurious to it. High-pressure steam almost melts it away, so that when sail-cloth, adulterated with jute, is submitted to high-pressure steam (of only 30 lbs. pressure), for four hours, mere washing afterward removes the jute. It is believed that an improvement in the process of setting would increase both its strength and durability; but it is very doubtful if it can ever be rendered equal in these respects to either hemp or flax.

The extent of the foreign traffic which has already been established in this fibre, notwithstanding its imperfections, may be judged of from the fact, that in the years 1850 and 1851, the quantity of jute exported from Calcutta alone was valued at 2,000,000 rupees, or £200,000, and the jute or gunny-cloth at an equal sum, and that it has already obtained a considerable place among the raw materials employed in manufactures.—P. J. of T. See HEMP.

According to Braithwaite's "Commerce of Liverpool," 100,000 bales of jute are used annually in England, valued at £20 per bale. The grass is sent to Dundee and other places, and the fibre so resembles caterpillar's thread, that it is used to adulterate silk. It is made into coverings, called "baggings," for cotton bales; and, after various uses, finds its way to the paper-mill, for the manufacture of coarse wrapping-papers.—HERAPATH'S *Journal*.

This article is now largely introduced in the manufactures of England. It much resembles a coarse flax, having a long fibry texture, and when dyed has a very woolly appearance. In and around Dundee, Scotland, there are no fewer than 76 mills, all engaged, spinning this jute and flax—the principal of which is said to be the largest mill in Scotland. There are in this mill some 2000 hands, all wholly employed spinning jute, which is used to a large extent in the manufacture of carpets and rugs. Some three houses in that quarter dye for this branch of trade alone about seven tons a day. The carpets are sold as low as from 7d. to 11d. per yard; the rugs again as low as 3s. sterling. Jute can be spun to a very fine thread. It might be turned to a good account in the shawl trade, as a substitute for cotton. In its unmanufactured state it is said only to cost 11s. per cwt.; a very great contrast to the very coarsest wool—at least 1s. per pound in its oily state.

Jury-mast. In naval affairs, a temporary mast erected in a ship in the room of one that has been carried away by tempest or any other accident. Jury-masts are sometimes erected in a new ship to navigate her down a river, or to a neighboring port, where her proper masts are prepared for her.

Jury Trial, the most thoroughly expressive feature in the administration of modern justice, is, in its essential principle, nothing more than the citizen's right to have the judgment of an impartial committee of his fellow-citizens on any question of fact tending to affect his life, his liberty, or some important patrimonial interest. The origin of the practice has been traced by juridical antiquaries into many and far diverging sources, but they have all been found converging in one direction, by the influence of a common determination, which seems to have over guided the purpose of the Anglo-Saxons and some other northern races in the practical application of such existing institutions as could be influenced to the end in view. See *North Brit. Rev.*, viii., 44; *Quar. Rev.*, lvii., 177; *Dem. Rev.*, vi., 163; BLACKWOOD, xxvii., 736; *Knick.*, xv., 478, xviii., 247; NILES'S *Reg.*, xiii., 139.

K.

Kaleidoscope. This optical instrument, which combines mirrors, and produces a symmetrical reflection of beautiful images, was invented by Dr. Brewster of Edinburg; it was first suggested in 1814, and the instrument perfected in 1817, after which large numbers were manufactured. It is intended to assist jewelers, glass-painters, and other ornamental artists, in the formation of patterns, of which it produces an infinite number. See BLACKWOOD, ill.

Kane, Elisha Kent, the Arctic explorer, was born in Philadelphia on the 3d of February, 1822, and graduated at the University of Pennsylvania in 1843, first in the college and subsequently in the medical department; and when he started upon his active career of adventure, he was esteemed a good classical scholar, and a good chemist, mineralogist, astronomer, and surgeon. His frame, even in boyhood, was delicate, and, with a view of strengthening his constitution, he solicited an appointment in the navy as surgeon, and obtained it, and was attached to the first American embassy to China. This position gave him an opportunity to explore the Philippine Islands, which he effected mainly on foot. He was the first man who descended into the crater of Taal, lowered more than 100 feet by a bamboo rope from the overhanging cliff, and clambering down some 700 more through the scoriæ, he made a topographical sketch of the interior of this great volcano, collected a bottle of sulphurous acid from the very mouth of the crater, and, although he was drawn up almost senseless, he brought with him a sketch of this hideous cavern and the specimens which it afforded. Before returning home from this expedition he had ascended the Himalayas, visited Ceylon, the upper Nile, and all the mythological regions of Egypt—traversing the route and making the acquaintance of the learned Lepsius who was then prosecuting his archæological researches. He also traversed Greece on foot, and returned to the United States through Europe. Soon after his arrival he was again ordered on duty—this time to the western coast of Africa. He now attempted to visit the slave marts of Whydah, but having taken the African fever, he was sent home in a precarious state of health. He recovered, however, and we next find him a volunteer in the Mexican war. His adventures in Mexico proved him to be the possessor of lion-like courage, and of a most generous and noble heart; but he fell a victim to one of the fevers of the country, and was very near dying. When he recovered and returned, he was employed in the Coast Survey department, from which he was transferred by the Secretary of the Navy to the post of surgeon on the Grinnell Arctic expedition. His history of that expedition gave him a high position as an author. Not yet satisfied, however, he scarcely gave himself time to recover from the hardships of that cruise, before he set on foot the second Grinnell or Kane expedition, the results of which have been pronounced by the highest European authorities as among the wonders of the present century. Dr. Kane died of consumption, at Havana, February 16th, 1857. See *Arctic Explorations and Life of Kane.*

Kansas Territory extends from the 37th degree of north latitude to 40 degrees north, and from the west boundary of Missouri to the crest of the Rocky Mountains. Area, 122,000 square miles. Drained by the main branch of the Arkansas, by the Kansas, and by head branches of the south fork of Platte or Nebraska River. Surface level, consisting of an immense plain, with a gentle slope from the base of the Rocky Mountains to the Missouri border, and the abrupt descent from the mountain ridge to the base of about 75 miles in width. The soil is various, rich alluvial bottom lands bordering the streams, some fertile prairie lands and extensive sandy plains, but these are of sufficient fertility to furnish nourishment to immense herds of the American bison. It was formed into a Territory by the act of Congress of May, 1854, together with the Territory of Nebraska.

Kedge, a small anchor used to keep a ship steady while she rides in a harbor or river, particularly at the turn of the tide, when she might otherwise drive over her principal anchor, and entangle the stock or flukes with her stock cable, so as to loosen it from the ground. This is accordingly prevented by a kedge rope that hinders her from approaching it. The kedges are particularly useful in transporting a ship; that is, removing her from one part of the harbor to another, by means of ropes, which are fastened to these anchors. They are generally furnished with an iron stock, which is easily displaced for the convenience of stowing them.

Keel, the principal piece of timber in a ship, which is usually first laid on the blocks in building. By comparing the carcass of a ship with the skeleton of the human body, the keel appears as the back-bone, and the timbers as the ribs. The keel supports and unites the whole fabric, since the stem and stern posts, which are elevated on its ends, are, in some measure, a continuation of the keel, and serve to connect and inclose the extremities of the sides by transoms, as the keel forms and unites the bottom by timbers. The keel is generally composed of several thick pieces placed lengthways, which, after being scarfed together, are bolted and clinched upon the upper side.

False Keel, a strong thick piece of timber, bolted to the bottom of the keel, which is very useful in preserving its lower side. The false keel is provided when the thick pieces which form the keel can not be procured large enough to give a sufficient depth thereto. In large ships of war the false keel is composed of two pieces, called the *upper* and *lower* false keels. The lowest plank in a ship's bottom, called the *garboard streak*, has its inner edge let into a groove or channel, cut longitudinally on the side of the keel. The depth of this channel is therefore regulated by the thickness of the garboard streak.—E. A.

Keel-hauling, a punishment inflicted for various offenses in the Dutch navy. It is performed by suspending the culprit by a rope from one yard-arm, with a weight of lead or iron upon his legs, and having another rope fastened to him, leading under the ship's bottom, and through a block at its opposite yard-arm. He is then suddenly let fall from the one yard arm into the sea, where, passing under the ship's bottom, he is hoisted up on the opposite side of the vessel to the other. This punishment is not altogether unknown in British ships; but, as it is dangerous, it is very rarely, or, indeed, scarcely ever, now practiced.

Keelson, or **Kelson,** a piece of timber forming the interior or counterpart of the keel, being laid upon the middle of the fore-timbers immediately over the keel, and serving to bind and unite the former to the latter, by means of long bolts driven from without, and clinched on the upper side of the keelson. The keelson, like the keel, is composed of several pieces scarfed together; and, in order to fit with more security upon the floor-timbers and crotchets, it is notched about an inch and a half deep opposite to each of those pieces, thereby scored down upon them to that depth, where it is secured upon them by spike-nails. The pieces of which it is formed are of only half the breadth and thickness of those of the keel.—E. A.

Kelp, a substance composed of different materials, of which the fossil or mineral alkali, or, as it is com-

monly termed, soda, is the chief. This ingredient renders it useful in the composition of soap, in the manufacture of alum, and in the formation of crown and bottle glass. It is formed of marine plants, which, being cut from the rocks with a hook, are collected and dried on the beach to a certain extent; they are afterward put into kilns prepared for the purpose, the heat of which is sufficient to bring the plants into a state of semi-fusion. They are then strongly stirred with iron rakes; and when cool, condense into a dark blue or whitish mass, very hard and solid. Plants about three years old yield the largest quantity of kelp. The best kelp has an acrid caustic taste, a sulphurous odor, is compact, and of a dark-blue greenish color. It yields about 5 per cent. of its weight of soda.—BARRY'S *Orkney Islands;* THOMSON'S *Dispensatory.* The manufacture of kelp in Great Britain, is, or rather *was*, principally carried on in the Western Islands, and on the western shores of Scotland, where it was introduced from Ireland, about the middle of last century. Toward the end of the year 1815, the kelp shores of the island of North Uist let for £7000 a year. It has been calculated that the quantity of kelp annually manufactured in the Hebrides only, exclusive of the mainland, and of the Orkney and Shetland Isles, amounted, at the period referred to, to about 6000 tons a year, and that the total quantity made in Scotland and its adjacent isles, amounted to about 20,000 tons. At some periods during the war, it sold for £20 a ton; but at an average of the 23 years ending with 1822, the price was £10.—Art. SCOTLAND, *Edinburg Encyclopædia.* Unluckily, however, the foundations on which this manufacture rested were altogether factitious. Its existence depended on the maintenance of the high duties on barilla and salt. Inasmuch, however, as kelp could not be substituted, without undergoing a very expensive process, for barilla, in a great many departments of industry in which the use of mineral alkali is indispensable, it became necessary materially to reduce the high duty in Great Britain on barilla during the war. The ruin of the kelp manufacture has been ascribed to this reduction; but though barilla had been altogether excluded from the markets which could not have been done without great injury to many most important manufactures, the result would have been perfectly the same, in so far as kelp is concerned, unless the high duty on salt had also been maintained. It was the repeal of the latter that gave the kelp manufacture the *coup de grace.* The purification of kelp, so as to render it fit for soap-making, is a much more troublesome and expensive process than the decomposition of salt; and the greatest quantity of alkali used, is now obtained by the latter method. The manufacture is now almost extinct. Shores that formerly yielded the proprietors a rent of £200 to £500 a year, are now worth next to nothing. The price of kelp since 1822 has not been, at an average, above £4 a ton; and the article will, most probably, soon cease to be produced.

This result, though injurious to the proprietors of kelp shores, and productive of temporary distress to the laborers employed in the manufacture, is not to be regretted. It could not have been obviated, without keeping up the price of some of the most important necessaries of life at a forced and unnatural elevation. The high price of kelp was occasioned by the exigencies of the late war, which, besides obstructing the supply of barilla, forced government to lay high duties on it and on salt. The proprietors had not the vestige of a ground for considering that such a state of things would be permanent; they did right in profiting by it while it lasted; but they could not expect that government was to subject the country, during peace, to some of the severest privations occasioned by the war, merely that *they* might continue to enjoy an accidental advantage.

Kelp is chiefly used in the United States as a manure, and for this purpose is very valuable. Large quantities are thrown on the beaches after a storm, and the Gulf Stream constantly brings it to our shores, from whence it is carted by our farmers to their fields, and allowed to decompose.

Kentledge, the name sometimes given to the iron pigs cast in a particular form for ballasting ships, and employed for that purpose.

Kentucky, one of the central United States, is situated between 36° 30′ and 39° 10′ north lat. and between 82° and 89° 40′ west long. Its length is about 400 miles, and its breadth 170 miles, containing 37,680 square miles. Population in 1790 was 73,667; in 1800, 220,959; in 1810, 406,511; in 1820, 564,317; in 1830, 688,844; in 1840, 779,828, and in 1850, 982,405. The State is divided into 100 counties.

Surface, Soil, etc.—A tract from 5 to 20 miles wide along the Ohio River, through the whole length of the State, is hilly and broken, but has a fertile soil. The margin of the Ohio for about a mile in width, consists of bottom lands, which are overflowed when the river is high. Between this tract of hilly country the more mountainous eastern counties and Green River is a fertile tract, frequently denominated the garden of the State. It is about 150 miles long, and from 50 to 100 wide. The soil is excellent, the surface gently undulating, and the forest-growth, black-walnut, black-cherry, buckeye, paw-paw, sugar-maple, mulberry, elm, ash, cotton-wood, white thorn, and an abundance of grape-vines. The country in the south-west part of the State, between Green and Cumberland Rivers, is called the "barrens." In 1800 the legislature of the State made a gratuitous grant of this tract to actual settlers, under the impression that it was of little value, but it proves to be excellent grain-land, and also adapted to the raising of cattle and swine. The whole State below the mountains, has, at the usual depth of eight feet, a bed of limestone which has frequent apertures through which the waters of the rivers sink into the earth, causing some of them to disappear for a time, and others to be greatly diminished in the summer season. The rivers have generally worn deep channels in the calcareous rocks over which they flow. The precipices formed by the Kentucky are in many places stupendous, presenting perpendicular banks of solid limestone 300 feet high, above which is a steep and difficult ascent several times as high. In the south-west part of the State, between Green and Cumberland Rivers, are several remarkable caves. One called the Mammoth Cave, 130 miles from Lexington, on the road to Nashville, has been explored for a distance of eight or ten miles. Iron ore and coal, are widely diffused, coal especially occupies an extensive field. Salt springs are numerous, and mineral springs are found in many localities. There were in this State in 1850, 5,968,270 acres of land improved, and 10,981,478 of unimproved land in farms; cash value of farms, $155,031,262, and the value of implements and machinery, $5,169,037; live stock—horses, 315,682; asses and mules, 65,609; milch cows, 247,475; working oxen, 62,274; other cattle, 442,763; sheep, 1,102,091; swine, 2,891,163; value of live stock, $29,661,436.

Agricultural Products, etc.—Wheat, 2,142,822 bushels; rye, 415,073; Indian corn, 58,672,591; oats, 8,201,311; barley, 95,343; buckwheat, 16,097; peas and beans, 202,574; potatoes, 1,492,487; sweet potatoes, 998,179; value of products of the orchard, $106,230; produce of market gardens, $303,120; pounds of butter made, 9,947,523; of cheese, 213,954; sugar, 284 hhds.; maple sugar, 437,405 pounds; molasses, 30,079 gallons; beeswax and honey, 1,158,019 pounds; wool, pounds produced, 2,297,433; cotton, 758; flax, 2,100,116; silk cocoons, 1201; hops, 4309 pounds; tobacco, 55,501,196; hay, tons of, 113,747; hemp, 16,432 tons; clover seed, 3230 bushels; other grass seeds, 21,481; flax seed, 75,801 bushels; and were made 8093 gallons of wine; value of slaughtered animals, $6,462,598.

The Ohio River, by its various windings, borders this State on the north for 637 miles. Cumberland and Tennessee Rivers pass through its western part as they approach their entrance into the Ohio. Cumberland rises in the eastern part of this State. The Big Sandy is 250 miles long, and for a considerable distance forms the boundary between this State and Virginia. It is navigable 50 miles for boats. The Kentucky River rises in the Cumberland Mountains, and after a course generally through a deep rocky bed, falls into the Ohio 77 miles above Louisville. It is navigble for steamboats 60 miles to Frankfort. Licking, Green, and Salt, are other considerable rivers. The Mississippi runs on the western border. Tonnage of the State, January, 1853, 12,166, composed entirely of steamboats.

Manufactures, etc.—There were in this State in 1850, 8 cotton factories, with a capital invested of $541,000, employing 206 males and 307 females, producing 1,078,034 yards of sheeting, etc., and 725,060 pounds of yarn, valued at $440,095; 27 woolen factories, with a capital of $260,320, employing 289 males and 81 females, manufacturing 878,034 yards of cloth, valued at $424,544; 24 establishments making pig iron, with a capital of $1,027,500, employing 1922 persons, producing 28,609 tons of pig iron, etc., the entire value of products, $629,937; 20 establishments, with a capital of $502,200, employing 578 persons, and making 5888 tons of castings etc., valued at $741,316; 4 establishments, with a capital of $176,000, employing 183 persons in manufacturing 3070 tons of wrought iron, valued at $299,700; 320 flouring and grist-mills 362 saw-mills, and 390 tanneries; 51 printing offices, 9 daily, 5 tri-weekly, 2 semi-weekly, 38 weekly, 1 semi-monthly, and 7 monthly publications; total copies printed annually, 6,582,838.

There were in this State January 1857, 33 banks, with a capital of about $12,000,000. There were in operation January, 1856, 233 miles of railroad, and 452 miles in course of construction.

The foreign commerce of Kentucky is very small. Effort is being made to increase it, and also the foreign commerce of some of the other western States, by giving facilities for the direct importation of goods. At several of the western cities, fine custom-houses have been built; at St. Louis and Cincinnati, and at others, Louisville and Dubuque, it is proposed to erect them. There are no records of the foreign commerce of Kentucky prior to 1835. Since that time it has been as follows:

FOREIGN COMMERCE OF KENTUCKY.

Years.	Exports, Domestic.	Imports.	District Tonnage, Enrolled.
Sept. 30, 1835, to Sept. 30, 1840.	$8,723	$39,435	In 1836.... 1,714
Sept. 30, 1840, to June 30, 1850.	....	390,885	" 1841.... 8,359
July 1, 1850, to July 1, 1853...	....	574,493	" 1851....12,089

Kepler, John. This eminent man, known in the annals of astronomical science as discoverer of the laws of motion of the planetary bodies which compose the solar circle, was the son of a military officer, and was born at Wiel, Duchy of Wirtemburg, 27th December, 1571. In 1591 he became the pupil of Michael Mæstlins, under whom he made great progress as a mathematician. Having added divinity to his studies, he acquired considerable celebrity as a preacher; but, relinquishing the clerical gown, he succeeded, in 1594, in obtaining the mathematical chair in the university of Gratz, in Styria. In 1598, having professed the Protestant faith, he was removed from his office, but was soon recalled again by the States. In 1600 he accepted an invitation from Tycho, urging him to settle at Prague, and assist him in the prosecution of astronomical researches, under the patronage of the Emperor Rodolph. The death of Tycho, and Kepler's own illness almost immediately on his arrival in Prague, prevented the desired co-operation; but on his introduction to the emperor, he was requested to complete the tables his late friend had begun, which were to be called the *Rodolphine Tables*. This work, which occupied him during the greater part of the remainder of his life, he carried on and completed in 1627, amid the inconveniences and difficulties which arose from the irregular payment of his pension, and the other expenses attending the undertaking. His health now again failed, and as a means of restoration, together with the desire of obtaining the arrears due him by the emperor, he went to Ratisbon; but the fatigue of traveling and mental uneasiness threw him into a sickness which closed his life, soon after his arrival in that city, in November, 1630. His published works on astronomical subjects are numerous, besides which he wrote on chronology, geometry of solids, trigonometry, logarithms, and dioptrics. To this great philosopher the world is indebted for the discovery of the true figure of the orbits of the planets, which he demonstrated to be ellipses, together with those principles of planetary motion generally denominated "the laws of Kepler."

Kermes (Ger. *Scharlachbeeren*; Du. *Grein Scharlakenbessen*; It. *Granа, Chermes, Cremese, Uochi*; Sp. *Grana Kermes, Grana de la coscoja*), an insect (*Coccus illicis* Lin.) of the same species as the true Mexican cochineal, found upon the *quercus ilex*, a species of oak growing in Spain, France, the Levant, etc. Before the discovery of America, kermes was the most esteemed drug for dyeing scarlet, and had been used for that purpose from a very remote period. Beckmann inclines to think that it was employed by the Phœnicians, and that it excelled even the famous Tyrian purple. (*Hist. of Invent.*, vol. ii., p. 197, Eng. ed.) From the name of *coccum* or *coccus*, cloth dyed with kermes was called *coccinum*, and persons wearing this cloth were said by the Romans to be *coccinati*. (*Mart.*, lib. i., epig. 97, lin. 6.) It is singular, however, notwithstanding its extensive use in antiquity, that the ancients had the most incorrect notions with respect to the nature of kermes; many of them supposing that it was the grains (*grana*) or fruit of the *ilex*. This was Pliny's opinion; others, after him, considered it in the same light, or as an excrescence formed by the puncture of a particular kind of fly, like the gall-nut. It was not till the early part of last century that it was finally and satisfactorily established that the kermes is really nothing but an insect, assuming the appearance of a berry in the process of drying.—The term kermes is of Persian origin. The Arabians had been acquainted with this production from the earliest periods in Africa; and having found it in Spain, they cultivated it extensively as an article of commerce, as well as a dye drug for their own use. But since the introduction of cochineal, it has become an object of comparatively trifling importance. It is still, however, prepared in some parts of Spain. Cloths dyed with kermes are of a deep red color; and though much inferior in brilliancy to the scarlet cloths dyed with real Mexican cochineal, they retain the color better, and are less liable to stain. The old tapestries of Brussels, and other places in Flanders, which have scarcely lost any thing of their original vivacity, though 200 years old, were all dyed with kermes. The history of this production has been treated with great learning by Beckmann (*Hist. of Invent.*, vol. i., pp. 171–191, 1st ed. trans.); and by Dr. Bancroft (*Permanent Colors*, vol. i., pp. 393–409).

Kersey (probably a corruption of Jersey, whence it originally came), a kind of coarse cloth, usually ribbed, and woven from long wool. It is chiefly manufactured in the north of England. *Kerseymere*, on the other hand, is a thin stuff, generally woven plain from the finest wools; and hence it has been inferred that these two terms, whose meaning is so distinct, can not be referred to the same origin. Kerseymere is said to have derived its appellation from Cashmir, a country which produces the finest wool, and is consequently

most celebrated for the works of its looms. In England it is principally manufactured in the western district.

Ketch (It. *caicchio*), an old English term applied to a vessel equipped with two masts, and from 100 to 250 tons burden. It was nearly synonymous with the modern term *yacht*, being used chiefly by embassadors or other distinguished personages in voyages from one place to another, and was furnished with all the apparatus necessary for defense or aggression.

Keys. The invention of them is ascribed to Theodore, of Samos, by Pliny, about 730 B. C. But this is an error, as keys are mentioned in the siege of Troy, 1193 B. C. Keys were originally made of wood, and the earliest form was a simple crook similar to the common picklock now in use. The ancient keys now to be found in the cabinets of the curious are mostly of bronze. The late Francis Douce, Esq., had some of remarkable shapes, the shaft terminating on one side by the works, on the other by a ring. Keys of this description were presented by husbands to wives, and were returned again upon divorce or separation.

Keys are certain sunken rocks lying near the surface of the water, particularly in the West Indies, from the Spanish *cayo* (an islet rock). The keys, so called, off the Florida coast, are prolific in wrecks of the larger class of vessels. For an account of these wrecks, see articles KEY WEST, FLORIDA, and WRECKS.

Key-West, a small island from four to five miles in length, by one in width; 56 miles south-west from Cape Sable, in Florida. It is one of the Florida keys, or of that extensive circular range of low islands, banks, and reefs, which fences the coast of Florida, and forms the northern boundary of the Gulf Stream, from the Tortugas Islands on the west round to Cape Florida on the north. A light-house erected on the south-west point of the island, lat. 24° 32′ 32″ N., long. 81° 48′ 30″ W., has a fixed light elevated 67 feet above the level of the water. The town of Key-West, near the north-west part of the island, has about 1600 inhabitants, and has an excellent harbor, with about 25 feet of water. A safe passage, about six miles in length, leads by Key-West from the Gulf Stream to the Gulf of Mexico. It has 12 feet of water at ebb tide, and vessels from the north bound for New Orleans, Mobile, etc., or from the latter for the former, by passing through it, avoid the delay and danger of the more westerly passage round the Tortugas. Owing to the frequent accidents to shipping from coming in contact with the banks and reefs in this dangerous vicinity, the American government has organized an establishment at Key-West for the assistance of ships in distress, and made it the seat of an admiralty court for the adjudication of claims for salvage. The former consists of above 20 licensed vessels, with crews of about 10 men each. These are kept constantly cruising about on the look-out for ships in distress or wanting pilots; and as their emolument principally depends on the fees they obtain for their assistance, it may be fairly assumed that it will be rendered with the greatest alacrity. But the desirable thing is to hinder vessels from getting on shore, the assisting them when in that predicament being, though an important, a secondary consideration. The latter, however, and not the former, is the main object which the licensed cruisers of Key-West have in view; and it would be preferable, could means be devised for making their remuneration depend rather on their success in preventing disasters, than, as at present, in mitigating their influence. This, however, is by no means easily done. Shipwrecks will, perhaps, be more effectually prevented by increasing the number of light-houses, light-vessels, and sea-marks along the edges of the islands and reefs, than in any other way. We subjoin an account of the sums awarded as salvages by the court of Key-West, in each of the 16 years ending with 1851. These, though of small amount, show a general uniformity, making it probable that they are from local causes.

1836	$174,192	1844	$92,719
1837	107,495	1845	60,502
1838	84,578	1846	124,400
1839	90,797	1847	50,851
1840	85,118	1848	125,800
1841	71,478	1849	127,870
1842	38,103	1850	122,881
1843	83,811	1851	75,852

See BLUNT'S *American Pilot*; DEBOW'S *Industrial Resources; Account of Light-houses, U. S.*, in 1850.

Kiakhta, a Russian settlement of more than a century old, a little to the south of Lake Baikal, and constitutes, with the Chinese frontier town Maimachen (which is in immediate juxtaposition), the emporium through which the whole of the overland tea for Russia passes, and it is from this fact that this place acquires its present importance. It is by this channel that the article originally reached western Europe; and if all intercourse with the Chinese seaboard were stopped, by this channel only would all consumers, not only in Europe, but in America also, be able to obtain it. The whole tea-drinking world would have to content itself with obtaining from St. Petersburg what supplies it could, after it had been brought a distance of nearly 8000 miles by land transport and river navigation. The cost of transit is such that before the late war with Russia scarcely any thing was drunk throughout the whole kingdom of Poland but smuggled Canton tea, which was every year penetrating further and further into the interior of Russia, as will be believed, when it is stated that the average *wholesale* price of the common tea was 270 copecks ($2 10) and of the best 410 copecks ($3 28) at Moscow in the year 1854. To what price it would reach, were the demand suddenly increased to any great extent, is mere conjecture. One thing is plain—it would deprive not merely the common people, but the great bulk of the middle class, of all participation whatever in this great necessity.

The duties on this overland tea form an important item in Russian finance. A most serious diminution in them was occasioned by the treaty with China which threw open the northern ports. In 1842 no less than 467,679 poods of Chinese merchandise, the far greater part of it being tea, left Kiakhta; in 1854 little more than half as much. If a perfectly free intercourse with the interior of China were allowed, the Kiakhta trade would be proportionably diminished; and it is quite conceivable that it would even be superseded altogether, except as regards the so-called "brick-tea"—a compost of tea-leaves and sheep's blood, in which the Mongul palate exclusively delights. This inference is drawn confidently from the positive statement of the Russian statist, M. Tengoboraski, that the Kiakhta tea costs 20 copecks the pound in transport before it even reaches the emporium; whereas the same article from the same dépôt may be taken to Shanghai for only 8 copecks, and all the way to London for 10. It is plain, therefore, that the question of open or closed ports in China is the question between the annihilation of the Russian revenue from tea, and the compelling of the consumers of the commodity throughout the world to enrich the Russian treasury by purchasing a tithe of their requirements at tenfold the price they need pay for an ample supply.

The only country which has an interest in sealing the Chinese seaboard is likewise the only one which enjoys, and has long enjoyed, the privilege of being represented at Pekin. Ever since the year 1727 the Russian government has maintained an establishment in that capital, the members of which are changed regularly every 10 years. It originally professed to be for the spiritual behoof of the descendants of some Siberian settlers who had been carried off about half a century before from the upper valley of the Amoor,

but the mission still continues, although the necessity has ceased; and, while authentic information relative to the resources and the administration of the Celestial Empire is derived through this channel by the foreign office at St. Petersburg, no doubt whatever opinions are current at Pekin of the powers of western Europe owe their shape and color to the same agency.—*London Times.*

Kidderminster, a manufacturing town of England, county Worcester, on the Oxford, Worcester and Wolverhampton railroad, and on both sides of the Stour, near its confluence with the Severn, 15 miles north of Worcester. Population, 18,462. Kidderminster was noted for its woolen manufactures in the reign of Henry VIII. The fabrics now made are carpets and finger rugs, with some bombazines, button coverings and waistcoat pieces. The carpets are unrivaled for excellence of workmanship at the low prices charged. In 1838, upward of 2000 looms, and 4000 hands, were employed in this manufacture. The Stafford and Worcester canal passes the town, and opens a communication with Liverpool, Hull, and Bristol. The Kidderminster and Scotch carpets are woven on the principle of damask patterns, all being wool, and the patterns being effected by arranging and interchanging two colors, so that while one predominates on one side, the other pattern shows itself on the other side. They have little substance, and soon wear out; their low price being their only advantage. They are made in widths of a yard, and are sold at about 3s. sterling per yard, or sometimes even below that price.

Kidney Beans, or **French Beans**, were introduced into England about A.D. 1633. The kidney bean-tree (*Glycine frutescens*) was brought to that country from South Carolina about the year 1724, though some authorities say earlier. Kidney beans are a summer pulse, and are of peculiar delicacy early in the season. They are much esteemed, both in this country and in England.

Kilogramme. In France, the unit used in weighing is the gramme, which has been fixed by law, and is equal to the specific weight of the distilled water contained in one cubic centimètre. The gramme thus fixed weighs 15·433 grains Troy and 16·924 grains avoirdupois, while the kilogramme, which consists of 1000 grammes, is found to be equal to 2 livres (pounds) 5 gros, 35 grains—15-100ths poids de mark—and to 2 pounds, 8 ounces, 3 pennyweights, 6·355 grains Troy, or 2 pounds, 3 ounces, 4 dramchans, 16 grains avoirdupois weight English. As the most common things of daily consumption are sold by weights in small quantities, a great difficulty arose in introducing this part of the system; and the old denominations of weights have therefore been allowed to remain, with some modification in their actual value, taking the kilogramme as the basis. The kilogramme is divided into 2 livres, the livre is subdivided into 16 ounces, the ounce into 8 gros, and the gros into 72 grains. The new livre, therefore, exceeds the old one (poids de marc) by 2-100ths; so, to reduce kilogrammes into old measure, it is necessary to multiply by 2 and add 2-100ths. In the decimal system adopted in France, the prefixes for *multiplying* are Greek, and for *dividing* are Latin. Thus:

Deca	means	10 times.	Decl	means	10th part.
Hecto	"	100 "	Centi	"	100th "
Kilo	"	1,000 "	Milli	"	1,000th "
Myria	"	10,000 "			

We have, therefore, the milligramme, centigramme, decigramme, Gramme, decagramme, hectogramme, kilogramme, and myriagramme, as the names of the various weights.

Kino (Fr. *Gomme de Kino*; Ger. *Kinoharz*; It. *Chino*), a gum, the produce of trees that grow in the East and West Indies, Africa, Botany Bay, etc. The kino now found in the shops is said by Dr. A. T. Thomson to come from India, and to be the produce of the *nauclea gambir*. The branches and twigs are bruised and boiled in water. The decoction is then evaporated until it acquires the consistence of an extract, which is kino. It is imported in chests containing from 1 to 2 cwt.; and on the inside of the lid of each chest is a paper, inscribed with the name of John Brown, the month and year of its importation, and stating that it is the produce of Amboyna. It is inodorous, very rough, and slightly bitter when first taken into the mouth; but it afterward impresses a degree of sweetness on the palate. It is in small, uniform, deep brown, shining, brittle fragments, which appear like portions of a dried extract broken down; being perfectly uniform in their appearance. It is easily pulverized, affording a powdor of a lighter brown color than the fragments. But it may be doubted whether the inspissated juice of the *nauclea gambir* ought to be considered as kino. Dr. Ainslie says that Botany Bay kino is the only kind he had seen in an Indian bazaar. The tree which yields it grows to a great height: it flows from incisions made into the wood of the trunk.—Thomson's *Dispensatory*; Ainslie's *Materia Indica*.

Knee, in a ship, a crooked piece of timber, having two branches or arms, and generally used to connect the beams of a ship with her sides or timbers. The branches of the knees form an angle of greater or smaller extent, according to the mutual situation of the pieces which they are designed to unite.

Knee of the Head, a large, flat piece of timber, fixed edgewise upon the fore part of a ship's stem, and supporting the ornamental figure or image placed under the bowsprit. The *knee of the head* is a phrase peculiar to shipwrights, as this piece is always called the *cutwater* by seamen, if we except a few, who, affecting to be wiser than their brethren, have adopted this expression, probably on the presumption that the other is a cant phrase or vulgarism.

Curling-Knees, in a ship, those timbers which extend from the ship to the hatchway, and bear up the deck on both sides.

Knives (Ger. *Messer*; Du. *Messen*; Fr. *Couteaux*; It. *Coltelli*; Sp. *Cuchillos*; Rus. *Nozhi*) well known utensils made of iron and steel, and employed to cut with: they are principally manufactured in London and Sheffield. Knives are made for a variety of purposes, as their different denominations imply; such as table-knives, pen-knives, oyster-knives, pruning-knives, etc. Although England at present excels every part of the world in the manufacture of knives, as in most branches of cutlery, the finer kinds were imported until the reign of Elizabeth. It is stated by Mr. Macpherson (*Annals of Com.*, A.D. 1563), that knives were not made for use in England till 1563; but there can be no doubt that this is an error. They had been made, though probably of a rude and clumsy pattern, for centuries before, in the district called Hallamshire, of which Sheffield is the centre; the cutlers of London were formed into a corporation in 1417.—*Manufactur · in Metal*, in Lardner's *Cyclopædia*. See Hardware and Cutlery. Forks were in use on the Continent in the 13th and 14th centuries.—Voltaire. This is reasonably disputed, as being too early. In Fynes Moryson's *Itinerary*, reign of Elizabeth, he says: "At Venice each person was served (besides his knife and spoon) with a fork to hold the meat while he cuts it, for there they deem it ill manners that one should touch it with his hand." Thomas Coryate describes, with much solemnity, the manner of using forks in Italy, and adds, "I myself have thought it good to imitate the Italian fashion since I came home to England," A.D. 1608.

Konigsberg, the capital of east Prussia, in lat. 54° 42′ 11″ N., long. 20° 29′ 15″ E. Population, in 1846, 75,234. Königsberg is situated on the Pregel, which flows in the Frische Haff, or Fresh Bay, a large

lake having from 10 to 14 feet water. The bar at the mouth of the Pregel has only from 10 to 11 feet water, so that vessels of more than that draught of water require to be lightered to come up to Königsberg. Pillau, in lat. 54° 33′ 39″ N., long. 19° 52′ 30″ E. on the north side of the entrance from the Baltic to the Frische Haff, is properly the port of the town. Within these few years, a light-house has been erected on a rising ground, a little to the south of Pillau, the lantern of which is elevated 95 feet above the level of the sea. The light is fixed and brilliant. The entrance to the harbor is marked by buoys; those on the larboard side being surmounted by small flags. A Gothic building, 120 feet above the level of the sea, has been erected to serve for a land-mark; at a distance it looks like a three-masted ship under sail. There is usually from 15 to 16 feet water between the buoys on entering the harbor; but particular winds occasion material differences in this respect. Being situated on a navigable river of considerable importance, Königsberg has a large command of internal navigation, and is the principal emporium of a large extent of country. Wheat, rye, and other species of grain are the chief articles of export. The wheat is somewhat similar to that of Dantzic, but of inferior quality, being larger in the berry, and thicker skinned. The rye is of good quality, but barley, with few exceptions, is thin and light. A few remarkable large and fine peas are exported; but the bulk are of small size, and inferior. Oats are common feed, with a slight admixture of tares, but as these last answer in some degree the purpose of beans, the value of the oats is rather enhanced than otherwise by the circumstance. More tares are shipped here than from any other port in the Baltic. The price of all sorts of grain is usually lower at Königsberg than at the neighboring Prussian ports. Linseed and rapeseed, hemp, flax, linens, oil-cake, oil, bristles, refined sugar, etc., are largely exported.

ACCOUNT OF THE ARTICLES EXPORTED FROM KÖNIGSBERG BY SEA IN 1851, SPECIFYING THE QUANTITIES SHIPPED TO GREAT BRITAIN, THE TOTAL QUANTITIES EXPORTED, AND THEIR VALUES, WITH THE TOTAL QUANTITIES EXPORTED IN 1850.

Articles.		Exports in 1851.			Total quantities exported in 1850.
		Total quantities.	Value in Prussian currency.	Value in sterling.	
			R. th.	£	
Wheat	lasts*	8,756	1,109,098	166,364	14,328
Rye	"	22,447	1,496,467	224,470	28,344
Barley	"	2,890	154,193	28,120	5,056
Oats	"	1,055	45,717	6,858	4,808
Peas	"	1,926	139,998	20,999	4,108
Beans	"	639	47,925	7,189	1,512
Tares	"	87	2,348	351	636
Linseed and rapeseed	"	4,411	499,913	74,987	5,101
Clover & Timothy seed, cwt.	†	2,998	19,908	2,985	2,046
Flax	"	18,895	124,515	18,677	20,468
Flax codille	"	16,770	79,405	11,920	8,724
Hemp	"	2,332	22,344	3,352	3,501
Hemp codilla	"	202	1,010	151	171
Linen	"	4,182	125,466	18,819	4,175
Bristles and hair	"	157	14,130	2,120	64
Feathers and quills	"	104	11,440	1,7[illegible]	126
Oilcakes	"	70,864	93,820	14,073	67,998
Oil	"	9,005	90,050	13,507	13,421
Bones	"	1,826	2,130	320	1,456
Bone Black	"	7,389	3,920	588	568
Sugar ref'd & molasses	"	12,716	228,888	34,333	11,668
Butter and cheese	"	62	1,240	186	166
Hides and skins	"	363	10,890	1,634	....
Ashes	"	56	120	18	64
Rags	"	302	906	136	....
Mats	bundles of 5	5,660	3,036	455	5,810
Sundries	....	....	50,000	7,500	....
Total value of exports 1851		....	4,374,851	656,228	....

* 10½ imperial quarters. † 20 to a ton.

The imports are sugar, tea, herrings, iron and steel, coffee, wines, tin and tin plates, dye-woods, tobacco, spices, drugs, coals, etc. Salt is a government monopoly; any person being allowed to import it, but he must either sell it to government at a price fixed by them, or export it again.

ACCOUNT OF THE PRODUCTS IMPORTED INTO KÖNIGSBERG BY SEA IN THE YEAR 1851, SPECIFYING THE QUANTITIES IMPORTED FROM GREAT BRITAIN AND ELSEWHERE, WITH THEIR ESTIMATED VALUES.

Articles.		From the United Kingdom	From all other places.	Total quantities.	Value in sterling.
					£
Arrack, rum, & brandy	cwts.	614	13,589	14,203	38,848
Ashes, calcined	"	20	296	316	417
Cotton wool	"	1,422	918	2,340	7,020
Cotton wares	"	82	224	256	3,072
Cotton yarn	"	5,963	64	6,027	22,601
Coffee	"	816	14,694	15,510	58,510
Cheese	"	7	526	533	959
Copperas and vitriol	"	2,087	582	2,669	1,201
Coals	"	190,300	360	190,660	7,627
China and earthenware	"	58	1,178	1,236	6,988
Cement	"	7,868	....	7,868	1,180
Dye wood	"	1,218	9,553	10,771	11,310
Drugs	"	3,414	11,656	15,070	11,802
Fruit, southern	"	133	4,058	4,191	6,287
Fruit, fresh and dried	"	....	1,198	1,198	1,258
Fire clay	"	2,104	....	2,104	105
Glass and glassware	"	10	1,922	1,932	4,347
Gypsum	"	....	81,225	81,225	1,875
Honey	"	....	1,289	1,289	2,280
Hops	"	87	718	755	2,832
Hides and skins	"	485	2,544	3,029	9,087
Herrings	barrels	4,230	75,039	79,269	77,295
Indigo	cwts.	442	24	466	10,485
Iron and steel ware	"	1,493	13,951	15,444	34,749
Iron and steel, raw	"	30,718	1,490	32,208	9,662
Iron and steel, new	"	1,485	28,128	29,613	85,586
Lead	"	1,998	829	2,827	2,094
White lead	"	76	175	251	490
Litharge	"	119	30	149	179
Limestone	lasts	148	....	148	88
Linen	cwts.	49	1,156	1,205	18,000
Mill and grind-stones, files and bricks	lasts	261	566	827	3,722
Malt liquors	cwts.	1,588	17	1,605	2,166
Molasses	"	....	207	207	218
Mustard	"	116	....	116	696
Oil, different sorts	"	7	3,575	3,582	8,060
Paper	"	....	341	341	975
Rice	"	4,906	4,903	9,809	11,770
Salt	"	145,847	8,618	158,865	9,870
Spices of all kinds	"	1,837	14,458	16,296	24,435
Sugar, refined	"	....	735	735	1,654
Sugar, raw	"	100,400	24,948	125,348	150,418
Succory root	"	....	9,642	9,642	7,389
Tea	"	9,058	4,894	13,447	121,023
Tin	"	84	133	217	651
Tinplate	"	655	1,396	2,051	9,230
Tobacco, manufactured	"	....	2,841	2,841	17,046
Tobacco leaves	"	....	1,111	1,111	3,333
Tar and pitch	"	600	14,247	14,847	3,345
Train oil	"	2,143	2,150	4,293	5,152
Vinegar	"	....	971	971	437
Wine	"	175	17,466	17,641	31,758
Woolen ware	"	145	69	214	2,889
Wool, not European	"	....	960	960	720
Sundry imports of various descriptions		....	....	....	7,500
Total value of imports		....	....	....	806,385

Money, Weights, and Measures, same as at Dantzic; see DANTZIC.

Kura·lee, or **Karachee**, the principal sea-port town of Scinde, on an inlet of the Indian Ocean, 18 miles from the west branch of the Indus. Lat. 24° 47′ 3″ N., long. 66° 56′ 2″ E. It stands on a low, sandy shore, and a few years ago consisted, with its extensive suburbs, mostly of straggling huts; but the latest accounts state that it has been almost rebuilt, and greatly improved since it has become a British possession. Its trade and consequence are rapidly augmenting. The harbor is the only port along this coast for vessels drawing more than 10 feet water, and is sheltered by Cape Munorah, four miles south-west.

L.

Laboring of a ship, implies pitching or rolling heavily in a turbulent sea, an effect by which the masts and hull are greatly endangered; because by the rolling motion the masts strain upon their shrouds with an effort which increases as the sine of their obliquity; and the continual agitation of the vessel often loosens her joints and makes her extremely leaky.

Labrador, a large peninsula of North America, nearly of a triangular shape, extending from N. lat. 50° to 63°, and from W. long. 56° to 79°. It is bounded on the south by Canada and the Gulf of St. Lawrence, east by the Atlantic Ocean, north by Hudson's Straits, and west by Hudson's Bay. Labrador is thus detached from the arctic lands, but is nevertheless a country as frozen, desolate, and barren, as those on the west of Hudson's Bay. The coast along that spacious inland sea is called East Main, and the climate there is peculiarly rigorous. The whole surface of Labrador, indeed, is as sterile and naked as any part of the globe. The prevailing features are rocks, swamps, and water; and vegetation appears as the last effort of expiring nature. Small, scraggy poplars, stunted firs, creeping birch, and dwarf willows, thinly scattered in the southern parts, constitute the whole of the trees. Herbs and grass are also in sheltered places to be met with, but in the most northerly parts only varieties of moss and lichens are to be found. The whole of the interior, from the aspect of what has been explored, and from the reports of the Esquimaux and other Indians, seems to be broken up with rivers, lakes, and rocks. The prevailing rock continuous to the sea-shore of Labrador, is gneiss. On this, at L'Anse à Loup, the most fertile part of the country, a bed of old red sand-stone, abut 200 feet thick, is superimposed, and extends about half a mile inland. Here, also, as on other parts of the coast, the appearances of the cliffs and of the land near them, and the rolled masses inland, which have evidently been exposed to the action of the sea, seem to prove that the latter has considerably receded.

On the coast of Labrador the winter is extremely severe, the thermometer often falling 30 degrees below the freezing point; and although the houses of the Moravian missionaries are heated by large cast-iron stoves, the windows and walls are all the winter covered with ice, and the bed-clothes freeze to the walls. Rum is frozen in the air as rapidly as water, and rectified spirits soon become thick like oil. From December to June, the sea is completely frozen over, and so intense is the cold during the winter months, that traveling is sometimes attended with the most painful consequences. The summer months, again, are extremly hot along the coast, the thermometer rising to 86 degrees of Fahrenheit, when swarms of musquitoes infest the air.

The climate is not insalubrious; and, notwithstanding all its disadvantages, Labrador is of considerable importance to Great Britain. No country is better provided with large, convenient, and safe harbors, or supplied with better water; and vast multitudes of all those kinds of fish common to the arctic seas abound on the coast. Herrings are very fine and plentiful in August, but there is no weather to cure any kind of fish after the 10th of September. The rivers are frequented by salmon and sea trout; and pike, barbel, eels, river trout, and the like, are likewise found in them. On the numerous islands which are scattered along the east coast, multitudes of eider-ducks and other water-fowl breed. Those of large size have deer, foxes, and hares upon them. On the continent the wild animals are principally bears, wolves, foxes, and otters; beavers and deer are not numerous, but their furs are remarkably close and beautiful. The birds of the country are the white-tailed eagle, falcons, hawks, and owls of various kinds; raven, white grouse, ptarmigan, spruce-game, whistling-curlew, gray plover, various kinds of sand-pipers and other waders; geese, ducks of various sorts, shags, gulls, divers, and some few species of small birds. During the short summer insects are very numerous, especially in swampy places. In winter they exist in a state of torpidity, from which they are aroused by the solar heat or artificial warmth. The phenomenon of the aurora borealis is uncommonly brilliant in this region, and exercises a very marked influence over the compass.

No accurate account of the trade of Labrador can be obtained, as there are no custom-houses or public officers in the country; but the following estimate is probably as close an approximation as can be made to the annual value of the exports:

In Newfoundland vessels	£240,000
" Nova Scotia "	96,000
" American "	96,000
" Canadian "	29,000
" Vessels owned or chartered by English or Jersey houses	96,000
Total	£557,000

Some, however, estimate the total exports at £800,000.—E. B.

The exports of Labrador are cod, herring, pickled salmon, fresh salmon (preserved in tin cases), seal-skins, cod and seal oil, furs, and feathers.

Fisheries of Labrador.—As late as 1761, it is not probable that fishermen of *any* flag had visited the waters of Labrador. The English whale and sea fisheries were the first, and employed upward of 100 vessels, at times, prior to the year 1775. The earliest adventures were near 1763; as at that time the Labrador country was politically separated from Canada, and annexed to the government of Newfoundland by royal proclamation, to the end that the "open and free fishery of our subjects may be extended." The pursuit of the cod and salmon followed. Meantime the Moravians, whose principal settlement is at Nain, who have ever led a quiet and simple life, and who now annually ship furs, oils, and other productions of that region to England, in payment for the manufactured commodities which they require, had founded a colony. The islands are so numerous, and so near each other, as to resemble, and often to be mistaken for, the main land. Back from the coast, the country is still unknown. Labrador still forms a part of the colony of Newfoundland. The natives bear the general name of Esquimaux. The resident inhabitants of European origin are English, Irish, Jerseymen, and Canadians, who are employed either on their own account, or as servants of others, as furriers, seal-catchers, and cod and salmon-fishers.

The Canadian fisheries are small. They send 8 or 10 vessels to the coast, with 80 or 100 men. They fish for cod and salmon. They carry a part of what they catch to Quebec, and send a part to Europe. The colonists of Nova Scotia and New Brunswick adventure at Labrador to a considerable extent; but they do not pursue the business as regularly and with as much system as do those of Newfoundland. Sometimes they send more than 100 vessels in a year; at others the number is much less. They engage principally in the cod-fishery, making a single fare and curing their fish at home. The Labrador fisheries have "increased more than sixfold," says Macgregor, "principally in consequence of our fishermen (the

English) being driven from the grounds now occupied by the French," since the year 1814; and he estimates that about 20,000 British subjects are at present required during the fishing season, in the catching, curing, and transporting the various products of these remote seas.

STATISTICS OF FISHERIES.

Year.	Vessels.	Men.	Dry fish produced.	Salmon produced.	Seals caught.	Oils produced.	Value.
	No.	No.	Quintals.	Tierces.	No.	Tuns.	Dollars.
1829	608	9,110	678,000	....	....	1,682	....
1831	700	11,200	720,000	2,430	16,000	2,200	1,450,000

The fishing establishments of the English and Jersey merchants are extensive and well conducted. They are engaged in the cod and salmon fisheries, and in the taking of seals. In the year 1831, the value of their shipments to Europe was upward of $200,000. The number of these commercial houses is from 10 to 12, who manage their business at Newfoundland, either by the temporary presence of junior partners or clerks, or by resident agents. The people of Newfoundland, averring that the French and Americans have driven them from their own "bank-fishery," resort to Labrador. They employ 200 or 300 vessels. A part make two voyages in a season. The first fare is commonly cured on the coast; but the second is carried home without drying. Some of the merchants of Newfoundland ship both cod and salmon directly to correspondents in Europe; while others order their captains to return to the island and unlade their fish and oil at their own warehouses.—SABINE'S *American Fisheries.*

Labuan, a small island off the north-west coast of Borneo, a dependency on the British crown, about six miles distant from the nearest point of the mainland, and 30 miles north from the city of Borneo or Bruni, lat. 50° 12′ N., long. 115° 19′ 36″ E. It is from 25 to 30 miles in circumference, flat, and covered with wood. The anchorage on the south side of the island is protected by a greater and three smaller islands; and the town of Victoria has been commenced at the embouchure of a rivulet in a small bay, at the head of the anchorage. Coal of good quality is found on the island, and it is well supplied with fresh water. It was ceded by the Sultan of Borneo to Great Britain in 1844; and Sir James Brooke, who negotiated its cession, was afterward appointed its governor. When it came into possession of the English it was uninhabited; but its situation is such that, provided it be moderately healthy, it can hardly fail to become an important emporium. It lies near the best route for shipping from the Straits of Singapore to China, and, while it is extremely well situated for carrying on trade with the west and north coasts of Borneo and the Philippine Islands, it will serve as a harbor of refuge, and as a convenient station for the steamers and other ships of war required to put down the piracy that has been, to the great injury of commerce, carried to so great extent from the ports and rivers of Borneo, and of some of the adjacent islands. In this respect, its abundant supply of coal will be of the greatest service. In war, the possession of Labuan will give to the English entire command of the Chinese Sea.—BROOKE'S *Journal.*

Borneo, or Bruni, on the adjacent shore of the mainland, and the residence of the Sultan of Borneo proper, has been termed the Venice of the East. It contains from 30,000 to 40,000 inhabitants, mostly Malays, and really seems as if it floated on the waves. It is situated on an estuary, and though built with little regard to regularity, it is intersected crosswise by two main streets, which divide it into four portions, one only of which stands on dry land. The houses in the other three parts are of wood, built on piles, which support them above the water, with streets, if so they may be called, to admit the passage of canoes. The steamer which conveyed Sir James Brooke to Borneo, when Labuan was ceded, anchored in the main street, in the centre of the town! "The greatest novelty at Brunei," says Mr. Marryat, from whom we have borrowed these details, "is the floating bazaar. There are no shops in the city, and the market is held every day in canoes. These come in at sunrise every morning from every part of the river, laden with fresh fruit, tobacco, pepper, and every other article which is produced in the vicinity; a few European productions, such as handkerchiefs, check-cotton prints, etc., also make their appearance. Congregated in the main street, the canoes are tacked together, forming lanes, through which the purchasers, in their own canoes, paddle, selecting and bargaining for goods with as much convenience as if the whole were transacted on *terra firma.* Iron is here so valuable that it is used as money. 100 flat pieces, an inch square, are valued at a dollar; and among the lower classes these iron pieces form the sole coin. They are unstamped, so that any person appears to be at liberty to cut his own iron into money; but whether such is really the case, I can not vouch."—MARRYAT'S *Borneo.*

But though deficient in iron, the gold mines of Borneo are said to be of the richest description. Sir Stamford Raffles estimated that in his time about 32,000 Chinese laborers were employed in these mines on the west coast of Borneo; and it is not easy to say how productive they might become were the miners in a condition to prosecute their undertakings in safety, and to bring the resources of science and of capital to their aid. Antimony is also found in abundance in Borneo, especially in the district of Sarawak, of which Sir James Brooke is rajah; and the diamonds of Borneo rival those of India and Brazil. But independently of its coal, and of its precious and other metals, its vegetable products might alone furnish the materials of an extensive commerce. The sago-palm grows in great perfection in many parts of the island, and sago is largely exported in a rough state to Singapore. The areca nut, rattan, gutta-percha, gum-benjamin, camphor, birds' nests, etc., are also considerable articles of export; and sugar, pepper, and all the products of tropical regions, might, with a little care, be raised to any extent in most parts of this vast island. The numbers and ferocity of the savages by whom it is occupied present, indeed, formidable obstacles to its improvement. But civilization is beginning to make its way among them; and, though probably slow, its progress can not well be arrested.

Lac or **Gum Lac** (Ger. *Lack, Gummilack;* Fr. *Laque, Gomme laque;* It. *Lacca, Gommalacca;* Sp. *Goma laca;* Rus. *Laka, Gummilak;* Arab. *Laak;* Hind. *Lak'h;* Sans. *Lākshā*), a substance which has been improperly called a gum, produced in Bengal, Assam, Pegu, Siam, etc., on the leaves and branches of certain trees, by an insect (*chermes lacca*). The trees selected by the insect on which to deposit its eggs are known by the names of the bihar-tree (*Croton laciferum* Lin.), the pepel (*Butea frondosa*), butt and coosimtrees, etc. After being deposited, the egg is covered by the insect with a quantity of this peculiar substance, or lac, evidently intended to serve, in the economy of nature, as a nidus and protection to the ovum and insect in its first stage, and as food for the maggot in its more advanced stage. It is formed into cells, finished with as much art as a honeycomb, but differently arranged. Lac yields a fine red dye, which, though not so bright as the true Mexican cochineal, is said to be more permanent; and the resinous part is extensively used in the manufacture of sealing-wax and hats, and as a varnish. Lac, when in its natural state, incrusting leaves and twigs, is called *stick lac.* It is collected twice a year; and the only trouble in procuring it is in breaking down the leaves and branches, and carrying them to market. When the twigs and sticks are large, or only partially cov-

ered, the lac is frequently separated from them, as it always ought to be when shipped for market, to lessen the expense of freight. The best stick lac is of a deep red color. When held against the light it should look bright, and when broken should appear in diamond-like points. If it be not gathered till the insects have left their cells, it becomes pale, and pierced at the top; and it is of little use as a dye, though probably better for a varnish.

Lac dye, lac lake, or *cake lac*, consists of the coloring matter extracted from the stick lac. Various processes have been adopted for this purpose. It is formed into small square cakes or pieces, like those of indigo. It should, when broken, look dark-colored, shining, smooth, and compact; when scraped or powdered, it should be of a bright red color, approaching to that of carmine. That which is sandy, light-colored, and spongy, and which, when scraped, is of a dull brick-dust color, should be rejected. Notwithstanding the continued fall in the price of cochineal, the use of lac dye has been extending. The annual consumption in 1858 was estimated at about 1,200,000 lbs., having more than quintupled since 1818. The finest qualities of lac dye are seldom met with for sale in Calcutta, being generally manufactured under contract for the European market. When stick lac has been separated from the twigs to which it naturally adheres, and coarsely pounded, the native silk and cotton dyers extract the color as far as it conveniently can be done by water. The yellowish, hard, resinous powder which remains, having somewhat of the appearance of mustard-seed, is called *seed lac*. When liquefied by fire, it is formed into cakes, and denominated *lump lac*. The natives use the latter in making bangles, or ornaments in the form of rings, for the arms of the lower class of females; the best *shellac* being used in manufacturing these ornaments for the superior class.

Shellac is produced from seed lac, by putting the latter into bags of cotton cloth, and holding it over a charcoal fire, when the lac melts, and being strained through the bag, the resinous part, which is the most liquefiable, is obtained in a considerable degree of purity; it is formed into thin sheets or plates. Thin, transparant, or amber-colored shellac is best. Avoid that which is thick, dark, and speckled. It should always, when broken, be amber-colored on the edge. That which has a dark-brown fracture, however thin, should be rejected. When laid on a hot iron, shellac, if pure, will instantly catch fire, and burn with a strong but not disagreeable smell. It used to be principally employed in this country in the manufacture of sealing-wax and as a varnish, but it is now very extensively used in the manufacture of hats. In Bengal lac is chiefly produced in the forests of Sylhet and Burdwan. The finest dye is said to be obtained from the stick lac of Siam and Pegu; but the shellac or resinous part obtained from the latter is inferior to that produced from Sylhet stick lac. It may be obtained in almost any quantity.—BANCROFT *on Permanent Colors*; AINSLIE'S *Mat. Med.*; MILBURN'S *Orient. Com.*

Lac of Rupees, is 100,000 rupees, which, supposing them standard or siccas, at 2s. 6d. each, amounts to £12,500 sterling.

Laccadives, an archipelago of low islands lying off the western coast of India, between 8° and 13° N. lat. There are 19 considerable ones; but as most of them are surrounded with reefs and steep rocks, with a great depth of water close to them, the approach to them is very dangerous. Between these islands there are many channels, through which ships from India, bound to Persia or Arabia, frequently sail. The safest of these is called Mamale, or the Nine-degree Channel, which runs between the islands of Seuhilipar and Kalpenny. The largest of these islands is about 7 miles in length and 2½ in breath. Most of them are inhabited by a race of Mohammedans called Moplays. They do not yield grain, but produce an infinite quantity of cocoa-nuts, from the husks of which they form the *coir* cables, which are more elastic and durable than hemp, as the sea-water, instead of rotting, preserves them. These islands are well supplied with fish, and carry on a trade with the small shells called *cowries*, which pass as coin all over India and most of Africa. Most of these islands are under the uncontrolled management of the beebee of Cannanore, subject to the payment of an annual tribute to the British government. A proposal has been made to the beebee to transfer them to the British, in consideration of a pecuniary equivalent. They were discovered by Vasco de Gama in 1499, but have since been little frequented by Europeans.

Lace (Du. *Kanten*; Fr. *Dentelle*; Ger. *Spitzen*, It. *Merletti, Pizzi*; Rus. *Krusheveo*; Sp. *Encajes*), a plain or ornamented net-work, tastefully composed of many fine threads of gold, silver, silk, flax, or cotton, interwoven, from *Lacinia* (Lat.), the guard hem or fringe of a garment. This delicate fabric appears to have claims to high antiquity, but its origin is involved in considerable obscurity. That it was worn by Grecian females is certain, and the derivation of the word *lace* affords presumptive evidence that it was also in use among the Romans. In Venice, and the neighboring States of Italy, it was very early worn; and Mary of Medicis is supposed to have been the first who introduced its use into France; but as early as 1483 it was included in a list of articles prohibited from importation into England. Hence it had been made in this country *prior* to the period above mentioned; and this prohibition, like many other subsequent acts, was for the protection and encouragement of home manufactures. But *pins*, which are indispensable in the process of fine lace-making, were unknown till long afterward; so that it is probable the fabric made was neither very fine in texture nor produced to any great extent. It is uncertain by whom the manufacture of lace was originally introduced into this country. About the middle of the 17th century the lace trade was flourishing in Buckinghamshire; and so greatly had it advanced in England, that, by a royal ordonnance in France, passed in 1660, a mark was established upon the thread lace imported from this country and from Flanders, and upon point lace from Genoa, Venice, and other countries.

Pillow, or *Thread Lace*, is made by placing a perforated pattern on a hard stuffed pillow, and the thread required is wound upon bobbins with a groove in the upper part for retaining the thread; while, to form the meshes, pins are stuck in the cushions, and threads woven or twisted round them, the pattern showing the points of insertion for the pins, and also the direction for the gimp, which is interwoven with the fine threads of the fabric to form the pattern. At the commencement of the work the bobbins are arranged on one side of the cushion, and are brought to the front side, two pairs at a time, and twisted together. The woman holds one pair of bobbins in each hand, and twists them three times over each other to form the sides of the mesh, the adjacent bobbins of each pair are next interchanged, so as to cross these threads over one another to form the bottom of the next. Supposing the four bobbins to be marked 1, 2, 3, 4,—No. 1 is twisted round 2, and No. 3 round 4; these, in order to cross 2 and 3, are interchanged, so that 1 and 3 and 2 and 4 come together, and at the next twist these pairs of threads will be combined. As the meshes or half-meshes are formed, they are secured by pins. These four bobbins are now put on one side of the cushion; two more pairs are brought forward, twisted and crossed as before, and these operations are repeated until a row of meshes is formed of the required breadth, when the bobbins are worked over again to form another row. From 48 to 60 bobbins are required for every inch of breadth. Pillow or thread

lace, formerly employed a large number of women and children in the counties of Bedford, Buckingham, Northampton, and Oxford, but the demand for this kind of white thread lace failed, and black lace took its place. *Honiton lace* differs from pillow lace in having the pattern made separately. The ornaments were formerly confined to simple sprigs and borders; but the fabrics now produced show extreme delicacy of execution, with beauty and taste in design: flounces, shawls, scarfs, handkerchiefs, berthes, etc., now vary in price from 10 to 200 guineas. The Honiton lace district extends about 30 miles along the coast of Devonshire, and about 12 miles inland. In 1851 from 7000 to 8000 persons were employed in the manufacture.

British point, *tambour*, and *Limerick* laces are chiefly imitation, and are produced in shawls, scarfs, dresses, court trains, flouncings, lappets, etc. British point is made chiefly in the neighborhood of London, tambour chiefly at Islington, Coggleshall, and Nottingham, while Limerick lace is peculiar to Ireland. Black laces now occupy a considerable portion of the attention of the trade. The most celebrated laces have been classed as—1. *Brussels*, the most valuable. There are two kinds: *Brussels ground*, having a hexagon mesh, formed by plaiting and twisting four threads of flax to a perpendicular line of mesh; *Brussels wire ground*, made of silk; meshes partly straight and partly arched. The pattern is worked separately, and set on by the needle. 2. *Mechlin:* a hexagonal mesh, formed of three flax threads twisted and plaited to a perpendicular line or pillar. The pattern is worked in the net. 3. *Valenciennes:* an irregular hexagon, formed of two threads, partly twisted and plaited at the top of the mesh. The pattern is worked in the net similar to Mechlin lace. 4. *Lisle:* a diamond mesh, formed of two threads plaited to a pillar. 5. *Alençon*, called *blond:* hexagon, of two threads, twisted similar to Buckingham lace; considered the most inferior of any made on the cushion. 6. *Alençon point:* formed of two threads to a pillar, with octagonal and square meshes alternately.

In the manufacture of lace, France takes the lead; and it is calculated that the production of lace by hand gives employment in that country to upward of 200,000 females of all ages. It is all made with bobbins upon a small pillow, except at Alençon, where the needle only is employed. The materials used are hand-spun linen thread, cotton, wool, silk, and gold and silver thread. *Point d' Alençon* is the only lace made with pure linen hand-spun thread; this thread is worth from $500 to $600 per pound. White lace is now chiefly made with cotton thread, Nos. 120 to 320. The principal seats of the manufacture are—Caen and Bayeux, Chantilly and its neighborhood, Lille, Arras, Mirecourt, Puy, Bailleul, and Alençon. Each of these districts has its own peculiar style; and although the lace may be made in the same way, and with the same material, in all these districts except the last, yet each is easily recognized. Silk blond originated at Caen, and was so called from being made of undyed silk of a nankeen color: the finest white or the finest black silk is now employed. Caen and Bayeux excel all other places in the production of piece goods, and manufacture shawls, robes, mantles, etc., more extensively than any other districts in the world. By means of a stitch called *rucroe*, the women of the department of Calvados join several parts into one piece so cleverly as to defy detection, even with a magnifying glass. Most of the improvements and novelties in lace-making originate at Mirecourt; it produces the same kind of lace as Lille and Arras, viz., clear foundation, *fonds clair*, and also *fonds de champs*, in white thread, also a lace resembling the Honiton called *guipure*.

Flowers are also made, and sewed upon the extremely fine net called Brussels net, closely resembling the Belgian fabric. The whitest and cheapest French lace is produced at Bayeux.

Belgium is the great rival of France in the manufacture of laces, the chief varieties of which are known as *Brussels*, *Mechlin*, *Valenciennes*, and *Grammont*. Brussels produces two descriptions of lace, known as *point à l'aiguille*, and *Brussels plait*, the one made entirely with the needle, and the other on the pillow. The finest kind is made of very fine flax thread, and some of cotton. It is remarkably soft and clear, but very costly. Mechlin laces are made at Malines, Antwerp, etc. They are made in one piece on the pillow, and the flowers are surrounded by a plait thread, which designs the outline, and has the effect of embroidery. Valenciennes laces are made chiefly at Ypres, Menin, Courtrai, Bruges, Ghent, Alost, and their respective neighborhoods, each town having its characteristic peculiarities by which its productions are identified. Ypres produces laces of the finest square grounds, varying in price from 12 cents to $250 the English yard.

It is natural to suppose that attempts would be made to lessen the cost of production of so beautiful and costly an article as lace. It was not, however, until machinery had been largely introduced for the purpose of manufacturing textile fabrics that lace machinery can be said to have been successfully employed. About the year 1768 a frame-work knitter of Nottingham employed the common stocking-frame in the manufacture of lace, and about the same time another person of the same place introduced a pin machine for making single-press point-net in imitation of the Brussels ground. Various machines were from time to time introduced, all of which, except the *warp machine*, have been superseded by the *bobbin-net machine*, so called from the circumstance that the thread that makes the lace is partly supplied from bobbins and partly from a warp. The first successful machine of this kind was made and patented by John Heathcote in 1809, the principle of which was to pass the bobbins from front to back, and from back to front, while a lateral motion was imparted to the warp-threads, thus causing one series of threads to wrap round the other. The first machine was so complicated, that 60 motions were required to complete one hole—an effect that can now be produced with six. The cost of production has also more than proportionally decreased; for in 1815 one square yard of the produce was worth $7, and can now be purchased for eight to ten cents. Up to the year 1831 plain net and quillings were the chief produce of the bobbin-net machine; but about this time methods were introduced to *purl* and *bullet-hole* the edges of narrow laces, finishing them afterward, with a gimp thread, with the needle. The machines used were known as the *Leavers*, named after the original constructor; the *pusher machine*, so called from having independent pushers to propel the bobbins and carriages from front to back, instead of pulling or hooking them; the *circular machine*, so called from the bolts or combs on which the carriages pass being made circular instead of straight; the *traverse-warp machine*, so called from the warp traversing, instead of the carriages. About the year 1839 the *Jacquard* apparatus was successfully applied to a pusher machine; and since 1841, when a plan was discoverd for applying the Jacquard to the guide-bars, scarcely a machine has been worked without the ornaments being applied by means of cards. New sources of manufacture soon developed themselves, such as flounces, scarfs, shawls, window-curtains, etc.

Bobbin-net lace owes much of its beauty to the quality of the threads, and the correct shape of the meshes. By increasing the number of warp-threads within a given space the meshes are reduced in size, and finer lace is formed. There may be from 700 to 1200 and upward of warp-threads in a piece one yard wide. The fineness, or *guage* or *points*, as it is called, depends

on the number of slits in the combs, and hence on the number of bobbins in an inch; thus *guage nine points* indicates nine openings in one inch of the comb. The length of work counted vertically, and containing 240 holes or meshes, is called a *rack*. A circular-bolt machine may produce about 360 racks per week. Bobbin-net is made up in pieces of from 20 to 30, or more yards in length, and of variable breadth. Narrow quillings are worked together in a number of breadths, united by threads, which are afterward drawn out. In well-made lace the meshes are slightly elongated in the direction of the selvage. Ornaments, consisting of separate flowers, sprigs, etc., are worked in by a Jacquard apparatus attached to the frame; but as the ornaments are all necessarily connected by the thread of gimp which forms them, the connected thread is afterward cut out with scissors, by children employed for the purpose. Where the machine produces only one plain net, the pattern is worked in by hand, the lace-runner being guided by a lithographic pattern placed under the net. When the embroidery is complete, it is examined, defective parts are marked by tying the lace in a knot, and these are restored by a distinct set of women called *lace-menders*.

In addition to the bobbin-net machine for making lace, there is also the *warp machine*, invented about the year 1775. It was suggested by the stocking-frame, which only one thread is required, while in the warp-frame there is a thread to each needle. The first articles made by it were silk stockings, with blue and white zig-zag stripes, or *vandykes*, as they were called, from the name of one of the four claimants to the invention of the warp-frame, the other three being Englishmen. About 1784 a Nottingham mechanic greatly improved the warp-frame by the application of the rotatory motion, and the cam-wheels to move the guide-bars, still known as *Dawson's wheels*. The improved frames produced officers' sashes, purses, braces, and other elastic textile fabrics, the manufacture of some of which still continues. In 1796 a new fabric was produced from the warp, and employed for sailors' jackets, pantaloons, and the article known as Berlin, so much used for making gloves. Warp machines were the first to produce ornamental patterns on lace, such as spots, bullet-holes, etc., which had been previously embroidered or tamboured by hand. The bobbin-net machine, invented in 1809, soon became a formidable rival of the warp, and influenced its fortunes in various ways, until 1839, when the Jacquard apparatus was applied to it, and so much increased its capabilities as to introduce into the warp-lace trade of Nottingham a new class of products of elaborate design, such as shawls, scarfs, mits, falls, laces, etc. Of late years the *twist machine* has been employed on similar goods, and has to a great extent superseded the warp. Great improvements have also been introduced in the English methods of *dressing* lace, especially in silk goods. Many new kinds of elastic fabrics, in gloves, in silk, and other materials, have been introduced. Velvet, and velvet in combination with lace, have also been produced at the warp-frame. At the time of the Great Exhibition there were about 1400 warp-frames in operation, namely about 600 in Leicestershire, about 400 in Derbyshire, and about the same number in Nottinghamshire. The employment in the various branches was estimated as follows: 150 machines engaged in the production of blond, and other silk laces; 150 in cotton tattings, 550 in Leicester hosiery, etc.; 100 in lace gloves and mits, 150 in woolen cloth, hosiery, purses, and various fabrics for gloves, etc. The first machines were about 16 inches in width; they are now, in the Nottingham trade, from 90 to 150 inches in width, and in the Leicester hosiery trade, from 44 to 72 inches. The number of persons employed in the warp trade in Great Britain, in 1851, was estimated at 10,000, and the capital invested at $1,800,000, making a return per annum of $3,500,000. In the Great Exhibition was exhibited a power machine, capable of producing (working 12 hours per day) 800 racks per week, which, when dressed, would be equal to about 1200 square yards. A yard of 4-quarter white silk blond, which in 1830 cost 50 cents, can now be had for 12 cents.

Gold and Silver Lace.—The textile fabric known as gold or silver lace consists of warp threads of silk, or of a mixture of silk and cotton, while the weft or shoot is a silk thread covered with silver, or with silver gilt, as the case may be. The production of this thread is a remarkable illustration of the extensibility of gold, and of the ductility of silver. The silver preferred by the wire-drawers is that which has been separated from argentiferous galena, this being less brittle than the silver obtained from purer sources. From 400 to 500 ounces are cast into an ingot about 2 inches in diameter, and from 20 to 24 inches in length. This is made red-hot in a charcoal fire, and hammered until sufficiently reduced to pass through the first hole of the draw-plate, the hammering increasing the tenacity and elasticity of the metal. After the bar has been reduced by passing through 10 or 12 holes, it is planed, in order to remove any imperfections from the surface which would interfere with the perfect gilding; the blemishes are readily detected by the reflection of a sheet of foolscap paper slightly arched, and placed over the bar. The bar is now gilt, by placing on it a number of gold leaves, varying from 10 to 30, according to the richness of the wire required, the higher qualities being used for military purposes, and pearls and bullions for embroidering, while the lower qualities are used for liveries, the ends of muslins, and for skein threads exported to India and China. The gold leaves are placed in a row, side by side, nearly the length of the bar, on a piece of cartridge paper: the bar is then gently placed on the leaves, pressed close, and the edges of the leaves raised up until the silver is entirely covered. The bar is next enveloped in paper tied tightly round with cord, and placed in a charcoal fire, where it is left until it becomes of a bright red heat, the paper not burning, but becoming red with the metal, when it slowly consumes, after which the bar is withdrawn. While still red-hot it is burnished with a blood-stone or with South Sea ax-stone, for the purpose of uniting the gold and the silver perfectly. When cold the surface is covered with wax, and the bar is drawn into wire through graduated steel dies, and, after one or two annealings, finished by drawing through perforated rubies, so fine that from an ounce of metal a wire a mile and a quarter in length is produced. At this point the wire has not so rich and deep a shade of yellow as is required, but this is given by winding the wire round a copper cylinder, with the addition of a small portion of wax, and filling the cavity of the cylinder with red-hot charcoal made from birch-wood, the effect of which is to deepen the color, and render it permanent. The next process is to flatten the wire by passing it between a couple of steel rollers, one of ten, and the other of four inches in diameter, made of the finest steel, and of exquisite polish. They are manufactured in Rhenish Prussia, at a cost of $600 for a single pair of rollers. The flattened wire is wound on small bobbins, which are placed in the centre of circular rings, attached to a bar over a spinning frame. On the front of the frame are bobbins of silk, the threads of which pass through the centre of the ring to which the reel of wire is fixed. The whole is set in motion, and while the thread is being twisted, the ring with the wire revolves round the thread in the opposite direction. In this way from 30 to 40 threads are covered at once, the result being a resplendent flexible gold thread, adapted to the purposes of lace-making, embroidery, etc. Of this thread, although gold only appears, probably 9-10ths of its bulk is silk, while of the remaining 1-10th only 1-50th part is gold. See details on this subject in the *Journal*

of the Society of Arts, No. 178, in the Report of Mr. F. Bennoch's paper on "Thread or Fibre Gilding."—E. B.

The exports of laces from the United States for the year 1856, were as follows:

Countries.	Thread and insertings.	Value.
Canada	$15,789	$25,373
British possessions	1,440	....
Mexico	249	1,472
Total	$17,458	$26,845

STATEMENT SHOWING THE IMPORTS OF LACES AND EMBROIDERIES INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30TH, 1856.

Whence imported.	Laces.		Embroideries of wool, cotton, silk, and linen.
	Thread and insertings.	Cotton insertings, trimmings, laces, braids, etc.	
Swedeo and Norway	....	....	$19
Hamburg	$29	....	11,549
Bremen	32,704	$18,655	186,754
Holland	....	....	746
Belgium	111	85	2,284
England	275,546	1,151,222	3,294,092
Scotland	279	3,940	198,194
Malta	27	28	....
Canada	....	....	15
British West Indies	....	373	46
British pos. in Africa	....	....	40
British East Indies	....	....	252
France on the Atlantic	100,252	19,743	958,488
France on the Mediter.	112	....	1,725
Canary Islands	....	....	258
New Granada	1,592	2,023	7,210
China and other places.	29	....	2,724
Total	$410,591	$1,191,019	$4,664,358

Lacquer, or **Lacker**, a yellow varnish, consisting of a solution of shellac in alcohol, colored by gamboge, saffron, annotto, or other yellow, orange, or red coloring matters. Lacquers are chiefly used for varnishing brass and some other metals, in order to give them a golden color and preserve their lustre.

Lacquer Ware, is derived from the Hindoo name *lac*, which is the resin secreted together with lac-dye by the lac insect. The lacquer ware has a covering or coating of lac; but two different processes are often confounded in India under this name—the one prevailing in the southern parts of India and in Burmah; the other in Cashmere and Lahore. The former of these wares, comprising lacquered cabinets, boxes, etc., was much appreciated in the last century; part being brought from Burmah and India, and part from China; but the lacquered or japanned work of Japan, seems to have been superior to either; many fine specimens of it may still be seen in the forms of large folding screens, etc. The chief expense of the manufacture arises from the care with which successive layers of varnish must be laid on. Boxes have been sent to this country in various stages of progress, which show the gradual production of the desired effect. The other kind of lacquered ware partakes somewhat of the nature of papier-maché, covered with one or more layers of lac varnish. Many of the lacquered boxes belonging to this class, from Cashmere and Lahore, are remarkable for the elegance of their patterns.

Lading, bill of. See BILL OF LADING.

Laden, in nautical language, the state of a ship when she is charged with a weight or quantity of any sort of merchandise or other materials equal to her tonnage or burden. If the cargo with which she is laden be extremely heavy, her burden is determined by the weight of the goods; if it be light she carries as much as she can stow, that she may be fit for the purposes of navigation. As a ton in measure is generally estimated at 2000 pounds in weight, a vessel of 200 tons ought, accordingly, to carry a weight equal to 400,000 pounds, when the matter of which the cargo is composed is specifically heavier than the water in which she floats; or, in other words, when the cargo is so heavy that she can not float high enough with so great a quantity of it as her hold will contain.

Laden in bulk, the state of being freighted with a cargo which is neither in casks, boxes, bales, nor cases, but lies loose in the hold, being defended from the moisture or wet of the hold by a number of mats, and a quantity of dunnage. Such are usually the cargoes of grain, salt, or such materials.

Ladoga, a lake in Russia, the largest in Europe, lies between the governments of Viborg on the north and west, Petersburg on the south, and Olonetz on the east. Its greatest length is about 180 miles, breadth above 70. The coast is generally low, much indented, and abounding in dangerous reefs. The depth in some places reaches about 150 fathoms, in others it is insufficient for safe navigation. Storms are frequent, and the influx of many considerable streams produces strong currents. The chief rivers entering the lake are the Swir (or Sveer) from the east, bearing the waters of Lake Onega; the Volkhoff on the south; those of Lake Ilmen and the Saima on the north, draining the reticulation of waters of that name. It empties itself on the south-west by the Neva, into the Gulf of Finland. There are numerous islands scattered along the north-western shore, several of them inhabited. The principal towns on the coast are Kexholm, Schlusselburg, and Novaia Ladoga. A canal executed in the reign of Peter the Great connects the two latter, forming a direct communication between the Neva and Volkhoff.

Ladrone, or **Marianne Islands** (so called respectively from the thievish habits of the natives, and in honor of Queen Mary Anne of Spain), a group in the North Pacific Ocean, between lat. 13° and 21°, long. 144° and 146°. They are about 20 in number, of volcanic origin, irregular and picturesque in outline, and clothed with luxuriant vegetation. The intervening straits abound in shoals and currents, and there are few good harbors. The heat of the climate is somewhat tempered by the trade-winds. Among the vegetable products are sugar, rice, Indian corn, tobacco, cotton, indigo, etc. Of wild animals, the most numerous are swine, sometimes of large size; cattle, horses, asses, mules, and llamas, have been introduced by the Spaniards. The principal island is Guajtan, or St. John, the most southerly of the group. It is about 80 miles in circumference, and has a good fortified harbor, some miles to the south of St. Ygnacio de Agaña, the seat of government. The aboriginal inhabitants, an active and athletic race, have gradually given place to a mixed population, descended of colonists from Mexico and the Philippine Isles. This group was discovered in 1521 by Magellan; but no settlement was made in them for about 150 years, when the widow of Philip IV. sent out a body of missionaries to convert the natives. They were visited in 1742 by Anson, who spent some time on the island of Tinain, where he discovered architectural remains, indicating a considerable progress in the arts of civilization. There are two other small island groups of this name, the one on the coast of China, at the mouth of the bay of Canton, a great stronghold of pirates, the other off the coast of Guatemala.

Lager-Bier was introduced into this country, generally, about nine years ago. The process of manufacturing the peculiar and popular beer under consideration, differs very much from that in making common beer, or ale. The only materials used are malt, hops, and water, and an inspection of the breweries is convincing that much care and cleanliness are exercised in all the operations. Lager-bier ferments downward. Common beer can be made fit to drink in four or five days, according to the heat of the weather; but it requires as many weeks before lager-bier can be drank, and it is thought to improve constantly if it be given years of probation.

Breweries, etc.—The art of fermenting grain was early known to the ancients, who employed it advantageously in fattening animals. Urquhart has noticed

that Penelope steeped the grain with which she fed her geese. The earliest mention of beer is found in the history of the Egyptians, who are said to have invented it more than 12 centuries before the Christian advent. They called it, however, not *beer*, but *Pelusian liquid*, from Pelusium, a city near the mouth of the Nile, where it was first made. Hops were first used in England, A. D. 1524, where, it appears, they were for a time prohibited as a "poisonous drug." The famous *white beer* was made from wheat, at Nuremberg, in Germany, about A. D. 1541. *Ale* was brewed by the English Saxons as early as A. D. 728, and their "barley-wine" was celebrated for its exhilarating qualities. *Porter* was originally a mixture of different draught beers, first compounded in 1780 for the laboring classes in London, who required a beverage of more nutritive qualities than had been produced by the mixture of ales of two, three or four "threads" or draughts. The celebrated German *mumm* was first brewed at Brunswick, A. D. 1492, by Charles Mumm, who gave his name to his invention. England has, however, till recently, been the great "beer country." Official returns show that in 1850 the licensed brewers in the United Kingdom were:

In England, 5631; malt consumed, 24,055,202 bush.; Scotland, 1510; 950,105; Ireland, 951; 164,702.

Of this last quantity, the greater portion was doubtless used in distillation! The licensed tavern-keepers in Scotland are shown by these returns to have numbered 14,971, and the number in Ireland to have been 13,793, many of whom were also licensed to brew or distill.

The quantity of ale and beer brewed in the United States, in 1850, was 1,177,924 barrels; of whisky and high wines, 42,133,955 gallons; of rum, 6,500,500.

The amount of capital invested in the United States' breweries averaged $8,334,254; and the number of persons employed in this branch of commerce, 5487. The breweries in our American States have been greatly increased of late years by the addition of German capital, amounting nearly to $7,500,000, distributed among upward of 500 establishments. In 1847, the German breweries first introduced into this country the beverage known as *lager-bier;* perhaps the drink more extensively used than any other beer compound in the present day. The process of brewing this peculiar and popular *bier* differs, we are told, very much from that employed in making common ale or beer. The only materials, we learn, are malt, hops, and water, but the quantities employed, and the mean temperature observed, are a secret to all but the initiated. An inspection of the different breweries, will show that a studied care and cleanliness are exercised in all the operations. Fermentation, which in common beer is upward, we are told, in the instance of *lager-bier*, is the reverse, or downward; but as it is the nature of all fermentation processes for the "workings," as they are termed, to *ascend* for a certain period before they finally settle, we are inclined to believe this "downward fermentation" an ingenious joke, in order to stifle further inquiry. The word *lager*, in German language, means "*rest, repose,*" an attention this peculiar drink requires in order to secure a ripening or maturity of perfectness; and from this word the *bier* derives its prefix, *lager*.

The *lager-bier* annually made in New York city and suburbs is estimated at 85,000 barrels, a number we are inclined to believe beneath the actual average. The entire city consumption, however, of this bier from all parts, is computed to be not less than 3,075,000 barrels! The city retailers number about 2000, exclusive of the large hotels and restaurants, which alone consume from $5000 to $6000 worth annually. In the city of St. Louis, Missouri, there were drank, from 1st March to September 17, 1854, more than 17,500,000 glasses of lager and common beer, and the entire stock of 24 breweries of that district was completely exhausted. Philadelphia has 22 breweries of lager-bier, and the stock accumulated during the fall and winter of 1855, was valued at $600,000 wholesale! The city of Cincinnati has 7 first-class and 22 second-class breweries; the value of the "plant" (machinery, tubs, etc., etc.) of the former is estimated at $150,000 each. The first-class breweries average each about 4000 barrels per year. Most of them have large excavated vaults for stocking or lagering this bier. M. Von Beck's store-cellar, in the rocks at Rondout, New York, which will contain 30,000 casks, cost $15,000 for excavations, etc.

The brewing of *lager-bier* usually commences about October, and is then deposited till the succeeding April or May, when it is considered to be in "fine condition." The Cincinnati lager-bier breweries employ about 250 brewers, and as many others as assistants, etc., etc. The salary of a good foreman is $1000 per annum and house-rent; his assistants receive from $30 to $50 per month. They commence operations at four A. M., and get through in from 9 to 10 hours. These men are remarkable for good health. Some of these establishments make 9 brewings a week. The fall stock of Milwaukie lager-bier, in 1856, was fully 60,000 barrels. The western lager requires to be of a stronger quality than that made in the northern breweries. Of the beneficial qualities of this bier, opinions are far from unanimous; the partisans in favor of the beverage profess that from 10 to 60 glasses per day may be drank with impunity! While the editor of the *New York Scalpel*, in his issue for October, 1856, asserts that its continued use produces the most injurious effects on the human constitution, and which, if persisted in, induces disease and gradual decay, mentally and physically.

Lagoon, from the Latin *lacuna*, a ditch, means a morass. The name is given particularly to those creeks which extend along the coast of the Adriatic, in the present government of Venice, and which are formed by water running up in the land. They contain many islands. Venice, for instance, is built on 60 of them. In some places they are deep; in others so shallow that their exhalations are offensive and dangerous. The Austrian government does less toward clearing them out than the former Venetian government did; and Venice in consequence is considerably less healthy than it was. Toward the sea the islets are secured by dams, natural or artificial.

La Guayra, the principal sea-port of the republic of Venezuela, in the province of Caraccas, on the Caribbean Sea, lat. 10° 36′ 19″ N., lon. 67° 6′ 45″ W. Population 8000? In 1810, the population is believed to have amounted to 13,000; the reduction being a consequence of the loss of life caused by the tremendous earthquake of 1812, and the massacres and proscriptions incident to the revolutionary war. The population of the city of Caraccas, of which La Guayra may be considered as the port, fell off, from the same causes, from 43,000 in 1810, to 23,000 in 1830; but they are now both increasing. There is neither quay nor mole at La Guayra. Ships moor E. N. E. and W. S. W., with their heads to the north, at from ¼ to ½ of a mile from the land, in from 9 to 18 fathoms. The holding ground is good; and notwithstanding the openness of the road, vessels properly found in anchors and cables run very little risk of being driven from their moorings. The principal articles of export are coffee, cocoa, indigo, hides, sarsaparilla, etc. La Guayra shares the trade of Venezuela with the ports of Cumana, Puerto Cabello, Maracaybo, etc., having about a half of its entire amount.

Port Regulations.—On casting anchor, a visit is paid by the collector of customs, or his agent, accompanied by other officers, who take from the master his register, manifest, and muster-roll, and an officer is left on board until the cargo is discharged. The master must swear to his manifest within 24 hours after his arrival,

when the permit to discharge is granted, and within 3 days all invoices must be presented. The discharge completed, the same officers repair on board to examine the vessel, and all being found in order, the officer is withdrawn. The clearing of a vessel outward (that has entered with cargo), in ballast is then completed by paying the port charges; proof whereof being produced, the permission to sail is signed by the governor and harbor master. If the vessel take cargo on board, then the same formality, as to visiting, is pursued, as on the entry of a vessel. Goods imported are almost invariably sold upon credit; those exported are, on the other hand, always sold for ready money. The terms of credit vary from 2 to 6 months, or more. Bankruptcy is very rare.

We subjoin a statement of the principal exports from La Guayra during each of the 5 years ending the 5th October, 1847.

Years ending 5th October.	Coffee.	Cocoa.	Cotton.	Sugar.	Indigo.	Hides.
	Quintals.	Fanegas.	Quint'ls	Quint'ls	Quint'ls	Number.
1843	147,474	28,624	510	3,268	1,074	31,684
1844	132,086	33,789	235	2,508	702	45,242
1845	122,912	29,418	767	5,153	489	44,878
1846	151,975	32,476	240	4,562	517	35,560
1847	126,812	37,876	1,128	7,040	621	49,773

Duties received at custom-house, La Guayra, 1842–43, $831,848; 1843–44, $722,115; 1844–45, $795,651; 1845–46, $891,502.

	National.	Foreign (not privileged).
Tonnage duty	$37 50	$150 00
Entrance fee	4 00	6 00
Anchorage	12 00	16 00
Captain of port's fee	8 00	6 00
Interpreter's fee	2 00	4 00
Permit to discharge and stamp	1 12½	1 12½
Health officer's fee	4 00	4 00
Municipal charge for water	40 00	40 00
Municipal bill of health	2 00	2 00
Permit to load and stamp	1 12½	1 12½
Certificate of sea worthiness	2 00	2 00
Total	$108 75	$232 25
Value in sterling money	£17 15	£38 14

A ship introducing a cargo, and sailing in ballast, would be liable to all the above charges, with the exception of the last two. The charge for water is levied without regard to tonnage; viz., sloops and schooners, $20 each, brigs, $30, and ships, $40. Tonnage employed in the foreign commerce of La Guayra, for six months of 1856, 30,417 tons. See Venezuela.

Laguna di Terminos, or Laguna di Carmen, a sea-port on the south shore of the Gulf of Mexico, State of Yucatan, lat. 18° 38′ 44″ N., long. 91° 51′ 22″ W. It derives its names from being situated about 1 mile within the south-west extremity of Carmen island, on the most westerly of the straits or entrances leading into the basin or lagoon of Terminos. Population about 3000. The port, which is secure and one of the best on the gulf, has from 12 to 14 feet water over the bar at the entrance to the lagoon. Vessels of greater draught load and unload by means of lighters, outside the bar, in from 8 to 4 fathoms, with good holding ground.

To Enter the Port.—Run in over the bar with Xicalango Point, bearing by compass S. ¼ E., till Point Sacatal bears S. E. ¼ S., and then steer for it; and when the north side of the island begins to shut in haul up for the anchorage off the town. The lead is a safe guide on the west side of the channel, but not on the east. The chief trade of the town consists in the shipping of logwood, known in foreign markets by the name of Campeachy wood, from its having been originally cut down in the vicinity of that port and shipped from it. But Campeachy has ceased to be an entrepôt for logwood. It is now principally cut down on the mainland adjoining the lagoon of Terminos; and being thence conveyed to Laguna in coasting schooners, is sent from it to all parts of the world. Vessels arriving with cargoes must bring a general manifest and invoice in triplicate, certified by the Mexican consul at the port of departure. Those arriving from a foreign port in ballast, must produce a clearance either from the Mexican consul or the authorities of the place from whence they came, showing that they bring no cargo. Pilotage $1.75 per foot, other port charges, such as harbor-master's fees, anchorage, board of health, etc., about $25 each vessel. Ships arriving direct from a foreign port pay $1.50 per ton for tonnage dues. See Mexico.

Statement of the Exportation of Dyewoods from the Port of Laguna di Terminos during the Years 1850, 1851, and 1852, specifying also the Vessels in which they were shipped and the Ports to which they belonged.

Ports.	1850.			1851.			1852.		
	Vessels.	Logwood.	Fustic.	Vessels.	Logwood.	Fustic.	Vessels.	Logwood.	Fustic.
		Quintals.	Quintals.		Quintals.	Quintals.		Quintals.	Quintals.
Liverpool	19	97,723	1,891½	28	100,908	4,491	21	96,311½	....
Havre	17	99,673½	....	12	73,845	520	15	88,703	1,000
Hamburg	12	42,369	....	9	32,889	2,897	14	47,877	3,084
Cork and market	15	70,940½	1,474	7	31,563½	....	7	30,070	2,012
Bordeaux	8	26,849	....	10	24,164	....	7	17,058	12,277
New York	4	20,280	9½	2	5,014	1,929	4	21,071½	....
Bremen	1	4,511½	....	5	27,482	....	6	44,227	50
Marseilles	2	14,029	523	3	22,638	1,177	5	31,534	....
Antwerp	1	5,197	....	2	7,364	1,201½	6	34,510	40
Stettin	2	17,718	....	2	15,102	630	..	....	....
Genoa	2	6,321	....	2	7,606	....	4	15,603	....
Petersburg	3	17,650½	4,440	1	8,966½	....	..	....	....
Boston	2	8,585	....	1	2,100	....	2	8,461½	1,114
New Orleans	1	500	....	3	1,591	....	2	1,000	....
Barcelona	..	....	....	..	....	....	1	2,480	....
Gibraltar and market	..	....	....	..	....	....	1	8,673½	....
Elsineur and market	..	....	....	1	7,481	....	..	....	....
Cadiz	1	1,500	....	..	....	....	1	1,678	....
Nantes	..	....	....	1	6,011	....	..	....	....
Havana	1	1,400	....	..	....	....	1	889½	....
Lancaster	..	....	....	..	....	....	1	2,972	....
Cette	..	....	....	1	2,231	....	..	....	....
In ballast to sundry ports	10	....	....	3	....	....	6	....	....
Total	101	454,611	8,338	88	371,406	12,845½	104	453,650½	19,527

Lahore, an extensive province of Hindoostan, situated between the thirtieth and thirty-fourth degrees of north latitude. It has been estimated at 340 miles in length by 200 in average breadth. It is bounded on the north by Cashmere and the course of the Indus; on the south by Delhi, Ajeueer, and Moultan; on the east by the mountains of northern Hindoostan; and on the west it is separated from Afghanistan by the Indus. The principal geographical and territorial subdivisions are the Punjab, comprehending other minor subdivisions, and the Kohistan of Lahore. Rice is cultivated in the narrow valleys, but the inhabitants subsist chiefly on wheat bread, and peas made into a thick soup. Pines and willow-trees grow on the surface of the mountains. The resinous part of the fir is cut into slips, and supplies the place of a

lamp. The climate is not favorable to fruits and vegetables. Fossil salt is found in many parts, and the mountain tracts are supposed to be rich in minerals.

The commerce of this country was formerly much obstructed by the heavy duties levied on all the goods as they passed through the different territories of the petty Sikhs. It was in consequence carried to Hindoostan Proper by the difficult and mountainous route of Jamboe, Nadone, and Serinagem. The Sikh chiefs, however, discovered their error, and many of these heavy and vexatious duties have been reduced; and by a more strict administration of justice, confidence has been restored to the merchants. The exports of Lahore to the countries west of the Indus are, sugar, rice, indigo, wheat, and cotton cloths. The imports from these countries are, swords, horses, fruit, lead, and spices. The exports to Cashmere are nearly the same as to Persia, the imports being shawls, a variety of cloths, saffron, and fruits. With Kohistan the mountainous district of Lahore, the inhabitants of Punjab exchange cloth, matchlocks, and horses, for iron and other small commodities. From the south are imported sulphur, indigo, salt, lead, iron, European coarse broadcloth, and spices. The exports to the south are, horses, camels, sugar, rice, white cloth, matchlocks, swords, and bows and arrows.

Lahore, the capital city of the Punjab, British India, on an affluent of the Ravee, in lat. 31° 33′ N., long. 74° 18′ E. Population estimated at from 100,000 to 120,000. It is inclosed by a double line of defenses, the outer being about 7 miles in circuit. Streets narrow, filthy, and excessively crowded; houses of brick, and lofty. It has many large and handsome mosques, and around it for many miles are extensive Mohammedan ruins, with the fine tomb of the Emperor Jehangire, and the garden of Shah Jehan. Here are also many Hindoo temples, well-supplied markets, and a citadel, containing the palace of the Sikh sovereigns. Under the Mogul emperors, the city was of much greater extent. In 1748, it fell into the hands of Ahmed Shah; in 1798 Runjeet Singh was invested governor and rajah. After the final defeat of the Sikhs, in 1849, Lahore was taken possession of by the British.

Lake, an extensive accumulation of water wholly surrounded by land, and having no direct nor immediate communication with the ocean, or with any seas, or having so only by means of rivers. Lakes are of various kinds, and have been divided into two classes, according to their situation and causes of production. Those which are formed in deep hollows between the ridges or at the bases of the mountains, and which are supplied with water by springs or torrents, are classed together, and those which are formed in low and level countries by the surplus water of rivers, or from a want of sufficient declivity in the ground to allow the waters to continue their course, constitute a second class. Sometimes a chain of lakes is connected with one another and with the ocean by a series of rivers. This is the case with the great lakes on the northern frontier of North America, where basin succeeds basin, on a lower level, like so many locks on a canal. A fourth class of lakes are those which receive streams of water and often great rivers without having apparently any outlet. These lakes are in general confined to warm climates; but the Caspian Sea, the largest of all lakes, belongs to this class. There are a great many others beside in Asia; and South America contains Lake Titicaca which has no efflux, although it receives very considerable rivers into it. Such lakes appear to belong to the interior of great continents; they are placed on elevated plains which have no sensible declivity toward the sea, and which do not allow the water opening for itself a passage through which to flow out.

It was long conjectured that by some subterraneous channel lakes of this description communicated with the sea; but the fact that the surfaces of some of the most remarkable of them, such as the Caspian and the Dead Sea, are depressed below the level of the ocean, is quite sufficient to explode this hypothesis. For were there any communication, however small, the ocean would flow into the lake till it brought it to a level with itself. The true explanation seems to be that a quantity of water equal to that which runs in is carried off by evaporation. The absorption of liquid by the contiguous land, may also materially assist in carrying off the surplus fluid.

Distinct from any of the characteristics of lakes yet alluded to, is the chemical nature of their waters. Lakes in respect to the quality of the waters are distinguished into fresh, saline, and alkaline. Those which receive and discharge considerable quantities of fresh water are almost always kept in a state of perfect freshness; but those which have no outlet are invariably saline. Thus the Dead Sea, whose waters have no efflux, and into which the river Jordan continually flows, contains about eight times as much salt as common sea-water. The waters of the Jordan are brackish, and the neighboring soil is much impregnated with salt, so that the accumulation of such a quantity of saline matter in the lake during a series of ages is by no means surprising, for none of it ever passes off by evaporation. Salt must likewise be accumulating in beds at its bottom; for as soon as water is perfectly saturated, and can hold no more salt in solution, the latter must fall to the bottom. Some of the large Asiatic lakes are dried up during summer, and their beds appear lined with an incrustation of salt. All the great American lakes consist of fresh water; those of Europe are either fresh or slightly saline; but the Caspian Sea, and various others which are situated in plains full of salt, or in tracts of country where salt springs abound, are almost invariably impregnated with that substance. Some lakes are both saline and alkaline, as is the case with the Natron Lakes in Lower Egypt. They derive their appellation from their abounding in soda which is there called trona, and natron, the nitre of the Scriptures. Some lakes produce a pitchy substance. In the island of Trinidad there is one on the surface of which an enormous quantity of bitumen, fit for naval purposes, is collected. Deposits of various kinds besides those enumerated seem to owe their origin to lakes. Bog iron ore, or hydro-phosphate of iron, is often found in such situations as to show that it has been deposited from the waters of lakes; and in some countries it is collected from the sides and bottoms of lakes once in a certain number of years. Calcareous springs are numerous, and when the waters of these collect in a hollow place so as to form a lake, quantities of calcareous sinters and tuffas are deposited, so that the lakes when emptied present extensive deposits of that mineral. The travertine employed at Rome for building, is a lake or spring calcareous deposit of sinter and tuffa.

Lakes, Great American. The following are the principal lakes forming the great chain of inland navigation, extending from the St. Lawrence River to the head of Lake Superior:

Lake Ontario, in shape, approaches to a long and narrow ellipse, being about 190 miles long and 55 wide, with a coast line of about 480 miles. Its surface is 234 feet above tide water, and 330 feet below the surface of Lake Erie. It is in many places over 600 feet deep, so that its bottom is below the level of the Atlantic. In every part it has sufficient depth for the largest vessels, and is rarely frozen, except near the shore. There are many good harbors on the lake. It receives the water of Niagara River, the outlet of the other American Lakes; also the Genesee, Oswego, and Black Rivers. It is connected with the Erie Canal by the Oswego Canal, and has by this means a direct water communication with New York city.

Lake Erie, which is situated 565 feet above the sea,

330 feet above the level of Lake Ontario, is about 265 miles in length, from 30 to 60 miles in breadth, and between 600 and 700 miles in circumference. Its mean depth is 120 feet, being the shallowest of all the great lakes, and most easily frozen. Its waters are also, on account of its shallowness, more readily agitated by storms, causing its navigation to be therefore more dangerous during stormy weather. Disasters, involving large loss of life and property, are not of unfrequent occurrence on the lake, toward the close of navigation, before the rigors of winter have put a final stop to all active lake traffic. The shores of this lake present features very similar to those of Lake Ontario; the banks of Lake Erie being generally bolder and more elevated, and composed chiefly of clay and sand. The more fertile parts are at some distance from the banks, throughout the extensive plain of table-land beyond. There are several good natural harbors along the shore, formed chiefly by the mouths of deep creeks or streams, and protected from the action of storms and current of the lake by streng projecting piers.

Among the harbors of Lake Erie may be mentioned Port Colborne, situated at the entrance to the Welland Canal, at the foot of Lake Erie, and a little above the commencement of the Niagara River. A little further up is the harbor of Port Maitland, at the mouth of the Grand River. This is a very fine and capacious stream, navigable for small vessels a considerable distance, and possessing much fertile land and pleasing scenery along its banks. The shore of the lake for some way above the mouth of the Grand River presents many delightful and fertile settlements. Among the harbors further up the lake are Ports Dover, Burwell, and Stanley. Port Stanley is perhaps the most flourishing of these harbors, being the port of one of the most populous and enterprising districts of this part of Canada, and situated near the centre of the great fertile peninsula. The banks of Lake Erie are here high, and of a sandy character; but off the immediate bank, and extending all the way through the extensive tract of country to the town of Goderich, on Lake Huron, a distance of 85 miles, the soil is of the best quality, being for the most part timbered with beech, maple, black and white walnut, oak, ash, cherry, and other trees, indicating the first qualities of soil. The whole tract is greatly undulating in its appearance, and is everywhere well watered. The upper part of Lake Erie is distinguished by many beautiful islands, the largest of which is Pele, on which there is a light-house, and several fares. The shores along the upper part of the lake, especially toward the mouth of the Detroit River, have a smiling and luxuriant aspect. Trees of the finest growth rise from the shore, and the wild vine may be seen twining and clustering among the branches of the lesser trees and tall shrubs along the sloping banks. The shore is here covered with fine white sand.

Lake St. Clair.—In our further progress up this country, we pass the Detroit River, thence into Lake St. Clair, then the River St. Clair, which last opens into the broad expanse of Lake Huron. From the head of Lake Erie to the foot of Lake Huron, is a distance of between 80 and 90 miles, through a country of unsurpassed fertility and luxuriance, and possessing many delightful features. The Detroit River, about 27 miles in length, is interspersed with many islands, several of which, near its entrance into Lake Erie, are beautifully wooded. The towns of Amherstburg and Sandwich, and the small village of Windsor, are situated along the Canada side of this river. Opposite Windsor, toward the upper part of the river, and where the banks narrow to about three quarters of a mile, is the American city of Detroit, in the State of Michigan. Lake St. Clair, which forms the connecting link, by means of the St. Clair and Detroit Rivers, between Lakes Huron, Michigan, and Erie, is the smallest of all the lakes, and exceedingly shallow for the larger class of vessels passing through it. It is from 20 to 30 miles in length, and about the same in breadth. Its average depth is about 20 feet, but the principal channel used by vessels passing through it is much shallower, especially in dry seasons, when the mud of its *flats* is stirred to the surface not unfrequently by large vessels. The chief stream which it receives from the Canadian shore is the River Thames, which is navigable for lake vessels 22 miles from its mouth, and the banks of which are exceedingly fertile, and mostly well settled. Much of the land bordering on the lake is low and marshy. In the upper part of the lake are several islands, the principal of which is Walpole Island, about 10 miles long, and from 3 to 4 miles wide. This island is inhabited by a stray portion of the remnant of Indians still existing in small and decreasing numbers in Canada. We are now at the entrance to the River St. Clair, in length about 30 miles. There are several thriving settlements along the fertile and beautiful banks of this river. Toward the lower part, amid a cluster of wooded islands, the banks, with somewhat of a flat appearance, are covered with luxuriant timber. Further up, the land rises, with finely sloping banks and cultivated farms. Near the head of the river, and picasantly situated, is the flourishing town of Sarnia.

Lake Huron.—The River St. Clair now opens to the wide expanse of Lake Huron, of about 1000 miles in circumference. This vast sheet of inland sea is the second in point of size of the great lakes, yielding only in this respect to Lake Superior. The surface of Lake Huron is about 30 feet above the level of Lake Erie, and 595 feet above the level of the Atlantic. The length may be estimated at 250 miles, and its breadth 160 miles, inclusive of the Georgian Bay, a large wing of the lake, extending along the north-eastern shore for a distance of about 100 miles. The mean depth of Lake Huron is 900 feet, and its greatest depth 1000 feet near the west shore. This lake is said to contain the almost incredible number of 32,000 islands, principally along the northern shore and at the north-western end, varying in size from mere rocky reefs and pinnacles to large and cultivable islands. The Great Manitoulin, the longest of the islands, is upward of 75 miles in length, and varies in width from 3 to 23 miles. The waters of the lake are remarkably pure, clear, and cold; in these respects resembling the great upper Lake Superior. The surface of Lake Huron is about 32 feet lower than that of Lake Superior, and it is very nearly as deep as that lake. The nature of the banks of Lake Huron vary very much. In parts they are low and sandy, in others formed of clay; they rise to a height of about 120 feet, while again the shore of this inland sea presents a bold, rocky, iron-bound coast, having great depth of water to the base. Numerous streams descend on all sides into the lake; and among its rivers may be mentioned the Maitland, Severn, and River Français. The lake, which is rather subject to storms, is deficient in good and natural harbors, the principal of which, along the eastern coast, are Goderich, at the mouth of the Maitland, Saugeen, and Penetanguishene; and on the western shore the best places of shelter in heavy weather are Thunder Bay and Saginaw Bay.

Lake Huron possesses the advantage of being remarkably centrally situated with respect to the other great lakes. With Lake Erie, as we have seen, it is connected by the Straits or Rivers St. Clair and Detroit, and the small Lake St. Clair. Lake Ontario, the lower of the lakes, is even open to it by the River Severn, Lake Simcoe, then by a short portage, a chain of lakes, and Trent River. Lake Simcoe, thus situated between Lake Huron and Lake Ontario, is a very beautiful lake, about 30 miles in length and 20 in breadth. The neck of land south of Lake Simcoe from Holland River leading to Toronto is, it will be

remembered, about 36 miles; and again, north of Lake Simcoe, from the narrows of this lake to Lake Huron, the portage is only about 14 miles. The new railway now cutting through this neck of the peninsula westward, situated between the Lakes Erie, Ontario, and Huron, will greatly facilitate the growing intercourse between the shores of Ontario, as well as all the country lower down along the banks of the St. Lawrence, and also great part of the United States, with the regions of the grea. upper lakes, Huron and Superior. This direct course will no doubt be much preferred to the circuitous route through Lakes Erie and St. Clair, and the connecting rivers.

Lake Huron, besides, communicates with the Ottawa, and thence with the St. Lawrence above Montreal, by means of French River, Lake Nipissing, and the River Mattawa, into the Ottawa. This is the route adopted generally by the north-west traders in proceeding to the remote parts of the country, and it is also the one by which Europeans first penetrated the West. The distance from Montreal by this route to Lake Huron is fully more than one half shorter than that by the St. Lawrence. From Montreal to the Georgian Bay, the distance is estimated at 400 miles, while by the St. Lawrence the distance is upward of 1000 miles. Again, Lake Huron communicates with the great upper Lake Superior by means of the River St. Mary, about 40 miles in length. Lastly, we have this centrally situated lake communicating by the straits of Mackinac with Lake Michigan, and thence by the Illinois River and Canal with the Mississippi and Gulf of Mexico. The shores of Lake Huron have of late revealed important mineral treasures. The Bruce copper mines promise to be of great value. These mines are situated upon the northern shore of the lake under the Cloche Mountains, a bold range of hills extending about 40 miles along the coast. Along the south-eastern shores of the lake, extending beyond the town and harbor of Goderich, on the River Maitland, are many highly prosperous settlements. The lands in this direction, and through the large and fine district inland, are believed to be the most fertile in Canada. The country is everywhere well watered, and enjoys much delightful scenery, both along the elevated banks of the lake and the beautiful rivers which diversify it. The town of Goderich, on the River Maitland, is very agreeably situated, and possesses an excellent harbor. The high banks of the Maitland are exceedingly picturesque.

Lake Superior.—We now approach the uppermost of these vast collections of water, not inappropriately named inland seas. The River or Strait of St. Mary, connecting Lake Huron with Lake Superior, is between 30 and 40 miles in length. The character of the scenery, on entering St. Mary's Channel, is the most delightful that can be imagined. The channel throughout, with the exception of several small lakes, seems to be almost packed with islands; and while perplexing the navigator by its intricacy, it is every now and then revealing new and striking beauties of wooded heights and steep banks clothed with verdure, and spots of flat, fertile meadows, and, at times, bare, rocky, fantastic crags. The sides of the ridges of table-lands that skirt the country, around the borders of Lake Superior, appear in the distance clothed with one mass of lively green. The foot of the Falls, or, more properly speaking, Rapids of St. Mary, approach within about 18 miles of Lake Superior. The region in this direction seems much less fertile; the trees along the shores of the broad strait appearing to be chiefly of the pine species, and the soil in many parts light and sandy, while the lands close upon the banks lie for the most part low and flat. We now approach the chief seat of the great copper district of America, where the barrenness of a large portion of the country is richly compensated by the value of the metals with which it abounds. The copper mines of Canada, along the shores of Lakes Huron and Superior, are perhaps entitled to rank among the most valuable resources of this great country.

As we approach the great queen lake or inland sea, upward of 400 miles in length and 180 in breadth, dark blue masses of hills uprise, somewhat reminding the voyager of the approaches to the St. Lawrence in the forms of the headlands of Cape Rozière and others, yet being neither so high nor so bold as these. The main entrance to the lake is marked by two such rocky headlands, one upon either shore several miles apart. From the heights of the one on the other shore, named Gros Cap, composed of the rock of the old red sandstone, the sides of which are partially covered with junipers, blue bells, wild briars, and other vegetation, reminding one of the Scottish hills, we overlook a scene of the most imposing and still grandeur possible to be imagined. The dim distance into the lake is bounded by vast islands, and along both shores bold uneven banks uprise, apparently covered with dark dense foliage, and stretch themselves in irregular course, as far as the eye can reach, along the wide expanse of water that scarcely as yet presents any speck of navigation. The shores of Lake Superior, which are even now imperfectly explored, already prove to be abundant in mineral resources. Many of the enterprising inhabitants of Canada, having formed themselves into associations, are now engaged in mining the seemingly inexhaustible treasures of virgin copper which are found along the shores of this lake as well as Lake Huron. This source of wealth to the colony is likely to prove of considerable importance.

Lake Superior, which is the largest sheet of fresh water on the face of the globe, is the most remarkable of the great American Lakes, not only from its magnitude, but also from the picturesque scenery of its borders, and the interest and value attaching to its geological features. "As a mining region," continues Dr. Jackson, who, as United States' geologist, was intrusted by his government to survey the territory, "it is one of the most important to this country, and is rich in veins of metallic copper and silver, as well as in the ores of those metals. At the present moment it may be regarded as the most valuable mining district in North America, with the exception only of the gold deposits of California. The whole coast of Lake Superior is rock-bound. Mountain masses of considerable elevation in some places rear themselves from the immediate shore, while steep precipices and frightful crags oppose themselves to the surges of the mighty lake, and threaten the unfortunate mariner who may be caught in a storm upon a lee shore with almost inevitable destruction. The northern or Canadian shore of the lake is the most precipitous, and consequently most dangerous to the navigator. Good harbors for vessels of moderate capacity are comparatively few, but there are abundance of coves or boat-harbors formed by the countless indentations of the rocky coast. In remarkable contrast to Lake Huron, which is thickly studded with islands, there are very few islands in Lake Superior.

Agriculture may be truly said to have not yet commenced to tame the great and comparatively unexplored wilderness around the shores of Lake Superior. The forests of stunted spruce and fir-trees along the immediate coast of the lake are said to afford a very inadequate idea of the agricultural resources of the shores of the great queen lake. The cold air from the lake, says Dr. Jackson, affects only the vegetation near its shores, while further inland the temperature more resembles that of the settled parts of Canada. The native forest trees, and also the flowering plants, as well as the agricultural produce where clearings have been made, are believed to afford very satisfactory evidence on this point. The forests are filled with excellent timber for building purposes; the

white and yellow pines, particularly, being of large dimensions. "The tributary rivers of Lake Superior are numerous," says Mr. I. D. Andrews, in his very interesting report to the United States' Senate, "and, bringing down a large volume of water, afford superabundant water-power for manufactories the most extensive in the world, though, from the precipitous descents and numerous falls and chutes, they can never be rendered navigable for more than a few miles above their mouths, except for canoes."

Lake Michigan, one of the five great lakes of North America, lies between 41° 38′ 58″ and 46° N. lat., and between 84° 41′ and 87° 8′ W. long. In the northern parts it communicates with Huron by the Straits of Michillimackinac or Mackinac, about four miles in width in its narrowest part, and by which and its northern part it separates the two peninsulas of Michigan. Michigan Lake is the largest lake that lies wholly within the United States, being 330 miles long, and, on an average, 60 miles broad, containing 16,981 square miles, or 10,868,000 acres. It has Green Bay, a large branch on the north-west; and on the east, Grand Traverse Bay and Little Traverse Bay. It is estimated to be on an average 900 feet deep; and is elevated about 300 feet above tide-water. It has few good harbors. On the west side are those of Chicago, Milwaukie, and Green Bay. On the east side are Michigan City, St. Joseph, at the mouth of St. Joseph River, and Grand Haven, near the mouth of Grand River. It is navigated by many large vessels and several steamboats, which ply from Buffalo to Lake Erie and Chicago, stopping at the intermediate places. It affords great facilities for transportation. The lake has pure and clear water, and abounds with excellent fish. There are several islands on its northern part. It has 23 light-houses and 4 beacons on its islands and coasts. The Illinois and Michigan Canal connects the navigable waters of the Illinois River with Lake Michigan.

Commerce of the Lakes.—These lakes are estimated to drain an entire area of 335,515 square miles, and discharge their waters into the ocean through the River St. Lawrence, which is rendered navigable from Lake Erie downward to all vessels not exceeding 130 feet keel, 26 beam, and 10 feet draught, and the free navigation of which for American bottoms was recently acquired by the concession of reciprocity of trade to the Canadian government. The whole traffic of these great waters may be now unhesitatingly stated at $326,000,000, employing 74,000 tons of steam, and 138,000 tons of sail, for the year 1851, of 215,000 tons burden.

The entire number of vessels and crews of the interior trade amounts to 140 bottoms, and 5,837 men, in excess of the whole ocean and coast navy, though the tonnage employed in the latter is smaller by 7,775 tons.

However remote the period of the discovery, exploration, and partial colonization of these wilds and waters, any thing like practical navigation of them for commercial purposes was unattempted until after the commencement of this century. In 1679 a French craft indeed was launched at Erie, Pennsylvania, for the expedition of the celebrated and unfortunate La Salle.

TONNAGE OF THE LAKE PORTS, 1856.

Collection districts.	Owned in districts.		Tonnage entered.				Tonnage cleared.			
			American.		Foreign.		American.		Foreign.	
	Steam tonnage.	Sail tonnage.	Steam.	Sail.	Steam.	Sail.	Steam.	Sail.	Steam.	Sail.
Vermont.....Ver.	3,240	692	56,421	17,490	9,566	10,758	58,024	17,020	9,321	7,602
Champlain.....N. Y.	917	3,291	90,434	8,135	3,899	20,759	90,436	8,135	3,899	20,759
Oswegatchie..... "	1,985	576	206,684	47,124	90,962	6,657	218,069	45,205	89,356	6,657
Cape Vincent..... "	....	2,496	427,457	....	12,473	....	427,457	....	12,473	....
Sackett's Harbor..... "	343	6,763	163,616	201	1,066	1,934	161,875	1,385	1,060	1,934
Oswego..... "	4,382	21,941	228,342	345,681	7,259	85,601	967,594	327,172	7,259	83,768
Genesee..... "	429	257	160,000	1,020	27,900	3,714	160,000	1,020	27,900	3,714
Niagara..... "	100	506	75,072	964	145,778	1,844	75,072	964	145,778	1,844
Buffalo..... "	22,438	29,620	18,493	11,705	48,456	23,755	18,152	13,774	48,672	22,588
Presque Isle.....Penn.	5,961	2,249	680	1,039	....	781	....	8,205	....	721
Cuyahoga.....Ohio	11,355	24,716	4,543	24,269	878	10,892	2,070	15,690	926	9,619
Sandusky..... "	73	4,785	1,494	4,760	280	740	....	1,396	836	1,300
Miami..... "	1,153	2,083	....	....	....	....	....	....	....	....
Detroit.....Mich.	21,944	18,475	983	1,544	49,081	7,300	2,086	1,668	51,727	6,546
Mackinac..... "	1,747	1,409	....	....	....	....	....	....	....	....
Milwaukie.....Wis.	287	2,659	....	....	....	....	....	....	....	....
Chicago.....Ill.	707	22,896	652	290	....	428	2,183	1,628	....	428
Total.....	77,061	138,914	1,434,779	464,822	397,587	174,619	1,482,548	433,862	398,702	166,010

Lake Trade.—The great chain of river, lake, and canal navigation, which extends westward to Fond du Lac and Chicago, a distance of about 1400 miles, embracing the largest extent of inland water communication in the world, the following table exhibits in a condensed form:

	Length.	Breadth.	Depth.	Elevation over sea.	Area.
	Miles.	Miles.	Feet.	Feet.	Sq. miles.
Lake Superior.....	420	120	600	600	31,100
" Michigan.....	320	70	1,000	573	21,900
" Huron.....	270	145	850	578	18,750
" St. Clair.....	25	18	20	570	300
" Erie.....	250	45	70	564	9,300
" Ontario.....	190	40	500	234	7,300
River St. Lawrence.	700	...	...	...	....

CANALS.

Canals.	Length.	Depth.	Size of Locks.	Lockage.	Locks.
	Miles.	Feet.	Feet.	Feet.	No.
Lachine.....	8½	10	200×45	44½	5
Beauharnois....	11½	10	200×45	82½	9
Cornwall.....	11½	10	200×45	48	7
Farrand's Point	9½	10	200×45	4	1
Rapid Plat....		10	200×45	11½	2
Point Iroquis..		10	200×45	6	1
Galops.....		10	200×45	8	2
Welland.....	28	10	150×26½	330	27

The great lakes are about 1-25th of the area of the Atlantic Ocean; but in proportion afford much greater facilities for commerce, in consequence of the advantage of great length with less width, and of greater proportion of shore line. The country forming the shores of the lakes can not be surpassed in general productiveness by any section of the Union, either in variety of important commodities, or in quantity produced per square mile. The extent of the commerce of the lakes may be estimated by the commerce of the lake ports. During the past 15 years the value of the trade of the lakes has swelled from $65,000,000, in 1841, to $608,310,320, in 1856; and the whole of this grand aggregate, with the exception of $42,260,060, set down for Sackett's Harbor, Cape Vincent, Oswegatchie, Genesee, and Niagara, came through the following ports:

Buffalo.....	$303,023,000	Milwaukie..	$35,000,000
Chicago....	223,898,000	Maumee....	94,107,000
Cleveland..	162,185,000	Sandusky...	59,966,000
Detroit....	140,000,000	Oswego.....	146,235,000

With the exception of Buffalo and Oswego, these are all ports of the north-west, whose trade has been the result of its development during a very brief period; and the great bulk of the trade of Buffalo and Oswego is derived from the same cause.

The tonnage employed on the great lakes is shown

in the following table, and does not include any ocean or river tonnage:

	Tons.		Tons.
Illinois	1,742	Ohio (Lake tonnage)	11,856
Wisconsin	1,451	New York	22,534
Michigan	7,848	Total	45,426

This is 1-12th of the total tonnage owned by the United States, and about 1-5th of the total amount employed in the coasting trade. The first steamer launched on Lake Ontario was in 1816, while on Lake Erie steam navigation commenced in 1814. In 1851 the proportion of steam craft to sailing craft was as 74,000 to 138,000 tons. The number of Canadian steamers and schooners now trading on Lake Ontario is 234, of which 48 are steamers, 17 propellers, and 169 schooners, the tonnage of which amounts to about 42,000 tons, and their value is about £378,000. The whole tonnage owned on the lakes in 1820 amounted to but 5,500 tons, in 1840 to 70,000 tons, in 1850 to 215,787 tons, and in 1855 to 345,000 tons. But even this rapid increase hardly conveys an idea of the vast commerce of which these great inland seas are destined to become the scene even before the close of the current century. The liberal provisions of existing treaties with England and her American colonies, will rapidly develop the resources of Canada and the N. States.

Value of Exports from the Lake Ports, 1856.

Collection districts.	Coasting trade.		Canadian and foreign trade.		Aggregate value of coasting trade.	Aggregate value of foreign trade.
	Exports.	Imports.	Exports.	Imports.		
Vermont, Ver.	$20,858,426	$8,455,196	$767,592	$266,417	$24,313,622	$1,033,989
Champlain, N. Y.			749,002	294,284		1,043,286
Oswegatchie, "	918,587	2,424,145	618,648	214,520	3,342,732	833,168
Cape Vincent, "	....	....	82,889	51,858	....	93,747
Sackett's Harbor, "	808,258	407,809	21,980	56,119	861,067	78,099
Oswego, "	11,471,671	6,088,036	3,207,811	1,784,412	17,554,107	4,992,223
Genesee, "	....	....	918,654	49,040	....	962,694
Niagara, "	433,634	216,634	585,784	108,985	670,818	680,769
Buffalo, "	50,674,975	37,472,108	618,948	507,506	88,147,083	1,121,454
Presque Isle, Penn	1,601,857	2,207,582	15,415	3,455	3,809,439	18,870
Cuyahoga, Ohio	12,026,497	22,804,150	284,336	360,634	35,830,656	645,570
Sandusky, "	6,450,659	15,985,357	99,088	75,628	22,445,016	174,716
Miami, "	7,347,808	22,987,772	66,804	20,470	30,335,580	92,774
Detroit, Mich.	6,961,480	20,416,357	115,014	98,541	27,377,837	213,555
Mackinac, "	2,000,000	3,000,000	....	3,967	5,000,000	3,967
Milwaukie, Wis.	4,564,797	19,550,718	....	....	24,125,516	....
Chicago, Ill.	5,859,471	25,325,052	116,185	5,811	31,184,523	121,996
Total	$132,017,470	$182,455,988	$8,207,750	$3,912,147	$314,473,458	$12,119,877
Total coasting & for. trade	....	....	....	....	....	$326,593,335

Marine Losses on the Lakes for the Year 1856.—The Report to the Board of Lake Underwriters is annually published, showing the disasters and losses on the lakes. The losses during 1856 are shown in the following summary:

Loss of Property.

May	steam and sail,	$142,600
June	" " "	118,550
July	" " "	266,480
August	" " "	67,750
September	" " "	342,860
October	" " "	882,089
November	" " "	1,060,894
December	" " "	109,550
Total loss, steam and sail, in 1856		$3,018,874
" " " " " 1855		2,797,839
Increased loss in 1856		$241,035
Losses in 1854		$2,187,925
" 1853		854,850
" 1852		991,015
" 1851		740,515
" 1850		544,440
Loss on steam hulls		$782,800
" cargoes by steam		645,300
Total loss by steam in 1856		$1,378,100
" " 1855		1,692,700
Decrease in 1856		$314,800
Loss on sail hulls		$868,615
" cargoes by sail		697,099
Total loss by sail in 1856		$1,560,774
" " 1855		1,105,199
Increased loss in 1856		$455,635

Loss of Life.

	1854.	1855.	1856
Loss of life	119	118	407

This shows an increase in the loss of life during the past year over that of 1855 of 289.

The increased facilities for saving wrecked property has lessened the actual amount of loss on property in distress at least 25 per cent. during the past severe season; as the proportion of total losses to the whole number of disasters will show when compared with 1855.

Synopsis of the Marine Register of the Board of Lake Underwriters of Vessels in Commission on the Lakes in the Fall of 1856.

Vessels.	No.	Tonnage.	Cash Value.
Steamers	107	62,863	$3,830,400
Propellers	125	54,675	2,741,200
Barks	56	21,773	693,800
Brigs	108	27,045	701,850
Schooners	850	175,380	5,487,100
Total	1,246	339,736	$12,944,350

For *Commerce of the Lakes*, see *South. Quar.*, xix., 420; *South. Lit. Misc.*, ii. (Maury); De Bow's *Rev.*, vii., 279; *Chris. Exam.*, lxix.; Silliman's *Jour.*, x., 83 (Agassiz); Hunt's *Mag.*, viii.; *Am. Whig Rev.*, vi., 466; Andrews' *Report on Colonial and Lake Trade*.

Lamar, formerly Conilla, a sea-port of the republic of Bolivia, the ci-devant Upper Peru, on the west coast of South America, lat. 22° 39′ 30″ S., long. 70° 12′ W. Population 5000. In 1833 Lamar was declared a free port, and in it centres almost the whole foreign trade of the republic. Its situation is, however, very unfavorable. It labors under a great want of fresh water; and is obliged to import all its provisions by sea, either from Valparaiso on the one hand, or from Arica on the other. The Desert of Atacama lies between it and the internal and populous part of the country, where the towns of Potosi, Cochabamba, Charcas, etc., are situated. The produce imported at Lamar is conveyed across the desert on the backs of mules to the interior; the gold and silver of the mines being brought in the same way to the port to be shipped. These, with copper, saltpetre, chinchilla-skins, and wool, form the principal articles of export. Saltpetre is found in large quantities in the desert; the copper is found near the coast, and, owing to the scarcity of fuel, most part of it is exported in the shape of ore. Peru possesses a long narrow strip of land, stretching along the coast of the Pacific from Arequipa to the Bay of Pica, which ought naturally to belong to Bolivia, being, in fact, the *littoral* of the latter. The Bolivian government has set on foot various negotiations to obtain the cession of this tract, which, besides greatly improving the frontier of the republic, would, at the same time, render her mistress of Arica, which is in all respects much better fitted than Lamar for

becoming the entrepôt of trade. Hitherto, however, these negotiations have proved abortive, so that, as already stated, Lamar at present engrosses most part of the foreign trade of the State. We subjoin the decree constituting Lamar a free port:

1. From and after the 1st of July of this present year, 1833, Port Lamar shall be absolutely free and open. 2. Vessels of every nation may enter this port, and remain as long as they please, without being subjected to any tax whatever, either on entrance, or during their stay, or on their departure. 3. They shall be free from all duties of anchorage, tonnage, shifting, unloading, or reloading of cargo, deposit, storage, or any other of whatever denomination. 4. Goods may be deposited in private warehouses, without any intervention on the part of the government. 5. The custom-house of Port Lamar is suppressed. In its stead will be a commissioner's office, for the purpose of distributing permits for the transportation of goods into the interior. 6. Whenever goods are to be sent into the interior, they must first be submitted to the commissioner, together with the invoice corresponding. 7. The commissioner will register them in a book, together with their valuation, made by two merchants of the place, and the name of their owners, of the person to whom, and the place where they are to be sent. This is to be signed by the person entering the goods, who, at the same time, binds himself to have them transported direct to the custom-house for which they are destined, without opening any of the cases, bags, or other envelops, each of which shall be sealed, marked, and numbered before departure. These points are to be expressed in the permit. 8. The commissioner shall by the earliest post send a notice to the collector of the custom-house for which any merchandise is destined, specifying the numbers, characters, quantities, and qualities of the several articles. 9. The goods must not be carried by any unaccustomed roads, but only through Calama and the public thoroughfares; and whenever they pass through any place at which a guard or commissioner is stationed, the permits must be exhibited, in order that their arrival with their seals unbroken may be ascertained. 10. Merchants, either in person or by a representative, must produce to the commissioner of the port a certificate of the delivery of the goods at the custom-house for which they are destined within six months from the day of their entry; in case they do not, they must at the end of that period pay the whole of the duties on them. 11. From and after the 1st of July, 1833, all goods entered at Port Lamar shall pay a duty of only 5 per cent. over and above that of half per cent. to the consulado. 12. The duty of 5 per cent. shall be paid thus: at the port, 2 per cent. on the valuation made as aforesaid; and the other 3 at the custom-house in the interior for which the goods are destined, in each case, one half at the end of 3, the other half at the end of 5 months. 13. All goods carried from Port Lamar by land to any of the adjacent republics shall only pay a transit duty of 2 per cent. 14. A duty of 2 per cent. shall be paid on three fourths of all gold and silver money entered at any of the custom-houses in the interior for exportation through Port Lamar. 15. It is absolutely prohibited to export gold or silver in bullion or plate, except in small quantities for the use of the person carrying it out. It will be seized wherever it is found on this side the districts of San Antonio, San Vicente, Atoca, Agua, de Castilla, Lequapate, or the line of the canal. 16. All hardware for agriculture and mining machinery, instruments of science or the arts, iron, steel, quicksilver, and moral books, may be introduced free of duty into the republic, and productions of Bolivia may be exported likewise free. 17. A premium of 2 per cent. on their value shall be allowed on the exportation through Port Lamar, of cascarilla, wool, tin, cocoa, and coffee, in the shape of remission from duties to the amount on goods carried into the interior from the same port. The remaining articles of the Decree are of a purely local nature. See Bolivia and Peru.

Lamb-skins (Ger. *Lammsfelle*; Fr. *Peaux d'agneaux*; It. *Pelli agnelline*; Sp. *Pieles de carderos*). The value of lamb-skins varies according to the fineness, brilliancy and color of the wool. Black lamb-skins are more generally esteemed than those of any other color. English lamb-skins are seldom to be met with perfectly black; but since the introduction of Merino sheep into this country, many of the white fleeces have, in point of quality, arrived at a pitch of perfection which justly entitles them to be ranked with some of the best fleeces in Spain. The importation of lamb-skins is immense. Eight tenths of the whole quantity are supplied by Italy. They are mostly used in the glove manufacture.

Lamp (Ger. *Lamps*; Fr. *Lampe*; It. *Lucerna*; Sp *Lampara*; Rus. *Lampadu*), an instrument used for the combustion of liquid inflammable bodies, for the purpose of producing artificial light. Lamps are mentioned in all the early ages: they were in use in Egypt, Greece, and Rome. The earthen lamp which Epictetus the philosopher had in his study sold after his death for 3000 drachmas, A. D. 161. Lamps with horn sides were the invention of Alfred. Lamps were in general use through the streets of London up to the close of the 18th century, as were flambeaux, which were carried by link-boys. London streets were first lighted by oil-lamps in 1681, and with gas-lamps in 1814. The domestic lamp is now of elegant manufacture; of this kind is the Argand lamp, brought into general use in England in 1784.—*Haydn.*

It is unnecessary to give any description of instruments that are so well known. We may, however, remark that the discovery of Sir H. Davy, who, by covering the flame with wire gauze, succeeded in producing a lamp that may be securely used in coal mines charged with inflammable gas, is one of the most ingenious and valuable that has ever been made. The following extracts from a communication of the late Mr. Buddle, an able and well-informed coal engineer, evinces the great importance of Sir Humphrey Davy's invention: "Besides the facilities afforded by this invention to the working of coal mines abounding in fire-damp, it has enabled the directors and superintendent to ascertain, with the utmost precision and expedition both the presence, the quantity, and correct situation of the gas. Instead of creeping inch by inch with a candle, as is usual, along the galleries of the mine suspected to contain fire-damp, in order to ascertain its presence, we walk firmly on with the safe lamps, and, with the utmost confidence, prove the actual state of the mine. By observing attentively the several appearances upon the flame of the lamp, in an examination of this kind, the cause of accidents which happened to the most experienced and cautious miners is completely developed; and this has hitherto been in a great measure matter of mere conjecture. It is not necessary that I should enlarge upon the natural advantages which must necessarily result from an invention calculated to prolong our supply of mineral coal, because I think them obvious to every reflecting mind; but I can not conclude without expressing my highest sentiments of admiration for those talents which have developed the properties and controlled the power of one of the most dangerous elements which human enterprise has hitherto had to encounter."

The lamps now used for light-houses are highly ingenious, and beautiful. In the first place, it is necessary to distinguish between two systems—the *catoptric* and the *dioptric*—the former depending on the reflection of light from a mirror, and the latter on the transmission of light through a lens. If a large lamp were placed on the top of a light-house, with glass roof and windows all around it, the light would shine in every direction, losing its intensity by being so much diffused; but by the use either of mirrors or of lenses, all the light is concentrated to one definite direction; its energy is increased by being circumscribed in range. In the catoptric system, numerous concave reflectors are placed at definite angles round a central lamp: they are of silvered copper, and are kept exquisitely bright; and they all contrive to reflect the rays out seaward, without allowing any to waste their power landward. The dioptric system involves the use of powerful convex lenses, through which the rays are focalized in a definite direction. If very large, these lenses would be difficult to make and costly to purchase; but it has been shown by Brewster and Fresnel, that a compound lens may be built up of a number of pieces, provided the curvatures are well adjusted. Around thousands of miles of coast,

where the annual wrecks are from 700 to 800, and the property lost amounts to millions sterling, the light-houses have passed through many stages of efficiency. First there was the large coal fire used on the summits of open buildings, then the old-fashioned oil lamps, or sometimes wax candles, with a looking-glass reflector behind; then the more brightly-burning Argand lamp, with concave metallic reflectors behind; then the convex lens, to focallze the rays by transmission; and then the lens built up piecemeal, so that the light may appear almost as one vast luminous pillar. See LIGHT-HOUSES.

Lamp-black (Ger. *Kienruss;* Fr. *Noir de fumée, Nero di fumo, Negro-fume, Negro de humo*). The finest lamp-black is produced by collecting the smoke from a lamp with a long wick, which supplies more oil than can be perfectly consumed, or by suffering the flame to play against a metalline cover, which impedes the combustion, not only by conducting off parts of the heat, but by obstructing the current of air. Lamp-black, however, is prepared in a much cheaper way for the demands of trade. The dregs which remain after the eliquation of pitch, or else small pieces of fir-wood, are burned in furnaces of a peculiar construction, the smoke of which is made to pass through a long horizontal flue, terminating in a close boarded chamber. The roof of this chamber is made of coarse cloth, through which the current of air escapes, while the soot remains.—URE'S *Dictionary.*

Land, in sea language, makes part of several compound terms; thus, *laying the land,* denotes that motion of a ship which increases its distance from the coast, so as to make it appear lower or smaller on account of the intermediate convexity of the sea. *Raising the land,* is produced by the motion of the vessel toward it. *Land is shut in,* signifies that another part of the land hinders the sight of that the ship came from. *Land to,* or so far from shore that it can only be just discerned. *Land turn,* a wind that in almost all hot countries blows at certain times from the shore in the night. *To set the land;* that is, to see by the compass how it bears. *Land-breeze,* a current of air, which in many parts within the tropics, particularly in the West Indies, regularly sets from the land toward the sea during the night, and this even on opposite points of the coast. *Land-locked,* is said of a harbor which is environed by land on all sides, so as to exclude the prospect of the sea, unless over some intervening land. If a ship is at anchor in such a place, she is said to ride land-locked, and is therefore considered to be safe from the violence of winds and tides. *To make the land,* is to discover it after having been out of sight of it for some time. *Land-mark;* any mountain, rock, steeple, or the like, near the sea-side, which serves to direct ships passing by how to steer so as to avoid certain dangerous rocks, shoals, whirlpools, etc.

Lands, Public. Grants of public land to certain States for railroads, made at the last session of the 34th Congress, 1855–'6:—*To Iowa,* a grant of the alternate sections designated by odd numbers, for six miles in width on each side of certain railroads named in the act; and, in case any of such sections shall have been sold, or become subject to pre-emption, then the limit of selection is extended to *fifteen miles* on each side, to make up the deficiency so caused. The alternate sections remaining to the United States within *six miles* on each side not to be sold for less than double the minimum price of other public lands—$1 25 per acre. Troops and other property of the United States to be transported free upon the railroads—mails to be carried at such rates as Congress may prescribe, and, until so fixed, at such rates as the Postmaster-General may allow.

At the second session of the same Congress, 1856–'7, a like grant was made to Minnesota and to Alabama. The quantity of land granted in each case is over 3000 acres per mile of railway.

In the first grant made to Alabama, there does not seem to be any increase of the price of the sections retained by the United States, that provision of the law not being fairly construable as one of the terms or conditions of the grant. In all these grants, it will be observed, the States are authorized to make their selections as far as *fifteen* miles on each side of every railroad, while the increase in the minimum government price of the retained lands is confined to the *six* mile limit. The public lands, in all the above-named States, particularly in Iowa, Alabama, Mississippi, Louisiana, Wisconsin, and Michigan, having been sold or pre-empted to a great extent, it is manifest that the selections for all the named railroads will range, more or less, to the maximum limit of 15 miles on each side of them. The increase in the minimum price, therefore, does not apply in a width of *nine* miles on each side. This seems to give up the argument that the only consideration which moved Congress to make these grants was such as would actuate any large holder of unoccupied land to give away part to enhance the value of the residue; for if the land is not improved in value for the full extent of the 15 miles, what right have Congress to make such a grant for such a reason?

The immense donations of public land made of late years by Congress to corporations within the new States, have awakened the attention of the people of the old States to the subject, and of Virginia, especially, where the burden of taxation for internal improvements has been greatly increased. It strikes us, therefore, that a brief recurrence to the history and conditions of the tenure of the public domain may be of general interest at this time.

At the commencement of the Revolutionary War, there belonged to some of the States large tracts of wild and unappropriated lands, while in others none such existed; the States possessing no such lands, claimed that as the war was waged with united means and equal sacrifices, the waste lands which might be conquered from the enemy should become common property, and, under the recommendations of Congress, 10th October, 1780, "that the unappropriated lands which might be ceded to the United States, by any particular State, pursuant to the recommendation of Congress of the 5th of September last, shall be disposed of for the common benefit of the United States."

Virginia promptly made a cession of her vast domain north of the River Ohio, out of which six States have since been formed. The condition of her cession (adopted substantially by other States) was, that all the lands conveyed "shall be considered as a *common fund* for the use and benefit of such of the United States as have become or shall become members of the confederacy or federal alliance of the said States, Virginia inclusive, according to their usual respective proportions in the general charge and expenditure, and shall be faithfully and *bonâ fide* disposed of for that purpose, and for *no other use or purpose whatever.*" Thus were the lands ceded, accepted, and held in *trust.* How they have since been disposed of, in total disregard of the conditions of the trust, the history of the country tells in the annals of Congressional legislation.

In disregard of the plain obligations of the trust, President Jackson, in the early days of his administration, proposed to cede the lands thus acquired, and all subsequently purchased, to the States in which they lie, gratuitously, or for a nominal price.

To counteract this movement, which at that time met with no favor in Congress, but which has since been substantially adopted in the system of partial grants, Mr. Clay introduced his well-known distribution bill, which was passed by Congress on the 24 day of March, 1833, by a vote of 24 to 20 in the Senate and 96 to 40 in the House of Representatives. This bill President Jackson refused to approve, and it did

not become a law, the popular will, as indicated by the vote of the House, to the contrary notwithstanding. Some of the western members did not hesitate to avow the purpose of eventually appropriating to the States in which they lie all the public lands, and one of the most eminent of them declared that, after the census of 1820, the power to do so would be irresistible. The fulfillment of this menace is almost complete, and after the census of 1860 the old States will be utterly powerless unless they unite cordially for their common protection.

The whole amount of money which would have gone into the Treasury of Virginia, under the provisions of Mr. Clay's land bill from 1832 to 1839, a period of seven years, would have been $4,369,169, or for each year, $728,194.

On September 4, 1841, an act was passed to appropriate the proceeds of the sales of the public lands among the several States. The first section provided that from and after the 31st of December, 1841, there should "be allowed and paid to each of the States of Ohio, Indiana, Illinois, Alabama, Missouri, Mississippi, Louisiana, Arkansas, and Michigan, over and above what each of the said States is entitled to by the terms of the compacts entered into between them and the United States, upon their admission into the Union, the sum of ten per centum upon the nett proceeds of the sales of the public lands, which, subsequent to the day aforesaid, shall be made within the limits of each of said States respectively." We give below a statement, showing the quantities of public land disposed of, and also the quantities vacant.

STATEMENT OF THE AREAS OF THE SEVERAL PUBLIC LAND, STATES AND TERRITORIES OF THE U. S., THE QUANTITY OF LAND DISPOSED OF, AND THE QUANTITY REMAINING VACANT, ON THE 30TH OF JUNE, 1856.

States and Territories.	Areas.		Surveyed up to June 30, 1856.	Unsurveyed.	Offered for Sale.	Sold.	RESERVATIONS FOR—		
							Salines.	Indians.	Companies, individuals, & corporations.
	Sq. miles.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Ohio	39,964	*25,578,960	16,770,084	....	16,770,084	12,820,890·08	24,216	16,330·73	8,805,976·00
Indiana	33,809	*21,637,760	21,487,760	....	24,487,760	16,090,350·87	23,040	126,220·71	149,102·00
Illinois	55,410	35,462,400	35,462,400	....	35,454,262	19,060,390·59	121,629	48,989·69	....
Missouri	65,037	41,608,680	41,590,898	24,792	41,186,654	16,891,887·07	48,080	22,587·61	....
Alabama	†50,943	†32,027,520	31,993,813	33,707	31,908,283	15,688,223·84	28,040	2,542,378·82	....
Mississippi	†37,827	†23,805,680	23,895,680	....	23,892,577	11,347,267·31	....	277,619·04	....
Louisiana	41,346	26,461,440	24,022,272	2,439,168	19,231,161	4,823,198·89	....	....	....
Michigan	56,451	36,128,640	33,168,640	....	34,115,710	11,117,714·55	46,080	169,300·33	....
Arkansas	52,198	33,406,720	33,279,008	127,712	32,618,409	4,436,521·35	46,080	....	....
Florida	59,268	37,931,520	25,272,062	12,659,458	18,876,615	1,532,296·66	....	227·49	305·75
Iowa	56,080	35,891,200	33,315,480	1,820,720	29,560,514	10,908,567·45	46,080	119,183·34	10,850·00
Wisconsin	53,924	34,511,360	27,834,391	7,176,969	24,131,412	9,066,912·26	46,080	127,894·27	....
California	188,980	120,947,840	10,921,401	110,026,439	....	....	....	....	....
Minnesota	141,339	90,476,960	10,675,138	80,101,827	2,508,710	1,532,687·67	....	....	....
Oregon	186,920	119,628,800	3,937,679	115,691,121	....	23,494·69	....	....	....
Washington	126,547	80,990,080	617,720	80,372,360	....	495·75	....	....	....
New Mexico	246,934	158,037,760	....	158,037,760	....	....	....	....	....
Utah	187,923	120,270,720	220,377	120,050,343	....	....	....	....	....
Nebraska	342,488	219,160,320	179,139	218,981,181	....	....	....	....	....
Kansas	126,288	80,824,120	1,572,690	79,248,430	....	....	....	....	....
Indian	67,020	42,892,800	....	42,892,800	....	....	....	....	....
Total	2,215,752	1,418,081,280	....	....	....	134,300,130·31	422,925	3,400,725·53	8,966,263·75

STATEMENT OF THE AREAS OF THE SEVERAL PUBLIC LAND STATES AND TERRITORIES, THE QUANTITY OF LAND DISPOSED OF, AND THE QUANTITY REMAINING VACANT, ON THE 30TH OF JUNE, 1856.—*Continued.*

States and Territories	DONATIONS AND GRANTS FOR—							Confirmed private claims.	Swamp lands.	Vacant public lands.
	Schools and universities.	Deaf and Dumb Asylums.	Internal improvements.	Railroads.	Individuals and Companies.	State Gov. and public buildings.	Military Services.			
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Ohio	727,528	....	1,248,001·77	....	32,141·24	....	1,824,423·96	26,460	‖ 92,428	43,558
Indiana	673,357	....	1,609,361·61	....	843·41	2,560	1,281,386·61	329,881	‖ 1,315,199	86,307
Illinois	1,001,736	....	500,000·00	2,595,838	954·64	2,560	9,597,050·68	188,902	¶ 1,838,419	511,663
Missouri	1,222,179	....	500,000·00	1,815,194	....	2,560	8,041,772·20	1,102,455	‖ 3,358,453	13,375,021
Alabama	925,804	21,949·46	500,000·00	2,854,248	1,041·53	1,620	1,014,244·95	213,387	‖ 2,598	8,233,088
Mississippi	830,624	....	500,000·00	1,664,540	15,965·31	1,280	244,053·21	688,0·3	‖ 2,753,824	5,542,381
Louisiana	832,124	....	500,000·00	1,091,640	8,412·98	....	588,190·30	2,092,914	‖ 10,580,676	6,444,294
Michigan	1,113,478	....	1,250,000·00	1,269,220	4,080·00	13,200	1,922,053·59	126,711	‖ 7,178,725	11,882,778
Arkansas	932,540	2,097·43	500,000·00	1,631,911	189,366·25	10,600	1,744,693·15	118,451	‖ 8,401,580	15,443,980
Florida	954,582	20,924·22	500,000·00	1,823,280	52,114·00	6,240	402,389·81	8,739,789	‖ 10,790,787	18,558,183
Iowa	951,224	....	‡1,366,791·22	2,748,560	18,276·86	3,840	10,929,683·30	....	‖ 1,499,716	7,888,596
Wisconsin	1,004,714	....	1,069,871·99	1,201,920	5,705·82	6,100	3,942,037·17	36,881	‖ 2,850,000	15,643,429
California	6,765,404	....	500,000·00	....	....	....	....	....	....	113,682,436
Minnesota	5,089,244	....	§ 340,000·00	....	....	....	1,313,020·00	....	....	82,592,608
Oregon	6,602,124	....	....	....	....	....	....	....	....	2,918,241
Washington	4,545,529	....	....	....	....	....	....	....	....	76,444,055
New Mexico	8,826,956	....	....	....	....	....	....	....	....	149,210,804
Utah	6,681,777	....	....	....	....	....	....	....	....	113,589,013
Nebraska	12,175,563	....	....	....	....	....	....	....	....	206,984,747
Kansas	4,460,062	....	....	....	....	....	....	....	....	70,361,058
Indian	....	....	....	....	....	....	....	....	....	42,892,800
Total	66,435,572	44,971·11	10,878,988·59	18,190,806	279,792·07	50,340	37,825,009·83	8,928,903	49,787,358	1,077,988,585

* Includes reserves under deeds of cession.
† Exclusive of Chickasaw cession.
‡ Includes the quantity of 541,625 acres of the Des Moines River Grant above the Raccoon Fork.
§ Is the estimate of the Des Moines River tirant, within this Territory.
‖ Reported by the State's authorities.
¶ Estimated.

Land-waiter, an officer of the English custom-house, whose duty it is, upon landing any merchandise, to taste, weigh, measure, or otherwise examine the various articles, etc., and to take an account of the same. They are likewise styled searchers, and are to attend, and join with, the patent searchers, in execution of all cockets for the shipping of goods to be exported to foreign parts; and, in cases where drawbacks or bounties are to be paid to the merchant on the exportation of any goods, they, as well as the patent searchers, are to certify the shipping thereof on the debentures.

Laniard, or **Lanyard** (from *Lanier*, Fr.), a short piece of cord or line fastened to several machines in a ship, and serving to secure them in a particular place, or to manage them more conveniently. Such are the lanyards of the gun-port, the lanyard of the buoy, the lanyard of the cat-hook, and others. The principal

lanyards used in a ship, however, are those employed to extend the shrouds and stays of the masts by their communication with the dead eyes, so as to form a sort of mechanical power resembling that of a tackle. These lanyards are fixed in the dead-eyes as follows: one end of the lanyards is thrust through one of the holes of the upper dead-eye, and then knotted to prevent it from drawing out; the other is then passed through one of the holes in the lower dead-eye, whence returning upward, it is inserted through the second hole in the upper dead-eye, and next through the second hole in the lower dead-eye, and finally through the third hole of both dead-eyes. The end of the lanyard being then directed upward from the lowest dead-eye, is stretched as stiff as possible by the application of tackles; and that the several parts of it may slide with more facility through the holes of the dead-eyes, it is well smeared with hog's-lard or tallow, so that the strain is immediately communicated to all the turns at once.

La Perouse, a celebrated French navigator. His first voyage was commenced in 1785, when Perouse sailed from France for the Pacific with the *Boussole* and *Astrolabe* under his command. The last direct intelligence received from him was from Botany Bay, in March, 1788. Several expeditions were subsequently dispatched in search of Perouse, but no certain information was had until Captain Dillon, of the East India ship *Research*, ascertained that the French ships had been cast away on two different islands of the New Hebrides—a fate authenticated by various articles of the wreck of these vessels, which Captain Dillon brought with him to Calcutta, April 9, 1828, 40 years afterward.

Lapidary, a name given to the artist or artisan whose business it is to cut, grind, and polish gems, small stones, etc., for the purposes of jewelry, and also for mineralogical specimens. The name, derived from *lapidarius*, pertaining to stones (from *lapis*, a stone), would seem to include the various modes of working or finishing stones in general; the technical use of the word, however, is limited as above noticed.

Lapis Lazuli. See Ultramarine.

Lapland, the most northerly country of Europe, is bounded north by the Arctic Ocean, south by Sweden, east by the White Sea, and west by Norway and the Atlantic Ocean. Its limits are not very accurately laid down by geographers; but it seems to be divided from the rest of Scandinavia by a line nearly corresponding with the polar circle, in latitude 66° 32′, and is consequently almost entirely an arctic region. North Cape, its most northerly point, is situated in N. lat. 71° 10′ 15″, consequently its length from north to south, is about 330 miles, and not 500, as is usually stated. From Cape Orlov, on the White Sea, to the Atlantic on the west, it extends about 700 miles; but besides this continental territory, there are a vast number of islands, which are included in the general name of Lapland. The whole country is divided into three parts, called Russian, Swedish, and Norwegian Lapland or Finmark, and is recognized by the Swedes and Norwegians by the name of Lapmark, *mark* signifying, both in Swedish and Norse, land or tract of country. The very early writers, however, do not notice any country under the name of Lapmark, while Finmark is alluded to, though not with such clearness as would admit of our defining the exact extent of country which went by that appellation. It has been conjectured that, in former ages, the parts of the north now known by the names of Swedish and Russian Lapland were distinguished as Russian and Swedish Finmark previously to the period when the Finns obtained the name of Lapper, or Laplanders.

Finmark, which forms the most northern part of this wild and extensive territory, constitutes one extremity of the kingdom of Norway, to which it now belongs, though doubtless in ancient times it was a separate kingdom, governed by its own sovereigns. Its present boundary on the west is Loppen, the first island in Finmark, and which forms a line between it and the Nordlands, a part of Norway sometimes erroneously confounded with Lapland. On the northwest and north-east it is washed by the Polar Ocean, while to the east it is bordered by Russian Lapland, which also, with Nordland, bounds it to the south—the boundary line between the two countries being the River Tana. Its extent from north to south—that is, from the borders of Russian Lapland to the North Cape—is nearly three degrees of latitude; its greatest breadth being from west to east, namely, from the western side of Faroe to the coast above Waranger, near the borders of Russian Lapland. At the eastern extremity of Finmark there is a considerable tract, to which both Norway and Russia lay claim. It lies between the acknowledged boundaries of each of these powers, and being now considered as neutral ground, is free to the Laplander of both countries to hunt and fish in. This district extends a little to the westward of Bugefiord, stretching nearly south to the Enara Lake, where it bends to the east, and afterward to the N.E., where it joins the coast. Russian Lapland lies to the south and east of the debatable ground above mentioned. The river Muonio, which for a considerable portion of its early course receives the name of the Köngärnäelf, constitutes the boundary between Sweden and Russia. The circle of Kola, and the northern part of eastern Kemi, constituted at one time Russian Lapland; but, by subsequent treaties, two extensive districts, all the Lapmark of western Kemi, and the greater part of the Lapmark of Torneo, have been ceded to Russia. Thus nearly two thirds of the regions inhabited by the Laplanders are included in the dominions of the Emperor of Russia. Swedish Lapland, the most southerly division, occupies the interior part of the country to the west of the River Torneo—the maritime district of Nordland, a portion of Norway, being situated between it and the North Sea. How much of the northern part of Sweden is entitled to be called Swedish Lapland, it is impossible to say. If the arctic circle be taken as the boundary line, only that portion of Sweden called North Bothnia can be considered as belonging to Lapland; but Pitea Lapmark and Umea Lapmark are sometimes mentioned as forming part of the latter country, and these are situated in West Bothnia. The cause of error may be traced to the circumstance of these nomadic tribes frequently inhabiting, at least for a portion of the year, districts of country far down in the interior of Sweden and Norway. Thus, in the latter country, the Roraas Mountains, situated between Christiania and Drontheim, are inhabited, during summer at least, by a family of Laplanders, with the never-failing herd of reindeer But the exact boundary line is not very material, as it has reference only to different portions of a tract of country which is under one government.

There are numerous lakes and rivers in Lapland. Of the latter, several take their rise in the Kodlin Mountains, and flow in various directions into the Atlantic Ocean or the Gulf of Bothnia. The principal rivers of the country are the Tana or Tarna, which takes a north-eastern course through Finmark, and empties itself into a bay or sound of the same name; the Alten or Alata, which is very rapid, forcing its way through the mountains of Finmark in a north-westerly direction, empties itself into a bay of the same name; the Torneo, which issues from a lake so named, and, after being enlarged by a number of streams uniting in one channel and running nearly due south through a long course, falls into the northern extremity of the Bothnian Gulf at Torneo; and the Muonio, which rises from the Killpis Jaure, at the foot of the alpine chain of Norway, is a considerable stream, and constitutes the boundary line between Sweden and Russia, till it unites with the River Torneo, when the latter marks the

limits of either country in this quarter. There are also other rivers which take their rise in Lapland, and fall into the Gulf of Bothnia, such as the Lulea, Pitea, Kalix, and others. In Russian Lapland there are several considerable streams, but these have not been so well defined, nor has this part of Lapland been so fully described as the others. The Kemi takes its rise among the Kemi Mountains, situated near the centre of the country, and flows into the Gulf of Bothnia. It has many imposing cataracts, of which the *Tairal Koski*, or the fall of the heavens, is the only one which the adventurous boatmen never attempt to cross. The *Passe*, or holy stream, is the outlet of the great lake Enara, flowing thence to the Arctic Ocean. The eastern declivities of Russian Lapland are watered by the Panoi, which discharges itself into the White Sea. The Tuloma falls from a great height, enters the Lake Kola, which name it afterward takes, and falls into Kola Bay, on the Arctic Ocean. Beside these, there are numerous other rivers which traverse the country in various directions, and either give rise to lakes, or issue from them.

Fishery.—The coast Laplanders support themselves entirely by the fishery; which is astonishingly productive, 2000 pounds' weight of cod-fish being caught in a day by means of lines alone. From the great number of small Russian vessels which frequent the coast at certain seasons, they find a ready sale for the fruits of their industry, receiving in exchange chiefly meal, brandy, tobacco, and the like. Whales are abundant, particularly what is called the fin whale, which is long, active, swimming with great strength and speed, and consequently difficult to capture.

Manufactures.—In their manual arts and manufactures, that is, making the various utensils which their mode of life requires, the Laps display some ingenuity. Their sledges and canoes are very strongly and closely put together, so as to be entirely impervious to water. They tan hides with the first inner bark of the birch, make strong cordage and thread of the sinews of the reindeer, weave coverings for their tents, knit gloves, fashion wooden utensils for domestic purposes; and the women prepare the skins of foxes, fawns, otters, and other animals for sale, by stripping off the membraneous parts, and curing them with fish-oil.

Russian Lapland begins at the Waranger Fiord, under N. lat. 70, and extends as far as the White Sea. Admiral Litke, in surveying its northern coast, in the years 1822-3, has noted down many interesting particulars, from which we derive the following notes:

It may appear surprising, but it is nevertheless true, that this coast, navigated for three centuries by the first maritime nations, was, before Admiral Litke's survey, less known to us than many of the most distant and uninhabited parts of the globe. Vessels trading to Archangel had, for a long time, only the *Zeefakel* of the Dutch for a guide. Litke, June, 1822, began his survey of the Lapland coast at Cape Orlov, in about N. lat. 67°. This, the eastern extremity of Russian Lapland, consists of high, steep, and bare rocks. Near Sviatoi Nos (in N. lat. 68°) the coast has an inviting appearance; the south side of the islands, or indentations, being covered with beautiful turf, wild leek, and a number of strawberries, but there were no bushes. On the main shore, however, were seen low dwarf birch and juniper bushes, and numerous tracks of reindeer. During summer, as Admiral Litke was here informed, there is no land route through Lapland; and all who are then necessitated to travel —as, for example, clergymen, the judges, or officers of judicial courts, etc.—pass by *shnakes* along the shore, by stations, from Kola, round the whole peninsula, as far as Kandalaksha, in the extreme north-eastern point of the White Sea. Between Kandalaksha, however, and Kola, they manage to travel in the usual manner. A little to the west of Sviatoi Nos is the mouth of the Yukanka River, which is navigable for three to four sea miles up, when rapids commence, and prevent navigation, even for small boats. On the left bank of this river lies a Lopar village, called the Yukanka Lodge: for all places of the Lopares, both for summer and winter residence, are called by the Russians *pagosti* (lodges).

About 30 miles north-west from Yukanka is Cherni Nos, or Black Cape; and near it, Noknev Island—in earlier charts, called Nagel, or Nagol. Here Admiral Litke found that the needle showed no variation. On the main shore, near Noknev Island, the principal fishes caught are salmon, bib, *paltus*, and *piksha*. The *peshchanka* (sand-eel) is caught in a remarkable manner. Some time before ebb, the Lopares set about digging up the wet sand close above the strand line; with almost every step they dig out such a fish, to which, however, they must not allow a second's time, as otherwise it would be sure to dig itself in again, and escape. As soon as they perceive it, therefore, they seize it with a handful of sand, and throw it violently on the ground. The fish, thus stunned, are collected in baskets or casks. It is strange that this fish is found only at ebb during the day, and never at night. The people of this place had also some sheep, which had abundant food in the adjoining pastures.

The chief island on the coast of Russian Lapland is Kildin—not Kilduin, as the Dutch call it—and lies 11 miles east from the mouth of the Kola Bay. It is 9 miles long, and 1½ to 3½ miles broad. Its shores are high and precipitous on the north side, and terminate abruptly in a perpendicular rock on the west, while on the south-east side it slopes down gently to the sea. The appearance of the south coast is most peculiar, rising as it does in four most regular terraces, forming an amphitheatre of 600 feet in height, with a flat, table-like top. This coast is everywhere clothed with the richest verdure, forming a most striking contrast with the bare granite crags on the main shore. The island consists of primary slate, and thus differs from both the islands and the main shore to the south-eastward, which show only granite.

Kola, the capital of Russian Lapland, is situate at the confluence of the Rivers Kola and Tulonia, about 30 miles from the sea. As determined by Mr. Rasumowski, who, in the last century, observed in this place the transit of Venus over the sun, the latitude of the city is 68° 52′, the longitude 33° 1′ east from Greenwich. It appears that Kola was founded long before 1533, as English and other mariners traded already about the middle of the 16th century to Kola as to a well-known place. It was at first only a *wolost* (capital of a district), became under Peter the Great an *ostrog* (fortified place), and since the foundation of the stadtholdership, the capital of a government. The place extends 530 fathoms along the River Kola, and 175 fathoms along the River Tulema. Except a church built of stone, all the houses are of wood. The streets are paved with planks. On the bank of the Kola, near the centre of the town, lies a wooden fort, being a square with five towers: since the rupture with England, in the year 1800, the cannon of this fort were removed to the priory of Solowez, in order to put the latter in a state of defense; and since then, the walls of the fort serve only as a fence for the cathedral, and the towers are transformed into storehouses. The number of inhabitants of both sexes was estimated by Litke, in 1822, at about 800, but recent official data show that it was, in 1849, only 642. The officials and merchants of Kola live in a style varying little from that of the capital. In external appearance, Kola is that of a clean town; and the houses, consisting frequently of two floors, are neat. The view of the town from the north-east is most charming; it stands on a high and abrupt bank, from which a wide plain extends, bordered on three sides by high hills. The principal trade of Kola is in fish, particularly in bib (*treska*) and *paltus*. The Ko-

laers are not themselves engaged in fishing, but obtain the fish by barter, mostly from the Russian fishers trading on the Lapland coast, partly from the Norway ports of Wadsö, Wardhuns, Hammerfest, and even from Tromsö, to which ports the Kolaers are permitted to export about 2000 *tchetwert* of rye flour every year.

Kola *lodji* go to Archangel to barter their cargo of fish for the various merchandise they require, and some of them venture to set out from the latter place on their return home as late as October. While the men of Kola are thus occupied, their wives and daughters do not remain idle. They cross in little boats to the islands to gather *maroshka*, the berries of *Rubus chamæmorus*. A boat contains usually but one young and able man, and from 12 to 20 women. Among the islands near the Bay of Kola, the Koreline Islands are considered to give the best produce of moroshka; they lie five miles west from the mouth of the bay. The Kola women, however, will go still further, to Metov Bay, and even to the Ainova Isles, at least 100 miles from Kola, in a boat. The moroshka from these isles are said to surpass in size and flavor all others, and are mostly destined for the imperial court. The Bay of Kola, near the town, is so shallow that even the smallest vessels can approach it only at high water. The River Kola ceases altogether to be navigable at the town; but the Tuloma is navigable for about 40 miles, namely, to its origin from the lake. Its banks are densely wooded with splendid fir. There is a small and bare island in the middle of the Bay of Kola, called Solnoi Ostrov (Tallow Island), from the immense number of seals which formerly used to come ashore here, but which entirely disappeared about the end of the last century.

The Lap hut is formed interiorly of wood, by means of curved ribs, which unite near the centre in a ring, which is open, and allows free escape for the smoke, the fire being lighted in the centre of the floor. The exterior is covered with turf. The door is wood on one side. The inmates recline on skins on the floor, with their feet toward the fire; and behind them, on a row of stones near the wall of the hut, are their various utensils. Their clothing—chiefly of tanned skins and woolen stuffs—looked very dirty. Their whole wealth consists in reindeer. The two families who frequent this valley possess about 700 deer. We saw, perhaps, about one fourth of that number. A few of them were driven, for our inspection, into a circular inclosure of wooden paling, where they are habitually milked. One of the men dexterously caught them by the horns with a *lasso*, or noose. The deer are small; but some of them carry immense branching horns, the weight of which they seem almost unable to support. At this season their long winter coat of hair came off by handfuls. They make a low grunting noise, almost like a pig. The milk is very small in quantity, and excessively rich.

The whole population of Finmark does not exceed 45,000. The degrading superstition in which they were formerly sunk has now in a great measure disappeared, along with those numerous deities which they worshiped: the wild creations of unenlightened nature have been superseded by Christianity, and a knowledge of the true God. Regular clergymen are established in the country by the different governments, and the Laps exhibit much reverence and devotional feeling during divine service, although its purport is only known to them through an interpreter. Finmark, in regard to ecclesiastical regulations, is under the jurisdiction of the Bishop of Norland and Finmark, both of which form one diocese. Swedish Lapland has a population of only about 12,000.—E. H.

La Plata. The Argentine Republic, or "La Confederacion Argentina," comprises the provinces which, with Paraguay and Uruguay, now independent States, constituted, under Spanish rule, the vice-royalty of Buenos Ayres. Its area is the largest of the South American republics, and its population to the square mile the smallest. It consists of 13 provinces, comprising an area estimated at 786,000 square miles, and contains a population of about 764,000 souls. Other estimates reduce this number to 596,000, while the "Almanach de Gotha" for 1855 gives a total number of about 2,000,000, of whom 1,200,000 are creoles, Spaniards, and mestizos, 200,000 subjugated Indians, and 25,000 negroes. Within a few years, Buenos Ayres has withdrawn from the confederacy. With the exception of a portion of the extensive plains, called *pampas*, watered by the rivers Rio Negro, Colorado, and Desaguadero, nearly all the country belonga to the basin of the La Plata, the great estuary of which is between the State of Buenos Ayres and the Uruguayan port of Montevideo. The most important product of the republic is cattle. Immense droves of oxen roam at large over the pampas, and vast herds are scattered throughout the extensive breeding estates of private individuals. Horses and mules constitute a prominent article of commerce with the Peruvian and other traders; and sheep and hogs, and the small quadrupeds which furnish the nutria and chinchilla-skins, are among the valuable native animals. Cotton, tobacco, rice, cocoa, sugar-cane, indigo, maize, wheat, and other grains, constitute leading productions; but the staples of export are hides, skins, horns, bones, horsehair, wool, tallow, ostrich feathers, salted meats, crude saltpetre, and cocoa. The export trade reaches, annually, a value of about $10,000,000.

Commercial relations between the United States and the Argentine Republic are regulated by treaties of July 10th and 27th, 1853. The former treaty relates chiefly to the navigation of the rivers Parana and Uruguay: that of July 27th was designed to acknowledge and confirm the relations subsisting between the two governments by the signing of a treaty of friendship, commerce, and navigation, as well for the good security as for the encouragement of the commercial intercourse already subsisting between them. This latter treaty stipulates that perpetual amity shall exist between the two countries and their respective citizens; that there shall be reciprocal freedom of commerce; that the citizens, ships, etc., of each shall be protected in the territories of the other, to which other foreigners, or the ships or cargoes of any other foreign nation or state are or may be, permitted to come; that the respective ships of war, and post-office or passenger packets of the two countries shall have liberty freely and securely to come to all harbors, rivers, and places to which other foreign ships of war and packets are, or may be, permitted to come; to enter into the same; to anchor and remain there, and refit, subject always to the laws and usages of the two countries respectively; that any favor, exemption, privilege, or immunity whatever, in matters of commerce or navigation, which either of the two nations has actually granted, or may hereafter grant, to the citizens or subjects of any other government, nation, or state, shall extend, in like cases and circumstances, to the citizens of the other; that no high or discriminating duties shall be imposed, in the territories of either of the contracting parties, on any article of the growth, produce, or manufacture of the territories of the other, than are, or shall be, payable on the like article of any other foreign country; that export duties on all articles exported from the territories of either party to those of the other, shall be the same as when the exportation is made to any other foreign country; and that all prohibitions as to imports and exports, into or from either country, shall be such as extend to the like articles of any other foreign country. The treaty further provides that no other or higher duties or charges, on account of tonnage, light or harbor dues, pilotage, salvage in case of average or shipwreck, or any other local charges, shall be imposed in the ports of either of the two contracting parties, on the vessels of the

other, than those payable in the same ports on its own vessels; that the vessels of each shall enjoy entire equality with national vessels in the ports of the other, both as respects imports and exports; that a regular passport, or sea-letter, furnished by competent authority, shall be sufficient evidence of the nationality of the vessel; that the merchants, commanders of ships, and all other citizens of either of the contracting parties, shall enjoy, in the management of their affairs in the territories of the other, the same privileges and rights, in all respects, that belong to its own citizens under the laws and established customs of the country; that, in case of the death, without will or testament, of any citizen of either of the contracting parties, in the territories of the other, the consul-general or consul of the nation to which the deceased belonged, or the representative of such consul-general or consul in his absence, shall have the right to intervene in the possession, administration, and judicial liquidation of the estate of the deceased, conformably with the laws of the country, for the benefit of creditors and legal heirs. The treaty concludes with placing the diplomatic agents and consuls of the United States on the same footing as similar representatives of the most favored nation, and makes ample provision respecting religious privileges, rites of burial, etc. This treaty contains no limitation as to its duration, but provides that the amity which it establishes between the citizens of the two republics shall be perpetual. The foreign trade of the Argentine Republic was formerly monopolized by Buenos Ayres; but, in 1852, new channels of commerce were opened, the Parana and Uruguay Rivers being declared free to the commercial traffic and navigation of all nations by a decree officially promulgated October 30, of which a translation is subjoined:

Article 1. The navigation of the Rivers Parana and Uruguay is allowed to every description of merchant vessels, whatever may be their nation, place of departure, or tonnage. Art. 2. All merchant vessels may enter the ports established on the Rivers Parana and Uruguay. Art. 3. The established ports are: 1. In the province of Entre Rios, that of the city of Parana, the capital of said province, and those of Diamanti, Victtori, Gualeguai, and La Paz, on the River Parana; and those of Gualeguaichu, Concepcion del Uruguay, Concordia, and Federacion, on the River Uruguay. 2. In the province of Santa Fé, that of the capital of the province and that of Rosario. 3. In Corrientes, the capital of the same, Bella Vista, and Gorga. Art. 4. All those ports designated in the foregoing article shall have custom-houses for foreign trade; and those established in the provinces of Jujul, Salta, San Juan, and Mendoza shall have custom-houses for inland trade. Art. 5. Until the national tariffs be fully arranged, the custom-houses for foreign trade on the river shall continue to collect duties, according to existing regulations. Art. 6. Seven per cent. upon the valuation of the articles imported for consumption into the litoral provinces shall be collected as the sole national tax. Art. 7. In the custom-houses for inland trade, six per cent. upon the valuation shall be collected on all articles introduced, as a national tax. Art. 8. All the custom-houses for foreign trade, as well on the rivers as in the interior, shall permit the transit of foreign merchandise for the provinces of the confederation; but the custom-house dispatching them shall collect and retain five per cent. upon the valuation of the goods, as the whole of the national tax. Art. 9. All goods and merchandise of foreign production, or shipped from foreign places, and all the productions of the manufactures or industry of Buenos Ayres, which are introduced by land into any of the provinces of the interior, shall pay, for the present, the same duties as are collected in the custom-house of Rosario. Art. 10. In the same custom-house, the same duties on exportation as on importation shall be paid on whatever articles interior provinces may introduce into the province of Buenos Ayres. Art. 11. In all the custom-houses in which deposit is allowed, the same shall be continued subject to the existing regulations. Art. 12. Within the territories of the 13 confederated provinces, the passage of their own product or manufacture shall be free of all duties of transit or on consumption. Art. 13. The present decree shall have effect only until the national congress shall establish permanent regulations on the subject it embraces.

The above decree, published by the provisional director of the republic, was followed by the publication, on the 18th of the same month, of the following resolution of the representatives of the province of Buenos Ayres:—"The province of Buenos Ayres, recognizing as a principle of general convenience the opening of the River Parana to the traffic and navigation of all nations, from this present date declares and authorizes the same on its part."

Buenos Ayres must always be a point of great commercial importance, as it is the principal outlet through which the produce and industry of the immense regions lying behind can have an egress to a foreign market; and it is only through this port and Montevideo that those countries can receive, by the La Plata and its tributaries, unless in the direct trade, their supplies of foreign merchandise. Indeed, these two ports form the only channels through which the productions of the countries lying between the Cordilleras and the La Plata will find their way to foreign markets. By late advices to the State Department, notice is received of a law which passed both houses of the Argentine legislature, and was approved by the President July 19, 1856, establishing differential duties on all foreign merchandise introduced into the ports of the confederation, in the indirect trade from Buenos Ayres. These duties are almost equivalent to prohibition, and will divert from the port of Buenos Ayres that portion of the foreign trade destined for the fluvial provinces. The chief reason assigned for the adoption of this measure, as announced during the debate which it elicited in both branches of the legislature, was, that it would be the most effective means that could be adopted to force Buenos Ayres from its secession movements, and thus restore tranquillity to the republic. Already the government budget of Buenos Ayres shows a deficiency of $9,000,000. This act of the confederation, in driving from its ports the foreign trade of the other provinces—hitherto a source of immense profit to its treasury—may lead to a commercial, perhaps a political, crisis.

The navigation of the La Plata and its tributaries is represented to be at this time active, employing a heavy tonnage both of steamers and sailing vessels. The trade between Buenos Ayres and Montevideo consists in the transhipment, to and from either port, of articles the growth or manufacture of Europe and the United States, and the conveyance of passengers. From Buenos Ayres to the interior, the trade consists in the interchange of foreign merchandise for the various productions of the La Plata provinces. South of Buenos Ayres, and from Patagonia, in exchange for dry goods, spirits, wines, and sundries, are imported hides, skins, tallow, hair, and, occasionally, wheat and salt, especially from Patagonia. The principal ports in the provinces open to this trade are San Fernando, San Pedro, and San Nicolas, in the province of Buenos Ayres; Rossario and Santa Fé, in Santa Fé; Gualeguaigchu, Parana, and Concordia, in Entre Rios; Gorga, Bella Vista, and Corrientes, in the province of Corrientes. From all these ports, as from those in Paraguay and Uruguay, the imports consist chiefly of yerba maté (Paraguay tea), and tobacco, hides, lumber, nutria, wool, candles, soap, ashes, peanuts, and various manufactures of wood.

The steam-vessels, exclusive of those of the British

Royal Mail Steam-packet Company, regularly employed, at a late date, in the navigation of the Plata, are: five steamers, under the Oriental flag—one of them constructed in the United States—and one under the Buenos Ayres flag, also of United States' origin. According to the navigation returns of the Argentine Republic for 1852, the steamers engaged in the regular trade between Buenos Ayres and Montevideo, with the number of round trips made by each, were as follows: 1 American, 44 round trips; 1 British, 17; 2 Oriental, 38; and 2 Brazilian, 14. The sailing-vessels engaged in the same trade, were 2 schooners, under the Oriental flag, which made 42 round trips; and 2 schooners and 2 brigantines, under the flag of Buenos Ayres, which made 40 round trips. The following table shows the exports of Buenos Ayres for six years, ending 1854.

COMPARATIVE STATEMENT EXHIBITING THE EXPORTATION OF STAPLE PRODUCTS OF THE STATE OF BUENOS AYRES TO ALL COUNTRIES, FROM 1849 TO 1854, BOTH INCLUSIVE. [MADE UP FROM "REJISTRO ESTADISTICO DEL ESTADO DE BUENOS AIRES."]

Exported to	In the years	Dry hides.		Salted hides.		Wool.		Hair.		Tallow and horse grease.	
		Ox and cow.	Horse.	Ox & cow.	Horse.	Bales.	Ser.& bags	Bales.	Ser.& bags	Pipes.	Bar.& Kk.
Great Britain.....	1849	88,494	9,992	517,886	195,045	4,896	1,070	1,589	425	17,180	87,050
	1850	25,848	3,600	357,988	102,855	1,821	326	960	618	13,055	17,337
	1851	48,686	4,564	547,840	57,208	999	370	1,171	854	19,205	4,095
	1852	11,503	1,220	393,114	53,005	3,066	372	897	209	23,050	7,609
	1853	83,209	6,927	285,577	106,656	5,894	1,196	914	788	16,078	3,644
	1854	2,990	727	283,281	139,294	5,120	285	1,122	299	20,951	8,929
France.....	1849	244,808	7,927	79,758	114	8,337	7	696	96	812	6,449
	1850	287,792	8,191	85,208	7,254	2,085	68	298	257	891	2,745
	1851	189,860	9,925	90,844	10,416	871	....	897	279	880	775
	1852	126,192	1,860	57,892	3,713	3,639	....	451	150	268	819
	1853	62,972	1,161	44,863	2,497	4,638	58	237	503	563	616
	1854	90,455	1,060	48,279	21,708	8,829	2	329	62	144	1,608
Continent	1849	613,416	775	81,65	....	1,119	164	341	77	182	902
	1850	585,353	941	67,195	224	1,495	143	341	25	395	975
	1851	539,630	2,051	55,545	107	760	8	479	6	1051	....
	1852	374,894	3,041	96,552	580	2,874	427	866	19	890	40
	1853	248,440	620	84,078	1,554	2,176	....	102	....	102	394
	1854	295,026	3,090	52,541	4,298	3,011	2	152	10	203	4
United States..	1849	734,701	8,009	122,784	....	13,008	1,935	800	529	....	....
	1850	608,929	13,474	137,184	7,575	12,549	2,666	909	1,217	199	....
	1851	572,109	14,037	124,471	20,863	15,791	2,499	726	816	9	....
	1852	393,493	255	105,640	25,167	7,847	677	1,020	1,306	1,061	871
	1853	259,164	1,265	25,280	7,196	8,618	124	768	550	1,495	69
	1854	312,265	6,672	55,645	44,419	9,986	862	1,101	1,174	46	....
Italy.....	1849	11,252	..	4,949	....	....	23	....	....	....	34
	1850	181,197	13,820	66,648	14,638	143	138	145	192	87	1,994
	1851	185,940	2,620	58,024	80	626	804	41	268	2	249
	1852	175,274	13,787	74,417	....	688	74	11	221	44	678
	1853	82,857	....	23,113	791	585	11	42	426	152	513
	1854	76,605	1,680	13,763	1,245	480	....	25	28	197	1,350
Spain.....	1849	262,463	9,311	9,389	2,462	....	....	....	....	....	175
	1850	158,865	10,577	5,817	2,327	1	....	6	86	....	402
	1851	208,416	14,388	5,911	5,583	....	....	42	11	....	229
	1852	168,828	1,043	9,002	1,212	4	....	....	....	23	884
	1853	98,888	3,856	2,881	447	....	....	....	....	30	54
	1854	211,215	15,785	5,891	5,276	285	....	....	28	....	29
Brazil	1849	32,798	*	....	....	....	....	....	....	457	402
	1850	7,746	*	....	....	....	....	....	....	74	150
	1851	1,506	*	....	....	....	....	....	....	281	238
	1852	2,752	*	....	....	....	....	....	....	479	260
	1853	2,176	*	....	....	....	....	....	....	999	....
	1854	1,818	*	....	....	....	....	....	....	1,797	449
Havana.	1849	6,684	....	....	....	....	....	....	....	....	1,831
	1850	3,522	....	....	....	....	....	....	....	....	1,757
	1851	4,069	....	....	....	....	....	....	....	20	2,168
	1852	2,009	....	....	....	....	....	....	....	....	2,101
	1853	1,623	....	....	....	....	....	....	....	....	642
	1854	1,928	....	....	....	....	....	....	....	87	911
Grand totals.....	1849	2,111,083	40,868	850,259	197,651	23,329	3,370	3,235	1,217	18,624	54,824
	1850	1,704,271	50,233	720,040	136,884	17,744	3,356	2,659	2,400	12,090	25,360
	1851	1,689,035	47,005	912,313	93,672	19,050	3,914	3,356	1,267	19,346	13,534
	1852	1,256,280	21,450	737,616	84,617	19,018	1,554	2,745	1,992	28,222	13,350
	1853	788,310	14,529	418,742	119,141	22,249	1,390	2,058	2,216	20,563	9,497
	1854	989,928	29,978	469,430	216 60	22,442	661	2,709	1,601	23,879	15,589

* These are embraced under ox and cow.

STATEMENT EXHIBITING THE QUANTITIES OF DOMESTIC PRODUCE EXPORTED FROM THE PORT OF BUENOS AYRES, FROM 1849 TO 1853, DISTINGUISHING THOSE EXPORTED TO THE UNITED STATES.

Articles.	1849.		1850.		1851.		1852.		1853.	
	All countries.	United States.	All countries.	United States.	All countries.	United States.	All countries.	United States.	All countries.	United States.
Bones.....No.	....	....	3,100,780	800,000	3,110,720	....	3,523,072	620,000	1,988,207	90,000
Hair.....Bales, etc.	1,581	201	5,059	2,126	4,482	1,602	2,165	3,519	2,068	164
Hides, ox and cow, salted.....No.	327,092	15,286	720,040	137,184	912,188	124,471	416,742	106,640	2,216	550
" " " dry..... "	774,091	115,353	1,784,211	303,929	1,589,005	572,109	1,256,280	393,488	788,310	259,164
" horse, dry..... "	22,969	2,545	50,223	18,474	47,005	14,037	14,529	255	14,529	1,265
" " salted..... "	89,814	....	186,884	7,576	93,672	20,863	119,141	25,167	7,196	8,477
Sheep-skins.....Bales	1,884	469	3,568	2,020	4,826	1,371	3,317	685	3,477	198
" " ..... Dozens	....	....	....	....	....	....	....	....	281	192
Wool.....Bales	13,905	850	17,741	12,549	19,060	15,791	22,241	7,847	22,249	8,916
" ..... Seroons	....	....	3,856	2,666	2,912	2,499	1,990	677	1,390	124
Horns, ox and cow.....No.	254,898	80,000	917,150	1,165,012	2,365,720	1,158,548	1,360,976	376,904	1,360,276	280,545

STATEMENT OF FOREIGN MERCHANT VESSELS WHICH ARRIVED AT THE PORT OF BUENOS AYRES, FROM 1821 TO 1854, DISTINGUISHING THOSE UNDER THE UNITED STATES' FLAG.

Years.	From all nations.	From United States	Years.	From all nations.	From United States
1821	202	42	1839	200	87
1822	252	75	1837	228	40
1823	240	80	1842	406	62
1824	342	148	1843	575	75
1825	275	102	1844	518	88
1830	257	88	1849	526	86
1831	207	77	1850	440	87
1832	213	55	1851	471	80
1833	294	91	1852	489	57
1834	261	67	1858	344	Unknown.
1835	211	51	1854	334	28

The aggregate value of cargoes from the United States imported into the port of Buenos Ayres during the year 1851, was $600,181; 1852, $659,915; 1853, $197,836. The aggregate value of exports from the port of Buenos Ayres to all countries in 1854, is stated by French authorities, as follows:

	Francs.		Francs.
Great Britain	10,060,558	Hanover	204,332
United States	9,168,799	Holland	1,329,547
Spain	11,255,339	Portugal	125,599
Hanse Towns	5,186,907	Argentine Repub.	366,061
France	5,356,352	Uruguay	212,038
Sardinia	8,796,605	Prussia	49,853
Brazil	1,785,272	Two Sicilies	30,733
Belgium	988,183		
Denmark	94,840	Total francs	51,287,072
Sweden	927,604		
Norway	95,450	Total dollars	$9,744,543

From statements published by the minister of finance of the State of Buenos Ayres to the legislative chambers, on the revenues of the customs, it appears that there was imported in 1854, of merchandise of every description, in value, as follows:

	Paper piastres.
Sundry articles, paying 5 per cent. duty	16,677,540
Sundry articles, paying 10 per cent. duty	1,437,987
Silks, paying 12 per cent. duty	5,811,241
Sundry articles, paying 15 per cent. duty	134,494,883
Articles made up, and provisions, paying 20 per cent. duty	44,800,330
Liquors, paying 25 per cent. duty	39,424,824
Articles free of duty, or entered in contraband	57,358,245
Total	300,000,000
Value in U. S. currency	$15,000,000
Total exports of Buenos Ayres in 1854	$9,744,543
Total imports of Buenos Ayres in 1854	15,000,000

The large balance of trade, however, which appears against this port (as is the case also with the port of Montevideo), is accounted for by the fact that the wants of the interior provinces of Paraguay, and even of many places in Bolivia, are supplied from these two points.

Wool constitutes upward of 25 per cent. in value of all the imports into the United States from the Argentine Republic. This is shown by the following tabular statement made up from annual reports of the Treasury Department on commerce and navigation for the years named, exhibiting the total values of imports into the United States from the Argentine Republic, from 1851 to 1855, together with the values of wool imported from the same country during the same period:

Years.	Total values of imports.	Values of wool.
1851	$3,265,382	$1,328,397
1852	2,091,697	704,084
1853	2,186,641	588,638
1854	2,144,971	854,232
1855	2,545,087	627,718

Of the total quantity of wool imported into the United States from all countries, about one third, or nearly so, is received from the Argentine Republic. This is shown by the following tabular statement, derived from the same sources as the former, exhibiting the quantities of wool imported into the United States from all countries, from 1851 to 1855, together with the quantities imported from the Argentine Republic during the same period:

Years.	All countries.	Argentine Republic.
1851	32,548,491	12,106,586
1852	18,841,298	7,084,742
1853	21,595,079	5,745,857
1854	20,200,110	6,255,698
1855	18,584,415	5,966,969

The preceding table exhibits an aggregate of 111,219,393 pounds of wool imported from all countries, and of 37,159,802 pounds from the Argentine Republic, or an annual average of 22,243,878 of the former, and of 7,431,960 of the latter; being a fraction over one third of the whole.

Regulations of the Port of Buenos Ayres.—Article 1.—All vessels at anchor in the port, whether national or foreign, shall render every assistance in case of a vessel breaking adrift, or of any other accident; or, in default, shall suffer the penalties established by law, and in proportion to the gravity of the case. 2. All vessels at anchor in the roads must have their anchors buoyed, on account of the shallow water; or pay all damages which may occur to any vessel or boat, from this precaution having been neglected. 3. Any vessel losing a buoy from her anchors shall report it immediately to the captain of the port, who will send off a pilot to replace it. No anchor can be weighed without permission of the captain of the port. 4. Pilots on bringing vessels up in the roads are to inform the captain what articles are necessary for their perfect safety, and in case of there being any wanting, report it to the captain of the port. Pilots neglecting to do so will be punished with the rigor of the law. 5. If, in a gale, the anchor of any vessel should happen to drag, or the cable part, either on account of said cable not corresponding with the size of the vessel or the anchor, or from rottenness, said vessel will be responsible for all the damages occasioned thereby. 6. Any vessel from sea, that may anchor in this port without applying to a pilot, will be liable to pay all damages that may occur, and can not claim redress if she, in any way, sustains damage. 7. Any vessel at anchor with her boats astern, and not hauling them alongside upon seeing another under sail, so as to give a free passage, can not claim for the damages she may suffer, and shall be obliged to pay for those occasioned. 8. No vessel at anchor in the roads can heave ballast, or any thing that does not float, overboard; and if such be proved to have been done, the act will be punished according to law. 9. No vessel, excepting on her arrival, can salute in the inner roads without obtaining permission of the captain of the port. Those which do so will suffer the penalties the government may determine on. 10. All boats, belonging to merchant vessels at anchor in either roads, shall put off from shore one hour after sunset. 11. All boats that may be found on the beach, from the time of firing the evening gun until daybreak, will be seized, and the crew punished according to the gravity of the case.

PILOT DUES OF THE PORT OF BUENOS AYRES.

Vessels drawing	Silver dollars.	Vessels drawing	Silver dollars.
10 feet, pay	40	17 feet pay	150
11 "	50	19 "	210
13 "	70	20 "	240
14 "	90	21 "	260
15 "	110		

All vessels, excepting packets, requiring a pilot to enter the inner roads, pay $200 currency (equal to $10 United States' coin—the currency dollar being, at present, equal to 5 cents, United States). When leaving port, whether taking a pilot or not, they pay $200 currency ($10 United States). Any vessel that may enter the inner roads without a pilot, wishing to be moored or to change anchorage, pays $100 currency ($5 United States).

Port Charges.—Tonnage dues per ton, entering (currency), $1½ = $0 07½ cents, United States; visit and regulation, $7 = $0 35; stamps for opening register,

etc., $169 = $8 45. Tonnage dues, clearing, $1½ = $0 7½; crew list, $12 = $0 60; bill of health, $6 = $0 30.

By the following law, passed by the Senate and Chamber of Representatives of Buenos Ayres, and officially announced under date of September 6, 1854, it will be seen that vessels of friendly nations enjoy the same privileges, and are subject to the same restrictions, as national vessels:—"From the date of the present law, there will not be charged in the ports of the State of Buenos Ayres, to the vessels, of friendly nations of more than 120 tons, for tonnage dues, port dues, pilotage, salvage in case of damage or shipwreck, more than will be charged to Argentine vessels."

This law places the vessels of the United States on an equality with those of Buenos Ayres; while, under an old law, the ship's register is taken as evidence of her measurement. For a more extended account of the commerce of La Plata, see article BUENOS AYRES.

COMPARATIVE STATEMENT OF THE COMMERCE OF THE UNITED STATES WITH THE ARGENTINE REPUBLIC, EXHIBITING THE VALUE OF EXPORTS TO AND IMPORTS FROM EACH COUNTRY, AND THE TONNAGE OF AMERICAN AND FOREIGN VESSELS ARRIVING FROM AND DEPARTING TO EACH COUNTRY, DURING THE YEARS DESIGNATED.

YEARS.	COMMERCE.				NAVIGATION.			
	VALUE OF EXPORTS.			VALUE OF IMPORTS.	AMERICAN TONNAGE.		FOREIGN TONNAGE.	
	Domestic produce.	Foreign produce.	Total.		Entered the United States.	Cleared from the U. States.	Entered the United States.	Cleared from the U. States.
1845.....	$342,575	$160,431	$503,006	$1,750,698	11,653	10,667	1,889	843
1846.....	147,807	38,118	185,425	799,213	5,988	4,134	987	....
1847.....	121,954	59,135	176,089	241,209	693	2,237	....	....
1848.....	208,706	25,225	233,928	1,026,097	695	586	714	1,450
1849.....	595,518	172,076	767,594	1,709,827	11,929	9,997	7,282	5,492
1850.....	718,931	346,511	1,064,442	2,658,877	13,930	16,107	13,081	9,260
1851.....	659,859	414,916	1,074,768	3,265,882	13,382	11,661	11,065	5,185
1852.....	518,007	281,110	799,117	2,091,097	18,458	18,711	4,872	4,381
1853.....	618,855	262,611	881,466	2,186,641	11,837	10,749	4,741	4,659
1854.....	658,720	103,005	761,725	3,144,971	11,945	8,526	1,669	1,830
1855.....	810,756	158,671	969,427	2,545,087	12,583	18,584	707	2,315

By a recent treaty with Brazil, the free navigation of the Parana and Paraguay is secured. The tariff of inport duties adopted by the Argentine Republic is based on the per cent. ad valorem principle, breadstuffs excepted; while export duties are chiefly specific.—*Com. Relations, U. S.*

Larboard, among seamen, the left hand side of the ship when you stand with your face toward the head.

Larch. In the catalogue of soft timber used in ship-building, the *larch* or *kacmatack* is not the least useful—the latter name is the aboriginal. It sometimes attains an altitude of 70 feet, but is usually found from 40 to 50 feet. It is generally of straight growth, but quite tapering. It grows rapidly, and is of great strength; and its durability exceeds that of the oak. It is distinguished for the closeness of its grain, is very compact, and of reddish color; and for knees and top-timbers of vessels, particularly steam-vessels, is unequaled. This fact should, however, be retained, that its strength is quite out of proportion to its density; hence, we say, that it should always be fastened with square iron; under such circumstances it is superior to oak. This timber is extensively cultivated in Europe, and is not a rare specimen of vegetation in the New England States.—GRIFFITH'S *Shipbuilders' Manual, N. Y.*, 1856.

Lascars, native Indian sailors, many of whom are in the service of the East India Company.

Last, an uncertain quantity, varying in different countries, and with respect to different articles. Generally, however, a last is estimated at 4000 pounds; but there are great discrepancies.

The following quantities of different articles make a last, viz.:—14 barrels of pitch, tar, or ashes; 12 dozen of hides or skins; 12 barrels of codfish, potash, or meal; 20 cades, each of 1000 herrings, every 1000, 10 hundred, and every 100 five score; 10½ quarters of cole-seed; 10 quarters of coan or rape-seed. In some parts of England, 21 quarters of corn go to a last; 12 sacks of wool; 20 dickers (every dicker 12 skins) of leather; 18 barrels of unpacked herrings; 10,000 pilchards; 24 barrels (each barrel containing 100 lbs.) of gunpowder; 1700 lbs. of feathers or flax. *Last* is sometimes used to signify the burden of a ship.

Lateen Sail, a long triangular sail, extended by a lateen yard, and frequently used in *Xebecs, Polacres, Settees,* and other vessels which navigate in the Mediterranean Sea.

Lath, Laths (Fr. *Lattes;* Ger. *Lattes;* It. *Correnti;* Rus. *Slegü*), long, thin, and narrow slips of wood, nailed to the rafters of a roof or ceiling in order to sustain the covering. Laths are distinguished into various sorts, according to the different kinds of wood of which they are made, and the different purposes to which they are to be applied. They are also distinguished, according to their length, into five, four, and three feet laths. Their ordinary breadth is about an inch, and their thickness a quarter of an inch. Laths are sold by the bundle, which is generally called a hundred; but seven score, or 140, are computed in the hundred for three feet laths; six score, or 120, in such as are four feet; and for those which are denominated five feet the common hundred, or five score.

Latitude. First determined by Hipparchus of Nice, about 170 B. C. It is the extent of the earth or of the heavens, reckoned from the equator to either pole. Maupertuis, in latitude 66°20 measured 1° of latitude, and made it 69·493; he measured it in 1737. Swanberg, in 1602, made it 69·292. At the equator, in 1744, four astronomers made it 68·732; and Lampton, in latitude 12°, made it 68·743. Mudge, in England, made it 69·148. Cassini, in France, in 1718 and 1740, made it 69·12, and Biot 68·769; while a recent measurer in Spain makes it but 68·63, less than at the equator; and contradicts all the others, proving the earth to be a prolate spheroid, which was the opinion of Cassini, Euler, and others, while it has more generally been regarded as an oblate spheroid. See LONGITUDE.

Latten, a name sometimes given to tin plates; that is, to thin plates of iron, tinned over. See TIN.

Launch, in sea language, signifies to put out; as, launch the ship; that is, put her out of dock. Launch aft or forward, speaking of things that are stowed in the hold, is, put them more forward. Launch, ho! is a term used when a yard is hoisted high enough, and signifies, hoist no more.

Laurel-tree. The Kalmia latifolia, or laurel, is a large evergreen shrub or low tree, growing to a height of 15 or 20 feet, in favorable situations, with a stem three or four inches in diameter; but ordinarily it does not attain more than one half of these dimensions. Its leaves are of a coriaceous texture, oval-acuminate, entire, and about three inches long. The flowers, which put forth from May to July, are sometimes of a pure white, tinted with pale pink, delicately spotted; but, in general, they are a beautiful rose-color, and are destitute of odor. They are disposed in corymbs at the extremity of the branches; and, as they are always numerous, their brilliant effect is heightened by the richness of the surrounding foliage.

The seeds are very minute, and are contained in small, globular capsules.

The Kalmia latifolia is indigenous to North America, from Canada to Carolina. It rarely occurs, however, north of the 42d or 43d degrees of north latitude, and is but sparingly produced in Kentucky and western Tennessee, and disappears entirely in the southern States wherever the rivers enter the low country, or where the pine-barrens begin. Although it is comparatively abundant along the rivers of the middle and southern States, it is nowhere seen more profusely multiplied, nor of a greater height, and of more luxuriant vegetation, than in North Carolina, on the loftiest parts of the Alleghanies. It there occupies large tracts, and forms thickets upon their summits, and for a third of their distance down their sides, which are rendered almost impenetrable by the crooked and unyielding trunks, crossed and locked with each other. As the shrubs which compose these copses are nearly of the same height, and richly laden with evergreen foliage, they present, at a distance, the appearance of verdant meadows, surrounded by tall trees.

The wood of the Kalmia latifolia, particularly that of the roots, is very compact, fine-grained, and marked with red lines. When green, it is of a soft texture, and is easily wrought; but, when well seasoned, it is very hard, and more nearly resembles the European box (Buxus sempervirens), than any other American wood. Consequently it is worthy of the attention of mathematical instrument-makers, and of engravers on wood. It is sometimes employed in the United States for the handles of light tools, for screws, boxes, etc.; and it is said, also, to make good clarionets. It is used by the American Indians for making small dishes, spoons, and other domestic utensils. The whole plant is regarded as poisonous to young cattle, and sheep, but not to goats and deer. A decoction of the leaves of this tree was formerly taken by those miserable natives who had determined on self-destruction. But modern enterprise has successfully enlisted it in the service of medicine, and it is applied, in a pulverized form, internally, in fevers, or topically, for the relief of cutaneous affections. A few drops of the tincture poured upon the body of a large and vigorous rattlesnake, killed the reptile in a short time. The powder which covers the leaves is popularly employed in some parts of the country where it grows, for snuff. The honey collected from the flowers by bees, is accounted deleterious, which, with other noxious qualities of this elegant shrub, lessens that esteem which its beauty claims.

The Laurus nobilis is a native of the south of Europe, and northern Africa; and, according to St. Pierre, remarkably fine trees of it were found on the banks of the river Peneus, in Thessaly, which, probably, might have given rise to the fable of the nymph Daphne (supposing the Greek *daphne* to be this tree), the daughter of that river. The exact date of the introduction of this species into Britain is unknown, but it must have been previous to 1562, as it is mentioned by Turner, in his "Herbal," published in that year; and we find that, in the reign of Elizabeth, the floors of the houses of distinguished persons were strewed with its leaves. The largest recorded tree of this species in Britain, is at Margram, in Glamorganshire, at the seat of C. P. Talbot, M. P., about 12 miles from Swansea. It is upward of 60 feet in height, with a magnificent bell-shaped summit, about 60 feet in diameter. At Cypress Grove, near Dublin, in Ireland, there is a laurel 50 feet in height, with a trunk two feet in diameter, and an ambitus or spread of branches of 25 feet. Throughout Germany, the Laurus nobilis is a greenhouse plant. In Russia, in the Crimea, it requires protection during winter. In Italy and Spain it attains a larger size than in any other part of Europe, forming immense bushes, from 50 to 70 feet in height. In the northern parts of the United States it is only cultivated as a green-house plant; but in the southern sections of the Union, where the climate is more mild, it grows in great perfection in the open air. The wood of this tree, from its inferior size, is not much used in construction, nor in the arts. The young branches are sometimes employed for the hoops of small casks. Both the leaves and berries were formerly considered medicinal, being highly aromatic and stomachic; they are also astringent and carminative. An infusion of them was not only considered beneficial, when taken internally, but it was used in fomentations, etc. From the berries there is extracted a particular principle, called *laurine*. The kernels of the fruit yield an emollient and resolutive oil, called *oil of laurel*, which is employed as an embrocation in materia medica, and in the veterinary art. The essential oil is used in perfumery, and for scrubbing wainscots in chambers, in order to drive away flies. The leaves impart a yellow color to wool. The principal use of this tree, however, is for hedges, and other purposes of ornament, though the leaves are much employed for flavoring custards, blanc-mange, etc. The flowers afford the best kind of honey, and are numerously frequented by bees.

The Laurus carolinensis is indigenous to the lower part of Virginia, and is found more or less abundantly throughout the maritime districts of the Carolinas, Georgia, Florida, and of Louisiana. It occurs in the broad swamps which intersect the pine-barrens, and is there associated with the tupelo (*Nyssa biflora*), red maple (*Acer rubrum*), and the water oak (*Quercus aquatica*). A cool and humid soil appears to be essential to its growth; and it is remarked, that the further south it grows, the more vigorous and beautiful is its vegetation. The wood of the Laurus carolinensis is very strong, and of a beautiful rose-color, with a fine, compact grain, and is susceptible of a brilliant polish, having the appearance of watered satin. Before mahogany became in general use in cabinet-making, in the United States, the wood of this tree was much employed in the regions where it abounds, in the manufacture of articles of furniture of the highest degree of beauty. It might also be employed in ship-building, and for other purposes of construction, as it unites the properties of strength and durability; but its trunks are rarely found, of late, of sufficient dimensions to render it available for these purposes. When bruised, the leaves diffuse a strong odor, resembling that of the sweet bay (*Laurus nobilis*), and may, like them, be employed in cookery.—*Browne's Trees of America.*

Law, John. Law's Bubble was the most ruinous speculation of modern times. The projector, John Law, of Edinburg, raised himself to the dignity of comptroller-general of the finances of Europe, upon the strength of a scheme for establishing a bank, an East India and a Mississippi Company, by the profits of which the national debt of France was to be paid off. He first offered his plan to Victor Amadeus, King of Sardinia, who told him he was not powerful enough to ruin himself. The French ministry accepted of it in 1710; and in 1716 he opened a bank in his own name, under the protection of the Duke of Orleans, regent of France; and most of the people of property of every rank in that kingdom, seduced by the prospects of immense gains, subscribed both in the bank and the companies. In 1718, Law's was declared a royal bank, and the shares rose to upward of twenty-fold the original value, so that in 1719 they were worth more than 80 times the amount of all the current specie in France. But the following year this great fabric of false credit fell to the ground, and almost overthrew the French government, ruining tens of thousand of families. It is remarkable that the same desperate game was played by the South Sea directors in England in the same fatal year, 1720.—*Hist. of France, Nouv. Dict.*

Law was the eldest son of William Law, and was

born at Edinburg in the month of April, 1671. His father followed the profession of goldsmith or banker, with so much success, that he was enabled to purchase the lands of Lauriston and Randleston, which afterward descended to his son. The latter was educated at Edinburg, where he is said to have made some progress in literature; but the bent of his genius having led him to study arithmetic and geometry, he attained such proficiency in these branches as to be able to solve with facility the most intricate problems; and he likewise made himself master of algebra. Law resided for several years abroad; first at Paris where he acquired great dexterity in all games of chance, and afterward at Genoa and Venice. One cause assigned for his leaving Paris, was his eloping with Lady Catharine, third daughter of Nicholas, Lord Banbury, and wife of Mr. Senor, or Semour. His success in play was so great, that he is said to have acquired £20,000. The favorite maxim inculcated by Law, and upon which his whole fabric of the Mississippi system was reared; namely, that the power and prosperity of a nation increase in proportion to the quantity of money circulating therein, and that, as the richest nations have not specie sufficient to afford full employment to their inhabitants, this defect may be supplied by paper credit; involves a dangerous fallacy, even in the most restricted view that can be taken of its application, inasmuch as it implies that paper money may be issued with advantage to an almost unlimited extent, upon general security; and that its credit, or, in other words, its value, may thus be maintained without its being rendered convertible at pleasure into cash. But all experience has proved that this is absolutely impossible. There is much truth in an observation of Mr. Burke, in his *Reflections on the French Revolution*. "It is not true," says he, "that Law built solely on a speculation concerning the Mississippi; he added the East India trade, he added the African trade, he added the farms of all the farmed revenue of France; all these unquestionably could not support the structure which the public enthusiasm, not he, chose to build on these bases. He laid the best foundation that he could, perhaps the best which, in the circumstances, it was possible to lay; but the nation went suddenly mad, an event which he could scarcely have foreseen; the Company was hurried onward by the general frenzy; and when the delirium had reached its height, the regent was advised to issue the fatal edict, which leveled the whole fabric to the dust. (See E. b., 1856.) (*Œuvres de Law*, passim; *Histoire du Systeme des Finances*, tom. i.; Pollnitz, *Mémoires;* Massillon, *Mémoires de la Minorité de Louis XV.;* *Mémoires de la Regence de M. le Duc d'Orleans*, tom. i.; Richelieu, *Mémoires*, tom. iii.; Voltaire, *Siècle de Louis XV.;* Chalmers's *Biog. Dict.*, art. "Law."

Lawn (Ger. and Fr. *Linon;* It. *Linone, Rensa;* Sp. *Cambray claris*), a sort of clear or open-worked cambric, which, till of late years, was exclusively manufactured in France and Flanders. At present, the lawn manufacture is established in Scotland and in the north of Ireland, where articles of this kind are brought to such a degree of perfection as nearly to rival the productions of the French and Flemish manufactories. In the manufacture of lawns, finer flaxen thread is used than in that of cambric.

Lawrence, a manufacturing town of the United States of North America, Essex county, Massachusetts, is situated on the left bank of the Merrimac, 26 miles north of Boston, and forms the centre of a network of railroads communicating with Lowell, Newburyport, Boston, and other places of importance. Although founded but recently, Lawrence has become one of the chief manufacturing towns in New England, in consequence of the great water-power it derives from the Merrimac. In 1845, the Essex Commercial Company constructed a dam of masonry across the stream, by which a fall of 28 feet was obtained for the whole river. From this dam a canal, from 60 to 100 feet broad, 12 feet deep, and more than a mile long, conducts the water to the various factories situate between it and the Merrimac. The town proper, which is laid out between the latter and a small tributary called the Spicket, has in its centre an open common of 17½ acres in extent, and contains a town-house, jail, several churches and schools, and a literary institute. The inhabitants are almost all employed in the various factories in the town, some of which are of great size, and one, the Pacific, is said to be the largest in the world. The building has seven stories, and its flooring covers 16 acres, while the consumption of cotton within its walls amounts to 1,500,000 lbs. yearly, and of wool to the third of that amount. It gives employment to about 2000 persons. The manufactures of the town comprise woolen, linen, and cotton goods of various kinds. Incorporated 1847. Population in 1848, 6000; in 1850, 8283; in 1855, about 14,000.

Lawrence, St., an important river of North America, forming part of the north boundary of the United States, and watering the finest portion of British America, rises, under the name of the St. Louis, in lat. 47° 45′ N., long. 93° W., flows east, and enters the south-west extremity of Lake Superior. Passing through the chain of great lakes, it quits Lake Ontario at Kingston. Here it takes the name of the Iroquois, and flowing north-east forms the wide expanses called Lakes St. Francis, St. Louis, and St. Peter. It is first called St. Lawrence after passing Montreal. Below Quebec it forms a broad estuary; and it enters the Gulf of St. Lawrence at Gaspé Point by a mouth 100 miles wide. Length, from Lake Ontario to the Gulf, 650 miles; entire length, 1800 miles. The basin of the St. Lawrence is estimated to contain 297,000 square miles, of which 94,000 are covered with the waters of the great lakes. The river receives many important tributaries from the north, but none of any size from the south. The tides rise to the district of Three Rivers. Ships of the line ascend to Quebec, and vessels of 600 tons to Montreal. The navigation is continued hence by canals to Kingston and Lake Ontario. See CANADA LAKES, COMMERCE OF.

Lawrence, St., Gulf, an inlet of the Atlantic Ocean, British North America, having Newfoundland on the east, Labrador, Lower Canada, and New Brunswick on the north and west, and Nova Scotia and Cape Breton on the south; extending from N. lat. 46° to 51° 30′, and W. long. 58° to 65°. It communicates with the ocean by three channels, the principal of which is between Cape Breton and Newfoundland, 48 miles in width at its narrowest part. The other two channels are much narrower; the Straits of Belle Isle, between the north extremity of Newfoundland and Labrador, being 10 miles, and the Gut of Canso, betwixt Cape Breton and the main land, being only about half a mile in width at the narrowest part. The Gulf is about 600 miles in length, from north to south, by 240 mi' in breadth, and incloses numerous islands, the chief of which are—Anticosti, in the north, the Magdalen group in the centre, and Prince Edward's Island in the south. The estuary of the St. Lawrence River debouches into the Gulf at the western extremity of Anticosti; although, properly speaking, this firth is an inlet of the Gulf as far up as the River Saguenay. Navigation is suspended here during winter and early spring, from the prevalence of ice, which is especially dangerous in the entrance to the Gulf. Fogs also are very frequent during the prevalence of the east winds in spring. In summer, however, the west and south-west winds render navigation comparatively safe. The fisheries, which are very valuable, are prosecuted with assiduity by the colonies as well as by United States' companies. Herring, cod, and mackerel abound. See CANADA and LAKES.

Laws of Commerce. The following article contains a condensed summary of the present state of commercial law in those countries with which the United States have commercial intercourse. For this valuable sketch, we are indebted to "*The Commercial Laws of the World*," by LEONE LEVI, London, 1854, 2 vols., 4to.

1. *Anhalt-Bernbourg, Anhalt-Coethen, Anhalt-Dessau, Duchies of.*—The Duchies of Anhalt-Bernbourg, Anhalt-Coethen, and Anhalt-Dessau, each forming an independent State, are under laws peculiar to themselves. One may easily perceive, however, that in provinces of so limited extent, and where commercial relations are very partially developed, legislation must have remained imperfect. Thus, in their tribunals, they have to refer either to laws which are rather civil than commercial, to foreign legislation, or to the common law of Germany. Two ordinances of 31st August, 1802 and 1832, on bills of exchange, were replaced by the law recently enacted for all Germany. There exists in the Duchy of Anhalt-Dessau an ordinance in regard to brokers, of the 19th April, 1803, and a law relating to bankruptcy, of the 12th July, 1818; but these contain only a small number of unimportant arrangements, which it is unnecessary to specify; with only one exception, namely, that in the law regarding brokers, every contract concluded by such persons is null if not drawn up in writing, and is complete only when the deed has appended to it the signatures of the parties interested. There is no special jurisdiction in the three Duchies for the determination of commercial suits. They are decided by the ordinary tribunals. It would be difficult to enter into the detail of the organization of these courts, the powers of which are of a very complicated character, and whose competency varies according to the persons or matters brought before them. It is sufficient to remark that the princes of the three Duchies of Anhalt joined with the princes of Schwartzburg in establishing, 14th October, 1807, a supreme court of appeal, before which all affairs, civil and criminal, of their respective States, are, or may be, finally carried.

2. *Austrian Empire.*—The commercial legislation of Austria, at present in force, is traced to the time of Maria Theresa, who, in 1756, published an ordinance of considerable length on matters connected with commerce. She at the same time caused a revision of the former law of exchange of 1717, and by letters patent of 1st October, 1763, declared the same to be imperative in almost all the provinces of the Austrian monarchy. This, consisting of 54 articles, contains directions relative to bills of exchange and to other points of commercial law. Various modifications, however, of later date, have passed on it. The law of bankruptcy is equally due to the care of Maria Theresa, although not promulgated before the reign of Joseph II. This law, not less important on account of the wisdom of its provisions than from its general extension throughout all the Austrian States, was to have come in force on the 1st of January, 1782, but in consequence of some accompanying difficulties, was not acted upon till the 1st of May following. It repeals all the pre-existing statutes in relation to bankruptcy. It presents at the same time certain undetermined points afterward provided for by later statutes, mostly inserted in the judiciary ordinances of Gallicia. As all the provisions of this law were repeated in a new edition of the Lombardo-Venetian code, the most important points will be exhibited in that division under the title "Bankruptcy." The maritime legislation of Austria is the work of the same empress. It dates 25th April, 1774. She published the ordinance known under the title, "Editto Politico di Navigazione Mercantile Austriaca," attended thereafter by some other ordinances. The whole, however, is far from being a perfect system of commercial legislation. The "Editto Politico," which embraces the most extensive and the wisest provisions in regard to captains and seamen, contains nothing on the subject of freight-contracts, of bottomry-bond, and insurances. In the absence, therefore, of legislative decision, reference is at present made, on the shores of the Adriatic, to the French "Ordonnance de la Marine" of 1682. These different laws are already of somewhat ancient date, and are by no means adequate to the new wants of commerce. We are led to this conclusion by the fact that of late there were being prepared in Austria two projects of law, the object of which was to embrace in the one the interests of inland commerce on which a great part of the new code of Hungary has been based; in the other, all the maritime legislation. Neither the one nor the other has received the legislative sanction.

3. *Baden, Grand Duchy of.*—From the 1st July, 1809, the French code has been in force within the Grand Duchy of Baden. Though the text of this has not been altered, and the same order of articles has been maintained as far as article 206, numerous additions, under the form of articles supplementary, have been introduced, particularly in what relates to commission, carrying-trade, and bills of exchange. We have inserted only these additional regulations. The civil code of the Grand Duchy of Baden, under the head of "Property," contains important provisions in regard to literary property. The second book on maritime commerce was necessarily retrenched. The fourth, on commercial jurisdiction, also has not been reproduced.

4. *Bavaria.*—Bavaria has no commercial code, nor even a commercial legislation, applicable to the whole extent of its territory. In the provinces where the Code Napoleon has been maintained, that is, in Rhenish Bavaria, the Code de Commerce is equally in force. In a similar manner, the districts which formerly belonged to Prussia, such as the principalities of Anspach and Baireuth, incorporated into Bavaria in 1803, have preserved the Prussian legislation. There are, therefore, none but the ancient provinces of Bavaria which are governed by special laws. This legislation, in what concerns commercial right, is extremely imperfect. In most cases, it is true, the defect is supplied by the common law of Germany and by the civil law, but the documents most important and complete, are three statutes: the first known under the name of the statute for Bavaria of 24th November, 1785, extending to all the provinces of the kingdom by the laws of 11th of September, 1825. The two others, that of 1778, for the city of Augsburg, and that of the 16th February, 1722, for the city of Nuremberg. We find in these three enactments regulations not only in regard to bills of exchange, but respecting merchants, brokers, partnership, and factorage.

5. *Belgium, Kingdom of.*—The commercial code of France, without any modification, has continued to regulate affairs of commerce in Belgium ever since the year 1811, the period at which a political separation between the two countries took place. The same judiciary organization has been in like manner continued. The single exception is, that a law has been enacted in Belgium (25th March, 1841) ordering that the tribunals of commerce shall give final judgment in causes that may come before them to the amount of 2000 francs, whereas in France the law of the 25th May, 1838, fixes the competency of the tribunals in the first instance at 1500 francs. Royal edicts have named commissions charged to prepare projects of law for the revision of the legislation in regard to bankruptcy, suspension of payment, partnership, civil or commercial insurances, writs of captim, mortgage seizure of real estate, accounts of law, expenses, marriage contract, possession and division of property. A law has been in progress on the proper interpretation of article 442 of the Code of Commerce. It was discussed in the Chamber of Representatives in the session of 1842, but was rejected by the Senate.

6. *Brazil, Empire of.*—A commercial code to which that of Spain has served as a basis, has lately been issued, but not being yet in our possession, we refer our readers to article BRAZIL.

7. *Bremen.*—Though the city of Bremen was one of the first in the ancient Hanseatic League, and is still among the most important sea-ports in Germany, its commercial legislation is extremely defective and incomplete. Statutes and legislative enactments bearing a very remote date, have fallen entirely into desuetude, and causes are determined either by the common law of Germany or by that of neighboring legislations, Hamburg, etc. Commercial disputes are determined by the tribunal of commerce, as in Hamburg. Bremen names two deputies to the Supreme Court established at Lubec for the four Hanseatic Towns.

8. *Brunswick, Duchy of.*—The city of Brunswick had formerly celebrated fairs. She obtained at an early period a special *ordonnance* in regard to exchange, which, renewed on 1st August, 1715, and afterward extended to the Duchies of Brunswick and Brandenbourg, was still the law of the State until the law for bills of exchange for all Germany came into force. Another ordinance relating to bankruptcy, of date 26th March, 1823, is almost the only document of a commercial character to be found in the duchy; for with the exception of some recent decisions in the Court of Appeal of Wolfenbüttel in regard to mercantile accounts and factorage, and whose simple object was to give the force of law to usages already established, other enactments have been of a description so purely of detail, without bearing directly on commercial legislation, properly so called, that it has been thought unnecessary to do more than refer to them. In the Duchy of Brunswick commercial causes are determined by the ordinary tribunals.

9. *Cracow.*—The commercial code of France, of which an almost literal translation was made for the use of Warsaw, has not been officially repealed in the new kingdom of Poland. It appears unlikely, however, that legislation of French origin will be permanent in this country. In the city of Cracow the code just mentioned still maintains its authority. It is also in force throughout the Grand Duchy of Warsaw, having been introduced in 1808; Cracow at that time forming a part of the duchy. Only one alteration has been made in the code, namely, that which authorizes the notaries and the judges of the court to affix their seals to the property real or movable of a bankrupt, and to determine the dividend payable to the respective creditors. Commercial affairs have no special tribunal. They are carried before the ordinary courts as well in first instance as in cases of appeal. Three laws, the one of 15th October, 1819, relative to the public exchange (la Bourse), and the corporation of merchants, and the other two of the 1st March, 1821, and 19th May, 1833, on the freedom of commercial transactions, and on the restrictions to which in certain cases they may be liable, are not of sufficiently general interest to have a place given them here. There are certain articles of produce subjected by the Senate to a tariff, in which trading is not considered as a part of commerce, and only legal process of a civil character is allowed.

10. *Denmark.*—The enactments relating to commercial jurisprudence in Denmark are not at all numerous. In matters of exchange the ancient *ordonnance* of 1768, has been replaced by a later act of legislature of 18th May, 1825, which repeals all preceding deeds with the exception of that of 26th June, 1824, relative to some particular branches of the law on bills of exchange, the rescript of 22d March, 1769, and the proclamation of 8th November, 1799, in which are found regulations for bills upon the West Indies. The maritime law of Denmark contained in the code of Christian V., 1683, continues still in force. We should have confined ourselves to an analysis of those regulations which possess only a historical interest; but we have felt the propriety of joining with them an analytic view of all the later enactments and laws which have served to complete, at this day, this ancient monument of maritime jurisprudence, and which we are enabled to present by the assistance of the excellent abstract of M. Poehls. As to bankruptcy, there exists no law which gives precise and fixed rules. Ordonnances of very ancient date, the meaning of which long custom has determined, constitute, on this subject, the legislation of the country. It would have been a matter of great difficulty to give a copy of these had not a valuable document, due to the labors of M. Orstedt, Attorney-General in the High Court of Copenhagen, and generally intended for the use of the French Conseil d'Etat at the time of the discussions on the projet de loi on bankruptcy (published 28th May, 1838), enabled us to present an abstract which will be found as exact as it is substantial and well arranged.

11. *France.*—France had, under the administration of Colbert, united, or rather codified, her commercial legislation, and collected in the two ordinances of commerce and navigation of 1673 and 1681, their principles, usages, and customs. Yet the want of a general code of laws was seriously felt until, with the entire reconstruction of her political institutions, Napoleon ordered the compilation of codes which, within a short period, were presented and adopted. With some unimportant modifications, they are still the basis of French jurisprudence. With regard to the administration of commercial law, the following is a summary of the report of the Minister of Justice for the year 1846, which deserves attentive consideration:—*Tribunals of Commerce.*—Commercial affairs are adjudicated by 220 special tribunals of commerce, established in the most commercial departments, and by 179 civil tribunals, which are charged to take cognizance of the same in the other departments. In 1846 there were introduced 207,279 new cases before these 399 tribunals; 177,446 have been brought before the 220 special tribunals, and 29,833 only before the civil tribunals, judging commercially. In 1845 only 191,687 cases were enrolled in the 399 tribunals; since 1845 the number has increased 38 per cent. On 31st December, 1845, there remained 7,932 cases to be adjudicated; 3,864 cases which were considered as terminated by compromise or abandonment, were brought before the court in 1846. These, united to the 207,279 new cases, form a total of 219,039 cases to be adjudicated. Of this number 59,323 have been adjudicated contradictorily, and 115,308 by non-appearance; 4029 have been submitted by the tribunals to arbitration, and 32,705 have been erased from the register as terminated by compromise or abandonment; 7678 only were left unsettled on the 31st December, 1846, or hardly 3½ per cent., while the civil tribunals left unsettled at the same epoch 26 per cent. of the civil cases brought before them. Of the 174,641 adjudications rendered in 1846 by the tribunals of commerce 34,569 only, hardly one fifth, were susceptible of appeal. The special tribunals of commerce have 1 court and 1 president only; the number of judges varies from 1 to 10, and that of the surrogates from 2 to 16. The tribunals of Paris and Lyons have each 10 judges, and of surrogates the first 16, the second 6; 8 tribunals have 6 judges and 4 to 6 surrogates; 1 only has 5 judges and 3 surrogates; 96 have 4 judges and 2 to 4 surrogates; 106 have 3 judges and 2 to 4 surrogates; lastly, 7 have 2 judges and 2 surrogates. In 1840 the tribunals of commerce of Paris had dispatched 56,276 cases, or more than one fourth of the total number. The tribunals of commerce which have dispatched most cases after that of Paris, are those of Lyons, 9641; Rouen, 4914; Marseilles, 4296; Bordeaux, 4137; Toulouse, 3723; that of Limoges,

2307; 21 other tribunals have adjudicated upon 1000 to 2000 cases; 11 tribunals composed of 3 to 4 judges have dispatched each 50 per year, and 16 others have terminated from 50 to 100 only. There were rendered, in 1846, 990 sentences by arbitration in disputes between partners, 169 of which with the assistance of a third. The greffiers of the tribunals of commerce have received the deposit of 2724 partnership deeds, of which 1989 in collective names, 459 in commandite, 235 by shares to nominated persons, and 41 by shares to the bearer, 39 anonymous partnerships, have been besides authorised by regulations of public administration; in all, 2747 partnerships of every kind. The greffier of the tribunal of the Seine alone has received 869 partnership deeds, almost the third of the total number. On 31st December, 1845, there remained 5964 bankruptcies to be liquidated. In 1846, 3795 new ones were opened; 3606 only have been terminated, and 6153, or almost two thirds of them were left unsettled at the end of the year; 1612 bankruptcies have been terminated by compromise; 1031 by liquidations; 829 have been closed by insufficiency of capital; lastly, there have been declared 134 judgments of bankruptcies. The tribunal of commerce of the Seine has terminated 896 bankruptcies in 1846, that of Rouen 193, of Lyons 131, of Bordeaux 60, of Marseilles 51. The passive debt of 356 bankruptcies which terminated in 1846, by agreement or liquidation, did not exceed 5000 francs; it varied from 5000 to 10,000 in 441 bankruptcies; from 10,000 to 50,000 in 1269; from 50,000 to 100,000 francs in 270; lastly, it exceeded 100,000 francs in 307. The amount of the active debt of 2943 bankruptcies liquidated was 51,819,891 francs; namely, in estates, 19,855,111 francs; and movables, 31,964,280 francs. The total amount of the passive debt was 143,544,671 francs; mortgaged debt, 19,257,540; privileged, 3,901,637; and ordinary, 120,385,494 francs. The loss borne by the ordinary creditors was, on an average, 76 per cent. The dividend obtained has been more than 75 per cent.; in 84 bankruptcies 51 to 75 per cent.; in 62 from 26 to 50 per cent.; in 594 10 to 25 in 1228; and 1 per cent. in 412. In 185 bankruptcies the ordinary creditors have received nothing; the assets having been absorbed by mortgaged and privileged creditors. Lastly, the dividends of 78 bankruptcies terminated by compromise have not been, indicated, as the assets could not be realized immediately. *Court of Appeal.*—In commercial matters the number of judgments susceptible of appeal have been in 1846, 34,569. 2511 appeals were made, namely, 7 appeals for 100 judgments less than in civil matters; 1777 appeals only were adjudicated upon. 1212 judgments (68 per cent.) have been confirmed; 1565 (92 per cent.) modified in whole or in part; 602 appeals have been negatived. *Council of Prudhommes.*—68 councils existed, 4 of which did not sit in 1846. The 64 councils have had on hand 21,254 cases. The parties have withdrawn 3153 cases before they were settled; 16,140 have been conciliated; 1762 remitted to the bureaux-general, and 196 to the judge of peace.

12. *Frankfort.*—The ancient ordinance of Frankfort (26 May, 1739) relative to various points of commercial law, such as partnership, commission, and brokerage, has always continued in force. The Senate had in 1811 prepared a project similar in great part of its provisions to the French code, but which, from national feeling, was not adopted in 1814. In 1827, a new project of a code of commercial law was published, for the purpose of being submitted to jurists and to merchants. This project, however, has not hitherto received any legislative sanction; so that the ordinance of 1739 still remains as law. There exists in Frankfort no special jurisdiction for commercial matters: they are brought before the ordinary tribunals. There is a court of appeal, a municipal court, and a municipal or teritorial bailiwick. The supreme court of appeal sits at Lubec. Its jurisdiction extends to all the free cities of Germany.

13. *Great Britain.*—The mercantile law of England is almost entirely founded on what has been experienced to be most conducive to the welfare of society. Its origin is derived from many sources, while ancient commercial enactments were the basis of our maritime law. With the increase of commerce and general advancement of the nation, mercantile law grew in importance. Promissory-notes and the banking system were placed in their present state during the reign of William and Anne. Numbers of judges followed, whose commanding intelligence formed an epoch in the annals of jurisprudence. The names of Justice Hale, Lord Mansfield, and Lord Stowell, are rendered familiar from their being constantly referred to in the adjudication of the most subtle arguments on commercial law. Most of the commercial law of Great Britain is included in the common law; yet lately various enactments have passed consolidating the bankruptcy law, joint-stock companies, etc. The law of Scotland differs materially from that of England in contracts and bankruptcy. The mercantile law of this country is entirely included in the civil law, of which Erskine, Stair, etc., are the leading writers.

14. *Greece.*—Since the erection of Greece into a sovereign and independent State, its government has been engaged in fixing its laws and digesting the various codes. The civil law is still determined by the manual of Hermunapol, the latest compilation of the Byzantine emperors. The commercial code, which is but a textual repetition of that of France, with a few unimportant alterations, has been in force since 1st May, 1835. These alterations consist only in the suppression of Articles 615 to 630, relating to the organization of tribunals of commerce, in place of which there is the law of 1834. To complete the documents relative to the commercial code, we shall say that the law of 14th May, 1835, re-established the regulations of Arts. 631 and 641 of the French code, which at first had been suppressed. It is interesting to remark that the adoption of the French code was anterior to the Greek revolution; inasmuch as in 1821 it had been twice translated, and the merchants of Greece had unanimously adopted it. It was for the purpose of confirming this voluntary preference that his majesty Otho, by a royal declaration of May, 1835, gave the force of law to a translation executed by his command, and now acknowledged as the sole official authority. As to the judicial organization, it is similar to that of France. There is an innovation, however, which is of some practical utility; this is the being obliged to choose a jurist as president of the tribunal of commerce. All the articles of the commercial code are the same as the regulations of that of France, with the exceptions of the modifications duly noticed.

15. *Hamburg.*—Though the commercial laws of Hamburg are now of old date, and have frequently, particularly in later years, been sought to be submitted to revision, yet going back, as they do, to the statutes of 1603, and supplied, when defective, by enactments of greatly more recent date, they demand our notice; and the more so that they regulate matters not only in Hamburg but in the neighboring cities, such as Bremen and Lubec, where, properly speaking, there exist no commercial laws whatever. The enactments most recently made in regard to points embraced in the commercial code of France are the following: an enactment on the subject of brokerage, of 15th December, 1824, and another on partnership, of 28th December, 1835, the latter, however, having only for its object the deposit and publication of partnership deeds. The statutes of 1603, relative to mercantile books, have not been repealed by any later enactment. The law on bills of exchange is now similar to that of Prussia. The regulations in regard to maritime commerce

are still chiefly borrowed from the statutes of 1603. As they have been modified, however, by several more recent enactments, we have alled ourselves of the work of M. Poehls upon this subject. These will be found also in the proper place—the regulation in regard to maritime insurance of 10th September, 1731—of great importance to one wishing information, and remarkable for the completeness of its details. Bankruptcies, before the tribunals of commerce (a procedure which does not exist generally in Germany, where in cases of failure the process for a settlement between the parties is carried to the civil courts), have been regulated by an ordinance of 31st August, 1752. The commercial jurisdiction and competency of tribunals of commerce had been fixed by the law of 15th December, 1815, which appointed a tribunal of commerce at Hamburg for all commercial affairs. Prior to 1815 these were carried before the administrative authority, or before the Court of Admiralty when the affair was of a maritime character.

16. *Hanover.*—There existed, accurately speaking, no commercial legislation in Hanover till the period of the Prussian occupation in 1801. Immediately after this the Prussian code was introduced into the bailiages of Heldesheim, Verden, Haya, Diepholtz, Osnabruch, and Lenjar. A royal ordinance of George IV., dated 23d July, 1822, confirmed it. It is still the existing law. In the other parts of the kingdom there exists, with the exception of the regulation in bills of exchange, of the same date (23d July, 1822), no law whatever, bearing on commerce. Actions are determined by usage and common law. The new penal code adopted in Hanover, 1840, fixes the penalties established in cases of bankruptcy. All commercial differences are brought before the ordinary tribunals. In most instances, however, they are terminated amicably by arbitrament, or they are decided by the municipal court which ordains according to common law, or, otherwise, acts in the capacity of a court of equity.

17. *Hayti, Republic of.*—The republic of Hayti has had, since 1828, its codes in uniformity with those of France. The commercial code is throughout the same as that of France. It was published on 28th March, 1826, and has been acted upon since 1st July, 1827. The other codes, those relating to civil and commercial procedure, penal and rural, form together, with the civil and commercial codes, one body of law, dated the 25th year of Independence, and produced by the labors of M. Blanchet, a distinguished member of the Parisian bar.

18. *Hesse, Grand Duchy of.*—The French code has been maintained where it had been introduced at the time of the French occupation in the Rhenish provinces. With regard to the other provinces such as Starkenburg and Hesse-Superieure, commercial legislation is regulated as much as possible in conformity with the French law, with the exception of the town of Offenbach, which had a special ordinance on the exchange, of date 4th March, 1829, the same as that of Frankfort. There are no tribunals of commerce in the Grand Duchy; commercial disputes are submitted, as in most parts of Germany, to ordinary tribunals.

19. *Hesse Electorate.*—Three ordinances only, and of very old date, exist in this State on commercial matters; the first, of 16th May, 1747, on bankruptcies; the second, of 21st November, 1788, on partnerships; the third, of 14th December, 1796, concerning commercial books. Although these three ordinances serve only to establish principles already recognized, and contain only a very limited number of provisions, yet we have thought it necessary to reproduce them. Independently of these ordinances, which are far from forming a sufficient body of commercial law, they generally refer either to the French code which has been in force for some time in this country, or to the common law of Germany.

20. *Holland.*—The code of Holland came into operation the 1st October, 1838. It passed under a severe ordeal, and it was delayed through the revolution which caused her separation from Belgium.

21. *Hohenzollern-Hechingen.*—(Principalities of Siegmaringer and Lichtenstein.) These States have no general procedure for commercial matters; the disputes arising on them are adjudicated by the ordinary tribunals. The principality of Lichtenstein is governed, for commercial matters especially, by the laws and ordinances of Austria.

22. *Ionian Islands.*—The French code of commerce with a small number of modifications, most of which have been borrowed from the code of commerce of Two Sicilies, has recently been introduced in the United States of the seven Ionian Islands, which form an aristocratic representative republic under the perpetual protectorate of England. A decree of 16th March (26th February), 1841, abrogated all the laws, statutes, regulations, general or local customs, the requirements of which are contrary to the present code which came in force on the 1st May, 1841. At the same epoch of 1st May, 1841, the other codes of civil and criminal procedure, and the penal codes, had been promulgated; they are drawn up almost in the same spirit and system as the French codes.

23. *Lombardo-Venetian Kingdom.*—The French code of commerce has been almost entirely preserved in the Lombardo-Venetian Kingdom; only with regard to bankruptcies they refer to the Austrian legislation; namely, to the ordinance of 1st January, 1782, and to the more recent ordinances inserted mostly in the ordinance for Western Gallicia, and later on in the judicial ordinance, for the Italian States of the Austrian monarchy. A translation in Italian of the French code of commerce has been recently published at Milan, where those provisions which have remained in vigor, and have the force of law have been reproduced; these provisions have replaced the French code, especially on bankruptcies. We have made use of this work as the most authentic compilation we could adopt; and have simply indicated the direct correspondence between them and the ancient ordinances or law of 1782, and the ordinance of Gallicia, deeming this sufficient to show the various changes which have been made. Trieste follows entirely the Austrian legislation, namely, the ordinance of 1760 on bills of exchange; that on bankruptcies of 1782 modified by more recent laws, such as that of Gallicia and others, and the political proclamation of Maria Theresa of 1673, on maritime commerce.

24. *Lubec (Free Town of).*—Lubec, although a truly commercial city, does not, properly speaking, possess any body of commercial law. She borrows provisions relative to this matter either from the common law of Germany from foreign legislation, or from ancient statutes. The Stadtrecht, which is the foundation of the law of Lubec, is not sufficient for the wants of commerce. Yet, with all the imperfections of the law, attempts to improve it have proved abortive. The political constitution of Lubec, which goes as far back as the middle ages, demands, for the compilation or revision of the law, such minute and complicated formalities that even the most indispensable improvements are infinitely long delayed. Every project, in fact, after having been elaborated by a commission, and subjected to the examination of the Senate, must be successively discussed and approved by the eleven colleges of the Burgess. This mode of deliberating, isolated and multiplied, carries with it lengthened and incalculable difficulties. Practice very imperfectly supplies defects of the written law; because no regular jurisprudence can be established in a country where the inhabitants terminate their differences chiefly by arbitration. This is so true that in 1840 the supreme court established at Lubec, for the 4 free towns of Germany, had to adjudicate only upon 4 appeals made by the citizens of Lubec. Nev-

ertheless, M. Herbert, the French consul there, in 1841, transmitted to the Minister of Foreign Affairs in France, a remarkable work on such legislation as that of Lubec, that we think proper to give some extracts from it. Through his care and enlightened zeal, we are furnished with some valuable documents on merchants, also, on commercial books, brokers, on whom there exists a regulation of the 26th June, 1822, and on commercial jurisdiction. With reference to maritime commerce we have followed the treatise of Poehls, so methodic and complete. The Stadtrecht is silent on bills of exchange. The three ordinances of 14th November, 1669, of 5th March, 1738, and of 20th August, 1823, contain only provisions of simple procedure. The first prescribes some measure for prompt execution in matters of exchange; the second declares the right of appeal, but not its suspensive powers; and the third leaves to the tribunals the faculty to examine whether a permission may be given to the natives of taking proceedings in matters of exchange. The reproduction of these texts did not appear to us necessary. Title IX. of the Third Book of the Stadtrecht is devoted to commercial partnerships; but their provisions are not in conformity with the developments that have taken place which ancient law could neither foresee nor regulate. Thus while expecting the enactment of a law on bankruptcy, and bearing on this subject, they are guided by the regulation of Hamburg. As for bankruptcies, the subject is so obscure and uncertain that it is now fifty years since merchants demanded some regulations; but difficulties, apparently insurmountable, have hitherto prevented any improvement. Still there exists a project prepared in the name of a commission by the Syndic Buecholz, a distinguished jurist. This project is to be submitted to the Senate. It seems that it is composed of more than 150 Arts. and that it approaches the French code in its spirit and as a whole. The title I. of the Third Book of the Stadtrecht contains some provisions still in force (the rights of creditors privileged, creditors distraint, etc., etc.), but which have reference more to individuals in general than to merchants. The "Bourse" of Lubec is regulated entirely by that of Hamburg, for the course of exchange, money and public funds. With respect to jurisdiction, commercial affairs are submitted to the civil tribunals of three different degrees, of which we will give some details.

25. *Lucca, Duchy of.*—An ordinance of 6th May, 1840, declares that the French code of commerce shall continue in force in the Duchy of Lucca.

26. *Luxemburg, Grand Duchy of.*—The French code of commerce has not ceased in the Grand Duchy of Luxemburg. Simply a decree of King William, of 3d April, 1817, modifies the articles 615, 640, and 641. It suppresses the tribunals of commerce, and it orders that commercial disputes shall be adjudicated by the ordinary tribunals.

27. *Malta.*—Much confusion exists in Malta, in the application of the laws in regard to commerce; a want of *fixity*, which gives occasion to constant complaints. Their only guides are the "*Ordonnance of French Marine*," of 1681, and other old authorities, such as the Code, or "Pragmatique," of the Grand Master Manoel (which is only subsidiarily in force), or the code of 1784, of the Grand Master de Rohan, which bears the name of "Municipal Law," and is at present a very general authority. Subsequently to the date last given, proclamations emanating from the different governments which have succeeded each other in Malta, and in particular that of Britain, since 1800, have introduced or remodeled certain rules of jurisprudence in regard to various points of commercial equity. The result has been a sort of common law, generally adopted in practice, and acted upon by the tribunals. To promote this object, a collection of all commercial usages in the form of a manual, has been published by gentlemen of the legal profession; it bears the title of "*Compendio di Diritto Commerciale Maltese* (Malta, 1841)"—Compendium of the Commercial Law of Malta. This collection presents an abridged view of the principles of Maltese legislation and jurisprudence, in the absence of any thing like a regular system of commercial law. It is a subject of regret that the English government has not followed up its plan in giving a code to the Ionian Republic by promulgating a similar one in Malta. (We understand that the civil code for Malta is already prepared and printed.) On the subject of bills of exchange, the want of legal arrangements has been peculiarly felt. In the mean time, the regulations in regard to maritime commerce, borrowed chiefly from the French shipping law, enter much into the necessary details, and form the principal part of the commercial law of the island. In the matter of bankruptcy, the ordinances of 1815 have established certain principles which, in the form of procedure especially, have been only imperceptibly modified by later enactments. These regulations treat bankruptcy as in England—Chap. XVI.—in which it is stated, that should any difficulties occur in regard to procedure, reference should be had to the law of England. The judiciary organization, which dates from 1679, was terminated by the constitution of 1814. The maritime consulship was then reformed, and the name of tribunal of commerce imposed. Regulations were at the same time enacted for its suitable efficiency. The commercial code so many years under consideration, was revised by the council in 1847, on the recommendation contained in the able Report of Andrew Jameson, Esq., Advocate, Sheriff-depute of the county of Edinburg. A commission was also named to revise the code of civil procedure, intended to remove many obstructions and delays in the administration of justice.—*Parliamentary Report*, 1849.

28. *Mecklenburg-Schwerin, and Mecklenburg-Strelitz, Duchies of.*—There exists in these Duchies no peculiar law relating to commerce. The only authority throughout their respective provinces is the common law of Germany. Rostock, however, has a municipal law peculiar to itself. A decree of this city was passed, 19th December, 1827, relative to bills of exchange.

29. *Modena, Duchy of.*—The duchy of Modena has no code of commerce. Reference is made to the opinions of the most celebrated writers, such as Casaregi and Ansaldo, and still more to Azuni, Baldasseroni, and Cassiani. In the absence of legislative enactment, in regard to commerce, the civil code is also most frequently appealed to, which in commercial differences alone permits to act by executory process.

30. *Nassau, Duchy of.*—Till the present period there existed in the Duchy no law relating to commercial rights, and the ordinance of Frankfort on bills of exchange was the sole authority. The government has, however, recently promulgated the project of a commercial code, extending to every subject that might be contemplated by it. This project, which has been aided by the valuable co-operation of Messrs. Volpracht and Bertram, is in a great measure a repetition (as to the text almost always so) of the regulations of the code of Wurtemburg, of those of the *ordonnance* of Saxe-Weimar (20th April, 1819) on bills of exchange. Though the above *projet* has not yet been discussed at an assembly of the States, there is every probability of its being adopted in its present form, at least without any material alteration. We have accordingly inserted it in due order.

31. *Norway.*—Civil and commercial legislation remain in this country the same as in Denmark. Its union with Sweden, in 1814, produced no alteration. Two laws only were carried in the last *Starthing* (Parliament) in 1842. The first, of date 4th August, on bills of exchange, given in its proper place, the second, of 29th June, and which has received the royal assent. This law, however, being merely a restriction on the right of engaging in commerce, which it limits, with

very few exceptions, to the citizens of commercial towns, we regard as not coming within the legal department we had assigned ourselves; we therefore omit it. There was recently in force a regulation in regard to exchange of Copenhagen, 16th April, 1681, as presented by M. Nonguier. This regulation has been replaced in Denmark by the law of 28th May, 1825. In Norway it has hitherto undergone no alteration except those of the recent law of 4th August, 1842.

The maritime law of Norway is the same with that of Denmark. The code of Christian, promulgated in 1683 in Denmark, and in 1657 in Norway, is still in force.

32. *Parma, Placentia, and Guastalla, Duchies of.*—The commercial code of France, which had been introduced into these duchies, still continues in force. Only the civil code of Parma contains regulations in regard to bills of exchange. These remain the sole distinguishing documents of commercial character.

33. *Portugal.*—On the 18th September, 1833, an ordinance of the King Don Pedro sanctioned a code drawn out by a jurist alone, and which, derived in great part from the Spanish and Dutch codes, has taken from them the most enlightened provisions, and added others, especially on the institution of the jury, for commercial matters.

34. *Roman States.*—The commercial code of France, suppressed in 1814, when the French ceased to occupy the Roman territory, has, notwithstanding, still continued in force in some of its provinces, and in 1821 was formally re-established throughout all the Papal States, by an edict of Pius VII., under the title of Provisional Law of Commerce. Certain modifications, however, of minor importance, and which were to remain only until the completion of a new code, were introduced. This code has not yet appeared. The edict of 1st June, 1821, contains, moreover, several enactments which have for their object the better organization of tribunals of commerce. In regard to this point, however, the legislative and judiciary regulations of 10th November, 1834, contains, in sections three and four, new provisions. The decisions of the tribunals of commerce may be carried before the ordinary courts of appeals. The new law, however, has not revoked a papal statute of date 27th February, 1830, re-establishing a court of appeal at Ancona, and of which we have also given a translation. The edict of 1st June, 1821, contains, besides, different judiciary enactments, several of which have been borrowed from the English code of civil procedure. Into the examination of these we felt it unnecessary to enter, the greater part being presented in the new legislative and judiciary law.

35. *Russia.*—As early as in 1760, Peter the Great conceived the idea of collecting all the ukases published since the code of 1649, but co-operation was wanting to carry it into practice. Nicholas completed this important undertaking. The *swod* was published with the ukase of 31st January, 1826. It is a complete digest where the old laws are inserted, yet conforming them to the progress of legislation and European civilization. The commercial part, forming the 11th volume, occupies an important place; it includes more than 2000 articles, and it contains very remarkable provisions, such as demonstrate the customs and usages of the inhabitants of this vast empire.

36. *Sardinia.*—After the events of 1814, which placed upon the throne the present family, the ancient laws published in 1723, an impression of which, with numerous additional provisions, had been published by King Charles Emmanuel III., the 7th April, 1770, were re-established in Sardinia, Savoy, and Piedmont. They remained in force as to commercial matters until the promulgation of the new code of commerce, which came into operation the 1st July, 1848. The city of Genoa alone has continued to be regulated by the French code since the Restoration, the exigencies of this commercial port requiring the application of a more modern legislation, and one which would be in harmony with the laws and customs of other nations. The same motive has urged the enlightened governments of Sardinia to endow their country with new and more uniform provisions by publishing a code of commerce. The new code of 1843 follows entirely the French code, taking into careful consideration the laws voted for its amelioration by the French Chambers in 1817, 1833, 1838, and 1841. It has done more; it has almost always resolved any difficulties that have arisen in the practice according to the sense and judgment of the Court of Cassation, and often made reforms which experience had proved to be necessary. Among the various innovations introduced, it is necessary to mention that minors and females whom the civil Sardinian code—the same as the Macedonian and Velleine status consultus—considered as incapacitated to act for themselves, are, as regards the exercise of commercial profession, independent; which modification was certainly indispensable; adding also to the No. 6 of the French law in conformity with their jurisprudence, a presumption of the consent of the husband when the married female is engaged in trade. The code intrusts to the tribunals of commerce the inspection of books of commerce; it prescribes precautions already specified in the projects of law presented by the Garde-des-sceaux, before the Chamber of Deputies, the 15th February, 1838, with a view to put an end to the scandalous speculations of partnerships in commandite; it relieves partners from forced arbitration, and makes it optional, as in several modern codes; it dedicates a fourth book to this important matter, under a special title, in conformity with the provisions of our code of procedure; and it replaces the entire section of the French code which treats of disputes between partners, with most valuable provisions in the functions of the liquidators of partnerships. The exchange agents are, as the notaries in France, responsible for the signatures to bills which they negotiate when signed in their presence; their books, and those of brokers, form evidence of agreements among parties. With reference to bills of exchange, those drawn by the States of the king in a foreign country, may be signed by any person who may be subjected to imprisonment for non-payment, without distinction of rank, but, for inland bills, merchants alone may be prosecuted commercially; and it is further necessary that the bill shall not be drawn by order and on account of a third, in which case they are only deemed as simple promises The endorsement, after the bill becomes due, and the security given by a person not engaged in trade, do not constitute procuration. It is worthy of remark that Sardinia has adopted the same metrical system for distances and measurement as in France. The second book relative to maritime commerce contains only regulations analogous to the French code, with the exception in reference to the sale of ships, which must be made by public act, under penalty of nullity; it prescribes also to the captain, express duty of ascertaining the good state of the ship before going to sea; it enjoins on him to watch with great care over the interests of seamen. Lastly, by the Art. 343, § 1, the negotiation of a bottomry-bond between persons not engaged in trade, produces the same effect as bills to order, and by the Art. 360, any convention which should have for its object to discharge the lender on bottomry-bond from the contribution to the common averages, is null. The regulations of the third book on bankruptcies are the same as those of the French law of 20th May, 1838. Simply they have suppressed the Art. 448 of the French code which declares null the inscriptions of mortgages taken within 10 days preceding the suspension of payment; and, also, they order the exposition of the names of all persons who fail at the hall of the tribunal of commerce during the whole of their lives unless they obtained a license.

The treasury advances the preliminary expenses of the procedure. With reference to the license, it can only be given by the Senate (court of appeal) after the accomplishment of many formalities. The tribunals have the same organization as in France; but the judges elected by the merchants are nominated by the king. An important modification has been introduced in Sardinia, as in Mexico, and in Spain; a lawyer (*consulente quidiziale*) is appointed to each tribunal as a counselor, but without a deliberative vote. This institution has doubtless great advantages, yet it is subject to great inconveniences, as if, for example, the *consultore*, through the influence of his acquaintances, should predominate in all the deliberations, and overrule the judges. Another innovation consists in the creation of a judge, delegated every week by the tribunals, who decides by himself all disputes below 300 francs, and judges without appeal all those which do not exceed 100 francs. The appeal is admissible only in disputes above 1200 francs, as before the enactment of the French law of 11th April, 1838. An article on imprisonment for debt has been added to the code; it fixes its duration in proportion to the sums due, and submits to it persons not engaged in trade for bills of exchange, drawn from or on foreign countries, when it results from maritime operations; and in consequence of frauds, or presumption of flight, and insolvency. There is not yet any regulation on the procedure before the tribunals of commerce. The publication of the code of procedure is shortly expected, the ministry having been occupied with it for several years past. A diplomatic treaty of 24th March, 1760, seems to place Sardinia, with respect to France, in a very exceptional position relative to the execution of judgments rendered by the Sardinian tribunals, and the payment of the security *judicatum solvi*.

37. *Saxe-Attenburg, Saxe-Coburg Gotha, and Saxe-Meiningen.*—In these duchies there exists, in regard to commerce, only a very small number of regulations. Commercial differences are decided before the ordinary tribunals, and, in general, by a reference to common law and usage much more than to particular statutes. Thus, for example, the practice of Leipsic is the principal guide to that of the two duchies of Saxe-Attenburg and Saxe-Meiningen.

38. *Saxe-Holdburghausen, Duchy of.*—The ordinance of Leipsic, which was introduced into this duchy in virtue of a rescript of 11th June, 1714, still continues in force.

39. *Saxe-Weimar.*—A number of laws, entering into considerable detail, on the subject of mortgages, and the proper distribution and precedency of creditors in cases of bankruptcy, were promulgated by the government in 1839 and 1841. Their object, however, is only to establish, in regard to the latter subject, a uniformity of rule, such as is required in any other civil arrangement. For books of merchants, partnership, brokerage, failures, there exist no other special regulations. The Prussian code is followed, or, as in other parts of Germany, actions are decided by usage and common law. There is no special tribunal of commerce in the Grand Duchy. It is proper, however, to remark, that, during the continuance of the wool-fair, which is annually held in Weimar, in the month of June, a commission is named by the burgomaster, composed of two members of the municipality and several merchants, for the purpose of deciding upon differences that may occasionally arise. There being no commercial town in the Grand Duchy, no Bourse (place of exchange) has been regularly established. Each city has its particular regulations in regard to fairs held in it.

40. *Saxony, Kingdom of.*—The government of Saxony are at present occupied in the revision of the ancient legislation, and in completing it by new laws. As yet, however, there exists no commercial code, not even in the form of a "*projet.*" The tribunals are guided by ancient statutes and ordinances, which, where no enactments exist, are considered as possessing uniform authority. Various regulations have passed in regard to brokerage. Their respective dates are 7th March, 1818, 21st September, 1833, and 14th April, 1832. In regard to payments and bankruptcy, the only legal authority is the ordinance of 20th December, 1766, promulgated in Lusatia in 1783; this answers, however, very insufficiently for the present requirements of commerce, and government are preparing to replace it by new enactments. The ancient tribunal of commerce established at Leipsic, by an ordinance of date 21st December, 1682, still exists, but simply as a local court, and without any effort being made to establish other tribunals upon a common principle of judiciary organization. Such is the present state of commercial law in Saxony, to which the government are now endeavoring to apply a remedy. In addition to other means for this purpose, M. Einert, one of the most distinguished jurisconsults of the country, has lately received an order to review the recent laws, so as to bring them still more into unison with the increasing demands of commerce and industry.

41. *Schwartzburg, Rudolstadt and Schwartzburg-Sondershausen, Principalities of.*—As in the greater number of the minor States of Germany, so in the above principalities, commercial differences are brought before the ordinary tribunals, and are decided upon according to common law usage, or even the laws of the neighboring States, Saxony, etc. The former ordinance of 1st September, 1787, respecting failures, has been replaced by another of 1st December, 1835, on the same subject.

42. *Sicilies, Kingdom of the Two.*—The French commercial code was introduced into Naples the 28th May, 1808, when the throne was occupied by King Joseph Napoleon Bonaparte. The laws, having undergone a general revision at the time of the Restoration, a new code of commerce for the Two Sicilies was made public 26th March, 1819. It forms one of the parts of a body of general law, arranged under the five heads of civil, penal, and commercial law, and civil and criminal procedure. This code of commerce contains nearly the same regulations as that of France, on the basis of which it has obviously been founded, and which long practice besides has sanctioned.

43. *Spain.*—In 1827 King Ferdinand VII. nominated a commission charged to frame a code of commerce; and on the 30th May, 1829, a royal ordinance sanctioned the new code, which was to come into force the 1st January, 1830.

44. *Sweden.*—For bills of exchange in Sweden there are two ordinances, of 1st February, 1748, and 12th June, 1816. The text of them has been given by M. Nonquier in his treatise. It appears, however, that these ordinances have been insufficient for the wants of commerce. Accordingly, on 20th May, 1835, there appeared a new law regulating inland bills. This law, which is perfect in itself, and may be considered as the common law of exchange in Sweden, forms, with the ordinances already mentioned, an extremely remarkable body of laws. In relation to maritime law, a complete account of it, as it formerly stood, may be found in the collection of M. Pardessus. He has given there the ordinance of 1667, being an abstract of the Hanseatic *Recez* Maritime Consulate, etc. Numerous changes, however, have since been made in this ordinance, certain articles having been retained, while others have been supressed or modified. On the present state of the maritime law of the north, the work of M. Poehls may be regarded as of the highest authority. A law, very minute in detail, was issued in regard to failures, in 1818. This has been more recently replaced by a new law of date 12th March, 1830, having regard to some modifications made in it in 1835. In regard to justiciary organiza-

tions, it is sufficient to note that, generally, the settlement of commercial disputes devolves on the civil tribunals. The only exceptions are proceedings relative to bills, or arising from disputes which may have arisen between ship-owners and the proprietors of the cargo, or the captains, or between captains and their seamen. Actions in regard to these are within the competency of the municipal courts. The same tribunals take cognizance of ordinary failures. If the bankrupt is a noble, the case is brought before the courts of justice. To these also an appeal lies from the decisions of the municipal tribunals. When there is room for appeal from an inferior district court, it may be carried in the second instance before a superior one; and in the third (finally) before one of the three high courts of the realm.

45. *Switzerland.*—Each of the twenty-two Swiss cantons is sovereign and independent, ruled by its own laws. There exists, however, in the greater part of them, no commercial law whatever. Matters of commerce are treated as other affairs of civil life, with all the restrictions and impediments which have been the fruit of municipal legislation. In the Canton of Geneva, the French code, introduced provisionally after the events of 1814, seems now to possess the authority of definitive law. No change has been made in it, except in what regards the mode of legal procedure, delineated in the "*Code de Procedure*," arranged by M. Bellot, and promulgated 1st January, 1821. A law of 12th May, 1817, giving a new sanction to the French code of commerce, established those changes already adopted in France, and introduced into the art. 160 a provision having special reference to Geneva, namely: "The loss of right mentioned in the art. 160, shall take place against the bearer of a bill of exchange, at one or more days after sight, or months or usances after sight, drawn from the Canton of Geneva, payable in foreign countries, who shall not exact the payment or acceptance within the time prescribed by each of the prefixed dates." In the other French Cantons of Switzerland, the same French code, though not expressly enacted, is frequently, in the absence of other legislative authority, the guide, or is at least appealed to as a rule of equity. The Canton of Vaud has published a law on bills of exchange, the 4th June, 1819, which is chiefly extracted from the French code, and which has been also adopted in the Canton of Friburg. In 1818, the Council d'Etat of the Canton of Vaud had prepared a report of a code of commerce to be submitted to discussion, but it was rejected in 1841, by the Grand Council. The Canton of Friburg, in 1840, presented the *projet* of the first book of the "*Code de Commerce*;" it has not yet, however, undergone discussion. Lastly, Neufchatel has recently published some commercial laws. The legislation in the German Cantons is extremely imperfect. The least defective system of mercantile law is that of Basle, in which, in addition to an ordinance on exchange, of 14th December, 1808, there are to be found various regulations in regard to mercantile books, brokerage (26th Dec., 1822; April, 1805 and 1817) as well as some old regulations (1719) relative to the ranking of creditors in a case of bankruptcy. The latter also still retain some degree of authority, and are therefore not without importance. Recently, in the Canton of Berne, the discussion as to the propriety of maintaining the codes of France in the French portion of the Canton, seems to have led the way to important reforms, having for their object the revision, not only of these codes in certain articles, but of the entire legislation of the country. This legislation is composed of very ancient laws, which could not be included in this work. The law on bankruptcy, of 22d December, 1820, contains some very remarkable provisions. The new civil code of Lucerne embraces various regulations on commercial matters. Zurich possesses an ordinance on bills of exchange, of date 16th May, 1805. St. Gall, an ordinance on the same of 18th July, 1784, and a law of 11th October, 1832, on commercial accounts. Lucerne follows the ordinance on bills of exchange of St. Gall; Soleure, that of Basle; and Friburg has the same law as Vaud on bills of exchange, of date 24th June, 1829. In the German Cantons the defects of commercial law are supplied partly from the civil law, but chiefly by usage. Commercial disputes are determined before the ordinary tribunals. A law on bankruptcy, of 18th May, 1818, for the Canton of Zug, contains some curious regulations in regard to religious establishments, in favor of the bankrupt himself, who preserves the right of redemption over the sale of his real estate, and against his family in certain cases. There still exists at Schoffenhausen a committee of commerce which traces its origin to the year 1703; similar ones were to be found in several cities in Switzerland. Its members were elected from the mercantile body, and were appointed to watch over every thing that concerned the commerce of the city. In 1805 it was erected into a tribunal of commerce for the decision of all mercantile differences. It is much to be wished that Switzerland, especially in regard to commercial affairs, were possessed of a common legislation applicable throughout the whole extent of the confederations. It is possible that the late reforms in the civil and the criminal codes of the Cantons individually, may lead eventually to this result. In certain cases, indeed, the Cantons have already felt it necessary, amid the multiplicity of statutes and usages, to adopt certain measures of a general character, by federal conventions or *concordats*. Thus, in a case of bankruptcy, by the concordat of 15th June, 1804, confirmed 8th July, 1818, every Swiss throughout all the Cantons, enjoys, on ranking as creditor, the same rights with the inhabitant of the Canton in whose jurisdiction the bankruptcy has been declared, both in regard to preferable and to ordinary claims. No seizure can take place of the movable property of the bankrupt, except for the common interest. Three Cantons only—Schwitz, Glaris, and Appenzell—refused their adherence to this federal agreement: their particular legislation seems to oppose it. By another concordat, 7th June, 1810, confirmed 8th July, 1818, the Cantons have mutually decreed that all the effects of the bankrupt, wherever found, must go into the general mass, without prejudice, meanwhile, to the claims of the present holder. In the case, however, of the body of the creditors contesting either the *property* of deposits, or a mortgage or ownership security situated in a different Canton from that in which the bankrupt was domiciled, the claim must be carried before the competent judge in that Canton, where the said effects, mortgage, or security, were found. By virtue of art. 14 of the treaty of alliance between France and Switzerland, Frenchmen and Swiss are respectively exempted, in pleading before the courts of each other's country, from the obligation to furnish a "*judicatum solvi.*" The Court of Cassation, 9th April, 1807, and the Court of Colmar, 28th March, 1810, have specially determined to this effect; and the law may be considered as fixed.

46. *Tunis.*—There is no commercial law in Tunis. Usage and particular articles of agreement direct the decision in those cases of dispute that may occur between native traders. Every trader keeps a book in which he registers his purchases and his sales. The native Mussulmen and Jews know no higher form of mercantile book-keeping. There are few countries, however, where commercial probity is found more prevalent. And though cases may occur, in which the confidence of the creditor or the equity of the judge are attempted to be worked upon, yet such are proportionably rare, when compared with similar instances among nations where the written laws of commerce are of a more definite and extended character.

47. *Turkey.*—The geographical position of Turkey was destined to form this rich country into an essentially commercial power. But the natural indolence of its inhabitants has prevented it from reaping the advantages which nature had lavished on it. Their foreign trade is almost exclusively carried on by strangers, who enjoy, by virtue of diplomatic treaties, the privilege of paying dues of customs of smaller amount than those which are exacted from the Mussulmen and Rayas, and possess the right, in cases of differences with other foreigners, of appealing to their own international laws. The Koran is the common law according to which causes among natives are almost always decided. It is no matter of surprise, therefore, that there exists no special law applicable to matters of commerce. Those enactments which seem to bear the nearest resemblance to such, are scattered throughout the general code—a collection of all sorts of laws; to which, moreover, the idea of religious sanctity is attached, and which have been brought together by various doctors for the purpose of regulating religious services and public administrations. The collection of highest authority is that which was compiled by order of Solymen II., from 1520 to 1566, entitled Multeka Ehbar. This code has been translated by Chevalier Monrudja di Hossen, a native of Constantinople, of honorable Armenian family, and dragoman (interpreter) to the embassy of the King of Sweden. The work appeared in France, the first two volumes in 1798, and the third in 1824, under the title of "Tableau General de l'Empire Ottoman," and presents an accurate exhibition of the laws which govern that vast empire. This code contains a book on commercial matters, but the laws embraced in it refer rather to principles bearing upon civil contracts, and adapted to Mussulman manners, than to commercial right, properly so called. Under the administration of Ahmed-Fetchi-Pacha, in 1839, a project of a commercial code was prepared on the model of that of France. The fall of that minister, however, has indefinitely deferred its publication. As to commercial jurisdiction not falling under the rule of common law, actions in regard to it were determined at Constantinople and in the principal sea-ports of the Levant, by the chief officer of the custom-house (chef de la douane), aided by several assessors chosen from the leading merchants of the place, Mussulmen, Rayas, and freemen. This court, however, had been suppressed in the capital, and the Ministers of Commerce, similarly aided by assessors from the same class of merchants, have for some time taken cognizance of all commercial affairs. It was the wish of the Porte that disputes between Ottoman subjects and Europeans, should be carried by petition before this tribunal without the presence of any European assessor, and subject only to the interposition of the interpreter of the embassador of the respective country. The entire diplomatic body were opposed to this, and the ministry of commerce has been abolished. The former order of things has now been re-established, and the Grand Dounaier (the officer already mentioned) presides as formerly in the tribunals. Its decisions are final. "A cause," says the religious code, "legally examined, discussed, and determined, can not again be brought into court, the law having pronounced against all appeal." The judgments which it pronounces are not founded on any well-defined usages. The code of France is generally the rule to which, in their private transactions, the Rayas, who hold a seat in the tribunal, are accustomed to defer. The tribunal of commerce is not the only tribunal existing in Constantinople. There are other three, namely: 1. The Arz Odassez, a supreme tribunal where formerly the Grand Vizir presided, now the Cheik-ul-islam (mufti), before whom, without appeal, differences of every kind are determined, save on commercial and maritime subjects. 2. The tribunal of the Cadi; the Mehkeim, a sort of court of peace or conciliation. 3. The court of the commandant du port (governor of the harbor), Leiman-Odassy, who, assisted by several captains, judges of all maritime questions, insurances, shipwrecks, jettisons, etc. Commercial differences between the subjects of the Grand Seignior and those of foreign powers who are residents in the Ottoman empire, are determined summarily in presence of an interpreter of the legation, or of the consul of the nation to which the foreign subject belongs, sometimes by the decision of the custom-house authority, sometimes by that of the Pacha. In consequence of foreign treaties, every process involving a subject exceeding 4000 aspres (about 8 francs each) may be forced before the divan in Constantinople. This privilege, however, is seldom made use of. In cases of dispute between the subjects of foreign powers, a decision is given by the consuls of the respective parties, assisted by merchants of both nations. The Turkish tribunals decide on actions brought before them by the commentaries of the Koran, of which there are four in number, namely, as follows: the *Hanafi*, the *Maleki*, the *Chafiy*, and the *Hambuli*. These have never been translated from the original language. The *Hanafi* is followed at Constantinople and throughout European and Asiatic Turkey; the *Maleki*, in Barbary; the *Chafiy*, in Egypt; the *Hambuli* is no longer used; the collection entitled *Multeka Ehbar* is known over the whole empire.

48. *Tuscany.*—The "Code de Commerce" has always, since it was introduced into the Grand Duchy, held its position as law; and with the exception of the suppression of the tribunals of commerce, which, notwithstanding, have been continued in Florence itself, it has undergone no alteration of any importance. The article 117, however, of the judiciary reform of 1838, has annulled the regulations of article 51 of the French code, relative to obligatory arbitration in matters of copartnery. An ordinance of 5th September, 1814, with a view to prevent the facility with which persons not engaged in trade sign bills of exchange, authorizes only bankers, merchants, and traders, to draw bills of exchange. In cases when on such bills there should be the signatures of others than merchants, the ordinance grants only a recourse against them through the civil procedure. Another ordinance of 23d November, 1818, prescribes certain measures proper to shorten the procedure in matters of bills of exchange. Lastly, a third ordinance, of 20th December, 1824, declares that the words *value exchanged*, in bills of exchange, shall be considered as a true cause. We may also announce an important resolution of the jurisprudence of the court of Tuscany, by which a failure does not destroy the provision of funds for a bill of exchange; a question much disputed in France, and which the Court of Cassation has adjudicated upon in a manner contrary to the judiciary decisions of the tribunals of Florence, by decrees of 7th February, 1816, 30th July, 1832, and 20th March, 1841. We may add that the article 130, of the new Sardinian code of commerce, contains a regulation in conformity to the jurisprudence of Tuscany. An ordinance of 6th August, 1827, has made alterations in regard to insolvency and bankruptcy. It confers on the Advocate Fiscal (public prosecutor), or his substitute, the same powers with those of the public minister of France. The same ordinance proceeds thereafter to abrogate the enactments of article 587, of the French code of 1807, relative to those cases in which proceedings might be taken against a simple bankrupt. The court above mentioned in Florence consists of two merchants who are judges, two surrogates, one judge, a professional lawyer, and a "greffier." The judges-consular are chosen by the principal merchants; the list of nominals is laid before the Grand Duke for approval. The judgments awarded by this tribunal may be carried by appeal before the tribunal "de la vote," and finally before the council of justice. All maritime cases are

under the jurisdiction of the "bureau de la Marine," at Leghorn. In the other provinces of Tuscany the tribunals of commerce have been suppressed, and the cognizance of commercial affairs transferred to the civil judges, whose jurisdiction is unlimited.

49. *United States.*—The commercial law of the United States is, in general, the same with that of England. The principles connected with it are almost always traceable to the latter source; modified, however, by the legislation of individual States, as well as by the decisions of the federal court of the Union, and other inferior tribunals. English laws are not valid as such. They must be sanctioned by legislative enactment, or introduced by a court, as an exposition of principles common to the two nations. Each State has a separate commercial legislation. This is founded either on express statute, or on decisions of court. But as the decrees of the different courts have a sort of authority of themselves and as, in addition to this, questions in relation to commerce emanate from general principles, of which the investigation of the proper interpretation of the rules of commercial law may be said to be the same [illegible] very inconsiderably throughout the Union. Numerous questions on commercial affairs are decided by the federal courts of the Union (district and circuit courts), held for the purpose of taking cognizance of civil disputes between inhabitants of different States, and of all cases of admiralty and maritime jurisdiction. The final revision of the decisions of these courts in generally competent to the Supreme Court of the United States, which, differing from the Court of Cassation in France, judges both in regard to fact and law; and the decrees of which, while not considered as determining the principles of legislation or jurisprudence, have, indirectly, great influence in giving uniformity to the decisions of inferior courts in the several States of the republic. Though each State is in itself independent, yet laws of a general and uniform character may be enacted by Congress. For example, article 1st of section 8 and section 4 of the Constitution of 1787, provides, that Congress shall have the power, in the matter of bankruptcy—a subject of so grave interest in America, and affecting so deeply public credit—to enact laws that shall be obligatory on all the States, and take place of local enactments, whatever these may be. Under a general view, the tribunals must form their decisions on the basis of four sufficiently defined elements: 1st. The common or imperfectly written law. 2d. The statutes of the particular States. 3d. The legislative acts of Congress; and 4th. The decisions of English courts and treatises on English jurisprudence to which lawyers are permitted to appeal, as *raison écrit*, professional decision reduced to writing. There are no tribunals of commerce in the United States. Commercial or maritime questions are determined in the first instance by the ordinary courts appointed in each State. There are many exceptions, however, viz.: 1st. Of maritime civil causes such as seaman's wages, mortgages, salvage, engagements of vessels, etc., in general, of every real action against the vessel, or even in certain cases against the cargo. 2d. In the case of seizure of the ship or cargo. 3d. In regard to patents for discovery, rights of authorship, etc.; and 4th. In an action intended by a citizen of one State against a citizen of another. In all these cases the jurisdiction devolves on the federal court of circuit or of district. Though the judges have no political privileges, they possess each in his own sphere, great power; inasmuch as they may refuse to apply the law on the ground of unconstitutional impropriety in particular cases brought before them—an ingenious but sure method of fixing the character of imperfection on a particular law. In order to place in one view the documents necessary to give the most perfect view of American legislation on the various matters contained in a commercial code, it was necessary to have recourse to the best accredited expositions and commentaries, and to which the Americans themselves attach the highest authority. The author generally followed, as the most accurate, is Chancellor Kent, whose *Commentaries on American Law*, presents an admirable and general view of commercial legislation. With reference to bankruptcies, the Congress having made use of the power granted to it by the Constitution, voted 19th June, 1841, a general law for all the States of the Union, which came in force 1st February, 1842. See INSOLVENCY.

50. *Wallachia and Moldavia.*—These principalities are ruled by laws, originally a mixture of Roman law, and usage. More recently the laws of the Lower Empire came into force, and retained their authority to a period not yet remote. The position of the two countries, pressed by the great powers which surround them, has led them to feel the importance of stability in civil legislation. For this purpose there have been established organic regulations, with a view to protect the citizens against the usurpations of the governing authorities, as well as to render secure the rights of the principalities against their powerful protectors. A desire has been felt also to preserve the traditionary usages which are the expression of national habits, though sometimes these usages are not perfectly in harmony with the French legislation, which has been adopted as the leading authority. The aristocratic principle is maintained in all its rigor in their laws. As the primary element in that principle is the preservation of the great estates, the law confers on parents, according to their rank, and, failing these, on inhabitants of the locality, a preference in the right of purchase, and also a power of redemption on the sale of immovable property. In the case of encroachments on contiguous property, prescription is not admitted. So jealous indeed are the inhabitants in preserving their estates intact that the property conveyed in dowry by the wife (such is the rigor with which the dotal system is carried into execution), is freed from obligation to a leasehold by the simple fact of marriage, if the husband refuses to confirm the lease; a regulation greatly tending to shackle and discourage the labors of the agriculturist. In 1840 a commercial code was laid before the General Assembly, containing, with a few alterations, the same regulations with that of France. It has 595 articles. After having been adopted by the General Assembly it received the sanction of the prince, June, 1840, and was to come into force 1st January, 1841.

CHRONOLOGICAL TABLE OF COMMERCIAL LAWS.

Date.	Title.	Countries.
B.C.	Maritime Law of Mena	India.
B.C.	Maritime Law of Barges	India.
	General Code of Malacca	India.
B.C.	Law on Contract, Usury, Factor, Exchange, Debtor and Creditor, Partnership, Books of Commerce, Maritime	Greece.
B.C.	Law on Bankers, Debtors and Creditors, Maritime, etc.	Rome.
5th cent.	Anfani Previarum of Alarie II., a Court of Admiralty at Amalfi for all Nations trading in the Mediterranean and Constantinople	Amalfi.
9th cent.	Excerpta Juris Orientalis ad Rem Nauticam Pertinentia	Eastern Empire
9th cent.	Jus Navale Rhodiorum	Rhodes.
940.	The Gelaping on Shipping	Norway.
1063.	Maritime Law of Trani	Two Sicilies.
11th cent.	The Maritime Law of William the Conqueror	England.
1150.	Statutes of Elsewick Maritime Law	Denmark.
1150.	Statutes of Arles	France.
1158.	Code	Lubec.
1160.	Constitutum Usus	Pisa.
12th cent.	Maritime Law from the book of the Assizes, and from the Usages of the Kingdom of Jerusalem, by the Court of Burgesses. [From this document it appears that other laws were enacted on commerce in general.]	Jerusalem.

CHRONOLOGICAL TABLE OF COMMERCIAL LAWS—*Continued.*

Date.	Title.	Countries.
12th cent.	Maritime Law known under the name of Rooles or Judgments of..	Oléron.
12th cent.	Law of Grágás, or the Code of	Iceland.
12th cent.	Maritime Law of the Burghs of	Scotland.
12th cent.	Maritime Law called Piar Keyar-Rett	Norway.
1214.	Civil Statutes of	Curzola.
1223.	Maritime Law from Coutume of....	Montpellier.
1224.	Maritime Privileges granted to Lu[illegible] in the town of	Stralsund.
1231.	Extract from a Constitution of Fred[illegible]ia for the Kingdom of...	Sicily.
1232.	The Criminal Statute regarding [illegible]ipping	Venice.
1240.	Maritime Extract from the Code of.	Lubec.
1243.	Maritime Privileges granted to the city of Va[illegible]ce by the King of [illegible]agon	Valence.
1260	Maritime Law, extracted from the coutume of	Valence.
1261.	Maritime Law, Statute of Biark[illegible] or Birca	Sweden.
1255.	Maritime Law, from the Statute of.	Marseilles.
1255.	Maritime Statutes	Venice.
1255.	Maritime Statutes, extracted from the *Fuero Real*	Castilla.
1258.	Ordinance of the King of Aragon on the policy of Navigation of	Barcelona.
1265.	Privilege granted by the King of Aragon to the Magistrates of Barcelona to nominate the Consols beyond the Seas	Barcelona.
1266.	Maritime Law, from the Partidas..	Castillila.
1269.	Maritime Law, extract of Privilege granted to	Barcelona.
1270.	Maritime Statute. [This statute is also dated 1276 and 1292.]	Hamburg.
1270.	Maritime Statute, extract from the statute of	Riga.
1271.	Maritime Law, extracted from a Pragmatic	Barcelona.
1274.	Maritime Law, extracted from the *Gulathingslagh* of the King Magnus	Norway.
1274.	Maritime Statutes	Bergen and Dronthelm.
1[illegible].	Maritime Statutes	Stralsund.
1[illegible].	Maritime Law, extracted from the *Jons-boc* Code	Iceland.
1282.	Maritime Law, a Constitution	Two Sicilies.
1283.	Maritime Law, a Constitution	Two Sicilies.
1283.	Maritime Law, the *Recognoverunt Proceres*	Barcelona.
1284.	Maritime Law, from the Statute of.	Flensburg.
1285.	Letters Patent of Edward I. on the Contribution of Jetison	England.
1286.	Maritime Law, extracted from a Constitution of Jacob I.	Sicily.
1288.	Pragmatic of the King of Aragon relative to Shipwrecks	Aragona.
1288.	Pragmatic of the King of Aragon relative to Pirates	Aragona.
1292.	Maritime Law, extracted from the Statute of	Hadersleben.
1298.	Maritime Law, from the *Breve Curiæ maris*	Pisa.
1299.	Maritime Statute	Lubec.
About 1300.	Maritime Law of Bremen	Bremen.
13th cent.	*Constitutio Societatis Navium*	Bayonne.
13th cent.	Maritime Law, extracted from the 1st and 2d Skras	Novogorod.
13th cent.	Maritime Code	Malacca.
13th cent.	Maritime Laws, extracted from the General Codes	Malacca.
13th cent.	Maritime Code	Mang Kassar and Bougui, in the Island of Celebes.
13th cent.	Maritime Code	Bougui.
13th cent.	Maritime Code, extracted from Statutes of Genoa	Colony of Pera.
13th cent.	Maritime Law, extracted from the Statute of Zara	Dalmatia
13th cent.	Maritime Law, extracted from the Establishments of	Montpellier.
1303.	Maritime Law, extracted from the Establishments of	Bari.
1303.	Maritime Law, extracted from the Establishments of	Bremen.
1303.	Maritime Law, extracted from the Establishments of	Rimini.
1304.	Pragmatic of Maritime Law	Catalogna.
1306.	Articles of Maritime Law	Hamburg.
About 1316.	Extract from a Maritime Statute of Genoa	Genoa.
About 1316.	Maritime Law, extract of a Statute of Sassari	Island of Sardinia.
1318 or 1319.	*Breve portus Kilturetani* (Caglia)	Island of Sardinia.

CHRONOLOGICAL TABLE OF COMMERCIAL LAWS—*Continued.*

Date.	Title.	Countries.
About 1320.	Maritime Law, extracted from the Statute of the City of Wisby.	Island of Gothland.
1330.	Extract from a Statute of Genoa (Sept. 24)	Genoa.
1330.	Privilege for the Charters (armateur in course)	Catalonia.
1331.	Maritime Law, extract from the Statute of Pharo Island, of Lesina in the	Adriatic.
1333.	Maritime Statute of Genoa (Jan. 22)	Genoa.
1335.	Maritime Law, extract from the Skras	Appenrade.
1338.	Extract from an Inquiry on the Maritime Law of	England.
1339.	Maritime Statute of Genoa (Nov. 15)	Genoa.
1340.	Maritime Law, extracted from the Coutume of	Island of Oléron.
1340.	Maritime Ordinance of the King of.	Aragona.
1341.	Maritime Statute of Genoa (Sept. 6)	Gazarie.
1341.	Maritime Ordinance relative to the Consuls of Barcelona	Sicily.
1343.	Ordinance of the Magistrates of Barcelona on Meritime Law	Barcelona.
1343.	Regulations of Consular Procedure.	Valenza.
1346	or 1347. Maritime Law, extracted from 6th volume of the "Civil Statutes"	Venice.
1354.	Ordinance of the King of Aragon on Men-of-War	Aragona.
1354.	Ordinance of the King of Aragon on Navigation in Times of War	Aragona.
1356.	Ordinance of the King of Aragon on Maritime Courses	Aragona.
1369.	Recess of the Hanseatic League	Hanse Town
1375.	Extract of the Inquiry of Queenborough on the Maritime Law	England.
1377.	Maritime Law, extract from the Statute of Levant	Genoa.
1378.	Recess of the Hanseatic League	Hanse [illegible]
1380.	Recess of the Hanseatic League	Hanse [illegible]
1381.	Regulation in the Consulate of Barcelona	Alexandria
1386.	Regulation for the Consulate of Barcelona	Dardanelles.
1390.	Maritime Law, extracted from the Coutume	Ha[illegible]
1391.	Recess of the Hanseatic League	Ha[illegible]
1397.	Maritime Statute	Ancona.
1399.	Privileges of the Grand Admiral	Sicily.
14th cent.	Maritime Law, known under the name of Jugements de Damme, or Laws of Westcapelle	Low. Netherlands.
14th cent.	Body of Maritime Law, known under the name of *Consolato del Mare*	Venice.
14th cent.	Articles of Maritime Law	Bremen.
14th cent.	Maritime Law, extracted from the Compilation of the Law of Lubec, published by Brokes	Lubec.
14th cent.	Maritime Law, extracts from the Statute of	Riga.
14th cent.	Maritime Law, from the Civil Statute of Cataro	Dalmatia.
14th cent.	Chapters on the Armaments in Course	Catalogna.
14th cent.	Maritime Law, extracted from the Recapitulation of the Ordinance of	Seville.
14th cent.	Maritime Law, extract from the *Lure de Justice et de plet*, drawn up in	France.
1405.	Royal *Cedule*, relative to the Jurisdiction of Judges, Consuls	Barcelona.
1412.	Recess of the Hanseatic League	Hanse Towns.
1417.	Recess of the Hanseatic League	Hanse Towns.
1418.	Recess of the Hanseatic League	Hanse Towns.
1428.	Law on Averages (June 9)	Venice.
1432.	Privilege in favor of Judges, Consuls of	Barcelona.
1434.	Recess of the Hanseatic League (June 5)	Hanse Towns.
1434.	Recess of the Hanseatic League (Oct.)	Hanse Towns.
1435.	Ordinance of the Magistrates on Maritime Police	Barcelona.
1435.	Ordinance on Insurances	Barcelona.
1435.	Ordinance on Insurances	Barcelona.
1436.	Ordinance on Maritime Police	Barcelona.
1441.	Recess of the Hanseatic League	Hanse Towns.
1441.	Maritime Statute of Genoa	Genoa.
1442.	Recess of the Hanseatic League	Hanse Towns.
1447.	Recess of the Hanseatic League	Hanse Towns.
1450.	Maritime Law, extract of the notorious Role	Bremen.
1454.	Recess of the Hanseatic League	Hanse Towns.
1455.	Maritime Law, extract of a *Willekur*	Dantzig.
1455.	Maritime Law, extract of a *Willekur*	Dantzig.
1457.	Maritime Law, extract of a *Willekur*, additions	Dantzig.

CHRONOLOGICAL TABLE OF COMMERCIAL LAWS—*Continued.*

Date.	Title.	Countries.
About 1457.	Regulations on Maritime Navigation	Florence.
1458.	Ordinance of the Magistrates on Insurances	Barcelona.
1461.	Ordinance of the magistrates on Insurances	Barcelona.
1468.	Ordinance on Insurances (July 2)	Venice.
1470.	Recss of the Hanseatic League	Hanse Towns.
1482.	Recess of the Hanseatic League (May)	Hanse Towns.
1484.	Ordinance of the Magistrates on Insurances	Barcelona.
1493.	Maritime Law, extract from the Statute (April 20)	Ancona.
1494.	Pragmatic, which constitutes a Consulate	Burgos.
1497.	Maritime Law, extract from the General Code	Hamburg.
1498.	Maritime Law, Code of Emmanuel	Portugal.
15th cent.	Maritime Law, known under the name of "*Usages Maritimes de Amsterdam, Rchuysen, Staeern*," etc	Northern Netherlands.
15th cent.	Compilation of the Maritime Law	Wisby.
15th cent.	Maritime Law	Dantzig.
15th cent.	Maritime Law, extracted from the *Statuta Ancontano urbis*	Ancona.
15th cent.	Additions to the Maritime Statutes of 1397	Ancona.
1507.	Maritime Ordioance of the Officers of the *Casa de la Contratacion* (Nov. 21)	Seville.
1508.	Maritime Law, attributed to the King John	Denmark.
1510.	Pragmatic of the King of Aragon relative to the Consular Jurisdictions	Barcelona.
1510.	Maritime Law, extract from a Statute of (June 21)	Ancona
1512.	Pragmatic concerning the Freighting of Ships (Jan. 31)	Burgos.
1512.	Maritime Law, extract from a Statute of (Dec. 19)	Ancona.
1523.	Statute on Insurances (Jan. 29)	Florence.
1523.	Statute on Insurances (Jan. 27)	Florence.
1526.	Statute on Insurances (June 15)	Florence.
1526.	Maritime Law, extracted from a Privilege granted	Dantzig.
1527.	Ordinance on the Loading of Ships (July 12)	Venice.
1527.	Statute relative to the Bottomry (Aug. 13)	Amsterdam.
1530.	Recss of the Hanseatic League	Hanse Towns.
1532.	Maritime Law, extract from a Statute	Pisaro.
1533.	Ordinance of Bottomry	Dordrecht.
1537.	Maritime Law, extract from an Ordinance (May 20)	Brabant.
1538.	Additions to the Pragmatic of January 31, 1519	Burgos.
1538.	Regulation on the Police of the Contractation	Burgos.
1538.	Ordinance for Insurance	Burgos.
1540.	Maritime Law extract of an Ordinance	Prussia.
1542.	Maritime Ordinance	Lubec.
1549.	Maritime Law, extract of an Ordinance (Jan. 29)	Netherlands.
1551.	Maritime Ordinance (July 19)	Netherlands.
1552.	Extract of the Maritime Ordinance Charles V	Spain.
1556.	Maritime Law, extract of the Book II. of the Criminal Statute	Genoa.
1556.	Maritime Law, extract from the Ordinance of the Contractation	Seville.
1557.	Extract of a Statute relative to Insurance (Oct.)	Genoa.
1560.	Maritime Ordinance for the Contractation	Bilbon.
1561.	Maritime Code	Denmark.
1563.	Maritime Ordinance (Oct. 31)	Netherlandr.
1567.	Policy of Insurance	Ancona.
1569.	Law on Shipwrecks (June 8)	Venice.
1569.	Law on Loading of Ships and Shipwrecks	Venice.
1570.	Maritime Ordinance (Jan. 20)	Netherlands.
1570.	Extract on Bottomry Bonds	Middelburg.
1572.	Recss of the Hanseatic League	Hanse Towns.
1582.	Extract on Insurances of the Costume	Antwerp.
1584.	Edict on the Admiralty (March)	France.
1585.	Law on Bottomry Bonds (Aug. 4)	Venice.
1586.	Law on Shipwrecks (June 29)	Venice.
1586.	Law on Insurance (Sept. 28)	Venice.
1590.	Maritime Law, extracted from the Statutes	Lubec.
1588.	Maritime Law, extracted from the Civil Statutes (Dec. 16)	Genoa.

CHRONOLOGICAL TABLE OF COMMERCIAL LAWS—*Continued.*

Date.	Title.	Countries.
1589.	Law on Loading of Ships (Nov. 4)	Venice.
1591.	Law on Shipwrecks	Duchy of Urbino.
1597.	Maritime Law, extract from the Statutes of	Dan'alg.
1598.	Ordinance on Insurance (Jan. 31)	Amsterdam.
1598.	Maritime Law, extract from the ancient Statute of	Culm.
1599.	Pragmatic of the King of Aragon on the Consular Jurisdiction	Barcelona.
1600.	Ordinance on Insurance (Sept. 30)	Middelburg.
16th cent.	Guidon de la mer	Guidon.
16th cent.	Maritime Law, extract from the Statute of	Gaeta.
16th cent.	Hanseatic Regulations on the Police of Ships	Hanse Towns.
16th cent.	Maritime Law, extract from the Political Statute of	Savona.
16th cent.	Maritime Law, from the Statute of the Court of Merchants	Lucca.
1601.	Statute of Elizabeth on Insurance	England.
1602.	Law on Navigation (Aug. 31)	Venice.
1603.	Statute on Books of Commerce	Hamburg.
1603.	Mercantile Law, extract from the 2d part of the General Statute of	Hamburg.
1604.	Pragmatic on Sailors (July 28)	Two Sicilies.
1604.	Ordinance on Insurance	Rotterdam.
1605.	Law on loading and arming Ships (April 15)	Venice.
1606.	Ordinance on Insurance (June 20)	Amsterdam.
1608.	Law on the Luggage of Sailors (Oct. 3)	Venice.
1609.	Ordinance on Bottomry Bonds (Feb. 14)	Portugal.
1609.	Maritime Law, extracted from the Statute of Bonifacio	Corsica.
1610.	An Act concerning Monopolies	Great Britain.
1610.	Maritime Law, from the Coutume of	Ostend.
1610.	Ordinance on Insurance (Jan. 26)	Amsterdam.
1614.	Ordinance on Insurances (May 9)	Amsterdam.
1614.	Recss of the Hanseatic League	Hanse Towns.
1615.	Maritime Law, from the Chapters of the Court of	Sardinia.
1617.	Maritime Law, from the Coutume of	Zuitcotte.
1618.	Maritime Law, from the *Stadtz-Lagh*	Sweden.
1620.	Maritime Law, from the Code of the Duchy of	Prussia.
1620.	Ordinance on Insurance (Dec. 5)	Amsterdam.
1621.	Declaration of the Magistrates of Amsterdam on the Bottomry	Amsterdam.
1621.	Ordinance on Insurance (Sept. 7)	Amsterdam.
1622.	Law on Quarantine (Sept. 13)	Venice.
1622.	Ordinance on Insurance	Two Sicilies.
1623.	Ordinance on Bottomry Bond (Aug. 23)	Portugal.
1623.	Ordinance on Insurances	Two Sicilies.
1624.	Law on Insurance (March 12)	Venice.
1628.	Ordinance on Insurances (Jan. 30)	Amsterdam.
1632.	Law on Provisioning of Ships (April 30)	Venice.
1632.	Law on the Police of Navigation (May 1)	Venice.
1633.	Maritime Law, extract from the computation of the Pragmatic of	Sardinia.
1639.	Extract of an Ordioance of Enchuysen on Insurance	Enchuysee.
1640.	Maritime Law, from the Pragmatic of the Grand Master	Malta.
1644.	Law on Bottomry Bond, (May 20)	Genoa.
1655.	Ordinance on Maritime Law and Jurisdiction (March 16)	Rotterdam.
1661.	Ordinance on Insurance (Feb. 12)	Flessing.
1664.	Act of Charles II. on Maritime Law and Jurisdiction	England.
1667.	Maritime Code	Sweden.
1672.	Maritime Law, extract from Statute of	Riga.
1681.	The Law on Bills of Exchauge of Copenhagen (April 16)	Denmark.
1681.	Ordinance on the Marine (Aug.)	France.
1681.	Regulations on the Marine (Oct. 24)	France.
1682.	Regulations on Bottomry (Jan. 30)	Amsterdam.
1682.	A Tribunal of Commerce established (Dec. 21)	Leipzig. Saxony.
1682.	Law on Bills of Exchauge (Oct. 2)	Leipzig. Saxony.
1682.	Ordinance of St. Sebastian on the Contractation (Sept. 15)	St. Sebastian.
1683.	Maritime Law, from the general code	Denmark and Norway.
1683.	Maritime Law, Code of Christian V.	Denmark.
1684.	Ordinance on Insurance (Nov. 22)	Portugal.
1687.	Ordinance on Insurance. (Jan. 31)	Amsterdam.
1687.	Ordinance on Insurance	Senate of Bremen.
1688.	Ordinance on Insurance (Jan 29)	Amsterdam.
1688.	Ordinance on Insurance (Oct. 29)	Portugal.
1693.	Ordinance on Insurance (Jan. 26)	Amsterdam.

CHRONOLOGICAL TABLE OF COMMERCIAL LAWS—*Continued.*

Date.	Title.	Countries.
1697.	Pragmatic on Maritime Law of Grand-Master Perellos (Sept. 1)	Malta.
1699.	Ordinance on Insurance (Jan. 28)	Amsterdam.
17th cent.	Maritime Law, extract from a code of Georgia, by the Prince Vakhtang	Georgia.
17th cent.	Usages on customs of Olonne	France.
1705.	An Act for giving like remedies on Promissory Notes as is now upon Bills of Exchange, and for the better payment of Inland Bills of Exchange (May 1)	Great Britain.
1710.	An Act for reviving, continuancy, and appropriating certain Duties (March 8)	Great Britain.
1711.	Law on Bills of Exchange (March 1)	Hamburg.
1712.	Law on Bills of Exchange (March 29)	Bremen.
1714.	An Act to reduce the rate of interest (Sept. 29)	Great Britain.
1715.	Law on Bills of Exchange (Aug. 1)	Brunswick.
1719.	Ordinance on Bankruptcy. Basle	Switzerland.
1721.	An Act for preventing trading to the East Indies (June 24)	Great Britain.
1722.	Regulations on Bills of Exchange for the City of Nuremburg (Feb. 10)	Bavaria.
1731.	Regulations on Insurances and Averages (Sept. 1)	Hamburg.
1732.	Ordinance on Bills of Exchange signed by minors and persons not engaged in trade (Sept. 4)	Hamburg.
1734.	Swedish Code	Sweden.
1734.	An Act to prevent the infamous practice of Stock-jobbing (June 1)	Great Britain.
1734.	An Act for settling the responsibilities of Owners of Ships for the acts of Masters and Seamen (June 24)	Great Britain.
1739.	Ordinance on Bills of Exchange (May 26)	Frankfort.
1746.	An Act to regulate Insurance of Ships and on Merchandise (Aug. 1)	Great Britain.
1746.	An Act for regulating Insurance upon Lives, etc.	Great Britain.
1747.	Ordinance on Bankruptcies (May 16)	Hesse-Electorate.
1748.	Ordinance on Bills of Exchange (Feb. 1)	Sweden.
1750.	Ordinance on Bills of Exchange	Saxe-Altenburg.
1751.	Regulation on Bankruptcies (Aug. 31)	Hamburg.
1755.	Ordinance on Bills of Exchange (March 20)	Schwartzburg, Rudolstadt.
1756.	Ordinance on Commerce (March 4)	Austria.
1763.	Ordinance on Bills of Exchange (Oct. 1)	Austria.
1766.	Additional Articles on Bankruptcies (Dec. 4)	Hamburg.
1773.	Regulations on Bills of Exchange (Nov. 5)	Augsburg.
1774.	Law on Merchant Shipping (July 25)	Austria.
1775.	Law on Tribunals of Exchange and Commerce (July 22)	Austria.
1776.	Ordinance on Bills of Exchange	Saxe-Cob. Gotha.
1779.	On the declaration of Cargoes at the arrival and sailing of Ships (March 18)	Austria.
1784.	Ordinance on Bills of Exchange. St. Gall (June 18)	Switzerland.
1785.	Ordinance on Bills of Exchange (Nov. 24)	Bavaria.
1786.	An Act to explain and amend an Act on the Responsibility of Owners of Ships, etc., (Sept. 1)	Great Britain.
1787.	Concerning the Regulations established for obtaining a Royal Patent of Navigation (Sept. 14)	Austria.
1788.	Ordinance on Commercial Partnerships (Nov. 21)	Hesse Electorate.
1794.	Maritime Laws (Dec. 19)	Denmark.
1796.	Ordinance on Books of Commerce (Dec. 21)	Hesse-Electorate.
1801.	Ordinance of Brokers. Basle (April 28)	Switzerland.
1802.	Ordinance on Bills of Exchange (Aug. 31)	Anhalt-Coethen.
1804.	On the deposit of Accounts at the "Greffe" in case of Bankruptcy (Nov. 8)	Switzerland.
1805.	Law on Bills of Exchange. Zurich (May 16)	Switzerland.
1808.	Code of Commerce (Jan. 1)	France.
1808.	Law on Bills of Exchange (Dec. 14)	Switzerland.
1810.	Law on Bankruptcy. Basle (Dec. 18)	Switzerland.
1811.	Law on Bankruptcy. Basle (Dec. 2)	Switzerland.
1813.	An Act to limit the responsibility of Ship-owners in certain Cargoes (July 21)	Great Britain.
1815.	Regulation on Bankruptcy (Nov. 1)	Malta.
1815.	Procedure in matter of Bankruptcy (Nov. 1)	Malta.

CHRONOLOGICAL TABLE OF COMMERCIAL LAWS—*Continued.*

Date.	Title.	Countries.
1815.	Ordinance on Commercial Jurisdiction (Dec. 16)	Hamburg.
1816.	Ordinance on Bills of Exchange (Feb. 19)	Sweden.
1817.	Ordinance on Brokers. Basle (Aug. 8)	Switzerland.
1818.	On Bankruptcy. Basle (Feb. 11)	Switzerland.
1818.	Law on Bankruptcy. Zug (May 11)	Switzerland.
1818.	Ordinance on Brokers. Leipsig (March 7)	Saxe.
1819.	Code of Commerce (March 26)	Two Sicilies.
1819.	Ordinance on Bills of Exchange (April 30)	Saxe-Weimar.
1819.	Act for resumption of Specie Payments	Great Britain.
1821.	An Act to regulate acceptance of Bills of Exchange (June 1)	Great Britain.
1821.	An Act for preventing Fraud upon Creditors, etc. (July 2)	Great Britain.
1821.	Provisional regulation of Commerce (June 24)	Roman States.
1822.	Regulation on Brokers (June 26)	Lubec.
1822.	Ordinance on Bills of Exchange (July 23)	Hanover.
1822.	Law on Merchants. Basle (Dec. 28)	Switzerland.
1828.	Law on Bankruptcies (March 26)	Brunswick.
1823.	Law on Bankruptcies. Berne (Dec. 22)	Switzerland.
1824.	Regulation on Brokerage (Dec. 15)	Hamburg.
1825.	An Act to amend the Laws relative to Bankrupts (May 2)	Great Britain.
1825.	Ordinance on Bills of Ex. (May 18)	Denmark.
1825.	An Act to alter and amend the Law for the better protection of the Property of Merchants (July 5)	Great Britain.
1826.	Code of Commerce (Jan. 31)	Russia.
1826.	Haytian code (March 28)	Hayti.
1826.	An Act for better regulating copartnership of certain Bankers in England (May 26)	Great Britain.
1827.	Bills of Exchange payable on Good Friday or Christmas Day (Apr. 12)	Great Britain.
1827.	Ordinance or Bills of Exchange (Dec. 17)	Rostock.
1828.	On Bills of Exchange (Jan. 21)	Bremen.
1828.	An Act for rendering a written memorandum necessary to the validity of certain promises and engagements (May 9)	Great Britain.
1830.	Code of Commerce (May 1)	Spain.
1830.	Establishment of a Tribunal of Appeal at Ancona (Feb. 27)	Papal States.
1830.	Law on Bankruptcy (March 12)	Sweden.
1831.	An Act to prohibit the payment in certain trades of wages in goods, etc. (Oct. 15)	Great Britain.
1832.	On the establishments of Brokers. Dresden (April 14)	Saxony.
1832.	An Act for regulating the protesting for non-payment of Bills of Exchange (Aug. 9)	Great Britain.
1832.	Bankruptcy amendment (Aug. 15)	Great Britain.
1832.	Law on commercial firms, partnerships, female property Lucerne (Oct. 11)	Switzerland.
1832.	An Act to establish a Court in Bankruptcy (Oct. 20)	Great Britain.
1833.	Bank Charter (Aug. 29)	Great Britain.
1833.	Code of Commerce (Sept. 18)	Portugal.
1833.	Ordinance on the evidence resulting from Books and Papers of Brokers (Sept. 21)	Saxony.
1834.	Slavery abolished in Jamaica	Great Britain.
1834.	Law on the Organization of Justice	Greece.
1834.	Circular on Bankruptcies. Berne (Sept. 17)	Switzerland.
1834.	Legislation and Judiciary Regulations (Nov. 10)	Roman States.
1835.	Law on Bills of Exchange (May 20)	Sweden.
1835.	Illegal Securities (Aug. 31)	Great Britain.
1835.	Weights and Measures (Sept. 9)	Great Britain.
1835.	An Act to amend the Law touching the Letters-patent for Invention (Sept. 10)	Great Britain.
1835.	Regulation of Partnership (Dec. 28)	Hamburg.
1836.	An Act for declaring the Law as to the day for presentation for payment of Bills of Exchange, etc. (Aug. 19)	Great Britain.
1837.	Joint-stock Companies (July 17)	Great Britain.
1838.	Joint-stock Bank Partners (Aug. 14)	Great Britain.
1838.	Imprisonment for Debt and Insolvent Act (Aug. 16)	Great Britain.
1838.	Cheap Postage Act	Great Britain.
1839.	Law on Bills of Exchange. Vaud (June 4)	Switzerland.
1839.	Law on the confirmation of the Civil Code and Code of Commerce. Berne (June 22)	Switzerland.

CHRONOLOGICAL TABLE OF COMMERCIAL LAWS—*Continued.*

Date.	Title.	Countries.
1839.	An Act for the better protection of parties dealing with persons liable to the Bankrupt Laws (July 19)..	Great Britain.
1839.	Exempting certain Bills of Exchange, etc., from the operation of the Law relating to Usury (July 29)..	Great Britain.
1840.	Admiralty Court (Aug. 7).....	Great Britain.
1840.	On Bankruptcies (Aug. 7).....	Hanover.
1842.	New Factor's Act (June 30).....	Great Britain.
1841.	Law on Bills of Exchange (Aug. 4)..	Norway.
1842.	An Act for the relief of Insolvent Debtors (Aug. 12).....	Great Britain.
1842.	Bankruptcy Amendment Act (Aug. 12).....	Great Britain.
1842.	Code of Commerce (Dec. 30).....	Sardinia.
1844.	Bank Regulation Act (July 19).....	Great Britain.
1844.	Debtors' and Creditors' Arrangement Bill (Aug. 6).....	Great Britain.
1844.	Insolvency, Bankruptcy, etc., amendment (Aug. 9).....	Great Britain.
1844.	Joint-stock Bank Act (Sept. 5).....	Great Britain.
1846.	Duties on Cotton abolished.....	Great Britain.
1845.	Navigation Act (Aug. 4).....	Great Britain.
1845.	Ship-registry Act (Aug. 4).....	Great Britain.
1845.	Merchant Seamen Protection Act (Aug. 8).....	Great Britain.
1846.	Regulations on Commerce and Manufactures (Dec. 22).....	Sweden.
1846.	Ordinance on Partnership.....	Prussia.
1846.	Ordinance on Tribunals of Commerce.....	Prussia.
16.	Corn Law reform.....	Great Britain.
1847.	Act for relief of Ireland (£8,000,000)	Great Britain.
1847.	Amendment of Registration, etc., Joint-stock Company's Act, etc. (July 22).....	Prussia.
1847.	Bankruptcy and Insolvency Jurisdiction Act (July 22).....	Prussia.
1848.	Suspension of Bank of France legalized (March 15).....	France.
1848.	An Act to consolidate and amend the Laws relative to Insolvent Debtors in India (June 9).....	Prussia.
1848.	Joint-stock Company's Winding-up Act (Aug. 14).....	Prussia.
1848.	An Act to empower the Commissioners of the Court of Bankruptcy to order the release of Bankrupts from Prison in certain cases (Aug. 31).....	Prussia.
1849.	An Act to amend the Laws in force for the encouragement of British Shipping and Navigation (June 26)	Prussia.
1849.	Bankruptcy Law Consolidation Act (Aug. 1).....	Prussia.
1849.	Bankruptcy Amendment Act (Aug. 1)	Ireland.
1849.	Joint-stock Company's Winding-up Enactment (Aug. 1).....	Iceland.
1847.	Institution of Tribunals of Commerce (April 5).....	Prussia.
1849.	Law on Bills of Exchange for all Leipzig (May 1).....	Germany.
1850.	A Stamp Law on Bills of Exchange, Shares, Policy of Ins. (June 5)....	France.
1850.	New Stamp Act.....	Great Britain.
1850.	County Court Extension Act.....	Great Britain.
1850.	Mercantile Marine Act.....	Great Britain.
1854.	Repeal of Usury Laws (Aug. 5)....	Great Britain.

See COMMERCIAL LAW OF THE WORLD, by LEONE LEVI.

Lazaretto. See QUARANTINE.

Lead (Ger. *Bley*, *Blei*; Du. *Lood*, *Loot*; Fr. *Plomb*; It. *Piombo*; Sp. *Plomo*; Rus. *Swinetz*; Pol. *Olow*; Lat. *Plumbum*; Arab. *Anuk*; Hind. *Sisa*; Pers. *Surb*), one of the most useful metals. It is of a bluish white color, and when newly melted is very bright, but it soon becomes tarnished by exposure to the air. It has scarcely any taste, but emits, on friction, a peculiar smell. It stains paper, or the fingers, of a bluish color. When taken internally, it acts as a poison. It is one of the softest of the metals; its specific gravity is 11·35. It is very malleable, and may be reduced to thin plates by the hammer; it may also be drawn out into wire, but its ductility is not very great. Its tenacity is so small, that a lead wire 1-126 inch diameter is capable of supporting only 18·4 lbs. without breaking. It melts at 612°.—THOMSON'S *Chemistry*. Lead is a metal of much importance in the arts. Its durability and malleability make it very suitable for the roofing of buildings, the construction of gutters, and such like purposes. It used to be very extensively employed in the formation of water-pipes and cisterns. But though water has no direct action on lead, it facilitates the action of the external air; and hence the lead of cisterns and of pipes from which the air is not entirely excluded becomes oxydized, and is covered with a white crust at the point where the surface of the water comes into contact with the air. Inasmuch, however, as this oxyd is extremely deleterious, lead pipes and cisterns are now very generally superseded by those of cast iron. At present, perhaps, lead is more extensively used in the manufacture of small shot than in any other way. Its salts, though poisonous, are used in medicine to form sedative external applications; and frequently not a little, by the disreputable wine merchant, to stop the progress of acetous fermentation. Wine thus poisoned may, however, be readily distinguished; a small quantity of the bicarbonate of potass producing a white precipitate, and sulphureted hydrogen a black one. Pure wine will not be affected by either of these tests.

"The oxyd of lead enters into the composition of white glass, which it renders clearer and more fusible; it is also used in glazing common earthen vessels; hence the reason that pickles kept in common red pans become poisonous. Lead, with tin, and a small quantity of some of the other metals, forms pewter; with antimony, it forms the alloy of which printing types are made."—JOYCE'S *Chemistry*. Mines of this valuable mineral have been wrought in England from the æra of the Romans. It does not, however, appear that it was obtained any where except in Derbyshire, till 1289, when it was discovered in Wales; and the fact that silver was found intermixed with the Welsh ores having transpired, gave a new stimulus to the business; but in other respects the discovery of silver was of no use; the quantity obtained being insufficient to defray the cost of its separation from the lead. At present, the most productive English lead mines are situated in Northumberland; in Cumberland; in the western parts of Durham; in Yorkshire; in Derbyshire, and in Cornwall. The Welsh mines are principally situated in the counties of Flint, Cardigan, and Montgomery; those of Scotland in Ayr, Kirkcudbright, and Lanark; and those of Ireland, in Wicklow, Down, Limerick. Lead mines are also wrought to considerable advantage in the Isle of Man. We subjoin an abstract deduced from the accounts furnished by the Museum of Practical Geology, of the

QUANTITIES OF LEAD ORE AND LEAD PRODUCED IN GREAT BRITAIN, IN 1852.

	Lead ore. Tons.	Lead. Tons.
England	62,411	43,853
Wales	18,879	13,708
Ireland	4,493	3,223
Scotland	3,499	2,881
Isle of Man	2,415	1,895
Total	91,198	64,961

"In 1852, 14,124 tons of lead were imported, and 26,548 tons (including 2,967 tons foreign), were exported. It consequently follows that the produce of British mines is sufficient not only to supply the home demand, but to furnish a surplus of 9,457 tons for exportation. Pig lead was worth, in the London market, in September, 1853, £22 10s. 6d. a ton. In 1832 it was only worth £13 10s. a ton.

"Lead, when first extracted from its ore, always contains a certain portion of silver, varying from a few grains to 45 oz. or more in the ton. When the silver mixed up with the lead is sufficient to repay the expense, it is usual to separate it, which is effected by the process termed *refining*. The lead of some of the English mines, especially those of Cornwall, and, also, of the Isle of Man, contains very considerable quantities of silver, and our readers will, perhaps, be surprised to learn that it has been estimated by the highest authority that, in 1852, the United Kingdom furnished no fewer than 818,325 oz. of silver, worth, at 5s an oz., £205,080, obtained from lead."

The consumption of lead in France has greatly increased within the last 20 years. In 1852, about 30,000 tons of ore were imported, of which from 8-10ths to 9-10ths were brought from Spain.

The lead mines of the United States are principally situated in Illinois and Wisconsin, on the Upper Mississippi. Their produce and that of the other mines in the Union, may, perhaps, average from 16,000 to 18,000 tons a year. Lead ore is also found in abundance in Missouri.

AN ACCOUNT OF BRITISH LEAD AND LEAD ORE EXPORTED FROM THE UNITED KINGDOM IN 1852, DISTINGUISHING THE COUNTRIES TO WHICH IT WAS SENT, AND THE QUANTITIES SENT TO EACH.

Countries to which exported.	Lead ore.	Pig and rolled lead.	Shot.	Litharge.	Red lead.	White lead.	Total Exports.
	Tons. cwts.	Tons. cwts.	Tons. cwts.	Tons. cwts.	Tons. cwts.	Tons. cwts.	Tons. cwts.
Russia	....	1,918 0	3 0	181 7	41 3	17 19	2,106 9
Denmark	....	295 0	38 0	86 4	20 5	169 16	554 4
Prussia	....	252 0	....	18 4	16 19	5 4	287 7
Hanseatic Towns	....	435 0	45 0	69 5	132 8	48 4	719 17
Holland	70 0	207 0	2 0	24 18	157 11	9 18	471 2
Belgium	....	269 0	1 0	20 5	107 5	....	397 10
France	....	2,244 0	....	13 18	1 7	....	2,259 0
Portugal, Azores, and Madeira	....	172 0	....	26 8	58 2	169 18	426 8
Turkey	....	71 0	49 0	0 18	8 19	7 4	137 1
Syria and Palestine	16 0	30 0	11 0	....	5 10	....	62 10
Egypt	102 0	21 0	1 0	....	4 18	0 10	129 8
Western coast of Africa	....	84 0	7 0	....	0 6	7 18	98 19
British possessions in S. America	....	109 0	28 0	0 16	9 9	29 19	267 4
British territories in E. Indies	6 0	1,311 0	200 0	0 2	150 18	260 9	1,929 9
Java	....	21 0	23 0	....	0 7	1 15	46 2
China	....	2,202 0	3 0	....	0 5	2 19	2,208 4
British settlements in Australia	....	488 0	147 0	2 9	7 8	150 18	795 5
British North Amer. colonies	1 0	638 0	419 0	1 17	88 14	179 12	1,278 3
British West Indies	....	236 0	58 0	0 5	2 17	88 19	376 1
Foreign West Indies	....	62 0	46 0	0 1	22 10	28 5	158 16
United States	....	6,466 0	33 0	7 16	151 4	106 1	6,764 1
Brazil	....	499 0	104 0	11 1	60 5	194 4	877 10
Uruguay	....	9 0	10 0	0 7	....	4 16	24 3
Chili	....	107 0	15 0	0 10	0 18	18 18	142 6
Peru	....	15 0	4 0	0 4	2 10	4 5	26 0
Other places	....	405 0	113 0	126 8	171 2	224 10	1,069 15
Total	195 0	18,641 0	1,355 0	477 18	1,181 15	1,781 1	23,581 9

The annexed table shows the total product of the lead mines, and the average yearly price at Galena, Illinois.

Years.	Pig lead.	Total pounds.	Price.
1842	447,909	31,353,630	$2 24
1843	559,261	39,148,270	2 34
1844	624,872	43,737,040	2 30
1845	778,499	54,494,860	2 96
1846	732,408	51,288,210	2 89
1847	772,656	51,095,920	3 17
1848	681,969	47,737,830	3 24
1849	628,935	41,025,850	3 67
1850	568,589	39,801,230	4 20
1851	474,115	33,188,050	4 18
1852	408,628	28,603,960	4 12
1853	425,314	29,807,980	5 50
1854	428,617	29,653,190	5 50
1855	430,365	30,125,550	5 75
1856	*	*	6 00

* Estimated at 25 per cent. less than 1855.

The following tables show the quantity of lead of Western production received in the port of New Orleans from 1844 to 1855 inclusive, and also of foreign lead, paying 20 per cent. duty, imported into the port of New York, from 1849, the first year of late importations of this staple, to 1856, both inclusive:

Years.	Received at New Orleans, and mostly forwarded to northern cities of U. S.	Foreign lead imported into New York.
	Pounds.	Pounds.
1844	44,746,480	....
1845	51,348,750	....
1846	54,977,580	....
1847	46,509,080	....
1848	36,487,620	....
1849	35,598,990	23,875,000
1850	29,078,600	30,004,240
1851	22,785,350	43,464,120
1852	18,729,480	38,451,000
1853	14,720,090	47,918,160
1854	2,456,000	55,298,900
1855	3,000,000	40,327,140
1856	1,900,000	42,281,680

Estimating the American lead to weigh 70 pounds each pig, and the foreign 140 pounds each, which is deemed about the average of both.

LEAD RECEIVED AT ST. LOUIS FROM WESTERN MINES.

Years.	Pigs.	Pounds.
1854	306,837 =	21,470,590
1855	615,617 =	22,097,890
1856	204,656 =	14,325,920

In 1844 the Galena mines produced 51,494,860 pounds of lead, and the price at St. Louis was about 3 cents per pound. In 1856 they landed at St. Louis 14,325,920 pounds—less than one fourth the supply of 12 years previous, and the price was about 6¼ cents per pound, thus being more than doubled. In 1854 there was imported into the single port of New York 55,945,900 pounds of foreign lead—more than the Galena mines ever produced in any one year. Doubling the price, doubling the demand, has reduced the production to one quarter, and it is certain that in 1857 the western manufacturers of lead will have to procure a portion of their staple from imported foreign lead in the Atlantic cities.

STATEMENT EXHIBITING THE FOREIGN IMPORTATIONS AND EXPORTATIONS, DOMESTIC EXPORTS AND HOME CONSUMPTION OF FOREIGN IMPORTATIONS OF LEAD, AND THE MANUFACTURES THEREOF; ALSO HOME CONSUMPTION OF FOREIGN IMPORTATIONS, LESS DOMESTIC EXPORTS, OF LEAD, AND THE MANUFACTURES OF LEAD, AND DOMESTIC EXPORTS, LESS HOME CONSUMPTION OF FOREIGN IMPORTATIONS OF LEAD, AND THE MANUFACTURES THEREOF, FOR THE LAST SEVENTEEN YEARS, AND THE ANNUAL AVERAGE THEREOF.

Years.	Foreign importations.	Foreign exports.	Domestic exports.	Home consumption of foreign importations.	Home consumption of foreign importations, less domestic exports.	Domestic exports, less home consumption of foreign importations.
	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.
1840	20,356	34,090	89,687	....	....	89,687
1841	5,989	....	117,994	5,989	....	111,805
1842	815	....	540,217	815	....	539,402
1843*	227	525	492,765	....	....	492,765
1844	103	47	605,256	56	....	605,200
1845	....	192	357,050	....	....	357,050
1846	....	....	624,796	....	....	624,796
1847	5,485	....	188,675	5,485	....	183,240
1848	7,192	121	92,017	7,071	....	84,946
1849	88,257	11,501	43,304	74,756	81,362	....
1850	1,187,425	61,876	85,479	1,125,549	1,090,070	....
1851	1,524,138	154,246	28,300	1,369,892	1,341,592	....
1852	1,284,672	182,644	61,194	1,102,028	1,100,834	....
1853	1,619,757	60,657	19,604	1,559,100	1,539,496	....
1854	2,102,487	28,117	43,352	2,074,870	2,031,018	....
1855	2,566,163	90,688	19,581	2,475,963	2,455,994	....
1856	2,554,284	139,578	33,140	2,414,656	2,381,516	....
Average	864,850	54,941	198,088	943,490	1,496,498	332,048

* The year 1843 is given for nine months only, in consequence of a change in the fiscal year.

STATEMENT SHOWING THE IMPORTS OF LEAD INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30TH, 1856.

Whence imported.	Pig, bar, sheet and old.		Shot.		Pipes.		Manufactures of, not specified.
	Pounds.	Dollars.	Pounds.	Dollars.	Pounds.	Dollars.	Dollars.
Swedish West Indies	4,523	95	....	....	....	....	....
Danish West Indies	3,758	105	....	....	....	....	....
Hamburg	427,668	18,238	10,000	595	....	....	....
Bremen	88,229	1,996	....	....	....	....	....
Holland	409,784	21,384	....	....	....	....	....
Dutch Guiana	201	6	....	....	....	....	....
Belgium	1,257,147	55,458	....	....	....	....	....
England	20,263,075	979,218	248,610	14,524	5,679	330	982
Scotland	....	....	60	3	....	....	....
Gibraltar	6,160	197	....	....	....	....	241
Canada	8,825	234	....	....	....	....	1
Other British North Amer. pos.	64,807	1,811	....	....	....	....	....
British West Indies	701,244	23,218	454	26	....	....	....
British Guiana	16,315	496	....	....	....	....	....
France on the Atlantic	9,244,288	415,825	350	21	....	....	487
France on the Mediterranean	13,578,997	626,283	....	....	....	....	....
French West Indies	3,177	77	....	....	....	....	....
Spain on the Atlantic	1,491,794	69,151	....	....	....	....	....
Spain on the Mediterranean	6,642,896	297,560	189,632	8,887	....	....	....
Cuba	4,758	135	....	....	....	....	156
Porto Rico	300	24	....	....	....	....	....
Sardinia	32,169	1,632	....	....	....	....	....
Mexico	1,091,766	22,545	....	....	....	....	15
New Granada	520	23	....	....	....	....	....
Venezuela	215	13	....	....	....	....	....
Total	55,294,256	2,528,014	448,106	24,056	5,679	330	1,884

EXPORTS OF LEAD FROM THE UNITED STATES, FOR THE YEARS ENDING JUNE 30TH, 1853, 1854, 1855, AND 1856.

Exported to	1853.		1854.		1855.		1856.	
	Pounds.	Dollars.	Pounds.	Dollars.	Pounds.	Dollars.	Pounds.	Dollars.
England	8,950	400	48,000	2,700	....	....	....	....
Canada	10,800	807	232,844	14,918	66,260	589	228,702	21,110
British Amer. col.	225	12	56,000	3,940	1,720	187	1,425	150
Cuba	2,219	100	....	....	604	51	3,230	210
Hayti	65,781	3,469	8,121	521	6,185	482	....	....
Mexico	6,150	320	32,886	2,622	12,850	1,875	1,500	100
Venezuela	6,611	482	21,642	1,843	21,686	1,774	....	....
British W. Indies	....	....	390	445	3,360	304	*9,199	674
Central Republic	....	....	1,000	70	1,000	100	†40,822	3,092
New Granada	....	....	989	75	1,225	99	2,525	200
Africa	....	....	2,075	145	300	25	8,978	281
Australia	....	....	....	....	5,900	472	....	....
British East Indies	....	....	....	....	758	61	‡6,640	530
Porto Rico	....	....	....	....	209	17	300	29
Brazil	....	....	....	....	2,525	199	....	....
Buenos Ayres	....	....	....	....	36,184	2,714	....	....
Peru	....	....	....	....	473	39	630	73
Sandwich Islands	....	....	....	....	4,098	337	11,870	1,033
Total	100,778	5,540	404,247	26,874	165,533	14,298	310,029	27,512

* Including British Honduras and Guiana. † Including Venezuela. ‡ China.

The production of lead at the Galena mines, of late years, has been materially reduced by the discovery of gold in California

White Lead.—The manufacturers of white lead, shot, lead pipe, etc., have petitioned Congress to place the raw material, pig lead, on the free list, and the committee reported favorably on the subject. The petition was signed by all the leading houses engaged in the trade, and the facts presented in favor of their request are numerous and conclusive. They say that for a long time previous to 1849 the domestic supply of pig lead was more than adequate to the entire domestic demand. Up to 1847 the Galena mines steadily increased in productiveness, and kept pace with the increase in consumption. Since that year the consumption has been in advance of the home supply, and the manufacturers on the seaboard have had to pay comparatively high prices for the raw material, the western States now manufacturing nearly all the pig lead they produce. Out of 60,000,000 pounds of pig lead imported into New York in 1854, only about 2,500,000 pounds were American. The duty on pig lead, by the tariff of 1846, was 20 per cent, *ad valorem*, and at the time that act was passed, it protected all domestic interests, for we produced as much lead as the country consumed. Since 1848 we have been obliged to import the bulk of our consumption, and all consumers and manufacturers are therefore injured, while foreign manufacturers are benefited by the duty now imposed on the article. Our manufacturers are shut out of all foreign markets by the enhanced price which the duty of 20 per cent. puts upon their goods. The manufacturers ask only that pig lead should be put in the free list. It is their wish that all articles manufactured from pig lead should remain as at present, under a duty of 20 per cent. The manufacturers of articles from pig lead ask no more than the Secretary of the Treasury has repeatedly suggested in his annual reports—"that the raw materials used in our manufactures should be admitted free of duty." By the tariff of 1857, passed 3d March, the duty on lead manufactures generally was reduced from 30 per cent. to 24; lead in pig and bars from 20 to 15 per cent. Ore from 20 to 15 per cent.

Lead, for sounding. The common hand lead weighs 11 lbs. with about 20 fathoms of line. The leadsman stands somewhere on the side of the vessel, leaning against a band for the purpose; lets the lead descend near the water; then, swinging it over his head once, or twice, if the ship is going fast, throws it forward. The line is marked at 5, 7, 10, 13, 17, and 20 fathoms. The numbers between are called *deeps*: thus, "by the mark 7," "by the deep 9," indicates 7 and 9 fathoms. When the depth is great, the deep-sea lead of 28 lbs. is used. The lead is dropped from the fore part of the vessel, the line being passed outside all. It is generally necessary to heave the ship to. See SOUNDINGS.

League, a measure of length, used in reckoning distances by sea. The sea league is three nautical or geographical miles, or the 1-20th of a degree, and consequently about 3·45 English miles. The common

land league is a well-known itinerary measure on the continent of Europe, chiefly in France. The French, however, have two distinct leagues: the legal posting league (*lieue de poste*), containing 2000 toises, and equal to 2·42 English miles; and a league of 25 to the degree (anciently the *lieue moyenne*), or equal to about 2·76 English miles. This last, however, can scarcely be regarded as a definite measure; and previous to the Revolution the league was different in the different provinces. The word is said to be derived from the Celtic leuch, *stone;* the distances having been marked by stones in the Roman provinces. In Gaul alone of those provinces, they were marked in some instances by leagues as well as miles. The Gaulish league was considered by the Romans as equal to a mile and a half of their own measure, or as containing 1500 Roman paces. It is supposed that the league, or *leuca*, was introduced into England by the Normans, where at an early period, it came to be reckoned as an equivalent to 2 miles of the time; this being the sense in which the term *leuca* is used by the oldest law writers, and in most of the old English charters. A league, or 3 miles, is the limit from shore generally allowed for the jurisdiction of a country to extend in fisheries, etc.; and also the limit of neutral water, in which a fugitive ship is safe. See FISHERIES and NEUTRALS. See MILE.

Leak, at sea, is a hole in the ship, through which the water comes in. A ship is said to *spring a leak*, when she begins to leak or let in the water. The manner of stopping a leak is to put into it a plug wrapped in oakum and well tarred, or to insert a tarpauling clout which keeps out the water, or to nail a piece of sheet-lead on the place. Seamen sometimes stop a leak by thrusting a piece of salt beef into it. The sea-water, says Mr. Boyle, being fresher than the brine imbibed by the beef penetrates into its body and causes it to swell so as to bear strongly against the edges of the broken plank, and thereby stops the influx of the water. A ready way to find a leak in a ship is to apply the narrower part of a speaking-trumpet to the ear and the other to the side of the ship where the leak is supposed to be; then the noise of the water rushing in at the leak will be distinctly heard, and thereby discovered.

Leakage, in commerce, an allowance in the customs, granted to importers of wine for the waste and damage the goods are supposed to receive by keeping.

Leather. The skins of various animals, in their fresh state, are flexible, tough, and elastic, and appear to be admirably adapted to the purposes of clothing. But in drying, they become hard and horny, and, on exposure to moisture, putrid. The art of restoring the supple qualities to skins, and rendering them durable, appears to have been discovered at an early period of man's history; and the word *leather*, from the Saxon *leh*, *lithe*, or *lither*, indicates the quality of suppleness. Leather is formed by the chemical union of the *dermis*, *corium*, *cutis*, or true skin of an animal, with an astringent vegetable principle, known as *tannin*, or *tannic acid*. The word *tan*, from the French *tanner*, to tan, appears to be derived from the low Latin *tanare*. Leather may, however, be prepared by impregnating the skin with alum, oil, or grease. In the animal hide or skin, the outer part, which is covered with hair or wool, is called the *epidermis* or *cuticle*, below which is the *reticulated tissue*, and then, in contact with the flesh, is the *dermis*, or true skin, which is the only part which admits of being tanned. It varies in thickness in different parts; the mane, the back and the rump, being thicker than the belly. The skin is converted into *gelatin*, or *glue*, by the action of boiling water.

Varieties.—Leather tanned is generally divided into three kinds, namely, *hides*, *kips*, and *skins;* and these yield different varieties of leather, such as *butts* and *backs*, which are made of the stoutest and heaviest ox-hides. When hides are tanned whole for sole leather, they are called *crop hides*. Skins produce the lighter varieties of leather. Large quantities of hides, dry salted, are imported into the United Kingdom from South America and different parts of Europe, from the Cape of Good Hope, Morocco, etc. Calf skins are imported from the Baltic, and the calves being killed younger than in England, the leather prepared from them is used for book-binding, gloves, and ladies' shoes.

The stoutest leather is made from butts or backs. Buff leather was formerly made from the hide of the buffalo, but it is now furnished by the cow-hide, and is used chiefly for soldiers' belts. Bull-hide is thicker than cow-hide, while that of the bullock is intermediate. Calf-skin supplies the great demand for the upper part of boots and shoes. Sheep-skins form a thin, cheap leather; lamb-skins are used for gloves; goat and kid-skins form a light leather of fine quality; deer and antelope are usually *shamoyed*, or dressed in oil; horse-hide is prepared for harness-work, etc., and this, with seal-skin, is used for making enameled leather; dog-skin makes a thin tough leather, but most of the gloves sold as dog-skin are made of lamb-skin. Hog-skin makes a thin, porous leather, and is used for covering the seats of saddles. There is a large import trade in skins. The great demand for leather for the best gloves is supplied by lamb-skins from Italy, Spain, the south of France, and other parts, where, in consequence of the lamb being killed earlier than with us, the skin is small, fine, and thin, and is used instead of kid; but it is neither so strong nor so glossy. The skin of lambs that die soon after their birth are sometimes dressed with the wool, and are used for lining gloves and shoes. The best kid-skins are from the south of France; they are also imported from Germany, Switzerland, Italy, and Ireland. It is said that as soon as the kid begins to feed on herbage, the skin suffers in fineness and delicacy, and is no longer suitable for the best gloves. The best morocco leather is made from Swiss goat-skins, another kind is from Mogador and East Indian goat-skins, which are often made into black morocco, known as "black Spanish leather," from the circumstance of the first supplies having been obtained from Spain. The leather from the Cape sheep-skin is nearly equal to morocco. Hippopotamus hides are imported from south Africa, and when tanned with oak bark, they make an extremely thick and compact leather.

Tanning Materials.—The vegetable substances used in tanning have of late years become almost as numerous as the varieties of hides and skins on which they are employed. The active vegetable principle, tannin, varies somewhat according to the source from which it is derived; but it is always marked by an astringent taste, a bluish-black, or dark-green precipitate, in aqueous solutions, by admixture with a solution of one of the salts of peroxyd of iron; while, with a solution of gelatin, it gives a dirty white or brown precipitate. A cold aqueous solution of tannin, mixed in certain proportions with one of gelatin in the form of glue, size, or isinglass, forms a substance which is known as *tanno-gelatin*, which may be formed by the application of heat into a viscid elastic mass, resembling India-rubber. By the action of ether, containing a little water, on gall-nuts, pure tannin may be procured. The etherial solution separates by repose into two layers, the lower one, which is of an amber color, being a solution of tannin in water; while the upper layer contains gallic acid, mixed with other substances. On gently evaporating the aqueous solution, nearly pure tannin is procured, to the extent of from 35 to 40 per cent. from galls. Obtained in this way, it is a shining, porous, uncrystallizable mass: it is soluble in water, and then exerts the properties of an acid. By exposure to air it absorbs oxygen, and gives off a carbonic acid; two new products, gallic acid and ellagic acid, being formed at the expense of the tannin, the latter being insoluble. Tannin may be precipitated from its

solutions by sulphuric and some other acids; by boiling the precipitate with sulphuric acid for a few minutes in a dilute solution of the same acid, gallic acid is formed, and crystallizes in cooling. Gallic acid exists in gall-nuts, sumach, vallonea, tea, and other substances, and probably arises from the decomposition of tannin. It does not combine with gelatin, and is, therefore, useless in tanning. Some tanners, however, imagine the gallic acid of the waste liquor to be useful in swelling or raising the hides, preparatory to removing them to a stronger liquor. It is important to the tanner to understand the circumstances under which tannin is converted into gallic acid; they are numerous and somewhat complicated, and their investigation belongs to the scientific chemist, to whom the manufacturer already owes so many obligations.

During a long period the principal tanning material has been oak bark. That which is stripped in the spring is the most esteemed, for it then contains a larger quantity of tannin than that stripped in autumn, and this more than the bark stripped in winter. The best bark is obtained in a warm spring, from coppice-trees about 12 years of age. Oak bark contains from 5·6 to 6·0 of tannin, which is contained in the inner white layers next the alburnum, as in the case of other astringent barks. The tannin of bark is probably not identical with that of galls, as it does not yield pyrogallic acid when subjected to destructive distillation. From four to six pounds of oak bark are required for every pound of leather. After the stripping, the bark is stacked to dry. Should the season be rainy a portion of the tannin may be washed out, and the bark be thus deteriorated. There is no doubt that the peculiar excellence of the sole leather of England is due in great measure to the superior oak bark which is possessed. Oak bark imparts firmness and solidity to leather, while other sorts give softness; thus the peculiar softness of French curried leather is referred to the bark of the evergreen oak, with which the better kinds are tanned, while the other tanning materials next to be named give each its peculiar quality with respect to color, scent, toughness, or the power of resisting moisture and decay.

The other tanning materials, used chiefly for fancy leathers, are as follows:—Sumach, consisting of the young branches and powder of the leaves of *Rhus Cotinus*, *Venus sumach*, or the wild olive, and *Rhus Coriaria*. Sumach varies in its amount of tannin from 16·4 per cent. in Malaga and Sicilian specimens, to 10 and 5 in Virginia and Carolina sumach. The solution is liable to fermentation. *Divi*, or *divi-divi*, is the pod of a South American shrub, *Cæsalpinia Coriaria*. The pod is dark-brown, about three inches long, and curled up as if by heat. It is rich in tannin, the whole of which is found in the rind below the epidermis. Vallonea, consisting of the acorn cups of *Quercus Ægilops*, or prickly-cupped oak, growing in the Morea. A smaller kind, called *carnata*, containing a larger proportion of tannin, is for the most part used by the silk dyers. About two pounds of vallonea are required for making one pound of leather. Vallonea and oak bark may be mixed together with good effect. *Catechu*, *cutch*, *Terra japonica*, or *terra*, are the inspissated aqueous extracts of the bark, wood, and leaves of the *Acacia Catechu*, and *Uncaria gambier*. The two varieties are known in commerce as catechu, or gambier, and cutch; that from Bombay is richer in tannin than that from Bengal. *Myrobalan* is a name given to the fruit of several East India trees; the husk, being the portion valuable to the tanner, is separated by bruising the nut which it incloses. *Mimosa* or *Wattlebark* is furnished by different species of *Mimosa* growing in Australia and New Zealand. *Cork-tree bark* is the inner bark of the cork oak, the outer, or dead bark being the well-known substance, cork. It is obtained from Corsica, Spain, and a few other countries, and contains twice as much tannin as average oak bark. *Larch bark* is sometimes used for tanning sheep-skins, and *Willow bark* for kid and lamb-skins. The last-named bark is used in making Russia leather, but its peculiar odor is given by means of the oil of birch-tree bark. In addition to the tannin contained in the above substances, there are mucilaginous, coloring and other matters which have an influence on the kind of leather produced. The tannin itself may also vary in different materials; thus catechu and divi give a more porous leather than oak bark or vallonea, while larch bark gives a very inferior leather to that prepared from oak bark. The coloring matter in some excellent tanning materials prevents their use; since it is the custom to sell both upper and sole leathers of a yellowish-fawn color, and any thing which interfered with the production of this tint would be objected to; thus, catechu and cutch would be among the cheapest of tanning materials, were it not that they impart to the leather a reddish-brown color, which would in no way interfere with the dressing or currying.

STATEMENT SHOWING THE EXPORTS OF LEATHER FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1856.

Whither exported.	Leather.		Boots and shoes of leather.	
	Pounds.	Dollars.	Pairs.	Dollars.
Russian Poss. N. Amer.	....	....	2,004	3,530
Danish West Indies	11,723	2,474	6,172	7,857
Hamburg	20,000	4,670	....	....
Bremen	1,200	220	....	....
Holland	1,000	150	....	....
Dutch West Indies	11,447	2,460	....	....
Dutch Guiana	400	57	....	....
Dutch East Indies	86	23	....	....
Belgium	5,000	750	200	385
England	45,767	9,785	4,905	3,877
Scotland	34,866	4,826	....	....
Canada	893,194	131,049	215,100	382,748
British N. Amer. poss.	379,891	80,141	153,518	142,115
British West Indies	3,610	820	20,870	17,682
British Honduras	....	....	4,992	5,955
British Guiana	750	227	....	....
British poss. in Africa	....	....	2,191	2,049
British Australia	....	....	143,588	358,770
New Zealand	....	....	100	250
French N. Amer. poss.	1,056	258	252	210
French West Indies	300	56	....	....
Cuba	25,543	4,086	11,154	11,651
Porto Rico	....	....	342	211
Cape de Verd Islands	....	....	960	778
Turkey in Europe	....	....	468	410
Turkey in Asia	....	....	588	543
Other ports in Africa	....	....	2,708	3,675
Hayti	6,122	1,871	10,409	12,758
San Domingo	....	....	2,042	2,055
Mexico	2,425	405	580	730
Central Republic	400	70	3,916	4,770
New Granada	8,290	792	7,807	10,652
Venezuela	11,594	3,902	4,040	3,827
Brazil	4,800	764	1,304	1,142
Uruguay	....	....	3,000	2,524
Buenos Ayres	300	68	13,436	18,567
Chili	....	....	17,822	14,515
Peru	4,000	686	19,753	17,237
Sandwich Islands	3,642	822	20,746	30,432
China	2,600	541	2,128	4,199
Whale Fisheries	212	57	494	560
Total	972,768	252,844	683,149	1,004,967

IMPORTS OF LEATHER MANUFACTURES INTO THE UNITED STATES, FOR THE YEARS ENDING JUNE 30TH, 1853, 1854, 1855.

Leather.	1853.	1854.	1855.
	Dollars.	Dollars.	Dollars.
Tanned, bend and sole	28,267	$50,147	....
Tanned and dressed upper	1,052,120	1,265,630	1,252,305
Skins tanned and dressed	496,666	518,636	436,631
Skins tanned & not dressed	16,520	10,838	....
Skivers	89,760	50,433	68,196
Boots	54,601	68,677	90,813
Shoes and pumps	87,693	93,126	
Gloves	1,868,997	1,326,335	986,225
General	281,748	337,382	235,926
Total	3,816,282	3,661,204	3,069,460

Grained Leather, which is curried on the hair or grained side, is called *black on the grain*, and is mostly used for the upper leathers of ladies' shoes. In preparing such leather, the waxing is performed as follows: A solution of sulphate of iron, called *copperas-water*, or *iron-liquor*, is applied to the grain side of the wet skin, when the salt, uniting with the gallic acid of the tan,

produces an ink dye; stale urine is then applied to the skin, and when dry, the stuffing is applied. The grain is raised, and when dry the skin is whitened, bruised, and again grained; after which a mixture of oil and tallow applied to the grain side, completes the process.

Varnished and Enameled Leather.—For many years it was found difficult to cause a bright varnish to adhere to leather without cracking, an effect which is now produced by means of boiled linseed oil, mixed with vegetable black and Prussian blue. This composition, of the consistence of a thick paste, is rubbed upon the surface of the leather, and then dried at a temperature of from 150° to 170° Fahr. The process is repeated from 3 to 7 times, and when quite dry, the varnish adheres very firmly, and will bear considerable flexure and tension without cracking. By mixing colored pigments with the varnish, enameled leather of various colors may be produced.

STATEMENT SHOWING THE IMPORTS OF LEATHER AND MANUFACTURES OF LEATHER, INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30TH, 1856.

Whence imported.	Tanned, bend, sole, and upper.		Skins tanned and dressed.		Skivers.		Boots and shoes.		Gloves for men, women, and children.		Manufactures of leather not specified.
	Pounds.	Dollars.	Dozen.	Dollars.	Dozen.	Dollars.	Pairs.	Dollars.	Dozen.	Dollars.	Dollars.
Prussia	1,659	796	42	506	....	....	....	....	....	....	....
Swedish West Indies	....	....	1	8	....	....	....	....	....	....	....
Danish West Indies	....	....	40	181	....	....	....	....	....	....	....
Hamburg	33,591	12,645	643	7,272	....	....	829	1,208	15	62	6,572
Bremen	74,678	29,594	2,551	22,383	239	1,779	1,065	1,985	15,626	79,865	52,889
Holland	18,890	8,411	53	625	....	....	716	2,048	....	....	1,065
Belgium	108,611	42,702	101	1,081	....	....	....	....	....	....	944
England	411,847	141,189	39,184	283,400	11,035	54,780	36,255	85,656	118,261	560,010	79,025
Scotland	7,190	1,838	1,535	12,804	....	....	....	....	....	....	208
Malta	....	....	....	....	....	....	....	....	....	....	49
Canada	8,300	1,947	56	395	.. .	....	451	435	9	75	3,264
Other Br. N. Amer. pos.	1,646	508	54	286	....	....	90	81	....	....	11
British W. Indies	....	....	100	553	....	....	98	228	....	....	21
British Guiana	....	....	65	239	....	....	....	....	....	....	....
British Australia	....	....	278	3,408	....	....	120	154	....	....	....
British East Indies	....	....	19,455	47,402	....	....	....	....	....	....	....
France on the Atlantic	3,843,480	1,669,839	34,697	378,935	2,325	12,058	22,777	40,210	141,398	698,641	163,640
France on the Mediter	2,085	3,316	32	183	....	....	514	333	100	174	46
Philippine Islands	....	....	....	....	....	....	....	....	....	....	21
Cuba	497	336	....	....	....	....	40	79	....	....	....
Portugal	970	320	....	....	....	....	....	....	....	....	....
Two Sicilies	....	....	....	....	....	....	....	....	30	68	....
Turkey in Asia	....	....	40	154	....	....	....	....	....	....	....
Other ports in Africa	....	....	10	44	....	....	....	....	....	....	....
Mexico	1,055	211	1	13	....	....	6	5	....	....	633
Central Republic	359	71	....	....	....	....	....	....	....	....	....
New Granada	446	171	24	283	....	....	3,921	5,950	3,310	19,655	531
Brazil	150	60	13	74	....	....	....	....	....	....	....
Uruguay	....	....	197	914	....	....	....	....	....	....	....
Buenos Ayres	....	....	426	2,797	....	....	....	....	....	....	....
Chili	250	59	....	....	....	....	....	....	....	....	....
China	....	....	28	320	....	....	....	....	....	....	2,524
Total	4,519,651	1,913,987	99,561	758,758	13,599	69,212	66,821	138,372	279,349	1,344,550	310,243

STATISTICS OF THE TANNERIES IN THE UNITED STATES, ACCORDING TO THE CENSUS OF 1850.

States.	No. of tanneries.	Capital invested.	No. of hides and skins.		Value raw material.	No. of hands employed.		Monthly wages.	No. of sides of leather, skins, etc., produced.		Value of manufac.
			Hides.	Skins.*		Males.	Fem.	Males.	Skins.	Sides leath.	
		Dollars.			Dollars.			Dollars.	Dolls.		Dollars.
Maine	213	732,747	316,334	81,350	592,343	787	3	17,229	28	81,350	632,663	1,020,636
New Hampshire	161	441,975	160,579	109,595	547,779	502	....	11,787	....	109,595	383,178	900,421
Vermont	152	340,250	125,052	41,330	357,946	390	....	8,807	....	44,230	250,104	587,466
Massachusetts	240	1,877,725	759,220	293,000	2,31[illegible],178	1,510	32	41,245	368	293,000	1,500,440	3,519,128
Rhode Island	10	42,900	10,571	14,861	40,615	38	....	829	....	14,861	21,142	75,015
Connecticut	115	360,500	122,455	67,110	451,854	407	....	10,027	....	67,110	244,910	781,000
New York	942	5,025,143	1,707,862	871,894	6,065,221	4,914	31	103,171	298	871,894	3,415,724	9,804,000
New Jersey	135	572,857	101,485	120,731	423,587	405	....	8,946	....	120,731	202,970	724,466
Pennsylvania	1,039	3,540,318	926,450	293,798	3,169,309	2,978	2	54,784	17	293,798	1,852,900	5,275,492
Delaware	16	99,350	26,050	12,050	99,620	108	....	2,533	....	12,950	52,100	163,742
Maryland	116	628,930	169,585	68,810	725,612	479	....	8,084	....	68,810	339,170	1,103,139
Virginia	341	676,988	189,200	74,573	498,926	980	6	18,643	62	74,573	373,400	894,877
North Carolina	151	251,055	77,805	24,035	191,287	372	1	5,291	4	24,035	155,610	352,535
South Carolina	91	184,935	55,000	18,830	181,079	264	....	3,667	....	18,830	110,000	261,382
Georgia	140	262,855	81,484	21,705	185,604	402	....	7,107	....	21,705	162,968	361,586
Florida	4	9,400	2,100	1,200	4,300	12	....	180	....	1,200	4,200	9,200
Alabama	149	290,570	79,634	18,922	258,247	457	5	7,700	45	18,922	158,066	335,911
Mississippi	92	145,615	52,315	9,730	111,474	266	3	4,924	25	9,730	104,653	229,407
Louisiana	15	88,800	10,500	2,850	26,440	51	3	930	22	2,850	21,000	55,025
Texas	22	31,850	9,850	1,750	18,624	63	1	1,037	10	1,750	18,700	52,050
Arkansas	51	42,100	16,450	3,851	35,230	110	....	1,845	....	3,851	32,900	78,774
Tennessee	394	490,320	166,944	43,429	396,159	915	6	14,338	82	43,429	333,888	746,484
Kentucky	275	763,455	196,200	69,880	537,147	877	2	14,417	9	69,880	392,490	985,267
Ohio	706	1,840,389	344,280	228,493	1,118,080	1,826	....	35,830	..	228,493	688,560	1,964,591
Michigan	60	236,000	72,365	21,600	208,450	265	....	6,782	....	23,600	144,730	368,980
Indiana	358	514,897	141,540	57,070	403,838	836	2	15,199	14	57,070	283,098	714,818
Illinois	96	188,378	50,825	21,575	129,907	210	....	5,145	....	21,575	101,650	244,028
Missouri	148	228,095	120,667	44,993	217,956	412	5	8,306	41	44,993	241,394	466,241
Iowa	14	20,350	5,840	850	10,745	28	....	543	....	850	10,650	24,526
Wisconsin	8	78,950	29,800	14,000	93,380	75	....	1,710	....	14,000	50,000	175,710
California	1	500	120	....	206	3	....	60	....	....	240	240
Dist. of Columbia	2	25,000	5,000	4,200	25,000	10	....	370	....	4,200	10,000	40,000
Total	6,263	18,900,557	6,128,970	2,653,865	19,619,237	20,909	102	416,214	970	2,653,865	12,257,946	32,861,796

* There are about 6,000,000 sheep, goat, and other small skins dressed annually which are not included in the above table.

Thin Leather.—The process of tanning differs considerably in the mode of treatment, with the kind of skin, and the result desired. A large number of thin leathers which are intended to be dyed, are tanned in various ways. White leathers are not tanned, but tawed; or treated with alum, salt, and some other matters. Wash leather is dressed with oil, or shamoyed. But whatever may be the subsequent treatment, the preparatory steps somewhat resemble each other, whereby hair, wool, grease, and other matters, are

removed, and the skin is reduced to the state of a gelatinous membrane called *pelt*. The hair is removed from kid and goat-skins by means of cream of lime; the wool is generally removed by the fell-mongers before the skin is passed to the tawers. Foreign lamb-skins, which are received with the wool on, are washed, scraped on the flesh side, and sweated in a close room, until, in consequence of the putrefactive fermentation, the wool can be easily removed. After this, fatty matters are got rid of by subjecting the skins to hydrostatic pressure, they are next worked at the beam, and pared into shape; treated with lime, and next with dogs' or pigeons' dung if the skins are to be tanned, and with bran and water if they are to be tawed, the object being in either case to get rid of the lime. During these operations the skins are worked a few times at the beam, and are finished by washing in clean water.

EXPORTS OF LEATHER AND MANUFACTURES OF LEATHER, FROM THE UNITED STATES, FOR THE YEARS ENDING JUNE 30TH, 1853, 1854, 1855.

Exported to	1853.			1854.			1855.			
	Leather.	Boots and Shoes.	Value.	Leather.	Boots and Shoes.	Value.	Leather.		Boots and Shoes.	
	Pounds.	Pairs.	Dollars.	Pounds.	Pairs.	Dollars.	Pounds.	Dollars.	Pairs.	Dollars.
Swedish West Indies	378	....	71	900	24	182	643	117	....	....
Danish West Indies	7,822	6,379	7,682	14,045	9,228	11,546	30,927	6,368	19,088	10,161
Dutch West Indies	9,289	....	1,538	15,266	....	2,095	15,027	2,854	....	....
English*	578,872	36	85,071	541,639	3,375	87,081	457 993	79,400	3,702	4,318
Scotland	163,420	....	26,500	382,957	....	53,678	194,289	26,088	....	....
Gibraltar	280	....	52	....	....	....	....	....	....	....
Honduras	8,866	2,989	4,451	5,476	6,580	10,744	12,080	2,148	8,945	8,160
British Guiana	722	2,621	2,984	1,925	636	1,175	2,721	718	9,876	8,886
British West Indies	3,651	18,866	18,436	9,068	17,138	17,592	12,077	1,859	27,651	24,746
Canada	179,570	70,671	104,873	490,008	106,542	271,447	288,790	75,885	112,484	206,433
British American colonies	190,287	113,822	121,645	286,990	153,495	219,562	417,536	74,650	161,487	172,011
Australia	468	126,452	193,788	4,100	42,791	84,863	....	....	83,868	136,054
Miquelon and Brit. E. Indies	....	150	190	....	....	....	....	....	391	640
Teneriffe	1,150	....	261	....	....	....	....	....	....	....
Cuba	21,866	14,704	3,562	19,295	1,743	5,598	30,850	5,245	340	365
Spanish West Indies	534	25	145	....	48	59	....	....	....	....
Madeira	....	85	64	200	....	385	....	....	....	....
Cape de Verd Islands	....	60	86	....	268	300	....	....	946	946
Hayti	6,266	22,791	19,876	15,241	14,816	16,255	10,299	1,899	4,872	4,062
Mexico	500	1,243	1,861	2,256	1,302	1,446	1,500	216	1,630	3,026
Central American Republic	....	5,214	6,089	2,490	1,946	3,358	....	....	5,218	4,931
New Granada	264	6,899	7,880	116	7,669	9,317	1,800	274	13,528	11,798
Venezuela	8,882	2,250	4,212	19,340	2,594	6,526	10,539	2,750	8,685	7,518
Brazils	260	10	63	....	2,182	2,191	1,800	250	2,174	2,008
Uruguay	....	4,272	4,035	....	25	75	....	....	1,652	1,638
Argentine Republic	....	7,960	5,524	....	5,488	5,869	12,000	2,080	16,044	13,790
Peru	....	7,729	8,578	....	1,110	8,880	10,318	....	27,356	36,500
Chili	....	6,824	7,595	....	30,632	28,227	2,567	425	72,696	64,578
China	....	....	....	4,500	1,000	1,829	8,500	804	3,288	3,502
South America generally	....	3,840	3,324	....	62	75	....	....	....	....
West Indies generally	60	780	1,146	....	....	....	11,501	2,918	446	512
Africa	....	2,836	2,950	....	2,316	2,572	....	....	4,625	4,628
Indian Ocean	....	300	340	....	....	....	....	....	....	....
South Seas and Pacific Ocean	1,550	22,628	25,223	9,034	27,876	30,146	2,147	521	31,752	33,210
Other places	....	....	....	5,325	5,835	9,162	17,846	2,513	5,356	5,372
Total Exports	1,172,561	440,709	674,708	1,763,066	455,680	893,724	1,400,385	288,867	616,104	763,539

Morocco.—Morocco leather is prepared by tanning goat-skins with sumach, and dyeing on the grain side. Inferior morocco are prepared from sheep-skins similarly treated, for which purpose each skin of pelt is sewed up into a bag, the grain side outermost, distended with air, and placed in a mordant of tin or alum. They are next placed in a warm cochineal bath for red, indigo for blue, orchil for purple, and are worked by hand until the dye has properly struck. For certain colors the tanning precedes the dyeing. The tanning or sumaching is carried on in a large tub, containing a weak solution of sumach in warm water; another and stronger solution is contained in an adjoining vessel, a portion of which, together with some sumach leaves, is poured into the bag; some of the weak solution is then added, the bag is then distended with air, and the skin thrown into the vat. In this way about 50 skins are treated, and are kept in motion a few hours in the sumach tub by means of paddles worked by hand or by machinery. The skins are then taken out and heaped up on a shelf at the side of the tub, the pressure thus produced causing the liquor to escape slowly through the pores of the skin, the bags being shifted about from time to time. The bags are next passed into a second vat containing a stronger solution than the first, and remain for 9 hours. The bags are now opened and washed; fine red skins being finished by a bath of saffron. All the skins are next *stretched* on a sloping board until they are smooth and flat, and a little *degras* or oil may be rubbed on the grain side. They are then hung up in a loft to dry, when they become horny, and are in *the crust*, as it is called. They next pass through much laborious friction with the pommel, and with a glass-ball; while the peculiar ribbed appearance of morocco is given by means of a ball of box-wood, on which is a number of narrow ridges. Sheep-skin morocco is prepared from split skins; the skin-splitting machine resembles in principle that already described, only as the membrane is thinner certain variations are required. Instead of stretching the skin on a drum, it is passed between two rollers, the lower one of gun-metal, and solid, and the upper made of gun-metal rings; while between the two rollers, and nearly in contact, is the edge of the sharp knife, which is moved by a crank, as already mentioned. When a skin is introduced between the two rollers, it is dragged through against the knife edge and divided, the solid lower roller supporting the membrane, while the upper one, being capable of moving through a small space by means of its rings, adjusts itself to inequalities in the membrane; where this is thin the rings become depressed, and where it is thick they rise up, so that no part escapes the action of the knife. The divided skins are not sewed up into bags, as from their thinness they can be sumached quickly.

In preparing white leather by tawing, the pelt is made as pure as possible; the best kind of leather being prepared from kid-skins, while sheep or lamb-skins make the inferior kinds. They are first fed with alum and salt in a drum or tumbler made like a huge churn; about 3 lbs. of alum, and 4 lbs. of salt being used to 120 skins of medium size. The alumina of the alum probably forms some definite compound with the gelatin of the skins, while the salt serves to whiten them

When taken out, the skins are washed in water, then allowed to ferment in bran and water, to remove the surplus alum and salt, and to reduce the thickness. They are next dried in a loft, and become tough and brittle, but they are made soft and glossy by means of a dressing of 20 lbs. of wheat flour, and yolks of 8 dozen eggs. By rotating the skins in the drums for some time the dressing is absorbed, and scarcely any thing but water remains. This dressing is usually repeated, and the skins are hung up to dry. The beautiful softness and elasticity of this leather is now given by manipulation. The skins are first dipped in clean water, worked upon a board, and staked upon a stretching, or softening iron, consisting of a rounded iron plate fixed to the top of an upright beam, by which the skins become extended and made smooth. They are finished by being passed over a hot iron.

STATEMENT EXHIBITING THE FOREIGN IMPORTS AND EXPORTS AND DOMESTIC EXPORTS, TOGETHER WITH THE HOME CONSUMPTION OF FOREIGN IMPORTATIONS OF LEATHER, AND THE MANUFACTURES THEREOF, FOR THE LAST SEVENTEEN YEARS, AND THE YEARLY AVERAGE THEREOF.

Years.	Foreign importations.	Foreign exports.	Domestic exports.	Home consumption of foreign importations.
	Dollars.	Dollars.	Dollars.	Dollars.
1840.....	542,498	14,248	293,917	528,250
1841.....	809,854	22,503	282,272	787,351
1842.....	912,585	10,258	191,427	902,332
1843*.....	237,217	3,446	142,137	293,771
1844.....	778,407	5,216	249,197	773,191
1845.....	979,886	40,263	344,454	939,623
1846.....	1,130,054	5,193	373,188	1,124,871
1847.....	1,060,818	2,330	273,672	1,058,488
1848.....	1,890,492	6,692	210,578	1,393,800
1849.....	1,460,125	13,098	161,201	1,447,027
1850.....	2,107,520	16,066	193,598	2,091,454
1851.....	2,815,663	26,049	472,147	2,789,614
1852.....	2,627,911	23,787	447,325	2,604,124
1853.....	3,316,292	40,870	689,156	3,275,422
1854.....	8,661,204	82,633	9 9,605	3,578,571
1855.....	3,009,360	138,700	321,912	2,931,160
1856.....	4,585,122	72,297	1,319,076	4,461,825
Yearly average.	1,849,148	30,850	397,227	1,818,298

* The year 1843 represents but nine months, in consequence of a change in the fiscal year.

STATEMENT EXHIBITING THE FOREIGN IMPORTATIONS AND EXPORTATIONS, DOMESTIC EXPORTS AND HOME CONSUMPTION OF FOREIGN IMPORTATIONS OF HIDES AND SKINS IN THE UNITED STATES, FOR THE LAST SEVENTEEN YEARS, AND THE YEARLY AVERAGE THEREOF.

Years.	Foreign importations.	Foreign exports.	Domestic exports.	Home consumption of foreign importations.
	Dollars.	Dollars.	Dollars.	Dollars.
1840.....	2,756,214	....	112,500	2,756,214
1841.....	3,457,248	63,972	45,898	3,393,276
1842.....	4,067,816	64,752	58,187	4,003,064
1843*.....	2,619,315	7,528	54,840	2,612,287
1844.....	....	....	62,658	....
1845.....	....	....	111,696	....
1846.....	....	....	143,328	....
1847.....	†1,529,948	....	131,394	1,529,948
1848.....	4,262,069	....	86,145	4,262,069
1849.....	3,507,300	127,616	29,300	3,379,684
1850.....	4,799,031	78,822	71,940	4,720,209
1851.....	5,964,888	103,638	86,624	5,861,200
1852.....	4,828,119	101,044	55,121	4,722,075
1853.....	5,919,391	67,632	25,955	5,851,759
1854.....	7,620,272	179,798	28,622	7,440,479
1855.....	8,048,015	801,088	361,982	7,743,927
1856.....	8,083,292	101,924	101,174	7,981,368
Yearly average	4,818,455	109,164	91,805	4,732,683

* Year 1843 is given for nine months only, in consequence of a change in the fiscal year.
† For but six months.

See HIDES, for the imports into, and exports from, the United States, of hides and leather.

Ledger, the principal book of accounts kept by merchants and tradesmen, wherein every person's account is placed by itself, after being extracted from the Journal. For an extended summary of the laws of different countries regulating the keeping of accounts, see LEONE LEVI'S *Commercial Law of the World*.

Lee, an epithet used by seamen to distinguish that part of the hemisphere to which the wind is directed from the other part whence it blows, and which is accordingly called *to windward*. This expression is chiefly used when the wind crosses the line of a ship's course, so that all on one side of her is called to windward, and all on the other side to leeward. Hence, *under the lee*, implies further to the leeward, or further from that part of the horizon whence the wind blows. Under the lee of the shore, means a short distance from the shore which lies to windward. This phrase is commonly understood to express the situation of a vessel anchored, or sailing under the weather-shore, where there is always smoother water and less danger of heavy seas than at a great distance from it. *Lee lurches*, the sudden and violent rolls which a ship often makes to the leeward in a high sea particularly when a large wave strikes her on the weather-side. *Lee side*, all that part of a ship or boat that lies between the mast and the side furthest from the direction of the wind; or, otherwise, that part of a ship which is pressed down toward the water by the effort of the sails, as separated from the other half by a line drawn through the middle of her length. That part of the ship which lies to windward of this line is accordingly called the weather side. Thus, admit a ship to be sailing southward with the wind at east, then is her starboard or right side the lee side, and the larboard or left the weather side.

Leeward Ship, signifies a vessel that falls much to leeward of her course when sailing close-hauled and consequently loses much ground. To leeward, toward that part of the horizon which lies under the lee, or whither the wind blows. Thus, "We saw a fleet under the lee," and "we saw a fleet to leeward," are synonymous expressions.

Lee-way, in navigation, is the deviation of the course actually run by a ship from the course steered upon; or it is the angle formed between the line of the ship's keel and the line which she actually describes through the water. In consequence of the action of the wind or currents, a ship is generally impelled *sideways* as well as forward, whence the direction of her motion is different from that of the keel.

Leeward Islands, a name frequently applied to those of the West India Islands lying between N. lat. 15° and 19°, and W. long. 60° 30′ and 65° 40′. The group comprises the British possessions of Antigua, Deminica, Montserrat, Nevis, St. Christopher's, Anguilla, Barouda, and the Virgin Islands, which are all included under one government. The French, Dutch, Danes, etc., have also possessions in the group. There are 23 islands, besides numerous islets, having in all an area of about 1700 square miles, and a population of about 321,000.

Leech-Fishery. The demand for the medicinal leech (*Hirudo medicinalis*) is so great as to afford employment to a considerable number of persons in catching and selling the animal. It is common throughout Europe, America, and India, inhabiting lakes and pools. Norfolk supplies the greater part of the leeches brought to the London market; but some are taken in Kent, Suffolk, Essex, and Wales; and large quantities are imported from Bordeaux and Lisbon. They are caught in spring and autumn by people who wade into the pools and allow them to fasten on their limbs; or more generally the catchers beat, as they wade in the surface of the water with poles, which sets the leeches in motion, and brings them to the surface; when they are taken with the hand, and put into bags. As they come to the surface just before a thunder storm, this is regarded a good time for collecting them.—THOMSON. We extract from the *Gazette des Hôpitaux* the following interesting account of the fishery of leeches at La Brenne, in France:

"The country about La Brenne is, perhaps, the most uninteresting in France. The people are miserable-looking, the

cattle wretched, the fish just as bad—but the leeches are admirable. If ever you pass through La Brenne, you will see a man, pale and straight-haired, with a woolen cap on his head, and his legs and arms naked; he walks along the borders of a marsh, among the spots left dry by the surrounding waters, but particularly wherever the vegetation seems to preserve the subjacent soil undisturbed; this man is a leech-fisher. To see him from a distance—his woe-begone aspect—his hollow eyes—his livid lips—his singular gestures—you would take him for a patient who had left his sick bed in a fit of delirium. If you observe him every now and then raising his legs, and examining them one after the other, you might suppose him a fool; but he is an intelligent leech-fisher. The leeches attach themselves to his legs and feet as he moves among their haunts; he feels their presence from their bite, and gathers them as they cluster about the roots of the bulrushes and sea-weeds, or beneath the stones covered with green and gluey moss. Some repose on the mud, while others swim about, but so slowly that they are easily gathered with the hand. In a favorable season, it is possible, in the course of three or four hours, to stow ten or twelve dozen of them in the little bag which the gatherer carries on his shoulder. Sometimes you will see the leech-fisher armed with a kind of spear or harpoon; with this he deposits pieces of decayed animal matter in places frequented by the leeches; they soon gather round the prey, and are presently themselves gathered into a little vessel half full of water. Such is the leech-fishery in spring. In summer the leech retires into deep water; and the fishers have then to strip naked, and walk immersed up to the chin. Some of them have little rafts to go upon; these rafts are made of twigs and rushes, and it is no easy matter to propel them among the weeds and aquatic plants. At this season, too, the supply in the pools is scanty; the fisher can only take the few that swim within his reach, or those that get entangled in the structure of his raft. It is a horrid trade, in whatever way it is carried on. The leech-gatherer is constantly more or less in the water, breathing fog and mist and fetid odors from the marsh; he is often attacked with ague, catarrhs, and rheumatism. Some indulge in strong liquors to keep off the noxious influence, but they pay for it in the end by disorders of other kinds. But, with all its forbidding peculiarities, the leech-fishery gives employment to many hands: if it be pernicious, it is also lucrative. Besides supplying all the neighboring *pharmacopœias*, great quantities are exported, and there are regular dealers engaged for the purpose. Henri Chartier is one of those persons; and an important personage he is when he comes to Meobecq, or its vicinity; his arrival makes quite a fête—all are eager to greet him. Among the interesting particulars which I gathered in La Brenne relative to the leech-trade, I may mention the following: One of the traders—what with his own fishing and that of his children, and what with his acquisitions from the carriers, who sell quantities *second-hand*—was enabled to hoard up 17,500 leeches in the course of a few months; he kept them deposited in a place where, in one night, they all became frozen en *masse*. But the frost does not immediately kill them: they may generally be thawed into life again. They easily, indeed, bear very hard usage. I am told by one of the carriers, that he can pack them as closely as he pleases in the moist sack which he ties behind his saddle; and sometimes he stows his cloak and boots on top of the sack. The trader buys his leeches *pêle mêle*, big and little, green and black—all the same; but he afterward sorts them for the market. Those are generally accounted the best which are of a green ground, with yellow stripes along the body."

A tract published at Paris in 1845, by M. Joseph Martin, leech-merchant, contains a great variety of curious and instructive details in regard to the natural history of leeches, the trade carried on in them, and the frauds of the dealers. They are, we believe, much more extensively used in medical practice in France than in England; and, at all events, their consumption in the former seems to be quite immense. Notwithstanding the exhaustion of some of the marshes and ponds in different parts of the country, whence supplies of leeches were formerly procured, great numbers are still obtained at home. By far the larger portion of the necessary supplies is, however, brought from abroad; principally from Germany, Spain, Sardinia, Turkey in Europe, Algiers, Asia Minor, etc. In the French custom-house the imports are estimated at 500 leeches per kilog.; but M. Martin affirms that 1000 leeches do not, at an average, weigh more than a kilog. Hence the numbers and values of the leeches imported into France during each of the five years ending with 1847, will be:

Years.	Numbers, according to official Returns.	Number corrected.	Official Value. Francs.
1843	17,607,696	35,215,392	528,231
1844	15,232,673	30,465,346	456,980
1845	13,848,488	27,696,980	415,304
1846	12,721,545	25,443,090	381,647
1847	11,799,840	23,581,680	353,710

See De Bow's *Rev.*, xiii., 80.

Leghorn, a city and sea-port of Italy, in Tuscany, lat. 43° 33′ 5″ N., long. 10° 16′ 45″ E. Population, in 1851, 84,000. Leghorn has an outer harbor, protected by a fine mole, running in a north north-west direction upward of half a mile into the sea, and a small inner harbor or basin. The water in the harbor is rather shallow, varying from 8 feet in the inner basin to 18 or 19 feet at the end of the mole. The rise of the tides is about 14 inches. Ships lie within the mole with their sterns made fast to it by a cable, and an anchor out ahead. The light-house is built on a rock a little to the south-west of the mole. It is a conspicuous object, being about 170 feet above the level of the sea. The roadstead lies west north-west of the harbor, between it and the Melora bank. The latter is sandy, lying north and south, 4 miles in length by 2 in breadth, the side nearest the shore being about 4 miles from it. It consists, for the most part, of sand and mud, and has from 3 to 3½ fathoms water over it; but toward its southern extremity it is rocky; and there, on some of the points which project above the water, the Melora tower has been constructed to serve as a sea-mark; it bears from the light-house west one half north, distant about 4 miles. The best course for entering the roads is to keep to the northward of the Melora bank at about a mile from it, and then, having doubled it, to stand on for the light-house about 2½ miles, anchoring in from 7 to 9 fathoms, the light-house bearing south south-east one half east 4 miles off. The entrance by the channel to the south of the Melora bank is also quite safe; but it is not so suitable for large ships as that by the north. During southerly winds there is sometimes a heavy sea in the roads, but the holding-ground is good; and with sufficient anchors and cables, and ordinary precaution, there is no danger. The lazaretto lies to the south, about one mile from the tower, and is said to be one of the best in Europe.

Trade, etc.—The comparative security and freedom which foreigners have long enjoyed in Tuscany, still more than its advantageous situation, render Leghorn the greatest commercial city of Italy. Its exports are similar to those from the other Italian ports; consisting principally of raw and manufactured silks, olive oil, borax, fruits, shumac, valonia, wines, rags, brimstone, cheese, marble, argol, anchovies, manna, juniper berries, hemp, skins, cork, etc. Leghorn platting for straw hats is the finest in the world; and large quantities are imported into Britain. See Hats, Straw. Besides the above, all sorts of articles, the produce of the Levant, may be had at Leghorn. Recently, however, this trade has fallen off; the English and other nations who used to import Levant produce at second hand from Italy, preferring now, at least for the most part, to bring it direct from Smyrna, Alexandria, etc. The imports are exceedingly numerous and valuable, comprising all sorts of commodities, with the exception of those produced by Italy. Sugar, coffee, and all sorts of colonial produce; cotton stuffs, yarn, and wool; corn, woolen stuffs, spices, dried fish, indigo, dye-woods, rice, iron, tin, hides, etc; are among the most prominent articles. Ships with corn on board may unload within the limits of the lazaretto, without being detained to perform quarantine; a circumstance which has contributed to make Leghorn one of the principal *dépôts* for the wheat of the Black Sea. Hard wheat, particularly from Taganrog, is in high estimation here and in the other Italian ports. It is particularly well

fitted for making vermicelli, maccaroni, etc. The government do not publish any official account of the imports of Leghorn; and no mercantile circulars that we have been fortunate enough to fall in with supply the deficiency.

Money.—Down to 1837 accounts were principally kept in *pezze da otto reali* (or dollars of 8 reali), the pezza being divided into 20 soli or 240 denari; but this money has been discontinued since the above date, and accounts are now kept in *lire Toscane*. The lire of 100 centesimi is worth 7·82d.; so that the par of exchange with London is 30·69 lire per £1. The lire is divided in 20 soldi di lira each of 5 centesimi.—TATE'S *Cambist*, p. 37.

Weights and Measures.—The pound by which gold and silver and all sorts of merchandise are weighed is divided into 12 ounces, 96 drachms, 288 denari, and 6912 grani. It is = 339·542 French grammes, or 5240 English grains. Hence 100 lbs. of Leghorn = 74·864 lbs. avoirdupois; but in mercantile calculations it is usual to reckon 100 lbs. of Leghorn = 77 lbs. avoirdupois: this, perhaps, has arisen from taking the tares and other allowances, as to which there is a good deal of uncertainty, into account. Thus it is found that the English cwt. seldom renders more than 140 or 142 lbs. at Leghorn, though it is = 150 lbs.; in the instances of logwood, tobacco, and a few others, it does not render more than 135 lbs. The quintal, or centinago = 100 lbs. The centaro is generally 150 lbs.; but a centaro of sugar = 151 lbs.; that of oil = 88 lbs.; of brandy = 120 lbs.; of stock-fish, and some other articles = 160 lbs. The rotolo = 3 lbs. Corn is sold by the sacco or sack = 2·0739 Winch. bushels; hence 4 sacks = 1 imperial quarter, very nearly. The liquid measures are:

2 Mezzette = 1 Boccale.
2 Boccale = 1 Fiasco.
20 Fiaschi = 1 Barlio=12 English wine gallons.

The barile of oil is 16 fiaschi, of two boccali each = 8·83 wine gallons; it weighs about 66 lbs. avoirdupois. A large jar of oil contains 30 gallons; a small one 15; and a box with 30 bottles = 4 gallons.

The long measure is the braccio, which is divided into 20 soldi, 60 quattrini, or 240 denari; it contains 22·98 English inches. 155 bracci = 100 English yards. The canna of 4 bracci = 92 English inches.

Credit, Charges, etc.—Goods in general are bought and sold for silver money; between which, and the money in which bills of exchange are bought, there is a difference of 7 per cent. (agio) against silver; *i. e.*, $107 in silver are equal to $100 in gold. On goods bought or sold (unless it be in effective money, where there is no discount) there is, generally speaking, a discount of 3 per cent.; on all cotton manufactures, 4 per cent. Charges on sales, including commission, are generally from 6 to 8 per cent.; on fish, 8 or 10 per cent. *Tares.*—Cinnamon lb. 12 to 14 per half bale; Mocha coffee, 5 to 7 per cent.; indigo seroons, lb. 20, 30 to 40 per seroon; sugar Havana, 14 per cent.; crushed, 42 per cent. or real tare of package; loaf package, and 4 per cent. for paper; Brazil of 19 inches, 18 per cent. upward 20 per cent.; tobacco, 10 per cent.; rosin, 12 per cent. For most other articles specified in the price current the real tare is allowed. *Exchanges, Three Months' Date.*—London, liv. @ per £ stg.; Spanish dollars, £6 11s.; Paris, liv. @ per 100 francs; doubloons, £101; Genoa, liv. @ per 100 Ln.; Trieste, liv. @ per 100 C. Flor.

In 1836 a joint-stock bank was established in Leghorn, with a capital of 2,000,000 lire (£66,666 sterling, taking the lira at 8d.) in shares of 1000 lire each. The whole of the capital is paid up, and the responsibility is limited to the capital. The managers have the power of issuing promissory notes to the extent of 6,000,000 lire. These notes, though received by the government, are not legal tender. The operations of the bank are confined to the discounting bills of exchange not having more than four months to run, and to the purchase and sale of foreign coins. The rate of discount is fixed at 5 per cent. The superintendence is vested in a director and eight regents, nominated by the shareholders; and the government appoints a commissary and three censors (from among the shareholders), who exercise the highest authority, to secure obedience to the statutes. An annual report and balance-sheet is produced, and is accessible to all shareholders. The maximum amount for which notes are issued is 2000 lire=£66 13s. 4d. sterling; the lowest, 200 lire=£6 13s. 4d. sterling. It is a profitable establishment; its shares are at a considerable premium, and it has every prospect of success.

IMPORTS OF THE LEADING ARTICLES INTO LEGHORN, DURING THE YEARS 1850, 1851, 1852.

Articles.	1850.	1851.	1852.
Sugar, Havana ..lbs.	3,400,000	1,149,000	2,510,000
" crushed ..lbs.	13,374,000	7,536,000	15,192,000
" loaf .....lbs.	18,500	6,000	37,000
" Brazil ....lbs.	602,000	135,000	89,000
" E. I. & Santos	1,512,800	129,000	966,000
Coffee .....lbs.	3,023,000	4,439,000	3,810,000
Cotton .....lbs	271,500	650,700	138 000
Pepper .....lbs.	298,500	635,000	836,000
Indigo..... cases ..	152	122	273
Indigo..... seroons	123	131	111

ACCOUNT OF THE NUMBER, TONNAGE, AND CREWS OF THE MERCHANT VESSELS WHICH BELONGED TO EACH MARITIME DIVISION OF TUSCANY IN 1850.

Maritime Divisions.	1 to 49 tons.			Above 50 tons.			Total.		
	Ves.	Tons.	Crews	Ves	Tons.	Crew	Ves.	Tons.	Crews.
Leghorn...	108	2,677	857	113	14,574	1,809	221	17,251	2,166
Orbetello.	124	818	940	..	....	....	124	818	940
Isl. of Elba	168	2,284	1,438	46	4,663	790	214	6,947	2,228
Viareggio.	98	2,712	547	54	3,612	341	152	6,324	888
Total.	498	8,491	3,782	213	22,849	2,440	711	31,340	6,222

CUSTOMS DUTIES RECEIVED IN THE GRAND DUCHY OF TUSCANY, IN 1848, 1849, AND 1850.

Duties.	1848.		1849.		1850.	
	Livres.	£	Livres.	£		£
Import..	3,411,749	118,725	3,614,281	120,476	4,660,466	155,348
Export..	236,490	7,883	274,010	9,134	297,710	9,924
Transit..	81,922	2,730	100,751	3,358	79,798	2,660
Total..	3,730,161	124,338	3,989,042	132,968	5,037,974	167,932

Leipsic, or more correctly Leipzig, one of the four circles into which Saxony is divided, comprises the north-west part of that kingdom, and is bounded on the north and west by Prussia, south by Saxe-Altenburg and the circle of Zwickau, and east by the circle of Dresden. Area, 1336 square miles. The country is generally level, and lies lower than any other part of Saxony. It is most elevated in the south, where some offsets of the Erzgebirge appear, but do not attain any great height. Leipsic belongs to the basin of the Elbe, and is principally drained by its tributaries the Elster and Mulda. The soil is fertile, and in general well cultivated. The principal crop is corn. The rearing of cattle, and especially of sheep of a superior breed, is much attended to. Tobacco is extensively grown. There are no metals; but limestone, marble, potters' clay, fullers' earth, and peat are abundant in various parts. The manufactures in the circle are flourishing, and include woolen, cotton, and linen goods, and earthenware. Population (1855) 454,262.

Leipsic, or Leipzig, the capital of the above circle, and the second city in the kingdom, is situate on an extensive and fertile plain, on the White Elster, here joined by the Pleisse and Parde, 72 miles W.N.W. of Dresden by railway. The fortifications which formerly surrounded the town have been converted into beautiful walks and gardens. The houses are chiefly old-fashioned stately buildings, frequently six stories in height, besides three or four additional ones in the pyramidal roof, and exhibiting much carved masonry. The streets are narrow, and from the height of the houses, have rather a dingy appearance, but are well

paved and clean. The suburbs, however, of which there are four, are of recent date, and more regularly built.

Leipsic is connected by railways with Dresden, Magdeburg, Berlin, and Altenburg, and is the centre of a very extensive trade. The celebrated Leipsic fairs are held thrice a year—on the 1st of January, at Easter, and at Michaelmas. They usually last for three weeks, and are attended by merchants from all parts of Germany, England, France, America, Russia, Italy, Greece, Turkey, Persia, etc. The goods comprise all kinds of woolen, linen, and cotton stuffs, silks, lace, hardware, jewelry, watches, toys, paper, books, leather, etc. The value of the goods brought to these fairs in 1855 was estimated at about £55,000,000. On these occasions the town presents the greatest bustle and confusion; the streets and squares are occupied by temporary booths, in addition to the ordinary shops, while the population of the town is nearly doubled. The Easter and Michaelmas fairs, particularly the former, are famous for the vast number of new publications brought there for sale. The Easter fair is attended by booksellers from all parts of Germany, and even from other countries, sometimes to the number of 600. Prospectuses and specimens of new publications are brought here for circulation, annual accounts are settled, and purchases made. In the Easter fair catalogue for 1856 the number of new works announced as published in Germany during the preceding year was 9540, as forthcoming, 1173. Leipsic is also of considerable importance as a manufacturing town. It has large type-founderies, oil-mills, paper-mills, and manufactories of silken goods, stockings, leather, hats, hardware, musical, optical, and mathematical instruments. There are about 150 publishing establishments in the town; and in 1853 there were 36 printing-offices, with 58 steam, and 164 hand presses. Leipsic was the scene of a tremendous conflict on the 16th, 17th, and 18th of October, 1813, between the allies under Prince Schwartzenberg, and the French, under Napoleon, in which the latter were totally defeated. See HISTORY OF FRANCE. Population (1855), 69,986.—E. B.

Leith, although an independent burgh, may be considered the sea-port of Edinburg, from which it is only about a mile and a half distant. The Water of Leith, at its confluence with the Firth of Forth, divides the town into two parts, called, respectively, North and South Leith. The first mention made of Leith is in the charter of erection of Holyrood Abbey, founded by David I. in 1128, where it is styled Inverleith. The magistrates of Edinburg obtained a grant of the harbor and mills from Robert I. in 1329, and they subsequently purchased, from Logan of Restalrig, all the other rights and privileges.

The chief manufactures of Leith are ropes, sailcloth, locomotive engines and machinery, glass, soap, ale, refined sugar, and oil-seed cakes. Iron and timber ship-building is also carried on to a considerable extent. Various efforts have from time to time been made to overcome the natural obstacles that lay in the way of Leith as a shipping port. In 1720 a dock was formed on the east side of the river, and in 1777 a small quay called the custom-house quay was built. Between 1800 and 1817, two wet docks were constructed, each measuring 750 feet in length by 300 in width, and having a united area of about 10 acres. In 1831 two great additional works were undertaken, viz., an addition to the old or east pier of 500 yards, and the formation of a covering bulwark, by means of which the water in the channel was deepened about two feet. There were still, however, only 17 feet of water over the bar at its mouth at high-water spring tides, and no vessel of above 400 tons could enter the harbor without lightening. Further improvements were commenced in 1848, and completed in 1855. These included the formation of the Victoria Dock, equal in extent to either of the others; the new western pier and low-water landing slip; the extension of the eastern pier 1000 feet seaward. The length of the east pier is now 3530 feet, and of the west, 3123 feet. They are unsurpassed by any in the kingdom; and, in addition to other important purposes, afford the means of a healthful and pleasant promenade. By means of these improvements, a depth of 26 feet water has been obtained in the new harbor at high-water spring, and of 21 feet at neap, tides. The Victoria Dock has 25 feet water at spring, and 20 feet at neap, tides, upon the gate sill, and two feet more within the dock; and the two old docks have 18 feet at spring, and 13 feet at neap, tides. Vessels of upward of 2000 tons burden, of 320 feet in length, and 58 feet in breadth, can be accommodated in the Victoria Dock. There are also five dry or graving docks at Leith, of the following dimensions:

No. of docks.	Length.		Width.			Depth of water over dock sills at high-water spring tides.
	Of floor.	At top.	Of floor.	At top.	Of gates.	
	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.
2	160 0	174 0	45 0	70 6	36 0	16 6
1	173 0	177 0	32 0	58 0	36 0	18 8
1	166 0	172 0	36 9	49 6	30 9	12 5
1	117 6	121 6	41 0	51 0	23 9	12 6

A new graving dock of greater capacity is proposed to be made on the east sands, and to enter the present new harbor a little to the north of the entrance to Victoria Dock. The following are its proposed dimensions: length of floor, 300 feet, at top, 330 feet; width of floor, 45 feet, at top, 80 feet; of *caisson*, 72 feet; depth of water over sills at high-water springs, 24 feet 5 inches. Besides having regular steam communication with Rotterdam, Hamburg, Hull, London, Newcastle, and the north of Scotland, Leith trades largely with the Baltic, Mediterranean, North America, and Australia. The exports are principally coal, iron, spirits, ale, paper, linen yarn, etc. Of coal and iron the quantities exported during the last three years were as follows:

EXPORTS.

	Coals. Tons.	Pig Iron. Tons.	Malleable Iron. Tons.
To May 15th, 1854....	29,773	24,072	2,008
" 1855....	35,093	38,094	1,196
" 1856....	36,898	29,220	2,352

The principal import is grain, of which the quantity imported during the last three years is given in the following table. After grain and timber, the chief articles of import are hemp, flax, wool, linseed, oil-cakes, guano, agricultural seeds, butter, cheese, fruit, corkwood, wines, spirits, oil, sugar, tea, etc.

IMPORTS.

Years ending May 15th.	Wheat.	Flour.	Timber from	
			Baltic and other ports.	North America.
	Qrs.	Bags & barls.	Loads.	Loads.
1854.....	277,256	36,637	36,350	10,547
1855.....	271,917	46,898	19,530	15,234
1856.....	254,006	85,700	25,544	13,089

NUMBER AND TONNAGE OF VESSELS ARRIVING AT LEITH, FOR THE YEARS ENDING MAY 15TH, 1854, 1855, 1856.

Years.	British sailing vessels.		British steam vessels.		Foreign vessels.		Total.	
	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.
1854	3,406	192,986	643	89,111	863	87,452	4,912	369,499
1855	3,314	193,431	626	86,052	816	78,481	4,756	357,964
1856	3,289	194,739	630	88,064	774	81,138	4,693	363,941

NUMBER AND TONNAGE OF VESSELS SAILING FROM LEITH, FOR THE YEARS ENDING MAY 15TH, 1854, 1855, 1856.

Years.	British sailing vessels.		British steam vessels.		Foreign vessels		Total.	
	No.	Tons.	No.	Tons.	No.	Tons	No.	Tons.
1854	3,410	191,300	630	87,504	842	85,218	4,882	364,022
1855	3,316	194,284	625	85,899	778	78,486	4,719	359,669
1856	3,309	195,227	628	87,663	842	88,585	4,779	371,475

The amount of customs duties received at Leith for the last four years were: 1853, £485,915; 1854,

£455,403; 1855, £462,917; and 1856, £498,172. The vessels registered as belonging to the port on 31st December, 1855, were: sailing vessels, of and under 50 tons, 71; tonnage, 2218; above 50 tons, 80; tonnage, 17,058; steam vessels of and under 50 tons, 14; tonnage, 289; above 50 tons, 23; tonnage, 6654. The recent war with Russia has checked the increase in the trade that would otherwise have resulted from the greatly enlarged accommodation.—E. B.

Lemons (Ger. *Limonen;* Du. *Limoenen;* Fr. *Limons, Citrons;* It. *Limoni;* Sp. *Limones;* Port. *Limões;* Rus. *Limonä;* Arab. *Lémôn*), the fruit of the lemon tree (*Citrus medica*, var. β. C.). It is a native of Assyria and Persia, whence it was brought into Europe: first to Greece, and afterward to Italy. It is now cultivated in Spain, Portugal, and France, and is not uncommon in our green-houses. Lemons are brought to England from Spain, Portugal, and the Azores packed in chests, each lemon being separately rolled in paper. The Spanish lemons are most esteemed. Like most of its tribe, the lemon produces under cultivation a great number of varieties. Several are known in commerce. The principal are: the Wax Lemon (*Citrus Limonum cerinscum* of Risso); this is the *smooth-peeled one*, most generally found in the markets; its rind is thick. The Bignette Lemon (*Citrus Limonum Bignetia* of Risso) is a thinner-peeled fruit than the wax lemon, less oval in shape, and more blunt at the point; the color of the rind is less clear, and is usually tinged with green. It is cultivated more largely than any other variety, as it yields a larger quantity of juice, and is a most abundant bearer. The Clustered Lemon (*Citrus Limonu r racemosum* of Risso) is the least oval of the imported lemons, but the nipple-like point is fully developed. The rind is thick, and has a bright yellow color. The pulp is less agreeable than the varieties previously mentioned. One or two other varieties, as the Imperial and Gaeta lemons, are occasionally brought to this country, but not in any considerable quantities.

Lemon Juice, or Citric Acid (Ger. *Zitzronensaft;* Fr. *Jus de limon;* It. *Agro o Sugo de limone;* Sp. *Jugo de limon*), the liquor contained in the lemon. It may be preserved in bottles for a considerable time by covering it with a thin stratum of oil: thus secured, great quantities of the juice are exported from Italy to different parts of the world; from Turkey, also, where abundance of lemons are grown, it is a considerable article of export, particularly to Odessa. The discovery of the antiscorbutic influence of lemon juice is one of the most valuable that has ever been made. The scurvy, formerly so fatal in ships making long voyages, is now almost wholly unknown: a result that is entirely to be ascribed to the regular allowance of lemon juice served out to the men. The juice is also frequently administered as a medicine, and is extensively used in the manufacture of punch.

Lemon Peel (Ger. *Zitronenshalen, Limonschellen;* Fr. *Lames d'écorce de citron;* It. *Scorze de limone;* Sp. *Cortezas de citra*). The outward rind of lemons is warm, aromatic, and slightly bitter—qualities depending on the essential oil it contains. It is turned to many uses, and, when well candied, constitutes a very good preserve. In Barbadoes, a *liqueur*, known under the name of *Eau de Barbade*, is manufactured from lemon peel, which the inhabitants have the art of preserving in a manner peculiar to themselves. Both the liqueur and the conserve used to be in high repute, especially in France.

Lending-houses. That it should have once been conceived unlawful to exact interest for the loan of money, will not appear surprising when it is considered that at an early period the occupations by which a man could support his family were neither so numerous nor so productive as in modern times. As money, therefore, was at that time sought to remove immediate necessity, those who advanced it were influenced by benevolence and friendship. But on the extension of trade, arts, and manufactures, money lent produced much more than what was adequate to the borrower's daily support, and therefore the lender might reasonably expect from him some remuneration. To the lending of money upon interest, according to the earliest accounts, succeeded the practice of establishing funds for the relief of the needy on condition that they could deposit any thing equal in value to double the sum borrowed, for which they were to pay no interest. But, as upon the one hand, the idea of exacting interest for the loan of money was odious to the members of the Catholic church in general, while, on the other, it appeared proper, and even necessary, to pay interest for money to be employed in commerce, the pontiffs themselves at length allowed the lending-houses to take a moderate interest; and, in order not to alarm the prejudices of those to whom the measure was obnoxious, it was concealed under the name of being paid pro indemnitate, the expression made use of in the papal bull.

It appears that lending-houses, which gave money on receipt of pledges at a certain interest, are by no means of recent date; for many houses of this description, in Italy at least, were established in the 15th century, by Marcus Bononiensis, Michel a Carcano, Cherubinus Spoletanus, Antonius Vercellensis, Bernardinus Tomitano and others. The lending-house at Perugia established by Barnaba Interamnensis was inspected in 1485 by Bernardinus, who augmented its capital, and in the same year established one at Assisi, which was confirmed by Pope Innocent, and visited and improved by its founder in the year 1487. He likewise established one at Mantua after formidable opposition, having procured for it the sanction of the Pope. The same person also founded lending-houses at Florence, Parma, Chieli, and Piacenza, in doing which he was sometimes well received, while at others he frequently met with great opposition. A house of this kind was established at Padua in the year 1491, and another at Ravenna, which were approved of and confirmed by Pope Alexander VI.

Long after the period here referred to, lending-houses were established at Rome and Naples; that of the former city having been opened in 1539, and that of the latter probably in the following year. A lending-house was established at Nuremberg, in Germany, about 1618, the inhabitants having obtained from Italy the regulations of different houses in order to select the best. In France, England, and the Netherlands, lending-houses were first known under the denomination of lombards. Similar institutions were formed at Brussels in 1619, at Antwerp in 1620, and at Ghent in 1622. Although such houses must be allowed to be of very considerable utility under certain circumstances, especially when interest is not allowed to be exorbitant, yet they were always odious in France. One was, however, established at Paris in 1626 in the reign of Louis XIII., which the managers next year were obliged to abandon. The mont de piété in that city, which has sometimes had in its possession forty casks full of gold watches which had been pledged, was established by royal authority in the year 1777, as we learn from the *Tableau de Paris*, published at Hamburg in the year 1781.—E. A

Lengthening, in ship-building, the operation of cutting a ship down across the middle and adding a certain portion to her length. It is performed by sawing her planks asunder in different places of her length on each side of the midship frame to prevent her from being too much weakened in one place. The two ends are then drawn apart to a limited distance, which must be equal to the proposed addition of length. An intermediate piece of timber is next added to the keel, upon which a sufficient number of timbers are erected to fill up the vacancy produced by the separation. The two parts of the kelson are afterward united by an ad-

ditional piece, which is scored down upon the floor timbers, and as many beams as may be necessary are fixed across the ship in the new interval. Finally, the planks of the side are prolonged so as to unite with each other, and those of the ceiling are refitted in the same manner, by which the whole process is completed.

Lentil, the seeds of *Ervum lens* (natural order *Leguminosæ*). The lentil is closely allied to the tare, and is probably the most ancient of all the food pro[illegible] which man derives from the pea-tribe. The *re[illegible]tage* in Gen. xxv. 34, is the small lentil decortica[illegible], as it is sold at the present day in the bazaars of India. Pliny mentions two kinds of lentils grown in Egypt, one rounder and blacker than the other. These were, probably, only varieties resulting from cultivation. Three such are cultivated in France, where, as in most Roman Catholic countries, this kind of pulse is extensively used during Lent; to which season, as some suppose, it gives its name. The lentil is a native of Europe, Asia, and northern Africa; or, at all events, it is naturalized in those parts of the world. It is cultivated occasionally in some parts of England, but chiefly as a fodder plant. The ripe seeds are very nutritious, and contain a large proportion of gluten. They are frequently imported from Alexandria for cattle-feeding; while, for culinary purposes, the larger and lighter-colored varieties are imported from France and Germany, where considerable attention is paid to their cultivation and harvesting. In Egypt the lentil forms a large proportion of the general food of the inhabitants, and the haulm is used for packing purposes. The empirical preparation called *Revalenta Arabica*, has been proved to be nothing but the meal of decorticated lentils; a food by no means well adapted to all constitutions, especially those of infants. The quantity of starch in the lentil is very considerable; and, in addition to the gluten, renders this pulse one of the most nutritive of vegetable food products. Lentils are, however, heating if used much. The starch, according to Einhoff, is nearly one third its weight.

Letters of Credit. A letter of credit is an open letter of request, whereby one person requests some other person or persons to advance money or to give credit to a third person, named therein, for a certain amount, and promises that he will repay the same to the person advancing the same, or accept bills drawn upon himself for the like amount. It is called a general letter of credit when it is addressed to all merchants, or other persons in general, requesting such advance to a third person, and a special letter of credit when it is addressed to a particular person by name, requesting him to make such advance to a third person. If the letter of credit be of the latter sort, there does not seem to be any doubt that it is an available promise in favor of the person to whom it is addressed, and who makes the advance upon the faith thereof. But if the letter of credit be general, it is a matter of some doubt whether the writer is bound to the person making advance upon the strength of the letter. The question does not appear to have been ever decided in England, but it has several times been thoroughly discussed in the Supreme Court of the United States (*Lawrason* vs. *Mason*, 3 Cranch, 492; *Adams* vs. *Jones*, 12 Peters, 207). The doctrine was maintained in these cases that the letter writer is bound positively and directly to any party making the advance upon the faith of the letter, not only where the letter purports, on its face, to be addressed generally to any person or persons whatsoever who should make the advance, but also in cases where the letter is addressed solely to the person to whom the advance is to be made, and merely states that the person signing the same will become his surety for a certain amount, without naming any person to whom he will become security, if it is obviously to be used to procure credit from some third person, and the advance is made upon the faith of the letter by such third person.

Formerly, and up to the years 1825—1830, remittances to India and China, for importations into the United States, were made almost exclusively in Spanish dollars. After that period letters of credit were liberally issued by the Bank of the United States, on their European correspondents, in favor of American merchants. This mode of remittance is made universally from the United States.

FORMS OF LETTERS OF CREDIT, AS USED IN NEW YORK, AND AS ISSUED BY THE WESTERN BANK OF SCOTLAND, FOR REMITTANCES TO INDIA, ETC.

No. 130. For First of Exchange. £300 Sterling.

New York, 7th June, 1842.

To Geo. D. Carter, eastward of the Cape of Good Hope, or holder hereof. We are duly authorized by Messrs. Palmers, Mackillop, Dent, & Co., London, to engage on their behalf that they will accept the first presented bill of this set of Exchange, at Six Months' sight, provided this Certificate be presented therewith and delivered to Messrs. Palmers, Mackillop, Dent, & Co., on their acceptance. On behalf of Palmers, Mackillop, Dent, & Co.

DAVIS, BROOKS & CO. FIRST.

No. 130.

New York, 7th June, 1842.

Exchange for £300 Sterling.

2385

R. S. & Co.

Six Months after sight of this First of Exchange (Second and Third unpaid) pay to the order of Davis, Brooks, & Co. Three Hundred Pounds Sterling, value received, as advised by

Your obedient servant,

GEO. D. CARTER.*

To

Messrs. Palmers, Mackillop, Dent, & Co.,

London.

* The bill is indorsed, "Pay George D. Carter, or order.—*Davis, Brooks, & Co.*

BY THE WESTERN BANK OF SCOTLAND.

No. £

FOR FIRST OF EXCHANGE.

WESTERN BANK OF SCOTLAND.

18

To

I hereby engage to accept, and to pay at Maturity, the first presented Bill of the set of Exchange, of which the annexed is the First, to be drawn by on the Western Bank of Scotland, on or before at Sixty Days' Sight, provided this Letter of Credit, as annexed to such Bill, be presented therewith and delivered to me on acceptance thereof. For the Western Bank of Scotland, Glasgow. Manager.

No. £ . . . . . 185[illegible].

Sixty days after sight, pay this First of Exchange (Second and Third of same tenor and date unpaid), to the order of at Messrs. Jones, Lloyd, & Co.'s, London, value received as advised.

To the

Western Bank of Scotland,

Glasgow.

BY THE CLYDESDALE BANK.

THIRD OF EXCHANGE. No.

£ CLYDESDALE BANK, GLASGOW. £ . . . . . 1851.

To

We hereby engage to accept and to pay at maturity, the first presented Bill of the set of Exchange, of which the annexed is the Third, to be drawn by you on us, on or before the for £ say Sterling, payable in London at a date not less than and not exceeding days' sight, provided this Letter of Credit be delivered to us on acceptance of the annexed Bill. For the Clydesdale Banking Company.

after sight, pay this Third of Exchange (First and Second of the same tenor and date unpaid), to the Order of in London Sterling.

Value received as advised

To

in New York it has been held (Hill's Rep., vol. v., 634) that letters of credit and commercial guaranties are not negotiable instruments. In Campbell's Rep., iv., 393, it was decided that a letter of credit, addressed to any person who should make an advance upon the faith of the letter, is an available promise in favor of the person making the advance; and it is considered as available if it be a general letter of credit, in favor of any person who makes the advancement the faith of it. See articles BANKS, BILLS OF EXCHANGE, and EXCHANGE.

Levant, a name derived from the Italian word for the south-east, and applied in the middle ages to that quarter of the Mediterranean east of Cape Matapan, now generally applied to the coasts of Asia Minor, Syria, etc. *Levant*, in *geography*, signifies any country to the eastward of us, or in the eastern part of any continent or country, or in that quarter where the sun rises.

Levee, an embankment on the margin of a river to confine it within its natural channel. The lower part of Louisiana, which has been formed by encroachments upon the sea, is subjected to be inundated by the Mississippi and its various branches for a distance of more than 300 miles. In order to protect the rich lands on these rivers, mounds are thrown up of clay, cypress-logs, and green turf, sometimes to the height of 15 feet, with a breadth of 30 feet at the base. These, in the language of that part of the country, are called *levees*. They extend for hundreds of miles; and when the rivers are full, cultivated fields covered with rich crops, and studded with villages, are seen several feet below the river courses. The giving way of these levees, sometimes occasioned by a sudden and violent pressure of the water, and sometimes by accidental perforations, is called a *crevasse*; French, a disruption.

Lew-Chew Islands. See LOO-CHOO ISLANDS.

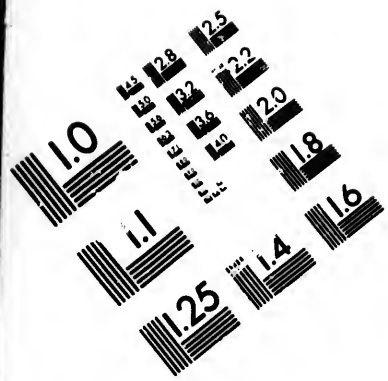
Liberia, an independent Negro republic of west Africa, established 1823, extends along the coast of Guinea, between Sierra Leone and Cape Mensurado, from the Shebar River on the north, to the Garaway on the south, a distance of 350 miles, with an average breadth of 80 miles. Population 1850, 250,000, of whom 10,000 are free blacks from the United States, and the remainder aborigines, or captives released from slavers. The country has been all purchased from time to time by the American Colonization Society, and its climate has improved greatly by a systematic drainage, and clearance of woods. It is estimated that 2,000,000 inhabitants of the interior now obtain supplies of European goods from this republic and Cape Palmas. Liberia, formerly a dependency of the United States of America, was recognized as an independent republic in July, 1848. Government vested in a president, vice-president, and a senate of 6 members, and a house of representatives of 28 members, elected by all possessors of a real estate to the value of $30. About 50,000 of the population are said to use the English language, and children are sent from the surrounding countries, 400 or 500 miles distant, to attend the schools of this State, which also supports two public journals. The sea-port and capital, Monrovia, has a population of 9,000.

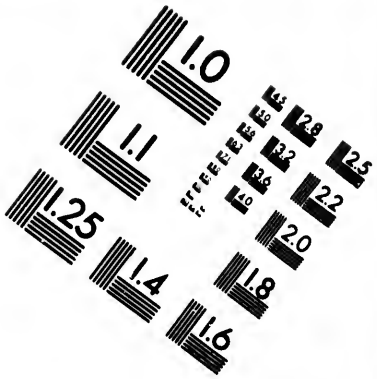
The treaty concluded in 1852 between France and the republic of Liberia was finally ratified in the year 1856. The independence of the republic was recognized successively by the United States, England, Belgium, Prussia, and Brazil, from 1847 to 1854. To this list France has at last added her name by the late treaty. The original colony of Liberia was founded by the American Colonization Society, under the direction of its first President, Mr. Finley. It is situated at the northern extremity of the coast of Guinea, and is about 370 miles in length. Its capital, Monrovia, is on the former site of the principal slave-market on this part of the African coast, and stands as a living protest against the slave-trade, in the abolition of which the colony has been largely instrumental. In February, 1820, the first ship-load of emigrants left New York for the coast of Guinea. They were 80 in number—forming 25 families—under the care of 8 citizens of the United States, a clergyman, a lawyer, and a physician. In 1847 Liberia emerged from its dependent colonial condition, and became an independent State. In 1854 it contained a population of about 12,000 black colonists, chiefly Americans, and from 140,000 to 150,000 natives, whose social and religious condition is far in advance of that of their blood-thirsty and idolatrous ancestors.

The capital is now a flourishing maritime city, having a fort, a light-house, a commercial market, a small marine, and schools, churches, newspapers, charitable associations, and other institutions similar to those in the United States. The 6th article of the constitution of the republic declares that, inasmuch as the essential object of its foundation was to open an asylum for the scattered and oppressed children of Africa, and, at the same time, to regenerate the people of the vast continent of Africa, yet enveloped in the darkness of ignorance, none but persons of color will be allowed to become citizens of the republic.

The exports of Liberia, consisting chiefly of palm-oil, logwood, and other dye-woods, which are transported to England and the United States, amount to about $1,000,000 annually. Besides all the usual tropical productions, it produces Indian corn, rice, the potato, sugar, coffee, and cotton. Gold is also found in considerable quantities. The cotton of Liberia, which has been highly approved in the Manchester market, has lately attracted much attention, and its probable successful cultivation promises to exert a most important influence on the future of the republic. A communication from a highly respectable and reliable source recently appeared in the *National Intelligencer*, the writer of which gave a decided preference to the cotton of Liberia over that of Brazil, in point of quality, cheapness of production, and facility of transportation to market. The subject deserves further and full investigation. Considered simply as an experiment in practical benevolence, Liberia deserves and will receive the protection of the great powers of the world. Whether or not it be destined, as some have thought, to work out the solution of the vexed question of slavery in the United States, it will yet gain the great glory of redeeming from barbarism and idolatry many millions of the human race.

Trade is the chosen employment of the great mass





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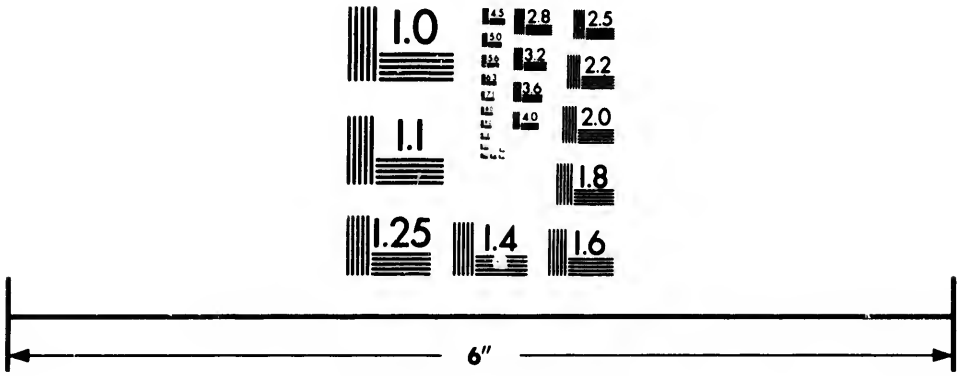

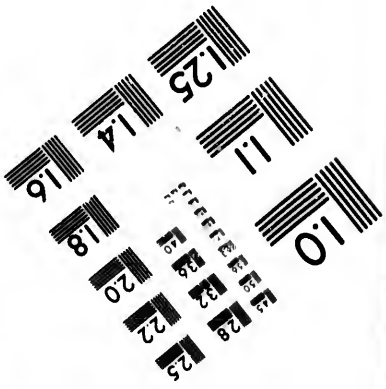

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of the Liberians, and some of them have been decidedly successful in this vocation. It consists in the exchange of articles of American or European manufacture for the natural products of the country, of which palm-oil, cam-wood, and ivory, are the principal articles. Cam-wood is a rich dye-wood, and it is brought to Monrovia on the shoulders of the natives from a great distance. It is worth, in the European and American markets, from $60 to $80 per ton. The ivory of this region does not form an important item of commerce. The Liberian merchants own a number of small vessels, built by themselves, and varying in size from 10 or 15 to 40 or 50 tons. These are navigated by the Liberian sailors, and are constantly engaged in bringing palm-oil to Monrovia, from whence it is again shipped in foreign vessels for Liverpool or New York.

Under the general name of Liberia are comprehended the territories of the republic and of the Maryland colony, founded at Cape Palmas. The political jurisdiction of the republic extends from Shebar, a point immediately north of Gallenas, to Grand Sesters, giving a coast frontier of 350 miles, or, including the Maryland colony, of 470 miles, running into the interior an average of 40 miles; the whole territory embracing an area of upward of 14,000 square miles. The jurisdiction of the Maryland colony extends from Grand Sesters to the River San Pedro, opening a coast frontier of 120 miles. These territories have, of late years, been considerably extended by means of purchase, the most important addition being the annexation of Gallenas, formerly the point at which the slave-trade was most extensively conducted. The New Jersey Colonization Society, established in 1825, is said to have recently purchased from the natives 150,000 acres in the interior of Bassa country. The population in 1850, as estimated by the Rev. R. R. Gurley, who was sent out by government to obtain information in respect to Liberia, was, in the republic, emigrants, 6,000; natives, 140,000 to 200,000. In the Maryland colony, emigrants, 9000; natives, 100,000. The independence of the republic of Liberia has been recognized by France, Belgium, Prussia, the Hanse Towns, and England; and, with the latter country, a treaty of peace, friendship, and commerce, was concluded, August 1, 1849. Treaties of friendship, etc., have also been entered into with several tribes of the interior, containing stipulations for the abolition of the slave-trade, and including new territory within the political and judicial jurisdiction of the republic. The soil of the republic is capable of yielding, in the greatest abundance, the most valuable productions of the tropics. Rice, cotton, the sugar-cane, and coffee are classed among the staples of Liberia; and corn, cassada, yams, sweet potatoes, arrow-root, vegetables, and beans, of every variety, are among the productions of this region.

It is stated, on the authority of persons thoroughly acquainted with the resources of this region of Africa, that no clime or country in the world will bring coffee to higher perfection than Africa; and, whether introduced at an early period by the Portuguese and Spaniards, or whether it is a native of the country, it has propagated itself along a great extent of the African coast, without culture, for many ages. The commerce of the republic with foreign countries consists chiefly in the exportation of articles supplied by the native population, from the spontaneous growth of the country, such as palm-oil, cam-wood, ivory, tortoise-shell, and gold, which are bartered for tobacco, powder, muskets, rum, cotton goods, salt, soap, crockery, and iron wares, copper and iron rods, and American provisions. This commerce must necessarily expand with the growing development of the agricultural resources of the country, and the extension of the arts of civilization and industry, in a region so highly favored in soil and climate, and so eminently adapted to the production of so great a variety of valuable staples.

In a letter from the Secretary of the Treasury of Liberia, in November, 1849, that gentleman says, "The committee whose duty it was to furnish you with a report, have, I think, considerably underrated the annual exports from Liberia. It may be fairly stated at $500,000, in African commodities (one fifth of which is $100,000), and our imports from the United States may be estimated at $150,000. It is worthy of remark that, at present, it is only from the United States that our merchants import goods; and, further, that the kinds of goods most suitable for the African trade come from Europe. The commerce of Liberia is in its infancy, but it advances rapidly. The two principal articles of trade are tobacco and powder; and no country can compete with the United States in these items. Provisions, also, will soon find an extensive market in Liberia; already the natives have commenced purchasing them, particularly beef, pork, and salt fish. I am not exaggerating when I say that the trade advances at least 50 per cent. annually. The American cotton goods are, in quality, superior to those brought from Europe; but there is a material difference in price. The European is the cheapest, and hence the inability of the American to compete with the European. In Liberia we attribute the difference in price to the low price of labor in Europe." Changes have occurred in the commercial movements of Liberia since the date of Mr. Gurley's report. Then, Liberia imported English goods, though not directly from England; but now, importations from England are very large, while from the United States they are annually diminishing. It is estimated that there are not less than 100 ships, some of them of 1000 tons' burden, regularly trading between British ports and the coast of Africa, while a regular line of steamers plies monthly between England and Liberia. Most of the supplies of every description are derived from England; while the only articles going from the United States are powder, rum, flour, beef, pork, tobacco, herrings, mackerel, and some few cotton goods; the latter article constantly diminishing. A reliable statement, recently put forth, estimates the value of the average annual exports from all this region of western central Africa, to the European States, at some $15,000,000, and at a commercial exchange in favor of the European merchants of about 500 per cent. The commerce has been carried on chiefly by native and Liberian traders from Liberian ports and others on the Gulf of Guinea, in European vessels. France, Spain, Denmark, Portugal, and Germany, have participated in this commercial intercourse; but they are all surpassed by Great Britain.

From the "Annual Statements of the Trade and Navigation of the United Kingdom," it appears that the imports into Great Britain from the western coast of Africa—the limits of which are not particularly designated, though estimated to contain some 50,000,000 inhabitants—consist chiefly of bar-wood, cam-wood, ebony, guano, gum-animi, gum-copal, untanned hides, palm-oil, orchal, elephants' teeth, and bees'-wax—the heaviest item, by far, being palm-oil, which averaged some 450,000 cwt. each of the five years ending with 1853; and amounted to 633,508 cwt., at a "computed real value" of £1,457,068, in 1854. The aggregate value of imports in 1854 is given officially at £1,528,896. The exports, during the same year, the produce and manufactures of the United Kingdom, or of other countries, consisted of arms and ammunition, wearing apparel, manufactures of cotton, wool, silk, iron, brass, copper, steel, and glass; salt, soap, spirits, staves, coals, hauds, unmanufactured tobacco, earthenwars, and porcelain; of which the heaviest items were cottons, gunpowder, guns, staves, and tobacco. The average "declared value" of cottons thus exported, during the six years ending 1854, was £187,000; and

of tobacco, the average quantity was 2,150,000 pounds. The computed real value of the 1,816,827 pounds of tobacco exported in 1854 is given at £56,700. The computed real value of all foreign exports to western Africa for the same year was £174,078; and of all domestic exports, £646,868; being more than that of 1853, and double that of 1852—the average value of each of the six years ending with 1854, being upward of £460,000.

It is thus seen that the trade of Great Britain with western Africa is rapidly increasing—amounting, in value, in 1854, to £1,528,896 imports: domestic exports, £646,868; foreign exports, £174,073; aggregate (imports and exports) £2,349,837=$11,749,185. And this, independently of the British colony of Sierra Leone, the trade of which amounted in 1854 to $1,421,-865; and of the British possessions on the Gold Coast and the River Gambia, amounting to $1,547,285 more; and of those at the Cape of Good Hope and south Africa, swelling the amount $8,883,090 more; making, in all, an aggregate of over $23,000,000 in 1854, for the western coast of Africa entire. The trade of the United States with west Africa, there are no means of determining—the values of imports and exports being given in Commerce and Navigation for "Africa Generally." "Liberia," it is true, appears in the reports from 1849 to 1854, inclusive, but with no figures to indicate trade, and but few to indicate navigation; giving, it is inferred, the tonnage of colonization vessels only—none others, perhaps, being engaged in the direct intercourse with Liberia. The following table shows the trade of the United States with Africa during the seven years ending June 30, 1855:

Years.	Exports.	Imports.	Total.
1849.....	$703,411	$495,742	$1,204,153
1850.....	759,266	524,722	1,283,988
1851.....	1,340,644	1,163,176	2,503,820
1852.....	1,246,141	1,057,657	2,303,798
1853.....	1,610,883	1,202,936	2,813,819
1854.....	1,804,972	1,386,560	3,191,532
1855.....	1,375,905	1,337,527	2,713,432

From this statement, it will be perceived that, although the figures for 1855 show a falling off in that year, as compared with 1854 and 1853, yet that there is a regular and very rapid advance from 1849. But, while the average value of the trade of the United States with all Africa, during the six years ending 1854, is found to be only $2,200,000; that of Great Britian with west Africa, alone, for the same period, averaged $2,300,000; and, including all of her African colonies and possessions, together with the *estimated* value of her trade on the eastern coast, it could not have averaged much less than $20,000,000.

In 1854, the trade of the United States with "Africa Generally" rose to $3,191,532—a higher figure than before or since; at the same time, the trade of Great Britain with west Africa, only, amounted to $11,749,185. The value of the unmanufactured tobacco alone—derived mostly from the United States—amounted to nearly $300,000 of that total; and the value of British trade with "Africa Generally" was, as has been seen, more than $23,000,000, or nearly 8 times that of the United States.

The establishment of a line of commercial steamers between the United States and the western coast of Africa has been urged, as tending greatly to the augmentation of our commerce with that country. The uses which such steamers might subserve have been stated thus:—1. The transportation of free negroes from the United States to Liberia. 2. The carrying of the mails. 3. The transportation of merchandize. 4. The carrying of pilgrims on their way to Mecca. 5. The carrying, on the return voyage, of the pilgrims, who now assume the name of Hadjis; the certain and expeditious transportation of the fruit and other products of the Mediterranean; and the greater facility afforded to passengers from central Europe to America, whose expense of travel will be greatly diminished by embarking at the south of France instead of at the usual western ports.

Palm-oil has become, within a few years, a staple of export from Liberia. More than 30 vessels were freighted with the article at her ports, in 1855; while three years before, the quantity exported did not exceed 1000 gallons, at a cost of $1 per gallon. The quantity exported at the present time is, at least, 700,000 gallons; but the price has fallen to 33 cents per gallon. The trade in ground-nuts, chiefly carried on with France, is becoming of great importance. They are shipped in bags, and, when ground, supply a wholesome substitute for olive-oil. Sugar, cotton, and coffee are, however, viewed as the great natural staples of product for the soil and climate of Liberia. The import duties in the republic of Liberia are 6 per cent. *ad valorem*.

From recent intimations, it is not improbable that the country east of Liberia may shortly be more extensively explored, with a view of planting new settlements in the interior of the present coast line, which it is hoped will be beyond the reach of malaria. Should such an enterprise be successfully carried out, the immense natural resources of that fertile region would soon attract foreign commerce, and thus the philanthropic labors of those engaged in the movement would be greatly facilitated.—*Com. Rel., U. S.*

There can be no question that vast commercial advantages would accrue to the commerce of western Africa, if the Niger and Tschadda, the natural highways into the interior to Timbuctoo and other large cities of the continent, were effectually opened and maintained so for a few years. The last expedition is a proof that, under judicious management, and at the proper season, there is no greater danger to health in a navigation of those streams, than of other rivers in Brazil and our southern States. While the British export trade with different parts of the world has only increased in the last 20 years 50 per cent., the export trade of western Africa has more than doubled. British manufactures are mainly dependent on that quarter for several articles, especially vegetable oils and ivory. The yearly export of palm-oil has risen to the value of nearly £2,000,000 sterling, or $10,000,000. Ground-nuts, for oil, are a leading article of production. Dyewoods are important. Of the whole imports of ivory into Great Britain, Africa supplies one half. When it is noticed what has been done in stimulating the cultivation of coffee, sugar, spices, and other staples in Liberia, there is no reason why a great stimulus may not be given also to the countries bordering on the rivers of the interior.

The following returns to Parliament illustrate the increase of British exports to the west coast of Africa, and of imports from the same region:

Years.	Exports.	Imports.	Total.
1850.....	£689,429	£005,958	£1,245,387
1851.....	654,548	794,810	1,449,353
1852.....	593,725	707,024	1,240,749
1853.....	901,402	749,373	1,659,775
1854.....	958,809	905,634	1,861,443

This is independent of the British colonies of Sierra Leone, the trade of which amounted in 1854 to $1,421,-865, and of the British possessions on the Gold Coast and the River Gambia, amounting to $1,547,285 more, and of those at the Cape of Good Hope and in south Africa, swelling the amount $8,883,090 more; making in all an aggregate of over $23,000,000 in 1854, for the western coast of Africa entire.

An American steam line to Africa would be a pioneer of civilization. It would afford a rapid communication with the interesting republic of Liberia, which is proving the capacity of the Christianized and Americanized African for self-government, according to Anglo-Saxon ideas and institutions. It could not fail to promote powerfully the prosperity of that young com-

monwealth. It would practically bridge the Atlantic in a new direction, and connect together the most progressive and the most stationary of the continents. It would soon be an effectual aid in that African exodus from the soil of the new world to the ancient fatherland of the race, of which we now see the faint beginnings. Its realization would involve more wide-reaching and beneficial results than even its warmest friends have ever hoped.

Libraries. In a volume on Public Libraries of the United States, published by the Smithsonian Institution, the following statistics appear, obtained for a large part from replies to circulars, and therefore less full than those of the census:

Libraries.	No.	Volumes.
State Libraries	39	288,937
Social Libraries	123	611,334
College Libraries	126	586,912
Students' Libraries	142	254,689
Semtoaries and Professional Libraries	227	320,909
Scientific and Historical Societies' do.	84	138,901

GREAT LIBRARIES OF EUROPE IN 1848.

Libraries.	Volumes.
* Paris National	824,000
* Munich Royal	600,000
Petersburg Imperial	446,000
* London British Museum	435,000
* Copenhagen Royal	412,000
* Berlin Royal	410,000
* Vienna Imperial	313,000
* Dresden Royal	300,000
Madrid National	200,000
Wolfenbattel Ducal	200,000
Stutgard Royal	187,000
Paris Arsenal	180,000
* Milan Breza	170,000
Paris St. Genevieve	150,000
Darmstadt Grand Ducal	150,000
* Florence Magliabecchian	150,000
* Naples Royal	150,000
* Brussels Royal	133,000
Rome Casanate	120,000
* Hague Royal	100,000
Paris Mazarin	100,000
Rome Vatican	100,000
* Parma Ducal	100,000

These marked thus (*) are entitled by law to a copy of every book published within the States to which they respectively belong.

Lien. It has been decided that no shipwright has a lien on a vessel for the repairs, etc., done to the vessel, when he parts with the possession of the vessel, and can only recover the same from the owners in an action for debt, as he in this case, as well as tradesmen, who have no lien upon the ship, are supposed to have given the credit for the requisites required for the vessel to the owner. In maritime lien, the persons who have a claim in the Admiralty Court in *rem*, and can compel reimbursement, consist of those who have rendered services to the ship by their labor, as mariners, by pilotage, tonnage, salvage, and by the loan of money as bottomry for repairs. The wages of seamen have the first claim upon a vessel, and then come salvage, pilotage, tonnage, or bottomry. Bottomry, however, has a precedence over prior salvage, although it gives way to subsequent salvage. Sir John Michel, speaking of lien, says: "Subjects which operate for the protection of prior interests are privileged over those interests."

Lieutenant, of a ship of war, the officer next in rank and power to the captain, in whose absence he is accordingly charged with the command of the ship, as also the execution of whatever orders he may have received from the commander.

Lieutenant (*locum tenens*, holding the place of), in a military sense, means the person second in command: as, lord-lieutenant, one who represents the prince or governing power; lieutenant-general, one who stands next to the general; lieutenant-colonel, the next to a colonel; and lieutenant, the next to a captain, in every company of both foot and horse, and who takes the command upon the death or absence of a superior officer.

Life-Boats. See LIFE-PRESERVERS.

Life-Preservers. Although it too frequently happens that an accident which materially endangers the life of an individual, deprives him, in the meantime, of that presence of mind which alone would enable him to take proper measures for his safety; yet to have meditated, in an interval of leisure, upon the best method of proceeding in case of emergency, must tend greatly to diminish the embarrassment and confusion that commonly accompany the accident, even if it should not be thought necessary to provide any particular apparatus for the purpose of escaping the danger. There are also many ways in which those who are not immediately involved in the disaster may contribute to the preservation of life, whether actuated by interest, or by humanity only; and the modes of relief will therefore be naturally divided into the *internal* and the *external*, whether relating to *fires* or to *shipwrecks*.

Internal Fire-Escapes.—Whenever a family establishes itself in a residence not detached from others, it becomes of importance to ascertain what facilities the house affords for ascending to the roof, and for passing to those of the neighboring houses. It is scarcely possible that a conflagration should extend at once to the contiguous houses on each side, before the inhabitants of the house in question have had time to escape. But in a detached house, if there are not two or more stair-cases remote from each other, and even in a house contiguous to others, when there is no facility of communicating by the roof, it becomes highly expedient to provide some *internal means* of escaping through the windows, in case of fire, and to have on every floor a strong rope, with a hook or a loop at the end, by which it may be fastened to a bed-post, so as to enable an active person to descend by its help out of the window, finding from time to time a partial footing in the inequalities of the wall. This process will be greatly facilitated by having the rope knotted at intervals of about a foot throughout its length; the knots being nearly as convenient as the blocks or clips, that are sometimes made for the purpose of retarding the descent, by holding them, and regulating the friction by the pressure of the hand; unless the clip be attached to a strong cross-bar, on which a person may sit, while he regulates the position of the clip by its handles, allows himself to descend with more or less velocity at pleasure.—EMERSON'S *Mechanics*, figs. 228, 229; LEUPOLD'S *Theatrum Machinarium*, plate liv.

External Means of Escape from Fire.—The external means to be employed in cases of conflagration must be provided by the managers of fire-offices, or by other public officers; and every ingenious workman whom they may employ will be able at his leisure, to devise such apparatus as he can the most conveniently execute, and to give it a full trial in the absence of all danger; it will therefore only be advisable that he should compare for himself the particular inventions which have been suggested for this purpose, and that he should choose from among them such as he thinks most likely to do him credit; and he may, indeed, very possibly find means of improving on any of them. In Leupold's *Theatrum Machinarium* (plates liv. lv.), we find the representation of a chair calculated to be drawn up or down by means of pulleys. Mr. Varcourt obtained, in 1761, the approbation of the Parisian Academy of Sciences for his invention of a hollow mast, fixed in a wagon, and supporting a stage, with the means of ascending and descending.—*Hist.*, p. 158. In the beginning of the present century, a fire-escape of Mr. Audibert was approved by the Parisian Institute.—*Mém. Inst.*, iv. A committee was also appointed for examining several similar inventions at the Lyceum of Arts, and a medal was awarded by it to Mr. Daujon, for his apparatus, which consists of a platform carried on wheels, supported by three frames, with brass wires, on which boxes are made to slide up and down for the conveyance of persons or furniture.—*Annales des Arts.*

Repertory, ii., vol. i., p. 489. Mr. Collins's invention of pipes raised by ropes, and affording a centre to a long lever, is described in the fourth volume of the *American Transactions*, and in the *Repertory*, vol. xv., p. 85. In the 31st volume of the *Transactions of the Society of Arts* for 1813, p. 244, we have an account of a fire-escape invented by Mr. Adam Young, for which he received a medal from the society. It appears to constitute by far the most portable of ladders, consisting of cross bars or rounds connected by ropes, and having their ends fitted together, so as to form a pole, which is readily elevated to the window; and the rounds being separated, and the hooks at the end properly fixed to the window-frame, the whole forms itself into a very convenient ladder of a mixed structure. The 34th volume, for 1816, p. 227, contains a description of Mr. Braby's fire-escape, consisting of a car made to slide on a strip of plank fixed to a pole, and governed by a rope, which is cased with iron, to protect it in case of necessity, from the effect of the fire.

A great many other forms of fire-escapes might be noticed, for it is one of those subjects which readily appeal to the ingenious mechanic in a large city where fires are numerous; and every form of fire-escape must at times fail. Hence, there has been a sort of competition among the uneducated inventors, who have displayed some mechanical ingenuity, but have not, so far as we are aware, developed any new principle.

Internal Means of Escape from Shipwreck.—The means of escaping from shipwreck may be similarly divided into *internal* and *external*, or into the precautions to be taken by the ship's company, and the measures to be adopted by persons on shore. The internal means depend either on enabling the individuals to swim or float, or establishing a connection with the shore by ropes: and of the former, we may first consider those which require no particular preparation before the occurrence of the accident that calls them into action, and which are, therefore, the most universally applicable. Of such expedients, the most effectual appear to be those which depend on the employment of empty water-casks for assisting the ship's company to drift on shore. 1. A paper on the arrangement of water-casks, to serve as floats in case of shipwreck, appears in the publications of the Society for the improvement of Naval Architecture, dated in 1796 (vol. ii., p. 51). 2. In 1818, Mr. Grant of Bideford obtained a gold medal from the Society of Arts, for the invention of a life-preserver, consisting of a 36 gallon cask, with some iron ballast fixed on a wooden bed, and lashed to the cask, and with ropes round it for the men to hold; and it was found that 10 men were supported by it with convenience in tolerably smooth water, the bung of the cask being well secured by cork (vol. xxxvl., p. 63). The ballast could be of very little use, and a cask simply tied round with a rope, like a common parcel, would probably answer the purpose equally well. It would, indeed, be prudent for every ship in a storm, on a lee shore, to have a few of her casks well emptied and stopped, and tied in this manner, before the actual occurrence of imminent danger. 3. In 37th volume of the *Transactions of the Society* (p. 110), there is an account of Mr. Cook's life-raft, consisting of a square frame with canvas nailed across it, supported by a cask at each corner, for which the gold medal was voted to him. 4. It is followed by a description of Lieutenant Rodger's life-raft (p. 112), which obtained a similar compliment. This raft has the advantage of requiring only such materials as are usually found on board of every ship; capstan-bars, boat-masts, yards, or any other spars of moderate dimensions, which are tied together so as to make a sort of wagon frame, with a large cask fixed on each side; it appears to afford a very convenient support to the men, but it can scarcely possess any great strength for resisting the force of the breakers.

Mr. J. Bremer, a clergyman in the Orkneys, had received a medal from the Society in 1810, for his method of converting any ship's boat into a life-boat by putting into it 3 or 4 casks lashed to the keel, which is to have ring-bolts fixed in it for receiving the ropes by which the casks are fastened; he gives particular directions for making all the necessary arrangements, in the 28th volume of the *Transactions* (p. 134); he particularly advises that no use should be made of the natural buoyancy of the cavity of the boat, but that the bottom should be perforated without hesitation, wherever the hole would afford any additional facility for fixing a rope. Captain Manby's jolly-boat, fitted as a life-boat, "at the expense of £3," seems to be comprehended among those preparations which are to be made previously to the voyage. The buckling a soldier's canteen on his breast as an assistance to enable him to float, belongs to those temporary expedients which may occasionally be employed with advantage. Tying a hat in a pocket-handkerchief, and holding it as a float, has been recommended by Mr. Dawson in the *Philosophical Magazine* (vol. xx., p. 362); he advises that the crown of the hat should be held downward, and observes that a stick may be employed, to enable us to use 2 or 4 hats at once; but this method can only be adopted when the accident occurs in very still water.

In China, a frame of bamboo surrounding the person is used for a float, and the lightness and strength of this substance must well adapt it for the purpose; sometimes also a gourd is tied to a child, to secure its floating in case of accident. The inflated goat-skins used from time immemorial by the Arabs, or the seal-skins employed by the Chilians, have the disadvantage of being easily rent or torn by a rock or a spar; an objection which is also more or less applicable to all substances containing air; for example, to the air-jackets described in Leupold's *Theatrum Pontificum*, published about 1724. A float of a semicircular form was recommended by Ozanam, the author of the *Recreations;* and Bachstrom, in his *Art of Swimming*, proposed to float a troop of cavalry, by fixing cork to the saddles. The cork jacket of Gelacy is described in the *History of the Parisian Academy of Sciences* for 1757, and Lachapelle's *Scaphander*, which is considered an improvement on it, in the volume for 1765. In the year 1764 the attention of the British public was particularly called to the floating powers of cork, by some experiments which were made with cork jackets on the Thames, together with some comparative experiments on air-jackets; and Dr. Wilkinson, in the *Philosophical Transactions* for 1765, describes some experiments by which he ascertained that about a pound of cork was amply sufficient to enable a man of ordinary size and make to float without effort. It is almost superfluous to enumerate the multitude of trifling variations that have been made in the arrangements of cork jackets and air-jackets, apparently for the purpose of exciting a momentary interest, though possibly from the best motives. Mr. Bosquet advised a bag of cork shavings to be kept in readiness by each person; the *Seaman's Friend* was composed of two pieces of cork, united by straps; the *Collinetta* was a hollow vessel of copper, divided into cells; a "marine spencer" has been described by Mr. Spencer, in the 16th volume of the *Philosophical Magazine*, consisting of a number of old corks, arranged so as to form a girdle; and in 1806, Mr. T. C. Daniel obtained a gold medal from the Society of Arts, for the invention of an apparatus of waterproof leather, surrounding the body, which, according to the testimonials he produced, had saved the lives of some persons who had been sailing in a pleasure-boat on a river. In smooth water, it has been suggested that throwing a foot-ball, with a small weight tied to it, to the person immersed, would often afford sufficient assistance;

and, with respect to floating, there is no doubt that any of the assistances which have been proposed would be sufficient if they were at hand; but there is another object, to which it is necessary to attend, in cold, and even in temperate climates, that of supporting a temperature compatible with life and health, if the immersion is likely to be of long duration; and an additional provision of worsted stockings, jackets, and trowsers, will be almost as essential, in such cases, as the means of obtaining buoyancy.

The invention of India-rubber cloth led to the introduction of inflated belts, the advantages of which, compared with cork, and other forms of belt, are their greater buoyancy compared with their bulk, and their greater portability, for, when emptied of air, they can be folded up, and packed into a small space. The objections to them are their liability to get punctured or torn, and to decay, from being put away damp; the metal valves by which they are inflated may also get out of order; during the hurry and confusion of a wreck they are liable to be only partially inflated, and the valves to be only half screwed up, so as to allow of the escape of the inclosed air. Commander J. R. Ward, R. N., inspector of life-boats to the National Life-Boat Institution, has invented a belt with 4 compartments, which admit of being separately inflated, thus mitigating the danger arising from puncture or injury to the inflating valves; it has a buoyancy equal to 30 lbs., and should two of its compartments be disabled, the remaining two would be sufficient to float the wearer.

For the rough purposes of ordinary boat-work, Commander Ward insists on the advantages of cork as a material for life-belts, and he has invented a form of belt, which has been selected by the National Life-Boat Institution for the use of its life-boats' crews. The buoyant power of each belt is from 20 to 24 lbs., the cork is uncovered, so that its quality can be seen, and it is divided into numerous narrow pieces, each of which is sewed separately to a strong linen or duck belt, which covers the body from the arm-pits to below the hips. The pieces of cork are distributed in two rows, one above, the other below the waist, and the belt is secured closely about the body by means of strings passed round the waist, between the two rows of cork. It is further secured by other strings, crossed over the shoulders. By this arrangement the trunk of the body is enveloped in cork, attached so as to be quite flexible, and to allow of the usual movements of the body without inconvenience, while it protects the body against injury from blows, and is a warm covering in cold weather.

Various forms of buoyant mattresses have been contrived by Mr. Laurie and others. As manufactured by Mr. Silver, numerous waterproof tubes are partly distended with horse-hair, woolen flocks, or cocoa-nut fibres, so that, should one or more of the tubes fail, the others may suffice to sustain the required weight on the water. The tubes are made up into mattresses, pillows, and floats—the last to be placed under the thwarts of boats. A mattress weighing 17 lbs. sustains in the water 284 lbs. A pillow sustains 28 lbs. A mattress for emigrant vessels, sold at 9s., was proved at the Great Exhibition. It sustained 96 lbs. in the water during 5 days, without being injured. Floating mattresses are also made, filled with cork shavings. In the Great Exhibition, Mr. Rhind had various models of deck seats and benches for steamers, so constructed as to be readily formed into rafts, each of which was capable of sustaining 8 persons.

For the second object which is desirable to a ship in distress, that of obtaining a safe communication with the shore, it has been usual of late years to rely principally on the humane exertions of persons who may be on the coast, and who may have made preparations for this purpose; and with this view, some instructions for properly co-operating in the measures to be adopted with Captain Manby's apparatus have been liberally distributed to all ships when they received their papers from some of the British custom-houses. There are, however, some simple expedients which may be adopted for this purpose by persons on board of the ship; for example, the making a kite with a pocket-handkerchief stretched over a hoop, and causing it to carry a cord to the lee shore, by means of which a stronger line, and at last a hawser, may be drawn by persons standing on the beach. A line may also sometimes be carried on shore by a cask, allowed to drift before the wind; and a bag has been recommended to be attached to such a cask, or to a buoy, in order to act as a sail, and to insure its crossing the surf. Mr. Cleghorn was also rewarded, in 1814, by the Society of Arts, for the invention of a buoyant line, having a heart of cork, to obviate the inconvenience which would arise from its sinking and being dragged on the stones under the breakers; but he observes, that in heavy storms there is generally a current along shore which renders the method almost impracticable. (*Transactions*, xxxii., p. 181.) A Mr. Wheatley assures us, in Captain Manby's *Essay*, that his own life, and those of 8 other persons, were saved, in 1791, by a lead line, which was carried on shore by a Newfoundland dog that he happened to have on board, when two good swimmers had been drowned in the attempt to swim on shore. It had occurred to Lieutenant Bell, in 1791, that a rope might be thrown from a ship which had struck, by means of a mortar carrying a heavy shot, and upon the principle of the gun harpoon; and he showed the practicability of the suggestion by an actual experiment, in which a deep-sea line was carried to a distance of about 400 yards. (*Trans. Soc. Arts*, xxv., p. 136.) He recommended that every ship should be provided with a mortar capable of carrying such a shot, and observed that it might be placed on a coil of rope to be fired, instead of a carriage. The line was to be coiled on handspikes, which were to be drawn out before the mortar was fired. In 1792 he received a premium of 50 guineas from the Society of Arts (*Transactions*, x., p. 204); and he obtained his promotion in the Ordnance as an acknowledgment of his merits. The shot was to weigh about 60 lbs. or more, and the mortar 5 or 6 cwt. The experiments of the French artillery at Lafere were subsequent to those of Mr. Bell, though they have sometimes been quoted as the first of the kind.

It has, however, generally been thought impracticable to manage a mortar with effect under the circumstances of actual shipwreck; and Mr. Trengrouse has preferred a rocket, as more easily fired, and as having a smaller initial velocity than a shot, so that the rope would be less in danger of being broken by the impulse. He found that a rocket of 8 oz. carried a mackerel line 180 yards, and a 1 lb. rocket 212; and in some experiments made under the inspection of the Society of Arts, a rocket 1¼ inch in diameter carried a cord across the Serpentine River in Hyde Park. The musket is provided with a valve, to prevent the escape of the materials of the rocket; and it is to be fired with a little powder, without wadding. The whole apparatus is packed in a chest, containing from 8 to 12 rockets, the musket, a life-spencer, a chair to traverse on a rope, a canvas bag, and a ball of wood to throw to a person swimming. Mr. Trengrouse was complimented with a medal from the Society of Arts in 1820. (Vol. xxxviii., p. 161.)

External Means of Escape from Shipwreck.—The means to be employed by persons on shore, in cases of shipwreck, depend either in projecting a line over the ship, or on the use of a life-boat. Mr. Bell had cursorily observed that a line might be carried over a ship from the shore by means of his mortar; but for the actual execution of this proposal, in a variety of cases, we are indebted to the meritorious exertions of

Captain G. W. Manby, whose apparatus, according to the report of a committee of the House of Commons, dated in March 1810, appears "to be admirably adapted to its purpose, and to have been attended with the fullest success in almost every instance." In consequence of this report, Captain Manby was thought worthy of a parliamentary reward; and he afterward published a description of his inventions, under the title of "An Essay on the Preservation of Shipwrecked Persons," 8vo, London, 1812. He had previously received a gold medal from the Society of Arts in 1808 (*Transactions*, xxvi., p. 209). His success makes it expedient to extract from his essay a detailed description of the apparatus; and it will be easy to make it somewhat more intelligible by a slight alteration of the order of arrangement: "The method of affixing a rope to a shot, for the purpose of affecting communication, when projected from a piece of ordnance over a stranded vessel, was at length succeeded in, by introducing a jagged piece of iron, with an eye at the top, into a shell, and securing it by filling the hollow sphere with boiling lead; and in another way, by drilling a hole through a solid ball, and passing a piece of iron with an eye to it, as before described, to the bottom, where it should be well secured by riveting. To produce the means of connecting a rope to a shot, and prevent its being burnt, and rendering it '*irresistible*' to the powerful inflammation of gunpowder, was the labor of infinite time, and the number of experiments to accomplish it were numerous. Chains in every variety of form, and great strength, breaking, proved that it required not only an elastic, but a closer connected body. At length, some stout platted hide (fig. 2), woven extremely close to the eye of the shot, about two feet in length beyond the muzzle of the piece, and with a loop at the end to receive the rope, happily effected it.

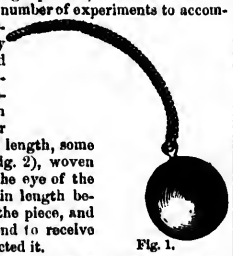

Fig. 1.

"This method is certainly desirable, as a rope may immediately [as] it is required, be affixed to the loop, and applied in service. The form of the platted hide may likewise be woven by twisting it in the manner that the lashes of whips or rope are spun. There is another method, by passing the rope through a case of leather, taking the greatest care that it is so well secured at the eye of the shot as to leave no room for the *slightest play*, as is represented by the annexed *barbed shot* (fig. 2).

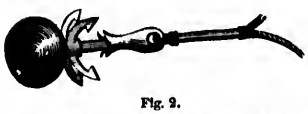

Fig. 2.

When the crew of the distressed vessel are incapable of availing themselves of the benefits arising from communication, they having previously lashed themselves in the rigging to prevent being swept away by the sea, which is repeatedly breaking over them, and when, from long fatigue and the severity of the storm (on which occasions it too frequently occurs), they totally lose the use of their limbs, and are rendered incapable of assisting themselves in the slightest degree—the advantages of this shot are, that, on its being projected over the vessel, and the people of the shore hauling it in, it firmly secures itself on some part of the wreck or rigging, by which a boat can be hauled to the relief of the distressed objects; and by the counterbarbs it is rendered impossible [that it should] give up its hold, or slip, while that part of the wreck remains to which it has secured itself.

"Among the many that have been saved by this shot, the following are testimonials of a few of the cases: 'We, the crew of the brig *Nancy* of Sunderland, do hereby certify that we were on board the said vessel when she was stranded on the beach of Yarmouth, on Friday morning, the 15th of December, 1809, and compelled to secure ourselves in the rigging to prevent being swept away, the sea running so high over the vessel. And we do further declare and certify that Captain Manby, firing a rope with a hooked shot, securely holding on to the wreck, enabled a boat to be hauled from the shore over the surf to our relief, otherwise we must inevitably have perished.' This certificate is attested by six signatures.

"Facilitating communication is at all times of importance; but when the stranded vessel is in momentary danger of going to pieces, this point becomes a consideration of extreme urgency. I feel a persuasion that this particular service can only be carried into effect by a small and light piece of ordnance, the range of which is consequently very inconsiderable, when compared with that of a large and heavier piece, as it is weight alone that conveys the rope. In order, therefore, to increase the powers of shot projected from a small mortar, its natural form must be varied, so as to give it additional 'preponderane.' The annexed shape, in the form of a pear (fig. 3), has been used with the greatest success; for, by the increased weight, the shot's momentum and power over the line is in consequence considerably augmented in its range; and when made to fit the piece as close as possible, a great increase of velocity is likewise produced from the decrease of windage.

Fig. 3.

"Portability in the construction of a piece or ordnance (as just described) is the very essence of this service; and communication with the stranded vessel or wreck may be effected with a cord, by which cord a rope can be conveyed, and by that rope a hawser or cable sent to the distressed vessel; for this purpose the annexed was constructed (fig. 4). A person completely equipped with every necessary apparatus to effect communication with a vessel driven on a lee-shore * * * the horseman, fully equipped, traveled a mile and a half, the howitzer was dismounted, and the line projected 153 yards, in six minutes.

Fig. 4.

"The application of a small piece of ordnance likewise offers particular advantages, capable of being employed from a boat to go to the assistance of a vessel grounded on a bar when running for a harbor, the necessity of which repeatedly occurs, and was twice witnessed at Blakeney, on the 10th of November, 1810, when boats endeavored to go to their relief, and were enabled to get out of the harbor on the ebb tide, within 20 yards of the vessel; but it was found impossible to approach them nearer. Had such boats been provided with a piece of this description, and the same firmly secured on a stout piece of plank, by the holes left at each corner of the iron bed, they might have projected a small rope, coiled in a crate or basket, made to the form of the bow of the boat; and the persons in the boat, so provided, would not have remained the distressed spectators of the untimely end of their fellow-creatures, without being able to afford them the smallest relief, although so little was then wanting for that desirable purpose.

"Although advantages have been pointed out in the use of these small mortars, it is necessary to be kept in remembrance that they are produced for particular services; as the nature of the coast, and circumstances attending the distressed vessels, will direct what piece is best adapted to the undertaking. To enable

the mind to form a judgment of what can be effected by other pieces, the following are the minutes of experiments made with a 5½-inch brass mortar, stating the quantity of powder used, and distance the ropes were projected against a strong wind, at the angle of 17° (elevation): weight of the mortar and bed about 300 lbs.:

Ounces of powder.	Yards of inch and half rope.	Yards of deep-sea line.
4	134	148
6	159	182
8	184	215
10	207	249
12	235	290
14	250	310

"With a short 8-inch mortar, the weight of which, and bed, was supposed to be about 700 lbs; the angles of elevation uncertain:

Ounces of powder.	Yards of deep-sea line.	Yards of two-inch patent Sunderland rope, capable of hauling the largest boat from a beach.
32	439	..
32	479	..
32	..	836

"*Directions for using the Apparatus.*—When the rope (which should be pliant and well stretched) is brought on the beach or cliff opposite to the stranded vessel, the most even spot, and free from projecting stones, should be selected to lay it on, and great care be taken that no two parts of it whatever overlay or even touch each other; nor must it be laid in longer lengths than of two yards. But to project a small line or cord, it will be necessary, if it is required to contract the faker to half a yard at most, to avoid the jerk received at the end of each right line. The best method, with such a description of cord, is to lay it on the ground in the most short and irregular windings, to relieve it from the powerful impulse. To prove the effect of the impulse on a rope, if it is faked in lengths of 10 or 15 yards, it will break each time, as it then becomes a most powerful pendulum. These precautions are absolutely necessary to the success of the service.

"The following has, after various trials, been found a certain method of laying the rope, and placing it into compartments." (*French Faking*, fig. 5)

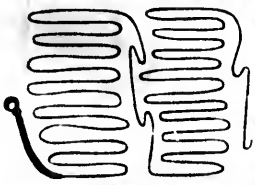

Fig 5.

"A particular attention to this mode will never fail, with a good rope, when the impediments are removed that might otherwise obstruct its rapid flight. Its advantages are, that it will allow the eye rapidly (yet correctly, *just before firing*, which is absolutely necessary) to pass over the different compartments, and at once discover if any fake has been displaced by the storm, or by any other casuality or accident come in contact with another part, which would destroy its application by the rope breaking.

"It may likewise be coiled in the manner used in the whale fishery, *whale lair* (fig. 6); and in the method called *chain faking* (fig. 7).

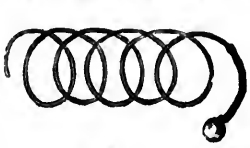

Fig. 6.

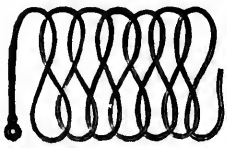

Fig. 7.

It is, however, necessary to add, that great attention is required in laying it agreeably to the two latter methods, arising not only from the arm being liable to get under certain parts of the rope, and thereby displace it, but from the great anxiety of mind natural on these occasions, where the lives of fellow-creatures are literally dependent on the correctness with which the rope is laid; it is therefore extremely difficult, in a moment of agitation, to determine whether any overlay has taken place, an error that would infallibly destroy every endeavor, and occasion even the fates of those whose lives we might be exerting ourselves to preserve. Could persons in the performance of this service be always collected, the two latter methods would have a decided advantage over the first mode of faking, they being laid in a much less space of time.

"As all these methods of laying the rope occupy time to place it with the care necessary; and as it has repeatedly happened that a vessel very soon after grounding, has gone to pieces, and all hands perished; it was necessary to produce a method of arranging the rope, so that it could be immediately projected as soon as it arrived at the spot; and none proved so effectual as when brought ready in a basket (fig. 8.) In this

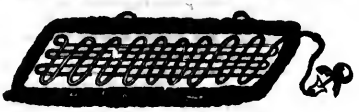

Fig. 8.

case, the rope should be most carefully laid in alternate tiers or fakes, no part of it overlaying; and it shou' be well secured down, that in traveling it be not displaced; but, above all, no mistake must happen in *placing the basket properly*. For example, that the end of the basket, from which the shot hangs in the above figure, should be previously marked, and must be placed toward the sea or wreck, that the rope be delivered freely, and without any chance of entanglement. It will be scarcely necessary to add, there will be several tiers of the rope when laid. The utmost care and attention are required in laying the rope in tiers with strict regularity, to prevent entanglement.

"The next is the application of the mortar. If the wind is sideways to the shore, it must be pointed sufficiently to windward to allow for the slack of the rope lighting on the object, as the rope will, of course, be considerably borne to leeward by the effect of a strong wind, and by its being laid at a low elevation insures the rope falling against the weathermost part of the rigging. While this service is performing, great care should be taken to keep the mortar dry; nor should it be loaded until every thing is ready; when that is done, it should be primed; but as it would be impossible to do it with loose powder in a storm, a tube is constructed in the simplest manner of common writing paper (the outer edge being cemented with a little gum) in this form (fig. 9).

Fig. 9.

It is filled with meal gunpowder, made into paste with spirit of wine; when in a state of drying, run a needle through the centre, and take care the hole is left open, for, on the tube being inflamed, a stream of fire darts through the aperture with such force as to perforate the cartridge. The mortar should then instantly be fired; and in order to lessen a difficulty that has often occurred in performing this service, a pistol may be used, having a tin box over the lock, to exclude the effect of wind or rain on the priming; and the muzzle being cut [obliquely], dilates the inflammation, so as to require but little exactness in the direction of the aim.

"We will suppose the communication to be secured, although it is scarcely necessary to offer any other assistance than that of a rope, as the inventive genius

of a sailor will supply every thing else; yet I could expect the people on shore to get a boat ready for meeting the vessel when driven on a beach: it is the promptest and most certain method of relief, as well as the most easy to be accomplished; for by hauling her off with the rope projected, the boat's head is kept to the waves, and not only insures safety by rising to the surge, but prevents her upsetting. When the rope attached to the shot (not having barbs to it), is fired over the vessel and lodges, let it be secured by those on board, and made fast to some firm part of the rigging or wreck, that they may haul off a boat by it; but should there not be any boat, then haul on board by the projected rope a larger one and a tailed block, through which a smaller rope is rove. Let the large rope be made fast at the mast-head, between the cap and the top of one of the lower masts, and the tailed block a little distance below it; but, if the mast should have been cut or carried away, then it must be made fast to the loftiest remaining part of the wreck. When this is done, there will be supplied from the shore a cot, hammock, netting, basket, hoop, or any of the numerous resources of seamen, which will run on the larger rope, and be worked by the people on shore. If a cot be used, the men may be so securely fastened to it as to preclude all possibility of falling out, and then be brought from the wreck, one by one, in perfect safety.

"While communication is gaining, 3 stakes should be driven into the ground in a triangular position, so as to meet close at the heads to support each other. As soon as communication has been effected by the crew of the vessel, and they have secured the line attached to the shot, made fast to these stakes, the crew will haul on board by it a large rope and a tailed block, through which a smaller rope is to be rove, both ends of which (the smaller rope) are to be kept on shore. When they have secured these on board, and the larger rope is rove through the rollers, let a gun-tackle purchase be lashed to it, then lash the purchase to the stakes. By the means of the purchase the larger rope may be kept at a fit degree of tension; for, if care be taken to slacken the purchase as the ship rolls out to sea, the danger of the rope being broken will be guarded against; and on the other hand, if the purchase be gathered in as the ship rolls toward the shore, the slackness of the rope, which would prevent the cot (fig. 10) traversing as it ought to do, and plunge it in the water more than it otherwise would, will be avoided.

"Supposing neither boat nor cot apparatus at hand, first cast off the shot from the projected rope, and with a close hitch, let it be put over the head and shoulders of the person to be saved, bringing it close under

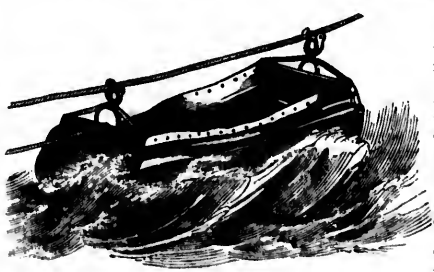

Fig. 10.

each arm, drawing it tight, *observing particularly the knot is on the breastbone;* for, by having the knot in that position, on the people of the shore hauling the person from the wreck, he will naturally be on his back, consequently, the face will be uppermost to seize every moment for respiration, after each surf has passed over the body. If circumstances compel recourse to this method, care must be taken to free the rope from any part of the wreck, and to jump clear away; but should there be more than one on board, each man should make himself fast in the same way, about 4 four feet from the other, and join hands, all attending to the same directions.

"*For giving Relief to Vessels Stranded on a Lee Shore in a Dark and Tempestuous Night.*—It will be requisite, first, to devise the means of discovering precisely where the distressed vessel lies, when the crew are not able to make their situation known by luminous signals; secondly, to produce a method of laying the mortar for the object, with as much accuracy as in the light; thirdly, to render the flight of the rope perfectly distinguishable to those who project it, and to the crew on board of the vessel, so that they can not fail of seeing on what part of the rigging it lodges, and consequently have no difficulty in securing it. To attain the first object, a hollow ball was made to the size of the piece, composed of layers of pasted cartridge paper of the thickness of half an inch, having a lid on the top to contain a fuse (fig. 11), and it was then filled with about 50 luminous balls of star composition, and a sufficient quantity of gunpowder to burst the ball and inflame the stars. The fuse fixed in the ball was graduated, to set fire to the bursting powder at the height of 300 yards. Through the head of the fuse were drilled holes, at equal [distances], to pass through them strands of quick match, to prevent the possibility of any accident from the match falling out, or from its not firing the fuse. On the stars being released, they continued their splendor, while falling, for near one minute, which allows ample time to discover the situation of the distressed vessel. During the period of the light, a stand, with two upright sticks (fig. 12), (painted white to render them more discernible in the dark), was ready at hand, and pointed in a direct line to the vessel.

Fig. 11.

Fig. 12.

"A shell affixed to the rope, having four holes in it to receive a like number of fuses (headed as before described), and filled with the fiercest and most glaring composition, which, when inflamed at the discharge of the piece, displayed so splendid an illumination of the rope, that its flight could not be mistaken.

"*To get a Boat from a Beach over the Surf.*—The importance of going to the relief of ships in distress at a distance from the land, or for taking off pilots, was viewed as of the highest consequence by the elder brethren of the Trinity House, and offered to my particular attention by several distinguished characters. After numerous experiments to accomplish it in various ways, the mode following was most approved:—About 40 fathoms of 2½-inch rope, made fast to 2 moving anchors, was laid out parallel with the shore, at a distance beyond the sweep of the surf; to the centre of this rope was made fast a buoy, of sufficient power to suspend the great rope, and prevent it from chafing on the sand, rock, or stones, as well as embedding, a circumstance that has rendered it impossible, on a sandy or shingly coast, to heave out an anchor with a

rope to it from the shore. As this service should be performed in fair weather (to be prepared for the storm), it may be regulated with the greatest exactness, and should take place at the top of high-water, that the upper part of the buoy may be at the full stretch of its power, and only seen at that time. Should the shore be extremely flat, it will be desirable to place another set at a sufficient distance beyond the first, to insure the operation of this method in any state of the tide.

"The royal mortar being brought to the spot, is to be pointed in the direction for the buoy, and should be laid at a very low elevation, but such as to insure the range; for the more it is depressed, the less slack of rope there will be from the parabola formed in the shot's flight; the basket with the rope ready laid (having a barbed shot to it) is to be placed in the front of the mortar; on its being fixed, instantly haul the slack of the rope in, to prevent the effect produced on it by a strong tide; which being done, let the remainder be gently hauled in, to insure the shot's grappling with the great rope; when that is caught and hooked, a power will be acquired fully adequate to the service.

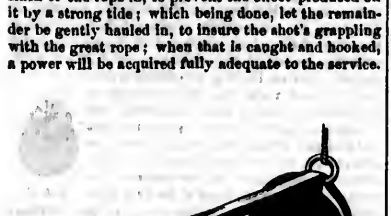

Fig. 13.

"As a cast-iron anchor appears particularly adapted to this method, and would be much cheaper than hammered, fig. 13 is a plan of one which the British Navy Board approved, and allowed me to cast at their expense, for the purpose of making the experiment. When a vessel is in that extreme and perilous situation, driven under a rugged and inaccessible cliff, and in danger of going soon to pieces, the most prompt method I should suggest is, by lowering to the crew a rope with stiff loops spliced into it (fig. 14), at the distance of a foot and a half from each loop, of sufficient size to contain the foot, by which they can ascend as a ladder. This rope-ladder is capable of being projected; and one of an inch and a half rope was thrown from a mortar 194 yards. It might also, from the simplicity of its structure, be extremely useful in escaping from a house on fire. By making one end fast to the leg of a bed or a table, the person would come down from the window in safety, and with much less difficulty, and quicker, than with the common rope-ladder, which is heavier and more unwieldy. It has great advantages when employed in saving shipwrecked men in situations just described, when, from extreme cold, and almost benumbed limbs, it would be impossible for them to climb up a rock, or ascend it even by the aid of a common rope. The holds, thus spliced in, will support both hands and feet."

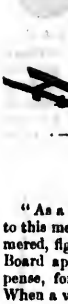

Fig. 14.

The Report of a Committee of the House of Commons contains also a paper of instructions for the managers of Captain Manby's apparatus on shore, which are somewhat more minute than the directions published in his Essay. For example:—"If the wind be sideways to the shore, the mortar must be pointed sufficiently to windward to allow for the slack of the rope lighting on the object, as the rope will, of course, be borne considerably to leeward by the effect of a strong wind. The distance your judgment decides the vessel to be from the shore should regulate the charge of powder as stated in the scale, taking just a sufficient quantity to clear the object: an attention to this will be more certain of your effecting communication, and guarding against the danger of the rope breaking, or any other circumstance that might prevent the successful performance of the service. The elevation of 15° is to be preferred, particularly if the wind is sideways, pointing the mortar sufficiently to windward, as the rope would then fall against the weather-most part of the rigging of the stranded vessel. When a vessel is driven on shore in the night, you will flash gunpowder as often as convenient on your way; this will animate the crew, and denote to them you are coming to their assistance. On getting to the spot where you have reason to suspect the vessel lies, as you are not able to discover her from the extreme darkness, and if the people on board can not [make known] their situation by luminous signals, or noises (which they will be directed to make if possible), you will lay the mortar at a very high elevation, and fire a light ball. Just before you fire (the rope) it would be advisable to let off a blue light to put the crew on their guard, to look out, and be ready to secure the rope. The service can be performed with a carronade."

In the report we have a copy of directions to persons on board vessels stranded on a lee-shore, proposed to be delivered to the masters at the custom-house. It is observed, that even snapping a pistol, when the powder is wet, may sometimes afford a signal visible on shore, from the sparks of the steel alone. The other parts of the directions will be supplied by those who understand the principles of the proposed mode of relief.

Rockets have of late years been much employed instead of the mortar, in Manby's apparatus for throwing a line to a ship in distress. "Dennett's Rocket Apparatus" is supplied to many stations along the coast. The only advantage which the rocket has over the mortar is its greater portability; for, being much lighter, it can be used with greater facility among rocky cliffs, and in positions difficult of access. The disadvantages of rockets are, that they are somewhat uncertain, sometimes exploding as soon as ignited, to the danger of the bystanders; and they are also liable to deteriorate from the effects of damp or of age. Moreover, being expensive, they can not be often employed in trials, so as to keep up the practice of the people employed in using them. The range of a shot from a 24-lb. mortar, which is the ordinary size, is about the same as that of a 12-lb. rocket, which is the largest in use. As the management of the mortar and rocket apparatus is much better understood by the officers and men of the coast-guard service than by ordinary boatmen and fishermen, it has been almost entirely le. in their hands, and is provided by the Board of Customs. There are in England 132 mortar and rocket stations; in Scotland, 15; in Ireland, 22. Several inventions, or variations, in the Manby apparatus may be just glanced at. M. G. Delvigne uses a howitzer instead of a mortar, while a portion of the line to be carried is contained in the projectile. Mr. Greener has a method of discharging a rocket, with a line attached, from a light harpoon gun. When discharged, the rocket ignites, and is said to prolong the range to a greater distance than if the gun or the rocket were alone employed. Captain Jerningham, R.N., has an anchor of a particular form, which he proposes to fire from a Manby's mortar, in sufficient numbers to afford the means of hauling a life-boat through the surf. Mr. A. G. Carte employs a war-rocket instead of a Dennett's rocket.

Life-boats.—The last description of the inventions

to be considered, with regard to the preservation of lives in cases of shipwreck, is that of life-boats, which are of such a construction as to be incapable of sinking, even when filled with water. The occasional adaptation of the common boats of the ship to such purposes, by means of empty casks, has been already noticed. But the boats now in question are supposed to be kept on shore at proper stations, and manned by active persons, who are in the habit of exerting themselves for the relief of seamen in distress. Mr. Henry Greathead of South Shields, received a gold medal and fifty guineas from the Society of Arts, in 1802, and a parliamentary reward of £1200, besides further remunerations from the Trinity House and from Lloyd's Coffee-house, for his invention of a life-boat, which is described in the *Transactions of the Society*, vol. xx., p. 283. The length of this boat is 30 feet, its breadth, 10, and its greatest depth about 3, besides a general curvature, which nearly doubles the depth, as reckoned from the ends; the convexity below being intended to give it a greater facility of turning, and a greater power of mounting on the waves without submersion of the bow, which would increase the resistance, though it would not sink the boat; the breadth is also continued further than usual fore and aft, in order to contribute to the same property. The gunwale projects some inches, and the sides below it are cased with pieces of cork, amounting in the whole to seven cwt., which are secured by plates of copper. There are ten short oars of fir, fixed on pins to the gunwales, and a longer oar for steering at each end, both ends of the boat being alike. It is painted white, in order to be more conspicuous; and a carriage is provided, for conveying it overland when required. The description is accompanied by documents of the preservation of 200 or 300 men by the boats of South Shields and North Shields, which were built in 1789 and 1798 respectively.

Mr. Christopher Wilson received a gold medal in 1807, for a life-boat with air gunwales, which was tried at Newhaven, and was said to be lighter and more manageable than Mr. Greathead's. (*Transactions*, xxv. 55.) "Little is required," says Captain Manby, "to establish the importance and advantages that will result from giving every boat the properties of a life-boat, particularly when taken into consideration that it can be produced at a very trifling expense." To illustrate the method of giving the properties of preservation to any boat—a man-of-war's jolly-boat, for example—we quote the description of the one which was fitted up to make experiments thereon, by permission of the Honorable Commissioners of the Navy Board. "To give it buoyancy, empty casks were well lashed and secured in it. For the advantage of keeping it in an upright position, launching from a flat shore, beaching, and to resist upsetting, it had billage boards of equal depth with the keel, and when a good sized piece of iron or lead was let into or made fast to the keel, if any accident did upset the boat, it immediately regained its original posture. A stout projecting rope, with swellings upon it to increase its elasticity, surrounded the gunwale, served as a fender, and prevented it being stove in lowering down, or when driven in contact with the vessel it might be going to relieve. The boat thus described had the plug out, and was filled with water until it ran over the gunwale, when a crew of four, with myself, tried it in every way, and found from the buoyant property of the casks, it kept the boat so much above the water's edge, that it was rowed with the greatest ease, and was capable of performing any service required."

Mr. J. Boyce, in 1814, obtained a medal for his life-boat and safety-buoy, consisting of hollow cylinders made of canvas, painted and varnished, and connected with each other. It was tried on a river, and carried a man with safety (*Trans.*, xxxii., 177); but surely it could not be trusted among breakers on a lee shore. In 1818 Mr. Gabriel Bray obtained a silver medal for his invention of a boat filled with air-boxes under the seats and along the sides. (Vol. xxxv., p. 172.)

Of late years the subject of life-boats has attracted considerable attention, from the circumstance of the increasing number of wrecks, consequent on the rocky nature of many shores, and the vast and increasing amount of our commerce. The exertions, too, of the National Life-Boat Institution have had a powerful influence in directing attention to this subject. This society, founded in 1824, is under the patronage of her majesty, and the presidency of his grace the Duke of Northumberland. The object is to assist every wrecked person in the kingdom, by such means as the establishment of life-boats and rocket-mortars at all the dangerous parts of the coast; to assist in the formation of local committees at the chief ports; to confer rewards in the form of medals, votes of thanks, or pecuniary remuneration to all persons risking their lives for the sake of others; and also to encourage the invention of new or improved life-boats, belts, rocket apparatus, buoys, and other means of saving life. This admirable society is dependent on voluntary subscriptions for its existence and support. That the society has worked with some success, may be judged of from the fact, that since its establishment it has been instrumenal in saving the lives of 9682 persons; it has granted 79 gold medallions, and 556 silver medals, besides pecuniary rewards, amounting to £9631. The attention of the public is also kept alive by the publication of a journal entitled *The Life-Boat*, which, in addition to statistical returns of shipwrecks, contains information on every subject connected with the preservation of life from shipwreck. One of the publications of the society is a *Wreck Chart of the British Islands*, originally published by the Admiralty. A vessel wrecked on their coast is indicated by a black spot ●, while a vessel so seriously damaged as to require to discharge her cargo is indicated by +; and the number of such marks at any one spot indicates the annual average of wrecks, which may be large because the coast is dangerous, or because the traffic is great. Thus, the mouth of the Tyne shows a larger number of black dots and crosses than any other place; the mouth of the Tees and the mouth of the Weir occupy the next places of distinction in this dismal chart: these three rivers being the outlets of the district by which London is supplied by sea with 3,000,000 tons of coal every year, giving employment to several thousand collier ships, which sail to and fro, and greatly add to the otherwise large trade of the Northumberland and Durham ports. The coast of these two counties indicates per annum 180 wrecks, sinkings, and serious collisions. The mouth of the Humber, the coast of Suffolk between Yarmouth and Southwold, the sandy shoals off the mouth of the Thames, the Goodwin Sands, the Scilly Isles, Barnstable Bay, and Liverpool, rank as the next dangerous portions of the English coast. The Welsh coast is also dangerous, especially Glamorgan, Pembroke, and Anglesea. Scotland, except near the Firth of Forth, is comparatively free from wrecks, the western coast remarkably so, probably from being less exposed to the winds, which tend to drive ships ashore on the eastern coast. In Ireland, the east and south coasts present about an equal number of wrecks, the smaller number being on the northern and western. In the year 1855 no less than 1141 wrecks occurred on the coasts of the United Kingdom—about one half of that number belonging to the east coasts of Great Britain. The loss of life from shipwreck during that year was comparatively small, being only 469, or less than one third of the loss of the preceding year, the average loss per annum being between 600 and 700 lives.

Passing over a great variety of proposals for life-boats, we proceed to notice the boat which the Life-boat Institution recommends and supplies to its sta-

tions. Its history is interesting. A few years ago, a lamentable accident occurred to a South Shields life-boat, whereby twenty pilots were drowned. This induced the Duke of Northumberland to offer a reward for the best model of a life-boat. This offer was responded to by boat-builders and others from various parts of the kingdom, as well as from France, Holland, Germany, and America, so that 280 models and plans were sent in. About 50 of the best of these were exhibited by his Grace in the Great Exhibition of 1851; and he expressed the intention of placing the best life-boats, with their subsidiary apparatus, on all the exposed points of the coast of Northumberland. He also caused a report to be prepared, accompanied by plans and drawings, with a view to elicit the best form of life-boat; for although the prize of £100 was assigned to Mr. Beeching of Great Yarmouth, it was considered that a better boat might still be produced. Accordingly, Mr. James Peake, assistant master-shipwright in her majesty's dockyard at Woolwich, and a member of the Life-boat Committee appointed by the Duke of Northumberland, was requested to furnish a design for a life-boat which might combine as many as possible of the advantages, and have as few as possible of the defects, of the best of the models examined by the committee. A boat was accordingly designed by Mr. Peake, and built at the public expense in Woolwich dockyard. Some modifications were from time to time made in her, in consequence of various experiments, and a trial of her capabilities made in a gale of wind at Brighton. The boat, with others of the same design, built at the cost of the Duke of Northumberland, was placed on the Northumberland coast in the autumn of 1852. In the course of the following winter, these boats were taken afloat on trial by the Society's inspector of life-boats, some of them in heavy seas and gales of wind, and the result of the trials was considered to be highly satisfactory. Other boats were therefore built on the same plan, and we may therefore consider this as the model life-boat. These boats have been, for the most part, of two sizes, viz., 27 and 30 feet in length, with 7½ to 8 feet beam, and rowing from 8 to 12 oars, double-banked—their weight averaging two tons. But as such boats have been found too heavy to be managed in some localities, where boatmen are few, boats of less beam and weight, rowing six oars single-banked, but on the same design in other respects, have been built under the denomination of second-class life-boats. The former class of boats has also been somewhat modified since the description of the boat was first published, so as to be reduced somewhat in beam, and to have less height, and greater sharpness of bow and stern, to enable them to be rowed with greater speed against a head gale and a heavy sea. They are also built of fir, upon the diagonal principle of double planking without timbers, whereas the earlier boats were of elm, and clenched, or clinker-built.

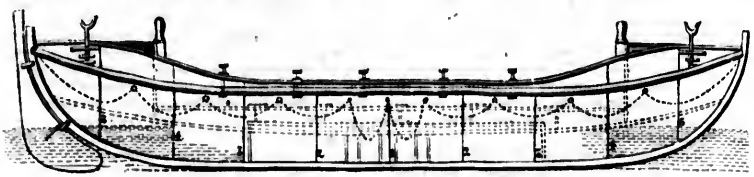

Fig. 15.

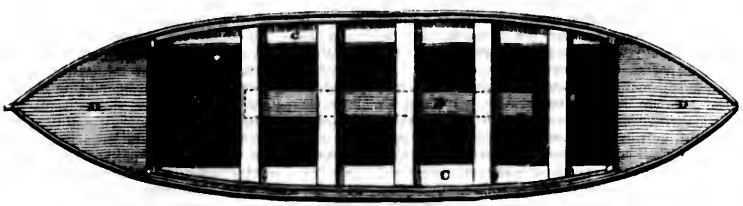

Fig. 16.

The accompanying figures show the general form and the nature of the fittings of the air-chambers of one of these boats, 30 feet in length, and 7 feet 6 inches in breadth. In figs. 15 and 16, corresponding to the elevation and deck-plans, the general exterior form of the boat is seen, showing the sheer of gunwale, length of keel, and rake, or slope of stem and stern posts. The dotted lines of fig. 15 show the position and dimensions of the air-chambers within the board, and of the relieving tubes. A represents the deck, B the relieving tubes, six inches in diameter, C the side air-cases, D the end air-chambers. In fig. 17 the exterior form of transverse sections, at different distances, from stem to stern, is shown. Fig. 18 represents a midship transverse section, A being sections of the side air-cases, B the relieving tubes, bored through solid massive chocks of wood, of the same depth as the space between the deck and the boat's floor; C C are spaces beneath the deck filled up, over six feet in length, at the mid-ship part of the boat, with solid chocks of light wood, or boxes of cork, forming a portion of the ballast; D is a section of a tier below the deck, with a movable hatch or lid, in which the boat's cable is stowed, and into which all leakage beneath the deck is drained through small holes with valves fixed in them. In some of the later boats a small draining tier only is placed, having a pump in it, by which any leakage can be pumped out by one of the crew while afloat. The festooned lines in fig. 15 represent exterior life-lines,

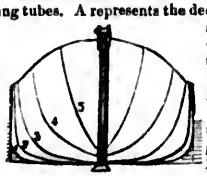

Fig. 17.

Fig. 18.

attached round the entire length of the boat, to which persons in the water may cling until they can be got into the boat; the two central lines are festooned lower than the others, to be used as stirrups, so that a person in the water, by stepping on them, may climb into the boat.

The chief peculiarity of a life-boat is its incapability of being sunk, in consequence of its being fitted with water-tight air-cases, or compartments. One of the difficulties of life-boats has been to decide as to the amount and distribution of such air-cases. The necessary space for rowing and working the boat, and for the stowage of shipwrecked persons being secured, the space along the sides within-board should be entirely occupied by buoyant cases, or compartments, because, on the boat's shipping a sea, the water, until got rid of, is confined to the midship parts of the boat, where it serves to a great extent as ballast, instead of falling over to the lee-side, and destroying the equilibrium of the boat. Hence, barrels or casks, which do not conform in shape to the sides of the boat, are not well adapted to serve as air-cases. In Mr. Peake's life-boat there is a water-tight deck at the load-water-line, and detached air-boxes along the sides, closely conforming to their shape from the thwarts to the deck. Extra buoyancy is also derived from large air-cases, built across the bow and stern, and occupying from 3 feet to 4½ feet in length, from the stem and stern posts to the gunwale height. These cases are chiefly intended to provide self-righting power; but in the event of the boat being stove in, and the space below the deck being filled with water, these air-cases alone have sufficient buoyancy to float the boat.

The second peculiarity of a life-boat is its power of discharging, in a few seconds, any water which may be shipped by the breaking over of the sea, or by the boat being suddenly thrown on her beam-ends. This property does not belong to all life-boats, for, in certain cases (the Norfolk life-boats, for example) the plugs which stop certain holes in the floors are taken out during a gale of wind, or a heavy sea, so as to let the water into them until it is at the level of the sea. The water thus let in is confined by the wide sea-cases to the midships of the boat, where it serves as a loose ballast, and the boatmen consider that it is safest to go off under sail with the boat deeply immersed. The Liverpool life-boats have no relieving holes, so that when filled by a sea, the water must be got rid of by bailing. In Mr. Peake's boat there is a water-tight deck at the load-water-line, and a number of large open tubes, opening at the surface of the deck, and passing through the space between the deck and the floor; the bottom orifices being furnished with self-acting valves opening downward, so as to allow any water shipped to escape through them. The deck being placed at or above the load-water-line, any water which is above it will be above the outside level of the sea, so that the water escapes from the deck by its own weight, and disappears in a few seconds. As a life-boat has very great buoyant power, it is important to her stability and safety to attend to the ballasting. The Greathead life-boats have usually no ballast, their great breadth of beam being relied on for stability; but some of them have a tank in the midships beneath the deck, which can be filled with water. Beeching's life-boats are similarly ballasted; but accidents, with loss of life, have arisen from a difficulty in filling the tanks, and preventing the escape of the water when full; hence solid ballast is to be preferred. Mr. Peake's life-boats are ballasted with heavy iron keels, and with solid wood and cork ballast, stowed under the decks; and should these be stove in, and the space beneath be filled with water, the wood and the cork would supply extra buoyancy.

A life-boat ought to be self-righting if upset, a property which, however, belongs only to Mr. Peake's and Mr. Beeching's boats, some boat-builders considering that stability is sacrificed thereby. The fact, however, has been established in the *Life-boat Journal*, that the means employed to produce self-righting add to the stability of a boat, and improve her in other respects. The self-righting power is thus attained: 1. The boat is built with considerable sheer of gunwale, the bow and stern being from 1 foot 6 inches to 2 feet higher than the sides of the boat at her centre, and the space within the boat at either extremity, to the distance of from 3 to 4½ feet from the stem and stern posts to gunwale height, is then inclosed by a sectional bulk-head and a ceiling, and so converted into a water-tight air-chamber, the cubical contents of which, from the thwarts upward, are sufficient to bear the whole weight of the boat when she is placed in the water in an inverted position, or keel upward. 2. A heavy iron keel (from 4 to 8 cwt.) is attached, and a nearly equal weight of light wood or cork ballast is stowed between the boat's floor on the deck. No other measures are necessary to be taken in order to affect the self-righting power. When the boat is forcibly placed in the water with her keel upward, she is floated unsteadily on the two air-chambers at bow and stern; while the heavy iron keel and other ballast being then carried above the centre of gravity, an unstable equilibrium is at once effected, and the weight of the iron keel falling over on one side, immediately restores the boat to her proper position; in other words, she self-rights."—*The Life-boat*, No. 22. Lateral stability or stiffness, being the tendency to preserve an upright position in the water, with proportionate resistance to upsetting, is obtained by breadth of beam or by ballast—as in Mr. Peake's boats, by an iron keel and other solid ballast, and by flatness and length of floor, with moderate beam only. The other qualities to be required in a good life-boat are speed strength, and stowage-room, all of which seem to have been well considered in Mr. Peake's boats.

A new description of life-boat, invented by the Rev. E. L. Berthon, M.A., of Fareham, and known as the Fareham Life-boat, has been made the subject of a patent. Its novel feature is, that it is collapsible, so that it combines the property of the life-boat, with facility of stowage in a small space. Hence, it is well adapted for the use of ships, especially large steamers, emigrant vessels, and troop-ships. Its frame-work is of wood, all the timbers extending the whole length of the boat, there being no transverse timbers or ribs. The timbers, four on each side of the stem and keel-piece, are thin, flat, and deep, something like a thin slice of melon; they are made without scarfing, by bending plank over plank till the required thickness is attained. They are jointed together at their ends, and to the tops of the stem and stern posts by a kind of chain hinge. When the boat is collapsed, these timbers stand side by side in vertical planes, like the leaves of a closed book; but when expanded, they stand apart in radial planes, somewhat like the segments of an orange. Attached to the edges of all the timbers are water-proof coverings, of which there are two, the outer skin being secured to the outer edges, and the inner skin to the inner edges of the timbers, by which means the whole body of the boat is divided into eight separate longitudinal cells or compartments, which become filled with air on expanding the boat. This is effected and maintained by the bottom boards and thwarts, which being jointed along the middle line, are made to stand up at an acute angle when the boat is collapsed, and fall down to straight lines when open. The inventor compares the principle of extension to that of a carriage-head, the frame of which may be compared to the boat's timbers, and the joints to the thwarts and stretchers of the bottom boards; and as the leathern covering of the carriage shuts in when the head is down, so the coverings of the boat shut in between the timbers. The boat has rather a deep keel, besides two bilge pieces on each side, and

in every other salient point the covering is protected by wood or copper. The boat is lowered by the following contrivance: Inside the bulwarks is a large, flat, deeply-grooved sheave about 2 feet 6 inches in diameter; it has two deep, narrow grooves cut nearly to its axis, and in these are wound separately the ends of the two falls. From this sheave is a projection on which a friction-strap with a powerful lever is made to work. This being placed flat against the bulwarks, the falls are brought to it fore and aft by small sheaves set in the top-rail; thus the friction of the strap, when the boat is up, is enough to prevent motion; but by slacking the lanyard by which the leather is secured, it may be allowed to descend rapidly or slowly, according to the pressure applied to the break. Rising and falling derricks are substituted for davits. The average size of the Fareham life-boat is 32 by 10 feet; it has 8 thwarts, besides seats round the stern, and will pull, if required, 12 oars, double-banked.

Captain Manby's proposal for throwing ropes from ship to ship in cases of accidents may easily be understood from the methods which he employs for saving lives in shipwrecks. The life-buoy by Lieutenant Cook, R.N. F.R.S., Professor of Fortification at Addiscombe College, is related to the same class of inventions; its object is to preserve the life of a person falling overboard in the night, by means of a floating light; and it obtained him a gold medal from the Society of Arts, in 1818.—*Transactions*, xxxvi. He observes that a ship may often have to run half a mile before she can get about and lower a boat, so that it becomes highly desirable to afford a temporary support to the sufferer. The machine consists of two copper spherical air-vessels, with a square tapering tube through each, made water-tight, and united together by a cross-piece of wood, in which are two brass conducting tubes through which is fixed a perpendicular tubular-staff, with a brass ferule at each end, and a copper sliding-rod, nearly its own length, within it. Attached to the lower end of the rod is a flat circular balance-weight, bearing a chain by which the life-buoy is suspended, and a link which, when hooked to a stud in the lower ferule, bears up the rod and the balance-weight, but which, when unhooked, allows the weight to draw the rod about two thirds out of the staff. To the head of the perpendicular staff is attached at night a fuse, on a brass fuse-plate, the shank of which is secured in a socket by a thumb-screw. The buoy is secured to the ship by the chain only, the ring of which hangs on the hook of the sheave of the trigger-plate. Attached to the stern of the vessel are two iron rods cased with copper tubing, together with the screw-bolts, from which they are suspended; just above the forked stay which keeps the rods parallel, at a proper distance from the stern, is the trigger-plate, and the brass fuse-case which covers and protects the fuse on the head of the staff. There is also a brass case for the lock or percussion-hammer, placed so as to communicate with the fuse-case, by means of the horizontal tube; all these, together with the pulleys and guard-iron, are firmly attached to the stern of the vessel, inside of which, immediately opposite to the pullies, are fixed the cups and handles, the one for firing the lock and lighting the fuse, the other for raising the trigger-bolt and disengaging the buoy from the ship. As soon as the trigger-bolt is raised, the sheave revolves, the stop turns round, and the life-buoy slides off the rods into the water, bearing on the head of the staff a brilliant flame. The balance-weight, when no longer held up by the chain, drops upward of three feet below the cross-piece, prevents the buoy from upsetting, and affords a place for the man to stand on. This apparatus admits of being lighted and let down into the water in the short space of five seconds. Lieutenant Cook is also the inventor of a plan for converting boats used for ordinary purposes into life-boats at pleasure.

Mr. Miller's safety-poles for skaters, and Mr. Prior's mode of preventing accidents in descending mines, are mentioned in the *Transactions of the Society of Arts* (vols. xxxii., xxxvi.) Apparatus of the latter kind has been introduced at different times with various modifications. In coal-pits, or coal and iron pits, where the men are raised and lowered in a rectangular iron frame, called a cage, the rope or chain may break, or the cage may be overwound by drawing it over the framing at the pit's mouth. Mr. Robert Blee of Redruth, has introduced what he calls a safety-bucket, and Messrs. White and Grant of Glasgow, have a safety-cage. These inventions depend upon some such arrangements as the following: Two pairs of eccentrics are attached to the ends of two parallel shafts, which extend across the top of the cage; the edges of the eccentrics are toothed, and when the cage is in motion they are free of the vertical wooden rails which steady the cage in its motion up and down the pit. Should the rope break, two volute springs bring round the thick sides of the eccentrics to bear against the guides, and hold the cage securely. To prevent overwinding, the holdfast which connects the rope to the cage is secured by a curved bolt, kept in place by a strong spring; this bolt moves on a fulcrum, and is continued as a lever beyond the holdfast; across the framing at the mouth of the pit is a bar so arranged that, when the lever comes in contact with it, the bolt becomes disengaged, the cage, by the action of the eccentrics, becomes fixed, and the rope only is drawn up over the pulley. In Mr. Blee's safety-cage the catches allow it to move freely so long as there is a vertical strain on them; but should this cease by the breaking of the rope, the catches become liberated, and attached to the iron staves of the ladders placed on either side of the shaft.

A sketch of the expedients which have been recommended for the preservation of mariners, published in a work entitled *Shipwrecks and Disasters at Sea* (vol. iii., Edinburg, 1822), contains a few further historical details relating to some of the inventions which have been described.—E. H.

Francis's life-boats are very generally used on our American coast, and below we give a short description of them. Many of them are also used in Great Britain. The structure of the boats, and of the wagons may be briefly described. A sheet of galvanized iron or copper of the full size of one half of the boat, from stem to stern, but not thicker than a sixpence, is placed between two dies of the requisite form, and then subjected to enormous hydraulic pressure. The dies require great care, labor, and expense, in their preparation, two being required for each form and size of boat—one for the starboard, and one for the larboard section. The plate of metal is thus pressed into the shape of the half boat, receiving at the same time certain longitudinal, or fore-and-aft corrugations of a peculiar character. The two halves are then riveted together, and the boat is complete.

It is to the corrugations that the boat owes its enormous strength, for it has no frame-work, no ribs, no timbers. A plate of plain metal was exhibited; it was laid on two blocks of wood a yard apart, and was too weak even to bear its own weight. Another plate of metal of the same thickness, but corrugated, was placed on the block, and bore the weight of a man without bending; and would have borne four men. Boats of all sizes may be thus constructed, from the smallest gig to the largest man-of-war's cutter or launch. The great majority of the American steamers have, for some years, carried Francis's boats. In an experiment to test the strength of these boats, one of them was subjected to most violent treatment. It was pitched from a height on stone pavement; it was rolled and bruised upon it, and several men used their utmost endeavors, with heavy hammers, to damage it, but all in vain. It was then set afloat, and four strong men,

pulling with might and main, ran it, stem on, at full speed, to the same wharf, again and again; but at the close of the experiments, which would have utterly annihilated a wooden boat, it was found to have suffered no damage beyond a few dents and bruises, which a hammar set to rights in five minutes.

The wagons were also experimented upon. The wagon was first placed in the water, with the whole of its running-gear attached, including the pole, the weight, 17 cwt. 16 men then got in, their weight amounting to 25 cwt., and brought the wagon to about one foot from the top. Attempts were then made to upset it in the water, by the whole of the men bearing down, first on one side, and then on the other, but all in vain; the upper edge of the wagon could not be brought below the water. Many other severe experiments were tried. The advantages possessed by an army marching with these wagons, are manifold and self-evident. The cumbrous pontoon and bridge train may be dispensed with, the ordinary wagons which must accompany an army supplying their place. On approaching a river, these wagons, full of men, may at once be driven across the water; or if the stream be full and rapid, the wagon-bodies may be taken off their running-gear, and used as boats, propelled by oars, or dragged by ropes from the opposite bank. Two wagon-bodies put together will float a field-piece, with its limber and ammunition ready for instant action. Four of the bodies make a valuable raft. A succession of them may be anchored across the river, planks laid over them, and a bridge for all arms is at once established. For a more extended account of the losses on the coast of the United States, see WRECKS.

Lighter, a large open flat-bottomed vessel, generally managed with oars, and employed to carry goods to, or from a ship, when she is to be laden or delivered. There are also some lighters furnished with a deck throughout their whole length, in order to inclose such merchandise as would be damaged by rainy weather. These are usually called close lighters.

Light-houses. Light-house, and sea-light, are terms which, although not strictly synonymous, are indifferently employed to denote the same thing. *A Sea-light* may be defined as *a light so modified and directed as to present to the mariner an appearance which shall at once enable him to judge of his position during the night, in the same manner as the sight of a landmark would do during the day.* The early history of light-houses is very uncertain; and many ingenious antiquaries, finding the want of authentic records, have endeavored to supply the deficiency by conjectures founded on casual and obscure allusions in ancient writers, and have invented many vague and unsatisfactory hypotheses on the subject, drawn from the heathen mythology. Some writers have gone so far as to imagine that the Cyclops were the keepers of light-houses; while others have actually maintained that Cyclops was intended, by a bold prosopopœia, to represent a light-house itself. A notion so fanciful deserves little consideration; and in order to show how ill it accords with that mythology of which it is intended to be an exposition, it seems enough to quote the lines from the ninth Odyssey, where Homer, after describing the darkness of the night, informs us that the fleet of Ulysses actually struck the shore of the Cyclopean island before it could be seen.

Ἐνθ' ἄνυτις τὴν νῆσον ἐλεύσσομεν ὀφθαλμῶσιν
Οὔτ' οὖν κύματα μακρὰ κυλινδόμενα ποτὶ χέρσον
Ἐσαΐσομεν πρὶν νῆας ἐϋσσέλμους ἐπικέλσαι,
Odyss., ix., 146.

There does not appear any better reason for supposing, that under the history of Tithonus, Chiron, or any other personage of antiquity, the idea of a light-house was conveyed; for such suppositions, however reconcilable they may appear with some parts of the mythology, involve obvious inconsistencies with others. Nor does it seem at all probable, that in those early times, when navigation was so little practiced, the advantages of beacon-lights were so generally known and acknowledged as to render them the objects of mythological allegory.

Colossus of Rhodes.—About 300 years before the Christian era, Chares, the disciple of Lysippus, constructed the celebrated brazen statue, called the Colossus of Rhodes, whose height was upward of 100 feet, which stood at the entrance to the harbor. There is considerable probability in the idea that this figure served the purposes of a light-house; but we do not remember any passage in ancient writers, where this use of the Colossus is expressly mentioned. There is much inconsistency in the account of this fabric by early writers, who, in describing distant objects which could be seen from it, appear to have forgotten the height which they assign to the figure. It was partly demolished by an earthquake, about 80 years after its completion; and so late as the year 672 of our era, the brass of which it was composed was sold by the Saracens to a Jewish merchant of Edessa, for a sum, it is said, equal to $180,000.

Pharos.—Little is known with certainty regarding the Pharos of Alexandria, which was regarded by the ancients as one of the seven wonders of the world. It was built by Ptolemy Philadelphus, about 300 years before Christ; and it is recorded by Strabo, that the architect Sostratus, the son of Dexiphanes, having first secretly cut his own name on the solid walls of the building, covered the words with plaster, and, in obedience to Ptolemy's command made the following inscription on the plaster—"King Ptolemy to the gods, the saviours, for the benefit of sailors." What truth there may be in this account of the fraud of Sostratus there is now no means of determining; and the story is only now interesting, in so far as it shows the object of the royal founder and the use of the tower. The accounts which have reached us of the dimensions of this remarkable edifice are exceedingly various; and many of the statements regarding the distance at which it could be seen are clearly fabulous. Josephus approaches nearest to probability, and informs us, that the fire which was kept constantly burning on the top, was visible by seamen at a distance of about 40 miles. If the reports of some writers are to be believed, this tower must have far exceeded in size the great pyramid itself; but the fact that a building of comparatively so late a date should have so completely disappeared, while the pyramid remains almost unchanged, is a sufficient reason for rejecting, as erroneous, the dimensions which have been assigned by most writers to the Pharos of Alexandria. Some have pretended that large mirrors were employed to direct the rays of the beacon-light on its top, in the most advantageous direction; but there is nothing like respectable evidence in favor of this supposition. Others, with greater probability, have imagined that this celebrated beacon was known to mariners, simply by the uncertain and rude light afforded by a common fire. In speaking of the Pharos, the poet Lucan, on most occasions sufficiently fond of the marvelous, takes no notice of the gigantic mirrors which it is said to have contained.

Septima nox, Zephyro nunquam taxante rudentes,
Ostendit Phariis Ægyptia littora *flammis*.
Sed prius orta dies nocturnam *lampada* texit,
Quam tutas intraret aquas. *Pharsal.*, ix., 1004.

It is true that, by using the word "*lampada*," which can only with propriety be applied to a more perfect mode of illumination than an open fire, he appears to indicate that the "*flamma*" of which he speaks, were not so produced. The word *lampada* may, however, be used metaphorically; and *flammis* would, in this case, not improperly describe the irregular appearance of a common fire. Those who are desirous of knowing all that occurs in ancient authors on the subject of the

Pharos of Alexandria, may consult PLINY, l. xxxvi., c. 12; l. v., c. 18, and l. xiii., c. 11. STRABO, l. xvii., p. 791, *et seq.* CÆSAR, *Comment. de Bell. Civil.*, l. iii., Pompon. MELA, l. ii., c. 7. AMMIAN. MARCELLIN, l. xxii., c. 16. JOSEPH. *de Bell. Judiac.*, l. vi. NICHOLAS LLOYD'S *Lexicon Geographicum*, and the *Notitia Orbis Antiqui*, of Celarius, l. iv., c. 1, p. 13.

Coruña.—Mr. Moore, in his *History of Ireland* (vol. i., p. 16), speaks of the Tower of Coruña, which, he says, is mentioned in the traditionary history of that country as a light-house erected for the use of the Irish in their frequent early intercourse with Spain. In confirmation of this opinion, he cites a somewhat obscure passage from Æthicus, the cosmographer. This in all probability is the tower which Humboldt mentions in his Narrative under the name of the *Iron Tower*, which was built as a light-house by Caius Sævius Lupus, an architect of the city of Aqua Flavia, the modern Chaves. A light-house has lately been established on this headland, for which dioptric apparatus was supplied from the workhop of M. Létourneau of Paris. See also a curious account of the traditions about this tower in SOUTHEY'S *Letters from Spain and Portugal*, p. 17. There is also a record in Strabo, of a magnificent light-house of stone at Capio, or Apio, near the harbor of Menestheus (the modern Mesa Asta, or Puerto de Sta. Maria), built on a rock nearly surrounded by the sea, as a guide for the shallows at the mouth of the Guadalquiver, which he describes in terms almost identical with those used by him in speaking of the Pharos of Alexandria. I am not aware of any other notice of this great work, for such it seems to have been, to have deserved the praises of Strabo. In Camden's *Britannia* a passing notice is taken of the ruins called *Cæsar's Altar*, at Dover, and of the *Tour d'Ordre*, at Boulogne, on the opposite coast; both of which are conjectured, on somewhat doubtful grounds, to have been ancient light-houses. Pennant describes the remains of a Roman Pharos near Holywell, but cites no authorities for his opinion as to its use. There were likewise remains of a similar structure at Flamborough-head. A very meagre and unintelligible account is also given of a light-house at St. Edmund's Chapel, on the coast of Norfolk, in Gough's additions to Camden, by which it might seem that the light-house was erected in 1272.—GOUGH'S CAMDEN'S *Britannia*, vol. i., p. 318, and vol. ii., p. 198. Batcheller, in his *Dover Guide* (1845, p. 111), says, that the Dover Pharos was built "during the lieutenancy of Aulius Plautius and Ostorius Scapula, the latter of whom left Britain A. D. 53" (PENNANT'S *History of Whiteford and Holywell*, p. 112).

Modern History.—Such seems to be the sum of our knowledge of the ancient history of light-houses, which, it must be admitted, is neither accurate nor extensive. Our information regarding modern light-houses is of course more minute in its details, and more worthy of credit, as the greater part of it is drawn from authentic sources, or is the result of the actual observation of the writer of this article, who has visited the most important light-houses of Europe. It seems sufficient here to notice briefly the most remarkable establishments of the kind now in existence; reserving, for the latter part of the article, the more appropriate and important topics of the methods of illumination, and the systems of management. The first light-house of modern days which merits attention is the Tour de Corduan, which, in point of architectural grandeur, is unquestionably the noblest edifice of the kind in the world. It is situate on an extensive reef at the mouth of the River Garonne, and serves as a guide to the shipping of Bordeaux and the Languedoc Canal, and, indeed, of all that part of the Bay of Biscay. It was founded in the year 1584, and was not completed till 1610, under Henri IV. It is minutely described in Belidor's *Architecture Hydraulique*. The building is 197 feet in height, and is shown in the accompanying woodcut, fig. 1. Round the base is a wall of circumvallation, 134 feet in diameter, in which the light-

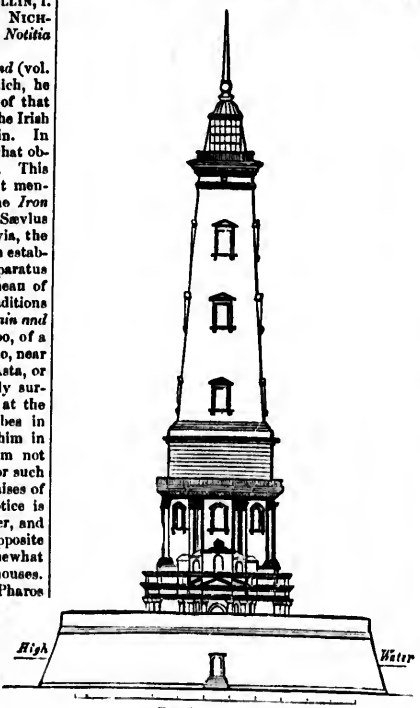

Fig. 1. TOUR DE CORDUAN.

keeper's apartments are formed, somewhat in the style of casemates. The first light exhibited in the Tour de Corduan was obtained by burning billets of oak wood, in a chauffer at the top of the tower; and the use of coal instead of wood was the first improvement which the light received. A rude reflector, in the form of an inverted cone, was afterwards added, to prevent the loss of light which escaped upward. About the year 1780, M. Lenoir was employed to substitute reflectors and lamps; and in 1822 the light received its last improvement, by the introduction of the dioptric instruments of M. Fresnel.—*History of Celebrated Light-houses.*

Eddystone.—The history of the celebrated light-house on the Eddystone rocks, is well known to the general reader, from the narrative of Mr. Smeaton the engineer. These rocks are 9½ miles from the Ramhead, on the coast of Cornwall; and from the small extent of the surface of the chief rock, and its exposed situation, the construction of the light-house was a work of very great difficulty. The first erection was of timber, designed by Mr. Winstanley, and was commenced in 1696. The light was exhibited in November, 1698. It was soon found, however, that the sea rose upon this tower to a much greater height than had been anticipated, so much so, it is said, as to "*bury under the water*" the lantern, which was 60 feet above the rock; and Mr. Winstanley was therefore afterward under the necessity of enlarging the tower, and carrying it to the height of 120 feet. In Novem-

ber, 1703, some considerable repairs were required, and Mr. Winstanley, accompanied by his workmen, went to the light-house to attend to their execution; but the storm of the 26th of that month carried away the whole erection, when the engineer and all his assistants unhappily perished.

The want of a light on the Eddystone soon led to a fatal accident; for, not long after the destruction of Mr. Winstanley's light-house, the *Winchilsea* man-of-war was wrecked on the Eddystone rocks, and most of her crew were lost. Three years, however, elapsed after this melancholy proof of the necessity of a light before the Trinity House of London could obtain a new act to extend their powers; and it was not till the month of July, 1706, that the construction of a new light-house was begun, under the direction of Mr. John Rudyerd of London. On the 28th of July, 1708, the new light was first shown, and continued to be regularly exhibited till the year 1755, when the whole fabric was destroyed by accidental fire, after standing 47 years. But for this circumstance, it is impossble to tell how long the light-house might, with occasional repair, have lasted, as Mr. Rudyerd seems to have executed his task with much judgment, carefully rejecting all architectural decoration, as unsuitable for such a situation, and directing his attention to the formation of a tower which should offer the least resistance to the waves. The height of the tower, which was of a circular form, and constructed of timber, was, including the lantern, 92 feet, and the diameter at the base, which was a little above the level of high water, was 23.

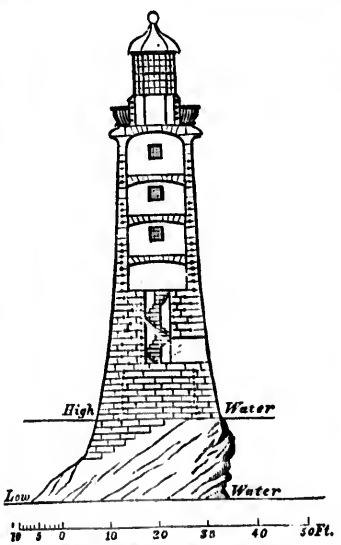

Fig. 2. EDDYSTONE LIGHT, CORNWALL.

The advantages of a light on the Eddystone having been so long known and acknowledged by seamen, no time was permitted to elapse before active measures were taken for its restoration; and Mr. Smeaton, to whom application was made for advice on the subject, recommended the exclusive use of stone as the material, which, both from its weight and other qualities, he considered most suitable for the situation. On the 5th of April, 1756, Mr. Smeaton first landed on the rock, and made arrangements for erecting a light-house of stone, and preparing the foundations, by cutting the surface of the rock into regular horizontal benches, into which the stones were carefully dovetailed or notched. The first stone was laid on 12th June, 1757, and the last on the 24th of August, 1759. The tower measures 68 feet in height, and 26 feet in diameter at the level of the first entire course, and the diameter under the cornice is 15 feet. The first 12 feet of the tower form a solid mass of masonry, and the stones are united by means of stone joggles, dovetailed joints, and oak treenails. It is remarkable that Mr. Smeaton should have adopted an arched form for the floors of his building, instead of employing these floors as tie-walls formed of dovetailed stones. To counteract the injurious tendency of the outward thrust of the arched floors, Mr. Smeaton had recourse to the ingenious expedient of laying, in circular trenches or beds in the stones which form the outside casing, sets of chains, which were heated by means of an application of hot lead, and became tight in cooling. The light was exhibited on the 16th October, 1759; but such was the state of the light-room apparatus in Britain at this period, that a feeble light from tallow candles was all that decorated this noble structure. In 1807, when the property of this light-house again came into the hands of the Trinity House, on the expiry of a long lease, Argand burners, and parabolic reflectors of silvered copper, were substituted for the chandelier of candles. Figure 2 shows a section of the Eddystone light-house, as executed according to Mr. Smeaton's design.

Bell-Rock.—The dangerous reef called the Inch Cape, or Bell-Rock, so long a terror to mariners, was well known to the earliest navigators of Scotland. Its dangers were so generally acknowledged, that the Abbots of Aberbrothick, from which the rock is distant about 12 miles, caused a float to be fixed upon the rock, with a bell attached to it, which, being swung by the motion of the waves, served by its tolling to warn the mariner of his approach to the reef. Among the many losses which occurred on the Bell-Rock in modern times, one of the most remarkable is that of the *York*, 74, with all her crew, part of the wreck having been afterward found on the rock, and part having come ashore on the neighboring coast. During the survey of the rock also, many instances were discovered of the extent of loss which this reef had occasioned, and many articles of ships' furnishings were picked up on it, as well as various coins, a bayonet, a silver shoe-buckle, and many other small objects. Impressed with the great importance of some guide for the Bell-Rock, Captain Brodie, R.N., set a small subscription on foot, and erected a beacon on spars on the rock, which, however, was soon destroyed by the sea. He afterward constructed a second beacon, which soon shared the same fate. It was not, however, until 1802, when the Commissioners of Northern Lights brought a bill into Parliament for power to erect a light-house on it, that any efficient measures were contemplated for the protection of seamen from this rock, which, being covered at every spring-tide to the depth of 12 feet, and lying right in the fareway to the Firths of Forth and Tay, had been the occasion of much loss both of property and life. In 1806 the bill passed into a law, and various ingenious plans were suggested for overcoming the difficulties which were apprehended, in erecting a light-house on a rock 12 miles from land, and covered to the depth of 12 feet by the tide. But the suggestion of Mr. Robert Stevenson, the engineer to the Light-house Board, after being submitted to the late Mr. Rennie, was at length adopted; and it was determined to construct a tower of masonry, on the principle of the Eddystone. On the 17th of August, 1807, Mr. Stevenson accordingly landed with his workmen, and commenced the work by preparing the rock to receive the supports of a temporary wooden pyramid, on which a barrack-house, for the reception of the workmen, was to be placed; and during

this operation much hazard was often incurred in transporting the men from the rock, which was only dry for a few hours at spring-tides, to the vessel which lay moored off it. The lowest floor of this temporary erection, in which the mortar for the building was prepared, was often broken up and removed by the force of the sea. The foundation having been excavated, the first stone was laid on the 10th July, 1808, at the depth of 16 feet below the high-water of spring-tides, and at the end of the second season, the building was 5 feet 6 inches above the lowest part of the foundation. The third season's operations terminated by finishing the solid part of the structure, which is 30 feet in height; and the whole of the masonry was completed in October, 1810. The light was first exhibited to the public on the night of the 1st of February, 1811. The difficulties and hazards of this work were chiefly caused by the short time during which the rock was accessible between the ebbing and flowing tides; and among the many eventful incidents which rendered the history of this work interesting, was the narrow escape which the engineer and 31 persons made from being drowned, by the rising of the tide upon the rock, before a boat came to their assistance, the attending vessel having broken adrift. This circumstance occurred before the barrack-house was erected, and is narrated by Mr. Stevenson in his account of the work, published at the expense of the Light-house Board in 1824, to which we may refer for more minute information on the subject of this work, and the other lights of the coast of Scotland.

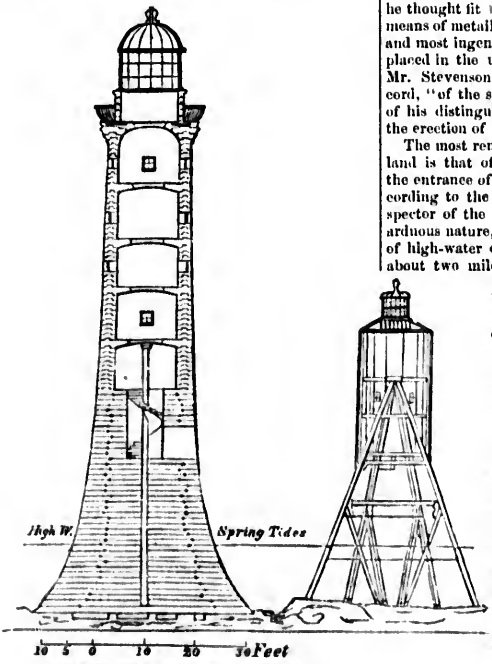

Fig. 3. BELL-ROCK LIGHT, SCOTLAND.

The Bell-Rock tower is 100 feet in height, 42 feet in diameter at the base, and 15 at the top. The door is 30 feet from the base, and the ascent is by a massive copper ladder. The apartments, including the light-room, are six in number. The light is a revolving red and white light, and is produced by the revolution of a frame containing 20 Argand lamps, placed in the foci of parabolic mirrors, arranged on a quadrangular frame, whose alternate faces have shades of red glass placed before the reflectors, so that a red and white light is shown successively. The machinery, which causes the revolution of the frame containing the lamps, is also applied to tolling two large bells, to give warning to the mariner of his approach to the rock in foggy weather. Fig. 3 shows a section of the Bell-Rock Light-house, and of the temporary barrack-house, which was removed on the completion of the work. The entire cost of the light-house was over £61,331. The great merit of Mr. Stevenson, as architect of the Bell-Rock Light-house, lies in his bold conception and unshaken belief in the possibility of erecting a tower of masonry on a reef 12 miles from the nearest land, and covered by every tide—a situation, undoubtedly, much more difficult than that of the Eddystone. But his mechanical skill in carrying on the work is also deserving of high praise. Not only did he conceive the plan of the *movable jib* and *balance cranes*, which he afterward used with much advantage in building the tower; but his zeal, ever alive to the possibility of improving on the conceptions of his great master Smeaton, led him to introduce several beneficial changes into the arrangements of the masonry. In particular, he converted the stone floors of the apartments, which in the Eddystone exert an *outward*, and in its tendency disruptive, thrust, into bonds of union and efficient sources of stability. This thrust was by Smeaton himself considered so disadvantageous, that he thought fit to counteract it, as already noticed, by means of metallic *girders*, concealed in the stone-work, and most ingeniously applied. The Light-house Board placed in the upper apartment of the tower a bust of Mr. Stevenson, "in testimony," as the minutes record, "of the sense entertained by the Commissioners of his distinguished talent and indefatigable zeal in the erection of the Light-house."

The most remarkable light-house on the coast of Ireland is that of Carlingford, near Cranfield Point, at the entrance of Carlingford Lough. It was built according to the design of Mr. George Halpin, the Inspector of the Irish Lights; and was a work of an arduous nature, being founded 12 feet below the level of high-water on the Hawlbowline Rock, which lies about two miles off Cranfield Point. The figure is that of a frustum of a cone, 111 feet in height, and 48 feet in diameter at the base. The light, which is fixed, is from oil burned in Argand lamps placed in the foci of parabolic mirrors. It was first exhibited on the night of the 20th December, 1830.

Skerryvore Rocks.—The Skerryvore Rocks, which lie about 12 miles W.S.W. of the seaward point of the Isle of Tyree, in Argyleshire, were long known as a terror to mariners, owing to the numerous shipwrecks, fatal alike to the vessels and the crews, which had occurred in the neighborhood. A list, confessedly incomplete, enumerates 30 vessels lost in the 40 years preceding 1844; but how many others, which during that period had been reported as "foundered at sea," or as to whose fate not even an opinion has been hazarded, may have been wrecked on this dangerous reef, which lies so much in the track of the shipping of Liverpool and the Clyde, it would be vain to conjecture. The Commissioners of the Northern Light-houses had for many years entertained the project of erecting a light-house on the Skerryvore; and with this object had visited it, more especially in the year 1814, in company with

Sir Walter Scott, who, in his diary, gives a graphic description of its inhospitable aspect. The great difficulty of landing on the rock, which is worn smooth by the continual beat of Atlantic waves, which rise with undiminished power from the deep water near it, held out no cheering prospect; and it was not until the year 1834, when a minute survey of the reef was ordered by the Board, that the idea of commencing this formidable work was seriously embraced.

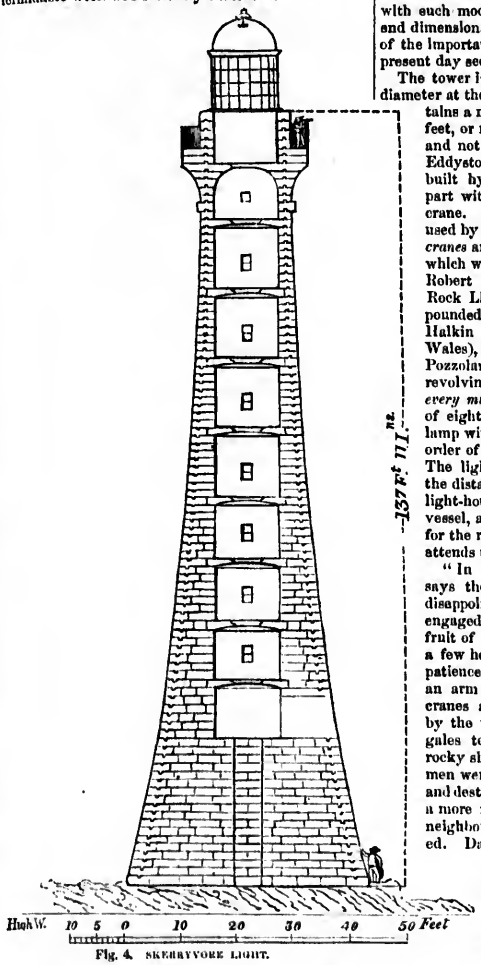

Fig. 4. SKERRYVORE LIGHT.

The reef is composed of numerous rocks, stretching over a surface of nearly eight miles from W.S.W. to E.N.E. The main *nucleus*, which alone presents sufficient surface for the base of a light-house, is nearly three miles from the seaward end of the cluster. It is composed of a very compact *gneiss* worn smooth as glass by the incessant play of the waters, and is so small that at high-water little remains around the base of the tower but a narrow band of a few feet in width, and some rugged humps of rock, separated by gullies, through which the sea plays almost incessantly. The cutting of the foundation for the tower in this irregular flinty mass occupied nearly two summers; and the blasting of the rock, in so narrow a space, without any shelter from the risk of flying splinters, was attended with much hazard.

The design for the Skerryvore Light-house was given by Mr. Alan Stevenson, and is an adaptation of Smeaton's Eddystone Tower to the peculiar situation and the circumstances of the case at the Skerryvore, with such modifications in the general arrangements and dimensions of the building as the enlarged views of the importance of light-houses which prevail in the present day seemed to call for.

The tower is 138 feet 3 inches high, and 42 feet in diameter at the base, and 16 feet at the top. It contains a mass of stone-work of about 58,580 cubic feet, or more than *double* that of the Bell-Rock, and not much less than *five times* that of the Eddystone. The lower part of the tower was built by means of *jib-cranes*, and the upper part with *shear-poles*, *needles*, and a balance-crane. The shear-poles were similar to those used by Smeaton at the Eddystone; and the *jib-cranes* and *balance-crane* were the same as those which were designed and first employed by Mr. Robert Stevenson in the erection of the Bell-Rock Light-house. The mortar used was compounded of equal parts of limestone (from the Halkin Mountain, near Holywell, in North Wales), burnt and ground at the works, and of Pozzolano earth. The light of Skerryvore is revolving, and reaches its brightest state *once every minute*. It is produced by the revolution of eight great annular lenses around a central lamp with four wicks, and belongs to the first order of dioptric lights in the system of Fresnel. The light may be seen from a vessel's deck at the distance of 18 miles. The entire cost of the light-house, including the purchase of the steam-vessel, and the building of the harbor at Hynish for the reception of the small vessel which now attends the light-house, was £86,977, 17s. 7d.

"In such a situation as the Skerryvore," says the engineer, "innumerable delays and disappointments were to be expected by those engaged in the work; and the entire loss of the fruit of the first season's labor in the course of a few hours was a good lesson in the school of patience, and of trust in something better than an arm of flesh. During our progress, also, cranes and other materials were swept away by the waves; vessels were driven by sudden gales to seek shelter at a distance from the rocky shores of Mull and Tyree; and the workmen were left on the rock desponding and idle, and destitute of many of the comforts with which a more roomy and sheltered dwelling, and the neighborhood of friends, are generally connected. Daily risks were run in landing on the rock in a heavy surf, in blasting the splintery gneiss, or by the falling of heavy bodies from the tower on the narrow space below, to which so many persons were necessarily confined. Yet had we not any loss of either life or limb; and although our labors were prolonged from dawn to night, and our provisions were chiefly salt, the health of the people, with the exception of a few slight cases of dysentery, was generally good throughout the six successive summers of our sojourn on the rock. The close of the work was welcomed with thankfulness by all engaged in it; and our remarkable preservation was viewed, even by many of the most thoughtless, as, in a peculiar manner, the gracious work of Him by whom 'the very hairs of our heads are all numbered.'"

There can be little doubt that, down to a very late pe-

riod, the only mode of illumination adopted in the light-houses, even of the most civilised nations of Europe, was the combustion of wood or coal in a chauffer on the top of a high tower. It is needless to enlarge upon the evils of such a method; they need only be named to be understood; for it is difficult to conceive how an efficient system of lighting a coast could be managed under such disadvantages. The uncertainty caused by the effects of wind and rain, and the impossibility of rendering one light distinguishable from another, must have at all times rendered the early light-houses in a great measure useless to the mariner.

Catoptric System.—M. Teulère, a member of the Royal Corps of Engineers of Bridges and Roads in France, is, by some, considered the first who hinted at the advantages of parabolic reflectors; and he is said, in a memoir dated the 26th June, 1783, to have proposed their combination with Argand lamps, ranged on a revolving frame, for the Corduan Light-house. Whatever foundation there may be for the claim of M. Teulère, certain it is, that this plan was actually carried into effect at Corduan under the directions of the Chevalier Borda, and to him is generally awarded the merit of having conceived the idea of applying parabolic mirrors to light-houses. These were prodigious steps in the improvement of light-houses, as not only the power of the lights was thus greatly increased, but the introduction of a revolving frame proved a valuable source of distinction among the lights, and has since been the means of greatly extending their utility. The exact date of the change on the light of the Corduan is not known; but as it was made by Lenoir, the same young artist to whom Borda, about the year 1780, intrusted the construction of his reflecting circle, it has been conjectured by some that the improvement was made about the same time. If this conjecture be correct, the claim of M. Teulère must of course fall to the ground. The reflectors were formed of sheet copper, plated with silver, and had a double ordinate of 31 French inches. It was not long before these improvements were adopted in England by the Trinity House of London, who sent a deputation to France to inquire into their nature. In Scotland, one of the first acts of the Northern Lights Board, in 1786, was to substitute reflectors in the room of coal lights, then in use at the Isle of May in the Firth of Forth, and the Cumbrae Isle in the Firth of Clyde, which had, till that period, been the only beacons on the Scotch coast. The reflectors employed were formed of facets of mirror glass, placed in hollow parabolical molds of plaster, according to the designs of the late Mr. Thomas Smith, the Engineer of the Board, who, as appears from the article REFLECTOR in the Supplement to the 3d edition of the *Encyclopædia Britannica*, was not aware of what had been done in France, and had himself conceived the idea of this combination. The system of Borda was also adopted in Ireland; and, in time, variously modified, it became general wherever light-houses were known.

Paraboloidal Mirrors.—The property of the parabola, by which all lines incident on its surface from the focus make with normals to the curve at the points of incidence, angles equal to the inclination of these same normals respectively to lines drawn parallel to the axis of the curve, is that which fits it for the purposes of a light-house. A hollow mirror, formed by the revolution of a portion of a parabola about its axis, has, in consequence of this property, the power of projecting the repeated images of a luminous point placed in its focus, in directions parallel to the axis of the generating curve; so that, when the mirror is placed with its axis parallel to the horizon, a cylindrical beam of light is thereby sent forward in a horizontal direction. When such mirrors are placed side by side, with their axis parallel on the faces of a quadrangular frame which revolves about a vertical axis, a distant observer receives the successive impressions which result from the passage of each face of the frame, over a line drawn between the observer's eye and the centre of the revolving frame. This arrangement constitutes what is called a revolving light. A fixed light is produced by placing, side by side, round a circular frame, a number of reflectors, with their axes inclined to each other, so as to be radii containing equal arcs of the frame on which they are placed. It is obvious that a perfect parabolic figure, and a luminous *point* mathematically true, would render the illumination of the whole horizon by means of a fixed light *impossible*; and it is only from the aberration caused by the size of the flame which is substituted for the point, that we are enabled to render even revolving lights practically useful. But for this aberration, even the slowest revolution in a revolving light, which would be consistent with a continued observable series, such as the practical seaman could follow, would render the flashes of a revolving light greatly too transient for any useful purpose; while fixed lights, being visible in the azimuths only in which the mirrors are placed, would, over the greater part of the distant horizon, be altogether invisible. The size of the flame, therefore, which is placed in the focus of a parabolic mirror, when taken in connection with the form of the mirror itself, leads to those important modifications in the paths of the rays, and the form of the resultant beam of light, which have rendered the catoptric system of lights so great a benefit to the benighted seaman. It is obvious, from a consideration of the nature of the action which takes place in this combination of the paraboloidal mirrors with Argand lamps, that the revolving light is not only more perfect in its nature than the fixed light, but that it possesses the advantage of being susceptible of an increase of its power, by increasing the number of reflectors, which have their axes parallel to each other, so as to concentrate the effect of several mirrors in one direction. The perfect parallelism of the axes of separate mirrors, it is true, is unattainable, but approaches may be made sufficiently near for practical results; and in order to prolong the duration of the flash, the reflectors are sometimes placed on a frame, having each of its sides slightly convex, by which arrangement the outer reflectors of each face of the frame have their axes less inclined inwards from the radii of the revolving frame which pass through their foci.

Proportions and Divergence of Paraboloidal Mirrors.—The best proportions for the paraboloidal mirrors depend upon the object to which they are to be applied; as mirrors which are intended to produce great divergence in the form of the resultant beam should have one form; while those which are designed to cause a near approach to parallelism of the rays will have another form. These objects may also be attained by variations of the size of the flame applied in the same mirror; but it is much more advantageous to produce the effect by a change in the form of the mirror, as any increase of the flame beyond the size which is found to be most advantageous in other respects can not be regarded otherwise than as a wasteful expenditure of light. The details into which a full investigation of this matter would lead us are quite beyond the scope of this article, and it therefore seems sufficient to give the formulæ which express the relations which exist between the size of the flame, the reflecting surface, and the corresponding divergence of the reflected ray. If Δ represent the inclination of any reflected ray to the axis of a paraboloidal mirror, e the distance of the focus from the point of reflection, and d the distance from the edge of the flame to the focus in the plane of reflection, we shall have $\sin \Delta = \frac{d}{e}$; and when the flame in the given plane of reflection is circular, or has its opposite sides equidistant from the focus of

the mirror, we shall, by putting Δ' for the effective divergence of the mirror have in the given plane, $\Delta' = 2\,\Delta$. When, therefore, great divergence, as in the case of the fixed lights, is required, the prolate form of the curve is to be preferred; and the oblate is conversely more suited to revolving lights.

Power of Paraboloidal Mirrors.—The power of the reflectors ordinarily employed in light-houses is generally equal to about 860 times the effect of the unassisted flame which is placed in the focus. This value, however, is strictly applicable only at the distances at which the observations have been made, as the proportional value of the reflected beam must necessarily vary with the distance of the observer, agreeably to some law dependent upon the unequal distribution of the light in the luminous cone which proceeds from it. The ordinary burners used in light-houses are one inch in diameter, and the focal distance generally adopted is 4 inches, so that the effective divergence of the mirror in the horizontal plane may be estimated at about 14° 22′. In arranging reflectors on the frame of a fixed light, however, it would be advisable to calculate upon less effective divergence, for beyond 11° the light is feeble; but the difficulty of placing many mirrors on one frame, and the great expense of oil required for so many lamps, have generally led to the adoption of the first valuation of the divergence.

Manufacture and testing of Reflectors.—The reflectors used in the best light-houses are made of sheet copper plated, in the proportion of 6 oz. of silver to 16 oz. of copper. They are molded to the paraboloidal form by a delicate and laborious process of beating with mallets and hammers, of various forms and materials, and are frequently tested during the operation by the application of a carefully-formed mold. After being brought to the curve, they are stiffened by means of a strong beazle, and a strap of brass, which is attached to it for the purpose of preventing any accidental alteration of its figure. Polishing powders are then applied, and the instrument receives its last finish. Two gauges of brass are applied to test the form of the reflector. One is for the back, and is used by the workmen during the process of hammering, and the other is applied to the concave face as a test, while the mirror is receiving its final polish. It is then tested, by trying a burner in the focus, and measuring the intensity of the light at various points of the reflected conical beam. Another test may also be applied successively to various points in the surface, by masking the rest of the mirror. Having placed a screen in the line of the axis of the mirror at some given distance from it, it is easy to find whether the image of a very small object placed in the conjugate focus, which is due to the distance of the screen, be reflected at any distance from that point on the centre of the screen through which the prolongation of the axis of the mirror would pass, and thus to obtain a measure of the error of the instrument. For this purpose it is necessary to find the position of the conjugate focus, which corresponds to the distance of the screen. If b be the distance which the object should be removed outward from the principal focus of the mirror, d the distance from the focus to the screen, and r the distance from the focus to the point of the mirror which is to be tested, we shall have $b = \frac{r^2}{d}$ as the distance which the object must be removed outward from the true focus on the line of the axis.

Argand Lamps.—The flame generally used in reflectors is from an Argand fountain-lamp, whose wick is an inch in diameter. Much care is bestowed upon the manufacture of these lamps for the Northern Light-houses, which have their burners tipped with silver, to prevent wasting by the great heat which is evolved. These burners are also fitted with a slide apparatus, accurately formed, by which the burner may be removed from the interior of the mirror at the time of cleaning it, and returned exactly to the same place, and locked by means of a key. This arrangement, which is shown in figures 5, 6, and 7, is very important, as it insures the burner always being in the focus, and does not require the reflector to be lifted out of its place every time it is cleaned; so that, when once carefully set and screwed down to the frame, it is never altered. In these figs. *aaa* represents one of the reflectors, *b* is the lamp, *c* is a cylindric fountain, which contains 24 oz. of oil. The oil-pipe and fountain of the former is connected with the rectangular frame *d*, and is movable in a vertical direction upon the guide-rods *e* and *f*, by which it can be let down and taken out of the reflector by simply turning the handle *g*, as will be more fully understood by examining fig. 6.

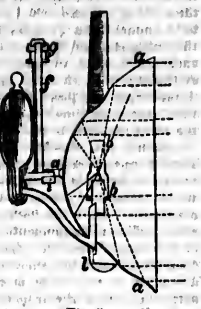

Fig. 5.

An aperture of an elliptical form, measuring about 2 inches by 3, is cut in the upper and lower part of the reflector, the lower serving for the free egress and ingress of the lamp, and the upper, to which the copper tube *h* is attached, serving for ventilation; *i* shows a cross section of the main bar of the chandelier or frame, on which the reflectors are ranged, each being made to rest on knobs of brass, one of which is seen at *kk*, and which are soldered on the brass band *l*, that clasps the exterior of the reflector. Fig. 5 is a section of the reflector *aa*, showing the position of the burner *b*, with the glass chimney *b′*, and oil-cup *l*, which receives any oil that may drop from the lamp. Fig. 6 shows the apparatus for moving the lamp up and down, so as to remove it from the reflector at the time of cleaning it. In the diagram, *c*, the fountain is moved partly down; *dd*

Fig. 6.

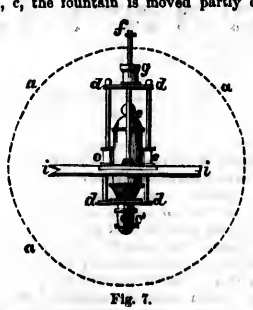

Fig. 7.

shows the rectangular frame on which the burner is mounted, *e*, *e* the elongated socket-guides, *f* the rectangular guide-rod, connected with the perforated sockects on which the *checking-handle g* slides.

Arrangement of Reflectors on the frame.—The modes of arranging the reflectors in the frames are shown in figs. 8, 9, and 10. It seems quite unnecessary, after what is said on the subject of divergence, to do more than remark, that in revolving lights the reflectors are placed with their axes parallel to each other, so as to concentrate their power in one direction; while in fixed lights it is necessary, in order to effect as equal a distribution of the light over the horizon as possible, to place the reflectors, with their axes inclined to each other at an angle somewhat less than that of the divergence of the reflected cone. For this purpose a brass guage, composed of two long arms, somewhat in the form of a pair of common dividers, connected by means of a graduated limb, is employed. The arms having been first placed at the angle, which is supplemental to that of the inclination of the axes of the two adjacent mirrors, are made to span the faces of the reflectors, one of which is moved about till its edges are in close contact with the flat surface of one of the arms of the guage. The different arrangements of the reflectors will be more fully understood by referring to the figures.

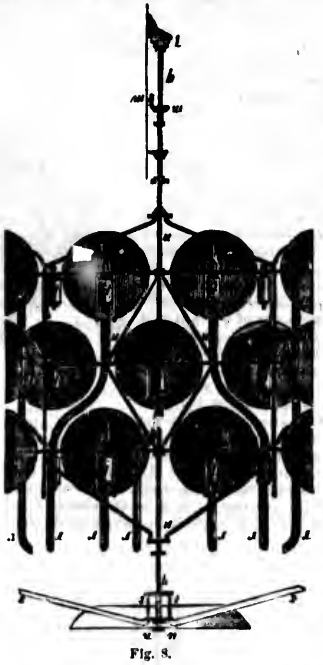

Fig. 8.

Fig. 8 shows an elevation of a revolving apparatus on the catoptric principle. In these figures, *nn*, shows the reflector frame or chandelier; *o*, *o*, the reflectors with their oil-fountains, *p*, *p*. The whole is attached to the revolving axis or shaft *q*. The copper tubes, *r*, *r*, convey the smoke from the lamps; *s*, *s* are cross bars which support the shaft at *tt*; *uu* is a copper pan for receiving any moisture which may accidentally enter at the central ventilator in the roof of the light-room; *l* is a cast-iron bracket, which supports the pivot on the shaft; *m*, *m* are beveled wheels, which convey motion from the machine to the shaft. Fig. 9 shows a plan of one tier of reflectors arranged in the manner employed in a fixed catoptric light; *nn* shows the chandelier, *q* the fixed shaft in the centre, which supports the whole, *o*, *o* the reflectors, and *p*, *p* the fountains of their lamps.

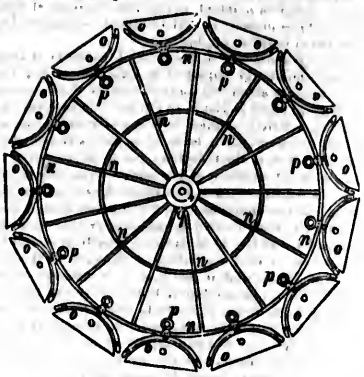

Fig. 9.

To the Dutch belongs the honor of having first, *after the French*, embraced the system of Fresnel in their lights. The Commissioners of the N. British Lights followed in the train of improvement, and, in 1834, sent Mr. Alan Stevenson on a mission to Paris, with full power to take such steps for acquiring a perfect knowledge of the dioptric system, and forming an opinion on its merits, as he should find necessary. The singular liberality with which he was received by M. Leonor Fresnel, brother of the late illustrious inventor of the system, and his successor as the Secretary of the Light-house Commission of France, afforded Mr. A. Stevenson the means of making such a report on his return as induced the Commissioners to authorize him to remove the reflecting apparatus of the revolving light at Inchkeith, and substitute dioptric instruments in its place. This change was completed, and the light exhibited on the evening of 1st October, 1835; and so great was the satisfaction which the change produced, that the Commissioners immediately instructed Mr. Stevenson to make a similar change at the fixed light of the Isle of May, where the new light was exhibited on the 22d September, 1836. The Trinity House of London followed next in adopting the improved system, and employed Mr. A. Stevenson to superintend the construction of a revolving dioptric light of the first order, which was afterward erected at Start Point in Devonshire. Other countries followed, and the *Report of the Light-house Board of America*, published in 1852, which recommends (see page 1229 of this article) the adoption of Fresnel's dioptric system, and the holophotal improvements, is a very full body of information on light-house subjects, extending over about 750 pages. Even Turkey has followed in the train of improvement, and we believe that a light on the dioptric principle will shortly be exhibited (if it be not already completed) from the Isle of Serpents. Fresnel, who is already classed with the greatest of those inventive minds which extend the boundaries of human knowledge, will thus, at the same time, receive a place among those benefactors of the species who have consecrated their genius to the common good of mankind; and, wherever maritime intercourse prevails, the solid advantages which his labors have procured will be felt and acknowledged.

When, however, this system was in its infancy, there were several objections raised to its adoption, which appeared to be of very considerable importance, though the experience of years has proved that they are not insurmountable. The first, and probably the

most important, was the liability of the lamp to be extinguished from the failure of the leather work of the oil-pumps—a most serious objection, inasmuch as, from there being only one lamp, its failure implies the extinction of the light. The means adopted to remedy this have been already described (*vide* "mechanical lamp"), and an experience of 21 years in the Northern Light-houses has proved them to be sufficient for the purpose; for during the whole of that time (although it has on several occasions been necessary to light the spare lamp), the light has only on one occasion been totally extinguished, a casualty which was caused by the keeper sleeping on his watch.

The only other objection worthy of mention is the short duration of the flash in revolving lights, owing to the small divergence (5° 9′) of the annular lens. This has been corrected by setting the inclined mirrors, or holophotal prisms, a little in advance of the great lenses, so that they precede, and consequently prolong, the principal flash. M. Degrand has also proposed to cut the whole apparatus by a horizontal plane passing through the focus, and to set one portion a few degrees in advance of the other, a plan which has considerable advantages, as all the portions of the beam are more nearly of equal intensity.

Spherico-Cylindric Lenses.—Mr. T. Stevenson, moreover, suggests an ingenious method of remedying this evil, by constructing lenses whose aberration in the vertical plane is corrected, while that in the horizontal plane may be adjusted to any determinate amount. In the application of this method of construction to the annular lenses they would be ground on the external surface as before; but the internal surface would be a portion of a vertical cylinder of suitable radius. Thus each vertical section would be similar to that of a plano-convex lens as at present, and would refract the rays accordingly, while the horizontal sections would be of a meniscal form, and would act only by the excess of their convexity over their concavity. Thus, by varying the radius of the cylinder, any amount of horizontal divergence may be obtained, and this without much increasing the thickness of the glass, at least in the case of revolving lights, in which a curve of long radius might be applied.

Fuel of Light-houses.—The oil, until lately, most generally employed in the light-houses of the United Kingdom, was the sperm oil of commerce, which is obtained from the South Sea whale (*Physeter macrocephalus*). In France, the colza oil, which is expressed from the seed of a species of wild cabbage (*Brassica oleracea colza*), and the olive oil, are chiefly used; and a species of the former has now been successfully introduced into the British light-houses. The advantages of the colza oil are thus stated by the engineer of the Scottish Light-house Board:—"It appears from pretty careful photometrical measurements of various kinds, that the light derived from the colza oil is, in point of intensity, a little superior to that derived from the spermaceti oil, being in the ratio of 1·056 to 1. The colza oil burns both in the Fresnel lamp and the single Argand burner with a thick wick during 17 hours, without requiring any coaling of the wick or any adjustment of the damper; and the flame seems to be more steady and freer from flickering than that derived from spermaceti oil. There seems (most probably owing to the greater steadiness of the flame), to be less breakage of glass chimneys with the colza than with the spermaceti oil. The consumption of oil seems in the Fresnel lamp to be 121 for colza, and 114 for spermaceti; while in the common Argand, the consumption appears to be 910 for colza, and 902 for spermaceti; and if we assume the means of these numbers, 515 for colza, and 508 for spermaceti, as representing the relative expenditure of these oils; and if the price of colza be 3s. 9d., while that of spermaceti is 6s. 9d. per imperial gallon; we shall have a saving in the ratio of 1 to 1·755, which, at the present rate of supply for the Northern Lights, would give a saving of about £8266 per annum."

Gas.—In a few light-houses which are near towns, the gas of pit coal has been used, and there are certain advantages, more especially in dioptric lights, where there is only one large central flame, which would render the use of gas desirable. The form of the flame, which is an object of considerable importance, would thus be rendered less variable, and could be more easily regulated, and the inconvenience of the clock-work of the lamp would be wholly avoided. But it is obvious that gas is by no means suitable for the majority of light-houses, their distant situation, and generally difficult access, rendering the transport of large quantities of coal expensive and uncertain; while in many of them there is no means of erecting the apparatus necessary for manufacturing gas. There are other considerations which must induce us to pause before adopting gas as the fuel of light-houses; for, however much the risk of accident may be diminished in the present day, it still forms a question which ought not to be hastily decided, how far we should be justified in running even the most remote risk of explosion in establishments such as light-houses, the sudden failure of which might involve consequences of the most fatal description, and the situation of which is often such that their re-establishment must be a work of great expense and time.

Drummond and Voltaic Lights.—The application of the Drummond and Voltaic lights to light-house purposes is, owing to their prodigious intensity, a very desirable consummation; but it is surrounded by so many practical difficulties, that it may, in the present state of our knowledge, be pronounced unattainable. The uncertainty which attends the exhibition of both these lights is of itself a sufficient reason for coming to this conclusion. But other reasons, unhappily, are not wanting. The smallness of the flame renders those lights wholly inapplicable to dioptric instruments, which require a great body of flame, in order to produce a degree of divergence sufficient to render the duration of the flash in revolving lights long enough to answer the purpose of the mariner. M. Fresnel made some experiments on the application of the Drummond light to dioptric instruments, which completely demonstrate their unfitness for this combination. He found that the light obtained by placing it in the focus of a great annular lens was much more intense than that produced by the great lamp and lens of Cordouan; but the divergence did not exceed 30′; so that, in a revolution like that of Cordouan, the flashes would last only 1¼ second, and would not, therefore, be seen in such a manner as to suit the practical purposes of a revolving light. The great cylindric refractor, used in fixed lights of the first order, was also tried with the Drummond light in its focus; but it gave colored spectra at the top and bottom, and only a small bar of white light was transmitted from the centre of the instrument. The same deficiency of divergence completely unfits the combination of the Drummond light with the reflector for the purposes of a fixed light, and even if this cause did not operate against its application in revolving lights on the catoptric plan, the supply of the gases, which is attended with almost insurmountable difficulties, would, in any case, render the maintenance of the light precarious and uncertain in the last degree.

There are many questions of much interest regarding light-houses which appear to open an extensive field of inquiry; and it may be doubted whether some of them have received that degree of consideration to which their importance entitles them. Among these we may rank the numerous questions which may be raised regarding the most effective kind of distinctions for lights. Those distinctions may be naturally expected to be of the most effective kind which strike an observer by their *appearance* alone. Thus a red and

white light, a revolving and a fixed light, offer *appearances* which are calculated to produce upon the observer a stronger sense of their difference than the same observer would receive from lights the sole difference of which lies in their revolutions being performed in greater or less intervals of time. On the other hand, the distinctions derived from time, if the intervals on which they depend do not approach too closely to each other, appear to afford very suitable means for characterizing lights; and the number of distinctions which may be founded upon time alone are pretty numerous. Colored media have the great disadvantage of absorbing light, and the only color which has hitherto been found useful in practice is red, all others at even moderate distances, serving merely to enfeeble, without characterising lights. In the system of Fresnel, as already explained, all the distinctions are based upon time alone. Mr. Robert Stevenson, the engineer of the Northern Light-houses, has invented two distinctions, which, although they are produced by variations of the time, possess characteristic *appearances*, sufficiently marked to enable an observer to distinguish a light without counting time. The one is called a *flashing* light, in which the flashes and eclipses succeed each other so rapidly as to give the appearance of a succession of brilliant scintillations; and the other has been called *intermittent*, from its consisting of a fixed light, which is suddenly and totally eclipsed, and again as suddenly revealed to view. The effect of this light is entirely different from that of any revolving light, both from the great inequality of the intervals of light and darkness, and also from the contrast which is produced by its sudden disappearance and reappearance, which is completely different from the gradual diminution and increase of the light in revolving lights, more especially in those on the catoptric principle. The great and still increasing number of lights renders the means of distinguishing them one of the most important considerations connected with light-houses.

Lights on the Coast.—Not less important, and very nearly allied to the subject of distinction, is that of the arrangement of lights on a line of coast. The choice of the most suitable places, and the assigning to each the characteristic appearances which are most likely to distinguish it from all the neighboring lights, are points requiring much consideration; and it ought never to be forgotten, that the indiscriminate erection of light-houses soon leads to confusion, and that the needless exhibition of a light, by involving the loss of a distinction, may afterward prove inconvenient in the case of some future light, which time and the growing wants of trade may call for on the same line of coast. To enter at length upon this topic, or even to lay down the general principles which ought to regulate the distribution of lights, would exceed the limits of this article; but in connection with this it may be observed, that the superintendence of light-houses should be committed to one general body, and ought not to be left to local trusts, whose operations are too often conducted on narrow principles, without reference to general interests. The inconveniences arising from interference between the distinctions of the lights under one trust, and those of the lights under another, are thereby avoided; and the full advantage is obtained of the means of distinction at the disposal of both.

The considerations which enter into the choice of the position and character of the lights on a line of coast are either, on the one hand, so simple and self-evident as scarcely to admit of being stated in a general form, without becoming mere truisms; or are, on the other hand, so very numerous, and often so complicated, as scarcely to be susceptible of compression into any general laws. We shall not, therefore, do more than very briefly notice, in the form of distinct propositions, a few of the chief considerations which should guide us in the selection of the sites and characteristic appearance of the light-houses to be placed on a line of coast. For further information on this subject, see works mentioned at the end of this article.

1. The most prominent points of a line of coast, or those first made on *over-sea* voyages, should first be lighted; and the most powerful lights should be adapted to them, so that they may be discovered by the mariner as long as possible before his reaching land. 2. So far as is consistent with a due attention to distinction, revolving lights of some description, which are necessarily more powerful than fixed lights, should be employed at the outposts on a line of coast. 3. Lights of precisely identical character and appearance should not, if possible, occur within a less distance than 100 miles of each other on the same line of coast, which is made by over-sea vessels. 4. In all cases, the distinction of color should never be adopted except from absolute necessity. 5. Fixed lights, and others of less power, may be more readily adopted in narrow seas, because the *range* of the lights in such situations is generally less than that of open sea-lights. 6. In narrow seas, also, the distance between lights of the same appearance may often be safely reduced within much lower limits than is desirable for the greater sea-lights. Thus there are many instances in which the distance separating lights of the same character need not exceed 50 miles; and peculiar cases occur in which even a much less separation between similar lights may be sufficient. 7. Lights intended to guard vessels from reefs, shoals, or other dangers, should, in every case where it is practicable, be placed *seaward* of the danger itself, as it is desirable that seamen be enabled to *make* the lights with confidence. 8. Views of economy in the first cost of a light-house should never be permitted to interfere with placing it in the best possible position; and, when funds are deficient, it will generally be found that the wise course is to delay the work until a sum shall have been obtained sufficient for the erection of the light-house on the best site. 9. The elevation of the lantern above the sea should not, if possible, for sea-lights, exceed 200 feet; and about 150 feet is sufficient, under almost any circumstances, to give the range which is required. Lights placed on high headlands are subject to be frequently wrapped in fog, and are often thereby rendered useless at times when lights on a lower level might be perfectly efficient. But this rule must not, and indeed can not, be strictly followed, especially on a coast where there are many projecting cliffs, which, while they subject the lights placed on them to occasional obscuration by fog, would also entirely and permanently hide from view lights placed on the lower land adjoining them. In such cases, all that can be done is carefully to weigh all the circumstances of the locality, and choose that site for the light-house which seems to afford the greatest balance of advantage to navigation. As might be expected, in questions of this kind, the opinions of the most experienced persons are often very conflicting, according to the value which is set on the various elements which enter into the inquiry. 10. The best position for a sea-light ought rarely to be neglected for the sake of the more immediate benefit of some neighboring port, however important or influential; and the interests of navigation, as well as the true welfare of the port itself, will generally be much better served by placing the sea-light *where it ought to be*, and adding, on a smaller scale, such subsidiary lights as the channel leading to the entrance of the port may require. 11. It may be held as a general maxim, that the fewer lights that can be employed in the illumination of a coast the better, not only on the score of economy, but also of real efficiency. Every light needlessly erected may, in certain circumstances, become a source of confusion to the mariner; and, in the event of another light being required in the neighborhood, it becomes a *deduction* from the means of distinguishing it from the lights which existed previous to its establishment. By the

needless erection of a new light-house, therefore, we not only expend public treasure, but waste the means of distinction among the neighboring lights. 12. Distinctions of lights, founded upon the minute estimation of intervals of time between flashes, and especially on the measurement of the duration of light and dark periods, are less satisfactory to the great majority of coasting seamen, and more liable to derangement by atmospheric changes, than those distinctions which are founded on what may more properly be called the *characteristic appearance* of the lights, in which the times for the recurrence of certain appearances differ so widely from each other as not to require for their detection any very minute observation in a stormy night. Thus, for example, flashing lights of five seconds' interval, and revolving lights of half a minute, one minute, and two minutes, are much more characteristic than those which are distinguished from each other by intervals varying according to a slower series of 5″, 10″, 20″, 40″, etc. 13. Harbor and local lights, which have a circumscribed range, should generally be fixed, instead of revolving; and may often, for the same reason, be safely distinguished by colored media. In many cases, also, where they are to serve as guides into a narrow channel, the leading lights which are used should, at the same time, be so arranged as to serve for a distinction from any neighboring lights. 14. Floating lights, which are very expensive, and more or less uncertain, from their liability to drift from their moorings, as well as defective in power, should never be employed to indicate a turning-point in navigation in any situation where the conjunction of lights on the shore can be applied at a reasonable expense.

British and Irish Lights.—English lights are placed under the Corporation of Trinity House of Deptford, Stroud; the Scottish lights are under the management of the Commissioners of Northern Lights; and the Irish lights are under the care of the corporation for preserving and improving the port of Dublin, commonly called the **Ballast Board.**

The last act of Parliament on the subject of light-houses forms part of one the general title of which is, "An act to amend various laws relating to merchant shipping." It passed 20th August, 1853. The chief provisions which affect light-houses are the following: 1. The light dues of the United Kingdom are to form one *imperial* fund, under the control of the Board of Trade. 2. From this fund all expenses of erecting and maintaining the lights of the United Kingdom are to be defrayed. 3. The three boards which manage the light-houses in England, Scotland, and Ireland, are to render account of their expenditure to the Board of Trade. 4. The Trinity House, or English board, is to exercise a certain control over the boards in Scotland and Ireland, and is to judge of all their proposals to erect new lights, or to change existing ones; but in every case the sanction of the Board of Trade must precede the acts of each of the three boards.—E. B.

Comparison of the Systems of Lighting in the United States, France, Great Britain, etc.—To make this comparison intelligible, will require a brief notice of the light-house systems of France and Great Britain, with some remarks on the systems of other countries, before giving an extended notice of the systems of the United States' light-houses.

France.—The administrative matters relating to light-houses, though hardly such as it would be possible for us to follow, are, nevertheless, regulated with a system of order worthy of all commendation. As with us, no light dues are exacted from shipping, but the light-houses are a direct charge upon the treasury, and supported by annual appropriations. The question, shall there be a light-house at a particular point, is decided by a board consisting of naval officers, government engineers, and scientific civilians. The first decision settles that inquiry is desirable. The civil engineer of the Department where the work is to be placed, reports his views, with plans and estimates for it, which are laid before the board by their secretary. If it now appears that the work should go on in the manner proposed, the details of construction and the estimates pass to the general council of government engineers (Bridges and Roads—"*Ponts et Chaussées*"), and when approved are constructed by contract, *under the supervision of the government engineers of the Department.* These engineers also superintend all repairs of light-houses. In some cases local boards are required, first, to examine and report upon the necessity for a proposed light, before the subject is examined by the light-house board. The administrative details are in the Department of State, ministry of public works, under which the different persons referred to, serve. The general arrangement of sea-coast lights, adopted on the report of Rear Admiral Rossel to the light-house board in 1825, is based upon two principles: that one light of the brightest class shall not be lost sight of until another is visible: and that such distinction shall be presented by the light, that a vessel on nearing the coast, without very gross error in the knowledge of her position, can not mistake one light for another. 21 nautical miles was adopted as the distance of visibility of the brightest lights, and three classes of distinction were admitted, viz.: fixed lights, revolving lights showing a bright light, and an eclipse at intervals of a minute and at half a minute. By placing the fixed light midway between the two revolving ones, of the different kinds, and at a distance of 42 nautical miles from each other, the essential conditions of the system would be fulfilled. In applying this practically, it was, of course, so modified as to conform to the general features of the coast, and to the wants of navigation. Between these brightest sea-coast lights, others of inferior power were arranged as required.

Every light is placed under the inspection of a person called *a conductor, who visits it at least once a month, by night as well as by day*, and is provided with keys of the building and of the watch-room, so that he can enter at all times, without summoning a keeper. The resident engineer of the Department inspects all the lights in his Department at least once a quarter, and the chief engineer of the Department once a year, and the secretary of the Department makes an inspection at least once in three years. The light-house keepers are furnished with books, ruled, and with appropriate headings to the columns, to record the observations required of them. Detailed instructions for light-houses and beacons are distributed, which direct minutely their duty.

Prior to 1822, Argand lamps with reflectors were used in the French light-houses. In that year, Augustine Fresnel put up the first lens light of his invention, in the tower of Cordouan, at the mouth of the Gironde. In 1825 the general adoption of the lens system was determined upon. In 1845 there were on the coast of France, not including the colonies, 151 lens lights and 47 reflector lights; *and nearly all of the latter were merely beacon-lights.*

According to Mr. Reynaud's statement, not one reflector light will be left in 1852, in the class of lights of the first and second order. Experience, then, has led to the substitution of lens lights for the others, except as small harbor beacon-lights, requiring a small arc of the horizon to be illuminated. The mechanical lamp used with the lens light was the joint invention of Arago and Fresnel, combining the idea of Rumford, of a number of concentric wicks, according to the intensity and volume required for the flame, and the idea of Carcel of keeping the wick from burning rapidly, by making the oil overflow about it, by raising it with a pump, moved by clock-work. Several kinds of mechanical lamps have, from time to time, been presented for examination and trial, an-

swering, generally, satisfactorily; those used in some of the recent lights are called the "moderator lamp." The repair of 28 lamps of the first order lights, 4 of the second, and 13 of the third, amounted, in 1850, only to $183 56.

Mr. Fresnel suggests that if it be apprehended, that, on account of the distance of a light-house from the workshops, there may be difficulties in regard to the repairs of the mechanical lamp, the appointment of a mechanic as light-house keeper, and the supplying him with the necessary tools, will be a very simple remedy. In the refracting light the diverging rays from the lamp are rendered nearly parallel, by passing through a glass lens. Several such lenses, forming the sides of a prism, surround the lamp, the light from which is thus refracted into a number of beams corresponding to the number of the faces of the prism, separated by dark angles. If this prism be made to revolve slowly about a vertical axis, there will be alternations of light and darkness, as the beam from the face of the prism reaches the eye, or it is in the dark angle between the beams. The increase of the light to its greatest brightness, and the decrease again, will be gradual. A prism of eight sides, thus revolving in eight minutes, would show bright flashes at intervals of a minute, and eclipses at the same interval.

The lens is made of a number of pieces of glass, ground to the same curve, and fitted closely together. The building up of a lens in this way, of separate pieces, has been carried to very great perfection, and the separate pieces composing it are of beautiful clearness, polish, and precision of form. A drum of glass, cylindrical in its horizontal sections, and lens-shaped in the vertical direction, placed about a lamp which occupies its centre, will diffuse all around the horizon the rays falling horizontally upon it, bending toward the horizon those coming above or below the horizontal line from the lamp, furnishing a fixed light of equal brilliancy in every direction. A panel of glass, lens-shaped in the horizontal direction, being made to revolve about this, would give a bright flash as the axis of the lens passed any particular point; and several of these thus made to revolve, constitute a fixed light, varied by flashes.

When the whole of the horizon is not to be illuminated, a reflector is substituted for the lens behind the lamp, so as to throw to the front the light which would otherwise be lost. Not to lose the light thrown upward by the lamp, a series of glass prisms is so arranged as to receive the rays at the angle at which they are reflected, to throw them downward to the horizon. Similar prisms below the lamp, serve to prevent the waste of the light which falls below the lens. This application of totally reflecting prisms, is claimed by Mr. Alan Stevenson, of Edinburg. There are four orders of lights, according to the range of visibility, determined by the volume and brilliancy of the flame; the first order corresponding to the greatest range. The number of wicks of the lamps, and the dimensions of the whole apparatus, vary, accordingly, in the different orders. The third and fourth orders are subdivided into two classes, corresponding to the larger and smaller size of the apparatus. The dimensions of the lantern of the several orders, the number of wicks of the lamps, and other details, will be found in the table annexed.

Fixed and revolving white lights are used to give six characteristic combinations: the simple fixed light; the fixed light, varied by bright flashes every four, three, or two minutes; the revolving light, with intervals between the flashes, or between the eclipses, of a minute or half a minute. By introducing a red fixed light, alternate red and white flashes, and a fixed white light with red flashes, these combinations are extended to eight. Two fixed white lights, in separate towers, are used in a few cases for the sake of distinction.

The loss of light by a deep-red glass, is stated by Mr. Stevenson to be as high as 80 per cent. of the whole. A pink French glass absorbed but 57 per cent., but the color of the burner was not very decided. All parts of the illuminating apparatus for light-houses are supplied from a dépôt and workshops under the immediate direction of the secretary of the light-house board. The distance to which a light may be seen, its range of visibility (called sometimes simply its range), depends upon the brightness (intensity) of the light, its elevation above the general surface, and the greater or less transparency of the atmosphere. Some persons, too, can distinguish lights at a much greater distance than others. The range of a light, then, is not a sure test for comparing it with other lights.

The value (useful effect) of a light depends on its brightness and the extent of the horizon which it will illuminate. The brightness can be ascertained by experiment with the photometer, in terms of the light of a standard lamp as a unit; the extent of horizon illuminated, by simple measurement in degrees, minutes, and fractions. Hence the value of a light can be expressed in numbers: so many units of the standard lamp, multiplied by so many degrees on the horizon. If the light is not spread uniformly over the horizon, it is necessary to estimate its brightness at different parts, and the space over which it extends. The value for each portion being thus found, the whole value is easily deduced.

Theory will show how much of a light from a lamp can be thrown by a given lens, or mirror, in a particular direction; but as the degree of perfection of these instruments would vary the result considerably, recourse is to be had to experiment in comparing different kinds of illuminating apparatus. Very careful and often-repeated experiments have been made by M. Léonor Fresnel, late secretary of the light-house board of France, for the purpose of comparing the reflector and lens lights used in France. To appreciate them fully, it is necessary to follow the very minute details entered into, by measuring the brilliancy of the light in the various divisions of the horizon, and finding its total value (useful effect) in estimating the value from different parts of the apparatus, and the allowance to be made for loss of light from the construction of the lantern, etc. Without such a scrutiny, however, the character of their author, as an experimentalist, is a guaranty for the accuracy of the results. They show the following comparison for lens lights of the different orders, and equivalent systems of reflector lights:

4th order, 2d class; economy 2¼ to 1 in favor of the lens light.

3d order, 1st class; economy 3½ to 1 in favor of the lens light.

2d order, fixed; economy 3½ to 1 in favor of the lens light.

2d order, revolving; economy 4 to 1 in favor of the lens light.

1st order, fixed, economy 4 to 1 in favor of the lens light.

The combination of reflectors, to be equivalent to the first order lens, is such as has never been made. The average economy of the light itself is about 3½ to 1 in favor of the lens system.

To render these deductions strictly applicable to practice, they should be made under the precise circumstances in which the apparatus is used; but as they would then be made in conditions unfavorable to accuracy, it is usual to assume that, in practice, the lamp is burning in the best way, and thus to make the comparisons. To render them strictly applicable to the lights of the United States, the oil, too, should be the same, and the manner of burning it the same; or, if different oils were used, each oil should be burned under the most favorable circumstances for it. These remarks, however, touch only the refine-

ments of the case, and show the desirableness of experiments made with the actual reflectors, lamps, and oil in use in the United States, with the lenses and their lamps, the oil being the same.

The question of the relative economy of the lens and reflector lights, depends upon the relative cost of the light-house adapted to them; of the illuminating apparatus; of the repairs of the building and apparatus; salaries of the keepers; cost of the oil, and incidental expenses. In France two keepers have always been employed for the larger lights; one or the other being required to be constantly on duty, so as never to leave the lights without attendance in the lantern or watch-room. With the new apparatus for the first order lights, in ordinary cases, three keepers are allowed, increasing the expense for salaries about one fourth. With those of the other orders, there has been no increase—two keepers being allowed to those of the second order, and third order, first class, using the mechanical lamp; and one to the third order, second class, and to the fourth order lights, using the ordinary fountain lamps with Argand burners. The light-house buildings are of the same cost, except that an additional room must be provided for the third keeper of the lens lights of the first order. The first cost of the lens apparatus is somewhat greater than that of the mirrors; but the great economy in consumption of oil, turns the scale entirely in favor of the lens lights—giving, according to the calculations of M. Fresnel, made upon the prices in France, for a small light, an economy of nearly 2 to 1 in favor of the lens; and for a large light (revolving light, second order), an economy of more than 1½ to 1. The interest on the first cost of apparatus, and the additional salaries, must make a large increase to counterbalance the large economy in the consumption of oil, which, in France, we have seen to be more than 3 to 1 in favor of the lens lights. The same grade of intelligence and education is stated by M. Fresnel to be required in the keepers of the two kinds of lights. The care of the mechanical lamp, however, requires more mechanical tact than that of a common lamp; while the cleansing of the lens apparatus requires less time and care than the others.

The additional keeper of the large lights, and the providing of a second lamp in case of accident, is supposed to guard against the danger of the total extinguishment, for any considerable time, of the single lights, which is the weak point of the lens system. A very simple alarum is also provided, which, as soon as the overflow in the lamp ceases, rings a bell, giving notice of any derangement in the machinery, etc., for raising the oil. Mr. Stevenson causes this apparatus to keep a bell constantly sounding, and to stop when the machinery becomes deranged; believing that he better secures the watchfulness of the keeper thereby. On this question M. Fresnel gives this very decided opinion—after an experience of 22 years, sustained by the daily results of more than 100 lenticular lights of the first 3 orders—"that they have been distinguished by the regularity of their service." The metallic parts of the lantern are made of gun-metal (bronze), the astragals being inclined to the vertical. The ventilation of the lanterns is carefully attended to. The domes are of copper, painted white inside. There is a lightning-conductor, of copper wire strands, twisted like a rope, to each tower. The keeper's house, and the cellars for oil, are generally detached from the light-house, when practicable. The construction of light-house towers offers nothing for special remark, except that, as might be expected from the care used in obtaining plans for them, they are substantial and convenient, dry and well ventilated.

Oil of colza (rape-seed), expressed from the seeds of a kind of wild cabbage (*brassica oleracea*), is the only oil used in the French light-houses. The colza gives a very white light, and the oil does not readily thicken by cold. M. Reynaud, secretary to the light-house board of France, speaks of the results of comparative experiments on olive oil, mineral oil from bitumina schiste, hydrogen, and mixtures of oxygen and hydrogen, as having been unfavorable. The oil is tested before being received, by burning for 15 or 16 consecutive hours in a mechanical lamp, when, if it burns clearly, and makes little or no crust on the wick, it is received. The oliometer is also used in the inspection. At the principal ports a book is kept, in which masters of vessels may register their complaints in reference to the lights on the coast. Their remarks are examined, and inquiry made by the inspecting engineers.

Table of Comparison of Lens and Reflector Lights for the experiments of M. Leonor Fresnel.

Order of the lights.	Class and character of lights.	Equivalent system of reflectors. No.	Equivalent system of reflectors. Diameter.	Value—useful effects.	Economy—economical effects
			Inches.		
Fourth.....	Second class	2	18½	2 —1	2½—1
Third.....	First class...	14	11	1·4—1	8½—1
Second.....	Fixed	84	20	1·2—1	3½—1
Second.....	Revolving...	24	20	....	4 —1
First.....	Fixed	36	24	....	4 —1
					3·4—1

For a list of the principal French, Danish, Russian, and other Continental Lights, showing the heights of power and elevation above the level, see the last part of this article.

Great Britain.—The administrative part of the British light-house system is so peculiar, having grown up irregularly with the expansion of commerce, that it does not require to be described in detail. The chief English lights are under the direction of the corporation of Trinity House, Deptford Stroud, London; and the Scottish and Irish lights under commissioners. The expense of the lights is paid by dues collected from vessels of all nations, including England herself.

The British lights are divided, according to their power and position, into three classes—sea-coast, secondary, and harbor lights.

Each district in England has a local inspector, and the members of the Trinity House corporation also inspect from time to time. In Scotland, the engineer of the commissioners has the general superintendence of the lights. Notices in regard to lights are given in several of the daily metropolitan papers, in periodicals perused by nautical men, and are posted at the custom-houses.

The lights of Great Britain are principally still reflecting lights, but the lens light has been introduced in many of the most important positions, and is gradually taking the place of the other.

Trinity House lenses, 1st order, 15; 2d order, 5; 4th order, number not known.

In Scotland, the proportion of lenses to reflectors is greater than under the Trinity House corporation. Mr. Stevenson says: "The Board of Northern Light-houses are, excepting in a few cases, giving up the use of reflectors, and substituting either Fresnel or holophotal lights." (See letter of October 15, 1851.) Quite recently three new lens lights have been established in England, by the Trinity House board; three others, of the first, second, and fourth orders, respectively, have taken the place of reflector lights, and fourth order lenses have been introduced for harbor lights.

The first lens light in Great Britain was established in 1835, at Inchkeith, near Edinburg, under the charge of Mr. Alan Stevenson; the next at the Isle of May; and now the Scottish lights of the larger classes are gradually being converted into lens lights. The Trinity House, of Deptford Stroud, introduced the first lens light in England, in 1837, at St. [illegible] Point, in Devonshire. Mr. Herbert says: "The hydraulic lamp is universally in use in the dioptric lights of the corpo-

ration of Trinity House, with one exception (the South Foreland light), where the light is shown from a Carcel lamp, the disadvantage arising from the use of which is the occasional derangement of the machinery." In Scotland, the mechanical lamp is used with the lens lights. When the ventilation of the towers is not complete, the introduction of Professor Farraday's ventilating tubes over the chimneys of the lamps has been found very useful. The consumption of oil is increased, but the light is also increased, and no flickering of the lamp can occur in the highest wind. These tubes are used in all the English light-houses under the Trinity House board. The oil of colza is now *exclusively used in all the lights under the Trinity House board*. According to Mr. Stevenson, its light is a little more intense than that of spermaceti oil; the consumption for a given quantity of light about the same, whether the two be compared in a mechanical lamp or a common Argand lamp; it remains fluid at temperatures which would thicken spermaceti oil; the flame appears more steady, and hence the breakage of lamp-glasses is less than with spermaceti oil. It is furnished in England at 89 cents per gallon, which is 40 per cent. less than the cost of spermaceti oil there. The supplies of oil, wicks, glasses, etc., are delivered once a year by a vessel belonging to the corporation. There are two distinctive characters given to the reflector lights on the Scotch coast, differing from those already adverted to; in one, by placing the rims of all the mirrors on one side of a revolving light, in one vertical plane, and inclining their axes slightly to the horizon, and causing a rapid rotation of the frame, a flash is produced every 5 seconds, which appears to rise and fall; the bright and dark intervals follow each other rapidly. In the other, an intermittent light is produced by the vertical motion of circular discs in front of the reflectors, eclipsing the light for half a minute, and then permitting it suddenly to show out.

In England, the cost of the lens apparatus for a sea-coast light, lantern, and pedestal, exceeds that of the reflector apparatus nearly one fourth; but this disappears in the cost of towers and apparatus, and the advantage is on the other side when the charge for construction is turned into an annual interest, and the cost of illumination is considered.

No difference is made in the number or salaries of the keepers of the lens lights in England. Two keepers are allowed to all large lights, because one is required always to be on duty in the watch-room.

Comparing the value (useful effect) of the revolving lens light at Skerryvore, Scotland, with the old reflector light at Inchkeith, Mr. Stevenson makes it in the ratio of nearly 8½ to 1, and the economy (economical effect) in the proportion of 3½ to 1. Spermaceti oil was used in these comparisons, the result of which, as to economy, is the same as was obtained in France. In the comparison of fixed lights, Mr. Stevenson makes the economy of the lens light rise to four times that of the reflector. Taking the interest on first cost of erection as an annual charge, and combining it with the cost of maintaining the two kinds of lights, Mr. Stevenson makes the economy of the lens system, for *revolving lights of the first order*, to be as 1·2 to 1, and for large fixed lights as 1½ to 1.

Argand burners and parabolic reflectors are used in the British light-vessels, both for fixed and revolving lights. The lanterns are of copper, or of gun-metal.

There are from 3 to 11 light-vessels in each of the districts under the charge of the Trinity House board, and in each district a relief light vessel is stationed. A gong is used as a fog-alarm, in the Trinity House corporation light-vessels.

The lens system was early introduced into Holland, where it has been entirely approved; it has also been introduced into Sweden, Denmark, Prussia, and Russia. The colza oil is also in common use. There is no case where the lens lights have been introduced, in which recurrence has been made to the reflector system.

From these data, we are prepared to make the comparison required by the instructions of the Department, under the heads which it has pointed out, as far as it can be done without further experiments.

The use of these data will be entirely safe, since the systems of reflecting and refracting are compared under the most favorable circumstances for each class.

1. *Useful Effect.*—We have just shown that, by the experiments of Fresnel and Stevenson, the useful effect of a lens light is to that of a reflector light of the same class, on the average, as 3½ to 1; of course, the holophotal system of saving some of the lost light in the various arrangements, increases this disparity.

2. *Economy—First Cost—Repairs—Durability—Efficiency.*—This branch of the subject has been so elaborated elsewhere in this report, that it is considered only necessary to remark briefly upon it in this place.

Assuming that the lights in the two systems are the best of their kind:

The economy of the third order lens light, in comparison to the reflector light, as nearly equal to it as possible, is as 1 to 2·6. That is, it requires more than two and a half times as much oil, etc., for the reflector light, which is less than one third as useful, as for the lens light.

The economy of the second order lens light, in comparison to the reflector light, as nearly equal to it as it is possible to be made, is as 1 to 4·07. That is, the lens apparatus is four times as advantageous as the reflector light.

The economy of the first order lens light, compared to that of the reflector, is 4·08 to 1; or that the reflector is four times as expensive as the lens, or that the lens is four times as advantageous as the reflector light.

"That if we take into account the first cost of construction and the expense of their maintenance, we will find, in respect to the effect produced, the new system (dioptric) is still from one and a half to twice as advantageous as the old."

The repairs to the mechanical lamps employed in lens lights, amount to a mere nominal sum.

No difficulty can be anticipated in getting proper keepers to attend to the lens lights. Men belonging to the class of ordinary mechanics or laborers, are appointed to take charge of the lamps in France. Eight or ten days will suffice to instruct a light-keeper in the most essential parts of his duty, receiving lessons from an instructor conversant with all the details of the service.

The attendance upon the lamps can no longer be regarded with fear of ill consequences. They have been greatly improved, and are now believed to be nearly perfect.

There is nothing belonging to a mechanical lamp which could not be repaired by a watch-maker, and any person capable of taking charge of a movable light is equally competent to manage a lens light.

While experience has fully proved that the fears which were entertained of the extinction of the single lamp used in the lens lights are illusory, yet, should they still exist in any mind, any greater guaranty be absolutely required than experience gives, it would be easily afforded by furnishing each of the three or four wicks of the mechanical lamp with a separate pump, rendering them thus, in effect, three or four lamps. By subdividing the wicks, this might, if desired, be carried still further, and the expense of the additional pumps would not add two dollars per annum to the cost of each first-class light. The experience in relation to lenses has not been confined to any one country; even in our own, with but three stations, the results are most conclusive in their favor. Every first-class light should have two keepers, as in Great

Britain, etc. Such, however, is not the case in the United States; and in making the comparison of cost, they have deemed it best to allow the salary of an assistant keeper, and the additional cost of his dwelling-rooms, in making comparative estimates of the expense of the lens and reflector lights; but in comparing the actual annual expense of lights per lamp in this and in foreign countries, no credit was given to the foreign light for having additional keepers, and no charge made to our lights for deficiency of keepers. The Congressional Committee on Commerce say:

"It is not believed that dioptric lights of the first order can be required at any points except a few, and those the most important outer sea-stations. The remarks hereinafter made in regard to the comparative efficiency and economy of French and American lights, and the letter of the Auditor, may suggest doubts of the propriety of using any of the first order."

First order lights are, if possible, *more necessary on our coast than on that of any other country, and the Board can not, therefore, conceive what good reason could be given for not introducing them.* It is true, we have *no first order lights at present, but many are claimed to be of that class, while they are no better than third-class ones.* It is demonstrated elsewhere in this report, *that the first order lenses are absolutely necessary; and it is beyond question true, that no combination of the reflectors can produce a first order light equal in power to a first order lens.*

Again, the committee say:

"In arranging lights, useful effect and expense should be looked at in one view. An outer or sea-coast light should have a 'portee' or reach of light sufficient to give the approaching vessel, in all weathers, timely notice of danger. Any expense in fitting up lights to produce more effect is useless. A light extending its limit of visibility to the distance of 25 miles, is as efficient and useful as one of greater range. The mariner sees it in ample time to shape his course free from all difficulty." The Board concur in these opinions. *But our lights are not of that character.* The object of a light is to warn the navigator of some hidden danger, or of his approach to land, and to guide him clear of that danger on his way, or into his destined port. It therefore becomes necessary to regulate the power and range of a light, solely with reference to these primary objects. If a light is placed on a "clear coast" merely to warn the mariner of his approach or proximity to a lee-shore, or of his danger of running his vessel on it at night, a power and range must be given with reference to the gradual or irregular soundings in approaching the danger. If it is intended to serve as a guide around a dangerous point or shoal, then it becomes necessary to give it such a range as will insure safety to the vessel outside of these dangers under every circumstance; such, for example, as a sudden storm, or a continued gale blowing on shore for many days.

There are many points along the coast of the United States, with dangerous shoals extending many miles from them. To guide vessels clear of these dangers, lights of the greatest power and range are indispensable. Take as example the Nantucket Shoals, those between Barnegat and Cape May, off Absecum, and those off Capes Hatteras, Lookout, Fear, Romain, etc. The shoals off Cape Fear extend 20 nautical miles from the present light, which can only be seen under favorable circumstances about 12 miles. The necessity for first order lights at all points where sea-coast lights are required, is therefore indisputable. None of the lights named above have a sufficient range to warrant the mariner in running boldly for them. The lights on the Bahama banks are vastly superior to those on the Florida coast. The idea that our lights are injured by the haze, mists, etc., etc., arising from the proximity of our southern coast to the Gulf Stream, is therefore erroneous. That there is nothing in the atmosphere along our coast calculated to affect the brilliancy and power of good lights, which does not exist on the coasts of England, Ireland, Scotland, France, Holland, Denmark, Norway, Sweden, etc., etc., is abundantly proved by the observations of intelligent individuals, who are acute observers of meteorological phenomena, and who have had their attention drawn to this particular subject in consequence of the great inferiority of our lights, compared to those of the rest of the maritime world.

The proper elevation to be given to first-class lights, is a subject closely allied to, and in some degree dependent upon, the general state of the atmosphere in the vicinity of the particular lights.

Observation by intelligent professional persons, will always enable the light-house engineer to act understandingly and decide correctly in all special cases of this kind.

As a general rule, it is considered by able light-house engineers in Europe, that on coasts where fogs prevail, a light should not have a greater elevation than 200 feet above the mean sea-level; but under other circumstances any elevation, if desirable to afford a greater range to the light, may be given, which is not above the region of clouds.

For a list of the principal British lights, showing the height of tower and elevation above sea-level, see the last part of this article.

No light dues are charged upon shipping in France, as in Great Britain, Holland, Denmark, Norway, and Sweden, etc., but the whole establishment is provided for as in the United States and Russia. The maintenance of the light-house buildings is confided to the departmental or local engineers, and the expenses are defrayed from funds appropriated for the service of the department of public works.

United States, Light-house System in the.—The following account of the condition of the light-houses in the United States, and the proposed changes to be made in the light-house system, is extracted from the Report of the Light-house Board, made in 1851.

"The subject of light-house illumination and improvement, although one of occasional discussion in Congress and in certain circles within the last 12 or 15 years, has not occupied the public mind to any great extent in this country, while in Europe generally, but more especially in France, England, Scotland and Ireland, the ablest and most distinguished statesmen, philosophers, and philanthropists have devoted themselves for the last 25 or 30 years to this subject, in endeavoring to apply practically the aids which science and the mechanic arts have developed. Experiments to ascertain the truthful practical tests of the relative useful and economical values of illuminating apparatus, combustibles, and their accessories, in the most minute detail, have been made by Fresnel, Faraday, Stevenson, and other distinguished individuals; the results of their investigations have been published to the world, and their conclusions have served for the formation of a system for light-house illumination, approximating to perfection. Legislation, too, has taken a prominent part in this important branch of the public service in Europe. In 1825 the French government adopted definitely the Fresnel system of illumination on the coasts of France, and took, as the basis of their future light-house establishment, the programme proposed by the Board organized for the purpose, at the head of which was Admiral Rossel of the French navy.

"About this time the subject, which Sir David Brewster had foreshadowed in 1811, was revived in England and Scotland, through Colonel Colby of the Royal Engineers, and Mr. Stevenson the engineer to the Northern Lights, and the distinguished architect of the Bell-Rock tower. However, no important step was taken on the English side of the Channel to introduce the Fresnel apparatus until after a more careful and rigid

examination had been made by the light-house engineer of Scotland, and after trials of comparative usefulness and economy with that and the reflector apparatus at the Inchkeith station. In 1834, a new impulse was given to the subject of improvement in light-house illumination by letters from Sir David Brewster, and from the action of the House of Commons' select committee. The light-house boards of Europe seemed to exert themselves to satisfy public opinion by the introduction of the Fresnel lens at a few of the most important points for land lights, and of improved apparatus for floating lights, consisting of the Argand lamps and parabolic reflectors, in general use for land lights prior to the introduction of the Fresnel lens, and movable machinery for converting such fixed floating lights as were necessary into revolving ones.

"Although the lens met with much favor in England, and has been gradually getting into use, until nearly one half the sea-coast lights have been changed since 1837, still Scotland has introduced a larger number, in proportion to extent of coast, than the Trinity House corporation. Notwithstanding these decided improvements in the lights of Great Britain, another select committee on light-houses was raised by the House of Commons in 1845; and of the benefits arising from this last report have been the introduction of a large number of lens apparatus, not only in Great Britain but also into many of the colonies, and the substitution of the colza or rape-seed oil in nearly every light-house in the kingdom, in consequence of its superiority and economy compared to the best sperm oil. Improvements in illuminating apparatus and construction, ventilation, combustibles, etc., have made rapid progress in light-house engineering in Europe; while in this country no attempt has been made to improve the lights, with the exception of the act of Congress approved July 7, 1838, and which was the result of the recommendation of the committee on commerce in the Senate, as follows:

"'SEC. 2. *And be it further enacted*, That the Secretary of the Treasury be, and he is hereby directed to cause two sets of dioptric or lenticular apparatus—one of the first, the other of the second class—and also one set, if he deem it expedient, of the reflector apparatus, all of the most improved kinds, to be imported, and cause the said several sets to be set up, and their merits as compared with the apparatus in use, to be tested by full and satisfactory experiments.' Under this authority, a lens apparatus was placed in each of the towers at the highlands of Navesink, and 14 out of the 15 reflectors were placed in the Boston light-house. If 'the said several sets' were 'set up' and 'their merits, as compared with the apparatus in use, tested by full and satisfactory experiment,' in conformity to the act, the results of those experiments have not been made known. With this exception, and the authority of Congress 'to test Mr. Isherwood's plan of discriminating one light from another, and of determining the distance of a vessel from a light,' which resulted in placing a second order lens in the tower at Sankaty Head, Nantucket, and the lights authorized by law to be constructed under the direction of the Topographical Bureau (Brandywine Shoal, Carysford Reef, and Sand Key), no steps have been taken to keep pace in light-house improvements in this country with those of France and Great Britain.

"The board, after examining with a patience and a zeal which they believe this important branch of the public service to demand, the different points to which their attention was specially called by the instructions of the Department, have arrived at the following conclusions, which they feel assured will be found to be fully sustained by the detailed data in this report, and its appendix, upon which they are chiefly based:

"That the light-houses, light-vessels, beacons, and buoys, and their accessories in the United States, are not as efficient as the interests of commerce, navigation, and humanity demand; and that they do not compare favorably with similar aids to navigation in Europe in general, but especially with those of France and Great Britain, and their dependencies. That the light-house establishment of the United States does not compare favorably in economy with those of Great Britain and France. * * * That while the superiority of European lights to those of the United States (arising from the greater care and attention bestowed upon them, the better and more expensive apparatus employed in them, the larger number of keepers to the lights, the more rigid superintendence and frequent visitations for inspection and for delivery of supplies), render any just comparison of them in annual expense in money impossible, it is shown that the difference for maintenance per lamp per annum is very small, fitted with lens apparatus of equal power to the reand that not invariably in favor of those of this country. * * * If all our present lights were flectors now in use, the annual expense for supplies of oil and cleaning materials would cost little more than one fourth as much as is now expended for these articles of supply annually; that is, that the supplies now costing upward of $152,000, would not exceed $38,000 to $42,000, making an annual saving of $110,000 to $115,000. That in addition to the great superiority in brilliancy, power, and economy of the lenses, compared to the reflectors, they possess the great advantage of durability to the extent of never requiring to be renewed.

"The light-house system of the United States has grown up from small beginnings—only 8 lights in 1789, and 55 lights in 1820—to the enlarged condition of 331 lights in 1851, and without those helps from organization of which some other countries have had the advantage. Great credit is due to the zeal and faithfulness of the present general superintendent, and to the spirit of economy which he has shown. The systems of lighting, however, which 25 years ago were in general use, have gradually given way *to more improved ones—more efficient and more economical*. The general condition of our lights is not such as our commerce now requires, and not such as the improvements of the day can supply. In considering the condition of the different parts of the system in their order, these facts will strongly appear, viz.: that waste of light, by imperfect apparatus, is waste of oil, and must be paid for in money. The navigator would be more benefited by a few good and reliable lights than by many imperfect ones; indeed, he would prefer no light at all to a bad one.

"*Classification of Lights.*—A proper classification of lights has many and obvious advantages; in fact, it forms the basis of the arrangement of lights in a system. In England the shore-lights are classed as sea-coast, secondary, river, and harbor-lights. In France they are divided into six orders, according to the size of the illuminating apparatus. The name of the order of the light in the French system suggests its purpose, the range, the relative brilliancy, the size and character of the parts of the illuminating apparatus, and the particulars of detail. That our own lights have not been classed, will explain the many anomalies in the number of lamps, the forms of the reflectors, and the like. It is an admitted principle, that the degree of divergency given to a light by a reflector for light-house purposes, should depend upon its intended objects, including range, etc., etc.; and yet no such principle has been applied in our light-houses, and a waste of light has been the consequence. Classification is of little avail without other and more important qualities; but it is nevertheless an essential of a system. The following is an assumed classification of the lights of the United States, according to their present value and useful effect, as compared to the lens:

I. One station with a first order fixed and a second

order revolving lens light. This combination renders the light only equal to a second order lens light. 2. One station with a second order flashing light (lens). This light is not fully equal to a second order lens, constructed on the most approved plan, in consequence of the loss of light by metal placed in the focal plane. 3. One station with a third order larger model lens light, constructed on the most approved plan. 4. One station with a revolving light, 21 21-inch reflectors, the nearest approximation to a first order catoptric light on the coast; inferior to a second order lens light. 5. Three stations with 18 21-inch reflectors (fixed light); not better than second order catoptric, or third order dioptric light. 6. One station with 30 18-inch reflectors (two lights in one tower), not better than second order catoptric, or third order lens light (larger model). 7. Four stations with 18 15-inch reflectors; about equal to third order lens light (larger model). 8. Two stations with 17 21-inch reflectors; about equal to third order lens light (larger model). 9. Nine stations, 15 21-inch reflectors; not equal to a third order lens light. 10. Eight stations, 14 21-inch reflectors; inferior to third order lens light. 11. Fourteen stations, 15 15-inch do. 12. Three stations, 16 15-inch do. 13. Eight stations, 14 16-inch do. 14. Eleven stations, 13 14-inch do. 15. Three stations, 12 21-inch do. 16. One station, 12 16-inch do. 17. Four stations, 12 15-inch do. 18. Three stations, 11 21-inch do. 19. Twelve stations, 11 16-inch do. 20. Nine stations, 10 21-inch do. 21. Eighteen stations, 10 15-inch do. 22. Forty stations, 10 14-inch do. 23. Thirty-nine stations, 8 14-inch do. 24. Twenty-eight stations, 8 14-inch do. 25. Two stations, 8 16-inch do. 26. Two stations, 9 21-inch do. 27. Eighteen stations, 7 14-inch do. 28. Fourteen stations, 6 14-inch do. 29. Two stations, 2 16-inch do. 30. Eight stations, 4 14 and 16-inch do. 31. Fourteen stations, 11 14-inch do. 32. Four stations, 1 14-inch 33. One station, 8 9-inch do. 34. Eight stations, 5 14-inch do. 35. Four stations, 3 14-inch do. 36. Nine stations, without reflectors.

"*Recapitulation.*—1 tower with 30 lamps (two lights in one tower); 1 do. 29 do.; 1 do. 21 do.; 7 do. 18 do.; 2 do. 17 do.; 3 do. 16 do.; 23 do. 15 do.; 16 do. 14 do.; 11 do. 13 do.; 8 do. 12 do.; 29 do. 11 do.; 67 do. 10 do.; 2 do. 9 do.; 70 do. 8 do.; 18 do. 7 do.; 14 do. 6 do.; 13 do. 5 do.; 8 do. 4 do.; 5 do. 3 do.; 2 do. 2 do.; 7 do. 1 do.; 5 do. small gas-lights; 4 do. lens lights; 37 towers with 21-inch reflectors; 1 do. 18 do.; 41 do. 16 do.; 51 do. 15 do.; 168 do. 14 do.; 1 do. 9 do.; 9 without reflectors.

"*Lens Lights.*—One station equal to second order lens light. One station not equal to second order lens light. One station with third order (larger model) lens light.

"*Reflector Lights.*—12 lights not equal to second order lens light. 61 lights not equal to third order lens light (large size). 35 do. (small size). 121 lights not better than fourth order lens light. 84 lights inferior to the fifth and sixth order lens light.

"It is apparent from this statement that there is not a first-class light of any description on the whole coast of the United States. The nearest approximations are at the Highlands of Navesink, composed of a first and second order light, and the revolving reflector light at Mobile Point, of 21 reflectors. The three next in order are Sandy Hook, Cape Henlopen, and Cape Henry, each fitted with 18 21-inch reflectors, and in towers of a good elevation. The Boston harbor light, fitted with 14 21-inch English reflectors, probably *now* stands next on this list, although the apparatus is much worn, and has not had the care and attention it deserved. There are 236 fixed lights, 30 revolving lights, 2 fixed and revolving lights, 18 double lights, 2 triple lights.

"Average number of lamps per light-house, in the United States, is now 9¼; in England (general coast), 13; in Scotland (do.), 17⅛; in Ireland (do.), 20; in Ireland harbor, 7½. The 41 light-vessels of the United States are fitted without lamps (in the ordinary acceptation of the term), and without reflectors. The lights are consequently seen at very short distances, and do not fully subserve the objects for which they were authorized by Congress. Argand lamps, with large parabolic reflectors, are employed in Great Britain in light-vessels. The Admiralty list of Trinity House lights for 1849, shows that there were at that time seven floating lights fitted with revolving apparatus, belonging to that corporation.

"*Distinctive Characters.*—The distinctive characters of the lights of the United States, are:—1st, fixed lights; 2d, revolving lights; 3d, double lights, or lights in two towers; 4th, lights in three towers; 5th, colored lights. Distinctions have been employed at 10 stations from two fixed lights, and from one fixed light, and one revolving light; and in three towers with two lights, one above the other. There is but one triple light on the coast of the United States. The beacons for ranges are not, of course, included in these numbers. Double and triple lights are among the most wasteful modes of distinction, and, it may be added, the least effective. Very little attention has been paid to distinguishing lights in the United States. At points along the eastern coast, many fixed lights are seen at the same moment, without the means of knowing any of them. The proportion of revolving to fixed lights on the entire coast, is 1 to 9·2. The proportion of all modes of distinction, including multiple and colored lights, is 1 to 5·2.

"On the coast of Maine there are 34 light-stations; of which number, 3 are revolving, 1 two-towers fixed and revolving, 1 two-towers fixed lights, and the remaining 29 are all fixed lights. In New Hampshire there are 3 light-stations: 1 fixed, 1 revolving red and white, and 1 fixed, with 2 lights in 1 tower. In Massachusetts there are 42 light-stations; of which 5 are revolving, 11 fixed and revolving, 1 lens, flashing, 8 double fixed, 1 triple, and the remaining 26 are fixed white lights. In Rhode Island there are 9 stations; 2 are revolving, and 7 are fixed lights. In Connecticut there are 11 stations; 2 are revolving, and 9 fixed lights. In New York there are 41 light-stations; 4 are revolving, and 37 fixed lights. In New Jersey there are 10 light stations; 1 revolving, 1 fixed and revolving, 1 red, and 7 fixed lights. In Pennsylvania there are 4 light-stations, and all fixed lights. In Delaware there are 8 light-stations, and all the lights are fixed. The one on the breakwater *is called* a red and white light, by the keeper; but as the light can not be seen through the dark red shield-like shades, the white part only is seen. In Maryland there are 14 light-stations; 1 double fixed, and 13 single fixed lights. In Virginia there are 8 light-stations; 2 are revolving, and 6 are fixed lights. In North Carolina there are 11 light stations: 2 are revolving, 2 double fixed lights, and 7 fixed lights. In South Carolina there are 5 light-stations; 1 revolving, 2 double fixed light-beacons, and 2 fixed lights. In Georgia there are 9 light-stations; 2 revolving, 1 two fixed beacons, and 6 fixed lights. In Florida there are 12 light-stations; 6 revolving, and 6 fixed; one of the latter with red shades. In Alabama there are 3 light-stations; 1 revolving, and 2 fixed lights. In Mississippi there are 4 light-stations, and all fixed lights. In Louisiana there are 14 light-stations; 3 revolving, 1 with two lights in one tower, 1 red light, and the remaining 9 are all fixed lights. Of the remaining 49 lights, *only two* are revolving.

"The foregoing lights are exclusive of the 42 light-vessels distributed along the coast, forming an important part of the light system, all of which are fixed lights. From the Highlands of Navesink to the fixed light on Dry Tortugas, a distance of upward of 1300 miles by the coast, there are only 3 prominent revolving lights; all the rest being single fixed lights. The revolving lights at Cape Charles, at Ocracoke, Sapelo,

and Amelia island, are not included in this estimate, because they are minor lights, and not seen, except by vessels bound into ports near their location. Body's island is so badly placed, and so low, that it is of very little use to navigators. From Dry Tortugas to Cape Canaveral, a distance of nearly 400 miles, there is not a single revolving or other than fixed lights. From Charleston to Cape Canaveral, a distance of 300 miles, all the prominent lights are fixed, with only two minor revolving lights. From Charleston to Navesink, there is but one revolving light which can be of any use to the mariner bound to New York.

"In England the lights are distinguished by fixed, revolving, flashing, colored (red only being used), with combinations of double fixed, fixed and revolving, etc., etc. The English Trinity House corporation have 7 revolving lights on board of light-vessels, out of 25; and the proportion of revolving to fixed lights is 1 to 4.2. Of 40 sea-coast lights, 19 are fixed white, 10 revolving, 4 revolving and fixed, 3 red fixed, and 1 double fixed light; that is, one half are fixed, and the remaining half are revolving, etc. The Scotch have 11 fixed white; 2 revolving red and white; 4 revolving, showing brightest every minute; 4 revolving, and showing white lights every two minutes; 2 double fixed lights; 2 flashing once in every five seconds; 4 intermittent lights, brightest state once in two minutes; 2 fixed and red; 1 double, revolving at the same instant; making only 11 fixed lights, out of 33, on the entire coast of Scotland. In Ireland there are five distinctions employed: fixed white, fixed red, revolving white, revolving red and white, and intermittent lights. Of 23 sea-coast lights, 11 are fixed white, 7 revolving, 1 fixed red, and 1 fixed and revolving.

"In France there are nine principal combinations of lights, possessing distinctive characteristics, viz.: 1. Flashes which succeed each other every minute. 2. Flashes which succeed each other every half minute. 3. Flashes alternate red and white. 4. Fixed lights, varied by flashes every 4 minutes. 5. Fixed lights, varied by flashes every 3 minutes. 6. Fixed lights, varied by flashes every 2 minutes. 7. Fixed white lights, varied by red flashes more or less frequently. 8. Fixed lights. 9. Double fixed lights. To which might be added fixed and revolving, in two towers, as at Navesink. There are, however, very few double lights in France, and are only employed to give a very decided character to a locality, in contradistinction to those nearest. By adopting the principle of Rear Admiral Rossel, as set forth in the programme reported by him for lighting the coasts of France, in 1822, finally adopted by the French administration in 1825, and which has been steadily adhered to since, of placing first order sea-coast lights within the distance of 42 nautical miles of each other, there can be no great difficulty in obtaining a sufficient number of very marked distinctions for sea-coast lights. The present advanced and progressive state of nautical science is also brought in to the aid of the light-house engineer, as it will now seldom happen that a navigator will be 84 miles out of his reckoning. By commencing at one line of the boundary of a country, on a sea-coast where a first order light is required, with a revolving light; then, at the distance of 42 nautical miles, a fixed light; and at the distance of 42 nautical miles forther, a flashing light; then an intermittent bright, then a fixed light; then a revolving—and so on along the entire coast—the mariner will find no difficulty in recognizing any well-kept light that he may see. Should it become necessary to employ time as one of the elements, then there can be no better system than that employed in France. An occasional deviation may be found to be necessary, such as the erection of two towers for fixed, revolving, or fixed and revolving lights. This is one of the branches of light-house service which can only be executed properly by competent persons, who have thoroughly investigated and studied the subject, both in general and for special cases. Should the very ingenious plan of distinguishing lights by occultations, as proposed by Mr. Charles Babbage, prove, upon experiment, to be practicable, the whole system of characteristic distinctions will be entirely changed and greatly simplified.

"The floating lights of the United States are all fixed, and fitted with common torch lamps, without Argand burners and reflectors. The light-vessels are too small for exposed positions, and the models are not the best for the purposes for which they are designed. They are not provided with moorings such as they require, and there is not sufficient attention paid to placing them in their proper positions. The lights, in consequence of the inferior lamps *without reflectors*, are of very little use to the navigator. The uncertainty of finding the light-vessels in their proper positions, by navigators who have been several months absent from the country, produces a general distrust, which destroys all reliance on them.

"The floating lights of England and Ireland are built upon the best models; are of sufficient tonnage to be safe at the points for which they were built; are constructed in the most substantial manner—of wood generally, but in some cases of iron; are moored with heavy anchors and chains, and long scopes. Those placed to mark channels, as the North-West light-vessel at Liverpool, are moored with long scopes of cable to a swivel, and hove in, so that in swinging they do not change their positions perceptibly. These floating lights are placed in the most exposed positions in the Irish or St. George's Channel, in the British Channel, North Sea, and in the most exposed positions of the English and Irish coasts. It very seldom happens that they break from their moorings, and are never taken away without previously placing a duplicate in the position. The system of relief to the keepers and crews is an admirable one; one that insures a faithful performance of the duties intrusted to them, to the great advantage of navigators.

"The English floating lights are fitted with Argand lamps and parabolic reflectors—fixed, revolving, and double lights. They are distinguished by day by cages of hoop-iron, balls, cones, flags, etc., etc. The name and number of each light-vessel are painted in large letters and figures conspicuously on the sides and stern. These lights from the superior apparatus employed in them, and the great care and attention of inspections and superintendence, under the most rigid instructions in detail (which are printed in large type, and hung in frames in the apartments), are very little inferior to the same class of reflector lights, with equal elevations, on shore. Many of them can be seen from the deck of a merchant vessel 12 to 14 miles, while those in this country can only be seen from 3 to 7 miles. Refractors have been made by Mr. Letourneau, of Paris, for light-vessels, which can not fail to be productive of much benefit, and which are, no doubt, destined to render floating lights much more useful to the navigator than they have hitherto been, even in England, where the best reflecting apparatus has been employed for many years.

"*Mode of ascertaining Places of Light-Houses.*—No systematic mode of determining where there should be a light-house, or boat, seems to have been followed for any period of years, and hence the lights are so numerous on some parts of the coast as to be inconvenient, and on other parts are so few as not to supply, *even moderately*, the demands of navigation. The principle adopted by the French commissioner of light-houses for placing lights on the coast of France, will be found stated in another part of this report; steadily adhered to, it has prevented the wasteful multiplication of lights, and has provided, gradually, those really necessary for facilitating navigation.

"*Plans for Light-Houses, Light-Vessels, etc.*—No sys-

tematic methods appear to have been resorted to to secure plans for light-houses, light-boats, lighting apparatus and other accessories, in the United States. The preparation of plans for light-houses, lighting apparatus, and other accessories, is the business of an engineer. Occasionally architects have been consulted, and the Treasury Department and Congress have sometimes devolved the preparation of plans, etc., upon the officers of the corps of topographical engineers. The unculled-for variety and the inconvenience and ill-adaptation of the structures visited by the Board, show how much the intervention of knowledge is required. In discussing the details of these works, this fact will constantly appear. Professional skill is essential to efficiency and economy. Ill-contrived light-houses require numerous additions, and do not then answer their purpose. Badly-constructed ones are expensive in repairs, besides injuring the apparatus and stores contained in them. Badly-contrived lamps waste the oil, and answer imperfectly the purpose of lighting. Mirrors badly made, unskillfully arranged, unscientific in their forms and adjustments, cause a loss of light which is paid for in oil. Imperfect ventilation causes a bad light. Unscientific arrangements of the lantern in regard to glazing, painting, etc., cause a waste of light. The proper arrangement of these matters is the study and occupation of a profession. The neglect of the proper conditions is wasteful. Plans of light-houses of different classes, with modifications adapted to different localities, would promote economy by the frequent repetition of the same pieces, which in stone-work, brick-work, iron-casting, carpenter's-work, glazier's-work, and the like, is productive always of a decided economy. The important subject of alarm signals has not received the attention which it deserves. In the English light-houses the gong is used instead of the bell, to give signals in case of fogs, and no attempt appears to have been made in this country to compare the value of the two kinds of alarm signals. The fog-whistle, introduced by Mr. Daboll and recommended by the Board, has been found to be far more efficient than the bell. The Board had ample means of forming correct conclusions as to the relative merits of the two modes of warning the mariner in fogs, and found no difficulty in deciding in favor of the whistle for positions where it can be put up.

"Mr. Alexander Gordon, civil engineer, of London, proposed to the select committee of the House of Commons on light-houses, in 1845, that the gong employed on board of light-vessels should be superseded by the use of a shrill scream or whistle, such as the railway whistle, giving it sound by a bellows, and having the sound directed around the horizon by reflectors, similar to those of Bordier Marcet for reflecting light. The reflection of the sound of the air-whistle of Mr. Daboll is believed to be practicable by the means suggested by Mr. Gordon; at any rate, the importance of the subject warrants the small expenditure which would be required to test it experimentally. The discharge of heavy guns has been recommended, and would be effective if there were sufficient force at the light-houses to load and fire them. They would always be expensive, however, every discharge of a 24-pounder gun costing about $1. The fog-bells examined by the United States' Board were not placed so as to produce the best effect. That at Boston harbor was inclosed in a frame building, the sides of which effectually deadened the sound in two directions. It is time that this subject received full and careful investigation by experiments under the direction of scientific men. Besides this class of signals, those intended to guide vessels entering into *barred* harbors, when (from heavy weather or other causes) pilots can not be had, should be carefully systematized. The system should be adopted of Captain Fenoux, of the French navy, depending upon the positions of a movable triangle fixed to a pole or mast, or to a light-house; and that of Lieutenant John Rodgers, United States' navy, by a flag, to be used in a boat or on shore. Surf-boats and life-boats should be furnished to certain light-house stations, and the means of readily providing crews for them in time of need, be furnished. They should be planned by, and constructed under the direction of, competent persons, who would study all the details of their use, and make it certain that when required they could be launched and effectively manned. The trustees of the Liverpool Dock Company (England) have, under the admirable management of their very able marine surveyor of that port, a most perfect system for the relief of the shipwrecked.

"There are nine life-boats stationed at different points around the bay and port of Liverpool. The boats are constructed on the most approved principles; kept on carriages in the boat-houses near the shore, and horses provided to enable them to proceed to the most advantageous spot for launching. A gun is placed at each station to summon the crew, besides distress flags placed at each light-house, light-ship, and telegraph station. The arrangements are so perfect that in many instances the life-boat has been manned, launched, and on her way to the wreck in 17 or 18 minutes from the time the distress signal was made. The life-boats are manned by picked boatmen of Liverpool and picked fishermen along the coast, who reside near the boat stations, and who are familiar with the banks, swashways, tides and currents, in Liverpool Bay. The whole of the boatmen are kept on constant and permanent pay, and are regularly mustered and exercised once a month, and no expense has been spared in rendering the boats, their equipments and crews, as perfect as possible. The Liverpool arrangements are well worthy of imitation for many parts of our dangerous coast (especially during the winter months). The necessity can not too strongly be urged for the employment of more efficient means than now exist at the points where life-boats have been authorized by law to be placed.

"*Light-Boats and their Accessories.*—The first cost, large annual expense for maintenance and repairs, and the rapid decay of light-vessels, render this mode of lighting very objectionable, independently of the ineffectual manner in which they subserve the purposes of warning the mariner of danger. That this description of lights has not received the attention in this country due to its importance as a necessary adjunct to a proper system of sea-coast illumination, is very evident to the Board.

"That there are many points on our extended sea-coast requiring to be lighted, which will not admit of any other means, is also evident. It therefore becomes necessary to select those means least objectionable, in an economical point of view, and best adapted to the desired end. The rapid decay of timbers, especially on our southern coast, would seem to suggest the propriety of employing more durable materials. It is stated by the general superintendent of lights that these vessels last from 5 to 10 years. To obviate the necessity for renewing them at such short periods iron vessels might, with great propriety, be substituted. The experiment has been tried in Europe with perfect success. The advantages of iron over wood for the construction of light-vessels are self-evident. Durability, buoyancy, and economy of first cost, are the advantages, without any conceivable disadvantages that could arise from their introduction.

"The inferiority of those vessels seen by the Board, the large sums appropriated annually for their support and repair, and the small amount of usefulness arising from their employment, warrant the Board in recommending a better class of vessels; to be built of iron, and filled with the best parabolic reflectors and Argand lamps, similar to the north-west light-ship at Liverpool and those generally employed by the Trinity House Board and Irish Board. Proper distinguishing

marks by day, as well as the distinctions of the lights at night, should not be neglected, and the Board can not do better than recommend the Liverpool and other English light-vessels as proper models, in every respect worthy of imitation. There are many points on our southern coast, especially in the sounds and bays, where small light-vessels are now placed, at which screw-pile foundations might be substituted with great advantage to the navigator, and in an economical point of view. Structures on screw-piles costing in the aggregate much less than the light-boats, and affording a more powerful and efficient light, would conduce greatly to the efficiency and economy of this branch of the lighting service of the United States. The apparatus of the light-vessels of this country is so far inferior that most intelligent and disinterested persons engaged in commerce and navigation pronounce them useless. The example of the Trinity House corporation, Liverpool lights establishments, etc., etc., in fitting up their light-ships with 21-inch parabolic reflectors and Argand lamps and burners, has not been followed in this country. While the light-vessels of this country are comparatively useless, those of Great Britain are in many instances equal, and in all nearly so, to those placed in towers on the shore. The introduction of movable machinery, with the view to distinguishing these lights, is not of very recent date in Europe, though not known here.

"The removal of light-vessels from dangerous and important points on the coast, without due notice (a source of almost universal complaint by masters of vessels), is an evil that can not be remedied too soon. It has not been many days since the finest steam-frigate in the navy struck on a dangerous shoal, properly laid down on the coast-survey chart, in consequence of the absence of the light-vessel from her position. Light-vessels seldom break away from their moorings in England, and are never taken away from their positions without previously placing a substitute. This branch of the lighting service of the country is probably the most defective. Properly modeled, built, and moored, light-vessels, fitted with the best apparatus, and placed under the charge of competent masters, with ample crews, governed by the most rigid rules and regulations, and subjected to frequent visitation and inspection, can alone subserve the great interests of navigation, in this branch of the lighting service.

"*Manner and Frequency of Inspection—Persons by whom made.*—All experience shows that frequent inspections of light-houses are essential to maintaining an efficient system. These inspections, by competent persons (engineers of the corps of Ponts et Chaussées) are carefully provided for in France, by members of the Trinity Board in England, and by the engineers of local establishments, such as that of the Port and Bay of Liverpool, and by the engineers and their assistants of the establishments of Scotland and Ireland. The vigilance which is secured by inspections at irregular intervals is of greater value than even the direct results of an examination. Our system, at present is quite deficient in this respect; a single annual visit from the collectors, who are superintendents of lights, and the visit of the employee who delivers supplies to the light-house, etc. (the latter, in some districts, being the only inspection), is obviously insufficent. (See Senate Doc. No. 428, 1st session, 29th Congress.) The evident state of preparation in the light-houses at which the visits of the Board were expected, showed that good effects would flow from a system of inspection. Such a system could be organized with very little, if any, additional expense to the government; which will be discussed in detail in another part of this report. The efficiency which would be gained by thorough inspection would justify additional expenditure, if it could not be reached without it; but it is believed to be clearly demonstrated elsewhere in this report, that the present annual expenditure for commission on purchases, distributing supplies, and nominal inspections, *would be ample*, under the system proposed by the Board, to produce these desirable and beneficial results. *Better have fewer lights and effective, than many without efficiency.* In the district of New York the collector employs an assistant, who is charged with the care of the lights, beacons, buoys, etc., and who has under his charge a small vessel for furnishing supplies, visiting the lights, replacing buoys when displaced, and the like. The zeal of this gentleman has been servicable in the management of this district; and were it guided by good instructions, and sustained by occasional visits of a competent general inspector, would produce still better results.

"*Positions of Beacons, Buoys, etc.*—As a general rule, only seamen familiar with hydrography, and pilots, know what beacons, buoys, and sea-marks are required, and where and how they should be placed. The beacons, buoys, and sea-marks which would suffice for pilots, with their accurate knowledge of natural and artificial objects available for safe navigation, are not always sufficient for mariners generally. Their object is not to dispense with the services of the pilot, but to furnish him with marks, etc., to provide for cases of emergency, when the vessel must enter, and may not be provided with a pilot. Small coasting vessels, carrying freights which do not pay well, can not afford to pay pilotage. The necessity for the beacons, buoys, and sea-marks recently and at present provided for by law, is inquired into and reported upon by the superintendent of the coast survey, on the examination of officers of the work, and by the chief of the Topographical Bureau. They are then usually placed by pilots or seamen, but sometimes by the officers of the coast survey. When required to be removed on account of ice, or for repairs, or when displaced, they are replaced by contract by the year, under the authority of the local superintendent. The duty of replacing buoys driven from their moorings is neither superintended nor executed in a proper manner. The buoys are usually placed by pilots (who contract to perform the service) by compass bearings, ranges, or by guess; and it has been remarked by the surveyors, that in many cases their places are so much changed in different years as to produce error, and even danger. The coast survey officers place them by the known positions of three suitable objects on shore—a method known as the three-point problem, measuring the angles with a sextant. This is the true mode of placing them; and no person should be permitted to put them down who is not competent to use that instrument. When placed, it is indispensable that their position should be verified by a competent officer, that he should report in relation to them to the local or general superintendent, and that he should inspect their positions from time to time, and always when, by accident or design, they have been moved.

"*Coloring and Numbering Buoys.*—Until the passage of the recent law (1850), in regard to coloring buoys, the local superintendents changed the colors at pleasure, often introducing the utmost confusion. No notice of such change being given to the general superintendent, no changes could be made in the charts of the coast, and the worst consequence might have resulted. Wise legislation has checked this; but it is still true, that the examination of positions, colors, and numbers, should be made by competent inspectors, and reported to the Department. Plain as are the directions of the law in regard to coloring and numbering buoys, there is known one important port in which the provisions of the law have been completely misunderstood, so that a navigator running by the buoys must put his vessel, if of considerable draught, on the bar.

"Sufficient care has not been bestowed upon the buoys generally, under the law of 1850. The paint used for coloring has not been, in any single instance that the Board has seen, of the best quality. To carry

out the design of the act of Congress, the red especially should be of the best quality of red lead, the black of the glossiest, and the white of the purest white. Spanish brown and dirty black are difficult to distinguish from each other. Such may be seen almost everywhere along our entire coast. The spar-buoys, being the most common in this country, are inefficient; difficult to give easily distinguished marks or numbers, and from their peculiar shape, size, and improper mooring, are too often at such an angle with the surface of the water as to render them exceedingly difficult to be seen. Can and nun-buoys are employed, but not to a great extent, and those used are much too small. The boat-buoys, used chiefly on the eastern coast are very inefficient. In some of the rivers, barrel-buoys, equal in capacity to about a sixty-gallon cask, are employed. Iron buoys have been authorized, by special act of Congress, for the Columbia River, rivers in Texas, Hatteras Shoals, etc. The moorings of buoys in the United States are, as a general rule, very defective. The weight of the blocks of granite, or sinkers of iron, and size of chains, are not sufficient. For want of proper inspection, buoys frequently sink at their moorings, and part their chains. Too much care can not be taken to guard against those casualties, especially in important channels: in rivers and on sand-bars, lodgments of this kind may destroy a valuable channel. The important duty of raising and replacing buoys should not be left to the discretion of contractors. The kind of buoys required, their material, etc., should all be provided for by competent persons. In regard to distinguishing them, the Board will elsewhere make further remarks. The numbers, as now placed upon the buoys, are very ineffective. The law in regard to coloring and numbering them, however, is deemed all-sufficient.

"*Notice to Mariners in regard to Changes.*—This is a subject which, in the opinion of the Board, requires more attention than has ever been given to it in this country. It is not sufficient to publish changes in a local newspaper. They should be published, as far in advance of the proposed change as possible, in all the leading commercial newspapers, nautical periodicals, and by placards in large type, with conspicuous headings, and distributed at home and abroad, at the custom-houses, and offices of the different consulates. In making changes, they should take place at the precise time designated, and nothing should prevent the perfect fulfillment of the originally published design. Changes of lights in light-houses, removal or placing of light-vessels, should never take place with less than six months' notice: a year's notice would be better. Should a light-vessel break adrift, although replaced within a few days, a notice of both facts should appear together in the same papers, and on the same placards, as the navigator might otherwise see the notice of the breaking adrift, and not the other, and thereby be deceived. This is one of the most important branches of the lighting service, and one that can never be perfectly systematized without a corps of competent and efficient local inspectors. In this respect the Trinity House, Northern Lights, Irish Board, Liverpool Dock Trustees, etc., are good models. Notices of proposed changes of lights, buoys, beacons, and of new lights, are to be found in every part of the globe, and always placed where the navigator is obliged to go before leaving port—the clearance office, and at the office of the consul of his country. The admirable system followed by these independent boards, in all the minute details of the service, for the benefit of commerce and navigation, can not be too highly commended. Those who have been around the world, and visited nearly every principal port it contains, never saw a notice to mariners relating to an American light, except by chance, in some corner of a newspaper, and that probably a merely local one.

"Changes arising from casualties should be published widely in the manner prescribed, and at the same time reported by the local inspector to the Department. No changes should be made except on the authority of the Department, which should authorize at least six months' notice, in all cases of lights. The looseness of the system in this country heretofore in these respects is proved by the fact, that although a circular was issued by the general superintendent of lights, etc., directing the collectors, acting as superintendents of lights to report to the superintendent of the coast survey all changes in regard to lights, beacons, buoys, etc., that they might be placed upon the charts, but one collector ever complied with the direction. Changes which otherwise would be improvements, unless known to the mariner, become snares. No list of beacons, buoys, or sea-marks exists; no description of them can be obtained, except by a general visitation and inspection of them along the whole coast. Having failed to obtain the required information, efforts have been made by the Board to procure this important information from the local superintendents, for the purpose of arranging a descriptive list of them. So far only a few returns have been made, and some of these not full enough to carry out the design. European light-house boards do not confine themselves to giving notice to mariners of proposed changes, etc., in their own lights, etc., but they cause those in foreign languages to be translated, and as widely disseminated as their own. The Trinity House corporation of London causes the notices relating to lights, etc., on the French coasts, as well as on their own, to be published in the commercial papers in this country.

"*Relative Economy of Reflector and Lens Systems.*—Now, although the most decided results in favor of economy are to be expected from the reformation of the minor classes of lights, we do not therefore conclude that we should begin with them, because humanity, and the more general interests of commerce, and the safety of our ships-of-war, have their claims. Our ships-of-war, vessels engaged in foreign commerce, all that arrive on our coast from distant voyages, are more liable to suffer from the inferiority of our sea-coast lights, or higher class lights, than are our coasters from the deficiencies of the inferior classes; and, accordingly, it is along our exterior coast line that we find occurring the greater number and the most disastrous shipwrecks during the stormy seasons.

"The minor lights are usually so multiplied, and the localities inside of the general coast line so well known to the navigators of our bays and rivers, that they can not often be at a loss for a secure harbor somewhere in heavy weather; whereas the sea-coast lights, at times comparatively few, and even deficient in number, and at others complicated by their superabundance, occupy positions full of danger to the navigator. It is, therefore, of the first importance to ships arriving on the coast from distant voyages, that the light which they first make should be clearly visible at the greatest distance from the land, and that it should be so distinct in character as not to be confounded with other lights; and it is not less important that we should not delay giving to such lights all the perfection they are capable of receiving; and having accomplished this purpose with respect to the most prominent and important, we should extend the improvement to the lights of inferior classes and of minor importance, although by so doing we were to save at the outset something less than if we were to begin by reforming the minor lights, because in the mean time our foreign commerce and the navy might be suffering to an amount far surpassing that which might be saved to the revenue.

"Mr. Alan Stevenson says: 'In comparing the fixed dioptric and the fixed catoptric apparatus, the results may be summed up under the following heads:

"'1. It is impossible, by means of any practical

combination of paraboloidal reflectors, to distribute round the horizon a zone of light of exactly equal intensity, while this may be easily effected by dioptric means in the manner already described. In other words, the qualities required in fixed lights can not be so fully obtained by reflectors as by refractors.

"'2. The average light produced in every azimuth by burning one gallon of oil in Argand lamps with reflectors, is only about one fourth of that produced by burning the same quantity in the dioptric apparatus, and the annual expenditure is £140 3s. 8d. less for the entire dioptric light than for the catoptric light.

"'3. The characteristic appearance of the fixed reflecting light in any one azimuth, would not be changed by the adoption of the dioptric method, although its increased mean power would render it visible at a greater distance in every direction.

"'4. From the equal distribution of the rays, the dioptric light would be observed at equal distances on every point of the horizon—an effect which can not be fully attained by any practicable combination of paraboloidal reflectors.

"'5. The inconveniences arising from the uncertainty which attends the use of the mechanical lamp, are not, perhaps so much felt in a fixed as in a revolving light, because the greater simplicity of the apparatus admits of easier access to it, in case of accident.

* * * * *

"'There can be but little doubt that the more fully the system of Fresnel is understood, the more certainly will it be preferred to the catoptric system of illuminating light-houses, at least in those countries where this important branch of administration is conducted with the care and solicitude which it deserves.

"'The expense of fitting up a revolving light with twenty-four reflectors, ranged on three faces, may be estimated at £1298, and the annual maintenance, including the interest of the first cost of the apparatus, may be calculated at £418 8s. 4d. The fitting up of a revolving light with eight lenses, and the diacatoptric accessory apparatus, may be estimated at £1459, and the annual maintenance at £354 10s. 4d. It therefore follows, that to establish, and afterward maintain, a catoptric light of the kind called revolving white, with a frame of three faces, each equal in power to a face of the dioptric light of Cordouan, an annual outlay of £63 18s. more would be required for the reflecting light than for the lens light; while for a light of the kind called revolving red and white, whose frame has four faces, at least 36 reflectors would be required in order to make the light even approach an equality to that of Cordouan; and the catoptric light would, in that case, cost £225 more than the dioptric light.'

"Convert these two sums into our currency, and it will be seen that we have a saving in the first case of $309, and in the second case of $1089 per annum.

"The effect produced by burning an equal quantity of oil in revolving lights in either system, may be estimated as follows: In a revolving light, like that of Skerryvore, having eight sides, each lighting with its greatest power a horizontal sector of 4°, we have 32° (or units) of the horizon illuminated with the full power of 3200 Argand flames, and consequently an aggregate effect of 102,400 flames produced by burning the oil required for 16 reflectors; while in a catoptric apparatus like that of the old light at Inchkeith, having seven sides of one reflector each, lighting with its greatest power a sector of 4° 25′, we have nearly 31° (or units) of the horizon illuminated with the full power of 400 Argand flames, and consequently an aggregate effect of 12,400 flames as the result of burning the oil required for seven reflectors. Hence the effect of burning the same quantity of oil in revolving lights in either system will be represented respectively by 16·7, 12,400=28,343 for the catoptric, contrasted with 102,400 for the dioptric light; or, in other words, revolving lights on the dioptric principle use the oil more economically than those on the catoptric plan, nearly in the ratio of 3·6 to 1.

"Let us, then, take the appropriation for oil for the lights in the United States, deducting the quantity used in the four towers fitted with dioptric apparatus, and divide it by 3·6, the proportion to 1, in favor of the lens apparatus.

"1851–2.—Appropriation for oil (less oil burned in lens lights) $122,629 55; 1 to 3·6 will give necessary quantity for lens lights of equal power, $34,063 68: annual saving for oil by this mode of comparison, $88,565 57. Glass chimneys, wicks, and repairs of lighting apparatus, will be in the proportion of not less than 310 to 8193; that is, 1 to 10. Amount appropriated for these objects, minus the expenses of the same articles, for the four lens lights, $15,162 30; 1 to 10 will give the necessary expense with lenses, $1216 23: annual saving by this comparison in these articles, $13,646 07.

"The oil being the most bulky article of supplies, it may be assumed that the saving in oil will be a fair proportion for the transportation, the more especially as spare lamps, burners, reflectors, and the great wear and tear of the Argand lamps, burners, and reflectors, is not included in the estimate of annual saving.

"Amount appropriated for the transportation and delivery of oil and other annual supplies, 1851–2, $11,437; 1 to 3·6 will give the necessary expense for this article, $3176 94: annual saving with lenses, $8260 06. It may be urged that there would not be so great a saving in transportation by the change: of that, the experiment alone can decide. By the aid of a small steamer, one half of the amount appropriated could be saved in money, while very important additional service would be rendered in the way of inspections, and more frequent visits to the principal sea-coast lights. Taking, then, the savings of this mode of comparison, it will be as follows: for oil in one year, $88,565 57; for wicks, chimneys, repairs of apparatus, etc., $13,646 07; for transportation, $8260 06: total annual saving, $110,471 70. Making within a fraction the same amount which would be saved annually by the introduction of the lens apparatus by this comparison, that was shown by taking the lights in their regular order of powers, and comparing with orders of as nearly as possible equal powers in the Fresnel system. Nothing therefore can be clearer than the results thus set forth.

"The effect produced by the consumption of a gallon of oil in a fixed light, with 26 reflectors, which is the smallest number that can be properly employed, may be estimated as follows: The mean effect of the light spread over the horizontal sector, substituted by one reflector, as deduced from measurements made at each horizontal degree, by the method of shadows, is equal to 174 unassisted Argand burners. If, then, this quantity be multiplied by 360 degrees, we shall obtain an aggregate effect of 62,640; which, divided by 1,040 (the number of gallons burned during a year in 26 reflectors), would give 60 Argand flames for the effect of the light maintained throughout the year by the combustion of a gallon of oil. On the other hand, the power of a catadioptric light of the first order, like that lately established Girdleness, may be estimated thus: The mean effect of the light produced by joint effect of both the dioptric and catadioptric parts of a fixed light apparatus, may be valued at 450 Argand flames; which, multiplied by 360 degrees, gives an aggregate of 162,000; and if this quantity be divided by 570 (the number of gallons burned by the great lamp in a year) we shall have about 284 Argand flames for the effect of the light produced by the combustion of a gallon of oil. It would thus appear, that in fixed lights the French apparatus, as lately improved, produces as the average effect of the consumption of the same quantity of oil over the whole horizon,

upward of four times the amount of light that is obtained by the catoptric mode, although in certain directions, opposite the axes of each reflector, the catoptric light is fully 50 per centam more powerful than the dioptric light.

"But the great superiority of the dioptric method rests chiefly upon its perfect fulfillment of an important condition required in a fixed light, by distributing the rays equally in every point of the horizon. Hence, the saving for fixed lights in the same amount of oil, etc., appropriated for as before, will be $91,971 94; saving on other articles, $22,226 07: total saving per annum, $114,198 01.

"It may, and probably will be urged, that a large portion of this annual saving will be absorbed in the wages of additional keepers. In answer to that, it may be stated, that in the comparisons of reflecting and refracting systems in Europe, the same number of keepers is required for both, of equal class or order, and therefore the ascertained saving is a net annual gain.

"In the United States, as a general rule, but one keeper (there being only 14 assistants belonging to an establishment of 301 light-stations, fitted with reflector apparatus) is attached to a light-station. To render the larger, or sea-coast lights efficient and safe, two keepers should be attached to each station having a single tower, and three to those with two towers, whether fitted with reflectors or lenses.

"However, as it may be contended, that inasmuch as our reflector lights in general have only one keeper, and that the change to the lens system would require two to each light of the first or second class or orders, it may not be inappropriate to see how many of the present lights on our coast would be required to be changed, and the increased expense for an additional keeper to each. From the north-eastern boundary to the Rio Grande there are 38 positions which ought to be fitted with the most powerful first order lenses.

"There are points between some of these first order lights, which ought to be fitted with second order lens apparatus, making a total of about 50 lights of the first and second orders. An additional keeper for each, at the rate of $300 per annum, will be $15,000.

"If this sum be deducted from the total already shown (which, on the contrary, ought to be added to the present expenditures, to render our lights in that department equal to European lights), there will still be an annual saving of $95,471 70, or $99,198 01. If additional evidence were required to prove so plain a proposition, that the reflector system is more expensive than the lens system in the proportion of 3·6 to 1, disregarding the great superiority of the lens system for all the useful purposes of the mariner, it would be found in the action of the Trinity House corporation, of Deptford Stroud, London; Northern Lights commissioners, of Edinburg; and the Ballast Board, of Dublin, Ireland.

"In 1835 the first lens apparatus was introduced into Scotland.

"In 1837 the first lens was introduced into England, under the Trinity House corporation; and since 1845 the first lens light was lighted in Ireland.

"Now (1851) there are very few lights fitted with reflectors in Scotland; the commissioners having abandoned the use of that apparatus, and substituted for it the Fresnel and holophotal system of Mr. Thomas Stevenson.

The Trinity House (London) has upward of 20 lens lights of the first and second order, besides numerous fourth order harbor lights. Lens lights are also being introduced into Ireland; the precise number, however, now existing there, is not known, as they are not marked in their printed lists, and no information has yet been received from that board.

"It is worthy of remark, that these three light-house boards of Great Britain and Ireland, are close corporations, deriving their means entirely from light-dues levied upon the shipping of all nations, including that of their own. They derive no pecuniary advantages from the government, and are only under its general control; consequently their acts are independent of Parliamentary legislation.

"If these boards had found the recommendations of the select committee of the House of Commons of 1845, to use less expensive apparatus and combustibles in their lights, with a view to the reduction of light dues, had not been based upon sound principles, they would have had no inducement to follow them; for whether the lights are economically kept or not, good or bad, the same amount of light-money would be collected. It is, therefore, plain that the introduction of the lens apparatus, and the colza oil, into the establishments under the control of these independent corporations, was the result of close examination and trial by those charged with, and most interested in the subject. The introduction after France, first by Holland, and successively by Belgium, Hanover, Prussia, Denmark, Sweden, Norway, Russia, Italy, Spain, Portugal, and Brazil, and the colonies of the respective nations, goes far to counteract any prejudice which may exist in any quarter, of the globe against this *inimitable* illuminating apparatus for light-houses.

"Notwithstanding the renovations of English, Scotch, and Irish lights, and the erection of new towers, fitted with the lens apparatus, a material reduction has been made of late years in the light-dues levied in Great Britain upon shipping. This may in some degree be attributed to the increased amount of commerce and navigation, and the more frequent and rapid intercourse between nations, by the aid of steam navigation; but, it can not fairly be contended that it is wholly due to that cause.

"These facts are undoubted, and the deductions from them, it is believed, will, upon the closest scrutiny, be found to be correct.

"Mr. Alan Stevenson says, 'It therefore follows, that, by dioptric means, the consumption of oil necessary for betweeen 14 and 16 reflectors, will produce a light as powerful as that which would require the oil of 24 reflectors in the catoptric system of Scotland; and, consequently, that there is an excess of oil equal to that consumed by 10 reflectors; or 400 gallons in the year against the Scotch system. But in order fully to compare the economy of producing two revolving lights of equal power, by those two methods, it will be necessary to take into the calculation the interest of the first outlay in establishing them.'

"It is worthy of remark that the French were followed by the Dutch government in introducing lenses into their light-houses.

"The subject of introducing lenses into the Scotch light-houses was brought before the commissioners of Northern Lights by the Engineer* of that body, at the instance of General Colby, of the Royal Engineers, as early as 1824. The Scotch commissioners directed their engineer to visit France, and report upon the lights of that country. At the close of the year 1834, the board directed lenses to be imported for the purpose of making experiments. These experiments resulted in the recommendation that an important light should be changed from a reflector to a lens apparatus.

"It is believed the powerful and unanswerable arguments contained in the letters of Sir David Brewster, in 1833, to the Bell-Rock committee, in favor of lenses, contributed greatly to the early introduction of them into the lights of Scotland.

"Notwithstanding the numerous experiments from 1825 to 1834, made by the Northern Lights commissioners to test the relative merits of the two systems, it was not until the latter year that decisive steps were taken to decide the question.

* Robert Stevenson.

"In October, 1835, the reflecting apparatus of the revolving light at Inchkeith was removed, and dioptric apparatus substituted.

"So great was the satisfaction which this change produced, that another light was immediately changed to a lens light. The second lens light erected in Scotland was at the Isle of May, in September, 1836.

"The Trinity House, London, fitted the Start Point light with a lens apparatus in 1837.

"The Turkish government employed an English engineer in 1836-7, to make experiments with the Fresnel lenses, Drummond's light, etc., to enable it to decide upon the best illuminating apparatus for the Bosphorus from the Black Sea. The letter upon this subject from William Henry Barlow, Esq., which was read before the Royal Society of London, will be found to contain much valuable information for those interested in the experiments of light-house navigation.—*Vide Philosophical Transactions of the Royal Society of London*, 1837, p. 211.

"*Number of Lenses in the World.*—At the present moment (1851), there are lens lights of the three first orders (first, second, and third orders), 216, and of the smaller classes, 152; making the total number of lenses 368.

"They are found now in England, Scotland, Ireland, France, Belgium, the maritime States of Germany, Denmark, Norway, Sweden, Russia (the Russian government has a French artist established at St. Petersburg, for the manufacture of lenses for their lights), Italy, Spain, Portugal, the Mediterranean, Egypt, Turkey, East and West Indies, Brazil, and, in general, in all the colonial dependencies of the European States. One first, two second, and one third order, are the only lenses at present in the United States.

"The three first named were procured in obedience to special acts of Congress, and the third order was placed on the Brandywine shoal by the Topographical Bureau.

"It is understood that the two light-towers now in the course of erection at Sand Key and Carysfort Reef, under the direction of the Topographical Bureau, are to be fitted with first order lenses.

"Mr. Stevenson pays this merited tribute to the distinguished savan whose system is now almost universally admired and adopted throughout the maritime world: 'Fresnel, who is already classed with the greatest of those inventors who extend the boundaries of human knowledge, will thus at the same time receive a place among those benefactors of the species who have consecrated their genius to the common good of mankind; and, wherever maritime intercourse prevails, the solid advantages which his labors have procured will be felt and acknowledged.'

"*Illumination.*—On a review of this subject, the adoption is recommended, as early as practicable, of the lens system instead of that of reflectors, as most effective and economical.

"It has been shown that the Fresnel lens is essential for sea or lake-coast lights of the first order; that for those of the second order, or for secondary or beacon lights, including the third, fourth, fifth, and sixth orders, the useful effect of a lens light is from 3·6 to 4 times that of reflector lights of the same class, and that, economically, the reflector lights are 4 times as expensive for oil alone as the lens lights.

"It has been clearly shown, in discussing this matter, that if it were possible to convert in a moment all the present reflector lights of the United States into lens lights as nearly as possible (though, in almost every instance, they would be superior), of equal orders, the annual saving, for oil and other supplies, would be $112,185 27, taking the appropriations of 1851-'52 as the basis of the calculation, with, at the same time, an increase of 3½ to 4 times as much light from each lantern as at present.

"If the estimates for 1852-'53 be taken as a basis, then the annual saving may be increased $20,000, which will make the entire saving for one year, with all the advantages to be derived from superior lights, $132,185.

"Add to this sum $40,000, the mean of the value of the lamps and reflectors proposed to be taken from the light-houses, to be fitted first with the lens apparatus, and which would be required, under any circumstances of improvement, for the 42 light vessels already existing, and the sum of $172,185 may be put down as clear profit, with which to purchase lens apparatus for the first year.

"By appropriating this sum, or as much of it as can be economically and judiciously employed in improving the sea-coast lights, there will be an additional gain, at the end of the first year, in the difference in the cost of oil, etc., under the two systems, for all the apparatus procured with this saving. This saving will go on from year to year, on compound interest, at the rate of 30 to 50 per cent., un'', in 5 or 6 years, should the appropriations be made as required to carry out gradually the system, we shall have lights equal to those of France and Great Britain in brilliancy, useful effect, and economy, and apparatus that never requires renewing, without, in the aggregate, having spent one cent more than would have been required for the ordinary service under the present system, with inferior lights and enormous sums for annual repairs and renovations.

"These estimates are based upon the assumption that the sperm oil now in use is to be continued. Should it be decided, however, to follow the example of nearly the whole maritime world in introducing the colza or rape-seed oil, a saving of 35 to 40 cents per gallon will be gained, equivalent to $40,000 to $45,000 more.

"The price of the first-quality clarified colza oil is, on an average, at the principal markets in France, 72 francs the hectolitre, or for a little more than 26 gallons, which is equal to nearly 55½ cents per gallon. Sperm oil, in this country, ranges from $1.30 to $1.50 per gallon, and it is doubtful if a *fair quality* can be furnished at these prices. The supply of the best sperm oil to stand a temperature of 28° Fahrenheit, is not equal to the demand, and no other quality should ever be burnt in a light-house. A few gallons of rape-seed oil have been sent from Havre to the Board, costing about 60 cents per gallon.

"This important agricultural product (rape-seed) only requires to be introduced favorably to the notice of our planters and farmers, to become a boon to the nation of no ordinary value. Adapted to the soils of nearly every portion of this great country, its admirable qualities for domestic illumination would soon bring it into favor, and, by its means, expel from our houses the many dangerous fluids now used for the sake *only of economy*.

"The experiments made by Fresnel, Faraday, Stevenson, and other distinguished individuals have proved, beyond all question, that the colza is not only better than the best sperm oil (an article now very difficult to procure), but that it will burn 17 hours without coaling the wicks; that it will remain in a fluid state in a lower temperature than the best sperm oil, and that it is cheaper by nearly one third.

"In this country, the quantity of sperm oil, independently of its high price, has not been sufficient to meet the demands for the various purposes connected with steam machinery, etc., for several years. Lard and other prepared oils have been forced to take the place of it, for these and other purposes for which it is peculiarly adapted.

"The returns from the fishing grounds show that this branch of commerce is becoming more and more uncertain, and less profitable, every year. When those engaged in the whale fisheries find it unprofitable,

they will not pursue it because the government may require a few thousands of gallons annually. We can not go wrong in this matter, in following the example of other countries.

"France introduced the rape-seed oil, from conviction of its superiority. England, Scotland, Ireland, and the northern powers of Europe generally, have followed; first from motives of economy, and continue its use from the conviction that it is not only more economical, but is better for light-house purposes than the best winter-strained sperm oil, the only kind used in most lights. Olive-oil has been introduced into the light-houses of Liverpool, England, at a saving of 40 per cent. over sperm oil.

"In the United States, the oil (two kinds, 'winter and summer,' being used) for our lights, is not of the best quality. It is now nearly 50 per cent. higher in price than it was a few years since; and with the present prospects, it must continue to increase in price so long as the demand is so great for it as at present.

"It has been proposed that the 38 most important sea-coast lights should be fitted, with as little delay as possible, with first order lenses, and that the Argand lamps and reflectors taken from them (or such of them as may, upon examination, be found to be sufficiently good for that purpose) be used for fitting up the 42 light-vessels now existing, which have been pronounced by high authority comparatively useless in their present state. Several years would be required to effect this change, as the new lights authorized by law, amounting to 34, exclusive of those for the coasts of California and Oregon, require illuminating apparatus; and as there are only two establishments from which the lenses could be procured for some time at least, it would not be prudent to demand a larger number at once than could be easily supplied.

"Having fitted the most important sea-coast lights with the best lens apparatus, as well as the newly authorized lights, by changing thereafter such only of the minor lights as now, or hereafter, require new apparatus, would in two or three years place the light-house establishment of this country far in advance of its present state in efficiency and economy.

"To purchase Argand lamps and reflectors for the 42 light-vessels, would be to retrograde in light-house illumination at a first cost of $40,000 or $45,000, and an annual waste of $7560 for oil alone; and of the supplies, to the extent to increase the amount to $10,000, with apparatus which must be frequently renewed, producing only from one fourth to one sixth the usefulness of the less economical system, which never requires renewing.

"Taking the estimate for 1852-3 for maintaining the lights of this country as a basis, the present system costs annually within a fraction of $135,000 more than the same lights would under the lens system. But in so important and humane a branch of the public service as this is, upon the efficient and proper management of which depends, in a greater or less degree, the loss of human life and property, in which every individual in the land is to a certain extent interested personally, mere saving of money, which is by no means always true economy, should not be the only guide. The incalculable benefits to the seaman; the merchant, who receives the foreign products to gratify the wants of our citizens; the planter, who ships his cotton, tobacco, grain, breadstuffs, provisions, naval stores, and the thousands of products of our clime, to the best markets, would seem sufficient to show the necessity for this change.

"By those of our citizens along our southern coasts, from the mouth of Delaware Bay to the Rio Grande, who are now and have ever been suffering in consequence of a badly lighted coast, will this additional reason be best understood and appreciated. Their freight lists and heavy insurances speak out truly on this point.

"The $7,000,000 worth of property sent into Key West, and there adjudicated for salvage, within the six years prior to January, 1850 (lost to our citizens and our government chiefly), speaks trumpet-tongued on this subject. But this is not all. The wreck-lists of Nassau and New Providence exceed by far those of Key West.

"Let us light our coasts as France and Great Britain have done theirs, and wreckers will be compelled to turn their attention to other means of livelihood, and the consumers of every class and grade will pay less for their necessaries and luxuries, and the planter, farmer, mechanic, will have smaller freight and insurance bills to pay on their exports.

"If we assume the necessity for changing all of the lights on our coast to lens lights, and give to each one of them its proper power and efficiency, we should have about as follows: 36 first order lens lights, costing for apparatus $244,800; 10 second order lens lights, costing for apparatus $44,000; 61 third order lens lights, costing for apparatus $113,460; 206 fourth, fifth, and sixth order lens lights, costing, in the aggregate, about $92,700; total amount necessary to purchase lens apparatus for all the lights in the United States, $494,960; deduct value of reflectors and lamps for light-vessels at present existing, and for proposed ones, $45,000; deduct value of present illuminating apparatus, lamps, reflectors, chandeliers, etc., merely estimating the value of the old silver, copper, and iron, say 2500 lamps and reflectors, and 315 chandeliers, at one fifth their cost, $50,000; deduct first year's saving on oil and other supplies, $110,000; total expenditure, $205,000; leaving at the end of the first year, with lenses, only a balance of $289,960; saving for four years, $440,000; making a gain, at the end of the fifth, of $150,040.

"Thus, at the end of the fifth year the country will have gained $150,000 in money, including interest, and an annual saving of $110,000, the interest of which will make it $117,600, and afford to the mariner lights equal to the best in the world, by which means every consumer and exporter will derive a pecuniary advantage; and those who go to sea, either from pleasure or necessity, will be doubly insured against shipwreck on our inhospitable coast.

"To make the reform in our present light-house system perfect in its illuminating department, it only remains to introduce, in addition to the lenses, the colza or rape-seed oil, which will produce an additional saving, as has already been shown, of about $10,000 per annum; making the grand total, in five years, of $200,000. It may be contended that, inasmuch as interest is included in the saving, it is but fair to allow it on the first cost, which will be, at the end of the second year, $15,397 60; third year, $8,797 60; fourth year, $2,197 60; making for interest, $26,392 80; still leaving a nett gain, at the end of five years, of $132,647 20, without taking into consideration the saving from the rape-seed oil, if introduced, which would increase it to $182, 647 20 of clear gain at the end of five years, in addition to the annual gain and other advantages already stated.

"But if we continue to employ reflectors, such as we have now in use and are constantly introducing into our lights, we will not only lose the amount annually which has been shown we should gain with lenses, but, in addition to that, these reflectors and lamps will require to be renewed once in 10 to 15 years, at a cost very little short of that of the lenses, which suffer no deterioration from long use, and humanity and commerce will continue to suffer for want of good and efficient lights on our coast.

"*Inspection.*—Without a rigid system of inspection by competent persons, the light-house system can never be efficient or economical. The whole sea and lake coasts of the United States should be divided into light-house districts, with less regard to geographical

than to local lines. For example, the New York district should embrace all the lights from Watch Hill, including Block Island, Montauk Point, etc., to the Highlands of Navesink, up the bays, including the Raritan, Hackensack, Passaic and North Rivers, to the head of navigation. The Philadelphia or Delaware Bay district should embrace the coast from the Barnegat to near Assateague, and up the Delaware on both sides to the head of navigation. The Baltimore or Chesapeake Bay district should embrace all the coast from Assateague to Cape Henry, Hampton Roads and tributaries, and Chesapeake Bay and tributaries, to the head of navigation. The other districts should be formed upon the same principles. In each of these districts there should be a local inspector, who should be furnished with the necessary means and facilities for regularly inspecting the lights, attending to the wants of the keepers, superintending small repairs, reporting the condition of the establishment, at short intervals of time, to the executive officer or engineer of the Light-House Board, superintend the placing, replacing and renovating buoys, beacons, etc., etc., under the general and special instruction of the Light-House Board, communicated through their executive officer or engineer.

"For this purpose, there would be required on the lakes two inspectors, and on the Atlantic, Gulf, and north-west coasts, including all the adjacent navigable waters, from 10 to 13 inspectors more, making the whole number required from 13 to 15.

"Each of these light-house districts should be placed under the charge of an active and zealous officer of the army or navy, who should receive all his instructions from, and be responsible to the Light-House Board, through their executive officer or engineer, and to whom all reports should be made.

"The facilities for inspectors superintending such repairs, etc., etc., as may be confided to the local inspector, to be furnished by the light-house vessels, revenue cutters, and such other means as the Treasury Department may from time to time authorize.

"By this mode of inspection, very little if any additional expense will be incurred, while there will be secured an independent examination of every light on the coast, say from four to six times per annum, by a competent person, whose duty it will be to inform himself upon all essential matters connected with this service. In addition to the foregoing means, the revenue boarding boats might and would be appropriately put in requisition, as occasion might require, to assist the inspector in his duties in situations where a strict economy would not authorize the employment of a vessel permanently to peform this service.

"Instead of, as now, contracting with persons to keep the buoys in their places for a certain sum per annum, and who seldom, if ever, perform the service faithfully, the inspector would, under proper instructions, be required to examine the bars, channels, etc., etc., of his district, at regular periods, and always immediately after heavy gales of wind to ascertain what buoys are out of position, and to replace them.

"The inspecting officers would occasionally be accompanied by the secretary or engineer to the Light-House Board, or perhaps by both of them; a thorough system would be provided, which would inevitably be less expensive in the aggregate than that at present existing without specific law. In connection with these inspections, dépôts for stores, spare buoys, moorings, etc., etc., are indispensable in each district. These dépôts might in most places be at some place requiring but little annual expense, where the buoys and their moorings could be repaired, painted, etc, and where a spare light-vessel might be kept ready for use. There should be at least one spare light-vessel for every three placed in exposed open sea-positions. Duplicate buoys and moorings should be ready at all times. The Light-House Board should have authority to cause buoys to be placed on newly-discovered shoals, wrecks, etc., etc., whenever necessary. By the employment of these inspectors, the country would derive the benefit of their services without expense, and have an assurance, from their position and standing, of a faithful execution of their duties. The Board would refer again to the reports of the committee of the Senate and House, already pointed out in this report, on this important branch of the lighting service. In connection with this recommendation, the Board would advise that light-keepers be examined, as naval engineers, midshipmen, and cadets are, in reference to qualifications for their appointments; that they should not be allowed to take charge of the lights without suitable preparation; nor the more important lights without proportionally higher qualifications; that such meteorological and tidal observations be required of them in addition to the keeping of suitable registers of lighting, consumption of supplies daily, etc., as may tend to test the capacity of the keepers, and to elevate the standard of information and practical skill of them as a class.

"*To Guide Legislation in Extending and Improving Our Present System of Construction, Illumination, Inspection, and Superintendence.*—The seventh section of the act making appropriation for light-houses, light-boats, buoys, etc., approved March 3, 1851, provides, 'That hereafter, in all new light-houses, in all light-houses requiring new lighting apparatus, and in all light-houses as yet unsupplied with illuminating apparatus, the lens or Fresnel system shall be adopted, if, in the opinion of the Secretary of the Treasury, the public interest will be subserved thereby.'

"This is a wise provision. There are very few cases, in the opinion of the Board, where the public interest will not be greatly subserved by the substitution of the Fresnel lens for the reflectors now employed in illuminating our light-houses. In positions where the light is only required to illuminate a small arc of the horizon, it may be of questionable propriety; but in all such cases, the capable light-house engineer should decide upon the merits of the two kinds of apparatus. In no case requiring one half or more of the horizon to be illuminated, is it believed reflectors ought to be employed, in preference to the lens. There may be occasionally circumstances of a paramount character, which may render the employment of reflectors preferable.

"The ninth section of the act approved March 3, 1851, provides, 'That the President be, and he is hereby required to cause to be detailed from the engineer corps of the army, from time to time, such officers as may be necessary to superintend the construction and renovation of light-houses.'

"The Board are of opinion that this act is one calculated to produce the most beneficial results, in increasing the durability of light-house structures, and consequently lessening, to some extent, at least, the present large annual appropriations for renovations and repairs; and they recommend that no new structure be erected, and no old ones be repaired, except under the superintendence of a competent officer of the corps of engineers.

"The Board are of opinion that, pending the action of Congress upon the subject of improving our lights, etc., much may be done toward introducing a more efficient and economical administration of the establishment, by a rigid adherence to the provisions of the seventh and ninth sections of the law of 1851.

"*Locating of Sea and Lake-coast Lights.*—The Board have adopted the same principle which has proved so effective in the organization of the French system of lights; namely, to place a sea-coast light of the first order, in general, every 42 nautical miles, so that, as a rule, one light will not be lost sight of until another is above the horizon. If it should be necessary to adopt only two main systems of distinction for these

lights into fixed and revolving, then a fixed light should be placed between two revolving lights, suitably distinguished by flashes, etc., so that no two lights of the same kind should be nearer than 84 miles from each other. Other distinctions, easily described in the published lists, and easily comprehended by navigators, which would render all fear of mistakes arising from the want of proper distinctions illusory (without the use of colored media), can be employed. If, however, Mr. Babbage's system prove to be practicable, and be adopted, all doubt in regard to distinctions of light will be obviated. The Board have adopted an approximate programme, in this report, for the sea and lake-coast lights, the number of which is necessary to a full system. Of these many now exist, though not with the requisite range of visibility. There are many locations where the wants of commerce will not require such lights for many years, though necessarily included in a general programme.

"At a full meeting of the Light-house Board, holden on the fifth of January, 1852, the following resolutions were offered and unanimously adopted:

"*Resolved*, That it is the opinion of this Board, 1. That the lens or Fresnel system of light-house illumination is the best at present known. 2. That the lens or Fresnel system of light-house illumination is, in economy, brilliancy, power, and usefulness, superior to the best reflector system of illumination in the ratio of about 4 to 1; or, in other words, that the lens system is about four times more advantageous than the best reflector system, and at the same time, at an expense, for oil alone, of only one fourth as much as the reflector system. 3. That the lens system of light-house illumination is as well adapted to the coasts of the United States as to those of the rest of the maritime world. 4. That while there is no well-founded objection to introducing the lens system of illumination into this country, there is every reason for doing so as rapidly as possible. 5. That the floating lights of this country are comparatively useless to the mariner, in consequence of the very inferior apparatus employed in them. 6. That the reflector lights of the United States are greatly inferior, in usefulness, power, and range, to the same description of lights in foreign countries generally, but especially to those of Great Britain."

"The object of these notes is to point out certain improvements in the use of existing light-houses, by which it shall become almost impossible—1st, To mistake any casual light, on shore or at sea, for a light-house; 2d, Ever to mistake *one* light-house for another. The plan requires, in most instances, no change in the optical means at present used for condensing and directing the illumination of light-houses; it adds slightly to the facility of observing them at great distances, and from its simplicity and generality is equally adapted to the use of all countries. Revolving-lights must become fixed; but the mechanism already existing for their rotation may, with little alteration, be employed for the motions required by the new system. The principle by which these objects are to be accomplished, is to make each light-house repeat its own number continually during the whole time it is lighted. This is accomplished by inclosing the upper part of the glass cylinder of the Argand burner by a thin tube of tin or brass, which, when made to descend slowly before the flame, and then allowed suddenly to start back, will cause an occultation and re-appearance of the light.

"Congress having authorized lights to be erected on a few of the most prominent and important points to aid the rapidly increasing commerce along that coast, which it is presumed will be fitted with appropriate lens apparatus, in conformity to the 7th section of the act of 1851, the Board have only added the names of the remaining most prominent points of that coast to this list, leaving the more detailed wants of this branch of the public service to be developed by the operations of the coast-survey, now in rapid progress for external or sea-coast, and of population and interior communication for local lights.

"*Petit Manan Light-house.*—This is a fixed light, 53 feet above the level of the sea, situated on the south end of Petit Manan Island, Maine, lat. 44° 22′ north, long. 67° 52′ west. This light is fitted with 12 lamps and 15-inch reflectors, to illuminate the whole horizon. If the apparatus belonged to the first class, instead of, as it does, to about the fourth, the greatest distance at which it could be seen, under the most favorable circumstances of weather, would be, from a vessel's deck 15 feet from the sea-level, about 13 miles. If we take into consideration the small size of the reflectors, and the small number of lamps for so large an arc of the horizon, it is fair to presume this light is seldom seen over 10 miles. Distant from this light to the eastward are Seal Islands, 34 miles (two fixed lights), and Gannet Rock (flashing light), 46 miles at the mouth of the Bay of Fundy, belonging to the British government. This light, with a proper elevation, and a lens apparatus, would serve to guide vessels bound to any of the ports on the coast of Maine, from Frenchman's Bay to Passamaquoddy Bay, having the sea-coast lights of Seal Island and Gannet Rock to the eastward, and Mount Desert Rock, distant 27 miles to the southward and westward. [Now become a flashing light (1856).]

"*Mount Desert Rock Light-house.*—This light is on the keeper's dwelling, with an elevation of 56½ feet above the level of the sea; it is fitted with 12 lamps and 21-inch reflectors, to illuminate the whole horizon. Lat. 43° 58′ 5″ north, long. 68° 08′ west; it is situated about 20 miles S.S.E. of Mount Desert Island; is 27 miles distant from Petit Menan light and 33 miles from Matinicus light (two fixed lights). This light, with the best illuminating apparatus, could not be seen, under the most favorable circumstances of weather, at a greater distance than 14 miles. The small number of lamps for so great an arc, renders it little better than a fourth order light, while its elevation can only give it the range of a light of that class.

"A much greater elevation is required for this light, with the most powerful lens apparatus that can be constructed. Vessels bound from the eastward into any port from the neighborhood of Mount Desert to Penobscot Bay, would run for it; having made it as a first-class light, it would guide them into the ranges of the different harbor-lights along the coast. From its isolated position at the distance of 14 to 18 miles from the nearest land, it is one of the most important points on the eastern coast for a first-class light.

"*Martinicus Rock Light-house.*—These lights (two fixed), are situated on the rock south of Martinicus Island, at the mouth of Penobscot Bay. They are placed 40 feet apart, N.N.W. and S.S.E. on the keeper's dwelling. Each light has 14 lamps and 21-inch reflectors, at an elevation of 82½ feet above the level of the sea; 33 miles from Mount Desert Rock and 39 miles from Seguin's Island light, lat. 43° 46′ 30″ north, long. 68° 49′ west.

"*Seguin Island Light.*—This is a fixed light, 166 feet above the level of the sea, fitted with 15 lamps and 21-inch reflectors. This light is deficient in illuminating apparatus; with 24 lamps and 21-inch parabolic reflectors of the proper shape and finish, it could, under favorable circumstances of weather, be seen 18 to 19 miles. It is 39 miles from Martinicus Rock light, 46 miles from Boone Island light, and 21 miles from Monhegan and Cape Elizabeth lights. Lat. 53° 41′ 36″ north, long. 69° 44′ west.

"*Boone Island Light.*—This light is situated on the west part of the small low island bearing its name, off York River, Maine. It is fitted with 12 lamps and 15-inch reflectors (fixed), with an elevation of 70 feet above the level of the sea, in lat. 43° 08′ north, long. 70° 29′ west.

"*Thatcher's Island Lights.*—These two fixed lights are situated about two miles off Cape Ann, fitted with 11 lamps and 21-inch reflectors, each with an elevation of 90 feet; greatest range, 16 miles. Cape Ann forms the northern limit of Massachusetts Bay. Distant from Boone Island light 30 miles, Boston light 24 miles, and from Truro, Cape Cod, 43 miles. Lat. 42° 38′ 21″ north, long. 70° 34′ 48″ west. This is a very important light-station, and the lights require to be increased in power and range.

"*Truro, Cape Cod, Light.*—This is an important sea-coast light, situated on the highlands outside of Cape Cod. It is 43 miles from Thatcher's Island lights, 45 miles from Sankaty Head light, and 41 miles from Boston light. It is fitted with 15 lamps and 21-inch reflectors (fixed), with an elevation of 180 feet, giving it a range, in good weather, if the apparatus is of the first order, of 20 to 21 miles. A first order lens is required for this tower. Lat. 42° 02′ 23″ north, long. 70° 03′ 55″ west.

"*Sankaty Head Light.*—This is a second order Fresnel flashing lens light. It is placed on the south-east extremity of the island of Nantucket, with an elevation of about 150 feet above the level of the sea, which gives it a range of about 19 miles in ordinary states of the weather. It has been seen at a much greater distance, and is considered equal to the Highlands of Navesink lights (first and second order lenses).

"In consideration of the dangerous navigation around the reefs and shoals off the island of Nantucket, it would have been advisable to have placed a first order lens in this tower; but the superiority of this light to those in its vicinity, renders it of doubtful propriety to propose any change in it.

"*Gay Head Light.*—This light is placed on the west point of Martha's Vineyard. It is a revolving light fitted with 10 lamps and 14-inch reflectors, having an elevation of 172 feet above the level of the sea. This light is deficient in power, and not arranged to subserve the wants of the navigator. At the distance of about 12 miles it is obscured about three fourths of the time. Its present elevation, with first order apparatus, would give it a range of 19 to 20 miles. Lat. 41° 20′ 54″ north, long. 70° 50′ 26″ west. Distant from Sankaty Head 39 miles, Montauk Point 88 miles, and Point Judith light 30 miles. This light is not second to any on the eastern coast, and should be fitted, without delay, with a first order illuminating apparatus. A glance at the chart will suffice, to see its great importance.

"*Montauk Point Light-house.*—Lat. 41° 04′ 10″ north, long. 71° 51′ 58″ west. This is a very important light, especially for navigators bound from Europe to New York. It is fitted now with only 15 lamps and 21-inch reflectors for a fixed light. Its reported elevation is 160 feet above the level of the sea, and with a first order apparatus would be seen under ordinary circumstances about 20 nautical miles. Distant from Gay Head 47 miles; from Fire Island Inlet light 66 miles. By erecting a light in the vicinity of Great West Bay, Long Island, midway between Montauk Point and Fire Island lights, the trade between New York and all ports to the eastward, including the whole of Europe, would be greatly benefited.

"*Lights near Great West Bay, Long Island, New York.*—It is proposed to erect a first-class light on Long Island, midway between Montauk Point and Fire Island Inlet, distant 33 miles, to facilitate navigators going to and coming from the eastward. The letters of packet and other shipmasters in Appendix II, will show conclusively the necessity for a light in this vicinity.

"*Fire Island Inlet Light-house, Long Island, New York.*—This is a most important light to navigators trading to New York. It may be said to mark the eastern entrance to the Bay of New York. It is situated on the south side of Long Island, New York, east side of Fire Island Inlet, lat. 40° 37′ 46″ N., and 73° 13′ 38″ W. long.; distant 37 miles from the Highlands of Navesink, which mark the western entrance to the Bay of New York. This tower has an elevation of only 89 feet 3 inches, and has only 14 lamps, and 21-inch reflectors for a revolving light. The range of this light, with its present elevation and the best apparatus that could be procured, would not exceed 14½ nautical miles in ordinary weather. It is, therefore, clearly necessary to increase its height, and place in the tower the most powerful lens apparatus that can be procured.

"*Highlands of Navesink Lights, New Jersey.*—There are two towers and lights at this station; a first order fixed, and a second order revolving lens apparatus. The great importance of the lights on this point renders it highly necessary, in carrying out the proposed plan of improving and increasing the number of sea-coast lights, that the second order apparatus should be changed for a first order one. These lights are now the best on the coast, but are not, when combined, equal to better than a second order lens light. With the present elevations of these lights above the level of the sea, and the substitution of a first order lens for the second order apparatus, navigators would be warranted in running boldly for them, and with the certainty of seeing them, under ordinary circumstances, at the distance of 22 nautical miles.

"*Barnegat Light-house.*—This is a light in point of importance equal to that of Fire Island Inlet. It is situated 37 miles from the Highland lights, on Long Beach New Jersey, on the south side of Barnegat Inlet. At present it is fitted as a fixed light, with 11 lamps and 14-inch reflectors, equal in power to about a fifth order lens light. The numerous wrecks, involving the great loss of life and property, attest the truth of the necessity for making this a first class sea-coast light. The tower is 40 feet high, placed on a low beach, giving it a range of probably 11½ nautical miles. The improvement of the Montauk, Fire Island, and Barnegat lights, and the erection of a first class light near Great West Bay, Long Island, would render the approaches to New York Bay much safer than they are at present, and would save to our government and to our citizens many millions of dollars' worth of property, and prevent the untimely loss of many valuable lives.

"*Absecum Beach, New Jersey.*—A sea-coast light is absolutely necessary in this vicinity to guide vessels, bound north, clear of the Absecum and Brigantine shoals. The coast here is very low, and difficult to distinguish, and the light on Tucker's Beach, near Little Egg Harbor, although fitted with 15 lamps and 15-inch reflectors, showing a fixed red light, from its little elevation (39½ feet) is not seen further than five to eight miles; in addition to which the woods on the Absecum beach to the southward hide it from the mariner going north. A light should be placed somewhere in this vicinity, west of the inlet, and as nearly midway between Barnegat and Cape May light as possible. An examination of this coast by competent professional persons can alone decide the best site for a sea-coast light.

"*Cape May Light-house, New Jersey.*—The position of this light on the east side of Delaware Bay, and its contiguity to the dangerous bank known to navigators as the Five-fathom Bank, renders it of great importance that it should be of the first order. This is a revolving light, 88 feet above the level of the sea, fitted with 15 lamps and 16-inch reflectors. This light has been shown to be inferior to the third order lens light on Brandywine Shoal, in the proportion of three to one. Its present range, under the most favorable circumstances of weather, is not greater than 14½ nautical miles, and, with the present apparatus, it is doubtful if it can be seen so far by several miles. Make Cape May and Henlopen lights first order lights, with

proper elevations, and navigators will be able to place their vessels in positions for receiving pilots without the risk of shipwreck on the dangerous Five-fathom Bank, distant 16 miles from Cape May, and 20 miles from Cape Henlopen. With bearings from these two lights, seen at the distance of 20 to 25 miles, the navigator could always shape his course by the most direct line into the bay, or for the breakwater. The light vessel authorized by law to be placed on the Five-fathom Bank is so often out of position that it is the more important that these improvements should be made.

"*Cape Henlopen Light-house.*—This is one of the best reflector fixed lights on the coast, although inferior to the third order lens on Brandywine Shoal in the proportion of one to six. This light has an elevation of 180 feet, and only requires a first order lens apparatus to make it equal to the requirements of commerce and navigation. The large amount of trade from Philadelphia warrants the proposed expenditure, and humanity would seem to dictate it as consistent with true policy and philanthropy.

"*Assateague Light-house, Virginia.*—This light is situated on Assateague Island, between Capes Henlopen and Charles, in lat. 37° 54′ 36″ N., and long. 75° 21′ 45″ W.; a fixed light, fitted with only 11 lamps and 14-inch reflectors. The shoals of this low and dangerous coast render the improvement of this light one of paramount importance. By elevating this tower to 150 feet, and placing in it a first order lens apparatus, there will be no great necessity for any other sea-coast light until we reach Cape Charles (Smith's Island). The very dangerous shoals extending along this entire coast, at a considerable distance from the low coast, at distances ranging from five to twelve miles, as shown from the recent surveys by the coast survey, make it the duty of the government to cause this light to be increased in power and range to the rank of a first class sea-coast light, without delay.

"*Smith's Island Light-house, Cape Charles.*—This light is placed on the north-east of Cape Charles, and at the north entrance of Chesapeake Bay. This very important light has at present only 10 lamps and 21-inch reflectors. The dangers at the entrance to Chesapeake Bay render it extremely important that this light should be increased to a first order one. The tower has an elevation of only 55 feet, placed on a very low coast, giving the light, if in other respects good, a range of not more than 12 nautical miles, which it can seldom reach in consequence of the very inferior illuminating apparatus. This is one of the lights requiring the earliest attention of the light-house department.

"*Cape Henry Light-house, Virginia.*—This is one of the best reflector lights on the coast. It is situated on the south side of the entrance of Chesapeake Bay, has an elevation of 120 feet, and is fitted with 18 lamps and 21-inch reflectors. It being a prominent leading mark for vessels bound into Chesapeake Bay, Hampton Roads, and their numerous tributaries, every argument would seem to be in favor of its speedy improvement, to render it equal to the best first class lights of other maritime nations.

"*Light-house half way between Cape Henry and Body's Island Light.*—The large number of shipwrecks and the vast amount of life and property lost annually on this coast should be a sufficient reason for erecting and maintaining a first class sea-coast light on some eligible site in this vicinity. The Body's Island Light is badly located, and insufficient in power and range to subserve fully the requirements of commerce and navigation. Vessels bound south from the eastward run to make this coast, with the view to avoid the opposing currents of the Gulf Stream, and, at the same time, to avail of the favorable currents within the limits of the cold wall bounding the Gulf Stream. The trend of the coasts on either side of the Chesapeake Bay renders navigation more dangerous than it would otherwise be; and therefore it becomes the more important to light well the entire coast from Cape Hatteras to Cape Henlopen.

"*Body's Island Light-house, North Carolina.*—This light has already been referred to. It is of great importance, especially to the coasting trade, and would be of much more if it were increased to a first class light. It is now fitted with 14 lamps and 21-inch reflectors, revolving, with an elevation of 56½ feet, giving it a range of about 12 nautical miles. This, in addition to the proposed sea-coast light between it and Cape Henry, would, if properly fitted, save the life of many a gallant seaman, and millions of dollars' worth of property to the country.

"*Cape Hatteras Light-house, North Carolina.*—There is perhaps no light on the entire coast of the United States of greater value to the commerce and navigation of the country than this. That it is not such a light as any sea-coast light should be is too apparent to require much argument; while its special requirement, having reference to the Gulf Stream, the currents and counter-currents which sweep past it, and the very dangerous shoals, extending to the distance of 10 nautical miles from the light, all tend to make it one of no ordinary importance. Vessels propelled both by wind and steam run for soundings off this cape; and it is of the first importance to navigators wishing to make quick passages, that they should see this light in going south. At present it is of very little use, in consequence of its limited range. Navigators do not, as a general rule, rely upon it sufficiently to warrant them in running for it. It is fitted with 15 lamps and 21-inch reflectors, having an elevation of about 95 feet, which would give it a range, under favorable circumstances, of 14½ nautical miles, provided the apparatus for illuminating was of the best description. There is no single light on the coast believed to require renovation more than this does. An elevation of 150 feet, and a first class illuminating apparatus, are imperiously demanded, and without any unnecessary delay.

"*Cape Lookout Light-house, North Carolina.*—This is at present a fixed light, fitted with 18 lamps and 21-inch reflectors, and elevated 95 feet above the level of the sea. In consideration of the manner in which navigators have to follow this low coast, this light becomes, necessarily, one of the important sea-coast lights, and requires to be elevated and improved to that extent. The shoals of this cape are of such a character as to render it a very important light.

"*New River Inlet, North Carolina.*—The great distance from Cape Lookout to Cape Fear, and the dangerous shoals extending to such a great distance from them, without any prominent mark intervening to guide navigators, render it necessary, in making up a general plan for lighting the entire sea-coast, to include a first class light, to be placed somewhere in the vicinity of New River Inlet. The coast between Capes Hatteras and Fear forms a curve, but not to such a degree as to render a light near this point unnecessary. Although the necessity for this proposed light may not be considered as pressing, yet in a well-devised scheme it can not be entirely omitted.

"*Bald Head, Cape Fear, North Carolina.*—This light in its present position and with its present apparatus, etc., is comparatively useless. The apparatus, 15 lamps and 21-inch reflectors, is inadequate to the requirements of the service of an ordinary sea-coast light, while this is one of the special cases requiring extraordinary means to insure any amount of good. The tower is nearly 4 miles from the pitch of the cape, and 20 nautical miles from 10 fathoms water, in a direct line on the end of the 'Frying Pan shoals,' which extend continuously from the pitch of the cape. The assumed elevation of the light is 110 feet, which, with good illuminating apparatus, would give a range, un-

der the most favorable circumstances, of 17 to 17½ nautical miles. Careful observation has, however, shown that it is very seldom seen 12 miles; and then only resembling a star of the fifth or sixth magnitude. This light is considered by the pilots as of very little, if indeed of any use at all, for the local purposes of the harbor; while it is perfectly clear that it is of no value to the navigator in guiding him around and clear of these shoals, which, in the opinion of navigators, are only exceeded in importance by those off Nantucket. This light should either be reduced to a mere harbor light, or removed to the pitch of the cape, and given an elevation sufficient to insure a first order light being seen, under ordinary circumstances, outside of the shoals. This light as a first-class sea-coast light, and a first-class light-vessel placed on the shoals, would tend greatly toward increasing the safety of navigation.

"*Cape Romain, South Carolina.*—The dangerous shoals off this point render this an important light to navigators bound to Charleston, and as far south as St. Augustine. To save the current, and to keep out of the influence of the current of the Gulf Stream, navigators run for soundings off the Cape Romain shoals. A first-class light would tend greatly to lessen the hazards of this navigation. The present light, fitted with only 11 lamps and 21-inch reflectors, at an elevation of only 87 feet, can not be seen with any degree of certainty at a greater distance, under the most favorable circumstances, than about 14 nautical miles, which is by no means far enough to enable navigators to run their vessels with that boldness which is essential to success. This light, in point of power, brilliancy and range, is not superior to a fourth order lens.

"*Charleston Light-house, South Carolina.*—This important light is fitted with only 12 lamps and 21-inch reflectors; revolving, with an elevation of about 125 feet. Its greatest range about 16 miles. The necessity for a first order lens apparatus for this light is too apparent to require more than a bare reference to the chart. This light should be changed to a fixed light, and the lights on either side of it changed in their characteristic distinctions, for the reason that it is used as a range with the beacon-light for crossing the bar. Revolving lights are not adapted to this purpose, especially where channels are narrow and the eclipses of long duration.

"*Hunting Island, Georgia.*—This point is one of the positions selected for new lights in carrying out the general programme. Distant 33 miles from Charleston, South Carolina, and about midway between the Charleston and Tybee lights.

"*Tybee Light.*—This is an important light both in a general and local point of view. For the over-sea voyager along the coast, it is of equal importance to those generally on the coast for local purposes, as the guide to the entrance to Savannah River. This light at present is fitted with 15 lamps and 16-inch reflectors, and has an elevation of 100 feet. This light, in consideration of the sameness in the appearance of the coast, should be well distinguished and improved to the extent of making it a first order light.

"*Sapelo Island Light-house.*—This light is 46 miles from Tybee light, and comes into the list embracing the general programme. As a sea-coast light, its importance will appear clearly by referring to the chart, and in a local point of view it is the mark to guide vessels into the important inland-waters constituting Doboy Sound. This is at present a light fitted with 15 lamps and 15-inch reflectors, elevated 74 feet above the level of the sea, and is revolving. Its greatest range now, will not exceed 13½ nautical miles. As a sea-coast light, it should be seen clearly and distinctly at the distance of 20 nautical miles.

"*Amelia Island Light-house, Florida.*—This light, 41 miles from Sapelo light-house, is another of the proposed sea-coast lights. It is at present fitted with 14 lamps and 15-inch reflectors; a revolving light, having an elevation of about 60 feet, and a consequent range for the best description of apparatus, of 13 nautical miles. The tower requires to be elevated, and in other respects improved, to the extent of making it a first-class sea-coast light.

"*St. Augustine Light-house.*—This light, being 50 miles from the Amelia Island light, is included in the list of sea-coast lights. The present light is one of a merely local character, being fitted with only 10 lamps and small reflectors.

"*Musquito Bar.*—A light is proposed to be placed in this vicinity. Although its immediate necessity is not apparent, yet in time it will become necessary to erect a sea-coast light half-way between St. Augustine and Cape Canaveral. This point is 50 miles from St. Augustine, and 43 miles from Cape Canaveral.

"*Cape Canaveral.*—This is one of the prominent points on the coast, requiring the most powerful sea-coast lights to facilitate navigation. Dangerous shoals extend to a considerable distance off this cape, rendering it still more important that a first order light should be substituted for the present very inefficient one. The present apparatus consists of 15 lamps and 21-inch reflectors, revolving, in a tower of only 55 feet elevation. The present range of this light does not exceed 12 nautical miles, and should be increased to not less than 20 nautical miles.

"*Cape Florida.*—Between this and Cape Canaveral it is proposed to erect 3 new sea-coast lights of the first order; one near Jupiter Inlet is considered of immediate importance; and the other two at different periods, according to circumstances, and as the expenditures for light-house service on other points may warrant. The Cape Florida light, marking, as it does, a prominent point on a most dangerous coast, should necessarily be of the most powerful illuminating apparatus. The present apparatus is composed of 17 lamps and 21-inch reflectors, with an elevation of 70 feet above the level of the sea, giving a range of not more than 13 nautical miles. The currents and dangerous reefs along the Florida coast, render it of absolute importance that it should be increased to the rank of a first-class sea-coast light.

"*Carysfort Reef and Sand Key Lights.*—These two important lights are now in course of construction by the officers of the Topographical Engineers, to be fitted with first order lens apparatus.

"*Dry Bank.*—This position has been selected as an intermediate point for a first-class light midway between Carysfort Reef and Sand Key lights, at the distance of 48 miles from them. It is believed to be of the first importance that the entire Florida coast should be lighted with the lens apparatus of the greatest power, without delay.

"*Dry Tortugas.*—This is a very important light, especially to those navigators bound to and from the Gulf of Mexico. It is fitted at present with 17 lamps and 21-inch reflectors, with an elevation of 70 feet, giving a range of about 13 nautical miles. This light is 55 miles from Sand Key, which makes it still more important that it should be of the first order.

"*Pensacola Light-house.*—This light is deficient in power, being fitted with only 10 lamps and 16-inch reflectors. This and the light at Mobile Point, being about 40 miles apart, are both revolving. As an important naval station, Pensacola requires a first-class sea-coast light. The present light is very little better than the ordinary local lights along the coast. The distinction of this light should be changed, as it is liable to be mistaken for the one at Mobile Point. The proposed lights along the Florida coast, from the Keys and Dry Tortugas to Pensacola, etc., although necessary in a general plan, are not deemed to be of present great importance. With the increase of trade and population, the coast must keep pace in its improvements in lighting.

"*Mobile Point.*—This is believed to be the best reflector-light on the coast; being revolving, and fitted with 21 lamps and 21-inch reflectors. The elevation of this light being only 55 feet, its range is necessarily restricted within the very narrow limits of only 12 nautical miles. This light, from a proper elevation, could be seen at a distance of 18 to 20 miles. This tower should be elevated to at least 125 feet, to render the light of as much importance as the navigation interests of Mobile demand. This light may be easily mistaken for the one at Pensacola, and therefore the characteristic distinction of one of them should be changed. In carrying out the general plan, it may become a question as to whether Mobile Point or Sand Island light should be the principal or sea-coast light.

"*Passes of the Mississippi.*—These lights should be of the first class, with such elevations as will give them the ranges of at least 20 nautical miles. The present lights are inefficient, and unnecessarily expensive, without any commensurate benefits. These lights are of great importance to the commerce of the Gulf of Mexico, and should be rendered the most efficient in the shortest space of time. The remaining lights along the coast, embraced in the programme, are of minor importance, compared to those already enumerated; but deserve the attention of those who are, or may be, charged with the light-house service. Many of the points along the coast of Texas require lights, especially at the entrances to the ports and bays, at an early day. The prominent points on the Pacific coast should have lights without unnecessary delay, and no sea-coast light should be fitted except with first-class apparatus.

"*Lake Coast. Champlain, Ontario, Erie, Huron, Michigan, Superior, and their tributaries or connecting links.*—The shores of these inland seas belonging to the United States, are, so far as the number of the lights is concerned, pretty well lighted. There are a few important points which require lights of greater power and range than those now existing; and as commerce and navigation increase there, a few additional small lights may be required, to the extent probably of 6 in Michigan, 1 in Ontario, 3 in Huron, and several in Superior. The most of these lights are mere pier-head beacons. A system arranging the lights into classes, and giving to each one a distinctive characteristic, is necessary. In Lake Huron, the two important lights of Thunder Bay Island and Point aux Barques, distant about 22 miles, and marking the entrance to Saginaw Bay, are both fixed.

"Many of these lake lights have more lamps and reflectors, although only requiring to have short ranges, than many sea-coast lights on the Atlantic and Gulf coasts. Galloo Island, east end of Lake Ontario, near the River St. Lawrence, is fitted with 15 lamps and reflectors; in Lake Superior, Manitou Island, 15 lamps and reflectors; White Fish Point, 13; and Copper Harbor, 13 lamps and reflectors. These principal lights on the lakes should be fitted with third order lenses, of smaller or larger model, according to circumstances, similar to the one recently placed in the Wagooshance Light, built under the direction of the Topographical Bureau. The following may be considered first-class lake lights, and should be of the third order lens apparatus, viz.: Galloo Island, Lake Ontario, fixed; Sodus Bay, Lake Ontario, revolving; Fort Niagara, Lake Ontario, fixed; Dunkirk, Lake Erie, fixed; Presq' Isle, Lake Erie, fixed; Cleveland, Lake Erie, fixed; Western Sister, Lake Erie, fixed; Buffalo, Lake Erie, fixed; Point aux Barques, Lake Huron, fixed; Thunder Bay Island, Lake Huron, fixed; Presq' Isle, Lake Huron, revolving; Point de Tour, Lake Huron, fixed; Wagooshance, Lake Michigan, third order lens; Fox Isles, Lake Michigan, required; South Manitou Island, Lake Michigan, fixed; Milwaukie, Lake Michigan, fixed; Chicago, Lake Michigan, fixed; White Fish Point, Lake Superior, fixed; Copper Harbor, Lake Superior, fixed; Manitou Island, Lake Superior, fixed.

"Of the 72 lights on the lakes and their tributaries, 68 are fixed and 4 revolving.

"*Arrangement into one System in reference to Classification.*—The following classification of lights is recommended according to their positions, uses, etc., etc.: 1. Main coast lights for the most prominent points on the coast. 2. Secondary lights for the inferior points on the coasts, and in broad sounds, bays, etc. 3. Minor sounds and bays, and for harbors and river lights. 4. Range, beacon, and pier lights. Also into six classes, according to the dimensions of the lighting apparatus and the range of the lights. All the main sea-coast lights should be of the first order, and the classes to which the secondary, sound, bay, harbor, river, range, beacon, and pier lights should belong, would be determined by the light-house board, according to the locality, objects for which placed, etc., etc. This applies to new lights, and to the gradual replacing of the old ones as they may require renewal. It is believed that many of the present lights might be dispensed with if effective ones were substituted for those now placed on important points, but not of sufficient power and range, which would in the end produce a considerable saving.

"*Distinctive Characteristics.*—Experiments will throw light on this important subject. The light-houses and vessels, as well as the lights, should be distinguished from each other by sight, as well as, in case of fogs, by sound. Colors should only be used for distinguishing small lights of short range, as river, pier, beacon, or range lights. In employing colored media at all for lights, it is important that the most approved modes, with the best quality of appliances, only be used; a duty which should devolve upon professional men. Mr. Stevens enumerates the number of distinctions of which reflecting lights are susceptible as nine: 1st, fixed; 2d, revolving white; 3d, revolving red and white; 4th, revolving red with two whites; 5th, revolving white with two reds; 6th, flashing; 7th, intermitting; 8th, double fixed light; 9th, double revolving white lights; to which may be added, 10th, double, one fixed and one revolving. Of these, three depend on color and should be discarded, reducing the distinctions to seven. In the Scottish lights, by causing a rapid revolution of the frame, and placing the rims of the mirrors of each side in one vertical plane, while their axes are in a plane inclined to the vertical, flashes are produced every five seconds, which appear to rise and sink. The intermitting light suddenly appears, is steady for a short time, and then disappears suddenly. These changes are produced by the vertical motion of circular shades in front of the reflectors. The different characteristic combinations in the lens system, according to M. L. Fresnel, are nine: 1st, flashing at the interval of a minute; 2d, flashing at the interval of half a minute; 3d, white and red flashes alternating; 4th, fixed lights flashing every five minutes; 5th, flashing every three minutes; 6th, every two minutes; 7th, fixed white lights with red flashes; 8th, fixed white lights; 9th, double fixed lights. These are applied only to the first three orders of lights. In England the lights are classified as sea-coast, secondary, and harbor and river lights. In France they are divided into six orders, according to their range and the size of the lighting apparatus; the first order being the largest, and the second, third and fourth orders being each divided into two classes, the larger and smaller, or first and second classes. The objections to colored lights are, the large absorption of the incident light, and the difficulty of distinguishing the color. Red is admitted to be the best color. A good red light is seen 16 miles, and sometimes 22. Green lights from a powerful apparatus, in Mr. Stevenson's experiments, were seen 7 miles in very clear weather, and blue lights only 5.

"The objections to red are: 1. The great loss of light by absorption. A full red glass used as a chimney of a lamp absorbed 80 per cent. of the whole. A pink French glass absorbed but 57 per cent. of the light, but the light was not characteristic.

"2. White lights grow reddish in a fog. In a revolving light, showing alternately red and white, the red is absorbed at a less distance than the white, and the light may be mistaken for a white light of half the period of revolution. Two lights will appear blended in one, which are not separated by at least 3′ 18″; call H the required distance between the lights in feet, Δ the observer's distance in feet, Θ half of 3′ 18″. Then H = 2 Δ tan. Θ. For 1 mile, H = 5·84 feet, and for n miles H = $n \times 5{\cdot}84$. Leading, or range lights, should be nearly on the same elevation, so as to cause them to appear nearly, but not quite in one. The distance between them should not be less than one sixth of the distance at which they are thus to be used.

"In forming a programme for lighting the coast, the following conditions should be realized: 1. The most prominent points should be first lighted. 2. Revolving lights, as more powerful than fixed, should be used, when possible, on the projecting points. 3. Lights identical in appearance should not occur within 80 to 100 miles of each other. 4. Distinctions of color should not be adopted except in cases of absolute necessity. 5. As few lights as possible should be used, not only for the sake of economy, but to avoid confusion. 6. Distinctions of lights depending on the estimations of small differences of time, of appearance and disappearance, should never be resorted to. 7. Harbor or local lights should generally be fixed, and may be distinguished by colors. 8. Floating lights should never be used when fixed lights can be employed.

"The system proposed by Charles Babbage, Esq., of London, and which has been communicated by its distinguished author to the Board, at the request of one of its members, is to distinguish lights by occultations; or, to make each light-house repeat its own number continually during the whole time it is lighted. This is accomplished by inclosing the upper part of the glass cylinder of the Argand burner by a thin tube of tin or brass, which, when made to descend slowly before the flame, and then allowed suddenly to start back, will cause an occultation and reappearance of the light.

"The number belonging to a light-house may be thus indicated to distant vessels. Take, as an example, 243. 1. Let there be *two* occultations. 2. A short pause. 3. *Four* occultations. 4. A short pause. 5. *Three* occultations. 6. A longer interval of time. This system of occultations may be repeated all night by means of proper mechanism.

"The rapidity of the occultations themselves, the length of the pauses between the units and tens and between the tens and hundreds, as well as the duration of the long interval of time which marks the termination of the number, must be made the subject of experiment. A light has been already used as an illustration, in which the occultations occurred at intervals of one second; the pauses occupied four and the long interval ten seconds. The pause was thought to be unnecessarily long, and was diminished. Whatever may be the times ultimately adopted, the experiments already made render it improbable that the average time required by a light-house for repeating its number should amount to one minute. It is by no means necessary that the counting of the number of a light-house should commence with the digit which expresses hundreds. No greater amount of time would have elapsed, if, in the above instance, the observer had commenced with counting the unit's figure. It would then have read thus: (three occultations) long interval; (two occultations) pause; (four occultations) pause. By the long interval denoting the commencement of a number, it is already apparent that the number of the light-house is 243, and not 324. In order still further to prevent mistakes arising from an incidental error in counting the number of occultations, it will be convenient to establish another principle for the purpose of numbering the light-houses. Light-houses must not be numbered in the order of their position; but every light-house must have such a number assigned to it, that no digit occurring in the number denoting the several light-houses nearest to it on either side shall have the same digit in the same places of figures.

"If five adjacent light-houses were thus numbered:

361, 517, 243, 876, 182;

supposing a mistake to have occurred in the first time of counting 243, and that it had been reported to the master of the vessel as 253, he would immediately, on looking at his numerical list of light-houses, perceive that a mistake had been made in the middle figure; because, in any general arrangement, 253 would have been assigned to some light-house on a coast very distant from that on which 243 was placed. In fact, two out of any three figures would always detect the error of the third.

"The occultations would distinguish every light-house from all casual lights, and their number would identify the light. The whole illuminating power would be always employed, undiminished by the interposition of colored glass. These lights would be more readily visible at a distance, because it is known that the eye perceives more readily a faint light which is intermittent than an equal light which is fixed. The Board regard this as the most important proposition for distinguishing lights which has ever been made, and propose to make full experimental trials of it. In fogs, Mr. Babbage proposes to make the pauses between the strokes of the gong take the places of the occultations of the light. To give this plan a full development, all nations should unite in a system of numbering for light-houses. Such a co-operation might reasonably be looked for, if the plan have all the success which is now expected.

"*Best mode of ascertaining the necessity for introducing new Lights, Beacons, etc.*—Legislation is, of course, necessary to the establishment of a new light. The recommendations of the Light-house Board, of officers of the coast survey, of pilots, navigators, and others, all reach the Committees of Commerce of the two Houses of Congress, through different appropriate channels. It does not seem practicable to propose any system of examination of sites which would not be very expensive, while legislation is pending on the subject. A reference to the Light-house Board, in doubtful cases, would secure the committees from recommending appropriations for objects which certainly would not have the approval of professional men. The law of the last session provided for the examination of sites, for which appropriations were made, by the officers of the coast survey, and a report by the superintendent. As this will leave a full knowledge of all the circumstances of the case, and be attended with very little expense, the same plan should be pursued in all future cases.

"*Best mode of supplying new Lights.*—When it has been shown, to the satisfaction of Congress, that new lights are required, and appropriations made for the purpose, the plans and specifications for construction, illuminating apparatus, distinction, etc., should be made by the engineer of the Light-house Board. Should a previous estimate have been made by this engineer, for the information of Congress, generally, there will be required but little more than to fill up the details. The construction having been approved by the Light-house Board, a contract should be entered into, according to law—based entirely upon the plans, drawings, and specifications and estimates of the engineer—and the building should be erected, and the lighting appa-

ratus and accessories be procured, under the inspection of the engineer of the Board, or of such officer of the corps of engineers of the army as may be detailed for the purpose, in conformity to the 9th section of the act approved 3d March, 1851. All the details should be subject to similar inspection.

"*Mode of renovating Lights.*—Whenever the Light-house Board is satisfied of the necessity for renovating any existing light, by the introduction of better illuminating apparatus, etc., the engineer of the Board should be required to prepare estimates and plans in detail, to be submitted to the board, which should be passed upon, and, if approved, the necessary steps should be taken to make the repairs, etc., according to law; or, in the event of the expense being too great to admit of the works being done, except by a special appropriation, then the necessary estimates, explanations, etc., should be prepared and submitted, through the Secretary of the Treasury, for the consideration of Congress. It should also be the duty of the Board to procure all the necessary information relating to the establishment of new lights, abolishment of old ones, etc.; to be accompanied by estimates of cost, to be submitted, through the Secretary of the Treasury, to Congress, at the commencement of each session.

"*Discontinuance of unnecessary Lights.*—The steps in regard to the discontinuance of lights should be similar to those necessary in cases of renovation of lights.

"*Subjects of Instruction to Employees.*—Inspectors and light-keepers should be provided with printed instructions, in the form of manuals of instruction, as well as those necessary to guide them in the police of the establishments, similar to those provided for the inspectors and keepers of light-houses in France and Great Britain. This manual should embrace a detailed account of the modes of executing every part of the duties confined to the inspectors and keepers; a description of the parts of the machinery employed; and the means to be employed, in case of accident to the machinery, etc., until it can be repaired. The instructions for the light-house service of France embrace every point in the most minute detail, and serve not only for the guidance of inspectors and keepers, but also of the engineers and others in any way connected with the service. The instructions for light-houses, light-vessels, etc., of England, are full and explicit; printed in large type, with conspicuous headings; and are kept in the quarters of the keepers, in frames, so that no one can ever be at a loss to know his duty. The different kinds of lamps employed are described, and the modes of attending to them pointed out, in plain, clear, and explicit terms, adapted especially to the understandings of the keepers of the lights. The subjects contained in the printed instructions and manuals, would form a part of the essentials in the examinations for qualifications of keepers.

"*Best Mode of securing Attention to Instructions.*—The system of inspection already recommended, the examinations for higher positions in the districts, and the exercise of the present power of removal for neglect or disobedience of instructions, would secure a due degree of attention to them. If promotions were made entirely by merit, on the recommendation of the general or local inspectors, and changes, not depending upon want of qualification, were avoided, there would be doubtless, great improvement in the knowledge, skill, and attention of the light-keepers.

"*Improvements in the Materials for Illumination.*—In regard to the substitution of the oil of colza (rape-seed), now used exclusively for light-house purposes in France, England, Scotland, and Ireland, and in most of the light-houses of the other maritime nations, for spermaceti oil, or, more properly, for that used in our lights, the Board would refer to the fact, that the recommendation of the select committee of the House of Commons of Great Britain, in 1845, to the Light-house Board, to introduce the more economical oil of colza into their light-house establishments, had the effect of causing a thorough experimental examination to be made of the two oils (colza and the best winter-strained sperm oil), by Professor Faraday, Mr. Alan Stevenson, and others interested in light-house service, by which it was clearly demonstrated that the colza oil is superior, in every essential particular, to the best winter-strained sperm oil. Professor Faraday says, in his report: 'Having burnt the lamps for many days, I have been much struck by the great steadiness of the rape oil lamps, either as considered alone or in comparison with the sperm-oil lamps. They would burn for 12 or 14 hours at a time with little or no alteration of the light, the cottons or lamps not being touched the whole time; whereas the sperm oil lamps would in the course of four, five, or six hours, give a diminished flame, from the incrustation of the charred part of the cotton retarding the flow of oil. In the rape oil lamps the coal is broken and porous, and serves for wick almost as well as the fresh cotton; but in the sperm oil lamps the coal forms a hard, continuous ring, which seals up the ends of the threads; and this, with the more confined condition of the burner, and the greater distance of the oil beneath (from intentional difference of flow in the lamps), causes the sperm oil lamp flame to fail in brightness, and requires that the wick should be re-trimmed. * * * I have made many careful experiments on the proportion of light produced by the two kinds of lamps, in every case weighing the oil before and after combustion, so as to know exactly the quantity burned, and making, during the experiments, above 100 comparisons of the lights one with another. The rape oil lamps were always more brilliant than the sperm oil lamps, except, indeed, one or two rare cases; but, at the same time, more oil was burned in them. * * * From 108 observations of the lights, taken at such times as appeared fitted to give the best mean expression of the light of the lamps compared with the oil burned in them, the average light of the rape oil lamp came out as one and a half, that of the sperm oil lamp being one.' Mr. Alan Stevenson says: 'In my last annual report on the state of the light-houses, I directed the attention of the Board to the propriety of making trial, at several stations, of the patent colza or rape-seed oil, prepared by Messrs. Briggs, of Bishopsgate-street. These trials have now been made, during the months of January and February, at three catoptric and three dioptric lights. * * * The substantial agreement of all the reports, as to the qualities of the oil, renders it needless to enter into any details as to the slightly-varying circumstances of each case; and I have, therefore, great satisfaction in briefly stating, as follows, the very favorable conclusions at which I have arrived: 1. The colza oil possesses the advantage of remaining fluid at temperatures which thicken the spermaceti oil, so that it requires the application of the frost-lamp. * * * 3. The colza oil burns, both in the Fresnel lamp and the single Argand burner, with a thick wick, during 17 hours, without requiring any coaling of the wick or any adjustment of the damper, and the flame seems to be more steady and free from flickering than that from spermaceti oil. 4. There seems (most probably owing to the greater steadiness of the flame) to be less breakage of glass chimneys with the colza than with the sperm oil. 5. The consumption of oil, in so far as that can be ascertained during so short a period of trial, seems, in the Fresnel lamp, to be 121 for colza and 114 for spermaceti; while in the common Argand lamp, the consumption appears to be 910 for colza and 902 for spermaceti. 6. If we may assume the means of these numbers, 515 for colza and 508 for spermaceti, as representing the relative expenditure of these oils, and if the price of the colza is 3s. 9d., while that of spermaceti is 6s. 9d.

per imperial gallon, we shall have a saving in the ratio of 1 to to 1·775, which, at the present rate of supply for the Northern lights, would give a saving of about £3226 per annum.' The evidence of these two distinguished gentlemen is conclusive of the superiority of the colza or rape-seed oil to the best winter-strained sperm oil; and how much better than that used in our lights, may be readily inferred without the aid of experiments on so nice a scale as these employed by Professor Faraday and Mr. Stevenson, when it is remembered that our lights are supplied with oil called winter and spring or summer oil. That efficient lights along the coasts of all maritime countries are essential to a safe navigation, and the successful prosecution of a lucrative commerce, will not be contested; that all mere personal or local interests should give way to the general good, is an assumption which will not meet with disfavor in this country; and inasmuch as it is of paramount importance to the best interests of the whole country, that our lights and other aids to navigation should be the best which money, science, and the mechanic arts will afford, it is, in the opinion of the Board, the duty of those charged with this important branch of the public service to employ every reasonable means, not inconsistent with law, to perfect them, and therefore recommend that the subject of introducing other combustibles than the oil now used, be taken into serious consideration, as one of the means of improving our lights, and, at the same time, of effecting considerable annual saving of expense to the country. If the rape-seed were cultivated to any extent in this country, it is not doubted it would supply the place of the numerous chemical oils, fluids, etc., now in general use for domestic purposes, as well as for lighting our light-houses and light-vessels. To insure the consummation of so desirable an object as the cultivation of this plant on a large scale in this country, where climate and soil are so well adapted to it, will be to place it in a fair competition with its rivals. It will be the duty of the Board, if authorized by Congress, among its numerous other important duties connected with the light-house establishment, to examine into the merits of all proposed improvements in apparatus and combustibles, and, by their recommendations to Congress, keep pace with the improvements of other countries in this branch. The introduction of gas into light-houses has long been looked forward to as an important step. Hitherto it has met with but little favor in any quarter. While the introduction of gas into our light-houses, if found adaptable to them, would involve important points to be considered, it is by no means certain that by the means of a series of experiments, the Board would not be enabled to decide conclusively as to the practicability of making the attempt in the present state of knowledge, or the best and safest means of generating, conducting, and continuing it for light-house purposes. The persons charged with the few gas-lights now existing in this country, for want of practical and theoretical knowledge, it is believed, are not competent to report results sufficiently reliable to decide so important a question.

"*Buoys.*—The material is iron or wood, sometimes covered with copper. The anchors are heavy blocks of stone, or mushroom anchors, or iron sinkers (which should be hollowed out below), or iron screws. It is worth trial whether fastening the buoys by a traverse line passing through the centre of oscillation would not diminish the liability to chafe off the chain, and separate the buoy from the anchor. A swivel-shackle, in a degree prevents this, but not effectually. The colors of buoys are made to indicate their purpose, as designating a channel, shoal, spit, etc. They are sometimes even characteristically marked to distinguish them. The law passed in 1850, in regard to coloring and numbering buoys in the United States, is simple and effective. The numbers were intended to begin at the exterior of a bay, harbor, etc. This law is as follows: Extract from an act making appropriation for light-houses, light vessels, buoys, etc., and providing for the creation and establishment of the same, and for other purposes, approved September 28, 1850: 'Section 6. *And be it further enacted*, That hereafter all buoys along the coast, or in the bays, harbors, sounds, or channels, shall be colored and numbered, so that, passing up the coast, or sound, or entering the bay, harbor, or channel, red buoys with even numbers shall be passed on the starboard hand; black buoys with uneven numbers, on the port hand; and buoys with red and black stripes, on either hand. Buoys in channel ways to be colored with alternate white and black perpendicular stripes.' Of course the buoys show, with more or less distinctness, when projected on the water, against the sky, trees, etc. The red buoys should be painted a bright red, and not a Spanish brown, in order to be well distinguished—red lead or vermillion being used as the paint. The experiments and observations of the Board satisfied them that in such a case, red and black were good colors for distinguishing buoys. The can-buoys, in some instances (as in New York harbor) are too small to be easily seen. The numbering is a simple matter, but is by no means effectively executed, especially on the spar-buoys, where the numbers repeated on the different sides, being seen in range in a diagonal view, lead to confusion. The Board have given some attention to plans for numbering buoys. The numbers should be placed above the buoys, on stems or perches; should present the same appearance on different sides, and have their distinctions by difference in a vertical line, and not by varying horizontally. Several plans have occurred to them. Three solids, the cone, cylinder, and sphere, arranged in groups of not more than 3 each, will give 42 combinations; no one of these figures can be taken for the other, and they may easily be placed on stems projecting nearly vertically above the buoy, the several solids being placed one above the other, with a sufficient interval. They can be of adequate size, and may be cheaply made in the turning lathe. The elementary forms of the unit, the 5 and the 10, of the Roman numerals, are the cylinder, the cone and the double cone. By combinations of these, 39 numbers are represented. Seven numbers may be represented by 2 signs and their combinations; 28 by 3 signs, restricting the number of elements in any one combination, to 4. Seven numbers of every 10 may be represented by only 2 more signs than those expressing the value of the ten's place, giving a very great variety. A letter made to revolve about a vertical axis, produces a solid of revolution which is easily recognized as the sign for the letter. Fourteen of the twenty-six letters are adapted to characteristic signs, as shown in the figures (A, B, E, I, J, L, O, P, Q, R, T, W, V, Y). Nine digits of the Arabic numerals, viz.: 1, 2, 4, 5, 6, 7, 8, 9, and 0, give easily formed and easily recognized signs, as is shown in the accompanying plate; and these the Board recommend for numbering buoys, excluding 3 as not sufficiently characteristic. In the English system of placing buoys, a red and black are placed on opposite sides of a channel, and the vessel runs between them. In our system only one buoy is placed on the starboard or port hand, and the vessel runs for the buoy, keeping it close aboard in passing. The English system is most simple, and even the most economical. In order to render buoys available at night, various propositions have been made for causing them to appear luminous, but none have succeeded practically. Lighting by gas is among the methods proposed.

"*Of Fog Signals.*—During the prevalence of fogs, the lights which ought to guide the seaman are often indistinctly seen, or entirely obscured, until he has approached too near the danger against which they were intended to warn him. In cases of fog, light-

ships and light-houses are, in some instances, provided with gongs and bells, which are then kept constantly sounding. It is unfortunate that the means of warning the seaman of his danger should extend to the shortest distance when that danger is most imminent. The lights usually employed are visible at a distance of from 6 to 30 miles; but the sound of a gong or bell is heard at a comparatively very small distance. When these instruments are heard, they merely indicate danger, but not its exact nature. It might, in some cases, be of great importance that the gong or bell should indicate the number of the light-ship. This could be accomplished by a very trifling alteration in the mechanism. Instead of striking the instrument at fixed intervals, let there be pauses and a long interval between the number of strokes which successively represent the digits of the number of the light-ships, just in the same manner as has been proposed for light-houses. A light-house or light-ship whose number is 243, would be thus indicated during fog: two blows on gong, pause; four blows on gong, pause; three blows on gong, long interval. The same mechanism which caused the occultations of the light might produce the blows on the gong. The preceding explanations are sufficient to show that each light-house or light-ship, by continually repeating its own number, might render any mistake of it for a different light very nearly impossible. The great principle on which the system rests is to give numerical expression to each light. If it be not thought necessary to apply it to every light-house, the most important may be chosen for its application. The expense of the alteration, and the amount of danger incurred by a mistake, will furnish the ground of decision in each individual case. In proposing, however, a new system which has extensive bearings on other questions connected with the safety of those who travel on the waters, it is desirable that a general and comprehensive view should be taken of such of its applications as the rapid advance in mechanical and chemical science justify us in supposing must take place in a few years. However partially the system may be adopted at first, a judicious foresight into its probable applications may enable us, without any present inconvenience, to accelerate future improvements, and to save considerable expense on their adoption. The following suggestions for improvements or applications, many of which are perfectly practicable at the present time, are offered for the consideration of those who may be called upon to carry out the *Numerical System of Light-houses*. They are not necessary for the success of the simple plan which has been already described, but may be adopted or rejected without any interference with it.

"*Suggestions for the Improvement of Light-house Signals, Buoys, etc.—Telegraphic communication during the night between Light-houses, and Ships in distress.*—Cases occur in which it is of great consequence that a ship should communicate with the land long before it can send a boat ashore or enter its intended port. It may be the bearer of important intelligence. It may convey some person whose presence is essential for some great object. The vessel itself may be in distress. The state of the elements may render it impossible to send for or receive any assistance from the land; yet, even under such unfavorable circumstances, if directions from skillful pilots, acquainted with the coast, could be conveyed to the ship, its wreck might, perhaps, be prevented; or, if driven on shore, having been directed to the least unfavorable spot, its crew might possibly be saved. Such communications might easily be organised. There are already existing in the royal navy in the East India Company's service, and elsewhere, large dictionaries of numerical signals. These, it is true, are made by flags, or by balls; but the same numbers may be expressed by the occultations of lamps. Any number, however large, may be expressed by making the number of occultations corresponding to the first or highest digit, then allowing a pause; after which the number of occultations representing the second digit, then a pause; and so on, always observing that, after the unit's figure has been expressed, there must follow a long interval.

"The plan for telegraphic communications would be thus arranged: 1. Light-house repeating its own number. 2. Ship fires a gun, and hoists a light, to call the attention of the light-keeper. 3. Light-house ceases repeating its number, and becomes a steady light, thus informing the ship that it is observed. 4. Ship having prepared its message, numerically expresses it by the occultations of its own lamp. 5. Light-house repeats the message of ship, in order to show that it has been rightly understood. 6. Light-house now repeats its own number, while it is preparing the answer. 7. Light-house expresses its answer by occultations. 8. Ship repeats the answer. This interchange of question and answer is continued as long as necessary, during which the light-house repeats its own number previously to each reply.

"Very little delay will occur; for these questions and answers will be arranged on movable discs, which may be placed in the mechanism employed for occulting, even while it is repeating another message. Many such discs, each containing a different message, may be placed in the machine at once, and on touching any lever the light will continue repeating the corresponding message. In case of a ship in distress, for instance, requiring an anchor of given weight, it may be necessary to send to the harbor-master of the adjacent port to give the order, and to ascertain the time when it can reach the vessel. During this interval, the light-house will be repeating its own number. An electric telegraph from the light-house to the dwelling of the harbor-master would save much time, and, in some cases, much damage. The gun fired by the vessel might also be heard by the harbor-master; and his attention then being directed to the telegraph light-house, the whole time might be saved. If even his own house was invisible to the ship, but within view of the light-house, he might, by means of a small light, correspond with the ship, through the intervention of the light-house, repeating the signals of both parties. Colored shades might, if thought expedient, be used for different dictionaries; or an entirely independent lantern might be specially devoted to signals; but this would cause additional expense, and seems unnecessary. It may be objected to this plan, that it would mislead other vessels on first coming in sight of the light-house. This objection, however, will be found on examination to be invalid; for a ship on first getting sight of a light-house, will be at the distance of many miles; and as all telegraphic messages would consist of more than three places of figures, the ship would immediately perceive that the light-house was acting telegraphically, and on turning to the dictionary would even become acquainted with its message. Besides, in the course of every three minutes, at least, the light-house would repeat its own number. Thus the ship would always know that it was in the presence of a light-house; and if its reckoning did not enable it identify the light, it could only remain in doubt during a few minutes.

"*Telgraphic Signals between Ships at night.*—The application of the system of occultations to ships at sea may not perhaps be quite so easy as that which is proposed for light-houses, but no objection has yet occurred which appears at all insurmountable. The question of the position of the occulted light or lights placed on the ship must be settled by practical men, after due consideration and experiment. It may, however, be suggested, that a light hid by a mast or sail may yet have its occultations made perfectly apparent by reflection from another sail. If such a system of signals were adopted, fleets might sail in company during the night, each repeating its own number; and

any orders could be conveyed to any individual ship. Specific lights have already been employed to distinguish sailing-vessels from steamers, in order to prevent collisions. By adapting the system of occultations to one or more of the lights of steamers, their character would appear more distinctly, and at greater distances. Perhaps, indeed, it would be better to have the distinctive character of a steam-vessel indicated by a continual enlargement and diminution of its light, rather than by an occultation. Two steamers also would have much less reason for approaching each other, because they could hold any correspondence by signals. They might also, by the same means, convey to each other their intended course long before they approach each other.

"*Of a universal Dictionary of Signals.*—Whether the system of occultations be generally adopted or not, numerical dictionaries of signals have been found absolutely necessary, and have long been in use. The rapid increase both of ships and of steamers renders some common language for all nations almost a matter of necessity. The concurrence between adjacent nations in numbering their respective light-houses would be essential if any numerical system is adopted for distinguishing them. Such an opportunity ought not to be lost of rendering those discussions still more useful by attempting to organize a plan for a universal system of numerical signals. The first step might, perhaps, be that each nation should supply all questions and answers that ships could ever require for their safety or convenience. Out of these, the duplicates being omitted, the first draught of the naval part of the dictionary might be formed. This being submitted to criticism, would probably itself suggest many additions.

"The questions should be very carfully translated into the languages of all maritime nations, and should be printed in columns for each language. A dictionary of this kind, containing about 5000 terms in ten European languages, was published in 1849 by M. K. P. Ter Reehorst. The words are contained on about 200 double pages; and since each word, of which there are usually about 25 in a page, is numbered, this work might be used as a numerical telegraphic dictionary. If a more general dictionary were undertaken, other considerations arise, and the great questions relating to the philosophy of language must be examined with reference to such a work. It will, however, be sufficiently early to enter on that subject when any steps are seriously taken to accomplish so desirable an object. The continually increasing use of the electric telegraph renders a universal language still more desirable.

"*On the Identification of a Light-house.*—A case has been more than once suggested to the author, to which it may be desirable to advert in order to point out the course of experiment which may lead to its removal. At certain periods of the year, and on certain coasts, there occur dense fogs. Under these circumstances, it has happened that a vessel has, on a partial and momentary opening in the fog, insufficient to show more than a single occultation, found herself almost close upon a light-house. In such a case, there is neither time nor opportunity to ascertain its number. It may here be remarked, that the assumed danger of going ashore is so imminent that it is not *necessary* to know the number. It is sufficient for the moment to know that there is a light-house in a certain direction, which is close at hand. It must, however, be admitted, that in common with all received systems of lights, the method of occultations will not furnish a remedy. If a colored light is already employed in particular localities to meet such a case, it will still accomplish the purpose when occultations are applied to it. The danger, although rare, ought, however, to be provided against. The following remarks are suggested to assist in attaining that object:

"The time between two occultations (usually one second) might be doubled in special cases. A little experience would enable most men to recognize the fact after two occultations. If such light-houses were placed alternately with others, no light-house would be mistaken for either of its adjacent neighbors. This plan might be partially extended, but it is liable to objections. Another view may be taken. Is it possible to give a specific character to the occultation itself? It has been found, that if the occultating cylinder descend rather slowly over the lamp, and then, after a *very short* pause, rise suddenly, the effect is best. It has also been observed, when an accidental defect in the apparatus caused the cylinder, after suddenly rising up, to rebound, and again to obscure partially the lamp, that the nature of the occultation was peculiarly characteristic. This peculiarity was very remarkable up to a certain distance, after which it became lost. Almost any form of peculiarity can be given to the occultations by giving proper forms to the cams which govern them. The fact that such peculiarities are not seen until the ship has approached within certain distances, does not appear to present a material difficulty, and may even prove an advantage. It would seem, then, to be desirable to institute a series of experiments to determine the following questions: Can the occultations of a lamp, in which the rapid re-appearance of the light occurs from the falling *down* of the shade, be distinguished from those in which it occurs in consequence of the rapid *rising up* of the shade; and if so, at what distance? In some cases the shades might move from right to left, and in the reverse direction. What peculiarities in occultations can be seen at the greatest distances? Among the experiments still required may be mentioned the loss of light resulting from the interposition of colored glasses, and also the proportion of light lost by sacrificing *given* portions of various parts of the optical apparatus used for concentrating it. This is necessary in order to enable us to judge what portion may be most economically sacrificed in case the space might be required for other purposes. The dangers arising from fogs are of such an extent that all the resources of science ought to be called in to remove them. Voltaic light can scarcely be depended upon except under continual superintendence; it would therefore be expensive. If, however, any intense light can be found capable of penetrating dense fogs, it might, during their continuance, be good economy to employ it even at considerable expense. Perhaps the ordinary light-house lamps might be supplied with *oxygen* during fogs; its expenditure being regulated by the obscurity to be penetrated. Possibly portions of phosphorus might be burnt in oxygen, and the light-house would then express its number by a series of *flashes*, and of *pauses* between them. The new form which that body is now known to assume, might render its application to this purpose free from danger.

"*On Sounds used for Signals.*—Both gongs and bells are employed as substitutes for lights during fogs. I am not aware of any series of experiments on the distances at which sounds of various kinds can be heard. In a question on which so much property and so many lives depend, it is surely important to be well informed. The only resource is experiment. It may be remarked that the low notes of the gong might be confounded with those of the roll of waves breaking on the shore, while the shrill whistle of the steam-engine will find a rival in the wind whistling through the rigging. The trumpet and the new and still more powerful instrument at the recent exposition ought also to be compared.

"Again, although some of these may be heard at greater distances in the open air, some may be more easily adapted to have their sound concentrated and directed, when placed in the focus of a parabolic mirror, or, perhaps, at the end of a long tube. Sound is

transmitted to considerable distances through water, and it has been suggested that this might be used in case of fogs. But it seems probable that sound would be much interrupted in its progress from the constant motion of the waves; and if it were transmitted at a considerable depth, it might be difficult for a vessel to send down an apparatus to render it sensible. Experiments should be made on the distance at which sounds can be heard under water in various circumstances of its motion. If, during storms, the surface only is agitated, it might be possible to transmit sounds in the still water near the bottom to considerable distances. Thus channels might be traversed by telegraphic communications with a less costly apparatus than that of the electric wire. It ought also to be ascertained whether the forms of the instruments struck would enable them to project their sounds in particular directions. Gongs, bells, and the firing of cannon under water, are among the sounds to be tried.

"Whatever may be the sound audible at the greatest distance, it will be necessary to ascertain what are the best means of producing it in greatest intensity—whether by one large instrument, or by many small ones. It seems probable that some combination of discordant sounds may be most effective, because it seems to be a law of our nature that contrasts produce stronger impressions than uniformity. There is one form of sound the most disagreeable with which we are acquainted; it is said 'to set the teeth on edge.' What is the cause of this, and does that highly obnoxious sound penetrate further than others? If it penetrate as far as others, it will certainly be the earliest to be noticed.

"*Lights on Buoys.*—The time is probably not remote when lights will be placed on floating buoys for the purpose of pointing out isolated dangers—as sunken rocks, shoals, etc., on which light-houses can not be placed, or where the great expense may prevent them from being built. They may also be useful to indicate the channels leading to some few ports of very great resort in order to render the approach of vessels possible during the night. The first difficulty in placing lights on buoys arises from the necessity of trimming the lamps, and of supplying them with fresh oil. Galvanic processes seem to present a similar difficulty. The chemical discoveries of recent times, however, offer some hope of removing it. By the destructive distillation of peat, of coal, and of shale, as well as by other methods, a variety of combinations of hydrogen and carbon have been obtained. Some of these only remain liquid under a pressure of two or three atmospheres. They possess considerable illuminating power; and by confining them in a close vessel, and allowing a very small aperture for their escape in the state of gas, a jet of flame may be produced, of uniform magnitude, and without the use of a wick, until the last drop of fluid has evaporated. If such a fluid could be produced at a moderate price, a quantity might be inclosed within the buoy, sufficient to last several weeks, if not months.

"Such a light would burn without the necessity of trimming, but it would require mechanism to light it each evening, and to put it out each morning. Such mechanism already exists in many of our public clocks. If it is thought desirable, too, that it should occult, so as to indicate its number, the plan already described might be applied. Thus the buoy would contain two pieces of mechanism. The only remaining difficulty would be the necessity of visiting the light frequently in order to wind up the two instruments. This might probably be removed by having within the buoy a heavy pendulum, or perhaps two such, swinging at right angles to each other. If the *perpendicular* motion of the buoy could be secured, then the winding up pendulums must be maintained horizontally by means of a powerful spring. These, by the action of the waves, would be continually winding up the springs which drive the mechanism. This might be so arranged that it would never over-wind them. Spirits of turpentine, benzole, and several other compounds, assume a gaseous state at very low temperatures. If the end of a tolerably thick rod of metal is heated by the flame of the lamp, and the other end conducts the heat to the bottom of the fluid, it is sufficient to produce a continuous stream of gas to supply the burner until the last drop of the fluid is exhausted. Lamps constructed on this principle have, under various names, been in use for several years. If the fluid were sufficiently cheap, one of these movements might be dispensed with, by allowing the light to burn constantly during the day as well as the night. New forms would be required for such buoys. Probably a columnar form, weighted at the bottom, might give a steadier light amid the fluctuations caused by the waves. These buoys should be attached to their moorings by rings fixed at the centre of resistance.

"*Of the Mechanism necessary for Occulting Lights.*—The period of time occupied by any occulting light in making a signal is so short that great accuracy in the wheel-work is not necessary. In light-houses the moving power may be a heavy weight driving a train of wheels. This must terminate in a governor, which presses by springs against the inner side of a hollow cylinder. When the length of the time necessary to indicate the number of the light-house is known, the governor must be so adjusted that some one axis shall revolve in the given time. A cam-wheel must be fixed on this axis, having its cams and blank spaces so arranged as to lift up the tail of a lever carrying the occultating cylinder at the proper intervals of time. Each tooth of the cam-wheel will cause an occultation of the lamp by the cylinder, which is instantly drawn back by a spring. It is obvious that an axis might be used which moves round in the course of two, three, or more cycles. In this case, the same system of cams would be repeated an equal number of times in the circumference of the cam-wheel. This plan is sufficient for light-houses which are not intended for signal stations also. When signals are to be used, it is better to have a single cam on an axis which revolves once in the time which elapses from the end of one occultation to the end of the next. The effect of this cam will be, by acting upon a forked lever, to lift up the occulting cylinder. If nothing retain it in that position, the action of the spring on the lever will cause it to descend, and the cylinder, acted on by gravity, will instantly follow. But if an arm is interposed which retains the cylinder, then the forked lever alone will be pulled back by its spring, and the occulting cylinder will remain suspended until the next turn of the cam-wheel. The suspending arm which was interposed must itself be governed by a cam-wheel, expressing the number of the light-house.

"When a signal is to be made, an adjustable cam-wheel is to be set to the proposed signal, and is to be fixed upon the axis carrying the constant number of the light-house. When the proper time arrives for making the signal, it is only necessary to shift the axis, so that the adjustable cam-wheel shall be moved into the place occupied by the fixed cam-wheel. The signal will now be made and repeated as often as required, after which, the original position of the constant cam-wheel must be restored. It is clear that any number of adjusting cam-wheels might be prepared for signals, and put upon the axis at once, so that a series of different signals might be made in a very short time. Lights to mark the depth of water must have a heavy float connected with them, which, at every foot of its rise or fall, must alter the number of occultations made by the colored light. It must, also, at the turn of the tide, change the color of the light. It is sufficient for the present purpose to observe that the mechanism similar to that by which a clock strikes different hours, might be employed for

this purpose. The well in which the float is placed ought to be open to the tide by several small apertures; this would render the rise or fall of the float more uniform. Telescopes are used for observing light-houses. They have a small magnifying power, but a large aperture. It is important that they should be as short as possible, for taking in a given visual angle. Possibly, those constructed with a lens of rock-crystal might be employed with advantage, but upon this subject, also, experiment must be made.

COMPARATIVE ELEVATION OF FOREIGN AND UNITED STATES' LIGHT-HOUSE TOWERS, ETC.

Names.	Height of tower.	Elevation above sea level.
	Feet.	Feet.
UNIT. STATES.*		
Portland	45	80
Seguin	20	166
West Quoddy	45	90
Monhegan Isl.	30	170
Owl's Head	15	117
Cape Elizabeth	50	140
" "	50	140
Dice's Head	40	116
Eagle Isl. point	25	100
Bear Island	17	95
Boston	60	90
Thatcher's Isl.	37	90
" "	..	90
Cape Cod	45	180
Gay Head	38	172
Sankaty Head	65	..
Juniper Island	30	95
New London	30	111
Eaton's Neck	50	184
Montauk	30	160
Sandy Hook	77	90
Navesink	40	248
"	40	246
Cape Henlopen	72	180
Cape Henry	72	120
Bald Head	90	110
Cape Hatteras	90?	95
Cape Lookout	96	95
Charleston	102	105
Cape Romain	65	87
Tybee	95	100
Dry Tortugas	65	70
Cape Florida	65	70
Cape May	68	88
ENGLISH LIGHTS		
Scilly	58	138
Longships	36	88
Lizard	45	221
"	45	224
Eddystone	72	72
Start Point	94	204
Casquets	18	81
"	28	81
"	28	81
Portland	25	198
"	70	181
Needles	36	469
St. Catharine's	105	178
Beachy Head	20	285
Dungenness	36	92
South Foreland	41	373
" "	89	275
North Foreland	70	184
Margate	70	85
Orford	87	87
Lowestoft	40	119
"	42	42
Halsbrough	85	137
Halsbrough	87	100
Cromer	88	274
Chapel	49	115
Spurn	90	100
Flamborough	72	214
Tynemouth	75	154
SCOTLAND.		
Inchkeith	45	220
Isle of May	67	240
"	36	110
Bell Rock	100	90
Girdleness	..	135
"	..	115
Buchanness	100	180
Kinnaird	57	190
Skerries	..	160
Tarbet	120	175
Noss Head	..	175
Dunnet	45	346
Pentland	30	170
"	16	140
Start	80	100
Sumburg	35	300
Cape Wrath	50	400
Glass	80	130
Barra Head	..	680
Skerryvore	Rock-awash	150 / 103
Lismore		
Rhins of Islay	80	150
Kyntyre	28	297
Pladda	80	130
Mull	70	325
Little Rosa	..	175
Corsewall	92	112
Calf of Man	55	375
"	40	282
Douglas	65	104
ENGLAND—WEST COAST.		
St. Bees	83	333
Walney	60	70
Black Rock	118	118
Lesowe	50	300
Lynas	36	128
Skerries	54	117
Stack	59	201
Bardsey	79	129
Small's (Rock)	..	70
St. Ann's	44	193
"	17	159
South Bishop	36	144
Caldy	40	210
Mumbles	56	114
Nash	90	167
"	45	122
Flatholm	77	156
Lundy	89	540
Trevose Head	..	204
" "	..	129
IRELAND.		
Fastnet Rock	75	151
Cape Clear	42	455
Kinsale	42	274
Kinsale Harbor	35	98
Hook Tower	110	152
Tuskar	81	101
Wicklow	58	250
"	29	121
Bally	42	134
Poolbeg	68	68
Carlingford (Rock)	111	101
Copeland	52	181
Maidens	60	84
"	60	94
Ionistrahul	26	167
Tory Island	68	125
Killybeg	41	104
Eagle	..	220
Clara Island	26	349
Arran	37	498
Loophead	40	269
Kilkradan	26	133
Skellig	26	372
"	26	178
This list comprises *all the most important lights.*		
BELGIUM.		
Ostend (3d order fixed)	72½	87
NETHERLANDS.		
Westkappel (fix'd)	..	146
Schouwen (1st order lens)	..	170
Goeree (fixed)	..	148
Brielle (fixed)	..	208
Egmond-aan-zee	..	125
Kykduin	..	154
Vlieland	..	151
Terschelling	..	177
HANOVERIAN.		
Borcum	110	142
HAMBURG.		
Neuwerk (fixed)	128	..
DANISH.		
Skaw	..	69
Anholt	..	123
Hesselöe	..	85
Nakkehoved	..	147
Kronborg	..	118
Thurnöe	..	100
Stevenskliut	..	144
Fakkebeirg	..	128
Hameren	..	280
Lubec	118	..
PRUSSIAN.		
Arcona	..	208
Jershöft	..	165
Rixhöft	..	226
Hela	..	180
Brüsterört	..	143
Memel	..	98
SWADISH.		
Orskär	..	118
Grönskär	..	108
Korsnäs	..	151
Landsort	..	145
Oland	..	130
Kullen	..	283
Winga	..	97
Marstrand	..	292
NORWEGIAN.		
Færder	..	216
Jumfruland	..	184
Oxöe	..	140
The Naze	..	146
Markiöe	..	201
Gunnarshaug	..	129
Holdingsöe	..	133
Rondöe	..	168
Gultholmen	..	191
Terningen	..	100
Agdenæs	..	116
Vilia Oen	..	124
RUSSIAN.		
Swalferort	..	119
Riga	..	100
Filsand	..	110
"	..	98
Dagerort	..	538
Odensholme	..	111
Pakerort	..	148
Sonrop	..	136
Narghen	..	115
Revel	..	135
"	..	210
Hogland	..	382
Outö	..	145
Hangaoud	..	107
Parkaloud	..	173
Euskar	..	163
Odessa	..	263
Pellinghe	..	126
Tarkankoot	..	115
Khersonese	..	109
Inkerman	..	420
"	..	360
Takli	..	168
Belosarilsk	..	176

* This list of 34 towers comprises those of the greatest elevation of the entire number of stations (296) on the coasts of the United States. Of the remaining towers (say 261), the majority have no greater average elevation than 50 to 65 feet, while there are many having less than 30 to 40 feet. The European lists, on the contrary, comprise nearly all the sea-coast lights.

SCOTCH LIGHTS.

Of the 24 northern lights in 1884, the following were fitted as below:

Name.	No. of lamps & reflectors.
Isle of May	24
Bell Rock	20
Girdleness	28
Buchanness	24
Kinnaird Head	18
Tarbetness	21
Pentland Skerries (2)	60
Sumburg Head	26
Dunnet Head	17
Cape Wrath	20
Island Glass	19
Barra Head	21
Lismore	18
Islay	24
Mull of Kintyre	20
Mull of Galloway	17
One of only	2
Six of only	12

"Of the 27 northern lights in 1845, there were 4 dioptric lights. (Reflector lights.) 1 fitted with 28 lamps and reflectors; 2 with 26; 4 with 24; 2 with 21; 2 with 20; 1 with 19; 3 with 18; 1 with 17; 1 with 16; 4 with 12. In 1851, nearly all the northern lights fitted previously with reflectors and Argand lamps had been changed to lens lights and the colza or rape-seed oil introduced. Perfectly formed parabolic reflectors, heavily plated with silver, and of large size, are employed in the lights of Great Britain, chiefly 24 and 21 inches in diameter. Reflectors are being changed as rapidly as possible for lenses, and the holophotal system of lenses and reflectors upon the plan of Mr. Thomas Stevenson of Edinburg.

"Of the sea-coast lights of Ireland in 1845, 1 was fitted with 40 lamps and reflectors; 1 with 28; 1 with 27; 2 with 26; 2 with 24; 2 with 23; 6 with 21; 2 with 20; 3 with 19; 1 with 17; 2 with 16; 3 with 15.

"*Floating Lights.*—1 was fitted with 24 lamps and reflectors; 2 with 16. Lens lights are being intro-

duced into Ireland, and the colza or rape-seed oil substituted for winter-strained sperm oil.

TRINITY HOUSE CORPORATION LIGHTS IN 1834.

Name and character of light.	No. of lamps & reflectors.
Scilly, revolving	30
Eddystone, fixed	24
Portland, revolving	21
Lizard (2), fixed.....each	19
Flamborough, revolving	21
South Stack, revolving	21
Beachy Head, revolving	30
Heligoland, fixed	24
Foulness, revolving	30
Longships	19
N. Foreland	18

Name.	No. of lamps & reflectors.
FLOATING LIGHTS.	
Newarp	24
Goodwin	24
Galloper	16
Halsborough	16
Stanford	12
Gull Stream	16
Lynn Well	12

"Whole number of Trinity House lights in 1834, 42; do. floating lights in 1834, 13.

"*Trinity House Corporation Lights.*—Total number of light-houses in 1845, 66; floating lights in 1845, 25. Of that number, there were, in 1845, 1st order lens lights, 11; 2d order, 4; total, in 1845, 15. Of the 51 remaining (reflector) lights, 2 were fitted with 30 lamps and reflectors each; 1 with 27; 1 with 26; 4 with 24; 2 with 21; 3 with 19; 3 with 18; 3 with 17; 3 with 15; 1 with 14; 5 with 13. Of the 25 floating lights belonging to the Trinity House in 1845, 2 were fitted with 24 lamps and reflectors each; 9 with 16; 1 with 12; 8 with 8; 5 with 4. 6 lens apparatus have been introduced into the Trinity House lights between 1846 and 1851.

"The fourth order lenses are introduced as substitutes in harbors for reflectors.

FRENCH LIGHTS.

Name and character of light.	Height of tower.	Elevation.	Range.
	Feet.	Feet.	Nautical miles.
Dunkerque, 1st order, revolving	..	192	24
Gravelines, 3d order, fixed	..	94	15
Calais, 1st order, movable	166	189	20
Cape Grisnez, 1st order, revolving	47	192	22
La Canche, 1st order, fixed	169	172	20
Cayeux, 3d order, movable	..	91	15
Treport, 4th order, fixed	..	86	9
Fecamp, 1st order fixed	55	422	18
Fecamp, 4th order, revolving	..	89	9
La Heve, 1st order, fixed	65	398	20
Havre, 4th order, fixed	..	89	10
Tancarville, 1st order, movable	104	416	..
Point de Ver, 3d order, movable	43	187	15
Points de Barfleur, 1st order, revolving	..	294	22
La Hague, 1st order, fixed	..	156	18
Isles Chausey, 3d order, movable	55	190	15
Granville, 3d order, fixed	43	153	15
Cape Frehel, 1st order, revolving	72	257	22
Ilieaux de Brehat, 1st order, fixed	..	146	18
L'Isle de Bas, 1st order, revolving	130	221	24
L'Isle d'Buossant, 1st order, fixed	84	273	18
St. Mathieu, 3d order, revolving	81	175	18
Portzee, 2d order, movable	107	182	18
L'Ile de Sein, 1st order, movable	..	185	20
Bec du Raz, 1st order, fixed	50	257	18
Belle Ile, 1st order, revolving	150	278	27
Chassiron, 1st order, fixed	140	168	18
Cordouan, 1st order, revolving	205	..	24
Cape Bearn, 1st order, fixed	30	748	18
Mont d'Agde, 1st order, revolving	75	410	27
Mont Pestusato, 1st order, revolving	52	322	27

"There are, in addition to the foregoing, 1st order lights, with elevations 183 feet, range 22 miles; 192 feet, range 18 miles; 175 feet, range 18 miles; 237 feet, range 20 miles; 160 feet, range 18 miles; 134 feet, range 18 miles; 130 feet, range 20 miles; 260 feet, range 20 miles; 420 feet, range 27 miles; 335 feet, range 18 miles; 266 feet, range 22 miles; 286 feet, range 18 miles; 338 feet, range 20 miles; 215 feet, range 20 miles. Second order lights, 78 feet elevation, range 18 miles; 104 feet, range 18 miles; 150 feet, range 18 miles. Third order lights are given a sufficient elevation to average a range of about 15 nautical miles. Fourth order lights (harbor lights) have generally an average range of 9 to 10 nautical miles. This list comprises all the important lights of France.

TABLE OF DISTANCES AT WHICH OBJECTS CAN BE SEEN AT SEA, ACCORDING TO THEIR RESPECTIVE ELEVATIONS AND THE ELEVATION OF THE EYE OF THE OBSERVER.

Heights in feet.	Distances in English miles.	Distances in nautical miles.	Heights in feet.	Distances in English miles.	Distances in nautical miles.
5	2·958	2·565	110	12·374	12·03
10	4·184	3·628	120	14·490	12·56
15	5·123	4·443	130	15·089	13·08
20	5·916	5·130	140	15·659	13·57
25	6·614	5·786	150	17·201	14·91
30	7·245	6·283	200	18·708	16·22
35	7·826	6·787	250	20·916	18·14
40	8·366	7·255	300	22·912	19·87
45	8·874	7·696	350	24·748	21·46
50	9·354	8·112	400	26·457	22·94
55	9·811	8·509	450	28·062	24·33
60	10·246	8·886	500	29·580	25·65
65	10·665	9·249	550	31·024	26·90
70	11·067	9·598	600	32·403	28·10
75	11·456	9·935	650	33·726	29·25
80	11·832	10·26	700	35·000	30·28
85	12·196	10·57	800	37·416	32·45
90	12·549	10·88	900	39·636	34·54
95	12·893	11·18	1,000	41·333	35·28
100	13·228	11·47			

"'The spheroidal form of the earth requires that the height of a light-house tower should increase proportionally to the difference between the earth's radius and the secant of the angle intercepted between the normal to the spheroidal at the light-house, and the normal at the point of the light's occultation from the view of a distant observer. The effect of atmospheric refraction, however, is too considerable to be neglected in estimating the *range* of a light, or in computing the height of a tower which is required to give to any light a given range; and we must, therefore, in accordance with the influence of this element, on the one hand, *increase* the range due to any given height and *vice versâ reduce* the height required for any given range, which a simple consideration of the form of the globe would assign.'

"If the distance at which a light of a given height can be seen by a person on a given level be required, it is only needful to add together the two numbers in the column of distances corresponding to those in the column of heights, which represent respectively the height of the observer's eye and the height of the lantern above the sea. When the height required to render the light visible at a given distance is required, we must first seek for the number corresponding to the height of the observer's eye, and deduct this from the whole proposed range of the light, and opposite the remainder, in the column of distances, seek for the corresponding number in the column of heights."

STATEMENT SHOWING THE INCREASE OF LENS LIGHTS IN FRANCE SINCE 1834. FRENCH LIGHTS.

Character of lights.	No.
In 1834.	
Lens lights	29
Reflector lights	45
Total	74
In 1845.	
1st order reflector lights	4
1st order lens lights	31
2d " "	4
3d " "	13
4th " "	57
Total of lens lights	109
Reflector lights (small)	42
Total	151
In 1851.	
1st order lens lights	39
2d " "	5
3d " "	16
4th " "	66
Total of lens lights	126
Reflector beacons	40

The lights of Algiers and the colonies are not included in this list. An imperfect list of these, up to the latest dates, may be found in PORTER'S *Yearly Journal of Trade*. Several important lights have been erected in Algiers during the past year (1851).

STATEMENT SHOWING THE NUMBER OF LENS LIGHTS IN EXISTENCE IN 1851. LENS APPARATUS.

Character of lights.	No.
In 1845 there were lights fitted with the first three orders of lens apparatus throughout the world.	95
Smaller catadioptric lights	115
Total lens lights	210
From 1845 to 1851 (six years), there were constructed in Paris and sold—	
1st order lens apparatus	65
2d " "	20
3d " "	96
4th " "	37
Total in six years	158
Total of the first three orders of lens apparatus in use in 1851	216
Smaller lens lights	152
Total of lens lights in 1851	368

Books and Public Documents of Reference.—The following works, Reports, and Documents may be consulted upon the subject of light-houses, viz.:—Smeaton's Narrative of the Eddystone Light-house: London, 1793. Stevenson's Account of the Bell-Rock Light-house: Edinburg, 1824. Mémoire sur un nouveau système d'éclairage des Phares; par M. A. Fresnel, Ingénieur au Corps Royal des Ponts et Chaussées, etc., etc., etc.: Paris, 1822. Belidor, Architecture Hydraulique, tome iv., p. 151. Peclet, Traité de l' éclairage: Paris, 1827. Admiral de Rossel, Rapport contenant l'exposition du système adoptè par la Commission des Phares pour éclairer les côtes de France: Paris, 1825. Treatise on burning instruments, containing the method of building large polygonal lenses. By David Brewster, LL.D., F.R.S.: Edinburg, 1812. Fanal di Salvore, nell'Istria, illuminato a gas: Vienna, 1821. On the construction of polygonal lenses and mirrors of great magnitude for light-houses and for burning instruments, and on the formation of a great national burning apparatus. By David Brewster, LL.D., F.R.S.: (Edinburg Phil. Journal, 1823, vol. viii., p. 160.) Account of a new system of illumination for light-houses. By David Brewster, LL.D., F.R.S. Edinburg, 1827. Saggio di osservazione, or observations on the means of improving the construction of light-houses; with an appendix, on the application of gas to light-houses. By Chevalier G. Aldini: Milan, 1823. Bodier Marcet, Notice descriptif d'un fanal à double aspect, etc., etc.: Paris, 1823. Bordier Marcet, Parabole soumise à l'art, ou Essais sur la catoptrique de l'éclairage: Paris, 1819. Description Sommaire des Phares et Fanaux allumés sur les côtes de France: Paris, 1845. Stevenson's British Pharos: Leith, 1831. The Light-houses of the British Islands, corrected at the Admiralty, to October, 1844. 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Detail estimatif des dépenses annuelles du service de l'éclairage des Phares et Fanaux des côtes de France: Paris, 1839, 1848. Sous details du prix des diverses fournitures et des dépenses à faire pour le service de l'éclairage des Phares et Fanaux des côtes de France, 1838. Notice sur la composition et les prix des Phares Lenticulaires, Catoptriques et Catadioptriques, parties optique et mécanique, par Létourneau et Cie., successeurs de MM. Soliel père, et François, jeune, constructeurs de Phares dioptriques, système de M. A. Fresnel, Rue des Poissonniers No. 24, près et hors la barrière Poissonnière, à Paris. Instruction sur l'organisation et la surveillance du service des Phares et Fanaux des côtes de France. Par Léonor Fresnel, l'ingènieur-en-chef, directeur, sécretaire de la Commission des Phares: Paris, 1842. Captain Leontey Spafareiff's New Guide for the Navigation of the Gulf of Finland: St. Petersburg, 1813. Collet, Guide des Marins: Paris, 1825. 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Light-house System of the United States 1856-57.—The recommendations suggested in the Report of 1851, have been generally carried into effect. At the end of the year 1856, there were in operation, or nearly finished, in the United States, 509 light-houses, light-boats, etc. The following extracts from the Light-house Board Report, under date November 1, 1856, will show some of the important changes that have recently taken place:

"The general condition of the aids to navigation, at the date of the last report from this office, was such as to leave but little to be done toward completing the systematic plan of improvements of authorized aids to navigation along the coasts beyond the general routine duties of renovating and repairing existing structures, and of providing those aids for which appropriations had been then recently made. The system of buoyage and beaconage had been carried out as perfectly, and to as great an extent as the means provided for that object would admit; and it is believed that but few localities are known to exist requiring additional aids of that kind. Renovations and improvements of light-houses and light-vessels, in addition to the ordinary necessary repairs, have been made as extensively during the past year as the means provided and the period of time for doing so would permit. A large number of lens illuminating apparatus has been substituted for the old reflectors and fountain lamps, to the great benefit and economy of the service. Changes are still being made as rapidly as the lens apparatus is available, having in each case due regard to the condition of the old apparatus in the light-houses requiring renovation. New and improved illuminating apparatus has been placed in, or is in course of preparation for, such of the light-vessels as had not been refitted at the date of the last report. All the aids to navigation, for which special appropriations have been made, have either been completed or commenced, except those condemned as being unnecessary by the proper authority, or those to the sites of which perfect titles have not been obtained. The late period of the year at which Congress made appropriations at its last regular session for new aids to navigation, rendered it impracticable to commence many of the works this season; but preliminary steps have been taken for commencing those at the north early next spring, and those at the south will be commenced and prosecuted as far as possible during the ensuing winter.

"The frequent inspections of the lights by inspectors and others, the instruction which the keepers have derived from them, and their acquirement of a better knowledge of their duties, as laid down in the printed instructions and directions, have resulted in a gradual but very perceptible improvement in the character, appearance, and reliability of lights along the entire coast. Notwithstanding the extraordinary severity of the past winter, and the consequent injury done to the buoys and light-vessels by the masses of floating ice on the coast from the capes of Virginia to the eastern boundary, it is believed but little serious inconvenience resulted to navigation on account of the temporary absence at times of these aids from their proper stations. The buoys which were driven from their stations were promptly replaced, by means of the buoy vessels, from the duplicates kept on hand at different points along the coast, and no efforts were spared to have the light-vessels repaired and towed by steamers to their stations with the least practicable delay. Since the light-vessels have been provided with service and spare moorings of the best description, but few of them have broken adrift from, or left even the most exposed positions. The supplies have been distributed to the lights on the Atlantic, gulf, and lake coasts, by three supply vessels employed, with as much regularity, and as satisfactorily as could be expected in a service, the successful performance of which depends so much upon the weather. The great diminution in the quantity of oil required to be delivered at the lights fitted with lens apparatus, will be the means, as the new apparatus is substituted for reflectors, of facilitating the operations of making deliveries; and more frequent and regular visits will be made without increasing the number or expense of the supply-vessels.

"The officer in charge of the light-house service on the Pacific coast was instructed to lose no time in commencing the erection of the light-house at Umpqua, in Oregon Territory, and it is expected, from the urgent instructions from this office, and the zeal and energy of the officer in charge, that it will be built as soon as the necessary materials can be collected at the site. The illuminating apparatus and lantern for that light reached the Pacific coast in July last. Instructions were also given to commence the building of the light at New Dungeness, in Washington Territory, and to take the necessary steps for commencing the one at Cape Flattery and at Blunt's Island with the least practicable delay. The Indian hostilities in Washington and Oregon Territories, and the difficulties attending, necessarily, operations at such distant and sparsely populated localities, will doubtless account for any seeming delay in the execution of these works. In the last report from this Board attention was invited to the low rate of compensation allowed to light-keepers under the existing law. By the fourth section of the act making appropriations for light-houses, etc., approved May 23, 1828, the Secretary of the Treasury is authorized and empowered to regulate and fix the salaries of the respective keepers of light-houses in such a manner as he shall deem just and proper, 'provided the whole sum allowed shall not exceed an average of $400 to each keeper.' The Board would again respectfully renew its recommendation of last year, that a reasonable increase be made

to the present average rate of compensation to light-keepers, as the best means of insuring efficiency and true economy in the care and management of the light-houses on our extended, dangerous, and, in many portions, sparsely populated and inhospitable coast. The present average rate of compensation to the keepers of light-houses on the Pacific coast, as established by the appropriation bills, is $800 per annum; but the difficulties which have been met with in obtaining the services of competent and reliable keepers for some of the lights at isolated, though important points, on that coast, and the frequent resignations of keepers after a short trial of the duties, lead to the opinion that the main cause of dissatisfaction with the service arises from insufficiency of the compensation in the present state of that part of the country."

The annual report of the United States Light-house Board, under date of November, 1857, recapitulates the progress of the work, viz.:

The systematic plan for an economical administration of the light-house establishment service, and for improving and perfecting those aids to navigation which had been authorized by the different acts of Congress subsequent to the passage of the law of August 7, 1789, which enacted "that all expenses which shall accrue from and after the fifteenth day of August, one thousand seven hundred and eighty-nine, in the necessary support, maintenance, and repairs of light-houses, beacons, buoys, and public piers, erected, placed, or sunk, before the passage of this act, at the entrance of or within any bay, inlet, harbor, or port of the United States, for rendering the navigation thereof easy and safe, shall be defrayed out of the treasury of the United States," was commenced by this board under the direction, orders, and instructions of the honorable Secretary of the Treasury on the 9th of October, 1852, under the authority of the act of Congress of 31st August, 1852.

At that time there were 325 light-houses and lighted beacons, and 38 light-vessels, making an aggregate of 343 light stations and 371 lights of all orders or classes, distributed in the waters and along the coasts of the Atlantic, Gulf, and northwestern lakes. A few buoys and beacons were placed along the coast and in the bays and harbors of the most prominent sea-ports, without system or plan, and often misleading instead of guiding the mariner. There were no lights or other aids to navigation at that time in the harbors or bays on the Pacific coast of the United States. There are now on the Atlantic, Gulf, Lake, and Pacific coasts of the United States, 548 light-house and light-vessel stations, with an aggregate of 602 lights; also 31 lights remaining either to be condemned according to law, or to be built in obedience to the directions of Congress, as soon as valid titles to the sites are obtained; making, after allowing for all probable condemnations and the discontinuance of such as time has shown to be wholly unnecessary for the general interests of commerce and navigation, an aggregate of 579 light stations, including light-vessels, and 627 lights. The buoyage and beaconage, at that time almost entirely neglected, is now, it is believed, unsurpassed in systematic arrangement, in reliability, and in economy of administration. The number of buoys and beacons may be put down, in round numbers, at not less than 4500 or 5000, with duplicates (and at most places along the coast spare buoys) to replace those to be taken up each spring and autumn for cleaning and painting, and to replace those removed or destroyed by ice or by storms, and by being run into and sunk by steamers and other vessels. The entrances to the principal harbors, and ship-channels leading to them, are marked by large nun and can buoys, made chiefly of iron, which have been introduced within the last four years. The previous reports from this office during the last five years have informed the department and Congress of the extremely dilapidated condition of the towers and buildings, of the inferior quality of the illuminating apparatus, and of the wasteful expenditures of oil, wicks, chimneys, and other necessary supplies, owing to the large number of lamps employed at the different light-stations, many of which, with proper illuminating apparatus, would have incurred less than one-tenth the cost for far more brilliant and better adapted lights. The light-vessels were found to be in a state of inefficiency, some of them absent from their stations for months at a time, without substitutes to occupy their places, with an inferior description of lamps, consuming large quantities of oil without producing sufficiently powerful lights to be seen at the required distances, or an adequate return for the expense incurred.

It will appear that at the time the Light-house Board was organized under the act of August 31, 1852, there were but five lights at four stations fitted with apparatus that had long before been shown incontestably to be in point of economical effect in no case less than 4 to 1, as compared with the catadioptric or reflecting light system, and in point of power and brilliancy the proportion in percentage was 83 to 16—that is, the consumption of oil would not exceed one-fourth in the new system of what was actually required in the old, and at the same time the new system producing for the benefit of the navigator more than five times as much light with this one-fourth part of the oil required for the argand lamps and parabolic reflectors. But even this comparison is too favorable to the state of the light-house establishment as it existed up to 1853, inasmuch as the apparatus was not, of its kind, the best that could be made, and also from the fact that the great majority of lights (those in the bays, sounds, rivers, and harbors) were fitted with a much larger number of lamps than was necessary, even under that system, attributable, however, to the great inferiority of the apparatus, which, it would seem, it was attempted to remedy by increasing the number of lamps at each station. The estimates for 1853 gave 3093 lamps for the 331 light stations. Estimating at an average of 10 lamps for each new light authorized or built since that time, the number of lamps to be fed with oil, to be supplied with wicks and chimneys, and in proportion to be supplied with the various articles of expensive cleaning materials, would, under the old system, have amounted to the large number of 5560 lamps, requiring an annual supply of not less than 222,400 gallons of oil, computing the consumption at 40 gallons per lamp, which is the minimum rate. The cost of oil has been as high as $2 per gallon at the warehouses of the manufacturer, and has been estimated for the year 1858-'59 at the rate of $1 60 per gallon.

The lights at Southwest Pass and South Pass of the Mississippi should be discontinued after the completion of the Southwest Pass screw-pile tower, which was authorized August 4, 1854, and for which $45,000 was appropriated, leaving about $70,000 to be appropriated for its entire completion before commencing the work.

The annual appropriations for renovations, repairs, etc., of light-houses, within the period referred to, have been employed to the best possible advantage in rebuilding such light-houses as were in imminent danger of falling to pieces, and, where special appropriations had not been made for rebuilding them, in providing the necessary improved and economical apparatus, fitting the lanterns and towers for receiving them, and in placing them; and with those means alone the whole of the light-houses existing in January, 1853, have been provided with new apparatus of the most approved kind, which combines the greatest advantages yet discovered in the science of light-house illumination—of power, durability, and economy.—See *Light-house Reports*, 1853 to 1858; also *Coast Survey Reports*.

Lima, the capital of Peru, on the west coast of South America, lat. 12° 2′ 42″ S., long. 77° 7′ 15″ W. Population variously estimated; but may probably amount to from 50,000 to 60,000. In 1524, Pizarro, marching through Peru, was struck with the beauty of the valley of Rimac, and there he founded a city, and gave it the name of *Ciudad de los Reyes*, or City of the Kings. This Spanish name it retains in all legal deeds, but it is better known as Lima. Awful earthquakes occurred here, since solemnly commemorated by annual festivals, A.D., 1586, 1630, 1687, and October 28, 1746. In the last it was almost totally destroyed, as well as Callao.

Callao, the port of Lima, is about six miles west from the latter. The harbor lies to the north of a projecting point of land, in the angle formed by the small uninhabited island of San Lorenzo. Previously to the emancipation of Peru, and the other *ci-devant* Spanish provinces in the New World, Lima was the grand *entrepôt* for the trade of all the west coast of South America: but a considerable portion of the foreign trade of Peru is now carried on through Buenos Ayres, and the former is also in the habit of importing European goods at second hand from Valparaiso and other ports in Chili. The exports from Lima consist principally of silver, which is by far the most important article, copper ore, bark, soap, Alpaca wool, etc. Guano is found in large quantities on some parts of the coast of Peru, but is principally imported from some small islands, opposite to Pisco, where it is found in vast quantities. The great value of guano as a manure is now generally recognized, and it is hardly of less importance as an article of commerce, no fewer than 80,000 tons having been imported in 1847. It was partly, however, brought from Chili and other ports, as well as from Peru; but that from the latter is decidedly the best. The imports consist principally of cotton stuffs, linens, woolens, and hardware, principally from England; silks, brandy, wine, and quicksilver from Spain and France; stock-fish and flour from the United States, indigo from Mexico, Paraguay herb from Paraguay, spices, dye-stuffs, etc. Timber for the construction of ships and houses is brought from Guayaquil. For moneys, weights, and measures, see PERU.

Lime (Ger. *Kalk*; Fr. *Chaux*; It. *Calcina*, *Calce*; Sp. *Cal*; Rus. *Iswest*), an earthy substance of a white color, moderately hard, but which is easily reduced to powder, either by sprinkling it with water or by trituration. It has a hot burning taste, and in some measure corrodes and destroys the texture of those animal bodies to which it is applied. Specific gravity, 2·3. Calcium, the metallic basis of lime, was discovered by Sir H. Davy. There are few parts of the world in which lime does not exist. It is found purest in limestone, marble, and chalk. None of these substances is, however, strictly speaking, lime; but they are all easily converted into it by a well-known process; that is, by placing them in kilns or furnaces constructed for the purpose, and keeping them for some time in a white heat—a process called the burning of lime.—THOMSON'S *Chemistry*. The use of lime as mortar in building, has prevailed from the earliest antiquity, and is nearly universal. It is also very extensively used in this country, and in an inferior degree in some parts of the Continent and of North America, as a manure to fertilize land. But it is a curious fact that the use of lime as a manure is entirely a European practice; and that its employment in that way has never been so much as dreamed of in any part of Asia or Africa. Lime is of much importance in the arts, as a flux in the smelting of metals, in the shape of chlorate in bleaching, in tanning, etc. Lime and limestones may be carried and landed coastwise without any customs document whatever. Its consumption in this country is very great.

Lime (Fr. *Citronier*; Ger. *Citrone*; Hind. *Neembo*), a species of lemon (*Citrus medica*, var. δ C.), which grows in abundance in most of the West India islands, and is also to be met with in some parts of France, in Spain, Portugal, and throughout India, etc. The lime is smaller than the lemon, its rind is usually thinner, and its color, when the fruit arrives at a perfect state of maturity, is a fine bright yellow. It is uncommonly juicy, and its flavor is esteemed superior to that of the lemon; it is, besides, more acid than the latter, and to a certain degree acrid.

Limerick, the principal city of west Ireland, and a parliamentary and municipal borough, river port, and county of itself, and capital county. Limerick, on an island in the Shannon, and on both banks of that river, being partly in county Clare, 50 miles from the Atlantic, and 25 miles N.N.W. Tipperary, with which town it communicates by railroad. Lat. 52° 40′ N., long. 8° 5′ W. Area of border, 70,000 acres. Population 1851, 55,268. Inhabited houses, 5,566. Population of town, 53,274. There are numerous flour mills, but manufactories are very limited; those of lace and fish-hooks are the principal; the trade, consisting of imports of British manufactures, coal, turf, continental and colonial produce, and of exports of corn, meal, butter, beef, pork, is great, and still increasing. Ships of 500 tons unload at the quays, and those of 1000 tons approach within 5 miles of the city, which by steamers on the upper Shannon and by canals, has also a water communication with Dublin.

Lime-tree. Lime-tree, Black Lime-tree, Smooth-leaved Lime-tree, Bass-wood. The *Tilia Americana*, like the European linden, is regarded as one of the finest of forest trees, and when cultivated, proves highly ornamental. In our native woods it often rises more than 80 feet in height, and frequently upward of four feet in diameter; and there is little doubt but, if cultivated, and judiciously treated, it would reach a size little inferior, if not equal, to the European species. Its body is straight, uniform, and surmounted with an ample and tufted summit. In winter it is readily recognized by the robust appearance of the trunk and branches, and by the dark-brown color of the bark on the shoots.

Geography and History.—The *Tilia Americana* is found in Canada and the northern parts of the United States. It becomes less abundant toward the south, except on the Alleghanies, where it is found quite at their termination in Georgia. It is profusely multiplied on the borders of Lakes Erie, Ontario, and in Maine, New Hampshire, and Vermont. It was cultivated in England by Miller, in 1752, but has not been very extensively distributed. The *Tilia Americana laxiflora* is said to abound from Maryland to Georgia, near the sea-coast. It was introduced into Britain in 1820, and is but sparingly cultivated in that country. The *Tilia Americana pubescens* belongs to the southern parts of the United States, Florida, Kentucky, and Texas. It is said to be the only variety found in the maritime parts of Carolina, Georgia, and Florida. Seeds of this tree were carried from this country to England by Mark Catesby, in 1726; but it does not appear to have been much cultivated. The *Tilia Americana alba* is not met with east of the River Delaware, but it is found in Pennsylvania, Maryland, Delaware, Virginia, Ohio, Kentucky, and Georgia. It is said, also, to grow on the River Santee, in South Carolina, and on the Mississippi. It is remarkable, that, although this variety was known in France in 1755, it should not have been introduced into England till 1811.

Properties and Uses.—The wood of the American lime-tree, when dry, weighs 35 pounds to a cubic foot. It is very white, when green, but becomes of a light-brown hue, when seasoned. It is soft, easily worked, and is often sawed into boards, which do not warp, like those formed of resinous trees. In the northern parts of the United States, and in the British prov-

inces, where the tulip-tree does not abound, it is used for the panels of carriage bodies, and the seats of chairs. In Kentucky and the western States, the wood of the white lime is often substituted for that of the white pine. In various parts of the country, it is turned into domestic utensils of various kinds; and is also carved into images for the heads of vessels, and other ornamental work. The young trees are sometimes cut, and employed as rails for rural fences; but they are not durable when thus exposed. The wood is almost useless as fuel, when green, being too full of sap, and of but little value when dry. The cellular integument of the bark is separated from the epidermis, and, after being macerated in water, is formed into ropes, after the manner of making them in Europe, of the other species. The bark was also employed by the Lenni Lenape Indians for making lines and ropes, as well as for covering their habitations. The outer bark of the *Tilia Americana* is rough and stringy, and the inner portion viscid and sweet. The twigs and buds are very glutinous when chewed, and afford considerable nutriment. In severe winters, when fodder is scarce, it is common for the farmers of the British American provinces, as well as those of Maine, New Hampshire, and Vermont, to drive their cattle into the woods in the morning, and fell a bass-wood, or other tree, on which they eagerly browse during the day.

The wood of the European lime-tree, or linden-tree, as compared with that of the oak, the ash, and other timber trees, holds but an inferior rank, and is only used in such works as are not to be exposed to the alternations of moisture and dryness. It is of a pale yellow, or white, close-grained, soft, light, and smooth; and, when seasoned, it is not liable to be attacked by insects. It is used by piano-forte-makers for sounding-boards, and by cabinet-makers for a variety of purposes, as it does not warp under atmospheric changes. It is turned into domestic utensils of various kinds, carved into toys, and turned into small boxes for apothecaries. The most elegant use to which it is applied, is for carving, for which it is superior to every other wood. Many of the fine carvings in Windsor Castle, Trinity College Library, at Cambridge, and in the Duke of Devonshire's mansion, at Chatworth, are of this wood. It is said to make excellent charcoal for gunpowder, even better than alder, and nearly as good as hazel, or willow. Baskets and cradles were formerly made from the twigs; and shoemakers and glovers are said to prefer planks of lime-tree for cutting the finer kinds of leather upon. The leaves of this tree are collected in Sweden, Norway, Carniola, and Switzerland, for feeding cattle; though, in Sweden, Linnæus says, they communicate a bad flavor to the milk of cows. One of the most important uses of the lime-tree, in the north of Europe, is that of supplying material for making ropes and mats; the latter of which enter extensively into European commerce. The Russian peasants weave the bark of the young shoots for the upper parts of their shoes, the bark of the trunks or large branches serving for the soles; and they also make of it, tied together with strips of the inner bark, baskets and boxes for domestic purposes. The outer bark of old trees also supplies them, like that of the birch, with tiles for covering their cottages. Ropes are still made of the bark of this tree in Cornwall, and in some parts of Devonshire. The manufacture of mats from the inner bark, however is now chiefly confined to Russia, and to some parts of Sweden. Trees from six to twelve inches in diameter are selected at the beginning of summer, when, from the expansion produced from the ascending sap, the bark parts freely from the wood. The bark is then stripped from them in lengths of six to eight feet, and is afterward steeped in water till it separates freely in layers. It is then taken out, and divided into ribbons or strands, and hung up in the shade, generally in the forest where it grows, and, in the course of the summer, is manufactured into mats, so much in use by gardeners and upholsterers, and for covering packages generally. The fishermen of Sweden make nets for catching fish, of the fibres of the inner bark, separated by maceration, so as to form a kind of flax or hemp; and the shepherds of Carniola weave a coarse cloth of it, which serves for their ordinary clothing. The sap of the lime-tree, drawn off in spring, and evaporated, affords a considerable quantity of sugar. The honey produced from the flowers is considered superior to all other kinds for its delicacy, selling for three or four times the price of common honey; and it is used in the preparation of medicine, and for making particular *liqueurs*, more especially rosoglia. This lime-tree honey is only produced at the little town of Kowno, on the River Niemen, in Lithuania, which is surrounded by an extensive forest of lime-trees, and where the management of the honey-bee occupies the principal attention of the inhabitants. The Jews of Poland produce a close imitation of this honey, by bleaching the common kind in the open air, during frosty weather. The fruit of the lime-tree had long been thought of little use, till M. Missa, of Paris, by triturating it, mixed with some of its flowers, succeeded in procuring a butter, perfectly resembling chocolate, both in taste and consistency; but, unfortunately, it was found that the lime-tree chocolate would not keep. It has been suggested whether some of the American varieties of *tilia* would not prove successful in this particular. In England, there are many ancient lime-trees, planted in towns, because, in olden times, their odor was considered as purifying to the air, and to be good against epilepsy.—Browne's *Trees of America*.

Line, in Geometry, a quantity extended in length only without breadth or thickness. It is formed by the flux or motion of a point. *Line*, in the art of war, is understood as the disposition of an army ranged in order of battle with the front extended out so that it may be flanked. *Line of battle* is also understood as the disposition of a fleet in the day of engagement; on which occasion the vessels are usually drawn up as much as possible in a straight line, as well to gain and keep the advantage of the wind as to run the same board. *Horizontal line*, in Geography, and Astronomy, a line drawn parallel to the horizon of any part of the earth. *Equinoctial line* in Geography is a great circle on the earth's surface exactly at the distance of 90° from each of the poles, and of consequence bisecting the earth in that part. From this imaginary line the degrees of longitude and latitude are reckoned. In Astronomy, the equinoctial line is that circle which the sun seems to describe round the earth on the days of the equinox in March and September. *Meridian line*, is an imaginary circle drawn through the two poles of the earth and any part of its surface.

Linen (Ger. *Linnen, Leinwand*; Du. *Lynwaat*; Fr. *Toile*; It. *Tela, Panno, lino*; Sp. *Lienza, Tela de lino*; Rus. *Polotno*), a species of cloth made of thread of flax or hemp. The linen manufacture has been prosecuted in England for a very long period; but though its progress has been considerable, particularly of late years, it has not been so great as might have been anticipated. This is partly, perhaps, to be ascribed to the efforts that have been made to bolster up and encourage the manufacture in Ireland and Scotland, and partly to the rapid growth of the cotton manufacture —fabrics of cotton having to a considerable extent supplanted those of linen.

Linen is a fabric of very remote antiquity. Pharaoh arrayed Joseph in vestures of fine linen.—*Gen.*, xli. 42. This article was first manufactured in England by Flemish weavers, under the protection of Henry III. 1253. Before this period woolen shirts were generally worn. A company of linen weavers established itself in London, 1368, and the art of stain-

ing linen became known in 1579. A colony of Scots in the reign of James I., and other Presbyterians who fled from persecution in that country in the succeeding inglorious reigns, planted themselves in the north-east part of Ireland and there established the linen manufacture. It was liberally encouraged by the lord deputy Wentworth, in 1634. Hemp, flax, linen, thread, and yarn, from Ireland, were permitted to be exported duty free, 1696. This law gave rise to the subsequently improved state of the manufacture there. The Irish Linen Board was established in 1711; the Linen-hall, Dublin, was opened, 1728; the Board was abolished in 1828. Dunfermline in Fifeshire, Dundee in Angusshire, and Barnsley in Yorkshire, are, in Great Britain, chief seats of the linen manufacture.

Spinning by the hand is now nearly unknown in Ireland, and the manufacture has disappeared from several parts of the country, where it had been largely introduced, leaving those who were partially dependent on it for subsistence, in a very depressed state. On the whole, however, there can be no doubt that the introduction of the factory system will be, in the end, most advantageous. Belfast has long been the great seat of the manufacture in Ireland, and there it is carried on in large factories furnished with the best machinery, and conducted on the most approved principle. In 1841, there were in the town and its immediate vicinity, 25 steam mills for spinning linen yarn, one of which employed 800 hands. In 1835, the exports of linen goods from Belfast, amounted to 53,881,000 yards of the value of £2,694,000. According to the official returns, there were in Ireland, in 1838, 40 flax-mills employing in all, 9,017 hands. The total average export of linens from Ireland during the 3 years ending with 1825, was 51,947,413 yards, of which 49,031,073 came to this country; the exports to *all* other parts being only 2,916,340. Since 1825, the trade between Ireland and Great Britain has been placed on the footing of a coasting trade; and linens being exported and imported without any specific entry at the custom-house, no account is kept of their quantity and value.

Scotch Linen.—In 1727, a Board of Trustees was established in Scotland for the superintendence and improvement of the linen manufacture. It is not easy to suppose that the institution of this Board could of itself have been of any material service; but considerable bounties and premiums being at the same time given on the production and exportation of linen, the manufacture went on increasing. Still, however, it did not increase so fast as cotton and some others, which have not received any adventitious support, until machinery began to be extensively employed in the manufacture; so that it is very doubtful whether the influence of the bounty has been so great as it would at first sight appear to have been. The regulations as to the manufacture, after having been long objected to by those concerned, were abolished in 1822; and the bounties have now ceased.

Dundee is the grand seat of the Scotch linen manufacture; and its progress there during the last few years has been so extraordinary, that the following details in respect to it may not be unacceptable. The manufacture appears to have been introduced into Dundee some time toward the beginning of last century; but, for a lengthened period, its progress was comparatively slow. In 1745 only 74 tons of flax were imported, without any hemp; the shipments of linen cloth during the same year being estimated at about 1,000,000 yards, no mention being made either of sail-cloth or bagging. In 1791, the imports of flax amounted to 2,444 tons, and those of hemp to 299 tons; the exports that year being 7,842,000 yards linen, 280,000 yards sail-cloth, and 65,000 yards bagging. From this period the trade began to extend itself gradually, though not rapidly. Previously to the peace of 1815, no great quantity of machinery was employed in spinning; but about this period, in consequence, partly and principally, of the improvement of machinery, and its extensive introduction into the manufacture, and partly of the greater regularity with which supplies of the raw material were obtained from the Northern powers, the trade began rapidly to increase. Its progress has, indeed, been quite astonishing; the imports of flax and hemp having increased from about 3000 tons in 1814 to 15,000 tons in 1830, and 40,000 tons in 1845, of which at least 30,000 tons were spun by the mills in the town, the rest being spun in the vicinity. The value of the exports of manufactured goods and yarn, from Dundee, amounts at present (1847) to from £1,600,000 to £1,700,000, a year.

AN ACCOUNT OF THE QUANTITIES OF THE DIFFERENT VARIETIES OF LINEN GOODS EXPORTED FROM DUNDEE DURING EACH OF THE FOUR YEARS ENDING WITH 1845.

Linens.	1831.	1835.	1844.	1845.
	Pieces.	Pieces.	Pieces.	Pieces.
Osnaburgs.....	90,957	139,450	78,816	77,629
Sheetings.....	181,660	165,959	268,345	281,904
Cotton bagging	65,592	80,158	10,524	952
Sundries.....	7,895	12,511	16,009	28,886
Sail-cloth.....	72,268	103,010	118,264	109,861
Sacking.....	45,893	57,177	174,759	192,917
Dowlas.....	40,915	46,733	82,987	73,131
Sundries.....	11,550	13,709	24,887	29,230
Total.....	474,230	618,707	774,591	784,910

It is not easy to give any satisfactory explanation of the remarkable progress of the linen manufacture at Dundee. Something must be ascribed to the convenient situation of the port for obtaining supplies of the raw material; and more perhaps to the manufacture having been long established in the towns and villages of Strathmore, the Carse of Gowrie, and the northern parts of Fife, of which Dundee is the emporium. But these circumstances do not seem adequate to explain the superiority to which she has recently attained in this department; and however unphilosophical it may seem, we do not really know that we can ascribe it to any thing else than a concurrence of fortunate accidents. Nothing, in fact, is so difficult to explain as the superiority to which certain towns frequently attain in particular departments of industry, without apparently possessing any peculiar facilities for carrying them on. But from whatever causes their pre-eminence may arise in the first instance, it is very difficult, when once they have attained it, for others to come into competition with them. They have on their side established connections, workmen of superior skill and dexterity in manipulation, improved machinery, etc. Recently indeed the advantages in favor of old establishments have been, to a considerable extent, neutralized by the prevalence of combinations among their workmen; but it is to be hoped that means may be devised for obviating this formidable evil.

Value of Manufacture.—There are no means by which to form an accurate estimate of the entire value of the linen manufacture of Great Britain and Ireland. Dr. Colquhoun estimates it at £15,000,000; but there can not be the shadow of a doubt that this estimate was, at the time, absurdly exaggerated. In the last edition of this work we estimated the annual value of the manufacture at £7,500,000. But it has increased very rapidly in the interval, principally through the great extension of the exports of France, and its value is at present (1847) certainly not under, if it do not exceed £10,000,000 or £12,000,000. But taking it at the former amount, and setting aside a third part of this sum for the value of the raw material, and another third for profits, wages of superintendence, wear and tear of capital, coal, etc., we have £3,333,000 to be divided as wages among those employed in the manufacture. And supposing each individual to earn on an average £24 a year, the total number employed would be about 133,000. It may be thought, perhaps, that £24 is too low an estimate for wages; and such, no

doubt, would be the case were not Ireland taken into the average. But as many persons are there employed in the manufacture at very low wages, we believe that £24 is not very far from the mean rate.

The rapid increase in the exports of linen goods and yarn, especially the latter, to France (see for an account of this increase the article HAVRE), though latterly they have declined, is wholly a consequence of their comparative cheapness in this country, occasioned by our superior and cheaper machinery. And if the French really wish to rival us in this department of industry, they should endeavor, by reducing or repealing the oppressive duties on iron and machinery imported into France (which would, of course, proportionally reduce the cost of the spinning-mills and power-loom factories), to place their manufacturers and spinners on something like the same footing as ours. In this way they might, perhaps, have some chance of rivalling us; but the attempts that have recently been made to bolster up the manufacture by means of duties, must necessarily fail, and will have no effect but to perpetuate exploded practices, and to promote the trade of smuggling. The British exports of linen goods are also increasing to most other countries, as well as to France; and we are gaining on the Germans in most markets that are equally accessible to both. Hence the decrease of late years in the export of linens from Hamburg. The improvement in the manufacture of damasks and table-linen generally, which is principally carried on in Dunfermline and Kirkcaldy, has been quite as striking as in the other departments of the trade, especially since the introduction of the Jacquard mounting. In fact, table-linen is now shipped from this country for Germany; so that the duty of 10 per cent. on the importation of German damasks and such like fabrics might be reduced or repealed without the measure having any injurious influence over the manufacturer.

TABULAR VIEW OF THE FOREIGN EXPORTS OF LINEN GOODS FROM GREAT BRITAIN FOR EACH YEAR FROM 1821 TO 1852, BOTH INCLUSIVE.

Years.	Value.	Years.	Value.	Years.	Value.
1821....	£1,981,465	1832...	£1,655,478	1843....	£2,702,052
1822....	2,192,772	1833...	2,239,030	1844....	4,075,476
1823....	2,095,574	1834...	2,579,656	1845....	4,104,986
1824....	2,442,440	1835...	3,208,778	1846....	3,706,212
1825....	2,130,705	1836...	3,645,097	1847....	3,619,772
1826....	1,489,647	1837...	2,606,752	1848....	3,292,701
1827....	1,895,186	1838...	3,566,435	1849....	4,108,463
1828....	2,000,033	1839...	4,230,452	1850....	4,845,089
1829....	1,885,831	1840...	4,128,864	1851....	5,067,096
1830....	1,926,256	1841...	4,320,021	1852....	5,867,871
1831....	2,301,803	1842...	3,372,300		

STATEMENT SHOWING THE IMPORTS OF LINEN INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30TH, 1856.

DISTRICTS.	Linen bleached or unbleached.	Hosiery and articles made on frames.	Manufactures not specified.
Passamaquoddy	$1,952	....	....
Portland & Falmouth	18,788	....	....
Gloucester	....	....	$206
Boston & Charlestown	641,293	....	464,159
Niagara	96	....	....
Oswegatchie	1	....	4
New York	7,557,778	$4,852	601,897
Champlain	....	....	798
Cape Vincent	....	....	10
Philadelphia	978,468	....	229,971
Delaware	81	....	....
Baltimore	125,899	11	14,571
Charleston	42,783	24	2,671
Savannah	....	....	400
Mobile	14,862	....	8,843
Key West	859	....	....
New Orleans	381,168	....	12,861
Texas	808	....	997
Saluria	....	28	....
Brazos de Santiago	893	....	68
Detroit	1,615	....	20
Michillimackinac	26	....	....
San Francisco	87,295	....	3,466
Total	$9,849,600	$4,921	$1,854,942

Consumption of Foreign Linens.—According to the returns of the imports and entries of foreign linens for the four years ending with 1844, the consumption of foreign linens in England is quite inconsiderable; the real or declared value of those entered for home consumption in 1844 could hardly amount to £40,000.

Until recently, this manufacture has been neglected in the United States. Lately, however, mills have been erected to test the profitableness of linen manufacture. In Fall River, Mass., new mills have been built, but not long enough in operation to give any statistics.

Linseed. The manufacture of linseed oil has greatly increased within a few years, encouraging the importation of seed from Calcutta and other places. The imports of linseed into Boston from Calcutta for the year 1856 were 1,387,944 bushels, valued at $1,841,719. The imports of linseed into the United States for the year 1856, amounted to 1,696,294 bushels, of which 1,691,875 bushels were from the East Indies.

By the official returns it appears that the imports into the United Kingdoms in 1856 amounted to 1,180,179 quarters of linseed, and to 264,919 of rape-seed, showing a very great increase in both cases as compared with the previous annual arrivals. Annexed are the official returns for the last 16 years, during which the consumption of the manufactured articles has made rapid strides.

Years.	Linseed.	Rape-seed.
	Quarters.	Quarters.
1841	363,461	89,442
1842	367,700	63,685
1843	470,589	87,097
1844	616,947	68,884
1845	656,793	47,677
1846	506,141	87,662
1847	439,519	47,523
1848	799,650	79,970
1849	626,495	29,480
1850	608,984	107,029
1851	690,471	82,394
1852	799,402	146,230
1853	1,035,335	86,815
1854	828,543	109,153
1855	756,950	163,353
1856	1,180,179	264,919

Liquorice (Ger. *Susssholz;* Fr. *Réglisse, Racine douce;* It. *Regolizia, Logoriziu, Liquirizia;* Sp. *Regaliz Orozuz*), a perennial plant (*Glycirrhiza glabra*), a native of the south of Europe, but cultivated to some extent in England, particularly at Mitcham in Surrey. Its root, which is its only valuable part, is long, slender, fibrous, of a yellow color, and when fresh very juicy. The liquorice grown in England is fit for use at the end of 3 years; the roots, when taken up, are either immediately sold to the brewers' druggists, or to common druggists, by whom they are applied to different purposes, or they are packed in sand, like carrots or potatoes, till wanted. The roots of liquorice have been introduced into the middle and southern States, and have thus far been successful. From the increasing demands for this root, it is probable that it could be cultivated profitably. The amount annually imported (and manufactured), is valued at about $300,000.

Liquorice Juice (*Succus Liquoritiæ*), popularly *black sugar*, the inspissated juice of the roots just mentioned. Very little of this extract is prepared in Britain, by far the larger part of our supply being imported from Spain and Sicily. The juice obtained by crushing the roots in a mill, and subjecting them to the press, is slowly boiled till it becomes of a proper consistency, when it is formed into rolls of a considerable thickness, which are usually covered with bay leaves. This is the state in which we import it. Most part of it is afterward redissolved, purified, and cast into small cylindrical rolls of about the thickness of a goose quill, when it is called *refined liquorice*. It is then of a glossy black color, brittle, having a sweet mucilaginous taste. It is used in the *materia medica*, particularly in colds, etc.—THOMSON'S *Chemistry*.

Lisbon, the capital of Portugal, situated on the north bank of the River Tagus, the observatory of the fort being in lat. 38° 42′ 24″ N., long. 9° 5′ 50″ W. Population about 240,000. The Moors are said to have given the name of Lisboa to this city when they conquered it, A.D. 716. It was made the capital of Portugal by Emanuel, 1506. Lisbon was almost destroyed by an earthquake, November 1, 1755. See *Earthquakes*. It became a point of the late war, and the court fled to the Brazils, November, 1807, in which month (the 30th) the French army under Junot entered Lisbon, and held possession of it until the battle of Vimeira, in which they were defeated by the British, under Sir Arthur Wellesley, August 21, 1808. Insurrection at Lisbon, August 21, 1831. Massacre at Lisbon, June 9, 1834. See PORTUGAL.

Port.—The harbor, or rather road, of Lisbon is one of the finest in the world, and the quays are at once convenient and beautiful. Fort St. Julian marks the northern entrance of the Tagus. It is built on a steep projecting rock. There is a light-house in the centre, 120 feet above the level of the sea. At the mouth of the Tagus are two large banks, called the North and South *Cachops*. There are two channels for entering the river; the north or little, and the south or great channel, exhibited in the ordinary charts. On the middle of the South Cachop, about 1½ miles from Fort St. Julian, is the Bugio fort and light-house, the latter being 66 feet in height. The least depth of water in the north channel on the bar is 4 fathoms, and in the south, 6. The only danger in entering the port arises from the strength of the tide; the ebb running down at the rate of 7 miles an hour; and after heavy rains, when there is a great deal of fresh water in the river, the difficulty of entering is considerably augmented. When at such periods, there is a strong wind from the sea, there is a complete break all over the bar; vessels moor up and down the river with open hawse to the southward. In some parts they may come within 200 yards of the shore, being guided by the depth of water, which, from nearly 20 fathoms in mid-channel, shoals gradually to the edge.

Trade, etc.—Lisbon is one of the best situated commercial cities of Europe. But notwithstanding this circumstance, the excellence of the port, and the command of the navigation of the Tagus, her commerce is comparatively trifling. Lisbon has a royal manufactory of fire-arms and powder, and a cannon foundery; other manufactories comprise silks, porcelain, paper, soap, jewelry, and trinkets; none of these, except the last, is in a flourishing state. The despotism, intolerance, and imbecility of the goverement have weighed down all the energies of the nation. The law and police being alike bad, there is no adequate security. Assassination is very frequent. Industry of all sorts is, in consequence, paralyzed; and since the independence of Brazil, commerce has rapidly declined. Formerly Lisbon had about 400 ships, of from 300 to 600 tons burden, employed in the trade with South America. But at present there are not above 50 ships belonging to the port engaged in foreign trade; and, of these, the average burden does not exceed 150 tons! The produce of Portugal sent to foreign countries, is almost entirely conveyed to its destination in foreign ships. The trade between Lisbon and Cork, is, we believe, the only exception to this; it being principally carried on in Portuguese vessels, which take salt from St. Ubes, and bring back butter in return. About 200 small craft belong to the city, which are exclusively employed in the coasting trade. There are neither price currents, shipping lists, nor official returns of any kind, published in Lisbon. The principal exports are lemons and oranges—which, however, are very inferior to those of Spain; wine, particularly Lisbon and Calcavella; wool, oil, tanned hides, woolen caps, vinegar, salt, cork, etc. Besides colonial produce, the principal imports consist of cotton, woolen, and linen goods; hardware, earthenware, dried fish, butter, corn, cheese, timber and deals, hemp, etc.

Money.—Accounts are kept in rees, 1000 of which =1 milree. In the notation of accounts the milrees are separated from the rees by a crossed cypher (θ), and the milrees from the millions by a colon: thus, Rs. 2:700θ500=2,700 milrees and 500 rees. The crusado of exchange, or old crusado=400 rees; the new crusado=480 rees; the testoon=100 rees; and the vinten or vintem=20 rees. The gold piece of 6,400 rees=35s. 11d. sterling; the gold crusado=2s. 3d.; and the milree, valued in gold=67½d. sterling. It appears, however, from assays made at the London mint, in 1812, on modern silver crusados, that the average value of the milree in *silver* may be estimated at 60d. or 5s. sterling. *Weights and Measures.*—The commercial weights are, 8 ounces=1 maro; 2 marcs =1 pound or arratel; 22 pounds=1 arroba; 4 arrobas =1 quintal; 100 lbs. or arratels of Portugal=101·19 lbs. avoirdupois=45·895 kilogrammes=94·761 lbs. of Hamburg=92·918 lbs. of Amsterdam. The principal measure for corn, salt, etc., is the moyo, divided into 15 fanegas, 30 alquiéres, 240 quartos, 480 selemis, etc. The moyo=23·03 Winchester bushels. The principal liquid measure is the almude, divided into 2 potes, 12 canadas, or 48 quartellos; 18 almudes=1 baril; 26 almudes=1 pipe; 52 almudes=1 tonelada. The almude=4·37 English wine gallons; and the tonelada =227½ ditto. A pipe of Lisbon is estimated by the custom-house (British) at 140 gallons; and this pipe is supposed to be 31 almudes. A pipe of port is 160 gallons, divided into 21 almudes of Oporto. Of measures of length, 2 pes=3 palmos=1 covado, or cubit; 1½ covados=1 vara; 2 varas=1 branga. The pe or foot=12·944 English inches; 100 feet of Portugal= 107·8 English feet; the vara=43·2 English inches. For freight a last is reckoned at 4 pipes of oil or wine, 4 chests of sugar, 4000 lbs. of tobacco, 3,600 lbs. of shumac. But from one place in Portugal to another, a tonelada is reckoned at 52 almudes of liquid, or 54 almudes of dry goods. Coffee is sold per arraba; cotton, indigo, and pepper, per lb.; oil, per almude; wine, per pipe; corn, per alquiére; salt, per moyo. Grain, seed, fish, wool, and timber are sold on board. Weights and long measures are the same throughout Portugal; but there is a great discrepancy in the measures of capacity. The almude and alquiére, at the principal places, are in English measures as follows: Lisbon almude=5·37 gals. English wine measure; Lisbon alquiére=3·07 gals. Winchester measure; Oporto almude=6¾ gals. wine measure; Oporto alquiére=3¾ gals. Winchester measure; Faro almude= 4½ gals. wine measure; Faro alquiére=2¾ gals. Winchester measure; Figuiera almude=5¾ gals. wine measure; Figuiera alquiere=3¼ gals. Winchester measure; Vianna almude=6¾ gals. wine measure; Vianna alquiére=3¾ gals. Winchester measure.

Bank of Lisbon.—This establishment was founded in 1822. Its capital consists of about £700,000 sterling, divided into 7000 shares. The shareholders are not liable beyond the amount of their shares. The bank discounts bills not having more than 3 months to run, at 5 per cent. Its dividends, at an average of the 3 years ending with 1831, were about 6 per cent. It enjoys the singular but valuable privilege of having its claims on all estates paid off in full, provided the estate amounts to so much; other creditors being obliged to content themselves with a division of the residue, if there be any.

Port regulations.—All vessels entering the Tagus are obliged to come to anchor off Belem Castle, where there is an office at which they must be entered, their cargoes declared, from whence they come, and whether the cargo be intended to be landed in Lisbon or not: if not, the master applies for "*franquia*," that is, for

leave to remain 8 days in the port for the purpose of disposing of the cargo or of departing with it. Two custom-house officers are then sent on board, and if the cargo is to be discharged at Lisbon, the vessel proceeds to the custom-house, when the master makes entry, delivering the manifest and bills of lading attached to the certificate of the Portuguese consul, at the port of lading, in order to identify the cargo. The officers put on board at Belem are then relieved by two others, who remain until the vessel be discharged and visited by the custom-house searcher. The port dues have to be paid in different offices; but the vessel is not subject to any other charges.

All goods sent on board for exportation must be accompanied by a permit from the custom-house. When the clearances are obtained, the papers are presented by the master, or the ship's agent, to the authorities at Belem, who deliver the signal the vessel is to hoist when going to sea.

There is no regular warehousing and bonding system at Lisbon. All imported dry goods are allowed to remain in the custom-house stores 2 years, and liquids 6 months, without being charged warehouse rent, provided they are intended for consumption, and pay the duties accordingly. But if, after that period, they are then taken out to be exported, they are charged 2 per cent. duty.

Port Charges.—On a foreign ship of 300 tons entering the port of Lisbon, with a general or mixed cargo, and clearing out with the same:

	Rees.
Royal passport	7,200
Petty expenses on entering at the Custom house, about	700
Anchorage	500
Ballast clearance	400
Tonnage, 100 rees per ton	30,000
Lights, 50 rees per ton	15,000
Contribution to board of trade	1,500
Petty charges	720
Bill of health	240
Total	56,260=£11 6s. 0d.

Vessels coming with a cargo, or in ballast, and departing in ballast, pay 200 rees per ton lights, or 4 times as much as if they sailed with cargoes. Vessels coming with a cargo, and sailing with the same cargo, pay no tonnage duty.

Commission—The ordinary rates of commission are, on the sale of goods, 2½ per cent.; *del credere*, 2½ per cent.; on the value of goods landed from a vessel putting in to effect repairs, 1 per cent.; on ship's disbursements, 5 per cent.

Insurances are effected to a trifling amount. There is one national company for effecting insurances; but it enjoys little credit.

Tares are not regulated by any certain rule. Those allowed are generally those invoiced or marked on the package. See *Annuaire du Commerce Maritime*, p. 290; KELLY's *Cambist*; CONSULS' *Answers* to *Circular Queries*, etc.

Litharge (Ger. *Glötte, Glätte*; Du. *Gelit*; Fr. *Litharge*; It. *Litargirio*; Sp. *Almartaga, Litarjirio*; Rus. *Gilet*; Lat. *Lithargyrium*), an oxyd of lead in an imperfect state of vitrification. Most of the lead met with in commerce contains silver, from a few grains to 20 ounces or more in the fodder: when the quantity is sufficient to pay the expense of separation, it is *refined*; that is, the metal is exposed to a high heat, passing at the same time a current of air over the surface: the lead is thus oxydised and converted into *litharge*, while the silver, remaining unchanged, is collected at the end of the process.—THOMSON's *Chemistry*. Litharge is used for various purposes in the arts, by potters, glass makers, painters, etc.

Litre. The French standard measure of capacity in the decimal system. The litre is a cubic decimetre; that is, a cube, each of the sides of which are 3·937 English inches; it contains 61·028 English cubic inches, and is, therefore, rather less than our *quart*. Four and a half litres are a close approach to the English imperial *gallon*.

Live Oak. Under acts of Congress, the President of the United States is authorized to take measures for the protection of the live oak timber growing on lands owned by the United States in Florida and elsewhere. Persons cutting or removing live oak or red cedar, and other timber belonging to the United States (without authority), are subject to imprisonment for twelve months and to a fine: the vessels engaged in such unlawful removal are subject to forfeiture, and the captain to a fine of $1000. (Act of 1831.) See OAK.

Liverpool, a borough of England, in Lancashire, and one of the greatest commercial towns in the world, is situate on the Mersey, along which it extends for nearly six miles. For five miles of this distance a line or chain of docks runs parallel with the river, and from these docks, at intervals, streets extend at right angles, tolerably direct, to the extremity of the boundary. These are crossed by streets more or less parallel to the river; but as the town grew up rather suddenly, no great attention was paid to regularity. The boundary line, from where it touches the river at the south, to its termination at Bootle Bay, embraces a circle of about eight miles. As yet the extremities are imperfectly filled up, but in some places the houses extend beyond the line.

History.—Local archæologists have been eager to invest the town with the dignity of a remote antiquity; but their labors have not been very successful. In *Doomsday Book* the name does not appear, although sites within its present boundary are mentioned. Mr. Picton, in his admirable paper on "Ancient Liverpool," contends that the place mentioned as *Smedone* must have represented Liverpool, and that *Smedone* is identical with Smithdown, now one of the southern streets. This, however, is not likely, for Smithdown was remote from ancient Liverpool, and on the south side of the Pool, then called Mersey Sea. The name has been a subject of unsatisfying contention; for although the final syllable *pool* is derived from the locality, *liver* is of doubtful origin. In early times the town was called indifferently *Lirpool, Litherpool, Lithpool*, and *Liferpole*. *F* and *v* were commutable; but, in the most ancient records, the name is written indifferently *Lithepol* and *Lithepols*. Mr. Baines, in his *History of Liverpool*, is disposed to think that *lithe* must be accepted for *sea*, and thus the derivation will be the pool on the sea. Originally the place was only a small fishing village; for the Mersey, up to a very recent period, was remarkable for its supply of salmon and other fish. The first authentic record of the town is found in a charter of Henry II., in the year 1173, declaring that the estuary of "the Mersey shall be for ever a port endowed with all the liberties belonging to a port of the sea, and that the men of Lyrpul, near to Toxteth, may come and go from each side of the sea with their ships and merchandise free and without obstruction." It is supposed that his majesty in this charter had reference to the conquest of Ireland; for, not content with the bestowal of a barren privilege, he actually erected dwellings called burgage houses, the tenants of which were the primitive freemen of Liverpool. These houses continued to yield a rental to the crown up to the time of Elizabeth, and constituted, to a great extent, the dwellings of the inhabitants. In 1207 King John granted the town a charter, as follows: "Know ye, that we have granted to all our faithful subjects who have taken burgage houses at Liverpool, that they may have all the liberties and free customs in the town of Liverpool which any other free borough upon the sea has in our territories. And, therefore, we command you, that, securely and in our peace, you may come thither to receive and dwell in our burgage houses; in witness whereof, we transmit to you these our letters patent. Witness—Simon de

Pateshill, at Winchester, the 28th day of August, in the 9th year of our reign."

The first palpable step in advance taken by the town was in the reign of Charles II. A new world had then been opened to the enterprise of the old; and Liverpool invited to its port such trade as was created by the infant manufactures of Lancashire, Yorkshire, and Cheshire. As the plantations in America increased, so did the trade of Liverpool; and from an early period her merchants took a prominent part in the slave-trade. She sent out ships to Africa, conveyed their live burdens to America and the West Indies, and in return brought back to the Mersey the sugar, tobacco, and other produce of those regions. The English merchants and ship-owners had competed successfully with the Spaniards and Portuguese; but it was not until 1708 that the first slaver was despatched from the Mersey. Having entered on the trade, they soon participated largely in it; for, in 1752, 101 Liverpool merchants were engaged in the slave traffic, 135 appertaining to London, and 157 to Bristol. The number of Liverpool vessels engaged in the American and West India trade was 106, and of these 88 were slavers. In due time this trade greatly increased; and that it enriched Liverpool may be inferred from the fact that the greater portion of the West Indies belonged to merchants of this place. This trade, however, like every other, was affected by war. It almost ceased during the French war of the 18th century, and the merchant ships unemployed were eagerly converted into privateers. At first the gain was immense; but subsequently the French predominated, and Liverpool suffered severely by the privateers of the enemy. On the return of peace trade was resumed, but not with any accelerated force until the inventions of Arkwright and others created the cotton trade in Lancashire. The war of American Independence had the worst possible effect on the prosperity of Liverpool; and the late war of the French Revolution at first operated most adversely. Still, two circumstances obviated these bad effects. The great increase of population and trade in the United States of America created a demand for British manufactures, and these manufactures had nearly all to pass from the Mersey, which received in return the raw produce indirectly paid for them. At the close of the war Liverpool was still advancing, but not so rapidly as within the last 25 years. The population of the old borough in 1801 was 77,000; in 1811, 94,000; in 1821, 118,000; in 1831, 203,000; in 1841, in the new borough, 286,000; and in 1851, 376,000. The usual rate of increase from 1851 to 1857 will have augmented the population to more than 400,000, and latterly it has gone on in accelerated ratio. Proof of this is derived from the fact, that the number of new houses erected in 1855 was 1355, while in 1856 it was 1703.

Trade of the Port.—In 1750 Liverpool had only 20 sailing vessels engaged in the continental trade; now she has treble that number, and fleets of screw steamers, which constantly visit every port in the Mediterranean, and render the Mersey a medium of communication between France, Holland, Belgium, and America. The East Indies, too, have been opened to Liverpool enterprise. Since the alteration in the Company's charter, and in the amount of business done in the East, Liverpool stands next to London. Another trade she has almost monopolized—the Australian trade. Her clipper vessels are admitted to be the finest in the world, and, in consequence, the emigration to the antipodes is the largest from this port, and the return cargoes the heaviest; for necessarily the freights are low, as more goods go than come, and cheapness induces shippers to send their wool here rather than to London, although London is the principal market. But Liverpool is now creating a wool market of her own. The first authentic account of the number of vessels entering the port dates from 1577; and the following returns indicate at a glance the progress of the trade:

Years.	Vessels.	Tonnage.	Dock duties.
1757.....	1,371	....	£2,386
1780.....	2,261	....	3,528
1800.....	4,746	450,000	23,879
1820*.....	7,277	805,088	94,412
1830.....	11,214	1,411,264	151,359
1840.....	15,998	2,445,708	178,196
1850.....	20,457	3,586,3.7	211,743
1856.....	20,886	4,820,618	336,801

* This is the first year when goods were rated as well as ships.

The custom-house revenue collected in the port was, in 1855, £3,576,344, 2s. 8d., and 1856, £3,824,177, 14s. 8d., showing an increase of £247,848, 12s. The last quarter of 1856 exhibits a comparatively further increase of £118,581 over the corresponding quarter of 1855. The town dues now produce more than £120,000 a year, and there is another impost called light-dues, which produced in 1856 £90,965, against £86,182 in 1855. These light-dues go altogether to the Board of Trade, and are disposed of as passing tolls. The greater number of vessels frequenting the port comes from the United States of America; for the great trade of Liverpool is in cotton, and the cotton supplied comes in largest quantities from the southern States of the Union. The following returns will give a correct idea of the progress of this trade. In 1770 there were imported into Liverpool 6037 bags 3 bales 3 barrels of raw cotton; but since the improvements of Hargreaves and Arkwright in spinning, the trade has greatly increased. Thus the importation was, in

	Pounds.		Pounds.
1780.....	6,766,613	1830.....	261,951,452
1800.....	56,010,732	1840.....	583,400,000
1820.....	143,672,635	1850.....	685,600,000

In 1856 there were imported into Liverpool 2,028,850 bales of cotton. A large trade is carried on in flour, grain, and corn. The imports of these in 1856 were:

Wheat.....qrs.	1,870,152	Flour.....sacks	232,704
Corn..... "	897,407	" ....barrels	1,188,260

Two thirds of all this came from the United States. The quantity re-exported is small. The total sugar imported in 1856 was 76,000 tons, of which 17,840 tons were from the British West India plantations, 18,555 from Bengal, and 19,996 from Brazil.

Docks.—For carrying on a trade so large great facilities are afforded. In 1715 the first dock was constructed with an area of 8½ acres. This sufficed for 42 years; but, at an interval of 18 years, another dock appeared, and within a period of 50 years five additional docks were made. In 1826 the corporation filled up the primitive dock in order to erect the custom-house on its site. In consequence of this proceeding, and the rapid increase of buildings, none of the docks run inland, but all extend along and parallel with the river. From 1830 to 1842, eight new docks were opened; and from 1845 to 1852, not less than 14 docks and basins have been added. The total water space afforded by the docks is 200 acres; and the quays measure 14 miles in length. The river wall is 5 miles 200 yards long; the total area of the dock estate is 712 acres. No other port can present any thing to be compared with the Liverpool Docks. One serious inconvenience, however, is, that running along the river wall, they interrupt the approaches to the ferries, and when the gates are open, stop intercourse for a short time altogether. To remedy this, an immense landing stage, constructed by Mr. Cubitt, has been placed at St. George's Pier, and this has not only promoted the comfort of passengers, but served as a very popular promenade. Another landing-stage has been constructed, three times the size of the former one, at a cost of £150,000. Means, too, are under consideration for facilitating approach to the ferries. Until 1826 there were few warehouses on the dock quays. The warehouses are in general up the town, or at some dis-

tance from the quays. The inconvenience of this provoked a lively agitation among the merchants, and, through the great exertion of several members of the council, the Albert Dock was constructed and surrounded, like St. Katherine's Dock, London, by piles of ponderous warehouses. Stanley Dock has since also been surrounded by warehouses, and the new Wapping Docks are to have the same advantage. Extensive as the dock accommodation is, it is no longer adequate to the wants of the port. Several new docks are projected at the north end, on land reclaimed from the bay, under a certain understanding with the Earl of Derby; and in 1854 the corporation became purchasers of the Birkenhead Dock and estates for a sum of £1,143,000. But these docks, to be rendered available, will require a further outlay of £800,000. The constitution of the dock management has undergone some changes. The corporation having been the first projectors and supporters of the docks, were recognized as trustees of the estate. Under the act 51st George III. the committee consisted of 21 persons, all members of and appointed by the common council, and this continued until the passing of the act 6th George IV., 1825, when the dock rate-payers were first directly represented by returning 8 members to the committee; the council electing 13, including the chairman, and the council having a veto on the proceedings. This continued until the act of 1851, by which a committee of 24 is appointed—12 by the council and 12 by the dock rate-payers. The committee appoint their own chairman and deputy-chairman; the chairman being, however, one of the 12 members elected by the council. The council have also a veto on the proceedings of the committee by a majority of two thirds. The care of the port is divided between the dock committee and the corporation. The latter constructed the light-house and built the Wallasey embankment, to prevent the sea encroaching on the district and impairing the channels leading to the river; and the former provide buoys, and a marine surveyor whose duty it is to note the shifting of the sandbanks, and give notice to the pilots and mariners.

Ship-building.—There are several eminent shipbuilders in Liverpool, but of late the greater part of the trade has been in repairing and in the building of iron ships. There are five building-yards on the Lancashire side of the river, and three on the other side. Those on the Cheshire side combine graving with building docks, and, although there are several graving docks on the Liverpool side, they are found to be inadequate to the wants of the port. As might be expected, a large trade is carried on in ships. In 1856, 694 ships, of 328,991 tons were sold, and of these one fifth were bought by foreigners. Liverpool is a place of trade rather than of manufactures, and those manufactures which exist are more for the supply of local wants than for general purposes. An attempt was made to establish a cotton manufactory, but without success.

Next to London, the corporation of Liverpool is decidedly the richest in the kingdom. At first her income was miserably small, and centuries passed without improving it; but in 1777 the corporation purchased from Lord Molyneaux, for £2250, his reversion, expectant on the determination of his lease in the town dues, and these rose gradually from £20,000 a year to £120,000. The income of the corporation is also derived from land within the town, from markets, and from police rates—the whole estimated at £238,000 for 1857. The claim to the town dues has often been questioned. A case was tried in the Court of King's Bench in 1831, and decided in favor of the corporation; but in 1856 government brought in a bill to abolish them. Great resistance being offered, a select committee was appointed; it heard evidence, but made no report. The people of Manchester are opposed to these dues, and it is believed that ultimately there must be a compromise. The dues consist of small sums, hardly appreciable in amount, collected on merchandise. The dock-rates belong to no special interest, being devoted not to demands, but simply to interest of money borrowed, and the cost of working.

With the increase of trade and wealth, the mode of doing business underwent a great change. At the beginning of the present century the merchant had his counting-house and warehouse behind his dwelling-house. These mansions may now be seen in Hanover-street, Duke-street, Seel-street, and others, bearing still, in their architecture, evidence of cost and taste, although now mostly devoted to meaner uses. 30 years later the mercantile offices began to gather about the Exchange; mean buildings were transformed into lordly edifices; and as much as £600 or £800 a year is now (1857) paid for a suite of rooms on a single floor. Such rents are, of course, temptations to an increase of buildings; and in 1856 as much as £47 a square yard has been paid for building-land near the Town-hall. All the opulent classes live in the environs. Up to the year 1833 New Brighton was a sand-hill, without a single tenement on it; now it is covered with villas. The villas cover the hills and crowd the gorges, which extend from the Red Noses to Rock Ferry; while on the Lancashire side, Aigburth, Allerton, Woolton, Wavertree, Old Swan, Knotty Ash, West Derby, Walton, Crosby, Litherland, Waterloo, and Bootle, have been entirely occupied by the mansions and villas of the opulent people of Liverpool.

The mercantile offices which have sprung up around the Exchange are remarkable for their architectural beauty, as well as for their convenience. Water-street, from the Town-hall to George's Dock, presents a succession of such buildings. On the site of the old tower, the last remnant of the Castle, have been erected the Tower Buildings—a mass of counting-houses, ornamented toward the river by an Italian tower, now used as a semaphore telegraph station. Fenwick-street, at right angles with Water-street, presents a succession of buildings equally beautiful. The Corn Exchange is in Brunswick-street; and in the same street is the Union Bank, a perfect architectural *bijou*; and a little further on, in James-street, at the top of Fenwick-street, is the North and South Wales Bank, equally entitled to notice. In Castle-street stands the Branch Bank of England, constructed by Mr. Cockerell; and in the same street the Commercial Bank Buildings, erected after Mr. Cunningham's design. North John-street, which runs parallel with Castle-street, is entirely devoted to offices; and in Dale-street are situated the Royal Bank Buildings, remarkable for boldness of design. The Custom-house, which stands at the foot of South-street, was built after a design of John Foster, at the cost of £283,801. The estimate was £175,000; and although the building is an imposing one in appearance, it is regarded as not fully answering its purposes. In front of it is a bronze statue of Huskisson, by Gibson. Part of the custom-house is used as a dock-office, and another part of it as the post-office; for neither of which is the building particularly suitable. To the east of the custom-house is the Sailors' Home, which is admirably adapted to the intended object of the Marine Board, and for a sailors' dépôt.—E. B.

Breakwater for Liverpool.—Mr. George Rennie, C. E., has projected for the port and harbor of Liverpool a jetty or breakwater, from the Black Rock Point, at the entrance of the Mersey, on the Cheshire shore, in a line nearly parallel to the Lancashire shore. The breakwater will take a north-westerly direction and curve outward toward the Victoria Channel, across the Brazil and Burbo Banks, for a distance of upward of three miles, when it will be ended by a light-house. Simultaneously with the construction of a breakwater, it is proposed to continue the line of quay wall of the

north docks, in a direction curving inward as far as Formby Point, so as to assimilate the form of the entrance into the Mersey to a trumpet's mouth. The advantages proposed by this plan are said to be: 1. The general improvement of the entrance into the harbor, by which the flow and ebb of the tides will be more regular and more favorable to the deepening and preserving the low water channels, and to their navigation generally. 2. The protection of the north docks (occasionally inaccessible in stormy weather), and of the Bootle and Formby shores from the violent effects of the prevailing winds. 3. The acquisition of nearly 2000 acres of valuable land, which will be inclosed between the new wall and that shore. 4. The valuable conversion of from 30,000 to 40,000 acres of sand-banks now rapidly accumulating and rising above low water, along the whole shore in front of the Leasowes, from the Rock Point to the entrance of the Dee estuary at Hilbre Point. 5. The prevention from entering into the harbor of vast quantities of drift sand which come from the North Burbo banks, in south-westerly gales. 6. The prevention of many shipwrecks and loss of lives and property which occur annually. 7. The reduction to a minimum of the great expenses now incurred in maintaining the lights, buoys, steam-tugs, dredgers, etc., now employed in preserving the direction and depth of the sea channels, and which heavily tax the 40,000 ships and 4,000,000 of tons carried by them annually. Finally, the preservation and improvement of the port and harbor of Liverpool, and which, like its neighbor, the estuary of the Dee, will be entirely ruined if prompt measures be not taken to prevent it. The following table shows the grain trade of Liverpool:

COMPARISON OF IMPORTS OF GRAIN, ETC., INTO LIVERPOOL FOR TWELVE MONTHS ENDING 30TH SEPTEMBER, 1852, 1853, 1854, 1855, AND 1856.

Years.	WHEAT.			FLOUR.				OATS.	
	Coastwise and Ireland.	Colonial.	Foreign.	British.	Foreign.		Colonial.	British.	Foreign.
	Quarters.	Quarters.	Quarters.	Sacks.	Sacks.	Barrels.	Barrels.	Quarters.	Quarters.
1852	20,030	21,780	475,199	81,584	140,507	930,458	78,055	186,223	22,491
1853	22,147	47,651	880,770	35,550	207,886	1,080,658	85,525	171,943	5,445
1854	25,565	43,021	761,676	27,474	172,591	1,281,449	77,707	167,064	2,206
1855	39,985	4,943	891,007	51,411	304,808	70,674	11,168	157,211	1,612
1856	59,817	66,957	1,017,605	52,526	231,447	1,016,587	121,345	182,271	4,721

COMPARISON OF IMPORTS OF GRAIN, ETC., INTO LIVERPOOL.—*Continued.*

Years.	BARLEY.		BEANS.		PEAS.		OATMEAL.	INDIAN CORN.	INDIAN CORN MEAL.
	British.	Foreign.	British.	Foreign.	British.	Foreign.	British.	Foreign.	Foreign.
	Quarters.	Quarters.	Quarters.	Quarters.	Quarters.	Quarters.	Loads.	Quarters.	Barrels.
1852	35,523	28,396	13,139	118,336	7,768	4,911	277,312	211,526	712
1853	22,103	18,024	9,915	103,631	13,958	9,100	548,838	304,360	228
1854	29,069	25,258	9,535	76,247	7,582	3,543	324,621	814,008	37,440
1855	16,944	16,591	3,894	126,498	3,685	9,823	851,220	765,299	4,882
1856	12,396	14,139	2,776	127,218	16,940	16,898	287,710	775,394	3,699

COMPARISON OF EXPORTS OF GRAIN, ETC., FROM LIVERPOOL FOR TWELVE MONTHS ENDING 30TH SEPTEMBER, 1852, 1853, 1854, 1855, AND 1856.

Years.	WHEAT.		FLOUR.		OATS.		BARLEY.	
	Coastwise and Ireland	Foreign.	Coastwise and Ireland.	Foreign.	Coastwise.	Foreign.	Coastwise.	Foreign.
	Quarters.	Quarters.	Sacks.	Barrels.	Quarters.	Quarters.	Quarters.	Quarters.
1852	127,607	1,657	42,403	346,932	29,246	750	937	....
1853	130,458	6,811	72,098	228,440	26,684	2,896	627	284
1854	116,258	4,994	83,410	293,367	18,820	2,984	13,527	7,252	275
1855	38,477	972	60,514	37,937	16,585	1,048	85,153	2,939	810
1856	108,932	17,324	85,107	88,520	39,095	898	42,629	6,061	569

COMPARISON OF EXPORTS OF GRAIN, ETC., FROM LIVERPOOL.—*Continued.*

Years.	BEANS.		PEAS.		OATMEAL.	INDIAN COR...	INDIAN CORN MEAL.	
	Coastwise.	Foreign.	Coastwise.	Foreign.	British and Foreign.	Coastwise.	Foreign.	British and Foreign.
	Quarters.	Quarters.	Quarters.	Quarters.	Loads.	Quarters.	Quarters.	Barrels.
1852	12,068	....	419	....	....	185,574	....	8,434
1853	3,174	218	865	135	18,747	123,412	191	9,872
1854	7,758	63	242	104	33,743	482,501	2,277	22,793
1855	6,698	69	370	615	8,911	592,995	14,857	12,503
1856	11,917	683	4,989	968	7,737	361,088	5,195	6,499

For a full exhibit of the commerce of Great Britain, including a statement of that of Liverpool, see articles GREAT BRITAIN and ENGLAND.

LIVRE. From about the year 800, in the reign of Charlemagne, to the year 1103, in that of Philip I., the French *livre*, or money unit, contained exactly a pound weight of twelve ounces (*poids de marc*) of pure silver. It was divided into 20 sols, each of which, of course, weighed 1-20th part of a pound. This ancient standard was first violated by Philip I., who diminished considerably the quantity of pure silver contained in the sols. The example, once set, was so well followed up, that in 1180 the livre was reduced to less than a *fourth* part of its original weight of pure silver. In almost every succeeding reign there was a fresh diminution. "La Monnoye," says Le Blanc, "qui est la plus précieuse et la plus important des mésures, a changé en France presque aussi souvent que nos habits ont changé de mode." And to such an extent had the process of degradation been carried, that, at the epoch of the Revolution, the livre did not contain a *seventy-eighth* part of the silver contained in the livre of Charlemagne. It would then have required 7885 livres really to extinguish a debt of 100 livres contracted in the ninth or tenth century; and an individual who, in that remote period, had an annual income of 1000 livres, was as rich, in respect to money, as those who, at the Revolution, enjoyed a revenue of 78,850 livres. (PAUCTON, *Traité des Mésures, Poids, etc.*, p. 693.) It was not to be expected that degradations originating in the necessities, the ignorance, and the rapacity of a long series of arbitrary princes, should be made according to any fixed principle. They were sometimes the result of an increase in the denomination of the coins, but more frequently of a diminution of the purity of the metal of which they were struck. A degradation of this kind was not so easily detected; and in order to render its discovery still more difficult, Philip of Valois, John, and some other kings, obliged the officers of the mint to swear to conceal the fraud, and to endeavor to make the merchants believe that the coins were of full value. (LE BLANC, p. 212.)

Sometimes one species of money was reduced, without any alteration being made in the others. No sooner, however, had the people, in their dealings, manifested a preference, as they uniformly did, for the money which had not been reduced, than its circulation was forbidden, or its value brought down to the same level with the rest. By an enactment of Congress, the commercial value, in the United States, of a livre tournois of France, is fixed at 18½ cents.

Lloyd's, a number of rooms in the Royal Exchange of London, frequented by underwriters, merchants, ship-owners, ship and insurance brokers, and others, chiefly for the purpose of obtaining shipping intelligence, and of transacting business connected with marine insurance. The principal room is that of the Underwriters, in which two enormous ledgers lie constantly open, the one containing notices of *speakings*, or ships spoken with, and arrivals of vessels at their various destinations; the other recording disasters at sea. All intelligence is entered immediately upon its reception, without removing the ledgers from their places, in order that they may at any moment be inspected by those interested in their contents. At the inner end of the room is an ingenious piece of mechanism, by means of which the indications of an anemometer and an anomoscope are inscribed every hour in the 24, by a couple of pencils, upon a sheet of white paper. The advantage to the underwriter, in the conduct of his business, of this information respecting the force and the direction of the wind, can scarcely be over-estimated. The underwriters are persons who, for a premium, grant an indemnity to merchants against risks by sea; and they are so called from the custom of *writing* their names *under*, or at the foot of the policies of insurance. The method of *effecting* an insurance at Lloyd's is the following: When a broker receives an order to insure interest to a certain amount in a particular ship, he writes upon a slip of paper the name of the vessel, the master's name, the nature of the voyage, the subject to be insured, and its value, and any other information which the circumstances of the case may require. He then offers the risk to different underwriters until the value of the interest to be insured is exhausted, each underwriter subscribing his name opposite to the amount he engages to insure, and all agreeing to accept a uniform premium. The insurance is now virtually effected; the stamped policy being afterward extended from this slip. This distribution of the risk among many individuals is, of course, very conducive both to the solvency of the underwriter and to the security of the insured. The number of underwriters is under 200; but some idea of the immense amount of insurance business done at Lloyd's may be derived from the fact, that the value of the interest annually insured at the present is estimated at about £40,000,000. No person is permitted to transact business at Lloyd's as an underwriter or insurance broker until he shall have been duly admitted as a member, and shall have paid an entrance fee. Communicating with the Underwriters' Room is the Chart Room. Here a valuable collection of charts, and shipping intelligence as originally received, are carefully arranged, so as to be at all times easy of access. In this room also lie, for the use of members, four ledgers, in which the names of ships are arranged in alphabetical order, each name having under it all the information possessed regarding the vessel. The Merchants' Room is a place of resort for general news; it is, in fact, a news or reading-room. The Captains' Room is employed as an auction-room for sales of ships, etc. Every person who enjoys the privilage of frequenting Lloyd's pays a fixed annual subscription.

The shipping intelligence received at Lloyd's is furnished by agents, who are appointed for the purpose; and as there is scarcely a port of any consequence where one is not resident, their number is very large. The information which each transmits to head-quarters is regular, accurate, and complete. It is furnished by means of *letters*, signed by the agents, and by means of the newspapers, and shipping lists which are published at the various ports; the intelligence thus received consisting not only of lists of vessels which had arrived at and which had sailed from the particular ports, together with their accomplished and intended voyages, and of casualties which had occurred at or near the ports, but also of notices of ships spoken with, and of casualties at sea, furnished by vessels. No salary attaches to the office of agent for Lloyd's; the labor involved being amply recompensed by the business which it commands, and by the credit which the appointment confers upon its holder as a person of worth and respectability. The intelligence, besides being made known to the members of Lloyd's by means of the ledgers, of which we have already spoken, is published every afternoon in *Lloyd's List* for diffusion over the country. The management of Lloyd's lies with the subscribers, who select a committee from their number for the purpose, called the "Committee for managing the affairs of Lloyd's." This committee appoints the agents and the officials of the establishment. The expenses connected with the establishment are defrayed by the fees and annual subscriptions.

The designation *Lloyd's* originated with a person of the name of Lloyd, who kept a coffee-house in Abchurch Lane, Lombard-street. From the vicinity of this house to the Old Royal Exchange, it speedily became a rendezvous of merchants for news, and for the transaction of business. It was afterward removed to Pope's Head Alley, and thence again, in 1774, to the Royal Exchange. After the destruction of the Exchange, in 1838, by fire, which originated in Lloyd's, the business was carried on in the South Sea House, in Old Broad-street, where it remained until the opening of the present Royal Exchange, in 1844, when it was finally removed to its present splendid apartments. Similar establishments exist in our principal sea-ports. *Lloyd's Register of British and Foreign Shipping*, a volume published annually, and furnishing information respecting the nature of vessels, their class, place where built, materials, owners, captains, age, repairs, etc. The ships are registered according to the reports of salaried agents, appointed at various ports. The office of this *Register* is in White Lion Court, Cornhill, and is quite distinct from Lloyd's of the Exchange.—E. B.

Loadstone (Ger. *Magnet*; Du. *Magneet*; Fr. *Aimant*; It. *Calamita*; Sp. *Iman*; Rus. *Magnit*; Lat. *Magnes*). M. Haüy observes, that the ores in which the iron contains the least oxygen without being engaged in other combinations, form natural magnets; and he calls the *loadstones* of commerce, which are found in considerable masses in Germany, Sweden, Norway, Spain, Italy, China, Siam, the Philippine Isles, Corsica, and Ethiopia, *oxydulated iron*. The loadstone is characterized by the following properties: A very strong action on the magnetic needle. Specific gravity 4·2457; not ductile; of a dark gray color, with a metallic lustre; primitive form, the regular octahedron; insoluble in nitric acid. This singular substance was known to the ancients; and they had remarked its peculiar property of attracting iron; but it does not appear that they were acquainted with the wonderful property which it also has of turning to the pole when suspended, and left at liberty to move freely. Upon this remarkable circumstance the mariners' compass depends—an instrument which gives us such infinite advantage over the ancients. It is this which enables the mariner to conduct his vessel through vast oceans out of the sight of land, in any given direction; and this directive property also guides the miner in subterranean excavations, and the traveler through deserts otherwise impassable. The natural loadstone

has also the quality of communicating its properties to iron and steel; and when pieces of steel properly prepared are touched, as it is called, by the loadstone, they are denominated artificial magnets." See COMPASS. Its virtues were but indistinctly known to the ancients, yet its attractive quality had been taken notice of from very remote times.—*Sturmius.* Aristotle assures us that Thales made mention of it, and Hippocrates speaks of it under the name of stone that attracts iron; and Pliny was struck with its attractive power. The polar attraction of the loadstone was, it is said, known in France before A. D. 1180; but this honor is accorded to Roger Bacon about 1267. The Italians discovered that it could communicate its virtues to steel or iron; and Flavio Giojo, of Amalfi, was the inventor of the mariners' compass.—*Haydn.*

Loans. Those for the service of the crown of England were generally borrowed at Antwerp until after the reign of Elizabeth. In 1559, the queen borrowed £200,000 of the city of Antwerp, to enable her to reform her own coin, and Sir Thomas Gresham and the city of London joined in the security.—*Rapin.* The amount of the English loans, during four late memorable periods, was, viz.:

Seven years' war, 1755—1763.....	£52,100,000
American war, 1776—1784.....	75,500,000
French Revolutionary war, 1793—1802...	163,500,000
War against Bonaparte, 1803—1814	206,800,000

Besides the property tax. In 1813 were raised two loans of 21,000,000 and 22,000,000; and it deserves to be recorded, that a subscription loan to carry the war against France was filled up in London in 15 hours and 20 minutes, to the amount of £18,000,000, December 5, 1796.

Lobos, or Seal Islands, two groups of guano islands in the Pacific Ocean, lying off the coast of Peru. The landward and northern group are about 20 miles west of the main land, in S. lat. 6° 29′, W. long. 80° 53′, and consist of one large island, 5 miles long by 2 in breadth, with several rocky islets. The seaward group lie about 38 miles from the main land, in S. lat. 6° 56′, W. long. 80° 55′, and consist of two islands of about the same size, viz., 1 mile long by 1 in breadth, and separated from each other by a narrow channel. Both belong to Peru, although unsuccessful attempts have been made at various times by private companies to obtain possession of them. On the north group there is estimated to be a deposit of guano of about 400,000 tons, and on the other islands of more than 200,000 tons. The only inhabitants are those employed in the shipment of the manure, and consisting chiefly of Indians and Chinese.

Lobster (Fr. *Ecrevisse;* Lat. *Cancer*), a fish of the crab species. The Scilly Islands and the Land's End abound in lobsters, as well as several places on the Scotch shores, particularly about Montrose. But the principal lobster fishery is on the coast of Norway; whence it is believed about 1,000,000 lobsters are annually imported into London. Those of Helligoland are, however, esteemed the best; they are of a deeper black color, and their flesh is firmer than those brought from Norway.

Loch. The Scotch term for *lake,* which see.

Lock, in Internal Navigation, is a part of a canal included between two floodgates, by means of which a vessel is transferred from a higher to a lower level, or from a lower to a higher.

Lock, Locks (Ger. *Schlösser;* Du. *Sloten;* Fr. *Serrures;* It. *Serrature;* Sp. *Cerraduras, Cerrajos;* Rus. *Samki*), a well-known instrument, of which there are infinite varieties. A great deal of art and delicacy is sometimes displayed in contriving and varying the wards, springs, bolts, etc., and adjusting them to the places where they are to be used, and to the occasions of using them. From the various structure of locks, accommodated to their different intentions, they acquire various names, as stock locks, spring locks, padlocks, etc. The grand difficulty to be overcome in making a lock is to construct it so that it may not be opened by any key except its own, nor admit of being picked; it should also be possessed of sufficient strength and durability, and not be too complex. Many ingenious contrivances have been proposed for the attainment of the desired security—several of which are possessed of considerable merit. Common door-locks are now usually inserted in the wood, instead of being, as formerly, screwed to it; and when so placed are called *mortise* locks.

Locust-tree. The Robina pseudacacia, or common locust, from the valuable properties of its wood, and the beauty of its foliage and flowers, ranks among the first trees of the American forests. In favorable situations, it attains a height of 80 or 90 feet, and sometimes exceeds four feet in diameter; but ordinarily, it does not surpass half of these dimensions. On the trunks and large limbs of old trees, the bark is very thick, and deeply furrowed, but on young trees, not more than two or three inches in diameter, it is armed with strong, hooked prickles, which disappear altogether as they grow old; and in some varieties they are wanting even when young.

The common locust naturally abounds in the country west of the Alleghanies, as far as Arkansas. It is also plentiful in the Canadas, but is not found indigenous in the United States east of the river Delaware, nor does it grow spontaneously in the maritime parts of the middle and southern States, within the distance of 50 to 100 miles from the sea. It is planted, however, for purposes of utility and ornament, from Maine to Georgia. It was observed by Michaux, that "the locust forms a much smaller portion of the American forests than the oaks and walnuts, and that it is nowhere found occupying tracts, even of a few acres exclusively." Hence the tree, where it is met with, is often spared by settlers, as being ornamental, and comparatively rare, and old specimens, which formerly belonged to the aboriginal forests, are frequently seen growing in the midst of cultivated fields.

Of all American trees that have been cultivated in Europe there is no one, of which so much has been said and done, as the locust. It was among the first plants that were carried to that country, and it has been more extensively propagated than any other, both in Britain and in France, where it has been alternately extolled and neglected; and even at the present day, though the beauty of its foliage and flowers is universally admired, and the valuable properties have enthusiastically been praised and acknowledged, it is not considered as holding a high rank as a timber-tree, or as being generally planted with a view to profit.

The wood of the locust, which is commonly of a greenish-yellow color, marked with brown veins, is very hard, compact, and susceptible of a brilliant polish. It possesses great strength, with but little elasticity; and its most valuable property is that of resisting decay longer than almost any other species of wood. When newly cut, it weighs 63 pounds 3 onnces to a cubic foot; half dry, 56¼ pounds, and when quite dry, only 48¼ pounds, or according to others, only 46 pounds. According to M. Hartig, the German dendrologist, its value for fuel, when compared with that of the beech (*Fagus sylvatica*), is as 12 to 15. For duration, he places it next below the oak (*Quercus robur*), and next above the larch (*Larix europœa*), and the Scotch pine (*Pinus sylvestris*). Barlow, in Wither's *Treatise,* gives the strength of locust timber, as compared with other woods, as follows:—Teak (*Tectona grandis*), 2462; Ash (*Fraxinus excelsior*), 2026; Locust (*Robina pseudacacia*), 1867; Oak (*Quercus robur*), 1672; Beech (*Fagus sylvatica*), 1556; Norway spar (*Abies excelsa*), 1474; Riga fir (*Pinus sylvestris rigensis*), 1108; Elm (*Ulmus campestris*), 1013. From some experiments made at Brest, in 1823, the weight of the lo-

cust wood was found to be one sixth heavier than that of the English oak; its strength as 1427 to 820; and its elasticity as 21 to 9. By experiments made in the yard of the royal naval college, at Woolwich, it appears that the lateral strength of the locust timber, in resisting fracture, is greater than that of the British oak, in the proportion of 100 to 75. From all these experiments, however widely they may differ in their results, we may safely conclude, that sound, well-seasoned locust timber "is heavier, harder, stronger, more rigid, more elastic, and tougher than that of the best English oak," and consequently is more suitable for trenails. Michaux remarks that, "if the trunks of the locust-trees grown in the north of Pennsylvania, exceed 15 inches in diameter, when they are cut down and split open, they are frequently found to be decayed at the heart; but that this is not the case with trees that have grown further south;" which would tend to show that a poor soil and a cold climate are not sufficient to produce good timber.

There are, at least, three popular varieties of the common locust, distinguishable by the color of the heart-wood, which may be described as follows:

1. *Red Locust*, with the heart red, and is esteemed as far the most beautiful and durable timber. Posts of this variety, perfectly seasoned before they are set in the ground, are estimated to last 40 years, or twice as long as those of the white locust.

2. *Green, or Yellow Locust.*—This is the most common variety, being known by its greenish-yellow heart, and is held next best in quality to the red locust.

3. *White Locust*, with a white heart, and is considered as the least valuable of them all.

All of the above-mentioned variations are supposed to be owing entirely to the soil and situations in which they grow, being caused in a similar manner as the various colors of the flowers of the hydrangea, which depend on the nature of the earth in which they are planted, and even on the color of the water with which they are irrigated.

In naval architecture, the timber of the locust is much esteemed by American shipwrights, and enters, with the live oak, the white oak, and the red cedar, into the upper and the lower parts of the frames of vessels, though in very small proportions. It is considered as durable as the live oak and the red cedar, with the advantage of being lighter than the former and stronger than the latter. It is used for trenails in the dockyards of Europe and the United States, in preference to any other kind of wood; and instead of decaying, it acquires, in time, an extraordinary degree of hardness. In civil architecture, in this country, it enters but little into the composition of houses, on account of its scarcity, and its value in ship-building, and for posts of rural fences, etc. When employed in the construction of houses, it is more particularly applied for the support of the sills, which usually consist of more destructible timber, and which, if they were placed immediately on the ground, would sooner decay. From the hardness of the wood when seasoned, the firmness of the grain, and its lustre when polished, it has been extensively used in cabinet-making, and has been substituted by turners for the box-wood, in many species of light work, such as small domestic wares, toys, etc. It has also been employed by millwrights for cogs, but it is less valuable for this purpose than that of the rock-maple.

The most important use to which the locust is applied in Britain, is that of forming trenails for ship-fastenings; and large quantities are annually imported into that country from America. As long as we can supply them for the prices which they at present bear, it never would repay the grower to cultivate them in England for this special purpose.

In France, the locust has been extensively cultivated in the Gironde, in copses, which are cut at the age of four years, for vine-props; and these props are said to last more than 20 years. In the same district, old trees are pollarded, and their branches lopped every third year, for the same purpose. In Paris, many small articles are made of the wood; such as salt-cellars, sugar-dishes, spoons, forks, sand-boxes, paper-knives, etc.

In Lombardy, the wood of the locust is used for many rural purposes. Young plants of it were formerly much employed for live fences; but this practice has long since been abandoned, because the tree was found to impoverish the soil; and, with age, lost its prickles; besides, from being continually pruned, to keep it low, or from being cropped by animals, the hedges became thin and open at the bottom, and eventually became mere stumps. Italy, as well as the southern Departments of France, Michaux considers the countries in which the greatest advantages may be derived from the rapid growth of this tree. In good soils, in such climates, at the end of 20 or 25 years, he says that a mass of wood may be obtained from the locust, twice as great as from any other species of tree.

In countries where clover and root crops are not cultivated, the leaves of the locust may serve as a substitute for these articles as provender for animals. When this species is cultivated for this purpose, it should be mown every year; or the trees may be allowed to grow to the height of 8 or 10 feet, and treated as pollards, the branches being cut off every other year, which should be done at mid-summer, when they are succulent, and can be dried for winter's use. In performing this operation, one or two shoots should be left on each tree, to keep up vegetation, which may be pruned off the following winter or spring. When the shoots are to be eaten green, none should be taken but those of the same season; because in them the prickles are herbaceous, and, consequently, do not injure the mouths of the animals.—Browne's *Trees of America.*

Lofoden Islands, a large group of islands off the north-west coast of Norway, stretching north-east to south-west from N. lat. 67° 30′ to 69° 30′, and E. long. 12° 16′ 30″. The group resembles the vertebræ of an animal in form; the islands fitting into each other so closely, that from a distance they seem to form one long continent. The islands, which are all of a granite or limestone formation, are precipitous, and very lofty; the hills of Vaagoe rising almost perpendicularly to a height of 4000 feet above the sea. The channels which separate them are narrow, tortuous, and generally of great depth. The largest islands of the group are in the north, viz., Hindoe, Andoe, and Langoe; the first being separated from the main land by a passage about a mile in width. The tail of the chain is formed of a number of smaller islands, the chief of which are the two Vaagoes, Moskenösoe, Väroe, and Rost, separated from the main land by West Fiord. This gulf is much dreaded by mariners when the wind is south-west, on account of the great swell which rolls in from the North Sea; and which is especially dangerous at the Mälstroem channel between Väroe and Moskenösoe. The mean temperature of the group ranges from 23° in winter to 50° in summer, which, considering the high latitude, is comparatively mild. This is caused, however, by the exposure of the group to the Gulf Stream. Large shoals of herring and cod frequent the Lofodens annually, and attract to these islands a large concourse of fishing-boats from several hundreds of miles of sea-coast. In the inclement months of February and March, generally about 3000 boats (mostly open) assemble here for the cod-fishing, each having, on an average, five of a crew, while the aggregate number of fish taken amounts to more than 3,000,000. These are chiefly dried in the sun and wind, without salt, and sent to Tromsoe, Trondhjem, Bergen, etc., along with large quantities of cod-liver oil and cod-roe, for exportation or home consumption. The cod-fishery ends in April, and is

followed by the herring-fishing, which is carried on till the boisterous season, at the ex of autumn. The permanent population of the Lofoodens is very small, considering the extent of territory, and is sustained principally by the fisheries. Some cattle, however, are kept in the most sheltered parts of the island, where good pasturage is obtained in the summer. Steilo, in the island of Ulvo, is the chief village of the group, and has communication with the ports of the main land by means of a steamer, which visits the Lofodens in summer. Estimated population of group, 4000.

Log, an apparatus used to measure the rate of a ship's velocity through the water. For this purpose, there are several inventions, but the one most generally used is the following, called the *common log*. It is a piece of thin board, forming the quadrant of a circle of about 6 inches radius, and balances by a small plate of lead, nailed on the circular part, so as to swim perpendicularly in the water, with the greater part immersed. The log-line is fastened to the log by means of two legs, one of which is knotted, through a hole at one corner, while the other is attached to a pin, fixed in a hole at the other corner so as to draw out occasionally. The log-line being divided into certain spaces, which are in proportion to an equal number of geographical miles, as a half or quarter minute is to an hour of time, is wound about a reel. The whole is employed to measure the ship's head-way in the following manner: the reel being held by one man, and the half-minute glass by another; the mate of the watch fixes the pin, and throws the log over the stern, which, swimming perpendicularly, feels an immediate resistance, and is considered as fixed, the line being slackened over the stern to prevent the pin coming out. The knots are measured from a mark on the line, at the distance of 12 or 15 fathoms from the log. The glass is, therefore, turned the instant the mark passes over the stern; and, as soon as the sand in the glass has run out, the line is stopped. The water, then being on the log, dislodges the pin, so that the board, now presenting only its edge to the water, is easily drawn aboard. The number of knots and fathoms which had run off at the expiration of the glass, determines the ship's velocity. The half-minute glass, and divisions on the line, should be frequently measured, to determine any variation in either of them, and to make allowance accordingly. If the glass runs 30 seconds, the distance between the knots should be 50 feet. When it runs more or less, it should therefore be corrected by the following analogy: as 30 is to 50, so is the number of seconds of the glass to the distance between the knots upon the line. As the heat or moisture of the weather has often a considerable effect on the glass, so as to make it run slower or faster, it should be frequently tried by the vibration of a pendulum. As many accidents attend a ship during a day's sailing, such as the variableness of winds, the different quantity of sail carried, etc., it will be necessary to heave the log at every alteration, and even if no alteration be perceptible, yet it ought to be constantly heaved. The inventor of this simple but valuable device is not known, and no mention of it occurs till the year 1607, in an East India voyage, published by Purchas.—E. A.

Logarithms, so useful in mathematics, are the indexes of the ratio of numbers one to another. They were invented by Baron Merchiston, an eminent Scotchman (Sir John Napier), in 1614. The method of computing by means of marked pieces of ivory, was discovered about the same time, and hence called Napier's lines. The invention was afterward completed by Mr. Brigge, at Oxford.

Log-Board, two boards shutting together like a book, and divided into several columns, containing the hours of the day and night, the direction of the winds and the course of the ship, with all the material occurrences that happen during the 24 hours, or from noon to noon, together with the latitude by observation. From this table the officers work the ship's way, and compile their journals. The whole being written with chalk, is rubbed out every day at noon.—E. A.

Log-Book, a book into which the contents of the log-board are daily transcribed at noon, together with any circumstance, deserving notice, that may happen to the ship, or within her cognisance, either at sea, or within a harbor, etc. The intermediate divisions or watches of a log-book, containing 4 hours each, are usually signed by the commanding officer thereof, in ships of war, or East Indiamen.—E. A.

Log-Line, the line which is fastened to the log.

Logwood (Fr. *Bois de Campiche*; Ger. *Kampeschols*; Du. *Campecheout*; Sp. *Palo de Campeche*), the wood of a tree (*Hæmatoxylon Campechianum*, Lin.), a native of America, and which attains the greatest perfection at Campeachy, and in the West Indies. It thrives best in a wet soil, with a large proportion of clay. The logwood-tree is like the white thorn, but a great deal larger. The wood is hard, compact, heavy, and of a deep red color internally, which it gives out both to water and alcohol. It is an article of great commercial importance, being extensively used as a dye-wood. It is imported in logs, that are afterward chipped. (The logwood-tree, and the adventures of those that were formerly engaged in cutting it, are described by Dampier; see his *Voyages*, vol. ii., part 2, p. 56, ed. 1729.) We borrow from the learned and able work of Dr. Bancroft, the following curious details with respect to the use of logwood: "Logwood seems to have been first brought to England soon after the accession of Queen Elizabeth; but the various and beautiful colors dyed from it proved so fugacious, that a general outcry against its use was soon raised; and an Act of Parliament was passed in the 23d year of her reign, which prohibited its use as a dye under severe penalties, and not only authorized but directed the *burning* of it, in whatever hands it might be found within the realm; and though this wood was afterward sometimes clandestinely used (under the feigned name of blackwood), it continued subject to this prohibition for nearly 100 years, or until the passing of the act 13 and 14 Chas. II.; the preamble of which declares, that the ingenious industry of modern times hath taught the dyers of England the art of fixing colors made of logwood, *alias* blackwood, so as that, by experience, they are found as lasting as the colors made with *any other sort of dyeing wood whatever*; and on this ground it repeals so much of the statute of Elizabeth as related to logwood, and gives permission to import and use it for dyeing. Probably the solicitude of the dyers to obtain this permission, induced them to pretend that their industry had done much more than it really had, in fixing the colors of logwood; most of which, even at this time, are notoriously deficient in regard to their durability."—Bancroft *on Permanent Colors*.

Loire, La (anc. *Liger*), the longest river in France, rises at the foot of Gerbier des Joncs, among the Cevennes Mountains, in the Department of Ardèche, and after a westerly course of 540 miles, falls into the Bay of Biscay. This river drains a district of France nearly equal in extent to one fourth of the entire kingdom. It becomes navigable at Roanne, and passes the flourishing towns of Orleans, Blois, Tours, Saumur, and Nantes. The navigation is interrupted, however, during four or five months of the year, by frost or floods. To obviate some of the difficulties incidental to the navigation of this river, a lateral canal has been formed along a part of its course, extending from the Canal du Centre to the Canal de Briare. The Loire communicates with the Rhone and Seine by means of canals. The affluents of this river are very numerous and important—many of them navigable. Those on the right are, the Arroux, the Nièvre, the

Maine (formed by the union of the Mayenne and the Sarthe) on the left, the Allier, the Loiret, the Cher, the Indre, the Vienne, the Thoue, and the Sevre-Nantaise. To prevent the Loire from spreading over the low grounds along its course, it has been banked in by dykes, built much above its ordinary level. These embankments were never known to give way previous to the great floods of 1846. They gave way at the same place during the fearful inundations of June, 1856, carrying away the bridge and village of Savounières, and inundating the communes of La Riche-extra and La Chapelle-aux-Naux, causing a dreadful loss of life and property. The mouth of the river is about seven miles wide, measured from St. Nazare to Paimbeuf. Ships find great difficulty in taking the mouth of the river, owing to the exposed nature of its position, and to the numerous sand-banks which traverse it.

Lombard, a term anciently used in England for a banker or money-lender. The name is derived from the Italian merchants, the great usurers or money-lenders of the middle ages, principally from the cities of Lombardy, who are said to have settled in London in the middle of the 13th century, and to have taken up their residence in a street in the city which still bears their name. Lombard usurers were sent to England by Pope Gregory IX. to lend money to convents, communities, and private persons, who were not able to pay down the tenths which were collected throughout the kingdom with great rigor that year, 13 Henry III., 1229. They had offices in Lombard-street, which great banking street is called after them to this day. Their usurious transactions caused their expulsion from the kingdom in the reign of Elizabeth. Stowe, in his *Survey of London*, says, "Then have ye Lombarde-street, so called of the Longobards and other merchants, strangers of diverse nations, assembling there twice every day. The meeting of which merchants there continued until the 22d of December, in the year 1568; on the which day the said merchants to make their meetings at the Burse, a place then new builded for that purpose, in the ward of Cornhill, and was since, by her majesty Queen Elizabeth, named the Royal Exchange."

London (Latin, *Londinium*; French, *Londres*; Italian, *Londra*), the metropolis of the British empire, and one of the greatest cities of ancient or modern times, is situate on both banks of the Thames, about 45 miles above its mouth at the Nore, and 15 below the highest tideway. Though chiefly within the county of Middlesex, London includes parts of Surrey and Kent, and extends into Essex. St. Paul's, the most striking object in the city, is in lat. 51° 30′ 48″ N., long. 0° 5′ 48″ W. of Greenwich. Its early history is lost in obscurity, and the first authentic notice of its existence is that of Tacitus (*Annal.*, lib. xiv., cap. 3), who, in alluding to *Londinium*, says, "Cognomento quidem colonia non insigne, sed copiâ negotiatorum et commeatuum maxime celebre." The derivation of the name "London," has been the subject of much conjecture; but that mentioned by Pennant (*London*, p. 17) seems most feasible, viz., *Llyn*, in Celtic, a lake, and *din*, a town. It could not, however, have been a place of importance at the period of Julius Cæsar's invasion, as it is not noticed in his *Commentaries*. About 100 years thereafter, the Romans, under Claudius, took possession of the city, and called it Augusta, in honor of that prince. It was erected into a prefecture; and the inhabitants, nominally citizens of Rome, were governed by Roman laws and Roman magistrates.

London was not fortified at an early period of the Roman occupation; for in A.D. 61, the Britons under Boadicea, revolted, captured and burned the city, and massacred the inhabitants. The city was soon, however, rebuilt, but is supposed to have remained open till the reign of Constantine the Great. From the number of coins of his time found under the walls, it may be inferred that that emperor constructed the walls; and it is alleged that he made London an episcopal see. The limits of these walls have been pretty exactly ascertained. They commenced near the site of the present Tower, extended along the Minories and back of Houndsditch, across Bishopsgate-street, in a straight line, by London Wall, to Cripplegate; thence southward to Aldersgate, proceeding afterward by the back of Christ's Hospital and Old Newgate, passing behind the site of Newgate Prison, and so reaching Ludgate; again proceeding westward to the River Fleet, and terminating at a fort called afterward Baynard's Castle. Their compass was completed by another wall along the bank of the Thames. Extent of the walls from and to the side of the river, 2 miles and 1 furlong; on the bank, 1 mile and 1-10th; uniform height, 22 feet. Through gates in these walls, roads led to different parts of the kingdom. The great Roman Roads, Watling-street and Ermin-street, had their termini at the London Stone, or Roman milliarium, a portion of which still remains, and is inserted in the most conspicuous part of St. Swithin's Church, abutting on Cannon-street. The names of the gates are still preserved in streets, etc., viz., Ludgate, Aldersgate, Moorgate, Bishopsgate, Aldgate, Newgate, Cripplegate, and Postern Row, on Tower Hill. After the Romans withdrew their forces from England, London suffered severely till the Saxons fixed themselves in the country. It is said to have become then the capital of the East Saxon kingdom; at any rate, it quickly regained its former importance, and is called by Venerable Bede a "princely town of trade." Soon after the introduction of Christianity, Old St. Paul's, and St. Peter's at Westminster, were founded. When the Saxon monarchies were united in the person of Egbert, London became the capital of the consolidated kingdom, and such it has continued to be. In the reign of Alfred it recovered from the effects of the Danish invasion, as well as from those of a fire, which nearly consumed it in 893.

After the battle of Hastings, the city submitted to William, who granted it a charter, still extant; and who commenced building the Tower of London in 1078. About this time the capital suffered severely and frequently by fires, especially in 1077 and 1086. In the following reign it was visited by a hurricane and an inundation; the latter carrying away the first wooden bridge over the Thames. Henry I. granted a new charter to the city in 1100, restoring the privileges it enjoyed previous to the Conquest, and conferring on the citizens the right of electing their own magistrates. It is said that this document served as the model for Magna Charta. The population in 1141 was estimated by Peter of Blois at 40,000. The title of the chief magistrate was changed by Henry II. from Portreeve to Bailiff; and in 1191 he is called Lord Mayor, in a document issued by the Court of Aldermen. In 1198 Richard I. committed the duty of fixing a national standard of weights and measures to the sheriffs of London and Middlesex. John, by several charters, conferred additional favors on the city; among others, the jurisdiction and conservation of the Rivers Thames and Medway; and the power of choosing sheriffs. In 1221 the first stone of the present Westminster Abbey was laid by Henry III.; and in 1236 water was conveyed in pipes from the village of Tybarn to the city. In 1258 and 1270 the city was visited by famine, and in 1348 by a species of plague, on all of which occasions it suffered grievously.

Under Edward I. London was first divided into 24 wards, each to choose common councilmen and an alderman. Edward II., in 1316, prohibited as a nuisance the burning of coal, then lately introduced, but his mistake was soon discovered and rectified. Under Edward III. the city received the perpetual right of magistracy over Southwark. In 1381 the citizens were alarmed by the insurrection of Wat Tyler, but

this was soon suppressed. Street lamps were first used in 1416. In the wars of the Roses, London chiefly favored the interests of the House of York; and after the battle of Barnet, in 1471, Edward VI. knighted the mayor, recorder, and 12 aldermen. This was the era of the first printing-press, constructed and worked by Caxton in Westminster Abbey, as well as the erection of water cisterns and conduits in several parts of the city and suburbs. In the reign of Henry VII., a disease called the "sweating sickness" carried off two mayors and six aldermen, with many citizens. Some considerable improvements were made in this reign, as well as in that of Henry VIII., to which the suppression of religious houses by the latter materially contributed; these giving way to schools, hospitals, and charitable institutions. By the aid of Queen Elizabeth, the prosperity of London rapidly advanced during her reign. The refugees from the Netherlands introduced numerous manufactures before unknown in England, and in this way conferred especial benefits on London.

By maps of the time of Elizabeth and James I., it may be seen that the chief part of London then consisted of Newgate-street, Cheapside, the Poultry, and Cornhill, and the various streets and alleys leading from them to the Thames. Along the Strand, toward Westminster, were houses on both sides—those to the south, and abutting on the river, being the palaces of the chief nobility. The names of Salisbury, Norfolk, Buckingham, Arundel, Essex, etc., have been perpetuated in the streets now on the sites of palaces and gardens formerly belonging to these families. Spring Gardens formed a series of walks, with bowling green, etc., extending from Charing Cross toward Whitehall Palace, whence to the Abbey there was a regular street. On the Surrey side, there were not ten buildings between Lambeth and the west foot of Blackfriars Bridge; but from that point a row of houses was continued to the Borough. Southwark then extended but a short distance along High-street; and there were small scattered houses from Tooley-street to Horselydown. In the reign of James I. brick was introduced as a substitute for wood in London houses, and the streets were first paved with stones. The city was severely visited by the plague in 1604, and again in the reign of Charles I. During the civil wars a majority of the corporation took part with the Commons, and the city treasury was of great service to their party.

After the Restoration London began greatly to revive; but a serious check was given to it by the last visit of the plague, which raged from June till the end of December, 1665, and destroyed nearly a third of the population. This was speedily followed by the "Great Fire," which commenced 2d September, 1666, lasted four days and nights, and in that time reduced to ashes five sixths of the whole city within the walls. The ruins covered a space more than a mile long and half a mile broad; and the value of buildings and goods consumed was estimated at ten to twelve millions sterling. But though severe at the time, this visitation contributed materially to the improvement of the city. It was built on a more commodious plan by Sir Christopher Wren in about four years. From the time of its re-construction, few stirring events occurred. The first stone of St. Paul's was laid in 1675. The revocation of the Edict of Nantes in 1685 brought to London many French Protestant families, who peopled Spitalfields, and introduced the manufacture of silk. The continued growth of the city in the reign of Queen Anne occasioned the act of 1711 for building fifty new churches, the cost being paid by a tax on all coals brought into the Thames. The streets were then first generally lighted; fire-engines were provided, and measures taken for watching the city. In her reign, Clerkenwell, Old-street, the lower part of Shoreditch, Marlborough-street, Soho, Bedford-row, Red Lion-square, and a district north of Holborn, were annexed to the metropolis.

—In the reign of George I. some additions were made to London, chiefly to the north of Oxford-street and about Berkeley square. In the reign of George II. some new parishes were erected, viz., St. George's, Bloomsbury; St. Ann's, Limehouse; St. Paul's, Deptford; and St. Matthew's, Bethnal Green. The River Fleet was covered, and a market built on it; Grosvenor-square, Westminster Bridge, and Great George-street, were built; and roads were formed in several directions, the principal one skirting the northern part of the city from Paddington to Islington.

The accession of George III. gave a fresh stimulus to improvement and extension. A new bridge at Blackfriars, with handsome streets leading to it, and many new dwellings on the Surrey side, were erected. On the north-west side the parishes of St. Pancras and Marylebone were formed. At the same period the street pavement for foot passengers was first laid down, the kennels removed from the middle to the sides of the streets, and the numbering of houses introduced. The American war gave a temporary check to extension; but soon after the peace of 1783 the advance became more rapid than ever. Docks were constructed, the commerce of the city rapidly augmented, the ground near the water side was covered with buildings, and, westward, Bedford, Russell, and Brunswick Squares quickly sprung up. From the Regency in 1811, London advanced in extent and elegance still more rapidly. Regent's Park was formed, and surrounded by handsome terraces; and within the last few years the extensive and fashionable districts called Belgravia and Tyburnia—the former to the south and the latter to the north of Hyde Park—have been created, and literally covered with houses of a high class. In 1851 there were 305,933 inhabited houses in the metropolis, and there are no less than 6300 streets enumerated in the *London Postal Guide* for January, 1857.

The situation of London, on the banks of a great tidal river, is also peculiarly favorable for a large city in a sanitary point of view. The subsoil is partly clay (the London clay of the geologist). The valley of the Thames has a gradual ascent on the north side; and the south side, though below the level of spring tides, has been well secured against inundations by embankments. The air is temperate and rather dry than moist, and the health of the inhabitants has gradually but rapidly improved from the earlier part of last century, when the deaths were annually 1 in 20 of the population, whereas at present they are about 1 in 40.

It is difficult to assign any distinct boundaries to the metropolis, as almost continuous lines of houses stretch like branches from the main trunk of London, to Chiswick, Kensal Green, Kilburn, Hampstead, Highgate, Stamford Hill, and Upper Clapton in Middlesex; Stratford and North Woolwich in Essex; Greenwich and Lee in Kent; and Dulwich, Norwood, Clapham, Wandsworth, and Putney in Surrey. These, too, are constantly increasing in length and breadth; the vacant spaces between distant lines of road being filled up with extraordinary rapidity. The circle formed on a radius of four miles from Charing Cross excludes a large portion of London; but its extreme length may be set down as ten miles, and its breadth at about six. There are four divisions of the metropolis which, though rather vague, are pretty generally understood by Londoners—these are, the City, the West End, Lambeth, and the Borough; the two first on the Middlesex, and the others on the Surrey side of the water. The city of London proper has an area of 725 acres, and contains 108 parishes—97 within and 11 without the walls. In its most limited sense, the metropolis includes the cities of London and Westminster, the parliamentary boroughs of Tower Ham-

lets, Finsbury, Marylebone, Lambeth, and Southwark. Annexed is an account of the populatio.s of the various cities and boroughs above mentioned, as ascertained by the different censuses, beginning with the first in 1801:

Cities and Boroughs.	1801.	1811.	1821.	1831.	1841.	1851.
London City	156,859	120,909	125,484	122,868	120,702	127,869
Westminster City	158,210	162,085	182,085	201,842	219,980	241,611
Tower Hamlets Borough	184,568	237,487	291,650	357,246	419,730	589,111
Finsbury "	134,616	167,180	201,781	259,123	265,043	328,772
Marylebone "	97,642	126,566	174,854	240,294	287,465	370,957
Lambeth "	49,886	76,806	108,565	160,568	197,412	251,345
Southwark	94,813	103,768	123,663	184,117	142,980	172,863
Total	876,954	994,746	1,207,489	1,476,048	1,652,902	2,027,528

The metropolitan district comprised within the bills of mortality includes, with the cities and boroughs embraced in the foregoing table, other integral parts of London, like Chelsea, Brompton, and Kensington; and the suburbs, such as Greenwich, Wandsworth, Hammersmith, Putney, etc. In this view, the area of the metropolis is 78,029 acres, comprising 186 parishes, and the present population may be estimated at upward of 2,500,000. Annexed is an account of the population of this area at the date of each census, commencing with 1801:

Years.	Population.	Years.	Population.
1801	958,863	1831	1,654,994
1811	1,138,815	1841	1,948,417
1821	1,378,947	1851	2,362,236

But many merchants and citizens, taking advantage of the easy access to the country afforded by the railways, occupy houses at such places as Kingston, Esther, Walton, Richmond, Twickenham, Staines, Windsor, Reigate, Brighton, etc., making daily journeys to and from the city, so that they and their families are not included in the foregoing account.

Commerce.—As one of the great occupations of its inhabitants, the commerce of London demands the first notice. The capital of a great empire, with immense wealth concentrated in it, having easy access, both by land and water, to all parts of the kingdom, and every facility of communication with foreign countries, London has become, with perhaps the single exception of New York, the greatest commercial city in the world. The commercial growth and prosperity of London are especially to be ascribed to its great river-port, the Thames. This famous stream has its source within the borders of Gloucestershire, a little to the south-west of Cirencester, and becomes navigable at Lechlade, 138 miles above London. It is first affected by the tide about 15 miles above the metropolis; but before reaching this point it is swollen by junction with the Isis, Kennet, Coln, and Wey. The city corporation are the chief conservators of the river, and appoint a navigation committee, who superintend the towing-paths, bridges, water-courses, and whatever relates to the river, as far as a stone a little above Staine's Bridge. Higher up the supervision is divided between the city and a body chiefly composed of the landowners on both sides of the river. The conservation of the river below London is also in some measure under the government of the city corporation, but the Trinity House has concurrent jurisdiction, and no ballast can be raised without its authority. The appointment and control of pilots, the placing and repairs of land-marks and buoys to indicate the channels, and the establishment of floating lights, are also under the superintendence of the Trinity House. Close to London Bridge there is water sufficient for vessels of 800 tons burden, and the legislature has placed the shipping of the port, and their moorings, under the direction of the harbor-masters, nominated by the corporation, and approved by the Trinity House. The sinuosities, currents, and shoals in the river, and its varying depth, render the navigation rather intricate. The river pilots, who are a distinct class, conduct vessels to Gravesend, where they are relieved by the sea pilots. Down to 1800, the commerce of London, and the shipping interest, suffered materially from the crowded state of the river, and the difficulties, delays, and abuses connected with the berthing and mooring of vessels, and the landing and storing of merchandise. These evils led to the construction of the West India Docks, which were opened in August, 1802. These, next to the Commercial Docks, the oldest in London, were formed in the gorge of the Isle of Dogs, on the Middlesex side of the river. They comprise the import and export dock (communicating with the river at Blackwall and Limehouse), and a dock of 19 acres for bonded timber.

The export dock occupies about 25, and the import dock 30, acres. The gates are 45 feet wide, and admit vessels of 1200 tons. At the highest spring-tides the water is 24 feet deep; and within the docks there is sufficient space for 600 vessels of from 250 to 600 tons. The import and export docks are parallel to each other, but divided by stacks of warehouses. There are sheds for sheltering the goods; and the chief warehouses are capable of storing 170,000 hhds. of sugar, besides coffee and other tropical productions. The whole space occupied by these docks and warehouses is 295 acres. The East India Docks at Blackwall now belong to, and are managed by, the same company as the West India Docks. They were commenced in 1803, finished in 1806, and were intended to accommodate the trade of the East India Company. They include an import basin of 18 acres, an export basin of about 9, and an entrance basin of 2¼ acres. The entrance lock is 210 feet wide, the width of the gates 48 feet, and the depth of water in the docks is never less than 23 feet. The extent of warehouse-room at these docks is comparatively small. The East and West India Docks are well inclosed and guarded, and the buildings are fireproof. The London Docks, situated between Ratcliff Highway and the Thames, were begun in June, 1802, and opened in January, 1805. They consist of two docks; the western, covering 20 acres, and the eastern about 7 acres. The latter is entered from Shadwell, and the former near Wapping Old Stairs, and also at the Hermitage. The whole can receive 500 vessels of from 200 to 800 tons. The entire space inclosed is 71 acres. The warehouses are very fine; the most extraordinary being that for bonded tobacco. The roof and pillars supporting it are of iron, and the whole building covers five acres of land, and is capable of containing 24,000 hhds. The company is governed by a body of directors, of whom the lord mayor is one. The regulations to prevent fire and pilfering are as effectual as in the East India Docks. St. Katherine's Docks, situate between the London Docks and the Tower, were executed in a year and a half, and first opened in October, 1828. The whole extent of the property is 24 acres, of which nearly one half is inclosed in the two docks communicating by a basin. The entrance lock, near Irongate Wharf, is 180 feet long, and 45 feet broad, and admits ships of from 200 to 800 tons. The warehouses are very large and commodious, and the regulations and charges are similar to those of the other dock. Victoria Docks, the last constructed, were completed in 1855. They are situated in the Plaistow Marshes, immediately below the East and West India Docks. The portion of this property appropriated by the Dock Company for their own purposes is about 200 acres, but the dock itself occupies but 74, and affords 23½ feet depth of water. The en-

trance lock at Bow Creek is 800 feet long, and 80 wide. There is a half-tide basin of 16 acres; and the available warehouse floor is stated to be upward of 11 acres. The company have also acquired about an acre and a half between Thames-street and the river for the erection of an up-town warehouse. One object of the company is to withdraw from the Thames a portion of the large fleet of colliers which lie at anchor in the Pool, and seriously obstruct the traffic on the river. On the other bank of the Thames, extending along the side of the river opposite Limehouse, and terminating nearly opposite the entrance to the West India Docks, are the Commercial, formerly the Greenland Docks, which existed in the 17th century. They are now of great extent, inclosing 120 acres, of which 70 are water, and were designed to receive vessels laden with timber, corn, and other commodities more bulky than costly. These docks are entered by a basin near Dog-and-Duck Stairs, sometimes called the East Country Docks, and the main body of the water within is divided into six unequal parts. See Docks.

Parallel to these is the Surrey Canal, having an inner and outer dock at the entrance in Rotherhithe, by which ships are received, and affording communication with the Croydon Canal. The Regent's Canal was formed to save expense of cartage through London of articles brought by sea, and afterward forwarded for consumption to the north-west parts of the metropolis; and also to communicate with the Grand Junction Canal. The Regent's Canal passes from Paddington, by a tunnel under Maida Hill, to the Regent's Park, thence to Islington, under which it is carried by a tunnel three quarters of a mile in length, and so on to Hoxton, Hackney, and Limehouse. It is 9 miles long, and is provided with 12 large locks. It is not easy, within a moderate compass, to give even a sketch of the foreign commerce of London. As would be an epitome of that of the world. To the British capital are brought the products, natural and artificial, of all soils and all climates. It has in store whatever the ingenuity and industry of man in any part of the globe can spare to exchange for what his own country does not yield. We can, therefore, do little more than state the number and size of the vessels that belong to and frequent the port, and the value of the produce and manufactures of the United Kingdom exported from the same:

Account of the Number and Tonnage of Vessels belonging to the Port of London on 31st December, 1855.

Description of vessels.	Under 50 tons.		Above 50 tons.	
	Vessels.	Tons.	Vessels.	Tons.
Sailing vessels..	617	21,308	1,870	668,899
Steamers.....	132	4,327	405	163,406
Total.....	749	25,690	2,275	827,305

Account of the Number and Tonnage of Vessels which have entered the Port of London from Foreign Countries and the Colonies, in each of the Five Years ending with 1855.

Years.	Vessels.	Tonnage.	Years.	Vessels.	Tonnage.
1851.....	10,341	2,170,822	1854.....	10,943	2,667,828
1852.....	9,986	2,160,157	1855.....	9,770	2,420,586
1853.....	11,768	2,594,118			

Account of the Number and Tonnage of Coasting Vessels that entered the Port of London in 1855, distinguishing British from Foreign.

Description of vessels.	British.		Foreign.	
	Vessels.	Tonnage.	Vessels.	Tonnage.
Sailing vessels..	17,729	2,438,878	13	1,801
Steamers.....	1,297	411,444	1	105
Total.....	19,026	2,850,317	14	1,906

The conveyance of coals to London employs a great deal of shipping. They are chiefly brought from the north-eastern district of the kingdom, and are sold at the New Coal Exchange, lately erected in Lower Thames-street.

Very large quantities of coal now reach London by means of the railways which centre in the metropolis.

Account of the Number of Ships laden with Coal which entered the Port of London in each Year from 1845 to 1855 inclusive.

Years.	Ships.	Years.	Ships.
1845.....	11,987	1851.....	11,765
1846.....	10,488	1852.....	12,085
1847.....	11,911	1853.....	12,111
1848.....	12,267	1854.....	11,875
1849.....	12,074	1855.....	10,784
1850.....	12,683		

Declared Value of British and Irish Produce and Manufactures exported from London to Foreign Countries and the Colonies in 1855 and 1856.

1855.....	£20,915,512
1856.....	25,966,088

Custom-house.—The present custom-house, opened in May, 1817, stands in Lower Thames-street, with its principal and imposing front, 480 feet long, toward the river, and occupies the site of a similar but smaller one destroyed by fire in 1814, as a preceding one had been in 1718. The Long Room is a noble apartment, 186 feet long, 60 broad, and of an appropriate height, with desks on each side for the several officers; the centre being left for such of the public as have business there. The other parts are distributed so as to suit the several branches of the office. The London customs establishment of clerks, tide-waiters, etc., amounted in 1856 to 2167; though as but 1620 were required for all the other English ports, it would seem as if the numbers here were excessive.

Amount of Customs Duties collected in the Port of London in 1855 and 1856.

1855.....	£11,525,125
1856.....	12,987,519

Trinity House.—The Society of the Trinity House has its chief establishment in a large and handsome house on Tower Hill, built by Wyatt in 1793. It was incorporated in 1815; but from the terms of its charter, it evidently had a previous existence, and was then established at Deptford Stroud. Its privileges were confirmed by the charter of 1658, and its members are now partly men of high rank, and partly those remarkable for naval knowledge and skill in maritime affairs. Its duties as to pilots, light-houses, buoys, ballast, etc., have already been mentioned. In process of time this society acquired large property; the net revenue under its management having in 1855 amounted to £204,195. Until the passing of the act 13th and 17th Vic., c. 131, the society spent much of its surplus revenue in pensions to poor and disabled seamen, or their widows and orphans; but this act transfers their revenue, as well as the charge for maintaining light-houses, etc., to the Mercantile Marine Fund. It would appear, from a parliamentary paper lately published, that the Board of Trade expended in 1856 out of this fund £1388 as rewards for the salvage of life. The Trinity House contains some portraits of naval heroes, naval trophies, etc.

Mint.—The Royal Mint, also on Tower Hill, was removed thither from the Tower in 1811. The present building which is extensive and well suited to its purpose, was completed under the direction of Sir R. Smirke. The interior is appropriately arranged for the manufacture of coin; and the machinery combines great ingenuity and beauty. In consequence of the report of a commission in 1849, the old company of moneyers was abolished, and a scientific chief has since been allotted to this department, instead of a political one. The amount of gold, silver, and copper money coined here in the last three years has been as follows:

Account of the Total Value of Gold, Silver, and Copper coined at the Mint in each of the Three Years ending with 1856.

Year.	Gold.	Silver.	Copper.	Total.
1854	£4,152,188	£140,480	£60,866	£4,353,529
1855	9,009,663	195,511	41,091	9,246,265
1856	6,002,114	462,593	11,418	6,476,060
Total	£19,162,960	£798,519	£113,375	£20,074,854

Banks.—The Bank of England, one of the most attractive objects in the city, was founded by act of Parliament in 1694, and its business was carried on for many years at Grocers' Hall. In 1733 it was transferred to Threadneedle-street, and soon thereafter the present hall and bullion office were opened. Between 1770 and 1788 the façade was extended, and two wings added, under the directions of Sir Robert Taylor and Sir John Soane. Under the superintendence of the latter, the front and wings of the original structure were harmonized. The area of the bank is an irregular quadrangle; the south or principal front is 365 feet, and the north 410; the east 245 feet, and the west 440. Its principal entrance is from Threadneedle-street, the other two from Bartholomew Lane and Lothbury. The interior contains several open courts, the rotunda, or circular room, numerous offices, committee-rooms, and private apartments for the residence of officers and servants. The business is carried on by a staff of about 800 clerks, etc., whose salaries amount to nearly £200,000. The bank has received nine successive renewals of its charter since it was first granted in 1694, and measures have been taken in Parliament this session (the first of 1857) for again renewing it. The act of 1844, still in force, separated the Bank into two distinct branches, viz.: 1. The Issue Department, devoted to its business as agent of the State in creating and issuing paper money, or bank-notes, convertible into gold on demand; and, 2. The Banking Department, where the private business of deposit and discount is carried on. There are 60 private and 28 joint-stock banks in the metropolis. Some few of the former, such as Child's, in Fleet-street, were established before the end of the 17th century; while the joint-stock banks are all the offspring of the last few years. There is an establishment near Lombard-street, called the Clearing House, where a daily exchange of checks or drafts on city bankers is effected, and this process tends greatly to facilitate banking business.

Roy.' Exchange.—The Royal Exchange, colossal in proportions, and occupying a commanding position between the Bank of England and Cornhill, is a spot where great mercantile transactions are daily concluded. The first exchange was built by Sir Thomas Gresham, completed in 1567, but destroyed by the great fire of 1666. It was, however, speedily rebuilt, and was opened on 28th September, 1669. Again destroyed by fire in 1838, it was rebuilt, and completed in 1846 by Mr. Tite. The present building is quadrangular, and the interior surrounded by arcades. In the centre, which is uncovered and unprotected from the weather, stands a statue of her majesty by Lough. The outside of the building, except the grand western entrance is occupied by small shops; and on the upper floor is Lloyd's, where the business of marine insurance is conducted by underwriters. It has been estimated that, on an average, 200,000 persons daily visit the exchange, but this can be little more than conjecture. Merchants and brokers resort much to coffee-houses in the vicinity of the Exchange for the transaction of business. Most of the larger transactions are negotiated by brokers, who in general confine themselves to one branch of trade, with which they are thoroughly acquainted. Thus we have colonial brokers, insurance brokers, ship brokers, stock brokers, bill or money brokers, etc. Near the Royal Exchange and the Bank is the Stock Exchange, where real and fictitious sales are made of property in the public funds, etc.; the latter for the most part being a species of gambling.

London, when compared with some of the towns in the north and west of England, can scarcely be called a manufacturing place; yet the various articles produced here employ many thousand persons. The silk manufacture especially employs a large number of hands. Originally introduced by French Protestant refugees, many of their descendants still continue the trade, which employed, in 1851, 15,764 persons, of whom 8277 were females. The manufacture of London porter and beer is a much more lucrative business, but a London brewery requires a very large capital. Sugar-refining and clock and watch making also prevail to a considerable extent, the latter chiefly in a district called Clerkenwell. London-built carriages are generally considered the best, as they are undoubtedly the most elegant in the world. London enjoys a high reputation for the manufacture of numerous smaller articles, such as mathematical, surgical, and musical instruments, jewelry of the superior kinds, gold and silver plate, etc. The great number of these employed in house-building proves that the metropolis is still rapidly extending; and though this business received a severe check during the late war with Russia, it was only temporary, as evinced by the general resumption of building in the various outskirts of London.

The shops in London are, generally speaking, well managed, and many of them are handsomely fitted up, especially those in Bond-street, Regent-street, and Oxford-street. The wholesale shops or warehouses are chiefly to be found in the city; the retail shops, particularly those on a large scale, being more general in the west or fashionable end of the metropolis. The bazaars in London, each of which forms an aggregation of shops or stalls, are not now so attractive as they once were. They deal mostly in fancy goods, furniture, toys, etc. The four great establishments of the kind are those in Soho Square and Baker-street, the Pantheon in Oxford-street, and the Pantechnicon in Halkin-street, Belgrave Square. The Burlington and Lowther Arcades contain many shops for the sale of the like commodities.

TABLE SHOWING THE AREA IN SQUARE MILES, AND THE POPULATION OF THE METROPOLIS, THE NUMBER OF HOUSES THEREIN, AND THE NUMBER OF FAMILIES OCCUPYING THE SAME IN 1851.

Divisions.	Area in square miles.	Houses.			Families or separate occupiers of dwellings.	Population.
		Inhabited.	Uninhabited.	Building.		
Middlesex	51	218,279	10,613	8,046	395,708	1,745,601
Surrey	36	72,844	4,524	1,160	110,027	482,485
Kent	35	20,816	1,506	609	27,859	134,202
Total	122	305,939	16,964	4,815	533,580	2,362,288

ACCOUNT SHOWING THE NUMBER OF PERSONS OF 20 YEARS OF AGE IN THE METROPOLIS IN 1851, DISTINGUISHING THE MARRIED FROM THE UNMARRIED.

Sexes.	Total.	Of the age of 20 and upward.		
		Bachelors and spinsters.	Husbands and wives.	Widowers and widows.
Males	632,545	196,857	398,624	37,064
Females	762,418	246,124	406,266	110,028

From different quarters we have gleaned the following estimates of the annual consumption of certain articles of London food. All, however, may be considered applicable to the period of the last census in 1851:

Wheat	1,600,000 quarters.
Bullocks	240,000 head.
Sheep	1,700,000 "
Calves	28,000 "
Pigs*	85,000 "
Poultry	3,748,000 "
Game, etc.	1,807,000 "
Fish, wet and dry, of which more than half were herrings	450,180,900 lbs.
Oysters	909,935 barrels.
Potatoes	810,464,000 lbs.
Cabbages	89,672,000 "
Onions	1,489,600 "
Apples	725,500 bushels.
Foreign eggs	about 75,000,000
Milk, the produce of	13,000 cows.

* Exclusive of large quantities of bacon and ham.

Water.—Although London is supplied with many excellent springs of fresh water, they proved, centu

ries ago, quite inadequate to the wants of the citizens. As already mentioned, conduits were then adopted as a substitute. The first effort to supply water on a great scale was made in 1608 by Sir Hugh Myddelton—a spirited citizen, who undertook, at his own risk, to convey a river of fresh and good water to the city. From this we may presume that in Myddelton's time the Thames no longer merited the eulogy of Stowe, that its "water was as cleere as that of the sea." In 1613 the River Lea water was let into the basin at the New River head at Islington, and thence, at the present day, the New River Company, with increased means, transmit the water through pipes to the houses, etc., supplied by them.

Bridges.—The bridges spanning the Thames in its passage through London, are nine in number, eight of these being adapted for carriages. The cost of New Westminster Bridge is estimated at £235,000. The following table will show the cost and dimensions of these various bridges:

TABLE SHOWING THE MATERIAL, COST, ETC., OF THE BRIDGES OVER THE THAMES, IN LONDON AND ITS VICINITY.

Names.	Date of completion.	Material.	Cost including Approaches.	Cost exclusive of Approaches.	Number of Arches.	Length.	Breadth.	Span of central Arch.
						Feet.	Feet.	Feet.
London Bridge	1831	Granite	£2,000,000	£542,150	5	904	56	150
Southwark	1819	Iron arches, stone piers	800,000	800,000	8	800	42	240
Blackfriars	1770	Stone	260,000	157,840	9	995	42	100
Waterloo	1817	Granite	1,150,000	679,915	9	1,380	42	120
Westminster	1751	Portland stone	389,500	....	15	1,160	43	70
Vauxhall	1814	Iron arches, stone piers	Unknown.	300,000	9	840	36	78
Hungerford Suspension	1845	Brick and stone piers	118,000	98,760	Nil.	1,586	13	....
Chelsea Suspension	1857	Iron piers and roadway	88,000	....	....	922	45	....
Battersea	....	Wood	Unknowe.	....	....	....	....	....

Trade of 1856.—The East India and China Association have published their usual comparative statement of the number of ships, both British and foreign, with their aggregate tonnage, entered inward and cleared outward with cargo from and to places within the limits of the East India Company's charter, from the 1st of January to the 31st of March, 1855 and 1856. According to the statistics of the vessels entered inward, the return for the port of London shows a decrease of 31 vessels and 8971 tons, the difference between 197 vessels, with the capacity of 109,484 tons, in 1855, and 166 vessels, with a capacity of 100,513 tons, in 1856. Liverpool figures for an increase of 8 vessels and 14,339 tons, the arrivals in the former period having been 62 vessels, with a capacity of 39,364 tons, and in the latter 70 vessels, with a capacity of 53,703 tons. With regard to Bristol, there is a decrease of 3 vessels, with an increase of 806 tons; the arrivals in 1855 having been 10 vessels, with a capacity of 2917 tons, and in 1856 7 vessels, with a capacity of 3723 tons. The return for the Clyde exhibits a decrease of 2 vessels and an increase of 722 tons, the difference between 8 vessels, with a capacity of 3414 tons, and 10 vessels with a capacity of 2629 tons. A review of these figures shows a net decrease of 24 vessels and an increase of 5452 tons; the arrivals in 1855 having been 277 vessels, with a capacity of 155,179 tons, and in 1856 253 vessels, with a capacity of 160,631 tons. The principal arrivals were from Calcutta, Madras, and the Cape of Good Hope. According to the statistics of vessels cleared outward, the return for the port of London exhibits an increase of 6 vessels, and 5095 tons; the departures in 1855 having been 157 vessels, with a capacity of 94,784 tons, and in 1856 163 vessels, with a capacity of 100,689 tons. In the case of Liverpool there is a decrease of 9 vessels and 11,137 tons, the difference between 98 vessels, with a capacity of 80,444 tons, and 89 vessels, with a capacity of 69,247 tons. The figures for Bristol show a decrease of 2 vessels and 459 tons; the departures in 1855 having been 3 vessels, with a capacity of 1641 tons, and in 1856 1 vessel, with a capacity of 1182 tons. With regard to the Clyde, the results show a decrease of 8 vessels, with 2534 tons, the difference between 25 vessels, with a capacity of 10,044 tons, and 22 vessels, with a capacity of 13, 510 tons. Taking the result of the whole return, there is a net decrease of 8 vessels, with 8285 tons; the departures in 1855 having been 283 vessels, with a capacity of 192,923 tons, and in 1856 275 vessels, with a capacity of 184,628 tons. The principal decline has been in departures for Australia, Calcutta, the Mauritius, Java and Sumatra, and Arabia. For a full exhibit of the commerce of Great Britain, including that of London, see GREAT BRITAIN.

Long Island, N. Y. Situated in the south-east part of the State, and contains 1500 square miles, lying between the Atlantic on the south, and Long Island Sound on the north. It contains three counties—Kings on the west end, Queens in the middle, and Suffolk on the east end of the island. A chain of hills runs from west to east, on the north of which the surface is somewhat hilly and broken; on the south it is level. The north shore is somewhat bold; on the south it is a beach of sand and gravel, inclosing bays, with various inlets, admitting vessels of 60 or 70 tons, and abounding with shell and other fish. At the east end is Gardiner's Bay and Island, and Montauk Point, a bold promontory, on which is a light-house. The north shore has several light-houses.

Longitude. By the term *geographical longitude*, is meant an arc which measures the inclinations of two terrestrial meridional planes, one of which passes through a known place as a place of reference, the other through any place whatever. It is sometimes also defined as the distance east or west, along the equator, of any place from a certain meridian. Longitude was determined by Hipparchus at Nice, who fixed the first degree in the Canaries, 162 B. C. Harrison made a time-keeper in A. D. 1759, which in two voyages was found to correct the longitude within the limits required by the act of Parliament, 12th Anne, 1714; and in 1763, he applied for the reward of £20,000 offered by that act, which he received. The celebrated Le Roi of Paris, in 1766, invented a watch that keeps time better; and the chronometers of Arnold, Earnshaw, and Bréguet, bring the longitude almost to the truth. Philosophers have sought the longitude in vain; but Newton has said it will yet be discovered by a fool. The selection of a station from which the longitudes of all other places are to be reckoned is entirely arbitrary; British astronomers and geographers have chosen the meridian of the Royal Observatory of Greenwich as their *first meridian*. The French and other continental nations refer the longitudes of all places to the meridian of their principal observatory. The longitude of a place may be expressed in hours, minutes, and seconds of time, or in degrees, minutes, and seconds of space; if it be given in either, it may be translated into the other. The reason of this is, that the earth revolves on its axis from west to east in 24 mean solar hours, thereby causing the first meridian to describe during that time a space equal to 360°, and therefore, in one hour, 15°. Hence, if the plane of the first meridian pass at the present moment through the sun, then the meridian of a place 15° *west* of the former, will pass through the sun exactly one hour after; if the place be 15° *east* of the first meridian, the plane of the former will pass through the sun one hour before the latter. The sun always

passes the meridian of any place when highest in the heavens, *i. e.*, at mid-day, or 12 o'clock mean solar time. Wherefore, places lying to the east of the first meridian will have every hour earlier, but places lying to the west of that meridian will have every hour later than it; so that if, while the meridian of one place is passing through the sun, the time be known before the meridian of another place pass through the sun, then the longitude of that place from the former is determined, the time being turned into space at the rate of 15° to the hour. Hence, therefore, places will have east or west longitude, according as they lie east or west of Greenwich Observatory, the longitude of the meridian of which is zero.

The problem of the longitude may be reduced to this—Given the hour by calculation at the place of observation, to find the hour at Greenwich Observatory corresponding to the same time; the difference of times gives the longitude of the place from Greenwich. The solution of this problem was attempted in very early times, dating even from the time of the ancient Egyptians, but the results obtained were very inaccurate. These results were deduced from tables of celestial phenomena calculated for a certain meridian, and then the times were compared with the times at which the same phenomena appeared at a different place; actual admeasurement was also employed. But it was not until after the invention of watches that the problem was rendered solvable. Harrison, in the 18th century, was the first who gave a *true* solution by a watch; but the first accurate resolution of the problem may be said to date from the discovery by Galileo of Jupiter's satellites, and his tables of their motions. The result of the problem at this period, as well as now, was, as Wolfius has expressed it, that the means might be found whereby the art of navigation might be brought to its utmost pitch of perfection. If the advantages of determining the longitude to a commercial and maritime people be considered, it will not appear surprising that princes and others should have held out high rewards for a true solution of the problem. Philip III., King of Spain, saw its value, and in 1598 offered a reward of 1000 crowns to the person who would solve it. The States of Holland imitated his example by a prize of 10,000 florins. In the year 1714, the British government offered a premium of £20,000 for any method whereby the longitude might be determined at sea to within 30 miles; £15,000, if the proposed method would give it to within 40 geographical miles; £10,000, if it would determine the longitude to within 60 miles. It was also enacted, that a reward of £5000 would be given to the inventor of any time-keeper which should enable a ship, during a voyage of six months, to keep her longitude to within 60 miles; £7500, if within 40 miles; and £10,000, if within 30 miles. If the method were by improved astronomical tables, the reward was to be £5000, the tables being compared with previous observations. France, also, in 1716, under the regency of the Duke of Orleans, offered a prize of 100,000 livres. In consequence of these rewards, many and various methods were proposed, the best of which, at least as respects frequency of observation and shortness of calculation, is the method of *Lunar Distances*.

Jean Werner of Nuremberg, appears to be the first who proposed, in his *Ptolemy's Geography*, 1514, a method of finding the longitude by the distance between the moon and a star. The lunar method was also recommended by Oronce Finé of Briançon, in his book *De Invenienda Longitudine*; by Gemma Frisius, in his treatise *Structura Radii Astronomici et Geometrici*, 1545; by Kepler, in his *Rudolphine Tables*; and by Christian Longomontanus, in his *Astronomia Danica*, 1622. Gemma Frisius is, moreover, said to have attempted the longitude by a watch some time after 1530. Carpenter, in his *Geography*, 1635, says that the lunar method is to be ascribed to Pierre Appian, a German, born in 1495. John Baptiste Morin, in 1634, attempted to improve the lunar method, and received, in 1645, a pension of 2000 livres; but his *improvements* were useless, as Paschal declared, owing to the imperfect nature of the existing tables.

The tables of celestial observations previous to Flamsteed's time were imperfect and erroneous; those generally used were Tycho Brahe's, or Kepler's, and to show that they were of little value in determining the longitude, although invaluable in other respects, it may be stated that Flamsteed's observed differed from Tycho's computed places by 5′, 6′, or more; and the tabulated distances of the latter differed from the observed distances of the former by 15′ or 20′, which would cause an error in the longitude of about 15°, or 300 leagues. Tycho's *lunar theory*, and the tables grounded on it, were in error 12′ and more. The uncertainty, then, of these tables being known, as well as the paucity of astronomical observations generally, a Frenchman, named Le Sieur de St. Pierre, contrived, in 1674, to get his pretensions to the discovery of the longitude brought under the notice of Charles II., of Britain and the court. Commissioners were appointed, and St. Pierre's data necessary to work the problem were as follows:—1. The heights of two stars, and on which side of the meridian they were; 2. The heights of the two limbs of the moon; 3. The height of the pole; all to be given in degrees and minutes; and 4. The year and day of observation. Flamsteed being in London at the time, was appointed, not only to act as a commissioner, but also to supply the necessary data. St. Pierre, having received the data which he required, refused to work the problem, because he alleged the observations given him were feigned. Flamsteed, on this, wrote to the commissioners, assuring them that the observations were genuine, and at the same time stated, that the longitude could not be solved by the conditions proposed; but if the tables of celestial observations, especially those of the moon, could be rendered more accurate, then the longitude might be determined by them. On the letter being shown to Charles, his majesty was startled at the assertion of the computed places not agreeing with the observed, and said with some vehemence, he must have them observed, examined, and corrected anew for the use of his seamen. It was this simple incident which led to the formation of the Royal Observatory of Greenwich, the foundation of which was laid by Flamsteed on the 10th of August, 1675; and it was in that building that Flamsteed labored for 44 years, under the most trying circumstances, to correct existing tables, and to commence the *British Catalogue*, one of the noblest monuments of British perseverance. So valuable were Flamsteed's observations to Newton, that they enabled him to form his *lunar theory*, which is now of such consequence in determining the longitude.

From the improvements made in watches by Huygens, Hooke, and others, previous to the year 1714, it was thought that the longitude would be solved by this machine. Hence, after 1714, the best artists applied themselves to the construction and improvement of watches. Henry Sully, an Englishman, but resident at Paris, tried in 1726 to determine the longitude by a *marine watch*, but without success. Julian Leroy, one of his pupils, would appear to lay claim to priority of invention; but it has never been disputed that the honor of solving the difficult problem of the longitude by means of a watch belongs wholly to Harrison. This ingenious workman began, at a very early period, to make experiments on pendulums made of different metals, in order to counteract the effects of heat and cold. In the year 1736 Harrison was brought into notice by a pendulum clock which he had made in 1726, and which, for ten successive years, kept remarkably exact time. This clock was tried in a voyage to Lisbon during August, 1736, when it corrected an error in the ship's reckoning of 1° 30′. At the special

request of the commissioners of longitude, who advanced him money, he continued his experiments on watches from 1737 till 1761, when he produced three watches, or time-keepers—the third the most accurate, and about 4 inches in diameter. This watch, or chronometer, was tried in a voyage to Jamaica as to its practicability in determining the longitude. The trial was eminently successful: the difference of time as shown by the chronometer indicating Greenwich or rather Portsmouth local time, and the local time of the place, being 4 seconds of time, which is equivalent to 1 nautical mile in the parallel of Jamaica. On the arrival of the vessel at Portsmouth, it was found that the error of the chronometer was only 1′ 53·5″, or 28′·375 for the entire voyage, which, in the parallel of Portsmouth, would be equivalent to 18 nautical miles. Since this error was within the limit prescribed by the act, Harrison claimed the full reward of £20,000; but the commissioners, considering the matter in all its detail, came to the conclusion that the watch was not yet sufficiently tried. In order, however, to testify their appreciation of the invention, they gave Harrison a grant of £5000, and requested him to improve the watch still further against a second voyage. This voyage was undertaken, in 1764, to Barbadoes; and that no misunderstanding might ensue, Maskelyne and Green were also sent out to make the necessary astronomical observations at that place. The difference of longitude, as shown by the chronometer and that by astronomical observation, was 43″ of time, which is equivalent to 10′ 45″ of space, or longitude. In consequence of the success attending this and the former trial, the House of Commons ordered one half of the reward promised by the act of 1714, or £10,000, to be paid to Mr. Harrison, the inventor of the *longitude clock*; the other half to be paid him when watches, constructed on principles stated by him, should determine by trial the longitude of any place to within 30 nautical miles. Another condition annexed to the payment of the other £10,000 was, that the inventor should give on an oath a full explanation of the principles on which the watch was constructed. This was done most willingly, and Harrison delivered over all his watches to government. The first watch made on Harrison's principles was that by Mr. Kendall; it was found to exceed the regularity of the best of its models. This instrument was committed to the care of Mr. Wales, in his voyage round the world with Captain Cooke, during the years 1772, 1773, etc., and such was its success, that in 1774 an appeal was made to the House of Commons to order the remaining sum to be paid to Mr. Harrison, which was accordingly done. Harrison realized by his invention alone upward of £24,000.

Several other parties received rewards for their improvements in chronometers. Arnold & Son received £3000, and Mudge £500.

Since Harrison's time, remarkable improvements have been made in time-keepers, or *chronometers*, as they are now termed; no one sustaining a good character that gains or loses more than a single second in one day.

But while watches were thus gradually being perfected, the tables of celestial motions were also attended to. Halley, on succeeding Flamsteed as astronomer-royal, continued improving what the latter had begun, so that for 1730, and consequently for the future, the *Caroline Tables* were presumed to give the true place of the moon within the compass of 2′ of her motion. But however perfect such tables may be made, they will be useless without a proper instrument with which to take angles accurately at sea. Dr. Halley proposed to overcome this obstacle, by using on shipboard a telescope of five or six feet; but the error in such a case would nearly equal 2°, or under the equator the longitude would be in excess or defect about 40 leagues. But in 1761 Mr. Hadley communicated to the Royal Society the nature of the *sextant*, which he had then invented. The sextant is an instrument for taking angles at sea with surprising accuracy; its principle depends on the law of the reflection of light. This instrument was tried in several voyages with wonderful success; but its results were most accurate when used with Professor Mayer's *Tables of the Moon*, computed for the meridian of Paris. These tables first appeared in the *Memoirs of Göttingen* for 1742, and a manuscript copy was sent in 1755 by Mayer to the Board of Longitude, setting forth, at the same time, his claim for some one of the rewards which he might be thought to merit. These tables were placed in the hands of Dr. Bradley, astronomer-royal, who compared several hundred computed longitudes of the moon with his own observed longitudes, and never found a greater difference than 1′·5. Dr. Bradley showed the commissioners the value of these tables. Mayer died in 1762; but having in the interval greatly improved his tables, his widow sent them in 1763 to the Board of Longitude. These are the tables which, in consideration of their value in finding the longitude at sea, were, by act of Parliament, honored with a reward of £5000, which was paid, in 1765, to Mayer's widow. Dr. Maskelyne, astronomer-royal, was at the same time requested to improve and correct them as far as possible, so that they might be compiled, and form the basis of a *British Nautical Ephemeris*, or *Almanac*; and to print the same, in order to make the lunar tables of general utility. The first of the series of the *Nautical Almanac and Astronomical Ephemeris* was published in 1766, under the superintendence of Dr. Maskelyne. It was published yearly by the Commissioners of the Board of Longitude. The *Nautical Almanac* has been greatly improved, corrected, and extended, under the able superintendence of Mr. Airy, the present astronomer-royal; it is now published four or five years previous to the observations being made at Greenwich Observatory; hence in long voyages the set of tables may be taken out.

In consideration of Mayer having availed himself of Euler's *lunar theory*, the latter received from government £300.

The several methods for finding the longitude are the following:

To find the Longitude by a Chronometer.—Suppose that a chronometer is warranted to measure equal portions of time uniformly, and always indicates Greenwich local time; it is evident that, were this instrument carried to any station on the surface of the earth where also the local time is known, the local times of Greenwich and that place can be compared with each other. If the chronometer be carried to any station on the meridian of Greenwich, the chronometer and local time of the place will always coincide; but if it be carried to any station west or east of the meridian of Greenwich, then the time as shown by the chronometer will be in excess in the former case, but in the latter in defect of the local time of the place; the difference of local times gives the longitude of the place from Greenwich. The time may be converted into distance, at the rate of 15° to one hour. Chronometers can never be made perfect; they require, therefore, to be daily compared with the heavenly bodies in order to ascertain if their motion has been uniform.

To find the Longitude by Lunar Eclipses.—Since an eclipse of the moon is visible to one half of the earth at the same time, this would seem to be an excellent method of finding the longitude. The different steps of the process are—to compute the time at which an eclipse is to happen at the place of observation, and to compare this time with an accurate chronometer showing Greenwich time; or, in the absence of this, the Greenwich time of the happening of the phenomenon must be looked for in the *Nautical Almanac*; or it may

be compared by the observer from the lunar tables. But this method of determining the longitude is rarely used, owing to the difficulty of ascertaining the exact time of contact of the penumbra of the earth's shadow with the moon's limb at the beginning or ending of the eclipse. Sometimes, indeed, two observers of an eclipse at the same place may differ more than two minutes in noting the time of contact; and hence the error from this cause alone would be about four minutes of time, which would be equivalent to nearly 1° of longitude. It was proposed in the *Philosophical Transactions* of 1786 to diminish this source of error, by observing the contact of the earth's shadow with some remarkable spot on the moon's face. But although this method were more accurate, the unfrequency of lunar eclipses at sea renders the method of little use.

To find the Longitude by the Eclipses of Jupiter's Satellites.—Ever since the discovery by Galileo of Jupiter's satellites the observation of their passage over their primary has been used as a meteor for finding the longitude. Tables of these eclipses were constructed by Galileo; and it was the disagreement of these tables with actual observation that led Roemer to the discovery of the gradual propagation of light. See LIGHT. The first astronomical solution of the great problem of the longitude really dates from the discovery of these *secondaries*, for the tables of their eclipses were framed on scientific principles. The three interior satellites of Jupiter pass through his shadow, and are eclipsed at every revolution; the fourth, or outer one, at times escapes eclipse, grazes the umbra, or is partially eclipsed. The computed times at which the eclipses are to happen at Greenwich Observatory are noted in the *Nautical Almanac*, published three or four years in advance; so that if these tables are in the hands of any one distant from Greenwich, he has but to observe the eclipse, and calculate the time at which it occurs, to find the difference of the local times between Greenwich and the place of observation, and thus ascertain the longitude. The times of immersion and emersion are noted with much greater accuracy than the contact of the moon's limb with the earth's shadow.

But before these eclipses can be observed with accuracy, a telescope of considerable power must be used; and as it is extremely difficult to direct a telescope properly on shipboard, the method is practically useless at sea. But, again, particular care is required in observing; for two observers at the same place, with telescopes of different magnifying powers and apertures, seldom agree within a second or two of each other; hence the mean of the results of immersion and emersion should be taken. But another source of error is, that no two or more observers will agree as to the instant of the local immersion, or of the complete emersion of the satellite; hence the only case in which this method is practically useful in determining terrestrial longitudes is that in which the instant of immersion and emersion are observed with the same telescope, and by the same observer, since in this manner he will find the precise instant of the satellite's opposition to the sun.

To find the Longitude by Signals.—If the difference of longitude between two places be small, it may be easily found by means of the bursting of a rocket, the oxy-hydrogen lime-ball light, or the explosion of gunpowder fired from the one place at a preconcerted time, and observed at the other place; the local times of these places being accurately ascertained, the longitude is known. These artificial signals, when fired from an elevated spot of country, may be seen, when the atmosphere is in a proper state, at distances varying from 80 to above 100 miles. An observer, therefore, distant from the spot at which the rocket or other signal is exposed, has only to observe the time when he sees it, and afterward compare this time with the time when the rocket was set up, the difference of times giving the longitude of the one place from the other; if at one of the places the Greenwich time corresponding to that of the event is known, the longitudes of the places from that meridian are also known. It is here supposed that the gradual propagation of light leads to no appreciable error in the small distance between the two places.

If the distance between the two places be considerable, and if a rocket sent up at the one place can not be seen at the other place, the longitude of which is required, then a series of signals must be made and noted by observers, placed at stations intermediate to the two extreme places.

Thus, let A and E be the two places, the longitude between which is required; B, C, and D, observers at intermediate stations; w, x, y, z, signal places, and let these places be arranged in the following manner:

A w B x C y D z E.

Before the signals are sent up at the previously arranged hours from w, x, y, z, the local times of the places along the whole line AE are supposed to be accurately known. Let then a signal be sent up at w, and noted at A and B, the difference of times of observation, as noted by the chronometers at those two places, will give the longitude AB. Let, again, another signal be sent up at x, and the time of appearance noted at B and C, then the difference of times, as shown by the chronometers, gives the longitude between B and C; and therefore between A and C. Similar results will be found when signals are sent up from the stations y and z, to be observed at C and D, D and E; and, in this manner, the whole longitude AE between the extreme stations can be found. The longitude found on this principle, and the mode of deducing the most advantageous results from a combination of all the observations, is fully stated by Sir John Herschel in the *Philosophical Transactions*, 1826, *on the Difference of Longitudes of Greenwich and Paris*.

To determine the Longitude by Moon-culminating Stars.—This method consists in finding the increase of the moon's right ascension in the intervals between the passage of the moon over the meridian of Greenwich and over that place whose longitude is required. It is necessary to find the right ascension of the moon's bright limb, and of a star selected on, or as near as possible to, the moon's parallel of declination, and not differing much from her in right ascension at the two meridians; then, the moon's increase of right ascension being known, the difference of longitude is determined.

Let T, for example, be the time when the moon's enlightened limb transits the meridian of any place distant from Greenwich; t the time of passage of a star over the meridian of the same place; let also n be the error of the clock in the course of the day; then $24+n$ will be the interval of time elapsing between two successive transits of the same star, and $24 \pm n$: T—t=360°: the difference of right ascension of the moon's bright limb and the star at the instant of the limb being on the meridian; and if to this the right ascension of the star be added, the right ascension, $=a'$, of the moon's bright limb when on the meridian is determined. Now the proper stars to be observed for this purpose, as well as the right ascension of the moon's bright limb when on the meridian of Greenwich, are given for every day of the year in the *Nautical Almanac*, from which the daily increment of right ascension may be determined. Let a be the right ascension of the moon's bright limb when on the meridian of Greenwich, a the increment of right ascension in the time between two successive transits over the same meridian; then, while the moon, by her relative motion, separates from the meridian of Greenwich by an angle of 360°, its real motion in right ascension is a; and while it separates by an angle equal to the dif-

ference of longitude, the motion in right ascension is $a - a'$; and therefore, supposing the change in right ascension uniform, the required longitude $= \frac{a - a'}{e} \cdot 360°$.

Where greater accuracy is required, the difference of longitude corresponding to the increase of right ascension $a - a'$ must be determined by interpolation. This method is considered one of the best which can be adopted for determining the longitude of distant places, when the observer, furnished with a transit instrument, can obtain a landing.- HYMER'S *Astron.*, 1840.

To find the Longitude by the passages of the Moon over the Meridian.—If the sun, moon, and a star be supposed to be on the meridian of Greenwich at the present moment, then the next instant the three bodies will be separated from each other—the star will be found most advanced to the west, the moon least advanced from the meridian, while the sun will occupy an intermediate situation. The meridian itself also leaves these bodies, but will approach them with different degrees of velocity, and reach each of them after certain intervals of time. It will pass the star after the lapse of a sidereal day, or after having described 360°; it will pass the sun at the end of a solar day, or after having described 360° 59′ 8″·3; and it will pass the moon after a time=the sum of 24 hours and the moon's *retardation* for that time, or after having described an angle=the sum of 360° and the moon's right ascension in 24 hours. This always takes places in the interval between two successive transits of the moon over the same meridian. So also a spectator on a different meridian will notice similar effects, but less in degree, and less proportional to the distance of his from the first meridian. The sun's right ascension will be increased (or the separation of the sun from the star), but less than 59′ 8″·3; the moon's right ascension (or the separation of the moon from the star) will also be increased to the spectator, but less than its increase between two successive transits; consequently there will be an excess of increase of the moon's right ascension above that of the sun's, but less than the excess that takes place between two successive transits of the moon over the meridian of Greenwich. Wherefore, since the spectator at the second meridian may compute the respective increments of right ascension of moon and sun that take place between two successive passages of the moon over the meridian of Greenwich; then, since he is also able to compute, by actual observation, the right ascensions of sun and moon at the times of their passage over his own meridian, he has determined the longitude. The spectator may choose the sun and a star, the moon and a star, or the moon and sun; the two former are preferable.—WOODHOUSE'S *Astron.*, 1821.

To determine the Longitude by means of Eclipses of the Sun, or by Occultations of Stars by the Moon.—One of the most exact methods, and at the same time the simplest, for finding the longitude, is by means of solar eclipses and occultations. If the commencement and ending of an eclipse of the sun, or the immersion and emersion respectively of a star from the enlightened and dark limb of the moon or of a planet, be observed, it is only necessary to deduce the true time of conjunction for Greenwich and also for another place of observation; the difference of the times gives the difference of meridians, and therefore also of longitudes. Kepler employed this method, and it is one of the simplest.—KEPLER, *Astron. pars opt.* The only inconvenience of this method is the large amount of calculation required.

To find the Longitude by Lunar Distances; that is, by the distance of the Moon from a Star or the Sun.—This method supposes that the face of the heavens is a dial-plate, the stars marks apparently irregularly distributed upon it, and the moon the hand movable among them and round the earth as a variable centre. Three things require particular notice about this *clock*: 1. The intervals of place separating the principal and secondary marks from one another and from the moving hand—the moon. 2. The exact amount of the eccentricity of the earth, the centre of motion of the hand. 3. The proper motion of both moon and earth at any part of their respective paths. When these data are properly known, the time as shown by this clock may be read. The time as pointed out on this dial-plate is generally *read* at Greenwich Observatory, and tabulated in the *Nautical Almanac*, 4 or 5 years beforehand, for every three hours. But this clock is supposed to be accurately seen by a spectator at the centre of the earth, and consequently, since observers are on the surface, the moving hand being rather near, and the marks immensely distant from the earth, it is evident that this movable hand will be displaced, or undergo a *parallax* with respect to the stars, which must be allowed for, ere the true place is known which she occupies in space, as seen from the centre of the earth. A reduction must also be made to the centre of the earth. The necessary steps for computing the longitude by this method are: (1.) Find by a sextant the distance between a star and one of the moon's limbs; or, between the limbs of the sun and moon; add or subtract, in the former case, the semi-diameter of the moon, and in the latter, the sum of the semi-diameters of sun and moon, which gives the distance of the moon's centre from the star, or that between the centres of sun and moon. (2.) When two observers are making the observations, one should take the above distance, while at the same instant the other takes the altitude above the horizon of the moon and star, or of the moon and sun. In the case of one observer, he must take the altitudes immediately before and after the distance has been found, and allow for the changes of altitude which may have taken place in the intervals between their observations and that of the distance. (3.) The true altitudes are derived from the apparent and observed, by correcting the latter for refraction and parallax; the *apparent* altitude being the observed altitude corrected for the dip of the horizon and instrumental errors. (4.) The observed is also an apparent distance, and must, like the altitude, be corrected for parallax and refraction in order to find the true distance. (5.) Since the true distance is found, the hour, minute, etc., of Greenwich time corresponding to it will also be found by the tables of the *Nautical Almanac*. (6.) The local time of the place of observation is now to be computed from the true and corrected altitude of a star or the sun, the sun's or star's north polar distance, and the latitude. (7.) The difference between this local time and Greenwich time gives the longitude.

To find the Longitude by the Electric Telegraph.—This beautiful and ingenious application of electricity for recording astronomical observations is the latest method of finding the longitude, and was proposed by Mr. Bond of the Cambridge Observatory, United States. Mr. Airy, of the Greenwich Observatory, has also carried it into effect with great improvements. During the summer of 1847 experiments were made on the electric telegraph connecting New York, Philadelphia, and Washington, for the purpose of determining the differences of longitude between these three cities. A competent observer was stationed at each observatory. A continuous wire connected the three cities, so that telegraph signals might be exchanged between any two of them at pleasure. In some of the first experiments, signals were exchanged between Philadelphia and Washington, but it was found impossible to transmit signals from Jersey City to Washington, the power of the battery being inadequate to that distance. This, however, was remedied on the 29th of July, when 20 clock signals were given at Jersey City, and recorded both at Philadelphia and

Washington; 20 signals were given at Philadelphia and recorded at Jersey City and Washington; and 20 signals were given at Washington and recorded at Jersey City and Philadelphia. Thus the comparison of the three clocks was decisively made in a remarkably short period of time. The success of these experiments amply repaid the first unsuccessful efforts. The difference of longitude between Jersey City and Philadelphia is $40^m\ 8^s$; and between Jersey City and Washington, $12^m\ 8^s$; omitting in each case the small fractional part of a second, which was ultimately allowed for. The distance between New York and Washington is 225 miles, and the time required to make a communication pass betwixt these two places was a fraction of a second which can not be measured.

Soon after a system of telegraphic wires was erected on the principal English lines of railway, Mr. Airy had them put in communication with Greenwich Observatory, his object being to give *Greenwich time* on a given day to the United Kingdom. It was at first proposed that a ball should be dropped from the upper part of Greenwich Observatory, so as to touch a spring communicating with all the telegraphic wires in the kingdom, and then, by the striking of a bell, give instantaneously true Greenwich time to Liverpool, Manchester, and all the northern towns. But this method was found impracticable, owing to the non-completion of all the lines with Greenwich. On the 1st of December, 1847, true Greenwich time was communicated directly from the observatory to the several stations of the London and North-Western and Midland lines in connection with it; but to all other stations of these lines special messengers were sent with chronometers indicating true Greenwich time. Hence, since Greenwich time is used over the whole of the United Kingdom, if the local time of any place be known, its longitude from Greenwich is also determined. Since submarine cables connect Greenwich with Brussels and Paris, and these again with the principal cities of Europe, Mr. Airy was very lately enabled to correct the latitudes and longitudes of their observatories. Hence, also, when the submarine cables which are to connect India, Australia, and America, with Greenwich, shall have been completed, the true longitudes of the principal cities of the world will easily be determined.—E. B. See articles LATITUDE and LONGITUDE, EARTH and DEGREE.

Loo-Choo Islands, a group consisting of about 36 islands in the North Pacific Ocean, between Japan and Formosa. They lie between N. lat. 24° and 28° 40′, and E. long. 127° and 129°. They are small and insignificant, with the exception of Great Loo-Choo, which extends about 60 miles in a north-easterly direction, and has an average breadth of about 10 or 12 miles. This island is entirely encircled by coral reefs, which, however, do not appear above water. Along its centre runs a chain of hills, covered for the most part by forests of pine, and broken at intervals by rupt crags that bear seeming traces of volcanic action. Their slopes in many parts are covered with terraced gardens and fields of grain, and are watered by streams led in artificial channels. The valleys are well watered, fruitful, and covered with a luxuriant vegetation. The villages are almost completely hidden among groves of bananas, bamboos, banyans, and pines. Rows of trees overarch the roads, line the streets of the chief towns, and form a screen in front of the houses. There are large rich fields of rice, intermingled with crops of sugar-cane, wheat, millet, sweet potatoes, plums, oranges, cotton, and tobacco. The principal surface-rock is argillaceous, and is intersected at intervals by peculiar ridges of limestone. The disintegration of the former rock forms the chief ingredient of the rich adhesive soil which is most prevalent in the island. Situate within the range of the trade-winds, Loo-Choo has in general a mild climate. The domestic animals are, geese, ducks, fowls, pigs, goats, a small species of black ox, and a nimble, and hardy breed of horses. Wild boars abound in the extensive forests. A striking trait in the zoology of the island is the scarcity of birds in the woods.

The dress, customs, but especially the language, of the Loo-Chooans, indicate a Japanese origin. Suspicious of strangers, they are, nevertheless, gentle and hospitable. They are diminutive in stature, and in complexion resemble the Chinese. They have dark eyes and black hair, plaited into a knot on the crown of the head; and the character of the hair-pin determines the sex as well as the rank of the wearer. The women wear single, and the men double hair-pins. Among the higher classes, these articles are made of gold or silver; among the lower, of brass, lead, or pewter. The highest grade of society includes the spies and officers of the government, and also the mechanics and small merchants. Immediately below them are the literary class, who pass the most of their time in smoking tobacco and drinking tea, and are supported by the subordinate rank of field-laborers. The meanest order are the public slaves, possessing no personal freedom, and no civil rights. Subjected from mere infancy to perpetual toil, closely watched by spies, and prevented from all intercourse with strangers, the lower classes are spiritless, uncomplaining drudges, subsisting upon two tenths of the produce they reap from the soil. In the same slavish labor the women also are engaged. The Loo-Chooans of one village seldom intermarry with those of another. Their dead are treated with great respect; and their capacious tombs, built of white limestone, appear at a distance like cottages, checkering the hill-sides. The huts are generally placed in the middle of well-cultivated gardens. Their floors, covered with thick mats, are used both for sitting and sleeping. A great part of the industrial population are engaged in weaving the grass-cloth that forms the ordinary garment, and in turning wooden implements and covering them with lacquer. There are also manufactured tobacco, sugar, and small quantities of salt. Saki, a strong intoxicating liquor, is distilled from rice. All the processes of agriculture, and especially that of irrigation, are carried on with great success. The entire trade of the island is with Japan, and consists chiefly of sugar, saki, and grass-cloth. The government of Loo-Choo seems to consist of an oligarchy of *literati* subject to Japan. Learning is limited to a knowledge of the Chinese character and the Confucian classics, and the principal means of disseminating it is home education. A few regular schools, however, are scattered over the island, and at Napakiang there is an advanced seminary. The Loo-Chooans have no native literature. Their religion is a hybrid between Confucianism and Buddhism. Concerning the history of the island nothing certain is known, but tradition reports that it was once subject to three distinct sovereigns.

The principal sea-port is Napa, or Napa-Keang, situated in latitude 26° 13′ N., and longitude 127° 36′ E. The harbor is secure, and the port is now open to American vessels, for the purposes specified in the convention concluded July 11, 1854, and proclaimed March 9, 1855. The government of Japan having virtually disclaimed any jurisdiction whatever over the Loo-Choo Islands, a separate compact was entered into between the United States and the kingdom of Loo-Choo. It is as follows:

"Hereafter, whenever citizens of the United States come to Loo-Choo, they shall be treated with great courtesy and friendship. Whatever articles these people ask for, whether from the officers or people, which the country can furnish, shall be sold to them; nor shall the authorities interpose any prohibitory regulations to the people selling; and whatever either party may wish to buy, shall be exchanged at reason-

able prices. Whenever ships of the United States shall come into any harbor in Loo-Choo, they shall be supplied with wood and water at reasonable prices; but if they wish to get other articles, they shall be purchasable only at Napo. If ships of the United States are wrecked on Great Loo-Choo, or on islands under the jurisdiction of the royal government of Loo-Choo, the local authorities shall dispatch persons to assist in saving life and property, and preserve what can be brought ashore, till the ships of that nation shall come to take away all that may have been saved; and the expenses incurred in rescuing these unfortunate persons shall be refunded by the nation they belong to. Whenever persons from ships of the United States come ashore in Loo-Choo, they shall be at liberty to ramble where they please, without hinderance, or having officials sent to follow them, or to spy what they do; but if they violently go into houses, or trifle with women, or force people to sell them things, or do other such like illegal acts, they shall be arrested by the local officers, but not maltreated, and shall be reported to the captain of the ship to which they belong, for punishment by him. At Tumai is a burial-ground for the citizens of the United States, where their graves and tombs shall not be molested. The government of Loo-Choo shall appoint skilful pilots, who shall be on the look-out for ships appearing off the island; and if one is seen coming toward Napa, they shall go out in good boats, beyond the reefs, to conduct her into a secure anchrage; for which service the captain shall pay the pilot five dollars, and the same for going out of the harbor, beyond the reefs. Whenever ships anchor at Napa, the officers shall furnish them with wood at the rate of 3600 copper cash (43 cents) per 1000 catties; and with water at the rate of 600 copper cash for 1000 catties, or 6 barrels full, each containing 30 American gallons."

Loom (Fr. *Metier a tisser*; Ger. *Weberstuhl*), is the ancient and well-known machine for weaving cloth by the decussation of a series of parallel threads, which run lengthwise, called the warp or chain, with other threads thrown transversely with the shuttle, called the woof or weft. See JACQUARD, article, WOOLEN MANUFACTURES.

Lorcha, the name of a coasting vessel used in the Chinese seas. One of those vessels, sailing under British colors, was, in 1856, boarded by the Cantonese, had her flag pulled down, and her crew forcibly carried off. Governor Yeh refused either reparation or apology, and this led to the conflict between Britain and China during the same year.

Lorient, one of the five great naval ports of France, and the principal town in the arrondissement of the same name in the Department of Morbihan, is situated on the northern shore of the Bay of Biscay, where the Rivers Scarf and Blavet, after mingling their waters, fall into the Bay of St. Louis. It is a large and flourishing town, strongly fortified, tolerably well built, but not very clean, standing in an angle between two creeks, one of which forms the naval, and the other the mercantile port. The port, which is large and commodious, is walled off from the town, thereby excluding all view of the water from the inhabitants. It is the seat of a maritime prefecture, of a civil tribunal, of a tribunal of commerce, of a college, and of a school of naval artillery. The dockyard is the first in France for the building and equipment of ships of war: there is accommodation on its slips for the simultaneous construction of 30 ships of war. It has an arsenal, a park of artillery, engineering works, masting-sheds and forges, etc. There is a good trade in sardines, marine stores, iron, wax, honey, etc. The town is quite modern. Founded by the French India Company, in the reign of Louis XIV., in 1664, it was not till the time of the Duke of Orleans that the company took full advantage of the accommodation of Lorient. The greater portion of the town was then built, and the port fortified. In 1745 it contained 35 frigates, besides a very great number of ships, averaging from 900 to 1200 tons burden. In the comparatively short space of 30 years Lorient had risen to the first rank of towns. On the dissolution of the company in 1770, it was made one of the stations for the French navy. Its population and shipping declined during the unsettled period of the Revolution, but since the peace of 1815 it has been more than restored to its former activity. Population 25,700.

Los Angeles (*the City of the Angels*), capital of Los Angeles county, California, 350 miles south south-east of San Francisco, and in a direct line 3,000 miles a little south of west from Washington. It contains a large Roman Catholic church, and 1620 inhabitants. This city was founded in 1781, by order of the Viceroy of New Spain, Bailio Frey, Antonio Bucarell y Ursa, and is situated on the right bank of the Porciuncula River, which copiously waters the highly fertile plain on which the city stands. Invited by a genial climate, the inhabitants have converted this plain into a delightful garden, covered with all sorts of native fruits, but especially the vine, which is cultivated with care and extraordinary success (the product of 1852 amounted to 2,250,000 pounds). This valley, famous for its wines and liquors, contains the missions of San Juan Capristrano, San Gabriel, and San Fernando, which but a few years since constituted the richest establishment in California, and numbered very nearly 500,000 head of cattle.

Lotteries, in their highest application, are institutions for raising the revenue of the country by granting to those who voluntarily contribute the chance of obtaining a reversion of part of the money collected. This reversion is determined by lot. The first mentioned in English history began drawing at the western door of St. Paul's Cathedral, January 11, 1569, and continued, day and night, until May 6 following. Its profits were for repairing the fortifications on the coast of England, and the prizes were pieces of plate. The first lottery mentioned for sums of money took place in 1680. Lotteries were established in 1693, and for more than 130 years yielded a large annual revenue to the crown. The Irish state lottery was drawn in Dublin in 1780. All lotteries were suppressed in France by a decree of the National Convention, November 15, 1793. They were abolished in England 1826; and an act was passed imposing a penalty of £50 for advertising foreign or any lotteries in the British newspapers, 1836. Abolished in Bavaria by unanimous vote of the deputies, October 19, 1847. They have long been abolished in New England: in New York they were prohibited about 1830. In nearly all the States there is a penalty against lotteries not specially authorized by the legislatures. The practice may be traced back to the Romans, who were accustomed, at least in the days of the empire, to enliven their festivals with the distribution of tickets, uniform in appearance, but entitling the holders to receive articles of various value. Instead of granting largesses to the leaders of the Plebs, the Emperor Augustus frequently distributed his gifs on the same principle; and Heliogabalus has the merit of devising in sport a plan frequently resorted to in fraud to avoid the penalties against lotteries in England, of making prizes really worthless take the place of blanks. In the middle ages the same practice prevailed at the banquets of feudal princes, who distributed their presents economically, and without the fear of jealousy, by granting lottery tickets indiscriminately to their friends. The practice soon descended to the merchants; and in Italy, in the 16th century, this became a favorite mode of disposing of their wares. In 1530 the "Lotto" of Florence was established for the necessities of the State, and the example was quickly followed throughout Europe. The first lotteries with numbered tickets were instituted at Genoa. Mercantile lotteries were

established in France, under Francis I., in 1539, and a tax levied on each ticket; but these were supplanted in 1660 by lotteries of money, under the direct control of the king. The first lottery established in England was drawn in 1569. It consisted of 40,000 lots, which were sold at 10s. each. The prizes were pieces of plate; and the profits were devoted to the repairs of certain harbors in the kingdom. The printed plan of this scheme is still in possession of the Antiquarian Society of London. In 1612 a lottery was granted in behalf of the Virginia Company; and in 1680 the same privilege was accorded to a contractor who undertook to supply London with water. From this time forward the spirit of gambling increased so rapidly, and grew so strong, that, in the reign of Queen Anne, private lotteries had to be suppressed as public nuisances. The first parliamentary lottery was instituted in 1709; and from this period till 1824 the passing of a lottery bill was in the programme of every session. Up till about the close of the 18th century the prizes were generally paid in the form of terminable, and sometimes of perpetual, annuities. Loans were also raised by granting a bonus of lottery tickets to all who subscribed a certain amount. This gambling in annuities, however, despite the restrictions of an act passed in 1793, soon led to an appalling amount of vice and misery; and in 1808 a committee of the House of Commons urged the suppression of this ruinous mode of filling the national exchequer. In October, 1826, the last public lottery was drawn in Britain. In France, State lotteries have been abolished, but they still exist in most of the continental States; and although demonstrably a source of loss to those who embark in them, they are upheld as a very ready mode of procuring money from the poor, the miserly, and the adventurous. The Hamburg lottery affords the most favorable representation of the system, as in it all the money raised by the sale of tickets is re-distributed in the drawing of the lots, with the exception of 10 per cent. deducted in expenses and otherwise. In the United States, lotteries were established by Congress in 1776, but with the exception of the southern States, heavy penalties are now imposed on persons attempting to establish them. Private lotteries are now illegal at common law in Great Britain and Ireland; and penalties are also incurred by the advertisers of foreign lotteries. Some years ago it became common in Scotland to dispose of merchandise by means of lotteries; but this is specially condemned in the statute 42d Geo. III., c. 119. An evasion of the law has been attempted by affixing a prize to every ticket, so as to make the transaction resemble a legal sale; but this has been punished as a fraud, even when it could be proved that the prize equaled in value the price of the ticket. This decision rested upon the plea, that in such a transaction there was no definite sale of a specific article.

In 1844 art-unions began to be established in Britain; and as the principle on which they are founded involves that of the lottery, their operations, which are in reality illegal, were immediately suspended by order of government. In the following year, however, an act was passed to indemnify those who had embarked in them for the losses which they had incurred by the arrest of their proceedings; and since that time they have been tolerated under the eye of the law without any express statute being framed for their exemption. —E. B.

Lotus. The lotus (*Nymphæa lotus*) is a native of the lakes of the Cashmere, and its stems serve as an article of food. In autumn, after the plate of the leaf has begun to decay, the stem has arrived at maturity, and being boiled till tender, furnishes a wholesome, nutritious diet, which is said to support 5000 persons in Cashmere for nearly eight months in the year. This plant would probably succeed well in the muddy bottoms of the coves, creeks, and sloughs of our lakes and streams; and, if not relished as human food, doubtless its products would serve to nourish animals.—*Patent Office Rep.*, 1855.

Lough, an Irish term, synonymous with the Scotch *loch*, but not with the English *lake*: for loch and lough are applied to designate arms of the sea, as well as collections of fresh water, which lake is not.

Louis d'Or, a French coin, first struck in the year 1640, under the reign of Louis XIII. By the French mint regulations it was at length made equal to 24 livres, or £1 sterling. This, however, was underrating it as compared with silver; and hence, as every one preferred paying their debts in the over-valued coin, silver became the principal currency of France—the gold coins being either sent to the melting-pot or exported. In Great Britain the process was reversed, gold having, for a long period, been overvalued by their mint.

Louisiana, one of the southern United States, lies between 29° and 33° N. lat. It is 240 miles long from north to south, and 216 broad, containing 41,346 square miles. Population in 1810 was 76,566; in 1820, 153,407; in 1830, 215,575; in 1840, 352,411; and in 1850, 511,974. The State is divided into 47 parishes. Robert de la Sale, when he reached the mouth of the Mississippi (1682), introduced the name *Louisiane*, in honor of the great king, as the name of the country along the great river, "from the Illinois to the Gulf of Mexico." (CHARLEVOIX, tom. i.) Many other points and locations were vowed round the same gulf to the same name, king and his saint. La Sale (1685) vowed to the saint and to the king "the Bay of St. Louis" (Matagorda Bay), discovered by him on the coast of Texas. When Iberville, on the 12th of April, 1699, discovered that little bay opposite Cat Island, on the coast of the continent, he introduced this name again into the Mississippi country, by naming the harbor "*La Baye de St. Louis.*" In the year 1701 Mr. Bienville, when he evacuated Billoxi, and removed the French head-quarters to Mobile Bay, called his fort there "*Fort de St. Louis*," and this name, Fort St. Louis, then designated, for more than 20 years, the central settlement or capital of the French Mississippi colony. It is curious that the name "*Louisiane*" seems not to have been much used before 1712. We do not find it, for instance, a single time mentioned in the *Memoirs of* M. DE SAUVOLE, written in this colony in the beginning of the 18th century. In the year 1712 King Louis XIV. adopted officially the name "*Louisiane*" for that province, which seemed now promising and important enough for such a grace. He pronounces that the countries at the mouth of the Mississippi shall henceforward be called "*La Province de la Louisiane.*" He at the same time changes also the name of the Mississippi, and says that it shall at present be called "*Riviere de St. Louis*" (the St. Louis River). The French extended the name of Louisiana over the whole Mississippi valley, between the Alleghany Mountains, the Lakes of Canada, Mexico, and the Rocky Mountains, and south they went as far with their pretensions as the Rio Bravo, including all Texas. All the old French maps go with their "*Louisiane*" as far south as the Rio Bravo. On some maps even the peninsula of Florida was called "*La Peninsule de Louisiane*;" so that, according to these French pretensions, the name "*Louisiane*" comprehended the whole coasts of the Gulf of Mexico which belong now to the United States.

The Spaniards, on the other hand, went with their name "*Mexico*" as far as Red River and the western shore of the Mississippi, and they kept in Texas their ground. They also kept up their old dominion in the Floridas; so that, in time, the name "*Louisiane*" was on the French maps more contracted. When the Spaniards acquired (1763) from France the dominion of Louisiana, they retained that name, changing it only to "*Louisiana*," or sometimes also to "*Luisiana*,"

and even to "*Luciana*." They put the eastern limit of their Mexican provinces and of Texas at the River Mermentau, quite near to the Mississippi Delta; and the western limit of the Floridas was, as well at the time of the English dominion in the Floridas (1763–1783) as after the retrocession of these provinces to Spain (1783), considered to be at the easternmost branch of the Mississippi (Riviere, Iberville and the Lakes Pontchartrain, etc.); so that during this time (1763–1800) the name "*Luaiana*" comprised only a very small part of the coasts of the Mexican Gulf. When the United States acquired the dominion of Louisiana (1802) this name was at first quite extinguished on the shores of the Gulf. The whole southern part of old Louisiana was called "The Territory of New Orleans." The old name was, however, revived again in the year 1812, when a part of the old French colony was admitted into the Union under the name of the "State of Louisiana." After the final settlement of the boundaries of this State, the name Louisiana comprised all the shores between the mouth of Pearl River to the east and that of Sabine River to the west, the whole Mississippi Delta, and on both sides a little more. We may remark that the orthography of the name Louisiana, which we have adopted, is half Spanish, half French. Purely French it ought to be "*Louisiane*," and purely Spanish, "*Luisiana*."—J. G. Kohl.

Physical Features, etc.—Below the mouth of Red River, the Mississippi divides into several branches or outlets, which, diverging from each other, slowly wend their way to the Gulf of Mexico, and divide the southwest part of the State into a number of large islands. The western of these outlets is the Atchafalaya, which leaves the main stream at the mouth of Red River, and inclining eastward, flows into Atchafalaya Bay, in the Gulf of Mexico. About 128 miles below the Atchafalaya is the outlet of Plaquemine, the main stream of which unites with Atchafalaya, but other portions of it intersect the country in different directions. 31 miles below the Plaquemine, and 82 above New Orleans, is the outlet of La Fourche, which communicates with the Gulf of Mexico by two mouths. Below the La Fourche, numerous other small streams branch off from the river at various points. On the east side of the Mississippi the principal outlet is the Iberville, which communicates with the Gulf of Mexico through Lakes Maurepas, Pontchartrain and Borgne. The whole territory between the Atchafalaya on the west, and Iberville, etc., on the east, is called the Delta of the Mississippi, from its resemblance in shape to the Greek letter of that name. A large extent of country in this State is annually overflowed. The alluvial margin along the Mississippi has a breadth of from one to two miles, and is of great fertility. To prevent the river from inundating the valuable tracts in the rear, an artificial embankment has been raised on the margin of the river, called the Levee. On the east side of the river this embankment commences about 40 miles below New Orleans, and extends up the river for a distance of 180 miles. On the west side it continues with little interruption to the Arkansas line. Along this portion of the river there are many beautiful and finely-cultivated plantations, and a continual succession of pleasant residences. The southwestern part of the State consists of sea marsh on the margin of the Gulf, but further inland of extensive and fertile prairies, which contain many flourishing settlements. The surface is elevated from 10 to 50 feet above high tide. The country between the Mississippi, Iberville, and Pearl Rivers, in its southern parts, is generally level and highly productive in cotton, sugar, corn, rice, and indigo. The northern part has an undulating surface and a heavy natural growth of white, red, and yellow oak, hickory, black walnut, sassafras, magnolia, and poplar. In the north-western part, the Red River, after entering the State by a single channel and flowing about 30 miles, spreads into a number of channels, forming many lakes, islands, and swamps, over a space of 60 miles long and 6 broad. The bottoms on the river are from 1 to 10 miles wide, and very fertile. The timber is willow, cotton-wood, honey-locust, pawpaw, and buckeye; on the rich uplands, elm, ash, hickory, mulberry, black walnut, with a profusion of grape vines. On the less fertile and sandy uplands of the State are white pitch and yellow pines, and various kinds of oak. There were in this State in 1850, 1,590,025 acres of land improved, and 3,989,018 of unimproved land in farms. Cash value of farms, $75,814,398; and the value of implements and machinery, $11,576,938.

Live Stock.—Horses, 89,514; asses and mules, 44,849; milch cows, 105,576; working oxen, 54,968; other cattle, 414,798; sheep, 110,333; swine, 597,801. Value of live stock, $11,152,275.

Agricultural Products, etc.—Wheat, 417 bushels; rye, 475; Indian corn, 10,266,373; oats, 89,637; buckwheat, 3; peas and beans, 161,732; potatoes, 95,632; sweet potatoes, 1,428,453; rice, 4,425,349 lbs. Value of products of the orchard, $22,359; produce of market gardens, 148,329. Pounds of butter made, 683,069; of cheese, 1,957; sugar, hhds, 226,001; maple sugar, 255 pounds; molasses, 10,931,177 gallons; bees' wax and honey, 96,701 pounds; wool, 109,897; cotton, 178,787; silk cocoons, 29; hops, 125; tobacco, 26,878; hay, 25,752 tons; clover seeds, 2 bushels; other grass seeds, 97 bushels; and there were made 15 gallons of wine. Value of home-made manufactures, 139,232; of slaughtered animals, $1,458,990.

Rivers, etc.—The Mississippi River forms the boundary of the State for a considerable distance, and in its lower part runs wholly within the State, and enters the Gulf of Mexico by several channels. It is navigable for vessels of the largest size. Red River enters the State near the north-west corner, and passes through in a south-east direction, discharging a vast amount of water into the Mississippi, 236 miles above New Orleans. The Washita runs in a south direction in the north part of the State, and enters Red River a little above its junction with the Mississippi. Bayou La Fourche and Atchafalaya are large outlets of the Mississippi. The other rivers and streams are the Black, Tensau, Sabine, Calcasieu, Mermanteau, Vermillion, Teche, Pearl, Amitie, Iberville, etc.

Manufactures.—There were in this State in 1850, 8 establishments with a capital of 225,000, employing 347 persons, and making 1,570 tons of castings, etc., valued at 312,500; 96 flouring and grist mills, 120 saw mills, 16 tanneries, 47 printing offices, 60 newspapers —11 daily, 6 tri and semi-weekly, 37 weekly—and one monthly publication; aggregate number of copies issued annually, 12,416,224. Capital invested in manufactures, $5,304,924; value of manufactured articles, $7,045,814. On the 1st of January, 1856, there were 7 railroads, with 111 miles of track finished and in operation.

The principal places in the State are Baton Rouge, the capital, New Orleans, Jackson, St. Francisville, Opelousas, Grand Coteau, Alexandria, Natchitoches, and Shreveport. There were, January 1st, 1853, 7 banks in the State, with an aggregate capital of $12,000,000. Tonnage, same year, 156,273 tons. Total value of exports of American and foreign produce, 1852, $49,058,885. Value of imports, $12,057,724.

Louisiana was first explored by the French, and received its name in 1682 from M. La Salle, in honor of Louis XIV., and a settlement was attempted in 1684, but failed. In 1699 a more successful attempt was made by M. Iberville, who entered the Mississippi and founded a colony. His efforts were followed by Crozat, who held the exclusive trade of the country for a number of years. About 1717 he transferred his interest to a chartered company, at the head of which

was the notorious John Law, whose national bank and Mississippi speculation involved half the French nobility. In 1731 the company resigned the concern to the crown, who, in 1762, ceded the country of Louisiana to Spain. In 1800 Spain re-conveyed the province to France, from whom, in 1803, the United States purchased the entire territory for $15,000,000. The portion now included in the State formed a constitution, and was admitted into the Union in 1812. A second constitution was adopted and went into operation in 1845, and the third and present one was formed and adopted in 1852.

FOREIGN COMMERCE OF THE STATE OF LOUISIANA, FROM OCTOBER 1, 1820, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Tonnage Cleared.		District Tonnage.	
	Domestic.	Foreign.	Total.	Total.	American.	Foreign.	Registered.	Enrolled and Licensed.
Sept. 30, 1821.....	$6,907,599	$364,573	$7,272,172	$3,879,717	58,812	21,823	16,244	33,114
1822.....	7,808,461	675,184	7,978,645	3,817,288	37,888	20,716	....	....
1823.....	6,769,410	1,009,662	7,779,072	4,288,125	58,258	26,445	....	....
1824.....	6,442,946	1,485,874	7,928,820	4,539,769	54,139	21,996	....	....
1825.....	10,965,234	1,617,690	12,582,924	4,990,054	51,602	25,776	....	....
1826.....	9,048,506	1,235,374	10,284,880	4,167,592	48,144	22,943	....	....
1827.....	10,602,832	1,126,165	11,728,997	4,531,645	89,706	30,240	....	....
1828.....	10,163,242	1,784,058	11,947,400	6,217,581	85,841	38,791	....	....
1829.....	10,898,183	1,487,877	12,386,060	6,837,209	87,857	38,172	....	....
1830.....	13,042,740	2,445,852	15,488,592	7,599,088	106,017	36,317	....	....
Total.....	$92,144,258	$13,232,909	$105,377,162	$49,383,223	692,151	277,659	....	....
Sept. 30, 1831.....	$12,335,531	$3,926,458	$16,761,989	$9,766,693	96,753	58,558	16,408	38,099
1832.....	14,105,118	2,425,813	16,530,930	8,871,658	88,296	59,620	....	....
1833.....	16,138,457	2,807,916	18,941,373	9,590,505	86,021	60,580	....	....
1834.....	23,759,607	2,797,917	26,557,524	13,731,809	112,380	71,599	....	....
1835.....	31,965,015	5,005,808	36,970,823	17,519,814	137,391	58,778	....	....
1836.....	32,226,565	4,953,263	37,179,828	15,117,649	147,888	48,110	....	....
1837.....	31,546,275	3,792,422	35,338,697	14,020,012	175,568	45,523	....	....
1838.....	30,077,584	1,424,714	31,502,248	9,496,808	139,722	48,184	....	....
1839.....	30,995,936	2,185,231	33,181,167	12,064,943	177,257	54,772	....	....
1840.....	32,998,659	1,288,277	34,286,936	10,67[illegible]196	277,021	73,850	....	....
Total.....	$255,948,097	$30,558,419	$286,501,515	$120,[illegible]6,351	1,438,182	569,074	....	....
Sept. 30, 1841.....	$32,865,618	$1,521,865	$34,387,483	$10,256,850	244,988	73,577	54,792	91,007
1842.....	27,427,422	976,727	28,404,149	8,033,500	244,110	73,668	....	....
9 mos., 1843.....	26,658,924	736,500	27,390,424	8,170,015	292,478	80,697	....	....
June 30, 1844.....	29,442,734	1,055,573	30,498,307	7,826,789	237,179	101,056	....	....
1845.....	25,841,311	1,316,154	27,157,465	7,854,897	248,548	129,561	....	....
1846.....	30,747,538	528,171	31,275,704	7,228,090	238,463	110,028	....	....
1847.....	41,788,808	263,830	42,051,633	9,222,969	274,112	166,768	....	....
1848.....	39,350,148	1,621,213	40,971,361	9,830,439	287,887	148,612	....	....
1849.....	36,057,118	654,549	37,611,667	10,050,697	293,456	194,294	....	....
1850.....	37,698,277	407,073	38,105,350	10,760,499	211,800	158,137	....	....
Total.....	$358,779,988	$9,081,155	$367,853,548	$88,278,835	2,568,011	1,235,888	....	....
June 30, 1851.....	$53,968,018	$443,950	$54,413,968	$12,528,460	222,954	128,612	81,158	172,126
1852.....	48,808,169	250,716	49,058,885	12,057,724	370,741	178,741	....	....
1853.....	67,768,734	523,984	68,292,658	13,680,686	440,736	190,084	....	....
1854.....	60,654,587	275,265	60,931,852	14,424,154	448,499	155,256	....	....
1855.....	55,056,094	311,568	55,367,962	12,900,821	480,502	123,900	....	....
1856.....	80,576,652	288,428	80,865,080	16,682,892	556,747	186,415	....	....

New Orleans is the principal port on the Mississippi, and the natural dépôt for the commerce of the great central valley. It is situated on the left bank of the river, 100 miles from the Gulf of Mexico, in lat. 29° 58′, and long. 90° 7′. Its site is low and marshy, and in the summer and fall very sickly. Two railroads connect it with Lake Pontchartrain, and thence steamboats connect with Mobile, etc. It communicates northward by the New Orleans, Jackson, and Great Northern Railroad, and westward by the New Orleans, Opelousas, and Great Western Railroad. Its commerce by river is carried on by steamboats in constant succession, and these traverse the great rivers and tributaries for thousands of miles. By these means it receives and distributes its merchandise. The average value of produce received from the interior, is about $120,000,000. Its foreign trade is co-extensive, and with regard to cotton and sugar, it is the first port of the Union. The depth of water in the river, opposite New Orleans, is at a medium of 70 feet, and it maintains soundings of 30 feet until within a mile of its confluence with the sea. The river has four principal passes. The tonnage of the port in 1856, was 163,308 tons.

Lowell, an important manufacturing town in Middlesex county, Massachusetts, on the right bank of the Merrimack River, at its junction with the Concord, 25 miles north north-west of Boston. Although the site of the town has considerable inequality of surface, its streets are regularly laid out, and intersect each other at right angles. The private residences are spacious, and many of them elegant buildings. Among the public edifices, the chief are the court-house, the mechanics' hall, a sick hospital for operatives, and a market-house. The literary institutions of the town are very efficient, and have been of considerable service to the community. The Mechanic Association, incorporated in 1825, has a valuable library of about 9000 volumes, and a scientific apparatus; while the city school library contains 9500 volumes, and is open to all on a small yearly payment. The great advantage which Lowell enjoys for a manufacturing town is derived from a descent of 30 feet made by the Merrimack, and known as the Pawtucket Falls, which, by means of canals and locks, provides abundance of water-power. Besides these there is a spacious reservoir, placed on an elevation eastward of the city, which furnishes an immense supply of water at all times in case of fire. The principal goods manufactured here are cotton, wool, and iron. The first is made into cotton cloth and calico; the second into carpets, cloth, and coarse stuffs; and iron into machinery and wire fences. Besides these, however, bleaching is carried on extensively, as well as the preparation of dyes, glue, and other essentials of the cotton and wool manufactures. In January, 1855, there were 12 manufacturing companies in Lowell, owning 52 mills, and working 371,838 spindles, and 11,407 looms. The aggregate quantities produced every week were 2,230,000 yards of cotton cloth, 30,000 yards of woolen cloth, 25,000 yards of carpeting, and 50 rugs. In the same year, $14,500,000 of capital was invested in the whole manufactures of the place; while the number of hands employed amounted to

8723 females, and 4542 males. Every attention is paid by the mill-owners to the health and morality of their operatives. One of the best proofs of the general good conduct of the mill-workers here is shown in the large amounts deposited by them in the savings-bank; and also in the interest they take in the literary and scientific associations connected with the factories.

In the rapidity of its growth, and in the extent of its manufactures, it stands pre-eminent; it has attained its present position altogether from the extent of its manufacturing facilities. A tract of 400 acres, constituting the most central part of the present city, was laid out in 1821. It was purchased for $100,000, and the owners were incorporated the following year, under the title of *Merrimac Manufacturing Company*, and the first mill erected. Population 1820, about 200; 1830, 6,477; 1836, 17,330; 1840, 20,796; 1850, 33,383; and in 1854, 40,000. In 1834, Belvidere village was added to it, making a territory of nearly 5 square miles, and in 1836 it was incorporated as a city. Lowell lies on the right bank of Merrimack River, at the junction of Concord River, and at the intersection of several lines of railroads. It was originally known as Pawtucket Falls. The water power is very extensive, and easily available. A canal, 100 feet wide, 15 feet deep, and 1½ miles in length, supplies the factories with water, taken from the Concord River, at Pawtucket Falls. The entire descent is 31 feet. The proprietors of the "Locks and Canals Company," acting under a charter granted in 1792, with a capital of $600,000, supplies the water power to the different manufacturing establishments. The *Merrimac Manufacturing Company*, was chartered in 1822, has a capital stock of $2,000,000; with 5 cotton factories, with 67,965 spindles, and 1,920 looms, employs 1,600 males, and 645 females; manufactures 18,000 yards of prints and sheetings annually. Connected with this Company is an extensive print works. The *Hamilton Manufacturing Company*, chartered in 1825, with a capital stock of $1,200,000, has 3 cotton factories, with 36,228 spindles, and 1,002 looms, employs 875 females, and 360 males; manufactures 10,000,000 yards of prints, flannels, and sheetings annually. It also has an extensive print works. The *Appleton Company* was incorporated in 1828, with a capital of $600,000; has 2 cotton factories, with 17,920 spindles, and 538 looms; employs 480 females, and 120 males; manufactures 6,500,000 yards sheetings and shirtings annually. The *Lowell Manufacturing Company* was chartered in 1828, with a capital of $1,500,000; has a cotton factory, 7,142 spindles, 244 looms, and a carpet factory, 4,300 spindles, and 80 looms, the whole employing 500 females, and 225 males; manufacturing 4,940,000 yards rugs, carpeting, and cotton cloth, annually. The *Middlesex Manufacturing Company* was chartered in 1830, with a capital of $1,000,000; has 3 mills, with 13,000 spindles, 45 broadcloth, and 375 cassimere looms, and 3 dye-houses, employing 950 females, and 820 males; manufacturing 950,000 yards of broadcloths and cassimeres annually. The *Suffolk Manufacturing Company*, chartered in 1830, with a capital of $600,000, has 2 factories.—See STATISTICS OF MASS., 1855, for further items.

Lowering, among distillers, a term employed to express the debasing the strength of any spirituous liquor by mixing water with it. The standard and marketable price of these liquors is fixed in regard to a certain strength in them called *proof*; or, that strength which makes them, when shaken in a phial or poured from on high into a glass, retain for some time a froth or crown of bubbles. In this state spirits consist of about half pure, or totally inflammable spirits, and half water; and if any foreign or home spirit be exposed for sale and found to have that proof wanting, scarcely any body will buy it until it has been distilled again and brought to the proper strength; and if it be above that strength the proprietor usually adds water to bring it down to the standard. There is another kind of lowering among the retailers of spirituous liquors to the vulgar, by reducing it under the standard proof. Whoever has the art of doing this without destroying the bubble-proof, which is easily done by means of some addition which gives a greater tenacity to the parts of the spirits, will deceive all who judge by this proof alone. In this case, the best way to judge of liquors is by the eye and the tongue, and especially by the instrument called the hydrometer.

Lubber, a contemptuous name, given by sailors to those who know not the duty of a seaman, *Lubber's Hole* is the vacant space between the head of a lower mast and the edge of the top. It is so termed from a supposition that a lubber, not caring to trust himself up the futtock shrouds, will prefer that way of getting into the top.

Lubec, one of the free cities of northern Germany, and nominally the chief of the Hanse Towns, is the capital of a small territory, is situate on a gentle ridge between the rivers Trave and Wakenitz, 10 miles from the mouth of the former at Travemünde, and 36 miles north-east of Hamburg. Lubec is the capital of the four free or Hanseatic towns, and the seat of their supreme court of appeal. The court consists of six members, one of whom is chosen by each of the free towns; Frankfort and Bremen nominate the fifth; while the sixth is named alternately once by Lubec and twice by Hamburg. The president is chosen annually by the senates of the four towns. The present city of Lubec was founded in 1143 by Adolphus II., Count of Holstein and Schaumburg, by whom it was ceded in 1158 to Henry Duke of Saxony, surnamed the Lion. In 1226 it was made a free imperial city by Frederic II. At this time it was an important commercial city, and was rapidly increasing. In 1241 it entered into treaty with Hamburg, and thus laid the foundation of the Hanseatic League, of which it became the head about 1260. For four centuries Lubec continued in a flourishing condition, and is said to have at one time contained 200,000 persons. After the dissolution of the League, which took place in 1632, it gradually fell into decay, and has never again attained its former importance. After the battle of Jena in 1806, the Prussian general Blucher, with the remains of his army, took refuge in Lubec, which was then stormed by the French, and sacked and pillaged for three days. In 1810 it was annexed to the French empire, and so remained till after the battle of Leipzig in 1813, when it was restored to its political independence, and subsequently joined the German Confederation as a free city. It has one vote in the full council; but in the select council it has only one in conjunction with the other free towns. Lubec is one of the most picturesque old towns in Germany. Its streets are generally straight and regular, and its public buildings, which are mostly of brick, have undergone little change since the 15th century. Many of the houses are in the old-fashioned style, with their quaint gables toward the street; and not a few of them are remarkable for the richness of their architecture. The old ramparts of the town have been laid out in public walks. The finest building in Lubec is the Marienkirche, founded in 1304. It is in the pointed Gothic style, constructed almost entirely of brick, and surmounted by two towers with spires rising to the height of 430 feet. It has three naves; the roof of the centre one rising to the unusual height of 134 feet. It contains numerous monuments and paintings—the latter by Holbein, Vandyck, Overbeck, etc. The "Dance of Death," dated 1463, is remarkable as representing the costumes of the period. This church possesses a very fine organ, and has also a curious old astronomical clock, constructed in 1405. The Domkirche, or cathedral, built between 1170 and 1341, is almost entirely of brick, and has two towers surmounted by spires 300 feet high. It contains numerous

monuments to bishops and others connected with Lubec. The screen of the choir is a master-piece of wood-carving of the early German school. In one of the side chapels is a painting by Memling representing the Passion of our Saviour in 23 distinct groups. The town-house, on the market-place, is a curious old Gothic brick building, completed in 1517. Here in ancient times deputies from 85 cities in Germany composing the Hanseatic League, held their sittings. The educational and charitable institutions are numerous; besides which there are an exchange, mint, arsenal, public library with 37,000 volumes and a theatre.

Lubec is still a place of considerable commercial importance. It trades largely with Hamburg by means of the Trave and a canal, and also with Russia, Denmark, Sweden, and Finland. A branch line connects it with the Hamburg and Berlin railway. Regular steam communication is kept up with Copenhagen, Stockholm, and St. Petersburg. Vessels drawing not more than nine feet of water can come up to the town, but larger vessels load and unload by means of lighters at Travemünde, between which and Lubec small steamers are constantly plying. The chief exports are—corn, cattle, wool, iron, and timber; imports—wines, silks, cottons, hardware, colonial products, and dye-stuffs. In 1855, 972 vessels, carrying 55,266 lasts, entered; and 958 vessels, carrying 54,246 lasts, left the port. The manufactures are numerous, but not large or important. Among the chief are woolen, linen, cotton, and silk goods; tobacco, soap, paper, playing-cards, musical instruments, hats; and iron, copper, and brass wares.

Its trade is principally carried on with the Baltic States, to which it exports corn, cattle, wool, fish, iron, and timber. Its imports comprise wines, silks, cottons, hardwares, and other manufactured goods; also colonial produce, dye-stuffs, etc. The territory belonging to Lubec is about 20 miles in length, by 3 miles in breadth, containing a population of 51,166, chiefly employed in the rearing of live stock. In 1852 there entered the port of Lubec 2086 vessels, measuring 262,724 tons, viz.: sailing vessels, 1699, of an aggregate tonnage of 170,096 tons, and 387 regular steam-packets, of an aggregate of 92,628 tons. Russia holds the first rank in the trade of Lubec. Of the whole number of vessels entered in 1852 (2085), there were under the Russian flag 456 vessels, with an aggregate of 85,730 tons. The total imports into this port in 1852 reached, in weight, 122,000,000 kilos. (2·20 lbs. each), viz.: by sea, 94,000,000 kilos.; by land, 28,000,000 kilos. This was a falling off from the preceding year of 10,000,000 kilos.

Among the imports of 1852 were: tobacco, 1,049,132 kilos.; cotton, drugs, and dye-stuffs, 4,034,849 kilos.; coffee, 2,291,526 kilos.; sugar, 4,278,066 kilos.

The total imports in 1851 amounted to 132,333,000 kilos.; but the increase of 10,000,000 kilos. was attributable to the heavy stock of material introduced by those engaged in the construction of the railroad between Lubec and Hamburg. A comparison with the preceding years of regular trade will show a steady, though a gradual increase. In 1850 the total imports reached 120,000,000 kilos., or 2,000,000 less than in 1852.

The general imports of Lubec are thus classified: *Manufactures.*—Including, principally, liquors, watches, jewelry, hardware, gunpowder, piece-goods, glass-ware, 13,954,580 kilos. *Colonial, or trans-Atlantic Merchandise.*—Consisting of coffee, cotton, drugs, dye-stuffs, sugar, tobacco, and tea, 11,708,795 kilos. *Animal Substances.*—Consisting of butter, cheese, wax, oils, wool, peltry, silk, 2,827,453 kilos. *Metals.*—Chiefly of iron and copper, 6,121,736 kilos. *Miscellaneous.*—Including salted fish, tallow, grains, timber, pot-ashes, etc., 88,424,913. Total, 123,037,477 kilos. Manufactures represent 11⅓ per cent., colonial, or trans-Atlantic merchandise 9½ per cent., metals 5 per cent., and all other imports 74 per cent. of the total trade.

Statement showing the Steam Navigation between Lubec and the Baltic Ports, from 1849 to 1852.—1849.—Between Travemünde (the port of Lubec) and Copenhagen—voyages, 67; passengers, 1955; receipts, 152,046 francs. 1850.—Between Travemünde, Copenhagen, and Gothenburg—voyages, 61; passengers, 2858; receipts, 194,788 francs. 1851.—Between Travemünde, Copenhagen, and Gothenburg—voyages, 37; passengers, 3,415; receipts, 137,884 francs. 1852.—Between Lubec, Copenhagen, and Gothenburg—voyages, 20; passengers, 3061; receipts, 114,360 francs.

The merchant marine of Lubec in 1853 consisted of 65 vessels, of 13,800 tons aggregate, viz., 60 sailing vessels, of 11,898 tons, and 5 steamers. The once extensive and flourishing trade of Lubec had dwindled down to the mere shadow of its former greatness. The tardy communication with Hamburg (a city on which it depends almost exclusively for its commercial activity) by canal navigation, contributed much to depress its commercial enterprise; and, hence, its merchants have, for a long period, been strenuous and unremitting in their efforts for the construction of a railroad that would connect them with that city. Denmark, however, jealous of any enterprise that would be likely to create a rival for the trade of Kiel, which town is also connected by railroad with Hamburg, long refused permission to construct the contemplated railroad across any portion of its territories. The difficulties were, however, adjusted, the road constructed, and during the past few years the trade of Lubec has risen to considerable importance. In 1850, before the connection by railroad was established, the merchandise which passed between the two cities amounted to but 26,000 quintals of 106·85 lbs. each; in 1853, after the railroad was opened, it ascended to 267,380 quintals, viz., 89,575 Hamburg merchandise, and 177,805 foreign merchandise, forwarded *viâ* Hamburg. The United States has no direct trade with Lubec, such of its staples as reach that market being supplied either from Hamburg or Altona, chiefly the former.

The tariff is that of December 5th, 1851.

Moneys.—1 mare = 16 schillings Lubec courant = 28·79 cents.

Weights and Measures.—1 ship-pound = 2½ cwt. of 112 lbs. English, each = 280 lbs. 1 lis-pound = 14 lbs.

Duties on Imports.—All goods, whether of foreign or home production, pay ½ of 1 per cent. ad valorem, as given in the invoices, except the following articles, which are free of import duties: Transit goods re-exported within three months after entry; effects of travelers; household furniture used; wool brought for the Lubec fair, and delivered at the wool warehouse; goods on board of vessels not consigned to Lubec; wares on board of ships entering the port of Travemünde in distress.

None but citizens have the privilege of clearing goods in the custom-house; American vessels, however, are exempt from this regulation.—*Com. Rel. U. S.*

Lucia, St., one of the British West India Islands, Windward group, lying about 30 miles north of Martinique, in lat. 13° 50′ N long. 60° 58′ W. It is 32 miles in length from north to south, by 12 in extreme breadth, and has an area of about 235 square miles, or 150,000 acres. It is longitudinally divided by a chain of mountains, generally from 1200 to 1800, and in some cases 2000 feet high, densely clothed with the finest timber. These are of volcanic formation, and assume the most fantastic forms, abounding in deep chasms and pointed eminences. From either side of this chain branches of lesser altitude go off toward the coast, forming plains and valleys of various sizes. At

its southern extremity are two mountains of volcanic origin, called the Sugar Loaves, which rise nearly perpendicularly from the sea, in the form of parallel cones, to the height of about 2700 feet; they are covered with evergreen foliage, and mark the entrance into the deep and beautiful Bay of Soufrière. The valleys throughout the island, as well as the plains upon the coast, are fertile, being well watered by numerous streams, and are under good cultivation. The island is divided into two territories—Basseterre, the low or leeward portion, which is well cultivated, and the most populous, though the prevalence of stagnant waters and morasses renders the climate very unhealthy; and Capisterre, the high or windward territory, which is also very unhealthy, but is becoming less so as the wood on the high lands is being cleared away. The climate is very moist, as the trees on the mountains attract the clouds, and hence render the island subject to frequent and heavy rains for 9 or 10 months in the year.

The extent of land under each description of crop in 1854, and the three preceding years, was:

	1851.	1852.	1853.	1854.
	Acres.	Acres.	Acres.	Acres.
Canes.....	3,015	3,563	3,489	3,290
Coffee.....	155	127	120	97
Cocoa.....	124	[illegible]	89	87
Provisions....	1,013	1,136	2,423	1,154

The quantities of various articles produced in each of the above years were:

	1851.	1852.	1853.	1854.
Sugar.....lbs.	6,691,800	7,130,560	6,782,700	7,414,100
Coffee..... "	18,620	25,988	6,051	10,250
Cocoa..... "	15,143	40,358	21,600	17,480
Rum.....galls.	45,056	66,929	58,343	77,751
Molasses.. "	159,540	206,095	214,712	208,625

The quantities and value of articles exported in 1854 were:

Articles.	Quantities.	Value.	To United Kingdom.	To British colonies.	To foreign States.
Cocoa.....lbs.	148,988	£1,491	£67	£1,424	....
Goods, Brit. manufact....packages	361	1,417	35	1,230	£151
Logwood.....tons	1,093	2,368	1,057	....	1,311
Molasses.....galls.	116,490	2,934	1,655	1,279	....
Rice.....cwt.	40	30	....	30	....
Rum.....galls.	14,364	1,428	1,428	....	....
Sugar, Mus...cwt.	59,242	41,468	41,462	6	....
Other articles.....	....	4,700	300	2,699	2,702
Total value...	.....	£55,836	£46 004	£6,668	£3,164

The total value of imports in 1854 (principally articles of British manufacture, flour, dried fish, butter, live stock, lumber, salted meat, olive oil, wine, rice, and tobacco), was £96,309; being £41,996 from the United Kingdom, £27,880 from British colonies, and £26,433 from foreign States. The nett amount of the general revenue in 1854 was £14,098; being, custom duties on imports, £6482; on tonnage, £744; assessed and other taxes, £0872. The nett expenditure for that year was £18,565. The total population in 1854 was 24,123, of whom 480 were male and 517 female whites, 11,081 male and 12,095 female persons of color. The chief town of the island is Castries, which contains about 3000 persons. St. Lucia was first colonized by English settlers in 1639, but these were soon after driven off by the Caribs. About 1650 the French effected a settlement, and from that time to 1803, when it was finally captured by the English, it belonged alternately to France and England. The government is administered by the commanding officer of the troops, a lieutenant-governor, and an executive council, consisting of the colonial secretary, the attorney-general, and the second military officer. There is also a legislative council, composed of five official and five non-official members, in which the colonial secretary and attorney-general have seats and votes, and of which the commanding officer is president. The laws of St. Lucia, except in so far as they have been altered by orders of council, are the laws of France, antecedent to the Code of Napoleon.

Luff, the order from the pilot to the steersman to put the helm toward the lee side of the ship, in order to make the ship sail nearer the direction of the wind. Hence, luff round, or luff a-lee, is the excess of this movement, by which it is intended to throw the ship's head up in the wind in order to tack her. A ship is also said to *spring her luff* when she yields to the effort of the helm by sailing nearer to the line of the wind than she had done before. *Luff Tackle*, a name given by sailors to any large tackle that is not destined for any particular place, but may be variously employed as occasion requires. It is generally somewhat larger than the jigger tackle, although smaller than those which serve to hoist the heavier materials into and out of the vessel; which latter are the main and fore-tackles, the stay and quarter-tackles, and so forth.

Lug-Sail, a square sail, hoisted occasionally on the mast of a boat or small vessel, upon a yard which hangs nearly at right angles with the mast. These sails are more particularly used in the barca-longas navigated by the Spaniards in the Mediterranean.

Lumber. One of the distinguishing characteristics of the United States is the quantity of wood and lumber they furnish. Of the well-wooded countries of the world, Russia, Sweden, Norway, and America, this country, no doubt, ranks as first. A discriminating writer, Volney, once described this country as "one vast forest, diversified occasionally by cultivated intervals." If this is less true than it was a century or even half a century ago, it applies in the main at the present moment. Even the oldest States of the Union, such as New Hampshire, New York, and the Carolinas, are still famous for both the quality and quantity of their lumber. And Maine, that had something like settlements before any other portion of New England, is to this day the great lumber State of the land. Hence, perhaps, the name it sometimes gets — the Pine-tree State. The trees of any country are valuable for at least four distinct purposes, for fuel, for shelter, for the food many of them afford, and for ornament. In the last point of view, which is generally considered the least important, trees are of much consequence. England has obtained the name of an extensive garden, very much through its beautiful shade trees and shrubbery. One half of the beauty of many of our New England villages would be lost in the warm season without their elegant natural screens in the shape of trees. It was Lord Bacon who said that "a tree in full leaf is a nobler object than a king in his coronation robes." No artist would ever think of presenting a fine landscape without trees. And so important are trees regarded as objects of beauty and shade, that ornamental tree associations are springing up in different parts of the country, whose objects are to adorn streets and highways with our beautiful elms, maples, and evergreens.

It is stated by Michaux that in the United States there are 140 species of forest trees which attain a greater height than 30 feet, while in France there are only 18 of the same description. And we suppose that the comparison would be similar if extended to Great Britain, Spain, or Germany. No wonder, then, that our forest scenery so much surpasses that in the west and south of Europe, and that European travelers think that it is worth while to cross the Atlantic to see our forest scenery as painted by the invisible artist every autumn.

So great is the interest in portions of Europe to promote the growth of forest trees that associations have been formed in Germany and other countries to plant forests upon soil adapted to their growth. The vast amount of forest trees annually used by such a country as Great Britain may be estimated by the fact that to build a 70 gun ship 40 acres of ship timber are re-

quired. In the light of such a fact, it may be seen that it is none too early for the people of this country to exercise due economy with regard to the use of forests already existing, and to promote the growth of others—on the waste lands that already abound in various sections of the country.

STATEMENT SHOWING THE EXPORTS OF LUMBER (SPECIFYING THE EXPORTING DISTRICTS) FROM THE UNITED STATES, FOR THE YEAR ENDING JUNE 30TH, 1856.

Districts.	Shingles.		Boards, planks, and scantling.		Hewn timber.		Other lumber.	Oak bark and other dye.	All other manufactures of wood.
	M. feet.	Dollars.	M. feet.	Dollars.	Tons.	Dollars.	Dollars.	Dollars.	Dollars.
Passamaquoddy	844	1,416	3,485	36,941	....	....	4,699	....	19,258
Machias	259	624	3,681	43,442	....	....	501	....	540
Frenchman's Bay	....	....	....	....	....	....	....	....	5,696
Penobscot	38	71	1,093	27,821	....	....	196	....	8,474
Wiscasset	....	....	2	32	....	....	....	....	15,852
Bath	53	98	1,718	21,881	....	....	56,042	....	1,047
Portland and Falmouth	256	639	8,913	118,906	....	....	120,575	....	419,657
Saco	....	....	....	....	....	....	....	....	6,554
Belfast	....	....	2,165	27,673	....	....	56	....	27,193
Bangor	4,068	12,261	8,122	106,418	....	....	8,516	....	23,652
Vermont	....	....	....	....	....	....	....	....	10,078
Newburyport	65	275	56	1,353	....	....	89	....	....
Gloucester	....	....	109	1,704	....	....	....	....	4,410
Salem	397	892	817	14,637	....	....	78	....	21,354
Boston and Charlestown	8,275	11,880	11,766	226,964	286	5,857	248,572	5,568	410,404
Fall River	....	....	....	....	....	....	1,401	....	....
New Bedford	....	....	13	270	....	....	....	....	611
Providence	151	606	419	6,506	....	....	....	....	52,439
Bristol and Warren	....	....	157	2,688	....	....	....	....	28,150
Newport	....	....	199	4,040	....	....	....	....	11,139
New London	....	....	443	11,076	....	....	868	....	42,661
New Haven	....	....	....	....	....	....	1,446	....	10,671
Sackett's Harbor	....	....	....	....	....	....	....	....	50
Genesee	....	....	58	3,702	....	....	....	590	37,758
Oswego	....	....	502	6,859	....	....	....	8,597	4,905
Niagara	8	17	3	66	....	....	18,091	....	34,458
Buffalo Creek	....	....	181	2,827	....	....	....	500	34,840
Oswegatchie	....	....	....	....	....	....	....	350	4,075
New York	2,581	14,812	27,469	554,911	....	....	55,724	87,694	778,783
Champlain	....	....	947	6,631	....	....	1,229	768	60,860
Cape Vincent	....	....	....	....	....	....	....	....	41,579
Philadelphia	168	1,548	1,569	27,741	....	....	....	31,480	164,579
Presque Isle	....	....	115	3,450	....	....	....	....	200
Delaware	....	....	....	....	....	....	728	....	....
Baltimore	1,580	8,995	2,193	38,486	....	....	9,880	34,843	113,640
Georgetown, D. C.	....	....	146	2,547	....	....	....	....	....
Norfolk and Portsmouth	2,998	18,600	22	399	....	....	3,383	....	89,719
Richmond	....	....	....	....	....	....	2,250	....	8,613
Camden	5,788	18,868	....	....	....	....	....	....	....
Plymouth, N. C.	5,684	15,368	....	....	....	....	....	....	....
Washington, N. C.	5,356	13,340	852	11,559	....	....	....	....	....
Newbern	1,884	4,849	580	6,795	....	....	65	....	....
Ocracoke	....	....	....	....	....	....	....	....	125
Beaufort	51	157	209	2,905	....	....	....	....	....
Wilmington	5,043	12,826	7,918	111,441	520	8,470	....	....	....
Charleston	105	781	2,476	43,958	3 197	20,003	18,375	....	1,929
Georgetown, S. C.	282	928	1,580	24,553	....	....	....	....	....
Savannah	11	44	3,488	62,586	26,878	189,167	19,985	....	135
St. Mary's	8	40	2,023	36,125	....	....	....	....	....
Brunswick	....	....	3,106	49,724	....	....	....	....	....
Mobile	....	....	5,161	58,878	982	7,756	128,948	....	19,922
Pensacola	74	254	4,885	58,773	....	....	1,520	....	....
Key West	....	....	....	....	....	....	....	....	7
St. John's	107	535	5,496	109,558	....	....	405	....	....
Apalachicola	....	....	860	501	....	....	14,500	....	....
New Orleans	714	4,199	1,700	41,113	....	....	31,818	600	23,040
Miami	....	....	105	1,050	781	2,618	125	....	....
Detroit	1,077	2,971	4,018	34,486	....	....	328	....	....
Chicago	....	....	....	....	....	....	....	....	....
Oregon	82	247	285	3,059	....	....	215	....	....
Puget's Sound	348	1,646	2,286	35,448	1,666	1,590	25,389	....	....
San Francisco	1,988	9,717	75	1,515	....	....	48,264	....	14,811
Total	45,173	166,207	126,880	1,987,302	34,260	234,259	803,684	121,630	2,501,585

This table shows the singular fact, that Chicago, the greatest lumber market in the world, exports directly no lumber to foreign countries.

The State of Maine, as the head-quarters of the lumber and ship building trade, has for a long time excited much interest. The season for cutting the timber and bringing it to market commences in December or earlier, and closes in March or April.

According to a careful estimate of George W. Cram, Esq., surveyor-general of lumber for Boston, the amount sold at that port in 1854, was 131,900,000 feet. The descriptions were 40,000,000 of white pine lumber, 18,900,000 southern pine, 25,000,000 spruce, 10,000,000 hard wood, 1,800,000 mahogany, 2,100,000 clapboards, 6,000,000 shingles, 20,000,000 laths, 4,000,000 hemlock, [illegible].

The following is a curious *estimate* of the lumber business. The number of men employed in getting the lumber to market is 120,000; number of cattle and horses, 80,000; number of saw-mills, 3000; number of vessels, 1000. Pine, spruce, and hemlock lumber is principally obtained from Bangor, Ellsworth, the Kennebec River, Calais, Machias, Cherrifield, Maine, and St. John, New Brunswick, while the larger portion of the hard pine grows in North and South Carolina, Georgia, Florida, and Alabama. Pine and spruce, too, are brought from Canada to Portland, and is thence shipped to this and other markets. The lumber secured from St. John is of a superior quality. Lumber is obtained also from the States of New York, Ohio, and Michigan. The two last States furnish black walnut, cherry, ash, white wood, and basswood; while New York and Pennsylvania furnish a share of the same. The railroads bring to market, oak timber from Massachusetts and New Hampshire. The southern and western States grow a portion of the same, and furnish considerable live oak. New York yields a large quantity of pine. Delaware and Maryland

more sparingly. It is stated that the best hard pine for ship-building grows on the Alatamaha River in Georgia, and on the Waccamaw River in South Carolina. It is but a few years since hard pine has been used in ship-building. It is now employed extensively in New England, and is considered as good for many parts of a ship as oak. During the year 1854 a commission house of this city sold about 23,000,000 of feet, to be used mostly in Massachusetts and Maine. It will be perceived that this house sold 5,000,000 feet more than all that was surveyed in the city for that year, showing how large a part of the lumber sold here is not surveyed under our surveyor-general. Formerly there was no hard pine obtained at the South except what grew immediately upon the rivers. But within five or six years the timber upon the margin of the streams has become scarce, so that now it is conveyed for several miles to the rivers, and in some cases is floated 300 miles to some sea-port, from whence it is shipped to the North or to foreign ports.

The reciprocity treaty that has recently been effected between the United States and the British possessions in North America is quite sure to increase our lumber trade, as Canada and the other provinces abound in this great staple. A few statistics will give some idea of the wealth and activity of the British provinces in this department. In 1832 the new ships built in the British colonies were of 32,778 tons burden; while in 1841 the tonnage of the ships built amounted to 108,038 tons, and in 1850 to 112,787 tons. Most of these ships were built for the British market. In the city of Quebec, according to Andrews's Report on Colonial and Lake Trade, there are about 25 ship-building establishments, and 8 or 10 floating docks. The vessels built there average from 500 to 1500 tons. In 1849, 114 vessels were built in New Brunswick, of 36,534 tons burden. Most of the ships built in New Brunswick are constructed in St. John and St. Andrews.

DOMESTIC EXPORTS OF LUMBER AND NAVAL STORES FROM THE UNITED STATES.

	1853.	1854.	1855.
Staves, shingles, boards, etc.	$2,578,149	$5,122,834	$4,609,665
Other lumber	123,743	165,178	677,659
Masts and spars	129,628	130,522	306,643
Oak bark and dye	118,894	95,863	99,168
All manufactures of	2,394,122	2,837,270	3,683,420
Naval stores, tar, pitch, rosin, etc.	1,406,488	2,966,306	2,049,456
Ashes, pot and pearl	334,821	322,728	448,499
Total	$8,985,845	$19,740,701	$11,874,510

Of these exportations, more than half of the naval stores go to England, and more than half of the lumber to Cuba.

The ship-building interest alone of Massachusetts consumes a vast amount of lumber. In 1837 the vessels built in the State were estimated to be worth $1,370,649, and the agricultural and domestic articles consuming lumber were worth $2,952,317. The persons employed in this handiwork were 3950. The estimated value of ships built in this State in 1854 was $5,000,000. If the value of agricultural and other articles requiring timber advanced in the same ratio the value was fully $10,000,000 for that year.

There were built in the United States in 1854, 1774 vessels of all descriptions, with a tonnage of 535,636. About a sixth of the value of the whole we find to have been built in Massachusetts. The value of the whole, then, in round numbers, may be stated at $30,000,000. It is true that the demand for vessels was unusual, and the prices obtained the same. What destruction of forests was made by the ship-building of that single year!

The lumber trade of this country is immense. It costs $30,000,000 a year to build our ships, and we may form some idea of the cost of all the buildings erected in the country for a year, and then of the cost of all other articles made of wood, and of the cost of the lumber material required.

STATEMENT SHOWING THE EXPORTS OF LUMBER (AND TO WHAT COUNTRIES EXPORTED) FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30TH, 1856.

Whither exported.	Hewn timber.		Other lumber.	Oak bark and other dye.	All manufactures of wood.
	Tons.	Dollars.	Dollars.	Dollars.	Dollars.
Russia on the Baltic & North Seas.	....	....	....	....	200
Sweden and Norway	....	....	....	487	647
Swedish West Indies	....	....	....	....	219
Danish West Indies	....	....	723	....	20,717
Hamburg	....	....	1,464	5,194	20,563
Bremen	362	2,882	18,259	9,984	59,104
Other German ports	....	....	....	....	469
Holland	953	7,086	24,104	10,289	4,831
Dutch West Indies	....	....	196	....	2,379
Dutch Guiana	80	600	4,185	....	4,848
Dutch East Indies	....	....	1,270	....	393
Belgium	887	7,004	2,834	762	3,202
England	12,151	84,257	76,986	50,078	162,786
Scotland	3,116	22,133	140	6,555	15,185
Ireland	1,118	8,097	665	....	110
Gibraltar	....	....	897	....	1,789
Malta	....	....	....	....	448
Canada	781	2,616	14,816	10,805	230,552
Other Br. N. A. pos.	6,525	44,567	9,065	464	57,198
British West Indies	341	2,561	4,027	2,442	52,489
British Honduras	....	....	166	....	5,573
British Guiana	....	....	600	....	3,915
British pos. in Africa	....	....	3,578	....	10,480
British Australia	....	....	21,660	....	218,190
New Zealand	....	....	....	....	616
British East Indies	73	1,088	12,581	....	12,444
France on the Atlan.	1,019	11,725	98,557	16,278	27,255
France on the Med.	....	....	18,199	5,076	1,791
French N. Amer. pos.	....	....	173	....	8,106
French W. Indies	172	1,900	288	....	217
French Guiana	....	....	80	....	1,468
Spain on the Atlantic	305	3,225	11,144	152	458
Spain on the Medit.	879	6,105	16,711	....	527
Canary Islands	....	....	1,140	....	62
Philippine Islands	....	....	....	....	1,900
Cuba	1,128	6,635	351,285	665	1,197,884
Porto Rico	....	....	12,361	....	107,241
Portugal	....	....	41	514	4,706
Madeira	....	....	860	....	510
Cape de Verd Islands	....	....	46	....	1,120
Azores	90	1,561	46	....	....
Sardinia	....	....	....	200	496
Papal States	....	....	....	400	....
Two Sicilies	....	....	....	....	624
Austria	....	....	....	140	....
Turkey in Europe	....	....	....	....	800
Turkey in Asia	....	....	....	....	110
Other ports in Africa	20	290	1,799	....	28,426
Hayti	....	....	3,085	....	11,202
San Domingo	....	....	....	....	102
Mexico	....	....	3,200	....	16,286
Central Republic	....	....	....	....	3,149
New Granada	....	....	6,050	....	23,961
Venezuela	24	324	....	....	18,560
Brazil	685	4,071	3,080	....	37,848
Uruguay	646	5,168	2,259	....	6,311
Buenos Ayres	500	3,599	7,585	....	24,660
Chili	....	....	11,782	....	33,331
Peru	....	....	1,972	....	19,325
Ecuador	....	....	2,000	....	....
Sandwich Islands	956	1,190	4,890	....	23,911
China	569	4,400	24,296	....	8,328
Whale Fisheries	....	....	16,768	....	52,880
Total	34,200	284,969	803,684	121,080	2,501,583

Lute, a substance used for making vessels or apparatus air-tight, by closing the apertures of their joints, or for coating, so as to enable them to bear a higher temperature, or for repairing a fracture. Clay is the basis of many lutes; whence the term, from *lutum*, clay. Among the principl lutes are *Stowerbridge clay*, in fine powder, made into a paste with water; *Windsor loam*, a natural mixture of clay and sand; *Wilkie's lute*, a thin paste made of a solution of borax, in boiling water, with slacked lime. Mixtures of borax and clay also form useful lutes. What is called *fat lute* is a mixture of pipe-clay with drying linseed-oil. Caustic lime furnishes, by admixture with orther bodies, a variety of lutes. A mixture of lime and white of egg, or glue, forms a powerful cement. *Iron cement* is useful for making joints tight, as is also white lead ground up with oil and spread on strips of cloth. Among the other substances used as lutes, may be mentioned moistened bladder, paste, and paper; paper prepared with a mixture of wax and turpentine, linseed-meal, and caoutchouc. The last named substance is in exten-

sive use for making chemical joints or elastic connectors, getting rid of that rigidity which, in a complicated arrangement of apparatus is so liable to lead to accident.

Lute, a stringed instrument of music, long since superseded by the harp and the guitar, but for centuries very fashionable in Europe. The music for the lute was written in tablature.

Luxury. The instances of extravagance and luxury are numerous in the history of almost all countries, ancient and modern, and many laws have been enforced to repress them. Horace mentions fowls dressed in Falernian wine, muscles and oysters from the Lucrine lake and Circean promontory, and black game from the Umbrian forests.—*Lardner.* Lucullus, at Rome, was distinguished for the immoderate expenses of his meals. His halls were named from the different gods; and when Cicero and Pompey attempted to surprise him, they were amazed by the costliness of a supper which had been prepared upon the word of Lucullus, who merely ordered his attendants to serve in the hall of Apollo. This feast for three persons casually met would have sufficed for 300 nobles specially invited. In England, luxury was restricted by law, wherein the prelates and nobility were confined to two courses every meal, and two kinds of food in every course, except on great festivals. The law also prohibited all who did not enjoy a free estate of £100 per annum from wearing furs (see FURS), skins, or silks: and the use of foreign cloth was confined to the royal family alone: to all others it was prohibited A. D. 1837. An edict was issued by Charles VI. of France which said: "Let no man presume to treat with more than a soup and two dishes." 1340.—*Haydn.*

Lying-to. A nautical term denoting the state of the ship when the sails are so disposed as to counteract each other, and thereby retard or destroy the progressive motion of the vessel. The fore and main stay-sails and mizzen try-sail serve very well for this purpose, as they cause but little way, and have sufficient power to keep the ship heeled over, and therefore steady, with her decks turned from the sea. When the sea runs very high, the lower sails are liable to be becalmed by the waves, and therefore to suffer the ship to roll to windward; the maintop-sail is then used.

Lyons (Fr. *Lyon*, ancient *Lugdunum*), the capital of the French Department of Rhône, and till recently ranking, in point of population and commercial importance, as the second city of the empire; but the last census returns show that in the former of these respects it has been exceeded by Marseilles. It is situated at the junction of the Saône with the Rhône, and on the Paris and Marseilles Railway, 316 miles from the former, and 218 from the latter city; lat. 45° 45′ 45″ N., long. 4° 49′ 33″ E.; elevation above the level of the sea, 963 feet. The Rivers Rhône and Saône being both navigable, it enjoys great facilities for trade; but it is as a manufacturing city that it is chiefly celebrated; and in this respect it is justly entitled to the name of the French Manchester. The staple articles of manufacture are silk stuffs of all descriptions, and which for richness and beauty are unequaled. In this manufacture about 100,000 of the population are either actively or indirectly concerned. There are no exact statistics of the silk manufacture at Lyons; but the following extract from a letter by the President of the Chamber of Commerce at Lyons, dated December 19, 1853, is said to give very nearly the exact results: "During the present year, and the two preceding, the manufacturers of silk at Lyons have employed about 60,000 machines (*metiers*), scattered over a district of about 40 miles. These machines have consumed about 2,500,000 kilogrammes of silk (5,500,000 lbs.), valued at 160,000,000 francs ($32,000,000); and the manufactured stuffs at 250,000,000 francs ($50,000,000). It is estimated that the home consumption amounts to one fourth or one third of that quantity. The balance is exported to all parts of the civilized world; but by far the largest foreign market is found in the United States." The silk manufacture in Lyons is not carried on in large factories, but on the domestic system, in the dwellings of the master-weavers, each of which has usually from two to six or eight looms, which, with their fittings, are generally his own property. Himself and as many of his family as can work are employed on these looms, and frequently also one or more *compagnons*, or journeymen. The number of master-weavers in the city and suburbs is estimated to be about 9000. The silk merchants, of whom there are about 600 in Lyons, supply the silk and patterns to the owners of looms, who are intrusted with the task of producing the web in a finished state. The weaving population, though earning comparatively good wages, are an ignorant and degraded race, living in a disgracefully filthy state, and showing little desire to improve their condition. Few of the journeymen ever raise themselves to be master-weavers. The silk manufacture was established here by Italian refugees in the middle of the 15th century. It was nearly ruined by the revocation of the edict of Nantes, which dispersed most of its best workmen to Spitalfields, Amsterdam, Crefeld, and other places. Lyons has numerous dye-works, printing establishments, founderies, glass-works, potteries tan-yards, breweries, chemical works, boat-building yards, etc.; but these are all insignificant compared with its chief branch of industry. The commerce carried on by means of the rivers is very considerable. The town is built principally on the tongue of land, or peninsula, between the Rhône and Saône, each of which is crossed by eight or nine bridges communicating with extensive suburbs lying to the east and west. The old portion of Lyons consists chiefly of narrow, crooked, and dirty streets, rendered dark and gloomy by the great height of the houses on each side, which are generally seven or eight stories high. About three fourths of a century ago, the point of confluence of the two rivers was removed about a mile further south, and on the additional territory thus acquired the suburb of Perrache was formed. This has been laid out on a regular plan, and now contains many elegant streets and some very agreeable promenades. The suburb of La Croix Rousse, to the north of the town, and that of Fourvières, on the right bank of the Saône, are chiefly inhibited by silk-weavers. Those of Brotteaux and Guillotière are on the left bank of the Rhône. The best view of the town and neighborhood is obtained from the summit of the steep hill of Fourvières, on the right bank of the Saône. The fortifications of Lyons consist of 18 detached forts, arranged in a circle of 12¼ miles around the town, crowning the heights of St. Croix and Fourvières, and of Croix Rousse, above the suburb of that name, and including in its circuit the suburbs of Brotteaux and Guillotière. These fortifications are required more to quell insurrections among the inhabitants than to withstand attacks from without. In 1831, 1834, and 1837, formidable riots took place, in which many lives were lost. Both banks of the Saône and the left bank of the Rhône are lined with quays, some of which are planted with trees, and afford very agreeable promenades.

In the revolution of 1793, the people of Lyons having declared against the revolutionary party, the city was taken by the conventional army after a seige of upward of two months, and almost reduced to ruins. It suffered severely from the inundations of its two rivers in June, 1856. Population in 1851, 156,169.—E. H.

M.

Macadam, John Loudon, the introducer of macadamized road-making, was descended from an old and respectable family in Kirkcudbrightshire, and was born in Ayrshire, Scotland, in 1756. His plan of road improvement occurred to him when acting as trustee for a district of roads in Ayrshire, and was first carried into practice on the Bristol roads, of which he had been appointed surveyor-general in 1815. He explained his system fully in two works—*A Practical Essay on the Scientific Repair and Preservation of Public Roads*, London, 1819; and *Remarks on the Present State of Road-making*, London, 1820. In 1827 he was appointed general surveyor of roads; and for the large sums which he expended while performing the duties of this office, he was afterward compensated by two grants from government, amounting together to £10,000. The honor of knighthood, which he declined, was conferred upon his son in 1834. Macadam died in 1836.

Macao, a sea-port and settlement belonging to the Portuguese, on the island of the same name, at the mouth of the Canton River, in China, in lat. 22° 12′ 45″ N., long. 113° 35′ E. The situation of Macao strikingly resembles that of Cadiz. It is built near the extremity of a peninsula projecting from the south-west corner of the island of Macao, to which it is joined by a long narrow neck. Across this isthmus, which is not more than 100 yards wide, a wall is erected, with a gate and guard-house in the middle for the Chinese soldiers. The greatest length of the peninsula belonging to the Portuguese, from north-east to south-west, is under three miles, and its breadth under half a mile. The broadest part, to the north of the town, is flat, and of a light, sandy soil; but is well cultivated, principally by Chinese, and produces all sorts of Asiatic and European culinary vegetables. Provisions are obtained from the Chinese part of the island or from the main land; and whenever the Portuguese do any thing to offend the Chinese authorities, the provisions are cut off till they are obliged quietly to submit. They are seldom allowed to pass beyond the narrow precincts of the territory assigned to them. The population of the peninsula may amount to from 12,000 to 18,000, of whom considerably more than half are Chinese. The functionaries belonging to the East India Company's factory at Canton resided here during the whole of the dead season. The Portuguese obtained possession of Macao in 1586. It was for a considerable period the seat of a great trade carried on not only with China, but with Japan, Siam, Cochin-China, the Philippine Islands, etc.; but for these many years past it has been of comparatively little importance, though it is probable that, if it belonged to a more enterprising and active people, it might still recover most part of its former prosperity. The public administration is vested in a senate composed of the bishop, the judge, and a few of the principal inhabitants; but all real authority is in the hands of the Chinese mandarin resident in the town.

The harbor is on the west side of the town, between it and Priest's Island; but the water in it not being sufficiently deep to admit large ships, they generally anchor in the roads on the other side of the peninsula, from five to ten miles east south-east from the town. All vessels coming into the roads send their boats to the Portuguese custom-house on the south side of the town. When a ship arrives among the islands, she is generally boarded by a pilot, who carries her into Macao roads. As soon as she is anchored, the pilot proceeds to Macao to inform the mandarin of the nation she belongs to. If there be any women on board, application must be made to the bishop and senate for leave to send them on shore, as they will not be permitted to proceed to Whampoa in the ship. As soon as the mandarin has made the necessary inquiries, he orders off a river pilot, who brings with him a *chop* or license to pass the Bocca Tigris, or mouth of the Canton River, and carries the ship to Whampoa.

The Chinese regulations do not permit any vessels, except such as belong to Portuguese or Spaniards, of which there are very few, to trade at Macao. But the Portuguese inhabitants lend their names, for a trifling consideration, to such foreigners as wish to be associated with them for the purpose of trading from the port. Independently, however, of this, vessels of other nations usually experience no difficulty in obtaining the connivance of the Chinese officers to the landing or receiving of goods in the roads by means of Portuguese boats. At intervals the prohibitory regulation is strictly enforced. Vessels of other nations, if in distress, and not engaged in the contraband trade, are admitted into the harbor for repairs, on application to the senate.

The following summary exhibits the direct trade between the United States and Macao during the years 1854 and 1855—the latter year up to March 6th: Arrived, 3 barks and 1 ship, measuring 1828 tons, laden with rice, sundries, salt provisions, and miscellaneous goods. The return cargoes were chiefly Coolies.

Port Charges.—The measurement duty paid by Spanish and Portuguese vessels is moderate. When a vessel has once paid the full amount, and is admitted on the list of registered ships belonging to the port (limited by the Chinese to 25), she is liable only to a third of the original charges, on every subsequent occasion of her entering, so long as she continues on the register. Portuguese vessels from Europe do not possess this privilege, unless they be registered as belonging to a morador of Macao. The rates of measurement duty, which vary, as at Canton (which see), on three classes of vessels, are the following: On vessels of 154 covids and upward, 6·223 taels per covid; on vessels from 120 to 154 covids, 5·72 taels per covid; on vessels from 90 to 120 covids, 4 taels per covid.

These rates are nearly the same as those levied on Canton junks trading with foreign countries, and ought, in fact, to be entirely so. The dimensions are taken and calculated in the manner formerly practiced at Canton; but the Chinese, at both places, speak not of the covid, but of the chang of 10 covids. However, as this is only a decimal increase, it makes no difference in the method of calculation. The following additional charges, to be calculated on the amount of measurement duty, are the same on every class of vessels, viz.: 2 per cent. for inspectors; 8 per cent. for difference in weight by the treasury scales; 10 per cent. for loss in melting; 17 per cent. for making sycee. Also the sum of 70 taels for the "public purse," or hoppo's treasury.

In addition to these, the following are the charges levied by the hoppo (collector of customs), or his deputy: On a 1st class vessel from Europe, 250 taels; if belonging to Macao or Manilla, 50 taels. On a 2d class vessel from Europe, 240 taels; if belonging to Macao or Manilla, 40 taels. On a 3d class vessel from Europe, 170 taels; if belonging to Macao or Manilla, 30 taels. Ships importing rice are exempt from the measurement duty, and pay only $50, as fees to the procurador of Macao and the officers of his department. Portuguese vessels from Europe, in addition to the measurement duty, have to pay to the Canton

hong merchants a charge, termed by the Portuguese, Hanistagem, or Consoo charge, which is usually a matter of specific bargain, varying from about $200 on a vessel of 200 tons to $2500 and upward on those of 500 tons, and of larger sizes. The charges on goods carried by the inner passage, between Canton and Macao, being generally less than those paid on goods to and from Whampoa; and the duties levied by the Portuguese, on articles of merchandise imported by vessels belonging to Macao, being very moderate; the Chinese are often led to engage in speculations on board the Macao vessels, the risk being so much less than in native junks. If the ship owners could manage their expenses so as to be satisfied with only the same freight as is charged by English vessels, it would probably induce many more Chinese to make remittances in this way.

Opium.—The trade in opium is prohibited at Macao by the Chinese government, as well as throughout the rest of the empire. It was, nevertheless, formerly carried on to a great extent by the Portuguese mordores, or citizens, to the exclusion of all others, even Portuguese who were not citizens. But this restriction, having occasioned the decline of the trade, it was abolished in 1823, when the senate passed a regulation throwing open the trade to all, without distinction, whether Portuguese or foreigners; securing to the latter "hospitality and the utmost freedom in the speculations." At present, however, very little opium is imported, in consequence, it is said, of the heavy bribes demanded by the Chinese officers, to insure their connivance. The trade is now principally carried on at Lintin, about 30 miles from Macao.

Imposts.—Goods imported pay at the Portuguese custom-house a duty of 6 per cent. on a fixed valuation, besides some fees, and Coolie hire. The following is a few articles extracted from the tariff:

Articles.	Valuation.	Duty.
	Taels.	Taels.
Cotton.....per picul	4	0·240
Broad cloth, middling.....per covid	1·600	0·096
" better than ordinary "	0·800	0·048
" ordinary or coarse. "	0·480	0·028
Camlets..... "	1·280	0·016
Betel nut.....per picul	1·200	0·072
Tin..... "	8	0·480
Birds' nests, 1st sort.....per catty	22·400	1·344
Rattans.....per picul	1·200	0·072
Saltpetre, Bengal..... "	4	0·240
" coast of Goa. "	1·600	0·096
Pepper..... "	4	0·240
Opium imported in Portuguese ships.....per chest		10½ drs.
" " foreign ships..... "		15½ "

Gold and silver, whether in coin, in bullion, or manufactured, pay, on importation, 2 per cent.; except in Spanish vessels from Manilla, when the charge is 1½ per cent.

Exports.—No duty is levied by the Portuguese on goods exported from Macao; nor does the custom-house take any cognizance of them.

Duties and Charges on Goods landed at Macao.—Macao is a place without any manufactures or commerce of its own. Prices are, in consequence, generally dependent on those of Canton. Money is usually paid at 72 taels per $100. It is a point of some interest to ascertain the internal duties and expenses to which goods landed at Macao are liable before coming into the Chinese purchaser's hands at Canton. But the subject is so involved in mystery and uncertainty, the charges varying according to the quantity of goods laden in one boat, etc., that it is scarcely possible to arrive at any accurate information respecting it. We believe, however, that the following may be considered as a pretty close approximation to the real amount of charges incurred on cotton landed at Macao:

Portuguese duty, fees, etc., 2·6 mace per picul; duties and charges on conveyance to Canton, 6·3 mace per picul; Canton charges, difference of weight, brokerage on sale, etc., 8 mace per picul; total, about 2 taels 6·9 mace. The duties and charges on conveyance from Macao to Canton are, for pepper, 9 mace per picul; rattans, 4·5 mace per picul; betel nut, 4·5 mace per picul.

The hoppo's examiner charges 90 taels per boat of 1000 piculs, the largest quantity allowed to be conveyed by a single boat; but the same charge of 90 taels is levied, although the boat should only contain 100 piculs. The duty on exporting goods from Canton to Macao is in some cases less, in other cases greater, than the Whampoa duty. Thus, nankeens to Macao pay $2 per 100 less than to Whampoa. Most descriptions of silk piece goods also pay less duty. On the other hand, tea, paper, China ware, etc., pay a higher duty to Macao than to Whampoa.

For details as to the *Weights, Measures, etc.*, used at Macao, see CANTON.

For further particulars, see HAMILTON'S *East India Gazetteer*, art. MACAO; MILBURN'S *Orient. Com.*; and the *Anglo-Chinese Kalendar Companion to the Almanac*, Macao, 1832.

Macaroni, a species of wheaten paste formed into long, slender, hollow tubes, used among us dressed with cheese, and in soups, broths, etc. Macaroni is the same substance as vermicelli; the only difference between them being that the latter is made into smaller tubes. Both of them are prepared in the greatest perfection in Naples, where they form the favorite dish of all classes, and the principal food of the bulk of the population. The flour of the hard wheat (*grano duro*) imported from the Black Sea is the best suited for the manufacture of macaroni. Being mixed with water, it is kneaded by means of heavy wooden blocks wrought by levers, till it acquires a sufficient degree of tenacity; it is then forced, by simple pressure, through a number of holes, so contrived that it is formed into hollow cylinders. The name given to the tubes depends on their diameter; those of the largest size being macaroni, the next to them vermicelli, and the smallest fedelini. At Genoa, and some other places, the paste is colored by an admixture of saffron; but at Naples, where its preparation is best understood, nothing is used except flour and water; the best being made of the flour of hard wheat, and the inferior sorts of the flour of soft wheat. When properly prepared and boiled to a nicety, Neapolitan macaroni assumes a greenish tinge. It is then taken out of the caldron, drained of the water, and being saturated with concentrated meat gravy, and sprinkled with finely-grated cheese, it forms a dish of which all classes, from the prince to the beggar, are passionately fond. But the macaroni used by the poor is merely boiled in plain water, and is rarely eaten with any condiment whatever. The macaroni usually served up in England is said, by those familiar with that of Naples, to be a disgrace to the name it bears. When properly prepared, macaroni is nutritious and easy of digestion. The lazzaroni pique themselves on the dexterity with which they swallow long strings of macaroni and vermicelli without breaking them.

Mace (Ger. *Macis, Muskatenbluthe*; Du. *Foelie, Foely, Muscaatbloom*; Fr. *Macis, Fleur de muscade*; It. *Mace*; Sp. *Macio*; Port. *Maxeis, Flor de noz moscada*; Lat. *Macis*), a thin, flat, membranous substance, enveloping the nutmeg; of a lively, reddish yellow color, a pleasant aromatic smell, and a warm, bitterish, pungent taste. Mace should be chosen fresh, tough, oleaginous, of an extremely fragrant smell, and a bright color—the brighter the better. The smaller pieces are esteemed the best. The preferable mode of packing is in bales, pressed down close and firm, which preserves its fragrance and consistence. It is imported from the Moluccas, where the best is to be found. The import trade in mace for home consumption in Great Britain for three years ending with

31st December, 1856, was: in 1854, 25,584 lbs.; in 1855, 28,563 lbs.; in 1856, 27,299 lbs. The present (1857) duty on mace imported into Great Britain is 1s. per lb. A production is met with on the coast of Malabar, so like mace, that at first it is not easy to be distinguished; but it has not the least flavor of spiciness, and when chewed has a kind of resiny taste.

STATEMENT SHOWING THE IMPORTS OF MACE INTO THE UNITED STATES FOR THE FISCAL YEAR ENDING JUNE 30TH, 1856.

Whence Imported.	Pounds.	Dollars.
Holland	8,548	4,991
Dutch West Indies	640	177
Dutch East Indies	4,524	1,818
England	5,244	3,408
British West Indies	8	8
British East Indies	25,826	13,496
China	180	81
Total	44,415	23,909

Machinery. The effects produced upon the world by the interposition and general use of machinery, are very important. Serious obstacles were at first presented and objections made by the masses, upon the ground that the use of machinery was opposed to the interests of labor. Gradually these objections wore away, it being found that there was, and still is, employment for all classes, even with the extraordinary facilities added by the many improvements in machinery. These questions have been fully discussed by some of the ablest writers in England and the United States. As to the "effects of machinery and accumulations," see *Edin. Rev.*, xxxv., p. 102, lvi., 313; *Quar. Rev.*, xxxi., 391; *Fraser*, viii., 167, ii., 419; *Am. Monthly*, iii., 24; *Westm. Rev.*, v., 201, xiv., 191; *North Am. Rev.*, xxxiv., 220, xiv., 401; *Am. Quar.*, xii., 300.

Macintosh Cloth. The manufacture of the Macintosh cloth is a singular one. The material is merely two layers of cotton cemented with liquid India-rubber; but the junction is so well effected, that the three become, to all intents and purposes, one. The stout and well-woven cotton cloth is coiled upon a horizontal beam, like the yarn beam of a loom; and from this it is stretched out in a tight state and a nearly horizontal position. A layer of liquid, or rather paste-like, solution is applied with a spatula, to a considerable thickness, and the cloth is drawn under a knife edge, which scrapes the solution and diffuses it equally over every part of the cloth, which may be 30 or 40 yards long. The cloth is then extended out on a horizontal framework to dry; and, when dried, a second coating is applied in a similar way; and a third and fourth may be similarly applied if necessary. Two pieces, thus coated, are next placed face to face with great care, to prevent creasing or distortion; and, being passed between two smooth wooden rollers, they are so thoroughly pressed as to be made to unite durably and permanently. Cloth, thus cemented and doubled and dried, may be cut and made into garments which will bear many a rough trial and many a deluging before rain or water can penetrate.

Madder (Ger. *Färberröthe*; Du. *Mee*; Fr. *Alizari, Garance*; It. *Robbia*; Sp. *Granza, Rubia*; Rus. *Marena, Krap*; Hind. *Munjith*), the roots of a plant (*Rubia tinctorum*), of which there are several varieties. They are long and slender, varying from the thickness of a goose-quill to that of the little finger. They are semi-transparent, of a reddish color, have a strong smell, and a smooth bark. Madder is very extensively used in dyeing red; and though the color which it imparts be less bright and beautiful than that of cochineal, it has the advantage of being cheaper and more durable. It is a native of the south of Europe, Asia Minor, and India; but has been long since introduced into and successfully cultivated in Holland, Alsace, Provence, etc. Its cultivation has been attempted in England, but without any beneficial result. Our supplies of madder were, for a lengthened period, almost entirely derived from Holland (Zealand); but large quantities are now imported from France and Turkey. Dutch or Zealand madder is never exported except in a prepared or manufactured state. It is divided by commercial men into four qualities, distinguished by the terms *mull, gamen, ombro*, and *crops*. The roots being dried in stoves, the first species, or mull, consists of a powder formed by pounding the very small roots, and the husk or bark of the larger ones. It is comparatively low priced, and is employed for dyeing cheap dark colors. A second pounding separates about a third part of the larger roots; and this, being sifted and packed separately, is sold here under the name of gamene, or gemeens. The third and last pounding comprehends the interior, pure, and bright part of the roots, and is sold in Holland under the name of *kor kraps*, but is here simply denominated crops. Sometimes, however, after the mull has been separated, the entire residue is ground, sifted, and packed together, under the name of *onberoofde*, or ombro. It consists of about one third of gamene, and two thirds of crops. Prepared madder should be kept dry. It attracts the moisture of the atmosphere, and is injured by it. The Smyrna or Levant madder (*Rubia peregrina*), the alizari or lizary of the modern Greeks, is cultivated in Bœotia, along the border of Lake Copais, and in the plain of Thebes. It also grows in large quantities at Kurdar near Smyrna, and in Cyprus. The madder of Provence has been raised from seeds carried from the latter in 1761. Turkey madder affords, when properly prepared, a brighter color than that of Zealand. It is, however, imported in its natural state, or as roots: the natives, by whom it is chiefly produced, not having industry or skill sufficient to prepare it like the Zealanders, by pounding and separating the skins and inferior roots; so that, the finer coloring matter of the larger roots being degraded by the presence of that derived from the former, a peculiar process is required to evolve that beautiful Turkey red which is so highly and deservedly esteemed.—THOMSON'S *Chemistry*; BANCROFT *on Colors*, vol. ii., pp. 221–278; see also *Beckmann, Hist. of Invent.*, vol. iii., art. *Madder*.

In France, madder is prepared nearly in the same manner as in Zealand. The following details are in regard to its cultivation, price, etc., in Provence.

This town (Avignon) is the centre of the madder country, the cultivation of which was introduced here about the middle of the 18th century, and, with the exception of Alsace, is still confined (in France) to this Department (Vaucluse). The soil appears to be better adapted for its cultivation here than anywhere else, and it has long been the source of great wealth to the cultivators. Of late years, however, the prices have fluctuated so much, that many proprietors have abandoned, or only occasionally cultivated this root, so that the crop, which was formerly estimated to average 500,000 quintals, is now supposed not to exceed from 300,000 to 400,000. The root is called *alizari*, and the powder (made from it) *garance*. The plant is raised from seed, and requires three years to come to maturity. It is, however, often pulled in 18 months without injury to quality; the quantity only is smaller. A rich soil is necessary for its successful cultivation; and when the soil is impregnated with alkaline matter, the root acquires a red color; in other cases it is yellow. The latter is preferred in England, from the long habit of using Dutch madder, which is of this color; but in France the red sells at 2 francs per quintal higher, being used for the Turkey red dye. It is calculated that when wheat sells at 20 francs per hectolitre, *alizari* should bring 85 francs per quintal (poids de table), to give the same remuneration to the cultivator. That is, wheat 63s. per English quarter, and *alizari* 34s. per English cwt. The price has, however, been frequently as low as 22 francs per quintal. Prices undergo a revolution every 7 or 8 years, touch-

ing the minimum of 22, and rising as high as 100 francs. As in every similar case, the high price induces extensive cultivation, and this generally produces its full effect 4 or 5 years after. The produce of Alsace, which is inferior both in quantity and quality to that of Vaucluse, is generally sold in Strasburg market. England employs both the root and the powder, according to the purpose for which they are intended. The Dutch madder is more employed by the woolen dyers, and the French by the cotton dyers and printers. In making purchases of *garance*, it is essential to employ a house of confidence, because the quality depends entirely upon the care and honesty of the agent. The *finest* is produced from the roots after being cleaned and stripped of their bark. The *second* by grinding the roots without cleaning. A *third* by mixing the bark of the *first* while grinding; and so on to any degree of adulteration.

STATEMENT SHOWING THE IMPORTS OF MADDER INTO THE UNITED STATES FOR THE FISCAL YEAR ENDING JUNE 30TH, 1856.

Whence imported.	Pounds.	Dollars.
Holland	4,266,822	331,807
Belgium	501,662	34,972
England	134,663	10,800
Malta	7,750	430
British West Indies	30	2
France on the Atlantic	336	29
France on the Mediter.	15,868,681	1,287,946
Turkey in Asia	68,122	5,819
Total	20,847,472	1,671,805

Madagascar, a large and important island in the Indian Ocean, about 300 miles from the coast of Africa, from which it is separated by the Mozambique Channel. Cape Amber, its northern extremity, is situate in S. lat. 12°, whence it extends southward, slightly inclining to the west, about 937 English miles, to Cape St. Mary, in S. lat. 25° 40′. Its extreme western shore is in E. long. 43° 10′, and its most easterly cape in E. long. 50° 30′. The breadth of the island increases gradually from the northern point to the centre, where it is widest, being about 350 miles across; while the average breadth of the southern portion is about 250 miles. It has been estimated to contain 150,000,000 or even 200,000,000 acres of land; and though such estimates, in the absence of actual measurements, can only be regarded as approximations to its actual extent, its surface is equal to three fourths of the territory of France, and larger than Great Britain and Ireland combined.

The coasts of Madagascar contain a number of bays and harbors, some of them spacious and sheltered, and capable of affording excellent and secure anchorage for shipping of the largest dimensions. Among these may be specified Diego Saurez Bay, or British Sound, near the north-eastern extremity of the island; Port Loquez, Antongil Bay, and the Bay of St. Luce, on the eastern coast. Samatave and Foule Point, though the most frequented ports on this side of the island, are only open roadsteads, protected by reefs of coral. St. Augustine's Bay, a port of frequent resort for vessels trading on the north-west coast and ships engaged in the whale fishery, Tolia Bay, Boiana, Bambetoka, Majambo, Narcenda, Passandava, and Chimpaykee Bays, are the most important on the western coast. There are several small islands adjacent to the northern shores of Madagascar, of which St. Mary's, 31 miles long, and 2 or 3 miles broad, on the eastern coast, and Nosibé, a somewhat larger and more compact island, on the north-west coast are the most important. Both these small islands are now occupied by the French—the latter having been taken possession of by them in 1840.

The commerce of the island, though at present but trifling, is capable of almost unlimited extension. The chief articles of export are cattle, poultry, rice, rufia cloth, matting; a kind of grass hat, woven by hand, light and durable; gums, and bees' wax. Coffee would grow well in many parts of the island; indigo might be produced to almost any extent; and both might furnish valuable articles of export. Good sugar has been made, but at present the cane is only cultivated for purposes of food, or for distilling from its juice a strong, fiery sort of arrack, the use of which is extended among the people, especially at the ports, and threatens to produce the most disastrous consequences. Other articles of export might be produced [illegible] country so fertile and extensive; and rice might, without comparatively little additional labor, be raised in much larger quantities than it is produced at present. It is scarcely possible to conceive of a soil more adapted for the cultivation of rice than that of many parts of Madagascar, or more fertile than, in favorable seasons, it often proves—a single bushel of seed yielding, under the most skillful modes of culture, in a favorable season, 100 bushels of grain. The crop, when ripe, is reaped, dried, and thrashed on the ground. Their process of thrashing consists in taking up large handfulls of rice and straw, and beating the ears on a stone or portion of rock fixed in the midst of a dry, hard, thrashing-floor, prepared for that purpose in some central spot easily accessible from the cultivated fields. When the grain is thrashed, it is carried on the heads of slaves to the granaries of their owners. These granaries vary in structure in different parts of the island. On the eastern coast and to the southward, the grain is stored in small houses raised on posts, with projecting ledges, to prevent the access of rats and mice. At the capital and some of the central provinces, the rice is preserved in granaries built of clay, in the form of a cone, with only one aperture on the summit. Some of these granaries are built above ground adjacent to the dwellings of their owners; others are constructed of the same form and dimensions under ground—the aperture at the top, generally about a foot below the surface, being covered with a stone, and then the hollow filled up with earth composing the surface of the court-yard, in which the underground granary is usually sunk. Rice, by these means, is often preserved for a great length of time in excellent condition. With land so fertile and adapted for the growth of such abundant crops of rice as the plantations in the interior often yield, it might be raised for exportation to almost any extent; but the absence of canals and public roads, and all means of land carriage, precludes the possibility of conveying the produce of many of the provinces to the sea-ports, excepting in comparatively small quantities, and thus impedes very materially the development of the resources of the island. The government has been deterred from constructing or encouraging the formation of public roads, from an apprehension of the facilities they would afford to a hostile force invading the country and seeking to penetrate the interior. The want of good roads, therefore, though detrimental to their commercial interests, is preferred by them as a means of security. This disadvantage might be, to a great extent, compensated in some of the provinces by greater attention to the means of carriage by water. The late Radama commenced the work of connecting some of the principal lakes on the eastern coast by means of a canal, but since his death the work has been discontinued. Boats, better adapted for conveying grain in larger quantities to the places adjacent to the ports, and accessible by water, might be constructed, and would assist in augmenting the exports from the island. Their imports are chiefly cotton and woolen goods, wearing apparel, articles of domestic use, fire-arms, ammunition, wines and liquors; and to these other articles will doubtless be added as their means of purchasing them increase. The Hovas, the paramount race in the country, exhibit many of the elements of a thoroughly commercial people; keenness in trade seems to be intuitive with many, and the love of bartering almost a passion among all; scarcely any

engagement interferes with the market, and multitudes employ themselves in hawking goods of foreign or domestic manufacture about the country for sale. In this occupation many persons of rank and property employ their slaves, giving them a percentage on the amount or the profit of their sales. The dealings of the Hovas are seldom transactions of barter or exchange, but usually money purchases. The only coins they use are Spanish dollars, and very recently five-franc French pieces. For all the cattle exported, these silver coins alone are received in payment. The Malagasy have no native currency; and for ordinary use among themselves, the Spanish dollar is cut into halves, quarters, eighths, and smaller portions, even to the 1-72d part of a dollar. The cut pieces of the dollar are weighed in every instance, and a pair of money scales with their appropriate iron weights, are not only considered essential in every house, but are often seen thrust into the girdles of the men when employed in their ordinary avocations. Money-changers are a distinct class among the traders, and the rate at which whole dollars and cut silver are exchanged fluctuates almost daily at the capital and other principal places, as the one or the other are most in demand. In other parts of the island, especially those remote from the capital or the ports visited by shipping, the trade among the inhabitants is carried on to a great extent by exchange, or barter. Several attempts have been made by the foreign traders to induce the natives to receive gold coin in payment for cattle and other articles, but hitherto without success. The Hovas are not ignorant of the relative value of gold and silver, but at present seem only to value the former for the manufacture of jewelry and other articles of personal ornament.

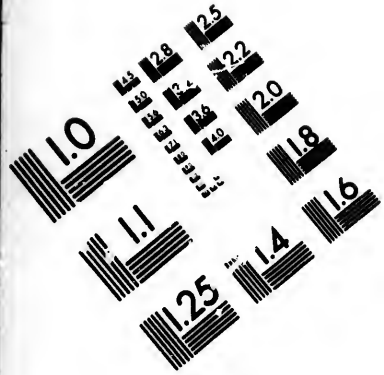
Madeira. The Madeira Isles are a group in the Atlantic Ocean, belonging to Portugal, from the southwest coast of which they are distant 660 miles southwest. They consist of the islands of Madeira and Porto Santo, and the islands called the Desertas, situated between 32° 23′ 15″ and 33° 7′ 50″ N. lat., and 16° 18′ 30″ and 16° 38′ W. long. The largest island, Madeira, is 31 miles long and 12 miles broad. Population, 1850, 108,464. Capital, Funchal. It consists of a mass of volcanic rocks, which, in Pico Ruivo, rise to 6056 feet in elevation. From the central mass, steep ridges extend to the coast, where they form precipices of 1000 to 2000 feet in height. The only plains are a small portion of the west coast, and the tableland of Paul de Serra in the interior. The roads are very steep and unfit for carriages. Oxen are the only beasts of draught, and ponies are used in traveling. Climate remarkably equable, and celebrated for its salubrity, on which account numerous visitors, afflicted with disease of the lungs, constantly resort to Madeira. The soil, which on the south side extends 2½ miles inland, is well watered, and extremely productive. Sugar, once extensively cultivated, is now neglected. Coffee is grown of superior quality, and the arrow-root is excellent. The orange, banana, and guava, are abundant. Wheat, maize, beans, and barley, are cultivated to a small extent, but quite insufficient for home consumption. The failure of the potato, formerly the chief support of the population of the villages and remote districts, has added to the existing distress, and the condition of the lower orders is that of squalid poverty. Madeira was settled by the Portuguese in 1431.

It is said that plants of the vine were conveyed from Crete to Madeira in 1421, and have since succeeded extremely well. There is considerable difference in the flavor and other qualities of the wines of Madeira; the best are produced on the south side of the island. The method of cultivation most generally followed is to trench the ground from three to seven and seven to nine feet deep, according to the nature of the soil, and lay a quantity of loose and stony earth at the bottom, to prevent the roots from reaching the clayey soil beneath, which would otherwise oppose their growth. The ground is watered three times if the summer has been very dry, the sluices being left open until the ground is pretty well saturated; the less the ground is watered, the stronger the wine, but the quantity is diminished in proportion. The vines are found to bear fruit as high as 2700 feet, but no wine can be made from it. Adjacent to Madeira is the island of Porto Santo, about six miles long, and two and a half broad. It is high and rocky, composed principally of sand-stone, and a calcareous tuffa of a greenish gray color. The vine is cultivated in considerable quantities, and the soil yields good crops of wheat, Indian corn, barley, and beans. The population is estimated at 1400, and there are 800 militia. It possesses a good roadstead, but the landing-place is bad. The Desertas are small, uninhabited islands, which, with Madeira and Porto Santo, form the group called the Madeiras.

The manufactures of Madeira are insignificant; their chief object being to satisfy some of the simple wants of the poorer classes. Baskets, straw hats, coarse linen and woolen articles, and shoes, are the principal objects. Artificial feathers, flowers, and sweatmeats are made for sale by the nuns. A good deal of needlework embroidery has been executed of late years by the women of Funchal for exportation, and a few fancy articles are made of the fibre of the *Agave Americana*. The bulk of the laboring population is employed in agricultural pursuits. Wine has hitherto been the chief article of export, but this branch of trade will soon cease. The rearing of the cochineal insect has been lately undertaken, in the hopes of its supplying the loss of the grape. Many of the coopers employed during the existence of the wine trade have emigrated; the rest earn a precarious subsistence. The casks they made possessed repute for excellence of construction. The chief artisans of Funchal at present are boot and shoemakers, cabinet-makers, carpenters, and stone-masons. The number of merchant ships anchoring at Funchal (which is the only foreign port) during 1855 was 242, of which 121 were British, and 91 Portuguese. The chief imports are, manufactured goods, iron ware, grain, salt, and timber. In 1855, of grain there was imported 195,765 bushels, principally from the neighboring coast of Africa, and from the Azores. In the same year 27,800 bushels of salt entered. The official returns of the imports of manufactured goods can not be relied on. The total receipts of the custom-house in 1855 amounted to rather more than £17,000. There is no bank on the island; the gold and silver coin in circulation is not Portuguese, but British, American, and Spanish. Accounts are made out in *reis*, imaginary coins, 4800 of which are equal by law to the pound sterling. Spanish and American dollars are current, at the value of 1000 reis, or 4s. 2d. British money. Funchal is a coaling station for the British mail steamers from England to Brazil and the African coast, which touch here once a month on their outward voyages, and again on their return. The Portuguese and French steamers to Brazil likewise touch here. Besides these vessels, two English sailing-packets are continually plying between London and Madeira, and a Portuguese packet-brig to and from Lisbon.

COMMERCE OF THE UNITED STATES WITH PORTUGAL AND MADEIRA IN 1856.

National character.	Vessels entered.		Vessels cleared.	
	No.	Tonnage.	No.	Tonnag
From Portugal.				
Portuguese	18	8,727	15	3,393
British	8	2,420	1	291
Swedish	1	330	4	1,249
Dantsk	1	309	2	524
Prussian	..	....	1	286
Bremen	1	648	..	....
United States	..	10,879	..	6,232
From Madeira.				
Portuguese	2	284	3	370
United States	..	....	1	390



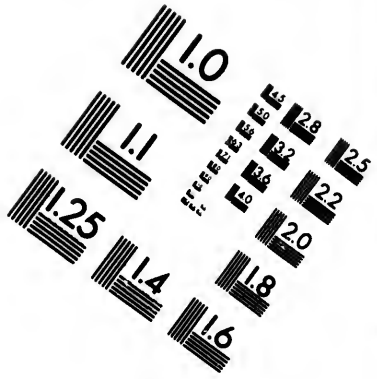
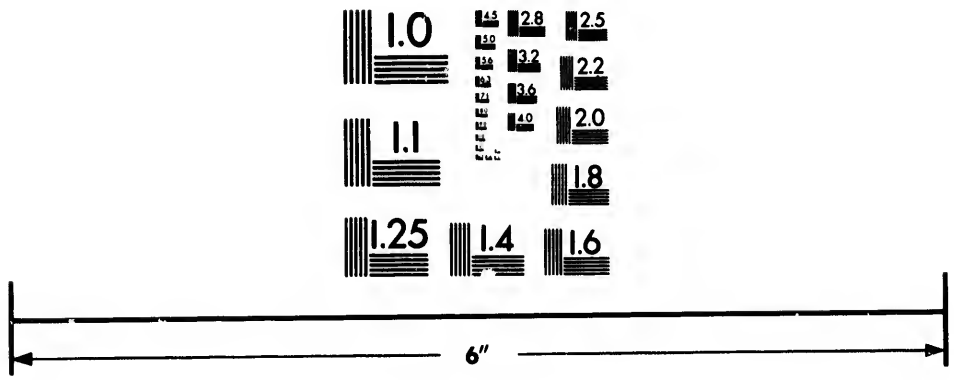
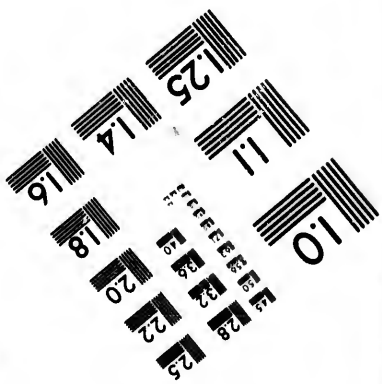


IMAGE EVALUATION TEST TARGET (MT-3)





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COMMERCE OF THE UNITED STATES WITH MADEIRA, FROM OCTOBER 1, 1820, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage Cleared.	
	Domestic.	Foreign.	Total.	Total.	Exported.	Imported.	American.	Foreign.
Sept. 30, 1821	$198,414	$26,667	$220,081	$190,289	$2,000	$10,286	3,088	....
1822	186,959	4,662	191,614	168,757	....	5,600	5,899	111
1823	117,635	3,976	121,661	244,283	485	12,863	4,973	....
1824	315,896	26,847	342,943	247,510	....	22,271	3,059	....
1825	122,840	55,826	178,166	361,016	58,050	850	5,861	185
1826	119,058	25,549	144,607	224,388	12,150	5,200	4,220	....
1827	100,153	18,281	118,434	229,282	....	21,424	4,068	....
1828	101,948	9,965	111,913	168,610	1,167	7,791	4,887	911
1829	175,074	15,089	190,163	408,966	500	9,660	5,091	669
1830	155,719	12,358	168,077	289,652	1,683	5,000	3,060	....
Total	$1,588,789	$198,240	$1,786,979	$2,497,203	$76,540	$100,395	57,485	1,126
Sept. 30, 1831	$171,563	$5,728	$177,291	$177,869	....	$8,667	5,166	....
1832	145,667	920	146,586	226,518	....	5,186	4,623	124
1833	119,641	15,642	134,983	312,349	$5,482	....	3,801	369
1834	100,910	43,595	144,505	424,699	....	2,000	4,080	698
1835	73,893	28,595	102,488	531,266	5,674	2,536	3,700	941
1836	39,947	17,998	56,938	346,210	4,011	95	3,414	....
1837	82,747	18,522	101,269	672,782	14,498	....	4,250	....
1838	36,429	4,535	40,957	366,274	8,166	....	3,464	....
1839	64,082	15,046	79,129	589,800	14,143	....	4,278	....
1840	93,819	22,858	116,677	309,524	14,619	3,695	3,963	....
Total	$927,899	$172,843	$1,100,322	$3,985,591	$61,581	$22,183	39,740	1,427
Sept. 30, 1841	$107,905	$20,370	$128,275	$229,519	$19,920	$5,200	4,626	827
1842	43,054	1,980	44,984	146,182	1,822	100	2,258	....
9 mos. 1843	37,849	3,656	41,505	7,180	2,606	....	1,657	....
June 30, 1844	44,763	7,523	52,286	22,904	8,695	....	2,404	122
1845	59,312	1,784	61,096	168,674	2,000	....	2,081	491
1846	60,948	3,957	64,909	127,070	1,600	....	3,535	477
1847	105,081	1,339	106,420	35,857	....	....	3,848	1,046
1848	110,842	7,407	118,249	9,493	592	....	4,524	1,444
1849	117,878	759	118,637	72,759	4,800	....	3,744	1,678
1850	136,874	6,527	143,401	114,799	863	....	4,182	1,879
Total	$824,251	$54,802	$879,058	$995,286	$42,388	$5,300	32,904	8,359
June 30, 1851	$94,589	$7,176	$101,765	$102,448	$2,696	....	3,873	1,814
1852	67,992	7,480	90,472	90,008	7,000	....	4,171	596
1853	101,524	15,574	117,098	77,598	15,993	....	3,707	348
1854	47,708	....	47,708	80,007	2,000	....	921	286
1855	48,502	5,261	53,763	25,983	2,286	$250	1,894	811
1856	27,655	932	28,587	19,788	....	....	890	870

The cereal crops of Madeira are scarcely equal to one third the consumption; hence, and owing also to the general poverty of the inhabitants, a decree was passed in 1843 reducing the duties on the leading foreign imports to one half the duties levied in Portugal. This decree is in force at this time, and, consequently, but half the duties fixed in the tariff of Portugal are now levied on foreign imports into Madeira. In 1843 the imports from the United States amounted to $59,900, and the exports from Madeira to the United States to $2750, employing 38 vessels, with an aggregate tonnage of 8533 tons. The commerce of this island with foreign nations, and especially with the United States, is declining, and must continue to decline so long as the vines remain diseased, as wine is the only article of export from Madeira.

See *Am. Jour. Science*, xxiv., 287; *North Brit.*, vii., 73; *North Am. Rev.*, xlvi., 336 (by J. W. WEBSTER). For Madeira Wine, see WINE.

Madeira Nut, or **Persian Walnut** (*Juglans regia*), originally a native of Persia, or the north of China, has been somewhat extensively distributed, and appears to be well adapted to the climate of the middle and southern latitudes of the United States. A tree of the "Titmouse" or "thin-shelled" variety (*juglans regia tenera*), about 20 years planted, 45 feet in height, and 15 inches in diameter, standing on the premises of Colonel Peter Force, in the city of Washington, is perfectly hardy, and bears yearly an abundance of excellent nuts. This is considered the most valuable of all the walnuts, as the tree begins to bear in eight or ten years from planting the seed; and the fruit is very delicate, keeps well, and is rich in oil. In Cashmere, where the walnut is the subject of careful cultivation, there are four varieties: The "Kanak," or wild, the nut of which is diminutive, with a thick shell and scanty kernel; the "Wantu," having a large nut, with a thick and hard shell, a deficient kernel; the "Denu," also a large nut, with a thick and rather hard shell, and a kernel large, good, and easily extracted; and the "Kaghazi," so called from its shell being nearly as thin as paper. The latter, which may be readily broken by the hand, is the largest of all, having a kernel easily extracted, and producing an excellent oil. Its superiority is said to be attributable to its having been originally engrafted, but it is now raised from seeds alone, and does not degenerate. The nuts, after being steeped in water eight days, are planted in the beginning of March, and the shoot generally makes its appearance in about 40 days. If reared by grafts, the process is performed when the plant is five years old. The head being cut off horizontally, at a convenient height, the stock is partially split, or opened, and the scion inserted in a similar manner to that adopted by our cleft method, in grafting the apple or pear; but clay-mortar, worked up with rice-husks, is put round it, and kept from washing away by being enveloped in broad slips of birch-bark.—*Patent Office Report*, 1855.

In Cashmere, the walnut-tree begins to fruit, ordinarily, when seven years old; but two or three years more elapse before it is in full bearing. The average annual number of nuts, brought to maturity on a single tree, often amounts to 25,000. It has been observed that, after a few seasons of full bearing, the trees fall off in producing fruit, and run, with great luxuriance, to leaf and branch. To this latter condition the Cashmereans apply the appellation of "must," and to remedy the evil, cut off all the small branches, bringing the tree to the state of a pollard. The year following, shoots and leaves alone are produced, which are succeeded the next season by an abundant crop of nuts. The cut ends of the branches swell into knots, or knobs, which are somewhat unsightly in the tree, until they are concealed by the growth of the young branches and leaves. When ripe, the fruit of the Wantu walnut is retailed in the city at the rate of about 2 cents a 100. The nuts

of the Dunu are sold for about 8 cents per 100; and of the Kaghazi, at about 4 cents per 100. It is a common practice for the country people to crack the walnuts at home, and carry the kernels alone to market, where they are sold to oil-pressers, for extracting their oil. The kernels yield half their weight in oil; and the other half, which consists of oil-cake, is much valued as food for cows in winter, when it is usually exchanged for its weight of rough rice. Abont 1,150,000 pounds of walnut kernels are annually consigned to the oil-press in Cashmere, producing a large amount of oil and cake, besides a considerable quantity eaten by man, or consumed by other modes. Walnut oil, in that country, is preferred to linseed oil, for all the purposes to which the latter is applied. It is employed in cookery, and also for burning in lamps, without much clogging the wick or yielding much smoke. It is exported to Thibet, and brings a considerable profit. By ancient custom, the crop of nuts was equally divided between the government and the owner of the tree, but at present, the former takes three fourths: yet, even under this oppression, the cultivation of this product is extended, and Cashmere, in proportion to its surface, produces a much larger quantity of nuts than any other portion of the globe. Estimating the product of each tree at a bushel of nuts, and supposing that it will produce that quantity in 12 or 15 years after planting, and considering that the amount imported into this country is valued at least at $100,000 per annum, the inducements for its culture by the farmers and planters of the middle and southern States would appear to be sufficiently ample for their immediate attention.—*Patent Office Report.*

Madras, the principal emporium of the coast of Coromandel, or western shore of the Bay of Bengal; latitude of light-house 13° 5′ 10″ N., long. 80° 20′ E. It is the seat of the government of the second presidency of British India, having under it a territory, including the tributary States, of 187,482 square miles, with a population, according to the census of 1850–51, of 27,054,672, paying a gross annual revenue of nearly £4,900,000 sterling. The town is situated in the Carnatic province, a low, sandy, and rather sterile country. It is without port or harbor, lying close upon the margin of an open roadstead, the shores of which are constantly beat by a heavy surf. Besides these disadvantages, a rapid current runs along the coast; and it is within the sphere of the hurricanes or typhoons, by which it is occasionally visited. In every respect, indeed, it is a very inconvenient place for trade, and its commerce is consequently greatly inferior to that of either Calcutta or Bombay. It has been in the possession of the English above two centuries, having been founded by them in 1639, and retained ever since. Fort St. George is a strong and handsome fortification, lying close to the shore. The Black-Town of Madras, as it is called, stands to the north and eastward of the fort, from which it is separated by a spacious esplanade. Here reside the native, Armenian, and Portuguese merchants, with many Europeans unconnected with the government. Like most other Indian towns, it is irregular and confused, being a mixture of brick and bamboo houses. Madras, like Calcutta and Bombay, is subject to English law; having a Supreme Court of Judicature, the judges of which are named by the crown, and are altogether independent of the local government and the East India Company. The population is not exactly ascertained, but there are said to be about 400,000 persons within a radius of 2½ miles round Fort St. George.

Madras is the seat of all the chief government offices for the President of the Supreme Court, Boards of revenue, admiralty, education, etc.; and though having less foreign trade than the capitals of the other presidencies, its commerce is still considerable, as it is the chief emporium of the Coromandel coast, and trades direct with Great Britain and the other European countries, the United States, Ceylon, and southeast Asia. Principal imports are rice and other grains, chiefly from Bengal; cotton piece goods, twist, and metallic wares from Great Britain; raw silk, areca, betel, gold dust, spices, and teak timber from Pegu; spirits and wines, coral beads, horses, drugs, to the total value, in 1851–52, of £1,958,786. Exports of cotton stuffs and wool, indigo, pepper, timber, coffee, and other native produce, amounted in the same year to £3,075,103. The site of the city formed the first territorial acquisition by the British in India, permission to erect a fort here having been obtained in 1639.

SUMMARY OF THE EXTERNAL COMMERCE OF MADRAS BY SEA, IN 1849—50 AND 1850—51.

For the years 1849—50.	Private trade.			Company's trade.			Grand total.
	Merchandise.	Treasure.	Total.	Merchandise.	Treasure.	Total.	
	Co.'s rupees.	Co.'s rupees.	Co.'s rupees.	Co.'s rupees.	Co.'s rupees.	Co.'s rupees.	Co.'s rupees.
Imports	1,32,17,743	42,35,514	1,74,54,256	2,86,589	....	2,86,589	1,76,90,795
Exports	2,36,38,359	9,10,427	2,45,48,786	81,944	59,70,000	60,51,944	3,06,00,730
Total	3,68,56,101	51,45,941	4,20,03,042	3,18,483	59,70,000	62,88,483	4,82,91,525
For the years 1850—51.							
Imports	1,84,47,091	60,42,437	1,94,89,528	97,833	....	97,833	1,95,87,361
Exports	2,61,22,274	11,97,691	2,73,19,965	1,81,073	33,00,000	34,81,073	3,07,51,038
Total	3,95,69,365	72,40,128	4,68,09,493	2,28,906	33,00,000	35,28,906	5,03,38,899

In Madras roads, large ships moor in from 7 to 9 fathoms, with the flagstaff off the fort bearing W.N.W., 2 miles from shore. From October to January is generally considered the most unsafe season of the year, in consequence of the prevalence, during that interval, of storms and typhoons. On the 15th of October the flagstaff is struck, and not erected again until the 15th of December; during which period a ship coming into the roads, or, indeed, anywhere within soundings on the coast of Coromandel (reckoned from Point Palmyras to Ceylon), vitiates her insurance, according to the conditions of the policies of all insurance offices in India. The cargo boats used for crossing the surf, called *Massula* boats, are large and light; made of very thin planks sewed together, with straw in the seams instead of caulking, which it is supposed might render them too stiff. When within the influence of the surf, the coxawain stands up, and beats time in great agitation with his voice and feet, while the rowers work their oars backward, until overtaken by a strong surf curling up, which sweeps the boat along with frightful violence. Every oar is then plied forward with the utmost vigor to prevent the wave from taking the boat back as it recedes; until at length, by a few successive surfs, the boat is thrown high and dry upon the beach. The boats belonging to ships in the roads sometimes proceed to the back of the surf, and wait for the country boats from the beach to come to them. When it is dangerous to have communication with the shore, a flag is displayed at the beach-house, which stands near the landing-place, as a caution. The fishermen and lower classes employed on the water use a species of floating machine of a very simple construction, named a catamaran. It is formed of 2 or 3 logs of light wood, 8 or 10 feet in length, lashed together, with a small piece of wood inserted between them to serve as a stem-piece. When ready for the water, they hold generally 2 men, who with their paddles impel themselves through the surf, to carry letters, or refreshments in small quantities,

to ships when no boat can venture out. They wear a pointed cap made of matting, where they secure the letters, which take no damage. The men are often washed off the catamaran, which they regain by swimming, unless interrupted by a shark. Medals are given to such catamaran men as distinguish themselves by saving persons in danger.

The limited extent of the trade of Madras as compared with that of Calcutta and Bombay, is partly ascribable to the badness of its port or roadstead, the want of any navigable river or other easy means of communication with the interior, and the backward state of the provinces of which it is the capital, in consequence of the heavy and fluctuating land tax to which they are subject. In 1839-40, there arrived at Madras no fewer than 5,426 vessels (including their repeated voyages of the aggregate burden of 335,465 tons. But by far the greater number of these were of very small burden; 2,832 being country craft from Bombay, 853 from Ceylon, and 585 from Goa. In the course of the same year 81 vessels arrived from the United Kingdom.—HAMILTON'S *East India Gazetteer; Geog. Dict.*, art. *Madras; Madras Almanac* for 1839, 1840, and 1845; *Official Returns of the Trade of Madras, etc.*

Maelstrom, or **Moskoe-Strom**, a whirlpool in the North Sea, near the Island Moskoe. In summer it is but little dangerous, but it is very much so in winter, especially when the north-west wind restrains the reflux of the tide. At such times the whirlpool rages violently so as to be heard several miles, and to engulf small vessels, and even whales, which approach it. See LOFODEN ISLANDS. See also FRASER'S *Mag.*, x., 267.

Magellan, or **Magalhaens, Straits of**, divide the continent of South America from the Island Tierra del Fuego; the east entrance is formed by Cape de la Virgines, on the mainland, and by Cape del Espiritu Santo (Queen Catharine's Foreland), on one of the largest islands composing Tierra del Fuego. Length nearly 300 miles, extending between lat. 52° 10′ and 55° S., and long. 68° 20′ and 75° W. Navigation difficult. Discovered in 1520 by Fernando Magalhaens. Ferdinand De Magellan, or Magalhaens, the discoverer of the straits that bear his name, was by birth a Portuguese. He served with honor in the East Indies, and in 1510 distinguished himself at the battle of Malacca. He entered into the employment of Charles V., King of Spain, and in conjunction with Ruy Folero, formed the bold design of discovering a new passage by the west to the Molucca Islands. On the 20th September, 1519, he sailed from San Lucas, with five ships and 236 men. After many exertions, he induced two of his ships to prosecute the entire voyage; and entering upon the straits which now bear his name, he soon reached the South Sea. The weather was so uniformly temperate, and the sea so calm, that they called the ocean Pacific. Magellan visited places seen for the first time by Europeans; and in visiting Matan, the natives gave battle, and Magellan was slain, in the year 1521. But for this he would have been the first circumnavigator of the world, which honor was secured by Cano, who brought his ships home by the East Indies.

Magnesia (Fr. *Magnésie*; Ger. *Gebraunte Magnesia*; It. *Magnesia*), one of the primitive earths, having a metallic basis. It is not found native in a state of purity, but is easily prepared. It is inodorous and insipid, in the form of a very light, white, soft powder, having a specific gravity of 2·3. It turns to green the more delicate vegetable blues, is infusible, and requires for its solution 2000 parts of water at 60°. See MANGANESE.

Magnet. Sturmius, in his *Epistola*, dated at Altorf, 1682, observes that the attractive quality of the magnet has been taken notice of from time immemorial; but that it was Roger Bacon, of Ilchester, in Somersetshire (he died the 17th June, 1294), who first discovered its property of pointing to the north pole. The Italians discovered that it could communicate its virtue to steel or iron. The variation not being always the same was taken notice of by Hevelius, Petil, and others. Flavio Gioja, of Naples, invented or improved the mariner's compass in 1302. The important discovery of the inclination or dip of the magnetic needle was made about 1576 (published 1580) by Robert Norman, of London. Dr. Gilbert's experiment was made in 1600. Artificial magnets were invented, or rather improved, in 1751. A magnetic clock, invented by Dr. Locke, of Ohio, announced at Washington, January 5, 1849. See COMPASS.

Magnolia. The magnolia conspicua, or lily-flowered magnolia, as its name indicates, is a beautiful and showy tree, and distinguishable from all others of the genus by the expanding of the flowers before any of the leaves. A full-grown tree, in its native country, is said to attain a height of forty or fifty feet, and it has arrived at nearly the same elevation in Europe and America. The tree was first introduced into England by Sir Joseph Banks, in 1789; but it was many years before it attracted much attention, being considered merely as a green-house or conservatory plant. Within the last 20 years, it has been discovered to be nearly as hardy as the American magnolias, and is now most extensively cultivated in the nurseries of Britain, continental Europe, and the United States. It flowers freely every year, as a standard in the neighborhood of London, New York, and Philadelphia, when the wood has been properly ripened during the preceding summer; and at White Knights, in England; at Fromont, and various other places in France; and at Monza, in Italy, and Brooklyn, in New York, it has ripened, seeds from which young plants have been raised. *Properties and Uses.*—Besides the value of the magnolia conspicua as an ornamental plant or tree, the Chinese pickle the flower-buds, after having removed their calyxes, and use them for flavoring rice. Medicinally, the seeds are taken in powder, in colds, and inflammations of the chest. It is also regarded as stomachic; and water, in which it has been steeped, is used for bathing the eyes when inflamed, and for clearing them of gum.

Geography and History.—The magnolia glauca has the most extensive range, especially near the sea, of any of the genus. It abounds from Massachusetts to Louisiana and Missouri. Its most northern boundary may be considered a sheltered swamp in Manchester, Cape Ann, about 80 miles northerly of Boston. It here attains but a small size, and is frequently killed to the ground by severe winters. In the maritime parts of the Floridas and lower Louisiana, it is one of the most abundant among the trees which grow in morasses or wet grounds. It is not usually met with far interior, nor to the west of the Alleghanies. In the Carolinas and Georgia it grows only within the limits of the pine-barrens. This species was introduced into England by Rev. John Banister, who sent it to Bishop Compton, at Fulham, in 1688. It was soon afterward generally propagated by American seeds, and became known throughout Europe many years before any of the other species. At Woburn Farm, Chertsey, there was formerly a row of these trees 20 feet high, and nearly a century old, which frequently ripened their seeds. In France, and southern Europe generally, this species is not very abundant, from the great heat of the summers, and the general dryness of the air. At Versailles and the Petit Trianon, as well as in Belgium, it has attained the height of 15 feet. In the north of Germany, and in Sweden and Russia, it is a green-house plant. At Monza, in Italy, it is found in all of its varieties. In general, this tree can only be used for ornamental purposes, and no collection should be without it. The wood, however, is sometimes employed for making

joiners' tools; and the bark is also used in some parts of the country, like that of the cinchona, in the case of intermittent and remittent fevers. It is aromatic and pungent, apparently more so than the other species. When distilled, it has a peculiar flavor, and an empyreumatic smell. In a dry state it affords a little resin. The aroma is volatile, and probably contains an essential oil, or a variety of camphor. The bark, seeds, and cones, are employed in tincture, in chronic rheumatism. That from the cones is very bitter, and is sometimes used to cure coughs and pectoral diseases, and for preventing autumnal fevers. The flowers in a dried state may be used in drawing-rooms for *pot pourri*, as a substitute for those of the lily of the valley.—BROWNE's *Trees of America*.

Mahogany, the wood of a tree (*Swietenia Mahogani*) growing in the West Indies and Central America. There are two other species of Swietenia found in the East Indies, but they are not much known in this country. Mahogany is one of the most majestic and beautiful of trees: its trunk is often 40 feet in length, and 6 feet in diameter; and it divides into so many massy arms, and throws the shade of its shining green leaves over so vast an extent of surface, that few more magnificent objects are to be met with in the vegetable world. It is abundant in Cuba and Hayti, and it used to be plentiful in Jamaica; but in the latter island, most of the larger trees, at least in accessible situations, have been cut down. The principal importations into Great Britain are made from Honduras and Campeachy. That which is imported from the islands is called Spanish mahogany; it is not so large as that from Honduras, being generally in logs from 20 to 26 inches square and 10 feet long, while the latter is usually from 2 to 4 feet square and 12 or 14 feet long, but some logs are much larger. Mahogany is a very beautiful and valuable species of wood; its color is a red brown, of different shades, and various degrees of brightness; sometimes yellowish brown; often very much veined and mottled, with darker shades of the same color. The texture is uniform, and the annual rings not very distinct. It has no larger septa; but the smaller septa are often very visible, with pores between them, which in the Honduras wood are generally empty, but in the Spanish wood are mostly filled with a whitish substance. It has neither taste nor smell, shrinks very little, and warps or twists less than any other species of timber. It is very durable when kept dry, but does not last long when exposed to the weather. It is not attacked by worms. Like the pine tribe, the timber is best on dry rocky soils, or in exposed situations. That which is most accessible at Honduras grows upon moist, low land, and is, generally speaking, decidedly inferior to that brought from Cuba and Hayti; being soft, coarse, and spongy, while the other is close-grained and hard, of a darker color, and sometimes strongly figured. Honduras mahogany has, however, the advantage of holding glue admirably well; and is frequently used as a ground on which to lay veneers of the finer sorts.

Not long since, Messrs. Broadwood, the piano-forte manufacturers of London, gave the immense sum of £3000 for three logs of mahogany! These logs, the produce of a *single tree*, were each about 15 feet long, and 38 inches square: they were cut into veneers of eight to an inch. The wood was particularly beautiful, capable of receiving the highest polish, and, when polished, reflecting the light in the most varied manner, like the surface of a crystal; and, from the wavy form of the pores, offering a different figure, in whatever direction it was viewed. Dealers in mahogany generally introduce an auger before buying a log; but, notwithstanding, they are seldom able to decide with much precision as to the quality of the wood, so that there is a good deal of lottery in the trade. The logs for which Messrs. Broadwood gave so high a price were brought to England with a full knowledge of their superior worth. Mahogany was used in repairing some of Sir Walter Raleigh's ships at Trinidad, in 1597; but it was not introduced into use in England till 1724. The duty on foreign mahogany used to be £7 10s. a ton, on Honduras, £1 10s., and on Jamaica mahogany, £4—its effect being to force the consumption of the inferior in preference to the superior article. Luckily, however, the duty on foreign and colonial mahogany, after being reduced in 1845 to 20s. and 5s, a ton, was wholly repealed in 1845. There has been, in consequence, a very great increase in the consumption of the superior sorts of mahogany for upholstery purposes, while the cheaper varieties are now largely employed, notwithstanding the difficulties thrown in the way by Lloyd's regulations, in the construction of ships, and in coarser fabrics. In 1840 the imports amounted to 23,115, and in 1852 to 41,090 tons, the re-exports during the latter year being only 2755 tons. Honduras, Cuba, and Hayti, are the great sources of supply; the timber brought from the first being the cheapest and by far the most abundant. See TREDGOLD's *Principles of Carpentry*, p. 204; *Library of Entertaining Knowledge*, volume on *Timber-trees and Fruits*; EDWARDS's *West Indies*, vol. iv., p. 208, ed. 1819, etc.; and the *Mahogany Tree*, by Messrs. CHALONER and FLEMING; *Living Age*, xxix., 354.

The imports of mahogany and other woods into the United States for the fiscal year ending June 30th, 1856, were as follows:

Imports.	Manufactured.	Unmanufactured.
Cabinet furniture	$46,781	....
Cedar, mahogany, etc	22,307	$440,246
Willow	125,908	36,554
Cork	202,567	9,130
Dye woods	....	796,302
Others not specified	429,915	25,157
Total	$827,378	$1,307,389

There are several varieties of mahogany, much admired, and sought after, for the beauty of their figures, and the gradations of their colors, which may be described as follows:

1. PLAIN MAHOGANY. *Acajou uni* of the French, the wood of which is of one color, and equal throughout. 2. VEINY MAHOGANY. *Acajou veiné*, French. The wood of this variety is veined longitudinally with the grain, displaying alternately dark and light streaks, continuous, interrupted, or re-appearing. 3. WATERED MAHOGANY. *Acajou moiré*, French. This variety is known by the transverse waves which exhibit to the eye an effect similar to those of a watered ribbon. 4. VELVET-CORD, or CATERPILLAR MAHOGANY. *Acajou chenillé*, French. This variety is distinguished by its whitish lines, accompanied by a figured shade of fragments of rosaate sprigs, here and there disposed diagonally, longitudinally, interrupted, or crossing one another. 5. BIRD'S-EYE MAHOGANY. *Acajou mouchété*, French. This variety is besprinkled with little oval knots, which, when duly proportioned, render the wood half light and half dark. 6. FESTOONED MAHOGANY. *Acajou ronceux*, French. This variety offers in its color a mixture of light and shade usually resembling sheaves of wheat, feathers, wreaths, festoons, or figures of shrubs. As the wood of mahogany is generally hard and takes a fine polish, it is found to serve better than that of any other tree for cabinet-making, for which purpose it is universally admired. It is very strong, and answers well for beams, joists, planks, boards, and shingles, for which it was formerly much used in Jamaica. Its adaptation to ship-building we have already mentioned in the history of this tree.—BROWNE's *Trees of America*.

Maine, the most north-easterly State of the republic of the United States of America, extends from lat. 43° to 47° 24′ N., and between long. 6° and 10° E. from Washington, and contains an area of 35,000 square miles. Population in 1790 was 96,540; in 1800, 151,719; in 1810, 228,705; in 1820, 298,335; in 1830, 399,995; in 1840, 501,793; and in 1850, 583,088.

Sebastian Cabot, who was, after the time of Columbus, the first European navigator along the coasts of Maine and its vicinity, appears not to have given a name to the countries discovered by him. The eldest and greatest name in these parts of North America is that of "*Baccalaos*"—a name given by the Biscay fishermen at first to Newfoundland, and then also to all the countries which they found near this island. On some old maps the name "*Baccalaos*"—that is to say, the cod-fish country—reaches over a great part of the eastern coast of America, but it appears more particularly in the regions of our State of Maine. Stephen Gomez was the first Spanish navigator who discovered (1525) and explored the coasts to the west and to the north of Cape Cod a little more particularly, and we therefore see on the Spanish maps these regions designated with the name of "*Tierra de Gomes*" (Gomez's Land). So, for instance, at first on that of Ribiero (1529), and afterward on many others. After the middle of the 16th century, when Gomez was more and more forgotten, another name was introduced for these regions—that of "*Norumbec*." We can not exactly point out the occasion at which this name was invented; but we find it in the latter half of the 16th and in the beginning of the 17th century, on nearly all the maps of these regions. The name seems to be of Indian origin, like the name of Kennebec, Quebec, and different others which have *bec* for the last syllable. Perhaps some unknown sailors heard it pronounced by the Indians, and introduced it among the geographers, who were always fond of new names. It was, however, changed and spelled in many different ways: Norubec, Norombec, Arambec, Norumberge, Norumberque, Norimbequa, etc.

The savans of the time supposed that there was in the interior of this northern country a large city of the same name, like that old famed "*Temistitan*," in Mexico, and that through this city was running a large broad river, which was also called the River of Norumberge. It is probable that with this name our Penobscot Bay and its rivers were designated. They from this, therefore, called the whole country "*La Terre de Norumberque*," or the coasts of Arambec.

English Settlers.—At the same time the English introduced here another name, that of Virginia, under which they comprised, since 1584, pretty much the whole Atlantic coast of North America. Custom and use already introduced very soon a division in the Southern and the Northern Virginia coast. The royal patent of 1606, by which the two Virginia companies were established, made this custom legal and official. After this patent the whole section of the country north of the 40th degree of latitude, comprising our Maine, was designated as "Northern Virginia," or also, since some attempts at settlement, "the Northern Plantations," or also "the Second," or "Plymouth Colony," because the king had given this latter name to that particular society of merchants who had taken upon themselves the exploration and settlement of Northern Virginia. In the year 1616 the name of "New England" was introduced. The celebrated Captain John Smith was no doubt the inventor of it, and Prince Charles approved of it. Smith says this himself in his history of New England, and states that he gave this name, which made some opposition against the neighboring French name of "New France" and the French pretensions; and, secondly, he did it in contraposition to the country on the Pacific side of America which was discovered by Drake, and named by him New Albion, and which was under the same latitude.

Sir Fernando Gorges gave, in the year 1636, to the territory between Piscataqua and Kennebec Rivers, the name of "New Somersetshire," from the shire in England where he was born. Sometimes the whole vast region was therefore then called "Somersetshire;" and we find, even when the name of Maine was already introduced, once the expression "Maine or Somersetshire." In the same way the whole of Maine was also sometimes called "Lacona," from a part of the country to which this name was given for a time. We find on a map by Seller, of the beginning of the 18th century, written with great letters, "the Province of Lacona or Maine." The early English settlers on the coast of New England had for Maine the popular name of "the Eastern shore," or "the Eastern country."

The name Maine was first introduced in the year 1639, when King Charles I. granted to Sir Fernando Gorges all the land from Piscataqua River to Sagadahoo, to which tract of land he gave the name "Province of Maine," "in compliment to the Queen of Charles I. who was a daughter of France, and owned as her private estate the province of Maine in France." This, at least, is the opinion of the first good historian of Maine, Mr. Sullivan. But Sullivan gives no authority for this opinion, which has, however, been adopted as a pretty general and popular one. The truth seems to be that it can not be proved that Queen Henrietta Maria had any rights at all in Maine. An old author on Maine observes, "it is very curious that the name of our country hue been made shorter by an 'e' than the French Maine." In fact the word is, in old documents, very commonly written "Main" or "Mayn." From this, one could be induced to suppose that the name originated in the English expression for *terra firma* or continent: "Main" or "Mainland." Nearly all the first English trading and fishing establishments along the shore were on the numerous islands of the coast. From there the explorers made excursions "to the Main," to trade with the Indians and to explore the country. There are innumerable allusions, in their traveling reports, to "the Mayn." Could not from this have grown the custom of calling the country "Main?" From similar reasons and circumstances the north coast of South America is called by the inhabitants of the Antilles and Caribbean Islands, "*Costa firme*," or "*Tierra firme*."—J. G. Kohl.

The name Maine extended at first only a small distance along the coast. By degrees, and in the course of time, in consequence of growing settlements and of many treaties and grants, it was subsequently extended as far east as Penobscot Bay, and at last as far as St. Croix River, and in the year 1819 the "Province of Maine" was erected into the "State of Maine."

There were in this State in 1850, 2,039,596 acres of land improved, and 2,515,797 of unimproved land in farms; cash value of land in farms, $54,861,748; and the value of implements and machinery, $2,284,557. *Live Stock.*—Horses, 41,721; asses and mules, 45; milch cows, 133,556; working oxen, 83,893; other cattle, 125,890; sheep, 451,577; swine, 54,598; value of live stock, $9,705,726.

Agricultural Products, etc.—Wheat, 296,259 bushels; rye, 102,916; Indian corn, 1,750,056; oats, 2,181,037; barley, 151,731; buckwheat, 104,523; peas and beans, 205,541; potatoes, 3,436,040; value of products of the orchard, $342,865; produce of market gardens, $122,387; pounds of butter made, 9,243,811; of cheese, 2,434,454; maple sugar, 93,542 pounds; molasses, 3,167 gallons; beeswax and honey, 189,618 pounds; wool, pounds produced, 1,864,034; flax, 17,081; silk cocoons, 252; hops, 40,120 pounds; hay, tons of, 755,889; clover seeds, 9,097 bushels; other grass seeds, 9,214; flax seed, 580 bushels; and were made 724 gallons of wine; value of home-made manufactures, $513,599; of slaughtered animals, $1,646,773.

Rivers, Lakes, etc.—It has been estimated that one sixth part of the surface of Maine consists of water. There are numerous lakes, the largest and most noted of which are Moosehead, Sebago, Chesuncook, and Umbagog. A part of the waters of the latter extend into New Hampshire. Some of these lakes are justly celebrated for the picturesque beauties of their scenery. A steamboat has been built to ply on the waters

of Moosehead Lake. The Kennebec and the Penobscot are the two most important streams; the former is navigable to Augusta, and the latter to Bangor. Their shores are adorned with villages, and the *intervales* along their margins are the most fertile and best cultivated in the State. The Saco, Androscoggin, and St. Croix Rivers enter the Atlantic. St. John, and its confluents, the Wallcostook, Allagash, and Aroostook, drain the northern part of the State. The St. John forms a part of the northern part of the State by the late treaty of Washington, and its waters are open to the free navigation of both nations. The principal bays are Casco, Penobscot, Machias and Passamaquoddy.

Manufactures.—There were in this State in 1850, 13 cotton factories, with a capital invested of $3,847,700, employing 849 males and 3,672 females, producing 33,168,556 yards of sheeting valued at $2,630,616; 45 woolen factories, with a capital of $644,200, employing 388 males and 390 females, manufacturing 2,926,320 yards of cloth, and 1,200 lbs. of yarn, valued at $934,923; 1 establishment making pig-iron, with a capital of $214,000, employing 71 persons, producing 1,484 tons of pig-iron, etc., valued at $36,616; 25 establishments, with a capital of $150,100, employing 244 persons, and making 3,691 tons of castings, valued at $265,000; 163 flouring and grist mills, 752 saw mills; 213 tanneries, with a capital of $732,447, employing 780 persons; value of products, $1,620,636; 45 printing offices, 4 daily, 3 tri-weekly, 4 semi-weekly, 48 weekly, and 1 monthly publication; aggregate number of copies published annually, 4,203,064. Capital invested in manufactures, $14,700,452; value of manufactured articles, $24,644,430.

There were, January 1856, 11 railroads in this State; 494 miles completed and in operation, and 90 miles in course of construction. The only canal in the State is the Cumberland and Oxford, 20½ miles long, connecting navigation from Portland to Sebago, and by a lock in Saco River, navigation is extended to Long Pond, 30 miles further.

The receipts on the principal lines of railroad in Maine, during the last four years, have been as follows:

	Length.	1853.	1854.	1855.	1856
	Miles.	Dollars.	Dollars.	Dollars.	Dollars.
A. and St. L.....	147	316,198	470,647	553,498	565,158
And. and Kennebec..	55	154,106	178,858	196,342	212,998
Androscoggin.....	20	19,152	29,896	Nor return	23,805
Bangor and Oldtown.	18	43,188	44,889	46,170	55,698
Calais and Baring...	6	28,038	31,640	37,172	39,880
Ken. and Portland..	72¼	177,088	297,357	228,064	228,290
Penobscot and Ken..	55	New.	....	....	112,702
Portland, S. and P'a.	51	282,977	270,800	277,502	264,180

There were, January, 1854, 60 banks, with an aggregate cash capital of $5,913,870.

FOREIGN COMMERCE OF THE STATE OF MAINE, FROM OCTOBER 1, 1820, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Tonnage Cleared.		District Tonnage.	
	Domestic.	Foreign.	Total.	Total.	American.	Foreign.	Registered.	Enrolled and Licensed.
Sept. 30, 1821.....	$994,228	$46,925	$1,041,148	$980,204	111,854	520	60,384	75,188
1822.....	1,013,873	22,769	1,036,642	948,775	105,880	4,452	....	....
1823.....	865,046	30,545	895,591	801,644	70,778	1,879	....	....
1824.....	870,871	29,324	900,195	768,643	98,477	774	....	....
1825.....	964,664	66,463	1,031,127	1,169,940	118,881	8,250	....	....
1826.....	1,001,875	50,700	1,052,575	1,245,295	115,060	2,240	....	....
1827.....	1,033,035	37,099	1,070,134	1,333,890	94,660	2,896	....	....
1828.....	1,003,642	15,875	1,019,517	1,246,809	95,066	1,785	....	....
1829.....	729,108	8,798	737,882	742,781	85,718	2,705	....	....
1830.....	643,435	27,087	670,522	572,666	91,899	6,165	....	....
Total.....	$9,119,770	$335,513	$9,455,283	$9,805,177	982,448	26,166	....	....
Sept. 30, 1831.....	$799,743	$5,825	$805,578	$941,407	61,582	49,872	69,753	93,314
1832.....	907,286	74,157	981,443	1,128,826	67,128	64,720	....	....
1833.....	989,197	30,644	1,019,881	1,380,308	65,488	98,785	....	....
1834.....	815,277	18,890	834,187	1,060,121	62,859	99,674	....	....
1835.....	1,044,951	14,418	1,059,387	883,389	63,048	64,031	....	....
1836.....	886,074	14,912	850,986	980,088	71,155	74,586	....	....
1837.....	947,276	8,676	955,952	801,404	81,898	74,160	....	....
1838.....	915,076	20,458	935,532	899,142	54,816	66,715	....	....
1839.....	878,494	17,051	895,485	952,724	77,988	61,097	....	....
1840.....	1,009,910	8,359	1,018,269	823,762	82,584	75,056	....	....
Total.....	$9,143,219	$213,386	$9,356,605	$9,630,669	688,476	728,645	....	....
Sept. 30, 1841.....	$1,078,638	$12,232	$1,091,565	$700,961	90,764	56,679	115,819	189,971
1842.....	1,048,172	7,351	1,055,523	608,864	86,827	58,721	....	....
9 mos., 1843.....	630,432	2,459	632,891	250,260	60,453	33,974	....	....
June 30, 1844.....	1,164,964	11,171	1,176,135	570,824	91,090	61,999	....	....
1845.....	1,167,640	87,465	1,255,105	853,645	88,602	62,901	....	....
1846.....	1,818,099	10,269	1,828,368	787,092	96,739	72,058	....	....
1847.....	1,614,071	20,132	1,634,203	574,056	104,189	69,608	....	....
1848.....	1,937,006	20,389	1,957,395	795,565	152,026	89,448	....	....
1849.....	1,279,898	7,288	1,286,681	721,409	127,868	66,081	....	....
1850.....	1,586,818	29,094	1,565,912	856,411	111,123	91,014	....	....
Total.....	$12,820,238	$208,550	$13,028,778	$6,719,087	1,009,091	614,408	....	....
June 30, 1851.....	$1,517,487	$33,951	$1,551,438	$1,176,590	120,887	74,854	357,390	179,935
1852.....	1,668,274	49,544	1,717,818	1,094,977	151,808	3,858	....	....
1853.....	1,761,929	278,858	2,040,787	1,886,589	179,569	62,614	....	....
1854.....	1,980,081	659,010	2,589,041	2,361,900	198,758	82,627	....	....
1855.....	2,548,014	2,308,198	4,851,207	2,927,443	251,885	82,005	....	....
1856.....	2,259,947	708,094	2,968,041	1,940,778	250,208	50,787	....	....

1. The principal ports are *Portland*, city and port of entry, situated on a peninsula at the western extremity of Casco Bay; lat. (Mount Joy), 43° 39′ 52″ N., long., 70° 13′ 34″ W. The harbor is capacious and safe, and among the best on the Atlantic coast. It is protected by islands from storms, seldom obstructed by ice, and has a good entrance. The water is deep enough for vessels of the largest class. The tonnage of the port in 1836, was 136,154 tons. 2. *Bath.*—On the Kennebec, 12 miles from the ocean, is one of the principal towns of the State, and the largest shipbuilding port in the world. A branch of the Kennebec and Portland Railroad connects the city with Portland. The tonnage of the port is the largest in Maine, and in 1856 amounted to 193,320 tons. 3. *Belfast.*—At the head of Belfast Bay, 30 miles from the ocean, has an excellent harbor, and a considerable trade in lumber and fish. Its chief industry, however, is ship-building. Steamboats ply to Portland and Boston. The tonnage of Belfast, in 1856, was 76,812 tons. 4. *Bangor*, on the Penobscot. Tonnage in 1856, 38,048 tons.

Finances of the State.—The whole amount of the funded debts of the State, December 31, 1856, was $699,000; of that sum $30,000 became due March 1, 1857, and the current expense of the year will be discharged, without resorting to other means than the usual tax imposed by the Legislature. No Legislature will be required to provide for the payment of that sum. Receipts and disbursements for the year ending December 31, 1856. Receipts, balance from year 1855, $39,180 37. From all other sources, $593,312,04. Total, $632,442 41. Disbursements, $486,165. Balance in the treasury, $146,277 41. See *North Am. Rev.*, lviii., 299 (SABINE), xxxvii., 419 (LEONARD), iii., 362 (RAND); NILES's *Reg.*, xl., 399 (II. CLAY); HUNT's *Mag.*, ii., 313 (LANMAN), xvii., 577; *Jo. of Sc.*, xxxvi., 143; *Am. Quar. Reg.*, v., 105, x., 154, xiv., 148, xiii., 144; *Am. Whig Rev.*, ii., 262; *De Bow*, xii., 603; *New Eng. Mag.*, ii., 394.

Maize, or **Indian Corn** (Fr. *Bled de Turquie*; Ger. *Türkisch korn, Mays*; It. *Grano Turco o Siciliano*; Sp. *Trigo de Indias, Trigo de Turquia*), one of the cereal grasses (*Zea Mays*), supposed to be indigenous to South America, being the only species of corn cultivated in the New World previously to its discovery. It was introduced into the Continent about the beginning, and into England a little after the middle of the 16th century. Its culture has spread with astonishing rapidity; being now extensively grown in most Asiatic countries, and in all the southern parts of Europe. It has the widest geographical range of all the cerealia, growing luxuriantly at the equator, and as far as the 50th degree of north, and the 40th of south latitude. It has been raised in England, in nursery gardens near the metropolis, for more than a century; and recently it has been attempted to raise it in the fields, but with indifferent success. Like other plants that have been long in cultivation, it has an immense number of varieties. The ear consists of about 600 grains, set close together in rows, to the number of 8, 10, or 12. The grains are usually yellow; but they are sometimes red, bluish, greenish, or olive-colored, and sometimes striped and variegated. The maize of Virginia is tall and robust, growing 7 or 8 feet high; that of New England is shorter and lower; and the Indians further up the country had a still smaller sort in common use. The stalk is jointed like the sugar cane. The straw makes excellent fodder; and the grain, as a bread corn, is liked by some; but though it abounds in mucilage, it contains little or no gluten, and is not likely to be much used by those who can procure wheaten or even rye bread. See CORN.

Malachite. Until 1851, so little was known about it, except to mineralogists, that the public knew not whether it was a stone or a composition. The industrial history of the substance, however, is exceedingly curious. Malachite is a peculiar variety of green carbonate of copper, found in a few localities in Siberia and South Australia. It is softer but heavier than marble, and much more difficult to work. It can rarely be found in masses weighing more than from 10 to 20 pounds; and the finer specimens have a very high value. There is a mine in Siberia, where a mass of malachite, supposed to weigh 500,000 pounds, lies imbedded at a depth of 280 feet in a copper mine; and there is every indication that the malachite has been formed by the solidification or petrefaction of a liquid carbonate of copper, on some such principle as the stalactites in the Derbyshire caves. The material breaks so readily, that it is generally pieces of only two or three pounds' weight that can be brought safely to light.

MM. Demidoff, the owners of this valuable mine, have established a malachite manufactory at St. Petersburg. The production of large doors, or vases, or other articles in this substance, is exceedingly difficult. The fragments of malachite are first sawn into thin plates, the thickness of which varies from a twelfth to an eighth of an inch. The cutting is effected by vertical circular saws, controlled by very delicate machinery, and moistened with sand and water. For curved surfaces, the malachite is cut by bent saws of a peculiar kind, the working of which is extremely precarious and difficult. The malachite has markings in different tints of green, which give to the material no small part of its beauty. The artist's workman determines what convolution or pattern these markings shall present in the finished article; and he so selects the veneers or small pieces as to attain that end. The pieces are cut at the edges to join with great nicety; and to make these joints accord better with the markings, they are often made curved. The grinding of the edges is effected by the aid of rapidly-revolving copper wheels. The substance on which the malachite is veneered is generally iron or copper, but sometimes stone or marble. When the pieces have been fixed down with cement, small interstices are filled up with a cement mixed with fragments of malachite, and colored with a powder of the same material. After this the surface is ground and polished. The price of the raw malachite, in average pieces as brought up from the mine, is about $3 50 to $4 per pound; but very great waste occurs in the working; and this, coupled with the lengthened time required in the working, will account for the great costliness of doors, vases, etc., made in this material. The malachite doors which occupied so prominent a place in the Great Exhibition, London, employed 30 workmen for a whole year.

Malaga, a city and sea-port of Spain, in the kingdom of Granada, in lat. 36° 43½′ N., long. 4° 25′ 7″ W. Population, perhaps, 65,000. Malaga has an excellent harbor. It is protected on its eastern side by a fine mole, full 700 yards in length. At its extremity a light-house has been constructed, furnished with a powerful light, revolving once every minute. At a distance it appears obscured for 45 seconds, when a brilliant flash succeeds for the other 15 seconds. A shoal has grown up round the mole-head; and the depth of water throughout the harbor is said to be diminishing. Latterly, however, a dredging-machine has been employed to deepen it, by clearing out the mud and accumulating sand. The depth of water at the entrance of the harbor and within the mole is from 26 to 30 feet; and close to the city from 8 to 10 feet. The harbor could easily accommodate more than 450 merchant ships: it may be entered with all winds, and affords perfect shelter. Owing to the want of official returns, and to the prevalence of smuggling, which may be said to have annihilated all fair trade, it is not possible to obtain any accurate accounts of the trade of Malaga, or indeed of any Spanish port. The great articles of export are wine and fruits, particularly raisins and almonds, grapes, figs, and lemons; there is also a considerable exportation of olive oil, with quantities of brandy, anchovies, cummin-seed, aniseed, barilla, soap, etc. The lead exported from Malaga is brought from Adra. The imports are salt fish, iron hoops, bar iron, and nails; cotton stuffs, hides, earthenware, etc., with dye stuffs, all sorts of colonial produce; butter and cheese from Holland and Ireland, linen from Germany, etc. The trade with England seems to be diminishing, and that with the United States to be increasing. This is a consequence, no doubt, of Malaga wine being very little in demand in the former, while it is pretty largely consumed in the latter. The Americans are also the largest consumers of Malaga fruit. See MARCY's *Com. Rel. U. S.*, vol. ii., pp. 63, 64, published 1856–7.

Commerce with the United States.—The following table will show, approximately, to what extent the direct trade between the United States and Spain has fallen off within the past few years. Most of this trade is carried on through the port of Malaga:

TONNAGE OF AMERICAN VESSELS ENTERED AT THE PORT OF MALAGA IN THE FOLLOWING YEARS.

Years.	Tons.	Years.	Tons.
1846	15,976	1850	16,600
1847	12,288	1851	11,918
1848	15,699	1852	12,610
1849	18,692	1853	11,875

The falling off in tonnage which the above table exhibits is, however, perfectly reconcilable with the comparative tables for 1854 and 1852, when we take into consideration the fact, that at least one third of the exports to the United States is carried by privileged vessels; and even national vessels, notwithstanding the discriminating duty of 10 per cent. to which they are subject in the ports of the United States, participate largely in this carrying trade, for the purpose of returning with cargoes of cotton for Malaga and Barcelona, or with codfish from Newfoundland.

EXPORTS FROM MALAGA TO THE UNITED STATES FROM 1ST JANUARY TO 1ST JULY, 1854.

Flags.	Wine.		Raisins.		Figs.	Almonds.	Lemons	Lead.	Red lead.	Liquorice paste.	Liquorice root.	Bird seed.	Mats.	Olives.	Olive oil.	Values.
	1-4 cks.	Bbls.	Boxes.	Casks.	Frails.	Boxes.	Boxes.	Tons.	Kegs.	Cases.	Bundles.	Bundles	Bales.	Kegs.	1-4 c'ks	Dollars.
United States	2,170	500	55,524	1,250	1,081	540	1,098	575	1,244	16	1,060	789	758	850	472	227,583
British	125	100	21,885	441	300	184	598	245	710	46	....	287	..	..	275	78,767
Spanish	680	340	10,475	..	..	166	..	204	....	..	....	150	284	300	..	57,288
Prussian	469	..	411	..	..	..	176	175	....	84	....	891	370	..	150	80,087
Danish	200	..	....	..	..	..	..	66	....	..	....	176	150	..	..	8,788
Tuscan	..	..	....	..	..	..	..	276	32	..	....	..	..	..	..	23,274
Total	3,644	940	88,295	1,700	1,381	840	2,779	1,681	2,006	96	1,060	1,748	1,512	1,150	897	420,652

The following extracts are taken from the commercial report of Malaga, dated the 31st of January, 1857, communicated to the Department of State: "The imports from the United States, which are usually limited to staves by American, and one or two cargoes of cotton by Spanish vessels, have been increased by a few cargoes of flour and wheat, toward the end of the year, under the late royal decree admitting breadstuffs free of duty until June next; the approximate value of imports of American produce for the last year amounted to $228,030, and of foreign produce from the United States to 32,700, making a total sum of $260,730. The exports to the United States have not been large in quantity, owing to short crops the past year. The high price of every article of exportation, however, brings up the value equal to any former period. The amount, as per proximate returns of American vessels, is $1,240,907, and by foreign vessels $407,360; making a total sum of $1,648,267. The raisin crop has been very short, the last vintage being estimated at not much over 600,000 boxes of Muscatels. Other descriptions of raisins show a still greater decrease, owing to the cenizo, a disease of the vines which has been very general the two last years. The culture of the grape is extending throughout the province; and the Muscatel vines would probably yield, in a favorable season 1,500,000 boxes. Over two thirds of this description have been shipped the last year to the United States: the finer quality is shipped to England and France; and when very abundant, at low prices, large shipments would be made to Germany and the north of Europe. Prices have ruled very high, averaging $2 for M. R., and $2 25 for ordinary layers, for the American market; fine London layers from $3 to $4 per box. The stock existing at the end of the year did not exceed 30,000 boxes, about two thirds of which may go to the United States. The various productions of this and the adjoining provinces, for want of good roads and rapid communication in a mountainous country, can not be brought to market so as to compete with the same of other countries, consequently they are not increased. Outside of five or eight leagues, little is received, but at such a high cost of transportation that many bulky articles can not be brought at all. Sumac, for instance, is worth, in the interior, from 20 to 25 per arroba, or 25 pounds. The freight of this article to Malaga is more than double the cost. It is considered by chemists of a better quality than the Sicily, but it can not be afforded for the American market, although, notwithstanding the high cost, considerable is shipped to France."

The following details, extracted from Mr. Inglis's valuable work, entitled "Spain in 1830," contain the fullest and best account we have met with of the trade of Malaga. The authenticity may, we believe, be depended upon:

"*Wine.*—The wines of Malaga are of two sorts, sweet and dry; and of the former of these there are four kinds; first, the common 'Malaga,' known and exported under that name. In this there is a certain proportion of boiled wine, which is allowed to burn, and which communicates a slightly burnt taste to the 'Malaga.' The grape from which this wine is made is a white grape; and every pipe of 'Malaga' contains no less than *eleven* gallons of brandy. Secondly, 'Mountain.' This wine is made from the same grape as the other, and, like it, contains coloring matter and brandy; the only difference is, that for 'Mountain' the grape is allowed to become ripe. Thirdly, 'Lagrimas,' the richest and finest of the sweet wines of Malaga; the name of which almost explains the manner in which it is made. It is the droppings of the ripe grape hung up, and is obtained without the application of pressure. The dry wine of Malaga is produced from the same grape as the sweet wine, but pressed when greener. In this wine there is an eighth part more of brandy than in the sweet wine; no less than 1-12th part of the dry Malaga being brandy. The whole produce of the Malaga vineyards is estimated at from 35,000 to 40,000 pipes; but, owing to the increasing stock of old wine in the cellars, it is impossible to be precise in this calculation. The exports of all sorts of Malaga wine may be stated at about 27,000 pipes. The principal market is the United States and South America; and to these the export is upon the increase. The average price of the wines shipped from Malaga does not exceed $35 per pipe; but wines are occasionally exported at the price of $170. Many attempts have been made at Malaga to produce sherry, but none with perfect success. The sherry grape has been reared at Malaga upon a soil very similar to that of Xeres; but the merchants of Malaga have not ventured to enter the wine for export. One reason of the very low price of the wines of Malaga is to be found in the cheapness of labor: field labor is only 2½ reals a day (10 cents). In the fruit and vintage time it is about double.

"*Fruit.*—Next to its wines, the chief export of Malaga is fruit, consisting of raisins, almonds, grapes, figs, and lemons; but of these, raisins are principally exported. I have before me a note of the exports of Malaga for the months of September and October, 1830—the chief, though not the sole exporting months—and I find that during that time the export of raisins amounted to 268,845 boxes, and 31,916 smaller packages. Of this quantity 125,334 boxes were entered for the United States; 45,513 for England; the remaining quantity being for France, the West Indies, the Spanish ports, South America, and Holland. The raisins exported from Malaga are of three kinds, *muscatel*, *bloom* or *sun raisin*, and *lexias*. The muscatel is the finest raisin in the world. In its preparation no art is used; the grape is merely placed in the sun, and frequently turned. The bloom or sun raisin is a different grape from the muscatel, but its preparation is the same. The lexias acquire this name from the

liquor, or ley, in which they are dipped, and which is composed of water, ashes, and oil; these, after being dipped, are also dried in the sun. All muscatel raisins are exported in boxes, and also a part of the bloom raisins. In 1829, the exports of muscatel and bloom raisins were 825,000 boxes of 25 lbs. each; in all, 8,125,000 lbs. This quantity is independent of the export of bloom raisins in casks, and of lexias; the latter amounting to about 30,000 arrobas. The export of raisins to England has fallen off, while that to America has considerably increased. In 1824, 75 ships cleared from Malaga for England, with fruit; in 1830, down to the 1st of November, 34 vessels had cleared out. Of the other fruits raised near Malaga, grapes, almonds, and lemons are the most extensively exported. In the months of September and October, 1830, 11,612 jars of grapes were shipped for England, 6429 for America, and 1650 for Russia. During the same months, 5335 arrobas of almonds (133,375 lbs.) were shipped for England, this being nearly the whole export. There were also exported during the same period 3749 boxes of lemons for England, 4201 boxes for Germany, and 840 boxes for Russia.

"*Oil.*—There is also a large export of oil from Malaga; but the export during the latter part of 1830 would be no criterion of the average, because the Greenland whale-fishery having failed, extensive orders had been received from England."

Money.—Accounts are kept in reals of 34 maravedis vellon. For the coins, and their value, used at Malaga, see CADIZ.

Weights and Measures.—The weights are the same as those of Cadiz. The arroba or cantara = 4·19 English wine gallons; the regular pipe of Malaga wine contains 35 arrobas, but is reckoned only at 34; a bota of Pedro Ximenes wine = 53½ arrobas; a bota of oil is 43, and a pipe 35, arrobas; the latter weighs about 860 lbs. avoirdupois; a carga of raisins is 2 baskets, or 7 arrobas; a cask contains as much, though only called 4 arrobas; as a last for freight are reckoned—4 botas or 8 pipes of wine or oil; 4 bales of orange-peel; 5 pipes of Pedro Ximenes wine or oil; 10 casks of almonds (each about 380 lbs., English); 20 chests of lemons and oranges; 22 casks of almonds (of 8 arrobas each); 44 casks of raisins (of 4 arrobas each); 88 half casks of raisins; 50 baskets or 100 jars of raisins.

Port Charges.—The port and harbor dues amount, on an English vessel of 300 tons, to about £21; on a Spanish vessel of the same burden they would be about £11 10s.

Warehousing.—Goods may be warehoused for 12 months, paying 2 per cent. ad valorem in lieu of all charges; but at the end of the year they must be either entered for consumption or re-shipped. The 2 per cent. is charged whether they lie a day or the whole year. See also TOWNSEND'S *Travels in Spain*, vol. iii., pp. 10 42.

Malmsley See WINE.

Malt (Ger. *Maly;* Du. *Mout;* Fr. *Mal, Blédgermé;* It. *Malto;* Sp. *Cebada retonada ó entallecida;* Rus. *Solod;* Lat. *Maltum*). The term malt is applied to designate grain which, being steeped in water, is made to germinate to a certain extent, after which the process is checked by the application of heat. This evolves the saccharine principle of the grain, which is the essence of malt. The process followed in the manufacture is very simple. Few changes have been made in it; and it is carried on at this moment very much in the same manner that it was carried on by our ancestors centuries ago. Rice, and almost every species of grain, has been used in malting; but in Europe, and especially in England, malt is prepared almost wholly from barley. It is the principal ingredient in the manufacture of beer, and is little used except in brewing and the distillation of spirits. Its consumption in the United States is rapidly increasing.

TABLE SHOWING THE CONSUMPTION OF GRAIN, AND THE PRODUCTION OF MALT AND SPIRITUOUS LIQUORS, IN THE UNITED STATES FOR THE YEAR 1850.

States.	Capital invested.	Quantities and kinds of grain, etc., consumed.							Hands employed.	Quantities of liquors produced.		
		Barley.	Corn.	Rye.	Oats.	Apples.	Molasses	Hops.	Tons.	Ale, etc.	Whisky & high wines.	Rum.
	Dollars.	Bushels.	Bushels.	Bushels.	Bushels	Bushels.	Hhds.	Tons.		Barrels.	Gallons.	Gallons.
Maine	17,000	....	....	....	....	....	2,000	....	5	....	....	220,000
Vermont	7,000	2,500	....	....	....	....	....	1	2	500	....	....
Massachusetts	457,500	80,000	19,400	26,600	....	....	35,130	29	181	25,800	120,000	3,736,000
Rhode Island	17,000	12,500	....	....	....	....	....	6	9	3,900	....	....
Connecticut	15,500	....	20,000	20,000	....	....	10	2	20	....	180,000	1,200
New York	2,585,900	2,062,250	1,647,366	909,067	6,707	60,940	24,500	581	1,380	644,700	9,291,700	2,488,800
New Jersey	409,655	108,700	254,000	58,400	....	409,700	....	42	197	34,750	1,250,530	....
Pennsylvania	1,719,960	550,135	1,483,555	517,180	24,790	51,200	16	263	911	189,581	6,548,810	1,500
Maryland	247,100	76,900	166,100	54,800	480	....	....	25	126	26,880	787,400	....
Virginia	100,915	20,000	250,700	62,680	450	....	....	14	128	5,500	879,440	....
North Carolina	21,900	....	64,650	4,700	....	....	....	....	75	....	153,090	....
South Carolina	8,475	....	18,100	....	....	....	....	....	33	....	43,900	....
Georgia	7,150	....	20,150	2,500	1,500	....	....	....	15	....	60,450	....
Alabama	500	....	....	....	....	....	25	....	2	....	....	8,000
Louisiana	8,500	10,000	....	....	....	....	....	10	6	8,000	....	....
Kentucky	168,895	65,650	551,350	30,520	....	5,000	....	18	274	19,500	1,491,745	....
Tennessee	66,125	8,000	258,400	5,480	....	....	....	....	159	....	657,000	....
Missouri	298,900	124,440	309,200	24,900	....	....	....	31	179	44,850	939,400	....
Ohio	1,202,974	330,950	3,588,140	281,750	19,500	....	....	178	1,033	96,943	11,865,150	....
Indiana	334,950	118,150	1,417,900	48,700	1 000	....	....	18	287	11,005	4,639,900	....
Illinois	303,400	98,000	708,500	48,700	2 0	....	....	30	274	27,925	2,815,000	....
Michigan	189,425	82,080	212,800	19,150	....	....	....	16	98	10,820	690,900	....
Iowa	19,500	....	51,150	7,200	....	....	....	....	19	....	160,600	....
Wisconsin	98,700	91,020	29,900	9,200	....	....	....	28	98	31,320	127,000	....
New Mexico Territ.	7,300	....	2,000	12,900	....	....	....	....	21	....	42,000	....
Utah Territory	8,000	1,000	....	....	....	....	....	....	8	300	....	....
Dist. of Colnobia	12,000	5,000	....	....	....	....	....	2	5	1,350	....	....
Total	8,334,254	3,787,195	11,067,761	2,143,927	56,517	526,840	61,675	1,294	5,487	1,177,924	42,133,955	6,500,500

Owing to malt liquor having early become the favorite beverage of the people of England, the manufacture of malt has been carried on in that country, for a lengthened period, on a very large scale. Instead, however, of increasing with the increasing wealth and population of the country, it was nearly stationary for the 100 years ending with 1816. In proof of this we may mention that the quantity of malt that paid duty in England and Wales, at an average of the 12 years ending with 1720, was 24,191,804 bushels a year; whereas the annual average quantity that paid duty during the 12 years ending with 1816, was only 23,197,754 bushels. This apparently anomalous result is probably in some measure to be accounted for by the increased consumption of tea and coffee; but there can not be a question that it is mainly owing to the exorbitant duties with which malt, and the ale or beer manufactured from it, have been loaded, and to the oppressive regulations imposed on the manufacture of malt and the sale of beer. But

the public attention being at length forcibly attracted to the subject, and the effect of the exorbitant duties on malt and beer in increasing the consumption of ardent spirits having been clearly pointed out (see *Edinburg Review*, No. 98), the beer duty in Great Britain was repealed in 1830.

Malta, an island in the Mediterranean, belonging to the British, nearly opposite to the southern extremity of Sicily, from which it is about 54 miles distant. Valetta, the capital, is situated on the north coast of the island, the light-house in the castle of St. Elmo being in lat. 35° 54′ 6″ N., long. 14° 31′ 1″ E. Malta is about 20 miles long, and 10 or 12 broad. The island of Gozo, about a fourth part of the size of Malta, lies to the north-west of the latter, at about four miles' distance; and in the strait between them is the small island of Cumino. In 1847 the population of Malta amounted, excluding the garrison (except the Maltese regiment), to 108,140. The population of Gozo, at the same period, was 15,130; the total population of both islands making 123,270. The entire revenue collected in Malta usually amounts to about £100,000 a year, of which about £23,000 is derived from the rent of lands. Valetta, the capital of the island, is defended by almost impregnable fortifications. "These," says Mr. Brydone, "are, indeed, most stupendous works. All the boasted catacombs of Rome and Naples are a trifle to the immense excavations that have been made in this little island. The ditches, of a vast size, are all cut out of the solid rock; these extend for a great many miles, and raise our astonishment to think that so small a State has ever been able to make them." (*Tour through Sicily and Malta.*) Since the island came into the possession of Great Britain, the fortifications have been considerably improved; so that at present it is a place of very great strength. After the capture of Rhodes by the Turks, the Emperor Charles V. made a present of Malta to the Knights of St John of Jerusalem, in whose possession it remained till 1798, when it was taken by the French. It was taken from the latter by the English in 1800, and was definitely ceded to Great Britain in 1814. The island consists mostly of a rock, very thinly covered with soil, a good deal of which has been brought, at an immense expense, from Sicily; but being cultivated with the utmost care, it produces excellent fruits, particularly the celebrated Maltese oranges, corn, cotton, with small quantities of indigo, saffron, and sugar. The principal dependence of the inhabitants is on their cotton; the crop of which, amounting to about 4,000,000 lbs. a year, is partly exported raw, and partly manufactured to the value of from $400,000 to $500,000. The corn raised on the island is not sufficient to feed the inhabitants for more than five or six months, and, at an average, about 100,000 quarters of foreign wheat are required for their use. In addition to corn, cattle, provisions of all sorts, including dried fish, fruits, Spanish peas, etc., are largely imported. The other leading articles of import comprise cottons and most sorts of manufactured goods, sugar, coffee, and other colonial products, tobacco, oil, wines, timber, etc. The trade in corn used to be monopolized by government; and after the monopoly was abandoned, duties on importation, varying, like those in this country, with the price, were imposed. But in 1835 these duties were abolished, and the fixed duties on corn entered for consumption, specified in the subjoined tariff, were substituted in their stead. Malta presents unusual facilities, which have not hitherto been taken proper advantage of, for becoming the entrepôt of the corn trade of the Mediterranean and Black Sea. Her warehouses for corn are, like those of Sicily and Barbary, excavated in the rock; and are, perhaps, the best fitted of any in Europe for the safe keeping of corn. The wheat lodged in them may be preserved for an indefinite period; and it is affirmed that though it should, on being deposited, be affected by the weevil, it is very soon freed from that destructive insect. It is not often that corn can be brought direct from Odessa, Taganrog, etc., to England, without the risk of being damaged; but were it brought, in the first instance, to Malta, and bonded there, it might afterward be conveyed in the best order to the English market. Malta is also admirably well suited for becoming a centre of the corn trade of Egypt, Barbary, Italy, etc. During the wars of 1800–1815, particularly during the period when Napoleon's anti-commercial system was in operation, Malta became a great entrepôt for colonial and other goods, which were thence conveyed, according as opportunities offered, to the adjacent ports. This commerce ceased with the circumstances that gave it birth; and for some years after the return of peace, the trade of the island was depressed below its natural level, by the imposition of various oppressive discriminating duties. In 1819, this vexatious system was partially obviated; but it continued to exert a pernicious influence till 1837, when, pursuant to the recommendation of the commissioners of inquiry, the then existing tariffs of customs duties and port charges were wholly abolished, and a new tariff was issued in their stead. It imposed moderate duties, for the sake of revenue only, on a few articles in general demand, without regard to the country whence they came, at the same time that it equalized the tonnage duties, and reduced the warehouse rent on articles in bond to the lowest level. There are some good springs of fresh water. Valetta is partly supplied by water brought by an aqueduct a distance of about six miles, and partly by the rain collected in cisterns.

Harbor.—The harbor of Valetta is double, and is one of the finest in the world. The city is built on a narrow tongue of land, having the castle and light of St. Elmo at its extremity, and an admirable port on each side. That on the south-eastern side, denominated the grand port, is the most frequented. The entrance to it, about 250 fathoms wide, has the formidable batteries of St. Elmo on the one hand, and those of fort Ricasoli on the other. In entering, it is necessary not to come within 50 or 60 fathoms of the former, on account of a spit which projects from it; but in the rest of the channel there is from 10 to 12 fathoms water. The port, which runs about 1¾ miles inward, has deep water and excellent anchorage throughout; the largest men-of-war coming close to the quays. Port Marsmusceit, on the north-western side of the city, is also a noble harbor. The entrance to it, which is about the same breadth as that of the grand port, is between St. Elmo and Fort Tiqua. In the centre of the basin is an island on which are built a castle and a lazaretto, for the convenience of the ships performing quarantine, by which the port is principally used. Owing to the narrowness of the entrance, and the usual variableness of the wind, it is customary for most vessels bound for Valetta to take a pilot on board before entering the harbor.

Classification of Merchant Vessels which have arrived in Malta during the Year 1848.

American	22	Neapolitan	562
Hanoverian	1	Norwegian	8
Austrian	212	Ottoman	88
Belgian	4	Prussian	3
Bremen	2	Roman	11
Danish	17	Russian	75
Dutch	9	Samiote	11
English	630	Sardinian	164
French	302	Sicilian	224
Gerosolimit	29	Spanish	4
Greek	326	Swedish	6
Ionian	41	Tunisian	23
Lubecese	1	Tuscan	65
Maltese	478	Venetian	2
Mecklenburg	4	Wallachian	4
Moldavian	17		

The arrivals of merchant-vessels and ships of war at Malta during the year 1849, were as follows:—Merchant-vessels, 3251; ships of war (including steamers), 340; total, 3591.

List of Vessels belonging to the Island of Malta, on the 1st of January, 1870.

	Ships.	Tons.	Crews.
Ships	1	891	18
Barks	24	7,274	222
Brigs	77	14,138	777
Brigantine	1	108	9
Snow	1	189	6
Cutters	2	28	11
Ketch	1	81	3
Brig schooners	12	1,109	94
Schooners	8	581	59
Bombards	8	579	81
Paranza	1	28	5
Speronares	65	720	760
Total	201	25,655	2,158

The central position, excellent port, and great strength of Malta, make it an admirable naval station for the repair and accommodation of the men-of-war and merchant-ships frequenting the Mediterranean, and render its possession of material importance to the British empire. Since Malta-built vessels were admitted into ports of the United Kingdom on the same terms as those of British-built, the trade of ship-building has materially increased in the island. The Maltese shipwrights are diligent, expert workmen; and, their wages being moderate, it is a favorable place for careening. Owing to the want of a dry dock, all ships above the size of a sloop of war, that require to have their bottoms examined, have to come to England for that purpose. This, surely, should be obviated. Quarantine is strictly enforced at Malta; but there is every facility for its performance, and the charges are less than at any other port in the Mediterranean.

Malta is now the centre of a very extensive steam-packet system; the steamers from England for the Ionian Islands, Constantinople, Alexandria, and other ports of the Levant, touching here. The French steamers from these ports usually perform quarantine at Malta.

Money.—In 1825, British silver money was introduced into Malta; the Spanish dollar being made legal tender at the rate of 4s. 4d.; the Sicilian dollar at 4s. 2d.; and the scudo of Malta, at 1s. 8d.

Weights and Measures.—The pound, or rottolo, commercial weight = 30 oncie = 12·216 English grains. Hence 100 rottoli (the cantaro) = 174½ lbs. avoirdupois, or 79·14 kilog. Merchants usually reckon the cantaro at 175 lbs. The salma of corn, stricken measure = 8221 Winchester bushels; heaped measure is reckoned 16 per cent. more. The caffiso, or measure for oil, contains 5½ English gallons = 20·818 litres. The barrel is double the caffiso. The Maltese foot = 11 1-6th English inches = ·2836 metres. The canna = 8 palmi = 81·9 English inches = 2·079 metres. Merchants usually convert Malta measure into English in the proportion of 6½ palmi to a yard, or 2 2-7th yards to 1 canna.

Bills on London are usually drawn at 30 and 60 days' sight. The deputy commissary general is obliged to grant, at all times, bills on the Treasury here for British silver tendered to him, at the rate of a £100 bill for every £101 10s. silver, receiving, at the same time, other silver, at a fluctuating rate of exchange.

Commercial Relations with the United States.—The commercial intercourse of the United States with Malta is dependent, as is that of all other nations, on the regulations and legislative enactments of the mother country. The trade of the United States with this island is not, however, very important, though an examination of the following table will show a perceptible increase in the amount of our tonnage, and but little variation in the value of our exports during the years which they embrace:

Commerce of the United States with Malta, from October 1, 1832, to July 1, 1856.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage Cleared.	
	Domestic.	Foreign.	Total.	Total.	Exported.	Imported.	American.	Foreign.
Sept. 30, 1833	$50,828	....	$50,828	$31,078	....	....	....	....
1834	37,426	....	37,426	49,028	....	....	1,001	....
1835	109,655	$121,243	230,898	31,867	$381	$1,482	2,126	....
1836	38,817	139,892	178,709	34,990	....	....	781	761
1837	100,905	173,806	274,171	85,961	....	....	1,993	710
1838	81,955	4,078	86,033	16,466	....	2,470	857	....
1839	65,870	34,126	99,996	24,918	....	....	1,860	....
1840	14,610	45,396	59,996	28,471	....	....	448	....
Total	$499,966	$518,091	$1,018,057	$258,094	$381	$3,952	9,165	1,471
1841	$97,869	$21,070	$48,939	$1,461	....	....	360	274
1842	11,644	8,261	19,905	7,300	....	....	736	....
9 mos. 1843	6,436	11,471	17,907	27	....	....	214	....
June 30, 1844	9,752	7,246	16,998	15	....	....	611	....
1845	12,909	....	12,909	22,811	....	....	954	....
1846	23,754	10,927	34,681	21,589	....	....	882	....
1847	25,096	22,541	47,637	....	....	....	843	228
1848	33,128	15,955	49,083	884	....	....	1,812	....
1849	51,283	67,784	118,967	8,405	....	....	3,068	720
1850	75,329	39,051	114,380	11,854	....	....	2,665	456
Total	$377,150	$199,256	$476,406	$72,846	....	....	12,165	1,678
June 30, 1851	$64,061	$12,238	$76,299	$26,167	....	....	1,097	746
1852	96,847	16,975	113,822	114,864	....	....	2,412	458
1853	165,819	22,237	187,556	80,053	$2,000	....	2,721	741
1854	148,528	21,245	169,773	83,695	....	....	3,197	302
1855	212,897	72,452	284,849	62,316	....	....	4,088	629
1856	281,045	33,541	314,586	44,224	....	....	2,993	400

No spirits or cordials, except rum and spirits, the product of Great Britain or of the British colonies, can be admitted for consumption, if they exceed 9 per cent. over-proof. The following are the legal rates for pilotage charged on all vessels entering the harbor of Malta:—Vessels of 100 tons burden, $2; 101 to 150, $3 04; 151 to 250, $4; 251 to 550, $5 04; 351 and upward, $6.

Vessels discharging merchandise in the island of Malta, on clearing outward, pay for every ton, or any part thereof, including all port charges, 12 cents. There is a public hospital in Malta, to which British sailors are admitted free of charge. American and other foreign sailors are also admitted at a charge of 20 cents per diem, the payment of which must be guaranteed by their respective consuls, or by the consignees of the vessels to which they belong.

For trade of, travel in, etc., Malta, see *Edin. Rev.*, vi., 194; *North Am. Rev.*, xxxv., 228 (A. H. Everett), x., 225 (E. Everett); *South. Lit. Mess.*, x., 728, ix., 86, 163, vii., 830, iv., 780, v., 146; *Chr. Exam.*, ii., 259 (Jas. Walker); *Quar. Rev.*, ix., 1.

Man, Isle of, is, as every one knows, situated in the Irish Sea, at about an equal distance from England, Scotland, and Ireland. It is about 30 miles long, and 10 or 12 broad. The interior is mountain-

one, and the soil nowhere very productive. Population in 1851, 52,827. This island used to be one of the principal stations of the herring fishery; but for a considerable period, it has been comparatively deserted by the herring shoals, a circumstance which is not to be regretted; for the fishery, by withdrawing the attention of the inhabitants from agriculture and manufactures, and leading them to engage in what has usually been a gambling and unproductive business, has been, on the whole, injurious to the island. The steam packets from Glasgow to Liverpool, and from the latter to Belfast, touch at the Isle of Man; which is, in consequence, largely frequented by visitors from these cities, and other parts of the empire, whose influx has materially contributed to the improvement of Douglas, the principal port in the island, and other towns. The feudal sovereignty of Man was formerly vested in the Earls of Derby, and more recently in the Dukes of Athol, a circumstance which accounts for the fact of the duties on most commodities consumed in the island having been, for a lengthened period, much lower than those on the same commodities when consumed in Great Britain. This distinction, which still subsists, has produced a great deal of smuggling, and been in no ordinary degree injurious to the revenue and trade of the empire. The customs revenue collected in the Isle of Man in 1852, amounted to £28,077; but from this sum £14,378 was deducted on account of expenses of collection, public works, internal government, etc.

Manchester, a city, parliamentary and municipal borough, and parish of England, county Lancaster. Area of parish, including the borough Salford, 33,553 acres. Population, 452,158. Inhabited houses, 53,697. Population in 1801, 110,938; in 1841, 353,390; in 1851, 401,321, of whom 316,213 were in the borough of Manchester, and 85,108 in that of Salford. The town stands on a plain, and consists, with Salford, of a dense mass of buildings, extending about two miles from east to west, by somewhat less from north to south, and covering about 3000 acres. It has a branch of the Bank of England, 5 joint-stock banks, and 5 weekly newspapers. Market, Tuesday, Thursday, and Saturday. The proximity of an abundance of coal, the improvements introduced into spinning and weaving machinery by Hughes, Arkwright, Hargreaves, and Crompton, and the applicaton of steam power, have raised Manchester to its eminence of monopolizing two thirds of the cotton manufacture of Great Britain. Its manufactures are mostly conducted in large mills and factories. Of these in 1853, there were in Manchester and Salford:

	No. of works.	Persons employed.	Steam Power.
Cotton spinning	35	5,292	1,520
Cotton weaving	65	7,709	1,080
Cotton spinning and weaving	42	17,358	4,706
Woolen and worsted spinning and weaving	3	280	80
Silk throwing and small ware	50	7,520	580
Flax spinning	3	1,120	198
Print works	35	2,985	....
Total	233	42,264	8,135

Woolen fabrics, machinery, hats, paper, ropes, twine, pins, and numerous other goods, are made in large quantities; and there are many bleaching and chemical works, and breweries. Annual export valued at £12,000,000. Manchester communicates with Birmingham and London by the Grand Junction (N. W.) railroad, and by other railroads and canals with Liverpool, Bolton, Preston, Rochdale, Sheffield, etc.

Manganese (Ger. *Braunstein, Glasseise*; Du. *Bruinsteen*; Fr. *Manganèse, Magalese, Savon du verre*; It. *Manganesia*; Sp. *Manganesia*; Lat. *Magnesia nigra, Manganesium*), a metal which, when pure, is of a grayish white color, like cast-iron, and has a good deal of brilliancy. Its texture is granular; it has neither taste nor smell; it is softer than cast-iron, and may be filed; its specific gravity is 8. It is very brittle, and can neither be hammered nor drawn out into wire. Its tenacity is unknown. When exposed to the air, it attracts oxygen with considerable rapidity. It soon loses its lustre, and becomes gray, violet, brown, and at last black. These changes take place still more rapidly if the metal be heated in an open vessel. Ores of manganese are common in Devonshire, Somersetshire, etc. The ore of manganese, known in Derbyshire by the name of *black wadd*, is remarkable for its spontaneous inflammation with oil. Oxyd of manganese is of considerable use; it is employed in making oxymuriatic acid, for forming bleaching liquor. It is also used in glazing black earthenware, for giving colors to enamels, and in the manufacture of porcelain. It is the substance generally used by chemists for obtaining oxygen gas.—THOMSON'S *Chemistry, etc.*

Mangel Wurzel, or **Field Beet** (Fr. *Betteraves*; Ger. *Mangold Wurzel*; It. *Bietiola*), a mongrel between the red and white beet. It has been largely cultivated in Europe and the United States, partly as food for cattle, and partly to be used in distillation, and in the extraction of sugar. Its culture in Great Britain is very recent; and Mr. Loudon questions whether it has any advantages over the turnip for general agricultural purposes. The preparation of the soil is exactly the same as for turnips, and immense crops are raised on strong clays. The produce per acre is about the same as that of the Swedish turnip; it is applied almost entirely to the fattening of stock, and the feeding of milch cows.—LOUDON'S *Ency. of Agr.*

Manger, the space near the hawse holes, bounded on the upper side by a partition across the bows, called the *manger board*, to receive the water while it enters the hawse holes and prevent it from flooding the deck.

Mangle (Fr. *Calandre*; Ger. *Mangle*), this is a well-known machine for smoothing table-cloths, table-napkins, as well as linen and cotton furniture, and much used in hotels. As usually made, it consists of an oblong rectangular wooden chest, filled with stones, which load it to a degree of pressure that it should exercise upon the two cylinders on which it rests, and which, by rolling backward and forward over the linen spread upon a polished table underneath, render it smooth and level. The moving wheel, being furnished with teeth upon both surfaces of its periphary, and having a notch cut out at one part, allows a pinion, uniformly driven in one direction, to act alternately upon its outside and inside, so as to cause the reciprocating motion of the chest. This elegant and much admired English invention, called the mangle-wheel, has been introduced with great advantage into the machinery of the textile manufactures.

Mango (*mangos marum*, in the Tamul language of India), is a very large fruit-tree, inhabiting the tropical parts of Asia, throughout all which it is as extensively cultivated as the apple and pear-trees are in Europe. Old specimens have been seen with a trunk from 10 to 15 feet in circumference. The fruit is something like a nectarine, but more compressed, longer, and more curved. It contains a large stone, covered with coarse fibres, which lose themselves in the succulent flesh. The wild and inferior varieties of the fruit taste so strongly of turpentine as to be wholly unfit for use by Europeans; but in the fine varieties this flavor is replaced by a rich sugary quality, which renders it very delicious. In this country the mango has rarely ripened its fruit, but it is common in the shops in a pickled state. The fruit of the *Mangifera Indica*, a tree cultivated in Asia, is also called *mango*.

Manifest, in commercial navigation, is a document signed by the master, containing the name or names of the places where the goods on board have been laden, and the place or places for which they are

respectively destined; the name and tonnage of the vessel, the name of the master, and the name of the place to which the vessel belongs; a particular account and description of all the packages on board, with the marks and numbers thereon, the goods contained in such packages, the names of the respective shippers and consignees, as far as such particulars are known to the master, etc. A separate manifest is required for tobacco. The manifest must be made out, dated, and signed by the captain, at the place or places where the goods, or any part of the goods, are taken on board.

Manilla, the capital of Luconia, the largest of the Philippine Islands, and the principal settlement of the Spaniards in the East, in lat. 14° 36′ 8″ N., long. 120° 53′ 30″ E. Population about 100,000, of whom from 4000 to 5000 may be Europeans. Manilla is built on the shore of a spacious bay of the same name, at the mouth of a river navigable for small vessels a considerable way into the interior. The smaller class of ships anchor in Manilla Roads, in 5 fathoms, the north bastion bearing N. 37° E., the fishery stakes at the river's mouth N. 18° E., distant about a mile; but large ships anchor at Cavita, about 8 leagues to the southward, where there is a good harbor, well sheltered from the west and south-west winds. The arsenal is at Cavita, which is defended by Fort St. Philip, the strongest fortress on the islands. The city is surrounded by a wall and towers, and some of the bastions are well furnished with artillery. Though situated within the tropics, the climate of the Philippines is sufficiently temperate; the only considerable disadvantage under which they labor in this respect being that the principal part of the group comes within the range of the typhoons. The soil is of very different qualities; but for the most part singularly fertile. They are rich in mineral, vegetable, and animal productions. It is stated in a statistical account of the Philippines, published at Manilla in 1818 and 1819, that the entire population of the islands amounted to 2,249,852, of which 1,376,222 belonged to Lucenia. There were at the period referred to only 2837 Europeans in the islands, and little more than 6000 Chinese. The natives are said to be the most active, bold, and energetic, of any belonging to the eastern Archipelago. "These people," says a most intelligent navigator, "appear in no respect inferior to those of Europe. They cultivate the earth like men of understanding; are carpenters, joiners, smiths, goldsmiths, weavers, masons, etc. I have walked through their villages, and found them kind, hospitable, and communicative; and though the Spaniards speak of and treat them with contempt, I perceived that the vices they attributed to the Indians, ought rather to be imputed to the government they have themselves established."—*Voyage de M. De la Perouse*, c. xv.

The principal articles of export consist of sugar, hemp, indigo, segars, cotton, coffee, rice, supan-wood, mother-of-pearl, hides, ebony, gold dust, etc. The principal articles of import are stuffs for clothing, iron, hardware, furniture, fire-arms, and ammunition, etc.

Account of the Quantities and Destination of the Produce Exported from Manilla in 1850.

Articles.	To Great Britain.	To the Continent of Europe	To the Australian colonies.	To China.	To Singapore, Batavia, and Bombay.	To California, and the Pacific	To the United States.	Total.
Sugar.....peculs	146,926	50,890	142,359	....	12,749	29,144	77,919	459,927
Hemp..... "	16,073	5,568	....	....	544	....	102,184	124,367
Cordage..... "	96	476	3,753	1,782	680	2,137	210	9,084
Segars.....M.	10,319	11,867	12,561	9,202	26,859	1,707	914	73,429
Leaf tobacco.....quintals	....	42,629	....	....	....	....	....	42,629
Sapan wood.....arrobas	37,068	14,436	....	18,942	17,337	....	9,015	96,798
Coffee.....peculs	165	9,670	1,481	100	250	1,072	2,063	14,801
Indigo.....quintals	259	218	....	Uncertain.	....	....	3,753	4,225
Hides.....peculs	3,340	213	....	1,069	....	....	....	4,622
Hide cuttings..... "	....	....	....	586	....	....	2,419	2,955
Mother-of-pearl shells "	820	338	....	....	260	....	74	1,492
Tortoise-shell.....catties	2,081	580	....	855	1,912	....	469	5,597
Rice..... "	....	6,576	....	Uncertain.	....	1,467	....	Uncertain.
Beche de Mer.....peculs	....	....	....	4,848	....	....	....	4,848
Gold dust.....taels	....	....	....	5,068	....	....	....	5,068
Camagon(ebony wd.)peculs	285	1,213	....	794	....	....	....	2,242
Grass-cloth.....pieces	175	13,252	....	500	650	22,975	37,552	74,553
Hats..... No.	....	....	9,400	5,115	9,115	500	25,870	50,000

The quantity of rice and paddy shipped to China from the islands can not be ascertained with any degree of exactness; what goes from Manilla is very small, because, before arriving there, it has, by its transport expenses, added to the price at which it is obtainable in the districts where it is produced, which, of course, prevents its being shipped from the capital. Probably, however, about [illegible],000,000 coyans, each of which, one with another, weighs about a China pecul, or 133⅓ lbs., may be annually exported. The export is regulated by the supposed scarcity or abundance of food in the country.—M'Mickin's *Manilla*, p. 270.

The principal currency of Manilla consists of Spanish dollars, of 8 reals and 96 grains; but South American dollars are also current. The weights in use are the Spanish pound, which is nearly 2 per cent. heavier than the English; the arroba = 25½ English lbs. nearly; the quintal = 102 lbs., and the pecul of 5 arrobas, or 1¼ cwt. English. The coyan is a measure for rice, etc., varying from 96 to 135 lbs. According to a recent list, there are in Manilla 47 Spanish merchants and 11 foreign firms. The Spanish merchants have a chamber of commerce and a joint-stock insurance society. The United States, France, and Belgium have consuls, and each of the Canton marine insurance companies has an agent here. There are, however, neither fire nor life-offices nor agents; nor is any newspaper, price-current, or other periodical publication issued in Manilla. Considering the great fertility and varied productions of the Philippines, and their peculiarly favorable situation for carrying on commerce, the limited extent of their trade, even with its late increase, may excite surprise. This, however, is entirely a consequence of the wretched policy of the Spanish government, which persevered until very recently in excluding all foreign ships from the ports of the Philippines, confining the trade between them and Mexico and South America to a single ship! Even ships and settlers from China were excluded. "Provisions," says La Perouse, "of all kinds are in the greatest abundance here, and extremely cheap; but clothing, European hardware, and furniture, bear an excessively high price. The want of competition, together with prohibitions and restraints of every kind laid on commerce, render the productions and merchandise of India and China at least as dear as in Europe!" Happily, however, this miserable policy the effects of which have been admirably depicted by M. De la Perouse, has been materially modified during the last few years. The events of the late war destroyed for ever the old colonial system of Spain; and the ships of all nations are now freely admitted into Manilla and the other ports in the Philippines. An unprecedented stimulus has, in consequence been given to all sorts of

industry; and its progress will, no doubt, become more rapid, according as a wider experience and acquaintance with foreigners make the natives better aware of the advantages of commerce and industry, and disabuses them of the prejudices of which they have been so long the slaves.

Port Charges.—On foreign vessels, 2 reals per ton, and one half on such as neither load nor unload cargo, besides fees, amounting from $5 to $15, according to the size of the vessel.

Import Duties.—Spanish commodities by Spanish vessels, pay 3 per cent. ad valorem, and 8 by foreign. Foreign commodities, by foreign vessels, 14 per cent., and 7 by Spanish; in general, being 8 per cent. under national flag from Singapore, and 9 from China. Spirits and strong liquors, produce of Spain, by Spanish vessels, 10 per cent., and 25 for foreign; if they be foreign produce, by Spanish vessels, 30 per cent., and 60 by foreign. Cider and beer, produce of Spain, by Spanish vessels, 3 per cent., and 10 by foreign; if they be foreign produce, by Spanish vessels, 20, and 25 foreign. All Spanish wines, by national vessels, 8 per cent., and 8 by foreign. Foreign wines, by Spanish vessels, 40 per cent., and 50 by foreign, except champagne, which pays, by Spanish vessels, 7 per cent., and 14 by foreign. Cotton twist, gray, black, blue, and purple, knives or bolos, such as the natives use, ready-made clothes, boots, shoes, preserved fruits, confectionery, and vinegar, by Spanish vessels, 20 per cent., and 30 by foreign. British and other foreign cotton and silk manufactures, made in imitation of native cloths, chiefly stripes or checks, of black, blue, and purple colors. Madras and Bengal gray, white, and printed cottons, towels, table-napkins, and tablecloths, 15 per cent. by Spanish vessels, and 25 by foreign. Beche de mer, rattans, diamonds, tortoise-shell, mother-of-pearl-shell, and birds' nests, 1 per cent. by Spanish vessels, and 2 by foreign. Machinery of all sorts for the promotion of the industry of the country, cotton twist of red, rose, yellow, and green colors, gold and silver, coined or uncoined, plants and seeds, free. Tropical productions similar to those of the Philippines, also arrack and gunpowder, are prohibited. Opium is only admitted to be deposited for re-exportation. Swords, fowling-pieces, muskets, pistols, and warlike stores may be deposited for re-export, and can not be introduced without the special license of the government; but cannon and dress-swords are admitted.

Export Duties.—Commodities and produce of every description to Spain, by national vessels, pay 1 per cent., and 2 by foreign; elsewhere, 1½ by Spanish vessels, and 3 by foreign. Hemp, by national vessels, to whatever destination, 1 per cent., and 2 by foreign. Rice, by Spanish vessels, free, and 4½ per cent. by foreign. Manufactured tobacco, and cordage of Manilla hemp, free by all flags. Gold dust, gold in bars, and silver in bars, free.

Entrepôt Duties.—One per cent. ad valorem, and 1 per cent. at the exportation, with 1 per cent. more if the commodities should be kept there more than 12 months, two years being the longest time allowed for it.

Port and Custom-house Regulations.—Vessels newly arrived are not to communicate with the shore until having been visited by the port captain's boat; and within 30 hours after this visit, a manifest must be presented, stating packages, marks, and numbers, but the vessel may retain her cargo 10 days in transit without stating whether for consumption or deposit, and without being obliged to land, or incurring any charge on the same, except gunpowder, pocket-pistols, and forbidden arms.

Terms for Sales and Purchases.—Sales and purchases made, duty paid, at 8 to 5 months' credit, occasionally at 2½ per cent. discount for prompt payment, and exports are bought for cash. See PHILIPPINE ISLANDS.

Manioc, is the Indian name of the nutritious matter of the shrub *jatropha manihot*, from which *cassava* and *tapioca* are made in the West Indies.

Manna (Fr. *Manne*; Ger. *Mannaesche*; It. *Manna*), the concrete juice of the *Fraxinus ornus*, a species of ash growing in the south of Europe. The juice exudes spontaneously in warm dry weather, and concretes into whitish tears; but the greater part of the manna of commerce is obtained by making incisions in the tree, and gathering the juice in baskets, where it forms irregular masses of a reddish or brownish color, often full of impurities. Manna is imported in chests, principally from Sicily and Calabria. The best is in oblong pieces or flakes, moderately dry, friable, light, of a whitish or pale yellow color, and in some degree transparent: the inferior kinds are moist unctuous, and brown. It has a slight peculiar odor, and a sweet taste, with some degree of bitterness not very pleasant, and leaving a nauseous impression on the tongue.

Mantua-maker. The word is supposed by some, and we think rightly, to be a corruption from *manteau*, French. Others assert that a court-dress was early known in England by the name of Mantua, either on account of its having been invented at Mantua, or from the celebrated Manto, in honor of whom that famous city was built by her son, Pianor, or Ochnus, about 1000 B.C.—BUTLER.

Manufacture, a commodity produced from raw or natural materials, either by the work of the hand or by machinery.

Manufacturer, one who works up a natural product into an artificial commodity.

STATEMENT SHOWING THE ANNUAL MANUFACTURES OF THE MOST PROMINENT COUNTRIES IN THE WORLD.

Austrian Empire.	
Spindles	1,500,000
Austrian Italy—Annual Produce.	
Silk.....lbs.	7,000,000
Registered manufactories	11,064
British Empire, £122,150,000 *estimate.*	
Cotton.....£35,000,000	
Woolen	24,000,000
Iron and hardware	20,000,000
Leather	13,500,000
Linen	8,000,000
Silk	10,000,000
Glass and earthenware	4,250,000
Hats	2,400,000
Paper	2,000,000
Watches, jewelries, etc	3,000,000
France, £93,200,000 *estimate.*	
Raw silk.....£12,000,000	
Woolen	10,600,000
Linen	10,400,000
Cotton	9,000,000
Iron, brass, etc	8,600,000
Refined sugar	4,480,000
Other kinds	33,120,000
Prussia.	
Number of manufacturing establishments in 1846	78,469
Machine spinning	2,608
Weaving	2,728
Connected with weaving	2,850
Mills	37,590
Metal	12,693
Other kinds	20,005
Russian Empire.	
Spindles at St. Petersburg in 1849	348,000
Producing 33½ hanks per day.	
Russian spindles	700,000
United States.	
Cotton manufactured a year.....lbs.	200,000,000
Woolen manufactures..... "	4,398,112
Produce of manufactures	$1,020,000,000
Bavaria.	
Manufacturing establishments mostly on a small scale.	
Belgium.	
Woolen cloth, 1833	£3,000,000
Spindles, 1846	400,000
Refined sugar exported.....lbs.	1,014,300
Brazil.	
Hides exported .....No.	1,763,100
Cotton " .....bags	124,408
Denmark.	
Sugar produce—Danish colonies.....tons	8,000

Egypt.
For want of fuel the country is ill adapted for manufactures. In all the cotton factories there were in use:
Spinning jennies..... 1,459
Looms..... 1,215

Greece.
Manufacturing industry is confined to articles for domestic use.

Hamburg.
Wool exported, 1849.....cwt. 103,003

Holland.
Dutch West Indies—sugar produced...tons. 18,000
Java..... " 99,000

Mexico.
Gold and silver coined 1848..... £3,901,351
Woolen and cotton.....value 1,000,000
Spindles.....No. 181,280

Papal States
Hemp.....lbs. 67,800,000
Silk..... " 800,000

Portugal.
These are confined to coarse and inferior woolen, common cotton, and linen.

Sardinia.
Silk.....lbs. 2,000,000
Hemp produced..... £400,000

Spain.
The capital invested in the cotton factories is said to be about..... £200,000

Sweden and Norway.
Sweden—Manufactures, 1848.....No. 2,496
" Looms..... 9,861
Value produced..... £1,743,405

Turkey.
Salonica, 1845—Silk produced.....lbs. 167,250
Brussa, 1848..... " 624,250

Two Sicilies.
Silk.....lbs. 1,200,000
Woolen cloth.....pieces 70,000
Leather.....bales 8,000
Cotton.....spindles 29,500
Yarn.....lbs. 1,946,000

China.
Silk, Great Brit., 30th June, 1849—50..bales 161,934
Silk, Great Britain, July 1, 1850, to May 20, 1851.....bales 19,281

COLONIES:

British Possessions—Indies.
Cotton exported from India per annum..lbs. 193,823,263
Coffee to Great Britain in 1850.....cwt. 3,845,357
Sugar..... " 1,349,990
Rum.....galls. 443,931

Canada.
Maple sugar, 1847.....lbs. 3,764,343
Fisheries, 1846..... £62,104
Property movable and immovable, valued in 1847 at..... 117,500,000

Cape of Good Hope.
Aloe, 1842.....lbs. 485,574
Ivory..... " 12,859
Whale oil.....galls. 11,964
Wine..... " 1,216,411

Australia—New South Wales.
Wool exported, 1848.....lbs. 22,091,481
Tallow.....cwt. 96,213

Western.
Wool exported, 1848.....lbs. 301,365

Van Diemen's Land.
Wool exported, 1848.....lbs. 4,955,963

South.
Wool exported, 1848.....lbs. 2,762,672

Jamaica.
Exported to Great Britain from the West Indies and British Guiana in 1850.
Sugar.....cwt. 2,586,429
Rum.....galls. 3,579,676
Coffee.....cwt. 4,343,590
Cocoa..... " 1,987,760

Ceylon.
Coffee exported to the U. Kingd., 1850...lbs. 30,859,909
Total Cinnamon exported, 1848..... " 408,211

Mauritius.
Sugar, 1848.....lbs. 121,261,300
Sugar exported to Great Brit. in 1850...cwt. 1,003,296
Coffee..... " 20,389
Rum.....galls. 24,167

French Possessions—Hayti. Estimate 1837.
Sugar.....lbs. 30,400,000
Coffee..... " 24,370,000
Cotton..... " 1,050,000

Spanish Possessions—Cuba.
Coffee exported 1850.....lbs. 4,218,235

Dutch Possessions—Java.
Coffee, 1848.....lbs. 17,353,425
Coffee, 1850.....cwt. 1,316,961
Sugar..... " 1,593,372
Cochineal.....lbs. 193,196

See LEONE LEVI'S *Statistical Chart.*

STATISTICS OF MANUFACTURES IN THE UNITED STATES, IN THE YEAR 1850.

States and Territories.	No. of establishments.	Value of raw material consumed	Capital invested.	Value of products.	Capital invested.
Maine	3,977	$13,555,806	$14,700,452	$24,664,135	$7,105,620
New Hampshire	3,211	12,745,466	18,242,114	23,104,503	9,252,448
Vermont	1,849	4,172,552	5,001,877	8,570,920	4,326,440
Massachusetts	8,259	85,856,771	83,357,642	151,137,145	41,771,446
" Fisheries	593	....	5,582,650	6,606,849	11,725,850
Rhode Island	1,144	....	....	....	10,690,136
Connecticut	3,482	23,589,397	23,589,397	45,110,102	13,669,139
" Fisheries	252	....	1,986,800	2,004,483	1,801,640
New York	23,553	134,635,674	99,904,405	237,597,249	55,252,779
New Jersey	4,108	21,992,186	22,184,740	39,713,586	11,517,582
" Fisheries	101	....	109,678	140,050	93,275
Pennsylvania	21,595	87,206,877	94,473,810	155,044,010	31,815,105
Delaware	591	2,844,607	2,978,945	4,649,206	1,503,215
Maryland	3,708	17,320,734	18,108,793	29,592,019	6,450,284
District of Columbia	427	....	....	....	1,005,775
Virginia	4,741	18,108,433	18,108,793	29,592,019	11,860,861
North Carolina	2,604	4,805,463	7,252,245	9,111,245	3,838,900
South Carolina	1,491	2,809,584	6,760,565	7,076,077	3,216,970
Georgia	1,407	....	....	6,704,138	2,399,565
Florida	103	220,611	547,060	668,335	669,400
Alabama	1,022	....	....	4,464,006	2,130,064
Mississippi	866	....	....	2,749,818	1,797,727
Louisiana	1,016	2,485,078	5,804,924	7,043,814	6,430,699
Texas	307	399,734	618,288	1,202,885	....
Arkansas	271	286,909	838,154	668,815	424,467
Missouri	3,030	12,408,457	9,194,999	24,250,578	2,704,405
Tennessee	2,789	4,757,257	7,044,144	9,448,701	3,573,580
Kentucky	3,471	12,458,786	14,236,964	23,373,201	5,945,279
Ohio	10,550	....	....	62,110,188	16,965,257
Indiana	4,326	9,847,920	7,917,813	18,747,068	4,132,043
Michigan	1,979	6,221,348	6,441,816	10,729,892	3,112,240
Illinois	3,099	8,986,142	6,128,282	16,671,278	3,136,512
Wisconsin	1,271	....	....	....	635,926
Iowa	482	2,093,844	1,256,419	3,308,542	199,645
California	....	....	17,000,000	60,000,000	....
Minnesota and other Territories	....	....	....	2,342,000	....
City of New York	3,163	47,664,504	29,407,754	90,382,015	11,228,894

The entire capital invested in the various manufactures in the United States, on the 1st of June, 1850—not to include any establishments producing less than the annual value of $500—amounted, in round numbers, according to the Report of the Superintendent of the Census, to $530,000,000; value of raw material used and consumed, $550,000,000; amount paid for labor, $240,000,000; value of articles manufactured

during year, $1,020,300,000; number of persons employed, 1,050,000. See UNITED STATES.

For "American Manufactures," see *N. A. Rev.*, xxx., 165 (A. H. EVERETT), xvii., 186, 1., 223 (N. HALE), xxxv., 265; NILES'S *Reg.*, xliv., 204 (J. Q. ADAMS), xxxii., 237, 832. "Manufactures at the South," see NILES'S *Reg.*, xxxv., 135. Of the United States, HUNT'S *Mag.*, vii., 289 (WALTER FORWARD), xiv., 152, xv., 369; DE BOW'S *Rev.*, ix., 466. Manufacturing System, see *For. Quar.*, viii., 319 (SOUTHEY); *Ed. Rev.*, lxxvii., 101, xxxiii., 382.

Maple Sugar. The State of New York produces more sugar than any other State in the Union, except Louisiana. The whole cane sugar crop of the country in 1850 was as follows:

	Pounds.		Pounds.
South Carolina....	670,000	Tennessee.....	248,000
Georgia.....	1,642,000	Kentucky.....	284,000
Florida.....	2,750,000		
Alabama.....	8,242,000	Total.....	247,577,000
Mississippi.....	888,000	Maple sugar crop..	64,253,436
Louisiana.....	226,001,000		
Texas.....	7,351,000	Total sugar crop.	281,830,436

TABLE SHOWING THE PRODUCTIONS OF SUGAR IN THE U. STATES IN 1850.

States and Territories.	Maple sugar.	Cane sugar.
	lbs.	Hhds. 1000 lbs.
Alabama.....	643	87
Arkansas.....	9,880	....
Connecticut.....	50,796	....
Florida.....	....	2,750
Georgia.....	50	646
Illinois.....	248,904	....
Indiana.....	2,921,192	....
Iowa.....	78,407	....
Kentucky.....	437,405	10
Louisiana.....	255	226,001
Maine.....	93,542	....
Maryland.....	47,740	....
Massachusetts.....	795,525	....
Michigan.....	2,439,794	....
Missouri.....	178,910	....
N. Hampshire.....	1,298,863	....
New Jersey.....	2,197	....
New York.....	10,357,484	....
North Carolina.....	27,932	....
Ohio.....	4,588,209	....
Pennsylvania.....	2,326,525	....
South Carolina.....	200	77
Tennessee.....	158,557	3
Texas.....	....	7,851
Vermont.....	6,849,357	....
Virginia.....	1,227,665	....
Wisconsin.....	510,976	....
Minnesota.....	2,950	....
Total.....		

The States which produced 1,000,000 pounds and over of maple sugar in 1850 were as follows:

	Pounds.		Pounds.
New Hampshire..	1,298,863	Virginia.....	1,227,665
Vermont.....	6,849,257	Indiana.....	2,921,122
New York.....	10,357,484	Ohio.....	4,588,209
Pennsylvania....	2,326,524	Michigan.....	2,439,794

The State of Louisiana produces four fifths of all the sugar crop of the Union, both maple and cane.

The production of maple depends very much upon the circumstances of the market. Its manufacture is not a regular business, like that of cane, but is prosecuted or not, very much to suit the convenience of the farming population among whom the sugar orchards lie. Nothing but a very high price of sugar—so high as to make its purchase a severe burden—stimulates a large production of maple. Accordingly we find that from 1850 to 1855 the product of maple sugar in New York State fell from 10,367,484 pounds to 4,935,815 pounds—a reduction of more than one half. If the falling off in price from 1850 to 1855 reduced the production one half, we are inclined to think it not extravagant to estimate that the present increased price has doubled the production of 1850, and we accordingly estimate the maple sugar crop of the present year in New York State at 20,000,000 pounds. It is worth not less than 12½ cents per pound, making its total value $2,500,000

Adopting the same estimate, would give the maple sugar crop of the whole Union for the present spring as 68,500,000 pounds, and its value as $8,562,500—making the quantity and value very nearly equal to one half the cane product of last year—and contributing in a very important degree to relieve the last year's deficiency. See SUGAR.

Maple-tree (*acer saccharinum*) known as the rock maple, hard maple, bird's-eye maple, sugar maple. The *acer saccharinum* is one of the most noble and majestic of American trees. In favorable situations it sometimes grows to a height of 70 or 80 feet, and from 2 to 4 feet in diameter; but usually it does not exceed an elevation of 50 or 60 feet, and a diameter of 12 or 18 inches. The trunk is generally straight, though often studded with projections and excrescences. In all healthful and vigorous trees, the outward bark is light-colored, by which they may readily be distinguished. When growing in open situations, with room to spread on every side, where all its branches are exposed to the free action of light, this tree is an object of great beauty. It somewhat resembles the English oak, in its outline, in the form of its trunk, and disposition of its branches, and in the dense and massy character of its foliage.

The wood of the *acer saccharinum*, when newly cut, is white, but after being wrought and exposed for some time to the light, it takes a rosy tinge. Its grain is fine and close, and when polished its lustre is silky. It is very strong and heavy, but wants the property of durability, for which the English and American white oaks are so highly esteemed. The northern wood, when dry, weighs 46 pounds to a cubic foot, but that grown south weighs much less. When cut, and properly dried, it makes excellent fuel, which is equally esteemed by some, for that purpose, with the oak and hickory. When exposed to the alternations of moisture and dryness, it soon decays, and for this reason it is not much used in civil and naval architecture. In Maine, New Hampshire, Vermont, and further north, where the oak is not plentiful, the timber of this tree is substituted for it, in preference to that of the beech, the birch, or the elm. When perfectly seasoned, which requires two or three years, it is used for axle-trees, spokes, runners of common sleds, mill-cogs, and for chairs, and cabinet-work. It is also sometimes used for the frames of houses, keels, and the lower frames of vessels, piles, and foundation pieces for mills, canal locks, and for many other purposes where strength is required, and the work is not exposed to the alternation of moisture and dryness. The wood of this tree exhibits several accidental forms in the arrangement of its fibre, of which cabinet-makers take advantage in manufacturing beautiful articles of furniture, such as bedsteads, writing-desks, and other fancy works, and for inlaying mahogany and black walnut, in bureaus, piano-fortes, etc. These forms or varieties may be classified and described as follows:

1. CURLED MAPLE. *Erable gris ondulé*, French. The undulations or medullary rays of this variety, like those of the red-flowered maple, are lustrous, and in one light appear darker, and in another lighter than the rest of the wood. Sometimes the zig-zag lines are crossed by beautifully-colored veins; but, unfortunately, the lustre of these shades disappear by long exposure to light and air.

2. BIRD'S-EYE MAPLE. *Erable mouchété*, French. This variety exhibits small whitish spots or eyes, not exceeding a tenth of an inch in diameter, sometimes occurring a little way apart, and at others contiguously disposed. The more numerous these spots, the more beautiful and valuable the wood. They are seen only in old trees, which are still sound, and appear to arise from an inflection of the fibres from the centres of their trunks toward the surface across the grain. To obtain the finest effect, the wood should be sawed

as nearly as possible in a direction parallel with the concentric circles.

In addition to the above-named varieties, two other kinds occur in the *wens*, or excrescences, which grow on the trunk or roots of this tree, and, like them, are covered with bark. The most valuable variety is known by the name of *Variegated Maple-knob*, or *Loupe d'érable de couleurs variées*, of the French. It presents an assemblage of shades, agreeably disposed, sometimes resembling Arabic characters, which renders the wood very appropriate for fancy works, and from its scarcity it usually commands high prices. The other variety, known by the name of *Silver-white Maple-knob*, or *Loupe d'érable blanc argenté*, of the French, exhibits a silvery lustre by the arrangement of its fibres, and is highly prized for the same purposes as the preceding, although more common.

The wood of this species is easily distinguished from that of the red-flowered maple, which it resembles in appearance, by its weight and hardness. There is, besides, a very simple and certain test. A few drops of water saturated with copperas (sulphate of iron), being poured upon samples of different woods, that of the sugar maple turns greenish, and the white maple and the red-flowered maple change to a deep blue. The ashes of the sugar maple are rich in the alkaline principle, and it has been asserted that they furnish four fifths of the potash exported from the United States to Europe. In the forges of Maine, New Hampshire, Vermont, and places further north where this tree grows, its charcoal is preferred to that of any other wood; and it is said to be one fifth heavier than that made from the same species in the middle and southern States.

The extraction of sugar from this tree is a valuable resource in a new country where it abounds; but it is obvious that this mode of obtaining sugar is only destined for a certain stage in the progress of society, and eventually gives way to the sugar of commerce, produced by cane. For this reason we shall not detail the process of its manufacture, as it can not be regarded as a matter of practical utility. In a country like the United States, intersected by canals, railroads, and other channels of inter-communication, where labor is expensive, and fuel is becoming more and more valuable, the manufacture of this article can not fail to be an unprofitable occupation. Besides, the annual drawage of the sap renders the trees sickly, and causes a premature decay.

From the great height, extended branches, regular and often pyramidal form, and the rich verdure and cleanliness of the foliage in spring and summer, the sugar maple is accounted as one of our finest shade-trees, and is highly recommended to be planted along streets and avenues, in pastures, and ornamental grounds. And it is no less beautiful in our forest or woodland scenery in autumn, when it puts on its bright-orange and deep-crimson robes. At first, the extremities of the boughs alone change their color, leaving the internal and more sheltered parts still in their verdure, which "gives to the tree the effect of great depth of shade, and displays advantageously the light, lively coloring of the sprays." Later in the season, on the contrary, when the tints become more and more gorgeous, and the full beams of the sunshine fall upon the large masses of foliage, the warm and glowing colors of the whole summit possess a great deal of grandeur, and add much to the beauty and effect in the landscape.

The wood of the *acer eriocarpum*, or white maple, is very white when newly cut, and of a fine texture; but it is softer and lighter than that of any other maple in the United States; and from the want of strength and durability it is little used. When dry, it weighs 38 pounds to a cubic foot, and in seasoning, loses nearly half of its weight. It is sometimes used in cabinet-making, instead of the holly or other light-colored wood, for inlaying furniture of mahogany, cherry-tree, and black walnut; though it is less suitable for this purpose, as it soon changes color by exposure to light. Wooden bowls are also made of it, when that of ash, or tulip-tree can not be obtained. The charcoal of this wood is preferred by hatters and dyers to every other, as it affords a heat more uniform, and of longer duration. The sap is in motion earlier in this species than in the sugar maple, beginning to ascend, in the middle States, about the 15th of January; so that when it is employed for making sugar, the operations are sooner completed. Like the sap of the red-flowered maple, it yields not more than one half of the product of sugar, from a given measure, as that of the *acer saccharinum*. Its inner bark produces a black precipitate with copperas (sulphate of iron), and is sometimes employed in domestic dyeing.

The wood of the *acer rubrum*, or red maple, when dry, weighs 44 pounds to a cubic foot, and when green, it is soft, full of aqueous matter, and loses in drying nearly one half of its weight. In this tree, as in others which grow in wet places, the sap-wood bears a large proportion to the heart-wood, the latter of which consists of an irregular column, star-like in its transverse section, and occupies the central parts of large trunks, with its points projecting into the sap-wood. This wood has but little strength, is liable to injury from insects, and ferments, and speedily decays when exposed to the alternation of moisture and dryness. Yet it is solid, and for many purposes is preferred by workmen to other kinds of wood. It is harder than that of the white maple, and of a finer and closer grain; hence it is easily wrought in the lathe, and acquires, by polishing, a glossy and silky surface. It is principally employed in the manufacture of chairs, saddle-trees, shoe-lasts, ox-yokes, broom-handles, and various other articles of domestic use. It sometimes happens that, in very old trees, the grain of the wood, instead of following a perpendicular direction, is undulated; and this variety bears the name of *curled maple*. This singular arrangement is never found in young trees, nor even in the branches of such as exhibit it in the trunk; it is also less conspicuous in the centre of the tree than near the bark. Trees offering this disposition, however, are rare. The serpentine direction of the fibres, which renders this wood difficult to split and to work, produces, in the hands of a skillful mechanic, the most beautiful effects of light and shade. These effects are rendered more striking, if, after smoothing the surface of the wood with a double-ironed plane, it is rubbed with a little sulphuric acid, and afterward with linseed oil. On examining it attentively, the varying shades are found to be owing entirely to the inflection of the rays of light; which is more sensibly perceived in viewing it in different directions by candle-light. Before mahogany became generally fashionable in the United States, the best furniture in use was made of the red-flowered maple, and bedsteads are still made of it, which in richness of lustre exceed those of the finest imported woods. But one of the most constant uses to which the curled maple is applied is for the stocks of rifles and fowling-pieces, which, to elegance and lightness, unite toughness and strength, the result of the tortuous direction of the fibres. The cellular matter of the inner bark is of a dusky-red. By boiling, it yields a purplish colored liquor, which, with the addition of sulphate of iron (copperas), acquires an intense dark blue, or black; and is sometimes employed as ink by American youth in village schools. For this purpose, however, it is very inappropriate, as it never dries properly, and in damp weather the writing becomes glutinous, and blots. A fluid prepared in a similar manner, by adding sulphate of alumina (common alum), instead of copperas, is also used for dyeing black. The French Canadians make sugar from the sap of this maple, which they call *plaine*; but, as in the

preceding species, the product of a given measure is not more than one half as great as that of the sugar maple.

The *acer campestre*, or field maple, is found throughout the middle States of Europe, and in the north of Asia. According to Pallas, it abounds in New Russia, and about Caucasus. It is common in hedges and thickets in the middle counties and south of England; but in the northern counties, and in Scotland, it is rare. It is not indigenous to Ireland, and perhaps not to Scotland. The wood of the *acer campestre*, when allowed to become a tree, and of a proper age, is very compact, possesses a fine grain, sometimes beautifully veined, and is susceptible of a high polish. When dry, it weighs 52 pounds to a cubic foot. It makes excellent fuel, and produces charcoal of the best quality, which is sometimes employed in the manufacture of gunpowder. It was celebrated among the ancient Romans for tables; and Pliny, who has treated at length upon the *brusca* and *mollusca*, the names under which the knobs and excrescences of this tree were known, informs us that cabinet-work of the most costly description was fabricated from them. In France and other European countries, it is still extensively used by turners, carvers, and cabinet-makers, and the wood of the roots, which is often knotted and curiously marbled, is wrought into snuff-boxes, pipes, and various other articles of fancy.—BROWNE'S *Trees of America*.

Maps and Charts. They were invented by Anaximander, the Milesian philosopher, a disciple of Thales, and the earliest philosophical astronomer on record, 570 B. C. He was also the first who constructed spheres. A celestial chart was, it is said, constructed in China in the 6th century.—*Freret.* And sea-charts were first brought to England by Bartholomew Columbus, to illustrate his brother's theory respecting a western continent, A. D. 1489. The earliest map of England was drawn by George Lily in 1520. Mercator's chart, in which the world was taken as a plane, was invented in 1556. A map of the moon's surface was first drawn at Dantzic in 1647.—HAYDN.

Of the Construction and Use of Maps.—In representing the geographical divisions of the earth's surface, two objects are to be kept in view; on the one hand to exhibit accurately to the eye the relative position of the different countries, and, on the other hand, to give a delineation sufficiently minute to furnish a distinct knowledge of the necessary details. As a globe has very nearly the exact figure of the earth, the representation which it affords of the surface fulfills the first of these objects in the most perfect manner; but to attain the second it would be requisite to enlarge the globe beyond all convenient size. A globe of the ordinary dimensions serves almost no other purpose in this respect but to convey a clear conception of the earth's surface as a whole; exhibiting the figure, extent, position, and general features of the great continents and islands, with the intervening oceans and seas. To obtain a detailed representation of any part of the earth's surface, geographers have therefore found it necessary to have recourse to maps, in which countries are delineated on a plane, while the mutual proportions of the distance of places are preserved as nearly as possible the same as on the globe.

For the construction of maps different mathematical hypotheses have been adopted. By one method of construction, that of *projection*, the boundaries of countries, and their more remarkable features, are represented according to the rules of perspective, on the supposition of the eye being placed on some point of the sphere, or at some given distance from it, which may be increased indefinitely. Wherever the eye is supposed to be situated, the representation thus obtained answers very well, provided the surface to be represented is of small extent, and the point of view, or *projecting point*, is nearly over the centre; but when the surface is of great extent, for example, a whole hemisphere, those places which are situated near the border of the projection are in all of them much distorted. Another method, that of *development*, is founded on the supposition that the spherical surface to be represented is a portion of a cone, of which the vertex is situated somewhere in the polar axis produced, and the conical surface is supposed either to touch the sphere in the middle parallel of the map, or to fall within the sphere of the middle parallel, and without it at the extreme parallels. The surface of the cone is then supposed to be spread out into a plane. For the "History and Construction of Maps," see *Eclec. Rev.*, XXV., 865; same article in *Living Age*, XXI., 353; *Smithsonian Annual Report*, 1856–7.

A third method, which depends on the development of a cylindrical surface, is that according to which maps are so delineated as to have the parallels of latitude and circles of longitude respectively represented by parallel straight lines. By this method marine charts are constructed. As the rhumb makes equal angles with every meridian, it necessarily, according to this method of delineation, becomes a straight line. Such a representation of the earth's surface is commonly called *Mercator's Chart*, although the invention is due to an English mathematician, Edward Wright. These are the three principal methods employed to represent to the eye the several countries on the surface of the earth. See CHARTS and COAST SURVEY.

The maps and charts of our country and the coasts, besides being of great general interest, are of such importance to the commercial community that any account of the progress made in this direction, should be made known as matter of common interest. The United States' Coast Survey have completed the surveys of a large portion of our coast, and, with a view of obtaining the important facts relative to the old surveys of the country, have employed Mr. J. G. Kohl to investigate the earliest records extant of the history of our maps and charts. Mr. Kohl has extended his researches, and in a series of lectures before the Smithsonian Institute (and published in their last Report), has embodied a general history of the origin of the chartographical art, and from these lectures we make some extracts that have an especial relation to the early history of our own country: The Chartographical Art originated probably everywhere with travelers by land and sea and their requirements; all the maps which we see mentioned in ancient times were probably more or less of this kind; as, for instance, those which the Greeks received from the Phenicians, and which they improved upon; so, too, the maps of the Romans, who scarcely mention any other than travelers' maps, called "itineraria picta" (painted itineraries), of which a separate class was formed by the "itineraria maritima" (marine itineraries).

By far the greater part of the maps painted during the middle ages belonged to this class, and more especially to the class of marine maps; because the greatest map-makers of that time, the Venetians and other Italians, were also the greatest navigators. Thus we see that the art of map-making particularly flourished among the great trading and navigating nations—the Phenicians, Greeks, and Italians. The different classes of chartographical works for which they had names in the middle ages related all of them more or less exclusively to the hydrography of the sea. Very common, for instance, were the so-called "portulanos," or indicators of harbors. The "isolarios" (books of islands) form a very curious sort of composition, also probably designed for the special use of mariners. In these insularies the authors represented and described all the most important islands of the world, which they separated from their surrounding continents. From the class of maps, made by conquerors and distributors of land, have grown our official government surveys, which often are very

valuable, because they are made without a too great fear of expense. They generally contain the most important information as regards the political divisions of the country, and for the adjustment of boundary questions. Sometimes, being particularly destined for government use, they have not been given to the public, or at least not to any great extent. With respect to America we have many most important publications of this character made by the French and British governments for Canada, by the British Admiralty for nearly every part of America; by the Spanish hydrographical dépôt in Madrid, for Spanish America, and by the Land Office, Topographical Bureau, Coast Survey Office, and other branches of the United States' government, for different parts of the territory of the United States. The governments of Brazil, of New Granada, and other South American States, have likewise caused splendid publications to be made, descriptive of the territories under their dominion.

Until the time of Columbus and Gama, nations had no accurate knowledge of the world, except that of their own immediate neighborhood. Hence, for thousands of years, the art of constructing maps made but little progress. The maps that were in use at the time of Columbus were not much better than those made for the work of Ptolomy a thousand years before. They do not include a greater extent of country, they exhibit no new facts, nor do they show any greater accuracy in the location of points on the earth's surface. After the discovery of America and the countries bordering on the Pacific Ocean and the Indian Sea, the extent of the known and habitable world was much increased, and the figure of the continents and the limits of the oceans were more correctly given on the maps. But it was still very long ere the classes of interesting facts represented on the maps were enlarged, and the manner of depicting them improved.

Water remained for a long time a blank on all the old maps. It was not known that the ocean offers so much variety in color, depth, temperature, and fitness for motion as the dry land itself. The Spaniards knew that some parts of the ocean are rough and boisterous, and called a certain part "el Golfo de los Cabellos" (the Horse Gulf), and a quiet portion "el Golfo de las Damas" (the Ladies' Gulf). Some of the regular currents of the ocean were also of early discovery. The Gulf Stream was known as early as 1512, or since the first voyage of Ponce de Leon to Florida. We find on many maps, in the neighborhood of Florida, legends like the following: "Here the water runs continually to the north." It would have been easier to have designated this by a few strips of color; and yet it required the inventive genius of Franklin, for it was he who first located definitely the Gulf Stream in our maps.

The regular trade winds between India and Arabia, with their nature, direction, and changes, were not only known, but daily taken advantage of by navigators for centuries. So too the trade winds of the Atlantic were described, discussed, and used, at least since the time of Columbus. Nevertheless, though there are currents that flow with nearly the same regularity as rivers, no map-maker gave any visible hint respecting them to the navigator to whom he pretended to furnish useful charts, until the time of our modern Rennell's Wind-maps, which are also a very late innovation of our century.

The existence of the banks of Newfoundland was known to the very first discoverers of the eastern coast of North America. Nay, for a long time these banks were the most frequented part of the North American waters, being visited since the year 1504 by whole fleets of French, Portuguese, Spanish, and English fishermen. To have a true conception of their configuration, extent, varying depths, currents, and other circumstances, was almost of greater importance for all the navigating nations of Europe than to know the configuration of the coasts of the great continent itself. Yet at a time when the whole east coast of North America was already very well represented on the maps, we see the Georges Bank, Nantucket shoals, and the other great banks, before this coast, either not given at all, or else in a shape so little like reality that it would have been almost better to leave them out altogether. The other qualities of the bottom of the ocean, its deep valleys and lofty mountain ranges, were of course not noticed in an age which did not possess our deep-sea sounding instruments, and which had also no practical occasion for such explorations. This practical interest has existed only since the question has been mooted where we can lay with safety our electric wires for the connection of the two continents. For this purpose we now explore those hidden recesses, and we may expect that ere long our pictures of the oceans will present as great variety of scenes as do those of the dry land itself.

We should endeavor to collect and preserve all the old records and charts of our early maritime history. These are valuable to science, and are objects of curiosity and interest to our merchants, and it should be the object of the Chamber of Commerce to collect and preserve these records of the past.

Maranham, or **Maranhao**, a province of Brazil, in South America. This name, which is common to the province, the capital, the island on which it stands, the River Meary, and the Amazon, is derived from Marañan, the appellation which the navigator Pinzan first bestowed upon the estuary of the Amazons, upon finding that its waters did not possess the saline properties of the ocean. It lies between 1° 20′ and 10° 50′ of south latitude, and 45° 10′ and 53° 20′ of west longitude, being nearly 400 miles in length from north to south, and having an average breadth of about 200 miles. Maranham, or St. Luiz, the capital, is situated on an island of the same name of about 42 miles in circumference. It forms the south-east side of the Bay of Marcos, having to the eastward the Bay of San José, in latitude 2° 32′ south, and longitude 43° 40′ west. It is fertile, and well inhabited, there being, besides the capital, numerous small hamlets belonging to the natives. Much difficulty is experienced in reaching this island, on account of the rapidity of three rivers at the mouth of which it is situated. The harbor, which is formed by a narrow creek, is of a sufficient depth to admit of merchantmen entering; but it is so beset with shoals as to require a pilot, and its depth is diminishing. Population about 30,000. Chief public edifices, an episcopal palace, college, hospital, theatre, and numerous convents of the Franciscan and Carmelite orders. It is the residence of the governor, and has a lyceum and schools of navigation and commerce. Chief exports, cotton, rice, and sarsaparilla. Chief imports, slaves. The average number of slaves imported between the years 1810 and 1815 averaged 5000 annually, for whom a considerable duty was derived. With regard to exports and imports, there are no returns which can be relied on later than the year 1820. From 1815 to 1820, the average number of bags of cotton exported was 68,000. The exports of rice varied during these years from 56,000 to 82,000 bags. The other articles sent out of the country consisted of hides, tanned and untanned, skins, and gums. The entire population of the province amounted, in 1821, to 182,000. This province might be made one of great importance, for it possesses vast capabilities; but as yet it is in an infant or semi-barbarous state.

Marble (Ger., Rus., and Lat. *Marmo*; Du. *Marmer*; Fr. *Marbre*; It. *Marme*; Sp. *Marmol*), a genus of fossils, composed chiefly of lime; being a bright and beautiful stone, moderately hard, not giving fire with steel, fermenting with and soluble in acid menstrua, and calcining in a slight fire. Dipænus and Scyllis,

statuaries of Crete, were the first artists who sculptured marble, and polished their works; all statues previously to their time being of wood, 568 B.C.—*Pliny.* Marble afterward came into use for statues and the columns and ornaments of fine buildings; and the edifices and monuments of Rome were constructed of, or ornamented with, fine marble. The ruins of Palmyra prove that its magnificent structures, which were chiefly of white marble, were far more extensive and splendid than those of even Rome itself. These latter were discovered by some English travelers near Aleppo, A. D. 1678.

The colors by which marbles are distinguished are almost innumerable. Some are quite black, others, again, are of a snowy white; some are greenish, others grayish, reddish, bluish, yellowish, etc.; while some are variegated and spotted with many different colors and shades of colors. The finest solid modern marbles are those of Italy, Blankenburg, France, Flanders and the United States.

Italy produces a most valuable marble, and its exportation makes a considerable branch of her foreign commerce. The black and the milk-white marble of Carara, in the duchy of Massa, are particularly esteemed. The marble of Germany, Norway, and Sweden are very inferior, being mixed with a sort of scaly limestone. Marble is of so hard, and compact, and fine a texture as readily to take a beautiful polish. That most esteemed by statuaries is brought from the island of Paros, in the Archipelago. It was employed by Praxiteles and Phidias, both of whom were natives of that island; whence also the famous Arundelian marbles were brought. The marble of Carara is likewise in high repute among sculptors. The specific gravity of marble is from 2·700 to 2·800. Black marble owes its color to a slight mixture of iron.

STATEMENT SHOWING THE EXPORTS OF THE MANUFACTURES OF MARBLE FROM THE UNITED STATES FOR THE FISCAL YEAR ENDING JUNE 30TH, 1856.

Whither exported.	Dollars.	Whither exported.	Dollars.
Dutch Guiana	50	Turkey in Europe	85
England	1,025	Hayti	1,235
Ireland	50	San Domingo	163
Gibraltar	90	Mexico	2,055
Canada	105,333	Central Republic	460
Other Br. N. A. pos.	10,664	New Granada	195
British West Indies	348	Venezuela	165
British Honduras	39	Brazil	270
British pos. in Africa	904	Buenos Ayres	535
British Australia	189	Chili	9,004
Cuba	30,884	Sandwich Islands	4,259
Porto Rico	743		
Madeira	181	Total	162,876

STATEMENT SHOWING THE IMPORTS OF MARBLE INTO THE UNITED STATES FOR THE FISCAL YEAR ENDING JUNE 30TH, 1856.

Whence imported.	Manufactures of.	Unmanufactured.
Bremen	$100	....
Holland	28	....
Belgium	17	$198
England	3,017	25
Scotland	1,145	....
Malta	170	....
Canada	154	....
British East Indies	25	....
France on the Atlantic	2,437	14
France on the Mediterranean	2,767	1,841
Portugal	....	3,168
Sardinia	11,886	82,858
Tuscany	15,685	140,843
Two Sicilies	154	....
China	178	....
Total	$38,054	$177,967

Brande divides marble, according to their localities, into classes, each of which contains eight subdivisions: 1. Uni-colored marbles, including only the white and the black. 2. Variegated marbles; those with irregular spots or veins. 3. Madreporic marbles, presenting animal remains in the shape of white or gray spots, with irregularly disposed dots or stars in the centre. 4. Shell marbles; with only a few shells interspersed in the calcareous base. 5. Lumachella marbles, entirely composed of shells. 6. Cipolin marbles, containing veins of greenish talc. 7. Breccia marbles, formed of a number of angular fragments of different marbles, united by a common cement. 8. Pudding-stone marbles; a conglomerate of round pieces.

Of Cutting and Polishing Marble.—The marble saw is a thin plate of soft iron, continually supplied during its sawing motion, with water and the sharpest sand. The sawing of moderate pieces is performed by hand, but that of large slabs is most economically done by a proper mill.

The first substance used in the polishing process is the sharpest sand, which must be worked with till the surface becomes perfectly flat. Then a second, and even a third sand of increasing fineness is to be applied. The next substance is emery of progressive degrees of fineness, after which tripoli is employed; and the last polish is given with tin-putty. The body with which the sand is rubbed upon the marble, is usually a plate of iron; but for the subsequent process, a plate of lead is used with fine sand and emery. The polishing-rubbers are coarse linen cloths or bagging, wedged tight into an iron planing tool. In every step of the operation, a constant trickling supply of water is required.

Marbling, the method of preparing and coloring marbled paper. There are several kinds of marbled paper, but the principal difference between them consists in the forms in which the colors are laid on the ground; some being disposed in whirls or circumvolutions, others in jagged lengths, and others only in spots of a rounder oval figure. The general manner of managing each kind is, nevertheless, the same, namely, the dipping the paper in a solution of gum-tragacanth, or, as it is commonly called, gum-dragon, over which the colors, previously prepared with oxgall and spirit of wine, are first spread.

Marine, a general name for the navy of a kingdom or state, as also for the whole economy of naval affairs, or whatever respects the building, rigging, arming, equipping, navigating, and fighting of ships. It comprehends, likewise, the government of naval armaments, and the state of all the persons employed therein, whether civil or military.

Marines, or **Marine Forces,** a body of soldiers raised for the naval service, and trained to fight either in a naval engagement or in an action on shore.

Mariner's Compass. The Chinese ascribe the invention of the compass to their Emperor Hong-Ti, who, they say, was a grandson of Noah; and some of their historians refer the invention of it to a later date, 1115 B.C. The honor of its discovery, though much disputed, is generally given to Flavio de Gioja or Giovia, a native of Amalfi, an ancient commercial city of Naples, A.D. 1302. The variation of the needle was first discovered by Columbus in his voyages of discovery, 1492; and it was observed in London in 1580. The dipping-needle was invented by Robert Norman, a compass-maker of Ratcliffe in that year. See COMPASS; *Am. Jour. Sc.*, xl., 242.

Maritime Law. By maritime law is meant the law relating to harbors, ships, and seamen. It forms an important branch of the commercial law of all maritime nations. It is divided into a variety of different departments; such as those with respect to harbors, the property of ships, the duties and rights of masters and seamen, contracts of affreightment, average, salvage, etc. The reader will find these subjects treated of under their respective heads.

Sketch of the Progress of Maritime Law.—The earliest system of maritime law was supplied by the Rhodians, several centuries before the Christian era. The most celebrated authors of antiquity have spoken in high terms of the wisdom of the Rhodian laws; luckily, however, we are not wholly left, in forming our opinion upon them, to the vague, commendatory statements of Cicero and Strabo. (CICERO *pro Lege Manillia*; STRAB., lib. xiv.) The laws of Rhodes

were adopted by Augustus into the legislation of Rome; and such was the estimation in which they were held, that the Emperor Antoninus, being solicited to decide a contested point with respect to shipping, is reported to have answered, that it ought to be decided by the Rhodian laws, which were of paramount authority in such cases, unless they happened to be directly at variance with some regulation of the Roman law.—("*Ego quidem mundi dominus, lex autem maris legis id Rhodia, qua de rebus nauticis præscripta est, judicetur, quatenus nulla nostrarum legum adveratur. Hoc idem Divus quoque Augustus judicavit.*") The rule of the Rhodian law with respect to average contributions in the event of a sacrifice being made at sea for the safety of the ship and cargo, is expressly laid down in the Digest (lib. xlv.); and the most probable conclusion seems to be, that most of the regulations as to maritime affairs, embodied in the compilations of Justinian have been derived from the same source. The regulations as to average adopted by all modern nations, are borrowed, with hardly any alteration, from the Roman, or rather, as we have seen, from the Rhodian law!—a conclusive proof of the sagacity of those by whom they had been originally framed. The only authentic fragments of the Rhodian law are those in the Digest. The collection entitled *Jus navale Rhodiorum*, published at Bâle in 1561, is now admitted by all critics to be spurious. See *ante*, pp. 1188–1192.

The first modern code of maritime law is said to have been compiled at Amalfi, in Italy, a city at present in ruins; but which, besides being early distinguished for its commerce, will be forever famous for the discovery of the Pandects, and the supposed invention of the mariner's compass. The Amalfitan code is said to have been denominated *Tabula Amalfitana*. But if such a body of law really existed, it is singular that it should never have been published, nor even any extracts from it. M. Pardessus has shown that all the authors who have referred to the Amalfitan code and asserted its existence, have copied the statement of Freccia, in his book *De Subfeudis*. (*Collection des Lois Maritimes.*) And as Freccia assures us that the Amalfitan code continued to be followed in Naples at the time when he wrote (1570), it is difficult to suppose that it could have entirely disappeared; and it seems most probable, as nothing peculiar to it has ever transpired, that it consisted principally of the regulations laid down in the Roman law, which, it is known, preserved their ascendancy for a longer period in the south of Italy than any where else.

But, besides Amalfi, Venice, Marseilles, Pisa, Genoa, Barcelona, Valencia, and other towns of the Mediterranean, were early distinguished for the extent to which they carried commerce and navigation. In the absence of any positive information on the subject, it seems reasonable to suppose that their maritime laws would be principally borrowed from those of Rome, but with such alterations and modifications as might be deemed requisite to accommodate them to the particular views of each state. But whether in this or in some other way, it is certain that various conflicting regulations were established, which led to much confusion and uncertainty; and the experience of the inconveniences thence arising, doubtless contributed to the universal adoption of the *Consolato del Mare* as a code of maritime law. Nothing certain is known as to the origin of this code. Azuni (*Droit Maritime de l'Europe*, tome i., or rather Jorio, *Codice Ferdinando*, from whose work a large portion of Azuni's is literally translated) contends, in a very able dissertation, that the Pisans are entitled to the glory of having compiled the whole, or at least the greater part, of the *Consolato del Mare*. On the other hand, Don Antonio de Capmany, in his learned and excellent work on the commerce of Barcelona (*Antiguo Comercio de Barcelona*, tome i., pp. 170–183), has endeavored to show that the *Consolato* was compiled at Barcelona; and that it contains the rules according to which the consuls, which the Barcelonese had established in foreign places so early as 1268, were to render their decisions. It is certain that the *Consolato* was printed for the first time at Barcelona, in 1502; and that the early Italian and French editions are translations from the Catalan. Azuni has, indeed, sufficiently proved that the Pisans had a code of maritime laws at a very early period, and that several of the regulations in it are substantially the same as those in the *Consolato*. But it does not appear that the Barcelonese were aware of the regulations of the Pisans, or that the resemblance between them and those in the *Consolato* is more than accidental; or may not fairly be ascribed to the concurrence that can hardly fail to obtain among well-informed persons legislating upon the same topics, and influenced by principles and practices derived from the civil law.

M. Pardessus, in the second volume of his excellent work already referred to, appears to have been sufficiently disposed, had there been any grounds to go upon, to set up a claim in favor of Marseilles to the honor of being the birth-place of the *Consolato*; but he candidly admits that such a pretension could not be supported, and unwillingly adheres to Capmany's opinion. "Quoique Français," says he, "quoique portée par des sentimens de reconnoissance, qu'aucun évènement ne sauroit affoiblir, à faire valoir tout ce qui est en faveur de Marseilles, je dois reconnoître franchement que les probabilités l'emportent en faveur de Barcelone." —Tome ii. But to whichever city the honor of compiling the *Consolato* may be due, there can be no doubt that its antiquity has been greatly exaggerated. It is affirmed, in a preface to the different editions, that it was solemnly accepted, subscribed and promulgated, as body of maritime law, by the Holy See in 1075, and by the kings of France and other potentates at different periods between 1075 and 1270. But Capmany, Azuni, and Pardessus, have shown in the clearest and most satisfactory manner that the circumstances alluded to in this sketch could not possibly have taken place, and that it is wholly unworthy of attention. The most probable opinion seems to be, that it was compiled, and began to be introduced about the end of the 13th or beginning of the 14th century. And notwithstanding its prolixity, and the want of precision and clearness, the correspondence of the greater number of its rules with the ascertained principles of justice and public utility, gradually led, without the intervention of any agreement, to its adoption as a system of maritime jurisprudence by all the nations contiguous to the Mediterranean. It is still of high authority. Casaregis says of it, though perhaps, too strongly, "*Consulatus maris, in materiis maritimis, tanquam universalis consuetudo habens vim legis, inviolabiliter attendenda est apud omnes provincias et nationes.*"—Disc. 214.

The collection of sea laws next in celebrity, but anterior, perhaps, in point of time, is that denominated the *Roole des Jugements d'Oleron*. There is as much diversity of opinion as to the origin of these laws, as there is with respect to the origin of the *Consolato*. The prevailing opinion in Great Britain has been, that they were compiled by direction of Queen Eleanor, wife of Henry II., in her quality of Duchess of Guienne; and that they were afterward enlarged and improved by her son Richard I., at his return from the Holy Land; but this statement is now admitted to rest on no good foundation. The most probable theory seems to be, that they are a collection of the rules or practices followed at the principal French ports on the Atlantic, as Bordeaux, Rochelle, St. Malo, etc. They contain, indeed, rules that are essential to all maritime transactions, wherever they may be carried on; but the references in the code sufficiently prove that it is of French origin. The circumstance of that

monarch's having large possessions in France at the period when the Rules of Oleron were collected, naturally facilitated their introduction into England; and they have long enjoyed a very high degree of authority in that country. "I call them the laws of Oleron," said a great civilian (*Sir Leoline Jenkins, Charge to the Cinque Ports*), "not but that they are peculiarly enough English, being long since incorporated into the customs and statutes of our admiralties; but the equity of them is so great, and the use and reason of them so general, that they are known and received all the world over by that, rather than by any other name." Molloy, however, has more correctly, perhaps, said of the laws of Oleron, that "they never obtained any other or greater force than those of Rhodes formerly did; that is, they were esteemed for the reason and equity found in them, and applied to the case emergent."—*De Jure Maritimo et Navali.*

A code of maritime law issued by Wisby, in the island of Gothland, in the Baltic, has long enjoyed a high reputation in the north. The date of its compilation is uncertain; but it is comparatively modern. It is true that some of the northern jurists contend that the laws of Wisby are older than the Rules of Oleron, and that the latter are chiefly copied from the former! But it has been repeatedly shown that there is not so much as the shadow of a foundation for this statement. See PARDESSUS, *Collection, etc.*, tome i., pp. 425, 462; *Foreign Quarterly Review*, No. 13, art. *Hanseatic League.* The laws of Wisby are not certainly older than the latter part of the 14th or beginning of the 15th century; and have obviously been compiled from the *Consolato del Mare*, the Rules of Oleron, and other codes that were then in use. Gretius has spoken of these laws in the most laudatory manner:—"*Quæ de maritimis negotiis*," says he, "*insulæ Gothlandiæ habitatoribus placuerunt, tantum in se habent, tum equitatis, tum prudentiæ, ut omnes oceani accolæ eo, non tanquam proprio, sed velut gentium jure, utantur.*"—*Prolegomena ad Procopium*, p. 64.

Besides the codes now mentioned, the ordinances of the Hanse Towns, issued in 1597 and 1614, contain a system of laws relating to navigation that is of great authority. The judgments of Damme, the customs of Amsterdam, etc., are also often quoted. A translation of the law of Oleron, Wisby, and the Hanse Towns, is given in the 3d edition of Malynes's *Lex Mercatoria*, but the edition of them in the work of M. Pardessus, referred to in the text, is infinitely superior to every other. But by far the most complete and well-digested system of maritime jurisprudence that has ever appeared, is that comprised in the famous *Ordonnance de la Marine* issued by Louis XIV., in 1681. This excellent code was compiled under the direction of M. Colbert, by individuals of great talent and learning, after a careful revision of all the ancient sea laws of France and other countries, and upon consultation with the different parliaments, the courts of admiralty, and the chambers of commerce, of the different towns. It combines whatever experience and the wisdom of ages had shown to be best in the Roman laws, and in the institutions of the modern maritime states of Europe. In the preface to his treatise on the *Law of Shipping*, Lord Tenterden says:—"If the reader should be offended at the frequent references to this ordinance, I must request him to recollect that those references are made to the maritime code of a great commercial nation, which has contributed much of its national prosperity to that code: a code composed in the reign of a politic prince; under the auspices of a wise and enlightened minister; by laborious and learned persons, who selected the most valuable principles of all the maritime laws then existing; and which, in matter, method, and style, is one of the most finished acts of legislation that ever was promulgated." The ordinance of 1681 was published in 1760, with a detailed and most elaborate commentary by M. Valin, in 2 volumes, 4to. It is impossible which to admire most in this commentary, the learning or the sound good sense of the writer. Lord Mansfield was indebted for no inconsiderable portion of his superior knowledge of the principles of maritime jurisprudence to a careful study of M. Valin's work.

That part of the *Code de Commerce* which treats of maritime affairs, insurance, etc., is copied with very little alteration, from the ordinance of 1681. The few changes that have been made are not always improvements. No system or code of maritime law has ever been issued by authority in Great Britain. The laws and practices that now obtain among them, in reference to maritime affairs have been founded principally on the practices of merchants, the principles laid down in the civil law, the laws of Oleron and Wisby, the works of distinguished jurisconsults, the judicial decisions of their own and foreign countries, etc. A law so constructed has necessarily been in a progressive state of improvement; and, though still susceptible of amendment, it corresponds, at this moment, more nearly, perhaps, than any other system of maritime law, with those universally recognized principles of justice and general convenience by which the transactions of merchants and navigators ought to be regulated. The decisions of Lord Mansfield did much to fix the principles, and to improve and perfect the maritime law of England. It is also under great obligations to Lord Stowell. The decisions of the latter chiefly, indeed, respect questions of neutrality, growing out of the conflicting pretensions of belligerents and neutrals during the late war; but the principles and doctrines which he unfolds in treating those questions, throw a strong and steady light on those branches of maritime law. It has occasionally, indeed, been alleged—and the allegation is probably, in some degree well founded—that his lordship has conceded too much to the claims of belligerents. Still, however, his judgments must be regarded, allowing for this excusable bias, as among the noblest monuments of judicial wisdom of which any country can boast. "They will be contemplated," says Mr. Serjeant Marshall, "with applause and veneration, as long as depth of learning, soundness of argument, enlightened wisdom, and the chaste beauties of eloquence, hold any place in the estimation of mankind."—*On Insurance*, Prelim. Disc. The *Treatise of the Law Relative to Merchant Ships and Seamen*, by the late Chief Justice of the Court of King's Bench, does credit to the talents, erudition, and liberality of its noble and learned author. It gives, within a brief compass, a clear and admirable exposition of the most important branches of our maritime law; and may be consulted with equal facility and advantage by the merchant, the general scholar, and the lawyer. Mr. Serjeant Marshall has entered very fully into some, and has touched upon most points of maritime law, in his work on *Insurance*; and has discussed them with great learning and sagacity. The works of Mr. Justice Park, Mr. Holt, and a few others, are also valuable. Of the earlier treatises, the *Lex Mercatoria* of Malynes is by far the best; and, considering the period of its publication (1622), is a very extraordinary performance. See *North Am. Rev.*, vi., 323 (J. STORY), ii., 218, xiii., 1 (H. WHEATON); *Hunt's Mag.*, xiii., 232, 455, x., 337, ix., 261,-358, 543, xiv., 547, xv., 75, xxiv., 191.

The marine law of the United States is the same as the marine law of Europe. It is not the law of a particular country, but the general law of nations; and Lord Mansfield applied to its universal adoption the expressive language of Cicero, when speaking of the eternal laws of justice: "Nec erit alia lex Romæ, alia Athenis; alia nunc, alia posthac; sed et omnes gentes, et omni tempore una lex et sempiterna, et immortalis continebit."

In treating of this law, we refer to its pacific character as the law of commerce and navigation in time of peace. The respective rights of belligerents and neu-

trals in time of war constitute the code of prize law, and that forms a distinct law of inquiry. When Lord Mansfield mentioned the law-merchant as being a branch of public law, it was because that law did not rest essentially for its character and authority on the positive institutions and local customs of any particular country, but consisted of certain principles of equity, and usages of trade, which general commerce and a common sense of justice had established to regulate the dealings of merchants and mariners in all the commercial countries of the civilized world.

In the study and cultivation of maritime law our improvement has been rapid, and our career illustrious, since the adoption of the present Constitution of the United States. The decisions in federal courts, in commercial cases, have done credit to the intellectual and moral character of the nation, and the admiralty courts in particular have displayed great research and a familiar knowledge of the principles of the marine law of Europe.

The reports of judicial decisions in the several States, and especially in the States of Massachusetts, New York, and Pennsylvania, evince great attention to maritime questions; and they contain abundant proofs that our courts have been dealing largely with that business of our enterprising and commercial people.

Declaration respecting Maritime Law signed by the Plenipotentiaries of Great Britain, Austria, France, Prussia, Russia, Sardinia, and Turkey, assembled in Congress at Paris, April 16, 1856:

The plenipotentiaries who signed the Treaty of Paris, on the 30th of March, 1856, assembled in conference, considering: That maritime law in time of war has long been the subject of deplorable disputes; that the uncertainty of the law and of the duties in such a matter gives rise to differences of opinion between neutrals and belligerents which may occasion serious difficulties, and even conflicts; that it is, consequently, advantageous to establish a uniform doctrine on so important a point; that the plenipotentiaries assembled in Congress at Paris can not better respond to the intentions by which their governments are animated, than by seeking to introduce into international relations fixed principles in this respect. The above-mentioned plenipotentiaries, being duly authorized, resolved to concert among themselves as to the means of attaining this object; and having come to an agreement, have adopted the following solemn declarations:

1. Privateering is, and remains, abolished. 2. The neutral flag covers enemies' goods, with the exception of contraband of war. 3. The neutral goods, with the exception of contraband of war, are not liable to capture under enemy's flag. 4. Blockades, in order to be binding, must be effective; that is to say, maintained by a force sufficient really to prevent access to the coast by the enemy.

The governments of the undersigned plenipotentiaries engage to bring the present declaration to the knowledge of the States which have not taken part in the Congress of Paris, and invite them to accede to it. Convinced that the maxims which they now proclaim can not but be received with gratitude by the whole world, the undersigned plenipotentiaries doubt not that the efforts of their governments to obtain the general adoption thereof will be crowned with full success. The present declaration is not, and shall not be binding, except between those powers who have acceded or shall accede to it.

Done at Paris the 16th of April, 1856.

(Signed,)

Buol-Schauenstein,	Hatzfeldt,
Hubner,	Orloff,
Walewski,	Brunnow,
Bourqueney,	Cavour,
Clarendon,	De Villamarina,
Cowley,	Aali,
Manteuffel,	Mehemmed Djemil.

The United States' Executive, through the Department of State, communicated to the French government its reply in August 1856, viz.:

These four points are *indivisible*, because he can not accept the first point—the abolition of privateering. Governor Marcy respectfully proposes, however, two distinct amendments:

1. Either to add to the *first* proposition in the "declaration" of the Congress of Paris—

"And that the private property of the subjects or citizens of a belligerent on the high seas shall be exempted from seizure by public armed vessels of the other belligerents, except it be contraband," or

2d. To adopt the 2d, 3d, and 4th propositions, without the first.

The argument contained in the reply of Governor Marcy is historical, argumentative, and forcible.

It goes to say, that no nation has a right to prescribe to another what shall constitute her military or naval force; and that we can, consistently with our institutions and policy, neither agree not to employ volunteers on land, nor privateers on the high seas. When a nation having a large standing army is threatening a nation with a small standing army, the latter must have recourse to volunteers; and so when a nation with a large navy, makes war on another with an inferior navy, the latter must have recourse to privateers, otherwise the nation with a large navy could employ a portion of her navy to keep the inferior navy of her enemy in check, and with the rest sweep the commerce of the latter from the ocean. Parity of position could only be reached if the armed cruisers of the superior navy and other national ships of war would forego making captures of the enemy's property on the high seas, or if the nation with an inferior navy armed privateers to inflict as much damage on the commerce of the greater naval power as the latter does on its inferior enemy. The concluding portion of Mr. Marcy's reply is as follows:

"In discussing the effect of the proposed measure—the abolition of privateering—a reference to the existing condition of nations is almost unavoidable. An instance will at once present itself in regard to two nations where the commerce of each is about equal, and about equally wide-spread over the world. As commercial powers they approach to an equality, but as naval powers there is great disparity between them. The regular navy of one vastly exceeds that of the other. In case of war between them only an inconsiderable part of the navy of the one would be required to prevent that of the other from being used for defense or aggression, while the remainder would be devoted to the unembarrassed employment of destroying the commerce of the weaker in naval strength. The fatal consequence of this great inequality of naval force between two such belligerents would be in part remedied by the use of privateers; in that case, while either might assail the commerce of the other in every sea, they would be obliged to distribute and employ their respective navies in the work of protection. This statement only illustrates what would be the case, with some modification, in every war where there may be considerable disparity in the naval strength of the belligerents.

"History throws much light upon the question. France, at an early period, was without a navy; and in her wars with Great Britain and Spain, both naval powers, she resorted, with signal good effect, to privateering, not only for protection, but successful aggression. She obtained many privateers from Holland, and by this force gained decided advantages on the ocean over her enemy. While in that condition France could hardly have been expected to originate or concur in a proposition to abolish privateering. The condition of many of the smaller States of the world is now, in relation to naval powers, not much unlike that of France in the middle of the 16th century.

At a later period, during the reign of Louis XIV., several expeditions were fitted out by him, composed wholly of privateers, which were most effectively employed in prosecuting hostilities with naval powers. Those who may have at any time a control on the ocean will be strongly tempted to regulate its use in a manner to subserve their own interests and ambitious projects. The ocean is the common property of all nations; and instead of yielding to a measure which will be likely to secure to a few—possibly to one—an ascendancy over it, each should pertinaciously retain all the means it possesses to defend the common heritage. A predominant power upon the ocean is more menacing to the well being of others than such a power on land; and all are alike interested in resisting a measure calculated to facilitate the permanent establishment of such a domination, whether to be wielded by one power or shared among a few others. The injuries likely to result from surrendering the dominion of the seas to one or a few nations which have powerful navies, arise mainly from the practice of subjecting private property on the ocean to seizure by belligerents. Justice and humanity demand this practice should be abandoned, and that the rules in relation to such property on land should be extended to it when found upon the high seas.

"The President, therefore, proposes to add to the first proposition in the 'Declaration' of the Congress at Paris the following words: 'And that the private property of the subjects or citizens of the belligerent on the high seas shall be exempted from seizure by public armed vessels of the other belligerent, except it be contraband.' Thus amended, the government of the United States will adopt it, together with the other three principles contained in that 'Declaration.' I am directed to communicate the approval of the President to the second, third, and fourth propositions, independently of the first, should the amendment be unacceptable. The amendment is recommended by so many powerful considerations, and the principle which calls for it has so long had the emphatic sanction of all enlightened nations in military operations on land, that the President is reluctant to believe it will meet with any serious opposition. Without the proposed modification of the first principle, he can not convince himself that it would be wise or safe to change the existing law in regard to the right of privateering.

"If the amendment should not be adopted, it will be proper for the United States to have some understanding in regard to the treatment of their privateers when they shall have occasion to visit the ports of those powers which are or may become parties to the declaration to the Congress at Paris. The United States will, upon the ground of right and comity, claim for them the same consideration to which they are entitled, and which was extended to them under the law of nations, before the attempted modification of it by that Congress.

"As connected with the subject herein discussed, it is not inappropriate to remark that a due regard to the fair claims of the neutrals would seem to require some modification, if not an abandonment, of the doctrine in relation to contraband trade. Nations which preserve the relations of peace should not be injuriously affected in their commercial intercourse by those which choose to involve themselves in war, provided the citizens of such peaceful nations do not compromise their character as neutrals by direct interference with the military operations of the belligerents. The laws of siege and blockade, it is believed, afford all the remedies against neutrals that the parties to war can justly claim. These laws interdict all trade with the besieged or blockaded places. A further interference with the ordinary pursuits of neutrals, in nowise to blame for an existing state of hostilities, is contrary to the obvious dictates of justice. If this view of the subject could be adopted, and practically observed by all civilized nations, the right of search, which has been the source of so much annoyance, and of so many injuries to neutral commerce, would be restricted to such cases only as justified a suspicion of an attempt to trade with places actually in a state of siege or blockade.

"Humanity and justice demand that the calamities incident to war should be strictly limited to the belligerents themselves, and to those who voluntarily take part with them; but neutrals, abstaining in good faith from such complicity, ought to be left to pursue their ordinary trade with either belligerent without restrictions in respect to the articles entering into it.

"Though the United States do not propose to embarrass the other pending negotiations relative to the rights of neutrals, by pressing this change in the law of contraband, they will be ready to give it their sanction whenever there is a prospect of its favorable reception by other maritime powers.

"The undersigned avails himself of this opportunity to renew to the Count de Sartiges the assurance of his high consideration.

"W. L. MARCY."

The points here settled are all of them important. Privateering has been the scourge of the ocean—a lawless sort of warfare between belligerents themselves—a grievous annoyance and damage to neutrals, and a most prolific school of piracy. Those whose recollection extends back 30 or 40 years remember when the ocean was traversed by pirates, trained for their fiendish business by the long wars of the earlier years of the century. The best men of modern Christendom had never ceased to protest against the system. Sweden and Holland attempted, in the 17th century, to put an end to the practice, but without effect. The United States and Prussia, in 1785, entered into stipulations against privateering, as between themselves, but did not renew the provision. The French Legislature, in 1792, made a similar, but fruitless effort. Privateering was destined to have one license more for perpetrating its atrocities, and shocking the sense of mankind. Jurists lamented the practice, but were forced to acknowledge it a part of the law of nations, and gave up in despair all expectation of an early abandonment of the legalized outrage.

When the late war between the United States and Mexico occurred, it was matter of general gratulation that the circumstances of the case saved the world from the curse of privateering; and much more did the world rejoice, at the commencement of the late European war, when England and France announced their intention to grant no letters of marque. With the conclusion of that war—as part of the conclusion, indeed—we have the solemn compact of the great powers of Europe, that "privateering is, and remains, abolished." It is an important step in the progress of humanity.

The declaration that "the neutral flag covers enemies' goods, with the exception of contraband of war," diminishes greatly the liabilities of the world to future strifes. Until the breaking out of the recent war, Great Britain had steadily maintained the contrary doctrine as the law of nations. The Empress of Russia, in 1780, set forth precisely the doctrine of the late Paris Conference, and gained the concurrence of most of the States of Europe, and of the government of the United States. Great Britain refused to yield, and the other nations, one after another, submitted to the interpretations of that power. Even Russia herself conceded that point, and in 1801 agreed, by treaty, that an enemy's property was not protected in neutral ships. Jurists, our own with the rest, regarded the question of international law as settled on the British interpretation. The qualified accession of England, in the Declaration of 1854, to the principles of the Armed

Neutrality occasioned, therefore, general and gratifying surprise. It then entered the minds of none, however, that within two years she would make her full accession to those principles, by a compact with those very powers against whom, on this same question, she had leveled the broadsides of her fleets. In regard to this particular, Russia is the victorious party, and her triumph is a note of human progress. Turkey, too, has a proud distinction in this declaration, for in settling the point that free ships make free goods, she is but publishing anew what she was the first to declare 250 years ago. The labors of our own government have been in the same direction through the whole period of our national history. Our government, while admitting the English rule as to the law of nations, has declared that the rule had no foundation in natural right, and in repeated treaties has gained the insertion of the doctrine now proclaimed in Paris.

The third item in the late Declaration has been less the occasion of differences than the second. The fourth is a conclusive testimony against "paper blockades."

Whether our government will "accede" in form to the points named may be doubted, though every one of them is a concession to principles or usages for which we have contended, and all, it may be hoped, will have our uniform and hearty practical concurrence. It has been generally the policy of our statesmen to keep our government clear from alliances which might, under any circumstances, be embarrassing, and that disposition may demand for us, even in this instance, an attitude of independence. However this may be, the moral sense of the nation will accept with thankfulness the results of the Paris Conference, and the Christian will see new foretokenings of that day when nations shall learn war no more.

Maritime Loans. The contracts of *bottomry* and *respondentia* are maritime loans of a very high and privileged nature, and they are always upheld by the admiralty with a strong hand, when entered into *bonâ fide*, and without any suspicion of fraud. The principle on which they are founded and supported is of great antiquity, and penetrates so deeply into it, that Emerigon says its origin can not be traced. It was borrowed by the Romans from the ancient Rhodians, and it is deeply rooted in the maritime general law of Europe, from which it has been transplanted into the law of this country. The object of hypothecation bonds is to procure the necessary supplies for ships which happen to be in distress in foreign ports, where the master and owners are without credit, and in cases in which, if assistance could not be procured by means of such instruments, the vessels and cargoes must be left to perish. The authority of the master to hypothecate the ship and freight, and even the cargo, in a case of necessity, is indisputable. The vital principle of a bottomry bond is, that it be taken in a case of unprovided necessity when the owner has no resources or credit for obtaining necessary supplies. If the lender knew that the owner had an empowered consignee or agent in the port, willing to supply his wants, the taking the loan is a fraud; but if fairly taken under an ignorance of the fact, the courts of admiralty are disposed to uphold such bonds, as necessary for the support of commerce in its extremities of distress. And if the lender of money on a bottomry or respondentia bond be willing to stake the money upon the safe arrival of the ship or cargo, and to take upon himself, like an insurer, the risk of sea perils, it is lawful, reasonable, and just, that he should be authorized to demand and receive an extraordinary interest, to be agreed upon, and which the lender shall deem commensurate to the hazard he runs.

A *bottomry bond* is a loan of money upon the ship or ship and accruing freight, at an extraordinary interest, upon maritime risks, to be borne by the lender for a specific voyage, or for a definite period. It is in the nature of a mortgage, by which the ship-owner, or the master on his behalf, pled, as the ship as a security for the money borrowed, and it covers the freight of the voyage, or during a limited time. A *respondentia* bond is a loan upon the pledge of the cargo, though an hypothecation of both ship and cargo may be made in one bond; and it amounts at most to an equitable lien on the salvage in case of loss. The condition of the loan is the safe arrival of the subject hypothecated, and the entire principle as well as interest is at the risk of the lender during the voyage. The bottomry holder undertakes the risk of the voyage as to the enumerated perils, but not as to those which arise from the fault or misconduct of the master or owner. The money is loaned to the borrower, upon condition that if the subject pledged be lost by a peril of the sea, the lender shall not be repaid, except to the extent of what remains, and if the subject arrives safe, or if it shall not have been injured, except by its own defect, or the fault of the master or mariners, the borrower must return the sum borrowed, together with the maritime interest agreed upon, and for the repayment the person of the borrower is bound, as well as the property pledged. This is the definition of the contract given by Pothier, and it was taken from the Roman laws, and has been adopted by Emerigon, and he says the definition is given in nearly the same terms by all the maritime jurists.—KENT's *Com.*

Mark, or **Marc**, a weight used in several parts of Europe, for various commodities, especially gold and silver. In France, the mark was divided into 8 ozs. =64 drachms=192 deniers or pennyweights=4,608 grains. In Holland, the mark weight was also called Troy weight, and was equal to that of France. When gold and silver are sold by the mark, it is divided into 24 carats.

The pound, or *livre poids de marc*, the weight most commonly used in retail dealings throughout France, previous to the Revolution, was equal to 2 marcs, and consequently contained 16 ozs.=182 drachms=384 den.=9,216 grains. One kilogramme is nearly equal to 2 livres. Subjoined is a table of livres, *poids de marc*, from 1 to 10, converted into kilogrammes. Any greater number may be learned by a simple multiplication and addition.

Livres.		Kilog.	Livres.		Kilog.
1	=	0·4895	6	=	2·9370
2	=	0·9790	7	=	3·4265
3	=	1·4685	8	=	3·9160
4	=	1·9580	9	=	4·4056
5	=	2·4475	10	=	4·8951

Mark, is a term sometimes used for a money of account, and in some countries for a coin. The English mark is ⅔ds of a pound sterling, or 13s. 4d.; and the Scotch mark is ⅔ds of a pound Scotch. The mark Lubs, or Lubec mark, used at Hamburg, is a money of account, equal to 29½ cents. See HAMBURG.

Market, a public place in a city or town, where provisions are sold. No market is to be kept within 7 miles of the city of London; but all butchers, victualers, etc., may hire stalls and standings in the flesh-markets there, and sell meat and other provisions. Every person who has a market is entitled to receive toll for the things sold in it; and by ancient custom, for things standing in the market, though not sold; but those who keep a market in any other manner than it is granted, or extort tolls or fees where none are due, forfeit the same. See FAIRS.

Marseilles, a large commercial city and sea-port of France, on the Mediterranean, lat. 43° 17′ 49″ N., long. 5° 22½′ E. Population, 1851, including suburbs, 195,257. The harbor, the access to which is defended by several strong fortifications, is in the centre of the city, forming a basis 525 fathoms in length, by about 152 fathoms in breadth. The tide is hardly sensible; but the depth of water at the entrance to the harbor varies from 16 to 18 feet, being lowest when the wind is north-west, and highest when it is

south-west. Within the basin, the depth of water varies from 12 to 24 feet, being shallowest on the north, and deepest on the south side. Dredging machines are constantly at work to clear out the mud, and to prevent the harbor from filling up. Though not accessible to the largest class of ships, Marseilles is one of the best and safest ports in the world for moderate-sized merchantmen, of which it will accommodate above 1000. Ships in the basin lie close alongside the quays; and there is every facility for getting them speedily loaded and unloaded. The Isles de Rattonneau and Pomegues, and the strongly fortified islet or rock of If, lie W.S.W. from the port; the latter, which is the nearest to it, being only 1½ miles distant, and not more than ¾ of a mile from the projecting point of land to the south of the city. There is good anchorage ground for men-of-war and other large ships between the Isles de Rattonneau and Pomegues, to the west of the Isle d'If. When coming from the south, it is usual to make the Isle de Planier, in lat. 43° 11′ 54″ N., long. 5° 13′ 59″ E. A light-house erected on this island is 131 feet high; the flashes of the light, which is a revolving one, succeed each other every half minute, and in clear weather it may be seen 7 leagues off. Ships that have made the Isle de Planier, or that of Le Maire, lying east from it about 4½ miles, steer northerly for the Isle d'If, distant about 7 miles from each, and having got within ¼ or ½ a mile of it, heave to for a pilot, who carries them into a harbor; it is not, however, obligatory on ships to take a pilot on board; but being obliged to pay for one whether they avail themselves of his services or not, they seldom dispense with them. The charge is 4 sous per ton in, and 2 sous per ton out, for French vessels, and the vessels having reciprocity treaties with France. There is a light-house in the fort St. Jean, on the north side of the entrance of the port. The *lazaretto*, which is one of the best in Europe, lies a little to the north of the city; and there is an hospital on Rattoneau Island, for individuals whose health is dubious. With the exception of the above charge for pilotage, and the charges for such vessels as perform quarantine, there are no port charges on ships entering at or clearing out from Marseilles.

Usages.—As soon as the master has, on his arrival, made his declaration at the Health Office, and received *pratique*, he is directed to an office close by, called the Patache, where he makes two similar declarations, the one for the captain of the port, and the other for the custom-house; the day and hour of the latter being made is marked, in order to ascertain if the regular manifest of his cargo is delivered at the custom-house within 24 hours after, as required by law. As soon as these declarations are made, the master is accosted by one or more public brokers, who alone are authorized by law to enter ships at the custom-house and other public offices, and to interpret, if it be necessary, for the master. The broker whom he may select then gives the master all the necessary information respecting the usages of the port as regards the ship and cargo, and goes through all the formalities respecting them that the law or local regulations require. Independent of the regular manifest which it is usual in all ports for the master to give in to the custom-house, he is here required to give in a full and complete list of all the ship's stores, provisions, etc., that he has on board for his own use, and that of his crew; and he can not be too careful to make this list as correct as possible, as when it is subsequently verified on board by the custom-house and excise officers, any variation subjects the ship to penalties. This is particularly the case with tobacco, which, being a government monopoly, is watched with the greatest vigilance. *All* the tobacco on board over that which the crew have in their chests for their own use, must be declared, and any attempt at concealment or smuggling is visited with heavy fines. When the ship sails, the stores, provisions, etc., are again examined, and an excise duty charged on such provisions and other excisable articles as may have been consumed in the port. No fire or light is allowed on board, and the cooking is all done on shore. Marseilles is a city of great antiquity, and has long enjoyed a very extensive commerce. Havre, partly, no doubt, from its being, as it were, the port of Paris, used to enjoy a greater share of the trade of France; but, notwithstanding the increased importance of the former, it has recently been surpassed by Marseilles. The customs duties collected at Havre in 1851, were 26,164,000 francs, whereas those collected at Marseilles during the same year amounted to 30,677,000 francs; having increased to that amount from 25,899,000 francs in 1830.

This statement shows conclusively, that the trade of Marseilles is not only increasing, but that it is already very extensive. She is the grand emporium of the south of France, and the centre of 9-10ths of her commerce with the countries on the Mediterranean and Black Sea. The exports consist principally of silk stuffs, wines, brandies, and liquors; woolens and linens; madder, oil, soap, refined sugar, perfumery, stationery, verdigris, and all sorts of colonial products. Among the principal imports are sugar, coffee, and other colonial products; dye stuffs; corn from the Black Sea and the north coast of Africa; cotton from Egypt and America; coal, linen, thread, and various descriptions of manufactured goods from England; with hides, wool, tallow, timber, etc. Marseilles engrosses almost the whole trade between France and Algiers. She is now also the principal seat of the intercourse carried on by steamers with Malta, Alexandria, and Constantinople; and besides the steamers employed by the government as packets, she ran upward of 28 steamers belonging to private companies. Mr. Maclaren says that in 1839 most of the latter had English-made engines, and English engineers; and that they burnt English coal, which sold here for about 30s. a ton. There belonged to the port, on the 31st of December, 1851, 684 sailing vessels of the burden of 63,577 tons; and 43 steamers of the burden of 9,565 tons. A joint-stock bank established here in 1835 is said to have been exceedingly successful.

Account of the Shipping which arrived at and departed from Marseilles in 1847, specifying the Countries to which the Ships belonged, and the Number, Tonnage, and Crews of those belonging to each.

Countries.	Arrivals.		Departures.	
	Vessels	Tonnage.	Vessels	Tonnage.
Great Britain	242	44,405	280	52,829
France	2,247	366,592	2,038	331,858
America	54	15,578	54	15,578
Austria	434	112,268	442	104,943
Brazil	2	547	1	287
Belgium	5	505	6	588
Chili	2	596	1	277
Denmark	16	1,688	13	1,947
Holland	19	2,810	23	2,930
Greece	770	163,572	771	163,812
Hanover	4	260	4	260
Hanseatic Towns	8	1,220	8	1,220
Lucca	66	8,185	63	3,276
Mecklenburg Schwerin	2	239	3	429
Morocco	69	1,109	69	1,109
Naples	554	127,456	576	134,817
Portugal	5	822	5	822
Prussia	10	2,882	10	2,882
Roman States	40	5,086	42	5,283
Russia	208	63,592	204	63,096
Sardinia	845	84,909	820	88,567
Spain	517	45,718	522	46,828
Sweden and Norway	96	24,383	107	27,617
Turkey	124	29,048	160	30,043
Tuscany	80	9,322	71	8,927
Venezuela	1	170	1	170
Total	6,445	1,107,389	6,804	1,090,395

The arrivals and departures in this and the preceding year are considerably above the average, a consequence of the great importations of foreign corn. In

1846 the imports of wheat amounted to 1,290,000 quarters, and in 1847 to above 2,200,000 quarters.

We are unable to lay before the reader any very recent account of the import and export trade of Marseilles. We believe, however, that the value of the first was, in 1853, estimated at about 200,000,000 francs, and that of the exports at about as much. For information as to money, weights, measures, duties, etc., the reader is referred to FRANCE and HAVRE, under which heads he will find an account of the trade of France.

The trade of Marseilles has been much increased by the occupation of Algiers, she being the grand centre of the intercourse carried on with that country. But independently of this circumstance, Marseilles engrosses by far the largest share of the extensive commerce carried on between France and the east coast of Spain, Italy, Greece, and the Levant. See FRANCE.

Martinico, or Martinique, one of the French West India Islands, in the windward group, between lat. 14° 24′ and 14° 53′ N., and long. 60° 50′ and 61° 18′ W. Population, 1850, 121,145. It is mountainous, and contains several extinct volcanoes; the numerous small rivers are used to turn sugar-mills. About one quarter of the surface is covered with dense forests. Soil fertile, but only one fifth of the superficies is cultivated. Chief products, sugar, coffee, and acao. This island, called by the natives Madiana, was discovered by the Spaniards in 1493. The French founded a colony on it in 1635. It was taken by the English in 1762, but resigned in 1763; they again occupied it from 1794 to 1809, and it was finally given up to France in 1814. The capital of the colony is Port Royal, but St. Pierre is the most populous town and the centre of commerce. The island is nearly 50 miles in length by about 16 in breadth, and comprehends an area of 360 square miles. The surface is uneven, and intersected in all parts by steep and rugged rocks. Piton de Corbet, one of the highest, is about 812 feet above the level of the sea. The shape of this calcareous hill resembles a cone, and it is on that account very difficult of access. The palm-trees with which it is covered, become more lofty and abundant near the summit, and these continually attract the clouds, which occasion noxious damps, and contribute to render it more rugged in appearance, and more dangerous to ascend. There are also two other mountains conspicuous from their elevation, and from these, particularly from the first, descend numerous streams, which irrigate the island. Martinique is better supplied with water, and less exposed to hurricanes than Guadaloupe, while the productions are nearly the same. Of 75,821 hectares, the superficial area of the island, 17,622 are employed in raising sugar-cane, 3861 in coffee, 719 in cocoa, 491 in cotton, 17,191 are pasturage, and 19,997 are woods. The annual production is valued at 21,000,000 francs. In 1824 the island consumed French products to the value of 16,000,000 francs, and exported to the mother country goods to the amount of 18,000,000 francs. The tonnage engaged in this commerce amounted to 33,500 tons. The revenue in 1823, was 4,000,000 francs. The commerce of Martinique has continued nearly the same since the period at which the above estimate was made.

Port Royal, the capital and seat of the courts of justice of Martinique, is situated on one of the several bays which indent the island, and possess one of the safest and most capacious harbors in the West Indies, or even in the world.

The commercial relations of Martinique and Guadaloupe are regulated by the royal decree of February 5, 1826, and by such other decrees as have subsequently been promulgated. Foreign and national ships may import into all open ports of the islands (in Martinique, the ports of St. Pierre, Port Royal, and Trinité; in Guadaloupe, Moule, La Basseterre, and Poin-à-Pitre; and in Mariegalante, or Grandbourg, the principal town and only port of the island), articles of merchandise enumerated in the following tariff:

TARIFF FOR ALL FLAGS, NATIONAL AND FOREIGN.

Denomination of merch.	No., weight or measure.	Rate of duty.
Animals, living		10 per ct. ad val.
Beef, salt	100 kilos. = 220 lbs.	$2 80 4-5
Codfish & other salt fish	" "	1 30 1-5
Indian corn, in grain	1 hect. = 2 4-5 bush.	87 1-5
Vegetables, dried	" "	64 4-5
Rice	220 lbs.	1 30 1-5
Salt	"	98
Tobacco		7 per ct. ad val.
Hoop-poles	1,000	$1 86
Wine, foreign	1 hect. = 26 gals.	In for. sbtps, 93 c. In nat. " 4 6-5c.
Stone coal	220 lbs.	$0 02

By decree of March 10, 1855, salted provisions (meats) of every description pay only 50 centimes (9·8 cents) per 100 kilogrammes. Wood of all sorts, other than hoop-poles; tar, pitch, and other extracts of pine, etc.; hides, with the hair on; forage, green and dry; table fruits, and seeds, pay 4 per cent. ad valorem.

No. 2.—Free of Duty.—Ammonia, unpulverized; animal substances used in medicine and perfumery; bones and horns of animals; cassia; cochineal; cocoa-shells; copper; elephants' teeth; fats, except of fish; ginger; gloves; gums; indigo; Jesuits' bark; kermes; lac; lead; medicinal balsams, juices, roots, barks, herbs, leaves, and flowers; mother-of-pearl; nutmegs; peltries; pepper; potash; quercitron; rocou; rushes and reeds; seeds hard to be crushed; skins, dry and undressed; sumach; tin, unwrought; tortoise-shell, [illegible] merio; vanilla; vegetables, green; wax, not worked; whale fins; woods, odoriferous, dye, and cabinet. Foreign vessels importing the above enumerated merchandise are subjected to no other port charges, light-house and tonnage duties, than are levied on French vessels. All goods not enumerated in the above tariff, and imported from foreign countries, either in foreign or French bottoms, are liable to confiscation.

The articles enumerated in lists Nos. 1. and 2, as well as all articles imported from France, may be re-exported, duty free, from one colony to another, but only in French vessels; on condition, however, that the importer of merchandise contained in list No. 1 proves that the duties have been discharged in the colony of original importation. Foreign vessels, as well as French, may export, duty free, to foreign countries, articles imported into the two colonies, whether from France or elsewhere; but these exportations can only be allowed from the ports opened by the ordinance of February 5, 1826, for the importation of merchandise enumerated in lists 1 and 2. Foreign flour may be imported (if necessity or urgency authorizes the importation) for a fixed duty of $3 94.2 per 80 kilogrammes, or 177½ lbs.; but then it can only be done if a special order by the governer permitting the importation has been issued, which allowance will never extend beyond the term of three months.

Maryland, one of the central United States, lies between 38° and 39° 44′ N. lat., and between 75° 10′ and 79° 21′ W. long. It is 196 miles long and 120 broad, containing 11,000 square miles. Population in 1790, 319,728; in 1800, 345,824; in 1810, 380,546; in 1820, 407,350; in 1830, 446,913; in 1840, 469,232; and in 1850, 583,035.

Early History of Maryland.—In the year 1632 King Charles I. gave a charter to Cecilius Calvert, Lord Baltimore, and granted to him a tract of land lying in that peninsula, between the ocean and Chesapeake Bay, and round the northern extremities of that same bay, and ordered this land to be called "Maryland," in honor to the Queen Henrietta Maria, the consort of Charles I. She was of the Catholic religion, like Lord Baltimore himself, and likewise the greater part of the settlers which he carried out. The name appears for the first time in the charter of Maryland of the 20th

June, 1682. It is possible that Lord Baltimore and his associates, in proposing to the king that name, had also at the same time the old Spanish maps of North America before their eyes, on which Chesapeake Bay is called "St. Mary's Bay" (*Bahia de Santa Maria*) and that they had a desire to carry back to this bay that old and historical name. It may be a mere accident that the name Maria was as well in modern as in ancient times applied to the same regions. But what we call accident in history is often secretly linked together by an association of ideas which escapes our research.

Others think that the Calverts and their associates, and their Catholic missionaries, who explored and settled the territory of Maryland, thought, in giving this name, exclusively of the Queen Henrietta Maria and not at all of the Holy Virgin. It was among Spaniards and French, and among all Catholic colonists and discoverers, very customary to vow a new country or place, to which they gave a name in honor of some person, at the same time to the protection of that saint which bore the same name. They would, for instance, call a place named after Christopher Columbus, not "Christophoro," but "*St.* Christophoro," because they thought at once as well of the man as of his protecting saint. That something similar was going on at the baptism of Maryland seems not unlikely, from the circumstance that the first principal settlement of Maryland was called *St.* Mary, and that this settlement, as well as the surrounding country, is so called to this day. The fact that the old forgotten name Mary, in later times, returned to the same regions, appears one of the so-called "curious coincidences in history worthy to be pointed out."—J. G. Kohl.

Physical Features, etc.—Eastern Maryland, or that part of the State east of the Chesapeake Bay, is mostly level. The country on the west shore to the head of the tides is similar to the eastern shore; the soil of this portion is generally fertile, producing wheat, Indian corn, tobacco, etc. Above the tides the surface rises into hills, and the western part attains an elevated region, being crossed by the Alleghany Mountains. The western part contains much fine land, adapted both to grain and grazing. Extensive beds of coal and iron ore exist. There were in this State in 1850, 2,797,905 acres of improved land, and 1,836,445 of unimproved land, in farms; cash value of farms, $87,178,545; and the value of implements and machinery, $2,463,443.

Live Stock.—Horses, 75,684; asses and mules, 5644; milch cows, 66,859; working oxen, 84,135; other cattle, 98,595; sheep, 177,902; swine, 352,911. Value of live stock, $7,997,684.

Agricultural Products, etc.—Wheat, 4,494,680 bushels; rye, 226,014; Indian corn, 11,104,631; oats, 1,242,151; barley, 745; buckwheat, 108,671; peas and beans, 12,816; potatoes, 764,939; sweet potatoes, 208,993. Value of products of the orchard, $164,051. Produce of market gardens, $200,869. Pounds of butter made, 3,806,160; of cheese, 3975; maple sugar, 47,740; molasses, 1430 gallons; bees' wax and honey, 74,802 pounds; wool, pounds produced, 480,226; flax, 85,686; silk cocoons, 89; hops, 1870; tobacco, 21,407,497 pounds; hay, tons of, 157,956; clover seeds, 15,217 bushels; other grass seeds, 2561; flax seed, 2446 bushels; and were made 1431 gallons of wine. Value of home-made manufactures, $111,828; of slaughtered animals, 1,954,800.

Foreign Commerce of the State of Maryland, from October 1, 1820, to July 1, 1856.

Years ending	Exports.			Imports.	Tonnage cleared.		District Tonnage.	
	Domestic.	Foreign.	Total.	Total.	American.	Foreign.	Registered.	Enrolled and Licensed.
Sept. 30, 1821	$2,714,850	$1,138,544	$3,850,894	$4,070,842	61,687	4,677	46,612	89,244
1822	3,496,998	1,039,808	4,536,796	4,792,486	58,790	9,469	....	....
1823	4,178,112	1,837,116	6,030,228	4,946,179	62,911	7,615	....	....
1824	3,549,957	1,313,276	4,863,233	4,651,642	78,610	6,017	....	....
1825	3,092,365	1,408,939	4,501,304	4,751,815	66,228	8,845	....	....
1826	2,947,352	1,063,396	4,010,748	4,928,559	62,212	2,931	....	....
1827	3,457,691	1,058,715	4,516,406	4,405,708	67,380	4,191	....	....
1828	3,107,319	1,226,603	4,334,422	5,029,094	69,532	6,631	....	....
1829	3,669,978	1,149,192	4,804,465	4,804,195	54,988	6,890	....	....
1830	3,075,985	715,497	3,791,482	4,598,566	55,090	8,586	....	....
Total	$38,278,897	$11,961,081	$45,239,478	$47,404,986	622,403	56,102	....	....
Sept. 30, 1831	$3,780,506	$578,141	$4,808,647	$4,826,577	65,870	10,276	25,959	47,958
1832	3,015,878	1,484,045	4,499,916	4,629,868	49,880	15,648	....	....
1833	3,301,014	761,458	4,062,467	5,437,057	47,181	25,409	....	....
1834	3,019,708	1,155,537	4,168,245	4,647,483	41,702	17,850	....	....
1835	3,176,866	748,368	3,925,234	5,647,153	45,298	18,526	....	....
1836	6,028,916	646,559	6,675,475	7,121,867	39,416	18,507	....	....
1837	3,865,173	424,744	4,289,917	7,857,088	39,155	35,798	....	....
1838	4,165,168	359,407	4,524,575	5,791,869	54,421	22,885	....	....
1839	4,818,189	263,379	4,576,561	6,995,285	49,298	19,556	....	....
1840	5,495,020	273,748	5,768,768	4,910,746	67,718	25,546	....	....
Total	$56,604,483	$6,695,874	$48,299,907	$57,784,373	498,979	209,391	....	....
Sept. 30, 1841	$4,789,160	$158,006	$4,947,166	$6,101,313	63,656	23,598	41,935	64,920
1842	4,635,507	269,259	4,904,766	4,417,078	61,447	21,260	....	....
9 mos. 1843	2,820,214	195,642	3,015,856	2,479,182	41,478	15,481	....	....
June 30, 1844	4,841,950	291,216	5,133,166	3,917,750	69,884	21,205	....	....
1845	4,946,237	275,740	5,221,977	3,741,804	69,716	22,342	....	....
1846	6,744,110	124,945	6,869,055	4,042,915	88,404	20,887	....	....
1847	9,632,360	129,884	9,762,244	4,432,814	114,802	56,223	....	....
1848	7,016,084	113,748	7,129,782	5,343,648	84,709	36,221	....	....
1849	7,786,695	213,965	8,000,660	4,976,731	118,376	31,652	....	....
1850	6,589,481	377,879	6,967,353	6,124,201	89,296	37,523	....	....
Total	$59,801,748	$2,149,977	$61,951,725	$45,576,881	801,513	295,347	....	....
June 30, 1851	$5,416,798	$218,988	$5,635,786	$6,650,645	75,406	30,868	95,675	108,869
1852	6,514,641	153,290	6,667,931	6,719,986	83,606	42,887	....	....
1853	7,788,224	188,235	7,976,459	6,880,078	87,218	56,878	....	....
1854	11,653,250	127,382	11,782,632	8,787,552	136,524	54,750	....	....
1855	9,889,218	518,766	10,395,984	7,788,949	111,096	47,494	....	....
1856	10,856,637	264,761	11,121,398	9,119,907	118,873	40,489	....	....

The Potomac River, which divides the State from Virginia, is 350 miles long, and navigable about 150 miles to Washington city. It is 7½ miles wide at its mouth. The great falls are 14 miles above Washington; the perpendicular descent is 76 feet, and the rapids extend for several miles up the river, and form a very picturesque view. The Susquehanna is a large river which enters into the head of Chesapeake Bay in

this State. It is 1½ miles wide at its mouth, but is navigable only 5 miles, being above that much obstructed by falls and rapids. The Patapsco is a small river, navigable, however, 14 miles to Baltimore for ships. The Patuxent is 110 miles long, and is navigable for 50 miles for vessels of 250 tons. The other rivers are Elk, Sassafras, Chester, Choptank, Nanticoke, and Pocomoke. The Chesapeake Bay is 270 miles long, and from 70 to 20 wide, and by its numerous inlets furnishes many fine harbors.

Manufactures, etc.—There were in the State in 1850, 33 cotton factories, with a capital invested of $2,248,600, employing 1212 males and 2035 females; products valued at $2,021,396; 43 woolen factories, with a capital of $258,100, employing 264 males and 106 females; products valued at $319,240; 19 establishments making pig iron, with a capital of $1,033,500, employing 1351 persons, producing 43,641 tons of pig iron, etc., valued at $1,048,250; 16 establishments, with a capital of $350,100, employing 761 persons, and making 6244 tons of castings, etc., valued at $685,000; 17 establishments, with a capital of $780,650, employing 568 persons, manufacturing 10,000 tons of wrought iron, valued at $771,431; 392 flouring and grist mills; 130 saw mills; 116 tanneries, with a capital of $628,900, employing 479 persons; value of products, $1,108,139; 59 printing-offices; 6 daily, 4 tri-weekly, 54 weekly, 1 semi-monthly, and 2 monthly publications. There were in this State (January, 1856) 3 railroads, with 466 miles of road finished and in operation, and 30 miles in course of construction. The Chesapeake and Ohio Canal, 184 miles long, is mostly in this State. Capital invested in manufactures, $14,753,143; value of manufactured articles, $32,477,702.

The principal places in the State are Baltimore, the metropolis; Annapolis, the capital; Havre de Grace, Frederick, Hagerstown, and Cumberland. There were (January, 1854) 25 banks, with an aggregate cash capital of $9,558,409. The exports of Maryland in 1852 of domestic produce in American vessels amounted to the value of $4,391,692; in foreign vessels, $2,122,949. Foreign produce in American vessels, $120,129; in foreign vessels, $38,091. Total value, $6,667,861. The imports same year in American vessels amounted to $5,620,114; in foreign vessels, $1,099,872. Total, $6,719,986. Tonnage, 1852, 201,186.

For History, Finances, etc., of Maryland, see *Am. Quar.*, ix., 483; Hunt's *Mag.*, v., 50; *Bank. Mag.*, i., 394; *Jo. Sc.*, xxvii., 1; De Bow's *Rec.*, x., 645.

The principal port is Baltimore, situated on the north side of the Patapsco River, about 14 miles above its entrance into the Chesapeake Bay, in lat. 39° 17′ N., long. 76° 36′ W. The harbor is spacious and convenient, and the water deep. Its tonnage in 1856 amounted to 183,344 tons. In the fiscal year, 1855–6, there were built at this port, 12 ships, 8 barks, 43 schooners, 3 sloops, with an aggregate tonnage of 15,393 tons.

Annapolis, city, port of entry, and capital of Maryland, on the Chesapeake Bay, at the entrance of Severn River. The State House is remarkable as the building in which the American Congress, during the revolutionary war, held some of its sessions. The Senate Chamber, which witnessed the last scene of the great drama of the Revolution, Washington's resignation of his commission to the Congress, has been preserved unaltered. The United States' Naval Academy, at Fort Severn, has 7 professors, and 70 midshipmen as students. Tonnage of the port in 1856, was 1332 tons.

Number of vessels built, and their tonnage, in the State of Maryland, during the year ending June 30, 1856:

District.	Ships & barks.	Brigs.	Schoon-ers.	Sloops & canal b'ts	Total No.	Tonnage.
Baltimore	12	8	43	3	66	15,393
Oxford	..	..	25	..	25	2,004
Vienna	..	..	83	..	83	1,920
Snow Hill	..	..	7	..	7	468
Annapolis	..	..	2	..	2	133
Total	12	8	110	3	133	19,918

Massachusetts, one of the eastern United States, lies between 41° 23′ and 42° 52′ north lat., and between 69° 30′ and 73° 30′ west long. It is about 190 miles long, with an average breadth of 90 miles, and contains 7250 square miles. Population in 1790 was 388,727; in 1800, 422,845; in 1810, 472,040; in 1820, 523,287; in 1830, 610,408; in 1840, 737,699; and in 1850, 994,499.

Early History.—The first and most ancient names which were given by historians to the territory of the State of Massachusetts were more or less the same with those of Maine, and we need not repeat them here. The name "*La Côte des Almouchiquois*" (the Coast of the Almouchiquois Indians), which the French introduced, and which the Dutch geographers frequently changed to "*The Land of Almushikosen*," covered particularly the whole extent of Massachusetts. This latter name was first introduced by the English navigators and explorers. The word is said to be composed of the Indian words *Mos* (*Arrowhead*) and *Wetuset* (*hill*). The pure and correct orthography of the compound word is from this said to be *Moswetuset*, the hill in the shape of an arrowhead. The king of an Indian tribe is said to have resided on such a hill near the shores of Massachusetts Bay, and his tribe of Indians received from this, the name "*The Indians of Moswetuset*. The name is already mentioned by Captain John Smith under the year 1616. He writes it *Massachuset*. In the early times, the name was, however, corrupted in many different ways. Captain Dermer writes, in his celebrated letter on his discoveries, *Massachusit* (1619). In a letter from Plymouth in the year 1629, the name is written *Massachulets Bay*, and in the patent of Sir Fernando Gorges, repeatedly *Massachusiack*. In the earliest time of the Plymouth Colony this name included only the country round Boston harbor, and the name was principally given to that great bay, of which Boston harbor is a part, and which was called *Massachusetts Bay*. The first English colony or province was therefore not called from the country, but from the bay, "*The Colony of Massachusetts Bay*" (since 1626). The territory which this name covered was at first not extensive, but by and by it became the greatest name throughout the whole of New England. In the year 1692 the country of the Plymouth Colony was united to it, and for the whole was now introduced the name of "*The Province of Massachusetts.*" So long also as New Hampshire and Maine were united to the mighty Massachusetts, during the greater part of the 17th and 18th centuries, the geographers, forgetting local names, extended the name of Massachusetts often over the greater half of all the New England seas and countries; while since 1774 the name "*State of Massachusetts*" includes the coasts between Merrimack River in the north and Naragansett Bay in the south.—J. G. Kohl.

Physical Features.—This State presents three distinct zones. The first toward the ocean, is a marine alluvion but little elevated above the sea; it is mostly sandy, and the least fertile and smallest in extent of the three sections. This plain is followed by a fine hilly tract which crosses the State from north to south, elevated in some places 300 feet above the sea; from these elevations the rivers flow in every direction. The second, or middle zone, includes part of the beautiful valley of the Connecticut, and is followed by the mountainous, but highly fertile county of Berkshire, which comprises the whole western part of the State. Through Berkshire passes two mountain ranges, the Taghkanic, on the western border of the State and between the Housatonic and Connecticut Rivers, the Green Mountain range here called the Hoosick Mountains. Mount Holyoke, near Northampton, is near 1200 feet above the level of the sea, and Wachusett Mountain in Princeton, is an elevated peak from 2000 to 3000 feet high. Saddle Mountain in the Taghkanic range in the north-west corner of the State is 4000 feet

high, and Mount Washington in the same range in the south-west corner of the State, is about 3000 feet high. The valleys of the Connecticut are fertile, as are also those of the Housatonic. There were in this State in 1850, 2,133,436 acres of land improved, and 1,222,576 of unimproved land in farms; cash value of farms $109,076,847, and the value of implements and machinery $8,209,584. Live stock—horses, 42,216; asses and mules, 34; milch cows, 130,009; working oxen, 46,611; other cattle, 83,284; sheep, 188,651; swine, 81,119; value of live stock, $9,647,710.

Agricultural Products, etc.—Wheat, 31,211 bushels; rye, 481,021; Indian corn, 2,345,490; oats, 1,165,146; barley, 112,385; buckwheat, 105,895; peas and beans, 43,709; potatoes, 3,585,384. Value of products of the orchard, $463,995; produce of market gardens, $600,020; pounds of butter made, 8,071,370; of cheese, 7,088,142; maple sugar, 795,525 pounds; molasses, 4693 gallons; beeswax and honey, 59,508 pounds; wool, pounds produced, 855,136; flax, 1162; silk cocoons, 7; hops, 121,595 pounds; tobacco, 138,246; hay, tons of, 651,807; clover seed, 1002 bushels; other grass seeds, 5085; flax seed, 72 bushels; and were made 4688 gallons of wine. Value of home-made manufactures, $205,333; of slaughtered animals, $2,-500,924.

The principal rivers are the Connecticut, a noble stream winding for 50 miles across the State. Housatonic, which rises in Berkshire county, and flows through the west part of the State, and Merrimac, which rises in New Hampshire, and has a course of 50 miles in the north-east part of the State, and enters the ocean below Newburyport. It is navigable for large vessels to Haverhill, 15 miles. Besides these, there are Nashua, Concord, Taunton, and Blackstone Rivers. Massachusetts has numerous good harbors. There are several important islands off the south shore of this State, to which they belong. The largest is Nantucket, 15 miles long and 11 miles broad, and which constitutes a county of its own name. Martha's Vineyard, west of Nuntucket is 20 miles long and from 2 to 10 miles broad, which, with other small islands, constitutes Duke's county. The shores of Massachusetts are diversified by some bold promontories and capacious bays. Of the latter, Massachusetts Bay, between Cape Ann on the north and Cape Cod on the south, is about 40 miles in breadth. Buzzard's Bay is on the south-west side of Cape Cod, and is 20 miles long. Cape Ann, in the north part of the State, is a rocky promontory 15 miles in length. Cape Cod is a peninsula in the south-east part of the State, extending 75 miles long and from 2 to 20 miles broad, with a bend in the middle nearly at right angles. The peninsula of *Nahant*, a few miles north of the harbor of Boston, is connected with the mainland by Lynn-beach two miles long. It has become, on account of its cool breezes and wild sea views, a place of fashionable resort during the summer months.

There were, January, 1856, 43 railroads, of which 1409 miles were finished and in operation, and 48 miles in course of construction. The Middlesex Canal, 27 miles long, connects Boston with Lowell. The Blackstone, and the Hampshire and Hamden Canals are both in disuse.

The value for the year of the products of industry, as found by adding the separate returns throughout the State, is found to be $295,820,681. If allowance be made for defective and erroneous returns, the Secretary thinks the whole amount would be at least $350,000,000. The returned value without allowance, shows an enormous increase of the productive energy of the State as compared with the previous returns, viz.:

	Production.	Population.
1837	$86,282,616	700,000
1845	124,749,457	845,000
1855	295,820,681	1,133,123

That is, while the population has increased only 34 and 62 per cent. respectively; the value of the product of industry (returned) has increased 188 and 242 per cent. The amount of capital invested in manufactures and other productions in Massachusetts, is shown to be $120,000,000, and the gross value of products $295,000,000 annually. The number of hands employed is 245,908. The leading products of the State in 1855, and the amount of capital employed in 1845 and 1855 are as follows:

Products.	Value, 1855.	Capital, 1855.	Capital, 1845.
	Dollars.	Dollars.	Dollars.
Cotton goods	26,140,000	61,961,000	17,789,000
Calico	5,218,000	1,980,000	1,401,000
Goods, bleached and colored	5,111,000	659,000	200,000
Woolen goods	12,105,000	7,305,000	5,604,000
Rolled and slit iron, and nails	5,512,000	2,342,000	1,906,000
Hollow ware and castings	3,256,000	1,618,000	718,000
Machinery	4,069,000	2,484,000	1,163,000
Steam engines and boilers	3,255,000	2,100,000	127,000
Railroad cars, coaches, etc.	2,352,000	950,000	558,000
Glass	2,648,000	1,805,000	700,000
Paper	4,141,000	2,564,000	1,144,000
Musical instruments	2,295,000	1,280,000	293,000
Watches, chronometers, gold and silver ware	2,105,000	720,000	126,000
Cordage	2,478,000	636,000	543,000
Vessels	4,643,000	1,940,000	....
Sugar, refined	2,056,000	....	410,000
Sperm candles and oil	6,818,000	3,282,000	2,451,000
Soap and tallow candles	7,720,000	1,582,000	405,000
Chairs and cabinet ware	3,969,000	1,913,000	477,000
Leather	12,206,000	4,380,000	1,900,000
Boots and shoes	37,489,000	....	....
Straw bonnets	4,905,000	....	....
Bricks	2,027,000	....	....
Alcohol and liquors	3,158,000	964,000	....
Bread	3,592,000	640,000	....
Clothing	9,061,000	2,779,000	....

The actual expenditures and receipts for 1855 are contrasted with those of 1856 (mostly actual, though a portion necessarily estimated), and with the estimates for 1857, in the following table:

EXPENDITURES FOR 1855 AND 1856, CONTRASTED WITH ESTIMATES FOR 1857.

	1855.	1856.	1857.
Legislative and Executive	$470,959	$512,400	$481,000
Scientific and Educational	12,889	12,420	18,950
Charitable and Humane	332,900	360,000	393,400
Military	78,329	75,250	70,000
Reformatory & Correctional	288,599	196,300	261,650
Interest	118,150	153,900	185,000
Public buildings	150,400	78,350	....
Total	$1,411,237	$1,385,620	$1,275,800

RECEIPTS FOR 1855 AND 1856, CONTRASTED WITH ESTIMATES FOR 1857.

	1855.	1856.	1857.
Bank tax	$578,983	$583,500	$585,000
State tax	428,108	900,000	....
Insurance tax	1,258	2,200	2,000
Alien estates	778	900	1,000
Alien passengers	15,849	16,800	15,000
Western R. R. Sink'g Fund	61,897	61,700	80,000
Western R. R. Dividend	49,892	49,892	49,100
Interest on deposits	792	1,500	1,000
Hawkers and peddlers	....	506	800
Courts of Insolvency	....	115	12,000
Attorney, Suffolk County	3,719	590	....
Premium and int. on scrip	4,803	12,600	....
Charles R. & West Bridge	....	9,550	....
Sundry accounts	2,241	4,250	....
State tax of 1856—balance	....	....	56,000
Cash on hand	18,610	10,937	....
Total	$1,666,425	$1,452,660	$751,900

For Manufactures, Finances, Commerce, etc., of Massachusetts, see *North Am. Rev.*, i., 223 (N. HALE), ii., 277; DE BOW'S *Rev.*, iv., 459, lxvi., 100; *Ch. Exam.*, xlii., 294.

COTTON MANUFACTURES IN MASSACHUSETTS IN 1855.

		Value.
Cotton mills, 294		....
Number of spindles	1,519,527	....
Cotton consumed	lbs. 105,851,749	....
Cotton cloth	yds. 314,996,568	$24,359,212
Unmanufact'd. cotton yarn	lbs. 3,321,146	830,546
Cotton thread	lbs. 534,893	285,994
Cotton batting	lbs. 4,825,686	395,374
Capital invested		31,961,000
Males employed	11,937	
Females "	22,850	

In 1850, the total value of cotton manufactures in Massachusetts was $19,712,461; in 1855, it was $26,760,065, an increase of 88 per cent. in a period of five years. The capital increased in the same period from $28,545,630 to $31,961,000, an increase of only 12 per cent.

FOREIGN COMMERCE OF THE STATE OF MASSACHUSETTS, FROM OCTOBER 1, 1820, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Tonnage Cleared.		District Tonnage.	
	Domestic.	Foreign.	Total.	Total.	American.	Foreign.	Registered.	Enrolled and Licensed.
Sept. 30, 1821	$3,688,597	$8,846,174	$12,484,771	$14,626,732	129,741	1,170	196,975	138,066
1822	4,072,166	8,526,859	12,599,525	18,337,320	135,334	5,297	....	....
1823	3,944,965	9,738,254	13,688,289	17,607,160	135,040	8,785	....	....
1824	4,088,972	6,995,356	10,434,328	15,378,758	134,952	4,667	....	....
1825	4,262,104	7,170,883	11,432,987	16,545,141	145,979	4,943	....	....
1826	3,888,188	8,210,724	10,098,912	17,068,482	139,746	4,519	....	....
1827	3,820,349	6,604,034	10,424,383	13,376,564	130,056	3,951	....	....
1828	4,096,025	4,929,760	9,025,785	15,070,444	138,999	4,819	....	....
1829	3,949,751	4,305,186	8,254,937	12,520,744	140,187	3,835	....	....
1830	3,599,952	3,613,242	7,213,194	10,453,544	148,124	5,176	....	....
Total	$39,311,089	$66,339,972	$105,651,011	$150,478,889	1,378,651	47,162	....	....
Sept. 30, 1831	$4,027,201	$3,706,562	$7,733,763	$14,209,056	157,580	7,483	225,226	117,450
1832	4,656,685	7,337,133	11,993,768	18,118,900	204,289	25,676	....	....
1833	5,150,584	4,582,588	9,833,122	19,940,911	201,097	31,785	....	....
1834	4,672,746	5,476,074	10,148,820	17,672,129	183,631	31,299	....	....
1835	5,564,499	4,479,291	10,043,790	19,800,373	210,021	38,167	....	....
1836	5,118,196	5,267,150	10,380,346	25,681,462	219,057	55,648	....	....
1837	4,871,901	4,856,289	9,728,190	18,984,668	188,821	59,559	....	....
1838	6,158,529	2,946,333	9,104,862	13,300,925	231,386	88,995	....	....
1839	5,526,455	3,749,630	9,276,085	19,335,228	193,378	45,769	....	....
1840	6,268,158	3,918,103	10,186,261	16,519,858	187,995	58,765	....	....
Total	$52,009,904	$46,269,103	$98,279,007	$184,667,505	1,976,655	392,446	....	....
Sept. 30, 1841	$7,897,692	$4,089,651	$11,487,343	$20,818,003	286,376	73,628	316,530	229,379
1842	6,719,115	3,087,995	9,807,110	17,986,433	212,291	36,848	....	....
9 mos., 1843	4,430,681	1,974,526	6,405,207	16,789,452	188,295	49,253	....	....
June 30, 1844	6,871,836	2,724,450	9,096,286	20,296,007	229,381	105,118	....	....
1845	7,756,396	2,594,634	10,351,030	22,781,024	231,096	122,212	....	....
1846	7,837,015	2,476,103	10,313,118	34,190,963	237,384	137,117	....	....
1847	9,202,777	1,988,655	11,248,402	34,477,008	235,890	139,634	....	....
1848	9,308,337	4,111,862	13,419,699	28,647,707	306,883	192,737	....	....
1849	8,174,667	2,090,195	10,264,862	24,745,917	250,187	244,067	....	....
1850	8,258,473	2,423,290	10,681,763	30,874,684	272,278	274,674	....	....
Total	$75,511,989	$27,562,891	$103,074,880	$240,607,193	2,369,871	1,418,338	....	....
June 30, 1851	$9,857,587	$2,495,145	$12,352,682	$32,715,827	279,863	846,997	604,876	190,026
1852	14,144,001	2,402,498	16,546,499	33,504,789	308,539	848,974	....	....
1853	16,895,804	3,059,972	19,955,276	41,967,956	337,805	879,028	....	....
1854	17,925,788	3,542,766	21,468,504	48,563,788	362,615	875,891	....	....
1855	24,412,923	3,778,002	28,190,925	45,113,774	432,634	880,850	....	....
1856	26,955,618	3,467,247	29,822,860	42,814,884	414,858	872,213	....	....

The principal ports are: 1. Boston, lat. 42° 23′ N., long. 71° 4′ W. The city is situated at the head of a deep bay, on a peninsula, being surrounded on three sides by water. Generally there is sufficient depth of water to enable the largest ships to come up to the city at all times of the tide; and they usually moor alongside of docks where there is perfect safety. The depth of water in the channel varies from 15 to 30 feet. It is the great centre of the commerce of New England, and in this capacity receives and distributes one fifth of the whole commercial material of the United States. The tonnage of Boston in 1856 was 521,117 tons. See BOSTON. 2. Salem, city and port of entry. It is chiefly built on a tongue of land formed by two inlets from the sea, called North and South Rivers; over the former are two bridges (one of which is crossed by the railroad), connecting it with Beverly. The harbor has good anchorage ground, but vessels drawing more than 12 or 14 feet of water must be partially unloaded before they can come to its wharves. The tonnage of Salem in 1856 was 29,970 tons. 3. Nantucket. Tonnage in 1856, 16,857 tons. 4. New Bedford. 5. Fall River. 6. Newburyport. 7. Gloucester.

COMMERCE OF BOSTON, 1855–56.

Years.	Custom House revenue.	Foreign arrivals.
1856	$8,357,024	2,990
1855	7,770,784	2,956

Mast, a long piece, or system of pieces, of timber, placed nearly perpendicularly to the keel of a vessel to support the yards or gaffs on which the sails are extended. When the mast is one entire piece, it is called a pole-mast; but in all larger vessels it is composed of several lengths, called lower, top, and top-gallant masts: sometimes a fourth, called a royal mast. The method of supporting each mast on the one next below it, is peculiar. On the sides of the lower mast, some feet below the head, are placed checks: on these are fixed horizontally two short pieces of wood, fore and aft, called trestle trees. Across these at right angles are laid, before and abaft the mast, two or more longer and lighter pieces, called cross trees, which give the name to the entire system. On the mast head itself is a cap. The topmast being placed up and down, the fore side of the lower mast is swayed up between the trestle trees, and through the round or foremost hole in the cap. When raised so high that the heel of the topmast is nearly up to the surface of the cross trees, a piece of iron, called the fid, is put through the hole in the heel for the purpose; and on this fid, of which the ends are supported on the trestle trees, the topmast rests. When fidded, the topmast is stayed, and the rigging or shrouds set up to the dead eyes in the ends of the cross trees. These dead eyes pull from the lower rigging below, and thus the cross trees serve merely to extend the rigging. The topgallant is supported in the same manner on the topmast. When the mast is to be taken down, it is first raised to relieve the fid; which being drawn out, the mast is lowered. The masts are supported by a strong rope, leading forward, called the stay; by others, leading aft on each side of the ship, called, in general, backstays; and by others abreast, called shrouds, and also breast backstays. Large lower masts are composed of pieces, and have for some years been made of several lengths, about a foot or so square, and the whole supported merely by hoops at intervals. The mainmast is near the middle of the vessel, the foremast is that which is nearest the fore part, and the mizzenmast is abaft the mainmast. The old rule for the length of the main

lower mast is to take one half the sum of the length of the lower deck and extreme breadth: the foremast is eight ninths of the mainmast, the mizzenmast considerably smaller. The topmast is about three fifths of the lower mast. These rules, as well as others for the thicknesses, etc., are merely for convenience, based on no mechanical principle, and are by no means strictly followed.

Masts are still built up in pieces, but by the aid of marine glue. A joint secured by this glue is less easily separable than the actual fibres of the wood itself. In the great Exhibition of London there were many curious specimens illustrative of the use of this extraordinary cement. One was a piece of the mast of the ship *Curaçoa*, found inseparable even by the wedge. Another was part of a mainmast, from which a glued fragment was torn away only after a force of 22 tons had been applied. A third was a block of elm, joined with glue; it was exploded by gunpowder, but the joint did not yield. Another was an oak cannon-ball, made of two glued pieces; it had been fired with eight ounces of powder, but the joint held fast. Another was a deal block, which broke in the fibres by a force of four tons. Others were pieces of masts, intended to show how intensely strong a mast becomes when built up with pieces which are joined by this glue. It is not only a glue: it is also a substitute for pitch. Many vessels have the seams payed or calked with this glue, which is found much more durable for the purpose than ordinary pitch.

Master, in commercial navigation, the person intrusted with the care and navigation of the ship. "The master is the confidential servant or agent of the owners; and in conformity to the rules and maxims of law the owners are bound to the performance of every lawful contract made by him relative to the usual employment of the ship."—ABBOTT *on the Law of Shipping*. From this rule of law it follows that the owners are bound to answer for a breach of contract, though committed by the master or mariners against their will, and without their fault. Nor can the expediency of this rule be doubted. The owners, by selecting a person as master, hold him forth to the public as worthy of trust and confidence. And in order that this selection may be made with due care, and that all opportunities of fraud and collusion may be obviated, it is indispensable that they should be made responsible for his acts. The master has power to hypothecate, or pledge, both ship and cargo for necessary repairs executed in foreign ports during the course of the voyage; but neither the ship nor cargo can be hypothecated for repairs executed at home. The master has no lien upon the ship for his wages, nor for money advanced by him for stores or repairs. In delivering judgment upon a case of this sort, Lord Mansfeld said: "As to wages, there is no particular contract that the ship should be a pledge; there is no usage in trade to that purpose; nor any implication from the nature of the dealing. On the contrary, the law has always considered the captain as contracting personally with the owner; and the case of the captain has, in that respect, been distinguished from that of all other persons belonging to the ship. This rule of law may have its foundation in policy for the benefit of navigators; for, as ships may be making profit and earning every day, it might be attended with great inconvenience, if, on the change of a captain for misbehavior, or any other reason, he should be entitled to keep the ship till he is paid. Work done for a ship in England is supposed to be done on the personal credit of the employer: in foreign parts the captain may hypothecate the ship. The defendant might have told the tradesman, that he only acted as an agent, and that they must look to the owner for payment." The master is bound to employ his whole time and attention in the service of his employers, and is not at liberty to enter into any engagement for his own benefit that may occupy any portion of his time in other concerns; and, therefore, if he do so, and the price of such engagement happen to be paid into the hands of his owners, they may retain the money, and he can not recover from them.—ABBOTT *on Shipping*.

Willfully destroying or casting away the ship, or procuring the same to be done by the master or mariners, to the prejudice of the owners, freighters, or insurers; running away with the cargo; and turning pirates; are offenses punishable by transportation beyond seas for not less than 15 years, or by imprisonment for not more than 3 years. After the voyage has been commenced, the master must proceed direct to the place of his destination, without unnecessarily stopping at any intermediate port, or deviating from the shortest course. No such deviation will be sanctioned, unless it has been occasioned by stress of weather, the want of necessary repair, avoiding enemies or pirates, succoring of ships in distress, sickness of the master or mariners, or the mutiny of the crew. —MARSHALL *on Insurance*. To justify a deviation, the necessity must be real, inevitable, and imperious; and it must not be prolonged one moment after the necessity has ceased. A deviation without such necessity vitiates all insurances upon the ship and cargo, and exposes the owners to an action on the part of the freighters. If a ship be captured in consequence of deviation, the merchant is entitled to recover from the owners the prime cost of the goods with shipping charges; but he is not entitled to more, unless he can show that the goods were enhanced in value beyond the sum above mentioned. If a merchant ship has the misfortune to be attacked by pirates or enemies, the master is bound to do his duty as a man of courage and capacity, and to make the best resistance that the comparative strength of the ship and crew will allow. By the common law, the master has authority over all the mariners on board the ship—it being their duty to obey his commands in all lawful matters relating to the navigation of the ship, and the preservation of good order. But the master should in all cases use his authority with moderation, so as to be the father, not the tyrant, of his crew. On his return home he may be called upon by action of law, to answer to a mariner he has either beat or imprisoned during the course of the voyage; and unless he show sufficient cause for chastising the mariner, and also that the chastisement was reasonable and moderate, he will be found liable in damages. Should the master strike a mariner without cause, or use a deadly weapon as an instrument of correction, and death ensue, he will be found guilty, according to the circumstances of the case, either of manslaughter or murder.—ABBOTT, part ii., c. 4. The master may by force restrain the commission of great crimes: but he has no jurisdiction over the criminal. His business is to secure his person, and to deliver him over to the proper tribunals on his coming to his own country.

The master must not take on board any contraband goods, by which the ship and other parts of the cargo may be rendered liable to forfeiture and seizure. Neither must he take on board any false or colorable papers, as these might subject the ship to the risk of capture or detention. But it is his duty to procure and keep on board all the papers and documents required for the manifestation of the ship and cargo, by the law of the countries from and to which the ship is bound, as well by the law of nations in general, as by treaties between particular States. These papers and documents can not be dispensed with at any time, and are quite essential to the safe navigation of neutral ships during war. It is customary in bills of lading to insert a clause limiting the responsibility of the master and owners, as follows: "The act of God, enemies, fire, and every other dangers and accidents of the seas, rivers, and navigation, of whatever nature and kind soever, save risk of boats, as far as ships are

liable thereto, excepted." When no bill of lading is signed, the master and owners are bound, according to the common law. The most difficult part of the master's duty is when, through the perils of the sea, the attacks of enemies or pirates, or other unforeseen accidents, he is prevented from completing his voyage. If his own ship have suffered from storms, and can not be repaired within a reasonable time, and if the cargo be of a perishable nature, he is at liberty to employ another ship to convey it to the place of destination. He may do the same if the ship have been wrecked and the cargo saved, or if his own ship be in danger of sinking, and he can get the cargo transferred to another; and in extreme cases he is at liberty to dispose of the cargo for the benefit of its owners. The most celebrated maritime codes, and the opinions of the ablest writers, have differed considerably as to these points. According to the Rhodian law (Pand. l. 10, § 1) the captain is released from all his engagements, if the ship, by the peril's of the sea, and without any fault on his part, become incapable of proceeding on her voyage. The laws of Oleron (art. 4), and those of Wisby (arts. 16, 37, 55), say that the captain may hire another ship; harmonizing in this respect with the present law of England. The famous French ordinance of 1681 (tit. *Du Frêt*, art. 11), and the *Code du Commerce* (art. 296), order the captain to hire another ship; and if he can not procure one, freight is to be due only for that part of the voyage which has been performed (*pro ratâ itineris peracti*). Valin has objected to this article, and states that practically it meant only that the captain must hire another ship if he would earn the whole freight. Emerigon (tom. i. p. 428) holds that the captain, being the agent not only of the owners of the ship, but also of the shippers of the goods on board, is bound, in the absence of both, to use his best endeavors to preserve the goods, and to do whatever, in the circumstances, he thinks will most condnce to the interest of all concerned; or what it may be presumed the shippers would do were they present. This, which seems to be the best and wisest rule, has been laid down by Lords Mansfield and Tenterden, as stated above, and may be regarded as the law of England on this point.

But to use the words of Lord Chief Justice Tenterden, "the disposal of the cargo by the master, is a matter that requires the utmost caution on his part. He should always bear in mind that it is his *duty to convey it to the place of destination*. This is the purpose for which he has been intrusted with it, and this purpose he is bound to accomplish by every reasonable and practicable method. What, then, is the master to do, if, by any disaster happening in the course of his voyage, he is unable to carry the goods to the place of destination, or to deliver them there? To this, as a general question, I apprehend no answer can be given. Every case must depend upon its own peculiar circumstances. The conduct proper to be adopted with respect to perishable goods, will be improper with respect to a cargo not perishable; one thing may be fit to be done with fish or fruit, and another with timber or iron; one method may be proper in distant regions, another in the vicinity of the merchant; one in a frequented navigation, another on unfrequented shores. The wreck of the ship is not necessarily followed by an impossibility of sending forward the goods, and does not, of itself, make their sale a measure of necessity or expedience; much less can the loss of the season, or of the proper course of the voyage, have this effect. An unexpected interdiction of commerce, or a sudden war, may defeat the adventure, and oblige the ship to stop in her course; but neither of these events doth of itself alone make it necessary to sell the cargo at the place to which it may be proper for the ship to resort. In these, and many other cases, the master may be discharged of his obligation to deliver the cargo at the place of destination; but it does not therefore follow that he is authorized to sell it, or ought to do so. What, then, is he to do? In general, it may be said, *he is to do that which a wise and prudent man will think most conducive to the benefit of all concerned.* In so doing he may expect to be safe, because the merchant will not have reason to be dissatisfied; but what this thing will be, no general rules can teach. Some regard may be allowed to the interest of the ship, and of its owners; but the interest of the cargo must not be sacrificed to it. Transhipment for the place of destination, if it be practicable, is the first object, because that is in furtherance of the original purpose; if that be impracticable, return, or a safe deposit, may be expedient. A disadvantageous sale (and almost every sale by the master will be disadvantageous) is the last thing he should think of, because it can only be justified by that necessity which supersedes all human laws."—*Law of Shipping*, part iii., c. 3.

The master of a ship is liable for goods of which she is robbed, in part; and the reason, as Lord Mansfield stated, is, lest room should be given for collusion, and the master should get himself robbed on purpose, in order that he might share in the spoil. The master is, however, entitled to indemnify himself out of the seamen's wages for losses occasioned by their neglect. If any passenger die on board, the master is obliged to take an inventory of his effects; and if no claim be made for them within a year, the master becomes proprietor of the goods, but answerable for them to the deceased's legal representatives. Bedding and furniture become the property of the master and mate; but the clothing must be brought to the deck, and there appraised and distributed among the crew. If a master die, leaving money on board, and the mate, becoming master, improve the money, he shall, on allowance being made to him for his trouble, account for both interest and profit. The conditions under which seamen and apprentices are to be taken on board ship, and the obligations of the master with respect to them, are fully set forth in the article SEAMEN, in this work; and to it also the reador is referred for a statement of the duty of the master with respect to the registry of seamen, and the contributions, etc., due to the corporation for the relief of decayed seamen, their widows, etc. For the duties of the master as respects custom-house regulations, see the articles CONSULS, FREIGHT, SEAMEN, UNITED STATES, and INSURANCE, etc.; and for a further discussion of this important subject, see the excellent work of LORD TENTERDEN, *On the Law of Shipping*; PARSONS *On Commercial Law*; KENT'S *Commentaries*; CHITTY *On Commercial Law*, vol. iii.; and the articles CHARTER-PARTY, FREIGHT, etc.

Qualifications of Masters. Means by Which They Should be Ascertained.—Considering the important nature of the duties which the master of a ship has to perform, it has been customary in some countries to require that all persons, previously to their being nominated to act in that capacity, should undergo an examination by some public board respecting their knowledge of seamanship, and their possession of the various qualifications necessary to act as masters, and that none should be appointed without their being licensed by such board or other competent authority. We are inclined to think that this practice is consistent with sound policy. "The interposition of government in a case of incapacity, is not only absolutely just and necessary, but it is conformable to the highest authority. The famous French ordinance of 1681, has the following article:—'Aucun ne pourra ci-après être reçu capitaine, maître, ou patron de navire, qu'il n'ait navigué pendant cinq ans, et n'ait été examiné publiquement sur le fait de la navigation, et trouvé capable par deux anciens maîtres, en présence des officiers de l'Amirauté et du Professeur de l'Hydrographie, s'il y en a dans le lieu.' A like article has been inserted in the *Code de Commerce*; and in 1825, the French government issued

an ordinance specifying, in detail, the qualifications that are necessary before any one can obtain a certificate of his fitness to command a ship, either on a foreign or a coasting voyage; the persons who are to examine candidates; and the rules to be observed in the examination. A similar system has been adopted in Prussia; and we can not entertain a doubt that it would be of the greatest service were it introduced into this country. The authority of the master is so very great, and the trust reposed in him, including not merely the ship and goods of his employers, but the lives of the crew and passengers, so very extensive, that it is the bounden duty of the public to provide, in as far as practicable, that it be not committed to ignorant or incapable hands. At present the care of the lives of hundreds of passengers may be committed without check or control of any sort, and without their knowing any thing of the matter, to any incapable blockhead who may be able to prevail on an owner to appoint him to a ship. No doubt it is for the interest of the owner to appoint the best captain he can find; but he may be unable to form a correct estimate of the qualifications necessary for such a situation; and, though this were not the case, hundreds of circumstances may conspire to blind his judgment, and to make him select a master who is really unworthy. Hence the advantage of the preliminary examination by competent parties, which, if made efficient, would certainly afford a powerful guaranty against the chance of an unfit person being appointed."

Mastic, Mastich (Ger. *Mastix;* Du. *Mastik;* Fr. *Mastic;* It. *Mastice;* Sp. *Almastica, Almaciga;* Arab. *Arâh*). This resinous substance is the produce of the *Pistacia Lentiscus*, a native of the Levant, and particularly abundant in the island of Chios. It is obtained by making transverse incisions in the trunks and branches of the trees, whence the mastic slowly exudes. About 1500 cwt. are annually exported from Chios, part of which is brought to this country, packed in chests. The best is in the form of dry, brittle, yellowish, transparent tears; it is nearly inodorous, except when heated, and then it has an agreeable odor; chewed, it is almost insipid, feeling, at first gritty, and ultimately soft. Its virtues are trifling.—AINSLIE'S *Materia Indica;* THOMSON'S *Dispensatory.*

Mate, in a merchant ship, the deputy of the master, taking, in his absence, the command. There is sometimes only one, and sometimes two, three, or four mates in a merchantman, according to her size—denominated first, second, third, etc. mates. The law, however, recognizes only two descriptions of persons in a merchantman—the master and mariners; the mates being included in the latter, and the captain being responsible for their proceedings. In men-of-war, the officers immediately subordinate to the captain are called lieutenants. But the *master*, or officer whose peculiar duty it is to take charge of the navigation of the ship, has certain mates under him, termed master's mates, sometimes selected from the midshipmen. The boatswain, gunner, carpenter, etc., have each their mates or deputies, taken from the crew. See articles MASTER, SHIPPING, and CONSULS.

The mate is the next to the master on board, and upon his death or absence, the mate succeeds, *virtute officii*, to the care of the ship and the government and management of the crew. He does not cease to be mate in such cases, but has thrown upon him, cumulatively, the duties of master. He is *quasi* master, with the same general powers and responsibilities, *pro hac vice*, and with the preservation of his character and privileges as mate. He may sue in the admiralty for his wages as mate, and is entitled, in that character, to be cured, if sick, at the expense of the ship. The master, and even the consignees, may appoint a substitute in a foreign port, in cases of necessity. Even a supercargo, in cases of necessity, and acting with reasonable discretion, may bind the owner.

Matches, Lucifer. According to Dr. R. Boettger, in *Annalen der Chemie und Pharmacie*, vol. xlvii., p. 384, take phosphorus, four parts; nitre, ten parts; fine glue, six parts; red ochre, or red lead, five parts; smalt, two parts. Convert the glue with a little water by a gentle heat into a smooth jelly, put it into a slighty warm porcelain mortar to liquefy; rub the phosphorus down through this gelatine at a temperature of about 140° or 150° Fahr.; add the nitre, then the red powder, and lastly the smalt, till the whole forms a uniform paste. To make writing-paper matches, which burn with a bright flame and diffuse an agreeable odor, moisten each side of the paper with tincture of benzoin, dry it, cut it into slips, and smear one of their ends with a little of the above paste by means of a hair pencil. On rubbing the said end after it is dry against a rough surface, the paper will take fire, without the intervention of sulphur. To form lucifer wood matches, that act without sulphur, melt in a flat-bottomed tin pan as much white wax as will stand one tenth of an inch deep; take a bundle of wooden matches free from resin, rub their ends against a red-hot iron plate till the wood be slightly charred; dip them now in the melted wax for a moment, shake them well on taking them out, and finally dip them separately in the viscid paste. When dry, they will kindle readily by friction.

The Manufacture of Friction Matches.—Among articles of great demand that have become of importance, though apparently insignificant, there is nothing more worthy of notice than the friction or lucifer match. About 20 years ago chemistry abolished the tinder-box; and the burnt rag which made the tinder went to make paper. Slowly did the invention spread. The use of the match is now so established, that machines are invented to prepare the splints. In New York one match manufactory annually cuts up a large raft of timber for matches. The English matches are generally square, and thus 80,000 splints are cut in a minute. The American matches are round, and the process of shaping being more elaborate, but 4500 splints are cut in a minute. We find that a bundle of 1800 thin splints, each 4 inches long, is finally converted into 3600 matches. Without being separate, each end of the bundle is first dipped into sulphur—when dry, the splints adhering to each other by means of the sulphur, must be parted by what is called dusting.

Mats (Du. *Matten;* Fr. *Nattes;* Ger. *Matten;* It. *Stuoje, Stoje;* Port. *Esteiras;* Rus. *Progoshki;* Sp. *Esteras*), textures composed, for the most part, of flags, reeds, the bark of trees, rushes, grass, rattans, old ropes, etc. In this country mats are used for a great variety of purposes. The coarser sort are very largely employed in the packing of furniture and goods; in the stowage of corn and various other articles on board ship; in horticultural operations; in covering the floors of churches and other public buildings, etc. The finer sorts are principally employed in covering the floors of private houses. In Europe, mats are principally manufactured for sale in Russia, where their production is a prominent branch of national industry. They consist of the bark of the lime or linden-tree, and are known in this country by the name of *bast* mats. The Russian peasants manufacture this sort of material into shoes, cordage, sacks for corn, etc., and employ it in an endless variety of ways. In consequence of the vast quantities of matting that are thus made use of at home and sent abroad, the demand for it is immense. It is principally produced in the government of Viatka, Kostroma, and those immediately contiguous; and in the months of May and June, the period when the bark is most easily detached from the stem, the villages in the governments in question are almost deserted, the whole population being then in the woods employed in stripping the trees. The academician Köppen, who has carefully investigated this curious subject, estimates the average

annual production of mats in European Russia, as follows:

Government of	Pieces.
Viatka	6,000,000
Kostroma	4,000,000
Kasan	1,000,000
Nijni Novgorod	1,000,000
Vologda, Tamboff, Simbirsk, and Penza	2,000,000
Total	14,000,000

Köppen further estimates that about one fourth part of this vast quantity, or 3½ millions, are exported, the rest being consumed at home. It is obvious from these statements that the annual destruction of linden-trees must be quite enormous; and it may well excite astonishment that they are not already all but exhausted. But whether it be from the rapid growth of the tree, or the vast extent of the forests in which it is found, the gloomy forebodings of Mr. Tooke as to its destruction have not hitherto been realized (*View of Russia*, iii., 262), and mats have not become either scarcer or dearer. It is, however, hardly possible to suppose that such should continue to be the case, seeing the rapid increase of population and of the consumption of matting in most parts of the empire. But in the event of its becoming scarcer, the inhabitants will have no difficulty in finding substitutes; so that we agree in opinion with those who think it would be bad policy to impose any restrictions on this branch of industry, in the view of averting an evil which may never occur; and which, if it do occur, may be easily obviated.—See *Supplement au Journal de l'Interieur de Petersburg*, for 1841.

Archangel is the principal port for the shipment of mats; and it appears that at an average of the years 1851 and 1852, the export of mats from that port amounted to 615,360 pieces a year. Large quantities are also shipped from Petersburg, Riga, and other ports; and most descriptions of Russian produce sent abroad are packed in mats. Various descriptions of reed mats are extensively manufactured in Spain and Portugal; some of them being very beautifully varied. In Spain large quantities of matting are made of the Esparto rush. Rush floor mats, and rattan table mats of a very superior description, are brought from China. They should be chosen clean, of a bright clear color, and should, when packed, be thoroughly dry. The mats of the Japanese are soft and elastic, serving them both for carpets and beds; they are made of a peculiar species of rush cultivated for the purpose. The bags in which sugar is imported from the Mauritius consist of matting formed of the leaves of a tree growing in the island, interwoven in broad strips. They are very strong and durable, and may be washed and cleaned without sustaining any injury. Being imported in large quantities, they are sold very cheap. (Beside the works already referred to, see Milburn's *Oriental Commerce*, and the valuable little work entitled *Vegetable Substances, Materials of Manufactures*, published by the Society for the Diffusion of Useful Knowledge, London.) It is probable that mats formed the first sort of woven fabrics produced by man; and it is worthy of remark that but few savage tribes have been discovered which have not attained to considerable eminence in their manufacture. On the coast of Guinea and other places in the west of Africa, pieces of fine mat, about a yard long, and of a pretty uniform texture, were denominated *makkutes*, and formed a sort of money; the value of commodities being rated and estimated in them.—Morellet, *Prospectus d'un Dictionnaire de Commerce*. They enjoyed this distinction, no doubt, from their utility, and the great care and labor bestowed on their preparation. There is hardly an island in the South Seas in which the natives have not acquired great skill and dexterity in the making of mats. The finer sorts consist, generally, of dyed reeds or grass; and have a very brilliant appearance.

Maulmain, or **Moulmein**, a sea-port town of India beyond the Ganges, capital of the British province of Martaban, at the mouth of the great River Than-luang, having north the Burmese town of Martaban, on the opposite side of the river, and west, the island of Balu, which serves as a natural breakwater to defend the port from the heavy seas that would otherwise be thrown in from the west, 100 miles S.S.E. of Rangoon, 27 miles N.N.E. of Amherst, lat. 16° 30′ N., long. 97° 38′ E. It was founded in 1825, when the site was selected by Sir A. Campbell as eligible as well for a commercial as a military station. It is about 200 feet above the level of the river, and extensive and fertile plains stretch eastward from it toward the mountains. Its port is good, and, from its extensive command of internal navigation, it promises to become a considerable emporium. The principal articles of export are teak-timber and rice; but there is also a considerable export of tobacco, stick-lac, betel-nut, ivory, cutch, cocoa-nuts, etc. The imports consist principally of European cotton goods and marine stores. The principal trade of the place has hitherto been carried on with Calcutta, Madras, Rangoon, and Penang; but in 1837 a direct trade was commenced with London. Owing to the facility with which supplies of teak-timber are obtained, ship-building is carried on very extensively. The population in 1848 was estimated at about 35,000. The principal article of commerce at Maulmain is teak-timber, with which from 25 to 30 ships annually load for England. The quantity of teak exported to that country from 1840 to 1847, and its estimated official value, was as follows:

Years.	No. of tons.	Price per ton.	Value.
		Rs.	£
1840	4,952	25	12,380
1841	6,399	25	15,998
1842	11,847	25	28,717
1843	10,528	80	31,584
1844	14,245	30	42,375
1845	13,360	40	53,442
1846	16,798	45	75,592
1847	7,878	50	39,365

Maulmain is a free port, on the same footing as Singapore, etc. There is no custom-house, and no duties on sea-borne goods: but foreign sugar, and sugar from Singapore and Malacca, is contraband. The coins in use are the Company's rupee and its subdivisions, the same as are current in Calcutta. The English sovereign is generally worth 11 rupees, and the Spanish dollar 220 rupees per 100 dollars. The weights are the Madras viss, equal to 3·065 lbs. avoirdupois, or, say, 3¼ lbs.; in this there are 100 ticuls. The Bengal bazaar maund of 82 lbs., is also occasionally used. The measures principally used are called baskets: they are of uncertain size. A basket of cleaned rice is about 65 lbs. in weight; of mixed about 60 lbs.; paddy 51 lbs. Ship-building is well adapted to the place; and some of the finest teak-ships in the world have been built here. There are several dry docks, though not of a very efficient description, for repairing vessels. The British government bought here, during 1847, upward of 5000 tons of teak for the royal dockyards in England.

The *Maulmain Almanac* for 1852 contains the following statements: "The value of the imports by sea into Maulmain during 1850 amounted to 22,57,983 rupees, and the exports to 23,32,951 rupees; while in the first 10 months of 1851 the imports increased in value to 28,78,487, or £287,848, and the exports to 28,79,797 or £287,979. The town, which 20 years back contained only a few miserable fishing-huts, is thus shown to have a trade of nearly £600,000 a year, which is still increasing. The value of the piece goods imported from Europe during 1851 amounted to £63,229, coals, £5408, and iron £1849. Provisions were imported to the extent of £3496, and wines of the value of £492; military stores £1853, etc. The articles of export pre-

sent no remarkable feature of interest, except timber, the value of which in 1850 was £55,108, and in the first 10 months of 1851, £81,561. The town possesses a large and thriving European population, and 40 vessels, of an aggregate burden of 17,170 tons, have been launched from its dockyard since 1830. It contains three printing-presses, seven places of public worship (five of which are Protestant), besides eight schools, English and native."

Mauritius. The Isle of France was discovered by the Portuguese, A. D. 1500, but the Dutch were the first settlers, in 1598. The Mauritius was so called by the Dutch in honor of Prince Maurice; but it was first settled by the French in 1720; and is indebted for most part of its prosperity to the skillful management of its governor, the famous M. de la Bourdonnais. It was taken by the English in 1810, and was definitively ceded to them in 1814. Mauritius is fertile, a considerable part of the surface being, however, occupied by mountains. Its shape is circular, being about 150 miles in circumference. The climate is healthy, but subject to hurricanes. The principal product of the island is sugar, which is now cultivated to the almost total neglect of every thing else; but it also produces excellent coffee, indigo, and cotton. The blackwood, or ebony, of the Mauritius is very abundant, and of a superior quality. Very little corn or grain of any kind is raised in the island, most articles of provision being imported. Previously to 1825, the sugar and other articles brought to Great Britain from the Mauritius were charged with the same duties as the like articles from India; but in the above-mentioned year this distinction was done away, and it was enacted that all goods of the growth, produce, or manufacture of the Mauritius should, upon importation into any port of the United Kingdom, be subject to the same duties and regulations as the like goods being of the growth, produce, and manufacture of the British colonies in the West Indies; and that the trade with the Mauritius should be placed as nearly as possible on the same footing as that of the West India Islands. This was a great boon to the Mauritius, and the exports of sugar from it have since rapidly increased. According to Milburn (Oriental Commerce, ii., 568), they amounted, in 1812, to about 5,000,000 lbs. In 1818 they amounted to about 8,000,000 lbs.; and in 1824 to 23,384,553 lbs. Since 1826 nine tenths of the sugar raised in Mauritius has been shipped for the United Kingdom.

Sugar Trade—The recent removal of the interdiction against the importation of coolies into the island of Mauritius has contributed largely to the prosperity of that colony, and materially augmented the sugar returns of 1856–57 over those of preceding years. Advices from the island, under date of July 11, refer in glowing terms to the prosperous condition of the sugar planters, and inform us of the gratifying fact—the more gratifying, inasmuch as the price of sugar has sensibly declined since that date—that "just as we are about to harvest the largest crop ever made, and the removal of the interdiction to emigration from India at the same time, has wonderfully improved the position of every landed proprietor, and has placed the colony in a high state of prosperity." In 1856 the shipments were 235,958,460 lbs., amounting in value to $12,433,492, equal to 5·26 cents per pound. From January to May there were shipped 98,445,286 lbs., valued at $6,042,500, or 6·13 cents per pound. The average price in 1856 was $5 26 per 100 lbs.; and during the first five months of the present year it rose to $6 13, showing an advance of 87 cents. The shipment of the old crop, it was believed, would be brought to a close by the end of July, and would reach nearly 220,000,000 lbs., against 235,000,000 lbs. produced in 1856. This, however, was the largest crop ever made on the island. The next crop (1857–58) it is estimated will reach 240,000,000 lbs., or 20,000,000 lbs. more than the crop now closed. We annex a statement showing the production of sugar in Mauritius during the past seven years:

Years.	Pounds.	Years.	Pounds.
1850—51	116,000,000	1854—55	214,000,000
1851—52	186,000,000	1855—56	236,000,000
1852—53	160,000,000	1856—57	220,000,000
1853—54	202,000,000	1857—58	240,000,000

About one fourth of the number of mills in the island were already, in (July) in operation, and by the first of August sugar-making would be general. Some few parcels had reached market, and sold at high prices to complete a cargo to Australia. Thus, for vacuum clairced $9 75 to $10; good and fine yellow, $8 75 to $9 25 per cwt. The news from Europe has, however, before this time arrested these advancing rates, and our next advices will show a considerable decline.

With the exception of molasses, ebony, and a few other unimportant articles, sugar is almost the only article of export. The principal imports consist of provisions, particularly grain and flour; the supply required for the use of the island being almost entirely derived from the Cape of Good Hope, Madagascar, India, Bourbon, etc. Earthenware, machinery, furniture, hardware, piece goods, wine, etc., are also largely imported. The total declared value of the exports from the United Kingdom to the Mauritius in 1852 amounted to £243,045. In 1851 the population of the Mauritius amounted, including military and seamen, to 183,506 souls, of whom between 9000 and 10,000 were whites. The population of the Seychelles—small islands dependent on the Mauritius—amounted at the same time to 8000. The emancipation of the slaves was little less injurious to the Mauritius than to the sugar colonies in the West Indies. But, owing to its more convenient situation, vast numbers of hill-coolies and other laborers from India have been enticed away and imported; and to this the increase of population and of the exports of sugar are wholly to be ascribed.

The principal imports from the United States are beef, pork, butter, cheese, candles, lard, and tobacco. The discriminating duties in favor of British produce and manufactures limit American exports to the articles above enumerated. *Ad valorem* duty 10 per cent., and specific duties various: On tobacco unmanufactured, 6 cents per pound; manufactured, 8 cents per pound; segars and snuff, 24 cents per pound. All foreign nations enjoy equal commercial privileges. The ports of the Mauritius are Mahebourg, Port Louis, and Seychelles Island.

There is some direct trade between the United States and the Mauritius. Occasionally a cargo of lumber arrives from California, but as yet this trade has not been profitable.

Maury, Matthew F.—Lieutenant Maury is a native of Virginia. He received an appointment as midshipman in the navy in 1825, and was ordered to the *Brandywine*, then fitting out at Washington, to convey the illustrious Lafayette to France. He returned home in that vessel, and in the spring of 1826 again sailed in her to the Pacific, and was absent about four years, returning in the *Vincennes* sloop. Passing his examination, he was again ordered to the Pacific station as master of the sloop-of-war *Falmouth*. From the time of his entrance into the navy he was a close student. He made himself master of the Spanish tongue, by studying a course of mathematics and navigation in that language. His work on "Navigation" he commenced in the steerage of the *Vincennes*, and it was completed in the frigate *Potomac*, to which he was ordered as acting lieutenant, when the *Falmouth* was about to return to the United States. When again Lieutenant Maury came home, he was regularly promoted to a lieutenancy, and was appointed astronomer to the South Sea Exploring Expedition, under Commander Thomas Ap-Catesby Jones. Soon after that officer gave up the command of the expedi-

tion, Lieutenant Maury retired from it also, and was afterward put in charge of the dépôt of charts and instruments which has served as a nucleus for the national observatory and hydrographical office of the United States, of which he now has charge. His labors in organizing the observatory were great and efficient, and he was successful in at once putting it on a respectable footing. The investigations of Lieutenant Maury as to the winds and currents of the ocean, the charts which he has constructed, mapping out better paths and more rapid routes across the trackless depths, and the incalculable benefits which he has thus bestowed upon the mercantile and marine interests of the world, are well known. See *South. Lit. Mess.*, vii., 560, ii., 454; HUNT'S *Mag.*, xviii., 516.

Mayagüez, or Mayaguas. This is the most important port on the island of Porto Rico. It possesses large capital, and contains several costly and fine dwellings. Rapidly rebuilt after the great conflagration, by which it was destroyed in 1841, Mayagüez has gained in prosperity; having been before that disaster but an inconsiderable village, it has now become the most important city on the island. The surrounding district produces large quantities of coffee, though, since 1840, there has been a sensible diminution in that article. For that year, the exports amounted to 80,000 quintals, while in 1853 they fell to 43,500 quintals. The coffee of Mayagüez stands in such high repute in America and Germany, that purchases are frequently made in advance of the crop. Hence comes also the best sugar of the island, which is mostly imported in American bottoms into the United States. In 1853, there arrived 83 American vessels, of 13,272 tons, carrying freight to the value of $223,600; and there cleared 76, of 12,680½ tons, taking cargoes worth $460,018. The molasses from this port is always of the best quality, and much sought after by American and English shippers. Besides coffee, in 1853 there were exported 165½ hogsheads of rum; 8,221 hogsheads of molasses; 20,766,033 pounds of sugar; but only 4,463 pounds of tobacco, showing a decrease, compared with the preceding year, of over 50,000 pounds. There were, besides, 1,000 hogsheads of rum mixed with tabasco pepper (*malagueta*), a preparation constituting now a new and profitable branch of domestic industry. Imports from the United States and England are generally similar to the imports into San Juan.

Mead, or Metheglin (Ger. *Meht; Meth;* Du. *Meede, Meedrank;* Fr. *Hydromel;* It. *Idromele;* Rus. *Lipez*), the ancient, and for a long time, the favorite drink of the northern nations. It is a preparation of honey and water.

Meal (Ger. *Mehl;* Du. *Meel;* Fr. and It. *Farine;* Sp. *Farina;* Rus. *Muka;* Lat. *Farina*), the edible part of wheat, oats, rye, barley, and pulse of different kinds, ground into a species of coarse flour. See CORN, FLOUR, WHEAT, and BREADSTUFFS.

Measures and Weights. They were invented by Phidion of Argos, 869 B.C.—*Arund. Marbles.* They became general in most countries soon afterward; and were very early known in England. Standards of weights and measures were provided for the whole kingdom by the sheriffs of London, 8 Richard I., A.D. 1197. Standards were again fixed in England, 1257. They were equalized for the United Kingdom in 1825. *Measure*, in legal and commercial sense, denotes a certain quantity or portion of any thing bought, sold, valued, or the like. See WEIGHTS and MEASURES.

Meats, Preserved. The interest which has of late attached to the subject of such meats, warrants us in bringing under examination the principles and practice on which this important branch of industry is based. The art itself is of modern invention, and differs in every respect from the old or common modes of preserving animal food. These, as is well known, depend on the use of culinary salt, saltpetre, sugar, or similar substances, which, when in solution, do not possess the power of absorbing oxygen gas, and therefore cut off effectually all access of air to the meat they protect. It might be imagined that water alone would answer this purpose; but the contrary is the case, for pure water absorbs oxygen, and is, therefore, all the less adapted for preserving meat, in proportion as it is free from saline matter, since it is then so much the more capable of combining with oxygen gas. Thus, snow, which is pure water crystalised, has a power of producing the panary fermentation when mixed with flour; and this it is able to do in consequence of the large quantity of gaseous oxygen which it contains. Similarly, rain water, and especially dew, will bring on the putrefaction of animal matters much sooner than spring water; and the vulgar prejudice respecting the effect of the moon's rays in accelerating the corruption of meat, is, beyond doubt, dependent upon the fact, that during clear moonlight nights, there is always a large deposition of dew; and this having fallen in a minutely divided state, possesses the largest amount of free oxygen, which pure or distilled water is capable of absorbing from the atmosphere, and, therefore, has a proportionate power of decomposing—just as it also has of bleaching. Thus far our remarks have been applied solely to raw or uncooked meats; but the practical bearing of the object which we have in hand really points to those which are more or less cooked or preserved. It is with reference to provisions of this kind, that a parliamentary inquiry is now in progress; and we can not do better than show the great importance of such a subject to a maritime nation, by stating, that these provisions, when sound, are an absolute preventive of sea-scurvy—a disease said, on good authority, to have destroyed more life, and to have done more damage to commerce, than all the enemies and tempests which shipping ever encountered. We need not go far in search of evidence to prove the fearful havoc caused by this disease; for we are well furnished by the history of Admiral Anson's memorable expedition, to damage the interests of Spain in the Pacific Ocean, by intercepting the annual treasure-ship or galleon on her return to Europe. In spite of every thing that care and experience could do, Anson tells us that he lost, in all, fully four fifths of his people by scurvy. Of 400 men with whom the *Centurion* departed from England, only 200 lived to reach the island of Juan Fernandez, and no more than 8 of these were capable of doing duty; and but for a supply of others at St. Helena, there would not have been strength remaining to carry the ship to her anchorage. After describing, in the most pathetic manner, the dreadful sufferings of his crew, and rejoicing at the improvement caused by the sojourn at Juan Fernandez, the writer concludes—"I therefore shall sum up the total of our loss since our departure from England, the better to convey some idea of our past sufferings and our present strength. We had buried on board the *Centurion*, since leaving St. Helena, 292 men, and had remaining on board 214. This, will, doubtless, appear a most extraordinary mortality; but yet, on board the *Gloucester* (his other ship of war) it had been much greater: for, out of a much smaller crew than ours, they had buried the same number, and had only 82 remaining alive. It might," continues Anson, "have been expected that, on board the *Trysal* (a provision ship), the slaughter would have been most terrible; but it happened otherwise, for she escaped more favorably than the rest, since she *only* buried 42, and has now 59 remaining." The real object of the voyage was, however, not yet commenced; though out of 960 men with which the three vessels left England, 626 were dead before this time.

It is almost superfluous to multiply instances of the same kind; though, in order to demonstrate the great

utility of preserved meats in the navy, we shall give two or three other examples.

In October, 1788, the fleet of Admiral Keppell came into harbor, and, before the end of December, had sent 3,600 sick to the hospital at Haslar. In 1779, the Channel fleet under Sir C. Hardy, sent 2,500 to the hospital, and retained more than 1000 on board for want of hospital accommodation. Within 4 months during a subsequent year, 6,064 were sent to Haslar, and Sir H. Hawkins asserts, that, within the space of 20 years, to his own knowledge, not less than 10,000 men had died of scurvy. When Admiral Geary's fleet returned to Portsmouth, after a 10 weeks' cruise in the Bay of Biscay, 2,400 men were ill of the scurvy; and the gross number of admissions into the hospital that year was 11,732, of whom 229 died. Now the highest medical authorities in this kingdom, and also on the continent, have all expressed the opinion that this fearful disease and mortality is altogether caused by the use of salt provisions; and the evidence of a host of navy surgeons and officers can be adduced to corroborate the truth of this view; therefore, not only motives of humanity, but also of self-interest, imperatively demand that, wherever unsalted provisions can be used, their employment should be insisted on by the voice of the entire nation. Such being the case, it becomes necessary for us to inquire how far the art of preserving unsalted provisions has reached that degree of uniformity, and certainty of result, which alone can warrant their introduction into the navy.—*Brande's Dict.*

Meat-Biscuits.—The American *meat-biscuits*, now coming extensively into use, are a kind of preserve differing from most others. The manufacture is located chiefly at Galveston, Texas. The prairies of that country abound in cattle of good quality, which are procued at so low a price as to justify the manufacture on the spot, thus saving the expense of transporting the useless portion of the meat. The meat-biscuit contains in a concentrated state and portable form all the nutriment of the meat, combined with wheaten or other flour. One pound of this biscuit is said to contain the nutriment or essence of five pounds of good meat; a 22-gallon cask can contain the concentrated nutriment of 500 pounds of fresh meat with 70 pounds of flour. As compared with corn or flour, the meat-baiscuit is said to be less liable to heating or molding during long voyages, and less subject to the attacks of weevils and other animals. It may be easily preserved in all climates, and for a great length of time; though it is not pretended that it possesses the lasting quality of well-canistered food. The United States' Army in Mexico was supplied with these meat-biscuits; and their use is rapidly spreading in America. The meat-biscuits are made in the following way:—Good beef is selected, and boiled by steam until all the nutritive qualities are extracted. The liquor is strained, allowed to settle, and then evaporated by heat to the consistence of thick treacle; the fat is skimmed off as it rises. While the liquor is yet hot, flour is added to it, and both are kneaded up into a stiff dough, which may then be rolled, pressed, made into biscuits, and baked. The biscuits are either kept whole or are ground to powder, and are preserved in air-tight cases. For making into soup the powdered biscuit is mixed with hot water, and boiled with the addition of salt and other condiments. Professor Lindley, in a lecture before the Society of Arts, expressed an opinion that the meat-biscuit "is one of the most important substances which the exhibition of 1851 has brought to our knowledge."

Meat, Prices of. *Prices of Meat and Bread in Cities.*—The following table of the prices of wheat-bread, beef, veal, and mutton, in 20 cities of the world, near November 15th, 1856, is derived from the report of a society in the city of New York for the improvement of the condition of the poor; the quantity of each pound avoirdupois, and the price in cents and hundredths of a cent, American weight and money:

	Wheat bread.	Beef.	Veal.	Mutton.
	Cts. per lb.	Cts. per lb.	Cts. per lb.	Cts. per lb.
Rome	5·63	7·23	7·67	9·31
London	5·70	11·74	16·68	15·57
Paris	4·44	11·33	14·04	13·62
Glasgow	5·46	13·62	13·62	12·62
Liverpool	4·68	12·90	15·90	12·90
Dublin	5·08	12·68	15·57	12·68
Antwerp	5·44	12·90	13·62	15·40
Brussels	4·68	12·76	12·76	13·75
Amsterdam	7·49	14·98	17·24	14·98
Dantzic	6·68	10·94	13·62	9·10
Oporto	5·44	8·68	12·93	9·70
Santander	4·94	5·89	8·60	8·00
Nice	4·68	11·06	11·92	11·92
Milan	5·02	10·80	10·80	7·15
Constantinople	8·76	8·17	8·17	8·17
Smyrna	5·08	6·55	10·00	10·00
New York	5·75	13·25	14·50	15·06
Boston	5·25	14·00	14·00	18·00
Philadelphia	5·25	11·50	12·50	18·50
Cincinnati	4·00	10·00	9·50	10·00

Medals, are pieces of metal, generally in the form of a coin, and impressed with some peculiar stamp, intended to commemorate some individual or action. Medals are of very different prices—varying according to their rarity and preservation, the fineness of the metal, the beauty of the workmanship, etc.

Mechanics. The time when the simple mechanical powers were first introduced is so uncertain, and perhaps so little known, that they have been ascribed to the Grecian and other deities of the heathen mythology—for instance, the ax, the wedge, wimble, etc., are said to be the invention of Dædalus. We know nothing of the machinery by which the immense masses of stone which are found in some of the ancient edifices were moved and elevated.

	Year
The first writing on mechanics was by Aristotle, about	B. C. 320
The Statera Romana invented	"
The fundamental property of the lever and other instruments was demonstrated by Archimedes	265
The hand-mill, or quern, was very early in use; the Romans found one in Yorkshire	"
Cattle mills, *molæ jumentariæ*, were also in use by the Romans, and in parts of Europe	"
Saw-mills are said to have been in use at Augsburg	A. D. 1332
Theory of the inclined plane investigated by Cardan, about	1540
Work on Statics, by Stevinus	1586
Theory of falling bodies, Galileo	1638
Theory of oscillation, Huygens	1647
Laws of collision, Wallace, Wren	1662
Epicycloidal form of the teeth of wheels, Roemer	1675
Percussion and animal mechanics, Borelli; he died	1679
The water-mill was probably invented in Asia; the first that was described was near one of the dwellings of Mithridates	B. C. 70
A water-mill is said to have been erected on the river Tiber, at Rome	" 50
Floating mills on the Tiber	A. D. 536
Tide-mills were, many of them, in use in Venice, about	1078
Wind-mills were in very general use in the twelfth century.	
Application of mechanics to astronomy, parallelogram of forces, laws of motion, etc., Newton	1679
Problem of the catenary with the analysis, Dr. Gregory	1697
Spirit level (and many other inventions), by Dr. Hook, from 1660 to	1702
The Mechanics' Institute in London was formed in	1828
Mechanics' Institute in New York formed	1833

Mediterranean Pass. The nature of this sort of instrument has been described by Mr. Reeves, in his *Treatise on the Law of Shipping*, as follows:—"In the treaties that have been made with the Barbary States, it has been agreed, that the subjects of the King of Great Britain should pass the seas unmolested by the cruisers of those States; and for better ascertaining what ships and vessels belong to British subjects, it is provided that they shall produce a *pass* under the hand and seal of the Lord High Admiral, or the Lords Commissioners of the Admiralty. In pursuance of these treaties, passes are made out at the Admiralty, containing a very few words, written on parchment, with

ornamented at the top, through which a scolloped indenture is made; the *scolloped tops* are sent to Barbary; and being put in possession of their cruisers, the commanders are instructed to suffer all persons to pass who have passes that will fit those scolloped tops. The protection afforded by these passes is such, that no ships, which traverse the seas frequented by these rovers, ever fail to furnish themselves with them, whether in the trade of the East Indies, the Levant, Spain, Italy, or any part of the Mediterranean; and from the more particular need of them in the latter, they, no doubt, obtained the name of *Mediterranean passes*. For the accommodation of merchants in distant parts, blank passes, signed by the Lords of the Admiralty, are lodged with the governors abroad, and with the British consuls, to be granted to those who comply with the requisites necessary for obtaining them. As this piece of security is derived wholly from the stipulations made by the crown with a foreign power, the entire regulation and management of it has been under the direction of his majesty, who, with the advice of the privy council, has prescribed the terms and conditions on which these passes shall be granted. Among others, are the following:—They are to be granted for none but British-built ships, or ships made free, navigated with a master and three fourths of the mariners British subjects, or foreign Protestants made denizens. Bond is to be given in the sum of £900 if the vessel is under 100 tons, and in £500 if it is of that or more, for delivering up the pass within 12 months, unless in the case of ships trading from one foreign port to another; and such passes need not be returned in less than three years. It has been found expedient, at the conclusion of war, and sometimes during a peace, to recall and cancel all passes that have been issued, and to issue others in a new form. This has been done for two reasons. 1st. That these useful instruments, by various means, either accidental or fraudulent, came into the hands of foreigners, who, under cover of them, carried on in security a trade which otherwise would belong to British subjects, and which had been purchased by the crown, at the expense of keeping up this sort of alliance. 2d. That the Barbary States complained that, adhering to the rule of fitting the other part of the indenture to the passes, they were obliged to suffer ships to pass that did not belong to British subjects." We have thought it right to give this explanation, though, since the occupation of Algiers by the French, and the disappearance of the corsairs of the other Barbary powers, Mediterranean passes have fallen into disuse.

Mediterranean Sea (*Mare Internum*), an inland sea inclosed by Asia on the east, Africa on the south, and Europe on the north, and communicates with the Atlantic by the Strait of Gibraltar on the west, situated between lat. 30° 20′ and 43° north, and long. 6° and 37° 30′ east. Within this space is included the Tyrhennian, Ionian, and Adriatic Seas, and the Sea of the Grecian Archipelago. The Sea of Marmora, the Black Sea, and the Sea of Azuv, which communicate with it by the Strait of the Dardanelles, are considered as separate seas. The principal rivers which flow into the Mediterranean are the Ebro, Rhone, Arno, and the Tiber in Europe, and the Nile in Africa. The principal islands are Sicily (which divides the Mediterranean into an eastern and western portion), Cyprus, Crete, Malta, and the Ionian Islands in the east, and Sardinia, Corsica, and the Balearic Islands in the west. The most important gulfs are Taranto in Italy, Lepanto in Greece, Syrtis and Cabes in Barbary, in the eastern portion; and Valencia in Spain, Lyon in France, Genoa in Italy, and Tunis in Africa, in the west. The winds of this sea are very variable; the tides are little felt, and very irregular. Fish is abundant in the Mediterranean, especially tunny, anchovies, pilchards, and mackerel, and the finest coral, sponge, and ambergris, are procured. The Mediterranean was called by the Hebrews "the Great Sea." The Phenicians are the first people known to have extended their commerce along its coasts; the Greeks afterward disputed it with them. After the destruction of Carthage, the Romans were sole masters of its shores; in the middle ages, the Venetians monopolized its commerce, and at present, England, by the possession of Gibraltar, Malta, and the Ionian Islands, possesses the greatest influence on its destinies. See GIBRALTAR.

It is estimated that three times as much water as the Mediterranean receives from its rivers is evaporated from its surface. *Vide* article PHYSICAL GEOGRAPHY, *Encyclopædia Britannica*. This may be an over estimate, but the fact that evaporation from it is in excess of the precipitation, is made obvious by the current which the Atlantic sends into it through the Straits of Gibraltar; and the difference, we may rest assured, whether it be much or little, is carried off to modify climate elsewhere—to refresh with showers and make fruitful some other parts of the earth. The great inland basin of Asia, in which are Aral and the Caspian Seas, is situated on the route which this hypothesis requires these thirsty winds from south-east trade-wind Africa and America to take; and so scant of vapor are these winds when they arrive in this basin that they have no moisture to leave behind; just as much as they pour down they take up again and carry off. We know that the volume of water returned by the rivers, the rains and the dews, into the whole ocean, is exactly equal to the volume which the whole ocean gives back to the atmosphere; as far as our knowledge extends, the level of each of these two seas is as permanent as that of the great ocean itself. Therefore, the volume of water discharged by rivers, the rains, and the dews, into these two seas, is exactly equal to the volume which these two seas give back as vapor to the atmosphere.—MAURY, *Phys. Geog.*

Commerce of the Mediterranean.—The United States' Consul at Trieste communicates to the Department of State, the following details as to increased steam navigation with the southern ports of the Mediterranean: "The project of establishing steam communication with the Mediterranean has long been a favorite one with a respectable class of merchants in the Atlantic States; and, if I am not mistaken, the experiment of a line to Genoa was tried some years ago, but without success. There is every prospect of the accomplishment of this important object, under the immediate patronage of the Austrian government. It is, in fact, proposed to construct three first-class steamships of 3200 tons, builder's measurement, and 1000 horse-power, to run between Trieste and New York, making 15 trips each way per annum, and touching at Corfu, Malta, Algiers, Cadiz, and Lisbon. The vessels would carry the mails, passengers, and goods from the East, received by the Lloyd's steamers and those of the Oriental Steam Navigation Company, and probably those of the greater part of the cities and ports of the Mediterranean, to the United States, and *vice versâ*. The running time west, from Trieste to New York, would be 20 days and 14 hours; and east, from New York to Trieste, 19 days 5 hours, including stoppages. The steamers would be built in New York, but sail under the Austrian flag. The originator of this enterprise is Mr. Loosey, the Austrian consul-general at New York—a gentleman of great experience, who has resided for the past 12 years in the United States. I am credibly informed, also, that the new minister of finance, Baron de Bruck, warmly favors the scheme. He was formerly, indeed, a leading merchant in Trieste, and the founder of the Austrian Lloyd's Steam Navigation Company. If the project succeeds, its effect upon the commercial and political relations of the United States and southern Europe must be very great. While it will prove a stimulus to exertion, by opening new channels for the industry of the Old

World, it must necessarily increase the demand for the precious and abundant raw material and manufactures of the United States.

"The amount of goods exported direct from Trieste to the city of New York, during the years 1850, 1851, 1852, and 1853, amounted to $2,085,282; and the amount of imports during the same years, from New York direct, amounted to $1,550,515. The amount of imports during the year 1852, from the ports of Philadelphia, Boston, Savannah, Richmond, Baltimore, Mobile and New Orleans, amounted to $1,628,700. But it would be very unfair to take these figures as any criterion of the business of the future. This country had then but partially recovered from the financial and political embarrassments of 1848-9, and confidence, without which commerce necessarily dwindles, had not been firmly established; while the means of internal communication and transportation were comparatively limited. Even now the success of this steamship project depends, in a great measure, upon the completion of the balance of 60 miles of railway between Trieste and Vienna—the last link in the chain which connects Trieste with the principal cities of Europe. This work is, however, in a state of forwardness, and will, probably, be finished in the course of a twelvemonth." See TRIESTE and TURKEY.

Commerce of the United States with the Ports of the Mediterranean.—The trade of the United States with the countries on the Mediterranean and in the Levant, is very irregular, and not yet developed. The statistics which we possess are of some value. MacGregor gives the best report on general commerce, and speaks, in regard to the Mediterranean trade in 1842, as follows:

"The commerce of the United States to the ports of the Mediterranean and Adriatic, consists chiefly in the export of cotton, sugar, dried and salt fish, whale-oil, etc., which are shipped to Trieste and other Austrian ports. The American ships take home in exchange wines and other manufactured articles. To Spain, the United States export cotton and other produce, for which they take wines, etc."

A few words, with some statistics, will suffice to show the condition of American commerce. Since that time this commerce has increased, and in some respects received a considerable impulse, but on the whole it presents nothing of much greater importance. The causes are clear: the Americans have paid, until now, very little attention to this important trade; they are not enough acquainted with it, while their successful rivals are thoroughly conversant in its sources, chances, and necessities. English and French merchants have, so far, the control of commerce in these important regions; they have agencies and branch houses—English, French, and Austrian steamers running in the Mediterranean regularly from port to port; while the Americans have not a single agency, and not one of their numerous steamers, such as navigate the ocean, the Pacific, and numerous rivers, are to be found in the Mediterranean and Adriatic. Notwithstanding the passiveness of American commerce in these regions, it is still progressive, as the following statistics will show:

The exports and imports of the United States, in the year 1842, were as follows:

	Exports.			Imports.
	Domestic produce.	Foreign produce.	Total.	
Gibraltar	$466,937	$116,961	$582,998	$12,268
Malta	11,644	8,261	19,905	7,300
France on the Mediter.	1,674,750	73,868	1,748,488	958,678
Spain	221,898	16,578	238,476	1,065,640
Italy	518,578	304,940	820,517	987,628
Sicily	227,861	195,797	423,658	539,419
Trieste	706,179	186,526	884,705	413,210
Turkey	125,451	76,515	202,036	370,248

From Tuscany and Sardinia we have no reports of 1842. The exports from Morocco to the United States for the same year was $98,500. In 1853 they amounted to $84,000, all of which were in foreign bottoms.

The same in the year 1854, was:

	Exports.			Imports.
	Domestic produce.	Foreign produce.	Total.	
Gibraltar	$446,445	$81,327	$527,772	$59,678
Malta	148,528	21,245	169,373	82,695
France on the Mediter.	1,918,786	201,374	1,420,160	2,889,372
Spain	3,212,868	31,040	3,243,408	1,579,674
Italy	1,586,927	165,439	1,751,766	971,074
Sicily	244,154	18,900	260,051	959,300
Sardinia	188,905	2,020	190,926	85,876
Tuscany	11,735	37,032	48,767	1,159,717
Trieste & oth. Aus. ports	1,697,319	206,290	1,903,609	741,919
Turkey	219,496	105,702	325,198	803,114

From these figures it can be seen that the commerce in question has, as it regards some States, greatly increased. The most remarkable is that of Spain, in the Mediterranean. The export to that country has augmented 13 times. Also an important increase is seen in Malta, Italy, Trieste, and Turkey. The commerce of France, however, on the Mediterranean, diminished considerably, also that of Sicily. From both these reports we learn also, that the commerce of the United States in the Mediterranean has not been developed in such an admirable manner as with other transatlantic countries, to which numerous mail lines and other steamers are running. What influence these communications have on trade and commerce, the comparison between the trade of France on the Mediterranean, and of France on the Atlantic, shows:

EXPORT TO, AND IMPORT OF, THE UNITED STATES IN THE YEAR 1854, FROM FRANCE.

	Atlantic.	Mediterranean.
Export—Domestic prod...	$29,749,466	$1,218,786
Foreign " ...	973,355	201,374
Total	$30,727,821	$1,420,160
Import	32,892,021	2,889,372

The commerce in the first direction, where the steam-line exists from Havre to New York, shows $63,013,842; and the commerce between the United States and France on the Mediterranean, where no steam communication exists, was only $4,309,532. The difference is enormous! Marseilles is much behind Havre, which, by its direct steam communication with New York, attracted the greatest part of commerce. See FRANCE.

Let us take, now, a view of the countries on the Mediterranean in general. All depend for the expedition of their letters upon the English post-offices, if they do not prefer to send them via Trieste, Ostend, and Liverpool; for in both cases the postages are very high and expensive, and, as the letters have to pass through several different offices, the loss of time is, in both ways, very great. These difficulties, and we might add nuisances, have an influence in keeping the commerce back, and to them it is chiefly attributable that the commerce of these countries with the United States has progressed no faster. Mr. Baker, who lived for several years as American consul in the Mediterranean, and observed pretty closely the great progress of commerce between these parts of the globe, hinted to his countrymen, several times, to pay more attention to the Mediterranean trade.

"Thousands, on both sides of the Mediterrranean," says Mr. Baker, "prefer American to other produce. Especially are flour and rice highly prized. The commerce with dried and salted fish is profitable. The greatest part of the staves and lumber which are used on the shores of Spain, are mostly imported from the United States. Also other produce, such as biscuit, different kinds of oats, sperm-oil, spermaceti candles, lard and provisions, find here ready and good markets. The port of Malaga is much frequented by American vessels; the same may be said of Barcelona, the great emporium of Spanish wines and brandies, where American import articles find good sale. But very

few American vessels visit Cartagena, Alicante, and Valencia, where American produce would be salable, with profit.

The cargoes which American ships take up in those places are mostly brandies, red and white wines, silk goods, shawls, cloths, woolen goods, paper, laces, saffron, nuts, raisins, and other dried fruits, olives, etc. As to the commerce with France, only Marseilles participates in it, and this very little, in comparison with the great trade with the United States. The advantages of Havre have already been stated. Of commercial ports, we name also Genoa, Leghorn and Messina. The old plan to connect Genoa, by a regular steamship line, with New York, has now been taken up anew, and will soon be in readiness. This connection is expected to give a powerful impulse to the Italian commerce, and also to awaken greater interest on the part of the Americans. Until now the Italian commerce with the United States has not been of much importance, compared with what it would be, had it frequent and regular communication. Of American articles, there are sugars of Louisiana and Cuba, as, also, American grain, highly appreciated, imported by Genoa, and again shipped to the Levant and other smaller ports. On the other hand, the articles imported from Genoa are many, and in the United States in fair demand. They consist in fresh and dried fruits, olive-oil, soap, silk goods, damasks, velvets, linen, gloves, ribbons, liquors, prepared marble, etc. American articles for export to Genoa, are indigo, dye-roots, honey, provisions, butter, etc. Rosin and pitch are bought freely in Genoa, and re-sold to other smaller ports in the Mediterranean.

The commerce of the United States with Tuscany presents interesting features. Tuscany exported, in the year 1854, to the United States, a value of merchandise of $1,152,717—much more than Trieste and the other Austrian ports together. The United States exported to Tuscany, of her own and foreign produce, not more than $48,767. This small figure is more remarkable, as American produce is in fair demand at Leghorn. For Sicily, the ports of Palermo and Messina are the most prominent. From these are exported to the United States, wines, fruits, extracts, oils, brandies, argols, tongues, sardines, prepared marble, senna, cantharides, soap, leeches, etc. The Americans export there stockfish, salted and dried meat, sugar, zinc, lead, indigo, cochineal, dye woods, cotton, cocoa, coffee, flour, tobacco, etc. The commerce of Sicily is important. England has, however, as will be seen, the lion's part.

As MacGregor relates, the import in Sicily was, in the year 1844, £744,630; the export, £1,035,026. The whole commerce with the exterior, £1,779,656. Of this the United States exported only £58,489, and imported from there, £224,988. In the year 1854, the United States exported to Sicily only $260,051 (£52,000); and imported from there, $959,300 (£191,860), which shows a decrease on both sides. This decrease is a peculiar fact, if we consider the quantity and quality of the articles there consumed. It can only be explained by the great activity of England, and the little attention paid to this quarter by Americans. Busied with the great commercial projects on the Atlantic, and culture in the interior, they have not yet found time to pay more attention to this commerce, and not being much posted up in the market prices in Sicily, they ignore partly the importance of that trade.

It is now time to act with energy. The energy will not be missed, while the communication with the Mediterranean will be facilitated and trade increased. The commerce of the United States with Trieste and other Austrian ports, is not satisfactory to the great wants in the trans-Atlantic markets, nor to the sales of Austrian manufactures, which are considered of very good quality. Cloths, woolen goods, linen and silk goods, can be had from Austria, at cheap prices and in fair quality. Nevertheless, the import of the said articles, in 1853, was $78,964,287. Other Austrian articles would also find good market here, by a regular and quick communication.

As to the Austrian ships, very few sail into the Atlantic. In the year 1854 only four Austrian ships came to the United States. Considering the passivity with which the commerce with the United States is regarded, it will not surprise us that so little is done between them. What has been exported from Austria to the United States, during 1854, viâ Trieste, and other Austrian ports, was not more than $741,919; in fact a great sum compared to the many good industrial articles, and its navigation, as also its ports, of which especially Trieste and the world-renowned Venice seem to be called to play a great part in the future commerce of the United States. The export of the United States to Trieste is much larger than their import from Austria, and was, in the year 1854, not less than $1,903,609.

The direct commerce of the United States with Turkey is fixed by the following data: to Turkey, the United States exported, in 1854, merchandise in value of $325,198; importing from there $808,714. This is a very poor trade, if we consider the means of both parties. This trade is in its first development and will soon be increased, if the Americans will take hold of it with their usual enterprise. Greece and the Ionian Islands are entirely forgotten by the Americans; no direct commerce is carried on from there to the United States.

Mr. Baker says, "The commerce with the Morea would be of the greatest importance to the Americans, if they would only attempt and explore it. The great quantity of produce would easily procure re-cargo to American vessels. The demand for zinc, lead, etc., is permanent, also of fish; rice, flour, and other American produce, would find easy market. The same," says Mr. Baker, "of the Ionian Islands, where a good trade would result."

Indirect Commerce.—As to the indirect commerce of the United States to the Mediterranean, there are very meagre data. The total export of the United States in 1854, to all ports in the Mediterranean, of goods not produced in the United States, was only $953,417. These foreign productions consist in coffee, tea, cocoa, leather, skins, pepper, rum, dye-woods, sugar from Cuba, segars, cochineal, and honey.

As to the American indirect import from those countries, it is difficult to find it out. The lists of navigation give only the direct trade; and at the nominations of the value of importation from the States on the Mediterranean, no port is named from where sent.

England, which has the greatest trade with the Mediterranean ports, and which is from there extended in all directions, keeps no direct ship communication from there to the United States. Of the 8508 British ships, tonnage 1,748,000, which came, in 1854, to the United States, not more than 820 tons were from Gibraltar; not one single ton from Malta! The cause is natural. England finds it more in her interest to do the commercial trading with the Mediterranean and Levantine produce to the United States, not directly, but from Liverpool and other ports. The advantage of this proceeding is easily explained.

The English merchants receive, through Liverpool, regular reports by the Collins and Cunard steamers, of the standing of the trans-Atlantic markets. This puts them in the way to use there all the chances offering to dispose of their rich stocks of Mediterranean produce with advantage, to the United States. The same is the case in other ports of the European continent, which follow the same policy. In this way considerable quantities of red and white wines, fruits, drugs, and other produce of the Mediterranean, come by indirect commerce to America.

We take, for example, the corinthes, which are exported from Zante and Corfu to England, and other European ports, from where they are sent to the United States in small quantities. It is the same with other articles, to countries where the Americans have no direct communication. In addition to the ports already named, we can add, under the same category, the rich islands of the Turkish dominions in Europe and Asia, viz.: Cyprus, Rhodes, Candia, Samos, Mytilene. Even from ports regularly visited by American vessels, goods are sent indirectly to the United States. This is the consequence of the isolation in which the United States are placed, in relation to those ports. In Smyrna, the large storing place of the produce in the Levant, where merchants of all nations have a counting-room, there is no American. It is the same in other ports of the Mediterranean, the Adriatic, and Levant. This isolation is advantageous to the indirect intercourse of the English and French with the United States; both are in the fortunate situation to turn the chances of both hemispheres to their advantage. Mr. Baker, in speaking of the commerce of the United States with the French dominions in Africa, viz., Algiers, Tunis, Tripoli, and Morocco, says: "It would be very profitable for our commerce if the Americans would engage in this branch; they would convince themselves, very soon, that such an undertaking would be very profitable. This advice has not been followed up to this time; at least there are no statistics that there have been any imports from there. These are almost exclusively African, and mentioned only in general terms, without branches of commerce in these dominions."

The American export to Africa in general, in the year 1854, amounted to $1,804,729; the imports to $1,386,560; of which proportion, $47,708 and $30,007 belong to Madeira, Teneriffe, and other Canarian Islands, $20,417 and $39,598; Cape of Good Hope, $299,958 and $448,903. There is no data for the other African territories. According to late disclosures, there are considerable numbers of vessels which leave American ports to embark secretly in the slave-trade, land them at Cuba and import a considerable quantity of goods from Africa. Americans can buy many kinds of African produce from the great caravans of the Mecca pilgrims, which traverse Africa in its greatest extremity to the Mediterranean.

From the above, it will be seen that the Americans appear in the Mediterranean as well as in the Levant as far less than a mercantile power of the first class. And it is but too plain that these great and rich territories, for hundreds of years the centre of shipping and commerce of well-advised nations, are, by the Americans, very much neglected. England and France are in opposition with steamers and manufactures on the Mediterranean, Adriatic, and Levant. The mail lines of Cunard, Collins, Bremen, and Havre, are not sufficient for our steam commerce with Europe, and a Mediterranean line, alone, will be found to answer the interests of American commerce. And through all this, the great project of the Pacific Railroad and Marine Telegraph across the Atlantic will the sooner be brought to completion. It is to be hoped that Trieste and the Austrian commercial community in general, will not allow such progressive movements to pass without considering that the same which has been done by the small city of Bremen, can be done by Trieste, with its powerful resources. Bremen can give satisfactory proof of the importance of a steam communication with the New World. Bremen has exported in 1854, not less than $14,643,927. Bremen is much ahead of Hamburg, on account of its steam communication with New York, as its exports in 1854 were only $2,322,971. Trieste would have double the advantage; it would have all the direct commerce with Austria, and the indirect connection with the Mediterranean and the New World. The project is great, but promises well-paying results. It can be developed by a direct, regular, and quick connection with New York. It is also well to mention, that Austria would, by these means, come into a more productive relationship with the Orient, as the commerce of Austria can look to a very prosperous future, on account of the Marine Telegraph from Sardinia to Constantinople and Alexandria, as the connection of the Mediterranean and the Red Sea.—*Nautical Magazine.* For Commerce, etc., of the Mediterranean, see *Ed. Rev.*, vi., 478; HUNT'S *Mag.*, vi., 201; FRASER, xxvii, 377; *Quar. Rev.*, lxxv., 280; same article in *Eclectic*, v., 83; *Living Age*, v., 361.

Melbourne, the capital of the British colony of Victoria, formerly Port Philip, in Australia, occupying the south-east portion of that continent, stretching through 9° of longitude, from Cape Howe on the east to the Glenelg River on the west. The town is situated on the north bank of the Yarra-Yarra River, about nine miles, following its windings, from its mouth, in the basin of Port Philip, latitude 37° 49′ 5″ S., long. 144° 58′ 85″ E. It was founded in 1837, and extends along the banks of the river. In 1851 it had a population of 23,000; and such has been the immigration consequent on the discovery of the gold-fields, that, including suburbs, it had on the 24th of April, 1854, 71,188 inhabitants. A considerable portion, however, of this immense population is to be regarded as migratory only, and as residing in town merely till their ultimate destination has been decided upon. This sudden increase of population raised house rent to an unparalleled height; and for some considerable time a large proportion of the population was not housed, but encamped under tents. But partly through the extraordinary stimulus which was thus given to building, and partly through the mercantile failures consequent to the overtrading of 1853 and 1854, there has been a very heavy fall of rents, which do not now (1855) exceed half their amount in 1852. The site of the town is unfortunate; for the river being obstructed by a bar and shallows, it is not generally navigable for vessels of more than 60 tons burden; and it has the further disadvantage of being low, and liable to be flooded by the overflowing of the river during the wet season. It has been proposed to facilitate the trade of the town by removing the bar at the mouth of the river, and deepening its channel: but this would be a very expensive undertaking, and one of which the success would be not a little doubtful. The excavation of a ship canal from the deep water in the bay to Melbourne has also been proposed; and it probably would be the preferable plan; but, in the mean time, a railway has been commenced, and is in progress to the bay, which, when completed, as is probably the case, will obviate many of the inconveniences which are now experienced. It seems, however, not unlikely that the trade of the town, and the greater part, perhaps, of its population, will ultimately centre at Williamstown, a village a few miles distant, on a headland extending into the bay, opposite to which all large vessels coming to Melbourne are obliged to anchor. The principal objection to Williamstown is the scarcity and bad quality of the fresh water; but this serious defect might, perhaps, be obviated by sinking wells, or by conveying hither a supply of water from some of the adjacent streams. Nothing can more strikingly illustrate the present unfavorable situation of the town for commercial purposes, and the extraordinary state of things which was lately prevalent there, than the fact that while the ordinary charge for the freight of goods from England to Melbourne Roads was in November, 1853, £3 10s. a ton, it was £5 to the quays.

There are very few goods or articles exported from the colony to the United States. The principal articles have been gum, in small quantities, a few hides, and some bones. With the exception of gold, on which

there is a duty of 60 cents per ounce (2s. 6d.), none are liable to duty.

IMPORTS, EXPORTS, AND POPULATION OF THE COLONY OF VICTORIA FROM 1839 TO 1853, BOTH INCLUSIVE.

Years.	Imports.	Exports.	Total of external trade.	Population, average of year.
1839	£285,000	£78,000	£283,000	7,000
1840	393,000	153,000	547,000	10,000
1841	335,000	139,000	474,000	14,000
1842	264,000	204,000	468,000	19,000
1843	183,000	278,000	461,000	22,000
1844	151,000	257,000	408,000	24,000
1845	248,000	464,000	712,000	28,000
1846	316,000	425,000	41,000	34,000
1847	438,000	669,000	1,107,000	42,000
1848	374,000	675,000	1,049,000	50,000
1849	480,000	755,000	1,235,000	60,000
1850	745,000	1,042,000	1,787,000	70,000
1851	1,056,437	1,423,909	2,480,346	90,000
1852	4,043,896	7,451,549	11,495,445	130,000
1853	15,842,687	8,946,096	24,788,783	....
1854	16,557,404	10,109,292	26,666,696	282,000

The following statement exhibits the quantity of gold exported from the several ports in Australia in each year from the commencement of the gold discoveries to the end of the year 1855; the exports chiefly destined for Great Britain and colonial possessions:

Gold exported from New South Wales.	Quantity.	Value.
	Oz. dwts. grs.	
1851 29th May to 31st Dec.	144,120 17 16	$2,341,680
1852	962,878 16 19	18,000,880
1853	548,052 19 21	8,905,855
1854	237,910 13 23	3,866,045
1855	64,344 14 8	1,046,250
Total		$34,160,710

Gold exported from Victoria.	Quantity.	Value.
	Oz. dwts. grs.	
1851	145,187 3 12	$2,193,885
1852	1,988,526 10 13	30,078,640
1853	2,497,723 15 16	43,822,645
1854	2,144,699 9 19	41,277,750
1855	2,575,745 4 17	56,819,900
Total		$174,292,820
Av'ge during last 4 years		$43,573,205

To the preceding statement we annex an official return of all the gold coined at the mint in Great Britain each year from January 1, 1846, to December 31, 1855:

Gold coined in Great Britain in—

1846	$21,674,556	1850	$59,761,935
1847	25,792,200	1854	20,760,915
1848	12,259,995	1855	45,049,316
1849	10,889,775	Total	$269,350,299
1850	7,454,181		
1851	23,002,055	Average	26,935,029
1852	43,711,351		

For further details, see the Articles COLONIES, PRECIOUS METALS, and CALIFORNIA. Here, as in other parts of Australia, wool, down to the discovery of the gold fields, was the principal article of produce and export. And it is seen from the following statement that its exportation went on increasing down to the present year.

ACCOUNT OF THE WOOL SHIPPED DURING THE YEARS ENDING 10TH OCTOBER, 1853, 1854.

	1853 lbs.	1854. lbs.
Melbourne	2,870,771	11,104,180
Geelong	7,012,900	5,641,400
Portland	8,475,818	4,162,492
Port Fairy	1,261,825	1,456,900
Port Albert	346,830	232,876
Total	21,968,104	22,598,688

A continuous high price of wool in the English markets will afford great encouragement to the settlers to struggle with these two tendencies so greatly deteriorative to our wool; and the manufacturers of Great Britain will have to afford that encouragement, or they must gradually teach themselves to look elsewhere for a supply.

EXPORTS OF VICTORIA, 1845–1853.

Years.	Produce of Victoria.	British manufactures	Produce of British Colonies.	Produce of foreign states.	Totals.
1845	£451,792	£8,479	£100	£3,236	£463,507
1846	409,818	10,152	....	5,236	425,201
1847	652,129	13,450	....	2,989	668,511
1848	657,919	13,210	2,166	3,084	671,359
1849	737,067	13,072	721	4,466	755,326
1850	1,022,064	12,945	195	6,592	1,041,796
1851	1,382,267	29,588	2,107	9,002	1,422,909
1852	7,837,925	54,898	6,434	52,292	7,451,549
1853	10,430,954	241,094	24,880	365,165	11,061,543

Population of census 30th April, 1854, 232,000 showing that, exclusive of the excess of immigrants over emigrants by sea, the population had gained 17,253 by overland arrivals and other causes.

ACCOUNT OF THE NUMBER AND TONNAGE OF THE SHIPS ENTERED INWARD IN THE PORTS OF VICTORIA IN 1851, 1852, AND 1853, SPECIFYING THE COUNTRIES TO WHICH THEY BELONGED, AND THE NUMBER AND TONNAGE OF THOSE BELONGING TO EACH.

	1851.		1852.		1853.	
	Ships.	Tons.	Ships.	Tons.	Ships.	Tons.
G. Kingdom	95	54,621	251	168,919	630	284,719
British colonies	591	67,195	1,364	225,446	1,740	351,066
United States	8	746	13	5,826	119	53,988
Other for. states	28	8,924	29	8,081	105	31,700
Totals	712	129,426	1,657	408,216	2,594	721,473

Scale of Commercial Charges adopted at a Special General Meeting of the Melbourne Chamber of Commerce, 15th May, 1854.

Commissions.—On cash payments, when not in funds, 5 per cent.; on cash payments when in funds, 2½ per cent.; on purchase and shipment of gold dust, 1 per cent.; on purchase and shipment of gold dust, if drawn against, 2½ per cent.

On the amount of invoice in either case.

On purchase and shipment of merchandise and on other purchases when not in funds, 5 per cent.; on purchase and shipment of merchandise and on other purchases when in funds, 2½ per cent.; on private sales, including the purchase of bills for remittance, 5 per cent.; on guaranty of sales, including remittances, 5 per cent.; on goods received for sale and reshipped, and on consignments of merchandise withdrawn, on invoice value, 2½ per cent.; on debts, rents, and other accounts collected, recovered, and remitted, 5 per cent.; on granting of letters of credit, 2½ per cent.; on letters of credit acted upon, an additional charge of 2½ per cent.; on freight or charter procured for vessels, and freight or passage-money collected, 5 per cent.; on freight paid at port of departure, 2½ per cent.; on ships' disbursements and outfits when not in funds, 5 per cent.; on ships' disbursements and outfits when in funds, 2½ per cent.; on guaranty of captains' drafts on owners, taken for balance of ships' disbursements, 5 per cent.; on money obtained on bottomry or respondentia, 5 per cent.; on insurance effected, or orders written for insurance, on the assured value, ½ per cent.; on insurance losses, partial or total, settled, or on premiums recovered, 5 per cent.

All sales of goods understood to be guarantied, unless there be special orders to the contrary.

Guaranty on security for contracts, 5 per cent.; acting as trustee on assignments, 5 per cent.; on advances on produce for shipment, 2½ per cent.

Auctioneers' commission and brokerage to be charged when incurred.

Advances and current accounts not liquidated at the end of the season, March 31st, the balance to be charged as a fresh advance, subject to a commission of 5 per cent.

Interest.—On advances for duty, freight, and lighterage, and on amounts occurring per annum, 10 per cent.

Charges.—For passing accounts with the government for emigrant ships, £21; for entering ship inward at the custom-house, when the original port of departure is Australia, Van Diemen's Land, or New Zealand, £2 2s.; for clearing ship outward, when

the port of destination is Australia, Van Diemen's Land, or New Zealand, £2 2s.; for entering ship inward from other ports, £5 5s.; for clearing ship outward, £5 5s.; for attending delivery of cargo from lighters, and giving notice to consignees, 15s. per day; fee for each surveyor within the city, £1 1s.; fee for survey of hatches and stowage of cargo, £1 1s.; fee for survey of hull of vessel, £5 5s.; on wool, for receiving, weighing, marking, and delivering, ½d. per load; in addition to the tare on wool, an allowance for draft of 1 lb. per cwt.

PILOTAGE RATES AT MELBOURNE, 1856.

	Sailing Vessel.	Steamer.	Maximum.	Minimum.
	s. d.	s. d.	£	£
From without the Heads to Melbourne or Geelong, and *vice versâ*, per ton	1 8	0 10	100	15
From within the Heads to Melbourne or Geelong, and *vice versâ*, per ton	0 9	0 6	60	10
Into or out of Port Albert, p. ton	0 9	0 6	60	5
Into or out of all other ports	0 6	0 4	40	4
Between Melbourne & Geelong	0 6	0 4	40	4

The above rates include two removes by the pilots.

Exemptions.—All ships belonging to her majesty, all ships outfitting to or refitting from the fisheries, all ships employed in the coasting trade, all ships regularly trading between any port of Victoria and of any of the colonies of New South Wales, Van Diemen's Land, New Zealand, West and South Australia (the master of such ship holding a certificate from the Pilot Board that he is competent to act as pilot to such trader), unless the services of a pilot shall have been actually received; and all ships not having actually received the services of a pilot.

The basin of port Philip, which receives the Yarra-Yarra, and other rivers, is a large circular bay, or inlet of the sea, whence the colony derived its former name. It has a narrow entrance, not more than 1¼ miles in width, partly occupied with rocks and shoals. A light-house has been erected near the extremity of Point Lonsdale, near the west side of the entrance, lat. 38° 16′ S., long. 140° 40′ E., and another on Point Gellibrand, near the head of the bay, between Williamstown and the mouth of the Yarra-Yarra River, lat. 37° 52′ S., long. 144° 55′ E. The bay is about 40 miles in depth from south to north, and where widest is about 40 miles from east to west. It is said to cover an area of above 800 square miles, and might accommodate all the navies of all the countries in the world. The whole trade of the colony, which is already very extensive, and is increasing with extraordinary rapidity, is at present carried on from this basin. And from its advantageous situation, and its stretching so far inland, it is probable it will always continue to engross the largest share of the trade, though, no doubt, it will be partly, also, carried on from other ports. Geelong, at the head of a deep bay on the west side of the basin, has a large population, and a very considerable trade.

COMMERCE OF THE UNITED STATES WITH AUSTRALIA, FROM OCTOBER 1, 1837, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage Cleared.	
	Domestic.	Foreign.	Total.	Total.	Exported.	Imported.	American.	Foreign.
Sept. 30, 1838	$38,546	$816	$34,362	$30,533	....	....	620	....
1839	6,700	....	6,700	58,844	....	....	1,053	....
1840	84,847	$6,022	90,869	122,141	....	....	1,368	....
Total	$125,183	$6,838	$132,021	$211,028	....	....	3,041	....
1841	$63,784	$112,557	$176,341	$86,706	$101,621	$37,125	....	....
1842	52,651	....	52,651	28,693	....	....	1,737	....
9 mos. 1843	57,805	11,232	69,037	44,916	6,730	....	590	....
June 30, 1844	29,667	....	29,667	....	....	....	415	....
1845	69,521	790	70,311	122	....	....	....	....
1846	48,783	....	48,783	....	....	....	....	....
1847	88,289	....	88,289	....	....	....	....	....
Total	$355,500	$124,579	$480,079	$160,431	$108,341	$37,125	2,792	....
June 30, 1852	$196,554	$11,713	$208,267	....	....	....	9,818	17,016
1853	4,148,828	138,174	4,287,002	....	$7,498	....	56,944	18,034
1854	2,999,685	149,444	3,149,079	$214,202	....	$197,581	39,421	4,989
1855	2,703,043	320,506	3,023,549	223,598	....	....	43,858	2,479
1856	4,909,925	125,047	5,034,972	134,452	8,112	10,960	42,865	4,722

Memel, a commercial town of east Prussia, lat. of light-house 55° 43′ 7″ N., long. 21° 6′ 2″ E. Population, in 1846, 9400. Memel is situated on the north-east side of the great bay, denominated the *Currische Haf*, near its junction with the Baltic. It is, consequently, the principal entrepôt of the country traversed by the Niemen, and as such enjoys a pretty extensive commerce. The harbor of Memel is large and safe; but the bar at the mouth of the Currische Haf has seldom more than 17 feet water, and sometimes not more than 13 or 14 feet; so that ships drawing more than 16 feet water are frequently obliged to load and unload a part of their cargoes in the roads, where the anchorage is but indifferent, particularly when the wind is north or north-west. A light-house, originally 75, but now 100 feet in height, has been erected on the north-east side of the entrance to the harbor. The light, which is fixed and powerful, may be distinguished in clear weather at more than 20 miles' distance. The outer buoy lies in 6 fathoms water, about a mile without the light-house, which bears from it south-east by east ½ east. The channel thence to the harbor is marked by white buoys on the north, and red on the south side. Three beacons to the north of the town, when brought into a line, lead directly into the harbor. Inasmuch, however, as the channel is subject to frequent changes, both in depth and direction, it is always prudent, on arriving at the outer buoy, to heave-to for a pilot; but this is not obligatory; and the Prussian authorities have issued directions for ships entering without a pilot, which may be found in NORIE'S *Sailing Directions for the Cattegat and Baltic*, p. 36. Timber forms the principal article of export; for though that of Dantzic be considered better, it is generally cheaper, and almost always more abundant, at Memel. Here, as at Dantzic, the best quality of all sorts of wood articles is called *khron*, or crown, the 2d, *brack*, and the 3d, *bracks brack*. Large quantities of hemp and flax are also exported, as are bristles, hides, linseed (the finest for crushing brought to England), wax, pitch, tar, etc. The exports of grain are sometimes very considerable. The wheat of Lithuania is reckoned the best. All flax and hemp shipped from Memel must be *bracked*, or assorted, by sworn selectors. See FLAX and HEMP. The imports consist principally of salt, herrings, coffee, sugar, spices, dye-woods, tobacco, tea, iron, cotton stuffs and yarn, cutlery, wine, etc. Merchants at Memel generally send their bills to Königsberg to be sold, charging their correspondents with 1 per cent. for bank commission, postages, etc. The navigation generally closes about the latter end of December, and opens about the middle of March.

Mercantile Agency System, U. S.—The Mercantile Agency is a name applied to various houses in the leading cities of the United States, and in Montreal and London. The principal object of the Agency is to supply, to annual subscribers, information respecting the character, capacity, and pecuniary condition of persons asking credit. The valuable services it has rendered to the domestic trade of the country, as a check upon our credit system, are acknowledged by the mercantile community. Its history, together with an explanation of its mode of operation, may not be without interest to the general reader and foreign merchant.

The Agency was first established in 1841 in the city of New York, by Mr. Lewis Tappan, and was conducted by him, upon a comparatively limited scale, until 1846, when Mr. Benjamin Douglass became his coadjutor, and assumed the chief management. From this time the business increased rapidly, and assumed a permanent and recognized position among the mercantile institutions of the country.

Our limits will not permit us to trace, step by step, the growth of the Agency, or to dwell upon the personal aspects of its history. Founded upon the interests of merchants, and conducted from the beginning by men of ability, capacity for work, high character, and thorough knowledge of the wants of mercantile business, its progress has been uninterrupted. From New York it has extended its branches and associate offices to seventeen other cities, viz.: Philadelphia, Boston, Montreal, Baltimore, Richmond, Petersburg, Charleston, New Orleans, Pittsburgh, Cleveland, Cincinnati, Chicago, Milwaukie, Dubuque, St. Louis, Detroit, and London, England. All these branches are under the direction of the proprietors at New York, and are governed by uniform rules. A daily interchange of information facilitates the answering of the inquiries of the respective subscribers for all parts of the country.

It is obvious that the gigantic labor of reporting the business men of Canada and the United States could not be performed by any one office, nor could the expense be borne by the merchants of any one city. It is performed by means of their system of branch offices, each supported by the subscriptions of the merchants, bankers, and manufacturers of the city in which it is located. The district allotted to each office is the country of which its city is the centre of trade. For instance, the Boston office reports that portion of the New England States of which it has the chief trade; the Dubuque, the greater part of Iowa; the Milwaukie, Wisconsin; the Charleston, South Carolina and Georgia; while the Ohio Valley is divided between the offices at Pittsburgh, Cincinnati, and Louisville.

This subdivision of labor is the means of securing a minuteness and accuracy of reports, which, to any one unacquainted with the machinery of the Agency, is very great. The operations of a branch office do not embrace a large extent of country. They are usually limited to the 150 or 200 counties, the majority of whose traders buy their goods chiefly at the city where it is established. In each of these counties the principal of the office secures one, two, three, or more correspondents, the number varying with the population, and the division of the local trade among towns. These correspondents are selected for their integrity, long residence in the county, general acquaintance, business experience, and judgment. Their duties are to advise the Agency promptly, by letter or telegraph, of every change affecting the standing or responsibility of traders; to notify it of suits, protests, mortgages, losses by fire, indorsements, or otherwise; to answer all special inquiries addressed to them by any of the associate offices; and to revise before each trade season, or oftener if required, the previous reports of every trader in the county, noting any change for the better or worse. No report is considered full unless it embraces, in regard to each trader, his business, the length of time he has pursued it, his success or the contrary, his age, character, habits, capacity, means, prospects, property out of business, real estate, judgments, mortgages, or other liens upon his property. The greatest care is taken in selecting the agents, who furnish the bulk of the information to the Agency. Their integrity of character, freedom from prejudice, and from any entangling connections with mercantile men, which might bias them in their reports, their social position, influence, and opportunities for knowing thoroughly the men they are reporting, are all taken carefully into consideration, and the very great success and expansion of the business is, we have little doubt, to be attributed, in a great measure, to the judgment and careful discrimination which has been exercised in this particular. Nevertheless, after all this care in the selection of the agents, prudence would seem to require some check upon them. This is done by traveling agents who are sent through the country, and who report the traders upon their own resources, and generally without any knowledge of what the local agent has previously reported. Their reports are compared carefully with those of the local agent, and any discrepancy thoroughly investigated. Again, much information of a most valuable character is derived from special correspondents, as bank cashiers, insurance agents, notaries public, sheriffs, and others, whose official position gives them peculiar opportunities of knowing not only the resources and character of business men, but also the degree of promptness with which they meet their business obligations. Another source of information is that afforded by merchants themselves, who frequently make "statements" of their own affairs from their books. These are given under their own signature, with the avowed purpose of having them used by the Agency as a basis for credit. The leading facts contained in such "statements" are of course always made matter of special investigation. As, for instance, a merchant in his "statement" says he owns a farm or a number of town lots, in a certain county, worth a certain sum. The records of the county are examined to see if any such property stands in his name; the estimate he puts upon it is compared with that given by persons acquainted with the value of property in that locality; and, lastly, a careful examination is made to ascertain if any incumbrance exists against it not mentioned in the voluntary statement of the merchant. All the other facts in his statement are scrutinized in like manner, and it is thus subjected to a very searching analysis. Reports obtained with the care thus exhibited, and from such a variety of sources, must certainly approach as near perfection as is practicable under any circumstances.

The records of each office are arranged according to counties. Each partnership and individual name is indexed for convenience of reference on inquiry being made by subscribers. The reports coming in daily are copied without delay in the book for the county to which they refer, and transmitted by mail or express to the next or central office. All unfavorable information is promptly copied on slips, and sent simultaneously to all the offices whose subscribers' interests are probably involved therein. Serious embarrassments, assignments, and failures, are telegraphed. The mass of information thus contributed by the branches to the central office passes into the hands of the chief clerk, is distributed by him to the heads of departments, by them in their turn parceled out among the clerks, and by these last recorded and indexed in the proper books. The records of the New York office of the Mercantile Agency contain the aggregate knowledge of traders possessed by the seventeen most extensive mercantile communities in North America.

A comparison of the system of the Mercantile Agency with that of the "Commercial Traveler," which it superseded, is much to the advantage of the former, as regards the item of cost as well as information. From

a large dry-goods house we learn that, in old times, its expenses for travelers counted by thousands, and that it was, to a vexatious extent, in the power of clerks, who were anxious to make sales, and whose good opinion was too often won by civilities than by responsibility. Now it holds an efficient check upon its salesmen, who travel not to choose customers, but to make collections, and obtain orders.

It has been urged as an objection to the Agency that it is *secret* in its operations, and that to the casual observer it partakes of the nature of a system of espionage, seemingly at variance with that candor and love of open dealing so characteristic of our commercial usages. This objection, with the explanations herein given, will appear utterly futile. It is necessarily of a confidential, and, to a certain extent, of a secret nature, because such communications must always be so. What merchant, banker, or president of an insurance company, who asked for and received such information as that kept by the Agency, from a business correspondent, would think of using it in any other way than as confidential, and to be kept strictly secret? What would his correspondent say if his communications were used as though they were not so regarded? Who would give such information, however pure the inquirer's motive might be, unless he were assured that he could implicitly rely upon this?

The principal Mercantile Agency established in the United States is that in the city of New York. Branches and associate offices are at all the following points: New York, Boston, Philadelphia, Baltimore, Cincinnati, Louisville, St. Louis, New Orleans, Charleston, Pittsburgh, Richmond, Chicago, Cleveland, Ohio; Detroit, Michigan; Dubuque, Iowa; Milwaukie, Wisconsin; Montreal, Canada East; London, England.

[It is proper to add that the editors do not entirely coincide with the writer of the above as to the merits of the Mercantile Agency system, but insert the article as being valuable and reliable as to statements and statistics.—*Eds. Cyc. of Com.*]

STATISTICS OF BANKRUPTCY IN THE UNITED STATES FOR THE YEAR 1857.

	Number of Stores	Failures.		Ordinary Failures.		How many have arranged with Creditors, and at what Average.
		Number.	Liabilities.	Number.	Liabilities.	
New York City, New York*	13,854	915	$135,129,000	600	$83,961,000	218, average 51 cts.
Albany	721	35	838,000	18	480,000	10, average 42 cts.
Buffalo	793	72	4,224,000	53	2,795,000	13, average 43 cts.
Oswego	204	13	161,000	12	156,000	
Rochester	408	31	859,000	27	707,000	8, average 48 cts.
Syracuse	305	29	436,000	22	268,000	4, average 31 cts.
Troy	391	24	1,607,000	12	682,000	3, average 48 cts.
Utica	298	20	535,000	9	376,000	5, average 47 cts.
Balance of the State	15,875	447	6,733,000	378	5,565,000	
Boston, Massachusetts	4,874	253	41,010,000	212	32,255,000	182, average 48 cts.
Balance of the State	10,257	230	2,611,000	202	1,711,000	
Philadelphia, Pennsylvania	7,404	280	32,951,000	155	16,925,000	63, average 54 cts.
Pittsburgh	1,374	28	1,183,000	22	913,000	23, average 47 cts.
Balance of the State	13,526	226	2,283,000	204	2,005,000	
Chicago, Illinois	1,350	117	6,579,000	89	4,571,000	11, average 54 cts.
Balance of the State	11,459	199	2,766,000	149	2,093,000	
Cincinnati, Ohio	2,813	98	3,808,000	69	2,387,000	54, average 48 cts.
Cleveland	559	30	613,000	24	390,000	10, average 47 cts.
Balance of the State	15,746	220	2,357,000	178	1,742,000	
New Orleans, Louisiana	2,230	58	6,285,000	36	4,383,000	8, average 55 cts.
Balance of the State	1,667	5	246,000	2	26,000	1 amounting to $13,000, pays 50 c.
St. Louis, Missouri	1,580	49	5,522,000	25	3,585,000	4, average 50 cts.
Balance of the State	4,851	29	433,000	17	247,000	
Providence, Rhode Island	1,100	55	4,564,000	22	2,136,000	12, average 40 cts.
Balance of the State	566	4	105,000	3	60,000	
Baltimore, Maryland	1,970	53	3,206,000	30	2,472,000	17, average 44 cts.
Balance of the State	3,368	41	725,000	37	708,500	
Detroit, Michigan	649	34	1,514,000	24	1,199,000	13, average 41 cts.
Balance of the State	5,706	98	1,004,000	71	732,000	
Dubuque, Iowa	403	36	735,000	21	463,000	4, average 44 cts.
Balance of the State	4,308	108	1,333,000	79	1,059,000	
Louisville, Kentucky	1,080	19	757,000	18	412,000	
Balance of the State	5,716	31	1,007,000	24	496,000	
Charleston, South Carolina	900	31	922,000	23	812,000	8, average 42 cts.
Balance of the State	2,538	24	805,000	20	245,000	
Territories	1,697	63	1,705,000	46	1,302,000	
Indiana	7,337	159	1,636,000	114	1,411,000	15, average 49 cts.
Richmond, Virginia	1,583	30	781,000	22	604,000	3, average 53 cts.
Balance of the State	7,781	90	982,000	70	749,000	
Milwaukie, Wisconsin	633	19	380,000	14	312,000	3, average 73 cts.
Balance of the State	3,757	101	1,244,000	92	1,150,000	
North Carolina	3 238	62	1,171,000	42	668,000	
New Jersey	4,433	86	1,142,000	72	836,000	
Connecticut	4,209	61	1,129,000	50	995,000	
Maine	4,912	81	1,060,000	71	892,600	
New Hampshire	2,700	70	928,000	60	775,000	
Vermont	1,902	57	473,000	49	382,000	
Georgia	5,539	32	925,000	21	681,000	
Delaware and District of Columbia	2,727	20	261,000	18	208,000	
Arkansas	1,170	7	309,000	5	285,000	1 amounting to over $100,000, will pay nearly all.
Alabama	2,694	16	295,000	14	265,000	
Mississippi	2,235	11	445,000	10	405,000	2, average 50 cts.
Tennessee	4,787	40	719,000	28	618,000	
Florida	783	7	250,000	5	220,000	2, average 52 cts.
Texas	2,447	16	593,000	12	353,000	
Total United States	208,061	4937	$291,750,000	3703	$193,305,500	
Toronto, Canada West	380	25	2,714,000	17	1,270,000	3, average 58 cts.
Balance of Canada West	3,444	109	2,172,000	73	1,031,000	8, average 45 cts.
Montreal, Canada East	1,992	15	523,000	12	445,000	4, average 52 cts.
Balance of Canada East	1,764	15	1,267,000	13	66,000	3, average 35 cts.
Nova Scotia and New Brunswick	1,797	22	1,575,000	21	1,363,000	3, average 50 cts.
Total British Provinces	8,303	186	$8,051,000	136	$4,715,000	
Total United States and British Prov.	212,364	5123	$299,801,000	3839	$197,080,500	

* Includes Brooklyn and Williamsburg.

Mercantile Law. Among the ancient Romans, trade and manufactures were accounted degrading and dishonorable employments; and what was done in that way was performed by slaves. None who had been employed in trade, or whose father had been a slave, could be chosen into the senate; and no senator, or father of a senator, could, by law, keep a bark above a certain small burden, in order, no doubt, to prevent his engaging in commerce. The Comoriats likewise despised trade; and at the Council of Melfi it was solemnly determined that none could exercise any traffic, nor follow the profession of the law, with a safe conscience.

These notions, however, were singular, and very different from the policy which has ever prevailed in England. According to a law of Athelstan, if any merchant made three voyages on his own account beyond the British Channel, or narrow seas, he was entitled to the privilege of a Thane; and it is especially provided by Magna Charta (c. 30), that all merchants, unless publicly prohibited beforehand, shall have safe conduct to depart from, to come into, or to tarry in and go through the realm, for the exercise of merchandise, without any unreasonable imposts, except in time of war; and that if a war breake out with another country, the merchants of that place shall be attached, but of their person only, till the king is informed how our merchants are treated in the land with which we are at war; and if our merchants are secure, theirs shall be so too. Upon this Montesquieu remarks, with admiration, that the English have made the protection of foreign merchants one of the articles of their national liberty; and also that the English know much better than any other people on earth how to value at the same time these three things, religion, liberty, and commerce. These, indeed, are the common rights of mankind. They are also inseparably connected together; and as liberty is the life of commerce, so commerce is in its turn the parent of man's advantages, moral and physical, personal, and political. Its protection and encouragement are now, therefore, an established principle of the law of nations.

Trade and commerce being thus the immediate offspring of natural liberty, the *lex mercatoria*, or the law of merchants, is less a branch of this or that system of municipal law, than the law of nations, or that universal law which reason teaches all men. It is, if one may so call it, an ambulatory system of civil law, not confined to any one place or locality, but attaching to the persons of men in all their commercial transactions throughout the world; the custom of merchants being everywhere acknowledged, as their persons and property are by the law of nations everywhere protected.

Thus, not to enter here at large into all the details of mercantile law, which will be found in other parts of this work, divers sorts of writing used among merchants and trading people in commercial transactions, are sustained in our courts, after the example of other States, although not executed with all the formalities of common deeds. Missive letters, *in re mercatoria*, are valid, although not holograph, and commissions from merchant to merchant, though not signed before witnesses; nor do fitted accounts among merchants, in mercantile matters, require the writer's name or witnesses. But of all obligations, *bills of exchange*, which owe their origin to merchants, are the most favored. The risks and accidents of trade have also caused particular favor to be extended to persons engaged therein, who have fallen into bankruptcy; provision having been made by statute for their entire discharge on their surrendering their effects to their creditors. See LAWS OF COMMERCE.

Mercator Gerard, one of the most celebrated geographers of his time, was born at Rupelmonde, in 1512. He applied himself with such industry to geography and mathematics that he is said to have frequently forgotten to eat and drink. The Emperor Charles V. had a particular esteem for him, and the Duke de Juliers made him his cosmographer. He composed a chronology, some geographical tables, and an atlas, having engraved and colored the maps himself. He died in 1594. His method of laying down charts is still used, and bears the name of *Mercator's Charts*.

Mercator's Charts. The true inventor of these charts is said to have been a Mr. Wright, who made several voyages; and in his absence Mercator published the charts in his own name, 1556.—PARDON. They are, however, now confidently ascribed to Mercator's own ingenuity. In these charts the meridians and parallels of latitude cut each other at right angles, and are both represented by straight lines, enlarging the degrees of latitude as they recede from the equator.

Mercator's Chart, or *Projection*, is a representation of the sphere on a plane, in which the meridians are represented by equidistant parallel straight lines, and the parallels of latitude also by straight lines perpendicular to the meridians. This projection, which is universally adopted for nautical charts, by reason of the facilities which it affords in navigation from the circumstance that the rhumb, or sailing course between two points, is represented by a straight line, was invented by Gerard Mercator (his true name was *Kauffman*, of which Mercator is the Latin equivalent), a native of Rupelmonde, in East Flanders, born in the year 1512. But, though Mercator gave his name to the projection, it does not appear that he knew the law according to which the distance of the parallels from the equator increases. The true principles of the construction were found by Edward Wright, of Caius College, Cambridge, who explained them in his treatise, entitled *The Correction of certain Errors in Navigation*, published in 1599, and are as follows: Suppose one of the meridians on the globe to be divided into minutes of a degree; one of these, taken at any parallel of latitude, will be to a minute of longitude, taken on that parallel, as the radius of the equator to the radius of the parallel; that is, as radius to the cosine of the latitude, or as the secant of the latitude to radius. This proportion holds true on the map in this sense, that if a minute of the equator be taken as the unit of a scale, and that unit be considered as the radius of the tables, then the representation of a minute of latitude will be expressed by the number in the trigonometrical tables which is the secant of that latitude. Hence, in the map, while the degrees of longitude are all equal, the degrees of latitude marked on the meridian form a scale of which the distances go on increasing from the equator toward the poles, each being (approximately) the sum of the secants of all the minutes of latitude in the degree. The numbers resulting from the addition of the secants of the successive minutes, reckoned from the equator, form a scale of meridional parts, which is given in all books of navigation. The very remarkable property of this projection, namely, that the divisions of the meridian are analogous to the excesses of the logarithmic tangents of half the respective latitudes augmented by 45°, above the logarithm of the radius, was discovered by Bond about the year 1645; but was first demonstrated by James Gregory, in his *Exercitationes Mathematicæ*, published in 1668.—UNE's *Dict.*

Mercator's Sailing is that which is performed by Mercator's charts.

Merchant, a person who buys and sells commodities in gross, or deals in exchanges, or one who traffics in the way of commerce, either by importation or exportation. The merchants of London and Amsterdam were accounted the most enterprising and richest in the world. An attempt was made by Queen Anne's ministry to exclude merchants from sitting in the House of Commons, in 1711; but it failed. The Mer-

chant Adventurer's Society was established by the Duke of Brabant in 1296. It extended to England in Edward III.'s reign, and was formed into an English corporation in 1564.—HAYDN.

Laws of Merchants.—The laws controlling merchants and commercial transactions are numerous, and are treated of in detail in the article LAWS OF COMMERCE. As an analysis of these laws, it may be stated, that most of the European and American countries have left uncontrolled the free action of the merchant. In Lubec every merchant is required to be a citizen. Russia has established numerous restrictions. The body of merchants are divided into three guilds or classes, to which none but Russian subjects or denizens (*i. e.* naturalized foreigners) may belong. In each guild a certain tax is imposed, and a determinate amount of capital is required; also, the nature and extent of the commercial operations permitted have proportioned limitations. Nearly every country, except Great Britain, France, and the United States, prescribes the enrollment in a public register of commerce, of the name of the merchant, the nature of his business, the name of each partner of the firm, and the dormant partners included in the firm and company, the power conferred on any party to act per procuration, and every particular connected with the formation and dissolution of the partnership. In some countries these details must be published in the gazette and newspapers. This register is either established at the tribunals of commerce or at the civil courts. Every publicity is given to such enrollments; and any person, by paying a small fee, may obtain extracts from them. The parties interdicted from engaging in trade are, with a few exceptions, only those who are laboring under a civil disqualification.

General Regulations.—The institutions of guilds or privileged companies are of Roman origin. Traces of them still exist in London and in Scotland; but the convivial meetings in which are expended the grants, which, in ancient times, they received from government, are the only evidences of periodical revival. The word "guild" was originally applied to a society of merchants, as by the statutes of the guild in 1283, and by the statute of William, c. 35, but out of them arose all the different corporations of craftsmen. A decree, arbitral, promulgated in Edinburg, dated from "Halyruidhouse, the twenty-twa day of Apryl, the yeir of God, one thousand foure hundred fourscore three years," thus expresses the union of merchants and craftsmen in the guildry: "Toward the lang controversies for the guildrie, it is finally, with common consent, appoyntit, agreit, and concludit, that als weil craftsmen as merchants sall be received and admitted gild brether, and tho ane not to be refusit nor secludit therefra mair the uther, they being burgesses of the burgh, als met and qualified thairfore; and that gildbrether to have liberty to use merchandice;" and by the same decree it is ordered, "That na manner of person be sufferit to use merchandice or occupy the hardiewark of any free craft within this burgh, or yet to exerce the liberty and priviledge of the said burgh without he be burgess and freeman of the same." This decree was ratified in Parliament; and, therefore, after this period, the general right of the original guilding, or society of merchants of the realm, was abridged so far that they could not trade in Edinburg unless they were admitted as burgesses. The commercial regulations of Lubec are still founded on the same system; the merchants are divided into nine companies and colleges, and administrators, all of which bear the stamp of antiquity. Russia, besides the forming of merchants into guilds, divides commerce into various branches, and specifies what commercial operations include, with some notices of commerce with patent. France determines what are acts of trade with regard to the competency of tribunals of commerce. Holland, Wurtemburg, and a few other countries, have similar determinations of what is comprised in commercial operations.

Who may be Parties to Mercantile Contracts.—It was once the doctrine of the English courts, that the law-merchant did not apply to any contracts between parties who were not merchants. But this view has passed away; and it has long been a well-established rule in that country as well as this, that the law merchant applies to mercantile contracts, such as negotiable notes, bills of lading, charter parties, policies of marine insurance, and the like, whoever may be the parties to them. All mercantile transactions begin and end in contracts of some kind—express or implied, executed or to be executed; and the first element of every contract is the existence of parties capable of contracting. Generally, all persons may bind themselves by contract. Whoever would resist a claim or action founded on his contract, on ground of incapacity, must make this out. See PARSON'S *Mercantile Law.*

Minors.—By the English law, a minor can not contract commercial engagements; yet he may act as a partner, and perform other functions for beneficial purposes, without being liable for contracts entered into during his minority. In Scotland, a minor may become a trader; and when he holds himself out as a major, he becomes responsible. In France, minors, by being emancipated, may engage in trade previous to the 18th year of their age, when authorized by a registered act, either of their parents or family council, or by civil authorities. They are allowed, in this case, to pledge or mortgage their estates. Similar principles are adopted in Spain, Portugal, Prussia, etc., etc.

The age at which minority ceases, is: In England, Scotland, British Colonies, United States, Hungary, Roman States, France, Normandy, Two Sicilies, etc., 21 years; in Mauritius, British Guiana, 24 years; in Cape of Good Hope, Ceylon, Holland, 25 years; in Gurnsey, Jersey (Coutume of Normandy), 20 years.

Married Females.—In London, a married female may engage in trade as a *feme sole*, but she must trade within the city, and on her account; she is, therefore, liable to be a bankrupt. In England she may engage in trade when authorized by her husband, but she is not responsible. Her endorsement, acceptance, negotiation of bills of exchange, are null, and no action can be maintained against her. The husband is liable for the debts contracted by her in a separate trade. In Scotland, parties may settle, by marriage contract, their several rights and interests. A married female can not act by or for herself.

In France, Spain, Portugal, Prussia, and Sardinia, the authority of the husband is necessary for her engaging in trade. Her property by dowry, and that held in common, are responsible for the obligations she contracts with reference to trade. The authority of the husband ought to be made public, as also the revocation of the same. In America, the common law of England is generally retained, with some exception, in Pennsylvania, Louisiana, and South Carolina. In Lower Canada and St. Lucia, same as the Coutume of Paris; and in the Mauritius it is regulated by the civil code. In Malta, a married woman may engage in trade with the consent of her husband, but she can not be imprisoned for debt. In Lubec, married females must receive the authority of the Senate for opening a shop. In Wallachia, a married female can not engage in trade without a marriage contract.

Aliens.—In Great Britain, United States and America generally, aliens enjoy the same privileges as natives with regard to trade. In France they enjoy the greatest liberty, and the same rights as the natives. In Russia and Sweden, a variety of provisions are enacted with regard to aliens, but a restriction prevails in all. In Spain and Portugal, aliens not naturalized may engage in trade, but they are established according to existing treatises with their respective govern-

ments. In Lubec, the restrictions on foreigners are extended even to deny them the power of establishing themselves as residents, without the authority of the tribunal of judicial police. See LEVI's *Com. Law.*

Mercury, or **Quicksilver** (Fr. *Vif argent;* Ger. *Quicksilber;* It. *Argento vivo;* Sp. *Azogue;* Rus. *Rtut;* Lat. *Hydrargyrum;* Arab. *Zibákk;* Hind. *Parah;* Sans. *Pārada*). This metal was known in the remotest ages, and seems to have been employed by the ancients in gilding, and separating gold from other bodies, just as it is by the moderns. Its color is white, and similar to that of silver; hence the names of *hydrargyrum, argentum vivum, quicksilver,* by which it has been known in all ages. It has no taste or smell. It possesses a good deal of brilliancy; and when its surface is not tarnished, it makes a very good mirror. Specific gravity 13·568. It differs from all other metals in being always fluid, unless when subject to a degree of cold equal to —39°, when it becomes solid. The congelation of mercury was first observed in 1759.—THOMSON's *Chemistry.* Mercury is found in various parts of the world. Among the principal mines are those of Almaden, near Cordova, in Spain; Idria, in Carniola; Wolfstein and Morsfield, in the Palatinate; Guancavelica, in Peru, etc. Most of the ores of mercury are readily distinguished from those of any other metal: in the first variety, globules of the metal are seen attached to or just starting on the surface, which is at once a sufficient criterion, mercury being unlike every other metal; in the second, by the fine white color, and the action of the blow-pipe, which sublimes the mercury and leaves the silver behind; the third, by its beautiful deep red tint, varying from cochineal to scarlet red, excepting in those termed hepatic cinnabars, which are generally of a lead gray; the fourth, by its gray color, its partial solubility in water, and its complete volatilization by heat, emitting at the same time an arsenical odor. Before the blow-pipe, these varieties burn with a blue flame and sulphurous odor, leaving more or less residue behind them, and which may consist of earthy matter, as silex and alumina, together with the oxyds of iron and copper.—JOYCE's *Chem. Min.*

Mercury is often adulterated by the admixture of lead, bismuth, zinc, and tin. When the metal quickly loses its lustre, is covered with a film, or is less fluid and mobile than usual, or does not readily divide into round globules, there is reason to suspect its purity. Our supplies of mercury are derived almost wholly from Spain. The imports usually amount to from 2,000,000 to 3,000,000 lbs., of which about 300,000 lbs. are retained for home consumption, the surplus being exported to South America, France, the East Indies, etc. The exports of quicksilver from Spain in 1848 amounted to 48,868 quintals, of which nearly 40,000 quintals were furnished by the mines of Almaden. The province of Idria, in Austria, has also some rather productive quicksilver mines. And the produce of this metal in California, and other parts of in South America, is said to be already considerable, and to be increasing. There are two sulphurets of mercury; the black or *ethiops mineral,* and the red or *cinnabar.* When mercury and sulphur are triturated together in a mortar, the former gradually disappears, and the whole assumes the form of a black powder, denominated ethiops mineral. If this powder be heated red-hot, it sublimes; and on a proper vessel being placed to receive it, a cake is obtained, of a fine red color, which is called cinnabar. This cake, when reduced to powder, is well known in commerce by the name of *vermilion.* Cinnabar may be prepared in various other ways. Calomel, or protochloride of mercury (*mercurius dulcis*) is the most useful of all the preparations obtained from it. It is in the form of a dull white, semi-transparent mass, having a specific gravity of 7·176. It is more generally employed, and with better effect, than almost any other remedy in the whole range of materia medica. Besides its uses in medicine, mercury is extensively employed in the amalgamation of the noble metals, in water-gilding, the making of vermillion, the silvering of looking-glasses, the making of barometers and thermometers, etc. For the imports of mercury into the United States, see QUICKSILVER.

Meridian, in geography, a great circle supposed to be drawn through any part of the surface of the earth and the two poles, and to which the sun is always perpendicular at noon. In astronomy, this circle is supposed to be in the heavens, and exactly perpendicular to the terrestrial one.

Meridional Distance, in navigation, is the same with departure, or easting and westing, being the difference of longitude between the meridian under which the ship now is, and any other meridian which she was under before. Meridional parts, miles, or minutes, in navigation, are the parts by which the meridians in a Mercator's chart increase as the parallels of latitude decrease.

Meridian, First. The meridian from which longitudes are reckoned. The choice of the first meridian is entirely arbitrary; and most nations reckon the longitudes from their capital, or meridian passing through their principal observatories. Thus, in English works, the longitude is reckoned from Greenwich; in French, from Paris; in Russian, from St. Petersburg, etc. Ptolemy employed the Canary Islands, the French formerly reckoned from Ferro, and the Dutch from the Peak of Teneriffe. Mercator chose the Island Del Corvo. See LONGITUDE.

Meridian Line. A line traced on the surface of the earth, coinciding with the intersection of the meridian of the place with the sensible horizon.

Meridian of a Globe, or the Brass Meridian, is a graduated circular ring, within which the globe is suspended and revolves, and by means of which it is connected with the frame bearing the horizontal scale. Meridian lines are also traced on the globe itself, usually at 15° distance, or a difference of longitude corresponding to an hour of time. It is probable that these, with the parallels of latitude, suggested to Descartes the idea of *co-ordinates,* which he applied so successfully to connect algebra with geometry.

Merino Sheep. A breed of sheep till lately peculiar to Spain, but now reared in Saxony, England, and more particularly in Australia, chiefly for the superior fineness of their wool. The word *merino* signifies overseer of pasture lands, and is applied to this breed of sheep, because in Spain they are kept in immense flocks, under a system of shepherds, with a chief as a head, and with a general right of pasturage all over the kingdom. The best flocks of Spanish merinos are found in Leon and Castile: of the Saxon variety, at Stolpen and Rochsberg; but merinos are to be found in North America, the Cape of Good Hope, and, above all, in New South Wales, which promises to be one of the principal wool-growing countries in the world. See WOOL.

Meerschaum (Ger.; Eng. *sea-froth;* Fr. *Ecume de Mer Magnésie carbonatée silicifère*), is a white mineral, of a somewhat earthy appearance, always soft, but dry to the touch, and adhering to the tongue. Specific gravity 2·6 to 3·4; affords water by calcination; fuses with difficulty at the blow-pipe into a white enamel, and is acted upon by acids. It consists, according to Klaproth, of silica, 41·5; magnesia, 18·25; water and carbonic acid, 39. Other analysts give silica 50, magnesia, 25, water 25. It occurs in veins of kidney-shaped nodules, among rocks of serpentine, at Egribos, in the Island of Negropont, Eski-Schehir, in Anatolia, Brussa, at the foot of Mount Olympus, at Baldissero, in Piedmont, in the serpentine veins of Cornwall, etc. When first dug up, it is soft and greasy, and lathers like soap; and is on that account used by the Tartars in washing their linen. The well known Turkey tobacco-pipes are made from it, by a process analogous to that for making pottery-ware. The bowls of the pipes,

when imported into Germany, are prepared for sale by soaking them first in tallow, then in wax, and finally by polishing them with shave-grass.

Messina, *Zancle and Messana*, a city and sea-port of Sicily capital of a province on the Strait of Messina, eight miles north-west from Reggio. Latitude of light-house 38° 11′ 10″ N., long. 15° 34′ 7″ E. Population 83,772. It is built on the west side of a noble harbor, inclosed by old walls; has wide, handsome streets, paved with lava, and lined with white stone houses. The port, defended by several fortifications, is formed by a long curved tongue of land, projecting north-east from the main land, and then bending westward in the form of a sickle, whence its ancient Greek name. It is about four miles in circumference, has deep water throughout, and large vessels can load and unload close to the quays. The trade is considerable. The exports comprise oranges and lemons, silk, olive-oil, wine and spirits, linseed, salt, fish, etc. The imports consist of colonial produce, cotton and woolen fabrics, hardware, and other manufactured goods. It has an active tunny and other fisheries, and manufactures of damasks and satins. Population of the province in 1851, 349,484. *The Strait of Messina* (*Fero di Messina*), separates Sicily from South Italy, and unites two basins of the Mediterranean. Length, north to south, 22 miles; breadth, 10 miles to 2½ miles at its north extremity, between the Faro Tower, Sicily, and the Rock of Scylla. No bottom has been reached in it with 200 fathoms of line. On its shores are the cities of Reggio and Messina, opposite which latter is the whirlpool of Charybdis.

A treaty of reciprocity between the United States and the Two Sicilies was concluded on the 1st of December, 1845, and ratified on the 1st of June, 1846. The terms of the treaty are faithfully adhered to, inasmuch as the citizens of the United States are treated in the same manner as the subjects of the Two Sicilies. The commercial intercourse of the United States is dependent solely on the regulations of the mother country: the existing regulations are neither temporary nor fixed to a definite period, but permanent. There are no privileges permitted to the commerce of other nations which are denied to the United States. There are restrictions imposed on commerce of others which have not treaties of commerce with the Sicilian government, as to be seen in the custom-house regulations. All goods imported by privileged vessels have a per centage allowed of 10 per cent. on the import duty, and the vessels themselves enjoy all the privileges and exemptions of national vessels, except the coasting trade. The few articles shipped to the United States, on which an export duty is paid, are brimstone, oil, and linen rags; if shipped by American or Neapolitan vessels to the United States they enjoy a drawback of 10 per cent. on the export duty. The port charges consist of the tonnage duty and some small charges in the police, the custom-house, and the health-office. The tonnage duty is 8 Sicilian grains, or 4 Neapolitan bajocs per ton, which is equal to 3¼ American cents. The small charges amount to nearly the same, consequently the whole port charges are from 7½ to 8 cents, United States' currency, per ton. Pilotage is $5 for a vessel of any size. The transhipment of goods in vessels belonging to the United States is not permitted for another port in the kingdom of the Two Sicilies, although it is allowed for foreign ports without any privilege or restriction. United States' vessels may complete their cargoes in one or more ports of this kingdom, or on the Island of Sicily, without being subject to pay the tonnage duty more than once. The moneys, weights, and measures known and in common use at the different ports are not the same as those established by the supreme law of the mother country; and they are even at variance in the ports of Messina, Catania, and Syracuse.—*Com. Rel. U. S.*, 1856-7.

Metalliques, a kind of Austrian stock, so called because the interest is paid in the precious metals, and not, like the interest of other stocks, in paper money. The name was afterward used in Russia and other countries, for stocks of a similar kind.—E. A.

Mexico. Discovered in A. D. 1518. It was conquered by the Spaniards under Cortez, whose name is infamous on account of his cruelties to the vanquished, A. D. 1521. The mint of Mexico, the richest in the world, was begun in 1535. This country, like other States in the New World, has recovered its independence. Iturbide made emperor, May, 1822. Mexican constitution proclaimed by the president, Vittoria, October, 1823. Iturbide shot, July 19, 1824. Treaty of commerce with Great Britain ratified, April, 1825. Titles suppressed, May, 1826. The expulsion of the Spaniards decreed, March, 1829. Spanish expedition against Mexico surrendered, September 28, 1829. Mexican revolution; the president Guerrero deposed, December 32, 1829. The independence of Mexico, previously recognized by the great European powers, also recognized by the Emperor of Brazil, June, 1830. Civil war between Bustamente and Santa Anna, 1832. Santa Anna elected president, March, 1834. Declaration of war against France, November 30, 1838. Castle of San Juan de Ulloa taken by the French, November, 27, 1838. This war terminated March 9, 1839. Civil war, with change of leaders at various times. Santa Anna displaced Bustamente again, October 6, 1841. Insurrection of General Paredes against Santa Anna, November 5, 1844; succeeds without bloodshed, and Herrera made president, December, 1844. Paredes overturns Herrera, December, 1845. War with the United States, 1846; Mexicans defeated at Palo Alto, May 8, 1846, and subsequently at Matamoras. Santa Fé captured, August 23, and Monterey September 24, 1846. Mexican Congress authorized their government to raise $15,000,000 for the war against the United States, upon the mortgage or sale of church property, January 8, 1847. Battle of Buena Vista, February 22, 1847. Vera Cruz surrendered to General Scott, March 29, 1847. Battle of Cerro Gordo, April 18. General Paredes landed at Vera Cruz in disguise, August 14, 1847. Battles of Contreras and Churubusco, August 20, 1847; of Chepultepec, September 12. Surrender of City of Mexico to American General Scott, September 14, 1847. Treaty of peace with the United States ratified at Queretaro, May 30, 1848. Mexico evacuated by the American troops, June 12. Paredes excites a revolt at at Guanaxuato, June 15. Herrera becomes president, July 6. Bustamente defeats Paredes, July 18. Vera Cruz surrendered by the United States, August 1. Signor de la Rosa first Mexican minister to the United States after the war, presented his credentials, December 2, 1848. See MAYER'S *Mexico*; POINSETT'S *Notes on Mexico*; DE BOW'S *Rev.*, ii., 27, 165 (J. R. POINSETT), v., 401; *North Am. Rev.*, xliii., 226 (Judge BULLARD), xx., 77 (J. SPARKS); HUNT'S *Mag.*, x., 118 (B. MAYER), xv., 250, xvi., 455.

The territory constituting the republic of Mexico has an area of 855,964·49 square miles, and forms, in its political divisions, 21 States, a Federal District, and three Territories. The population has somewhat augmented since the time of its independence, and the census (Tejada's) of 1850 states its position and numbers as follows:—No two authorities agree as to the area and population of Mexico.

Area in 1821.	Ceded to U. S. by treaty of 1848.	Area in 1859.*	Population in 1851.
Sq. leagues.	Sq. leagues.	Sq. leagues.	
216,012·27	109,944·80	106,067·47	7,659,919

* By the treaty of Dec. 30, 1853, defining more accurately the boundary between Mexico and the United States, additional territory was ceded to the latter, for the consideration of $10,000,000.

More recent returns would indicate a greater increase of the white than other classes of population;

but it is probably explained by the fact that certain literary acquirements define color, and that successful efforts have been made to advance the common education in many of the States. A census stated to have been taken in 1854, makes some very slight alterations in the preceding table. It raises the population to 7,853,394.

Along the eastern declivity of the Cordilleras of the Andes, from 3000 to 4000 feet above the level of the sea, grow the coffee and tobacco, both of unusual excellence; but the coffee is heavily burdened with the internal taxes of the States, and the sale of tobacco is a monopoly of the government; so that, with these restrictions upon them, their cultivation languishes. From this elevation to the sea is the country of cane, of the product of which little is at present exported. Cochineal, which has greatly diminished in quantity within the past few years, has become of little importance. Wheat, the growth of the table-lands, is equal to the best in the world, and, when not absolutely forbidden, a heavy duty rests upon the imported article, which, unless in times of scarcity, is equal to a prohibition. The lands of the people of the hot and temperate climates are chiefly taxed with this great difference; and, in consequence, the flour is brought to them, often a distance of 200 miles, on mule-back, instead of being received at a fair and cheaper rate from abroad, by the sea. This weight falls heavily upon the State of Vera Cruz, and exists for the benefit of the proprietors of the wheat-fields, principally of Puebla; but force and wealth prove ever to abide with the latter State, in every attempt to obtain relief. Nor do the burden and vexation stop here. Notwithstanding the exemption seemingly given to the imported article from other than the federal duties, the owner has often to pay other sums at the ports of entry, in the nature of municipal duties, and at every remove from State to State.

Maize, although indigenous to the table-lands, and growing in every climate of the republic, is rarely to be found at a low price anywhere; and this, not from any failing of industry or a want of knowledge in its cultivation, but from droughts that continue, at times, for years, and sometimes until districts are half depopulated. Even in the fertile valley of Mexico, about the capital itself, corn usually bears a price of about $2 the bushel. The cotton, wherever it has been attempted to be raised, has been materially and discouragingly affected by insects; and the article is yearly the subject of special licenses to individuals, to be introduced at Vera Cruz at rates lower than those designated by the tariff, to supply the calls of cotton manufactories. The vine and the olive have been attempted to be cultivated since the revolt from Spain, but with poor, or only partial success. The price of the *maguey*, both in its natural state as *pulque*, and as the distilled liquor made from it, *mescal*, is an important item in the economy of considerable territories, but of no consideration in commerce. The pith of some varieties of the plant, baked like a potato, is, in many places, the food for nearly the year round of the half-wild tribes of the *sierras*; and the spirituous extract is the inebriating draught that keeps a large portion of the population about the cities and towns where it can be raised or bought, in a state of wretchedness and physical destitution.

The principal manufactures of Mexico are sugar and rum, aloes, wine, and brandy, earthen and stone ware, glass, paper, and tissues of cotton, wool, and silk. M. Lerdo de Tejada estimates the entire value of the manufactures of all kinds in Mexico, annually, at $80,000,000 to $90,000,000.

The production of gold and silver in the republic has arrived at a state of great prosperity; but the inadequate supply of quicksilver is felt as a considerable obstacle to the still greater development of the mineral wealth of Mexico.

Manufactures.—The principal products of Mexican industry are brandy, and sugar made from cane, mescal, made from the juice of the maguey, oil, wine, and brandy made from grapes, earthen and glass wares, paper and spun and woven cotton, silk and woolen. Sugar is made in mills on all the estates where the cane is cultivated, and which are found chiefly in the States of Vera Cruz, Tabasco, Yucatan, Mexico, Guerrero, Michoacan and Guadalajara; and brandy by stills in most of them. Although the ancient and imperfect system is generally pursued, some improvements have begun to be introduced, of which may be cited the apparatus lately put up on the hacienda of La Puga, near Tepic, that of San Carlos, in the Cañeda of Cuautla, and in Silva, four leagues from San Juan Bautista de Tabasco, for sugar-making and distilling brandy. For the making of oil there are already in the capital 49 mills, besides those in Tacubaya, Toluca and Puebla. Not only oil is made in them from olives, which nearly supplies the consumption, but from ajonjote, linseed, rape-seed, colwort, higuerola, almonds, cacahuate, small nuts, and finally from calves' and pigs' feet, etc., to oil wheels and machinery With respect to grape-wine and brandy, although there were vineyards in several States, they are manufactured only in those of Guanajuato, Coahuila, Lower California, Sonora, and Chihuahua, from the last of which are annually made more than 600 barrels of brandy, 300 of wine, and 200 tierces of raisins. For the manufacture of earthen vessels of all kinds there are establishments in the republic, where they are made with much skill, the best in Mexico, Guanajusto, and Guadalajara. In fine pottery, great improvements have been recently made in Puebla, where the business has been carried on from very remote times, in Salamanca, in the state of Guanajuato, and lately in the capital a manufactory excels all the rest. There are four establishments for plain glass in the capital, and the States of Mexico and Puebla, the product of which exceeds the consumption. There are eight paper mills in the Federal District, and the States of Mexico, Puebla and Jalisco, which not only supply the demand for the press, but for other purposes, particularly writing-paper equal to that of other countries. The scarcity of linen rags requires most of the paper to be made of cotton, though some is made of linen, and also of the filaments of the maguey. Although many hand-wheel looms are used in making cotton fabrics, as rebozos, mantas and other ordinary articles, there are 62 large establishments moved by machinery, in the Federal District, and the States of Coahuila, Durango, Jalisco, Puebla, Mexico, Queretaro, and Vera Cruz. Although some pretty fine linens are made in them, they are but few, the chief part being hilazas and mantas, which in 1845 amounted to 3,000,000 pounds of the hilazas and 1,000,000 pieces of the latter. The manufactory of rebozos in the city of Zamora in the State of Morelia, is worthy of particular notice. For woolen fabrics, besides the numerous shops in which are manufactured ordinary cloths and various common articles, there are seen large establishments in the district and the States of Mexico, Queretaro, Zacatecas and the territory of Hexcala, in which are made cloths, cassimeres, carpets, baize, etc., which compete with those imported, both in quality and in price. In spinning and winding silk, more than 60 hand machines are in the capital, Puebla and Guadalajara, and the products are preferred to the foreign. In the capital is a machine by horse-power, on the French plan, which can spin above 100 lbs. a day. About 40,000 lbs. are estimated to be spun in Mexico annually. The only woven silk yet made are some rebozos and bands. All kinds of fancy trimmings are made in Mexico, as buttons, cords, braids, and many ornaments of cotton, wool, and silk; and the best factory is that of the Hopicio for the poor in the capital, where they are as well made as in Europe. Gold and

silver thread of all kinds are made, and bugles, spangles, galloon, cords and belts of silver and gold, and bells of silver and copper. Oil-cloths are made, of qualities and patterns equal to foreign. Many other minor articles are also manufactured, to a considerable amount annually. An establishment for stearine candles has been commenced, under an exclusive privilege. According to the estimates of Señor Quiros in 1817, this branch of products amounted to $16,011,818; they are now, probably, not less than $80,000,000 or $90,000,000.

Mineral Resources of Mexico.—In a period of 27 years, from 1825 to 1851, both inclusive, the average value of the precious metals annually exported was $9,481,042, as appears from a recent work of Miguel Lerdo de Tejada, "*Comercio de México desde la Conquista hasta hoy*," which gives the following table of the amounts *legally* exported in coin and otherwise, during the period designated:

Years.	Value.
1825	$3,702,447
1826	5,847,795
1827	9,669,428
1828	12,387,288
From July, 1829, to June, 1830	12,022,812
" 1830 " 1831	10,594,974
" 1831 " 1832	7,290,808
" 1832 " 1833	14,160,146
" 1833 " 1834	13,587,759
" 1834 " 1835	8,062,213
" 1835 " 1836	12,705,471
" 1836 " 1837	8,471,826
" 1847 " 1838	4,459,745
1839	11,625,143
1840	6,402,185
1841	11,661,491
1842	8,511,856
1843	10,645,883
1844	11,661,296
1845	11,830,901
1846	9,687,829
1847	888,195
From January, 1848, to June, 1849	10,994,788
From July, 1849, to June, 1850	12,166,806
" 1850 " 1851	8,808,081
Aggregate	$237,026,081
Average	9,481,042

It is believed that immense quantities of sulphur, sufficient, it is stated, to supply the manufacturing wants of the whole world, are to be found in the State of Puebla. A late Mexican paper says, in reference to these sulphur-beds: "The volcano of Popocatapetl is no uncertain or chance enterprise. It possesses a real and certain treasure, and that treasure is the inexhaustible amount of pure sulphur which is springing up every day in infinite abundance from its bowels." The *Siglo* newspaper, published in Mexico, says: "The United States consume annually, in manufactures, sulphuric acid to the amount of the enormous sum of $18,000,000 to $22,000,000; and, perhaps, it would not be out of the way to estimate the imports of sulphur into Great Britain at nearly the same amount. In these two countries alone, we should find a market for over $30,000,000 worth annually. The price of sulphur is now at about $50 per ton, in the English and American markets, for the article brought from Vesuvius and the sulphur-beds of Italy. The article from Popocatapetl would, of course, command a higher price, from its superiority. * * * The supply in Vesuvius is limited, while that of Popocatapetl would find little diminution by the labor of a century." There seems to be no doubt of the existence of incalculable quantities of pure sulphur in the vicinity of this volcano. From observations actually made, and estimates formed on the spot, by scientific officers, it is believed that the sulphur thrown up and hardened may be set down at millions of millions of arrobas. The government of Mexico has already given attention to this subject. The stipulations by which commercial relations between the United States and the republic of Mexico are regulated are found in the treaty of April 5, 1831, and that of May 30, 1848; the latter known as the treaty of Guadalupe Hidalgo.

Article 8d of the latter treaty provides that all the custom-houses then in possession of officers of the United States should be immediately restored to the Mexican authorities, together with all bonds and evidences of debt for duties on imports and exports not fallen due; and further, that all duties collected at such custom-houses by the United States' officers, from and after the ratification of the treaty, shall, after deducting the cost of collection, be delivered over to the Mexican government, at the city of Mexico, within three months after the exchange of ratifications.

Articles 6 and 7 relate to the navigation of the Gulf of California, the Rivers Colorado and Rio Bravo del Norte (annulled by 4th article of the treaty of December 30, 1853, ratified and exchanged 30th June, 1854). Article 17 revives treaty of 1831 for 8 years, with the usual stipulation of 12 months' notice by either party desirous of terminating the same. From the treaty of 1831 the "additional article" is excepted, and also such stipulations as are incompatible with the treaty of 1848. Article 20 continues in force, for 60 days after the ratification of the treaty, the tariff established by the United States at ports and places occupied by their forces. Article 21 provides for the appointment of commissioners or arbitrators to settle any disagreements which may hereafter arise between the two governments concerning the political or commercial relations of the two countries. Article 22 prescribes rules and proceedings to be followed, should a war unhappily break out between the two republics, and covenants protection, etc., for the citizens of each residing in the other; and also provides that this article shall not be annulled under the pretense that war dissolves all treaties, or under any other pretense whatever.

The treaty of 1831, revived by the 17th article of the treaty of 1848, secures to the citizens of each country, in the territory of the other, equal footing with the citizens and subjects of all foreign nations, and provides that neither country shall grant any particular favor to other nations in respect of commerce and navigation, that shall not immediately become common to the other party; no higher or other duties, imposts, or fees whatsoever, to be paid by the citizens or vessels of either country in the ports of the other, than are, or may be, paid by the citizens or vessels of the most favored nation; all merchandise, the produce, growth, or manufacture of either country, imported into the other, to be subject to no higher or other duties than similar importations from any other foreign country; no export duties or prohibitions to be prescribed by either country, that shall not equally apply to all other foreign nations; the vessels of both countries, in the ports of either, to be placed on the footing of national vessels, as respects tonnage duties, light or harbor dues, pilotage, salvage in case of damage or shipwreck, or any other local charges, the coasting trade being reserved by each of the high contracting parties to its own vessels, respectively; the duties on imports and exports of articles, the growth, produce, or manufacture of either country, to or from the ports of the other, to be the same, whether such importations or exportations take place in vessels of the United States or of Mexico; all merchants, captains, commanders of vessels, and other citizens of either country, to have full liberty to manage, themselves, their own affairs, or choose their own brokers, factors, agents, or interpreters in the ports and territories of the other. The fourth section of the 34th article saves from the operation of this treaty all former or existing treaties with other sovereign States or powers.

Measures of Weight.—The largest measure for brandy, wine, and other liquors, is the jarva, which contains 18 cuartillos, of 1 pound, or 16 ounces of distilled water at the temperature of its greatest density. Brandy barrels are distinguished into medidos and

redondos. The former contain 262 cuartillos, and the latter 160. The redondo barrel of wine contains 150 cuartillos. Oil is bought and sold at wholesale by weight; but at retail a particular cuartillo is used, containing 17 ounces and 9 drachms of distilled water. For olive oil the same cuartillo is used as for brandy, wines, etc. At the mines the marco is used for gold and silver. The gold marco is divided into 50 castillanos, of 8 tomines of 12 grains. The silver marco has 8 ochoods, of 6 tomines of 12 grains. Assayers, to determine the purity of these two metals, use the same marco. For gold, the castellano is divided into 24 quilates, of 4 granos de ley, each grano equivalent to 50 in weight. For silver, the marco is divided into 12 dineros of 24 granos de ley, each grano being equivalent to 16 in weight. Lapidaries, for the assay of precious stones, use the quilate, which is the tenth of an ounce. Apothecaries use the libra medicinal, which is divided into 12 common ounces of eight drachms, of 3 scruples, of 24 granos.

Money in Circulation.—Baron Humboldt calculated, in 1803, the value of the money accumulated in Mexico to be $55,000,000 or $56,000,000; which sum compared with the population then existing in New Spain, corresponded in proportion to $10 for each inhabitant. Taking this calculation for a basis, and considering the prosperity in mining from that time to this, there is no hazard in saying that the value of the money now in the republic, notwithstanding the great exportation past and present, amounts to $90,000,000 or $100,000,000. Although this sum is, doubtless, sufficient for all the operations of the interior trade, which is very small, as well in agriculture as in manufactures and commerce, the circumstance of the greater part being confined to a few hands on the one side, and on the other the want of confidence, causes the frequent scarcity of the money in circulation, causing the rare phenomena of a country which produces gold and silver so abundantly, paying a higher interest on money than in countries not yielding it.

The geographical position of the States and Territories of Mexico is thus defined: 1. *Eastern or Gulf Coast.*—The States of Yucatan, Chiapas, Tabasco, Vera Cruz, and Tamaulipas. 2. *Western or Pacific Coast.*—The States of Oajaca, Puebla, and Territory of Tlascala; State of Mexico, and Federal District; States of Michoacan, Jalisco, and Territory of Colima; States of Sinaloa, Sonora, Guerreoro, and Territory of Lower California. 3. *Interior.*—The States of Queretaro, Guanajuato, Zacatecas, San Luis Potosi, New Leon, Coahuila, Durango, and Chihuahua.

Yucatan.—The State of Yucatan occupies the greater portion of the peninsula which bounds the southern edge of the Gulf of Mexico. It comprises an area of about 52,947 square miles, and contains a population of 680,948.

The principal productions of Yucatan are maize, cotton, rice, tobacco, pepper, sugar-cane, dye-woods, hides, and soap. Foreign trade with Yucatan is distributed between the United States, France, England, Spain, and other countries. The proportions may be estimated from the following table, showing the value of imports into Yucatan during the year 1850, from each of the countries above designated: Spain, 1,950,000 francs; England, 1,400,000 francs; United States, 1,000,000 francs; France, 225,000 francs; other countries, 925,000 francs; total, 5,500,000 francs, or $1,023,000.

The principal ports in Yucatan are Campeche and Sisal, both open to foreign commerce. In the former, the water is so shallow that vessels are obliged to anchor some considerable distance from the town of Campeche, and discharge and take in cargoes by means of lighters and canoes. Sisal possesses a deeper port than Campeche, but it is more exposed to the north winds, which prevail in the Gulf of Mexico from October to April. It is the dépôt for the import and export trade of Merida, the capital of Yucatan, and for all merchandise transported to or from the interior of the State. Campeche attained, under the ancient rule, a high degree of commercial prosperity. It enjoyed a monopoly of all the imports and exports of the province; but since the independence of Mexico, its commerce has declined—a result brought about by the opening of other ports to general trade, as well as by its difficulties with the central government, and the fearful ravages of epidemics, by which, in one year, fully two fifths of its population were carried off.

Chiapas.—The State of Chiapas possesses but little commercial interest. It was incorporated into the territory of Mexico in 1833, forming, before that year, a portion of the territory of Guatemala. Its productions are corn, cocoa, sugar, tobacco, indigo (of the very finest quality, but in small quantities), tropical fruits, and timber of almost every variety. Like Yucatan, this State derives its chief interest from the ancient remains of a former advanced civilization within its territories, bearing date long anterior to the Spanish conquest. The ruins of Palenque, in Chiapas, and of Uxmal and Chichen, in Yucatan, are, perhaps, the most wonderful of all that have been discovered hitherto on the western continent.

Tabasco.—Tabasco, the smallest State of the confederacy, was, previous to the revolution, a province belonging to the intendency of Vera Cruz. Its principal productions are cocoa, coffee, pepper, sugar, tamarinds, arrow-root, palmetto, and some tobacco. Its capital, Villa de San Juan Bautista, lies about 70 miles from the Gulf, and is reached by vessels of light draught. Its commerce is chiefly carried on with the adjoining States and with Guatemala.

Vera Cruz.—The State of Vera Cruz lies under the burning sky of the tropics, and is comprised within a long, but somewhat narrow, strip of territory along the Gulf of Mexico, running from the mouth of the Tampico River in the north, to the Guassacualco and the boundaries of Tabasco on the south. It contains an area of 3199·50 square leagues, and a population of 264,725* inhabitants. The port of Vera Cruz lies in 19° 11′ 52″ N. lat., and 98° 29′ 19″ W. long. from Paris, on a sandy plain, interspersed with marshes, which bound the Gulf of Mexico. From the month of May to that of November, the usual period during which the northers cease blowing, the unhealthiness of Vera Cruz is proverbial. The principal productions of the State of Vera Cruz are tobacco, coffee, sugar, cotton, corn, barley, wheat, jalap, sarsaparilla, vanilla, mahogany, ebony, dye-woods, and every variety of tropical fruit. The port of Vera Cruz supplies a great part of the republic, and is considered by far the most important shipping point on either coast. Foreign vessels are allowed to introduce goods and effects from foreign countries only, and they are permitted to enter but one port for discharge; they may then proceed, in ballast, to any other port in the republic for the purpose of taking in cargoes of the produce of the country. During the year 1852 there arrived at the port of Vera Cruz, from all foreign countries, 173 vessels, with an aggregate of 21,958·23 tons. The total value of merchandise exported, including gold and silver, was $10,449,070 05. Of the vessels named, there were 49 American, measuring 6234·15 tons. The character or value of their inward cargoes is not given in the United States' consular returns, but the import duties are stated to have amounted to $159,301 20. Amount of silver exported, $353,287; of gold, $55,884; other products, $205,150; total value of homeward cargoes, $614,322.

During the same year there arrived from Great Britain 38 vessels, with an aggregate of 2655·22 tons. Total amount of exports, $9,175,763 82, of which silver

* A census taken in 1854 raises this number to 274,690.

covered $8,565,359 32, and gold $47,952. France holds the next rank in the trade of Vera Cruz. The number of French vessels arrived in 1852 was 28, of 5717 tons. Inward cargoes not ascertained. Outward, total value $421,235; of which, silver $118,921, gold $45,554. Number of Spanish vessels arrived at Vera Cruz during the year 1852, 26, with an aggregate of 3211·67 tons. Total value of cargoes exported $141,287, chiefly silver and gold. The residue of the foreign trade of this port, during the same year, was distributed between 32 vessels, with an aggregate of 4139 tons, carrying, respectively, the Belgian, Danish, Hanoverian, Mexican, Portuguese, Sardinian, and Venezuelan flags. From Hamburg there were 8 vessels, exporting a total value of $23,196.

During the prevalence of the northers, the port of Vera Cruz is considered to be very unsafe. In 1846 the United States' brig-of-war *Somers* was lost in sight of the city, making the third United States' national vessel lost during that season, in the Gulf of Mexico. A norther generally continues two or three days. "It comes on," says a publication elicited by the loss of the *Somers*, "gradually, so that the mariner who is unaccustomed to navigate the Gulf of Mexico is often unsuspicious of danger, and flatters himself with the idea that the 'stiff breeze' which impels his vessel onward will soon carry her to her port of destination. And so it does, but not in safety; for the 'stiff breeze' freshens into a gale, and the gale into a hurricane; and, at length, the vessel strikes on one of the rocks with which the harbor of Vera Cruz is studded. In that harbor the anchorage ground is, perhaps, the worst in the world. At Vera Cruz no number of anchors hardly will keep a vessel from going ashore in a norther. All that the captain of a vessel can do, under such circumstances, is to slip his anchors and stand out to sea immediately. Vessels of war, even those belonging to friendly powers, are not allowed by the Mexican government to enter the harbor of Vera Cruz. They always anchor at Sacrificios, a barren island at the entrance of the harbor. At Sacrificios the anchorage is pretty good. Mexican men-of-war, when there are any such in the harbor of Vera Cruz, are always moored to rings set in the walls of the castle of St. Juan de Ulloa, and by that means, are secured from the effects of a norther." The official account of the loss of the *Somers*, bearing date December 12, 1846, is on file in the Navy Department, and contains many valuable suggestions relative to the dangers to which navigation is exposed in the Gulf of Mexico.

Tamaulipas.—This State is bounded north by the State of Texas; north-west by the Mexican State of Coahuila; on the west by the States of New Leon, San Luis Potosi, and Vera Cruz; and on the east by the Gulf of Mexico. In breadth it varies from 12 to 55 leagues. This State has more than 350 miles in length of sea-coast, and is fringed with lagoons varying from 4 to 18 miles in width, divided from the gulf by a bank of sand. The shallowness of the shores along the coast, and the dangerous bars which choke the mouth of the rivers, render the navigation difficult and dangerous for vessels of almost all classes. Population in 1850, 110,074; though the census of 1854 gives but 100,064. The chief productions of this State are similar to those found in the State of Vera Cruz. The coasting and foreign trade is conducted principally in the ports of Tampico de Tamaulipas and Matamoras. From these places large quantities of European and North American manufactures enter the middle and northern States of the republic. Queretaro, San Luis, Nuevo Leon, Coahuila, Zacatecas, Jalisco, Durango, Chihuahua, and Sonora, receive most of their foreign supplies from these points. Tampico de Tamaulipas, on the northern bank of the Panuco, is the principal commercial port of this State. Its bar is dangerous, and its harbor considered unsafe. The town is situated in the midst of extensive marshes, and can not be approached by large vessels. Its foreign commerce is represented as increasing (vide MAYER'S *Mexico*, vol. ii., p. 206), though a consular return from that port, bearing date February 17, 1854, says that the trade with the United States is on the decrease, owing to "high rates of duties, both impost and consumption; as also circulation and municipal."

Tampico exports hides, sarsaparilla, goat-skins, fustic, vanilla, wool, jerked beef, and Mexican hemp. Tampico is the outlet of the metals and other productions of San Luis Potosi, Guanajuato, Zecatecas, and Durango, considered to be the richest mining districts in Mexico. The foreign trade of Tampico during the year ending December 31, 1852, was as follows: Total value of inward cargoes, $1,228,948; total value of outward cargoes, $3,266,634; total foreign trade, $4,495,582.

Total number of American vessels included in the above, 22, with an aggregate of 2267 tons. Value of inward cargoes, $196,936; value of outward cargoes, $237,944; total trade in American vessels, $434,880. Total number of British vessels, 17; aggregate tonnage not ascertained. Of these, 14 belonged to the British Royal Mail Steamship Company, and 3 were sailing vessels. Total value of inward cargoes (exclusive of 1000 flasks of quicksilver, value not ascertained), $287,500; total value of outward cargoes, $2,928,418; total trade in British vessels, $3,215,918. Total number of French vessels, 9, of 1,315 tons. Total value of inward cargoes, $398,000; total value of outward cargoes, $2080; total trade in French vessels, $400,080. Total number of Spanish vessels, 7, of 728 tons. Total value of inward cargoes, $132,300; total value of outward cargoes, $50,176; total value of trade in Spanish vessels, $189,476.

The residue of the trade at the port of Tampico, during 1852, was distributed between Sardinia, Hamburg, Holland, and Mexico. Matamoras lies on the right bank of the Rio Grande, or Rio Bravo del Norte, at the distance of nearly 30 miles from its mouth. For purposes of navigation, this river is, perhaps, the most important in Mexico, and has proved navigable by steamers for a considerable distance into the interior. Recent returns from this port are not at hand, but the general trade of Matamoras is not of much importance. The following facts relative to its trade are derived from French official returns: Imports into the port of Matamoras consist chiefly of breadstuffs, spices, provisions, and cloths, from New Orleans; exports, of specie, hides, and wool. In 1844 there entered 33 vessels, of 2054 tons, floating inward cargoes of the value of 1,633,000 francs, and outward about an equal amount. Two thirds of all commercial operations at this port are under the American flag. In 1841 commercial movements with the United States reached the sum of 23,000,000 francs—12,000,000 for inward, and 11,000,000 for outward cargoes. Of the imports, British merchandise imported in American bottoms reached 5,000,000, while American produce and manufactures amounted to only 2,500,000. French merchandise in American bottoms figured as high as 1,300,000 francs, and German 1,080,000. Cotton cloths (mostly British) reached, in this trade, 5,136,000 francs. The export trade to the United States during this year covered 9,000,000 francs in specie, and over 2,000,000 in hides.

Chihuahua.—The principal port in this State is El Paso del Norte, lying on the right bank of the Rio Grande. "The position of this town is an important one, inasmuch as the road by it is the only practicable one for wagons leading from Santa Fé to Chihuahua." —MAYER'S *Mexico*. The valley of El Paso is the most fertile in Mexico, producing maize, wheat, and almost every variety of fruits. The commerce of the United States with this port has decreased since 1851, not half the amount of merchandise having been imported from

the United States in 1852 as in 1850 and in 1851. This decline is attributed to the failure of the crops in the State of Chihuahua, and the high duties, which amount almost to a prohibition. Mexican and foreign merchants send to the United States wine and brandy, manufactured in the El Paso valley, and sugar, soap, rebosas, saddles, bridles, leather, segars, mats, and fruits, amounting annually to about $70,000.

Oajaca.—This State has a sea-coast on the Pacific extending 118 leagues, and comprises an area of about 4150 square leagues, containing a population of 525,101 inhabitants. The fertility of soil and richness of productions render this State, in a commercial aspect, one of the most important in Mexico. There is not, however, any port open to foreign commerce on this part of the Pacific, from the boundary line of Guatemala to Acapulco, a distance of nearly 900 miles. The coasting trade is nearly nominal, although the State possesses nine sea-ports or anchorages, namely: Tehuantepec, Huatulco, Escondido, Chacahua, and Jamiltepec. Corn, cotton, coffee, sugar, cocoa, vanilla, tobacco, cochineal, wax, honey, and indigo, are the staple productions. The indigo crop, produced in the department of Tehuantepec, is estimated at 500 garrones, of 175 pounds each, and that in the valley of Sonola at 600 garrones, making the whole crop of indigo equal to 192,500 pounds. The price paid to planters is 62½ cents to $1 per pound. From a message of the Governor of Oajaca to the National Congress, it appears that, during the 17 months previous to March 1, 1854, the crop of cochineal produced in the State of Oajaca reached as high as 1,248,550 pounds. The price usually ranges from 50 cents to 75 cents per lb., according to quality. This State possesses, also, considerable mineral wealth. There are, at present, silver mines worked, 4; not worked, 3; gold mines worked, 5; lead mines, 1. Annual product of all the mines, $352,000; annual products of iron mines, 244,000 pounds. On both sides of the Isthmus of Tehuantepec great quantities of mahogany and other cabinet woods, gums, etc., are produced. The cocoa raised in some parts of this State is of so superior a quality, that, while the country belonged to Spain, it was reserved for the royal family. It still has a deserved reputation.

Guerrero.—This State comprises the districts of Acapulco, Chilapa, Tasco, and Tlapa, and the municipality of Coyucan. Its principal port is Acapulco, so spacious and secure that 500 vessels can lie at anchor in it with perfect safety. The trade of Acapulco is inconsiderable; the foreign vessels entering the port being either freighted with coals for the Pacific Mail Steamship Company, or in distress—the former being compelled to clear in ballast. By decree dated February 4, 1854, the Supreme Government made a reduction in the tonnage dues upon all vessels arriving in that port laden with coal, and consigned to any steamboat company having a dépôt of coals in the harbor, viz.: 50 cents per ton, instead of $1 50, as formerly. During the year 1853, there entered the port of Acapulco 81 American steamships, of 107,007 tons; 8 sailing vessels (ships) carrying 4,369 tons; 1 bark, and 2 schooners. Besides Acapulco, there are other ports on the Pacific coast open to foreign trade; but the Department is not in possession of information respecting them. They possess, however, no commercial importance. The other States of Mexico, being either in the interior of the republic, or possessing no ports open to foreign commerce, are not deemed of sufficient commercial consideration to demand separate notice. Returning to the general commerce of Mexico with foreign nations, particularly with the United States, it is found that the principal articles of importation from the latter to that country are, machinery, articles of iron, small wares, linen, woolen, and cotton cloths; silks, flour (when not prohibited), raw cotton, timber for the construction of houses, prepared medicines, household furniture, vehicles, harnesses, horses, salt meats, sperm, paper, marble and other stone.

The imports into the United States from Mexico consist, principally, of gold, silver, dyewoods, dyestuffs, hides, skins of sheep, cattle, and other productions of less value. The following statement shows a decrease in the importance of our commerce.

COMMERCE OF THE UNITED STATES WITH MEXICO, FROM OCTOBER 1, 1824, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage Cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1825.....	$951,040	$5,519,104	$6,470,144	$1,044,647	$199,946	$2,603,108	20,487	2,618
1826.....	1,024,275	5,256,775	6,281,050	3,916,198	1,500	2,800,409	23,526	2,452
1827.....	886,907	3,286,950	4,173,257	5,281,867	800	4,005,255	28,494	2,123
1828.....	522,016	2,364,468	2,886,484	4,814,258	4,850	3,853,880	26,870	3,181
1829.....	495,626	1,835,525	2,331,151	5,026,761	4,640	4,344,946	21,682	4,719
1830.....	985,764	3,851,694	4,837,458	5,235,241	....	4,703,716	27,225	3,551
Total....	$4,865,628	$22,115,916	$26,979,541	$28,268,972	$211,736	$22,371,314	149,354	18,644
Sept. 30, 1831.....	$1,091,489	$5,086,729	$6,178,218	$5,166,745	$24,210	$4,464,134	22,803	10,619
1832.....	845,777	2,621,764	3,467,541	4,293,954	1,600	3,626,704	24,111	9,364
1833.....	1,649,314	3,758,777	5,408,091	5,452,818	1,410	4,592,892	30,548	4,359
1834.....	1,102,646	4,172,407	5,265,053	8,066,068	....	7,204,517	25,504	6,062
1835.....	3,016,612	6,012,609	9,029,221	9,490,446	8,895	8,843,181	44,453	11,169
1836.....	1,500,639	4,540,996	6,041,635	5,615,819	....	4,547,418	27,273	4,583
1837.....	993,613	2,240,710	3,880,323	5,654,092	....	4,650,978	17,502	4,018
1838.....	1,040,906	1,123,191	2,164,097	3,580,709	22,732	2,689,426	11,288	2,725
1839.....	816,660	1,970,702	2,787,362	3,127,159	4,200	2,278,548	17,816	5,629
1840.....	969,968	1,545,403	2,515,841	4,175,001	....	3,458,802	13,348	3,025
Total....	$13,063,594	$34,678,288	$46,736,882	$54,542,715	$62,54	$45,841,690	234,196	69,914
Sept. 30, 1841.....	$886,518	$1,150,107	$2,036,620	$3,284,957	$6,204	$1,938,083	14,018	1,935
1842.....	969,371	564,862	1,534,233	1,965,626	8,680	1,812,817	15,912	1,226
9 mos. 1843.....	907,745	564,192	1,471,937	2,782,406	11,825	2,176,668	22,727	2,960
June 30, 1844.....	1,292,752	502,381	1,794,833	2,387,092	6,000	1,780,267	22,686	1,804
1845.....	781,154	868,177	1,152,331	1,702,936	....	956,407	16,952	1,500
1846.....	901,393	629,847	1,531,180	1,836,621	1,440	698,558	14,224	3,961
1847.....	586,641	155,787	692,428	716,818	....	328,008	10,716	2,155
1848.....	2,095,485	1,962,951	4,058,436	1,581,247	....	850,146	62,083	4,526
1849.....	1,047,999	1,042,869	2,090,868	2,216,719	6,290	1,528,225	29,820	10,140
1850.....	1,198,791	514,036	2,012,827	2,135,966	....	1,560,166	24,518	30,104
Total....	$10,920,784	$7,454,909	$18,375,693	$20,669,768	$40,439	$13,159,335	233,606	65,714
June 30, 1851.....	$1,014,690	$567,098	$1,581,788	$1,804,779	....	$1,093,993	31,019	20,145
1852.....	1,406,872	878,557	2,284,929	1,649,206	....	1,093,942	22,719	17,974
1853.....	2,529,770	1,029,054	3,558,824	2,167,985	....	1,411,885	30,810	15,801
1854.....	2,091,870	1,043,616	3,135,486	3,163,190	....	2,525,334	29,758	15,173
1855.....	2,253,868	669,436	2,922,804	2,882,830	$1,200	1,978,080	41,458	10,123
1856.....	2,461,942	1,237,297	3,702,239	3,568,681	450	2,714,923	47,129	7,106

This exhibit may be relied upon, having been made up from official reports on "*Commerce and Navigation.*" It will be perceived that the commerce between the two countries decreased during the 30 years embraced in the above table. In 1854 it experienced considerable activity, exceeding in value the totals of 1850, but not reaching those of 1840, and still further below those of 1830. The value of imports in 1854, as already given, was $3,463,190; and of exports, $3,135,486; making a total of $6,598,676—being $91,666 less than for the yea. 1840, and $3,474,023 less than for 1830. The importations from Great Britain into Mexico may be illustrated from a report made by order of Parliament. For a period of seven years, from 1840 to 1846, both included, the sum total of the value of the imports was $82,246,705, making an average value of nearly $12,000,000 per annum. The principal articles of import were as follows: drugs, haberdashery, and wearing apparel, arms and ammunition, malt liquors, printed books, manufactures of brass and copper, furniture, carriages, coals, cordage, manufactures of cotton, earthenware of all kinds, glass wares, hardware and cutlery, hats, iron and steel in bars, manufactured lead, prepared skins, harnesses and saddles, manufactures of flax, machinery and machines, and musical instruments. Of these articles, the manufactures of cotton rank highest; the estimated value of the importation for the seven years amounting to more than $57,000,000, while that of manufactures of linen (which comes next in order of value) was more than $12,000,000, leaving only some $12,000,000 or $13,000,000 as the aggregate value of all the other imports from Great Britain into Mexico. The character and value of merchandise entering into the commercial movement of Mexico with France may be exemplified by those of the year 1851, as exhibited from the data furnished by the official returns of France. The reason of the shipments thither of the precious metals being in so small amounts, is, that the exchange with England can always be more conveniently arranged than with that country.

Description of merch.	Values.	Description of merch.	Values.
Manufs. of silk	$1,240,038	Perfumery	$42,957
" cotton	644,154	Precious stones	41,000
" wool	625,447	Clocks and watches	89,943
" glass	328,583	Carriages, etc	32,630
Engravings, b'ks, etc	278,065	Jewelry	35,553
Wines	245,693	Furniture	32,581
Arms	231,419	Machines and machinery	25,541
Manfs. of metal	179,380	Musical instruments	23,008
Haberdashery, etc	126,549	Stearine oil	21,675
Rabbit & hare sk's	504,216	Medicines	19,867
Mech. & oth. tools	103,040	Iron and steel	19,747
Dressed skins	67,017	Prepared skins	19,298
Cutlery	56,851	Silk (raw & manuf.)	15,861
Fish, pickled, etc	55,546	Toys	15,073
Artificial flowers & fancy goods	47,810	Olive-oil	13,976
Spirits and liqueurs	47,257	Umbrellas and parasols, silk	13,525
Manufs. of flax and hemp	45,921	Sundries	221,966

The importation to Mexico from Germany consists principally of linen textures, such as Silesian linen, creas, etc., etc.; to which are added, in smaller quantities, some chintzes, muslins, silk handkerchiefs, cloths, cassimeres, crystals, plain glass, fine and common hardware, arms, carriages, furniture, and pianos.

The quantities of linen exported from Hamburg and Bremen to Vera Cruz and Tampico, during the years designated, were as follows:

Kinds of linen.	1839.	1840.	1841.
	Pieces.	Pieces.	Pieces.
Silesian	116,220	59,188	52,854
Creas	29,506	20,754	19,654
Ruanes	1,973	1,155	1,4'
Bretanas	12,795	11,022	4,160
Estopillas	7,177	7,156	5,888
Listados	7,568	10,442	2,325
Osnabruck	2,949	1,046	150
Crucillas	10,852	4,164	200
Canamazos	3,885	1,154	1,830
Cotles	753	1,966	1,559

STATEMENT SHOWING THE VALUES OF IMPORTS FROM HAMBURG AND BREMEN INTO THE PORTS OF VERA CRUZ AND TAMPICO, WITH THE NUMBERS OF VESSELS ENGAGED DURING THE YEARS SPECIFIED.

Years.	No. of vessels from			Values of merch as per invoice.
	Hamburg.	Bremen.	Both ports.	
1837	10	5	..	$1,466,000
1838	11	5	2	1,760,000
1839	11	3	1	1,970,800
1840	14	6	..	1,750,000
1841	12	4	1	1,485,200
Aggregate				$8,432,000
Av. an'l value				1,686,400

STATEMENT EXHIBITING THE AMOUNT OF IMPORT DUTIES COLLECTED AT THE PORT OF VERA CRUZ DURING THE FOUR YEARS ENDING WITH 1854, AS COMPILED FROM THE CUSTOM-HOUSE BOOKS OF THAT PORT.

Years.	Tariff.	Averia imposts.	Mola tax.	Totals.
	Dollars.	Dollars.	Dollars.	Dollars.
1851	1,954,388 37	435,912 14	110,607 13	2,500,907 64
1852	2,015,591 39	200,988 40	106,548 33	2,323,128 12
1853	2,454,723 08	242,676 82	124,770 95	2,822,170 85
1854	2,588,636 74	278,514 94	114,459 27	2,981,640 95
Aggreg'e	9,513,339 58	1,158,092 30	456,415 68	11,527,847 56
Average	2,478,334 89½	289,523 07½	114,103 92	2,881,961 89

The foregoing is exclusive of city and hospital contributions, and *internacion*, or internal duty, levied upon the same goods when dispatched to the interior.

The commerce of Mexico is confined to the reception of foreign goods sufficient for the necessities or luxury of a very small class of the population, for which is given in exchange a large portion of the products of the mines, and some few products of the soil. As the yield of the mines is estimated only at $26,000,000 annually, the amount of commerce can not much exceed that sum. The total number of Mexican merchant vessels, all of which are small, does not exceed 50, and of these more than half belong to the merchants of Yucatan.

The following account of the trade and commerce of the republic for the year 1851–52 is compiled from the official returns:

Ports.	Total Tonnage.	Passengers.	
		Arrived.	Departed.
Vera Cruz	28,203	1,429	1,346
Tampico	7,704	178	126
Campeachy	6,992	4,975	1
Sisal	4,249	43	95
Tabasco	3,739	81	21
Acapulco	181,330	31,242	28,540
Manzanilla	1,402	11	....
San Blas	30,321	4,563	4,920
Mazatlan	30,762	5,095	5,006
Altata	1,158	81	9
Guaymanas	4,335	718	35
Total	256,602	43,816	40,153

Of the vessels arriving, 68 belonged to Mexico, 435 to the United States, 108 to England, 69 to France, 60 to Spain, 13 to Hamburg, 24 to Peru, 5 to Belgium, 8 to Bremen, and 1 each to Portugal, Nicaragua, Sweden, Hanover, and Venezuela.

Among the arrivals were 219 steamers, viz., 145 at Acapulco, 7 at Vera Cruz, 4 at Tampico, 27 at San Blas, 35 at Mazatlan, and 1 at Guaymas. Of these, 145 were United States' vessels.

Of the classes of vessels, beside steamers, there were 55 frigates (vessels of war), 114 barks, 165 brigs, 63 hermaphrodite brigs, 155 schooners, and 68 pilot boats.

The chief coasting trade of the republic, on the Gulf of Mexico, is performed by schooners between Tampico, Tuspan, Sisal, Campeche, Tabasco, Minatitlan, Alvarado, and Tlacotalpan. For this trade, a few vessels exist of about a hundred tons burden, built at Campeche, and are equal to American vessels of like quality in respect to capacity, sailing properties, and durability. National vessels make voyages only to the ports of New Orleans and Cuba; and in the year 1852 only seven sail were thus employed, and the amount of coasting in the same time was very small. There appears to be no increase in this trade, nor in the building of vessels. The commerce with foreign

countries is reported recently to have decreased; and with the United States, in particular, to be on the decline. The cause of this change is considered to be the high rates of duties, both on imports and exports, and the additional charges, local as well as internal. It is known that the late President of Mexico (Santa Anna), a short time before his abdication, had granted privileges and special concessions to certain European houses for the introduction of foreign merchandise on the Pacific coast, at from 25 to 30 per cent. less than the regular impost by the established tariff. As this involved a palpable violation of the treaty between the United States and Mexico, the American minister to that country, under date of April 10, 1855, protested against such privileges and special concessions. Under such a system, American merchants were reduced to the necessity of witnessing the products of the United States contributing to the fortunes of European merchants; while they were denied the right, notwithstanding treaty stipulations, of importing similar merchandise on the same terms, under a penalty of confiscation, and a fine to the extent of the market value of the cargoes at the place of importation.

The Principal Ports are Acapulco, lat. 16° 50′ 30″ north, long. 90° 46′ west, the best sea-port on the western coast of Mexico, and is capable of containing a large navy with perfect safety. Tampico, a considerable commercial port on the eastern coast of Mexico, in lat. 22° 15′ 30″ north, long. 97° 52′ west. The shifting of the bar at the mouth of the river, and the shallowness of the water on it, which is sometimes under 8 feet and rarely above 15 feet, are serious obstacles to the growth of the port. Vessels that can not enter the port, load and unload by means of lighters, mooring outside the bar, so that in event of a gale from the north, they can readily get to sea. Vera Cruz, the principal sea-port on the eastern coast of Mexico, lat. 19° 11′ 52″ north, long. 96° 8′ 45″ west. The harbor lies between the town and the island of San Juan de Ulloa, about 2400 feet wide; it is insecure, the anchorage being very bad, and no vessel is safe unless made fast to iron rings fixed into the wall of the castle on the island, and even then accidents sometimes occur. Guaymas, a sea-port town of Sonora, on the Gulf of California, at the mouth of a considerable river, lat. 27° 55′ north, long. 110° 16′ west. It is neither large nor well built, but its harbor is the best on the western coast of Mexico, and it has an active and increasing trade.

New Ports Open for Foreign Trade.—Guaymas, Camargo, Mier, Piedras-negras, Monterey, Laredo, Tonalá, Zapaluta, Guatzacoalcos, La Ventosa.

Tonnage Duties and Port Charges at Vera Cruz.—On foreign ships and national vessels from foreign ports, per ton (the Mexican ton is 12 per cent. less than that of the United States), $1 50; fees of captain of the port, $3 50; water dues (Mexican vessels in the coasting trade pay 6¼ cents per ton, as water tax, but are exempt from tonnage duty), 12½ cents; stamped paper for entering and clearing, $8 50; pilotage, either way, per foot, $2 50; pilot-boat, with four or six oars, $8; bills of health, if required, $4; to consul of country where destined, $4; visit of health officer, $2. Wharfage and municipal dues are very insignificant. The moneys, weights, and measures, in use in Mexico, are the same as those of Spain. At the port of Tampico, the dues and charges are quite the same as at Vera Cruz. Hospital dues at the former port are $10.

Tariff Regulations.—The tariff regulations of Mexico have been subject to frequent changes of late. The rates established by the tariffs of 1845, 1855, and 1856, will be found in the *Comparative Tariffs* issued by the State Department, Part II. The details of the tariff of January 31, 1856, are as follows:

Charges on Vessels.—Tonnage, $1 per ton; free of tonnage, if in ballast to load logwood, specie, etc.; or if bringing coal for the Mexican deposits; or if only bringing passengers or mails.

Prohibitions.—Brandy, of sugar-cane; and all other except that made out of grape—excepting gin, rum, and others named in the tariff, in bottles, or jars: sugars, of all kinds; rice; buttons, with the Mexican or foreign arms; coffee; wax, made up in candles; obscene pamphlets, books, etc.; flour of wheat, except at Acapulco, Yucatan, Tampico, Matamoras, and the custom-houses of the northern frontier. For regulations, see *Comparative Tariffs*, Part II. Boots, shoes, slippers of leather with soles; rein-bitts and spurs of Mexican fashion; books prohibited by competent authority; lard, subject to the same exceptions (omitting Acapulco) as flour; saddles, and appurtenances of Mexican fashion; playing-cards, of Mexican fashion; scarfs, Mexican fashion, of all kinds; speckled or printed textures imitating the same; wheat, and all kinds of grain and seeds; blankets, woolen or cotton, or mixed excepting coverlets and bed-coverings of piqué, without seams.

Additional Duty to Tariff.—1. Municipal duty will will be 12½ cents on each package of 8 arrobas weight, payable at the time of importation. 2. For improvement of the country, 20 per cent. on the import duty. 3. International duty, 10 per cent. on importation duty, payable at the time of sending the goods to the interior. 4. *Contra registro*, is 20 per cent. on import, payable at the final place where goods are sent. 5. Amortization duty of the public debt liquidated and consolidated: this duty will be 25 per cent. on the import duty, and be payable in full at the General Treasury Department of the nation, with bonds of the public debt liquidated and consolidated.

Export Duty.—On coin and wrought gold, 1½ per cent.; on coined silver, 3½ per cent.; on silver bars, stamped by mint, 7 per cent. All the remaining goods, products, and national manufactures, not specified, may be exported without paying any duty.

All laws, decrees, circulars and orders, which are in conflict with this tariff, directly or indirectly, will cease immediately after publication of the present new one.

PRO FORMA INVOICE UNDER NEW TARIFF OF JANUARY 31ST, 1856.

Invoice of the following goods shipped by the subscriber for ....., Captain....., to the consignment of....., merchants of the port of Vera Cruz (Mexico), whither this vessel is bound.

Marks.	Numbers.	Number of packages.	Gross weight of each.	Description of packages.	Total net weight of each which pay by weight.	Total measurement by length of goods which pay by measurement.	Width of goods exceeding one yard.*	Class of goods specified.	Value.
P. M. B.	1 to 10.	10 (ten).	1 (one) quintal.	Bales of common size.	....	100,000 (one hundred thousand) yards.	1 (one) yard.	White ordinary cotton.	....

NEW YORK, (date.)

(Signature).

* 100 yards English are equal to 109 11-100 Mexican.

In this manner all invoices are to be made out, specifying every one of its packages. The total number of packages to be specified in words also.—*Com. Relations, U. S.*

Michigan, a north-western State of the republic, lies between lat. 41° 43′ and 48° north, and between 82° 25′ and 90° 34′ west from Greenwich, or 5° 24′ and 13° 33′ west from Washington. It consists of

two peninsulas, and contains 56,243 square miles. Population in 1810, was 4528; in 1820, 9448; in 1830, 31,639; in 1840, 212,276; and in 1850, 397,654.

Physical Features, etc.—The surface of the lower, or southern peninsula is generally level, having few elevations which may be denominated hills. The interior is gently undulating, rising gradually from the lakes to the centre of the peninsula. This central region may be regarded as a table land, elevated about 300 feet above the level of the lakes, covered with fine forests of timber, oak plains, and prairies. Along the eastern shore of Lake Michigan are sand-hills, thrown up by the winds into fantastic forms generally quite barren and naked. The part lying between Lake Huron and Saginaw Bay is low and swampy. No part of the United States is better supplied with fish, aquatic fowl and game.

There were, in this State, in 1850, 1,929,110 acres of land improved; and 2,454,780 acres of unimproved in farms; cash value of farms, $51,872,446, and the value of implements and machinery, $2,891,371. Live stock—horses, 58,506; asses and mules, 70; milch cows, 99,676; working oxen, 55,350; other cattle, 119,471; sheep, 746,435; swine, 205,847; value of live stock, $8,008,734.

Agricultural Products, etc.—Wheat, 4,925,888 bushels; rye, 105,871; Indian corn, 5,641,420; oats, 2,866,056; barley, 75,249; buckwheat, 472,917; peas and beans, 74,254; potatoes, 2,359,897; sweet potatoes, 1177; value of products of the orchard, $132,650; produce of market gardens, $14,738; pounds of butter made 7,065,878; of cheese, 1,011,492; maple sugar, 2,439,794; molasses, 19,823 gallons; beeswax and honey, 359,232; wool, pounds produced, 2,043,283; flax, 7152; silk cocoons, 108; hops, 10,663 pounds; of tobacco, 1245; hay, tons of, 404,934; clover seeds, 16,989 bushels; other grass seeds, 9285; flax seed, 519 bushels; and were made, 1654 gallons of wine; value of home-made manufactures $310,947; of slaughtered animals $1,328,327.

Of the northern peninsula, Mr. Schoolcraft says:—"Portions of it are the mere developement of sublime scenery which pertains to that comparatively elevated portion of the continent. Mountains and lakes, plains, rivers, and forests, spread over it with a boldness of outline which may be said to constitute almost a peculiar type of North American Geography. This division embraces the mineral region. It is of little value for the uses of agriculture. The interior abounds in small lakes. On the shore of Lake Superior are several large bays and good harbors. Recent explorations here have discovered immense deposits of rich copper ore; on the southern shore of Lake Superior is a series of lofty bluffs and isolated rocks, having the appearance of ruins, tottering walls, and caverns. *La Chapelle*, or the Arched Rock, is a beautiful specimen of this character, as are the Pictured Rocks, etc. There are also several picturesque cascades."

The southern peninsula of Michigan is drained by several large rivers and numerous smaller streams, which, rising in the interior, pass off in easterly, westerly, and northerly directions into the lakes. Raisin and Huron Rivers flow into Lake Erie, Rouge River into Detroit Strait, Clinton and Black Rivers into the Strait of St. Clair, Saginaw River formed by the junction of Titibawasse, Flint, and Cass Rivers enters Saginaw Bay. Thunder Bay, Cheboigan River, and some smaller streams fall into Lake Huron. St. Joseph, Grand, Kalamazoo, and Maskegon Rivers flow into Lake Michigan. Many small lakes of pure water, stocked with fish of fine quality, are found in the interior. This State borders on four of the great lakes, viz., Erie, Huron, Michigan, and Superior. The principal rivers of the upper peninsula are Ontonagon, Huron, Menomonee, Montreal, St. Mary, Eagle, Cedar, White Fish, Black, Sturgeon, Rapid, and Manistic. The principal islands are Drummond, Sugar, St. Joseph, Bois Blanc, Mackinaw, Manitou, and Beaver Island, in Lakes Huron and Michigan; Isle Royale and the Apostles, in Lake Superior.

Manufactures, etc.—There were in this State in 1850, 15 woolen factories, with a capital of $94,000, employing 78 males and 51 females, manufacturing 141,570 yards of cloth, valued at $90,242; 1 establishment making pig iron, with a capital of $15,000, employing 25 persons, producing 660 tons of pig iron, etc., valued at $21,000; 63 establishments with a capital of $195,450, employing 337 persons, and making 2070 tons of castings, etc., valued at $279,697; 231 flouring and grist mills, 477 saw mills, 45 tanneries; 57 printing offices, 58 newspapers, 3 daily, 2 semi-weekly, 47 weekly, 2 semi-monthly, and 3 monthly publications. Aggregate number of copies published, 3,247,736. Capital invested in manufactures, $5,764,645; value of manufactured articles, $10,407,285. There were, January, 1856, 590 miles of railroad in operation.

The principal places in the State are Detroit, the metropolis, Monroe, Ann Arbor, Ypsilanti, Adrian, Jackson, Marshall, Kalamazoo, Lansing, the capital, St. Josephs, Mackinac, Grand Haven, and Sault St. Marie. There were in 1854, 6 banks and 1 branch, with an aggregate capital of $1,084,718. Exports (1852) in American vessels, of domestic produce, to the value of $100,436; in foreign vessels, $31,930; of foreign produce in American vessels, $4338; in foreign vessels, $8448. Total value, $145,142. Imports in American vessels, $191,976; foreign vessels, $4264. Total value, $196,240. Tonnage, 1853, 4,591,284.

The shipments from Detroit were as follows:

	1854.	1855.
Flour.....bbls.	337,143	640,893
Wheat.....bush.	897,159	737,880
Indian corn..... "	887,489	629,895

White Fish.—One of the largest and most important items in the commerce of Detroit, is the trade in white fish. From the head of Lake Erie to the head of Lake Superior, including Lake Michigan, during the fall and spring months, the fisheries form an important branch of our western commerce. But probably there is no place of the same area along our lakes and rivers which is so valuable in this particular, as the river contiguous to this city. From Fighting Island, to the northern point of Belle Isle, a distance of 17 miles, there is one complete fishery, from which large numbers of fish are yearly taken. The cost of taking them, when the run is fine, is very light, and fishermen realize large profits. They are known through all the States, and are esteemed among the choicest delicacies to be had in any market. The large demand creates a corresponding valuation, and in every city they have become the first brand of fish sought. The river fish are generally larger, fatter, and better flavored than those of the lakes, and are, therefore, always in greater demand, and always command better prices. In New York, Boston, New Orleans, and even San Francisco, the Detroit River white fish are eagerly sought for.

The season of 1855 was a remarkably good one. At the fisheries (about 50 in number), between Fighting Island and Belle Isle, over 7000 barrels, or some 700,000 fish, have been taken. About half of these have been sold fresh, at an average of 11 cents each, bringing in a revenue of $3850. The remaining portions are mostly held by the fishermen until navigation shall open to them the southern and eastern trade. These 3500 barrels, when sold, will nett the holders about $30,000, or in the neighborhood of $8 or $9 per barrel. From the fisheries upon Belle Isle about 7000 fish were taken, a majority of which were sold fresh. The remainder of them were caught below the city, mostly upon the American side of the river.

The method of catching fish here in the river differs somewhat from the means adopted for lake fishing. There gill-nets are the principal agency employed, while seines are the instruments here used.

The number of barrels caught annually in the lake fisheries is nearly as follows:

	Bbls.		Bbls.
Lake Superior	3,000	Lake Erie	3,000
Lake Michigan	15,000	Detroit River	7,000
Lake Huron	14,000	Total	42,000

These are sold at an average price of $11 per barrel, the aggregate amount of sales being $462,000, or nearly $500,000. Probably one sixth of all the fish caught in Lakes Michigan, Huron, and Superior, are trout; the remainder being white fish. They are commonly caught by gill-nets, set some 10 miles distant from the shore. Large quantities of the fish are taken from the Detroit River, which they ascend from Lake Erie to spawn. On their return to the lake they are captured. The number of fisheries in the river is 50.

In some of the rivers that flow into the lakes, enormous quantities of pickerel are caught. Not less than 1000 barrels are taken annually from Fox River, Wisconsin; from Saginaw River, Michigan, 1500 barrels; St. Clair River, Michigan, 1500; Maumee River, Ohio, 3000 barrels, and an equal quantity of bass, mullet, etc., making a total of 10,000 barrels, which are sold for $8 50 per barrel, or $85,000 in the aggregate. The annual product of the lakes and tributary rivers is thus shown:

	Bbls.	Value.
The Lakes	85,000	$385,000
Detroit River	7,000	77,000
Other rivers	10,000	85,000
Total	52,000	$547,000

See Hunt's *Mag.*, vi., 333, xix., 19 (J. R. Williams), xxii., 131.

Foreign Commerce of the State of Michigan, from October 1, 1820, to July 1, 1856.

Years ending	Exports.			Imports.	Tonnage Cleared.		District Tonnage.	
	Domestic.	Foreign.	Total.	Total.	American.	Foreign.	Registered.	Enrolled and Licensed.
Sept. 30, 1821	$53,290	....	$53,290	$29,076	....	....	302	304
1822	694	....	694	18,877	....	....	....	....
1823	1,010	....	1,010	2,159	....	....	....	....
1824	....	....	....	1,886	....	....	....	....
1825	....	....	....	5,695	....	....	....	....
1826	1,820	....	1,820	3,774	....	....	....	....
1827	....	....	....	3,440	....	....	....	....
1829	....	....	....	2,957	....	....	....	....
1830	1,588	....	1,588	21,815	50	....	....	....
Total	$57,902	....	$57,902	$88,679	50	....	....	....
Sept. 30, 1831	$12,892	....	$12,892	$27,299	48	....	....	1,202
1832	9,234	....	9,234	22,648	....	....	....	....
1833	9,054	....	9,054	68,876	644	210	....	....
1834	36,021	....	36,021	106,202	2,767	215	....	....
1835	63,480	$1,350	64,830	150,629	1,881	629	....	....
1836	57,181	4,050	61,231	502,287	750	803	....	....
1837	69,790	....	69,790	....	1,879	3,258	....	....
1838	125,660	....	125,660	256,662	1,480	1,343	....	....
1839	188,805	....	188,805	176,221	3,708	1,986	....	....
1840	162,229	....	162,229	138,810	4,796	6,370	....	....
Total	$678,346	$5,400	$683,746	$1,424,434	17,787	14,964	....	....
Sept. 30, 1841	$88,529	....	$88,529	$137,800	875	4,734	....	11,524
1842	262,229	....	262,229	80,784	1,714	4,640	....	....
9 mos. 1843	262,994	....	262,994	76,376	439	1,507	....	....
June 30, 1844	298,901	....	298,901	120,678	18	5,757	....	....
1845	251,220	....	251,220	41,952	1,807	8,542	....	....
1846	251,890	....	251,890	154,928	540	27,920	....	....
1847	93,795	....	93,795	37,608	440	36,171	....	....
1848	111,194	$441	111,635	115,760	180,800	87,014	....	....
1849	127,844	5,007	132,851	98,141	33,919	90,605	....	....
1850	132,045	....	132,045	144,102	7,982	46,719	....	....
Total	$1,875,641	$5,448	$1,881,089	$1,008,138	225,584	314,209	....	....
June 30, 1851	$183,448	$7,978	$191,426	$192,146	7,935	45,102	....	41,574
1852	182,366	12,786	195,152	196,240	4,884	65,097	....	....
1853	295,809	57,876	353,685	211,230	8,005	71,928	....	....
1854	465,181	29,314	494,495	204,286	9,405	22,790	....	....
1855	526,825	41,266	568,091	281,379	24,415	38,196	....	....
1856	895,624	85,404	981,028	886,668	22,072	27,128	....	....

The principal port is Detroit, a large and flourishing city on the Detroit River, opposite Windsor, the terminus of the Great Western (Canada) Railroad, which here connects by ferry with the Michigan Central Railroad, together forming a convenient line between Niagara and Chicago. It is also the south-western terminus of the Detroit and Milwaukee Railroad; and a line (the Detroit and Toledo Railroad) is now in progress to connect with the railroads centering at Toledo. It has one of the finest harbors in the United States, and is admirably adapted for commerce. It has also extensive manufactures, chiefly machinery, agricultural implements, etc., and a large trade in lumber. On the whole, it is a most flourishing place, and ranks as the first city of the State. Population in 1855, 50,448. Detroit was founded in 1760 by the French, and was for many years the State capital. Twenty-five years ago it had only 2000 inhabitants. The tonnage of Detroit in 1856 was 58,688 tons.

Port Huron.—A town at the mouth of Black River, on the St. Clair, and two miles south of Lake Huron. It has a large lumber business and fine general trade.

Microscopes. Invented nearly at the same time in Italy and Holland, A. D. 1621. Those with double glasses were made at the period when the law of refraction was discovered, about 1624. The honor of this invention is awarded to Drebel and Torricelli. Solar microscopes were invented by Dr. Hooke. In England, great improvements were made in the microscope by Henry Baker, F.R.S., who wrote two treatises upon it about 1763.—*Biog. Dict.*

Mile (Lat. *mille passuum*, a thousand paces). The Roman pace being five feet, and a Roman foot being equal to 11·62 modern English inches, it follows that the ancient Roman mile was equivalent to 1614 English yards, or very nearly 11-12ths of an English statute mile. The English statute mile was defined (incidentally, it would seem) by an act passed in the 35th year of the reign of Queen Elizabeth, by which persons were forbidden to build within three *miles* of London; and the mile was declared to be 8 furlongs of 40 perches of 16½ feet each. The statute mile is, therefore, 1760 yards, or 5280 feet. See Weights and Measures.

The mile is used as an itinerary measure in almost

all countries of Europe, particularly those which were formerly under the sway of the Romans; but it is very difficult to conjecture the cause which has given rise to the great diversity of its values. It has been supposed that in some countries the Roman mile was confounded with the ancient Celtic league. The following table shows the length, in statute miles of 1760 yards, of the modern mile, and also the leagues of various countries in English yards:

MILE OF DIFFERENT NATIONS.

	English y'ds.		English y'ds.
Arabian mile	2,148	Irish mile	8,038
Bohemian	10,127	Italian	2,025
Brabant	6,082	Lithuanian	9,784
Burgundy	6,183	Oldenburg	10,820
Chinese lis	228	Persian Parasang	6,086
Danish mile	8,244	Polish (short mile)	6,095
English	1,760	" (long mile)	8,101
English (geog.)	2,025	Portuguese leguas	6,760
Eng. (geog.) leagues	6,075	Prussian mile	8,468
Flemish	6,869	Roman (ancient)	1,618
French art. leagues	4,860	" (modern)	2,025
" marine "	6,075	Russian versts	1,167
" legal leagues, of 2,000 toises	4,263	Saxon mile	9,905
German miles (geog.)	8,100	Scotch	1,984
" " (long)	10,126	Silesian	7,083
" " (short)	6,859	Spanish leguas, legal	4,630
Hamburg mile	8,244	" " com	7,416
Hanover	11,559	Suabian mile	10,125
Hesse	10,547	Swedish	11,704
Dutch	6,895	Swiss	9,166
Hungarian	9,116	Turkey berries	1,821
		Westphalian mile	12,155

Milford-Haven, a harbor of England, on a basin or deep inlet of the Atlantic, on the coast of South Wales, county Pembroke, forming one of the best ports in the British dominions. Latitude of St. Anne's Heads, the north-western extremity of the entrance, and on which are three light-houses, with fixed lights, 51° 41′ N., long. 50° 10′ 25″ W. Length of haven about 15 miles; average breadth, 2 miles. It is completely land-locked, has deep water, and the whole shipping of the empire might ride here as safely as in dock, in any weather; while the access is easy, and the egress can be accomplished, by aid of the strong ebb, even in head winds. It has for some time been a favorite scheme with the southern States to have a line of steamers between this port and Norfolk, Virginia, and thereby secure a portion of the importing and carrying trade now absorbed by the ports of New York and Boston.

Milk (Fr. *Lait;* It. *Latte;* Lat. *Lac*), a fluid secreted by the female of all those animals denominated *mammalia*, and evidently intended for the nourishment of her offspring. The milk of every animal has certain peculiarities which distinguish it from all other milk. But the animal whose milk is most used by man, and with which, consequently, we are best acquainted, is the cow. The external character of all milk is that of a white opaque fluid, having a sweetish taste, and a specific gravity somewhat greater than that of water. When allowed to remain at rest, it separates into 2 parts; a thick whitish fluid called *cream*, collecting in a thin stratum over its surface, and a more dense watery body, remaining below. Milk which has stood for some time after the separation of the cream, becomes acescent, and then coagulates. When the coagulum is pressed gently, a serous fluid is forced out, and there remains the caseous part of the milk, or pure cheese. Butter, one of the most valuable animal products, is solidified cream, and is obtained artificially by churning. Milk has always been a favorite food of most European nations, and especially of the British. *Lacte et came vivunt*, says Cæsar of our ancestors; and the same articles still continue to form a large part of our subsistence. See articles BUTTER, CHEESE, DAIRY.

Millet (Ger. *Hirse;* Fr. *Millet, Mil;* It. *Miglio, Panicastrello;* Sp. *Mijo;* Lat. *Milium, Panicum miliaceum*). There are 3 distinct species of millet; the Polish millet, the common or German millet, and the Indian millet. It is cultivated as a species of grain; and is sometimes employed to feed poultry, and as a substitute for rice. The Indian millet grows to a large size; but the autumns in England are seldom dry and warm enough to allow of its being cultivated here.—LOUDON'S *Encyc. of Agriculture.*

Milliner. Defined by Shakspeare and Johnson as a seller of ribbons and dresses for women, a very ancient occupation; the term is supposed to be derived from Milan. There are men-milliners, and the adoption of such a trade by the male sex has been strongly and justly censured. In 1810, men-milliners and other classes of an epicene character were very strongly censured in the Society of Arts. Young females are employed at all seasons, and in all weathers, to carry bandboxes through the streets, exposed to the insolence of libertines, and the perils of vicious example, while the perfumed coxcomb ["He was perfumed like a milliner."—*Shakspeare.*] measures ribbons safely at home, or folds gauzes, and lisps the while in lady phrases to females of distinction.—*Butler.*

Mill-stones (Ger. *Mühlsteine;* Fr. *Pierres meulières;* It. *Mole macine;* Sp. *Muelas de Molino;* Rus. *Schernowoi kamen*), the large circular stones, which, when put in motion by machinery, grind corn and other articles. The diameter of common mill-stones is from 5 to 7 feet, and their thickness varies from 12 to 18 inches. These stones have been principally imported from Rouen and other parts of France; the burr-stones of that country being supposed to be more durable than our own. The island of Milo, in the Archipelago, furnishes mill-stones of a very excellent quality. They are exported to Greece, Italy, and other countries on the Mediterranean, where they are employed in grinding the hard wheat, or *grano duro*, used in the manufacture of macaroni, vermicelli, etc. The quarries are wrought on account of government, and the stones sold at moderate prices fixed by a tariff, which, however, leaves a handsome profit to the State.—TOURNEFORT, *Voyage au Levant;* STRONG'S *Greece.* The stones used by millers are of various sizes, according to the intensity of moving power obtainable. Technically, the two stones are called the runner and the bedder; and the operation of "hanging a runner," or adjusting the upper stone over the lower, is one of some delicacy; since not only must the two be rigorously parallel, but the distance between them must depend on the fineness of the flour to be produced and on the rapidity with which the upper stone rotates. Other things being equal, the greater the velocity, the closer must the stones be together, else the centrifugal force would drive away the corn unground or half-ground.

Mineral Pitch, *Maltha.* A solid, softish bitumen. Sp. gr. about 1·5.

Mineral Tar. The bituminous substance called *petroleum.* It is brown, viscid, and unctuous. Its specific gravity is 0·88. It is found in Britain, and on the continent of Europe, in the West Indies (Barbadoes tar), and in Persia. It may be resolved by distillation into naphtha and petroleum.

Mines (*Mine*, Fr.; *Mwyn*, or *Mwn*, Welsh), a subterraneous work or excavation for obtaining metals, metallic ores, or other mineral substances.

STATISTICS SHOWING THE PRODUCTIONS OF THE MINES OF THE PRINCIPAL COUNTRIES IN THE WORLD.

Austrian Empire.			
Iron—Average produce	cwt.	30,000,000	£3,000,000
Coal	quintals.	4,239,841	
Copper	"	44,800	
Gold	marcs	5,600	
Silver	"	94,195	
Russian Empire.			
Silver	lbs.	17,500	£50,000
Copper	tons	12,000	1,200,000
Tin	"	5,500	550,000
Lead	"	50,000	1,000,000
Iron	"	1,850,000	9,000,000
Coal, 1850	"	38,000,000	19,000,000
Salt, alum, etc.			1,500,000

France.
Annual value of minerals.....£19,779,870
Coal produce, 1845.....tons 4,141,617
Pig iron..... " 600,000
Salt..... " 398,000

Prussia.
Value, 1840.....£5,398,430
Produce of mines..... 1,513,177
Produce of founderies..... 3,562,262
Zinc.....cwt. 2,574,861
Copper..... " 703,951
Coal..... tons 18,197,132
Peat..... " 8,773,222
Bar and pig iron..... " 200,000

Russian Empire.
Gold, 1849.....lbs. 71,711
Fine gold.....£3,350,798
Iron.....tons 150,000

United States.
See article UNITED STATES.

Bavaria.
Iron, 1847.....tons 15,000
Copper refined.....cwts. 11,012

Belgium.
Iron, manufactured, 1850.....tons 230,000
Coal..... " 4,500,000

Brazil.
Gold and silver produced in 1850 in the old American mines.....£7,000,000

Denmark.
Iron.....tons 13,000

Egypt.
There is an iron foundery, and they are able to cast 50 cwt. of iron per day, employing 50 cwt. of coal.

Greece.
Insignificant quantities of minerals are extracted.

Hamburg.
Zinc exported, 1849.....cwts. 271,633

Holland.
There are large engineering establishments.

Mexico.
Pure gold.....marcs 7,000

Papal States.
Bar iron.....lbs. 2,000,000
Cream of tartar..... " 750,000
Sulphur..... " 4,000,000

Portugal.

Sardinia.
Salt.....lbs. 3,000,000
Iron.....tons 22,000

Spain.
Value—Estimated produce.....£308,000
Iron.....tons 18,000

Sweden and Norway.
Sweden, 1843 to 1847—Average.
Cast iron.....tons 156,907
Bar iron..... " 86,218
Steel wares..... " 10,518
Silver.....oz. 774
Copper.....cwts. 21,798
Brass..... " 1,572

Turkey.

Two Sicilies.
Sulphur exported from Sicily, 1847....cwts. 1,618,858
Sumac..... " 147,000

China.

COLONIES:

British Possessions—Indies.

Canada.

White pine, 1846.....	pieces	404,690....feet	24,698,260
Red pine.....	"	141,705.... "	5,287,948
Oak.....	"	58,102.... "	2,589,754
Elm.....	"	97,204.... "	3,472,393

Property assessed, 1847.....£8,567,001

Cape of Good Hope.

Australia—New South Wales.
Coal, 1848.....tons 45,447
Gold mines at Bathurst.

Western—Van Diemen's Land.

South.
Copper ore exported, 1848.....tons 10,631

Jamaica.

Ceylon.

Mauritius.

French Possessions—Hayti.
Copper mines.

Spanish Possessions—Cuba.
Copper ore exported, 1848.....tons 31,782

Dutch Possessions—Java.
Tin exported, 1849.....lbs. 8,595,355

Minim. The smallest liquid measure, generally regarded as about equal to one drop. The fluid drachm is divided into 60 minims.

Minnesota, a north-western Territory of the United States of America, lies between lat. 42° 30′ and 49° N., and long. 91° and 103° 5′′ W. Area, 141,839 square miles. Population, 1850; whites, 6,038; colored, 39; total, 6,077; in 1857 estimated at 150,000.

Physical Features.—Minnesota is an elevated tableland, with a surface but little varied, being mostly a rolling prairie, abounding with lakes of pure water, and streams which flow in all directions, excepting toward the west. The soil is a fertile, sandy loam, easily cultivated, and well adapted to agricultural purposes. The Mississippi River rises centrally in the Territory, in Itasca Lake, a beautiful sheet of water. The river flows first in an eastern, thence in a southern direction, to the confines of the Territory, in its course to the ocean. It is also drained by the Missouri and its numerous tributaries, the Red River of the North, whose waters pass off to Hudson Bay, and the St. Louis entering Lake Superior on the eastern border of the Territory. Forests of pine and other valuable woods for timber, border the principal streams, and lead and copper ore have been found to some extent, and iron ore on the shore of Lake Superior. There were in the Territory in 1850, 5,035 acres of improved land, and 23,846 acres of unimproved land in farms. Cash value of farms, $161,948; and the value of implements and machinery, $15,981. *Live Stock.*—Horses, 860; asses and mules, 14; milch cows, 607; working oxen, 655; other cattle, 740; sheep, 80; swine, 734. Value of live stock, 92,859. *Agricultural Products.*—Wheat, 1,401 bushels produced; rye, 125; Indian corn, 16,725; oats, 30,582; barley, 1,216; buckwheat, 515. Value of the products of market gardens, $150; pounds of butter made, 1,100 lbs.; maple sugar, 2,950; beeswax and honey, 80; tons of hay, 2,019; potatoes, 21,145 bushels; wool, 85 lbs.; sweet potatoes, 200; peas and beans, 10,002. Value of slaughtered animals, $2,480. The common traveling roads and military roads are the only improvements yet constructed. The route of the great Northern Pacific railroad has been explored across the Territory. Congress, in May 1856, appropriated over 1,000,000 acres for the construction of railroads.

The French were the first Europeans to explore the region now comprised in Minnesota, and the Mississippi River was explored by the Jesuit fathers, even beyond the Falls of St. Anthony, at a very early period. The first American military post was established here in 1819, and called Fort Snelling. This county has formed a part of several territorial governments: the last were Iowa and Wisconsin. It was formed into a Territory with its present name (in 1849), which it derives from the original Indian name of St. Peter's River.

Mint. Athelstan first enacted regulations for the government of the mint, about A.D. 928. There were several provincial mints under the control of that of London. Stow says the mint was kept by Italians, the English being ignorant of the art of coining, 7 Edward I., 1278. The operators were formed into a corporation by the charter of King Edward III., in which condition it consisted of the warden, master, comptroller, assay-master, workers, coiners, and subordinates. The first entry of gold brought to the mint for coinage, occurs 18 Edward III., 1343. Tin was coined by Charles II., 1684; and gun-metal and pewter by his successor, James. Between 1806 and 1810, grants amounting to £262,000 were made by Parliament for the erection of the present fine structure in London. The new constitution of the mint, founded on the report of the Honorable Mr. Wellesley Pole, took effect in 1815. The master is now the chief officer.

The general appropriation bill makes provision for

the expenses of the mint and branches of the United States for the fiscal year, to the following effect:

Mint at Philadelphia	$117,200
" New Orleans	68,200
" Charlotte, N. C.	11,600
" Dahlonega, Ga	10,880
" San Francisco	277,300
" New York Assay Office	62,200

Congress loses sight of the fact that the coinage of the branches at New Orleans, Dahlonega, and Charlotte, could be easily dispensed with, and with decided advantage to the Treasury. Those branches were established at periods when the bulk of American gold was produced in the southern Atlantic States. Now the supplies are mainly from California, and the expenses at the three branches named are a dead weight upon the Treasury. The coinage at Dahlonega and Charlotte, particularly, is too trifling to render either necessary or expedient any further operations there. The coinage at each place last year, and the appropriations for the coming year, are as follows:

	Coinage—1855.	Expenses—1856.
Philadelphia	$12,045,752 98	$117,200
New Orleans	2,868,500 00	68,200
Dahlonega	116,778 50	10,880
Charlotte	217,935 50	11,600
San Francisco	21,121,752 43	277,300
New York Assay Office	20,441,813 68	62,200
Total	$56,812,732 99	$602,280

The coinage at Philadelphia, in 1855, was suspended for several months, in order to make extensive improvements, and to make the building, for the first time, fire proof. The coinage of the parent mint has of late years been over 50,000,000 annually. The above statement will, however, show that the coinage at New Orleans costs nearly 3 per cent., Dahlonega 9 per cent., and Charlotte over 5 per cent. A Report of the Committee on Commerce, in 1850, demonstrated that the actual cost of coinage for a series of years was as follows:

	Per cent.
At Philadelphia	2·23
New Orleans	6·68
Charlotte	9·00
Dahlonega	9·97

This, be it remembered, was when the coinage at the southern branches was more than double what it now is—the production of gold in that region being either actually less, or its profits less. The coinage at the three southern branches has now dwindled down to such small sums as to demand the closer attention of the government, and indicates the expediency of cessation at all those points. The following is a summary of the gold of domestic production for each year, 1850—1855:

Years.	New Orleans.	Charlotte.	Dahlonega.
1850	$4,580,021	$320,289	$247,698
1851	8,770,722	316,061	879,309
1852	8,777,784	430,900	474,789
1853	2,006,678	385,155	452,290
1854	981,511	213,606	280,225
1855	411,517	216,983	116,652

Thus the production of gold which was at the two small branches $567,000 in the year 1850, has gradually become reduced to $333,000, and in order to maintain *the show of coinage* at these two points, an annual expenditure of $22,000 is by Congress deemed expedient, when the same work could be done at Philadelphia for $6000. Since 1838, the gross product of the gold mines of North Carolina, as far as indicated by the mint returns was $4,238,236, and of Georgia $5,686,864; total, $9,925,100; and the aggregate expense of maintaining them $22,000 annually, or about $400,000 for the whole period. See COINAGE.

Mirage (Fr.), an optical illusion very common at sea, and especially in high latitudes, and sometimes also witnessed on land, particularly in Egypt and Persia, and on the margin of rivers and lakes, or on the sea-shore. It arises from unequal refraction in the lower strata of the atmosphere, and causes remote objects to be seen double, as if reflected in a mirror, or to appear as if suspended in the air. When the effect is confined to apparent elevation, the English sailors call it *looming;* when inverted images are formed, the Italians give it the name of *Fata Morgana* (see the term). Ships in the whale fisheries are often descried, and sometimes known, by means of the mirage, at considerable distances. Captain Scoresby recognized his father's ship at the distance of more than 30 miles, and consequently when below the horizon, by its inverted image in the air, though he did not previously know that it was cruising in that part of the fishery. The mathematical theory of the phenomenon is given by Biot, in the *Memoires de l'Institut* for 1809. See also CADDINGTON'S *Optics;* BIOT'S *Traité de Physique*, tome iii.; BREWSTER'S *Optics*, *Cabinet Cyclopædia.*

Mississippi, one of the southern United States, is situated between 30° 10′ and 35° N. lat., and between 80° 30′ and 81° 35′ W. long. It is 339 miles long from north to south, and 150 broad, containing 47,151 square miles. Population in 1816 was 45,929, in 1820, 75,448; in 1830, 136,836; in 1840, 375,651; and in 1850, 606,555.

The tract of land which now belongs to the present State of Mississippi was in olden times comprised under all those different ancient and general names under which the whole northern shore of the Mexican Gulf became known to Europe. In the year 1798 the name of the river was for the first time given to a Territory, and the great "Mississippi Territory" was erected, which included also the present State of Alabama. In the year 1817 the eastern portion of this Territory was separated from it and received the name of Territory of Alabama, while the western portion, with a very limited sea-shore (from Pearl River to Grande Bay), was admitted into the Union as the State of Mississippi.

The southern part of the State, for about 100 miles from the Gulf of Mexico, is mostly a sandy, level pine forest, interspersed with cypress swamps, open prairies, and inundated marshes, and a few hills of a moderate elevation. This region is generally healthy, and by cultivation produces cotton, Indian corn, sugar, indigo, etc. As you proceed further north, the country becomes more elevated and agreeably diversified, and the soil is a deep rich mold, producing abundantly cotton, Indian corn, sweet potatoes, indigo, peaches, melons, and grapes. The natural growth of timber consists of poplar, hickory, black walnut, sugar-maple, cotton-wood, magnolia, lime, and sassafras. The country in the north of the State is healthy and productive, and the lands watered by the Yazoo through its whole course in the north-west are very fertile.

There were in this State in 1850, 3,444,358 acres of land improved, and 7,046,061 of unimproved land in farms; cash value of farms, $54,738,634, and the value of implements and machinery, $5,762,927.

Live Stock.—Horses, 115,460; asses and mules, 54,547; milch cows, 214,231; working oxen, 83,485; other cattle, 436,254; sheep, 304,929; swine, 1,582,734. Value of live stock, $19,403,662.

Agricultural Products, etc.—Wheat, 137,990 bushels; rye, 9,606; Indian corn, 22,446,552; oats, 1,503,288; barley, 228; buckwheat, 1121; peas and beans, 1,072,757; potatoes, 261,482; sweet potatoes, 4,741,795; rice, 2,719,856 pounds. Value of products of the orchard, $50,405; produce of market gardens, $46,250. Pounds of butter made, 4,346,234; of cheese, 21,191; sugar, hogsheads of, 388; molasses, 18,318 gallons; beeswax and honey, 397,460 pounds; wool, pounds produced, 559,619; cotton, 484,293; flax, 665; silk cocoons, 2; hops, 473; pounds tobacco, 49,960; hay, tons of, 12,504; hemp, 7 tons; clover seeds, 84 bushels; other grass seeds, 533; flax seed, 26 bushels; and

were made 407 gallons of wine. Value of home-made manufactures, $1,164,020; of slaughtered animals, $3,636,582.

The Mississippi River, with its various windings, forms the entire western boundary of the State, and its margin consists of inundated swamps, covered with a large growth of timber. Back of this the surface suddenly rises into what are called bluffs, and behind them the country is a moderately elevated table land with a diversified surface. Cotton is the principal production of the State. The Yazoo is the largest river that has its whole course in the State. It rises in the north-west part, and after a course of 250 miles, enters the Mississippi. The Pascagoula River, after a course of 250 miles, enters the Gulf of Mexico. At its mouth it widens into a bay. It is navigable for a considerable distance for small vessels. The Big Black River, after a course of 200 miles, enters the Mississippi just above Grand Gulf. It has a boat navigation of 50 miles. Pearl River rises in the central part of the State, and passing through it to the south, forming in its lower part the boundary between this State and Louisiana, enters Lake Borgne. Its navigation is much impeded by sand bars and obstructions of timber. The Homochitto is a considerable river which enters the Mississippi. Beside these, there are a few other small rivers and creeks. A chain of low, sandy islands, six or seven miles from the shore, enclose several bays or sounds, the largest of which are Mississippi Sound, Pascagoula Sound, and Lake Borgne.

Manufactures, etc.—There were in the State in 1850, 2 cotton factories, with a capital invested of $38,000, employing 19 males and 17 females, producing 171,000 pounds of yarn, valued at $30,500; 8 establishments, with a capital of $100,000, employing 112 persons, and making 924 tons of castings, etc., valued at $117,400; 157 flouring and grist mills, 266 saw mills, 130 tanneries, 53 printing offices, 56 newspapers, 2 triweekly, 2 semi-weekly, and 52 weekly publications. Capital invested in manufactures, $1,835,395; value of manufactured articles, $2,962,038. There were, January, 1856, 10 railroads in the State, 87 miles completed and in operation.

The principal places in the State are Jackson, the capital, Natchez, Grand Gulf, Washington, Vicksburg, Columbus, Aberdeen, and Holly Springs. On the 1st of January, 1854, there was one bank, with a capital of $240,000. Total tonnage of the State, 1853, 2,509,000 tons.

DIRECT FOREIGN COMMERCE OF THE STATE OF MISSISSIPPI.

Years.	Exports.	Imports.
1826.....	....	$10,628
1836.....	....	5,650
1837.....	$364,831	....
June 30, 1854 to June 30, 1855.	...	4,338
1851 and 1852.....	....	6,721

These returns are very incomplete, and only include the direct commerce. Most of the imports for Mississippi are entered in the port of New Orleans.

Mississippi River, the largest river of North America; and in length of navigable tributaries, and in extent of facilities afforded to commerce, the greatest river in the world.

Discovery of the Mississippi.—There seems to be little doubt that Pinedo, the Captain of Garay, saw for the first time the mouth of the Mississippi when he accomplished, in the year 1519, his first circumnavigation of the whole Mexican Gulf. We have no special report of Pinedo's proceedings. But on the few maps or sketches of the Mexican Gulf which were made in Spain soon after Pinedo's return (of the years 1520, 1521, and 1529), there is to be found, near the centre of the northern gulf shore, a large inlet called "Mar pequeña" (the little sea), and a mighty river leading into it called "Rio del Espiritu Santo." Diego Ribero, on his large and accurate map (of 1529), which he made for the Emperor Charles V., has this bay and the mouth of the river already under 20° north latitude, which is very remarkable, because it is the true latitude of the Mississippi mouth, and because it nearly decides the question that not Mobile Bay, as some have supposed, but the Mississippi, was indicated by it. Nobody could have made this discovery, given these names, and brought home the news of it, but Pinedo. Since that time the "Mar pequeña" and the great River "Del Espiritu Santo" appear on the old maps. We can trace and follow them on the Spanish maps through the whole of the 16th century, and find them always, with some slight variations, in the middle part of the northern gulf shore, and generally under the latitude from 25° to 30° north.

It is thought that with the name "Mar pequeña" is meant that great bay which is included between the projecting promonturies formed by the Mississippi passes and the northern gulf shore, and for which we have no general name. The Mississippi passes must have appeared to the old Spanish navigators as very dangerous and difficult of approach. And very often they put the name of the Holy Cross to capes of this description.

The second traveler after Pinedo who saw and crossed the Mississippi was no doubt Cabeça de Vaca and his companions, between the years 1534-1535. From Cambeça de Vaca's report, it is evident that his commander, Narvaez, and his companions, got lost about Mobile or Perdido Bay, or somewhere else not very far to the east of the Mississippi. Once, he says, they believed themselves to have arrived at the "Bay of Espiritu Santo, near the Mississippi." Afterward Cabeça and his followers wandered westward in the direction of New Mexico; so they must have crossed the Mississippi. But that is all we can say. He mentions so many great rivers in his report, that we can not recognize among them the true "Rio Grande," the Mississippi.

De Soto.—Fernando de Soto was the third discoverer and principal old Spanish explorer of the Mississippi. He arrived at its borders, in the neighborhood of the so-called Chicasaw bluffs, 1542, and ascended and descended the river, which in the reports of his expeditions is generally only called "Rio Grande," up and down. He died on the shore of the river, and was buried near its waters somewhere about the mouth of the Arkansas River. De Soto's successor, Moscoso, carried the rest of the Spanish army, in the year 1543, down the whole river, and he was the first commander who sailed from the mouth of the river into the sea. Which of the passes it was can not be made out. Biedma, one of the writers on De Soto and Moscoso, and one of their companions, states, however, that the river had different mouths and branches. In one of the reports on De Soto's expedition (by Garcilasso de la Vega) it is said that the Indian name of the great river was "Chucagua." Probably in consequence of this, the geographers put sometimes on their maps the name "Chucagua" to the river. Generally, however, the old name of "Rio del Espiritu Santo" (River of the Holy Ghost) prevailed after De Soto for a long time. One of the historians of De Soto, "a so-called 'Portuguese gentleman of Elvas," sometimes calls it "the Great River of Guachoya." Guachoya was one of the places along the river where De Soto encamped. "In Guachoya," says Garcilasso, "the great river is called 'Tamalisco;' in Nilco, 'Tapata;' in Coça, 'Mico;' at the port or mouth it is called 'Rio.'"

Luna.—In the year 1557 the Governor, Luna, was sent to Pensacola Bay, and from thence, with his captains and men, made many inroads into the interior toward the north and west. It is very possible, though it is nowhere exactly stated, that some of his men also got as far east as the Mississippi.

Marquette and La Salle.—The French Marquette (1673) and soon after him the Sieur de la Salle (1682) re-discovered the Mississippi, and saw a greater part

of the river than was ever seen before them. De la Salle was, after Moscoso (1543), the first who sailed (1682) down the whole river to its mouth, and entered the Mexican Gulf. He explored in boats the whole delta of the passes, and saw, without however naming them, all the principal passes. A little above the dividing point of the passes he erected a monument with the arms of France. This was on the 8th of April, 1682. On the 7th of the same month he had explored the principal branches of the river and seen the sea. He observed also the latitude of this place; but there is a great diversity about the results of his observations. Some say that he observed the latitude 27° north, as, for instance, that remarkable document of the taking possession of the country at the month of the river by La Salle. Also, Barcia says that La Salle observed the latitude of the mouth between 27° and 28° north latitude, "though," he adds, "some heard La Salle say that the mouth was between 28° and 29° north latitude." After this, La Salle ascended the stream again to the north.

Father Marquette (1672) was the person who introduced for the first time into geography the Indian name of the river, "Mississippi." He, however, gave to it at the same time the Christian or French name "*Riviere de Conception.*" La Salle seems to have ratified this latter name. He called the river, after the great French minister, "*Riviere de Colbert.*" On some maps even the whole upper Mississippi country is called "La Colbertie" (Colbert's land). The name Riviere Colbert may be called La Salle's name for the Mississippi. It seems, however, soon to have given way to the Indian name Mississippi, which really was already longer known to the European missionaries, and which was already oftener adopted in books and in commerce than those new inventions of the European discoverers.

Tonti.—The next man after De la Salle who came down the Mississippi was tha Sieur de Tonti, or Tonty, who had already accompanied La Salle on his first navigation. De Tonti had heard that La Salle had set out from France to the mouth of the river, and he came, in the year 1685, down to meet him at the shores of the Gulf. He arrived there during "the Holy Week" (Easter) of 1686, but did not find La Salle, who had reached the coast of Texas instead of that of the Mississippi passes.

Origin of the Name.—"One of the names of the river under which Iberville, in 1699, had heard it called," says Charlevoix, "was *Malbouchia.*" But the name Mississippi seems already then to have been quite common. At least the first journal written in this colony—that of Captain Sauvol (1699, 1700)—uses always the name Mississippi, and not once that of Riviere Colbert. In the year 1712 an attempt was made to give the river still another name. The great King of France himself ordered, in the letters patent to Crozat, that the great river "heretofore called Mississippi" should henceforward be called "*Riviere St. Louis.*" But this name, newly sent out from France by royal authority, did not keep its ground against the old long-ago adopted Indian name. Charlevoix, who traveled along the river in 1721–22, and published his work in 1744, never uses it. He always calls it "*Mississippi*" or "*Micisipi.*" Into general use the name Riviere St. Louis has certainly not come; but on maps made by royal geographers or great savans like D'Anville, we find it still used in the year 1732, though always *besides* the name Mississippi.

The name "Mississippi" is an Ojibbeway word, which the first discoverers of that stream heard pronounced in their missions round Lake Superior. According to some, its meaning is "*the Great Water.*" Others, for instance the Reverend Bishop Barage, explain it as "rivers," or "waters from all sides."

The French authors generally write "Missisipi;" Spanish authors have always "Misisipi." We now double every consonant in it, and write "Mississippi," in which word, I have no doubt, some letters could be spared.—J. G Kohl.

Description.—Its extreme source, according to the explorations of Schoolcraft, July 13, 1832, is Itaska Lake, 47° 10′ N. lat., and 95° 54′ W. long., at an elevation of 1500 feet, and the distance of 3160 miles above the Gulf of Mexico. Itaska Lake is a beautiful sheet of water, lying among hills surmounted by pines. The outlet of the lake is 10 or 12 feet broad, and from 12 to 18 inches deep. Its course is then northwardly and north-eastwardly, and it passes through Lakes Irving and Travers, and then eastwardly and south-eastwardly, and through some small lakes, to Lake Cass. This lake is of considerable extent, and contains a large island, 182 miles below its source, and its surface is elevated 1330 feet above the Gulf of Mexico. Its course is west to Lake Winnipec, then south-west, through Little Winnipec Lake, until it receives Leech Lake Fork, the outlet of a considerable lake of the same name. The most northern point attained by the river is a few minutes short of 48°; it then pursues a winding course eastwardly, passing through some small lakes, until it attains a southwardly direction. The average descent of the Mississippi, from its source to its entrance into the Gulf of Mexico, is a fraction over five inches per mile. The region about the source of the Mississippi is an elevated table land, abounding in small lakes of pure water, and fed chiefly by springs.

Extent of Steam Navigation on the Rivers, Bayous, etc., connected with the Mississippi by Channels navigable for Steamers, 16,674 Miles.

Mississippi and Branches, Bayous, etc.

	Miles.		Miles.
Mississippi, proper	2,000	Spring	50
St. Croix	80	Arkansas (navigable at high water, 850 m.)	600
St. Peter's	1,120	Canadian	60
Chippoway	70	Neosho	60
Black	60	Yazoo	300
Wisconsin	180	Tallahatchee	300
Rock	250	Tallabusha	80
Iowa	110	Big Sunflower	70
Cedar	60	Little Sunflower	150
Des Moines	250	Big Black	90
Illinois	245	Bayou de Glaze	140
Maremee	60	" Care	40
Kaskaskia	150	" Rouge	60
Big Muddy	5	" La Fourche	12
Oblon	60	" Pisquomine	96
Forked Deer	195	" Teche	12
Big Hatchu	75	Grand River	
St. Francis	300	Bayou Sorrell	12
White	500	" Chien	5
Big Black	60		

Missouri and Branches.

	Miles.		Miles.
Missouri, proper	1,800	Osage	275
Yellow Stone	300	Grande	100
Platte or Nebraska	40	Big Sioux	150
Kansas	150		

Ohio and Branches.

	Miles.		Miles.
Ohio, proper	1,000	Kentucky	62
Alleghany	200	Salt River	35
Monongahela	60	Green	150
Muskingum	70	Barren	30
Kanawha	65	Wabash	400
Big Sandy	50	Cumberland	400
Scioto	50	Tennessee	720

Red River and Branches.

	Miles.		Miles.
Red River, proper	1,500	Tensas	150
Washita	375	Lake Bistenaw	60
Saline	100	Lake Coddo	75
Little Missouri	50	Sulphur Fork	100
Bayou d'Arbonne	60	Little River	65
" Bartholomew	80	Klamebl	40
" Bœuf	150	Boggy	40
" Macon	175	Bayou Pierre	150
" Louis	30	Atchafalaya	360

The average width of the Mississipi below the Missouri is about a mile; but the large rivers which enter it greatly increase its depth. Its medial current is about four miles an hour. At the head of the delta, the depth is from 75 to 80 feet; at New Orleans it is

100. At the distance of 105 miles below New Orleans, by the course of the river, but 90 in a direct course, this majestic river enters the Gulf of Mexico by several mouths, the principal of which are called the Balise, or North-east Pass, in 29° 08′ 30″ N. lat., and 89° 01′ 24″ W. long. Draining a country of over 1,000,000 square miles in extent, it would naturally be expected that its spring floods would be vast; and in consequence of them, it overflows its banks at that season to a great extent. From the sources to the mouth of the Missouri, the flood commences in March, and does not subside before the last of May, at an average height of 15 feet. From the Missouri to the Ohio it rises 25 feet, and below the Ohio, for a great distance, 50 feet. At every flood it overspreads a country, chiefly on its western side, from 10 to 30 miles wide, 550 miles from its mouth. This river is extremely winding in its course; and sometimes a bend will occur of 30 miles in extent, in which the distance across the neck will not exceed a mile. This circumstance undoubtedly impedes the current, and thus favors navigation.

There are three light-houses at the passes, and one at the head of the South Pass, viz.: the one at the north-east is a fixed light, elevated 78 feet above the surface of the Gulf, and visible 13½ nautical miles; at the South Pass is a revolving light, on a tower of 54 feet above the sea; at the south-west pass is a fixed light, elevated 60 feet above the surface of the Gulf, and visible 12 nautical miles; and one with a fixed light at the head of the South Pass, built of iron in 1852: it shows a fixed light.

The acquisition of Louisiana and Florida by the United States having included within their boundary the whole river from its source to the Gulf of Mexico, and the stipulation in the treaty of 1783, securing to British subjects a right to participate in its navigation, not having been renewed by the Treaty of Ghent, in 1814 the right of navigating the Mississippi is now vested exclusively in the United States.—Wheaton's *International Law*, p. 258.

"The right of the United States to participate with Spain in the navigation of the River Mississippi, was rested by the American government on the sentiment written in deep characters on the heart of man, that the ocean is free to all men, and its rivers to all their inhabitants. This natural right was found to be universally acknowledged and protected in all tracts of country, united under the same political society, by laying the navigable rivers open to all their inhabitants. When these rivers enter the limits of another society, if the right of the upper inhabitants to descend the stream was in any case obstructed, it was an act of force by a stronger society against a weaker, condemned by the judgment of mankind. The then recent case of the attempt of the Emperor Joseph II., to open the navigation of the Scheldt from Antwerp to the sea, was considered as a striking proof of the general union of sentiment on this point, as it was believed that Amsterdam had scarcely an advocate out of Holland, and even there her pretensions were advocated on the ground of treaties, and not of natural right. This sentiment of right in favor of the upper inhabitants must become stronger in the proportion which their extent of country bears to the lower. The United States held 600,000 square miles of inhabitable territory on the Mississippi and its branches, and this river with its branches afforded many thousands of miles of navigable waters penetrating this territory in all its parts. The inhabitable territory of Spain below their boundary, and bordering on the river, which alone could pretend any fear of being incommoded by their use of the river, was not the thousandth part of that extent. This vast portion of the territory of the United States had no other outlet for its productions, and these productions were of the bulkiest kind. And, in truth, their passage down the river might not only be innocent, as to the Spanish subjects on the river, but would not fail to enrich them far beyond their actual condition. The real interests, then, of the inhabitants, upper and lower, concurred in fact, with their respective rights."—Wheaton's *International Law*, pp. 258, 259.

Missouri, one of the western United States, is situated between 36° and 40° 36′ N. lat., and between 89° and 95° 30′ W. long. It is 287 miles long, and 230 broad, containing 65,037 square miles. Population in 1810 was 19,833; in 1820, 66,586; in 1830, 140,074; in 1840, 383,702; and in 1850, 682,043.

Physical Features, etc.—This State presents a great variety of surface and soil. Alluvial or bottom land is found on the margin of the rivers; receding from them the land rises in some places gently, and in others very abruptly, into elevated barrens or rocky ridges. In the interior, bottoms and barrens, naked hills and prairies, heavy forests and streams of water, may often be seen at one view, presenting a diversified and beautiful landscape. The south-east part of the State has a very extensive tract of low, marshy country, abounding in lakes, and liable to inundations. Back of this a hilly country extends as far as the Osage River. This section is rich in minerals. The lead region covers an area of more than 3,000 square miles. In St. Francis county is the celebrated "Iron Mountain," elevated 300 feet above the surrounding plain, and 1½ miles across its summit, and 80 per cent. of its mass pure iron. Five miles distant is the Pilot Knob, 300 feet high, and with a base a mile and a half in circumference of the same species of rich ore. Between the Osage and Missouri Rivers is a tract of country very fertile, and agreeably diversified with woodland and prairie, and abounding with coal, salt, etc. The country north of the Missouri is emphatically "the garden of the West." There is no part of the world where a greater extent of country can be traversed more easily when in its natural state. The surface is for the most part delightfully undulating and variegated, sometimes rising into picturesque hills, then stretching away into a sea of prairies, occasionally interspersed with shady groves and shining streams.

There were in this State in 1850, 2,938,425 acres of land improved, and 6,794,245 of unimproved land in farms; cash value of farms, $63,225,513, and the value of implements and machinery, $3,981,525. *Live Stock.*—Horses, 225,319; asses and mules, 41,667; milch cows, 230,169; working oxen, 112,168; other cattle, 449,173; sheep, 762,511; swine, 1,702,625; value of live stock, $19,887,580.

Agricultural Products, etc.—Wheat, 2,981,652; rye, 44,268; Indian corn, 36,214,537; oats, 5,278,079; barley, 9,631; buckwheat, 23,611; peas and beans, 46,017; potatoes, 939,006; sweet potatoes, 335,505; rice, 700 pounds; value of the product of the orchard, $514,711; produce of market gardens, $99,454; pounds of butter made, 7,834,359; of cheese, 203,572; maple sugar, 178,910; molasses, 5,636 gallons; beeswax and honey, 1,328,972 pounds; wool, 1,627,164 pounds produced; flax, 527,160; silk cocoons, 186; hops, 4,130; tobacco, 17,113,784; hay, 116,925 tons; hemp, 16,628 tons; clover seeds, 619 bushels; other grass seeds, 4,346; flax seed, 13,696; and were made 10,563 gallons of wine. Value of home-made manufactures, $1,674,705; of slaughtered animals, $3,367,106. The Mississippi winds along the entire eastern boundary of the State for a distance of 100 miles, and receives in its course the waters of the Great Missouri, which indeed deserves to be regarded as the main stream. Through the central and richest part of the State the Missouri rolls its immense volume of water, being navigable for five months in the year for steamboats 1,800 miles from its entrance into the Mississippi. The La Mine, Osage, and Gasconade on the south, and the Grand and Charlton on the north side, are navigable

tributaries of the Missouri. Maramec River runs through the mineral district, is a navigable stream, and enters the Mississippi 18 miles below St. Louis. Salt River, which is also navigable, enters the Mississippi 85 miles above the Missouri. The White and St. Francis drain the south-east, and the tributaries of Neosha the south-west part of the State.

Manufactures, etc.—There were in the State in 1850, 2 cotton factories, with a capital invested of $102,000, employing 75 males and 80 females, producing articles valued at $142,900; 1 woolen factory, with a capital of $20,000, employing 15 males and 10 females, manufacturing 12,000 yards of cloth, and 6,000 pairs blankets, valued at $56,000; 5 establishments making pig iron, with a capital of $619,000, employing 334 persons, and producing 19,250 tons of pig iron, etc., valued at $314,600; 6 establishments, with a capital of $187,000, employing 297 persons, and making 5,200 tons of castings, etc., valued at $336,495; 2 establishments, with a capital of $42,100, employing 101 persons, manufacturing 963 tons of wrought iron, valued at $68,700; 75 flouring and grist mills, 338 saw mills, 210 tanneries; 56 printing offices, 5 daily, 4 tri and semi-weekly, 45 weekly, and 7 monthly publications. Capital invested in manufactures, $9,194,999; value of manufactured articles, $24,250,578.

The principal places in this State are St. Louis, Jefferson City, the capital, St. Charles, Palmyra, Columbia, Liberty and Lexington. There were in January, 1854, 1 bank with 5 branches, with a cash capital of $1,215,405. There were 3 railroads in the State; 50 miles of road completed, and 963 in the course of construction. Tonnage, 1853, 45,441 tons.

DIRECT FOREIGN COMMERCE OF THE STATE OF MISSOURI.

	Imports.
From October 1st, 1832, to October 1st, 1840	$82,593
" " 1840, to July 1st, 1850..	1,024,417
" July 1st, 1850, to July 1st, 1855.....	2,398,180

District tonnage enrolled and licensed, 34,065 tons. The returns of the foreign commerce are very incomplete, and only include the direct exports.

The following statement exhibits a rapid increase in the population of Missouri for the years mentioned:

POPULATION.

1850.....	682,907
1852.....	722,871
1856.....	900,000

The statement below shows a most gratifying advancement in the number, quantity, and value of the chief objects of taxation in the State. The years mentioned are selected merely for the reason that the aggregates for those years are the most accessible, without making laborious additions. Any other periods would exhibit the same flattering results:

Years.	Polls.	Land.		Personal property.
		Acres.	Value.	Value.
1849....	83,798	8,808,603	$31,512,000	$7,730,000
1850....	85,546	9,511,251	36,099,000	10,797,000
1853....	97,470	11,236,485	51,740,000	19,021,000
1854....	102,953	12,901,237	67,744,000	22,974,000
1855....	106,150	15,390,334	79,010,000	24,342,000
1856....	121,488	18,553,128	89,702,000	30,846,000

For mineral resources, etc., of Missouri, see *North Amer. Rev.*, xlviii., 514 (W. G. ELIOT); HUNT'S *Mag.*, viii., 535 (C. C. WHITTLESEY), xiii., 222, xv., 28, xvi., 177.

Missouri, a large river in the United States, rises in the Rocky Mountains, and takes its name after the union of three branches, denominated Jefferson, Gallatin, and Madison, in 45° 10′ N. lat., and 110° W. long. The spring sources of Missouri, and those of the Columbia, which flows west to the Pacific, are not more than a mile apart. At the distance of 411 miles from the extreme point of navigation of its head branches, the Missouri passes through the Rocky Mountains by what is denominated the Gates. For a distance of six miles the rocks rise perpendicularly from the water's edge to the height of nearly 1200 feet, and the river is only 150 yards wide. 110 miles below this and 521 miles from its source, are the Great Falls, 2,575 miles above its entrance into the Mississippi. The river descends 357 feet in 18 miles, by a succession of falls. The Yellowstone River, 800 yards wide at its mouth, enters the Missouri from south-west 1211 miles from its source and 1,880 from its mouth. The Missouri enters the Mississippi 3,096 miles from its source, which, added to 1395 miles, the distance to the Gulf of Mexico, makes the whole length 4,491 miles. Through this whole length there is no serious impediment to navigation except the Great Falls. The principal tributaries are navigable from 100 to 500 miles. See MISSISSIPPI RIVER. The Missouri through the greater part of its course is rapid and turbid, and about a mile in width. The plat or valley of its banks is exceedingly fertile and from 5 to 25 miles wide on each side.

Mobile, city, port of entry, and capital of Mobile county, Alabama, 200 miles south-west of Montgomery, 217 miles south by west of Tuscaloosa, 170 miles east north-east of New Orleans, 55 miles west by north of Pensacola. Mobile is situated on the west side of a river of the same name, at its entrance into Mobile Bay, 30 miles north Mobile Point, at the mouth of the bay, and at the commencement of the Mobile and Ohio railroad. Lat. 30° 41′ 26″ N., long. 88° 1′ 29″ W. from Greenwich, England. Population, 1830, 3,194; 1840, 12,672; 1850, 20,515; 1854, 25,000. Mobile is situated on a beautiful and extended plain, elevated 15 feet above the highest tides, open to refreshing breezes from the bay, and commanding a beautiful prospect. It is lighted with gas, and supplied with pure water brought from "the spring" near Spring Hill, a distance of 8 miles, and distributed throughout the city in iron pipes. The entrance to Mobile Bay is between Mobile Point on the east, and Dauphin Island on the west, about 3¼ miles apart, the deepest channel having 15 feet water at low ebb; but vessels drawing more than 8 or 9 feet water can not, owing to a shoal in the bay, reach the town except at high water. A light-house erected on the point, lat. 30° 16′ N., long. 88° 32′ W., exhibits a fixed light elevated 55 feet above the level of the sea. Vessels drawing more than 8 feet water pass up Spanish River, 6 miles, around a marshy island into Mobile River, and then drop down to the city. It is, next to New Orleans, the greatest cotton mart of the South. 681,000 bales were exported in the year 1855. The exports amount to from $12,000,000 to $16,000,000 annually. Tonnage of the port 1853, 176,949. It is defended by Fort Morgan, formerly Fort Bowyer, situated on a long, low, sandy point at the mouth of the bay, 30 miles below the city. Near Dauphin Island is the anchorage for large class vessels, where may be seen at times a fleet of 50 or 60 sail. It was surrendered to the Americans by Spain in 1813, chartered as a town in 1814, incorporated as a city in 1819. It has suffered severely by fire: 170 buildings were burned in 1827, and 600 in 1839. But it has been rebuilt, with additional beauty and convenience.

STATEMENT OF THE VALUE OF IMPORTS AND DUTIES AT THE PORT OF MOBILE FOR THE YEAR 1856, AND FOR THE FIRST AND SECOND QUARTERS OF 1857.

	Imports.			Duties.
	Dutiable.	Free.	Total.	
1st quarter, 1856.....	$94,542	$111,746	$206,288	$23,256
2d " "	352,287	86,503	438,790	93,068
3d " "	26,023	60,056	86,079	7,661
4th " "	197,332	6,400	203,732	56,671
Total, 1856.....	....	....	$934,889	$180,656
" 1855.....	....	....	441,529	62,288
" 1854.....	....	....	889,622	184,873
1st quarter, 1857.....	$151,069	$170,75t	$321,813	$40,964
2d " "	31,159	.. .	31,159	11,545
Total 6 months...	....	....	$352,972	$52,509

FOREIGN EXPORTS FROM THE PORT OF MOBILE FOR THE YEAR 1856, AND FOR THE FIRST SIX MONTHS OF 1857.

	In American vessels.	In foreign vessels.	Total.
1st quarter, 1856.....	$5,351,240	$5,094,144	$10,445,393
2d " "	3,180,612	3,885,928	6,516,540
3d " "	286,880	446,287	732,517
4th " "	1,776,972	345,962	2,122,934
Total, 1856.....	....	....	$19,917,384
" 1855.....	....	....	16,818,005
" 1854.....	....	....	15,952,221
1st quarter, 1857.....	$8,887,187	$4,550,847	$12,887,584
2d " "	3,999,964	883,035	4,882,999
Total, 6 months..	....	....	17,720,583

TABLE OF ENTRIES AND CLEARANCES OF VESSELS AT THE PORT OF MOBILE (EXCLUSIVE OF STEAMERS AND OTHER CRAFT NAVIGATING THE RIVERS AND BAY), FOR THE YEAR ENDING JUNE 30TH, 1857.

Character.	Entries.			Clearances.		
	Vessels	Tons.	Crew.	Vessels	Tons.	Crew.
American.....	92	60,563	2,034	187	111,866	3,691
Foreign	58	49,756	1,418	52	44,881	1,958
Coastwise.....	556	247,084	9,780	217	71,619	2,254
Total.....	706	357,408	13,236	456	227,360	6,603

EXPORTS OF COTTON TO FOREIGN PORTS, WITH THE WEIGHT AND VALUE ATTACHED, FOR THE YEAR ENDING AUGUST 31ST, 1857.

	Bales.	Pounds.	Value.
Gt. Britain, in Am. vessels	128,719	64,584,437	$8,378,741
" " Brit. "	81,148	41,252,609	5,201,531
" " Sw. "	1,971	696,486	83,937
Total to Great Britain	211,231	106,480,532	$13,664,215
France, in Amer. vessels...	84,695	42,789,503	$5,294,014
" " Sard. " ...	145	73,094	9,614
Total to France.....	84,840	42,862,527	$5,303,628
Belgium.....	2,297	1,157,501	$151,424
Sweden.....	2,108	1,088,260	122,825
Hamburg.....	2,545	1,305,476	166,675
Russia.....	8,190	4,145,060	545,984
Holland.....	1,470	750,544	91,186
Denmark.....	1,128	570,838	74,200
Spain.....	1,225	611,112	86,454
Total to other fo. ports	18,918	9,578,781	$1,238,648
Total foreign.....	314,989	158,921,840	$20,206,491

COMPARATIVE VIEW OF THE EXPORTS OF COTTON FROM MOBILE FOR FOUR YEARS, COMMENCING 1ST SEPTEMBER.

Ports.	1856—57.	1855—56.	1854—55.	1853—54.
	Bales.	Bales.	Bales.	Bales.
Liverpool.....	196,865	340,812	218,616	227,462
Hull.....	4,774	....	....	....
Glasgow and Greenock..	3,059	5,183	....	3,768
Cowes and a market..	6,583	5,695	1,632	....
Total to Great Britain	211,231	351,690	215,248	231,230
Havre.....	84,563	94,012	110,074	76,827
Rochelle, etc.	132	804	1,016	....
Marseilles and Dieppe..	145	1,946	....	....
Total to France.....	84,840	96,962	111,090	76,827
Amsterdam&Rotterdam	1,470	955	2,900	2,964
Antwerp.....	2,297	9,901	9,539	6,087
Hamb'g,Bremen,St.Pet.	10,735	10,779	1,550	3,894
Stockholm, Ghent, etc..	2,008	7,881	....	1,525
Gibraltar and Barcelona	1,225	5,017	3,777	8,406
Havana, etc.....	....	....	....	100
Genoa, Trieste, etc.....	....	3,050	1,939	5,709
Other ports.....	1,123	....	1,268	419
Total to oth. for. ports	18,918	37,983	13,973	29,094
New York.....	28,736	28,402	80,955	85,414
Boston.....	47,412	65,307	26,958	43,230
Providence.....	22,932	17,672	15,875	23,406
Philadelphia.....	6,581	2,975	1,813	5,047
Baltimore.....	5,898	4,548	3,304	3,921
New Orleans.....	60,036	73,707	32,087	64,556
Other ports.....	2,510	3,585	1,806	2,931
Total coastwise	174,055	196,286	112,792	178,505
Grand total.....	489,044	681,321	453,103	515,656
RECAPITULATION.				
Great Britain.....	211,231	351,690	215,248	231,230
France.....	84,840	96,962	111,090	76,827
Other foreign ports.....	18,918	37,083	13,978	29,094
Total foreign.....	314,989	485,035	340,311	337,151
Total United States...	174,055	196,286	112,792	178,505
Grand total.....	489,044	681,321	453,103	515,656

COTTON CROP OF SOUTH ALABAMA FOR TWENTY-EIGHT YEARS.

Years.	Crop.	Annual increase.	Annual decrease.	Years.	Crop.	Annual increase.	Annual decrease.
	Bales.	Bales.	Bales.		Bales.	Bales.	Bales.
1830	102,684	22,355	....	1844	468,126	....	14,505
1831	118,075	10,391	....	1845	517,860	49,434	....
1832	125,608	12,080	....	1846	421,660	....	96,881
1833	129,866	3,761	....	1847	322,516	....	99,153
1834	149,518	20,147	....	1848	433,824	115,808	....
1835	197,847	48,334	....	1849	517,946	79,522	....
1836	237,590	39,743	....	1850	350,297	....	167,649
1837	292,685	....	4,905	1851	451,697	101,400	....
1838	309,807	77,122	....	1852	549,772	98,075	....
1839	251,742	....	58,065	1853	546,514	....	3,258
1840	445,725	193,983	....	1854	598,110	....	8,404
1841	317,642	....	126,083	1855	454,595	....	89,515
1842	317,315	673	....	1856	659,738	205,143	....
1843	492,631	164,816	....	1857	503,177	....	156,561

STOCK OF COTTON AT THE PORT OF MOBILE IN PRESSES, WAREHOUSES, AND ON SHIPBOARD, AUGUST 31ST, 1857.

	Planter's mark. Bales.	Ship marked. Bales.	Total. Bales.
Factor's press and warehouses....	987	2,477	3,464
Shipper's " "	559	219	778
Alabama " "	196	....	196
Selma warehouse.....	14	....	14
Pickeries, stores, etc.....	13	....	13
Arrived by railroad	26	....	26
Total.....	1,795	2,696	4,491
Arrived since.....	13	....	13
Total stock, Aug. 31, 1857...	1,808	2,696	4,504

COMPARATIVE IMPORTS OF THE FOLLOWING STAPLE ARTICLES INTO THE PORT OF MOBILE FOR FIVE YEARS.

Articles.	1856—7.	1855—6.	1854—5.	1853—4.	1852—3.
Bagging.....pieces	16,460	28,176	23,938	21,063	22,327
Bale rope,.....coils	82,781	88,899	81,597	21,562	24,107
Bacon.....hhds	21,415	12,626	16,929	17,741	13,227
Coffee.....sacks	32,686	38,556	38,936	20,678	34,503
Corn..... "	140,482	49,496	101,225	189,029	92,104
Flour.....bbls.	73,580	59,078	41,920	62,057	64,441
Hay.....bales	31,998	13,556	17,858	23,101	22,930
Lard.....kegs	14,168	16,692	22,083	15,738	22,889
Lime.....bbls.	23,100	6,790	14,692	11,953	21,252
Molasses..... "	7,007	17,605	29,830	30,709	19,681
Oats.....sacks	29,895	88,912	33,939	60,426	48,895
Potatoes.....bbls.	17,695	19,308	12,099	23,261	21,344
Pork..... "	13,692	19,944	12,446	14,700	15,841
Rice.....tierces	2,803	1,961	11,421	2,949	1,399
Salt.....sacks	172,015	234,321	139,901	169,631	123,266
Sugar.....hhds.	6,183	7,570	7,431	8,898	8,852
Whisky.....bbls.	31,244	25,808	19,702	24,095	21,751

COMPARATIVE VIEW OF THE STOCKS OF THE FOLLOWING STAPLE ARTICLES TO DATE AT MOBILE, FOR SIX YEARS.

Articles.	1857.	1856.	1855.	1854.	1853.	1852.
Bagging....pieces	5,282	8,595	5,058	8,013	8,788	1,852
Bale rope.. coils	4,946	1,268	4,290	3,874	7,992	2,290
Bacon.....hhds.	706	507	422	454	273	556
Cotton.....bales	4,504	5,005	28,519	29,278	7,516	2,319
Coffee.....sacks	6,602	4,164	1,197	1,476	3,932	1,455
Corn..... "	6,729	2,277	5,530	7,484	9,655	1,900
Flour.....bbls.	2,068	2,222	1,868	1,843	1,285	629
Hay.....bales	2,630	1,296	1,180	3,492	2,994	2,173
Lard.....kegs	1,171	1,000	427	858	920	516
Lime.....bbls.	550	1,117	1,155	1,550	3,113	2,175
Molasses..... "	814	794	815	2,156	1,236	793
Oats.....sacks	4,632	4,983	2,824	4,677	1,153	818
Potatoes.....bbls.	307	43	328	89	174	179
Pork..... "	943	451	243	580	403	515
Rice.....tierces	601	146	72	224	43	23
Salt.....sacks	47,149	*22,666	10,765	28,174	14,388	3,537
Sugar.....hhds.	274	383	310	505	673	119
Whisky.....bbls.	7,070	3,551	1,916	2,623	3,498	3,208
Candles.....boxes	2,373	1,668	1,365	1,580	882	1,304

* Including 3,800 bags French and 700 of Turk's Island.

EXPORTS OF COTTON FROM MOBILE FROM 1846 TO 1851, COMMENCING SEPTEMBER 1ST.

Ports.	1850—51.	1849—50.	1848—49.	1847—48.	1846—47.
	Bales.	Bales.	Bales.	Bales.	Bales.
Great Britain..	250,118	102,180	290,836	228,829	181,156
France.....	46,005	89,978	68,290	61,812	39,293
Other fo. ports	26,373	11,927	44,525	29,070	19,784
Total foreign.	322,496	214,089	398,651	319,211	190,233
Total U. S...	96,929	111,452	140,993	130,350	116,674
Grand total..	419,525	325,541	539,642	449,561	306,907

Tariff of Charges on Cotton at Mobile.—The proprietors of the several presses and warehouses at Mobile, have adopted the following uniform tariff of charges on cotton: Factor's storage on cotton for the season, 20 cents per bale; compressing cotton, 50 cents per bale; extra ropes on compressed cotton, each 6¼ cents per bale; labor on ship marked cotton, 5 cents per bale; drayage, compressed cotton, 5 cents per bale; wharfage, compressed cotton, 5 cents per bale; storage on cotton going coastwise, per week, 5 cents per bale; turning out and re-storing cotton, 5 cents per bale; arranging, 8 cents per bale.

Alabama Finances.—The Comptroller and Treasurer of this State have published the biennial reports for the fiscal year ending September 30, 1856, which show a total of receipts into the treasury, from all sources, of $798,008 46; of which sum $616,863 15 was on the assessment of taxes for the year 1855; the balance, $81,145 31, making up the first sum, was derived from taxes of 1844, 1847, 1851, 1853, 1854, from State Bank branches, bonus from Stock Banks, Marietta and Ohio Railroad, 16th section fund, and 2 and 8 per cent. funds, etc. The above sum of receipts, $798,008 46, with the balance in the treasury, September 30, 1855, of $1,102,652 96, makes $1,900,656 42. The disbursements for the year ending 30th September last, amount to $486,867 52, of which $158,552 21 were paid for educational purposes, $100,000 to Bank Commissioner, $61,745 50 to pay members of the Legislature, etc., $26,350 87 to insane hospital, and the balance to the judiciary, university fund, etc., etc. There was in the treasury on September 30, 1846, $1,503,788 90.

FOREIGN COMMERCE OF THE STATE OF ALABAMA, FROM OCTOBER 1, 1820, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Tonnage cleared.		District Tonnage.	
	Domestic.	Foreign.	Total.	Total.	American.	Foreign.	Registered.	Enrolled and Licensed.
Sept. 30, 1821.....	$108,960	....	$108,960	....	....	....	614	5,576
1822.....	209,748	....	209,748	$36,421	2,090	85	....	....
1823.....	202,387	....	202,387	125,770	2,187	....	....	....
1824.....	457,725	$3,002	460,727	91,604	5,847	1,449	....	....
1825.....	691,897	738	692,635	113,411	9,896	884	....	....
1826.....	1,518,701	8,411	1,527,112	179,354	16,086	1,807	....	....
1827.....	1,330,770	45,594	1,376,364	201,969	18,696	3,073	....	....
1828.....	1,174,787	7,822	1,182,559	171,909	15,859	4,765	....	....
1829.....	1,679,885	14,578	1,698,958	288,720	14,494	4,953	....	....
1830.....	8,291,825	8,129	2,294,954	144,528	22,977	4,059	....	....
Total....	$9,666,185	$83,269	$9,749,404	$1,299,121	102,932	20,975	....	....
Sept. 30, 1831	$2,412,862	$1,032	$2,413,894	$224,435	14,707	10,953	2,136	8,925
1832.....	2,733,554	2,333	2,736,887	306,845	18,764	12,884	....	....
1833.....	4,522,221	5,740	4,527,961	265,918	29,067	9,286	....	....
1834.....	5,664,047	6,750	5,670,797	395,361	29,272	10,614	....	....
1835.....	7,572,128	2,564	7,574,692	525,955	32,795	12,065	....	....
1836.....	11,181,788	378	11,181,166	651,618	35,840	17,367	....	....
1837.....	9,052,910	5,598	9,058,308	609,885	58,822	10,725	....	....
1838.....	9,088,049	195	9,088,244	524,548	27,191	11,996	....	....
1839.....	10,338,159	....	10,338,159	805,261	43,286	17,006	....	....
1840.....	12,854,094	....	12,854,094	574,651	94,551	23,552	....	....
Total....	$76,022,412	$25,390	$76,047,802	$4,973,917	388,795	136,548	....	....
Sept. 30, 1841.....	$10,969,820	$11,445	$10,981,271	$530,819	47,481	33,795	5,589	10,125
1842.....	9,965,075	....	9,965,075	363,871	51,247	38,096	....	....
9 mos. 1843.....	11,157,460	....	11,157,460	366,655	79,107	55,900	....	....
June 30, 1844.....	9,906,195	1,459	9,907,654	442,818	47,097	59,938	....	....
1845.....	10,515,374	22,954	10,538,228	473,491	80,092	62,491	....	....
1846.....	5,260,317	....	5,260,317	259,607	46,044	51,007	....	....
1847.....	9,054,580	....	9,054,580	390,161	23,103	48,185	....	....
1848.....	11,920,693	7,056	11,927,749	419,396	67,574	49,859	....	....
1849.....	12,828,725	....	12,828,725	657,147	76,528	74,593	....	....
1850.....	10,544,858	....	10,544,858	865,382	32,268	80,717	....	....
Total....	$102,118,608	$42,914	$102,161,517	$4,763,327	550,476	545,030	....	....
June 30, 1851.....	$18,528,824	....	$18,528,824	$413,446	60,747	52,518	8,078	18,749
1852.....	17,383,581	$2,128	17,385,704	588,382	91,067	72,068	....	....
1853.....	16,786,913	....	16,786,913	809,562	79,563	64,122	....	....
1854.....	13,911,612	....	13,911,612	725,610	60,004	58,494	....	....
1855.....	14,270,565	....	14,270,565	619,964	100,750	44,865	....	....
1856.....	23,726,215	7,955	23,734,170	798,514	122,409	90,809	....	....

Mobile Bay, Alabama.—The bay sets up from the Gulf of Mexico, and is 30 miles long, and on an average 12 miles broad. It communicates with the gulf by two straits, one on each side of Dauphin Island. The strait on the west side will not admit of vessels drawing more than 5 feet water; that on the east side, between the island and Mobile Point, has 22 feet water, and the channel passes within a few yards of the point. There is a bar across the bay, near its upper end, which has only 11 feet water. The Mobile Point light-house is on the east side of the entrance into Mobile Bay. Lat. 30° 13′ 48″ north, long. 88° 00′ 30″ west. Shows a revolving light, elevated 57 feet above the level of the sea, and visible for a distance of 12 nautical miles. Three miles south-west of Mobile Point, is Sand Island light, lat. 30° 11′ 18″ north, long. 88° 02′ west. Shows a *fixed* light, elevated 54 feet above the sea, and is visible for a distance of 12 nautical miles. Within the bay, a little south of the city of Mobile, is the Choctaw Point light-house; it shows a *fixed* light, elevated 54 feet above the surface of the bay, and is visible for a distance of 11 nautical miles.

Mocha, the principal port in the Red Sea frequented by Europeans, in that part of Arabia called Yemen, about 40 miles to the north of the Strait of Bab-el-mandeb, lat. 13° 19′ 30″ north, long. 43° 20′ east. Population variously estimated; but may, perhaps, amount to from 5000 to 7000. It is encircled with walls, and indifferently fortified. Its appearance from the sea is imposing. Mocha is situated on the margin of a dry sandy plain. It is built close to the shore, between two points of land which project and form a bay. Vessels drawing from 10 to 12 feet water may anchor within this bay at about a mile from the town; but large ships anchor without the bay in the roads, in 5 or 7 fathoms water—the grand mosque bearing east south-east, and the fort to the south of the town south by east, distant about two miles from the shore. The great article of export from Mocha is coffee, which is universally admitted to be of the finest quality. It is not possible to form any very accurate estimate of the quantity exported; but we believe it may be taken at 10,000 tons, or perhaps more. The greater portion is sent to Djidda and Suez; but there

is a pretty large export to Bombay, and other parts of India, whence some is sent to Europe; occasionally, however, the exports from Mocha and Hodeida, direct from Europe, are very considerable. Besides coffee, the principal articles of export are, dates, adjoue, or paste made of dates, myrrh, gum Arabic, olibanum, senna (*cassia senna*), sharks' fins, tragacanth, horns and hides of the rhinoceros, balm of Gilead, ivory, gold dust, civet, aloes, sagapenum, etc. The principal articles of import are, rice, piece goods, iron, and hardware, etc. The ivory, gold dust, and civet, met with at Mocha, are brought from the opposite coast of Abyssinia, whence are also brought slaves, ghee, etc. The greater part of the foreign trade of Mocha is transacted by the Banians; and it is much safer to deal with them than with either Turks or Arabs. Europeans pay a duty of 3 per cent. *ad valorem* on all goods imported by them from Europe, India, or China; the duty being levied on the amount of the sales. The buyer pays brokerage, coolie and boat-hire. All kinds of foreign goods are sold on credit, and the payment is made by three instalments at a certain day, according as may have been agreed on. Coffee is always paid for in ready money. On the sale of other goods, the produce of the country, a credit is given; or if ready money be paid, a discount is allowed at the rate of 9 per cent. When goods are discharging the master must furnish the custom-house officer with a manifest, or account of the marks, numbers, and contents of each package. He then opens two or three bales taken at random; and if they correspond with the account delivered, no further examination is made; but if they do not correspond, the whole bales are opened, and double duty is charged upon the excess. The quantities being thus ascertained, their value is learned from the account of sales rendered by the seller, and the duty charged accordingly. In this respect there is nothing to object to at Mocha; but a good deal of extortion is practiced in the exaction of port charges, presents, etc., which may, however, be defeated by proper firmness. The port charges on ships, or *three-mast* vessels, may amount to about 400 Mocha dollars, and those on brigs to about half as much. Provisions are plentiful and cheap; but water is dear; that in the vicinity being brackish and unwholesome, whatever is used for drinking, by all but the poorest persons, is brought from Mesa, about 20 miles off. Fish are abundant and cheap, but not very good.

Mogadore, a sea-port town on the west coast of Morocco, lat. 31° 50′ north, long. 9° 20′ west. Population about 10,000. It is indifferently fortified; the country in the immediate vicinity is low, flat, sandy, and unproductive. Water is scarce and rather dear; being either rain-water collected and preserved in cisterns, or brought from a river about 1½ miles distant. The port is formed by a small island lying to the southward of the town; but as there is not more than 10 or 12 feet water in it at ebb tide, large ships anchor without, the long battery bearing east, distant 1½ miles. The principal imports are English woolen and cotton stuffs and hardware, German linens, tin, copper, earthenware, mirrors, glass, sugar, pepper, paper, and a variety of other articles. The exports principally consist of sweet and bitter almonds, gum Arabic, and other gums, beeswax, cow and calf skins, ivory, ostrich feathers, gold dust, olive oil, dates, etc.

"The duties levied on imported articles are not paid in money, but in kind, and on English manufactures, army and navy cloth, brass, copper, tea, and sugar, and in fact, in all cases, with few exceptions, are rated at 20 per cent., or a fifth part of the goods, whatever they may be, that are landed. This primitive mode of business is also accompanied by disadvantages, and assists, in conjunction with the high tariff, to cripple any endeavors attempted to bring the Barbary States in closer mercantile alliance with ourselves." It is to be hoped that the government of Morocco may become alive to the mischievous consequences of this system. Nothing would do so much to promote industry and civilization in the country, as the effectual reduction, or rather the total repeal, of the existing duties on exports.

Mohair (Ger. *Mohr*; Fr. *Moire*; It. *Moerro*; Sp. *Mae*, *Muer*), the hair of a variety of the common goat, famous for being soft and fine as silk, and of a silvery whiteness. It is not produced anywhere but in the vicinity of Angora, in Asia Minor. The exportation of this valuable and beautiful article, unless in the shape of yarn, was formerly prohibited; but it may now be exported unspun. The production, preparation, and sale of mohair have long engrossed the principal attention of the inhabitants of Angora; and it used to form an important article of Venetian commerce. It is manufactured into camlets and other expensive stuffs. Hitherto but little has been imported into England. See, for further particulars, TOURNEFORT, *Voyage du Levant* and URQUHART on *Turkey and its Resources*.

Moire Antique. In an ordinary woven goods the threads cross each other at right angles; the long threads forming the warp, and the short threads the weft. According as the fabric is of high quality, so do these threads intersect in a regular and equable quality; but be it as good as it may, there are always some irregularities; they may escape the eye, but they become apparent in a singular way. If good silk be wrapped tightly and carelessly round a roller, it may become moire much against the inclination of the possessor; it will have acquired an irregular kind of glossing in some parts rather than in others; and this irregular glossing, when viewed from a little distance, presents somewhat of the appearance of moire, or watering,—who knows? Perhaps an accident to a piece of rolled silk suggested the first idea of watering as a distinct mode of adornment to silken goods? Such accidents have frequently occurred in the history of manufactures. However, accident or no accident, watered silks have long been in use, both in this country and in France. If a pattern be engraved upon one cylinder in relief, and a similar pattern on another cylinder, in sunken devices; and if one of these be heated from within, and if a piece of silk or velvet be drawn between the cylinders, then will the silk or velvet acquire an embossed pattern, because some parts of the surface are more pressed, and are consequently more glossy than the rest. Numerous varieties of this process are employed in the preparation of fancy goods. But this is not exactly watering. For this process two layers of silk are laid face to face, and are pressed tightly between rollers. What follows? However close the threads may be, there are still interstices between them; they follow each other in ridge and hollow fashion throughout the length and breadth of the piece. Now, if the slightest irregularity exists in the pressure, some of the threads become pressed in particular parts more than others; and the over-pressed portions present a greater gloss, a greater power of reflecting light than the rest. The more capriciously these proportions distribute themselves, the more undulatory and cloudy will be the result. We do not say that the actual process is nothing more than this, but that this is the basis on which the whole is founded. The goods may be sprinkled with water previously or not; the rollers may be both heated or both cold, or one heated and one cold; the rollers may be plain or variously indented; they may move smoothly over each other or may have a slight lateral movement—how these variations of method would produce variations of effect every one will see. The adjective 'antique" is most likely given to the silks thus produced from their resemblance to the tabby silk dresses worn in former times. It is chiefly produced in France; but in Spitalfields, England, its weavers and moireurs combined, have lately copied the art so cleverly as actually to excel the French. But Spitalfields

guards its secret as sedulously as the magician in a fairy tale guards the captive princess in the castle, and will not let the world have a peep at their doings.

Molasses, or **Melasses** (Fr. *Sirop de Sucre, Melasses;* Ger. *Syrup;* It. *Mielazzo di zucchero;* Sp. *Miel de azucar, Chancaca;* Port. *Melasso, Assucar liquido;* Rus. *Patoka sacharnaja*), the uncrystallizable part of the juice of the sugar cane, separated from the sugar during its manufacture. It is of a brown or black color, thick, and viscid; has a peculiar odor, and a sweet empyreumatic taste. About 8 gallons of proof spirit may, it is said, be obtained from a cwt. of molasses, such as has recently been imported; but this depends, of course, wholly on the richness of the molasses. Part of the refuse that remains, after refining muscovado sugar, is a sweet syrup, which, as well as the syrup that remains after boiling molasses to obtain bastards, is called treacle. But the treacle obtained from the former is always preferred to that obtained from the latter, and fetches 50 cents per cwt. more. Molasses is sometimes used in preparing the coarser sort of preserves; and on the European continent it is extensively used in the manufacture of tobacco. The following statistics show the foreign trade of the United States in molasses, and also show the receipts to the foreign and home of this staple. The last table shows the average value of the different kinds of molasses at the port of New York for two years:

ANNUAL STATEMENT SHOWING THE IMPORT, EXPORT, STOCK, AND ESTIMATED CONSUMPTION OF MOLASSES IN THE UNITED STATES (EXCLUSIVE OF CALIFORNIA AND OREGON), FOR THE YEAR ENDING DECEMBER 31ST, 1856.

Received at New York from	Hhds.	Tierces.	Barrels.
Cuba	89,640	3,705	6,650
Porto Rico	14,563	824	386
Barbadoes	1,456	....	79
Trinidad, P. S.	1,047	....	94
Demerara	189	....	....
St. Kitts	195	....	4
Antigua	35	....	....
St. Croix	29	....	2
Nassau, N. P.	141	....	....
Other foreign ports	99	10	0
Total receipts of foreign direct	57,414	4,039	7,164
Louisiana	....	128	85,308
Other coastwise ports	7,520	471	12,998
Total receipts	64,934	4,638	55,530
Add stock Jan. 1st, 1856	281	14	217
Total supply	65,224	4,662	55,747
Deduct export and inland shipments to Canada	2,256	92	1,838
	62,968	4,569	53,909
Deduct stock, Jan. 1st, 1857	1,798	....	100
Taken from this port for consumption	61,170	4,569	53,809

	Gallons.		Gallons.
Containing	9,818,923	foreign imptd. dir.	6,906,175
Total consump., 1855	12,876,134	" " "	5,936,878
Decrease, 1856	3,057,511	Increase, 1856	969,297

Received at New York (1855) from	Hhds.	Tierces.	Barrels.
Cuba	42,188	3,870	7,194
Porto Rico	6,818	263	287
Barbadoes	404	....	....
Port Spain, Trinidad	108	....	....
St. Vincent	....	....	....
Antigua	....	....	....
Other foreign ports	124	5	31
Total receipts of foreign direct	49,642	4,138	7,512
Louisiana	980	365	94,874
Other coastwise ports	21,158	476	7,124
Total receipts	71,780	4,979	109,510
Add stock, Jan. 1st, 1855	276	....	3,790
Total supply	72,056	4,979	113,230
Deduct export and inland shipments to Canada	4,581	175	879
	67,475	4,804	112,360
Deduct stock, Jan. 1st, 1856	281	14	217
Taken from this port for consump.	67,194	4,790	112,143

	Gallons.		Gallons.
Containing	12,876,434	foreign imptd. dir.	5,936,878
Total consump., 1854	11,742,030	" " "	5,489,278
Increase, 1855	1,134,404		447,605

RECEIPTS OF FOREIGN MOLASSES IN THE UNITED STATES, FOR THE YEAR ENDING DECEMBER 31ST, 1856.

Ports.	Hhds.	Tierces.	Barrels.
New York	57,414	4,039	7,164
Boston—from Cuba	41,732	8,263	1,595
" " Surinam	1,111	118	50
" " Porto Rico, etc.	2,994	138	547
Portland—from Cuba, etc.	33,675	2,951	2,517
New Haven—from Porto Rico, etc.	11,625	61	371
Gloucester & Providence—fm. Cuba	6,435	219	239
Newburyport, Salem, Bristol, Warren, and other eastern ports—from Cuba, Surinam, etc.	2,947	278	449
Philadelphia—from Cuba	17,319	1,391	393
" " Porto Rico, etc.	1,618	56	3
Baltimore—fm. Cuba, Porto Rico, etc.	6,360	350	1,130
New Orleans—from Cuba	151	....	1,170
Savannah, Charleston, and other southern ports—fm. Cuba, etc.	10,521	746	885
Total receipts	193,304	13,610	16,403
Add stock at all ports, Jan. 1, 1856	1,701	34	57
Total supply	195,005	13,644	16,460
Deduct exports and shipments inland to Canada, from all the ports, in 1856	8,746	1,538	3,649
	186,259	12,106	12,811
Ded. stock at all ports, Jan. 1, 1857	8,256	....	....
Total consumption of foreign	178,003	12,106	12,811

	Gallons.
Containing	24,014,878
Add crop of Louisiana, Texas, Florida, etc., of 1855—56, the most of which came to market in 1856, and assuming the stock of this description, 1st Jan., of each year, to be equal	16,594,000
Would make the total consumption in 1856	39,608,878
Total consumption in 1855	47,266,085
Decrease in 1856	7,657,207

RECEIPTS OF FOREIGN MOLASSES IN THE UNITED STATES, FOR THE YEAR ENDING DECEMBER 31ST, 1855.

Ports.	Hhds.	Tierces.	Barrels.
New York	49,642	4,138	7,512
Boston—from Cuba	52,423	4,376	1,897
" " Surinam	1,491	66	50
" " Porto Rico	653	84	..
" " from other for. ports	..	..	..
Portland—from Cuba, etc.	29,147	2,692	897
Providence—from Cuba, etc.	2,891	7	90
New Haven—from Porto Rico, etc.	15,656	..	..
Newburyport, Gloucester, Salem, Bristol, Warren, R. I., and other eastern ports—from Cuba, Porto Rico, Surinam, etc.	9,658	460	653
Philadelphia—from Cuba	11,666	1,146	976
" Porto Rico, etc.	570	..	62
Baltimore—fr. Cuba, Porto Rico, etc.	2,513	192	181
New Orleans—from Cuba	..	114	2,251
Savannah—from Cuba, etc.			
Charleston—from Cuba, etc.	10,915	259	759
Other southern ports—from Cuba			
Total receipts	186,025	13,407	15,328
Add stock at all the ports, Jan. 1855	5,651	..	200
Total supply	191,676	13,407	15,528
Deduct exports and shipments inland to Canada, from all the ports, in 1855	7,831	485	1,305
	183,845	12,982	14,223
Ded. stock at all ports, Jan. 1, 1856	1,701	34	57
Total consumption of foreign	182,144	12,948	14,166

	Gallons.
Containing	23,583,423
Add crop of Louisiana, Texas, Florida, etc., of 1854—55, the most of which came to market in 1855, and assuming the stock of this description, 1st Jan., of each year to be equal	24,119,742
Less export of domestic, not included in above statement of shipments	887,080
	28,782,662
Would make the whole consumption in 1855	47,265,085
Total consumption in 1854	56,498,019
Decrease in 1855	9,226,934

It will be seen by the foregoing statistics, that the receipts of foreign molasses in the United States for the year ending December 31, 1856, were 25,035,724 gallons, against total receipts in 1855 of 24,152,446 gallons, and the total consumption of this description in 1856 was 23,014,878 gallons, against a consumption

of foreign in 1855 of 23,533,423 gallons, being a decrease in the consumption of foreign in 1856, as compared with 1855, of 2·20 per cent., while the total consumption of foreign and domestic in 1856 was 39,608,878 gallons, against a consumption in 1855 of 47,266,085 gallons, being a falling off in 1856 of 7,657,207 gallons, or the large decrease of 16·20 per cent.

The consumption of all kinds in 1856, as shown, was 16·20 per cent. less than that of 1855, while that of 1855 was 16½ per cent. smaller than the consumption of 1854. This continued large decrease is attributable, in a great measure, to the rapid decline in the yield of Louisiana cane. The following table shows the average value of molasses in New York for two years.

MOLASSES.—ITS AVERAGE VALUE AT NEW YORK FOR TWO YEARS.

Months.	1855.				1856.			
	New Orleans.	Porto Rico.	Cuba Muscov.	Cuba Clayed.	New Orleans.	Porto Rico.	Cuba Muscov.	Cuba Clayed.
	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.
January	24—28	24—30	23—27	22 —25	45—49	41—44	41—43	42—...
February	25—28	25—32	24—27	23 —25	41—46	43—44	35—42	33—40
March	23—27½	25—32	22—27	20 —22	40—46	43—44	34—38	33—36
April	23—32	25—32	23—28	21 —23	42—47	37—45	32—38	30—34
May	27—33	25—32	26—30	23 —26	46—48	39—45	32—38	30—32
June	27—34	25—32	26—30	25 —26	47—52	40—46	37—42	34—36
July	29—33	28—38	27—30	25¼—27	50—54	45—50	41—45	38—40
August	33—37	32—36	29—33	28½—31	52—56	43—48	42—46	37—40
September	34—38½	34—39	31—36	30 —34	54—56	43—48	40—45	37—40
October	37—39	37—39	35—37	34 —35	54—56	46—53	42—48	39—41
November	36—38	35—40	34—38	33 —37	55—60	50—60	47—52	40—42
December	36—40	40—43	40—43	30 —42	70—80	56—60	48—55	49—...
Average for the y'r	32	32½	30¼	28½	52	46½	41½	38

STATEMENT SHOWING THE DOMESTIC EXPORT OF MOLASSES FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30TH, 1856.

Whither exported.	Gallons.	Value.
Hamburg	16,987	$4,076
Canada	411,048	140,385
Other British N. Amer. pos.	6,671	2,854
British West Indies	2,265	667
Ports in Africa	1,995	746
Mexico	41	25
New Granada	4,028	1,499
Chili	511	276
Whale Fisheries	3,769	4,102
Total	454,815	$154,630

STATEMENT SHOWING THE FOREIGN EXPORTS OF MOLASSES FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30TH, 1856.

Whither exported.	Gallons.	Value.
Russian possessions in N. Amer.	600	$369
Hamburg	16,784	4,818
Gibraltar	2,103	720
Canada	1,079,837	251,300
Other British North Amer. pos.	103,989	31,694
French North American pos.	25,413	7,709
French West Indies	2,188	784
Madeira	75	30
Ports in Africa	430	139
Hayti	1,232	360
Chili	22,000	6,500
Whale Fisheries	6,980	2,314
Total	1,261,140	$306,180
From warehouse	966,818	$232,580
Not from warehouse	294,322	73,600

STATEMENT SHOWING THE IMPORTS OF MOLASSES INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30TH, 1856.

Where imported.	Gallons.	Value.
Danish West Indies	5,970	$968
Dutch West Indies	26,123	3,760
Dutch Guiana	732,819	94,282
Dutch East Indies	30	4
England	1,282	89
Canada	810	106
Other British North Amer pos.	35,489	8,535
British West Indies	782,022	154,299
British East Indies	235	47
British Guiana	55,277	12,419
French West Indies	3,704	1,007
Spain on the Mediterranean	1,094	154
Cuba	19,452,854	3,510,609
Porto Rico	2,521,946	585,637
Central Republic	11,034	1,910
Brazil	32	10
Sandwich Islands	38,488	10,882
Total	23,617,674	$4,334,668

See SUGAR.

Mole, in architecture, a massive work formed of large stones laid in the sea by means of coffer dams, extended either in a right line or an arc of a circle, before a port, which it serves to close; to defend the vessels in port from the impetuosity of the waves, and to prevent the passage of ships without leave. It is frequently fortified. *Mole* is sometimes used to signify the harbor itself, which it serves to form or defend.

Money. When the division of labor was first introduced, commodities were directly bartered for each other. Those, for example, who had a surplus of corn, and were in want of wine, endeavored to find out those who were in the opposite circumstances, or who had a surplus of wine and wanted corn, and then exchanged the one for the other. It is obvious, however, that the power of changing, and, consequently, of dividing employments, must have been subjected to perpetual interruptions, so long as it was restricted to mere barter. A carries produce to market, and B is desirous to purchase it; but the produce belonging to B is not suitable for A. C, again, would like to buy B's produce, but B is already fully supplied with the equivalent C has to offer. In such cases—and they must be of a constant occurrence wherever money is not introduced—no direct exchange could take place between the parties; and it might be very difficult to bring it about indirectly. The difficulties that would arise on such occasions, and the devices that would be adopted to overcome them, have been very well illustrated by Colonel Torrens, in his work on the *Production of Wealth*, p. 291. The extreme inconvenience attending such situations must early have forced themselves on the attention of every one. Efforts would, in consequence, be made to avoid them; and it would speedily appear that the best or rather the only way in which this could be effected, was to exchange either the whole or a part of one's surplus produce for some commodity of known value, and in general demand; and which, consequently, few persons would be inclined to refuse to accept as an equivalent for whatever they had to dispose of. After this commodity had begun to be employed as a means of exchanging other commodities, individuals would become willing to purchase a greater quantity of it than might be required to pay for the products they were desirous of immediately obtaining; knowing that should they, at any future period, want a further supply either of these or other articles, they would be able readily to procure them in exchange for this universally desired commodity. Though at first circulating slowly and with difficulty, it would, as the advantages arising from its use were better appreciated, begin to pass freely from hand to hand. Its value, as compared with other things, would thus come to be universally known, and it would at last be used, not only as the common medium of exchange, but as a standard by which to measure the value of other things. Now this commodity, whatever it may be, is *money*.

An infinite variety of commodities have been used as money in different countries and periods. But none can be advantageously used as such, unless it possess several very peculiar qualities. The slightest reflection on the purposes to which it is applied, must, indeed, be sufficient to convince every one that it is indispensable, or, at least, exceedingly desirable, that the commodity selected to serve as money should (1) be divisible into the smallest portions; (2) that it should admit of being kept for an indefinite period without deteriorating; (3) that it should, by possessing great value in small bulk, be capable of being easily transported from place to place; (4) that one piece of money, of a certain denomination, should always be equal, in magnitude and quality, to every other piece of money of the same denomination; and (5) that its value should be comparatively steady, or as little subject to variation as possible. Without the *first* of these qualities, or the capacity of being divided into portions of every different magnitude and value, money, it is evident, would be of almost no use, and could only be exchanged for the few commodities that might happen to be of the same value as its indivisible portions, or as whole multiples of them; without the *second*, or the capacity of being kept or hoarded without deteriorating, no one would choose to exchange commodities for money, except only when he expected to be able speedily to re-exchange that money for something else; without the *third*, or facility of transportation, money could not be conveniently used in transactions between places at any considerable distance; without the *fourth*, or perfect sameness, it would be extremely difficult to appreciate the value of different pieces of money; and without the *fifth* quality, or comparative steadiness of value, money could not serve as a standard by which to measure the value of other commodities; and no one would be disposed to exchange the produce of his industry for an article that might shortly decline considerably in its power of purchasing.

The union of the different qualities of comparative steadiness of value, divisibility, durability, facility of transportation, and perfect sameness, in the precious metals, doubtless formed the irresistible reason that has induced every civilized community to employ them as money. The value of gold and silver is certainly not in variable, but generally speaking it changes only by slow degrees: they are divisible into any number of parts, and have the singular property of being easily reunited, by means of fusion, without loss; they do not deteriorate by being kept; and from their firm and compact texture, they are very difficult to wear. Their cost of production, especially that of gold, is so considerable, that they possess great value in small bulk, and can, of course, be transported with comparative facility; and an ounce of pure gold or silver taken from the mines in any quarter of the world, is precisely equal, in point of quality, to an ounce of pure gold or silver dug from the mines in any other quarter. No wonder, therefore, when all the qualities necessary to constitute money are possessed in so eminent a degree by the precious metals, that they have been used as such, in civilized societies, from a very remote era. "They became universal money," as Turgot has observed, "not in consequence of any arbitrary agreement among men, or of the intervention of any law, but by the nature and force of things." When first used as money, the precious metals were in an unfashioned state, in bars or ingots. The parties having agreed about the quantity of metal to be given for a commodity, that quantity was then weighed off. But this, it is plain, must have been a tedious and troublesome process. Undoubtedly, however, the greatest obstacle that would be experienced in early ages to the use of gold and silver as money, would be found to consist in the difficulty of determining the degree of their purity with sufficient precision; and the discovery of some means by which their weight and fineness might be readily and correctly ascertained, would be felt to be indispensable to their extensive use as money. Fortunately these means were not long in being discovered. The fabrication of coins, or the practice of impressing pieces of the precious metals with a stamp indicating their weight and purity, belongs to the remotest antiquity. Gouget, *De l'Origine des Loix, etc.*, tome i., p. 269. And it may safely be affirmed, that there have been very few inventions of greater utility, or that have done more to accelerate the progress of improvement.

It is material, however, to observe, that the introduction and use of coined money make no change whatever in the *principle* on which exchanges were previously conducted. The coinage saves the trouble of weighing and assaying gold and silver, but it does nothing more. It declares the weight and purity of the metal in a coin; but the *value* of that metal or coin is in all cases determined by precisely the same principles which determine the value of other commodities, and would be as little affected by being re-coined with a new denomination, as the burden of a ship by a change of her name. Inaccurate notions with respect to the influence of coinage seem to have given rise to the opinion so long entertained, that coins were merely the *signs* of values! But it is clear they have no more claim to this designation than bars of iron or copper, sacks of wheat, or any other commodity. They change for other things, because they are desirable articles, and are possessed of real intrinsic value. A draft, check, or bill may not improperly, perhaps, be regarded as the sign of the money to be given for it. But that money is nothing but a commodity; it is not a sign—it is a thing signified.

Money, however, is not merely the universal equivalent, or *merchandise banale*, used by society: it is also the *standard* used to compare the values of all sorts of products; and the stipulations in the great bulk of contracts and deeds, as to the delivery and disposal of property, have all reference to, and are commonly expressed in, quantities of money. It is plainly, therefore, of the utmost importance that its value should be preserved as invariable as possible. Owing, however, to improvements in the arts, the exhaustion of old mines, and the discovery of new ones, the value of the precious metals is necessarily inconstant; though, if we except the effects produced in the 16th century by the discovery of the American mines, it does not appear to have varied so much at other times as might have been anticipated. Great mischief has, however, been repeatedly occasioned by the changes that have been made in most countries in the weight, and sometimes also in the purity, of coins; and since the impolicy of these changes has been recognized, similar, and perhaps still more extensive, discords have sprung from the improper use of substitutes for coins. It is, indeed, quite obvious, that no change can take place in the value of money without proportionally affecting the pecuniary conditions in all contracts and agreements. Much, however, of the influence of a change depends on its direction. An increase in the value of money is uniformly more prejudicial, in a public point of view, than its diminution; the latter, though injurious to individuals, may sometimes be productive of national advantage; but such can never be the case with the former. See *Principles of Political Economy*, by M'Culloch, 3d ed., pp. 510-515.

No certain estimate can ever be formed of the quantity of money required to conduct the business of any country; this quantity being, in all cases, determined by the value of money itself, the services it has to perform, and the devices used for economizing its employment. Generally, however, it is very considerable; and when it consists wholly of gold and silver, it occasions a very heavy expense. There can, indeed, be no doubt that the wish to lessen this expense has been one of the chief causes that have led ... civilized and commercial nations to fabricate a portion of their

money of some less valuable material. Of the various substitutes resorted to for this purpose, paper is, in all respects, the most eligible. Its employment seems to have grown naturally out of the circumstances incident to an advancing society. When government becomes sufficiently powerful and intelligent to enforce the observance of contracts, individuals possessed of written promises from others that they will pay certain sums at certain specified periods, begin to assign them to those to whom they are indebted; and when the subscribers are persons of fortune, and of whose solvency no doubt can be entertained, their obligations are readily accepted in payment of debts. But when the circulation of promises or bills in this way has continued for a while, individuals begin to perceive that they may derive a profit by issuing them in such a form as to fit them for being readily used as a substitute for money in the ordinary transactions of life. Hence the origin of bank notes. An individual in whose wealth and discretion the public have confidence, being applied to for a loan, say $5000, grants the applicant his bill or note, payable on demand, for that sum. Now, as this note passes, in consequence of the confidence placed in the issuer, currently from hand to hand as cash, it is quite as useful to the borrower as if it had been gold; and supposing that the rate of interest is 5 per cent., it will yield, so long as it continues to circulate, a revenue of $250 dollars a year to the issuer. A banker who issues notes, coins, as it were, his credit. He derives the same revenue from the loan of his written promise to pay a certain sum, that he could derive from the loan of the sum itself, or of an equivalent amount of produce! And while he thus increases his own income, he, at the same time, contributes to increase the wealth of the public. The cheapest species of currency being substituted in the place of that which is most expensive, the superfluous coins are either used in the arts or are exported in exchange for raw materials or manufactured goods, by the use of which both wealth and enjoyments are increased. Ever since the introduction of bills, almost all great commercial transactions have been carried on by means of paper only. Notes are also used to a very great extent in the ordinary business of society; and while they are readibly exchangeable, at the pleasure of the holder, for coins, or for the precise quantities of gold or silver they profess to represent, their value is maintained on a par with the value of these metals; and all injurious fluctuations in the value of money are as effectually avoided as if it consisted wholly of the precious metals.

In common mercantile language, the party who exchanges money for a commodity is said to buy; the party who exchanges a commodity for money being said to sell. Price, unless where the contrary is distinctly mentioned, always means the value of a commodity estimated or rated in money. For a further account of metallic money, see the article Coin.

See *Bankers' Mag.*, v., 309, 381, ii., 1, 611; Hunt's *Mag.*, i., 50 (C. F. Adams); *Ed. Rev.*, x., 284, xiii., 35, xxxiii., 568; *West. Rev.*, ix., 99; De Bow's *Rev.*, vi., 243, vii., 501.

Monopoly. By this term is usually meant a grant by competent authority, conveying to some one individual, or number of individuals, the sole right of buying, selling, making, importing, exporting, etc., some one commodity, or set of commodities. Such grants were very common previously to the accession of the house of Stuart, and were carried to a very oppressive and injurious extent during the reign of Queen Elizabeth. Commercial monopolies reached to such a height in England, that Parliament petitioned against them, and they were in consequence mostly abolished about the close of Elizabeth's reign, 1602. They were further suppressed, as being contrary to law, 19 James I., 1622; and were totally abolished, and it was decreed that none should be in future created, as was previously the custom, by royal patent, 16 Charles I., 1640.—Anderson's *History of Commerce.* The grievance became at length so insupportable, that, notwithstanding the opposition of government, which looked upon the power of granting monopolies as a very valuable part of the prerogative, they were abolished by the famous act of 1624. The act of James I. declared that all monopolies, grants, letters patent for the sole buying, selling, and making of goods and manufactures, shall be null and void. It excepts patents for 14 years for the sole working or making of any new manufactures within the realm, to the true and first inventors of such manufactures, provided they be not contrary to law, nor mischievous to the State. It also excepts grants by act of Parliament to any corporation, company, or society, for the enlargement of trade, and letters patent concerning the making of gunpowder, etc. This act effectually secured the freedom of industry in Great Britain; and has done more, perhaps, to excite the spirit of invention and industry, and to accelerate the progress of wealth, than any other in the statute book.

Monsoons (from the Malay *mussin*, season), periodical trade winds, which blow six months in one direction, and the rest of the year in an opposite one. They prevail in the Indian Ocean north of the 10th degree of south latitude. From April to October a violent south-west wind blows, accompanied with rain, and from October to April, a gentle dry north-east breeze prevails. The change of the winds or the *breaking up* of the monsoons, as it is called, is accompanied by storms and hurricanes. These periodical currents of winds do not reach very high, as their progress is arrested by mountains of a moderate height.

Monsoons are, for the most part, formed of trade-winds. When at stated seasons of the year a trade-wind is deflected in its regular course from one quadrant to another, or drawn in by overheated districts, it is regarded as a monsoon. Thus the African monsoons of the Atlantic, the monsoons of the Gulf of Mexico, and the Central American monsoons of the Pacific, are, for the most part, formed of the trade-winds, which are turned back or deflected to restore the equilibrium which the over-heated plains of Africa, Utah, Texas, and New Mexico have disturbed. When the monsoons prevail for five months at a time, for it takes about a month for them to change and become settled, then both they and the trade-winds, which they replace, are called monsoons. The north-east and the south-west monsoons of the Indian Ocean afford an example of this kind. A force is exerted upon the north-east trade-winds of that sea by the disturbance which the heat of summer creates in the atmosphere over the interior plains of Asia, which is more than sufficient to neutralize the forces which cause those winds to blow as trade-winds; it arrests them; and were it not for the peculiar conditions of the land about that ocean, what are now called the north-east monsoons would blow the year round; there would be no south-west monsoons there; and the north-east winds, being perpetual, would become, all the year, what in reality for several months they are, viz., north-east trade-winds.

As long ago as 1831, Dove maintained that the south-west monsoon was the south-east trade-wind rushing forward to fill the vacant places over the northern deserts. Dove admits the proofs of this to be indirect, and acknowledges the difficulty of finding out and demonstrating the problem.—*Annalen der Physik*, No. 94. Translated by Dr. Rosengarten for the *American Journal of Science*, vol. xx., 60.

The north-east and south-east trade-winds meet, we know, near the equator, where they produce the belt of equatorial calms. All vessels that pass from one system of trade-winds to the other have to cross this calm belt. Sometimes they clear it in a few hours. Sometimes they are delayed in it for weeks; and the

calm is so still and the rain so copious that the fresh water is sometimes found standing in pools on the sea. If it be true, as Dove maintains, that the south-west monsoons of the Indian Ocean are the south-east trade-winds of that sea pressing up toward the desert regions of Asia, then a vessel bound hence to Calcutta, for instance, and entering the Indian Ocean at the time of the south-west monsoon, should find no belt of equatorial calms there at all, but, on the contrary, she should find the south-east trade-wind to haul more and more to the south, until finally, without having crossed any belt of equatorial calms, she would find her sails trimmed to the south-west monsoon. In like manner, Jansen maintains that the north-west monsoon is a similar deflection of the north-east trade-wind.

The Desert of Cobi and the arid wastes of Asia are the cause of the monsoons of the Indian Ocean. When the sun is north of the equator, the force of his rays, beating down upon these wide and thirsty plains, is such as to cause the vast superincumbent body of air to expand and ascend. Consequently, there is an indraught of air from the surrounding regions to supply the ascending column. The air that is going to feed the north-east trades is thus arrested, drawn in, heated, and caused to ascend; and so, the north-east trade-winds are first weakened, then "killed," and afterward drawn into the vortex of ascending air over the burning sands of the deserts; on the other hand, the south-east trade-wind, failing, when it arrives at the place where the equatorial Doldrums were wont to be, to meet with them or any opposing force from the north-east trades, are drawn over into the northern hemisphere. Going now from the equator toward the poles, their tendency is to obey the forces of diurnal rotation, as well as those of the indraught for the heated plains, and thus the south-east trades become south-west monsoons. In this view, the "equatorial Doldrums" of the Indian Ocean are transferred, as it were, during the south-west monsoons, to the deserts of central Asia. It may be asked by some, saying, Since we can not always tally the air, how do we know that these south-west monsoons are the south-east trades of the Indian Ocean? The reply is, We infer that they are, because in co-ordinating for the Pilot Chart of that sea we have *found no belt of calms between the south-east trades and the south-west monsoons*, but a gradual change, so to speak, of the one wind into the other. Thus, confining ourselves to August —one of the south-west-monsoon months—and to the strip of ocean between 85° and 90° east, the investigation gives as follows for calms and winds in the field between: 10° S. and 5° S. 133 observations, wind south-east. 5° S. and 102 observations, 3 calms, wind south. 5° N. 99 observations, 3 calms, wind south-west. 5° N. and 10° N. 77 observations, wind south-west. These monsoons do not, as we are generally taught to suppose, commence or end at the same time all over the Indian Ocean. In the first field below Calcutta, *i. e.*, between the land and 20° N., the north-east trade-winds, toward the latter part of January, begin their conflict with the south-west monsoons. The conflict rages in February, and by March the south-west monsoons in that "field" are considered to have regularly set in. They now remain the dominant wind for upward of six months, and until some time in the early part of September. The north-east monsoons or trades now renew the conflict, which is carried on with more and more vigor until the latter part of November, when they obtain the ascendency, and prevail until the latter part of January, when, as before stated, the south-west monsoons commence their annual struggle for the mastery. In the next field below, *i. e.*, between 15° and 20° N. lat., the north-east monsoons begin to grow light and variable, and to have conflicts with the south-west in February. The period of this conflict, or change, as it is called, frequently lasts until some time in March, when the force that is calling in and driving the monsoons from the south-west finally gains the ascendant. They then blow steadily until late in September, when the north-east trade-wind forces begin again to assert their ascendency and to renew the conflict on this side through October, by which time the north-east trades or monsoons become the prevailing winds. Thus, by going 200 or 300 miles further from the supposed place of heat and rarefaction that give rise to this system of winds, the duration of the north-east monsoons is prolonged nearly a month; for in this "field" they prevail from November to January inclusive, three months, while the south-west last from about the middle of March to the middle of September, say six months. In the next field below, *i. e.*, between the parallels of 10° and 15° the south-west monsoons blow about five months, perhaps not quite so long; they do not commence as early, nor blow so late as in the "field" above. They begin the conflict with the north-east trade-wind forces in the latter part of March, and gain the ascendent in May. They then prevail till October, when the north-east trade-wind forces, escaping from the heated plains of the interior, begin to renew the annual combat which is to get them the victory. They soon achieve it, and maintain the mastery undisputed till the last of March or first of April.—MAURY, *Phys. Geog. of the Sea.*

Changing of the Monsoons.—Lieutenant Jansen thus describes this phenomenon: "We have seen that the calms which precede the sea-breeze generally continue longer, and are accompanied with an upward motion of the air; that, on the contrary, those which precede the land-breeze are, in the Java Sea, generally of shorter duration, accompanied by a heavy atmosphere, and that there is also an evident difference between the conversion of the land-breeze into the sea-breeze, and of the latter into the former. Even as the calms vary, so there appears to be a marked difference between the changing of the monsoons in the spring and in the autumn in the Java Sea. As soon as the sun has crossed the equator, and its vertical rays begin to play more and more perpendicularly upon the northern hemisphere, the inland plains of Asia, North Africa, and of North America are so heated as to give birth to the south-west monsoons in the China Sea, in the North Indian Ocean, in the North Atlantic, and upon the west coast of Central America; then the north-west monsoon disappears from the East Indian Archipelago, and gives place to the south-east trade-wind, which is known as the east monsoon, just as the north-west wind, which prevails during the southern summer, is called the west monsoon. This is the only monsoon which is found in the southern hemisphere, while in the northern hemisphere the north-east trade-wind blows in the China Sea and in the Indian Ocean; in the East Indian Archipelago the west monsoon prevails; and here, when the south-east trade blows as the east monsoon, we find the south-west monsoon in the adjacent seas of the northern hemisphere. Generally the westerly monsoons blow during the summer months of the hemisphere wherein they are found. As the land-breeze daily destroys in miniature the regular flow of the trade-wind, so does the latter the west monsoon in larger measure, and observations will be able to decide whether monthly disturbances do not also take place. In the Java Sea, during the month of February, the west monsoon blows strong almost continually; in March it blows intermittingly, and with hard squalls; but in April the squalls become less frequent and less severe. Now the changing commences; all at once gusts begin to spring up from the east: they are often followed by calms. The clouds which crowd themselves upon the clear sky give warning of the combat in the upper air which the currents there are about to wage with each other."

Montevideo, a sea-port, and the capital of the Republic of Uruguay, on the north bank of the Rio de

la Plata, lat. 34° 54′ 11″ S., long. 56° 13′ 18″ W. The population, which is variously estimated, may probably be about 12,000. The town is built in the form of an amphitheatre, on a regular plan, and is well fortified. It has suffered much from the various revolutions to which it has been subject during the last 30 years. Montevideo is situated 2° 3′ 33″ W. of Cape St. Mary, the northern limit of the embouchure of the La Plata. Vessels from the north bound to Montevideo generally make this cape, entering the river between it and the small island of Lobos, in from 14 to 17 fathoms. The course is thence nearly west to the Isle of Flores, on which is a light-house 112 feet above the level of the sea, with a revolving light. From Flores to Montevideo is 16 miles in a direct line, and the course west by south by compass. A light-house, 475 feet above the level of the sea, has been erected on the summit of the Montevideo, whence the town has its name. The latter is built on a projecting tongue of land, the port being on its south side. This, which is the best on the La Plata, is a large circular basin, open to the south-west. Generally the water is shallow, not exceeding from 14 to 19 feet; but the bottom being soft mud, vessels are seldom damaged by groundlag. It should, however, be observed that the depth of water in the harbor, as well as throughout the whole of the Rio de la Plata, depends very much on the direction and strength of the winds. The south-west wind, called *pamperos*, blows right into the bay of Montevideo with much force, not unfrequently causing a rise of a fathom or more in the depth of water! But it rarely occasions much damage to vessels properly moored with anchors to the south-west, south-east, and one to the north. (BLUNT'S *American Pilot*, edit. 1857; *Coulier sur les Phares*, *etc.*) Montevideo has a considerable commerce. The great articles of export consist of animal products, or of hides, beef, tallow, hair, bones, grease, wool, etc. The imports principally consist of British cottons, woolens, and hardware, flour, wine and spirits, linens, sugar, tobacco, boots and shoes, salt, etc. The following table shows the exports from these ports for five years:

ACCOUNT OF SUNDRY EXPORTS FROM BUENOS AYRES AND MONTEVIDEO IN THE FOLLOWING YEARS.

Years.	Dry and salted ox & cow hides.	Horse hides.	Horse hair.	Wool.	Sheep skins.	Nutria skins.	Tallow and soap.	Horns.
	No.	No.	Arrobas.	Arrobas.	Dozens.	Dozens.	Arrobas.	No.
1838.....	1,218,101	64,596	80,536	199,059	58,965	71,745	314,283	1,030,000
1839.....	1,262,468	49,798	49,892	72,062	16,804	21,839	407,892	1,399,000
1840.....	1,318,827	48,804	61,101	96,611	10,851	12,540	375,474	1,142,086
1841.....	3,552,938	177,508	177,095	959,067	211,694	97,904	1,222,086	2,687,972
1842.....	2,930,040	140,355	115,811	516,798	102,424	97,523	511,735	2,183,919

Duties on Imports, in National or Foreign Vessels, at Montividco.—1. Machinery, agricultural implements, instruments used in the arts and sciences, books, prints, and maps, free. 2. Silk, raw and wrought, laces, blonde, gold and silver embroidery, watches, jewelry, saltpetre, plaster of Paris, coal, timber, cotton fringe, and wooden hoops, 5 per cent. 3. Powder, pitch, tar, rosin, and naval stores, 13 per cent. 4. All raw materials, and manufactured articles, not included in the preceding enumeration, 15 per cent. 5. Sugar, Paraguay and China teas, cocoa, cassia lignea, and cinnamon, spices, drugs, and provisions in general, 20 per cent. 6. Furniture, pictures, looking-glasses, musical instruments, all sorts of carriages, carts, etc., and harness, saddles, horses' furniture (excepting horse cloths of the manufacture of the adjacent provinces, which pay 15 per cent.), ready-made clothes, boots and shoes, liqueurs, brandy, wine, vinegar, ale and porter, cider, tobacco, and soap, 25 per cent. Salt, 2 reals the fanego, say 11d. per 290 pounds. 7. Hides of all classes, hair, horns, tallow, silver and gold, in bullion or coin, free. A small charge is made for warehousing and porterage on passing through the custom-house. Goods may be bonded for an indefinite period, during which time they are subject to a moderate warehouse rent. Foreign flour pays as follows: $8 per barrel, when wheat is worth $2 to $3 per fanega, about 224 pounds; $6 per barrel, when wheat is worth $3 to $5; $4, when wheat is worth $5 to $7; $2, when wheat is worth $7 to $9; $1, when wheat exceeds $9. Wheat: $3 per fanega, when wheat is worth $2 to $3 per fanega; $2, when wheat is worth $3 to $6; $1, when wheat is worth $6 to $10; nothing, when wheat is worth above $10 per fanega; goods transhipped, or shipped out of bond, pay 2 per cent. Foreign goods, shipped in vessels of less than 150 tons burden, for ports of the Uruguay and Paraguay, pay only 1 per cent. 8. All goods imported, paying duties, are subject to pay an additional 1 per cent. to the consulado; ½ per cent. to the hospital; and for the extinction of copper money, 1 per cent additional on all goods that pay 5 per cent. (This has, much to the honor of the authorities and people, been already accomplished; but the duty is maintained for general purposes.) On all goods that pay 13, 15, and 20 per cent., 3 per cent. On all goods that pay 25 per cent., 5 per cent. On flour, 10 per cent. On wheat, 3 per cent.

Duties on Exports, in National or Foreign Vessels.—Ox and cow hides, 2 reals, 25 centesimos, for reconnidor valuations of $1, and 1 per cent. consulado. Horse hides, 1 real for reconnidor, on valuations of 5 reals for reconnidor each, and 1 per cent. consulado. All other produce of the country pays 4 per cent. on the market value, and 1 per cent. consulado. Jerked and salt beef, pork, etc.; also all foreign goods that have paid the import duty, free. Gold and silver, coined or in bullion, 1 per cent.

Port Charges.—Tonnage from beyond sea, foreign vessels, 3 reals; national vessels, 2 reals. During loading and unloading, both classes pay $1 per day. Pratique, with pilot, foreign vessels, $8; national vessels, $4. Boat, with pilot, foreign vessels, $2; national vessels, $2. Without pilot, foreign vessels, $1; national vessels, $2. National and foreign vessels that neither discharge nor load cargo, and that do not remain more than six days, pay nothing; those that remain in the harbor more than six days pay one third of the above tonnage dues. National vessels, and vessels belonging to the provinces of Buenos Ayres, employed within the River Platte, called coasting, pay for a license for each voyage, if 3 to 7 tons, 4 reals; 8 to 15 tons, 10 reals, or $1 02; 16 to 30 tons, 18 reals, or $2 02; 31 to 45 tons, 26 reals, or $3 02; 46 to 60 tons, 30 reals, or $3 06; 61 to 80 tons, 38 reals, or $4 06; 81 to 100 tons, 46 reals, or $5 06; 101 and above, 54 reals, or $6 06.

Hospital Dues.—National and foreign vessels, sailing for a foreign port beyond sea or in the River Platte, pay $2 for the vessel, 4 reals for the captain, 2 reals for each seaman, $1 for each passenger.

Pilotage from Montevideo to Buenos Ayres to be paid in Montevideo. If the draught of water do not exceed 9 feet, Burgos measure, $50; 9 to 10 feet, $60; 10 to 11 feet, $70; 11 to 12 feet, $80; 12 to 13 feet, $100; 13 to 14 feet, $120; 14 to 15 feet, $140; 15 to 16 feet, $160; 16 to 17 feet, $190; 17 to 18 feet, $220.

Moneys, Weights, and Measures.—Paper money there is none. Current money, the Brazilian patacon and Spanish dollar; they pass for 960 centesimos. 100 cents make a real; 800 cents, or 8 reals, make a dollar; 960 cents, or 9 reals 60 cents, make 1¼ current dollar, or 1 hard dollar or patacon. Weights and measures same as those of Spain; for which, see CADIZ.

As regards the commerce of the United States with

Montevideo, we find it has much diminished of late years, which may be attributed to the late civil war of nine years' duration. The interior of the country, which formerly abounded in horned cattle, is now without a sufficiency to supply the "Estancias" for breeding those useful animals, millions of them having been destroyed for their hides alone in the course of the war before mentioned, by the troops of Generals Rozas and Oribe; and the consequence is, that little or no produce comes in from the country. Vessels from the United States with their outward cargoes proceed onward to Buenos Ayres, where they find return cargoes, which are easily obtained. Capitalists of late have turned their attention to agriculture, particularly to the cultivation of wheat and Indian corn, which flourish here in a high degree; and in the course of a few years this country will, probably, be enabled to supply Brazil with the article of flour in abundance, in exchange for coffee, sugar, tobacco, etc, articles of vast consumption. There is a fine opening here for a steam mill, for the grinding of wheat and corn, none as yet (September, 1854) having been introduced into this country, and it is worth the attention of some of the enterprising citizens of the United States. Wind, and horse power for mills, are the only means used at present throughout the country; and although its streams of water are innumerable, that power has not been brought into action. The manufactures consist chiefly of soap, tallow candles, chocolate, and leather, the latter of very inferior quality, which may be attributed to the species of bark used in tanning. Steam navigation on the Rio de la Plata, and its tributaries, is gradually increasing. There are two steamers running regularly between this city and Buenos Ayres, and others to the Parana and Uruguay Rivers, carrying freight and passengers; however, it may be considered as yet in its infancy. The very high price of fuel is a serious obstacle to steam navigation in this quarter, as no coal mines are found here, and the coal used comes from England and the United States, at a very dear rate, and, in consequence, the steamers have not realized so profitable a business as was anticipated.

Port Charges on Foreign Vessels at the Rate of 800 *Reis to the Montevidean Dollar.*—Pilotage inward, $10; mooring, $4; tonnage duty, 300 reis per ton (say on 150, if not more), $43 06; free of entry, if to discharge, $8; stamps for ditto, $12; custom-house officer $1 per day while discharging and loading, say for 30 days, $30; stamps, in case of loading, and on being dispatched, $25 04; hospital fees, from $4 to $6, according to the number of hands on board the vessel, $5; pilot to Franquia, $4; bill of health, $4 04; escribano's fees, if for balance of cargo, $8, or if the vessel lade here, $12. Spanish 127 to 1000 reis, or $158 06 at 800 reis. Vessels are allowed to lay 12 days from arrival without entering at the custom-house, and may land samples, so as to dispose of a part or the whole of their cargoes.

Montreal, a city and river port of entry, Canada East, and the largest and most populous city and chief seat of commerce of British America. Situated on the left bank of the St. Lawrence, 142 miles in a direct line south-west of Quebec. Lat. 45° 30′ north, long. 73° 25′ west. Population, 1840, 27,297; in 1852, 57,716; 1854, 65,000. The site is not so commanding as that of Quebec, but it is in every other respect superior to that city. The position of Montreal, at the head of the ship navigation of the St. Lawrence, and near its confluence with the Ottawa, as well as its situation with respect to the city of New York, necessarily makes it one of the greatest emporiums of Canada. The harbor, though not large, is secure, and vessels drawing 15 feet water, may lie close to the shore. Its general depth is from 3 to 4½ fathoms. Its chief disadvantage consists in the rapid St. Mary, about one mile below the city wharves, which vessels often find it difficult to stem, without the aid of steam-tugs. To obviate the obstructions in the navigation above Montreal, the Lachine Canal, 9 miles long, 20 feet wide, and 5 feet deep, was undertaken in 1821, and completed at an expense of £130,000. The communication with the opposite side of the river is carried on by several steam and other vessels; and during the summer a regular steamboat communication is kept up with Quebec. At this season vast rafts of timber come down and pass the city of Quebec; and scows, batteaux of about six tons, and Durham boats bring to Montreal the produce of Upper Canada. Neither is the trade of Montreal suspended in winter, like that of Quebec. Numerous sledges may be seen coming in from all directions with agricultural produce, frozen carcases of beef and pork, firewood and other articles. Montreal is the centre of the commerce between Canada and the United States, carried on by Lake Champlain and the Hudson, and not only is it the depôt of all the adjacent country, but most of the business done in Quebec is carried on by branches from the Montreal houses. See *Exports of Canada*, p. 853. The imports in 1853, amounted to £3,603,696, and the net amount of duties, £447,089. In the same year, 4885 vessels entered the port, of 491,928 tons burden. The wharves of this city are constructed in a manner unequaled upon this continent; the entire line of which is over two miles in length, and considerable additions (to meet the rapidly increasing trade of the city) will be speedily commenced. The Lachine Canal, with its locks and basins, is another of those public works of which the city may well be proud. The Champlain and St. Lawrence Railroad, commences at Brewsterville, opposite the city and connects with the lines to New York and Boston, at Rouse's Point, a distance of 43 miles. This road is now completed and the cars run daily. The Lachine Railroad connects the city, by a line of road 9 miles in length, with the village of that name. The continuation of this road from Caughnawaga till it connects with the Ogdensburg Road at Moers, is now complete, and the whole line is known as the Montreal and New York Railroad. The St. Lawrence and Atlantic Railroad, connecting Montreal with the city of Portland, a distance of 292 miles, is now complete. A line from Quebec to Melbourne, a distance of 100 miles, is also in course of construction, and will be completed in 1854. The Grand Trunk Railroad to connect Montreal with Kingston, Toronto, etc., is now in course of construction. The entire length of the road from Trois Pistoles to Sarnia, will be 1112 miles, and it will probably be completed in 1856. The Montreal and Bytown Railroad will pass through a fine district of country, and is in progress of construction. The length will be about 121 miles, and will be opened in 1856. *The Victoria Bridge.*—This splendid and useful structure is to cross the St. Lawrence from Point St. Charles to the south shore, a total length of 9437 feet, or somewhat over a mile and three quarters. It is to be built on the tubular principle, and will have a track for railroad cars in the centre, while on the outside of the tube there will be a balcony on each side, with a foot path for passengers. The bridge will rest on 24 piers and two abutments of limestone masonry, the centre span being 330 feet long, and 60 feet high from summer water level. The iron used in its construction will be the best boiler plate T iron, and the total cost of the work is to be £1,500,000 sterling, or $7,500,000. Formerly this city was the head-quarters of the fur-trade, but its interest in it has greatly declined. It has establishments for the manufacture of cotton goods, India rubber, steam engines, railroad cars, axes, etc., cast iron founderies, distilleries, breweries, soap, candle, and tobacco manufactories, several ship-building establishments, etc.; various articles of hardware, linseed oil, floor-cloth, etc., are made in the city. The markets are abundantly supplied with meat, fish, poultry, fruit, vegetables, etc. About three fourths of the population are

of French descent, the remainder consisting principally of emigrants from Great Britain.

A letter from the United States' Consul at Montreal, dated October 9, 1855, remarks:—"Since my last communication, the only material alteration between the trade of the two countries has been the ratification and adoption of the reciprocity treaty, which has proved, so far, at least, as has come under my observation, highly satisfactory to the provincial government, and to the people of Canada at large; and there is every appearance of its increasing in usefulness, to this country at least. It is, if I may be allowed to use the expression, commercially speaking, tantamount to annexation; while its beneficial effects have shown themselves in the increased value of farms and landed estates on this side of the line, and I am induced to believe, by careful observation, that there has been a corresponding advance in those on the United States, particularly the larger sea-port towns. This treaty has been instrumental in doing much for the advantage of the carrying trade, by conveying the products of this province over the railroads and canals of the Union, thereby placing Canada and the lower provinces, so far as their trade is concerned, in the position of one of the States of the Union. There has been, since my last communication, hitherto alluded to, but one enactment on the part of the Canadian government in relation to the trade between the United States and Canada, which was to the effect that the governor in council had abolished the duty levied upon the original packages, containing products of the United States imported into this province, under the provisions of the reciprocity treaty."

The following figures will show the comparative importance of the trade of the principal cities of Canada:

CITIES.	IMPORTS.				EXPORTS.				DUTIES COLLECTED.			
	1853.	1854.	1855.	1856.	1854.	1855.	1853.	1854.	1855.	1856.
Quebec....	£1,141,505	£1,753,520	£2,[illegible]	£[illegible]	£2,511,767	£1,558,702	£128,454	£179,189	£74,307	
Montreal..	3,381,540	3,816,082	3,00[illegible]	1,88[illegible]	572,514	475,650	449,102	478,603	310,219	
Toronto....	1,165,056	1,862,706	1,401,454	221,[illegible]	273,040	404,105	156,083	172,576	152,586	

The St. Lawrence, however, with all its acknowledged capacity, is not without its drawbacks. Foremost was the long winter, which sealed its waters during six months of the year; and next may be classed the dangers of a navigation of 700 miles between Belle Isle and Quebec. There were other circumstances which threatened that commercial prosperity which once appeared to be the undoubted appanage of the most convenient port of this large river—using the term "most convenient" in reference to breadstuffs, the chief produce of the West, and to manufactured goods, the chief article in demand by the West. The principal of these was the discovery that the most fertile lands lay beyond the barrier formed by Niagara. Hence, the population which would otherwise, in the natural order, have filled up the nearest land first, was tempted to the shores of Lake Erie and the country lying between that lake and the head waters of the Mississippi. It has been in this region that the great emigrant population has chiefly established itself, leaving the less fruitful shores of the St. Lawrence and Lake Ontario comparatively bare of inhabitants.

Imports to the Port of Montreal.—In 1845, £2,614,911; 1846, £2,303,908; 1855, £3,093,145; 1856, £3,993,000. The export trade generally has received a great impetus during the past year, owing in part, no doubt, to the establishment of the ocean steam line. The exports from Montreal for the first three quarters of the year 1855 were but £333,610; for the year 1856 they have amounted to £716,475, or more than double.

The population of the city is steadily increasing, and it is believed that at no former period was its trade and general business on a more healthy footing. In 1800, the population was 9000; 1816, 16,000; 1825, 22,000; 1831, 27,297; 1851, 57,715; 1856, 75,000, at a very moderate estimate.

Regulations in Force.—Merchandise shall not be unladen in Canadian ports except after due entry, at places designated for that purpose, under penalty of forfeiture. Merchandise shall not be imported except into some port at which a custom-house is established, under penalty of forfeiture of vessel and goods, if under the value of $1000; if above that sum, they shall be retained as security for the payment of that amount.

Banks connected with Montreal.—Montreal being a large commercial centre, the banking facilities afforded to the business community are on an extended scale. The banks of Canada have been, on the whole, prudently and judiciously managed, and have proved remunerative to the shareholders, while there has yet been no instance of the stoppage of a Canadian bank. The names and capital of the banks carrying on their business in Montreal are here given, selected from the official statement, with a statement of whether the office be a head office or agency. These banks all, with one exception, transact business under Canadian charters, and their stockholders are liable in double the amount of their shares. The bank of British North America holds a royal charter, the head office being in London, but the principal colonial office is in Montreal.

BANKS ACTING UNDER CHARTER.—1856.

Name of Bank.	Capital authorized by act.	Capital paid up.
City B'k of Montreal, principal office.	$1,200,000	$1,047,000
Bank of Montreal, principal office ...	6,000,000	5,273,000
Commercial Bank of Canada, agency.	4,000,000	2,976,000
Bank of Upper Canada, agency.....	4,000,000	2,608,000
Banque du Peuple, principal office...	800,000	795,000
Molson's Bank, principal office.....	1,000,000	824,000
Bank of British North America.....	5,000,000	5,000,000

A COMPARATIVE STATEMENT OF THE PRINCIPAL ARTICLES IMPORTED INTO CANADA DURING THE ELEVEN MONTHS ENDED DECEMBER 15TH, 1855 AND 1856.

Goods paying specific duty.....		£1,865,910
" "	20 per cent.....	67,451
" "	12½ and 15 per cent.....	5,225,623
" "	2½ to 5 per cent.....	710,159
Free goods.....		2,997,941
Total.....		£10,866,096

The countries from which these imports came:

Great Britain.....	£4,553,223
British North America.....	258,148
British West Indies.....	4,403
United States.....	5,676,127
Other foreign countries.....	404,183

The total amount of duty collected during the year 1856 was £1,127,220.

The following is a comparative statement of imports, exhibiting in contrast the value of, and amounts of duties collected on, goods entered for consumption in Canada during the years 1853, 1854, 1855, and 1856.

Whence Imported.	Value.				Duty.			
	1853.	1854.	1855.	1856.	1853.	1854.	1855.	1856.
Great Britain.....	£4,622,240	£5,740,882	£3,325,835	£4,553,223	£1,028,676	£1,224,751	£881,445	£1,127,220
N. Amer. Colonies.	158,164	168,778	216,491	258,148				
West Indies.....	869	663	8,533	4,403				
United States.....	2,945,536	3,883,274	5,207,169	5,676,127				
Oth. for. countries.	268,507	838,777	268,477	404,183				
Total.....	£7,995,359	£10,182,331	£9,021,542	£10,866,096	£1,028,676	£1,224,751	£881,445	£1,127,220

The following is a comparative statement of exports from the province of Canada for three years:

	1854.	1855.	1856.
Produce of the mine	£74,730	£91,458	£41,411
" " sea	87,427	114,980	114,086
" " forest	2,495,241	1,982,980	2,504,470
Animals and their products	208,818	398,796	641,014
Agricultural products	1,829,040	3,157,599	3,743,067
Manufactures	54,160	119,019	98,467
Other articles	11,246	17,140	19,799
Total value of exports	£4,760,264	£5,925,975	£7,148,749
Value of silver bullion at Quebec	552,62	804,886	808,269
Estimated amount of exports, short returned and inland trade	442,470	816,268	528,725
Grand total of exports	£5,754,197	£7,047,115	£8,011,754

The following is a comparative statement of the value of imports and exports of Canada during the years 1855 and 1856:

	Exports.	Imports.	Total.
1855	£7,047,115	£9,021,542	£16,068,657
1856	8,011,754	10,896,096	18,907,851

Increase of the commerce of 1855 over 1856 ..... £2,839,193 or 17·67 per ct.

The nett comparative revenue from custom duties for the past five years, after deducting cost of collection, return duties, and balances, is as follows:

1852	£705,814	1855	£813,819
1853	986,507	1856	1,028,905
1854	1,168,613		

The following is a statement of the tonnage inward and outward, showing the amount of coasting and ferriage on Canadian inland waters, and the intercourse by inland navigation between Canada and the United States during the year 1856:

	Tons.
Total outward	6,046,388
" inward	6,199,329
Total	12,245,667

The following is a subdivision of this grand total:

Canadian steam	6,287,897	American steam	4,768,826
" sail	830,726	" sail	848,218

The following tables exhibit the number of vessels entered outward for sea, their tonnage, number of men employed, and the countries whence they came, during the year 1856, and the two preceding years:

Years.	Totals.			Great Britain.		British colonies.		United States.		Other foreign countries.	
	Number.	Tons.	Men.	Number.	Tons.	Number.	Tons.	Number.	Tons.	Number.	Tons.
1856	1,582	573,648	19,880	1,004	536,303	450	28,628	87	3,575	41	5,147
1855	1,219	451,241	15,914	760	412,782	385	27,545	24	3,000	50	7,914
1854	2,018	781,755	26,286	1,537	737,768	437	37,778	15	1,401	29	4,80

The following is the statement of the same inward:

Years.	Total.			Great Britain.		British colonies.		United States.		Other foreign	
	Number.	Tons.	Men.	Number.	Tons.	Number.	Tons.	Number.	Tons.	Number.	Tons.
1856	1,494	550,578	18,976	641	358,626	508	47,196	71	32,849	247	1,022
1855	1,168	419,553	14,252	523	279,986	424	50,730	80	38,706	141	50,131
1854	1,890	705,342	24,401	1,051	501,488	499	53,825	139	85,401	207	64,728

The number of steamers built in Canada in 1856 was 22; their tonnage 3755. Sail vessels 26; their tonnage 41,584. Total number of vessels built 148; their tonnage 45,339.

Summary of the Regulations in force at the different Ports in Canada.—Merchandise shall not be unladen, except after due entry, at places designated for that purpose, under penalty of forfeiture. Merchandise shall not be brought or imported into the province, whether by sea, land, coastwise, or by inland navigation, whether dutiable or not, except into some port or place at which a custom-house is or may be established, under penalty of forfeiture of vessel and goods, if under the value of $1000; if above that sum, then the vessel and goods shall be retained as security for the payment of that amount. This applies, *mutatis mutandis*, to goods brought into the province, by land, in carriages or other vehicles. Other regulations have reference, principally, to frontier smuggling, and to the duties and powers of the officers charged with its prevention. They convey no general commercial information, and are, therefore, omitted. Most of the articles on which a discrimination in favor of importations from Great Britain exists, are embraced in the third article ("schedule") of the Reciprocity Treaty. The foregoing regulations, etc., apply, with some slight modifications, to all the other colonial possessions of Great Britain in North America.

Commerce of the United States with Canada, from July 1, 1848, to July 1, 1856.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage Cleared.	
	Domestic.	Foreign.	Total.	Total.	Exported.	Imported.	American.	Foreign.
June 30, 1849	$2,320,327	$1,914,401	$4,234,728	$1,481,082	$181,500	$417,880	890,204	563,910
1850	4,641,451	1,289,370	5,930,821	4,285,470	....	426,369	919,515	456,527
Total	$6,961,778	$3,203,771	$10,165,549	$5,766,552	$181,500	$843,749	1,809,719	1,020,437
1851	$5,835,834	$2,093,806	$7,929,140	$4,956,471	$284,801	$1,368,727	927,013	516,883
June 30, 1852	4,004,963	2,712,097	6,717,061	4,589,969	166,850	583,959	765,945	589,845
1853	4,905,512	3,823,587	7,829,099	5,278,116	517,000	984,219	1,062,686	734,029
1854	10,510,373	6,790,333	17,300,706	6,721,539	441,177	75,000	880,941	648,289
1855	9,950,764	8,769,580	18,720,344	12,182,814	....	....	890,017	908,502
1856	15,194,788	5,688,453	20,883,241	17,488,197	....	....	1,113,784	1,212,698

Moor, in navigation, signifies generally to fix a vessel by two anchors in nearly opposite directions, so that she *rides* by either in certain winds, or partly by both in other winds. Also, to secure a vessel to weights or chains sunk in harbors for the purpose. These weights are called *mooring blocks*, and the whole apparatus, *moorings*.

Morocco, or **Maroquin** (Ger. *Saffiam*; Fr. *Maroquin*; It. *Marrocchino*; Sp. *Marroqui*; Rus. *Safian*), a fine kind of leather prepared of the skins of goats, imported from the Levant, Barbary, Spain, Flanders, etc. It is red, black, green, yellow, etc. It is extensively used in the binding of books. See Leather.

Morocco. In Africa generally, barbarism, with all its attendant evils—ignorance, superstition, and cruelty—still characterize not only the several governments, but most of the countries of Africa, if we except Egypt, the European settlements, and the republic of Liberia. Balbi, the distinguished Venetian geographer, in his great work, *Balance Politique du Globe*, remarks: "The title of African statistics may be rejected as absurd;" and, hence, he persisted for a long time in his determination of excluding Africa, Oceanica, and the greater part of Asia, from consideration. Since Balbi composed his work, however, civilization has made encouraging progress in some

portions of western Africa. Point Gallenas has been brought within the limits, and under the humanizing influences, of a young, vigorous, and Christian republic. Where the slave factories once stood, pulpits are now erected; and savage tribes, and barbarous chiefs, instead of warring with each other for human plunder, have cast away the implements of carnage, and now seek a common protection in the plow and the gospel. Geographically, Macgregor divides Africa into seven great regions:

1st. The region of the Nile, under which may be comprised Egypt, Nubia, and Kardafan. 2d. The region of the north, situated between the Mediterranean and the great desert of Sahara, and extending from Egypt west to the Atlantic, generally known as the States of Barbary—namely, Morocco, Tunis, and Tripoli. The soil and climate of this region are eminently favorable to the culture and growth of the choicest productions. 3d. The third region comprehends the vast desert of Sahara, west from Fezzan and Darfour to the Atlantic, and south from the Barbary States to Senegambia, Soudan, and Bornou. 4th. The fourth region comprehends Nigritia, or western Africa, extending from the south boundary of the western desert to the south boundary of Benguela, in about latitude 16° south, including the republic of Liberia. 5th. The fifth region comprehends the Cape of Good Hope colony; the country of the Caffres and Hottentots; and the extensive dry desert coast north of the Hottentot country, to Benguela, and the great unknown southern desert. 6th. The sixth region, or eastern Africa, extending along the sea-coast, and to an unknown inland limit, from Delagoa Bay, in latitude 26° south, to the frontiers of Abyssinia. 7th. The seventh region comprehends the States of Abyssinia and Somaula, extending from Cape Ras-asser, or Guardafo, to Zeylah, and along the Red Sea to the territories of the Pacha of Egypt.

Of the seven divisions thus given by Macgregor, the 1st, 4th, 5th, and 6th, only, possess any commercial importance: the first, comprising the Barbary States; the fourth, the republic of Liberia; the fifth, the colony of Good Hope (some account of which will be found in the Digest of British Colonial Possessions); and the sixth, the African possessions of the Sultan of Muscat, including the Island of Zanzibar.

Barbary States.—Under the collective denomination of Barbary States, are grouped together the countries which form the northern coast of Africa, viz.: Morocco, Tunis, and Tripoli. Prior to the submission of Algeria to the French arms, this division was also comprehended under the same general name. Being now a French colony, it is included in the Digest of French Colonial Possessions.

Empire of Morocco.—Morocco is one of the most powerful of the Barbary States, and comprises an area of 220,000 square miles, with a population estimated at 8,500,000. Although agriculture is in the most backward state, the soil yields, in great abundance and of the finest quality, wheat, barley, maize, olives, hemp, and cotton; and lemons, grapes, figs, oranges, almonds, and various fruits are grown in the greatest profusion. The sugar-cane, the tobacco-plant, and the date-tree thrive wherever they are cultivated. Under a liberal government, and with ordinary industry, Morocco could be made one of the most productive countries in the world. Islamism, however, wherever it extends, spreads its withering blight over every branch of industrial improvement. Among the varied physical resources are mines of iron, tin, copper, antimony, and salt; the last of which only appear to be worked. Two treaties of peace, friendship, etc., and for the security of persons and property, have been concluded by the United States with Morocco; the former bearing date January, 1787, and the latter, September, 1836. The principal stipulations relating to trade and commerce, in the treaty of 1836, are embodied in the following summary:

Article 8. If any vessel of the United States shall meet with a disaster at sea, and put into one of our ports to repair, she shall be at liberty to land and reload her cargo without paying any duty whatever. 14. The commerce with the United States shall be on the same footing as is the commerce with Spain, or as that with the most favored nation for the time being; and their citizens shall be respected and esteemed, and have full liberty to pass and repass our country and sea-ports whenever they please, without interruption. 15. Merchants of both countries shall employ only such interpreters and such other persons to assist them in their business as they shall think proper. No commander of a vessel shall transport his cargo on board another vessel; he shall not be detained in port longer than he may think proper; and all persons employed in loading or unloading goods, or in any other labor whatever, shall be paid at the customary rates, not more and not less. 17. Merchants shall not be compelled to buy or sell any kind of goods but such as they shall think proper, and may buy and sell all sorts of merchandise but such as are prohibited to the other Christian nations. 18. All goods shall be weighed and examined before they are sent on board; and, to avoid all detention of vessels, no examination shall afterward be made, unless it shall first be proved that contraband goods have been sent on board; in which case the persons who took the contraband goods on board shall be punished according to the usage and custom of the country, and no other person whatever shall be injured, nor shall the ship or cargo incur any penalty or damage whatever. 19. No vessel shall be detained in port on any pretense whatever, nor be obliged to take on board any article without the consent of the commander, who shall be at full liberty to agree for the freight of any goods he takes on board. The treaty to continue in force 50 years, with the usual 12 months' notice after the expiration of that period.

The principal ports of Morocco are Mogadore, on the Atlantic, with a safe harbor for vessels of 150 tons; Tangier, Tetuan, Dar al Baida, Mazagan, Saffi, Rabat, and Larache. The import duties are often arbitrarily raised, and frequently corruptly levied. With the exception of cochineal, coffee, cotton, iron, raw silk, sugars, and tea, on which articles there are specified duties, and tobacco, which can be sold only to the temporary assignees of the emperor's monopoly, a general duty of 10 per cent. is levied on all imports. When thus sold, it is admitted free; the price of the monopoly varying according to the number of bidders, but usually reaching as high as $100,000. The assignee realizes from nett sales about $180,000. Besides tobacco, the sultan reserves the monopoly of brimstone, gunpowder, and lead. Every article entering into the export trade of Morocco is subject to arbitrary, and frequently oppressive duties. On leeches and cork-bark the sultan retains the monopoly, which is annually sold to the highest bidder, and sometimes adds to the sultan's revenue as much as $100,000 per annum. If we compare this large amount with the total value of these articles annually exported, viz.: leeches $120,000, cork-bark $110,000 (about 50 per cent. of which is paid for the monopoly), it can be seen at once how much the trade in these articles is affected by these burdensome internal taxes. Morocco maintains an extensive trade with the interior of Africa by caravans, the principal of which usually accompanies the pilgrims across the whole continent of Africa to the Red Sea, and the tomb of Mohammed, and Mecca. The value of the investments in this caravan has been usually estimated at $2,000,000. The caravans trading with the interior depart from Tetuan, Morocco, and Fez, and meet at Tafilet, in order to cross together the great desert of Sahara. The trade between the United States and the empire of

Morocco is principally indirect, through the ports of Marseilles and Gibraltar, and is conducted for the most part in French and British bottoms. It is suggested to the Department of State, by the United States' consul at Tangier, that this carrying trade could be secured to American vessels if our import duties on produce in general of Morocco, especially on coarse wool, were reduced to the same standard that rules in England. In 1853 the carrying export trade of the United States to Morocco, amounting to $84,000, was entirely effected in foreign vessels. In 1852, of the 474 vessels of all sizes, measuring an aggregate of 30,426 tons, engaged in the foreign trade of the empire, there were but four American vessels, measuring in all 1,100 tons. The imports into the United States from Morocco consist of coarse wool, gums, skins, ostrich feathers, etc. The exports from the United States to Morocco are raw cotton, coarse domestics, brown sugar, rice, and tobacco. The latter article is supplied almost exclusively from the United States.

In 1848 the maritime commerce of Morocco reached 15,046,979 francs ($2,798,738), viz.:

	Imports. Francs.	Exports. Francs.
Merchandise	8,747,504	5,689,275
Specie	253,800	356,400
Total	9,001,304	6,045,675

In this general movement the returns assign to the port of Mogadore amounts as follows: Imports, 2,281,038 francs; exports, 2,584,804 francs; total, 4,865,842 francs. See MOGADORE, *ante*, p. 1368.

This leaves 10,181,137 francs for the other ports—Mazagan, Tangier, Tetuan, Dar al Baida, Laroche, and Rabat.

For the purpose of comparison, the general movements for 1847 are given as follows: Imports, 7,077,208 francs; exports, 6,910,946 francs; total, 13,988,154 francs.

Compared with 1846, these figures show a diminution of 390,547 francs; but when compared with the returns for 1848, they exhibit an increase of 1,056,825 francs, exclusively on imports. The diminution principally affects the trade with France; thus, in 1847, the trade of this country with Morocco amounted to 2,314,154 francs—(imports 520,965, exports 1,793,189)—while in 1848 it fell to 1,656,386 francs—(imports 404,906, and exports 1,251,480)—showing a decrease of 657,768 francs. With every other country engaged in this trade there was an augmentation in 1848, both in imports and exports. In one article, rather suspiciously called "Americanos," England largely augmented her export trade to Morocco—the whole increase in 1848 being upward of $1,500,000. This description of merchandise is thus explained in an official dispatch transmitted to the Department of State from Tangier: "Throughout the whole empire, from the sultan down to the lowest subject, the article which we call 'coarse domestics' is used under the appellation of *Americanos*. It is the principal article of import, and is an imitation, by the manufacturers of Manchester, England, of the coarse domestics of Massachusetts. * * * * * It took with the Moors, who were so enthusiastic in their praise of it, that the English manufacturers dispatched an agent to this country to examine and report on the fabric, and the probable demand. They then set to work to manufacture an article in every respect similar; and, stealing the name, they managed to underseil our countrymen and monopolize the market." The tabular statements that follow, giving a condensed view of the trade and navigation of Morocco, are brought down to the latest period for which authentic data are accessible. They are compiled from French official publications:

TABULAR STATEMENT EXHIBITING THE TRADE OF MOROCCO FOR 1848, COMPARED WITH 1847.

Ports.	Imports.		Exports.	
	1847.	1848.	1847.	1848.
	Francs.	Francs.	Francs.	Francs.
Tangier	1,665,000	2,904,000	1,102,000	1,090,000
Tetuan	1,086,000	1,829,000	536,000	459,000
Laroche	561,000	1,187,000	329,000	251,000
Rabat	935,000	229,000	648,000	398,000
Dar al Baida	875,000	428,000	1,157,000	929,000
Mazagan	840,000	143,000	817,000	836,000
Mogadore	2,065,000	2,281,000	2,380,000	2,585,000
Total	7,077,000	9,001,000	6,910,000	6,048,000

Official returns give to England the principal share of this trade—an advantage which she enjoys, partly because of the proximity of Gibraltar, but mainly because she monopolizes the large bulk of the carrying trade between the United States and Morocco.

The imports, these years, consisted of cottons (*Americanos*) and woolen cloths, raw silk, iron, steel, copper and lead, sugar, coffee, grains, drugs, hardwares, tea, and specie; the exports were wool, hides and skins, leeches, gum, olive-oil, Morocco leather, and ostrich feathers. The general commerce of the Mediterranean in 1854 increased materially over that of 1853; the increase was chiefly with Spain, Morocco, Sardinia, the United States, and Tuscany.

Navigation.—The following table exhibits the navigation of the ports of Morocco in 1850:

Nationality.	No. of vessels.	Tonnage.
England	612	33,685
France	157	18,089
Spain	49	1,889
Portugal	32	2,129
Turkey	14	1,840
Other countries	13	1,523
Total	877	59,155

The principal imports are cotton goods of all kinds, cloth, silk stuffs, velvets, copper, iron, steel, hardware, cochineal, indigo, and other dyes, tea, coffee, sulphur, paper, glass, beads, rum, etc. The exports consist in hides, wax, wool, leeches, dates, almonds, oranges, and other fruit, bark, flax, durra, woolen sashes, haicks, Moorish slippers, etc.

The following table exhibits the values of this trade during a period of five years ending with 1856:

Years.	Imports.	Exports.	Total.
1852	$395,260	$359,230	$754,490
1853	416,965	382,150	799,115
1854	636,245	222,080	858,325
1855	662,120	255,750	917,870
1856	677,830	356,320	1,034,150
Total	$2,788,420	$1,605,530	$4,393,950
Average	$557,684	$321,106	$878,790

That our commercial readers may see the share which Great Britain holds in the trade of Tangier, we subjoin a tabular statement showing the navigation of this port during the same period, distinguishing the number and tonnage of British vessels:

Years.	Entered.				Total.		Cleared.				Total.	
	British ships.		Foreign ships.				British ships.		Foreign ships.			
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
1852	159	4,599	102	2,896	261	7,495	159	4,599	100	2,844	259	7,443
1853	176	7,261	174	8,353	350	15,614	176	7,261	172	8,191	348	15,452
1854	137	12,846	128	5,934	265	18,780	136	12,826	128	5,934	264	18,760
1855	153	12,397	90	3,213	243	15,610	153	12,397	87	3,198	240	15,595
1856	203	10,883	119	4,780	313	15,663	207	10,984	110	4,780	317	15,714
Total	828	47,986	604	25,176	1,432	73,162	831	48,017	597	24,887	1,428	72,904
Average	165	9,597	121	5,035	286	14,632	166	9,603	119	4,977	285	14,580

In 1853 the commercial movements at the port of Mogadore reached, imports and exports united, 10,592,245 francs; of which imports covered 4,984,220 francs, and exports 5,608,025 francs. In 1852 the total was only 6,920,525 francs; of which, for imports, there were 3,267,175 francs, and for exports 3,653,350 francs. There was, therefore, an increase in 1853 of, imports 1,717,045 francs, exports 1,954,675, making a total of 3,671,720 francs.

Navigation returns show that 57 vessels entered, measuring, in all, 7483 tons, viz.: England, 37; France, 9; Portugal, 2; Belgium, 1; Spain, 1; other nations, 7.

The trade of this port (Mogadore) in 1854 exhibits a total value of 5,946,095 francs; of which there was for imports 2,810,045 francs, and for exports 3,136,050 francs.

NAVIGATION OF MOROCCO IN 1848, COMPARED WITH THAT OF 1847.

Years.	Vessels		Total Tonnage.
	Entered.	Cleared.	
1848.....	297	225	28,846
1847.....	316	297	37,434
Decrease in 1848.	19	72	9,088

The general foreign commerce of the empire in 1849 and 1850 is shown by the following statement:

Years.	Imports.	Exports.	Total.
1849.....	$2,106,200	$1,683,200	$3,789,400
1850.....	1,822,800	1,683,200	3,506,000

The commerce for these years was thus distributed between the ports of Morocco:

Ports.	Imports.		Exports.	
	1849.	1850.	1849.	1850.
	Francs.	Francs.	Francs.	Francs.
Tangier.....	2,136,000	1,614,000	1,549,000	1,038,000
Tetuan.....	2,497,000	529,000	1,115,000	517,000
Laroche.....	983,000	515,000	332,000	356,000
Rabat.....	1,387,000	1,804,000	477,000	1,145,000
Dar al Baida...	716,000	840,000	1,625,000	1,116,000
Mazagan.....	63,000	493,000	848,000	410,000
Mogadore.....	2,756,000	3,323,000	2,970,000	3,792,000
Total.....	10,538,000	9,114,000	8,416,000	8,384,000

The following tabular statement shows the countries which participated in the trade of 1850:

Countries.	Imports.	Exports.	Total.
England.....	$1,308,800	$976,400	$2,285,200
France.....	395,600	621,800	1,017,400
Spain.....	48,200	37,400	85,600
Portugal.....	47,400	7,800	55,200
Sardinia.....	....	28,000	28,000
Belgium.....	14,000	11,800	25,800
Austria.....	8,800	....	8,800
Total.....	$1,822,800	$1,683,200	$3,506,000

The principal ports of Morocco are Tangier, Tetuan, Laroche, Rabat, Dar al Baida, Mazagan, and Mogadore. The town of Tangier occupies an eminence at the western extremity of a capacious bay, within the limits of the Straits of Gibraltar, and nearly opposite to the Spanish town of Tarifa. The peculiar advantages of its situation render it the most frequented port of Morocco. The town contains 900 houses, and about 8500 inhabitants—consisting of 6000 Moors, 2200 Jews, and 340 Christians. The inhabitants are, comparatively speaking, civilized and tolerant. Christians are treated with greater respect, and Jews with less severity, than in any other part of the empire—privileges for which they are indebted partly to the presence of the chief representatives of foreign powers and partly to the liberality of the present able and energetic Pasha, Sid Mohamed Ben Abd-el-Maleck.

Port Charges.—The port charges and dues are simply for anchorage, and vary from $2 to $25, with a gratuity to the port captain of from $2 to $4. This gratuity secures the services of this officer in obtaining abundant provisions and other supplies for the vessel, free of duty. The anchorage dues, as above, range between the two extremes, according to the friendly or unfriendly terms which may subsist between the local authorities and the consul of the nation the flag of which the vessel may bear.—*Com. Rel. U. S.*

Consular Regulations with the United States.—It is stipulated by the 19th and the three following articles of the treaty concluded between the United States and Morocco, October 1, 1837, that if any of the citizens of the United States, or any persons under their protection, shall have any dispute with each other, the consul shall decide between the parties; and whenever the consul shall require any aid or assistance from the government of Morocco to enforce his decisions, it shall be immediately rendered to him. If a citizen of the United States should kill or wound a Moor, or, on the contrary, if a Moor shall kill or wound a citizen of the United States, the law of the country shall take place, and equal justice shall be rendered, the consul assisting at the trial; and if any delinquent shall make his escape, the consul shall not be answerable for him in any manner whatever. If an American citizen shall die in Morocco, and no will shall appear, the consul shall take possession of his effects; and if there shall be no consul, the effects shall be deposited in the hands of some person worthy of trust, until the party shall appear who has a right to demand them; but if the heir to the person deceased be present, the property shall be delivered to him without interruption; and if a will shall appear, the property shall descend agreeably to that will, as soon as the consul shall declare the validity thereof. The consul of the United States is permitted to reside in any seaport of the dominions of the emperor of Morocco that he shall think proper; and he shall be respected, and enjoy all the privileges which the consuls of any other nation enjoy; and if any of the citizens of the United States shall contract any debts or engagements, the consul shall not be in any manner answerable for them, unless he shall have given a promise in writing for the payment or fulfillment thereof; without which promise in writing no application to him for any redress shall be made.

Mortgage. A mortgage is a conveyance or transfer of real or personal estate to secure the grantee or assignee the payment of some debt or the performance of some agreement, with a condition or understanding that, in case of the debt being paid, or the agreement being performed, within a certain time, and in the specified manner, the conveyance or assignment shall be void, and the land or personal property revert to, or rather, still belong to the mortgager. The English, and so the American mortgage of land, is mostly borrowed from the civil law (see KENT'S *Commentaries*, vol. iv., part iv., lect. lvii.; BROWN'S *Civil Law*, vol. i., p. 200), or, at least, many of the rules and incidents of the Roman *hypotheca*, coincide with ours relating to mortgages. The essential characteristic of a mortgage, however, according to the import and definition of the term, must be the same in all countries, namely, that the property conveyed or transferred, whether real or personal, shall not absolutely go, and belong to the grantee or assignee, in case the debt intended to be secured shall be paid, or the contract, whatever it may be, intended to be guarantied, shall be performed within the time and terms agreed upon. The rules and incidents of such a hypothecation will, therefore, have some resemblance under all codes of laws. There is no limitation of the kind of debts or contracts, the payment or performance of which may be secured by mortgage, for all legal ones may be so guarantied. What will be a sufficient conveyance of the property, whether real or personal, will again depend on the laws of the place. A conveyance of land, for instance, must, in most countries, be made in writing, and with certain formalities. So, in England, the right of property in a ship must appear by a bill of

sale. Whatever these rules are by which the absolute transfer of property is regulated, they will equally apply to a conveyance or assignment by way of hypothecation. As real estate is usually required by the laws to be conveyed by written documents, and, according to the laws of most places, these conveyances are evidenced by public records of the instruments by which they are made, there is no necessity of an open, visible possession of the estate by the grantee, that the public may take notice of the grant, for they may find the evidence of it at the office of public record. The case is not the same with personal property, the title to which is usually confirmed and established to the purchaser by a delivery of the article into his possession. In respect to all chattels, of which manual possession and transfer from place to place is practicable, the delivery by the vender, and actual possession by the purchaser, are very material circumstances in establishing the right of property in the latter. It is, indeed, laid down as a maxim of the English, and also of the American law, that movables can not be validly sold or mortgaged without a delivery actual, or constructive, to the purchaser or mortgagee, and a possession by him. But this rule is very much modified and relaxed; not that a delivery to and a possession by the vendee and mortgagee are not considered requisite to establish his title, but a very liberal interpretation has been put upon circumstances showing a constructive delivery and possession. The object and policy of the law is to leave the movable, just as it does land, to be used either by the mortgager or mortgagee, without affecting their mutual rights and obligations as to the property in the thing, as far as this indulgence can be carried without leading other persons into a misapprehension, and exposing them to fraud and imposition in giving credit to the mortgager, upon the supposition of his being the absolute owner of the property hypothecated. The various rules and distinctions by which the mortgage of chattels is regulated in this respect, constitute an essental part of the law upon this subject. But, after all, we may lay it down as an essential doctrine, that a mortgaged chattel must be in possession of the mortgagee, in order to render his title secure; and when the mortgager has, by the law, been permitted still to use the thing, it is only in cases where his possession is, in legal construction, that of the mortgagee.

The most material consideration relating to mortgages, whether of lands or chattels, is the effect of the non-performance of the condition by the mortgager. This will depend, it is true, in part, upon the terms of the contract of hypothecation or mortgage. If it be agreed between the parties, that in case of non-performance of the condition of the hypothecation, the mortgagee shall sell the thing hypothecated, whether land or goods, and account to the mortgager for the proceeds in satisfaction of the debt, or discharge of the obligation, intended to be secured, and pay over the surplus, if any, this is all that justice or the law can demand, and this is, in effect, what the law aims at where the parties do not make any such stipulation; but, on the contrary, agree, either expressly or impliedly, that, in case of a non-performance of the condition, the thing mortgaged shall be absolutely and immediately forfeited to the mortgagee, without any right on the part of the mortgager to redeem it, or to call upon the mortgagee to sell it and account with him for the proceeds. Thus, in the common form of mortgaging land, it is conveyed to the mortgagee with a provision that unless he shall pay a certain debt, or do a certain thing within a time specified, the conveyance shall be void. According to the literal construction, therefore, if this condition is not complied with, the thing henceforth belongs absolutely to the mortgagee. But here the law steps in and controls the agreement, and attempts to prevent it from operating as a penalty or forfeitnre, at the same time giving it all its force as a security or guaranty. For this purpose, different modes are adopted in different codes of laws, all of which agree in applying the value of the thing mortgaged, in satisfaction and discharge of the debt or obligation intended to be secured; so that by all the codes justice is done, if there is no surplus value. But if there be a surplus value, some of the codes will reach it, and others not, and the same code will reach it in regard to one kind of pledge, mortgage, or hypothecation, and not another. For example, by the English and American law, if a debtor pledges bills of exchange, or any personal property for a debt, to an amount exceeding its value, the creditor must account for the proceeds, and pay over the surplus to the debtor; but in England, and so in some of the United States, if the debtor mortgages lands, of which the creditor takes possession for breach of condition, the debtor has three years to redeem it, after which time the land is absolutely gone, though twice the amount of the debt in value. The law, in this case, supposes three years to be time enough to allow the debtor to redeem it, in case of an excess of value of the land; and this supposition is not wholly unreasonable, since the debtor has all that time to sell the land if he can get more than the amount of the debt for it. The civil law, as more generally administered, where it has been made the basis of modern codes, and so the laws of many of the United States adopt a different mode, prescribing an appraisement of the mortgaged land, and providing that it may be sold by auction, if two thirds of the appraised value is bid for it, and the proceeds of the sale are applied in satisfaction of the debtor obligation guarantied by the mortgage, and the surplus, if any, paid over to the debtor.—E. A.

Moss, *Iceland Moss* (*Cetraria Islandica*), a species of lichen, a native of the mountainous heaths and woods in the Alpine parts of Scotland, and of the Asturias, in Spain, as well as in Iceland and the north of Germany. It grows to a height of only two or three inches, and has rather a rugged, bushy appearance, and doubtless would thrive, and perhaps with profit, in the northern parts of the United States, particularly in Minnesota, Wisconsin, Michigan, northern New York, Vermont, New Hampshire, and Maine. In Iceland and Lapland, this plant is used as an article of diet, being boiled in broth or milk, after being freed from its bitterness by repeated maceration in water; or dried and made into bread. The dried plant differs but little from its appearance in a recent state. Medicinally, it is tonic and demulcent. The decoction, as ordered in the pharmacopœias, is so bitter as to prevent many persons from taking it; and when deprived of its disagreeable taste, it can only be viewed as a demulcent, and is hardly equal in its effects to linseed, quince-seed, and marsh-mallows. It certainly does not cure phthisis pulmonalis; but in the last stage of that disease, when solid food is oppressive, and the diarrhœa appears to be kept up by the acrid contents of the stomach and bowels, it has appeared to check the latter, and to impart both vigor and nourishment to the digestive organs.—*Patent Office Rep.* See Iceland.

Mosaic Gold. For the composition of this peculiar alloy of copper and zinc, called also *Or-molu*, Messrs. Parker and Hamilton obtained a patent in November, 1825. Equal quantities of copper and zinc are to be "melted at the lowest temperature that copper will fuse," which being stirred together so as to produce a perfect admixture of the metals, a further quantity of zinc is added in small portions, until the alloy in the melting-pot becomes of the color required. If the temperature of the copper be too high, a portion of the zinc will fly off in vapor, and the result will be merely spelter or hard solder; but if the operation be carried on at as low a heat as possible, the alloy will assume first a brassy yellow color; then, by the introduction of small portions of zinc, it will take a purple or violet hue, and will ultimately become perfectly white; which is the appearance of the proper compound

in its fused state. This alloy may be poured into ingots, ; but as it is difficult to preserve its character when re-melted, it should be cast directly into the figured molds. The patentees claim the exclusive right of compounding a metal consisting of from 52 to 55 parts of zinc out of 100. Mosaic gold, the *aurum musivum* of the old chemists, is a sulphuret of tin.

Mosaic (*Mosaique*, Fr.; *Mosaisch*, Germ). There are several kinds of mosaic, but all of them consist in imbedding fragments of different colored substances, usually glass or stones, in a cement, so as to produce the effect of a picture. The beautiful chapel of Saint Lawrence, in Florence, which contains the tombs of the Medici, has been greatly admired by artists, on account of the vast multitude of precious marbles, jaspers, agates, avanturines, malachites, etc., applied in mosaic, upon its walls. The detailed discussion of this subject belongs to a treatise upon the fine arts.

Mosquito Coast, Mosquitia. The limits of this pseudo Central American State, Mosquitia or the Mosquito Coast, are so indefinite, and its extent inland so imperfectly ascertained, that scarcely more of a reliable character can be said respecting it physically, than politically or commercially. It is supposed to extend from Cape Honduras to the mouth of the River San Juan, having west the States of Honduras and Nicaragua, and north and east the Caribbean Sea, and to embrace about 26,000 square miles. The Mosquito Indians, its native and almost only inhabitants, are represented as an active and daring race, never brought under submission by the Spaniards. The San Juan River is claimed as its south boundary. Its capital is Blewfields, and it contains several other small villages, inhabited chiefly by native Indians and some few British colonists. The country is fertile, and, under proper cultivation, would produce cocoa, cotton, sugar, indigo, vanilla, and logwood; but, until some change takes place either in the mode of cultivation, or the form of government, its resources have but small chance for development. See HONDURAS.

Mother of Pearl (*Nacre de Perles*, Fr.; *Perlen mutter*, Germ.) is the hard, silvery, brilliant internal layer of several kinds of shells, particularly oysters, which is often variegated with changing purple and azure colors. The large oysters of the Indian seas alone secrete this coat of sufficient thickness to render their shells available to the purposes of manufacturers. The genus of shell fish called *pentadinæ* furnishes the finest pearls, as well as mother of pearl; it is found in greatest perfection round the coasts of Ceylon, near Ormus in the Persian Gulf, at Cape Comorin, and among some of the Australian seas. The brilliant hues of mother of pearl do not depend upon the nature of the substance, but upon its structure. The microscopic wrinkles or furrows which run across the surface of every slice, act upon the reflected light in such a way as to produce the chromatic effect; for Sir David Brewster has shown, that if we take, with very fine black wax, or with the fusible alloy of D'Arcet, an impression of mother of pearl, it will possess the irridescent appearance. Mother of pearl is very delicate to work, but it may be fashioned by saws, files, and drills, with the aid sometimes of a corrosive acid, such as the dilute sulphuric or muriatic; and it is polished by colcothar of vitriol.

Mozambique, a fortified maritime city, and the capital of the Portuguese possessions in eastern Africa, on an island at the entrance of Mesaril Bay, an inlet of the Mozambique Channel, 5½ miles broad, and 6 miles in length, and receiving 3 small rivers, its entrance being sheltered also by the islands St. George and St. Jago, which help to bound its harbor. Mozambique Island, in lat. 15° 2′ S., long. 40° 48′ E., is about 1½ miles in length, low, and of coral formation.

Mulberry. *Soil, Situation, Propagation, etc.*—The *morus nigra*, or black mulberry-tree, will grow in almost any soil or situation that is tolerably dry, and in any climate not much colder than most parts of Britain and the United States. It is very easily propagated by truncheons or pieces of the branches, eight or nine feet in length, and of any thickness, being planted half their depth in tolerably good soil; when they will bear fruit the following year. As it is extremely tenacious of life, every part of the root, trunk, boughs, and branches may be converted into plants by separation; the rootlets, and small shoots or sprays, being made into cuttings, the larger boughs into stakes, the arms into truncheons, and the trunk, stool, and roots, being cut into fragments, leaving a portion of the bark on each, and planting them after the Italian mode of propagating the olive-tree. The mulberry may also be increased from seeds, by layers, or by grafting and budding. This tree, from its slowness of putting out its leaves, being rarely injured by spring frosts, and its leaves being seldom or never devoured by any insect, except the silkworm, and never touched with mildew, very seldom fails to produce a good crop of fruit. This fruit, however, though excellent, and exceedingly wholesome, does not keep, and is so far troublesome, that it is only good when it is quite ripe, and is best when it is suffered to fall from the tree itself. For this reason, mulberry-trees are generally planted on a lawn or grass-plot, to prevent the fruit that falls from being injured by the gravel or dirt. This practice, however, is objectionable, as no tree, perhaps, receives more benefit from the spade and the dunghill than the mulberry, and it ought, therefore, to be frequently dug about the roots, and occasionally assisted with manure. The ground under the tree should be kept free from weeds throughout the summer, particularly when the fruit is ripening, as the reflected light and heat from the bare surface of the soil is thus increased. In a cool, moist climate, like that of Britain, the fruit is also very fine if the tree be trained as an espalier, with the reflection of the south side of a building or wall. As a standard tree, whether for ornament or fruit, the mulberry requires very little pruning or attention of any kind, other than that which is given above. As it increases in age, it increases in productiveness, and in full-grown trees the fruit is much larger and better flavored than in those which are young.

Properties and Uses.—The wood of the *morus nigra* is less compact than even that of the white mulberry, and when perfectly dry, weighs only about 40 pounds to a cubic foot. It is said to be durable, and has been employed in England for various purposes of carpentry, for hoops, bows, wheels, and even ribs for small vessels, instead of oak. In France, this wood is considered of but little value, except for fuel. In some parts of Spain, in Sicily, and in Persia, the leaves of this species are said to be preferred to those of the white mulberry for the food of silkworms. The leaves are also eaten by cattle, sheep, and goats. The roots have an acrid, bitter taste, and are considered as an excellent vermifuge, when taken, in powder, in doses of half a drachm. The tree, in every part, contains a milky juice, which, being congulated, is found to form a coarse kind of elastic gum. The fruit of this tree is of an agreeable acid and aromatic flavor, and is eaten raw, as a dessert, or may be formed into an agreeable preserve; and Evelyn says that, mixed with the juice of cider apples, it makes a very strong and agreeable wine. Dr. Clarke observes, that he saw some Greeks, in the Crimea, employed in distilling brandy from mulberries; which he describes as "a weak but palatable spirit, as clear as water." A wine is also made from it in France; but it requires to be drunk immediately, as it very soon becomes acid. The fruit, when ripe, is regarded as cooling and laxative, allaying thirst, and being grateful in cases of fever. When made into a syrup, it is considered excellent for a sore throat. Like the strawberry and raspberry, it is said to undergo the acetous fermenta-

tion in the stomach, and therefore may be safely eaten by persons afflicted with the rheumatism or gout. All kinds of poultry are excessively fond of this fruit, and devour it with avidity, whenever within their reach.

Insects and Diseases.—The leaves of the *morus alba*, or white mulberry-tree, are believed to be eaten by no other insect but the silkworm (*bombyx mori*). M. Pullein, however, made experiments with various kinds of insects, but they all rejected the mulberry leaf for food, except "a green worm, about an inch long, and as thick as an oat straw." Although he found it upon a mulberry, it was his belief that it was not peculiar to that tree alone, but found its way there by accident. The white mulberry, however, is attacked by numerous diseases, occasioned partly, no doubt, by the unnatural manner in which it is treated, by being stripped of its foliage. One of these diseases is brought on by any sudden check given to the transpiration of the leaves, which turn yellow, and fall off, shortly after causing the tree to die. Another is the death of the roots, which is accompanied by the formation on them of parasitic fungi. The leaves are also apt to be attacked with honey-dew, mildew, rust, and other diseases, which render them unfit for the food of the silkworm. Those leaves covered with honey-dew may be washed, and, when thoroughly dry, may be given to the insects without injury; but the other diseased leaves should be thrown away. If leaves covered with honey-dew are employed without washing, they cause dysentery and death to the worms. As it is not our intention to treat of the whole art of the rearing and management of the silkworm, we are compelled to refer the reader to a "*Treatise on the origin and Progressive Improvement of the Silk Manufacture*," being the 22d volume of the London Cabinet Cyclopædia; also to the work of Count Dandolo, entitled "*Dell' Arte di governare i Bacchi da Seta;*" KENRICK's "*American Silk-Grower's Guide;*" and to most of the agricultural journals of the day.

Properties and Uses.—The wood of the *morus alba*, when dry, weighs 44 pounds to a cubic foot. In France, the principal uses of that of the trunk, is for various purposes of turnery, and carpentry, and for the making of wine-casks, for which it is highly valued, as it is said to impart an agreeable violet-like flavor to white wines. The branches are used for vine-props, posts and rails to rural fences, and for fuel. The bark may be converted into linen of the fineness of silk. For this purpose the young wood is gathered in August, during the second ascent of the sap, and immersed for three or four days in still water. It is then taken out, at sunset, spread on the grass, and returned to the water at sunrise. After repeating this process daily for some time, it is finally taken out, dried, and prepared like flax. The bark is also used like that of the European lime-tree, for making bast for mats, etc. The bark, and more especially the leaves of the white mulberry, abound in a milky juice, which is found to possess more or less of the properties of caoutchouc, according to the climate in which the tree is grown. It is doubtless owing to this property in the leaves of the mulberry, that the cocoons of the silkworm have so much more tenacity of fibre than those of any other insect that feeds on the leaves of trees. Hence, also, the silk, like the tobacco and wine of warm climates, and of poor, dry soils, is always superior to that produced in colder climates, and from rich and moist soils. To verify this opinion, we quote the following very judicious observations from the "*Journal d'Agriculture de Pays-Bas,*" which will not only show the impracticability of profitably raising silk in the higher latitudes, but will serve as an infallible guide in the choice of a soil and climate for this species of agriculture: "The mulberry-tree is found in different climates; but the juice of the leaves grown in the north is much less suitable for the production of good silk, than that of the leaves of the south. In this respect, mulberry leaves and silk differ as much as wines, according to the climate and soil in which they are produced. In general, every climate and soil that will grow good wheat will produce large, succulent mulberry leaves; but these leaves will, in many cases, be too nutritive; that is, they will have too much sap, and too much substance and succulency. The wild mulberry, with small leaves, answers better, for such a soil, than the grafted mulberry, with large leaves. A general rule, and one to be depended on, is, that the mulberry, to produce the best silk, requires the same soil and exposure that the vine does to produce the best wine. Experience has proved that silkworms nourished by leaves gathered from a dry soil, succeed much better, produce more cocoons, and are less subject to those diseases, which destroy them, than those which have been nourished by leaves produced by an extremely rich soil." The fruit of the white mulberry is less acid than that of the black species, and that of some of the varieties, particularly of the *morus a. multicaulis*, is used for making robs and syrups, and is said to be remarkably good to eat, in warm climates.

The perfect wood of the *morus rubra*, or red mulberry-tree, which is fine-grained and compact, though light, is of a yellowish hue, approaching to lemon-color. It possesses strength and solidity; and, when properly seasoned, it is almost as durable as that of locust, to which, by many persons, it is esteemed equal. In the dockyards at Philadelphia, Baltimore, and the more southern ports, it is employed in the construction of both the upper and lower frames of vessels, for knees, floor-timbers, etc.; and is preferred to every other kind of wood for treenails, except that of the locust. In Charleston, South Carolina, it is sometimes selected for the ribs of large boats. It is also used in the parts of the country where it abounds, for the posts of rural fences, which, from their durability, are as much esteemed as those of the locust. As the leaves of this species are thick, rough, and hairy, while young, they are improper for the food of silkworms, which feed with advantage, in a cold climate, only on the *morus alba*, or some of its varieties. The red mulberry is well deserving of cultivation, both from its thick and shady foliage, and the agreeable flavor of its dark-red fruit.

The wood of the paper mulberry, which is soft, spongy, and brittle, is of little value except for fuel. The leaves are too rough and coarse, in their texture, for the food of silkworms; but they are found to be excellent fodder for cattle; and as the tree will grow rapidly in almost every soil, and throws out numerous tufts of leaves, it has been suggested that it might be valuable to cultivate, in some situations and climates, for that purpose. The juice of this tree is sufficiently tenacious to be used in China as a glue, either in gilding leather or paper. The finest and whitest cloth worn by the inhabitants of Otaheite, and of the Sandwich Islands, is made of its bark. But the principal use, however, to which this tree appears to be applied, is for the manufacture of paper. The following is an abridgment of Kæmpfer's account of the process of making this article in Japan, as quoted from the fifth volume of the London "*Penny Cyclopædia:*" "The branches of the current year, being cut into pieces about a yard long, are boiled until the bark shrinks from the wood, which is taken out, and thrown away; and the bark, being dried, is preserved till wanted. In order to make paper, it is soaked for three or four hours in water; after which, the external skin (*epidermis*), and the green internal coat, are scraped off, and the strongest and finest pieces are selected; the produce of the younger shoots being of an inferior quality. If any very old portions present themselves, they are, on the other hand, rejected as too coarse. All knotty parts, and every thing which might impair the beauty of the paper, are also removed. The chosen bark is boiled in a lixivium till its downy fibres can be separated by a touch of the finger. The pulp, so produced,

is then agitated in water till it resembles tufts of tow. If not sufficiently boiled, the paper will be coarse, though spongy; if too much, it will be white, indeed, but deficient in strength and solidity. Upon the various degrees and modes of washing the pulp, much also depends as to the quality and beauty of the paper. Mucilage obtained from boiling rice, or from a root called oreni, one of the mallow tribe, is afterward added to the pulp. The paper is finished much after the European mode, except that stalks of rushes are used, instead of brass wires." The article thus made, constitutes the India or China paper used by engravers for taking proofs, and by chemists for filters.—BROWNE's *Trees of America*.

Munjeet, a species of *Rubia tinctorum*, or madder, produced in Nepaul, and in various districts of India. That which is brought to England is imported from Calcutta, and is cultivated in the high lands about Natpore in Purnea. The roots are long and slender, and when broken appear of a red color. It is used in dyeing; the red which it produces being, though somewhat peculiar, nearly the same as that produced by European madder. Dr. Bancroft says that the color which it imparts to cotton and linen is not so durable as that of madder; but that upon wool or woolen cloth its color is brighter and livelier; and, when proper mordants are used, nearly, perhaps quite, as permanent.—*Permanent Colors*, vol. ii., p. 279. The best munjeet is in pieces about the bigness of a small quill, clean and firm, breaking short, and not pipy or chaffy. Its smell somewhat resembles liquorice root.

Muriatic or Hydrochloric Acid; anciently *marine acid*, and *spirit of salt*. (*Acide hydrochlorique*, and *Chlorhydrique*, Fr.; *Salzsaüre*, Germ.) This acid is now extracted from sea-salt, by the action of sulphuric acid and a moderate heat; but it was originally obtained from the salt by exposing a mixture of it and of common clay to ignition in an earthen retort. The acid gas which exhales, is rapidly condensed by water. 100 cubic inches of water are capable of absorbing no less than 48,000 cubic inches of the acid gas, whereby the liquid acquires a specific gravity of 1·2109; and a volume of 142 cubic inches. The muriatic acid of commerce has usually a yellowish tinge, but when chemically pure it is colorless. It fumes strongly in the air, emitting a corrosive vapor of a peculiar smell. The characteristic test of muriatic acid in the most dilute state, is nitrate of silver, which causes a curdy precipitate of chlorid of silver.

Muscat, a city and sea-port situated on the east coast of Arabia, about 96 miles N. W. of Cape Rasselgate (Ras-el-had), in lat. 23° 38′ N., long. 58° 37½′ E. Population uncertain; but estimated by Lieutenant Wellsted at 40,000, which we incline to think beyond the mark. There are more Banians here than in any other city in Arabia. There are among them some very extensive merchants, who engross almost the whole pearl trade of the Persian Gulf, and the supply of corn from India. The negro slaves are numerous, and are generally stout, well made, and active. The harbor, which is the best on this part of the Arabic coast, opens to the north, and is shaped like a horse-shoe. It is bounded on the west and south by the lofty projecting shores of the mainland, and on the east by Muscat Island, a ridge of rocks from 200 to 300 feet high. The town stands on a sandy beach at the south end or bottom of the cove or harbor, about 1½ miles from its mouth. The depth of water near the town varies from three to four and five fathoms. Ships at anchor are exposed to the north and north-west winds; but as the anchorage is everywhere good, accidents are of very rare occurrence. The harbor is protected by some pretty strong forts. Vessels are not allowed to enter after dusk, nor to leave before sunrise. If the usual signal be made for a pilot, one will come off, but not otherwise. It is best to make them attend till the vessel be secured, as they have excellent boats for carrying out warp anchors. Muscat is a place of considerable importance, being at once the key to, and commanding the trade of, the Persian Gulf. The dominions of the imaum, or prince, are extensive, and his government is more liberal and intelligent than any other in Arabia or Persia. The town, situated at the bottom of a high hill, is ill-built and filthy; and, during the months of July and August, is one of the hottest inhabited places in the world. The country in the immediate vicinity of the town is extremely barren; but it improves as it recedes from the shore. Dates and wheat, particularly the first, are the principal articles of produce. The dates of this part of Arabia are held in high estimation, and are largely exported, those of Bushire and Bussorah being imported in their stead. A date tree is valued at from $7 to $10, and its annual produce at from $1 to $1½. An estate is said to be worth 2,000, 3,000, 4,000 date trees, according to the number it possesses.

But the place derives its whole importance from the commerce and navigation of which it is the centre. The imaum has some large ships of war, and his subjects possess some of the finest trading vessels to be met with in the Indian seas. The part of Arabia adjoining to Muscat is too poor to have any very considerable direct trade; but, owing to its favorable situation, the backward state of the country round the Persian Gulf, and the superiority of its ships and seamen, Muscat has become an important *entrepôt*, and has an extensive transit and carrying trade. Most European ships bound for Bussorah and Bushire touch at it; and more than half the trade of the Persian Gulf is carried on in ships belonging to its merchants. (See BUSHIRE.) But, exclusive of the ports on the gulf, and the south and west coasts of Arabia, ships under the flag of the imaum trade to all the ports of British India, to Singapore, Java, the Mauritius, the east coast of Africa, etc. The pearl trade of the Persian Gulf is now, also, wholly centered at Muscat. All merchandize passing up the gulf on Arab bottoms pays a duty of one half per cent. to the imaum. He also rents the islands of Ormuz and Kishmee, the port of Gombroon, and some sulphur mines, from the Persian government. In the magazines of Muscat may be found every species of produce imported into or exported from the Persian Gulf. Various articles are also imported for the use of the surrounding country, and for the internal consumption of Arabia. Among these, the principal are rice, sugar, coffee from Mocha, cotton and cotton cloth, cocoanuts, wood for building, slaves from Zanguebar, dates from Bushire and Bussorah, etc. Payment for these is chiefly made in specie and pearls; but they also export drugs of various descriptions, ivory, gums, hides, ostrich feathers, horses, sharks' fins, a sort of earthen jars, called martuban, to Tranquebar, dried fish, an esteemed sweetmeat called *halwah*, and a few other articles. The markets of Muscat are abundantly supplied with all sorts of provision. Beef, mutton, and vegetables of good quality may be had at all times, and reasonably cheap. The bay literally swarms with the greatest variety of most excellent fish. Water is excellent, and is conveyed to the beach in such a manner that the casks of a vessel may be filled in her boats while afloat. Firewood is also abundant, and is cheaper than at Bombay. A duty of five per cent. is laid on imports, all exports being duty free. The entire value of the imports has been estimated at £900,000.

Money, Weights, and Measures.—Accounts here are kept in goz and mamoodies: 20 goz = 1 mamoody and 20 mamoodies = 1 dollar. All Persian, Turkish, and Indian coins, as well as French and German crowns, and Spanish dollars, are met with; their value fluctuating with the demand; and they are generally sold by weight. The weights are, the cucha and maund; 24 cuchas = 1 maund = 8 lbs. 12 oz. avoirdupois. Niebuhr thinks that Muscat occupies the site

of the Mosca of Arrian and other Greek writers (*Voyage en Arabie*, vol. ii., p. 71, ed. Amst. 1780); a conjecture which seems to be confirmed, not merely by the resemblance of the name, but also by the terms applied by Arrian to Mosca being sufficiently descriptive of Muscat; and as the port is bounded on all sides by rocks, it must now present almost the same appearance as in antiquity. Dr. Vincent, however, though he speaks doubtfully on the subject, is inclined to place Mosca to the west of Cape Rasselgate.—*Commerce and Navigation of the Ancients*, vol. ii., pp. 344–347. For further particulars, besides the authorities above referred to, see HAMILTON'S *New Account of the East Indies*, vol. i., p. 63; FRAZER'S *Journey to Khorasan*, pp. 5–19; WELLSTED'S *Travels in Arabia*, i., pp. 14–25. The longitude given above is that of ARROWSMITH'S *Chart of the Persian Gulf*.

Commerce with the United States.—The Sultan of Muscat concluded a treaty with the United States, September 21, 1833, and it took effect June 24, 1837, the day on which the President of the United States made his proclamation. Its stipulations establish perpetual peace between the two countries, and open the ports of each to the vessels and citizens of the other, with unrestricted liberty of trade, reserving in the island of Zanzibar the sale of muskets, powder, and ball to the government only, but leaving the trade in these articles in all other ports of the sultan's dominions free from every restriction. The treaty further stipulates that vessels of the United States entering any port within the sultan's dominions shall pay no more than five per cent. duties on the cargoes landed, which shall be in full of all import and export duties, tonnage, license to trade, pilotage, anchorage, or any other charge whatsoever; that no charge shall be made on that part of the cargo which may remain on board and be re-exported; that no charge shall be made on any vessel of the United States which may enter any of the sultan's ports for the purpose of refitting, or for refreshments, or to inquire the state of the market. It is further stipulated that the American citizen shall pay no other duties on export or import, tonnage, license to trade, or other charge whatsoever, than the citizens of the most favored nation shall pay; and similar equality in the ports of the United States is extended to the vessels and citizens of the sultan.

In the report to the Department of State, of the agent by whom this treaty was negotiated, the following paragraphs occur: "The Sultan of Muscat is a very powerful prince. He possesses a more efficient naval force than all the native princes combined, from the Cape of Good Hope to Japan. His resources are more than adequate to his wants. They are derived from commerce, running himself a great number of merchant vessels; from duties on foreign merchandize; and from tribute-money and presents received from various princes; all of which produce a large sum. His possessions in Africa stretch from Cape Delgado to Cape Guardafui, and from Cape Aden, in Arabia, to Ras el Haud; they extend along the northern coast of Aman to the entrance of the Persian Gulf; and he claims also the sea-coast and islands within the Persian Gulf, including the Bahrein Islands, and the pearl-fishery contiguous to them, with the northern coast of the gulf, as low down as Scindy. * * * In Africa he owns the ports of Monghow, or Mongallow, Lyndy, Quiloah (Keelwah), Melinda, Larmo, Patta, Brava, Magadosha (alias Mogadore), and the valuable islands of Monfeca, Zanzibar, Pemba, Socotra (Socotera)," etc.

The exports from the African part of his dominions are gum-copal, aloes, gum-arabic, columbo-root, and a great variety of other drugs, ivory, tortoise-shell, rhinoceros' horns, hides, beeswax, cocoanut-oil, rice, millet, etc. From Muscat the exports are wheat, raisins, drugs dates, salt, dried fish, etc. It is estimated that seven-eighths of all the ivory imported into the United States, and all the copal of the finest quality, are from the island of Zanzibar. To this place all the goods collected for this large trade are imported, and sold to the Banians and Hindoos at six months' credit. The United States supply by far the most important goods for all the coast trade, viz.: Lowell manufactured sheetings and shirtings. Other goods in demand for the coast trade are powder, muskets, brass-wire, glass-beads, and India rubber goods. The currency of Muscat differs materially from that of the Persian Gulf or Africa, and, with its weights and measures, is peculiar to the country. The Spanish dollar is current, and the Spanish doubloon varies in value from $14 to $16. See ZANZIBAR.

Muscat, Imamat of, an extensive and powerful State of Arabia, comprising the eastern portion of that peninsula, its authority also extending over its south-east coast nearly as far as Aden, and over parts of the coast of Persia on the Persian Gulf, and that of east Africa from the equator south to Cape Delgado. Area and population not ascertained. Besides Muscat, the capital, this dominion comprises the towns of Rostak, Muttra in Arabia, and Juba, Melinda, Mombas, Magadoxo, Bravah, Quiloa and Lyndy in Africa, with the islands Zanzibar, Socotra, etc., and it has an active trade with all the adjacent countries, and with British India. The Imaum has a patriarchal and despotic sway, and the most efficient naval force of any native prince from the Cape of Good Hope to Japan.—*Muscat* or *Mascua* (probably the *Mosca* of Arrian), a fortified maritime city of east Arabia, capital above dominion, on a peninsula in the Arabian Sea, lat. 23° 37′ N., long. 58° 35′ E. Population estimated at 40,000 to 50,000. It is surrounded by heights all strongly fortified. The harbor of the city is well sheltered, and has deep water. Muscat is the grand emporium of east Arabia, and the key to the entrance of the Persian Gulf. Imports estimated $4,500,000 in value annually, and consist chiefly of almonds, aloes, assafœtida, gum ammoniac, sulphur, nitre, gum copal, frankincense, coffee, pearls, ivory, horns, hides, wax from Persia and Africa, most of which are re-exported to India and the East; the returns thence being made in British and India cotton goods, shawls, China manufactures. Large quantities of dates, as also wheat, horses, salt, and dried fish, are among the principal exports. The port is usually touched at by vessels going up the Persian Gulf. Though the country around it is sterile, a plentiful supply of provisions may generally be obtained at Muscat.

Commercial Relations with the United States.—The treaty made by the United States in 1837, with the Sultan of Muscat has been duly observed, and a very friendly disposition shown by the authorities to all Americans. The present existing commercial regulations are fixed and permanent. There are no privileges permitted to other nations which are denied to our own. There are no port charges or other dues levied on vessels of the United States. There is no drawback of duties; merchandise from one vessel to another, or landed for re-shipment, must pay a duty of 5 per cent. The German crown, and pice, and pie, from the East India Company's possessions, are the only currency. The number of pice for a German crown (better known in these countries as the black dollar) varies, according to the supply, from 116 to 128. At this present time, 120 pice are given for one black dollar, and 3 pie make one pice. Spanish and Mexican dollars are worth no more, and do not circulate freely. They are purchased for the Bombay market, usually at a premium of 2 to 3 per cent. at the commencement of the south-west monsoon, in April, and also near its close, in September, and find their way from thence to China. American half eagles are worth $5; English sovereigns, $4.75; Spanish and Portuguese doubloons, $16; Spanish quarters and eighths pass freely at 25 and 12½ cents, and American

dimes and half dimes at 10 and 5 cents. Merchandise is bought and sold for dollars and cents.

Ivory.—This article varies greatly in price, according to quality and size. The superior kinds, and largest and best, are sent to the United States. In lots, average weight 70 lbs. and upward, $40 to $44 per frasla of 35 lbs. Ivory, 50 to 60 lbs. average weight, $37 to $40 per frasla. Tortoise shell per pound, of 3 lbs. English, $2 to $5. Gum copal, per frasla of 35 lbs. English, $5 to $7. Hides, per conge of 20 lbs., $10 to $15 per conge. Cloves, per frasla of 35 lbs., $1.75 to $2.50.

Commissions usually charged, 2½ per cent. As for freights and insurance, there are no rates to the United States. Cargoes imported from the United States are invariably sold at 6 months' credit. If cash is wanted for a sale, a discount is made of 4½ per cent. for 6 months. As for exchange, the captains of whale ships draw upon their owners for the cash they require, and the usual charge is 20 per cent. Duties, 5 per cent. on all cargo landed. No duties on exports to the United States. There are no internal taxes of any kind paid by the people of this island directly. The sultan's revenue is derived from duties on all articles of commerce brought from the neighboring coast, Red Sea, Aden, Persian Gulf, Bombay, and the Malabar coast. The negro slaves are almost the only common laborers, and receive per day about 12½ cents, or $2.50 to $3 per month. The higher order of servants to oversee the work in preparing and shipping cargoes are paid from $7.50 to $10 per month. Native workmen in the various branches of mechanic industry receive about $5 to $7 per month.

No steamers are owned or built here, and there are no facilities for ship-building, or even repairing, to any extent. The sultan has a few ships-of-war built either at Bombay or at places on the coast of Malabar. They are manned by slaves and officered by Arabs. The only vessels owned here by natives are called *dows*, and seem to answer the purpose very well, but are the rudest kind of ship possible to conceive of, and never undertake to get to any place against the monsoon. They sail fast, and are of very peculiar construction. Zanzibar is a large, fertile, and populous island, and the favorite residence of the sultan, who is far superior to his brother princes in intelligence, and has a disposition to introduce improvements into his dominions. But his subjects, like all Arabs, are far behind other nations, and despise all improvement. Cloves are produced upon this island in large quantities, and the annual increase is considerable. All other articles of export are brought from other places. See *Com. Rel., U. S.*, vol. iii., 1866–57, pp. 367–368.

Musk (Fr. *Musc;* Ger. *Bisam;* Du. *Muskus;* It. *Muzchio;* Sp. *Almizcle;* Rus. *Muscus;* Arab. and Pers. *Mushk*) is obtained from a species of deer (*Moschus moschiferus*) inhabiting the Alpine mountains of the east of Asia. The musk is found in a small bag under the belly. Musk is in grains concreted together, dry, yet slightly unctuous, and free from grittiness when rubbed between the fingers or chewed. It has a peculiar, aromatic, and extremely powerful and durable odor; the taste is bitterish and heavy; and the color deep brown, with a shade of red. It is imported into England from China in caddies containing from 60 to 100 oz. each; but an inferior kind is brought from Bengal, and a still baser sort from Russia. The best is that which is in the natural follicle or pod. Being a very high-priced article, it is often adulterated. That which is mixed with the animal's blood may be discovered by the largeness of the lumps or clots. It is sometimes mixed with dark, highly colored, friable powder that appears to the touch to be of a more crumbling texture and is harder as well as heavier than genuine musk. 20 cwt. of musk are allowed to a ton. It was not permitted to be brought home in the China ships belonging to the East India Company.—Thomson's *Dispensatory;* Milburn's *Orient. Com.*

Muslin (Ger. *Musselin, Nesseltuch;* Du. *Neteldoek;* Fr. *Mousseline;* It. *Moussolina;* Sp. *Moselina;* Rus. *Kissea*) is derived from the word *mousale* or *mouseln*, a name given to it in India, where large quantities are made. It is a fine thin sort of cotton cloth, with a downy nap on the surface. Formerly all muslins were imported from the East; but now they are manufactured in immense quantities at Manchester, Glasgow, etc., of a fineness and durability which rival those of India, at the same time that they are very considerably cheaper. See Cotton.

Mustard (Ger. *Mustert, Senf;* Fr. *Moutarde;* It. *Mostarda;* Sp. *Mostaza;* Rus. *Gortschiza;* Lat. *Sinapis;* Arab. *Khirdal;* Hind. *Rāi*), a plant (*Sinapis*) of which there are several species. It is a native of Europe, and is now naturalized, and a common weed in some parts of the United States. It is besides very commonly cultivated for the sake of the seeds, which, when powdered and mixed with vinegar, form a well known pungent condiment in daily use. The root is annual; the stem three or four feet high; the lower leaves are lyrate, and the upper ones landolato and entire. The flowers are small and yellow. It belongs to the natural family *cruciferæ*, and is known by the smooth four-cornered pods which are pressed close to the stem. Table mustard, mixed with warm water, and taken in considerable quantities, acts as an emetic, and as such is so much the more valuable from its being always at hand. The white mustard (*S. alba*) is milder than the preceding, and on this account is more agreeable to some palates.—E. A.

Mutiny of the Bounty. Memorable mutiny on board the *Bounty* armed ship returning from Otaheite with bread fruit. The mutineers put their captain, Bligh, and 19 men, into an open boat near Annamooka, one of the Friendly Islands, April 28, 1789, and they reached the island of Timor, south of the Moluccas, in June, after a perilous voyage of nearly 4000 miles, in which their preservation was next to miraculous. The mutineers were tried September 15, 1792, when six were condemned, of whom three were executed.

Myrobalans are the dried fruits of different varieties of *terminalia*. The fruit, varying from the size of an olive to that of a gall-nut, consists of a white pentangular nut, covered by a substance about two lines in thickness. The latter, which is the only valuable part, is mucilaginous and highly astringent; and being separated from the nut is employed, with the best effect, both by dyers and tanners, especially by the latter. It produces with iron a strong, durable, black dye and ink: and with alum, a very full, though dark, brownish yellow. The imports vary considerably.—Ranchoft *On Permanent Colors*, i., 351, etc.

Myrrh (Ger. *Myrrhen;* Du. *Mirrhe;* Fr. *Myrrhe;* It. and Sp. *Mirra;* Lat. *Myrrha;* Arab. *Murr*), a resinous substance, the produce of an unknown tree growing in Arabia and Abyssinia. It is imported in chests, each containing from one to two cwt. Abyssinian myrrh comes to us through the East Indies, while that produced in Arabia is brought by the way of Turkey. It has a peculiar, rather fragrant, odor, and a bitter aromatic taste. It is in small irregularly shaped pieces, which can hardly be called tears. Good myrrh is translucent, of a reddish yellow color, brittle, breaking with a resinous fracture, and easily pulverized. Its specific gravity is 1·36. When it is opaque, mixed with impurities, and either white, or of a dark color approaching nearly to black, with a disagreeable odor, it should be rejected.—Thomson's *Dispensatory.*

N.

Nails (Ger. *Nägel, Spiker;* Du. *Spykers;* Fr. *Clous;* It. *Chiodi, Chiovi, Aguti;* Sp. *Clavos;* Rus. *Gwosdi*) are small spikes of iron, brass, etc., which, being driven into wood, serve to bind several pieces together, or to fasten something upon them. The consumption of nails is immense; and the aggregate value of those annually produced is very large.

STATEMENT SHOWING THE DOMESTIC EXPORTS OF IRON NAILS FROM THE UNITED STATES, FOR THE YEAR ENDING JUNE 30TH, 1856.

Districts.	Pounds.	Value.
Passamaquoddy	188,900	$8,839
Portland and Falmouth	20,094	804
Bangor	12,000	600
Portsmouth	100	5
Vermont	7,000	280
Newburyport	8,000	330
Gloucester	1,200	48
Salem	36,900	1,665
Boston and Charlestown	2,778,100	102,897
Fall River	2,500	100
New Bedford	23,600	960
Providence	40,000	1,550
Bristol and Warren	67,700	2,933
Newport	10,000	400
New London	7,581	791
Genesee	14,214	743
Oswego	337,841	21,424
Niagara	60,740	1,240
Buffalo Creek	55,700	2,529
Oswegatchie	43,822	2,152
New York	1,380,172	60,360
Philadelphia	382,950	14,446
Baltimore	109,650	4,518
Richmond	15,600	650
Wilmington	5,000	200
Charleston	1,000	48
Savannah	2,500	110
New Orleans	2,926	707
Cuyahoga	10,800	471
Detroit	16,700	907
San Francisco	91,290	5,683
Total	5,786,580	$288,388

STATEMENT SHOWING THE IMPORTS OF IRON NAILS, SPIKES, AND TACKS, INTO THE UNITED STATES, FOR THE YEAR ENDING JUNE 30TH, 1856.

Districts.	Pounds.	Value.
Passamaquoddy	5,200	$158
Vermont	10,100	1,071
Boston and Charlestown	83,212	11,624
Oswego	220	13
Oswegatchie	10	1
New York	1,881,029	73,508
Cape Vincent	1,200	61
Philadelphia	92,416	12,015
Baltimore	54,475	6,486
Charleston	17,578	1,577
Savannah	3,644	375
Mobile	4,700	694
New Orleans	115,837	18,508
Detroit	10	2
Chicago	3,370	77
San Francisco	19,700	1,619
Total	2,292,696	$127,879

See IRON and HARDWARE.

Nangasacki, a sea-port town on the south-west coast of the island of Ximo, one of the Japanese islands, being, according to Krusentern, in lat. 32° 43′ 40″ N., long. 130° 11′ 47″ E. The harbor extends N. E. and S.W. about 2½ leagues, being, in most places, less than a mile in width. Ships lie in 5 or 6 fathoms water, within a gunshot of the town, near the middle of the bay where they are protected from all winds.

Nankeen or **Nankin** (Ger. *Nanking;* Du. *Nankings linnen;* Fr. *Toile Nankin;* It. *Nanquino;* Span. *Nanquina*), a species of cotton cloth in extensive use in this country. It takes its name from Nanking, in China, a European corruption of Kyang-ning, the capital of the extensive province of Kyang-nan, where it is principally produced, and which also furnishes the greater part of the green teas. In the East, the manufacture is wholly confined to China. The cloth is usually of a yellowish, though occasionally it is of a blue color, and of different degrees of fineness; the broad pieces called "the Company's nankeens," are generally of a better quality than the narrow ones, and are most esteemed. The color, whether yellow or blue, is given to the cloth by dyeing; for though yellow cotton wool be raised in the East, the cloth made from it is too glaring. The nankeens brought to England come under the general denomination of piece goods. They are mostly made into trowsers and waistcoats for gentlemen's wear during summer, ladies' pelisses, etc. In some of the more southern parts of Europe, the warmer parts of Asia and America, and the British settlements in Africa, nankeen is worn by both sexes all the year round, and constitutes the principal article of attire. Latterly, however, they have become unfashionable in this country, and their importation has, in consequence, all but ceased. See article CANTON.

Nankin, or Nanking ("court of the South"), a city, and the ancient capital of China, capital of the province of Kiangsu, near the Yang-tze-Kiang, about 90 miles from its mouth. Lat. 32° 2′ N., long. 118° 49′ E. Population estimated at 400,000. Its ancient walls can be traced over hill and dale for 35 miles, but Nankin has so greatly declined since the transference of the seat of empire to Pekin by Kublai-khan in the 13th century, that the modern walls are of much less extent, and the city scarcely occupies one eighth part of the surface inclosed by them, and it is commanded by hills especially on the east, and otherwise ill-calculated for defense. Principal objects of interest are the famous porcelain tower of 9 stories and 200 feet in height, completed in 1432 at a cost, as stated, of about $3,500,000; and the "tomb of kings" (supposed to be of the Ming dynasty, A.D. 1328 to 1621), leading to which is a fine-paved road with an avenue of gigantic armed figures. The governor's palace, and an observatory, are worthy of notice. Here are important manufactures of crape, satin of the finest quality, paper, artificial flowers, China or Indian ink, and nankeen, which hence derives its name, but is also made throughout the whole province. It is the centre of a very extensive trade, and by the great canal which crosses the Yang-tze-kiang, about 50 miles eastward, it communicates directly with Pekin, to which city a good deal of fish is sent hence, among other articles. It is also the place of a grand viceroy, with authority over the Kiang provinces, of a great military dépôt, and the chief seat of literature in the empire.

Nantes, a large commercial city and sea-port of France, on the Loire, about 34 miles from its mouth, in lat. 47° 13′ 6″ N., long. 1° 32′ 44″ W. Population, in 1851, 96,362. Vessels drawing 18 and 19 feet water come up to Palmbœuf, about 24 miles lower down the river; but no vessel, drawing more than 11 or 12 feet can come up to the city, unless at high water a day or two before *full* and *change*. There are three entrances to the Loire. The first and most generally frequented is between the bank called *Le Four* and Point *Croisic;* there is a second between Le Four and the bank called *La Banche;* and the third, which in southerly winds is much resorted to, between the latter and the rocks called *La Couronne*. The navigation, which is naturally rather difficult, has been much facilitated by the erection of light-houses and beacons. Of the former, one has been recently constructed on the north part of Le Four, about a league from Croisic, in lat. 47° 17′ 53″ N., long. 2° 38′ 3″ W. It is 56 feet high. The light is a revolving one; the flash, which continues for 7 seconds, being succeeded by a dark interval of 53 sec-

onds. Two light-houses, called the Alguillon lights, stand on the north side of the river, near its mouth; the lower light, adjoining *Point de Levi*, being in lat. 47° 14′ 33″ N., long. 2° 15′ 46″ W. The light is fixed, and is 111 feet above the level of the sea. The upper Alguillon light, situated about a mile N. 81° E. from the lower, is 127 feet high; it also is a fixed light, varied, however, by a flash every 8 minutes. A beacon tower, called the Turk, is erected on the southernmost extremity of La Blanche, the course for vessels entering between it and La Couronne, is to bring the Aguillon lights in one. The depth of water on the bar at the mouth of the river varies from 2 to 2¼ fathoms. At springs the rise is 14, and at neaps 7 or 8 feet. High water at full and change 3¼ hours.

Her situation renders Nantes the emporium of all the rich and extensive country traversed by the Loire, so that she has a pretty considerable import and export trade, particularly with the West Indies. The exports consist of all sorts of French produce, but principally of brandy, wine and vinegar, silk, woolen and linen goods, refined sugar, wheat, rye, biscuits, etc. The principal imports are sugar, coffee, and other colonial products, cotton, indigo, timber, hemp, etc. Nantes is a considerable entrepôt for the commerce of salt, large quantities being made in the Department, principally at Noirmutiers and Croisic. During the time that the slave trade was carried on, Nantes was more extensively engaged in it than any other French port. The custom duties of Nantes, exclusive of those on salt, produced, in 1851, 10,817,000 francs; she being in this respect inferior only to Marseilles, Havre, and Bordeaux. There belonged to the port, except river craft, coasters, and steamers, on the 31st December, 1851, 569 ships, of the burden of 68,121 tons.

The port charges levied on vessels of the United States are the same, and little more than the port charges levied on French vessels, except the tonnage duty, which is 94 cents per ton register, the same as the French vessels pay in the United States. The transhipment in vessels of the United States of goods is permitted to any port, except from a French port to another French port, which would be considered as a coasting trade; and no vessels of any nation whatsoever are allowed to do that trade, except the Spanish vessels, Spain having an ancient treaty with France to that effect.

AMOUNT AND CHARACTER OF THE PORT CHARGES LEVIED ON AMERICAN VESSELS AND FRENCH VESSELS AT THE PORT OF NANTES, THE VESSEL BEING SUPPOSED TO BE OF A BURDEN OF 299 TONS PER REGISTER, AND DRAWING 11 FEET AMERICAN.

Port charges.	French vessels.	American vessels.
	Francs.	Dollars.
Sanitary board at St. Nazaire	64 85	8 64
Entry of the vessel	12 00	2 28
Pilotage from Belle Ile to Paimbœuf	143 62	21 66
Pilotage from Paimbœuf to Nantes	60 55	11 51
Tonnage duty	...	287 00
River dues	47 10	8 97
Consular fees	...	4 00
Sixty tons of stone ballast, at 1·25 fr.	75 00	14 28
Pilotage from Nantes to Paimbœuf	49 55	9 44
Pilotage from Paimbœuf to sea	35 10	6 68
Clearances out	12 00	2 28
Brokerage on 361 tons delivered, at 50 centimes	180 50	34 38

Pilotage.—Vessels under 80 tons (if French or assimilated by treaty) are not obliged to take a pilot at sea, but must have one for the river. The rates, which are fixed by law, are paid by the *foot* from the sea to Paimbœuf, and *from thence* to Nantes for all vessels under 80 tons. Above 80 tons, they are per ton. The master of a vessel bound to Paimbœuf or Nantes has merely to give a note to the pilot stating where the pilot boarded him, where he left him, the name and draught of water of his vessel in *English* feet. The note will be deposited at the pilot's office, and the pilotage be received from the ship's broker. No foreign vessel, however small, can be removed from one anchorage to another, or to or from a quay, but by a pilot. Every vessel is boarded at St. Nazaire, and if she has a foul bill of health, or disease on board, is instructed where to go. *River Dues* on vessels ascending from Paimbœuf to Nantes are about 1½d. per ton. At Paimbœuf, and below it, none are levied. If a vessel under sail causes damage to another that is properly moored, she must pay all the expenses of repairs; if to a vessel at single anchor (unless intentionally done) or under sail, the expense of the repairs of both are added together, and each pays a moiety. The same rule is enforced if damage be caused by one vessel properly moored driving on board another in the same situation; but if either were riding at single anchor, the one properly moored is indemnified; if both were at single anchor, both bear the loss alike.

Naples, a large city and sea-port in the south of Italy, the capital of the kingdom of the same name, the light-house being in lat. 40° 50′ 12″ N., long. 14° 14′ 15″ E. Population in 1851, 416,475. Naples is well situated for commerce; but the policy of the government has hitherto been most unfavorable to its growth, and has confined it within comparatively narrow limits. The Bay of Naples is spacious, and is celebrated for its picturesque views. The harbor is formed by a mole, built nearly in the form of the letter L, having a light-house on its elbow. Within the mole there is from 3 to 4 fathoms water, the ground being soft. The water in the bay is deep, and there is no bar; it is, however, a good deal exposed to the south-westerly winds; and to guard against their effects, vessels lying in the bay moor with open hawse in that direction. There is no obligation to take a pilot on board, but it is usual to take one the first time that a ship anchors within the mole. The light-house has a revolving light. The period of revolution is 2 minutes, during the first of which the full strength of the light is continued, and during the second minute its brilliancy rapidly decreases. The height of the light is 161 feet above the sea, and it is visible at the distance of 18 or 20 miles. At the extremity of the mole is a low fixed light to guide vessels round its head.

EXPORTS FROM THE CONTINENTAL STATES OF THE TWO SICILIES, BY LAND AND BY SEA, IN NATIONAL AND FOREIGN VESSELS, IN EACH YEAR FROM 1840 TO 1850, BOTH INCLUSIVE.

Years.	By land.	By sea.		Total values.	
		In national vessels.	In foreign vessels.		
	Ducats.	Ducats.	Ducats.	Ducats.	Sterling.
1840	461,595	7,229,289	4,037,278	11,728,112	1,954,685
1841	726,837	7,352,093	5,528,616	13,607,046	2,267,841
1842	862,168	9,524,804	8,989,852	19,376,824	2,812,729
1843	385,679	7,825,160	2,644,298	10,855,137	1,725,856
1844	298,890	6,844,870	2,828,156	9,971,416	1,661,903
1845	275,961	9,984,751	2,441,927	13,702,639	2,283,773
1846	276,606	11,170,154	2,807,324	14,250,084	2,291,081
1847	887,900	8,571,310	8,143,556	12,102,766	2,017,128
1848	262,700	6,503,595	3,184,393	9,930,678	1,655,113
1849	251,545	8,561,960	4,962,591	13,776,096	2,296,016
1850	429,823	9,489,948	4,840,629	14,760,420	2,460,070

The exports principally consist of the products of the adjacent country. Of these, silk is the most important. Olive oil is also a most important article; but it is principally supplied by Gallipoli, a town in the Terra d'Otranto, whence it is commonly called Gallipoli oil. The entire exports of oil from the kingdom of Naples have been estimated at about 200,000 salme, or 36,333 tons, a year, which, taking its mean value when exported at $100 per ton, is equivalent to the annual sum of $3,633,300. See OLIVE OIL. The other articles of export are wool, wine, brandy, dried fruits, red and white argol, tallow, liquorice, gloves, madder, hemp, linseed, cream of tartar, bones, lamb and kid skins, oak and chestnut staves, rags, saffron, etc. There is a great variety in the Neapolitan wines. The most esteemed is the *lacrima Christi*, a red luscious wine, better known in England by name than in reality, the first growths being confined to a small quantity only, which is chiefly reserved for the royal

cellars. There are, however, large quantities of second-rate wines produced in the vicinity of Naples, such as those of Pozzuoli, Ischia, Nola, etc., which are sold under the name of *lacrima Christi*, and are largely exported. Several parts of Calabria produce sweet wines of superior quality.—HENDERSON'S *Ancient and Modern Wines*, p. 239. The price of wine at Naples depends entirely on the abundance of the vintage. The imports consist principally of cottons and cotton twist, hardware, iron and tin, woolens, sugar, coffee, indigo, spices, etc. Naples is a good market for pilchards, and it requires a large supply of dried and barreled cod.

"The existing regulations as to commercial intercourse with the United States appear fixed. When our treaty, however, shall expire, if not renewed, a change may follow, as well for tonnage dues as for the additional 10 per cent. on the duties of merchandise. I know of no privileges permitted to the commerce of other nations which are denied to the United States, nor are there any restrictions on the commerce of other nations and not on the United States. The amount and character of the port charges and other dues levied on vessels of the United States are as follows: *On entry.*—Tonnage, 4 grains, or 3 and one fifth cents per ton, when there is a treaty; without treaty and indirect voyage, 40 grains, or 32 cents per ton. Light money, $1; presentation of manifest, $1; custom-house visit, 80 cents; liquidation of manifest and boletta, 35 cents; customary present, 60 cents. Total amount on entry, except tonnage, $3.75. *On clearance.*—Biglietto of departure, $1; bill of health, $1; roll of police, 25 cents; roll of port, 25 cents; usual present, 60 cents; "spedizionieri," or broker's compensation, $2. Making a total amount on clearance of $5.10. National vessels pay the same, but the presents are greater by them. The health officer has for granting pratique on arrival $5. Should the vessel be subject to quarantine, the charges increase according to circumstances, and still more so when sent to Visita to perform it. Transhipment in vessels of the United States of goods, either to another port in the kingdom or to a foreign port is prohibited, as well as in other vessels, except the Neapolitan steamboats. It is allowed by favor when the manifest, on arrival, specifies the goods and the port to which they are intended to be transhipped.

"Exports from this port have been put on board free of any duty, at prices as follows: Refined argols, at 20 cents per pound; refined yellow pink, at 23 cents per pound; cream tartar, at 25 cents per pound; licorice paste (Corigliano) at 16 cents per pound; licorice, Baracco and other, at 15 to 15½ cents per pound; olive oil, in casks, at 78 cents per gallon; oranges, per box, $2.20 to $2.25; lemons, $1 to $3.20; filberts, 4½ cents per pound; walnuts, 5 cents per pound. There have been exported during the year, from the first of July last, about 60,000 lbs. of sewing silks—first, second, and third qualities—at $4.20, $3.80, and $3.60 per lb. of 16 oz.; also about 25,000 lbs. of such silks, raw or undyed, at $3 per lb. of 16 oz. These are shipped by steamers for Marseilles or Liverpool for the most part. In like indirect way are also sent clay pipes with reed tubes, of little value, musical strings, coral and lava ornaments, but no prices can be quoted, as their value depends on the beauty of the article and the execution of the work. Between wholesale and retail prices there may be a difference of about 10 per cent. Five or six foreign vessels (Neapolitan and English) have loaded in part with oranges and lemons for the United States, and gone to Sicily to fill up, or first take a part cargo in Sicily and fill up here. About 20,000 boxes are shipped in the year from this port, but the prices vary continually; they are now double what they were in the beginning of the season."—*Com. Rel. U. S.*, 1856-7.

Commercial Policy.—The policy of the Neapolitan government with respect to commerce was for a lengthened period the most objectionable that can well be imagined. Articles, whether of import or of export, were burdened, alike, with oppressive duties and restrictions; and even the warehousing of foreign goods could hardly be said to be permitted. Of late, however, we are glad to observe, the administration appears to have become alive to the injurious influence of this *felo de se* system, and has given its sanction to several measures of a comparatively liberal character.

The duties on imports have also undergone various modifications. Those on fish, sugar, and other colonial products, have been reduced fully a half. But we submit in illustration of these changes the following statement of the old and new rates of duty on certain articles:

	Old duty.	New duty.
	duc. c.	duc. c.
Herrings.....cantar gross	5 51	3 0
Codfish..... " "	5 7	3 20
Cocoa..... " "	16 50	8 0
Coffee..... " "	24 75	12 0
Camphor, raw..... " "	35 0	24 0
" refined.....rottolo	1 12	0 70
Cinnamon, in sorts..... "	1 54	0 60
Cassia lignea, of any sort...cantar	50 0	30 0
Cloves..... "	77 0	30 0
Nutmegs.....rottolo	1 54	0 80
Pepper..... "	8 25	7 0
Pilchards, etc..... cantar gross	2 47	1 20
Stockfish..... "	4 63	3 0
Sugar, any kind, in powder "	23 0	10 0
" in loaves "	33 0	15 0
Vanilla..... "	2 78	80

We have no doubt that the beneficial influence of these wise and liberal measures will lead to further changes. The duties on iron, wire, those on cottons, woolens, and other descriptions of manufactured goods, are a great deal too high. These duties were imposed partly for the sake of revenue, and partly in the view of encouraging domestic manufactures; but they have not accomplished either object. See TWO SICILIES and ITALY.

Naphtha. A limpid bitumen, which exudes from the earth upon the shores of the Caspian and some other eastern countries. Near the village of Amiano, in the State of Parma, there exists a spring which yields this substance in sufficient quantity to illuminate the city of Genoa, for which purpose it is employed. It has a peculiar odor, and generally a yellow color, but may be rendered colorless by distillation. Its specific gravity is about 0.75. It boils at about 160°. It is highly inflammable, burning with a white smoky flame. It appears to be a compound of 36 of carbon with 5 of hydrogen, and is therefore a pure hydro-carbon. A liquid very similar to mineral naphtha is obtained by the distillation of coal tar. It has sometimes been used in lamps, but is apt to smoke. This variety of naphtha is in great request as a solvent for caoutchouc.

Napier, John, Baron of Merchiston. Celebrated as the inventor of Logarithms. Born 1550, and educated at the university of St. Andrews. On returning from his travels, in 1574, his learning and accomplishments attracted great attention, and would have raised him to the highest offices of State; but, declining all civil employment, he devoted himself to scientific researches and to theology. In 1614 he published his *Logarithmorum Canonis Descriptio*. To Napier science is indebted for considerable improvements in spherical trigonometry, etc. He is principally celebrated, however, by his *Rabdology and Promptuary of Multiplication*, or instruments and tables for the more easy performance of great arithmetical operations, connected with which were the rods of ivory, etc., known as *Napier's bones*. In addition to his scientific treatises, he wrote several works on theological subjects. He died in 1617, in his 68th year, and was buried in the cathedral of St. Giles, at Edinburgh.

Narrows, The, a channel between Long Island and Staten Island, connecting New York Bay with the Atlantic, nine miles south of New York. The channel is 1905 yards wide, and is well defended by forts and batteries.

Natal, a colonial possession of Great Britain, on the south-east coast of Africa, between lat. 27° 40′ and 30° 40′ S., and long. 29° and 31° 10′ E., having south-east the Indian Ocean, west, the Drakenberg, or Kahlamba Mountains, separating it from the territory between the Orange and Vaal Rivers, recently annexed to the Cape Colony; and north-east the Buffalo and Tugela Rivers, dividing it from the Zooloo country. Estimated area, 18,000 square miles. Population uncertain. Surface undulating, well watered, and mostly covered with tall grass. Timber in the interior grows only in clumps, but the sea-coast is bordered by a belt of mangroves. Climate most healthy, and the soil is reported to be far more fertile than in the Cape Colony. Cotton and indigo grow wild, and the former has been produced for exportation, of the finest quality. Sugar, coffee, wheat, oats, beans, and tobacco, are important crops. Superior coal has been found in the interior; building stone is found all over its surface, and iron ore is abundant. Butter, corn, hides, ivory, tallow, tobacco, cotton, and wool, were lately among the chief exports. Value of exports in 1851, $15,000. Imports same year, valued at $280,000. The territory, which is a dependency of the Cape of Good Hope, is administered by a lieutenant-governor, assisted by an executive and a legislative council.

It is subdivided into the districts D'Urban, Pietermaritzburg, Umvoti, Impafane, Upper Tugela, and Umzinzate, exclusive of a tract in the south, hitherto without an established magistracy. Pietermaritzburg, the capital, is 50 miles inland from *Port Natal*, which is near the centre of the coast line. This colony derives its name from the fact of its having been discovered on Christmas day (1498), by the Portuguese. It was revisited in 1575 by order of King Sebastian.

National Debt. The first mention of parliamentary security for a debt of the English nation, occurs in the reign of Henry VI. The present national debt commenced in the reign of William III. It had amounted, in the year 1697, to about five millions sterling, and the debt was then thought to be of alarming magnitude.

1702, On the accession of Queen Anne, the debt amounted to	£14,000,000
1714, On the accession of Geo. I.	54,000,000
1749, Geo. II.; after the Spanish war	78,000,000
1768, Geo. III.; end of the 7 years' war	189,000,000
1786, Three years after the American war	268,000,000
1798, The civil and foreign war	462,000,000
1802, Close of the French revolutionary war	571,000,000
1814, Close of the war against Bonaparte	865,000,000
1817, When the Irish and English exchequers were consolidated	843,282,477
1830, Total am't of the funded and unfunded debt	840,184,022
1840, Total amount of ditto	789,578,000
1845, Funded debt	768,789,000
1857, " "	780,000,000

The national debt of the United States originated in consequence of the expenses incurred during the revolutionary war, and amounted in the year 1791 to about $75,000,000. The revenue of the government enabled it to curtail the debt until the year 1812, when it was only $45,000,000. The war with England in 1812-15, added largely to this debt, the loans necessary for war expenditures being raised at a considerable loss. At the end of the war the debt was over $103,000,000. This was rapidly curtailed, and by the year 1835 was fully liquidated, besides an appropriation of several millions of surplus revenue to the individual States. In 1839, the revenue was less than the expenditure, and another debt was created which had been nearly liquidated up to the year 1845, when the war with Mexico rendered further loans necessary. The progress of the national debt from 1791 to 1857 was as follows:

Years.	Debt—U. S.	Years.	Debt—U. S.
1791	$75,463,476	1824	$90,269,778
1792	77,227,924	1825	83,788,433
1793	80,352,634	1826	81,054,060
1794	78,427,405	1827	73,987,357
1795	80,747,587	1828	67,475,044
1796	83,762,172	1829	58,421,414
1797	82,064,479	1830	48,565,406
1798	79,228,529	1831	39,123,192
1799	78,408,670	1832	24,322,235
1800	82,976,294	1833	7,001,699
1801	83,038,051	1834	4,760,082
1802	80,712,632	1835	37,733
1803	77,054,686	1836	37,513
1804	86,427,121	1837	1,378,224
1805	82,312,150	1838	4,857,660
1806	75,723,271	1839	11,983,738
1807	69,218,899	1840	5,125,078
1808	65,196,818	1841	6,737,898
1809	57,028,192	1842	15,028,486
1810	53,173,217	1843	26,595,953
1811	48,005,587	1844	26,145,996
1812	45,209,738	1845	15,861,647
1813	55,962,828	1846	24,256,195
1814	81,487,846	1847	45,659,059
1815	99,833,660	1848	65,804,456
1816	127,334,934	1849	64,704,693
1817	123,491,965	1850	64,228,238
1818	103,466,634	1851	62,560,395
1819	95,529,648	1852	47,560,395
1820	91,015,566	1853	56,326,157
1821	89,987,428	1854	44,975,456
1822	93,546,677	1855	39,969,731
1823	96,827,377	1856(Nov. 15)	30,963,909

For funded debts of various European nations, see article EUROPE, p. 622.

Naval Architecture. In the small space we can assign to this subject we shall merely endeavor to convey a general notion of the principles and process of construction. Ships are built in different forms, according to the service they are intended for, and the burdens they have to carry. It is in men-of-war, which, besides possessing in an eminent degree the general qualities of a ship, have to support a heavy armament of cannon, and which are destined to severe and long-continued service, that the principles of construction have been carried to the greatest perfection. The form of the ship, her strength, or the scantling necessary for the services required of her, are, from our imperfect knowledge of hydrodynamics, the results of experience alone. When a ship is to be built, her form is projected in three different planes perpendicular to each other.

1st. The *sheer draught*, which is the side view, or projection on the plane of the keel. On this are laid off the length, the heights of all the parts from the keel, the position and rake of the stem and sternpost, the principal frames or timbers of the sides, the ports, decks, channels, place of the greatest breadth or midship frame, stations of the masts, etc. The frames before the midship frame are distinguished by letters; abaft it, by numbers. The midship frame is not exactly in the middle of the length, but rather before it.

2d. The *body plan*, or end view. This shows the contour of the sides of the ship at certain points of her length, and since the two sides are exactly alike, the left half represents the vertical sections in the after part of the body, and the right-hand half those in the fore part. The base of the projection is the midship, or largest section, called also the *dead flat*, within which the other sections are delineated. On this are exhibited also the beams of the decks.

3. The horizontal or floor plane, called also the *half breadth plan*. The base of this is the section made by the horizontal surface of the water and the outside surface of the ship, and is called the *upper water line*, or *load water line*. If the ship now be supposed to be lightened uniformly, she will exhibit another water line, and thus any number of like parallel sections at equal distances down to the keel. On this projection the water lines appear as curves, on the sheer draught as straight lines parallel to the keel. These three sec-

tions correspond to each other upon the same scale, and any point in one is immediately referable to the other two projections. The several parts are drawn from these plane in their full size on the floor of the mold-loft, and worked from the molds or model so taken.

The place in which the ship is built is called a *slip*. In the middle, and leading to the water, is a row of piles of stout pieces of wood called the *blocks*, having a declivity towards the water of about one inch in one foot. On these the keel, which is of elm, is laid, and its component lengths scarfed together. Under the keel is placed the false keel for defense. At the end furthest from the water is raised the *stem*, which is, in fact, the keel continued upwards. Inside the stem, and just above the keel, is the *apron*, a curved timber connecting both. On each side of the upper part of the stem is fixed an upright timber; these are called the *knight heads*, and the bowsprit lies between them. At the other end of the keel is the sternpost, at which the planking finishes abaft, and on which the rudder is hung. Inside (or before this) are the *inner post* and other pieces for strength. Upon the keel is fixed a layer of timber of the same breadth, and rising forward and aft, called the *dead wood;* on this are placed the *floor timbers;* these consist of one which crosses the keel to which it is coaked, and the two parts of a like timber firmly joining it, and projecting beyond its ends. The several pieces are got into their places by shifting shears.

The *frames* consist of pairs of timbers composed of pieces of different lengths, joining the floor timbers, and carried upwards. The length joining the floors is called the first futtock, the next the second futtock, and so on, ending in the *top timbers*. The pairs are bolted by iron bolts, and of late adjacent pairs have been thus connected. The frames are supported temporarily by being fixed to the *cross spalls*, long fir planks laid horizontally about the height of the gun deck. Those frames whose planes are perpendicular to the keel are called *square frames;* at the head and stern these planes incline toward the extremities, and are called *cant frames*. These divisions of the ship are called, accordingly, *square* and *cant bodies*. When the framing has assumed its form the *ribands* are fixed; these are thick, narrow planks at wide intervals, extending the length of the vessel, marking the direction of the planks; they are firmly shored, and removed when the planking comes on. The *riband lines* appear on the half breadth plan as diagonal lines. Upon the keel, and over the floor timbers, to which it is scored, is laid the *kelson*, which is, in fact, a second keel over the first. The stern of square-sterned ships is formed upon the *wing transom*, the uppermost of the horizontal pieces of timber, called *transoms*, crossing the sternpost inside. The wing transom is secured to the timbers of the side by a strong horizontal knee. When the framing is complete, the outside planking is laid on. The *wales*, thick planks above the water, are first secured to the ribs. The *clamps* are thick planks inside, to support the ends of the beams of the decks. The *beams* support the decks, rest on the clamps, and are secured to the side by *knees*. The *breast hooks* are strong curved pieces of timber crossing the stem, and joining the bows. The *deck hooks* are the same, being at the decks. The *crutches* answer a like purpose below in the after part. The *port sills* are the upper and lower edges of the ports. The *spirketting* is the plank of the side between the water way and the port sill. The *chain wales* are thick planks of the outside to receive the chains and preventer-bolts for the support of the rigging. The *foot waling*, or *ceiling*, is the plank lining the inside of the ship below. The *limber boards* are short, thick pieces of wood resting against the kelson for the convenience of keeping a clear passage to the well. The *knee of the head*, also called the *cutwater*, is the projecting part of the head; it is secured to the bows by knees called *cheeks*.

In order to bend wood into the necessary curvature, it is steamed in places for the purpose. When the planking is all complete, the ship is caulked and painted. The fastenings of timber are effected by bolts, treenails, or coaks. The present method of framing ships-of-war is chiefly due to Sir Robert Seppings. We shall describe it here generally; for particulars, see the *Phil. Trans.*, 1814, and the published reports on the subject. As the timbers or ribs can not be procured entire, or of the proper curvature, various methods have been used for joining the several pieces together. A method used till lately consisted of an angular chock C, fastened by treenails to the ends A B of the timbers. By this plan all stress upon the joint, in whatever direction, falls on the treenails; and when the chock decays, no support is afforded in any sense whatever. At present the square ends, A′ B′, are brought together, while a *coak* C′, or small oak cylinder, is let into each.

By this plan the two faces resist any effort by pressure from without to close the timbers, and the coak itself resists the effort (perpendicular to this last) to make one timber slide past the other by the whole force necessary to cut it off flush with the section. In the single case of lifting one face exactly perpendicularly off the other, the coak offers no resistance; this effort, which is that produced by the strain of the rigging on the sides, is opposed by other numerous connections. The method is very ancient, being used in the construction of the pillars in the temple at Balbec; the advantages of its application to ship-building is seen in the frames, which undergo no change of form while hoisting into their places. The efficiency of the plan, however, does not appear in a single length, but in the system of frames, each joining of which is placed near the middle of the next piece.

A *shelf piece*, coaked and bolted to the timbers or ribs, and resting on short vertical pieces of timber called *chocks*, and sometimes scored to the ribs, is carried like a hoop entirely round the ship. On this the beam ends are coaked; and over these again is laid a strong water way scored to the beams, and coaked. Besides these the beam end is clasped by two arms of an iron knee, of which the third, which is vertical, is bolted to the chock. The shelf binds firmly the ends and sides of the ship together, and resists like an arch all external pressure. The spaces between the timbers below are filled up by dry wood driven in tight, and caulked, thus rendering the bottom solid and water-tight, independently of the planking. One of the most important improvements is the diagonal framework below, Instead of the former planking in the hold are placed *braces*, crossing the ribs, to which they are coaked, at an angle of 45°; those in the fore body incline (or rake) aft, and those in the after body forward. They butt against the kelson, and extend nearly to the water; they are in general placed under every other beam, but closer at the extremities.

Longitudinal pieces of timber are laid nearly parallel to the keel over the heads or joinings of the timbers, and bolted through; these, crossing the diagonals, form a series of rhomboidal figures, across which, inside, are firmly driven *trusses*, lying the opposite way from the diagonals; these are bolted through, and, when necessary, are further tightened by driving in thin iron plates at the ends. The diagonals act by the *tension* of the fibres, the trusses by the *thrust*, and the whole thus resists every effort to change the figure of the ship. The system was first put into complete practice in the *Tremendous*, 74, in 1810; which ship evinced, in several severe trials, a firmness and dryness not known before. M. C. Dupin has shown (*Phil. Trans.*, 1817) that the principle of diagonal framing had sug-

gested itself, and been tried by several French engineers, but as often abandoned. The merit, therefore, of Sir R. Seppings, in reducing to practice a system which to others had been attended with insuperable difficulties, more than compensates the want of novelty in the idea itself. The ancient sterns were massive, but weak sterns, have been replaced by Sir R. Seppings by round sterns, corresponding in construction, and therefore in strength, to the bow. These have again undergone various alterations, tending to combine the strength of the new with the imposing appearance of the former stern. It is only now by contrasting the solid and immovable frame with the former weak and unconnected structure, that we can fully perceive the inefficiency of the ancient construction. The timbers, instead of forming an independent system, were often supported in part by the planking itself, as is the case in boats. The masts, resting only upon their steps, instead of strong platforms which diffuse the pressure on all sides, and pressed downwards by their weight, and by the enormous strain of the rigging, arising from the wind on the sails, forced the keel down, and made the ship leaky. The timbers and framework, being at right angles, without mutual support, the whole stress of the ship came on the fastenings; and, lastly, the safety of the ship depended entirely upon that of the outside plank, the part most exposed to injury.

The planks of the decks have also sometimes been placed diagonally; and lately iron diagonal straps have been added to the upper works inside. The extremities being unsupported below by the water droop, or the ship *hogs*, a three-decker formerly drooped at once, on being launched, nine inches at each end, which increased with her length of service; at present, such a ship droops only 3½ inches, which, when the materials are set, suffers little or no increase. Exposure to moisture being a cause of the decay of timber, building under cover has long been practiced. This also protects the men from the weather. The wood usually employed in ship-building is oak. Elm, which does not split readily, is employed for the keel, and for the caps. East India teak, a very heavy durable wood, which does not shrink, nor is liable to splinter from shot, is now very much used. African teak is also much used. Fir is used for light works, masts, etc. The bottoms of ships are liable to become covered with weeds and shells, and to be eaten through by worms. To prevent these evils, the bottoms were formerly covered with a thin sheathing of wood, which was replaced when worn. Lead has also been used. Ships are now sheathed almost universally with thin sheets of copper.

For further information on this subject, reference may be made to the following works: Bouguer, *Traité du Navire*; Clairbois, *Traité Elementaire, etc.*; Chapman's *Naval Archit.*, with Notes by Dr. Inman; Steel's *Elements*, with an Appendix, by J. Knowles, F.R.S.; Fincham's *Outlines of Ship-building*; the article "Ship-building" in the new edition of the *Ency. Britannica*.

Naval Courts are tribunals established as occasion may require, either on the high seas or in foreign parts, or at home, for inquiring into and dealing with various matters pertaining to maritime affairs.

Naval Stores. The principal of these are tar, pitch, rosin and turpentine, though other articles used in building and equipping vessels are sometimes included. The United States are so abundantly supplied with naval stores, that notwithstanding she is more extensively employed in ship-building than any other nation, she exports naval stores in large quantities.

Naval Stores exported from the United States to Great Britain.

Year 1848	$5sd,789	Year 1852	$945,224
" 1849	724,630	" 1853	1,099,582
" 1850	911,281	" 1854	1,505,633
" 1851	761,408	" 1855	1,183,866

Statement showing the Exports of Naval Stores from the United States for the Year ending June 30th, 1856.

Whither exported.	Tar and pitch.		Rosin & turpentine.	
	Barrels.	Dollars.	Barrels.	Dollars.
Prussia	....	....	4,227	8,096
Sweden and Norway	....	....	1,075	1,715
Danish West Indies	516	1,604	158	390
Hamburg	....	....	14,358	28,813
Bremen	....	....	16,394	27,902
Other German ports	....	....	102	172
Holland	80	144	37,979	70,039
Dutch West Indies	93	144	....	....
Dutch Guiana	334	657	10	14
Dutch East Indies	581	1,663	757	1,506
Belgium	....	....	68,867	128,80
England	25,518	72,872	257,248	702,8
Scotland	9,717	29,283	22,576	50,309
Ireland	....	....	2,620	4,773
Gibraltar	724	1,702	786	1,881
Malta	1,919	4,896	2,580	4,911
Canada	3,057	10,398	6,878	26,665
Other British N. Amer. pos.	12,653	27,983	3,200	7,154
British West Indies	2,470	5,949	320	557
British Honduras	233	583	....	....
British Guiana	746	1,887	....	....
British Possess. in Africa	657	1,380	996	1,994
British Australia	1,140	2,886	5,113	10,467
British East Indies	8,963	21,097	4,945	9,548
France on the Atlantic	....	....	5,860	10,275
France on the Mediter	100	370	17,118	32,419
French North Amer. poss.	216	550	....	....
French West Indies	808	1,674	222	392
French Guiana	192	313	....	....
Spain on the Atlantic	600	1,720	1,000	2,016
Spain on the Mediterranean	816	2,250	876	1,416
Cuba	3,912	10,759	615	2,988
Porto Rico	292	785	22	55
Portugal	1,051	2,887	1,643	3,092
Madeira	35	90	100	231
Cape de Verd Islands	55	172	....	....
Azores	800	495	....	....
Sardinia	....	....	2,987	5,430
Tuscany	....	....	2,787	4,883
Two Sicilies	....	....	1,240	1,994
Austria	....	....	1,729	3,287
Austrian possess. in Italy	268	575	2,204	3,692
Turkey in Europe	50	125	2,929	5,456
Turkey in Asia	450	1,087	824	1,526
Other ports in Africa	898	2,1	959	1,971
Hayti	658	1,681	252	715
San Domingo	182	495	....	....
Mexico	626	2,042	260	780
Central Republic	38	123	....	....
New Granada	941	2,589	220	641
Venezuela	380	1,005	1,608	3,718
Brazil	673	1,851	17,181	31,230
Uruguay	100	212	2,675	4,487
Buenos Ayres	400	950	1,455	2,459
Chili	1,165	2,784	2,359	4,592
Peru	1,041	2,934	2,089	4,031
Ecuador	49	147	....	....
Sandwich Islands	252	887	80	257
China	1,860	4,308	374	990
Whale Fisheries	31	142	....	....
Total	87,765	235,487	524,799	1,222,066

Navigation (Lat. navis, *a ship*), is that branch of science by which the mariner is taught to conduct his ship from one part or place to another. To understand the principles of navigation, and their practical application, it is necessary that the mariner should be acquainted with the form and magnitude of the earth, the relative situations of the lines conceived to be drawn on its surface, and have charts of the coasts and maps of the harbors which he may have occasion to visit. He must also understand the use of the instruments by which the direction in which a ship is steered, and the distance which she sails, are ascertained; and be able to deduce from the data supplied by such instruments the situation of his ship at any time, and to find the direction and distance of any place to which it may be required that the ship should be taken. A curve passing through any two places on the earth, and cutting every intervening meridian at the same angle, is called a *rhumb line*; the angle which such a curve makes with each meridian is called the *course* between any two places through which the curve passes; and the arc of that curve intercepted between any two places is called their *nautical distance*. This distance is more than that measured on the arc of a great circle passing through the two places, un-

less both places are on the same meridian, or both on the equator, when the rhumb line and great circle coincide. The *difference of latitude* between any two places is an arc of a meridian intercepted between the parallels of latitude on which the places are situated; and the *difference of longitude* is the arc of the equator, or the angle at the pole included between the meridians of the places. Hence, when the latitudes or the longitudes of two places are of the same denomination with respect to *north* or *south*, *east* or *west*, the difference is found by subtracting the less from the greater; but when of different denominations, what is called their difference is found by taking their sum. See LATITUDE, LONGITUDE.

Navigation owes its origin to the Phenicians, about 1500 B.C. The first laws of navigation originated with the Rhodians, 916 B.C. The first account we have of any considerable voyage is that of the Phenicians sailing round Africa, 604 B.C.—BLAIR. On the destruction of Thebes by Alexander the Great, 335 B.C. its commerce passed to Alexandria, and subsequently the Romans became the chief masters of commerce. It passed successively from the Venetians, Genoese, and Hanse Towns, to the Portuguese and Spaniards; and from these to the English and Dutch.—HAYDN.

Plane charts and mariners' compass used about....	A. D. 1420
Variation of the compass discovered by Columbus.....	1492
That the oblique rhumb lines are spirals, discovered by Nonius	1537
First treatise on navigation.....	1545
The log first mentioned by Bourne.....	1577
Mercator's chart.....	1599
Davis's quadrant, or backstaff, for measuring angles, ab't	1600
Logarithmic tables applied to navigation by Gunter....	1620
Middle latitude sailing introduced.....	1623
Mensuration of a degree, Norwood.....	1631
Hadley's quadrant.....	1731
Harrison's time-keeper used.....	1764
Nautical almanac first published.....	1767
Barlow's theory of the deviation of the compass.....	1820

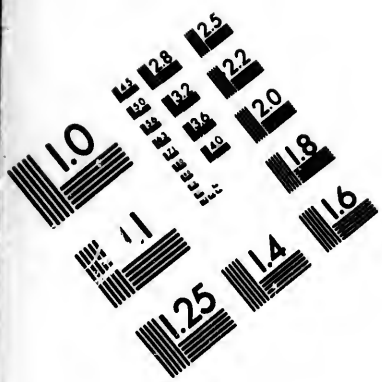
See COMPASS, LATITUDE, LONGITUDE, etc.

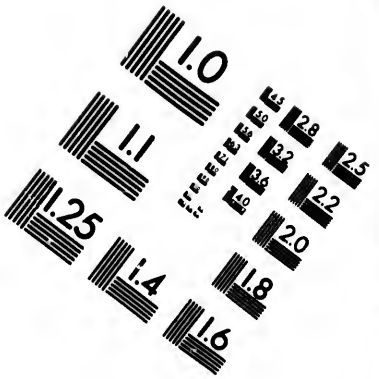
Navigation Laws. These laws form an important branch of maritime law. In this country they are understood to comprise the various acts that have been passed, defining the way in which ships are to be manned, the peculiar privileges enjoyed by them, and the conditions under which foreign ships shall be allowed to engage in the trade of the country, either as importers or exporters of commodities, or as carriers of commodities from one part of the country to another.

Sketch of the History and Principles of the Navigation Laws.—The origin of the navigation laws of England, which are the foundation of ours, may be traced to the reign of Richard II., or perhaps to a still more remote period. But, as no intelligible account of the varying and contradictory enactments framed at so distant an epoch could be compressed within any reasonable space, it is sufficient to observe, that in the reign of Henry VII., two of the leading principles of the navigation law were distinctly recognized, in the prohibition of the importation of certain commodities, unless imported in ships belonging to English owners, and manned by English seamen. In the early part of the reign of Elizabeth (5 Eliz. c. 5), foreign ships were excluded from the fisheries and coasting trade. The republican Parliament gave a great extension to the navigation laws, by the act of 1650, which prohibited all ships, of all foreign nations whatever, from trading with the plantations in America, without having previously obtained a license. These acts were, however, rather intended to regulate the trade between the different ports and dependencies of the empire, than to regulate intercourse with foreigners. But in the following year (9th of October, 1651), the republican Parliament passed the famous *Act of Navigation*. This act had a double object. It was intended not only to promote British navigation, but also to strike a decisive blow at the naval power of the Dutch, who then engrossed almost the whole *carrying trade* of the world, and against whom various circumstances had conspired to incense the English. The act in question declared, that no goods or commodities whatever, of the growth, production or manufacture of Asia, Africa or America, should be imported either into England or Ireland, or any of the plantations, except in ships belonging to English subjects, and of which the master and the greater number of the crew were also English. Having thus secured the import trade of Asia, Africa and America, to the English ship-owners, the act went on to secure to them, as far as that was possible, the import trade of Europe. For this purpose, it further enacted, that no goods of the growth, production, or manufacture of any country in Europe, should be imported into Great Britain, except in British ships, or *in such ships as were the real property of the people of the country or place in which the goods were produced, or from which they could only be, or most usually were, exported.* The latter part of the clause was entirely leveled against the Dutch, who had but little native produce to export, and whose ships were principally employed in carrying the produce of other countries to foreign markets. Such were the leading provisions of this famous act. They were adopted by the regal government which succeeded Cromwell, and form the basis of the act of the 12th Car. 2, which continued, to a very recent period, to be the rule by which naval intercourse with other countries was mainly regulated; and has been pompously designated the *Charta Maritima* of England!

American View of the Rights of Navigation.—The liberty of passage to be enjoyed by one nation through the dominions of another, was treated by the most eminent writers on public law, as a qualified, occasional exception to the paramount rights of property. They made no distinction between the right of passage by a river, flowing from the possessions of one nation through those of another, to the ocean, and the same right to be enjoyed by means of any highway, whether of land or water, generally accessible to the inhabitants of the earth. The right of passage, then, must hold good for other purposes, besides those of trade; for objects of war as well as for those of peace; for all nations, no less than for any nation in particular, and be attached to artificial as well as to natural highways. The principle could not, therefore, be insisted on by the American government, unless it was prepared to apply the same principle by reciprocity, in favor of British subjects, to the navigation of the Mississippi and the Hudson, access to which from Canada might be obtained by a few miles of land carriage, or by the artificial communication created by the canals of New York and Ohio. Hence the necessity which has been felt by the writers on public law, of controlling the operation of a principle so extensive and dangerous, by restricting the right of transit to purposes of innocent utility, to be exclusively determined by the local sovereign. Hence the right in question is termed by them an imperfect right. But there was nothing in these writers, or in the stipulations of the treaties of Vienna, respecting the navigation of the great rivers of Germany, to countenance the American doctrine of an absolute natural right. These stipulations were the result of mutual consent, founded on considerations of mutual interest growing out of the relative situation of the different States concerned in this navigation. The same observation would apply to the various conventional regulations which had been at different periods applied to the navigation of the River Mississippi. As to any supposed right derived from the simultaneous acquisition of the St. Lawrence by the British and American people, it could not be allowed to have survived the treaty of 1783, by which the independence of the United States was acknowledged, and a partition of the British dominions in North America was made between the new government and that of the mother country.

This argument, it was replied, on the part of th





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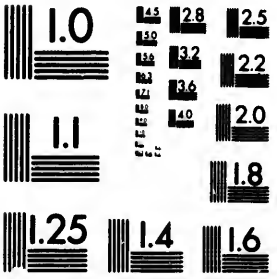

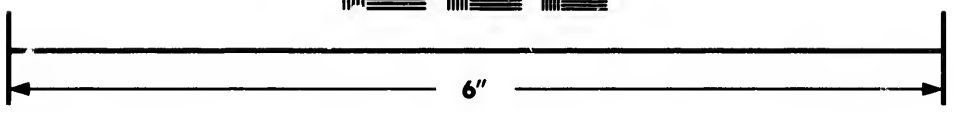

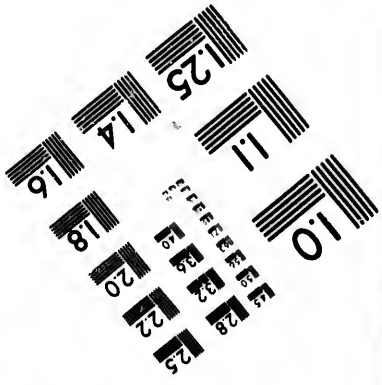

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United States, that, if the St. Lawrence were regarded as a strait connecting navigable seas, as it ought probably to be, there would be less controversy. The principle on which the right to navigate straits depends, is, that they are accessorial to those seas which they unite, and the right of navigating which is not exclusive, but common to all nations; the right to navigate the seas drawing after it that of passing the straits. The United States and Great Britain have between them the exclusive right of navigating the lakes. The St. Lawrence connects them with the ocean. The right to navigate both (the lakes and the ocean), includes that of passing from one to the other through the natural link. Was it then reasonable or just that one of the two co-proprietors of the lakes should altogether exclude his associate from the use of a common bounty of nature, necessary to the full enjoyment of them? The distinction between the right of passage, claimed by one nation through the territories of another, on land, and that on navigable water, though not always clearly marked by the writers on public law, has a manifest existence in the nature of things. In the former case, the passage can hardly ever take place, especially if it be of numerous bodies, without some detriment or inconvenience to the State whose territory is traversed. But in the case of a passage on water no such injury is sustained. The American government did not mean to contend for any principle, the benefit of which, in analogous circumstances, it would deny to Great Britain. If, therefore, in the further progress of discovery, a connection should be developed between the Mississippi and Upper Canada, similar to that which exists between the United States and the St. Lawrence, the American government would be always ready to apply, in respect to the Mississippi, the same principles it contended for in respect to the St. Lawrence. But the case of rivers, which rise and debouch altogether within the limits of the same nation, ought not to be confounded with those which, having their sources and navigable portions of their streams in States above, finally discharge themselves within the limits of other States below. In the former case, the question as to opening the navigation to other nations, depended upon the same considerations which might influence the regulation of other commercial intercourse with foreign States, and was to be exclusively determined by the local sovereign. But in respect to the latter the free navigation of the river was a natural right in the upper inhabitants, of which they could not be entirely deprived by the arbitrary caprice of the lower State. Nor was the fact of subjecting the use of this right to treaty regulations, as was proposed at Vienna to be done in respect to the navigation of the European rivers, sufficient to prove that the origin of the right was conventional, and not natural. It often happened to be highly convenient, if not sometimes indispensable, to avoid controversies, by prescribing certain rules for the enjoyment of a natural right. The law of nature, though sufficiently intelligible in its great outlines and general purposes, does not always reach every minute detail which is called for by the complicated wants and varieties of modern navigation and commerce. Hence the right of navigating the ocean itself, in many instances, principally incident to a state of war, is subjected, by innumerable treaties, to various regulations. These regulations—the transactions of Vienna, and other analogous stipulations—should be regarded only as the spontaneous homage of man to the permanent Lawgiver of the universe, by delivering his great works from the artificial shackles and selfish contrivances to which they have been arbitrarily and unjustly subjected.—WHEATON'S *International Law*, pp. 263–266.—[*This chapter in* MR. WHEATON'S *work furnishes the best view, in brief, of the rights of navigation of the St. Lawrence, the Mississippi, the Rhine, and of the rights of Territory.*—EDS. C. of C.]

Laws of trade and navigation can not affect foreigners, beyond the territorial limits of the State, but they are binding upon its citizens, wherever they may be. Thus, offenses against the laws of a State, prohibiting or regulating any particular traffic, may be punished by its tribunals, when committed by its citizens, in whatever place; but if committed by foreigners, such offenses can only be thus punished when committed within the territory of the State, or on board of its vessels, in some place not within the jurisdiction of any other State.—WHEATON, *Int. Law*, p. 175.

Claims to Portions of the Sea upon the Ground of Prescription.—Besides those bays, gulfs, straits, mouths of rivers, and estuaries which are inclosed by capes and headlands belonging to the territory of the State, a jurisdiction and right of property over certain other portions of the sea have been claimed by different nations, on the ground of immemorial use. Such, for example, was the sovereignty formerly claimed by the republic of Venice over the Adriatic. The maritime supremacy claimed by Great Britain over what are called the Narrow Seas, has generally been asserted merely by requiring certain honors to the British flag in those seas, which have been rendered or refused by other nations, according to circumstances, but the claim itself has never been sanctioned by general acquiescence. Straits are passages communicating from one sea to another. If the navigation of the two seas thus connected, is free, the navigation of the channel by which they are connected ought also to be free. Even if such strait be bounded on both sides by the territory of the same sovereign, and is at the same time so narrow as to be commanded by cannon shot from both shores, the exclusive territorial jurisdiction of that sovereign over such strait is controlled by the right of other nations to communicate with the seas thus connected.

Such right may, however, be modified by special compact, adopting those regulations which are indispensably necessary to the security of the State whose interior waters thus form the channel of communication between different seas, the navigation of which is free to other nations. Thus the passage of the strait may remain free to the private merchant vessels of those nations having a right to navigate the seas it connects, while it is shut to all foreign armed ships in time of peace.—WHEATON'S *Int. Law*, pp. 238–240.

Navigation of the Mississippi.—By the treaty of peace concluded at Paris in 1763, between France, Spain, and Great Britain, the province of Canada was ceded to Great Britain by France, and that of Florida to the same power by Spain, and the boundary between the French and British possessions in North America was ascertained by a line drawn through the middle of the River Mississippi, from its source to the Iberville, and from thence through the latter river and the lakes of Maurepas and Pontchartrain to the sea. The right of navigating the Mississippi was at the same time secured to the subjects of Great Britain from its source to the sea, and the passages in and out of its mouth, without being stopped or visited, or subjected to the payment of any duty whatsoever. The province of Louisiana was soon afterward ceded by France to Spain; and by the treaty of Paris, 1783, Florida was retroceded to Spain by Great Britain. The independence of the United States was acknowledged, and the right of navigating the Mississippi was secured to the citizens of the United States and the subjects of Great Britain by the separate treaty between these powers. But Spain, having thus become possessed of both banks of the Mississippi at its mouth, and a considerable distance above its mouth, claimed its exclusive navigation below the point where the southern boundary of the United States struck the river.

This claim was resisted, and the right to participate

in the navigation of the river from its source to the sea was insisted on by the United States, under the treaties of 1763 and 1783, as well as by the law of nature and nations. The dispute was terminated by the treaty of San Lorenzo el Real, in 1795, by the 4th article of which his Catholic majesty agreed that the navigation of the Mississippi, in its whole breadth, from its source to the ocean, should be free to the citizens of the United States; and by the 22d article they were permitted to deposit their goods at the port of New Orleans, and to export them from thence, without paying any other duty than the hire of the warehouses. The subsequent acquisition of Louisiana and Florida by the United States having included within their territory the whole river from its source to the Gulf of Mexico, and the stipulation in the treaty of 1783, securing to British subjects a right to participate in its navigation, not having been renewed by the treaty of Ghent in 1814, the right of navigating the Mississippi is now vested exclusively in the United States.—WHEATON'S *Int. Law*, pp. 257, 258. The navigation of the continuous waters of the United States and Canada is provided for in the following articles of the treaty of June 5, 1854. The third article, whose operation may be affected at the will of the American government, by a suspension of this privilege, as stipulated in the fourth article, on the part of Great Britain, provides for a reciprocal trade, free of duty, between the United States and the British colonies, in the articles of their respective growth and produce, as enumerated in the schedule thereto annexed.

"It is agreed that the citizens and inhabitants of the United States shall have the right to navigate the River St. Lawrence and the canals in Canada, used as the means of communicating between the Great Lakes and the Atlantic Ocean, with their vessels, boats, and crafts, as fully and freely as the subjects of her Britannic majesty, subject only to the same tolls and other assessments as now are, or may hereafter be, exacted of her majesty's said subjects; it being understood, however, that the British government retains the right of suspending this privilege on giving due notice thereof to the government of the United States. It is further agreed, that if at any time the British government should exercise the said reserved right, the government of the United States shall have the right of suspending, if it think fit, the operation of article 8, of the present treaty, in so far as the province of Canada is affected thereby, for so long as the suspension of the free navigation of the River St. Lawrence or the canals may continue. It is further agreed that British subjects shall have the right freely to navigate Lake Michigan with their vessels, boats, and crafts, so long as the privilege of navigating the River St. Lawrence, secured to Americans by the above clause of the present article, shall continue; and the government of the United States further engages to urge upon the State governments to secure to the subjects of her Britannic majesty the use of the several State canals, on terms of equality with the inhabitants of the United States."—WHEATON'S *Int. Law*, pp. 266, 267. [*A full understanding of this subject, and of the able views of* MR. WHEATON, *can be had only by a careful reading of his elaborate and highly-prized work on International Law.*—EDS. C. of C.]

Navigators' Islands, a group of islands in the southern Pacific Ocean, remarkable for their extent, fertility, and population. They are about 10 in number, and are situated between 169° and 172° 30′ W. long., and from lat. 13° 25′ to an uncertain boundary southward. When seen from the ocean, they present a lofty appearance, and are mountainous, but neither surrounded with a low border nor inclosed by reefs, like the Society Islands. The first discovery of these islands was made in 1722, by Roggewin and Banman, who fell in with the easternmost of the number; while Bougainville, in 1768, added another; and Porouse, in 1787, discovered the two westernmost, which are the largest, being more than 40 miles in length. The last navigator was informed of three more to the southward. The whole group was visited in 1791 by Captain Edwards. The inhabitants are a stout and well-made race, of the ordinary height of 5 feet 9 or 11 inches. They are altogether savage in their manners, which are said to be remarkably indecent. They are also of the most ferocious disposition. The least dispute between them is followed by blows from clubs, sticks, or paddles, and is often attended with the loss of life. They are very ingenious, and fashion their work dexterously with hatchets shaped like adzes, and made of very fine and compact basalts. With these they finish works in wood, and give them so high a polish that they appear to be coated with the finest varnish. They also manufacture a species of cloth which possesses great strength and pliability, and is well calculated for the sails of canoes. The name of Navigators' Islands was bestowed by Bougainville, from the practice which prevails among the inhabitants of continually traveling in canoes. We have no data upon which we can calculate the amount of the population, but it must be considerable, considering that these islands are among the most fertile in the South Seas.

Navy Department. The Navy Department was created by an act of Congress, 30th April, 1798, and is under the direction of the Secretary of the Navy. The Department conducts its business in several bureaux, namely, the Bureau of Docks and Navy Yards; the Bureau of Ordnance and Hydrography; the Bureau of Construction, Equipments, and Repairs; the Bureau of Provisions and Clothing; the Bureau of Medicine and Surgical Instruments, etc.; and the National Observatory at Washington is under the charge of this Department. The ministerial duties of these several bureaux were formerly exercised by a Board of Navy Commissioners.

Secretaries of the Navy.—George Cabot, Mass., May 8, 1798; Benjamin Stoddard, Md., May 21, 1798; Robert Smith, Md., January 26, 1802; Jacob Crowninshield, Mass., March 2, 1805; Paul Hamilton, S. C., March 7, 1809; William Jones, Penn., January 12, 1813; Benjamin W. Crowninshield, Mass., December 17, 1814; Smith Thompson, N. Y., November 30, 1818; Samuel L. Southard, N. J., December 9, 1823; John Branch, N. C., March 9, 1829; Levi Woodbury, N. H., August, 1831; Mahlon Dickerson, N. J., June 30, 1834; James K. Paulding, N. Y., June 30, 1838; George E. Badger, N. C., March 5, 1841; Abel P. Upshur, Va., September 13, 1841; David Henshaw, Mass., July 24, 1843; Thomas W. Gilmer, Va., February 15, 1844; John Y. Mason, Va., March 14, 1844; George Bancroft, Mass., March 10, 1845; John Y. Mason, Va., 1846; William B. Preston, Va., March 7, 1849; William A. Graham, N. C., July 20, 1850; James C. Dobbin, N. C., March 5, 1853; Isaac Toucey, Conn., March, 1857.

Navy Yards of the United States.—Portsmouth, Charlestown, Brooklyn, Philadelphia, Washington, Gosport, Pensacola.

Navy Dry Docks.—Charlestown, Brooklyn, N. Y., Pensacola, Gosport.

United States' Navy Squadrons.—East Indian, Pacific, African, Brazilian, Mediterranean, Home (West Indies).

Navy Hospitals.—Chelsea, Mass., New York, Portsmouth, Va., Pensacola.

Naval Magazines.—Charlestown, Mass., New York, Washington, Norfolk, Pensacola.

National Observatory, Washington; Naval Academy, Annapolis; Naval Asylum, Philadelphia.

Navy. The first fleet of galleys, like those of the Danes, was built by Alfred, A.D. 897. In the time of Henry VIII. the British navy consisted of 1 ship of 1200 tons, 2 of 800 tons, and 6 or 7 smaller; the largest was called the *Great Harry*. Elizabeth's fleet at

the time of the Spanish Armada, in 1588, consisted of only 28 vessels, none larger than frigates. James I. added 10 ships of 1400 tons each, and 64 guns, the largest then ever built.—GIBSON'S *Camden.*

ACCOUNT OF THE PROGRESSIVE INCREASE OF THE ROYAL NAVY OF ENGLAND FROM HENRY VIII'S REIGN TO THE CLOSE OF THE WAR, 1814.

Year.	Ships.	Tons.	Men voted.	Navy estimate.
1521	16	7,260	....	no account.
1578	24	10,566	6,700	"
1603	42	17,055	8,346	"
1658	157	57,000	21,910	"
1688	173	101,892	42,000	"
1702	272	159,020	40,000	£1,056,915
1760	412	321,184	70,000	8,227,143
1793	498	433,226	45,000	5,525,331
1800	707	668,744	135,000	12,462,337
1808	669	692,800	143,800	17,496,047
1814	901	966,000	146,000	18,786,509

Neap, or Neep Tides, are the lowest tides, being those which are produced when the attractions of the sun and moon on the waters of the ocean are exerted in directions perpendicular to each other. When the two forces act in the same or exactly opposite directions, the *spring* or highest tides are produced. The neap tides take place about four or five days before the new and full moons. See TIDES.

Needles. They make a considerable article of commerce, as well as of home trade in England. German and Hungarian steel is of most repute for needles. The first that were made in England were fabricated in Cheapside, London, in the time of the sanguinary Mary, by a negro from Spain; but, as he would not impart the secret, it was lost at his death, and not recovered again till 1566, in the reign of Elizabeth, when Elias Growse, a German, taught the art to the English, who have since brought it to the highest degree of perfection.—STOWE. The family of the Greenings, ancestors of Lord Dorchester, established a needle manufactory in Bucks about this time.—ANDERSON.

Needles are made from the best steel, reduced by a wire-drawing machine to the suitable diameter. The manufacture is supposed to have originated in Spain, and to have been introduced into England about the year 1565, by Elias Krause, or Growse, who then settled in London. Dr. Ure, in his *Dictionary of Arts,* states that "the construction of a needle requires about 120 operations; but they are rapidly and uninterruptedly successive. A child can *trim* the eyes of 4000 needles per hour. When we survey a manufacture of this kind, we can not fail to observe that the diversity of operations which the needles undergo bears the impress of great mechanical refinement. In the arts, to divide labor is to abridge it; to multiply operations is to simplify them; and to attach an operative exclusively to one process, is to render him much more economical and productive."—E. A.

STATEMENT SHOWING THE IMPORTS OF NEEDLES INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30TH, 1856.

Portland and Falmouth	$276
Boston and Charlestown	36,089
New York	202,944
Philadelphia	5,596
Baltimore	329
Charleston	126
New Orleans	983
San Francisco	897
Total	$246,060

Nests, Esculent. A species of nests built by swallows peculiar to the Indian Islands, and very much esteemed in China and other parts of the world. These nests resemble in form those of other swallows; they are formed of a viscid substance, and in external appearance as well as consistence are not unlike fibrate ill-concocted isinglass. Esculent nests are principally found in Java, in caverns usually situated on the seacoast. Nothing satisfactory is known as to the substance of which these nests are composed.

Net (Fr. *Filet, reseau;* Ger. *Netz*), is a textile fabric of knotted meshes for catching fish and other purposes. Each mesh should be so secured as to be incapable of enlargement or diminution. The French government offered in 1802 a prize of 10,000 francs to the person who should invent a machine for making nets upon automatic principles, and adjudged it to M. Buron, who presented his mechanical invention to the *Conservatoire des Arts Métiers.* It does not appear, however, that this machine has accomplished the object in view; for no establishment was ever mounted to carry it into execution. Nets are usually made by the fishermen and their families during the periods of leisure. The formation of a mesh is too simple a matter to require description in this dictionary.

Nett (It. *netto,* pure), that which remains of a weight, quantity, etc., after making certain deductions. Thus, in mercantile language, the *nett weight* is the weight of any article after deducting tare and tret; *nett profits, income, etc.,* is the absolute profit or income, after deducting expenses, interest, etc. It is opposed to *gross* (britto).

Nettings, in a ship, a sort of grates made of small ropes seized together with rope-yarn, or twine, and fixed upon the quarters and in the tops. They are sometimes stretched upon the ledges from the waist-trees to the roof-trees, from the top of the forecastle to the poop, and sometimes are laid in the waist of a ship to serve instead of gratings.

Netherlands (Kingdom of the), or Holland (Du. *Koningrijk der Nederlanden;* Fr. *Royaume des Pas Bas*), a State of western Europe, on the German Ocean (capital Amsterdam), composed of the Netherlands proper, or the ancient republic of the Seven United Provinces, and part of the Duchy of Limburg, situated between lat. 50° 43′ and 53° 21′ N., and long. 3° 24′ and 7° 12′ E., bounded east by Hanover and Prussia, south by Belgium and the Grand Duchy of Luxemburg (the south-east portion of which is held by the King of the Netherlands), and west and north by the German Ocean. Extent and population as follows:

Provinces.	Area in geog. miles.	Population in 1853.	Schools. 1851.
Brabant (North)	98·395	408,687	408
Gelderland	92·720	383,894	400
Holland (South)	55·275	584,698	460
Holland (North)	45·133	506,006	590
Zeeland	81·683	163,318	155
Utrecht	25·244	158,946	153
Friesland	59·589	255,915	355
Overlissel	60·580	224,773	288
Groningen	41·707	195,264	246
Drantha	48·529	86,735	140
Limburg—Duchy	40·100	210,275	210
	593·905	3,168,006	3,295
Grand Duchy of Luxemburg, Dec. 31st, 1851	46 600	194,619	Attendance. 861,015
Total	639·915	3,362,625	

The leading features of the new navigation laws of the Netherlands may be gathered from the following summary: 1. Unconditional repeal of discriminating favors granted to the Dutch flag, by suppression of the rules allowing to this flag preference above foreign flags. 2. Conditional similarity of flag in the navigation to and from the Netherlands' colonies. 3. Stipulations by law concerning the trade and navigation in the colonies of the realm carried on by other nations. 4. Repeal of interdiction to grant Netherlands registers to foreign-built vessels, by their admittance for registry (naturalization) at a duty of 4 per cent. of their value. 5. Diminishing of import duties on principal materials for shipbuilding. 6. Suspension of the shipping duties on the Rhine and Yssel. 7. Total abolition of transit duties.

Public revenue, in 1853, 71,685,772 florins, of which amount nearly half is raised by direct taxation and excise duties. Expenditure, 70,085,078 florins. National debt, 1,206,493,330 florins. The marine force in

actual service on 1st July, 1852, comprised 6087 men, exclusive of those in the colonies. The merchant marine is comprised of 2000 vessels, aggregate burden 20,000 lasts. The following table shows the extent and population of the colonial possessions of the kingdom of the Netherlands in 1849:

Colonies.	Area in geog. miles.	Population in 1849.
ASIA.		
Java, and adjacent islands	2,444·6	9,560,880
Sumatra, West coast	2,200·8	988,585
" Benkulen	455·6	98,875
" Lampongs	475·0	82,900
" Palembang	2,558·4	272,000
" Indragiri	670·6	50,000
Assahan, Batoe, Bara, Sirdu, Dolli, etc.	252·8	100,000
Banca	856·0	43,000
Rhio	148·6	80,000
Borneo, Sambas	244·8	46,819
" West coast	2,561·5	304,076
" South and east coast	6,567·8	811,100
Macassar, Celebes	2,149·9	1,569,000
Amboyna	478·9	977,508
Menado	1,267·2	183,000
Ternate	1,129·7	97,329
Banda	411·3	155,765
Timor	1,042·6	1,057,300
Lombock	191·5	1,105,000
New Guinea	3,210·0	200,000
Total	28,923·2	16,478,187
AMERICA.		
Guiana	2,819·5	64,270
Curaçoa and St. Eustache	17·4	26,811
AFRICA.		
Coast of Guinea	500·0	100,000
Grand total	32,259·1	16,668,718

The Netherlands is a name, which, for several centuries, was applied to the countries now forming the kingdoms of Belgium, and the Netherlands, and part of the north of France (Departments Nord and Pas-de-Calais). This country belonged almost entirely to Charles V. United to Franche-Comté, it formed the circl of Burgundy. From this seven of the north provinces separated themselves in 1579, and formed the republic of Holland, or the Seven United Provinces. Part of the low country was conquered by Louis XIV., and called the French Netherlands; the rest, first under the dominion of Spain, passed in 1714 to that of Austria, and was called Spanish Netherlands, Austrian Netherlands, or Belgium.

The fisheries formed the origin of prosperity in the Netherlands, and the herrings prepared by the Dutch still maintain their superiority. In 1842, 1603 boats, manned by 8280 men, were employed in this fishery. The whale fishery in the Sea of Spitzbergen has been profitably carried on since the 16th century. The manufacturing industry of the country is very active, Holland having long been celebrated for its linens, velvets, and paper; and during the 17th and 18th centuries, its typography enjoyed a well-merited reputation. The absence of cold, and the prevalence of strong winds, have led to the adoption of the windmill as a motive power, and it is universally employed in all kinds of work. The chief manufactures are linen of the finest quality, woolens, silks, and velvets, paper, leather, cordage, hats, ribbons, saltpetre, and tobacco. The manufacture of cotton has been recently introduced. There are numerous distilleries of "Geneva" (rather jenever, from the juniper berry, with which the gin is flavored), or "Hollands," and extensive bleach fields, brick and tile works. Holland presents the appearance of an immense net-work of canals, which form the usual access not only to towns and villages, but even to private mansions. The most important is that of North Holland, between Amsterdam and the Helder, the finest work of the kind in Europe 52 miles in length, 125 feet broad at the surface, and 21 feet in depth. By means of this important work, ships bound for Amsterdam avoid the danger and delay of navigating the Zuyder Zee; it is spacious enough to admit 2 frigates abreast. Since not only the surface but the bed of many of the canals is above the level of the land, the drainage of the *polders* or meadows, through which they pass, is an object of great solicitude; it is effected by means of pumps worked by wind-mills. In a country where human industry is engaged in a continual struggle with the sea, from the domains of which it has been conquered, the management of dykes, canals, and roads, is a special object of attention on the part of the government. The roads, which are always formed on the dykes and bordered by canals, are excellent. In 1849 lines of railroad were completed from Amsterdam west to Harlem, and south to Leyden, the Hague, and Rotterdam, and south and east by Utrecht to Arnhem. The principal imports consist of colonial products and manufactured goods, corn, wines, cotton, wool, and leather, valued in 1851 at 303,993,224 florins. Chief exports are butter, cheese, dried fish, gin, the manufactures of the country, and colonial produce; valued at 242,744,806 florins.

A letter from the United States' consul at the Hague gives the annexed information, under date of July 20, 1855: "The second Chamber has, by a vote of 48 to 7, passed the bill abolishing the tonnage dues. The deficit in the revenues, caused by this bill, is calculated at 500,000 francs a year, and is to be covered oy an additional excise duty on refined sugar, which has also been passed by the Chamber. The abolition of the tonnage dues, and of the still more vexatious malt tax, has been hailed throughout the country with joy as an indication of a progressive policy, to which the present ministry has appeared but little inclined till now."

COMMERCE OF THE NETHERLANDS IN 1854.

Countries.	Imports.	Exports.
	Florins.	Florins.
Australia	....	479,511
Belgium	41,446,556	30,489,426
Brazil	1,240,388	221,585
Bremen	1,162,632	773,560
California	....	81,904
China	561,900	53,994
Cuba	2,461,486	244,861
Curaçoa	185,614	287,819
Denmark	3,963,715	1,190,010
France	12,171,902	13,074,585
Greenland, etc	9,526	....
Great Britain	99,761,865	75,194,278
Hamburg	6,759,502	2,924,583
Hanover and Oldenburg	5,488,825	2,587,857
Java, etc	74,883,228	29,402,129
Canary Islands	2,772,244	242,623
Papal States	....	854,334
Coast of Guinea	422,185	517,116
Lubec	85,559	16,528
Mecklenburg	59,346	77,665
Naples and Sicily	2,002,691	3,805,510
United States	7,545,043	5,186,923
Norway	4,824,728	844,948
Austria	974,810	3,802,120
Philippine Islands	179,816	....
Portugal	748,689	508,587
Russia (on Baltic & White Seas)	7,510,808	87,448
Russia (on the Black Sea)	1,748,529	....
Sardinia	264,157	2,925,746
Spain	1,127,887	735,530
America, except U. S.	429,488	822,955
Surinam	4,884,095	1,501,934
German Customs' Union	68,819,497	116,493,226
Tuscany	576,322	2,769,146
Turkey, Greece, etc	779,998	3,772,505
Sweden	1,125,047	579,805
Other ports	115,101	....
Total	356,484,519	308,780,801
Year preceding	321,051,729	272,801,666
Difference	35,432,790	35,979,135

SHIPPING IN 1854 AND 1855.

Vessels.	Entered.		Cleared.	
	No.	Tons.	No.	Tons.
Loaded (1854)	7,128	1,154,450	4,533	822,785
In ballast	474	89,682	3,291	461,896
Total in 1854	7,502	1,244,132	7,824	1,284,681
Loaded (1855)	7,788	1,303,450	4,242	810,136
In ballast	409	81,098	4,203	633,544
Total in 1855	8,257	1,384,548	8,445	1,443,670

Neutrals. *Of the General Rights and Duties of Neutral Nations.*—The rights and duties which belong to a state of neutrality form a very interesting title in the code of international law. They ought to be objects of particular study in this country, inasmuch as it is our true policy to cherish a spirit of peace, and to keep ourselves free from those political connections which would tend to draw us into the vortex of European contests. A nation that maintains a firm and scrupulously impartial neutrality, and commands the respect of all other nations by its prudence, justice, and good faith, has the best chance to preserve unimpaired the blessings of its commerce, the freedom of its institutions, and the prosperity of its resources. Belligerent nations are interested in the support of the just rights of neutrals, for the intercourse which is kept up by means of their commerce contributes greatly to mitigate the evils of war. The public law of Europe has established the principle, that, in time of war, countries not parties to the war, nor interposing in it, shall not be materially affected by its action; but they shall be permitted to carry on their accustomed trade, under the few necessary restrictions which we shall hereafter consider.

A neutral has a right to pursue his ordinary commerce, and he may become the carrier of the enemy's goods, without being subject to any confiscation of the ship, or of the neutral articles on board; though not without the risk of having the voyage interrupted by the seizure of the hostile property. As the neutral has a right to carry the property of enemies in his own vessel, so, on the other hand, his own property is inviolable, though it be found in the vessels of enemies. But the general inviolability of the neutral character goes further than merely the protection of neutral property. It protects the property of the belligerents when within the neutral jurisdiction. It is not lawful to make neutral territory the scene of hostility, or to attack an enemy while within it; and if the enemy be attacked, or any capture made, under neutral protection, the neutral is bound to redress the injury, and effect restitution. The books are full of cases recognizing this principle of neutrality.—KENT'S *Com.*

Prizes brought into Neutral Ports.—A neutral has no right to inquire into the validity of a capture, except in cases in which the rights of neutral jurisdiction were violated; and, in such cases, the neutral power will restore the property, if found in the hands of the offender, and within its jurisdiction, regardless of any sentence of condemnation by a court of a belligerous captor. It belongs solely to the neutral government to raise the objection to a capture and title, founded on the violation of neutral rights. The adverse belligerent has no right to complain when the prize is duly libeled before a competent court. If any complaint is to be made on the part of the captured, it must be by his government to the neutral government, for a fraudulent, or unworthy, or unnecessary submission to a violation of its territory, and such submission will naturally provoke retaliation.—*Ibid.*

Arming in Neutral Ports.—The government of the United States was warranted, by the law and practice of nations, in the declarations made in 1793, of the rules of neutrality, which were particularly recognized as necessary to be observed by the belligerent powers, in their intercourse with this country. These rules were, that the original arming or equipping of vessels in our ports, by any of the powers at war, for military service, was unlawful; and no such vessel was entitled to an asylum in our ports. The equipment by them of government vessels of war, in matters of which, if done to other vessels, would be applicable equally to commerce or war, was lawful. The equipment by them of vessels fitted for merchandise and war, and applicable to either, was lawful; but if it were of a nature solely applicable to war it was unlawful. And if the armed vessel of one nation should depart from our jurisdiction, no armed vessel, being within the same, and belonging to an adverse belligerent power, should depart until 24 hours after the former, without being deemed to have violated the law of nations.—*Ibid.*

Prizes in Neutral Ports.—Though a belligerent vessel may not enter within neutral jurisdiction for hostile purposes, she may, consistently with a state of neutrality, until prohibited by the neutral power, bring her prize into a neutral port, and sell it. The neutral power is, however, at liberty to refuse this privilege, provided the refusal be made, as the privilege ought to be granted to both parties, or to neither. The United States, while a neutral power, frequently asserted the right to prohibit, at discretion, the sale within their ports of prizes brought in by the belligerents; and the sale of French prizes was allowed as an indulgence merely, until it interfered with the treaty of England of 1794, in respect to prizes made by privateers.—*Ibid.*

Neutral Property in an Enemy's Vessel.—It is also a principle of the law of nations relative to neutral rights that the effects of neutrals, found on board of enemy's vessels, shall be free; and it is a right as fully and firmly settled as the other, though, like that, it is often changed by positive agreement.

The two distinct propositions, that enemy's goods found on board a neutral ship may lawfully be seized as prize of war, and that the goods of a neutral found on board of an enemy's vessel were to be restored, have been explicitly incorporated into the jurisprudence of the United States, and declared by the Supreme Court to be founded in the law of nations. The rule, as it was observed by the court, rested on the simple and intelligible principle, that war gave a full right to capture the goods of an enemy, but gave no right to capture the goods of a friend.

The neutral flag constituted no protection to enemy's property, and the belligerent flag communicated no hostile character to neutral property. The character of the property depended upon the fact of ownership, and not upon the character of the vehicle in which it is found.—*Ibid.*

Of Restrictions upon Neutral Trade.—The principal restriction which the law of nations imposes on the trade of neutrals, is the prohibition to furnish the belligerent parties with warlike stores, and other articles which are directly auxiliary to warlike purposes. Such goods are denominated contraband of war; but in the attempt to define them, the authorities vary, or are deficient in precision, and the subject has long been a fruitful source of dispute between neutral and belligerent nations.

Contraband of War.—In the time of Grotius, some persons contended for the rigor of war, and others for the freedom of commerce. As neutral nations are willing to seize the opportunity which war presents, of becoming carriers for the belligerent powers, it is natural that they should desire to diminish the list of contraband as much as possible. Grotius distinguishes between things which are useful only in war, as arms and ammunition, and things which serve merely for pleasure, and things which are of a mixed nature, and useful both in peace and war. He agrees with other writers in prohibiting neutrals from carrying articles of the first kind to the enemy, as well as in permitting the second kind to be carried. As to articles of the third class, which are of indiscriminate use in peace and war, as money, provisions, ships and naval stores, he says that they are sometimes lawful articles of neutral commerce, and sometimes not; and the question will depend upon circumstances existing at the time.

Law of Blockades.—A neutral may also forfeit the immunities of his national character by violations of blockade; and among the rights of belligerents, there is none more clear and incontrovertible, or more just and necessary in the application, than that which gives

rise to the law of blockade. Bynkershoeck says, it is founded on the principles of natural reason, as well as on the usage of nations; and Grotius considers the carrying of supplies to a besieged town, or a blockaded port, as an offense exceedingly aggravated and injurious. They both agree that a neutral may be dealt with severely; and Vattel says he may be treated as an enemy. The law of blockade is, however, so harsh and severe in its operation, that, in order to apply it, the fact of the actual blockade must be established by clear and unequivocal evidence; and the neutral must have had due previous notice of its existence; and the squadron allotted for the purposes of its execution must be competent to cut off all communication with the interdicted place or port; and the neutral must have been guilty of some act of violation, either by going in, or attempting to enter, or by coming out with a cargo laden after the commencement of the blockade. The failure of either of the points requisite to establish the existence of a legal blockade, amounts to an entire defeasance of the measure, even though the notification of the blockade had issued from the authority of the government itself.

Right of Search at Sea.—In order to enforce the rights of belligerent nations against the delinquencies of neutrals, and to ascertain the real as well as assumed character of all vessels on the high seas, the law of nations arms them with the practical power of visitation and search. The duty of self-preservation gives to belligerent nations this right. It is founded upon necessity, and is strictly and exclusively a war right, and does not rightfully exist in time of peace, unless conceded by treaty. All writers upon the law of nations, and the highest authorities, acknowledge the right in time of war as resting on sound principles of public jurisprudence, and upon the institutes and practice of all great maritime powers. And if, upon making the search, the vessel be found employed in contraband trade, or in carrying enemy's property, or troops, or dispatches, she is liable to be taken and brought in for adjudication before a prize court.

Neutral nations have frequently been disposed to question and resist the exercise of this right. This was particularly the case with the Baltic confederacy, during the American war, and with the convention of the Baltic powers in 1801. The right of search was denied, and the flag of the State was declared to be a substitute for all documentary and other proof, and to exclude all right of search. Those powers armed for the purpose of defending their neutral pretensions; and England did not hesitate to consider it as an attempt to introduce, by force, a new code of maritime law, inconsistent with her belligerent rights, and hostile to her interests, and one which would go to extinguish the right of maritime capture. The attempt was speedily frustrated and abandoned, and the right of search has, since that time, been considered incontrovertible.

This right of search is confined to private merchant vessels, and does not apply to public ships of war. Their immunity from the exercise of any civil or criminal jurisdiction but that of the sovereign power to which they belong, is uniformly asserted, claimed and conceded. A contrary doctrine is not to be found in any jurist or writer on the law of nations, or admitted in any treaty; and every act to the contrary has been promptly met and condemned.

Neutral Documents.—A neutral is bound, not only to submit to search, but to have his vessel duly furnished with the genuine documents requisite to support her neutral character. The most material of these documents are, the register, passport or sea letter, muster-roll, log-book, charter-party, invoice and bill of lading. The want of some of these papers is strong presumptive evidence against the ship's neutrality; yet the want of any one of them is not absolutely conclusive. "*Si aliquid ex solemnibus deficiat, cum equitas poscit subveniendum est*" The concealment of papers material for the preservation of the neutral character, justifies a capture and carrying into port for adjudication, though it does not absolutely require a condemnation. It is good ground to refuse cost and damages on restitution, or to refuse further proof to relieve the obscurity of the case, where the cause labored under heavy doubts, and there was *prima facie* ground for condemnation independent of the concealment.

The spoliation of papers is a still more aggravated and inflamed circumstance of suspicion. That fact may exclude further proof, and be sufficient to infer guilt; but it does not in England, as it does by the maritime law of other countries, create an absolute presumption *juris et de jure;* and yet, a case that escapes with such a brand upon it, is saved so as by fire. The Supreme Court of the United States has followed the less rigorous English rule, and held that the spoliation of papers was not, of itself, sufficient ground for condemnation, and that it was a circumstance open for explanation, for it may have arisen from accident, necessity, or superior force.—KENT's *Comm.*, vol. i. See WHEATON's *International Law.*

Neutral Trade.—The present position of the United States in regard to neutrals may be learned from the following extract:

"Soon after the commencement of the late war in Europe, this government submitted to the consideration of all maritime nations two principles for the security of neutral commerce; one, that the neutral flag should cover enemy's goods, except articles contraband of war; and the other, that neutral property on board merchant vessels of belligerents should be exempt from condemnation, with the exception of contraband articles. These were not presented as new rules of international law, having been generally claimed by neutrals, though not always admitted by belligerents. One of the parties to the war (Russia), as well as several neutral powers, promptly acceded to these propositions; and the two other principal belligerents, Great Britain and France, having consented to observe them for the present occasion, a favorable opportunity seemed to be presented for obtaining a general recognition of them both in Europe and America.

"But Great Britain and France, in common with most of the States of Europe, while forbearing to reject, did not affirmatively act upon the overtures of the United States.

"While the question was in this position, the representatives of Russia, France, Great Britain, Austria, Prussia, Sardinia, and Turkey, assembled at Paris, took into consideration the subject of maritime rights, and put forth a declaration containing the two principles which this government had submitted nearly two years before to the consideration of maritime powers, and adding thereto the following propositions: 'Privateering is and remains abolished,' and 'Blockades, in order to be binding, must be effective, that is to say, maintained by a force, sufficient really to prevent access to the coast of the enemy;' and to the declaration thus composed of four points, two of which had already been proposed by the United States, this government has been invited to accede by all the powers represented at Paris, except Great Britain and Turkey. To the last of the two additional propositions—that in relation to blockades—there can certainly be no objection. It is merely the definition of what shall constitute the effectual investment of a blockaded place, a definition for which this government has always contended, claiming indemnity for losses where a practical violation of the rule thus defined has been injurious to our commerce. As to the remaining article of the declaration of the conference of Paris, 'that privateering is and remains abolished,' I certainly can not ascribe to the powers represented in the conference of Paris any but liberal and philanthropic views

in the attempt to change the unquestionable rule of maritime law in regard to privateering. Their proposition was doubtless intended to imply approval of the principle that private property upon the ocean, although it might belong to the citizens of a belligerent State, should be exempted from capture; and had that proposition been so framed as to give full effect to the principle, it would have received my ready assent on behalf of the United States. But the measure proposed is inadequate to that purpose. It is true that if adopted, private property upon the ocean would be withdrawn from one mode of plunder, but left exposed, meanwhile, to another mode, which could be used with increased effectiveness. The aggressive capacity of great naval powers would be therefore augmented, while the defensive abllity of others would be reduced. Though the surrender of the means of prosecuting hostilities by employing privateers, as proposed by the conference of Paris, is mutual in terms, yet, in practical effect, it would be the relinquishment of a right of little value to one class of States, but of essential importance to another and a far larger class. It ought not to have been anticipated that a measure, so inadequate to the accomplishment of the proposed object, and so unequal in its operation, would receive the assent of all maritime powers. Private property would be still left to the depredations of the public armed cruisers.

"I have expressed a readiness, on the part of this government, to accede to all the principles contained in the declaration of the conference of Paris, provided that relating to the abandonment of privateering can be so amended as to effect the object for which, as is presumed, it was intended, the immunity of private property on the ocean from hostile capture. To effect this object, it is proposed to add to the declaration 'that privateering is and remains abolished,' the following amendment: 'And that the private property of subjects and citizens of a belligerent on the high seas shall be exempt from seizure by the public armed vessels of the other belligerent except it be contraband.' This amendment has been presented not only to the powers which have asked our assent to the declaration to abolish privateering, but to all other maritime States. Thus far it has not been rejected by any, and is favorably entertained by all which have made any communication in reply.

"Several of the governments, regarding with favor the proposition of the United States, have delayed definite action upon it, only for the purpose of consulting with others, parties to the conference of Paris. I have the satisfaction of stating, however, that the Emperor of Russia has entirely and explicitly approved of that modification, and will co-operate in endeavoring to obtain the assent of other powers; and that assurances of a similar purport have been received in relation to the disposition of the Emperor of the French.

"The present aspect of this important subject allows us to cherish the hope that a principle so humane in its character, so just and equal in its operation, so essential to the prosperity of commercial nations, and so consonant to the sentiments of this enlightened period of the world, will command the approbation of all maritime powers, and thus be incorporated into the code of international law."—*Message President United States, Dec.*, 1856. See MARITIME LAW, NAVIGATION LAWS.

Nevis, a West India Island, belonging to Great Britain, leeward group, in lat. 17° 10′ N., long. 62° 40′ W., separated from the south end of St. Christopher's by a channel two miles across. Area about 20 square miles. Population in 1851, 10,200. Shape circular; the surface rises to a central peak 2,500 feet in elevation. Soil generally fertile, and in 1841, the total produce exported amounted in value to £17,455, sugar standing for £15,527. Total value of imports in 1841, £23,728. The legislature is composed of the administrator of the government, a legislative council, and a house of assembly of 15 members. Salary of administrator, £500. The island consists of 5 parishes. Charlestown, the capital, is at its south-west extremity. Public revenue in 1845, £4,560. A letter from the United States' consul, dated December 5, 1855, says: "The legislature of Nevis has passed a law, to go into operation on the 1st of March ensuing, removing all duties on imports, exports, and tonnage duties on vessels, thereby creating a free port. The consequence will be that the commercial intercourse with the United States will be very considerable."

New Bedford, a port of entry in Massachusetts, 55 miles south of Boston, 28 east of Newport, 49 south-east of Providence, 226 east of New York, 434 from Washington; in 41° 38′ 10″ N. lat., and 70° 55′ 16″ E. long. Population in 1830, 7,592; in 1840, 12,087; in 1850, 16,443; in 1851, 18,044; and in 1854, 20,000. There are 33 manufactories of all sorts; the most important of which are, 15 for oil and candles, the product of the whale fishery; one large cotton factory, called the Wamsutta mill, propelled by steam, containing 12,500 spindles, 288 looms, employing 230 hands, and turns out daily 4,800 yards of cotton cloth, which has obtained several medals for its superior quality; one cordage factory, with an invested capital of $75,000, employing 100 hands, and producing annually 1,000 tons of cordage, celebrated for being of the best quality; a large paper-hanging manufactory which turns out 400,000 rolls of paper annually; also a rivet factory worked by steam, and two iron founderies; four printing offices, issuing two daily, three weekly, and one monthy publication; and 186 mercantile stores. There are two marine railways, one of them capable of taking up large ships. Railroad cars leave three times daily for Boston and Providence, and every afternoon for Fall River and Stonington to connect with steamboats at those places running to New York. The whale fishery is the principal business which is carried on at New Bedford, and has been the means chiefly of building it up to its present importance in population and wealth. As early as 1764, small sloops of 40 to 60 tons burden were fitted out to cruise, during the summer months, off the Capes of Virginia and Hatteras for sperm whales; taking care to return to port before the equinoctical gales commenced; the blubber was brought into port and tried out on shore. Gradually the voyages were extended in larger vessels to the Bay of Mexico, and about the West India Islands, thence to the Azores, and Cape de Verd Islands, and coast of Guinea. In 1791, a ship called the *Rebecca*, was fitted out for a whaling voyage to the Pacific Ocean; this ship was the first *American whaler* that ever entered that ocean in pursuit of whales; her voyage was successful. From these small beginnings, the whale fishery has steadily increased to its present importance, with the exception of the interruption of the revolutionary war, and of the war of 1812 with Great Britain, until New Bedford has become the greatest whaling port in the world. Her ships now circumnavigate the globe, and explore every ocean and sea from the Arctic to the Antarctic in pursuit of whales. The number of vessels employed in the whale fishery from the United States at this time, 1852, is 620, their tonnage, 193,990, of which there are belonging to the district of New Bedford, 372 vessels, employing upwards of 10,000 seamen. There were entered into the United States, during the year 1851, of sperm oil, 99,591 bbls.; of right whale oil, 328,483 bbls.; of whalebone, 3,916,500 lbs.; amounting in value to $10,028,089, of which there were imported into the district of New Bedford, of sperm oil, 60,465 bbls.; of right whale oil, 175,460 bbls.; of whalebone, 2,473,500 lbs.; amounting in value to $5,781,118; of which value, about $5,000,000 was brought into the port of New Bedford. The average length of the voyages of the right whale ships are 36 months; sperm whale ships

44 months. New Bedford is the great nursery for seamen in the United States. See article Oil.

New Brunswick, a British province, east coast of North America, lat. 45° 5′ to 48° 40′ N., long. 63° 50′ to 68° W.; bounded west by the State of Maine; north-west Lower Canada, from which it is separated by the River Restigouche; north, Bay of Chaleurs; east, Gulf of St. Lawrence and Northumberland Strait, the latter separating it from Prince Edward Island; and south, the Bay of Fundy, and part of Nova Scotia. Its coast-line is about 500 miles in length, interrupted only at the point of junction with Nova Scotia, where an isthmus of not more than 10 miles in breadth connects the two provinces, and separates the waters of Northumberland Strait from those of the Bay of Fundy, which it is proposed to unite by means of a canal. The most remarkable bays and harbors are Bathurst Bay, on the north coast; Miramichi Bay, on the east coast; Passamaquoddy Bay, and St. John harbor, on the south coast. There are, besides these larger indentations, numerous smaller harbors, particularly on the south portion of the east coast. Area, 27,704 square miles.

The population of this province is principally composed of British settlers and their descendants. The remnant, of French extraction, are settled around the Bay of Chaleurs. There is still a few of the aborigines left, consisting of the Micmacs, Melicites, and others, amounting in 1851 to 1,116 persons.

Physical Features, etc.—The general surface of the country presents a series of bold undulations, sometimes rising into mountains, or continuous ridges of high land. The latter are seldom of any considerable height; but their precipitous acclivities, sharp outline, and deep ravines, give them an alpine and picturesque character that finely and strikingly contrasts with the rich valleys and sheltered plains which alternate with the more rugged scenery. The shores of the Gulf of St. Lawrence and Northumberland Strait, however, present different and far less pleasing features. There the land, for about 12 miles inland, is low and sandy, covered with trees of a stunted growth, and skirted with extensive marshes, large deep morasses, and long sand beaches. Along the shores of the Bay of Chaleurs and the Gulf of St. Lawrence, gray sandstone and gray clay-slate predominate, with detached rocks of granite, quartz, and ironstone; on the south coast, limestone, graywacke, clay-slate, with saudstone, interrupted occasionally by gneiss, trap, and granite. Specimens of amethyst, cornelian, jasper, etc., have been picked up in various places. Coal is plentiful, and iron ore abundant; the former is said to extend over 10,000 square miles, or above one third part of the whole area of the province.

New Brunswick is drained by numerous rivers and small streams, the principal of which is the St. John, navigable for vessels of 50 tons to Fredericton. The next river in importance is the Miramichi, which rises near the west limits of the territory, whence it flows north-east, and falls into Miramichi Bay, on the east coast, about lat. 47° 5′ N., long. 64° 53′ W.; its whole course is upward of 110 miles, it is navigable for nearly 40 miles, and admits vessels of 600 or 700 tons. The Restigouche is the next considerable river; it forms the north-west limit of the province, and falls into the head of the Bay of Chaleur, after a course of about 100 miles. There are a number of small lakes in New Brunswick, particularly in the northern part, but none of any considerable size. In the south there are a few somewhat larger, the most important of which are Grand Lake, 20 miles long, by about 5 miles broad; and Washedemoak Lake, about 20 miles long, by 2 miles broad—both lying between St. John and Fredericton.

Manufactures, etc.—There were in the province in 1851, 52 woolen factories, employing 96 persons; 261 grist mills, employing 366 persons; 584 saw mills, employing 4,302 persons; 125 tanneries, employing 255 persons; 11 founderies, employing 242 persons; 8 breweries; 52 weaving and carding establishments (5,475 hand looms), employing 96 persons; 96 of various manufacturing establishments, employing 953 persons. Coals raised, 2,482 tons; iron smolted, 810; lime burnt, 35,599 casks; grindstones quarried, 58,840; gypsum, 5,465 tons quarried.

Products.—Cloth, 622,237 yards; and 100,975 gallons malt liquor. Value of boots and shoes made, £89,867; leather, £45,165; chairs, cabinet ware, and wood ware, £33,977; candles, £19,860; soap, £18,562; hats, £6,360; iron castings, £20,025.

The principal places are St. John, the metropolis, and Fredericton, the capital. There were in 1854 several railroads in course of construction; 5 banks, aggregate capital, £337,500; a savings' institution, and 4 insurance companies.

Fisheries of New Brunswick.—There were French fishing establishments in that part of Acadia now known as New Brunswick, as early as 1638. The English succeeded to these at the treaty of Utrecht, in 1713; but they do not seem to have formed many others until after the cession of Canada, in 1763.* Among the first, I suppose, was that of Lieutenant Walker, of the royal navy, in the Bay of Chaleurs, which was extensive, controlling the fur and fish trade of that region for several years. There were similar settlements on the River St. John; but from the estimates of Mr. Grant, made in 1764, at the request of the Rev. Dr. Stiles, the whole population of British origin could not have exceeded 1000.

At the peace of 1783, several thousand "Tories," or loyalists, compelled to abandon their native land, settled in New Brunswick, and transferred thither the jurisprudence, the social and political institutions of "the old thirteen;" and, the year following, were allowed to organize a separate colonial government. Like those who went to that part of Acadia still called Nova Scotia, many of the loyalists were gentlemen of education, eminent private virtue, and distinguished consideration. Some obtained offices of honor and emolument; others adopted agricultural pursuits; and another class, fixing their abodes on islands and the shores of the main land, resolved to earn their support on the sea. Of the latter description, several, though compelled to toil and exposure in open fishing boats, had been persons of note and property. But, ruined by the confiscation laws of the Whigs, or by the general disasters of a civil war, they resorted to the hook and line to relieve the pressure of immediate want, indulging the hope of "better times," and more congenial avocations. Few, however, abandoned the employment, and their children, trained to it from early youth, and acquiring fishermen's habits, succeeded to boats, fishing-gear, and smoke-houses, as their only inheritance, and continue it at the present day. I have often met with common boat fishermen of this lineage, whose earnings were hardly sufficient to procure the absolute necessaries of life.

The fisheries of New Brunswick are prosecuted with neither skill nor vigor. The *apparent* exports, small as are the statistics, do not indicate their real condition; since it is certain, that of the products of the sea shipped to other countries, a part is first imported from Nova Scotia, and form a proportion of the exports of that colony.† The number of vessels sent to Labrador and other distant fishing grounds is never large, and often almost nominal. The cod-fishery in the Gulf of St. Lawrence and the Bay of Chaleurs is

* The French built two forts on the River St. John prior to the peace of Utrecht (1713), which they repaired in 1754, although the country had been ceded to England quite half a century.

† The imports into St. John from Nova Scotia for three months only (July 10 to October 10) of the year 1852, were 7,861 quintals of dried fish, 869 barrels of mackerel, 2,423 barrels of herring, and other pickled fish.

not as extensive as might be reasonably expected from the long experience of the inhabitants there, and the general safety and practicableness of the harbors and indentations of the coast.

The same remarks need slight qualification when applied to the Bay of Fundy, and its principal branch, the Bay of Passamaquoddy. Cameron's, Doggett's, Drake's, Woodward's, Money, and Whale Coves; Dark Harbor, Long's Eddy, Grand Harbor, and Long, Duck, Nantucket, and Kent's Islands, which are all in the group of islands known as "Grand Menan," afford excellent facilities for catching and curing cod, pollock, and herring, in large quantities. In the waters that surround Campo Bello, Deer, and Indian Islands, as well as in those that wash Bean's, Adams's, Parker's, Minister's, Hardwood, and Fish Islands, and along the coast between L'Etite Passage and Point Lepreau, embracing Mace's and Back Bays, Bliss' Island, Seely's Cove, Crow, Beaver, and Deadman's Harbors, the advantages for fishing are very good. Every place here mentioned is within a few hours' sail of the frontier ports of Maine, and many of them are within cannon-shot distance of the shores of the United States. The fishermen of both countries meet on the same fishing grounds; borrow and lend "bait;" ask after each other's "woman"* at home; narrate the wonderful cures of the last-discovered remedy for the "reumatis;" complain of the "scacity" of fish, and the low price of "lie;" discourse about "flat-hooped flour;" and generally conduct toward one another as friends and brethren, owing allegiance to one government. Indeed, the observation of quite 25 years authorizes me to say that the colonists always agree far better with the Americans than with each other. Our countrymen are not often considered interlopers when they leave the fishing grounds nearest home and visit those of Grand Menan; but the fishermen of Campo Bello, and the other islands on the British side of the Passamaquoddy, are sometimes roughly accosted and "twitted" when *they* venture to take the same liberty. Frequent attempts have been made to disturb the friendly relations which have generally existed between the people of the two flags, but without success. The efforts of officious individuals, and of functionaries of the colonial government, have been alike disregarded. The captains of the British ships-of-war on the station, gentlemen in their feelings, have steadily refused to stoop to wage a petty warfare against the American boats that cross the imaginary boundary line in the waters of the Passamaquoddy, though, of course, they have *always* obeyed their instructions. Yet, in the spirit of Nelson, who looked at the signal he meant to disobey with his blind eye, they have never been able to *see* a "Yankee," or to distinguish one from a subject of her majesty. Some of them—as I remember the stories of by-gone years—admitting the necessity of driving off the aggressors, have asked, "How are we to know them—are they *marked*?" Others, sending their barges into the fleet of boats, have directed that "all who *say* they are Americans must be told to go to their own side of the line;" but, strangely enough, the unbroken silence of the fishermen to whom the question was propounded afforded proof that all were "Bluenoses." Still others, satisfying themselves, by peering through glasses from their quarter-deck, that *all* the boats in sight *must* belong to the islands in New Brunswick, have thought the sending of barges to inquire a needless ceremony. One, in 1840—the captain of the *Ringdove*—in his official report, recommended that "every British boat should have a license; otherwise," said he, "it is impossible to discriminate them from Americans."

Those who seek to put an end to this state of things, whatever their motives, do not take into the account that the instant they shall accomplish their object, border strifes will follow of necessity. Before renewing their efforts, they may be kindly asked to consider that harmony and good-fellowship between the inhabitants of frontier settlements are indispensable, and far better securities against the marauder's torch and bludgeon than armed ships or bodies of troops. The produce of the boat-fishery of the Bay of Fundy, and of the Passamaquoddy, is not only small in value, but generally inferior in quality. An increase of this fishery, under present circumstances, is not desirable. The fishermen dress and cure the cod, pollock, hake, and haddock—the kinds usually dried—in a slovenly manner.

It is stated in an official document that in 1850, at the different fishing-stations mentioned as within these bays, there were employed 62 vessels of 1,268 tons, 344 open boats, 55 weirs, and 1,337 men, in catching and curing the several kinds of fish just referred to; and that the value of the products of the various branches of the fishery were £33,080 currency, or $132,320. These facts show that the fishermen received a miserable pittance for their toil; since, without allowing for the use and depreciation of the capital invested in the vessels, boats, weirs, nets, and other fishing-gear, they earned for the year less than $100 each. We may lament that men who pursue their avocation both day and night, 'mid rains and gales, are so poorly rewarded. We may lament, too, that the people of Grand Menan, falling short of those of Campo Bello, West Isles, and the parishes on the coast of the main land, earn even less than the average. But, what then? The fault is their own; entirely so. They may, if they will, produce as sweet and as well-cured pollock and cod as do their brethren of Barrington, and as good colored and flavored smoked herring as do those of Digby, and obtain prices to correspond with the quality.

The general poverty among them is not to be attributed entirely or principally, as they aver, to the occasional loss of boats and nets, nor to glutted markets and bad seasons, nor to the interlopers who visit their fishing grounds, but to their own want of industry, thrift, cleanliness, and honesty. The few "who work it right," acquire property, and enjoy the entire confidence of the dealers, command credit for supplies, and high prices for their commodities when offered for sale.

It remains to speak of the fisheries of the Bay of Chaleurs, and of the Gulf of St. Lawrence. The county of Restigouche borders on Canada, and the counties of Gloucester, Northumberland, and Kent, are favorably situated for adventures in these waters. The fishing grounds are safe, and generally close to the shores; and those near Caraquet, in Gloucester, are much frequented by boats from Gaspè, and owned by residents of Canada. Since 1835, the catch of both cod and herring by the fishermen of Restigouche and Northumberland has fallen off more than half, and in Kent has nearly become extinct. But the inhabitants of the port of Caraquet, availing themselves of the advantages of their position, have actually produced a large portion of the dried cod exported from the colony for some years. These four counties are more remote from the capital of New Brunswick, and from the markets of the United States, than the county of Charlotte, which embraces Grand Menan, and the other Islands in the Bay of Fundy (where the fish are so badly cured), and the attention of the people is divided between several branches of industry; but fishing, as an occasional and irregular employment merely, has commonly proved a source of profit, or at least has afforded a fair reward for the labor and capital devoted to it. The fish shipped at Caraquet are in much better repute than those caught in the Bay of Fundy, and the remark is true of the produce of the Bay of Chaleurs and St. Lawrence fisheries generally. It may be presumed that *there* the herring does not

* They thus speak of their wives.

"become rotten before salting;" that, when sold as the "gibbed" article, it is not packed without taking out the entrails; and that the cod *is* washed after being split, and *not* salted and put in "kinch" in all its blood and dirt.—SABINE'S *American Fisheries.*

The following statement exhibits the value of imports and exports to and from the United States and New Brunswick during the years 1849 and 1850:

	1849.	1850.
Exports to New Brunswick....	$1,822,810	$1,810,740
Imports from "	257,910	387,000

The following abstract of the trade between the United States and the port of St. John, New Brunswick, shows the number of ships and tonnage entered inward, and the value of imports at that port during the year ending 31st December, 1851: Vessels inward: 605 vessels, of an aggregate tonnage of 166,052 tons; value of imports, $1,458,205. Vessels outward: 359 vessels, of an aggregate tonnage of 64,344 tons; value of exports, $812,895.

The United States export to New Brunswick, principally, books and stationery, Indian corn, flour, wheat, lumber, salted provisions, rice, coal, tobacco, timber, all various kinds of manufactured goods, and merchandise; and receive, in return, timber of different kinds (except pitch-pine, oak, locust, hickory, and black walnut), lumber, staves, laths, shingles, spars, and fish. Coal and timber being classed among the staples of both countries, an examination has been instituted with a view to ascertain the probable effect of the Reciprocity Treaty on the trade in these articles between the United States and New Brunswick. To meet this inquiry, it is necessary to know whether the coals and timber of New Brunswick and the United States are similar in character and kind, or whether they differ in both, and in the uses to which they are applied; such having their own peculiar advantages for certain purposes.

Dr. Jackson, an American geologist of ability, in a sketch "of the early history and of the present state of our knowledge of the geology, etc., of Nova Scotia and New Brunswick," referring to the mineral productions of these provinces, says: "The coals of Nova Scotia are of various kinds, and are wholly different from those of the United States; at least, they differ from all the coals which are found on the eastern side of the Apalachian Mountains, so that they do not enter into competition with the coals obtained from mines in the United States, which supply our coast." In a subsequent part of this essay Dr. Jackson remarks, in substance, that recent explorations in New Brunswick have brought to light a beautiful and before unknown variety of highly bituminous coal, containing 60 per cent. of gas-making bitumen and 40 per cent. of coke. This coal is a new variety, particularly adapted to the uses of the gas-house; and it is represented by Dr. Jackson as the very material wanted by gas-manufacturers to enrich the products of our semi-bituminous coals of Maryland and Virginia. In the formation of gas, this New Brunswick production can not be used alone, but is mixed with other coals, in the proportion of from one fifth to one third; and thus gives the best material that can be obtained. It also gives greater value to the coke of our more ash-bearing coals. If these facts are to be relied upon (and they are supported by high authority), it follows that the importation of the New Brunswick coal into the United States, so far from interfering with the sale of our own coals, would contribute, in a great measure, to make available, in the manufacture of gas, much of those which would otherwise be unsuitable for that purpose. With these distinctive characters and different applications, the coals of New Brunswick and Nova Scotia will always be required, whatever may be the supply of our own mines of Pennsylvania, Maryland, and Virginia. Indeed, the mine near Richmond, Virginia, is the only one in the United States that furnishes bituminous coal that will fully serve in the place of the coals of Nova Scotia.

From the imports and exports of timber between the United States and New Brunswick, it will be seen that New Brunswick imports from the United States large quantities of pitch-pine, oak, locust, hickory, and black walnut, none of which are found in that province; while the United States receives, in return, boards, scantling, deals, various kinds of lumber, and fish. The interchange of these products must be greatly increased under a system which relieves them from all import duties.—*U. S. Com. Rel.*

Newcastle. The following information is from the United States' consul at Newcastle in answer to a circular issued by the State Department: "In this port there are no privileges that British or any other vessels have which American vessels have not to the same extent; but there are restrictions and extra charges at this port on the vessels of some other nations that have not treaties of reciprocity with England, viz., France, Two Sicilies, and Portugal. French vessels, taking cargoes to, or bringing them from, any place but France proper, are subject to double the ordinary light-house dues; also, to double harbor lights, double Ramsgate dues; and in case the vessel loads coals or grindstones, instead of paying 4 cents, or 2d., per chaldron town dues, as the vessels of nations in reciprocity, 16 cents, or 8d., per chaldron, is charged. When the vessel goes to any place but France proper, such vessels also pay 12 cents, or 6d., per foot extra pilotage. Vessels belonging to the Two Sicilies are subject to the same extra charges. Vessels belonging to Portugal have the additional privilege of taking cargoes to or from their own colonies on the same terms as to Portugal proper, but to or from any other country they are subject to the above extra charges. There are, also, other nations, such as some of the South American States, whose vessels are subject to these extra charges, but such vessels never visit this port. These extra local dues are, nevertheless, payable by all foreign vessels coming to this port, but the British government satisfy these claims on the vessels of nations in reciprocity.

"The port charges on vessels of the United States are the same as on British vessels. Annexed are particulars of the charges on a vessel of 400 tons register, carrying 200 chaldrons, or 530 tons, of coals and 60 tons of other goods. Vessels belonging to the United States (by a law passed this (1854) session of Parliament) are allowed to carry goods of any kind coastwise without any restriction, and with every privilege that British vessels enjoy.

LIST OF CLEARING CHARGES AT THE PORT OF NEWCASTLE, CHARGED ON AN AMERICAN VESSEL OF FOUR HUNDRED TONS REGISTER, CARRYING TWO HUNDRED CHALDRONS OF COALS AND SIXTY TONS OF OTHER GOODS.

Charges.	U. S. currency.	Sterling.
Low lights	$0 61	£0 2 8
Life boats (once a year)	73	3 0
Pier dues	8 67½	1 13 4
Night office	48	2 0
Brindlington pier	1 21	5 0
Whitby pier	2 02½	8 4
River watch	2 02½	8 4
Ramsgate	4 84	1 0 0
Trinity lights	54 55½	11 5 5
Tower dues { Cargo	8 67	1 18 4
Tower dues { Ship	77	8 2
Total	$83 89	£17 4 7

"If the vessel bring ballast, there is an additional charge on it of 1s. 6d., or about 36 cents, per ton on the ballast. Sea pilotage, in winter, 1s. 6d.; and in summer, 1s. 3d. per foot. Towage, according to distance, from 5s. to £3.

"Insurances are mostly effected in the States; the rate here runs from 2½ to 5 per cent., according to season and class of vessel. Freights from $4 84, or 20s., to $7 74, or 32s., per ton, according to circum-

stances. Commission for purchasing is usually 2½ per cent. Sales are made either by direct correspondence or through agents resident here. Terms vary, with the articles, from 2 to 4 months. Bills, and a various discount for cash, are the ordinary terms. There is no export duty payable on goods to the United States. There are no internal taxes levied on any of the commodities mentioned, either in a crude, partially manufactured, or wholly complete state."

Newfoundland, Colony of, is in lat. 46° 40′ and 51° 39′ N., and long. 52° 44′ and 59° 31′ W. Area, 35,913 square miles. Extreme length, about 420 miles, and extreme breadth, about 300 miles.

Newfoundland is an island lying on the north-east side of the Gulf of St. Lawrence, and is bounded on the whole east shore by the Atlantic Ocean, on the north-west and north by the Strait of Belleisle, which separates it from Labrador, on the west by the Gulf of St. Lawrence, and on the south-west it approaches at Cape Ray toward Cape Breton, so as to form the main entrance from the Atlantic into the St. Lawrence. Capital, St. John's. The island is of a somewhat triangular form, but without any approach to regularity, each of its sides being broken into numerous bays, harbors, creeks, and estuaries. Its perimeter is not less than 1000 miles. From the sea it has a wild and sterile appearance, and its general character is that of a rugged, and, for the most part, a barren country. Hills and valleys continually succeed each other, the former never rising into mountains, and the latter rarely expanding into plains. Of various character, the hills sometimes form long, flat-topped ridges, and are occasionally rounded and isolated, with sharp peaks and craggy precipices. The valleys vary also from gently sloping depressions to rugged and abrupt ravines. The sea-cliffs are bold and lofty, with deep water to their bases; and the rough character of the country is increased by the existence of vast boulders scattered over it. This uneven surface is naturally distinguished into woods, marshes, and barrens. The "woods" are spread over the whole country wherever there is any water-course, and are even found crowning the summits, and near the sea-coast are especially luxuriant. The trees consist principally of pine, spruce, fir, larch (or hackmatack), and birch; in some districts the mountain ash, the alder, the aspen, and a few others are found. Most of the wood is of small and stunted growth, although the character of the trees is greatly varied in this respect according to soil and situation, and in small groups wood of fair growth and length may be found. The open tracts are generally called "marshes." These are not necessarily low, or even level lands, but are frequently at a considerable height above the sea, and have often an undulating surface. They are open tracts, covered with moss, sometimes to the depth of several feet. This thick coating of moss is precisely like a great sponge spread over the country. At the melting of the snow, it becomes thoroughly saturated. Numerous small holes and pools, and in the lower parts small sluggish brooks or gullies are met with. But in most cases the surface is sufficiently eligible for drainage, and when the moss is stripped off, dry ground or bare rock is generally found beneath. The "barrens" occupy the summits of the hills and ridges, and other elevated and exposed tracts. They are covered with a thin and scrubby vegetation, consisting of berry-bearing plants, and dwarf bushes of various kinds. Bare patches of gravel and boulders, and crumbling fragments of rock are frequently met with upon the barrens, which are generally altogether destitute of vegetable soil. These different tracts are none of them of great extent; woods, marshes, and barrens frequently alternating.

Not the least remarkable features of the island are its lakes and ponds. These are found in every direction, and in almost every situation, not only in the valleys, but on the hills, islands, and even in the hollows of the summits, and on the very tops of the hills. They vary in size from pools of 50 yards in diameter to lakes 80 miles in length, and from 4 to 5 miles wide. The number exceeding 2 miles in extent amount to several hundreds, while those of smaller size are absolutely countless.

But with all this lake surface, there are few large water-courses; yet this absence of any thing which can be called a navigable river is readily explained. The character of the natural surface, indeed, is such that it absorbs every new accession of moisture from rain and melted snow, and only parts with it again by evaporation or a slow drainage into the ponds, the overflow of which is the only supply the brooks have. Thus there is never formed a current sufficiently powerful to dig out a deep channel, or to breach opposing barriers. The area covered by fresh water has been estimated at one third the whole island, and this large proportion will not probably be found exaggerated.

The coast of Labrador is also included in the government of Newfoundland, to which it was annexed in 1808. It has a sea-coast of about 100 miles, and is frequented during the summer season by more than 20,000 fishermen. This vast country, inhospitable in climate and uninviting, is inhabited by Esquimaux and Moravian missionaries, in all numbering some 8000 or 10,000 souls. Situate in a severe and gloomy climate, and producing nothing that can support human life, this is one of the most barren and desolate of countries. But, as if in compensation for these disadvantages, the sea in its vicinity teems with fish, and thus thousands of hardy adventurers are drawn to its rugged shores, and their industry and enterprise amply rewarded. The sea in this locality indeed forms the most valuable fishery in the world. In no part the mainland of Labrador exceeds the height of 500 feet above the sea, and is often much lower, as are all the islands, except Great and Little Mecatina. Both are of granite rock, and almost bare of trees; and there are many ponds of dark bog water, frequented by water-fowl and flocks of Labrador curlew. The coasts are beset with islands and rocks, sometimes so intricate as to forbid navigation. There are, however, several harbors fit for large vessels, and which may be safely entered. The Strait of Belleisle, which separates the two parts of the government, is about 50 miles long and 12 wide. It is deep, but its passage is not considered a safe one, owing to its currents. There are no harbors on that part of the Newfoundland coast which faces this strait, and few on the opposite coast. During the winter months the resident population of European descent scarcely numbers 800 souls, and many of these have intermarried with the Esquimaux. The few widely scattered families reside at the establishments for sea and salmon fishing and for fur-trading. Seals and salmon are very plentiful, and the latter are of a large and superior description. The furs of Labrador are very valuable, and consist of fox, otter, sable, lynx, bear, wolf, deer, ermine, hare, etc. The Canadian partridge and the ptarmigan are also plentiful. The "egging" business employs a large number of small schooners. The eggs obtained are chiefly those of the murr, but the eggs of puffins, gannets, gulls, eider ducks, and cormorants, are also collected. Halifax is the principal market for these, although no small quantity is disposed of at Boston and other United States' ports. Feathers are also extensively collected on the coasts and islands.

The average size of Newfoundland vessels is about 130 tons. The chief coasting trade consists in carrying provisions and supplies for the fishery, and bringing back the proceeds of the voyage.

Newfoundland proper is divided into nine districts, the population of which, in 1845, the last census year, was as follows:

Electoral Districts.	Males.	Females.	Total.
Twillingate and Fogo	3,771	2,973	6,744
Bonavista Bay	3,948	3,284	7,227
Trinity Bay	4,689	4,119	8,801
Conception Bay	14,899	13,127	28,026
St. John's	13,177	12,919	26,196
Ferryland	2,413	1,957	4,370
Placentia and St. Mary's	3,578	2,895	6,473
Burin	2,485	1,873	4,358
Fortune Bay	3,109	1,991	5,100
Total	52,064	44,931	96,995

The population of Newfoundland at various periods, from 1806, has been as follows: in 1806 it was 26,505; in 1816, 52,672; in 1828, 52,157; in 1825, 55,719; in 1828, 60,088; in 1832, 59,280; in 1836, 73,705; and in 1845, as above stated. The population in 1851 was estimated at 101,600 souls.

The chief statistics of the agricultural condition of the colony, as gleaned from the census of 1845, are exhibited in the subjoined table, showing the disposition of land, number of live stock, and agricultural products:

Electoral Districts.	Land in cultivation.	Land in possession.	Live stock owned.					Agricultural products.		
			Horses.	Cattle.	Sheep.	Pigs.	Goats.	Potatoes.	Grain.	Hay, etc.
	Acres.	Acres.						Bushels.	Bushels.	Tons.
Twillingate and Fogo	406	591	9	276		569		18,682	14	59
Bonavista Bay	612	808	108	970		1,804		25,971	272	357
Trinity Bay	1,070	1,478	237	1,938		795		29,028	8	518
Conception Bay	3,798	8,875	1,820	1,576		2,710		152,878	6,708	2,929
St. John's	19,099	63,777	998	1,607	298	577	1,125	48,548	3,436	4,818
Ferryland	1,202	2,270	350	1,206	315	129	276	28,556	556	918
Placentia and St. Mary's	2,200	4,279	475	3,231	1,998	518	226	28,759	688	1,578
Burin	1,047	1,581	170	1,772	127	101	8	11,081	20	777
Fortune Bay	211	320	9	678	439	85	7	2,067	3	176
Total	29,645	83,428	4,261	13,810	..	..	..	341,160	11,695	11,008

The manufactures of the colony are very limited, and consist only of the following establishments: at St. John's, 2 corn, 1 saw, and 1 bone mill, 1 iron foundery, and 1 brewery. The city has gas and water works. At Brigus, Conception Bay, there is 1 corn mill; at Harbor Grace, 1 corn mill and gas-works; in Trinity Bay, 1 saw mill; and at Green Bay 2 saw mills. These are all that are noted.

As before stated, the chief wealth of the colony consists in its fisheries. The extent and value of these will be best appreciated by perusal of the statistical returns.

In 1845 the number of fishing-boats, etc., was as follows: boats from 4 to 15 quintals, 8092; boats from 15 to 30 quintals, 1025; boats from 30 quintals and upward, 972; cod seines, 879; and seal nets, 4568.

The value of property employed in the fisheries, on an average of four years, ending in 1849, has thus been stated:

341 vessels engaged in the seal fishery	$1,023,000
80 " coasting & cod-fishery	80,000
10,089 boats engaged in the cod-fishery	756,675
Stages, fish-houses, and flakes	125,000
4,568 nets of all descriptions	68,500
879 cod seines	110,000
Vats for making seal-oil	250,000
Fishing implements and casks for liver	150,000
Total	$2,563,175

The value of the annual products of the colony during the same average period is thus stated:

949,169 quintals fish exported	$2,610,000
4,019 tierces of salmon	60,300
14,478 barrels of herrings	42,500
508,446 seal-skins	254,000
6,200 tons of seal-oil	550,000
3,990 tons of cod-oil	525,000
Fuel and skins	6,000
Bait sold to the French	59,750
Value of agricultural produce	1,011,770
Fuel	300,000
Game, venison, and wild-fowl	40,000
Timber, boards, staves, hoops, etc.	250,000
Fresh fish used by inhabitants	125,000
Salted " "	175,000
Oil consumed by "	42,500
Total	$6,352,020

The outfit for the seal-fishery in 1851 and 1852 is shown in the subjoined ta

From	1851.			1852.		
	Ves.	Tons.	Men.	Ves.	Tons.	Men.
St. John's	91	9,200	3,480	96	10,1[illegible]	3,522
Harbor Grace	64	5,949	2,398	64	6,129	2,494
Spaniard's Bay, etc.	6	439	192	6	571	287
Carbonear	34	3,408	1,228	32	3,344	1,167
Brigus, Cupids, Port de Grave, etc.	57	5,809	2,019	68	6,407	2,456
Trinity and Catalina	30	2,573	999	..	....	....
New Perlican & Hants Harbor	11	927	367	15	1,324	562
Greenspond, etc.	23	1,740	696	..	....	....
Bay Bulls, Aquaforte and Renews	..	....	....	..	....	....

The chief foreign trade of Newfoundland vessels is with England, Scotland, Ireland, Spain, Portugal, Hamburg, Brazil, the West Indies, United States, and British North America. The time occupied on the voyage to Europe and back is from six to eight weeks. To Great Britain the cargo, generally, is oil, and to the other European countries dried codfish. A voyage to the West Indies and back requires about nine weeks. The outward cargo is dried cod and pickled fish, and the inward cargo West India produce. Vessels from the West Indies sometimes return by the United States, bringing flour and provisions. Vessels proceeding to Brazil with dried fish generally go from thence to Europe with cotton, sugars, etc., and on their return to this consulate bring manufactured goods from Great Britain. This voyage occupies them from three to four months. The trade with the United States and Canada is almost exclusively in the importation of provisions. American vessels could be advantageously employed in the foreign trade, particularly in carrying breadstuffs, provisions, etc., to this colony, and dried fish hence to the West Indies, etc.

The following table exhibits the quantity and value of the products of the fisheries exported for the eleven years ending 1851:

Years.	Dried fish.		Oils.		Seal skins.		Salmon.		Herrings.	
	Quintals.	Value.	Gallons.	Value.	No.	Value.	Tierces.	Value.	Barrels.	Value.
1840	915,795	£576,245	8,206,583	£305,197	631,385	£39,408	3,896	£12,939	14,686	£9,036
1841	1,009,725	605,014	2,673,674	266,892	417,115	29,961	3,642	12,302	9,965	6,861
1842	1,007,980	561,950	2,262,031	234,813	344,683	23,200	4,715	13,078	13,839	7,119
1843	936,202	532,194	3,111,312	335,975	651,870	40,497	4,058	12,216	9,649	4,570
1844	852,102	482,480	3,605,868	315,090	685,520	39,648	3,753	11,945	13,410	6,065
1845	1,000,338	536,990	2,219,801	243,640	352,202	40,123	3,545	12,794	20,903	11,234
1847	837,978	489,940	2,224,233	229,172	436,831	46,280	4,917	9,782	9,908	5,111
1848	920,366	491,924	2,610,820	350,579	521,004	58,428	3,822	6,597	13,872	7,644
1849	1,175,167	588,728	2,292,496	215,742	306,072	33,780	5,911	10,815	11,471	5,671
1850	1,082,182	582,949	2,636,809	309,928	440,828	56,850	4,600	9,200	19,556	9,779
1851	1,017,074	498,014	2,744,910	319,977	511,630	76,596	4,025	12,024	30,259	18,261

The annexed is an account of the vessels and tonnage, both British and foreign, entered inward, and cleared outward, of the colony of Newfoundland, in the year ending 5th January, 1852:

Countries.	Entered.				Cleared.			
	British vessels.		Foreign vessels.		British vessels.		Foreign vessels.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
Great Britain	900	99,514	2	486	190	16,117	3	333
Gibraltar	..	....	..	....	11	1,159	1	149
Jersey and Guernsey	11	1,415	..	....	8	451	..	....
Spain	72	11,021	36	4,425	18	2,178	36	4,276
Portugal	76	9,439	1	76	90	11,608	1	76
Denmark	5	1,122	3	474	1	107	..	....
Germany	36	5,738	7	1,289	..	....	..	....
Naples	3	437	..	....	30	3,900	..	....
Sardinia	1	121	..	....	..	....	..	....
Roman States	..	....	..	....	6	546	..	....
Tuscany	..	....	..	....	9	1,156	16	1,947
Azores	..	....	..	....	1	94	..	....
Sicily	..	....	..	....	1	125	1	147
Zante	..	....	..	....	1	155	..	....
Madeira	..	....	..	....	1	62	..	....
British N. Amer. Colonies	563	49,343	8	503	564	55,866	7	1,514
United States	121	14,692	11	1,907	81	8,041	4	618
British West Indies	28	3,487	..	....	71	10,319	1	186
Spanish West Indies	21	2,826	19	2,478	16	1,930	1	179
Danish West Indies	..	....	..	....	1	188	1	200
Brazil	8	1,661	..	....	48	8,841	7	1,292
St. Pierre (French)	38	594	..	....	10	98	..	....
Total	1,188	130,929	82	11,588	1,027	117,778	79	11,119

Making an aggregate of 1265 vessels, and 142,467 tons (manned by 8465 men), entered, and a total of 1106 vessels, and 128,890 tons (with 7741 men), cleared. From this exhibit it will be seen that the arrivals from the United States greatly exceed the departures for this country, thereby showing the balance of trade to be strongly against this colony.

The entrances and clearances for the past four years have been as follows:

Years.	Entered.		Cleared.	
	Vessels.	Tons.	Vessels.	Tons.
1849	1,156	132,888	1,074	120,643
1850	1,220	138,228	1,091	108,795
1851	1,232	137,465	1,084	141,578
1852	1,265	142,467	1,106	128,890

The statistics of ship-building for a series of years exhibit the following results:

Years.	No.	Tons.	Years.	No.	Tons.
1844	25	1,281	1848	19	794
1845	32	1,607	1849	30	1,054
1846	31	1,728	1850	30	1,497
1847	17	854	1851	88	1,806

Ships owned and registered in the colony, on the 31st December, 1851: ships, 830; tons, 52,078.

The total value of the commerce of the colony for the past five years, ending 5th January, 1852, has been as exhibited in the following table:

Years.	Value of imports.	Value of exports.	Total value.
1847	£843,409	£806,605	£1,750,014
1848	769,628	887,581	1,657,209
1849	770,190	876,567	1,646,757
1850	867,816	976,770	1,844,586
1851	946,191	956,751	1,902,942

Comparative Statement of the Revenue and Expenditure in the years 1849, 1850, and 1851.

	1849.	1850.	1851.
Imper'l customs duties	£3,583 5 8	....	....
Colonial duties	52,796 2 6	£59,881 19 0	£74,205 4 1
Light dues	1,698 7 9	2,890 16 11	2,487 18 8
From other sources	11,832 9 2	5,142 8 0	3,722 11 5
Totals	£69,405 5 1	£66,915 3 11	£80,395 14 2
Expenditure	66,962 2 1	71,807 1 5	75,770 5 1

Total Amounts received and paid for the Year ending 31st December, 1851.

Receipts for the Year.

Customs revenue	£74,305 4 1
Light dues	2,467 18 8
Rent fund	1,601 8 4
License fund	849 0 9
Fees from public officers	779 2 4
From N. A. clergy, estimate	500 0 0
Total	£80,395 14 2

Expenditures for the Year 1851.

Civil department	£5,990 0 0
Customs establishment	4,892 18 10
Judicial department, etc.	6,804 10 7
Police and magistracy	5,823 10 0
Ecclesiastical department	500 0 0
Legislative "	4,125 19 6
Printing and stationery	545 4 8
Jail expenses	687 4 9
Coroners	280 12 1
Fuel and light	510 4 8
Repairs of court-houses, etc.	509 16 6
" government buildings	245 1 8
Relief of the poor	6,829 18 10
Roads and bridges	6,765 13 10
Postage and incidentals	107 12 2
Public institutions	475 0 0
Education	7,748 5 0
Light houses	2,928 13 6
Registration of voters	30 0 0
Interest on loans	5,786 10 6
Pensions	161 4 0
Crown lands act	281 11 2
Loans paid off	6,780 0 0
St. John's rebuilding acts	2,881 16 10
Ferries and packets	619 10 0
Postal act	155 13 7
Electric telegraph	688 1 9
Harbor Grace streets acts	886 13 4
St. John's burying ground	602 0 0
Steam communication	500 0 0
Miscellaneous	2,884 13 8
Total	£75,770 5 1

The Labrador coast, as before observed, is the resort of a large number of fishermen. Since the treaty of Paris, this fishery has increased more than sixfold. No accurate account of the products can be ascertained, but the following is considered to be an approximation. The salmon fisheries average annually about 30,000 tierces. The herring fisheries are also very large, and the seal fisheries are equal in value to those of Newfoundland. The imports of Labrador have been estimated by the authorities of Newfoundland at $600,000 per annum, and the following is an approximation to the value of the exports:

American vessels	$480,000
Nova Scotia vessels	480,000
Canada vessels	144,000
Vessels owned or chartered by English and Jersey houses having establishments on the coast	480,000
Vessels owned or chartered by the people of Newfoundland	1,200,000
Total	$2,784,000

The total exports, however, are by some persons estimated at $4,000,000.

[Authorities: Official *Abstract of Census*, 1845; *Return showing the Value of Articles*, etc., imported, and the *Newfoundland Almanac* for 1853, furnished by Hon. James Crowdy, Colonial Secretary; Martin's

British Colonies (London edit.); ANDREWS's *Report on Colonial and Lake Commerce* (U. S. Sen. Doc. 112, part viii., p. 578); *Report of the Committee* (Canada) *to prepare a Statement of the Population, Income, Expenditure, and Debt of the Provinces of British North America* (June, 1853), etc., etc.]

Trade with the United States.—The great staple of this colony is derived from its extensive fisheries. An elaborate and interesting account of these may be found in Mr. Andrews's Report on Canada, etc., already referred to.

	1850.	1851.
Imports from Newfoundland into U. S...	$63,270	$92,220
Exports to Newfoundland from U. S.....	167,550	954,266

The trade of Newfoundland with other countries than the United States, particularly with Spain, Portugal, Italy, and the Brazils, is much more extensive, in proportion to its commercial capabilities, than is that of any other North American colony. The heavy balance against that island, in its trade with the United States, may suggest a reason why it seeks a European market for so large a portion of its products. The United States export to Newfoundland, beef, pork, pitch and tar, corn-meal, flour, rice, tobacco, and general merchandise. It may be seen from the following table that flour and pork amount to fully three fourths of the total exports from this country to Newfoundland.

COMPARATIVE STATEMENT EXHIBITING THE QUANTITIES AND VALUES OF THE PRINCIPAL ARTICLES IMPORTED INTO THE PORT OF ST. JOHN'S, N.F., FROM THE UNITED STATES OF AMERICA, DURING THE YEARS 1853, 1854, AND 1855.

Description of goods.	1853.		1854.		1855.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Apothecaries' wars	....	$997 08	....	$1,352 18	....	$1,291 84
Bacon and hams ..... cwts.	229	3,023 01	810	3,516 52	255	4,190 00
Beef, salted ..... bbls.	679	6,563 44	856	10,412 52	1,029	11,750 00
Bread ..... cwts.	7,910	22,257 68	9,849	53,475 48	6,896	39,105 00
Butter ..... "	1,649	27,688 72	1,547	25,952 10	2,552	39,685 00
Candles ..... lbs.	84,906	11,104 28	74,183	10,685 02	116,104	17,407 88
Coffee ..... cwts.	210	2,789 08	262	3,261 44	265	3,350 88
Indian corn ..... bush.	725	608 12	3,533	3,316 44	7,812	9,160 00
Indian meal ..... bbls.	8,096	34,540 00	11,496	65,308 68	16,146	88,535 00
Flour ..... "	55,117	279,855 00	51,493	423,405 00	75,847	841,628 60
Hardware and cutlery	....	682 00	....	1,186 20	....	3,479 30
Leather and leather wares	....	13,246 10	....	13,516 25	....	20,387 25
Molasses ..... galls.	12,690	3,410 00	39,988	10,867 00	5,617	2,210 00
Pork, salted ..... bbls.	2,289	12,850 00	11,320	146,882 88	15,012	237,040 00
Rum ..... galls.	14,981	9,724 20	13,934	7,463 36	2,218	1,305 48
Tea ..... lbs.	90,678	25,077 44	159,753	45,490 20	42,716	10,826 00
Tobacco, manufactured	....	45,418 25	....	35,729 25	....	35,381 00
Miscellaneous	....	88,563 60	....	24,487 61	....	86,160 81
Total	....	661,801 90	....	887,048 48	....	1,407,783 54

STATEMENT EXHIBITING THE ARTICLES MADE FREE BY THE RECIPROCITY TREATY, THE VALUE OF SUCH IMPORTED, AND THE AMOUNT OF DUTIES PAID THEREON, DURING THE FISCAL YEAR ENDING JUNE 30, 1854.

Articles.	Rate of duty per cent.	Value of articles.	Duties.
Grain, flour, and breadstuffs....	20	$3,908,073	$781,214
Animals, free	..	75,406	....
" dutiable	20	225,642	45,128
Fresh, smoked, and salted meat	20	5,184	1,036
Cotton-wool, free	..	125	....
Seeds, plants, shrubs, etc., free.	..	18,210	....
" " dutiable	20	556	111
Vegetables	20	102,806	20,561
Undried fruits	20	13	2,788
Dried "	20	18,692	6
Fish of all kinds	20	901,671	180,334
Products of fish, and of all other creatures living in the water	..	....	....
Poultry	20	1,016	208
Eggs	20	5,500	1,100
Hides and skins	5	34,729	1,736
Furs, undressed	10	13,920	1,392
Tails, undressed	20	8	1
Unwrought stone	10	10,758	1,075
Unwrought marble	20	4	....
Butter	20	126,811	25,362
Cheese	30	127	38
Tallow	10	37	3
Lard	20	837	167
Horns	5	1,421	71
Manures	..	....	....
Ores of metals, free	..	18,790	....
" " dutiable	20	516	103
Coal	30	254,775	76,432
Pitch, tar, and turpentine	20	75	15
Ashes	20	4,441	888
Fire and other wood	30	728,688	218,606
All other wood	20	574,051	114,810
Pelts	20	24,639	4,927
Wool	30	60,182	20,754
Fish oil	20	110,402	22,080
Rice	..	....	....
Broom corn	..	....	....
Bark	20	978	195
Gypsum, ground	20	352	70
" unground, free	..	118,919	....
Grindstones	5	23,265	1,163
Dye stuffs	5	14,717	735
Hemp, flax, tow, unmanuf'd	..	....	....
Tobacco, unmanufactured	30	2,915	874
Rags	5	12,690	634
Total	....	$7,398,358	$1,524,577

STAPLE ARTICLES OF PRODUCE, AND THEIR QUANTITIES, EXPORTED FROM THE PORT OF ST. JOHN'S, NEWFOUNDLAND, TO THE UNITED STATES OF AMERICA, IN THE YEARS 1853, 1854, AND 1855.

Description of goods.	1853.	1854.	1855.
	Quantity.	Quantity.	Quantity.
Fish, cod ..... quintals	21,886	14,362	60,257
" salmon ..... tierces	1,350	1,070	2,145
" herring ..... bbls.	3,310	907	3,040
Oil, seal ..... tuns	6	5	28
" cod ..... "	336	41	187
Skins, seal ..... No.	6,00	....	....

NUMBER AND TONNAGE OF UNITED STATES' VESSELS ARRIVING AT AND CLEARING FROM THE PORT OF ST. JOHN'S, DURING THE YEARS 1853, 1854, AND 1855.

Years.	Entered.		Cleared.	
	Vessels.	Tons.	Vessels.	Tons.
1853....	10	1,802	10	1,802
1854....	18	3,170	11	2,858
1855....	42	9,107	42	9,107

"Article 3. It is agreed that the articles enumerated in the schedule hereunto annexed [the preceding list], being the growth and produce of the aforesaid British colonies, or of the United States, shall be admitted into each country, respectively, free of duty." The colonies referred to in the foregoing articles are, Canada, New Brunswick, Nova Scotia, and Prince Edward's Island. With respect to Newfoundland, article 6 provides as follows: "And it is hereby further agreed, that the provisions and stipulations of the foregoing articles shall extend to the island of Newfoundland, so far as they are applicable to that colony. But, if the imperial Parliament, the provincial Parliament of Newfoundland, or the United States, shall not embrace in their laws, enacted for carrying this treaty into effect, the colony of Newfoundland, then this article shall be of no effect; but the omission to make provision by law to give it effect, by either of the legislative bodies aforesaid, shall not in any way impair the remaining articles of this treaty." This treaty is limited to ten years, with the usual notice of 12 months by either of the high contracting parties who may wish to terminate the same. Date of exchange of ratifications of the treaty above referred to, September 9, 1854. Date of President's proclamation of

the same, September 11, 1854. Date of its acceptance by Canada, 23d September, 1854; by New Brunswick, 11th November, 1854; by Nova Scotia, December 15, 1854; by Prince Edward's Island, 11th October, 1854; and by Newfoundland, 14th November, 1855.—*U. S. Com. Digest*, 1856. See HUNT's *Mer. Mag.*, x., 380; FRASER, xxxii., 740; *Eclec. Rev.*, xlii., 816.

New Granada is the most important of the three republics into which the South American republic of Colombia resolved itself at the dissolution of that confederation in 1831. Till 1810 it was a vice-royalty under the Spanish crown, but subsequently a part of the republic of Colombia, the middle and western portions of which it now embraces. New Granada is bounded on the north by the Caribbean Sea, on the east by the republic of Venezuela, on the south-east by Brazilian Guiana, on the south by the republic of Ecuador, and on the west by the Pacific Ocean. It lies mostly between the equator and 12° N. lat., and between 70° and 83° W. long. Area about 480,000 square miles.

The *llanos* or plains of the Orinoco extend over the entire tract, stretching away to the western banks of the Orinoco and to the Cassiquiare, between the Rio Negro on the south, and the Rio Apure on the north. As far south as the Vichada, the northern part is a complete level, averaging only 300 feet above sea-level near the mountains, whence it gradually, but almost imperceptibly, declines toward the Orinoco. With the exception of a few palms that occur at great intervals all over the plain, and some low bushy trees along the rivers, this district is quite destitute of trees. During the rainy season, which is from April till November, rain falls in torrents, accompanied with fearful thunder-storms, which usually occur between two and four o'clock in the afternoon; but the contrast is very striking in December, January and February, when a cloud never crosses the sky. This immense plain is not at all fit for cultivation; but innumerable herds of cattle and horses find abundant pasture on it during the rainy season, though they suffer much during the dry months, from November till April. The wet season is, on an average, 8° Fahr. hotter than the dry, and the mean annual temperature is 80° Fahr.

The principal rivers of New Granada are the Magdalena and Cauca, which run their whole course within the territory of the republic, taking their rise in the Andes near the southern frontier, and after flowing nearly the entire length of the country from south to north, unite in one channel, and discharge their combined waters through a delta, by three channels, into the Caribbean Sea, about W. long. 75°. Besides these two principal streams, a large number of the tributaries of the Orinoco, having their sources in the different ranges of the Andes, drain the *llanos* of the east. Of these, the principal are the Apure, Meta, Vichada, Guaviare, Rio Negro and Japura, on the mutual boundary with Ecuador. The lakes of New Granada are inconsiderable; the most celebrated is the Guatavita, not far from the city of Bogotá, into which, it is affirmed, large treasures were thrown by the natives during the Spanish invasion and conquests.

The mineral riches of New Granada are considerable, and mostly occur in the western declivity of the three chains of the Andes. They consist of salt-rock, lead, iron, copper, mercury, platinum, silver, and gold. Along all the central and western declivity of the Andes gold is found, and is obtained by washing the sand of the rivers, as well as that on the sides and foot of some hills. It is found on the plateaux of Cucuta and Girona in the eastern Andes, where silver also is obtained in considerable quantity. There are also some very rich mines in the mountain region between the Rios Cauca and Magdalena, north of N. lat. 5½°. Platinum is found in the western declivity of the western Andes, and mercury in the valley of Santa Rosa, near Antioquia, and near the Pass of Quindiu in the central Andes. Copper is found in the eastern Andes, near Pamplona, and north of Tunja. Iron and coal occur in the mountains bordering on the table-lands of Bogotá, and lead in various parts of the eastern Andes. In some mountains north-east of Bogotá large masses of rock-salt are found, and it is worked by the government. Large quantities of salt are furnished also by salt-springs in the same mountains.

From the great diversity of surface, soil, and climate of New Granada, the natural productions are extremely varied, embracing almost every variety found in the temperate as well as in the tropical zone. The chief objects of culture over the table-lands of Bogotá, and the district north of it, along the western slopes of the eastern range, are the cereals as in Europe, the aracacha-root, and potatoes; but in the river-valleys, and on the coast-plains, maize is the chief grain cultivated, with rice, sweet potatoes, and plantains. As articles of commerce, are cultivated coffee, cotton, cocoa, tobacco, some sugar, and indigo. The forests abound with numerous kinds of useful timber trees; but those converted into articles of export are the log-wood, Brazil, Nicaragua, and fustic trees, which grow most abundantly in the forests of the Santa Marta chain. The balsam of Tolu, so named from a village near Cartagena, is collected largely on the banks of the Rio Sinu, and ipecacuanha on those of the Rio Magdalena; cinchona, or Peruvian bark, is obtained in large quantities in the region of the Sierra de Santa Marta, as well as in several other places; cochineal of the finest quality is procured from the banks of the Sogamozo. Previous to the discovery of this country by Europeans, horses and cattle were unknown in these regions; but now tasajo, or jerked beef, and hides, as articles of commerce, are furnished by the immense herds of cattle which the *llanos* support; and mules, horses, and cattle are exported to the West Indies.

The population of New Granada are descendants of the Spaniards who have settled there during the three last centuries, and some of the native tribes intermixed with a few negroes. Very different degrees of civilization are found among the native tribes. Before the invasion of the Spaniards, those of the table-lands along the eastern Andes had organized a political system, and made some progress in the simpler arts of civilization. These, with the Indians in the valley of the upper Magdalena, are still the best husbandmen in the republic. Between the Pacific and the western Andes, nearly all the population are descendants of the aboriginal native tribes, whose progress in the arts of civilized life is very small, and almost exclusively owing to the few Spanish priests scattered among them as missionaries. None but the descendants of Europeans dwell in the treeless *llanos*; and their occupation is the care of the herds of mules, horses, and cattle. Wandering Indians, still in a very barbarous state, occupy the southern wooded portion of the *llanos*. The numbers of the respective races occupying New Granada have been estimated by Hubner as follows:—

White Caucasians	450,000
Native civilized Americans	301,000
Negroes	80,000
Metis (descendants of Spaniards and natives)	999,000
Mulattoes	283,000
Samoyes	120,000
Zambos (in Magdalena)	100,000
Quadrones	30,000
Total estimated population in 1853	2,363,000

Agriculture holds the first place in the industry of New Granada. Rice, cotton, tobacco, cocoa, sugar, and tropical fruits, are among the productions of the coast region; while the elevated plains yield maize, wheat, and all the products of a temperate zone. The cultivation of the soil, however, is carried on very carelessly; and reclaimed land bears but a small proportion to the whole. On the *llanos* toward the Orinoco, almost the sole occupation of the people is the

rearing of cattle and horses. Agriculture is chiefly in the hands of the converted Indians, who manifest a very decided predilection for these labors of peace. Manufacturing industry is of so little importance that it can hardly be said to exist in the republic. It is limited to home-made coarse woolens and cottons, adapted for the use of the lower classes only. At Bogotá, the capital, and the other principal towns, indeed, straw hats, carpets, and some other articles are made, but in no case does the native industry become commensurate with the demands of the country, so that nearly all manufactured goods in use are imported. Mining is carried on, but only to a very inconsiderable degree. There is a silver mine at Santa Ana, in Bogotá, the only one now worked; and gold is collected in a few localities. Emeralds, diamonds, and pearls, are also obtained. The salt mines of Zipaquira are, however, extensively worked. With the exception of this last, the mining business of the country is left entirely to the poor and ignorant.

The principal ports of New Granada are—on the Caribbean Sea, Santa Marta, Cartagena, Chagres, Rio de la Hacha, and Portobello; on the Pacific, Panama and Buenaventura. Steamers now navigate the Magdalena; and the only railway in the country is that from Aspinwall to Panama.

Christopher Columbus discovered terra firma in 1498, and, during his fourth voyage, on the 2d of November, 1502, found Chagres and the Bay of Limones, called also Navy Bay. Different governments have been established throughout the Granadian territory, while Spanish colonies; a vice-royalty was at length formed in 1732, of what are now the republics of New Granada and Ecuador. In 1810, New Granada separated herself from the Spanish monarchy, and maintained a constant war until 1824, when the Spanish army was conquered by the republican, of which two thirds consisted of Colombians. Bolivar, the most distinguished leader of the Spanish-American revolution, was the first proposer of the union of Venezuela and New Granada, in 1818; and when the Congress of Angostura met, early in 1819, the fundamental law was enacted which established Colombia, on the 17th of December of that year. Venezuela separated herself in November, 1829, and Ecuador in May, 1830; and the central part of Colombia instituted itself the republic of New Granada on the 21st of November, 1831. In 1832, the constitution of the State was sanctioned, under the form of a democratic republican government, by dividing the supreme power into the executive, legislative, and judicial, under a central regimen, but giving to the provinces a municipal corporation, that each section might legislate in its local affairs. The republic was divided into provinces, these into cantons, and the cantons into parochial districts. The State recognized no national religion; but has declared that it will pay for the Catholic worship, and protect Granadians in its exercise. The law of Colombia, which attributed to itself the law of patronage exercised by Spain, has continued in vigor to the present time. The republic was first divided into 18 provinces; and they have since been increased to 35. The constitution of 1832 was reformed in 1843, without any variation in the form of government.

Commercial relations between the United States and New Granada are regulated by treaty of December 12, 1846, proclaimed June 12, 1848. The following summary presents the principal commercial features of this treaty:

There shall be a perfect, firm, and inviolable peace and friendship between the two republics. No favors to be granted by either party to other nations, which shall not become common to the other. Mutual benefits in trade and residence to be equally enjoyed. The coasting trade reserved by each country to its own flag. Equalization of duties granted by each country on vessels and their cargoes. The privileges respecting drawbacks equalized to the flag of each in the ports of either. Importations and exportations of articles, the produce or manufactnre of either country, into or from the other, equalized as to duties with similar importations and exportations of any other foreign country. All prohibitions as to articles of import or export to be equal in each country as respects the flag of the other; the three preceding stipulations to apply, whether the vessels proceed from their own ports or from foreign ports, respectively. The citizens of either country to be free to manage their own business, as well with respect to shipping and its incidents, as to purchases, sales, etc., in the country of the other; and this privilege to be enjoyed personally or by agents—they being in all these cases treated as citizens or subjects of the most favored nation. In case of embargoes, detention of vessels, etc., for public or private uses, full indemnity to be allowed. The vessels of either party seeking refuge in the ports of the other to be protected. Vessels captured by pirates to be delivered up to the owners. Assistance to be given in cases of shipwreck, etc., in the ports of each to the vessels of the other, in the same manner as to the national flag. Citizens of either country authorized to dispose of their personal goods and real estate within the jurisdiction of the other, by sale, donation, testament, or otherwise; and their representatives, being citizens of the other country, to succeed to their said personal goods or real estate, whether by testament or *ab intestato*, and to take possession thereof, either by themselves or others acting for them, and to dispose of the same at their will, paying only such dues as the inhabitants of the country are subject to in like cases. Protection to persons and property formally guarantied, whether such persons are transient or dwellers in the territories under the jurisdiction of either party, respectively; and access to the legal tribunals of each country, free and unrestricted, granted to the citizens of the other, on the same terms as to the native or other citizens of such country. Liberty of conscience and the free and unrestricted rites of burial guarantied. Both parties at liberty to trade with those at enmity with the other. Free ships to make free goods, contraband of war excepted. Enemy's property, to be protected by a neutral flag, must be shipped within two months after declaration of war. Articles contraband of war specified. Blockade defined to be the besieging or blockading of those places only which are actually attacked by a belligerent force capable of preventing the entry of the neutral. All contraband articles liable to confiscation. In case of blockade, vessels to be turned away, but not detained. Vessels entering before blockade may quit unmolested. During a visit at sea, armed vessels to remain out of cannon-shot. In case of war, sea-letters, certificates of cargo, etc., to be furnished, showing to whom the property belongs. In case of war between the two nations, merchants allowed time (6 months to those residing in ports, and 12 months to those residing in the interior) to arrange their business, transport their effects, etc. Citizens of other occupations, who may be established in the territories of the United States or of New Granada, to be respected and maintained in the full enjoyment of their personal liberty and property, this protection being dependent on their conduct. No confiscation of debts, etc., in the event of war. Citizens of the United States, their vessels and merchandise, placed on the same footing as those of New Granada in the ports of Panama. Right of transit across the Isthmus of Panama guarantied to citizens of the United States, and no other or higher tolls to be exacted from them than from citizens of New Granada. The United States guaranties to New Granada the perfect neutrality of the Isthmus. Citizens to be held personally responsible for infringing any articles of the treaty; but reprisals not to be authorized, nor war declared, until justice has been demanded and refused.

An additional article provides that the two republics will hold and admit as national ships, of one or the other, all those that shall be provided by their respective governments with a patent issued according to its laws. The treaty to continue in force twenty years from the date of its ratification, and after that period the usual twelve months' notice required. The navigation and tariff regulations of New Granada are marked by a spirit of liberality, though the foreign commerce of the republic has not, as yet, attained any considerable importance. The commerce of the United States, however, with that republic, is thought to labor under some disadvantages, as appears from the following extract from a late consular return: "Our commerce, by treaty, is put on the footing of the most favored nations. But this is nominal only; for, in the list of dutiable articles, those supplied by the United States are taxed at a higher rate than such as come from England, France, and Germany. I can not now give you many instances; but my recollection is, that flour, bacon, and provisions generally, as well as common hats, boots, and shoes, may be enumerated. The articles mainly produced by the United States being taxed at a higher rate than articles produced by England, etc., etc., creating a practical discrimination against us, necessarily operates as a double injury in the exchange for the products of this country. * * * These matters should be corrected, and there should be a stipulation inserted in the treaty (should a new treaty be entered into) prohibiting the provinces from adding any tax, direct or indirect, except, perhaps, to enforce *bona fide* inspection."

The principal commercial ports of New Granada are Santa Martha, Cartagena, and Panama; the aggregate trade of which ports, for the year 1852, is given in the following statement:

COMMERCE OF NEW GRANADA, 1852.

Principal ports.	Entered.		Cleared.	
	Ships.	Tons.	Ships.	Tons.
Cartagena	114	14,871	109	13,734
St. Martha	59	4,157	48	4,127
Panama	312	143,899	297	133,836
Total	485	162,427	454	151,697

	Value entered.	Value cleared.
Cartagena	881,946 livr. sterl.	99,207 livr. sterl.
St. Martha	84,734 "	15,998 "
Panama	302,868,000 francs.	2,476,009 "

The subjoined analysis of this statement will show the distribution of the commerce of New Granada for the year specified:

	Per cent.		Per cent.
England and colonies	30·88	Cuba	0·50
France	7·42	Holland	0·49
United States	4·28	Hanse Towns	0·40
Curacoa	2·54	Mexico	0·27
St. Thomas	2·31	Spain	0·23
Sardinia	0·63	Nicaragua	0·10

The imports, during the same year, consisted of printed, dyed, and white cottons, calicoes, and other similar tissues; silks, linens, woolens, hardware, furniture, manufactures of metals, medicinal drugs, wines, spirits, flour, and provisions generally. The chief article of export was gold, of which the amount for this year was about $1,000,000.

A comparison of exports for a number of years exhibits the fact, that the quantity of gold exported has either remained stationary or slightly diminished. The cause is not found in any deficiency in the auriferous resources of the country, as the mines of Antioquia, and those in the country along the Pacific, on the Rio Zulia and the Rio Hacha, contain large quantities of the precious metals; but the difficulties attending the transportation of heavy machinery, indispensable in working the mines of Antioquia, seem to be insuperable, beyond a certain weight. Until good roads shall have been established, and the mines thereby rendered more accessible, but little improvement in the mining industry of this region (the richest in New Granada) can be expected.

Large quantities of gold, in ingots and dust, enter into the clandestine trade of the republic, of which no account can be taken in the official returns.

Next to gold, tobacco is the most important article in the export trade of New Granada, and its most productive staple. The soil, in many parts of the republic, is peculiarly adapted to the growth of tobacco, and its production might be made a source of the principal agricultural wealth of the State, under a different system of properly regulated industry. The quantity exported in 1848 exceeded that of the preceding year by 35 per cent.; and the returns for several preceding years exhibit a regular, though not so large, augmentation.

Cabinet-maker's wood and dye-stuffs rank next in the exports of the country. In 1848, they amounted in value to $161,500. The large bulk of these products is sent to the United States, in part exchange for provisions, cotton goods, furniture, medicinal drugs, and sundries. Excellent coffee and cocoa are raised, chiefly in the valley of Cucuta; whence transported to Maracaibo, in Venezuela, they enter into the returns of Venezuelan exports.

In addition to these products of New Granada, a new species of bark has recently been discovered, which promises to become a valuable article of commerce. A letter from a mercantile house in London to a correspondent in New Granada, written in 1845, says: "We imported last year 17,000 seroons (hampers or baskets) of New Granada and 500 seroons of Bolivian bark. The New Granada all sold; but the Bolivian being held for a monopoly price, is still in the market—proving that this kind has very little demand."

Delondre, in his new work on quinine barks, gives an analysis of a New Granadian bark containing quite as much quinine as Bolivian calisaya. If the calisaya of Santa Fé, or fusagasuga and pitaya barks of New Granada, had been introduced into the market before the Bolivian, there would be no question about the quality of the alkaloids they yield.

There seems a probability that this New Granadian bark will soon enter largely into the export trade of that country. The chemical test to which it has been subjected in England, has already stamped it as a valuable acquisition to the materia medica; and the periodical scarcity of quinine, which sometimes raises that article to a most exorbitant price, will render it still more popular. In reference to this bark, and other valuable products of New Granada, a report submitted in July, 1856, to the French government, relative to the commercial movements of France in New Granada, says: "Formerly, that republic had no other equivalent to offer, in exchange for foreign merchandise, than the gold of its mines." The abolition, in 1853, of the monopoly of tobacco, however, has given a new stimulus to agricultural industry, and attracted numbers to the cultivation of that article. This agricultural movement is not the only benefit accruing to New Granada from the suppression of this monopoly. In bringing the capitalists of the country in contact with foreign merchants, it has taught them to appreciate better than formerly the immense wealth to be found in the soil of the republic. Thus, quinquina, which has remained almost unknown since the departure of the Spaniards, has been a second time discovered in 1853, and has already entered into their exports, and will soon become a considerable article among the staples of New Granada. The cultivation of cocoa, formerly limited to the consumption of the country, has also been largely extended, and is now become an article of export.

The navigation laws of New Granada, by a decree of the Senate and Chamber of Representatives of that republic, bearing date May 27, 1853, a translation of

which is subjoined, undergo some modifications in favor of foreign commerce, as follows:

ARTICLE 1. The following ports and territories of the province of Choco shall be free for all nations in the world, from January 1, 1854, for twenty years:

1. The ports of the Atlantic and the territory watered by the River Atrato, from its mouth to its confluence with the River Gulto, comprehended between the western chain of the Andes and that branch of it toward the eastward which separates said province from that of Antrio-Chin.

2. The ports of the Pacific and the territory watered by the River San Juan, from its embouchure, as far as the city of Navita, contained between the abovementioned chain of the Andes and that branch of it which separates it toward the southward from the province of Buenaventura.

ART. 2. Consequently, no custom-houses can be established in said ports and territories within the time specified; nor can any duties be levied, save those of toll, passage, and excise, corresponding to the municipal revenues, and in conformity with the existing laws.

ART. 3. In order to recover the duties on importation of foreign merchandise which may be introduced for the consumption of the interior of the rest of the province, and other provinces of the republic, there shall be established two custom-houses, one in the city of Quibdo, and the other in the city of Navita, with necessary officers, etc., etc.

ART. 4. The executive power is authorized, when it deems it indispensable for weighty motives of public convenience, to assign other ports for custom-houses than those expressed in this law; in which case, the maritime ports expressed in article 1, and the territory comprised between the coasts and the spot on which such custom-houses shall be fixed, alone can enjoy freedom.

Another decree of similar importance to the interests of foreign commerce was published in the official paper of the New Granadian government of the 20th of July, 1856, in virtue of legislative authority, declaring Cartagena a free port for the commerce of all nations, from the 1st of September ensuing. By this decree, however, vessels will continue to pay tonnage duty, conformable to the law of the 25th of June last in relation to that subject, The exemption from import duties is circumscribed to the walled portion of the city, and hence does not apply to goods carried to the outside villages of Cabrero, Bocagrande, Espinal, and Manga I Pie de la Popa. Counterfeit money, and Spanish, Colombian, and Granadian money, under the standard of 0.900, as well as copper not sold for the use of the republic, are prohibited; also, rum, and its compounds, so long as the legislature shall not decree the free manufacture and sale of that article. Vessels must exhibit the usual papers on entering the port; and when a vessel is only going to leave a part of her cargo, the captain must, within twenty-four hours, present a manifest of what he intends to land, and what to leave on board. If the vessel come in search of a market, and not for the determined purpose of landing her goods, the captain will be allowed forty-eight hours to present a manifest of what he intends to land and what to retain on board. If the vessel come in ballast, a manifest will not be required, but the visiting officer will satisfy himself that such is the state of the vessel. A vessel from another port of the republic, or from a port of a nation in which, by virtue of stipulations entered into with this republic, by treaty or convention, merchandise put on board in the ports of such nation must be accompanied by bills of lading, will be required to produce bills of lading for articles which may have been shipped in said ports, and a general manifest for the remainder of the cargo not embraced in such bill. The captain or supercargo not fulfilling these regulations must leave port immediately; first paying tonnage duty, unless exempted from such payment by the law of the 25th of June, before cited. Vessels carrying a mail, and steam or sailing packets, shall be visited at any hour of the day or night, and in like manner their goods and the baggage of their passengers may be landed. A custom-house officer will board vessels at Bocachica. When the vessel contains goods subject to import duties, the hatchways, etc., shall be closed and sealed by the commanding revenue officer, packets being excepted from this regulation; after which formality, the custom-house officers will retire, leaving a suitable guard, which shall be relieved daily. The seals on the hatches, etc., are not to be broken, except by the commanding officer who placed them there, or by his deputy. The decree embraces a number of additional provisions in relation to the discharge of cargo, custom-house inspection, re-exportation, etc., etc., and is accompanied by an explanatory note from the Secretary of the Treasury of New Granada.

The coasting trade of New Granada is open to all foreign vessels, but only foreign steamers are permitted to navigate the rivers of the republic. This is an important privilege to foreign vessels, and one which is destined to stimulate American enterprise in this neighboring republic. When the repairs of the canal connecting the harbor of Cartagena with the Magdalena, now in progress, under the superintendence of an American engineer, shall have been completed, the internal trade of New Granada will be the means of developing more fully its great resources, and bringing to market the tobacco, India rubber, quinia, hides, corn, cocoa, coffee, sugar, etc., the production of which can be increased to an incredible extent. When this canal shall have been completed, Cartagena will become the great emporium of New Granada—at least of 20 of the principal agricultural provinces, containing a population of 1,628,471 inhabitants. The present tariff regulations of New Granada, to be found in Part II., have been in force since May 1, 1855; but by a late act of Congress, the manumission duty of 20 per cent. is to be suppressed, and, in lieu, the additional duty of 25 per cent. on the total amount of the import duty is to be increased to 50 per cent. The port regulations of New Granada are such as are deemed necessary, as well in view of the general convenience and safety of vessels, as to answer proper police and harbor discipline. Places are pointed out into which all rubbish, etc., is to be thrown. Ballast is to be taken in and thrown out under written authority of proper officers. Cannon are not to be fired without permission of the captain of the port. At Cartagena, it is forbidden to sound the upper or interior channels of the port, or to have any communication with the shore between eight o'clock at night and five o'clock in the morning. It is also forbidden to disembark any individual before the visits of the officers of customs and captain of the port. For the violation of any of these regulations, fines are imposed, varying from 10 to 40 dollars, according to the nature of the case.

There are no quarantine regulations at any of the ports of New Granada, and consequently no bills of health are required. No light or hospital money is levied. No local impost is charged. At the port of Savanilla there is a water-tax upon all vessels arriving there of $4 each, imposed by the provincial legislature. Pilots are employed and paid by government. Their duty is to visit all vessels requiring their assistance, and all vessels coming from a foreign port are required to pay the full fees, whether they take on board a pilot or not. The fee is $11, in and out. There is also a fee of $6 40 to be paid to the captain of the port on visiting the vessel, and $1 60 for the interpreter. With the exception of the interpreter's fee, this amount is also levied on New Granadian vessels. By a decree of the Congress of New Granada, bearing date June 19, 1856, which, like that of July 20, already given, comes to hand as these sheets go to press, new regu-

lations respecting tonnage dues are established, of which a translation is given as follows: "Tonnage dues, port dues, pilotage, and visit fees, shall be the same in all the ports of the republic, including the free ports of the Isthmus of Panama, Cartagena, Chocó, Buenaventura, and Tumaco, and the following sums shall be collected: 1. Every vessel under 100 tons shall pay 40 cents per Granadian ton for her capacity. 2. Every vessel exceeding 100 tons shall pay 40 cents per ton for the first 100 tons, and 20 cents per ton for each ton over the same. 3. Tonnage dues shall only be paid at the first port at which a vessel touches, proceeding from foreign countries: vessels proceeding from one port to another in the republic shall not pay tonnage dues. 4. War vessels of the country, or of friendly nations, and transports assimilated to them, which may touch at the ports of the republic, shall not pay tonnage dues. 5. The executive may exempt from tonnage dues, and permit to coast, sail or steam vessels that agree to convey the mails between the ports of the republic, and carry such correspondence gratis as may be entrusted to them. Those that do not agree to this, shall pay tonnage dues, cash, in hard dollars of the country. 6. Vessels arriving in ballast, or which load in New Granada, shall not pay tonnage dues; neither shall those chartered to bring immigrants to the republic, when the number of the same exceeds 50. Tonnage dues shall be charged at the Isthmus ports from the 1st September next; the product shall be divided equally between the State and general government."—*Com. Rel. U. S.*, vol. iii., 1857.

Since January 1, 1850, Panama, and all the other ports on the Isthmus, have been free—Aspinwall, of course, included. The only duties levied at these free ports are navigation dues, as above given; from which, however, the vessels in the service of the Panama railroad at Aspinwall are exempt by charter. In February, 1855, Panama was erected into an independent State, with the power vested in the legislature to establish custom-houses, or, in other words, to abolish the existing freedom of its ports. It is not very likely, however, that the new State will be disposed to take any legislative action by which the existing franchise of Aspinwall would be abolished, or even abridged. This new State has now become the principal centre of commercial interest in this republic. In 1852 there entered and cleared at its Pacific port (the port of Panama) 609 vessels, measuring an aggregate of 277,735 tons, of which 312 entered floating cargoes, including specie, to the value of $60,473,000; and there cleared 297 vessels, with cargoes valued at nearly $500,000. In this movement, the number of vessels under the American flag was 159, measuring an aggregate of 163,113 tons; under the British flag, 138 vessels, measuring in all 88,070 tons; and under the French flag, 20 vessels, with an aggregate of 5836 tons. The freights under the United States' flag were valued at $51,935,000; those under the British, at $8,000,000; and the remainder of the total given above was distributed between the South American, French, and other European flags. The American and British freights included the gold dust brought down from California by the steamers for the former, and the silver brought up the coast for the latter, in neither case including the large amounts in the hands of passengers. See PANAMA.

The total amount of gold and silver which passed through Panama in transit in 1853 was $52,037,785. The countries whence this sum was exported, and the amounts from each, are given as follows:

California	$42,627,352
Mexico	2,765,000
Peru and Chili	6,584,876
Australia	60,557
Total	$52,037,785

The total number of passengers who crossed the Isthmus the same year was 23,690, of whom 13,937 came from California, and 9753 were proceeding to that country. In 1855 the total number of passengers that crossed the Isthmus was 28,704. Of this number there came from California 10,015, and there proceeded to that State 16,289, all in American steamers; by the British steamers there came from Europe 1300 passengers, and there proceeded to Europe 1100. The transit of gold and silver the same year amounted to $40,407,907. This amount was brought from the following points:

San Francisco	$31,671,815
Chili and Peru	6,854,578
Mexico	1,367,961
Panama	513,558
Total	$40,407,907

The total exports of New Granada, during the year ending December 31, 1853, amounted to $30,849,595 65. Of this aggregate amount, Cartagena exported $17,913,146; Cucuta, $4,153,898; Guanapalo, $14,312; Rio Hacha, $628,069 40; Savanilla, $8,105 728 25; Tumaco, $34,442.

COMMERCE OF THE UNITED STATES WITH NEW GRANADA, FROM OCTOBER 1, 1840, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage Cleared.	
	Domestic.	Foreign.	Total.	Total.	Exported.	Imported.	American.	Foreign.
Sept. 30, 1841	$50,562	$59,873	$110,435	$144,117	$14,158	$42,432	583	722
1842	57,863	46,861	103,724	176,216	....	41,884	1,615	161
9 mos. 1843	72,009	89,944	161,953	115,788	2,480	39,714	1,245	....
June 30, 1844	75,621	49,225	124,846	189,616	....	62,605	1,091	....
1845	48,717	30,260	78,977	171,921	....	47,389	1,562	....
1846	51,842	24,095	75,944	67,043	....	82,100	1,069	293
1847	58,655	19,405	78,060	158,654	....	75,179	565	734
1848	79,165	45,438	124,603	218,296	19,000	77,500	783	1,567
1849	244,460	53,324	297,784	158,960	52,077	62,562	25,094	1,351
1850	970,619	285,600	1,256,219	591,992	273,000	430,080	121,758	6,227
Total	$1,704,020	$703,525	$2,407,545	$1,985,548	$360,710	$911,104	158,860	11,068
1851	$2,507,701	$583,121	$3,040,822	$695,606	$65,395	$495,758	205,890	12,585
June 30, 1852	1,298,216	217,558	1,515,794	730,527	50,461	456,744	183,375	5,158
1853	753,391	103,079	856,470	538,528	3,462	295,956	205,602	3,840
1854	855,254	82,052	937,306	1,478,520	2,017	885,022	170,469	1,164
1855	892,245	169,800	1,062,045	1,709,672	273,864	478,943	121,598	1,658
1856	1,444,841	166,548	1,611,392	2,825,019	257,474	232,490	129,518	1,312

Principal Ports.—Chagres, a sea-port town of New Granada, Central America, on the northern coast of the Isthmus of Panama, at the mouth of the Chagres River, on the Caribbean Sea. Latitude of fort San Lorenzo 9° 18′ 6″ N., long. 79° 59′ 2″ W. It is a mere collection of huts, with a harbor only for vessels drawing 10 or 12 feet of water; but it has frequent traffic with Panama, and is sometimes resorted to by shipping from the United States, Cartagena, and the British West Indies.

Panama, a city and sea-port town of New Granada, on the Pacific, 38 miles south-east of Chagres, lat. 8° 56′ N., long. 79° 31′ 2″ W. Population estimated at 7000. It stands on a rocky peninsula, projecting into the Bay of Panama, and has an imposing aspect from the sea. Its streets are well ventilated, and it is said

to be cleaner than most Spanish American cities. It is encircled by irregular and not very strong fortifications, constructed at different periods. The houses are partly of wood, straw, and other fragile materials. The tides daily rise and fall from 20 to 27 feet, so that it is peculiarly well fitted for the repair and building of ships. The Panama railroad has one of its termini here, and another at Aspinwall, on Manzanilla Island, Navy Bay. Trains take about four hours in passing from sea to sea. See PANAMA.

Cartagena, or Carthagena, a strongly-fortified city and sea-port of New Granada, South America, of which republic it is the chief naval arsenal, capital of the province, on a sandy peninsula in the Caribbean Sea. Lat. of the dome 10° 25′ 36″ N., long. 75° 34′ W. Population, 10,000, nine tenths of whom are a mixed black race. Its excellent port is defended by two forts, and is the only harbor on the north coast of New Granada adapted for repairing vessels. Cartagena is the principal dépôt for the produce of the provinces watered by the Cauca and Magdalena Rivers, and is connected with the Magdalena by a canal. It exports sugar, cotton, coffee, tobacco, hides, specie, bullion, etc. Under the Spaniards, this city was the seat of a captain-general, and one of the three tribunals of the Inquisition in America. It was the first town that proclaimed independence, and in 1815 endured a most vigorous siege, and was subdued only by famine. Population of the province, 103,783.

New Hampshire. It is situated between lat. 42° 41′ and 45° 11′ N., and 70° 40′ and 72° 30′ W. long. It contains 8,030 square miles.

Population in 1790, was 141,885; in 1800, 183,858; in 1810, 214,460; in 1820, 244,161; in 1830, 269,328; in 1840, 284,574; and in 1850, 317,864.

Early History.—John Mason, one of the first eminent settlers of the north-eastern coast of New England, having agreed with Sir Ferdinando Georges to make the Piscataqua the division line between them, took subsequently from the Plymouth Council a patent of what lies between that river and Merrimack, and he called that tract of land "*New Hampshire*," because he had been Governor of Portsmouth, in Hampshire, in England.

In the year 1680 New Hampshire separated from the province of Massachusetts, and was established as an independent royal province. It was afterward united again with Massachusetts, but in 1749 finally separated, and has existed since that time as an independent community, first under the name of "*the Province of New Hampshire*," and since 1770 under that of "*the State of New Hampshire*."

The Connecticut River has its source in the highlands, on the north border of the State, and its west branch forms the boundary line between New Hampshire and Canada to within one mile of the 45th degree of north latitude. Its general course is south by west, and dividing New Hampshire and Vermont it passes through the western part of Massachusetts, and the central part of Connecticut, where it enters Long Island Sound. Merrimack River, the Pemigewasset branch, rises near the Notch in the White Mountains, and is joined by the Winnipiseogee, 70 miles below the source of the former. It here takes the name of Merrimack. The Androscoggin and Saco Rivers rise and have a part of their course in this State.

Granite is plentiful throughout the State, and also marble and limestone. Iron ore, zinc, tin, lead, and copper exist, some of which have been worked to advantage.

There were in this State in 1850, 2,251,488 acres of land improved, and 1,140,926 of unimproved land in farms. Cash value of farms, $55,245,997, and the value of implements and machinery, $2,814,125. *Live Stock.*—Horses, 34,233; asses and mules, 19; milch cows, 94,277; working oxen, 59,027; other cattle, 114,606; sheep, 384,756; swine, 63,487; value of live stock, $8,871,901.

FOREIGN COMMERCE OF THE STATE OF NEW HAMPSHIRE, FROM OCTOBER 1, 1820, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Tonnage Cleared.		District Tonnage.	
	Domestic.	Foreign.	Total.	Total.	American.	Foreign.	Registered.	Enrolled and Licensed.
Sept. 30, 1821	$180,129	$80,636	$260,765	$850,021	8,237	....	17,467	6,282
1822	188,889	10,817	199,699	830,052	8,846	....	....	....
1823	182,945	54,760	237,705	871,770	7,563	....	....	....
1824	178,508	6,875	185,383	245,513	8,048	....	....	....
1825	181,840	16,340	198,180	331,244	7,568	4,691	....	....
1826	150,693	16,998	167,675	348,609	7,177	....	....	....
1827	155,580	21,818	177,398	302,211	6,849	....	....	....
1828	115,947	8,486	124,433	299,849	5,394	....	....	....
1829	98,264	7,476	105,740	179,889	6,748	....	....	....
1830	93,499	2,685	96,184	180,828	4,632	....	....	....
Total	$1,526,276	$226,786	$1,753,062	$2,889,986	71,060	4,691	....	....
Sept. 30, 1831	$109,456	$1,766	$111,222	$146,205	4,826	....	8,790	5,919
1832	115,582	....	115,582	115,171	4,777	250	....	....
1833	145,355	9,903	155,258	167,754	6,002	....	....	....
1834	79,656	1,214	80,870	118,695	4,830	78	....	....
1835	75,076	6,605	81,681	71,514	8,877	119	....	....
1836	15,015	505	15,520	63,912	2,436	574	....	....
1837	26,000	8,641	34,641	81,550	2,575	429	....	....
1838	56,103	18,567	74,670	169,985	11,191	1,615	....	....
1839	74,914	7,080	81,944	50,665	6,849	678	....	....
1840	20,761	218	20,979	114,647	1,925	2,989	....	....
Total	$717,918	$54,449	$772,367	$1,100,098	45,288	6,682	....	....
Sept. 30, 1841	$10,261	$87	$10,348	$78,701	1,475	2,330	17,371	7,863
1842	28,419	128	28,547	60,481	1,241	3,612	....	....
9 mos., 1843	44,659	115	44,774	8,289	1,018	2,256	....	....
June 30, 1844	5,994	690	6,684	31,420	201	4,515	....	....
1845	2,874	10	2,884	22,089	169	2,849	....	....
1846	4,997	75	5,072	15,488	893	3,413	....	....
1847	1,407	283	1,690	16,935	931	1,871	....	....
1848	7,807	436	8,243	61,908	3,229	2,689	....	....
1849	5,852	26	5,878	64,351	1,623	5,819	....	....
1850	8,722	205	8,927	49,079	682	7,531	....	....
Total	$120,492	$2,055	$122,547	$406,783	10,162	36,685	....	....
June 30, 1851	$4,949	....	$4,949	$58,028	2,886	5,907	17,849	7,578
1852	67,204	$2,254	69,458	83,819	2,284	5,132	....	....
1853	1,126	....	1,126	32,608	845	3,692	....	....
1854	913	118	1,031	34,505	1,648	2,519	....	....
1855	1,528	....	1,528	17,786	2,405	3,061	....	....
1856	5,168	107	5,275	24,389	2,268	3,479	....	....

Manufactures, etc.—There were in the State in 1850, 43 cotton factories, with a capital invested of $10,874,700, employing 2,915 males and 2,235 females, producing sheetings valued at $8,861,749; 91 woolen factories, with a capital of $2,547,500, employing 878 males, and 1,021 females, manufacturing 1,712,840 yards of cloth, and 165,200 lbs. of yarn, valued at $2,439,967; 1 establishment with a capital of $4,000, employing 30 persons, producing 200 tons of pig iron, etc., valued at $17,200; 28 establishments with a capital of $292,700, employing 374 persons, and making 5,764 tons of castings, etc., valued at $371,710; 2 establishments with a capital of $4,000, employing 6 persons, manufacturing 110 tons of wrought iron valued at $10,400; 178 flouring and grist mills, 80 saw mills, 185 tanneries, with a capital of $441,975, employing 518 persons; 40 printing offices, 2 daily, 36 weekly, 1 semi-monthly, and 2 monthly newspapers. Capital invested in manufactures, $18,242,114; value of manufactured articles, $28,160,503.

Agricultural Products, etc.—Wheat, 185,658 bushels; rye, 183,117; Indian corn, 1,573,670; oats, 978,381; barley, 70,256; buckwheat, 65,265; peas and beans, 70,856; potatoes, 4,804,019; value of products of the orchard, $248,563; produce of market gardens, $56,810; pounds of butter made, 6,977,056; of cheese, 3,196,563; maple sugar, 1,294,863; molasses, 9,811 gallons; beeswax and honey, 117,140 pounds; wool, 1,108,476; flax, 7652; silk cocoons, 4,191; hops, 257,174; tobacco, 50; hay, tons of, 598,854; clover seeds, 829 bushels; other grass seeds, 8,071; flax seed, 180; and were made 344 gallons of wine. Value of homemade manufactures, $393,455; of slaughtered animals, $1,522,873.

Principal Port.—Portsmouth is the only sea-port in the State. It is situated on the south side of the Piscataqua River, on a peninsula, three miles from the sea, lat. 43° 40′ N., long. 70° 45′ W. The harbor is one of the best in the world; it has 42 feet water at low tide through the whole channel, and the current is sufficient to prevent it from freezing. The United States' Navy Yard is located on an island near the main bank of the river. The city has valuable manufactures and a large foreign and country trade, and being intersected by the line of railroads between Boston and Portland is connected thereby with all the New England and Canada towns; a railroad also extends to Concord. The tonnage of Portsmouth in 1856, was 34,590 tons.

The principal places in this State are Concord, the capital, Manchester, Portsmouth, Dover, Exeter and Nashua. There were in 1856, 15 railroads, with 660 miles of track completed and in operation, and 24 in course of construction. The only canals are those facilitating the navigation of the Merrimack River.

For commerce, resources, etc., of New Hampshire, see HUNT'S *Merch. Mag.*, iv., 346; *Am. Jo. Science*, xlix., 27; *Am. Quar. Reg.*, xiii., 170; *North Am. Rev.*, xviii., 33.

New Jersey lies between 38° 55′ and 41° 24′ N. lat., and between 73° 59′ and 75° 29′ W. long. It is 163 miles long and 52 broad, and containing 8,851 square miles.

Population in 1790, was 184,189; in 1800, 211,149; in 1810, 245,592; in 1820, 277,575; in 1830, 320,779; in 1840, 373,306; and in 1850, 489,555.

Early History of New Jersey.—The shore and territory of the present State of New Jersey were at first, since 1606, a part of the great English province of northern Virginia; and then (since about 1621) it was considered (at least by the Dutch) as a part of their *New Netherlands*.

The English, however, always claimed the country; and in the year 1648 Sir Edmund Ployden and some English gentlemen received a charter and grant of a great tract of country "lying midway between New England and Maryland," to which the name of *New Albion* was given. This is the first English name which this country received. The charter had, however, no great consequences. The Dutch remained in possession, and the name New Albion was forgotten.

When the English conquered the New Netherlands for the Duke of York, all this land was included in the large territory given to the Duke of York. But the Duke of York very soon sold (as early as the year 1664) that part of his grant which was lying between Delaware and Hudson's River to Sir George Carteret and John Lord Berkeley. The grant which he gave to them is dated on the 24th of June, 1664. The country received at once the name of New Jersey, in compliment of Sir George Carteret, whose ancestors came from the Island of Jersey, and who was himself Governor of the Island of New Jersey.

The Hudson and Delaware Rivers flow on the eastern and western sides of this State. The Raritan is navigable 17 miles to New Brunswick, and it enters Raritan Bay; the Passaic is navigable for small vessels for about 15 miles, and enters into Newark Bay; the Hackensack, navigable 15 miles, also enters Newark Bay. Great Egg Harbor River, navigable 20 miles for small craft, passes through a bay of the same name and enters into the Atlantic. The principal bays are Newark and Raritan. Delaware Bay is on its south-eastern border. It has two important capes, viz., Cape May on Delaware Bay, and Sandy Hook at the entrance of the Bay of New York. It contains quarries of good building stone, valuable mines of zinc and of iron, and in the south parts, beds of marl.

The principal places in this State are Trenton, the capital, Princeton, New Brunswick, Rahway, Elizabethtown, Jersey City, Hoboken, Paterson, Hackensack, Morristown, South Amboy, Freehold, Burlington, and Camden. There were in the State, July, 1857, 38 banks with a paid capital of $5,147,741. The total tonnage of the State, January, 1853, amounted to 93,300 tons.

The northern part of the State is mountainous, being crossed by a branch of the Alleghany Ridge; the middle portion is agreeably diversified by hills and valleys; while the southern part is level, sandy, and mostly covered with pines and a scanty growth of shrub oaks. The northern and middle portions of the State have a fertile soil.

There were in the State in 1850, 1,767,991 acres of improved land, and 984,955 of unimproved in farms. Cash value of farms $120,287,511; and the value of implements and machinery $4,425,603. *Live Stock.*—Horses, 63,955; asses and mules, 4,089; milch cows, 118,736; working oxen, 12,070; other cattle, 80,455; sheep, 160,488; swine, 250,370; value of live stock, $10,679,291.

Agricultural Products, etc.—Wheat, 1,601,190 bushels produced; rye, 1,255,578; Indian corn, 8,759,704; oats, 3,548,063; barley, 6,492; buckwheat, 878,934; peas and beans, 14,174; potatoes, 3,207,236; sweet potatoes, 508,015; value of products of the orchard, $607,278; produce of market gardens, $475,242; lbs. of butter made, 9,487,210; of cheese, 365,756; maple sugar, 2,197; molasses, 954 gallons; beeswax and honey, 156,694 lbs.; wool, 375,396; flax, 182,965; silk cocoons, 28; hops, 2,133; tobacco, 310; hay, 435,950 tons; clover seed, 28,280 bushels; other grass seeds, 63,051; flax seed, 16,525; and were made, 1,815 gallons of wine; value of home-made manufactures, $112,781; of slaughtered animals, $2,638,552.

Manufactures, etc.—There were in the State in 1850, 29 cotton factories with a capital invested of $1,691,000, employing 739 males and 1,299 females, producing 8,122,580 yards of sheeting, etc., and 2,000,000 pounds of yarn valued at $1,289,648; 51 woolen factories with a capital invested of $410,650, employing 407 males and 137 females, manufacturing 771,100 yards of cloth, etc., valued at $784,772; 9 establishments making pig iron, with a capital invested of

$967,000, employing 600 persons, producing 24,081 of pig iron, etc.; entire value of products $917,000; 45 establishments with a capital of $598,250, employing 803 persons, making 10,259 tons of castings, valued at $686,430; 53 establishments with a capital of $1,016,843, employing 598 persons, manufacturing 3,162 tons of wrought iron valued at $629,278; 891 flouring and grist mills; 75 printing offices, 61 newspapers, 8 daily, 50 weekly, and 3 monthly publications. Capital invested in manufactures, $22,184,710; value of manufactured articles, $39,134,514. The Delaware and Raritan Canal, 42 miles long, and the Morris, 102 miles long, are the canals in this State. There were, January 1, 1856, 11 railroads with an aggregate length of 504 miles in operation, and 29 miles in course of construction. The State of New Jersey has no public debt.

FOREIGN COMMERCE OF THE STATE OF NEW JERSEY, FROM OCTOBER 1, 1820, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Tonnage cleared.		District Tonnage.	
	Domestic.	Foreign.	Total.	Total.	American.	Foreign.	Registered.	Enrolled and Licensed.
Sept. 30, 1821	$83,616	$98	$83,711	$17,906	231	....	207	34,043
1822	83,551	....	83,551	103,190	2,302	....	....	....
1823	26,064	....	26,064	5,988	1,298	....	....	.
1824	28,989	....	28,989	687,518	1,448	....	....	....
1825	43,980	3,233	47,213	27,688	1,657	....	....	....
1826	30,850	7,106	37,955	48,004	1,658	....	....	....
1827	25,627	....	25,627	388,497	933	571	....	....
1828	1,892	....	1,892	706,872	180	....	....	....
1829	8,022	....	8,022	786,947	414	....	....	....
1830	8,224	100	8,324	18,444	627	....	....	....
Total	$290,831	$10,537	$301,358	$2,884,999	10,718	571	....	....
Sept. 30, 1831	$11,430	....	$11,430	....	708	....	1,254	30,978
1832	33,991	$7,803	41,794	$70,460	732	800	....	....
1833	30,853	1,900	32,753	170	1,424	....	....	....
1834	8,131	....	8,131	4,492	790	236	....	....
1835	66,868	7,673	74,041	18,992	2,337	....	....	....
1836	88,769	24,040	62,809	24,263	3,076	....	....	....
1837	19,640	24,577	44,217	69,152	427	2,002	....	....
1838	28,010	....	28,010	1,700	906	....	....	....
1839	73,484	19,645	93,079	4,182	3,904	847	....	....
1840	14,888	1,198	16,076	19,209	725	....	....	....
Total	$350,504	$86,836	$437,340	$212,560	15,158	10,885	....	....
Sept. 30, 1841	$19,166	....	$19,166	$2,315	2,739	....	842	52,762
1842	64,931	5,976	70,907	145	2,301	....	....	....
9 mos. 1843	8,033	2,588	10,621	....	180	....	....	....
June 30, 1844	18,839	4,800	18,189	17,670	609	....	....	....
1845	....	....	....	829	....	....	....	....
1846	4,087	....	4,087	635	181	....	....	....
1847	18,428	700	19,128	4,837	552	615	....	....
1848	62	....	62	1,835	....	220	....	....
1849	855	8	863	4,253	....	423	....	....
1850	1,655	....	1,655	1,494	150	981	....	....
Total	$130,606	$13,572	$144,178	34,013	6,662	2,244	....	....
June 30, 1851	$139	....	$139	$1,111	....	228	377	88,518
1852	1,488	....	1,488	2,491	....	1,398	....	....
1853	1,254	....	1,254	3,539	....	2,681	....	....
1854	2,225	....	2,225	3,971	....	3,029	....	....
1855	687	....	687	1,478	....	606	....	....
1856	390	....	390	2,788	....	608	....	....

Principal Ports.—Jersey City is a flourishing city at the mouth of the Hudson River, opposite New York city, and is the terminus of the southern railroad travel, and also of the New York and Erie Railroad and of the Morris Canal. Though a separate municipality, it may be considered as a suburb of the great metropolis, with which it connects by several ferries. It is a place of considerable manufacturing industry, ship-building, and commerce, and it is the American station of the Cunard line of New York and Liverpool steamships.

Paterson is situated immediately below the falls of the Passaic River, 17 miles from New York. It ranks next to Newark in manufactures, and is the third city in the State as to population. Its principal products are cotton and silk goods, locomotives, machinery, paper, etc. On the opposite side of the river is the manufacturing town of Manchester. Paterson communicates with New York by the Paterson and Hudson Railroad and Morris Canal.

The other towns of note are Newark, New Brunswick, Camden, Trenton, and Princeton.

New London, Connecticut, is situated on the Thames River, 3 miles from the ocean, 50 miles east of New Haven by railroad. Its harbor is one of the best in the United States, but is seldom visited by foreign vessels. The whale fisheries constitute its main interest, and it has also a large coasting trade. Several railroads connect it with the interior, New York, and Boston, and regular steamboats ply to and from New York. The tonnage in 1856, was 40,371 tons. Population in 1830, 4850; in 1854, 10,000.

New Mexico, a Territory of the United States of America, lies between lat. 32° 30′ and 38° 32′ N., and long. 103° and 116° W. from Greenwich, England. Area, 210,744 square miles.

New Mexico is a mountainous country, with an extensive valley in the middle, running from north to south, and formed by the *Rio del Norte*. The valley is generally about 20 miles wide, and bordered on the east and west by mountain chains, continuations of the Rocky Mountains, which have received here different names, as Sierra Blanca, de los Organos, Oscura, on the eastern side, and Sierra de los Grullas, de los Mimbres, toward the west. The height of the mountains south of Santa Fé is from 6000 to 8000 feet, while near Santa Fé, and in the more northern regions, some snow-covered peaks rise from 10,000 to 12,000 feet above the sea. The mountains are principally composed of igneous rocks, as granite, sienite, diorite, basalt, etc. On the higher elevations, excellent pine timber grows; on the lower, cedars, and sometimes oak; in the valley of *Rio del Norte*, mezquite. The main artery of New Mexico is the Rio del Norte. Its head waters were explored in 1807 by Captain Pike, between 37° and 38° N. latitude; but its highest sources are supposed to be about 2° further north in the Rocky Mountains, near the head waters of the Arkansas and the Rio Grande (of the Colorado of the west). Following a generally southern direction, it

runs through New Mexico, where its principal affluent is the Rio Chamas from the west, and winds its way then in a south-eastern direction along the borders of Chihuahua, Coahuila, and Tamaulipas, to the Gulf of Mexico, in 25° 56′ N. lat. Its tributaries below El Paso, are the Pecos, from the north; the Conchos, Salado, Alamo, and San Juan, from the south. The whole course of the river, in a straight line, would be near 1,200 miles; but by the meandering of its lower half, it runs at least 2,000 miles from the region of perpetual snows to the almost tropical climate of the Gulf. The elevation of the river above the sea near Albuquerque is about 4,800 feet; at el Paso del Norte, about 3,800; and at Reynosa (between 300 and 400 miles from its mouth), about 170 feet. The fall of its water between Albuquerque and el Paso, is from 2 to 3 feet in a mile, and below Reynosa 1 foot in 2 miles. The fall of the river is seldom used as a motive power, except for some flour mills, which are oftener worked by mules than water. The principal advantage which is at present derived from the river, is for agriculture, by their well-managed system of irrigation. As to its navigation in New Mexico, even canoes could not be used, except perhaps during May or June, when the river is in its highest state from the melting of the snows in the mountains. The river is entirely too shallow, and interrupted by too many sand-bars, to promise any thing for navigation. On the southern portion of the river, the recent exploration by Captain Sterling, of the United States' steamer *Major Brown*, has proved that steamboats may ascend from the Gulf as far as Laredo, a distance of 700 miles. Although the steamboat used did not draw over two feet of water, yet the explorers of that region express their opinion, that "by spending some $100,000 in a proper improvement of the river above Mier, boats drawing four feet could readily ply between the mouth of the Rio Grande and Laredo."

There were in this Territory in 1850, 166,201 acres of land improved, and 124,370 of unimproved land in farms. Cash value of farms $1,653,952, and the value of implements and machinery $77,960. *Live Stock.*—Horses, 5,079; asses and mules, 8,654; milch cows, 10,335; working oxen, 12,257; other cattle, 10,085; sheep, 377,271; swine, 7,314; value of live stock, $1,494,629.

Agricultural Products, etc.—Wheat, 196,516 bushels produced; Indian corn, 865,411; oats, 5; barley, 5; buckwheat, 100; peas and beans, 15,688; potatoes, 3; value of products of the orchard, $8,231; produce of the market gardens, $6,679; pounds of butter made, 111; of cheese, 5,848; molasses, 4,236 gallons; beeswax and honey, 2 pounds; wool, 32,901; hops, 50; tobacco, 8,467; and wore made, 2,363 gallons of wine; value of home-made manufactures, $6,033; of slaughtered animals, $82,125.

Besides agriculture, the inhabitants of New Mexico pay a great deal of attention to the *raising of stock*, as horses, mules, cattle, sheep, and goats. Their stock is all rather of a small size, because they care very little for the improvement of the breed; but it increases very fast, and as no feeding in stables is needed in the winter, it gives them very little trouble. There are large tracts of land too distant from the water-courses to be cultivated, or in too mountainous parts, which afford, nevertheless, excellent pasturage for millions of stock during the whole year; but unfortunately the raising of the stock has been crippled by the invasions of the hostile Indians, who consider themselves secret partners in the business, and annually take their share away.

A third, much neglected branch of industry in New Mexico, are the mines. A great many now deserted mining places in New Mexico, prove that mining was pursued with greater zeal in the old Spanish times than since, which may be accounted for in various ways, as the want of capital, want of knowledge in mining, but especially the unsettled state of the country and the avarice of its arbitrary rulers. The mountainous parts of New Mexico are very rich in gold, copper, iron, and silver. Gold seems to be found to a large extent in all the mountains near Santa Fé, south of it in a distance of about 100 miles, as far as *Cerro Quivira*, and north for about 120 miles up to the River Sangre de Cristo. Throughout this whole region, gold dust has been abundantly found by the poorer classes of Mexicans, who occupy themselves with the washing of this metal out of the mountain streams. At present, the old and new *Placer*, near Santa Fé, have attracted most attention, and not only gold washes, but some gold mines, too, are worked there. They are the only gold mines worked now in New Mexico. Several rich silver mines were, in Spanish times, worked at Avo, at Cerrillos, and in the Nambe Mountains, but none at present. Copper is found in abundance throughout the country, but principally at las Tijeras, Jemas, Ablqulu, Gaudelupita de Mora, etc. There is but one copper mine worked at present south of the placers. Iron, though also abundantly found, is entirely overlooked. Coal has been discovered in different localities, as in the Raton Mountains, near the village of Jemez, south-west of Santa Fé, and in a place south of the placers. Gypsum, common and selenite, are found; most extensive layers of it exist in the mountains near Algodones, on the Rio del Norte, and in the neighborhood of the celebrated "Salinas." It is used as common lime for whitewashing, and the crystalline or selenite instead of window-glass.

Santa Fé is the capital of the Territory. There were in 1850, 3 printing offices in the Territory, issuing a weekly and a tri-monthly, and a monthly publication. In the same year there were 1 academy, with 40 pupils; 146 Roman Catholic churches. Total amount of church property valued at $188,200.

The *climate* of New Mexico is of course very different in the higher, mountainous parts, from the lower valley of the Rio del Norte; but generally taken, it is temperate, uniform, and healthy. The summer heat in the valley of the river will sometimes rise to nearly 100° Fahrenheit, but the nights are always cool and pleasant. The winters are long and severe; the higher mountains are always covered with snow, and ice and snow are common in Santa Fé; but Rio del Norte is never frozen with ice thick enough to admit the passage of horses and carriages, as was formerly believed. The sky is generally clear, and the atmosphere dry. Between July and October, rain falls; but the rainy seasons are here not so constant and regular as in the southern States. Disease seems to be very little known, except some inflammations and typhoidal fevers in the winter season.

Of the history of New Mexico we authentically know but little. The Spaniards, it seems, received the first information in regard to it, in 1581, from a party of adventurers, commanded by Captain Francisco de Levya Bonillo, who, finding the aboriginal inhabitants and the mineral wealth of the country to be similar to those of Mexico, called it New Mexico. In the year 1594, the Count de Monterey, then viceroy of Mexico, sent Juan de Oñate, of Zacatecas, to take formal possession of the country, in the name of Spain, and to establish colonies, missions, and presidios (forts). They found many Indian tribes, which they succeeded in Christianizing in the usual Spanish way, with sword in hand, and made them slaves. The villages of the Christianized Indians were called *Pueblos*, in opposition to the wild and roving tribes that refused such favors. Many towns, of which only ruins exist now, were established at that time; many mines were worked, and the occupation of the country seemed secure, when, in 1680, a general insurrection of all the Indian tribes broke out, and the Spaniards, who were quite unsuspecting and unprepared, were

massacred almost to a man. The Governor of New Mexico, Don Antonio de Otermin, after a hard struggle, retreated from Santa Fé, and marched as far south as Paso del Norte, where he and his followers met with some friendly Indians, made a stand, and laid the foundation of the town of that name. The war with the Indians lasted 10 years, when the Spaniards reconquered the whole country. Subsequently, several insurrections have taken place, none, however, have been so disastrous as the first, but the deep rancor of the Indian race against the white, has continued to the present time. There has grown up a hatred between the Indians and the Mexicans, never to be subdued but with the extinction of the race.

Santa Fé was taken by General Kearney, September 8, 1846, and the Territory was ceded to the United States by the treaty of Guadalupe Hidalgo, February, 1848, and the present territorial government established in 1850. The legislative assembly consists of a council of 13 members, elected for 2 years, and a house of representatives, of 26 members, elected for 1 year. Governor appointed by the President of the United States for 4 years. Every free white inhabitant, 21 years of age, and a citizen of the United States, is a legal voter.

New Orleans, the capital of Louisiana, one of the United States, on the eastern bank of the Mississippi, about 105 miles from its mouth, lat. 29° 57′ 45″ N., long. 90° 9′ W. Population, in 1850, 119,461. The new-built streets are broad, intersecting each other at right angles; and the houses are mostly of brick. It is the grand emporium of all the vast tracts traversed by the Mississippi, the Missouri, and their tributary streams, enjoying a greater command of internal navigation than any other city, either of the Old or New World. Civilization has hitherto struck its roots, and begun to flourish only in some comparatively small portions of the immense territories of which New Orleans is the sea-port; and yet its progress has been rapid beyond all precedent. It appears from the accounts printed by order of Congress, that during the year ended the 30th June, 1852, the value of the native American produce exported from this city amounted to $48,808,169, while the value of that exported from New York was $74,042,587. With respect to imports, the case is materially different; the value of those of New Orleans, in the year just mentioned, being only $12,057,724, whereas those of New York amounted to $182,329,306. It is believed by many, seeing how rapidly settlements are forming in the "West," that New Orleans must, at no very distant period, exceed every other city of America, as well in the magnitude of its imports as of its exports; and, considering the boundless extent and extraordinary fertility of the uncultivated and unoccupied basins of the Mississippi and Missouri, the anticipations of those who contend that New Orleans is destined to become the greatest emporium, not of America only, but of the world, will not appear very unreasonable. Steam navigation has been of incalculable service to this port, and, indeed, to the whole of the valley of the Mississippi. The voyage up the Mississippi, that used formerly to be so difficult and tedious, is now performed in commodious steam packets with ease, celerity, and comfort. "There have been counted," says Mr. Flint, "in the harbor, 1500 flat-boats at a time. Steam-boats are arriving and departing every hour; and it is not uncommon to see 50 lying together in the harbor. A forest of masts is constantly seen along the levee, except in the sultry months. There are often 5000 or 6000 boatmen from the upper country here at a time; and we have known 30 vessels advertised together for Liverpool and Havre. The intercourse with the Havana and Vera Cruz is great, and constantly increasing." As a shipping port, New Orleans now ranks third in the Union; being in this respect inferior only to New York and Boston. Vessels of the largest burden may navigate the river several hundreds of miles above the city. The aggregate burden of the shipping belonging to the port on the 30th June, 1852, amounted to 266,013 tons; of which 162,637 were employed in steam navigation. In the year ending 31st August, 1852, the arrivals of steamers, principally from the interior, were 2784. The depth of water in the river opposite to New Orleans is, at a medium, about 70 feet; and it maintains soundings of 30 feet till within a mile of its confluence with the sea. Besides three or four of inferior consequence, the Mississippi has four principal passes or outlets. In the south-east, or main pass, at Balize, the water on the bar, at ordinary tides, does not exceed 12 feet; and as the rise of tides in the Gulf of Mexico is not more than 2 or 2½ feet, vessels drawing much water can not make their way from the ocean to New Orleans. The unhealthiness of the climate is the great drawback on New Orleans. This probably arises from the low and marshy situation of the city and surrounding country, which is under the level of the Mississippi, being protected from inundation by an artificial levee or mound, varing from 5 to 30 feet in height, and extending along the bank of the river a distance of 100 miles. The unhealthy season includes July, August, and September; during which period the yellow fever often makes dreadful havoc, particularly among the poorer classes of immigrants from the North and from Europe. Latterly, great efforts have been made to improve the health of the city, by supplying it abundantly with water, paving the streets, removing wooden sewers, and replacing them with others of stone, etc. Many places, where water used to stagnate, have been filled up; and large tracts of swampy ground contiguous to the town have been drained. And as such works will no doubt be prosecuted on a still larger scale, according to the increase of commerce and population, it is to be hoped that the ravages of fever may be materially abated, though the situation of the city excludes any very strong expectation of its ever being rendered quite free from this dreadful scourge. It has latterly been proposed to bring earth from the upper parts of the Mississippi, and to employ it in forming a site for a new city raised some feet above the level of the river. It is believed that this would be the most likely means to guard against fever; and the object in view is of such paramount importance, that the expense of the scheme should be reckoned a very inferior matter.

Several cotton presses are among the most imposing structures in the city. The Orleans cotton press is on ground 632 feet long and 308 wide, which is nearly covered with buildings. It contains a centre building, three stories high, surmounted by a cupola, which affords a fine view of the city. The wings are two stories high, and very extensive. It presses, on an average, 150,000 bales of cotton annually, but its capacity is much greater. There are other cotton presses. Several of the banks have fine buildings, and some of the hotels are magnificent. Two of these hotels cost $600,000 each. The United States' branch mint has an edifice, 282 feet long, and 108 feet deep, with two wings 29 by 81 feet, the whole, three stories high, which cost $182,000. The city is supplied with water raised by powerful steam-engines from the Mississippi River into a reservoir constructed on an artificial mound, 21 feet high at its base. The reservoir is 250 feet square, built of brick, and plastered with hydraulic cement. It is divided into four compartments, to allow the water to settle before it is distributed over the city in cast-iron pipes, which are laid to the aggregate length of 18 miles. The water works belonged to the Commercial Bank, and cost $722,004. The city lighted with gas. A draining company, with a capital of $64,000, has two steam-engines for draining the marshes of 35 miles in extent between the city and Lake Pontchartrain. There are in the city a United

States' land office, several public and private banks, having a large capital, and several insurance companies, with commensurate capitals.

The manufacturing establishments of this city are comprised under the head of furnaces, founderies, machine shops, sugar refineries, cotton factories, distilleries, tobacco factories, saw mills, etc. The whole employed a capital in 1850 of $2,[illegible]2,060, and manufactured articles valued at $4,462,944; since which time the increase has been very rapid, and in 1854 were estimated to have doubled the amounts of 1850.

On the right bank of the river, and opposite to New Orleans, connected by a steam ferry, is Algiers; and adjoining, the suburb of Macdonough, where are the United States' Marine Hospital and many pleasant residences. Algiers contains several large machine shops, iron founderies, and ship-building establishments.

There are steam and sailing packet lines to all the large sea-port cities, sailing weekly. Also, steam packets weekly to Vera Cruz and other ports in the Gulf.

For commercial purposes, New Orleans occupies a very superior and commanding situation. It is the natural entrepôt for supplies destined to all parts of the Mississippi valley, as well as the dépôt for those products of that salubrious region which seek a market seaward. By means of the Mississippi River and its tributaries, an inland trade is opened to her grasp, the magnitude of which has never been equaled. Steamers may leave her wharves and proceed on voyages of several thousand miles without breaking bulk. The Mississippi and its affluents are flanked on either side by extensive territories, unsurpassed in richness of soil, which readily yield a harvest to the labors of the agriculturist, whether it be of sugar, corn, or cotton. These are the principal staples of the valley, and the receipts of each of their products at New Orleans are rapidly increasing. Heretofore, the river has been the only channel depended upon for their transportation. Several lines of railroad are in process of construction now, however, to facilitate the transportation of cotton and sugar produced at a distance from the river, to market, and thus enlarge the area of production. These bulky products will not bear an extensive land carriage by the old mode, and result in wealth to the producer; but the construction of railroads for their cheap transit to the river even, will not only change the prospects of the interior planters for the better, but will add greatly to the wealth and commerce of New Orleans, which is eminently a place of exchange and distribution. It is the great dépôt of the south-western plantations, where cotton and sugar crops are bought and sold while still in the field, or "advanced" upon prospectively if necessary. It has also an extensive trade with Texas, Mexico, and the Gulf ports, as well as a very heavy foreign export trade. She has, besides, a large coasting trade with Atlantic ports, the value of which can only be known generally by its results. Her commercial life may be said to date after the cession of Louisiana to the United States, in 1803, as previous to that, her commerce was insignificant; and yet, in this short period of about 40 years, she already ranks as the fourth city of the world for the magnitude and value of her commerce. The facilities and convenience of transacting business at New Orleans are fully equal to, and in many respects superior to those of any other place. It is the centre of immense exchange operations, and any amount of funds can at all times be obtained at the shortest notice under good letters of credit, and bills negotiated with great readiness and facility on any prominent point in the United States, or any of the commercial cities of western Europe; and the banking institutions afford all reasonable accommodations to the local wants and trade of the city. Some European cities can show more splendid quays or magnificent docks for the accommodation of shipping, and the landing and loading of cargoes, far exceeding in appearance and durability any thing of the kind in New Orleans, but in no way superior in point of actual convenience to the unpretending wharves of the city. As is generally known, the surface of the alluvial soil of Louisiana, including, of course, the site of the city, is considerably below the river in ordinary stages of high water, and the country is protected from inundation by a raised and solid embankment called the "levee," extending on both sides of the river below, and a great distance above the city. Outside of the levee the bank of the river is called the "batture," which in many places is increasing from the continual alluvial deposits, while in other places the river has what is called "a falling bank," and the water gradually encroaches on the land. In the former case the levee is advanced as the batture increases, and this has been the case in a large portion of the front of New Orleans, where, in some parts, the levee has, in the last 25 years, advanced fully 1000 feet; and the front warehouses now stand for a long extent that distance from the water, affording a splendid space for the vast bulk of produce that is annually landed and shipped. The wharves are constructed outside the levee on massive piles, driven with a heavy iron ram into the mud, and extending over the river into the water sufficiently deep to admit the heaviest steamboats and ships to lie up against them; heavy sleepers connect the piles at their tops, and on these piles the platform is laid, of thick planking, the edges of which are separated about one inch, to prevent the accumulation of dirt, which falls through these interstices into the river flowing below, and in five minutes after the heaviest storm the whole surface is in perfect condition to receive any description of merchandize. These wharves are thus planked back till they join the crown of the levee, in some places 150 to 200 feet, which is made firm and solid by a constant coating of shells, and always kept in good order. One of these wharves presents an unbroken front on the river of 1500 feet, and others 600 to 800 feet, and in the business season it is usual to see these fronts entirely occupied with steamboats lying bow on, and each with her stage rigged out to the wharf, actively engaged in loading or unloading. The wharves intended for seagoing vessels are detached from each other with an intervening dock, and each wharf accommodates a tier of vessels, which, unlike the steamboats are moored up and down the river, one outside the other, three, four, and five tiers deep, with a broad, common stage communicating with the levee, and extending on the bulwarks of the vessel to the outside one; the timber, plank, and all the conveniences for this staging, being furnished by the city, who even also supply tarpaulins to protect the goods in case of rain.

New Orleans was founded by the French in 1717. In 1762 it was conveyed to the Spanish, who, in 1800, re-conveyed it to the French, and in 1803 it was included in the purchase of Louisiana by the United States. On January 8th, 1815, the British under General Packenham made an attack on the city, approaching it through Lake Borgne, but were signally defeated by the Americans under General Jackson. The British loss in killed and wounded was 3000 men, and General Packenham was killed; the Americans lost only 7 men killed and 6 wounded. In 1718 Bienville, at that time governor of the province, selected the present site of New Orleans, but owing to difficulties he had to encounter, it was not located until 1722. In 1727 the Jesuits arrived and were located in a tract of land, on a portion of which St. Charles Hotel now stands. In 1763 they were compelled to quit Louisiana by an order from Pope Clement XIII., and all their property confiscated, then estimated to be worth $180,000, which is now worth over $20,000,000. In 1769 the first case of yellow fever known, was introduced by a British slaver with a cargo from Africa.

In 1778 *Le Moniteur*, the first newspaper, was published; there are now 12 dailies and as many weekly papers published. In 1810 the first street was paved in New Orleans. At this time such was the state of the streets after a rain, that sleds were used to drag cotton, which paid $1 a bale. In 1834 gas and water were introduced. The present area of the city is not far from 40 square miles, double the size of New York. In 1825 the grounds above Canal-street and below Esplanade-street were principally plantations.

The following statistics give a complete view of the trade of this great and growing emporium. Its preponderance in shipment of cotton is as decided as that of Manchester in its manufacture: for further information refer to articles, COTTON, COTTON MANUFACTURE, GREAT BRITAIN, LOUISIANA, UNITED STATES.

EXPORTS OF COTTON AND TOBACCO FROM NEW ORLEANS FOR SIX YEARS, COMMENCING SEPTEMBER 1, AND ENDING AUGUST 31.

Whither exported.	Cotton.						Tobacco.					
	1856—57.	1855—56.	1854—55.	1853—54.	1852—53.	1851—52.	1856—57.	1855—56.	1854—55.	1853—54.	1852—53.	1851—52.
	Bales.	Bales.	Bales.	Bales.	Bales.	Bales.	Hhds.	Hhds.	Hhds.	Hhds.	Hhds.	Hhds.
Liverpool	721,111	931,541	702,541	779,021	869,385	751,172	6,164	2,931	5,272	6,360	9,458	7,844
London	....	....	836	....	50	....	5,179	4,600	7,571	5,048	6,082	5,197
Glasgow, Greenock, etc.	18,980	26,018	8,621	12,851	39,767	11,700	....	....	....	....	....	....
Cowes, Falmouth, etc.	5,494	8,605	3,480	15,611	12,434	7,211	103	....	549	578	610	982
Cork, Belfast, etc.	8,900	20,458	1,873	6,258	....	2,159	....	....	....	....	....	....
Havre	247,481	227,152	168,850	185,254	202,957	183,054	143	3,844	8,430	5,707	1,492	9,056
Bordeaux	2,986	2,811	1,814	1,285	2,317	1,554	218	194	8,056	2,817	169	1,916
Marseilles	2,989	8,819	3,486	2,019	5,098	4,908	982	1,904	6,661	4,428	1,457	2,976
Nantes, Cette, & Rouen	5,463	6,092	4,873	5,619	1,154	7,998	....	....	....	....	....	....
Amsterdam	4,850	7,807	1,875	4,311	1,875	250	14	....	100	924	800	1,157
Rotterdam and Ghent	6,786	6,408	1,907	1,910	1,982	1,507	624	560	....	644	292	222
Bremen	55,895	58,288	29,451	32,349	14,021	10,348	10,667	8,240	5,293	7,970	16,053	15,515
Antwerp, etc.	15,089	18,147	7,877	9,010	24,292	24,562	3,725	3,747	2,492	3,926	4,084	7,618
Hamburg	11,500	21,382	5,661	23,709	10,581	17,604	....	....	46	....	125	475
Gottenb'g & Stockholm	19,294	20,167	15,861	18,152	7,892	6,634	121	823	904	768	414	1,229
Spain, Gibraltar, etc.	58,580	88,174	47,154	58,796	51,448	47,645	4,071	14,279	7,818	6,282	10,175	7,662
Mexico, etc.	17,787	17,491	18,787	24,925	20,608	11,919	....	....	....	....	....	....
Genoa, Trieste, etc.	58,852	78,847	43,223	52,240	76,902	75,093	5,457	4,472	4,947	1,128	1,966	11,134
St. Petersburg, etc.	43,666	30,534	....	9,634	37,502	15,046	....	....	....	....	2,647	3,588
Other foreign ports	....	....	....	....	....	....	3,587	4,624	3,714	2,479	....	....
New York	50,658	54,840	60,950	58,168	73,049	101,998	6,245	7,176	6,019	4,818	7,281	18,947
Boston	153,198	151,469	118,875	113,851	151,580	128,629	1,446	1,408	739	126	1,331	1,941
Providence, R. I.	4,090	2,894	1,458	....	16,028	4,561	....	....	....	....	....	....
Philadelphia	18,979	10,592	8,105	14,054	19,302	15,594	843	410	480	190	688	1,296
Baltimore	1,255	3,133	4,070	4,057	5,126	4,745	66	....	108	50	124	385
Portsmouth	....	1,540	....	2,139	....	....	....	....	....	....	....	....
Other coastwise ports	94	1,212	50	258	357	45	32	162	97	110	147	280
Western States	....	....	....	....	1,200	1,200	....	....	....	....	....	....
Total	1,516,921	1,795,028	1,270,264	1,429,180	1,644,981	1,485,815	50,181	59,074	64,100	53,043	64,075	93,715
RECAPITULATION.												
Great Britain	749,485	986,622	717,928	818,736	922,086	772,242	11,446	7,531	13,392	11,981	16,150	14,028
France	258,163	244,814	178,928	193,571	211,526	196,254	1,288	5,042	18,147	12,447	2,908	13,948
North of Europe	156,450	162,675	62,692	93,375	95,645	75,950	15,156	18,870	9,247	18,932	20,798	26,814
S. Europe, Mexico, etc.	129,619	178,812	109,164	135,971	149,038	134,657	18,665	28,075	15,867	9,889	14,698	21,731
Coastwise	223,204	222,100	202,317	192,527	266,696	256,712	3,632	9,156	7,447	4,794	9,521	17,199
Total	1,516,921	1,795,023	1,270,264	1,429,180	1,644,981	1,485,815	50,181	59,074	64,100	53,043	64,075	93,715

COMPARATIVE RATES OF FREIGHT, ON COTTON AND TOBACCO, TO LIVERPOOL, HAVRE, AND NEW YORK, ON THE 1ST OF EACH MONTH FOR THE PAST TWO YEARS.

Months.	Cotton, per pound.						Tobacco, per hogshead.					
	1856—57.			1855—56.			1856—57.			1855—56.		
	Liverpool.	Havre.	New York	Liverpool.	Havre.	New York	Liverpool.	Havre.	New York	Liverpool.	Havre.	New York
	Pence.	Cents.	Cents.	Pence.	Cents.	Cents.	s. d.			s. d.		
September	3-8	1	3-8	3-4	1 1-2	1	42 6	....	$3 50	....	$12 50	$10 00
October	1-2	1	7-16	7-8	1 7-8	1	42 6	....	5 00	....	....	....
November	15-32	1	1-2	7-8	1 3-4	0 3-4	45 0	....	5 00	....	12 00	7 50
December	17-32	1 1-16	1-2	1-2	1	0 1-2	42 6	....	5 00	....	12 00	7 50
January	9-16	1 3-16	9-16	3-4	1 1-2	0 1-2	55 0	....	7 75	....	....	7 75
February	9-16	1 3-16	9-16	1-2	1 1-16	0 1-16	....	....	7 75	....	....	7 50
March	15-32	1	1-2	5-8	1 1-4	0 3-4	40 0	....	7 75	....	....	8 50
April	5-16	0 3-4	3-8	5-8	1 1-4	0 3-4	35 0	....	6 00	....	....	8 50
May	3-16	0 7-16	1-4	5-16	0 5-8	0 7-16	27 6	....	2 50	....	....	5 75
June	5-16	0 5-8	3-16	11-32	0 3-4	0 3-8	30 0	....	2 50	35 0	....	4 75
July	11-32	0 3-4	3-16	1-4	0 5-8	0 1-4	30 0	....	2 50	30 0	....	3 50
August	7-16	1	5-16	7-16	....	0 3-8	35 0	....	3 50	37 6	....	4 50

COMPARATIVE PRICES OF MIDDLING TO FAIR COTTON AT NEW ORLEANS, ON THE FIRST DAY OF EACH MONTH DURING A PERIOD OF FIVE YEARS, TOGETHER WITH THE TOTAL RECEIPTS AT NEW ORLEANS AND THE TOTAL CROPS OF THE UNITED STATES.

Months.	1856—57.	1855—56.	1854—55.	1853—54.	1852—53.
	Cents.	Cents.	Cents.	Cents.	Cents.
September	11 —13	8—	8—	10½	9½—11
October	11—13	9—10¾	8—	10½	9½—11
November	11—13½	8—10½	8—10½	8½	9½—10½
December	11—13	9 —11½	8—10½	9½	8½—10½
January	11—13	8—10½	8 —10	9½	8½—
February	12—13½	8—10½	8 —10	9½	8½—
March	12—13½	9½—11	8 —10	8½	8½—
April	13½—14½	9½—11	8½—	8½	9½—
May	13½—15	10—	9—	8½	9½—
June	13½—15	10—	10—	7½	10 —
July	14 —	10—	9½—	8½	9½—
August	15 —	10—	9½—	8½	10 —
	Bales.	Bales.	Bales.	Bales.	Bales.
Receipts at N.O.	1,518,247	1,759,293	1,284,768	1,440,779	1,664,864
Crop	2,935,000	3,527,845	2,847,339	2,930,027	3,220,000

COMPARATIVE ARRIVALS, EXPORTS, AND STOCKS OF COTTON AND TOBACCO AT NEW ORLEANS, FOR TEN YEARS, FROM 1ST SEPTEMBER EACH YEAR.

Years.	Cotton.			Tobacco.		
	Arrivals.	Exports.	Stocks.	Arrivals.	Exports.	Stocks.
	Bales.	Bales.	Bales.	Hhds.	Hhds.	Hhds.
1856—57	1,518,247	1,516,921	7,321	55,067	50,181	18,711
1855—56	1,759,293	1,795,028	6,995	56,090	59,074	9,125
1854—55	1,284,768	1,270,264	39,425	58,343	64,100	12,653
1853—54	1,440,779	1,429,180	24,121	48,905	53,043	24,045
1852—53	1,664,864	1,644,981	10,529	75,019	64,075	29,166
1851—52	1,429,193	1,423,815	9,758	89,675	93,715	18,891
1850—51	995,080	997,458	15,900	64,080	54,501	23,871
1849—50	887,723	888,591	16,612	60,804	57,955	14,842
1848—49	1,142,882	1,167,303	15,480	52,385	52,896	13,293
1847—48	1,213,805	1,201,897	37,401	55,882	60,364	14,851

Commerce of New Orleans.—The following tables, which we have compiled from our records, present some leading facts connected with the commercial progress of this city, and will be found valuable for future reference by the readers of this work:

STATEMENT OF THE RECEIPTS AND EXPORTS OF COTTON AND TOBACCO AT THE PORT OF NEW ORLEANS IN EACH YEAR, FROM 1822-23 TO 1856-57, A PERIOD OF THIRTY-FIVE YEARS.

Years.	Cotton.		Tobacco.	
	Receipts.	Exports.	Receipts.	Exports.
	Bales.	Bales.	Hhds.	Hhds.
1822—23	161,959	171,879	16,292	28,624
1823—24	141,524	143,843	25,262	25,910
1824—25	206,358	208,914	17,759	16,849
1825—26	249,881	259,681	18,249	18,231
1826—27	336,573	326,516	29,681	26,540
1827—28	293,853	304,073	29,449	35,098
1828—29	268,699	267,786	24,697	25,288
1829—30	302,977	351,237	32,488	28,028
1830—31	429,392	428,942	32,096	33,872
1831—32	345,646	358,104	31,174	35,056
1832—33	408,888	410,524	20,627	23,637
1833—34	467,984	461,026	25,871	25,210
1834—35	536,179	536,991	35,059	33,801
1835—36	495,442	490,495	50,555	41,604
1836—37	605,813	588,969	28,501	35,821
1837—38	742,720	708,818	37,588	35,555
1838—39	573,514	579,179	28,158	30,892
1839—40	954,445	949,820	48,837	40,476
1840—41	822,570	821,288	53,170	54,667
1841—42	740,155	749,267	67,555	68,058
1842—43	1,089,642	1,088,870	92,509	89,891
1843—44	910,854	895,316	82,485	81,249
1844—45	979,288	964,616	71,498	68,679
1845—46	1,058,633	1,054,857	72,306	62,045
1846—47	740,669	724,508	55,588	50,876
1847—48	1,218,805	1,201,867	55,882	60,864
1848—49	1,142,882	1,167,308	52,385	52,896
1849—50	887,728	888,591	60,804	57,955
1850—51	995,036	997,458	64,690	54,501
1851—52	1,429,189	1,435,815	89,675	94,715
1852—53	1,664,864	1,644,981	75,016	84,075
1853—54	1,440,779	1,429,180	48,905	58,043
1854—55	1,284,768	1,270,264	53,348	64,100
1855—56	1,759,298	1,795,023	56,090	59,074
1856—57	1,513,247	1,516,921	55,067	50,181
Total..	27,201,866	27,181,859	1,642,481	1,625,581

Upon the supposition that the average value of cotton and tobacco for the 35 years above stated may be fairly estimated at $40 per bale for the former, and $70 per hogshead for the latter, it would give a total value for these two articles alone of $1,203,048,310.

IMPORTS OF SPECIE AT NEW ORLEANS, FOR TWELVE YEARS, FROM 1st SEPTEMBER TO 31st AUGUST.

Years.	Value.	Years.	Value.
1856—57.....	$6,500,015	1850—51.....	$7,987,119
1855—56.....	4,913,540	1849—50.....	3,792,662
1854—55.....	8,746,087	1848—49.....	2,501,250
1853—54.....	6,907,056	1847—48.....	1,845,808
1852—53.....	7,865,226	1846—47.....	6,680,050
1851—52.....	6,278,528	1845—46.....	1,872,071

COMPARATIVE PRICES OF FLOUR, ON THE 1ST OF EACH MONTH FOR FIVE YEARS.

Months.	1856—57.	1855—56.	1854—55.	1853—54.	1852—53.
	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.
September.....	6¼—6½	7¼—7½	7¼— 8¼	5¾—6¼	3½—4¼
October.....	6½—6¾	7¼—7¾	6¼— 7	5¼—6¼	4¼—4½
November.....	6¾—6¾	8¼—8¾	8 — 8¼	6¼—7	4½—5
December.....	7¼—7¾	8¼—9	8¼— 9	6¼—6¾	4½—5
January.....	6¾—7	8 —8½	8¼— 9	6 —6¾	4 —5¼
February.....	7 —7½	8¼—8¾	9¼— 9¾	7¼—7¾	4¼—5
March.....	6¼—6¾	6¾—7¼	9 — 9¼	7 —7¼	4 —4¾
April.....	6¼—6¾	7 —7¼	9 — 9¼	6 —6¾	3¾—4¼
May.....	6¼—7	6¼—6¾	10¼—11	6¼—7¼	3¾—4¼
June.....	7¼—7¾	6¼—6¾	9¼— 9¾	7 —7½	3¾—4¼
July.....	6¾—6	6 —6¼	8 — 8¼	6¼—7	4¼—5
August.....	6¼—6¼	6¾—6¾	7¾— 8¼	6¼—8¼	5¼—6¼

COMPARATIVE PRICES OF CORN, SACKS, AT NEW ORLEANS ON THE 1ST OF EACH MONTH, FOR FIVE YEARS.

Months.	1856—57.	1855—56.	1854—55.	1853—54.	1852—53.
	Cents.	Cents.	Cents.	Cents.	Cents.
September.....	70 — 90	70—75	70— 85	58—65	52—58
October.....	60 — 75	60—68	60— 80	68—69	58—62
November.....	65 — 70	65—75	75— 87½	65—70	56—60
December.....	63 — 65	85—90	86— 90	57—66	55—60
January.....	59 — 61	65—68	87— 90	60—70	52—58
February.....	105—110	65—72	90— 95	80—90	42—54
March.....	62½— 70	48—54	90— 92	60—70	35—46
April.....	62 — 77	48—58	94— 97	52—61	34—45
May.....	70 — 78	43—48	100—120	58—65	44—50
June.....	100 —110	54—57	95—115	52—60	43—52
July.....	75 — 85	46—50	70— 88	45—53	50—60
August.....	70 — 85	69—72	75— 95	50—60	66—75

COMPARATIVE RATES OF EXCHANGE ON LONDON, PARIS, AND NEW YORK, AT NEW ORLEANS, ON THE 1ST OF EACH MONTH FOR THREE YEARS. (60 DAY BILLS.)

Months.	1856—57.			1855—56.			1854—55.		
	London.	Paris.	New York	London.	Paris.	New York	London.	Paris.	New York
	pm.	per $	dis.	pm.	per $	dis.	pm.	per $	dis.
Sept....	9¼	5 20	1¾	8¼	5 15	2	9¼	5 15	1¼
October	9	5 22½	1¾	8	5 20	2	9¼	5 12	1¼
Novem.	8¾	5 25	2	7¼	5 30	2¼	9¼	5 12	1¼
Decem.	7¾	5 27	2¼	7	5 25	2¼	8¾	5 15	2¼
January	7¾	5 30	2¾	7¼	5 30	2¼	7	5 25	2¼
Feb....	7	5 30	2½	6¾	5 35	2¼	7	5 25	2¼
March..	7¾	5 27	2¼	8	5 25	2	8¼	5 21	2
April...	8¼	5 25	1¾	8	5 25	2¼	9¼	5 19	1¾
May....	9¼	5 17	1¼	9¼	5 19	1¾	10	5 12	1¼
June....	9¼	5 12	1¼	9¼	5 20	1¼	10¼	5 07	1
July....	10	5 20	1¼	9¼	5 15	1¼	10¼	5 07	1
August.	9¼	5 15	1¼	9¼	5 15	1½	9¼	5 10	2¼

EXPORTS OF SUGAR AND MOLASSES FROM NEW ORLEANS, FOR THREE YEARS (UP THE RIVER EXCEPTED), FROM SEPTEMBER 1ST, 1854, TO AUGUST 31ST, 1857.

Whither exported.	1856—57.				1855—56.				1854—55.			
	Sugar.		Molasses.		Sugar.		Molasses.		Sugar.		Molasses.	
	Hhds.	Barrels.	Hhds.	Barrels.	Hhds.	Barrels.	Hhds.	Barrels.	Hhds.	Barrels.	Hhds.	Barrels.
New York	387	40	....	6,917	14,479	3,438	....	45,715	74,970	6,116	62	107,452
Philadelphia	55	....	....	1,184	2,840	1	....	10,863	14,352	320	....	20,788
Charleston, S. C.	171	15	....	1,330	3,688	9	....	12,932	5,018	10	....	17,329
Savannah	38	....	....	340	759	54	....	4,001	854	6	....	5,047
Providence & Bristol, R.I.	....	....	....	50	....	....	....	1,201	5	214	....	1,273
Boston	....	....	....	1,226	439	....	....	12,227	2,654	143	204	25,508
Baltimore	680	....	....	1,072	11,580	554	....	15,784	14,445	866	....	21,366
Norfolk, Richmond and Petersburg, Va.	508	....	....	1,622	4,618	....	....	6,087	6,424	....	....	11,130
Alexandria, D. C.	....	....	....	....	499	....	....	591	843	....	....	745
Mobile	5,050	22	....	6,662	7,690	....	....	20,208	7,070	....	....	26,816
Apalachicola & Pensacola.	509	578	....	1,076	1,161	417	....	3,272	784	226	....	3,016
Other ports	1,944	1,870	....	2,777	3,459	1,410	....	9,506	2,118	2,565	....	16,940
Total	9,372	2,525	....	24,556	51,018	5,883	....	142,967	129,487	10,466	266	257,144

COMPARATIVE PRICES OF SUGAR AND MOLASSES AT NEW ORLEANS, ON THE FIRST OF EACH MONTH, FOR FIVE YEARS.

Months.	Sugar.					Molasses.				
	1856—57.	1855—56.	1854—55.	1853—54.	1852—53.	1856—57.	1855—56.	1854—55.	1853—54.	1852—53.
	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.
September...	5¼— 9½	5 —7¼	2¾ —6¼	3½—5½	3¼—6½	30 —48	28—32½	8 —18	18 —20	16—28
October.....	8½—10½	4 —8	3 —5½	2½—5	3½—7	30 —45	22—30	9 —13½	18 —20	18—28
November..	8½—10½	5¼—7½	3 —7¼	2¼—5	2¼—6½	30 —55	24—31	10 —24	20 —22½	25—26
December...	8½—10½	4½—7½	2½—5	1¼—4½	2½—5½	57 —59	27—30	12 —18	12 —18½	23—23½
January.....	7½—10½	5 —8	2¾—4½	2 —4½	2½—5½	60½—61	37—40	14 —16½	13 —18	17—22
February....	7½—11½	5 —8	2½—4½	2 —4½	3 —5½	58 —62½	30—35	13 —17½	12½—18	21—24½
March.....	7 —11½	4½—8½	3 —5	2½—4½	3 —5½	58 —61	33—34½	15½—18½	12 —17½	18—24½
April.....	7 —11½	4 —8½	2½—5½	1 —4½	2½—5	45 —58	30—35	12½—20	9 —15½	17—24
May.....	7½—12	4 —8½	4 —6½	1 —4½	2½—5½	47 —58	35—38	20 —28	9 —13	15—20
June.....	9 —12	4½—9	4 —6½	1 —5	2½—5	64 —67	35—43½	20 —28	8 —11½	14—22
July.....	8 —12	5 —9½	4 —6½	1½—5½	2½—5	47 —68	35—48	20 —28	7 —11	11—20½
August.....	10 —11	5½—9½	3½—6½	3½—3½	3½—6	47 —68	30—45	20 —28	8 —13	13—19

EXPORTS OF FLOUR, PORK, BACON, LARD, BEEF, WHISKY, AND CORN, FOR TWO YEARS, FROM SEPT. 1 TO AUG. 31.

Ports.	1856–57.							1855–56.						
	Flour.	Pork.	Bacon.	Lard.	Beef.	Whisky	Corn.	Flour.	Pork.	Bacon.	Lard.	Beef.	Whisky	Corn.
	Barrels.	Barrels.	Casks.	Kegs.	Barrels.	Barrels.	Sacks.	Barrels.	Barrels.	Casks.	Kegs.	Barrels.	Barrels.	Sacks.
New York	141,494	46,628	2,979	183,638	5,527	1,956	26,087	131,591	60,682	4,124	154,788	14,147	1,762	17,906
Boston	241,466	58,725	2,798	57,308	10,887	8,925	55,822	200,179	52,624	4,878	122,216	18,998	4,454	195,660
Philadelphia	....	....	9	....	....	849	....	....	....	....	1,583	....	67	5,049
Baltimore	....	8,947	....	1,480	....	856	....	....	4,565	....	....	....	137	....
Other coast ports	141,149	18,874	25,691	17,941	866	46,884	204,608	108,686	80,707	24,648	26,351	1,946	51,402	118,962
Great Britain	72,758	16,068	4,716	158,611	1,929	....	250,641	99,862	9,368	1,990	180,624	4,949	....	1,174,874
Cuba	17,974	1,420	1,740	185,090	814	....	59,785	8,947	2,658	1,438	212,771	235	....	5,075
Other foreign ports	290,776	4,722	644	40,758	903	1,088	115,285	185,177	17,688	442	94,584	1,504	754	104,749
Total	904,910	145,174	38,447	648,866	18,726	60,058	711,628	729,442	178,682	37,015	742,817	86,179	58,626	1,676,975

In the above the exports to Mobile, etc., via the Pontchartain Railroad and New Canal, are included.

IMPORTS INTO NEW ORLEANS, FROM THE INTERIOR, FOR TEN YEARS, FROM THE 1st SEPTEMBER TO THE 31st AUGUST IN EACH YEAR.

Articles.	1856–57.	1855–56.	1854–55.	1853–54.	1852–53.	1851–52.	1850–51.	1849–50.	1848–49.	1847–48.
Apples.....bbls.	56,612	62,449	32,523	47,451	48,828	20,356	54,809	37,244	54,987	39,518
Bacon...asst. casks, etc.	39,127	36,454	40,787	37,664	50,347	46,784	48,602	38,396	32,056	45,119
" .....bbls. & bxs.	8,855	9,732	8,492	9,981	4,009	3,626	9,274	29,941	32,156	....
" hams.....hhds.	32,804	28,751	31,871	32,155	42,589	38,488	44,473	19,335	19,831	13,539
" in bulk.....lbs.	7,660	178,760	232,920	121,000	134,800	231,280	235,000	209,045	217,000	381,140
Bagging.....pieces	32,028	33,905	40,578	45,263	64,144	60,044	72,804	58,821	72,941	77,692
Bale rope.....coils	112,846	101,881	95,886	102,274	121,553	90,272	107,224	80,104	93,822	74,325
Beans.....bbls	8,189	6,758	4,090	13,459	9,494	6,508	4,256	9,807	13,157	20,485
Butter.....kegs	32,845	33,119	33,874	47,649	44,444	44,786	54,907	51,058	57,972	45,213
" .....bbls	1,000	1,825	1,017	1,934	2,134	1,778	2,720	1,772	2,144	1,156
Beeswax..... "	87	180	141	161	194	171	230	367	491	698
Beef.....lbs. & tcs.	30,958	01,059	41,587	40,011	78,791	52,850	48,006	65,271	70,599	50,260
" dried.....lbs.	30,980	19,010	28,850	31,601	18,900	26,100	15,800	48,219	20,900	50,100
Buffalo robes.....pcks.	30	1	3	12	17	1,309	155	358	23	14
Cotton.										
La. and Miss....bales	1,068,835	1,176,698	865,690	961,526	1,135,172	967,679	618,156	474,411	811,205	888,144
Lake.....	4,187	4,052	4,128	19,239	21,614	15,202	14,399	10,902	15,781	18,734
N. Ala. and Tenn.....	277,545	379,434	286,758	256,594	328,170	304,158	286,821	249,688	217,078	227,561
Arkansas.....	80,933	102,154	75,259	107,566	95,082	85,480	62,793	44,980	46,783	64,294
Montgomery.....	18,996	37,031	16,823	33,798	28,995	21,760	18,051	17,501	9,889	....
Mobile.....	41,040	36,542	15,764	31,008	38,324	15,606	24,473	23,647	25,325	10,857
Florida.....	4,708	5,186	4,147	9,368	7,866	4,807	11,091	10,601	5,065	4,208
Texas.....	17,583	23,601	16,690	21,680	14,685	14,546	9,252	6,088	11,87	10,007
Corn meal.....bbls.	856	240	225	355	1,788	2,514	3,862	5,187	12,00	47,543
" in ears..... "	14,719	41,924	10,701	48,404	17,020	163,008	42,526	42,719	295,711	509,583
" shelled.....sacks	1,437,051	1,990,995	1,110,446	1,740,267	1,225,031	1,397,132	1,298,982	1,114,897	1,706,812	1,058,465
Cheese.....bxs.	48,979	42,052	45,245	58,132	39,497	72,441	78,894	62,869	54,287	52,362
Candles.....boxes	74,891	82,893	56,888	72,299	68,796	53,996	80,748	58,906	28,862	16,750
Cider.....bbls.	17	59	14	89	36	300	245	993	1,189	344
Coal, Western..... "	1,779,000	987,000	1,018,000	1,000,000	700,000	850,000	700,000	600,000	315,000	320,000
Dried peaches..... "	255	286	397	2,704	258	336	2,685	934	469	885
Dried apples..... "	375	2,760	855	4,649	1,379	468	4,168	665	2,495	1,178
Flaxseed.....tierces	261	230	281	192	1,279	519	204	217	1,188	4,398
Flour.....bbls	1,290,597	1,120,974	673,111	874,256	808,372	927,212	941,106	591,986	1,018,177	700,958
Furs ...hhds. bxs. bdls.	1,740	1,030	802	1,048	730	2,136	1,280	444	206	411
Feathers.....bags	823	778	1,078	1,377	2,042	2,065	3,645	5,900	3,039	2,594
Glassware.....boxes	30,859	30,326	16,384	24,857	18,408	19,251	16,428	4,887	575	4,200
Hemp.....bales	13,003	16,818	31,385	19,992	17,648	17,140	25,116	34,792	19,856	21,584
Hides.....	165,546	151,431	84,298	112,480	101,460	123,087	140,338	43,542	30,570	47,062
Hay.....bales	59,361	146,787	73,271	72,661	175,000	58,434	48,281	56,258	54,241	81,984
Iron, pig.....tons	77	332	17	515	121	62	152	28	413	701
Lard.....bbls.	37	4	104	....	1067	37	215	790	....	59
" .....tcs. & bbls.	103,023	110,718	144,086	139,065	118,136	125,496	115,570	228,019	214,362	216,131
" .....kegs	98,850	83,790	98,826	110,477	159,372	157,689	151,981	302,366	278,185	393,661
Lime, Western....bbls.	28,309	16,551	19,238	21,890	33,838	42,305	37,738	32,086	10,410	14,920
Lead.....pigs	18,291	80,624	79,514	74,206	210,287	267,504	325,505	415,400	508,557	606,966
" bar.....kegs.	365	341	301	210	157	1,188	629	631	949	787
" white..... "	85	65	269	544	726	1,368	1,930	5,979	7,795	9,208
Molasses.....bbls.	84,169	288,511	310,718	341,170	254,626	233,923	184,489	189,813	155,807	150,460
Oats.....bbls. & sacks	393,171	587,180	439,978	586,451	446,956	463,278	479,741	325,795	286,559	467,217
Onions.....bbls.	14,670	14,477	11,665	22,893	17,718	17,184	14,279	13,021	6,398	7,960
Oil, linseed..... "	10	163	348	539	508	758	178	1,098	1,469	2,387
" castor..... "	956	1,520	2,617	2,493	4,742	4,291	4,145	2,091	2,628	1,199
" lard..... "	8,071	10,881	13,332	14,298	14,685	14,114	17,157	14,712	8,842	5,401
Pickles.....kegs & "	113	197	266	457	617	381	895	243	639	505
Potatoes..... "	74,193	182,556	70,539	206,278	204,327	228,695	162,922	166,008	146,146	151,891
Pork.....tcs. & "	243,228	271,814	276,393	249,188	316,502	276,606	325,008	543,694	550,643	356,480
" .....boxes	10,924	6,823	7,458	13,206	2,074	303	1,980	15,695	18,279	....
" .....bbls.	2,879	2,983	3,007	1,750	2,517	2,478	1,231	13,008	18,499	14,261
" in bulk.....lbs	3,417,340	7,480,884	6,263,630	12,646,600	12,985,810	8,800,000	19,518,895	15,862,431	16,278,680	13,564,480
Porter and ale.....bbls.	1,788	1,087	1,216	1,770	1,140	400	384	804	1,898	3,492
Packing yarn.....reels	1,485	3,314	1,723	2,443	2,811	2,093	4,190	4,181	2,211	3,333
Skins, deer.....packs	794	406	793	365	425	998	1,119	1,375	1,801	1,361
Shot.....kegs	2,745	3,398	3,435	3,675	2,283	2,704	2,044	4,405	4,377	5,258
Sugar.....hhds.	62,463	155,819	180,742	274,906	186,001	141,946	125,755	143,912	125,592	128,112
" .....bbls.	8,995	8,526	13,175	12,245	10,494	11,213	18,675	17,895	5,879	....
Soap.....boxes	9,538	10,287	7,783	9,173	6,911	5,308	9,484	9,980	6,520	5,580
Shingles.....M	6,000	5,000	1,008	3,126	35	40	50	70	80	60
Staves.....M	7,000	4,647	4,000	2,500	6,000	7,319	9,000	6,000	3,500	2,000
Tallow.....bbls.	965	1,195	711	371	1,318	1,307	6,164	4,902	5,622	4,357
Tobacco, leaf.....hhds.	53,067	50,090	53,348	48,905	75,010	89,655	64,030	60,804	52,335	55,882
" chew.....boxes	3,261	3,599	4,153	4,617	10,800	4,779	4,116	2,321	2,315	6,390
" .....bales	151	199	62	....	74	162	220	153	33	118
Twine.....bundles	2,982	3,658	3,249	3,847	4,529	2,341	3,156	2,118	2,067	2,264
Whisky.....bbls	179,164	148,758	108,854	128,925	138,515	146,852	157,741	117,753	129,029	185,333
Wheat.....bbls. & sacks	775,962	869,524	81,288	184,943	47,298	64,918	88,797	57,508	238,911	149,181

EXPORTS OF SUGAR FROM NEW ORLEANS, FROM THE YEAR 1834 TO 1855 INCLUSIVE.

Year.	Exported to Atlantic ports.	Exported to Western States.	First receipt of new crop.
	Hhds.	Hhds.	
1834	45,500	44,500	October 15.
1835	1,500	23,500	November 5.
1836	26,300	35,000	" 1.
1837	24,500	32,500	" 1.
1838	26,500	32,500	October 17.
1839	42,600	58,000	" 18.
1840	38,500	46,500	" 14.
1841	28,000	50,000	" 18.
1842	63,000	60,000	" 12.
1843	34,000	52,000	" 22.
1844	101,000	70,000	" 3.
1845	79,000	75,000	" 4.
1846	45,500	70,000	" 7.
1847	81,000	115,000	" 2.
1848	90,000	108,000	" 5.
1849	90,000	125,000	" 11.
1850	45,000	123,000	" 17.
1851	42,000	149,000	" 19.
1852	82,000	206,000	" 9.
1853	166,000	185,000	" 6.
1854	122,000	148,000	" 4.
1855	39,188	131,027	" 10.
Total	1,816,088	1,984,527	

COMPARATIVE PRICES OF MESS AND PRIME PORK, AT N. O., PER BARREL, ON THE 1ST OF EACH MONTH, FOR TWO YEARS.

Months.	1856—57.		1855—56.	
	Mess.	Prime.	Mess.	Prime.
	Dollars.	Dollars.	Dollars.	Dollars.
September	19½—20	—	20 —20¼	17½—
October	21 —21½	—	20 —21	17½—
November	21 —21½	18 —19	21 —22	17½—
December	—20	—	19 —20	18½—
January	18 —18½	16 —16½	15½—16	15 —
February	21 —21½	17½—18	16½—17	—
March	21 —21½	18½—	15½—16	16½—
April	22½—23½	18 —18½	15½—15½	12½—13
May	22 —23	18 —18½	16 —16½	13 —13½
June	23½—24½	17½—19	17½—	14½—15½
July	24½—24	17½—19	19 —19½	16 —
August	23½—23½	17½—18½	20 —20½	16 —

VALUE OF PRODUCE OF THE INTERIOR.

Articles.	1856—57.	1855—56.	1854—55.
	Dollars.	Dollars.	Dollars.
Cotton	86,255,979	70,871,720	51,390,720
Sugar	8,137,360	10,199,890	18,025,020
Tobacco	11,973,645	8,072,775	7,215,195
Flour	9,034,179	8,407,305	5,553,166
Pork	5,859,287	5,584,505	4,980,557
Lard	4,262,958	3,841,278	4,092,530
Lead	91,455	409,940	359,290
Molasses	2,685,369	4,582,242	4,255,000
Bacon	6,772,241	4,570,363	4,993,154
Corn	2,531,237	3,020,031	2,402,440
Whisky	2,329,132	1,785,636	1,306,248
Wheat	2,327,886	2,782,476	87,606
Bagging	512,448	610,290	608,070
Beef	484,585	824,289	610,174
Hemp	990,090	504,510	940,050
Bale rope	1,123,460	1,013,810	667,352
Butter	360,550	395,065	267,628
Hay	296,805	612,350	360,870
Hides	579,411	454,293	189,670
Coal	1,150,500	444,150	559,200
Potatoes	185,362	456,896	176,843
Staves	475,000	282,850	188,000
Tallow	28,950	32,265	21,330
Feathers	41,150	82,676	90,184
Oats	629,073	587,180	549,972
Corn meal	4,280	960	1,013
Other articles	9,557,907	8,888,412	7,260,001
Total	158,061,869	144,256,081	117,106,823

Years.	Total value.	Years.	Total value.
1853—54	$115,936,798	1846—47	$90,089,251
1852—53	134,233,735	1845—46	77,193,164
1851—52	108,051,708	1844—45	57,196,122
1850—51	106,924,083	1843—44	66,094,716
1849—50	96,897,873	1842—43	53,782,651
1848—49	81,989,092	1841—42	45,716,045
1847—48	79,779,151		

From the above table it results that the total value of all the products received at this port from the interior from September 1, 1841, to September 1, 1857, a period of 16 years, amounts to $1,526,652,970.

The following is a statement of the imports at New Orleans, for the last four fiscal years:

	Year ending June 1853.	Year ending June 1854.	Year ending June 1855.	Year ending June 1856.
	Dollars.	Dollars.	Dollars.	Dollars.
Dutiable	8,019,029	8,272,449	6,989,092	8,990,538
Free	4,272,252	3,876,573	4,297,170	6,417,505
Bullion & specie	1,362,832	2,253,128	1,687,436	1,775,148
Total	13,654,113	14,302,350	12,923,698	17,183,327

VALUE OF PRODUCE OF THE INTERIOR.—A TABLE SHOWING THE RECEIPTS OF THE PRINCIPAL ARTICLES FROM THE INTERIOR, DURING THE YEAR ENDING AUGUST 31ST, 1857, WITH THEIR ESTIMATED AVERAGE AND TOTAL VALUE.

Articles.	Quantity.	Average price.	Value.
		Dollars.	Dollars.
Apples	bbls. 36,612	5 00	183,060
Bacon, assorted	hhds. & csks. 39,127	100 00	3,912,700
"	boxes 8,855	45 00	398,475
" hams	hhds. & tes. 32,804	75 00	2,460,300
" in bulk	lbs. 7,660	10	766
Bagging	pieces 32,028	16 00	512,448
Bale rope	coils 112,346	10 00	1,123,460
Beans	bbls. 3,189	8 00	25,112
Butter	kegs & firkins 32,345	10 00	323,450
"	bbls. 1,060	35 00	37,100
Beeswax	" 87	50 00	4,350
Beef	" 29,397	15 00	439,605
"	tierces 1,651	25 00	41 275
" dried	lbs. 30,880	12	3,705
Co on	bales 1,513,247	57 00	86,255,079
Corn meal	bbls. 856	5 00	4,280
" in ear	" 14,719	1 25	18,398
" shelled	sacks 1,497,051	1 75	2,514,339
Cheese	boxes 48,979	5 00	244,895
Candles	" 74,391	8 00	595,128
Cider	bbls. 17	5 00	85
Coal, western	" 1,770,000	65	1,150,500
Dried apples & peaches	" 680	8 00	5,040
Feathers	bags 823	50 00	41,150
Flaxseed	tierces 261	12 00	3,132
Flour	bbls. 1,290,597	7 00	9,034,179
Furs	hhds. bundles & boxes 1,740		600,000
Glassware	packages 30,859	5 00	154,295
Hemp	bales 13,008	80 00	390,090
Hides	No. 165,546	3 50	579,411
Hay	bales 59,361	5 00	296,805
Iron, pig	tons	35 00	2,695
Lard	bbls. & tierces 103,027	85 00	3,605,945
Lard	kegs 93,859	7 00	657,013
Leather	bundles 5,184	37 50	194,400
Lime, western	bbls 28,309	1 75	49,546
Lead	pigs 18,201	5 00	91,455
" bar	kegs & boxes 365	21 25	7,756
" white	kegs 85	5 25	454
Molasses (estimated crop)	gals 4,882,350	55	2,685,369
Oats	bbls & sacks 393,171	1 60	629,073
Onions	bbls. 14,676	5 00	73,380
Oil, linseed	" 10	40 00	400
" castor	" 956	60 00	57,360
" lard	" 8,074	45 00	363,330
Potatoes	" 74,133	2 50	185,332
Pork	tierces & bbls. 243,228	20 30	4,864,560
"	boxes 10,924	45 00	491,580
"	hhds. 2,872	80 00	229,760
" in bulk	lbs. 3,417,840	8	273,387
Porter and ale	bbls. 1,788	10 00	17,880
Packing yarn	reels 1,425	6 00	8,610
Rum	bbls. 425	30 00	12,750
Skins, deer	packs 794	30 00	23,820
Shingles	M 6,000	3 00	18,000
Shot	kegs 2,745	27 00	74,115
Soap	boxes 9,598	4 00	38,392
Staves	M 7,000	65 00	455,000
Sugar (estimated crop)	hhds. 73,976	110 00	8,137,360
Spanish moss	bales 8,475	30 00	254,250
Tallow	bbls. 965	30 00	28,950
Tobacco, leaf	hhds. 47,867	210 00	10,052,070
"	strips " 5,850	300 00	1,755,000
"	stems " 1,350	64 00	86,400
"	chewing, kegs & boxes 3,261	25 00	81,525
Twine	bundles & boxes 3,132	12 00	37,584
Vinegar	bbls. 1,354	6 00	8,124
Whisky	" 179,164	13 00	2,329,132
Wheat	bbls & sacks 775,962	3 00	2,327,886
Other various articles, est'm'd at	....	....	6,500,000
Total value	....	....	158,061,869

RECEIPTS AND STOCKS OF HAY AT THE PORT OF NEW ORLEANS, FROM SEPTEMBER 1ST, 1855, TO AUGUST 31ST, 1857.

	1856—57.	1855—56.
Stock on hand, Sept. 1, (all Western)	32,720	5,000
Receipts, Northern and Eastern	88,483	24,358
" Western	59,361	146,717
Total	180,924	178,075
	173,075	
Increase in total supply	7,849	
" Northern and Eastern	67,505	
Decrease in Western	87,376	

MONTHLY ARRIVALS OF SHIPS, BARKS, BRIGS, SCHOONERS, AND STEAMBOATS, FOR THREE YEARS, FROM SEPTEMBER 1 TO AUGUST 31.

Months.	1856—57.							1855—56.							1854—55.						
	Ships.	Barks.	Brigs.	Schrs.	St. Ships.	Total.	S. Boats.	Ships.	Barks.	Brigs.	Schrs.	St. Ships.	Total.	S. Boats.	Ships.	Barks.	Brigs.	Schrs.	St. Ships.	Total.	S. Boats.
September	85	18	9	18	10	88	181	27	18	12	21	14	87	158	23	7	9	21	16	75	118
October	65	23	19	32	15	154	224	99	29	25	30	20	203	204	119	25	11	16	16	187	187
November	100	36	22	31	17	206	279	134	51	42	39	23	289	291	89	34	17	44	17	201	220
December	89	44	22	26	15	196	331	90	40	34	34	23	221	352	94	36	19	49	20	218	284
January	94	32	23	59	23	231	253	130	59	27	49	22	287	296	75	31	18	63	22	209	356
February	96	48	23	43	16	226	287	62	24	23	39	17	165	287	81	27	20	48	22	198	271
March	77	28	35	70	24	234	293	80	34	23	43	23	201	355	55	18	17	44	23	157	268
April	74	30	21	50	23	188	250	104	42	24	40	20	230	311	79	23	14	41	22	178	332
May	43	32	18	48	23	164	225	43	18	17	24	19	121	279	50	21	14	42	19	146	252
June	25	25	21	34	23	128	210	68	34	15	25	21	163	185	41	16	14	25	19	115	190
July	11	11	12	20	13	67	129	27	21	14	23	19	109	155	14	7	14	14	15	64	166
August	20	9	6	12	10	57	118	10	10	6	18	13	57	97	11	11	14	19	14	69	142
Total	729	321	231	441	212	1,984	2,745	874	375	261	399	234	2,143	2,956	781	255	180	426	226	1,317	2,763

MONTHLY ARRIVALS OF FLATBOATS FOR THE PAST SEASON.

Months.	Ohio.	Kentucky.	Indiana.	Virginia.	Pennsylvania.	Illinois.	Arkansas.	Tennessee.	Mississippi.	Total.
September	1	..	..	..	..	..	..	1	..	2
October	2	..	..	..	..	2	..	1	..	5
November	3	..	..	..	..	..	..	..	..	3
December	2	2	2	..	..	..	1	1	1	9
January	15	4	18	..	..	1	2	1	..	36
February	19	1	7	..	..	1	1	2	2	26
March	17	9	20	2	46	2	8	16	1	121
April	4	5	18	..	8	6	2	8	1	50
May	7	4	40	1	20	1	..	11	..	84
June	5	2	15	..	24	..	..	16	..	62
July	1	7	4	..	10	..	..	17	3	42
August	1	..	17	..	13	..	..	20	..	51
Total	71	34	186	3	119	12	14	94	8	491

DIRECT IMPORTS OF COFFEE, SUGAR, AND SALT, FOR THREE YEARS, FROM SEPTEMBER 1 TO AUGUST 31.

Articles.		1856—57.	1855—56.	1854—55.
Coffee—Cuba, etc	bags	11	10,885	2,287
" —Rio	"	440,908	885,982	341,188
Sugar—Cuba	bxs. & bbls.	29,807	31,665	20,111
" —Cuba	hhds.	21,394	6,639	443
" —Brazil, etc	bxs. & bags	8,306	....	....
Molasses—Cuba	hhds. & tcs.	24,453	122	114
" —Cuba	bbls.	29,531	1,673	2,261
Salt—Liverpool	sacks	1,051,190	1,033,284	603,298
" —Turk's Island, etc	bushels	592,778	735,282	382,298

New Orleans Levee Dues.—The subjoined ordinance, passed by the Common Council of the city and approved by the mayor, May 28, 1852, is now in force:

An Ordinance to Regulate the Levee and Wharfage Dues on Ships and Vessels arriving from Sea, and on Steamboats, Flats, Barges, etc.—ARTICLE 1. That from and after the passage of this ordinance the levee or wharfage rates on ships or other sail vessels, steamships, steamboats, flats, barges, and other craft, shall be fixed as follows: On all ships or sail vessels of 1,000 and under, 25 cents per ton. Excess of tonnage over 1,000 tons, 20 cents per ton. On all steamships, 17½ cents per ton. On all steamboats of 1,000 tons and under, 15 cents per ton. Excess of tonnage over 1,000 tons, 10 cents per ton; *provided*, the boats arriving and departing more than once each week, shall pay only two thirds of these rates. On each flatboat not measuring over 80 feet, $10. On each flatboat measuring 80 to 100 feet, $12. On each flatboat measuring over 100 feet, $15. On each barge more than 70 feet long, $12. On each barge less than 70 feet long, and not exceeding 15 tons burden, $8. On each steamboat hull used as a barge, $25. On each scow and coastwise pirogue, $2. For every flatboat, barge, or other vessel, not including steamboats, employed in the transportation of brick, lumber, or other building materials, or in bringing produce from this and neighboring parishes to this city, and measuring not over 25 tons, the levee and wharfage dues shall be $30 per annum. From 25 to 50 tons, $60 per annum. Over 50 and not exceeding 75 tons, $80 per annum. Over 75 and not exceeding 100 tons, $125 per annum. Over 100 tons, $200 per annum.

ARTICLE 2. Every proprietor of any small craft of the description above-mentioned, who shall desire to enjoy the privilege accorded by the present ordinance, must apply to the treasurer of the city of New Orleans for the purpose of obtaining a license, approved by the mayor, and countersigned by the controller, which license shall specify the number or name of such craft, which shall be painted in a conspicuous place on the side of the said craft.

ARTICLE 3. Hereafter it shall not be lawful for any pirogue, flatboat, barge, boat, or keelboat, to remain in port longer than eight days, under the same provisions and penalties contained in Article 3, of an ordinance of the General Council, approved May 20, 1843.

ARTICLE 4. That the payment of the levee dues on ships or sail vessels, steamships, and steamboats, shall be exacted and collected by the collectors of levee dues, and an extra duty of one third these rates shall be paid by all sail vessels or steamships which may remain in port over two months, the same to be recovered at the commencement of the third month; and if over four months, an additional duty of one third these rates. Steamboats shall be entitled to remain thirty days in port after payment of the dues. All over thirty days to pay an additional duty of $2 per day.

ARTICLE 5. That all vessels now in port, and that have paid a daily or weekly wharfage, shall be allowed (and the collectors are hereby authorized) to deduct the amount so paid from the rates now to be collected. All ordinances or parts of ordinances conflicting with the foregoing be, and the same are hereby, repealed.

TARIFF OF COMMERCIAL CHARGES AND RATES ADOPTED BY THE NEW ORLEANS CHAMBER OF COMMERCE, IN 1846 AND 1848, AND AMENDED MAY 10, 1852.

Commission on Sales.

Sugar, cotton, tobacco, lead, floor, and other products of the soil	2½ per cent.
Domestic manufactures, and all foreign merchandise	5 "
Guaranty of sales on time	2½ "
Purchase and shipment of merchandise or produce	2½ "
Sales or purchase of stock and bullion	1 "
Collecting and remitting dividends	1 "
Selling vessels or steamboats	2½ "
Purchasing "	5 "
Procuring freights	5 "
Collecting freights from foreign ports	2½ "
Coastwise	5 "
Outfits and disbursements	2½ "
Effecting insurance	½ "
Adjusting or collecting insurance or other claims without litigation	2½ "
With litigation	5 "
Purchasing and remitting drafts, or receiving or paying money on which no other commission has been charged	1 "
If bills remitted are guaranteed, in addition	1½ "
Bills and notes remitted, for collection protested and returned	1 "
Landing, custody, and re-shipping merchandise or produce from vessels in distress	2 "
Ditto, bullion or specie	1 "
Adjusting and collecting general average	5 "

Commission on Sales—continued.

Consignments of merchandise withdrawn or re shipped per order, on account of advances and responsibilities—full commission.	
On the surplus amount of invoices of such consignments, deducting advances and liabilities —half commission.	
Drawing, indorsing, or negotiating foreign bills of exchange	1½ "
Ditto, on domestic bills of exchange	1 "
Receiving, entering, and re-shipping merchandise to a foreign port—on amount of invoice	1 "
On amount of advances, charges, and liabilities on same	2½ "
For drawing, accepting, negotiating, or indorsing notes or drafts without funds, produce, or bills of lading in hand	2½ "
On cash advances in all cases	2½ "
For entering and bonding merchandise for the interior—on amount of duties, freight, and charges (besides the regular charge for forwarding)	2½ "
Agency for steamboats—according to special contract.	

The foregoing rates to be exclusive of brokerage and charges already incurred.

Receiving and Forwarding Merchandise, exclusive of Charges actually incurred.

Sugar, molasses, and tobacco	per hhd.	50 cents.
Cotton	per bale	50 "
Hemp	"	20 "
Moss	"	10 "
Provisions or bacon	per hhd.	25 "
" "	per tierce	12½ "
Pork, beef, lard, tallow	per bbl.	5 "
Box pork	per box	15 "
Flour, grain, and other dry barrels		5 "
Lard, nails, and shot	per keg	2½ "
Lead	per pig	1 "
Corn, wheat, beans, oats, and other grain, per bag		3 "

Liquids.

Pipes and hogsheads		50 cents.
Half pipes and tierces		25 "
Quarter casks and barrels		12½ "
Whisky	per bbl.	10 "
Oils		12½ "

Storage and Labor per Month.

	First Month.	Second and after.
	Cents.	Cents.
Cotton and wool, per bale	20	10
Tobacco, per hhd.	50	25
Hemp, per bale not exceeding 300 lbs.	10	07
" " " 450 "	15	10
" " " 600 "	20	15
" " " 800 "	25	18
Moss, per bale	10	06
Bagging and rope	05	03
Peltries	10	07
Hides, each	01½	01
Lead, per pig	01	01
Hollow ware, per ton	125	75
Bar iron and castings	75	50
Railroad iron and pig iron	50	25
Bacon and provisions, per hhd.	25	28
Pork, beef, lard, tallow, etc., per bbl.	08	06
Molasses, oil, and whisky	10	08
Flour	05	04
Lard, per keg	02½	02
Sugar and molasses, per hhd.	40	25
" Havana, per box	12½	10
Corn, wheat, oats, and other grain, per bag	04	03
Coffee, spices, etc	05	03
Salt	03	02
Candles, soap, wine, fish, raisins, oils, sweetmeats, segars, etc., per box or basket	01	02
Ditto, in half boxes	02	01
Nails, per keg	03	02
Dry goods, not exceeding 10 feet	15	10
" " " 20 "	20	15
" " " 30 "	25	20
" " " over 30 "	40	25
Crockery, per cask or crate	30	20
" half cask or half crate	15	10
Hardware, per cask	40	25
" per tierce	20	15
" per bbl.	10	08
Liquids, per pipe or hhd.	40	30
" per half pipe or tierce	25	18
" per quarter cask or bbl.	10	08
Claret, per cask	20	15
Gunny bags, per bale	10	08
India bagging	15	10

Sundries.

Boxes, bales, cases, trunks, and other packages, dry goods	10—50	cents.
Earthen and hardware, per package	25—50	"
Bar-iron and castings, per ton	75	"
Railroad iron and pig iron	50	"
Hollow ware	150	"
Soap, candles, wines, etc., per box	5	"
Coffee, spices, etc., per bag	0	"
Gunpowder, per keg	25	"
Salt, per sack	3	"

Weight of Grain per Bushel.

Wheat and rye	60	lbs.
Corn	56	"
Oats	32	"

Tares.

Lard, butter, cheese, tallow, stearine, sugar, rice, actual tare.
Coffee in bags, 2 per cent.

For commerce, etc., of New Orleans, see *Bankers' Magazine*, ii., iii., iv.; HUNT'S *Mer. Mag.*, iv., v., vi., vii., ix., xi., xiii., xv., xxv., etc.; DE BOW'S *Rev.*, ii., 53 (by W. L. HODGE), iii., 39, 235, 112 (by S. J. PETERS), vi., 433, viii., i., xi., 387, 474, vii., 412, x., 505.

New South Wales. Prior to 1836, official returns exhibit no evidence of any trade between the United States and New South Wales. In that year six American vessels entered the harbor of Sydney with freights valued at $69,510, and carrying home staples and other colonial produce to the amount of $92,970. From that period to 1850 but little advance was made either in the import or export trade with that colony; the highest return being that for 1841, which shows the following summary:

Vessels from the United States entered the ports of New South Wales, in 1841, 13; tonnage, 4,751.

TRADE WITH THE UNITED STATES.

	1841.	1852.	1853.
Imports from U. S.	$176,410	$148,450	$1,068,975
Exports to U. S.	24,185	25,405	15,140

The principal imports from the United States to New South Wales are: Apparel, bags and sacks, butter and cheese, candles (tallow and sperm), carts and wagons, coffee, preserves, drugs and medicines, salt fish, flour and bread, fruits, furniture, glassware, oats, rice, and barley, hardware and ironmongery, ice, leather manufactures, linens, provisions, spirits (chiefly rum and whisky), stationery and books, sugar, tobacco, woodenware, watches and clocks, and wine. The principal exports to the United States from New South Wales are: Coals and coke, lard, etc. The leading staple of New South Wales is wool; but it can not be imported into the United States advantageously, while it is admitted free into British ports. The total exports of wool from New South Wales during the four years ending with 1853, were 56,984,938 pounds, valued in the colony at $16,465,320.

Newspapers, publications in numbers, consisting commonly of single sheets, and published at short and stated intervals, conveying intelligence of passing events. It is foreign to the purpose of this work to consider the moral and political effects produced by newspapers; of the extent of their influence there is no doubt, even among those who differ widely as to its effect. Their utility to commerce is, however, unquestionable. The advertisements or notices which they circulate, the variety of facts and information they contain as to the supply and demand of commodities in all quarters of the world, their prices, and the regulations by which they are affected, render newspapers indispensable to commercial men, supersede a great mass of epistolary correspondence, raise merchants in remote places toward an equality, in point of information, with those in the great marts, and wonderfully quicken all the movements of commerce. But newspapers themselves have become an important commercial article.

The first newspaper published in England, which might truly be considered as a vehicle of general in-

formation, was established by Sir Roger L'Estrange, in 1663; it was entitled the *Public Intelligencer*, and continued nearly three years, when it ceased on the appearance of the *Gazette*. A publication, with few claims however to the character of a newspaper, had previously appeared; it was called the *English Mercury*, and came out under the authority of Queen Elizabeth, so early as 1588, the period of the Spanish Armada. An early copy of this paper is dated July 23, in that year. In the reign of James I., 1622, appeared the *London Weekly Courant*, and in the year 1643 (the period of the civil war) were printed a variety of publications, certainly in no respect entitled to the name of newspapers, of which the following were the titles:

England's Memorable Accidents, The Kingdom's Intelligencer, The Diurnal of Certain Passages in Parliament, The Mercurius Aulicus, The Scotch Intelligencer, The Parliament's Scout, The Parliament's Scout's Discovery, or Certain Information, The Mercurius Civicus, or London's Intelligencer, The Country's Complaint, etc., The Weekly Account, Mercurius Britannicus.

A paper called the *London Gazette* was published August 22, 1642. The *London Gazette* of the existing series, was published first at Oxford, the court being there on account of the plague, November 7, 1665, and afterward at London, February 5, 1666. The printing of newspapers and pamphlets was prohibited 31 Charles I., 1680.—SALMON'S *Chron.* Newspapers were first stamped in 1713. Number of the stamps issued in England:

Year.	No.	Year.	No.
1753.....	7,411,757	1825.....	26,950,628
1760.....	9,404,790	1830.....	30,158,741
1774.....	12,900,000	1835.....	32,874,652
1790.....	14,085,639	1840.....	49,033,884
1800.....	16,084,905	1843.....	56,448,977
1810.....	20,172,837	1849.....	76,569,285
1820.....	24,862,186		

The total number of newspapers published in the United Kingdom in 1849 was 603, viz.: 160 in London, 232 in the English provinces, 117 in Ireland, and 94 in Scotland. The number of advertisements inserted in the London newspapers in 1849 was 886,108, paying a gross duty of £66,458 2s.; in the English provincial newspapers, 834,729, yielding to the crown a revenue of £62,604 13s. 6d.; in the Irish papers, 220,524, paying £11,026 4s.; and in the Scotch papers, 240,911, paying in duty £18,075 16s. 6d.

Newspapers, etc., in the United States.—The *Boston News Letter* was established in 1704, which was continued till 1774; the second was the *Boston Gazette*, 1719; the third the *American Weekly Mercury*, at Philadelphia, started one day after the last. First *New York Gazette*, in 1725; first newspaper in the Carolinas, at Charleston, 1731-2; first *Rhode Island Gazette*, at Newport, 1732; first *Virginia Gazette*, at Williamsburg, in 1736. In 1775 there were in all the colonies 37 newspapers; in 1810, in the United States, 358; in 1828, 802; in 1839, 1555, and in 1850, 2526.

Newspapers in France.—The first was the *Gazette de France*, established by Renairdot, in 1631, and continued with few interruptions till 1827, when it ceased and another paper assumed its name. The *Moniteur*, commenced in 1789, has been since 1800 the official journal of the government. The *Constitutionelle* and the *Journal des Debats* have long had the largest circulation. There were 374 newspapers published in France in 1832. See PERIODICAL LITERATURE.

Newspapers, Irish.—The first Irish newspaper was PUE'S *Occurrences*, published in 1700. FAULKNER'S *Journal* was established by George Faulkner, "a man celebrated for the goodness of his heart, and the weakness of his head," in 1728.—*Supplement to Swift.* The oldest of the existing Dublin newspapers is the *Freeman's Journal*, founded by the patriot, Dr. Lucas, about the year 1755.—*Westm. Rev.*, January, 1830. The *Limerick Chronicle*, the oldest of the provincial prints, was established in 1768.—*Idem.*

Notices of Newspapers.—The history of newspapers, and of periodical literature in general, remains to be written; and were the task executed by an individual of competent ability, and with due care, it would be a most interesting and important work. It appears, from the researches of Mr. Chalmers, that the first newspaper published in modern Europe made its appearance at Venice in 1536; but the jealousy of the government would not allow of its being printed; so that, for many years, it was circulated in manuscript! It would seem that newspapers were first issued in England by authority during the alarm occasioned by the approach of the Armada to her shores; in order, as was stated, by giving real information, to allay the general anxiety, and to hinder the dissemination of false and exaggerated statements. From this era, newspapers, of one sort or other, have, with a few intermissions, generally appeared in London, sometimes at regular, and sometimes at irregular intervals. During the civil wars, both parties had their newspapers. The earliest newspaper published in Scotland made its appearance under the auspices of Cromwell in 1652. The *Caledonian Mercury* was, however, the first of the Scotch newspapers of native manufacture; it made its appearance at Edinburg, under the title of *Mercurius Caledonius*, in 1660; but its publication was soon afterward interrupted. In 1715 a newspaper was, for the first time, attempted in Glasgow.

To Boston belongs the honor of establishing the first newspaper in North America. It was issued in the year 1690. It was deposited in the State Paper Office, in London, and stopped by the government. It was of the size of an ordinary sheet of letter paper. One copy of it alone was known to be in existence, and that it was that shared the luckless fate abovenamed. The first regular paper that was issued was also of Boston. Its title was the *News Letter*, its date was 1704, and it was printed by John Allen, in Pudding Lane. We have seen some of its early numbers, and they are peculiar. Its latest news from England was dated one hundred and twenty days previously, and consisted of a speech of Queen Anne to Parliament. An advertisement informs us that the mail between Boston and New York set out once a fortnight. Negro men, women, and children were advertised for sale, and an urgent appeal appeared in one, calling upon a female who had stolen a piece of fine lace, valued at 14 shillings a yard; and upon another who had conveyed a piece of fine calico from its proper destination, under her riding-hood, to return the same or suffer exposure in the newspapers. For 74 years this paper continued in existence as the leading Tory paper. About these days, the revolutionary struggle drawing near, the Boston *Gazette* was issued at Watertown as the organ of the patriots. When the war broke out, there were 37 newspapers being published in the United States; eight of them were committed to the interests of the British, and five others were brought over to the government side.

Old Papers.—The Worcester *Spy*, published in 1770, is the oldest existing paper of Massachusetts. There are copies extant of the *Albany Journal, or the Montgomery, Washington, and Columbia Intelligencer*, printed in 1788. It was issued semi-weekly, at a subscription price of 12 shillings per annum. Its size was about 11 by 13 inches. Charles K. and George Webster & Co. were its publishers. Its leading article is an extract from a letter from Philadelphia, dated February 20, as follows: "On Saturday last, upon the arrival of the news of the ratification of the Federal Constitution by the powerful State of Massachusetts, the bells of Christ Church were rung, and congratulations of joy have appeared in every part of the city for several days." The "latest news from Europe" is made a feature of the sheet; it bears date December

1787, by which it would appear that it took some three months to cross the water.

New York and her Newspapers.—The position which this city sustains, as compared with any other city of the world, in the number and circulation of her journals, can be adjudged by a glance at the following table, which gives the supposed number of newspapers in the world, 1852—56:

Austria	10	Belgium	65
Africa	14	Denmark	85
Asia	30	Germanic States	350
Great Britain and Ireland	500	Portugal	26
		Spain	24
Russia and Polynesia	50	United States	2,800

Of these, New York alone issues 122 sheets, as follows: secular journals, daily, morning, 8; evening, 6; semi-weekly, 2; weekly, 59; German dailies, 3; weeklies, 8; French daily, 1; Spanish weeklies, 2; Welsh, 3; of religious weeklies, there are 29 sheets. It is difficult to obtain a correct estimate of the present circulation of so many papers. Of the daily papers, at least 250,000 copies must be circulated; while 13 religious weeklies are spread before 150,000 subscribers.

The whole number of newspapers and periodical publications in the United States on the 1st of June, 1852, amounted, according to the official returns, to about 2,800. Of these, 2,494 were fully reported upon, while the particulars with respect to the others were in part estimated.

From these returns, etc., it appears that the aggregate circulation of papers and other publications was about 5,000,000; and that the entire number of copies printed annually in the United States, amounted to about 422,600,000. The following table shows the number of daily, weekly, monthly, and other issues, with the aggregate circulation of each class:

	No.	Circulation.	No. if copies printed annually.
Daily Journals	350	750,000	225,000,000
Tri-weekly	150	75,000	11,700,000
Semi-weekly	125	80,000	8,320,000
Weekly	2,000	2,875,000	149,500,000
Semi-monthly	50	800,000	7,200,000
Monthly	100	900,000	10,800,000
Quarterly	25	20,000	80,000
Total	2,800	5,000,000	422,600,000

Four hundred and twenty-four journals were issued in the New England States; 876 in the Middle States; 716 in the Southern States; and 784 in the Western States. Of the whole 2,800 publications, about 2,200 were newspapers, properly so called; the residue being scientific, religious, and educational journals. The average circulation of the mere papers was 1,785. There was one publication for every 7,161 free inhabitants in the United States and Territories. The following summary is based on the official returns:

NEWSPAPERS AND PERIODICALS PUBLISHED IN THE UNITED STATES IN 1850.

States & Territories.	Daily.		Tri-weekly and semi-weekly.		Weekly.		Semi-monthly.		Monthly.		Quarterly.		Aggregate.	
	No.	No. copies printed annually.	No.	No. copies printed annually.	No.	No. copies printed annually.	No.	No. copies printed annually.	No.	No. copies printed annually.	No.	No. copies printed annually.	No.	No. copies printed annually.
Alabama	6	869,201	5	266,500	48	1,509,040	1	18,000	..	....	..	....	60	2,662,741
Arkansas	..	....	..	....	9	277,000	..	....	..	....	..	....	9	277,000
California	4	626,000	..	....	3	135,200	..	....	..	....	..	....	7	761,200
Dist. Columbia	5	6,149,198	5	1,308,610	8	3,769,428	..	....	..	....	..	....	18	11,127,236
Connecticut	7	1,752,800	4	374,400	80	2,117,232	..	....	1	6,000	2	8,800	46	4,267,932
Delaware	..	....	3	62,400	7	358,800	..	....	..	....	..	....	10	421,200
Florida	..	....	1	31,200	9	288,600	..	....	..	....	..	....	10	319,800
Georgia	5	1,036,000	3	146,380	37	2,609,778	6	228,600	..	....	..	....	51	4,070,866
Illinois	8	1,120,000	4	214,500	84	3,575,936	3	43,200	7	147,200	1	900	107	5,102,276
Indiana	9	1,158,000	2	195,000	95	2,920,736	1	48,000	..	....	..	....	107	4,816,828
Iowa	..	....	2	577,200	25	923,000	..	....	2	12,600	..	....	29	1,512,800
Kentucky	9	2,243,584	7	1,125,280	38	3,053,024	8	160,950	..	....	..	....	62	6,582,838
Louisiana	11	9,947,140	5	676,000	37	1,646,594	..	....	1	146,400	..	....	55	12,416,224
Maine	4	964,940	5	802,000	39	2,906,124	..	....	1	30,000	..	....	49	4,303,064
Maryland	6	15,806,500	4	499,700	54	3,166,124	1	48,000	3	92,400	..	....	68	19,612,724
Massachusetts	22	40,498,444	15	2,421,016	126	20,871,104	3	61,800	29	1,357,200	7	24,000	209	64,833,564
Michigan	3	1,252,000	2	52,000	47	1,685,736	3	184,400	3	128,600	..	....	58	3,247,736
Mississippi	..	....	4	245,440	46	1,507,064	..	....	..	....	..	....	50	1,752,504
Missouri	5	3,380,400	4	273,000	45	2,406,560	..	....	7	135,600	..	....	61	6,195,560
N. Hampshire	..	....	..	....	35	3,538,152	1	15,600	2	13,800	..	....	38	3,067,552
New Jersey	6	2,175,850	..	....	43	1,900,288	2	23,040	..	....	..	....	51	4,099,178
New York	51	63,928,685	21	3,892,460	308	39,205,920	9	1,704,000	36	6,629,808	8	24,600	428	115,385,473
North Carolina	..	....	5	414,310	40	1,530,204	6	76,050	..	....	..	....	51	2,020,564
Ohio	26	14,285,633	10	1,047,980	201	13,334,204	23	1,781,640	..	....	1	24,000	261	30,473,407
Pennsylvania	24	50,416,788	8	140,400	261	27,359,384	19	6,972,000	..	....	2	7,600	310	84,898,672
Rhode Island	5	1,768,450	2	25,200	12	964,200	..	....	..	....	..	....	19	2,756,950
South Carolina	7	5,070,600	5	549,250	27	1,418,880	5	102,600	..	....	2	9,600	46	7,145,930
Tennessee	8	4,407,666	2	266,240	36	2,139,644	..	....	4	127,200	..	....	50	6,940,750
Texas	..	....	5	525,400	29	771,524	..	....	..	....	..	....	34	1,296,924
Vermont	2	172,150	1	228,800	30	2,142,712	..	....	2	24,000	..	....	35	2,567,662
Virginia	15	4,992,850	12	1,416,550	55	2,518,568	3	267,600	1	24,000	1	1,000	87	9,223,068
Wisconsin	6	1,053,245	4	198,250	35	1,895,992	..	....	1	18,000	..	....	46	2,665,487
Minnesota Terri.	..	....	..	....	..	....	..	....	..	....	..	....	..	....
N. Mexico "	..	....	..	....	1	20,800	1	18,000	..	....	..	....	2	38,800
Oregon "	..	....	..	....	2	58,968	..	....	..	....	..	....	2	58,968
Utah "	..	....	..	....	..	....	..	....	..	....	..	....	..	....
Total	254	235,119,966	146	17,876,816	1,902	158,120,708	95	11,703,480	100	8,887,808	19	108,500	2,526	426,409,978

PUBLICATIONS AND THEIR CIRCULATION IN THE PRINCIPAL CITIES IN 1850.

Cities.	States.	Publications.	Annual circulation	Average circulation.	Annual circulation to each white inhabitant.
Albany	New York	8	16,050,460	2,006,307	321
Baltimore	Maryland	81	29,711,100	668,100	147
Boston	Massachusetts	113	54,492,644	482,147	404
Charleston	South Carolina	12	5,675,800	472,983	284
Chicago	Illinois	17	1,886,952	110,997	64
Cincinnati	Ohio	89	8,753,200	224,441	78
Louisville	Kentucky	23	3,186,688	138,550	88
Mobile	Alabama	4	1,002,000	250,500	77
New Orleans	Louisiana	18	1,260,860	625,608	126
New York	New York	104	78,747,600	757,188	157
St Louis	Missouri	18	4,890,080	271,668	66
Philadelphia	Pennsylvania	51	48,457,240	950,142	125

See *Am. Alm.*, 1835, 98, 266; *N. Br. Rev.*, ii., 154, xiii., 86; *N. Am. Rev.*, lvi., 229 (C. C. FELTON); *For. Quar.*, xxx., 197, xxxi., 182, 250; *Liv. Age*, iv., 780; *Westm. Rev.*, x., 216, 466, ii., 194, xii., 69, xxv., 264; *Southern Lit. Mess.*, vii., 690; FRASER, xxxiii., 674, iv., 127, 810, xiii., 620; *Dem. Rev.*, xxiv., 219; *Ed. Rev.*, lxi., 96.

New Style. Ordered to be used in England in 1751; and the next year eleven days were left out of the calendar—the 3d of September, 1752, being reckoned as the 14th—so as to make it agree with the Gregorian Calendar, *which see*, and also article CALENDAR. In the year A.D. 200, there was no difference of styles; but there had arisen a difference of eleven days between the old and the new style, the latter being so much beforehand with the former: so that when a person using the old style dates the 1st of May, those who employ the new, reckon the 12th. From this variation in the computation of time, we may easily account for the difference of many dates concerning historical facts and biographical notices.—M.

New York, one of the United States of America, situated between 40° 30′ and 45° 01′ N. lat., and between 71° 50′ and 79° 56′ W. long., and contains an area of 46,000 square miles. The population in 1790 was 340,120; in 1800, 586,050; in 1810, 959,049; in 1820, 1,372,812; in 1830, 1,913,508; in 1840, 2,428,921; and in 1850, 3,097,394.

Early History of New York State.—The Spaniards comprised the territory of the present State of New York under their great name of Florida, and designated it also on their maps of the sixteenth century particularly as the "Tierra de Stephen Gomez," or shorter "Tierra de Gomez," because Gomez (1525) was for a long time the only Spanish navigator who was known to have explored especially these coasts. The English comprised it since 1585 under the name Virginia, and since 1606 under the name of Northern Virginia, or the Northern Colony. Since 1616 they considered it as a part of New England, which name took the place of the old name of Northern Virginia, and went down like this as far south as the fortieth degree of north latitude. The Dutch began soon after the discovery of Hudson (1609) to call it "Nieuw Nederlandt" (the New Netherlands). This name may already have been in use for some time, but it occurs for the first time in a public document in the year 1614. They also sometimes called it "Nieuw Holland." It is on maps also sometimes called "New Belgium." They at first gave to it very extensive boundaries, as far east as Cape Cod, including the whole Barnstable peninsula, and south as far as the Delaware River and beyond it. With these limits we find it represented on many old Dutch maps. The southern limit on the Delaware River remained pretty much unchanged on the Dutch maps. Not so the eastern boundary. On later maps we see this advancing only as far as Nassau Bay, Rhode Island. Since 1630 or 1635 the maps have it only as far as the Connecticut River, where at this time the English had already arrived with their plantations. When, in the year 1664, the English conquered the whole country, it was named the "Province of New York," in honor of James, Duke of York, brother of Charles II. It lost in the same year a part of its coast by the grant which the Duke of York made to a company of gentlemen who founded the province of New Jersey, between the lower Hudson and the Delaware Bay.—J. G. KOHL.

When the province became, in 1776, a State, the name remained unchanged, and also the limits along the coast.

Physical Features.—This State is divided into three unequal parts, by two great valleys, viz.: 1st. The valley of the Hudson, including the depression in which Lake Champlain is situated, or, more properly, the valleys of the Hudson and Champlain united. 2d. The valleys of the Mohawk, and Oneida Lake, and Oswego River, united. The eastern division is a long narrow belt, extending from New York island to the head of Lake Champlain. Its eastern limits are the borders of Connecticut, Massachusetts, and Vermont, with a slope westward to the Hudson, traversed longitudinally by several narrow valleys. This division comprehends the western slope of the Taghkanic mountains, which form the *water-shed* that separates the waters flowing into the Hudson, from those which flow into Long Island Sound. The north division of the State is traversed by the Clinton range. There are several subordinate ranges connected with this group. It begins at Little Falls, in the valley of the Mohawk, and pursues a north-east course across the country to Trembleau Point, on the west shore of Lake Champlain. There are numerous lofty peaks which formed a remarkable group, and have been styled the Adirondack mountains. Mount Marcy, the highest of the range, attains to an elevation of 5,467 feet above the sea. This ridge presents the *water-shed* of the region dividing the waters of the Hudson, or those which flow south into the Atlantic, from those which flow into the Gulf of St. Lawrence. The south division is situated between Lake Ontario and the Mohawk, and the Hudson valleys and Pennsylvania. It rises with a gradual ascent until it reaches its maximum height near the southern boundary of the State. The south-eastern part of this division is comprised in three ranges, viz., the Highlands, broken through by the Hudson, the Shawangunk, and the Catskill. There were in this State in 1850, 12,408,964 acres of land improved, and 6,710,120 of unimproved land in farms. Cash value of farms, $554,656,642, and the value of implements and machinery was $22,084,926. *Live Stock.*—Horses, 447,014; asses and mules, 963; milch cows, 931,324; working oxen, 178,909; other cattle, 767,406; sheep, 3,453,241; swine, 1,018,252; value of live stock, $73,570,499.

Agricultural Products, etc.—Wheat, 13,121,498 bushels; rye, 4,148,182; Indian corn, 17,858,400; oats, 26,552,814; peas and beans, 741,546; barley, 3,585,059; buckwheat, 3,183,955; potatoes, 15,368,368; sweet potatoes, 5,629; value of products of the orchard, $1,761,950; produce of market gardens, $912,047; pounds of butter made, 79,766,094; of cheese, 40,741,413; maple sugar, 10,357,484; molasses, 56,539 gallons; beeswax and honey, 1,755,830 pounds; wool, 10,071,301 pounds produced; flax, 940,577; silk cocoons, 1,774; hops, 2,536,299 pounds; tobacco, 83,189; hay, 8,728,797 tons; hemp, 4 tons; clover seed, 88,222 bushels; other grass seeds, 96,493; flax seed, 57,963; and were made 9,172 gallons of wine; value of home-made manufactures, $1,280,333; of slaughtered animals, $13,573,883.

The principal rivers are the Hudson, 324 miles long, navigable 156 miles to Troy. The Mohawk, 135 miles long, which enters the Hudson a little above Troy; the Genesee, 125 miles long, which enters Lake Ontario, having at Rochester, 5 miles from its mouth, 2 falls of 96 and 75 feet. Black River, which rises near the sources of the Hudson, and flows 120 miles into Lake Ontario; the Saranac, 65 miles long, entering Lake Champlain at Plattsburg; the Oswegatchie, 100 miles long, flowing into the St. Lawrence; the Oswego, proceeding 40 miles from Oneida Lake into Lake Ontario; the Au Sable, rising in the Adirondack mountains, and having a course of 75 miles to Lake Champlain. The majestic St. Lawrence forms a part of the northern boundary of the State. The head branches of the Susquehanna, the Alleghany, and the Delaware, rise in this State. Besides Lakes Ontario and Erie on the north, and Champlain on the east, which are but partly within it, there are wholly within the State many picturesque sheets of water, viz., Lakes George, Oneida, Skaneateles, Owasco, Cayuga, Seneca, Crooked Lake, Canandaigua, and Chautauque. The islands belonging to New York are—Long Island,

120 miles long from west to east, with an average width of about 15 miles, within whose waters on the east are Fisher's, Shelter, Robin's, and some other islands. Staten Island, south-west of the harbor of New York, 18 miles long, and 8 wide. Manhattan Island, on which the city of New York stands, 18½ miles long, and about 1½ wide at an average breadth. Grand Island, in Niagara River, 12 miles long, and from 2 to 7 wide, and extending to within a short distance of the Falls. The harbor of New York is one of the finest in the United States. On the bar at Sandy Hook it has a depth of from 21 to 27 feet. Sag Harbor on the east, and Brooklyn on the west end of Long Island, have good harbors; Sackett's Harbor has a good natural, and Oswego a good artificial harbor on Lake Ontario. Buffalo and Dunkirk are harbors on Lake Erie.

Manufactures.—There were in the State in 1850, 118 cotton factories, with a capital invested of $5,554,320, employing 3,877 males and 5,499 females, producing 59,532 yards of sheetings, etc., and 5,808,561 pounds of yarn, valued at $5,019,323; 263 woolen factories, with a capital invested of $3,944,090, employing 3,500 males and 2,645 females, manufacturing 7,124,600 yards of cloth, etc., valued at $6,442,869; 28 carpet factories, employing a capital of $802,175; 29 establishments making pig iron, with a capital invested of $727,500, employing 934 persons, producing 23,022 tons of pig iron, etc., valued at $1,067,572; 823 establishments, with a capital of $4,622,482, employing 5,925 persons, and making 104,588 tons of castings, etc., valued at $5,721,980; 60 establishments, with a capital of $1,131,300, employing 1,037 persons, manufacturing 13,636 tons of wrought iron, valued at $1,423,968; 1,442 flouring and grist mills; 4,599 saw mills; 942 tanneries; 550 printing offices; 458 newspapers, viz., 54 daily, 18 tri-weekly, 18 semi-weekly, 313 weekly, 13 semi-monthly, 25 monthly, and 3 quarterly publications. Capital invested in manufactures, $99,904,405; value of manufactured articles, $237,599,361.

The principal places in the State are New York, the metropolis, Albany, the capital, Troy, Brooklyn, Newburgh, Poughkeepsie, Hudson, Saratoga Springs, Plattsburg, Schenectady, Utica, Syracuse, Auburn, Geneva, Rochester, Buffalo, Lockport, Oswego, and Ithaca. There were, January, 1856, 32 railroads, with 2,794 miles of road finished and in operation. There is in this State the greatest extent of canal navigation within any State or country on the face of the earth, forming an aggregate of 787 miles. See CANALS and RAILROADS. There were, January, 1856, 287 banks, and 1 branch, with a paid capital of $76,890,000.

Canals.—The canals of New York were the chief element of her early prosperity, and we give a short history of them, and their present commercial importance.

From 1814 till 1817, the subject of the canal was warmly discussed in the legislature by the friends and opponents of the internal improvement system; and the act authorizing the construction of the canal was finally passed in 1817, by a vote of 18 to 9 in the Senate. The first contract was made on the 27th of June, 1817, and the 4th of July was celebrated by breaking ground at Rome for the construction of the canal. Buffalo then had a population of less than 2,000. Notwithstanding the vast benefits conferred upon the State by De Witt Clinton in his vigorous efforts to bring about a system of internal improvements, he was removed in 1824 from the office of canal commissioner, by a vote of 21 to 3 in the Senate, and 61 to 34 in the Assembly. In 1825, a report on canals was made, written by Mr. Marcy, afterward governor, in which he said:

"From the views taken by the commissioners, it appears reasonable to indulge the hope that within the space of 10 years the canal debt may be extinguished; and this copious stream of revenue, yielding, according to the most moderate estimates, an annual income of more than $1,000,000, may be turned into the treasury, and the government be thereby enabled to remove from the people the burden of taxation, to diffuse the blessings of education in a more abundant manner than at present, and to carry forward this State with increasing progress, in its career of general prosperity."

In 1826, Governor Clinton congratulated the legislature on the completion of the water communication between the lakes of the West and the Atlantic Ocean, affording an "inland navigation unparalleled in the experience of mankind." It was in this year (1826) that the first act for a railroad was passed by the Legislature of New York, being the road from Albany to Schenectady, 16 miles in length. This road was not completed for several years.

In 1827, Governor Clinton called the attention of the legislature to the subject of internal improvements by the general government. The project of the Chesapeake and Ohio Canal was then before Congress, and the aid of the government was given in behalf of that then considered great work. Governor Clinton observed: "It has become a question of great moment, whether the general government has power, with or without the consent of the State governments, to construct canals and roads in their territories, and whether such power, if not already vested, ought not to be granted. * * * I think it due to a sense of duty and a spirit of frankness, to say, that my opinion is equally hostile to its possession or exercise by, or its investment in, the national authorities." See CANALS.

River and Canal Navigation.—The subjoined tables show the date of the opening and closing of the Hudson River and Erie Canal for a period of 15 years, and the number of days they were open each year.

HUDSON RIVER.

River opened.	River closed.	Days open.
1842, February 4	November 28	308
1843, April 18	December 10	242
1844, March 18	" 17	278
1845, February 24	" 8	288
1846, March 18	" 14	275
1847, April 7	" 25	268
1848, March 29	" 27	292
1849, " 19	" 26	286
1850, " 10	" 17	282
1851, February 25	" 14	298
1852, March 28	" 23	270
1853, " 28	" 21	274
1854, " 17	" 8	266
1855, " 27	" 20	268
1856, April 10	" 19	

ERIE CANAL.

Canal opened.	Canal closed.	Days open.
1842, April 20	November 28	222
1843, May 1	" 30	214
1844, April 18	" 26	222
1845, " 15	" 29	228
1846, " 16	" 25	224
1847, May 1	" 30	214
1848, " 1	December 9	228
1849, " 1	" 5	219
1850, April 22	" 11	234
1851, " 15	" 5	235
1852, " 20	" 16	239
1853, " 20	" 20	245
1854, May 1	" 8	217
1855, " 1	" 10	224
1856, " 8	"	

The average cost of railroads has been as follows:

		Total cost.	Per mile.
30 roads. in	New York.....	$80,000,000	$46,344
38 "	Massachusetts.....	60,000,000	44,482
12 "	the South and West	50,000,000	45,658

The number of railroads, including branches, now in progress in the United States, is 372. The miles in operation are 13,586; the miles in progress, 10,828; and the amount now expended is $400,000,000—the average cost being $30,000 per mile. The average cost of the whole 2,579 miles being about $35,000 per mile. The amount expended on the canals of the United States is about $150,000,000.

The New York Canals.—The Annual Report of the Canal Auditor of this State, for 1856-7, has been com-

municated to the Senate. The revenue for the past year has been greater and the expenses less than for the year 1855. The following comparative statement shows the difference in the receipts and payments between the two years:

	1855.	1856.
Tolls received	$2,689,792 12	$2,740,133 40
Payments by superintendents, and to repair-contractors	788,781 41	606,932 38
Payments to canal commissioners for repairs	82,279 82	62,478 78
Payments to collectors, weighmasters, and inspectors	79,846 40	82,623 88
Refunding tolls, salaries, etc.	38,884 40	34,608 36
	$989,792 12	$786,633 40

The whole amount of tolls received is $2,748,212

Which amount is composed as follows:

Toll on boats and passengers		193,997
" products of the forest	$399,655	
" products of animals	27,947	
" vegetable food	1,262,599	
" other agricultural products	8,261	
" manufactures	120,462	
" merchandise	585,391	
" other articles	154,400	
		2,554,215
		$2,748,212

The whole amount of tonnage transported on the canals during the last season of navigation, ascending and descending, was 4,116,082

And is composed as follows:

Products of the forest		1,478,674
Products of animals	$33,826	
Vegetable food	1,158,804	
Other agricultural products	4,953	1,192,073
Manufactures		284,901
Merchandise		370,758
Other articles		789,076
		$4,116,082

The value of such tonnage is as follows:

Products of the forest		$10,211,383
Products of animals	$7,456,433	
Vegetable food	42,596,226	
Other agricultural products	977,794	51,030,453
Manufactures		10,303,419
Merchandise		135,691,816
Other articles		11,084,991
Total		$218,327,062

Tons.

The total amount of freight, or number of tons carried one mile during the last season of navigation, was	592,000,603
The total movement of the several classes composing such total tonnage is as follows:	
Products of the forest	149,734,515
Products of animals	6,755,670
Vegetable food	250,425,916
Other agricultural products	936,750
	253,118,341
Manufactures	28,409,663
Merchandise	85,428,158
Other articles	70,313,625
Total	592,009,663
The whole amount of tonnage received at tide water by way of the Erie Canal from western States and Canada during the last season of navigation, was 1,212,550 tons. The whole amount of tonnage arriving at tide water, the produce of this State, during the same period, was 374,580 tons. The whole number of barrels of flour arriving at tide water through the canals, during the last season of navigation, was	1,130,509
The whole number of bushels of wheat arriving during the same period, was 11,776,332, which turned into flour, calculating five bushels to the barrel, would make	2,355,266
Total in barrels	3,485,775

The whole number of bushels of corn arriving at tide water during the same period, was 9,587,148. The total number of new boats registered during the last year, is 364, with a total tonnage of 38,990, making an average tonnage of 107·4.

The number of lockages at Alexander's lock, for the season, was 31,223, and the greatest number of lockages at any one lock, was 37,969, at lock No. 45, Frankfort.

Comparing the season of 1855 with that of 1856, it shows a decrease in revenue of $56,871, and an increase in tonnage of 93,465, divided among the different articles, as follows:

	Tons.	Tons.
Products of the forest—decreased	59,960	
" animals "	14,865	
Other agricultural products "	525	
Merchandise "	3,644	75,994
Vegetable food—increased	100,799	
Manufactures "	3,028	
Other articles "	5,012	
		108,759
Increase		93,465

The increase in lockages at Alexander's lock is 350.

In flour and wheat comprised in the returns of vegetable food, there has been an increase on tonnage the past year of 112,537 tons, and an increase of tolls of $160,694. In corn and oats there has been an increase during the same period of 28,669 tons, and an increase in tolls of $7,691. Under the head of "Products of the forest," there was an increase in tonnage upon shingles, boards, and scantling, as compared with 1855, of 32,163 tons, and a decreased tonnage upon timber, staves, and wood, of 97,705 tons, and an increase in pot and pearl ashes of 9,615 tons. Under the head of "Other articles," there was an increase in the tonnage of mineral coal, for the same period, of 77,568 tons, and an increase in sundries of 15,323 tons.

Statement No. 47, appended to the report, shows the tons and description of freight carried on the New York Central and New York and Erie Railroads, ending 30th September, 1853, 1854, 1855, and 1856, and on the New York Canals during the seasons of navigation the same years.

Thus three lines of freight transit, it is well known, take all the carriage which passes through the State between New York and the Hudson River and the West, including a considerable portion of Upper Canada. It may with justice be said they are all of them competing lines of transport for what is termed "through freight," and two of them are virtually competing lines for both through and way freight.

The ascertained results presented by these tables are interesting, and worthy of much reflection. They not only show the steady and progressive increased carriage and movement by railway, and the steady and progressive decreased carriage and movement by canal, but they also show the description of freight wherein the carriage by railroads exceeds that of the canal.

Tons Carried.

	Railroad.	Canal.	Total.
1853	991,081	4,267,553	5,258,699
1854	1,293,853	4,165,802	5,459,715
1855	1,512,121	4,022,816	5,534,738
1856	1,719,327	4,116,082	5,835,409

This statement shows an increase of more than 700,000 tons in 4 years by rail, and a loss of 181,771 tons to the canal in the same time.

Total Movement.

	Railroad.	Canal.	Total.
1853	156,327,879	700,389,933	856,717,805
1854	211,976,114	668,359,044	880,635,158
1855	250,279,834	619,170,651	869,450,485
1856	329,191,724	592,009,603	921,201,327

The total movement by railway in 1853 was not quite one fifth of that by the canals. In 1854, it was nearly one third—nearly one half in 1855, and it was quite three fifths in 1856. At this rate of progression on the part of the railroads, and of loss by the canals, the total movement of freight on those two railroads will be equal to that of the canals in about 3 years from this time, if not sooner.

The aggregate of the total movement has increased on the railroads from 1853 to 1856, 164,483,622, and the loss to the canal has been 108,380,330.

The annexed tables show why it is that with an increased tonnage in 1856 of 93,465 over 1855, the total movement should be 27,171,048 less. This increase in the number of tons carried was on short distances;

otherwise an increase in the receipts of tolls would have been the result.

But this statement also exhibits the amount of freight earnings on these railroads, and tolls received on the canals, including the tolls on boats and passengers during the above period, together with these total movements. These comparative statements show the rapid and successful progress of the former, and the immobility of the latter:

	Freight and Tolls.	
1853.		
N.Y. Cen. R.R., tons moved 1 mile,	$54,801,350	1,638,830
N.Y. and Erie R.R., "	101,626,522	2,537,214
Canals, "	700,389,933	3,204,718
Total	$856,717,805	7,580,762
1854.		
N.Y. Cen. R.R., tons moved 1 mile,	$31,163,080	2,479,820
N.Y. and Erie R.R., "	130,808,034	3,369,590
Canals, "	668,659,044	2,773,566
Total	$889,635,158	8,622,976
1855.		
N.Y. Cen. R.R., tons moved 1 mile,	$99,606,836	3,189,603
N.Y. and Erie R.R., "	150,674,998	3,658,002
Canals, "	619,170,651	2,905,077
Total	$869,450,485	9,647,692
1856.		
N.Y. Cen. R.R., tons moved 1 mile,	$145,783,678	4,338,041
N.Y. and Erie R.R., "	183,458,046	4,545,732
Canals, "	592,009,608	2,748,212
Total	$921,201,327	11,622,035

This statement also shows the total tonnage of freight on these roads for 1855 and 1856 separately from other tabular calculations, from which it appears the increase on through freight in one year was 182,358 tons, and on way 14,847 tons.

The operations of these roads, for the year ending September 30, 1855, were as follows:

Roads.	Through freight.	Way freight.	Total number.	Total movement or mileage.	Tolls at canal rates in 1855.
1855.	Tons.	Tons.	Tons.		
N. Y. & Erie..	155,469	686,586	842,055	150,873,998	$542,185
N. Y. Central..	156,194	513,879	670,073	99,605,886	487,019
Total.....	311,663	1,200,465	1,512,128	249,279,884	$936,204
1856.					
N. Y. Central..	253,2[illegible]	[illegible]22,824	776,112	145,783,678	$491,451
N. Y. & Erie..		Not reported			

The New York and Erie Railroad received on through freight in 1855, $1,461,419 18, equal to $9 40 per ton, on the quantity transported, and in the same year the New York Central received $1,289,706 97 on through freight, which gives an average of $8 25 7-10 per ton on the amount carried.

The comparative tabular statement herewith submitted is a condensed view of the total tonnage and receipts of toll on all the canals on the different descriptions of property carried, for the period of six years:

Year.	Tons carried.	Tolls received.	Av. per ton.
1851	3,582,733	$3,073,999	85·86
1852	3,963,449	2,866,385	74·19
1853	4,347,853	2,955,697	69·51
1854	4,165,862	2,547,438	61·15
1855	4,022,617	2,610,420	64·89
1856	4,116,082	2,554,215	62·05

The receipts of toll above given are upon the property carried exclusive of the tolls on boats and passengers, and the average must be affected by the rates of toll charged and received, and the distance that property or freight is transported on the canals. The average of 1851 on the tonnage of 1856 would give $3,542,178 of tolls. The Auditor is satisfied that the rates of toll as arranged in 1851 may be imposed on most of the property transported on the canals without any injury to trade, if the legislature will interpose its constitutional authority to protect the trade of the canals.

The canal debt of 1846, to which the annual Sinking Fund of $1,700,000 is applicable and constitutionally pledged, was, on the 30th September, 1856, $13,223,704 33, the annual interest of which, payable quarter yearly, amounts to $792,193 28, and $5,739,024 76 of this debt are for loans made upon the credit of this Sinking Fund to supply the deficiencies which existed in that fund, to pay the debt as it fell due after 1847. Former financial officers of the State have estimated that the Sinking Funds established by article 7, section 1, of the Constitution, would be ample to meet all the charges upon them from year to year, and finally to liquidate the Canal debt, of $16,944,815 57 outstanding on the 30th of September, 1846, in 18 years and 3 months, with a surplus of $95,333 48 on the 1st of January, 1865, when it was assumed the whole of the debt would be paid.

CANAL DEBT.—STATEMENT SHOWING THE AMOUNT OF PRINCIPAL AND INTEREST ACTUALLY PAYABLE IN EACH YEAR, TOGETHER WITH THE RESULTS OF THE SINKING FUND, UNDER THE CONSTITUTION, ART. 7, SEC. 1, FROM SEPTEMBER 30TH, 1856; ALSO THE AMOUNT OF SURPLUS ON SEPTEMBER 30TH, OF EACH YEAR, AND THE AMOUNT OF ANNUAL INTEREST ON THE SAME AT FIVE PER CENT. PER ANNUM.

Year.	Principal payable.	Total principal and interest.	Surplus on Sept. 30th, of each year.	Interest on surplus in each year.
1856 surplus	....	....	$1,259,901	$62,995
1857	....	$692,193	2,330,708	116,535
1858	$3,058,605	3,718,566	434,672	21,733
1859	....	539,263	1,617,148	80,857
1860	943,100	1,463,216	1,929,784	96,489
1861	2,182,974	4,598,649	1,142,628	57,131
1862	900,000	1,858,841	1,641,418	82,070
1863	....	928,841	8,095,142	154,757
1864	400,000	722,841	4,227,558	211,377
1865	1,789,024	2,017,280	4,121,655	206,082
1866	....	200,000	4,127,738	206,386
1867	....	200,000	4,134,125	206,706
1868	....	200,000	4,140,831	207,041
1869	....	200,000	4,147,872	207,393
1870	....	200,000	4,155,266	207,763
1871	....	200,000	4,163,029	208,151
1872	....	200,000	4,171,181	208,559
1873	....	200,000	4,179,740	52,246
1874, Jan. 1st	4,000,000	4,050,000	181,987	....
Total debt, principal & interest	$13,223,704	....	Interest on surplus	$2,594,278
Surplus on Jan. 1st, 1874	....	$18,972,198		
	....	181,987		
	....	$19,154,180		

The following statement shows the tonnage of all the canals of the State from 1850 to 1855, inclusive, the total movement in the years stated, and the total value of all the property carried on the canals in each year.

Years.	Total tonnage.	Total movement.	Total value of property carried.
1850	3,076,617	....	$156,897,929
1851	3,582,733	....	159,981,501
1852	3,963,449	602,900,818	196,608,547
1853	4,347,853	700,389,933	207,179,570
1854	4,165,862	668,659,044	210,284,912
1855	4,022,617	619,170,651	204,890,147

The two lines of railway in the State, which, during the season of canal navigation, most effectually and seriously compete with the canals in the transport of freight, are the New York and Erie and the New York Central Railroads. The operations of these lines in the transportation of freight during the years stated below, show a steady and progressive increase.

The largest amount of tolls in any fiscal year was in 1851, when the receipts were $3,703,999 34; and the per centage of the cost of collection on the gross amount received was $2 03. This was before the repeal of the laws imposing tolls on freight transported on certain railroads, and the consequent reduction of tolls on the canals, to enable the State to compete for the carrying trade. In 1851 the tonnage of all the canals was 3,582,733. The tonnage of all the canals in 1855, was 4,022,617; 439,884 more than in 1851; while the tolls were only $2,632,906 11, being $1,071,093 23 less. The tonnage of 1855, at the rates of toll as they were fixed in 1851, would have yielded about $4,108,000, or about $1,536,000 more than were actually received; the very natural and perfectly legitimate results of a policy adopted by the State before it was prepared by the completion of the enlargement to encounter an active and vigorous competition.

Table below shows the amount of the new debt created since 1846, the interest of which is paid by the General Fund; the specific objects for which the several stocks were issued, and the date of redemption of each, followed by a recapitulation of the whole canal debt of the State:

CANAL DEBT.

6's due 1st July, 1879	$2,250,000
6's " 1st January, 1873	1,000,000
6's " 1st July, 1878	1,250,000
6's " 1st November, 1873	2,250,000
6's " 1st October, 1874	2,250,000
Total debt for the enlargement and completion of the canals	$9,000,000
6's due 1st July, 1878	1,500,000
5's " 1st January, 1874, to provide for deficiencies to pay the interest and redeem the principal	500,000
	$11,000,000

RECAPITULATION OF THE CANAL DEBT.

To pay the interest and redeem the principal under Article 7, Section 1, of the Constitution	$13,223,704 33
To pay the interest and redeem the principal under Article 7, Section 3, of the Constitution	11,000,000 00
The interest paid by the General Fund	442,585 49
Total debt 1st January, 1857	$24,666,289 82

Of the debt paying interest there was held on the 30th September, 1856:

On the United States' account	$18,992,289 82
On foreign account	3,424,000 00
Total canal debt to 30th September, 1856	$22,416,289 82

The interest on the debt is a fraction over 5.51 per cent.

On the 1st of July, 1858, there will be redeemed by the Sinking Fund under section one, all the five per cent. stocks then falling due, say	$3,053,605 34
The new debt will probably be increased by a resort to the credit of the Sinking Fund under § 3, on the 30th September, 1858	818,839 44
Decrease in aggregate of canal debt	$2,239,765 90

If the surplus of the canal revenues during the current fiscal year shall not be sufficient to meet the whole annual contribution of $350,000 to the General Fund Debt Sinking Fund, the deficiency should be made up from the receipts from taxes transferred to the Canal Fund during the year.

The premiums on loans constitute quite an important item of receipts to the State.

PREMIUMS ON LOANS.

The premiums received and paid into the treasury on loans made since the 1st of January, 1854, have been as stated below:

On loan of June 22, 1854, of	$1,000,000		$175,706 25
" Aug. 31, "	1,250,000		167,246 52
" Feb. 22, 1855, of	1,000,000		131,380 00
" June 21, "	1,250,000		234,500 00
" June 20, "	1,500,000	C. R. C.	259,405 00
" Oct. 24, "	1,250,000		204,511 50
On loans to supply deficiencies in Sinking Funds, December 18, 1855 (5 per cent.)	4,500,000		31,981 20
On E. and C. Loan, March 25, 1856	1,000,000		170 709 00
Aggregate to September 30, 1856			$1,375,439 52
On the 18th October, 1856, a loan of $1,250,000 for E. and C. was made at a premium of			171,386 50
Total of premiums			$1,546,826 02

OF THE COST FOR ENLARGEMENT AND COMPLETION.

The late State Engineer and Surveyor, Hon. John T. Clark, in his report to the Legislature in 1856, estimated the cost of completing all the canals, after the 31st of December, 1853, including 10 per cent. for contingencies, the cost of engineering and land damages, at	$18,131,808 74
To this cost he applied the constitutional loans, under § 3, article 7	9,000,000 00
And estimated a deficiency of	$4,131,808 74

which is a pretty large addition to any estimate heretofore given by the engineers of the total cost of enlargement and completion.

Trade and Tonnage of the Canals.—From the tables furnished the Auditor of the Canal Department we compile the annexed statement of the trade and tonnage of the canals for the year 1856. The tables, obtained from the same source, of the movement for the years 1854 and 1855, are also published, for the purpose of giving a comparison in both value and quantity with the business of 1856. The statement will be found of much interest.

It will be found that in the products of the forest the Report of 1856, compared with that of 1855, presents an increase in the articles of furs and peltry, timber and ashes, while in the other articles there is a large decrease, both in value and quantity. Comparing the same products with those of 1854, the increase is in the articles of furs, shingles, and ashes, both as to value and quantity.

Under the head of agriculture the receipts of 1856 show a large increase in some important articles, such as pork, wheat, rye, corn meal, barley, oats, peas and beans, potatoes, dried fruit and hops. In other articles, under the same head, there is a large deficiency; such as beef, bacon, cheese, butter, wool, lard, etc. The products under the same head, compared with those of 1854, show a different exhibit from those of 1855. There is a large deficiency in pork, beef, bacon, lard, wool, corn, corn meal, and clover seed; while in the articles of cheese, butter, hides, wheat, rye, barley, oats, bran, and ship-stuff, peas and beans, potatoes, dried fruit, and flax seed, there is an increase.

The first constitution of New York was adopted by the Provincial Congress, April 20th, 1777, was ratified by the State Legislature July 26th, 1788, and was somewhat amended in 1801. On the third Tuesday of June, 1821, a convention called by the Legislature met at Albany, and having made a revision of the constitution, the same was ratified by the people in December following. The third and present constitution was adopted in convention at Albany, October 9th, 1846, was ratified by the people on the ensuing 2d November, and went into operation January 1, 1847. Among the provisions of the existing constitution are these:—A sinking fund to pay the State Canal Debt shall be thus formed: from the surplus revenues of the State canals from June 1, 1846, to June 1, 1855, $1,800,000, annually; from June 1, 1855, thenceforward, $1,700,000, annually, including $300,000 then to be borrowed until the debt is wholly paid. After thus appropriating there shall be annually set apart $350,000 out of the surplus canal revenues from June 1, 1846, until the canal debt is paid; and after said payment, then $1,500,000 annually, which appropriations shall form a sinking fund to pay the general fund debt of the State. After thus appropriating, $200,000 or less shall be annually paid from the surplus canal revenues to the State treasury for general State expenses. And the remainder of the surplus canal revenues shall be applied to the completion of the canals. If the above sinking funds are insufficient to satisfy the creditors of the State, equitable taxes shall be laid. * * * The credit of the State shall not be loaned to any individual corporation. To meet casual deficits, the State may contract debts not exceeding $1,000,000. Other debts may be contracted if submitted by the Legislature to the people, with provisions for payment by direct taxation, and ratified by the people. * * * Corporations are to be formed under general laws, except those for municipal purposes. Municipal corporations are to be restricted by the Legislature in their power of taxation and contracting debts. Stockholders in banks are individually responsible for the debts of their corporation to the amount of their shares of stock. * * The capitals of the common school literature and United States deposit funds are inviolate.

The aggregate statement shows an increase in the down tonnage in 1856 over 1855 of 200,844 tons, and a decrease in value of $2,674,537.

In respect to the upward movement, there is an increase of tonnage in 1856 over 1855 of 115,846 tons, and in value of $30,687,844.

STATEMENT SHOWING THE TOTAL QUANTITY AND ESTIMATED VALUE OF EACH ARTICLE WHICH CAME TO THE HUDSON RIVER ON ALL THE CANALS, DURING THE YEARS 1854, 1855, AND 1856.

Articles.	1854.		1855.		1856.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
THE FOREST.						
Fur and peltry.....lbs.	67,840	$85,887	45,718	$16,827	90,000	$117,910
Products of wood.						
Boards and scantling.....ft.	592,478,855	8,315,496	421,776,759	7,634,769	886,680,400	4,440,647
Shingles.....M.	25,826	124,674	71,898	228,808	67,160	214,784
Timber.....cu. ft.	4,456,039	927,958	8,199,446	646,822	8,891,700	880,559
Staves.....lbs.	182,061,491	689,220	199,787,285	889,115	165,566,000	744,595
Wood.....cords	16,370	88,245	10,190	50,580	9,804	49,070
Ashes, pot and pearl.....bbls.	26,026	959,549	12,075	362,250	60,647	2,177,370
AGRICULTURE.						
Products of animals.						
Pork.....bbls.	141,846	$1,729,926	60,422	$1,408,284	81,018	$1,708,427
Beef..... "	58,068	524,681	67,188	658,783	47,080	822,101
Bacon.....lbs.	18,926,806	1,648,298	9,519,657	961,411	6,566,000	686,497
Cheese..... "	5,675,169	613,405	2,507,123	250,422	4,152,000	535,528
Butter..... "	9,254,126	568,016	4,941,985	855,292	8,462,000	726,497
Hides..... "	201,876	21,234	451,232	96,552	514,000	112,194
Wool..... "	8,199,867	7,091,835	4,324,945	1,498,566	2,928,490	942,869
Lard, tallow, and lard oil.... "	16,808,210	1,718,788	9,458,458	972,686	6,736,000	807,205
Vegetable food.						
Flour.....bbls.	1,249,458	11,434,807	1,290,140	12,685,082	1,120,509	8,581,804
Wheat.....bush.	8,523,794	7,047,570	5,426,285	11,502,977	11,786,882	20,517,169
Rye..... "	225,362	278,770	777,584	971,874	1,285,505	1,092,716
Corn..... "	12,876,434	10,648,806	9,348,776	9,126,671	9,087,714	6,361,900
Corn meal.....bbls.	178,417	774,292	2,848	11,221	14,851	82,486
Barley.....bush.	1,949,379	2,188,158	1,674,429	2,316,479	2,182,882	2,499,428
Oats..... "	5,858,121	2,676,567	4,507,982	2,276,918	6,060,812	2,483,516
Bran and ship stuff.....lbs.	17,014,026	191,222	44,096,652	440,967	40,958,000	364,948
Peas and beans.....bush.	170,745	250,921	90,728	222,786	1,146,266	654,895
Potatoes..... "	626,489	407,182	689,043	480,248	870,788	487,926
Dried fruit.....lbs.	603,431	50,359	823,410	81,968	788,000	78,799
All other agricult al products.						
Cotton.....lbs.	733,812	71,949	96,874	10,846	184,000	20,074
Unmanufactured tobacco... "	6,684,056	1,191,486	2,344,842	312,750	1,166,000	283,149
Hemp..... "	2,267,924	156,756	448,329	82,207	74,000	5,588
Clover and grass seed..... "	943,018	84,285	592,494	88,287	548,000	76,773
Flax seed..... "	181,851	4,587	426,352	13,742	588,000	23,494
Hops..... "	914,018	322,699	260,478	50,104	876,000	87,807
MANUFACTURES.						
Domestic spirits.....galls.	2,068,791	773,865	1,929,892	549,142	3,739,150	817,080
Oil meal and cake.....lbs.	16,622,755	385,879	11,143,467	242,189	10,650,000	170,425
Leather..... "	6,217,378	1,392,865	7,458,919	1,908,579	4,678,000	1,080,300
Furniture..... "	770,941	77,094	72,440	124,194	718,000	71,647
Bar and pig lead..... "	850,778	58,581	2,780,819	194,622	508,000	37,918
Pig iron..... "	11,915,564	182,709	31,668,288	558,322	53,496,000	792,412
Bloom and bar iron..... "	18,876,715	461,103	15,080,440	428,250	12,288,000	388,392
Castings and iron ware.... "	1,786,878	60,024	1,512,256	49,958	2,184,000	85,242
Domestic woolens..... "	305,572	271,166	320,243	77,706	848,000	324,515
" cottons..... "	1,810,575	378,155	1,106,198	116,454	1,682,000	295,668
" salt..... "	8,805,087	64,186	6,065,004	37,907	8,726,000	18,928
Foreign salt..... "	1,248,490	30,996	57,300	35	210,000	1,054
Merchandise..... "	81,488,000	5,316,528	83,112,000	6,899,959	27,146,000	5,297,738
OTHER ARTICLES.						
Live cattle, hogs and sheep. lbs.	167,520	$5,026	125,600	$6,336	816,000	$12,628
Stone, lime and clay..... "	187,511,377	902,008	156,877,258	1,029,728	113,760,000	167,540
Gypsum..... "	15,199,989	30,400	6,877,246	27,510	1,322,000	2,644
Mineral coal..... "	111,171,940	461,510	86,065,040	107,496	54,158,000	135,397
Copper ore..... "	8,575,190	798,190	232,618	57,586	2,816,000	419,609
Sundries..... "	201,934,814	4,038,686	149,420,905	5,739,528	43,262,000	3,497,701

STATEMENT SHOWING THE AGGREGATE IN TONS AND THE AGGREGATE VALUE OF THE PROPERTY WHICH CAME TO THE HUDSON RIVER ON ALL THE CANALS, DURING THE YEARS 1854, 1855, AND 1856, UNDER THE DIVISIONS AS SPECIFIED IN THE ABOVE TABLE.

Value.	1854.		1855.		1856.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
The forest.....	1,132,921	$11,518,509	884,653	$10,698,483	858,771	$10,446,880
Agriculture.....	728,540	44,626,405	787,689	48,057,269	1,028,417	49,892,912
Manufactures.....	43,129	4,081,066	45,273	4,284,619	50,454	4,484,371
Merchandise.....	15,774	5,316,528	16,556	6,899,959	14,078	5,297,738
Other articles.....	234,782	6,235,820	188,511	7,080,941	176,754	4,295,528
Total.....	2,155,146	$71,728,265	1,922,625	$76,961,271	2,123,469	$74,286,734

STATEMENT SHOWING THE AGGREGATE QUANTITY AND VALUE OF THE PROPERTY WHICH WENT UP THE CANALS DURING THE YEARS 1855 AND 1856.

	1855.	1856.
Tons.....	535,597	650,943
Value.....	$113,443,863	$184,131,707

STATEMENT SHOWING THE AGGREGATE QUANTITY AND VALUE OF THE PROPERTY LEFT BY AND WENT UP THE CANALS DURING THE YEARS 1855 AND 1856.

	1855.	1856.	Increase.
Tons.....	2,690,743	2,774,412	83,669
Value.....	$190,405,134	$208,418,441	$18,013,307

FOREIGN COMMERCE OF THE STATE OF NEW YORK, FROM OCTOBER 1, 1820, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Tonnage cleared.		District Tonnage.	
	Domestic.	Foreign.	Total.	Total.	American.	Foreign.	Registered.	Enrolled and Licensed.
Sept. 30, 1821	$7,894,695	$5,264,818	$13,160,913	$28,629,246	158,174	16,720	113,750	130,416
1822	10,987,167	6,113,815	17,100,482	30,445,826	183,666	17,784	....	....
1823	11,862,995	7,676,995	19,088,990	29,491,849	199,581	23,558	....	....
1824	13,528,654	9,368,480	22,897,134	34,113,733	222,971	18,142	....	....
1825	20,651,558	14,607,703	35,259,261	49,692,174	255,978	19,851	....	....
1826	11,466,719	10,451,072	21,947,791	88,115,690	214,664	21,965	....	....
1827	13,930,697	9,918,519	23,884,187	38,719,444	239,968	38,375	....	....
1828	12,862,615	10,415,684	23,777,649	41,927,792	217,118	42,873	....	....
1829	12,964,561	8,062,450	20,119,011	34,748,807	219,674	22,855	....	....
1830	13,913,278	6,079,705	19,697,983	35,624,070	229,841	36,574	....	....
Total....	$127,861,179	$87,972,177	$215,833,356	$368,879,568	2,135,370	256,592	....	....
Sept. 30, 1831	$15,736,118	$9,969,026	$25,585,144	$37,077,417	254,231	72,444	180,982	169,906
1832	15,057,250	10,948,695	26,000,945	38,214,402	242,749	101,967	....	....
1833	15,411,296	9,983,821	25,395,117	38,918,449	284,176	158,566	....	....
1834	18,949,469	11,662,545	30,612,014	76,188,594	361,606	238,850	....	....
1835	21,707,887	8,637,997	30,345,884	88,191,205	389,835	345,078	....	....
1836	18,816,520	9,104,118	27,920,638	113,958,416	477,694	365,591	....	....
1837	15,063,969	11,254,450	27,318,419	79,801,722	453,008	404,784	....	....
1838	16,482,483	5,573,088	22,008,471	68,458,306	516,789	328,766	....	....
1839	23,206,995	9,971,104	33,268,099	99,882,488	569,736	330,666	....	....
1840	22,676,609	11,587,471	34,264,080	60,440,750	518,209	343,114	....	....
Total....	$180,058,526	$99,529,665	$279,588,191	$758,921,699	4,346,975	2,672,628	....	....
Sept. 30, 1841	$24,279,608	$8,660,225	$33,139,833	15,713,426	600,307	365,241	237,957	248,696
1842	20,739,286	6,687,402	27,576,778	57,875,604	556,989	340,520	....	....
9 mos. 1843	13,443,284	3,319,480	16,762,664	31,356,540	381,281	174,374	....	....
June 30, 1844	26,009,177	6,852,368	32,861,540	65,079,516	978,818	414,625	....	....
1845	25,029,904	10,245,394	35,175,298	70,909,085	926,280	414,688	....	....
1846	29,585,666	7,349,547	36,935,413	74,254,283	1,120,944	425,942	....	....
1847	44,816,480	5,027,883	49,844,363	84,167,852	1,040,340	488,755	....	....
1848	38,771,209	14,579,948	53,351,157	94,525,141	1,004,316	705,379	....	....
1849	36,738,215	9,224,885	45,963,100	92,567,869	1,358,643	784,514	....	....
1850	41,502,900	11,209,980	52,712,789	111,193,524	1,411,557	797,589	....	....
Total....	$301,515,779	$83,507,156	$385,322,935	$787,571,840	9,379,479	4,951,571	....	....
June 30, 1851	$68,104,543	$17,902,477	$86,007,019	$141,546,538	1,588,813	878,819	618,575	522,489
1852	74,042,581	18,441,875	87,484,456	182,929,906	1,570,927	906,798	....	....
1853	66,080,355	12,175,965	78,256,290	178,270,999	1,959,902	1,084,749	....	....
1854	105,551,740	16,982,906	122,584,646	195,427,988	1,918,317	1,035,154	....	....
1855	96,414,808	17,316,480	113,731,288	164,776,511	1,861,682	1,140,197	....	....
1856	109,848,509	9,362,991	119,111,500	210,162,458	2,136,877	1,335,577	....	....

HOMANS *Foreign Commerce of the United States.*

For New York Canals, see *North Am. Rev.*, xiv., 230, xxix., 500, xl., 129, xiv., 543. For Trade, Commerce, Debts, etc., of New York, see HUNT'S *Mer. Mag.*, xviii., 243, xxiii., 610, xxiv., xxv. (by A. C. FLAGG); *Banker's Magazine*, vii., viii., ix., x., xi. Mineral Resources, see *N. Y. Rev.*, lv., 71, v., 477, viii., 103; *Am. Jo. Science*, xxxix., 95, xl., 73, xlii., 227, xlvi., 143, xlviii., 296, i. (N. S.), 43, iii., 57, 164.

As our limits prevent our giving full statistics of many important elements of commerce, we refer to these subjects under their proper heads. For particular information, see articles EMIGRATION, TONNAGE, NEW YORK CITY, BANKING, COMMERCE, TARIFF, SHIPPING, RAILROADS, CANALS, and UNITED STATES.

New York, the capital of the State of that name, and the commercial metropolis of the United States, on the southern extremity of Manhattan Island, at the point of confluence of the Hudson River, which separates Manhattan from New Jersey, with East River, which separates it from Long Island, in lat. 40° 42′ N., and long. 74° 8′ W. New York Bay, or inner harbor, is one of the most capacious and finest in the world; it is completely land-locked, and affords the best anchorage. The entrance to the bay through the Narrows is extremely beautiful. On each side, the shore, though wooded down to the water's edge, is thickly studded with farms, villages, and country seats. At the upper end are seen the spires of the city; and in the distance the bold precipitous banks of the Hudson. From New York to the bar between Sandy Hook Point and Schryer's Island (the division between the outer bay or harbor and the Atlantic) is about 17 miles. Fortifications have been erected at the Narrows, Governor's Island, and other places, for the defense of the city and shipping.

Manhattan was first discovered and explored by Hendrick Hudson in 1609. Hudson ascended the river which now bears his name as far as the present site of Albany. The ship in which he made the voyage from Holland was of about 80 tons burden, and called the *Half Moon*. In 1610 a ship was sent by the Amsterdam merchants to trade with Indians for furs, etc. In 1613 a small fort was erected, and four houses were built, under the superintendence of Hendrick Corstiaensen, who explored the bay and the several inlets, creeks, etc. But no permanent settlement seems to have been made until about 1625, on the south point of the island. After the formation of the Dutch West India Company, they took immediate measures for establishing a permanent colony. Under their fostering care, bonweries, or farms, were soon taken up, a substantial fort erected, and the dwellings of the colonists clustered around it. In 1652 it was incorporated under the name of New Amsterdam, and was governed by 2 burgomasters, 5 schepens, and a schout or sheriff, and continued in their possession until 1664, when it was taken by the English, and the name changed to New York. In 1673 it was retaken by the Dutch, and called New Orange, but they held possession only one year, when it was again occupied by the English, and continued in their possession until the period of the Revolution. The assessors' valuation of property in the city, in 1688, was about $320,000. In 1690 a congress of the commissioners of the several colonies was held at New York. In 1694 there were 60 ships, 25 sloops, and 40 boats, belonging to the city. In 1696 Trinity Church was built. This building was burned in 1776. In 1725 the first newspaper was published in this State.

In 1699 it contained 6900 inhabitants. In 1774, previously to the commencement of the War of Independence, the population amounted to 22,750. During the war the population continued stationary; but since 1783 its increase had been quite extraordinary. In 1790 the population amounted to 33,131; in 1800, to 60,489; in 1820, to 123,706; in 1830, to above 213,000;

in 1840, to 312,710; and in 1850, to 515,507. This, however, is exclusive of the population of Brooklyn, which, in 1850, amounted to 96,838, and is as much a part of New York as Birkenhead is of Liverpool. Originally the houses were mostly of wood, and the streets narrow and confined. In these particulars, however, a vast improvement has taken place during the last half century; most part of the old houses having been pulled down and rebuilt with brick. The new streets, which are broad, and intersect each other at right angles, are well paved and lighted. Broadway, the principal street, is one of the largest and finest in the world. Many of the public buildings are commodious and elegant. The pools, that were formerly abundant in the city and its vicinity, have been completely filled up; a measure that has done much to improve the health of the population. In respect of cleanliness, however, New York, though much improved, is still rather deficient. Formerly there was hardly such a thing as a sink or common sewer in the whole city; the night soil and filth were collected in the pits, of which there was one in every house, and being conveyed to the nearest quays, were thrown into the water; and as these were made of timber, with many projections, a great deal of filth was retained about them, producing, in hot weather, an abominable stench. But in these respects a great amendment has been effected; and the deficiency of water, under which the city formerly labored, has been completely obviated by the construction of the Croton Aqueduct, about 40½ miles in length, a work worthy of being ranked with the noblest of the old Roman aqueducts.

New York is indebted, for her wonderful increase, to her admirable situation, which has rendered her the greatest emporium of the New World. The rise of the tide is about 6 feet, and even at ebb there are 21 feet water on the bar; and the water in the outer and inner bays, and in the river, is so deep that ships of the largest burden lie close to the quays, and may proceed to a great distance up the river. The navigation of the bay is rarely impeded by ice. The great strength of the tide, and the vicinity of the ocean, keep it generally open, even when the Chesapeake and Delaware Bays are frozen over. The influence of the tides is felt in the Hudson as far as Troy, 160 miles above New York, affording peculiar facilities for its navigation. Those natural advantages have been vastly extended by a system of canals, which has connected the Hudson not merely with Lake Ontario and Lake Erie, but with the Ohio River, and consequently with the Mississippi and the Gulf of Mexico! So prodigious a command of internal navigation is not enjoyed by any other city, with the exception of New Orleans; but the readier access to the port of New York, the great salubrity of the climate, and her situation, will secure her hereafter the preponderance.

New York Harbor.—In April, 1857, Professor Bache, of the United States' Coast Survey, furnished the Life Saving Association with his *Sailing Directions for Sandy Hook and its Approaches from Sea*, of which 5000 copies have been printed in pamphlet form. A portion of these has been placed in the hands of the dealers in nautical instruments in the following ports for gratuitous distribution to captains of vessels, namely, New York, Portland, Me., Portsmouth, N. H., Boston, Mass., Philadelphia, Baltimore, Savannah, Mobile, New Orleans, Norfolk, Charleston, and a supply of these pamphlets, for the like purpose, has been forwarded to the United States' consuls in Cork, Dublin, Belfast, Bristol, Cardiff, Hull, Sunderland, Portsmouth, Southampton, Glasgow, Dundee, Liverpool, London, Havre, Marseilles, Antwerp, Bremen, Hamburg, Amsterdam, Rotterdam, and Havana.

Range Lights from East End of Gedney's Channel, between Sandy Hook and Flynn's Knoll.—Two fixed lights located near Point Comfort, New Jersey. The front light will be exhibited from a lantern on the keeper's dwelling, which is located near the beach, and painted white, with the top of the lantern black. The rear light is located three quarters of a mile distant from the front one, and will be exhibited from a tower painted white, with the head of it and lantern black. The keeper's dwelling is north of it and painted white. The front light is 40, and the rear one 76 feet above the mean level of the sea, and should be seen, under ordinary state of the atmosphere, outside the bar. During the day the front building can be readily recognized from other buildings in the vicinity by the lantern on its centre, and the rear one by the lantern of the tower being projected on the sky above the trees.

Main Ship Channel Range Lights.—Two fixed lights located on the New Jersey shore, west of Highlands of Navesink. The front light will be exhibited from a tower near the beach, painted with 2 white and 1 red horizontal bands, and the roof of the lantern also of the latter color. The keeper's dwelling is west of the tower, and painted white. The rear light is located on the north side of Chappel Hill, 1¼ miles distant from the front light, and will be exhibited from a lantern on the keeper's dwelling. The dwelling is painted white, and the top of the lantern red. The front light is 60, and the rear one 224 feet above the mean level of the sea, and both should be seen, under ordinary state of the atmosphere, the length of the range line. During the day they can be readily recognized by the shape and colors of the towers of the front light, and by the lantern of the keeper's dwelling, and isolated portions of the rear one. It is about 1 mile east of Pigeon Hill.

Swash Channel Range Lights.—Two fixed lights located on Staten Island, New York. The front light will be exhibited from a tower near the site of the "Old Elm Tree" Beacon, painted with 2 white and 1 red horizontal bands, and the roof of the lantern also of the latter color. The keeper's dwelling is south of the tower, and painted white. The rear light is located on a hill, near New Dorp, about 1¾ miles from the front light, and will be exhibited from a lantern on the keeper's dwelling. The dwelling is painted white, and the top of the lantern red. The front light is 59 feet, and the rear light 189 feet above the mean level of the sea; and both should be seen, under ordinary state of the atmosphere, well outside of the bar at Sandy Hook. During the day they can be readily recognized by the shape of the tower, and colors of the front light, and by the lantern on the dwelling, and isolated position of the rear one.

Sailing Directions.—Masters of vessels intending to enter by Gedney's Channel around the south-west Spit Buoy, should run on a north-west half west course from the light-vessel for the black and white perpendicular-striped Nun Buoy at the outside of Gedney's Channel, and from it west by north through the channel, keeping between the buoys, until the range lights near Point Comfort, New Jersey, are in one, when haul up for them, and continue upon the range until the two main channel lights are brought in range, which will also be shown by the main light at Sandy Hook, being a little open to the southward of the West Beacon. From this point the Main Ship Channel range will take them up clear of the "West Bank" and Craven's Shoal. Masters of vessels intending to pass through the Swash Channel, can bring the lights in range outside the bar, and run for them, until the Red Can Buoy, No. 8 (which marks the upper middle), is passed, or until the Main Ship Channel range is on, when haul up on that range until clear of the "West Bank." Vessels drawing more than 17 feet should not be taken through this channel on the range line at low water. A foot more water may be carried through this channel, after crossing the bar, by keeping a little to starboard, and opening the front light

clear of the rear one. The Swash Channel range line indicates, by the most recent survey, 18 feet at low water.

There are *57* banks in the city of New York, with an aggregate capital of $60,000,000, 8 marine insurance companies, and 60 fire insurance companies, with an aggregate capital of $20,000,000; besides 8 life insurance companies. There are 16 savings' banks, and 15 markets.

COMPARATIVE VALUE OF REAL AND PERSONAL ESTATE OF THE CITY AND COUNTY OF NEW YORK, AND AMOUNTS RAISED BY TAX, FROM THE YEAR 1844 TO 1856.

Year.	Real estate.	Personal estate.	Taxes.
1844	$171,937,591	$64,789,552	$1,988,818
1845	177,207,990	62,787,527	2,006,191
1846	183,480,534	61,471,470	2,526,146
1847	187,315,836	59,837,918	2,581,776
1848	193,029,076	61,164,447	2,715,510
1849	197,741,919	58,455,224	3,005,762
1850	207,142,576	78,919,240	3,230,085
1851	227,015,856	93,095,001	2,924,455
1852	253,278,884	98,490,042	3,380,511
1853	294,637,296	118,994,187	5,066,698
1854	330,300,396	131,721,393	4,345,886
1855	336,975,866	150,022,812	5,841,822
1856	340,972,098	170,774,393	7,075,425

Manufactures.—The manufactures of New York absorb a large amount of capital. The amount employed in 1850 was $34,232,822, and the value of articles manufactured was $105,218,308. The number of establishments was 3387, employing 53,703 males, and 29,917 females.

RETURNS OF THE PRODUCTIVE ESTABLISHMENTS OF THE CITY OF NEW YORK.—CENSUS OF 1850.

Wards.	No. of manufacturing estabs.	Capital invested.	No. of hands employed.	Annual products.
First	197	$1,018,500	2,707	$3,906,337
Second	851	12,672,095	35,704	31,310,642
Third	9	607,000	660	1,801,700
Fourth	189	1,088,800	2,895	4,885,211
Fifth	88	1,227,562	2,146	4,473,214
Sixth	156	1,125,880	4,040	3,822,191
Seventh	422	3,493,275	5,947	9,641,088
Eighth	238	861,890	2,785	4,080,484
Ninth	189	793,300	2,444	2,883,180
Tenth	96	397,700	1,035	1,678,422
Eleventh	149	2,054,850	4,434	20,056,409
Twelfth	19	241,550	420	520,500
Thirteenth	172	299,110	1,281	2,073,628
Fourteenth	72	965,700	1,560	1,546,927
Fifteenth	93	1,045,550	1,176	1,876,818
Sixteenth	129	3,280,380	2,763	4,868,175
Seventeenth	145	892,400	1,885	2,579,812
Eighteenth	199	1,227,780	2,618	2,920,760
Nineteenth	94	334,600	670	1,293,860
Total	3,387	$34,232,822	83,620	$105,218,308

The Croton aqueduct commences at the Croton River, 5 miles from the Hudson, in Westchester county. The dam is 250 feet long, 70 feet wide at the bottom, and 7 at the top, and 40 feet high, built of stone and cement. It creates a pond 5 miles long, covering a surface of 400 acres, and containing 500,000,000 gallons of water. From the dam the aqueduct proceeds; sometimes tunneling through solid rocks, crossing valleys by embankments, and brooks by culverts, until it reaches Harlem River a distance of 33 miles. It is built of stone, brick, and cement, arched over and under, 6 feet 3 inches wide at bottom, 7 feet 8 inches at top of the side walls, and 8 feet 5 inches high; has a descent of 13½ inches per mile, and will discharge 60,000,000 of gallons every 24 hours. It crosses the Harlem River on a magnificent bridge of stone, 1450 feet long, with 14 piers; 8 of them bearing arches of 80 feet span, and 7 others of 50 feet span, 114 feet above tide-water at the top. The receiving reservoir at Eighty-sixth-street, 38 miles from the Croton dam, covers 35 acres, and holds 150,000,000 of gallons. The distributing reservoir, on Murray's Hill, at Fortieth-street, covers 4 acres, and is constructed of stone and cement, 45 feet high above the street, and holds 20,000,000 of gallons. Thence the water is distributed over the city in iron pipes, laid so deep under ground as to be secure from frost. The whole cost of the work has been about $13,000,000. The water is of the purest kind of river water. There are laid below the distributing reservoir in Fortieth-street, more than 200 miles of pipe, from 6 to 36 inches in diameter. See AQUEDUCTS. There are not more than four cities in Europe larger than New York, viz., London, Paris, Constantinople, and St. Petersburg.

STATEMENT SHOWING THE AMOUNT OF TAXES, AND OBJECTS FOR WHICH THEY WERE LEVIED, IN THE CITY AND COUNTY OF NEW YORK, FOR THE YEARS 1850, 1852, 1854, AND 1856.

Heads of accounts.	1850.	1852.	1854.	1856.
	Dollars.	Dollars.	Dollars.	Dollars.
Alms-house	400,000	390,000	427,000	925,000
Aqueduct repairs	20,000	80,000	22,000	85,000
" construction	8,000	....	....	....
Battery enlargement	....	20,000	25,000	....
Board of health	10,000	16,000	10,000	40,000
City Inspector's depart.	....	50,000	75,500	8,315
Coroners' fees	10,000	12,000	16,000	18,000
Cleaning docks and slips	8,000	10,000	6,000	6,000
County contingencies	100,000	120,000	120,000	70,000
Common Council, pay of members	....	....	31,888	86,000
Contingent expenses of Common Council	10,000	25,000	10,000	7,500
Docks & slips (new work)	80,000	....	166,000	100,000
" repairs	45,000	....	50,000	20,000
Donations	15,000	15,000	5,000	10,000
Election expenses	8,000	12,000	28,000	20,000
Errors and delinquencies	3,000	3,000	5,000	5,000
Fire department	40,000	70,000	55,000	81,000
Int. on revenue bonds	90,000	75,000	130,000	220,000
" assessment bonds	....	....	....	60,000
Intestate estates	3,000	3,000	3,000	3,000
Lands and places	5,000	15,000	15,000	16,500
Lands purchased for assessments	25,000	30,000	....	....
Markets	5,000	7,000	8,000	7,000
Mayorally fees	125	150	150	150
Officers' fees	30,000	35,000	35,000	20,000
Police and fire telegraph	....	....	....	5,000
Printing	26,000	45,000	75,000	85,000
Repairs and supplies	50,000	60,000	135,000	182,000
Rents	2,030	3,000	8,500	20,000
Real estate	15,000	30,000	25,000	25,000
" expenses	10,000	50,000	30,000	50,000
Roads and avenues	30,000	40,000	50,000	50,000
" 8th avenue	....	7,500	15,000	....
Stationery	9,000	20,000	20,000	18,000
Sunken vessels, (remov'g)	....	2,000	2,000	2,000
Sewers (rep'r'g & clean'g)	10,000	12,000	15,000	24,000
Salaries	200,000	225,000	260,000	369,200
Statistical tables C. A. department	....	....	1,500	1,500
Water pipes and laying	140,000	....	128,000	165,700
Cleaning streets	200,000	310,000	140,000	259,224
Street exp'ns & rep'rs.	....	....	250,000	60,000
Com. schools (for State)	8,144	185,641	74,742	126,117
" (for City)	267,969	502,815	668,814	1,028,854
Commis'ners of Record	....	....	....	150,000
Building loan stock, Nos. 2 and 3	50,000	50,000	50,000	50,000
Indexing records, Co. offices	....	....	5,654	....
Judges Supreme Court	....	....	3,875	4,500
Lighting lamp district	185,000	203,000	321,405	390,367
N. Y. S. Lunatic Asylum	127	362	467	800
" Juvenile "	....	....	4,882	40,000
" Asyl. for Idiots	....	....	....	120
Institution for Blind	720	720	2,080	2,240
" for Deaf & Dumb	2,032	2,960	2,640	2,700
Police	492,000	540,000	872,715	828,500
Public education stock	....	....	12,449	12,357
State mill tax	143,043	175,859	310,225	608,826
Washington squ. iron railing stock	5,000	5,000	....	....
Water loan interest	186 089	....	....	....
Arrearages of prov. years	280,941	18,833	123,770	415,933
Blasting Diamond Reef	....	....	....	35,500
Repairing County jail	....	....	....	5,000
Monument, Major-General Worth	....	....	....	24,500
Grooving Broadway	....	....	....	50,000
Paving Bowery and Chatham-street	....	....	....	75,000
Grading 10th avenue	....	....	....	18,000
Ward maps & surveys for Tax Commis'rs.	....	....	....	10,000
Surg. departm't of police	....	....	....	5,000
Central park interest	....	....	....	162,422
Society for relief of juvenile delinquents	....	....	....	4,000
Total tax levied	3,230,180	3,378,835	4,841,256	7,075,426

RELATIVE VALUE OF THE REAL AND PERSONAL ESTATE IN THE CITY AND COUNTY OF NEW YORK, AS ASSESSED IN 1855 AND 1856.

Wards.	Assessments, 1855.		Assessments, 1856.		Total.		Increase.		Total.	
	R. Estate.	P. Estate.	R. Estate.	P. Estate.	1855.	1856.	R. Estate.	P. Estate.	Increase.	Decrease.
	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.
1	35,975,250	55,177,896	37,192,380	60,089,018	91,153,146	97,281,598	1,217,130	4,911,116	6,128,446	....
2	22,448,157	5,118,680	22,787,925	6,778,172	27,566,787	29,561,097	339,768	1,654,542	1,994,310	....
3	21,745,650	8,480,022	22,723,288	9,841,681	30,165,672	32,564,919	977,638	921,608	1,899,246	....
4	9,378,890	1,644,430	9,449,070	1,758,545	11,023,320	11,207,615	70,180	114,115	184,295	....
5	13,865,800	2,150,558	14,282,450	1,938,992	16,015,853	15,236,442	417,156	....	220,589	....
6	9,506,550	1,700,357	9,567,314	1,580,422	11,206,907	11,097,748	60,774	....	....	109,961
7	12,475,958	3,185,516	12,574,698	3,328,166	15,661,474	15,902,864	98,740	142,650	241,390	....
8	15,261,500	1,823,726	16,162,969	2,907,358	17,085,226	19,070,327	901,469	1,082,642	1,985,101	....
9	13,787,700	2,602,864	13,899,000	3,081,575	16,370,564	16,980,875	131,300	479,011	610,311	....
10	8,144,400	1,121,385	8,281,500	1,083,484	9,265,785	9,364,984	137,100	....	99,199	....
11	7,564,700	621,987	7,634,000	847,345	8,086,687	8,481,345	69,300	325,357	394,657	....
12	8,491,453	903,800	7,391,285	758,075	9,397,253	8,149,360	....	....	....	1,247,875
13	5,093,921	740,654	5,121,400	515,100	5,834,575	5,636,500	57,408	....	....	198,155
14	9,875,900	2,819,645	10,281,400	2,254,423	12,194,945	12,515,823	386,100	....	320,577	....
15	25,857,850	20,042,047	25,691,500	21,991,129	45,899,897	47,682,629	384,150	1,949,082	2,283,282	....
16	14,874,850	2,602,800	15,565,200	3,536,588	17,474,650	19,104,788	690,350	936,788	1,630,138	....
17	15,562,400	4,798,230	15,821,879	5,725,780	20,360,630	21,547,115	259,979	927,500	1,186,485	....
18	31,936,205	14,296,150	33,934,850	16,992,442	46,232,355	49,946,792	1,018,145	2,696,292	3,714,437	....
19	9,892,986	137,000	8,041,188	1,560,000	9,529,986	9,601,188	....	1,428,000	71,247	....
20	13,986,500	455,200	14,304,950	1,019,250	14,881,700	15,324,200	868,450	574,050	942,500	....
21	21,796,375	5,037,700	21,025,025	6,586,092	26,834,075	27,611,117	....	1,548,892	777,042	....
22	10,590,129	738,175	10,239,022	780,675	11,328,305	10,969,697	....	....	....	358,607
Non-residents	....	14,491,580	....	18,600,265	14,491,580	18,600,265	....	4,108,735	4,108,735	....
Total	337,038,526	156,092,819	340,971,408	172,967,751	487,060,838	518,939,279	7,507,832	28,687,144	28,792,241	1,919,799
Less decrease	....	....	....	....	....	....	....	....	1,913,799	....
Total increase	....	....	....	....	....	....	....	....	26,878,441	....

The general results are:

Total valuation in county	$518,939,279
" " Lamp districts	499,123,165
" " South of Forty-second st	486,092,364

PERMANENT CITY DEBT REDEEMABLE FROM THE SINKING FUND, JANUARY 1st, 1857.

		Redeemable.	
5 per cent.	Water Stock	Jan. 1, 1858	$3,000,000
5 "	" "	Jan. 1, 1860	2,500,000
5 "	" "	Nov. 1, 1870	3,000,000
6 "	" "	July 12, 1875	255,600
5 "	" " New Reser'r.	Oct. 1, 1875	29,100
5 "	" "	Nov. 1, 1880	2,147,000
5 & 6 "	Croton Water Stock	Feb. 1, 1890	1,000,000
7 "	Water Loan, No. 8	Feb. 1, 1857	990,488
5 "	Fire Indemnity	May 10, 1868	402,768
5 "	Building Loan, No. 3	Nov. 1, 1870	75,000
5 "	" " No. 4	Nov. 1, 1878	115,000
5 "	Central Park Fund	July 1, 1898	715,200
	Total amount, January 1st, 1857		$14,230,156

Less

Amount of Corporation Stocks held by the Commissioners of the Sinking Fund on account of the Redemption of City Debt	$4,525,478	
Revenue and Assessment Bonds	417,000	
Bonds and Mortgages taken on sale of real estate	925,716	
		$5,868,194
Actual amount of Permanent Debt, Jan. 1, 1857		$8,361,961

which is a decrease of $14,270 as compared with the amount of debt, January 1st, 1856.

FUNDED DEBT OF THE CITY, REDEEMABLE FROM TAXATION, JANUARY 1st, 1857.

		Payable.	
5 per cent.	Pub. Building Stock, No. 8	Nov. 1, 1857	$50,000
5 "	" " " " "	1858	50,000
5 "	" " " " "	1859	50,000
5 "	" " " " "	1860	50,000
5 "	" " " " "	1861	50,000
5 "	" " " " "	1862	50,000
5 "	" " " " "	1863	50,000
5 "	" " " " "	1864	50,000
5 "	" " " " "	1865	50,000
5 "	" " " " "	1866	50,000
5 "	Stocks for Docks and Slips	1867	50,000
5 "	" " " "	1868	50,000
5 "	" " " "	1869	50,000
5 "	" " " "	1870	50,000
5 "	" " " "	1871	50,000
5 "	" " " "	1872	50,000
5 "	" " " "	1873	50,000
5 "	" " " "	1874	50,000
5 "	" " " "	1875	50,000
5 "	" " " "	1876	50,000
5 "	Public Education Stock	May 1, 1878	154,000
	Total amount payable from taxation, Jan. 1, 1857		$1,154,000

FUNDED DEBT REDEEMABLE FROM CENTRAL PARK ASSESSMENTS. JANUARY 1st, 1857.

6 per cent. Central Park Assessment Fund Stock, payable February 5th, 1859	$1,600,000
Total amt. of Central Park Assessment Fund Stock	$1,600,000

The Chamber of Commerce of the State of New York holds its meetings monthly, for the consideration of those questions having a direct bearing upon the commerce of the city and state. Hitherto this body has published no annual reports, whereby the commerce of the state could be illustrated for the benefit of its citizens. It is now proposed however to supply this want, and to adopt such measures as will secure at an early day suitable rooms for the use of the members, with the use of a reference library, and such foreign commercial journals as will enable the committees to publish to the world an annual report at the close of each year, illustrating the commercial operations, not only of this city and state, but of the union.

Commerce.—The magnitude of the commerce of the city of New York will be best explained by the statistics showing the exports and imports for a series of years. We refer to the article STATE OF NEW YORK for an exhibit of the commerce of the State (and which has its principal entrepôt in the city of New York) for a series of years extending from 1821 to 1856.

Among the imports, the great increase in hides, liquor, railroad iron, sugar, tea, and dry goods will be noticed. There has been a decrease in the importation of watches, hardware, and cutlery. Among the exports, the most important articles which have increased are flour, wheat, pork, hams, and bacon. The decrease has been principally in cotton, corn, beef, butter, cheese, naval stores, sperm-oil, and India-rubber goods.

IMPORTS INTO THE PORT OF NEW YORK FOR THE LAST QUARTER OF THE FISCAL YEARS ENDING JUNE 30, 1855, 1856, AND 1857.

	1855.	1856.	1857.
Dutiable goods	$22,446,581	$39,441,328	$19,078,444
Free "	8,644,645	5,651,169	3,587,604
Total ent. for con.	$26,091,226	$45,092,497	$22,666,048
Warehoused	6,475,210	10,851,535	30,216,709
Total mdse. ent	$32,566,436	$55,944,028	$52,882,757
Specie and bullion	183,318	486,626	2,379,502
Total Imports	$32,749,754	$56,430,654	$55,262,259
Withd'n fr. w'house.	$1,901,772	$4,672,796	$5,330,581
Add ent. for con.	26,091,226	45,092,497	22,666,048
Total put on m'ket	$30,992,998	$49,765,293	$27,996,645

EXPORTS FROM NEW YORK TO FOREIGN PORTS FOR THE SEVERAL MONTHS OF THE FISCAL YEAR ENDING JUNE 30TH, 1857.

Months.	Domestic merchandise.	Foreign merchandise, dutiable.	Foreign merchandise, free.	Total merchandise.	Specie.	Total exports.
July.....1856	$6,901,272	$108,617	$22,428	$7,032,312	$7,771,901	$14,804,218
August	5,612,328	211,998	88,242	5,912,068	3,202,053	9,115,116
September	7,045,302	509,752	87,325	7,622,279	3,733,547	11,360,826
October	6,129,387	130,577	71,981	6,332,845	4,096,650	11,429,005
November	7,541,995	202,093	55,662	7,799,750	2,955,889	10,755,189
December	8,246,463	467,501	193,148	8,907,112	1,779,181	10,676,293
January.....1857	4,543,842	183,408	151,920	4,884,170	1,307,946	6,192,116
February	5,899,302	868,878	175,706	5,988,786	1,881,728	7,770,512
March	7,904,481	628,080	485,330	9,017,891	2,174,965	11,192,856
April	5,162,160	814,143	195,642	5,671,945	3,854,805	8,026,750
May	6,046,643	294,839	169,451	6,510,933	5,789,266	12,300,199
June	5,895,812	512,840	782,028	6,689,789	7,989,854	14,679,143
Total, 1856—57	$75,928,842	$4,982,230	$2,893,908	$82,259,975	$46,942,243	$128,102,218
" 1855—56	75,026,244	8,207,710	1,752,804	79,986,758	22,580,991	102,567,749
" 1854—55	52,602,406	5,836,788	4,084,887	62,323,581	38,058,334	100,381,915
" 1853—54	66,321,085	5,168,816	1,889,978	72,824,324	34,804,241	107,129,065

The heavy warehousing of goods during the past three months, to secure the benefit of the new tariff, will not escape observation. The import of merchandise is more than $3,000,000 less than in the corresponding three months of 1856, but a nearly equal total import is made up of specie and bullion.

The annexed statement exhibits the value of certain articles imported into and exported from this port during the year 1856, compared with 1855:

COMMERCE OF THE PORT OF NEW YORK.
VALUE OF IMPORTS AND EXPORTS.

	1855.	1856.
IMPORTS.		
Cigars	$1,869,167	$2,670,928
Coffee	5,718,351	6,565,216
Hardware and cutlery	4,160,452	2,956,000
Hides	4,302,588	6,075,000
Lead	1,454,733	2,081,786
Liquor	1,809,856	2,662,000
Molasses	820,630	1,317,242
Railroad iron	440,749	3,076,039
Steel and iron	4,492,204	6,512,000
Sugar	7,840,046	14,585,965
Tin	4,481,879	4,022,918
Tea	2,940,475	4,106,875
Tobacco	651,453	805,852
Matches	3,820,134	2,684,536
Wines	1,414,681	2,000,000
Dry goods	65,446,452	92,206,952
EXPORTS.		
Cotton	16,520,010	10,858,182
Flour	10,762,574	14,981,928
Wheat	5,686,571	15,300,042
Corn	5,795,899	2,948,000
Rye	589,375	385,940
Beef	1,543,295	896,079
Pork	832,842	2,170,809
Ham, bacon and shoulders	1,480,451	2,563,194
Butter	183,609	76,937
Cheese	836,695	385,263
Lard	1,457,007	1,404,287
Sugar	549,883	170,583
Tea	652,394	198,500
Coffee	1,885,592	481,278
Rice	329,668	711,066
Tobacco	2,430,758	2,236,243
Naval stores	2,986,530	1,496,869
Sperm oil	1,503,261	892,104
Oilcake	486,556	305,762
Whalebone	638,098	1,001,670
India rubber goods	1,695,768	200,000
Furs and skins	248,734	267,994

EXPORTS FROM NEW YORK TO FOREIGN PORTS, FOR THE LAST QUARTER OF THE FISCAL YEARS ENDING JUNE 30TH, 1855, 1856, AND 1857.

	1855.	1856.	1857.
Domestic merchandise	$13,378,540	$19,066,095	$16,584,115
Foreign mdse., dutiable	1,357,362	899,588	1,121,531
" free	892,028	284,663	927,770
Total merchandise	$15,627,930	$20,250,346	$18,633,416
Specie	12,495,692	8,236,273	17,083,425
Total	$28,123,622	$29,086,619	$35,716,841

The figures above given for the last three months, although presenting many points of comparison with the same time in 1855, show little or nothing more, in comparison with those of 1855, than a steady increase, except perhaps, in specie, in which the increase is relatively large.

VALUE OF ARTICLES OF MERCHANDISE, OF DOMESTIC GROWTH AND MANUFACTURE, EXPORTED FROM NEW YORK, IN THE YEAR ENDING DECEMBER 31, 1855.

Articles.	Quantity.	Value.
Alcohol.....gallons	28,170	$15,883
Apples.....barrels	2,460	9,275
Ashes, pot and pearl.....tons	8,395	489,789
Bacon.....lbs.	17,224,028	1,521,263
Bark, oak	....	88,648
Beef, salt.....barrels	25,062	1,870,889
Beef, salt.....tierces	87,046	
Boatware.....lbs.	157,400	42,989
Biscuit or shipbread...bbls.&kegs	55,379	214,701
Bricks, common	....	19,068
Butter.....lbs.	1,083,076	220,397
Candles....."	1,706,036	320,696
Cheese....."	6,128,966	654,889
Clover seed	....	17,731
Coal,anthracite&bituminous..tons	16,266	91,404
Copper ore, pig, pipe & sheet	....	547,351
Cordage & cables.....lbs.	986,000	127,565
Corn, shelled.....bush.	3,806,989	3,811,245
Corn meal.....bbls.	58,185	297,149
Cotton.....bales	273,074	12,057,905
Cotton goods, printed or colored	....	149,853
" uncolored	....	1,378,429
Earthenware	....	8,341
Flour.....bbls.	990,563	9,018,673
Ginseng.....lbs.	72,740	88,876
Hemp, common....."	60,400	6,540
Hides.....No.	27,764	117,782
Hogs, live....."	4	35
Hops.....lbs.	1,592,286	419,520
Horses.....No.	110	20,080
Iron cast'gs & oth. manufs. of iron	....	1,250,450
Lard.....lbs.	8,694,720	963,798
Leather.....'	914,757	156,750
Lumber, pine, hemlock, poplar, oak, maple, black walnut and cherry	29,478	635,174
Molasses.....gals.	33,240	8,484
Oil, lard....."	90,786	76,454
" linseed.....'	25,687	23,646
Onions	....	21,950
Paint, mineral	....	68,138
Pork.....tierces	2,997	2,517,165
" .....bbls.	143,004	
Potatoes, common.....'	22,590	50,111
Rice.....tierces	13,628	612,466
" .....bbls.	11,591	
Rosin	505,950	1,214,574
Rum.....gals.	1,414,255	684,534
Rye.....bush.	650,000	324,885
Rye meal.....bbls.	20,100	183,881
Sheep and lambs.....No.	1,781	11,317
Snuff.....lbs.	14,830	1,424
Spirits of turpentine.....gals.	1,619,649	776,859
Staves and heading .....M.	19,512	1,324,596
Sugar cane .....lbs.	577,685	35,784
Tallow.....lbs.	1,964,718	239,630
Tar and pitch.....bbls.	60,467	192,408
Tobacco, leaf.....hhds.	6,868	1,030,515
" strips.....bales	8,514	
" stems.....cases	5,244	
" chewing.....lbs.	5,420,021	934,106
Vinegar.....gals.	25,515	3,281
Wheat.....bush.	3,455,244	6,952,393
Whisky .....gals.	55,820	36,514
Total	....	$53,756,387

Large as was the export of specie for the fiscal year, it is less than $9,000,000 in excess of 1854-55. The export of domestic produce is a trifle larger than last year, with prices averaging about the same—cotton and provisions being higher, and breadstuffs lower.

IMPORTS INTO THE PORT OF NEW YORK FROM FOREIGN PORTS FOR THE SEVERAL MONTHS OF THE FISCAL YEAR ENDING JUNE 30, 1857.

Months.	Dutiable goods.	Free goods.	Total for consumption.	Warehoused.	Total undue. entered.	Specie and bullion.	Total import.	Withdrawn from warehouse.	Total put on market.
July.....1856	$19,398,885	$1,280,854	$20,509,789	$4,917,669	$25,427,408	$298,918	$25,726,326	$2,187,937	$22,757,076
August.....	18,875,986	1,808,790	19,679,776	4,186,716	23,816,492	108,178	24,919,665	2,584,782	22,214,508
September.....	10,984,435	1,026,208	11,960,643	3,264,622	15,225,265	84,097	15,309,362	3,457,564	15,418,207
October.....	9,382,001	961,781	10,893,782	2,886,781	13,780,563	95,029	13,325,592	3,278,952	14,167,761
November.....	9,730,429	1,079,524	10,809,953	3,318,842	14,128,795	821,750	14,450,545	1,725,541	12,585,497
December.....	7,980,499	1,141,628	9,072,127	2,696,241	11,768,368	246,878	12,015,244	1,025,650	10,697,777
January.....1857	15,800,984	850,928	16,150,957	1,969,266	18,120,223	886,509	19,006,732	2,678,755	18,824,712
February.....	18,508,918	2,447,889	20,956,752	3,543,996	24,500,748	1,028,711	25,524,459	2,501,696	23,458,848
March.....	19,250,457	2,388,879	14,588,836	5,478,327	20,067,163	1,061,383	21,128,496	2,639,228	17,228,059
April..	11,155,530	955,428	12,110,958	8,168,142	20,279,100	939,218	21,218,318	2,287,815	14,398,273
May	5,451,191	1,674,810	7,126,001	10,508,421	17,634,422	1,070,898	18,705,325	2,262,178	9,388,174
June.....	2,471,728	967,866	3,429,089	11,540,136	14,969,225	869,901	15,839,126	781,099	4,210,188
Total, 1856—57.	$141,380,063	$16,018,580	$157,348,613	$62,879,159	$219,727,772	$6,441,348	$226,169,120	$27,950,070	$185,298,683
" 1855—56.	150,088,122	17,432,102	167,520,224	29,508,426	197,028,650	1,126,007	198,154,747	21,934,180	189,454,354
" 1854—55.	107,029,210	14,290,259	121,259,469	32,022,896	153,281,856	1,153,661	154,505,526	23,501,421	144,860,887
" 1853—54.	147,929,241	12,791,055	160,720,296	27,417,160	188,137,456	2,997,043	191,074,504	19,876,445	180,596,741

It will be seen from the above that the value of goods put upon the market falls short of the total value of the import of merchandise, about $34,500,000, and we have good reason to set down the value of goods in bond July 1, 1856, at $10,000,000 at least, making the total value of goods in bond July 1, 1857, about $45,000,000, which is $6,000,000 or $7,000,000 greater than was to have been expected from such reports as we have had from time to time. We must not forget to place to the credit of the year, an importation of specie and bullion of $6,500,000 against a little more than $1,000,000 the previous year. The total import of merchandise is $22,000,000 in excess of the previous year, and it is not a flattering fact, that we have been importing most freely, when it was evident that stocks were accumulating. The merchant can not devote a few hours more profitably, than in a careful scrutiny of the above tables.

The extent to which goods have been warehoused, caused the cash receipts at the custom-house to fall below those of last year, as is shown in the following:

CASH DUTIES RECEIVED AT THIS PORT DURING THE FISCAL YEAR ENDING JUNE 30TH, 1857, COMPARED WITH THE TWO PREVIOUS YEARS.

Months.	1854—55.	1855—56.	1856—57.
July.....	$2,045,745	$3,787,342	$5,441,544
August.....	2,214,629	4,290,764	5,288,899
September.....	3,439,493	3,548,379	3,702,135
October.....	2,402,715	3,329,195	3,391,231
November.....	1,751,023	2,171,708	2,774,846
December.....	1,505,720	2,284,942	2,381,970
January.....	2,560,038	3,688,655	4,587,378
February.....	2,665,165	3,576,919	5,117,250
March.....	2,362,085	4,382,107	3,752,185
April.....	1,994,711	3,913,885	3,891,607
May.....	2,400,483	3,457,154	1,907,290
June.....	2,816,465	3,527,425	677,811
Total.....	$30,658,872	$42,628,480	$42,273,446

The final result of this expansion, if continued, will be the loss of credit, and, as a consequence, a reduction—not, however, until we shall have endured all the penalties incident to bankruptcy. With the realization of the present prospect, good crops, and the continued development of the manufactures of our country, we can expect prosperity, if we can only avoid the evil of excessive consumption, and, as a consequence, importation of foreign manufactures. We have prepared a statement showing the exports of France, Great Britain, and the United States for a period extending from 1847 to 1856, inclusive. This statement enables us to compare the increase in exports, and consequently in wealth, of the three principal maritime countries in the world. With regard to the increase of wealth, a country is in a similar position to an individual. The exports of one are equivalent to the income of the other; and the imports of one, on the other hand, are equivalent to the expenses of the other. In the case of this country, the *ad valorem* tariff prevents us from obtaining a correct valuation of the imports, in order to obtain the exact difference, or, in other words, the increase of wealth, through the foreign commerce of the country. We may, however, judge in a measure from the *character* of the imports of the probable gain of wealth. If they are luxuries instead of necessaries, or manufactures that could be home-made, instead of the products foreign to our soil and climate, we may justly put that nation down on the extravagant list. And this is the position of the United States. In the period of 10 years below given, the increase of exports to the United States has been equal to 107 per cent.; the increase of imports has been (for the same period) equal to 114 per cent. Showing that even with our enormous productive powers, and the great wants of Europe, our exports have not kept pace with our demand for luxuries. We are apt to congratulate ourselves on the unequaled growth of our country, and its commerce. Of the former we have reason; but of the latter, the figures do not prove our statements. In the last 10 years the exports of the United States have increased 107 per cent, while the increase in the exports of France for the same period is equal to 130 per cent.; and the increase in the exports of Great Britain for the same period is equal to 93 per cent.

Statement showing, separately, the total exports of domestic produce of France, Great Britain, and the United States for the past 10 years:

Year.	France.	Great Britain.	United States.
1847	$140,000,000	$293,000,000	$158,000,000
1848	135,000,000	268,000,000	154,000,000
1849	185,000,000	315,000,000	145,000,000
1850	211,000,000	359,000,000	152,000,000
1851	228,000,000	370,000,000	218,000,000
1852	305,000,000	398,000,000	210,000,000
1853	245,000,000	398,000,000	251,000,000
1854	289,000,000	438,000,000	278,000,000
1855	308,000,000	475,000,000	275,000,000
1856	325,000,000*	575,000,000	326,000,000

* Estimated.

The exports of a country are the best exponent of its commercial prosperity, and in a measure it is in a direct ratio. For although the profit which is made on the articles exported may vary according as they are the natural products of the soil, or manufactures, the raw material of which is the growth of another country, yet there are other allowances to be made which compensate for this difference. It is evident, therefore, that any financial troubles we may have must be the result of our extravagant imports. These we have shown to have increased more rapidly than our exports, even with the valuation of our imports by an *ad valorem* tariff. The correction to be applied, if we wish to continue prosperous, is self-evident; and this correction will, under our present course, become ere long a necessity. A nation's balance-sheet is equivalent to the relation of receipts and expenditures with an individual; and national bankruptcy will surely follow when the imports, for a long series of years, are greater than the exports.

The exports of domestic cottons from the port of New York to foreign ports, for three years past, has been as follows:

Exported to.	1854. Packages.	1855. Packages.	1856. Packages.
Mexico	1,718	2,972	4,897
Dutch West Indies	896	337	151
Swedish West Indies	3	6	10
Danish West Indies	147	284	427
British West Indies	903	499	880
Spanish West Indies	69	1,148	151
San Domingo	208	411	228
British North America	54	16	25
New Granada	112	181	949
Brazil	2,682	2,704	3,756
Venezuela	988	1,094	835
Argentine Republic	1,445	468	590
Central America	43	495	190
West. coast of South America	809	1,152	158
Honduras	276	401	160
Africa	1,007	1,824	1,874
Australia	529	1,908	2,060
East Indies and China	12,436	11,929	17,674
All others	550	251	267
Total	24,280	27,585	34,792

Maritime Advancement.—We doubt whether the progress of this country as a maritime power, and of this city as a commercial emporium, can be more clearly demonstrated than in the subjoined simple tables; the first showing the tonnage of the shipping that entered this port from foreign ports, for a number of years, commencing with 1821:

Years.	Home.	Foreign.	Total Tonnage.
1821	$155,733	$16,240	$171,963
1825	259,525	20,655	280,180
1830	255,691	25,821	281,512
1835	373,455	90,999	464,464
1840	409,458	118,136	527,593
1845	472,492	140,858	613,350
1846	493,761	185,404	682,165
1847	665,488	333,537	999,026
1848	657,795	367,321	1,025,116
1849	734,009	414,096	1,148,105
1850	807,550	441,757	1,249,337
1851	1,144,485	479,569	1,624,052
1852	1,231,951	478,037	1,709,988
1853	1,321,674	491,581	1,813,255
1854	1,442,278	477,035	1,919,313
1855	1,310,257	202,000	1,512,257

The increase in the total tonnage from 1821 to 1851, thirty years, was nearly ten-fold. The increase in American tonnage during the same period, was more than seven-fold. The increase in foreign tonnage was nearly *thirty*-fold—about 2,000 per cent. This explains, more clearly than any other fact, the cause of the growing interest felt by European governments in the affairs of this country. The great falling off in the foreign tonnage in 1854, in comparison with several years immediately preceding, was doubtless mainly in consequence of the Eastern war, which employed, not only the Cunard steamers running to this port, but a vast amount of British shipping of all descriptions, as transports. The inactivity in freights hence was also potent in influence. There is no reason to doubt that, with the return of peace, the foreign shipping entering this port yearly, will equal, if not surpass in tonnage, any former year.

The above table shows only the extent of the trade of this city with foreign ports. The coasting trade since 1847 is shown, partially, in the following. But it must be remembered, that coasting vessels to or from ports north of the northern boundary of Georgia, are not compelled to enter or clear, unless distilled spirits are of the cargo. It will at once be seen that this exhibit of the trade of this city coastwise is far from being complete. The same fact will also explain the disparity between the tonnage entered and cleared:

Years.	Entered.	Cleared.
1848	402,143	805,988
1849	424,976	895,589
1850	489,896	1,020,070
1851	455,542	1,214,922
1852	497,540	1,373,762
1853	507,531	1,310,697
1854	543,483	1,499,968
1855	614,045	1,378,889

But the increase in tonnage is not alone remarkable. It is a common observation that the largest ships of 20 years ago did not exceed in tonnage the ordinary coasters of the present day. Then, a ship of 700 or 800 tons was a wonderful achievement of capital and mechanism. Now, ships of more than 2,000 tons have ceased to be regarded as out of the ordinary course. The following is a statement of the number of vessels, foreign and American, that entered this port in the years indicated, their total and average tonnage. The statement of the entries for 1855, shows a diminution in the average tonnage of foreign vessels, to below that of 1840; which makes it quite clear that the diminished tonnage of the year was, as we have said, caused mainly by the use of a great number of large ships for purposes incident to the war between the Allies and Russia. From 1835 to 1854, the American tonnage increased about four-fold, but the number of ships increased only about 70 per cent., the average tonnage about 117 per cent., exceeding the average foreign tonnage about 60 per cent.

Years.	American.			Foreign.		
	No. of vessels.	Total tonnage.	Average tonnage.	No. of vessels.	Total tonnage.	Average tonnage.
1835	1,544	373,465	245	471	90,999	193
1840	1,447	409,458	280	470	118,136	253
1845	1,484	472,492	319	526	140,858	267
1850	1,892	807,580	427	1,451	441,757	304
1854	2,686	1,442,278	547	1,411	477,035	338
1855	2,487	1,310,257	527	904	202,000	228

VESSELS BUILT AT THE PORT OF NEW YORK, INCLUDING THE SHIP-YARDS OF BROOKLYN, WILLIAMSBURG, AND GREENPOINT.

Class.	Launched in the years						On the stocks at the close of the years					
	1854.		1855.		1856.		1854.		1855.		1856.	
	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.
Steamships	19	24,600	4	11,100	15	18,900	13	9,200	2	9,000	6	7,450
Oth. steam vess.	28	5,967	4	2,200	5	1,900	1	500	2	1,150	3	2,750
Ships	30	39,380	6	9,130	11	12,550	6	8,200	6	8,150	4	2,150
Barks and brigs	15	6,151	10	4,651	12	6,300	2	1,000	4	2,900	3	650
Schooners, etc	21	5,292	13	3,785	13	2,820	4	1,133	3	1,120	..	....
Total	108	81,320	87	29,867	56	42,470	16	20,033	17	21,720	16	13,000

We give two tables, arranged from the report on Commerce and Navigation, showing the complete commerce of the port of New York, and specifying the destination of all vessels when outward bound, or the country from whence they arrived when inward bound; also showing their nationality. This table enables us to see at a glance the distribution of the commerce of New York, and gives a clear exhibit of our relations to other countries in regard to favorable or unfavorable tariffs, and shows some very curious statistics. In our trade to England, four fifths of the tonnage belongs to the United States, showing that we have a fair field for enterprise; while to the British North American possessions we have less than one fourth, showing that we are inferior in enterprise to our neighbors, or they have some tariff advantage. We absorb four fifths of the carrying trade to France, while to the northern European countries we have but an equal amount. The carrying trade to South America goes almost entirely in American bottoms. The Cuba trade is 95 per cent. in American vessels, while to Portugal only about one third; showing that the tariff is in favor of that country. To Hamburg we have less than one fifth; which is probably owing partly to more economy practiced by the Dutch, and lower wages.

STATEMENT EXHIBITING THE NUMBER AND TONNAGE OF AMERICAN AND FOREIGN VESSELS WHICH ENTERED INTO THE DISTRICT OF NEW YORK, AND THE COUNTRIES FROM WHICH THEY ARRIVED, DURING THE FISCAL YEAR ENDING JUNE 30TH, 1856.

Arrived from	American vessels.		Foreign vessels.		Total.	
	No.	Tons.	No.	Tons.	No.	Tons.
Russia	1	593	..	....	1	593
Sweden&Norw'y	3	1,486	8	2,371	11	3,857
Swed. W. Indies	5	656	..	....	5	656
Danish W. Indies	13	3,480	3	322	16	3,802
Hamburg	8	4,540	41	24,910	49	29,450
Bremen	19	26,753	82	44,816	101	71,569
Other Ger. ports	..	....	1	208	1	208
Holland	14	3,961	22	9,490	36	13,451
Dutch W. Indies	16	3,247	5	744	21	3,991
Dutch E. Indies	6	2,868	..	....	6	2,868
Belgium	29	21,519	1	626	30	22,138
England	432	515,468	85	60,844	517	576,312
Scotland	31	17,657	18	11,764	49	29,421
Ireland	4	2,227	2	849	6	3,076
Gibraltar	4	789	2	362	6	1,151
Malta	..	....	1	262	1	262
Canada	1	245	..	....	1	245
Other B. N. A. pos.	45	8,671	310	41,310	355	49,981
British W. Indies	107	19,745	123	17,263	230	37,008
British Honduras	14	3,448	..	....	14	3,448
British Guiana	17	3,988	2	370	19	4,358
Br. poss. in Africa	13	2,931	3	493	16	3,424
British Australia	1	293	..	....	1	293
British E. Indies	16	11,992	3	1,328	19	13,320
France on Atlan.	119	122,360	24	12,692	143	135,052
France on Med.	35	16,600	4	1,640	39	18,240
Amer. pos.	..	....	10	1,196	10	1,196
West Indies	1	200	..	....	1	200
Spain on Atlantic	12	8,464	8	1,999	20	5,463
Spain on Medit.	41	11,618	19	3,917	60	15,535
Canary Islands	5	988	1	189	6	1,177
Philippine Isls.	12	12,918	1	1,060	13	13,978
Cuba	689	243,500	39	8,801	728	252,301
Porto Rico	100	19,444	48	7,349	148	26,687
Portugal	26	8,737	24	5,627	50	14,364
Madeira	..	....	2	284	2	284
Cape de Verd	9	1,849	..	....	9	1,849
Azores	2	891	..	....	2	891
Sardinia	4	2,941	9	2,607	15	5,548
Tuscany	19	9,868	10	3,856	29	12,724
Papal States	1	358	..	....	..	358
Two Sicilies	48	16,064	32	8,479	80	24,543
Austria	4	1,585	4	2,234	8	3,789
Turkey in Asia	3	1,256	2	373	5	1,629
Egypt	..	....	3	1,061	3	1,061
Oth. ports Africa	22	4,858	..	....	22	4,858
Hayti	132	28,218	20	8,838	152	27,056
San Domingo	2	302	3	359	5	662
Mexico	37	9,638	5	736	42	10,374
Central Republic	32	31,174	2	402	34	31,576
New Granada	72	58,310	3	741	75	59,051
Venezuela	61	16,501	22	4,669	83	21,170
Brazil	110	31,483	26	6,339	136	37,822
Uruguay	4	928	..	....	4	928
Buenos Ayres	28	8,954	2	356	30	9,310
Chili	1	321	..	....	1	321
Peru	7	5,021	1	212	8	5,233
Sandwich Islands	4	4,393	..	....	4	4,393
China	55	51,918	2	1,086	57	53,004
Total	2,496	1,881,726	1,033	299,933	3,529	1,681,650

The greater increase of the commerce of New York over the other cities, is shown by the tables from the annual report on commerce and navigation. The tonnage built during the year ending June 30, 1856, in all the States, was 469,393 tons, the leading States ranging as follows:

States.	Ships.	Brigs.	Schooners.	Sloops and canal boats.	Steamers.	Total.	Tons.
Maine	155	70	84	4	4	316	149,907·88
Massachusetts	84	10	35	1	4	134	80,834·88
New York	24	7	87	161	27	306	76,301·12
All others	33	17	343	313	186	947	162,351·00
Total	306	103	549	479	221	1,703	469,393·78

Maine, it appears from this, builds an amount of tonnage nearly as large as Massachusetts and New York together, and also nearly as large an amount as all the other States of the Union, omitting Massachusetts and New York; so that there is built on the coast of Maine almost one third of the aggregate tonnage of the Union. Probably, leaving out of view steamships, canal boats, and river craft, Maine builds fully one half of the tonnage of the Union.

Taking the leading ship-owning States, we have the following result as to tonnage owned:

	June 30, 1856. Tons.	June 30, 1855. Tons.	
New York	1,508,503	1,464,216	Inc. 44,287
Massachusetts	891,360	979,205	Dec. 87,845
Maine	780,170	806,599	Dec. 26,429
Total	3,180,033	3,250,020	
		3,180,333	
Decrease in the year 1855			69,687

The following table shows the relative amount of tonnage owned in the large ports which have over 50,000 tons registered at the custom-house of the district:

Ports.	June 30, 1856.	June 30, 1855.
	Tons.	Tons.
New York	1,328,086	1,228,234
Boston	521,117	540,264
Philadelphia	197,228	204,806
Baltimore	183,344	183,108
Bath	198,320	175,258
New Orleans	163,308	200,836
Waldoborough	155,378	148,896
New Bedford	153,000	169,996
Portland	136,154	127,317
Buffalo	89,929	76,952
Chicago	57,407	50,972
Cleveland	60,919	51,578
Detroit	58,888	65,058
Belfast	76,612	70,762
Barnstable	83,186	80,615
Charleston	59,128	56,419
San Francisco	80,750	87,342
Cuyahoga	60,916	....

The most remarkable decline is that shown in Philadelphia. New York exhibits the greatest increase of tonnage, according to these returns.

Of tonnage employed in steam navigation, New York stands at the head by a large amount. The figures are as as follows:

	Tons.
New York State	153,136
New Orleans	51,751
St. Louis	88,745
Pittsburg	37,503

RATES OF COMMISSIONS RECOMMENDED BY THE CHAMBER OF COMMERCE, TO BE CHARGED WHERE NO EXPRESS AGREEMENT TO THE CONTRARY EXISTS.

Banking.

On purchase of stocks, bonds, and all kinds of securities, including the drawing of bills for the payment of same	1 per cent.
On sale of stocks, bonds, and all kinds of securities, including remittances in bills and guaranty	1 "
On purchase of sale of specie and bullion	½ "
Remittances in bills of exchange	½ "
Remittances in bills of exchange, with guaranty	1 "
Drawing or endorsing bills of exchange	1 "
Collecting dividends on stocks, bonds, or other securities	½ "
Collecting interest on bonds and mortgages	1 "
Receiving and paying moneys on which no other commission is received	½ "
Procuring acceptance of bills of exchange payable in foreign countries	½ "
On issuing letters of credit to travelers, exclusive of foreign bankers' charge	1 "
Where bills of exchange are remitted for collection, and returned under protest for the non-acceptance, or non-payment, the same commissions are to be charged as though they were duly accepted and paid.	

General Business.

For sales of foreign merchandise	5 "
On domestic merchandise	2½ "
Guaranty	2½ "
On purchase and shipment of merchandise, on cost and charges, with funds in bond	2½ "
Collecting delayed and litigated accounts	5 "
Effecting marine insurance, on amount insured.	½ "
No amount to be charged for effecting insurance on property consigned.	
Landing and re-shipping goods from vessels in distress, on value of invoice	2½ "
Landing and re-shipping, on specie and bullion	½ "
Receiving and forwarding merchandise entered at custom-house, on invoice value 1 per cent., and on expenses incurred	2½ "
On consignments of merchandise withdrawn or re-shipped, full commissions are to be charged, to the extent of advances or responsibilities in-	

General Business.

curred, and one half commission on the residue of the value.

On giving bonds that passengers will not become a charge on the city, on the amount of the bonds..... 2½ per cent.

The risk of loss by robbery, fire (unless insurance be ordered), theft, popular tumult, and all other unavoidable occurrences, is in all cases to be borne by the owners of the goods, provided due diligence has been exercised to the care of them.

Shipping.

On purchase or sale of vessels..... 2½ "
Disbursements and outfit of vessels..... 2½ "
Procuring freight and passengers for Europe, East Indies, and in American vessels..... 2½ "
Do. do. in foreign vessels..... 5 "
Do. do. coastwise..... 5 "
Collecting freight..... 2½ "
Collecting insurance losses of all kinds..... 2½ "
Chartering vessels, on amount of freight, actual or estimated, to be considered as due when the charter-parties are signed..... 2½ "

But no charter to be considered binding till a memorandum, or one of the copies of the charter has been signed.

On giving bonds for vessels under attachment in litigated cases, on amount of liability..... 2½ "

The foregoing commissions to be exclusive of brokerage, and every charge actually incurred.

Nicaragua, San Juan de. A sea-port town at the mouth of the river of the same name, State of Costa Rica, on the west shore of the Caribbean Sea, lat. 10° 55′ N., long. 83° 43′ W. The port is excellent, and is considered the best on this part of the coast. Till lately, the town was quite inconsiderable, and consisted of little else than a cluster of huts; but latterly it has no doubt been improved.

This place has risen into importance from its being at the western extremity of a proposed line of water communication between the Caribbean Sea and the Pacific Ocean. This line is to consist partly of the River San Juan, flowing from the Lake of Nicaragua east to the sea at San Juan, partly of the lake, and partly of a canal to be constructed from the latter to the Pacific Ocean. This project has been often mooted; but the discovery of the extraordinary mineral riches of California, and the consequent emigration to and intercourse with that country, have given it an incomparably greater interest than it formerly possessed. The country appears to present greater facilities for effecting this great work, than any other part of Central America, except the Isthmus of Darien or Panama. The River San Juan, about 90 miles in length, is said to have been occasionally navigable throughout its entire course for sea-going vessels, till the Spaniards, to protect themselves from the attacks of the buccaneers, sunk vessels loaded with stone in its bed. In consequence of the interruption thus given to the stream, a considerable portion of the water was carried off by a new channel called the Rio Colorado.—CHEVALIER, *L'Isthme de Panama, etc.*, p. 84. The San Juan is still, however, navigated, though with much difficulty, in the rainy season, by steamers and other vessels drawing little water.

The lake itself has deep water throughout, and is adapted for ships of the largest burden. The distance between its south-western shore and the Gulf of Papagayo, on the Pacific, is only 29,880 yards, or 15¾ miles; and though the intervening country be laid down in many maps as mountainous, the greatest actual height of any part of it above the level of the lake is only 19 feet; at least, such is the result given by a series of 347 levels, about 100 yards apart, taken in 1781.—THOMPSON'S *Guatemala, Append.*, pp. 512–520. The surface of the lake is 128 feet 3 inches (English) above the level of the Pacific; an ascent which might be overcome by a succession of locks. The difference in the level of the two oceans, formerly supposed to be so serious an obstacle to the undertaking, is said by Humboldt not to exceed 20, or, at most, 22 feet. (*Nouv. Espagne*, i., 223, ed. 1825.) At its western extremity, the Lake of Nicaragua is connected by a small river, the Tipitapa, with the Lake of Leon or Managua. The latter, 55 miles in length by nearly 30 in breadth, is also said to have deep water throughout. And the plan which appears to be at present preferred is, to make the channel uniting these two lakes navigable, and to excavate a canal from the latter to the port of Realejo, on the Pacific. Mr. Squier, late *chargé des affaires* of the United States at Nicaragua, has published the following statements in regard to this route.

Length of the route by Lake Nicaragua, etc., across the American Continent, from the Atlantic to the Pacific Oceans: River San Juan, 90 miles; Lake Nicaragua, necessary to be traversed, 110 miles; River Tipitapa, 18 miles; Lake Managua or Leon, 55 miles; from Lake Managua to Realejo, 40 miles; total, 803 miles. Height of the various lakes to be passed, and the elevations of land: height of Lake Licarsgua, 147 feet 9 inches above Atlantic, 128 feet 3 inches above Pacific; height of Lake Managua, 176 feet 5 inches above Atlantic, 156 feet 11 inches above Pacific; highest point of land to be passed, 231 feet 11 inches above Atlantic, 212 feet 5 inches above Pacific.

The River San Juan reaches the ocean by several mouths. The divergence takes place about 20 miles from the sea, forming a low delta, penetrated by numerous canals, or, as they are called on the lower Mississippi, *bayous*, and lagunas. The principal branch is the Colorado, which carries off at least two thirds of the water of the river, and which empties into the ocean some 10 or 15 miles to the southward of the port. There is an almost impassable bar at the entrance, which would preclude the ascent of vessels, even if the depth of water above permitted of their proceeding after it was passed. The little steamer *Orus*, nevertheless, after repeated trials, succeeded in passing. There is another small channel called the *Taure*, which reaches the sea midway between the port and the mouth of the Colorado. The branch emptying into the harbor, the one through which the ascending and descending boats pass, carries off only about one third of the water of the river. It, too, has a bar at the mouth, *i. e.*, at its point of debouchure into the harbor, upon which, at low tide, there are but three or four feet of water. This passed, the bed of the river is wide, and studded with low islands; but excepting in the channel, which is narrow and crooked, the water is very shallow. It has been suggested that the Colorado branch might be dammed, and a greater column of water thrown into the other, or San Juan branch. But the suggestion can only be made by those who are wholly unacquainted with the subject. Allowing it to be possible to build a dam, the stream would probably find a new channel to the sea; or, if it took the direction of the harbor, fill it up during the first rainy season with sand, or at once destroy the saudy barriers which now protect and form it. It can not be made navigable for ships or vessels of any kind, except of the lightest draught, by any practicable system of improvements. The boats used upon the river for carrying freight and passengers are exaggerated canoes, called *bongos*. Some are hollowed from a single tree, but the better varieties are built, with some degree of skill, from the timber of the *cedro*, a very light and durable kind of wood, which grows abundantly about the lakes. The largest of these carry from 8 to 10 tons, and draw 2 or 3 feet of water when loaded. They are long, and rather deep and narrow, and have, when fully manned, from 8 to 12 oarsmen, who drive the boats by means of long sweeps and setting-poles. Sails are seldom, if ever, used, except upon the lake. The masts are unshipped and left at the head of the river in descending, and resumed again in returning. These boats have a small space near the stern called the "*chopa*," covered with a board roof, a thatch of palm leaves, or with hides, which is assigned to the passengers. The rest of the boat is open, and the oarsmen, or, as they call

themselves *marineros* (sailors), are without protection, and sleep upon their benches at night, covered only with their blankets, and with the gunwale of the boat for a common pillow. The captain, or *patron*, is the steersman, and occupies a narrow deck at the stern, called the *pineta*, upon which he also sleeps, coiling himself up in a knot, if the boat is small and the pineta narrow. The freight, if liable to damage from exposure, is covered with raw hides, which, between sun and rain, soon diffuse an odor very unlike the perfumes which are said to load the breezes of Araby the Blest. The usual freightage from San Juan to Granada — a distance of 160 or 170 miles — is from 30 to 50 cents per cwt.; if the articles are bulky, it is more. The boatmen are paid from seven to eight dollars the trip, down from Grenada and back, which usually occupies from twenty to thirty days, although with proper management it might be made in less time. Time, however, in these regions is not regarded as of much importance, and every thing is done very leisurely.

Nicaragua, a Republic of Central America. It extends from lat. 10° 45′ to 13° 20′ N., at the Bay of Conchagua, on the Pacific Ocean, long. 83° 40′ to 87° 40′ W.; having west the Pacific Ocean, east the Caribbean Sea, and part of the so-called Mosquito territory, north the State of Honduras and San Salvador, and South Costa Rica. Area about 49,000 square miles. The Republic is divided into five Departments, each of which has several judicial districts, as follows:

Departments.	Pop.	Districts.
Meridional	20,000	Rivas or Nicaragua.
Oriental	95,000	Acayopa or Chontales, Granada, Masaga, and Managua.
Occidental	90,000	Leon and Chinandega.
Septentrional of Matagalpa	40,000	Matagalpa.
Septentrional of Segovia	12,000	Segovia.
Total	247,000	

The population here given is the results arrived at, in round numbers, by a census attempted in 1846. It was only partially successful, as the people supposed it preliminary to some military conscription or new tax. The principal towns of the State, with their estimated population, are as follows:

Leon (the capital), including Subtiava	25,000	Puebla Nueva	2,900
Chinandega	11,000	Nagorote	1,800
Chinandego Viejo	3,000	Soucl	2,500
Realejo	1,000	Managua	12,000
Chichigalpa	2,800	Massaya	15,000
Posaltega	900	Granada	10,000
Telica	1,000	Nicaragua	8,000
Somotillo	2,000	Segovia	8,000
Villa Neuva	1,000	Matagalpa	2,000

It is a singular fact that the females greatly exceed the males in number. In the Department Occidental, according to the census, the proportions were as *three* to *two!* The civilized Indians, and those of Spanish and negro stocks crossed with them, constitute the mass of the population. The individuals of pure European extraction constitute but a small part of the whole, and are more than equaled in number by those of pure negro blood. The entire population may be divided as follows: Whites, 20,000; negroes, 15,000; Indians, 80,000; mixed, 130,000.—Total, 250,000. Most of these live in towns, many of them going two, four, and six miles daily to labor in the fields, starting before day and returning at night. The plantations, "haciendas," "hatos," "ranchos," and "chacras", are scattered pretty equally over the country, and are reached by paths so obscure as almost wholly to escape the notice of travelers who, passing through what appears to be a continual forest from one town to another, are liable to fall into the error of supposing the country almost wholly uninhabited. Their dwellings are usually of canes, thatched with palm, many of them open at the sides, and with no other floor but the bare earth, the occupation of which is stoutly contested by pigs, calves, fowls, and children. These fragile structures, so equable and mild is the climate, are adequate to such protection as the natives are accustomed to consider necessary. Some of them are more pretending, and have the canes plastered over and whitewashed, with tile roofs, and other improvements; and there are a few, belonging to large proprietors, which are exceedingly neat and comfortable, approaching nearer our ideas of habitations for human beings. A large part of the dwellings in the towns are much of the same character. The residences of the better classes, however, are built of adobés, are of one story, and inclose large courts, which are entered under archways, often constructed with great beauty. The court-yard has generally a number of shade trees, usually orange, making the corridors, upon which all the rooms open, exceedingly pleasant.

In October, 1855, Walker, an adventurer from California, landed in Nicaragua with a force of one hundred and fifty men, and being favored by part of the inhabitants, succeeded in effecting a revolution. From this time until 1857 he held possession of the country, though with varied success, against all forces brought against him. In 1857, his expected reinforcements from the United States failing to arrive, he was forced to retreat, and with an almost total loss of his army, and finally had to accept the offer of the United States sloop *St. Mary* to convey himself and command to the United States.

Unfortunately, agriculture is at a very low ebb, and but a small portion of this valuable land is made available. The productions are indigo, of which from 800 to 1000 zeroons are manufactured yearly; sugar, coffee, cacao, and cotton — the last of superior quality, and formerly raised in large quantities; Indian corn, rice, beans, and plantains, the staple food of the people, are raised in abundance; wheat, also, is grown in the mountainous and cooler parts of the country. Fruits, of various kinds, are plentiful, including excellent oranges and lemons. One of the principal sources of wealth consists in cattle, of which there are great numbers in all parts, particularly in the districts on the eastern side of the lake, where extensive and excellent pasturage is met with. The chief exports of the State are indigo, Nicaragua wood, and hides. The executive has the title of Supreme Director, with two counselors, a legislative chamber and senate. From the reports of the Minister of Finance, it was estimated that the receipts into the State Treasury for the year ending 30th June, 1851, would amount to $122,682, and the expenses to $173,646, leaving a deficit of $50,946. This, added to the standing debt of the State, $523,905, makes a total debt of $574,869.

Commerce with the United States. — On the 19th day of April, 1850, a treaty was concluded between the United States and Great Britain, in respect to a proposed ship-canal between the Atlantic and the Pacific, by which both governments stipulate and declare that "neither the one nor the other will ever obtain or maintain for itself any exclusive control over the said ship-canal." The 8th article further stipulates that the two governments shall "extend their protection, by treaty stipulations, to any other practicable communications, whether by canal or railway, across the Isthmus which connects North and South America, and especially to the inter-oceanic communications, should the same prove to be practicable, whether by canal or railway, which are now proposed to be established by the way of Tehuantepec or Panama." This treaty contains other stipulations relative to the Mosquito coast, Central America generally, etc., but nothing of commercial interest. General information respecting the Central American States is exceedingly limited; though, both for its productions and its geographical position, the country is one of great interest and importance. It abounds in all the precious and useful minerals, and produces almost spontaneously the varied and luxuriant staples of the tropics. It has been termed the portage or stepping-stone between

the commerce of Europe and Eastern Asia, and between the Atlantic and the Pacific possessions of the United States; and on this account is now the scene of active operations for facilitating its transit. Of the many routes by which the passage is deemed practicable, that by the way of the Rio San Juan and Lakes Nicaragua and Leon is said to be the most so; and here, therefore, the great inter-oceanic canal may, it is thought, be eventually constructed. The routes vary in length from 133 to 279 miles. By these routes, in comparison with the older ones, the distance from New York to Canton will be reduced from 17,100 to 12,600 miles; to Calcutta, from 15,000 to 14,000; and to Singapore, from 15,800 to 13,000; while from England to those places the distance will be materially increased. "In a commercial point of view, therefore," says a late statistical publication, from which these facts are gleaned, "England can care but little about the canal as proposed, since without it her advantages are much superior to those of the United States in the Asiatic trade."

The trade with the United States has been decreasing for a number of years, as is shown by the following:

	Exports to United States.	Imports from United States.
Total trade from 1830 to 1840...	$2,037,000...	$2,603,000
" " " 1840 to 1850...	1,265,000...	964,000

Nicaragua, or Peach Wood (Ger. *Nicaragaholz, Blutholtz*; Du. *Bloedhaut*; Fr. *Bois de Sang, Bois de Nicaragua*; It. *Legno sanguigno*; Sp. *Palo de sangre*; Port. *Pao sanguinho*), a tree of the same genus (*Cæsalpina*) as the Brazil and sapan wood; but the species has not been exactly ascertained. It grows principally in the vicinity of the lake of Nicaragua, whence its name. It is said by Dr. Bancroft to be almost as red and heavy as the true Brazil wood, but it does not commonly afford more than a third part, in quantity, of the color of the latter; and even this is rather less durable and less beautiful, though dyed with the same mordants. Nicaragua, or peach woods, differ greatly in their quality as well as price; one sort being so deficient in coloring matter that six pounds of it will only dye as much wool or cloth as one pound of Brazil-wood, while another variety of it will produce nearly half the effect of an equal quantity of Brazil-wood, and will sell proportionally dear.—BANCROFT *on Colors*, vol. ii.

Nickel, a scarce metal, which occurs always in combination with other metals, from which it is exceedingly difficult to separate it. When pure, it is of a fine white color resembling silver. It is rather softer than iron; its specific gravity, when cast, is 8·279; when hammered, 8·932. It is malleable, and may without difficulty be hammered into plates not exceeding one hundredth part of an inch in thickness. It is attracted by the magnet, and is not altered by exposure to the air, nor by being kept under water. It is employed in potteries, and in the manufacture of porcelain.—THOMSON'S *Chemistry*. The cobalt ores are commonly employed in the extraction of nickel, and they are now treated by the method of Wöhler to effect the separation of the two metals. The arsenic is expelled by roasting the powdered *speise*, first by itself, next with the addition of charcoal powder, till the garlic smell be no longer perceived. The residuum is to be mixed with three parts of sulphur and one of potash, melted in a crucible with a gentle heat, and the product being edulcorated with water, leaves a power of metallic lustre, which is a sulphuret of nickel free from arsenic; while the arsenic associated with the sulphur, and combined with the resulting sulphuret of potassium, remains dissolved. Should any arsenic still be found in the sulphuret, as may happen if the first roasting heat was too great, the above process must be repeated. The sulphuret must be finally washed, dissolved in concentrated sulphuric acid, with the addition of a little nitric, the metal must be precipitated by a carbonated alkali, and the carbonate reduced with charcoal. Nickel forms twelve per cent. of the new cent authorized by Congress in 1857.

Since the manufacture of German silver or Argentan became an object of commercial importance, a great deal of attention has been bestowed upon nickel by mineralogists, chemists, and nickel-workers, and its extraction from its ores has been undertaken upon a considerable scale. It is sparingly found, and in comparatively few localities, and even in those it is usually associated with cobalt. In consequence of its rarity it is generally classed among the precious metals. It is, when pure, almost as white as silver, and both ductile and malleable, either when hot or cold. It may be made into mariners' compasses, being susceptible of magnetism. It does not oxidize or rust by contact with air, and only melts, when pure, at an intense heat. It makes other metals harder and brittle when alloyed with them. The nickel used for alloys is usually obtained from what the Germans call Kuffer Nickel or Copper Nickel, which is an arseniuret or compound of arsenic with nickel, which is hard and has a metallic lustre of a coppered color inclining to brown or gray, and displaying all the hues of the rainbow. It contains 56 parts of arsenic and 44 of nickel, when pure, but usually contains a little iron, lead, sulphur, and antimony.

The Chinese probably first made use of nickel; their *white copper*, or pack-fong, contains about 32 nickel, 40 copper, 25 zinc, and 3 iron; but the proportions vary more or less. The composition known as British plate is an alloy of nickel, the ores from which the Birmingham people extract it being imported principally from Norway and Hungary. In Saxony they produce twenty thousand pounds of nickel a year, and in Prussia about nine thousand pounds. In Germany they make it into German silver, and in this country our Mint is busily engaged in making it into money.

Nickel is obtained at Chatham, in Connecticut; also in Missouri, in the chrome mines of Maryland and Pennsylvania, and in Lancaster County, Pennsylvania.

Nile (*Nilus*), a great river of East Africa, formed by the union of the *Bahr-el-Abiad* (White River) and the *Bahr-el-Azrek* (Blue River). The first, which is regarded as the true Nile, is supposed to rise on the eastern edge of the table-land of East Africa, about lat. 2° S., long. 34° E., but its source is unknown. Expeditions sent by the Pacha of Egypt in 1840–2 traced it to lat. 4° 42′ N., in long. 30° 58′ E. Here the navigation was interrupted by a ledge of rock; it flows generally north, with a width of from one to two miles, and joins the Bahr-el-Azrek at Khartum, in Nubia (lat. 15° 37′ N.). The second rises in Abyssinia, in lat. 10° 59′ 25″ N., long. 36° 55′ 39″ E. It flows north 55 miles, when it enters Lake Dembeah on the southwest; emerging from the lake on the southeast, it flows in the form of a curve, first south, then west and northwest, traversing in its course several mountain chains, and descending by numerous falls into the plains of Nubia, where it passes Sennaar. Its confluence with the Bahr-el-Abiad forms the Nile, which from this point flows northeast, north, and northwest past Halfay, Shendy, and Berber to lat. 19° 20′, where it turns to the southwest, forming a wide curve called the Great Bend. In lat. 18° it again turns northward, and continues in a northerly direction past Dongola, Girgeh, Siout, and Cairo to its mouth, near Assouan; and from the junction of its head streams to its delta its basin is formed by two parallel chains of mountains, which in some places close upon it and form rapids, and in others open up and leave fine plains between them and the river. It forms the first cataract (in ascending) near Essouan, lat. 24° 10′ N., the second being in lat. 21° 52′ 20″ N., and the third in lat. 19° 40′ N. Its banks are generally elevated in Nubia; they are less so in Middle Egypt, and absolutely flat in the Delta. From Essouan to the sea the average fall is two inches to a mile, and its mean velocity is about three miles an hour. Its length from supposed source, following its bends to the sea, is about 3000 miles (direct distance 2300 miles).

The delta of the Nile commences in lat. 30° 7′ N., where its waters spread out into numerous streams in the form of a triangle, extending at its base on the Mediterranean over a space of 120 miles; the two principal mouths are the west, or Rosetta branch, and the east, or Damietta branch. The others are the Bourlos and Dibe mouths. The system of the Nile is an anomaly among rivers: in ascending its course no affluent is met with for 1400 miles, the first being the Atbara in Nubia, which joins it on the right, 27 miles south of Berber. It is the only great tropical river which, by its periodical inundations, fertilizes a country surrounded throughout a great part of its course by sandy deserts. The waters begin to rise in June, and they subside in September. —*See* EGYPT. From time immemorial the Egyptians have made use of canals for the purpose of extending the inundations. The rise of the Nile appears due to the periodical rains which fall in the tropical regions of Africa from June to September. In Upper Egypt the swelling of the river amounts to about 30 feet, and at Cairo to 24 feet, perpendicular.

Ning-po, a city of China, province of Che-kiang, and one of the five ports recently opened to foreign trade, on the Takia, or Ning-po River, the mouth of which is directly opposite Chusan, 95 miles east-southeast of Hang-chow-foo, on a tongue of land at the influx of an affluent into the river, here crossed by a bridge of boats; lat. 29° 54′ N., long. 121° 32′ 30″ E. Population estimated at between 200,000 and 300,000. The city, six miles in circumference, inclosed by walls 25 feet in height, and entered by six gates, is surrounded by a fine plain covered with villages and water-courses. It has well-supplied shops, a temple of large size, hexagonal tower 150 feet high; a missionary hospital, opened in 1843; an active trade in junk-building, and a large manufacture of silks for export to Japan. It has been reported that about 670 junks come to it annually from Shang-tung and Leao-tong with oil, provisions, fruits, caps, cordage, horns, drugs, rice, and silk; 560 from Fo-kien and Hai-nan with sugar, alum, pepper, black tea, indigo, salt, rice, and dye-woods; from Canton and the Straits some vessels; and from the interior about 4000 small craft yearly; the total imports being estimated at $7,650,000 annually. It exports large quantities of wood and charcoal to Shang-hai, the trade of which port it has crippled, from being by several days nearer to the green-tea districts. It was taken by the British, without resistance, in 1841, when was captured a ponderous bell, now in the British Museum.

Nitric Acid, Aquafortis (Fr., *Acide Nitrique*; Germ., *Salpetersaure*), exists, in combination with the bases potash, soda, lime, magnesia, in both the mineral and vegetable kingdoms. This acid is never found insulated. It was distilled from saltpetre so long ago as the 13th century by igniting that salt, mixed with copperas or clay, in a retort. Nitric acid is generated when a mixture of oxygen and nitrogen gases, confined over water or an alkaline solution, has a series of electrical explosions passed through it. In this way the salubrious atmosphere may be converted into corrosive aquafortis. When a little hydrogen is introduced into the mixed gases, standing over water, the chemical agency of the electricity becomes more intense, and the acid is more rapidly formed from its elements, with the production of some nitrate of ammonia.

Noble, an ancient money of account, containing six shillings and eightpence sterling, or in United States currency equivalent to one dollar and sixty cents.

North America lies between the 16th degree of north latitude and the Arctic Ocean. It is more irregular in form than South America, but of greater uniform breadth, larger in area, and more deeply indented with gulfs, bays, and inlets. Two extensive elevations or mountain ridges extend near and parallel, the one to its east and the other to its west coast. Between these is a vast plain, the largest in the world, stretching from the Gulf of Mexico to the Arctic Ocean. In this plain are situated the great lakes of North America, and through it flow the rivers Mississippi, the Mackenzie, and the St. Lawrence, the one forming a southern, the other a northern, and the third an eastern drain for its superfluous waters. Its coast indentations and inlets are Baffin's Bay and Hudson's Bay on the north; the Gulf of St. Lawrence on the east coast; the Gulf of Mexico on the south; the Gulfs of California and Georgia, and Cook's Inlet, on the west. The coast of North America is very extensive, extending in an irregular line from Davis's Strait to the Florida Channel about 4800 miles, and from the latter along the inland sea to Tehuantepec about 3000. The whole length on the Pacific side to Behring's Strait is about 10,000 miles. The extent of the north and northeast shores can not probably be less than 3000 miles. The entire extent will thus be 22,800 miles. The most remarkable physical characteristics of North America are its sandy deserts, treeless steppes, and prairies; the first stretch along the base of the Rocky Mountains to the 41st degree of north latitude, having an average breadth of 200 to 500 miles. The steppes form another cheerless and extensive region in the northern part of the continent. The prairies or savannas, peculiar characteristics of North America, are chiefly in the Mississippi Valley. They consist of extensive and generally irregular tracts without trees, covered in the spring with bright verdure, intermingled with fragrant flowers. A vast extent is also occupied by forests, comprising probably not less than 600,000 square miles.

Mountains.—Of these there are four principal systems in North America: the Oregon or Rocky Mountains—a continuation of the Andes—the Sierra Nevada or Snowy Mountains of California, merging in its passage northward into the coast range, and the Alleghanies or Appalachian range, extending northeast parallel with the coast. The Rocky Mountain range is a continuation of the Andes, forming the elevated table-land passing centrally through Mexico; thence trending north, divide the waters entering the Pacific and Atlantic Oceans, and continue to the Arctic coast. Several peaks rise above the line of perpetual snows. The Sierra Nevada of California and coast range extend nearly parallel with the Rocky Mountain range, and are connected with the latter by several transverse ridges. The Alleghany range stretches along the eastern portion of the continent. It rises in the gently undulating ridge dividing the waters of the Tennessee from those flowing into the Mississippi and the Gulf of Mexico, and trending across the country in the same general direction from southwest to the northeast, terminates in the headland of Gaspè.

Rivers and Lakes.—The principal rivers are the Mississippi, with its affluent the Missouri, and the St. Lawrence. The first is the largest river in North America, and one of the greatest on the earth, occupying, with its tributaries, the whole of the southern portion of the great central basin of North America. It has its origin in the junction of streams formed on the eastern declivity of the Rocky Mountains, between lat. 42° and 50° N., and enters into the sea in the Gulf of Mexico in lat. 29° N. Its whole course, which is from north to south, is calculated to exceed 1400 miles. The St. Lawrence rises under the name of the St. Louis, in lat. 47° 45′ N., long. 93° W.; entering Lake Superior, it flows a southeast and a northeast course, and enters the Gulf of St. Lawrence at Cape Gaspè, where it has expanded to one hundred miles in width. The Mackenzie issues from the Great Slave Lake, from which it flows nearly due north, and enters the Arctic Sea, lat. 69° 10′ N. In the number and magnitude of its lakes North America is unequaled. They form one of its most noted features, and in conjunction with its rivers present a medium of commercial intercourse wholly unsurpassed. The principal are Lakes Superior, Michigan, Huron, Erie, and Onta-

rio, which together cover an area of 100,000 square miles. Following the chain of lakes which crosses the country in a northwestern direction, there occur Lakes Winnipeg, Woolaston, Deer Lake, Athabasca, Great Slave Lake, and Great Bear Lake. The Great Salt Lake in Utah, and Mono Lake and Lake Chapola in Mexico. There are, besides these, many smaller yet considerable bodies of water, viz., St. Clair, midway between Lakes Huron and Erie; the Lake of the Woods, between Lakes Superior and Winnipeg; Nepissing, Simcoe, Champlain, and many others of lesser magnitude.

Islands.—In the Atlantic Ocean the principal are Newfoundland, Anticosti, Prince Edward Island, and Cape Breton, all lying at the embouchure of the St. Lawrence; Nantucket, Long Island; the Bahama Islands, off the coast of the Carolinas; and the Columbian Archipelago, comprising the Islands of Cuba, Hayti, Jamaica, Porto Rico, Santa Cruz, Antigua, Guadaloupe, Martinique, St. Lucia, Barbadoes, St. Vincent, Tobago, Trinidad, and other small islands. On the northwest coast the principal are the California group; Vancouver, Queen Charlotte, Prince of Wales, Sitka, and Admiralty Islands; and on the extreme northwest the Alentian group. In the Arctic Ocean there are a vast number of islands of which but little is yet known.

Geology, Mineralogy, etc.—A remarkable analogy exists in the structure of the land in North America and Central and Northern Europe. Gneiss, mica, schist, and granite prevail in wide areas in the Alleghanies, on the Atlantic slope and the northern latitude of the American continent, and in the high and middle latitudes the silurian strata extend over 2000 miles. Crystalline and Silurian rocks form the substratum of Mexico, for the most part covered with Plutonic and volcanic formations and secondary limestone. The Rocky Mountains are mostly silurian, except the eastern ridge, which is of stratified crystalline rocks, amygdaloid, and ancient volcanic productions. The coast range has the same character, with immense tracts of volcanic rocks, both ancient and modern, especially obsidian. In North America volcanic action is entirely confined to the coast and high land along the Pacific. The principal minerals are gold, silver, copper, iron, lead, and coal. The first three are found in greatest abundance in Mexico, where there are nearly 3000 mines of gold and silver alone. Since 1848 the great field for gold gathering has been California, where large quantities have been obtained, and both silver and quicksilver have been found to abound. The silver supplied by the Mexican veins is extracted from a great variety of minerals, pure or native silver being of comparatively rare occurrence. The principal deposits of gold in the United States besides California occur in the primary rocks of the southeastern declivity of the Alleghanies. The coal-fields are of prodigious extent, the Appalachian stretching without interruption 720 miles, with a maximum breadth of 280, and occupying an area of 63,000 square miles. The Pittsburg seam, ten feet thick, exposed on the banks of the Monongahela, extends horizontally 225 miles in length and 100 in breadth, and covers an area of 14,000 square miles. Besides the coal-fields named, there are various others of great extent in different parts of North America, including New Brunswick, Nova Scotia, and Vancouver Island. Iron is also extensively worked. Salt is widely diffused throughout the continent.

Climate.—The predominating character of the climate of North America is intense cold, although in some parts an oppressive heat prevails during a portion of the summer. Above the 50th degree of latitude the cold is so severe as to render the country all but uninhabitable, while frosts occasionally occur as low down as the 30th degree of latitude. In winter a keen and piercing northwest wind prevails throughout all North America, adding greatly to the rigor of the northern climate, and carrying its chilling influence into the more southerly regions. The transitions from cold to hot, or from winter to summer, are very sudden, especially in Canada. Among the causes of a lower temperature than obtains in Western Europe may be mentioned the small portion of the continent lying in the torrid zone, the Rocky Mountain range, and also the Sierra Nevada mountains near the Pacific Ocean, prevent the warm winds from the Pacific penetrating the interior; the great expansion of the land north and northeast, and the almost level plain in those directions, allow full scope for the piercing Arctic blasts. The narrowness of the Gulf Stream, and the prevailing winds taking the same general course, carry away from this continent the hot circumambient air, a source of warmth to Western Europe; and the cold polar oceanic current brings down the icebergs of Spitzbergen and Greenland to the shores of Labrador and Newfoundland.

The territorial limits of the United States include that portion of the continent of North America, extending from the Atlantic to the Pacific Ocean, which is bounded by the British possessions on the north, and by the Gulf of Mexico and the Mexican Republic on the South.

The superficial area of the Union, according to a computation made by the Topographical Bureau at the close of 1853, and subsequently reviewed and amended, amounted on the first of January, 1854, to *two millions nine hundred and thirty-six thousand, one hundred and sixty-six square miles*, being somewhat more than one third of the area of the continent of North America.

AREA OF NORTH AMERICA, EXCLUSIVE OF THE WEST INDIES.

Territory.	Square Miles.	Square Miles.
United States, as ascertained by the Topographical Bureau		2,936,166
British America { New Britain*	2,598,837	
British America { Upper and Lower Canada†	346,860	
British America { Nova Scotia, New Brunswick, Cape Breton, &c.	104,701	
		3,050,398
Mexico		1,058,834
Central America		203,551
Russian America‡		394,000
Danish America (Greenland)§		380,000
Total square miles		8,022,949‖

* According to Balbi's estimate of the area of North America. Another estimate gives New Britain but 1,800,000 square miles.

† M'Culloch. The late Canadian census gives 242,482 square miles as the area over which jurisdiction is actually extended.

‡ Guibert gives 962,500 kilometres carrés, or 371,611 square miles.

§ Greenland, from present information, would appear to be a trilateral island, 1500 miles long and 600 miles in its greatest breadth. Its area, therefore, can not be greater than we state above. Guibert gives the area of Danish America 3861 square miles, and M'Culloch only 170, meaning only that portion which has been explored.

‖ The area of the continent of North America is variously estimated by geographers at from five to seven millions of square miles. Guyot ("Earth and Man") estimates it at 5,472,000, and that of Europe at 2,688,000, exclusively of islands.

The treaty of 1854 with Mexico settles the boundaries of the two republics as follows: "Retaining the same dividing-line between the two Californias as already defined and established according to the 5th article of the treaty of Guadalupe Hidalgo, the limits between the two Republics shall be as follows: Begin-

ning in the Gulf of Mexico, three leagues from land, opposite the mouth of the Rio Grande, as provided in the 5th article of the treaty of Guadalupe Hidalgo; thence, as defined in the said article, up the middle of that river to the point where the parallel of 51° 47′ north latitude crosses the same; thence due west one hundred miles; thence south to the parallel of 31° 20′ north latitude; thence along the said parallel of 31° 20′ to the 11th meridian of longitude west of Greenwich; thence in a straight line to a point on the Colorado River, twenty English miles below the junction of the Gila and Colorado Rivers; thence up the middle of the said River Colorado, until it intersects the present line between the United States and Mexico."

For early history, etc., of North America, see *New England Magazine*, vii. 109; *Christian Review*, xiv. 610; *North American Review*, lxxiii. 210 (F. Bowen).

North Carolina lies between 33° 50′ and 36° 30′ N. lat., and between 75° 45′ and 84° W. long. from Greenwich, and between 6° 20′ W., and 1° 33′ E. long. from Washington. Area, 45,500 square miles. Population in 1790, 393,754; in 1800, 478,103; in 1810, 555,500; in 1820, 638,829; in 1830, 738,470; in 1840, 753,419; and in 1850, 868,903.

Physical Features, etc.—Along the entire coast of this State there is a ridge of sand separated from the main land in some places by narrow, and in other places by broad sounds and bays. The passages or inlets through it are shallow and dangerous, Ocracoke Inlet being the only one through which vessels pass. Capes Hatteras and Lookout are projecting points in this belt, and off them, particularly the former, is the most dangerous navigation on the coast of the United States. Cape Fear is on an island off the mouth of Cape Fear River. For 60 or 80 miles from the shore the country is level, the streams sluggish, and there are many swamps and marshes. The soil is sandy and poor, excepting on the margins of the streams, where it is frequently very fertile. The natural growth of this region is mostly the pitch-pine. This tree affords tar, pitch, turpentine, and lumber, which constitute an important part of the exports of the State. In the swamps rice of a fine quality is raised. Back of the flat country, and extending to the lower falls of the rivers, is a belt of land about 40 miles wide, of a moderately uneven surface; a sandy soil, and of which the pitch-pine is the prevailing natural growth.

Throughout the State Indian corn is raised, and in some parts considerable cotton. In the low country, grapes, plums, blackberries, and strawberries grow spontaneously; and on the intervales canes grow luxuriantly, the leaves of which continuing green during winter furnish food for cattle. In the elevated country, oak, walnut, lime, and cherry trees of a large growth abound. Principal minerals coal, iron, and gold. It is the only State in the Union where every article enumerated in the census is produced.

Rivers.—The principal rivers are the Chowan, 400 miles long, navigable for small vessels 30 miles; Roanoke, Pamlico, navigable for 30 miles; Tar, Neuse, Cape Fear, the largest river in the State, 280 miles long, with eleven feet of water to Wilmington; the Yadkin, which forms a part of the Great Pedee in South Carolina.

The principal places in the State are, Raleigh the capital, Newbern, Wilmington, Fayettoville, Edenton, Elizabeth City, Beaufort, and Charlotte. On January 1st, 1850, there were three railroads, with 631 miles of track finished and in operation. Exports, 1852, valued at $576,397. Imports, same year, $300,488. Tonnage of the State, 1853, 56,375 tons. The first permanent settlement in this State was on the eastern bank of the Chowan River, about 1660, by emigrants, who, in consequence of religious persecution, fled from Nansemond, Virginia. The constitution of the United States was adopted in convention November 27th, 1789. Yeas, 193; nays, 75.

Commerce of the State of North Carolina (showing also the District Tonnage in 1821, 1831, 1841, and 1851) from Oct. 1, 1820, to July 1, 1856.

Years ending	Exports.			Imports.	Tonnage Cleared		District Tonnage.	
	Domestic.	Foreign.	Total.	Total.	American.	Foreign.	Registered.	Enrolled and Licensed.
Sept. 30, 1821	$490,944	....	$490,944	$200,673	37,343	109	13,376	19,693
1822	585,951	....	585,951	258,761	30 360	1,208	....	....
1823	482,417	....	482,417	183,958	24,716	968	....	....
1824	588,733	....	588,733	465,836	40,440	4,447	....	....
1825	553,390	....	553,390	311,308	41,139	3,454	....	....
1826	581,740	....	581,740	367,545	48 688	3,568	....	....
1827	447,086	2151	449,237	278,791	36,683	3,164	....	....
1828	522,498	1249	523,747	268,615	44,060	1,352	....	....
1829	564,506	....	564,506	283,347	51,942	1,512	....	....
1830	398,550	783	399,333	221,092	36,592	1,172	....	....
Total	$5,125,815	$4183	$5,129,998	$2,858,826	391,903	21,554	....	....
Sept. 30, 1831	$340,975	$167	$341,140	$196,356	30,450	1,990	16,277	11,860
1832	338,246	3795	342,041	215,184	26,272	3,419	....	....
1833	432,986	49	433,035	198,758	37,604	4,925	....	....
1834	471,406	....	471,406	222,472	36,041	4,488	....	....
1835	319,327	....	319,327	221,981	32,543	3,278	....	....
1836	428,415	1436	429,851	197,116	31,864	5,968	....	....
1837	548,876	2919	551,795	271,623	38,585	4,645	....	....
1838	544,952	271	545,223	290,405	20,544	3,496	....	....
1839	426,934	992	427,926	229,233	43,545	7,895	....	....
1840	387,484	....	387,484	252,532	38,130	3,029	....	....
Total	$4,239,599	$9629	$4,249,228	$2,315,660	355,577	47,126	....	....
Sept. 30, 1841	$383,056	....	$383,056	$220,360	39,828	3,184	16,922	17,623
1842	344,650	....	344,650	187,404	38,118	2,598	....	....
9 mos., 1843*	171,099	....	171,099	110,976	30,411	1,292	....	....
June 30, 1844	298,401	....	298,401	209,142	35,476	4,068	....	....
1845	379,960	....	379,960	230,470	39,757	5,176	....	....
1846	414,398	....	414 398	242,859	38,471	3,791	....	....
1847	284,919	....	284,919	142,884	31,387	2,449	....	....
1848	340,028	....	340,028	195,814	37,383	4,322	....	....
1849	270,076	....	270,076	113,146	26,030	3,880	....	....
1850	416,501	....	416,501	323,692	50,739	11,493	....	....
Total	$3,303,088	....	$3,303,088	$1,976,247	347,603	42,247	....	....
June 30, 1851	$426,748	$4347	$431,095	$206,931	28,420	13,068	12,799	32,983
1852	572,276	4123	576,399	300,488	40,088	13,061	....	....
1853	314,142	....	314,142	271,238	29,292	8,611	....	....
1854	391,897	....	391,897	312,533	25,581	5,551	....	....
1855	433,818	....	433,818	243,083	30,729	4,918	....	....
1856	376,174	....	376,174	274,960	27,674	4,237	....	....

* Nine months to June 30, and fiscal year begins July 1, 1843.

Principal Ports.—Beaufort, at the mouth of Newport River, is famous as possessing the finest harbor on the southern Atlantic sea-board. It will be the eastern terminus of the Atlantic and North Carolina railroad, which, when built, will open to its commerce an immense interior region, hitherto isolated from the coast. The impediment in the growth of this place up to this time has been in the want of internal facilities for commerce. The tonnage of Beaufort, in 1856, was 1991 tons. Wilmington, city, port of entry, situated on the left bank of Cape Fear River, just below the confluence of the northeast and northwest branches, about thirty-five miles from the sea. It is well situated for trade, but the location is accounted unhealthy. The harbor admits vessels of 300 tons, but the entrance has a dangerous shoal. Opposite the town are two islands, dividing the river into three channels. They afford the finest rice-fields in the State. In 1819, two hundred buildings were destroyed by fire, a loss of $1,000,000. The tonnage in 1856 was 21,420 tons.—See *North American Review*, xxiv. 168; xii. 216 (J. SPARKS); *American Journal of Science*, xiii. 396; *Southern Review*, i. 235; DE BOW'S *Review*, ii. 30, 105.

Northwest Passage. The attempt to discover a northwest passage was made by a Portuguese named Cortereal, about A.D. 1500. It was attempted by the English in 1553; and the project was greatly encouraged by Queen Elizabeth in 1585, in which year a company was associated in London, and was called the "Fellowship for the Discovery of the Northwest Passage." From 1745 until 1818, Parliament offered £20,000 for this discovery. In 1818, the reward was modified by proposing that £5000 should be paid when either 110°, 120°, or 130° W. long. should be passed; one of which payments was made to Sir E. Parry. For their labors in the voyages enumerated in the *list below*, Parry, Franklin, Ross, Back, and Richardson, were knighted. The honor of completing the northwest passage is due to Captain M'Clure, who sailed in the *Investigator* in company with Commodore Collinson in the *Enterprise*, in search of Sir John Franklin, January 20, 1850. On September 6 he discovered high land, which he named Baring's Land; on the 9th other land, which he named after Prince Albert; on the 30th the ship was frozen in. Entertaining a strong conviction that the waters in which the *Investigator* then lay communicated with Barrow's Straits, he set out on October 21, with a few men in a sledge, to test his views. On October 26 he reached Point Russel (73° 31′ N. lat. 114° 14′ W. long.), where from an elevation of 600 feet he saw Parry or Melville Sound beneath them. The strait connecting the Pacific and Atlantic Oceans he named after the Prince of Wales. The *Investigator* was the first ship which traversed the Polar Sea from Behring's Straits to Baring Island. Intelligence of this discovery was brought to England by Commodore Inglefield, and the admiralty chart was published October 14, 1853. Captain M'Clure returned to England September, 1854. On June 19, 1855, a select committee of the House of Commons was appointed, on the motion of Mr. W. Mackinnon, to consider the claims of M'Clure and his companions. Sir G. Back, Sir James Ross, Sir R. T. Murchison, and Captains M'Clure, Kellett, and Collinson, were examined. The report was received July 20, in which the committee recommend that £5000 be paid to Captain M'Clure, and £5000 be distributed between the officers and crew.

1553. Sir Hugh Willoughby's expedition to find a northwest passage to China, sailed from the Thames, May 20.
1576. Sir Martin Frobisher's attempt to find a northwest passage to China.
1585. Captain Davis's expedition to find a northwest passage.
1594. Barents's expedition.
1602. Weymouth and Knight's.
1610. Hudson's voyages; the last undertaken (see *Hudson's Bay*.)
1612. Sir Thomas Button's
1616. Baffin's.—See *Baffin's Bay*.
1631. Foxe's expedition.
[A number of enterprises undertaken by various countries followed.]
1742. Middleton's expedition.
1746. Moore's and Smith's.
1769. Hearne's land expedition.
1773. Captain Phipps, afterward lord Mulgrave, his expedition.
1776. Captain Cook in the *Resolution* and *Discovery*, July.
1789. Mackenzie's expedition.
1790. Captain Duncan's voyage.
1795. The *Discovery*, Captain Vancouver, returned from a voyage of survey and discovery on the northwest coast of America, September 24.
1815. Lieutenant Kotzebue's expedition, October.
1818. Captain Buchan's and Lieutenant Franklin's expedition in the *Dorothea* and *Trent*.
1818. Captain Ross and Lieutenant Parry, in the *Isabella* and *Alexander*.
1819. Lieutenants Parry and Liddon, in the *Hecla* and *Griper*, May 4.
1820. They return to Leith, November 8.
1821. Captains Parry and Lyon, in the *Fury* and *Hecla*, May 8.
1824. Captain Parry's third expedition with the *Hecla*, May 8.
1825. Captains Franklin and Lyon, after having attempted a land expedition, again sail from Liverpool, Feb. 16.
1827. Captain Parry, again in the *Hecla*, sails from Deptford, March 25.
1827. And returns, October 6.
1833. Captain Ross arrived at Hull, on his return from his arctic expedition, after an absence of four years, and when all hope of his return had been nearly abandoned, October 18.
1835. Captain Back and his companions arrived at Liverpool from their perilous Arctic Land Expedition, after having visited the Great Fish River, and examined its course to the Polar Seas, September 8.
1836. Captain Back sailed from Chatham in command of His Majesty's ship *Terror*, on an exploring adventure to Wager River. [Captain Back, in the month of December, 1835, was awarded, by the Geographical Society, the king's annual premium for his polar discoveries and enterprise, June 21.]
1839. Dease and Simpson traverse the intervening space between the discoveries of Ross and Parry, and establish that there *is* a northwest passage, October.
1845. Sir John Franklin and Captain Crozier, in the *Erebus* and *Terror*, leave England, May 24.
1849. Captain Ross returned from an unsuccessful expedition in search of Franklin.
1850. Another expedition (one sent out by Lady Franklin) in search of Sir John Franklin, consisting of two vessels, sailed from England, April–May.
1850. Still another, consisting of two vessels, the *Advance* and *Rescue*, liberally purchased for the purpose by Henry Grinnell, a New York merchant, and manned at Government cost from the United States navy, under command of Lieutenant De Haven, sailed from New York, May.
1850. Commanders Collinson and M'Clure, in the *Enterprise* and *Investigator*, sailed eastward in search of Sir John Franklin, January 20.
1850. Northwest Passage discovered by M'Clure, October 26.
1853. The second American Arctic Expedition left New York in search of Sir John Franklin, and for the purposes of science, May 31.
1855. M'Clure returned to England in October, 1854, and Collinson in May.

—See *American Journal of Science*, x. 138 (ISAAC LEA); *North American Review*, lxix. 1. (FORCE); HUNT'S *Merchant's Magazine*, iii. 52; *Edinburgh Review*, xxx. 1, xlviii. 423; *American Quarterly*, iii. 505; *Quarterly Review*, xvi. 145, xxi. 213, xxv. 175, xxx. 231, lvi. 1.

Norway, kingdom of (Swed. *Norrige*, Ger. *Norwegen*), a country of Northern Europe, united to the crown of Sweden, and forming the northwestern part of the Scandinavian peninsula, capital Christiana. It extends from Cape Lindesnaes, lat. 57° 57′ 8″, to the North Cape, lat. 71° 10′ 3″ N., and between long. 4° 50′ and 31° 15′ E. The mountains of Norway contain rich minerals; but, from the difficulty of transport and the want of fuel, mining industry is but little developed. The only mines in operation are those of silver, copper, iron, cobalt, and chrome. The chief product is iron,

the mines of which are situated mostly in the Gulf of Christiana; the silver mine of Konsberg is at present one of the richest in Europe, and, next to the copper mine of Rorsas, the most important in the kingdom.

Manufactures, properly so called, scarcely exist in Norway. Brandy distilleries and saw-mills are the only extensive branches of industry; next to these are forges and metal founderies, the produce of which is exported in a raw state, except what is used in the manufacture of arms at Königsberg, and in the manufactures of iron ware and nails. The manufacture of cloth, linen, and cotton, as well as the preparation of skins and leather, are almost entirely domestic. The other manufactures comprise those of glass, paper, oil, gunpowder, soap, tobacco, and sugar refining. The principal forests are in the interior; the timber is felled in autumn and winter, and is conveyed over the snow to the coast. Holland is now the chief market for Norwegian timber. Fish is exported from all the towns on the west coast, but Bergen is the chief entrepôt. The most important branches of this trade are dried fish and salted herrings. The export of mineral products is less than might be expected, from the number of mines; the principal are iron, copper, and silver. The chief imports are salt, grain, and colonial produce. Commerce in the interior of the country is greatly impeded for want of means of communication; none of the rivers are navigable except near their mouths. Good roads exist only between the towns of the south coast and the principal valleys in Nordland and Finmark; the usual communication is by sea. Among the numerous islands on the west coast, there are violent and irregular currents, which render the coast navigation dangerous. Among these is the celebrated *Maelstrom*, or Moskenes-Strom, the danger from which has been greatly exaggerated, since it can at nearly all times be passed over even by open boats. Regular communications have successively been established between the principal towns of the coast from Christiana to Hammerfest, and steam vessels ply in the Gulf of Christiana, and on the lakes of Miösen and Tyrifiord. Norway has a national discount bank, established 1817, which has the exclusive right of issuing paper money.

COMMERCE OF NORWAY IN 1853.

Countries.	Entered.		Cleared.	
	Vessels.	Commercial lastes.*	Vessels	Commercial lastes
Sweden	569	8,772	872	16 984
Russia	669	11,768	805	17,271
Prussia	291	5,564	345	6 531
Mecklenberg	6	187	10	205
Lubec	4	191	4	54
Denmark	5,578	47,497	3,593	46,247
Altona	128	3,641	57	1,667
Hamburg	83	3,613	19	565
Bremen	107	3,393	92	1,751
Oldenburg	66	1,655	28	616
Hanover	249	5,560	254	5,703
Netherlands	1,010	62,980	1,010	63,064
Belgium	51	2,666	61	2,168
Great Britain	2,077	180,244	1,818	120,900
France	941	58,673	1,183	74,771
Spain	72	4 160	128	5 592
Portugal	149	9,367	4	220
Gibraltar	...	....	1	35
Sardinia	4	307	2	73
Roman States	..	...	1	40
The Two Sicilies	6	883	10	553
Austria	..	....	3	158
Turkey	5	372	4	198
Brit. Am. Colonies	..	....	57	9,691
U. S. of America	3	617	11	1,261
Cuba	3	218	4	249
West Indies	..	...	5	179
Brazil	6	565	3	222
Australia	..	....	2	198
Trinidad	1	176	..	...
Java	2	304	..	...
Baltic Sea	..	...	20	1,671
Ports northwest	26	751	38	1,645
Ports southwest	..	...	57	3,964
Total	10,106	364,094	10,458	399,648
Of which { loaded.	4,247	101,6 5	9,989	368,739
were { in ball'st	5,859	262,459	461	25,863

* Laste = two tons.

Owing to the difficulty of transport, all the seats of industry, and the only towns, are on the coast, and chiefly on the Gulf of Christiana. Ship-building is actively carried on in the ports. In the Middle Ages, the commerce of Norway consisted exclusively in the exportation of fish, and this is still the most important article of trade. Next to this is the export of timber, which was commenced by the Dutch in the sixteenth century; and, lastly, the products of the mines and metal forges. The timber exported annually amounts to 200,000 lastes, value 1,685,000 specie dollars.

Norway possesses nearly the same natural advantages as Sweden. The inhabitants are chiefly employed in the breeding of horses, sheep, goats, and the reindeer; cultivating small farms, fishing, mining, and such other occupations as a country rich in its forests and minerals, and enjoying a favorable position for commerce, usually affords. Historians represent the ancient navigation and trade of Norway as being in a highly flourishing condition, especially when its towns, in the twelfth century, joined the Hanseatic League. As early as 1217, England concluded a treaty (the first she ever made with a foreign power) with Norway, stipulating an entire reciprocity of trade between the two countries. The trade of Norway has always consisted of the interchange of the produce of her forests, of her copper and iron mines, and of her fisheries, for such articles as she required from foreign countries. The principal sea-ports are Bergen, Trondheim, Christiana, Hammerfest, and its outport Wardœhuus. Denmark occupies the first rank in the foreign trade of Norway. So much of its trade passes through the ports of this country, particularly Altona, that Denmark may be justly considered the commercial entrepôt of Norway. Its commercial relations with nearly all the countries of Europe are conducted through these ports; and it was not until during the recent troubles in the duchies of Denmark that Norway manifested any disposition to export direct from the producing country. The maritime industry of the Norwegians constitutes the commercial bond which unites them with Denmark. Sweden, on the other hand, being separated from the more populous and industrious divisions of Norway by mountainous and sterile territories, necessarily confines her commercial relations with the sister kingdom to the southern frontier or the coast; and, as their principal productions are generally similar, these relations are not susceptible of any great development.

The Hanse Towns have long been the principal entrepôts for the commercial movements of the north of Europe. The relations of Hamburg with Norway are, even at this day, considerable; but for the past few years they have been stationary, with rather a decreasing tendency. With England, on the other hand, the trade of Norway is becoming more important every year. This is mainly owing to the liberal commercial system of the former country, under which Norway is enabled to compete with British colonial possessions, in America, in supplying the British markets with the varied productions of her forests. France and Holland chiefly import into the markets of Norway colonial or raw produce; but neither of these countries find, in Norwegian markets, a profitable exchange for their manufactures: Holland, because she has but few; and France, for the reason that her works of art and taste are too costly, and perhaps not very well adapted to meet the wants of a people whose cold and inhospitable climate, as well as their maritime occupations, would seem to demand the coarser qualities of manufactures. From official documents recently published, it appears that in 1848 the population of Norway was 1,200,000 souls; their merchant marine counted 3400 vessels, measuring an aggregate of 240,000 tons, and employing 16,500 persons as officers and crews. This would give to Norway one vessel for every 352 inhabitants, and make every seventy-third subject a sailor. At the

same period, the total merchant marine of France consisted of 14,235 vessels, measuring an aggregate of 670,000 tons.

With the United States the trade of Norway is chiefly indirect. Tobacco and cotton are the principal articles of American produce which enter into the consumption and manufactures of the Norwegians. The restrictive character of the tariff of Norway, however, like that of her sister kingdom, and the fallacious principles on which her fiscal and commercial legislation has been so long maintained, must ever prove an inseperable obstacle to the expansion of her foreign trade, and the consequent development of her vast internal resources. So long as Norway adheres to the now generally obsolete idea that the best way to raise revenue and relieve the land-owner is to levy high duties on all goods imported into the country, so long will her relations with foreign countries be limited to the exchange of such articles of necessity as can not be elsewhere procured. The decline which her iron trade has experienced during the few years past, both in England and the United States, will necessarily compel the government of Sweden and Norway to look for a market in France; and it is understood that the latter government is not averse to such amelioration of her tariff as will open her markets to this great staple of Sweden and Norway, by a material reduction of her present seventy per cent. duty on iron. The only equivalent, however, which could satisfy France for so liberal a concession would be a total change in the Swedish and Norwegian tariffs, by which her own manufactures could enter the ports of the united kingdom, and find a profitable as well as a ready market. Nor could such a change in any manner have an injurious effect upon the manufacturing industry of either of these countries, as the great demand would be for such heavy and coarse manufactures as are most needed in so northern a latitude, and which never have been, and perhaps never will be, successfully manufactured in Sweden or Norway—at least, to any extent approximating the great consumption of the kingdom. Such a result would extend its benefits to other countries besides France; and if, in addition to a remodification of the Swedish and Norwegian tariffs in respect of manufactures, the present exorbitant cent-per-cent. duties on American tobacco were liberally reduced, the trade between the United States and Sweden and Norway would be materially benefited, and exports and imports, direct between the two countries, largely augmented.

The Norwegian tariff differs, in many essential particulars, from that of Sweden. Its range is considerably lower, and, owing to this fact, and to the advantages resulting from different weights, it will be found (for instance) that tobacco blades may be imported into Norway at a rate nearly 33.3 per cent. less than into Sweden. The oppressive system of fictitious valuation, in practice in the Swedish custom-houses, is unknown in the sister kingdom; and, besides, greater consideration is shown to the poorer inhabitants of remote provinces. At Brodö and Tromsöe, in the northern part of Norway, many articles are admitted at half rates of duty; and at Hammerfest and other remote ports the duty is altogether remitted. This consideration is not shown to the inhabitants of far-off provinces in Sweden; indeed, in districts no farther off than Dalecarlia many necessaries of life, which the country can not supply to them, must be purchased, if at all, by the poorer peasantry, with the additional costs of inland transportation and the coast navigation of the Gulf of Bothnia. The tariff now in operation came in force on January 1, 1855, and will expire on the 31st December, 1857. The duties on tobacco have been raised nearly to the level of those of Sweden. The latter, upon tobacco blades, is still one cent per pound higher. The augmentation of the duty on this staple of the United States was, doubtless, designed as an additional argument in any negotiations which might be proposed by the government of Sweden and Norway relative to the iron duties of the United States.

The following brief summary is presented of the new tariff. It will show the duties levied on certain American produce by the old and new Norwegian tariffs:

Tobacco.—(Stem and blade), raised from 5 to 6 skillings per lb. The skilling is nearly equivalent to one cent.

Rice.—Unchanged; namely, 80 skillings per barrel (in husk), or 1½ skillings per lb., without husk or ground.

Cotton.—Raw, unchanged; one-half skilling per pound.

Maize, unground.—Lowered from 72 skillings to 16 skillings per toende (barrel of nearly four bushels).

Maize, ground.—Lowered from 16 skillings to 7½ skillings per lispund (17·6 lbs. avoirdupois).

Wheat.—Unchanged; 72 skillings per barrel (toende).

Flour.—16 skillings per lispund.

The principal ports of Norway are Christiana, Bergen, and Hammerfest, or Alten Hammerfest, the chief port of Finmark. Christiana is a deep sea-port, having at all seasons from six to seven fathoms depth of water close to the quay. It is the capital of Norway, and has some few fabrics of woolen, glass, hardware, soap, leather, cordage, tobacco, etc. The deals of this port have ever been celebrated. Its trade has flourished as far back as 1792, in which year the number of ships arrived was 521, of which 518 cleared with cargoes of deals. Bergen has a safe and deep harbor close to the town, but a pilot is necessary for vessels entering or departing, on account of the numerous rocks. It has a few manufactories of tobacco and earthen-ware, several rope-works and distilleries, ship-yards, forges, and other establishments of ordinary handicraft. Its fisheries, however, are its chief resource, and its foreign trade is principally confined to Hamburg. Hammerfest has an extensive trade, chiefly with England, through the port of Hamburg. Its exports are copper, dried stock-fish, salted fish, fish-oil, rein-deer skins, buckskins, walrus hides and teeth, feathers, fox and other skins, etc. Finmark has always enjoyed a high degree of commercial prosperity. Its revenues exceed its expenditures by upward of two millions of dollars. Its chief wealth depends upon its fisheries, a source of remunerative industry that never fails. For centuries back, observes Macgregor, not a single example can be given of a total failure. The value of these fisheries may be estimated from the fact that in five years, ending with 1844, the produce of cod, seth, and halibut was about 500,000 tons, and 20,000 barrels of oil, independently of what was taken by the Russians.

Coarse cottons and woolens are well adapted for the markets of Norway, more especially of Finmark; but the commercial privileges reserved to Russia, by treaty, have hitherto secured to that power the monopoly of this trade. Her linens, raven's-duck, and various other manufactures, are admitted free into Finmark; while duties, varying from 50 to 100 per cent. on the cost price, are interposed on similar manufactures of other foreign countries.

Were cottons and woolens admitted even at a moderate duty, American and British manufactures of that description would soon supersede the almost general use of Russian fabrics.

The present condition of the trade of Norway may be gathered from the following summary: Number of vessels from all countries entered in 1850, 8542, measuring in the aggregate 1,174,501 tons; of these there were Norwegian, 5318 vessels, of 881,320 tons. From the United States there arrived but nine vessels—seven carrying 2654 tons of merchandise, and two being in ballast—all under the Norwegian flag. The principal countries of departure of nearly all the others were England, Holland, and Prussia.

During the same year, there cleared from Norwegian ports 8479 vessels, measuring 1,182,332 tons. Of these

there were destined for the United States 31 vessels, floating 13,178 tons of merchandise; 30 being under the Norwegian flag, and one being foreign. From these figures, it will be seen that there arrived from Norway in the United States 31 vessels, carrying 13,178 tons of Norwegian products, against nine cleared from the United States for Norway with American products to the amount of 2654 tons; or a difference of 22 vessels and 10,524 tons of merchandise against the United States in the direct trade with Norway. The restrictive tariff regulations of the latter country will readily account for this great inequality. In 1850, Norway imported upward of 1,700,000 lbs. of cotton. In 1852, the total importation of cotton amounted in value to 1,927,560 francs; viz.: from Great Britain, 1,071,200 francs, from the United States, 650,700 francs; from other places, 205,660 francs; making a total of 1,927,560 francs, or $266,236 40. In 1850, there were imported into Norway 3,000,000 lbs. of tobacco, 8,000,000 lbs. of sugar, 6,500,000 lbs. of coffee. During the same year the effective merchant marine of Norway consisted of—

Vessels of	Number of Vessels.	Tons.	Crews.
Under 28 tons.....	816	13,282	1,766
From 28 tons to 71....	1301	53,292	4,288
From 71 tons to 177...	617	66,671	3,475
From 177 tons to 354..	449	128,379	9,975
From 354 tons and over	475	235,677	5,595
Total in 1850.....	3698	503,301	19,037
Total in 1838.....	2427	212,242	12,925
Total in 1835.....	2272	161,918	11,279

For the comparative statement of the commerce of the United States with Sweden and Norway, exhibiting the value of exports to and imports from each country, and the tonnage of American and of Swedish and Norwegian vessels arriving from and departing to each country, during the years designated, see SWEDEN.—*Edinburgh Review*, lxv. 21, xxii. 145, xxiii. 79; *Westminster Review*, xxvii. 164; *North British Review*, ix. 39; *Quarterly Review*, ii. 104; *Fraser*, xxiii. 478; *American Quarterly Register*, xiv. 119 (Rev. Dr. BAIRD); HUNT'S *Merchant's Magazine*, xvi. 138.

Notaries Public. The origin of that class of public officers now called notaries public may be traced as far back as the ancient Roman Republic, although their functions now are different. We find, at the time of the Republic, *scribæ* and *librarii*, who were public secretaries. The private secretaries were called *exceptores*, and also *notarii*, if they were short-hand writers, which service was frequently performed by slaves. The public secretaries were those whom the authorities of state appointed and paid to assist them in their duties of office, and they appear to have corresponded to our present actuaries and secretaries. It does not appear, however, that legal documents were drawn up by public functionaries resembling our notaries public. During the Empire the public secretaries increased both in number and importance. They appear to have been secretaries working in the cabinet of the Emperor, in distinct departments, and they had an overseer, called *magister scriniorum*. Distinct, however, from these persons were those who may be compared to our present notaries public, and who were called *tabelliones*. It seems that what even at the present day may be seen in Italian cities was already customary in the early days of ancient Rome; namely, that in the public market-place, or forum, scribes offered their services to persons who wanted to have letters written or documents drawn up.

This class of persons were called *tabelliones forenses*, or *personæ publicæ*. They occupied themselves with drawing up legal instruments and documents, and other writings (*libelli*) or statements, to be presented to the courts of law, or other authorities of state. It appears, from a "constitution" of Diocletian, that a tariff of fees was established for them. The number of *tabelliones* constantly increased. They then formed themselves into a guild or corporation (*schola*), under a presiding officer called *primicerius*. The state authorities began, more and more, to exercise surveillance over them, which even went so far that the magistrates determined whether a person should be admitted into, or an unworthy person be removed from, this guild of *tabelliones*. These persons prepared all kinds of legal documents and papers, but they still carried on their business in the public market-place. It was soon found necessary, for judicial purposes, to define by law what should be the requisites of such notarial acts and writings to make them legal evidence. It had become a usage, in important matters, to have witnesses also attest the papers drawn up by these public scribes or *tabelliones*, and it was finally required by law that three witnesses should attest a document, in case the principals could write, and five witnesses if the parties could not write. It was, moreover, required that the notary (*tabellio*) should be present in person at the drawing up of the document, and also affix his signature and the date of execution.

During the Empire another class of officers, called *tabularii*, came up in the cities. Their functions resembled somewhat our archivaries and auditors. They also made out certain documents, and these bore sometimes the names both of a *tabellio* and a *tabularius*; but at a later period both names are used as synonymous. Under the Frankish kings Roman institutions were imitated. In the imperial bureaux the emperors needed and employed persons for drawing up documents and countersigning them. These officers were called *referendarii*, *cancellarii*, and *notarii*. The chief of these officers was called *archinotarius* or *summus notarius*, but at a later period *cancellarius*, as a more honorable title. The Frankish kings, as early as the year 803, appointed these officers, and issued laws to prevent the abuse of their power. It became later the sole prerogative of the kings to appoint these notaries, but by degrees the Popes of Rome also assumed the same right; and we find in documents notaries named who were appointed by princes and bishops, and even by cloisters. The legal powers of notaries during the Middle Ages, and their condition as a distinct class of officers, are distinctly seen in the Italian cities. They acted either by authority of the Emperor or that of the Pope, and were engaged for drawing all the various legal documents, and especially last wills and testaments, which were received in all the courts of law as full proof. They were formed into a guild, called *collegium*, and had their own prefects, called *consules*. A candidate for admission into this college had to undergo an examination. Minute and strict rules for the drawing up of instruments, and their attestation, were prescribed. The study of notarial functions was reduced to rules, and notarial schools were established in many cities.

Notaries came to be regarded at an early period as a kind of judges (*judex chartularius*), and a practice grew up among them of inserting in bonds, or other documents of indebtedness, a power for the creditor of taking out execution, by application to the court, in case of non-fulfillment of the contract, which laid the foundation of the so-called "executory process," which prevails still in the Civil Law countries, and which corresponds somewhat to the warrant of attorney to confess judgment in the English law. We shall see that the foreign law on bills of exchange on the Continent of Europe gives this right of "executory process" to the creditor of these mercantile instruments, and thus strengthens the security of the creditor.

France.—In France the notaries have always played an important part in her judicial institutions, and they do so still. The king regarded it as his prerogative to appoint them, but the popes also arrogated this power, and the lords of provinces (*seigneurs*) assumed it likewise. They were regarded there as *juge ordinaire*, and inserted in their documents this executory power or

summary execution (*execution parée*). The basis of the present rights and duties of notaries in France was laid by the law of 1791, which recognized no longer any royal notaries, but only *notaries public*, appointed by the general government. The law of the eleventh year of the Republic recognized them as public officers, appointed for the purpose of drawing up all papers and contracts which, either according to express laws or the will of parties, are to have the effect of public documents, and of fixing the dates thereof, of holding in safe-keeping these acts, and of making out copies of them for the use of the parties concerned. All documents made out in the presence of two notaries, or of one notary and two witnesses, and attested by them, receive full credence in all the courts of law, and are executory throughout the land. The original (*minute*) of the act remains in the hands of the notary, and copies are allowed to be given only to the interested parties, unless specially empowered by the courts. The law points out many cases in which the presence of a notary and his attestation of instruments are essential; *e. g.*, with testaments, donations, marriage contracts, protests, etc. In most cases it is left to the choice of parties to employ a notary in the making out of instruments and documents. But the courts often appoint them, to undertake the part of mediator in some judicial proceedings; for instance, in cases of divorce, or in making out inventories, or in dividing and distributing property and estates, or in taking and making up accounts, like the Masters in Chancery in English law. The notaries are appointed for life, and can be removed only by a judicial decision. By their official position they become the advisers in families and the *confidants* of them. They become the mediators in disputes between the parties, and particularly in regulating and settling estates, and in the distribution of property.

The law of the seventh year of the Republic requires that all acts and documents made out by notaries be registered within ten days, the fees for which are very high. Hence it often happens that the notary must advance the money for the registration, and this obliges him to have sums of money always at his disposal. Thus notaries have gradually come to deal in money affairs in general, by loaning and investing money, and procuring money for borrowers. Hence it is that persons of property intrust their money and property to the hands of notaries, as being the fittest persons to invest it safely and advantageously. The great influence which they thereby must acquire in families and in all classes of society is manifest; and this great power could not but lead to great abuses. An ordinance of 1843 prohibited notaries, under heavy penalties, from entering into stock speculations, from acting as money-brokers, from investing money intrusted to them in their own names, etc. The requisites for becoming a notary in France are, that the candidate be a French citizen, twenty-five years of age, and that he has served as clerk with a notary for six years. But no man without property can expect to obtain a place as notary, because he is obliged to buy, often for an enormous price (which in Paris often amounts to from 200,000 to 300,000 francs, in smaller towns to 100,000 francs, and in small communes to 10,000 francs), from a notary who is about to retire, or from the heirs of a deceased notary, a study-room or office (*étude*), with the acts and documents belonging to it; for without such an office the mere appointment of notary is of little value. There are also established by law in France notarial chambers, which consist of a number of deputies, chosen by the notaries, who regulate the discipline among them, decide on the admission of candidates, adjust disputes which may arise among themselves, and hear and decide on the complaints of third persons against notaries, and the punishments of delinquent notaries.

Italy.—In Italy the French system of notaries has been followed in its main features. In Germany, however, the notaries occupy but a subordinate position in most states, and it has been now almost generally established by law that only persons who have studied law for several years can be appointed as notaries.

England.—In England, notaries were known as public officers before the Norman Conquest, and at a very early period they were employed to attest and authenticate instruments of moment and solemnity. But whatever their duties and functions may have been in former times, at present they are described to be, by Richard Brooke, in his treatise on the office of a notary public of England, as follows: "In England a notary is a public officer of the civil and canon law, who derives his faculty or authority to practice from the Court of Faculties of the Archbishop of Canterbury, in London, the chief officer of which is the Master of the Faculties, to whom applications are made for the admission, or removal under any special circumstances, of notaries. In the Institutes of the Laws of England the Court of Faculties is stated to be 'a court, although it holdeth no plea of controversie (like the Court of Audience next before). It belongeth to the archbishop, and his officer is called *Magister ad Facultates*.'" The functions and powers of a notary in England are, to draw and prepare deeds relating to real and personal property, to note and protest bills of exchange, to prepare acts of honor, to authenticate and certify examined copies of documents, to prepare and attest instruments going abroad, to receive the affidavits or declarations of mariners and masters of ships, and to draw up their protests, and to solemnize all other notarial acts. "The expression *notarial act*," says Mr. Brooke, "is one which has a technical meaning, and it seems generally considered to signify the act of authenticating or certifying some document or circumstance by a written instrument, under the signature and official seal of a notary, or of authenticating or certifying as a notary some fact or circumstance by a written instrument, under his signature only." The English notaries have always considered themselves entitled to administer oaths, affidavits, and affirmations, as within the powers and functions of a notary; and the act of 5th and 6th William IV. has placed it beyond dispute. The requisitions for admission to the Faculty of Notaries in England are, an apprenticeship or clerkship of five years with a notary, a certificate from two notaries certifying to the candidate's skill and probity, and that he is a proper person to become a notary. Upon due proof of these facts, the Master of Faculties will admit him upon his taking the prescribed oaths, which are the oath of allegiance, the oath of supremacy, the oath of due service under the articles of clerkship and for the faithful exercise of the office of notary. A notary is liable to be struck off the Roll of Faculties for any malpractice or misconduct in his office, on a complaint made to the Master of the Faculties, and supported by affidavit or other proof.

United States.—In the United States the duties and functions of notaries resemble those of the same officers in England. They are appointed by the respective governors of the States for a limited number of years, or during good behavior, and derive their powers by the statute laws of the States; and in cases where these laws do not specify their powers—as, for instance, in Massachusetts—it must be presumed that all the powers which, by general usage, the custom of merchants, and law of nations are generally exercised by these officers, are also vested in them. We may state their general and customary functions to be, to demand acceptance and payment of foreign and inland bills of exchange and promissory notes, and to protest the same for non-acceptance and non-payment; to note and draw up ship protests, and all other protests which are customary according to the usage of merchants; and to exercise such other powers and duties as by the law of nations, and according to commercial usage, or

by the laws of any other state, government, or country, may be performed by notaries public. But although notaries public are generally considered as accredited officers in other countries, and affidavits sworn before and instruments authenticated by them are received in evidence in foreign courts, it is required by foreign courts that the consuls of the respective foreign states in which the document is to be used certify to the fact that the person whose signature and seal are affixed is a notary public duly appointed. This is, however, not necessary in a protest for the non-acceptance or non-payment of a bill of exchange. The laws of the different States of the Union, in some instances, give some peculiar powers to their notaries, and hence the laws of each State must be consulted in regard to them. The principal functions of an American notary are, to protest bills of exchange and promissory notes on their being dishonored, and, as a part of this function, to present and demand payment of these mercantile instruments. Although the notaries with us generally give notice of the dishonor of bills and notes to antecedent parties, it is not their duty to do so, unless made so by statute, or they undertake so to do as a part of their duty; and then they are liable for any negligence in the discharge of this duty.—See *Manual for Notaries*, 8vo. pp. 220, New York, 1857.

Notes, Promissory. *See* BANKING and BANKS.

Nova Scotia (Fr. *Acadia*), a British province, forming a peninsula, connected with the main land by an isthmus only 8 miles broad, having the Bay of Fundy on the one side, and Northumberland Strait on the other. It lies, including Cape Breton Island, between lat. 43° 25′ and 46° N., and long. 59° 45′ and 66° 30′ W., and is bounded north by Northumberland Strait, which separates it from Prince Edward Island, northeast by the Gut of Canseau, flowing between it and the island of Cape Breton (which forms a part of the government of Nova Scotia), south and southeast by the Atlantic Ocean, west by the Bay of Fundy, and northwest by New Brunswick. Area, 18,746 square miles.

Its southeast coast is remarkable for the number and capacity of its harbors, there being no fewer than twelve ports capable of receiving ships of the line, and fourteen of sufficient depth for merchantmen, between Halifax and Cape Canseau, a distance of not more than 110 miles. The surface of Nova Scotia seldom rises to a height exceeding 600 feet above the level of the sea. A ridge of high land extends through the peninsula in a direction east to west, and, with less prominent hills and undulations, gives a pleasing variety to the scenery. The principal rivers of the province are the Annapolis and Shubenecadie; the latter rises in Grand Lake, Halifax County, and, after a rapid and circuitous course of over 80 miles, enters Cobequid Bay; by means of a canal this river forms a navigable communication from Halifax harbor to the Bay of Fundy. It is navigable for some distance. The rise and fall of the tide at the mouth is about 50 feet. The Annapolis, after a course of 75 miles, in which it receives the waters of Moose and Bear rivers, enters Annapolis Bay. It is navigable for large vessels 20 miles above Annapolis. At Pictou, the East, West, and Middle rivers, all three navigable for large vessels, enter the harbor. The Avon receives the waters of the St. Croix, Kennetcook, and several others, and empties itself into the Bay of Mines; it is navigable to Windsor. The La Have, Mersey, and Medway; the Shelburne (which forms the fine harbor of that name); the Clyde, one of the most beautiful streams of Nova Scotia; the Tusket and its numerous tributaries; the St. Mary, which, at its embouchure, forms the fine harbor of St. Mary; the Maccau, Nappau, and Gaspereau; the Musquedoboit, Sale, and Jordan; these form but a few of numerous streams of Nova Scotia. The tide rises with astonishing rapidity in the Bay of Mines to the height of 75 feet, while on the south shore and in the Gulf of St. Lawrence it does not rise more than 6 feet. There are but few large lakes; the largest is Lake Rosignol, about 30 miles in length; Lake George is another sheet of water of considerable size, and the entire peninsula is dotted over with innumerable small lakes. The mines and minerals of Nova Scotia, though but imperfectly explored, are known to be valuable. Granite, trap, and clay-slate rocks predominate. The most abundant variety is the gray granite, which prevails along the shore, and is well adapted for mill-stones. Clay slate, of fine quality, is of extensive formation in the eastern section of the province, and graywacke slate along both shores of Chedabucto Bay. Several extensive and beautiful grottoes are to be found on different parts of the coast; and grindstones of superior quality are obtained from a stratum of sandstone, found between the coal and limestone. Coal, and iron in combination with it, abounds in many places. Copper ore also exists, but the attempts to work it have been hitherto unsuccessful; gypsum is plentiful, and furnishes an active and profitable trade. The soils of Nova Scotia are various; along the south shore the granite forms the basis, extending in many places 20 miles into the interior. This region is the least fertile, but there are elsewhere extensive alluvial tracts producing the most abundant crops. Many fine fertile districts, also, are met with on the north coast, along the banks of rivers and the heads of bays. The climate of Nova Scotia is affected by its almost insular position, and is characterized by a remarkable salubrity. The springs are tedious, but the summer heats being for a brief season excessive, vegetation is singularly rapid, and the autumn is delightful. The thermometer ranges from 18° to 70°. It is estimated that about 7,000,000 acres are still covered with primeval forests. There were in this province in 1851, 40,012 acres of diked land, and 799,910 acres of other improved land.

Live Stock.—Horses, 28,789; neat cattle, 156,857; milch cows, 86,856; sheep, 282,180; swine, 51,583.

Agricultural Products, etc.—Wheat, 297,157 bushels produced; rye, 61,438; Indian corn, 37,475; oats, 1,384,437; peas and beans, 21,638; barley, 196,097; buckwheat, 170,310; potatoes, 1,986,789; pounds of butter made, 3,613,890; of cheese, 652,069; of maple sugar, 110,441; hay, 287,837 tons made; grass seeds, 3686 bushels; and were made 89,976 gallons of malt and distilled liquors. Nova Scotia, however, does not yet supply her population with bread, even in good seasons; large importations of fine flour being yearly made from the United States. The apple orchards of the western counties are very productive. Apples and cider are annually exported, and the domestic supply is cheap and abundant. Cattle and sheep are raised in considerable numbers, and are exported both to New Brunswick and Newfoundland; but the breeds are inferior, and little attention is paid to their improvement. The cod and haddock fisheries are actively prosecuted all along the south coast. Mackerel and herrings are also taken in great quantities; but the salmon fishing has greatly fallen off, from the erection of grist and saw mills on the streams. The fisheries employed, in 1851, 812 vessels, with an aggregate of 43,333 tons, manned by 3681 men, and 5161 boats, manned by 6713 men; the catch amounted to 1669 barrels of salmon, 3536 of shad, 100,017 of mackerel, 53,200 of herrings, and 542 barrels of alewives; total value of fisheries, £217,220; and there were manufactured 189,250 barrels of fish-oil, valued at £17,754. Several attempts have been made to prosecute the whale and seal fisheries, but hitherto with no great success. The manufactures of Nova Scotia are yet but very limited. Coarse cloths, called "homespuns," are made, and are generally worn by the farmers, fishermen, etc. There were in this province, in 1851, 81 woolen factories, employing 119 persons, and 11,096 hand-looms, producing 119,698 yards of fulled cloth, 790,101 yards not fulled, and 219,352 yards flannel; total value, £36,178; 9 iron founderies, employing 138 persons, making castings, etc.,

to the amount of £8121; 398 grist-mills, 1153 saw-mills, 237 tanneries, and 10 factories moved by steam power. Cash value of agricultural implements manufactured, £16,640.

The houses of Nova Scotia are mostly constructed of timber, excepting in Halifax and the larger towns, where some good stone and brick houses are to be seen; yet stone for building abounds in the province —granite of the finest quality on the south coast, freestone all along the north shore, and excellent slate in the central region.

The foreign trade of Nova Scotia was very limited previous to 1824; since that period it has extended to the Baltic, Mediterranean, China, Mauritius, East Indies, the Brazils, and the Havana. The total amount of imports at Halifax and the outports, in 1852, was $5,309,894, of which $1,445,043 were from the United States. The exports during the same period amounted to $3,925,227, of which $941,607 were to the United States. Of these the principal articles were—mackerel, valued at $280,145; salmon, $30,080; other fish, dry and pickled, $218,693; skins and furs, $8165; molasses, $3625; potatoes, $4152; sugar, $3000; cordwood, $33,990; coals, Pictou, $151,215; coals, Sidney, $35,983; gypsum, $32,823; freestone and grindstones, $4500; oil, fish, $48,915. The number of vessels that entered and cleared during the year were, 72 to Great Britain; 1757 to British colonies; 11,429 to the United States; other countries, 158. Total tonnage, 383,400 tons.

The population of Nova Scotia is now chiefly composed of the descendants of the English, Irish, and the Scotch. The western and midland counties are principally occupied by the descendants of the loyalists, mostly of English extraction. The county of Lunenburgh is inhabited by a race sprung from a body of German and Swiss Protestants who emigrated from Rotterdam in 1753. There are also several settlements of French Acadians. The Indians are still a distinct people, but there are only a few hundreds of them left in the province.

The following statement exhibits the description and value of imports and exports to and from the United States and Nova Scotia, during the years 1852 and 1853, respectively. For the convenience of calculation the £ is estimated at $5:

Imports from Nova Scotia, 1852.—Coal, fish, gypsum, lumber and plank, staves, spars, etc., wood and bark, potatoes, turnips, miscellaneous. Total value, $1,289,246.

Exports to Nova Scotia.—Beef, pork, hooks and stationery, bread and biscuit, burning fluid, corn, corn meal, cotton manufactures, drugs and medicines, flour (of rye and wheat), hardware, rice, tobacco, wheat, miscellaneous. Total value, $1,739,216. Showing a balance in favor of the United States of $449,970.

Imports from Nova Scotia, 1853.—Principal articles the same as in 1852. Total value, $1,389,731.

Exports to Nova Scotia.—Principal articles the same as for 1852. Total value, $2,079,546.

The preceding tables exhibit the course of trade between the United States and Nova Scotia during the periods indicated. The following are introduced to show the proportionate value of supplies furnished to that province by the United States, compared with the value of imports from the mother country, from 1849 to 1853, both years inclusive

Years.	Great Britain.		United States.	
	Imports from.	Exports to.	Imports from.	Exports to.
1849	$1,489,615	$260,785	$1,761,185	$894,425
1850	1,892,020	262,945	1,612,575	988,065
1851	2,133,625	142,245	1,590,025	736 425
1852	2,137,661	813,380	1,739,230	1,289,250
1853	2,358,240	511,630	2,079,547	1,389,783
Total.	$10,010,571	$1,491,015	$8,587,092	$5,297,948

Total trade of Great Britain with Nova Scotia... $11,501 586
" " United States " " " ... 13,885,040

A glance at the preceding tables will suggest the inferences which they are designed to convey.

In reference to the coal trade of Nova Scotia, Consul General Andrews, in his report on the "Trade and Commerce of the British North American Colonies," says: "The principal exportation of coals from Nova Scotia and Cape Breton is to ports in Massachusetts and Rhode Island, with a small quantity to New York. Many American vessels in this trade, especially since the change in the navigation laws, obtain freights for Nova Scotia, Newfoundland, the French island of St. Peter, Prince Edward's Island, and the New Brunswick ports on the Gulf of St. Lawrence, and load with coal as their return cargo. One hundred chaldrons of coal, Pictou measure, are equal to 120 chaldrons, Boston measure. The usual freight from Pictou to Boston is $2 75 per chaldron, Boston measure. To this must be added insurance, 2 per cent., and commission, 2½ per cent. Anthracite coal does not exist in any of the colonies; and they bid fair to become consumers of Pennsylvania anthracite, the importation of which has already commenced to some extent in New Brunswick for steamboats and founderies. Under liberal arrangements on both sides, the consumption of anthracite coal would greatly increase in the colonies, and even in Nova Scotia, it being for many purposes better fitted and more economical than the bituminous coal of that colony."

Cord or firewood is largely exported from the ports along the coast to the United States, at a cost last year of $2 per cord. This year none has been shipped for less than $2 50, and latterly $3 per cord; retail price at Halifax, 1853, $3 50 to $3 60; 1854, $4 to $4 50. Wood knees for ship-building have been shipped in some quantities at $2 each for sizes averaging eight inches, and a reduction of 20 cents for each inch under, and a like addition for each inch over, the average. Sawed lumber, in small quantities, has been shipped, but none prior to 30th June, 1854. Many cargoes of potatoes were shipped from the western ports, costing from 40 to 60 cents per bushel.

Insurance during the year to ports from Virginia to Maine average one per cent.; a half per cent. additional is charged in the winter months to Pennsylvania and farther south. Freights to ports from Maine to Virginia range from 25 to 50 cents per barrel. A commission of 2½ per cent. is usually charged.

The usual mode of selling is by private contract on terms generally of three months' credit; sometimes a longer credit is allowed; cash payments only when specially provided for. Public auction is a favorite mode at this port. Brokers are sometimes used, but it is an exception to the usual mode.

The par of exchange is 4½ per cent.; the Mexican and Spanish dollar being current by an act of the provincial Legislature (chapter 83 Revised Statutes), at 5*s.* 2½*d.*, or $1 4½ each. The rate of exchange with the United States during the year ranges from 2 to 3½ per cent. There are no internal taxes.

Remuneration for personal services in commerce and trade ranges from £40 to £150 per annum. Mechanics, say house carpenters, joiners, etc., from July 1, 1853, to June 1, 1854, ninety cents to a dollar per day; after June 1, 1854, they received $1 50 a day. Shipwrights, to December 1, 1853, $1 50; from December 1, 1853, to 1st July, 1854, $1 75 to $2 per day. Day laborers, up to June 1, 1854, were paid 60, and sometimes 70 cents a day. Since the 1st June, 1854, they have received $1 a day.—See *North American Review*, xix. 127 (J. Sparks), xxx. 121 (C. W. Upham); *Westminster Review*, xix. 300; *American Journal of Science*, xiv. 305, xv. 132, 301, xxx. 330.

Nova Zembla (properly **Novaia Zemlia**, "new land"), an insular region in the Arctic Ocean, considered to be comprised in Europe, and dependent on the Russian government of Archangel, between lat. 70° 30′ and 76° 30′ N., and long. 52° and 66° E. Length es-

timated at 470 miles, and average breadth at 56 miles. It consists of two islands, separated by the channel Matotshkin-shar. Surface on the western side rises generally to 2000 feet, and in some places to from 3200 to 3500 feet above the sea; but the eastern shores are comparatively low and barren. Black clay-slate and limestone are the principal constituent rocks, as in the Ural chain, of which Nova Zembla may be considered an insular continuation. Its coasts are frequented by walrus hunters in summer, but nowhere permanently inhabited. Subterranean stone labyrinths of great antiquity have been discovered here.

Nut, or **Hazel-nut** (Germ. *Haselnusse;* Fr. *Noisettes, Avelines;* It. *Naccinole, Avelane;* Sp. *Avellanas;* Port. *Avellidas;* Lat. *Avellanæ*), the fruit of different species of *Coryli*, or hazels. The kernels have a mild, farinaceous, oily taste, agreeable to most palates. A kind of chocolate has been prepared from them; and they have sometimes been made into bread. The expressed oil of hazel-nuts is little inferior to that of almonds. Besides those raised at home, we import nuts from different parts of France, Portugal, and Spain, but principally from the latter. The Spanish nuts in the highest estimation, though sold under the name of Barcelona nuts, are not really shipped at that city, but at Tarragona, a little more to the south. Mr. Inglis says that the annual average export of nuts from Tarragona is from 25,000 to 30,000 bags, of four to the ton.

Nuts (Ground) (*Arachis hypogæa*), known in French commerce as "*arachides*," in America as peanuts, and in Africa as *Mandubim*, the fruit of a papilionaceous plant, rising to the height of about 15 inches, being very like the field pea, with yellow flowers. The branches, after flowering, bend down till they touch the ground, into which they work themselves, and upon them grow the pods that contain the nuts. When the nuts are ripe the plant dies. It is then pulled up, and the nuts which adhere to the twigs are collected. The pods, which are of an elongated figure, about three quarters of an inch in length, and half an inch in circumference, and brittle, usually contain two nuts, but sometimes only one, and very rarely three. They are elliptical at one end and flattened at the other. Ground-nuts are grown in light, sandy soils in most tropical countries. They have been used as food from time immemorial in Africa, India, Brazil, and other parts both of South and North America. The best are raised on the banks of the River Gambia, where they are extensively grown in large fields, the ground being prepared for their reception by the natives after the rude fashion of the country. The plant is very prolific; it is also said to be highly exhaustive of the soil, though this is perhaps questionable. Ground-nuts yield large quantities of oil; and within the last 20 years they have begun to be grown in Africa as an article of commerce, and are now largely exported for crushing. A mill for expressing oil from them was constructed in London in 1835. But the French Government having a few years after imposed high duties on most descriptions of oil seeds, the oil-crushers of Marseilles and other towns endeavored to find out seeds not included in the tariff, or less heavily taxed than the others. They were thus led to import *arachides* or ground-nuts, which they found to answer extremely well. France has, in consequence, become the great market for this peculiar product. The exports from the Gambia, which in 1835 did not exceed 47 tons, had increased in 1851 to not less than about 12,000 tons. Of this quantity about 800 tons went to the United States (where they are eaten at dessert, roasted, as are chestnuts elsewhere), 700 tons to England, and the rest to France, principally to Marseilles. The total imports of *arachides* into France in 1851 amounted, according to the official returns, to 16,472,562 kilogrammes, or 16,180 tons.

Nuts are also exported from the Rio Grande, the Rio Nunez, and from Sierra Leone, and the adjoining rivers. And though there are no accounts of the exact quantities sent from each, it is believed that their aggregate amount is fully equal to the exports from the Gambia. Within the last three or four years considerable quantities have been shipped from the Senegal River. The oil expressed from the nuts differs in quality and price according to the care with which it is refined. That made in London, which is equal to fine olive oil, sold, in 1853, at from £60 to £62 a ton. In France the oil is principally used in the manufacture of soap; and being inferior to the former, is only worth from £45 to £48 a ton. Besides being used for the like purposes as other oil in food, in the woolen manufacture, and in lamps, the oil of ground-nuts is said to be especially well fitted for lubricating heavy machinery, including the locomotive engines on railways. The Belgians use it for this latter purpose in preference to all other oils. Ground-nuts are worth at present (September, 1853) from 380 francs to 390 francs per 1000 kilogrammes (a ton) in Marseilles; £13 15*s.* a ton in London; and from £9 to £10 a ton delivered to a French ship in the Gambia. Sierra Leone nuts bring from £1 to £2 less than those from the Gambia.

Nutmeg (Ger. *Muskatennüsse;* Du. *Muskaät;* Fr. *Muscades, Nvix muscades;* It. *Noce muscada;* Sp. *Moscada;* Arab. *Jowzalteib;* Sans. *Jätiphala;* Malay, *Buahpala*), the fruit of the genuine nutmeg-tree (*Myristica Moschata*), a native of the Moluccas, but which has been transplanted to Sumatra, Penang, etc. An inferior and long-shaped nutmeg is common in Borneo; but the fruit nowhere attains to the same perfection as in the Moluccas. Of the several varieties of the tree, that denominated the Queen Nutmeg, which bears a small, round fruit, is the best. The kernel, or proper nutmeg, is of a roundish oval form, marked on the outside with many vermicular furrows, within of a fleshy, farinaceous substance, variegated whitish and bay. Nutmegs are frequently punctured and boiled, in order to obtain the essential oil, the orifice being afterward closed; but the fraud is easily detected by the lightness of the nutmeg.—Thomson's *Dispensatory;* Ainslie's *Materia Indica.* Nutmegs should be chosen large, round, heavy, and firm, of a lightish gray color on the outside, and the inside beautifully marbled, of a strong fragrant smell, warm aromatic taste, and a flat, oily body. They are very subject to be worm-eaten. The best manner of packing them is in dry chunam. The oblong kind, and the smaller ones, should be rejected. 15 cwt. are allowed to a ton.—Milburn's *Orient. Com.* The dried produce of a nutmeg-tree consists of nutmeg, mace (which *see*), and shell. Supposing the whole produce to be divided into 100 parts, there are 13½ of mace, 33½ of shell, and 53½ of nutmeg. In the ancient commerce, and down to the establishment of the Dutch monopoly, nutmegs were always sold and exported in the shell. The natives, whenever the commerce is left to their management, continue the practice, which is strongly recommended by Mr. Crawfurd.—*Eastern Archipelago*, vol. iii. p. 396.

The jealous policy of the Dutch has reduced the trade in nutmegs to a mere trifle, compared to what it would otherwise have been. They have, in so far at least as it was possible, exerted themselves to exterminate the nutmeg plants every where except in Banda. The aboriginal inhabitants of this island have been expatriated, and the land parceled among settlers from Holland, under the name of *perk-keepers*. These persons have about 2000 slaves, who cultivate and prepare the nutmegs. The prices paid by the cultivator are all fixed by Government; and it deserves to be mentioned, as affording one of the most striking illustrations of the ruinous effects of monopoly, that the fixed price which the Government is now obliged to pay for nutmegs is FIVE *times greater than the price at which they bought them when the trade was free!* We can not

conceive how so enlightened and liberal a Government as that of Holland should continue to tolerate such scandalous abuses, more especially since it has established a free system in Amboyna, Java, and its other possessions. M. Temminck estimates the produce of the Banda Islands at about 600,000 pounds of nutmegs, and 160,000 pounds of mace.—*Possessions Neerlandaises dans l'Inde Archipelagique*, iii. 283. During the period that the English had possession of the Spice Islands, nutmeg plants were carried to Penang, Boncoolen, and some of the West India islands. In the latter they have altogether failed, at least as far as respects any useful purpose; but very good nutmegs, and in considerable quantities, are now raised at Penang and Bencoolen. Mr. Crawfurd, however, alleges that the cost of bringing them to market is there so high, that the restoration of a free culture in the native country of the nutmeg would instantly destroy this unstable and factitious branch of industry.—*Eastern Archipelago*, vol. iii. p. 409. *See American Journal of Science*, xii. 322.

STATEMENT SHOWING THE IMPORTS OF NUTMEGS INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1856.

Whence imported.	Pounds.	Value.
Hamburg	1,275	$851
Holland	259,209	158,589
Dutch West Indies	2,970	1,908
Dutch East Indies	37,513	18,520
Belgium	11,478	5 552
England	67,923	41,765
British West Indies	455	157
British East Indies	193,881	88,866
France on the Atlantic	18,593	9,941
Hayti	115	61
China	400	233
Total	594,813	$326,133

Nutria, or **Neutria**, the commercial names for the skins of *Myopotamus Bonariensis* (Commerson), the *Coypou* of Molina, and the *Quoiya* of D'Azara. In France, the skins were, and perhaps still are, sold under the name of *racoonda*; but in England they are imported as *nutria* skins—deriving their appellation most probably from some supposed similarity of the animal which produces them, in appearance and habits, to the otter, the Spanish name for which is nutria. Indeed, Molina speaks of the *coypou* as a species of water rat, of the size and color of the otter. Nutria fur is largely used in the hat manufacture, and has become within the last 15 or 20 years an article of very considerable commercial importance. The imports fluctuate considerably. In 1841 they amounted to 1,125,212 skins; but in some years they are much less; and in 1840 amounted to only 242,733. Those entered for home consumption pay a duty of 1s. per 100 skins. They are principally brought from the Rio de la Plata. —*See* FUR TRADE.

The *coypou* or *quoiya* is a native of South America, very common in the provinces of Chili, Buenos Ayres, and Tucuman, but more rare in Paraguay. In size it is less than the beaver which it resembles in many points. The head is large and depressed, the ears small and rounded, the neck stout and short, the muzzle sharper than that of the beaver, and the whiskers very long and stiff. There are, as in the beaver, two incisor teeth, and eighteen molar, above and below—twenty teeth in all. The limbs are short. The fore feet have each five fingers not webbed, the thumb being very small: the hind feet have the same number of toes; the great toe and three next toes being joined by a web which extends to their ends, and the little toe being free, but edged with a membrane on its inner side. The nails are compressed, long, crooked, and sharp. The tail, unlike that of the beaver, is long, round, and hairy; but the hairs are not numerous, and permit the scaly texture of the skin in this part to be seen. The back is of a brownish red, which becomes redder on the flanks; the belly is of a dirty red. The edges of the lips and extremity of the muzzle are white. Like the beaver, the coypou is furnished with two kinds of fur; viz., the long, ruddy hair which gives the tone of color, and the brownish ash-colored fur at its base, which, like the down of the beaver, is of much importance in hat-making, and the cause of the animal's commercial value. The coypou is easily domesticated, and its manners in captivity are very mild.

Nux Vomica (Fr. *Noix Vomique*; Hind. *Kaachla*), the fruit of a species of *Strychnos*, growing in various places in the East Indies. The fruit is about the size of an orange, covered with a smooth, crustaceous, yellow bark, and filled with a fleshy pulp, in which are imbedded several orbicular, flatted seeds, about three quarters of an inch in diameter. Nux vomica is inodorous, and has a very bitter, acrid taste, which remains long on the palate. It is known as a very virulent poison. A suspicion has, however, been entertained that it has been used in porter breweries; but its introduction into them is prohibited under heavy penalties.—THOMSON'S *Dispensatory*, *etc.*

O.

Oak (Ger. *Eiche*; Du. *Eik*; Dan. *Eeg*; Swed. *Ek*; Fr. *Chêne*; It. *Quercia*; Sp. *Roble, Carballo*; Port. *Roble, Carbalho*; Russ. *Dub*; Pol. *Dab*; Lat. *Quercus*; Arab. *Baalut*). There are several varieties of this valuable tree; but the common English oak (*Quercus robur*) claims precedence of every other. The knotty oak of England, the "unwedgeable and gnarled oak," as Shakspeare called it, when cut down at a proper age (from 50 to 70 years), is the best timber known. Some timber is harder, some more difficult to rend, and some less capable of being broken across, but none contains all the three qualities in so great and equal proportions; and thus, for at once supporting a weight, resisting a strain, and not splintering by a cannon shot, the timber of the oak is superior to every other.

A fine oak is one of the most picturesque of trees; it conveys to the mind associations of great strength, and of all but endless duration. It stands up against the blast, and does not take, like other trees, a twisted form from the action of the winds. Except the Cedar of Lebanon, no tree is so remarkable for the stoutness of its limbs; they do not exactly spring from the trunk, but divide from it; and thus it is sometimes difficult to know which is stem and which is branch. The twisted branches of the oak, too, add greatly to its beauty; and the horizontal direction of its boughs, spreading over a large surface, completes the idea of its sovereignty over all the trees of the forest. Even a decayed oak, such as that described by Spenser:

> "——————— dry and dead,
> Still clad with reliques of its trophies old,
> Lifting to heaven its aged, hoary head,
> Whose foot on earth has got but feeble hold,"

is strikingly beautiful. To such an oak Lucan compared Pompey in his decline:

> "Qualis frugifero quercus sublimis in agro
> Exuvias veteres populi, sacrataque gestans
> Dona ducum; nec jam validis radicibus hærens,
> Pendere fixa suo est; nudosque per æra ramos
> Effundens, trunco, non frondibus, efficit umbram.
> At quamvis primo metuet casura sub Euro,
> Tot circum silvæ firmo se robore tollant,
> Sola tamen colitur."—(Lib. i. lin. 136.)

The oak is raised from acorns, sown either where the oak is to stand, or in a nursery, whence the young trees are transplanted. The color of oak wood is a fine brown, and is familiar to every one; it is of different shades; that inclined to red is the most inferior. The larger transverse septa are in general very distinct, producing beautiful flowers when cut obliquely. Where

the septa are small, and not very distinct, the wood is much the strongest. The texture is alternately compact and porous; the compact part of the annual ring being of the darkest color, and in irregular dots surrounded by open pores, producing beautiful dark veins in some kinds, particularly pollard oaks. Oak timber has a particular smell, and the taste is slightly astringent. It contains gallic acid, and is blackened by contact with iron when it is damp. The young wood of English oak is very tough, often cross-grained, and difficult to work. Foreign wood, and that of old trees, is more brittle and workable. Oak warps and twists much in drying, and, in seasoning, shrinks about 1-32d of its width. Oak of a good quality is more durable than any other wood that attains a like size. Vitruvius says it is of eternal duration when driven into the earth: it is extremely durable in water; and in a dry state it has been known to last nearly 1000 years. The more compact it is, and the smaller the pores are, the longer it will last.

Remarkable Oaks.—The oldest oak in England stands in the most ancient park, belonging to the Duke of Portland. It is called the Parliament Oak, for it is said that Edward I. held a Parliament under its branches. It is supposed to be 1200 years old. Another remarkable oak is at Welbeck Abbey, in Nottinghamshire, which is famous for its oaks. This tree is called "The Duke's Walking-stick." It is 112 feet high. Three others of these notable trees claim attention for their extraordinary size and longevity, of which the Greendale Oak is the largest. Through its trunk a coach road is cut, and its branches cover a space of 700 square yards. The Two Porters, standing near one of the park entrances, are each 100 feet high; the third is called the Seven Sisters, from its having seven stems rising 90 feet in height from the trunk. The Cathorpe Oak, in Yorkshire, is noted as being the largest oak in England. Its girth is 78 feet.—*The Half Holiday.*

The supply of oak timber in this country is plentiful, but not inexhaustible, and care should be taken to preserve the forests, and, by a judicious use of the timber, avoid the great waste that has been going on; for upon a supply of this lumber depends, in a measure, our success as a maritime nation. Though some prejudice has existed in Europe against the quality of our oak timber, it is now conceded by all to be unsurpassed. By means of the Mississippi River and its tributaries we are enabled to use with advantage the oak forest on the western slope of the Alleghanies, and even in the forest of Michigan, and the West will soon be a rival to the East in ship-building. Kentucky especially abounds in the finest oak forests, as yet unmolested, but destined to add greatly to our wealth.—*See* SHIP and SHIP BUILDING.

Gall-nut Oak (Quercus infectoria), a native of Persia, Asia Minor, Arabia, Egypt, Morocco, and Algeria, in its natural habitat, is an evergreen shrub, with a very crooked stem, and seldom attains six feet in height. From the circumstance of its growing near Paris, where it bears the winter quite well in the open air, though losing its leaves in the autumn, it doubtless would be adapted to the climate of our Middle and Southern States. On this shrub is found the well-known "gall-nuts" of commerce, which are extensively used in the manufacture of writing-ink and in dyeing. These excrescences are the product of the gall-fly (*Cynips scriptorum*), a small insect of a dale-brown color, which may often be found inclosed in the galls sold in the shops of the druggists, collected before the fly had made its escape. There are two kinds of gall-nuts known in commerce; those which still contain the insect, and are known in the trade under the names of "Black," "Blue," or "Green" galls, termed *yerly* by the natives of the country in which they are collected; and those from which the insect has escaped, and which are called "White" galls. The latter contain not more than two-thirds of the astringent qualities of the former, and are of a pale-brown or whitish color, being not so heavy and less compact.

The *Ægilops*, or *Valonia Oak* (Quercus ægilops), is indigenous to the islands of the Archipelago, and, indeed, to all Greece, and often grows to a height of fifty or sixty feet. It is perfectly hardy in the climate of England, from which it may be inferred that it also would grow in favorable localities in our Middle and Southern States. The cups and acorns of this tree are annually conveyed to Europe, where they are in great demand for tanning, and are believed to contain more tannin than any other vegetable, in proportion to their bulk. These acorns, which are commonly called "Valonia," form a very considerable article of export of the Morea and the Levant, being worth in England from $60 to $70 a ton. The more substance there is in the husks, or cups, of these acorns the better. They are of a bright-drab color, which they preserve as long as they are kept dry; but dampness injures them, as they turn black, and become impaired, both in quality and strength. A kind of gall is found on this tree somewhat similar to that on the *Quercus infectoria*, and which is employed for the same purposes. These galls are rugose, of an angular form, and are either the fruit itself, distorted by the puncture of the insect (*Cynips quercus calycis*), or merely the scaly cup which is enlarged into a gall.

Oakum, the substance into which old ropes are reduced when they are untwisted, loosened, and drawn asunder. It is principally used in calking the seams, tree-nails, and bends of a ship, for stopping or preventing leaks.

Oar, a long piece of timber, long at one end, and round or square at the other, used to make a vessel advance upon the water. The flat part, which is dipped into the water, is called the *blade*, and that which is within the board is termed the *loom*, whose extremity, being small enough to be grasped by the rowers, is called the *handle*. To push the boat or vessel forward by means of this instrument, the rowers turn their backs forward, and, dipping the blade of the oar in the water, pull the handle forward, so that the blade, at the same time, may move aft in the water. But, since the blade can not be so moved without striking the water, this impulsion is the same as if the water were to strike the blade from the stern toward the head; the vessel is therefore necessarily moved according to the direction. Hence it follows that it will advance with the greater rapidity by as much as the oar strikes the water more forcibly; consequently, an oar acts upon the side of a boat or vessel like a lever of the second class, whose fulcrum is the station upon which the oar rests on the boat's gunwale.

Oats (Ger. *Hafer;* Du. *Haver;* Dan. *Havre;* Swed. *Hafre;* Fr. *Avoine;* It. *Vena, Avena;* Sp. *Avena;* Port. *Aveа;* Russ. *Owes;* Pol. *Owies*), a species of grain, the *Avena sativa* of botanists. There are innumerable varieties of this grain. It is the hardiest of all the cereal grasses, growing luxuriantly in cold northern climates, and in coarse mountainous districts, where neither wheat nor barley can be advantageously cultivated. It thrives best, and is, indeed, chiefly raised, in northern latitudes; being but little known in the south of Europe. In Scotland it forms a large part of the food of the people, and is far more generally cultivated than any other species of grain. There are four leading varieties of this grain cultivated; viz., white, black, gray, and brown or red oats. The sub-varieties of the white are numerous. That denominated the potato oat is at present almost the only one raised on land in a good state of cultivation in the north of England and the south of Scotland, and usually brings a higher price in the London market than any other variety. It was accidentally discovered growing in a field of potatoes in Cumberland in 1788; and from the produce of that single stalk has been obtained the stock

now in general cultivation. Black and gray oats are little cultivated, except in some places in the north of Scotland. The red oat is chiefly confined to Cheshire, Derbyshire, and Staffordshire. A species of naked oats, provincially called *pillar*, is raised in Cornwall.—LOUDON'S *Encyclopedia of Agriculture*; BROWN'S *Rural Economy*.

The oat, when considered in connection with the artificial grasses and the nourishment and improvement it affords to live stock, may be regarded as one of the most important crops we produce. Its history is highly interesting, from the circumstance that, while in many portions of Europe, when ground into meal, it forms an important ailment for man, one sort at least has been cultivated from the days of Pliny on account of its superior fitness as an article of diet for the sick. The country of its origin is somewhat uncertain, though the most common variety is said to be indigenous to the island of Juan Fernandez. Another oat, resembling the cultivated variety, is also found growing wild in California. This plant was introduced into the North American colonies soon after their settlement by the English. It was sown by Gosnold, on the Elizabeth Islands, in 1602; cultivated in Newfoundland in 1622, and in Virginia, by Berkeley, prior to 1648.

The oat is a hardy grain, and is suited to climates too hot and too cold either for wheat or rye. Indeed, its flexibility is so great, that it is cultivated with success in Bengal, as low as latitude 25 degrees north, but refuses to yield profitable crops as we approach the equator. It flourishes remarkably well when due regard is paid to the selection of varieties, throughout the inhabited parts of Europe, the northern and central portions of Asia, Australia, Southern and Northern Africa, the cultivated regions of nearly all North America, and a large portion of South America.

In this country the growth of the oat is confined principally to the Middle, Western, and Northern States. The varieties cultivated are the common white, the black, the gray, the imperial, the Hopetown, the Polish, the Egyptian, and the potato oat. The yield of the common varieties varies from forty to ninety bushels and upward per acre, weighing from twenty-five to fifty pounds to the bushel. The Egyptian oat is cultivated south of Tennessee, which, after being sown in autumn and fed off by stock in winter and spring, yields from ten to twenty bushels per acre. In the manufacture of malt and spirituous liquors oats enter but lightly, and their consumption for this purpose does not exceed sixty thousand bushels annually in the United States. It will be seen by the following exhibit that New York, Pennsylvania, Ohio, Virginia, and Illinois are the largest producers of oats, and in the order in which they are here placed.

PRODUCTION OF OATS IN THE UNITED STATES DURING THE YEAR 1850.

States and Territories	Oats, Bushels.	States and Territories.	Oats, Bushels.
Alabama	2,905,696	Missouri	5,278,079
Arkansas	656,183	N. Hampshire	973,381
California	.....	New Jersey	3,378,663
Columbia, D. of	8,134	New York	26,552,814
Connecticut	1,258,738	North Carolina	4,052,078
Delaware	604,518	Ohio	13,472,742
Florida	66,586	Pennsylvania	21,538,156
Georgia	3,820,044	Rhode Island	215,232
Illinois	10,687,241	South Carolina	2,322,155
Indiana	5,655,614	Tennessee	7,703,086
Iowa	1,524,345	Texas	99,017
Kentucky	8,201,311	Vermont	2,397,754
Louisiana	89,637	Virginia	16,179,144
Maine	2,181,037	Wisconsin	3,414,672
Maryland	2,242,151	Minnesota	30,582
Massachusetts	1,165,146	New Mexico	5
Michigan	2,866,059	Oregon	61,214
Mississippi	1,503,288	Utah	10,900
		Total bushels	146,678,890

The oat, like rye, never has entered much into our foreign commerce, as the domestic consumption has always been nearly equal to the quantity produced. The annual average exports, for several years preceding 1817, were seventy thousand bushels. By the Census returns of 1840, it will be seen that the total produce of the United States was 123,000,000 bushels; of 1850, 146,678,890 bushels.—*United States Patent Office Report.*

A few years since the oat crop of the Western States sold at 30 or 40 cents per bushel. At the present time (October, 1856), owing to the larger number of horses employed in the West and the East, the price is steady at 40 to 60 cents in the West; and 45 to 50 cents in the States of New England and New York.

Observatories. The first is supposed to have been on the top of the temple of Belus, at Babylon. On the tomb of Osymandias, in Egypt, was another, and it contained a golden circle 200 feet in diameter: that at Benares was at least as ancient as these. The first in authentic history was at Alexandria, about 300 B.C. The first in modern times was at Cassel, 1561. The Royal Observatory at Greenwich was founded by Charles II. A.D. 1675; and from the meridian of Greenwich all English astronomers make their calculations.

	A.D.
First modern meridional instrument, by Copernicus	1540
First observatory at Cassel	1561
Tycho Brahe's, at Uranibourg	1576
Astronomical tower at Copenhagen	1657
Royal (French)	1667
Royal Observatory at Greenwich	1675
Observatory at Nuremberg	1678
At Utrecht	1690
Berlin, erected under Leibnitz's direction	1711
At Bologna	1714
At Petersburg	1725
Oxford, *Dr. Radcliffe*	1772
Dublin, *Dr. Andrews*	1783
Cambridge, England	1824
Observatories in the United States.	
Yale College, New Haven, Conn.	1828–1830
Williams' College, Massachusetts	1836–1837
Western Reserve College, Hudson, Ohio	1837–1838
Military Academy, West Point, New York	1837–1838
High School, Philadelphia, Pennsylvania	1840–1842
National Observatory, Washington, D. C.	1842–1844
Georgetown College Observatory, D. C.	1843–1844
Cincinnati Observatory, Ohio	1843–1844
Cambridge Observatory, Massachusetts	1845–1847
Sharon Observatory, near Philadelphia, Penn.	1845–1846
Tuscaloosa Observatory, Alabama	1843
Lewis M. Rutherford's Observatory, New York City	....
Dartmouth College Observatory, New Hampshire	....
Amherst College, Observatory, Massachusetts	....
Shelbyville, Kentucky	....
Dudley Observatory, Albany, New York	1855–1856

—See *Christian Review*, v. 89; *North American Review*, viii. 205, lxix. 143 (B. A. GOULD); *American Journal of Science*, xlvii. 88, xli. N. S. 295; *Edinburgh Review*, xci. 159; *Southern Literary Messenger*, xiv. 4 (Lieutenant MAURY), xv. 304; Professor LOOMIS'S "Recent Progress of Astronomy," New York, 1850.

Ocean (Gr. ωκεανος.) In Geography, the vast body of water which surrounds the continents, and is the receptacle of all their running waters. It is divided by geographers into five great basins; viz., the Pacific Ocean (so called by reason of its comparative stillness), which separates Asia from America, and is the largest of all the basins; 2. The Atlantic Ocean, which has Europe and Africa on its eastern shore, and America on its western; 3. The Indian Ocean, which washes the south of Asia, and the south-eastern coast of Africa; 4. The Arctic Ocean, which surrounds the north pole; and, 5. The Antarctic, which surrounds the south pole. Other smaller portions of the great connected body of water are called *seas*, of which the Mediterranean, the German, the Baltic, and Black seas, are the most considerable. The superficial extent of the several great basins is not known with any certainty, nor, indeed, can their limits be exactly defined. From the nearest estimation that can be made of the extent of the continents and principal islands, it is supposed that nearly three-fourths of the whole surface of the globe are covered by water. The Pacific Ocean alone exceeds the whole surface of the dry land.

Depth of the Ocean.—If the superficial extent of the ocean can not be easily ascertained, it will readily

be supposed that its depth is a problem of much greater difficulty. The bottom appears, wherever it has been reached by the sounding-line, to have similar inequalities to those of the surface of the land: hence the depth must be extremely various; and it might be supposed from analogy that the greatest depth of the ocean is at least equal to the height of the highest mountains above its surface. Lord Mulgrave found no bottom in the North Atlantic Ocean with a sounding-line of 4680 feet, and Mr. Scoresby sounded to the depth of 7200 feet without the lead touching the ground. These experiments are not altogether to be depended on for the determination of such great depths; for, the pressure becoming very great, the lead may be drawn out of the perpendicular direction by currents, of which it may encounter more than one, flowing in different directions. Over a great portion of the Atlantic and Pacific oceans no bottom has been found. The depth of the ocean, in general, and the form of the bed on which it rolls, can not, therefore, be determined by experiment. The mathematical theory of the oscillations of fluids has, however, thrown some light on the subject. Laplace demonstrated that the difference which is indicated by observation between the height of two consecutive tides depends on the law of the depth of the sea, and that, but for the influence of accessory circumstances, it would disappear altogether if the depth were constant. It follows, therefore, that, since the difference between the consecutive tides is extremely small, the depth of the sea, taking in a large extent of ocean, must be nearly uniform; that is to say, there must be a certain mean depth from which the variations are not considerable.—*Méc. Céleste*, book xiii.

Level of the Ocean.—Were it not for the disturbing actions of the sun and moon, and of the winds, the level of the ocean would be every where the same, and its surface would have the form determined by the attraction of the whole mass of the earth, combined with the centrifugal force belonging to its velocity of rotation; that is to say, the surface would be that of an oblate spheroid of revolution. This uniformity, however, can never be established. The tide at every instant is at different heights in different parts of the ocean; and therefore the form of the surface, within the limits of the rise and fall of the tides, is variable. But even if we neglect the alternate rise and fall of the water which constitutes the tides, and take the surface of the ocean at its mean height, it is found by accurate leveling that all its parts do not coincide with the surface of the same spheroid. Gulfs and inland seas, which communicate with the ocean by narrow openings, are affected according to their position with regard to the prevailing winds. The level of the Red Sea was found, by the French engineers in Egypt, to be 32½ feet higher than that of the Mediterranean, which is supposed to be a little lower than the ocean. Humboldt concluded, from observations made on the Isthmus of Panama, that the waters of the Gulf of Mexico are about two feet higher than those of the Pacific Ocean. The Baltic and Black seas rise in spring from the great quantity of river water poured into them, and are lowered in summer by the joint effects of a small supply and increased evaporation.

Color of the Ocean.—The usual color of the ocean is a bluish green, of a darker tint at a distance from land, and clearer toward the shores. According to Mr. Scoresby, the hue of the Greenland Sea varies from ultramarine blue to olive green, and from the purest transparency to great opacity. The surface of the Mediterranean, in its upper part, is said to have at times a purple tint. In the Gulf of Guinea the sea sometimes appears white; about the Maldive Islands black; and near California it has a reddish appearance. Various causes co-operate to produce this diversity of tint. The prevailing blue color may be ascribed to the greater refrangibility of the blue rays of light, which, by reason of that property, pass in greatest abundance through the water. The other colors are ascribed to the existence of vast numbers of minute animalculæ; to marine vegetables at or near the surface; to the color of the soil, the infusion of earthy substances; and very frequently the tint is modified by the aspect of the sky. The phosphorescent or shining appearance of the ocean, which is a common phenomenon, is also ascribed to animalculæ, and to semi-putrescent matter diffused through the water.

Temperature of the Ocean.—Water being a slow conducter of heat, the temperature of the ocean is much more uniform than that of the atmosphere. At a certain distance from the equator, it follows, though not very closely, the mean temperature of the corresponding latitudes, the solar action being greatly modified by the existence of currents which convey the temperature of one region to another; so that at any place the temperature of the water depends, in some measure, on the direction of the currents. Within the tropics the mean temperature at the surface is about 80° of Fahrenheit, and generally ranges between 77° and 84°. At great depths the temperature is probably nearly the same under every latitude. In the torrid zone it is found to diminish with the depth; in the polar seas it increases with the depth; and about the latitude of 70° it is nearly constant at all depths. But the small number of observations which have yet been made on this subject do not indicate any uniform law, according to which the variations of temperature at different depths is regulated.

Saltness of the Ocean.—The ocean holds in solution a variety of saline matters, of which by far the most abundant is common salt, constituting, in general, about two-thirds of the whole. The saltness of seawater at particular places is influenced by temporary causes—storms, for example; as well as by the neighborhood of large rivers, and permanent accumulations of ice. A series of experiments on this subject were made some years ago by the late Dr. Marcet, and the following are the general conclusions which he deduced from them: 1. That the Southern Ocean contains more salt than the Northern Ocean, in the ratio of 1·02919 to 1·02757. 2. That the mean specific gravity of seawater near the equator is 1·02777. 3. That there is no notable difference between sea-water under different meridians. 4. That there is no satisfactory evidence that the sea at great depths is more salt than at the surface. 5. That the sea, in general, contains more salt where it is deepest, and that its saltness is always diminished in the vicinity of large masses of ice. 6. That small inland seas, though communicating with the ocean, are much less salt than the ocean. 7. That the Mediterranean contains rather larger proportions of salt than the ocean.—*Philosophical Transactions*, 1819; PHOUT'S *Bridgewater Treatise*; BRANDE'S *Dictionary*. The peculiar bitter taste of sea-water does not appear to belong to it beyond a certain depth, and is ascribed to the vegetable and animal matter held in a state of decomposition near the surface.—*See* TIDES, ATLANTIC OCEAN, GULF STREAM, AND SOUNDINGS; *Massachusetts Quarterly*, ii. 308; *American Journal of Science*, v. 128, v. N. S. 41; *Foreign Quarterly*, xiv. 369.

Oceanica. Geographers have divided "Oceanica" into three distinct portions; viz., Malaysia, Australasia, and Polynesia. So comparatively little is known of its component parts, that it is only possible to state the statistics of such countries as most frequently come under the notice of civilized nations, and this is done in the annexed accounts:

I. *Malaysia.*—This portion includes most of the islands of the Indian Archipelago, and has its name from the fact that the Malay race are its most prominent inhabitants. Malaysia is naturally composed of five grand divisions.

1. Sumatra, Java, Bali, Sumbawa, and about two-thirds of the western portion of Borneo as far as 116°

E. long.; 2. Celebes, with the smaller Islands about its coast, and the eastern portion of Borneo up to 3° N. lat.; 3. The Spice Islands; 4. The Soo-loo Archipelago, Mindanao, and the northeast corner of Borneo; and, 5. The Philippine Islands.

These several divisions are peculiar in physical formation, in climate, productions, and inhabitants.

II. *Australasia* extends from 1° N. to 55° S. lat., and from 112° to 180° E. long., and its components are, Australia or New Holland, Van Diemen's Land, New Zealand, Papua or New Guinea, New Britain, New Ireland, the Arru Islands, Solomon Islands, New Caledonia, New Hebrides, Queen Charlotte's Islands, New Hanover, Admiralty Islands, and many smaller islands scattered over the intervening seas.

III. *Polynesia* includes the numerous groups of islands scattered over the Pacific between Asia, Malaysia, and Australasia on the west and southwest, and the western coast of America. The following is the most approved classification of these groups: the Bonin or Arzobispo Islands, the Ladrone or Marian Islands, the Caroline Islands, the Feejee Islands, the Tonga or Friendly Islands, Navigator's or Samoa Islands, Cook's or the Hervey Islands, the Society, Georgian, and Low Islands, the Austral Islands, the Marquesas and Washington Islands, the Hawaiian or Sandwich Islands, the Kermadec Isles, and scattered and isolated islands, among which are Gambier Islands, Pitcairn Island, etc., etc. The *Malaysian*, with the exception of the Philippine Islands, belong chiefly to Holland, and, according to the latest official reports, the following are the statistics of the Dutch possessions: The superficies of Netherlands India is 27,892 square geographical, or 36,887 American miles. The population of Java and Madura, exclusive of the army, is 9,581,130; viz., Europeans, etc., 16,409; Chinese, 119,481; other easterns, 27,687; and natives, 9,420,553. Sumatra has 3,430,000 inhabitants; Banka and dependencies, 50,000; Rhio and dependencies, 70,000; Borneo and dependencies, 1,200,000; Celebes, 300,000; Molucca Islands and dependencies, 718,500; Timor and dependencies, 800,000; Bali and Limbok, 1,205,000. Total, 10,473,500. Total population of Dutch India, 20,057,630. Great Britain is the first power in *Australasia*. The statistics of the following colonies refer to the commencement of the year 1851:

Colonies.	Population.	Value of Imports.	Value of Exports.	Tonnage entered.
		£	£	
New South Wales..	192,000	2,078,338	2,330,580	234,215
Victoria.....	77,360			
South Australia ...	67,430	845,572	570,816	86,583
West Australia	5,886	52,351	22,134	15 988
Van Diemen's Land	70,130	1,252,272	1,172,530	203,081

Of the exports, as above, the following is the value of wool from each colony in 1850: New South Wales and Victoria, £1,614,241; South Australia, £131,730; West Australia, £15,482; and Van Diemen's Land, £151,203. The value of minerals, chiefly copper, from South Australia in the same year was £362,568. Since the above returns gold has been discovered in Australia, and the fields have been more productive than those of California. The quantity yielded in the year ending 30th December, 1852, was 3,998,321 ounces, valued at over £15,000,000, or $75,000,000. The population and every interest has increased, and perhaps doubled, under the stimulating influence of this shower of gold. Among the islands of *Polynesia* the Sandwich Islands hold the first rank, whether viewed in relation to their position, products, population, or civilization. The population in January, 1849, was 80,641. The excess of deaths over births in 1848 had been 6165, or 8 per cent. About 10,000 died of measles and hooping-cough in 1847–'8. At this rate of mortality the population in 1860 would be 32,224; in 1870, 14,073; in 1880, 6134; in 1890, 2667; and in 1900, only 1162. In 1950 the Hawaiian race would be extinct. Such is the influence of civilization on aboriginal races — the same throughout America and throughout the world. In 1853 the Islands were visited by small-pox, and about 3000 died of the epidemic. A new census was taken at the commencement of 1854. The extent of the cultivation of sugar in these islands is shown in the annexed table:

	Acres Cultivated.	
	1852.	1853.
Lihue	200	580
Koloa	240	650
Honahula, Maui	250	300
Makawuo, "	325	500
Hana	45	130
Waimea, Hawaii	50	50
Hilo	540	540
Total	1650	2750

Average yield per acre, 2000 lbs.; average value, five cents per lb.

The *Polynesian* of 29th January, 1853, referring to the year just passed, furnishes the following relating to the commerce of these islands:

"*Imports.*—There is a large falling off in the value and amount of goods imported for consumption. The value of goods imported, as compared with previous years, is as follows:

1850. 1851. 1852.
$1,035,068 70.....$1,828,821 68.....$750,808 54

— giving as an average of imports for three years, $1,206,249.

"*Exports.*—The following comparison of some of the staple exports for the Islands with those of former years shows at a glance that the exports for 1852 do not equal those of 1850, though a large gain on those of 1851 is apparent.

Staples.	1850.	1851.	1852.
Sugar..... pounds.	750,738	721,030	729,877
Syrup ..... gallons.	75 577	60,111	36,375
Molasses... "	58,855	13,031	41,000
Coffee..... pounds.	208,428	37,190	117,210
Salt ..... bushes.	7,652	2,769	7,118

"The custom-house receipts in 1850 amounted to $121,506 73; in 1851, to $160,602 19; and in 1852, to $113,091 93; the receipts of the latter year thus shewing a decrease of $47,510 26 as compared with 1851, and of $7414 80 as compared with 1850. The number of merchant-vessels that visited the islands in 1850 was 469; in 1851, 446; and in 1852, 235. It is impossible," adds the *Polynesian*, "to give the number of 'whalers' that have visited the islands in 1852, but the number is about 300, which is much more than the number in 1851 or 1850. It may be added here, in regard to the number of merchant-vessels in 1850 and 1851, that a large proportion of them were small vessels engaged in the potato trade, while in 1852 the vessels have been generally of a larger class. Another reason for the large number given in 1850 and 1851 was the fact that vessels more generally then touched at several ports, which would increase the number in the custom-house returns, though in fact it should not. The ports being now more generally known, vessels for produce go directly to the port where they can obtain their cargoes." In a commercial point of view, as an entrepôt between the western coast of America and Eastern Asia, these Islands are of the greatest importance; and in view of the vast commerce now springing up in the Pacific, and which will eventually revolutionize the trade of the world, it is possible that the United States may see fit to accept the offer to annex them to the national territory. Already the question has been before Congress.—*American Statistical Annual.*

Odessa, a flourishing sea-port of Southern Russia, on the northwest coast of the Black Sea, between the rivers Dneister and Bug, in lat. 46° 28′ 54″ N., long. 30° 43′ 22″ E. Population in 1850, 78,000. The foundations of Odessa were laid so lately as 1792, by order of the Empress Catharine, after the peace of Jassy. It was intended to serve as an entrepôt for the commerce of the Russian dominions on the Black Sea and the Sea

of Azof, and has in a great measure answered the expectations of its founders. By an imperial ukase, dated the 7th of February, 1817, it was declared a free port, and the inhabitants exempted from taxation for thirty years; since which period its increase has been extremely rapid. The bay or roadstead of Odessa is extensive, the water deep, and the anchorage good, the bottom being fine sand and gravel; it is, however, exposed to the southeasterly wind, which renders it less safe in winter. The port, which is artificial, being formed by two moles, one of which projects to a considerable distance into the sea, is fitted to contain about 300 ships. It has also the advantage of deep water. There is a convenient lazaretto, on the model of that of Marseilles. The want of fresh water used to be the greatest disadvantage under which the inhabitants labored; but this has been obviated by the construction of a canal, which conveys an abundant supply of water into the town. There are no trees in the vicinity, which has, in consequence, a bleak and arid appearance.

Light-houses. — A light-house has been erected on Cape Fontan, about 6½ nautical miles south of Odessa. The light, which formerly revolved, is now *fixed*, and is about 203 (Russian) feet above the level of the sea. At the distance of eleven leagues S.E. by E. ½ E. from Odessa, on the north end of the long, narrow, low island of Tendra, a light-house has been erected, of great use to ships approaching Odessa from the south or west. The lantern is elevated 92½ (Russian) feet above the level of the sea. It consists of three reflecting lights, suspended in the form of a triangle, revolving in the space of four minutes, so that each lamp arrives at its maximum of brilliancy after an interval of one minute, twenty seconds. Being also of a *red* color, this light is readily distinguished from Fontan light, and the other lights in the Black Sea. In foggy weather a bell is kept ringing.—*Coulier sur les Phares*, 2d ed.; NORRIE'S *Sailing Directions for the Mediterranean and Black Seas, etc.* Not being at the mouth of any great river, nor having any considerable manufactures, Odessa is not a port for the exportation of what may be called articles of native growth; but in consequence of her convenient situation, excellent port, and the privileges she enjoys, she is, as already remarked, the emporium where most part of the produce of Southern Russia destined for foreign countries is collected for exportation, and where most part of the foreign articles required for home consumption are primarily imported. The shallowness of the water at Taganrog, and the short period during which the Sea of Azof is navigable, tend to hinder foreign vessels of considerable burden from entering the Strait of Yenikalé, and occasion the shipment of a considerable portion of the produce brought down the Don in lighters to Caffa and Odessa, especially the latter. All the products brought down the Dniester, the Bug, and the Dnieper are exported from Odessa; but owing to the difficult navigation of the first and last mentioned rivers, by far the greater part of the corn brought to Odessa from Podolia, the Ukraine, etc., is conveyed to the town in carts drawn by oxen. The roads traversed by these carts are only practicable at certain seasons of the year; and nothing would contribute so much to increase the commerce of the port, and the prosperity of Southern Russia, as the opening of improved communications with the interior, whether by removing obstructions in the channels of the rivers, constructing canals, or railways, or good common roads. Among the articles of export from Odessa, corn, especially wheat, occupies, as every one knows, the highest rank; but tallow is also an important article; and next to it are linseed, wool, hides, copper, wax, caviar, potash, beef, furs, cordage, sailcloth, tar, butter, isinglass, etc.

Ports of the Black Sea, the Sea of Azof, and the Crimea.—The importance of the Black Sea as a channel of Russian commerce will be easily understood by casting an eye over the map of Southern Russia, and tracing the rich and extensive regions which are tributary to its various ports. The Danube and its branches, the Dniester, the Bug, Dnieper, Don, and several lesser rivers, empty their waters into the Black Sea. Odessa is situated on a bay, 30 miles from the mouth of the Dniester, and 60 from that of the River Dnieper. The bay is secure and accessible, and seldom closed by ice. The port is protected by two moles, each extending 315 fathoms, and raised 7½ feet above the surface of the sea; and, thus formed, it will afford ample protection to two hundred large-sized vessels. Akerman is situated near the Black Sea, on the lagoon on the Dnieper. It is the principal outlet of the produce of Galicia, Podolia, and Bessarabia. The lagoon, or liman, on which Akerman is situated, is said to produce annually 7,000,000 poods (252,000,000 pounds) of salt. The port is, however, too shallow for vessels drawing over seven feet of water. Kherson, Nicolaief, and Sevastopol are the remaining principal ports of these seas.

The following table exhibits the tonnage of Odessa in 1852:

Nationality.	Entered.		Cleared.	
	Vessels.	Tonnage.	Vessels.	Tonnage.
England	208	68,601	225	69,175
Austria	198	68,731	206	71,591
Belgium	1	280	2	442
France	42	7,028	42	7,028
Greece	162	43,375	150	40,272
Holland	12	2,633	12	2,640
Ionian Islands	14	2,891	13	2,919
Sicily	27	7,024	26	6,636
Sardinia	172	43,628	197	48,792
Sweden, etc.	90	20,412	88	22,695
Tuscany	10	3,557	11	4,200
Turkey	43	8,881	60	11,332
Others	97	20,347	113	30,169
Total in 1852	1076	296,767	1145	317,501
Total in 1851	625	172,179	648	177,133
Increase in 1852	451	124,618	497	140,668

The preceding table exhibits a total of 2221 vessels (entered and cleared), with an aggregate of 614,598 tons, being an increase over 1851 of 950 vessels, with an aggregate of 265,286 tons. If to the figures given in the table is added the coasting trade, viz., 2304 vessels, with an aggregate tonnage of 418,436, the total navigation of the port of Odessa, in 1852, will amount to 4525 vessels, with an aggregate of 1,033,034 tons. An analysis of the table gives to Austria the first rank in the navigation of this port. Total tonnage entered and cleared, 614,598 tons: Austria, 140,322 tons. England holds the second rank, viz., 137,776 tons; then Sardinia, 92,420 tons; Greece, 83,647 tons; Sweden, 43,017 tons. The augmentation in 1852 over 1851 gives Austria 66,878 tons more; England, 61,531 tons more; Sardinia, 38,977 tons more; and Greece, 13,577 tons more. The steam navigation of Odessa is maintained by the two lines of Constantinople and the Danube. The first makes thirty-six voyages (between the two points), and the second eighteen, annually. The Constantinople line conveyed, in 1852, 1214 passengers; that of the Danube, 995; making a total for both lines of 2209 passengers. The first of these transported to Odessa merchandise and specie amounting to 5,411,520 francs, and the other 359,620 francs. There was exported to Constantinople by the first line merchandise valued at 1,669,108 francs; and to the ports of the Danube, by the other, merchandise to the amount of 637,796 francs. Government steamers keep up the communication between the ports of Kherson, Nicolaief, the Crimea, and the Caucasus. In 1852 they made ninety-five voyages from these different points to Odessa, transporting passengers and merchandise.

The different steamers which make Odessa their starting-point made, in 1852, 149 voyages, transporting 20,905 passengers, and merchandise to the amount of 10,705,768 francs, equal to $2,000,000 nearly.

COMMERCE OF ODESSA.

	1852.	1851.
	Francs.	Francs.
Exports	103,452,410	53,205,024
Imports	36,190,066	29,886,800
Total, Francs	139,642,476	83,089,824

The principal exports were:

Grains, value	60,756,826	francs.
Wool, "	17,044,716	"
Linseed, "	7,980,580	"
Tallow, "	1,927,296	"

The principal imports in 1851–'52 were: raw cotton and cotton yarns, olive-oil, dye-stuffs, drugs, metals, wines, and sugar. In 1853 the total value of the foreign trade of Odessa was $25,953,807, viz.: exports, $18,583,293; imports, $7,370,514. Grains constituted the chief export in 1853. Thus, of the $26,000,000 (in round numbers), grains amounted in value to $13,000,000; linseed, wool, tallow, and cordage covered $5,000,000. In 1854 this immense trade must have been completely paralyzed, as an official notification was published at Odessa on 8d March, 1854, prohibiting the exportation of grains of all kinds, from all ports of the Black and Azof Seas, until the 1st of September following. This prohibition, however, is now removed; and official returns, when received, will show how far the blockade of the Russian ports by the allied powers affected the trade of the Black Sea. By declaration published at St. Petersburg 7th [19th] April, 1856, all the mercantile harbors of Russia are open to the merchant vessels of neutral countries.

The total value of the trade of the ports of the Sea of Azof (Taganrog, Kertch, Rostoff, Mariopol, and Berdiansk), was, in 1851: imports, 6,902,000 francs; exports, 27,182,000 francs.

The imports were chiefly from Turkey, the Two Sicilies, Ionian Islands, France, and Greece. The exports were destined to Turkey, England, Sardinia, Tuscany, Ionian Islands, and France. The total value of the trade at the commercial ports of the Crimea (Eupatoria, Balaklava, Theodosia, and Kertch), in 1852, was: imports (including specie), 1,092,500 francs; exports, 654,500 francs. Total, 1,747,000 francs.

Compared with 1851, the imports increased 12 per cent., and exports decreased nearly 60 per cent. Imports consisted of cottons, raw cotton, coals, oil, and fruits; exports, of wool, raw hides, butter, caviar, and grains.—*United States Commercial Relations.*

The United States Consul, under date of July 1, 1854, communicates the following information: There exists a treaty of commerce between the United States and the Imperial Russian government, which was concluded at St. Petersburg on the 6th [18th] December, in the year 1832, and was ratified at Washington on the 11th May, 1833, to which the Russian government abides with strictness. The city and port of Odessa was declared as *porto-franco* by a decree of the imperial government in the year 1823, which was put into execution only on the 15th August, in the year 1824, by which the importation of all kinds of merchandise was allowed, on paying only one-fifth of the entire duty paid in other ports of this empire; and this one-fifth duty was employed to defray the annual expenditure for the benefit of this city, such as pavements, foot-paths, repairing streets, lights, government buildings, and for the expenses of all the local administrations. The importation of all kinds of merchandise is allowed, even those articles which are prohibited at all other ports of the empire, but they are not allowed to be transported into the interior from hence, as tea, refined sugars, strong spirits, cloths—black and green—printed cottons, silks, and wools. These articles are to be consumed at Odessa. The term of these privileges for Odessa expired in the year 1849, but his majesty the emperor, wishing to favor this city, granted a prolongation of the same privileges for a period of five years, which ends on the 14th August, 1854. During this last period the duty was augmented; instead of one-fifth, it is now two-fifths of the entire duty on the import of any kind of merchandise, with the exception of tobacco, rum, and other strong spirits, on which the entire duty is paid, as at all other ports of Russia. Refined sugars, tea, and wines, have to pay three-fifths of the entire duty, one-fifth of which is destined for expenses of this city, and the remainder in favor of government. There does not exist at this port any privilege granted to any nation, in any way, which is denied to citizens of the United States. The only restriction existing at Odessa is on ships under French and Neapolitan colors, they not being allowed to import any merchandise from foreign countries to Russia, unless paying 50 per cent. more on the import duty, in comparison to Americans, or ships of other nations. This difference on French and Neapolitan vessels exists by the commercial treaties between the respective powers, by which it is also prohibited for Russian vessels to import to France or to Naples merchandise from foreign ports not Russian produce, as the cargo must be, and from a Russian port. There are no differences in the charges, or any other dues, on ships of the United States and Russian vessels. A Russian vessel of 150 lasts (equal to 300 tons) pays the same charges as an American of the same size. The following affords a comparative statement:

Lasts, 150, at 17-100 per last	S. R. 25 50 =	$19 18
Light dues	7 15 =	5 36
Quarantine dues, custom-house charges and fees	20 00 =	15 04

The tonnage and light dues are a fixed charge, and established by law; the quarantine and custom-house dues are not so. The amount of the latter charges is generally paid partly for stamp paper, fees, and other trifles, which reaches the sum above stated, and which every one pays without opposition, as it is the custom and has been for many years past, and by which means business is greatly facilitated. It is prohibited by law to reship merchandise from one ship to another, even if the merchandise reshipped be destined for another Russian port, and no matter under what colors it is brought to this port. The merchandise, before reshipment, must first be landed and visited by the custom-house authorities, and the whole amount of duty paid, before permission can be obtained for such merchandise to be shipped and transported to another Russian port. But if such merchandise be destined for a foreign port, it has to be landed, and after being visited by the custom-house officers, a certificate to that effect is given to the shippers of the cargo, allowing the reshipment and exportation to a foreign port. All foreign, as well as American vessels are allowed to share in the coasting trade from one Russian port to another in the Black Sea or the Sea of Azof. The current coin, weights, measures, etc., are the same at Odessa as at St. Petersburg. The value of a silver ruble is 75 $\frac{38}{100}$ cents of an American dollar; one pood weight is 36 English pounds; one arshine measures 28 English inches; one chetwert of wheat is 5¾ English bushels.

The only cargo exported from hence for America since the 1st of July, 1853, consisted of common washed wool, 505 bales, weighing 5972 poods, 23 pounds; and linseed, 1200 chetwerts—the whole shipped on board of an American bark of 380 tons, bound for New York, and cleared from hence on the 10th November, 1853. The duty on the cargo amounted to 342·80 silver rubles, or $257 80, being on the linseed alone, as there is no duty on the exportation of wools. No insurances have ever taken place here for the United States, but the general custom is to insure in England for America. The custom in purchasing any kind of merchandise for exportation at this place is to pay ready cash, and without any discount whatever; but in the sale of colonial and other goods imported from abroad sometimes a credit of six or eight months is granted to the buyers. There is no established rate of exchange here for the United States, but the value of the dollar is

nominal at 1½ silver ruble. The amount of duty paid here on merchandise exported for America during the last period amounts to $257; but no import duty was paid here, as no merchandise arrived from America. There is no duty levied in Russia by government on produce exported in its new state, or partly manufactured, or entirely so; the only existing duty is on raw sugars, on which the refiners of Russia pay an excise to government of $\frac{60}{100}$ silver rubles per pood on the refined sugars, or $45\frac{1}{1000}$ cents in American currency. Laborers are generally paid here by the day, and, the rate not being fixed, fluctuates according to the wants of such men—rising from $\frac{30}{100}$ to one silver ruble per day, or from 22½ to 75 cents per day, American currency.

A tribunal of commerce was established at Odessa in 1824, whose jurisdiction extends over all disputes connected with trade. There is no appeal from its decisions except to the senate. There are twelve sworn brokers, approved and licensed by the Tribunal of Commerce, who have duties appointed by themselves. They register all transactions, and receive ½ per cent. from each party as commission. There is a discount or loan bank, established in 1828, and marine and fire insurance societies. Most articles of provision are cheap; and fish, which costs next to nothing, is excellent. Fuel, however, is scarce and dear. Within the last thirty years, the Merino breed of sheep has been extensively introduced into the governments of Taurida, Cherson, and Ekaterinoslov, so that there has been not only a great increase in the quantity, but also a very decided improvement in the quality, of the wool exported. *Corn Trade.*—The principal trade of Odessa is with Constantinople, Smyrna, and other towns in the Levant, Naples, Leghorn, Genoa, Marseilles, etc. "It is generally stated," says Mr. Jacob (*Memoir on the Trade of the Black Sea*, in the *Appendix* to the octavo edition of *Tracts on the Corn Trade*), "that the supply of Constantinople requires annually 100,000 quarters of Black Sea wheat. The Greek Islands scarcely, on the average of years, produce sufficient wheat for their own consumption, and in some years require a large supply, which is furnished partly from the neighboring continent, and partly from the Black Sea. The Asiatic coasts of the Turkish Empire, especially in Anatolia, are nearly in the same predicament. At times the market of Smyrna is very favorable for the sale of the corn of Southern Russia. The islands of Malta and Gozo produce only about half as much corn as the 120,000 inhabitants require. Sicily, though it has greatly declined from its ancient productiveness, has still a quantity of grain to spare for the less fruitful parts of Italy in most years, and its wheat enters into competition with that of the Black Sea, in the ports of Naples, Genoa, and Leghorn. There are few years in which Tuscany grows a sufficiency of wheat; and its chief port, Leghorn, being one of those in which ships can unload their cargoes of corn, without being detained to perform quarantine, has been at all times a place of deposit for the wheat of the Black Sea. A market at some price may always be found there, as the capitalists are disposed to purchase, relying on the uncertain productiveness of some adjacent country, in which they may realize a profit at no great distance. Genoa, like Leghorn, is a port where wheat can be unloaded within the bounds of the lazaretto. The country around it yields but little wheat; and at some periods it enjoys a trade in that article even as far as Sunderland. This internal demand, and the chance of advantageous re-exportation, induces much trade in corn. There is said to be seldom less than 100,000 quarters in store at the two ports of Genoa and Leghorn, and at some periods a far greater quantity. Nice, though not having the same advantageous quarantine regulations, and, consequently, not being a *dépôt* for corn beyond its own demand, from the sterile soil that surrounds it, requires every year a large importation of wheat. That of Sicily and Odessa creates a competition in its port, and the government draws a revenue by imposing a heavy duty on both. Though the corn laws of France have kept the ports closed against the introduction of foreign corn for domestic use, yet it is allowed to be bonded for re-exportation. From the frequent local and partial scarcities which occur on the eastern coast of Spain, at which periods wheat is allowed to be lawfully imported, and, it is said, from the facility of its introduction by contraband when not legally allowed, Marseilles has been a great *dépôt* for the wheat of the Black Sea. From thence, as also from Gibraltar, where there is generally some in store, it can easily be transported to Spain, to Sardinia, to Corsica, to Tunis, to Tripoli, or wherever scarcity has created a beneficial market. The coasts of Barbary, though often having a surplus of wheat, much of which occasionally assists to feed Portugal, in some seasons have been affected with most deficient harvests. This was recently the case in a remarkable degree. Tripoli and Tunis experienced, in the year 1820, a harvest most miserably short, and were supplied from other countries." The warehouse rent of corn at Odessa is from eight to ten copecks per chetwert per month. M. De Hagemeister supposes that Turkey and the different ports of the Mediterranean require, at an average, an annual supply of 1,400,000 chetwerts, or about 1,050,000 quarters, of which 1,000,000 chetwerts, or 750,000 quarters, are furnished by Southern Russia, and principally shipped from Odessa. Wallachia and Moldavia are both very fertile in corn; and were tranquillity and good order introduced into them, and the free navigation of the Danube secured, Galacz and Brailoff would be two of the principal European grain-shipping ports. — See the excellent Report of HAGEMEISTER *on the Trade of the Black Sea*, p. 96–114, Engl. Trans. Exclusive of corn, the other articles mentioned as being exported from Odessa find their way to the different markets in the Mediterranean. Those shipped for Turkey are iron, tallow, sail-cloth, cordage, anchors for ships of war, butter, etc. The exports to Italy and other European countries are similar. The importation of all foreign articles into the Russian dominions on the Black Sea and the Sea of Azof is confined to Odessa, Theodosia or Kaffa, and Taganrog. The import trade is, however, of inferior importance when compared with the export trade. The principal articles are sugar and coffee, dye-woods, wine and brandy, cotton stuffs and yarn, woolen and silk manufactures, spices, cutlery; oranges, lemons, figs, and other fruit; lemon-juice, oil, tin and tin plates, dried fruits, paper, silk, specie, etc.

Odessa, in addition to its great and rapidly increasing trade with Constantinople and the countries on the Mediterranean, had, before the war of 1854–1855, a considerable trade with Redout-kalé at the mouth of the Phasis, and with Trebizond and several ports on the south coast of the Black Sea. Georgian and Armenian merchants are already considerable purchasers at the Leipsic and other German fairs, and civilization is beginning to strike its roots throughout all the extensive countries between the Black Sea and the Caspian. It is probable that at no very remote period the Phasis will be frequented by British ships; and that merchants, without any enchantress to aid them, and depending only on the superior cheapness and excellence of their goods, will be hospitably received in the ancient Colchis, and bear away a richer prize than fell to the lot of Jason and his compeers.—*See* RUSSIA.

Offing, or **Offin**, in *Nautical language*, that part of the sea, a good distance from shore, where there is deep water and no need of a pilot to conduct the ship. Thus if a ship from shore be seen sailing out to seaward, they say, "She stands for the offing;" and if a ship, having the shore near her, have another a good way without or beyond her, toward the sea, they say, "That ship is in the offing."

Ohio, one of the United States, lies between lat. 38° 30′ and 42° N., and between long. 80° 35′ and 84° 47′ W. It is 210 miles long from north to south, and 200 miles broad. Area, 39,964 square miles. The population in 1790 was 3000; in 1800, 45,365; in 1810, 230,760; in 1820, 581,434; in 1830, 937,697; in 1840, 1,519,467; and in 1850, 1,980,408. The land in the interior of the State and bordering on Lake Erie is generally level, and in some places marshy. From one quarter to one third of the State, comprehending the eastern and southeastern parts, bordering on the Ohio River, is generally hilly and broken, but in no part mountainous. On the margin of the Ohio River and several of its tributaries are alluvial lands of great fertility. The valleys of the Scioto and the Great and Little Miami are the most extensive sections of level, rich, and fertile lands in the State. At the head of the Muskingum River are prairies of considerable extent, some of which are wet, though generally dry and fertile. The height of land which divides the waters which fall into the Ohio from those which fall into Lake Erie is the most marshy of any in the State, while the land on the margin of the rivers is generally dry. Wheat may be regarded as the staple production of the State, though Indian corn and other grains are largely cultivated. It is rich in mineral wealth, iron, coal, limestone, marble, and superior building stone, grind-stones, etc. There are many valuable salt springs. There were in this State in 1850, 9,861,493 acres of land improved, and 8,146,000 of unimproved land in farms; cash value of farms, $358,758,603; and the value of implements and machinery, $12,750,585. *Live Stock*—horses, 463,897; asses and mules, 3423; milch cows, 544,499; working oxen, 65,381; other cattle, 749,067; sheep, 3,942,929; swine, 1,964,770. Value of live stock, $44,121,741.

Agricultural Products, etc.—Wheat, 14,487,351 bushels; rye, 425,918; Indian corn, 59,078,695; oats, 13,472,742; barley, 354,358; buckwheat, 638,060; peas and beans, 60,168; potatoes, 5,057,769; sweet potatoes, 187,991. Value of products of the orchard, $695,921; of the market-gardens, $212,904. Pounds of butter made, 34,449,379; of cheese, 20,819,542; maple sugar, 4,588,209; molasses, 197,308 gallons; beeswax and honey, 804,275 pounds; wool produced, 10,196,371; flax, 446,932; silk cocoons, 1552; hops, 63,731; tobacco, 10,154,449; hay, tons of, 1,433,142; hemp, 150; clover-seeds, 103,197 bushels; other grass seeds, 37,310; flax-seed, 188,880; and were made, 48,207 gallons of wine. Value of home-made manufactures, $1,712,196; of slaughtered animals, $7,439,243.

Rivers, etc.—The Ohio River, which gives name to the State, washes its entire southern border. This river is 1004 miles long from Pittsburg to its mouth, by its various windings, though it is only 614 in a direct line.—*See* Ohio River. The Muskingum, the largest river which flows entirely in this State, is formed by the junction of the Tuscarawas and Walhonding rivers, and enters the Ohio at Marietta. It is navigable for boats 100 miles. The Scioto, the second river in magnitude, flowing entirely within the State, is about 200 miles long, and enters the Ohio at Portsmouth. Its largest branch is the Whetstone, or Olentangy, which joins it immediately above Columbus. It is navigable for boats 130 miles. The Great Miami, a rapid river in the western part of the State is 100 miles long, and enters the Ohio in the southwest corner of the State. The Little Miami has a course of seventy miles, and enters the Ohio seven miles above Cincinnati. The Maumee, 100 miles long, rises in Indiana, runs through the northwest part of the State, and enters Lake Erie at Maumee Bay. It is navigable for steamboats to Perrysburg, eighteen miles from the lake, and above the rapids is boatable for a considerable distance. The Sandusky rises in the northern part of the State, and, after a course of about eighty miles, enters Sandusky Bay, and thence into Lake Erie. The Cuyahoga rises in the north part of the State, and after a curved course of sixty miles, enters Lake Erie at Cleveland. It has a number of falls, which furnish valuable mill seats. Besides these there are Huron, Vermilion, Black, Grand, and Ashtabula rivers, which enter Lake Erie.

The principal places are Cincinnati, the metropolis; Columbus, the Capital; Cleveland, Sandusky, Dayton, Springfield, Zanesville, Marietta, and Portsmouth. There were in February, 1854, sixty-eight banks, with a paid capital of $8,718,366; in January, 1856, forty-six railroads, of which 2725 miles of track were finished and in operation, and 1578 in course of construction. Tonnage of the State in 1853, 25,632 tons.

Manufactures, etc.—There were in the State in 1850 eight cotton factories, with a capital invested of $297,900, employing 132 males and 269 females, producing 280,000 yards of sheetings, etc., and 443,000 pounds of yarn, valued at $394,700; 130 woolen factories, with a capital of $870,220, employing 903 males and 208 females, manufacturing 1,374,087 yards of cloth, and 65,000 pounds of yarn, valued at $1,111,027; thirty-five establishments making pig-iron, with a capital of $1,503,000, employing 2415 persons, producing 52,658 tons of pig-iron, etc., and the entire value of products, $1,255,850; 183 establishments, with a capital of $2,003,650, employing 2758 persons, and making 37,399 tons of iron castings, etc., valued at $3,069,350; eleven establishments, with a capital of $620,800, employing 708 persons, manufacturing 14,416 tons of wrought iron, valued at $1,076,192; 1082 flouring and grist-mills; 1730 saw-mills; 243 printing-offices, 302 newspapers, twenty-eight daily, six tri-weekly, four semi-weekly, 222 weekly, seven semi-monthly, twenty monthly, and one yearly publication. Capital invested in manufactures, $28,612,136; value of manufactured articles, $61,915,036.—*See* Pork for further information.

Educational Establishments, etc.—The University of Ohio at Athens, the Miami University at Oxford, Franklin College at New Athens, the Western Reserve College at Hudson, Kenyon College at Gambier, Granville College at Granville, Marietta College at Marietta, Oberlin College at Oberlin, St. Xavier at Cincinnati, Ohio Wesleyan University at Delaware, Wittenberg College at Springfield, Willoughby University at Willoughby, Lane Theological Seminary at Cincinnati. There are also theological departments at Kenyon, Western Reserve at Hudson, Granville at Granville, Oberlin at Oberlin, Wittenberg at Springfield, and a seminary of the Associate Reformed Church at Oxford, Western Reserve Medical College at Cleveland, Medical College of Ohio at Cincinnati, Medical College (Homeopathic) at Cleveland, Starling Medical College at Columbus, and Cincinnati Law College at Cincinnati. The whole having, in 1850, 3621 students. There were also 206 academies, 5052 pupils; 11,661 schools, 484,153 scholars; 352 libraries—aggregate number of volumes, 186,826. School fund, $304,474.

The first permanent settlement in Ohio was made in 1788 at Marietta. In 1802 Ohio was admitted into the Union.

The progress of banking in the State of Ohio is shown in the following summary:

Year.	Number of Banks.	Capital.
1805	1	$200,000
1811	4	898,000
1815	12	1,484,000
1816	21	2,061,000
1820	20	1,797,000
1835	24	5,819,000
1838	33	9,247,000
1840	37	10,507,000
1845	8	2,171,000
1850	56	7,129,000
1854	60	6,995,900
1857	54	5,598,000

The free-banking law of Ohio was adopted in the year 1851, and forms at present a part of the banking system in operation.

FOREIGN COMMERCE OF THE STATE OF OHIO (SHOWING ALSO THE DISTRICT TONNAGE IN 1821, 1831, 1841, AND 1851) FROM OCTOBER 1, 1820, TO JULY 1, 1850.

Years ending	Exports.			Imports.	Tonnage Cleared.		District Tonnage.	
	Domestic.	Foreign.	Total.	Total.	American.	Foreign.	Registered.	Enrolled and Licensed.
Sept. 30, 1821	....	....	....	$12	....	....	331	716
1822	$105	....	$105	190	....	....	....	....
1823	....	....	....	161	31	....	....	....
1824	....	....	....	....	....	....	....	....
1825	....	....	....	....	....	....	....	....
1826	1,810	....	1810	....	309	....	....	....
1827	....	....	....	....	....	....	....	....
1828	....	....	....	....	....	....	....	....
1829	2,00-	....	2004	293	....	....	....	....
1830	....	....	....	162	56	49	....	....
Total	$3,919	....	$3,919	$818	456	49	....	....
Sept. 30, 1831	$14,728	....	$14,728	$617	91	138	120	1622
1832	58,394	....	58,394	12,392	269	1,541	....	....
1833	225,544	....	225,544	8,353	2,041	4,126	....	....
1834	241,451	....	241,451	19,767	2,999	3,756	....	....
1835	97,061	$140	97,201	9,898	2,166	4,371	....	....
1836	8,718	....	8,718	10,960	105	2,043	....	....
1837	132,844	....	132,844	17,747	4,249	4,598	....	....
1838	139,827	....	139,827	12,895	1,141	2,438	....	....
1839	95,854	....	95 854	19,280	4 716	1,987	....	....
1840	991,954	....	991,954	4,915	8,708	3,265	....	....
Total	$2,001,375	$140	$2,001,515	$116,734	26,485	28,929	....	....
Sept. 30, 1841	$793,114	....	$793,114	$11,318	9,600	2,624	....	25,111
1842	899,786	....	899,786	13,051	14,890	8 596	....	....
9 mos., 1843*	120,108	....	120,108	10 774	1,245	5,170	....	....
June 30, 1844	543,856	....	543,856	36 015	2,053	14,162	....	....
1845	321,114	....	321,114	78,196	6,324	1,201	....	....
1846	352 630	....	352 630	102,714	6,222	4,831	....	....
1847	778,944	....	778,944	90,681	7,144	10,223	....	....
1848	147,509	....	147,509	186,726	7,065	5,853	....	....
1849	149,724	....	149,724	140,839	6,957	9,821	....	....
1850	217,532	$100	217,632	582,524	15,485	18,522	....	....
Total	$4,324,407	$100	$4,324,507	$1,261,908	77,585	80,903	....	....
June 30, 1851	$395,125	....	$395,125	$696,331	18,720	11,866	....	58,352
1852	353,514	....	353,514	932.216	14,844	11,222	....	....
1853	158,418	....	158.418	847,760	22,630	9,939	....	....
1854	743,004	$1580	744,584	790,082	57,054	18.234	....	....
1855	847,143	....	847,143	600,656	26,309	18.890	....	....
1856	1,045,052	....	1,045,052	403.473	28,252	42,676	....	....

* Nine months to June 30, and fiscal year begins July 1, 1843.

FINANCES OF THE STATE OF OHIO.

Fiscal Years.	Foreign and Domestic State Debt.	Annual Interest on State Debt.	Taxable Property of State, Real and Personal.	Gross Revenues of State.	Gross Expenditures of State.
1833	$4,750,000	$285,000	$78,019,526	$268,739	$288,739
1834	4,891,669	293 500	75,5?8,312	261,826	277 949
1835	4,979,287	291,757	94,438,016	201,766	235 365
1836	5,857,833	351,470	85,812,352	301,069	209,660
1837	6,136,516	368,190	91,591,745	527,868	287,560
1838	6,905,790	414,348	100,953,018	451,757	324,702
1839	10 030,162	601,809	111,224,197	655,905	631,823
1840	14,012,230	770,822	112,037,861	806,498	295,060
1841	15 573,354	934 401	128 353,657	253 832	192,?79
1842	16,947,325	1,016,839	132,543,835	292,224	227,863
1843	18,0? 321	1,120,099	133,663,794	328,270	223,462
1844	19,276,751	1,167,444	136.142,666	871,963	239,141
1845	19,251,180	1,140,706	144,160,469	1 553,456	1,859,937
1846	19,246,002	1,154,260	159,293,132	2,081,384	2,038 027
1847	19,293,847	1,163,509	409.897,879	2,614,785	2,3? 7,605
1848	19,173,223	1,150,893	419,897,236	2,473 702	2,137,194
1849	19,026,209	1,147,854	429,665,629	2,511,119	2,383.135
1850	18,744 504	1,124,536	439,876,340	2,586 558	2,961.5?1
1851	15,584,493	923.843	462,148,629	2,878 656	2,6 6 369
1852	15 520,768	919,496	507 581,911	3,016.403	2,736,660
1853	15 218,129	901,191	593,396,848	2,865,607	2,696,118
1854	14 524,886	859,596	866,9?9,982	3,715,103	3 393,253
1855	14,008,2?5	829,253	860 877,354	3,651,173	3,512,844
1856	14,008,274	829,253	820,661,037	3 588,353	3,?12,206

Cincinnati, the metropolis of Ohio, capital of Hamilton county, and one of the leading commercial places west of the Alleghany Mountains. It is situated on the right bank of the Ohio River, 455 miles below Pittsburg, 1548 miles above New Orleans, and 502 miles from Washington. It is the largest city of the Mississippi Valley, north of New Orleans, and the fifth in population in the United States. Population in 1800, 750; in 1810, 2540; in 1830, 24,831; in 1840, 46,338; in 1845, 65,000; in 1850, 115,438; in 1853, 160,141. The Ohio River at Cincinnati is 1800 feet, or about one-third of a mile wide, and its mean annual range from low to high water is about fifty feet; the extreme range may be about ten feet more. Depressions are generally in August, September, and October, and the greatest rise in December, March, May, and June. The upward navigation is in winter very rarely suspended by floating ice, and in some winters not at all. Its current at its mean height is about three miles an hour; when higher, or rising, it is more; and when very low, it does not exceed two miles. Cleveland, Toledo, and Sandusky, on Lake Erie, export largely in grain, lumber, and manufactured goods.—See *North American Review*, lxiii. 320 (HILDRETH), xxii. 459 (SPARKS), xlvii. 1 (J. H. PERKINS), xlix. 69; *American Journal of Science*, xlv. 12; DE BOW'S *Review*, iii. 129; *Bankers' Magazine*, 1856; HUNT'S *Merchants' Magazine*, xxi. 389.

Ohio, a large river of the United States, formed by the confluence of the Alleghany from the north and the Monongahela from the south at Pittsburg, in the western part of Pennsylvania, lat. 40° 32′ N. and long. 80° 9′ W., at the height of 1133 feet above tide-water in the Atlantic. It proceeds in a direction west-south-west, dividing the states of Virginia and Kentucky on the south from Ohio, Indiana, and Illinois on the north, and enters the Mississippi in lat. 37° N. and long. 88° 58′ W. Its length from Pittsburg to its mouth, by the course of the river, is 948 miles; but the distance in a direct course is only 614 miles. It has a descent, in its whole course, of 395 feet, making an average descent of not quite five inches in a mile. The width of the Ohio varies from 400 to 1400 yards; its average width is 534 yards. Opposite to Cincinnati, which is about equidistant from Pittsburg and its confluence with the Mississippi, where it is about 900 yards wide. The great valley drained by this river contains over 218,000 square miles, and a population of over 5,000,000, which is rapidly increasing. There are no considerable falls in this river excepting at Louisville, Kentucky, where it descends 22½ feet in two miles. These falls have been obviated by a canal around them, which admits of the passage of the largest steamboats; but boats ascend and descend these rapids, when the water is high. The current of the Ohio, when low, does not exceed two miles an hour; when at a mean height, three miles; and when higher and rising, four or five miles. The highest water occurs in December, March, May, and June; and the lowest in August, September, and October. The average difference between high and low water is 40 feet; its extreme range on record, 64 feet (at Cincinnati). During eight or ten weeks in the winter, the navigation is obstructed by floating ice. Of the two confluents which form the Ohio, the Alleghany is the most important, being navigable for boats 260 miles to Olean, New York, and will hereafter, by means of the Genesee Valley Canal, terminating at this place, and extending to the Erie Canal, form an important communication between the city of New York and the West. The principal tributaries of the Ohio on the north are the Beaver, Muskingum, Scioto, the two Miamis, Whitewater, and Wabash; those on the south are the Kanawha, Sandy, Licking, Kentucky, Green, Cumberland, and Tennessee. Some of these are navigable at high water to a great extent by boats and steamboats. The Tennessee is navigable by boats for 1000 miles; the Cumberland is navigable for steamboats to Nashville, and for keel-boats 300 miles further; the Wabash is navigable for 200 miles; Green River, 200 miles; Kentucky, 150; Great Kanawha, 64 miles, to the salt works. The Ohio, with its tributaries, has 5000 miles of navigable waters.

The whole fall of the Ohio from Pittsburg to Cairo is estimated at 425 feet, and the distance is 977 miles. The average fall per mile is therefore less than five inches. The fall of the River Thames is greater than this, being an average of nearly seven inches per mile for one hundred and eighty miles. Indeed few rivers of equal length and volume of water have so few falls or rapids impeding navigation as the Ohio.

Its fall, however, is not distributed equally over its whole course, as the following table will show:

	Distance.	Fall.	Averages.
	Miles.	Feet.	Inches.
From Pittsburg to Wheeling..	88	79	10·77
From Wheeling to Cincinnati.	374	198	6
From Cincinnati to Louisville.	156	55	4·2
From Louisville to Falls.....	3	27	100
From Falls to Evansville	169	33	2·85
From Evansville to Cairo.....	187	45	2·9

From this table it will be seen that were it necessary to "canalize" the whole river, from its mouth to Pittsburg, it would be the most magnificent channel of trade on the face of the globe. No canal was ever constructed, and probably none could be constructed, of equal length, with comparatively as little lockage as this. The Erie Canal has about five times the lockage in proportion to its length; and the Pennsylvania Canal, from Pittsburg to Johnstown, has more than ten times as much. But it should be remembered that it will be unnecessary, for the purpose of making this great improvement, to overcome all this fall of 425 feet by means of locks and dams. A large part of this whole descent is due to the gentle flow of the river, through the long pools which make up the most of its distance, and which, in their natural condition, afford a sufficient depth of water at all seasons of the year for the purposes of navigation. What proportion of this whole fall of 425 feet is thus due to these pools, which need no improvement, we are unable to determine; but it must be a very considerable proportion of it, and would leave a comparatively small aggregate to be overcome by locks and dams or wing dams. It would be unnecessary to construct these dams so high as to flow back the water from one to the other, but only to rise from one of these pools to another, or perhaps, in some cases, to unite one or more of them in one. To reduce the whole river to a series of long levels, as in the construction of canals, would not be required, and indeed would be liable to grave objections on the score of health. A depth of about five feet at the lowest stage of water would be all that would be necessary to render the Ohio the most important channel of commerce in the world. This depth could be had without affecting unfavorably the healthfulness of the river, and would be enough for the first class of steamers which now ply on the river.

The volume of water in this stream, in an improved condition, would be ample, for ten or eleven months in the year, to meet the wants of a commerce large enough to tax to the utmost the capacity of ten canals equal to the Erie when enlarged; and so favorable is the climate, that the obstructions from ice would be of very short duration, if, indeed, such impediments would ever occur. It is well known that the Monongahela suffers less inconvenience from ice, in its present condition, than it did before it was improved by locks and dams, and no good reason can be given why the same results would not follow the improved navigation of the Ohio. That the growing demands of trade in the Great West will imperatively require this great work to be speedily accomplished, no man who has at all considered this subject can for one moment doubt. Saying nothing of the great staples of agriculture, which already seek our Eastern cities through the valley of the Ohio, and which will continue to increase in a ratio that will almost defy computation, there are immense resources of undeveloped mineral wealth, whose tonnage will soon exceed that of all the traffic now done upon the river, and upon all the railroads running nearly parallel with it through the Western States. The vast treasures of coal, iron, and salt, are there in store for the scores of millions which will soon inhabit the rich valley of the Ohio. But admitting that the river, when improved by locks and dams, would impose a heavy expense for lockage, still the actual expense of navigation would be far less than is now imposed upon it, in consequence of the ruinous delays and disruptions of business, arising from the sudden rise and fall of the river. Though subjected to tolls at the locks, the certainty and regularity with which steamers could make their trips would more than compensate this expense. The whole system of passage and freight would be systematized, and in the aggregate rendered far less expensive and hazardous. Indeed, in whatever light this grand scheme may be viewed, it is matter of surprise that public attention has not been fully directed to it before, and that statesmen should not long ago have urged its paramount importance upon the attention of Congress.—*See article* Mississippi River.

Oil (Fr. *Huile*; Germ. *Oel*; It. *Olio*; Lat. *Oleum*; Russ. *Maslo*; Sp. *Aceite*). The term *oil* is applied to

designate a number of unctuous liquors, which, when dropped upon paper, sink into it, and make it seem semi-transparent, or give it what is called a greasy stain. These bodies are very numerous, and have been in common use from time immemorial. Chemists have divided them into two classes; namely, *volatile* and *fixed* oils. Oil was used for burning in lamps as early as the epoch of Abraham, about 1921 B.C. It was the staple commodity of Attica, and a jar full was the prize at the Panathenæan games. It was the custom of the Jews to anoint with oil persons appointed to high offices, as the priests and kings, *Psalm* cxxxiii. 2; 1 *Sam.* x. 1, xvi. 13. The anointing with this liquid seems also to have been reckoned a necessary ingredient in a festival dress, *Ruth*, iii. 3. The fact that oil, if passed through red-hot iron pipes, will be resolved into a combustible gas, was long known to chemists; and after the process of lighting by coal-gas was made apparent, Messrs. Taylor and Martineau contrived apparatus for producing oil-gas on a large scale.—HAYDN.

We borrow from Dr. Thomas Thomson the following statement with respect to these bodies:

I. VOLATILE OILS, called also *essential oils*, are distinguished by the following properties: 1. Liquid, often almost as liquid as water, sometimes viscid; 2. Very combustible; 3. An acrid taste and a strong fragrant odor; 4. Volatilized at a temperature not higher than 212°; 5. Soluble in alcohol, and imperfectly in water; 6. Evaporate without leaving any stain on paper. By this last test it is easy to discover whether they have been adulterated with any of the fixed oils. Let a drop of the volatile oil fall upon a sheet of writing-paper, and then apply a gentle heat to it; if it evaporates without leaving any stain upon the paper, the oil is pure; but if it leaves a stain upon the paper, it has been contaminated with some fixed oil or other. Volatile oils are almost all obtained from vegetables, and they exist in every part of plants—the root, the bark, the wood, the leaves, the flower, and even the fruit, though they are never found in the substance of the cotyledons; whereas the fixed oils, on the contrary, are almost always contained in these bodies. When the volatile oils are contained in great abundance in plants, they are sometimes obtained by simple expression. This is the case with oil of oranges, of lemons and bergamot: but in general they can only be obtained by distillation. The part of the plant containing the oil is put into a still with a quantity of water, which is distilled off by the application of a moderate heat. The oil comes over along with the water, and swims upon its surface in the receiver. By this process are obtained the oils of peppermint, thyme, lavender, and a great many others, which are prepared and employed by the perfumer. Others are procured by the distillation of resinous bodies. This is the case in particular with oil of turpentine, which is obtained by distilling a kind of resinous juice, called turpentine, that exudes from the juniper. Volatile oils are exceedingly numerous. They have been long known; but as their use in chemistry is but limited, they have not hitherto been subjected to an accurate chemical investigation. They differ greatly in their properties from each other, but it is impossible at present to give a detailed account of each.

1. The greater number of volatile oils are *liquid*; many, indeed, are as limpid as water, and have none of that appearance which we usually consider oily. This is the case with the following; namely, oil of turpentine, oranges, lemons, bergamot, roses. Others have the oily viscidity. It varies in them in all degrees. This is the case with the oils of mace, cardamoni, sassafras, cloves, cinnamon. Others have the property of becoming solid. This is the case with the oils of parsley, fennel, anise seed, balm. Others crystallize by slow evaporation. This is the case with oil of thyme, peppermint, marjoram. The oil of nutmegs has usually the consistence of butter. This is the case also with the oils of hops and of pepper. 2. The color of the volatile oils is as various as their other properties. A great number are limpid and colorless; as oil of turpentine, lavender, rosemary, savine, anise seed: some are yellow; as spike, bergamot: some are brown; as thyme, savory, wormwood: others blue; as camomile, motherwort: others green; as milfoil, pepper, hops, parsley, wormwood, cajeput, juniper, sage, valerian: others, though at first colorless, become yellow or brown by age; as cloves, cinnamon, sassafras. 3. The odors are so various as to defy all description. It is sufficient to say, that all the fragrance of the vegetable kingdom resides in volatile oils. Their taste is acrid, hot, and exceedingly unpleasant. 4. Their specific gravity varies very considerably, not only in different oils, but even in the same oil in different circumstances. When the volatile oils are heated in the open air, they evaporate readily, and without alteration diffuse their peculiar odors all around; but there is a considerable difference between the different oils in this respect. When distilled in close vessels, they do not so readily assume the form of vapor. Hence they lose their odor, become darker in color, and are partly decomposed. Oils do not seem very susceptible of assuming the gaseous form, unless some other substance, as water, be present.

II. FIXED OILS are distinguished by the following characters: 1. Liquid, or easily become so when exposed to a gentle heat; 2. An unctuous feel; 3. Very combustible; 4. A mild taste; 5. Boiling point not under 600°; 6. Insoluble in water, and nearly so in alcohol; 7. Leave a greasy stain upon paper.

These oils, which are called fat or expressed oils, are numerous, and are obtained partly from animals and partly from vegetables, by simple expression. As instances, may be mentioned whale oil or train oil, obtained from the blubber of the whale and from cod: olive oil, obtained from the fruit of the olive; linseed oil and almond oil, obtained from linseed and almond kernels. Fixed oils may also be extracted from poppy seeds, hemp seeds, beech mast, and many other vegetable substances.

All these oils differ from each other in several particulars, but have also many particulars in common.

1. Fixed oil is usually a liquid with a certain degree of viscidity, adhering to the sides of the glass vessels in which it is contained, and forming streaks. It is never perfectly transparent; has always a certain degree of color, most usually yellowish or greenish; its taste is sweet, or nearly insipid. When fresh it has little or no smell.

There exist also in the vegetable kingdom a considerable number of bodies which, at the ordinary temperature of the atmosphere, are solid, and have hitherto been considered as fixed oils. Palm oil may be mentioned as an example. The various substances used in India and Africa as substitutes for butter, and as unguents, may likewise be mentioned.

2. All the fixed oils hitherto examined are lighter than water, but they differ greatly from one another in specific gravity. The same difference is observable in different samples of the same oil. Fixed oil, when in the state of vapor, takes fire on the approach of an ignited body, and burns with a yellowish white flame. It is upon this principle that candles and lamps burn. The tallow or oil is first converted into a state of vapor in the wick; it then takes fire, and supplies a sufficient quantity of heat to convert more oil into vapor; and this process goes on while any oil remains. The wick is necessary to present a sufficiently small quantity of oil at once for the heat to act upon. If the heat were great enough to keep the whole oil at a temperature of 600°, no wick would be necessary, as is obvious from oil catching fire spontaneously when it has been raised to that temperature. When oil is used in this manner, either in the open air or in contact with oxygen gas, the only new products obtained are *water* and *carbonic* acid. The drying oils are used as the vehicle of paints and varnishes. Linseed, nut, poppy, and

hemp-seed oils belong to this class. These oils in their natural state possess the property of drying oils, but imperfectly. To prepare them for the use of the painter and varnish maker, they are boiled for some time in an iron pot, and sometimes burned till they become viscid. When they burn for some time, their unctuous quality is much more completely destroyed than by any method that has been practiced. Hence it is followed frequently in preparing the drying oils for varnishes, and always for printers' ink, which requires to be as free as possible from all unctuosity. Nut oil has been found preferable to all other oils for printers' ink; though the dark color which it acquires during boiling renders it not so proper for red ink as for black. Linseed oil is considered as next after nut oil in this respect. Other oils can not be employed, because they can not be sufficiently freed from their unctuosity. Ink made with them would be apt to come off and smear the paper while in the hands of the bookbinder, or even to spread beyond the mark of the types and stain the paper yellow.

The kind of oil used for burning in lamps varies, in different parts of the world, with the sources of supply. Whale oil is used in Great Britain, but seal oil, fish oil, and oils obtained from seeds by pressure are also largely consumed. In Paris the oils of rape-seed and of poppy-seed are used; and in the south of France, and in Italy, an inferior kind of olive oil, and also the oil of the earth-nut, are employed. In the latter country a lamp oil is expressed from grape-stones. In Piedmont walnut oil is common; oil of sesamum-seed is burned on the eastern and southern coasts of the Mediterranean; while in tropical countries cocoa-nut oil, which is solid in the climate of Great Britain, is generally used. In China, the *Camellia oleifera* is cultivated for the sake of the oil obtained from its seeds; also a shrub, *Croton sebiferum*, the fruit of which yields a useful oil. In consequence of the deficient supply of tallow during the late war with Russia, inquiries have been set on foot in various parts of the world as to the seeds and other vegetable products from which oil may be obtained, and the result of these inquiries has already shown that many oil-yielding substances, not before known in commerce, exist. The export of oils from the East Indies, especially *gingelly*, has greatly increased. Pistachio-nut oil is becoming common, as is also ground-nut oil from Africa. All these oils are used for burning in lamps.

The following is a list of the plants which yield the ordinary unctuous oils of commerce:

No.	Plants.		Oils.	Specific Gravity
1.	Linum usitatissimum et perenne	D.	Linseed oil	0·9347
2.	Corylus avellana	D.	Nut oil	0·9260
3.	Juglans regia	D.		
4.	Papaver somniferum	D.	Poppy oil	0·9243
5.	Cannabis sativa	D.	Hemp oil	0·9276
6.	Sesamum orientale	G.	Oil of sesamum	....
7.	Olea Europea	G.	Olive oil	0·9176
8.	Amygdalus communis	G.	Almond oil	0·9180
9.	Guilandina moringa	G.	Oil of behen or ben	....
10.	Cucurbita pepo, and melapepo	D.	Cucumber oil	0·9231
11.	Fagus silvatica	G.	Beech oil	0·9225
12.	Sinapis nigra et arvensis	G.	Oil of mustard	0·9160
13.	Helianthus annuus et perennis	D.	Oil of sunflower	0·9262
14.	Brassica napus et campestris	G.	Rape-seed oil	0·9136
15.	Ricinus communis	D.	Castor oil	0·9611
16.	Nicotiana tabacum et rustica	D.	Tobacco-seed oil	0·9282
17.	Prunus domestica	G.	Plum-kernel oil	0·9127
18.	Vitis vinifera	D.	Grape-seed oil	0·9262
19.	Theobroma cacao	G.	Butter of cacao	0·892
20.	Cocos nucifera	G.	Cocoa-nut oil	....
21.	Cocus butyracea vel avoira ciala	G.	Palm oil	0·968
22.	Laurus nobilis	G.	Laurel oil	....
23.	Arachis hypogæa	G.	Ground-nut oil	....
24.	Vateria indica	G.	Piney tallow	0·926
25.	Hesperis matronalis	D.	Oil of Julienne	0·9281
26.	Myagrum sativa	D.	Oil of camelina	0·9252
27.	Reseda luteola	D.	Oil of weld-seed	0·9388
28.	Lepidium sativum	D.	Oil of garden cresses	0·9240
29.	Atropa belladonna	D.	Oil of deadly night-shade	0·9250
30.	Gossypium Barbadense	D.	Cotton-seed oil	....
31.	Brassica campestris oleifera	G.	Colza oil	0·9136
32.	Brassica præcox	G.	Summer rape-seed oil	0·9139
33.	Raphanus sativus oleifer	G.	Oil of radish-seed	0·9187
34	Prunus cerasus	G.	Cherry-stone oil	0·9239
35.	Pyrus malus	G.	Apple-seed oil	....
36.	Euonymus Europæus	G.	Spindle-tree oil	0·9380
37.	Cornus sanguinea	G.	Cornil-berry tree oil	....
38.	Cyperus esculentus	G.	Oil of the roots of cyper grass	0·9180
39.	Hyoscamus niger	G.	Henbane-seed oil	0·9130
40.	Æsculus hippocastanum	G.	Horse-chestnut oil	0·927
41.	Pinus abies	D.	Pinetop oil	0·285

Candia.—A fair crop or yield of olive oil is estimated at two million gallons, and two and a half millions an abundant crop. Although immense numbers of olive-trees were cut down during the "Greek war" and the civil commotion in 1810, the population is still insufficient to attend to them, and the only culture they receive is slightly plowing the ground on which they stand. The fruit is allowed to drop from the tree, when it is collected by women and children, who receive for their trouble one-third the quantity they collect; if the crop is abundant, generally one quarter is lost for want of hands to collect it. In the district of Opokero the fruit is beaten from the trees, evidently to its injury, for it is smaller in that section than in any other part of the island. The fruit is collected in heaps and taken to a wooden mill of very primitive and rough construction, operated by four men. The oil from the first pressure belongs to the owner of the olives, out of which the government receives one-tenth; the mass is again pressed, and one-third quantity, in comparison with the first pressure, is obtained, although of an inferior quality; this is divided into tenths, one of which belongs to the government, two divided among the workmen, and the remainder belongs to the owner of the mill.

WHALE OIL.

STATEMENT OF THE QUANTITIES OF OIL AND BONE TRANSHIPPED AT THE SANDWICH ISLANDS IN 1854.

To what Country.	Season.	Sperm Oil.	Whale Oil.	Bone.
		Gallons.	Gallons.	Pounds.
United States	Spring	49,361	257,380	28,765
do.	Fall.	60,449	1,268,365	752,659
do.	do.	46,674	104,700	654,241
Bremen	do.	....	10,244	26,089
Itavre	do.	....	25,172	46,810
Total, 1854	....	156 484	1.665 921	1.508,441
do. 1853	....	175,396	5,787,348	2,020,264

IMPORTATIONS OF SPERM AND WHALE OIL AND WHALEBONE INTO THE UNITED STATES IN 1856.

	Sperm Oil.	Whale Oil.	Whalebone.
	Barrels.	Barrels.	Pounds.
New Bedford	52,885	81,132	1,067,600
Fairhaven	5,606	9,648	26,300
Dartmouth	1,027	1,939	8,400
Westport	1,247	334	1,500
Mattapoisett	979	368	....
Sippican	293	32	....
Dis. of New Bedford.	62,127	93,554	1,123,800
Sandwich	380	140	1,000
Falmouth	507	2,477	18,400
Holmes's Hole	238	800	2,000
Edgartown	1,227	6,171	104,300
Nantucket	6,015	7,354	57,500
Provincetown	889	2,806	4,000
Orleans	480	889	3,600
Boston	879	849	28,500
Salem	221	919	1,300
Beverly	141	144	....
Fall River	50	1,944	11,600
Warren	3,073	11,909	109,000
Newport	700	....	....
New London	961	81,808	249,900
Mystic	121	5,146	69,000
Stonington	290	6,307	44,500
Sag Harbor	664	4,087	92,200
Greenport	675	159	4,000
Cold Spring	....	2,596	27,000
New York	2,083	18,997	691,200
Total for 1855	80,941	197,890	2,592,700

IMPORTS OF EACH MONTH OF 1856.

	Sperm Oil.	Whale Oil.	Whalebone.
	Barrels.	Barrels.	Pounds.
January, no arrivals.	....	....	....
February	2,739	3,284	48,300
March	3,074	20,987	678,900
April	9,832	49,350	338,600
May	18,328	52,246	418,300
June	12,326	31,659	324,800
July	18,051	13,588	162,000
August	5,577	8,115	43,000
September	5,094	3,304	38,300
October	3,487	2,090	8,200
November	4,817	1,362	30,500
December	2,036	885	....
Total	80,941	197,890	2,592,700

In addition to the above there have been imported into the port of Boston from St. John's, Newfoundland, 3129 barrels sezi oil, 124 barrels whale oil, and 20 barrels sperm oil.

The following table gives a summary of the importations of oil and bone into the United States for the past sixteen years:

Years.	Sperm Oil.	Whale Oil.	Whalebone.
	Barrels.	Barrels.	Pounds.
Imports for 1841	159,304	207,348	2,000,000
" 1842	165,657	161,041	1,600,000
" 1843	153,985	206,727	2,000,000
" 1844	233,534	263,047	2,532,445
" 1845	157,917	272,730	3,147,142
" 1846	95,217	207,493	2,270,029
" 1847	120,753	313,150	3,241,680
" 1848	107,976	283,656	2,993,000
" 1849	100,944	248,492	2,281,100
" 1850	92,892	200,608	2,869,200
" 1851	90,591	328,483	3,916,500
" 1852	78,872	84,211	1,259 900
" 1853	102,077	260,114	5,052,300
" 1854	76,096	319,837	3,445 200
" 1855	72,049	181,015	2,707,500
" 1856	80,941	197,890	2,592,700

STATEMENT OF THE AVERAGE PRICES OF SPERM AND WHALE OIL AND WHALEBONE FOR SIXTEEN YEARS PAST, AT NEW YORK AND NEW BEDFORD.

Years.	Sperm Oil.	Whale Oil.	Whalebone
1841	100c.	30½c.	19c.
1842	94	31½	19½
1843	72	33½	23
1844	63	34½	35½
1845	90½	36½	49
1846	88	32½	33½
1847	87½	33½	34
1848	100½	36	30½
1849	106 9-16	39 9-10	31 8-10
1850	120 7-10	49 5-10	34 4-10
1851	127½	45 5-16	34½
1852	123½	68½	50½
1853	124½	58½	34½
1854	148½	58½	39 1-5
1855	177 2-10	71 3-10	45½
1856	162	79½	58

NORTH PACIFIC FISHERY.

TABLE SHOWING THE NUMBER OF SHIPS ENGAGED IN THE NORTH PACIFIC FISHERY FOR THE LAST FIFTEEN YEARS, AND THE AVERAGE QUANTITY OF OIL TAKEN.

Years.	Ships.	Average.	Total.
	Number.	Barrels.	Barrels.
1841	20	1412	28,200
1842	29	1627	47,200
1843	108	1349	146 800
1844	170	1528	259 570
1845	263	953	250,600
1846	292	160	253 800
1847	177	1059	187.443
1848	159	1164	185,265
1849	165	1334	220.850
1850	144	1692	243,648
1851	138	626	86,360
1852	288	1343	373.450
1853	238	912	218,135
1854	282	774	184 063
1855	217	873	189,579

In 1856 about 181 ships cruised in the Northern Seas, two of which were lost, and three have not been reported during the season.

UNITED STATES VESSELS EMPLOYED IN THE WHALE FISHERY, JANUARY 1, 1857.

	Ships and Barks.	Brigs.	Schooners.	Tonnage
New Bedford	329	..	1	111,864
Fairhaven	47	..	1	16,646
Westport	14	4	1	3,983
Dartmouth	10	..	..	2,700
Mattapoisett	12	5	1	3,530
Sippican	..	..	3	319
Wareham	1	..	..	374
Dis. of New Bedford	413	9	6	138,926
Sandwich	..	1	..	165
Falmouth	3	..	..	1,106
Holmes's Hole	3	1	..	1,219
Edgartown	14	..	3	4 955
Nantucket	38	1	2	13 620
Provincetown	5	2	15	2,735
Beverly	2	..	..	452
Lynn	1	..	..	323
Orleans	1	2	1	610
Fall River	3	..	..	715
Warren	15	..	..	5,043
Providence	1	..	..	298
Newport	4	..	..	1,206
New London	50	4	11	18,999
Mystic	6	..	..	1,840
Stonington	6	..	..	1,949
Sag Harbor	14	2	2	5,261
Greenport	9	..	..	2,652
Cold Spring	5	..	..	2,129
Total Jan. 1, 1857	553	22	40	204,269

Showing an addition of eight ships, one brig, and eleven schooners, with an addition in the aggregate tonnage of 5068 tons.

Of the above are owned in the State of—

	Ships and Barks.	Brigs.	Schooners.	Tonnage.
Massachusetts	483	15	27	164 822
Rhode Island	20	..	..	6 647
Connecticut	63	4	11	22,788
New York	28	2	2	10,042
Total	593	22	40	204,298

The number of vessels and amount of tonnage employed in the Whale Fishery since 1844 has been as follows:

Years.	Ships and Barks.	Brigs.	Schooners.	Tonnage.
January 1, 1844	595	41	9	200,147
" 1845	648	35	17	218 655
" 1846	678	35	22	233,189
" 1847	670	31	21	230,218
" 1848	621	22	15	210,663
" 1849	581	21	12	196,112
" 1850	510	20	13	171,484
" 1851	502	24	17	171,871
" 1852	558	27	35	193,990
" 1853	590	30	32	206,286
" 1854	602	28	38	208 399
" 1855	584	20	34	199,842
" 1856	585	21	29	199,141

—*New Bedford Shipping List.*

EXPORTS OF DOMESTIC OILS FROM THE UNITED STATES FOR THE FISCAL YEAR ENDING JUNE 30, 1856.

Whither Exported.	Spermaceti.		Whale and other Fish.		Lard Oil.		Oil Cake.
	Gallons.	Dollars.	Gallons.	Dollars.	Gallons.	Dollars.	Dollars.
Russian Possessions in North America	100	176	60	120	....	....	....
Prussia	2,520	5,040	....	....	....	....	....
Sweden and Norway	5,704	11,170	1,284	1,001	....	....	....
Swedish West Indies	....	....	....	....	81	79	2,977
Denmark	1,462	3,166	....	....	....	....	....
Danish West Indies	80	164	1,778	1,462	717	684	....
Hamburg	390	850	....	....	....	....	....
Bremen	....	....	10,482	9,020	4,942	3,564	....
Other German ports	....	....	3,868	2,137	5,000	4,772	....
Holland	674	1,297	....	....	....	....	....
Dutch West Indies	....	....	2,865	2,324	120	102	....
Dutch Guiana	....	....	2,715	2,237	....	....	....
Dutch East Indies	120	255	....	....	....	....	....
Belgium	1,659	3,242	....	....	4,160	3,926	....
England	467,372	853,920	131,265	97,830	25,177	22,026	1,074,258
Scotland	13,880	26,173	24,857	18,817	49,383	40,322	10,795
Canada	17,950	21,049	177,593	170,810	9,764	9,749	980
Other British North American Possessions	5,609	8,300	11,737	9,722	2,376	2,392	52
British West Indies	....	....	5,715	4,880	11,412	10,484	44,025
British Guiana	....	....	1,876	1,500	2,998	2,879	150
British Possessions in Africa	900	1,228	561	552	606	607	....
British Australia	....	....	21,160	14,778	940	1,085	....
British East Indies	....	....	4,601	3,586	....	....	....
France on the Atlantic	18,215	32,640	90,685	65,714	....	....	....
French North American Possessions	....	....	....	....	40	40	....
French Guiana	....	....	2,523	2,100	....	....	....
Spain on the Mediterranean	168	362	....	....	41	43	....
Cuba	853	1,243	123,734	98,390	4,288	4,243	2,350
Porto Rico	....	....	4,443	3,537	4,013	3,128	300
Cape de Verd Islands	....	....	63	70	....	....	....
Hayti	190	375	3,113	2,889	51	52	....
Mexico	2,917	5,861	2,166	1,904	1,606	1,413	....
Central Republic	....	....	....	....	40	43	....
New Granada	28	48	892	670	5,151	5,027	....
Venezuela	....	....	1,269	1,089	775	704	1,032
Brazil	....	....	80	71	80	84	61
Chili	....	....	1,874	1,784	76,944	42,777	....
Peru	....	....	7,587	6,479	1,289	1,257	....
Sandwich Islands	....	....	338	343	....	....	....
Whale Fisheries	....	....	15	8	....	....	....
Total year 1855-'56	540,784	$977,005	646,004	$526,338	212,262	$161,252	$1,138,970

STATEMENT SHOWING THE IMPORTS OF OILS INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1856.

Whence Imported.	Castor.		Linseed.		Rape seed and Hemp seed.		Palm.		Neat's-foot and other animal.	Essential Oils.	Olive, in Casks.	Olive, in Bottles.
	Gallons.	Value.	Gallons.	Value.	Galls.	Value.	Gallons.	Value.	Value.	Value.	Value.	Value.
		$		$		$		$	$	$	$	$
Danish West Indies	....	....	....	....	....	....	1,615	675	....	....	....	....
Hamburg	....	....	885	737	26,618	12,294	....	....	....	3,064	....	3,009
Bremen	....	....	....	....	120	153	....	....	5	13,037	....	....
Holland	....	....	8,489	6,242	95	56	....	....	....	1,050	....	....
Dutch East Indies	....	....	....	....	....	....	....	....	....	2	....	....
Belgium	681	805	....	....	46	25	....	....	....	1,020	....	....
England	55,585	42,139	1,691,265	1,048,910	15,127	6,191	23,471	11,912	....	21,258	6,265	4,230
Scotland	....	....	55	61	....	....	....	....	....	....	....	....
Ireland	....	....	....	....	....	....	....	....	....	....	....	....
Gibraltar	....	....	....	....	....	....	....	....	....	....	....	....
Malta	....	....	....	....	....	....	....	....	....	....	6,910	....
Canada	....	....	45	25	....	....	....	....	244	10	22	286
Other British N. A. Poss.	....	....	....	....	....	....	....	....	....	50	....	....
British Poss. in Africa	....	....	....	....	....	....	208,926	77 707	....	....	....	....
Other ports in Africa	....	....	....	....	....	....	910,559	325,752	27	....	....	....
British Australia	....	....	....	....	....	....	....	....	....	....	....	....
British East Indies	87,315	53,337	....	....	....	....	....	....	....	3,791	....	....
France on the Atlantic	....	....	11,478	7,796	11,423	6,437	....	....	....	12,281	811	53,451
France on the Med'n	....	....	....	....	....	....	....	....	....	13,680	18,665	249,708
Spain on the Atlantic	....	....	....	....	....	....	....	....	....	757	11,891	....
Spain on the Med'n	....	....	....	....	....	....	....	....	....	....	13,381	353
Cuba	....	....	....	....	....	....	....	....	....	85	939	1,701
Porto Rico	80	64	....	....	....	....	....	....	....	....	....	....
Portugal	....	....	....	....	....	....	....	....	....	....	5,648	2
Sardinia	....	....	....	....	....	....	....	....	....	534	5 916	37,162
Tuscany	....	....	....	....	....	....	....	....	....	726	8,033	25,934
Two Sicilies	....	....	....	....	....	....	....	....	....	17,356	13,303	393
Austria	....	....	....	....	....	....	....	....	....	4,599	....	77
Turkey in Europe	....	....	....	....	....	....	....	....	....	....	3,467	....
Turkey in Asia	....	....	....	....	....	....	....	....	....	....	832	....
Mexico	20	26	....	....	....	....	....	....	....	....	....	....
New Granada	....	....	....	....	....	....	4	3	....	20	....	....
Brazil	....	....	....	....	....	....	550	186	....	197	....	....
China	....	....	....	....	....	....	....	....	....	20,312	....	10
Whale Fisheries	....	....	....	....	....	....	822	82	....	....	....	....
Total	143,681	96,371	1,712,208	1,063,771	53,429	26,156	1,149,547	416,317	276	119,438	94,163	376,356

An instance of the demand for oil is manifest in the palm-oil trade with the west coast of Africa. A few years ago — probably less than fifteen — palm oil, in the west of Africa, was worth a dollar a gallon, and a late account from that region says not one thousand gallons left the country in a year. Now the traffic in that article with Great Britain alone amounts to 700,000 gallons a year, at an average of thirty-three cents a gallon; and with the United States as much more. For lubricating machinery, particularly in steam factories and on railroads in Great Britain, this oil is used more than any or all other articles, being both cheaper and better. There is now a monthly line of steamers from Southampton to the west coast of Af-

rica, the Madeira and Canary Isles. Bristol has fifty-four ships in the trade with that coast; Liverpool thirty-five; and the entire number from Great Britain, both steamers and sailing vessels, is not less than one hundred. Some of these are ships of 1000 tons burden. President Roberts, of Liberia, says twenty ship-loads of palm oil go from Monrovia every year. The import of oils into the United States has been as follows:

	1850.		1855.	
	Gallons.	Value.	Gallons.	Value.
Whale.....	39,669	$12,864	103,394	$36,267
Olive.....	91,600	55,787	126,478	88,646
Olive in bot.	....	....	88,096	576,154
Linseed	1,163,647	487,020	1,243,035	776,077
Rape-seed ..	136	59	45,381	26 658
Palm.....	....	....	767,784	295,211
Neat's-foot..	....	....	5,184	2,893
Total.....	1,295,052	$556,630	2,330,059	$ 841,962
Increase ...	....	....	1,035,007	285,332

The table does not include the [illegible] of whales, but only the whale [illegible] mostly from the British Possessions and [illegible]. Olive oil in bottles has been estimated [illegible] mostly of French origin. The linseed is [illegible] altogether English.—*See* OLIVE OIL.

Benzole, or *Coal Oil*, is a new discovery of producing oil from certain kinds of bituminous coal. At Cloverport, Kentucky, on the Ohio River, are extensive new works, running twelve retorts night and day, consuming from eight to ten tons of coal every twenty-four hours, and producing 750 gallons of crude oil. Re-distilled, this quantity yields 600 gallons of refined oils; viz., 125 gallons of benzole, 75 of naphtha, 225 of lubricating oil, and 175 of oil for illuminating purposes. Benzole readily sells at $1 50 per gallon; lubricating oil at $1 25; naphtha and burning at eighty cents. Preparations are making at Cloverport for the manufacture of a beautiful semi-transparent candle from the substance called "paraffine," resembling spermaceti, and which is formed in pearly crystals in the dark oils of the last distillations after they have cooled. The paraffine, as remarked by Professor Silliman, Jun., does not exist ready formed in the original crude product, but is a result of the high temperature employed in the process of distillation, by which the elements are newly arranged. It derives its name from the unalterable nature of the substance under the most powerful chemical agent. The residuum from the last distillation makes the finest quality of asphaltum, used for smearing vaults, etc., now imported and sold at thirty dollars per ton.

Oil-painting. Painting in which the medium for using the colors is oil. It is said to have been unknown to the ancients, and not used earlier than the fourteenth century; its invention being attributed to John Van Eyck, sometimes called John of Bruges. By him it was supposed to have been imparted to one Antonio da Messina, who first brought it to Venice. Giovanni Bellini, by a stratagem, got possession of the secret from him, and then made it publicly known. Oil-painting has the advantages, above all other modes, of affording great delicacy of execution, a union and insensible blending of the colors, and, above all, that of imparting great force to its effects. The various colors chiefly used in oil-painting are white-lead, Cremnitz white, chrome, king's yellow, Naples and patent yellow, the ochres, Dutch pink, terra di Sienna, yellow lake, vermilion, red-lead, Indian and Venetian red, the several sorts of lake, brown pink, Vandyke brown, burned and unburned umber, ultramarine, Prussian and Antwerp blue, ivory black, blue black, asphaltum. The principal oils are those extracted from the poppy, nut, and linseed. With the latter, driers are introduced.—*See* PAINTS.

Oldenburg, a state of Germany, in the northwest, with the title of Grand Duchy, composed of three separate portions: 1st. The Duchy of Oldenburg, which forms eight-ninths of the territory. It is surrounded by Hanover on the east, south, and west, and bounded north by the North Sea; capital, Oldenburg; 2d. The Principality of Lübeck, or Eutin, inclosed in the Duchy of Holstein (Denmark); and, 3d. The Principality of Birkenfeld, between Rhenish Prussia and Holstein Homburg; capital, Birkenfeld. Area, 2421 square miles. Population in 1852, 281,923. Oldenburg lies in the basin of the North Sea, and is entirely flat. Soil in general fertile, but in several places are extensive sand dunes and marshes. Corn raised insufficient for consumption. Pasturage excellent; horses, cattle, and sheep extensively reared. Manufactures confined to linen-weaving and coarse woolens. Revenue (estimated), 1854, 891,000 thalers; expenses, 979,000 thalers; public debt, 1,600,000 thalers. *Oldenburg*, the capital, is situated at the conflux of the Hunte with the Haaren, which here forms a small port, eighty miles west-southwest of Hamburg. Population, 7829. It is the residence of the Grand Duke. Population of circle in 1852, 59,453.

COMMERCE OF OLDENBURG IN 1854 AND 1855.

	Entered.			Cleared.		
	Number.	Tonnage.	Equipment.	Number.	Tonnage.	Equipment.
Merchant vessels.....	867	65,511	5,869	898	68 075	5,984
Coasting vessels	6871	77,385	13,477	5 64	65,159	11,761
Total in 1854	7738	142,896	19,346	6862	133,234	17,755
Domestic.....	5658	84,124	12,509	5604	79,762	11,464
Foreign	2080	78,772	6,847	1808	54,452	6,191
Total in 1855	6956	131,991	17,613	6030	121,759	17,591

Olibanum (Fr. *Encens*; Ger. *Weirauch*; It. *Olibano*; Arab. *Looban*), a gum-resin, the produce of a large tree (*Libanus thurifera*) growing in Arabia and India. It is imported in chests, containing each about one cwt., from the Levant and India; the best comes from the former, and is the produce of Arabia. Good olibanum is in semi-transparent tears, of a pink color, brittle, and adhesive when warm. When burned, the odor is very agreeable; its taste is bitterish, and somewhat pungent and aromatic; it flames for a long time with a steady, clear light, which is not easily extinguished, leaving behind a *black* (not, as has been said, a whitish) ash. Olibanum is the frankincense (*thus*) of the ancients, and was extensively used by them in sacrifices. —PLINY, *Nat. Hist.* It has also been used in the ceremonies of the Greek and Roman churches.—AINSLIE'S *Materia Indica*; THOMSON'S *Chemistry*; KIPPISGH, *Antiq. Rom.*

Olive, Olives (Fr. *Olives*; Ger. *Oliven*; It. *Olive, Olive*; Sp. *Aceitunas*; Port. *Azeitenas*; Lat. *Oliva*), a fruit yielding a large quantity of oil, the produce of the *Olea*, or olive-tree. The wild olive is indigenous to Syria, Greece, and Africa, on the lower slopes of Mount Atlas. The cultivated species grows spontaneously in Syria, and is easily reared in Spain, Italy, and the south of France. It has even been raised in the open air in England, but its fruit is said not to have ripened. The fruit is a smooth, oval plum, about three-quarters of an inch in length, and half an inch in diameter; of a deep violet color when ripe, whitish and fleshy within, bitter and nauseous, but replete with a bland oil; covering an oblong, pointed, rough nut. Olives intended for preservation are gathered before they are ripe. In pickling, the object is to remove their bitterness, and to preserve them green, by impregnating them with a brine of aromatized sea-salt;

for this purpose various methods are employed. The wood of the olive-tree is beautifully veined, and has an agreeable smell. It is in great esteem with cabinet-makers, on account of the fine polish of which it is susceptible.

Olive Oil (Ger. *Baumol*; Fr. *Huile d'olives*; It. *Olio d'ulivo*; Sp. *Aceite de aceitunas*; Lat. *Oleum olivarum*). The olive-tree is principally cultivated for the sake of its oil. This is an insipid, inodorous, pale greenish-yellow colored, viscid fluid, unctuous to the feel, inflammable, incapable of combining with water, and nearly insoluble in alcohol. It is the lightest of all the fixed oils; and is largely used, particularly in Greece, Italy, Spain, and France, as an article of food, and in medicine and the arts. It is also very extensively used in England, particularly in the woolen manufacture. The ripe fruit is gathered in November, and immediately bruised in a mill, the stones of which are set so wide as not to crush the kernel. The pulp is then subjected to the press in bags made of rushes; and by means of a gentle pressure, the best, or *virgin* oil, flows first; a second, and afterward a third, quality of oil is obtained by moistening the residuum, breaking the kernels, etc., and increasing the pressure. When the fruit is not sufficiently ripe, the recent oil has a bitterish taste; and when too ripe, it is fatty. After the oil has been drawn it deposits a white, fibrous, and albuminous matter; but when this deposition has taken place, if it be put into clean glass flasks, it undergoes no further alteration; the common oil can not, however, be preserved in casks above one and a half or two years. It is sometimes adulterated by the admixture of poppy oil.—THOMSON'S *Dispensatory*. The best olive oil is said to be made in the vicinity of Aix, in France. That which is brought from Leghorn, in chests containing thirty bottles, or four English gallons, is also very superior; it is known in our markets by the name of Florence oil, and is used mostly for culinary purposes. Olive oil is the principal article of export from the kingdom of Naples.—*See* NAPLES. Apulia and Calabria are the provinces most celebrated for its production. The Apulian is the best, and is preferred by the woolen manufacturers, by whom it is extensively used. By far the largest portion of the olive oil brought to England is in general imported from Italy, principally from Gallipoli, on the east coast of the Gulf of Taranto (which see), whence it is commonly known by the name of Gallipoli oil. But besides Italy, Spain, Turkey, the Ionian Islands, etc., send us large quantities.

Oil Trade of Naples.—The oils of the kingdom of Naples are produced in Apulia, from Bari to its southern extremity, the Capo di Leuca, a district comprising the territories which export from Gallipoli and Taranto; and in Calabria from Rossano, on the Gulf of Taranto, across to Gioja. The whole coast from Gioja as far as Gaeta is covered with olive-trees. They are also abundant in the Abruzzi and the Terra di Lavora; but Apulia and Calabria furnish by far the greatest quantity of oil. The principal magazines, or *caricatori*, for oil, are at Gallipoli and Gioja. Gallipoli supplies England, Holland, the north of Europe, and, in short, all those countries that require the most perfectly purified oil. It is clarified to the highest degree by merely keeping it in cisterns hollowed out of the rock on which the town is built. The voyages it has to perform being long, it is put into casks so well constructed that it frequently arrives at Petersburg in the heat of summer without the least waste or leakage—an advantage attributed to the seasoning of the staves, which, before they are put together, are well soaked in sea-water.

The oil received into the cisterns in Gallipoli, either belongs to the proprietor, who buys it of the planter, or is received in *deposit* on account of some other party, who gets a receipt (*biglietto di maggazino*) specifying the quantity of the oil received on his account, its quality, etc. Depositors pay at the rate of 20 grani a year for every salma of oil to the party holding it in deposit, and who is bound to account for it. The *caricatori* of Bari and Monopoli furnish oils for the consumption of Upper Italy and Germany, through the medium of Venice and Trieste. They also draw supplies from Brindisi and Otranto. The *caricatori* of Taranto, of Eastern Calabria or Retromarina, and of Western Calabria, the principal of which is Gioja, furnish supplies for Marseilles, etc. But the *caricatori* now mentioned, having no conveniences for clarification, produce only the thick oils used for soap-making. The oils of Sicily, like those of Tunis, are too thin to be used singly in the making of soap; and, being used only for mixing, are less valuable than most others. A full crop of oil in the province of Terra d'Otranto is supposed to yield about 300,000 salme, or 41,666 tuns. To facilitate transactions, orders or *cedules* are circulated, representing quantities of oil deposited in the provincial *caricatori*. These orders are negotiable, like bills of exchange, and are indorsed by the intermediate holder, who receives their value in cash, without, however, becoming liable for their due satisfaction. The only responsible parties are the drawer and drawee. The latter is obliged to deliver the oil at sight of the order, or to hold it at the bearer's disposal, till the 10th of November for the *caricatori* of Apulia, and till the 31st of December those of Calabria. If the contract be for time—that is, from one year to another, the oil is usually delivered at the purchaser's command on the 1st of March. Purchases for time are effected by means of a *voltata*, wherein the vendor undertakes to deliver the oil by the end of January, on receiving payment of the money; but the oil, as observed above, is not really at the purchaser's disposal before the beginning of March. Hence, in time bargains, the payment of the money precedes the delivery of the oil more than a month; scarce an instance is on record of an engagement of this sort having been broken, and the order is as readily negotiable as any other security. In purchases of oil at command, payment likewise precedes the delivery of the article; but in this case the advance is confined to the five days necessary to transmit the order to the *caricatore* where the oil is kept for delivery. The oil remains in the *caricatore* under the care and responsibility of the vendor, to be delivered on demand to the bearer of the order, free of all costs and charges whatever for the first year; but for every successive year from 25 to 30 grains per salma are charged for keeping, and for renewal of warranty. (We are indebted for these details to a very valuable Report by Mr. Steel, British vice-consul at Gallipoli, and to a *brochure* of M. Millenet, entitled *Coup de l'Œil sur le Royaume de Naples*. Naples, 1832.) *For the trade in Olive oil, see article* OILS.

Olive-tree. The wood of the olive is heavy, compact, fine-grained, and brilliant. The sap-wood is white and soft, and the heart-wood hard, brittle, and of a reddish or yellowish tint, with the pith nearly effaced, as in the box. It is employed by cabinet-makers to inlay the finer species of wood, which are contrasted with it in color, and to form light articles of ornament, such as dressing-cases, snuff-boxes, etc. The wood of the roots, which is agreeably marbled, is preferred to that of the trunk. On account of its hardness and durability, the wood of this tree was anciently used for the hinges of doors; and, before metal became common, it was selected by the Greeks for the images of their gods. From its resinous and oleaginous nature, the wood of this tree is exceedingly combustible, and burns as well before as after it is dried. There exudes from its wood a gum, which is sometimes sold for gum-elemi. There is also extracted from this tree a substance called *olivine*. The bark contains a bitter principle, and is regarded as tonic and febrifugal. The leaves are astringent.

The olivea are first bruised by a mill-stone, suffi-

ciently hard as not to break the kernels, and are then put into sacks of coarse linen, feather-grass, or of wool, and subjected to heavy pressure, by which means the most fluid and the best liquor is forced out, and is called *virgin oil*. It is received into vessels half filled with water, from which it is skimmed, and put into tubs, barrels, and bottles for use. Several coarser kinds of oil are afterward obtained, by adding hot water to the bruised fruit. The best olive oil is of a bright pale-amber color, without smell, and bland to the taste. Kept warm, it becomes rancid, and at 38° Fahr. it congeals. It is of the same nature as all mild expressed vegetable oils; of these the most fluid are preferred, and hence the oils of olives and of almonds are those chiefly used in medicine. One of the most esteemed kinds of oil is that produced at Aix (*Huile d'Aix en Provence*). *Florence oil* is also a fine kind, imported from Leghorn in flasks surrounded by a kind of network, formed of the leaves of a monocotyledonous plant. These are the kinds of olive oil in most frequent use at the table for salads (hence they are called *Salad oils*). *Lucca oil* is imported in jars holding about nineteen gallons each. *Genoa oil* is a fine kind. *Gallipoli oil* is imported in casks, and constitutes the largest portion of the olive oil imported into England. *Sicily oil* is of an inferior quality. *Spanish oil* is the worst. The foot deposited by olive oil is used for oiling machinery, under the name of *Droppings of Sweet oil*.

Another important advantage afforded by this tree is its fruit in a pickled state. It is gathered unripe, and suffered to steep in water for some days, and is afterward put into a lye of water and barilla, or kali, with the ashes of olive-stones, or with lime. It is then put up in earthen bottles, or in barrels, with salt and water, and in this state is ready for use. Olives are eaten before, as well as after meals, and are believed to excite appetite and promote digestion. The finest kind of prepared fruit is known in commerce by the name of *Picholines*, after one Picholini, an Italian, who first discovered the art of pickling olives. The fruit of the olive is of a pleasant taste, and is eaten by the modern Greeks during Lent, in its ripe state, without any preparation, except with the addition of a little pepper, salt, and oil. From the value of its products, in a commercial point of view, aside from other considerations, the culture of the olive strongly claims the attention of the American agriculturist, and the trial should be made in every place where its failure is not certain, and for this purpose young grafted trees of hardy and choice varieties should be obtained from Europe, and the formation of nurseries immediately begun. A portion of Texas, Louisiana, the islands of Georgia, and chosen exposures of the interior of the last-named State, as well as of some of the Western States, California, or of Oregon, will be the scene of this species of culture, if ever attended with success in North America.—BROWNE's *Trees of America*.

Omnium, a term used at the English Stock Exchange, to express the aggregate value of the different stocks in which a loan is now usually funded. Thus, in the English loan of £36,000,000 contracted for in June, 1815, the omnium consisted of £130 3 per cent. reduced annuities, £14 3 per cent. consols, and £10 4 per cent. annuities, for each £100 subscribed. The loan was contracted for on the 14th of June, when the prices of the above stocks were—3 per cent. reduced, 54; 3 per cent. consols, 55; 4 per cents., 70; hence the parcels of stock given for £100 advanced, were worth—

	£	s.	d.
£130 reduced, at 54	70	4	0
£14 consols, at 55	24	4	0
£10 4 per cents., at 70	7	0	0
Together	101	8	0

which would be the value of the omnium, or £1 8*s.* per cent. premium, independently of any discount for prompt payment.

Onion (Ger. *Zwiebel*; Fr. *Oignon*; It. *Cipolla*; Sp. *Cebolla*; Russ. *Luk*), a well-known bulbous plant (*Allium Cepa*, Linn.) cultivated all over Europe and the U. States for culinary purposes. The Strasburg, Spanish, and Portuguese varieties are the most esteemed.

Ontario, a lake of New York and Canada, easternmost and smallest in extent of the five great lakes of North America. It is between 43° 10′ and 44° N. lat., and between 76° and 88° W. long. It receives Niagara River, the great outlet of the upper lakes, in its south western part, and has its outlet by the St. Lawrence River in its northeastern part, in which, immediately below the lake, is the cluster denominated the "Thousand Islands." Its shape approaches to a long and narrow ellipse, being 190 miles long, and 55 wide in its widest part, and about 480 miles in circumference. It is in some places over 600 feet deep, so that its bottom is considerably below the level of the Atlantic. Its surface is 330 feet below the level of Lake Erie, and 134½ feet above tide-water. In every part it has sufficient depth of water for the largest vessels. It has many good harbors, and is rarely frozen excepting in shallow parts near the shore. The principal rivers which enter it from the southern side are the Genesee, Oswego, and Black rivers, and a large number of creeks. The Bay of Quinte is a long and irregular body of water on its eastern part, which receives a considerable river, the outlet of several small lakes, and Burlington Bay is in its western part. Both these bays are in Canada. It has several important places on its shores, the principal of which are Kingston, Toronto, and Coburg, in Canada; and Oswego, Sackett's Harbor, Port Genesee, or Charlotte, in the United States. It is subject to violent storms and heavy swells. It is connected with the Erie Canal by the Oswego Canal, and from thence the Erie Canal forms a navigable communication with the Hudson River, a distance of 209 miles; and much of the trade of New York for the West passes through it and through the Welland Canal, which is 28 miles long, with 27 locks, and admits the passage of the largest vessels which navigate the lakes. This canal commences at Sherbroke, near the mouth of Grand River, on Lake Erie, and terminates at Port Dalhousie, on Lake Ontario, nine miles west of Niagara village. Its entrance being a considerable distance west of the outlet of Lake Erie, it is open earlier than the Erie Canal at Buffalo, where the ice often accumulates in the spring. The Rideau Canal forms a navigable communication with the Ottawa River, 126 miles. It has 15 light-houses on the American shore, and 13 on the Canadian side.—*See* LAKES, *Commerce of*.

Onyx (Ger. *Onyx*; Fr. *Onix*, *Onice*; Sp. *Onique*; Lat. *Onyx*). Any stone exhibiting layers of two or more colors strongly contrasted is called an *onyx*, as banded jasper, chalcedony, etc., but more particularly the latter, when it is marked with white, and stratified with opaque and translucent lines. But the Oriental onyx is considered a substance consisting of two or more layers or bands of distinct and different colors. A sard, or sardoine, having a layer of white upon it, would be called an onyx; and according to the number of layers it would be distinguished as an onyx with three or more bands. Some of the antique engravings are upon onyxes of four bands.—MAWE's *Treatise on Diamonds, etc.*

Opal (Ger. *Opal*; Fr. *Opale*; It. *Opalo*; Sp. *Opalo*, *Piedra iris*; Port. *Opala*; Lat. *Opalus*), a stone, of which there are several varieties, found in different parts of Europe, particularly in Hungary, and in the East Indies, etc. When first dug out of the earth it is soft, but it hardens and diminishes in bulk by exposure to the air. The opal is always amorphous; fracture conchoidal; commonly somewhat transparent. Hardness varies considerably. Specific gravity from 1·958 to 2·54. The lowness of its specific gravity in some cases is to be ascribed to accidental cavities which the stone contains. These are sometimes filled with drops of water. Some specimens of opal have the property of

emitting various colored rays, with a particular effulgency, when placed between the eye and the light. The opals which possess this property are distinguished by lapidaries by the epithet *Oriental;* and often, by mineralogists, by the epithet *nobilis.* This property rendered the stone much esteemed by the ancients.—THOMSON'S *Chemistry;* see also PLINY, *Hist. Nat.* lib. xxxvii. c. 6, where there are some very curious details as to this stone.

Opium (Ger. *Mohnsaft;* Fr. *Opium;* It. *Oppio;* Sp. and Port. *Opio;* Lat. *Opium;* Arab. *Ufyoon;* Hind. *Afeem;* Turk. *Madjoon*), the concrete juice of the white poppy (*Papaver somniferum*), which is most probably a native of Asia, though now found growing wild in the southern parts of Europe, and even in England. Opium is chiefly prepared in India, Turkey, and Persia; but the white poppy is extensively cultivated in France and other parts of Europe, on account of its capsules, and of the useful bland oil obtained from its seeds. It has also been cultivated, and opium made, in England; but there is very little probability of its ever being raised here to any considerable extent. The poppy is an annual plant, with a stalk rising to the height of three or four feet; its leaves resemble those of the lettuce, and its flower has the appearance of a tulip. When at its full growth, an incision is made in the top of the plant, from which there issues a white milky juice, which soon hardens, and is scraped off the plants, and wrought into cakes. In India, these are covered with the petals of the plant to prevent their sticking together, and in this situation are dried, and packed in chests lined with hides and covered with gummy, each containing forty cakes, and weighing two maunds, or 149½ lbs.; they are exported in this state to the places where the opium is consumed. Turkey opium is in flat pieces, covered with leaves, and the reddish capsules of some species of *rumex*, which is considered an indication of its goodness, as the inferior kinds have none of these capsules adhering to them. According to Dr. A. T. Thomson, Turkey opium has a peculiar strong, heavy, narcotic odor, and a bitter taste, accompanied by a sensation of acrid heat, or biting on the tongue and lips, if it be well chewed. Its color, when good, is a reddish brown, or fawn color; its texture compact and uniform. Its specific gravity is 1·336. When soft, it is tenacious; but when long exposed to the air, it becomes hard, breaks with a uniform shining fracture, is pulverulent, and affords a yellowish brown powder. East Indian opium has a strong empyreumatic smell, but not much of the peculiar narcotic, heavy odor of the Turkey opium; the taste is more bitter, and equally nauseous, but it has less acrimony. It agrees with the Turkey opium in other sensible qualities, except that its color is blacker, and its texture less plastic, although it is as tenacious. Good Turkey opium has been found to yield nearly three times the quantity of *morphia*, or of the peculiar principle of the drug, that is yielded by East Indian opium. Opium is regarded as bad when it is very soft, greasy, light, friable, of an intensely black color, or mixed with many impurities. A weak or empyreumatic odor, a slightly bitter or acrid, or a sweetish taste, or the power of marking a brown or black continuous streak when drawn across paper, are all symptoms of inferior opium.—*Dispensatory.* The raising of opium is a very hazardous business; the poppy being a delicate plant, peculiarly liable to injury from insects, wind, hail, or unseasonable rain. The produce seldom agrees with the true average, but commonly runs in extremes; while one cultivator is disappointed, another reaps immense gain. One season does not pay the labor of the culture; another, peculiarly fortunate, enriches all the cultivators. This circumstance is well suited to allure man, ever confident of good fortune.—COLEBROOKE'S *Husbandry of Bengal.*

The Opium Trade.—This drug is chiefly grown in British India, where it has long been a strict monopoly of the government, and also in Persia and Turkey. It was first imported into China by the Portuguese; but up to the year 1768 the whole quantity imported did not exceed from 100 to 200 chests annually. The East India Company commenced its importation in 1773–'4; and in 1780 small dépôts for its sale were established a little south of Macao. The trade continued to increase rapidly from India until 1794, when large English ships found it profitable to anchor near Whampoa, for fifteen months at a time, selling opium. In 1800 its sale had risen to about 2000 chests; but recently its further importation into China was prohibited. Since that period the smuggler succeeds the legal importer; and although the importation is no longer conducted in the vessels of the East India Company, it is extensively cultivated under their monopoly, and sold by them to private traders, by whom it is introduced into the prohibited markets of China.

Consumption and Trade of Opium in China.—Opium is pretty extensively used, both as a masticatory and in smoking, in Turkey and India; but its great consumption is in China and the surrounding countries, where the habit of smoking it has become almost universal. The Chinese boil or seethe the crude opium; and by this process the impurities, resinous and gummy matter, are separated, and the remaining extract only is reserved for use. Thus prepared, the drug loses its ordinary strong and offensive aromatic odor, and has even a fragrant and agreeable perfume. A small ball of it, inserted in a large wooden pipe with some combustible matter, is lighted, and the amateur proceeds to inhale four or five whiffs, when he lies down and resigns himself to his dreams, which are said to have no inconsiderable resemblance to the sensations produced by inhaling the oxyd of azote. Those who do not carry the indulgence to excess do not, it is said, experience any bad effects from it. Nine-tenths of the supplies of opium for the consumption of China have always been derived from India, a comparatively small quantity only being derived from Turkey. The trade has always been contraband, the introduction of the drug having been prohibited by the Chinese government. Until about 1810 the trade had not attracted much attention, or become of any very great importance, but it has since been very greatly extended, and has been since 1828 of first-rate consequence. The trade was at first carried on at Whampoa, about fifteen miles below Canton; next at Macao, whence it was driven by the exactions of the Portuguese; and thereafter in the Bay of Lintin. Here the opium is kept on board ships, commonly called receiving ships, of which there are often ten or twelve lying together at anchor. But latterly the trade has been carried on all along the southeast coast of China, by means of a species of fast-sailing vessels called "clippers," built expressly for the trade and strongly armed. The sales are mostly effected by the English and American agents in Canton, who give orders for the delivery of the opium; which, on producing the order, is handed over to the Chinese smuggler, who comes along side at night to receive it. Frequently, however, the smuggler purchases the opium on his own account, paying for it on the spot in silver; it being a rule of the trade, never departed from, to receive the money before the drug is delivered. During the first ten years of the present century the exports of opium from India to China averaged about 2500 chests, of 149½ pounds each. But after the introduction of Malwa opium into the markets of Bombay and Calcutta, the exports began rapidly to increase.

According to the *Friend of India* of Calcutta, October, 1855, the opium sales for the five preceding years were as follows:

1849–'50...	Chests sold,	35,383....	Proceeds,	35,432,000 Rs.
1850–'51...	"	34,409....	"	32,250,000 "
1852 ...	"	33,561....	"	37,245,000 "
1853 ...	"	39,403....	"	38,348,000 "
1854 ...	"	48,319....	"	36,727,000 "

The price paid to the cultivator is about Rs. 240 a chest.

An Account of the Quantities and Prices (excluding Fractions) of the different Species of East India Opium imported into China from the Season 1816–1817, down to the Season 1837–1838, when the Trade was interrupted.

From April 1st to March 31st.	Number of Chests.	Value in Dollars.
1816-'17.....	3,210	3,057,000
1817-'18.....	3,680	3,945,250
1818-'19.....	4,580	4,151,250
1819-'20.....	4,600	5,583,200
1820-'21.....	4,770	5,400,800
1821-'22.....	4,628	5,314,000
1822-'23.....	5,822	7,988,930
1823-'24.....	7,082	8,515,100
1824-'25.....	8,655	7,679,625
1825-'26.....	9,621	7,609,295
1826-'27.....	9,909	9,610,085
1827-'28.....	9,535	10,425,075
1828-'29.....	13,162	12,535,115
1829-'30.....	14,000	12,057,157
1830-'31.....	18,760	11,964,263
1831-'32.....	13,508	10,931,605
1832-'33.....	23,670	15,322,750
1833-'34.....	19,786	13,056,540
1834-'35.....	16,514	9,655,010
1835-'36.....	16,785	10,539,875
1836-'37.....	21,509	14,287,330
1837-'38.....	20,040	10,883,157

Confiscation of Opium in 1839.—Opium has always been prohibited in China, and consequently its importation has always been looked upon as a smuggling speculation. There would seem, however, to be good grounds for thinking that the prohibition of the importation of opium was all along intended to be more apparent than real. At all events, it is certain that the trade grew gradually up, from a small beginning, to be one of great extent and value; and it is contradictory and absurd to suppose that this should have been the case had it encountered any considerable opposition from the Chinese authorities. But the truth is, that these functionaries, instead of opposing the trade, or even merely conniving at it, were parties to its being openly carried on, and received certain regulated and large fees on all the opium that was imported. It has even been alleged that a part of these fees found its way into the Imperial treasury at Pekin, though that is more doubtful. The appetite for the drug increased with the increasing means of gratifying it; and there appeared to be no assignable limits to the quantity that might be disposed of in the empire. The rapid extension of the trade seems at length to have drawn the attention of the court of Pekin to the subject. We doubt, however, notwithstanding what has been alleged to the contrary, whether a sense of the injurious consequences of the use of the drug had much to do in the matter. This, indeed, is a part of the subject as to which there exists a great deal of misapprehension; and we are well assured that, provided it be not carried to excess, the use of opium is not more injurious than that of wine, brandy, or other stimulants. The alarm of the Chinese government was probably not so much about the health or morals of its subjects as about their bullion! They are still haunted by the same visionary fears of being drained of a due supply of gold and silver, that formerly haunted the people of this country. The imports of opium having increased so rapidly as to be no longer balanced by the exports of tea and silk, sycee silver began also to be exported! The paternal government of Pekin might have tolerated what are called the demoralizing effects of opium with stoical indifference, but the exportation of silver was not a thing to be endured. It is, however, only fair to state that the Chinese statesmen are not all of the school of Mun and Gee, and that some of them appear to have taken an enlightened view of the question, and to have emancipated themselves from the prejudices that still influence the majority of their colleagues. The statesmen in question contended that, whether the use of the drug were injurious or not, the taste for it was too deeply seated and too widely diffused to admit of its effectual prohibition; and they, therefore, proposed that its importation should be legalized, subjecting it, at the same time, to a heavy duty. There can not be a doubt that this was the proper mode of dealing with the subject. In the end, however, the government of Pekin, influenced by unfounded theories as to the mischievous effect of the export of the precious metals, came to a different conclusion, and resolved to put a stop to the traffic. No sooner had this resolution been adopted, than a most extraordinary change appears to have taken place in the conduct of the Chinese authorities; and their usual caution seems to have wholly deserted them. They now became as precipitate and violent as they had previously been slow and circumspect; and resolved at all hazards to attempt forcibly to put down the trade. To accomplish this, all foreigners were, in March, 1839, prohibited from leaving Canton; and compulsory measures were at the same time resorted to for compelling them to deliver up the opium in their possession. How the affair might have ended, had the English at Canton been left to the exercise of their own judgment in this crisis, it is impossible to say; but we have been assured by those on whose statements we are disposed to rely, that they would most probably have succeeded in getting out of it with comparatively little loss. Instead, however, of acting for themselves, they had to act in obedience to the orders of Mr. Elliot, chief superintendent of the British trade in Canton; and he, while under constraint, occasioned by confinement to the factory, commanded all the opium belonging to British subjects to be given up to him for delivery to the Chinese authorities; declaring, at the same time, that "failing the surrender of the said opium," the British government should be free "of all measures of responsibility or liability in respect of British-owned opium."

We do not presume to offer any opinion as to the necessity or policy of this proceeding on the part of the superintendent; but in consequence thereof, and of the unjustifiable proceedings of the Chinese, above 20,000 chests of opium were delivered up to Mr. Elliot by British subjects, and by him to the Chinese authorities; and the latter, not satisfied with the possession of the opium, which it was their duty to have placed in a state of security till the matters with respect to it should be arranged, immediately proceeded to destroy it! Having succeeded thus far, the Chinese next insisted that the foreign merchants should subscribe a bond, pledging themselves not to import opium into any part of China; or that, if they did, they were to be justly liable to the penalty of *death*. But this condition being refused, and no arrangement having been come to, Mr. Elliot suspended the trade on the 22d of May. Our readers do not require to be told that a war with China grew out of these extraordinary proceedings.

Indemnity for the Opium destroyed in China.—The question as to the amount of the compensation that should be awarded to the parties who delivered up the opium to the superintendent in China has since attracted considerable attention. The merchants contended that they were entitled to its cost, or to the price at which it had been invoiced to them, or to above £2,300,000. It is, however, admitted on all hands that the price of opium is exceedingly fluctuating, and that it is influenced in a very high degree by variations in the facilities for smuggling into China. And it was contended by government, that such were the obstacles thrown in the way of its clandestine importation when the delivery was made in 1839, that the price of opium had fallen to less than half its invoice cost, and that supposing the merchants had retained it, they must necessarily have sustained a very heavy loss. Having taken this view of the matter, government proposed that indemnity should be made at the rate of £64 per chest (£1,250,000 in all), being (though little more than half the sum claimed) considerably above the current price of opium in Canton previously

to its being delivered up. As might have been expected, this decision was much found fault with. On the whole, however, we think it eminently fair and reasonable. No one doubts, though not a pound of the opium had been delivered up to Captain Elliot, that its owners must, in consequence of the increased difficulties in the way of its sale, have lost heavily; and, under the circumstances, we see no ground for contending that government was bound, because their agent had interfered, to place the merchants in a better position than they would have been in but for that interference. All that they could justly require was, that it should not be permitted to injure them.

Cultivation of Opium in India—Monopoly—Revenue, etc.—Opium is produced in Bengal, principally in the provinces of Bahar and Benares, in parts of Bombay, and in Malwa, in Central India. In Bengal the production of opium is a monopoly, no person being allowed to grow the poppy except on account of government. The latter make advances to the cultivators, who deliver the entire produce into their hands at a fixed price of about 3*s.* 6*d.* per lb. It is afterward sold by the Company for about 11*s.* per lb., so that the profit of the latter amounts to about 7*s.* 6*d.* per lb. Opium may be grown and manufactured in Bombay; but it is subjected to the same high duty that is imposed on opium imported into the Presidency. The object of this high duty is to "discourage its production." Government purchase what little is produced in Bombay, supplying through licensed dealers all that is required for home consumption. The poppy is extensively cultivated in Malwa, in Central India, and yields a large revenue. Down to 1831, it was produced under a monopoly. But in that year the business was thrown open to the public, and the revenue collected by imposing a duty on the opium when passing through the Company's territories to Bombay. The capture of Scinde, by closing the route for the smuggling of opium through Kurachee to the Portuguese settlements of Demaun, etc., enabled a large addition to be made to the transit duty on Malwa opium, which was raised in 1847 to 400 rupees per chest, affording a revenue to government of about 5*s.* 8*d.* per lb.—(We have borrowed these authentic details from the Official Papers relative to India, p. 73–75, published in 1853.) No one doubts that opium is an excellent subject for taxation; and the higher the rate to which the duty on it can be raised without encouraging smuggling, so much the better. But a great deal has been said for and against the system under which the opium revenue is raised in Bengal and other parts of India; and perhaps it might be the better policy to open the culture of the plant to the unfettered competition of the public, imposing a high duty on the drug when grown or when exported. Without, however, entering on the discussion of this difficult question, we may shortly observe that the monopoly does not appear to have the consequences stated by Mr. Colebrooke; who tells us (*Husbandry of Bengal*, p. 118) that, except in a few situations that are peculiarly favorable, its culture is unprofitable; and that the peasants engage in it with reluctance, being tempted thereto only by the advances made by the government agents. But if such were the case formerly, it would seem that circumstances have changed in the interval; for it appears from the official accounts that the production of Bengal opium, which amounted to 17,858 chests of 160 lbs. each in 1840–'41, had increased to about 36,000 chests in 1848–'49. The number of chests of Malwa opium (140 lbs. each) exported from Bombay during the same period has continued pretty stationary at about 16,000 a year. The whole, or nearly the whole, of this immense supply of above 50,000 chests, is sent to China. Latterly it has produced to the government of India a clear revenue of considerably more than £3,000,000 sterling a year.

It is very doubtful whether the use of opium, when taken in moderate quantities, be so injurious as has been represented. That it may, like spirits and wine, be abused, is abundantly certain; but it has not been shown that it is more liable to abuse than either of these articles. And the Chinese, by whom it is principally consumed, are a highly industrious, sober, frugal people.

It is computed that, had China no silk nor teas to give in part payment for the opium consumed in the Celestial empire, the drain of specie during the last 30 years would have amounted to $600,000,000. It is stated in a memorial presented to the Emperor of China, on the subject of the opium trade, that the drain from the imperial treasury, to supply this destructive luxury, was,

From 1829 to 1831	$24,000,000
" 1831 to 1834	28,000,000
" 1834 to 1838	40,000,000

The latter sum, it is stated, is about the average annual outlay at the present time; and it is considered by an intelligent commercial correspondent at Macao quite problematical whether the Chinese would have taken more cotton goods and other imports from the United States and England, had they not expended so much for opium. The profits of the East India Company, who are entitled to whatever of credit or discredit may attach to keeping up this lucrative trade in opium, are stated at $18,000,000 per annum. If the company succeed in opening new markets for the drug (and it is represented that they are establishing retail shops all over the Indian empire), they will be amply reimbursed for their diminished importations into China, since the importation of Turkish opium in American bottoms has so considerably interfered with their previously almost exclusive monopoly of this trade. It should be added, that the importation of opium into China, though illegal, is openly tolerated by the Chinese officials, and no difficulty is experienced in finding cash customers for any quantity imported. From 200 chests in 1756, when the trade was legal, the importation has risen to from 70,000 to 80,000 chests per annum in 1856, when its introduction is prohibited by law. The value of opium imported in 1756 was about $1,000,000; the value at the present day has risen to $40,000,000. The basis of foreign exchange with China is as follows: General imports, opium (which makes about 30 per cent. of the whole), bullion and specie, or drafts on London.—*Commercial Relations of the United States*, 1856–'57.

Cultivation in the United States.—A variety of the "Common" or "Opium Poppy" (*Papaver somniferum*), indigenous to the warm and temperate parts of Europe and Asia, from Portugal to Japan, and especially cultivated in China, India, Turkey, Egypt, and in the Morea, has been introduced into the United States, and has proved itself susceptible of easy cultivation on very rich soils, and is well adapted to the climate of the Middle and Southern States. The flowers of the "White Poppy" (*Papaver s. alba*), the variety with which the experiment was made, may be either entirely white or red, or may be fringed with purple, rose, or lilac, variegated and edged with the same colors, but never occur blue nor yellow, nor mixed with these colors, each petal being generally marked at the bottom with a black or purple spot. The seeds are black in the plants having purple flowers, and light-colored in those which are white; although the seeds of the latter, when of spontaneous growth, are sometimes black. The largest heads, which are employed for medical or domestic use, are obtained from the single-flowered kind, not only for the purpose of extracting opium, but also on account of the bland, esculent oil that is expressed from the seeds, which are simply emulsive, and contain none of the narcotic principle. For the latter purpose, if no other, its culture in this country is worthy of attention.

With regard to the cultivation of this plant, with the view of obtaining opium, there can be but little

doubt that our clear sky, fervid summer sun, and heavy dews would greatly favor the production of this article; but how far these circumstances, in connection with American ingenuity in devising improved methods for its extraction, would allow us to compete with the cheapness of labor in the East, can only be determined by actual trial. Certainly it is an object worthy of public encouragement, as the annual amount of opium imported into the United States is valued at upward of $407,000, a considerable portion of which might be saved, and thereby add to our resources. Besides, if we were to raise a surplus, it could be sent to China in exchange for tea. The successful cultivation of the plant, however, requires the provision of good soil, appropriate manure, and careful management. The strength of the juice, according to Dr. Butler, of British India, depends much upon the quantity of moisture of the climate. A deficiency even of dew prevents the proper flow of the peculiar narcotic, milky juice, which abounds in almost every part of the plant, while an excess, besides washing off this milk, causes additional mischief, by separating the soluble from the insoluble parts of this drug. This not only deteriorates its quality, but increases the quantity of moisture, which must afterward be got rid of.

STATEMENT SHOWING THE IMPORTS OF OPIUM INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1856.

Whence imported.	Pounds.	Value.
England	113,130	$272,608
British East Indies	1,000	4,626
Sardinia	55	100
Austria	1,210	2,556
Turkey in Asia	9,457	26,558
China	32,062	179,358
Total	157,814	$485,846

Besides the works previously referred to, we have consulted, in compiling this article, AINSLIE'S *Materia Indica*; MILBURN'S *Oriental Commerce*; WILKINSON'S *Commerce of Bengal* (J. R. M'CULLOCH); *American Almanac*, 1841, p. 63; *Patent Office Report*, 1853; HUNT'S *Merchants' Magazine*, ii. 386, iv. 9 (F. WHARTON), xxiii. 28, 147; *Eclectic Review*, vi. 458; FRASER, xxi. 365; NILES' *Register*, xxiii. 249; *China War and Opium Trade*; *Commercial Relations of the United States*, 1856.

Opoponax (Ger. *Opoponax*; Fr. *Opopnax*; It. *Opponasso*; Sp. *Opopanaca*; Arab. *Jawesheer*), a gum-resin obtained from the *Pastinaca Opoponax*, a species of parsnep. It is a native of the south of Europe and Asia Minor. The stem rises to the height of four or five feet, with a thick branched yellow-colored root. The roots being wounded, a milky juice flows from them, which, being dried in the sun, is the opoponax of the shops. It is in lumps of a reddish yellow color, and white within. Smell peculiar. Taste bitter and acrid. Specific gravity, 1·622. It is imported from Turkey. Being used only to a small extent in medicine, the consumption is inconsiderable.—THOMSON'S *Chemistry*; AINSLIE'S *Materia Indica*.

Oporto, or **Porto**, a large city and sea-port of Portugal, on the north bank of the Douro, about two miles from its mouth, lat. 41° 10′ 30″ N., long. 80° 37′ 18″ W. It is a beautifully situated, well-built city, and is supposed to contain, including the suburbs of Villanova and Gaya, on the opposite bank of the river, about 80,000 inhabitants. The harbor of Oporto is a bar harbor, and can only be entered, at least by vessels of considerable burden, at high water; and it is seldom at any time practicable for vessels drawing more than sixteen feet. On the north side of the entrance is the castle of St. Joao de Foz, whence a ledge of rocks, some of which are at all times above water, extends in a southwest direction. The outermost of these rocks, named Filgueira, which is always visible, is left on the left or larboard side on entering. Cabedelo Point, forming the southern extremity of the entrance, is low and sandy. The bar being liable, from the action of the tides, and of sudden swellings or *freshes* in the river, to perpetual alterations, it is exceedingly dangerous for any vessel to attempt crossing it without a pilot. Pilots are always on the alert, and ready to offer their services when a vessel comes in sight, unless the weather be so bad that they can not go off. On some few occasions of this sort, vessels have been detained for three weeks off the port, without having an opportunity of entering. The chapel of St. Catherine in a line with that of St. Michael leads over the bar. The ordinary rise of spring tides is from ten to twelve feet, and of neaps from six to eight feet. A light-house with a revolving light, having the lantern 220 feet above the level of the sea, is erected on rising ground about 600 yards north-northwest of St. Joao de Foz. The swellings of the river, or *freshes*, as they are called, most commonly occur in spring, and are caused by heavy rain, and by the melting of the snow on the mountains. The rise of water at such times is frequently as much as forty feet; and the rapidity and force of the current are so very great, that no dependence can be placed on anchors in the stream. Fortunately, a *fresh* never occurs without previous warning; and it is then the practice to moor with a cable made fast to trees, or stone pillars erected on the shore for that purpose.—For further information as to the harbor of Oporto, see PURDY'S *Sailing Directions for the Bay of Biscay*.

Oporto is the emporium of a large portion of the kingdom of Portugal, and enjoys a pretty considerable foreign commerce. The well-known red wine, denominated Port, from its being exclusively shipped at this city, forms by far the largest article of export. The exports vary in different years, from about 26,000 to above 40,000 pipes. England is much the largest consumer of port. The high discriminating duties on French wine originally introduced port into the British markets, and gave it a preference to which, though an excellent wine, it had no just title; this preference first generated, and its long continuance has since so confirmed the taste for port among the great bulk of the population, that it bids fair to maintain its ascendency as an after-dinner wine, notwithstanding the equalization of the duties. At an average of the nine years ending with 1851, there were shipped from Oporto for England 22,861 pipes a year. Next to England, Brazil, Russia, and the north of Europe are the principal consumers of port; but it appears, from the subjoined account, that the total exports to them do not amount to a half of those sent to England. The other exports are oil, oranges, and other fruits, wool, refined sugar, cream of tartar, shumac, leather, cork, etc. The imports are corn, rice, beef, salt fish, and other articles of provision; sugar, coffee, etc., from Brazil; cotton and woolen goods, hardware, tin plates, etc., from England; hemp, flax, and deals, from the Baltic, etc. Besides the British manufactured goods imported into Portugal for the use of the natives, a considerable quantity is destined for the consumption of Spain; being smuggled into that country through Braganza and other towns on the frontier.

VESSELS ENTERED AND CLEARED AT OPORTO IN THE ECONOMIC YEAR 1854–'55.

Years and Months.	Vessels Entered.			Vessels Cleared		
	National.	For'n.	Tons.	National.	For'n.	Tons
1854.						
July	81	36	10,906	74	29	10,656
August	98	34	14,045	92	31	13,313
September	101	26	12,127	89	38	15,260
October	57	19	8,132	80	19	9,442
November	72	21	10,272	75	14	9,857
December	42	21	9,166	39	26	9,355
1855.						
January	75	32	11,548	56	23	10,338
February	1	3	522	5	3	692
March	86	48	13,303	40	39	11,950
April	80	51	13,576	52	45	11,054
May	104	42	16,024	95	42	10,763
June	78	27	11,002	88	35	14,449
Total	825	359	131,483	785	344	126,788

EXPORTATION OF WINE AND BRANDY IN THE ECONOMIC YEAR 1854-'55.—(12 canadas = 1 almude = 3·64 gallons.)

	Pipes.	Alms.	Cans.
Wine—1st quality, for ports in Europe...	32,298	15	11
" " " out of Europe	1,886	10	8
" " " out of the Kingdom and islands	249	11	9
" 2d quality, for ports out of Europe	1,740	15	7
Brandy—1st quality, for ports in Europe...	4	..	10
" " " out of Europe	....	2	..
" " " out of the Kingdom and islands	17	12	..
Total.....	35,097	12	9

Total gallons ..... 3,275,969.

QUANTITY OF PORT WINE EXPORTED FROM OPORTO IN 1855, AND THE COUNTRIES TO WHICH EXPORTED.

Countries.	Pipes.	Alms.	Cans.
Brazil.....	3,644	12	6
Bremen	103	20	8
Canada.....	605	20	6
Denmark.....	436	12	1
United States.....	683	15	9
France	27	13	8
Great Britain	26,755	11	11
Hamburg.....	1,076	..	10
Spain	....	13	3
Morocco	....	15	6
Russia.....	256	3	8
Portugal and possessions	317	6	8
Sweden.....	288	14	2
Newfoundland	189	19	9
Total.....	34,386	12	11

Total gallons ..... 3,152,906.—C. D.

Oranges (Ger. *Pomeranzen*; Du. *Orangen*; Fr. *Oranges*; It. *Melarance*; Sp. *Naranjas*; Russ. *Pomeranezvi*; Hind. *Narunge*; Malay, *Simao-manis*), the fruit of the orange-tree. The common or sweet orange (*Citrus sinensis*, or *Citrus nobilis*), and the Seville, or bitter orange (*Citrus aurantium*), are natives of China; and the Portuguese are entitled to the honor of having transferred the plant to other countries. Particular species of *Citrus* seem to be indigenous to various Eastern countries; but the birth-place of the proper orange may be distinctly traced to China. It is now to be found in our green-houses. Oranges are imported in chests and boxes, packed separately in paper. The best come from the Azores, Spain, and Cuba; very good ones are also brought from Portugal, Italy, Malta, South America, and other places.

The orange trade carried on by this country is of considerable value and importance. Oranges are not much more expensive than most of our superior domestic fruits, while they are, perhaps, the most refreshing and wholesome of those of warmer climates.

The *Citrus aurantium*, or golden-fruited orange-tree, under favorable circumstances, usually attains a height of twenty-five or thirty feet, and is graceful in all its parts. The trunk is upright, and branches into a regular or symmetrical head. The bark of the twigs is of a soft and almost translucent green, while that of the trunk and older branches is of a delicate ash-gray. The leaves are moderately large, beautifully shaped, of a fine healthy green, and shining on the upper sides, while the under sides have a slight appearance of down. The flowers occur in little clusters on the sides of the branches, are pleasing in their form, of a delicate white in the sweet oranges, and in the more acid varieties slightly tinged with pink. In some plants they have a more powerful odor, and are, for the moment, more rich; but in the orange-grove there is a fragrance in the aroma which never satiates nor offends; and as the tree is at one and the same time in all stages of its bearing—in flower, in fruit just set, and in golden fruit, inviting the "hand to pull and the palate to taste"—it is hardly possible to conceive or imagine any object more delightful. There is something, too, peculiar in the organization of the fruit of this tree. Its rind, or external covering, is of a spongy texture, containing but little juice or sap of any kind in its substance; but the external surface is covered, or tuberculated with little glands, which secrete an acrid, volatile oil, very inflammable, and of a strong, pungent taste. The interior of the fruit is usually divided into from nine to twelve carpels or cells, which contain the pulp, seeds, and juice, and are united by a whitish pellicle or leathery skin, radiating from the centre to the rind, and may easily be separated without wasting the juice. The seeds are solitary or several, and are attached to the inner angle of the carpel, and in some varieties are entirely wanting.

The wood of the orange-tree, when dry, weighs forty-four pounds to a cubic foot, is hard, compact, flexible, slightly odoriferous, and is susceptible of being polished. When recently cut, it is of a yellowish hue, but in the course of time it fades. From its scarcity and small size, it is but little employed in the arts, the only particular uses to which it is applied being to make boxes, dressing-cases, and other articles of fancy; and in Florida, considerable quantities of straight, young shoots are cut, and shipped in bundles, to be made into walking-canes.

The fruit of the orange may be obtained fresh in any region of the globe, and at almost every season of the year. The aromatic oil and the rind preserve it from the effects both of heat and of cold; and the acridity of the former renders it proof against the attacks of insects. It is true that oranges decay, like other fruit; but that does not happen for a long time, if the rind remains uninjured, and they are kept from humidity, and so ventilated as not to ferment. With regard to the quality of this fruit in various places, there appears to be a diversity of opinion. Some consider those of Malta the best; others those of St. Michael's; while others prefer those of Bahia, Havana, or of St. Augustine.

The *Maltese oranges* are usually large, the rind thick and spongy, and the glands which secrete the volatile oil are prominent. The pulp is red and delicious, although sometimes there is a trace of bitterness in their taste. They are shipped in boxes of an irregular size, and are generally packed in shavings or saw-dust.

The *St. Michael's oranges* are of a small size, the rind is thin and smooth, the glands small, which secrete but little volatile oil, the pulp light-colored, and of a delicious, sugary taste. They are put up in boxes of three hundred and fifty to four hundred, with each fruit enveloped in paper, or in the husks of maize.

The celebrated *Narel oranges* of Bahia are of difficult transport to Europe and the United States, in consequence of the length of the voyage, and of the humidity and warmth of the climate through which they have to pass. If they are gathered green, however, and suspended in the air above deck, or at the stern of the vessel, in netting, they will endure through the voyage.

The *Havana oranges* are usually of a good size, with a moderately rough rind, and a pulp well filled with delicious juice. From the shortness of the voyage to any of the American markets, they may be safely transported during the winter months. The fruit is ripe in Cuba at the end of October, and is usually shipped in barrels of two hundred and fifty to four hundred fruits in each, put up loosely, without any envelopes.

The *St. Augustine oranges* are superior, both in size and quality, to those of Cuba or the Mediterranean. They resemble those of Havana in flavor, but are much larger, and bring from twenty to thirty per cent. more in the New York and Boston markets. Of the smaller sizes, it requires about three hundred fruits to fill a barrel, but of the largest ones only one hundred are necessary.

In Europe, the *Valencia oranges* are eagerly sought after, on account of their early appearance, large size, and beautiful color. They are put up in boxes of two hundred and twenty to two hundred and forty fruits in each, enveloped in brown paper.

The *Sicilian oranges*, and those of the south of Italy, may be regarded as nearly of the same quality. They

are of a medium size, with a fine color, and are rather acid in their flavor. Those shipped from Messina are put up in boxes of two hundred to two hundred and ten fruits in each, and those of Palermo, which mature later, are shipped in boxes of three hundred or more fruits in each. The oranges of Reggio ripen very early, so much so, that it is not unusual to send them away by the 20th of October. They are packed in boxes of two hundred and forty fruits in each, and, like most of the oranges of the Mediterranean, are enveloped in paper.

The *Provence oranges* come to great perfection, and may be classed with those of Genoa. Along the River Var, they have two harvests of the orange, the first commencing from the 10th to the 15th of November, when the fruit begins to turn, and continues till the 4th of December; the second begins about the 10th of January, and is prolonged nearly to the end of February. They are put up in boxes of one hundred and twenty to three hundred and sixty fruits in each, according to their size and qualities.

With the *Seville oranges* may be classed those of Faro, St. Ubes, Oporto, Andalusia, Malaga, and the bitter oranges of Cuba and Florida. This fruit is usually of a good size, of a beautiful color, but unfit to eat, on account of its bitter flavor. Those shipped from Seville are put up in large boxes, of one thousand fruits in each; while those of Faro and St. Ubes are badly packed in cases of three hundred to three hundred and fifty in each. Those of Spain and Portugal are principally carried to England and the Baltic, and are employed in cookery, and in the manufacture of cordials and other aromatic liquors. The essential product of the fruit is in the rind or peel; it is cut into quarters, separated from the pulp, and caused to be quickly dried. It is used in Holland in aromatizing a liquor called *curaçoa*.—BROWNE'S *Trees of America*.

IMPORTATIONS OF ORANGES, LEMONS, OTHER GREEN FRUIT, AND PRESERVED FRUIT, INTO THE UNITED STATES DURING THE FISCAL YEAR ENDING JUNE 30, 1856.

Whence imported.	Oranges, Lemons, and Limes.	Other green Fruit.	Preserved Fruit.
Swedish West Indies	....	$4,541	$193
Danish West Indies	$6	....	16
Hamburg	....	111	710
Bremen	....	165	233
Holland	....	....	15
Dutch Guiana	290	....	66
Dutch East Indies	....	....	90
England	112	45	725
Scotland	....	....	96
Canada	....	....	13
British N. A. Possessions	....	61	12
British West Indies	9,981	28,462	238
British Honduras	14	7,230	....
British Guiana	....	29	8
British Australia	3	....	....
British East Indies	....	....	9
France on the Atlantic	....	83	40,740
France on the Mediter'n.	5,012	512	1,386
French West Indies	23	865	13
French Guiana	76	....	1,857
Spain on the Atlantic	52	6	486
Spain on the Mediter'n	51,546	1,421	1,530
Philippine Islands	....	....	9
Cuba	35,520	65,275	5,080
Porto Rico	2,113	860	141
Portugal	185	....	112
Madeira	....	....	8
Azores	6,468	....	....
Sardinia	10,105	....	2,791
Tuscany	1,712	....	57,498
Two Sicilies	487,341	....	1,408
Austria	....	....	90
Turkey in Asia	....	....	6
Africa	32	....	5
Hayti	90	34	270
Mexico	1,203	1,054	8
Central Republic	9	1,271	....
New Granada	83	2,367	22
Venezuela	....	45	13
Brazil	271	3	41
Chili	....	1,155	101
Sandwich Islands	2,709	1,213	....
Japan	916	....	543
China	3.3	155	19,454
Whale Fisheries	24,372	1,146	....
Total	$640,670	$117,889	$124,480

Orchilla Weed, Orchella, or **Archil** (Ger. *Orseille*; Fr. *Orseille*; It. *Oricello, Orcella*; Sp. *Orchilla*), a whitish lichen (*Lichen orcella*) found in the Isle of Portland; but that which is used is imported from the Canary and Cape de Verd Islands, Madeira, Barbary, and the Levant. From it is obtained the archil, or orchal, of commerce, which yields a rich purple tincture, fugitive, indeed, but extremely beautiful. The preparation of orchilla was long a secret, known only to the Florentines and Hollanders; but it is now extensively manufactured in England. Orchil is generally sold in the form of cakes, but sometimes in that of moist pulp; it is extensively used by dyers; and in times of scarcity the weed or lichen has sold as high as £1000 per ton!—THOMSON'S *Dispensatory*.

Ordinary, in *Nautical language*, denotes the establishment of the persons employed by government to take charge of the ships of war which are laid up in the several harbors. These are principally composed of the warrant officers of the ships, as the gunner, boatswain, carpenter, deputy purser, and cook. There is, besides, enrolled in the list of the ordinary a crew of laborers, who pass from ship to ship occasionally, to pump, moor, move, and clean them, whenever it is necessary. The term *ordinary* is also applied sometimes to the ships themselves, and it is likewise used to distinguish the inferior sailors from the most expert and diligent. The latter are rated *able* on the navy books, and have higher pay than those who are rated as *ordinary*.

Oregon, territory, United States of America, bordering the Pacific coast, lies between the parallels of 42° and 46° 10′ N. lat., and west of the Rocky Mountains. Area, 210,000 square miles. Much of this territory is mountainous, but it abounds in fertile valleys. It forms three sections, separated from each other by nearly parallel ridges, and following the general direction of the coast line. These several sections have each distinct characteristics of soil, productions, and climate. The division extending from the Pacific coast to the Cascade range has a genial climate throughout the year. The valley of the Willamette is exceedingly fertile, the intervales and prairies form the best of farming lands, and the uplands afford good pasturage, and abound with valuable timber; and there is much fertile land bordering the Shastl and Umpqua rivers. The division between the Cascade range and the Blue Mountains has generally a light sandy soil, but with many valleys of rich alluvion; altogether said to be a fine grazing region. The portion lying west of the Rocky Mountains and east of the Blue Mountains, in extent full one half of the territory, is mostly a rocky and rough country, with some few narrow valleys of great fertility. In the southern portion of the territory gold has been extensively found. There were in Oregon and Washington territories in 1850, 132,857 acres of land improved, and 299,951 of unimproved land in farms. Cash value of farms, $2,849,170; and the value of implements and machinery, $183,423. *Live Stock:* Horses, 8056; asses and mules, 420; milch cows, 9127; working oxen, 8114; other cattle, 21,188; sheep, 15,382; swine, 30,235. Value of live stock, 1,876,189.

Agricultural Products, etc.—Wheat, 211,943 bushels; rye, 106; Indian corn, 2918; oats, 61,214; peas and beans, 6566; potatoes, 91,326; value of products of the orchard, $1271; produce of market gardens, $90,241; pounds of butter made, 211,464; of cheese, 36,980; molasses, 24 gallons; wool, 29,686 pounds produced; flax, 640; tobacco, 325; hay, tons of, 373; clover and other grass seeds, 26 bushels. Value of slaughtered animals, $161,530.—See *Census Returns*, 1850.

The Columbia forms its north boundary for a distance of 300 miles, and the east part is almost entirely drained by the south branch, called Saptin or Lewis River, and its tributaries; a very small portion only in the southeast corner is drained by the head sources of the Rio Colorado, here called Green River; and also by

the Bear River of Great Salt Lake; Umatillah, John Days, and Willamette rivers enter the Columbia River on the south; and the Shastl or Rogue, Umpqua, Sequatchie, Yaquina, Kilamook, and several small streams enter the Pacific on the west. The principal places are Salem, the capital, Portland, at the head of navigation, Oregon city, and Astoria. The principal articles of export are lumber and agricultural produce. Tonnage in 1853, 1063 tons. There were in the territory in 1850, thirty-seven saw-mills employed in the manufacture of lumber. The fisheries of Oregon are important and valuable. The rivers abound with salmon, especially the Columbia and the Willamette, which are taken in large quantities below the fall. The hunting and trapping of the fur-bearing animals has given employment to a great number of persons, and the rivers and coasts abound with wild fowls. The governor is appointed by the President of the United States for four years. The Legislative Assembly is composed of a council of nine members, elected for three years, and a House of Representatives of eighteen members, elected annually. The elective franchise is enjoyed by every free white male inhabitant twenty-one years of age, and a citizen of the United States.

On the 7th of May, 1792, Captain Robert Gray, in the ship *Columbia*, of Boston, discovered and entered the Columbia River; to which he gave the name of his vessel. He was the first person that established the fact of the existence of this great river, and this gives to the United States the right of discovery. In 1804–'5, Captains Lewis and Clarke, under the direction of the government of the United States, explored the country from the mouth of the Missouri to the mouth of the Columbia, and spent the winter of 1805–'6 at the mouth of the Columbia. This exploration of the River Columbia, the first ever made, constitutes another ground of the claim of the United States to the country. In 1808, the Missouri Fur Company, at St. Louis, established a trading post beyond the Rocky Mountains, on the head-waters of Lewis River, the first ever formed on any of the waters of the Columbia. In 1810, the Pacific Fur Company, under John Jacob Astor, of New York, was formed; and in 1811, they founded Astoria, at the mouth of the Columbia, as the principal trading post, and proceeded to establish others in the interior. A little later in the same year, the Northwest Company sent a detachment to form establishments on the Columbia; but when they arrived at the mouth of the river, they found the post occupied. In consequence of the exposure of Astoria by the war of 1813, the post was sold out to the Northwest Company. At the close of the war, Astoria was restored, by order of the British government, to its original founders, agreeably to the first article of the Treaty of Ghent; but Britain still persisted in claiming this territory, south to the 42d degree of latitude, until 1845. In 1821, the Hudson's Bay and Northwest Company, who had previously been rivals, were united, and since that time have greatly extended their establishments in the region of Oregon. It was held in joint occupancy until the treaty of 1845, when Britain gave up all claims south of the 49th parallel of north latitude. It was organized with a territorial government in 1848. The portion now the Territory of Washington was set off by an act of Congress, March, 1853.

FOREIGN IMPORTS AND EXPORTS OF OREGON.

Years.	Exports.			Imports.	Tonnage Cleared.	
	Domestic.	Foreign.	Total.	Total.	American.	Foreign.
1854	$42,707	$120	$42,8 1	$18,932	772	231
1855	123,612	...	123,612	9,666	1663	...
1856	6,234	...	6,234	2,724	388	...

Organs. The invention of the organ is attributed to Archimedes, about 220 B.C.; but the fact does not rest on sufficient authority. It is also attributed to one Ctesibius, a barber of Alexandria, about 100 B.C. The organ was brought to Europe from the Greek empire, and was first applied to religious devotions in churches in A.D. 658.—BELLARMINE. Organs were used in the Western churches by Pope Vitallanus in 658.—AMMONIUS. It is affirmed that the organ was known in France in the time of Louis I., 815, when one was constructed by an Italian priest. St. Jerome mentions an organ with twelve pairs of bellows, which might have been heard a mile off; and another at Jerusalem which might have been heard on the Mount of Olives. The organ at Haerlem is one of the largest in Europe; it has 60 stops and 8000 pipes. At Seville is one with 100 stops and 5300 pipes. The organ at Amsterdam has a set of pipes that imitate a chorus of human voices.

Orgol. *See* ARGOL.

Orinooo, one of the principal rivers of South America, ranking in size and importance immediately after the Amazon and Plata, north of which former its basin lies. It rises in the Sierra Nevada, Venezuelan Guiana, winds successively west, north, and east, through the centre of the Venezuelan territory, and enters the Atlantic by numerous mouths, in lat. 8° 40′ N., and long. 61° W. Total course estimated at 1600 miles, for more than the latter half of which, or to the rapids of Atures, it is uninterruptedly navigable. Area of its basin, 252,000 square miles. It receives numerous large affluents, principal the Meta and Apure, each having a navigable stream of 500 miles, the Guaviara and Caroni. By the Cassiquiare it has a singular navigable communication with the Rio Negro and Amazon; and in the upper part of its course are several large cataracts and long rapids. At 200 leagues from the ocean, its breadth is about three miles; and at the city of Bolivar, between 250 and 300 miles from its mouths, to which place the tide reaches, it is four miles across, and, when lowest, 35 fathoms deep. About 100 miles from the ocean, it separates into a delta of numerous mouths. It rises gradually from March to September, yearly, usually from 60 to 70 feet, but in one narrow place to 120 feet. Its banks are clothed with dense forests, which, like its waters, abound with animal life. Like all great rivers, its upper waters separate into several branches, and it does not appear that the main source has been ascertained with any degree of certainty. According to La Cruz d'Olmedilla, it issues from a small lake called Ypava, situated in north latitude 5° 5′, whence, by a bend of a spiral form, it enters the Lake Parima; but although the existence of this sheet of water has been determined, doubts are entertained whether it may not owe its origin only to the temporary overflowing of the river. From this lake it is said to issue by two mouths; and after a very circuitous route of upward of fifteen hundred miles, including its windings, it flows into the Atlantic Ocean, opposite the island of Trinidad, by about fifty mouths, seven of which are navigable. The Grand Boca, or principal mouth, which is six leagues wide, is southeast of Trinidad, in lat. 8° 30′ N., and long. 59° 50′ W.

Orpiment (Ger. *Operment*; Fr. *Orpiment*; It. *Orpimento*; Sp. *Oropimente*; Lat. *Auripigmentum*), the name usually given to sulphuret of arsenic. When artificially prepared, it is in the form of a fine yellow-colored powder; but it is found native in many parts of the world, particularly in Bohemia, Turkey, China, and Ava. It is exported from the last two in considerable quantities, and is known in the East by the name of hartal. Native orpiment is composed of thin plates of a lively gold color, intermixed with pieces of a vermilion red, of a shattery foliaceous texture, flexible, soft to the touch like talc, and sparkling when broken. Specific gravity, 3·45. The inferior kinds are of a dead yellow, inclining to green, and want the bright appearance of the best specimens. Its principal use is as a coloring drug among painters, bookbinders, etc.—THOMSON'S *Chemistry*; MILBURN'S *Orient. Comm.*

Orsedew, Orsidue, Manheim or **Dutch Gold** (Ger. *Flittergold*; Du. *Klatergoud*; Fr. *Oripeau, Oliquant*; It. *Orpello*; Sp. *Oropel*), an inferior sort of gold leaf, prepared of copper and zinc. It is sometimes called *leaf* brass. It is principally manufactured in Manheim.

Ostrich Feathers. *See* FEATHERS.

Oswego. Oswego is one of the most thriving cities in the Union. With a population of 20,000, it does as much business as many cities of twice its population. The Welland Canal has given it advantages over even Buffalo, and hence its trade grows enormously. Its increase has been so steady that it will continue to grow with every improvement in the Western States.

The receipts of flour and grain by lake for three seasons are given as follows:

	1854.	1855.	1856.
Flour, barrels	167,207	224,648	102,920
GRAIN.			
Wheat, bushels	2,492,333	5,365,783	8,282,398
Corn, "	2,632,274	2,860,909	2,530,211
Rye, "	43,215	281,021	339,505
Barley, "	101,436	172,216	110,019
Peas, "	340	51,160	41,416
Oats, "	323,296	228,097	169,750
Totals	5,492,903	8,959,176	12,682,305
By converting the flour into wheat, at 5 bushels per barrel, the amount would be	836,335	1,123,215	514,650
Totals	6,429,238	10,092,391	13,146,955

Showing an increase in 1856 of 6,717,717 bushels over 1854, and 3,064,564 bushels over 1855.

The annual review of its commerce for 1856 says, of the grain warehouses of Oswego, "There are ten elevators, which are capable of elevating in the aggregate over 37,000 bushels of grain per hour, and storage room for over *two million bushels*." This is about the same as Milwaukee. There are in Oswego sixteen mills, with eighty-six run of stone, capable of manufacturing 8600 barrels of flour a day, or over 1,800,000 barrels in a year.

Out of Trim, the state of a ship when she is not properly balanced for the purposes of navigation, which may be occasioned by a defection in the rigging or in the stowage of the hold.

Outrigger, a strong beam of timber, of which there are several, fixed upon the side of a ship, and projecting from it, in order to secure the masts in the act of careening, by counteracting the strain they suffer from the effort of the careening tackles, which, being applied to the mast-head, draw it downward, so as to act upon the vessel with the power of a lever, whose fulcrum is in her centre of gravity. *Outrigger* is also a small boom, occasionally used in the top to give additional security to the top-mast.

Owners of Ships. The ownership or title to a ship can be acquired in several ways, as by purchase, building, or capture. In regard to the first, it is generally done by a bill of sale, of which there are two kinds: the first is where the ship passes from the builder to the first purchaser, and is called the grand bill of sale; the second is where the owner of the ship not being the builder, transfers his interest to another purchaser. Upon the death of the owner, his interests devolve upon his executors or his personal representatives. Special conditions may be introduced which may vest the property in the purchaser, although the property may not have been completed, such as a payment of a certain part of the purchase-money when a part of the vessel has been completed; and so on, upon the completion of that vessel, and the builder cannot require him to accept any other.—ABBOT. A ship's boat does not constitute a part of a vessel's tackle, apparel, furniture, etc.

Property in ships is sometimes acquired by capture. During war ships and private ships having letters of marque, are entitled to make prizes. But before the captors acquire a legal title to such prizes, it is necessary that they should be condemned in the admiralty or other court constituted for that purpose. When this is done, the captors are considered to be in the same situation, with respect to them, as if they had built or purchased them.—*See articles* PRIVATEERS, LETTERS OF MARQUE, PRIZES, and SHIPS and SHIPPING.

Oyster, a well-known edible shell-fish, belonging to the genus *ostrea*, occurring in most parts of the world. The European oyster (*O. edulis*), which forms a considerable article of trade on the coasts of England and France, is taken by dredging, after which the animals are placed in pits formed for the purpose, furnished with sluices, through which, at spring tides, the water is suffered to flow. In these receptacles they acquire the green tinge so remarkable in the European oyster, and which is considered as adding to their value. This color, which at one time was supposed to be owing to some mineral impregnation, has recently been ascertained to arise from the *confervæ*, and other marine vegetable matter, on which the animal feeds. The oysters brought to the different markets in the United States are furnished by several species, which it is extremely difficult to discriminate, and are known among the venders and epicures of this food by appellations derived from the places from whence they are brought. The business of taking these shell-fish employs a great many hands, and no inconsiderable amount of tonnage. In many places oysters are *planted*, as it is called; that is, large artificial beds are formed in favorable situations, where they are permitted to fatten and increase. The breeding-time of oysters is in April or May, from which time to July or August the oysters are said to be *sick* or *in the milk*. This is known by the appearance of a milky substance in the gills. Oysters attain a size fit for the table in about a year and a half, and are in their prime at three years of age; though what the natural term of their lives may be, it is difficult, if not impossible, to determine with any degree of accuracy. Many curious discussions have arisen as to whether oysters possessed the faculty of locomotion. It is well known that, in general, they are firmly attached to stones or to each other; and it has been stated, and generally believed, that they were not endowed with any powers of changing their position. From the observations and experiments of naturalists, however, it appears that they can move from place to place by suddenly closing their shells, and thus ejecting the water contained between them with sufficient force to throw themselves backward, or in a lateral direction. Oysters form the basis of many culinary preparations, but are much more digestible in their raw state than after any mode of cooking them, as this process, in a great measure, deprives them of the nourishing animal jelly, which forms so large a portion of their substance. The shell of the oyster is composed of carbonate of lime and animal matter, and was at one time supposed to possess peculiar medical properties; but analysis has shown that the only advantage of these animal carbonates of lime over those from the mineral kingdom arises from their containing no admixture of any metallic substance. The lime obtained from the calcination of oyster-shells, though exceedingly pure and white, is better suited for work which does not require great tenacity, as for plastering rooms, than for the common purposes of building, as it does not form as hard a compound with sand as the mineral lime.

P.

Pacific Ocean, a vast watery expanse extending from the Arctic to the Antarctic circle, through 127° of lat., and between America on the east, and Asia, the Malay Archipelago, and Australia on the west. In its widest part, at the equator, it is 10,000 miles across; it narrows especially toward the north, where it communicates with the Arctic Ocean by Behring's Strait; and, including the Indian Ocean, it contains upward of 70,000,000 of square miles, or more than all the dry land on the globe. Its coast line on the American side, though generally bold, is very little broken by inlets; on the Asiatic side it is very irregular; and the Celebes, China, and Yellow seas, with the seas of Japan, Okhotsk, and Kamtschatka, are inlets of this ocean. It is studded with a great number of island groups, the principal of which, proceeding from west to east, are the Ladrones, Carolines, Solomon, Queen Charlotte's, New Hebrides, Feejee, Friendly, Society, Low, Marquesas, Sandwich, and Galapagos islands, and New Zealand, besides a vast multitude of solitary islands, reefs, and sand banks. The great equatorial current of this ocean originates in the *Anturctic drift current*, which flows north along the shores of South America, and then west through the Pacific, where it occupies the entire space between the tropics. Strong land currents sweep round the shores of East Australia and Japan. The northeast trade-wind prevails uninterruptedly between lat. 5° and 23° N.; the southeast trade-wind commonly blows from the equator to lat. 26° S.; between them is the region of calms, extending over 5°, and varying in position according to the season. Greatest equatorial temperature of Pacific 88°·5 Fahr. In lat. 56° 26′ the temperature of the sea throughout its depth is 39°·5 Fahr. This ocean became first known to Europeans in 1513; it received its name from Magnathaens, who sailed across it in 1521. In the 18th century its different parts were explored by Behring, Anson, Byron, Bougainville, Cook, Vancouver, Broughton, La Perouse, etc. In the present century by D'Entrecasteaux, Krusenstern, Beechey, Fitzroy, D'Urville, Wilkes, and Sir James Ross.

Current of the Pacific.—Lieutenant Bent, of the United States navy, recently read a paper before the Geographical and Statistical Society of New York, of which the following is an abstract, upon "the great ocean current of the Pacific," corresponding with the Gulf Stream of the Atlantic. The Japanese have known it for many years, and call it the Kurosino, or Black Stream, from its dark blue color compared with that of the adjacent ocean. The fountain from which this stream springs is the great equatorial current of the Pacific, which in magnitude is in proportion to the vast extent of that ocean, when compared with the Atlantic. Extending from the tropic of Cancer on the north, to Capricorn, in all probability, on the south, it has a width of nearly three thousand miles. With a velocity of from twenty to sixty miles per day, it sweeps to the westward in uninterrupted grandeur around three-eighths of the circumference of the globe, until, diverted by the continent of Asia, and split into innumerable streams by the Polynesian Islands, it spreads the genial influence of its warmth over regions of the earth, some of which, now teeming in prolific abundance, would otherwise be but barren wastes. One of the most remarkable of these off-shoots is the Kuro-Suro, or Japan Stream, which, separated from the parent country by the Bashee Islands and south end of Formosa, where its strength and character are as decidedly marked as those of the Gulf Stream on the coast of Florida. This northwardly course continues to the parallel of 26° N., when it bears off to the northward and eastward, washing the whole southeastern coast of Japan as far as the Straits of Sangar, and increasing in strength as it advances, until reaching the chain of islands to the southward of the Gulf of Yedo, where its maximum velocity, as shown by our observations, is 80 miles per day. Its average strength from the south end of Formosa to the Straits of Sangar is found to be from 35 to 40 miles per twenty-four hours at all seasons that we traversed it.—*Scientific Annual*, 1857.

The Pacific Trade of the United States.—The whole number of arrivals in the United States from ports in the Pacific during the year 1856 were 69; and in 1855, 146.

AT BOSTON.

Talcahuana	3	Honolulu, via N. London	1
Valparaiso	3	Iquiqua	1
Caldera, Chili	3	Peru Blanca	1
Tongoy, Chili	2	Total for 1856	14
Total in 1855			18

AT NEW YORK.

Callao	10	Arica	1
California	3	Caldera	1
Honolulu	4	Callao via Valencia	1
Total in 1856			20
" " 1855			38

AT BALTIMORE.

Callao	14	Coquimbo	1
Valparaiso	1	Tongoy, Chili	1
Total in 1856			17
" " 1855			48

AT PHILADELPHIA.

Callao	10	Iquique	1
Total in 1856			11
" " 1855			10

AT NORFOLK.

Callao	6	Total in 1856	6
Total in 1855			19

Boston, 14; New York, 20; Baltimore, 17; Philadelphia, 11; Norfolk, 6; New London, 1. Total, 69.

Whole number of clearances for the Pacific in 1855 were 237; and in 1856, 261, of which there were cleared

FROM BOSTON FOR

California	34	W. C. Central America via Philadelphia	1
Australia	18	Guayaquil	2
Valparaiso	16	Valparaiso via St. John	1
Honolulu	5	Callao via Liverpool	2
Callao	8	Valparaiso via Liberia	1
California via N. York	4	Panama via New York	1
Australia via St. John	4	Arica	1
" " London	1	Australia via Richmond	2
New South Wales	2	Tahiti	1
Callao via London	3	Total for 1856	108
W. C. Central America	1		
Total for 1855			95

FROM NEW YORK FOR

California	73	W. C. Central America	2
Australia	19	Honolulu	1
Valparaiso	12	Iquiqua	1
New South Wales	6	Panama	2
Hobart Town	1	Acapulco	1
Total for 1856			117
" " 1855			113

FROM BALTIMORE FOR

W. C. Central America	4	Valparaiso	1
California	2	Valparaiso via Rio	1
Acapulco	2	Arica	1
Total for 1856			11
" " 1855			7

Boston, 108; New York, 117; Baltimore, 11; Philadelphia, 5; New London, 2; Bangor, 1; Charleston, S. C., 1; Providence, 1; Portland, 1; Savannah, 1; Salem, 1; New Orleans, 2. Total, 251.

Package, Scavage, Baillage, and **Portage,** were duties charged in the port of London on the goods imported and exported by aliens, or by denizens being the sons of aliens. During the Dark Ages it was usual to lay higher duties upon the goods imported or exported by aliens, whether in British or foreign ships, than were laid on similar goods when imported or exported by natives. But according as sounder and more enlarged principles prevailed, this illiberal dis-

tinction was gradually modified, and was at length wholly abolished, in so far at least as it was of a public character, by the act of 24 Geo. III. The duties thus preserved to the city were not very heavy; but the principle on which they were imposed was exceedingly objectionable, and their collection was attended with a great deal of trouble and inconvenience. Not being levied in other places, they operated to the prejudice of the trade of the metropolis. The act 3 and 4 Will. IV. c. 66, authorized the Lords of the Treasury to purchase up the duties in question from the city. This was done at an expense of about £140,000, and the duties were abolished.

Packet, in *Navigation*, meant originally a vessel appointed by government to carry the mails between the mother country and foreign countries or her own dependencies. It is now used as nearly synonymous with an ordinary vessel, chiefly of small burden, that freights goods or passengers.—*See* NEW YORK, PASSENGERS, and POST-OFFICE.

Pack-horse, a horse employed to carry goods on its back in bundles, called packages or packs. In countries not yet intersected by regular roads this is the only mode of transporting goods from one part to another. In Britain, horses were formerly employed for this purpose, but for these carts and wagons are now substituted. In Spain, mules and asses are still so employed, and in Asia and Africa camels and dromedaries.

Padang. This settlement lies on the west coast of Sumatra, and receives its imports almost exclusively from Java. It has no direct importations from foreign countries. Port, harbour, and other commercial regulations the same as at Java, to the government of which island Padang is subordinate. Under the operation of high tariff duties, especially on American cotton goods, the trade between the United States and Padang is insignificant.

Painter. In *Naval Language*, a rope used to fasten a boat either along side of the ship to which it belongs, or to some wharf, quay, etc., as occasion requires.

Paints. The coloring substances or pigments used in the arts. The following are some of the principal pigments and coloring substances included in the commercial name of Paints, and coloring substances:

Asphaltum,	Lead, red and white,
Bronze Powders,	Mineral White,
Brunswick Green,	Ochre,
Brunswick Blue,	Oxyd of Zinc, etc.
British Lustre,	Plumbago,
Chalk,	Pumice-stone,
Carmine,	Painter's Colors,
Dry Ochre,	Paints in Oil,
Emery,	Putty Oil,
Emerald Green,	Paris Green,
Gum Damar,	Shellac,
Gum Sandrac,	Ultramarine,
Gum Animi,	Vermilion,
Gum Copal,	Venetian Red,
Ivory Black,	Verdigris,
Lustre,	White Oxyd of Zinc,
Litharge,	Whiting and Paris White,
Lampblack,	Zinc Paint.

IMPORTS OF PAINTS INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1856.

Whence Imported.	Dry Ochre.	Red and White Lead.	Whiting and Paris White.
	Value.	Value	Value.
Hamburg	....	$17	....
Bremen	....	308	....
Holland	....	294	....
Belgium	....	702	$577
England	$2,820	136,631	21,748
Scotland	....	95	....
Canada	....	19	....
France on the Atlantic	15,622	8,284	1,498
France on the Mediter'n	453	960	....
Spain on the Atlantic	....	2,585	....
Spain on the Mediter'n	....	29,290	....
Tuscany	1,923	....	....
Two Sicilies	215	....	....
Total	$21,033	$174,125	$23,823

EXPORTS OF PAINTS OF FOREIGN MANUFACTURE FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1856.

Whither Exported.	Dry Ochre.	Red and White Lead.	Whiting and Paris White.
	Value.	Value.	Value.
England	....	$1430	....
Canada	$4950	3228	$508
Other British N. A. Poss.	....	1025	....
Hayti	....	94	....
San Domingo	8	....	....
Mexico	....	127	....
Sandwich Islands	....	69	....
Total	$4958	$5891	$508

EXPORTS OF PAINTS AND VARNISH OF DOMESTIC MANUFACTURE FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1856.

Whither Exported.	Value.
Sweden and Norway	$1,201
Danish West Indies	4,186
Hamburg	400
Bremen	862
Holland	90
Dutch Guiana	273
Belgium	216
England	4,659
Scotland	302
Gibraltar	16
Canada	106,578
Other British North American Possessions	5,012
British West Indies	2,084
British Honduras	572
British Guiana	343
British Possessions in Africa	2,077
Other ports in Africa	1,430
British Australia	1,355
British East Indies	529
France on the Atlantic	6,770
France on the Mediterranean	104
French North American Possessions	334
Philippine Islands	580
Cuba	13,383
Porto Rico	671
Portugal	591
Cape de Verd Islands	43
Two Sicilies	71
Austrian Possessions in Italy	50
Hayti	4 220
San Domingo	46
Mexico	9,618
Central Republic	135
New Granada	5 958
Venezuela	4,218
Brazil	2,449
Uruguay, or Cisplatine Republic	1,909
Buenos Ayres	4 079
Chili	13,876
Peru	8,662
Equador	150
Sandwich Islands	4 471
China	6,745
Whale Fisheries	56
Total value	$217,179

Palermo (anciently **Panormus**), a large city and sea-port, the capital of the noble island of Sicily, on the north coast of which it is situated, the light-house being in lat. 38° 8′ 15″ N., long. 13° 21′ 56″ E. Population, 170,000. The Bay of Palermo is about five miles in depth, the city being situated on its southwest shore. A fine mole, fully a quarter of a mile in length, having a light-house and battery at its extremity, projects in a southerly direction from the arsenal into nine or ten fathoms water, forming a convenient port, capable of containing a great number of vessels. This immense work cost about £1,000,000 sterling in its construction; but the light-house, though a splendid structure, is said to be very ill lighted. There is an inner port, which is reserved for the use of the arsenal. Ships that do not mean to go within the mole may anchor about half a mile from it, in from sixteen to twenty-three fathoms, the mole light bearing N.W. ¾ W. A heavy sea sometimes rolls into the bay, but no danger need be apprehended by ships properly found in anchors and chain cables. In going into the bay, it is necessary to keep clear of the nets of the tunny fishery, for these are so strong and well moured as to be capable of arresting a ship under sail.—SMYTH's *Sicily*, p. 70, and *Append.* p. 4.

Imports and Exports.—The great articles of export

from Sicily are, olive oil, grain, particularly wheat and barley, alik, brimstone, wine and brandy, barilla, lemons and oranges, lemon juice, manna, shumac, linseed, fruit, salted fish, and salt; with argol, liquorice, pumice-stone, rags, skins, honey, cotton wool, saffron, etc.

ARTICLES EXPORTED FROM AND IMPORTED INTO PALERMO IN 1852.

Articles.		Quantities.	Values.
EXPORTS			
Argols and cream of tartar	Cwt.	7,558	£11,746
Brimstone	—	138,886	22,217
Cantharides	—	5	60
Cheeses	—	188	300
Corn, grain, and pulse	Quarters.	2,160	4,540
Essences	Pounds.	29,420	20,578
Fish, salted	Cwt.	3,476	4,450
Fruits, dry and picked	—	2,143	2,726
Oranges and lemons	Boxes.	400,681	100,506
Linseed	Quarters.	4,417	8,834
Liquorice paste	Cwt.	14,229	25,532
Manna	—	3,555	34,140
Oils, olive	Gallons.	139,910	21,745
Rags	Cwt.	31,756	15,397
Shumac	—	28,574	369,378
Skins	Number.	30,100	934
Wine and spirits	Gallons.	197,856	22,984
Other articles	Value.	....	32,000
Total	£	....	698,744
IMPORTS.			
Cocoa	Cwt.	409	£1,045
Coffee	—	4,476	11,200
Indigo	—	56	1,430
Pepper	—	2,208	4,476
Rum	Gallons.	1,600	320
Spices	Cwt.	61	600
Sugars	—	11,944	23,902
Tea	Pounds.	300	60
Woods	Cwt.	2,000	1,680
Cottons	Packages.	834	41,400
Cotton yarn	Cwt.	7,190	55,032
Cotton and linen	Packages.	30	2,250
Cotton and wool	—	56	4,480
Earthen-ware and glass	—	1,398	41,940
Fancy goods	—	100	4,000
Hardware	—	458	13,840
Linens	—	75	6,000
Silks	—	161	16,100
Woolens	—	504	50,300
Copper	Cwt.	605	2,800
Coals	Tons.	10,000	10,000
Deal boards	Number.	1,010,197	50,850
Drugs and colors	Packages.	1,274	12,710
Fish, cod	Cwt.	7,750	5,813
Herrings	Barrels.	85	170
Hemp	Cwt.	476	1,904
Hides	—	8,049	48,281
Iron	—	11,496	5,748
Lead	—	4,900	3,775
Leather	—	226	4,440
Pitch and tar	Barrels.	539	1,078
Saltpetre	Cwt.	444	888
Stationery and books	Packages.	146	2,140
Steel	Cwt.	1,500	1,500
Tin in bars	—	320	1,600
Tin in plates	—	925	2,082
Tobacco	—	15,850	63,400
Wax	—	2,672	18,704
Wool	—	207	2,850
Other articles	Value.	....	85,000
Total	£	....	606,063

Wheat is largely exported. It is of a mixed quality, hard, and is generally sold from the public magazines, or *caricatori*, by measure, without weight. But the best hard wheat, grown in the neighborhood of Palermo, is sold by the salma of 272 rottoli = 476 lbs. English; the difference between weight and measure being made good by the seller or buyer, as the case may be. Wine is principally shipped from Marsala; lemons, oranges, and lemon-juice from Messina; salt from Trapani; and barilla from the southern coast. But all the articles to be found on the coast may, for the most part, be had at Palermo; unless, however, the quantity required be small, it is usually best to ship them from the outports, the expense of their conveyance to Palermo being very heavy. The crops of barilla and shumac come to market in August; but brimstone, salt, oil, wine, rags, etc., may generally be had all the year round. The first shipments of lemons and oranges may be made in the beginning of November. Purchases of produce are always paid for in cash, generally half on making the purchase, and the other half on delivery, when in Palermo, and on receiving order for delivery, on the coast. The imports consist of cotton yarn, wool, and stuffs; sugar, coffee, cocoa, dye stuffs, iron, earthen-ware, spices, tin, hides, Newfoundland cod, timber for building, etc. The best of the old accounts of the trade of Sicily that we have met with is contained in SWINBURNE'S *Travels in the Two Sicilies*, 4to ed., vol. ii. p. 401–413.

Palm (Lat. palma, *the hand*). An ancient measure of length taken from the extent of the hand. There were two different palms; one corresponding to the length of the hand, and the other to the breadth. The Roman palm was about eight and a half English inches. The English palm is understood to be three inches.

Palm Oil (Ger. *Palmol*; Fr. *Huile de palme, Huile de Senegal*; It. *Olio di palma*; Sp. *Aceite de palma*) is obtained from the fruit of several species of palms, but especially from that of the *Elais Guineensis*, growing on the west coast of Africa, to the south of Fernando Po, and in Brazil. When imported, the oil is about the consistence of butter, of a yellowish color, and scarcely any particular taste; by long keeping it becomes rancid, loses its color, which fades to a dirty white, and in this state is to be rejected. It is sometimes imitated with hog's lard, colored with turmeric, and scented with Florentine iris root. The inhabitants of the coast of Guinea employ palm oil for the same purposes that we do butter. Our supplies of palm oil are almost wholly derived from the west coast of Africa, of which it is the staple article of export.—LEWIS'S *Materia Medica*; THOMSON'S *Dispensatory*.

Candles are made of palm oil and cocoa-nut oil, of which many thousand tons per annum are now employed. This modern substitution of vegetable fat for animal fat is remarkable. It is bringing Central Africa into intimate commercial relations with civilized countries. The palm oil is found in Africa, but it assumes a solid state in a colder climate. The casks containing it have steam forced into them, by which the oil is melted and made to flow out; and the oil is then purified and bleached to various degrees of whiteness, according to the purpose to which it is to be applied. The whitened cakes of palm oil are cut into slices by a machine; the slices are deposited on mats of cocoa-nut fibre; the mats are piled in heaps, with iron plates between them; the heaps are placed in hydraulic presses, where intense pressure brings the palm oil to the state of dry, thin cakes. After a little more purification, the palm oil is fitted for melting, previous to the making of candles.

IMPORTS OF PALM OIL INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1856.

Districts imported into.	Gallons.	Value.
Salem and Beverly	666,078	$228,417
Boston and Charlestown	76,064	25,102
New Bedford	322	82
New London	4,858	2,079
Stonington	4,073	1,597
New York	397,562	148,894
Baltimore	550	186
Mobile	40	59
Total	1,149,547	$416,317

Palms, called by Linnæus, from their noble and stately appearance, the princes of the vegetable kingdom, are a natural order of arborescent endogens, chiefly inhabiting the tropics, distinguished by their fleshy, colorless, six-parted flowers, inclosed within spathes; their minute embryo, lying in the midst of albumen, and remote from the hilum; and rigid, plaited or pinnated inarticulated leaves, sometimes called fronds. Wine, oil, flax, flour, sugar, and salt, says Humboldt, are the produce of this tribe; to which Von Martius adds thread, utensils, weapons, food, and habitations. The most common species is the cocoa-nut. Their wounded stems, or spathes, yield in abundance a sac-

charine fluid, known in India by the name of toddy. The succulent rind of the date is a most nutritious as well as agreeable fruit. Sago is yielded by the interior of the trunks of nearly all, except *Areca catechu*, the well-known *pinang*, or betel-nut. The fruit of the latter species is remarkable for its narcotic or intoxicating power. The common canes or ratans of the shops are the flexible stems of species of the genus *Calamus*.

Pampas The name given to one of the great systems of South American plains, which can scarcely, with propriety, be called *deserts*, inasmuch as they are covered with luxuriant herbage, and inhabited by vast herds of wild cattle and droves of horses. The region of the Pampas forms the basins of the Paraguay and La Plata, and includes the vast plains of Buenos Ayres, extending from the foot of the eastern ridge of the Andes to the "sea-like Plata," and stretching southward into the deserts of Patagonia. — TRAILL'S *Physical Geography*. See *Quarterly Review*, xxxv., 114 (ROBERT SOUTHEY).

Pamphlet, a small book, usually printed in the octavo or duodecimo form, and stitched with paper cover, popularly understood to comprise from fifty to two hundred pages.

Panama, a city and sea-port of New Granada, on the Pacific, thirty-eight miles southeast from Chagres, lat. 8° 56′ N.; long. 79° 31′ 2″ W. Population, 7000. It stands on a rocky peninsula, projecting into the Bay of Panama, and has an imposing aspect from the sea. Its streets are well ventilated, and it is said to be cleaner than most Spanish-American cities. It is encircled by irregular and not very strong fortifications, constructed at different periods. The houses are partly of wood, straw, and other fragile materials; but many are substantially built of stone, the larger having court-yards, or *patios*, in the old Spanish style; and no doubt it has been much improved within the last two or three years. Its roadstead is one of the finest in the world. There are a number of islands a short distance from the main land, which afford secure anchorage for ships of any burden, and from which supplies of provisions, including excellent water, may easily be obtained. The tides daily rise and fall from twenty to twenty-seven feet, so that it is peculiarly well fitted for the repair and building of ships. Previously to 1740, when the trade with the Pacific first began to be carried on round Cape Horn, Panama was the principal entrepôt of trade between Europe and Western America. From that period, however, it fell off; and its decay was peculiarly rapid after the independence of South America, and the opening of the other ports of the Pacific. But since the occupation of California by the Americans, and especially since the discovery of the auriferous deposits in that country, it has again rapidly increased. And now that a railway is carried across the isthmus, it will in all probability attain to greater commercial distinction than ever. In the course of the year 1855 as many as twelve steamers were employed in the trade between Panama and San Francisco.

There is a treaty of commerce between the United States and New Granada, the terms of which are complied with by New Granada, but are sometimes broken by the local government of the province, which placed a tax upon passenger-carrying vessels, at the rate of one dollar for each passenger, which has been recently annulled by the supreme government of New Granada. The commercial intercourse of the United States is alone dependent on the regulations made by the general government of New Granada, which latter, by an act of Congress, has made Panama and other ports on the isthmus free ports of entry since the 1st of January, 1850. There are no privileges permitted to the commerce of other nations which are denied to the United States, and there are no restrictions imposed on the commerce of other nations other than what are imposed upon that of the United States. The sum of $6 40 is collected from each American vessel; viz., $4 80 to the captain of the port, and $1 60 to the interpreter. The same charge is made against New Granadian vessels, except the interpreter's fee. The transshipment of goods from one port to another in New Granada, or to a foreign country, by United States ships, is permitted without restrictions. The currency of this country, by a recent law, is established at ten dimes to the dollar. The weights and measures are the same as used in France, but as yet are not brought into use in this country. The French silver, by a law of New Granada, is made a legal tender at the rate of twenty cents to the one-franc piece, although, compared with the value of United States silver, it would only be worth 18·6 cents. New Granada does not export any thing from here other than a very few hides, and the imports of the United States to this place consist only of coal and provisions for the steamers which carry passengers to and from the isthmus. The laborer in this consular jurisdiction receives from two to three dollars per day; mechanics from six to eight dollars per day; and clerks from $1500 to $5000 per annum. There are no price-current sheets published in this consular jurisdiction.—*Commercial Relations of the United States.*

Panama, or **Darien (Isthmus of)**, connects North (or rather Central) and South America, and is comprised in the republic of New Granada, sec., Isthmus, forming a province between lat. 9° and 10° N., and long. 77° 30′ and 81° W., having north the Caribbean Sea and Gulf of Darien, and south the Gulf of Panama. Length, west to east, about 200 miles, average breadth 40 miles, but in long. 79° it is narrowed to less than 30 miles. Surface undulating, the hill chains which extend through the isthmus, uniting the mountain systems of Central and South America, are, near Panama, not more than 260 feet above the level of the Pacific. A great quantity of rain falls; in the months of July, August, and September it rains incessantly. Soil very fertile; products comprise fine timber, in great variety, fruits, rice, maize, sugar-cane, coffee, cocoa, caoutchouc, vanilla, dyes, drugs, hides, limestone. On its north coast are Aspinwall (colony), Puerto-Bello, and Chagres; on its south side is Panama. A connection between the Atlantic and Pacific oceans has been proposed at different points of Central America; viz., at Tehuantepec, at Chiquimula, at Nicaragua, and at the narrowest part, where a railroad has been constructed between Aspinwall and Panama.

Passage across the Isthmus of Panama or Darien.— Latterly, or since the discovery of the mineral riches of California, the isthmus has become a great thoroughfare, vast numbers of individuals having crossed from the port of Chagres on the Caribbean Sea to Panama on the Pacific Ocean, and conversely. The port of Chagres is within the mouth of the river of that name, in lat. 9° 18′ 6″ N., long. 79° 59′ 2″ W. A bar at the mouth of the river has only from 10 feet to 12 feet water, though within the bar the river deepens to from four to six fathoms. It is probable that the bar might be deepened without much difficulty, and a canal might be cut from the bottom of the Bay of Manzanilla to the river, from which it is only three miles distant. A short while ago the town (if so it might be called) was a mere cluster of huts, unhealthy, and without any accommodation for passengers. But having latterly become one of the starting-points in the nearest and shortest route from the east to California, it has been considerably improved. A joint-stock company was formed in New York for the construction of a railway from or near Chagres, at the bottom of Manzanilla Bay, to Panama, a distance of about 34 or 35 miles. This railway has been completed, and is now in operation. The undertaking reflects great credit on American enterprise and perseverance. The difficulties to be overcome were of a very formidable description, partly from

the nature of the ground, which not unfrequently consisted of deep marshes, but more from the luxuriance and strength of the vegetation through which it was necessary to penetrate, and the heat, moisture, and unhealthiness of the climate. Unluckily, the desire to accomplish their task in the shortest time and at the least expense, tempted the engineers to execute the work in a very superficial manner, substituting bridges, viaducts, pillars, etc., of wood for those of stone, mortar, and iron. In a country where the decomposition of vegetable matter is so very rapid this was as false and spurious a species of economy as can well be imagined. Already several miles of the railway have had to be repaired, or rather reconstructed, by the substitution of *lignum vitæ* and other hard woods for the softer ones that were first used. This, however, will do little more than palliate the evil; and there can be no doubt that eventually stone and iron bridges and viaducts will have to be used instead of wooden ones every where along the line. Trains take about four hours in passing from sea to sea; but were the railway properly finished, the passage might be performed in less than half that time. A station, called Aspinwall, has been erected on Manzanilla Island, in the Caribbean Sea. But it is extremely unhealthy, and there is little prospect of its ever becoming a place of much importance. —TOMES'S *Panama Railroad*, New York, 1855, *passim*.

But supposing (which is not the case) that this railway were every thing that could be desired, still it is plain that the grand desideratum is the carrying across the isthmus of a water communication between the Atlantic and Pacific oceans. We do not mean by this a canal suitable only for coasters, or vessels of comparatively small burden. Such a channel would be of little use, except to the countries contiguous to its termini. What is really wanted is a canal that will admit ships of the largest burden, and bound on the longest voyages. The advantages that would result from having the isthmus perforated by such a channel can not be easily exaggerated. No other project that appears to be within the limits of possibility, perhaps not even the carrying of a ship canal across the Isthmus of Suez, would give so great a stimulus to commerce and navigation. It would remove the barrier which renders the navigation between the eastern and western coasts of America so tedious and difficult. And, by doing this, it would enable ships from Europe to reach the latter and the Pacific in less than half the time they do at present, while it would greatly facilitate the voyage to Australia and China.

And a grand project of this sort is on foot. It is proposed to cut a canal that shall admit ships of 1000 tons burden and upward, between Porto Escoces (lat. 8° 5′ N., long. 77° 21′ W.), near Point Caledonia, in the Gulf of Darien, on the Caribbean Sea, and the Rio Savana, which falls into the Gulf of San Miguel, on the Pacific. The intervening space (about 38 or 40 miles) is said to be comparatively flat; the ports at each extremity are easy of access, and have deep water; and it is proposed that the canal should be constructed throughout on the same level, and have no locks. The cost of the project is estimated at from 12 to 15 millions sterling. And considering the vast importance of such a work to the United States, to England, and, indeed, to all maritime nations, this expense, heavy as it may appear, should be reckoned a subordinate matter. Were the country through which it is to pass in the possession of England or the United States, it would most probably have been undertaken. But the unsettled state of Central America, and the knotty questions that might eventually arise as to the property and management of the canal, are serious obstacles to its being proceeded with.—See, for ample details on this interesting subject, the work of Dr. CULLEN, entitled *Isthmus of Darien Ship Canal*.

The route by which the railroad passes is in every respect the most desirable for this purpose, and the means by which the character of the country could be best known, as far as its topography and the features essential to the object in view could be seen. It was, in fact, the direct means for the accomplishment of the purpose. It is supposed that the canal will be united with the waters of the Pacific on either side of the city, and that a channel might be dredged to the depth of thirty feet, to meet the navigable waters for ships of large draught. The bay then expands into an ample harbor, where the winds are said never to blow with violence, sufficiently comprehensive for the commerce of the world, and studded with islands, convenient for all the great purposes that the condition of things would call for, by the construction of a canal through the isthmus.

The isthmus itself seems to present no serious obstacle to science for the construction of a canal. The whole extent, from the Atlantic to the Pacific, is made up of swamps, hills, and plains; and the highest point of land where the railroad passes is not more than 286 feet above the level of the sea. On the whole route, most if not all the hills through which the canal would pass would be required for embankments over the plains and swamps; and there are no insuperable obstacles to piercing the highest part, so as conveniently to make the waters of the Chagres, Obispo, and Rio Grande available for the wants of a canal. In a climate less unfavorable to the white man, the question of "feasibility" would not be raised. It seems to be conceded, from experience, that the African race alone persistently labor in this climate. A few thousand of free blacks might be obtained from the West India Islands; but this resource would be inadequate, as was experienced by the operations on the Panama Road. The want of men to labor would seem to be the great obstacle to the successful accomplishment of a work of so much magnitude.

On the Atlantic side the canal would enter the Bay of Aspinwall. In approaching this point, it would pass a few miles from the Chagres, and enter the bay near the River Mindi. Here, it will be seen, as in the Bay of Panama, extensive dredging for a channel to meet the deep water would be necessary. The bay expands for the distance of about five miles, between two headlands, and is open to the sea. A breakwater would be necessary here. With such an one as would afford the necessary protection against the ocean swell, the Bay of Aspinwall, like the Bay of Panama, would afford ample room for the commerce of Europe as well as America; and in contemplating these two bays with the eye of a seaman, and in reference to the great work in question, it would look as though nature had provided them for the especial convenience of man in his laborious undertakings in the extension of commerce, as a place where all nations may meet, in their varied pursuits on the great highway of the ocean. In a work like that of a canal through the Isthmus of Darien, it is to be supposed that the requirements of commerce and navigation, in its most extended application, would alone be considered; and, taking this for a standard, a canal two hundred feet wide and thirty feet deep would seem to be the appropriate dimensions. With such an avenue from the Atlantic, the stormy and distant seas of the South would be abandoned by Europe as well as America, and we should meet there on neutral ground, pursuing with a common purpose the paths of peace and industry, which by its means, we may suppose, would effect a moral revolution such as the world has never known, and surpassing in importance that which would be effected in the revolution of the commercial world.

Appended is a paper submitted by Colonel G. M. Totten, containing dimensions and other data for the proposed ship-canal across the Isthmus of Panama:

Dimensions and other Data of the proposed Ship-Canal across the Isthmus of Panama.—Length from shore to shore, 45½ miles. Length from five fathoms water

in Navy Bay, on the Atlantic, to three fathoms water in Panama Bay, on the Pacific, 48¾ miles. The prism of water to be 150 feet wide at the bottom, 270 feet wide at surface, and 31 feet deep. The locks to be 400 feet in clear length of chamber, and 90 feet in clear width. The summit level will be 150 feet above mean tide of the Atlantic and Pacific oceans. The summit cut will be about four miles long. The deepest cutting on this level will be 136 feet, and the average depth of the cut will be 49 feet. The Rio Chagres yields an ample supply of water for the canal at all seasons of the year. The summit level will be supplied by a feeder about twenty-four miles long, which will tap the River Chagres about twenty-one miles above the town of Cruces, where the level of the river is about one hundred and eighty-five feet above mean tide, and about thirty-five feet above the summit level. The cost of this canal, including the requisite harbor improvements at each end, will not exceed $80,000,000. —Commodore Paulding's *Report to the Navy Department*, United States, 1857.

The following figures will show the comparative distances from New York to San Francisco of the four routes, exclusive of the land travel:

Routes.	Distance on Atlantic.	Distance on Pacific.	Total.
	Miles.	Miles	Miles
Panama	2292	3755	6147
Nicaragua	2403	2964	5367
Honduras	2102	2965	4767
Tehuantepec	2276	2305	4581

The several transit distances, and the total distances from New York to San Francisco, are shown by the following table:

Routes.	Transit Distances.	Total Distances.
	Miles	Miles.
Panama	51	6198
Nicaragua	137	5504
Honduras	161	5128
Tehuantepec	236	4817

Papal States. This portion of Italy comprises an area of 17,210 square miles, and contained in 1850 a population of 3,006,771 inhabitants. The chief productions of the Papal States are wheat, maize, pulse, hemp, wine, oil, and tobacco. There are numerous mines of iron, lead, sulphur, alum, vitriol, and other volcanic products; but, with the exception of the sulphur mines near Rimini, they are unproductive. The quantity of this article annually manufactured amounts to about 84,000,000 pounds. The manufactures of the Papal States comprise silks, leather, gloves, paper, musical strings, iron and glass ware, a few cotton goods (at Rome), crape and sausages (at Bologna), and cordage, soap, cream of tartar, and glue. There is no direct trade between the United States and the Papal States—the latter deriving their supplies of cotton, sugar, coffee, cocoa, rum, etc., from the ports of Genoa and Trieste. The foreign commerce of these states is conducted chiefly through the ports of Ancona and Civita Vecchia—the former with the western shores of the Adriatic, and the latter with the Mediterranean ports. The celebrated Roman cement is exported from the port of Civita Vecchia.

Foreign Trade.—In 1850, the foreign trade of Ancona represented $4,464,000, viz., imports, $2,976,000; exports, $1,488,000. This trade was distributed between Austria, England, and its dependencies in Europe, these countries appropriating more than three-fourths of the whole. During the same year the foreign trade of Civita Vecchia amounted to $3,821,928; viz., imports, $2,929,314; exports, $892,614. The countries participating in this trade were France, Sardinia, England, Holland, and the Two Sicilies. The whole foreign commerce of the Papal States in 1850 amounted to $19,208,680; and in 1851 to $20,454,240. All foreign vessels are permitted to engage in the coasting trade of the States on the payment of the following dues: Anchorage, on French, Austrian, and American vessels, three bajocchi per ton—about three cents. Foreign vessels putting into harbor, either for anchorage or through stress of weather, pay half of the above-named duty.—*See* Italy.

Clearance Duty.—For each vessel of from 1 to 149 tons, ten bajocchi (ten cents); and for 150 tons and upward, twenty bajocchi (twenty cents). No vessels enjoy an exemption from the custom-house duties on imports and exports. These duties have recently undergone several reductions, applicable chiefly to articles of necessity; on articles of luxury, in which sugar is included, the duties have been proportionably raised. —*Commercial Relations of the United States.*

Paper (Ger. and Du. *Papier*; Fr. *Papier*; It. *Carta*; Sp. *Papel*; Russ. *Bumaga*; Lat. *Charta*; Arab. *Kar*; Pers. *Kaghas*). This highly useful substance is, every one knows, thin, flexible, of different colors, but most commonly white, being used for writing and printing upon, and for various other purposes. It is manufactured of vegetable matter reduced to a sort of pulp. The term paper is derived from the Greek word *παπῦρος, papyrus*, the name of the plant on the inner bark of which (*Liber, βίβλος*, whence our word *book*) the ancients used to write. Paper is made up into *sheets*, *quires*, and *reams*, each quire consisting of twenty-four sheets, and each ream of twenty quires.

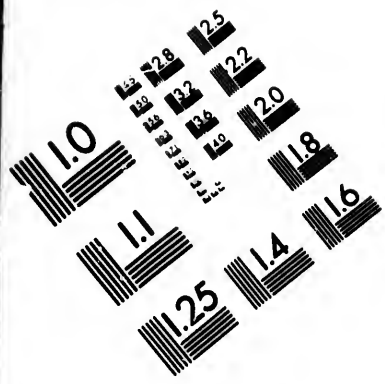
Historical Sketch of Paper. Difference between ancient and modern Paper.—Some of those learned and ingenious persons who have investigated the arts of the ancient world have expressed their surprise that the Greeks and Romans, though they possessed an immense number of books, and approached very near to printing in the stamping of words and letters, and similar devices, should not have discovered the art; the first rude attempts at typography being sufficiently obvious, though much time and contrivance have been required to bring the process to its present state of perfection. But they should rather, perhaps, have wondered that the more civilized nations of antiquity did not invent paper, an invention which, it may easily be shown, necessarily preceded that of printing. But this was an exceedingly difficult task; the more so, that the vast importance of paper could not be appreciated, or even imagined, till after it had been generally introduced. At first, the memory of important events appears to have been handed down by inscriptions cut on rocks, pillars of stone or marble, and the walls of edifices; and this primitive usage is still retained in the monuments in our churches and cemeteries. In a later, though still very remote age, men were accustomed to write upon portable surfaces of various kinds. Every body knows that the Decalogue was written upon tables of stone; and Joshua wrote a copy of the law upon the like materials.—*Josh.* c. viii., v. 32. The Greeks and Romans engraved laws, treaties, contracts, and other important documents, on plates of brass; and it is stated that a fire which broke out in the capitol, in the reign of Vespasian, consumed above 3000 such bronze muniments. — *Nouveau Traité de Diplomatique*, i. 451. But exclusive of plates of this sort, which were necessarily inconvenient, costly, and quite unfit for ordinary use, thin and flexible plates of lead and other metals (*Job*, c. xix., v. 23, 24), thin pieces of wood, skins, parchment, linen, and a variety of similar substances, were used in writing. Cheaper materials, such as the leaves and bark of trees, palms, etc., were also used from a very remote period for the same purpose; but leaves (*χάρται, charta*) being, when dry, apt to split in the direction of the fibres, it was found to be necessary, in preparing them for writing, to glue them together, so that the fibres might cross each other in opposite directions. The texture of the leaf, or sheet, if we may so call it, is thus greatly strengthened; and when it has been smoothed, polished, and fitted for use, it is less inconvenient and better looking than might be supposed. Such, in

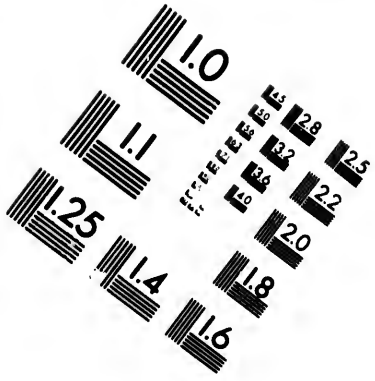
fact, is the principle on which the paper of the ancients was formed. This, however, which was called *Charta Egyptiaca*, from the place of its manufacture, did not consist of leaves, but of the inner bark of the famous reed or rush, the *Cyperus Papyrus*, found along the banks of the Nile, or rather in the pools and ditches which communicate with the river. The ancients applied this useful plant to an immense variety of purposes; but here we shall only notice that from which it has acquired an immortality of renown. The inner bark having been divided by a needle or other sharp instrument into very thin and broad layers or filaments, portions of these were placed side by side longitudinally, and glued together at the ends; another portion being glued cross-wise on the backs of the latter, to give the page the requisite strength. Pliny and other writers have described the process (*Hist. Nat.* lib. xiii. c. 11, 12, 13), which has been further elucidated by Hardouin and other commentators. But the fullest and ablest discussion of this curious subject is contained in the very learned and elaborate work, the *Nouveau Traité de Diplomatique* (1. p. 448–524), where the most interesting particulars respecting the history and manufacture of papyrus, as well as of the greater number of the other writing materials used in antiquity, have been collected and set in the clearest point of view.—See also the *Dictionnaire Diplomatique* of De Vaines, *art.* PAPIER, ii. 165–174. Bruce has given a summary of the authorities in the seventh volume of the octavo edition of his Travels; and, not satisfied with this, he attempted to make paper from the papyrus, in which, not being very successful, he imputes his failure to errors in the statements of Pliny; not reflecting that, had he endeavored, trusting to written directions, without experience and traditional art, to make modern paper, or even a pair of shoes, he would most probably have been equally infelicitous. Egypt enjoyed for a lengthened period a natural monopoly of this valuable article, and even attempted, in anticipation of a later policy, by prohibiting the growth of the papyrus, except in certain localities, and limiting its supply, to sell its produce at an artificially enhanced price!—AMEILHON, *Commerce des Egyptiens*, p. 238. But this policy ceased on the conquest of Egypt by the Romans, who, having imported the plant into Rome, succeeded in preparing from it a very superior article. Pliny enumerates the various kinds of paper, from the coarsest, which was used, like our brown paper, for packing, to the most expensive and finest. The latter, which was made of the innermost filaments, was of a snowy whiteness; and when properly dressed and polished, was easily written upon. The consumption was very considerable; and being, after the foundation of Alexandria, principally made in that city, it formed an important article in her commerce, and furnished employment for many workmen and much capital. Flavius Vopiscus relates that, in the third century, the tyrant Firmus used to say there was so much paper there, and so large a quantity of the glue or size used in its preparation, that he could maintain an army with it; "*Tantum habuisse de chartis, ut publicè sæpe diceret, exercitum se alere posse papyrô et glutinô.*" We may doubt whether the value of the paper at present belonging to any single city would do the like. *Charta Egyptiaca* is very ancient, having, notwithstanding the assertion of Varro and Pliny to the contrary (*Hist. Nat.* lib. xiii. cap. 11), been in common use long before the age of Alexander. This is evident from the statement of Herodotus, who, though he lived about a century before that conqueror, tells us that in former times, when papyrus was scarce, the Ionians wrote on the skins of goats and sheep, and that that practice continued to be customary among several barbarous nations.—Lib. v. cap. 58.

Though white, smooth, durable, and not ill adapted for writing, ancient paper was not suited for the printer; by reason of the closeness of the grain, it would not have received the ink from types more kindly than shavings of wood, and such like materials; and its texture was so very brittle that it would have shivered to pieces under the press. It was, in truth, an inartificial mass ("*viscera nivea virentium herbarum*"), no great invention or ingenuity being discovered in its preparation. Modern paper, on the other hand, is wholly artificial; and the contrivances for its manufacture are marvelous alike for the sagacity evinced in their design and their practical efficiency. Like the paper of antiquity, it is formed of the filaments of various sorts of vegetable substances, derived principally from the tearing to pieces or pounding cotton and linen rags, and similar materials, mixed with water. This process is called beating them into pulp; and when examined with a microscope, the floating filaments are found to be well fitted for adhering together, being jagged and rough, and mixed in every possible way. A portion of this mixture or pulp being, when properly prepared, poured upon moulds or sieves of fine woven wire, the water is drained off, and the suspended fibres falling to the bottom, form a layer or sheet, which, being consolidated by pressure and dried, becomes paper, its strength and goodness depending, of course, in a great measure, on the quality of the rag or other material of which it is made. Paper used to be manufactured by dipping sieves or frames into the pulp, the portion of filaments so lifted up forming the sheet of paper. But the application of rotary motion to the manufacture has effected a total change in the mode in which it was carried on: instead of dipping the sieves or frames into the cistern of pulp, a circular web, or round towel of woven wire, revolves horizontally under the vessel (technically called the vat), receives the deposit, conveys it away, and, by an adjustment of extraordinary delicacy, transfers it uninjured, though as fragile as a wet cobweb, to a similar revolving towel of felt; thus an endless web of paper is spun, as long, at least, as the machine continues to move and pulp is supplied.

The pervious and spongy texture of paper make it readily imbibe and retain the ink impressed on it by types in printing, and by the pen in writing; its toughness hinders it from being easily torn; and, in a well-bound book, under favorable circumstances, its duration is indefinite, and, for all practical purposes, eternal! It is true that legal documents are sometimes written or printed on parchment, which is less liable to be torn or injured by rubbing; the luxury of typography occasionally, also, exhibits a few impressions of a splendid work upon vellum; and it is further true that these substances were used for writing upon by the ancients; but they are necessarily expensive, and the cost of either far exceeds the means of the great majority of book buyers—so that it would be altogether unprofitable to cast types, to construct presses, and to incur the various and heavy charges of an establishment for printing, unless we possessed a cheaper material on which to print. Almost all the more ancient and valuable existing Greek and Latin manuscripts are written either on parchment or vellum, but generally on the latter. It is singular, however, that while such is the case, all or almost all the very old charters and diplomas are written on papyrus. Indeed, the learned authors of the *Nouveau Traité de Diplomatique* affirm that no parchment charter has been discovered anterior to the sixth century.

It appears to be sufficiently established that paper, fabricated like that now in use, of cotton and other vegetable materials, and of silk, has been manufactured in China from a very remote epoch.—*Nouveau Traité de Diplomatique.* The Arab historians state that similar paper was manufactured in Mecca in the beginning of the eighth century (ANDRES, *Origine e Progressi d' Ogni Letteratura*, and GIBBON, ix. 379); and most probably the mode of its production was then also known to the Greeks. It appears to have been





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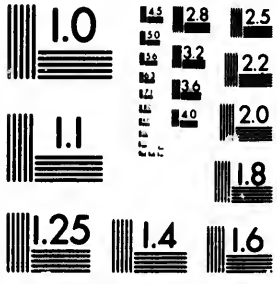

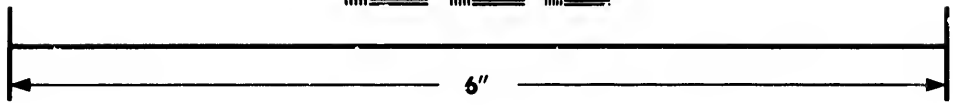

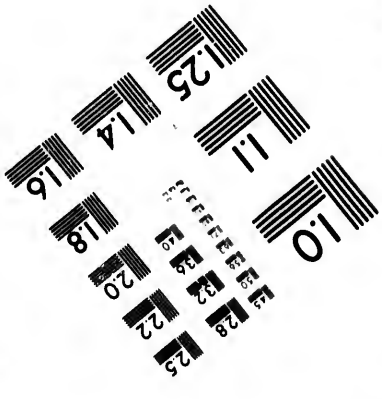

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ury. In other respects the change would have been of little practical importance. There are extremely few persons in India, as compared with those in England and most European countries, who would have suffered by a fall in the value of money; and government could have readily indemnified itself for any loss it might thereby have incurred. A further substitution of gold for silver will also be probably brought about by using gold coins of less value than formerly. In most countries, for example, gold might be advantageously coined into one-dollar pieces. It would be inconvenient, perhaps, to have gold coins worth less than this; but of this value their employment would be beneficial as well by economizing the use of silver as by their being more convenient and easily carried about.

The lessened demand for silver in Europe and the United States, and the greater demand for it in India, arising out of the circumstances now and previously adverted to, have contributed to that immense exportation of silver to the East to which we have already called the reader's attention. But there are no satisfactory reasons for thinking, unless some fresh changes take place in the circumstances under which gold and silver are produced, that this exportation of silver will be of long continuance. It is difficult, indeed, to say how great a quantity of silver might be imported into India without sensibly affecting its value there; but the increase of its value in Europe, arising from the diminution of its supply, will eventually hinder its being sent elsewhere.

The apprehensions that were formerly so very prevalent, even among those who should have known better, in regard to an immediate and heavy fall in the value of gold have now in great measure subsided. It appears to be now pretty generally admitted that if a fall should take place, it will only manifest itself by slow degrees; and this conclusion would appear to be pretty well founded.

The supplies of gold from Australia have fallen off very greatly since 1852. In proof of this we subjoin a statement by Mr. Khull, of Melbourne, showing the

Comparative Produce of the Gold Fields of Victoria in 1852, 1853, and 1854.

Years.	Ascertained. Ounces.	Unrecorded Ounces.	Total Ounces.	Price per oz.	Value.
1852	3,150,378	1,046,825	4,247,807	76s.	£14,860,198
1853	2,274,159	816,190	6,090,349	75s.	11,788,182
1854	1,681,434	301,264	2,192,699	80s.	8,770,796

Now supposing that the supplies from the gold fields of New South Wales and other parts raised the total produce of Australian gold in 1854 to $50,000,000, still that would be little more than half the estimated produce ($95,000,000) of 1852; a decline which would go far to check any downward tendency, if such there were, in the value of gold. It is affirmed, indeed, in communications from Victoria, that the produce of the gold fields in the current year (1855) will exceed their produce in 1854. This, however, is doubtful; but supposing it to be the case, and that their produce should amount to $50,000,000, still that would be nearly $25,000,000 below its amount in 1852. And though it be quite impossible to say whether the yield of the current year (1855) is destined to increase or fall off in time to come, our anticipations are rather in favor of a decline. The great excitement of the gold fields has already pretty well subsided, both in Australia and California. They are found to be a lottery with many great prizes, but in which notwithstanding the blanks very largely predominate. The probability, indeed, seems to be that the deposits of stream gold will in no lengthened period be comparatively exhausted; and that gold in future will have to be principally obtained by the crushing of quartz rocks, an employment which is rarely found to be productive of more than ordinary profits. The supply of silver from Mexico is now (1855) supposed to amount to from $28,000,000 to $30,000,000 a year. On the other hand, however, the supply of the precious metals from Russia has decreased.

On the whole, it may be concluded that at present no decline need be expected in the value of the precious metals. On the contrary, an increase of their value would seem to be more probable. Most likely, however, it will continue about stationary till it begins to be influenced by some new combination of circumstances.—*See article* Panics. Refer also to California, Gold, Banks, Corn Law; *also Bankers' Magazine*, vols. iii. (the last essay on the subject by Baron Humboldt), iv., vi., vii., viii., ix., x., xi., xii.; New York, 1848–1855.

Premia. *See* Insurance.

Press, the Printing. This great engine was of rude construction from the period of the discovery of the art of printing, up to the close of the 18th century, when many improvements were made. William Caxton, a mercer of London, had a press set up at Westminster, 1471.—Stowe's *Chronicle*. The Earl of Stanhope's presses were in general use in 1806. The printing-machine was invented by Koenig in 1811, and Applegath followed. The Columbian press of Clymer was produced in 1814; and the Albion press, an improvement on this last, came into use a few years after. Printing by means of steam-machinery was first executed in England at the *Times* office, London, on Monday, November 28, 1814. Cowper's and Applegath's rollers for distributing the ink upon the types were brought into use in 1817. Vast improvements have been made in the United States within a few years, both in hand and steam presses. The most celebrated manufacturers probably are R. Hoe & Co., of New York. Their largest presses for newspapers are capable of throwing off over 20,000 sheets per hour, which is so much in advance of any presses in Europe that they have supplied orders from Paris. The presses of Seth Adams & Co., of Boston, are perhaps the best in the world for book printing. *See article* Books.

Press-gang, the name given in England to a detachment of seamen, who (under the command of a lieutenant) are empowered, in time of war, to take any sea-faring men, and oblige them to serve on board the king's ships.

Press of Sail, signifies as much sail as the then state of the wind, etc., will permit a ship to carry.

Prices. By the price of a commodity is meant its value estimated in money, or simply the quantity of money for which it will exchange. The price of a commodity rises when it fetches more, and falls when it fetches less money.

1. *Prices of freely-produced Commodities.*—The exchangeable value of commodities—that is, their power of exchanging for or buying other commodities—depends, at any given period, partly on the comparative facility of their production, and partly on the relation of the supply and demand. If any two or more commodities respectively required the same outlay of capital and labor to bring them to market, and if the supply of each were adjusted exactly according to the effectual demand—that is, were they all in sufficient abundance, and no more, to supply the wants of those able and willing to pay the outlay upon them, and the ordinary rate of profit at the time—they would each fetch the same price, or exchange for the same quantity of any other commodity. But if any single commodity should happen to require less or more capital and labor for its production, while the quantity required to produce the others continued stationary, its value, as compared with them, would, in the first case, fall; and in the second, rise; and, supposing the cost of its production not to vary, its value might be increased by a falling off in the supply, or by an increase of demand, and conversely. But it is of importance to bear in mind that all variations of price arising from any disproportion in the supply and demand of such commodities as may be *freely produced in indefinite quantities* are *temporary* only; while those that are occasioned by changes

in the cost of their production are *permanent*, at least as much so as the cause in which they originate. A general mourning occasions a transient rise in the price of black cloth; but supposing that the fashion of wearing black were to continue, its price would not permanently vary, for those who previously manufactured blue and brown cloths, etc., would henceforth manufacture only black cloth; and the supply, being in this way increased to the same extent as the demand, the price would settle at its old level. Hence the importance of distinguishing between a variation of price originating in a change of fashion or other accidental circumstance—such, for example, as a deficient harvest—and a variation occasioned by some change in the cost of production. In the former case, prices will, at no distant period, revert to their old level; in the latter the variation will be lasting. When the price of a freely produced commodity rises or falls, such variation may evidently be occasioned either by something affecting its value, or by something affecting the value of money. But, when the generality of commodities rise or fall, the fair presumption is that the change is not in them, but in the money with which they are compared. This conclusion does not, however, apply in all cases; and we believe that most part of that fall in the price of commodities, which has taken place since the peace, and which has been so generally ascribed to a rise in the value of money, occasioned by a decline in the productiveness of the mines, has been caused by the increased productiveness of industry, arising from the abolition of oppressive restraints on commerce, the opening of new and more abundant sources of supply, and the discovery of new means and improved methods of production.

2. *Price of monopolized Commodities.*—Exclusive, however, of the commodities now alluded to, there is a considerable class whose producers or holders enjoy either an *absolute* or a *partial* monopoly of the supply. When such is the case, prices depend entirely or principally on the proportion between the supply and demand, and are not liable to be influenced, or only in a secondary degree, by changes in the cost of production. Antique statues and gems, the pictures of the great masters; wines of a peculiar flavor, produced in small quantities, in particular situations; and a few other articles, exist under what may be called absolute monopolies; their supply can not be increased; and their price must, therefore, depend entirely on the competition of those who may wish to buy them, without being in the slightest degree influenced by the cost of their production. Monopolies are sometimes established by law; as when the power to supply the market with a particular article is made over to one individual or society of individuals, without any limitation of the price at which it may be sold; which, of course, enables those possessed of the monopoly to exact the highest price for it that the competition of the buyers will afford, though such price may exceed the cost of production in any conceivable degree. Monopolies of this sort used to be common in England, particularly in the reign of Elizabeth; but they were finally abolished by the famous act of the 21 Jac. I, c. 3—an act which, by establishing the freedom of competition in all businesses carried on at home, has been productive of the greatest advantage.—*See* MONOPOLY. The corn laws establish a partial monopoly of the supply of Great Britain with corn in favor of the agriculturists; but, as competition is carried to as great an extent in agriculture as in any other business, this monopoly does not enable them to obtain a higher price for their produce than is sufficient to pay the expenses of its production, though, owing to the peculiar circumstances under which England is placed, this price is higher than the price in the surrounding countries. Hence it results that the monopoly is injurious to the public, without being of any advantage to those engaged in the business of agriculture. Neither, indeed, can it be truly said to be advantageous to the landlords. The rights conveyed by patents sometimes establish a valuable monopoly, for they enable the inventors of improved methods of production to maintain, during the continuance of the patent, the price of the article at a level which may be much higher than is required to afford them the ordinary rate of profit. This advantage, however, by stimulating invention, and exciting to new discoveries, of which it is the natural and appropriate reward, instead of being injurious, is beneficial to the public. There are also partial monopolies, depending upon situation, connection, fashion, etc. These and other inappreciable circumstances sometimes occasion a difference of 30 per cent or more in the price of the same article in shops not very distant from each other. Generally speaking, the supply of monopolized commodities is less liable to vary than the supply of those which are freely produced; and their prices are commonly more steady. But there are various exceptions to this rule, and of these the corn monopoly is one. The great variations in the harvests of particular countries, and their average equality throughout the world, exposes a nation which shuts foreign corn out of its ports to destructive vicissitudes of price, from which it would enjoy a comparative exemption were the ports open. Sometimes the expiration of a monopoly—a patent, for example—has occasioned a sudden and extraordinary increase of supply, and consequent fall of price; entailing, of course, a serious loss on the holders of large stocks of goods produced under the monopoly.

3. *New Sources of Supply.*—The effects on prices produced by the opening of new markets, or new sources of supply, are familiar to every one. The fall that has taken place in the price of pepper, and of most sorts of commodities brought from Europe from the East, since the opening of the trade in 1814, is a conspicuous proof of what is now stated.

4. *Influence of War on Prices.*—The effect of war in obstructing the ordinary channels of commercial intercourse, and occasioning extreme fluctuations in the supply and price of commodities, is well known. In this respect, however, the latter part of the French war is, perhaps, entitled to a pre-eminence. England then dealt with an enemy who had extended his sway over most part of the Continent; and who endeavored, by every means in his power, to shut us out of the Continental markets. Mr. Tooke has given, in his elaborate and valuable work on *High and Low Prices*, a variety of details which strikingly illustrate the effect that the regulations then adopted by the belligerent powers had on prices. "Among the means," says Mr. Tooke, "devised by the ingenuity and enterprise of adventurers to elude or overcome the obstacles presented by the decrees of the enemy, one in particular, which was resorted to on an extensive scale, deserves mention, as illustrating in a striking manner the degree in which those obstacles were calculated to increase the cost to the consumer. Several vessels laden with sugar, coffee, tobacco, cotton twist, and other valuable commodities, were dispatched from England, at very high rates of freight and insurance, to Salonica, where the goods were landed, and thence conveyed on mules and horses through Servia and Hungary to Vienna, for the purpose of being distributed over Germany, and possibly into France. Thus it might happen that the inhabitants of that part of the Continent most contiguous to this country could not receive their supplies from us without an expense of conveyance equivalent to what it would be if they were removed to the distance of a sea-voyage twice round the globe, but not subject to fiscal and political regulations." And in consequence of these, and other causes of the same sort, Mr. Tooke mentions that the price of sugar in France, and other parts of the Continent, during the latter years of the war, was as high as 5*s.* and 6*s.* a pound; that coffee rose to 7*s.*, indigo to 18*s.*, and so on. But the sums charged for freight and insurance were the most ex-

traordinary. Mr. Tooke states that he has known instances in which the license, freight, and other charges on account of a vessel of about 100 tons burden, making a voyage from Calais to London and back, have amounted to the almost incredible sum of £50,000! A ship, of which the whole cost and outfit did not amount to £4000, earned during the latter period of the war a gross freight of £80,000 on a voyage from Bordeaux to London and back! The freight of indigo from London to the Continent does not at present exceed 1*d.* a pound; whereas it amounted, at the period referred to, to about 4*s.* 6*d.*—*High and Low Prices*, 2d ed. p. 212.

5. *Influence of Taxes on Prices.*—It is unnecessary to dilate on a topic so familiar to every one. When a tax is laid on a commodity, its price necessarily rises in a corresponding proportion; for otherwise the producers would not obtain the ordinary rate of profit, and would, of course, withdraw from the business. The rise in the price of several of the articles in the annexed table is principally to be ascribed to the increase of taxation. These statements will probably suffice to give our readers a general idea of the principles which determine the value of commodities. To go deeper into the subject would involve us in discussions that belong to political economy, and are among the most intricate in that science. The influence of speculation on prices must not, however, be passed over in a work of this sort.

6. *Influence of Speculation on Prices.*—It very rarely happens that either the actual supply of any species of produce in extensive demand, or the intensity of that demand, can be exactly measured. Every transaction in which an individual buys produce in order to sell it again, is, in fact, a speculation. The buyer anticipates that the demand for the article he has purchased will be such, at some future period, either more or less distant, that he will be able to dispose of it with a profit; and the success of the speculation depends, it is evident, on the skill with which he has estimated the circumstances that must determine the future price of the commodity. It follows, therefore, that in all highly commercial countries, where merchants are possessed of large capitals, and where they are left to be guided in the use of them by their own discretion and foresight, the prices of commodities will frequently be very much influenced, not merely by the actual occurrence of changes in the accustomed relation of the supply and demand, but by the anticipation of such changes. It is the business of the merchant to acquaint himself with every circumstance affecting the particular description of commodities in which he deals. He endeavors to obtain, by means of an extensive correspondence, the earliest and most authentic information with respect to every thing that may affect their supply or demand, or the cost of their production; and if he learned that the supply of an article had failed, or that, owing to changes of fashion, or to the opening of new channels of commerce, the demand for it had been increased, he would most likely be disposed to become a buyer, in anticipation of profiting by the rise of price, which, under the circumstances of the case, could hardly fail of taking place; or, if he were a holder of the article, he would refuse to part with it, unless for a higher price than he would previously have accepted. If the intelligence received by the merchant had been of a contrary description—if, for example, he had learned that the article was now produced with greater facility, or that there was a falling off in the demand for it, caused by a change of fashion, or by the shutting up of some of the markets to which it had previously been admitted—he would have acted differently: in this case he would have anticipated a fall of prices, and would either have declined purchasing the article, except at a reduced rate, or have endeavored to get rid of it, supposing him to be a holder, by offering it at a lower price. In consequence of these operations, the prices of commodities, in different places and periods, are brought comparatively near to equality. All abrupt transitions, from scarcity to abundance, and from abundance to scarcity, are avoided; an excess in one case is made to balance a deficiency in another, and the supply is distributed with a degree of steadiness and regularity that could hardly have been deemed attainable.

It is obvious, from what has now been stated, that those who indiscriminately condemn all sorts of speculative engagements have never reflected on the circumstances incident to the prosecution of every undertaking. In truth and reality they are all speculations. Their undertakers must look forward to periods more or less distant; and their success depends entirely on the sagacity with which they have estimated the probability of certain events occurring, and the influence which they have ascribed to them. Speculation is, therefore, really only another name for foresight; and though fortunes have sometimes been made by a lucky hit, the character of a successful speculator is, in the vast majority of instances, due to him only who has skillfully devised the means of effecting the end he had in view, and who has outstripped his competitors in the judgment with which he has looked into futurity, and appreciated the operation of causes producing distant effects. Even in the securest businesses, such as agriculture and manufactures, there is, and must be, a great deal of speculation. An unlooked-for change of season frequently disappoints the apparently reasonable expectations of those who undertake the former; while the equally capricious variations of fashion have to be encountered by those engaged in the latter; and each is, besides, liable to be affected by legislative enactments, by new discoveries in the arts, and by an endless variety of circumstances which it is always very difficult, and sometimes quite impossible, to foresee. On the whole, indeed, the gains of the undertakers are so adjusted that those who carry them on obtain, at an average, the common and ordinary rate of profit. But the inequality in the gains of individuals is most commonly very great; and while the superior tact, industry, or good fortune of some enable them to realize large fortunes, the want of discernment, the less vigilant attention, or the bad fortune of others, frequently reduces them from the situation of capitalists to that of laborers.

The great cotton speculation of 1825 took its rise partly and chiefly from a supposed deficiency in the supply of cotton, partly from an idea that there was a greatly increased demand for raw cotton in this country and the Continent, and partly from a belief that the stocks on hand were unusually low. Now it is obvious that the success of those who embarked in this speculation depended entirely on two circumstances: viz., *first*, that they were right in the fundamental supposition on which the whole speculation rested, that the supply of cotton was no longer commensurate with the demand; and, *second*, that their competition did not raise the price so high as to diminish the consumption by the manufacturers in too great a degree to enable them to take off the quantity to be actually brought to market. If the merchants had been well founded in their suppositions, and if their competition had not raised the price of cotton too high, the speculation would certainly have been successful. But, instead of being well founded, the hypothesis on which the whole thing rested was perfectly visionary. There was no deficiency in the supply of cotton, but, on the contrary, a great superabundance; and though there had been such a deficiency, the excess to which the price was carried must have checked consumption so much as to occasion a serious decline. The falling off in the imports of cotton from America in 1824 seems to have been the source of the delusion. It was supposed that this falling off was not accidental, but that it was a consequence of the price of cotton having been for a series of years so low as to be inadequate to defray the expenses of its cultivation. The result showed

that this calculation was most erroneous. And besides, in entering on the speculation, no attention was paid to Egypt and Italy,—countries from which only about 1,400,000 lbs. of cotton were obtained in 1824, but from which no less than 23,800,000 lbs. were obtained in 1825! This unlooked-for importation was of itself almost enough to overturn the combination of the speculators; and, coupled with the increased importation from America and other countries, actually occasioned a heavy glut of the market.

The risk to which merchants are exposed when they either sell off any commodity at a reduced price in anticipation of a fall, or buy at an advanced price in anticipation of a future rise, is a consequence principally of the extreme difficulty of ascertaining the true state of the fact with respect to the grounds on which an abundant or a deficient supply, or an increasing or decreasing demand, may be expected. Rules can here be of no service; every thing depends upon the talent, tact, and knowledge of the party. The questions to be solved are all practical ones, varying in every case from each other; the skill of the merchant being evinced by the mode in which he conducts his business under such circumstances, or by his sagacity in discovering coming events, and appreciating their character and the extent of their influence. Priority, but, above all, accuracy of intelligence, is in such cases of the utmost consequence. Without well-authenticated data to go upon, every step taken may only lead to error. The instances, indeed, in which speculations, apparently contrived with the greatest judgment, have ended in bankruptcy and ruin, from a deficiency in this essential requisite, are so very numerous, that every one must be acquainted with them. Hence the importance of selecting acute and cautious correspondents; and hence, also, the necessity of maturely weighing their reports, and of endeavoring, by the aid of information gleaned from every authentic accessible source, to ascertain how far they may be depended upon. When a few leading merchants purchase in anticipation of an advance, or sell in anticipation of a fall, the speculation is often pushed beyond all reasonable limits by the operations of those who are influenced by imitation only, and who have never, perhaps, reflected for a moment on the grounds on which a variation of price is anticipated. In speculation, as in most other things, one individual derives confidence from another. Such an one purchases or sells, not because he has any really accurate information as to the state of the demand and supply, but because some one else has done so before him. The original impulse is thus rapidly extended; and even those who are satisfied that a speculation, in anticipation of a rise of prices, is unsafe, and that there will be a recoil, not unfrequently adventure, in the expectation that they will be able to withdraw before the recoil has begun.

It may, we believe, speaking generally, be laid down as a sound practical rule to avoid having any thing to do with a speculation in which many have already engaged. The competition of the speculators seldom fails speedily to render an adventure that might have been originally safe extremely hazardous. If a commodity happen to be at an unusually reduced price in any particular market, it will rise the moment that different buyers appear in the field; and supposing, on the other hand, that it is fetching an unusually high price, it will fall, perhaps, far below the cost of production, as soon as supplies begin to be poured in by different merchants. Whatever, therefore, may be the success of those who originate a speculation, those who enter into it at an advanced period are almost sure to lose. To have been preceded by others ought not, in such matters, to inspire confidence; on the contrary, it ought, unless there be something special in the case, to induce every considerate person to decline interfering with it. The maintenance of the freedom of intercourse between different countries, and the more general diffusion of sound instruction, seem to be the only means by which those miscalculations, that are often productive of great national as well as private loss, can be either obviated or mitigated. The effects consequent to such improvident speculations being always far more injurious to the parties engaged in them than to any other class, the presumption is that they will diminish, both in frequency and force, according as the true principles of commerce come to be better understood. But, whatever inconvenience may occasionally flow from them, it is abundantly plain that, instead of being lessened, it would be very much increased, were any restraints imposed on the freedom of adventure. When the attention of many individuals is directed to the same line of speculation—when they prosecute it as a business, and are responsible in their own private fortunes for any errors they may commit—they acquire a knowledge of the various circumstances influencing prices, and give by their combinations a steadiness to them which it is easy to see could not be attained by any other means. It is material, too, to bear in mind, as was previously stated, that many, perhaps it might be said *most*, of those who press so eagerly into the market when any new channel of commerce is opened, or when any considerable rise of price is anticipated, are not merchants, but persons engaged in other business, or living, perhaps, on fixed incomes, who speculate in the hope of suddenly increasing their fortune. This tendency to gambling seldom fails to break out upon such occasions; but fortunately these are only of comparatively rare occurrence; and in the ordinary course of affairs, mercantile speculations are left to be conducted by those who are familiar with business, and who, in exerting themselves to equalize the variations of price caused by variations of climate and of seasons, and to distribute the supply of produce proportionally to the effective demand, and with so much providence that it may not at any time be wholly exhausted, perform functions that are in the highest degree important and beneficial. They are, it is true, actuated only by a desire to advance their own interests; but the results of their operations are not less advantageous than those of the agriculturist who gives greater fertility to the soil, or of the mechanist who invents new and more powerful machines.

Those desirous of detailed information as to the prices of commodities in Great Britain, in remoter ages, may consult the elaborate tables in the 3d volume of Sir F. M. Eden's work on the *Poor*; and the 4th volume of Macpherson's *Annals of Commerce*. Arbuthnot's *Tables of Ancient Coins, Weights, Measures, Prices, etc.*, are well known; but the statements are not much to be depended upon. The *Traité de Métrologie* of M. Paucton, 4to, Paris, 1780, is the best work on this curious and difficult subject. *See also* volumes v. vi. Tooke *on Prices*, London, 1857; Hunt's *Merchants' Magazine*, iii. 305 (Hildreth); *Quarterly Review*, xxix. 214; *American Almanac*, 1836, 101; *Bankers' Magazine*, New York, 1857, 91-94.

"Considerable uneasiness begins to prevail in Paris at the enormous rise that has taken place within the last two years in the prices of food and lodging. It is not only that this state of things drives away the crowds who a few years ago used to resort to Paris to economize, and who spent immense sums in that capital, but, what is of far more importance in a social and political point of view, it creates suffering, and, consequently, discontent among the working classes. In all the capitals of Europe, there has been of late a similar tendency to an increase in prices, partly caused, no doubt, by the uncertainty created by the late war, and by the withdrawal of large numbers of able-bodied men from the ordinary pursuits of agriculture and industry, to swell the ranks of the standing armies kept up by the four great military monarchies of France, Russia, Austria, and Prussia. Perhaps, also, the speculative habits of the present generation have had some share in producing this result."

The above is from a late London paper. The same remark is pertinent to new circumstances in the United States. The advanced prices charged for all commodi-

ties where labor is involved in their production, and where new machinery and new appliances can not be used, are unerring results of an increased volume of the precious metals. According to estimates made by statistical writers who have examined the subject critically, the increase of the precious metals during the six years, 1851–1856, is fully one-third of that existing in the world at the end of the year 1850.

The product of gold in California is thus stated in round numbers:

Years.	Export.	Marginal Addition.	Total.
1848–'49	$8,060,000	$806,000	$8,866,000
1850	25,000,000	2,500,000	27,500,000
1851	41,250,000	4,125,000	45,375,000
1852	58,500,000	5,850,000	64,350,000
1853	62,500,000	6,250,000	68,750,000
1854	70,500,000	7,050,000	77,550,000
1855	67,000,000	6,700,000	73,700,000
1856	70,000,000	7,000,000	77,000,000
Total	$402,810,000	$40,281,000	$443,091,000

Product of gold in California and Australia combined:

Years.	Export.	Marginal Addition.	Total.
1848–'49	$8,060,000	$806,000	$8,866,000
1850	25,000,000	2,500,000	27,500,000
1851	45,760,000	4,576,000	50,336,000
1852	107,175,000	10,717,510	117,892,500
1853	112,725,000	11,272,500	123,997,500
1854	115,640,000	11,564,000	127,204,000
1855	124,555,000	12,456,500	137,021,500
1856	133,715,000	13,371,600	147,086,500
Total	$672,640,000	$67,264,000	$739,904,000

At the same time, the rate of interest has increased from an average one of 3 and 3½ to 6 and 7 per cent.; and the active demand for capital throughout Europe, in support of heavy undertakings abroad and at home, will probably maintain the current rates for some years to come. We see no present indications of a plethora of capital.

We think it will appear that a greater rise, *pro rata*, has taken place in prices within this short period. In our own country, the prices of market produce, labor, and materials requiring labor for their production, have all increased from thirty to fifty, and in some instances to one hundred per cent. In articles of food in the London markets, the changes in prices between 1851–1857 are shown in the following summary, which we take from "TOOKE's *History of Prices*, during the years 1848–1856," just published in London:

Articles.	January, 1851.	January, 1854.	Feb. 1857
Coffee	53 a 58s.	53 a 63s.	58 a 67
Sugar	26 a 28s.	21 a 65s.	36 a 40
Rum, Jamaica	26 a 32d.	42 a 44d.	44 a 46
Tobacco	4½ a 10d.	2½ a 8d.	8 a 11
Butter	78 a 80s.	104 a —	112 a —
Beef (8 lbs.)	28 a 30	42 a 46	40 a 46
Beef, prime	32 a 36	48 a 50	48 a 50
Mutton	34 a 42	48 a 54	48 a 52
Mutton, prime	44 a 46	50 a 52	54 a 58
Pork	30 a 42	42 a 44	44 a 52
Silk, raw, lbs.	9 a 17s.	12½ a 16½	16 a 25
Flax, tons	38 a 46	35 a 52	52 a —
Wool (240 lbs.)	£14 a —	15½ a 16	37 a —
Logwood	70 a 80s.	110 a —	110 a —
Seal oil	£37 a —	43 a —	50 a —
Olive oil	43 a —	63 a —	61 a —
Palm oil	29 a —	43 a —	47 a —
Tallow	36½ a —	60 a —	62 a —
Leather, lbs.	12 a 23d.	15 a 21	24 a 31
Saltpetre, cwt.	27½ a 29½s.	27 a 31	37 a 46
Ashes, Pearl	30½ a 31	29 a —	45 a —
Copper	£81 a —	126 a —	135 a —
Iron, tons	5½ a 6	9½ a —	9 a —
Iron, Swedish	11½ a —	12½ a —	15 a —
Lead, tons	17½ a —	23½ a —	23 a —
Steel, Swedish	15 a —	17½ a —	20 a —
Tin, tons	84 a —	126 a —	143 a —

These facts are important, as demonstrating the progressive advance of prices according to the increased bulk of precious metals. The same result occurred in the century following the discovery of gold in America (1500–1600), although the increased production was far less than it is now. Rents, wages, family supplies, labor generally—all advanced fully one hundred per cent.; and the probability is that an equal (or greater) ratio of increase will take place between 1850 and 1860. It is true that the present accumulation of precious metals is diffused among a much larger population and over a more extended region of country than in the 16th or 17th centuries; but similar causes will produce similar results, and labor will secure for itself a remuneration commensurate with the increased expenses of living.

Fluctuations in Prices.—Mr. Tooke, an English writer of some celebrity, has lately added two volumes on the prices of 1848–1856. From these volumes (published in London in 1857) we extract the following summary view of the changes in prices since the discoveries of gold in California:

Summary of Conclusions with Reference to the Prices of Commodities and State of Trade, 1848–'56.—Without attempting to include in a summary of conclusions all the inferences which arise from the survey of the past few years, we present the following statements as setting forth those results which are best established and most important, viz.: That as regards the great articles of import, such as colonial and tropical produce and commodities largely employed in this country as raw materials of manufacture, the course of prices during the nine years, 1848–'56, may be described in general terms, as follows, viz.: During 1848 and 1849 there was a general, and, in several important instances, a strong tendency to lower prices; that in 1850, partly in consequence of larger consumption and partly in consequence of actual or apprehended failures of supply, prices sensibly, and, in some cases, materially advanced; that in 1851 there was again an extensive and severe decline, attributable almost wholly to excess of supply; that in 1852 there was a manifest tendency toward recovery; that in the first nine months of 1853 the upward tendency of the previous year reached its highest point, establishing and maintaining for nine months a range of prices considerably higher than had prevailed for a long period; that from the autumn of 1853 to the close of 1854, there was a sensible reaction from the previous high rates, except as regards some of the articles immediately affected by operations, or the commissariat consumption of the war; and that in 1855 and 1856 the markets were quiet and firm, exhibiting only such fluctuations as arose out of ordinary changes in supply and demand. In a future part we shall inquire how far the fluctuations of prices now referred to were connected with the influx of the new gold.

That the first effects of the California discoveries of 1848 were felt in England in 1850 and 1851, and manifested themselves in the increased demand for British and foreign articles suitable for the export trade to the United States; that the same effects were still more sensibly felt in the course of 1852; that in 1853 the consumption of British goods in California and the United States generally had become so large and rapid as to counteract almost entirely, as regards England, any prejudicial effect upon the balance of trade of the vast imports of grain, rendered necessary by the serious failure in these islands of the harvest of 1853; that the same large American demand for British exports continued through 1854 and 1855, and had prevailed through 1856, interrupted but casually by the extensive failures and discredit which prevailed in the United States and California during portions of the years 1854 and 1855; and that, as the general result of the trade between England and the United States since 1850, the absorption of British exports either in California itself or in those regions of the North American continent to which the supplies of California gold are chiefly sent in the first instance, has increased so rapidly as to render necessary a constant and large transmission of the precious metals from America to England.

That the effects of the Australian discoveries of the

summer of 1851 were felt in this country in a striking manner early in the following year (1852), manifesting themselves in a sudden and large expansion of the stream of emigration from these islands, and in a sudden and large expansion in the shipment of nearly all descriptions of commodities; that the demand for ships hence arising could not, in the then condition of the mercantile marine, be readily supplied; and the consequence was an enormous increase of the rates of freight, and a demand for new ships so urgent, that considerably higher wages were at once conceded in all the ship-building trades; that the same urgent demands for Australia continued in the early part of 1853, were considerably moderated in 1854, still more reduced in 1855, but in 1856 were again marked by considerable activity. That the movement for higher wages successfully commenced in the autumn of 1852; in the ship-building trades became almost universal in the first half of 1853; and previous to September, in that year, had led to a very general addition of from 12 to 20 per cent. to the wages current in 1851; but that the effect of the bad harvest of 1853, the war of 1854-'55, and the glut of the Australian markets, was to produce a considerable reaction from this advance, especially in the factory districts. That the first and immediate effect of the high prices of colonial and other imported articles in 1852 and 1853, and of the high prices and large demand for manufactured goods in the same years, was to occasion vigorous efforts and a large expenditure of capital, with a view to opening up new fields of supply, and creating extended means of production; and that it is principally to the operation of these causes that the steady and frequently declining course of prices since 1853 is to be attributed.

That as far as trustworthy evidence can be obtained, there are no facts in the experience of the last nine years which justify the conclusion that in England the fluctuation of prices, the course of trade, or the increased demand for goods arising out of the large exports to America and Australia, were immediately preceded by or connected with changes in the amount of the aggregate outstanding circulation of bank-notes. In other words, all the evidence available to us points distinctly and uniformly to the conclusion that the fluctuations of the bank-note circulation were determined and regulated by the consequences flowing from previous applications of capital and credit in particular modes. That further, in a great number of specific instances, it can be shown conclusively that fluctuations of price of the most important kind, and in the largest markets of England, took place either without the occurrence of any change whatever in the bank-note circulation or contemporaneously with the occurrence of a change the precise opposite of that which on *a priori* grounds, or on the grounds on which the currency theory is built, would have been expected to precede or accompany the particular alteration in the markets.

That neither is there any such coincidence between variations in the rate of interest and variations in the markets for produce, as to justify the inference of a direct connection between them in the relation of cause and effect. That the first effect of the gold discoveries on the financial condition of England was the remarkable and prolonged depression in the rates of interest and discount, which prevailed during the twelvemonth preceding the spring of 1853; that this effect on the rate of interest was the immediate consequence of an excessive accumulation, principally in the Bank of England, of the early remittances from California and Australia; and that the influence produced by these accumulations on opinion and credit was greatly extended and aggravated by the maintenance at the Bank of England of a rate of discount so low as 2 per cent., from April, 1852, to January, 1853. That the rise of the rate of discount which commenced in January, 1853, and has been maintained during the subsequent three years, is to be traced in its origin and continuance to extended demand for capital for the purpose of new, distant, and costly enterprises, directed either to the construction of public works, to the extension of old and introduction of new processes, or to the exploration of new fields for the supply of commodities; and that, so far as we can judge from recent experience, the absorption of capital for these and other objects becomes more rapid and extensive with every succeeding year.

That the interruption to the trade of England occasioned by the Russian war of 1854-'55 was comparatively slight, and for four reasons, viz.: 1. Because the theatre of war was in a remote part of the east of Europe; 2. Because the enemy had practically no navy that could molest our commerce; 3. Because the raw materials previously obtained from Russia still continued to arrive through neutral ports or were readily replaced by imports from India and elsewhere; and 4, lastly, because the invention of the telegraph, the existence of steam, and the enormous resources of our mercantile marine and postal services, enable us to accomplish in a few weeks' operations what, at the commencement of the century, would have occupied a long series of months. That further, in addition to and far more powerful than any of the five causes just enumerated, was the effect of the continued influx of gold during 1854 and 1855—but especially during the latter portion of 1855, in averting from England and from France the extreme financial pressure and peril which, in the absence of that influx, must inevitably have been produced by the necessity of providing large and constant remittances of gold to the seat of war; and must inevitably have placed entirely out of question the maintenance of the restrictions of the Bank Chart Act of 1844, and perhaps have even imperiled the maintenance of the act of 1819.

That during the years 1848 and 1849, and part of 1850, the losses and discredit which fell with crushing force on a large portion of the middle classes involved in the railway expenditure, did, beyond question, produce some important effect in limiting the consumption of commodities. That, on the other hand, it was a direct consequence of the railway expenditure of the years 1848, 1849, and 1850, that the working classes were provided with fair employment during a period of interrupted trade, and it was also a direct consequence of the cheapness of food, and the low range of general prices which prevailed to the year 1852, that the working classes were able to command, by means of their wages, a larger amount of sustenance and comfort than had been within their reach probably at any former period of the century.—TOOKE'S *History of Prices*, 1857.

Price-current, a list or enumeration of the various articles of merchandise, with their prices, the duties (if any) payable thereon when imported or exported, with the drawbacks occasionally allowed upon their exportation, etc. Lists of this description are published periodically, generally once or twice a week, in most great commercial cities and towns.—For examples, see the *articles* GENOA, HAVRE, TRIESTE, etc. in this work.

Pride of China. The *Melia azedarach*, or Pride of China, is supposed to have been originally a native of Persia, where it was known as long ago as the year 980, by Avicenna, an Arabian physician, who noticed the venomous principle which resides in its fruit; but some botanists are of the opinion that it is also indigenous to Florida and the United States, or at least has become so from habit; for it is found there growing wild in the forests, and attains its fullest magnitude. It is propagated for ornament or use in all the warm countries of the civilized world. It is also cultivated in conservatories in the temperate and colder parts of Europe and America, and even there it often flowers, and ripens its fruit.

Properties and Uses.—The wood of the azedarach is

of a reddish color, and is organized in the distribution of its fibres similar to those of the ash. It is sufficiently strong and durable to be employed in civil architecture, and is adapted to various uses in the mechanic arts. It has already been employed for pulleys, which in Europe are usually made of elm, and in America of ash. It is said to make good fuel. The fleshy part of the fruit, like that of the olive, yields a fixed oil, which is bitter, and is considered as anthelmintic, and a narcotic stimulant. The leaves are universally used in India for poultices, and both the flowers and seeds are stimulant. The berries, though said by the Arabian physician, Avicenna, to be poisonous, and the pulp of which was mixed with grease, for the purpose of killing rats and dogs, are often eaten by children in the South without injurious effects. According to Mr. Royle, however, the fruit is considered as poisonous when used in large doses. The bark of the root, when green, has a bitter, nauseous taste, yielding its virtues to boiling water, and may be employed as a cathartic or emetic, and is considered as an efficient vermifuge, and also may be used with advantage in intermittents. In Persia, an ointment is made, for the cure of some cutaneous eruptions, by mulling the leaves with lard. It is also said that a kind of toddy is obtained by fermenting the sap of young and vigorous trees. The nuts are often bored by monks, and strung into beads. Hence the names of *Bead-tree*, and *Paternostri di San Domenico*.—BROWNE'S *Trees of America*.

Primage and **Average.** Primage is a charge in addition to the freight. It was originally intended as a gratuity to the captain for his particular care of the goods, and is sometimes called hat-money; but it now belongs to the owners or freighters by charter-party of the vessel, unless by special agreement the whole or portion of it is assigned to the captain. It is collected with the freight. The rate or manner of making this charge depends chiefly upon the custom of the department of trade in which the ship is engaged. Very commonly it is a rate, as 5, 10, or even 15 per cent., upon the amount of the freight. In some trades it is a rate per hogshead, etc., and in some cases it is not allowed, the word primage being canceled or omitted, and the words in full being added to the stipulated rate of the freight, as has been noticed in speaking of the forms of bills of lading. The average referred to in the bill of lading is the liability to general contribution for making good any damage which has been occasioned by any step necessary for general preservation. This forms what is called a "general average," and the notice of it is introduced into the bill of lading to avoid any doubt as to liability on the part of the consignee or claimant of the goods.—*See* INSURANCE—SHIPS, and SHIPPING.

Prince Edward Island. Lat. N. 46° and 47° 10′; long. W. 62° and 65°; area, 2134 square miles; length about 135 miles; and breadth from 4 to 34 miles.

The island of Prince Edward, formerly called St. John's, is situated in a recess, on the west side of the Gulf of St. Lawrence, and is separated from New Brunswick and Nova Scotia by the Strait of Northumberland, which at its narrowest part is only nine miles wide. Capital, Charlotte-Town. The colony is divided into three counties: viz., Queen's, 15,425; Prince, 15,142; King's, 32,111; and its total population in 1848 was 62,678.

The population at several periods was as follows:

1802	20,671
1826	22,600
1827	23,266
1833	32,176
1841	47,033
1848	62,678

The quantity of arable land under cultivation was 215,389 acres; and the whole quantity of land occupied was as follows: Held in fee-simple by occupants, 280,649 acres; under lease, 330,293 acres; by written demise, 31,312 acres; by verbal agreement, 38,786 acres; and by squatters, 65,434 acres. The crops represented in the census of the same year consisted of: wheat, 219,787 bushels; barley, 75,521 bushels; oats, 746,383 bushels; potatoes, 781,575 bushels; turnips, 153,988 bushels; clover-seed, 14,900 pounds; and hay, 45,128 tons. The live-stock on the island was as follows: Horses, 12,845; neat cattle, 49,810; sheep, 92,875; and hogs, 19,683. The industrial establishments were embraced under the following branches: 18 breweries and distilleries, 116 grist-mills, 27 carding-mills, 130 saw-mills, and 246 threshing-machines. The commerce of the island in 1851 is exhibited in the following abstract:

Exports, including 89 vessels, 15,721 tons, at $16 per ton; 1,497,629 feet, and 6316 pieces, boards and deals; shingles, 220,773 M; oats, 866,695 bushels; cattle, 303 head; dried fish, 7637 quintals; pickled fish, 3624 barrels; oysters, 4977 bushels; and a variety of other products, as timber, scantling, knees, etc., valued in all at	$607,389
Imports, including ship-chandlery, which is exported again in the building and rigging of ships, and not estimated in the value of the shipping.....$588,735	
Less—say for ship-chandlery..... 62,884	475,871
Total commerce.....	$1,083,260

The shipping employed in this commerce was as follows:

	Entrances.		Clearances.	
	Vessels.	Tons.	Vessels.	Tons.
Great Britain.....	18	4,140	45	10 951
British colonies	470	18.042	488	25,374
United States.....	43	2,724	86	5,427
Other countries.....	2	87	2	71
Total in 1851.....	533	24.913	621	41.823
Total in 1850.....	557	25.017	638	40 322

The number of seamen inward, in 1850, was 2082, and in 1851, 2370; outward, in 1850, 2301; and in 1851, 3631.

The following compares the value of the imports and exports for three years:

	1849.	1850.	1851.
Imports.....	$576,040	$630,475	$475 871
Exports.....	292,775	325,989	607,389
Total.....	$868,815	$956,464	$1,083,260

The exports of 1851 include the value of vessels sold to Great Britain and Newfoundland, amounting to $251,536, which is not included in either 1849 or 1850. In 1849 there were built in the colony 88 vessels, 15,902 tons; and in 1850, 93 vessels, 14,391 tons, valued at $16 per ton. The total value of articles, the growth, produce, or manufacture of the United States, imported in 1851, was $77,858, the whole of which, except to the value of $3200, were carried in British bottoms. In 1850 the value of the same description of articles imported was only $42,113. The wide difference between the two years arises from the fact that in 1851 the duties on imports were greatly reduced from the rates of the preceding year. With the high rates of duties of 1850, only $6420 was received on articles of American production; while in 1851, with diminished rates, the duties were increased to $14,020. The articles exported to the United States in 1851 were as follows: Barley, 17,929 bushels; boards and planks, 12,000 feet; iron, 60 cwt.; cattle, 9 head; firewood, 20 cords; dry fish, 650 quintals; pickled fish, 1786 barrels; hard wood, 74 tons; horses, 3; hackmatack knees, 2215; oats, 222,109 bushels; potatoes, 45,942 bushels; turnips, 5090 bushels; and wool, 1700 pounds. The value of the foregoing, with the value of sundry other articles not enumerated, amounted together to $119,236. The value of similar articles exported in 1850 was only $55,886. On the 31st December, 1850, the number of vessels owned and registered in Prince Edward Island was 310, of the burden of 27,932 tons. On the 31st December, 1851, the vessels owned and registered numbered 323, of the burden of 31,410 tons. Prince

Edward Island has valuable fisheries in the Gulf of St. Lawrence, and in the Strait.

Prince Edward Island is chiefly an agricultural colony. Ship-building, however, is carried on to a considerable extent; and new ships have already become a prominent article of export. In the years 1849, 1850, and 1851, there were built in the island, for sale in Great Britain, Newfoundland, or wherever else they might find a profitable market, 270 vessels, with an aggregate of 45,946 tons; giving an annual average of 90 vessels, and 15,315 tons.

	1849.	1850.	1851.
Exports to United States ..	$32,410	$55,385	$119,286
Imports from United States	32,580	41,603	77,858

TONNAGE IN 1850.

	Vessels.	Tons.
Entered from United States.....	84	2578
Cleared for United States.....	49	4086
Entered in 1851	43	2724
Cleared in 1851.....	86	5427

The difference between the imports from the United States in 1850 and 1851 ($36,255) is accounted for by the reduction of the duties on imports by colonial act, the high duties up to 1851 affecting, to a large extent, the trade with the United States. This reduction of the tariff of Prince Edward Island not only augmented the exports from the United States, but produced a corresponding increase in the imports from that island. Thus, in 1850, the value of exports from Prince Edward Island to the United States was $55,385; in 1851 it amounted to $119,286. The trade between the United States and this island being now comparatively free, a still greater increase than that exhibited above may be annually expected.

The revenue, expenditures, and public debt of the colony, in 1851, were as follows:

Revenue.—Customs and imports, £17,769 18*s.* 7½*d.*; fines and forfeitures, £110 5*s.* 1*d.*; interest on bonds, £161 2*s.* 0½*d.*; post-office, £999 2*s.* 4½*d.*; land assessments, £2165 1*s.* 7*d.*; registers, £159 6*s.* 2½*d.*; licenses, £459 10*s.*; seizures, £44 9*s.* 8*d.*; and fees from Secretary's office, £299 15*s.* 3*d.* Total, £22,538 14*s.* 9½*d.*, being an average per head of 7*s.* 2½*d.*, or of the net customs alone, the average per head was 5*s.* 8½*d.*

Expenditures.—Legislature, £1912 4*s.* 4½*d.*; education, £2351 14*s.* 10*d.*; agricultural societies, £450; miscellaneous, £752 3*s.* 8½*d.*; post-office, £1539 10*s.* 3*d.*; salaries, £3145 11*s.* 11*d.*; compensation to government officers, £774 16*s.*; public postages, £55 19*s.* 3*d.*; crown prosecutions, £793 14*s.* 4½*d.*; board of health, £421 15*s.* 11*d.*; fish bounties, £370 18*s.* 9*d.*; provincial building, £540 15*s.* 8*d.*; inquest and shadiac packes, £116 11*s.* 7½*d.*; printing and stationery, £794 4*s.* 2½*d.*; apprehension of deserters, £378 14*s.* 2*d.*; interest on liabilities and debentures, £1626 4*s* ; drawbacks, £220 16*s.* 4½*d.*; sundry fees, etc., £173 12*s.* 11*d.*; roads, bridges, and wharves, £5978 8*s.* 2*d.*; jails, £610 11*s.* 8½*d.*; small disbursements, £86 7*s.* 2½*d.*; markets, £50 1*s.* 8*d.*; light-house, £176 17*s.* 11½*d.*; public works, £787 6*s.* 3*d.*; and buoys and beacons, £65 0*s.* 8*d.* Total, £24,173 10*s.* 11½*d.*, showing a surplus of expenditures amounting to £1634 16*s.* 2*d.* The public debt amounted, in the year above stated, to £17,938.—ANDREWS's *Report on Colonial and Lake Trade* (Sen. Doc. 112), 1852–'53; MARTIN's *British Colonies* (London edition); *Report of a Committee* (Canadian) *on the Income, Expenditure, and Debt of British North America* (11th June, 1853); *U. S. Comm. Rel.*, etc.

Printed Goods. The art of calico-printing is of considerable antiquity, and there exist specimens of Egyptian cotton dyed by figured blocks many hundred years old. A similar process has been resorted to even in the Sandwich Islands, where they use a large leaf as a substitute for the block.—*See art.* COTTON. The copyright of designs secured in England by 2 Vic., 1839.

Printing. *See* PRESS, BOOKS, and NEWSPAPERS.

Prints, impressions on paper, or some other substance, of engravings on copper, steel, wood, stone, etc., representing some particular subject or composition. Prints, like paintings, embrace every variety of subject; and differ very widely in the manner in which they are engraved. Their prices vary according to the style of the engraving, the fineness of its execution, the goodness of the impression, its rarity, etc. The art seems to have taken its rise in the 15th century.

Prisage, or **Butlerage,** was a right of taking two tuns of wine from every ship importing into England twenty tuns or more; which was changed by Edward I. into a duty of 2*s.* for every tun imported by merchant strangers, and called butlerage, because paid to the king's butler. The term is now fallen into disuse.—BLACKSTONE.

Privateering. In order to encourage privateering, it is usual to allow the owners of private armed vessels to appropriate to themselves the property, or a large portion of the property, they may capture, and to afford them and the crew other facilities and rewards for honorable and successful efforts. This depends upon the municipal regulations of each particular power; and as a necessary precaution against abuse, the owners of privateers are required, by the ordinances of the commercial states, to give adequate security that they will conduct the cruise according to the laws and usages of war and the instructions of the government, and that they will regard the rights of neutrals, and bring their prizes in for adjudication. These checks are essential to the character and safety of maritime nations. Privateering, under all the restrictions which have been adopted, is very liable to abuse. The object is not fame or chivalric warfare, but plunder and profit. The discipline of the crews is not apt to be of the highest order, and privateers are often guilty of enormous excesses, and become the scourge of neutral commerce. They are sometimes manned and officered by foreigners, having no permanent connection with the country or interest in its cause. This was a complaint made by the United States in 1819, in relation to irregularities and acts of atrocity committed by private armed vessels sailing under the flag of Buenos Ayres. Under the best regulations, the business tends strongly to blunt the sense of private right, and to nourish a lawless and fierce spirit of rapacity. Efforts have been made from time to time to abolish the practice. In the treaty of amity and commerce between Russia and the United States in 1785, it was stipulated that in case of war neither party should grant commissions to any private armed vessels to attack the commerce of the other. But the spirit and policy of maritime warfare will not permit such generous provisions to prevail. That provision was not renewed with the renewal of the treaty. A similar attempt to put an end to the practice was made in the agreement between Sweden and Holland in 1675, but the agreement was not performed. The French Legislature, soon after the breaking out of the war with Austria in 1792, passed a decree for the total suppression of privateering, but that was a transitory act, and it was soon swept away in the tempest of the revolution. The efforts to stop the practice have been very feeble and fruitless, notwithstanding that enlightened and enlarged considerations of national policy have shown it to be for the general benefit of mankind to surrender the licentious practice, and to obstruct as little as possible the freedom and security of commercial intercourse among the nations. —KENT's *Commentaries.* The reader is referred to the *North American Review*, x. 166 (J. GALLISON); NILES's *Register*, xiv. 129, xvi. Sup. 29; DE BOW's *Review*, i. 516. *See also* MARITIME LAW, *ante*, 1321, *et seq.*

Letters of Marque and Reprisal "are grantable by the law of nations, whenever the subjects of one state are oppressed and injured by those of another, and justice is denied by that state to which the oppressor be-

longs."—CHITTY's *Comm. Law*, vol. iii. page 604. Before granting letters of marque, government is directed by the 5 Hen. V. c. 7, to require that satisfaction be made to the party aggrieved; and in the event of such satisfaction not being made within a reasonable period, letters of marque and reprisal may be issued, authorizing the aggrieved party to attack and seize the property of the aggressor nation, without hazard of being condemned as a robber or pirate. Such letters are now only issued to the owners or captains of privateers during war, or when war has been determined upon. They may be revoked at the pleasure of the sovereign; and when hostilities terminate, they cease to have any effect. Letters of marque and reprisal were first issued in England by Edward I., for the seizure of the enemy's vessels, and for reprisal and retaliation upon the enemy on the sea.—RYMER's *Fœdera*. They were first granted in 1295.—BAKER's *Chron.* They are usually granted in time of war to private armed ships, and do great mischief to the commerce of belligerent nations.—POWEL.

Privateers, ships of war fitted out by private individuals, to annoy and plunder the public enemy. But before commencing their operations, it is indispensable that they obtain *letters of marque and reprisal* from the government whose subjects they are, authorizing them to commit hostilities, and that they conform strictly to the rules laid down for the regulation of their conduct. All private individuals attacking others at sea, unless empowered by letters of marque, are to be considered pirates, and may be treated as such either by those they attack or by their own government.

Policy of Privateering.—The policy of this system is very questionable. It seems to be a remnant of that species of private war exercised by all individuals in early ages, but which gradually disappears as society advances. In wars carried on by land, the property of the peaceable inhabitants who take no part in the operations of the armies is uniformly protected; and it is difficult to discover any solid grounds why the same rule should not be followed at sea. Privateers rarely attack ships of war. Their object is merely to plunder and destroy merchantmen. They cause an infinite deal of mischief to individuals, and aggravate all the miseries of war, without having the slightest influence on the result of the contest. Experience has also shown that it is not possible, whatever precautions may be adopted, to prevent the greatest abuses from being perpetrated by privateers. The wish to amass plunder is the only principle by which they are actuated; and such being the case, it would be idle to suppose that they should be very scrupulous about abstaining from excesses. A system of this sort, if it be ever useful, can be so only to nations who have little trade, and who may expect to enrich themselves during war by fitting out privateers to plunder the merchant ships of their enemies. In all other cases it seems to be productive only of mischief; though it is, of course, most injurious to those states that have the greatest mercantile navy. Instead, therefore, of encouraging the practice of privateering, we think that a due regard to the rights and interests of humanity would suggest to the great powers the expediency of abolishing it altogether. A few efforts have, indeed, been already made toward this desirable object. Thus it was stipulated in the treaty between Sweden and the United Provinces, in 1675, that neither party should, in any future war, grant letters of marque against the other. In 1787 Russia abstained from licensing privateers; and in the treaty between the United States and Prussia, in 1785, a stipulation was inserted as to privateers, similar to that in the treaty between Sweden and the United Provinces in 1675. But nothing short of a convention and agreement to that effect among the great powers will be able to effect this desirable object.—MARTENS, *Essai concernant les Armateurs*, 1794. *See* MARITIME LAW, p. 1322, etc.

Prize. Any thing captured by a belligerent using the right of war: in common language, only ships thus captured, with the property taken in them, are so called. Prizes taken in war are condemned by the proper judicature in the courts of the captors; such condemnation is held to divest the title of the proprietor and confer a new ownership. In order to give jurisdiction to a court of prize, it is deemed necessary, by the law of nations, that the property captured should be in possession of the captors in their own ports, those of an ally, or of a neutral; but no belligerent power has a right to capture in the ports of a neutral country, or within a marine league of her shores; nor does a capture made there render the adjudication valid. Subject to capture is hostile property, *i. e.*, the property of persons domiciled in a hostile country, and neutral property contraband of war.—*See* CONTRABAND.

Prize Money.—The money arising from captures made upon the enemy is divided into eight equal parts, and is equally distributed by order of government, thus: Captain to have three-eighths, unless under the direction of a flag officer, who in that case is to have one of the said three-eighths; captains of marines and land forces, sea lieutenants, etc., one-eighth; lieutenants of marines, gunners, admirals' secretaries, etc., one-eighth; midshipmen, captain's clerk, etc., one-eighth; ordinary and able seamen, marines, etc., two-eighths.—*See* PRIVATEERS and LETTERS OF MARQUE.

Prizes.—The right to all captures vests primarily in the sovereign, and no individual can have any interest in a prize, whether made by a public or private armed vessel, but what he receives under the grant of the state. This is a general principle of public jurisprudence, *bello parta cedunt reipublicæ*, and the distribution of the proceeds of prizes depends upon the regulations of each state; and unless the local laws have otherwise provided, the prizes vest in the sovereign. But the general practice, under the laws and ordinances of the belligerent governments, is to distribute the proceeds of captured property, when duly passed upon and condemned as prize (and whether captured by public or private commissioned vessels), among the captors, as a reward for bravery, and a stimulus to exertion. When a prize is taken at sea, it must be brought with due care into some convenient port, for adjudication by a competent court; though, strictly speaking, as between the belligerent parties, the title passes, and is vested when the capture is complete, and that was formerly held to be complete and perfect when the battle was over, and the *spes recuperandi* was gone. Grotius and many other writers, and some marine ordinances, as those of Louis XIV., and of Congress during the American war, made twenty-four hours' quiet possession by the enemy the test of title by capture. Bynkershoeck says that such a rule is repugnant to the laws and customs of Holland; and he insists that a firm possession at any time vests the property in the captor, and that ships and goods brought *infra præsidia* do most clearly change the property. But by the modern usage of nations, neither the twenty-four hours' possession, nor the bringing the prize *infra præsidia*, is sufficient to change the property in the case of a maritime capture. A judicial inquiry must pass upon the case, and the present enlightened practice of commercial nations has subjected all such captures to the scrutiny of judicial tribunals, as the only sure way to furnish due proof that the seizure was lawful. The property is not changed in favor of neutral vendee or recaptor, so as to bar the original owner, until a regular sentence of condemnation has been pronounced by some court of competent jurisdiction belonging to the sovereign of the captor; and the purchaser must be able to show documentary evidence of that fact to support his title. Until the capture becomes invested with the character of prize by a sentence of condemnation, the right of property is in abeyance, or in a state of legal sequestration. It can not be alienated or dis-

posed of, but the possession of it by the government of the captor is a trust for the benefit of those who may be ultimately entitled. This salutary rule, and one so necessary to check irregular conduct and individual outrage, has been long established in the English admiralty, and it is now every where recognized as the law and practice of nations.

The condemnation must be pronounced by a prize court of the government of the captor, sitting either in the country of the captor or of his ally. The prize court of an ally can not condemn. Prize or no prize, is a question belonging exclusively to the courts of the country of the captor. The reason of this rule is said to be, that the sovereign of the captors has a right to inspect their behavior, for he is answerable to other states for the acts of the captor. The prize court of the captor may sit in the territory of the ally, but it is not lawful for such a court to act in a neutral territory. Neutral ports are not intended to be auxiliary to the operations of the power of war; and the law of nations has clearly ordained that a prize court of a belligerent captor can not exercise jurisdiction in a neutral country. This prohibition rests not merely on the unfitness and danger of making neutral ports the theatre of hostile proceedings, but it stands on the ground of the usage of nations. It was for some time supposed that a prize court, though sitting in the country of its own sovereign, or of his ally, had no jurisdiction over prizes lying in a neutral port, because the court wanted that possession which was deemed essential to the exercise of a jurisdiction in a proceeding *in rem*. The principle was admitted to be correct by Sir William Scott, in the case of the *Henrick* and *Maria*, and he acted upon it in a prior case. But he considered that the English admiralty had gone too far in supporting condemnations in England, of prizes abroad in a neutral port, to permit him to recall the vicious practice of the court to the acknowledged principle; and the English rule is now definitively settled, agreeably to the old usage and the practice of other nations. The Supreme Court of the United States has followed the English rule, and it has held valid the condemnations, by a belligerent court, of prizes carried into a neutral port, and remaining there. This was deemed the most convenient practice for neutrals, as well as for the parties at war; and though the prize was, in fact, within a neutral jurisdiction, it was still to be deemed under the control, or *sub potestate*, of the captor.—KENT'S *Commentaries*, vol. i.

Proa, a narrow canoe about thirty feet long by three feet wide, used in the Ladrone Islands. The lee side is flat, being the mere longitudinal section of the common form, and the head and stern exactly alike. A slight frame-work projects several feet to windward, bearing a small block of wood like a canoe; this float supports the vessel from oversetting to that side, as she would otherwise do, and the frame-work affords support for a weight acting against the pressure of the sail. The vessel is steered by the paddle at either end, and moves with great velocity either backward or forward, being adapted to a side wind in running between two places. The sail is mat, with a boom, upon one mast. *Proa* is also the name for large boats used by the Malays, propelled both by oars and sails.

Produce, Production. *See articles* WHEAT, FLOUR, etc.

Promissory Notes. A promissory note may be defined to be a written engagement by one person to pay another person, therein named, absolutely and unconditionally, a certain sum of money at a time specified therein. The definition given by Mr. Justice Blackstone is, that promissory notes, or notes of hand, are a plain and direct engagement in writing to pay a sum specified at a time limited therein, to a person therein named, or sometimes to his order, or often to the bearer at large. Perhaps this definition may be thought faulty in not stating that the engagement is to be absolute and unconditional. Mr. Justice Bayley more succinctly states, that a promissory note is a written promise for the payment of money at all events. Mr. Chancellor Kent follows the definition of Mr. Justice Bayley; and perhaps each is open to the objection that, while it seeks brevity, it is incomplete, as it does not state that the promise is made by one person to pay the money to another person specified. Although a promissory note is, in contemplation of law, entitled to all the privileges belonging to such an instrument by the Commercial Law, as well as by the Common Law, without being negotiable, yet it is the latter quality which gives it its principal importance and value in modern times, and makes it a circulating credit, so extensively useful and so generally resorted to in the commerce of the world. Promissory notes are now generally made negotiable, by being stated therein to be payable to A or order, or to the order of A, or to A or bearer, or to the bearer generally. Perhaps the silent but steady progress in England, from the simple use of the non-negotiable notes, before the reign of Queen Anne, to the present almost universal negotiability of such instruments in our day, can not be better expressed than by referring to the language of Blackstone, where he adverts to the fact that promissory notes are payable "to a person therein named," and then cautiously adds, or "sometimes to his own order, or oftener to the bearer." The reverse language might be far more justly used in the present day; and it might be correctly stated that promissory notes are now generally negotiable by being payable to order, or to the bearer: and that they are rarely limited to be payable only to a particular person named therein. We may add in this connection, that the person who makes the note is called the maker, and the person to whom it is payable is called the payee; and when it is negotiable by indorsement, and is indorsed by the payee, he is called the indorser, and the person to whom the interest is transferred by the indorsement is called the indorsee. Every indorsee is of course deemed the holder, and so is every person who, by a transfer of a note payable to the bearer, becomes entitled thereto. The Scottish law seems precisely coincident with the English law as to promissory notes, except so far as respects the remedial process thereon; there being some peculiar privileges annexed thereto in Scotland.

It seems scarcely necessary to point out the distinction between bills of exchange and promissory notes in their general structure and character. In a bill of exchange there are ordinarily three original parties, the drawer, the payee, and the drawee, who, after acceptance, becomes the acceptor. In a promissory note there are but two original parties, the maker and the payee. In a bill of exchange, the acceptor is the primary debtor in the contemplation of law to the payee; and the drawer is but collaterally liable. In a promissory note, the maker is, in contemplation of law, the primary debtor. If a note be negotiable, and is indorsed by the payee, then there occurs a striking resemblance in the relations of the parties upon both instruments, although they are not in all respects identical. The indorser of a note stands in the same relation to the subsequent parties as the drawer of a bill, and the maker of the note is under the same liabilities as the acceptor of a bill.

The origin of promissory notes is quite as obscure as that of bills of exchange. There is no doubt that promissory notes in writing (*chirographa*) were well known and in use among the Romans. Of this we have an instance in the Digest: *ab Aulo Augerio Caius Seius mutuam quandam quantitatem accepit hoc chirographo: ille scripsit, me accepisse, et accepi ab illo mutuos et numeratos decem; quos ei reddam kalendis illis proximis cum suis usuris placitis internos: Quæro, an ex eo instrumento usuræ peti possint, et quæ? Modestinus respondit, si non appareat de quibus usuris conventio facta sit, peti eas non posse.* But this instrument never seems

to have been known as a negotiable instrument among the Romans, or as a general medium used in purchases and sales, with that superadded quality; but its negotiability seems to be exclusively the invention of modern times. Probably the origin of negotiable promissory notes is somewhat later than that of bills of exchange, and grew out of the same general causes as the latter, viz., to facilitate the operations of commerce, and to extend the negotiability of debts. Mr. Kyd's remarks on this subject seem at once well founded and satisfactory, at least as conjectures. "As commerce," says he, "advanced in its progress, the multiplicity of its concerns required, in many instances, a less complicated mode of payment than by bills of exchange. A trader, whose situation and circumstances rendered credit from the merchant or manufacturer, who supplied him with goods, absolutely necessary, might have so limited a connection with the commercial world at large that he could not easily furnish his creditor with a bill of exchange on another man. But his own responsibility might be such that his simple promise of payment, reduced to writing for the purpose of evidence, might be accepted with equal confidence as a bill on another trader. Hence, it may reasonably be conjectured, promissory notes were at first introduced." Undoubtedly negotiable promissory notes were well known upon the continent of Europe long before their introduction into England. They were probably first brought into use in England about the middle of the 17th century, although Lord Holt has been thought to assign to them a somewhat later origin. They seem at first to have been called bills of debt, or bills of credit, indifferently. Indeed, as Lord Mansfield has observed, there seems much confusion in the "Reports" in the times of King William and Queen Anne, so that it is difficult, without consulting the records, to ascertain whether the action arose upon a bill or note, as the words "bill" and "note" were used promiscuously. There was a long struggle in Westminster Hall as to the question whether promissory notes were negotiable or not at the Common Law, for there could be no doubt that they were by the Law Merchant, at least as recognized upon the continent of Europe. Lord Holt most strenuously, and with a pride of opinion not altogether reconcilable with his sound sense and generally comprehensive views, maintained the negative. The controversy was finally ended by the statute of 3 and 4 Anne, ch. 9 (1703), (made perpetual by the statute of 7 Anne, ch. 25, sec. 3,) which, after reciting that promissory notes had been held not negotiable, proceeded to enact, "That all notes in writing, made and signed by any person or persons, body politic or corporate, or by the servant or agent of any corporation, banker, goldsmith, merchant, or trader, who is usually intrusted by him, her, or them, to sign such promissory notes for him, her, or them, whereby such person or persons, body politic and corporate, his, her, or their servant or agent as aforesaid, doth or shall promise to pay to any other person or persons, body politic and corporate, his, her, or their order, or unto bearer, any sum of money mentioned in such note, shall be taken and construed to be, by virtue thereof, due and payable to any such person or persons, body politic and corporate, to whom the same is made payable; and also every such note payable to any person or persons, body politic and corporate, his, her, or their order, shall be assignable or indorsable over, in the same manner as inland bills of exchange are or may be, according to the custom of merchants; and that the person or persons, body politic and corporate, to whom such sum of money is or shall be by such note made payable, shall and may maintain an action for the same, in such manner as he, she, or they might do upon any inland bills of exchange, made or drawn according to the custom of merchants, against the person or persons, body politic and corporate, who, or whose servant or agent as aforesaid, signed the same; and that any person or persons, body politic and corporate, to whom such note, that is payable to any person or persons, body politic and corporate, his, her, or their order, is indorsed or assigned, or the money therein mentioned ordered to be paid by indorsement thereon, shall and may maintain his, her, or their action for such sum of money, either against the person or persons, body politic and corporate, who, or whose servant or agent as aforesaid, signed such note, or against any of the persons that indorsed the same, in like manner as in cases of inland bills of exchange." In most of the States of America this statute has been either expressly adopted by statute, or recognized as part of their Common Law. A few only have deemed it inapplicable to their situation; and in some States the circulation of promissory notes still remains clogged with positive restrictions or practical difficulties, which greatly impede their use, and value, and circulation. Most, if not all commercial nations, have annexed certain privileges, benefits, and advantages to promissory notes, as they have to bills of exchange, in order to promote public confidence in them, and thus to insure their circulation as a medium of pecuniary commercial transactions. In England and America they partake in a very high degree of the character of specialties, and are deemed to import *prima facie*, to be founded upon a valuable consideration, and may be generally declared on without specially stating what the particular consideration is; in which circumstance they differ from other unsealed contracts, whether written or unwritten. Between the original parties the consideration may indeed, as a matter of defense, be inquired into. But where they are negotiable, and in the possession of a *bona fide* holder for a valuable consideration, without any notice of any inherent infirmity or vice in their original concoction, they are binding upon the antecedent parties, and the consideration is not inquirable into, and becomes immaterial. In Scotland they are entitled to all the privileges of bills of exchange, among which, besides the common privileges in England and America, is the privilege of a summary process to enforce payment upon their dishonor, differing from the ordinary process. The like summary process is given by the French law. [And a similar statute has recently been enacted in England.] Heineccius, in the passages already referred to, states that they are indorsable like bills of exchange, and are subject to the law of prescription, and, in case of dishonor, are open to the same process and mode of execution as bills of exchange.—STORY *on Promissory Notes*. *See* BILLS OF EXCHANGE *and* EXCHANGE.

Promontory (Latin *pro*, and *mons*, *a mountain*). In *Geography*, a point of land, whether high or low is indifferent, projecting into the sea.—*See* CAPE.

Protection, in *Commercial legislation*, means the protecting or bolstering up of certain branches of domestic industry by prohibiting the importation of the produce of such branches from abroad, or loading it, when imported, with heavy duties. This policy was at one time universally prevalent. But its extremely injurious influence having been demonstrated over and over again, it has been abandoned by all intelligent statesmen. And notwithstanding the powerful interests by which it was supported, it has nearly disappeared from our legislation; and it will, no doubt, eventually disappear from the legislation of all countries.

Providence, city, the principal port of entry, and semi-capital of Rhode Island; situated in 41° 49′ 22″ N. lat., and 71° 24′ 48″ W. long. from Greenwich, and 1° 28′ 24″ E. long. from Washington. It is 30 miles north of Newport, 42 miles south-southwest from Boston, 70 miles east of Hartford, 173 miles east of New York, and 396 from Washington. Population in 1820, 11,767; in 1830, 16,832; in 1840, 23,171; in 1850, 41,513; in 1854, 50,000. In point of population and wealth Providence is the second city in New England. Its present limits contain about nine square miles. The

compact portion of the city is built on both sides of the Providence River, over which are constructed two broad and substantial wooden bridges, above which the river expands into a broad and beautiful cove.

There are in Providence 26 banks, with an aggregate capital of $10,419,690; a savings-bank; three insurance companies, with a capital of $300,000, besides several mutual insurance companies without specified capital. The manufactures of Providence are extensive. The city also contained in 1857, 73 steam-engines, and within 100 rods of the city line are 12 or 15 more, that for all practical purposes belong here; 56 jewelry establishments, employing 1400 hands, and yielding an annual product of $2,771,600; three bleaching and dyeing works, employing 350 hands, and finishing 50,980,000 yards of goods; 22 manufactories of machinery, steam-engines, boilers, castings, etc., employing 2002 hands; 9450 tons of coal; 11,095 tons of pig-iron; 9801 tons of other iron, and producing annually 33,800 stoves, 9,000,000 pounds of nails and spikes, 80 steam-engines, 220 boilers, 3,584,000 pounds of nuts, etc., and other articles to the total value of $2,561,000; two screw factories, that yield an annual product of $1,086,000; two butt factories, that produce $235,000, and a great variety of smaller manufactories, yielding together an annual product of $17,400,000.

Providence possesses great commercial facilities, which have been well improved. The harbor, at the head of Narraganset Bay, 33 miles from the ocean, is spacious, and has sufficient depth of water for the largest ships. Somewhat more than 100 vessels belong to the port. The registered tonnage in 1853 was 16,861 tons. Two lines of packets ply regularly to New York, two to Albany, one to Philadelphia, and one to Baltimore. A railroad 41 miles long extends from Providence to Boston, with which it is connected.

Provisions. Under this term, taken in its most extensive sense, in reference to man, may be comprised all those articles used as food by the inhabitants of this and other countries; but commercially it is understood to comprise only fresh and salted butchers' meat, hams and bacon, butter and cheese, eggs, and a few other articles.

VALUE OF LIVE STOCK, ACCORDING TO THE CENSUS OF 1850, OF THE UNITED STATES.

States and Territories.	Swine.	Value of Live Stock.	Value of Animals slaughtered.
Alabama	1,904,540	$21,690,000	$4,823,000
Arkansas	836,727	6,647,000	1,163,000
California	2,776	3,351,000	107,000
Columbia, District of	1,685	71,000	9,000
Connecticut	76,472	7,467,000	2,292,000
Delaware	56,261	1,849,000	373,000
Florida	209,453	2,880,000	514,000
Georgia	2,168,617	25,728,000	6,339,000
Illinois	1,915,907	24,209,000	4,972,000
Indiana	2,263,776	22,478,000	6,567,000
Iowa	323,247	3,689,000	821,000
Kentucky	2,891,163	29,661,000	6,462,000
Louisiana	597,301	11,152,000	1,458,000
Maine	54,598	9,705,000	1,646,000
Maryland	352,911	7,917,000	1,954,000
Massachusetts	81,119	9,647,000	2,500,000
Michigan	205,817	8,005,000	1,328,000
Mississippi	1,582,734	19,403,000	6,636,000
Missouri	1,702,625	19,887,000	3,367,000
New Hampshire	63,487	8,871,000	1,522,000
New Jersey	250,270	10,679,000	2,683,000
New York	1,018,252	73,570,000	13,573,000
North Carolina	1,812,813	17,717,000	5,767,000
Ohio	1,964,770	44,121,000	7,439,000
Pennsylvania	1,049,866	41,500,000	8,219,000
Rhode Island	19,509	1,592,000	667,000
South Carolina	1,065,563	15,060,000	3,502,000
Tennessee	3,104,800	29,978,000	6,401,000
Texas	632,022	10,412,000	1,116,000
Vermont	66,296	12,643,000	1,861,000
Virginia	1,329,843	33,656,000	7,502,000
Wisconsin	159,276	4,897,000	920,000
Minnesota Territory	734	92,000	2,000
New Mexico Territory	7,314	1,404,000	82,000
Oregon Territory	30,235	1,876,000	164,000
Utah Territory	914	546,000	67,000

—*See articles* BACON, PORK, WHEAT, FLOUR, etc.

Prunes and Prunelloes, a species of dried plums, of which there are many varieties. The finest are imported from France, in the south of which this fruit is very abundant. The best prunes are packed in hampers or baskets made of white osiers, weighing from six to ten pounds each; the second quality in quarters, and the third in puncheons.

Prussia (*one of the Zoll-Verein*). The Prussian territory is not much more than two-fifths of the size of that of Austria, and the larger portion of it lies within the limits of the great and comparatively barren plain which extends from the Bohemian and Carpathian Mountains to the Baltic Sea. The smaller and more fertile part of the Prussian territory, called the Grand Duchy of the Lower Rhine, lies in the lower part of the basin of that river, and is separated from the main body of the kingdom by the intervention of Hanover, Saxony, and other German states. There are, besides, several smaller districts scattered in the heart of Germany; and with a territory thus scattered and disjointed, the rank of Prussia as a great state has been sustained chiefly through the superiority of her internal organization, and the wary, temporizing, and even shuffling policy of her government, forced upon them, indeed, by the defenselessness of a kingdom without natural frontiers, or physical centrality, or a people united by language, and national feeling, and interest. Agriculture is the chief occupation of the people; but in the Rhenish provinces the cotton, and in Silesia the linen manufactures, are carried on to a great and increasing extent. Prussia necessarily maintains a large standing army, but has no naval power; the king, however, has recently purchased the port of Jahde from the Grand Duke of Oldenburg for the purpose of a naval station, and has begun the formation of a fleet. The kingdom was till recently an absolute monarchy, but has now received a Constitution.

The first treaty of amity and commerce between the United States and Prussia was negotiated in 1785. This was renewed in 1799, and expired in 1815. In 1828 a new treaty was concluded between the two governments, which is still in force. Under the former treaties the vessels of the two high contracting parties were reciprocally allowed to import the goods which were of the produce or manufacture of their respective nations. The latter treaty, however, stipulates entire reciprocity and freedom of commerce. The vessels of each nation are allowed to import into the other the productions of their own or of any other country. The direct trade between the United States and Prussia is, however, very inconsiderable. There is scarcely any article of American production demanded in Prussia, except tobacco, rice, and raw cotton; nor is there any bulky article of Prussian produce wanted in the American markets.

VESSELS ENTERED AND CLEARED.

		1854.		1855.	
		Number.	Tonnage.	Number.	Tonnage.
Entered loaded		4754	414,803	5134	511,661
Of which were	national	2183	211,648	2316	244,160
	foreign.	2571	203,155	2818	267,501
Entered in ballast		2986	274,756	....	....
Cleared loaded		5576	585,663	6123	600,554
Of which were	national	2808	277,923	2797	272,589
	foreign.	2768	307,740	3326	327,965
Cleared in ballast		981	88,443	....	....

IMPORTS AND EXPORTS TO AND FROM THE UNITED STATES AND PRUSSIA, FROM 1850 TO 1855, BOTH INCLUSIVE.

Years.	Value of Imports into United States.	Value of Exports from United States.
1850	$27,469	$98,636
1851	20,542	85,913
1852	21,263	99,386
1853	47,875	28,717
1854	47,773	....
1855	297,814	31,266

The following statement exhibits the value of ex-

ports, the produce and manufacture of Prussia, to the United States during a period of five years, from 1851 to 1855, both inclusive, specifying the places at which said exports were shipped for the United States:

Years.	Via— Hamburg.	Bremen.	Holland.	France.	Belgium.	England.	Total.
1851*	$47,969	$474 701	$15 387	$333,284	$197 746	$286,008	$1,955,, 85
1852	289 848	1,410,705	47,146	1,648,972	442,620	1,616,848	5,4' 6 734
1853	573,900	1,643,978	21,270	1,801,435	420,109	1,614,435	6,7 7,4 1
1854*	175,021	1,071,689	14,614	1,059,115	393,717	1,;61,184	5,175,2 0
1855	204,714	1,082 315	67,814	1,926,249	840,0 4	1,942,403	7,024,562†

* These returns are for the port of New York only, and for six months. The Department is not in possession of the requisite data to exhibit the general trade for these years. The other years, however, show the general annual value of the indirect trade.

† This includes $505, *via* Rotterdam.

With Great Britain and France, Prussia maintains an active and annually increasing commercial intercourse. This trade is chiefly conducted through the port of Stettin. In 1852 the general navigation of this port was as follows:

VESSELS ENTERED THE PORT OF STETTIN IN 1853.

From England	280
" France	20
" United States	5
" Russia	15
" Denmark	30
" Mediterranean	20
Total number of vessels entered	370

VESSELS CLEARED FROM THE PORT OF STETTIN IN 1852.

For England	130
" France	50
" Denmark	30
" Russia	25
" Belgium	3
" Sweden	4
" Norway	10
" Holland	0
Total number cleared	308

From the United States the imports into this port are: rice, ashes, rosin and turpentine, and whale-oil; though, owing to its high price within the past few years, the article last named has almost ceased to be imported from the United States. Sugar has also disappeared from the list of imports, for the reason that the refineries in the Baltic ports chiefly use beet-root sugar.

The value of imports from the United States into this port for the years 1851, 1852, and 1853, and the duties levied thereon, are thus given in Prussian official reports:

1851	$329,870	Amount of duty		$26,160
1852	134,310	"		13,270
1853	79,883	"		5,920

The port of Memel is also the centre of no inconsiderable share of the direct trade between the United States and Prussia. From 1st July to 31st December, 1854, there entered this port from the United States, in the direct trade, five vessels, measuring an aggregate tonnage of 2505 tons, and floating 8171 bales of cotton, valued at $411,500. Outward cargoes consisted of hemp, rope, canvas yarn, mats, bags, and leather.

At the port of Konigsberg there arrived from the United States from 1st July, 1854, to 1st January, 1855, seven American vessels, floating cargoes in value $898,000—namely, 9680 bales of cotton, 1700 gallons of oil, and 3600 boxes of sugar. Outward cargoes consisted of hemp, yarn, bristles, feathers, raven's-duck, cordage, horse-hair, soap, and tallow, to the aggregate value of $730,000.

The general foreign trade of this port is considerable. Its exports consist of grain, woolens, silks, soap, starch, sealing-wax, and refined sugar. Its imports, however, largely exceed in value its exports. The former in 1851 amounted to about 6,000,000 thalers, while the latter only reached a little over 4,000,000.

The harbor of Königsberg admits small vessels only; large ships land at Pillau, which is also the port of Elbing and Braunsberg.

Dantzic is the only remaining port of Prussia in which foreign trade is conducted. It is situated on the left bank of the Vistula, three and a half miles from its outlet at Weichselmünde, and is accessible to vessels drawing from eight to nine feet water. Larger vessels lie in the Neufahrwasser, at the mouth of the river, or in the roads, which afford good anchorage for vessels of any burden. Its exports consist of wheat, rye, barley, oats, peas, flour, linseed, rape-seed, biscuit, provisions, ashes, zinc, bones, timber, staves, hemp, flax, linens, wool, etc. The imports comprise woolen and silken stuffs, and other manufactured goods; colonial products, dyes, wine, oil, spice, fruit, salt, and furs.

At Stettin, port dues are: Tonnage duty, 14 silver groschen per last, laden, and one half only if in ballast. This would be about 16·1 cents per ton if laden, and 8·05 cents per ton if in ballast. Pilotage dues, 2½ thalers per 25 lasts, and 15 silver groschen for every 10 lasts upward. This equals $1 72½ per 50 tons, and 34½ cents per every 20 tons upward.

Port Regulations.—The following regulations apply to all the Prussian ports: On a ship arriving in the road or port, the master must submit to the police regulations of the port, which are made known to him or the officer in command; the master is then required to proceed to the custom-house and deliver a complete manifest of the cargo. This manifest or general declaration is required to state clearly if the whole cargo is to be entered at the port, and the part, if any, which is to be carried farther in the ship; that part to be stated under a special head. The merchandise, as per bills of lading, is then entered regularly. The statements for entry are to be drawn up, specifying the description, weight, measure, or quantity, agreeably to a zoll-tariff for the payment of duties. Excepting various articles imported in an unpacked state, the following measures are to be adopted: For beer in casks, tuns of 100 Prussian quarts; for wines, brandy, and vinegar, in casks (eimers) of 60 Prussian quarts; for herrings, barrels; for burned chalk, tuns of 4 Prussian bushels; for all other packed articles, centners of 110 pounds gross weight. If there be several packages of similar articles, and each package contains an equal quantity, they may be entered together, according to their number and size, and with a general statement of the contents. If the contents of the packages vary, it will be necessary to specify the contents of each. The luggage of passengers must be noted as such in the manifest. If it consist of usual traveling luggage, it will be sufficient to state the several boxes or parcels; but if it include goods, these must be stated according to number and description. The personal property of the master, with the exception of provisions, must be stated like other goods, but omitting the declaration to a consignee; and it must also be stated in the declaration what are the articles which are not in the ship's hold. A form is presented to the master to fill up as his report. It must be filled up exactly according to this form, and written clearly in the German language. This declaration is binding on the master, and each error that may be discovered on the unlading, or on examination, subjects him to a penalty stated in the customs laws. If the master has not a report with him, he may have one prepared in the port by a customs officer; in which case he delivers all his papers to the officer, who stamps and numbers them, the last number being marked as such. The master, at the same time, informs the officer of the goods or luggage

belonging to himself or to passengers, if there be no account of the same; the officer makes out a list thereof, which is signed by the master, and returned, in order to be inserted in the report. If the report has to be prepared on shore, it must be delivered to the customs officers within 24 hours after the arrival of the ship in the road; if not, possession will be taken of the ship at the master's expense. Customs officers may take possession of the ship at once, free of expense. It is required of the master to procure the necessary information for the report, in the arranged manner, on receipt of the cargo. If he does not so prepare himself, the customs officers assume the whole direction of landing the cargo, according to the regular instructions in such cases. Respecting the ship's provisions, if they consist of articles which pay a consumption duty, a separate report is required in duplicate: one is returned to the master after revision, in order that he may take on board an equal quantity of similar provisions when he sails. If he fails in this, or if the sailing is delayed beyond a twelvemonth, the consumption duty must be paid on the provisions remaining on hand. The master is, however, at liberty to deposit the provisions at the custom-house until he sails, subject to the consumption duty if not taken away. Articles not properly forming a part of the cargo are so considered if they undoubtedly appertain to the ship's inventory, and are articles for the use of the voyage. Articles which are not considered as such, are to pay duty if they be subject to a consumption tax; or they may be landed, in order to be deposited in the custom-house. If a vessel remains in the road, and does not enter the port, and only discharges the cargo into lighters, the consumption of provisions in the road is duty free. A report of the provisions is sufficient, and no further control over the same is observed, except in particular cases when considered necessary. If the master is bound for another destination, and only enters the harbor through distress, then a general inspection is only made, in order that no part of the cargo may be disposed of. A report, however, is to be made of the cargo. In cases of shipwreck, on the salvage of the cargo, the kind and quantity is ascertained, with the assistance of the regular officers, and the cargo shall be placed in security until further directions are issued. The cargo of vessels which winter in Prussian ports must be declared without unnecessary delay, in as far as the ship's papers and the knowledge of the master afford information. An inspection of the outer parts and decks of the vessel, and the stores or articles thereon, takes place at once, and the ports or hatchways of the ship's hold are then locked. Until the declaration, inspection, and locking up of the vessel take place, it is watched at the expense of the captain; which guarding, in particular cases, may continue as long as the customs officers may consider necessary. Ships which only anchor in the roads, and do not enter the port, are not considered within the control of the customs officers; they must not, however, hold intercourse with the shore or the port, without delivering a report and their papers. If the ship remain in the roads longer than 24 hours after the declaration is made, without entering or proceeding to unload, unless the one or the other be prevented by stress of weather, then an officer repairs to the ship, examines the decks, etc., and locks up the hatches, etc., of the hold. To the officers who are on service on board the vessel, proper maintenance is to be allowed, the same as is afforded to travelers of the trading class. The following table exhibits the foreign commerce of the United States with Prussia for 37 years, giving the domestic and foreign exports, the imports, and tonnage.

COMMERCE OF THE UNITED STATES WITH PRUSSIA FROM OCTOBER 1, 1820, TO JULY 1, 1857.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared	
	Domestic.	Foreign.	Total	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1821	....	....	....	$1,930	....	....	....	....
1822	....	....	....	....	....	....	....	....
1823	$7,368	$568	$7,936	....	....	....	120	....
1824	5,163	....	5,163	....	....	....	....	....
1825	4,918	12,650	17,568	21,250	....	....	....	217
1826	15,129	3,421	18,550	107,615	....	....	313	....
1827	8,515	....	8,515	30,758	....	....	166	....
1828	15,430	....	15,430	126,084	....	....	117	....
1829	14,311	....	14,411	22,135	....	....	188	....
1830	16,501	....	16,501	16,005	....	....	232	....
Total	$87,385	$16,639	$103,974	$345,026	....	....	1126	217
Sept. 30, 1831	$27,043	....	$27,043	$50,070	....	....	387	....
1832	11,116	....	11,116	27,927	....	....	179	....
1833	12,812	....	12,812	124,570	....	....	....	....
1834	15,304	$3,510	18,810	14,045	....	....	....	299
1835	53,064	2,682	55,745	38,543	....	....	239	....
1836	66,410	....	66,410	81,301	....	....	....	1,177
1837	106,558	33,427	139,985	497,829	....	....	....	4,625
1838	65,661	19,283	84,944	6,629	....	....	240	1,433
1839	29,313	43,500	72,813	70,412	....	....	816	1,234
1840	43,353	43,115	86,468	59,304	....	....	500	1,677
Total	$430,629	$145,517	$576,146	$971,530	....	....	2367	10,345
Sept. 30, 1841	$149,211	$26,765	$175,976	$36,119	....	....	547	3,342
1842	149,141	7,547	156,688	18,192	....	....	....	2,063
9 mos., 1843*	222,039	18,330	240,369	....	....	....	2173	1,905
June 30, 1844	194,006	23,968	218,574	12,609	....	....	164	5,000
1845	502,007	65,114	567,121	91,082	....	....	947	9,521
1846	305,210	30,645	435,855	31,584	....	....	1170	7,275
1847	182,250	19,907	202,100	7,008	....	....	....	5,127
1848	145,074	15,385	160,459	22,817	....	....	....	3,750
1849	34,703	9,516	44,219	17,087	....	....	240	606
1850	70,645	27,991	98,636	27,469	....	....	....	4,887
Total	$2,045,875	$254,168	$2,300,063	$295,107	....	....	5247	45,485
June 30, 1851	$86,469	$5,444	$85,913	$20,542	....	....	184	1,635
1852	93,233	153	93,386	21,203	....	....	225	1,568
1853	26,911	1,806	28,717	47,875	....	....	....	293
1854	....	....	....	47,773	....	....	....	295
1855	30,466	10,800	81,266	337,814	....	....	....	1,174
1856	70,367	9,395	79,762	101,109	....	....	208	1,327
1857	30,788	14,311	45,099	66,127	....	....	949	1,394

—*See article* ZOLL-VEREIN for a general account of the foreign commerce.

* Nine months to June 30, and the fiscal year from this time begins July 1.

Prussian Blue, or **Prussiate of Iron** (Ger. *Berlinerblau*; Fr. *Bleu de Prusse*, It. *Azurro Prussiano*, Sp. *Azul de Prussia*; Russ. *Lasor Bezlinskaja*), a beautiful deep blue powder, accidentally discovered at Berlin in 1710. It is of considerable importance in the arts, being extensively used by painters; it is manufactured in this country. Many attempts have been made to render Prussian blue available for the dyeing of broad-cloths, but without much success. The difficulty is to diffuse the color equally over the surface; for, from its extraordinary vivacity and lustre, the slightest inequalities strike and offend the eye. Prussian blue resists the air and sun extremely well; but it can not be used in the dyeing of cottons, or any sort of stuff that is to be washed with soap, as the alkali contained in the soap readily dissolves and separates the coloring matter.—BANCROFT on *Colors*. Blue is a favorite color with the Chinese, and in 1810-'11 the imports of Prussian blue into Canton from England amounted to 1899 piculs, or 253,200 lbs. But for some years past the Chinese have not imported a single pound weight. The cause of the cessation of the trade deserves to be mentioned. A common Chinese sailor, who came to England in an East Indiaman, having frequented a manufactory where the drug was prepared, learned the art of making it; and on his return to China he established a similar work there, with such success that the whole empire is now amply supplied with native Prussian blue! The West has derived many important arts from the East; but we incline to think that this is the first well-authenticated instance of any art having ever been carried from the West to the East by a native of the latter. But in all that respects industry, ingenuity, and invention, the Chinese are incomparably superior to every other people to the east of the Indus.

Prussian or **German Commercial Union**. Next to the efforts of the Prussian government to diffuse the blessings of education, their efforts to introduce a free commercial system into Germany constitute their best claim to the gratitude and esteem of their own subjects, and of the world. Germany, as every one knows, is divided into a vast number of independent, and mostly petty states. Until a very recent period, every one of these states had its own custom-houses, and its own tariff and revenue laws; which frequently differed very widely indeed from those of its neighbors. The internal trade of the country was, in consequence, subjected to all those vexatious and ruinous restrictions that are usually laid on the intercourse between distant and independent states. Each petty state endeavored either to procure a revenue for itself, or to advance its own industry, by taxing or prohibiting the productions of those by which it was surrounded; and customs officers and lines of custom-houses were spread all over the country! Instead of being reciprocal and dependent, every thing was separate, independent, and hostile: the commodities admitted into Hesse were prohibited in Baden, and those prohibited in Wirtemberg were admitted into Bavaria. It is admitted that nothing contributes so much to the growth of industry and wealth in modern times as the perfect freedom of internal industry, and that intimate correspondence among the various parts of the country which renders each the best market for the produce of the other. How different would have been our present condition had each county been an independent state, jealous of those around it, and anxious to exalt itself at their expense! But, until within these few years, this was the exact condition of Germany; and, considering the extraordinary obstacles such a state of things opposes to the progress of manufactures, commerce, and civilization, the wonder is, not that they are comparatively backward in that country, but that they should be so far advanced as they really are.

But, thanks to the intelligence and perseverance of Prussia, this anti-social system has been well-nigh suppressed; and the most perfect freedom of commerce established among the great bulk of the Germanic nations. The disadvantages of the old system had long been seen and deplored by well-informed men; but so many interests had grown up under its protection, and so many deep-rooted prejudices were enlisted in its favor, that its overthrow seemed to be hopeless, or, at all events, exceedingly distant. The address and resolution of the Prussian government, however, triumphed over every obstacle. Being fully impressed with a strong sense of the many advantages that would result to Prussia and Germany from the introduction of a free system of internal intercourse, they pursued the measures necessary to bring it about with an earnestness that produced conviction, and with a determination, *coute qui coute*, to carry their point.

The first treaties in furtherance of this object were negotiated by Prussia with the principalities of Schwarzburg-Sondershausen and Schwarzburg-Rudolstadt, in 1818 and 1819, on the principle that there should be a perfect freedom of commerce between these countries and Prussia; that the duties on importation, exportation, and transit, in Prussia and the principalities, should be identical; that these should be charged along the frontier of the dominions of the contracting parties; and that each should participate in the produce of such duties, in proportion to its population. All the treaties subsequently entered into have been founded on this fair and equitable principle: the only exceptions to the perfect freedom of trade in all the countries comprised within the league or tariff alliance being confined, first, to articles constituting state monopolies, as salt and cards, in Prussia; 2d, to articles of native produce, burdened with a different rate of duty on consumption in one state from what they pay in another; and, 3d, to articles produced under patents conferring on the patentees certain privileges in the dominions of the states granting the patents. With these exceptions, which are not very important, the most perfect freedom of commerce exists among the allied states. Since 1818, when the foundations of the alliance were laid, it has progressively extended, till it now comprises more than three-fourths of the Germanic states, exclusive of Austria. Ducal Hesse joined the alliance in 1828, and Electoral Hesse in 1831; the kingdoms of Bavaria, Saxony, and Wirtemberg joined it afterward, as have Baden, Nassau, and almost all the smaller states by which it had not been previously joined, with the exception of Mecklenburg-Schwerin and Mecklenburg-Strelitz. But these, with Hanover, will be very shortly included in the league. In 1852 the tariff alliance comprised—

	German Square Miles.	Population in 1849
Prussia	5188	16,069,153
Luxemburg	47	189,783
Bavaria and her detached territories	1396	4,526,656
Saxony (Kingdom of)	272	1,894,431
Wirtemberg and the two Hohenzollerns	384	1,815,558
Hesse (Electoral)	203	7,731,584
Hesse (Duchy) and Homburgh	154	862,917
The Thuringian States	237	1,014,954
Baden (Duchy of)	276	1,360,599
Brunswick (Duchy of)	63	247,070
Nassau	85	425,086
Frankfort	2	71,678
Totals	8307	29,800,063

Throughout the whole extent of this immense country, from Aix-la-Chapelle, on the confines of the Netherlands, eastward to Tilsit, on the confines of Russia, and from Stettin and Dantzic, southward to Switzerland and Bohemia, there is nothing to interrupt the freedom of commerce. A commodity, whether for consumption or transit, that has once passed the frontier of the league, may be subsequently conveyed, without let or hinderance, throughout its whole extent. Instead of being confined within the narrow precincts of their own territories, the products of each separate country of the alliance may be sent to every one else;

so that each may apply itself, in preference, to those departments in which it has some natural or acquired advantage; and each has to depend for its success, not on the miserable resource of customs regulations, but on its skill and industry. The competition thence arising is most salutary; and, should the peace of Europe be preserved, we run little risk in saying that all sorts of industry will make more progress among the states comprised within the tariff alliance, during the next ten years, than they did during the half century previous to its being organized. An assembly of representatives from the allied states meets annually, to hear complaints, adjust difficulties, and make such new enactments as may seem to be required. The Prussian tariff has been adopted, with certain modifications. The duties are received into a common treasury, and are apportioned according to the population of each of the allied states. In addition to its other advantages, the new system has reduced the cost of collecting the duties to a mere trifle, compared with its former amount; and has enabled hundreds of custom-houses, and thousands of customs officers, to be employed in the different departments of industry. The existing discrepancy in the weights and measures used in different parts of Germany occasions considerable inconvenience; and we are glad to observe that the equalization of weights and measures, and their reduction to a common standard in all the allied states, is declared to be one of the objects of the league. It is also expressly provided that the tolls, or other charges in lieu thereof, shall in all cases, whether they belong to the public or to private individuals, be limited to the sums *required to keep the roads in a proper state of repair;* and that the tolls existing in Prussia shall be considered as the highest that are to be levied, and shall not in any case be exceeded.

We are able to lay before the reader the following extract from a work printed by order of the House of Representatives, giving an account of the objects to be attained by the Prussian Commercial League: "Prussia," it is there said, "has evidently taken the lead in this wise and important measure, to which the smaller states have gradually acceded. The whole commercial policy of this enlightened power has been distinguished for its liberality, being founded on the desire of placing her intercourse with all nations on the basis of reciprocity. The commercial league of Germany is intended to carry out this principle, and not to be directed, as has been supposed, against any particular nation; as it is well known that Prussia, in her treaties with maritime powers, has invariably adopted the system of reciprocity, to whatever extent those with whom she negotiates are willing to carry it. The establishment of this community of commercial interests forms a part of the fundamental compact by which the new Germanic Confederation was created, after the dissolution of the Confederation of the Rhine; to be subsequently adopted, however, at the option of such of the co-states as should choose to accede to it. Its effects can not fail to promote commerce, and every other branch of industry, as it removes all those vexatious and endless difficulties which previously obstructed the freedom of intercourse. Navigable rivers and highways are now opened to the unfettered use of the German people; the custom and toll houses, with their officers and barriers, have been withdrawn from the interior, and the whole intercommunication resembles that of the subjects of any one of the states within its own territories. To these benefits may be added the assured prospect of improvement in the finances of the great and smaller sovereignties composing the league. This advantage will grow out of the simplicity or unity of the new system, a saving in the cost of collection, and from the increased consumption which renovated industry and progressive prosperity so invariably cause."—*Digest of Customs Laws*, vol. iii. p. 227.

Prussian Duty on Cottons.—The duty on cotton goods being that in which we are most interested, we have taken some pains to ascertain its real influence. This duty amounts to 50 rix dollars per Prussian quintal on all cotton goods, without respect to quality or price; and, taking the quintal at 113 lbs. avoirdupois, and the rix dollar at 3*s.*, it is equal to £7 10*s.* per 113 lbs. Now we have learned from statements obligingly furnished to us by a large wholesale house in the city, 1st. That a quintal (113 lbs.) of *coarse shirting*, worth 4*d.* per yard, contains 497 yards; it consequently costs £8 6*s.*, and the Prussian or tariff alliance duty of £7 10*s.* on it is, therefore, equivalent to an *ad valorem* duty of 90 per cent. 2d. That a quintal of *superior shirting*, worth 1*s.* a yard, contains 457·65 yards; it consequently costs £22 17*s.* 7*d.*, making the Prussian duty on such goods 32½ per cent. 3d. That a quintal of *printed cottons*, worth 1*s.* 6*d.* a yard, contains 633 yards; it consequently costs £47 9*s.*, making the Prussian duty on such goods 15¾ per cent. 4th. That a quintal of *fine printed cottons*, worth 2*s.* 6*d.* a yard, contains 678 yards; it consequently costs £84 15*s.*, making the Prussian duty on such goods 8¾ per cent. It is plain, therefore, that, except on the coarsest and cheapest species of goods, the Prussian or tariff alliance duty is very far from being oppressive; and, as the value of coarse goods is principally dependent on the cost of the raw cotton and the wages of labor, being but little influenced by superiority of machinery, it is not very probable that we should export them largely to Prussia, even were the duty materially reduced. No doubt, however, it would conduce greatly to the interests of the people comprised within the league, though we do not know that it would sensibly affect us, were the duty assessed on an *ad valorem* principle, and made 20 or 30 per cent. on all goods; and we should think that this might be done without any material difficulty. The subjoined translation of the more important clauses of the customs treaty of the 22d of March, 1833, sets the principles on which the alliance is founded in a clear point of view.

Customs Treaty, concluded the 22d March, 1833, between the Kings of Bavaria and Wirtemberg, on the one part; and the King of Prussia, the Prince Electoral Co-regent of Hesse, and the Grand Duke of Hesse on the other part.

I. The existing customs unions between the states above named shall henceforth constitute a general Union, united by a common system of customs and commerce, embracing all the countries which are comprised therein.

II. In this general reunion are also comprised the states which have already adhered, either for the whole of their territory, or for a part, to the system of customs and commerce of one or other of the contracting states, having regard to their special relations, founded upon the conventions of adhesion concluded with the states which have intervened.

III. But there will remain excluded from the general reunion the parts separated from the countries of the contracting states which, because of their situation, are not yet included either in the reunion of the Bavarian or Wirtemberg customs, nor in those of Prussia and Hesse. Nevertheless, the regulations now in force to facilitate the commerce of these territories with the principal country will be maintained. Other favors of this kind can not be accorded without the unanimous consent of the contracting states.

IV. In the contracting states there shall be established uniform laws for the duties of import, of export, and of transit, except such modifications as, without injury to the common object, result necessarily from the particular legislation of each contracting state, or from local interests. Thus, exceptions and modifications to the common tariff may take place, as to rates of duties of entry, of export, and of transit (according as the direction of the routes of commerce may require), established upon articles recognized as of minor conse-

quence in extensive commerce; provided always, that these modifications be preferred by separate states, and that they shall not be disadvantageous to the general interests of the Association. The administration of the duties of import, export, and transit, as well as the organization of the authorities which are engaged therein, in all the states of the Association, shall be established upon a uniform footing, having regard, however, to the particular relations existing in those countries. The laws and ordinances which, according to those principles, ought to be uniform in the contracting states, and which are to constitute the law of the tariff and the regulations of the customs, shall be considered as an integral part of the present treaty, and shall be published at the same time.

V. There can neither be alterations, nor additions, nor exceptions, to the acts above mentioned (Article IV.), but by the unanimous consent of all the contracting parties, and in the form required for the making (*confection*) of the laws. The preceding applies equally to all the ordinances which would establish, for the administration of the customs, dispositions entirely different.

VI. Liberty of commerce, and community of the receipts of customs, as regulated by the following article, will commence simultaneously with the operation of the present treaty.

VII. Dating from this epoch, all duties of import, of export, and of transit shall cease on the common frontier of the Bavaro-Wirtemberg and Prusso-Hessian customs reunions. All articles of free commerce in one of those territories may be imported freely and without duty into all the others, except only as follows:

A. Articles monopolized by the states (playing-cards and salt) conformable to Articles IX. and X.

B. Indigenous articles, now subject in the interior of the contracting states to different duties, or excepted from all duty in one state, and imported into another, and which according to article II. ought consequently to be subject to a duty of compensation.

Finally, C. Articles which, without prejudice to patent rights or conceded privileges in one of the contracting states, can not be imitated or imported, and ought consequently to be excluded during the existence of the patents and privileges from importation into the state which has granted them.

VIII. Notwithstanding the freedom of commerce, and the exemption from duties, established by Article VII., the transport of articles of commerce, subject by the common tariff to duties of import or export on the frontiers of the Association, can not take place between the states of Bavaria and Wirtemberg, and the states of Prussia, of Electoral Hesse, or of Grand Ducal Hesse, and reciprocally, except by the public roads, military routes, and navigable rivers. For this purpose there shall be established on the interior frontiers common *bureaus* of verification, to which the conductors of merchandise must, on exhibiting their licenses, declare what are the articles which they are employed to transport from one territory to another. This disposition will not be applicable to retail commerce in raw materials, nor to the petty commerce of the frontiers or the fairs, nor to the effects of travelers. Process for the verification of merchandise will go no farther than is required for security of the duties of compensation.—*See* Article VII.

XIII. The contracting parties reciprocally renew their adhesion to the principle that the tolls, or other charges in lieu thereof, shall only be sufficient to defray the expense of maintenance and repairs of the roads, whether the tax be for the state or for private rights. It was thus that has been approved the supplement to the duty of customs, created in Bavaria and Wirtemberg, to replace the duty of tolls, paving, causeways, bridges, and generally of all analogous taxes. The tolls, etc., now existing in Prussia, according to the general tariff of 1828, shall be considered as the *highest rates*, and shall not be exceeded in any of the contracting states. In accordance with the principle thus announced, the individual duty for closing the gates of cities shall be abolished; as also the duty of paving of causeways, where it still exists; and all paved roads will be considered as causeways of a description liable only to the duty on causeways established by the general tariff.

XIV. The contracting governments agree to unite their efforts to introduce into the states a uniform system of coins, weights, and measures; to commence immediately the requisite negotiations for this purpose; and, subsequently, to direct their efforts toward the adoption of uniform custom-house weights. The contracting states, in the impossibility of establishing this uniformity before this treaty goes into operation, agree, for facilitating the forwarding of merchandise where it has not already been done, to revise their tariff as to weights and measures, assuming for a basis the tariffs of the other contracting states. They will cause such modifications to be published, for the government of the public and of their custom-house *bureaus*. The common tariff (Article IV.) shall be divided into two principal divisions, according to the system of weights, measures, and moneys of Bavaria, and that of Prussia. The declaration of the weights and measures of articles subject to duty shall, in Prussia, be according to Prussian weights and measures; in Bavaria and Wirtemberg, according to those of Bavaria; and in the two Hesses, according to the weights and measures there legally established. In expediting custom-house acts, the quantity of merchandise must be expressed according to the two principal divisions of the common tari Until the contracting states agree upon a system of common money, the payment of duties in each state shall be made in the same currency as in use for payment of its other taxes. But from the present time, the gold and silver coins of all the contracting states, with the exception of small money (*sheidemunze*), shall be received into all the *bureaus* of receipt of the Association; and for this purpose tables of value shall be published.

XV. The duties of navigation upon the rivers, comprising therein those which apply to vessels, shall always be mutually acquitted according to the acts of the Congress of Vienna, or of special conventions, upon all the rivers to which these regulations apply, unless other determinations be adopted in this respect. The contracting states agree to enter without delay into negotiations for that which particularly regards the navigation upon the Rhine and the neighboring streams, in order to effect an arrangement by which the import, export, and transit of the productions of all the states of the Union upon said streams shall be, if not absolutely free, at least relieved as far as possible from duties of navigation, under the reserve of charges of reconnoissance. All the advantages granted by one state of the Union to its subjects, in the exercise of the navigation upon said streams, shall extend equally to the navigation of the other associated states. Upon the other streams to which neither the acts of the Congress of Vienna, nor any other treaties apply, the duties of navigation shall be according to the special regulations of the governments interested. Nevertheless, the subjects of the contracting states, their merchandise and vessels, shall throughout be treated on those streams with perfect equality.

XVI. Dating from the day on which the general custom-house regulations of the Union shall come into operation, the duties of public stores (*etapes*), and of transhipments (*umschlagsrechte*), which still exist in the territories belonging to the Association, shall cease, and no one shall be liable to forced delay, nor to the discharging and storage of his merchandise, except in cases authorized by the common regulations of the customs or navigation.

XVII. No duties shall be claimed for canals, locks,

bridges, ferries, cranes, weighing, and storage; and the establishments destined to facilitate commerce shall not be allowed rent, except when actually used. Charges can not be increased; and the subjects of the other contracting states shall be on a perfect equality with the subjects of the countries having those establishments. If the establishments for weighing and cranes are only used by the custom-houses, no charge shall be made, if the articles have been previously weighed at a custom-house.

XVIII. The contracting states engage to continue their common efforts for the encouragement of industry by the adoption of uniform regulations, so that the subjects of each state may enjoy, as extensively as possible, the privilege of seeking work and occupation in every other state. From the coming into operation of the present treaty, the subjects of any one of the contracting states, trading or seeking employ in the territory of any other of those states, shall not be subject to any impost which does not equally affect the native similarly employed. Manufacturers and merchants who are only making purchases for their trade, or travelers who have no goods with them, but simply patterns for the purpose of soliciting commissions, shall not, when thus employed, have any duty to pay in another state, if authorized to carry on such commerce in the state where they have their domicile; or if employed in the service of native manufacturers or merchants. When trading in the markets and fairs, or when they are selling the produce of the soil and fabrics, in any one of the states of the Association, the subjects of the other contracting states shall be treated in all respects as subjects of the same states.

XIX. The sea-ports of Prussia shall be open for commerce to all the subjects of the states of the Union, on payment of the same duties as are paid by Prussian subjects, and the consuls of the several states in the sea-ports or places of foreign commerce, shall be bound, in cases of need, to assist with their advice and support the subjects of the other contracting states.

XX. To protect against contraband their common custom-house system, and to insure the regular payment of the duty of consumption in the interior, the contracting states have concluded a reciprocal cartel, which shall be enforced as soon as possible, but at the farthest at the same time with the present treaty.

XXI. The community of receipts of the contracting states, stipulated by the present treaty, shall comprehend the product of duties of entry, of export, and of transit, in the Prussian states, the kingdoms of Bavaria and Wirtemberg, the Electorate, and the Grand Duchy of Hesse, comprising therein those countries which have down to the present time acceded to the custom-house system of the contracting states. The following are excluded from the community of receipts, and remain reserved for the particular benefit of the respective governments: 1. The imposts collected in the interior of each state on indigenous products, comprising therein the compensatory duties reserved in Article XI. 2. The toll on rivers, to which are applicable the regulations of the acts of the Congress of Vienna, or special conventions.—Article XV. 3. Duties of paving, of causeways, of bridges, of ferries, of canals, of locks and ports, charges of weighing and storage, as well as similar receipts, whatever may be their name. 4. The fines and confiscations which, beyond the part allowed to informers, remain the property of each government throughout its territory.

XXII. The produce of the duties received into the common treasury shall be divided among the states of the Association, in proportion to the population which may be found in the Union, subject to deduction, 1st. Of the expenses specified in Article XXX.; 2d. Of the restitution of erroneous receipts; 3d. Of the restoration of duties and diminutions made in consequence of special common conventions. The population of every state which has entered or may enter into the Association, by treaty with one or other of the contracting states, under the engagement made by the latter, to make an annual contribution for the participation of the former to the common revenue of the customs, shall be added to the population of the states which make this contribution. There shall be made every three years, dating from a period to be hereafter fixed, an exact enumeration of the population of the associated states: the states shall reciprocally communicate the results thereof.

XXIII. All restitutions of duties not authorized by the legislation of the customs shall remain charged to the treasury of the government which shall have granted it. Conventions, hereafter to be concluded, will regulate in what cases similar restitution may be accorded.

XXIV. In conformity with the object of this association of customs tending to facilitate a freer and more natural commercial intercourse, the favors accorded for the payment of custom-house duties at certain places in which fairs are held, especially the privileges of abatement (*rabat privilegien*), can not be extended to those states of the Association where they do not exist; on the contrary, they shall be restricted and abolished as far as possible, regard being had to the means of subsistence of the places heretofore favored, and to the commercial relations which they have with foreigners; but others can on no account be granted without the general consent of the contracting parties.

XXXIII. There shall every year, on the 1st day of June, be an assembly of plenipotentiaries of the governments of the Union empowered generally to deliberate; and each state may send thither a duly authorized representative. The plenipotentiaries will choose from among themselves a president, who, however, shall have no pre-eminence over the other members. The first assembly shall be held at Munich. At the close of each annual assembly, the place of next meeting will be determined, having reference to the nature of those subjects which will then come under discussion.

XXXIV. The assembly of plenipotentiaries will have under its consideration the following subjects: A. To consider the complaints which may have arisen in any of the states of the Association concerning the execution of the general treaty, of special conventions, of the law, and of custom-house regulations; also of the tariff, when these shall not have been adjusted during the year by correspondence between the different ministers. B. The definite reparation among the states of the Union of the total common receipts, based upon the observations made by the superior authorities, and verified by the central *bureau*, as may be rendered necessary by the common interest. C. To deliberate upon propositions and suggestions made by the governments for the perfection of the administration. D. Discussions upon alterations, demanded by any of the contracting states, in the laws, tariffs, and custom-house regulations, as well as in the organization of the administration, and in general upon the development and perfection of the general system of customs and commerce

XXXV. If, in the course of the year, when the plenipotentiaries are not in session, extraordinary incidents should occur, which require prompt decision on the part of the states of the Union, the contracting parties will consult upon these through their diplomatic agents, or they will order an extra sitting of their plenipotentiaries.

Recent Changes in the German Customs Union.—The discussions in the assemblies of the League have, especially of late years, been a good deal influenced by political considerations. A league, denominated the *Steur-Verein*, had been formed in opposition to, or in rivalry with, the Prussian League, by Hanover, Oldenburg, and Brunswick. It was evident, however, inasmuch as the interests of these and the other German states were identical, that it would be a great public ad-

vantage were these associations merged into one. But owing to political, commercial, and financial jealousies, this desirable object was of very difficult attainment. Happily, however, these difficulties have been surmounted; and a treaty negotiated between Hanover and Prussia, on the 7th of September, 1851, provided for the incorporation, from the 1st of January, 1854, of the former kingdom, and the other states included in the Steuer-Verein, with the Prussian Union. Some modifications have been introduced by the treaty into the basis of the League, but they are of little importance, except the to parties immediately interested.

Treaty with Austria.—More recently a great deal of discussion has taken place between Prussia and the subordinate German states on the one hand, and Austria on the other, in regard to the formation of a Customs Association which should include the latter; and in order to pave the way for this desirable consummation, Austria issued a new tariff on the 25th of November, 1851, in which she made many important modifications in the prohibitive system on which she had previously acted, at the same time that she established a free commercial intercourse between Hungary (which had previously a separate customs establishment) and the other states of the empire. And though this wise and liberal measure has not yet led to the incorporation of Austria into the Customs Union, it has led to the conclusion of an extremely important commercial treaty between Austria and Prussia, dated the 19th of February, 1853. The contracting parties engage to suppress, with a few specified exceptions, *all* prohibitions against importing the products of the one into the territories of the other; they next establish a complete freedom of trade between the two countries in all articles of raw produce; and they further stipulate that the duties to be imposed on manufactured products shall be moderate and reasonable. It has a variety of other clauses, all of which have a liberal character. The duration of the treaty is limited to 12 years; but we have little doubt, should peace be preserved, that the advantages of which it will be productive will be so many and so great, that long before the expiration of 12 years its provisions will be still further liberalized, and that it will lay the foundations of a lasting intercourse, of which we can neither foresee the extent nor the beneficial influence.

In consequence of these and other changes the duties in the tariff of the German Customs Union have undergone many modifications. But except on coarse and heavy goods, they continue, speaking generally, to be moderate. We subjoin

AN ACCOUNT SHOWING THE PROPORTION OF THE REVENUES OF THE GERMAN CUSTOMS UNION RAISED IN THE DIFFERENT STATES IN 1851, AND THE DISTRIBUTION THEREOF, ACCORDING TO THEIR POPULATION, FROM THE OFFICIAL RETURNS PUBLISHED AT BERLIN IN 1852.

States.	Import Duties.				Export and Transit Duties payable to each State.	Import, Export, and Transit Duties payable to each State
	Population.	Amount of gross Receipts.	Amount of net Receipts for Distribution.	Amount payable to each State according to its Population		
		Thalers *	Thalers.	Thalers.	Thalers.	Thalers.
Prussia	16,669,153	15,572,929	14,347,476	11,211,383	244,208	11,455,586
Luxemburg	180,783	77,114	‡ 10,445	137,635	2,241	139,886
Bavaria	4,520,659	1,210,539	904,591	3,044,546	53,463	3,098,009
Saxony	1,894,481	2,119,347	1,925,287	1,274,161	29,736	1,303,897
Wirtemberg	1,805,568	348,527	330, 37	1,214,887	21,325	1,235,712
Baden	1,360,539	652,625	353,482	915,115	16,070	931,185
Hesse Cassel	731,884	433,046	342,256	492,051	8,641	500,692
Hesse Darmstadt	862,917	412,803	402,501	580,883	10,192	590,575
Thuringian States	1,014,154	391,793	391,793	682,640	15,931	698,571
Brunswick	247,070	390,143	229,523	166,175	3,584	169,759
Nassau	425,686	74,819	71,310	286,309	5,028	291,339
Frankfort†	....	861,492	636,384	....	....	....
Total	29,728,385	22,545,687 ‡ Less	20,005,240 10,445‡	19,994,795	410,364	20,405,159
			19,994,795			

* The thaler, 69 cents American currency. † Frankfort is regulated by a specific arrangement, and not by population.
‡ A special payment by Prussia, on account of the Union.

Pumice-stone (Ger. *Bimstein*; Fr. *Pierre ponce*; It. *Pietra pomice*; Sp. *Piedra pomez*; Lat. *Pumex*), a light, spongy, vitreous stone, found usually in the neighborhood of volcanoes. It is used for polishing metals and marble, and smoothing the surface of wood and pasteboard. It is said to form a good glaze for pottery. The lighter pumice-stones swim on water, their specific gravity not exceeding ·914. The island of Lipari, in the Mediterranean, is chiefly formed of pumice-stone, and may be said to be the magazine whence all Europe is supplied with this useful article. There are several species of pumice-stones, but those only that are light and spongy are exported.

Puncheon, a measure of capacity for liquids, containing eighty-four gallons, or one-third of a tun.

Putchock. An article of this name is imported in considerable quantities from the northwest coast of India into China, and is regularly quoted in the Canton price-currents. It is the root of a plant that grows abundantly in Sinde. When burned, it yields a fine smoke, and a grateful and diffusive smell. The Chinese beat it into a fine powder, which they burn as incense in the temples of their gods.—HAMILTON'S *New Account of the East Indies.*

Pyroligneous Acid (Gr. πυρ; Lat. *lignum*, *wood*). This term is generally applied to the *acid liquor* which passes over along with tar and gaseous products when wood is subjected to destructive distillation. This acid liquor is an impure vinegar, from which acetic acid is obtained as follows: The pyroligneous acid, freed from tar, is saturated with chalk or powdered slaked lime, filtered and evaporated, by which an impure acetate of lime is obtained; this is gently heated, so as to destroy part of its empyreumatic matter without decomposing the acetic acid; it is then mixed with sulphate of soda, which yields, by double decomposition, sulphate of lime and acetate of soda; the acetate of soda is filtered off the sulphate of lime, evaporated, heated, and redissolved and crystallized. In this way a pure crystallized acetate of soda is, by proper management, obtained, which is mixed in a retort or still with a proper proportion of sulphuric acid, and a gentle heat applied, which causes the strong acetic acid to distill over, and sulphate of soda remains behind. This acetic acid is in a high state of concentration; it is lowered by the addition of water, and if intended for the table or for domestic use, as a substitute for other forms of vinegar, it is usually colored with a little burned sugar. The charcoal which is the residue of this distillation of wood is of an excellent quality—that employed in the manufacture of gunpowder is thus prepared. This manufacture of vinegar is now carried on upon a very large scale, and the greater part of the vinegar used for domestic purposes and in the arts, in many of which it is largely consumed, is derived from this source.

Q.

Quadrans, in *English money*, the fourth part of a penny. Before the reign of Edward I., the smallest coin was a *sterling*, or penny marked with a cross, by the guidance of which a penny might be cut into halves for a half-penny, or into quarters, or four parts, for farthings. But, to avoid the fraud of unequal cuttings, that king afterward coined half-pence and farthings in distinct round pieces.

Quadrant, in *Geometry*, the arch of a circle, containing 90°, or the fourth part of the entire periphery.

Quadrant also denotes a mathematical instrument, of great use in astronomy and navigation, for taking the altitudes of the sun and stars, as also for taking angles in surveying. This instrument is variously contrived, and furnished with different apparatus, according to the various uses it is intended for; but they all have this in common, that they consist of a quarter of a circle, the limb of which is divided into 90 degrees. Some have a plummet suspended from the centre, and are furnished with sights to look through. The principal and most useful quadrants are the common surveying quadrant, astronomical quadrant, Adams's quadrant, Cole's quadrant, Gunter's quadrant, Hadley's quadrant, horodictical quadrant, Sutton's or Colline's quadrant, and the sinical quadrant.

Quarantine, a regulation by which all communication with individuals, ships, or goods, arriving from places infected with the plague, or other contagious disease, or supposed to be peculiarly liable to such infection, is interdicted for a certain definite period. The term is derived from the Italian *quaranta*, forty, it being generally supposed that if no infectious disease break out within 40 days, or six weeks, no danger need be apprehended from the free admission of the individuals under quarantine. During this period, too, all the goods, clothes, etc., that might be supposed capable of retaining the infection are subjected to a process of purification. This last operation, which is a most important part of the quarantine system, is performed either on board ship, or in establishments denominated *lazarettos*.

Policy of Quarantine.—The regulations as to quarantine are entirely precautionary; they have their origin in the belief that various diseases, but especially the plague, are contagious; and supposing such to be the case, the propriety of subjecting those coming from an infected or suspected place to a probation is obvious. Indeed, no government could, until the belief in question be proved to be ill-founded, abstain from enforcing precautionary measures, without rendering itself liable to the charge of having culpably neglected one of its most important duties—that of providing, by every means in its power, for the safety of its subjects. Latterly, however, it has been contended that the plague is never imported—that it is always indigenous; originating in some peculiar state of the atmosphere, or in something peculiar in the condition of the people; and that, consequently, quarantine regulations merely impose a heavy burden on commerce, without being of any real utility. But though there does not seem to be any reason for doubting that infectious diseases have originated in the way described, the fact that they have, in innumerable instances, been carried from one place to another, seems to be established beyond all question. Even if the evidence as to the importation of infectious diseases were less decisive than it is, or the opinions of medical men more divided, it would not warrant the repeal of the restraints on the intercourse with suspected ports. This is not a matter in which innovations should be rashly introduced; wherever there is doubt, it is proper to incline to the side of security. In some cases, perhaps, quarantine regulations have been carried to a needless extent; but they have more frequently, we believe, been improperly relaxed.

Institution of Quarantine.—The notion that the plague was imported from the East into Europe seems to have prevailed in all ages. But it would appear that the Venetians were the first who endeavored to guard against its introduction from abroad, by obliging ships and individuals from suspected places to perform quarantine. The regulations upon this subject were, it is most probable, issued for the first time in 1484.—Beckmann, *History of Inventions.* They have since been gradually adopted in every other country. Their introduction into England was comparatively late. Various preventive regulations had been previously enacted, but quarantine was not systematically enforced till after the alarm occasioned by the dreadful plague at Marseilles in 1720. The regulations then adopted were made conformably to the suggestions of the celebrated Dr. Mead, in his famous "Discourse concerning Pestilential Contagion."

Lazarettos or *Pest-houses* are establishments constructed to facilitate the performance of quarantine, and particularly the purification of goods. They have usually a port in which ships from a suspected place may anchor; and, when perfect, are provided with lodgings for the crews and passengers, where the sick may be separated from the healthy; and with warehouses, where the goods may be deposited; all intercourse between the lazaretto and the surrounding country being, of course, interdicted, except by permission of the authorities. The lazarettos of Leghorn, Genoa, and Marseilles are the most complete of any in Europe. The facilities they afford to navigation are very great; for, as ships from suspected places may discharge their cargoes in the lazaretto, they are not detained longer than they would be were there no quarantine regulations. The goods deposited in the lazaretto, being inspected by the proper officers, and purified, are then admitted into the market.

Bills of Health.—The period of quarantine varies, as respects ships coming from the same place, according to the nature of their bills of health. These are documents, or certificates, signed by the consul or other competent authority in the place which the ship has left, describing its state of health at the time of her clearing out. A *clean* bill imports that at the time of her sailing no infectious disorder was known to exist. A *suspected*, or, as it is more commonly called, a *touched* bill, imports that rumors were afloat of an infectious disorder, but that it had not actually appeared. A *foul* bill, or the *absence of clean bills*, imports that the place was infected when the vessel sailed. The duration of the quarantine is regulated by the nature of these instruments. They seem to have been first issued in the Mediterranean ports in 1665, and are obviously of great importance.

By an act of Congress passed February 25, 1799, respecting quarantine and health laws, it is provided that the quarantines and other restraints required by the health laws of any State, respecting any vessel arriving in or bound to any port or district, shall be duly observed by the officers of the revenue of the United States, and by the masters and crews of the revenue cutters, and by the military officers stationed upon the sea-coast; and all such officers of the United States are required faithfully to aid in the execution of such laws. The secretary is authorized, when a conformity to the quarantine and health laws requires it, to prolong the terms limited for the entry of vessels, and the report or entry of their cargoes, and to vary or dispense with any other regulations applicable to such reports or entries, provided that no State is thus enabled to collect a duty of tonnage or import without the consent of Congress, and provided that no part of the cargo be taken out or unladen otherwise than as by law is allowed. When, by the health laws of any State,

any vessel arriving within a collection district is prohibited from coming to the port of entry or delivery for such district, and it is required by such health laws that the cargo of such vessel may be unladen at some other place, the collector, after due report to him of the whole of such cargo, may grant his special permit for unlading, under the care of the surveyor, or one or more inspectors, at some other place where such health laws permit, and upon the conditions which shall be directed by the Secretary of the Treasury, or which such collector may judge expedient for the security of the public revenue; provided that all the articles so unladen shall be deposited at the risk of the parties concerned in such warehouses or inclosures as the collector shall designate, there to remain under the joint custody of such collector and of the owner, or person having charge of such vessel, until the same be entirely discharged, and until the goods so deposited may be safely removed, without contravening such health laws. And when such removal may be allowed, the collector having charge of such goods may grant permits to the respective owners or consignees, their factors or agents, to receive all goods which shall be entered, and whereof the duties accruing shall be secured upon the payment by them of a reasonable rate of storage, which shall be fixed by the Secretary of the Treasury.

Suitable warehouses, with wharves and inclosures, are provided, where goods may be unladen and deposited for any vessel subject to a quarantine, pursuant to the health laws. When, by the prevalence of any contagious or epidemical disease in or near the port of entry for any collection district, it shall become dangerous or inconvenient for the officers of the revenue to discharge their respective offices at such port, the secretary, or, in his absence, the comptroller, may authorize the removal of the collector, and the other officers employed in his department, to any other more convenient place within or near to such collection district, where such officers may exercise the same authority, and are liable to the same duties, according to existing circumstances, as in such lawful port or district; and of such removal public notice must be given.—BLUNT'S *Shipmasters' Assistant.*

The quarantine laws of the different States are too voluminous to give in detail, and therefore there is here annexed only a synopsis of the quarantine laws in force in New York city.

It is the duty of the pilots to hail all vessels entering into the port of New York, and find whether they are subject to quarantine; and if they are, to bring them to anchor in the quarantine grounds; also, to prevent any violation of the quarantine regulations while they have charge of a vessel, such as communication between a vessel subject to quarantine and the shore, etc., and to report all infringements of regulations to the health officer.

Vessels arriving at the port of New York are subject to quarantine as follows: 1st. All vessels direct from, or touching at any place where yellow fever, bilious malignant, or other pestilential or infectious fever existed at the time of their departure, or on board of which, during the voyage, any case of such fever has occurred, arriving between the 31st day of May and the 1st day of October, shall remain at quarantine for at least 30 days after arrival, and at least 20 days after cargo has been discharged, and shall perform such further quarantine as the health officer shall prescribe. 2d. All vessels arriving between the 1st day of April and the 1st day of November, exclusive of the above-specified; all vessels from a foreign port, on board of which, during the voyage, or while at the port of departure, any person has been sick, or from any place in the ordinary passage from which they pass south of Cape Henlopen, arriving between the 31st day of May and the 16th day of October; and all vessels from any place (including Islands) in Asia, Africa, or the Mediterranean, or from any of the West Indian, Bahama, Bermuda, or Western Islands, or from any place in America, in the ordinary passage from which they pass south of Georgia, arriving between the 1st day of April and the 1st day of November, are subject to quarantine and other regulations, as the health officer may prescribe. The health officer must board every vessel subject to quarantine or visitation immediately on her arrival, and make his examination.

The powers of the Board of Health are ample to protect the port. The regulations are similar to those generally adopted, and include a fine of $2000, and imprisonment of twelve months, to any master or crew of a vessel that shall refuse to submit to quarantine, and also a fine of $500 and imprisonment for any violation of quarantine.

Quarter, the fourth part of any thing. As a term of weight it denotes the fourth of a hundred weight, or 28 pounds; as a dry measure it signifies the fourth of a chaldron.

Quarter, that part of a ship's side which lies toward the stern, or is comprehended between the aftmost end of the main chains and the sides of the stern, where it is terminated by the quarter pieces.

Quarter of a Point, in *Navigation*, is the fourth part of the distance between two cardinal points, which is 2° 48′.

Quarter Days. The days usually regarded in England and most Continental countries (but not in Scotland) as beginning the four quarters of the year. They are, 1. Lady Day (25th of March); 2. Midsummer Day (June 24th); 3. Michaelmas Day (September 29th); and, 4. Christmas Day (December 25th).

Quarter Deck. The portion of the uppermost deck of a ship between the main and mizen masts. This is the "parade" in men-of-war.

Quarter Master, in the *Navy*, an inferior officer appointed to assist the mates in their several duties.

Quarters imply the several stations where the officers and crew of a ship of war are posted in time of action.

Quassia (Ger. *Quassienholz*; Fr. *Bois de quassie*; Sp. *Leno de quassia*), a beautiful tall tree (*Quassia amara*), growing in North and South America and the West Indies. The wood is of a pale yellow color, and inodorous. Taste intensely bitter. It affords to water an intensely bitter decoction, which is occasionally used in medicine, and was formerly substituted by some brewers for hops, but is now prohibited under severe penalties. It affords a safe and efficacious fly-water or poison for flies. It is believed that it would succeed well in our Southern States, and form a valuable addition to our forests.

Quebec, the capital of Canada, and of the British possessions in North America, on the northwest bank of the River St. Lawrence, about 340 miles from its mouth, in lat. 46° 48′ 49″ N., long. 71° 10′ 45″ W. Population in 1850, 40,233. Quebec is situated on a ridge, or promontory, formed by the St. Lawrence on the south and west, and the River St. Charles on the east. The extremity of this headland, called Cape Diamond, is about 345 feet above the level of the water, and on it the citadel is built. The town extends from the citadel, principally in a northeast direction, down to the water; and is, from the difference of elevation, divided into the upper and lower towns. The fortifications, which are very strong, extend across the peninsula, the circuit within them being about two and three quarter miles. From their situation many of the streets are uneven; they are also, for the most part, narrow; but they are either well paved or Macadamized. The greater number of the houses are built of stone, with shingle roofs. Some of the public buildings are elegant, and well adapted for their purposes. The harbor, or basin, lies between the town and the island of Orleans. It is safe and commodious: the water is about 28 fathoms deep, with a tide rising from 17 to 18 feet; and at springs from 23 to 25 ditto. Que-

bec was founded by the French in 1608. In 1629 it was taken by the English; but was restored in 1632. It was again taken by the English under General Wolfe, who fell in the engagement, in 1759; and was finally ceded to England by the treaty of Paris in 1763. The rapid increase of population in, and of emigration to, Upper Canada has occasioned a proportional increase of intercourse between Quebec and Montreal, and the Canadian ports on Lakes Ontario, Erie, etc. The first steamboat that plied on the St. Lawrence was launched in 1812; but there are now a great many steamers, some of them of large burden, employed in the conveyance of goods and passengers between Quebec and Montreal; and in the trade between Quebec and Halifax, in Nova Scotia. And by means of the Rideau and Welland canals, an uninterrupted line of steam communication is formed between the Atlantic and Amhurstburg, one of the remote settlements of Upper Canada, a distance of more than 1500 miles; which is now extended through Lake Huron to the western extremity of Lake Superior, about 700 miles beyond Amhurstburg; giving to Quebec a command of internal navigation inferior only to that of New Orleans. The navigation at Quebec closes at the end of November or beginning of December, and opens in April. Below Quebec the river is seldom frozen over; but the masses of floating ice, kept in constant agitation by the flux and reflux of the tide, render navigation impracticable. The waters of the St. Lawrence are very pure; and in point of depth and magnitude it is one of the noblest rivers in the world.—BOUCHETTE'S *British Dominions in America.* Quebec is a free warehousing port.

The trade of Quebec is very extensive. It engrosses, with Montreal, almost the entire trade of the province with the mother country, the West Indies, etc. Great numbers of emigrants leave England for Canada; but the larger number subsequently re-emigrate to the United States. It has a regular intercourse, by means of steamers, with Montreal and other ports higher up the St. Lawrence, and with Halifax and other ports on the Atlantic. Still, however, it must not be forgotten that in so far as the United Kingdom is concerned, the trade with Canada and Quebec is, in some degree, forced and factitious, and has not been a source of profit, but the reverse. In former years it was, in fact, mainly a consequence of the discriminating duties laid in British ports on timber from the north of Europe; and but for this preposterous arrangement, the trade between Great Britain and Quebec would have been extremely unimportant. Now, however, some branches of the trade appear to have acquired a solid footing; and notwithstanding the reduction of the discriminating duties in favor of Baltic timber, the imports into Great Britain from Canada and other parts of British America of red-pine, and of pine and spruce planks, especially the latter, have of late very largely increased. Excepting timber, furs and ashes are the most important articles sent from Canada. A considerable part of the corn and flour exported from Quebec is the growth of the United States. The principal articles of import into Canada consist of corn, cottons, woolens, silk, and other manufactured goods; glass ware, spirits and wines, iron and hardware, sugar and tea, etc. The total value of the imports into Canada (of which, however, by far the largest portion goes to Montreal) in 1848 amounted to £2,107,164 currency (24*s.* 4*d.* currency = 20*s.* sterling). Declared value of British produce and manufactures exported to Canada in 1851, £2,451,584. It is material, however, to bear in mind that little more than half the imports are paid for by the exports; they are, in fact, principally paid for by the Treasury at home, and are to be regarded as the means sent out by England to pay the troops and meet the other heavy expenses she has to incur in the preservation of this unprofitable colony.

ACCOUNT OF THE NUMBER OF VESSELS AND THEIR TONNAGE WHICH ARRIVED AT THE PORT OF QUEBEC, INCLUDING THOSE BOUND FOR MONTREAL, AND FROM SEA, FROM 1846 TO 1855 INCLUSIVE.

Years.	Vessels.	Tons.
1846	1448	578,104
1847	1173	474 545
1848	1044	426,068
1849	1064	431,053
1850	1479	484.291
1851	1185	505,934
1852	1055	454,102
1853	1188	532,517
1854	1315	580,328
1855	977	346,449
1856	907	471,444

Among the arrivals in 1856 were the following foreign vessels: 38 Norwegian, aggregate tonnage, 17,730 tons; 15 United States, 8596 tons; 8 German, 3015 tons; 6 Prussian, 2056 tons. The total from all countries was 74 vessels, 34,824 tons.

VALUE OF THE EXPORTS AND IMPORTS OF QUEBEC AND MONTREAL.

Years.	Exports.		Imports.	
	Quebec.	Montreal.	Quebec.	Montreal.
1841	£1,727,726	£700,070	£217,916	£2,068,135
1842	991,489	728,729	216,669	2,021,106
1843	1,367,651	885,199	402,227	1,289,571
1844	1,486,848	754,281	655,868	2,475,084
1845	2,056,551	720,797	712,398	2,020,252
1846	1,866,456	658,338	750,989	2,303,908
1847	1,331,399	848,982	796,917	2,063,440
1848	1,857,326	891,841	625.845	1,481,418

STATEMENT SHOWING THE COINS CHIEFLY IN USE IN THE BRITISH NORTH AMERICAN COLONIES, WITH THEIR VALUES IN THE RESPECTIVE COLONIES, IN HALIFAX CURRENCY (FRACTIONS OMITTED).

Coins.	Eastern (Lower) Canada.	Western (Upper) Canada.	Nova Scotia.	New Brunswick.	Newfoundland.	Prince Edward Island.	
						Island Currency.	Halifax Currency.
GOLD.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
British sovereign	1 2 2	1 4 4	1 5 0	1 2 3	....	1 10 0	1 2 2
British guinea	1 3 4	1 5 6	....	1 3 4	....	....	....
American eagle, coined before July 1, 1834	2 10 0	2 13 4	....	....	....	....	....
Ditto, coined since	2 10 0	2 10 0	2 10 0	2 10 0	....	3 2 6	2 10 0
Spanish milled doubloons	3 14 6	3 14 6	4 0 0	3 15 6	3 16 8	....	....
SILVER.							
British crown (half-crown in proportion)	0 5 6	0 6 0	0 6 3	0 5 6	0 5 6	0 7 8	0 5 6
Shilling (sixpence in proportion)	0 1 1	0 1 3	0 1 3	0 1 1	0 1 2	0 1 6	0 1 1
French crown	0 5 0	0 5 6	....	0 5 6	....	....	....
French half-crown	0 2 9	....	....	....	....	....	....
American dollar	0 5 0	0 5 0	0 5 0	0 5 0	0 5 0	0 6 3	0 5 0
Spanish milled dollar	0 5 0	0 5 0	0 5 0	0 5 0	0 5 0	0 6 3	0 5 0
South American dollar	0 5 0	....	0 5 0	0 5 0	....	0 6 3	0 5 0
Mexican dollar (coined in 1831, 1832, or 1833)	0 5 0	....	....	....	....	....	....
Pistareen	0 0 10	....	....	....	....	....	....
French five-franc piece	0 4 8	....	....	....	....	....	....

Paper Currency.—There is no established government bank in the province; but there are several private chartered banks, of which the Quebec Bank is the principal.—For a complete account of the trade of the Provinces, *see* CANADA and MONTREAL.

Quercitron Bark. The bark of the *Quercus nigra*, or American oak: It is a highly valuable dye-stuff, and is used in the production of some of the most durable yellows.—For a more full account of this dye-stuff, *see articles* DYES and OAK.

Quicksilver, or **Mercury**, one of the metals, and so fusible that it can not be reduced to a solid state but at a degree of cold equal to forty below zero of Fahrenheit's thermometer. Its use in refining silver was discovered A.D. 1540. There are mines of it in various parts, the chief of which are at Almadur or Almeida, in Spain, and at Udria, in Carniola, in Germany, discovered by accident in 1497. A mine was discovered at Ceylon in 1797. Quicksilver was congealed in winter at St. Petersburg in 1759. It was congealed in England by a chemical process, without snow or ice, by Mr. Walker, in 1787.—*See* MERCURY. For notices of quicksilver mines, see *American Journal of Science*, xxviii. 219; HUNT's *Merchants' Magazine*, xviii. 108.

The exports of quicksilver from California, the production of the California mines, for three years, were as follows, allowing the flasks to hold 75 pounds at a value of 50 cents a pound:

Years.	Flasks.	Value.
1853	18,800	$705,000
1854	20,068	786,112
1855	26,917	1,084,887
1856	22,179	831,724

The exports of quicksilver of domestic production from the United States, for the year 1856, amounted to $831,724, and was solely from the port of San Francisco. The exports of foreign quicksilver amounted to $16,011 of which $15,589 was from New York. The imports of quicksilver for the same time amounted to $3625, of which $2649 was into New Orleans, and the production of the mines of Mexico.

Quicksilver is found in the largest quantities in Spain and California. Almaden, in Spain, has long been famed for its mines of this metal, which, according to Bowles, are the richest in their produce. In China quicksilver is chiefly used in the manufacture of vermilion and other articles of commerce.

The quantity of quicksilver produced from the New Almaden mines, Santa Clara county, California, is about 100 bottles per month, or nearly 1,000,000 pounds per annum. The other quicksilver mines worthy of note are, one at Huancavelica, in Peru; in Hungary, Transylvania, and the district of Deux Ponts, in Germany. There is a mine of cinnabar near Alicante, and another not far from San Felipe, in Spain. Mercury has also been found in China and Japan; and though the amount of the produce is unknown, it is believed to be considerable.

According to Dumas, the following mines yield annually as follows: Almaden, in Spain, from 2,700,000 to 3,456,000 pounds avoirdupois; Idria, 648,000 to 1,080,000 pounds; Hungary and Transylvania, 75,600 to 97,200 pounds; Deux Ponts, 43,200 to 54,000 pounds; Palatine, 19,440 to 21,600 pounds; Huancavelica, 824,000 pounds. The total annual product, including California, can not be less than 6,500,000 to 7,000,000 pounds.

Quills (Fr. *Plumes à écrire*; Ger. *Posen, Feder kiel*; It. *Penne de scrivere*; Russ. *Stivoli*; Sp. *Canones para escribir*), the hard and strong feather of the wings of geese, ostriches, swans, turkeys, crows, etc., used in writing. They are classified according to the order in which they are fixed in the wing, the second and third quills being the best. Crow quills are chiefly used for drawing. The goodness of quills is judged partly by the size of the barrels, but more by the weight; hence the denomination of quills of 14, 15, etc., loths per *mille*, each millo consisting of 1200 quills. The quills of the porcupine are much employed by the Indians in North America as personal ornaments; the quills are dyed, and the colors appear to be durable; they are applied both to articles of dress and household furniture.

Quince-tree. The common quince (*Cydonia vulgaris*) is a low tree, seldom exceeding fifteen or twenty feet in height, with a crooked stem, and tortuous, rambling branches. The bark is smooth and brown, approaching to black. The leaves are roundish or ovate; dusky green above, and whitish underneath. The flowers, which put forth in England by the middle of April, and in the middle and northern parts of the United States in May and June, are large, with the petals pale red or white, and the sepals of the same length as the petals. The flowers are succeeded by large fruit of a globular, oblong, or pear-shaped form, of a rich yellow or orange color, when ripe, of an austere taste, and emitting a peculiar and rather pleasant smell.

Geography and History.—The quince is supposed to have been originally a native of Sidon, a city of ancient Crete, now the island of Candia; but it is much more probable that it was only first brought into notice in that city. It is considered at present as indigenous to the south of France, particularly on the borders of the Garonne, and to Germany, on the banks of the Danube. By some the tree is thought to be indigenous to Britain; and Phillips states, in his *Pomarium Britannicum*, that quinces grow in such abundance in some parts of the Wealds of Sussex, as to enable private families to make quince wine in quantities of from one hundred to two hundred gallons in a season.

The quince was known to the Greeks and Romans, and both nations held it in high estimation. Columella says, "Quinces not only yield pleasure, but health." He speaks of three kinds—the "Strutbian," the "Must Quince," and the "Orange Quince." Pliny mentions many kinds, some growing wild in Italy, and others in cultivation, so large that they weighed the boughs on which they grew down to the ground. He also says that some were of a green, and others of a golden color, the latter of which were called *chrysomela*. The only kind that was eaten raw he states to have been raised by grafting the large quince upon the stock of a small variety, called *struthia*. "All kinds of this fruit," continues he, "are grown in boxes, and placed within the waiting-chambers of our great personages, in which men wait to salute these personages as they come forth every morning." It appears from the same author that quinces were used to decorate the images of the gods, which were placed in sleeping-chambers, round the beds; whence it follows that the Romans did not think that there was any thing either injurious or unpleasant in their smell. He gives directions for preserving the fruit, by excluding the air from them, or boiling them in honey; or by plunging them in boiling honey, a practice in use with this and other fruits in Genoa at the present day. He also writes much on the medicinal qualities of this fruit. "Quinces," says he, "when eaten raw, if quite ripe, are good for those who spit blood, or are troubled with hemorrhage." The juice of raw quinces he states to be a sovereign remedy for the swollen spleen, the dropsy, and difficulty of taking breath, particularly to those who can not conveniently breathe except when in an upright position. The flowers of the quince, either fresh or dried, he tells us, are good for inflamed eyes. The root of the tree was used, not only as a medicine, but as a charm against scrofula.

The wood of the quince, when found of sufficient dimensions, is applied to the purposes of turnery; but from its small size this tree is almost entirely cultivated for its fruit, or as stocks on which to graft the mountain ash and the pear. In France, however, this tree is sometimes grown for hedges. The fruit is seldom eaten by itself, but is generally preserved in sirup, or is made into marmalade, or is mixed with apples in tarts. —BROWNE's *Trees of America*.

R.

Rags (Da. *Lompes, Vodden*; Fr. *Chiffes, Chiffons, Drapeaux, Drilles*; Ger. *Lumpen*; It. *Straci, Strazze*; Russ. *Trepje*; Sp. *Tropos, Harapos*), shreds or fragments of worn linen, woolen, or cotton cloth. Though commonly held in little estimation, rags are of great importance in the arts, being used for various purposes, but especially in the manufacture of paper, most of which is entirely prepared from them. As the mode in which rags are collected must be well known to every one, the following statements apply only to the trade in foreign rags.

Woolen Rags.—Woolen and linen rags are imported in considerable quantities from the continent of Europe, particularly from Italy and Sicily. Woolen rags are chiefly used for manure in England, especially in the culture of hops; but rags of loose texture, and not too much worn or decayed, are unraveled and mixed up with fresh wool in the making of yarn—a practice more favorable to the cheapness than to the strength and durability of the fabrics into which this old wool is introduced.

Linen Rags are principally imported from Rostock, Bremen, Hamburg, Leghorn, Great Britain, Ancona, Messina, Palermo, and Trieste. Their export from Holland, Belgium, France, Spain, and Portugal, is strictly prohibited. The imported rags are coarser and inferior in appearance to the English; but, being almost exclusively linen, they are stronger, and bear a price disproportioned to the apparent difference in quality: this disproportion has been materially augmented since the introduction of the process of boiling the rags in ley, and afterward bleaching them with chlorine, has rendered foreign rags fit for making fine paper, and indeed, in some respects, preferable for that purpose, by their affording greater strength of texture combined with equal whiteness of color. There is considerable variety in the appearance of rags from different ports; but in general those from the north of Europe are darker and stronger than those from the Mediterranean ports. The latter are chiefly the remains of outer garments, and have become whitened by exposure to the sun and air; but since the improvements in bleaching, this does not enhance their value.

IMPORT OF RAGS INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whence imported.	Pounds.	Value.
Sweden and Norway	90,800	$926
Swedish West Indies	990	10
Danish West Indies	25,984	852
Hamburg	1,011,763	30,817
Bremen	208,895	5,471
Dutch West Indies	176	4
England	5,053,345	147,560
Scotland	350,984	9,302
Malta	230,376	6,139
British North American Poss.	1,020	22
British West Indies	439,050	10,549
British Guiana	1,940	52
France on the Atlantic	60,423	2,991
Canary Islands	6,576	178
Cuba	731,135	18,733
Portugal	6,700	211
Sardinia	1,573,277	61,309
Tuscany	18,907,907	655,859
Papal States	422,950	15,080
Two Sicilies	6,153,180	212,298
Austria	2,726,081	97,700
Austrian Possessions in Italy	260,906	11,008
Turkey in Europe	44,075	590
Turkey in Asia	2,307,781	58,428
Egypt	3,821,055	97,970
Hayti	25,130	377
New Granada	668	26
Brazil	683	10
Uruguay, or Cisplatine Repub.	60,071	1,256
Buenos Ayres, or Argentine Rep.	91,813	1,705
Chili	48,887	747
China	600	4
Total, 1856–'57	44,582,080	$1,448,125
" 1855–'56	38,727,017	1,239,168
Increase	5,855,063	$208,957

Railroad, or **Tramroad**, a species of road having tracks or ways formed of iron, stone, or other solid material, on which the wheels of the carriages passing along it run. The object in constructing such roads is, by diminishing the friction, to make a less amount of power adequate either to impel a carriage with a greater velocity, or to urge forward a greater load. The essential requisites of a railroad are two or more smooth parallel surfaces for the wheels to run upon, and formed and placed in such relation as to give the maximum strength and safety with the minimum friction. The friction on a perfectly level railroad, properly constructed, is estimated to amount to from one-tenth to one-seventh only of the friction on an ordinary level road; so that, supposing the same force to be applied in both cases, it would move a weight from 10 to 7 times as great on the former as on the latter. But if there be a very moderate ascent, such as one foot in fifty, which in an ordinary road would hardly be perceived, a great increase of power on the railroad is required to overcome the resistance that is thus occasioned. The reason is, that the ordinary load on a *level* railroad is about *seven times as great* as on a common turnpike road; so that when the force of gravity is brought into operation by an ascending plane, its opposing power, being *proportioned to the load*, is seven times as great as on a common road. Hence the vast importance of having railroads either level or as nearly so as possible. It is also of great importance that railroads should be straight or at least free from any abrupt curves. Carriages being kept on the road by *flanges* on the wheels, it is obvious that, where the curves are quick, the friction on the sides of the rails, and consequent retardation, must be very great.

The great success, rapid extension, and present necessity of railroads, are in consequence of the appreciation of the *value of time and saving of labor*, which are the characteristics of the present age. Distance is now measured by the time consumed in its passage; and the saving of cost in the carriage of goods is the aggregate of the saving in time and the saving in labor. We can not in the scope of this article give more than a summary of the history of railroads, and the statistics necessary to show the present condition and progress of railroads.

The aim and advantage of railroads may be stated concisely to be, to obtain with the minimum expenditure of power the maximum result of speed, draught, and safety in the carriage of passengers and freight. To show how this can be done would be to illustrate the whole science of railroad engineering, and does not come within the compass of this work. It will be sufficient to show the improvement over the age before railroads, and the progress since the invention of railroads, we have made up to this time. 1st. As to speed. In 1804 a locomotive was constructed in Wales, that performed the unprecedented feat of drawing ten tons on a tramroad at the rate of five miles an hour. Wood on railroads, in 1825, says: "Nothing can do more harm to the adoption of railroads than the promulgation of such nonsense as that we shall see locomotive engines traveling at the rate of 12, 16, 18, and 20 miles per hour." Ritchie on railways, in 1846, says: "An express train on the Great Western Railway, drawing 59 tons, has traveled for three hours at the rate of 63 miles per hour." And we know that the speed of 100 miles per hour has been obtained several times in the past few years. In 1778 a contract was made to establish a coach for passengers between Edinburgh and Glasgow, a distance of 44 miles. The coach was drawn by six horses, and the journey between the two places, to and fro, was completed in six days. Even so recently as the year 1750, the stage-coach from Edinburgh to Glasgow took 36 hours to make the journey. In the

year 1849 the same journey was made, by a route three miles longer, in one hour and a half. In the year 1763 there was but one stage-coach between Edinburgh and London. This started once a month from each of these cities. It took a fortnight to perform the journey. At the same epoch the journey between London and York required four days. In 1835 there were seven coaches started daily between London and Edinburgh, which performed the journey in 48 hours. In 1849 the same journey was performed by railway in twelve hours.

2d. The great increase of draught, or decrease of friction, needs but brief illustration. It is stated as a result of experiments on the Massachusetts railroads, that the cost of merchandise transportation is 3·095 cents per ton per mile, with an average speed of ten miles an hour. The average cost of transportation of heavy merchandise on the improved Macadamized roads of England is 27 cents per mile, with an average speed of three miles per hour. We see, therefore, that the cost of transportation on railroads has been reduced to 11¼ per cent. of the cost of transportation on improved turnpikes, while the speed has been increased 233 per cent. at the same time. 3d. As to the increase of safety. On the French railroads, 212 miles in length, of 1,889,718 passengers, who traveled 816,945 miles in the first half of 1843, *not one* was either killed or wounded, and only three servants injured. Comparing this with the traveling by horse coaches in the same region, we find that in seven years, from 1834 to 1840, 74 persons were killed, and 2078 were wounded. According to Dr. Lardner, the chances of a passenger meeting with a fatal accident in traveling one mile on a railroad are 65,363,735 to 1. And again, the chances of his meeting with bodily injury in the same distance are 8,512,496 to 1; and also that 366,036,923 passengers must travel one mile in order to cause the death of one railroad employe. On comparing the safety of railroad traveling on the roads of New York with those of Great Britain, it is found that for the last four years there were a greater number of passengers killed and a less number injured upon the roads of New York, in proportion to the number carried, than upon those of Great Britain. In New York one passenger was killed out of every 1,262,165 who traveled, one either injured or killed out of every 341,125. One passenger was killed for every 47,164,426 miles traveled, and one was either injured or killed for every 12,747,142 miles traveled. Excluding all the accidents growing out of the imprudence and fault of the passengers themselves, it appears that one was killed out of every 6,310,828 who traveled, and one was either injured or killed out of every 664,300. Excluding the accidents caused by their own carelessness or imprudence, there was but one passenger killed for every 235,822,132 miles traveled, and but one either injured or killed for every 24,823,382 miles traveled. A vast number more lives would have been lost if the same number of passengers had been conveyed the same number of miles in one-horse wagons or in the old-fashioned four-horse coaches.

"There be three things which make a nation great and prosperous—a fertile soil, busy work-shops, and easy conveyance of men and things from one place to another."—Bacon. And we can form some estimate from the foregoing, of what share railroads have had in giving us one of these three elements of prosperity.

History.—Wooden railways were employed as a substitute for common roads, in the colonies of England early in the 17th century.—Ritchie *on Railways*, p. 19. The earliest record of their existence is in the life of the Lord-keeper North, wherein it appears that about the year 1670 they were used at Newcastle-on-Tyne, for transporting coal from the mines to the river, and enabled one horse to draw from four to five chaldrons. Subsequently these plates were covered with iron; but the introduction of rails wholly of iron seems not to have taken place till 1768.—Hornblowee's *Report to House of Commons in* 1811. A projection or flange on the outer side of the rails kept the wheels of the carriages upon them. They were called "Tramroads;" and the objections to them were the great amount of friction against the side flange and the wood surface of the plate.

In 1789 was constructed the first public railway in England, at Loughborough, by Mr. William Jessop; and he introduced cast iron edge-rails, and wheels with the flanges cast upon them instead of on the rail. Tramroads were, however, in use up to 1808. The first railroad built in the United States was in 1827, from Quincy to a point on Massachusetts Bay, three miles in length, for the purpose of conveying granite to Boston from the quarries of Quincy. The rails used were of wood. The first passenger railroad was the first 13 miles of the Baltimore and Ohio in 1830, from Baltimore to Elkridge.

Rails.—"In 1803 malleable iron rails were first tried, but not approved of. In 1808 they were introduced into some coal works of Cumberland, and used with complete success."—Gillespie *on Railways*.

Since then they have been formed of a great variety of shapes. The principal are, 1st. The flat rail used on branch coal-roads and on roads where horse-power is used, and where economy is considered essential. 2d. The rail called the "fish-bellied," from the rounded profile of its under side. The form of this rail is indicated by theory as almost perfect for strength; but on account of the unsteadiness, from requiring a high support, it is now generally abandoned. 3d. The Ω rail, or inverted U. This rail is admirably adapted for strength and security, but is more complex for rolling than the rail commonly in use, namely, the T rail inverted, ⊥; and has only been used to a moderate extent, and principally in England. 4th. The inverted H rail, so called, but more like an I in form. This form was found by Professor Barlow to possess the maximum strength from a given quantity of material. This rail is used in England, but has been found to be deficient in stability. The T (inverted) rail is the one generally used in this country; and for the facility in rolling, strength, and stability, is decidedly the *best* form. The weight commonly used is about 60 pounds to the yard; but a heavier rail is more economical in the end; and the weight of rails has been increasing from 35 pounds, the weight first used, to that of sixty pounds to the yard.

Rails were first laid on stone sleepers or blocks, as giving the most solid support; but this plan has gradually been abandoned, as the want of elasticity was the cause of a rapid destruction to the rolling stock. Longitudinal sleepers of wood were also tried; but after much practical experience, the present form of transverse wooden sleepers, laid on broken stone or gravel bed, was adopted as the best foundation, and is now in common use.

Locomotives.—After a full trial of horse-power and stationary steam-engines, the plan of an engine, and which the present locomotive is in many respects only an improvement of, was invented. There has been some controversy as to who should have the credit of the invention. It appears, however, that in 1759 Dr. Robinson, then a student in the University of Glasgow, suggested to Watt the application of the steam-engine to wheel-carriages; and in 1782, Murdoch, to whom Trevithick was a pupil, made a model of a steam-carriage. In 1784 Watt described such an application in his patent.

In 1801 Oliver Evans, of Philadelphia, moved a steam dredging-machine a mile and a half on wheels turned by its own engine. In 1802 Richard Trevithick, in conjunction with Andrew Vivian, both Cornwall engineers, *built* and took out the *first* patent for a locomotive; and in 1804 Richard Trevithick built a second locomotive, which on a road in South Wales drew ten tons at the rate of five miles an hour. It

was many years, however, before any improvement took place, owing chiefly to the *imaginary* difficulty of getting the locomotive wheels to "bite," or keep from slipping on the rails. Great ingenuity was brought to task to remedy this imaginary evil; and in 1812 a rail with racks or sockets was laid, and an engine with teeth to fit in the rack was built. In 1813 an engine with hind legs was invented to prevent the slipping. All these contrivances were, however, shown to be useless by the discovery in 1814, by actual experiment, that no friction was needed. And in this same year the first really successful locomotive was invented by George Stephenson, which ran six miles an hour, and drew 30 tons. Little progress was made from this time until 1829, when Robert Stephenson constructed the "Rocket" engine, which on trial ran with an average speed of 15 miles an hour, and with a maximum speed of 29½ miles an hour. Since that time locomotives have been built to run over one hundred miles an hour, and to draw a train of cars up an inclined plane of 500 feet to the mile. The performances of a modern locomotive, in fact, are among the most wonderful of all mechanisms.

Railroad Management.—Although one of the most powerful elements in our prosperity, and in fact now a necessity, it can not be denied that railroads generally have been failures considered as profitable investments to the stockholders. The business of our railroads is ample to make them good investment; and therefore there can be but one cause for so general a failure; namely, *unremunerative tariffs*. Occasional instances of bad management have taken place, but it is obvious that this can not be the cause of so general a failure. The gold discoveries of California and Australia have advanced the prices of labor, fuel, etc., from 30 to 50 per cent., and, consequently, the expenditures of railroads in a similar ratio. During this time there has been no corresponding increase in the tariffs of our railroads. This, in connection with the fact that the depreciation of the rails, rolling stock, etc., have not been sufficiently allowed for, explain the cause; and make a remedy obvious. To show the authority for this statement, we give the expenditures, etc., on railroads at different periods since their first practical adoption. These show that there was a gradual decrease to 1845, and since that time an increase in expenditures.

The annual cost of maintaining in operation a well-managed road is almost 1¼ cents for each ton per mile carried over it, and 44 cents for each mile run by all the engines, besides $500 for each mile of road. If it be likewise a passenger road, there is to be added three-fourths of a cent per mile for each passenger carried.—CHARLES ELLET, Jun., Civil Engineer, Franklin Institute, 1842.

The complete average expense per train per mile of running on the principal roads was estimated

In the United States, in 1838,* at	100 cents.
In England, 1840†	73 "
Utica and Schenectady Railroad, 1839 to 1841	115 "
Western Railroad (Massachusetts), 1840 to 1844	71 "
Average of Massachusetts railroads, 1845	65 "
" " " 1846	73 "
" " " 1847	75 "
" " " 1848	70 "
" " " 1849	76 "
" " " 1850	74 "
" " " 1851	76 "
" " " 1852	77 "
" " " 1853	82 "
" " " 1854	98 "
" " " 1855	105 "

* Chevalier DE GERSTNER. † Professor VIONOLES.

It will be seen from this statement that the expenses have been steadily increasing since 1845. To exhibit this more plainly, we give a table showing the gross receipts and expenses, and also the net receipts of the Massachusetts railroads for ten years.

OPERATIONS OF THE RAILROADS OF MASSACHUSETTS FROM 1846 TO 1855.

Years.	Total Receipts per Mile run.	Total Expenses per Mile run	Net Receipts per Mile run.
	¢ Cts.	¢ Cts.	Cents.
1846	1 56	73	83
1847	1 55	75	81
1848	1 50	76	74
1849	1 51	76	75
1850	1 53	74	78
1851	1 50	76	74
1852	1 44	77	67
1853	1 53	82	70
1854	1 57	98	59
1855	1 69	1 05	64

From this it will be seen that the gross receipts (or tariff) increased only 08 per cent. in ten years, while the net receipts decreased 23 per cent.; and the expenses increased 44 per cent. This comparison holds equally true with many of our railroads.

The following facts regarding eight of the principal railroads of Massachusetts are developed by reports to the Legislature:

1. The cost of passenger transportation is 1·062 cents per passenger per mile. 2. The cost of merchandise transportation is 3·095 cents per ton per mile. 3. In passenger transportation $41·98 per cent. of the receipts therefrom are absorbed in expenses. 4. In merchandise transportation $89·52 per cent. of the receipts therefrom are absorbed in expenses. 5. The expenses of railroads are almost invariably determined by the weight carried over the rails. For instance—the Eastern road, upon which passenger traffic predominates, is operated at an expense of $3670 per mile of the length of the road; while the Lowell, upon which merchandise traffic predominates, is operated at an expense of $12,478. 6. The cost of renewals of iron upon railroads is an infallible index of the magnitude of expenses. For the preceding reasons, the cost of that item on the Eastern road is but $390 per mile of the length of the road, while upon the Western it is $1399. 7. Of the expenses of railroads, thirty per cent. are absorbed in maintenance of way, or road bed; twenty per cent. in fuel and oil; twenty per cent. in repair of engines, tenders, and cars; ten per cent. in special freight expenses; and the remainder in passenger, incidental, and miscellaneous expenses. 8. The weight of the engines, tenders, and cars upon passenger trains is nine-fold greater than the weight of the passengers. 9. The weight of the engines, tenders, and cars upon freight trains, is scarcely one fold greater than the weight of the merchandise. 10. For cheapness, railroads can not compete with canals, in transportation of heavy descriptions of merchandise; the cost of carrying merchandise upon the Erie Canal ranges from two to sixteen mills per ton per mile; while upon sixteen of the principal railways of New York and Massachusetts the cost of carrying merchandise ranges from thirteen to sixty-five mills per ton per mile.

It being granted that the present tariffs are too low, the *remedy*, or how to make railroads more profitable, is the chief point. We extract from a paper written by Charles Ellet, Jun. civil engineer, which elucidates a good system.

1st. Every road should form its own tariff of tolls, based upon its own trade.

2d. *In arranging the tariff, let the first step be to ascertain the true cost of transportation upon the particular road for which the tariff is intended.* The actual cost of transportation is clearly the minimum limit of admissible reductions in favor of those objects of transportation which are deemed, from motives of policy, most worthy of special encouragement. There may be, and ought to be, material discriminations in every tariff; but no article ought to be conveyed for less than the actual cost of its transportation, fairly made out from the proper experience of the line. Having determined the true cost of transportation, and adopted *that* as a minimum charge, below which the toll on no article

shall be suffered to fall, the company will be secured against one frequent source of immense extravagance —that of carrying freight *for nothing*, or *less than nothing*. With this information in hand, it is practicable to construct *a tariff of expenses*, which should in every case precede the adoption of a tariff of charges.

3d. *The next step in the process should be to ascertain the highest charge which each article will bear.*

4th. *The true charge for each article and each position, it must be apparent, will be found somewhere between the actual cost of transportation and the prohibitory charge.* The next step in the construction of a toll-sheet should then be to form a third tariff, by adding together, for each article and each position, the cost of transportation and the prohibitory charge, and taking half their sum as a near approximation to that charge which will yield the greatest net revenue. Yet there is no fact better susceptible of the strictest mathematical demonstration than this, that *the charges which will yield the maximum net revenue on railroads doing a miscellaneous business must be from one to two cents per ton per mile greater than that which will produce the maximum gross revenue.* If, then, a company aims to obtain the greatest possible gross revenue, it can only succeed by a great sacrifice of dividends. In fact, the gross revenue may be enormous, and yet be insufficient to pay their expenses.

Railway Legislation.—Notwithstanding the vast advantages which the opening of so many new and improved lines of communication have conferred on the country, we can not help thinking that these advantages might have been much greater, and that, in the instance of railway-legislation, the public interests have been overlooked to a degree that is not very excusable. It is, we admit, no easy matter to decide how far the interference of government should be carried in matters of this sort. But, at all events, this much is obvious, that when government is called upon to pass an act authorizing private parties to execute a railway or other public work, it is bound to provide, in as far as practicable, that the public interests shall not be prejudiced by such act, and that it should be framed so that it should not, either when passed, or at any future period, stand in the way of the public advantage. We believe, however, that a little consideration will serve to satisfy most persons that this important principle has, in the case of railways, and indeed of most descriptions of public works, been, in this country, all but wholly neglected.

Within a few years past the railway interest has become one of the most important in this country, not only on account of the large pecuniary investments which have been made therein, but also on account of the effect which its development has had in increasing the value and changing the relations of property, trade, and commerce, and in modifying the social conditions of our people. These varied interests, and the new circumstances which have been called into existence by the vast and rapid expansion of the railway system, have required additional legal enactments from time to time, but the same supervision and restraints of law which are considered necessary to guard and protect other public interests have not been imposed upon this one to an extent commensurate with its increasing importance. The railroad corporations, in which there is a larger investment than in the banks, over which the law exercises supervision, are permitted to control an immense amount of capital, and interests of the greatest magnitude, with no other check than is afforded by an annual statement of their affairs, notoriously incorrect, and in many cases made so systematically, for the purpose of concealing from the stockholders and the public violations of law and want of fidelity to their trusts.

One of the best guarantees for the faithful performance of duty that can be given to the public and the stockholders by railroad managers is to render, at frequent intervals, full and accurate statements of the results of the operations of the works, and the manner in which these officers have discharged their trusts. It is not difficult to demonstrate that the publication of such ample statements does not, in the long run, injure the interests of any corporation, and that it is the most certain security against malversation in the administration of its affairs.

Under the General Railroad Act of 1850 each of the railroad corporations in the State of New York is required to make an annual report to the State Engineer and Surveyor in the form prescribed, showing its financial condition and cost, its length, and other characteristics; the business done during the year and the expense thereof, a statement of the receipts and payments, and a list of accidents which have occurred involving injury to life or limb; and this officer is required to arrange the information thus furnished, and submit it, together with the reports, to the Legislature. —*Report of the New York State Engineer*, 1855.

Austrian Railroads.—The government of Austria has at length conceded to a public company all the railways that have been completed, and those which are to be constructed, in the Lombardo-Venetian territories, and the Central Italian Railway. The lines already completed by the state are as follows:

	Kilometres.
Venice to Coccaglio	204
Milan to Como	45
Milan to Treviglio	32
Verona to Mantua	56
Mestre to Camrsa	94
Coccaglio to Bergamo	26
Total	457

The railways to be constructed are as follows:

	Kilometres.
Bergamo to Monza	37
Bergamo to Lecco	30
Milan to Buffalora	32
Milan to Piacenza and Pavia	86
Milan to Cesto Calende	55
Railroad round Milan	6
Mantua to Borgoforte	20
Casarsa to Nebresina	89
Total	355

The length of railways completed is equal to 373 English miles, and the length of those to be constructed is equal to about 223 English miles. The Central Italian Railway concession is for 280 kilometres, so that the entire concession, when complete, will comprise about 680 English miles of railway. The state grants to the company the free use of the line from Nebresina to Trieste, with the joint use of the terminus at Trieste. The company is to pay to the state for the finished railways 60,000,000 francs, or £2,400,000; this sum is to be paid in six installments within a period of six years, or at the rate of about £400,000 per annum. Should the net profits at the end of this term exceed 7 per cent., the company will have to pay an additional sum to the Austrian government of 16,500,000 francs, or £660,000. The Austrian government guarantees 5 per cent. on the whole capital required, which is estimated at about 250,000,000 francs, or £10,000,000. For the Central Italian Railroad, the company has a guarantee of 6,500,000 francs per annum, or more than 6½ per cent. on the capital.

Of the railways in operation, in progress, and contemplated in Eastern Europe, a brief notice will suffice.

Russia, carried along by the tide of public opinion in Europe, found herself compelled, by a due regard to the interests of her people, to consecrate a part of her exertions and her capital to the construction of the new lines of communication. An attempt was first made to attract private capitalists to these projects, and special advantages were offered to companies who might be disposed to undertake the construction of the lines of railway contemplated in Russia. The emperor, besides guaranteeing to the shareholders a minimum profit of 4 per cent., proposed to give them gratuitously all the lands of the state through which the rail-

ways should pass, and to place at their disposal, also, gratuitously, the timber and raw materials necessary for the way and works which might be found upon the spot. It was further proposed to permit the importation of rails and the rolling stock free of duty. Russian proprietors also spontaneously came forward, and not only agreed to grant such portion of their land as the railways might pass through gratuitously, but further to dispossess themselves temporarily of their serfs, and surrender them to the use of the companies on the sole condition that they should be properly supported while employed.

By a special ukase, dated February 18, 1842, it was decreed that the railway which was to unite the two capitals of St. Petersburg and Moscow should be constructed exclusively at the expense of the state, in order to retain in the hands of the government, and in the general interest of the people, a line of communication so important to the industry and the internal commerce of the empire. The local proprietors equally agreed to surrender to government gratuitously the lands necessary for the works of this line.

The system of railways contemplated in Russia is composed of five principal trunk lines, one of which, connecting Warsaw with Cracow, is completed and in operation: the length of this line is 168 miles. The second will connect Warsaw with St. Petersburg: the extent of this would be, when executed, 683 miles. The third will connect St. Petersburg with Moscow; this line is in active progress: its length will be about 400 miles. Besides these, authorization was given to a company, by a ukase dated July, 1843, to construct a railway for the transport of goods between the Wolga and the Don, the length of which would be 105 miles. In the actual execution of this magnificent system of railway communication, no considerable progress has been yet made, with the exception of the line already mentioned between Warsaw and Cracow.

A short line of railway connecting St. Petersburg with Tsarkoé-soéla, having an analogy to the Greenwich and Richmond lines, which diverge from London, and the Versailles and St. Germain lines from Paris, was completed and opened for traffic in April, 1838. The traffic on this line has hitherto amounted to about seven hundred passengers per day.

The railway connecting the Don and the Wolga was opened for traffic in 1846; but this line is exclusively for merchandise, and is worked by horses.

In southern Russia a line of railway is projected between Kief and Odessa, the surveys of which have been made by Belgian engineers; but no progress in its construction has yet been effected. A railway has been projected also between St. Petersburg and Cronstadt, and another between St. Petersburg and Baltishport, in Esthonia, to be constructed and worked by a company with a guarantee of 4 per cent. by the government.

In Italy a few short lines of railway only have been executed, connecting the chief states with neighboring places. They are as follows:

	Miles.
Naples to Portici, opened October, 1839	5
Portici to Castlemare, with branch to Nocera	21¼
Naples to Capua	23½
Milan to Treviglio	18
Milan to Monza	13
Venice to Vicenza	40
Leghorn to Pisa	12½
Florence to Empoli, Ponte Dera, Pisa, and Sienna	..
Pisa to Lucca and San Salvador	..
Florence to Prato	10½

In the kingdom of Sardinia railways exist as yet only in prospect. It is intended to carry two lines from Turin, one directed on Genoa by Alexandria, and the other on Milan by Vercelli and Novara. The political distractions, however, of the last two years have suspended these projects.

Railroads in Spain.—From returns lately made in Spain to the government concerning the railways conceded and at work in that country in 1856, it appears that the whole of the lines open to the public, including that from Madrid to Saragossa, conceded to the Spanish Crédit Mobilier, gave a length of 1955 kilometres (1222 miles). In the concession granted to that company, of the two sections of the railroad from Madrid to Valladolid, and from Burgos to the frontier of France, the first section will leave Madrid, pass by Avila, Arevolo and Medina del Campo, and will stop at Valladolid, where it will join the section already traced out from Valladolid to Burgos.

Railroads in Prussia.—The subjoined is an account of the progress of railroads in Prussia since 1849.

Years	Length in Miles.	Outlay in million Dollars.	Over whole Length.		Receipts.		Average Profit per Cent.
			Passengers.	100 lbs. Merchandise.	Passengers	Merchandise.	
1849	1821	101	129,416	1,057,021	$3,708,227	$3,545,427	3·82
1850	1871	106	146,273	1,331,894	4,420,172	4,308,229	4·05
1851	1982	112	148,680	1,604,325	4,622,900	4,958,459	5·09
1852	2186	126	147,817	2,171,619	4,560,734	6,511,396	6·75
1853	2226	135	144,897	2,587,401	5,488,166	7,821,683	5·76
1854	2326	141	137,184	2,789,084	5,712,185	9,977,251	5·79
1855	2384	146	143,784	3,545,060	5,959,314	12,205,523	6·41

The number of passengers has remained stationary since 1849, while the receipts for passenger trade have increased only in proportion to the length of road. The amount of merchandise transported has, on the contrary, increased three-and-a-half fold; and while in 1849 the receipts on merchandise did not equal the receipts from passengers, they amounted in 1855 to more than double the receipts from passenger transport. In 1849, 384,788,585 hundred pounds were transported over every mile of road; in 1855 were transported 1,742,066,452 hundred pounds. While the roads have scarcely increased one-third in aggregate length, the transport of merchandise has increased five-fold.

The lengths above attributed to Prussian roads extend in some cases beyond the Prussian borders. At the end of 1854 there were 2230 miles of railroad in Prussia. At the end of 1855 there were 2313 miles. During the year 1856 about 270 miles of road were opened in Prussia, so that at present in the whole Prussian state there is one mile of railroad to every nine and two thirds square miles. This, however, varies in different provinces—amounting in Rhineland and Westphalia to 5·5; in Silesia to 7·2; in Brandenburg and Saxony to 7·5; in Pomerania, Prussia, and Poland, to 22·5 square miles for every mile of railroad. There are already commenced, and to be completed in 12 years, 2650 miles, so that in 12 years Prussia will contain at least 5230 miles of railroad, or one mile for every 4·3 square miles. There will then be one mile of railroad to every 2·3 square miles in Rhineland and Westphalia, to every 4 square miles in Silesia, to every 4 square miles in Brandenburg and Saxony, and to every 10 square miles in Pomerania, Posen, and Prussia. The cost of building these new roads is estimated at about $168,000,000, or $14,000,000 yearly.

Railroads in France.—We extract the following report on the condition and progress of railroads in France during the year 1856, submitted to the Emperor by M. A. Rouher, chief of the Department of Agriculture, Commerce, and Public Works:

"A résumé of these figures, which indicate the great increase of public confidence, also exhibits the fact that the construction of the net-work of railroads in France has cost, to this period, 3,080,000,000 francs,* of which

* The franc equals 18·6 cents.

2,419,000,000 fell upon the companies, and 661,000,000 was contributed by the state. Of this aggregate amount there appears for the years 1855 and 1856 the enormous sum of 919,000,000 francs.

"The net receipts, which in 1847 were raised to 22,000 francs per kilometre,* suddenly fell in 1848 to 13,600 francs; but since 1852, notwithstanding double tracks were laid, their marked increase is shown by the following figures:

In 1852	21,600	francs per kilometre.
" 1853	24,000	" "
" 1854	26,400	" "

"These returns experienced in 1855 an exceptional augmentation, owing to the Universal Exhibition or World's Fair. They reached 30,300 francs; and if the amount did not reach that figure the present year (1856), the increase over 1854 is not the less progressive; for the returns for the first three quarters show the net amount of 28,000 francs, at the very lowest, per kilometre.

"STATEMENT EXHIBITING THE COST OF RAILROADS IN FRANCE FROM 1823 TO 1853.

	Actual Cost—		
	To the State.	To the Companies.	Total.
	Francs.	Francs.	Francs.
From 1823 to 1829 ..	....	3,300,000	3,300,000
" 1830 to 1841 ..	3,228,740	172,097,753	175,326,493
" 1842 to 1847 ..	278,553,671	509,411,555	787,965,232
" 1848 to 1851 ..	218,417,147	198,711,088	497,128 235
" 1852 to 1854 ..	51,187,751	646,690,064	697,877,815
In 1855	55,200,000	430,406,485	485,606,485
In 1856	20,286,000	458,569,715	478,855,715
Total	706,875,315	2,419,186,658	3,126,061,973
Less receipts in 1855-'56	45,565,000	....	45,565,000
General total	661,308,315	2,419,186,658	3,080,494,973

"It may be interesting and instructive to show as well the proportions in which the expenses are distributed between the principal periods into which the past thirty-four years have been divided, as the share contributed by the state during the same periods. The years which elapsed between 1823 and 1830 were, as respects railroads, an epoch of experiments and trials, to which the companies devoted an annual average of 470,000 francs, the state furnishing no contribution.

"During the twelve years which succeeded the revolution of July, the indecision in regard to the system upon which railroads were to be constructed, and the small share of confidence which these new speculations inspired, paralyzed the progress of development. Thus the expenses on the part of the companies did not exceed an annual average of over 14,330,000 francs, while the amount which fell upon the state on a similar average was but 270,000 francs. The law of June 11, 1842, gave the first impetus to railroad enterprises. From 1842 to 1847 the annual average expense was 85,600,000 francs for the companies, and 46,400,000 for the state. From 1848 to the month of December, 1851, owing to the political disturbances, which reached even the sources of credit, the annual average expenses of the company sunk to 30,000,000 francs, while the amount which fell upon the state was raised to 75,000,000 each year. Since 1852, however, when legitimate confidence was again restored, and new institutions had inspired in France security and hope in the future, a new order of things commenced. The annual expenses of the company augmented in a remarkable degree, having risen to the average of 216,000,000 francs. The demands upon the treasury diminished no less rapidly, having been reduced by receipts and reimbursements to the annual sum of 17,000,000 francs.

"Finally, under the healthy influence of the general prosperity and credit, the expenses of the companies reached, in the year 1855, 430,000,000 francs, and in 1856, 458,000,000 francs; while those of the state were reduced by reimbursements to not more than 80,000,000 for both years. The résumé of these figures, which are themselves the indices of the public confidence, shows that the net-work of railroads in France has cost, up to the present period, 3,080,000,000 francs, of which the state paid 661,000,000 francs, and the companies 2,419,000,000. To this aggregate amount the years 1855 and 1856 alone contributed the enormous amount of 919,000,000 francs.

"The entire length of this net-work of railroads at the commencement of 1857 is 11,250 kilometres; or opened, 6500; in progress of completion, 4750.

"Length to be completed in the next ten years:

1857	968	kilometres.
1858	818	"
1859	1197	"
1860	254	"
1861	548	"
1862	83	"
1863	300	"
1864	236	"
1865	—	"
1866	566	"
Total length in progress of completion...	4750	"

The following are the last returns of the gross receipts of the principal French railways from November 11 to November 17, compared with the corresponding week last year:

Railroads.	1855.	1856.
	Francs.	Francs.
Northern	1,074,272	967,627
Western	615,960	703,113
Orleans	1,055,070	1,187,942
Strasburg	734,620	744,800
Montereau	....	42,385
Lyons	835,769	932,170
Lyons to Mediterranean	519,361	675,007
Grand Central	....	43,291
Southern	76,218	220,452

Progress of Railroad Building in France and Germany.—In Germany the first railroad was opened in the year 1828, and two years later in France. The following table exhibits the number of geographical miles in operation in both countries since 1828:

Years.	France.	Germany.	Years.	France.	Germany.
	Miles.	Miles.		Miles.	Miles.
1828	..	9	1844	109	322
1830	11	9	1845	109	413
1832	10	17	1846	135	519
1833	36	17	1847	210	739
1835	36	18	1848	236	833
1836	36	27	1849	365	919
1837	39	30	1850	385	992
1838	39	51	1851	460	1035
1839	45	78	1852	501	1099
1840	68	108	1853	532	1176
1841	74	164	1854	612	1223
1842	74	201	1855	733	1274
1843	109	251			

No two countries have the same weights and measures, though the same name to designate them may be used in many countries. Take the mile measure, for instance; in England and the United States a mile means 1760 yards; in the Netherlands it is 1093 yards; while in Germany it is 10,120 yards, or nearly six English miles; in France it is 3025 yards; the Scotch mile is 2472 yards, and the Swedish mile 11,700 yards.

Railways of Great Britain.—On the 31st of December, 1856, the 8506 miles of railway in the United Kingdom had actually cost in money 309 millions sterling, and that large sum had been obtained as follows: viz.,

	Millions Sterling
Ordinary shares	174
Preference shares	57
	231
Loans raised	78
	309

The average rate of interest paid on the preference share capital was £5 13s. per cent. per annum; on the loans raised, that is on debenture debt, £4 13s. per cent. per annum; and on the ordinary share capital,

* The kilometer equals about five furlongs.

£3 2s. 6d. per cent. per annum. The total gross receipts of the railways of the United Kingdom in 1856 were twenty-three millions sterling, or something approaching the interest of the national debt. The end is now rapidly approaching of the era of railway making. It has been going on for twenty years with amazing vigor, and it has covered Great Britain with a system of public roads which, for extent, perfection, utility, and rapidity of execution, leave far behind the achievements of any other nation except the United States, or any other age in the same space of time.

The following table shows the number of railway acts passed in each session of Parliament since 1846, together with the length of new lines and amount of capital authorized by those acts:

Years.	Number of Railway Acts.	Length of Line authorized.	Amount of Money authorized to be raised.
		Miles.	
1846.....	270	4538	£132,017,368
1847.....	190	1350	39,460,128
1848.....	85	371	15,274,237
1849.....	34	16	3,011,331
1850.....	34	8	4,115,632
1851.....	61	135	9,553,275
1852.....	51	241	4,333,634
1853.....	106	940	15,517,691
1854.....	71	482	9,211,602
1855.....	73	363	9,192,098

Of the 73 acts passed in 1855, 53 had reference to the construction of works; the length of new lines authorized by these 53 acts was as follows: viz., 196 miles in England and Wales, 76 miles in Scotland, and 91 miles in Ireland.

The lines authorized in England and Wales were chiefly extensions or branches connected with railways already authorized. The most important were the following:

The extension of the East Kent Railway, from Canterbury to Dover. By this line direct railway communication will be afforded between Dover and the naval and military arsenals in North Kent, as also a shorter line between Dover and the metropolis, than is afforded by the Southeastern Railway. The Newtown and Oswestry Railway deserves notice, as forming a link in a line of railway communication which will probably eventually connect the manufacturing districts with Milford Haven. The Carlisle and Silloth Bay Railway is an extension of the Port Carlisle Railway to a new harbor on the Solway Frith.

Among the lines authorized in Scotland may be noticed the Glasgow, Dumbarton, and Helensburg Railway, proposed to be constructed along the north bank of the Clyde from Glasgow to Helensburg, and the Banff, Macduff, and Turiff Railway. The remaining lines were merely short branch lines in connection with existing railways.

In Ireland were authorized an extension of the Dundalk and Enniskillen Railway to Cavan, and of the Ulster Railway to Monaghan. The Belfast and County Down Railway Company was authorized to make a line to connect Downpatrick with Belfast. A few other short branch lines were also authorized.

Development of Railway Communication.—The total length of line authorized by Parliament down to the end of 1855 amounted to 14,346 miles; but of this 1495 miles have been abandoned by subsequent acts or by warrant under the authority of the commissioners of railways, and consequently there remain 15,851 miles for which the parliamentary powers which were obtained have not been repealed. Of these 8280 miles were open at the end of 1855; 4571 miles, having received the authority of Parliament, remain unopened.

The following table exhibits for each year since 1843 the proportions of railways authorized, opened, and abandoned under the authority of Parliament:

TABLE SHOWING THE LENGTH OF RAILWAY AUTHORIZED PREVIOUS TO THE END OF 1843, AND IN EACH SUCCEEDING YEAR, OPENED FOR TRAFFIC DURING EACH YEAR, AND THE PROPORTION REMAINING TO BE COMPLETED AT THE END OF 1855; ALSO, SHOWING THE TOTAL LENGTH OF RAILWAY OPENED FOR TRAFFIC IN EACH YEAR SINCE 1843.

Years.	LENGTH OF LINE OPENED. Previously to December, 1843.	During 1844.	During 1845.	During 1846.	During 1847.	During 1848.	During 1849.	During 1850.	During 1851.	During 1852.	During 1853.	During 1854.	During 1855.	Total length of Line opened to Dec., 1855.	Length of Line authorized, and opened, and during each subsequent Year.	Decrease by abandonment, deviation, etc., under authority of subsequent Acts.	Length of Line after reductions, made in consequence of deviations, etc., under the authority of Acts passed subsequently to 1843.	Length of Line remaining to be made.
	Mls.	Mls.	Ms.	Mls.	Mls.	Mls.	Mls.	Mls.	Mls.	Mls.	Mls.	Mls.	Mls.	Mls.	Miles.	Miles.	Miles.	Mls.
Of lines authorized prev. to Dec. 1843	2036	204	131	16	2	1	..	..	..	..	..	..	..	2390	2,390	..	2,3 0	..
1844	..	..	159	366	142	118	3	4	..	..	..	..	..	792	805	..	805	13
1845	..	..	6	224	578	664	511	213	65	100	122	50	26	2300	2,700	56	2,644	344
1846	..	..	..	..	84	403	501	579	122	288	179	121	22	2000	4,588	989	3,549	1450
1847	..	..	..	..	2	56	45	26	71	10	15	29	22	276	1,354	438	916	646
1848	..	..	..	..	..	..	7	..	7	16	..	11	..	41	371	7	364	325
Of lines authorized in 1849	..	..	..	..	..	..	2	1	..	..	..	..	..	3	16	..	16	13
1850	..	..	..	..	..	..	..	2	4	..	..	1	..	7	8	..	8	1
1851	..	..	..	..	..	..	..	..	..	15	23	15	24	77	135	..	135	58
1852	..	..	..	..	..	..	..	..	..	11	11	106	21	149	244	2	242	93
1853	..	..	..	..	..	..	..	..	..	..	..	35	88	123	940	1	139	816
1854	..	..	..	..	..	..	..	..	..	..	..	..	23	23	482	2	480	457
1855	..	..	..	..	..	..	..	..	..	..	..	..	..	..	363	..	363	363
Total.....	2036	204	296	605	803	1182	869	6 5	269	440	350	368	226	8280	14,346	1,495	12,851	4571
Railways opened to passenger traffic belonging to private individuals, but which have not received Parliamentary sanction													17	17				
Total.....													243	8297				

From the foregoing table we see that there was a general increase in the number of miles opened from the year 1844 to the year 1848, when the number reached the maximum. From the year 1848 there was a decrease, which, though not regular, is sufficiently so to show that Great Britain was approximating toward a completed system. The average number of miles opened in the twelve years from 1844 to 1855 inclusive, was 690, which is much less than the average number built in the United States during the same period.

This length of line is distributed throughout the United Kingdom as follows:

Countries.	Length of Line open December 31, 1854.	Length of Line opened during 1855.	Length of Line open December 31, 1855.	Length of Line authorized, but not open, on December 31, 1855.	Total length of Line authorized to Dec. 31, 1855.
	Miles.	Miles.	Miles.	Miles.	Miles.
England and Wales..	6114	96	6210	3,736	9,946
Scotland	1043	40	1083	458	1,541
Ireland.....	897	90	987	837	1,824
Total	8054	226	8280	4571	12,851

With respect to 2284 miles out of the 4571 miles for which parliamentary powers have been obtained, and which have not yet been opened, the powers for the compulsory purchase of the land and the completion of the works have expired. The proportion in which this is distributed through the several years is shown in the following table:

TABLE SHOWING THE PROPORTION OF RAILWAY NOT OPEN FOR TRAFFIC, AUTHORIZED PREVIOUS TO THE END OF 1843 AND IN EACH SUBSEQUENT YEAR, AND WHICH HAVE NOT BEEN ABANDONED BY SUBSEQUENT ACTS; AND THE PROPORTION AS TO WHICH THE TIME ALLOWED FOR THE COMPULSORY PURCHASE OF LAND AND FOR THE COMPLETION OF WORKS HAS EXPIRED WITHOUT THE RAILWAYS BEING COMPLETED, DOWN TO THE END OF 1855.

Years.	Length of Line authorized and not abandoned by subsequent Acts, which was not open for Traffic on December 31, 1855.	Length of Lines upon which the powers for compulsory purchase of Land and completion of Works had expired without the Railways being opened on December 31, 1855.	Railways for the construction of which Parliamentary powers exist.
	Miles.	Miles.	Miles.
Of lines authorized previous to December... 1843	....	....	....
1844	13	13	....
1845	344	253	91
1846	1450	1134	316
1847	640	567	73
1848	323	257	66
Of lines authorized in 1849	13	13	....
1850	1	....	1
1851	58	3	55
1852	93	44	49
1853	816	....	816
1854	457	....	457
1855	853	....	853
Total.....	4571	2284	2287

Upon 213 miles out of the 2287 miles for the construction of which parliamentary powers exist, the powers for the compulsory purchase of the land have been allowed to expire without having been exercised; and this increases, therefore, the number of miles which it is not probable will ever be made to 2497 miles.

The total amount of money authorized to be raised by railway companies, by shares and on loan, to the end of 1855, amounted to £374,971,966, of which £297,583,284 had been raised, leaving £77,388,682 to be raised. There are no means of ascertaining how much of this sum is apportioned to the miles of railway for which parliamentary powers have expired, but it may be assumed approximately that from £30,000,000 to £40,000,000 of this amount would have been applied to those portions of railway, and that it will not, therefore, be now raised.

Of the 8297 miles open for traffic on the 31st of December, 1855, the proportion constructed on the narrow gauge, broad gauge, mixed gauge, and Irish gauge, is as follows:

	Narrow Gauge.	Broad Gauge.	Mixed Gauge.	Irish Gauge.	Total.
	Miles.	Miles.	Miles.	Miles.	Miles.
In England...	5345	667	206	...	6218
In Scotland...	1092	...	...	...	1092
In Ireland....	8	...	...	979	987
Total.....	6445	667	206	979	8297

And by the following table is shown the length of lines open for traffic at the same dates:

	Number of Companies having single Lines.	Narrow Gauge.	Broad Gauge.	Mixed Gauge.	Irish Gauge.	Total.
		Miles.	Miles.	Miles.	Miles.	Miles.
In England	85	1064	209	72*	...	1345
In Scotland	20	154	...	..	...	154
In Ireland.	21	2	...	..	568	570
Total..	126	1310	209	72	568	2160

* Thirty-nine miles of this length is laid with a second line on a narrow gauge.

From the above details it appears that the length of new lines opened for traffic during the year 1855, including 17 miles of line belonging to private individuals, amounted to 243 miles; of these, 235 miles were laid with only one line of rails.

Of the lines opened in 1855, the following are those which appear to be the most important, viz.:

The Hereford, Ross, and Gloucester Railway, a broad-gauge line, which affords to Hereford a more direct communication with the metropolis than it previously possessed.

The Wimbledon and Croydon Railway, which affords a communication to the south of London, between the London and Southwestern and the Southeastern Railways, and provides another link in the line of railway communication which encircles the metropolis.

The length of new line reported to be in course of construction on the 30th of June, 1855, was 880 miles; of these about 170 miles were opened before the 31st of December, 1855.

With the view of affording some measure of the comparative progress of railway enterprise, the following table has been prepared, showing the number of miles of railway in course of construction in each year since 1848, and the number of persons employed thereon, together with the amount of money received, and the number of miles of railway opened during the year:

Years.	Lines in course of Construction.		During the Year.	Money raised by Shares and Loans.	Miles of Railway opened during the Year.
	Miles.	Number of Persons employed.	Average Number employed per Mile.			
May 1, 1848	2958	188,177	63·6	....	....	....
June 30, 1849	1804	103,814	61·0	1849	£29,574,719	869
June 29, 1850	864	58,854	68·15	1850	10,522,107	6·5
June 30, 1851	734	42,958	58·49	1851	7,970,151	207
June 30, 1852	738	35,935	48·69	1852	15,924,753	446
June 30, 1853	682	37,764	55·36	1853	9,158,885	550
June 30, 1854	889	45,491	51·07	1854	12,452,374	368
June 30, 1855	880	38,516	43·80	1855	11,514,490	447

The number of persons employed on the 30th of June, 1855, upon the railways in course of construction amounted to 38,516, being on the average 43·8 per mile. It will be seen from this table that the average number of persons employed per mile has gradually decreased since 1849. This may be ascribed to improvements and the employment of steam-power in railway construction.

The length of line open for traffic in the United Kingdom on the 30th of June, 1855, was 8116 miles, and the number of persons employed thereon amounted to 97,952 persons, or 12·07 per mile. This, as appears from the following table, is a larger number per mile than has been employed in any year since 1848. The increase in the number of miles for the whole period of eight years, is 98 per cent.

Years.	Lines open for Traffic.				
	Miles.	Number of Persons employed.	Average Number employed per Mile.	Stations.	
				Number.	Number per Mile.
During 1848	4252	52,088	12·3	1321	·31
" 1849	5147	55,968	10·2	1850	·36
" 1850	6308	60,325	9·51	2030	·32
" 1851	6698	63,563	9·49	2107	·31
" 1852	7076	67,091	9·55	2253	·31
" 1853	7512	80,409	10·7	2463	·32
" 1854	7863	90,409	11·59	2410	·30
" 1855	8116	97,952	12·07	2798	·34

—*Report of the Board of Trade.*

ENGLISH RAILWAY TRAFFIC.

	1855.	1856.	Increase.
Total receipts for goods, passengers, mails, etc.	£21,123,315	£22,995,500	£1,872,185
Length of railways open for traffic, miles	8,240	8,760	520
Average receipt per mile open during the year	£2,668	£2,750	£91

There is thus seen to be an increase, not only in the amount received, but also in the length of railway, and this has been to such an extent that the receipts per mile are likewise greater; and although the later weekly returns for 1856 did not show so large an increase over those of 1855 as those of the earlier portion of the year exhibited, there is still reason to hope that railway property has now overcome many of the difficulties by which it was beset, and that it will henceforth yield a return more commensurate with the advantages it has conferred upon the public than has hitherto been the case.

Among the benefits derived from railways London may reckon the increased importation and diminished price of fuel, which have been the consequence of the better development, as shown by the following return of railway coal traffic:

COALS BROUGHT TO LONDON BY RAIL.

1855. Tons.		1856. Tons.		Increase. Tons.
1,137,835	.....	1,246,299	.....	108,464

But the value of railways in this respect will be better appreciated if the quantities brought in that way are contrasted with those brought by other means of conveyance, for during the same period we find that the canal coal traffic only amounted to

1855. Tons.		1856. Tons.		Increase. Tons.
24,651	.....	25,401	.....	750

And that the whole amount of sea-borne coals brought into London in those years did not exceed

1855. Tons.		1856. Tons.		Increase. Tons.
3,016,868	.....	3,100,322	.....	884,454

From which it appears that the railway coal traffic now bears a very large proportion to the importation by sea, and that during 1856 the *increase* by rail was greater than in 1855, although there was not then the competition, for purposes of war, in freights which had previously existed; while the canal traffic is so small as scarcely to deserve notice.

The result, as shown by the following table, is that passengers and goods have changed places as the chief elements in the gross earnings. The early railway managers expected—and with reason—that with the railways, as with the coaches, the passengers would be the main resource, and so they were for a few years. But for the last four years, and the more rapidly as the lines open have extended, the goods traffic has shot ahead, and year by year has left the passenger traffic behind.

ENGLAND AND WALES.

EIGHT YEARS, 1849-'56.—GROSS RECEIPTS, PER MILE OPEN, FROM EACH CLASS OF PASSENGERS, AND ALSO THE RECEIPTS PER MILE FOR GOODS.

Miles open.	Years.	Passengers. 1st.	2d.	3d.	Total.*	Goods.	Total per Mile.
Number.		£	£	£	£	£	£
4355	1849	406	518	331	1255	1090	2.45
4908	1850	380	498	321	1199	1117	2316
5217	1851	424	521	378	1330	1158	2488
5477	1852	379	471	350	1200	1037	2457
5730	1853	408	474	378	1279	1415	2694
5962	1854	406	486	407	1324	1784	2908
6165	1855	400	472	423	1325	1053	2978
6352	1856	411	476	448	1364	1756	3120

* These tables include also a fourth-class return, except in the years 1849 and 1850.

But this is not all; for when we come to look closely into the passenger traffic itself, we find the same continuous and confirmed tendency in the common to supersede in importance the dear kinds of service. The receipts from first-class fares have barely maintained the level at which they stood eight years ago. The receipts from second-class fares have seriously fallen off; namely, from £518 per mile in 1849 in the 4355 miles open, to £476 per mile in 1856, with 6332 miles open. But with the third-class fares a precisely opposite class of changes has taken place. With scarcely a single exception of consequence during the eight years, the receipt per mile from third-class fares has gone on increasing, until, in 1856, the receipt of £448 per mile is quite 33 per cent. above receipt of £331 per mile in 1849. The percentage proportions to the total passenger traffic in 1849 and 1856 of the receipts per mile of the three classes of fares, were as follows, viz.:

Years.	First Class. Per Cent.	Second Class. Per Cent.	Third Class. Per Cent.
1849.....	32	41	27
1856.....	33	35	33

While, therefore, in 1849 the common kinds of passenger service contributed a little more than a fourth part of the total passenger receipts, that proportion had been raised to quite a third part in 1856; the first-class proportion remaining the same, but the second-class proportion falling from 41 to 35 per cent.

But there is more evidence to be adduced.

We have seen in the foregoing table the gross results per mile of railway open. Let us now examine somewhat more in detail the relation between those larger results and the rate of fares and average payment by each person conveyed, and these further details will be found in the following table, but extending to the five years 1852-'56:

FIVE YEARS, 1852-'56.—DETAILS OF THE AVERAGE RECEIPTS FOR PASSENGER TRAFFIC.

Years.	First Class. Average Payment.	First Class. Average per Mile.	Second Class. Average Payment.	Second Class. Average per Mile.	Third Class. Average Payment.	Third Class. Average per Mile.	Total. Average Payment.	Total. Average per Mile.
	d.	d.	d.	d.	d.	d.	d.	d.
1852.....	54·96	2·11	22·32	1·43	12·48	0·87	21·36	1·35
1853.....	51·30	2·13	20·40	1·44	12·48	0·86	20·40	1·32
1854.....	47·28	2·10	20·88	1·42	12·48	0·85	19·92	1·29
1855.....	43·88	2·00	20·16	1·43	12·00	0·86	19·20	1·28
1856.....	43·30	2·07	20·45	1·44	11·66	0·83	18·74	1·22

NOTE.—In the above table the columns of "Average Payment per Passenger" represent the total average sums paid in each year by each of the passengers conveyed. The columns of "Average Fare per Mile per Passenger" reduce the larger columns to a more convenient mileagement.

We find here that the first-class fares have fallen from 2·11*d.* per mile in 1852 to 2·07*d.* per mile in 1856, and average payments of each passenger conveyed from 54·96*d.* in 1852 to 43·30*d.* in 1856; but in connection with these reduced fares and smaller individual payments, we have already seen that the earnings per mile open have somewhat risen, comparing 1856 with 1852.

In the second class the fares have risen slightly—that is, from 1·43*d.* in 1852 to 1·44*d.* in 1856; and the average payments have slightly fallen from 22·32*d.* to 20·45*d.*, but the average earnings per mile have remained almost unchanged.

In the third class the fares have fallen, and so have the individual payments; but the earnings, as we have already seen, have increased largely.

We may venture, then, to infer that, so far as the evidence before us applies, three general conclusions seem to be justified at this stage of the inquiry, and these conclusions are:

1st. That the revenue of railways during the last eight years—that is, during the period since the railway system had arrived at maturity in England and Wales—has been derived year by year in a larger proportion from common as distinguished from dearer kinds of service, and especially in the rapid relative growth of goods traffic.

2d. That during the same period a precisely similar result has taken place in the passenger traffic by increase of receipts from third-class passengers, and the decline or non-increase of receipts from first and second class passengers.

3d. That as regards nearly all classes of passengers, the increase of passenger traffic per mile of railway has been accompanied by a reduction in the rates of fares, and also by a reduction in the average payments of each person conveyed; in other words, a larger revenue has been obtained by means of smaller individual contributions.

Railroads in Canada.—The gigantic railway enterprises now in progress in Canada are intended to embrace a railway system traversing nearly the entire length of the province from east to west, with branch feeders running into the main-trunk line, and carrying off traffic to the leading American cities and Atlantic sea-board.

Besides the government aid to this complete railway system through Canada, these undertakings are understood to receive substantial support from United States interests, the great Western country, as well as the northeastern States of the Union, being directly interested in the success of these Canadian lines; more expeditious routes between the agricultural districts of the West and their centres of trade being opened up by them. One of the most valuable features of these railways to Canada will be their affording the province increased facilities of trade during winter, and uninterrupted communication with ocean traffic when inland navigation is closed.

The most important line of this comprehensive railway system is the Grand Trunk railway. The entire length of this line, when completed, will be 1112 miles. Its eastern terminus is at Trois Pistoles, in Lower Canada. Thence upward it proceeds along the south shore of the St. Lawrence, passing opposite to Quebec, and, continuing thus westward, reaches Montreal. Before reaching Montreal, the line effects a junction at Richmond, in the eastern townships, with a line of railway to Portland, on the Atlantic, in the State of Maine. The part of the line between Montreal and Portland, a distance of 292 miles, is now open. The communication between Portland and Quebec was opened in 1854.

At Montreal, one of the most stupendous structures of modern times will carry the railway across the River St. Lawrence, which is here two miles in width. This gigantic undertaking is now in course of construction, under the superintendence of Mr. Robert Stephenson, whose name is associated with the well-known Britannia tubular bridge. The Victoria tubular bridge of Canada will, however, far surpass Mr. Stephenson's earlier work. The total span of the arches will be 6168 feet, besides piers on either side, running into the river, each about half a mile long. The span of the centre arch is 360 feet. The number of arches is 25, and, with the exception of the centre one, each has a span of 242 feet. The tube, which is of iron, is 25 feet high and 18 feet wide. The other parts of the work, including the half mile of piers on either side, are wholly of solid masonry. The height from the water level of the river to the floor of the iron tube will be 60 feet. In order to impart some idea of the strength of this stupendous work, it may be mentioned that each buttress is calculated to resist the pressure of 70,000 tons of ice. The estimated cost of the Victoria tubular bridge is stated to be $7,000,000.

From Montreal the Grand Trunk line follows the north bank of the St. Lawrence, touching the towns of Cornwall, Prescott, and Brockville, to the city of Kingston, on Lake Ontario. This distance from Montreal to Kingston is about 180 miles, about 120 of which, from Montreal to Prescott, was opened in October, 1855.

A branch line of 55 miles, connected with this part of the main trunk, was fully completed during 1854, from Bytown to Prescott, opposite to the American port of Ogdensburg, where an important connection has been formed with United States lines of railway. Another line of about 80 miles was also constructed in connection with this section of the Grand Trunk from Montreal to Kingston. This is one from Bytown to Montreal, following the course of the Ottawa, and joining the Grand Trunk at Vaudreil, close to the Ottawa, and to the junction of that river with the St. Lawrence.

The Grand Trunk line, proceeding westward from Kingston, skirts the shores of Lake Ontario, passing the Bay of Quinte, through the towns of Belleville, Cobourg, and Port Hope to Toronto, the capital of Upper Canada. The length of this section of the line, from Kingston to Toronto, is about 200 miles; the length of the line from Montreal to Toronto being 380 miles.

A branch of this section of the Grand Trunk from Kingston to Toronto, extending to 30 miles from Cobourg to the town of Peterborough, on the River Otanabee, was opened during the year 1856. Another line is also in construction from Belleville to Peterborough. The most important line branching from this main section of the Grand Trunk, 45 miles of which are already open, is that from Toronto northward, passing Lake Simcoe, and thence continuing to the great Georgian Bay, on Lake Huron. From Toronto the Grand Trunk railway proceeds directly westward through the fertile peninsula of Upper Canada, passing the towns of Guelph and Stratford, and terminating at the flourishing town of Sarnia, at the head of the River St. Clair and southeastern extremity of Lake Huron. The entire length of the Grand Trunk line, which is now being pushed toward completion, namely, that from St. Thomas, 40 miles below Quebec, to Guelph, in Upper Canada, was completed in September, 1856. The remaining portions of the system will not be so actively proceeded with. The direct distance from Trois Pistoles to Sarnia is 850 miles.

At Toronto another important railway system commences, known as the Great Western. This railway commences from a joint station at Toronto in connection with the Grand Trunk railway, and skirts the head of Lake Ontario to Hamilton, a distance of 45 miles. It thence proceeds westward through the heart of the settled parts of the great peninsula, situated between the lakes Ontario, Erie, and Huron, passing through Brantford, London, and Chatham, and terminates at Windsor, on the River Detroit, directly opposite to the American city of Detroit, in the State of Michigan. At this point an important connection takes place with United States railways.

The Great Western line, besides its terminus at Hamilton, diverges to the Falls of Niagara. The Great Western railway is now open from Windsor to Hamilton and Niagara Falls, a distance of 220 miles. That portion of it from Hamilton to Toronto, 45 miles in length, was opened in the year 1854.

We have now (returning to Lower Canada) to mention the St. Lawrence and Champlain railway, which connects the south bank of the St. Lawrence, opposite to Montreal, with the head of Lake Champlain, at Rouse's Point, a distance of 45 miles. At Rouse's Point this railway connects with the system of railways

to Albany, Boston, New York, and other parts of the United States. The Plattsburg railway commences at Caughnawaga, on the south shore of the St. Lawrence, opposite to Lachine, and runs to the town of Plattsburg, on Lake Champlain, a distance of 28 miles. The Montreal and Lachine railway, a short line of 9 miles, connects the city of Montreal with the upper part of the island at the village of Lachine. This railway, as also a portion of the St. Lawrence and Champlain line, have been in active operation for several years.

The average cost of the construction of railways in Canada will be about $47,500 per mile. The average fares are from two to three cents per mile, according to distance of journey. The electric telegraphs in Canada convey messages at much more moderate charges than in England.

The control of the Post-office of Canada was transferred from imperial to colonial authorities in 1851.

RAILROADS IN CANADA.—1857.

Name of Road.	Length. Miles.
Buffalo and Lake Huron (Buffalo to Paris)	84
Champlain and St. Lawrence (Rouse's Pt. to Montreal)	44
Cobourg and Peterborough	28
Erie and Ontario (Niagara Falls to Chippewa)	16
Grand Trunk. For Portland District, see Maine.	
Montreal District	143
Quebec District (Richmond to Quebec)	96
Brockville and Toronto Districts	333
Toronto and Sarnia District	91
St. Thomas Branch	49
Great Western (Niagara Falls to Detroit)	230
Guelph Branch	17
Toronto Branch (Hamilton to Toronto)	38
Montreal and New York (Montreal to Mooer's Junc.)	42
Plattsburg and Montreal (Mooer's Junction to Platts.)	20
Ontario, Simcoe, and Huron (Toronto to Collingwood)	95
Ottawa and Prescott (Prescott to Bytown)	54
Other roads	32
Total	1412

United States.—To give a complete history of the railroad system of the United States would exceed our limits of space. We therefore confine ourselves to a brief summary of the history, with the statistics necessary to show the present condition of the railroads in the United States.

The first railroad constructed in the United States was the Quincy road, built in 1827. The first passenger railroad was the Baltimore and Ohio, which was opened with horse power for fifteen miles in 1830. The Mohawk and Hudson river road was opened for public travel with horse power in the summer of 1831. Locomotives were first used in this country in 1831, on the Mohawk and Hudson railroad, and in 1832 upon the Baltimore and Ohio, and on the South Carolina railroad. In 1828 there were but three miles of railroad in the United States; now there are twenty-five thousand miles!

The superstructure of some of our first railroads was made by placing a thin flat bar of iron on longitudinal timbers, which rested on stone blocks, protected from displacement by frost by filling the trenches below them with small broken stone. In some cases the iron bar was placed on continuous stone sills.

The first change made in the rails used was the substitution of bars of greater thickness; then succeeded the **T** rail, of nearly the present form, weighing fifty pounds per lineal yard, resting on longitudinal sills; subsequently the weight of iron rail was successively increased to sixty, seventy, and seventy-five pounds; cross-ties were used, which were placed on longitudinal sills, and finally these sills were removed and gravel ballasting substituted. The first cars used were coach bodies of the ordinary form, placed on four-wheeled frames; afterward the bodies were enlarged and the form changed, and finally the bodies were adapted to contain sixty passengers, placed on two separate trucks attached loosely to the bodies, so as to permit them separately to adapt themselves to the curves and inequalities of the track. The motive power at first was horses, and on steep inclinations stationary steam power. The first locomotive engine used weighed but six tons, and these have been successively increased to ten, sixteen, twenty, and twenty-six tons, while on some of the freighting roads engines of forty tons weight (including the tenders) have been introduced. The foregoing list of changes shows how imperfect a machine the railroad was when many of them in this country were first commenced, and how many radical changes have been necessary in the construction of their ways and works. The present state of perfection in the machine renders it probable that new substitutions of its important and expensive parts will annually become more rare, but yet it may be safely assumed that some expenses of this character will continue to accrue and must be provided for in estimating the cost of our railroads or their value as an investment.—*Report of the New York State Engineer*, 1855.

In the conception and construction of our system of railroads there was no well-digested plan in regard to the position of the principal termini, or the route for the trunk lines, or the mutual relation of the main lines to each other. The result is that the system is imperfect as a whole, though admirable in many of its parts. We have many roads built only in rivalry to others; some parallel, others having the same termini. The same expenditure properly directed would have given us a complete system, with fewer miles constructed, but of a more durable character. The want of plan is in consequence of our system having been built by States not separated by topographical divisions, and by private companies having a view more to immediate profit than to the future success of and connection with the system. One of the greatest resulting evils is the constant break of gauge, which makes necessary the frequent transhipment of both passengers and freight; thereby increasing cost and delay. The gauges in common use comprise from 4 feet 8½ inches, the *chance* width of the first "tram wagon," which the first "tramroads" were made to *fit;* to 4 feet 10, 5 and 6 feet, all empirical gauges; and each having respective merits which were advocated by their introducers. Whatever may have been these claims, it is unfortunate that one was not universally agreed upon; and there is no risk in asserting that even at this late date the saving in time to passengers and in injury to freight during five years would be more than an equivalent for the cost of all necessary changes in the rolling stock, and superstructure consequent on the adoption of a common gauge. Our railroads have been so much indebted to fortuitous circumstances for their position and relation to each other, that the principal claim to a *system* that we can advance is based on topographical divisions. And having this division in view, we will proceed to describe briefly our railroads as a system.

The objects to be gained by our first railroads were to open an outlet from the fertile regions of the West, and to get access to the interior as a market for the manufactures of the sea-board. The principal results are the four great trunk lines, which are the boast of the country, and which have done more to develop the West and enrich the East than was dreamed by the "enthusiasts" who were followers of De Witt Clinton. Two of the four trunk lines, the New York and Erie, and the New York Central railroads, directed their first slow course to the great American chain of lakes, expecting to be content to end there, and not to enter into a contest with an inland sea. But with the aid of the frosts of winter, they found themselves fit rivals, and have extended their lines with such vigor, that the branches of these trunk lines have tapped the Mississippi, and are hastening on to the Pacific. Their connection with every town and hamlet in the Mississippi valley is the best foundation for a continuation of the progressive prosperity of New York. The other two lines, the Pennsylvania Central and the Baltimore and Ohio railroads, had no further aim than to pass the barrier of the Alleghanies, and then receive their pros-

perity from the Ohio River. But a river that, according to John Randolph, "was dry half the year, and frozen the other half," was not a dependence; and now even the Mississippi River is not a satisfying end. We can briefly say that these four trunk lines, with their direct connections, constitute the Northern half of the system. The other single roads, not connections, north of a line of the Ohio valley, however important in themselves, are only local roads. South of the line of the Ohio valley, the Virginia Central and the Charleston and Memphis railroads, with their direct connections, constitute a similar portion of the Southern half of the railroad system. The remaining East and West trunk line to be described is the one from New York city, in a direct line west. This railroad, now nearly completed, is almost a necessity to the passenger traffic, being the shortest route west from New York city. These roads, in conveying the produce of the interior to the sea-board, and in opening the West for settlement, form a much more important part of the system than the roads running north and south, and having as their principal business the interchange of the products of the North and South. The roads, running north and south, are divided by the Alleghany Mountains. The eastern half is made up of a trunk road and its branches, running parallel to the sea-coast from Bangor to Mobile, having at present but one short break in Alabama. The freight business of these roads is necessarily limited, and confined principally to costly freight, as the coasting trade is the natural carrier of heavy freight. The passenger business is the principal source of profit; and as these roads run through the most populous sections of the country, they have ample employment. The trunk road west of the Alleghany Mountains is made up of the Illinois Central and other roads in the Mississippi valley, converging to the mouth of the Ohio River, added to the yet unfinished trunk road from the mouth of the Ohio to Mobile and New Orleans. These roads until lately have not been necessary, as the Mississippi and branches have generally afforded all the internal communication necessary. The interchange of the productions of the South and West, and giving rapid communication over the West, make these roads now a necessity. We can see then, that, notwithstanding the want of unity of action from the first, the system is gradually becoming more perfect, and that the completion of the trunk lines running west to the Pacific will not let us lose the proud boast that we can now truly make of having the noblest system of internal improvement in the world.

New York State.—The following exhibit of the condition of the railroads in New York State is in part a synopsis of the report made to the New York Legislature in 1855 by the state engineer, and contains many important suggestions in regard to the future management of our railroads, coupled with much valuable information as to the condition of the state system.

The returns of the railroad corporations of New York State do not comply with the law in stating the amount of depreciation of the works and rolling stock. The returns of the railroads of Massachusetts, in most cases, show a small allowance made for the depreciation of the iron rails, engines, and cars. It is contended by many skillful managers that if the works and rolling stock are kept in thorough repair, they are in as good condition at the end of each year as they were at the end of the preceding year, and therefore that there can be no depreciation. The difficulty lies in determining the *fact* whether the repairs have been kept up in this thorough manner. The expense for repairs of iron rails, after allowing for the value of the old material, is equal to the cost of an entire renewal once in fourteen years; that for cross-ties to a renewal once in eight years; for wooden bridges once in ten years; and for wooden stations once in thirty years. This deterioration may be represented in another form, by stating it as equal to from 2 to 4 per cent. annually on the whole cost of the road.

Railroads are also subject to one item of expense which is rarely directly stated: viz., the necessary substitution of improvements in the way and works before the original ones have been worn out by use. The railroad, considered as a machine, is of recent invention. Its power, capacity, and endurance have not even yet been fully ascertained. As the two former are developed, the substitution of improved forms for increasing its efficiency, either in capacity, speed, or economy, becomes necessary, and these substitutions are more extensive than they are in other machines of older date or use.

The returns of the railroad corporations show continued large additions every year to the construction account of even our oldest and best built roads. The reported increase of cost during the year 1855 was chiefly in consequence of an extension of the double track, a larger equipment, and station facilities for the accommodation of the increased freight traffic. The increase of the cost of the road on the New York and Erie was 20 per cent. during the years 1854, 1855, and on the Central it was greater than 25 per cent. during the same period. The reported earnings and net earnings of these roads have increased by a much larger percentage than the cost of the roads as above stated, while the reported expenses of operating have increased by about the same percentage as the earnings. The freight earnings have increased more than the passenger earnings; but the average receipts per ton per mile were less in the year 1855 than the preceding one, especially on the Central road, although the rates of charges have been increased on both roads. The average receipts per ton per mile for the year 1855 were two and a half cents on the Erie, and a little more than three cents on the Central, while the average the preceding year on the latter was nearly three and a half cents. The freight tariff has been nearly alike on each of these roads for the last two years; it is, therefore, evident that the business of the Erie road embraces a larger portion than that of the Central of those articles which pay the least rates, and that the latter road has been performing a much larger proportion of its business at low rates this year than formerly. On comparing the reported receipts, expenses, and business of our three principal freighting roads, it will be seen that the passenger business on the Erie is reported as giving a net profit of 47 per cent., with an average charge of one and seven-tenths cents per passenger per mile; on the Central, a net profit of 44 per cent., and a charge of one and nine-tenths cents, and on the Northern Railroad a net profit of two per cent., with an average charge of two and seven-eighths cents per passenger per mile; and that the freight business on the first is reported as giving a net profit of 51 per cent., with an average charge of two and six-tenths cents per ton per mile; on the second a net profit of 48 per cent., with an average charge of three and seven-tenths cents; and on the third a net profit of 34 per cent., with an average charge of two and one-fourth cents per ton per mile. The character of the business, the grades, and other circumstances of these roads, do not furnish any sufficient reason for these discrepancies. The actual cost of transportation upon railroads will probably never be accurately determined from their reports, until they have been run a few years with the construction account closed, and no money borrowed. The expenses of operating the road, as stated in the reports, are about one and a quarter cents per ton per mile on the Erie, and one and six-tenths cents on the Central; but, as before stated, these reports do not show accurately the cost of this service. More reliable testimony on this subject is afforded by the recent action of the railroad conventions. At the one held at New York, embracing the officers of the four great lines between the Atlantic and the West, a joint report was submitted by the superintendents of the several roads, in which they state

that "experience has proved that the *lowest rates* at which ordinary freight can be carried to pay interest and expenses will average about two cents per ton per mile for heavy agricultural products, three cents for groceries, and four cents for dry goods." At a subsequent convention of the railroad companies of Ohio and Indiana, similar rates were adopted. The above charges applied to the business of our two great lines would yield an average of a little less than three cents per ton per mile, and would serve to show that some of the business done on each of these roads does not even pay "interest and expenses." Sufficient information has been elicited from the railroads of this and other States, from the actions of the conventions, and from other sources of information, to warrant the belief that a considerable portion of the freighting business now done by our railroads yields no profit at the present rates, when due allowance is made for the increase of capital which it requires for the increased wear and depreciation of the works, and for the occupation of the track to the injury of the other business.

The reports of the year 1855 show an increased expense in operating the roads, over that of the preceding year. An examination of the reports of a number of railroads in New England and elsewhere, shows, for the last five years, an annual increase in their cost of from 2 to 5 per cent. per annum; an increase in their receipts of from 12 to 20 per cent.; and an increase in their expenses of from 20 to 40 per cent. per annum.

Deductions from the reports of the railroads in the State of New York, 1855, have been made, showing the comparative cost of construction, of maintenance, and of operating each of the roads of the State, and have been arranged as follows:

The total length of road known to be in operation in New York in 1855 was	2723¾ miles.
In addition to which there is of second track in operation	803 "
Making a total length of track in operation	3526¾ "
The whole length of completed and projected roads	4436 "
The capital stock, as by charters, of 64 roads (4436 miles), is	$114,102,200 00
The amount of the above subscribed	84,072,597 00
The amount of capital stock paid in on 63 roads (4406 miles)	69,473,458 52
The amount of funded debt of 63 roads	68,230,997 42
The amount of floating debt do.	8,804,818 43

The expenditures on the roads which are completed are as follows:

For grading and masonry, 16 roads, 1623¼ miles	$30,742,090 21
For bridging 16 roads, 1623¼ miles	1,902,424 87
For superstructure, 21 roads, 2106¼ miles	26,737,876 67
For grading, bridging, and superstructure, 21 roads, 2106¼ miles	63,822,911 21
For station buildings, engine houses and shops, 22 roads, 2127¼ miles	5,042,758 87
For land damages and fences, 22 roads, 2127¼ miles	9,127,330 92
For locomotives, 17 roads, 2058¾ miles	5,748,722 83
For cars (of all kinds), 19 roads, 2110¼ miles	6,726,243 12
For engineering and agencies, 23 roads, 2188¾ miles	3,395,962 50
Total expenditure for construction and equipment, 2210¼ miles	115,537,193 73
The expenditure for the construction and equipment of 28 roads (1600 miles), which are in progress and partly completed, including those which reported in 1855, but not in 1856	13,112,451 29
The number of locomotives in use is	668
do. passenger and emigrant cars	1008
do. freight and baggage cars	7808

	Miles run.	Miles of road.
The miles run by the passenger trains for the year was	7,024,190 on	2437
Miles run by freight trains for the year	4,368,677 on	2411
Total miles run by trains	11,392,867 on	2437
Number of passengers carried in the cars	12,360,449 on	2437
Number of miles traveled by all the passengers	479,025,821 on	2437
Number of tons of freight carried in the cars	2,959,362 on	2437
Number of miles, or total movement of freight one mile	861,707,951 on	2376

Expense of maintaining the roads on 21 roads, 2229 miles	$2,504,041 96
Viz.: chargeable to passenger business, 1923 miles	1,141,260 96
chargeable to freight business, 1915 miles	953,991 06
Expense of repairs of machinery on 19 roads, 2189 miles	$1,901,412 74
Viz.: chargeable to passenger business, 2054 miles	809,277 53
chargeable to freight business, 2043 miles	991,451 48
Cost of operating the road on 20 roads, 2191 miles	$5,802,563 88
Viz.: chargeable to passenger business, 16 roads, 2074 miles	2,685,179 74
chargeable to freight business on 15 roads, 2066 miles	2,515,265 45
Receipts from passengers on 19 roads, 2189 miles	$8,022,419 53
Receipts from freight on 19 roads, 2189 miles	8,271,012 85
Receipts from other sources, 18 roads, 2171 miles	835,765 10
Total receipts on 19 roads, 2189 miles	$18,129,197 48
Payments for transportation expenses, 18 roads, 2171 miles	$10,314,414 44
Payments for interest on debts on 21 roads, 2205 miles	3,040,360 23
Payments for dividends on 6 roads, 1388 miles	2,237,416 06
Total payments	$16,492,990 73

The average cost of construction and equipment per mile of road on those railroads which have reported these items has been as follows:

Grading and masonry on 19 roads,	1623¼	miles ..	$12,778 49
Bridging	19 "	1623¼ " ..	1,171 98
Superstructure	21 "	2106¼ " ..	12,600 00
Grading, bridging, and superstructure on 21 roads, 2106¼ miles			30,453 49
Station buildings, engine houses, and shops on 22 roads, 2127¼ miles			2,370 27
Land damages and fences on 22 roads, 2127¼ miles			4,290 17
Locomotives	17 "	2058¾ "	2,792 38
Cars of all kinds	19 "	2110¼ "	3,186 66
Engineering and agencies	23 "	2188¾ "	1,084 79
The total average expenditure for construction and equipment on 25 roads, 2340¼ miles long, was			49,355 05

The average cost per mile of a single track is as follows:

Grading, masonry, and bridges on 19 roads, 2340¼ miles	$9,676 37
Superstructures on 21 roads, 2823 miles	9,469 48
Grading, bridges, and superstructure on 21 roads, 2823¼ miles	22,604 18
Station, engine houses, and shops on 22 roads, 2841¼ miles	1,772 80
Land and fencing on 22 roads, 2841¼ miles	3,208 41
Engineering and agencies on 23 roads, 2963¼ miles	1,145 94
The total average expenditure for construction and equipment on 25 roads, with 3142¼ miles of track, was	36,769 45

There is one locomotive for every 3¾ miles of road in use. There is one passenger or emigrant car for every 2½ miles. There is one freight or baggage car for every 32-100th mile. The average mileage of the passengers for each mile run by the train is 69. The distance traveled by each passenger is 39½ miles; or, if we exclude the Harlem road, the travel on which is principally in the city of New York, 51 miles. The speed of the express trains, when in motion, per hour, is 36 miles. The number of tons of freight for each mile run by the trains is 71. The distance each ton of freight was moved, 107 miles. The speed of the freight trains when in motion, per hour, is 16 miles. The weight of the freight trains, exclusive of the freight, is 175 tons.

The proportions of the tonnage of each description of freight carried on nineteen roads, 2228 miles, are as follows:

Of the product of the forest	14 per ct. of the whole tonnage.
" " animals	15½ " "
Vegetable food	22 " "
Other agricultural products	4 " "
Manufactures	12 " "
Merchandise	12½ " "
Unclassified articles	20 " "

AVERAGE COST OF THE MAINTENANCE OF WAY PER MILE OF ROAD.*

	Total.	Charged to the Business of	
		Passengers.	Freight.
Repairs of road-bed	$816 43	$453 43	$351 64
Iron used for do.	277 54	83 22	140 00
Repairs of buildings	55 69	27 43	22 15
" fences and gates	19 01	11 72	7 72
Taxes	114 36	64 61	54 37
Total	$1123 40	$635 04	$436 09

AVERAGE COST OF REPAIRS OF MACHINERY PER MILE OF ROAD.

	Total.	Charged to the Business of	
		Passengers.	Freight.
Repairs of engines	$427 53	$237 84	$191 07
" cars	353 58	145 20	206 66
Tools	36 42	18 59	16 48
Oil and waste	65 55	37 72	28 88
Total	$923 41	$434 52	$438 01

AVERAGE COST OF OPERATING PER MILE OF ROAD.

	Total.	Charged to the Business of	
		Passengers.	Freight.
Office expenses and stationery	$50 28	$25 03	$25 08
Agents and clerks	248 40	116 31	122 07
Labor, loading, and unloading	213 49	....	187 45
Porters, watchmen, and switchmen	165 71	100 40	61 88
Wood and water station attendance	41 59	25 51	16 34
Conductors, baggage and brakemen	271 72	146 39	122 54
Enginemen and firemen	263 09	140 73	122 61
Fuel, cost and labor of preparing	732 60	395 23	202 12
Oil and waste for engines	89 27	49 58	30 63
" " cars	65 02	33 65	31 49
Loss and damage to goods and baggage	46 49	5 74	40 33
Damages for injuries to person	36 06	30 94	13 65
" to property and cattle	12 36	5 71	8 22
General superintendence	65 38	28 97	50 64
Contingencies	408 15	242 18	199 01
Total	$2648 66	$1294 84	$1212 90

AVERAGE COST OF MAINTENANCE OF WAY PER MILE RUN BY THE TRAINS.

	Total.	Charged to the Business of	
		Passengers.	Freight.
	Cents.	Cents.	Cents.
Repairs of road-bed	16·75	15 86	18·23
Iron for "	4·87	3 59	6·40
Repairs of buildings	1·15	0·96	1·15
Fences	0·39	0 41	0·40
Taxes	2·31	2·25	2 81
Total	22·63	20·82	25·70

AVERAGE COST OF REPAIRS OF MACHINERY PER MILE RUN BY THE TRAINS.

	Total.	Charged to the Business of	
		Passengers.	Freight.
	Cents.	Cents.	Cents.
Repairs of engines	8·71	7·81	9·92
" cars	7·10	4·89	10·02
" tools	0·65	0·54	0·75
Oil and waste	1·18	0·97	1·31
Total	17·52	13·44	22·75

AVERAGE COST OF MAINTENANCE OF WAY PER PASSENGER AND PER TON FREIGHT CARRIED ONE MILE.

	Total.	Charged to the Business of	
		Passengers.	Freight.
	Mills.	Mills.	Mills.
Repairs of road-bed	2·40	2·14	2·41
Iron for "	0·82	0·50	0·71
Repairs of buildings	0·16	0·13	0·15
" fences	0·05	0·05	0·05
Taxes	0·34	0·31	0·37
Total	3·37	2·83	3·41

* Many of the roads do not give complete returns of the various items of cost of maintenance of way, repairs of machinery, and operating. The average cost of each item is made up from those roads only which have reported that item, which will account for the apparent discrepancies between the averages of the total cost and the sum of averages of the cost of each item.

AVERAGE COST OF OPERATING PER MILE RUN BY THE TRAINS.

	Total.	Charged to the Business of	
		Passengers.	Freight.
	Cents.	Cents.	Cents.
Office expenses and stationery	1·02	0·85	1·20
Agents and clerks	4·82	3·82	6·29
Labor, loading and unloading	3·72	2·52	0·48
Wood and water station attendance	1·27	1·39	1·06
Porters, watchmen, and switchmen	3·87	3·04	2·04
Conductors, baggage and brakemen	5·44	4·82	6·22
Enginemen and firemen	5·45	4·64	6·63
Fuel, cost and labor of preparing	14·44	13·02	15·65
Oil and waste for engines	1 84	1·65	1·86
" " cars	1·37	1·16	1·65
Loss and damages to goods and baggage	0 92	0·18	2·08
Damages for injuries to persons	0·69	0·78	0·38
" to property and cattle	0·25	0·13	0·43
General superintendence	1·30	0·10	1·48
Contingencies	8·17	7·47	0·64
Total	53·48	43·06	63·46

AVERAGE COST OF REPAIRS OF MACHINERY PER PASSENGER AND PER TON OF FREIGHT CARRIED ONE MILE.

	Total.	Charged to the Business of	
		Passengers.	Freight.
	Mills.	Mills.	Mills.
Repairs of engines	1·27	1·17	1·33
" cars	1·02	0·73	1·46
" tools	0·09	0·08	0·10
Oil and waste	0·16	0·14	0·18
Total	2·54	2·12	3·07

AVERAGE COST OF OPERATING PER PASSENGER AND PER TON OF FREIGHT CARRIED ONE MILE.

	Total.	Charged to the Business of	
		Passengers.	Freight.
	Mills.	Mills.	Mills.
Office expenses and stationery	0·15	0·12	0·17
Agents and clerks	0·71	0·56	0·86
Labor, loading and unloading	0·57	0·02	1·29
Porters, watchmen, and switchmen	0·45	0·45	0·49
Wood and water station attendance	0·18	0·25	0 14
Conductors, baggage and brakemen	0·81	0·71	0·87
Enginemen and firemen	0 78	0·68	0 88
Fuel, cost and labor of preparing	2·08	1·92	2·13
Oil and waste of engines	0·25	0·24	0·25
" " cars	0·20	0·17	0·72
Loss and damage to goods and baggage	0·13	0·03	0·28
Damages for injuries to persons	0 09	0·11	0·15
" to property and cattle	0 04	0·02	0·16
General superintendence	0·18	0·13	0 20
Contingencies	0·06	0·01	0 85
Total	7·64	0·36	8 61

The average receipts per mile of road were:

Passengers	$4,074 46
Freight	3,776 72
Other sources	427 28
	$8,278 47
And the expenses	$4,710 44

From this we see that the expenses were 56 per cent. of the gross receipts, which is below the average throughout the country.

The expenses of operating the road were 57 per cent. of the whole receipts.

The average receipts per mile run by the trains were as follows:

From passengers	$1 32
freight	2 02
other sources	1 67
And of the expenses	$0 97

The average receipts per passenger per mile were 1 95 cents.

Per ton of freight	2 79 "
Per passenger or per ton	2·38 "
Expenses	1·38 "
On 16 roads, 2225·24 miles long, the number of passengers carried, as reported, was	12,256,714
The actual number of travelers was probably about	10,000,000
The number of miles traveled on same roads was	477,611,422

Comparison of the Returns of several Railroads.—From the statistics of the net income and general economy of the principal railroads in New York and Massachusetts, we can elucidate many facts of the greatest importance in railroad management. Among these may be noticed the following: The average number of passengers and the number of tons of freight carried each mile run is the same; that is, on an average there are daily carried an equal number of passengers and freight an equal distance on the road. The largest number of passengers carried each mile run is by the Hudson River Railroad, which has as a rival the best navigable river in the world. The largest number of tons carried per mile run is by the New York and Erie Railroad, which is the principal through freight road for the products of the West; and this road also shows the largest net income per mile. The ratio between the total receipts per mile and the net income per mile is far from being constant, or the last from being dependent on the first. There is, however, a relation between the net income per mile of a road and the expenses per mile; that is, the net income per mile of a railroad bears a very nearly constant ratio to an inverse of the expenses per mile run; thereby making it evident that, *ceteribus paribus*, the interests of the stockholder are advanced more by reducing the expenses per mile run, than by increasing the business of the road. The receipts for passengers or freight carried per mile is given by adding the expenses and the net income carried per mile. It is shown from this comparison that on an average the net income from passengers carried per mile is 50 per cent. of the receipts, or equal to the expenses; while the net income from freight is only 34 per cent. of the expenses. From this we see that the tariff of freight should be increased 16 per cent., that it shall be in a just proportion to the passenger tariff.

The tables also show that the net income from passengers and mails per mile run is generally greater on the Massachusetts railroads than on the New York railroads, and that the net income from freight per ton per mile is greater on the New York railroads. The general tariffs are not materially different in the two States, but the expenses of freight are fully 50 per cent. greater in Massachusetts than in New York. The net income per mile is the greatest on the New York and Erie Railroad, which is a freight road.

STATISTICS OF THE INCOME AND ECONOMY OF THE PRINCIPAL RAILROADS IN NEW YORK AND MASSACHUSETTS.

Companies.	Length in Miles.	Receipts from Passengers, Mails, etc.	Receipts from Freight.	Total Receipts.	Passengers carried each Mile run.	Tons of Freight carried each Mile run.	Net Income from Passengers, Mails, etc.
New York Central	582	$3,438,514	$2,479,821	$5,918,335	77	68	$1,650,852
New York and Erie	464	1,930,309	3,309,500	5,859,759	65	89	1,089,839
Hudson River	144	1,289,841	464,145	1,753,986	127	55	465,296
Harlem	133	605,084	337,811	942,395	29	29	191,420
Ogdensburg	119	147,580	440,144	590,124	20	74	29,084
Buffalo, Corning, and New York	100	67,681	55,176	123,157	21	33	29,645
Watertown and Rome	97	168,181	222,796	850,977	37	85	79,834
Buffalo and New York City	92	137,917	116,853	254,770	25	62	35,530
Boston and Worcester	69	547,397	405,479	952,706	79	50	303 571
Western	155	838,971	924,973	1,763,944	87	49	573,746
Boston and Providence	55	329,156	214,594	543,750	55	47	194,723
Boston and Lowell	28	175,249	267,252	442,492	57	65	39,548
Old Colony and Fall River	87	427,137	222,519	649,656	63	37	193,814
Fitchburg	68	313,754	390,885	704,639	61	53	145 679
Boston and Maine	83	560,935	297,446	858,381	69	58	385,086
Eastern	93	473,758	105,445	579,198	52	35	204,8-6
Totals and averages	2379	$11,514,100	$10,314,419	$21,828,649	67	67	$5,648,422

Companies.	Net Income from Freight	Total net Income.	Total Receipts per Mile.	Net Income per Mile.	Ratio of net Income to Receipts from Passengers, Mails, etc.	Ratio of net Income to Receipts from Freight.	Net Income from Passengers, Mails, etc., per Mile run.
New York Central	$1,179,642	$2,830,294	$10,170	$4863	Per Cent. ·48	Per Cent. ·48	Cents. 77
New York and Erie	1,682,482	2,722,351	11,573	5867	·52	·50	69
Hudson River	127,937	593,235	12,186	4119	·36	·28	77
Harlem	133,248	324,668	7,086	2441	·32	·39	25
Ogdensburg	144.766	170,850	4,959	1436	·19	·33	19
Buffalo, Corning, and New York	21,107	50,752	1,231	507	·44	·38	24
Watertown and Rome	91,385	171,219	4.030	1765	·43	·41	52
Buffalo and New York City	16,400	52,030	2,856	466	·26	·14	13
Boston and Worcester	54,796	858,367	13,809	5194	·55	·14	90
Western	144,957	720,703	11,393	4650	·63	·16	79
Boston and Providence	17,562	219,285	9,879	3823	·59	·08	85
Boston and Lowell	79,917	119,465	15,803	4260	·23	·30	24
Old Colony and Fall River	....	....	7,467	....	·44	..	67
Fitchburg	....	....	10,333	....	·46	..	52
Boston and Maine	....	....	10,342	....	·69	..	94
Eastern	....	....	6,228	....	·62	..	96
Totals and averages	$3,555,153	$9,203,575	$9,176	$3368	·49	·34	70

Companies.	Net Income from Freight per Mile run.	Expenses of Passengers, Mails, etc., carried one Mile.	Net Income from Passengers, Mails, etc., carried one Mile.	Expenses of Freight per Ton carried one Mile.	Net Income from Freight per Ton carried one Mile.	Net Income from Passengers, Mails, etc., per Mile run.	Net Income from Freight per each Mile run.
New York Central	$ Cts. 99	Cents. 1·091	Cents. 1·007	Cents. 1·692	Cents. 1·453	Cents. 77	$ Cts. 99
New York and Erie	1 15	·983	1·076	1·290	1·286	69	1 15
Hudson River	46	1·085	·606	1·853	·705	77	46
Harlem	52	1·904	·881	2·042	1·234	25	52
Ogdensburg	54	2·811	·676	1·501	·735	10	54
Buffalo, Corning, and New York	38	1·487	1·151	1·866	1·156	24	38
Watertown and Rome	94	1·574	1·428	1·603	1·114	52	94
Buffalo and New York City	26	1·586	·553	2·412	·339	13	26
Boston and Worcester	25	·928	1·150	2·909	·454	90	25
Western	22	·924	2·000	2·416	·449	75	22
Boston and Providence	16	1·121	1·623	3·807	·339	28	16
Boston and Lowell	63	1·471	·429	2·278	·972	24	63
Old Colony and Fall River	..	1·322	1·068	6·510	....	67	..
Fitchburg	..	·971	·841	8·979	....	52	..
Boston and Maine	..	·618	1·352	3·362	....	94	..
Eastern	..	1·116	1·830	4·165	....	96	..
Totals and averages	66	1·098	1.058	1·880	·990	70	66

OPERATIONS OF THE RAILROADS OF MASSACHUSETTS FROM 1846 TO 1855.

Years.	Number of Railways in operation.	Number of Miles in operation.	Cost.	Number of Miles run. By Passenger Trains.	By Freight Trains.	By other Trains.	Total.	Total Receipts per Mile run.	Total Expenses per Mile run.	Net Income per Mile run.
								$ Cts.	$ Cts.	Cents.
1846	16	620	$27,094,027	1,426,737	746,547	145,799	2,339,484	1 50	73	83
1847	19	715	29,796,363	1,763,038	1,181,482	206,679	3,177,143	1 55	75	81
1848	21	787	41,302,532	2,112,406	1,290,319	261,773	3,568,089	1 50	76	74
1849	27	945	45,125,769	2,356,891	1,248,799	282,122	3,806,702	1 51	76	75
1850	32	1009	50,750,452	2,607,611	1,327,046	281,168	4,215,825	1 52	74	78
1851	36	1042	52,505,888	2,760,888	1,424,209	293,067	4,308,370	1 50	76	74
1852	36	1150	53,076,013	2,997,022	1,589,590	199,171	4,785,783	1 44	77	67
1853	38	1164	54,914,506	3,186,957	1,702,541	941,338	5,830,840	1 52	82	70
1854	37	1194	57,005,408	3,314,459	1,962,193	254,447	5,531,064	1 57	98	59
1855	37	1273	60,359,891	3,116,401	2,041,854	228,181	5,386,416	1 69	1 05	64

Years.	Receipts. From Passengers.	From Merchandise and Gravel.	From Mails, Rents, etc.	Total.	Expenses. Of Road-bed.	Of Motive Power.	Miscellaneous.	Total.	Net Income.
1846	$2,018,108	$1,467,969	$119,317	$3,642,171	$819,709	$881,669	$1,009,604	$1,696,576	$1,945,595
1847	2,509,784	2,106,843	196,721	4,904,533	480,040	428,088	1,434,790	2,372,432	2,532,079
1848	849,724	2,325,407	220,735	5,445,845	484,069	498,556	1,754,479	2,741,604	2,663,411
1849	3,023,701	2,411,807	253,991	5,741,799	579,450	590,949	1,670,613	2,890,918	2,850,881
1850	3,404,948	2,606,766	296,637	6,419,353	578,613	485,762	1,995,619	3,112,796	3,306,738
1851	3,502,128	2,650,465	280,248	6,599,576	652,666	531,360	2,083,411	3,358,905	3,240,671
1852	3,641,790	2,819,409	273,801	6,885,517	751,701	504,144	2,288,266	3,672,410	3,212,107
1853	4,171,964	3,330,369	317,627	7,977,57 7	912,856	728,801	2,674,578	4,324 013	3,653,514
1854	4,495,836	3,725,186	346,411	8,606,251	1,223,076	1,018,041	3,171,117	5,451,047	3,745,204
1855	4,609,877	3,904,075	451,504	9,077,529	1,367,107	886,756	3,395 647	5 650,600	3,426,929

Years.	Net Increase per Cent. on Cost.	Number of Passengers carried in the Cars.	Number of Passengers hauled one Mile.	Number of Tons of Merchandise and Gravel carried in the Cars.	Number of Tons of Merchandise and Gravel hauled one Mile.	Weight, in Tons, of Passenger Trains, not including Passengers, hauled one Mile.	Weight, in Tons, of Freight Trains, not including Merchandise and Gravel, hauled one Mile.	Total Number of Tons, not including Passengers, hauled one Mile.
1846	$7 20	4.7 2,818	82,024,265	1,140,265	89,215,049	61,440,637	71 030,160	171,865,837
1847	7 25	5,341,341	99,870,187	1,665,218	66 8 8,733	79,208,113	108,345,834	254,452 646
1848	6 51	6,728,427	118,005,742	1,834,192	64,577,165	107,236,014	119,604 791	291,418,570
1849	6 32	8,336,854	136,096,362	2,025,727	66,734 812	108,141,392	124 045 927	298,921.131
1850	6 49	8,751,372	147,605,638	2,188,838	72,111,962	90,922,192	130 875,802	302,759,955
1851	6 20	9,810,858	162,916,183	2,260,546	70,275,310	98 766,749	116,695,509	287,467 668
1852	5 05	9,810,056	161,604,655	2,583,287	77,638,247	101,746 153	151,077,459	316,461,8'0
1853	6 64	11,479,232	185,805,727	3,041,782	15 985,832	105 148,699	148 804,441	350,038,972
1854	5 68	12 3 2,703	194,158,801	3,767,631	104,583 043	122,063,281	171,677,154	3' 8,323,575
1855	5 68	11,339,850	185,160,127	3,062,251	103,876,163	116,689,219	165,260,745	385,626,127

STATEMENT SHOWING THE NUMBER OF MILES, EQUIPMENT, COST, AND REVENUE OF THE PRINCIPAL RAILROADS IN THE UNITED STATES FOR 1855.

Railroads.	Miles. Length.	Miles. Finished.	Equipment. Locomotives.	Equipment. Cars.	Cost. Capital paid in.	Cost. Funded Debt.	Cost. Floating Debt.	Cost. Total.	Revenue. Gross Earnings.	Revenue. Net Earnings.
Baltimore and Ohio, Main Stem	380	380	204	3333	$10,118,902	$12,754,940	$194,043	$23,067,885	$4,385,052	$2,001,172
Baltimore and Ohio, Washington Branch	30	30	4	118	1,650,000	....	25,000	1,675,000	444,220	235,044
Bellefontaine and Indiana	118	118	16	219	1,881,635	1,214,500	29,829	3,125,964	298,293	140,823
Chicago, Burlington, and Quincy	210	210	27	372	1,475,300	1,240,000	282,579	2,997,879	722,581	379,822
Chicago and Rock Island	228	228	41	722	4,029,000	1,971,000	114,085	6,114,085	1,416,304	709,935
Cincinnati, Hamilton, and Dayton	60	60	24	382	2,193,900	1,011,000	65 441	3,430,341	508,271	264,225
Cleveland, Columbus, and Cincinnati	141	141	38	445	4,547,020	98,400	124,458	4,769,878	1,220,296	732,056
Cleveland and Pittsburg	104	155	24	539	2,830,784	2,750,818	293,670	5,924,776	881,878	309,519
Cleveland and Toledo	221	206	26	275	5,323,712	3,670,278	335,473	7,029,463	970,471	518 831
Covington and Lexington	98	98	...	....	1,302,904	1,611,000	469,939	5,383,743	264,974	138,094
Delaware, Lackawanna, and Western	111	111	30	2057	3,051,622	2,400,000	1,063,756	6,515,378	1,293,108	450,540
Galena and Chicago	250	250	53	1050	5,441,500	2,834,330	438,238	8,714,068	2,315,787	1,252,042
Green Bay, Milwaukie, and Chicago	40	40	5	93	1,000,000	600,000	109,062	1,709,062	239,926	142,762
Hartford and New Haven	72	73	...	....	2,350,000	944,000	....	3,294,000	730,704	291,405
Hudson River	144	144	57	658	3,758,892	8,842,000	408,363	13,009,255	1,812,088	603,047
Illinois Central	704	627	83	1452	2,571,050	19,247,000	2,558,703	24,376,753	1,582,119	627,963
Indianapolis and Bellefontaine	84	84	10	189	834,187	852,000	174,259	1,860,446	191,538	65,670
Indianapolis and Cincinnati	110	110	19	342	1,303,675	1,396,800	259,470	2,959,954	418,654	221,749
La Crosse and Milwaukie	198	61	12	277	1,037,632	1,764,000	82,131	2,883,963	....	....
Little Miami	84	84	38	556	2,981,327	828,000	193,537	4,002,864	678,120	310 422
Macon and Western	103	103	14	185	1,353,755	129,000	....	1,482,755	349,940	195,242
Marietta and Cincinnati	258	155	23	274	4,330,550	7,150,000	....	11,480,550	196,083	64,219
Michigan Central	330	330	81	1522	6,033,432	5,408,065	785,180	12,226,675	2,878,321	1,306,503
Michigan Southern and Northern Indiana	468	338	74	1011	4,682,600	8,646,300	406,438	13,135,338	2,595,630	984,810
Milwaukie and Mississippi	225	125	25	358	1,826,459	2,347,500	67,889	4,241 828	691,241	417,444
New Albany and Salem	288	288	31	324	2,511,824	4,774,722	300,794	7,587 340	730,407	389,458
New Jersey Central	75	84	...	....	2,000,000	3,000,000	59,748	5,059,748	398,400	181,06
New York Central	556	556	209	2663	24,136,661	14,763,897	....	38,900,5'8	7,773,069	3,675,202
New York and Erie	497	497	203	2938	10,000,000	24,891,000	1,104,060	35,995 060	6,249,050	3,005,650
New York and Harlem	133	133	35	517	4,217,100	5,353,305	558,361	10,128,766	1,649,338	324,892
New York and New Haven	62	62	23	381	3,000,000	2,215,000	73,010	5,288,010	884,306	338 877
Panama	47½	47½	...	....	4,532,000	2,468,000	....	7,000,000	1,177,470	est.577,470
Pennsylvania Central	353	353	118	1754	12,555,525	6,376,041	1,143,055	19,874,621	2,598,233	1,820,378
Philadelphia and Reading	98	98	141	5778	9,054,267	8,820,600	1,480,827	19,526,694	4,521,794	2,444,433
Terre Haute, Alton, and St. Louis [not official]	208	208	...	....	3,250,000	4,500,000	50,000	7,800,000	471,000	....

Railroad to the Pacific.—The proposed railroad to the Pacific involves so many questions as to feasibility and cost, requiring to determine much more accurate data than we now possess, that it is better to give only the statistics that have up to this time been obtained, and abstain from arguments in favor of any route.

SURVEYED ROUTES FOR A RAILROAD FROM THE MISSISSIPPI OR ITS TRIBUTARIES TO THE PACIFIC OCEAN.—FROM THE REPORT OF THE SECRETARY OF WAR.

Description of Route.	Distance in straight Line.	Distance by proposed Route.	Sum of Ascent and Descent.	Estimated Cost.	Through arable Lands.	Through sterile Land.
	Miles.	Miles.	Feet.		Miles.	Miles.
1. Route near 47th and 49th parallels, from St. Paul to Vancouver	1455	1864	16,100	$130,781,000	374	1490
a. Extension thence to Seattle	45	161	1,000	10,000,000	161	....
2. Near the 41st and 42d parallels, via South Pass from Council Bluffs to Benicia	1410	2032	29,120	116,095,000	632	1400
3. Near the 38th and 39th parallels, from Westport to San Francisco, by the Coo-che-to-pa and Tah-ee-chay-pah Passes	1740	2080	49,986	So great that road is impracticable.	620	1460
b. Same, from Westport to San Francisco by the Coo-che-to-pah and Madelin Passes	1740	2200	56,514	do.	670	1620
4. Near the 35th parallel, from Fort Smith to San Pedro.	1360	1892	48,812	169,210,365	416	1476
c. Near the 35th parallel, from Fort Smith to San Francisco	....	2174	50,670	169,210,365	644	1530
5. Near the 32d parallel, from Fulton to San Pedro	1400	1618	32,784	68,070,000	408	1210
d. Fulton to San Francisco	1020	2039	42,008	93,120,000	759	1280

Route.	Miles of Route elevated										Length of level Route of equal Working Expenses.	Summit of highest Pass.
	Less than 1000 Feet.	Between 1 and 2000 Feet.	Between 2 and 3000 Feet.	Between 3 and 4000 Feet.	Between 4 and 5000 Feet.	Between 5 and 6000 Feet.	Between 6 and 7000 Feet.	Between 7 and 8000 Feet.	Between 8 and 9000 Feet.	Between 9 and 10,000 Feet.		
											Miles.	Feet.
1	470	530	720	130	97	28	...	...	..	..	2207	6,044*
a	161	....	....	....	....	....	....	....	..	..	180	....
2	180	170	210	160	580	285	270	107	20	..	2583	8,373
3	340	276	165	348	466	170	60	155	80	20	3125	10,032†
b	275	308	190	143	725	284	110	153	80	20	3360	10,032†
4	305	347	260	185	160	305	235	95	..	..	2816	7,472
c	....	....	....	....	....	....	...	...	..	..	3187	....
5	485	300	100	170	503	60	...	...	..	..	2230	5,711
d	700	410	160	205	504	60	...	...	..	..	2834	5,717

* Tunnel at elevation of 5219 feet. † Tunnel at elevation of 9540 feet.

RAILROADS IN THE UNITED STATES IN JANUARY, 1858.

States.	Number of Companies.	Length of Lines.		Cost of Construction and Equipment.	Completed Road actually in each State.	Mileage opened in 1857.
		Total.	Open.			
		Miles.	Miles.		Miles.	
Maine	14	586	541	$17,963,677	474	89
New Hampshire	15	534	550	17,597,703	654	..
Vermont	8	585	521	20,523,9-8	556	29
Massachusetts	47	1,417	1,286	63,384,310	1,215	5
Rhode Island	2	63	63	2,586,512	101	..
Connecticut	11	650	647	24,348,963	565	..
Total six New England States	97	3,904	3,617	$146,805,163	3,595	73
New York	42	2,809	2,700	$103,407,268	2,731	47
New Jersey	16	621	529	24,825,970	529	..
Pennsylvania	68	3,455	2,775	155,166,609	2,605	242
Delaware	3	91	91	1,610,310	114	8
Maryland	10	841	798	44 057,831	429	31
Total five Middle Atlantic States	139	7,904	6,893	$329,376,488	6,408	328
Virginia	19	1,465	1,321	$37,705,049	1,553	133
North Carolina	5	700	675	11,126,486	606	..
South Carolina	9	974	748	17,601,944	842	69
Georgia	14	1,362	1,186	24,952,153	1,187	118
Florida	4	521	128	3 500,000	128	87
Total five Southern Atlantic States	51	5,028	4,058	$94,885,632	4,316	412
Alabama	7	1,160	558	$15,253,771	510	68
Mississippi	5	404	177	5,515,009	483	84
Louisiana	8	996	335	11,032,362	265	27
Texas	5	1,505	147	5,000,000	147	96
Arkansas	1	140	38	775,000	38	38
Tennessee	9	1,116	887	19,359,390	654	244
Kentucky	9	666	306	10.197,414	819	88
Total seven Southwestern States	44	6,053	1,438	$67,123,946	2,446	645
Ohio	29	3,298	2,708	$106,043,328	2,702	53
Indiana	16	1,451	1,231	28,801,276	1,862	119
Michigan	5	1,025	999	30,390,853	954	127
Illinois	18	2,616	2,616	86,446,291	2,598	82
Wisconsin	10	1,092	718	19,2 5,842	688	157
Iowa	7	1,076	256	9,087,520	256	89
Missouri	4	798	317	19.140,247	317	127
Total seven Northwestern States	89	12,226	8,935	$299,205,971	9,177	747
California	1	22	22	750,000	22	..
Grand total	421	35,137	25,965	$918,146,600	25,965	2205

Progress of Railroads in the United States.—The following table exhibits the aggregate number of miles of railroads in the United States for every year from 1838 to 1856 inclusive, and also shows the whole number of miles of railroads in each State for the same period:

PROGRESS OF RAILROADS IN THE UNITED STATES.

States.	1838.	1839.	1840	1841.	1842.	1843.	1844.	1845.	1846.	1847.	1848.	1849.	1850.	1851.	1852.	1853.	1854.	1855.	1856.
	m.	m.	m.	m.	m.	m.	m.	m.	m.	m.	m.	m.	m.	m.	m.	m.	m.	m.	m.
Maine	12	12	12	12	37	64	64	64	64	64	64	87	175	224	283	394	410	422	442
New Hampshire	....	....	....	....	....	....	3	3	10	38	38	134	309	414	463	582	596	646	646
Vermont	....	....	....	....	....	....	....	....	....	....	....	93	243	302	361	427	480	516	518
Massachusetts	126	144	144	219	43.	465	465	467	626	718	709	948	1095	1145	1,153	1,153	1,175	1,207	1,285
Rhode Island	50	50	50	50	50	50	50	50	50	50	50	50	50	50	60	50	50	78	85
Connecticut	36	36	36	212	238	238	238	238	238	238	238	326	434	549	570	627	596	596	601
New York	325	325	404	496	590	722	722	796	873	878	902	1 53	1070	1404	1,946	2,128	2,400	2,608	2,701
New Jersey	108	124	148	180	180	186	186	186	186	186	195	115	231	267	290	290	350	448	472
Pennsylvania	562	562	562	893	893	893	893	893	893	946	981	981	981	1183	1,326	1,326	1,700	2,038	2,407
Delaware	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	50	84	120
Maryland	181	181	181	202	223	258	254	208	285	324	324	324	324	324	355	355	355	372	378
Virginia	125	125	125	147	223	223	223	228	223	270	308	308	308	418	548	624	900	1,252	1,480
North Carolina	....	....	53	87	87	87	87	87	87	87	87	154	302	240	240	240	400	483	612
South Carolina	137	137	137	204	204	204	204	204	204	204	204	204	241	263	383	599	626	677	706
Georgia	57	100	185	271	323	363	402	518	576	609	609	609	609	665	804	857	910	1,002	1,062
Florida	....	....	....	....	....	....	....	....	....	38	54	54	54	54	54	28	28	26	26
Alabama	46	46	46	46	46	46	46	46	91	91	113	113	113	135	236	290	317	484	
Mississippi	....	....	....	14	14	26	26	42	42	60	60	60	60	60	95	210	255	410	
Louisiana	40	40	40	40	40	40	40	40	40	40	40	66	66	117	117	117	190	222	264
Texas	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	52	86	86	57
Missouri	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	144	189
Tennessee	....	....	....	....	....	....	....	....	....	....	....	....	....	....	134	185	366	366	509
Kentucky	22	25	28	28	28	28	28	28	28	28	28	28	55	98	98	150	198	198	307
Ohio	....	....	....	36	84	84	84	84	84	129	274	274	219	531	890	1,585	2,500	2,641	2,869
Michigan	....	....	....	188	188	174	206	236	238	270	270	270	344	370	474	474	474	474	601
Indiana	....	....	....	....	....	....	....	....	30	30	42	86	86	215	538	715	950	1,498	1,807
Illinois	....	....	....	22	22	22	22	22	22	22	22	22	22	148	271	296	1,200	2,135	2,534
Wisconsin	....	....	....	....	....	....	....	....	....	....	....	....	....	....	20	50	200	276	630
Iowa	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	88	2 3
California	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	23	23
Total	1843	1920	2167	3319	3877	4174	4311	4511	4870	5336	5682	6350	7 55	9090	11,631	13,213	18,265	21,128	24,476

From an examination of the above table it will be found that the construction of railroads has made greater progress in 1856 than in any previous year. The number of miles in operation on the 31st of December, 1856, is 24,476, against 21,069 at the close of the year 1855, being an increase of 3407 miles for the year.

We add to the last two columns of the following table the population and wealth of the several States, as estimated by the Secretary of the Treasury.

MILES OF RAILROAD IN OPERATION ON THE 31ST DECEMBER, 1856.

States.	1855.	1856.	Increase.	Population, 1856.	Wealth, 1850.
Maine	422	442	20	623 802	$131,128,186
New Hampshire	646	646	..	324,701	102,304,326
Vermont	516	516	..	325 206	91,165,680
Massachusetts	1,207	1,285	78	1,133,123	567,326,195
Rhode Island	78	85	7	166,927	91,499,850
Connecticut	596	601	5	401,292	203,759,831
New York	2,668	2,701	33	3,470,050	1,364,154,625
New Jersey	448	472	24	569,499	179,750,000
Pennsylvania	2,038	2,407	369	2,542,760	1,031,731,304
Delaware	84	120	36	97,295	50,466,924
Maryland	372	378	6	629.580	261,243,660
Virginia	1,252	1,480	228	1,512,593	580,914,897
North Carolina	483	612	129	921,852	229,603,572
South Carolina	677	706	29	705,661	303,434,240
Georgia	1,002	1,062	60	935,060	500,000,000
Florida	26	26	26	110,725	49,461,461
Alabama	317	484	167	885,192	279,213,067
Mississippi	255	410	155	671 549	250,625,000
Louisiana	222	264	42	600,887	270,425,000
Texas	86	57	51	500,000	240,000,000
Tennessee	366	509	143	1,092,470	321,776,810
Kentucky	198	307	109	1,086,587	411,000,198
Ohio	2,641	2,869	228	2,215,750	860,877,354
Indiana	1,498	1,807	309	1,149,606	301,858,404
Michigan	474	601	130	509,574	116,583,580
Illinois	2,135	2,534	399	1,242,917	333,237,474
Wisconsin	276	630	354	552,109	87,500,000
Iowa	88	253	165	325,014	110,000,000
Missouri	144	189	45	831,215	223,948,731
California	23	23	..	335,000	165,000,000
Arkansas	0	0	..	253,117	64,240,726
Territories and District of Columbia	0	0	..	303,500	70,079,347
Total	21,128	24,476	3407	26,764,312	$9,817,611,072
Estimated increase of property since 1850					1,500,000,000
					$11,317,611,072

The above table, condensed, presents the following points:

Miles opened in five years ending	1852	131
" " "	1857	1,281
" " "	1842	2,465
" " "	1847	1,439
" " "	1852	6,295
" " "	1857	13,809

The greatest progress has been made by the eight Western States; next by the Southern States; while the Northeastern States have made but trifling additions to their public works.

	1855.	1856.	Increase.
	Miles.	Miles.	Miles.
6 Eastern States	3,465	3,575	110
4 Middle "	5,238	5.700	462
13 Southern "	5,206	6,304	1154
8 Western "	7,219	8,897	1681
Total	21,128	24 476	3407

The Secretary of the Treasury has prepared a statement showing the cost of railroads in the United States in 1855, from which we make the following summary. Returns not having been received from a number of companies, these figures are only approximative.

Capital paid in	$433,286,946
Funded debt	303,137,973
Floating debt	40,126,958
Expended in 1855	$776,551,877
Required to finish the roads	313,829,237
Total estimated cost	$1,090,381,114
Miles finished	19,036
Miles unfinished	16,069
Total length	36,005
Receipts for the year	$91,182,683

According to these figures, the average cost per mile would only amount to $30,000, whereas experience proves that $35,000 is nearer the truth. Assuming this estimate, the total cost of the 36,000 miles, when finished, would amount to $1,260,000,000.

The average cost of a portion of our railroad system has been as follows:

	Costing.	Per Mile.
30 roads in New York	$30,000,000	$46,344
38 " " Massachusetts	60,000,000	44,482
12 " " the South and West	50,000,000	45,653

It is estimated that at least three-fourths of the money which has been expended upon railroads in this country has been furnished by our own citizens, and the remainder (chiefly for bonds) has been obtained from foreign investments.

In conclusion, we may add, that, in reviewing the progress of railroads in the United States, their effect upon the prosperity of the country, and their future prospects, are much beyond the wildest dreams of the originators of the system. The number of miles built in the first ten years of our railroad history, beginning in the year 1828, was 1843, of which New York State built 16 per cent. The number of miles built in the second ten years, or from 1838 to 1848, was 3839, of which New York built 15 per cent. From 1848 to 1856 the number built was 18,794, of which New York built 9 per cent. At the present time New York has over 11 per cent of the total length of railroads, and ranks next to Illinois in number of miles. Our railroad history has had two eras—the first from 1828 to 1848, when there was in the number of miles built an average increase of 268 miles per year; and the second from 1848 to 1856, having an average in crease of 2350 miles per year. In many of the States the development of the railroad system is quite equal to the wants of the people; but in many others, Kentucky being the most notable instance, it is much less.

The cost of these 26,000 miles of railroad built at the end of the year 1857 is estimated at $920,000,000, or an average of $35,000 @ $36,000 per mile; and, if the rails had been laid with American iron, produced by domestic labor, it would have been the most productive investment the country ever made.

The Railroad Systems of Europe and the United States.—Among the greatest achievements are the opening up of new fields of supply, and the deepening of old channels of consumption. They have brought into profitable use mines, forests, quarries, arable and grazing districts, fisheries, harbors, and rivers, previously inaccessible.

But still greater even than these achievements are the advantages arising from the cheap and rapid conveyance of passengers over long distances. Every enterprise is now carried on with perhaps ten times as much dispatch, and with ten times less trouble than forty years ago; and the facility of personal superintendence is certainly twenty times greater than it was then. It is not difficult, therefore, to comprehend that to accelerate even by a few years the completion in a country of an extensive system of railways, is to confer upon it advantages the real value of which it is impossible to represent in terms of money; and we shall find, in the considerations connected with this mode of viewing the facts, a correction of many prevalent errors relative to the cost of English railways.

Let us see what was the comparative progress which, at the end of 1854, had been made by the countries of Central and Western Europe, and by the United States, in providing themselves with railways.

Railways.—General summary of the comparative extent of railway open at the close of 1854, in different countries:

Countries.	Area in English Square Miles.	No. of Miles of Railway open in 1854.	Miles of Rail open to each 100 Square Miles of Area.
England and Wales	57,800	6,100	10·2
Scotland	30,240	1,040	3·5
Ireland	31,870	900	2·8
	119,910	8,040	6·7
France	205,000	2,916	1·4
Germany	268,000	5,400	2·0
Belgium	11,000	530	4·8
	484,000	8,840	1·8
Massachusetts	7,800	1,300	16·6
New York	47,000	2,700	5·8
Pennsylvania	46,000	2,000	4·3
	100,800	6,000	5·4
Ohio	40,000	3,000	7·7
Indiana	33,800	1,500	4·4
Illinois	55,400	2,800	5·0
	129,200	7,300	5·6
Twenty-two other States of the Union	1,551,066	8,200	0·6
Totals	2,185,040	32,380	1·5

It appears by these figures that the only country or State possessing a greater extent of railway (compared with territorial area) than England and Wales was the State of Massachusetts; but the area of Massachusetts is only an eighth part the area of England and Wales.

In France and Germany the progress has been less than a seventh of our own. Even in Belgium, and New York, and Pennsylvania, the progress has been barely a third of ours. In Scotland the progress has been twice as rapid as in Germany; and if fair allowance be made for the lake and mountain surface of Scotland, the progress in it will exceed the progress of Belgium, and of those Western States of the Union where railways are made with a cheapness and facility unknown any where else.

We may now recapitulate the conclusions which seem to be established by the facts and statements before us, viz.:

1. That of the three hundred millions sterling actually expended in railways to the close of 1855, in the United Kingdom, fully one half, or one hundred and fifty millions sterling, were expended during the five years, 1846, '47, '48, '49, and '50, and that of the 8300 miles of railway open and at work at the close of 1855, fully one half, or 4150 miles, were completed and brought into operation for the first time during the five years now enumerated.

2. That the consequence of so prodigious an outlay in so small a space of time has been to place the United Kingdom, but especially England, so far in advance of other countries in the possession of an extensive railway system, that, adopting the fair test of comparing territorial area with railway mileage, England has a comparative mileage three times greater than Belgium, New York, and Pennsylvania, and seven times greater than France and Germany.

3. That the introduction on the largest scale into this country, and in degrees more limited into other countries, of a change so extensive, absolute, and fundamental in the means of transit, has already led, and in a short time will lead still further, to important modifications in the conditions affecting the supply of and the demand for large classes of commodities—these modifications tending generally to reductions of price, as a consequence of diminished cost of production or reduced expenses in conveyance to market.

4. That as regards the 150 millions sterling expended in this country in the five years, 1846-'50, its operation was to give employment, during periods,

first, of dear food (1846–'47), and second, of extreme commercial difficulty (1847–'48–'49), to a body of artisans and others, varying from upward of a million to half a million of persons.

5. That on the other hand, the calls by the process of which the 150 millions were gradually raised from the middle and wealthier classes, who were the holders of railway shares, operated like an income tax, nearly the whole amount of which was provided by the resort to severe economy, or by additional exertions to produce augmented resources.

6. That the retrenchments and increased exertions of the contributors of calls, taken in the aggregate, more than counterbalanced the consumption of the army of laborers employed in railway works, and also the expenditure for the purpose of those works on imported materials; and hence that even during the five years, 1846–'50, of an average annual expenditure of thirty millions sterling, the balance of trade was, as a general result, constantly in our favor.

7. That during the five years in question the average annual return yielded by the (say) 200 millions actually expended in railway undertakings was less than 2 per cent. per annum; that beyond the failure of annual return there was a depreciation of market price equal to about 50 per cent. below par value; and that while the ultimate recovery of the country, with comparative ease, from the effects of so severe a strain, abundantly indicates its resources; still the depression and losses experienced by so large a portion of the middle class during 1846–'50, and even later, may be considered to have been, to some extent, a cause of the dullness of trade and the low range of prices which prevailed during the two or three last years of the period.

8. That, on the other hand, the cessation after 1850 of an annual heavy demand for calls, the rapid increase of dividends on the capital previously expended, the still more rapid advance of the market price of railway stock, and, more powerful still, the effect upon production and consumption of several thousand miles of railway communication, may be regarded as explaining in some important degree the comparative prosperity and ease which have prevailed since 1851.

9. That finally, while it is quite true that the railway excitement of 1841–'45 was in many respects irrational and disgraceful, and in numerous individual cases the source of crime and ruin, still it enabled this country to pass, almost at one step, and by a single sharp and effectual effort of self-denial on the part of the middle classes, into the possession of the most complete system of railways possessed by any country; that while these railways have cost more to their projectors than would have been expended by less precipitate adventurers, there is no sufficient reason to believe that the inordinate cost falls as a perpetual burden upon the frequenters of the lines; in other words, that the cost of the line and the rates of toll, which can alone attract customers, have no necessary or close dependence on each other. And hence, that, eccentric and exceptional as may have been, in many cases, the efforts of private enterprise, as displayed in the formation of railways in this country, no denial can be given to the broad and beneficial result. That to private enterprise we are indebted for being a generation in advance of the rest of Europe as regards the new means of internal transit.—TOOKE's *History of Prices.*

We give a summary showing the number of miles and cost of the railroads of the world. This summary is of later date than the separate statements given before, and of course shows an increase. There is a discrepancy between the number of miles in operation in Germany, according to the authority of Tooke, and the following. This is explained by the fact that many of the railroads stated by Tooke as belonging to Germany should be placed in the column of French and Belgic railroads.

The following table also exhibits the low cost of American railroads compared to those of Europe.

COMPARATIVE TABLE OF RAILROADS IN OPERATION.

Countries.	English Miles.	Cost in Dollars.	Cost per Mile.
United States (1857) ...	26,000	920,000,000	$35,000
Great Britain (1855) ...	8,297	1,487,916,420	179,000
France (1856)	4,038	616,118,995	152,000
Germany (1855)	3,213	228,000,000	71,000
Prussia (1855).....	1,290	145,000,000	63,000
Belgium (1855).....	1,095	98,500,000	90,000
British Provinces	823	41,000,000	50,000
Cuba	359	16,100,000	45,000
Panama	47	7,000,000	150,000
South America.....	60	4,500,000	75,000
Russia.....	422	42,000,000	100,000
Sweden.....	75	7,760,000	100,000
Italy	170	17,000,000	100,000
Spain.....	60	6,000,000	100,000
Africa.....	25	3,100,000	125,000
India.....	100	15,000,000	150,000
Total.....	46,074	$3,655,335,415	$79,000

Raisins (Fr. *Raisins secs, ou passés;* Ger. *Rosinen;* It. *Uve passe;* Port. *Passas;* Russ. *Issum;* Sp. *Pasas*), the dried fruit of the vine. They are produced from various species of vines; deriving their names partly from the place where they grow, as Smyrnas, Valencias, etc.; and partly from the species of grape of which they are made, as muscatels, blooms, sultanas, etc. Their quality appears, however, to depend more on the method of their cure than on any thing else. The finest raisins are cured in two methods; either by cutting the stalk of the bunches half through, when the grapes are nearly ripe, and leaving them suspended on the vine till the watery part be evaporated, and the sun dries and candies them; or by gathering the grapes when they are fully ripe, and dipping them in a ley made of the ashes of the burned tendrils; after which they are exposed to the sun to dry. Those cured in the first way are most esteemed, and are denominated raisins of the sun. The inferior sorts are very often dried in ovens.—THOMSON's *Disp.*

Raisins are imported in casks, barrels, boxes, and jars. The finest come in jars and quarter boxes weighing about 25 lbs. Some of the inferior sorts are brought to us in mats. Malaga raisins are in the highest estimation. The muscatels from Malaga fetch fully a third more than any other description of raisins.

The value of raisins imported into the United States for the fiscal year 1856–'57 was $937,460, viz:

Whence imported.	Pounds.	Value.
France on the Mediterranean.....	564,150	$29,551
Spain on the Mediterranean	14,489,800	876,770
Turkey in Asia.....	154,816	14,638
Chili.....	231,200	6,715
All others.....	159,625	9,706
Total in 1856–'57	15,699,624	$937,460
Total in 1855–'56.....	14,308,407	864,219
Increase	1,393,207	$73,241

Rake, to. The sea term for *incline*, and applies to the masts, stem, and stern-post, etc.; the bowsprit, instead of raking, is said to *steere.* Masts generally rake aft, and in peculiar rigs only forward. The rake of the mast has an influence on the sailing of the vessel, and the masts of some schooners rake excessively. The principal effect seems to be to diminish the effect common to all the sails, of depressing the ship's head. To *rake a ship*, is to fire into her head or stern in the direction of her length, or along her decks. It is similar to what engineers term enfilading.

Rake of a Ship, is all that part of her hull which hangs over both ends of her keel. That which is before is called the *fore-rake* or *rake forward*, and that part which is at the setting on of the stern-post is called the *rake-aft* or *afterward.*

Rangoon, a commercial port and town of the Burmese dominions, about 26 miles from the sea, on the left bank of the eastern branch of the River Irrawaddy, in lat. 16° 42′ N., long. 96° 20′ E. The town and suburbs extend lengthwise about one mile along the

bank of the river, being about three-fourths of a mile in depth; but the houses are very unequally scattered over this area. The fort, or rather wooden stockade, which contains the town, properly so called, is a regular square about 14 feet high, composed of heavy beams of teak timber. It appears, from a census taken a short time previously to the commencement of the war in 1824, that the population was 18,000, which probably is not far from its present amount, though it has been stated considerably higher. The foreign trade is principally regulated by the treaty between Great Britain and the Court of Ava, 1826.

Rangoon is the chief, and indeed almost the only port of foreign trade in the Burmese dominions, which extend from between the 15th and 16th, up to the 26th and 27th degrees of N. lat., and from the 93d to the 98th degree of E. long., containing an area of about 184,000 square miles, with a population of about 4,000,000. Its situation is extremely convenient for commercial purposes, being situated so near the sea, and commanding the navigation of the Irrawaddy, which extends to Ava, the capital, a distance of nearly 500 miles. Rangoon is accessible to ships of even 1200 tons burden; the navigation, although somewhat intricate, being safe and practicable with the assistance of the ordinary native pilots.

The town has many advantages for ship-building. At neaps the tide rises and falls about 18 feet; and at springs from 25 to 30 feet. The principal teak forests are, at the same time, at a comparatively short distance, and there is a water conveyance for the timber nearly the whole way. Ship-building has, in fact, been carried on at Rangoon since 1786, and in the 38 years before the British captured it there had been built 111 square-rigged vessels of European construction, the total burden of which amounted to above 35,000 tons. Several of these were of from 800 to 1000 tons. Under the direction of European masters, the Burmese were found to make dexterous and laborious artisans; in this respect greatly surpassing the natives of British Indian provinces. There are two considerable markets, where the ordinary necessaries of life, according to Burmese usage, are cheap and abundant: these are rice, excellent fish, and poultry.

Money.—The Burmese currency consists, for small payments, of lead; for larger ones, of gold and silver, but chiefly of the latter. There are no coins. At every payment the metal must be weighed, and very generally assayed—a rude and very inconvenient state of things. The weights used in the weighing of money are the same as those used on ordinary occasions; the kyat or tical, and the paiktha or vis, being by far the most frequent. Silver may be considered as the standard. Gold is generally held to be about 17 times more valuable than silver. The weighing and assaying of the metals used as currency gives employment to a class of persons as brokers, money-changers, and assayers. Every new assay costs the owner, if the metal be silver, 2½ per cent.—1½ per cent. being the established commission of the assayers, while 1 per cent. is lost, or supposed to be lost, in the operation. If it be repeated 40 times, it follows that the original amount is wholly absorbed—a fact which shows the enormous waste of metal arising out of this rude substitute for coin.

All grains, pulses, certain fruits, natron, salt, and lime, are bought and sold by measure: other commodities by weight.—For an account of the weights and measures, *see article* BURMAH.

Commerce.—A considerable intercourse is carried on between the Burmese and Chinese dominions by an annual caravan, of which the merchants are all Chinese. The imports from China consist of manufactured articles, the chief export from Burma being cotton wool. The trade with foreign countries seaward is carried on with the ports of Chittageng, Dacca, and Calcutta, in Bengal; Madras and Masulipatam, on the Coromandel coast; the Nicobar Islands, in the Bay of Bengal; Penang, in the Straits of Malacca; and occasionally with the Persian and Arabian Gulfs. The largest trade is with Calcutta, owing to the great consumption of teak timber in the latter, and the facility with which she supplies the demand of the Burmese for Indian and British cotton goods. The articles exported to foreign countries from Rangoon are the following: Teak wood, terra Japonica, or catechu, stick-lac, beeswax, elephants' teeth, raw cotton, orpiment, commonly called in India hurtal, gold, silver, rubies, sapphires, and horses, or rather the small, hardy pony of the country, which is much esteemed, particularly at Madras. By far the most important of these commodities is teak timber; the quantity of this wood annually exported is said to be equal to 7500 full-sized trees, which for the most part consist of what India ship-builders call *shinbin*, which are planks hewn out of the log with the adze at an immense waste. The teak forests of Pegu are by far the most abundant in India. The teak is nowhere to be found in the low alluvial lands to which the tide reaches, but abounds in the high lands beyond its influence. It seems to be very generally disseminated throughout the Burmese dominions. In the territory ceded to the British in Martaban, there are some fine forests, the timber of which is cut down for exportation, and where it is believed that saw-mills have very recently been established by some European settlers. The most accessible and extensive forests of teak in the Burmese dominions are in the province of Sarawadi, about 150 miles to the north of Rangoon, with which there is a water communication. The principal imports into Burma are cotton piece goods from India and Britain, British woolens, iron, steel, quicksilver, copper, cordage, borax, sulphur, gunpowder, saltpetre, fire-arms, coarse porcelain, English glassware, opium, tobacco, cocoa and areca nuts, sugar, and spirits. Of these by far the most important is cotton piece goods. The Burmese have few cotton manufactures of their own, and appear, from very early times, to have been furnished with the principal part of their supply from the Coromandel coast. To these were afterward added the cheaper fabrics of Bengal; and both are now, in a great measure, superseded by British manufactures, the use of which has spread very rapidly since the opening of the trade in 1814.

Rape, a biennial plant of the turnip kind (*Brassica napus*, Linn.), but with a woody fusiform root scarcely fit to be eaten. It is indigenous, flowers in May, and ripens its seeds in July. It is cultivated in many parts of England, partly on account of its seed, which is crushed for oil, and partly for its leaves as food for sheep. The culture of rape for seed has been much objected to by some, on account of its supposed great exhaustion of the land; but Mr. Loudon says that, where the soil and preparation are suitable, the after-culture properly attended to, and the straw and offal, instead of being burned, as is the common practice, converted to the purposes of feeding and littering cattle, it may, in many instances, be the most proper and advantageous crop that can be employed by the farmer. The produce, when the plant succeeds well, and the season is favorable for securing the seed, amounts to from 40 to 50 bushels an acre. The seed is crushed in mills constructed for that purpose.—LOUDON'S *Encyc. of Agriculture*. *See* OIL and LINSEED.

The value of rape-seed and hemp-seed oil imported into the United States for the fiscal year 1856-'57 was $11,601, viz.:

Countries.	Bushels.	Value.
England	6,768	$5 278
France	9,441	5,713
Others	976	610
Total	17,215	$11,601

Ratans, or **Canes**, the long slender shoots of a prickly bush (*Calamus rotang*, Linn.), one of the most

useful plants of the Malay peninsula and the Eastern islands. They are exported to Bengal, to Europe, and, above all, to China, where they are consumed in immense quantities. For cane work they should be chosen long, of a bright pale-yellow color, well glazed, and of a small size, not brittle, or subject to break. They are purchased by the bundle, which ought to contain 100 ratans, having their ends bent together, and tied in the middle. In China they are sold by the picul, which contains from 9 to 12 bundles. Such as are black or dark colored, snap short, or from which the glazing flies off on their being bent, should be rejected. When stowed as dunnage, they are generally allowed to pass free of freight.—MILBURN'S *Oriental Commerce*, etc. "The ratan," says Mr. Crawfurd, "is the spontaneous product of all the forests of the Archipelago; but exists in great perfection in those of the islands of Borneo, Sumatra, and of the Malayan peninsula. The finest are produced in the country of the *Bataks* of Sumatra. The wood-cutter who is inclined to deal in this article proceeds into the forest without any other instrument than his *parang* or cleaver, and cuts as much as he is able to carry away. The mode of performing the operation is this: he makes a notch in the tree at the root of which the ratan is growing, and cutting the latter, strips off a small portion of the outer bark, and inserts the part that is peeled into the notch. The ratan now being pulled through as long as it continues of an equal size, is by this operation neatly and readily freed from its *epidermis*. When the wood-cutter has obtained by this means from 300 to 400 ratans—being as many as an individual can conveniently carry in their moist and undried state—he sits down, and ties them up in bundles of 100, each ratan being doubled before being thus tied up. After drying, they are fit for the market without further preparation. From this account of the small labor expended in bringing them to market, they can be sold at a very cheap rate. The Chinese junks obtain them in Borneo at the low rate of 5 Spanish dollars per 100 bundles, or 5 cents for each 100 ratans, or 27 for 1*d*. The natives always vend them by tale; but the European residents and the Chinese sell them by weight, counting by piculs. According to their quantity, and the relative state of supply and demand, the European merchants dispose of them at from 1½ to 2½ dollars the picul. In China the price is usually about 8½ dollars per picul, or 75 per cent. above the average prime cost. In Bengal they are sold by tale, each bundle of about 100 ratans bringing about 20½*d*."—*Indian Archipelago*, vol. iii. p. 423.

Ratlines, small lines which traverse the shrouds of a ship horizontally, at regular distances, from the deck upward, forming a variety of ladders whereby to climb or to descend from any of the mast-heads.

Razee, a ship of war cut down to a smaller size.

Real, in the Spanish monetary system, is of two sorts; viz., a *real of plate*, and a *real vellon*. The former is a silver coin, varying in value from 10 to 12½ cents.—*See* COINS. A real vellon is a money of account, worth about 5 cents. Formerly, by authority of Congress, the value of a real of plate was put at 10 cents, and a real vellon of Spain at 5 cents.

Realejo. The port of Realejo, on the Pacific, lat. 12° 34′ N., long. 87° 4′ W., to which it is proposed to bring the canal from Lake Leon, is said to be one of the best that is any where to be met with. The port of Realejo consists chiefly of a salt-water creek, into which several small streams of water empty themselves. The entrance is protected by an island about two miles long, which leaves at each end a channel where ships can enter the harbor, but extending opposite the main land, forming the port in such a manner as to protect it entirely from any wind that could possibly blow, and also entirely breaking the swell which enters the outer bay of Couchagua from the ocean. The north entrance is about a quarter of a mile wide, and that at the south of the island rather narrower, both being entirely free from rocks or hidden dangers, and having in no part less than five fathoms depth of water. At one of these openings vessels can at all times enter with a leading wind, from whatever quarter it may blow. The inside consists of a noble basin of water, nowhere less than four fathoms deep, with a bottom of mud, where two hundred ships of the line might lie at all times in the most perfect security. One of the branches of the creek extends inland to within three leagues of the Lake of Leon or Managua. The intermediate country is a gentle slope, where undoubtedly should enter one of the ends of the canal to connect the Pacific and Atlantic oceans. The difficulties to be encountered in crossing the chain of hills between the Lake of Nicaragua and San Juan del Sud would be entirely avoided by bringing the canal through the Lake of Leon (connected as it is with that of Nicaragua by a river that might be rendered navigable at a moderate cost) into the above-named branch of the Realejo harbor, thus securing the great advantage of an excellent harbor at each end of the canal, besides many others which are certainly not to be met with either at Panama, Tehuantepec, or any other place. The town of Realejo is about two leagues distant from the part of the creek where vessels lie; but there is sufficient depth for small vessels to come within a mile of the town, and a very little labor would make it accessible to large ships; but an enlightened government would probably prefer moving the town to the opposite side of the reach, where vessels lie, where there is a site extremely suitable for the purpose, and where a quay might easily be erected capable of accommodating any number of ships. In the time of the Spanish government several vessels, some of 300 to 400 tons, were built at Realejo, where the wood is very superior and durable. The port of San Juan del Sud, to which place it was proposed to bring the canal, seems inferior to Realejo in most respects. The Gulf of Papagayo, where the port is situated, is very difficult to enter for a sailing vessel for five months in the year.—*See* NICARAGUA and PANAMA.

Ream, a quantity of paper. The ream of writing-paper consists of twenty quires, each of twenty-four sheets; usually consisting of eighteen quires of twenty-four sheets each, and the two outside (or broken) quires of sixteen to twenty sheets each; but the ream of printing-paper, or, as it is sometimes called, the *printer's ream*, extends to twenty-one and a half quires, or 516 sheets. Two reams of paper make a *bundle*.

Receipt is an acknowledgment in writing of having received a sum of money, or other valuable consideration. It is a voucher either of an obligation or debt discharged, or of one incurred.

Reckoning, in *Navigation*, the estimated place of a ship, calculated from the rate as determined by the log, and the course as determined by the compass, the place from which the vessel started being known. *Dead reckoning* means the same as *reckoning*, due allowance being made for drift, lee-way, currents, etc.

Red River is the first large river which enters the Mississippi, 311 miles above its mouth, and rises at about lat. 34° N. in the *Llana Estacuda*, or Great Staked Plain. It is formed by several head branches, and receives several tributaries, the largest of which are Blue River and False Washita. A greater part of its course is through rich prairies of a red soil, which colors the water of the river, and hence the origin of its name. Its shores are covered with grass, and abound with grape-vines, which produce an excellent fruit. About one hundred miles above Natchitoches commences what is denominated the *Raft*, which consists of a swampy expansion of the river to the width of twenty or thirty miles, and has a length of sixty or seventy miles. The river divides into a great number of channels, many of which are shallow, and these channels have been obstructed by fallen trees, brought

down by floods from its upper parts. At a great expense, this raft has been so far removed by the United States government that steamboate pass through it. Boats sometimes pass the raft by leaving the river above it, in a channel which flows out of it into some neighboring lake, and following the outlet of this lake until it joins the river below the raft. This raft has been a serious obstruction, as the river would otherwise be navigable for steamboats four hundred miles, and the lands on its borders are highly fertile, and desirable for cultivation for a great distance above the raft. Below the raft, and four miles above Natchitoches, the whole volume of the river is again united, but very soon divides into many channels, and fills an immense number of bayous and lakes that lie parallel to it. In its lower parts the main channel of the river is narrower than above the raft.

Red Sea, or Arabian Gulf, an inland sea between Africa and Asia (Arabia), lat. 12° 40′ to 30° N., long. 32° 30′ to 43° 39′ E. Length, northwest to southeast, upward of 1400 miles; breadth varies to nearly 200 miles. At its southern extremity it communicates with the Indian Ocean by the strait Bab-el-Mandeb. In its northern part it bifurcates into the Gulfs of Suez and Akabah, which inclose the peninsula of Sinai. Depth varies; average about 100 fathoms. It abounds with islands and coral reefs, and is supposed by some to have derived its name from the large quantities of red coral and pink-colored fuci which it yields; while it is more probably derived from the ancient *Idumæ*, "Sea of Edom," or "Red Sea." The country almost every where around it is mountainous. The southeast monsoon blows constantly for eight months of the year, and during the remainder the northwest monsoon. From October to May, when south winds prevail, the water rises in the northern part of the sea, which then attains an elevation much higher than the Mediterranean. The navigation is difficult, owing to sudden changes of wind and heavy gales. Principal ports are Mocha, Hodeida, Loheia, Jiddah, and Yembo on the Arabian side, and Suez, Kosseir, Suakin, and Massowah on the Egyptian, Nubian, and Danakil coasts.

Reef, a term in navigation. When there is a heavy gale of wind the seamen commonly roll up part of the sail below, that by this means it may become the narrower, and not draw so much wind; and this contracting or taking up the sail they call a *reef*, or *reefing a sail*; so also when a *top-mast is sprung*, as they call it, that is, when it is cracked, or almost broken in the cap, they cut off the lower piece that was nearly broken off, and setting the other part, now much shorter, in the step again, they call it a *reefed top-mast*.

Regatta, a word used originally by the Venetians to signify a grand fête in which the gondoliers contested for superiority in rowing their gondolas; but the term has been adopted into all the modern languages, in which it signifies a brilliant species of boat-race.

Registry, in *Commercial navigation*, the registration or enrollment of ships at the custom-house, so as to entitle them to be classed among, and to enjoy the privileges of national ships.—*See* SHIPS.

The United States have imitated the policy of other commercial nations in conferring peculiar privileges upon American-built ships, and owned by citizens. The object of the Registry Act is to encourage our own trade, navigation, and ship-building, by granting unusual and exclusive privileges of trade to the flag of the United States, and by prohibiting the communication of those immunities to the shipping and mariners of other countries. The provisions are well calculated to prevent the commission of fraud upon individuals, as well as to advance the national policy. The registry of vessels at the custom-house, and the memorandums of the transfers, add great security to title, and bring the existing state of our navigation and marine under the view of the general government. By these regulations the title can be correctly traced back to its origin. The acts of Congress of 31st of December, 1792, and 18th February, 1793, constitute the basis of the regulations in this country for the foreign and coasting trade, and for the fisheries of the United States; and they correspond very nearly to the provisions of the British statutes in the reign of George III.

These acts relate to all ships employed at sea, which may be divided into five classes: 1. Ships of the United States employed in foreign trade, which are entitled to be *registered*. 2. Ships of the United States employed in the coasting trade or fisheries, which are entitled to be *enrolled and licensed*. 3. Ships built out of the United States, but owned by citizens, which are entitled to a *certificate of ownership*; but if wrecked in the United States and repaired to the extent of three-quarters of their value, they may be registered. 4. Ships built in the United States, but owned wholly or partly by foreigners, which are entitled to be *recorded*. 5. Ships built out of the United States, and owned by foreigners, which are considered alien vessels to all intents and purposes.—*See* KENT's *Comm.*, vol. iii.

Vessels actually registered, and vessels duly qualified for carrying on the coasting trade and fisheries, or one of them, are alone denominated and deemed *ships* or *vessels of the United States*, entitled to the benefits and privileges appertaining to such vessels; and they continue to enjoy the same no longer than they continue to be wholly owned and commanded by a citizen or citizens of the United States. Vessels built within the United States, and vessels captured by citizens in war, and condemned as prizes, or seized and condemned for a breach of revenue laws, and wholly belonging to citizens, may be registered. No citizen who usually resides in a foreign country can, during such residence, entitle himself to have registered a ship owned in whole or in part by him, unless he be a consul, or an agent or partner in some house of trade or partnership, consisting of citizens actually carrying on trade with the United States. An American vessel, transferred by parol while at sea to an American citizen, and resold to her original owners on her return to port, does not lose her privileges as an American vessel.

If one of two partners obtain a registry of a vessel by swearing that he and his partner, of the city of New York, are the owners, when in fact his partner is domiciliated abroad, the vessel is liable to forfeiture.

No ships can be registered, or if registered, can be entitled to the benefit thereof, if owned, in whole or in part, by a naturalized citizen, residing for more than one year in the country from which he originated, or for more than two years in any foreign country, unless he is a consul or public agent. But such ships may be registered anew on a *bona fide* sale to any citizen resident within the United States.

No registered ship, which has been seized or captured and condemned by a foreign power, can be registered anew, except regained by the original owner at the time of capture or seizure, or by his executors or administrators; but such a ship is deemed a *foreign vessel*, though purchased or owned by any other citizen. Ships entitled to be *recorded* and entitled to the benefits of *recorded ships* in the United States are ships built in the United States, and belonging wholly or in part to foreigners. Vessels entitled to be enrolled are vessels of twenty tons or upward, possessing the same qualifications and requisites as are made necessary for registering ships, i. e., they must be built within the United States, and be owned wholly by citizens. If under twenty tons, they are entitled to a *license*. No ships, unless enrolled and licensed, are deemed entitled to the privileges of American vessels employed in the coasting trade or fisheries; and if any not enrolled or licensed be found engaged in the coasting trade or fisheries, having on board any foreign articles or distilled spirits other than sea stores, they are subject to forfeit-

ure, unless the vessel be at sea at the expiration of the time for which the license was granted; in which case the forfeiture is not incurred, provided the master prove the fact, and deliver his license to the collector of the district in which he shall first arrive, within forty-eight hours after his arrival.

In the United States no vessels are required to be registered. But to entitle them to the privileges of the United States they must be registered; otherwise they are deemed alien ships. As is before stated, vessels engaged in the coasting trade or fisheries are liable to forfeiture if they have foreign goods on board, unless they are enrolled or licensed.—BLUNT'S *Shipmasters' Assistant.*

It is further provided by the act of March 2, 1797, that whenever any vessel is transferred *by process of law*, and the register, or certificate of enrollment or license, is retained by the former owner, a new one may be obtained upon the usual terms, without the return of the outstanding paper. Vessels captured and condemned by a foreign power, or by sale to a foreigner, whereby there becomes an actual divesture of the title of the American citizen, are to be considered as foreign vessels, and not entitled to a new register, even though they should afterward become American property, unless the former owner regain his title, by purchase or otherwise, and then the law allows of the restoration of her American character by a sort of *jus postliminii*. Every registered or unregistered vessel owned by a citizen of the United States, and going to a foreign country, and an unregistered vessel, sailing with a sea-letter, is entitled to a passport, to be furnished by the collector of the district. But no sea-letter, certifying any vessel to be the property of a citizen of the United States, can be issued, except to ships duly registered, or enrolled and licensed, or to vessels wholly owned by citizens of the United States, and furnished with or entitled to sea-letters, or other custom-house documents.

The English registry acts of 26 Geo. III. and 34 Geo. III. c. 68, required the certificate of registry to be truly recited at length in every bill of sale of a British ship to a British subject; otherwise such bill of sale was declared to be utterly null and void, to all intents and purposes; and this was held to be necessary, even though the ship was at sea at the time, and the vendee took the grand bill of sale and possession of the ship immediately on her arrival in port. The laws of the United States do not go to that rigorous extent; and the only consequence of a transfer without a writing containing a recital at length of the certificate of registry is, that the vessel can not be registered anew, and she loses her privilege as an American vessel, and becomes subject to the disabilities incident to vessels not registered, enrolled, or licensed as the statute prescribes. But where an American registered vessel was in part sold, by parol, while at sea, to an American citizen, and again resold, by parol, to her original owner on her return into port and before entry, that transaction was held not to deprive the vessel of her American privileges, or subject her to foreign duties, for in that case no new register was requisite. It would have been, except in date, a duplicate of the old one, and perfectly useless.

If a ship be owned by American citizens, and be not documented according to the provisions of the registry acts, it is not liable to any forfeitures or disabilities which are not specially prescribed. The want of a register is not a ground of forfeiture, but the cause only of loss of American privileges. Every vessel, wherever built, and owned by an American citizen, is entitled to a custom-house document for protection, termed a passport, under the act of June 1, 1796; for it applies to "every ship or vessel of the United States going to any foreign country." As our registry acts do not declare void the sale or transfer, and every contract or agreement for transfer of property in any ship, without an instrument in writing, reciting at large the certificate of registry; and as they have not prescribed any precise form of indorsement on the certificate of registry, and rendered it indispensable in every sale, as was the case under the British statutes of 26 Geo. III. c. 60, and 34 Geo. III. c. 68, we are happily relieved from many embarrassing questions which have arisen in the English courts relative to the sale and mortgage of ships.

There have been great difficulty and some alternation of opinion in the English courts in the endeavor to reconcile the strict and positive provisions of the statute with the principles of equity, and the good faith and intention of the contracting parties. It has even been a question of much discussion whether the statutes of 26 and 34 Geo. III. had not destroyed the common-law right of conveying a ship by way of mortgage, like other personal property; and whether the mortgagee had not a complete title beyond the power of redemption after the transfer of the legal title according to the prescribed form of the indorsement on the certificate of registry. The language, in many of the cases, was in favor of the conclusion that there could be no equitable ownership of a ship distinct from the legal title, and that upon a transfer under the forms of the registry acts the ship becomes the absolute property of the intended mortgagee, and that the terms and the policy of the registry acts were incompatible with the existence of any equity of redemption. But these opinions or *dicta* have been met by a series of adjudications which assume the laws to be otherwise, and that the registry acts related only to transactions between vendor and vendee, and to cases of real ownership; and that an equitable interest in a ship might exist by operation of law, and by the contract of the parties, distinct from the legal estate; and that, notwithstanding the positive and absolute terms of the indorsement upon the certificate of register, a mortgage of a ship is good and valid, according to the law as it existed before the registry acts, provided the requisites of the statutes be complied with. The opinion of Sir Thomas Plumer, in *Thompson* vs. *Smith*, contained a very clear and masterly vindication of the validity of the mortgage of a ship consistently with the preservation of the forms of the registry acts. He effectually put to flight the alarming proposition that, since the registry acts, there could be no valid mortgage of a ship; and he insisted that the defeasance annexed to the bill of sale ought to be fully indorsed as part of the instrument on the certificate of registry, if the ship be mortgaged in port; or, if mortgaged while at sea, a copy of the whole transmitted to the custom-house; and that though the defeasance should not be noticed in any of the forms adhered to at the office of the customs, and the instrument should be registered as an absolute bill of sale, the mortgager's right of redemption would not suffer by the omission. But as no such questions can possibly arise under the registry acts of Congress, these discussions in the English courts are noticed only as a curious branch of the English jurisprudence on this subject.

The registry is not a document required by the law of nations as expressive of a ship's national character. The registry acts are to be considered as forms of local or municipal institutions for purposes of public policy. They are imperative only upon the voluntary transfer of parties, and do not apply to transfers by act or operation of law. They are said to be peculiar to England and to the United States, whose maritime and navigation system is formed upon the model of that of Great Britain. But by various French ordinances, between 1681 and the era of the new code, it was requisite that all vessels, in order to be entitled to the privileges of French vessels, should be built in France, under some necessary exceptions, and should be owned exclusively by Frenchmen, and foreigners were prohibited from navigating under the French flag; and a Frenchman forfeited his privileges as such owner by marrying a foreign wife,

or residing abroad, unless in connection with a French house. The register is not of itself evidence of property, unless it be confirmed by some auxiliary circumstance to show that it was made by the authority or assent of the person named in it, and who is sought to be charged as owner. Without proof to connect the party with the register as being his direct or adopted act, the register has been held not to be even *prima facie* evidence to charge a person as owner; and even then it is not conclusive evidence of ownership. The cases of the *Mohawk Insurance Company* vs. *Eckford*, decided in the New York Court of Common Pleas in 1828, and *Ring* vs. *Franklin*, in the Superior Court of that city in 1820, went upon the same ground that the register, standing in the name of a person, did not determine the ownership of a vessel, though it might, perhaps, be presumptive evidence in the first instance. An equitable title in one person might legally exist consistently with the documentary title at the custom-house in another.—KENT's *Comm.*, vol. iii. p. 196. *See articles* TONNAGE, SHIPPING, etc.

Relieving Tackles. Temporary tackles attached to the end of the tiller in bad weather to assist the helmsman, and in case of accident happening to the tiller ropes. They are also strong tackles from the wharf to which the ship is hove down, passed under her bottom and attached to the opposite side, to assist in righting her afterward, as well as to prevent her from oversetting entirely.

Report. In *Commercial navigation*, a paper delivered by the masters of all ships arriving from parts beyond seas to the custom-house, containing an account of the cargo on board, etc.

Repousse, or **Chasing.** The *repoussé* work of French silver-smiths, which is equivalent to *chasing*, is a very remarkable mode of decorating gold and silver plate. It is effected entirely by the hammer. The workman has a plain flat sheet of silver to work upon, and before him is a carefully executed wax model of the article to be produced; the silver plate rests upon a soft bed of pitch or other composition, and with a small hammer the workman produces indentations over the surface corresponding with the device to be produced. A small steel punch is employed occasionally; and if any of the indentations are carried too far, the plate is reversed, and a little counter-hammering applied. Many of the shields, salvers, dishes, and other articles in the Great Exhibition, displayed fine examples of this kind of work; and there was an equestrian statue of Queen Elizabeth produced almost entirely by this remarkable process.

Reprisals. Where the people of one nation have unlawfully seized and detained property belonging to another state, the subjects of the latter are authorized, by the law of nations, to indemnify themselves by seizing the property of the subjects of the state aggressing. This is termed making reprisals; and commissions to this effect are issued from the Admiralty.—*See* PRIVATEERS.

Resin (Gr. *ρετινη*; from *ρεω*, *I flow*). A proximate principle common in the vegetable kingdom, the ultimate components of which are carbon, oxygen, and hydrogen. There are many varieties of resin. Their general characters are fusibility and inflammability; solubility in alcohol, insolubility in water. They are generally separable into two distinct portions by the action of cold and of hot alcohol. They are valuable as ingredients in varnishes, and several of them are used in medicine. They are often naturally blended with modifications of gum, in which case they constitute the series of *gum resins*. The specific gravity of the resins varies between 1·0 and 1·4. They become negatively electric by friction. The commonest resin in use, usually called *rosin*, is obtained by distilling turpentine: the volatile oil passes over, and the resin remains in the still.—*See* GUMS and OILS.

Respondentia, in *Commercial law*, signifies the hypothecation of the cargo of a ship, on conditions similar to those upon which the ship and freight may be pledged—the latter being called a bottomry bond. The security of the cargo may, indeed, be given by the master of the vessel, in addition to that of the ship and freight, should the last two be deemed sufficient security by the lender of the money; but, notwithstanding the cargo may in this case form the principal part of the security, still such loan will be commonly said to be bottomry, but is more strictly on bottomry and respondentia. The right which a master possesses of thus pledging the cargo is undoubted, and is a natural consequence of the power which is invested in him of disposing of part of the cargo in case of extreme necessity, and which is to be exercised by him for the benefit, to the best of his judgment, of all concerned. The master of the ship is not, however, justified in selling the whole of the cargo, for that would defeat the object of the voyage which the repairs are intended to carry into effect; nor is he permitted to hypothecate the cargo without the ship, or without the ship and freight. A bottomry bond may include a respondentia bond, or they may be given separately. Generally all laws applicable to respondentia are equally as upon bottomry, but the reverse is not in all countries the case. By custom, the holder of the bottomry and respondentia bond after judgment first receives the freight and sells the ship, and, if these do not satisfy his claim and the expenses of legal proceedings, then to have recourse upon the cargo; but this course is not always imperative; he may sell the cargo, and leave the ship and freight. In such case the owners of the vessel are responsible for any loss which the owners of the cargo may sustain, over and above the proportion of general average charges on the cargo and the bottomry premium thereon.

A respondentia or bottomry bond is an assignable instrument, and is usually transmitted to an agent in the place named as the termination of the voyage, with legal authority for him to receive the money, or institute legal proceedings for enforcing payment. The general rule is, that the power of the master to give bottomry or respondentia bonds exists only after the voyage has commenced, and is to be exercised in some port where the owner does not reside. But it is not indispensable to the validity of a hypothecation that the ship and cargo be in a *foreign* port. The law looks more to the difficulty of communication between the master and owner. And a hypothecation may be made in another port of the same country, if communication with the owner is subject to great difficulty and delay. The bottomry or respondentia bond is to be paid before any prior insurance, and it supersedes a previous mortgage on the ship. If there is more than one bottomry bond, they take precedence in an inverse order to their dates. The last bond given is entitled to priority of payment over all others.

The position taken by Lord Mansfield, that the lender on bottomry or respondentia is not liable to contribution in case of general average, has been much and justly questioned. It is contrary to the maritime law of France, and of other parts of Europe, and in Louisiana there is a decision against it. It seems conclusive that if the lender on bottomry owes the preservation of the security of his money to any sacrifice of ship or cargo, he should contribute to a general average or jetsam. —*See* BOTTOMRY and RESPONDENTIA, and MARITIME LOANS. *See also* KENT's *Comm.* vol. iii.; PARSONS's *Maritime Law.*

Revenue and Expenditure. Though not properly belonging to a work of this sort, we believe we shall do an acceptable service to our readers by laying before them the following comprehensive Table of the revenue and expenditure of the world, which we have compiled from LEONE LEVI's *Commercial Law.* For an exhibit of the revenue and expenditure of the United States from 1789–1857, *see article* UNITED STATES.

REVENUE AND EXPENDITURE OF THE PRINCIPAL COUNTRIES IN THE WORLD.

Countries.	Revenue in Pounds Sterling.	Expenditure in Pounds Sterling.	Public Debt in Pounds Sterling.
Austrian Empire	1851. 20,817,258	1851. 27,702,952	1848-'49. 99,770,665
		Interest on debt.. 6,106,509	Bearing interest 83,170,665
		War..... 10,866,250	Add to Jan. 31, 1850 .. 16,600,00
		Commerce 3,378,675	
		Miscellaneous 7,884,108	
British Empire	July 5, 1851. 53,045,262	July 5, 1851. 50,012,476	1850. 787,029,169
	Customs..... 20,568,637	Interest on debt .. 28,894,477	
	Excise..... 14 562,116	Term. ann. 2,766,133	
	Stamps..... 6.4 0,014	Army and Navy.. 13,051,574	
	Direct tax 9,076,105	Justice 1,008,073	
	Miscellaneous.. 1,758,390	Miscellaneous.... 6,292,219	
France	1851-'52. 55,182,192	1851-'52. 57,578,674	1851. 201,015,027
			Consolidated debt .. 180,385,936
			Floating debt 20,629,091
Prussia	1851. 14,304,244	1851. 14,521,944	1851. 27,092,689
	Direct tax 3,054,262	War..... 4,036,808	General debt 23,016,448
	Indirect tax.... 4,509,045	Interest on debt .. 1,434,185	Provin. debt, provided for by the State..... 1,250,032
	Miscellaneous.. 6,640,037	Trade 1,152,883	
		Justice 1,353,219	Treasury bills without interest 8,126,152
		Miscellaneous.... 5,544,819	
Russian Empire	Customs Establishment, 1848..... 4,943,121	.....	1850.....53,534,752
			Term. debt, Dutch .. 5,616,589
			Do. domestic..... 10,921,525
			Perm. stock, foreign and domestic 86,696,308
	1850.	1850.	1855.
United States	$73,918,141	$72,048,792	$39,969,731
	1849-'51.	1849-'51.	1850.
Bavaria	2,929,149	3,152,096	12,261,569
	Direct tax 637,364	Interest on debt.. 913,833	
	Indirect tax.... 1,223,772	Army..... 711,633	
	Miscellaneous.. 1,068,013	Miscellaneous 526,430	
	Budget, 1850.	Budget, 1850.	May 1, 1850.
Belgium	4,666,432	4,670,206	25,057,346
	Land tax 734,390	Interest on debt.. 1,430,485	
	Customs..... 457,400	War..... 1,071,080	
	Excise..... 826,000	Public works 633,562	
	Register's tax .. 835,000	Miscellaneous.... 1,534,479	
	Miscellaneous.. 1,783,642		
Brazil	1847..... 1,908,359	1845-'46 2,578,412	12,210,876
			1847.
			Internal debt 6,023,896
			1843.
Denmark	1850..... 2,728,841	1850 2,573,007	Foreign debt..... 6,187,050
Egypt	1838..... 2,225,725	1853 2,102,525	1850 12,000,000
	Now about 4,000,000		
Greece	1850..... 734,290	1850 791,279	None.
			1850 2,434,340
			Bavarian debt..... 127,444
Hamburg	1849..... 518,432	1849 576,925	Rothschild 2,328,750
	Budget, 1850.	Budget, 1850.	1849 2,456,250
Holland	5,839,540	5,803,628	1850.
	Direct taxes ... 1,533,338	Public debt..... 3,035,338	102,563,484
	Indirect taxes.. 750,000	War..... 879,898	National debt a 2½ ... 68,042,333
	Excise..... 1,618,796	Marine 443 693	" " a 3 ... 10,071,406
	Miscellaneous.. 1,988,411	Miscellaneous.... 1,444,824	" " a 3½ ... 19,803,375
Mexico	1849..... 3,800,000	1849 1,766,000	Miscellaneous 4,646,371
Papal States	1845..... 1,475,000	1845 1,650,000	1849 20,000,000
	30th June, 1849.	June 30, 1849.	1849.
Portugal	2,214,333	2,602,300	14,640,000
Sardinia	1850..... 3,630,038	1850 4,416,000	1849.
	1850.	1850.	16,332,197
Spain	11,470,282	11,469,075	1850 15,200,000
	Direct taxes ... 3,337,800	War..... 3,184,584	1850.
	Indirect taxes.. 1,805,000	Debt 1,001,860	155,180,578
	Customs..... 1,752,000	Clergy..... 1,847,346	
	Miscellaneous.. 4,576,482	Miscellaneous.... 5,785,776	
	1850.	1850.	
Sweden and Norway	Sweden..... 883,031	Sweden..... 992,960	.....
	Norway 588,401	Norway..... 588,401	.....
	Estimate . 3,000,000	.....	7,600,000
Turkey	1835..... 4,511,222	1855 4,513,125	Estimate.....20,000,000
Two Sicilies	Estimate. 63,084,173	.....	.....
China			
COLONIES.			
British Possessions.	1848-'49.	1848-'49.	1848.
Indies	17,692,610	20,017,339	49,085,263
Canada	1848..... 574,640	1848 505,402	1848 4,281,074
Cape of Good Hope	1848..... 224,696	1845 218,816	.....
Australia.	1848.	1848.	
New South Wales	400,847	252,638	.....
Western	1848..... 18,464	1849 17,886	.....
South	1848..... 119.023	1848 80,811	.....
Jamaica	1847 247,392	1847 292,097	.....
Ceylon	1848..... 414,765	1848 431,825	.....
Mauritius	1847..... 361,293	1847 289,194	.....
Spanish Possessions.	1848.	1844.	
Cuba	2,666,000	1,696,556	.....
Dutch Possessions.	Dutch East India, 1844.	Dutch East India, 1844.	
Java	5,201,802	5,201,802	.....

Rhode Island, one of the United States of America, and the smallest State in the Union, being about 49 miles long and 29 broad, containing 1200 square miles, of which 130 is included in Narraganset Bay. Population in 1790 was 58,825; in 1800, 69,122; in 1810, 76,931; in 1820, 83,059; in 1830, 97,212; in 1840, 108,830; and in 1850, 147,545.

Early History.—The country round the Narraganset Bay and to the west of it is in the first old works and maps generally named *Narragansets*, or the *Narrayansett Country*. The colonists at Plymouth discovered and entered this country already in the first years of the existence of their town. Roger Williams was the first settler in this territory. He and some other dissenters and refugees from Massachusetts founded here the towns of Providence, Newport, and Portsmouth. They united all in one government in the year 1648, under the name "*Incorporation of Providence Plantations*;" or, as they are styled in King Charles First's patent of that year, "*Incorporations of Providence Plantations in our Naragansetts Bay, in New England.*" In the year 1655 Cromwell writes to this colony under the following address or title: "*To our well-beloved inhabitants of Rhode Island, together with the rest of the Providence Plantations;*" and this, I believe, is the first time that the name Rhode Island is applied to a greater extent of the territory of a province. As the name of an island it was, however, already for some time in existence.

Origin of the Name.—This island, the largest in Narraganset Bay, was called by the Indians Aquiday, or Aqueduet, or Aquetneck, which is said to signify Garden Island. In the first volume of the *Colonial Records*, p. 120, in the proceedings of the General Court of Election, or General Assembly, March, 1644, is the following: "It is ordered by this Court, that the Ysland commonly called Aquethneck, shall be from henceforth called the Isle of Rhodes, or Rhode Island." Some ancient authors write the name "*Island of Rhodes*," and it has been suggested that the name was derived of the old Grecian island of this name. It is in this respect a curious fact that already the old French navigator Verrazano, the first modern explorer who touched this part of the American coast, pronounced the name of Rhodes in connection with this bay. He discovered in these waters an island (supposed by some to be the island now known as Martha's Vineyard), which he compares, in respect to size and appearance, to the island of Rhodes, in the Mediterranean. This was read in Hacklyt, and it is possible that John Clark and his companions (the first settlers on Aquetneck) took occasion from this circumstance to name their island. The name was afterward given to the whole country round Narraganset Bay, which also was sometimes called Rhode Island Bay. In the year 1663 the colonists of that country obtained from Charles I. a charter which incorporated their community under the name of the "*Colony of Rhode Island and Providence Plantations.*" The Narraganset country, lying south of Warwick, was also sometimes called *The King's Province*. The present legal and official name is still *Rhode Island and Providence Plantations*, but commonly the name is made shorter, *State of Rhode Island.*—J. G. Kohl.

Physical Features, etc.—This State on the north and west is hilly and broken, but becomes gradually level toward the sea. The islands in Narraganset Bay are distinguished by their pleasing and diversified scenery and fertile soil. The climate is healthy, particularly on the islands, where the sea-breezes have the effect not only of mitigating the heat in summer, but moderating the cold in winter, and rendering the climate truly delightful. The rivers, though not large, furnish many fine mill seats, which are extensively used for manufacturing purposes. The principal are Pawtucket, Providence, Pawtuxet, Pawcatuck, and Wood Rivers. Narraganset Bay is a fine body of water, and contains a number of beautiful and fertile islands. Among them is Rhode Island, which gives name to the State. Iron ore and anthracite coal are found to some extent; marble, limestone, freestone, and other building stone. There were in this State in 1850, 356,487 acres of land improved, and 107,451 of unimproved land in farms; cash value of farms $17,070,802, and the value of implements and machinery $497,201. *Live Stock.*—Horses, 6168; milch cows, 28,698; working oxen, 8189; other cattle, 9375; sheep, 44,296; swine, 19,509; value of live stock, $1,532,687.

Agricultural Products, etc.—Wheat, 49 bushels; rye, 28,409; Indian corn, 589,201; oats, 215,282; barley, 18,875; buckwheat, 1245; peas and beans, 6846; potatoes, 651,029; value of products of the orchard, $68,994; produce of market gardens, $98,298; pounds of butter made, 995,670; of cheese, 816,508; maple sugar, 28 pounds; molasses, 4 gallons; beeswax and honey, 6347 pounds; wool, pounds produced, 129,692; flax, 85; hops, 277; hay, tons of, 74,818; clover seeds, 1328 bushels; other grass seeds, 3708 bushels; and were made 1018 gallons of wine; value of homemade manufactures, $26,495; of slaughtered animals, $667,486.

Manufactures, etc. — There were in the State in 1850, 158 cotton factories, with a capital invested of $6,675,000, employing 4959 males and 5916 females, producing 96,725,612 yards of sheetings, etc., and 1,902,980 pounds of thread and yarn, valued at $6,447,120; 45 woolen factories, with a capital of $1,013,000, employing 987 males and 771 females, manufacturing 8,612,400 yards of cloth and 46,000 pounds of yarn, valued at $2,381,825; 20 establishments, with a capital of $428,800, employing 800 persons, and making 3558 tons of castings, etc., valued at $728,705; 1 establishment, with a capital of $208,000, employing 220 persons, manufacturing 2650 tons of wrought iron, valued at $222,400; 29 flouring and grist mills, 51 sawmills, 8 tanneries, 20 printing-offices, 5 daily, 2 semi-weekly, and 12 weekly publications. Capital invested in manufactures, $12,923,178; value of manufactured articles, $20,000,000.

The principal places in the State are Providence, city, Newport, each of which is alternately used as the capital, and Bristol. There were in September, 1857, 100 banks in the State, with a paid capital of $21,000,000. There were built and in operation January, 1856, 145 miles of railroads; tonnage, 1853, 41,156 tons.

Principal Ports.—Newport is situated on the southwest shore of Rhode Island, twenty-eight miles south from Providence, and five miles from the ocean. The harbor is one of the best in the United States, and is well defended. Its site is beautiful, and of late years it has been much resorted to in the summer season. Its shipping is mainly employed in the whale fisheries and coasting trade: its manufactures are various, and of considerable extent. The tonnage of Newport in 1856 was 11,646 tons, and in 1857, 12,308 tons.

Providence, a city, and principal port of entry in Rhode Island, situated in lat. 41° 49′ 22″ N., long. 71° 24′ 28″ W. Providence has great commercial facilities, which have been well improved. The harbor is at the head of Narraganset Bay, thirty-three miles from the ocean, is spacious, and has sufficient depth of water for the largest ships. The tonnage of Providence was 19,305 tons in 1856, and in 1857, 22,343 tons.

Bristol, between Mount Hope Bay and Narraganset Bay, has a good harbor, and great facilities for navigation. The tonnage in 1856 was 2902 tons, and in 1857, 15,152 tons.

The public revenue of Rhode Island for the fiscal year ending April 30, 1857, was $206,400; viz., direct tax, $52,407; tax on banks, $83,604; licenses of peddlers and auctioneers, $5221; insurance companies, $4320; from courts, $10,118; interest, $36,100; miscellaneous, $14,634.

FOREIGN COMMERCE OF THE STATE OF RHODE ISLAND FROM OCTOBER 1, 1820, TO JULY 1, 1857, SHOWING ALSO THE DISTRICT TONNAGE IN 1821, 1831, 1841, AND 1851.

Years ending	Exports.			Imports.	Tonnage cleared.		District Tonnage.	
	Domestic.	Foreign.	Total.	Total.	American.	Foreign.	Registered.	Enrolled and Licensed.
Sept. 30, 1821	$481,965	$515,463	$996,928	$1,032,908	21,314	107	28,456	10,893
1822	607,238	241,725	849,963	1,364,144	24,490	..	....	....
1823	590,014	412,500	993,114	1,412,953	23,8 0	..	....	....
1824	556,589	316,917	87,.,.6	1,988,236	24,690	..	....	....
1825	515,591	159,873	675,467	907,106	25,923	..	....	....
1826	566,370	216,170	781,540	1,185,954	23,045	..	....	....
1827	596,127	203,010	804,137	1,241,920	21,353	..	....	....
1828	541,075	186,4 1	728,166	1,129,236	20,800	..	....	....
1829	337,498	59,913	3.0,381	423,811	15,621	..	....	....
1830	206,905	71,985	278,950	488,756	14,004	..	....	....
Total..	$4,997,043	$2,393,8.2	$7,320,850	$11,014,862	212,706	107	....	....
Sept. 30, 1831	$348,950	$19,216	$367,465	$562,161	22,767	..	24,819	9,644
1832	377,056	156,803	534,459	457,109	26,672	80	....	....
1833	330,869	154,612	485,481	1,042,286	26,032	180	....	....
1834	430,885	80,741	501,626	427,024	25,928	401	....	....
1835	182,366	113,137	296,003	597,713	20,979	762	....	....
1836	212,917	16,123	228,420	555,199	24,824	1,192	....	....
1837	411,806	76,452	488,258	523,610	22,584	128	....	....
1838	270,005	21,122	291,257	656,613	27,728	205	....	....
1839	175,808	9,426	185,234	610,631	22,885	319	....	....
1840	208,006	8,988	206,985	374,854	17,456	..	....	....
Total...	$3,938,809	$861,694	$4,585,199	$6,907,540	287,849	3,364	....	....
Sept. 30, 1841	$266,270	$12,189	$278,458	$339,592	20,911	787	26,163	15,021
1842	323,437	25,269	348,706	228,092	19,264	729	....	....
9 mos., 1843	106,912	555	105,647	156,758	7,645	..	....	....
June 30, 1844	257,602	8,175	260,777	290,437	17,471	1,789	....	....
1845	100,141	911	101,052	274,330	14,598	196	....	....
1846	220,010	4,245	224,264	210,487	14,257	785	....	....
1847	191,464	998	192,869	305,480	14,595	1,978	....	....
1848	215,860	5,771	221,631	351,550	19,816	3,148	....	....
1849	172,031	5,461	178,152	237,478	15,568	2,815	....	....
1850	206,299	9,966	216,265	258,803	16,770	1,705	....	....
Total..	$2,140,051	$68,547	$2,217,598	$2,726,158	164,3.5	15,425	....	....
June 30, 1851	$223,404	$14,378	$237,777	$310,630	19,838	3,747	24,197	13,853
1852	174,115	5,060	179,175	210,680	14,016	2,913	....	....
1853	302,454	8,031	310,485	366,116	16,901	7,077	....	....
1854	426,046	13,185	439,231	487,172	17,841	7,910	....	....
1855	331,297	4,786	336,023	536,887	17,210	6,474	....	....
1856	393,224	14,150	407,374	345,803	16,144	6,524	....	....
1857	544,178	8,173	552,351	515,402	21,066	9,079	....	....

Nine months to June 30, and the fiscal year from this time begins July 1.

Rhodes, a sea-port of Asiatic Turkey, capital of the island of Rhodes, at its northeast extremity, thirteen miles southeast the nearest promontory of Asia Minor. Lat. of mole 36° 26′ 9″ N., long. 28° 13′ E. Population about 15,000, of whom 6000 are Turks, and 3000 Jews. On the northeast side two piers project to inclose a harbor, having in its centre from sixteen to eighteen feet water, and on its north side is another port of nearly equal depth.

Rhubarb (Du. *Rhabarber*; Fr. *Rhubarbe, Rubarbe*; It. *Rabarbaro, Reo-barbaro*; Sp. *Rubarbo*; Russ. *Rewen*; Arab. *Rawend*; Chin. *Ta-hwang*), the root of a plant, a native of China and Tartary. Three varieties of rhubarb are known in the shops; viz., Russian, Turkey, and East Indian or Chinese rhubarb. The first two resemble each other in every respect. They are, in fact, the same article, being both derived from Tartary. The portion destined for the Petersburg market being selected and sorted at Kiachta, acquires the name of Russian rhubarb; while the portion that is sent from Tartary to Smyrna and other places in Turkey is called Turkey rhubarb. The best pieces only are sent to Petersburg; and according to the contract with the government, on whose account it is bought, all that is rejected must be burned; and that which is approved undergoes a second cleaning before being finally packed up for Petersburg. The best pieces of Russian and Turkey rhubarb are roundish, and perforated with a large hole, of a reddish or yellow color on the outside, and when cut or broken exhibit a mottled texture, and alternate streaks of red and gray. Its odor is peculiar, and its taste nauseous, bitter, and astringent. It should not be porous, but rather compact and heavy. East Indian or Chinese rhubarb is in oblong flat pieces, seldom perforated; has a stronger odor, and is more nauseous to the taste than the other; it is heavier, more compact, breaks smoother, and affords a powder of a redder shade. — THOMSON'S *Dispensatory*; AINSLIE'S *Mat. Indica*, etc.

The palmated rhubarb (*Rheum palmatum*) is a perennial, native of Russia and some parts of Asia, whence the dried root is imported into this country for medicinal purposes. Large quantities of the roots are also annually collected for exportation in the Chinese provinces, within the lofty range of the Himalayas. The best is that which comes by the way of Russia, as greater care is taken in the selection; and, on its arrival at Kiachta, within the Russian frontiers, the roots are all carefully examined, and the damaged pieces destroyed. This is the fine article of the shops, improperly called "Turkey" rhubarb. That of the best quality occurs in small pieces, with a hole in the middle of each, made in the fresh root, to facilitate the operation of drying. The color is a lively yellow, streaked with white and red. Its texture is dense, and, when reduced to powder, it is entirely yellow. The Chinese rhubarb, called by the natives *Ta Hroangor Haihoung*, is cultivated chiefly in the province of Chensee. As imported, it is known by the name of "East Indian" rhubarb, and comes in larger masses, more compact and hard, heavier, less friable, and not so fine in the grain as the other, and having less of an aromatic flavor. This species has been introduced into England, where it has been extensively cultivated; and there is little doubt, therefore, of its proving perfectly hardy in many parts of our own country. Large quantities are annually imported, the cost of which might be saved if its culture were successfully prosecuted here, and we might thus add to our productive resources. In the middle and cooler parts of the United States, the seeds may be sown in March, in a gentle hot-bed, and, when the roots are about an eighth of an inch in diameter, they may be carefully drawn up, preserving the tap-root, and planted in a fine, rich, and

deep soil, but not too much so, lest the roots become too fibrous. The largest specimens of this drug have generally been allowed to grow six or seven years; the roots are then very large, sometimes weighing from thirty to fifty pounds. The Chinese take up their rhubarb in winter. Pallas says that the Tartars take up theirs in April and May; but Forster, in his *History of Voyages in the North*, with more reason, affirms that the roots are dug up in winter, because they then contain the entire juice and virtue of the plant, as those taken up in summer are of a light, spongy texture, and unfit for use. In Tartary, after being thoroughly cleansed, and the small radicles cut off, the roots are cut transversely into pieces of a moderate size; these are then placed on long tables or boards, and turned three or four times a day, in order that the yellow, viscid juice may incorporate with the substance of the root. If this juice be suffered to run out, the roots become light, and of but little value; and if they are not cut within five or six days after they are dug up, they become soft, and rapidly decay. Four or five days after they are cut, holes are made through them, and they are hung up to dry, exposed to the air and wind, but sheltered from the sun. Thus in about two months the roots are completely cured. The loss of weight in drying is very considerable, seven parts in weight of the green root yielding only one part of that which is perfectly dry. The Chinese method is somewhat different. They peel the roots, cut them into slices, and dry them on stone slabs, under which fires are kindled; but as this process is not sufficient to dry them perfectly, they make a hole through each of the pieces, and suspend them on strings—some say exposed to the sun, while others assert that they are hung in the shade.

Rhumb, a circle on the earth's surface, making a given angle with the meridian of the place, marking the direction of any object through which it passes. The divisions of the compass card are called rhumbs. —*See* MERCATOR'S CHART.

Rhumb Line. In *Naval affairs*, the track of a ship which cuts all the meridians at the same angle; called also the *loxodromic curve*. This being the simplest curve, is the route universally pursued; but a ship sailing on this curve never looks direct for her port until it comes in sight. A great meridian circle would be the shortest distance between any two points; but in order to follow such a circle, the course of the ship would have to be constantly changing, and with such variations as to make it practically impossible.

Ribbons, or Ribands (Fr. *Rubens de Soie;* Ger. *Band;* It. *Nastro di Seta;* Sp. *Cinta de Seda*), a name given to silken bands of various widths and colors, much used by females for head-dresses and other purposes. They are both plain and figured, and are sometimes distinguished into sarcenet, satin, etc., according to the manner in which they are made. They are also frequently ornamented by having what is called a *pearl edge* given to them. Ribbons are woven in pieces, each 35 yards in length. The finest are made entirely of Italian silk; the next in quality, of a mixture of Italian and Bengal silk; and the commoner sorts, altogether of Bengal silk. The great seat of the manufacture of ribbons is Coventry, where they are now made of quality equal to the finest of the productions of the Lyonese weavers: they are also made at Congleton, Derby, Macclesfield, Leek, and other places.—*See* SILK.

Rice (Fr. *Riz;* It. *Riso;* Arab. *Aruz;* Hind. *Chawl*), one of the most valuable of the cereal grasses, the *Oryza sativa* of botanists. It is raised in immense quantities in India, China, and most Eastern countries; in the West Indies, Central America, and the United States; and in some of the southern countries of Europe. It, in fact, occupies the same place in most intertropical regions as wheat in the warmer parts of Europe, and oats and rye in those more to the north. Forming, as it does, the principal part of the food of the most civilized and populous Eastern nations, it is more extensively consumed than any other species of grain. It is light and wholesome, but is said to contain less of the nutritive principle than wheat. When rough, or in its natural state in the husk, it is called *paddy*. There is an immense variety in the qualities of rice. That which is principally exported from Bengal has received the name of *cargo* rice. It is of a coarse reddish cast, but is sweet and large grained, and is preferred by the natives to every other sort. It is not kiln-dried, but is parboiled in earthern pots or caldrons, partly to destroy the vegetative principle, so that it may keep better, and partly to facilitate the process of husking. Patna rice is more esteemed in Europe than any other sort of rice imported from the East. It is small-grained, rather long and wiry, and remarkably white. But the rice raised on the low marshy grounds of South Carolina is unquestionably very superior to any brought from any part of India. It may, perhaps, be worth mentioning that rice, like wheat, oats, and barley, is not indigenous to America. It was first raised in South Carolina from seeds brought from Madagascar, near the end of the 17th century. Its culture increased so rapidly that in 1724 no fewer than 18,000 tierces, or barrels, were exported.—PITKIN'S *Statistics*, 1835. According to the returns under the census of 1840, the total annual produce of rice in the United States was estimated at 80,841,422 lbs., whereas under the census of 1850 it was estimated at 215,812,000 lbs., or above 96,000 tons, of which 159,030,613 lbs. were raised in South Carolina; and in 1850, 213,540,000 lbs.

The produce of lands naturally or artificially irrigated is, as far as rice is concerned, from five to ten times greater than that of dry land having no command of water; and hence the vast importance of irrigation in all countries where this grain is cultivated. But it is worthy of remark that, owing to the not unfrequent occurrence of severe droughts, there is a greater variation in the crops of rice than in those of any other species of grain. Those who, like the Hindoos, depend almost entirely on it for subsistence, are consequently placed in a very precarious situation. There can be no doubt that famines are at once more frequent and severe in Hindostan than in any other country, Ireland excepted.

Cultivation in the United States.—Rice is the chief food, perhaps, of one-third of the human race; possesses the advantage attending wheat, maize, and other grains, of preserving plenty during the fluctuations of trade; and is also susceptible of cultivation on land too low and moist for the production of most other useful plants. Although cultivated principally within the tropics, it flourishes well beyond, producing even heavier and better filled grain. Like many other plants in common use, it is never found wild (it is to be understood that the wild rice, or water oat, *Zizania aquatica*, which grows along the muddy shores of our tide-waters, is a distinct plant from the common rice, and should not be confounded with it), nor is its native country known. Linnæus considers it as a native of Ethiopia, while others regard it of Asiatic origin. At the Industrial Exhibition in London there were displayed many curious samples and varieties of rice, grown without irrigation, at elevations of 3000 to 6000 feet on the Himalayas, where the dampness of the summer months compensates for the want of artificial moisture. At the exhibition above alluded to, American rice received not only honorable mention for its very superior quality, but the Carolina rice, exhibited by E. J. Heriot, was pronounced by the jury "magnificent in size, color, and clearness," and to it was awarded a prize medal. The jury were free to admit that the American rice, though originally brought from the Old World, is now much the finest in quality. The common variety is cultivated throughout

the torrid zone, wherever there is a plentiful supply of water, and will mature, under favorable circumstances, in the Eastern Continent, as high as the forty-fifth parallel of north latitude, and as far south as the thirty-eighth. On the Atlantic side of the Western Continent it will flourish as far north as latitude thirty-eight degrees, and to a corresponding parallel south. On the western coast of America it will grow as far north as forty or more degrees. Its culture is principally confined to India, China, Japan, Ceylon, Madagascar, Eastern Africa, the south of Europe, the southern portions of the United States, the Spanish Main, Brazil, and the Valley of Parana and Uruguay.

Rice was first introduced into Virginia by Sir William Berkeley in 1647, who received half a bushel of seed, from which he raised sixteen bushels of excellent rice, most or all of which was sown the following year. It is also stated that a Dutch brig from Madagascar came to Charleston in 1694, and left about a peck of paddy (rice in the husk) with Governor Thomas Smith, who distributed it among his friends for cultivation. Another account of its introduction into Carolina is, that Ashby was encouraged to send a bag of seed rice to that province, from the crops of which sixty tons were shipped to England in 1698. It soon after became the chief staple of the colony. Its culture was introduced into Louisiana in 1718, by the "Company of the West."

The present culture of rice in the United States is chiefly confined to South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, and Texas. The yield per acre varies from twenty to sixty bushels, weighing from forty-five to forty-eight pounds when cleaned. Under favorable circumstances, as many as ninety bushels to an acre have been raised. Another variety is cultivated in this country, to a limited extent, called Cochin-China, dry or mountain rice, from its adaptation to a dry soil without irrigation. It will grow several degrees further north or south than the Carolina rice, and has been cultivated with success in the northern provinces of China, Hungary, Westphalia, Virginia, and Maryland; but the yield is much less than that of the preceding, being only fifteen to twenty bushels to an acre. It was first introduced into Charleston from Canton, by John Bradby Blake, in 1772. The amount of rice exported from South Carolina in 1724 was 18,000 barrels; in 1731, 41,957 barrels; in 1740, 90,110 barrels; in 1747–'48, 55,000 barrels; in 1754, 104,682 barrels; in 1760–'61, 100,000 barrels; from Savannah in 1755, 2299 barrels, besides 237 bushels of paddy, or rough rice; in 1760, 3283 barrels, besides 208 bushels of paddy; in 1770, 22,120 barrels, besides 7064 bushels of paddy; from Philadelphia in 1771, 258,375 pounds. The amount exported from the United States in 1770 was 150,529 barrels; in 1791, 96,980 tierces; in 1800, 112,056 tierces; in 1810, 131,341 tierces; in 1820–'21, 88,221 tierces; in 1830–'31, 116,517 tierces; in 1840–'41, 101,617 tierces; in 1845–'46, 124,007 tierces; in 1846–'47, 144,427 tierces; in 1850–'51, 105,590 tierces.

PRODUCTION OF RICE IN THE UNITED STATES IN THE YEAR 1850.

States.	Rough Rice. lbs.
Alabama	2,312,239
Arkansas	63,179
Florida	1,075,090
Georgia	38,950,091
Kentucky	5,088
Louisiana	4,425,349
Mississippi	2,719,856
Missouri	700
North Carolina	5,465,868
South Carolina	159,930,618
Tennessee	258,854
Texas	38,203
Virginia	17,154
Total	215,313,097

It will be seen from this table that South Carolina produced in 1850 75 per cent. of the total production, and Georgia 18 per cent.

STATEMENT EXHIBITING THE QUANTITY AND VALUE OF RICE EXPORTED ANNUALLY FROM 1821 TO 1855, INCLUSIVE.

Fiscal Years.	Barrels.	Tierces.	Value.	Aver. cost per tierce.
1821	....	88,221	$1,404,307	$16 94
1822	....	87,089	1,550,492	17 84
1823	....	101,365	1,820,985	17 96
1824	....	113,220	1,862,982	16 60
1825	....	97,015	1,925,245	19 84
1826	....	111,063	1,917,445	17 26
1827	....	113,518	2,843,908	17 55
1828	....	175,019	2,626,096	14 97
1829	....	122,923	2,514,870	18 92
1830	....	120,607	1,986,824	15 20
1831	....	116,517	2,016,267	17 30
1832	....	120,337	2,164,831	17 89
1833	....	144,163	2,744,418	19 04
1834	....	121,886	2,122,272	17 41
1835	....	119,851	2,216,231	19 94
1836	....	919,983	2,548,150	11 97
1837	....	106,084	2,309,279	21 76
1838	....	71,048	1,721,819	24 22
1839	....	93,320	2,460,198	26 36
1840	....	101,660	1,942,076	19 10
1841	....	101,617	2,010,107	19 78
1842	....	114,617	1,907,387	16 64
1843	....	106,766	1,625,726	15 23
1844	....	134,715	2,182,468	16 20
1845	....	118,621	2,160,456	18 21
1846	....	124,007	2,564,991	20 68
1847	....	144,427	3,508,896	24 97
1848	....	100,403	2,381,824	23 23
1849	....	124,961	2,360,382	19 24
1850	....	127,009	2,531,557	20 71
1851	....	105,590	2,170,927	20 56
1852	....	119,733	2,470,029	20 63
1853	....	67,747	1,657,658	24 48
1854	....	105,191	2,634,127	25 06
1855	19,774	52,520	1,717,953	....
1856	61,038	58,668	2,390,233	....
1857	74,309	64,332	9,290,400	....
Total	175,121	4,137,759	$81,309,386	....

EXPORTS OF RICE FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither Exported.	Tierces.	Barrels.	Value.
Russia on the Baltic and North Seas	308	25	$11,354
Prussia	25	....	730
Sweden and Norway	244	....	7,568
Swedish West Indies	13	12	559
Denmark	600	12,619	50,567
Danish West Indies	433	221	12,725
Hamburg	1,472	254	49,925
Bremen	4,453	....	124,385
Holland	1,481	...	39,073
Dutch West Indies	....	834	9,265
Dutch Guiana	61	110	2,362
Belgium	4,771	6,000	156,183
England	11,121	16,337	328,022
Scotland	1,084	...	30,269
Ireland	16	....	574
Canada	654	36	25,190
Other Brit. N. Am. Posses.	543	161	16,542
British West Indies	1,454	120	37,077
British Honduras	253	108	8,860
British Guiana	50	....	500
British Possess. in Africa	....	115	1,326
Other ports in Africa	170	464	11,095
British Australia	70	601	9,710
France on the Atlantic	5,139	....	157,498
France on the Mediterran.	33	....	450
French N. Am. Possessions	1	10	154
French West Indies	2	283	2,839
French Guiana	54	....	1,046
Spain on the Atlantic	30	2,424	12,900
Canary Islands	2	....	57
Cuba	28,831	313	641,256
Porto Rico	2,990	42	81,577
Portugal	30	530	6,750
Madeira	....	46	524
Cape de Verd Islands	7	....	173
Azores	15	61	1,357
Hayti	185	4,737	60,402
San Domingo	8	145	1,742
Mexico	....	350	4,414
Central Republic	....	49	557
New Granada	143	1,561	20,578
Venezuela	798	633	29,862
Brazil	505	2,161	36,861
Uruguay, or Cisplatine Rep.	....	5,406	66,484
Argentine Republic	....	7,409	81,404
Chili	1,119	3,447	135,654
Peru	25	205	5,384
Sandwich Islands	51	234	3,711
China	....	79	991
Whale Fisheries	11	68	1,215
Total	64,332	74,309	$2,290,400

Of these exports, 1856–'57, there was exported from the following ports,

Boston	$198,319
New York	795,009
Baltimore	122,053
Charleston	888,708
Savannah	138,137
Other ports	148,174
Total	$2,290,400

Rice Paper. This substance is said to be a membrane of the *Artocarpus incisa*, or bread-fruit tree. It is brought from China in small pieces, dyed of various colors, and is used as a material for painting upon, and for the manufacture of several fancy and ornamental articles. It is sometimes erroneously stated to be prepared from rice.—*See* PAPER.

Richmond, city and port of entry, and capital of Henrico county, and of the State of Virginia, is situated on James River, at the falls, at the head of tide-water, and is in 37° 30′ N. lat., and 77° 31′ W. long. from Greenwich, and 0° 27′ W. long. from Washington. It is 23 miles north from Petersburg, and 117 south by west from Washington. The population in 1800 was 5727; in 1810, 9785; in 1820, 12,067; in 1830, 16,060; in 1840, 20,153; in 1850, 27,570; and in 1854, 30,000. It is beautifully located on the west side of the river, between 50 and 60 miles above City Point, and 150 miles above the mouth of the river.

Four lines of railroad here connect, viz., Richmond, Fredericksburg, and Potomac; Richmond and Petersburg; the Central Railroad of Virginia; and the Danville Railroad; and here terminates the James River and Kanawha Canal. Vessels drawing 10 feet of water come to Rockets, about a mile below the centre of the city; and those drawing 15 feet, to Warwick, three miles below the city. The falls in James River are obviated by the canal, and above them it is navigable for boats 220 miles. Regular lines of packets connect the city with New York and other places, and it is connected by steamboats to Norfolk. The principal articles of exportation are wheat, flour, and tobacco. The exports amount to about $3,000,000 annually. The tonnage of the port in 1853 was 11,460 tons. The manufactures of Richmond are also extensive.

Riding, in *Naval affairs*, is the state of a ship's being retained in a particular station by means of one or more cables with their anchors, which for this purpose are sunk into the bottom of the sea, etc., in order to prevent the vessel from being driven at the mercy of the wind or current. A rope is said to *ride* when one of the turns by which it is wound about the capstan or windlass lies over another, so as to interrupt the operation of wearing.

Riding Athwart, the position of a ship which lies across the direction of wind and tide, when the former is so strong as to prevent her from falling into the current of the latter.

Riding between the Wind and the Tide, the situation of a vessel at anchor when the wind and tide act upon her in direct opposition, in such a manner as to destroy the effort of each other upon her hull; so that she is in a manner balanced between their reciprocal force, and rides without the least strain on her cables. When a ship does not labor heavily, or feel a great strain when anchored in an open road or bay, she is said to ride easy. On the contrary, when she pitches violently into the sea, so as to strain her cables, masts, or hull, it is called *riding hard*, and the vessel is termed a *bad roader*.

Riga, a city of European Russia, the capital of Livonia, on the Duna, about 9 miles from the sea, lat. 56° 56′ 5″ N., long. 24° 0′ 4″ E. Population in 1842, excluding garrison, 60,000. A light-house has been erected on Fort Comet, on the western side of the mouth of the river. It has two lights: the first, elevated about 104 feet (English) above the level of the sea, may be seen, under favorable circumstances, at the distance of 4 leagues; and the second, elevated about 24½ feet, may be seen at the distance of 2½ leagues. The bar at the mouth of the river has usually from 12 to 13 feet water; and vessels drawing more than this frequently load and unload part of their cargoes by means of lighters at Bolderaa, a small town on the west side of the river, near its mouth. There is a fair-way beacon without the bar, in 5 fathoms water; and within, the channel is buoyed with black and white buoys; the black being left on the right or starboard side when entering, and the white on the larboard. Vessels bound for Riga take pilots at Bolderaa, who carry them to their anchorage. No ballast is allowed to be discharged, except at Poderague. Regulations as to clearing, etc., similar to those at Petersburg.—*Coulier sur les Phares*, 2d edit.; and *Regulations published by the Russian Authorities*.

Trade.—Owing to its advantageous situation near the mouth of a great navigable river, the trade of Riga is very extensive; being, of the Russian towns on the Baltic, in this respect second only to Petersburg. The trade is chiefly carried on by foreign merchants, particularly by the English. The principal exports are flax and hemp, linseed and hemp seed, timber, corn, tobacco, hides, wool, tallow, etc.; the imports are salt, sugar, coffee, and groceries of all sorts, herrings, indigo, dye-woods, cotton and cotton twist, silks, wines, etc. The mast trade is extensive. The burghers of Riga send persons who are called mast brokers into the provinces to mark the trees, which are purchased standing. They grow mostly in the districts which border on the Dnieper, are sent up that river to a landing-place, transported 30 versts to the Duna, when, being formed into rafts of from 50 to 200 pieces, they descend the stream to Riga. The tree which produces the largest masts is the Scotch fir. Those pieces which are from 18 to 25 inches in diameter are called masts; under those dimensions, spars, or, in England, Norway masts, because Norway exports no trees more than 18 inches in diameter. Great skill is required in distinguishing those masts that are sound from those which are in the least internally decayed. They are usually from 70 to 80 feet in length. The best kind of flax shipped from Riga is grown in White Russia, and is called Druana rakitzer; its color is very white, and the threads long, fine, and loose, but it has sometimes black spots; the next quality, coming from the province of Trockie, in Lithuania, is called Lithuanian rakitzer, and is very little inferior to Druana, but its color is a little brown; of this kind the best sort is Thiesenhausen. The best kind of Courland flax shipped from Riga is Marienburg; that grown in Livonia is inferior. There are two kinds of linseed; that of the last crop, which is used for sowing; and that of former years, for crushing. To prevent deception, the year of its growth is stamped on the barrel by sworn inspectors (*brackers*). Hemp seed is mostly shipped for Holland.

Money.—For the moneys of Riga, *see* PETERSBURG.

Weights and Measures.—The commercial pound is divided into 2 marks, or 32 loths; and also into halves, quarters, etc. It contains 6452 English grains. Hence 100 lbs. of Riga = 92·17 lbs. avoirdupois = 41·8 kilog. = 86·32 lbs. of Hamburg = 84·64 lbs. of Amsterdam. The lispound = 20 lbs.; the shippound = 20 lispounds. The loof is the measure for grain: 48 loofs = 1 last of wheat, barley, or linseed; 45 loofs = 1 last of rye; and 60 loofs = 1 last of oats, malt, and beans. According to Kelly, the loof = 1·9375 Winchester bushel; and, consequently, the last of wheat = 11·625 quarters. Nelkenbrecher does not value the loof quite so high as Kelly. The fuder, the measure for liquids, is divided into 6 ahms, 24 ankers, 120 quarts, or 720 stoofs. The anker = 10 English wine gallons. The foot of Riga = 10·79 English inches. The ell = 2 feet; the clafter = 6 feet.

Like most of the rivers falling into the Baltic, the Duna has a bar, varying, according to seasons, from 12 to 15 feet of water. Large vessels usually discharge and take in their cargoes either at the roads or in the Bolderaa harbor, near the mouth of the river,

by means of well-covered lighters. The linseed, flax, hemp, and wool of this port have always been held in higher repute than those exported from any other port in Russia. The grain shipped from Riga is the produce of White Russia, the Ukraine, Poland, Courland, Livonia, Esthonia, Smolensk, Minsk, Lithuania, etc. The navigation of Riga may be seen from the following returns for a series of years:

VESSELS ENTERED.

In 1800	867
1810	400
1819	1300
1849	1524
1850	1364
1853	1917

	Francs.
Value of imports into the port of Riga in 1840	19,333,000
Value of exports " " "	61,426,000

This port, like Odessa, derives its principal wealth from its export trade. In 1850 the total value of exports reached 61,426,000 francs. The imports during the same year were only 19,335,000 francs. The following table exhibits, in francs, the commercial movements of Riga, and the share assigned to each country, in the year 1850:

Countries.	Imports.	Exports.	Total.
England	4,984,000	35,339,000	40,323,000
France	2,757,000	6,963,000	9,720,000
Holland	756,000	6,187,000	6,943,000
Hanse Towns	4,442,000	1,955,000	6,397,000
Belgium	24,000	5,698,000	5,722,000
Sweden and Norway	1,219,000	1,825,000	3,044,000
United States	2,904,000	....	2,904,000
Portugal	1,373,000	864,000	2,237,000
Denmark	215,000	1,431,000	1,646,000
Spain	198,000	539,000	737,000
Other countries	468,000	625,000	1,093,000
Total francs	....	....	80,761,000

From the preceding table it will be seen that, of the whole trade of Riga, England has 50 per cent.; France upward of 12 per cent.; Holland, and the three Hanse Towns, each 8 per cent. The principal imports in 1850 were—

Sugar	Francs,	3,815,000
Salt	"	2,495,000
Wines and spirits	"	2,386,000
Tobacco	"	1,729,000
Herring	"	1,256,000
Raw and spun cotton	"	1,856,000

The principal exports were—

Flax (of which England took two-thirds)	Francs,	28,430,000
Hemp (to England more than one half)	"	7,879,000
Timber (chiefly to England and Holland)	"	5,160,000
Grains " " " "	"	5,147,630
Flax-seed, for seed (one half to England)	"	3,791,000

ACCOUNT OF THE QUANTITIES OF THE PRINCIPAL ARTICLES EXPORTED FROM RIGA IN 1851 AND 1852.

	To all Countries.	
	1851.	1852.
Flax, 1st sort, tons	17,814	27,223
Ditto, 2d sort "	7,292	3,051
Ditto, 3d sort "	1,499	2,465
Ditto, codilla "	924	647
Total of flax "	27,529	33,387
Rye hemp "	9,318	7,645
Outsnot ditto "	3,799	3,460
Pass ditto "	3,892	4,016
Hemp codilla "	958	605
Total of hemp "	17,967	15,727
Tallow "	2	7
Quills "	26	13
Rye qrs.	124,981	101,501
Barley "	83,816	38,035
Oats "	92,705	1,309
Sowing linseed bls.	129,429	164,956
Crushing linseed qrs.	111,134	97,578
Hemp seed "	19,108	4,433
Deals pieces	436,561	364,645
Timber "	128,875	97,800
Masts "	4,948	171
Wainscot logs and vatwood "	8,057	7,123
Pipe and hogshead staves "	296,786	180,312
Total value in S. Ro.	14,507,251 at 77½ cts.	14,898,728 at 77½ cts.
Total value in dollars	$11,163,250	$11,466,759

Total amount of exports from England to this port in 1850, 4,984,000 francs, or $927,000.

Total amount of exports from Riga to England, $6,573,054.

The merchandise imported into England from Russia is such, chiefly, as Russia only can supply—at least in such quantities as to meet the extensive demands of the manufacturers of Great Britain. It consists principally of articles of first necessity in manufactures, such as hemp and flax seed for oil and culture. The merchandise supplied to Russia (at the port of Riga) from other countries consists chiefly of sugar, coffee, salt, wines, spirituous liquors, tobacco, and cotton tissues. In reference to the latter article, such is the extraordinary activity of Russian manufacturing industry, supported as it is by a high tariff on manufactured articles, that, had not the war intervened, she would probably be now independent of other nations as respects cotton yarns.

The total tonnage which entered and cleared at the port of Riga in 1850, as already shown, was 397,895 tons. Of this total, 180,904 tons were under the English flag, or within a figure of 50 per cent. on the whole; while the Russian flag covered only 61,894 tons, or 15 per cent. on the whole. The value of flax-seed for culture, exported from this port from 1840 to 1850, was $7,000,000; of which England received, in the aggregate, one-third. The remaining two-thirds were sent to Belgium, Prussia, Hanse Towns, Sweden and Norway, France, and the United States. The navigation movements at this port for 1853 were as follows:

PORT OF RIGA.—NAVIGATION IN 1853.

Nationality.	No. of Vessels entered.	No. of Vessels cleared.
English	310	310
Russian	206	206
Belgian	10	10
Hanoverian	110	110
Dutch	244	244
French	55	55
Spanish	1	1
Danish	181	181
Swedish	291	291
Prussian	169	169
Mecklenburg	186	186
Oldenburg	37	37
Portuguese	6	6
Hamburgian	7	7
American	2	2

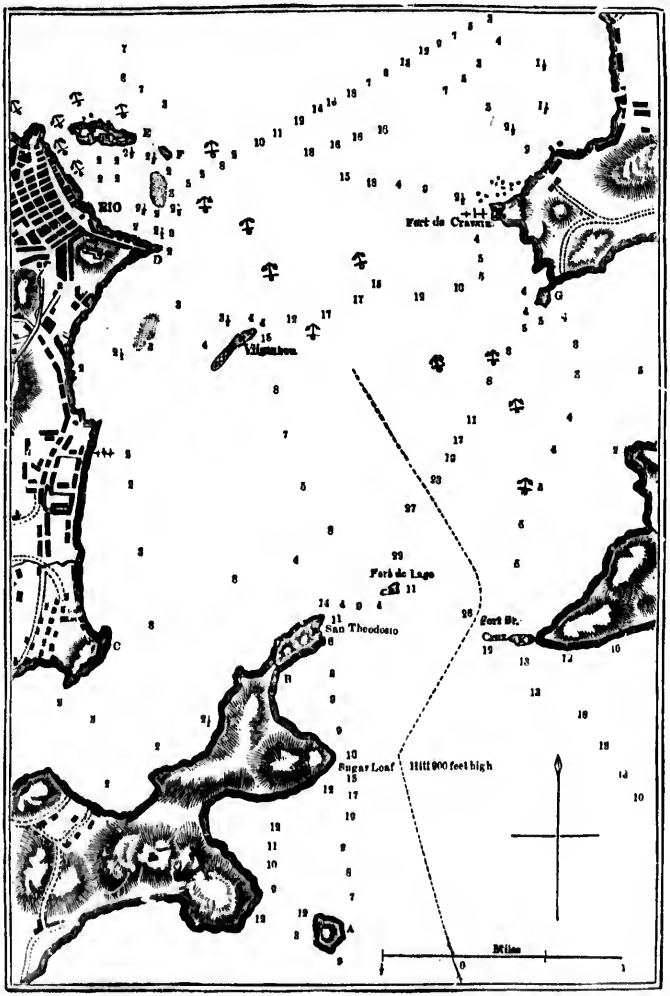
The official paper, from which the preceding table is extracted, furnishes also interesting facts relative to the hemp trade of this port. The following extract is translated from this document:

"Hemp is usually sold by the producers in the interior to merchants who visit their estates for the purpose of speculation. They make their contracts generally between April and October. The time of delivery is stipulated for, and from 5 to 10 per cent. on the purchase-money is paid down in cash. The annual average quantity of hemp thus brought to the market of Riga amounts to about seven millions of francs. At Riga there are surveyors' offices established, where the hemp brought for sale is subjected to the strictest examination, and is ranked, according to quality, Nos. 1, 2, or 3. Should the producers be dissatisfied with the action of the surveyors at Riga, they have the right of appeal to St. Petersburg."—*See* articles HEMP and RUSSIA for particular information.

Rigging of a Ship, a general name given to all the ropes employed to support the masts, and to extend or reduce the sails, or arrange them to the disposition of the wind. The former, which are used to sustain the masts, remain usually in a fixed position, and are called *standing rigging*; such are the shrouds, stays, and backstays. The latter, whose office is to manage the sails, by communicating with various blocks or pulleys, situated in different parts of the masts, yards, shrouds, etc., are comprehended in the general term *running rigging*; such are the braces, sheets, huilliards, clew-lines, and brails.

Ring, an ornament of gold and silver, of a circular figure, and usually worn on the finger. The antiquity of rings is known from Scripture and profane authors. Judah left his ring or signet with Tamar. When Pharaoh committed the government of all Egypt to Joseph, he took his ring from his finger and gave it to Joseph. After the victory which the Israelites obtained over the Midianites, they offered to the Lord the rings, the bracelets, and the golden necklaces, and the golden ear-rings, that they had taken from the enemy. The Israelitish women wore rings, not only on their fingers, but also in their nostrils and their ears. St. James distinguishes a man of dignity by the ring of gold which he wore on his finger. At the return of the prodigal son, his father orders him to be dressed in a new suit of clothes, and to have a ring put upon his finger. The ring chiefly was used to seal with. The patents and orders of princes were sealed with their rings or signets; and it was this that secured to them their authority and respect. The episcopal ring, which makes a part of the pontifical apparatus, and is esteemed a pledge of the spiritual marriage between the bishop and his Church, was used at a remote period. The fourth council of Toledo, held in 633, appoints that a bishop condemned by one council, and found afterward innocent by a second, shall be restored by giving him the ring, staff, etc.

Rio de Janeiro, the capital of Brazil, on the Atlantic, in lat. 22° 54′ 15″ S., long. 48° 15′ 50″ W. Population, [illegible],000. The harbor of Rio is one of the finest in the world, both as respects capaciousness and security for all sorts of vessels. In coming from the northeast it is usual to make Cape Frio, in lat. 23° 1′ 18″ S., long. 42° 3′ 19″ W., being about 4 leagues



References to Plan.—A. Ilha do Catundubo. B. Fort de St. Joao. C. Morro do Flamengo. D. Ponta do Calhabouco. E. Fort da Ilha das Cobras. F. Ilha dos Rattos. G. Fort da Boa Viagem.

nearly east of Rio. The entrance to the harbor is marked by a remarkable hill in the form of a sugar-loaf, 900 feet high, close to its west side; while on the east, or opposite side of the bay, at the distance of about 1¼ mile, is the fort of Santa Cruz. But the woodcut in the preceding page, taken from a chart published by order of the Brazilian authorities, gives a much better idea of this noble harbor than could be obtained from any description.

Harbor.—Vessels bound for Rio, coming from the north, should, after rounding Cape Frio, steer due west, keeping about 8 leagues from the coast, until they come within 5 or 6 miles of the *Ilha Raza*, or Flat Island, lying almost due south from the mouth of the harbor, at the distance of about 3 leagues. A light-house, the lantern of which is said to be elevated nearly 800 feet above the level of the sea, was erected on this island in 1829. The light is a revolving one, finishing its revolution in 3 minutes, and exhibiting alternately a white and a red light. There is also a light-house in the fort of Santa Cruz, the light of which is fixed, and elevated about 50 feet above the level of the sea. —*Coulier sur les Phares*, 3d ed. Having got within 5 or 6 miles of the Ilha Raza, ships may enter by day or by night, the dotted line in the cut marking the fair-way into the harbor. There are no pilots to be met with; and as there are no hidden dangers of any kind, their services are not wanted. On entering, vessels must pass within hail of Fort Santa Cruz, to be ready to answer any questions that may be put to them. They then proceed to Fort Vilganhon, below or opposite to which they must bring to, or come to anchor, allowing no boats to come along side but those of the government until they have received *pratique*, when they will be permitted to proceed to the usual place of anchorage for the merchant shipping. The sea-breeze generally sets in about 11 A.M., and lasts till about sunset. It is strong enough to enable ships to overcome the ebb. High water at full, and change at 2 in the afternoon.

Anchorage Dues.—1. From and after 1st July, 1852, the anchorage duty upon vessels trading between foreign ports and the ports of Brazil will be reduced to 300 reis the ton; and the same class of duty now levied upon coasting vessels shall be abolished. 2. That part of the provisions of April 26, July 20, and November 15, 1844, which has not been altered by this decree will continue in force.

Money, Weights, and Measures.—All payments are made in paper money, which has been over-issued, and is excessively depreciated. But in ordinary cases the par of exchange may now be assumed at about 31*d.* sterling per patriotic dollar, of 1620 reis paper. Weights and long measures are the same as those of Lisbon, the arroba being 32½ lbs. avoirdupois; but measures of capacity are different, a medida being equal to ·5954 imperial gallon, and an alquiere to 1·11 ditto.

Trade.—The trade of Rio is extensive, and has increased rapidly of late years. It is now by far the greatest mart for the export of coffee. The shipments of this important article, which in 1830 amounted to 396,785 bags, have increased with such unexampled rapidity, that in 1848 they amounted to 1,710,707 bags, that is (taking the bag at 160 lbs.), to 273,713,120 lbs., or 122,193 tons; being about equal to all the exports of coffee from all the other ports in the world. It has not, however, been so large since. Sugar was formerly an important article of export from Rio, but latterly it has rapidly decreased, and only amounted to 5979 cases (13 cwt. each) in 1849. It is probable, however, that here, as in Cuba and other places, the late low prices of coffee may have produced a reaction in favor of sugar, the exports of the latter having risen in 1850 to 13,047 cases. The other great articles of export from Rio are hides, rice, tobacco, rum, tapioca, ipecacuanha, manioc or manihot, flour, and other inferior articles. The export of cotton has entirely ceased; and that of gold, diamonds, etc., is secretly clandestine. Diamonds are principally exported from Bahia. We subjoin an

Account of the Exports of Native Produce from Rio de Janeiro during each of the six Years ending with 1852.

Years.	Coffee.	Sugar.	Hides.	Horns.	Rosewood.	Leather.	Rice.	Rum.	Tobacco	Ipecacuanha.	Tapioca.
	Bags.	Cases.	No.	No.	Logs and Planks.	Sides.	Bags	Pipes.	Rolls.	Seroons.	Barrels
1847	1,639,234	8,426	267,238	450,783	9,427	5,562	19,741	3,933	24,403	470	1,914
1848	1,710,570	5,713	331,583	269,191	16,364	10,254	9,712	2,863	23,144	333	1,832
1849	1,460,410	5,865	301,982	378,707	22,2[illegible]	10,746	20,707	4,380	25,427	130	9,566
1850	1,359,058	13,047	200,033	268,550	26,332	17,617	24,242	3,216	23,440	127	16,053
1851	1,846,213	7,824	147,296	276,949	26,647	12,774	8,229	3,892	28,785	441	17,737
1852	1,907,130	12,516	125,739	176,098	25,369	3,955	8,449	1,952	32,246	291	10,940

The principal article of import consists of cotton goods, the value of which amounts to full one-third of the total value of the imports. Next to cottons are woolen, linen, and silk manufactures; wines, jewelry, and iron-mongery; flour, meat, fish, butter, and other articles of provision; spirits, salt, earthen-ware, paper, and a host of articles. The importation of ready-made furniture from the United States is also extensive.

About 56 per cent. of the entire commerce of Brazil passes through the port of Rio de Janeiro. Hither is conveyed, from all the ports on the coast, from Bahia almost to the frontiers of the Argentine Republic, all the produce intended for exportation or home consumption. Farina, beans, bacon, dried and salt meat, hides, horns, tallow, rice, tobacco, sugar, coffee, cotton—in a word, all the produce and manufactures of the different provinces are made tributary, either by land or water conveyance, to the wealth and commercial greatness of the Brazilian metropolis. A numerous fleet of vessels is employed in the coasting trade, in supplying the different ports along the coast with the various productions of the soil and industry of America and Europe. The chief foreign exports from Rio de Janeiro are—coffee (more than half of the whole going to the United States), sugar, cotton, hides, tobacco, otter skins, etc.

Tonnage employed in the trade of 1841: Total vessels, 1705, of 416,000 tons—of which, from and to the United States, there were 289 vessels, of 77,000 tons. Tonnage, etc., of 1841, compared with that of 1840:

1841	1705 vessels	416,000	tonnage.
1840	1640 "	399,200	"
Excess over 1840	65 "	16,800	"

The increase of the foreign commerce of Rio de Janeiro is better illustrated by the following returns:

Commercial Movement of Rio de Janeiro in 1846.

Countries.	Imports of Rio.	Exports from Rio.	Total Francs.
England and Possessions	52,960,000	24,230,000	77,190,000
United States	20,440,000	38,756,000	59,190,000
France	20,720,000	9,800,000	30,520,000
Hanse Towns	5,020,000	13,330,000	18,350,000
Portugal	8,920,000	6,950,000	15,870,000
Spain	4,710,000	1,630,000	6,340,000
Switzerland	4,490,000	...	4,490,000
Belgium	2,670,000	4,320,000	6,990,000
Uruguay and La Plata	2,180,000	1,580,000	3,760,000
Sardinia	2,050,000	2,000,000	4,050,000
Sweden and Norway	1,740,000	2,710,000	4,450,000

Africa, Austria, Denmark, Turkey, Russia, the Two Sicilies, Prussia, Netherlands, Chili, and other countries, participate in this foreign trade to an extent ranging in value from 6,000,000 francs to 4,000,000 each, making the total trade for

1846	256,640,000 francs	= 47,735,040	dollars.
1845	236,800,000 "	= 44,044,800	"
Increase over 1845	19,840,000 "	= 3,690,240	"

All foreign nations shared equally in the large augmentation which the returns of 1846 exhibit over those of 1845. Some of the causes that contributed to this increase have been already adverted to. The true cause, however, to which all others are but auxiliary, is the admitted capacity of Brazil to multiply her staple productions, particularly coffee, to the fullest extent of the foreign demand, if she will only avail herself of the abundant resources with which nature has so bountifully supplied her.

The quantity of coffee exported increased 23,764,000 kilogrammes (of 2·20 lbs. avoirdupois). Sugar, on the other hand, diminished 8,096,000 kilogrammes. The exports of coffee during the year 1846 were:

To England	kilogrammes	39,000,000
United States	"	38,000,000
Hanse Towns	"	10,000,000
Austria	"	5,000,000
France	"	4,000,000
Belgium	"	3,000,000
Sweden and Norway	"	2,500,000
Denmark	"	2,400,000
Portugal	"	1,500,000
Russia	"	1,000,000
Other countries	"	1,600,000
Total value..81,000,000 francs	"	108,000,000

The course of exchange, which varied from 313 to 374 reas per franc, ruled in 1346 at 335 reas per franc, or 18·6 cents—equal to 55 cents per 1000 reas. The following table gives the number of vessels, and their tonnage, engaged in the trade of 1846, with the countries whence they came:

Countries whence.	No. of Vessels.	Tonnage.
Brazilian ports	72	15,600
United States	366	95,600
England and Possessions	415	89,700
La Plata and Uruguay	197	45,500
Portugal	218	44,500
Africa	146	28,800
Hanse Towns	97	23,300
Spain	102	20,400
France	95	19,080
Austria	46	9,300
Belgium	39	8,000
Sardinia	33	6,700
Chili	28	5,850
Denmark	22	5,050
Sweden and Norway	21	4,200
Other countries	80	17,460
Total in 1846	1977	440,040
Do. in 1845	1762	389,070

Tonnage to and from the United States in 1846: vessels 366, of 95,600 tons. Tonnage in 1843: vessels 328, of 76,900 tons. Increase in 1846 over 1843, vessels 38, tonnage 18,700.

Summary of the Trade of Rio de Janeiro in 1848.

Total imports	134,500,000	francs.
Total exports	134,080,000	"
Total imports and exports	268,580,000	"

Tonnage, etc. — Entered, 213,900 tons; cleared, 191,200 tons; total, 405,100 tons, of which from and to the

United States	89,000	tons.
Great Britain	65,000	"
Portugal	47,000	"
France	18,400	"
Other countries	185,700	"
Total	405,100	"

Course of exchange at Rio de Janeiro in 1848: 359 reas per franc, or 50 cents (nearly) per milrea.

The navigation of the port of Rio de Janeiro in 1851 is exhibited in the following table:

Arrivals.

Arrivals from foreign Ports.	Vessels.	Tons.
With cargo for port	847	237,567
Other destinations	51	16,158
On way to California	23	10,428
In ballast for foreign countries	167	49,715
In ballast for home ports	17	3,479
Total in 1851	1210	317,347
Total in 1850	1020	264,616

Departures.

Clearances to foreign Ports.	Vessels.	Tons.
With products of country	805	295,238
With foreign products	174	87,427
For California	6	2,488
In ballast for foreign countries	76	33,490
In ballast for home ports	80	26,053
Total in 1851	1138	434,696
Total in 1850	1080	380,671

The leading articles imported in 1851 were as follows: Cottons, 42,560, woolens, 5488, linens, 5695, silks, 1088, and mixed goods, 1263 packages; codfish, 54,602 quintals; coals, 42,007 tons; ale and porter, 23,704 barrels; flour, 283,893 barrels; candles, sperm, 90, composition, 6052, and tallow, 25,561 boxes; wines, Portugal, 14,033, Mediterranean, 7644, and Bordeaux, 4421 pipes; butter, 25,561 firkins; cordage5 480 coils, etc. The produce of the country exported in the same year consisted of: Coffee, 2,033,743 bags; hides, 147,296; sugar, 7824 cases; rum, 3892 pipes; rice, 8229 bags; horns, 256,949; tobacco, 28,755 rolls (of 96 lbs. each); rosewood, 36,547 pieces; half-tanned hides, 12,744; tapioca, 17,737 barrels, etc. The arrivals coastwise in 1851 were 1935 sail vessels, and 359 steamers, with an aggregate of 221,647 tons; and the departures were 1863 sail vessels, and 380 steamers, with an aggregate of 225,002 tons. The total imports and exports of the empire in 1851 exhibit an increase of 33 per cent. over the average of the four preceding years. Could Brazil be induced to abolish the heavy export duties which she levies on her staple productions, the increase would largely exceed this figure. The article of coffee alone would in a short period fully make up for any deficiency in her revenue caused by the abolition of these duties, in the increased demand for that article for foreign markets. Besides, the stimulus which would in consequence be imparted to that branch of agricultural labor would present an incidental benefit which could hardly escape the observation of a sagacious legislator.

The subjoined figures show the amount of export duties levied at Rio de Janeiro from 1846 to 1851. [Milrea = 55 to 56 cents United States currency.]

1846-'47	3,966,000	milreas.
1847-'48	4,118,000	"
1848-'49	3,834,000	"
1849-'50	3,780,453	"
1850-'51	4,706,696	"

Statements illustrative of the Trade of Rio in 1850.

Leading Articles imported.		Quantities.
Cotton manufactures	pkgs.	20,124
Woolen do.	"	2,053
Linen do.	"	1,170
Silks	"	770
Mixed	"	1,141
Codfish	quintals	35,050
Coals	tons	33,404
Ale and porter	bbls.	15,041
Flour	"	208,578
Candles, sperm	boxes	1,872
" composition	"	5,260
" tallow	"	2,222
Wines, Portugal	pipes	14,525
" Mediterranean	"	6,701
" Bordeaux	"	2,482
Butter	firkins	23,080
Cordage	coils	10,670

Exports of Produce of the Country.		Quantities.
Coffee	bags	1,359,058
Hides	No.	200,033
Sugar	cases	13,047
Rum	pipes	3,216
Rice	bags	24,242
Horns	No.	208,350
Tobacco	rolls	28,440
Ipecacuanha	serroons	127
Rosewood	pieces	20,332
Other woods	deals	15,186
Half-tanned hides	No.	17,017
Tapioca	lbs.	16,053
Tea	boxes	34
Cigars	"	650
Hair (horse)	bales	857
Flour (manihot)	bags	10,672
Soap	boxes	3,535
Candles, tallow	"	304

TABULAR STATEMENT EXHIBITING IN DETAIL COMMERCIAL MOVEMENTS AT THE PORT OF RIO DE JANEIRO IN 1851, AND THE RELATIVE SHARE THEREOF ASSIGNED TO EACH FOREIGN NATION.

Countries.	Vessels entered.		Imports.	Exports.	Total.
	Vessels.	Tons.	Francs.	Francs.	Francs.
United States	524	154,000	27,680,000	67,640,000	95,320,000
Great Britain and Possessions	370	124,000	60,610,000	22,690,000	83,300,000
Portugal	151	39,600	10,800,000	5,890,000	16,190,000
France	134	39,000	29,330,000	10,540,000	39,870,000
Uruguay	122	31,200	2,020,000	2,690,000	4,710,000
Argentine Republic	98	26,150	3,240,000	3,920,000	6,760,000
Denmark	91	25,590	1,190,000	4,290,000	5,840,000
Austria	77	20,740	2,900,000	5,590,000	8,490,000
Hanse Towns	74	20,200	7,440,000	12,100,000	19,540,000
Spain	68	19,400	3,980,000	200,000	4,180,000
Prussia	69	19,100	970,000	1,160,000	2,130,000
Belgium	60	16,400	5,910,000	7,180,000	13,090,000
Other countries	510	157,130	9,000,000	23,930,000	33,530,000
Total	2348	692,423	165,500,000	166,950,000	332,450,000

ACCOUNT OF THE COFFEE EXPORTED FROM RIO DE JANEIRO IN EACH YEAR FROM 1821 TO 1850, BOTH INCLUSIVE, IN BAGS OF 160 LBS.

Years.	Bags.	Years.	Bags.	Years.	Bags.
1821	105,536	1831	448,249	1841	1,013,915
1822	152,048	1832	478,950	1842	1,179,731
1823	184,994	1833	563,195	1843	1,189,526
1824	224,000	1834	539,117	1844	1,266,431
1825	182,510	1835	637,165	1845	1,208,062
1826	263,000	1836	704,385	1846	1,511,090
1827	350,900	1837	629,734	1847	1,639,234
1828	309,147	1838	741,651	1848	1,710,579
1829	375,107	1839	871,765	1849	1,460,410
1830	391,785	1840	1,063,801	1850	1,359,058

COMPARATIVE STATEMENT SHOWING THE INWARD NAVIGATION OF RIO DE JANEIRO IN THE YEARS 1851 AND 1852.

Foreign Flags.	Vessels.	Vessels.
	1851.	1852.
United States	300	255
Great Britain	217	228
Portugal	104	90
Hanse Towns	90	72
Sweden and Norway	114	72
France	78	68
Denmark	72	67
Spain	80	14
Sardinia	48	44
Belgium	30	30
Austria	32	25
Holland	11	17
Prussia	16	16
Russia	20	11
Other countries	46	90
Total	1210	1099

Brazilian Flag.—On foreign voyages... 449 vessels.
" On coasting trade.... 1612 "
Total.... 2061 "

The total value of the commercial movements at the port of Rio de Janeiro in 1852 was 353,000,000 francs—equal to $67,070,000; showing a large increase over the trade of the preceding year. Of the above total there was for imports 180,000,000 francs, and for exports 173,000,000 francs. The following condensed summary shows the trade of the principal commercial countries with Rio during this year: Great Britain and possessions, 74,000,000 francs; imports consisted chiefly of cottons, woolens, provisions, hardware, coal, etc. France, 34,000,000 francs; imports—liquors, tissues, cutlery, articles of fashion, etc. United States, 23,000,000 francs; imports—provisions, stores, etc. Portugal, 14,500,000 francs; imports—wines, provisions, etc. Hanse Towns, 11,000,000 francs; imports—general cargoes. Buenos Ayres and Montevideo, 5,000,000 francs; imports—provisions, skins, etc. The exports of Rio de Janeiro this year were in value:

Coffee, about	140,000,000 francs.
Diamonds and pearls	15,000,000 "
Sugar	5,000,000 "
Tobacco and cigars	5,500,000 "
Hides and skins	2,550,000 "
Cabinet woods	1,800,000 "

According to the official report of the custom-house of Rio de Janeiro, there was exported from that port to the United States, up to 30th June of this year (1852), 952,489 bags of coffee, of 160 lbs. each—making in all 152,398,240 lbs. The total quantity of coffee exported the same year is stated to have been 1,896,609 bags, or 303,457,440 lbs. The quantity sent to the United States was thus distributed:

New Orleans	346,202 bags.
New York	260,179 "
Baltimore	207,792 "
Philadelphia	81,125 "
Charleston	25,732 "
Boston	11,758 "
Mobile	11,261 "
Savannah	4,869 "
San Francisco	4,011 "
Total	952,480 "

The following table exhibits the exports of coffee, in bags, from Brazil to New Orleans, from 1842 to 1852, both inclusive:

1842	126,210
1843	85,438
1844	161,082
1845	167,069
1846	215,031
1847	205,111
1848	230,371
1849	206,129
1850	229,013
1851	274,690
1852	346,202

It is stated that the first importation of coffee into New Orleans direct from Brazil took place in 1835; and that from that year to 1840, or during a period of six years, the quantity thus directly imported from Brazil did not exceed 44,000 bags; while in the year 1840 alone there were received at that port from Cuba 91,000 bags. Cuba, however, has now almost entirely ceased to export coffee—has ceased, at least, to any considerable extent.

COMPARATIVE STATEMENT SHOWING THE QUANTITIES OF COFFEE EXPORTED FROM RIO DE JANEIRO FROM 1851 TO 1855, BOTH INCLUSIVE.

Years.	Bags.	Pounds.
1851	2,032,743	325,398,880
1852	1,896,609	303,457,440
1853	1,637,663	262,026,080
1854	1,987,632	318,021,120
1855	2,409,099	385,455,840
Total	9,964,746	1,594,359,359
Annual average	1,992,949	318,871,872

These returns show great uniformity, and go to prove that the trade of Rio Janeiro in the great staple of Brazil has attained for the time its maximum. The exports to New Orleans for the same period, however, show a progressive increase.

From official publications received as these pages go to press, it appears that the general foreign commerce of Brazil in 1854 was unusually prosperous. The agricultural productions of the empire, the chief basis of its foreign trade, exceeded those of the preceding year, the returns for the port of Rio de Janeiro reaching as high as 338,000,000 francs; showing an excess over those of the preceding year of 13,000,000 francs. The total number of vessels that entered the port of Rio de Janeiro in 1854 was 1064, and in 1855, 1285; while in 1853 there entered only 1054 vessels; showing an increase for 1854 of 10, and for 1855 of 231 vessels over 1853. The following statement shows how the navigation of this port was distributed in 1853 and 1854:

Nationality.	No. of Vessels.	
	1853.	1854.
United States	279	231
England	204	200
Portugal	123	123
France	54	63
Hanse Towns	53	63
Spain	43	44
Sweden and Norway	72	44
Montevideo	22	37
Buenos Ayres	18	43
Belgium	30	32
Denmark	61	32
Sardinia	12	10

For many years the United States occupied the first rank in the navigation of Rio de Janeiro. It will be perceived from the preceding table that England claims the precedence in 1854, a fact which is attributed to the falling off in that year in the importation of flour from the United States. The new line of steamers, established in 1853 between Liverpool and Rio de Janeiro, touching at the same places as the Southampton line—namely, Lisbon, Madeira, Teneriffe, St. Vincent, Pernambuco, and Bahia—notwithstanding the fears as to its success, continued, in 1854, its monthly service with activity and profit. Besides these two lines of steamers, a company, composed of Brazilian and Portuguese merchants, has established a line between Lisbon and Rio, touching at the same points; but this line had in 1854 but one steamer in service, the voyages of which, however, proved very successful.

The port of Rio de Janeiro is becoming yearly more important as the centre of South Atlantic commerce. The number and tonnage of vessels which entered in 1855 were augmented a third when compared with 1845, and more than a half over the number and tonnage of vessels in 1835. From 1850 to 1854 the average increase during the five years was nearly a fifth. The following statement exhibits this progressive movement:

Years.	Vessels.	Tons.
1835	572	134,012
1845	878	153,949
Average 1850–'54	...	214,238
1855	1285	380,872

Thes figures exhibit the results of foreign navigation only. The coasting trade is shown as follows:

Years.	Vessels.	Tons.
1835	1920	116,117
1845	2092	168,873
Average 1850–'54	2290	230,293
1855	3068	318,220

The employment of steamboats in the navigation of Rio de Janeiro is yearly extending. In 1845 the number of steamboats engaged in the trade of the port of Rio was 239. In 1855 the number reached 431. Fourteen companies, owning thirty-nine steamboats, with an aggregate of 2428 horse power, keep up the communications between Rio de Janeiro and the other maritime towns of the empire. There are also four towboats, with an aggregate of 187 horse power. The following tabular statement exhibits the value of leading importations into Rio de Janeiro in 1854:

1st.—Merchandise.

Liquors, wines, tea, etc.	17,000,000 francs.
Provisions, flour, butter, etc.	24,000,000 "
Lamp-oil, fat, tallow, soap, etc.	4,000,000 "
Hatters' wares, dry goods, laces, fancy ware, etc.	9,000,000 "
Tissues of cotton	31,000,000 "
" wool	7,000,000 "
" linen	8,000,000 "
Paper, books, etc.	4,000,000 "
Skins and leather, shoes, etc., saddlery, etc.	4,000,000 "
Broom wares, willow wares, woods, furniture, etc.	8,000,000 "
Pottery wares, porcelain, etc.	3,000,000 "
Watches, jewelry, hardware, etc.	10,000,000 "
Coal, metals, manufactured and wrought, etc.	11,000,000 "
Saltpetre, powder, arms, sea-stores	5,000,000 "
Sundries	19,000,000 "

2d.—Countries from which imported.

Africa	350,000 francs.
America:	
United States	18,000,000 "
Buenos Ayres	1,400,000 "
Montevideo	1,000,000 "
Chili	700,000 "
Central Europe:	
England and Possessions	56,000,000 "
Austria	2,000,000 "
Belgium	5,000,000 "
France	32,000,000 "
Switzerland	4,000,000 "
Southern Europe:	
Spain	5,000,000 "
Portugal	14,000,000 "
Sardinia	3,000,000 "
Sicily and Naples	400,000 "
Turkey and Levant	300,000 "
Northern Europe:	
Holland	1,300,000 "
Hanse Towns	12,000,000 "
Denmark	3,000,000 "
Sweden and Norway	3,000,000 "
Prussia	1,700,000 "
Fisheries	100,000 "
Other places	4,000,000 "

As regards the export trade of Rio de Janeiro in 1854, the returns at hand are not so minute. Of coffee, however, the chief article of export from the Brazilian market, there were exported this year 1,987,632 bags, weighing an aggregate of 318,021,120 lbs., of which 899,900 bags, or 143,984,000 lbs., were sent to the United States. The quantity exported the previous year was 1,637,663 bags, or 262,026,080 lbs. The quantity of sugar exported was less than that of 1853—namely, 5905 hhds. and 1739 barrels.

The following *resumé* exhibits the total results of 1854:

	Imports.	Exports.	Total.
	Francs.	Francs.	Francs.
Value in 1854	171,000,000	167,000,000	338,000,000
Value in 1853	164,000,000	161,000,000	325,000,000
Increase in 1854	7,000,000	6,000,000	13,000,000

The total flour imports at Rio for 1856 were 317,404 barrels, of which 301,729 barrels were from the United States. Of this amount 151,716 barrels were shipped coastwise or re-exported after reaching Rio.

Total import, 1857	317,404	
Stock in all hands January 1, 1856	80,000	
		397,404
Shipped coastwise and re-exported, 1856	151,716	
Stock in all hands January 1, 1857	60,000	
		211,716
Consumption of 1856 bbls.		185,687

The imports of flour from all sources last year exceed those of the preceding year 16,536 barrels, while the imports from the United States show an increase for the same period of 74,423 barrels. In fact, the tables for ten years show a somewhat irregular but decisive transfer of the flour trade almost entirely to the hands of the United States.

The total exports of coffee from Rio for the year 1856 show as follows:

To the United States	1,109,131 bags.
To Europe	889,885 "
To other points	40,120 "
Total	2,000,136 "
Exports of 1855.	
To the United States	1,139,135 bags.
To Europe	1,242,826 "
Elsewhere	24,848 "
Total	2,406,809 "
Exports of 1854.	
To the United States	891,705 bags.
To Europe	1,064,632 "
Elsewhere	37,319 "
Total	1,993,706 "

The total exports of sugar for 1856 were: Cases, 2364; barrels, 25,581; showing a decrease from the preceding year of 2381 cases and 12,155 barrels. The export of hides for 1856 was 64,861 pieces, showing a large decline from the two preceding years.

Of the coffee exports to the United States in 1856,

Baltimore received 188,011 bags; New York, 362,248; Philadelphia, 91,985; Boston, 5001; and New Orleans, 404,502.

The foreign commercial arrivals in 1856 number 1050 vessels, of 335,886 tons, of which thirty-two were from Baltimore, thirty from New York, twenty-eight from Richmond, fifteen from New Orleans, fourteen from Boston, eleven from Philadelphia, two from Charleston, two from the Rio Grande, and one from Wilmington. The number of foreign departures in 1856 was 996 vessels, of 426,908 tons, of which 640 were with produce, 34 with foreign merchandise, 140 with their inward cargoes, and 182 in ballast proceeded to other ports of the empire. The coasting trade outward was conducted, exclusively of 303 steamboats, by 2276 vessels, of 253,736 tons burden. The coasting trade inward was conducted by 2222 sailing vessels and 305 steamboats, of 276,967 tons.

The revenue collected at the custom-house of Rio exhibits an increase corresponding with that of the import trade of this port. This is shown by the following comparative statement of receipts:

1835	3,583,000 milreas.
1845	8,048,000 "
1855	13,077,000 "

The last year (1855) does not exhibit the maximum. This was reached in 1852, the amount that year exceeding 14,775,600 milreas, or over $7,000,000.

Immigration.—The immigration returns of Rio furnish the following statistics:

Years.	Entered.	Departed.
1851	9,585	1549
1852	6,870	1887
1853	9,645	1981
1854	8,673	1773
Aggregate	34,773	7181
Annual average	8,693	1795

The immigrants are very generally Portuguese, who are employed in the mechanic trades, in commercial pursuits, as domestics, etc. Some hundreds are sent to the new colonies, where they constitute almost the only aid which Brazilian agriculture receives annually from foreigners. There arrived in 1851 and in 1852 a large number of German settlers, engaged in Europe by the agents of the colonial directors. On their arrival these colonists became dissatisfied, and hence German immigration has almost entirely ceased. In 1851, there arrived of this class of immigrants 2958 persons; in 1852, 1047 persons; in 1853, 349 persons; and in 1854, only 295.

General Remarks.—On the 30th of April, 1854, the first railroad in Brazil was thrown open to the public, the inauguration taking place in the presence of their Imperial Majesties, and an immense concourse of the leading personages of the empire. The general navigation and commerce of the southern provinces, as well as the general trade between them and the United States, are decreasing; owing, it is alleged, to the settlement of the difficulties that existed on the River Plata. The more liberal tariff, both on imports and exports, attracts a large bulk of the trade of these provinces to that quarter. A treaty between the United States and Brazil is regarded as the only means of promoting the general commerce and navigation between the two countries. There exists no commercial treaty between the United States and Brazil; but Brazilian vessels, with their cargoes, are admitted on an equal footing with vessels of the United States as respects tonnage and import duties, and all other charges.

The ports of Brazil open to direct foreign trade are: Para, Maranham, Parnahiba, Fortaleza (Ceara), Aracaty (Ceara), Rio Grande North, Parahiba, Pernambuco, Maceyo (Alagoas), Lanangeiras (Sergipe), Bahia, Espirito Santo, Rio de Janeiro, Santos, Paranagua, St. Catherine, Rio Grande, São Borga (R. G. South), Porto Alegre (R. G. South).

COMMERCE OF THE UNITED STATES WITH COAST OF BRAZIL AND DEPENDENCIES, FROM OCTOBER 1, 1820, TO JULY 1, 1857.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1821	$885,348	$496,412	$1,381,760	$605,126	$150,999	$19,500	22,264	314
1822	1,217,411	246,518	1,463,929	1,486,567	....	71,803	28,301	549
1823	1,062,209	279,181	1,341,390	1,214,810	8,615	46,215	22,616	..
1824	1,699,754	602,159	2,301,904	2,074,119	83,219	218,792	38,845	567
1825	1,641,296	752,458	2,393,754	2,150,707	188,343	197,188	33,938	707
1826	1,597,344	603,005	2,200,349	2,156,678	113,000	104,771	34,372	1,034
1827	1,486,433	377,373	1,863,806	2,060,971	1,575	292,932	37,709	381
1828	1,565,779	482,926	1,988,715	3,097,792	195,183	181,577	40,114	..
1829	1,510,960	419,667	1,929,927	2,535,467	73,612	70,896	40,978	..
1830	1,600,999	242,239	1,843,238	2,491,460	1,470	84,065	44,450	601
Total	$14,206,833	$4,501,939	$18,708,772	$19,875,657	$878,106	$1,234,309	343,587	4,053
Sept. 30, 1831	$1,652,193	$423,902	$2,076,095	$2,375,820	$216,375	$23,14	36,852	203
1832	1,232,077	822,717	2,054,794	3,800,845	381,503	20,671	30,439	356
1833	2,474,555	797,546	3,272,101	5,089,613	156,840	11,458	40,735	1,017
1834	1,536,097	473,264	2,050,351	4,729,960	60,084	31,735	37,092	1,077
1835	1,810,701	797,865	2,608,566	5,574,466	343,931	66,605	39,269	2,254
1836	1,732,741	1,362,195	3,094,936	7,210,150	900,324	6,240	48,533	3,062
1837	1,301,217	441,992	1,743,209	4,991,583	83,531	40,617	19,576	4,107
1838	2,094,967	562,237	2,657,194	5,101,298	204,700	123,223	30,623	1,601
1839	2,133,997	503,488	2,637,485	5,225,056	184,427	4,858	39,431	3,183
1840	2,145,803	360,711	2,506,514	4,027,2 6	102,174	14,522	34,180	1,764
Total	$18,164,488	$6,545,907	$24,710,395	$47,274,464	$2,637,85 5	$343,816	360,779	19,824
Sept. 30, 1841	$2,941,991	$575,282	$3,517,273	$6,302,653	$255,803	$21,252	47,634	3,101
1842	2,225,511	375,931	2,601,502	5,048,814	81,724	60,245	38,778	2,643
9 mos., 1843*	1,568,584	223,704	1,792,288	3,947,658	22,403	50,349	32,666	1,355
June 30, 1844	2,499,418	448,834	2,818,252	6,882,806	142,825	28,600	40,250	1,816
1845	2,413,567	424,393	2,837,960	6,084,599	181,159	7,477	40,716	2,077
1846	2,754,012	389,383	3,143,395	7,441,803	235,031	2,532	48,026	4,689
1847	2,566,938	376,840	2,943,778	7,016,160	147,240	26,558	39,281	3,397
1848	3,092,736	279,698	3,372,434	7,092,648	163,072	17,503	57,206	6,036
1849	2,838,380	264,597	3,102,977	8,474,368	117,604	9,361	56,335	6,028
1850	2,723,768	473,347	3,197,114	9,324,429	279,690	2,160	58,113	3,560
Total	$25 534,964	$3,791,999	$29,326,963	$69,716,928	$1,628,066	$216 28	464,405	34,714
June 30, 1851	$3,128,956	$623,960	$3,752,916	$11,525,304	$430,262	$6,511	63,020	7,048
1852	2,782,179	288,803	3,071,042	12,230,281	117,466	14,317	50,454	5,718
1853	3,734,190	260,254	3,994,444	14,817,061	399,029	9,000	64,735	5,158
1854	4,046,857	192,384	4,239,241	14,116,387	642,114	24,400	60,348	2,829
1855	3,973,219	288,054	4,261,273	15,218,425	141,525	1,451	75,666	2,674
1856	4,858,125	226,779	5,074,904	19,262,657	233,503	....	74,280	2,800
1857	5,268,166	277,041	5,545,207	21,490,733	146,588	....	84,712	3,186

* Nine months to June 30, and the fiscal year from this time begins July 1.

Anchorage Dues.—300 reas (about 16½ cents) per ton of Brazilian measurement. Vessels arriving and departing in ballast pay only half anchorage; and those calling merely for supplies are exempt from anchorage duty. Vessels which make more than two voyages to ports of Brazil during a twelvemonth are exempt from the payment of anchorage dues on all voyages over that number within the same year; vessels, therefore, pay no more than 600 reas annually (33½ cents), be the number of voyages what it may. For passports to leave, from 4 to 8 milreas (from $2 22 to $4 44); for pilotage inward 30 milreas ($16 67), but no obligation to take pilots inward; for pilotage outward 70 milreas ($38 88), and for canoe-hire, 6 milreas ($3 33). No vessel is allowed to leave port without a pilot, nor to get under weigh after sunset, or before sunrise. Hospital money, 4 milreas on the vessel (say $2 22), and 640 reas (or about 36 cents) for each of the crew. The charge for stamps varies, being not less than $1. A consular return from Pernambuco, under date of January, 1855, gives each specific item of charges upon an American bark of 200 tons burden which entered that port laden with flour, and leaving with a cargo of sugar. The total, inward and outward, including the charges for lighterage, labor, cranеage, etc., which are not on government account, amounted to $571 45. Of this there was paid on government account $192 45—the remainder belonging to the other class of charges.

Tariff.—The market prices in Brazil are taken as the basis for the duties imposed by the present tariff. The dispatch by invoice will take place when the goods imported have no fixed duties in the tariff, or when they are subject only to a tax for warehousing and clearing out.

For the dispatch of goods subject to *ad valorem* duties the merchant or consignee is obliged to show a declaration stating the prices of his goods, and the original invoice duly certified. In want of the original invoice may be presented two certificates by two brokers, or, in the absence of brokers, of two merchants of the place, showing the current prices of the goods.

The value of the goods subject to *ad valorem* duties will be that of the Brazilian market, as before said; deductions made of the respective duties, or the value of the original invoice, with the addition of 10 per cent. —*United States Com. Relations.*

Remarks on the Trade of Brazil.—This vast empire comprehends the great eastern section of South America. Its length from north to south is computed at about 2600 miles, and its greatest breadth at 2540 miles. The entire area comprises about 2,973,400 square miles, or over ten times the area of Texas, and about seventy times that of Portugal. The climate is generally favorable to agricultural pursuits, the soil being fertile, and in many parts of the empire, particularly in the provinces, abounding with valuable mineral resources. The staple productions of Brazil are such as must necessarily attract an extensive foreign trade; though it is stated that anterior to 1809 she had no direct intercourse with other nations—the mother country, under the policy which dictated her colonial system, excluding from the ports of her extensive colony all foreign flags. The dangers which menaced, and the domestic troubles which agitated Portugal at this period, resulted in the flight of the royal family to Brazil. With the court were introduced new tastes, new ideas, and a more liberal policy in regard to foreign intercourse. The ports of Brazil were at once opened to foreign commerce, and since that period the culture of the staple productions has kept pace with the increased demands of foreign markets. The great staple of Brazil is coffee, though vegetables, fruits, wheat, barley, rice, maize, and tobacco are extensively produced in the southern or temperate provinces; while within the tropics the chief productions are mandioca, rice, bananas, plantains, beans, sweet potatoes, coffee, sugar, cotton, and cocoa—the last four for exportation. The forests supply the very best timber for ship-building, and almost every variety of wood for cabinet-work and dyeing purposes; among the latter, Brazil-wood, rosewood, and Campeachy-wood are important articles of commerce. Travelers who have minutely explored the interior of Brazil describe no less than 219 varieties of timber, and many of them largely enter into the commercial resources and domestic wealth of that empire. Since the acknowledgment of its independence, the commercial regulations of Brazil have been marked by a spirit of liberality and of freedom from unnecessary and exclusive restrictions. The duties on imports and exports are based upon the valuation principle, and are designed solely with a view to supply the necessary revenues for the support of the government; and the port, pilot, and other navigation charges seldom exceed the actual requirements of a just and liberal intercourse with foreign nations. Indeed, the commercial policy of Brazil seems eminently adapted to a country of such boundless extent and so sparsely populated, as labor is sure to find a remunerative reward, in whatever mode it may seek to develop the exhaustless resources of the empire, in the free competition to which it invites the enterprise and exchanges of foreign nations. The entire population amounts to about six millions—being two persons to the square mile; of which at least three-fifths are blacks. The commercial treaties negotiated by the government of Brazil with foreign countries are generally based upon the principle of reciprocity. That with the United States was concluded December 12, 1828, and established between the two countries freedom of commerce and entire reciprocity of trade and navigation—certain special favors being reserved to Portugal, owing to the former relations between that country and Brazil. This treaty contained the usual stipulation requiring twelve months' notice to be given by either party desiring to terminate the same; and such notice having been given by the government of Brazil, and the twelve months having expired, the treaty is no longer of force. The commercial relations between the two countries were, however, placed upon a footing of similar reciprocity to that guaranteed by the treaty, by virtue of the proclamation of the President of the United States, bearing date November 4, 1847, issued conformably to the provisions of an act of Congress passed on the 24th day of May, 1828.

As the trade between the two countries is placed much on the same footing of reciprocity as that guaranteed by the treaty, it is deemed not irrelevant to present a synopsis of the provisions of that treaty, so far as they relate to commerce.

The contracting parties are placed on the footing of the most favored nation in respect to commerce and navigation, the relations between Portugal and Brazil excepted. Free commercial intercourse, on the basis of perfect equality and reciprocity between the citizens and subjects of the two countries, is established, the coasting trade being reserved by each government to its own flag. The vessels of both countries are placed on the same footing in the ports of each, as to the importation, exportation, or re-exportation of foreign goods, from or to any foreign country; the United States agreeing to consider a vessel as Brazilian when the proprietor and captain are subjects of Brazil and the papers are in legal form. The contracting parties agree that no higher or other duties shall be imposed on the importation of any articles, the produce or manufactures of either country, into the ports of the other, than are or shall be payable on the like articles, being the produce or manufactures of any other foreign country; and export duties shall be the same in each to the ports of the other as when the articles are exported to any other foreign country. It is agreed that it shall be wholly free for all merchants, commanders of ships, and other citizens or subjects of both countries, to manage themselves their own business in all the ports

and places subject to the jurisdiction of each other, as well with respect to the consignment and sale of their goods and merchandise by wholesale or retail, as with respect to the loading, unloading, and sending off their ships; they being in all these cases to be treated as citizens or subjects of the country in which they reside, or, at least, to be placed on a footing with the subjects or citizens of the most favored nation. Vessels in distress, pursued by pirates or enemies, etc., belonging to either of the contracting parties, to be received and protected in the ports, rivers, bays, etc., of the other.

Foreign Commerce of Brazil.—From official documents, it appears that of the whole commerce of Brazil, Rio de Janeiro holds 56 per cent.; Bahia 12 per cent.; Pernambuco 12 per cent.; Alagoas, Santo Paulo, and Santo Pedro do Sul, 8 per cent.; Para, Maranham, and Santa Catarina, each 4 per cent. The species of merchandise which constitutes the leading imports into Brazil are cottons; of which Rio de Janeiro, Bahia, and Pernambuco usually receive in value about $47,000,000; woolens about $10,000,000; silks, $8,000,000. After these rank next in commercial importance provisions, flour (the great bulk of which comes from the United States); wines and other liquors; metals, crude and manufactured; watches, jewelry, arms, ammunition, etc. etc. The principal exports are coffee (which is shipped from Rio) and sugar, (principally from Bahia and Pernambuco). Full a moiety of the former goes to the United States, and the latter chiefly to England, Trieste, and the Hanse Towns. The precious metals next follow in the rank of exports; then diamonds, skins (otter), hides, cotton, and tobacco. The two last, as well as sugar, though not to so great an extent, are either stationary or declining, as respects the quantities annually exported.

The following comparative statements give the figures for two years, 1851 and 1852:

	1851.	1852.
Imports	$32,300,000	$34,200,000
Exports	31,920,000	32,680,000
Total	$64,220,000	$66,880,000

The proportion which the United States had in the trade of these two years, appear as follows: Exports, 1851, 36 per cent.; 1852, 37 per cent. Imports, 1851, 12 per cent.; 1852, 9 per cent.

ANALYSIS OF IMPORTS (BY COUNTRIES).

	1851.	1852.
	Francs.	Francs.
England	60,000,000	74,000,000
France	29,000,000	33,000,000
United States	27,000,000	24,000,000
Hanse Towns	8,000,000	12,000,000
Austria	5,000,000	6,000,000
Belgium	6,000,000	6,000,000
Switzerland	4,000,000	5,000,000

ANALYSIS OF EXPORTS (BY MERCHANDISE).

	1851.	1852.
	Francs.	Francs.
Coffee	132,000,000	140,000,000
Sugar	3,000,000	5,000,000
Hides	5,000,000	1,000,000
Woods	3,000,000	1,000,000

ANALYSIS OF EXPORTS (BY COUNTRIES).

	1851.	1852.
	Francs.	Francs.
United States	68,000,000	71,000,000
England	25,000,000	23,000,000
Hanse Towns	12,000,000	3,000,000
France	11,000,000	12,000,000
Belgium	7,000,000	8,000,000
Austria	6,000,000	7,000,000

The French official report, from which the preceding summary is derived, states that there were received from the United States 230,000 barrels of flour, and from Europe 30,000 barrels; of which 15,000 barrels were shipped from Marseilles, and the remainder from Trieste and Antwerp. Butter, salt, dried beef from the Plata, gin, dried and preserved fruits, fish-oil, linseed oil, &c., maintained the figures of the preceding year; but in the articles of beer, soap, wax and other candles, tea, and codfish, there was a diminution. The following statement shows the relative share assigned to each country in the general importation of 1852:

	Imports.	Exports.
Great Britain	38,100	12,000
France	18,100	12,000
United States	13,100	38,000
Germany, Belgium, Holland, and Switzerland	19,100	25,000
Portugal, Spain, and Italy	12,100	13,000

The following tabular statement will be interesting as exhibiting the custom-house revenues of Brazil for the periods designated, and the sources whence derived. The present value of the reis in United States currency is, 1000 reis or 1 milreis=55 cents.

Fiscal Years.	DUTIES OF				Total.
	Import.	Export.	Navigation.	Internal and Extraordinary.	
	Reis.	Reis.	Reis.	Reis.	Reis.
1849–'50	17,830,020,000	3,780,453,000	345,580,000	2,125,817,000	24,081,870,000
1850–'51	20,471,262,000	4,706,606,000	545,581,000	237,125,000	27,960,664,000
1851–'52	24,793,045,000	4,527,772,000	546,944,000	365,810,000	32,233,572,000
Increase in 1852 over 1851	4,321,784,000	....	31,363,000	128,685,000	4,302,408,000
At the port of Rio Janeiro in 1851–'52	14,034,906,000	2,555,548,000	282,845,000	1,733,347,000	18,666,744,000

Coffee.—Coffee is the leading staple of Brazil. Formerly, and for many years, San Domingo was the source from which Europe derived its supplies of this article—the quantity exported from that island at one time having reached as high as 77,000,000 lbs.; and had not the revolution broken out in 1792, it was estimated that there would have been exported that year about 84,000,000 lbs. That event, combined with other obvious causes, produced a total cessation in the supplies from this source. Being driven from St. Domingo, the culture of coffee at once became a leading branch of industry in Cuba, Jamaica, Surinam, and Java, and was at a subsequent period introduced with much success into Brazil. After the flight of John VI. from Portugal to Brazil, in 1808–'9, the port of Rio de Janeiro was opened to foreign trade, and coffee soon became one of the leading staples of export. At that period the annual crop did not exceed 30,000 bags, or 4,800,000 lbs. In 1820 it reached as high as 100,000 bags, or 16,000,000 lbs. In 1817 and 1821 the supply was so small, that in the market of London it rose as high as 37½ cents per lb. This of course stimulated its cultivation in Brazil. The ruin of San Domingo transferred, also, the culture of indigo to British India, and it culture was at the same period abandoned in Brazil. Previously to the revolution in Hayti there was exported from that island 76 835,219 lbs.; in 1818 the exports fell to about 26,000 000 lbs.; and now they do not exceed thirty-five to forty millions. In 1834, the year in which the emancipation act went into effect, Jamaica exported to England 18,268,888 lbs. of coffee; five years later, the quantity had fallen to 9,423,197 lbs. The decline in the cultivation of coffee in this island, and the unrestricted supply of African slave labor in Brazil, combined to give a powerful impulse to its culture in that empire. Hence, in 1830, the crop reached as high as 400,000 bags, or 64,000,000 lbs. The coffee-growing districts in Brazil are divided into Serra Abaxo (below the mountains) and Serra Acima (above the mountains). The cost of transporting the coffee from the plantation to market is about 2 cents per lb.; and the actual cost of production, is stated to be about 4½ cents per lb. The quantity produced in the empire, year by year, is not officially ascertained; but it has been approximated with sufficient exactness for practical purposes.

Coffee was first imported into the United States from Brazil in 1809, the first importation consisting of 1809 bags. From 1809 to 1849 the imports of coffee into the United States had increased from 1809 bags to over 100,000,000 lbs.; and in 1855 it reached as high as 135,369,383 lbs. The following comparative tabular statement shows the quantities of coffee imported into the United States from Brazil, and the quantities of flour exported from the United States to Brazil, with the total annual values of each respectively; and the current price of flour per barrel, and of coffee per lb., for each year, for a period of eleven years — from 1844 to 1854, both inclusive, showing a greater rate of increase in coffee over flour:

Years.	Coffee to U. S. from Brazil.	Values.	Flour from U. S. to Brazil.	Values.	Value of Coffee per lb.	Value of Flour per bbl.
	Pounds.	Dollars.	Barrels.	Dollars.	Cents.	Dols. Cts.
1844	95,291,484	5,802,901	288,181	1,493,413	6 1/4	5 18 1/2
1845	78,553,616	4,401,269	209,845	1,083,318	5 5/8	5 16 1/2
1846	97,535,697	5,964,513	296,460	1,675,756	6 1/8	5 65/8
1847	94,916,629	5,673,690	254,800	1,562,979	5 7/8	6 14 1/2
1848	110,927,284	5,969,993	294,816	1,952,212	5 3/8	6 62 1/2
1849	122,581,183	6,776,727	314,808	1,885,203	5 1/2	5 98 3/4
1850	90,319,511	7,422,608	292,464	1,649,696	8 1/4	5 64
1851	107,578,257	8,881,105	369,975	2,021,631	8 1/4	5 46 1/2
1852	138,156,506	10,064,740	345,025	1,633,285	7 1/4	4 72 1/2
1853	153,338,464	11,844,414	433,843	2,434,187	7 3/4	5 61 1/2
1854	116,794,773	10,329,992	315,319	2,417,685	8 3/4	7 66 1/4

Sugar.—A glance at the preceding tables will show that coffee is the great staple export of Brazil to the United States, the produce of which is most steadily and rapidly advancing. The supply will doubtless always be equal to the demand, owing, in a great measure, to the facility and comparatively small expense attending its production; while the culture of sugar and cotton depends on contingencies, both temporary and permanent, which must materially affect the quantities annually produced. These contingencies may be briefly stated. The culture of sugar depends as much on the science of the manufacturer as on the capital and labor of the planter. Before it can reach the market of Rio, or of any of the other ports of the empire, it requires a vast expenditure of labor, the most assiduous attention, and an outlay of capital that absorbs fully one half, if not more, of the gross yield. Besides, the abolition of the slave-trade, and the severity with which the present laws of Brazil punish those detected in that traffic, must produce decided effects upon the production of those staples in the culture of which slave labor is indispensable.

A French work on statistics, recently published, furnishes the following data relative to the present number of slaves in Brazil: From a publication made in 1843 by Mr. Saturnino de Souza e Oliveira, chief officer of the customs in Brazil, the number of slaves has been computed at three millions, who are thus divided as to employment:

Slaves in Brazil.

Employed on the estates	2,500,000
Domestics	100,000
Without any special employment	200,000
Hired out, and others	200,000
Total	3,000,000

The operation of the present rigid measures in force in Brazil in respect to the slave-trade is seen in the following table, compiled from an American authority:

Slaves imported into Brazil from Africa.

1842	17,435	1847	50,172
1843	19,095	1848	60,000
1844	22,849	1849	54,000
1845	19,453	1850	23,000
1846	50,024	1851	3,287

The figures for 1851 evidence the vigilance of the government in the detection of those engaged in this traffic. It may be remarked, that of the 3287 given for 1851, 1006 were recaptured by the Brazilian cruisers, and declared free.

How long, under these circumstances, sugar and cotton shall continue to be classed among the staples of Brazil, is scarcely left to conjecture.

Quantities and Values of Sugar imported into the United States from Brazil.

Years.	Pounds.	Values.
1844	6,258,288	$321,000
1850	10,100,618	418,998
1851	15,043,677	518,401
1852	19,738,093	632,700
1853	28,074,205	908,911
1854	11,118,228	390,042
1855	8,579,707	296,564

Cotton.—As regards the cultivation of cotton, it is well known that several insuperable drawbacks to its extension exist in Brazil. Among these may be named the ravages of insects, the peculiarities of the climate, and the expense and difficulties attendant upon its transportation from the interior to the coast. Many years ago, it was ascertained in Brazil that the cotton-plant will not flourish near to the sea, and the plantations have, in consequence, receded further inland, as well to avoid this difficulty as to seek new and fresher lands.

Tabular Statement showing the Quantities of Cotton exported from Brazil to Great Britain from the Year 1840 to 1855, and also to France, Spain, Portugal, and Belgium, for such Portions of that Period as can be supplied from official Data—blanks indicating the Absence of said Data.

Years.	Great Britain.	France.	Spain.	Portugal.	Belgium.
	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
1840	14,779,171	....	....	....	....
1841	16,671,348	....	....	....	....
1842	15,222,828	....	....	....	....
1843	18,675,123	....	....	....	....
1844	21,084,744	....	....	....	....
1845	20,157,033	....	....	....	....
1846	14,746,321	....	....	....	....
1847	19,966,922	....	....	....	....
1848	19,971,878	....	....	....	....
1849	20,738,133	....	832,604	....	14,690
1850	30,230,982	....	....	....	None.
1851	19,389,104	1,232,000	....	....	None.
1852	26,590,144	930,517	2,201,578	1,836,286	None.
1853	24,190,628	931,829	2,351,279	....	None.
1854	19,703,609	287,302	....	2,673,766	19,991
1855	24,577,953	400,000	....	1,767,445	....
Aggregate	330,031,011	....	....	....	....
Annual average	21,021,438	....	....	....	....

The exportations of cotton from Brazil in 1843-'44 and 1853-'54 are stated by Brazilian official authorities as follows:

In 1853-'54	28,420,320	pounds.
In 1843-'44	26,056,160	"
Increase in ten years	2,364,160	"

In 1851-'52 the exportation amounted to 31,983,050 lbs., of which quantity Great Britain received 26,881,201 lbs., Spain 2,291,578 lbs., Portugal 1,896,286 lbs., and France 889,048 lbs. Of the total exportations in 1852-'53, Great Britain received, as appears from the same authorities, 22,575,122 lbs., Spain 2,351,279 lbs., Portugal 2,673,766 lbs., and France 543,611 lbs. The exports to Great Britain from Brazil began in 1781; and from that period to the present time the large bulk—at least four-fifths—of Brazilian grown cotton goes to that kingdom.—*Comm. Rel. U. S.*

The commerce of Brazil has sustained great injury from the wretched state of the currency and of the finances; the value of the former, which consists almost wholly of paper, being excessively depreciated and liable to extreme fluctuations, and the revenue being inadequate to meet the expenditure. Latterly, however, vigorous efforts have been made to increase the revenue; and it is hoped that in the event of the finances being placed on a better footing, measures may also be taken to improve the currency. We subjoin an account of the debt, etc., of the empire in 1851:

Foreign debt	£6,187,000
Local funded debt, 62,370,000,000 reis, at exchange 24*d.*	7,540,000
Treasury bills afloat, about 2,000,000,000 reis, at exchange 24*d.*	240,000
Estimated amount of notes in circulation (paper money) throughout the empire, 50,000,000,000 reis	6,700,000
	£20,667,000

or, in round numbers, the debts and liabilities of Brazil may be stated at £20,500,000 sterling. The foreign capital in the empire is computed to be about £10,000,000 sterling.

"The quantity of precious stones shipped is now very considerable. In most cases they are sent to a losing market; being, in fact, more valuable in Brazil than in London or Paris. Aquamarines (*see* BERYL) of a very large size have been found. In January, 1811, one was found in the Riberao das Americanas, near the diamond district, which weighed 15 lbs.; and in the same place, in the October following, one was discovered weighing 4 lbs. Topazes of fine quality, but seldom large, amethysts and chrysolites, are also articles of exportation; and at times some fine specimens of these gems are to be met with in the jewelers' shops. Correctly speaking, there are no trading companies in Rio de Janeiro; there is a society for effecting maritime assurances, but no other. The Bank of Brazil has had very extensive concessions made in its favor, and ought to be in a flourishing state. It has power of issuing notes; and all disputed moneys and property of the deceased and absent (*mortes e auzentes*) must be placed in its hands, and 2 per cent. per annum charged for the care and trouble. This, in addition to the interest which might be obtained for the deposit, would alone, in an active mercantile country, form no inconsiderable revenue. Specie is prohibited from being carried coastwise; merchants who wish to deposit cash in one of the northern ports, where the largest purchases are made, are therefore forced to take hand bills, and pay a premium for them, varying from 3 to 5 per cent. Some enormous capitals have been amassed; but generally the speculations of the native merchants are conducted on a very limited scale. The legal rate of interest is 6 per cent.; but money can seldom be obtained under 12."—CALDCLEUGH'S *Travels in South America*, vol. i. p. 53-59.

River. A river is a current of fresh water flowing in a *bed* or *channel* from its source to the sea. The term is appropriated to a considerable collection of waters formed by the conflux of two or more *brooks*, which deliver into its channel the united streams of several *rivulets*, which have collected the supplies of several *rills* trickling down from numberless springs, and the torrents which carry off from the sloping grounds the surplus of every shower.

Rivers form one of the chief features of the surface of this globe, serving as voiders of all that is immediately redundant in our rains and springs, and also as boundaries and barriers, and even as highways, and in many countries as plentiful store-houses. They also fertilize our soil by laying upon our warm banks the richest mould, brought from the high mountains, where it would have remained useless for want of genial heat.

Rix Dollar (a corruption of German *reichsthaler*, or *dollar of the empire*). A silver coin of different values in different countries.—*See* COINS. By authority of Congress, the value of a rix dollar of Denmark is put at 100 cents, and the rix dollar of Bremen at 78¾ cents.

Road, in *Navigation*, a bay or place of anchorage, at some distance from the shore, whither vessels occasionally repair to receive intelligence, orders, or necessary supplies, or to wait for a fair wind. The excellence of a road consists in its being protected from the reigning winds and the swell of the sea, in having a good anchoring-ground, and being at a competent distance from the shore. Those which are not sufficiently protected are termed *open roads*.

Roads, pathways formed through the country with more or less art and care, for facilitating the transit of individuals, carriages, etc., between different places. They are of every variety of form—from rude, narrow, rugged, and unformed paths, carried over mountains, interrupted by every petty rivulet, and almost impracticable to any but foot-passengers, to smooth, broad, and level ways, formed of solid materials, winding round or cut through mountains, and carried over swamps and rivers at an immense expense, and admitting of the easy passage of carriages and of all sorts of goods. The laying out of improved roads, and their construction, forms an important part of what is denominated the science of civil engineering. But as it would be quite foreign to our purpose to enter into any details as to the formation of roads, we shall satisfy ourselves with laying before the reader the following statements as to their importance in a commercial point of view.

Importance and Utility of improved Roads.—Next to the introduction of money, and weights and measures, the formation of good roads and bridges gives the greatest facility to commerce, and contributes more powerfully, perhaps, than any thing else to the progress of improvement. They have been denominated national veins and arteries; and the latter are not more indispensable to the existence of individuals than improved communications are to a healthy state of the public economy. It were vain to attempt to point out in detail the various advantages derived from the easy means of communication. There is not a single district that is not indebted to others for a large part of its supplies, even of some of the bulkiest commodities. Besides the coals, metals, minerals, timber, corn, etc., conveyed from one part of the empire to another by sea, immense quantities are conveyed from place to place in the interior by roads and canals; and every improvement effected in the means of conveyance has obviously the same effect upon the cost of commodities that have to be conveyed, as an improvement in the methods by which they are raised or manufactured. Wherever the means of internal communication are deficient in a country, the inhabitants must unavoidably disperse themselves over the surface. Cities were originally founded by individuals congregating more, perhaps, for the sake of mutual defense and protection than for any other cause. But in countries where good government is established, and property is secure, men resort to cities only from a sense of the advantages they afford. The

scale on which business is conducted in them presents facilities that can not be elsewhere afforded for making a fortune; and the extent to which the subdivision of employments is carried opens a field for the exercise of all sorts of talent; at the same time that it improves and perfects all sorts of arts, whether subservient to industrious or scientific pursuits, or to those of pleasure and dissipation. It is this that attracts the aspiring, the industrious, the gay, and the profligate, to cities—that fills them with the best and the worst part of the species. The competition that takes place in a great town, the excitement that is constantly kept up, the collision of so many minds brought into immediate contact, and all endeavoring to outstrip each other in their respective departments, develops all the resources of the human mind, and renders a great city a perpetually radiating focus of intelligence and invention. There are, however, considerable clogs upon the continued increase of cities. The food and fuel made use of by the inhabitants, and the raw products on which their industry is to be exerted, must all come from the country; and according as the size of a city increases, the distances from which its supplies have to be brought become so much the greater, that ultimately the cost of their conveyance may be so great as to balance or exceed the peculiar advantages resulting from a residence in town. Hence the impossibility of a large or even a considerable city existing any where without possessing extensive means of communication either with the surrounding country or with other countries; and hence, too, the explanation of the apparently singular fact, of almost all large cities having been founded on or near the sea, or a navigable river.

The influence that the growth of a large town has upon agriculture is great and striking. "In the neighborhood," says Paley, "of trading towns, and in those districts which carry on a communication with the markets of trading towns, the husbandmen are busy and skilful, the peasantry laborious; the land is managed to the best advantage, and double the quantity of corn or herbage (articles which are ultimately converted into human provision) raised from it, of what the same soil yields in remoter and more neglected parts of the country. Wherever a thriving manufactory finds means to establish itself, a new vegetation springs up around it. I believe it is true that agriculture never arrives at any considerable, much less at its highest, degree of perfection, when it is not connected with trade; that is, when the demand for the produce is not increased by the consumption of trading cities."—*Moral Philosophy*, book vi. c. 11. But the fact of their being mainly conducive to the growth of cities is not the only advantage which improved roads confer upon agriculture. Without their aid it would be impossible to carry to distant places sufficient supplies of such bulky and heavy articles as lime, marl, shells, and other manures necessary to give luxuriance to the crops of rich soils, and to render those that are poor productive. Not only, too, would inferior roads lessen the market for farm produce, and consequently the quantity raised, but a larger proportional number of horses or other cattle would be required to convey the diminished produce to market. It is plain, therefore, that good roads are both directly and indirectly a prime source of agricultural improvement; directly, by increasing the quantity and reducing the cost of manure, and by increasing the quantity and reducing the cost of conveying farm produce to market; and indirectly, by providing for the growth and indefinite extension of cities and towns, that is, of the markets for agricultural produce. Increased speed of conveyance is one of the principal advantages that have resulted from the formation of good roads, the invention of steam-packets, etc. Suppose that it takes two days to travel by an uneven, ill-made road between any two places, and that, by improving the road, the journey may be accomplished in one day; the effect is the same as if the distance were reduced one half; and there is not only a great saving of time to travelers, but also a great saving of cost, from the more speedy conveyance of commodities. This latter is a point of much more importance than is commonly supposed. It is not possible to form any correct estimate of the value of the products that are constantly in the act of being carried from place to place. It is certain, however, that it is very great; and every additional facility of conveyance, by bringing such products more rapidly to their destination, and enabling them to be sooner applied to the purposes for which they are intended, renders large quantities of capital available for industrious purposes that would otherwise be locked up.—*See articles* RAILROADS and CANALS.

Rolling. In *Naval language*, the lateral oscillation of a vessel. This motion, which is often very great when the vessel is running before the sea, endangers the masts, strains the sides, and loosens the decks at the water-ways; it is also liable to cause the guns to break adrift. When the centre of gravity is too low, the oscillations begin and end violently. The changes in the stowage necessary to modify the nature or extent of the roll are made by seamen from experimental knowledge.

Rolling Tackle. A tackle or pulley hooked to the weather quarter of a yard, and to a lashing or strap round the mast near the slings or parrel of the yard. The object of it is to keep the yard constantly over to leeward, thereby depriving it of play and friction when the ship rolls to windward.

Rope consists of hemp, hair, etc., spun into thick yarn, of which several strings are twisted together by means of a wheel. When made very small, it is called a cord; and when very thick, a cable. All the different kinds of this manufacture, from a fishing-line or whip-cord to the cable of a first-rate ship of war, go by the general name of cordage.—*See* CABLE.

Roses (Oil, Essence, or Attar of), an oil obtained by distilling the leaves of damask roses. It is limpid, of a light orange color, and has an extremely grateful and powerful perfume. This, which is the most expensive article of Oriental luxury, used to be principally made at Tunis and Ghazipore, in India. But though it be still very extensively produced at these places, and more especially at the latter, what may be called the foreign demand for the oil is now almost wholly supplied by the districts of Eski Zara and Hassanlik, in Bulgaria. There the culture of roses is carried on upon a very large scale. Inasmuch, however, as it is said to require about 300,000 roses to yield an ounce of oil, the quantity produced does not exceed 4500 lbs. in a good, and 3000 lbs. in an ordinary year. The genuine article fetches an enormous price; and is in consequence very generally, or rather, we should say, uniformly adulterated. When the adulteration is effected by means of the oil of geraniums and other fine volatile oils, the fraud is not easily detected except by *connoisseurs*, unless the foreign matter be in excess. Sometimes it is alleged that attar of roses has been sold as genuine when above 80 per cent. of other oils was mixed up with it. That which is hawked about the streets of Constantinople and Smyrna is seldom any thing better than olive oil scented with roses. Some of the more expert dealers in the article will tell within 2 per cent. the foreign oil in any parcel given them to examine. The value of the exports of this curious product from Turkey has been estimated at from $400,000 to $500,000 a year.—BLANQUI, *Voyage en Bulgarie;* HUNT'S *Merch. Mag.*

Rose-wood (Ger. *Rosenholz;* Fr. *Bois du rose, de Rhode;* It. *Legno rodie;* Sp. *Leno de rosa;* Port. *Páo de rosado*) is produced in Brazil; the Canary Islands; in Siam, whence it is pretty largely exported by the Chinese; and in other places. It is in the highest esteem as a fancy wood. The width of the log imported into this country averages about 22 inches, so that

it must be the produce of a large tree. Rose-wood has a slightly bitterish, somewhat pungent, balsamic taste, and fragrant smell, whence its name. It should be chosen sound, heavy, of the deepest color, in the largest pieces that can be procured, and of the most irregular, knotty grain. The small, light-colored, and large shivered pieces should be rejected. The more distinct the darker parts are from the purple red, which forms the ground, the more is the wood esteemed. It is usually cut into veneers of nine to an inch.—Milburn's *Orient. Comm.*, etc.

Rosin. This substance is obtained from different species of fir; as the *Pinus abies, sylvestris, lariz, balsamea.* It is well known that a resinous juice exudes from the *Pinus sylvestris*, or common Scotch fir, which hardens into tears. The same exudation appears in the *Pinus abies*, or spruce fir. These tears constitute the substance called *thus*, or frankincense. When a portion of the bark is stripped off these trees, a liquid juice flows out, which gradually hardens. The juice has obtained different names, according to the plant from which it comes. The *Pinus sylvestris* yields common turpentine; the *larix*, Venice turpentine (*see* Turpentine); the *balsamea*, balsam of Canada. All these juices, which are commonly distinguished by the name of turpentine, are considered as composed of two ingredients; namely, oil of turpentine and rosin. When the turpentine is distilled, the oil comes over, and the rosin remains behind. When the distillation is continued to dryness, the residuum is known by the name of common rosin, or *colophonium*; but when water is mixed with it while yet fluid and incorporated by violent agitation, the mass is called *yellow rosin*. During winter, the wounds made in the fir-trees become incrusted with a white, brittle substance, called *barras* or *galipot*, consisting of rosin united to a small portion of oil. The yellow rosin, made by melting and agitating this substance in water, is preferred for most purposes, because it is more ductile, owing, probably, to its still containing some oil. The uses of rosin are numerous and well known.—Thomson's *Chemistry*. *See* Naval Stores.

Rostock, the principal city of the Grand Duchy of Mecklenburg Schwerin, on the Warnow, about 9 miles above where it falls into the Baltic, lat. 54° N., long. 12° 12′ E. Population in 1837, 18,067. A large fair for merchandise is annually held at Whitsuntide; and there are wool fairs at other seasons of the year. The outport of Rostock is at Warnemunde, at the mouth of the Warnow. The depth of water at the latter varies from 10½ to 12 feet; but when the west pier, now in the course of being constructed, has been completed, it is expected that the depth of water will be from 12 to 14 feet. The depth of water in the river from Warnemunde up to Rostock is usually from 8 to 9 feet; so that vessels drawing more than this must be lightened to get up to the latter. Rostock has a good harbor and commodious quays.

Imports.—The principal articles of import are sugar, coffee, and other colonial products; cottons, woolens, and hardware, with coal, earthen-ware, salt, iron, horses, etc., from England; hemp, flax, tallow, oil, sail-cloth, etc., from Russia; alum, deals, timber, lime, tar, etc., from Sweden; herrings and fish oil from Norway; wine, brandy, molasses, drugs, etc., from France; with rice, rum, groceries, etc., from Copenhagen and Hamburg. The total value of the imports by sea may be estimated at about £250,000.

Exports.—These consist chiefly of very good red wheat, barley, peas, rape-seed, and a few oats; with wool, rags of a very superior quality, oil-cake, rape-oil, bones, etc. The exports of wheat amounted in 1840 to 97,565 quarters, and in 1841 to 124,267. In 1840, the exports of peas from Rostock only were 9503 quarters; but from the duchy they amounted to 43,013 quarters; but at an average their export does not exceed from 20,000 to 25,000 quarters. The export of bones amounted during the same year to 1,550,000 lbs. At an average, the value of the exports may be estimated at £300,000.

Shipping.—The port of Rostock in 1840 had 230 ships, of the burden of 35,332 tons, which trade with most European nations, the United States, and Brazil. In 1835 there entered the port 540 ships (burden not stated), of which 215 belonged to Mecklenburg, 152 (mostly small craft) to Denmark, 83 to Sweden, 27 to Hanover, 18 to Prussia, 12 to Russia, 19 to Holland, 10 to Lübeck, 2 to Hamburg, and 1 each to France and England. It is only, in fact, when our ports are open to the importation of foreign corn that British ships are met with in considerable numbers in the ports of Mecklenburg.

Port Charges.—These are the same on native and privileged ships, among which are included those of England, France, America, Prussia, Norway, etc. The port charges on a vessel of 100 tons burden are as follow, viz.:

	Privileged.		Not privileged.	
	Rix Dol.	Sch.	Rix Dol.	Sch.
Inward with cargo	10	2	10	2
Outward ditto	23	44	32	6
Inward in ballast	12	6	12	6
Outward ditto	19	36	31	10
Ditto without either	17	32	25	42

Duties.—These are extremely moderate. On most imported articles they amount to only 3 per cent. *ad valorem*. An export duty of about 5*d.* per quarter is charged on corn, and of about 4*s.* 8*d.* per hhd. on wine. Wool is not subject to any duty on export. Goods imported in vessels not privileged pay 50 per cent. additional on the above duties; that is, they pay 4½ instead of 3 per cent. *ad valorem*.

Wismar, the second sea-port town of Mecklenburg, at the confluence of the River Stor with the sea, in lat. 53° 49′ 25″ N., long. 11° 26′ 15″ E. Population 11,000. The harbor of Wismar is commodious and safe, being nearly land-locked by the islands of Poel and Walfisch. Close to the town there is from 8 to 8½ feet water; in the inner roads there is from 12 to 13 feet; and in the outer from 16 to 20 feet water. The port charges on a native or privileged vessel of 100 tons amount to about 30 rix dollars. The articles of import and export are the same at Wismar as at Rostock; but owing to the proximity of Lübeck, from which Wismar is not more than 27 miles distant, her foreign trade is comparatively limited. About 35 ships, of the burden of 4800 tons, belong to this port. There cleared from it in 1835 227 ships, of which 11 were English. The duties at Wismar are somewhat higher than at Rostock, being 4½ per cent. *ad valorem* on colonial products, and from 4*d.* to 8*d.* per quarter on corn exported. It is believed, however, that they will shortly be reduced to the Rostock level.

Trade of the Duchies.—Mecklenburg is essentially an agricultural, wool-growing, grazing, and breeding country. In some places it is sandy and barren; but it is for the most part very fertile, and the crops and pastures are both luxuriant. Having few manufactures, her imports necessarily consist principally, as already stated, of manufactured goods, and her exports of raw produce. Owing, however, to the circumstance of the southwestern part of the province being bounded by the Elbe, and approaching to within about 30 miles of Hamburg, almost all the manufactured goods, as well as a very large proportion of the colonial products used by the population (550,000), are imported by way of Hamburg. Hence, in Mecklenburg, as in Prussia, the direct foreign trade carried on by the sea frontier forms but a very small part of the entire trade of the country. It is impossible, however, to form any precise estimate of what the latter may amount to. Probably there is no European country so little fettered by customs regulations as Mecklenburg. The duties on articles imported by sea amount only, as already stated, to about 3 per cent. *ad valorem*; and those entering by the land frontier are subject merely to a tri-

filing charge, ( ) account of toll, of which we have not seen any account. It is impossible, indeed, that any commercial system can be bottomed on more liberal principles; and this enlightened policy, and her situation near the mouth of the Elbe, and on the western frontier of the Prussian league, give to Mecklenburg far greater importance, as a commercial state, than is indicated by the amount of her population or her internal consumption.

Rotterdam, on the north bank of the Maese, in lat. 51° 55′ 19″ N., long. 4° 29′ 14″ E. Population in 1850, 82,000? Rotterdam is the second commercial city of Holland. It is more advantageously situated than Amsterdam, being nearer the sea; and the canals which intersect it are so deep as to admit of the largest vessels coming up to the quays and warehouses of the merchants. Its commerce during the last fifteen years has increased more rapidly than that of any town in Holland. The exports and imports are similar to those of Amsterdam. The white Zealand wheat shipped here is of a peculiarly fine quality; and it is the best market for madder and geneva. Geneva is sold by the aam; but it used, for the convenience of smuggling to England, to be divided into ankers and half ankers. The legitimate imports of geneva from Holland in 1851 amounted to 155,895 gallons. Rotterdam has a regular and frequent intercourse, by means of steamers, with London, Liverpool, Hull, Leith, Havre, Hamburg, etc.

IMPORTS FOR THE SEVEN YEARS ENDING WITH 1852, AT ROTTERDAM, OF THE UNDER-MENTIONED ARTICLES OF FOREIGN AND COLONIAL PRODUCE.—(FROM THE MONTHLY MARKET REVIEW, JANUARY 1, 1853.)

		Imports.	Imports.	Imports.	Imports.	Imports.	Imports	Imports.	Stocks, 31st December.
		1846.	1847.	1848.	1849.	1850.	1851.	1852.	1852.
Coffee, East India	bags	334,800	361,560	320,600	323,500	242,100	346,100	396,000	132,000
Do. West India	"	22,690	37,520	42,100	95,000	22,900	25,800	6,100	....
Do. do.	casks	2,500	1,003	950	2,000	780	2,600	2,100	....
Tea	qr. chests	16,115	17,805	20,800	21,700	34,250	20,800	31,400	3,600
Rice	bags	111,072	147,060	159,200	196,400	111,300	138,000	325,000	45,700
Do.	tierces	2,880	3,998	3,200	2,500	5,420	2,700	4,200	100
Pepper	bags	8,620	8,716	7,700	4,850	9,600	8,800	6,000	7,300
Sugar	tons of 1000 kilogr.	30,750	23,500	34,000	34,000	37,000	45,750	23,750	abt. 4,000
Cotton	bales	3,200	2,816	7,849	9,575	3,510	7,410	14,026	5,710
Tobacco, Maryland	hhds.	4,074	6,577	5,653	8,404	5,157	3,099	9,143	1,923
Do. Virginia	"	612	1,203	699	1,030	1,045	594	2,184	139
Do. Kentucky	"	198	200	633	624	153	787	576	75
Do. Stems	"	79	....	275	380	2.5	201	107	....
Do. Java	packages	4,807	5,500	8,544	5,300	1,215	4,785	4,130	....
Hides, East India	pieces	22,354	46,188	79,600	44,072	58,550	91,404	73,062	22,730
Do. West India	"	7,270	5,064	500	1,100	192	5,063	9,848	3,175
Oil, South Sea Whale	hcts.	26,800	21,700	22,300	22,700	1,000	15,400	....	....
Indigo	chts. & bxs.	5,784	7,006	6,648	3,724	3,572	3,338	3,691	184
Ashes, United States, pots	barrels	3,503	2,085	3,260	2,382	2,906	3,186	969	310
Do. do.	pearls	808	393	386	291	468	203	612	92
Do. sundries	casks	20	532	1,000	320	1,601	712	5,172	2,087

COMPARATIVE STATEMENT OF STOCKS OF CORN AND GRAIN IN THE UNDER-MENTIONED PORTS OF HOLLAND, IN 1850, 1851, AND 1852.

31st December.		Wheat.	Rye.	Barley.	Oats.	Buck-wheat.	Horse Beans.	Pigeon Beans.	White Beans.	Brown Peas.	Gray Peas.	White Peas.	Blue Peas.	Lin-seed.	Linseed	Hemp-seed.	Mustard Seed.	Canary Seed
1850.	Amsterdam*	7,750	29,400	2500	325	490	30	14	..	..	295	150	143	2650	2000	30	250	..
	Rotterdam	5,862	8,506	245	81	321	91	44	34	22	86	24	30	100	62	23	4	19
	Dordrecht	350	956	11	95	79	204	37	4	15	18	14	20	752	88	52	..	..
	Schiedam	90	10,067	1517	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Delfshaven	232	730	260	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Total lasts	14,293	46,259	4613	501	890	325	95	38	37	3.5	188	193	3502	2750	105	254	19
1851.	Amsterdam	10,205	21,235	758	237	803	..	..	..	..	67	32	12	8130	2510	..	300	200
	Rotterdam	5,682	7,151	579	24	593	33	10	13	6	8	48	24	2?5	100	8	3	27
	Dordrecht	686	895	11	35	86	61	8	2	2	12	12	12	1414	135	..	..	..
	Schiedam	130	8,238	567	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Delfshaven	160	695	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Total lasts	10,923	38,214	1915	296	1482	94	18	15	8	87	92	49	9883	2805	8	303	227
1852.	Amsterdam	9,400	18,300	700	19	980	..	..	..	..	..	..	170	3300	1700	..	..	..
	Rotterdam	3,141	6,480	149	121	689	2	13	28	9	67	9	80	230	208	3	..	10
	Dordrecht	278	530	22	118	85	26	68	2	2	..	..	15	1577	292	..	..	21
	Schiedam	956	8,053	911	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Delfshaven	60	1,114	70	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Total lasts	10,835	25,035	1852	258	1754	28	81	30	11	67	9	274	5107	2195	3	..	31

—*See* HOLLAND and AMSTERDAM.

* The stocks in Amsterdam include the quantities on hand at Zaandam.

Rouble, a Russian coin. (For the silver rouble, *see* COINS, division *Russian;* the value of the paper rouble is variable.) By the official valuation of the paper rouble, in the payment of taxes, a few years since, one silver rouble was equal to three roubles sixty copecks paper. By authority of Congress, the value of the Russian rouble formerly was fixed at 75 cents.

Rouge (Fr. *Fard*). The only cosmetic which can be applied without injury to brighten a lady's complexion is that prepared, by the following process, from safflower (*Carthamus tinctorius*). The flowers, after being washed with pure water till it comes off colorless, are dried, pulverized, and digested with a weak solution of crystals of soda, which assumes thereby a yellow color. Into this liquor a quantity of finely-carded white cotton wool is plunged, and then so much lemon juice or pure vinegar is added as to supersaturate the soda. The coloring matter is disengaged, and falls down in an impalpable powder upon the cotton filaments. The cotton, after being washed in cold water, to remove some yellow coloring particles, is to be treated with a fresh solution of carbonate of soda, which takes up the red coloring matter in a state of purity. Before precipitating this pigment a second time by the acid of lemons, some soft powdered talc should be laid in the bottom of the vessel, for the purpose of absorbing the fine rouge, in proportion as it is separated from the carbonate of soda, which now holds it dissolved. The colored mixture must be finally triturated with a few drops of olive oil, in order to make it smooth and marrowy. Upon the fineness of the talc, and the proportion of the safflower precipitate which it contains, depend the beauty and value of the cosmetic. The rouge of the above second precipitation is received

sometimes upon bits of fine-twisted woolen stuff, called *crepons*, which ladies rub upon their cheeks.

Row, to propel a boat by oars. Rowing is reckoned the most favorable application of human strength; the whole force is, however, not effective on the oar, as the part inside the actual fulcrum, which is in the water, acts as a backwater. Some nations take short strokes, which they rise up in making; a long stroke sitting, to say the least, saves much exertion. As the theory of rowing involves the resistance of fluids, it is necessarily defective.

Royal, in *Naval affairs*, the sail above the top-gallant sail. The term *royal* is also applied, in artillery, to a kind of small mortar.

Royal Exchange, London. The foundation of the original edifice was laid by Sir Thomas Gresham, June 7, 1566, on the site of the ancient Tun prison. Queen Elizabeth visited this Exchange in January, 1571, and by the sound of trumpets her herald named it the *Royal* Exchange.—HUME. This grand fabric was totally destroyed by the great fire in 1666, precisely a century after its erection. Charles II. laid the foundation of the next edifice, October 23, 1667, which was completed by Mr. Hawksmoor, a pupil of Sir Christopher Wren, in about three years; and it was repaired and beautified in 1769. This last also became a prey to a destructive fire, January 10, 1838, and was burned to the ground, with a number of public offices and adjoining houses. The new Royal Exchange, commenced in 1840, under the direction of Mr. Tite, was opened by the queen in state, accompanied by her ministers and a grand civic procession, October 28, 1844.

Ruby, a precious stone, very highly esteemed; but under this name a variety of minerals have not unfrequently been sold, which differ essentially in their characters. The *Oriental ruby* is, in fact, a red variety of the sapphire. When perfect, its color is a cochineal red, presenting a richness of hue the most exquisite and unrivaled: it is, however, in general more or less pale, and often mixed with blue: hence it occurs rose red, peach-blossom red, and lilac blue, passing into the amethyst. It is harder than any other mineral, except the diamond. Easily frangible. Specific gravity from 3·916 to 4·283. Infusible before the blowpipe. Oriental rubies of 10 carats are extremely rare and valuable. One of 22 grains was sold for £160. Rubies in lots, Indian cut, or small sizes, and of different qualities, are at all times to be had, and sell at from 15*s.* to 65*s.* a carat; but a perfect stone of a carat, or 6 grains, may be deemed rare, and falls little short of the value of the diamond: nay, in some cases, rubies of 2, 3, or 4 carats, if *very fine*, are much scarcer, and even more valuable than diamonds of equal weight. The finest ruby in England, or perhaps in Europe, is in the collection of the late Mr. Hope, the author of "Anastasius." There are two other species of ruby, the *Spinelle* and *Balais*. When perfect, the spinelle is a gem of great value and scarcity. Its color is a fine full carmine or rose red, but it never presents that rich mellow tinge that attends the Oriental ruby. It is also inferior to the latter in hardness and specific gravity. Stones of 3 carats and upward are very rare and valuable.

The *Balais ruby* is a pale variety of the spinelle. It varies in color from light red to yellowish red. Though not so rare as the spinelle, it is by no means common. It is much admired for its agreeable tinge of color; and, when pure and perfect, fetches a very high price, though considerably less than the other varieties. Rubies are not found in any considerable quantity except in Ava.—MAWE on *Diamonds*; THOMSON'S *Chemistry*.

Rudder. A heavy flat piece or frame of wood, hung upon the stern-post by means of pintles and gudgeons, for the purpose of steering the ship. The rudder is turned round the stern-post as an axis, by the tiller, which enters the rudder-head. In vessels drawing much water the rudder is deep and narrow; in flat-bottomed vessels it is shallow and broad. When carried to a considerable breadth, as in the Chinese vessels, it is pierced with holes, which preserves an increased leverage with a diminished direct resistance from the water. When the rudder is broken off by the ship getting aground, or by a heavy sea, a temporary one is made by a topmast and other spars placed parallel, and loaded at the bottom with pigs and ballast, and confined to the stern-post by hawsers leading on each side of the keel.

Rudder Coat.—A covering of tarred canvas loosely put round the rudder-head to keep the water from entering by the aperture, while it admits of the rudder being turned freely round.

Rudder Pendants.—Strong pieces of rope ending in chains, by which the rudder, if unshipped, is held to the ship's quarter.

Rudder Shock.—A piece of wood fitting between the head of the rudder and the rudder-hole, to prevent the play of the rudder in case of the tiller being removed.

Rum, a well-known and highly esteemed spirituous liquor imported from the West Indies, of which it forms one of the staple products. It is obtained by means of fermentation and distillation from molasses, the refuse of the cane juice, and portions of the cane, after the sugar has been extracted. The flavor and taste peculiar to rum are derived from the essential oils carried over in distillation. When the distillation has been carelessly performed, the spirit contains so large a quantity of the grosser and less volatile part of the oil as to be unfit for use till it has attained a considerable age. When it is well rectified, it mellows much sooner. Rum of a brownish transparent color, smooth oily taste, strong body and consistence, good age, and well kept, is the best. That which is clear and limpid, and has a hot pungent taste, is either too new, or mixed with other spirits. Jamaica rum is the first in point of quality; the Leeward Island rum, as it is called, being always inferior to it, both in flavor, strength, and value. The price of the latter is usually 20 per cent. below that of the former. It is customary, in some of the West India Islands, to put sliced pine-apples in puncheons of rum: this gives the spirit the flavor of the fruit; and hence the designation *pine-apple rum*. Rum is also produced in and imported from the Mauritius and the East Indies; but that of the latter is more nearly allied to arrack than to genuine rum.

We know nothing about the origin of the word *rum*, or the time at which the manufacture of the spirit commenced. At present the manufacture is chiefly carried on in the islands belonging to Great Britain. Dr. Ure states that in Jamaica the wort is made by adding together 120 gallons of molasses, 1000 gallons of the spent wash of a former distillation, 720 gallons of the skimmings of the sugar boilers, and 160 gallons of water; so that there is in the wort nearly 12 per cent. of solid saccharine matter. Other proportions, however, are used, bringing the proportion of saccharine matter up to nearly 15 per cent.; as, for instance, 100 gallons of molasses, 300 gallons of skimmings, 200 gallons of spent wash, and 400 gallons of water. The proportions vary in almost every estate, so that no certain rule can be laid down. The fermentation is in general conducted very slowly (apparently very unnecessarily so), occupying from nine to fourteen days. The saccharine matter is, therefore, very imperfectly converted into alcohol, and the yield of spirit is usually so low as 115 gallons of proof-spirit for every 1200 gallons of wash. On some estates, and depending on the price of sugar in the market, the greater proportion of the sugar is converted into rum; and the same imperfect fermentation being followed, the average yield is said to be only 200 gallons of rum for every three hogsheads of sugar, whereas the proportion ought to be very nearly double. It is from the skimmings, which

are rich in aroma, that the peculiar flavor of rum is derived; for it is a curious fact that sugar and molasses distilled in this country yield a spirit entirely destitute of all rum flavor, and in nothing distinguishable from the ordinary spirit derived from grain. Any depth of color may be given to the rum by the addition of molasses or caromel, though it is commonly but erroneously stated that the color of the rum is derived from the oak casks.—*See* SPIRITS and WINE.

The manufacture of rum entirely of sugar or molasses is not carried on in Great Britain. The number of gallons of rum manufactured in Great Britain during the year ending January 5, 1854, of a mixture of sugar or molasses with unmalted grain, was as follows:

England	989,010	gallons.
Scotland	915,631	"
Ireland	4,005	"
Great Britain	1,908,646	"

EXPORTS OF RUM FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Spirits from Molasses.	
	Gallons.	Dollars.
Danish West Indies	2,955	1,648
Hamburg	200	90
Bremen	13,087	9,417
England	6,270	3,135
Gibraltar	42,425	20,740
Malta	109,924	51,024
British North Amer. Possessions	163,163	106,766
British West Indies	17,392	9,705
British Honduras	5,552	4,504
British Possessions in Africa	140,836	72,140
British Australia	9,452	6,819
France on the Atlantic	108,458	74,350
France on the Mediterranean	157,835	88,752
French North Amer. Possessions	50,107	24,415
French West Indies	8,031	3,755
Canary Islands	800	350
Cuba	300	154
Madeira	4,901	1,995
Cape de Verd Islands	27,135	12,162
Sardinia	49,764	25,834
Two Sicilies	5,647	3,237
Austria	35,445	17,757
Turkey in Europe	323,824	146,832
Turkey in Asia	233,752	110,177
Ports in Africa	826,068	3 2,373
Hayti	1,087	865
New Granada	5,283	2,688
Uruguay, or Cisplatine Republic	27,481	11,648
Argentine Republic	6,156	3,750
Chili	2,544	1,271
Peru	1,251	563
Sandwich Islands	80	50
Total	2,378,603	1,216,635

Rupee, a silver coin current in the East Indies, equal to from 50 to 60 cents. By authority of Congress, the value of the rupee of British India was fixed at 44½ cents, and the sicca rupee of Bengal and the rupee of Bombay at 50 cents.

Russia. This extensive empire comprises the whole northern portion of the eastern hemisphere, from the frontiers of Posen and the Gulf of Bothnia on the west, to the Pacific Ocean and Behring's Straits on the east. It includes the greater part of the ancient kingdom of Poland, Finland, Astrakhan, and Kazan, conquered from the Tartars; the Crimea, Little Tartary, Bessarabia, and a portion of Moldavia, taken from Turkey.

The Russian empire embraces nearly one-half of the surface of Europe. It chiefly consists of an enormous plain, being little diversified by rising ground, except toward the Urals and the Caucasus in the south and east, and in the province of Finland in the northwest. The northern part of the country is a cold and barren region of heaths and marshes; the central provinces are rich and fertile; the southern, more steppes, or grassy, sandy, and salt plains, which afford, however, in their hollows, along the river-courses, abundance of excellent pasturage for cattle and horses. The population is chiefly agricultural or nomadic; and the manufactures that are to be found in some places are more indebted to the fostering care of the government, and the high import duties, or absolute prohibition of foreign wares, than to native enterprise, for their origin and continuance. Russia is an immense military power, so far as that depends on the numbers of her armies; but the want of national wealth is such a drawback on military enterprise as she has not yet been able to overcome.

The origin of the Russians as a distinct branch of the Slavonians is a moot point among archæologists. They seem to have borne at one time the name of Antes, consisting of several tribes that formed a sort of confederation. In the 9th century, Ruric the Varangian established himself in Novgorod the Great; and his successors, extending their dominion by conquest, established their capital at Kieff, where the dynasty reached the zenith of its power under Vladimir the Great, who introduced Christianity among his subjects, according to the creed and ritual of the Greek Church, A.D. 983. His empire was subsequently overthrown by the Poles and Lithuanians, and the greater part of it remained subject to Poland till the accession of the house of Romanoff. The eastern provinces beyond the Dnieper were conquered by Tartars, and remained under their dominion till the 16th century. The city of Moscow was founded by Andrey I. in A.D. 1156. In the middle of the 15th century, Ivan Vassiliwitz, Duke of Moscovy, recovered his independence, and having subdued a number of petty chieftains, and added the duchies of Tver and Novgorod to his dominions, assumed the title of Grand Duke. His grandson, of the same name, subdued the Tartar kingdoms of Kazan and Astrakhan, and assumed the title of Czar or Great King.

During the last three centuries the successive dukes and czars of Moscovy and emperors of all the Russias have followed the same policy of extending their dominions by every possible means, fair or foul. They have now declared themselves the heads and protectors of all the Slavonic races, and of the orthodox Greek Church, and seem to make no secret of their deep-laid project of unscrupulous aggrandizement. Their vast dominion now extends in length through 202° of longitude, and in breadth through 38° of latitude, and is supposed to contain about 65,000,000 of inhabitants, of whom five-sixths are in Europe.

The following is believed to be a correct estimate of the extent and population of this vast empire:

AREA AND POPULATION OF RUSSIA.

Natural Divisions.	Area in English Square Miles.	Population in 1852.
Great Russia	398,781	20,403,371
Little Russia	155,141	11,775,865
New Russia	96,036	3,253,612
White Russia	70,339	2,937,436
Western provinces	47,076	2,870,667
Baltic provinces	36,616	1,761,907
Northern provinces	536,226	1,420,629
Ural provinces	447,788	10,770,181
Cossack districts	123,776	1,156,736
Poland	49,230	5,156,543
Finland	135,800	1,469,199
Total in Europe	2,022,478	63,012,146
Caucasian provinces	86,578	2,850,000
West Siberia	2,681,147	3,500,000
East Siberia	2,122,000	237,000
American possessions	371,350	61,000
Total extra European	5,261,075	6,648,000
Grand total	7,283,553	69,660,146

The rivers of Russia are usually divided into five groups or systems, corresponding to the seas in which they have their *embouchures;* viz., the Arctic Ocean, the Baltic Sea, the Black Sea, the Caspian Sea, and the Pacific Ocean. The first division comprises the Dwina, Mezen, and Petchora, in Europe; the Obi, Jenisei, and Lena, with numerous other small rivers, in Asia: the three last have a course of from 2000 to 2500 miles. The rivers which fall into the Baltic, though possessing much more commercial importance to Russia, are of inferior magnitude. The principal are—the Neva, which has St. Petersburg at its mouth, the Düna, and the Niemen. The rivers which fall into the Black Sea are of

equal importance with those just named, and exceed them in length of course and volume of water. The principal among these are the Dniester, Dnieper, Bug, Don, and Kuban. The Volga, in the basin of the Caspian Sea, is the largest and most important of the rivers of Russia. This extensive river has its sources in the government of Twer, about 180 miles south by east from St. Petersburg. Its course is about 1000 leagues, while that of the Danube is only about 450. It is of vast importance to the internal commerce of Russia. Its affluents, which are connected by several canals with the Neva, establish a communication between the Caspian and the Baltic, White, and Black seas. Two other rivers—the Ural and the Emba—have their *embouchures* in the Caspian Sea.

Staples.—The products of Russia vary with the difference of soil and climate. Cereals of every kind are raised in great abundance; but rye, being the common food of the peasantry, is produced in much greater quantities than any other sort of grain. The most productive provinces are Orel, Kasan, Nijnl Novgorod, Penza, Tambov, and Kursk. The total annual production of grains in European Russia (including Poland) may be estimated in ordinary years at 1,495,000,000 bushels, at a value of about $720,416,665. Flax and hemp are also extensively cultivated, and constitute a leading export of Russia. Tobacco is cultivated in the southern provinces, and of late years much attention has been given to the cultivation of beet-root. In 1848, the quantity of sugar manufactured from this article was estimated at 92,240,000 lbs. Tallow and wool are also important articles in the export trade of Russia; of the latter, the exports amount annually to about 18,000,000 lbs. The climate of Russia is not, however, well adapted to the production of fine wool; and although much attention has been given to the improvement of the breed of sheep, Russia can not enter into competition with Australia in supplying foreign markets with this article. The quantity of wool furnished by the Cape of Good Hope colony, from 1840 to 1852 inclusive, was 48,859,748 lbs.; furnished by Australia in same period, 256,008,415 lbs.; by Cape colony, in 1852, 7,772,505 lbs.; by Australia, in 1852, 32,500,000 lbs.; number of sheep in Cape colony, 4,496,000; number of goats in Cape colony, 1,093,000; number of sheep in Russia in Europe, 35,666,598; number of goats in Russia in Europe, 1,188,173.

Manufactures.—The manufactures of Russia are not generally in a very advanced condition. In some departments of manufacturing industry, however, Russia excels all other countries. Every attempt to imitate her leather, especially such as is used for book binding purposes, has proved a failure; and Russia still continues to enjoy, as she doubtless ever will, an undisputed monopoly in supplying foreign markets with this valuable production. Her glass manufactures are also highly esteemed. Single plates have been manufactured at the St. Petersburg glass-works which have readily sold for $3000. Her other manufactures are sail-cloth, cordage and canvas, tick, felt, mats, potashes, soap, candles, caviar, isinglass, spirits, and some minor articles for domestic consumption. The cotton manufactures of Russia have made rapid progress during the past twenty years; and, instead of the vast quantities of cotton yarns formerly imported, she now imports largely of the raw material. In 1832 the quantity of raw cotton imported was 116,000 poods (4,176,000 lbs.); in 1852 it ascended to 1,748,000 poods (62,928,000 lbs.), of which she received from the United States 10,475,168 lbs. The total manufactures of Russia employ 6,064,700 persons, of which number 4,500,000 are engaged in the manufacture of flax and hemp. The total annual value of Russian manufactures is estimated at about 486,000,000 silver roubles ($364,500,000). Moscow is the grand centre of this branch of industrial pursuits, and is inhabited almost exclusively by manufacturers and artisans.

The following table, translated from Russian official returns, will exhibit the number and character of manufactories in Russia, the number of workmen employed, and the quantity and value of their productions, in the year 1852. It is proper to remark, that the table gives only the principal manufactures which enter into the export trade of Russia. Those consumed in the country, and numerous minor manufactures, are omitted in the following summary:

RUSSIAN MANUFACTURES, ETC.

Denomination of Manufactures.	Number of Factories.	Quantities manufactured.	Value of Manufactures in Silver Roubles.*	Number of Workmen.
Manufactures of woolens (cloths)	414	13,446,236 archines† and 180,057 pieces of woolen cloths: 12,854 poods‡ of woolen yarn	19,129,833	80,443
Manufactures of woolens (tissues)	136	861,760 pieces and 1,651,614 archines of woolen tissues: 8800 poods of yarn	5,231,457	13,806
Manufactures of cotton yarns, thread, etc.	75	1,136,326 poods of cotton thread, 88,150 pieces and 85,500 archines of tissues	15,647,888	30,576
Manufactures of cottonades	449	3,770,089 pieces, 8,764,881 archines, 118,317 dozen tissues, and 5230 poods of thread	14,208,540	81,451
Dyeing factories	340	6,785,588 archines, 4,411,007 pieces, 23,476 dozen, 166,986 poods	15,425,334	25,867
Factories for weaving	112	275,196 pieces, 170,044 archines, 1086 dozen tissues, 1800 poods of thread	2,239 099	12,450
Manufactures of silks and brocades	532	5,302,567 archines, 1,270,191 pieces, 3691 dozen of tissues, 888 poods of silk thread	5,672,272	15,982
Manufactures of cables	142	757,344 poods	1,940,042	3,403
Manufactures of paper	177	1,888,305 reams, 50,484 poods, 716,134 sheets, 40,000 packages of pasteboard	3,928,976	14,942
Manufactures of tobacco	345	182,732 poods of tobacco, 205,098,256 pieces, 451,955 boxes and packages of cigars and cigarettas	4,687,005	4,861
Foundories and forges	115	5,258,405 poods and 64,274 pieces of cast iron, 929,027 poods of iron, and 38,731 poods of steel	3,6 6,099	27,879
Manufactures of hardware	289	2,539,[illegible]3 poods, 223,610 pieces, and 5370 archines of iron wire	2,254,242	13,542
Manufactures of copper	149	133,02a poods and 1,261,192 pieces	1,366,915	4,295
Manufactures of chemicals	102		2,[illegible]20,452	2,032
Manufactures of soap	202	514,142 poods	1,221,122	764
Manufactures of sugar	564	2,418,278 poods of sugar, and 148,830 poods of sirup	17,315,603	45,711
Manufactures of glass and crystals	180	47,524,316 pieces of glass dishes, plates, etc., 88,018 covers, and 150,980 plates or sheets of glass	3,387,868	11,650
Tallow factories	534	2,141,808 poods	5,2[illegible]6,650	4,511
Candle factories	478	1,174,852 poods	4,498,484	2,008
Wax-candle factories	15	284,6[illegible]3 poods	1,5[illegible]7,678	1,264
Tanneries	2,032	4,286,321 pieces	9,134,749	14,565
Other manufactures	3,148		19,043,551	51,774
Total	10,388		161,151,708	470,911
Total in 1851	10,126		15[illegible],380,506	465,016

* The silver rouble is equal to 75 cents. † The archine is equivalent to 28 inches. ‡ The pood is equal to 36 lbs.

The large manufacturing establishments are located in the government of Moscow. The 1244 factories of this government give employment to 114,628 workmen, the annual value of whose productions amounts to $83,146,606. In the government of St. Petersburg there are 477 factories, employing 24,581 workmen; annual value of productions, $24,728,555. Before the commencement of the late European war, the foreign commerce of this vast empire was very extensive. In 1852 the imports reached the sum of 114,778,829 silver roubles, and the exports amounted to 100,864,052 silver roubles. This trade gave employment to 17,162 vessels, measuring an aggregate of 1,559,200 lasts.* Previous to the war, the exports of Russia from the ports of the Black Sea alone amounted to 80,000,000 bushels of grain annually. There is no official or reliable information at hand which would indicate the diminution which Russian trade has experienced from the blockading measures of the allied powers. It is certain that not half the usual quantity of hemp, flax, and tallow can pass from the territories of Russia. There is at all times a considerable overland trade across Prussia, but the heavy expenses attending the transportation of merchandise over this route must necessarily confine its consumption to the wealthier classes. The value of coffee, salt, sugar, etc., has been augmented to the most exorbitant figure; and these enhanced prices, with the expenses of land transportation superadded, must, in the event of prolonged hostilities,† drive these articles out of general use altogether. These are, however, but the unavoidable effects of war; and as the philanthropist must hope that peace shall soon return, and the channels of commerce be again reopened, so the commercial statistician must regard these interruptions to the peaceful trade of the world as but temporary and unfixed, and treat only of the permanent commercial regulations, and relations with foreign nations, of such countries as may come within the scope of his official duties. The commercial relations of the United States with Russia are regulated by the treaty of October 6 [18], 1832. Its stipulations provide for entire reciprocity and perfect commercial equality between the two countries. It has been observed in good faith by both governments, and its provisions and spirit faithfully adhered to. The principal articles of export from Russia are tallow, grain, hemp, and flax; timber; potashes; leather; fox, hare, and squirrel skins; canvas and coarse linen; cordage, caviare, wax, isinglass, furs, tar, etc. The principal imports are sugar, cotton, cotton stuffs and yarns; machinery for mills, factories, etc.; hardwares and iron; coffee, indigo, and other dye-stuffs; woolens, oils, spices, wine, tea, lead, tin, coal, and salt; linens, silks, etc. The principal ports for foreign commerce are St. Petersburg and Riga, on the Baltic; Archangel, on the White Sea; Ketch and Taganrog, on the Sea of Azof; and Astrakhan and Baku, on the Caspian. The interior commerce of the empire has its principal entrepôt at Moscow; and Kiachta is the centre of the trade with China. This trade with China is strictly one of barter. The interchange takes place at the town named above, lying on the Selenga, and at some distance from the great lake Baikal. The Russian merchandise and wares are here deposited in warehouses, which are visited by the Chinese merchants, with whom the interchange is effected.

None (says McCulloch, in a work published in 1854) but native Russians are allowed to engage in the internal trade of the country; and hence a foreigner who imports goods into Russia must sell them to Russians only, and at the port where they arrive. The merchants engaged in the foreign trade are mostly foreigners, of whom the English are the principal. Every Russian carrying on trade must be a burgher, and have his name registered in the Burghers' Book. These burghers are divided into three guilds. Foreign merchants or guests are permitted to enroll their names in the city register, on the payment of from $900 to $950 per annum. *The Journal of the Manufactures of the Empire*, 1846, published in Russia, gives the following information relative to these guilds:

Number of merchants of the 1st guild	860
" " " 2d "	2,233
" " " 3d "	37,451
" of foreign merchants	84
Total	40,228
Burghers possessing licenses, 1st class	5
" " " 2d "	36
" " " 3d "	2,881
" " " 4th "	4,225
Total	7,147
General total of those engaged in trade	47,375

Declared capital of those engaged in commerce:

First guild	$9,675,000
Second guild	10,275,500
Third guild	66,691,800
Declared capital of foreign merchants	382,500
Total capital invested in trade	$87,022,800

In the whole of European Russia about 7,000,000 tchetwerts of grain are employed in the distillation of 64,000,000 vedros (208,000,000 imperial gallons) of brandy, nearly all for home consumption.

The tariff regulations of Russia have during the past few years undergone several modifications. Under the tariff of 1841, the duties on most kinds of manufactures were equivalent to a prohibition. This tariff was entirely remodeled in 1850; and in June, 1854, various other alterations and changes were made, reducing still lower the duties prescribed by the tariff of 1850. These alterations and reductions are given down to the 23d June, 1854, the date of the last change in the Russian tariff; for which see Tariffs of Northern Europe, "Russia," Part II. Prior to the year 1850, there was a separate tariff for Poland; but the imperial ukase, promulgating the tariff of 1850, observes, in reference to this kingdom: "In our constant solicitude for the promotion of commerce and industry, we have judged it expedient, with a view to facilitate the interior, as well as the exterior, relations between our faithful subjects of the empire of Russia and the kingdom of Poland, to establish a uniform tariff of customs applicable to the empire and kingdom alike, and to suppress the customs-line which has heretofore separated them." The only other separate tariff now in force in Russia is that which applies to the ports of the Black Sea. For the purpose of comparison with subsequent tables, giving the commercial movements of Russia for later periods, the following table is annexed, exhibiting the total commerce of the empire with foreign countries, by land and sea, from 1832 to 1842, both inclusive:

Years.	Imports.	Exports.	Total.
	Francs.	Francs.	Francs.
1832.....	190,387,000	255,694,000	446,081,000
1833.....	211,984,000	265,153,000	477,137,000
1834.....	240,044,000	243,401,000	483,445,000
1835.....	245,542,000	239,720,000	485,260,000
1836	261,879,000	304,003,000	565,882,000
1837	277,062,000	280,855,000	557,917,000
1838.. ...	273,200,000	330,018,000	603,218,000
1839.....	274,375,000	371,843,000	646,218,000
1840.....	300,766,000	324,307,000	625,073,000
1841.....	317,718,000	345,529,000	663,247,000
1843.....	338,000,000	331,000,000	669,000,000

If to the total for 1841 we add for specie imported, and the commerce of Poland and Finland, neither of which is included in the above table—about 100,000,000 francs in all—we shall have for that year a general total of nearly 760,000,000 of francs, or $141,360,000. A comparison of the Russian official reports from 1832-'33 (annual average) to 1842, as above condensed, shows that the general commerce of Russia has increased; viz., imports 40 per cent., exports 22 per cent.

	Francs.
Revenue from customs and other sources in 1839,	105,000,000
" " " " 1840,	109,420,000
" " " " 1841,	109,550,000

* The last is about two tons.

† While this report was in press the result of the conferences at Paris was officially proclaimed.

The amounts derived from the different branches of customs in 1841 were,

Duties from custom-house	106,172,000	francs.
" entrepôts	694,000	"
Excise on salt in the Crimea	500,000	"
Other duties	2,184,000	"
Total	109,550,000	"

An analysis of the foregoing figures will show that the duties amount to about 88¼ per cent. on the total value of imports. The following table exhibits the total value of products exported from Russia in European commerce from 1841 to 1850, and the share assigned to each country:

Years.	Annual Value.	Proportion to each Country.	
	Silver Roubles.		Per Cent.
1841	74,817,000	To England	40
1842	72,202,000	To France	8
1843	71,200,000	To Prussia	6
1844	80,515,000	To Turkey	6
1845	78,802,000	To Holland	5
		To Italy	5
		To other countries	21

Years.	Annual Value.	Proportion to each Country.	
	Silver Roubles.		Per Cent.
1846	88,398,000	To England	49
1847	84,112,000	To France	9
1848	75,938,000	To Prussia	6
1849	83,134,000	To Turkey	6
1850	83,881,000	To Holland	5
		To United States	2
		To other countries	23

The following table exhibits in detail the principal foreign merchandise entering into the import trade of Russia, and also the value or quantities imported, in the years 1849, 1850, and 1851:

Description of Merchandise.	1849.	1850.	1851.
Coffee, poods	231,147	185,186	228,803
Raw sugar "	2,038,258	1,979,931	1,820,577
Olive oil "	656,809	548,000	576,180
Wines and other liquors, value in roubles	7,815,539	8,090,926	7,008,635
Fruits "	3,462,541	3,612,193	3,045,118
Cotton, raw poods	1,564,919	1,200,738	1,812,356
Cotton, white spun "	279,108	108,303	138,065
Dye-stuffs roubles	5,421,599	5,453,777	5,800,944
Silk poods	16,894	15,513	11,031
Wool	56,344	67,290	67,443
Tissues, or woven goods:			
Of cotton roubles	4,448,849	3,299,515	4,486,221
Of silk "	4,448,057	4,258,187	4,466,311
Of flax "	579,041	537,936	962,048
Of wool "	2,201,698	1,958,705	1,738,894
Machinery, etc. "	2,567,271	2,674,805	2,889,116

The augmentation which the official returns of Russia exhibit in cottons, dye-stuffs, wool, machinery, and tools, evince the progressive condition of Russian manufactures. It has already been shown that in 1832 the quantity of raw cotton imported into Russia was only 116,000 poods; in 1851 it reached 1,312,356 poods; and in 1852 it ascended to 1,748,000 poods of 36 lbs. each. In 1845 the importation of cotton yarns (chiefly from England) reached 606,045 poods; in 1851 this amount fell to 138,065 poods, making a difference of 467,980 poods, or 16,847,280 lbs. The activity and progress of the cotton manufactures of Russia explain this great falling off in the quantity of cotton yarns imported, as the annual diminution of the letter will be found to be proportionate to the annual augmentation in the quantity of the former. An analysis of the returns of trade between Russia and the United States will also show an increase in the quantities of raw cotton imported by the former, corresponding with the diminished importation of cotton yarns; our raw cotton supplying to a great extent the different factories in Russia. The following table, compiled from the United States official authorities, exhibits the quantities and value of this staple exported to Russia direct from the United States:

Years.	Cotton exported to Russia from United States.	Value.
1844	2,767,766 lbs.	$241,454
1850	4,938,705 "	540,222
1851	16,698,448 "	1,297,164
1852	20,415,168 "	992,546
1853	21,286,503 "	2,254,345
1854*	2,914,154 "	301,393
1855	448,817 "	48,647

* The war was formally declared March 31, 1854.

The diminished quantity exported to Russia in 1854 shows the effect of the war on the direct trade between the two countries. This, however, can be more fully shown by the following comparative table, exhibiting the general trade between the two countries in 1853, 1854, and 1855:

TOTAL VALUE OF DOMESTIC PRODUCE EXPORTED FROM THE UNITED STATES TO RUSSIA.

In 1853	$2,312,175
In 1854	335,521
In 1855	48,949

Cotton absorbed $48,647 of this last sum. Besides the domestic produce exported to Russia in 1855, there was also exported foreign produce to the amount of $20,414.

In 1854, exports to Russia from the United States consisted principally of two articles: Rice, $21,723 in value; and cotton, $301,293.

In 1853 we sent—Spermaceti oil, $7160; lumber, $1485; dye-stuffs, $6648; hams and bacon, $441; shipbread, $8268; rice, $5564; cotton, $2,254,345; tobacco, leaf, $14,109; tobacco, manufactured, $1164; sundries, $18,991; total, $2,313,175.

We here give the export trade of Russia for the years 1850 and 1851. The table includes only the principal articles exported, which are usually denominated Russian staples:

EXPORTS OF PRINCIPAL STAPLES FROM RUSSIA IN 1850 AND 1851.

Articles.		1850.	1851.
Corn	silver roubles.	19,207,188	19,393,281
Red hides	"	1,052,829	1,288,121
Raw hides	"	1,085,526	833,693
Flax	poods.	4,307,618	3,018,780
Hemp	"	2,723,933	3,042,422
Timber	roubles.	2,797,576	3,519,263
Copper	poods.	114,976	110,905
Iron	"	757,956	793,054
Potash	"	477,898	507,330
Tallow	"	3,313,873	2,998,438
Hemp and linseed	tchetwerts.*	1,065,173	963,784
Wool	poods.	611,069	479,074
Bristles	"	83,858	74,075

The exports from Poland are not included in the above table.

The foreign trade of Russia, though interrupted in its usual course in 1854 by the war, still exhibits considerable importance, as is shown by the following summary of official returns:

TOTAL EXPORTS.

To Europe from Russia proper	$33,056,623
" from Poland	7,084,804
To Asia	7,431,014
To Finland	1,431,021
Total	$49,003,262

EXPORT OF COIN (GOLD AND SILVER) IN 1854.†

To Europe from Russia proper	$6,448,434
" from Poland	641,413
To Asia	2,288,525
Total	$9,378,372

TOTAL IMPORTS.

From Europe into Russia proper	$33,679,902
" into Poland	7,138,985
From Asia	11,701,371
From Finland	248,691
Total	$52,768,950

IMPORTS OF COIN (GOLD AND SILVER) FROM ABROAD.

From Europe into Russia	$4,441,091
" into Poland	212,070
From Asia	72,853
Total	$4,726,014

Trade with Finland.—The exports of merchandise to

* Tchetwert—nearly six bushels.

† A supreme ukase of February 21, 1854, prohibited the exportation of gold coin. Silver coin has been exported only by ship-masters, carriers, and passengers, in the quantities allowed by law.

Finland amounted to $1,481,022; the imports from thence amounted to $248,691.

The trade beyond the Caucasus, in 1854, was confined to Persia. The total imports amounted to $2,645,955; exports, $378,297; total trans-Caucasian trade, $8,024,252.

The value of goods imported at the port of Astrakhan was $784,742; of which raw cotton amounted to 138,183 silver roubles, or $103,638.

The total trade on the frontiers of Orenburg and Siberia, in 1854, amounted to: Imports, $3,890,571; exports, $2,415,270: total, $6,305,841.

*Trade of Kiachta.**—Total amount of goods taken by the Chinese, $4,380,104; being woolens, $1,875,875; cottons, $1,145,620; linen goods, $119,991; jewelry (gold and silver), $745,966; furs, $185,997; dressed skins, and red leather, $72,830; miscellaneous, $234,325.

EXPORTS OF WOOL FROM RUSSIA.

	Poods.
From 1800 to 1813, average annual exportation,	19,813
" 1814 to 1823, " " "	35,173
" 1824 to 1833, " " "	111,546
" 1834 to 1837, " " "	600,100
" 1838 to 1841, " " "	875,680
In 1841, average annual exportation	436,181
In 1845, " " "	783,588
In 1849, " " "	601,636
In 1850, " " "	617,092

M. de Tegoborski gives the following account of the exports of flax and hemp from Russia from 1822 downward:

Years.	Flax and Codilla of Flax.	Hemp and Codilla of Hemp.	Total of Flax and Hemp.
	Poods.—Average of four Years.	Poods.—Average of four Years.	Poods.—Average of four Years.
1822–1826	1,906,641	2,938,673	4,845,314
1827–1831	2,539,978	2,526,095	5,066,073
1832–1836	2,499,922	3,065,420	5,565,342
1837–1841	3,125,597	3,260,817	6,386,324
1842–1846	5,663,766	2,802,419	6,466,175
1847–1850	4,616,755	2,819,781	7,436,536

The total custom-house receipts at Kiachta were $2,146,778.

Total tonnage at the different ports in 1854: entered, 226,774 lasts; cleared, 268,477.

The amounts of duties in 1854 were as follows:

On imports and exports, and tonnage duties	$13,831,521
Duties for benefit of various cities	202,628
Excise on Crimean salt	260,476
For bridge on the Neva	105,823
Warehouse and storage duties	146,648
For the Odessa Lyceum	17,369
Total	$14,654,465

In the kingdom of Poland the custom-house receipts amounted to $993,978.

The Asiatic commerce of Russia centres at three principal points. Kiachta, at which place the operations with China are conducted, is the most important of these. Considerable trade is also prosecuted with the Tartars in Central Asia. Astrakhan, on the Caspian Sea, is the entrepôt for this trade. The land route is from Astrakhan, through a barren and desert country, to Khiva. Steam vessels are now established between Novgorod, Astrakhan, the Caucasian provinces, and Persia.

In 1854 a steam navigation company was organized at Astrakhan for the purpose of opening a regular steam communication between the ports of the Caspian Sea. Up to 1852 there were but a few small government steamers employed on the waters of the Caspian. The steamers of this new company will offer abundant facilities for commercial movements. Not being obliged to winter at Astrakhan, they can be kept afloat the entire year, and thus maintain regular communications, not only with the trans-Caucasian ports of Russia and the eastern ports of the Caspian, but also with the Persian coast.

* This trade is exclusively a trade of barter with the Chinese.

In 1848 the entire commerce of Russia with Asia is thus summed up in official returns:

Exports	9,144,500 silver roubles.
Imports	13,471,750 "
Total	$22,616,250 "

If to the above we add the European commerce of Russia, we shall have for that year nearly 710,000,000 francs, or $132,060,000.

The general navigation of Russia, for a series of years, is found in official returns, as follows:

Ports of	Vessels entered.				Vessels cleared.			
	1845.	1846.	1847.	1848.	1845.	1846.	1847	1848.
Baltic Sea	2987	3766	6,231	3092	2990	3790	6,241	3023
White Sea	573	801	824	330	568	807	822	827
Black and Azof Seas	2245	2442	4,201	2818	2229	2432	4,231	2685
Caspian Sea	121	116	110	161	140	134	130	102
Total	5926	7125	11,366	6401	5940	7213	11 424	6197
Laden	3037	2930	3,063	3010	3812	7028	10,968	5486
In ballast	2889	4195	8,308	3391	128	185	456	711

ENTERED AND CLEARED.

	1845	1846.	1847	1848.
Vessels entered	5,926	7,125	11,366	6,401
Vessels cleared	5,940	7,213	11,424	6,197
Total	11,866	14,338	22,790	12,598
Tonnage entered	567,702	654,236	968,034	661,540
Tonnage cleared	572,911	672,864	999,284	588,997
Total	1,140,613	1,327,100	1,967,318	1,250,537

The preceding figures demonstrate the increasing activity of Russian maritime commerce. It is proper to observe, however, that the years of 1846 and 1847 are exceptional, as the commerce of these years was simulated by circumstances which were, happily, of a transient character; and they can not, therefore, form a basis for legitimate comparison. The movements in grain alone, in 1847, augmented Russian exports upward of 640,000 tons, equivalent to an increase of 50 per cer

COMMERCIAL SHIPPING.

		Ships arrived.		Ships sailed.	
		1850.	1851.	1850.	1851.
Baltic ports		3,423	3,790	3,545	3,731
White Sea ports		547	721	541	658
Southern ports		2,510	2,585	2,480	2,598
Caspian ports		220	227	235	305
Total		6,780	7,823	6,801	7,842
Of which					
With goods		3,659	3,253	6,433	6,821
In ballast		3,121	4,070	368	521
The tonnage of the whole amounted to)	lasts	626,373	579,396	570,077	576,289
	tons	1,252,746	1,158,792	1,152,154	1,152,578

The greatest number of ships were English and Russian, viz.: of the former thero arrived 1875; and of the latter, 1019. Of ships arrived under other flags were Turkish, 978; Dutch, 586; Greek, 444; Swedish, 366; Mecklenburg, 329; Russian, 299; Danish, 223; Sardinian, 210; Austrian, 191; and of other nations, 800.

These arrivals and departures were thus distributed in 1852:

Ports of	Arrived.	Cleared.
The Baltic	3627	3507
The White Sea	827	845
The Black and Azof Seas	5929	3830
The Caspian Sea	272	293
Total	8655	8507

The following table exhibits the national character of the vessels arrived:

Nationality.	No. of Vessels.	Nationality.	No. of Vessels.
England	2020	Austria	333
Russia	1125	Prussia	330
Turkey	1072	Denmark	301
Greece	660	Mecklenburg	291
Holland	513	Hanover	258
Sweden	470	France	186
Sardinia	453	Other countries	433

EXPORTS AND IMPORTS FOR 1854.—(*Value in Silver Roubles.*)

	Exports.	Imports.
	Rubles d'Arg	Rubles d'Arg
By the European frontier of the empire	44,075,497	44,906,535
The kingdom of Poland	9,446,138	6,518,659
The frontiers of Asia	9,908,018	15,001,837
Finland	1,008,028	331,587
	65,337,681	70,358,608

NAVIGATION FOR 1854.

Ports of	Vessels.	
	Arrived.	Departed.
The Baltic	473	463
The White Sea	685	747
The Black Sea	1183	1409
The Caspian Sea	181	211
Total	2522	2830

Steam Navigation.—The steam navigation of Russia has largely increased since 1850. In that year there visited the port of Cronstadt 82 steamers, viz.: From London, 8; Hull, 13; Dunkirk, 7; Lübeck, 26; Stettin, 24; Kiel, 2; Havre, 2; Total, 82. Two steamers maintain a regular communication between Riga, Hull, and Stettin, making monthly, sometimes semi-monthly, trips. The frigate-built steamers the *Odessa*, the *Crimea*, and the *Odessa and Kherson*, make annually 33 trips between Odessa and Constantinople, and the steamer *Peter the Great* 19 between Odessa and Galatz. Regular communication is also kept up between St. Petersburg and the ports of Finland and of the Baltic; also between Odessa, Kherson, Nicolaïef, and other ports in the south of Russia. These steamers usually make 104 voyages yearly. Two steamers connect the ports of the Sea of Azof; and communication between the ports of Russia and those of Persia is regularly maintained by national steamers. The prospectus of the new Russian Steam Navigation and Traffic Company, the statutes of which received the emperor's sanction on the 3d of August, is published very conspicuously in the *Journal de St. Petersburg*. This company, which, by the extent of its resources, and by its importance to "the regeneration of the internal and foreign trade of Southern Russia," is regarded as one likely to take rank above all other existing Russian companies, will have a capital of six millions of roubles to begin with, divided into 20,000 shares of 300 roubles each. At a future period this capital may be raised to nine millions, by the creation of 10,000 new shares, if agreed to by a general meeting of shareholders. By the 25th statute of the company, none but Russian subjects are capable of holding shares, the laws of the empire prohibiting any foreigners from taking part in the coasting trade between the Sea of Azof and the Russian Black Sea ports, which is an essential part of the company's undertaking. Like the Russian American Company, it is to be placed under the special protection of the imperial government. The objects of its establishment are defined as being "the development of the trade of Southern Russia, and of the commercial as well as the postal communications by steamboats between that part of the empire and foreign countries."

The company is bound to keep up certain lines of communication. Between Odessa and Constantinople, Athos, Smyrna, Rhodes, Beyrout, Jaffa, and Alexandria, its steamboats are to ply three times a month, as well as between Odessa, the Sea of Azof, and the Circassian coast. If it should be deemed advisable, boats from Odessa may touch at the ports of the Crimea, and also at those of the Anatolian coast, before proceeding to Constantinople, or a line may be established from Odessa, taking in Galatz and the ports of the Principalities, and ending at Constantinople.

The company are bound, moreover, to provide for eighteen voyages in the year from Odessa to Trieste, calling at Constantinople, Syria, the Ionian Isles, and Ancona, as well as for eighteen voyages in the year from Odessa to Marseilles, stopping at Constantinople, the Piræus, Messina, Naples, Leghorn, and Genoa.

The government will cede to the company, at a price to be fixed by valuation, all the steamboats belonging to the department which has conducted hitherto the postal and commercial intercourse between the different ports of New Russia, together with the wharves, warehouses, and stores belonging to that department.

The company is to be aided by the government with a subvention, calculated at so much per mile, allowed upon the voyage actually made by the company's vessels. This allowance during the first ten years will be at the rate of 5 roubles 22 kopecks for the Levant voyages, 3 roubles 49¾ kopecks for the Marseilles, and 4 roubles 7½ kopecks for the Trieste voyages; the allowance for the Black Sea trips will be somewhat lower. After the first ten years the subsidy will decrease regularly in each year. Above this mileage, an annual grant of 64,000 roubles is secured during twenty years.

Commerce with the trans-Caucasian Provinces and on the Caspian Sea.—The trade with the trans-Caucasian countries consists in the importation of Asiatic produce, for which European and colonial merchandise is sent in return. Silk is the principal article of import from this region, and is chiefly destined for European markets. The transit through Persia, of merchandise destined for the trans-Caucasian countries, is becoming more active each succeeding year. The establishment of regular steam packets on the Black Sea, as well as the steamboats belonging to the Volga Steamboat Company, have contributed to make Astrakhan a place of considerable importance to Russian commerce. The yearly increasing commerce of this port attests the importance of these lines of communication. In 1850 there was received from trans-Caucasian countries merchandise valued at 954,625 silver roubles, showing an increase over the imports of the preceding year of 290,432 roubles. This augmentation is to be attributed to the increased demand for the silk of these countries. In 1850 this article alone covered 232,150 roubles, while the quantity in market in 1849 reached only 69,840. The imports into Astrakhan in 1850 amounted to 453,039 roubles, against 139,094 roubles in 1849.

From Russian official statistics for 1853, the following extracts are translated:

"The position of Astrakhan on the Volga, the convenience of its port, and its proximity to the Caspian Sea, are the chief foundations of its commercial importance. The advantage of water transportation of merchandise over land conveyance, draws to this market the larger bulk of all the trade of the neighboring territory. The imports and exports of Astrakan are thus given for 1853:

Imports	788,389	silver roubles.
Exports	1,190,148	"
Total	1,978,537	"

"This sum is, however, largely augmented, if we add the amount of the internal trade, or trade with the neighboring provinces of Astrakhan. Official returns show this trade to have been in 1853, 28,666,732 francs, or 5,446,790 dollars. The imports at Astrakhan are silk, cottons, dry fruits, and sundries. The exports are cotton tissues, iron, grains, copper, sugar, tea, and hides."

Commerce by the Lines of Orenburg and Siberia.—The commercial movements of Russia with Central Asia are prosecuted with much activity. The value of merchandise exchanged with the Tartars of this portion of Asia in 1850 reached nearly 6,000,000 roubles, showing an increase over the total trade of 1849 of 600,000 roubles. The principal imports were tea (19,070 poods), which passed through the western frontiers of China, amounting in value to 512,482 roubles (equal to 50 cents per pound nearly). In 1851 this trade maintained still greater activity. The value of merchandise imported across the lines of Orenburg and Siberia reached 3½ millions of roubles; and the exchanges, consisting of cotton and woolen cloths, loaf-

sugar, raw and tanned hides, amounted to 2,746,822 roubles. This exhibits an increase over 1850, viz.:

	Silver Roubles.
Imports from China by the frontiers of Orenburg and Siberia	219,404
Exports to China by the frontiers of Orenburg and Siberia	3,502,502

The principal imports were black and other teas (755,330 lbs., valued at $437,891, or nearly 58 cents per pound), raw and spun cotton, etc.

Commerce with China at Kiachta in 1851.—This trade, as already remarked, is strictly a barter of merchandise. It takes place from the 6th of February to the 6th of April each year. In 1851 the export trade consisted of woolen cloths, value 3,267,053 silver roubles; cotton cloths, value 1,193,713 silver roubles; Russian leather, 240,933 silver roubles; corals, 259,527 silver roubles; making a total of 4,961,226 roubles, or $3,720,920. The imports (merchandise received in barter) were teas (122,839 chests and 26,289 small packages). For the interior of Russia there were imported at Kiachta 121,249 half chests, and 30,849 small packages of tea. The duties levied on these imports at the Kiatcha custom-house amounted to 4,685,433 roubles, or $3,504,076; an excess of $280,560 over the receipts of 1850, and of $615,225 over those of 1849. The duties, cost of transportation, and other incidental expenses between Kiachta and Moscow, amount to about 100 per cent. on the original cost. This would make the cost price of tea in Moscow $1 per pound. The profit, however, is realized on the merchandise bartered, on which high and arbitrary prices are usually fixed. The tea in small packages is consumed in Siberia.

Official returns, received since the above was prepared, afford materials for bringing down a report of trade at this important point to a later period. From these it appears that the number of chests of tea (black and green) deposited by the Chinese merchants at Kiatcha during the trading season of 1852 reached 100,000. There also arrived 1000 packages for consumption in Siberia. The number of pounds per chest varies; they average, however, about 60 lbs. to a chest of black tea, and about 90 lbs. to the chest of family tea. Besides tea, the Chinese also exchange sugar and sugar-candy; but these articles are usually consumed in the vicinity of Kiachta.

Of late years the Russian traders have derived immense profits from the barter of velvets and velveteens, which are in great demand among the Chinese.

The trade of 1853 presented some novel features. The announcement that 180,000 chests of tea were *in transitu* for Kiachta threw the market, at this point, into the greatest confusion. The merchants received weekly advices as to the state of the market at Moscow, and the great decline which teas had experienced at that time left no alternative to the merchants, in view of the heavy arrivals of teas daily expected, than to raise the prices of Russian merchandise 50 per cent. Any other course would have annihilated the profitable trade so long carried on at this place. The arrivals, however, did not exceed 67,000 chests, and the market maintained its usual tranquillity.

General Summary.—The following summary of the navigation of the different ports of Russia, in 1851 and 1852, is abstracted from official returns:

1851.—Vessels arrived	7,325
" " cleared	7,342
Total tonnage, lasts	790,300
1852.—Vessels arrived	8,655
" " cleared	8,507
Total tonnage, lasts	768,900

Navigation of the Volga in 1852.—The importations at Rybinsk, by the Volga, in 1852, reached in value $75,449,000 francs, and the exportations 101,621,000 francs. The excess of exports over imports is explained by the fact that Rybinsk exports by water only, and imports by land as well as by water. The returns of imports by land are inaccessible to the statistician; but it is supposed that they would equalize the values of the imports and exports of this market. Rybinsk is one of the most important markets in the interior of Russia. In the import trade there are employed 32 steamboats belonging to the Volga-Kama Steamboat Company; 681 canal-boats; and 8141 barks, flat-boats, etc., propelled by sails and oars.

The export trade of Rybinsk (*i.e.*, the re-exportation of merchandise) employs: By the Volga, 3765 vessels of all kinds; Mologa, 1779; Sheksna, 2221; total, 7765.

Steam Company of the Volga.—From the report of the general meeting of this company, held 27th February [11th March], 1852, the information is gleaned, that the company was organized in 1843 with a capital of 1,300,000 roubles ($975,000), divided into 5200 shares of 250 roubles ($187 50) each; that it now owns (in 1852) five iron steamers, which navigate the Volga; namely, the *Sampson* and the *Hercules*, each of 77; the *Kama*, of 50; the *Volga*, of 42; and the *Oka*, of 17 horse-power. Besides these, the company owns nineteen barks and three large bateaux. The capital invested in property (vessels, etc.) amounts to 1,200,000 roubles ($900,000). In 1852 the company received for freights 334,805 roubles 90 kopecks ($251,104 42½), besides 3215 roubles 60 kopecks ($2411 70) interest on capital invested, which brings up their total receipts to 338,021 roubles 50 kopecks ($253,516 12½).

	Roubles.	Kopecks.	Dollars.	Cts.
Total expenses during the year	170,038	45	=134,278	83½
Total receipts	338,021	50	=253,516	12½
Net receipts during the year	168,183	05	=119,237	28½

This net amount was thus distributed:

	Roubles.	Kopecks.	Dollars.	Cts.
To stockholders, at 20 roubles per share	104,000	00	= 78,000	00*
Premium to the directors	7,049	15	= 5,961	86½
For reserved capital	47,033	90	= 35,275	42½
Total	168,083	05	=119,237	28½

Extra Duties.—In addition to the rates given in the tariff, special duties are levied for the benefit of cities, etc., as follows:

At the Port of Archangel.—For the benefit of the town, ½ per cent. on the value of all imports and exports.

At Odessa.—For the benefit of the town: On wheat exported by sea, 1 cent per 5⅗ bushels. For the benefit of the lyceum, 1⅗ cent per 5⅗ bushels, on all kinds of corn exported.

At the Port of Taganrog.—For the benefit of the city: On all merchandise passing through the scales, imported, ⅜ cent per 36 lbs. Exported, $\frac{3}{16}$ cent per 36 lbs. On wines imported, $\frac{3}{16}$ cent per 2½ gallons.

At the Port of Mariopol.—For the benefit of the city: Imports, ⅜ cent per pood, dry measure; $\frac{3}{16}$ cent per pood, liquid measure.

St. Petersburg.—For the bridge on the Neva: On all imports, 2 per cent. on amount of duties.

Moscow.—For a similar purpose to the foregoing: On all imports *via* St. Petersburg, 2 per cent. on amount of duties.

The custom-houses of St. Petersburg, Archangel, and Riga allow foreign goods, imported by privileged merchants, to remain in bond without paying duty, or to be re-exported, during twelve months; if imported by others, six months.

Progress of Cotton Manufactures in Russia.—It has already been remarked, that the manufacture of cotton in the Russian empire is progressing with extraordinary activity. The number of spindles in Russia exceeds 350,000, producing annually upward of 10,800,000 lbs. of cotton yarns. The manufacture of cotton velvets, especially, is becoming highly import-

* A simple calculation will show this to be equal to 8 per cent. on the capital invested. The dividend for the year 1851 was not so large (only seven roubles, or $5 25 per share), and consequently stock fell to 120 @ 130 roubles per share ($90 @ $97 50). In 1853 it again became firm, and commanded a premium.

ant to the direct trade between the United States and Russia, the raw material being almost exclusively supplied, either in the direct or indirect trade, by the former country. Formerly cotton velvets were supplied to the Chinese exclusively by the British. The Chinese now prefer the Russian manufacture; hence it has become a leading staple of barter at the Russio-frontier markets of China.

No foreign nation is allowed to participate in the coasting or internal trade of Russia—*Ordinance, September* 9, 1845. The treaties between Russia and other maritime states all contain the same terms as that between Russia and the United States of December 18, 1832; viz., the vessels of friendly nations, with cargoes in ballast, are to be regarded quite as the domestic, as to export or import, and to port or other duties, or taxes of any kind whatever; but the coasting trade is interdicted. From Russia hemp and iron can be profitably exported to the United States; and from the United States flour and rice may be advantageously imported on return.

The following table exhibits the quantities of raw and spun cotton imported into Russia during the years designated:

Years.	Raw Cotton.	Cotton Twists.	
		White.	Colored.
	Kilogrammes.*	Kilogrammes.	Kilogrammes.
1846	11,863,000	8,128,000	51,000
1847	14,119,000	5,732,000	57,000
1848	20,171,000	6,325,000	56,000
1849	23,470,000	4,572,000	67,000
1850	19,610,000	2,765,000	50,000
Total	91,233,000	28,522,000	281,000
Annual average	18,253,600	5,704,400	56,200

* 100 kilogrammes=220 pounds.

The imports of raw cotton from the United States to Russia for designated periods have already been given, and it has been noticed that the distribution of cotton twists is in a ratio corresponding with the augmentation in the importation of raw cotton. Below is annexed a table, exhibiting the direct trade and navigation between the United States and Russia during the years designated.—*Comm. Rel. U. S.*

Commerce of the United States with Russia from October 1, 1820, to July 1, 1857.

Years ending	Exports			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1821	$127,980	$500,975	$628,804	$1,852,199	....	....	4,521	..
1822	177,261	351,820	529,081	3,307,328	....	$300	4,325	..
1823	51,635	597,099	648,734	2,268,777	....	1,300	2,771	..
1824	92,706	139,215	231,981	2,209,663	....	....	2,201	..
1825	58,191	232,210	287,401	2,007,110	....	....	3,279	..
1826	11,044	163,604	174,648	2,017,169	....	....	1,386	..
1827	45,510	336,734	382,244	2,086,077	....	....	3,593	117
1828	108,922	341,573	450,495	2,788,382	$13,553	....	2,785	284
1829	51,684	334,542	386,226	2,218,995	10,213	....	2,943	..
1830	25,461	381,114	416,575	1,621,800	28,700	....	3,492	234
Total	$757,413	$3,378,866	$4,136,279	$23,027,579	$52,466	$2,100	31,212	637
Sept. 30, 1831	$114,852	$347,914	$462,766	$1,608,328	$90,423	....	4,310	..
1832	121,114	461,568	582,682	3,251,852	82,683	$3,000	3,147	391
1833	223,734	480,071	703,805	2,772,550	85,494	2,192	6,498	..
1834	168,627	162,067	330,694	2,595,840	1,546	....	4,979	300
1835	231,607	353,840	585,447	2,305,245	6,077	....	3,424	505
1836	320,283	584,730	911,013	2,778,554	12,000	....	6,196	1,199
1837	144,080	1,162,652	1,306,732	2,816,116	3,000	4,000	6,644	4,147
1838	352,047	689,242	1,048,289	1,808,396	7,070	1,000	7,253	198
1839	434,887	804,659	1,239,246	2,393,804	1,856	50	8,540	358
1840	234,856	934,025	1,169,481	2,572,427	9,231	....	6,018	477
Total	$2,358,787	$5,981,368	$8,340,155	$25,088,202	$299,680	$10,242	57,000	7,665
Sept. 30, 1841	$146,118	$870,611	$1,025,729	$2,717,448	....	....	7,495	808
1842	316,026	520,567	836,593	1,850,100	$4,978	....	5,691	1,699
9 mos., 1843*	30,867	76,226	366,703	742,803	626	$3,491	4,163	211
June 30, 1844	414,882	140,532	755,414	1,051,419	1,120	....	6,308	1,981
1845	536,845	190,492	727,337	1,402,202	....	....	9,100	1,506
1846	589,388	97,079	686,467	1,576,054	....	....	7,471	1,543
1847	626,332	124,118	750,450	924,678	....	....	4,135	1,362
1848	1,047,582	108,428	1,156,010	1,819,084	....	....	9,588	203
1849	737,557	197,947	1,135,504	840,238	....	74	10,349	1,378
1850	666,435	198,506	864,941	1,511,572	....	....	5,048	3,960
Total	$5,597,062	$2,534,206	$8,071,238	$15,021,659	$6,724	$3,475	67,247	15,846
June 30, 1851	$1,465,704	$145,987	$1,611,691	$1,802,702	....	....	9,241	3,239
1852	1,661,748	138,739	1,800,480	1,581,620	....	....	10,006	3,045
1853	2,313,175	143,478	2,456,653	1,278,501	....	....	11,958	5,207
1854	335,521	145,095	480,616	1,544,235	....	....	3,891	1,485
1855	48,940	20,414	69,354	250,550	....	....	3,088	..
1856	600,153	85,252	686,405	330,781	....	....	9,720	350
1857	4,474,842	255,039	4,729,881	1,519,426	....	....	27,979	5,456

* Nine months to June 30, and the fiscal year from this time begins July 1.

Principal Ports.—Odessa, a sea-port of southern Russia, on the northwest coast of the Black Sea, between the rivers Dniester and Bug, in lat. 46° 28′ 54″ N., long. 36° 43′ 22″ E. The bay or roadstead of Odessa is extensive, the water is deep, and the anchorage is good—the bottom being fine sand and gravel; it is, however, exposed to the southeasterly winds, which render it less safe in winter. The port, which is artificial, being formed of two moles, one of which projects a considerable distance into the sea, and has deep water, with room for three hundred ships.

St. Petersburg, the capital of Russia, situated at the confluence of the River Neva with the eastern extremity of the Gulf of Finland, in lat. 59° 56′ 23″ N., long. 30° 18′ 45″ E. Cronstadt, situated on a small island about twenty miles west of St. Petersburg, may in some measure be considered as the port of the latter. Almost all vessels bound for St. Petersburg touch here, and those drawing above eight feet of water load and unload at Cronstadt—the goods being conveyed to the city in lighters. The water to Cronstadt is ample, there being from twenty-four to thirty-six feet of water.

Russian Possessions in America.—The territory belonging to the Russian American Company comprehends the northwestern portion of North America, extending from Behring's Straits eastward to the meridian of Mt. St. Elias, along both the Arctic and Pacific oceans, and from that mountain southward along the coast chain of hills till it touches the coast in 54° 40′ N. lat., forming an area of 394,000 square miles. The Aleutian Islands, though comprised in the Asiatic government of Irkutsk, may be considered as belonging to

this region. The settlements originated with an association of merchants, formed at Irkutsk, who obtained from the Emperor Paul the exclusive privilege of trading for peltries in the Aleutian Islands and adjacent coasts. This privilege was extended by the Emperor Alexander over all Russian America, and the charter was renewed by Nicholas in 1849. The capital and principal factory was first established at Kodiak, but the increasing scarcity of sea otters led the then governor to lay the foundation of New Archangel, which has now become the chief depôt. The Russian dominion over the vast solitudes of the interior is only nominal: the interior, indeed, is a *terra incognita*, and inhabited by tribes who scarcely know the name of their lords. At the present day the Russians occupy only the islands off his coast. New Archangel, the capital, is situated on the island of Sitka, in lat. 57° 30′ N., and long. 135° 13′ W. It is a town of some 1000 inhabitants, and contains the Boards and warehouses of the company. The whole country is under the surveillance of a governor, who derives his authority from the company at Irkutsk. The total population of Russian America is estimated at 60,000 or 70,000, including aborigines. The commerce of this country is chiefly confined to the exportation of furs to Canton, and the import of provisions and agricultural supplies from the Puget's Sound Agricultural Company. It is of little value, being less than $300,000 a year, and is constantly declining, consequent on the decline of the seal and otter. Bodega, on the coast of California, was formerly a Russian settlement. The British lease the continental part of Russian America for hunting purposes.

Shipping and ship-building are considerably increasing in Finland. The causes are to be sought in the increasing commerce and the general prosperity of the country, in the high prices which have been paid in the last years for the principal exports—wood articles—especially in Southern Europe, and in the high freights paid by foreigners for the employment of Finnish vessels. To encourage shipping and ship-building in Finland, the Russian government has allowed that all materials and articles which are used in ship-building, and are to be had cheaper in foreign countries, may be imported into Finland free of duty. American improvements in ship-building have, in part, already been introduced, and will probably be more generally adopted.—*Comm. Rel. U. S.*

For able articles on the commerce, commercial policy, commercial strength, mines, resources, etc., of Russia, *see* BLACKWOOD'S *Magazine*, liii. 807; *Bankers' Magazine*, ii. 278; *Quarterly Review*, lxxvii. 188, xix. 131, lxvi. 218; *Journal of Science*, iii. 153; *Edinburgh Review*, xl. 476 (JEFFREY), xxiii. 340, lxxix.; HUNT'S *Merchants' Magazine*, v. 297 (F. WHARTON), x. 207; *Living Age*, xxiv. 529; *American Whig Review*, xii. 616; *North American Review*, xxvii. xxx.

Russia Company, a regulated company in Great Britain for conducting the trade with Russia. It was first incorporated by charter of Philip and Mary, sanctioned by act of Parliament in 1566. The statute 10 and 11 William III., ch. 6, enacts, that every British subject desiring admission into the Russia Company shall be admitted on paying £5; and every individual admitted into the company conducts his business entirely as a private adventurer, or as he would do were the company abolished.

Russia Leather (Fr. *Cuir de Russie*; Ger. *Juften*; It. *Cuojo di Russia*; Pol. *Jachta*; Russ. *Juft*, *Youft*; Sp. *Muscovia*), the tanned hides of oxen and other kine, denominated by the Russians *youfts*, or *juffs*—a designation said to be derived from their being generally manufactured in pairs. The business of tanning is carried on in most towns of the empire, but principally at Moscow and St. Petersburg. Russia leather is soft, has a strongly prominent grain, a great deal of lustre, and a powerful and peculiar odor. It is principally either red or black: the former is the best, and is largely used in this and other countries in book-binding; for which purpose it is superior to every other material. The black is, however, in very extensive demand in Russia, large quantities being made up into boots and shoes. The process followed by the Russians in the preparation of this valuable commodity has been frequently described; but notwithstanding this circumstance, and the fact that foreigners have repeatedly engaged in the business in Russia, with the intention of making themselves masters of its details, and undertaking it at home, the efforts made to introduce the manufacture into other countries have hitherto entirely failed. One of the best tests of genuine Russia leather is its throwing out a strong odor of burned hide upon being rubbed a little.—RICARD, *Traité Général du Commerce*, tome i. p. 275, ed. 1781.

We extract from Mr. Borrisow's work on the *Commerce of St. Petersburg* the following details with respect to this article: Russia leather forms one of the principal export commodities of St. Petersburg. But since the ports of the Black Sea have been opened, the exports of leather from this port have considerably decreased; Italy, the principal consumer, supplying its wants from Odessa and Taganrog more easily, cheaply, and expeditiously than from St. Petersburg. The chief exportation from the latter is to Prussia, Germany, and England. Frankfort-on-the-Maine and Leipzic are of great importance as respects the trade in Russia leather, on account of the fairs held in them. Juffs are never bought on contract, but always on the spot at cash prices. It nevertheless often happens that agents—in order to secure a lot of juffs, pay a certain sum in advance, and settle for the amount at the first market prices; no prices being fixed at the months of January, February, March, and sometimes even April. Juffs are assorted or *bracked* when received, according to their different qualities, into *Gave*, *Rosval*, *Malja*, and *Domashna*. The three first sorts are again divided into *heavy* and *light Gave*, *heavy* and *light Rosval*, etc. Domashna is the worst, and consequently the cheapest sort. It often happens that juffs are bought unassorted, and then the prices are regulated according as the quantity of Domashna contained in the lot is greater or less. Persons well acquainted with the nature of Russia leather prefer purchasing it in this state. Juffs are sold by the pood, which consists, as it is commonly expressed, of 4, 4½, 4½, 5, 5½, and 5½ hides. By this is understood, that so many hides make a pood, calculated upon the whole lot; and it is to be observed that the lightest juffs are esteemed the best in quality. Heavy juffs, or those of 4 and 4½ hides, are shipped for Italy: the Germans, on the contrary, prefer the lighter sort. Juffs are packed in rolls, each containing 10 hides; and from 10 to 15 of these rolls are packed together in a bundle, which is well secured by thick matting. There are red, white, and black juffs; but the red are most in demand. Their goodness is determined by their being of a high red color, of equal size, and unmixed with small hides: they must also be free from holes, well stretched, and equally thin. In a well-finished lot no thick head or feet parts should be found. If spots resembling flowers are seen on the red hides, it is an additional sign of their good quality, and they are then called *bloomed juffs*. The inside should be clean, soft, and white, and, when taken in the hand, should feel elastic. The best connoisseurs of Russia leather can nearly determine the quality by the smell alone. Great attention must be paid, in shipping juffs, to secure them from being wetted, as damp air alone is sufficient to injure them. Sixty rolls of juffs make a last; 88 poods net weight, when shipped for Italy, make a last; and 44 poods a ton. The exports of juffs from Russia in 1841 amounted to 177,838 poods, and 150,951 pieces, worth together 1,538,191 silver roubles.

Rye (Ger. *Rogken*, *Rocken*; Du. *Rog*, *Rogge*; Fr.

Seigle; It. *Segale, Segala*; Sp. *Centeno*; Russ. *Rosch, Sel, Jar*; Lat. *Secale*), according to some, is a native of Crete; but it is very doubtful if it can now be found wild in any country. It has been cultivated from time immemorial, and is considered as coming nearer in its properties to wheat than any other grain. It is more common than wheat in many parts of Europe, being a more certain crop, and requiring less culture and manure. It is the bread corn of Germany and Russia.—LOUDON's *Encyc. of Agriculture*.

Rye is supposed by some authorities to be a native of the Caspian Caucasian desert; and has been cultivated in the north of Europe and Asia from time immemorial, where it constitutes an important article of human subsistence, being generally mixed with barley or wheat. Its introduction into western Europe is of comparatively recent date, as no mention is made of it in the *Ortus Sanitatis*, published at Augsburg in 1485, which treats at length of barley, millet, oats, and wheat.

The production of rye has decreased 4,457,000 bushels in the aggregate; but in New York it is greater than in 1840 by about 40 per cent. Pennsylvania, which is the largest producer, has fallen off from 6,613,373 to 4,805,160 bushels. Perhaps the general diminution in the quantity of this grain now produced may be accounted for by supposing a corresponding decline in the demand for distilling purposes, to which a large part of the crop is applied

EXPORTS OF RYE AND SMALL GRAIN FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1856.

Whither exported.	Rye, Oats, and other small Grain, and Pulse.
Swedish West Indies	$634
Danish West Indies	1,508
Hamburg	264,866
Bremen	449,403
Other German ports	8,860
Holland	427,085
Dutch West Indies	223
Dutch Guiana	570
Belgium	1,071,639
England	176,535
Ireland	14,600
Canada	85,317
Other British North American Possessions	14,639
British West Indies	45,325
British Honduras	110
British Guiana	8,037
British Possessions in Africa	1,104
British Australia	54,821
British East Indies	336
France on the Atlantic	18,735
French North American Possessions	108
French West Indies	85
French Guiana	93
Cuba	7,571
Porto Rico	1,636
Turkey in Europe	3,910
Turkey in Asia	67
Hayti	849
San Domingo	86
Mexico	1,326
Central Republic	70
New Granada	350
Venezuela	13,214
Brazil	1,477
Chili	255
Peru	122
Sandwich Islands	4,023
China	461
Whale Fisheries	536
Total, 1855–1856	$2,718,620
Total, 1856–1857	680,108

Rye was cultivated in the North American colonies soon after their settlement by the English. Gorges speaks of it as growing in Nova Scotia in 1622, as well as of barley and wheat. Plantagenet enumerates it among the productions of North Virginia (New England) in 1648, and alludes to the mixing of it with maize in the formation of bread. It was also cultivated in South Virginia by Sir William Berkeley previous to that year.

Geographically, rye and barley associate with one another, and grow upon soils the most analogous, and in situations alike exposed. It is cultivated for bread in northern Asia, and all over the continent of Europe, particularly in Russia, Norway, Denmark, Sweden, Germany, and Holland; in the latter of which it is much employed in the manufacture of gin. It is also grown to some extent in England, Scotland, and Wales. In this country it is principally restricted to the Middle and Eastern States, but its culture is giving place to more profitable crops.

The three leading varieties cultivated in the United States are the Spring, Winter, and Southern, the latter differing from the others only from dissimilarity of climate. The yield varies from 10 to 30, or more, bushels per acre, weighing from 48 to 56 lbs. to the bushel.

This grain has never entered largely into our foreign commerce, as the home consumption for a long period nearly kept pace with the supply. The amount exported from the United States in 1801 was 392,276 bushels; in 1812, 82,705 bushels; in 1813, 140,136 bushels. In 1820–'21 there were exported 23,523 barrels of rye flour; in 1830–'31, 19,100 barrels; in 1840–'41, 44,031 barrels; in 1845–'46, 88,530 barrels; in 1846–'47, 48,892 barrels; in 1850–'51, 44,152 barrels.

During the year ending June 1, 1850, there were consumed, of rye, about 2,144,000 bushels in the manufacture of malt and spirituous liquors.

According to the census returns of 1840, the product of the country was 18,645,567 bushels; in 1850, 14,188,637 bushels. Of this amount there was exported from New York $2,022,352.

PRODUCTION OF RYE IN THE UNITED STATES FOR THE YEARS 1840 AND 1850.

States and Territories.	1840. Bushels.	1850. Bushels.
Alabama	51,088	17,361
Arkansas	9,219	8,047
Columbia, District of	5,081	5,569
Connecticut	737,424	600,893
Delaware	33,546	8,066
Florida	905	1,152
Georgia	60,6 3	53,750
Illinois	98,197	85,564
Indiana	129,621	78,702
Iowa	3,7:2	19,516
Kentucky	1,321,373	415,673
Louisiana	1,812	455
Maine	137,941	102,916
Maryland	723,577	226,014
Massachusetts	536,014	481,021
Michigan	24,226	105,871
Mississippi	11,444	9,606
Missouri	68,808	44,268
New Hampshire	308,148	183,117
New Jersey	1,665,820	1,255,673
New York	2,679,323	4,148,182
North Carolina	213,971	222,563
Ohio	814,265	425,918
Pennsylvania	6,613,373	4,805,160
Rhode Island	34,821	26,499
South Carolina	44,738	43,750
Tennessee	304,320	89,137
Texas	....	2,108
Vermont	230,993	176,233
Virginia	1,482,799	458,950
Wisconsin	1,965	81,253
Territories. (Minnesota	....	125
Territories. Oregon	....	106
Territories. Utah	....	210
Total	18,855,567	14,188,813

Ryots. The name given to the cultivators of the soil of Hindostan, who hold their land by a lease which is considered as perpetual, and at a rate fixed by ancient surveys and valuations.

S.

Sable (Ger. *Zobel*; Fr. *Zibelline*; It. *Zibellino*; Russ. *Sobol*), an animal of the weasel tribe, found in the northern parts of Asiatic Russia and America, hunted for the sake of its fur. Its color is generally of a deep glossy brown, and sometimes of a fine glossy black, which is most esteemed. Sable skins have sometimes, though very rarely, been found yellow, and white. The finer sorts of the fur of sables are very scarce and dear. A single skin of the darker color, though not above four inches broad, has been valued as high as $60. The sable (*Mustela sibellina*, Linn.) is principally a native of the northern regions of Asia: it is hunted and killed for the Russian market, either by a single ball, a blunt arrow, or traps, by exiles or soldiers sent for that purpose, in the deserts of Siberia. The skin is in the highest perfection from November to February. A nearly allied animal, called the "fisher," inhabits North America, and is similarly sought after and destroyed for its fur.—*See* FUR TRADE.

Saddles (Fr. *Selles*; Ger. *Sattel*; It. *Selle*; Russ. *Sädla*; Sp. *Selles*), seats adapted to horses' backs, for the convenience of the rider.

Safflower, or **Bastard Saffron** (Ger. *Safflor*; Du. *Safflower*, *Basterd Saffran*; Fr. *Cartame*, *Saffran batard*; It. *Zaffrone*; Sp. *Alazor*, *Azafran bastardo*; Russ. *Polevroi*, *Prostoi schafran*), the flower of an annual plant (*Carthamus tinctorius*, Linn.) growing in India, Egypt, America, and some of the warmer parts of Europe. It is not easily distinguished from saffron by the eye, but it has nothing of its smell or taste. The flowers, which are sometimes sold under the name of *saffranon*, are the only parts employed in dyeing. They yield two sorts of coloring matter: one soluble in water, and producing a yellow of but little beauty; the other is *resinous*, and best dissolved by the fixed alkalies: it is this last which alone renders safflower so valuable in dyeing; as it affords a red color exceeding in delicacy and beauty, as it does in costliness, any which can be obtained even from cochineal, though much inferior to the latter in durability. The color of safflower will not bear the action of soap, nor even that of the sun and air for a long time; and being very costly, it is principally employed for imitating upon silk the fine scarlet (*ponceau* of the French) and rose colors dyed with cochineal upon woolen cloth.

The fine rose color of safflower, extracted by crystallized soda, precipitated by citric acid, then slowly dried, and ground with the purest talc, produces the beautiful *rouge* known by the name of *rouge végétale*. Safflower should be chosen in flakes of a bright pink color, and of a smell somewhat resembling tobacco. That which is in powder, dark-colored, or oily, ought to be rejected.—HASSELQUIST's *Voyages*, Engl. ed. p. 352; BANCROFT's *Permanent Colors*, vol. i. p. 286–289; MILBURN's *Orient. Commerce*.

Saffron (Ger. *Saffran*; Du. *Safran*; It. *Zafferano*; Sp. *Saffron*; Fr. *Azafran*; Russ. *Schafran*), a sort of cake prepared from the stigmas, with a proportion of the style, of a perennial bulbous plant (*Crocus sativus*, Linn.). When good, saffron has a sweetish, penetrating, diffusive odor; a warm, pungent, bitterish taste; and a rich, deep orange-red color. It should be chosen fresh, in close, tough, compact cakes, moderately moist, and possessing in an obvious degree all the above-mentioned qualities. The not staining the fingers, the making them oily, and its being of a whitish yellow or blackish color, indicate that it is bad, or too old. Saffron is used in medicine and in the arts; but in England the consumption seems to be diminishing. It is employed to color butter and cheese, and also by painters and dyers.—THOMSON's *Dispensatory*; LOUDON's *Encyclopedia of Agriculture*.

Sagapenum (Arab. *Sugbenuj*), a concrete gum-resin, the produce of an unknown Persian plant. It is imported from Alexandria, Smyrna, etc. It has an odor of garlic, and a hot, acrid, bitterish taste. It is in agglutinated drops or masses, of an olive or brownish yellow color, slightly translucent, and breaking with a horny fracture. It softens and is tenacious between the fingers, melts at a low heat, and burns with a crackling noise and white flame, giving out abundance of smoke, and leaving behind a light spongy charcoal. It is used only in medicine.—THOMSON's *Dispensatory*.

Sago (Malay *Sagu*; Jav. *Sagu*), a species of meal, the produce of a palm (*Metroxylon Sagu*) indigenous to and abundant in such of the Eastern islands as produce spices, where it supplies a principal part of the farinaceous food of the inhabitants. It is produced in China, Japan, Molucca, and the South Sea Islands. The tree, when at maturity, is about 30 feet high, and from 18 to 22 inches in diameter. Before the formation of the fruit, the stem consists of an external wall about two inches thick, the whole interior being filled up with a sort of spongy medullary matter. When the tree attains to maturity, and the fruit is formed, the stem is quite hollow. Being cut down at a proper period, the medullary part is extracted from the trunk, and reduced to a powder like saw-dust. The filaments are next separated by washing. The meal is then laid to dry; and, being made into cakes and baked, is eaten by the islanders. For exportation, the finest sago meal is mixed with water, and the paste rubbed into small grains of the size and form of coriander seeds. This is the species principally brought to England, for which market it should be chosen of a reddish hue, and readily dissolving in hot water into a fine jelly. Within these few years, however, a process has been invented by the Chinese for refining sago, so as to give it a fine pearly lustre; and the sago so cured is in the highest estimation in all the markets. It is a light, wholesome, nutritious food. It is sent from the islands where it is grown to Singapore, where it is granulated and bleached by the Chinese. The export trade to Europe and India is now principally confined to that settlement.—AINSLIE's *Mat. Indica*; CRAWFORD's *East. Archipelago*; BELL's *Review of the Commerce of Bengal*.

Sahara, or the **Great Desert** (Arab. *Zahra*), a vast region of northern Africa, extending between lat. 16° and 33° N., and long. 17° W., and 23° 10′ E. Bounded east by Egypt and Nubia, south by Senegambia and Nigritia, west by the Atlantic, and north by Barbary. It consists of an elevated table-land, covered with large blocks of stone, hard-baked earth, gravel, and loose sand; and in many places it is incrusted with salt. It is the greatest desert on the globe, but numerous oases and habitable spots are scattered over its surface, the largest of which are Gadames and Tuat. It is traversed in many directions by caravan routes; travelers on which undergo the most intense sufferings from thirst, and from exposure to the *simoom*, or hot, dry wind from the south and east, which usually lasts 10 or 12 hours: during its continuance the air is impregnated with fine sand, and the sun is barely perceptible. Rain appears to fall in torrents at intervals of 5, 10, or 20 years, and many places of the desert bear evidence of its action even for a much longer period. The heat is excessive during the summer, but in winter the evenings are cool, and during night frequently cold. Palm-trees grow on the borders of the Sahara, and the chief products of its oases are dates and gums.

Sail, in *Navigation*, an assemblage of several breadths of canvas sewed together by the lists, and edged round with cord, fastened to the yards of a ship to make it drive before the wind. The edges of the cloths or pieces of which a sail is composed are generally sewed together with a double seam, and the whole is skirted round the edges with a cord, called the bolt-rope. Although the form of sails is extremely different, they

are all, nevertheless, triangular or quadrilateral figures; or, in other words, their surfaces are contained either between three or four sides. The former of these are sometimes spread by a yard, as lateen sails, and otherwise by a stay, as stay-sails, or by a mast, as shoulder-of-mutton sails; in all which cases the foremost leech or edge is attached to the said yard, mast, or stay, throughout its whole length. The latter, or those which are four-sided, are either extended by yards, as the principal yards of a ship; or by yards and booms, as the studding-sails, drivers, ring-tails, and all those sails which are set occasionally; or by gaffs and booms, as the mainsails of sloops and brigantines.

Sail is also a name applied to any vessel seen at a distance under sail, and is equivalent to ship.

To set sail, is to unfurl and expand the sails upon their respective yards and stays, in order to begin the action of sailing.

To make sail, is to spread an additional quantity of sail, so as to increase the ship's velocity.

To shorten sail, is to reduce or take in part of the sails, with an intention to diminish the ship's velocity.

To strike sail, is to lower it suddenly. This is particularly used in saluting or doing homage to a superior force, or to one whom the law of nations acknowledges as superior in certain regions.—*See* BLUNT's *Coast Pilot;* BLUNT's *Ship-master's Assistant*, New York, 1857; BOWDITCH's *Navigation*.

Sailing, the movement by which a vessel is wafted along the surface of the water by the action of the wind upon her sails. When a ship changes her state of rest to that of motion, as in advancing out of a harbor, or from her station at anchor, she acquires motion very gradually, as a body which arrives not at a certain velocity till after an infinite repetition of the action of its weight. The first impression of the wind greatly affects its velocity, because the resistance of the water might destroy it: since the velocity being but small at first, the resistance of water which depends upon it will be very feeble. But as the ship increases her motion, the force of the wind on the sails will be diminished; and, on the contrary, the resistance of the water on the bow will accumulate in proportion to the velocity with which the vessel advances. Thus the repetition of the degrees of force, which the action of the sail adds to the motion of the ship, is perpetually decreasing; while the new degrees added to the effort of resistance on the bow are always augmenting. The velocity is then accelerated in proportion as the quantity added is greater than that which is subtracted; but when the two powers become equal, when the impression of the wind on the sails has lost so much of its force as only to act in proportion to the opposite impulse of resistance on the bow, the ship will then acquire no additional velocity, but continue to sail with a constant, uniform motion. The great weight of the ship may, indeed, prevent her from acquiring the greatest velocity; but when she has attained it, she will advance by her own intrinsic motion, without gaining any new degree of velocity, or lessening what she has acquired. She moves then by her own proper force *in vacuo*, without being afterward subject either to the effort of the wind on the sails, or to the resistance of the water on the bow. If at any time the impulsion of the water on the bow should destroy any part of the velocity, the effort of the wind on the sails will revive it so that the motion will continue the same. It must, however, be observed, that this state will only subsist when these two powers act upon each other in direct opposition, otherwise they will mutually destroy one another. The whole theory of working ships depends upon this counter action, and the perfect equality which should subsist between the effort of the wind and the impulsion of the water.

The effect of sailing is produced by a judicious arrangement of the sails in the direction of the wind. Accordingly, the various modes of sailing are derived from the different degrees and situations of the wind with regard to the course of the vessel.

Sailing also implies a particular mode of navigation, which is formed on the principles and regulated by the laws of trigonometry. Hence we say, Plain Sailing, Mercator's, Middle-latitude, Parallel, and Great-circle Sailing.

Saint Christopher, or **Saint Kitt's**, one of the British West India Islands, leeward group; lat. (Fort Smith) 17° 17′ 7″ N., long. 60° 42′ 2″ W. Length, northwest to southeast, 20 miles; breadth, 5 miles. Area, 68 square miles. Population about 25,000. The soil is particularly adapted to sugar.

Staple Productions.—Sugar, rum, molasses, arrow-root, fruits, and vegetables. The United States export to this island, and the other islands which compose this consular district, flour, grain, lumber (principally pitch-pine), and provision of all kinds. American tonnage employed in the trade with this island in 1853: 31 vessels, with an aggregate tonnage of 5070. There are no British vessels regularly engaged either in the foreign or coasting trade of this island. Hence American ships are frequently chartered to convey sugar, molasses, and other products to England, where, by reason of a protective duty on foreign similar products, they find the best market. In addition to the staples of this island, United States vessels export large quantities of old metals (as brass, iron, copper, lead) and hides. A large portion of the revenue of this island is derived from an export duty on its staple productions.

Port Regulations.—All vessels on entering pay a tonnage duty of 36 cents per ton, and a fee of $4 to the colonial secretary. There is no pilotage tax, as the port of St. Christopher is open and free from all obstacles, such as reefs, etc. The official returns for six months, from 1st July to 31st December, 1854, will sufficiently exhibit the extent of trade between the United States and St. Christopher.

Imports from United States	$81,556
Exports to United States	14,714
Balance in favor of the United States	66,842

Saint Croix, the southernmost and largest of the Virgin Islands, and the most important of the Danish possessions. Area, 100 square miles. Population (1845), 25,600.

The commercial intercourse between this island and the United States depends partly on the mother country, and partly on local legislation fixed for the time. There are no privileges allowed other countries which are not allowed the United States. Goods may be reshipped in American vessels. The money currently passing here is dollars and cents. Danish weight is about 10 per cent. heavier than English. The trade to this island is now less than one-third of what it was before the emancipation. Oftentimes there is not an American vessel in port for months together. The supplies come generally through St. Thomas, which is a free port, and yet under the same government.—For Geology of St. Croix, *see* SILLIMAN's *Journ.* XXXV. 64.

AMERICAN PRODUCE IMPORTED DIRECT INTO THE ISLAND OF ST. CROIX.

Articles.		1851.	1852.	1853.
Corn meal	puncheons	3,963	3,740	4,060
Corn meal	barrels.	666	830	745
Superfine flour	"	3,594	3,240	3,150
Bread	"	240	210	190
Beef	"	60	74	80
Pork	"	410	560	610
Herrings	"	320	410	280
Salt fish	casks.	250	278	310
Rye flour	barrels.	124	168	210
Red oak staves	....	231,000	246,000	260,000
White oak staves	....	140,000	120,000	110,000
White pine lumber	feet.	1,667,000	1,760,000	1,720,000
Pitch pine lumber	"	310,000	185,000	265,000
Shingles	....	2,315,000	1,580,000	1,950,000
Horses	number.	14	22	20
Mules	"	150	165	150
Kegs of nails	"	70	95	78
Wood hoops	"	210,000	250,000	280,000

PRODUCTS OF THE ISLAND REPORTED TO THE UNITED STATES, 1851–'53.

Articles.		1851.	1852.	1853.
Sugar	hogsheads.	1953	806	1057
Sugar	barrels.	1159	788	75
Rum	puncheons.	1921	910	1531

Saint Helena, an island in the south Atlantic Ocean, belonging to Great Britain, about 800 miles southeast from Ascension, and nearly 1200 miles from the coast of Lower Guinea. Lat. of observatory, 15° 55′ S., long. 5° 44′ E. Area, 30,300 acres. Population in 1850, 7000, of whom nearly one-half were whites. It is of volcanic origin, and consists of rugged mountains, interspersed with numerous ravines, in one of which, on its northwest shore, is James Town, the residence of the principal authorities. Its centre is a table-land, with an elevation of 1500 feet, but from which several mountains rise to a greater elevation, Diana's Peak being 2700 feet. Climate mild. Mean temperature of year, 61°·3; winter, 58°·4; summer, 63°·8. The island is watered by numerous brooks, and about a fifth part of its surface is fertile, yielding the products both of European and tropical countries. Goats are plentiful in the uplands; but supplies of provisions are mostly procured from abroad, the island lying in the homeward track of ships returning from India. St. Helena is chiefly noted as the place of exile of Napoleon Bonaparte, whose residence, Longwood, was on the elevated plateau of the interior. He lived there from 1816 till his decease, May 5th, 1821.

The United States have a consul resident at this island, which is frequently visited by our ships to and from Asia, India, Cape of Good Hope, etc. By act of 3 and 4 William IV. the island of St. Helena, and all forts, factories, and public edifices, were vested in His Majesty, and the island shall be governed by orders in council.

The average aggregate values of imports at this island from the United States are: For the year 1851, $6429; for the year 1852, $8377; for the year 1853, $30,809; for the six months ending 30th June, 1854, $12,254. Value of oil and whalebone transhipped by American vessels to the United States, $16,525. There are no privileges permitted to the commerce of other nations which are denied to the United States; but, on the other hand, there are privileges granted *solely* to vessels of the United States, such as the reduction of custom charges on the transhipment of oil, whalebone, and empty oil casks, as per proclamation of September, 1853, and the remission of port charges to whaling vessels calling here within three months after their first arrival, as per notice of July, 1854, which accommodations have had their effect in the increase of the American fleet at this port. The port charges are levied alike on all foreign vessels as on British. There are no charges on national vessels, either British or foreign, and all are alike furnished with water free of charge. There is no Chamber of Commerce, and the rates of exchange depend on the parties agreeing; generally, however, they are on private bills, and are taken at par; the commissariat, however, charges 1½ per cent. There are no duties except on wines, spirits, and beer; only a wharfage tax on all goods landed from Great Britain or any foreign country. There are no price-current sheets issued, the market being unstable; and the supplies from abroad (almost entirely from England) being irregular, every thing, as a general thing, bears a high value. The American whaling fleet, after once entering this port and paying the custom fees, may return to the island at any time within three months, *for water or any other supplies whatsoever, without being subject to the payment a second time* of the tonnage or other custom fees; and that every facility will be given for the accommodation of the fleet.

Saint Johns, a sea-port, and capital of the island and British colony of Newfoundland, North America, near the extremity of the most eastern of the numerous peninsulas which project from the eastern portion of the island; lat. 47° 33′ 6″ N.; long. 52° 43′ W. Population in 1850, 19,000; in 1852, 21,000 (resident), 6000 fishermen. The trade of St. Johns consists chiefly in supplying the fishermen, most of whom are Roman Catholics, with clothing, provisions, and fishing and hunting gear. The harbor of St. Johns is excellent, although narrow at the entrance; the channel, from point to point, being only 360 fathoms wide. The tide rises 5 feet, neap-tides 3½ feet, but very irregularly, being much influenced by the winds. Goods may be transhipped in United States vessels to any place out of this colony without restriction of any sort. The weights and measures are the same as in England. The moneys are in a great degree the same, namely; sovereigns, with Spanish and Mexican dollars, which, however, are now fast disappearing. The currrent value of the sovereign is 24 shillings, equal to $4 80, and of the dollar 5 shillings, or 100 cents.

The average wholesale prices of the exports to the United States since July 1, 1853, have been as follows: Seal oil, 60 cents per gallon; cod oil, 55 cents per gallon; codfish, $2 50 per quintal; herrings, $2 40 per barrel. Salmon, not quoted above, varies from $12 to $20 generally for the tierce of 310 pounds. These articles are rarely sold at retail in this market. The average rate of exchange was 4 to 5 per cent. discount from this colony to the United States. The true par of exchange is 2 per cent. The duties are on imports from all countries alike, as follows: Bread, 6 cents per bag of 112 lbs.; flour, 35 cents per barrel; pork, 72 cents per barrel; beef, 48 cents per barrel; butter, 48 cents per cwt.; manufactured tobacco, 4 cents per lb.; tea, 6 cents per lb. On all unenumerated goods 5 per cent. *ad valorem;* and in this port an additional duty is levied of 10 per cent. *on the duties* above.

Saint Lawrence river, United States and Canada, forms the outlet of the great lakes Superior, Huron, Michigan, Erie, and Ontario, and, after a course of more than 2000 miles, flows into the Gulf of St. Lawrence. It forms the boundary, with the middle of the lakes through which it passes, between the United States and Canada, until it arrives at the 45th degree of north lat. It has different names in different parts of its course. From its mouth to Lake Ontario it is called the St. Lawrence; between Lakes Ontario and Erie, Niagara River; between Lakes Erie and St. Clair, Detroit River; between Lakes St. Clair and Huron, St. Clair River; and between Lakes Huron and Superior, St. Mary's River. It is navigable for ships of the line 400 miles, to Quebec; and for ships of 600 tons to Montreal. The distance from Montreal to Lake Ontario is nearly 200 miles. From Quebec to Montreal it has an average breadth of two miles. At its mouth, the Gulf, from Cape Rosier to Mingau settlement, in Labrador, is 105 miles in length. The elevation from tide-water to Lake Ontario (exceeding two hundred feet) is overcome by seven canals of various lengths, from 12 miles to one mile (but in the aggregate only forty-one miles of canal), having locks two hundred feet in length between the gates, and forty-five feet in width, with an excavated trunk from one hundred to one hundred and forty wide on the water-surface, and a depth of ten feet water. From Lake Ontario to Lake Erie an elevation of three hundred and thirty feet is surmounted by a canal twenty-eight miles in length, with about thirty cut stone locks one hundred and fifty feet long, by twenty-six and a half feet wide, designed for propellers and sail craft. These locks will pass a craft of about five hundred tons burden, while those on the St. Lawrence have a capacity double this amount. The total cost of this navigation may be set down at $12,000,000. The St. Lawrence Canal was designed for paddle-steamers, which are required as tugs, or to ascend against the current; but from the magnitude of the rapids, and their regular inclination, the aid of the locks is not required in de-

scending the river. At some of the rapids there are obstacles preventing the descent of deeply-laden craft, but the government are about to give the main channel in all the rapids a depth of ten feet water, when the whole descending trade by steam will keep the river, leaving the canals to the ascending craft.—*See* CANADA and MONTREAL.

The relative position of the United States and Great Britain in respect to the navigation of the great northern lakes and the River St. Lawrence, appears to be similar to that of the United States and Spain, previously to the cession of Louisiana and Florida, in respect to the Mississippi; the United States being in possession of the southern shores of the lakes, and the River St. Lawrence to the point where the northern boundary line strikes the river; and Great Britain of the northern shores of the lakes, and the river in its whole extent to the sea, as well as of the southern banks of the river, from the latitude of 45° to its mouth. The claim of the people of the United States of a right to navigate the St. Lawrence to and from the sea was, in 1826, the subject of discussion between the American and British governments.

The navigation of the continuous waters of the United States and Canada is provided for in the following articles of the treaty of June 5, 1854: The third article, whose operation may be affected at the will of the American government, by a suspension of this privilege, as stipulated for in the fourth article, on the part of Great Britain, provides for a reciprocal trade, free of duty, between the United States and the British colonies, in the articles of their respective growth and produce, as enumerated in the schedule thereto annexed.

"It is agreed that the citizens and inhabitants of the United States shall have the right to navigate the River St. Lawrence and the canals in Canada, used as the means of communication between the great lakes and the Atlantic Ocean, with their vessels, boats, and crafts, as fully and freely as the subjects of Her Britannic Majesty, subject only to the same tolls and other assessments as now are or may hereafter be exacted of Her Majesty's said subjects; it being understood, however, that the British government retains the right of suspending this privilege, on giving due notice thereof to the government of the United States.

"It is further agreed, that if at any time the British government should exercise the said reserved right, the government of the United States shall have the right of suspending, if it think fit, the operation of Article 3, of the present treaty, in so far as the province of Canada is affected thereby, for so long as the suspension of the free navigation of the River St. Lawrence or the canals may continue.

"It is further agreed, that British subjects shall have the right freely to navigate Lake Michigan with their vessels, boats, and crafts, so long as the privilege of navigating the River St. Lawrence, secured to the Americans by the above clause of the present article shall continue; and the government of the United States further engages to urge upon the State governments to secure to the subjects of Her Britannic Majesty the use of the several State canals on terms of equality with the inhabitants of the United States."—WHEATON'S *International Law*. For correspondence on navigation of St. Lawrence, see *American Annual Register*, ii. 1-7; NILES'S *Register*, xxxiii. 411.

Saint Louis, city, Missouri, capital of St. Louis county, is situated on the right bank of the Mississippi, in lat. 38° 37′ 28″ N., and long. 90° 15′ 16″ W. from Greenwich, and is one of the largest and most flourishing cities in the great valley of the Mississippi. It is 1200 miles above New Orleans, and 1350 miles above the mouth of the river. About 180 miles south of the city the Ohio comes in to the Great Father of Waters, from its eastern sources in the Alleghanies, after a course of 1000 miles, while a short distance above its mouth the Cumberland and the Tennessee pour their streams into La Belle Riviere. To the northward, 17 miles, the Missouri pours out its turbid stream into the Mississippi, and the waters flow down to the very front of the city, before the clear waters of the Mississippi yield themselves to the embraces of the great rivers of the West, coming down from the snows of the Rocky Mountains 2000 miles away. At a distance of 33 miles to the northward, the Illinois—now connected with the lakes by the Illinois and Michigan Canal—comes in from the northeast, and is navigated by St. Louis boats as far as the junction of the canal and river at La Salle, 290 miles from St. Louis. St. Louis is the centre of a great railroad system, radiating to all parts of the Union. The system, as at present planned, may be stated as follows: The Pacific Road with its branches. This road runs from St. Louis to the Merrimac River; the main line then crosses the divide between the Merrimac and the Missouri to Jefferson City, the capital of the State; thence leaving the river, it runs directly to the mouth of the Kansas River, to be extended to the Pacific, through the great chain of the Rocky Mountains. This road is 311·60 miles in length, and is finished to Jefferson City. The Ohio and Mississippi Railroad, from Cincinnati to St. Louis, was opened in 1857, 336 miles in length.

The steamboat tonnage of this city will appear from the following table. For the year ending June 30, 1853, the following cities stood entered on the books of the custom-house, as follows:

Cities.	1850.	1851.	1853.
St. Louis	24,975	24,065	45,544
Cincinnati	16,906	14,187	10,191
Nashville	3,776	3,587	3,414
Louisville	14,820	12,967	14,166

thus showing an increase at the rate of 11,000 tons per year. For the year ending December 31, 1853, the sugar landed at St. Louis was 50,774 hhds., 13,993 bbls., 46,257 boxes and bags; molasses, 54,933 bbls. and hhds. For this article St. Louis is the great central supply mart. By the government returns, all the sugar shipped from New Orleans for 1852 was 50,793 hhds., and 6534 bbls., while St. Louis imported 50,774 hhds., and 13,993 bbls. The whole imports of coffee into the United States in 1853 were 199,089,823 lbs., and of this St. Louis imported 16,714,720, or about one-twelfth. To show the business of the years 1852–1857, we give the receipts of certain articles:

Articles.		1852.	1853.	1857.
Tobacco	hhds.	14,053	10,102	5,167
"	boxes.	12,386	10,528	12,111
Hemp	barrels.	49,122	63,350	78,950
Lead	pigs.	409,314	442,218	162,500
Flour	barrels.	131,333	200,203	305,061
Wheat	bushels.	1,591,886	2,077,427	2,800,000
Corn	sacks.	344,720	459,192	1,243,000
Oats	"	323,081	464,062	68,000
Barley and malt		47,204	62,885	111,000
Pork	bbls. and tcs.	66,206	78,254	110,000
Lard	" "	42,515	75,168	55,000
"	kegs, etc.	11,815	16,889	15,000
Whisky	barrels.	46,446	51,207	125,000
Hides		97,148	101,340	136,000
Bagging	pieces.	3,680	2,826	....
Bale rope	coils.	42,121	58,437	44,000

Flour manufactured at St. Louis in 1851, 408,099 bbls.; 1852, 383,184 bbls.; 1853, 457,076 bbls.; to this must be added receipts by wagons from country mills, 80,220 barrels, making the sum total of the flour manufactured and brought to St. Louis, 737,499 barrels. The flour manufactured in St. Louis in the year 1856 was 678,000 barrels; and in 1857, 662,000. There are sixteen flour-mills within the limits of the city. The number of steamboat arrivals in 1857 was 3415, with an aggregate tonnage of 964,700 tons. Foreign goods imported in St. Louis for the year ending December 31:

	1851.	1852.	1853.
Goods, etc.	$873,672 89	$1,039,473 00	$1,436,981 40
Duties	239,318 68	290,168 85	457,646 44

—*See* MISSISSIPPI RIVER.

Saint Petersburg, the modern metropolis of the Russian empire, situated at the confluence of the River Neva with the eastern extremity of the Gulf of Finland, in lat. 59° 56′ 25″ N., long. 30° 18¾′ E. Population, 480,000. This flourishing emporium was founded by Peter the Great, whose name it bears, in 1703. In the same year, the first merchant ship that ever appeared on the Neva arrived from Holland; and the czar, to mark his sense of the value of such visitors, treated the captain and crew with the greatest hospitality, and loaded them with presents. In 1714, 16 ships arrived at St. Petersburg; in 1730 the number had increased to 180; and so rapid has been the progress of commerce and civilization in Russia since that period, that at present from 1200 to 1500 ships annually enter and clear out from St. Petersburg. It is much to be regretted that, although favorable to commerce, the situation of St. Petersburg is in other respects far from good. The ground on which it stands is very low and swampy; it has on different occasions sustained great injury from inundations; and the country round is, generally speaking, a morass and forest, so that almost every thing required for the subsistence of the inhabitants must be brought from a distance. No one less bold and daring than Peter the Great would have thought of selecting such a situation for the metropolis of his empire; and none possessed of less power and resolution could have succeeded in overcoming the all but insuperable obstacles which the nature of the country opposed to the completion of his gigantic schemes.

Cronstadt, situated on a small island about 20 miles west of St. Petersburg, may, in some measure, be considered as the port of the latter. Almost all vessels bound for St. Petersburg touch there; and those drawing above 8 feet water load and unload at Cronstadt; the goods being conveyed from and to the city in lighters, the charges of which vary according to the demand at the time. The merchants' harbor at Cronstadt is fitted to contain about 600 ships; but it is exposed to the westerly winds. Cronstadt is strongly fortified, and is the principal station of the Russian fleet. Vessels bound for St. Petersburg must pass by the narrow channel to the south of the island, commanded by the fortifications of Cronstadt on the one side, and of Cronslot on the other.

Money.—Accounts are kept at St. Petersburg, and throughout Russia, in roubles of 100 copecks.

The only gold coin at present struck is the ½ imperial, or 3-rouble piece, =16*s.* sterling very nearly. The silver rouble, worth 3*s.* 2¾*d.* sterling very nearly, was declared, by a ukase issued in 1839, to be worth 3½ paper roubles.

But another ukase, issued on the 14th June, 1843, directs that the old bank-note roubles in circulation, amounting to the sum of 595,776,310, being equal, at the exchange of 3½, to 170,221,803 silver roubles, should be called in, and replaced by an issue of 170,221,000 *billets du credit*, to be exchangeable at the pleasure of the holder for silver roubles. This is a most important regulation, and if it be fully carried out, the distinction between silver and paper roubles will disappear; at the same time that additional security will be given to all sorts of industrious undertakings, and to the credit of the government.

Weights and Measures.—The Russian weights are the same for gold, silver, and merchandise: viz.,

3 Soltnicks = 1 Loth.	40 Pounds = 1 Pood.
32 Loths = 1 Pound.	10 Poods = 1 Berkovitz.

The Russian pound contains, according to Kelly, 6318·5 English grains. Hence 100 lbs. Russian = 90·26 lbs. avoirdupois = 40·93 kilog. The pood = 36 lbs. 1 oz. 11 drs., but among merchants it is reckoned = 36 lbs. According to Nelkenbrecher, 100 lbs. Russian = 90·19 lbs. avoirdupois = 40·9 kilog. = 82·8 lbs. of Amsterdam = 84·444 of Hamburg.

The principal measure for corn is the chetwert, divided into 2 osmins, 4 pajocks, 8 chetwericks, or 64 gerlitz. The chetwert = 5·77 imperial bushels. Hence 100 chetwerts = 72·12 Imperial quarters.

In liquid measure,	3 Wedros = 1 Anker.
11 Tsharky = 1 Krashka.	6 Ankers = 1 Oxhoft.
8 Krashka = 1 Wedro.	2 Oxhoft = 1 Pipe.
40 Wodros = 1 Sorokovy.	In long measure,
The Wedro = 8¼ English wine gallons.	16 Wershok = 1 Arsheen.
	3 Arsheen = 1 Sashen.
13½ Bottles = 1 Wedro.	500 Sashen = 1 Verst.

1 sashen = 7 English feet. 1 arsheen = 28 English inches. 100 Russian feet = 114½ English feet. The verst, or Russian mile, = 5 furlongs 12 poles. The English inch and foot are used throughout Russia, chiefly, however, in the measuring of timber.—Kelly's *Cambist*, art. *Russia*; Nelkenbrecher, *Manuel Universel*.

The following regulations for the importation of foreign goods are strictly enforced. All goods imported must be accompanied by the following documents:

1. The declaration of the captain, according to the form ordered by the custom-house.

2. An attestation from the Russian consul, and, where there is no consul, from the custom-house of the place, of the quantity and quality of the goods, and a declaration that they are not the produce, manufacture, or property of an enemy's country.

3. Bills of lading of all goods, in which the weight, measure, or quantity of each package must be specified. In case the bills of lading are not exactly after this regulation, the goods pay double duty as a fine. In case more is found than specified in the bill of lading, the surplus is confiscated; if less is found, the duty must be paid on the quantity specified. Of wine, it is not sufficient to specify the number of pipes or hogsheads only, but also their contents in gallons, etc. Of lemons, the number in each box must be specified. Of manufactured goods, the measure of each piece must be specified, and the number of pieces in each bale. It is indifferent whether the gross or the net weight be specified. If the packages be all of the same weight, measure, or contents, a general specification will do; as, for example, 100 casks alum, of 17 lispound each. Of dye-woods the weight of the whole need only be mentioned. Of goods of small bulk, as pepper, etc., it is sufficient to state the weight of every five or ten bales, but with specification of the numbers. There must not be any erasures or blots in the bill of lading. All goods not accompanied by these documents, or where the documents are not according to the above regulations, will be sent back. Bills of lading may be made out either to some house or to order.

The following charges have been fixed by the merchants of St. Petersburg:

	Per Ct.
Commission on sales and purchases	2
Extra charges on all goods	1
Commission and extra charges for goods delivered up	2
Brokerage on sales and purchases	¼
Ditto on bills	¼
Ditto on freight, per ton, 60 copecks.	
Stamps	¼
Charges on duty, paid inward	4
Ditto, paid outward	4
Commission for collecting freight, or average inward	3
Commission for procuring freight outward	2

For clearances, 40 roubles.
Dues to be paid to the Church, 10 roubles each vessel.
Clearing of ships of or under

25 lasts each	40 roubles each vessel.
25 to 50 lasts each	60 " "
50 to 75 "	80 " "
75 to 100 "	100 " "
100 to 150 "	150 " "
150 or above	200 " "

Tare on Goods exported, as fixed by the Custom-house.

Dry Goods.	Per Ct.
In barrels or chests	10
In sacks	2
In mats, or sacks made of mats	3
Except Muscovy leather, of which is deducted	5
Moist Goods.	Per Ct.
Pressed caviare	13
Soap	3
Meat and salt fish	20

Moist Goods.	Per Ct.
Tallow	10
Honey	17
Treacle	10
All other moist goods	17

Tare on Goods imported.

Dry Goods.	Per Ct.
In barrels or chests	10
In vessels of glass or earthen-ware	20
In sacks	2
In double sacks	4
In mats	8
In casks and mats together	5
In baskets	5

Moist Goods imported.—The following are some of the tares specified in the tariff:

Olive oil in casks	17	per cent.
" of Italy, in flasks and straw	20	"
" of France, in flasks and earthen-ware	40	"
Salt fish in barrels	26	"
And generally on all moist goods in barrels	17	"
in glass and earthen-ware	20	"
Miscellaneous Goods.		
Cotton twist in bales	6	per cent.
in chests and barrels	15	"
Cochineal must be weighed in the sacks after being taken from the casks; for every sack of from 4 to 7 poods	2	lbs.
sacks of from 2 to 3½ poods	1	"
Indigo in serons; every seron of from 5½ to 7 poods	34	"
" in half serons, 2½ to 4 poods	20	"
" of Guatemala	20	per cent.
" in boxes	20	"

Bills drawn in Russia, and payable after date, are allowed 10 days' grace; but if payable at sight, 3 days only. Sundays and holidays are included in both cases. The Julian calendar, or old style, is still retained throughout Russia. This is 12 days later than the new style; and in leap-years, 13 days, after the month of February.

Port Charges.—The regular charges which ships have to pay at the ports of St. Petersburg and Cronstadt comprise the following fixed dues and expenses; viz., lastage, passes, clearing at Cronstadt, address money, St. Petersburg and Cronstadt church money, Cronstadt expedition and allowance to the Russia Company's agent, for all which a charge is made in the ship's account in one sum, proportionally to the ship's register tonnage, according to the following scale: viz.,

Tons Register.	Silv. Roub.	Tons Register.	Silv. Roub.
For 61	48 0	For 322 to 341	136 0
" 62 to 81	56 0	" 342 to 361	141 14
" 82 to 101	61 14	" 362 to 381	149 14
" 102 to 121	66 28	" 382 to 401	154 0
" 122 to 141	74 0	" 402 to 421	162 0
" 142 to 161	79 14	" 422 to 441	167 14
" 162 to 181	84 28	" 442 to 461	175 14
" 182 to 201	92 0	" 462 to 481	180 0
" 202 to 221	97 14	" 482 to 501	188 0
" 222 to 241	102 29	" 502 to 521	193 14
" 242 to 261	110 28	" 522 to 541	200 84
" 262 to 281	115 14	" 542 to 561	206 0
" 282 to 301	123 14	" 562 to 581	214 0
" 302 to 321	128 28	" 582 to 600	218 86

Trade, etc.—St. Petersburg has the most extensive foreign trade of any city in the north of Europe. This arises from its being the only great maritime outlet on the Gulf of Finland, and from its vast and various communications with the interior of the country. Few countries have such an extent of internal navigation as Russia. The iron and furs of Siberia, and the teas of China, are received at St. Petersburg by rivers and canals *via* the Caspian; but owing to the great distance of those countries, and the short period of the year during which the rivers and canals are navigable, they take three years in their transit. Immense quantities of goods are also conveyed during winter upon the ice, in sledges, to the different ports, and to the nearest *pristans*, or places in the interior where barks are built for river or canal navigation. They are put on board in anticipation of the period of sailing, that the barks may be ready to take advantage of the high water, by floating down with the current as soon as the snow and ice begin to melt. The cargoes carried up the river into the interior during summer are principally conveyed to their ultimate destinations by the sledge roads during winter. The conveyance by the latter is generally the most expeditious; and it, as well as the internal conveyance by water, is performed at a very moderate expense. The barks that come from the interior are mostly of a very rude construction, flat-bottomed, and seldom drawing more than 20 or 30 inches water. When they arrive at their destination, they are sold or broken up for fire-wood. Those that leave the ports for the interior are of a superior description, and are comparatively few in number; the commodities imported being at an average, of much greater value relatively to their bulk and weight than those that are exported.

Principal Articles of Export.—The principal articles of export are tallow, hemp, and flax; grain, particularly wheat; linseed, timber, copper; hides, potashes, bristles, hemp-seed oil, furs, leather; fox, hare, and squirrel skins; canvas and coarse linen, cordage, caviare, wax, isinglass, quills, tar, etc. Tallow, both for candles and soap, is more largely exported from this than from any other port in the Baltic or elsewhere, and is an article of great commercial importance.—*See* TALLOW. Hemp is of good quality, though inferior to that of Riga: it is assorted, according to its quality, into *clean*, or firsts; *outshot*, or seconds; and *half-clean*, or thirds. The first sort should be quite clean, and free from spills; the second is less so; and the third, or *half-clean*, contains a still greater portion of spills, and is, besides, of mixed qualities and colors. Russian flax is much esteemed for the length of its fibre; it is naturally brownish, but becomes very white after the first bleaching. Three qualities are distinguished; viz., 12 head, 9 head, and 6 head. Iron of good quality, and preferable to that from the other Russian ports, is of two kinds, old and new sables, the former being the best. It used to be exported in considerable quantities; but the shipments are now much reduced.

Commerce.—The total value of the exports of St. Petersburg in 1852 amounted to nearly $30,000,000. A considerable augmentation was experienced in certain descriptions of merchandise. The quantities of wool and copper more than tripled, and of wheat and flax-seed oil more than doubled the quantities exported during the year 1850. Potashes increased 50 per cent.: on the other hand, oats decreased $\frac{8}{9}$, peltries $\frac{1}{3}$, iron $\frac{1}{4}$, tallow 25, per cent.; flax-seed, hemp, and woven goods more than 10 per cent. Sugar, tobacco, salt, wines, silk, and cotton yarns also fell much below the usual importations. An augmentation, however, was noted in the importation of fruits, rice, raw cotton, and Champagne wine.

Notwithstanding a heavy expenditure was applied by the Russian government to the improvement of St. Petersburg as the commercial emporium of Russia, still, owing to the numerous difficulties encountered, and the severity of the climate allowing but six months in the year for the continuance of these works, the result by no means realized the expectations of the government. The consequence was, that the low waters in the rivers, and the almost total absence of water in the canals, kept back the produce usually forwarded from the interior. It was not until toward the end of July that the trade of St. Petersburg exhibited any briskness. During the month of May, several British vessels arrived and cleared in ballast; but in the latter part of July and August freight offered in great abundance, although the arrivals were numerous. From this period the trade continued unusually brisk, until early in November, when the navigation closed.

Subjoined is a statement of the principal exports from St. Petersburg in 1852:

TALLOW. To England	1,861,982	poods.
Other countries	172 84	"
Total	2,057,806	"

Average price:
31 roubles 71 kopecks per berkowitz = 7¼ cents per lb., nearly.

FLAXSEED. To England	145,860	tchetwerts.
Other countries	57,834	"
Total	203,694	"

Average price, 83¼ cents per bushel, nearly.

FLAX. To England	513,780	poods.
Other countries	57,762	"
Total	571,542	"

Average price for best, 0¼ cents per pound, nearly.

HEMP—1st quality. To England	1,000,075	poods.
United States	125,280	"
Germany	80,828	"
Sweden, etc.	14,961	"
Total	1,180,994	"
" 2d quality—To England	161,017	"
Germany	27,040	"
Sweden, etc.	16,485	"
France	6,292	"
United States	3,074	"
Total	213,938	"
" 3d quality—To England	118,649	"
Germany	118,274	"
Sweden, etc.	22,521	"
United States	7,081	"
France	746	"
Total	267,271	"

Average prices, 1st quality, 5 cents per pound, nearly.
2d " 4¼ " " " "
3d " 4¼ " " " "

CLOTHS—canvas for sails:* To United States	4,914	pieces.
Germany	3,789	"
England	1,630	"
France	5	"
Total	10,398	"
" Flemish woolens: To Germany	4,030	"
United States	1,304	"
France	7	"
Total	5,341	"
" Raven's-duck: To Germany	7,871	"
United States	7,550	"
Sardinia	3,448	"
England	1,078	"
Italy	298	"
France	80	"
Total	20,925	"

Average prices:

Sail-cloth (best quality),	16 roubles per piece	=	$12 00
Flemish woolens "	9 "	" =	6 75
Raven's-duck "	6 r. 50 kop.	" =	4 87½

BRISTLES. To England	42,443	poods.
United States	8,439	"
France	7,495	"
Sweden	194	"
Other countries	62,146	"
Total	121,347	"

Average prices:

Okalka, 40 *a* 47 r. per pood = $30 *a* $35 25 per 36 pounds, or 97½ cents per pound; second quality do., 30 r. per pood = $22 50 per 36 pounds, or 62½ cents per pound.

Souchaya, 20 r. per pood = $15 00 per 36 pounds, or 41¼ cents per pound; 2d quality do., 10 r. per pood = $7 50 per 36 pounds, or 20⅝ cents per pound.

HORSE TAILS AND HAIR: To Germany	2,867	poods.
United States	2,078	"
France	1,750	"
England	1,413	"
Sweden, etc.	1,012	"
Total	9,726	"

Average price:

3 r. 50 kop. per pood = $2 62½ per 36 lbs., or 7¼ cents per lb.

ISINGLASS.† To England	2,543	poods.
Germany	1,169	"
France	761	"
Total	4,473	"

Average price:

1st quality, 140 r. per pood = $105 per 36 pounds, or $2 92 per pound, nearly; 2d quality, 100 *a* 120 r. per pood = $75 *a* $90 per 36 pounds, or $2 08½ *a* $2 50 per pound.

WOOL. To England	46,260	poods.
France	41,951	"
Germany	17,530	"
Italy	3,105	"
Total	108,857	"

Prices ranged at 9, 10, and 12 roubles per pood = $6 75, $7 50, and $9 per 36 pounds, or 18¾, 20⅝, and 25 cents per pound.

The foregoing were the principal exports from St. Petersburg in 1852, and they are given in detail, inasmuch as they constitute, together with iron, copper, timber, grains, Russian leather, quills, etc., the leading staples of this great commercial emporium.

Navigation of the Neva in 1852.—The following table exhibits the navigation of the Neva (*i. e.* of St. Petersburg and Cronstadt) in 1852:

Nationality.	Vessels.	Tonnage.	Per Centage on the Whole.
English	1150	326,448	54·22
Russian	222	62,570	10·59
Prussian	205	44,306	7·50
Dutch	365	38,915	6·58
United States	66	27,284	4·62
Swedish	123	16,862	2·85
Danish	182	16,290	2·76
French	113	13,013	2·35
Sardinian	42	11,012	1·86
Norwegian	84	9,286	1·57
Lübeck	60	7,086	1·20
Hanoverian	118	7,052	1·20
Mechlenburg	54	6,244	1·06
Oldenburg	64	5,760	·97
Bremen	10	1,608	·27
Hamburg	14	1,536	·26
Portuguese	2	272	·04
Total	....	....	100·00

It is proper to observe that the percentage is predicated upon the actual entries. Seventy-six of the vessels included in the table wintered at St. Petersburg, and do not, of course, enter into the calculation. These were:

English	21	Lübeck	6
Bremen	1	Norwegian	2
Danish	6	Prussian	3
French	1	Russian	7
Hanoverian	2	Swedish	3
Dutch	24	Total vessels	76

Aggregate tonnage..... 12,034

—C. D. For further information see *Living Age*, ii. 347; *South. Lit. Messenger*, xv. 427; *Democratic Review*, xi. 151; *British and Foreign Review*, viii. 33; BLACKWOOD'S *Magazine*, lxx. 151; *Foreign Quarterly*, xxviii. 398. For an account of the commercial policy of Russia and the general statistics of trade, *see* RUSSIA.

Saint Thomas, a Danish West India Island, Virgin group, three miles west of St. Johns. Latitude of west extremity, 18° 20′ N., long. 64° 55′ W. Area, 13 square miles. Population (1847), 12,800. Soil poor. The principal products are sugar and cotton.

The commercial intercourse of the United States with this island is dependent partly on the action of Denmark, and partly on the colonial government. The present commercial regulations are not fixed for a definite period, but may be changed at any time by the recommendation of the colonial council, approved by the Ministry and King of Denmark. There is, however, no change contemplated. By the existing laws and regulations, all nations, including the mother country, are placed on the same footing in their commercial intercourse with this island, except as to the tonnage duties on vessels entering and clearing at this port, which are: on all European vessels, 45 cents per ton; on all others, including American, 19 cents. The distinction is probably made to encourage the introduction of provisions, rather than the dry goods, fancy articles, and liquors imported from Europe. The transhipment in vessels of the United States of goods to ports in Denmark, the Danish colonies, or to a foreign port, is permitted without any privileges or restrictions not granted to or imposed on Danish vessels, or the vessels of any other nations. The moneys, weights,

* Sail-cloth is of variable length and width. The pieces of Flemish woolens are usually 50 archines long, by 1¼ wide. Raven's-duck usually the same length, but only one archine wide.

† The supply of this article was so small, and the demand so brisk, as to create the most active competition. This is usually the case.

and measures known and in common use in this island are the same as those established by the supreme law of the mother country, yet the gold and silver coins of the United States and the doubloons of Mexico are also in common use; the latter is worth $16. The notes of the "Bank of St. Thomas" (a private institution not incorporated) and the notes of the Colonial Bank, issued in $5, $10, $50, and $100, redeemable in gold and silver, according to the standard value of the currency of the United States, form also a considerable part of the colonial circulation.

The navigation between the United States and St. Thomas, as shown by Consular Returns, was: entered in 1851, 375 vessels, 71,410 tons; cleared, 366 vessels, 69,847 tons; total, 741 vessels, 141,257 tons. Entered in 1852, 368 vessels, 69,490 tons; cleared, 361 vessels, 68,451 tons; total, 829 vessels, 137,941 tons.

FOREIGN IMPORTATIONS AT ST. THOMAS, FROM APRIL 1, 1853, TO MARCH 31, 1854.

Denmark	$12,349
The Duchies	40,652
Altona and Hamburg	651,507
Bremen	7,833
Great Britain	2,321,114
Holland	30,223
France	421,720
Spain	44,865
Italy	50,406
South American States	75,891
United States of America	670,733
British possessions in North America	9,454
British West India colonies	81,884
Danish colonies	48,884
Spanish colonies	100,477
French colonies	12,250
Dutch colonies	32,389
Swedish colony	2,310
Hayti	34 131
Total	4,054,781

St. Thomas is the central station for packets in general, and for the steam communication between Southampton and the West Indies.

Sal Ammoniac. The manufacture of this salt may be traced to the remotest era. Its name is derived from Ammouia, or the temple of Jupiter Ammon, in Egypt, near to which the salt was originally made. Sal ammoniac exists ready formed in several animal products. The dung and urine of camels contain a sufficient quantity to have rendered its extraction from them a profitable Egyptian art in former times, in order to supply Europe with the article. In that part of Africa, fuel being very scarce, recourse is had to the dung of these animals, which is dried for that purpose by plastering it upon the walls.

Salep, a species of powder prepared from the dried roots of a plant of the orchis kind (*Orchis mascula*, Linn). That which is imported from India is in white oval pieces, hard, clear, and pellucid, without smell, and tasting like tragacanth. As an article of diet, it is said to be light, bland, and nutritious.—AINSLIE'S *Mat. Indica;* MILBURN'S *Oriental Commerce.*

Salmon (Ger. *Lachs, Salm;* Fr. *Saumon;* It. *Sermone, Salmone;* Sp. *Salmon;* Russ. *Lemga*). This excellent fish is too well known to require any description. It is found only in northern seas, being unknown in the Mediterranean and other warm regions. In this country it is an article of much value and importance. It is said to be exceedingly abundant in Japan and Kamtschatka.

Great Britain.—Such salmon as are taken in estuaries or rivers are, of course, the property of those to whom the estuaries or rivers belong, the fisheries in them frequently letting for very large sums; but of late very considerable quantities of salmon have been taken in boats out in the open sea, where the fishing is free to any one who chooses to engage in it. The London market, where the consumption is immense, has been since 790 principally supplied from the Scotch rivers. The Tweed fishery is the first, in point of magnitude, of any in the kingdom; the take is sometimes quite astonishing, several hundreds having been frequently taken by a single sweep of the net! Salmon are dispatched by steamers or fast-sailing vessels from the Spey, the Tay, the Tweed, and other Scotch rivers, for London, packed in ice, by which means they are preserved quite fresh. When the season is at its height, and the catch greater than can be taken off fresh, it is salted, pickled, or dried, for winter consumption at home, and for foreign markets. Formerly, such part of the Scotch salmon as was not consumed at home was pickled and kitted after being boiled, and was in this state sent up to London under the name of Newcastle salmon; but the present method of disposing of the fish has so raised its value, as to have nearly deprived all but the richer inhabitants in the environs of the fishery of the use of salmon. There are considerable fisheries in some of the Irish and English rivers, but inferior to those of Scotland. The Scotch salmon fisheries seem to have attained their maximum value toward the end of the last war, when the fisheries in the Tweed were let for from £15,000 to £18,000 a year! and those of the Tay, Dee, Spey, etc., were proportionally valuable. But the value of the Scotch salmon fisheries has, speaking generally, declined greatly of late years; in consequence, partly and principally, of a diminished supply of fish in the rivers, but in some degree, also, from the greater facility of the communication between London and Liverpool, and the consequent importation of Irish salmon into the London markets.—*General Report of Scotland*, vol. iii. p. 327.

This fishery in Canada, at the present time, is very small. In 1786, however, the export was considerable. In parts of the country where, in former years, the catch was large, a few barrels of pickled salmon only were shipped in 1848. In the Gulf of St. Lawrence there were once extensive establishments for the prosecution of this business; but some have been broken up, and others have become unprofitable. Streams that half a century ago afforded sufficient for domestic consumption, and thousands of barrels for export, now yield only hundreds of barrels, and the quantity is rapidly diminishing.

Nova Scotia.—The loyalists, who went to this colony at the peace of 1783, depended very much upon this fishery, and carried it on to advantage. The quantity of salmon exported for some years was sufficient to purchase many articles of comfort, and to save them at times from the miseries of pressing want. The salmon has entirely disappeared in some parts of the colony, and has ceased to be plentiful in all of its rivers and streams. The export of salmon caught in the colony is not large. The whole produce of the fishery in 1851 appears to have been but 1069 barrels.

Newfoundland.—The fishery is still worthy of attention, as reference to the accompanying statistics will show. The export in 1843 was even larger than in 1814.

Labrador.—Captain Henry Atkins, of Boston, who made a voyage to Davis's Straits in the ship *Whale* in 1729, and who visited the coast a second time in 1758, found salmon very abundant. In Salmon River both he and his men caught many while wading, and with their hands. They took all they had salt to cure, and one that measured four feet ten inches in length. Atkins's account, after his return, seems to have induced no attention to the fishery on the part of his townsmen. In 1831 the exports amounted to 2430 tierces of the pickled fish, of the value of $35,650.

New Brunswick.—The loyalists and other early settlers found the salmon in almost every river and stream in the colony. At present it is never seen in some, is becoming scarce in most, and is of importance as an article of export in the St. Johns alone.

The catch at Salmon Falls, in the St. Croix, thirty years ago, was two hundred in a day, on the average, for three months in a year. A person standing on a "jam of logs" caught there at one time one hundred and eighteen with a dip-net; and a boy fifteen years

old took about five hundred in a season. But such has been the decline, that it is said only two hundred were taken during the entire year of 1850 by all who engaged in the business on the river. It is stated that the dams erected across the river have produced this change in the fishery, and facts appear to sustain the position. The few salmon that now appear in the Oromocto, the Nashwaak, the Maduxnakeag, and the Mispech, as well as in Emerson's and Gardner's creeks, in Great Salmon River and Goose Creek, is attributed to the same cause. In two or three of the streams of minor size, where no obstructions exist, and where the water is not muddy, the pursuit is still attended with some success and profit.

In some other places, the fishery, but for the wanton and lawless destruction of the fish, without reference to its condition or the season of the year, might be carried on advantageously.

To the people of the city of St. Johns the annual catch of salmon is a source of gain. The fisheries of the harbor, by a provision in the city charter, belong to the citizens, or "freemen." The fishing grounds or stations are letted out, and sold at auction every year for the benefit of those who are entitled to them under the charter. The practical fishermen are the purchasers. The lots are of unequal value, and some merely nominal. The number of salmon taken at St. Johns in 1850 was estimated at 32,000, which sold, whether large or small, at the contract price of one dollar each—except a small part for city consumption—to be packed in ice and sent to Boston. Drift-nets and weirs are used in the fishery, though the former are prohibited by law. Fishermen deprecate the use of torch and spear; but both are sometimes seen in the hands of lumberers and gentlemen sporters. The salmon is found on the St. Johns, two hundred miles from the sea, and on several of its tributaries nearer to the ocean. On the Nerepis, one of its branches, on which no mill-dams have been erected, there is a fishery of note—from 1500 to 2000 being taken annually.

It will be seen that the exportation of *cured* salmon from New Brunswick ceased entirely in 1818—the whole catch, not required for consumption, having been packed in ice, and shipped fresh.

STATISTICS OF THE SALMON FISHERY.

EXPORTS FROM CANADA.

Years.	Pickled.			Smoked.
	Tierces.	Barrels.	Kits.	Number.
1783	....	...	..	304
1784	....	...	..	221
1786	1100	...	..	258
1802	348	193	47	...
1838	249	111	..	...
1843	268	120	..	...
1848	70	28	..	...

EXPORTS FROM NEWFOUNDLAND.

Years.	Pickled.	
	Tierces.	Value.
1814	2080	$48,080
1838	4408	66,750
1839	2922	58,460
1840	3396	64,635
1841	3642	61,510
1842	4715	68,340
1843	4058	61,080
1844	3753	59,745
1845	3545	63,970
1847	4976	48,910
1848	3822	....
1849	5911	....
1850*	1950	....

* From St. Johns alone.

EXPORTS FROM LABRADOR.

Year.	Pickled.	
	Tierces.	Value.
1831	2430	$25,650

CAPE BRETON, PRODUCE.

Years.	Barrels.
1847	335
1848	2.5

EXPORTS FROM NEW BRUNSWICK.

Years.	Pickled.		Smoked.	Fresh.
	Barrels.	Kits.	Number.	Number.
1819	362	....	....	....
1822	....	2271	....	....
1827	504	2092	2,655	....
1828	295	1725	2,581	....
1829	489	2721	5,795	....
1830	1776	2035	5,353	....
1831	1199	2597	4,812	....
1832	992	2947	4,837	....
1833	652	2151	3,708	....
1834	100	1965	4,596	....
1835	88	5278	9,476	....
1836	30	4650	6,964	....
1837	1843	1120	6,073	....
1838	930	8261	....	....
1839	1400	5500	10,201	....
1840	1804	2270	1,059	....
1841	1825	2653	4,853	....
1842	2870	1232	1,858	.. .
1843	2155	855	993	....
1844	2479	6119	436	....
1845	2021	1261	80	....
1846	1511	1529	20	....
1847	2426	170	2,243	....
1848	2175	....	5,460	....
1850	....	....	....	32,000*

* A proportion of the annual catch has been exported fresh for some years, but the quantity can only be conjectured.

IMPORTS AND EXPORTS, NOVA SCOTIA.

Years.	Imports.		Exports.	
	Barrels.	Tierces.	Barrels.	Tierces.
1785	....	...	2850	...
1845	4251	...	5053	...
1846	4745	...	6118	...
1847	3716	208	5586	538
1848	3219	82	2011	49
1849	....	...	5055	...
1850	....	...	6112*	340

* From Halifax alone.

—SABINES' *American Fisheries.*

Salonica, a large city and sea-port of European Turkey, at the northeast extremity of the gulf of the same name, lat. 40° 38′ 47″ N., long. 22° 57′ 13″ E. Population estimated at 60,000 to 75,000.

This city, originally called Therma, and afterward Thessalonica, is celebrated both in sacred and profane history. It was visited by St. Paul, who has addressed two of his epistles to the Thessalonians. In the days of its prosperity it had an amphitheatre, an extensive hippodrome, numerous temples and triumphal arches, the ruins of which sufficiently attest its ancient splendor.—CLARKE'S *Travels*, vii. 441–478, 8vo ed.

Being the principal emporium of Macedonia, Salonica has always had a considerable trade; and to this circumstance may be ascribed its continued and comparatively prosperous existence, notwithstanding the many vicissitudes it has undergone.

There is no port at Salonica, but there is excellent anchorage in the roads opposite to the town. The access to them is by no means difficult, and pilots are seldom employed. Vessels anchor very near the walls of the town, though it is prudent not to come too close in, owing to the number of small craft at anchor. The depth of water a cable's length from the shore varies from 3½ to 4, and at two cables' length from 7 to 8 fathoms, whence to Cape Carabourum it varies from 12 to 17 fathoms. There is very little rise. Owing to the rivers which empty themselves into the Gulf, the currents setting out are at times strong, and in light winds sufficient to impede the way of the vessel. Next to Constantinople, Salonica is the most important port of Turkey in Europe. In 1850 its maritime commerce reached upward of $3,500,000; viz., about $2,000,000 for imports, and $1,500,000 for exports.

The foreign trade of this port is chiefly engrossed by the British and French flags. The imports consist chiefly of cheap cottons and woollen cloths, and various other manufactures. Its exports are wheat, barley, maize, timber, wool, sponge, raw silk, wine, sesamum seed, tobacco, and staves. Colonial produce and manufactured goods are supplied to this port—the former

from second and third hands—by England and Austria. There is nothing to prevent the United States from participating in the trade in this species of merchandise. Neither Austria nor England could compete with this country in supplying the vast quantities of colonial produce, and the cheap white and printed cottons, which are required for consumption in this market. In addition to the supplies needed for the daily wants of 60,000 to 75,000 inhabitants, Salonica furnishes large quantities of colonial and manufactured goods for the yearly fairs of Parlepi, Ipsera, and Seres, where the sales are always made for cash. The high price of French cotton and woolen cloths will always preclude the merchants of France from successful competition in this branch of trade; and the heavy expenses attending the circuitous trade through Marseilles, Smyrna, Constantinople, Trieste, and Venice, would necessarily favor direct exportation from the United States. The prices at Salonica are always from 10 to 12 per cent. higher than at Constantinople or Smyrna.

The gross returns of trade at the port of Salonica for the year ending December 31, 1854, show a considerable increase in the import trade, viz.:

Value of imports in 1854	$3,770,235
" " in 1853	2,857,765
Increase	$912,470

But the returns exhibit a still more considerable increase in the value of the outward trade, viz.:

Value of exports in 1854	$5,492,980
" " in 1853	3,476,050
Increase	$2,016,950

This large increase, both in the inward and outward trade with the port of Salonica, may be regarded as an evidence of the improving state of the country.

The navigation returns for the same periods exhibit the following result:

Years.	Inward.	Outward.
	Tons.	Tons.
1854	113,498	111,767
1853	79,845	81,192
Decrease	33,653	30,575

British manufact's and produce imported direct	$567,375
" " " " indirect	521,350
Total imports of British manufac's and products	$1,118,725
Total exports to Great Britain	27,800
Balance, in 1854, in favor of British manufac's.	$1,090,925

A British authority, referring to this trade, says: "A demand for British cotton manufactures of all descriptions daily increases, and every year there is some new outlet of sufficient importance for the establishment of agencies in the interior by the importers at Salonica; hence the prospect of an increase of the import trade in proportion to the increasing value of the export trade. The Austrian and Saxon manufacturers have again turned their attention to this part of Turkey, and are sending larger parcels of low cotton goods."

The above extract is worthy the attention of those engaged in trade with Turkish ports.

Exports.—Owing mainly to the Hellenic invasion, considerable delay was occasioned in getting in the crops in 1854, and, consequently, the supply of grain at Salonica was not equal to the demand. Little was done in wools and cottons, the prices having averaged too high a rate for European markets. The trade in silk was considerable; but, owing to the rise in the price for labor and fire-wood, several of the silk factors preferred sending the silk-pods to France and to the Italian ports, to drawing the raw silk at Salonica.—*U. S. Com. Relations.*

Salt (Ger. *Salz*; Du. *Zout*; Fr. *Sel*; It. *Sale*; Sp. *Sal*; Russ. *Sol*; Lat. *Sal*; Arab. *Melh*; Chin. *Yen*; Hind. *Nimmuck*; Per. *Nun*), the *chlorid of sodium* of modern chemists, has been known and in common use as a seasoner and preserver of food from the earliest ages. Immense masses of it are found in this and many other countries, which require only to be dug out and reduced to powder. In that state it is called rock-salt. The water of the ocean also contains a great deal of salt; to which, indeed, it owes its taste, and the power which it possesses of resisting freezing till cooled down to 28°·5. When this water is sufficiently evaporated, the salt precipitates in crystals. This is the common process by which it is obtained in many countries. There are various processes by which it may be obtained quite pure. Common salt usually crystallizes in cubes. Its taste is universally known, and is what is strictly denominated *salt*. Its specific gravity is 2·125. It is soluble in 3·82 times its weight of cold water, and in 2·76 times its weight of boiling water.—THOMSON'S *Chemistry*.

Besides its vast utility in seasoning food, and preserving meat both for domestic consumption and during the longest voyages, and in furnishing muriatic acid and soda, salt forms a glaze for coarse pottery, by being thrown into the oven where it is baked; it improves the whiteness and clearness of glass; it gives hardness to soap; in melting metals it preserves their surface from calcination, by defending them from the air, and is employed with advantage in some assays; it is used as a mordant, and for improving certain colors; and enters more or less into many other processes of the arts. Many contradictory statements have been made as to the use of salt as a manure. Probably it may be advantageous in some situations, and not in others.

Salt Mines, Springs, etc.—The principal salt-mines are at Wielitska in Poland, Catalonia in Spain, Altemonte in Calabria, Loowar in Hungary, in many places in Asia and Africa, and in Cheshire in England. The mines at Wielitska are upon a very large scale; but the statements that have frequently been published, of their containing villages inhabited by colonies of miners who never saw the light, are altogether without foundation. These mines have been wrought for more than 600 years.—COXE'S *Travels in the North of Europe*, vol. i. 149, 8vo ed.

The salt-mines in the neighborhood of Northwich, in Cheshire, England, are very extensive. They have been wrought since 1670; and the quantity of salt obtained from them is greater, probably, than is obtained from any other salt-mines in the world. In its solid form, when dug from the mine, Cheshire salt is not sufficiently pure for use. To purify it, it is dissolved in sea-water, from which it is afterward separated by evaporation and crystallization. The greater part of this salt is exported. Salt springs are met with in several countries. Those in Cheshire and Worcestershire furnish a large proportion of the salt made use of in Great Britain. The brine, being pumped up from very deep wells, is evaporated in wrought-iron pans from 20 to 30 feet square and 10 or 12 inches deep, placed over a furnace. Most of the salt used in Scotland, previous to the repeal of the duty, was obtained by the evaporation of sea-water nearly in the way now mentioned; but most part of the Scotch salt-works have since been relinquished.

In warm countries, salt is obtained by the evaporation of sea-water by the heat of the sun; and the crystals of salt made in this way are more perfect and purer, from the greater slowness of the process. French salt is manufactured in this mode, and it has always been in considerable demand.

Duties on Salt.—In ancient Rome, salt was subjected to a duty (*vectigal salinarum*; *see* BURMAN, *Dissertatio de Vectigalibus Pop. Rom.* c. 6); and it has been heavily taxed in most modern states. The *gabelle*, or code of salt laws, formerly established in France, was most oppressive. From 4000 to 5000 persons are calculated to have been sent annually to prison and the galleys for offenses connected with these laws, the severity of which had no inconsiderable share in bringing about the Revolution.—YOUNG'S *Travels in France*, vol. i. p. 598. In England duties upon salt were imposed in the reign of

William III. In 1798 they amounted to 5*s.* a bushel; but were subsequently increased to 15*s.* a bushel, or about *thirty times* the cost of the salt! So exorbitant a duty was productive of the worst effects; and occasioned, by its magnitude, and the regulations for allowing salt duty free to the fisheries a vast deal of smuggling. The opinion of the public and of the House of Commons having been strongly pronounced against the tax, it was finally repealed in 1823.

The duty on salt imported into the United States is 15 per cent. by the act of March 3, 1857.

United States.—The following comprehensive account of the manufacture and consumption of salt in this country was written in answer to a request for the statistical information it contains, for the use of a committee of the British Parliament. Its author is a prominent salt merchant of New York, and thoroughly conversant with the subject:

New York, *April* 28, 1857.

Dear Sir,—I have received your letter of the 20th instant, in which you solicit information respecting the manufacture of salt, the quantity made in the United States at each of the works, the rate of freight to the principal ports, the toll paid on domestic and also on foreign salt on our State canals, etc.

The interest I feel in the salt trade of this country prompts me to take some pains to give you the required information. Yet the short time I have had since the receipt of your letter precludes me from answering your several inquiries with perfect satisfaction to myself in regard to their accuracy.

I will, however, venture to give you the following statistics, which, from the best information I have been able to obtain, I believe to be mainly correct:

Estimated Quantity of Salt manufactured in the United States per Annum.

	Bushels.
In the State of Massachusetts (mostly in vats built along the sea-shore)	46,000
In the State of New York (Onondaga County), about	6,000,000
In the State of Pennsylvania (Alleghany and Kiskiminetas Rivers)	900,000
In the State of Virginia (Kanawha and Kings Works)	3,500,000
In the State of Kentucky (Goose Creek)	250,000
In the State of Ohio (Muskingum, Hocking River)	500,000
In the State of Ohio (Pomeroy and West Columbia)	1,000,000
In the State of Illinois	50,000
In the State of Michigan	10,000
In the State of Texas	20,000
In the State of Florida	100,000
Total	12,376,000

There are salt lakes in the United States territories—one in the southwesterly part of Texas and one or more in Utah—where salt of good quality is found in great abundance. Nearly all of the salt manufactured in the United States is made by boiling, excepting what is made in Massachusetts, Florida, and the Solar Works at Onondaga. The amount of salt manufactured at the Solar Works of Onondaga in 1856 was 709,391 bushels. The amount of salt manufactured in kettles in Onondaga in 1856 was 5,258,419 bushels. When the works (at Onondaga) are generally running, they require 3,000,000 gallons of brine daily, and the supply is not less than 2,000,000 gallons per day for six months. The annual report of V. W. Smith, Esq., the State Superintendent of the Onondaga salt springs, which I herewith hand you, furnishes valuable information in regard to the manufacture of salt, the saline deposits within our State, and such other general information pertaining to this necessary article of animal subsistence, as to render it one of the most accurate and interesting public documents published in our country.

The wells in the Virginia salt springs are about 900 feet deep. The wells at Pomeroy and West Columbia are from 1000 to 1200 feet deep. The estimated quantity of foreign salt consumed in the United States and territories is about 13,500,000 bushels per annum. The amount of salt consumed in the United States (for various uses) is about sixty pounds to each inhabitant. The consumption in France is estimated at 21½ pounds; in Great Britain at 25 pounds for each inhabitant. The cost of manufacturing salt by boiling in Onondaga, as per estimate, during five consecutive years, averages about $1 per barrel of 280 pounds. The freight charged on our canals on domestic salt, in barrels of 280 pounds each, from Onondaga to Buffalo, 198 miles, is about 15 cents per barrel over the toll paid to the State, which is one mill on 1000 pounds per mile in the canals. To Oswego, 35 miles, the freight is about six cents per barrel over the toll.

The freight on foreign and domestic salt from Albany to Buffalo, 364 miles, is about $3 per ton (of 2000 pounds) over the toll. Freight from Albany to Oswego, about 209 miles, is $2 per ton over toll. The freight from New York city to Oswego and Buffalo *via* Albany is precisely the same as though shipped at Albany, although 148 miles farther.

The toll on foreign salt on our State canals is five mills on 1000 pounds per mile. The freight on a barrel of salt from Oswego to the principal ports on Lake Erie (average distance about 450 miles) is 12 cents per barrel. The freight to the principal ports on Lake Michigan, distance about 1000 miles, is 25 cents per barrel. The freight from ports on Lake Erie (say Cleveland and Toledo) to the Ohio River and Cincinnati is 50 cents per barrel. The freight from Chicago to the Mississippi River and St. Louis is 50 cents per barrel. The minimum price of salt at the Onondaga works in 1849, '50, and '51 was from 70 to 90 cents per barrel; in 1852, $1 per barrel; in 1853, $1 12; in 1854, $1 25; in 1855, $1 30; and in 1856, $1 40 per barrel. The solar salt costs about the same price to manufacturers as boiled salt. The solar salt weighs about 70 pounds to the bushel (measure). The boiled salt weighs about 56 pounds to the bushel, varying, however, according to the [illegible]on of the kettles, to a weight considerably above [illegible]se considerably below this standard. The duty paid to the State of New York on salt manufactured at Onondaga is always reckoned on 56 pounds (the statute bushel), and covers the expense incurred by the State for pumping up the water and delivering it to the premises of the manufacturers.

A salt block at Onondaga, of the largest size, is made of brick about 12 to 15 feet wide, four to five feet high, and forming two parallel arches, extending the whole length of the block. Over and within the top of these arches are placed common cast-iron kettles, holding about 50 to 70 gallons of brine, placed close together in two rows the whole length of the arches. A fire built in the mouth of the arches passes under each kettle into a chimney, built generally 50 to 150 feet high, averaging from 50 to 70 kettles in each block. A single block with one row of kettles is about half of this width. The quantity of salt made in one of these double blocks in the year (say eight months) averages 20,000 to 25,000 bushels of 56 pounds. The cost of a bushel of salt produced at Kanawha is about 17½ cents. The price of freight on a sack of Liverpool salt from New Orleans to Louisville averages about 35 cents per sack. A good portion of the coarse, hard salt imported into the United States from the most southerly islands of the West India group is kiln-dried, cleansed, ground very fine, and put in small packages for culinary or dairy use. The amount of coarse and fine salt imported into the United States from foreign countries for the year ending June 30, 1856, was 15,465,864 bushels. The amount of domestic salt exported during the year ending June 30, 1856, was 698,458 bushels. The amount of foreign salt exported during the year ending June 30, 1856, was 126,427 bushels.

Yours, truly, Samuel Hotaling.

Patents were issued by the United States Patent Office in 1856—1. For improvement in apparatus for evaporating salt. 2. Improvement in apparatus for solar salt evaporation. 3. Improvement in salt evaporators.

STATISTICS OF THE SALT MANUFACTURES IN THE UNITED STATES FOR THE YEAR ENDING JUNE 1, 1850.

States.	Number	Capital.	Raw Material.	Hands employed.		Average yearly Wages paid.		Annual Product in Bushels.	Value.
				Male.	Female.	Male.	Female.		
Connecticut	1	$4,000	$4,000	1	1	$360	$144	40,000	$5,000
Florida	1	19,000	....	6	2	1,440	288	....	6,000
Illinois	1	2,500	2,000	3	..	720	....	20,000	6,000
Kentucky	12	121,450	17,050	153	9	16,896	432	246,500	37,825
Maine	3	3,100	7,225	4	..	1,080	....	....	9,700
Massachusetts	9	40,400	60,000	29	7	8,088	1092	....	93,850
New York	192	819,950	631,955	873	..	299,376	....	4,500,000	998,315
Ohio	32	188,750	35,633	167	..	42,036	....	550,350	132,293
Pennsylvania	47	168,260	57,189	219	..	55,020	....	919,100	206,736
Texas	2	3,475	1,750	15	1	2,280	72	8,000	5,000
Virginia	40	1,269,900	234,623	1230	67	317,136	7761	3,479,890	760,466
Total	340	$2,640,885	$1,051,425	2699	87	$744,132	$9792	9,705,840	$2,232,715

EXPORTS OF DOMESTIC SALT FROM THE UNITED STATES.

To	Year ending June 30,					
	1853		1854.		1855.	
	Bushels.	Value.	Bushels.	Value.	Bushels.	Value.
Canada	508,285	$115,666	530,560	$152,871	529,003	$152,516
Other places	7,572	4,063	17,625	6,155	7,070	3,563
Total	515,857	$119,729	548,185	$159,026	536,073	$156,079

IMPORTS OF SALT INTO THE UNITED STATES IN THE YEARS 1853, 1854, 1855.

From	Year ending June 30,					
	1853		1854.		1855	
	Bushels.	Value.	Bush. s.	Value.	Bushels.	Value
England	6,013,204	$778,772	7,980,979	$1,006,192	8,884,219	$1,206,268
British West Indies	1,734,864	179,796	1,863,166	207,545	1,187,775	274,386
Other places	1,718,913	169,924	1,214,231	103,398	2,854 210	239,326
Total	10,066,981	$1,059,452	10,158,376	$1,310,935	12,926,234	$1 718,980

EXPORTS OF SALT OF DOMESTIC PRODUCTION FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Bushels.	Value.
Asiatic Russia	912	$91
Danish West Indies	1,301	652
Canada	569,574	171,006
Other British N. American Poss.	9,454	2,249
British West Indies	410	215
British Australia	12,000	4,950
French Guiana	7	4
Cuba	30,050	8,591
New Granada	125	50
Chili	6,900	1,568
Sandwich Islands	5,625	1,323
Total	576,151	$190,699

IMPORTS OF SALT INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whence imported.	Bushels.	Value.
Danish West Indies	2,624	$554
Bremen	70	15
Dutch West Indies	174,862	31,790
England	12,890,868	1,564 854
Ireland	74.955	7,748
Malta	14.562	1,586
Canada	191,298	36,909
Other British N. Amer. Poss.	9,504	1,806
British West Indies	1,033,601	153,969
British Honduras	1,040	271
British Guiana	6,422	1,022
France on the Atlantic	14 180	2,758
France on the Mediterranean	131,914	10,053
French West Indies	40,126	2,968
Spain on the Atlantic	1,004,714	79,841
Spain on the Mediterranean	554,927	23,965
Porto Rico	1,368	241
Portugal	93,143	14,017
Cape de Verd Islands	18.925	1.4 5
Azores	5,700	918
Sardinia	183,559	17,076
Two Sicilies	773,602	55,188
Ports in Africa	23,800	1,068
Mexico	76,770	15,319
Venezuela	5 537	1,279
Sandwich Islands	10,356	4,732
China	26,207	1,871
Total	17,165,704	$2,032,583

The whole amount of salt inspected on the Onondaga salt springs during the year 1856 was 5,968,810 bushels. This is about 120,000 bushels short of the inspection of 1855, but exceeds, however, that of any previous year, being 160,000 more bushels than were returned in 1854. In the ordinary course of events, considering the increase of population in the Western markets for Onondaga salt, and the additional facilities of transportation constantly brought into use, the inspection for 1856, according to the official Reports, ought to have reached 6,500,000 bushels. The two principal causes producing the deficiency may be found in a more stringent state of the money market during the whole season, and in the enhancement of the price of salt at the works—$1 40 per barrel in 1856 against $1 30 in 1855. The amount of salt actually manufactured in 1856, and either sold and shipped or remaining in original hands, is considerably in excess of the manufacture of any former year. The inspection indicates very accurately the amount of sales, as no more is inspected during the manufacturing season than what is required to fill orders. The arrivals of Onondaga salt at Oswego in 1856 were 3,483,987 bushels, against 3,039,593 in 1855—an increase of 444,394 bushels. The arrivals at Buffalo in 1856 were 1,081,767 bushels, against 1,947,938 in 1855—a decrease of 866,171 bushels. The arrivals at all the lake ports in 1856, compared with those in 1855, show a decrease of 241,778 bushels.

Saltpetre, or **Nitrate of Potash** (Ger. *Saltpeter*; Fr. *Nitre, Salpetre*; It. *Nitro, Salnitro*; Sp. *Nitro, Salitre*; Russ. *Senitra*; Lat. *Nitrum*; Arab. *Uhlir*; Hind. *Shoreh*), a salt well known in commerce, and of great importance. It may be regarded both as a natural and an artificial production; being found on the surface of the soil in many parts of India, Egypt, Italy, etc.; but in these and other places all that is known in commerce is obtained by an artificial process, or by lixiviating earth that has been formed into *nitre* beds. The saltpetre consumed in England is brought from Bengal in an impure state, but crystallized, in bags, each containing 164 lbs. Saltpetre forms the principal ingredient in the manufacture of gunpowder, and is used in various arts. It is also of great utility in the commerce of India, from its furnishing a large amount of dead weight for the shipping engaged in it. Saltpetre possesses considerable antiseptic power. That which is of the best quality and well refined is in long, transparent crystals; its taste is sharp, bitterish, and cooling; it flames much when thrown upon burning coals; it is very brittle; specific gravity, 1·933. It is not altered by exposure to the air.

Beckmann contends, in a long and elaborate dissertation (*Hist. of Invent.*), that the ancients were unacquainted with saltpetre, and that their *nitrum* was really an alkaline salt. But as saltpetre is produced

naturally in considerable quantities in Egypt, it is difficult to suppose that they could be entirely ignorant of it, though it would appear that they had confounded it with other things. It has been known in the East from a very early period. Beckmann concurs in opinion with those who believe that gunpowder was invented in India, and brought by the Saracens from Africa to the Europeans, who improved its manufacture, and made it available for warlike purposes.

The Mammoth Cave in Kentucky was used as a place for the manufacture of saltpetre during the war of 1812. The soil in the cave is thoroughly impregnated with saltpetre; but in consequence of the difficulty of transportation, the manufacture has been abandoned.

IMPORTS OF SALTPETRE INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whence imported.	Crude.		Refined, or partly refined.	
	Pounds.	Value.	Pounds.	Value.
England	594,041	$46,660	3116	$190
British East Indies	23,933,708	1,068,207	....	..
France on the Atlantic	149,460	5,992	1326	147
New Granada	....	....	427	25
Brazil	61,308	4,170	....	..
Chili	1,475,920	31,425	....	..
Total	26,314,437	$1,156,463	4869	$362

Of this amount there was re-exported the following quantity. There were no exports of saltpetre of domestic production.

FOREIGN EXPORTS OF SALTPETRE FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Crude.		Refined.	
	Pounds.	Value.	Pounds	Value.
Hamburg	4,350,000	$69,233	394,670	$27,628
England	3,763,000	296,588	1,331,588	99,275
Other places	656,008	46,948	105,683	4,802
Total	5,769,008	$412,769	1,831,941	$131,705

Salvage, as the term is now understood, is an allowance or compensation made to those by whose exertions ships or goods have been saved from the dangers of the seas, fire, pirates, or enemies.

The propriety and justice of making such an allowance must be obvious to every one. It was allowed by the laws of Rhodes, Oleron, and Wisby; and in this respect they have been followed by all modern maritime states. At common law, the party who has saved the goods of another from loss or any imminent peril has a *lien* upon them, and may retain them in his possession till payment of a reasonable salvage.

Salvage upon Losses by Perils of the Sea.—In fixing the rate of salvage, regard is usually had, not only to the labor and peril incurred by the salvors, but also to the situation in which they may happen to stand in respect of the property saved, to the promptitude and alacrity manifested by them, and to the value of the ship and cargo, as well as the degree of danger from which they were rescued. Sometimes as large a proportion as *a half* of the property saved has been allowed as salvage; and in others not more than *a tenth*.

Parties entitled to salvage are all those who have contributed to the safety, either by personal exertions or by summary sacrifice, provided it did not fall within the course of their regular duty to make the exertions or sacrifice. Thus neither the master nor seamen of the ship in danger have any title to it; nor have any passengers for any ordinary assistance they may give; but it is not the duty of passengers to remain on board in time of danger, nor to incur any responsibility by undertaking the management of the ship; and if by doing the one or the other they contribute to the safety of the ship, they may be entitled to salvage.

If, before the service is rendered, a bargain is made for the amount to be paid for the assistance, this amount settles the claim for salvage; so if two ships sail as consorts, as is customary with whaling ships, on the terms of rendering each other mutual assistance, neither can claim salvage for assistance rendered to the other.

All the officers and crew of a British ship are under obligations to assist ships in distress; they are, nevertheless, to receive salvage for their services, subject to the conditions expressed in the British statutes. The owners, also, of a ship which has saved another are, besides being remunerated for stores or other matters contributed, or injury done to their ship, entitled to salvage for the detention of their ship, the risk of vacating their insurance, etc.—*See* SHIPPING.

The salvage is to be paid by those who would have borne the loss had there been no assistance, in the proportion to the benefit they have received. If the ship was in the course of earning freight, the freight must contribute. The wearing apparel, etc., of the master and crew are not liable for salvage.

The subject of salvage was largely discussed in our courts in a case of recapture. The District Court of New York allowed as salvage one half the value of the ship. The Circuit Court reversed the decree, and denied all salvage. The Supreme Court of the United States corrected both decrees, and allowed one sixth part of the net value, after deducting the charges. The court in that case admitted the rule to be, that a neutral vessel, captured by a belligerent, was entitled to be discharged without paying salvage, on the ground that no beneficial service was thereby rendered, as the neutral, acting properly, would of course be discharged by the courts of the sovereign of the captor; and they admitted likewise the exception to the rule when belligerent captors and courts were notorious for their unprincipled rapacity. This rule and the exception have been frequently declared in the English admiralty. The rule of British jurisprudence in respect to recaptured property of British subjects to allies, until it appears that they act upon a less liberal principle, and then the allies are treated according to their own measure of justice. The same rule has been adopted by statute in this country, and is founded on the immovable basis of reciprocal justice. Though the contract of seamen be not dissolved by shipwreck, and it be their duty to remain and labor to preserve the wreck and fragments of the ship and cargo, yet they may be entitled to recompense, by way of salvage, for their peculiar services. The wages recovered in the case of shipwreck are in the nature of salvage, and form a lien on the property saved. The character of seamen creates no incapacity to assume that of salvors; and were it otherwise, it would be mischievous to the interests of commerce, inconsistent with natural equity, and would be tempting the unfortunate mariner to obtain by plunder and embezzlement, in a common calamity, what he ought to possess upon principles of justice. The allowance of salvage in such cases is and ought to be liberal; not less, in any case, than the wages would have amounted to; and even an additional recompense should be made in cases of extraordinary danger and distinguished gallantry, when the service was much enhanced by the preservation of life, and the great value of the property at stake.—KENT'S *Commentaries*, vol. iii.—*See* INSURANCE.

Sample, a small quantity of a commodity exhibited at public or private sales, as a specimen. Sugars, wool, spirits, wine, coffee, and indeed most species of merchandise, are sold by sample. If an article be not, at an average, equal to the sample by which it is sold, the buyer may cancel the contract, and return the article to the seller.

Sandal-wood, the wood of a tree (*Santalum album*, Linn.) having somewhat the appearance of a large myrtle. It is of a deep yellow color, and yields an agreeable perfume. The tree, when cut down, is usually about nine inches in diameter at the root, but sometimes considerably more. After being felled, it is barked, cut into billets, and buried in a dry place for about a couple of months, during which time the white ants eat off the outer wood, without touching the heart, which is the sandal. It is then taken up and sorted, according to the size of the billets. The deeper the

color, and the nearer the root, the higher is the perfume. Reject such pieces as are of a pale color, small, decayed, or have white wood about them; and take especial care that it be not mixed with wood resembling sandal, but without its perfume. — MILBURN'S *Orient. Commerce.*

Sandal-wood is extensively employed by the Hindoos as a perfume in their funeral cerem[illegible]. But the Chinese are its principal consumers. [illegible] manufacture it into fans, and small articles of furniture, and use it, when ground into powder, as a cosmetic. During the year ending the 31st of December, 1848, there were imported by British vessels into Canton 20,732 piculs of sandal-wood, valued at $207,400; and the imports in some years are more than twice this amount. The average importation into Calcutta is about 200 tons a year. It grows principally in Malabar, in the mountainous country at a little distance from the low sea-coast; in Timor; and in the Fejee Islands in the South Sea. Calcutta is principally supplied from Malabar, while China derives the larger portion of her supplies from Timor and the other islands. It is seldom brought to Europe, except by individuals for their own use, or as presents for their friends.—BELL'S *External Comm. of Bengal;* CRAWFURD'S *Indian Archipelago.*

Sandals, a species of slippers worn by the ancient Jews, Greeks, and Romans. They consisted of a sole with a hollow part at one extreme, to embrace the ankle and leave the upper part of the foot bare. Originally sandals were made of leather; but they afterward became articles of great luxury, being made of gold, silver, or other precious stuff, and most beautifully ornamented.

Sandarach, a resinous substance, commonly met with in loose granules a little larger than a pea, of a whitish yellow color, brittle, inflammable, of a resinous smell, and acrid, aromatic taste. It exudes, it is said, in warm climates, from cracks and incisions in the common juniper bush. It is used as a varnish, dissolved in spirits of wine.—AINSLIE'S *Mat. Indica.*

San Domingo. The old Spanish part of the island of San Domingo, or the Dominican Republic, embraces the territory as settled by the treaty of limits between Spain and France in 1777. According to those limits, its area would comprise about two-thirds of the whole island, or over 18,000 square miles. The population of the republic reaches about 126,500 souls, composed of Spaniards, creoles, and blacks. The population, however, is stated by some authorities to exceed 250,000; but this is probably too large. The natural productions of the republic are all kinds of valuable wood, copper, iron, salt, coal, etc. Its soil is very fertile, but its climate is unhealthy, and at certain seasons exceedingly fatal to foreigners. The chief staples of the republic are mahogany, lignum-vitæ, dye-woods, tobacco, honey, and hides. The imports from the United States consist of assorted cargoes, flour, etc.; but most usually our vessels enter the ports of the republic in ballast.

The tariff of duties is based upon a fixed value assigned to each class of merchandise, on which a duty of 25 per cent. is levied. The general scope of these duties may be illustrated by selecting from the latest tariff the article of flour. The tariff valuation of this article is $5 per barrel of from 175 to 200 lbs.; the duty on which, at 25 per cent., would be $1 25. These duties are permanent (so long as the tariff continues unaltered), and are in no manner dependent on the fluctuation of prices. The tonnage duty on American vessels is $1 per ton in port, and 50 cents per ton for the coast, being 50 per cent. more than is charged on the vessels of such nations as have recognized the independence of the republic, or have entered into treaties with its government. The effect of this, as well as of other discriminations against the American flag, has been to give to the flags of treaty nations, especially to that of Great Britain, a large share of the carrying trade between the United States and the Dominican Republic. In 1854 a treaty of amity, commerce, and navigation was agreed upon and executed by plenipotentiaries of the two governments duly appointed for that purpose; but, objections being made to some of its stipulations by the Dominican Legislature, it was not confirmed. An amendment, defining the rights of Dominican citizens in the United States, was proposed, to which the commissioner of the United States objected, and thus the matter is understood to stand at the present time. The following tabular statements exhibit the trade and navigation of the Dominican Republic during a period of four years, ending with 1852, together with an analysis of the trade and navigation of each of the ports, San Domingo and Porto Plata, during the year last designated:

TRADE AND NAVIGATION OF THE DOMINICAN REPUBLIC.

Years.	Vessels entered.	Tons.	Vessels cleared.	Tons.	Imports.	Exports.
1849.....	248	20,082	216	16,139	$268,900	$637,360
1850.....	272	22,403	268	20,290	762,370	1,047,035
1851.....	270	24,449	261	21,776	1,189,470	1,234,285
1852.....	324	30,055	298	29,914	1,212,840	1,020,660

STATEMENT EXHIBITING THE SHARE ASSIGNED TO EACH OF THE TWO PORTS OF SAN DOMINGO AND PORTO PLATA IN THE ABOVE GENERAL TABLE.

ARRIVALS.

Years.	Port of San Domingo.			Porto Plata		
	No. of Vessels.	Tonnage.	Values.	No. of Vessels.	Tonnage.	Values.
1849	130	12,428	$140,885	118	7,654	$120,075
1850....	147	15,273	430,980	125	7,130	331,690
1851....	128	14,272	582,780	151	10,177	606,690
1852....	162	19,375	662,685	102	10,680	540,655

DEPARTURES.

Years	Port of San Domingo.			Porto Plata		
	No of Vessels.	Tonnage.	Values.	No of Vessels.	Tonnage.	Values.
184[illegible]....	115	9,863	$270,625	101	6,276	$366,735
1850....	148	16,447	524,185	120	6,843	522,870
1851....	119	12,912	394,965	142	8,864	839,320
1852....	140	18,408	705,285	158	11,440	945,375

FOREIGN TRADE OF SAN DOMINGO, 1852.

Nationality.	Arrivals.			Departures.		
	No. of Vessels.	Tonnage.	Invoice values of Cargoes.	No. of Vessels.	Tonnage.	Invoice values of Cargoes.
British.....	38	5,375	$78,840	38	5,375	$321,925
Dominican ..	27	767	195,000	6	359	3,250
French.....	30	5,727	25,705	30	5,660	180,300
Danish.....	20	1,633	201,500	18	1,713	49,510
Dutch	20	1,168	53,450	24	1,320	40,400
American ...	15	2,266	65,300	14	2,050	57,000
Italian.....	1	1,000	18,300	3	655	18,450
Hamburg ...	2	352	5,950	2	352	10,000
Prussian	2	536	20,855	2	536	13,710
Venezuelan .	2	90	845	1	22	350
Spanish.....	1	134	50	1	134	2,390
Swedish.....	1	312	....	1	312	8,000
Total	162	19,375	$662,685	140	18,468	$705,285

FOREIGN TRADE OF PORTO PLATA, 1852.

Nationality.	Arrivals.			Departures.		
	No. of Vessels.	Tonnage.	Invoice values of Cargoes.	No. of Vessels.	Tonnage.	Invoice values of Cargoes.
British.....	82	8,247	$129,510	80	8,140	$119,610
Danish	24	1,805	166,210	24	1,999	156,125
Bremen.....	9	1,564	119,000	11	2,032	306,435
American ...	8	1,121	31,500	11	1,448	41,145
Dutch	8	744	27,150	6	513	17,425
Hamburg ...	7	1,099	26,150	6	826	108,600
Oldenburg ..	2	1.	40,000	3	316	54,425
Sardinian ...	1	267	45,000	2	458	25,500
Hanoverian .	1	78	....	1	78	19,500
Swedish.....	1	198	5,000	2	447	65,375
French.....	1	148	....	1	148	20,850
Portuguese ..	1	149	....	..	..	....
Spanish.....	1	45	....	1	45	....
Dominican ..	16	141	385	10	86	475
Total	162	10,080	$589,955	158	11,44	$916,475

The following is a summary of the trade between the United States and the port of San Domingo during the last six months of 1854, viz.:

Number of vessels entered and cleared 28, with an

aggregate of 2520 tons; of these, four entered in ballast, and ten with assorted cargoes. The homeward cargoes consisted of mahogany, lignum-vitæ, hides, and honey, and amounted in value to $26,270. During the same period there entered six vessels under British colors, measuring in all 518 tons: one French vessel of 139 tons; one Danish of 125 tons, and one Dominican of 68 tons; total number of foreign vessels (exclusive of American) nine, with an aggregate tonnage of 850 tons. During the first six months of 1855 there entered and cleared 40 vessels from the United States (under the American flag), measuring in the aggregate 3375 tons; of these, 13 entered in ballast, and 7 with assorted cargoes, including one laden in part with flour. Value of cargoes, inward, $27,650; value of cargoes, homeward, $44,664. Homeward cargoes consisted of mahogany, lignum-vitæ, satin-wood, fustic, hides, and honey.

The commerce of San Domingo with the United States for the year 1857 was as follows:

Exports to San Domingo	$44,349
Imports from San Domingo	109,874
Tonnage cleared from United States—American	1920
" " " Foreign	918
Total	2838

The latest revision of the Dominican tariff bears date 18th June, 1853. The valuation of several articles, including domestic cottons, boys' shoes, etc., has been reduced; while in a few others, including women's shoes, there is an increase—on the latter article from $7 to $8 per dozen, which will raise the duty from $1 75 to $2 per dozen. The financial and political difficulties now experienced in the Dominican Republic can hardly fail to be felt in the general movements of its foreign commerce.

The reader is referred to the *article* HAYTI for the comparative statement of the commerce of the United States with the island of San Domingo—embracing the empire of Hayti and the Dominican Republic—exhibiting the value of exports to and imports from each country, and the tonnage of American and foreign vessels arriving from and departing to each country, during the years designated.

A Dominican vessel arriving in the United States from a port in the Dominican Republic is liable to a tonnage duty of $1 per ton, that being the duty imposed on the tonnage of vessels of the United States arriving in said republic; but the cargo is not liable to a discriminating duty of 10 per cent., no such duty being levied by the Dominican Republic on the cargoes of United States vessels arriving in the ports of that republic. — *See* HAYTI. For Political Relations of England with San Domingo, *see* FRASER'S *Mag.* xlii. 133; same article, *Living Age*, xxvii. 126; *Edinburgh Review*, xvii. 372.

Sandwich Islands. A group of eleven islands in the Pacific Ocean. They were discovered by Captain Cook in 1778. Many voyagers report that the natural capacity of the natives seems in no respect below the common standard of mankind. It was in one of these islands that this illustrious circumnavigator fell a victim to the sudden resentment of the natives, Feb. 14, 1779. Tamehameha, chief of Hawaii, becomes king of the group, 1800. Rihoriho, his son, succeeds him, 1819. Idolatry abolished, 1819. Rihoriho and his queen died in England, 1824. Kanikeaouli, 20 years of age, king, 1824. Mission established by the American Board, 1820. In 1832 there were 900 schools and 50,000 pupils in the islands. Treaty with the French, made with admiral Dupetit-Thouars, 1837. Another, enforcing the introduction of Catholic missionaries, etc., 1839. Tamehamcha III. becomes king, Dr. G. P. Judd, an American, prime minister. In 1831 there were 14 ships, 2630 tons, belonging to the islands—which are important to the United States as a whaling station.

This remote but interesting group is situated in the midst of the Pacific Ocean, in about lat. 21° N., and long. 157° W. It comprises eight inhabited and four uninhabited islands, Owhyhee, where Captain Cook was killed, being the most considerable. They are of volcanic formation, and mountainous, some of the peaks rising in Owhyhee to between 13,000 and 14,000 feet in height! The population in 1847 is said to have amounted to above 112,000, of which nearly 40,000 belonged to Owhyhee. But it is a curious fact that the native population has been rapidly decreasing for some years past, and does not now probably exceed a third part of its amount at the epoch of their discovery. The islanders are honorably distinguished among the Polynesian nations by the advances they have made in civilization; and particularly by their progress in manufactures, navigation, and commerce. Christianity was introduced by the American missionaries in 1820, and is now the religion of the state; schools have been established, churches have been built, and the forms of religion are pretty well observed. European usages have become fashionable; and the costume of the better classes, women as well as men, closely resembles that of the Americans.

The following table exhibits the population of the principal islands, according to the census of December, 1853:

Islands.	Natives.	Foreigners	Total
Hawaii	24,193	259	24,452
Maui	17,420	244	17,664
Molokai	3,565	42	3,607
Lanai	509	....	509
Oahu	17,815	1311	19,126
Kauai	6,726	264	6,990
Niihau	796	....	790
Total	71,108	2120	73,228

The staple exports of the islands are: Sugar, molasses, sirup, coffee, goat-skins, sweet potatoes, wool, hides, salt, tallow, beef, pulu,* and arrow-root. Agriculture has made but little progress, and will never, probably, occupy the natives to any great extent. There are many excellent tracts suitable for the production of coffee, wheat, vines, etc.; but the means of subsistence are so easily procured, that the inhabitants have but few inducements, even did they not lack the industry and enterprise, to become extensive agriculturists.

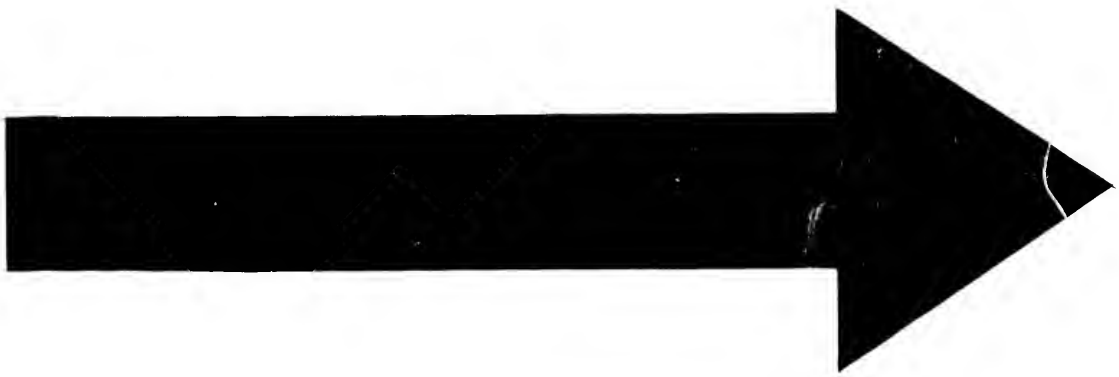
There are large tracts of good grazing land scattered throughout the island, and the growth of cattle is a leading, perhaps the most profitable, branch of agricultural industry. There are also numerous sheep ranges, on which are tended about 12,000 sheep; but the business is not encouraging.

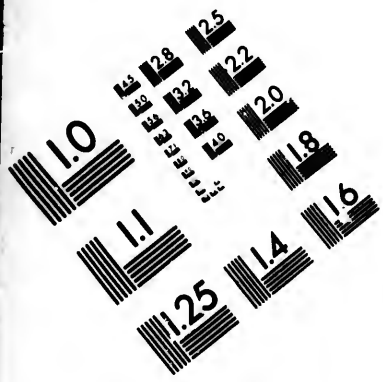
The eminently advantageous position of the Sandwich Islands, lying on the great route between America and China, invited at an early period the enterprise and capital of several European and American settlers, and led to the establishment of a somewhat active trade. They constitute a common centre between the three principal whaling grounds of the Northern Pacific—one on the equator, the other near Japan, and the third toward the Behring Sea.

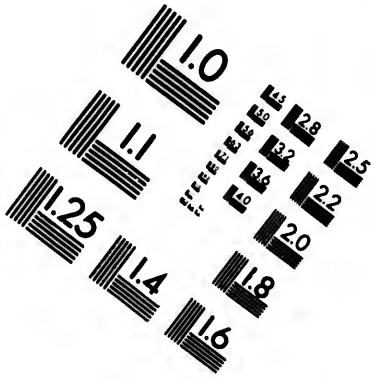
The principal port is Honolulu, on the south side of the island of Woahoo, in lat. 21° 18′ 8″ N., long. 157° 55′ W. Population about 8500, of whom about 1200 are Englishmen, Americans, and other foreigners. The harbor, to which the place owes all its importance, has a narrow entrance, but it is easy of access at all times of the tide to vessels not drawing more than 18 feet water. The bar at its mouth being narrow, and composed of soft coral, it might easily be made accessible even for line-of-battle ships.

Commercial relations between the United States and the Sandwich Islands had existed for many years before the treaty of 1849. As far back as 1832, when the native population of the islands amounted to 130,315 (nearly double its present number), it appears that the

* A native production used for beds and pillows.







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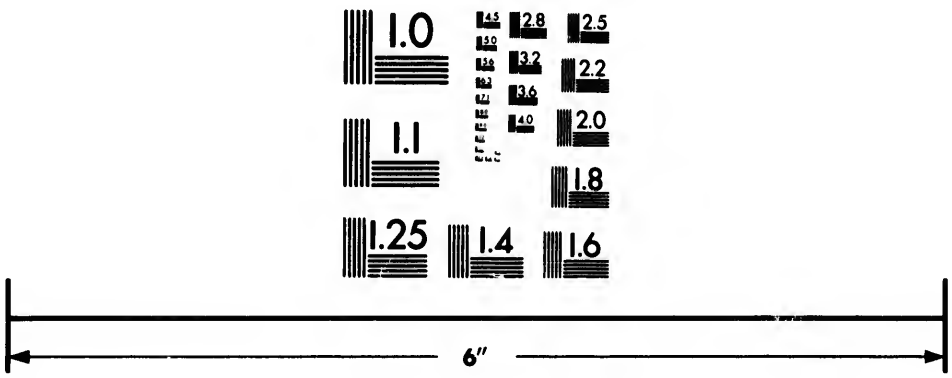

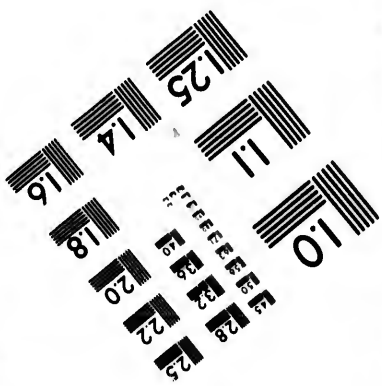

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soon after introduced into Europe, but it is doubtful whether this were done by the Arabians or Greeks. The mode of fabricating paper from cotton and other vegetable materials being once discovered, its fabrication from linen rags was a comparatively easy, and in Europe, where cotton was then extremely scarce, an all but necessary step. It is singular, however, that we have no positive information either as to the country where, or the epoch when, paper from rags began to be manufactured in Europe. *Mais on ne peut reculer son invention plus tard, qu'au Treizieme siecle, ni son usage ordinaire au-delà du Quatorzième. — Nouveau Traité*, etc., i. 524. In fact, Egyptian paper, or paper made of papyrus in the manner described above, continued to be partially employed down to the middle of the eleventh century, though parchment was then the principal material used in writing. It is curious to observe how very shortly the introduction of paper preceded the invention of printing, to which, indeed, as already seen, it was an indispensable preliminary. Muratori attributes the ignorance of the barbarous ages principally to the scarcity and high price of paper, and the superior intelligence of modern times to its abundance and cheapness. — Andres, i. 200. And whatever opinion may be entertained as to the first part of this statement, there can be no question that the latter is perfectly well founded.

Not only are we in the dark as to the history of modern paper, but we are unable to make any very satisfactory conjectural estimate of the mode in which it was invented. It is all but certain that the invention must have been suggested by accident, or by observing the effects produced by the accidental drying of triturated vegetable matter, or in some such way; and that the hint thus afforded was gradually improved upon. It is not possible to imagine that the invention should have been wholly the result of design; for we can not conceive how any one without any previous knowledge should have proposed to himself to produce paper by pounding rags, or other vegetable matter, mixing the mass in water, and then pressing and drying the deposit. But, without indulging in unprofitable conjectures, it is at all events certain that, however and by whomsoever discovered, no invention has been of greater importance. *Chartæ usu maxime humanitas vitæ constet et memoria.* — Pliny, *Hist. Nat.* lib. xiii. cap. 11. The processes by which the most worthless and vilest materials are converted into such admirable substances as paper and glass are probably the greatest triumphs of human talent and ingenuity. They have more than realized the dreams of the alchemists, and have been incomparably more advantageous than if we had become acquainted with a means of transmuting the inferior metals into gold.

In 1813, Dr. Colquhoun estimated the value of paper annually produced in Great Britain at £2,000,000; but Mr. Stevenson, an incomparably better authority upon such subjects, estimated it at only half this sum. From information obtained from those engaged in the trade, we incline to think that the total annual value of the paper manufactured in the United Kingdom, exclusive of the duty, may at present amount to about £1,600,000 or £1,700,000. There are about 700 paper-mills in England, and from 70 to 80 in Scotland. The number in Ireland is but inconsiderable. Of these mills, we believe, very few have lately been unemployed. It was formerly customary to collect the rags used in the manufacture into large heaps, in order that, by their heating and fermentation, they might be the more easily reduced to filaments. But this injured the rags; and it is now the practice to tear them to pieces, without any such preparation, by powerful machines constructed for the purpose. During the present century this manufacture has been signally promoted by the combined influence of science, ingenuity, and mechanical skill. These have been successfully exerted in the preparation of the pulp; the conversion of the pulp into paper, and the provision of materials; and in none has their influence been more remarkable than in the last. This is evident from the fact that, while the manufacture has been more than doubled since 1820, the demand for Continental rags and other foreign materials has actually been reduced within that time, in consequence of the immense home supply we derive from substances previously regarded as worthless, and treated as refuse. The sweepings of cotton and flax mills, owing to the grease and dirt with which they are mixed up, were, until within these few years, of no value whatever, except as manure. The chemical and mechanical processes by which these materials are purified, whitened, and made available for the production of paper, without their strength being impaired, are not only exceedingly interesting in themselves, but are of great national importance; and, by reducing the cost of paper, have done ten times more to lower the price of books, and diffuse literature, than all the efforts of all the societies that ever existed.

The first idea of a machine for converting pulp into paper originated in France, the inventor being an ingenious workman of the name of Louis Robert. A model of this machine was brought to England by M. Leger Didot; and though at first it was far from giving an assurance of success, it sufficed to induce English capitalists and engineers, particularly Mr. Donkin, to follow up the scheme; and in the course of a few years they brought it to a high degree of perfection.

The following tabular statement exhibits the aggregate quantities, values, and prices per pound of rags imported into the United States from all countries, distinguishing in a separate column the quantities received from Italy during a period of ten consecutive years, from 1846 to 1855:

Years.	Rags imported from all Countries	Rags imported from Italy.	Aggregate Values.	Price per Pound.
	Pounds	Pounds.	Dollars.	Cents.
1846.....	9,897,706	8,002,865	385 020	8·89
1847.....	8,154 886	6,529,284	304,177	3·73
1848.....	17,014,587	13,803,036	626 136	3·68
1849.....	14,941,286	11,000,608	524 437	2·51
1850.....	20,696,875	15,861,266	747,157	3·01
1851.....	26,094,701	18,512,673	902,876	3·46
1852.....	18,288,458	12,280,570	622,576	3 42
1853.....	22,760,000	14,171,292	985,465	4·31
1854.....	32,015,753	24,240,999	1,007,826	3·0
1855.....	40,018,516	23,948,812	1,224 413	3 06
Aggregate....	206,883,718	148,300,155	$7,928,721	
Ann. average .	20,688,371	14,830,015	792,872	

From the preceding table it will be seen that during the decennial period ending with 1855 the aggregate quantity of rags imported into the United States from all parts was 206,631,954 lbs., while the aggregate quantity received from Italy reached as high as 148,300,155 lbs. The annual average for the period designated will, however, furnish a more statistical basis for ascertaining the relative importance of Italy compared with all other countries as the principal source of supply upon which the United States must rely, with any degree of certainty, for an article the consumption of which is so rapidly increasing there; even during the past year, an alarming deficiency of the manufactured material was seriously apprehended by the conductors of our periodical and newspaper journals. The average annual quantity imported into the United States from all countries during the period designated was 20,988,371 lbs.; the average annual quantity received from Italy was 14,830,015 lbs. Thus it is shown that instead of one-fifth Italy actually furnishes nearly two-thirds of all the rags imported into the United States.—*See* Rags.

The consumption of paper in the United States is equal to that of France and England combined. In other words, the 28,000,000 inhabitants of the United States consume as much paper as the 64,000,000 inhabitants of France and England. This is very near-

ly correct. The statistics, however, will prove interesting. The number of paper-mills in operation in England in 1685 was 750, and the annual value of the paper manufactured reached as high as $6,000,000. At that period, however, the manufacture of paper was burdened with an excise duty amounting to more than three times as much as the total wages of the hands employed in making it, and the quantity annually produced did not exceed 50,000,000 lbs. of first-class and 16,000,000 lbs. of second-class paper, requiring a supply of about 100,000,000 lbs. of rags.

Improvements in machinery and mode of manufacture, and the application of steam, have reduced the number of mills in Great Britain and Ireland to 380, according to the latest statistical returns; while the quantity of rags annually consumed has risen to 201,600,000 lbs., or over 100 per cent. We have compiled from a recent, though in this country a rare Dublin publication on statistics, the following tabular statement, showing the quantity of paper manufactured, consumed, and exported in Great Britain for a period of nine years, ending with 1854:

COMPARATIVE STATEMENT SHOWING THE QUANTITIES OF PAPER MANUFACTURED, CONSUMED, AND EXPORTED IN GREAT BRITAIN FROM 1846 TO 1854.

Years.	Pounds of Paper manufactured in Great Britain.	Pounds of Paper retained for Consumption in Great Britain.	Pounds of Paper exported from Great Britain
1846	127,400,000	122,600,000	4,836,000
1847	121,900,000	116,190,000	5,852,030
1848	121,800,000	116,600,000	5,180,000
1849	132,100,000	126,100,000	5,966,000
1850	141,000,000	133 200,000	7,762,000
1851	160,900,000	142,570,000	8,305,000
1852	154,400,000	147,100,000	7,228,000
1853	177,600,000	164,300,000	13,296,000
1854	177,800,000	161,700,000	16,112,000

France turns into paper annually about 235,200,000 lbs. of rags, producing about 156,800,000 lbs. of paper. In the United States there are 750 paper-mills, which work up each year about 405,000,000 lbs. of rags. Assuming (the usual estimate) that 1½ lb. of rags yields 1 lb. of paper, we have the following comparative statement for the United States, and France and Great Britain combined:

	Pounds of Rags annually consumed.	Pounds of Paper annually manufactured.	Pounds of Paper per Capita.
United States	405,000,000	270,000,000	10·80
Great Britain and France combined	436,800,000	291,200,000	4·55

From this statement it appears that the United States consumes 31,800,000 lbs. of rags, and manufactures 21,200,000 lbs. of paper, less than Great Britain and France combined, while the quantity of paper manufactured *per capita* of the population of the former is more than double that assigned to the combined population of the two latter. The quantity of paper imported in Great Britain and France and added to the stock for consumption might vary slightly, but not materially, the above results. The preceding statement, however, omits the quantities annually imported and exported by each of the countries respectively, items without which no calculation as to consumption can be accurately made. The importation of paper of all kinds into France in 1858 did not exceed 337,104 lbs., while the exports amounted to 17,058,657 lbs. This gives an excess of exports over imports to be supplied from the stock of domestic manufacture, of 16,716,553 lbs. Deduct this from 156,800,000 lbs., the quantity manufactured, and we have left for consumption 140,083,447 lbs., or 3·89 lbs. *per capita* of the population.

During the same year there were imported into England, according to the Report on Trade and Navigation, 909,250 lbs. of paper. The report gives this quantity for the last six months of the year only; assuming that the importation during the first six months was equal to that for the last as above given, and the total importation would reach, say 200,000 lbs. The quantity exported, we have seen, was 13,296,874 lbs., leaving an excess of exports over imports of 13,696,874 lbs. Recent and important improvements have been made, by the use of refuse tanned leather, bark of the cotton-stalk, pulp from the fibres of endogenous plants, as raw materials for the manufacture of paper.—*Scientific Ann.*

EXPORTS OF PAPER AND STATIONERY OF DOMESTIC MANUFACTURE FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1856.

Whither Exported.	Value.
Russia on the Baltic and North Seas	$300
Russian Possessions in North America	614
Danish West Indies	1,567
Bremen	330
Dutch West Indies	568
England	200
Canada	63,632
Other British North American Possessions	20,678
British West Indies	3,893
British Honduras	262
British Guiana	2,389
British Possessions in Africa	364
British Australia	1,645
British East Indies	180
France on the Atlantic	1,260
Cuba	43,186
Porto Rico	5,624
Cape de Verd Islands	124
Other ports in Africa	547
Hayti	3,059
San Domingo	49
Mexico	10,965
Central Republic	713
New Granada	7,175
Venezuela	11,068
Brazil	9,295
Uruguay, or Cisplatine Republic	403
Buenos Ayres, or Argentine Republic	883
Chili	2,757
Peru	1,533
Sandwich Islands	4,330
China	3,391
Total value	$203,013

IMPORTS OF PAPER AND MANUFACTURES OF PAPER INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1856.

Whence Imported.	Papier Mache Articles.	Paper Hangings.	Paper Boxes and Fancy Boxes.	Paper and Manufactures of.	Blank Books.	Writing Paper.	Sheathing Paper.	Playing Cards.
Hamburg	$771	$1,141	$530	$2,089	$453	$3,361	....	$298
Bremen	5,469	1,474	6,405	17,482	954	14,777	....	489
Holland	52	4,604	....	4,084	2	711	....	33
Belgium	238	3,006	141	2,430	141	72,410	....	2,516
England	9,285	56,650	7,412	62,047	5,361	68,868	....	2,382
Scotland	....	....	75	440	88	867	....	....
Gibraltar	40	....	....	....	....	....	....	....
Canada	....	....	10	4	....	15	....	....
British West Indies	....	....	....	....	....	12	....	....
British East Indies	....	....	12	19	....	....	....	....
France on the Atlantic	9,167	161,360	21,328	34,519	5,588	103,354	....	2,345
France on the Mediterranean	....	....	....	18	....	....	....	....
Spain on the Mediterranean	....	....	....	....	....	1,133	....	433
Cuba	....	....	887	827	....	1,211	$5530	835
Sardinia	....	....	....	....	....	5,402	....	....
Tuscany	....	....	100	33	....	....	....	....
New Granada	....	....	287	205	109	93	....	257
Chili	....	....	....	3,885	....	662	....	376
Peru	....	....	3	....	....	....	....	....
China	....	43	....	6,076	294	44	....	66
Total value	$25,051	$228,577	$36,700	$135,167	$12,940	$272,010	$5530	$10,577

Paper Boxes.—The manufacture of boxes from paper, or rather pasteboard, has become a very large one, from the custom of so many manufacturers selling their goods in these boxes. It is said that in Paris four thousand persons are employed in this trade alone. The trade is divided into six branches. The first comprises the most elaborately-finished and ornamented boxes, for the display of artificial flowers, rich velvets, ribbons, silks, trimmings, medals, miniatures, and corbeilles for wedding presents. The second class consists of boxes and small ornaments for confectioners. The third kind are used for packing toys and trinkets of small size. The fourth kind are for perfumery, fans, gloves, etc. The fifth comprises large boxes for shawls and ribbons for exportation. The sixth are pill-boxes, wafer-boxes, and others of the smallest kind. The French productions in this department of manufactures are superior to any other in neatness of execution and taste of ornamentation.

Chinese Paper.—The Chinese make a filamentous kind of paper much superior to ancient papyrus; it obtains in England the name of rice-paper; but sufficient is now known of it to show that this is by no means a correct designation. Dr. Livingstone introduced Chinese rice-paper in England about half a century ago; it had great favor as a material for artificial flowers. It was many years afterward that information was obtained concerning the mode adopted by the Chinese in making these small but very expensive sheets of paper. There is a leguminous plant growing in China and India, the stem of which is cut into pieces eight or ten inches in length; and these are cut by the Chinese into one continuous spiral film, on the same principle as the modern mode of veneer cutting, but by the dexterous use of hand-tools. These laminæ, being spread out and pressed flat, form thin sheets, which, after being dyed and otherwise prepared, constitute the rice-paper of the Chinese.

The same ingenious people make paper of bamboo. The bamboo stems, when about three or four inches thick, are cut into pieces four or five inches long. These, when softened in water, are washed, cut into filaments, dried and bleached in the sun, boiled, beaten to a pulp, and made into thin sheets of paper. This is truly paper, which the former examples are not; and the art must have made a considerable advance before such a method could have suggested itself.

Paper-hangings.—Stamped paper for this purpose was first made in Spain and Holland about A.D. 1555. Made of velvet and floss for hanging apartments, about 1620. The manufacture of this kind of paper rapidly improved in Great Britain from early in the eighteenth century; and it has now been brought to great perfection. Since this important and elegant substitute for the ancient "hangings" of tapestry or cloth came into use about 200 years ago, the manufacture has undergone a gradual succession of improvements, and has now reached a high state of beauty and perfection. The patterns on these papers are sometimes produced by stencil plates, but more commonly by blocks, each color being laid on by a separate block cut in wood or metal upon a plain or tinted ground. The patterns are sometimes printed in varnish or size, and gilt or copper leaf applied; or bisulphuret of tin (*aurum musivum*) is dusted over so as to adhere to the pattern; and in what are called *flock papers*, dyed wools minced into powder are similarly applied. Powdered steatite, or French chalk, is used to produce the peculiar gloss known under the name of *satin*. Striped papers are sometimes made by passing the paper rapidly under a trough, which has parallel slits in its bottom through which the color is delivered; and a number of other very ingenious and beautiful contrivances have lately been applied in this important branch of art. The invention of the paper machine, by which any length of paper may be obtained, effected a great change in paper-hangings, which could formerly only be printed upon separate sheets, and were much more inconvenient to print as well as to apply to the walls.

Papier-mache, a name given to articles manufactured of the pulp of paper, or of old paper ground up into a pulp, bleached, if necessary, and moulded into various forms. This article has lately been used upon an extensive scale for the manufacture of mouldings, rosettes, and other architectural ornaments; pilasters, capitals, and even figures as large as life, have also been made of it. It is lighter, more durable, and less brittle and liable to damage than plaster, and admits of being colored, gilt, or otherwise ornamented. Another article sometimes goes under the same name which is more like pasteboard, consisting of sheets of paper pasted or glued and powerfully pressed together, so as to acquire, when dry, the hardness of board, and yet to admit, while moist, of curvature and flexure: tea-trays, waiters, snuff-boxes, and similar articles are thus prepared, and afterward carefully covered by Japan or other varnishes, and often beautifully ornamented by figures or landscapes and other devices, etc., occasionally inlaid with mother of pearl. A mixture of sulphate of iron, quicklime, and glue, or white of egg, with the pulp for papier-mache, renders it to a greater extent water-proof; and the further addition of borax and phosphate of soda contributes to make it almost fire-proof. The chief papier-mache manufactory in England is that of Bielefeld, in Wellington Street, Strand, who has recently published a concise history of the manufacture, embellished with numerous illustrations. There are manufactories of papier-mache goods now established in Massachusetts. For the imports of articles of papier-mache, *see* PAPER.

Para, or **Belem**, a sea-port city of Brazil, capital of the province, 70 miles from the Atlantic, latitude of Fort St. Pedro 1° 28′ S., long. 48° 30′ 5″ W. Population estimated at 10,000, mostly of European descent. It stands on elevated ground, on the south shore of the Bay of Guajuara, on the right bank of the Para, or Tocantins, and has a fine appearance from the river. Chief edifices, the governor's palace, cathedral, several other churches, convents, barracks, arsenal, episcopal palace and seminary, formerly a Jesuits' college; a prison, and an unfinished theatre. Vessels of large draft can lie near the city, and the cocoa, caoutchouc, isinglass, rice, and drugs, exported from Brazil are chiefly from Para. It has also a trade in cotton, vanilla, annatto, dye-woods, honey, wax, and a great variety of other vegetable and animal products. The trade is mostly with Liverpool, London, Barbadoes, Cayenne, and the North American and other Brazilian ports. The River Para, bounding the island of Marajo southward, extends between long. 48° 10′ and 50° 40′ W., receives the Tocantins and Annapu from the south, and is connected northwestward with the Amazon.

Para enjoys an advantage possessed by no other seaport town in Brazil—that of an unobstructed intercourse by water with the interior. The commercial resources of this province, and the admirable trading position of the city, are unsurpassed; but inhabitants are wanting to develop these elements of commerce and civilization. In 1840, some American citizens established several saw-mills at Maguery, in the vicinity of Para; but whether they met with better success than did the Glasgow merchants, whose property to the amount of $350,000 was pillaged in the same place during a revolt in 1835, has not been ascertained. The cotton of Para has been highly prized. Caoutchouc, the use of which was first discovered in 1735 by French academicians sent to Brazil to make astronomical observations, is abundant, and is extensively manufactured into shoes, etc. Were this article admitted into the United States, as in England, free of duty, it would become one of the staple exports to this country. A well-informed American merchant, residing at Para, addressed a letter on this subject to one of the officers of Lieutenant Herndon's expedition to the Amazon,

urging the disadvantages under which American commerce labors, as compared with that of Great Britain, in the caoutchouc trade.—*See* "Letter from the Secretary of the Treasury, transmitting copy of circular letter and replies thereto, in reference to the Tariff, March 8, 1854." This article is now becoming the chief staple of the province of Para; and so various and multiform are the uses to which it is applicable, both in the arts and in domestic economy—so important as an article of commerce has it already become, that, even against the import duty of 10 per cent. in the United States, it constitutes almost 50 per cent. of our trade with Para. The following statement exhibits the quantities of India-rubber imported from Para into the United States during the years designated:

	Pounds.	Value.
1850	1,500,000	....
1854	3,830,000	....
1855	2,740,000	$1,660,000

The exports from Para to foreign countries consist of caoutchouc, cotton, rice, castor-oil, copaiva, aniseseed oil, cocoa, cloves, cinnamon, hides, horns, isinglass, Peruvian bark, etc. From 1816 to 1827, the exports from this province averaged annually $850,131. The following summary exhibits the total trade of Para for 1845: Inward—Vessels, 69; tonnage, 11,136; value of cargoes, $495,940; of which there entered from the United States: Vessels, 28; tonnage, 8920; value of cargoes, $236,200. Cleared to all countries—Vessels, 70; tonnage, 11,445; value of cargoes, $737,525. To the United States—Vessels, 27; tonnage, 3628; value of cargoes, $261,620. In this province, the sugar and coffee plantations do not produce sufficient for home consumption, and supplies are usually imported from the neighboring provinces. The imports from foreign countries consist of cotton goods, silks, hardware, wines, spirits, salt, flour, salt provisions, gunpowder, etc. The only manufactures are ordinary cotton cloths for sacks and hammocks, and India-rubber shoes; but these manufactures seem not to thrive, from a want of skill to direct them.

TOTAL NUMBER OF VESSELS, WITH THEIR TONNAGE, ENGAGED IN THE TRADE BETWEEN PARA AND FOREIGN COUNTRIES, AND VALUE OF EXPORTS AND IMPORTS, ETC., IN 1848 AND 1850.

1848.	Vessels.	Tons.	Francs.
Entered	83	12,828	Imports, 3,295,000
Cleared	83	12,029	Exports, 4,881,000
1850.			
Entered	96	16,877	Imports, 5,109,000
Cleared	92	10,433	Exports, 7,402,000

STAPLE PRODUCTIONS OF PARA, RELATIVELY CONSIDERED, WITH RESPECT TO THE QUANTITIES ANNUALLY EXPORTED:

Caoutchouc	33,600 arrobas.
Cocoa	200,000 "
Cotton	6,120 "
Hides	15,500 pieces.
Copaiva	3,300 pots.
Rice	130,000 arrobas.
Rice in the husk	26,000 alqueires.
Sugar	21,330 arrobas.
India-rubber shoes	192,000 pairs.

The above are the leading exports from Para; but, besides these, the province produces various kinds of timber admirably adapted for ship-building purposes, and a great variety of textile plants, medicinal drugs, and dye-woods of the richest qualities. The present population of Para is about 205,000, though the province is said to be capable of maintaining some millions of inhabitants. With such a population, its natural resources might be more fully developed, and Para thus placed, in point of position and commercial importance, in the very first rank of Brazilian ports.—*Commercial Relations with the United States.*

Paraguay, a republic or consulship of South America, extends from lat. 21° to 27° 20′ S., and long. 54° to 58° 40′ W. The space thus inclosed forms a very compact territory, nearly in the shape of a parallelogram, about 430 miles long, north to south, with an average breadth of about 200 miles, and contains an area of about 86,000 square miles. Population 300,000. Capital, Asuncion. The name Paraguay at one time was used in a very extensive sense, so as to include the whole of the immense regions of South America, between lat. 16° S., and the Strait of Magellan, and between Chili and Peru on the west, and Brazil on the east, now confined to the republic properly so called. On the north the limits of this state with Brazil are not definitely settled, but in other directions it has the advantage of great natural boundaries; the Parana on the east and south, and its tributary the Paraguay on the west. The whole surface thus belongs to the basins of these two rivers, a mountain range of considerable elevation stretching between them north to south, so as to form their water-shed, and send the drainage in opposite directions, but nearly in equal portions. The distance of the water-shed from the river scarcely any where exceeds 100 miles, and hence the tributaries by which the drainage is conveyed are more remarkable for their number than their magnitude. By far the largest is the Tibimari, which, owing to an eastern bend in the water-shed, has its course considerably prolonged, and being augmented by several large affluents from the north, becomes a noble stream before it reaches the Paraguay. The surface is mountainous in the centre, and also in the northeast, where a ramification, known by the name of the Sierra de Maracay, or Cordillera de Maracara, breaks off from the central chain, and proceeding east to the banks of the Parana, interrupts the navigation of that river, and forms one of the most remarkable cataracts in the world.

Paraguay is one of the finest countries in the world. It is almost inclosed by rivers, and the interior is also bountifully watered. The exterior waters are navigable, and constitute the great avenues which are destined to become the highways of the commerce of a magnificent interior country. Unlike the open countries surrounding it, Paraguay is well wooded, and among its trees are many valuable in the arts and manufactures. It also abounds in medicinal products, as rhubarb, sarsaparilla, jalap, sassafras, dragon's blood, copaiva, nux vomica, liquorice, ginger, etc., all of the finest quality. Of dye-stuffs, too, there is an immense variety; as cochineal, indigo, vegetable vermilion, saffron, etc. Many of the forest trees yield valuable gums, and they comprise some of the most delicious perfumes and incense that can be imagined. Others, again, are like amber, hard, brittle, and insoluble in water. The *seringa*, or rubber-tree, the product of which is now almost a monopoly with Para, and also the *palosanto*, which produces the gum guiacum, crowd the forests, and the sweet-flavored vanilla is abundant. Upon the hills the celebrated yerba maté flourishes luxuriantly. The cultivated products are sugar-cane, cotton, tobacco, rice, mandioca, Indian corn, etc. On the plains thousands of cattle range, and large quantities of hides, hair, horns, bones, tallow, etc., are lost for want of transportation. The country is not celebrated for its minerals; but in all that constitutes an agricultural country, rich lands, a fine climate, and abundance of water, it has no equal. Hitherto, however, it has been shut out from the world by the arbitrary will of despotism; and its future commerce can only be measured from its resources and facilities. The recent revolutions in the states of the Plata have opened the magnificent rivers of this country, and there is certainly no further impediment to commercial enterprise.

This state, formerly a province of Buenos Ayres, withdrew from the connection in 1811, and the Spanish-American revolution breaking out about that date secured it from molestation. The policy of its rulers has been the exclusion of foreigners from the country, and under Dr. Francia, so celebrated in connection with its annals, the utmost despotism was exercised. The tyrant dying in 1840 the government was changed in its character, and a more liberal policy obtained,

and ultimately it has become in form an elective republic. As early as 1842, Paraguay acceded to the opening of its rivers to foreign commerce; but until the overthrow of Rosas, the tyrant of Buenos Ayres, who exercised authority over the estuary of the Plata, the concession was of no value. The successors of Rosas have now fully conceded free ingress and egress with the sea. These important revolutions in the policy of the two countries will eventuate in the development of the vast resources of the southeastern and middle portions of South America—countries which are unsurpassed in agricultural wealth and valuable commercial staples. For further information, see *American Statistical Annual*; *American Whig Review*, vi. 245 (U. S. Consul HOPKINS); *North American Review*, xxvi. 444 (A. H. EVERETT); *Dublin University*, xii. 474; *Quarterly Review*, xxvi. 277.

The commercial policy of Paraguay, however, is not of that liberal character to attract foreign merchants to its ports. In addition to the expense of purchasing stamped paper, by means of which every official transaction in the republic is conducted, and without which foreign merchants can not enter the markets, the internal taxes are such as to discourage efforts to develop the resources of the country, and, as a consequence, to oppress its commercial industry. The aggregate of these taxes bearing specially upon commerce is stated to amount to 26 per cent. on the value of every article sent to market. They consist of *diezmos* (tithes), 10 per cent.; export duty, 10 per cent.; and on rent of lands (almost wholly owned by the state, and fixed at a high valuation) 6 per cent. If to this be added an import duty of 20 per cent. on almost every article which the United States could send to the markets of Paraguay, it can be readily comprehended why the name of this republic does not appear among those of other foreign nations the details of whose commerce are minutely set forth in the annual Report on Commerce and Navigation, prepared by the Department of the Treasury of the United States. The "stamps," to which allusion has been made, are divided into eight classes: those of the first class cost 25 cents; of the second, 87½ cents; of the third, $1; of the fourth, $2; of the fifth, $6; of the sixth, $8; of the seventh, $16; of the eighth, $26. Permission to discharge or to load a vessel of 21 tons, or 2000 tons, can only be obtained on a stamp of this last description; so that to unload a cargo valued at $100 will cost $26—all the same as if it were worth $100,000; and in like manner as to taking cargo on board. The foreign trade of Paraguay is conducted chiefly through the ports of the Argentine Confederation, especially that of Buenos Ayres, and those of the Republic of Uruguay. The exports consist of yerba maté (with which the hills of the country are literally covered), tobacco, cigars, woods, hides, hair, leather, molasses, rum, white starch, mandioca, peanuts, beans, and oranges; of which latter article not less than 30,000 bushels are said to be exported per month. The exports from the United States which would most readily find a market in Paraguay are cotton domestics, calicoes, plain cloths, clocks, boots and shoes, gunpowder and shot, saddlery, and agricultural implements.

If the navigation of the River Vermejo, an affluent of the Paraguay, were opened to foreign commerce, or were even permitted to the Argentine flag, the United States would, it is believed, soon enjoy the entire foreign trade of the upper provinces of the Argentine Confederation. This privilege, however, is refused by the government of Paraguay, notwithstanding the River Vermejo, in its entire course, lies within the territories of the sister republic. Hitherto a selfish and illiberal policy excluded foreign vessels from the port of Albuquerque, a place 1600 miles above Asuncion, the capital of Paraguay, in the Brazilian province of Matto Grosso, which the government of that empire has declared open to the commerce of the world. Brazilian vessels were not permitted to descend the River Paraguay, which takes its rise in this province, nor are foreign vessels allowed to ascend higher than the city of Asuncion; thus cutting off all trade with the richest portions of Bolivia and the fertile province of Matto Grosso, in Brazil. The claim of Paraguay to exercise jurisdiction over both banks of this river, by prohibiting its navigation above Asuncion, and by closing the navigation of the Vermejo, both to the citizens of the Argentine Republic and to foreigners, has never been admitted.

A treaty between Paraguay and Brazil was duly signed and ratified June 14, 1856, by which it is stipulated that the waters of the Upper Paraguay shall henceforth be open to general navigation and commerce. This will bring not only the produce of the Brazilian province of Matto Grosso, but also the agricultural and mineral wealth of Bolivia, to an Atlantic market. The value of these mineral resources may be inferred from the fact that there are stated to exist in this region upward of a thousand valuable mines unworked, it having been found impossible hitherto to convey machinery thither, across the mountains, from the Pacific coast. A highway to the spot is now opened from the Atlantic, as broad as the Mississippi, and equally accessible. The rich province of Matto Grosso, with its diamonds, gold, silver, and copper, is also brought in connection with the good and contiguous sea-ports, Buenos Ayres and Montevideo, by the Paraguay River; and Cujaba, its capital, in the centre of the mining districts, can easily be reached from Asuncion. Dianantino, about two hundred miles from Cujaba, sends its produce to Santarem, on the Amazon, and thence to Para. This tedious and circuitous route is now superseded, as the Paragnay connects these markets with the estuary of the Plata. A Paraguayan journal, "*La Nacional*," of August 11, 1856, publishes the subjoined regulations: "All vessels from foreign ports to the Brazilian ports above shall take pilots at Asuncion, Concepcion, the junction of the Apa, and Olimpo. The vessels that descend that river from the upper Paraguay are obliged to take pilots from Olimpo, the junction of the Apa, and Concepcion; and the wages of the said pilots are to be agreed upon at the captain of the port's bureau in Asuncion."

In 1853, the United States steamer *Water Witch*, of 400 tons burden, and nine feet draught, was dispatched, under the command of Lieutenant Thomas J. Page, to make an exploration and survey of the tributaries of the River La Plata. The results of this expedition will, doubtless, contribute in an eminent degree to the advancement of commerce and the promotion of science. The navigation of the Paraguay River, which empties into the Parana at the distance from Buenos Ayres of 800 miles, was extended to the parallel of 18° south latitude; making the entire distance of the rivers Parana and Paraguay, through which this small sea-steamer had passed from Buenos Ayres to Corumba (an interior military post of Brazil), equal to about 1700 miles. There is no doubt that the navigation of the Paraguay, during the season of high water, could have been carried by the *Water Witch* to a still greater extent; but at the time of this exploration any further ascent was prohibited by Brazil. Permission was, however, subsequently granted by the imperial government, but refused by that of Paraguay. The expedition was thus restricted to a more limited exploration of the upper waters of this river than had been anticipated. It is to be hoped that the time is not far distant when all such prohibitions will be removed, and this interesting region of unknown country brought to the knowledge of the world.

The navigation of the Paraguay has thus been extended beyond Asuncion, to the distance of 650 miles. This fact has induced the Brazilian government to avail itself of this important channel of communication, by steam, with her northwestern province, Matto Grasso, in which is found the most valuable diamond region of the empire.

An expedition was dispatched by the French government, a few years since, for the exploration of the Parana and Paraguay rivers; and the following passage is translated from a report made in March, 1855, by Captain Picard, to whose charge it had been committed: "When we consider the excellent means of communication which nature has opened to the provinces of the Argentine Confederation and the Republic of Paraguay, we can not but regret to see them unemployed and deserted. The absence of population, continual civil war, and the administrative policy of Paraguay, have, so far, been the chief obstacles to progress. Let us indulge the hope that the day is not distant when the aspect of things will change, and these magnificent countries will flourish under the blessings of a more advanced civilization."

Paraguay can hardly be said to possess a merchant marine. In 1851 there were distributed, between the two ports of Asuncion and Villa del Pilar, 12 vessels, averaging each about 42 tons. In 1852 there were 11 of the same description, and in 1853 only 9. Besides these, there is one brig belonging to the government, which is said to monopolize almost exclusively the commerce of the state. The foreign vessels engaged in the trade of Paraguay in 1852 were 81, with an aggregate of 4582 tons, from the Argentine provinces south, below the Paraguay River, and three American vessels, tonnage not known. All these vessels trade with the ports of Asuncion and Villa del Pilar, which, with the port of Encarnacion, on the Parana, were alone open to foreign commerce. There is no treaty between the United States and Paraguay. With England a treaty was ratified November 2, 1853, by the second article of which the Republic of Paraguay concedes to the merchant flag of Great Britain the free navigation of the River Paraguay as far as Asuncion, the capital of the republic, and of the right side of the Parana, from where it belongs to her, as far as the city of Encarnacion. It stipulates, also, that British subjects shall be at liberty, with their ships and cargoes, freely and securely to come to, and to leave, all the places and ports of the said territories; hire houses and warehouses; and trade in all kinds of produce, manufactures, and merchandise of lawful commerce, subject to the usages and established customs of the country: also, that they may discharge the whole or part of their cargo at the ports of Pilar and where commerce with other nations may be permitted, or proceed with the whole or part of their cargo to the port of Asuncion, according as the captain, owner, or other duly authorized person shall deem expedient; and that, in the same manner, shall be treated and considered such Paraguayan citizens as shall arrive at the ports of Great Britain with cargoes in Paraguayan or British vessels.

There is an American company established in Paraguay, under a charter from the State of Rhode Island, which has been engaged in commercial operations for some time, under the title of "The United States and Paraguay Navigation Company." The chief object of this company is to introduce steam navigation on the rivers of Paraguay; but how far it has progressed in the accomplishment of this object, information is not at hand. The only direct trade, however, yet opened between the United States and this republic consists of some shipments of cigars and samples of wood made by this company. All other articles of Paraguayan produce which reach the United States come through the ports of Buenos Ayres or Montevideo, and are included in the custom-house returns to the Treasury Department of exports from the republics to which these places respectively belong.

The government of Paraguay puts forth no statistics relative to the commercial movements of the republic, and it is said to be quite impossible to obtain information on the subject from its administrative officials. Complete commercial statistics, which may be viewed as strictly accurate, can not, therefore, be looked for in this Digest; but the subjoined statements, derived from a Memoir prepared in 1853 by M. L. Geofroy, an attaché of the mission extraordinary sent by France to the Plata and Paraguay, are, no doubt, reliable, so far as they extend.

EXPORTS OF ASUNCION FROM JULY, 1851, TO DECEMBER 31, 1852.

Tobacco—229,000 arrobas, at 12 reals (or $1 50) per arroba of 25 pounds	$343,500
Yerba maté—175,000 arrobas, at 20 reals per arroba	437,500
Hides—Dry, 100,000, at 10 reals each	125,000
" Tanned, 35,000, at $3 each	105,000
Wood—Cedar, 50,000 yards, at 4 reals	25,000
" Cabinet, a sloop-load of 7000 to 8000 arrobas	6,000
Hair—600 quintals, at $8 per quintal	4,800
Sweetmeats—30,000 arrobas, at 6 reals per arroba.	15,000
Cigars—2,000,000, at $2 per 1000	4,000
" 250,000, at $5 per 1000 (in boxes of 100)	1,250
Sundry products—White wax, rum, molasses (several cargoes), common wood (Urunday and Lapacho), several cargoes of oranges, maize, pulse, etc.; cotton, 1,500 arrobas; tiger-skins, 500, at $2 each; India rubber, otter-skins, hammocks, baskets, etc.; fringed napkins, lace, etc.	27,800
Total	$1,094,850

It is believed that the above total might be increased at least one-third, could exact statements be obtained. If we add the export duties of 10 and 6 per cent. on the articles exported—yerba and wood, which are government monopolies, and are exempt from duty, being excepted, and which would amount to about $70,000—and $20,000 in silver, exported in contraband, and $10,000 for sundry charges—we have $1,500,000, or an amount equal to the value of imports during the same period. Indeed, such is the scarcity of money in circulation, that the trade is necessarily one of barter; so that the figures which represent the value of imports may also, generally, give the value of exports.

Measures.—The arroba equals 25 lbs.; the cubic vara about 20½ cubic feet; the pesada 36 lbs.; the almude about three-fourths of a bushel; the asumbre about one quart; the frasco about half a gallon; the fanega about four bushels. It may be observed, that these denominations of weight and measure represent different quantities in different countries, and even in the same countries, as regards different articles.

IMPORTS AND EXPORTS OF ASUNCION FROM 1851 TO 1854.

Years.	Imports.	Exports.	Total.	Duties paid.
1851	No data.	$341,380	No data.	No data.
1852	$549,150	474,499	$1,014,649	$128,276
1853	406,668	691,932	1,098,620	56,564
1854	585,523	777,457	1,362,980	122,280

Among the importations of 1854, tissues and wines hold the first rank, or, rather, they constitute four-fifths of the total value of imports.

Navigation.—Transportation by land being extremely difficult, the commercial movements already analyzed were effected by water—by the Paraguay, an affluent of the Parana. From the opening of the port of Asuncion in July, 1851, to December, 1852, there arrived about 120 sloops, of 6000 arrobas, on an average, for each. A cargo of 7000 arrobas equals 60 tons, which would give an average of from 40 to 80 tons for each vessel. From January 1, to February 28, 1853, there arrived at Asuncion 30 Sardinian vessels. These vessels, the owners of which, or the greater part of them, were Sardinians, sailed under the Uruguayan or Paraguayan flag. There arrived also, up to March 10, 1853, at this port, 19 sloops. In 1854 there arrived 160 merchant vessels, averaging each 50 tons burden. Of these, 2 were British, 81 were under the flag of the republic, 116 belonged to the Argentine Confederation, and 11 to Uruguay.

The customs tariff of Paraguay, now in force in that republic, is that promulgated by a decree given at Asuncion, January 2, 1846.—*Commercial Relations of the United States.*

Parallels of Latitude, on the Terrestrial Sphere, are small circles parallel to the equator; but in the Celestial Sphere they are parallel to the ecliptic.

Paramaribo, the capital town of Dutch Guiana, on the west bank of the Surinam, five miles from its mouth in the Atlantic, lat. 5° 49′ N., long. 55° 22′ W. Estimated population, 20 000, mostly blacks. It is regularly and well built; streets unpaved, but ornamented with rows of tamarind and orange trees; and it has Lutheran, Calvinistic, Roman Catholic, and English churches, Portuguese and German-Jewish synagogues, and is the centre of the trade of the colony. Fort Zeelandia, north of the town, is the residence of the governor. In a hospital for lepers, on the right bank of the Coppename, 450 patients are maintained at the expense of the colony. The Kwatta Canal, begun in 1846, is the first public work executed by free laborers.

Paramo (sometimes rendered, though incorrectly, by *desert* or *heath*). The name given in South America to a mountainous district covered with stunted trees, exposed to the winds, and in which a damp cold perpetually prevails. Under the torrid zone the Paramos are generally from 10,000 to 12,000 feet in height. Snow often falls on them, but remains only a few hours; in which respect they are distinguished from the *Nevados*, which enter the limits of perpetual snow. The Paramos are almost constantly enveloped in a cold, thick fog; so that when a thick, small rain falls, accompanied with a depression of the temperature, they say at Bogota, or at Mexico, *cae un paramito*. Hence has been formed the provincial word *emparamarse*—to be as cold as if one were on a *paramo*. —Humboldt's *Pers. Nar.* ii. p. 252.

Parasang, a Persian measure of length; according to Herodotus, equal to 30 stadia, and (reckoning eight stadia to the English mile) equal to 3¾ English miles. The length of the parasang was reckoned differently by different authors; and such are the discrepant estimates of the ancients that some have assigned it the length of 60 stadia. The word is supposed to be derived from the Persian *seng*, signifying *a stone*.

Parcel, a term indifferently applied to small packages of wares, and to large lots of goods. In this latter sense, 20 hogsheads of sugar or more, if bought at one price, or in a single lot, are denominated "a parcel of sugar."

Parcels, Bill of, an account of the items composing a parcel.

Parchment and **Vellum**. The former consists of the skins of sheep and goats, and the latter of those of calves, prepared in such a manner as to render them suitable for being written upon, for covering books, and other purposes. The consumption of these articles is very considerable. In this and most other countries it is customary to use them instead of paper in the drawing up of a great variety of deeds and other legal instruments. They are also extensively used, especially in Italy, in the binding of books. The finest copies of the magnificent classics which issued from the Dutch presses in the 17th century, and the early part of the 18th, were all bound in vellum. Parchment is coarser than vellum, and not so well adapted for writing upon. The qualities of both articles differ very widely; so much so that the best parchment is preferable to inferior or even middling vellum. The goodness of each depends partly on the quality of the skins of which they are made, and partly, and indeed in a very high degree, on the care and skill with which they are manufactured.

The history of these articles is involved in some obscurity. Varro and Pliny (*Hist. Nat.* lib. xiii. cap. 11), who have been generally followed, state that they were originally manufactured at Pergamus, in Asia Minor, the capital city of Eumenes II., one of Alexander's successors, during the reign of that prince; and that parchment owes to this circumstance its classical name of *charta Pergamena*. But there seems to be little if any foundation for this statement. We have seen, in the preceding article on paper, that Herodotus, who flourished rather more than a century before Alexander the Great, states distinctly that, previously to his era, when paper (*charta Egyptiaca*) was scarce, the Ionians were accustomed to write on the skins of sheep and goats, and that that practice was then followed (viz., in his time) by several barbarous nations. —Lib. v. cap. 58. And it is all but certain, seeing that the practice of writing on skins had been in use for at least 2½ centuries, and probably much more, previously to the era of Eumenes, that their preparation would, in the course of that lengthened period, be so much improved as to render them little different from parchment. It is probable, indeed, that their manufacture may have been improved in Pergamus; but we incline to think that parchment owes its name rather to the extensive demand for it in that city, in consequence of Eumenes having amassed a large and valuable library, than to any thing else. He was, in fact, compelled to use parchment and vellum in the copying of books, as his contemporary Ptolemy Philadelphus had prohibited the exportation of paper.—Pliny, *ubi supra*. The scarcity of parchment during the Middle Ages, and in antecedent times, led to the practice of obliterating the writing on old parchments, by rubbing them with pumice-stone, immersing them in boiling water, and such like devices; and there can be no manner of doubt that the prevalence of this practice has been most injurious to literature, and that it has most probably occasioned the total destruction of some of the noblest *chefs-d'œuvre* of antiquity. In the Middle Ages, these were erased that room might be made for some worthless treatise on scholastic theology or logic! Sometimes, however, it happens that the ancient writing is not so much obliterated but that it may still be read; and to that circumstance the recent discovery of a portion of Cicero's treatise *De Republica* is to be ascribed. It had been effaced to make room for a commentary of St. Augustine on the Psalms. Parchments that have been erased in this way are called *Palimpsests* (from *παλιν*, *again*, and *ψαω*, *to efface or clean*), or repeatedly cleaned parchments; because they have been repeatedly cleaned, renewed, or prepared for writing upon. If the learned world is ever to be gratified by the recovery of the lost comedies of Menander, or the lost books of Polybius, Livy, and Tacitus, it will most probably be by finding them under some homily or such like trash.—*Nouveau Traité de Diplomatique*; *Dom de Vaines*.

Paris (anc. *Lutetia Parisiorum*), the capital of France, and, after London, the largest and most populous city in Europe; lat. (observatory) 48° 50′ 12″ N., long. 79° 23′ 02″ E. from the national observatory, Washington, and long. 2° 20′ 30″ E. from London. Population in 1851, 1,021,530. Situated 193 feet above the level of the sea, on both sides and on two islands of the Seine, 111 miles from its mouth. It has recently, and at the expense of about £100,000,000, been surrounded with fortifications, consisting of a wall 33 feet in height, bastioned and terraced, lined with a fosse about 20 feet deep, and embracing both banks of the Seine, with a continuous inclosure, and of outworks composed of 14 detached forts. These fortifications take in much of the suburbs, and even of the surrounding country; but the proper limits of the town are traced by an interior wall, erected at a much earlier date, for fiscal purposes. In this wall are 50 gates or barriers, which form the proper entrances of Paris, and at which the *octroi*, or duties on goods brought into it, are levied. Many of these barriers are magnificent structures. Among others may be specified the Barrière de Neuilly, consisting of two pavilions, and having in front the splendid triumphal arch De l'Etoile; the Barrières de Vincennes, de St. Martin, de Fontainebleau, de Reuilly, de Chartres, and de Passy. Outside the barriers and their connecting wall is a large zone, finely planted, which nearly makes the circuit of the town, and forms an excellent, though not very

much frequented, promenade. It receives the name of Outer Boulevards, to distinguish them from the Inner Boulevards, which form a similar internal zone, consisting, in their finest parts, of a magnificent central thoroughfare, bounded on either side with a double row of trees, under which a broad and elevated pathway has been formed, and lined by elegant shops and mansions, the whole forming a scene of animated gayety and splendor which no other capital in Europe can equal.

The Seine traverses the city in a west-northwest direction, and has a medium breadth of about 450 feet, nearly one-third less than that of the Thames at London. It is shallow, and navigable only by barges and small steamers. Its quays are built of solid masonry, and form large terraces, with a roadway in the centre, and a footpath on either side, generally planted. They extend about 11 miles, and, in addition to the splendid walks which they afford, serve the important purpose of protecting the lower parts of the city from inundations, from which, previously to these erections, it often suffered. The number of bridges is twenty-seven, all of stone, with the exception of seven suspension bridges, three of a combination of stone and iron, and one of wood.

Manufactures and Trade.—The government possesses only two properly manufacturing establishments—that known by the name of the Gobelins, celebrated for its tapestry and carpets, made, however, not for sale, but the supply of the palaces, and for presents; and that of tobacco, which the government holds as a monopoly, and carries on in a vast establishment on the south side of the Seine, producing about a fifth of all the snuff used in the kingdom, and yielding an annual profit estimated at $14,000,000. In the other branches, which are free, the most important manufactures are articles of jewelry and precious metals; ebony and ivory trinkets, fine hardware, paper-hangings, saddlery, and other articles in leather; cabinet-work, carriages, various articles of dress, silk and woolen tissues, particularly shawls and carpets; lace, embroidery, artificial flowers, combs, machines, mathematical and optical instruments, types, books, engravings, refined sugar, chemical products, etc. The value of all the industrial products of Paris in 1847 was, after a very careful investigation, estimated at $292,725,670. In 1848, during the turmoil of the last revolution, they fell to less than one half of what they were before. The value of the exports, composed almost entirely of the above articles of manufacture, was declared at the custom-house of Paris to amount in value, in 1850, to $11,095,945. The estimated revenue of the city for 1852 was $9,308,630; and the expenditure $9,703,630.—*See article* FRANCE. For commerce, etc., of Paris, *see* HUNT's *Merchants' Magazine*, xviii. 60; *Quarterly Review*, lxxviii. 146; *Living Age*, ii. 404, xiii. 219; *Foreign Quarterly*, xxxi. 182; *Edinburgh Review*, lxxxv. 89; *Comm. Rel. U. S.*

The commercial intercourse between the United States and this consular district depends on the regulations of the custom laws of the empire, and on the local legislation of the city of Paris, by which *octroi* duties are levied on many articles brought into the city, whether foreign or domestic, but especially on spirits and articles of subsistence. These regulations are fixed, and rest only on the contingency of alteration by legislative enactment. There are some privileges accorded to Spain by ancient treaties which will be found set forth in the *Code des Douanes*, *Code Maritime*, and the *Tarif des Droits*. We are not aware of any privileges accorded to the commerce of other nations and denied to the United States, or of any important restrictions. The books referred to above give full information, in tabular statements, on this question. The transhipment of goods belongs to the coasting trade, and, by law, only French vessels are entitled to engage in this trade. Full information will be found upon this point in the *Code Maritime*.

Rates of insurance, by steamers, on goods,	¾ to 1½ per cent.
" " by ships,	1 to 1½ "
" " by steamers, valuables,	1 to 1½ "
" " by ships,	1 to 1 "
Commissions for shipping	2 francs each package.
Commissions for purchasing in large quantities	3 per cent.
Commissions for purchasing in small quantities	5 "
Average rate of exchange between New York and Paris	5 18¾ francs.

Sales of goods are made upon cash or upon orders, with credits from thirty days to six months. Commission houses are in the habit of advancing for many of their customers.—See *Tarif des Droits*, *Regulations des Douanes*, and *Statistique Industriel*.

Parrel. In *Naval language*, the collar of greased rope, or trucks, by which the yard is confined to the mast, while it slides up and down it.

Partnership. A partnership is an agreement between two or more to share in the profit and loss of the use and application of their capital, labor, and skill, in some lawful business, whether one supplies capital, and another skill and labor, or each both labor and capital. The benefits of a union of the means and advantages of different persons for the conduct of a branch of business, in many instances, are too obvious and common to need illustration. A partnership is not constituted merely by an interest of different parties in the same thing, but it depends on a participation of profits and joint liability to loss. And yet there are some exceptions to this rule, for it has been held that seamen shipping on shares in a shipping voyage are not copartners with the owners. And so, where a certain share or commission is allowed to a clerk or agent, depending on the success of the business or amount of profits, in addition to his other compensation, it has been held, in many cases, not to make him a copartner. It is difficult to point out the criterion by which cases of this description are distinguished from those of copartnership; and some of them look more like an exception of cases which strictly come within the definition of copartnership. A question has been made whether joint owners of a ship are copartners, and the general doctrine is that they are not so; and yet it is generally held that each one is liable for the whole amount of repairs and expenditures in the navigation of the ship; but still the ownership is not joint, for, in the case of the decease of one, the property in the whole ship does not survive to the others, as would be the case if it were partnership property, but the property is held in common, each part-owner having a distinct title to his share; and one part-owner can not, merely as such, convey a title to the whole ship, or to any share except his own. As to the share of each partner in the profits, or his liability for losses, if there is no agreement on this subject, all the partners stand upon an equal footing.

As to the objects of copartnership, they are not confined to commerce, though most frequent in that branch of industry, but may embrace manufacturing, the carrying on of any mechanic art, agriculture, the practice of law or medicine, and, in short, every lawful branch of business. Copartnership is more usually formed by a written agreement; and by some codes and in regard to certain copartnerships, formal stipulations are required by law in order to constitute a copartnership. This is not a general rule, however, for in many branches of business parties may agree orally for a participation in profit and loss. These associations are divided into different classes, distinguished by their objects, and the extent of the liability of each partner. The Roman law allowed of general copartnerships, extending the community of property, and joint profit and loss, not only to the business pursued, but also to all acquisitions by either party, whether by legacy, inheritance, gift, or as the fruits of industry. By that law, and so by the laws of France, Spain, Louisiana, and other codes derived from the Roman law, a man and his wife may

be copartners; and, in making the marriage contract, the kind and extent of copartnership is agreed upon, the form of the stipulation for this purpose being particularly pointed out by the French code. It was between the parties to the marriage contract that the general copartnerships above-mentioned were most frequently formed. In this respect, however, the Roman law, and those codes derived principally from it, leave the parties at liberty to agree upon a universal copartnership or a limited one, or a separate property.

Copartnerships are usually confined to the prosecution of a particular branch of business, and it very often happens that each copartner is concerned in other branches. The term *general copartnership* is also applied to one formed for trade generally, or business generally, without limitations; but where the joint interest extends only to a particular concern, as, for instance, the freighting of a ship, it is called a *special copartnership*. And so a partnership is called *special* when the parties enter into stipulations modifying and restraining the right and powers of the members, instead of leaving them to the operation of the laws generally applicable to such associations; and this is the usual meaning of such copartnerships. Another description is that of *limited* copartnerships, in which one or more partners put in a certain amount of capital, which is liable for the contracts of the firm; but beyond this the party or parties are not liable. This sort of partnership is particularly provided for in the French code, and is not unfrequent in France. It is a very useful provision of the law that allows of such associations, for it enables persons of fortune, and retired from business, to put a part of their capital at risk in trade, without risking their whole property; and it accordingly operates very favorably upon the enterprise of the community; for a young man who has only his talents and industry to put into a concern can thus more easily obtain the capital necessary to give his activity and enterprise scope, and every community ought to open all practicable channels for the intellectual and physical exertions of its members. This species of copartnership has accordingly been partially introduced into the United States, being provided for in the code of Louisiana, which is modeled on the French code, and having been introduced also into the laws of New York by a statute, the provisions of which were closely copied from the French code—the first instance (as Chancellor Kent remarks in his Commentaries) in which any other foreign law than the English had been adopted in the particular structure and provisions of an American statute, in those States of whose codes the English law is the basis. This species of partnerships has also been authorized by statute in Massachusetts, Rhode Island, Connecticut, Vermont, New Jersey, Pennsylvania, Maryland, South Carolina, Georgia, Alabama, Florida, Mississippi, Indiana, and Michigan. We will now proceed to a more extended account of limited partnerships.

The condition of a limited partnership is that the name of the person whose liability is thus limited must be used in the firm, and particular provisions are made as to paying in the amount of capital stipulated; and another suitable provision in such case is the provision for some registry by which it may appear to those who wish to make the inquiry what amount such partner pays in. Some partnerships are *secret;* that is, some one agrees, upon terms, to share profits with ostensible partners without any notice to the public of his being a member of the firm. Each partner has a joint interest in the whole personal property, and, unless the articles stipulate otherwise, may transfer it.

Each partner may also bind the whole firm by his contract made in the course of the business of the firm, unless it be otherwise agreed between them; and even when it is otherwise agreed, still, if a party with whom a partner contracts has a legal right, from the manner in which the joint affairs are managed, to presume that a partner is authorized to contract for and to bind his copartners in regard to the subject of any contract, the firm will be bound by such contract. But if the party contracted with has notice that, by the articles of copartnership, a partner has not authority to make a contract, the company will not be bound by it. So if a partner contracts, in the partnership name, in a manner which the party contracted with knows is not within the business of the firm—as if he makes a negotiable note in the name of the firm for his own separate debt—the contract will not bind the firm to the party thus contracted with; but still, if this contract, being transferable in its nature, and holding out on the face of it the responsibility of the whole firm, is negotiated to those who have no notice that the paper was made for the private accommodation of the partner who signed the partnership name, the company will be bound in respect to such assignee; that is, the firm having given notice to the world that they are copartners in a certain branch of business, every one has a right to presume that all acts done by each of them in regard to it are authorized by the terms of their contract, or the circumstances of the case, unless he has notice to the contrary. But certain acts are not authorized by the general powers of copartners, and those no one partner can be presumed to have power to do; as, for instance, one partner is not merely, as such, authorised to make a deed in the name of the other, or to act as his attorney; and he can not, accordingly, convey land belonging to the members of the company; for, though it may have been acquired and paid for with the property of the firm, yet when acquired, it belongs to the members in common, if the title be in them all, and each member can himself convey only his share; and in order to the conveyance of that of another, he must be specially empowered. But a partner may release a debt due to the firm if it be done fairly, and without collusion between him and the debtor. It has been held, however, that one partner can not by deed submit a question to arbitration. A partnership may be dissolved by its own limitation, the death, bankruptcy, or insanity of a member, or by the breaking out of a war between the countries to which the members belong.

A question is also made whether a member may dissolve the copartnership voluntarily before the time for which it was formed expires, and the opinion seems to be that he may do so by giving sufficient notice to this effect; and this seems to be necessarily incident to new associations; for, though he would, in such case, be answerable to his copartners for the breach of his agreement, yet it would be exceedingly inconvenient if a partner were irrevocably bound to give his copartners the right of his credit, and of disposing of his property, after all his confidence in them had ceased. In case of mismanagement by any partner having charge of the partnership effects, so that the other partners are liable to be materially injured, they may make application to a Court of Chancery to appoint a receiver to take charge of the concerns of the company, and wind up its affairs, in case the partnership has already been dissolved, or in case there appears sufficient reason to dissolve it. But where there is no ground for such application to a Court of Chancery, and the company is dissolved by the death of one partner, the joint property will survive to the other partner, who may dispose of it, and collect and pay the debts of the concern, and will be liable to account to the personal representatives of the deceased partner for his proportion of the surplus property. In case of the decease of a partner, his personal representatives do not become copartners with the surviving partners, but the affairs of the concern must be settled with reference to the time of the death of the deceased partner.—E. A.

Limited Partnership in New York.—1. According to the Revised Statutes of the State of New York, limited partnership for transaction of any mercantile, mechanical, or manufacturing business within the State may

be formed of two or more persons; but the provisions of the act will not authorize any such partnership for the purpose of banking or making insurance. 2. Such partnerships may consist of one or more persons, who shall be called general partners, and who shall be jointly and severally responsible, as general partners now are by law; and one or more persons who shall contribute, in actual cash payments, a specific sum as capital to the common stock, who shall be called special partners, and who shall not be liable for the debts of the partnership beyond the fund so contributed by him or them to the capital. 3. The general partners only shall be authorised to transact business and sign for the partnership, and to bind the same. 4. The persons desirous of forming such partnership shall make, and severally sign, a certificate, which shall contain: I. The name or firm under which such partnership is to be conducted. II. The general nature of the business to be transacted. III. The names of all the general and special partners interested therein, distinguishing which are general and which are special partners, and their respective places of residence. IV. The amount of capital which each special partner shall have contributed to the common stock. V. The period at which the partnership is to commence, and the period at which it shall terminate. 5. The certificate shall be acknowledged by the several persons signing the same, before the Chancellor, a Justice of the Supreme Court, a Circuit Judge, or a Judge of the County Courts; and such acknowledgment shall be made and certified in the same manner as the acknowledgment of conveyance of land. 6. The certificate so acknowledged and certified shall be filed in the office of the clerk of the county in which the principal place of business of the partnership shall be situated, and shall also be recorded by him at large in a book to be kept for the purpose, open to public inspection. If the partnership shall have places of business situated in different counties, a transcript of the certificate, and of the acknowledgment thereof, duly certified by the clerk in whose office it shall be filed, under his official seal, shall be filed and recorded in like manner in the office of the clerk of every such county. 7. At the time of filing the original certificate, with the evidence of the acknowledgment thereof, as before described, an affidavit of one or more of the general partners shall also be filed in the same office, stating that the sums specified in the certificate to have been contributed by each of the special partners to the common stock have been actually and in good faith paid in cash. 8. No such partnership shall be deemed to have been formed until a certificate shall have been made, acknowledged, filed, and recorded, nor until an affidavit shall have been filed, as above directed; and if any false statement be made in such certificate or affidavit, all the persons interested in such partnership shall be liable for all the engagements thereof as general partners. 9. The partners shall publish the terms of the partnership, when registered, for at least six weeks immediately after such registry, in two newspapers, to be designated by the clerk of the county in which such registry shall be made, and to be published in the senate district in which their business shall be carried on; and if such publication be not made, the partnership shall be deemed general. 10. Affidavits of the publication of such notice, by the printers of the newspapers in which the same shall be published, may be filed with the clerk directing the same, and shall be evidence of the facts therein contained. 11. Every renewal or continuance of such partnership beyond the time originally fixed for its duration shall be certified, acknowledged, and recorded, and an affidavit of a general partner be made and filed, and notice be given in the manner herein required for its original formation; and every such partnership which shall be otherwise renewed or continued shall be deemed a general partnership. 12. Every alteration which shall be made in the names of the partners, in the nature of the business, or in the capital or shares thereof, or in any other matter specified in the original certificate, shall be deemed a dissolution of the partnership; and every such partnership which shall in any manner be carried on after any such alteration shall have been made, shall be deemed a general partnership, unless renewed as a special partnership, according to the provisions of last section. 13. The business of the partnership shall be conducted under a firm, in which the names of the general partners only shall be inserted, without the addition of the word "Company," or any other general term; and if the name of any special partner shall be used in such firm, with his privity, he shall be deemed a general partner. 14. Suits in relation to the business of the partnership may be brought and conducted by and against the general partners, in the same manner as if there were no special partners. 15. No part of the sum which any special partner shall have contributed to the capital stock shall be withdrawn by him, or paid and transferred to him, in the shape of dividends, profits, or otherwise, at any time during the continuance of the partnership; but any partner may annually receive lawful interest on the sum so contributed by him, if the payment of such interest shall not reduce the original amount of such capital; and if, after the payment of such interest, any profits shall remain to be divided, he may also receive his portion of such profits. 16. If it shall appear that, by the payment of interest or profits to any special partner, the original capital has been reduced, the partner receiving the same shall be bound to restore the amount necessary to make good his share of capital with interest. 17. A special partner may, from time to time, examine into the state and progress of the partnership concerns, and may advise as to their management; but he shall not transact any business on account of the partnership, nor be employed for that purpose as agent, attorney, or otherwise. If he shall interfere contrary to these provisions, he shall be deemed a general partner. 18. The general partners shall be liable to account to each other, and to the special partners, for their management of the concern, both in law and equity, as other partners now are by law. 19. Every partner who shall be guilty of any fraud in the affairs of the partnership shall be liable civilly to the party injured to the extent of the damage, and shall also be liable to an indictment for a misdemeanor, punishable by fine or imprisonment, or both, in the discretion of the court by which he shall be tried. 20. Every sale, assignment, or transfer of any of the property or effects of such partnership, made by such partnership when insolvent, or in contemplation of insolvency, or after, or in contemplation of the insolvency of any partner, with the intent of giving a preference to any creditor of such partnership or insolvent partner, over other creditors of such partnership, and every judgment conferred, lien created, or security given by such partnership under the like circumstances, and with the like intent, shall be void, as against the creditors of such partnership. 21. Every such sale, assignment, or transfer of any of the property or effects of a general or special partner, made by such general or special partner when insolvent, or in contemplation of insolvency, or after, or in contemplation of the insolvency of the partnership, with the intent of giving to any creditor of his own, or of the parnership, a preference over creditors of the partnership, and every judgment conferred, lien created, or security given by any such partner under the like circumstances, and with the like intent, shall be void, as against the creditors of the partnership. 22. Every special partner who shall violate any provision of the two last preceding sections, and who shall concur in and assent to any such violation by the partnership, or by any individual partner, shall be liable as a general partner. 23. In case of the insolvency or bankruptcy of the partnership, no special partner shall, under any circumstances, be allowed to

claim as a creditor until the claims of all the other creditors of the partnership shall be satisfied. 24. No dissolution of such partnership by the acts of the parties shall take place previous to the time specified in the certificate of its formation, or in the certificate of its renewal, until a notice of such dissolution shall have been filed and recorded in the clerk's office in which the original certificate was recorded, and published once in each week for four weeks in a newspaper printed in each of the counties where the partnership may have places of business, and in the State papers.—Leone Levi's *Commercial Law of the World.*

Analysis of the general Law of Partnerships.—Partnership in Great Britain is a contract entirely free, and subject to no formalities; it belongs to the parties themselves to regulate the conditions; the law is merely circumscribed in protecting the rights of third parties, and to see them respected. Partnership in common law is divided into three classes—universal, general, and limited or special. They are also divided into private partnerships and public companies. Public companies are divided into unincorporated companies or associations, and incorporated companies, and corporations chartered by government. By the law of Scotland partnerships are divided into ordinary partnerships, joint-stock companies, and public companies. In the first the firm is a distinct person at law, and the partners, although jointly and severally liable for all the debts and contracts of the firm, are so as guarantors of the firm. This is general partnership. Special partnership is one contracted for a particular branch of business.

There are principles connected with the law which are identical in every country; namely, that all members of an ostensible partnership, or in collective name, are responsible in solidum; but differences appear in points regarding the continuation or cessation of partnership after the decease of one of the partners. Thus in Prussia or Frankfort, the heirs continue the partnership until the end of the year, and if they do not give notice of their retirement, or if they are not excluded by the other partners, they do not cease to form part of it.

In France partnership ends of full right at the instant of the death of a partner, unless by contrary agreement this last regulation has been generally adopted. It is the same for that by which the profits distributed among partners are not to be returned to the partnership fund, whatever may happen afterward, unless there be fraud, and the provision is added, that a partner who brings in only his labor can not, in any case, return the dividends which he has received.

Almost every legislation except that of Great Britain recognises the existence of three kinds of commercial partnerships. 1st. Ostensible partnerships (in collective name); 2d. Partnerships *in commandité*; 3d. Anonymous partnerships.

The Portuguese code specifies each kind of partnership, indicating their rules at some length. In effect, besides the partnership anonymous, dormant, or secret, and in collective name, that of capital and labor is made prominent; in this case the partner with capital alone is responsible beyond his investment, in consequence of which the law characterizes this association as irregular. Then come partnerships in participation, with limited or unlimited capital, called Pareeria, either for an indivisible object, or for a determinate end; but in all cases it is necessary that it should refer to a commercial operation, and that there be at least one merchant either dormant or ostensible. There are in this code some regulations worthy of being noted; namely, that a contract which would free the provider of funds from all obligations, when he has a share in the profits, is null, but then he becomes an interested party, and not a partner. A contract is declared usurious which should allow to a lender of money the profits besides the interests, without subjecting him to the losses, which is very proper and just; because the principle of equality ought to govern, above all, matters of partnership; consequently this last clause ought to be annulled if it existed. In general, a minor, even not a trader, may not be a partner; but he has power to make use of the privilege of restitution in case of loss. If, at his coming of age, he has not declared that he wishes to retire, he becomes responsible for all further acts of the partnership.

It is most essential in partnership in collective name that the partners should all be responsible *in solidum*. In this the Dutch code is equal in all points to the French code; but the former code contains a derogation from this rule surprising at first, because it says that a collective partner who has become *commanditaire* is not responsible *in solidum*. The reason of this extraordinary regulation is founded upon the usage which permits the continuation of ancient commercial houses, known under the names of their founders, although these have still their capital invested in them; true it is that third parties ought to have been acquainted with it by the liquidation of the preceding house, or by the publication of the dissolution.

In the Spanish code there is a regulation different from any other legislation in matter of constitution of anonymous partnerships, by subjecting the articles, not to the examination of the government, but of the tribunals of commerce. The Spanish code and that of Portugal prescribe a measure the same as that of the Code Napoleon, which consists in making interests to run in full right, on the investments of the partners, from the day in which they ought to be made. With regard to the nomination of managers of partnership, in France the law has no provision for it. In Würtemberg and in Spain, when the manager is nominated by the articles, it is allowed, should his action be injurious to the interests of the company, to add another member. In Russia it is prohibited to confer by the articles the management of the partnership on certain parties for all its duration and without a renewal.

All legislation is silent upon the interests of the capital invested by the shareholders. It is, in fact, clear that an investment of funds in a partnership is not an employment, but a sum bestowed for mere operations, and which can only allow to raise sums on the realised profits, either every year, or at the time when balance-sheets are drawn up according to law, or at any other time, periodical or not. But in Hungary the "*commanditaires*," improperly called partners, because they are then only considered as lenders of money, may stipulate for interests beyond the legal rate which the other partners ought to pay, even if they should suffer losses. It is the same in Prussia.

With regard to the emission of shares and their transference, the Hungarian code contains very important regulations. It says that all persons may buy shares, but it proscribes shares to the bearer—a regulation which was reproduced in the Russian code and in the Würtemberg code. It says also that no investment of capital can be made nor interests claimed before the constitution of the partnership, and that only when all shares are disposed of the shareholders may establish the articles. Lastly, there is the remarkable regulation, that when the majority of shareholders have voted for a change or modification in the articles, of a nature to alter the object of the partnership, the minority have power to retire.

The Russian code prescribes several very curious measures. The sale of shares, or promises of shares on credit, is prohibited. A portion of the profits must be taken to constitute a reserve fund; the unreclaimed dividend, after ten years, is united to the social fund, or may be divided among the other shareholders. Lastly, if the directors are divided in their deliberations, the dissenting minority may exact that mention be made of their opinion in the verbal process. The same code indicates the mode of terminating disputes:

between shareholders or directors they may, with their consent, be decided by the general meeting, or by arbitrators; when third parties are concerned, it stands always with the tribunal of arbitrament to decide as a forced jurisdiction. In France the same clause is equally precise. But various modern legislations inserted regulations against this mode; thus the code of Würtemberg permits parties to derogate from it; the Hungarian code says that disputes among partners shall be brought before the Tribunal of Commerce; and if it regards bills of exchange, or in case of insolvency, they shall be adjudicated upon by the ordinary tribunals. The Lombardo-Venetian code does not reproduce the section of the French code, called *On Disputes among Partners*. The recent codes of Nassau and Sardinia do not contain any regulation on this matter. In England, when a reference is depending, made, or determined, it may be a bar; but the agreement of the parties does not oust either courts of law or equity, as the former will not allow their jurisdiction to be ousted by any private arrangement, and equity will not decree a specific performance thereof.

The law of merchants differs from the common law in the power of binding a partner by deed.

Lord Kenyon said, in Harrison *v.* Jackson, 7 S. R. 210: "The law on merchants is part of the law of the land, and in mercantile transactions it never was doubted but that one partner might bind the rest. But the power of binding each other by deed is now for the first time insisted on. A general partnership agreement, though under seal, does not authorize the partners to execute deeds for each other, unless a particular power be given for that purpose. Yet in common law a partner has power to bind his copartner by deed."

Although, in the words of Hobart, C. J., "The custom of merchants is part of the common law of the United Kingdom, of which the judges ought to take notice; and if any doubt arise to them about their custom, they may send for the merchants to know their custom, as they may send for the citizens to know their law;" yet, on the other hand, Lord Holt says, "We take notice of the laws of merchants that are general, not of those that are particular usages."—See *Westminster Review*, xx. 58; *American Quarterly Review*, xix. 48; Hunt's *Merchants' Magazine*, xxiv. 66, xxxiii. 457, xxxv. 720. See also Leone Levi's *Commercial Law of the World*, 4to. London, 1854; and Kent's *Commentaries*, vol. iii.

Partners of the Masts, the wood-work round the mast at the deck, to strengthen and support the deck against the pressure of the mast. The term is also applied to the similar supports round the capstan and pumps.

Partridge Wood, a variegated wood imported from Martinique; it is said to be the produce of the *Heisteria coccinea*.

Passengers, in *Commercial navigation*, are individuals conveyed for hire from one place to another on board ship. Passage ships are those peculiarly appropriated to the conveyance of passengers. Passage ships are generally placed under certain regulations; and the extent to which emigration is now carried renders it of the utmost importance that these regulations should be carefully compiled. The greater number of emigrants are in humble life: few among them know any thing of ships, or of the precautions necessary to insure a safe and comfortable voyage; they are also, for the most part, poor, and exceedingly anxious to economize, so that they seldom hesitate to embark in any ship, however unfit for the conveyance of passengers, or inadequately furnished with provisions, if it be *cheap*. Unprincipled masters and owners have not been slow to take advantage of this; and in order to prevent the frauds that would otherwise be practiced on the unwary, it has been found indispensable to lay down some general regulations as to the number of passengers to be taken on board ships as compared with their tonnage, the quantity of water and provisions as compared with the passengers, etc. But this is no very easy task. If the limitations be too strict, that is, if comparatively few passengers may be carried, or if the stock of provisions to be put on board be either unnecessarily large or expensive, the cost of emigration is proportionally enhanced, and an artificial and serious impediment is thrown in the way of what should be made as easy as possible, consistent with security. But, on the other hand, if too many passengers be allowed, their health is liable to suffer; and should the supply of provisions be inadequate, or the quality bad, the most serious consequences may ensue.

In some respects passengers may be considered as a portion of the crew. They may be called on by the master or commander of the ship, in case of imminent danger either from tempest or enemies, to lend their assistance for the general safety; and in the event of their declining, may be punished for disobedience. This principle has been recognized in several cases; but as the authority arises out of the necessity of the case, it must be exercised strictly within the limits of that necessity.—*Boyce v. Badcliffe*, 1 Campbell, 58. A passenger is not, however, bound to remain on board the ship in the hour of danger, but may quit it if he have an opportunity; and he is not required to take upon himself any responsibility as to the *conduct* of the ship. If he incur any responsibility, and perform extraordinary services in relieving a vessel in distress, he is entitled to a corresponding reward. The goods of passengers contribute to general average.—Abbott *on the Law of Shipping*.

Passenger Act of the United States.—It is made the duty of the Secretary of State, by the second paragraph of the 18th section of the act approved 3d of March, 1855, to give notice, in the ports of Europe and elsewhere, of the provisions of the act to regulate the carriage of passengers in steamships and other vessels.

The special attention of United States consular officers is called to this act, and also to the instructions which have been issued by the Treasury Department in reference to it. It will be observed that, while this act prescribes spaces of certain clear superficial feet of deck to each passenger (other than cabin passengers), it moreover fixes a maximum, by restricting the number of such passengers allowed to be carried in any such vessel in the proportion of one to every two tons of said vessel's tonnage measurement, excluding children under the age of one year in the computation, and computing two children over one and under eight years of age as one passenger. It follows, that though a vessel might afford clear spaces of the dimensions indicated for a greater number of passengers than one to every two tons of her tonnage measurement, yet if the number shall exceed that allowed by her tonnage measurement the penalties imposed by the law would attach; or if her tonnage measurement should allow a greater number of passengers than according to the clear spaces prescribed by law she could carry, yet if the number shall exceed that allowed by the clear spaces prescribed by law the penalties imposed by the law would equally attach. In other words, the one rule, as to the number of passengers a vessel is entitled to carry, is a limitation upon the other. The tonnage of each vessel, according to custom-house measurement, must, therefore, be ascertained, as well as the measurement of the spaces allotted to passengers, in order to determine the number of passengers she is entitled to carry.

In order to determine the number of passengers a vessel is entitled to carry in accordance with the spaces prescribed by this act, the height between decks must be measured, not from the bottom edge of the carlines or deck beams, but from the under surface of the upper deck to the top floor below; and no space shall be con-

sidered available for passengers that has not, when measured in this manner, the height called for by the law, as the case may be; nor shall any space in the vessel of a less width than four feet be measured; provided, however, if the vessel shall, in accordance with the provisions of the first section of this act, carry any portion of her cargo, or any other article or articles, on any of the decks, cabins, or other places appropriated for the use of passengers, in lockers or inclosures prepared for the purpose, the height between decks shall be measured from the bottom edge of the carlines, or deck beams, to the upper surface of said lockers or inclosed spaces, which shall be deemed and taken to be the deck or platform from which measurement shall be made for all the purposes of this act, and the spaces occupied by said lockers or inclosed spaces shall be deducted from the spaces allowable for the use of passengers. For example: the spaces in the main and poop decks, or platforms, and in the deck houses, if any there be, will be $16 \times 6 = 96$ feet; lower deck, $18 \times 6 = 108$ feet; two-deck vessels, $14 \times 7\frac{1}{2} = 105$ feet. The encumbering by merchandise or stores, not the personal baggage of the passengers, except in lockers or inclosures prepared for the purpose, of any part of the space occupied by the passengers, will vitiate the whole space, unless the part so encumbered be separated from that so occupied by a substantial bulkhead. The deck or platform must be of a permanent nature, flush, and impervious to the water.

Passport, a warrant of protection and authority to travel, granted to persons moving from place to place by the competent officer. The word appears to be derived from the maritime usage of some Continental countries of giving similar authorities from the admiral of a naval station to vessels leaving harbors within his jurisdiction. As passports are not required in our own country, the only species known to our travelers is that of foreign passports, which, for traveling on the continent of Europe, are usually made out by the resident minister or consul of the country he intends first to visit, or by the State Department. They are subject to *visa*, or inspection, by the proper authorities at the place where the traveler disembarks, and also at other places where he may reach, according to the police regulations of each particular country, and on passing the frontiers of states. Austria is, we believe, the only European state which at this time requires absolutely the *visa* of an embassador or minister of her own for travelers entering her domains by land. In France, and in many Continental countries, home passports are necessary for the native traveler. According to the letter of the French law (since 1796), a Frenchman can not pass the limits of the canton in which he is domiciled without a passport; but in practice it is not required within the extent of the department. Legally speaking, the strict formalities of an internal passport in France require the direction of a journey to be specified, and its exact execution attested by the *visas* and signatures of the police authorities at every place mentioned in it; and these laws are, from their severity, so incapable of complete execution, that it is a common saying that no man but a rogue is ever entirely *en règle* with respect to his passport, suspicious characters being usually the most particular in their attention to formalities, for fear of detention. A Frenchman traveling without a properly-authenticated passport is liable to arrest and detention for a period not exceeding a month. The fees fixed in France are two francs for a passport to travel at home, and ten to go abroad.

By the twenty-first section of the act of August 18, 1856, the Secretary of State of the United States is authorized to grant and issue passports, and cause passports to be granted, issued, and verified in foreign countries by such diplomatic or consular officers of the United States, and under such rules as the President shall designate and prescribe, for and on behalf of the United States, and no other person shall grant, issue, or verify any such passport; nor shall any passport be granted or issued to or verified for any other persons than citizens of the United States; nor shall any charge be made for granting, issuing, or verifying any passport, except in a foreign country; and in any case the fee allowed therefor shall not exceed the sum of one dollar, nor shall any such charge be made for more than one such verification in any foreign country; and if any person acting or claiming to act in any office or capacity under the United States, or any of the States of the United States, who shall not be lawfully authorized so to do, shall grant, issue, or verify any passport, or other instrument in the nature of a passport, to or for any citizen of the United States, or to or for any person claiming to be or designated as such in such passport or verification; or if any consular officer who shall be authorized to grant, issue, or verify passports, shall knowingly and willingly grant, issue, or verify any such passport to or for any person not a citizen of the United States, the person so offending shall be deemed and taken to be guilty of a misdemeanor, and on conviction thereof shall be imprisoned not exceeding one year, or fined in a sum not to exceed five hundred dollars, or both; and may be charged, proceeded against, tried, convicted, and dealt with therefor in the district where he may be arrested or in custody. It is likewise made the duty of all persons who shall be authorized, pursuant to the provisions of the act, to grant, issue, or verify passports, to make return of the same to the Secretary of State; and such returns shall specify the names and all other particulars of the persons to whom the same shall be granted, issued, or verified, as embraced in such passport.

From the foregoing provisions of the act it will be seen that passports can only be issued by the Secretary of State, and such diplomatic and consular officers of the United States in foreign countries as he may expressly authorize, and they can be granted to citizens of the United States only. Passports will be granted by the Secretary of State, and by the diplomatic representatives of the United States in foreign countries, free of charge; but when issued by a consul general or consul, the fee of one dollar, as prescribed in these instructions, is to be collected in every case. As passports granted by the Secretary of State secure to the bearers facilities from foreign governments not accorded to those issued by diplomatic officers, consuls general, or consuls, it will always be to the interest of travelers to procure their passports before leaving the United States, and this course is earnestly recommended by the Department of State. In any country where there is a diplomatic representative of the United States, no consul general or consul is authorized to issue passports, except in the absence of such representative from the place of his legation. Whenever he may be so absent, authority is given to consuls general and consuls only to issue passports; but in all cases the said consuls general or consuls, as the case may be, will report to the Department of State the names of the persons to whom passports have been issued by them, together with the evidence of their being citizens of the United States, and a copy of the same report will be forwarded to the legation of the United States, if there be any in the country. In case there should be no diplomatic representative accredited to the country in which a consul general or consul may reside, then these officers are authorized to grant passports, having regard to the general instructions to consular officers in reference thereto; they will transmit, in all cases, to the Department of State the information in regard to citizenship required by this section.

Whenever a foreign government shall require the *visa* of a passport of any citizen of the United States, it shall be given by the consular officer of the United States at the place where it is demanded, and he shall, for each passport so *visaed*, collect and account for the

fee prescribed in these instructions, noting on the passport that this has been done; and no charge shall thereafter be made by any officer of the United States for any *visa* of that passport in the same country. Passports are granted upon the ground of international courtesy, and as affording evidence to the diplomatic and other agents in foreign countries that the bearer thereof is a citizen of the United States, and entitled to full protection as such. A passport, in proper form, must contain a description of the bearer, with his signature; it must also request all whom it may concern to permit the bearer thereof, being a citizen of the United States, safely and freely to pass, and, in case of need, to give him all lawful aid and protection while so doing. It must be signed by the diplomatic representative, consul general, or consul, and sealed with the seal of the legation or consulate. Consuls general and consuls are expressly instructed that when an application is made for a passport by a native citizen of the United States, before granting it, the applicant must file in the consulate an affidavit stating that fact, and also his age and place of birth; this must be signed and sworn to by himself and one other citizen of the United States named therein, to whom he is personally known, and to the best of whose knowledge and belief the declaration made by him is true. If the applicant be a naturalized citizen, a passport can only be granted upon his exhibiting a certificate of naturalization, or a certified copy thereof; an authenticated copy of which must be transmitted by the consul general or consul to the Department of State. When the applicant is accompanied by his wife, children, or servants, or by females under his protection, it will be sufficient to state the names and ages of such persons and their relationship to the applicant.

UNITED STATES CONSULAR PASSPORT.

CONSULATE OF THE UNITED STATES OF AMERICA.

To all to whom these presents shall come, greeting:

Age, years.
Stature,
Forehead,
Eyes,
Nose,
Mouth,
Chin,
Hair,
Complexion,
Face,

I, the undersigned, consul of the United States of America for ——, and the dependencies thereof, hereby request all whom it may concern, to permit safely and freely to pass, —— ——, a citizen of the United States, and in case of need to give him all lawful aid and protection.

Given under my hand and the seal of the consulate, at ——, this —— day of ——, A.D. 18—, and in the year of the independence of the United States ——.

[SEAL.]

—— ——.

Paste (Fr. *pâte*). In Gem Sculpture, a preparation of glass, calcined crystal, lead, and other ingredients, for imitating gems. This art was well known to the ancients, and, after being long lost, was restored, at the end of the fifteenth century, by a Milanese painter. Some modern artists have succeeded in obtaining a composition possessing a hard, fine, and brilliant lustre or appearance; but *pastes*, or mock diamonds, as they are called, depend most for brilliancy on the art displayed in setting the foil or tinsel behind them. Several recipes have been given by M. Fontanieu; but the most useful, and that generally employed for the production of artificial diamonds, is the following: Take of litharge 20 parts, of silex 12, of nitre 4, of borax 4, and of white arsenic 2 parts. These ingredients are to be well mixed together in a crucible and melted; the fused metal is thrown into water; and should any of the lead employed be reduced to the metallic state, it becomes separated by this process, and the glass is remelted for use. For the finer kinds, rock crystal is used instead of flint or sand, as it occurs in a much purer state; *i. e.*, more free from the admixture of metallic oxyds, which give to vitreous compounds their different colors. In place of the above, Loysel recommends the following ingredients to form a compound having the same specific gravity as the Oriental diamond, and on this account considered superior, as it more nearly approaches the gem with regard to its refractive and dispersive powers; but, like the former, it requires to be kept for some two or three days in a fused state, in order to expel the superabundant alkali and to perfect the refining. A moderate degree of heat fuses it. The following is its composition: Take of white sand purified by being washed, first in muriatic acid and afterward in pure water until all traces of acid are removed, 100 parts; red oxyd of lead (minium) 150 parts; calcined potash 30 to 35 parts; calcined borax 10; and oxyd of arsenic 1 part.—See the *Polytechnic Journal* for July, 1841. The term paste is also applied to the earthy mixture for pottery and porcelain; also to dough, and to the solution of starch or wheat flour, made by first mixing it with a proper portion of cold water, and then adding boiling water under constant stirring, so as to form an even solution. Alum is often added to paste to strengthen it.—BRANDE'S *Dictionary*.

Pastel (Lat. *pastillus*). In painting, a crayon formed with any color and gum water, for painting on paper or parchment. The great defect of this mode of painting is its want of durability.

Patents. A patent, according to the definition of Mr. Philps, is a grant by the State of the exclusive privilege of making, using, and vending, and authorizing others to make, use, and vend, an invention.

The first act of Congress on this subject was passed April 10th, 1790, and it authorized the Secretary of State, the Secretary of War, and the Attorney General, or any two of them, to grant patents for such new inventions and discoveries as they should deem sufficiently useful and important. That act extended equally to aliens, and the board exercised the power of refusing patents for want of novelty or utility. This act was repealed, and a new act passed on the 21st February, 1798. It confined patents to the citizens of the United States, and they were to be granted by the Secretary of State, subject to the revision of the Attorney General. The act gave no power to the Secretary of State to refuse a patent for want of novelty or usefulness, and the granting of the patent became a mere ministerial duty. The privilege of suing out a patent was, by the act of 17th April, 1800, extended to aliens of two years' residence in the United States. The act of July 13th, 1832, only required the alien to be a resident at the time of the application, and to have declared his intention, according to law, to become a citizen.

But as every person was entitled to take out a patent, on complying with the prescribed terms, without any material inquiry, at least at the Patent Office, respecting the usefulness and importance of the invention or improvement, a great many worthless and fraudulent patents were issued, and the value of the privilege was degraded, and in a great degree destroyed. It became necessary to give a new organization to the Patent Office, and to elevate its character, and confer upon it more efficient power. This was done by the act of Congress of July 4th, 1836, which repealed all former laws on the subject, and re-enacted the patent system with essential improvements. A Patent Office is now attached to the Interior Department, and a commissioner of patents appointed. Applications for patents are to be made in writing to the commissioner, by any persons having discovered or invented any new and useful art, machine, manufacture, or composition of matter, or any new and useful improvement on any art, machine, manufacture, or composition of matter, not known or used by others before his discovery or invention thereof, and not at the time of his application for a patent in public use or on sale, with his consent or allowance, as the inventor or discoverer. The applicant must deliver a written description of his invention

or discovery, and of the manner and process of making, constructing, using and compounding the same, in full, clear, and exact terms, avoiding unnecessary prolixity, so as to enable any person skilled in the art or science to which it appertains, or is most nearly connected, to make, construct, compound, and use the same; and he must, in the case of a machine, fully explain the principle and the application of it, by which it may be distinguished from other inventions; and he must particularly specify the part, improvement, or combination which he claims as his own invention or discovery. He must accompany the same with drawings and written references, where the nature of the case admits of drawings or specimens of ingredients, and of the composition of matter sufficient in quantity for the purpose of experiment, where the invention or discovery is of a composition of matter. He must likewise furnish a model of his invention, in cases which admit of representation by model. The applicant also must make oath or affirmation that he believes he is the original and first inventor or discoverer of the art, machine, composition, or improvement for which he solicits a patent, and that he does not know or believe that the same was ever before known or used, and he must further state of what country he is a citizen.

If the applicant be a citizen, or an alien of one year's residence, he is to pay to the Treasury of the United States $30; and if a British subject, $500; and all other applicants, $300. The original and true inventor is not to be deprived of the right to a patent for his invention, by reason of his having previously taken out letters patent therefor in a foreign country, and the same having been published at any time within six months next preceding the filing of his specification and drawing. The executors and administrators of persons dying before a patent is taken out, may apply and take it out in trust for the heirs or devisees, on due compliance with the terms of the statute. Patents are assignable, and may be granted in whole or in part by writing, to be recorded in the Patent Office. If invalid by reason of defective specifications, or by claiming too much, the patent may be surrendered, and a new patent taken out for the unexpired period, provided the error did not arise from any fraudulent intention. If the patentee be an alien, he forfeits his exclusive right, if he fails for eighteen months from the date of the patent to continue on sale to the public on reasonable terms the invention or discovery covered by the patent. The patentee does not lose his patent if it satisfactorily appears to the court, that at the time of his application he believed himself to be the first inventor or discoverer of the thing patented, though the invention or discovery, or any part thereof, had been before known or used in a foreign country; provided it does not appear that the same, or any substantial part thereof, had before been patented or described in any printed publication.

These are the principal existing statute provisions on the subject, and though the act of Congress of 1836 has made considerable alterations in the pre-existing laws respecting the organization of the Patent Office, and the limitations on the granting of patents, yet the essential and established doctrines concerning patents heretofore declared in the decisions of the courts remain unaffected. The act of 1793 declared that simply changing the form or the proportions of any machine or composition of matter in any degree was not a discovery. And also, that the person who had discovered an improvement in the principle of any machine, or in the process of any composition of matter, might obtain a patent for such improvement, but that he could not thereby make, use, or vend the original discovery, nor could the first inventor use the improvement. These declaratory provisions are omitted in the law of 1836, and I presume the construction was considered to be necessarily the same without the provision. In an age distinguished for an active and ardent spirit of improvement in the arts of agriculture and manufactures, and in the machinery of every kind applied to their use, the doctrine of patent rights has attracted much discussion, and become a subject of deep interest both here and in Europe.—KENT's *Commentaries*, vol. ii. p. 438; DUNLAP's *Digest Laws U. S.*

Patras, or **Patrasso**, a sea-port in the northwest corner of the Morea, near the entrance of the Gulf of Lepanto, lat. 38° 14′ 25″ N., long. 21° 40′ 20″ E. Population variously estimated from 7000 to 8000. The port lies a little to the northward of the town; but the part fronting it is unsafe, and exposed to heavy seas, particularly in winter. Vessels, therefore, go a little farther up the gulf, where there is a mole or quay, and where they can lie close to the wharf. Patras has a more extensive trade than any other port of Greece. The principal exports are currants, oil, valonia, wine, raw silk, raw cotton, wool, skins, wax, etc. Of these, currants are by far the most important. The fruit is larger, and freer from sand and gravel, than that of the Ionian Islands. They are shipped in casks of various sizes; but as the weight of the cask is included in that of the fruit, it is said to be, for the most part, heavier and stronger than necessary. Morea currants are preferred in most countries, except England; but there the currants of Zante are held in equal, or perhaps greater, estimation. The export of currants from Patras may average from 70,000 to 80,000 cwts. a year; but the produce of the crop varies extremely in different seasons. Latterly the culture of currants in the Morea has been very greatly extended. Owing to the increase of their quantity, their price has been much reduced. But their cultivation would notwithstanding be extremely profitable were it not for the extraordinary risks by which it is attended. It is seldom, indeed, that the entire crop can be housed without serious damage; and very frequently it is all but entirely lost. This was the case with the crop of 1852, the loss of which occasioned much distress. The crops of oil, the next great article of export from Patras, are, if possible, still more fluctuating than those of currants. The imports at Patras, as at the other Greek ports, consist principally of sugar, coffee, and other colonial products; plain and printed cotton stuffs, woolen goods, salted fish, iron, tin plates, hardware, coal, cordage, hemp, deals, etc. Imported articles are brought principally from the Ionian Islands, Malta, Venice, Leghorn, Marseilles, and Trieste; but, from the want of authentic details, it is quite impossible to form any accurate estimate of their amount either as respects Patras or any other Greek port.

Commerce.—The Greeks have particularly distinguished themselves by the spirit and success with which they have engaged in naval and mercantile enterprises. Their commerce, next to their freedom, was the grand source of the prosperity of Athens, Corinth, and other Greek cities of antiquity. And in this respect the modern Greeks have been no unsuccessful imitators of their illustrious progenitors. The great articles of export from Greece consist of currants, silk, figs, wool, olive oil, valonia, wine, sponge, wax, tobacco, etc.; the principal imports being manufactured cotton and woolen goods, corn, with a great variety of subordinate articles, principally from England, but partly also from France and Germany. The mercantile navy of Greece was estimated in 1850 at 4000 vessels, of the aggregate burden of 150,000 tons, employing about 30,000 seamen. The Greeks have, in fact, attained to the distinction of being the carriers, factors, and traders of the Levant.

The advantage resulting to Greece from her being the seat of extensive trade is not so great as might have been anticipated. The import and export trade of the country is subjected to many troublesome regulations; there are no roads, which, however, are less wanted here than in most other countries. Manufactures on a large scale can not be said to exist, the bulk

of the popular'on, but little removed from barbarism, using only those made at home; agriculture is also in the most backward condition, and is almost wholly carried on under the *metayer* system. Still, however, some improvements are taking place, especially in the islands; and it is probable that the progress toward a better state of things will be gradually accelerated. It is deeply to be regretted that Candia, or Crete, was not either added to the new kingdom of Greece, or made independent. We can not help considering it as disgraceful to the Christian nations of Europe, that this famous island, where European civilization first struck its roots, should be consigned to the barbarians by whom it is now laid waste. It is as well entitled to the favorable consideration of England, France, and Russia, as any part of Continental Greece; and we hope that measures may yet be devised for rescuing it from the atrocious despotism by which it has been so long weighed down.—*See* GREECE. For Commerce, etc., of Modern Greece, see *Living Age*, ii. 557; NILES'S *Register*, xxv. 342 (DANIEL WEBSTER'S *Speech*); HUNT'S *Merchants' Magazine*, vii. 109; DE BOW'S *Review*, xiii. 134; *Democratic Review*, viii. 204 (GEORGE SUMNER).

Patterns are specimens or samples of commodities, transmitted by manufacturers to their correspondents, or carried from town to town by travelers, in search of orders.

Pawnbrokers and **Pawnbroking.** A pawnbroker is a species of banker, who advances money, at a certain rate of interest, upon security of goods deposited in his hands; having power to sell the goods, if the principal sum and the interest thereon be not paid within a specified time. The origin of borrowing money by means of pledges deposited with lenders is referred, as a regular trade, to Perousa, in Italy, about A.D. 1458; and soon afterward in England. The business of pawnbrokers was regulated 30 Geo. II., 1756. Licenses were issued 24 Geo. III., 1788. In London there are 334 pawnbrokers; and in England, exclusively of London, 1127.

Advantages and Disadvantages of Pawnbroking.—The practice of impledging or pawning goods, in order to raise loans, is one that must necessarily always exist in civilized societies, and is in many cases productive of advantage to the parties. But it is a practice that is extremely liable to abuse. By far the largest proportion of the *bona fide* borrowers of money on pawn consist of the lowest and most indigent classes; and were the lenders not subjected to any species of regulation, advantage might be taken (as, indeed, it is frequently taken, in despite of every precaution) of their necessities, to subject them to the most grievous extortion. But, besides those whose wants compel them to resort to pawnbrokers, there is another class, who have recourse to them in order to get rid of the property they have unlawfully acquired. Not only, therefore, are pawnbrokers instrumental in relieving the pressing and urgent necessities of the poor, but they may also, even without intending it, become the most efficient allies of thieves and swindlers, by affording them ready and convenient outlets for the disposal of their ill-gotten gains. The policy of giving legislative protection to a business so liable to abuse has been doubted by many. But though it were suppressed by law, it would always really exist. An individual possessed of property which he may neither be able nor willing to dispose of, may be reduced to a state of extreme difficulty; and in such case, what can be more convenient or advantageous for him than to get a loan upon a deposit of such property, under condition that if he repay the loan and the interest upon it within a certain period, the property will be returned? It is said, indeed, that the facilities of raising money in this way foster habits of imprudence; that the first resort for aid to a pawnbroker almost always leads to a second; and that it is impossible so to regulate the business as to prevent the ignorant and the necessitous from being plundered. That this statement, though exaggerated, is to a certain extent true, no one can deny. On the other hand, however, the capacity of obtaining supplies on deposits of goods, by affording the means of meeting pressing exigencies, in so far tends to prevent crime, and to promote the security of property; and it would seem as if the desire to redeem property in pawn would be one of the most powerful motives to industry and economy. At the same time, too, it must be borne in mind that it is not possible, do what you will, to prevent those who are poor and uninstructed from borrowing; and that they must in all cases obtain loans at a great sacrifice, and be liable to be imposed upon. But the fair presumption is, that there is less chance of any improper advantage being taken of them by a licensed pawnbroker than by a private and irresponsible individual. Although, however, the business had all the inconveniences, without any portion whatever of the good which really belongs to it, it would be to no purpose to attempt its suppression. It is visionary to imagine that those who have property will submit to be reduced to the extremity of want, without endeavoring to raise money upon it. Any attempt to put down pawnbroking would merely drive respectable persons from the trade, and throw it entirely into the hands of those who have neither property nor character to lose. And hence the object of a wise Legislature ought not to be to abolish what must always exist, but to endeavor, so far at least as is possible, to free it from abuse, by enacting such regulations as may appear to be best calculated to prevent the ignorant and the unwary from becoming the prey of swindlers, and to facilitate the discovery of stolen property.

Obligations under which Pawnbrokers should be placed.—For this purpose it seems indispensable that the interest charged by pawnbrokers should be limited; that they should be obliged to give a receipt for the articles pledged, and to retain them for a reasonable time before selling them; that the sale, when it does take place, should be by public auction, or in such a way as may give the articles the best chance for being sold at a fair price; and that the excess of price, if there be any, after deducting the amount advanced, and the interest and expenses of sale, should be paid over to the original owner of the goods. To prevent pawnbrokers from becoming the receivers of stolen goods, they should be liable to penalties for making advances to any individual unable to give a satisfactory account of the mode in which he became possessed of the property he is desirous to pawn; the officers of police should at all times have free access to their premises; and they should be obliged carefully to describe and advertise the property they offer for sale.

Law as to Pawnbrokers.—It may appear singular that pawnbrokers should hardly have been named in any legislative enactment till after the middle of last century. It was enacted by the 30 Geo. II. that a *duplicate* or receipt should be given for gooda pawned, and that such as were pawned for any sum less than £10 might be recovered any time within *two* years on payment of the principal and interest; but the rate of interest was not fixed.

Of the pledge of Mortgage and Chattels.—There is a material distinction to be noticed between a pledge and a mortgage. A pledge, or pawn, is a deposit of goods redeemable on certain terms, and either with or without a fixed period of redemption. Delivery accompanies a pledge, and is essential to its validity. The general property does not pass, as in the case of a mortgage, and the pawnee has only a special property. If no time of redemption be fixed by the contract, the pawner may redeem at any time; and though a day of payment be fixed, he may redeem after the day. He has his whole lifetime to redeem, provided the pawnee does not call upon him to redeem, as he has a right to do at any time, in his discretion, if no time for redemption

be fixed; and if no such call be made, the representatives of the pawner may redeem after his death. As early as the time of Glanville, these just and plain principles of the law of pledges were essentially recognised, and it was declared, that if the pledge was not redeemed by the time appointed, the creditor might have recourse to the law, and compel the pawner to redeem by a given day, or be forever foreclosed and barred of his right. And if no time of redemption was fixed, the creditor might call upon the debtor at any time, by legal process, to redeem or lose his pledge. The distinction between a pawn and mortgage of chattels is equally well settled in the English and American law; and a mortgage of goods differs from a pledge and pawn in this, that the former is a conveyance of the title upon condition, and it becomes an absolute interest at law, if not redeemed by a given time, and it may be valid in certain cases without actual delivery. According to the civil law, a pledge could not be sold without judicial sanction, unless there was a special agreement to this effect; and this is, doubtless, the law at this day in most parts of Europe. The French *Civil Code* has adopted the law of Constantine, by which even an agreement at the time of the original contract of loan, that if the debtor did not pay at the day, the pledge should be absolutely forfeited, and become the property of the creditor, was declared to be void. While on this subject of pledges, it may be proper further to observe, that the pawnee, by bill in chancery, may bar the debtor's right of redemption and have the chattels sold. This has been done frequently in the case of stock bonds, plate, or other personal property pledged for the payment of debt. But without any bill to redeem, the creditor, on a pledge or mortgage of chattels, may sell at auction, on giving reasonable opportunity to the debtor to redeem, and apprising him of the time and place of sale; and this is the more convenient and usual practice. While the debtor's right in the pledge remains unextinguished, his interest is liable to be sold on execution; and the purchaser, like any other purchaser or assignee of the interest of the pawner, succeeds to all his rights, and becomes entitled to redeem. —*See* KENT's *Commentaries*, vol. iv.

Italy, France, etc.—The practice of advancing money to the poor, either with or without interest, seems to have been occasionally followed in antiquity.—BECKMANN, vol. iii. But the first public establishments of this sort were founded in Italy, under the name of *Monti di Pietà*, in the 14th and 15th centuries. As it was soon found to be impossible to procure the means of supporting such establishments from voluntary contributions, a bull for allowing interest to be charged upon the loans made to the poor was issued by Leo X. in 1521. These establishments, though differing in many respects, have universally for their object to protect the needy from the risk of being plundered by the irresponsible individuals to whom their necessities might oblige them to resort, by accommodating them with loans on comparatively reasonable terms. And though their practice has not, in all instances, corresponded with the professions they have made, there seems no reason to doubt that they have been, speaking generally, of essential service to the poor. From Italy these establishments have gradually spread over the Continent. The *Mont de Piété*, in Paris, was established by a royal ordinance in 1777; and after being destroyed by the Revolution, was again opened in 1797. In 1804 it obtained a monopoly of the business of pawnbroking in the capital. Loans are made by this establishment upon deposits of such goods as can be preserved, to the amount of two-thirds of the estimated value of all goods other than gold and silver, and to four-fifths of the value of the latter. No loan is for less than 3 francs. The advances are made for a year, but the borrower may renew the engagement. Interest is fixed at the rate of *one* per cent. per month.

The *Mont de Piété* has generally in deposit from 600,000 to 650,000 articles, worth from twelve million to thirteen million francs. The expense of management amounts to from 60 to 65 *centimes* for each article; so that a loan of 3 francs never defrays the expenses it occasions, and the profits are wholly derived from those that exceed 5 francs. At an average the profits amount to about 280,000 francs, of which only about 155,000 are derived from loans upon deposit, about 125,000 being the produce of other funds at the disposal of the company. In some respects, particularly the lowness of interest upon small loans, and the greater vigilance exercised with respect to the reception of stolen goods, the *Mont de Piété* has an advantage over the pawnbroking establishments in this country. It may be doubted, however, whether it is, on the whole, so well fitted to attain its objects. The limitation of the loans to 3 francs would be felt to be a serious grievance here, and it can hardly be otherwise in France; nor is it to be supposed that the servants of a great public establishment will be so ready to assist poor persons, having none but inferior articles to offer in security, as private individuals anxious to get business. And such, in point of fact, is found to be the case, not in Paris only, but in all those parts of the Continent where the business of pawnbroking is confined to a few establishments. And hence, though the question be not free from difficulty, it would seem that, were the modifications already suggested adopted, our system would be the best of any. For further information with respect to this curious and interesting subject, the reader is referred to the *Traité de la Bienfaisance Publique* of Degerando, iii. 1–55; besides giving a succinct historical notice of *Monts de Piété*, the learned author has discussed most part of the knotty questions connected with the proper organization of these establishments, and with their influence on society, with equal sagacity and ability.—See *Bankers' Magazine*, New York, August, 1850, p. 170; August, 1852, p. 124 (Sir F. HEAD); Standard Lib. Cy. London, 1849.

Peach-tree (*Amygdalus persica*). It is not certain in what part of the globe the peach-tree was originally produced; for although we have early accounts of its being brought to Europe from Persia, it does not follow from thence that it was one of the natural productions of that country. Pliny relates that it had been stated to have possessed venomous qualities, and that its fruit was sent into Egypt by the kings of Persia, by way of revenge, to poison the natives; but he treats this story as a mere fable, and considers it the most harmless fruit in the world; that it had the most juice, and the least smell of any fruit, and yet caused thirst to those who ate of it. He expressly states that it was imported by the Romans from Persia; but whether it was indigenous to that country, or sent thither from a region still nearer to the equator, we have no information. He adds that it was not long since peaches were known in Rome, and that there was great difficulty in rearing them. He also informs us that this tree was brought from Egypt to the Isle of Rhodes, where it could never be made to produce fruit; and from thence to Italy. He says, moreover, that it was not a common fruit either in Greece or Natolia. No mention, however, is made of it by Cato. Pownall, in his *Roman Provinces*, makes it a Phocæan importation to Marseilles; and evidently it was cultivated in France at an early period, as Columella, in his account of this fruit, says:

> "Those of small size to ripen make great haste;
> Such as great Gaul bestows, observes due time
> And season, not too early, nor too late."

The peach is said to have been first cultivated in Britain about the middle of the 16th century. Gerard describes several varieties of it as growing in his garden, in 1597. Tusser mentions it in his list of fruits in 1577; and in all probability it was introduced when the Romans had possession of that country.

The peach was introduced into North America by

the first European settlers, probably toward the close of the 16th or early in the 17th century, where it is cultivated in extensive plantations, which often grow with such luxuriance as to resemble forests of other trees. In New Jersey, Pennsylvania, Delaware, Maryland, Virginia, and several other States, much attention is paid to its culture, and the fruit is of an excellent quality. It is no uncommon circumstance for a planter to possess a peach orchard containing one thousand or more of standard trees. It is only in the Middle States of the Union where this fruit arrives at the greatest perfection. In favorable seasons, it matures in the open air as far north as Maine, New Hampshire, Vermont, and the Falls of Niagara; but its pulp is not so delicious as when grown some degrees farther south; it is also trained against walls at Montreal and Toronto, in Canada, where, in some seasons, fruit of a fine quality is obtained. In the Carolinas, Georgia, and Florida, the trees make much foliage and wood; still, if well cultivated and properly pruned, the fruit grows to a large size, and is juicy and well flavored. On the Mississippi, particularly in Louisiana, which lies in the same latitude as that part of Asia where this species is indigenous, it grows spontaneously, but is regarded as of foreign origin, having been introduced from Spain before that river was explored by the French. In the vicinity of Boston, Salem, New York, Philadelphia, and other populous cities of the United States, the peach is reared against walls and in hot-houses by numerous opulent citizens, and fruit of a large size and fine quality is produced. In some other parts of the American continent it also readily grows, and in great abundance. Sir Francis Head, in his *Rough Notes*, speaks in raptures of the beauty and luxuriance of this fruit, which was scattered over the corn-fields in the neighborhood of Mendoza, on the east side of the Andes; and the same traveler noticed dried peaches used as an article of food on the more elevated parts of those mountains, to which they must have been carried from the plains below. On the banks of Rio de la Plata, from Montevideo to Buenos Ayres, we have seen peach-trees growing spontaneously in the greatest perfection, and in such abundance as to form a considerable portion of the fuel of the provinces in which they grew. The fruit there is of a fine quality, large quantities of which are annually dried for domestic use, and the chief part of the remainder is consumed by cattle, or is suffered to decay upon the ground.

The wood of the peach-tree is hard, compact, of a roseate hue, and is susceptible of a fine polish; but owing to its inferior size and comparative scarcity, it is but little used in the arts, or for fuel, except in countries where other kinds of wood are rare. When obtained, however, of suitable dimensions, it may be employed for similar purposes as that of the almond. A color may also be extracted from it called *rose-pink*. Its leaves yield, by distillation, a volatile oil of a yellow color, containing hydrocyanic acid. Its bark, blossoms, and kernels of the fruit, also possess the same poisonous property. From the quantity of gum and sugar contained in the delicious pulp, the peach is nutritious, and is employed as a dessert, both fresh and preserved. From the malic acid contained in its juice, it is slightly refrigerant, and if eaten in moderate quantities it is generally considered as wholesome; but if taken too freely it is liable to disorder the bowels. When stewed with sugar, it may be given as a mild relaxative to convalescents. The kernels may be used for the same purpose as those of the bitter almond. The leaves are sometimes employed by the cook, the liquorist, and the confectioner, for flavoring, and they have also been substituted for Chinese tea; but, as fatal consequences have sometimes followed these uses, they should be looked upon with precaution. The preservation of peaches, plums, cherries, apricots, and other kinds of fruit in sirup occupies a prominent rank in the industry and commerce of France and Majorca, and doubtless could be profitably carried on in those parts of the United States where these fruits are cultivated in abundance. To those who are desirous of entering into the business on an extensive scale, we would recommend the *Nouveau Manuel du Limonadier, du Glacier, du Chocolatier, et du Confiseur, par* MM. Cardelli, Lionnet-Clémandot, et Julia de Fontenelle, published at Paris in 1838; or, what would be still better, the employment of an intelligent *confiseur* who is practically acquainted with all its manipulations.—Browne's *Trees of America*.

Peak, a name given to the upper corner of those sails which are extended by a gaff, or by a yard which crosses the mast obliquely, as the mizzen-yard of a ship, the main-yard of a bylander, etc. The upper extremity of these yards and gaffs is also denominated the *peak*.

Pear-tree (*Pyrus Communis*). The common pear-tree is indigenous to Europe, Western Asia, the Himalayas, and to China; but not to Africa nor America. It is found wild in most of the counties of Britain, as far north as Forfarshire; on the continent of Europe, from Sweden to the Mediterranean; and in Asia, as far east as China and Japan. It is always found on a dry soil, and more frequently on plains than on hills or mountains; and solitary, or in small groups, rather than in woods and forests. The varieties cultivated for their fruit succeed both in the temperate and transition zones of the two hemispheres, and it has been remarked that this tree, as well as the apple and the cherry, will grow in the open air wherever the oak will thrive.

The wood of the common pear-tree is heavy, strong, compact, of a fine grain, and slightly tinged with red. In common with that of all the Rosaceæ, it is liable to have its natural color changed by steeping in water, which, therefore, ought to be avoided when intended for particular purposes in the arts. When green, it weighs nearly eighty pounds to a cubic foot, and from forty-nine to fifty-three pounds when dry. According to Du Hamel, it is, next to the true service (*Pyrus sorbus*), the best wood that can be employed in wood-engraving, for which purpose, however, it is far inferior to that of the box. Yet it is allowed to be very hard and homogeneous, easy to cut, and, when perfectly dry, is not liable either to crack or warp. For the coarser kinds of engraving, such as large plans or diagrams, show-bills, etc., it serves a very good purpose. When it can be obtained, in Europe, it is much used by turners and pattern-makers; also for joiners' tools; and, as it can readily be stained, it is sometimes made into various articles, dyed black, in imitation of ebony. As fuel, the wood of this tree is excellent, producing a vivid and durable flame, accompanied by an intense heat. According to Withering, the leaves afford a yellow dye, and may be employed to impart a greenish shade to blue cloths. But the most important uses of the pear-tree are those which arise from its fruit. When ripe, it is employed at the table as a dessert, either raw, stewed, or preserved in sirup, and occasionally it is used in tarts. In most of the countries where it grows this fruit is very generally dried in ovens, or in the sun, in which state, when stewed, it is excellent, either as a substitute for puddings and pies, or as forming part of the dessert.

Another purpose to which the pear is applied is for making perry. It is extensively cultivated for this object in various parts of Britain, France, and Germany, where the trees are sometimes planted in rows eighteen or twenty yards apart, in order to admit a free access of light and air. Perry is made in the same manner as cider. The pears should be gathered before they begin to fall, and should be ground as soon after as possible. Should the perry not be sufficiently clear, when racked off, it may be fined in the usual manner of clarifying cider, by isinglass, in the proportion of about half an ounce to a barrel. The kinds of pears

used for making this liquor in Herefordshire are such as have an austere juice, as the "Squash," the "Old-field," the "Barland," the "Huff-cap," the "Sack," the "Red," and the "Longland" varieties. Pears were considered by the Romans as an antidote to the effect of eating poisonous mushrooms; and up to the present time perry is said to be the best remedy that can be employed for the same purpose. In Britain and France an agreeable wine is made from a mixture of crab-apples and pears, which in the latter country is called *piquette*. Pears, in general, produce flatulency, and consequently are unfit for weak stomachs; but when they are quite ripe, and contain a sweet juice, they seldom prove noxious, unless eaten to excess. Pears that are to be kept for winter use should hang as long on the trees as the state of the weather will admit. They should then be kept in heaps, in an open, dry situation, for about ten days, then wiped with a dry woolen cloth, and, lastly, packed up close from the air and moisture. But to keep the fruit in its greatest perfection, small earthen jars may be selected about the size of the pear, which should be packed separately, in clean oat chaff or wheaten bran, then tied down with oiled paper or skin, and cemented tight with wax or pitch. These jars should then be packed in a cask, chest, or some other secure place, with their bottoms upward, where they should remain until required for use.—BROWNE'S *Trees of America*.

Pearl-ash. *See* POTASH.

Pearls (Du. *Paarlen*; Fr. *Perles*; Ger. *Perlen*; It. *Perle*; Lat. *Margaritæ*; Russ. *Shemptschug, Perlü*; Sp. *Perlas*; Arab. *Looloo*; Cyng. *Mootoo*; Hind. *Mootie*), are well-known globular concretions found in several species of shell-fish, but particularly the mother-of-pearl oyster (*Concha margaritifera*, Linn.). Pearls should be chosen round, of a bright, translucent, silvery whiteness, free from stains and roughness. Having these qualities, the largest are of course the most valuable. The larger ones have frequently the shape of a pear; and when these are otherwise perfect, they are in great demand for ear-rings. Ceylon pearls are most esteemed in England. The formation of the pearl has embarrassed both ancient and modern naturalists to explain, and has given occasion to a number of vain and absurd hypotheses. M. Réaumur, in 1717, alleged that pearls are formed like other stones in animals. An ancient pearl was valued by Pliny at £80,000 sterling. One which was brought, in 1574, to Philip II., of the size of a pigeon's egg, was valued at 14,400 ducats, equal to £13,996. A pearl spoken of by Boetius, named the *Incomparable*, weighed thirty carats, equal to five pennyweights, and was about the size of a muscadine pear. The pearl mentioned by Tavernier as being in possession of the Emperor of Persia was purchased of an Arab in 1633, and is valued at a sum equal to £110,400.—HAYDN.

Value of Pearls.—Pearls were in the highest possible estimation in ancient Rome, and bore an enormous price. *Principium culmenque omnium rerum pretii, margaritæ tenent.*—PLINY, *Hist. Nat.* Their price in modern times has very much declined; partly, no doubt, from changes of manners and fashions, but more probably from the admirable imitations of pearls that may be obtained at a very low price. According to Mr. Milburn, a handsome necklace of Ceylon pearls, smaller than a large pea, costs from £170 to £300; but one of pearls about the size of peppercorns may be had for £15. The pearls in the former sell at a guinea each, and those in the latter at about 1*s.* 6*d.* When the pearls dwindle to the size of small shot, they are denominated *seed* pearls, and are of little value. They are mostly sent to China. One of the most remarkable pearls of which we have any authentic account was bought by Tavernier at Catifa, in Arabia, a fishery famous in the days of Pliny, for the enormous sum of £110,000! It is pear-shaped, regular, and without blemish. The diameter is ·63 inch at the largest part, and the length from two to three inches. Much difference of opinion has existed among naturalists with respect to the production of pearls in the oyster; but it seems now to be generally believed that it is the result of disease, and is formed in the same manner as bezoar (*see* BEZOAR), pearls, like it, consisting of successive coats spread with perfect regularity round a foreign *nucleus*. In fact, the Chinese throw into a species of shell-fish (*mytilus cygneus*, or swan muscle), when it opens, five or six very minute mother-of-pearl beads strung on a thread; and in the course of a year they are found covered with a pearly crust, which perfectly resembles the real pearl.—MILBURN'S *Oriental Commerce*; AINSLIE'S *Materia Indica*.

Pearl Fisheries.—The pearl oyster is fished in various parts of the world, particularly on the west coast of Ceylon; at Tuticoreen, in the province of Tinnevelley, on the coast of Coromandel; at the Bahrein Islands, in the Gulf of Persia; at the Sooloo Islands; off the coast of Algiers; off St. Margarita, or Pearl Islands, in the West Indies, and other places on the coast of Colombia; and in the Bay of Panama, in the South Sea. Pearls have sometimes been found on the Scotch coast, and in various other places. The pearl fishery of Tuticoreen is monopolized by the East India Company, and that of Ceylon by government. But these monopolies are of no value; as in neither case does the sum for which the fishery is let equal the expenses incurred in guarding, surveying, and managing the banks. It is, therefore, sufficiently obvious that this system ought to be abolished, and every one allowed to fish on paying a moderate license duty. The fear of exhausting the banks is quite ludicrous. The fishery would be abandoned as unprofitable long before the breed of oysters had been injuriously diminished; and in a few years it would be as productive as ever. Besides giving fresh life to the fishery, the abolition of the monopoly would put an end to some very oppressive regulations enacted by the Dutch more than a century ago.

Persian Gulf.—The most extensive pearl fisheries are those on the several banks not far distant from the island of Bahrein, on the west side of the Persian Gulf, in lat. 26° 50′ N., long. 51° 10′ E.; but pearl oysters are found along the whole of the Arabian coast, and round almost all the islands of the Gulf. Such as are fished in the sea near the islands of Karrak and Corgo contain pearls said to be of a superior color and description. They are formed of eight layers or folds, while others have only five, but the water is too deep to make fishing for them either very profitable or easy. Besides, the entire monopoly of the fishery is in the hands of the Sheik of Bushire, who seems to consider these islands as his immediate property. "The fishing season is divided into two portions—the one called the short and cold, the other the long and hot. In the cooler weather of the month of June, diving is practiced along the coast in shallow water; but it is not until the intensely hot months of July, August, and September, that the Bahrein banks are much frequented. The water on them is about seven fathoms deep, and the divers are much inconvenienced when it is cold; indeed, they can do little when it is not as warm as the air, and it frequently becomes even more so in the hottest months of the summer. When they dive, they compress the nostrils tightly with a small piece of horn, which keeps the water out, and stuff their ears with beeswax for the same purpose. They attach a net to their waists, to contain the oysters; and aid their descent by means of a stone, which they hold by a rope attached to a boat, and shake it when they wish to be drawn up. From what I could learn, two minutes may be considered as rather above the average time of their remaining under water. Although severe labor, and very exhausting at the time, diving is not considered particularly injurious to the constitution; even old men practice it. A person

usually dives from twelve to fifteen times a day in favorable weather; but when otherwise, three or four times only. The work is performed on an empty stomach. When the diver becomes fatigued, he goes to sleep, and does not eat until he has slept some time. At Bahrein alone the annual amount produced by the pearl fishery may be reckoned at from £200,000 to £240,000. If to this the purchases made by the Bahrein merchants or agents at Aboottabee Sharga, Ras-ul Khymack, etc., be added, which may amount to half as much more, there will be a total of about £300,000 or £360,000; but this is calculated to include the whole pearl trade of the Gulf; for it is believed that all the principal merchants of India, Arabia, and Persia who deal in pearls make their purchases, through agents, at Bahrein. I have not admitted in the above estimate much more than *one-sixth* of the amount some native merchants have stated it to be, as a good deal seemed to be matter of guess or opinion, and it is difficult to get at facts. My own estimate is in some measure checked by the estimated profits of the small boats. But even the sum which I have estimated is an enormous annual value for an article found in other parts of the world as well as here, and which is never used in its best and most valuable state except as an ornament. Large quantities of the seed pearls are used throughout Asia in the composition of majoons, or electuaries, to form which all kinds of precious stones are occasionally mixed, after being pounded, excepting, indeed, diamonds; these being considered, from their hardness, as utterly indigestible. The majoon in which there is a large quantity of pearls, is much sought for and valued, on account of its supposed stimulating and restorative qualities. The Bahrein pearl fishery boats are reckoned to amount to about 1500, and the trade is in the hands of merchants, some of whom possess considerable capital. They bear hard on the producers or fishers, and even those who make the greatest exertions in diving, hardly have food to eat. The merchant advances some money to the fishermen at cent. per cent., and a portion of dates, rice, and other necessary articles, all at the supplier's own price; he also lets a boat to them, for which he gets one share of the gross profits of all that is fished; and, finally, he purchases the pearls nearly at his own price, for the unhappy fishermen are generally in his debt, and therefore at his mercy."—*Manuscript Notes communicated by Major* D. Wilson, *late political Resident at Bushire.*

The fishery at Algiers was farmed by an English association in 1826, but we are ignorant of their success. The pearl fisheries on the coast of Colombia were at one time of very great value. In 1587 upward of 697 lbs. of pearls are said to have been imported into Seville. Philip II. had one from St. Margarita which weighed 250 carats, and was valued at 150,000 dollars. But for many years past the Colombian pearl fisheries have been of comparatively little importance. During the mania for joint-stock companies, in 1825, two were formed; one, on a large scale, for prosecuting the pearl fishery on the coast of Colombia; and another, on a smaller scale, for prosecuting it in the Bay of Panama and the Pacific. Both were abandoned in 1826. The best fishery ground is said to be in from six to eight fathoms water. The divers continue under water from a minute to a minute and a half, or at most two minutes. They have a sack or bag fastened to the neck, in which they bring up the oysters. The exertion is extremely violent; and the divers are unhealthy and short-lived.—For further information, *see* Hunt's *Merchants' Magazine*, xviii. 565.

Pearl shells, commonly called *Mother-of-pearl shells*, are imported from various parts of the East, and consist principally of the shells of the pearl oyster from the Gulf of Persia and other places, particularly the Sooloo Islands, situate between Borneo and the Philippines the shores of which afford the largest and finest shells hitherto discovered. On the inside the shell is beautifully polished, and of the whiteness and water of pearl itself: it has the same lustre on the outside, after the external lamina have been removed. Mother-of-pearl shells are extensively used in the arts, particularly in inlaid work, and in the manufacture of handles for knives, buttons, toys, snuff-boxes, etc. The Chinese manufacture them into beads, fish, counters, spoons, etc.; giving them a finish to which European artists have not been able to attain. Shells for the European market should be chosen of the largest size, of a beautiful pearly lustre, thick and even, and free from stains. Reject such as are small, cracked or broken, or have lumps on them. When stowed loose as dunnage, they are sometimes allowed to pass free of freight.—Milburn's *Oriental Commerce*. The Imports during the three years ending with 1842 amounted, at an average, to about 950,000 lbs. a year.

Artificial Pearls.—These are small globules or pear-shaped spheroids of thin glass, perforated with two opposite holes, through which they are strung, and mounted into necklaces, etc., like real pearl ornaments. They must not only be white and brilliant, but exhibit the iridescent reflections of mother-of-pearl. The liquor employed to imitate the pearly lustre is called the *essence of the East* (*essence d' Orient*), which is prepared by throwing into water of ammonia the brilliant scales, or rather the *lamellæ*, separated by washing and friction, of the scales of a small river fish, the blay, called in French *ablette*. These scales digested in ammonia, having acquired a degree of softness and flexibility which allow of their application to the inner surfaces of the glass globules, they are introduced by suction of the liquor containing them in suspension. The ammonia is volatilized in the act of drying the globules. It is said that some manufacturers employ ammonia merely to prevent the alteration of the scales; that when they wish to make use of them, they suspend them in a well-clarified solution of isinglass, then pour a drop of the mixture into each bead, and spread it round the inner surface. It is doubtful whether, by this method, the same lustre and play of colors can be obtained as by the former. It seems, moreover, to be of importance for the success of the imitation, that the globules be formed of a bluish, opalescent, very thin glass, containing but little potash and oxyd of lead. In every manufactory of artificial pearls there must be some workmen possessed of great experience and dexterity. The French are supposed to excel in this ingenious branch of industry. False pearls were invented in the time of Catherine de Medicis, by a person of the name of Jaquin. They are made of small globules of glass, blown by the ordinary lamp. The pearly lustre is communicated by introducing by means of a blow-pipe a small quantity of nacreous substances obtained from the surface of the scale of a small fish very common in the Seine and the Rhine, and also in the Thames. This substance preserved with sal ammoniac in a liquid state is commonly sold under the name of "Oriental essence." After having covered the inside of the pearl with this liquid, a coating of wax is added, which is colored to the required shade. The manufacture of pearls is principally carried on in the department of the Seine in France. There are also manufactories in Germany and Italy, but to a small extent. In Germany, or rather Saxony, a cheap but inferior quality is manufactured. The globe of glass forming the pearl in inferior ones being very thin, and coated with wax, they break on the slightest pressure. They are known by the name of German fish pearls. Italy also manufactures pearls by a method borrowed from the Chinese; they are known under the name of Roman pearls, and a very good imitation of natural ones: they have on their outside a coating of the nacreous liquid. The Chinese pearls are made of a kind of gum, and are covered likewise with the same liquid. In the year

1684 a French artisan discovered an opaline glass of a nacreous or pearly color, very heavy and fusible, which gave to the beads the different weights and varied forms found among real pearls; gum instead of wax is now used to fill them; by which they attain a high degree of transparency, and the glassy appearance has been lately obviated by the use of the vapor of hydro-fluoric acid. This acts in such a manner as to deaden the surface, and remove its otherwise glaring look.—URE's *Dictionary*.

Peas (Ger. *Erbsen*; Fr. *Pois*; It. *Piselli, Bisi*; Sp. *Pesoles, Guisantes*; Russ. *Gorooch*). The pea is one of the most esteemed of the leguminous or pulse plants. There are many varieties; but the common garden pea (*Pisum sativum*), and the common gray or field pea (*Pisum arvense*), are the most generally cultivated; being reared in large quantities in all parts of the country. But since the introduction of the drill husbandry, the culture of the pea as a field-crop has been to a considerable extent superseded by the bean. Sometimes, however, it is drilled along with the latter; for, being a climbing plant, it attaches itself to the bean, so as to admit the ground being hoed, at the same time that the free admission of air about its roots promotes its growth. It is not possible to frame any estimate of the consumption of peas. The field pea is now hardly ever manufactured into meal for the purpose of being made into bread, as was formerly the case in many parts of the country; but there is reason to think that the garden pea is now more extensively used than ever. —LOUDON's *Encyclopedia of Agriculture*; BROWN on *Rural Affairs*.

Various kinds of pulse, from the facility with which they are produced in almost every country of the globe, and the highly nutritive properties which they usually possess, have been a favorite food for man and animals among all nations, and in every age of the world. Thus we find that the Athenians employed sodden beans in their feasts dedicated to Apollo, and that the Romans presented them as an oblation in their solemn sacrifice called *Fabaria*. Pliny informs us that they offered bean-meal cakes to certain gods and goddesses in these ancient rites and ceremonies; and Lempriere states that bacon was added to beans in the offerings to Cama, not so much to gratify the palate of that goddess as to represent the simplicity of their ancestors. The bean came originally from the East, and was cultivated in Egypt and Barbary in the earliest ages of which we have any records. It was brought into Spain and Portugal in the early part of the eighth century, whence some of the best varieties were introduced into other parts of Europe, and finally into the United States. The first beans introduced from Europe into the British North American colonies were by Captain Gosnold, in 1602, who planted them on the Elizabeth Islands, near the coast of Massachusetts, where they flourished well. They were also cultivated in Newfoundland as early as 1622; in New Netherlands in 1644; and in Virginia prior to 1648. French, Indian, or kidney beans were extensively cultivated by the Indians of New York and New England long before their settlement by the whites; and both beans and peas (calavances), of various hues, were cultivated by the natives of Virginia prior to the first landing of Captain John Smith. Among these were embraced the celebrated cow-pea (*Phaseolus*), or Indian pea, at present so extensively cultivated at the South for feeding stock, as well as for the purposes of making into fodder, and for plowing under, like clover, as a fallow crop.

The varieties of beans at present cultivated in the United States, as field and garden crops, are too numerous to admit of repetition in this report. For field culture, the common small white, the red-eyed China, the turtle-soup, the Mohawk, and the refugee are preferred; for garden culture, the Mohawk, the early six-weeks, the early Valentine, the yellow six-weeks, the black Valentine, the royal white kidney, the Carolina, or Sewee, the cranberry, the London horticultural, and the Dutch case-knife. The yield usually varies from thirty to sixty bushels per acre, weighing sixty-three pounds to the bushel. The common pea is supposed to have been indigenous to the South of Europe, and was cultivated both by the Greeks and Romans. Its introduction into the British North American colonies probably dates back to the early periods of their settlement by Europeans, as it is enumerated in several instances among the cultivated products of this country by our early historians. The cultivation of the pea as a field crop is principally confined to the Middle, Eastern, and Western States, the varieties of which are distinguished as the early and the late ripening. The early varieties are generally small and dark-colored, among which the gray and grass are the most common. The yield varies from twenty-five to forty bushels per acre, weighing sixty-four pounds to the bushel. The marrow-fats are among the richest of the field peas, which are much preferred for good lands. The small yellow are thought to be best for poorer soils. A very prolific "bush pea" is cultivated in the Southern States, bearing pods six or seven inches in length, which hang in clusters, and are filled with fine white peas, much esteemed for the table, either green or dry. The amount of peas exported from Savannah in 1755 was 400 bushels; in 1770, 601 bushels; from Charleston, in 1754, 9162 bushels; from North Carolina, in 1755, 10,000 bushels; annually from Virginia, before the Revolution, 5000 bushels; annually from the United States, twenty years preceding 1817, 90,000 bushels. The amount of beans annually exported during the last-named period, from 30,000 to 40,000 bushels.—*Patent Office Report*.

Peat, a well-known inflammable substance, employed in many parts of the world as fuel. There are two species of peat. The first is a yellowish brown or black peat, found in moorish grounds in Scotland, Holland, and Germany. When fresh, it is of a viscid consistence, but hardens by exposure to the air. It consists, according to Kirwan, of clay mixed with calcareous earth and pyrites; sometimes, also, it contains common salt. While soft, it is formed into oblong pieces for fuel, after the pyritaceous and stony matters are separated from it. By distillation, it yields water, acid, oil, and volatile alkali, the ashes containing a small proportion of fixed alkali, and being either white or red, according to the proportion of pyrites contained in the substance. The oil which is obtained from peat has a very pungent taste, and an empyreumatic smell, less fetid than that of animal substances, but more so than that of mineral bitumens. It congeals in the cold into a pitchy mass, which liquefies in a small heat; it readily catches fire from a candle, but burns less vehemently than other oils, and immediately goes out upon removing the external flame; and in rectified spirit of wine it dissolves almost totally into a dark, brownish red liquor. The second species is found near Newbury, in Berkshire. In the *Philosophical Transactions* for the year 1757, we have an account of this species, the substance of which is as follows: Peat is a composition of the branches, twigs, leaves, and roots of trees, with grass, straw, plants, and weeds, which having lain long in water, is formed into a mass soft enough to be cut through with a sharp spade. The color is a blackish brown, and it is used in many places for fuel. There is a stratum of this peat on each side of the Kennet, near Newbury, in Berks, which is from about a quarter to half a mile in width, and many miles in length. The depth below the surface of the ground is from one foot to eight. Great numbers of entire trees are found lying irregularly in the true peat. These are chiefly oaks, alders, willows, and firs, and appear to have been torn up by the roots; many horses' heads, and bones of several kinds of deer, the horns of the antelope, the heads and tusks of boars, and the heads of beavers, are also found imbedded in it.

Peck, a dry measure for grain, pulse, etc. The standard, or imperial peck, contains two gallons, or 554·55 cubic inches. Four pecks make a bushel, and four bushels a coomb.—*See* WEIGHTS and MEASURES.

Peculation, the term, in the Roman law, for the embezzlement of public money belonging either to the government or to communities. Under *peculation*, also, was comprised the adulteration of gold, silver, or any metal belonging to government. Connected with it, by a law of the dictator, Cæsar, were the *crimen de residuis* (if a person had received public money for a particular purpose, and did not apply it for the same), and the *sacrilegium* (the theft or misappropriation of money or other things sacred to a god). In most governments the embezzlement of public money by public officers is severely punished. Peculation and treason were, by the French charter of 1814, the only crimes for which a minister was impeachable.—E. A.

Pellitory, the root of a perennial plant (*Anthemis pyrethrum*), a native of the Levant, Barbary, and the south of Europe. The root is long, tapering, about the thickness of the finger, with a brownish cuticle. It is imported packed in bales, sometimes mixed with other roots, from which, however, it is easily distinguished. It is inodorous. When chewed, it seems at first to be insipid, but after a few seconds it excites a glowing heat, and a pricking sensation on the tongue and lips, which remains for 10 or 12 minutes. The pieces break with a short, resinous fracture; the transverse section presenting a thick, brown bark, studded with black, shining points, and a pale yellow radiated inside. It is used in medicine as a stimulant.—THOMSON'S *Dispensatory*.

Peltry is the name given to the skins of different kinds of wild animals found in high northern latitudes, particularly in North America, such as the beaver, sable, wolf, bear, etc. When the skins of such animals have received no preparation they are termed *peltry*; but when the inner side has been tanned by an aluminous process they are denominated *furs*.

Pencils (Ger. *Pinsel*; Du. *Pinseelen*; Fr. *Pinceaux*; It. *Pennelli*; Sp. *Pinceles*). The word pencil is used in two senses. It signifies either a small hair brush employed by painters in oil and water colors—they are of various kinds, and made of various materials, some being formed of the bristles of the boar and others of camel's hair, the down of swans, etc.—or a slender cylinder, of black-lead or plumbago, either naked or inclosed in a wooden case, for drawing black lines upon paper. The last sort, which is the one to be considered here, corresponds nearly to the French term *crayon*, though this includes also pencils made of differently-colored earthy compositions. The best black-lead pencils of this country are formed of slender parallelopipeds, cut out by a saw from sound pieces of plumbago, which have been previously calcined in close vessels at a bright red heat. These parallelopipeds are generally inclosed in cases made of cedar wood, though of late years they are also used alone, in peculiar pencil-cases, under the name of ever-pointed pencils, provided with an iron wire and screw, to protrude a minute portion of the plumbago beyond the tubular metallic case, in proportion as it is wanted.

Pendant, or **Pennant**, a sort of long and narrow banner displayed from the mast-head of a ship-of-war, and usually terminating in two ends or points, called the *swallow's tail*. It denotes that the vessel is in actual service. *Broad pendant* is a kind of flag terminating in one or two points, used to distinguish the chief of a squadron. *Pendant* is also a short piece of rope, fixed on each side, under the shrouds, upon the heads of the main and foremasts.

Penknives (Germ. *Federmesser*; Fr. *Canifs*; It. *Temperini*; Sp. *Corta plumas*), small knives, too well known to need any particular description, used in making and mending pens. The best penknives are manufactured in London and Sheffield.

Pennsylvania, one of the central United States, lies between 39° 43′ and 42° N. lat., and between 74° and 80° 40′ W. long. It is 307 miles long and 160 broad, containing 47,000 square miles. Population in 1700 was 434,373; in 1800, 602,545; in 1810, 810,091; in 1820, 1,049,313; in 1830, 1,347,672; in 1840, 1,724,033; and in 1850, 2,311,786. The Alleghany Mountains cross the State from southwest to northeast, and there are many smaller ranges on each side of the principal ridge and parallel to it. The southeastern and northwestern parts of the State are either level or moderately hilly. The soil is generally fertile, and much of it is of a superior quality; the best land on the southeast is on both sides of the Susquehanna. Between the head-waters of the Alleghany and Lake Erie the soil is very fertile. The anthracite coal region is immense. The Mauch Chunk, Schuylkill, and Lyken's Valley coal-field extends from the Lehigh River across the head-waters of the Schuylkill, and is 65 miles in length, with an average breadth of five miles. The Lackawanna coal-field extends from Carbondale, on the Lackawannock, to 10 miles below Wilkesbarre, on the Susquehanna. The Shamokin field has been less explored. Iron ore exists in nearly every county, and in the vicinity of Pittsburgh vast quantities are manufactured. Beds of copper and lead exist, and quarries of marble and building-stone abound. There are in the south part valuable mineral springs. There were in the State, in 1850, 8,628,619 acres of improved and 6,294,728 acres of unimproved land in farms; cash value of farms, $407,876,099; and the value of implements and machinery, $14,722,541. *Live Stock.*—Horses, 350,898; asses and mules, 2259; milch cows, 530,224; working oxen, 61,527; other cattle, 562,195; sheep, 1,822,357; swine, 1,040,366; total value of live stock, $41,500,053.

Early History of Pennsylvania.—The territory of this State was, before the year 1681, for the greater part comprised under the name *Northern Virginia*, and after 1616 under the name of *New England*. When Penn, in the year 1681, obtained from Charles II. a grant of a great tract of land, between 40° and 42° N. lat., he himself wished to give to it the name of *New Wales*; but the king, against Penn's wish, called it, in honor of Penn, *Pennsylvania*. The name is to be found for the first time in the King's charter of the 4th of March, of the year 1681. In the year 1682 Penn, desirous of approaching his province to the sea-coast, bought from the Duke of York the whole tract of land and settlements along the west side of Delaware Bay, the so-called *three lower counties*. This tract of land remained, however, in connection with Pennsylvania only until the year 1776, when the inhabitants of these lands declared themselves independent and founded the State of Delaware. By this the State of Pennsylvania was again excluded from the sea-coasts, and as a nearly entirely inland State the history of its limits is not of a great interest for our hydrographical researches.—J. G. KOHL.

The Delaware River washes the entire eastern border of the State, and is navigable for ships to Philadelphia. The Lehigh, after a course of 75 miles, enters it at Easton. The Schuylkill, 130 miles long, unites with it six miles below Philadelphia. The Susquehanna is a large river, which rises in New York, flows south through this State, and enters the Chesapeake Bay in Maryland. It is much obstructed by falls and rapids. The Juniata rises among the Alleghany Mountains, and, after a course of 160 miles, enters the Susquehanna 11 miles above Harrisburg. The Alleghany River, 400 miles long, from the north, and the Monongahela, 300 miles long, unite at Pittsburgh, and form the Ohio. The Youghiogheny is a small river which flows into the Monongahela.

Agricultural Products.—Wheat, 15,367,691 bushels; rye, 4,805,160 bushels; Indian corn, 19,835,214 bushels; oats, 21,538,156 bushels; barley, 165,584 bushels;

buckwheat, 2,193,602 bushels; peas and beans, 55,231 bushels; potatoes, 5,980,752 bushels; sweet potatoes, 52,172 bushels. Value of products of the orchard, $723,589; produce of market gardens, $688,714. Pounds of butter made, 39,878,418; of cheese, 2,505,084; maple sugar, 2,526,525; molasses, 50,652 gallons; beeswax and honey, 850,509 pounds; wool, pounds produced, 4,481,570; flax, 530,807; silk cocoons, 285; hops, 22,088; tobacco, 012,651; hay, tons of, 1,842,970; hemp, 44 tons; clover seeds, 125,030 bushels; other grass seeds, 58,913 bushels; flax seed, 41,728 bushels; and were made, 25,590 gallons of wine. Value of home-made manufactures, $749,132; value of slaughtered animals, $8,219,848.—*Census Report*, 1850.

Manufactures.—There were in the State in 1850, 136 cotton factories, with a capital invested of $4,671,015, employing 4283 males and 4374 females, producing 59,532,000 yards of sheeting, etc.; 5,808,561 pounds of yarn, valued at $5,812,126; 254 woolen factories, with a capital invested of $1,776,268, employing 1747 males and 753 females, manufacturing articles valued at $2,703,409; 178 establishments making pig iron, with a capital invested of $8,357,525, employing 9264 persons, producing 322,752 tons pig iron, etc., valued at $6,170,625; 320 establishments, with a capital of $3,422,924, employing 4783 persons, and making 57,810 tons of castings, etc., valued at $5,354,881; 131 establishments, with a capital of $7,620,066, employing 6771 persons, manufacturing 182,506 tons of wrought iron, valued at $8,902,907; 2380 flouring and grist mills, 2936 saw mills, 1540 tanneries; 103 printing-offices, 328 newspapers, 25 daily, three tri-weekly, one semi-weekly, 275 weekly, eight semi-monthly, 12 monthly, and two quarterly publications. Capital invested in manufactures, $91,463,210; value of manufactured articles, $154,944,698.

Canals.—The State of Pennsylvania as early as the year 1791 initiated a system of inland water communication. William Penn, it is said, first conceived the idea. In 1792 two companies were formed, to build the Schuylkill and Susquehanna, and Delaware and Schuylkill canals. They constructed fifteen miles and abandoned the work. In 1821 the enterprise was renewed, and completed in 1827, when other works were started, and nearly all the present canals authorized and their routes surveyed. The State has now 848 miles of canals, which cost $24,168,000, according to an estimate considered to be under rather than above the mark. Private companies have built 485 miles of canal, costing $21,955,000. The State has therefore 1333 miles of canal, costing upward of $46,000,000. Besides these it has 2164 miles of railroad, which cost some $58,000,000. The totals of these important improvements added together, make 3497 miles, and their cost foots up $104,000,000. Their value to the State is not represented by their cost, for without them Pennsylvania would be a wilderness. They unite her to the Great West, to the southern part of our State, and to the great metropolis; and enable her to send her coal and iron to distant marts, enriching her beyond estimate.

The following is presented as a comparison of the anthracite coal trade of Pennsylvania for two years:

	1855.	1856.
	Tons.	Tons.
Reading Railroad	2,218,392	2,143,903
Schuylkill Navigation Co.	1,105,263	1,169,286
Pine Grove	165 656	170,154
Little Schuylkill	427,250	454,514
Lehigh	1,274,986	1,302,883
Lackawanna	1,059,595	1,167,013
Wyoming	559,000	519,000
Shamokin	122,500	126,500
Lyken's Valley	112,000	100,000
Scranton	....	50,000
Total	6,926,283	7,258,891

FOREIGN COMMERCE OF THE STATE OF PENNSYLVANIA FROM OCTOBER 1, 1820, to JULY 1, 1856, SHOWING ALSO THE DISTRICT TONNAGE IN 1821, 1831, 1841, AND 1851.

Years ending	Exports.			Imports.	Tonnage cleared.		District Tonnage.	
	Domestic	Foreign.	Total.	Total.	American.	Foreign.	Registered.	Enrolled and Licensed.
Sept. 30, 1821	$2 832,397	$4,659,360	$7,331,767	$4,158,922	69,436	3,611	59,295	25,081
1822	3,575,147	5,472,655	9,047,802	11,874,170	70,846	5,745	....	....
1823	3,139,809	6,477,383	9,617,192	12,696,710	75,930	5 293	....	....
1824	3,182,694	6,182,199	9,364 893	11,865,591	76,631	5 935	....	....
1825	3,936,133	7,333,848	11,269,981	15,041,707	82 435	2,855	....	....
1826	3,158,711	5,173,011	8,331,729	15,551,779	69,444	4 445	....	....
1827	3,391,296	4,184,537	7,575,833	11,212,935	68,753	4,097	....	....
1828	3,116,001	2,935,479	6,051,480	12,884,468	61,819	5,880	....	....
1829	2,617,152	1,472,783	4,089 935	10,100,152	52,841	4,625	....	....
1830	2,924,452	1,367,341	4,291,793	8,702,122	63,022	4,870	....	....
Total	$31,873,782	$45,158,616	$77,032,398	$117,088,583	690,857	46,616	....	....
Sept. 30, 1831	$3,504,302	$1,919,411	$5,513,712	$12,124,083	65,149	7,556	51,293	29,226
1832	2,008,991	1,577,075	3,516,066	10,676 358	46,726	14,181	....	....
1833	2,671,300	1,407,651	4,078,951	10,451,250	49,109	22,578	....	....
1834	2,981,803	1,957,943	4,939,746	10,479,268	46,411	16,286	....	....
1835	4,416,099	1,823,176	6,739,275	12,389,987	57,688	10,985	....	....
1836	2,627,651	1,343,904	3,971,555	15,068,233	49,670	14,349	....	....
1837	3,565,719	1,275,887	3,841 509	11,680,111	45,185	18,284	....	....
1838	2,481,543	995 603	3 477,151	9,360,871	75,349	8,559	....	....
1839	4,148,211	1,151,204	5,299,415	15,050,715	64,318	18,891	....	....
1840	5,736,456	1,083,689	6,820,145	8,464,882	72,288	11,840	....	....
Total	$30,282,008	$18,965,548	$44,247,610	$115,747,206	571,856	156,989	....	....
Sept. 30, 1841	$4,404,863	$747,638	$5,152,501	$10 346 6'8	74,201	9,322	52,267	67,046
1842	2,293,814	476,913	2,770,727	7,985 856	65,208	18,719	....	....
9 mos., 1843*	2,071,945	283,003	2,354,948	2,760,690	41,573	5,899	....	....
June 30, 1844	3,905,027	270,229	3 595,256	7,217,107	70,550	8,627	....	....
1845	3,129,673	444,685	3,574,363	8 157,227	63,271	12,987	....	....
1846	4,157,918	593,087	4 751,005	7,989,396	77,272	7,627	....	....
1847	8,263,811	281,080	8,544,891	9,587,516	107,930	85,218	....	....
1848	5,428,800	304,024	5,732,388	12,147,584	77,870	20,218	....	....
1849	4 950,872	492,549	5,843,421	10,645,500	98 822	27,005	....	....
1850	4,049,464	452,142	4,501,606	12,066,154	81,276	30,849	....	....
Total	$42,915,901	$4,845,350	$47,260,551	$88,305,836	752,573	170,962	....	....
June 30, 1851	$5,101,949	$254,067	$5,356,016	$14 168,761	102,123	38,051	60,4 5	214,948
1852	5,522,449	306,122	5,828 571	14,785,917	90,951	43,181	....	....
1853	6,255,329	272,767	6 5 7,996	18,834,410	101,029	59,656	....	....
1854	9,846,810	257,606	10,104,416	21,359,306	120,640	56 567	....	....
1855	5,985,125	289,213	6,274,338	15,909,965	114,908	35,720	....	....
1856	7,043,408	189,164	7,232,572	16,590,045	112,087	31,245	....	....

* Nine months to June 30, and fiscal year begins July 1, 1843.

Philadelphia, near the confluence of the rivers Delaware and Schuylkill, in lat. 39° 57′ N., long. 75° 10′ W., and near the head of the Delaware Bay. Vessels of the largest burden ascend the river as far as Newcastle, but those drawing above 18 or 20 feet of water can not reach Philadelphia, on account of a bar a little below the city. The entrance to the magnificent bay formed by the embouchure of the Delaware has Cape May on the north, and Cape Henlopen on its south side. The commerce of Philadelphia has not kept pace with her growth in other respects, especially in manufactures. The tonnage in 1856 was 197,228 tons.—*See* PHILADELPHIA.

Erie, port of entry, is beautifully situated on Presque Isle Bay, on Lake Erie, or rather one mile square, and has one of the best harbors on the lake, the channel or entrance to which has lately been much improved; the water is from 11 to 20 feet deep, and the largest steamboats enter without difficulty. There is a light-house on the west side of the entrance of Presque Isle Bay, lat. 42° 8′ 14″ N.; shows a fixed light, elevated 93 feet above the surface of the lake, and visible for a distance of 14½ miles. The beacon is on the east side of the bay; visible 8¾ miles.—For further information of the commerce and resources of Pennsylvania, *see Bankers' Magazine*, New York, 1851–1856; *North American Review*, xlii. 241 (C. CUSHING); HUNT's *Merchants' Magazine*, x. 808, xii. 237; DE BOW's *Review*, xii. 476. *See also articles* DELAWARE RIVER—COAL—CANALS and RAILROADS.

Penny, formerly a silver, but now a copper coin. This was the first silver coin struck in England by our Saxon ancestors, being the 240th part of their pound; so that its weight was about 22½ grains Troy. Camden derives the word from the Latin, *pecunia*, money. The ancient English penny, penig, or pening, was the first silver coin struck in England, nay, the only one current among our Saxon ancestors, as is agreed by Camden, Spelman, Hickes, and others. The penny was equal in weight to our threepence; five of them made one shilling or scilling Saxon, and 80 a mark or mancuse, equal to 7*s.* 6*d.* Till the time of King Edward the First, the penny was struck with a cross, so deeply indented into it that it might be easily broken, and parted, on occasion, into two parts, which were thence called *half-pennies*, or into *four*, which were called *fourthings*, or *farthings*. But that prince coined it without indenture, instead of which he first struck round halfpence and farthings. He also reduced the weight of a penny to a standard, ordering that it should weigh 32 grains of wheat, taken out of the middle of the ear. This penny was called the penny *sterling;* and, as 20 of these pence were to weigh an ounce, the penny thus became a weight as well as a coin. The penny sterling was long disused as a coin, and was scarcely known, except as a money of account, containing the twelfth part of a shilling; but latterly it has been introduced into the British current coin.—*See* POST-OFFICE.

To ascertain the, as yet unknown, quality of the metal in the old British penny, the chief assayers in Philadelphia were addressed, to procure information from books of reference or actual assay. The answer decided: "The ancients intended fine silver and pure gold in their coins, refined them as well as they could, and issued them for fine metal. But the old silver pennies of Britain are now so few and expensive—one in the mint collection cost seven dollars—we can not afford to assay them." As this point was essential for accurate calculation, Mr. DuBois added, in a postscript, "Since writing the above I have assayed a silver penny of William the Conqueror. It gives a fineness of ·956 thousandths, and contains gold equal to ·009¼ thousandths." This trial shows an alloy of some base metal exceeding ·040 thousandths (·040⅛) contained in the silver penny, diminishing its standard in that degree from that of perfect purity. "The Mint remedy" of the United States, regarded to be a necessary allowance for casual deviations in the quality of silver pieces, can not exceed ·008 thousandths, instead of ·040, on each side the standard. It is not now proposed at mints to have the coins of the highest quality, but the rule or standard of purity, ordered by law, must be exact, both in fine metal and alloy. By recent proof with wheat corn measure, the weight of the old penny *may* have varied from five grains in the red to eight grains in the white wheat. The modern "allowance" for variation in quantity is one-fourth or one-half a grain, in a coin approaching the value of the Anglo-Norman penny. The silver penny of old time—the only money except rings known to the native Britons—was at once a coin, a weight, and a measure. Its character of purity checked and ruled the values of all moneys, weights, and measures represented by or deduced from it. Such values do not depend solely on weight nor solely upon fineness, but on their combined powers, the product of both. The keystone of the so-called "system" of 1266 was conceived to be "*the weight* of the silver penny sterling." But *defective quality* caused this "keystone" to crumble. The superstructure erected upon such foundation failed, because metallurgical irregularity was *not* checked by metrical exactness. The measures were faulty throughout—"weighed in the balances, they were *both* found wanting." The bases for calculation in this ancient scale being inaccurate, no truth could be elicited by any increase of numbers—or quantities in progression. Some of the silver pennies of the early Britons were nearly divided by the impression of a cross, through the middle on the reverse, so they could be broken into half-pennies, and again into quarters, called "fourthings," or farthings. This practice of simple division had continued until silver half-pennies and farthings were specially coined by King John, in 1185—*first* in Ireland, where his principal Mint was. During the latter part of the reign of Henry the Third, of England, "a penny" of fine gold was ordered of the value of twenty pennies of silver. The word "penny" had its derivation from the French "denier," the "denarius" of the Latins. The French title, shortened into "denny" by the Normans, was easily changed on the English tongue to "penny"—at that time a common term for money in general, of whatever metal it might be. Golden deniers, coined sparingly in France, bearing the figure of a lamb, were called deniers d'agneau, or moutons d'or. During the reigns of the early Norman kings, their rents, though reserved in money, were answered in cattle, corn, and other provisions, because money was then scarce among the people. Coins of gold, named "nobles d'or," were first issued from the British Mint by Edward the Third, in 1344; but with so much difficulty that it was thought necessary to order by law, "no one should be *obliged* to receive them." It was decided to prove the standard of the silver penny of our remote ancestry, by the approval of English and other contemporaries, in wheat corn grains from "the Old North State of Carolina." Six different growths of the crop of 1856, intended for seed and consumption, selected in October from two prominent varieties, the red and the white, choosing grains of average quality, but perfect fullness, were antagonized by a penny-weight Troy of the purest silver, specially prepared from solution, for assays of gold. No two samples of thirty-two wheat corn grains were found of the same weight. Of early red—May wheat—from thirty-eight to forty and forty-three corns were required to balance the silver piece, while of white wheat from twenty-eight to thirty-five and thirty-six grains effected the same purpose, showing a disproportion equal to fifteen wheat grains in the six parcels; that is, from twenty-eight to forty-three corns—a deviation in the value of a silver penny equivalent to nearly one half the standard weight. An act of Henry the Third, in 1266, explains the primitive initials of these ancient British, Gallic, and German standards, to all which one common deri-

vation is imputed. "By consent of the whole realm, the measure of the king was made, that is to say, an English penny of silver, called a sterling, round, and without any clipping, shall weigh thirty-two wheat corns, taken from the middle of the ear. And twenty pence of silver do make one ounce. And twelve ounces of silver do make one pound. And eight pounds of silver do make a gallon of wine. And eight gallons of wine do make a London bushel, which is the eighth part of a quarter." This general arrangement for money weights and measures was that of the Eastern nations, by which Europe had been overrun. The term "easterlin" of the Norman French was transmuted on the English tongue, first to "easterling," and finally to "sterling."—*Report of Dr.* J. H. GIBBON, United States Mint, North Carolina. *See* POUND.

Penny-Post. First set up in London and its suburbs by a Mr. Murray, upholsterer, A.D. 1681. Mr. Murray afterward assigned his interest in the undertaking to Mr. Dockwra, a merchant, 1683; but on a trial at the King's Bench bar in the reign of Charles II., was adjudged to belong to the Duke of York as a branch of the general post, and was thereupon annexed to the revenue of the crown.—DELAUNE, 1690. This institution was considerably improved in and round London, July, 1794, *et seq.*, and was made a twopenny-post. A penny-post was first set up in Dublin in 1774.—*See* POST-OFFICE.

Pennyweight, a Troy weight, containing twenty-four grains, each grain weighing a grain of wheat, gathered out of the middle of the ear and well dried. The name took its rise from the circumstance that this was anciently the weight of one of our silver pennies.

Pens (Fr. *Plumes à écrire*; Ger. *Schreibfedern*; It. *Penne da Scrivere*; Russ. *Pera Stwoli*), well-known instruments for writing, usually formed of the quills of the goose, swan, or some other bird. Metallic pens have been occasionally employed for a lengthened period; but it is only within these few years that they have been extensively introduced. They are now, however, manufactured in vast quantities, and of an immense variety of forms. But though they have superseded to a very considerable extent the use of quills, and have some peculiar advantages, it does not appear possible to give them the elasticity of the quill, nor to fit them so well for quick and easy writing on common descriptions of paper. Quills are said to have been first used for pens in A.D. 553; but some say not before 635. Quills are for the most part plucked with great cruelty from living geese; and all persons, from convenience, economy, and feeling, ought to prefer metallic pens, which came into use in 1830.—PHILLIPS.

For the manufacture of steel pens the best metal, made from Dannemora or hoop (I.) iron, is selected and laminated into slips about three feet long and four inches broad, of a thickness corresponding to the desired stiffness and flexibility of the pens. These slips are subjected to the action of a stamping-press, somewhat similar to that for making buttons. The point destined for the nib is next introduced into an appropriate gauged hole of a little machine, and pressed into the semi-cylindrical shape; where it is also pierced with the middle slit, and the lateral ones, provided the latter are to be given. The pens are now cleaned, by being tossed about among each other, in a tin cylinder, about three feet long, and nine inches in diameter; which is suspended at each end upon joints to two cranks, formed one on each of two shafts. The cylinder, by the rotation of a fly-wheel, acting upon the crank-shafts, is made to describe such revolutions as agitate the pens in all directions, and polish them by mutual attrition. In the course of four hours several thousand pens may be finished upon this machine. When steel pens have been punched out of the softened sheet of steel by the appropriate tool, fashioned in the desired form, and hardened by ignition in an oven and sudden quenching in cold water, they are best tempered by being heated to the requisite spring elasticity in an oil bath. The heat of this bath is usually judged of by the appearance to the eye; but this point should be correctly determined by a thermometer, according to the scale; and then the pens would acquire a definite degree of flexibility or stiffness, adapted to the wants and wishes of the consumers. They are at present tempered too often at random.

IMPORTS OF METALLIC PENS INTO THE UNITED STATES FOR THE FISCAL YEAR ENDING JUNE 30, 1856.

Whence imported.	Value.
Bremen	$472
England	113,587
France	2,029
New Granada	76
Total value	$116,165

Pepper (Fr. *Poivre*; Ger. *Pfeffer*; Du. *Peper*; It. *Pepe*; Sp. *Pimienta*; Russ. *Perez*; Lat. *Piper*), the berry or fruit of different species of plants, having an aromatic, extremely hot, pungent taste, used in seasoning, etc. The following sorts of pepper are met with in commerce: *Black Pepper* (Fr. *Poivre*; Ger. *Schwarzen pfeffer*; It. *Pepe negro*; Sp. *Pimienta*; Sans. *Mercha*; Hind. *Gol-mirch*; Malay, *Lada*; Jav. *Marika*), the fruit of a creeping plant (*Piper nigrum*), one of the pepper genus, of which there are upward of 80 species. It is cultivated extensively in India, Siam, the Eastern islands, etc. It requires the support of other trees, to which it readily adheres. It climbs to the height of 20 feet, but is said to bear best when restrained to the height of 12 feet. It begins to produce at about the third year, and is in perfection at the seventh; continues in this state for three or four years; and declines for about as many more, until it ceases to be worth keeping. The fruit grows abundantly from all the branches, in long small clusters of from 20 to 50 grains; when ripe, it is of a bright red color. After being gathered, it is spread on mats in the sun, when it loses its red color, and becomes black and shriveled as we see it. The grains are separated from the stalks by hand rubbing. That which has been gathered at the proper period shrivels the least; but if plucked too soon, it will become broken and dusty in its removal from place to place. The vine produces two crops in the year; but the seasons are subject to great irregularities. Pepper should be chosen of a pungent aromatic odor, an extremely hot and acrid taste, in large grains, firm, sound, and with few wrinkles—for of these it always has some. Reject that which is shriveled, or small grained, or which on being rubbed will break to pieces. In point of quality, the pepper of Malabar is usually reckoned the best; but there is no material difference between it and that of Sumatra, and the other islands. In the market of Bengal, where they meet on equal terms, the produce of Malabar is generally about two per cent. higher than the other. In Europe there is generally a difference of ½*d.* per lb. in favor of Malabar; but in China they are held in equal estimation. Black pepper sold ground is said to be often adulterated with burned crust of bread.

White Pepper is made by blanching the finest grains of the common black pepper by steeping them for a while in water, and then gently rubbing them, so as to remove the dark outer coat. It is milder than the other, and is much prized by the Chinese; but very little is imported into England.

Cayenne Pepper is the produce of several varieties of the *Capsicum*, an annual plant, a native of both the Indies. The best is brought from the West Indies ready prepared, and is made from the *Capsicum baccatum* (bird pepper). It has an aromatic, extremely pungent, acrimonious taste, settling the mouth, as it were, on fire, and the impression remaining long on the palate. It is sometimes adulterated with muriate of soda; and sometimes with a very deleterious substance, the red oxyd of lead; but this fraud may be detected by its weight, and by chemical tests.

Long Pepper.—This species is the produce of a peren-

nial (*Piper longum*), a native of Malabar and Bengal. The fruit is hottest in its immature state, and is therefore gathered while green, and dried in the sun. It is imported in entire spikes, which are about one and a half inch long. It has a weak aromatic odor, an intensely fiery, pungent taste, and a dark gray color. The root of long pepper is a favorite medicine among the Hindoos. The quantities of the last three species of pepper imported are quite inconsiderable.—Milburn's *Oriental Commerce*; Ainslie's *Materia Indica*; Thomson's *Dispensatory*, etc.

Trade in Pepper.—Pepper is extensively used, all over Europe and the East, as a condiment. It was originally imported into England by way of the Levant; and for many years after the establishment of the East India Company it formed the most important article of their imports. In nothing has the beneficial effect of opening the Indian trade been so unequivocally displayed as in the instance of pepper. The private traders have resorted to new markets, and discovered new sources of supply, which had hitherto been wholly unexplored; so that there has been not only a very great increase in the quantity of pepper brought to market, but also a very great fall in its price, which does not now exceed a third part of what it amounted to in 1814!

Supply of Pepper.—The following instructive details with respect to the supply of pepper are taken from the *Singapore Chronicle*, to which they were contributed by John Crawfurd, Esq., than whom there can be no more competent authority as to such subjects. Of all the products of the Eastern islands, and of the countries immediately in their neighborhood, in demand among strangers, black pepper is the most important, both in value and quantity. The pepper countries extend from about the long. of 96° to that of 115° E., beyond which no pepper is to be found; and they reach from 5° S. lat. to about 12° N., where it again ceases. Within these limits we have Sumatra, Borneo, the Malayan peninsula, and certain countries lying on the east coast of the Gulf of Siam. The whole produce of the island of Sumatra is estimated not to fall short of 168,000 piculs of 133⅓ lbs. each; the southwest coast being said to produce 150,000, and the northeast coast 18,000 piculs. The pepper ports on the northeast coast of Sumatra are Lankat and Delli, with Sardang. The first two produce 15,000 piculs, and the latter 3000 annually. The cultivation is carried on by the Batta nation in the interior. The ports on the southwest coast, and the amount of their produce, as given in a recent estimate, are as follows: viz., port and district of Trumah, 40,000; district of Pulo Dua, 4000; ditto of Ciuat, 30,000; coast from Tampat Tuan to Susu, 33,000; port of Susu, 1000; Kualla Batta, 20,000; Analabu, 2000; districts to the north of Analabu, 20,000; making in all, 150,000 piculs. Here it is of importance to remark that the culture and production are extremely fluctuating. During the last pepper season, there obtained cargoes on the west coast of Sumatra, 27 American ships, six country traders, four large French ships, besides the ships belonging to the East India Company, which generally take away 500 tons. Nearly the whole of this trade is in the hands of Europeans or Americans; the pepper finds its way to Europe, to America, and in a small proportion to China. The northeast coast of Sumatra, from Pedier down to the Carimons, is estimated, as already mentioned, to produce 18,000 piculs. Prince of Wales Island is the principal *dépôt* for this, from whence the greatest part is exported to India and China. The produce of Prince of Wales Island itself is about 15,000 piculs. Of the islands at the mouth of the Straits of Malacca and Singapore, Bingtang, on which Rhio is situated, and adjacent islands, produce 10,000 piculs; and Lingga about 2000. A large proportion of this is brought to Singapore, which exported last year about 21,000 piculs; some part to Bengal and China, but principally to Europe direct, in free traders. The west coast of the Malayan peninsula produces no pepper, with the exception of about 4000 piculs afforded by the territory of Malacca. On the east coast of the peninsula, the production of pepper is very considerable. The ports of Patani and Calantan—chiefly the latter—yield about 16,000 piculs annually, and Tringanu about 8000. A portion of this is brought to Singapore and Penang; but we believe the greater proportion goes direct to China in junks, of which three large ones frequent Tringanu annually, and one Calantan. The Americans, too, occasionally visit these ports. In the year 1821, three vessels of considerable burden obtained cargoes. The east coast of the Gulf of Siam, from the lat. of 10½° to that of 12½° N., affords an extensive produce of pepper. This coast is scarcely known, even by name, to the traders of Europe. The principal ports here are Chantibun, Tungyai, Pongsom, and Kampop—the first two being under the dominion of Siam, and the latter under that of Kamboja. The whole produce is estimated at not less than 60,000 piculs; 40,000 of which are brought at once to the capital of Siam as tribute to the king, and the whole finds its way to China in junks. It remains only to estimate the produce of the island of Borneo. The whole produce of Borneo is estimated at about 20,000 piculs; of which a large share is carried to China direct in junks, some by Portuguese vessels; and about 7000 piculs are now annually brought by the native craft of the country itself to Singapore in the course of that free trade which is happily flourishing at this settlement. The data which have been stated will enable us to estimate the whole production of the Malayan Archipelago, including that of the peninsula of Malacca, and that of the east coast of the Gulf of Siam, at 308,000 piculs; and as there is no other part of the world that affords pepper, excepting the western coast of the peninsula of India, and this affords but 30,000 piculs, or less than one-tenth part of what the places we have enumerated produce, we have, accordingly, at one view the whole production of the earth, being 338,000 piculs, or 45,066,666 lbs. avoirdupois. The average price of pepper has been lately about nine Spanish dollars a picul; so that the whole value drawn into India from Europe, China, and the New World, on account of this single commodity, is 3,042,000 dollars. The quantity given in this statement may appear enormous; but if meted out to the whole population of the globe, or to 1,000,000,000 of people, it would be found that the average annual consumption of an individual would amount to no more than 323 grains. Mr. Crawfurd has more recently supplied a revised estimate of the annual production of pepper as follows:

	Pounds.
Sumatra (west coast)	20,000,000
" (east coast)	8,000,000
Islands in the Straits of Malacca	5,000,000
Malay peninsula	3,733,333
Borneo	2,666,667
Siam	8,000,000
Malabar	4,000,000
Total	50,000,000

Imports of Pepper into the United States for the Year ending June 30th, 1856.

Whence imported.	Pepper, black.		Pepper, red.	
	Pounds.	Value.	Pounds.	Value.
Hamburg	640	$86	....	....
Holland	....	....	919	$60
Dutch West Indies	777,717	38,964	....	....
Dutch East Indies	2,292,271	103,967	17,896	1153
England	9,224	655	4,250	208
British West Indies	....	....	703	110
British Poss. in Africa	....	....	23,337	771
British East Indies	3,028,961	169,189	5,466	416
France ... the Atlantic	60	10	....	....
Spain on the Atlantic	....	....	531	51
Spain on the Mediter'n	....	....	33,144	1350
Cuba	1,282	197	700	74
Ports in Africa	27,154	557	....	....
Mexico	....	....	31,705	1687
China	500	20	....	....
Total	6,737,809	$313,552	118,741	$5849

Perch, or **Rod**, a long measure, 16½ feet in length.—*See* WEIGHTS and MEASURES.

Perfume (Fr. *parfum*), a term used to denote the volatile effluvia from any body affecting the organ of smelling, or the substance emitting those effluvia. Perfumes were in general use among the ancients (see the *Quarterly Review*, vol. xxiii.); and in France, Germany, Spain, and Portugal, and even, though not to so considerable an extent, in England, they are regarded almost as necessaries. In general they are made of musk, ambergris, civet, rose, and cedar woods, orange flowers, jessamines, jonquils, tuberoses, and other odoriferous flowers. Aromatic drugs, such as storax, frankincense, benzoin, cloves, etc., enter into the composition of a perfume; and many perfumes are composed of aromatic herbs or leaves, as lavender, marjoram, sage, thyme, etc.

Perfumery. Many of the wares coming under this name were known to the ancients, and the Scriptures abound with instances of the use of incenses and perfumes. No such trade as a perfumer was known in Scotland in 1763.—CHEECH. A stamp tax was laid on various articles of perfumery in England, and the vender was obliged to take out a license, in 1786. At the corner of Beaufort Buildings, in the Strand, resided Lilly the perfumer, mentioned in the *Spectator*.—LEIGH.

Some of the most exquisite of perfumes are obtained from the most offensive substances. In olden times the most delicate perfumes were distilled from flowers, whose names they bore; but chemistry has shown how to obtain them from other sources. To give one example, a peculiarly fetid oil, called fusel-oil, is formed during the making of brandy and whisky. Now this loathsome oil, by a particular mode of treatment, is made to yield the fragrant *oil of pears*; by another process, *oil of apples*; and by others, *oil of grapes* and *oil of cognac*. The *oil of pine-apples* is produced from sugar and putrid cheese. The *oil of bitter almonds* is a resultant from aquafortis and the offensive oils from gas tar. The dainty *eau de mille fleurs* is made from the drainage of cow-houses. And in all these cases, there is not the same kind of fraud which is practiced in ordinary adulterations; for though the perfumes are not actually, in the present state of things, produced from the flowers and fruits which give them their names, yet they are really identical, or nearly so, in chemical composition with the original perfumes; nature mixes the ingredients in one case, man in the other, but the ingredients are the same. The passion for perfumes is increasing. British India and Europe consume about 150,000 gallons of handkerchief odors yearly; and the English revenue from *eau de Cologne* is about 8000 pounds sterling a year. The total revenue from imported perfumes in England is estimated at about £40,000 sterling per annum. The largest revenues of the estates on the borders of the Mediterranean are those which proceed from the sale of the orange blossoms and Parma violets. The house of Fagner, 83 Rue de Richelieu, and many of the other perfumers of Paris, pay a yearly sum, varying from 10 to 30,000 francs, to the proprietors, for their whole crop of orange blossoms or violets. The *fleurs de citriconnier of Fagner* is one of the favorite and most delightful odors used for scenting the pocket handkerchief.

Periodical Publications. These, as the name implies, are publications which appear at fixed periods or stated intervals, and consequently include newspapers, monthly and other magazines, quarterly reviews, and journals, and all such books as appear at monthly or other intervals. But the term "periodical publications" is usually understood in a more confined sense, or as comprising only magazines and such political, literary, and scientific journals as appear at regular intervals, without including newspapers or works published in parts. Even when thus restricted, this is a very extensive and important department of literature. No doubt a vast deal of trash gets into print by the agency of magazines that might not otherwise see the light; but most part of these publications contain at the same time some superior articles; and a few are ably conducted and embrace a wide range of topics. Since the establishment of the *Edinburgh Review* in 1802, the quarterly journals, especially those that embrace politics and literature, have risen to great eminence, and have had a powerful influence over the public mind. At present, however, and for some time past, the influence of this class of journals has been declining. An ably conducted daily paper is, at this moment, by far the most powerful engine the press can bring into the field.—*See* NEWSPAPERS. For further information refer to *American Almanac*, 1835, p. 97, 256, 1836, p. 92; *North American Review*, xxxix. 277 (J. G. PALFREY); *Southern Literary Messenger*, ii. 393; *Westminster Review*, i. 206, ii. 463; *Edinburgh Review*, xxxviii. 349; *American Quarterly Observer*, iii. 135.

Pernambuco Province. This is one of the most important provinces in Brazil. It abounds with many good harbors, and possesses an exceedingly fertile soil. Its chief staples are sugar, cotton, and hides. Of these its average annual exports from 1840 to 1845 were as follows: Sugar, 34,177 tons; cotton, 32,279 bags (160 lbs. each); hides, 72,500. The city of Pernambuco maintains the third rank in the empire. There are in this province about six hundred "engenhos," or sugar estates, each covering about one square league. On each engenho are produced annually about fifty cases of white, and five of brown, or muscovado sugar,—or forty tons of the former, and four and a half tons of the latter—equal to about 24,000 tons of white, and 2550 tons of brown, for the whole province. The province is estimated to be capable of yielding 396,800 tons of white, and 40,800 tons of muscovado sugar. Imports from the United States consist chiefly of cotton domestics. Fabrics of this kind, thirty yards in length, and twenty-seven to twenty-eight inches in width, are in demand, and bring much better prices than similar goods from England. Of late years the manufacturers of Lancashire have imitated these cloths, and have succeeded in sharing the advantages which the American article had secured. In printed cottons Manchester and Glasgow almost monopolize the markets of Pernambuco. The quality as well as the cheapness of their goods have secured this privilege. The importation of butter, hitherto almost exclusively in the hands of the French, might be advantageously shared by the citizens of the United States.

In 1840 the French imported			.....	4160 firkins.
" 1841	"	"	.....	5549 "
" 1842	"	"	.....	5906 "
" 1843	"	"	.....	7981 "
" 1844	"	"	.....	8062 "
In 1840 were imported from Great Britain				4437 "
" 1841	"		"	3889 "
" 1842	"		"	3240 "
" 1843	"		"	4032 "
" 1844	"		"	3616 "

The production of cotton has diminished, owing mainly to the expense attending its transportation to market; but the production of sugar has increased. From 1828 to 1831, the average annual export was 1,607,389 arrobas, and in the years 1841 to 1844 it was augmented to 2,083,212 arrobas; being an annual increase of 475,823 arrobas, or 6797$\frac{33}{72}$ tons. The number of hides exported during the two periods of four years above-named increased in a still greater ratio than sugar. From 1828 to 1831 the annual average export was 60,272 hides; and during the latter four years, from 1841 to 1844, the same average augmented to 122,573 hides per annum; showing an annual increase of 62,301 hides. It has already been observed that if the export duty levied upon the produce of Brazil transmitted to foreign parts were modified or repealed, a vast augmentation in agricultural productions would unquestionably follow. While an export duty of ten per cent. on the weekly average price of

sugar continues, and a similar duty on cotton, coffee, tobacco, rum, hides, and, with one or two unimportant exceptions, on all other articles produced in the country, the producing interests must remain crippled, and expectations either continue to be stationary or decrease. The cotton and sugar-growing districts suffer most under these heavy taxes upon their industry and capital. The planters are obliged to carry cotton and sugar to Pernambuco by horse conveyance, a distance of from twenty to one hundred leagues, during the dry season, when food and water are difficult to be obtained. These charges are such, in addition to those imposed by law, that when the planter reaches market his cotton hardly yields him net four cents per lb. And so with his sugar, and all other heavy produce.

The navigation and trade of Pernambuco in 1845 stood as follows: Inward from all nations—Vessels, 242; tonnage, 49,796; value of cargoes, $4,136,075. Of which from the United States: Vessels, 35; tonnage, 6117; value of cargoes, $602,075. Outward to all nations — Vessels, 226; tonnage, 48,539; value of cargoes, $4,567,870. Of which to the United States: Vessels, 19; tonnage, 3216; value of cargoes, $283,460. During the year 1845 two United States vessels went south with cargoes; two were sold, and four remained in port. This will, to a certain extent, account for the difference between the values of imports and exports to and from the United States, as above shown.

The vessels from the United States imported as follows:

Cottons	1018	packages.
Silks	3	"
Woolens and silks	1	"
Flour	24,913	barrels.
Do.	648	half-barrels.

And on return voyage home, exported—

Sugar	9,104 barrels.
Do.	23,410 bags.

Total quantity of sugar produced and entered in the market of Pernambuco in the years 1844 and 1845:

In 1844	Arrobas,	2,146,688 = Pounds,	68,694,027
In 1845	"	2,465,824 = "	78,906,371

Of which were sent, in 1845, to the United States, 184,417 arrobas 26 lbs. = (at 32 lbs. to arroba) 5,901,344 lbs.

Hides.—Total number exported to all countries: In 1844, 124,074; in 1845, 163,935. Of which to the United States, 10,888.

TOTAL EXPORTS OF COTTON, SUGAR, AND HIDES FROM PERNAMBUCO FROM 1828 TO 1845, BOTH INCLUSIVE.

Years.	Cotton.	Sugar	Hides.
	Bags	Arrobas.	Number.
1828	70,785	1,460,628	52,444
1829	54,820	1,463,332	46,573
1830	61,151	1,705,614	65,489
1831	53,157	1,100,084	76,584
1832	31,520	1,518,300	66,656
1833	58,564	1,301,412	84,743
1834	42,799	854,088	80,350
1835	52,142	1,588,848	91,492
1836	62,834	1,823,292	90,701
1837	43,847	1,454,420	93,771
1838	00,648	1,750,380	105,851
1839	89,173	1,878,675	111,052
1840	95,849	2,191,008	132,993
1841	26,990	2,261,699	136,494
1842	21,857	1,906,936	126,206
1843	35,906	2,017,522	104,428
1844	41,385	2,146,688	124,074
1845	26,562	2,565,824	163,935

Number of vessels to and from the United States in Pernambuco in 1846: Vessels, 117, of 30,801 tons.

VALUE OF IMPORTS FROM AND EXPORTS TO ALL COUNTRIES.

		1845.	1846.
Imports	Francs,	24,567,000	17,136,000
Exports	"	20,327,000	19,851,000

Value of imports and exports from the United States in 1845: Imports, 1,928,000 francs; exports, 641,000 francs; total, 2,569,000 francs.

PRODUCTS EXPORTED TO ALL COUNTRIES IN 1846, COMPARED WITH 1847, IN FRANCS.

Years.	Sugar.	Hides.	Cotton	Tafia
1846	15,107,000	2,750,000	1,055,000	644,000
1847	17,478,000	1,124,000	1,836,000	82,000

From the preceding table it will be seen that the market at Pernambuco was more brisk in 1847 than during the preceding year. Sugar is the leading article in this market, and is exported to England, Trieste, Genoa, Portugal, the north of Europe, and to the United States. The total exports of sugar from Brazil are thus distributed throughout the ports of the empire. The exports for 1846 are taken as a basis for calculation:

	Kilo.	Pounds
Bahia	62,447,000	137,383,400
Pernambuco	40,570,000	89,254,000
Rio de Janeiro	8,244,000	9,892,800
Total kilo and pounds.	111,261,000	236,530,200

EXPORT OF SUGAR FROM PERNAMBUCO FROM 1852 TO 1854.

Exported to	1851-'52.	1852-'53	1853-'54
	Tons.	Tons	Tons
Great Britain	14,838	15,006	18,505
France—Nantes	....	....	1,478
" Havre	1,194	855	206
" Marseilles	2,277	5,799	2,755
Northern Europe	1,416	2,046	1,663
Genoa	1,726	4,824	2,845
Trieste	5 315	6,979	2,426
Gibraltar (for a market)	3 062	4,744	3,044
Portugal and possessions	5 571	4,083	2,675
United States	6,535	10,487	2,728
La Plata	2,564	3,048	4,205
Valparaiso	584	1,349	1,901
Australia	....	....	423
Brazilian ports	5,274	5,510	6,003
Total	47,956	64,829	50,549

The sugar produced in the province of Pernambuco amounts to about 80,000 tons a year, of which 60,000 are exported to foreign countries, 5000 coastwise, and 15,000 are retained for home consumption. There are about 1000 engenhos or sugar estates, 257 of which have been established within the last ten years. They average in extent about two square miles, and their crops vary from 200 tons as a maximum to 30 as a minimum; or at an average of about 75 tons each. Very few engenhos possess 150 slaves, and the smallest not more than 10 or 12; the average number of slaves employed on each engenho is about 50, so that 50,000 may be said to be her employed in sugar cultivation. They are badly treated and hard worked.

Pernambuco has many of the privileges of a sovereign state; it has its own president, provincial and municipal chambers, levies a portion of its own taxes, and maintains a militia which can not be removed from the province. It sends four senators and fifteen representatives to the imperial government — elected, the former for life, and the latter for four years, by almost universal but indirect suffrage. The imperial revenue levied within the province in 1849-'50 amounted to £542,423; in 1850-'51 to £690,526; and as these sums are derived chiefly from imports and exports, and no additional duties have been imposed, the increase is a proof of its commercial prosperity. The details of the latter year's general revenue were as follows:

Duties upon imports	£426,105
Duties upon exports	61,705
Port charges	7,183
Post-office, crown lands, etc	34,737
Extraordinaries	1,066
Deposits for charities, restitution unclaimed estates	3,573
Remittance of funds to the imperial treasury	155,354
Total	£690,526

In 1841 the receipt of imperial taxes from the province of Pernambuco amounted to only £278,852 11*s.* 2*d.*; so that in the course of ten years it has nearly trebled. Provincial taxes are levied upon sugar, coffee, tobacco, cattle, horses, spirits, passports, licenses for potteries, saw-mills, cigar shops, auctions, etc.; upon houses, legacies, inheritances, slaves, the tolls of bridges, etc., etc. Total amount in 1850-'51, £173,997 5*s.* The municipal

taxes are derived from the stamping of weights and measures, licenses to public houses, and places of entertainment, etc. They amounted in 1850–'51 to 123,650 reals, or £12,506 11*s.* 3*d.*, making the total taxation of the province as follows:

Imperial taxes	£690,526
Provincial	173,997
Municipal	12,506
Total	£877,030

Of these sums nearly two-thirds are expended by the imperial government; and to this is chiefly to be attributed the many attempts which have been made by Pernambuco to free herself from the imperial connection; and if the weight of a country's taxation may be judged of by its relation to the number of its inhabitants, the province of Pernambuco is as heavily taxed as most European states. The population of the province of Pernambuco amounted, according to the last census, to 606,936; of these 143,102 are white, and 463,834 colored; viz., 4078 Indians, 322,685 mulattoes, and 137,071 blacks. 506,702 were free, and 106,234 are slaves; 315,749 males, and 291,157 females. But the population must have increased considerably of late years.

Pernambuco, a city and sea-port of Brazil, inferior only to Rio Janeiro and Bahia in commercial importance; capital of the province of its own name, on the Atlantic, at the mouth of the Capaharibe, 210 miles northeast from Bahia; latitude of light-house, 8° 3 25″ S.; longitude, 34° 52′ W. Population estimated in 1852 at 100,000. It consists of the separate towns of Olinda, Recife, Boa-Vista, and St. Antonio; the first of which is on the main land, and the others lie south from it on a succession of low sandy banks, separated by salt-water creeks and different arms of the river, but connected with each other by two bridges. Recife, or Pernambuco proper, the most southerly, about four miles southwest from Olinda, is defended by the principal forts, and comprises the dock-yard and the large merchants' warehouses. In St. Antonio are the governor's palace, formerly the Jesuits' convent; the treasury, town-hall, prison, barracks, with convents, churches, and several good squares. A long embankment connects this town with the main land. Boa-Vista is extensive, but irregularly laid out; it has one handsome street, and comprises the residences of many of the richer inhabitants of the city, with gardens, various churches and convents, etc. Olinda, though beautifully situated, is in a state of decay, having been deserted by many of its population for Recife and the other parts of the city. The harbor of Pernambuco is defended from the swell of the ocean by an extensive reef (*recife*), which, according to Koster, continues along the whole coast from Maranham, at a variable distance from the shore, and has numberless breaks, through which ships approach the land. This reef, which is said to be of coral, "is scarcely sixteen feet broad at top; it slopes off more rapidly than the Plymouth breakwater, to a great depth on the outside, and is perpendicular within to many fathoms." — GRAHAM, in *Modern Traveler*, XXX., 228. This natural breakwater forms the harbor; for though at high-water the waves beat over it, they strike the quays and buildings of the town with diminished force. Along the sandy neck of land between Olinda and Boa-Vista, however, which is not covered by the reef, the surf is very violent; but the harbor itself is quite safe for vessels that are well-found and well-moored. It consists of two parts—the Poco, capable of receiving vessels of 400 tons and upward, entered across a bar on which there are from seventeen to thirty feet of water, and the Mosqueiras, much better protected than the former, but on the bar of which there are but seven feet of water at ebb-tide. Vessels trading with Pernambuco should not, however, draw more than from ten to twelve feet of water.—BLUNT'S *American Coast Pilot*, 519. The harbor is defended by several strong military works, the principal being the stone forts of Do Buraco and Do Brum. The light-house, on a reef at the entrance to the harbor, has a revolving light.—*See* PROVINCE OF PERNAMBUCO; *also* BRAZIL.

Foreign vessels are not allowed to engage in the coasting trade, but they can load here for any foreign port. Vessels from the United States can discharge part of their cargo, and, if desired, they can proceed on with the remainder to Bahia, Rio de Janeiro, etc.

There are no insurance offices here, all business of that kind being done either in the United States or England. With funds in hand, a commission of 2½ per cent. is charged. Vessels are generally chartered both ways, arriving with flour, the charterer stipulating for a return cargo of sugar. Vessels coming out on their own account have been chartered back this season as low as 60 cents a bag of 160 lbs. Usually, however, the freight ranges from 80 cents to $1 per bag. There is no business done in exchange between this port and the United States, except the few whalers' drafts that are purchased at from two to twelve per cent. discount. The value of the milreis is governed by the state of exchange on England. The principal articles imported from the United States are flour and tea. The former pays a duty of 3 milreis ($1 50) per barrel, and the latter pays 600 reis (30 cents) per lb.; hams pay 60 reis (3 cents) per lb.; tobacco pays 180 reis (9 cents) per lb. Sugar and hides are the only articles of export worth mentioning. Sugar pays an export duty of eight per cent. The export duty on hides is ten per cent. on a valuation fixed weekly by a committee appointed for the purpose. The only articles on which this government levies a consumers' tax are, all spirituous and malt liquors, cigars, tobacco, soap, and snuff. Wines and liquors pay 1½ cents a canada (1¾ gallons); 56 cents, in addition to this, is levied on each pipe for what the decree terms "charitable purposes." Cigars pay 56 cents per 1000; tobacco, 1 cent per lb.; soap, 1½ cents per lb. This tax affects the United States only in tobacco and snuff.—*Consular Returns for the United States*, 1854.

Perry, a fermented liquor made from pears, in the same manner as cider from apples. The pears best fitted for producing this liquor are exceedingly harsh and tart; but it is itself pleasant and wholesome.—*See* CIDER; PEARS.

Peru, a republic of South America, between lat. 3° 25′ and 21° 48′ S., and long. 68° and 81° 20′ W. Area, 520,000 square miles. Peru is bounded north by Ecuador, east by Brazil, southeast and south by Bolivia, and west by the Pacific Ocean. Its coast reaches from the month of the Rio Tumbez to that of the Loa, 1240 miles; capital, Lima. All the mountains of Peru form part of the great chain (cordillera) of the Andes. From Porco, in Bolivia, it is separated into two chains—that of Ancumar, which runs from the east between the provinces of Carabaya and Azangaro, in the department of Puno, and that which runs to the west through Tacna, Moquegua, and Arequipa. Both reunite afterward near the city of Cusco, and again separate, the one running to the east of the provinces of Huanta and Tarma, and the other to the west of those of Castrovireyna, Huancavelica, and Huarochiri, reuniting themselves again in Pasco. From Pasco three chains detach themselves —the eastern between the Rio Guallaga and the Pachitea, the central one between the Guallaga and the Upper Marañon, and the western one between the latter and the coast of Trujillo and Paita. These several chains reunite in the province of Loja, in Ecuador. The direction of these chains of mountains determines the great valleys of the interior of Peru. The lakes most notable in Peru are those of Titicaca, between the departments of Puno and La Paz, the latter in Bolivia; of Urnos to the south of the city of Cuzco; of Pleyes or Junin; and of Lauricocha, in the department of Junin. Lake Titicaca has a periphery of ninety leagues, and that of Junin of ten leagues. The other two are

smaller. In that of Lauricocha the Rio Marañon has its birth; in that of Junin, the Rio Jauja, which runs into the Ucayali; and in that of Titicaca, the Desaguadero (anglicé, *outlet*), which empties into the Lake of Paria, in the Republic of Bolivia. The rivers of Peru flow, some to the Pacific Ocean, others into the Amazon, and others into Lake Titicaca. Those that empty into the Pacific are the Tumbez, Chira, Sechura, Jequitepeque, Saña, Viru, Santa, Patavilca, Huaura, Chillon, Rimac, Mala, Cañete, Pesco, Ocoña, Camana, Quilca, Tambo, and Loa; and those flowing to the Amazon are the Tungaragua or Marañon, which takes the name of Amazon at its confluence with the Ucayali, the Guallaga, the Ucayali (formed by the rivers Pachitea, Apurimac, and Beni), and the Rio Yavari. The mineral resources of Peru, like those of Mexico, are inexhaustible. The very name of the country is associated in the mind with ideas of gold and silver. Besides the precious metals, however, the country produces copper, tin, iron, coal, saltpetre, etc., in abundance—the latter, under the name of nitrate of soda, has become an important export. The agricultural staples of the country are sugar, rice, tobacco, etc., which grow in the warmer situations; the vine, wheat, etc., in the milder. Potatoes are cultivated in all parts. Maize is cultivated, and is the common diet of the people. Medicinal plants, drugs, and dye-stuffs form a large part of the exports, and some of the hard woods abound in the forests. The Cinchona, or Peruvian bark, is indigenous to the country: it grows at the elevation of 10,000 or 12,000 feet, and abounds most in the northern provinces. Among the wild animals of Peru are the puma, the uturunca (a species of tiger), the acumari (a black bear), and great varieties of deer, wild bears, armadillos, etc. The llama, alpaca, guanaco, vicuña, etc., are the most valuable animals. Four varieties of condor are indigenous. Of acclimated animals the sheep has succeeded best, and goats, hogs, etc., thrive well. In the mountains cattle and horses find a congenial climate, but on the coast speedily pine and die away. The wool of Peru is among the best in the markets. The political divisions of Peru consist of eleven departments, and two provinces called "littorales." The departments are subdivided into sixty-one provinces, the provinces into districts, and these into parishes. The government, civil and economical, of each department is in charge of a Prefect, dependent directly on the President of the Republic; that of the provinces is in charge of Sub-prefects, dependent on the Prefects; that of the districts is in charge of Governors, and that of parishes is in charge of Sub-governors. The departments and the population in 1852 were as follows:

Departments.	Population.	Capitals.
Amazonas	43,074	Chachapoyas.
Ancach	219,145	Huaraz.
Arequipa	119 336	Arequipa.
Ayacucho	132,921	Huamanga.
Cuzco	349,718	Cusco.
Huancavelica	70,117	Huancavelica.
Junin	222,949	Cerro de Pasco.
Libertad	204,553	Trujillo.
Lima	251,801	Lima.
Moquegua	61,432	Tacna.
Puno	285,661	Puno.
Provincia Littoral de Callao	8,453	
Provincia Littoral de Piura.	70,332	
Total population	2,106,492	

The most eastern parts of the departments of Amazonas, Junin, Ayacucho, and Cuzco have not been well explored, and are inhabited by diverse tribes of savage Indians, for whose civilization different missions have been established, and to whom belongs entirely all the territory to the east of the Ucayali, and where the Prefects of the departments above-named do not exercise their authority.

Peru is an integral republic. The Constitution, which was finally settled in 1839, recognizes legislative, judicial, and executive powers entirely separate and independent of each other. The legislative power is vested in a Senate and Assembly, chosen by the people through electoral colleges; the deputies are apportioned in the ratio of one to every 20,000 inhabitants. The judiciary is appointed by the President, and judges are not removable except for cause. The Constitution provides for sub-judiciaries, having separate qualifications, for departments, districts, towns, and parishes. The executive power is delegated to a President, whose term is six years. There is no Vice-president, but the President of the Executive Council supplies the place of President in case of the removal, inability, or death of that officer. The Council consists of the Ministers and members of the Senate. The established religion is the Roman Catholic. The Church is presided over by an Archbishop and several suffragans. It is immensely rich. The Inquisition has been entirely abolished throughout the Republic.

Peru was conquered in 1532 by the Spaniards, under Pizarro and Almagro, and remained a colony of Spain for nearly three hundred years. The independence of the country was proclaimed at Lima, 28th July, 1821. Since that period the following parties have exercised supreme power: General San Martin, to 21st September, 1822; thence a "Junta Gubernativa," composed of General Lamar and Señors Salazar-y-Baquijuno and Alvarado; thence General Don José de la Riva Aguero, as President, to July, 1823; thence José Bernardo Tagle; thence General Simon Bolivar, to July, 1835; thence a "Council of Government," to the end of 1826; thence General Bolivar, as President; thence General Lamar, as Constitutional President, to June, 1829; thence General Gamarra, to 1833; thence General Orbegoso; thence General Salaberry, as "Supreme Chief," to 1836; thence General Santa Cruz, to 20th January, 1839; thence General Gamarra, to November, 1841; thence Señor Menendez, to August, 1842; thence Vidal, Figuerola, and Vivanco, successively, to 1844; thence Menendez (restored), to 1st April, 1845; thence General Ramon Castilla, to 1st April, 1851; and thence General Rufino Echenique, the present President.

The following is a statement of the public debt of Peru, as given by Señor E. Escobar de Bedoya, attaché to the Legation of Peru at Paris, 26th October, 1853:

Loans on the fours-and-a-half in England	$13,000,000	£2,600,000
Loans on the threes per cents. in England	8,500,000	1,700,000
Interior debt	23,200,000	
Debt to Chili	2,000,000	
Debt to the Republics of Old Columbia	3,600,000	
Total	$50,300,000	

The deposits of Chincha alone are worth three hundred millions of dollars (piastres). The Chincha and Lobos Islands, off the coasts of Peru, are of immense value to the country, on account of their guano deposits. This substance is the most potent of fertilizers, and until lately the islands above-named were the only sources whence it was derived. According to a report made by Señor Villa in 1812, the deposits in these islands were estimated to be 46,632,280 tons. Assuming the consumption to be 300,000 tons a year, valued at $20 a ton, it would produce $6,000,000 annually, and require 160 years for its total consumption. This resource has been an efficient aid to the national treasury, and has made Peru the most apparently prosperous of all the South American republics. The exports in 1852 amounted to 220,500 tons—32,000 of which went to the United States, and the remainder to France and England.—*See article* GUANO.

According to a treaty between Peru and the United States signed July, 1857, it is agreed that the permission to the whale ships of the United States by the treaty of 1851, to barter or sell their supplies and goods to the value of two hundred dollars, *ad valorem*, without being obliged to pay port or tonnage dues or other imposts, should not be understood to comprehend every kind of merchandise without limitation, but those only that whale ships are usually provided with for their long

voyages. That in the said exemption from duties of every kind are included the following articles in addition to the produce of their fishery, viz., white unbleached domestics, white bleached domestics, wide cotton cloths, blue drills, twilled cottons, shirting stripes, ticking, cotton, prints, shirtings, sailors' clothing of all kinds, soap, slush, boots, shoes, and brogans, axes, hatchets, biscuit of every kind, flour, lard, butter, rum, beef, pork, spermaceti and composition candles, canvas, rope, tobacco.

The principal ports of Peru are Paita, San José, Huanchaco, Callao, Islay, Arica, and Iquique. These are ports of entry for foreign commerce. There are other ports open to the coasting trade, and for the exportation of the produce of the country. These are Ylo, Chala, Pisco, Huacho, Casma, Pacasmayo, and Tumbez, and the small harbors of Sechura, Samano, Santa, Supe, Huarmes, Echenique, Chancay, Ancon, Cerro, Azul, Chilca, Cancato, Nasca, Quilca, Cocotea, Morro de Sama, and Pisaque.

The commercial relations of the United States with Peru are regulated by the treaty already cited, bearing date July 26, 1851, and by such decrees and orders as are issued from time to time by the Supreme Government of that republic. The treaty guarantees entire liberty of commerce and navigation, and perfect reciprocity between the flags of the two countries in the ports of the other.

The trade between the two nations (Peruvian guano excepted) is not, however, very extensive, as appears from the official returns of the United States Treasury Department. Before entering into the details of the commerce between the United States and Peru, the following summary of the general foreign trade of that republic is given, with a view to show the relative rank held by the United States and other nations in that trade. The figures are derived from the official returns of the Peruvian government for the years 1851 from all nations, and in 1851 and 1853 from the United States. —*See Commercial Relations of United States.*

Imports into Peru in 1851–1853.

Articles.	1851.	1851.	1853.
Textiles of silk	$758,075	$1,155	$232
Textiles of linen	234,743	13,086	6,005
Textiles of cotton	2,254,343	252,667	268,190
Textiles of wool	2,408,846	11,004	730
Gold and silver ware	360,373	32,422	270
Fruits	30,570	614	64
Provisions	523,545	58,900	115,600
Timber	145 895	11,506	10,405
Furniture	105,663	34,200	49,901
Wines and liquors	170,869	2,526	1,615
Sundries, &c.	2,403,552	99,902	152,300
Ready-made clothing	....	....	618
Total, 3 years	$9,447,465	$518,042	$686,024

Résumé of Imports from all Nations by Ports.

Ports.	1851.	1853.
Callao	$6,317,920	$6,076,474
Arica	891,698	860,170
Islay	1,376,492	1,454,358
Huanchaco	330,228	295,746
San José	230,430	180,738
Paita	288,678	253,918
Loreto	....	26,494
Total	$9,447,465	$9,087,898

Exports from Peru to the United States.

Articles.	1851.	1852.	1853.
Cotton	$7,410	$6,800	....
Cascarilla	41,364	30	11,840
Hides	231	1,031	2,081
Hats	....	13,665	600
Sundries	5,972	75	5 643
Fruits	190	....	....
Guano	1,722,195	1,088,280	4,713,660
Wool	20,736	17,724	69,020
Gold	4,104	57,579	....
Silver	....	10,000	8,644
Tobacco	3,048	....	....
Saltpetre	....	28,900	85,204
Provisions	31,160	23,664	1,088
Total, 3 years	$1,836,440	$1,268,748	$4,898,380

Recapitulation of Foreign Commerce of Peru for three Years.

Years.	Imports.	Exports.
1851	$9,447,465	$18,085,715
1852	9,916,242	10,173,216
1853	9,087,898	16,883,630
Total	$27,851,606	$40,142,562

Balance of foreign trade in favor of Peru, during these three years, $12,290,956; making an annual average in favor of Peru of $4,096,985. The number of vessels employed in the steam navigation of Peru is: six steamships belonging to the British mail line, which ply semi-monthly between Valparaiso and Panama. The aggregate tonnage of these six steamers is 3506 tons. There is also a seventh steamer of 500 tons on the same line. One Peruvian steamer, of 250 tons burden, coasts regularly between Callao and Valparaiso. The two latter are screw-propellers; the other six have paddle-wheels. The merchant marine of Peru in 1852 consisted of nine ships, with an aggregate of 3194 tons; ten barks, measuring in all 4156 tons; and eight brigs, of 1681 tons; making a total of twenty-seven vessels, with an aggregate of 9031 tons. The total number of Peruvian vessels employed in the coasting trade during the same year was 141, with an aggregate of 14,705 tons. The number of seamen engaged in this service is about 4000, of which 2150 are natives, and 285 citizens of the United States—1250 being employed in the foreign trade, and 2750 in the coasting trade. The tables on next page, transcribed from French official authorities (the dollars having been reduced to francs by multiplying by 5), exhibit in detail the general import and export trade of Peru in 1853.

Callao is the chief port in Peru for foreign commerce. The aggregate tonnage of Peruvian vessels, belonging to and employed in foreign trade at Callao, in 1852, was 67 vessels, measuring an aggregate of 15,031 tons; in the coasting trade the number of vessels was 181, with a tonnage of 17,705 tons; making a total of 248 vessels, and 32,736 tons. Besides the above, there were employed, during the same year, at the port of Pisco, six vessels of 1200 tons aggregate; and at the port of Huacho (both ports being in the consular district of Callao), eight vessels, with an aggregate of 400 tons; making a total in both ports of 1600 tons. The total number of Peruvian vessels which entered at Callao (in foreign trade) in 1852 was 150, with a tonnage of 19,478 tons; and the number cleared, 157 vessels, with a tonnage of 19,326 tons. The number and tonnage of United States vessels which entered Callao during the same year was: vessels, 69; tonnage, 27,360 tons; and the number and tonnage of those cleared was: vessels, 56; tonnage, 23,650 tons. The following comparative table shows the rank which the United States held, relatively with other foreign nations, in the navigation of this port in 1852, including British mail steamships:

Nationality.	Entered.		Cleared.	
	Vessels.	Tons.	Vessels.	Tons.
United States	69	27,360	56	23,600
English	210	108,600	260	151,000
French	42	16,000	30	10,200
Spanish	9	3,500	11	4,000
Italian	17	6,500	20	8,100
German	25	13,800	30	12,400
Chilian	40	4,400	40	4,400
Others	20	4,000	20	600

The following statement exhibits the number and tonnage of United States vessels which entered at Callao during the years specified:

Years.	Vessels.	Tons.
1852	69	27,360
1853	235	159,521
1854	246	168,558

The general features of commercial transactions at Callao, and at the ports of Peru generally, are set forth in a communication of late date from the consul of the

NATURE AND VALUE, IN FRANCS, OF GENERAL MERCHANDISE IMPORTED INTO AND EXPORTED FROM PERU IN 1853.

IMPORTS OF LEADING ARTICLES—AND THE TOTAL VALUES OF ALL IMPORTS—(FRANCS).

Countries from which.	Silk Goods.	Linen Goods.	Cotton Goods.	Woolen Goods.	Jewelry.	Wearing Apparel.	Furniture.	Provisions and Spices.	Total.
Germany	....	41,620	....	....	....	....	....	....	54,885
England	841,006	1,190,455	11,177,930	4,532,010	319,230	151,415	510,155	178,585	23,081,455
Central America	....	....	....	....	....	....	....	....	885,525
Australia	....	....	....	....	....	....	....	....	585
Bolivia	....	....	....	....	....	....	....	155	155
Brazil	2,250	2,500	18,750	....	820	....	....	....	126,940
Buenos Ayres	....	....	....	....	....	....	....	2,250	57,010
China	620,445	....	....	....	7,800	1,000	71,390	167,070	1,447,480
Chili	....	....	....	....	....	1,200	....	2,487,365	3,270,035
Denmark	....	....	....	....	....	....	....	....	320
Spain	69,755	....	....	....	....	....	....	56,210	311,835
Equador	....	....	....	....	9,200	....	....	4,980	634,140
United States	1,100	30,025	1,240,650	3,650	1,751	3,090	249,505	578,000	2,930,120
France	1,727,000	111,935	743,670	1,592,325	486,025	421,010	274,015	112,385	6,418,965
Hamburg	111,755	29,130	519,005	388,410	6,295	12,540	139,360	11,055	2,431,055
Holland	....	....	....	....	....	....	....	....	1,910
Italy	2,825	29,060	1,135	245	....	....	2,455	52,365	214,515
Mexico	....	....	....	....	....	....	....	....	75
New Granada	....	....	....	....	140,170	....	....	....	214,100
Paraguay	....	....	....	....	....	....	....	400	400
Prussia	....	....	....	....	....	....	....	....	6,535
Switzerland	....	....	....	510	....	....	....	....	510
Total francs	3,376,285	1,434,725	13,891,500	6,408,640	972,490	590,255	1,246,860	3,851,400	45,459 470

EXPORTS OF LEADING ARTICLES—AND THE TOTALS OF ALL EXPORTS FOR THE YEAR 1853 (FRANCS).

Countries to which.	Cascarilla Bark.	Cochineal.	Hides	Guano.	Wool.	Gold.	Silver.	Saltpetre.	Total.
Germany	....	....	....	....	....	....	....	138,405	138,405
England	254,559	66,935	23,180	25,089,300	2,543,530	1,250,475	10,851,680	4,010,115	44,024,125
West Indies	....	....	....	1,321,200	....	....	....	....	1,321,200
Bolivia	....	....	....	....	....	57,970	....	....	57,970
Brazil	....	....	....	....	....	6,510	....	....	134,535
Chili	....	5,250	39,360	....	....	51,000	186,550	17,515	2,457,185
China	....	....	....	204,525	....	20,945	382,000	....	703,470
Denmark	....	....	....	....	....	....	....	70,000	70,000
Spain	....	....	....	920,475	....	28,560	54,730	141,205	1,144,970
Equador	....	....	675	....	....	11,900	9,070	....	41,415
United States	50,200	....	13,405	23,568,300	545,100	....	43,220	426,020	24,491,890
France	11,780	....	2,845	2,112,975	569	343,775	3,540,905	1,189,210	7,208,030
Hamburg	7,200	....	6,250	....	....	....	....	1,010,220	1,074,070
Holland	....	....	....	....	....	....	....	122,500	122,500
Italy	....	....	750	176,400	....	12,700	1,730	111,125	303,575
Mauritius	....	....	....	400,275	....	....	....	....	400,275
Mexico	....	....	....	....	....	....	....	....	177,450
New Granada	....	....	....	....	....	....	3,000	....	243,025
Sweden	....	....	....	....	....	....	....	182,785	182,785
Total francs	332,710	72,185	86,565	53,885,450	2,889,250	1,765,895	15,068,885	7,419,100	84,491,885

United States at that port, as follows: "The most valuable of the articles imported into this consulate are asserted merchandises from England, France, Italy, the United States, Chili, Spain, and Equador; viz., Cotton, linens, silks, wines, hardware, etc. From the United States, domestic cottons, furniture, lumber, provisons, etc. The export trade of Peru consists chiefly of guano, which is sent to England, the United States, France, and Spain, and in smaller quantities to Italy, India, and the West Indies. The export was forced during the revolution, and a diminution has taken place under the present government, owing to over-supplies in Europe and the United States, and a wish on the part of Peru to raise the price of this article abroad to its consumers. It is valued on board the ships at the Islands where laden at $5 per ton—that is, at the cost attending its shipment. The average rate of freights to the United States during the year past (1855) has been $22 per ton of 2240 lbs. This much of the product of guano goes into the hands of our ship-owners, who carry nearly all of it to the United States, and part of it to other places, from Callao and the Chincha Islands. No prohibitions exist, in fact, upon imports; but arms and munitions of war are difficult of introduction during revolutions. Powder is strictly prohibited. The general trade regulations are liberal. Goods lie in bond at the option of the merchant; paying only, after the first month, storage and labor, until entered for consumption, or else exported abroad, and then no charges further. There are at present no differential or discriminating duties on any foreign vessels or goods. A quarantine exists in the case of coolies from China, who usually arrive sick; and this district, during the last three years, has become subject to fatal epidemic fevers, etc. United States capital is employed in the ice trade, and in repairing ships; in the humbler trades, and in commerce, and upon the public works. The English at present enjoy the largest share of the import and export trade; but the activity and intelligence of all commercial nations are occupied in seeking a share, and the tendency is gradually toward a more equal participation.

Crude wools are largely exported; but the high duty on them in the United States throws nearly all that trade into Europe, mostly to England, where wool is free under the tariff. Of late they have been paying good profits. This remark applies also to the barks of Peru, and to copper. The bar silver exported all goes to England, because there is no direct steam communication with the United States. Some supplies of wheat, flour, and other agricultural products begin to be imported into this consular district from California, such as barley, potatoes, etc.; and about 2500 flasks of quicksilver, valued at nearly $100,000, have been imported during this last quarter. Whale ships, while cruising, call at times for refreshments, and to change their crews. The agricultural industry of the country has been obstructed by the liberation of the slaves in 1855, to replace whom Chinese coolies are being imported. Such laborers are also now being employed by the government at the Chincha guano islands, near Pisco. The army of Peru employs about 7000 Cholo half-breed Indian soldiers, the tendency of which polity is to hinder population. There is a perceptible increase in the number of Americans in this consulate—seamen, artisans, and tradesmen, who come to reside. Nitrate of soda is largely exported—at least a million and a half of quintals annually, valued at $2 per 100 lbs.; a considerable part of which goes to the United States. Dry and salted hides, and straw

hats, are exported in small quantities. The circulating currency of Peru, representing silver, and now the only money in common use, is below the nominal standard about three-eighths, or 37½ per cent. The rate of exchange fluctuates from five to fifteen per cent. on the dollar. The dollar of Peru, in invoices of export to the United States, is now usually valued at from 80 to 85 cents of United States currency. The Peruvian dollar, of pure silver, not in circulation, is worth about 87½ cents of United States currency. Gold coins of Peru are not now seen in common use. Patriot doubloons pass current at $17, and of late are worth 3 per cent. premium, and but few to be obtained."

Paita.—The chief staples of export from the port of Palta are straw (Panama) hats and Peruvian bark. The exports consist chiefly of cotton manufactures, of iron, and assorted sundries. The official navigation returns for this port, for a period later than 1852, are not at hand. There entered from all foreign nations in that year 185 vessels, with an aggregate of 61,624 tons; of which there were from the United States 42 vessels, measuring an aggregate of 10,256 tons. The direct trade between the United States and this port is limited, owing to the facilities afforded in the coasting trade between this point and Callao.

Arica.—The staple exports from the port of Arica are tin, copper ore, Peruvian bark, and alpaca wool. With the exception of the latter, all these exports are of Bolivian produce. Indeed, the port of Arica is merely a transit port for Bolivian produce and trade. Owing, however, to some misunderstanding between the governments of Peru and Bolivia, which resulted in the imposition by the former, in 1853, of 40 per cent. duty on the produce of the latter passing through this port, this transit trade is now conducted through the port of Cobija (Port La Mar), the only port open for foreign commerce in Bolivia. The imports from the United States are cotton domestics, blue drills, chairs, and shoes, on which last-named article a duty of 40 per cent. is levied.

Iquique.—This port possesses a harbor safe and commodious, and is well protected by the island of Iquique from the heavy swells which, in the winter season, set in from the southwest. With the exception of a few months during the late revolution in Peru, up to the month of July, 1855, when it was declared a *puerto mayor*, Iquique ranked as a *puerto menor*, with some extra privileges. The province of Iquique is the great centre of the nitrate of soda trade, and to this article alone it owes its present position. Out of a population of about 15,000 four-fifths are more or less interested in this trade. At the works, the nitrate of soda varies in value from 81¼ cents to $1 06¼ per quintal. The rate of carriage to the coast varies from 68¾ cents to 93¾ cents per quintal. The average rate paid for the article placed on the beach is $1 75 per quintal; and this price gives the makers a profit of 9¾ cents per quintal.

Nitrate of soda is always sold deliverable along side the ship's launch, outside the surf. The merchant has to bag and embark it, which costs him about 21¾ cents per quintal. Selling it, therefore, at $1 87½, would yield him a profit of 15¾ cents per quintal.

Nitrate of soda is used in the manufacture of sulphuric and nitric acids, and as a fertilizer. Between 1820 and 1830, attempts were made to export it to the United States and England, but the cargoes were unsalable. Soon afterward, however, its value became known, and at this time the quantity annually exported reaches nearly 1,500,000 quintals, valued at about $1 25 to $2 per 100 lbs. The following statement will show the total amount of nitrate of soda exported since 1830, when the trade began:

1830 to 1834, inclusive	.....	Quintals.	361,365
1835 to 1839, "	.....	"	701,249
1840 to 1844, "	.....	"	1,592,300
1845 to 1849, "	.....	"	2,060,595
1850 to 1854, "	.....	"	3,260,473
Total	.....	"	8 036,108

QUANTITIES OF NITRATE OF SODA, IN QUINTALS, EXPORTED FROM 1850 TO 1854, BOTH INCLUSIVE, AND THE COUNTRIES TO WHICH EXPORTED.

Countries.	1850.	1851.	1852.	1853.	1854.
Australia.....	....	....	....	....	7,000
Belgium	....	6,447	....	....	....
California	....	....	....	....	5,242
Chili.....	4,965	5,180	8,346	12,000	14,085
France.....	87,327	154,381	60,561	150,423	96 446
Germany.....	33,630	44,671	44,627	188,268	89,609
Great Britain.	304,459	271,137	360,703	406,391	421,625
Holland.....	40,642	26,912	7,879	....	14,691
Italy.....	10,054	7,599	....	10,200	....
Spain	....	....	....	16,138	....
Sweden	....	....	4,700	....	....
United States.	25,130	34,136	38,436	58,562	48,555
West Indies ..	....	9,709	2,287	....	....
Peru (North) .	3,542	3,178	6,0 0	1,495	1,198
For orders ...	....	39,807	20,647	23,065	11,418
Total....	519,879	5 0.007	563,276	866,532	719,879

Before Iquique was constituted a puerto mayor, foreign vessels from any foreign port could call and anchor, provided their cargoes consisted of nothing but the following articles: Peas, beans, lentils, Indian corn, wheat, barley, nuts, raisins, almonds, cocoa-nuts, flour, bran, biscuit, macaroni, frangallo, chococa, dried potatoes, fat, butter, tallow, lard, jerked beef, cheese, live and dead stock, salted meats, and all kinds of vegetables and roots, candles and soap, fire-wood, timber for building, coals, bricks, iron, steel, nails, tools for mines, empty sacks, twine, machines for making nitrate or distilling water. It is now open to general commerce, and will necessarily become a port of much importance. Being the most windward of the Peruvian ports, vessels proceeding from the south, having other goods on board than those above specified, were obliged to go to Arica, the first puerto mayor, and, after dispatching at the custom-house there, beat back again to Iquique, at a cost of from five to fifteen days' sailing. The consequence of this restriction was, that but few vessels entered this port with cargoes direct from foreign countries. Another advantage to be derived from making Iquique a puerto mayor is, that it will open a transit trade into Bolivia, and thus render this port an entrepôt for an extensive trade with that republic. The distance to Potosi is much less—less, it is stated by three or four days' journey, than by the way of Cobija. The mules would only have to travel fifteen leagues without water, and the pass in the Cordillera is equally as favorable as by the latter route.

Tumbez.—No vessels except whale ships are allowed to enter at this port. The privileges to which American whalers are entitled by the twelfth article of the treaty of Peru with the United States, have already been stated. The market of Tumbez is supplied chiefly by American whale ships, which usually import small quantities of American manufactured goods, flour, etc. Other foreign whale ships must conform to the general regulations of commerce, which allow them to anchor, provided they have on board only the products of the fishery, provisions and supplies necessary for the use of the vessel and crew, and to sell oil and candles to any amount, in exchange for provisions, free of import duty. The following summary exhibits the number and tonnage of American whaling vessels which arrived at the port of Tumbez, from August, 1852, to June 30th, 1855:

Years.	Number of Vessels.	Tons.
1852.....	28	7,711
1853.....	57	17,579
1854.....	64	19,042
1855 (first six months).	32	9,740

—*United States Commercial Relations.*

No deposits of guano which will at all compare with those of Peru seem as yet to have been discovered, although most extensive explorations have been prosecuted; nor has science yet succeeded, though inventive skill has been tasked to the utmost, in manufacturing a substitute which would supersede the use or lower the price of the Peruvian fertilizer.—*See* GUANO.

COMMERCE OF THE UNITED STATES WITH PERU FROM OCTOBER 1, 1824, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1825.....	$359,854	$374,944	$734,798	$346,833	....	$323,157	2,919	....
1826.....	278,724	231,175	509,899	795,194	....	408,622	3,171	....
1827.....	202,944	70,977	273,921	1,065,409	$5000	665,788	2,454	....
1828.....	159,589	100,555	259,944	943,199	....	629,850	2,314	....
1829.....	91,542	119,815	211,157	1,044,458	....	902,079	749	....
1830.....	32,400	39,408	71,808	972,884	....	591,521	732	....
Total...	$1,124,853	$935,774	$2,060,627	$5,098,080	$5000	$3,220,517	12,339	....
Sept. 30, 1831.....	$8,560	$7,616	$16,176	$917,788	....	$331,711	628	....
1832.....	7,126	10,834	17,960	730,008	....	165,192	73	....
1833.....	....	....	....	654,630	....	182,872	73	....
1834.....	42,767	16,096	58,863	618,412	....	203,231	685	....
1835.....	....	....	....	1,118,278	....	660,877	....	....
1836.....	....	918	918	155,831	....	86,203	....	....
1837.....	99,757	11,601	111,358	909,418	....	440,109	1,221	....
1838.....	103,808	29,581	203,390	633,437	....	164,375	1,074	....
1839.....	....	....	....	242,813	....	87,696	1,019	....
1840.....	....	....	....	438,495	....	146,521	607	....
Total...	$322,978	$86,596	$408,674	$6,409,200	....	$2,483,717	5,134	....
Sept. 30, 1841.....	....	....	....	$524,876	....	$120,161	....	....
1842.....	....	....	....	204,768	....	14,389	....	....
9 mos., 1843*.....	....	....	....	135,563	....	34,441	446	....
June 30, 1844.....	$14,053	$2,754	$16,807	184,424	....	21,839	404	....
1845.....	33,424	....	33,424	336,112	....	18,221	735	....
1846.....	....	....	....	252,509	....	9,500	291	....
1847.....	192,978	34,659	227,637	396,223	....	32,520	1,208	512
1848.....	124,618	16,731	141,349	317,759	....	57,991	2,732	1,419
1849.....	93,195	18,041	111,236	440,963	....	17,493	5,611	2,291
1850.....	253,959	16,793	276,728	170,753	....	3,250	10,332	7,340
Total...	$717,207	$88,374	$806,081	$2,969,530	....	$338,711	21,759	11,612
June 30, 1851.....	$240,760	$22,338	$272,098	$34,733	$344	....	18,920	13,519
1852.....	333,704	22,048	355,842	694,892	....	$975	5,179	11,331
1853.....	657,316	40,261	697,577	175,441	3000	10,679	63,246	37,410
1854.....	651,707	33,448	685,155	1,005,496	5000	....	121,825	36,685
1855.....	756,328	114,223	870,546	597,618	....	....	85,151	25,377
1856.....	1,159,232	84,991	1,241,225	217,759	7600	....	51,561	20,107

* Nine months to June 30, and the fiscal year from this time begins July 1.

A treaty of friendship, commerce, and navigation exists between the United States and the Republic of Peru, the terms of which treaty are adhered to in good faith at the ports of Peru; and although questions sometimes arise in police cases regarding seamen belonging to American vessels, the authorities assist readily in arranging such questions as they occur. The present existing regulations are fixed and definite as regards commerce. Changes in parts of these regulations are made by decrees issued by the President and Congress, when that body is in session, and by the President and Council of State during the recess of Congress, as required by the public exigencies. At present (August, 1855) the government is undergoing the process of a revision of its fundamental laws, now being made by a convention of deputies elected from all sections of the country, and holding its sessions in the hall of Congress at the city of Lima. There are no privileges permitted to the commerce of other nations which are denied or not allowed to the United States. There are no restrictions imposed on the commerce of other nations and not on that of the United States. But a line of eight fine British steamers, carrying the mails and running between the ports of Panama and Talcahuano, under the provisions of a postal convention existing between Great Britain and Peru, are exempted from all tonnage duties and port charges whatsoever in the ports of Peru, in consideration for the transmission of the mails of Peru to and from the various ports of Peru at which they touch in making passages to and from Talcahuano and Panama. The whaling vessels of the United States, also, are allowed certain privileges in the port of Tumbez and all the open ports of Peru, in virtue of the treaty now existing. Some question has been made by Peru as to whether this privilege should allow whale ships to avail themselves of its provisions in one port only, while on a cruise, or at each or any port or ports, and every time they visit such port or other port or ports of Peru. The amount of the port charges made upon the vessels of the United States in the ports of Peru is as follows, namely: Tonnage duty, 25 cents per ton; anchorage fee, $8 on vessels to Callao only; anchorage fee on vessels to Callao and the Chincha Islands is $4 more, making $12; inspector's fee, $4 25; custom-house fee, $4 25. The various stamped papers cost from $5 to $12, according to the operations made by the vessel. There are no light-house dues nor any light-houses, and no hospital money is exacted. The tonnage duty is only payable in one port, and only once in six months. There are no pilots nor any pilot system in Peru—the naturo of the ports rendering pilots unnecessary. National vessels that measure less than 200 tons do not pay any tonnage duty, but pay the other port charges. National vessels over 200 tons register pay 25 cents per ton, being the same duty that the vessels of all nations are made subject to. The line of eight British mail steamers is exempted from all port charges whatsoever, under the conditions of the postal convention now existing between Great Britain and Peru. The transhipment of goods is permitted in the vessels of the United States, either to another port in Peru or to a foreign port. This privilege is allowed also to the vessels of all nations. By the *Reglamento de Commercio* for 1852, the latest yet published, it is allowed to vessels of all nations to take coastwise, from one open port (mayor) to another, any foreign goods in bond; that is, which have not paid duty; for example, from Arica or Isly to Callao. It is also allowed to take the productions of Peru, and any foreign merchandise free of duty, in the same manner, from any port to another port or ports in Peru. All vessels may go loaded with free goods, and the productions of Peru, not only from one open port to another, but from an open port to a minor port (menor), or from a minor port to an open port (mayor), or in any manner. Vessels of all nations are permitted to go to the port Iquique, to load with nitrate of soda and other articles, and also to proceed from Callao to the Chincha Islands to load with guano.

The moneys, weights, and measures, known and in common use in Peru, are those of Spain, having remained the same as when Peru was a colony of Spain.

The difference between the vara and the yard in the custom-house is eight per cent. additional, the vara being about 33 inches of the English yard of 36 inches. The gross and dozen are the same as in the United States. The gallon of oil, of wine, and of spirits, are each taken at 7½ pounds to the gallon. The fanega is an arbitrary ideal measure, and is regulated by weight; namely, one fanega of wheat is 135 pounds; one fanega of millet is 130 pounds; one fanega of beans is 182 pounds; one fanega of peas is 182 pounds; one fanega of corn is 156 pounds; one fanega of Lima beans is 156 pounds; one fanega of tallow is 180 pounds. But these measures do not come into use in foreign intercourse, or in any large transactions. There is no measure of bulk in use, such as a bushel or a gallon; articles measured in bushels or in gallons in the United States are sold by the pound or quintal of 100 pounds in Peru. The difference between the pound and quintal (of 100 pounds) of Peru and those quantities in the United States is two per cent., the pound of Spain and Peru being two per cent. heavier than the pound avoirdupois of the United States and England.

Insurance to the United States, one and a half to two per cent. Freight, $20 to $30 per ton of 2240 pounds, guano, delivered; and the same price on 40 cubic feet measurement of other articles. Commission, two and a half to five per cent. on the invoice. Cash in all cases on exports. Average rate of exchange, five to seven per cent. premium for a bill on the United States, and eight to ten per cent. on United States currency. The true par of exchange is: Specie, six to ten per cent. premium; by exchange, six to seven per cent. Bills, six to seven per cent. premium; by the currency, ten per cent. No duty is charged on merchandise exported. No internal or other taxes are levied on exports. Guano belongs to the government and people of Peru, and is sold by itself.

PRICES OF EXPORTS.

Articles.		Wholesale Price.
Guano from the Chincha Islands	Per ton of 2240 lbs.	
Nitrate of soda, a sort of saltpetre	Per 100 lbs.	$1 25
Hides, ox and cow	Each	2 00
Bark, Peruvian	Per 100 lbs.	40 60
Tin, block	"	13 00
Hats, straw	Dozen	12 00, etc.
Horns, ox and cow	1000	20 00
Wool, sheep's	100 lbs.	12 00
Chocolate	"	14 00
Vanilla	Pound	6 00 to $7 00
Balsam	"	1 50

Peruvian Bark. The trees yielding Peruvian bark, which grow at an elevation of 7000 to 8000 feet on the Andes, have for a long series of years been felled for the sake of their bark, and no pains were taken to replace them. Fears have been naturally entertained that ere long the supply of bark, and consequently of quinine, would fail. Efforts have consequently been made to transplant the tree into countries where it is supposed the climate would be suitable. Dr. Royle has taken measures for introducing Cinchona Calisaya, or the yellow-bark tree, into the higher regions of India; and of late years the Dutch government have employed Mr. Haskarl to transport plants of various species of cinchona from South America to Java and other parts of the Dutch East Indies. These attempts have been successful; and the reports in regard to the growth of the plant are such as to lead to the expectation that ere long the Peruvian bark trees will be scattered over extensive districts, and will thus be saved from destruction.—*Edin. New Phil. Journ.*, No. 9.

Pewter (Ger. *Zinn*, *Zinngeisserzinn*; Fr. *Etain*; It. *Stagno*; Sp. *Estano*, *Peltre*; Russ. *Olowo*), a factitious metal used in making plates, dishes, and other domestic utensils. It is a compound, the basis of which is tin. The best sort consists of tin alloyed with about one-twentieth or less of copper, or other metallic bodies, as the experience of the workmen has shown to be most conducive to the improvement of its hardness and color, such as lead, zinc, bismuth, and antimony. There are three sorts of pewter, distinguished by the names of plate, trifle, and ley pewter. The first was formerly much used for plates and dishes; of the second are made the pints, quarts, and other measures for beer; and of the ley-pewter, wine measures and large measures. A fine pewter is made, according to Aiken, by fusing together 100 parts of tin, 8 of antimony, 1 of bismuth, and 4 of copper. The use of these additions to tin is to harden it and preserve its color; and a good pewter, when clean and polished, has a silvery lustre, and does not readily tarnish. Common pewter, of which measures and pewter pots are made, is an alloy of lead and tin.

Philadelphia, the metropolis of Pennsylvania, and the second city in the United States of America in population and in manufactures, is in lat. 39° 56′ 39″ N., and long. 75° 10′ 54″ W., 130 miles from Washington, and 87 from New York. Population in 1800 was 70,287; in 1810, 96,287; in 1820, 119,325; in 1830, 167,325; in 1840, 258,037; in 1850, 408,762; and in 1854, 480,000. It is situated between the Delaware and Schuylkill rivers, five miles above their junction, and extends from the one to the other. The rivers bounding it lie about two miles apart in the narrowest place. The city is 100 miles distant from the ocean by the course of the Delaware. Its principal harbor is on the east, or Delaware River side, where ships come up, and its foreign commerce centres. Philadelphia has an extensive foreign, and a still greater domestic trade; by means of railroads and canals it possesses facilities for communication with a great extent of country. The city is built upon a plain rising gradually from the Delaware on the east, and the Schuylkill on the west, to the height of about 65 feet above the surface of the rivers at highest water. The portion most densely built upon has an outline of about ten miles, and extends along the Delaware River five miles. Philadelphia is laid out with great regularity, the streets, with but few exceptions, crossing each other at right angles. High Street, extending from river to river, and Broad Street, which extends south and north from Penn Square, are very wide and spacious thoroughfares; the other streets are, many of them, neat and cleanly kept. The public buildings are generally tasty and well built edifices, and the private residences have a neat and cheerful appearance. It was surveyed and laid out in 1682 by Thomas Holmes; the ground selected was claimed by three Swedes by the name of Swenson, who held a title to it obtained of the Dutch Governor of New York in 1664. This claim was purchased by Penn.—*Harper's and Lippincott's Gazetteers.*

Manufactures.—This branch of the industry of Philadelphia is very important both as regards value and extent. The vicinity abounds with water-power of great magnitude, and coal is obtained at an easy and cheap rate, so that steam can be applied as a motive power to a great advantage over other places, and which has been made extensively available. Machinery, locomotives, hardware, sugar-refining, cordage, and a variety of wares are produced here.—*Census Report*, 1850.

CAPITAL INVESTED, THE NUMBER OF HANDS EMPLOYED, AND THE VALUE OF THE ANNUAL PRODUCT OF THIS BRANCH OF INDUSTRY, IN THE CITY AND COUNTY OF PHILADELPHIA DURING THE YEAR ENDING JUNE 30, 1850.

Districts.	Capital invested.	Hands empl'd.		Annual Products.
		Males.	Fem.	
Philadelphia City	$13,207,6 5	17,020	9046	$26,209,265
Northern Liberties	3,922,251	4,463	1181	7,073,023
Spring Garden	2,913,445	4,3:6	854	5,376,781
Kensington	3,755,711	6,723	1870	10,083,904
Southwark	2,171,065	2,080	167	3,734,730
Moyamensing	530,364	1,970	488	1,290,201
Townships, etc.	7,237,380	6,705	2377	10,237,308
Total	$33,737,911	59,106		$64,114,112

Coal Trade, etc.—The coal trade during the year 1853 amounted in value to over $10,000,000, and the quantity brought to market about 6,000,000 tons. The

commerce of Philadelphia is rapidly on the increase, amounting in value the same year to $14,500,000, and employing a tonnage of 252,451 tons. In 1854 there was a line of first-class steamships and four lines of sailing-vessels plying between this port and Liverpool; two steamships to Charleston, South Carolina; one to Richmond, Virginia, *via* Norfolk and Petersburg; one to Boston; one to Hartford; two to New York; and one to Baltimore. These vessels were substantial and well built, and most of them constructed in this city. The total number of steamships, ships, barks, brigs, schooners, barges, etc., entering the port during the year 1856, was 27,044.—*See* COAL; COINAGE.

The following railroads centre here: The Camden and Amboy; Philadelphia and Trenton, connecting with the New Jersey; the Camden and Atlantic; Philadelphia and Germantown; Philadelphia, Reading, and Pottsville; the Great Central Railroad of Pennsylvania, with its extensive connections; Philadelphia and Westchester; Philadelphia, Wilmington, and Baltimore, etc. The Schuylkill Navigation Canal, 108 miles long, extends to Port Carbon; and the Chesapeake and Delaware Canal, 14 miles long, extending from the Delaware River at Delaware city to Back Creek, Maryland. These great arteries of traffic contribute much to the trade of Philadelphia.

The city, as consolidated by the act of January, 1854, embraces a territory 23½ miles long, and 5½ average breadth, coextensive with the county. It is divided into 24 wards, and is governed by a mayor, elected for two years, a select council of 24 members for the same period, and a common council of 72 members, elected annually.

Philadelphia was first surveyed and regulated in 1682. It had previously been in possession of the Swedes, some of whom came into the country bordering on Delaware Bay as early as 1627. It was named after a city in Asia Minor, and the plan is said to have been suggested by that of ancient Babylon, and according to the original design of William Penn, its original founder and proprietor, was designed to have equaled that ancient capital in extent; but the idea was soon abandoned, and the charter of 1701 restricted it to the boundaries of the late city proper. Penn's country residence was at Pennsbury Manor, above Bristol, in which was a large Hall of Audience, where he held treaties with the Indians; and the oak armchair in which he sat is now in the Pennsylvania Hospital. The first Congress assembled in Philadelphia September 5th, 1774, and adopted a declaration of rights; on July 4th, 1776, the Declaration of Independence; in the autumn of 1776 retired to Baltimore; September 26th, 1777, the city fell into the hands of the British, who occupied it until the 18th of June following. May 17th, 1787, a convention met here, and in September 17th, following, agreed on a Constitution for the United States, when it became the seat of Government of the United States until 1800.

Harbor, Light-houses, Pilotage, etc.—Vessels of the largest burden ascend the river as far as Newcastle, but those drawing above 18 or 20 feet water can not reach Philadelphia on account of a bar a little below the city. The entrance to the magnificent bay formed by the embouchure of the Delaware, has Cape May on its north, and Cape Henlopen on its south side. The former, in lat. 38° 57′ N., long. 75° 47′ 45″ W., is a sandy headland, rising about 12 feet above the level of the sea. It has recently been surmounted by a light-house 60 feet in height. The light revolves once a minute; an eclipse of 50 seconds being succeeded by a brilliant flash of 10 seconds. It is seen in clear weather from 20 to 25 miles off. Cape Henlopen, marking the southern boundary of the bay, is in lat. 38° 47′ N., long. 75° 4′ 45″ W. A little south from it is a hill, elevated about 60 feet feet above the level of the sea; and on it is erected a light-house 72 feet in height, furnished with a powerful *fixed* light visible in clear weather ten leagues off. To the north of this principal light, and close to the extremity of the Cape, a second light-house has been constructed, 36 feet above the level of the sea, which is also furnished with a *fixed* light, which may be seen about six leagues off. The channel for large ships is between Cape Henlopen and the banks called the Overfalls. The navigation is, however, a little difficult, and it is compulsory on ships to take pilots. The latter frequently board them at sea; but, if not, as soon as a ship comes between the Capes, she must hoist the signal for a pilot, and heave to as soon as one offers to come on board.

PHILADELPHIA TO THE OCEAN.—DISTANCES, IN STATUTE MILES, FROM PHILADELPHIA (MARKET STREET WHARF) TO THE CAPES, BY THE USUAL STEAMBOAT CHANNEL, AS LAID DOWN ON THE CHART OF THE DELAWARE BY THE UNITED STATES COAST SURVEY.

From Philadelphia (Market Street Wharf) to	Miles
Fort Mifflin landing (broad off in channel)	8 3-8
Chester landing " "	16 5-8
Marcus Hook landing " "	20 1-4
Quarryville " " "	24 3-4
Dupont's " " "	26 3-8
Wilmington, by the Christiana, to bridge	31 3-4
New Castle, railroad wharf (broad off in channel)	34
Delaware City landing " "	39 5-8
Reedy Island " "	44 1-4
Port Penn landing	44 7-8
Liston's Tree (broad off in channel)	51 3-16
Liston's Point " "	51 5-8
Duck Creek Light (broad off in channel)	55 3-8
Bombay Hook Point " "	60 9-16
Buoy of the Middle	71 9-16
Ledge Light Boat	76 1-4
Buoy of the Lower (qr.)	83 5-8
Brandywine Light-house	89 9-16
Buoy of the Brown	93 1-16
Breakwater	102 3-8
Cape Henlopen	102 5-8
Cape May landing, by channel east of Pea Patch	16

Exports of Breadstuffs.—The annexed statement shows the quantity and value of breadstuffs exported from Philadelphia to foreign ports during 1855 and 1856:

	1855.		1856.	
	Quantity.	Value.	Quantity.	Value.
Flour .... Barrels.	218,197	$1,092,618	343,335	$2,400,113
Corn meal "	45,168	455,204	21,249	290,400
Rye meal. "	12,757	80,238	16,298	68,612
Wheat ... Bushels.	226,071	451,921	662,888	1,049,717
Corn ..... "	686,252	683,782	1,093,521	711,090
Rye, Oats, etc.	....	57,897	....	232,435
Total.....	....	$3,677,507	....	$4,753,336

These figures show a marked difference in the prices of breadstuffs in the years specified, as follows:

	Average Price 1855.	Average Price 1856.
Flour.....	$8 90½ per barrel.	$6 90 per barrel.
Corn Meal ...	4 57½ "	3 18½ "
Rye Meal	6 76 "	4 21 "
Wheat.....	1 99½ per bushel.	1 53½ per bushel.
Corn	99½ "	64½ "

It will be observed also that, had the articles enumerated brought the prices in 1856 that were paid for them in 1855, the value of breadstuffs exported in 1856 would have aggregated $6,123,216 instead of $4,753,336, the real cost.

Receipts of Cattle in Philadelphia.—The following tabular statement presents the number of cattle received here during each of the last twelve years, with the exception of the large number brought in by butchers, of which no account can be obtained:

Years.	Beeves.	Cows.	Swine.	Sheep.	Total.
1845	51,298	18 8 5	20,455	56,948	153,500
1846	47,500	14,480	18,670	55,810	136,460
1847	50,270	16,700	22,450	57,800	147,220
1848	67,211	14,108	47,690	76,820	205,829
1849	68,120	14,320	46,700	77,110	206,250
1850	68,750	15,120	46,900	82,500	213,270
1851	69,100	15,400	46,700	83,000	215,200
1852	71,200	14,420	49,200	81,200	216,020
1853	71,900	15,100	53,300	72,300	212,600
1854	73,400	15,350	78,000	61,000	227,750
1855	55,200	11,530	65,300	132,500	264,530
1856	61,078	12,900	103,350	240,700	418,928

The following table shews the measurement of grain, seeds, salt, and coal, in Philadelphia, annually, for the last sixteen years. This statement, of course, does not include all the receipts of grain, seeds, etc., at this port.

Years.	Wheat.	Corn.	Rye.	Barley.	Oats.	Seeds.	Beans.	Bit. Coal.	Salt.
1841	467,243½	791,279½	51,371½	44,336	167,566½	19,704½	3040½	118,168	826,132
1842	462,770	422,951	36,334	35,578½	194,908	25,198½	1616½	9,068	151,250
1843	434,384½	518,671½	68,018½	20,012	372,713½	27,773½	1580½	181,909	174,134½
1844	526,667½	640,459	95,227½	58,600	375,578½	42,258	1402½	17,000	217,315½
1845	799,502½	788,486½	85,357½	46,630½	357,677½	31,434	3920½	261,838	146,451
1846	963,923	665,178	80,329	40,330	350,942	15,864	1895	348,261	237,465
1847	947,5.8	1,093,264	78,979	33,210	949,171	7,528	676	268,740	246,488
1848	723,054½	1,302,918½	46,900½	62,554½	937,735½	9,770½	459	357,927	200,474
1849	945,485	1,283,092	64,446	27,649	424,816	7,060	1270	235,092	451,157
1850	1,108,240	1,168,646	68,905	70,228	491,396	5,261	1803	100,895	178,719
1851	1,055,088	1,378,491	89,219	41,459	259,066	3,705	253	258,092	242,917
1852	977,544½	799,199½	59,637	37,119	427,538	23,774	....	61,767	168,098
1853	950,330½	967,514½	49,965	31,250	406,529	11 541	....	....	17,870
1854	731,333	1,182,178	41,496½	39,705	272,946	18,040	....	500	5 814
1855	1,046,096	1,438,458	147,889	31,918	686,924	416	....	6,504	....
1856	1,051,591	1,601,992	263,389	84,962	466,540	629	....	....	....

Importation of Hides at Philadelphia.

Years.	Foreign.	Coastwise.	Total.
1831	132,492	No return.	132,492
1832	173,761	51,060	224,821
1833	63,485	84,593	148,078
1834	93,691	51,879	145,576
1837	127,057	20,166	147,223
1838	95,853	29,372	125,225
1839	124,208	23,905	148,113
1840	127,526	13,050	140,576
1841	143,449	14,084	157,524
1842	123,674	19,570	143,244
1843	84,609	9,370	93,979
1844	127,082	19,052	146,724
1845	90,725	8,755	99,280
1846	51,815	17,742	69,557
1847	76,139	75,818	151,957
1848	52,414	72,300	124,714
1849	102,698	88,284	190,028
1850	103,882	47,791	151,673
1851	134,225	35,727	169,952
1852	130,154	37,154	167,308
1853	119,977	24,434	144,411
1854	174 577	10,451	185,048
1855	156,102	12,300	168,402
1856	109,755	9,399	119,154

Foreign Hides imported into Philadelphia in 1856.

	Number.	Bales.
Buenos Ayres and Laguayra	79,829	....
Brazil	13,216	....
Spanish Main	4,772	....
Africa	5,540	....
Total	103,356	....
Calcutta, kips		50
Total coastwise	9,399	880

The following is the aggregate exports from Philadelphia to foreign ports in 1856:

Countries.	Domestic.	Foreign.	Total.
Swedish West Indies	$81,372	$3,410	$84,783
Danish West Indies	66,911	416	67,327
British East Indies	578	2,632	3,010
Belgium	26,097	....	26,097
Bremen	34,415	....	34,415
England	3,859,212	18,066	3,877,278
Canada	3,972	21,786	25,758
Other Br. N. A. Colonies	349,323	8,931	358,254
Cuba	793,087	21,911	814,998
British West Indies	742 622	6,399	749,021
British Guiana	134 589	....	134,589
Africa	28,494	290	28,784
French West Indies	1,260	....	1,260
Porto Rico	18,625	152	18,847
Hayti	79,430	1,490	80,920
Central Republic and New Granada	14,000	....	14,000
Venezuela	617,947	....	617,974
Brazils	450,031	62,914	512,945
B. Ayres & Montevideo	105,101	2,324	107,425
Sandwich Islands	102,055	6,029	108,084
France	131,279	4,817	136,096
Colombian ports	....	19,178	19,178
Mexico	....	7,947	7,947
Madeira	6,360	....	6,360
Holland	41,578	....	41,578
Hamburg	10,568	....	10,568
Gibraltar	13,757	....	13,757
Total	$7,711,285	$188,592	$7,899,977

The following is a comparative statement of some of the principal articles of produce exported from the port of Philadelphia to foreign ports for the years 1855-'56:

	1855.	1856.
Flour, barrels	220,179	342,035
Wheat, bushels	206 069	684,092
Corn, bushels	685,807	1,057,283
Corn meal, barrels	98,978	92,803
Rye meal, "	18,460	15,367
Rye, bushels	45,762	238 863
Ship-bread, barrels	21,856	26,426
Rice, tierces	2,129	4 537
Beef, tierces and barrels	6 615	7.6 5
Pork, " "	7,872	11,141
Butter, pounds	344,633	4 9 8
Cheese, "	389,504	989,702
Naval stores, barrels	23,033	14 517
Oil, gallons	39,129	61,365
Peas and beans, bushels	....	10,422
Lard, pounds	1,900,793	1,934,086
Coal, tons	19,935	13,367
Tallow, pounds	705,700	391,463
Candles, "	584 514	709,146
Soap, "	1,089,001	1,256,086
Bacon, "	4,210,616	4,988,716
Bark, hhds	651	1,373

Cash Duties.—The following is an official statement of the amount of cash duties received at the custom-house at this port during the past three years:

Months.	1854.	1855.	1856.
January	$530,202	$.87,437	$214,848
February	525,098	280,8' 6	64 904
March	316,333	340,916	673,002
April	370,471	228,183	385,226
May	328 422	225,588	435,623
June	804 754	240,445	376,420
July	485,163	311,649	472,879
August	601,153	341,422	533,499
September	326,077	275,033	345,016
October	257,187	216,0 8	285,585
November	215,615	311,592	243,162
December	100,944	235,202	271,943
Total	$4,963,515	$3,353,517	$4,501,125

The following is an official statement of the value of exports from the district of Philadelphia from 1791 to 1816. For subsequent trade see *ante*, p. 1510.

Years.	Foreign.	Domestic.	Total.
1791	....	$3,436,008	$3,436,008
1792	....	8,820 662	8,820,662
1793	....	6,158,836	6,158 836
1794	....	6,643,002	6,643,002
1795	....	11,518,260	11,518,260
1796	....	17,513,866	17,513,866
1797	....	11,446,291	11,446 291
1798	....	8,915,463	8,915,463
1799	....	12,431,987	12,431,987
1800	....	11,949,679	11,949,679
1801	....	17,438,193	17 438,193
1802	....	12,677,475	12,677,475
1803	$3,504,496	7,525 710	11,030,206
1804	6 851,344	11,030,157	17,881,501
1805	9,397,012	13,702,252	23 159,264
1806	13,809,389	17,574,702	31,384,091
1807	12,055,128	16,864,744	28,919 872
1808	2,246,803	4 013,330	6 160,133
1809	4,810,883	9,049,241	13,860,124
1810	6,241,764	10,929,378	17,235,162
1811	3,865,670	5,691,447	9,560,117
1812	1,319,293	4,664,457	5,973,750
1813	927,494	3,249,623	3,577,117
1814	....	....	....
1815	1,024,368	3,569,551	4,593,919
1816	2,709,917	4,486,329	7,196,246
Total	$68,457,861	$229,220,818	$317,081,474

ACCOUNT SHOWING THE NUMBER OF VESSELS, DISCRIMINATING BETWEEN ARRIVALS FOREIGN AND COASTWISE, WHICH ENTERED THE PORT OF PHILADELPHIA FROM THE 1ST OF JANUARY, 1825, TO THE 1ST OF JANUARY, 1840.

Years.	Foreign.	Coastwise.	Total.
1825	484	1,195	1,679
1826	488	1,195	1,677
1827	460	1,320	1,780
1828	453	1,347	1,807
1829	374	2,210	2,584
1830	415	2,287	2,702
1831	396	2,262	2,658
1832	428	2,849	3,277
1833	474	2,573	3,047
1834	430	2,686	3,116
1835	420	3,573	4,002
1836	421	3,764	4,185
1837	409	7,776	8,185
1838	464	10,860	11,324
1839	521	11,188	11,709

ARRIVAL OF VESSELS AT THE PORT OF PHILADELPHIA DURING THE YEARS 1848, 1849, AND 1850.

	1848.	1849.	1850.
Ships	101	115	106
Barks	353	325	342
Brigs	905	888	834
Schooners	5,907	6,480	7,681
Sloops	8,629	4,486	5,200
Steamers	464	661	1,043
Barges	3,265	8,086	3,850
Boats	9,800	8,523	8,420
Total	24,483	25,109	27,555

COMPARATIVE STATEMENT OF THE NUMBER OF VESSELS, FOREIGN AND COASTWISE, WHICH HAVE ARRIVED AT PHILADELPHIA DURING FIVE YEARS.

Total in 1852	25,169
Total in 1853	30,126
Total in 1854	29,001
Total in 1855	30,223
Total in 1856	27,044

The following are abstracts of the vessels entered and cleared at the port of Philadelphia, from and to foreign ports, during the year ending June 30th, 1856; from which it appears that the total number of vessels entered under the American flag during the year was 452, and the tonnage 198,253 tons, being an increase of 32 vessels and 8432 tons over the year 1855. The total number of vessels entered under foreign flags was 125, and the tonnage 37,696 tons, an increase of 10 vessels and 17,497 tons over 1855; making a total increase over the preceding year of 42 vessels and 25,929 tons. The total number of vessels cleared under the American flag was 304, and the tonnage 110,581 tons, a decrease of 22 vessels and 7849 tonnage under 1855; and the total number of vessels cleared under foreign flags was 127, and the tonnage 38,409 tons, an increase of nine vessels and 18,362 tons, making a total decrease from that of the preceding year of 13 vessels, and an increase of 513 tons. *See* PENNSYLVANIA.

ENTERED.					CLEARED.				
Countries.	Flag, American.		Flag, Foreign.		Countries.	Flag, American.		Flag, Foreign.	
	No. of Vessels.	Tonnage.	No. of Vessels.	Tonnage.		No. of Vessels.	Tonnage.	No. of Vessels.	Tonnage.
Swedish West Indies	2	287	..	....	Swedish West Indies	5	1,409	..	....
Danish West Indies	2	404	1	191	Danish West Indies	2	738	3	538
Bremen	..	....	8	2,392	Hamburg	..	....	1	251
Holland	1	267	1	134	Bremen	..	....	3	1,526
England	68	60,847	19	21,057	Holland	1	500	1	218
Scotland	2	526	..	....	Dutch West Indies	..	....	1	94
Ireland	1	795	3	2,059	Belgium	1	457	1	290
British N. A. Possessions	55	10,198	25	2,470	England	46	42,036	17	20,125
British West Indies	37	8,772	28	2,600	Scotland	1	330	1	283
British Honduras	1	176	..	....	Ireland	5	2,681	9	3,148
British Guiana	1	412	..	....	Gibraltar	1	198	..	....
British Poss. in Africa	2	370	..	....	Canada	2	1,435	1	335
British East Indies	1	1,350	..	....	Other British N. A. Poss.	10	6,116	58	7,176
France on the Atlantic	8	2,666	3	752	British West Indies	55	11,736	10	1,816
France on the Mediter'n.	1	336	..	....	British Guiana	6	2,114	1	118
Spain on the Mediter'n.	1	177	2	325	British Poss. in Africa	2	370	..	....
Cuba	138	30,076	5	1,958	British East Indies	1	731	..	....
Porto Rico	11	2,518	6	928	France on the Atlantic	5	1,043	2	480
Cape de Verde	1	197	1	138	France on the Med'n.	2	687	..	....
Azores	1	118	..	....	French West Indies	1	247	..	....
Sardinia	1	574	1	319	Philippine Islands	1	447	..	....
Tuscany	5	1,982	..	....	Cuba	62	19,762	5	1,178
Sicily	16	5,124	8	1,887	Porto Rico	3	5 3	..	....
Hayti	16	2,943	2	183	Madeira	1	197	..	....
Mexico	1	213	..	....	Hayti	7	1,248	1	175
New Granada	1	233	..	....	Central Republic	1	3 5	..	....
Venezuela	81	6,153	1	136	New Granada	1	139	3	684
Brazil	32	8,054	1	218	Venezuela	25	6,727	..	....
Chili	1	594	..	....	Brazil	25	6,228	..	....
Peru	11	18,236	..	....	Uruguay	2	448	..	....
Ecuador	3	825	..	....	Buenos Ayres	3	1,868	..	....
Total	452	160,557	125	37,696	Total	304	110,581	127	38,409

Philippine Islands, a large and important group in the Asiatic Archipelago, forming its northern division, and next to Cuba the most valuable colonial possession of Spain, chiefly between lat. 5° 32′ and 19° 38′ N., and long. 117° and 127° E., having north and east the Pacific Ocean, west the China Sea, and south the seas of Sooloo and Celebes. There are at least 1200 islands, great and small. Principal islands, Luzon, Mindano, and Palawan, with Mindoro, Panay, Marindique, Negros, Zebu, Bohol, Leyte, Samar, Masbate, and many of less size. Total area estimated at 120,000 square miles. The Spanish dominion is stated to extend over only 52,148 sq. miles. Population, in 1850, 3,815,878, consisting of Europeans, native whites, the Papuan negro race, and independent tribes, Malay Indians, half castes, and Chinese. The islands are of volcanic formation, and contain a chain of active volcanoes. Earthquakes also are of frequent occurrence. The group is within the range of the monsoons, and violent hurricanes are common. From May to September the western coasts are deluged with rain, while the October monsoon brings rain to the eastern coasts, at other seasons dry. The high temperature and abundance of moisture produce a luxuriant vegetation; so that they are capable of yielding all kinds of colonial, and probably European produce. Rice, millet, maize, sugar, indigo, hemp, tobacco, coffee, and cotton, are raised; and sago, cocoa-nuts, bananas, cinamon, betel, numerous fine fruits, and timber for ship-building are among the products. Buffaloes and most of the domestic animals common in Europe are reared. There are no predaceous quadrupeds; the cayman is found in the rivers. Pearls, pearl-oyster shell, the sea-slug, edible birds' nests, and sapan-wood, are important articles of export hence to China. Domestic weaving is pretty generally carried on by the females, and straw hats, cigar cases, and earthen-wares, are made; but the chief manufacture is that of "Government Manilla" cigars, which occupies 2000 hands at a royal factory in Manilla. The wretched colonial policy of Old Spain excluded all for-

eign ships and Chinese settlers from these islands, and the trade with the Spanish dominion in America was also confined to that conducted annually by a single ship. But such restrictions have vanished since the revolution, and the colony is now making commensurate progress toward prosperity. In 1842, 149 ships, aggregate burden 46,869 tons, entered, and 162 do., burden 50,226, cleared, at the different ports. Imports amounted in value to £900,080, one-third from England, and more than another third from China, the United States, and British India. Exports amounted in value to £974,160, chiefly sent to England, Spain, the United States, China, and Australia. Manilla (which see) is the principal seat of the trade, and also the seat of the government, it being the residence of the captain general. In each of the larger islands is a lieutenant governor; and each of the 80 provinces, governed by an alcalde, is divided into pueblos, or communes. The Roman Catholic religion has been extensively diffused among the Malay population. Public revenue is derived chiefly from duties on exports and imports, the tobacco monopoly, and a capitation tax, which in 1837 was paid by 1,305,142 adults, of whom 901,924 belonged to the island Luzon. Armed force amounts to about 7000 men, one-tenth Spaniards, and the rest Malays. These islands were discovered by Magalhaens in 1521, and settled by the Spaniards in the reign of Philip II., after whom they were named.

The commercial intercourse generally is under the laws and regulations of the mother country, but, in fact, is in some degree dependent upon the local authority, the power being with the governor to order the departure from the colony of any person who may become obnoxious to himself or his government. The regulations are fixed for an indefinite time; amendments are constantly proposed, and, for several years past, a total revision of the tariff of duties on foreign produce has been, from time to time, discussed. Any such changes, though they may be proposed and discussed in Manilla, can only be made law by the home government. In fact, the reins are held very tightly in Madrid, and the governor general is constantly made to feel his dependence upon the minister in power. Citizens of the United States enjoy the privileges of all other foreigners. There is no distinction made in the privileges or restrictions permitted or imposed on the commerce of foreign nations. The port charges consist of tonnage dues, river-cleaning dues, and light dues. The tonnage dues are 25 cents per ton register, if the vessel discharges or takes in cargo; and one-half, or 12½ cents per ton, if she departs without having broke bulk or received cargo. A vessel may land specie without being subjected to the full dues. The river dues, for the support of a mud-boat, are: on a vessel discharging and loading any cargo, 6¼ cents per ton; entering in ballast and sailing with cargo, or *vice versa*, 3¼ cents per ton; entering with cargo and sailing with same, 3¼ cents per ton; entering and sailing in ballast, nothing. The light dues are, on all foreign vessels, 6¼ cents per ton register. Spanish vessels pay one half these rates. The transhipment of goods is strictly prohibited. In order to effect a transhipment, the goods must be entered in deposit, actually brought on shore to the custom-house, and then shipped under fresh documents from deposit. There is but one port, this of Manilla, open to foreign shipping, and foreigners are excluded from all internal and coasting trade.

The moneys, weights, and measures in common use in Manilla are authorized by the laws of Spain, but can not be said to correspond with those of the mother country, inasmuch as in Spain the weight and measures are not the same throughout the kingdom. The moneys current here are specie only. Of gold, the doubloon of Spain, Mexico, and the republics of South America, of full weight, is current at $16. The smaller coins—halves, quarters, and eighths—at their proportionate value. Of silver, the dollar of Spain, Mexico, and the other South American republics, of full weight, is current at $1 United States currency. The relative smaller coins pass at their relative value. Copper coin is of three sizes; 1 cuarto, 2 cuartos, and 4 cuartos; 160 cuartos are equal to a dollar. Accounts are kept by Spanish merchants in dollars, real., and cuartos; 20 cuartos equal 1 real; 8 reals equal 1 dollar. Foreigners generally keep their accounts in dollars and cents. The value of these coins is about the same in the United States as here; but not being fixed by the United States laws, there is a fluctuation which can not be reduced to regular limits.

The weights in common use are piculs, quintals, arrobas, and pounds. The pound is about 1⅓ per cent. heavier than that of the United States. 25 pounds equal 1 arroba, or, at the United States standard, about 25½ pounds; 4 arrobas=1 quintal=101⅓ lbs.; 5½ arrobas=1 picul=140 lbs. The measures are long measure—inches, feet, yards, fathoms, miles, and leagues. 12 inches make 1 foot; 3 feet make one yard; 2 yards make 1 fathom; 1111 fathoms and 6 inches make 1 mile; 3 miles make one league. The yard (or vara) in use here is about 33 inches of the United States. Grain is usually sold in the country by the cavan. 4 apastanes equal 1 chupo; 8 chupos equal 1 ganto; 25 gantos equal 1 cavan. These differ, however, in the different provinces. In Manilla, a cavan of rice weighs 127 lbs.; of coffee, about 52 lbs.; of wheat, about 150 lbs. A tinaja of oil contains 16 gantos; of wine, 17 gantos.

The rate of insurance to the United States from Manilla is charged 3 to 3½ per cent.; but little is done, however, there being but one local insurance office with a trifling capital, the policies issued by which contain so many exceptions as to make them of very little value. The shipments of produce to the United States are covered by insurance made in the United States or in England. Freights vary constantly, being governed by the supply of tonnage and quantity of produce waiting shipment. At present, $20 per ton of 40 cubic feet of hemp and other measurement goods, and $12 or $13 per ton of 2240 pounds of sugar, are current. These are considered full rates. Commission is charged 2½ per cent. on all purchases for the United States. When a broker is employed he is paid a brokerage commission of 6¼ cents per picul on hemp, 6¼ per picul on sugar, 3¼ cents per picul on rice, and on other articles as may be agreed upon. All articles of produce are bought for cash, and paid for on delivery. Oftentimes payment is made in part before delivery, and in the hemp trade the advances made are very large. The rate of exchange between this and the United States is not quoted, there being no transactions in the regular course of trade. All exchange transactions per American account (and the greater portion of the exports to the United States is paid for in bills) are made through England, bills being drawn here on London bankers, by virtue of credits granted by the bankers themselves in London, or by their agents in the United States. The average rate of exchange during the past year has been, for bills on London, drawn at six months' sight, 5*s.* 0¾*d.* per dollar. The par of exchange is about 4*s.* 2*d.*, the same as in the United States; the currency in silver being about equivalent that of one country with the other. The dollar current here, being of the Mexican and South American currency, is worth one hundred cents in the United States.

Duties on exports are, on hemp, 2 per cent.; on tortoise shell, mother-of-pearl shell, and ratans, 1 per cent. (these three articles last named are, in fact, not productions of this island, but brought from the Soolee Islands, and pay 1 per cent. import duty); all other articles, 3 per cent. On all imports direct from the United States, 14 per cent. There are no internal taxes of any kind on produce. The rates of wages in agricultural pursuits are very low, generally paid in produce sufficing for the subsistence of the laborer, and difficult

to be reduced to a money standard. Artisans obtain 50 cents per day, and if expert workmen as high as $1, or even $1 50 per day. Laborers in and about Manilla, 25 cents to 37½ cents per day. On board ships in the bay they are paid 62½ cents per day. At these rates labor is much dearer than in the Atlantic cities of the United States—the quantity and quality of the work done by a Manilla workman comparing very unfavorably with that of a man in New York.—*See* MANILLA, SPAIN. For further information refer to *Quarterly Review*, vii. 235, xvii. 530, xxxv. 328.

The chief exports from Manilla (the seat of government, and the chief port of the islands) are hemp, sugar, sapan-wood, cigars, cordage, indigo, coffee, rice, hides, mother-of-pearl shell, almaciga, grass-cloth, and tortoise-shell. The principal imports are cotton fabrics, silks, woolens, haberdashery, drugs, clocks, jewelry, etc.

The leading exports to the United States in 1844 were:

Sugar	francs	1,000,000	= $205,200
Coffee	"	149,000	= 28,310
Hemp	"	1,444,000	= 274,360
Indigo	"	384,000	= 72,960
Hides	"	108,000	= 20,520

IMPORTS AND EXPORTS OF THE PHILIPPINE ISLANDS IN 1844.

Countries	Imports.	Exports.	Total.
	Francs.	Francs.	Francs.
China	8,944,000	5,883,000	14,827,000
England	4,234,000	2,759,000	6,993,000
Singapore	4,375,000	476,000	4,851,000
United States	1,122,000	3,335,000	4,457,000
Spain	1,618,000	2,370,000	3,988,000
Java and Moluccs	1,119,000	620,000	1,739,000
Australia	349,000	925,000	1,274,000
East Indies	146,000	989,000	1,135,000
France	290,000	461,000	751 000
Soulou Isles	340,000	281,000	621,000
Belgium	100,000	313,000	413,000
Hanse Towns	32,000	330,000	362.000
Cape of Good Hope	267,000	....	267,000
South America	23,000	....	23,000
Total francs	22,508,000	19,333,000	41,701,000
Dols. at 19 c. per fr.	4,249,920	3,673,270	7,923,190

Imports.—National commerce, $125,011; foreign commerce, $3,176,325; imports for deposit, $718,631.

Exports.—National commerce, $3,834,069; foreign commerce, $338,204; exports from deposit, $436,638. Total imports, $4,019,967; total exports, $4,608,911.

The Manilla *picul* is estimated at 133⅓ lbs.

QUANTITIES OF HEMP AND SUGAR EXPORTED FROM MANILLA TO THE UNITED STATES AND EUROPE, RESPECTIVELY, FROM 1844 TO 1853.

	1844	1845.	1846.	1847.	1848.	1849.	1850.	1851	1852.	1853.
HEMP.										
To the United States.	88,132	95,288	92,696	100,285	123,040	113,404	102,194	143,133	220,514	204 584
To Europe	5,934	7,202	16,500	16,739	20,543	39,948	21,216	30,805	27,743	16,934
Piculs [133⅓ lbs. each]	95,966	102,490	109,196	117,024	143,583	153,352	123,410	173,938	248,257	221,518
SUGAR.										
To the United States.	90,106	72,100	35,050	91,435	77,350	89,122	78 489	116,412	143,149	194 115
To Europe	127,429	103,000	176,208	111,447	68,402	184,830	211,774	127,75	123,732	108,922
Piculs [133⅓ lbs. each]	217,536	175,100	211,258	202,882	145,758	273,961	290,264	244,137	266,881	303,117

The average price of hemp at Manilla is from $7 to $7 06½ per picul, though in 1854–'55 it ascended as high as $10, owing to the Eastern war. The average price of sugar is $3 37½.

The preceding table shows that the quantity of hemp exported from Manilla to the United States in 1853 amounted to 204,584 piculs=27,277,866 pounds; and the quantity of sugar to 194,195 piculs=25,892,667 pounds. The following condensed summary exhibits the total export trade from Manilla to the United States during the same year: Hemp, 204,584 piculs; sugar, 194,195 piculs; indigo, 9050 quintals; sapan-wood, 8602 piculs; coffee, 1724 piculs; mother-of-pearl shell, 712 piculs; hide cuttings, 3291 piculs; ratans, 763 piculs; hides, 4,886 piculs, grass-cloth, 19,598 piculs; gum almaciga, 2556 piculs; tortoise-shell, 214 catties; cigars, 148 thousand. The merchandise above specified was floated in 41 vessels; of which 21 cleared for New York, 17 for Boston, 2 for Salem, and 1 for Philadelphia. The preceding summary exhibits the general character of the imports into the United States from the Philippine Islands. In the official reports published at Manilla the trade with San Francisco is given separately from that with the United States. During the year under review (1853), the exports to California consisted of: Sugar, 3976 piculs; coffee, 7546 piculs; rice, 16,876 piculs; cordage, 2285 piculs; cigars, 812 thousand; paddy, 2949 cavanas; panocha, 1818 baskets; Indian corn, 8922 lbs.; garlic, 46 piculs; lime, 78 cavanas; hats, 1200. The total exports from Manilla to all countries in 1853 were: Sugar, 566,371 piculs; hemp, 222,689 piculs; sapan-wood, 81,963 piculs; rice, 303,902 piculs; cordage, 12,119 piculs; coffee, 18,080 piculs; cigars, 79,311 thousand; indigo, 9123 quintals; mother-of-pearl, 2040 piculs; hides, 5874 piculs; hide cuttings, 3697 piculs. In cotton goods (the principal import of the Philippine Islands) England and the United States are the chief competitors.

Formerly, if the master of a vessel touching at these islands desired to ship native sailors, he was obliged to give his bond for their return to Manilla This, it is obvious, was but a mere matter of form, and hence but few of the sailors thus taken away ever returned. After the discovery of gold in California, it was found extremely difficult to procure sailors at any of the Malayian islands; and this difficulty was increased by a new regulation at the Philippines, which requires the consignee to sign the captain's bond for the return of such sailors as should be shipped at Manilla This the consignees are, in most cases, unwilling to do. Hence the trade between the United States and the Philippines remains so long stationary. For a number of years the United States has enjoyed about one fifth of the entire trade of the islands. Were this difficulty in regard to the employment of native sailors removed, this one fifth of the trade would in a short time ascend to one half.

In ship-building at Manilla, the timber used is all the growth of the country. The timbers and knees are of "molare;" planking above water is of "mangachapuy," and below of "banaba" in the northern provinces, and "batitinan" in the south; deck beams, molare, or "dougon;" keel of dougon, and waterways of the same. All these woods are very excellent, and, if well seasoned before using, are very durable. The molare is a hard, close-grained, strong wood, but is very heavy; dougon is next in value, and the mangachapuy ranks third. There are many other kinds of wood which are used, according to the caprice of builders. The cost where grown is trifling, but if brought to Manilla the addition of freight makes it expensive. The preservation or seasoning of ship-timber is not attended to here; and there are no depositories of ship-timber, properly speaking, though it may always be had in sufficient quantities for repairs to vessels frequenting the islands.

Port-charges.—Vessels arriving in ballast, and not breaking bulk, pay 12½ cents per ton (register tonnage). If cargo is landed or stripped, 25 cents per ton. Mud-machine, 6¼ cents per ton; light-house dues, 6¼ cents per ton. Spanish vessels pay only one half of the above rates.—*United States Commercial Relations.*

COMMERCE OF THE UNITED STATES WITH MANILLA AND PHILIPPINE ISLANDS, FROM OCTOBER 1, 1820, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total	Export.	Import.	American.	Foreign.
Sept. 30, 1821.....	$1,359	$209,984	$211,323	$114,861	$100,000	....	632	....
1822.....	....	11,799	11,799	....	....	....	370	....
1823.....	5,449	41,275	46,724	158,285	....	....	370	....
1824.....	8,968	210,552	219,520	153,472	136,000	$3,000	804	....
1825.....	23,169	185,554	208,723	229,571	129,500	30,500	3,067	110
1826.....	14,138	58,207	72,340	348,375	80,000	12,215	724	....
1827.....	....	....	....	150,813	....	26,685	....	....
1828.....	19,914	141,838	161,752	60,881	101,000	....	809	....
1829.....	10,802	66,430	77,232	209,206	20,052	....	594	....
1830.....	39,129	54,539	93,668	384,587	....	16,248	458	....
Total...	$122,918	$980,168	$1,103,081	$1,809,651	$599,552	$88,648	7,828	110
Sept. 30, 1831.....	$15,094	$16,830	$32,824	$348,995	$3,000	$1,220	240	....
1832.....	20,906	113,414	134,320	332,280	58,000	114	1,286	....
1833.....	1,021	8,376	9,397	504,498	....	....	914	....
1834.....	3,662	12,257	15,919	283,685	....	....	222	....
1835.....	38,947	50,152	89,099	413,815	48,000	....	1,972	....
1836.....	7,361	52,672	60,033	803,330	15,000	465	1,908	....
1837.....	....	....	....	1,346,425	....	....	....	....
1838.....	93,214	149,363	242,517	386,528	148,460	....	1,780	....
1839.....	68,558	88,255	156,808	876,477	86,200	1,020	1,674	....
1840.....	90,539	30,927	121,516	450,251	30,000	....	800	....
Total...	$370,247	$472,156	$842,433	$5,740,244	$388,660	$2,825	10,804	....
Sept. 30, 1841.....	$75,450	$187,336	$262,786	$733,906	$105,344	....	3,704	....
1842.....	235,732	100,444	336,176	772,372	94,536	....	4,797	....
9 mos., 1843*.....	57,743	54,435	112,178	402,290	48,068	....	1 491	....
June 30, 1844.....	91,769	131,228	222,997	724,811	129,385	....	6,233	....
1845.....	119,263	55,315	174,578	633,059	31,200	....	3,230	....
1846.....	100,954	9,285	110,239	865,866	9,008	....	3,036	....
1847.....	32,480	44,760	77,240	494,656	44,760	....	3,189	....
1848.....	36,949	13,543	50,492	1,197,027	10,382	8,520	3,318	....
1849.....	137,868	8,669	146 537	1,127,114	....	5,182	8 828	....
1850.....	16,817	1,450	18,267	1,336,866	....	4,423	3,165	2592
Total...	$905,025	$586,465	$1,491,490	$8,294,367	$532,521	$18,125	35,983	2592
June 30, 1851.....	$125 544	$7,000	$132,544	$1,254,688	$2,200	192	15,134	4865
1852.....	211,791	9,927	221,718	1,522,646	....	523	11,089	6362
1853.....	64,375	1,000	65 375	2,465,688	....	....	20,708	2003
1854.....	27,852	46,650	74 502	2,965,282	42,522	....	16,708	843
1855.....	94,203	83,708	177,911	2 867,441	123,420	109,485	12.430	600
1856.....	204 6 8	64,089	290,357	2,926,870	127,393	....	21,786	363

* Nine months to June 30, and fiscal year begins July 1, 1843.

Phosphorus, a substance of a light amber color, and semi-transparent; but, when carefully prepared, nearly colorless and transparent. When kept some time, it becomes opaque externally, and has then a great resemblance to white wax. It may be cut with a knife, or twisted to pieces with the fingers. It is insoluble in water; its specific gravity is 1·77. When exposed to the atmosphere, it emits a white smoke, and is luminous in the dark. When heated to 148° it takes fire, and burns with a very bright flame. When phosphorus is inflamed in oxygen, the light and heat are incomparably more intense—the former dazzling the eye, and the latter cracking the glass vessel.—THOMSON'S *Chemistry.*

Piano-forte. Invented by J. C Schroeder, of Dresden, in 1717. He presented a model of his invention to the court of Saxony; and some time after, G. Silverman, a musical-instrument maker, bega.. to manufacture piano-fortes with considerable success The invention has also been ascribed to an instrument-maker of Florence. The square piano-forte was first made by Freiderica, an organ-builder of Saxony, about 1758. Piano-fortes were made in London by M. Zumpio, a German, 1766, and have been since greatly improved by others here. They are now extensively manufactured in Boston, New York, Philadelphia, Baltimore, Albany, Buffalo, Cincinnati, Chicago, and St. Louis, and other cities of the United States.—For "Origin of the Piano-forte" see *Westminster Review*, xxxii. 306.

Piastres, or **Dollars,** Spanish and American silver coins in very extensive circulation. They are used in Spain, Italy, Turkey, South America, the East Indies, etc., varying in value in every country.—*See* COINS.

Pickles are various kinds of vegetables and fruits preserved in vinegar The substances are first well cleaned with water, then steeped for some time in brine, and afterward transferred to bottles, which are filled up with good vinegar. Certain fruits, like walnu. , require to be pickled with scalding-hot vinegar; others, as red-cabbage, with cold vinegar; but onions, to preserve their whiteness, with distilled vinegar. Wood vinegar is never used by the principal pickle-manufacturers, but the best malt or white-wine vinegar, No. 22 or 24. Kitchener says that, by parboiling the pickles in brine, they will be ready in half the time of what they require when done cold. Cabbage, however, cauliflowers, and such articles, would thereby become flabby, and lose that crispness which many people relish. When removed from the brine, they should be cooled, drained, and even dried, before being put into the vinegar. To assist the preservation of pickles, a portion of salt is also added, and likewise, to give flavor, various spices, such as long pepper, black pepper, white pepper, allspice, ginger, cloves, mace, garlic, mustard, horseradish, shallots, capsicum. When the spices are bruised they are most efficacious, but they are apt to render the pickle turbid and discolored. The flavoring ingredients of Indian pickle are Curry powder mixed with a large proportion of mustard and garlic Green peaches are said to make the best imitation of the Indian mango.

Pilchards, fishes closely resembling the common herring, but smaller, and at the same time thicker and rounder. They are rarely found on the British shores, except on the coasts of Cornwall and Devon, particularly the former, where they are taken in great numbers from the middle of July to the end of November, or even the middle of December. It is a saying of the Cornish fishermen, that the pilchard is the least fish in size, most in number, and greatest for gain, taken from the sea.

Pilchard Fishery.—This is carried on along the British coasts of Cornwall and Devon, from the Bolt Head in the latter, round by the Land's End to Padstow and

Bossiney in the former. Its principal seats are St. Ives, Mount's Bay, and Mevagissey. The fish usually make their appearance in vast shoals in the early part of July, and disappear about the middle of October; but they sometimes reappear in large quantities in November and December. They are taken either by *seines* or by drift-nets, but principally, perhaps, by the former. A seine is a net, varying from 200 to 300 fathoms in length, and from 10 to 14½ feet in depth, having cork buoys on one edge and lead weights on the other. Three boats are attached to each seine, viz., a boat (*seine-boat*) of about 15 tons burden, for carrying the seine; another (*follower*) of about the same size, to assist in mooring it; and a smaller boat (*lurker*) for general purposes. The number of hands employed in these three boats varies from about 13 to 18, but may be taken at an average at about 16. When the shoals of fish come so near the shore that the water is about the depth of the seine, it is employed to encircle them; the fishermen being directed to the proper place for casting or shooting the nets by persons (*huers*) stationed for that purpose on the cliffs and in the boats. The practice is to row the boat with the seine on board gently round the shoal; and the seine being, at the same time, thrown gradually into the water, assumes, by means of its buoys and weights, a vertical position, its loaded edge being at the bottom, and the other floating on the surface. Its two ends are then fastened together, and, being brought into a convenient situation, it is moored by small anchors or grapnels; sometimes, however, one or two smaller seines are employed to assist in securing the fish. At low water the inclosed fish are taken out by a *tuck-net*, and carried to the shore. A single seine has been known to inclose at once as many as 4200 hogsheads (1200 tons) of fish! But this was the greatest quantity ever taken, and it is but seldom that as many as 1200 hogsheads are caught at a time. The "take," in fact, depends on so many accidental circumstances, that while one seine may catch and cure in a season from 1000 to 2000 hogsheads, others in the neighborhood may not get a single fish. In some places the tides are so strong as to break the seines and set the fish at liberty. When the quantity inclosed is large, it requires several days to take them out, as they must not be removed in greater numbers than those who salt them can conveniently manage. Drift-nets are usually about half a mile in length, by about 4½ fathoms in depth; they are shot in the open sea, and entangle the fish in their meshes in the same way as the herring-nets. The fish thus taken are said to be superior to those taken by the seine, though it be doubtful, from their being strangled in the nets, whether they are so good for curing. As soon as the fish are brought on shore, they are carried to cellars or warehouses, where they are piled in large heaps, having a sufficient quantity of salt interspersed between the layers. Having remained in this state for about 35 days, they are, after being carefully washed and cleaned, packed in hogsheads, each containing, at an average, about 2600 fish; they are then subjected to a pressure sufficient to extract the oil, of which each hogshead yields, provided the fish be caught in summer, about three gallons; but those that are taken late in the season do not yield above half this quantity. This oil usually sells for from 12 to 15 per cent. under the price of brown seal oil. The broken and refuse fish and salt are sold to the farmers, and are used as manure with excellent effect. The skimmings which float on the water in which the pilchards are washed are called *dregs*, and are chiefly sold as grease for machinery. The fresh fish in a hogshead of pilchards weigh about 6 cwt., and the salt about 3½ cwt.; but the weight of the hogshead when cured and pressed is reduced to about 4½ cwt.; including the weight of the cask, from 20 to 24 lbs. Four-fifths of the persons employed on shore in the salting, curing, packing, etc., of the fish are women.—Dr. Paris's *Guide to Mount's Bay*.

Pilots and Pilotage. The name of pilot or steersman is applied either to a particular officer, serving on board a ship during the course of a voyage, and having charge of the helm and the ship's route; or to a person taken on board at any particular place, for the purpose of conducting a ship through a river, road, or channel, or from or into a port. Masters and mates of merchant vessels, after having passed an examination before legally constituted authorities, and possessing a certificate to that effect, may pilot their own vessels within the prescribed limits for which they have passed, without being liable to any penalty. In all other cases, when a master is by law subject to a penalty for not taking a pilot, he is bound to do so when he has the opportunity; and after the pilot is taken on board, the master has no longer any command of the ship, nor is he responsible for the management of her while she continues in the district for which the pilot is authorized to act. When beyond that district, the master again resumes the government of the vessel, the pilot being then no longer liable, although for his own convenience he may still remain on board. In such case he is only to be considered as a passenger, and is not entitled to any remuneration for whatever service he may choose to perform on the voyage, beyond that for which he was originally engaged; but should he remain on board at the request of the master, he is entitled, besides his pilotage, to a further remuneration per day or per month, according to the rules of the respective ports, from the day when he has passed the limits of his license to the day of his return to the port from which he was taken on board. If a master of a vessel in any district within which pilots are appointed to act (usually denominated "Pilots' Water") should, except under the circumstances before stated, refuse the service of a pilot offering to come on board, he immediately renders himself liable to his owners, freighters, or insurers for any damage that may occur to the vessel or cargo, arising from the want of such service. When the law does not compel a master to take a pilot on board, and he nevertheless, of his own discretion, chooses to do so, the pilot is considered to be the servant of the owners, who under such circumstances would be responsible to strangers for the management of the ship during the time he continued in charge. If the master at a foreign port attempt to obtain a pilot and fail, and then, in the exercise of his best discretion, endeavor to enter the port and fail, the insurer is not discharged. If the vessel approach a port in the night, he must make signals for a pilot, and wait a reasonable time for one; and if he attempt to enter the port without one, except in case of extreme necessity, the insurers are discharged. Pilotage constitutes a lien upon the vessel, and may be prosecuted in admiralty. But the pilot must be employed by some person rightfully in possession of the vessel. A pilot can not recover for piloting into an enemy's port.

Great Britain.—Under most charter parties, with the exception of those made for vessels in the coal trade in England, the charge for pilotage is paid by the charterers. Many ports enjoy separate and distinct jurisdictions for the appointment and government of pilots, and the regulations of the rates of pilotage. These jurisdictions are exercised by corporations and other bodies, the privileges of which have been granted either by ancient charters or by parliamentary. Among the many corporations so established, the most important are those of the Trinity House of Deptford Strand, whose jurisdiction is the most extensive; and of the Trinity Houses of Hull and Newcastle. The bodies are authorized within their districts to determine the qualifications of pilots, license them, make regulations for their government, fix and alter pilotage rates, and arrange the limits of the pilotage districts, subject, however, to the special provisions contained in the Merchants' Shipping Act of 1854. The regulations of which are given in summary, as follows:

It is questionable whether the Trinity House may revoke a pilot's license without hearing him; but if, after hearing him, it revoke his license, its decision is binding. The application of the Merchants' Shipping Act of 1854 applies only to the United Kingdom.

Powers of Pilotage Authorities.—Every pilotage authority shall retain all powers and jurisdiction which it now possesses, so far, and only so far, as they are consistent with the provision of the general act. Every pilotage authority has the power to exempt ships from being compelled to employ pilots; also to license pilots; to make regulations as to pilot-boats; to make regulations for the government of pilots; to alter rates of pilotage; to limit pilotage districts—all being within their district.

Power of Appeal to Board of Trade.—If the greater number of qualified pilots belonging to any port, or the local marine board, or any number of owners of ships, masters or insurers, consider themselves aggrieved by any regulations enforced by the pilotage authority, they may appeal to the Board of Trade; and the consequent decision shall be deemed conclusive.

Spain.—No one can be a pilot or officer of a merchant ship without having obtained a license. In case of decease, absence, or illness of the captain, the pilot takes his place, and incurs all his responsibility. The pilot can not change the course, unless the captain agrees to it. In case of difference of opinion, the pilot shall explain his reasons to the other officers; and if the captain persists in his orders, the pilot shall enter his protest in the navigation book.

Russia.—The pilot should look after the vessel, the embarkation and debarkation of merchandise, keep a registry of all that passes on board and of the observations. He owes obedience only to the captain, and should never quit the vessel when the captain is absent unless forced to do so.

Portugal.—The pilot who from ignorance, negligence, or design, loses, or exposes a vessel to damage, is bound to repair her, and is liable to be revoked and pursued by criminal process.

United States.—An act of Congress authorizes all States to make their own pilotage laws, and questions under these laws are cognizable in the State courts. No one can act as pilot, and claim the compensation allowed by law for the service, unless duly appointed. And he should always have with him his commission, which usually designates the largest vessel he may pilot, or that which draws the most water. If a pilot offers himself to a ship that has no pilot, and is entering or leaving a harbor, and has not reached certain geogra ical limits, the ship must pay him pilotage fees, whether his services are accepted or not. As soon as the pilot stands on deck he has command of the ship. But it remains the master's duty and power, in case of obvious and certain disability, or dangerous ignorance or error, to disobey the pilot, and dispossess him of his authority. If a ship neglect to take a pilot when it should and can do so, the owners will be answerable in damages to shippers and others for any loss which may be caused by such neglect or refusal. Pilots are answerable for any damage resulting from their own negligence or default, and have been held strictly to this liability. The owner is also liable on general principles for the default of the pilot, who is his servant.

The laws passed by the United States concerning pilots are comprehended in the following: August 7, 1789—"That all pilots in the bays, inlets, rivers, harbors, and ports of the United States shall continue to be regulated in conformity with the existing laws of the States respectively wherein such pilots may be, or with such laws as the States may respectively hereafter enact for the purpose, until further provision shall be made by Congress." March 2, 1837—"That it shall be lawful for the master or commander of any vessel coming into or going out of any port situated upon waters which are the boundary between two States, to employ any pilot duly licensed or authorized by the laws of either of the States bounded on the said waters, to pilot said vessels to or from said port; any law, usage, or custom to the contrary notwithstanding."

Maine.—Pilots are appointed by the Governor and Council upon the recommendation of a majority of the ship-owners and masters in the port for which they are appointed. Bonds are required to the amount of $5000 for the faithful discharge of the duties, and the pilots are liable for damages from neglect or unskillfulness. Any master may pilot his own vessel.

New Hampshire.—The appointment of pilots is the same as in Maine. Pilots must take charge of vessels drawing over nine feet, except coasting vessels. Bonds for $1000 are required for a faithful performance of duties. Masters may pilot their vessels when outward bound, and pay no pilotage. But vessels inward bound must pay half pilotage if they refuse a pilot, unless the vessel be within the light-house before a pilot offers, in which case no pilotage is due unless a pilot is employed. The Governor and Council regulate the fees for pilotage, and suspend or remove pilots for misconduct.

Massachusetts.—The Governor appoints pilots, except for the ports of Boston, where two commissioners, and New Bedford, where five commissioners, have the appointing power. The pilots give bonds for $2000 for the faithful performance of their duties. All vessels, except fishing-vessels and coasting vessels of less than two hundred tons, and vessels trading within the State limits, are bound to employ pilots or pay full pilotage, unless no pilots offer before vessels have arrived within the following limits: viz., within the chops of the harbors of Salem, Marblehead, or Gloucester; within the garnet of Plymouth harbor, or within the bar of any barrel harbor, or within the entrance of Boston harbor, being a line drawn from Harding Rocks to the Outer Graves, and thence to Nahant Head. In such case the master may refuse pilot.

New York.—In this State, Sandy Hook pilots are appointed and regulated by the Pilot Commissioners, who are chosen by the Underwriters and Chamber of Commerce. Hell Gate pilots are appointed by the Governor, and subject to the regulations of the Port Wardens.

The rates of pilotage in and out of New York are as follows: For vessels drawing

14 feet or less...	Inward,	$2 44	.. Outward,	$1 81	per foot.
14 to 18 feet	"	3 06	.. "	2 12½	"
18 to 21 feet	"	3 69	.. "	2 75	"
21 feet or more .	"	4 31½	.. "	3 18¾	"

New Jersey.—Sandy Hook pilots for the ports of Jersey City, Newark, and Perth Amboy are appointed by commissioners. The regulations do not differ materially from those enacted in regard to the New York pilots.

Pennsylvania.—Pilots for Philadelphia are appointed by a Board of Wardens. There are three classes of pilots: the first for vessels of any description; the second for vessels drawing less than twelve feet; the third for vessels drawing less than nine feet. Unlicensed pilots are subject to fine and imprisonment. New Jersey and Delaware pilots have power to act without a special license. The first qualified pilot that offers is entitled to take charge of the vessel. A second or third grade pilot may act unless a superior pilot offers before the vessel passes Reedy Island. Coasting vessels pay no half pilotage.

Delaware.—Vessels of 75 tons and upward, unless owned in Delaware, must take a pilot or pay half pilotage.

Maryland.—Pilots for the Chesapeake Bay are appointed by a Pilot Board. Pilots are divided into the same classes as in Pennsylvania. Pilots must take the nearest vessel to shore, or in the most distress. Foreign vessels must take a pilot, if one offers, or pay full pilotage.

Virginia.—Pilots are appointed by a Board. Pilots are divided into three classes, as in Pennsylvania. Vessels other than coasters must take a pilot or pay full pilotage.

North Carolina.—Pilots are appointed by commissioners for each port. Vessels pay full pilotage when refusing a pilot.

South Carolina.—Pilots are appointed by commissioners. Pilots who bring vessels into port are entitled to carry them out. Vessels pay full pilotage to the first pilot offering, whether his services are accepted or not.

Alabama.—Pilots are licensed by the harbor-master and port wardens. Vessels pay half pilotage, if pilot is not accepted.

Louisiana.—The harbor-master and port warden of New Orleans appoint pilots. There are no river pilots. Vessels pay half pilotage to the pilot if his services are not accepted. If the Balize, or regular pilots, carry the vessel to New Orleans, the compensation is a matter of agreement.

Florida.—Pilots are appointed by Pilot Commissioners. Vessels pay half pilotage, refusing a pilot, if outward bound, and full pilotage when inward bound. —*See* KENT'S *Commentaries*, vol. iii.; PARSONS'S *Mercantile Law*; *Mercantile and Maritime Guide*; BLUNT'S *Shipmaster's Assistant*.

Pimento, Allspice, or **Jamaica Pepper** (Fr. *Poivre de Jamaïque*; Ger. *Nelkenpfeffer*; It. *Pimenti*), the fruit of the *Myrtus pimenta*, a beautiful tree which grows in great plenty on the hills on the north side of Jamaica. The berries are spherical, and, when ripe, of a black or dark purple color. But, as the pulp is in this state moist and glutinous, the berries are plucked when green; and being exposed in the sun to dry, they lose their green color, and become of a reddish brown. They are packed in bags and hogsheads for the European market. The more fragrant and smaller they are, the better are they accounted. They have an aromatic, agreeable odor, resembling that of a mixture of cinnamon, cloves, and nutmegs, with the warm, pungent taste of the clove. Pimento is used in medicine, but its principal use is in the seasoning of soups and other dishes. "The returns," says Mr. Bryan Edwards, "from a pimento walk in a favorable season are prodigious. A single tree has been known to yield 150 pounds of the raw fruit, or 100 pounds of the dried spice, there being commonly a loss in weight of one-third in curing; but this, like many other of the minor productions, is exceedingly uncertain, and perhaps a very plenteous crop occurs but once in five years. The price in the market, as may be supposed, fluctuates accordingly; but its average for some years past may be set down at 14 cents per pound."—Vol. ii. p. 872, ed. 1819.

IMPORTS OF PIMENTO INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30TH, 1856.

Whence imported.	Pounds.	Value.
Hamburg	91,599	$8,246
British N. A. Possessions	18,714	1,225
British West Indies	4,715,309	337,647
Spain on the Mediter'n	375	36
Cuba	15,741	1,017
Mexico	63,311	3,787
Venezuela	979	64
Totals	4,906,028	$352 022

Pin, in *Commerce*, a little necessary instrument, made of brass wire, chiefly used by women in adjusting their dress. When the wire is received in the manufactory, it is wound off from one wheel to another, and passed through a circle of a smaller diameter in a piece of iron. Being thus reduced to its proper size, it is straightened by drawing it between iron pins fixed in a board in a zigzag manner. It is afterward cut into lengths of about four yards, and then into smaller pieces, every length being sufficient for six pins. Each end of these is ground to a point by boys, each of whom sits with two small grindstones before him, turned by a wheel. Taking up a handful, he applies the wires to the coarsest of the two stones, moving them round, that the points may not become flat. He then gives them a smoother and a sharper point on the other stone. A lad of twelve years of age can point 16,000 in an hour. When the wire is pointed a pin is taken off from each end, till it is cut into six pieces. The head is made solid by the present process; but by the old method it is a separate piece, and is made as follows: One piece of wire is with rapidity drawn round another, and the interior one being drawn out, leaves a hollow tube between the circumvolutions. It is then cut by shears, every two turns of the wire forming one head. These are softened by throwing them into iron pans, and placing them in a furnace till they are red hot. As soon as they are cold they are distributed to children, who sit with anvils and hammers before them. These they work with their feet, by means of a lathe. They take up one of the lengths, and thrust the blunt end into a quantity of heads which lie before them; then catching one at the extremity, they apply it immediately to the anvil and hammer, and by a motion or two of the foot the point and head are fixed together, in much less time than can be described, and with a dexterity that can only be acquired by practice. The pins are thrown into a copper, containing a solution of tin and wine lees. Here they remain for some time, and when taken out their brass color has become changed to a dull white. In order to give them a polish, they are now put into a tub containing a quantity of bran, which is set in motion by turning a shaft that runs through its centre; and thus, by means of friction, the pins become entirely bright. They are now separated from the bran, which is performed by a mode exactly similar to the winnowing of corn; the bran flying off, and leaving the pin behind it fit for sale.—E. A.

The manufacture of pins was commenced in the United States between 1812 and 1820. Among the first established were those at Bellevue and Greenwich, New York. Mr. Lemuel William Wright, of Massachusetts, obtained patents in the United States and in England, and commenced the manufacture at Lambeth, London. John J. Howe obtained patents in 1832–1834, in the United States and in England, and established the Howe Manufacturing Company in New York, which was afterward removed to Birmingham, Connecticut. Mr. Samuel Slocum obtained another patent, and in 1838 established a manufactory of pins at Poughkeepsie, New York. The "American Pin Company" has been established for some years at Waterbury, Connecticut, and is the leading manufactory of the kind in the United States. The improvements produced in the United States have been for several years adopted in England and other parts of Europe. —See *American Journal of Science*, xxxviii. 209; HUNT'S *Merchants' Magazine*, xxv. 641; *Economy of Manufactures*, by BABBAGE.

VALUE OF IMPORTS OF PINS INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30TH, 1856.

Whence imported.	Pins in Packs and otherwise.
Hamburg	$204
Bremen	527
Belgium	2,446
England	33,249
Scotland	35
France on the Atlantic	3,995
Total value	$40,255

Pinchbeck (Ger. *Tomback*; Du. *Tombak*; Fr. *Tombac, Similor*; It. *Tombacco*; Sp. *Tambac, Tumbaga*), a name given to one of the many imitations of gold. By melting zinc in various proportions with copper or brass, some alloys result, the colors of which approach more or less to that of gold. This composition is frequently employed as a substitute for gold, in the formation of watch-cases, and various other articles of a like description. Pinchbeck is sometimes called *Tombac*, and sometimes *Similor*, and *Petit-or*.

Pine, or Fir, a species of forest tree, next, if not superior, to the oak, in point of utility and value. There are above twenty species of pine. They do not bear flat leaves, but a species of spines, which, however, are real leaves. They are mostly, though not all, avergreens; but the appearance of the tree, as well as the quality of the timber, varies with the species, and also with the situation in which it grows. Generally speaking, the timber is hardest and best in exposed cold situations, and where its growth is slow.

Scotch pine (*Pinus sylvestris*) is a native of the Scotch mountains, and of most northern parts of Europe; being common in Russia, Denmark, Sweden, Norway, and Lapland. It is straight, abruptly branched, rising in favorable situations to the height of eighty or ninety feet, and being from three to four feet in diameter. It is at perfection when seventy or eighty years old. The color of the wood differs considerably; it is generally of a reddish yellow, or of a honey yellow, of various degrees of brightness. It has no larger transverse septa, and it has a strong resinous odor and taste. In the best timber the annual rings are thin, not exceeding $\frac{1}{10}$th of an inch in thickness; the dark parts of the rings of a bright reddish color; the wood hard and dry to the feel, neither leaving a woolly surface after the saw, nor filling its teeth with resin. The best Norway is the finest of this kind, and the best Riga and Memel are not much inferior. The inferior sorts have thick annual rings; in some the dark parts of the ring are of a honey yellow, the wood heavy, and filled with a soft resinous matter, feels clammy, and chokes the saw. Timber of this kind is not durable, nor fit for bearing strains. In some inferior species the wood is spongy, contains less resinous matter, and presents a woolly surface after the saw. Swedish timber is often of this kind. Scotch fir is the most durable of the pine species. It was the opinion of the celebrated Mr. Brindley, "that red Riga deal, or pine wood, would endure as long as oak in all situations." Its lightness and stiffness render it superior to any other material for beams, girders, joists, rafters, etc. It is much used in joiners' work, as it is more easily wrought, stands better, is much cheaper, and is nearly, if not quite, as durable as oak. Scotch fir is exported from Norway and Sweden, under the name of *red-wood*. Norway exports no trees above eighteen inches diameter, consequently there is much sap-wood; but the heart-wood is both stronger and more durable than that of larger trees from other situations. Riga exports a considerable quantity under the name of masts and spars: pieces from eighteen to twenty-five inches diameter are called *masts*, and are usually seventy or eighty feet in length; those of less than eighteen inches diameter are called *spars*. Yellow deals and planks are imported from various parts of Norway, Sweden, Prussia, Russia, etc. Tar, pitch, and turpentine are obtained from the Scotch fir.—*See these titles.* When the tree has attained to a proper age it is not injured by the extraction of these products.

Spruce Pine.—Of this there are three species—the Norway spruce, or *Pinus abies;* white spruce, or *Pinus alba;* and black spruce, or *Pinus nigra*. These are noble trees, rising in straight stems from 150 to 200 feet in height. They yield the timber known by the name of *white fir*, or *deal*, from its always being imported in deals or planks. Deals imported from Christiana are in the highest estimation.—*See* CHRISTIANA. The trees are usually cut into three lengths, generally of about twelve feet each, and are afterward cut into deals by saw-mills, each length yielding three deals. The Norway spruce thrives very well in Britain, and produces timber little inferior to the foreign; it is somewhat softer, and the knots are extremely hard. The white spruce, or *Pinus alba*, is brought from British North America. The wood is not so resinous as the Norway spruce; it is tougher, lighter, and more liable to twist in drying. The black spruce, or *Pinus nigra*, is also an American tree; but it is not much imported into England. The black and white spruce derive their names from the color of the bark, the wood of both being of the same color. The color of spruce fir, or white deal, is yellowish or brownish white; the hard part of the annual ring a darker shade of the same color. It often has a silky lustre, especially in the American and British grown kinds. Each annual ring consists of two parts; the one hard, the other softer. The knots are generally very hard. The clear and straight-grained kinds are often tough, but not very difficult to work, and stand extremely well when properly seasoned. White deal, as imported, shrinks about $\frac{1}{10}$th part in becoming quite dry.

Weymouth Pine, or *White Pine* (*Pinus strobus*), is a native of North America. It is one of the largest and most useful of the American trees, and makes excellent masts; but it is not durable, nor fit for large timbers, being very subject to dry-rot. It has a peculiar odor.

The commercial value of pine is greater than that of any other wood, and it forms a large proportion of the lumber trade. The Northeastern States are supplied principally by Maine. The Middle States obtain their supplies from Michigan, New York, and Western Pennsylvania; the Northwestern States from Western Pennsylvania, Virginia, and Wisconsin.—*See* LUMBER TRADE.

Larch (*Pinus larix*). There are three species of this valuable tree—one European, and two American. The variety from the Italian Alps is the most esteemed, and has lately been extensively introduced into plantations in Great Britain. It is a straight and lofty tree, of rapid growth. A tree seventy-nine years of age was cut down at Blair Athol in 1817, which contained 252 cubic feet of timber; and one of eighty years of age, at Dunkeld, measured 300 cubic feet. The mean size of the trunk of the larch may be taken at 45 feet in length, and 33 inches diameter. The wood of the European larch is generally of a honey yellow color, the hard part of the annual rings of a redder cast; sometimes it is brownish white. In common with the other species of pine, each annual ring consists of a hard and a soft part. It generally has a silky lustre; its color is browner than that of the Scotch pine, and it is much tougher. It is more difficult to work than Riga or Memel timber, but the surface is better when once it is obtained. It bears driving bolts and nails better than any other species of resinous wood. When perfectly dry it stands well, but it warps much in seasoning. It is in all situations extremely durable. It is useful for every purpose of building, whether external or internal; it makes excellent ship timber, masts, boats, posts, rails, and furniture. It is peculiarly adapted for flooring boards, in situations where there is much wear, and for stair-cases; in the latter, its fine color, when rubbed with oil, is much preferable to that of the black oaken stair-cases to be seen in some old mansions. It is well adapted for doors, shutters, and the like; and, from the beautiful color of its wood when varnished, painting is not necessary.—(We have abstracted these particulars from Mr. TREDGOLD'S excellent work, *The Principles of Carpentry*, p. 209–217.)

Pine-apple, or **Ananas,** though a tropical fruit, is now extensively cultivated in hot-houses and gardens, and is well known to every one. When of a good sort and healthy, it is the most luscious, and perhaps the best fruit that is produced; and, when carefully cultivated, is superior, in point of quality, to that produced in the West Indies.

Pink, a vessel masted and rigged like other ships, only that this is built with a round stern, the heads and ribs compassing so that her ribs bulge out very much. This renders the pinks difficult to be boarded, and also enables them to carry great burdens, for which purpose they are often used.

Pinnace, a small vessel used at sea, with a square stern, having sails and oars, and carrying three masts,

chiefly employed to obtain intelligence, and to land men, etc. One of the boats of a man-of-war, used to carry the officers to and from the shore, is also called the *pinnace*.

Pint, a measure used chiefly in the measuring of liquids. The word is High Dutch, and signifies a little measure of wine. The English pint used to be of two sorts: the one for wine, the other for beer and ale. Two pints make a quart; two quarts a pottle; two pottles a gallon, etc. The pint, imperial liquid measure, contains 34·659 cubic inches.

Pipe, a wine measure, usually containing 105 (very nearly) imperial, or 126 wine gallons. Two pipes, or 210 imperial gallons, make a tun. But, in practice, the size of the pipe varies according to the description of wine it contains. Thus a pipe of port contains 138 wine gallons; of sherry, 130; of Lisbon and Bucellas, 140; of Madeira, 110; and of Vidonia, 120. The pipe of port, it is to be observed, is seldom accurately 138 gallons, and it is usual to charge what the vessel actually contains.

Pipe-clay, a species of clay abounding in Devonshire, and other parts of England, employed in the manufacture of various sorts of earthen-ware, and in bleaching.

Pipes, Amber (in Turkey). Prussia is almost the only country by which amber is furnished for ornamental purposes. M. Von Roy, an amber merchant, of Dantzig, is said to have been twenty-five years collecting the splendid specimens which he now possesses. The most extensive use of this elegant material is for the manufacture of the mouth-pieces of meerschaum pipes and hookahs. Up to the present day amber mouth-pieces continue in great request in the East, where they fetch very high prices; and almost all the Prussian amber is sold to the Turks for manufacturing. There were in the Turkish department of the Exhibition four amber mouth-pieces for pipes, which were collectively worth £1000. It may serve in some measure to explain the peculiar favor which amber is held in by the Turks, that there is a current belief that amber is incapable of transmitting infection; it is deemed a mark of politeness to hand an amber pipe to a stranger.

Meerschaums.—The clay of which these are made is procured chiefly in Asia Minor, but also in Spain, Greece, and Moravia. The manufacture of pipes from the clay is carried on with especial care at Vienna and Pesth. The meerschaum is soaked in a liquefied composition of wax, oil, and fat, the absorption of which occasions the colors assumed by the pipe after smoking. Occasionally the bowls are artificially stained by dipping them in a solution of copperas and other substances before the application of the wax composition. The carving of the bowls is often difficult work, owing to the occurrence of a kind of clay mixed up with and harder than the meerschaum. The large quantity of parings left in roughing out the bowls would entail considerable loss, unless some process had been devised for using them. This has been done; the parings are employed in making the kind of meerschaum bowls called *massa-bowls*. The parings are ground to a fine powder, boiled in water, and moulded into blocks, with or without the addition of clay. The blocks are allowed to dry, and then a pipe-bowl is fashioned from each. These bowls are distinguished from the real meerschaum chiefly by being rather heavier. Meerschaum bowls have been produced so large and so elaborately carved as to be valued at five hundred dollars each.

Piracy consists in committing those acts of robbery and violence upon the seas that, if committed upon land, would amount to a felony. Pirates hold no commission or delegated authority from any sovereign or state, empowering them to attack others. They can, therefore, be only regarded in the light of robbers or assassins. They are, as Cicero has truly stated, the common enemies of all (*communes hostes omnium*); and the law of nations gives to every one the right to pursue and exterminate them without any previous declaration of war; but it is not allowed to kill them without trial, except in battle. Those who surrender, or are taken prisoners, must be brought before the proper magistrates, and dealt with according to law. By the ancient common law of England, piracy, if committed by a *subject*, was held to be a species of treason, being contrary to his natural allegiance; and, by an *alien*, to be felony only; but since the statute of treasons (25 Edw. III. c. 2) it is held to be only felony in a subject. Formerly this offense was only cognizable by the admiralty courts, which proceed by the rules of the civil law; but it being inconsistent with the liberties of the nation that any man's life should be taken away unless by the judgment of his peers, the statute 28 Hen. VIII. c. 15, established a new jurisdiction for this purpose, which proceeds according to the course of common law. It was formerly a question whether the Algerines, and other African states, should be considered pirates; but, however exceptionable their conduct might have been on many occasions, and however hostile their policy might be to the interests of humanity, still, as they had been subjected to what may be called regular governments, and had been admitted to enter into treaties with other powers, they could not be treated as pirates. Pirates having no right to make conquests, or to seize upon what belongs to others, capture by them does not divest the owner of his property. At an early period of English history a law was made for the restitution of property taken by pirates, if found within the realm, whether belonging to strangers or Englishmen; but any foreigner suing upon this statute must prove that at the time of the capture his own sovereign and the sovereign of the captor were in mutual amity; for it is held that piracy can not be committed by the subjects of states at war with each other. Piracy was almost universally practiced in the Heroic Ages. Instead of being esteemed infamous, it was supposed to be honorable.—*Latrocinium maris gloriæ habebatur.*—JUSTINIAN, lib. xliii. Menelaus, in the Odyssey, does not hesitate to inform his guests, who admired his riches, that they were the fruit of his piratical expeditions (lib. iv. ver. 90); and such, indeed, was the way in which most of the Greek princes amassed great wealth.—GOGUET, *Origin of Laws.* The prevalence of this piratical spirit in these early ages may, perhaps, be explained by the infinite number of small, independent states into which the country was divided, and the violent animosity constantly subsisting among them. In this way ferocious and predatory habits were universally diffused and kept alive; and it is not to be supposed that those who were at all times liable to be attacked by hosts of enemies should very accurately examine the grounds upon which they attacked others. According, however, as a more improved system of government grew up, Greece, and a few states, as Athens, Corinth, etc., had attained to distinction by their naval power, piracy was made a capital offense; but though repressed, it was never entirely put down. Cilicia was at all times the great strong-hold of the pirates of antiquity: and in consequence of the decline of the maritime forces of Athens, Rhodes, etc., which had kept them in check, they increased so much in numbers and audacity as to insult the majesty of Rome herself; so that it became necessary to send Pompey against them, with a large fleet and army, and more extensive powers than had been ever previously conferred on any Roman general.

During the anarchy of the Middle Ages, when every baron considered himself a sort of independent prince, entitled to make war on others, piracy was universally practiced. The famous Hanseatic League was formed chiefly for the purpose of protecting the ships of the confederated cities from the attacks of the pirates by which the Baltic was then infested. The nuisance was not finally abated in Europe till the feudal system had been subverted, and the ascendency of the law every

where secured. In more modern times, some of the smaller West India islands have been the great resort of pirates: latterly, however, they have been driven from most of their haunts in that quarter. They are still not unfrequently met with in the Indian seas east of Sumatra.—M'Culloch's *Com. Dict.*

Piracy is robbery, or a forcible depredation on the high seas, without lawful authority, and done *animo furandi*, and in the spirit and intention of universal hostility. It is the same offense at sea with robbery on land; and all the writers on the law of nations, and on the maritime law of Europe, agree in this definition of piracy. Pirates have been regarded by all civilized nations as the enemies of the human race, and the most atrocious violators of the universal law of society. They are every where pursued and punished with death; and the severity with which the law has animadverted upon this crime arises from its enormity and danger, the cruelty that accompanies it, the necessity of checking it, the difficulty of detection, and the facility with which robberies may be committed upon pacific traders in the solitudes of the ocean. Every nation has a right to attack and exterminate them without any declaration of war; for though pirates may form a loose and temporary association among themselves, and re-establish in some degree those laws of justice which they have violated with the rest of the world, yet they are not considered as a national body, or entitled to the laws of war, as one of the community of nations. They acquire no rights by conquest; and the law of nations, and the municipal law of every country, authorize the true owner to reclaim his property taken by pirates, wherever it can be found, and they do not recognize any title to be derived from an act of piracy. The principle that *a piratis et latronibus capta dominium non mutant*, is the received opinion of ancient civilians and modern writers on general jurisprudence, and the same doctrine was maintained in the English courts of common law prior to the great modern improvements made in the science of the law of nations.

By the Constitution of the United States, Congress is authorized to define and punish piracies and felonies committed on the high seas, and offenses against the law of nations. In pursuance of the authority it was declared, by the act of Congress of April 30, 1790, c. 9, sec. 8, that murder or robbery committed on the high seas, or in any river, harbor, or bay, out of the jurisdiction of any particular state, or any other offense, which, if committed within the body of a county, would, by the laws of the United States, be punishable with death, should be adjudged to be piracy or felony, and punishable with death. It was further declared, that if any captain or mariner should piratically or feloniously run away with any vessel, or any goods or merchandise to the value of fifty dollars, or should yield up any such vessel voluntarily to pirates; or if any seaman should forcibly endeavor to hinder his commander from defending the ship or goods committed to his trust, or should make a revolt in the ship, every such offender should be adjudged a pirate and felon, and be punishable with death. And by the act of March 3, 1819, c. 76, sec. 5, Congress declared, that if any such person on the high seas should commit the crime *of piracy as defined by the law of nations*, he should, on conviction, suffer death. This act was but temporary in its limitation, and has expired; but it was again declared, and essentially to the same effect, by the act of Congress, 15th of May, 1820, c. 113, sec. 3, that if any person upon the high seas, or in any open roadstead or bay or river, where the sea ebbs and flows, commits the crime of robbery, in or upon any vessel, or the lading thereof, or the crew, he shall be adjudged a pirate. So if any person, engaged in any piratical enterprise, or belonging to the crew of any piratical vessel, should land and commit robbery on shore, such an offender shall also be adjudged a pirate. The statute in this respect seems to be only declaratory of the law of nations; and upon the doctrine of the case of Lind *v.* Rodney, such plunder and robbery ashore by the crew, and with the aid of vessels, is a marine case, and of admiralty jurisdiction. The statute further declared, that the above provision was not to be construed to deprive any particular State of its jurisdiction over such offenses when committed within the body of a county, or to authorize the courts of the United States to try any such offenders, after conviction or acquittance, for the same offense in a State court.

There can be no doubt of the right of Congress to pass laws punishing pirates, though they may be foreigners, and may have committed no particular offense against the United States. It is of no importance, for the purpose of giving jurisdiction, on *whom* or *when* a piratical act has been committed. A pirate, who is one by the law of nations, may be tried and punished in any country where he may be found, for he is reputed to be out of the protection of all laws and privileges. The statute of any government may declare an offense committed on board its own vessels to be piracy, and such offense will be punishable exclusively by the nation which passes the statute. But piracy, under the law of nations, is an offense against all nations, and punishable by all.—Kent's *Commentaries*, vol 1.

Liability of Insurers.—There can be no piracy or robbery without violence; but this is not necessary to constitute the crime of theft. Piracy and robbery are most usually committed by strangers to the ship; they may, however, be committed by the crew; and the insurers are answerable for such a loss, unless it arise from the fault of the owner. If theft be committed by the crew, we should still hold the insurers liable. This may be doubtful; but insurers regard it as at least possible, and provide against it by the phrase, "assailing thieves." This excludes theft without violence, and perhaps all theft by those lawfully on board the vessel, as a part of the ship's company. If, after shipwreck, the property is stolen, the insurers are liable, and would probably be so if there were no insurance against theft, if this was a direct effect of the wrecking.—Parsons's *Mercantile Law*. The subjects of pirates and piracy have been discussed in the following works: Niles's *Register*, xvlii. 275, xxxii. 302, xx. 59, xxvii. 391, xxv. 157, xxvii. 138. xxiii. 211; Hunt's *Merchants' Magazine*, xiii. 450, 526, xlv. 89; *Edinburgh Review*, lxviii 33, xxvi. 449; Littell's *Museum*, xxv. 337, xxvi. 266.

Pistachia, or **Pistachio Nuts** (Ger. *Pistaschen*; Du. *Pistasjes*; Fr *Pistaches*; It. *Pistacchi, Fistucchi*; Sp. *Alfocigos*; Lat. *Pistaciæ*), the fruit of the *Pistachia vera*, a kind of turpentine-tree. It grows naturally in Arabia, Persia, and Syria; also in Sicily, whence the nuts are annually brought to us. They are oblong and pointed, about the size and shape of a filbert, including a kernel of a pale greenish color, covered with a yellowish or reddish skin. They have a pleasant, sweetish, unctuous taste, resembling that of sweet almonds; their principal difference from which consists in their having a greater degree of sweetness, accompanied with a light grateful flavor, and in being more oily. Pistachias imported from the East are superior to those raised in Europe.—Lewis's *Materia Med.*

Pistols. These are the smallest sort of fire-arms, carried sometimes on the saddle-bow, sometimes in a girdle round the waist, sometimes in the pocket, etc.—Pardon. The pistol was first used by the cavalry of England, in 1444.

The manufacture of guns and pistols in the United States has become an active one. Colt's Revolvers have acquired a reputation throughout Europe and South America, as well as the United States. His principal factory is located near Hartford, Connecticut. "It is so well ordered, so complete, so striking in its results, that all engaged in manufacture may learn something from it; it is in itself one large machine, well oiled too, which takes in at one end a shapeless

lump of iron, and a piece of wood, and puts out at the other a beautifully finished arm which you may load and fire six balls from separately in three-quarters of a minute, after a certain amount of practice. In each pistol there are fifty-three distinct pieces, including fourteen screws, and for the formation of these forty or forty-five separate machines co-operate, hammering, milling, cutting, drilling, punching, riffling, and shaving; all put into motion by a gallon of water 'in a violent perspiration;' in other words, a twenty-horse power steam-engine. Some of the machines are especially beautiful: look at that for riffling the barrels, for example, with the brush to keep the cutters clean; and the one near it for drilling the six chambers around the central boring in the solid cylinder, where accuracy is so indispensable. That regular irregularity, the eccentric, plays an important part in this, as it does in the hammering machine below—the machine patented by Rider. In one week they turned out 525 perfect pistols here, and there are the means for making 800 or 900 a week, if it were necessary to do so."—*London Builder.*

Pistols were first used by the Germans. Bellay mentions them in the year 1544. In the time of Francis I. and under Henry II. the German horsemen, *des reiters*, were called pistoliers. The derivation of this term is uncertain. Frisch conjectures that it may have arisen from pistillo or stiopo, because pistols used to have large knobs on the handles. Daniel and others think that the name comes from Pistoja, in Tuscany, where they were first manufactured. He says he saw an old pistol that, with the exception of the ramrod, was all iron. During the latter part of the last century many ingenious persons directed their attention to the improvement of fire-arms, with a view to simplify their construction, to render them more effective, and to combine safety with celerity in firing. One of the most marked advancements was effected by Mr. Henry Nock, and patented by him in England in 1787. Previous to this the breeching or plug of a gun was a solid lump of iron, screwed into one end of the barrel, the touch-hole being drilled through the side of the barrel above it. Another most marked improvement was the introduction and adaptation of fulminating powder, for igniting the charge in the chamber of the breech; and for which the Rev. Mr. Forsyth obtained a patent in Great Britain, in 1807. The perfection of a proper fulminating powder was long a matter of great difficulty. Other changes were suggested, but not of a practical kind. One made by Mr. E. H. Collier, of Boston, Massachusetts, in 1818; and another by Mr. Wheeler, of Boston, in 1819.

The first valuable improvements made by Colonel Samuel Colt, of Connecticut, in the construction of the pistol, were made public in the year 1835. The original conception of Colonel Colt in regard to fire-arms was the combination of a number of long barrels to rotate upon a spindle, by the act of cocking the lock, in the same manner that they have since been made by others who claim to have originated the plan; but as objections arose from the weight and bulk of the arm, in his study to obviate them, the idea of a single barrel and a chambered breech suggested itself to him. Although without the pecuniary means of then practically testing his convictions, he made a small wooden model of his conception, which he possesses at the present day. He then assiduously pursued his calling as a scientific lecturer, and from its rewards procured the aid to manufacture specimen arms, which in their practical results exceeded even his most sanguine expectations; and in 1835 he received his first patent from the Government of the United States.

Colonel Colt's first manufactory of fire-arms was located at Paterson, New Jersey, in the year 1836, with a capital of $300,000. This continued in operation until the year 1842, when it was relinquished as unprofitable. The Florida war of 1837–'38 created a demand for, and gave practical demonstration of the great value of, the repeating fire-arms patented by him. They were also used with great effect in the Texan revolution and war; and afterward in the war with Mexico (1846–'47), when a contract was made by him with the government for the supply of one thousand of the improved arms. A temporary manufactory was established for this purpose at Whitneyville, Connecticut. This was succeeded by the present extensive factory at or near Hartford, on the Connecticut River, which was finished and in successful operation in the year 1855, with a capital of $1,250,000. These buildings present a front of 500 feet. The repeating principle has also been successfully applied by Colonel Colt to rifles and carbines, several varieties of which are constantly in the course of completion in the armory. Lately the demand for the sporting rifle has increased wonderfully, which increase will, no doubt, be much augmented as their superiority is more generally practically demonstrated by our hardy backwoodsmen; and the day is not distant when regiments of riflemen will be equipped with Colt's revolvers.

Within the last year still another style of pistol has been introduced. It is called "Colt's new Model," and by some it is preferred to either of the others. Undoubtedly this is a matter of fancy with the party using the arm, as in some cases individuals yet prefer Colt's first to any arm that was ever manufactured. The arms are of several sizes, and weigh as follows:

	Pounds.	Ounces.
The military rifle, barrel 36 inches, fitted with improved bayonet	11	8
Sporting rifle, barrel from 18 to 30 inches, average	9	
The army or holster pistol	4	4
The navy or belt pistol	2	6
The pocket pistol, barrel 6 inches	1	12
The pocket pistol, barrel 5 inches	1	10
The pocket pistol, barrel 4 inches	1	8

These are kinds that are constantly in the course of construction; of course many other varieties are made by special order.

Of the improved pistol, over 138,000 had been manufactured here up to January, 1857. Nearly eight hundred men are ordinarily employed in this work alone. This result is the fruit of a market for arms, not confined to the United States, but extending over both the Americas; more or less to the Indies, East and West; to Egypt—even to distant Australia; to remote Asiatic tribes assembled at the great fairs of Novgorod; and over Europe generally, but especially to England. Here the arms of Colonel Colt, first introduced in splendid style through the World's Fair, were warmly welcomed, and led to the speedy establishment in London of an extensive armory for their manufacture, and to their rapid adoption into the British army and naval service.—*United States Magazine*, March, 1857.

See FIRE-ARMS.

Pitcairn's Island. A small solitary island in the Pacific Ocean, seen by Cook in 1773, and noted for being colonized by ten mutineers from the ship *Bounty*, Captain Bligh, in 1789, from which time till 1814 they (or rather their descendants) remained here unknown. Soil fertile, but porous, and rather defective in water; well wooded, and climate healthful; thermometer ranging from 59° to 89° Fahr. Prevailing winds southwest and east-southeast, but it is beyond the limits of the regular trade-winds. It is surrounded by rocky shores, and has only one accessible landing-place at Bounty Bay. The cocoa-nut, plantain, banana, and bread-fruit trees flourish, hibiscus, or cloth tree, banyan-tree, orange, and others; and the potato, sweet potato, yams, water-melons, pumpkin, taro, sugar-cane, ginger, turmeric, tobacco, tea-plant, and maize, are cultivated. The island contained no indigenous quadrupeds, but goats, hogs, and poultry have been imported. In 1790 this island was resorted to by the mutineers of the *Bounty*, consisting of nine British sailors, six native Tahitian men, and twelve women.

In consequence of various discords and massacres, at the end of ten years there remained only one Englishman, Adams, the Tahitian females, and nineteen children, their offspring. Under the superintendence of this man the children were educated and trained up to habits of industry and morality. In 1825 Captain Beechey found a most interesting and intelligent colony of sixty-six persons. In 1831, by the somewhat imprudent sanction of the British government, the colony, numbering eighty-seven persons, was transferred to Tahiti. After remaining five months there, and losing twelve of their number by death, the colony, at their own solicitation, were again reinstated in their native island. In 1840 the population amounted to 75 males and 74 females, in all 149; of these, three were Englishmen, one a native Tahitian woman, the only remaining female of the original migration, and the remainder were natives of the island. They live chiefly on yams, potatoes, and other vegetables, which they raise by their own labor. From the remains of burial-grounds, the island would appear to have been occupied by inhabitants at a period antecedent to the visit of the mutineers of the *Bounty*. It was seen by Carteret in 1767, and named by him after one of his officers.

Pitch (Ger. *Pech;* Fr. *Poix, Brai;* It. *Pece;* Sp. *Pez*, Russ. *Smola gustaja*), the residuum which remains on inspissating tar, or boiling it down to dryness. It is extensively used in ship-building, and for other purposes.—*See* NAVAL STORES.

Pittsburgh, city, port of entry, and capital of Alleghany county, Pennsylvania, is situated at the conflux of the Alleghany and Monongahela rivers, where they form the Ohio, which is here a quarter of a mile wide. It is in 40° 32′ N. lat., and 80° 2′ W. long., 357 m. *via* Pennsylvania Railroad from Philadelphia, 247 west-northwest of Harrisburg, 226 from Washington, D. C., and 2044 above New Orleans by the course of the river. Population in 1810, 4768; in 1820, 7248; in 1830, 12,568; in 1840, 21,115; in 1850, 46,601; in 1854, the city and immediate vicinity estimated at 110,000. It was originally laid out on the northeast bank of the Monongahela, after the model of Philadelphia, with streets running parallel with the rivers, and others crossing them at right angles. The streets on the Alleghany are laid out on a similar plan, and hence a short distance from the Alleghany the old and new streets meet in oblique directions. The Alleghany River is spanned by three bridges, which, with several steam ferries, connect the city with the suburbs. The Pennsylvania Canal crosses the river by an aqueduct, and there is a suspension-bridge over the Monongahela.

As a manufacturing city, Pittsburgh is second in the State only to Philadelphia. In 1850 it had thirteen rolling-mills, with a capital of $5,000,000, employing 2500 hands, consuming 60,000 tons of pig metal, and producing annually bar iron and nails to the value of $4,000,000; thirty large founderies, with an aggregate capital of $2,000,000, and 2500 hands, using 20,000 tons of pig iron, and yielding articles valued at $2,000,000 annually; two establishments for manufacturing locks, latches, coffee-mills, scales, and other iron casting, employing 500 hands, and a capital of $250,000, using 1200 tons metal, and producing annually to the value of $3,000,000; five large cotton factories—capital $1,500,000, hands 1560, cotton consumed 15,000 bales, and products valued at upward of $1,500,000 annually; eight flint-glass manufactories—capital $300,000, hands 500, and producing various articles of glass, in the manufacture of which 150 tons lead and 200 tons of pearlash are used, to the value of $400,000 annually; seven phial furnaces and eleven window-glass factories—capital $250,000, hands 600, and annual products $600,000; one soda-ash factory, employing 75 hands, and producing annually 1500 tons; one copper-smelting house, producing 600 tons refined copper annually, valued at $380 per ton; one rolling-mill, producing annually 300 tons sheathing and brazier's copper; five white-lead factories—capital $150,000, hands 60, and producing 150,000 kegs annually, worth $200,000. There are also a number of manufactories of the smaller sizes of iron, several extensive manufactories of axes, hatchets, spring-steel, steel springs, axles, anvils, vices, mills, cross-cut and other saws, gun barrels, shovels, spades, forks, hoes, cut tacks, brads, etc. The products of the manufactures in the aggregate are valued at between $50,000,000 and $60,000,000 annually. There are consumed about 12,000,000 bushels of coal annually, worth $600,000, and an equal quantity is exported from the city, giving employment constantly to 4000 hands.

Plains. In Geography, the general term for all those parts of the dry land which can not properly be called mountainous, and which compose by far the greater part of the earth's surface. Plains have different physical appearances according to their geographical position, and the peculiar characteristics of each have procured for them different names; thus we have the steppes of Asia, the deserts of Africa, the pampas of South America, and the prairies or savannas of North America. *See these different terms.*

Plane, a forest tree, of which there are two species; the Oriental plane (*Platanus Orientalis*), and the Occidental plane (*Platanus Occidentalis*). The Oriental plane is a native of the Levant, and other Eastern countries, and is considered one of the finest of trees. It grows to about 60 feet in height, and has been known to exceed eight feet in diameter. Its wood is much like beech, but more figured, and is used for furniture and such like articles. The Occidental plane is a native of North America, and is one of the largest of the American trees, being sometimes more than 12 feet in diameter. The wood of the Occidental plane is harder than that of the Oriental. It is very durable in water. The tree known by the name of plane in England is the sycamore, or great maple (*Acer pseudo-platanus*). It is a large tree, grows quickly, and stands the sea-spray better than most trees. The timber is very close and compact, easily wrought, and not liable either to splinter or warp. It is generally of a brownish white or yellowish white color, and sometimes it is very beautifully curled and mottled. In this state it takes a fine polish, and bears varnishing well. It is chiefly used in the manufacture of saddle-trees, wooden dishes, and a variety of articles of furniture and machinery. When kept dry, and protected from worms, it is pretty durable; but it is quite as liable as beech to be attacked by them.—TREDGOLD, p. 196.

Plane Sailing, in *Navigation*, is the art of determining the ship's place, on the supposition that she is moving on a plane, or that the surface of the ocean is plane instead of being spherical. On account of the magnitude of the terrestrial radius, this supposition may be adopted for short distances without leading to great errors; and it affords great facilities in calculation, for the place of the ship is found by the solution of a right-angled plane triangle. The part of the meridian between the ship and the parallel of latitude of the place whence she departed forms the perpendicular of the triangle; the distance on the parallel between the place of departure and the foot of the perpendicular is the base of the triangle (technically called the departure); and the distance sailed is the hypothenuse. The angle at the ship is called the course, and the other acute angle the complement of the course. Now, of these four things, the perpendicular, the departure, the distance sailed, and the course, any two being given, the triangle can be laid down on the chart, and all the other parts of it found.—*See* NAVIGATION.

Planks (Ger. and Du. *Planken;* Da. *Planker;* Sw. *Plankor;* Fr. *Planches, Boraages;* Russ. *Tolstiie oloski*), thick strong boards, cut from various kinds of wood, especially oak and pine. Planks are usually of the thickness of from 1 inch to 4. They are exported in large quantities from the northern parts of Europe, particularly from the ports of Christiana, Dantzic, Archi-

angel, Petersburg, Narva, Reval, Riga, and Memel, as well as from several parts of North America.—*See* LUMBER TRADE.

Plantain, or Banana, the pulpy fruit of the *Musa paradisiaca*, an herbaceous plant, extensively cultivated in most inter-tropical countries, but especially in Mexico. It is not, like most other fruits, used merely as an occasional luxury, but is rather an established article of subsistence. Being long and extensively cultivated, it has diverged into numerous varieties, the fruit of which differs materially in size, flavor, and color. That of some is not above two or three inches long, while that of others is not much short of a foot; some sorts are sweet, and of a flavor not unlike nor inferior to that of a good mellow pear; but the larger kind are, for the most part, coarse and farinaceous. The latter are either used fresh or dried in the sun, in which latter state they are occasionally ground into meal and made into bread. In Mexico the sweeter sorts are frequently pressed and dried, as figs are in Europe; and, while they are not very inferior to the last-mentioned fruit, they are infinitely cheaper. "I doubt," says M. Humboldt, "whether there be any other plant that produces so great a quantity of nutritive substance in so small a space. Eight or nine months after the sucker is planted, it begins to develop its cluster. The fruit may be gathered in the tenth and eleventh month. When the stalk is cut, there is always found, among the numerous shoots that have taken root, a sprout (*pimpollo*), which, being 2-3ds the height of its parent plant, bears fruit three months later. Thus a plantation of bananas perpetuates itself, without requiring any care on the part of man, further than to cut the stalks when the fruit has ripened, and to stir the earth gently once or twice a year about the roots. A piece of ground of 100 square metres of surface will contain from 30 to 40 plants. During the course of a year this same piece of ground, reckoning the weight of the cluster at from 15 to 20 kilog. only, will yield 2000 kilog., or more than 4000 lbs., of nutritive substance. What a difference between this product and that of the cereal grasses in most parts of Europe! The same extent of land planted with wheat would not produce above 30 lbs., and not more than 90 lbs. of potatoes. Hence the product of the banana is to that of wheat as 133 to 1, and to that of potatoes as 44 to 1."—*Essai sur la Nouvelle Espagne.* The banana forms a principal part of the food of the people of Mexico; and the apathy and indolence of the natives in the *tierras calientes*, or hot regions, has been ascribed, and probably with good reason, to the facility with which it supplies them with subsistence. It is by no means in such extensive use in tropical Asia, and comes nowhere in it into competition with corn as an article of food.

Plaster, or **Plaister,** in building, a composition of lime, sometimes with sand, or other substance, to parget or cover the nudities of building.

Plaster of Paris, a preparation of several species of gypsum dug near Montmartre, a village in the neighborhood of Paris, and hence the name. The best sort is hard, white, shining, and marbly, being known by the name of *plaster-stone*, or *parget of Montmartre*. It will neither give fire with steel, nor ferment with aquafortis; but it calcines very freely and readily into a fine plaster, the use of which in building and casting statues is well known.

Plata (Rio De La), or the Plate River, one of the great rivers, or rather a great estuary of South America, in the Argentine Republic, formed by the junction of the Parana and Uruguay rivers, in lat. 34° S., long. 58° 30′ W., its basin lying south of those of the Amazon, Tocantins, and San Francisco, and its numerous tributaries draining most part of the Plata, Paraguay, and Uruguay territories, with considerable portions of Bolivia and Brazil. The estuary resulting from their union is 200 miles in length northwest to southeast, and where it joins the Atlantic Ocean, is 170 miles across (between Maldonado and Cape St. Antonio); its centre being about lat. 35° 30′ S., long. 56° W. Its muddy waters can be traced in the ocean 200 miles from its mouth. The total length of the Plata and the Paraguay has been estimated at nearly 2500 miles; and from the ocean to the island of Apipe in the Parana, at least 1250 miles, there is a continuous and safe navigation for vessels of 800 tons. The Aguapehy, an affluent of the Paraguay near lat. 15° 40′ S., long. 59° 20′ W., is separated only by a portage of three miles from the Alegre, a tributary of the Guapore, and were a canal to be made to connect the two streams, a complete system of internal navigation throughout nearly all South America would exist.—*See* PARAGUAY.

Plate, the denomination usually given to gold and silver wrought into articles of household furniture. It appears from PORTER'S *Progress of the Nation*, iii. 25, that the annual consumption of silver plate has increased from about 800,000 oz. at the commencement of the century, to about 1,050,000 oz. at present. Most persons may, perhaps, be inclined to think that this is not so great an increase as might have been anticipated from the increase of wealth and population. But it should be borne in mind that this account refers only to articles of standard silver and gold, and that the great consumption of the precious metals consists in plated and gilt articles, which are now made of a very superior quality. Owing also to the fact of old plate being held in the greatest estimation, but little of it is melted down to be remanufactured, so that the principal consumption is by new families.—*See* GOLD and PRECIOUS METALS.

Platina, a metal which, in respect of scarcity, beauty, ductility, and indestructibility, is hardly inferior to gold, was unknown in Europe till about the middle of last century, when it began to be imported in small quantities from South America. It has since been discovered in Estremadura in Spain, and more recently in the Ural Mountains in Asiatic Russia, where it is now raised in very considerable quantities. Platina is of a white color, like silver, but not so bright, and has no taste or smell. Its hardness is intermediate between copper and iron. Its specific gravity is about 21·5, that of gold being 19·3; so that it is the heaviest body with which we are acquainted. It is exceedingly ductile and malleable; it may be hammered out into very thin plates, and drawn into wires not exceeding 1-1940th of an inch in diameter. In these properties it is probably inferior to gold, but it seems to surpass all the other metals. Its tenacity is such, that a wire of platina 0·078 inch in diameter is capable of supporting a weight of 274·31 lbs. avoirdupois without breaking. It is one of the most infusible of all metals; but pieces of it may be welded together without difficulty when heated to whiteness. It is not in the smallest degree altered by the action of air or water.—THOMSON'S *Chemistry*. The late Dr. Wollaston discovered a method of fusing platina, and, consequently, of rendering it easily available in the arts. The Russians have within these few years issued platina coins of the value of 3, 6, and 20 silver roubles. Platina first began to be an object of attention in Russia in 1824, when 1 pood 33 lbs. were collected. In 1836 the produce amounted to 188 poods 42 lbs. In 1831 a piece of native platina was discovered at Demidoff's gold mines, weighing 29 lbs. 2½ zolt.—*Official Statements* published by the Russian government.

Plating. The art of covering copper and other metals with silver or gold: it is effected in various ways. Sometimes the silver is attached to and rolled out with the copper by pressure; sometimes the one metal is precipitated from its solutions upon the other; and of late manufacturers have availed themselves of electro-chemical decomposition for the purpose.

Platinum (so called from the Spanish word plata,

silver, on account of its color), a metal of a white color, exceedingly ductile, malleable, and difficult of fusion. It is the heaviest substance known, its specific gravity being 21·5. It undergoes no change from air or moisture, and is not attacked by any of the pure acids; it is dissolved by chlorine and nitro-muriatic acid, and is oxydized at high temperatures by pure potassa and lithia. It is only found in South America and in the Uralian Mountains: it is usually in small grains of a metallic lustre, associated or combined with palladium, rhodium, iridium, and osmium; and with copper, iron, lead, titanium, chromium, gold, and silver; it is also usually mixed with alluvial sand. The particles are seldom so large as a small pea, but sometimes lumps have been found of the size of a hazel-nut to that of a pigeon's egg. In 1826, it was first discovered in a vein associated with gold by Boussingault, in the province of Antioquia, in South America. When a perfectly clean surface of platinum is presented to a mixture of hydrogen and oxygen gas, it has the extraordinary property of causing them to combine so as to form water, and often with such rapidity as to render the metal red hot: *spongy platinum*, as it is usually called, obtained by heating the ammonio-muriate of platinum, is most effective in producing this extraordinary result; and a jet of hydrogen directed upon it may be inflamed by the metal thus ignited, a property which has been applied to the construction of convenient instruments for procuring a light. The equivalent of platinum is about 98. It is precipitated from its nitro-muriatic solution by sal ammoniac, which throws it down in the form of a yellow powder, composed of bichloride of platinum and sal ammoniac.

Platting, slips of bast, cane, straw, etc., woven or plaited for making into hats, etc.

Plumbago. *See* BLACK-LEAD.

Plums, the fruit of the *Prunus domestica*, are too well known to require any description. They were introduced into England in the 15th century, and are cultivated in all parts of the country. There are said to be nearly 300 varieties of plums.

Plum-tree (*Prunus domestica*). The *Prunus domestica* appears to be more widely diffused in its original locality than the apricot. It is believed to be indigenous to the south of Russia, Caucasus, the Himalayas, and to many parts of Europe. In England, and in some parts of the United States, it is sometimes found in hedges, but never truly wild. This species and many of its varieties are cultivated for ornament, or their fruit, in all the temperate countries of the habitable globe. Faulkner, in his *Kensington*, makes the plum a native of Asia, and an introduction into Europe of the Crusaders. Gough, in his *British Topography*, says that Lord Cromwell introduced the Perdrigon plum into England in the time of Henry VII. The introduction of this tree into the United States dates back to the earliest periods of their settlements. Several valuable and interesting varieties have originated in this country, among which the Bolmar or Washington plum stands conspicuous. The parent tree is said to have been purchased in a market in New York, about the end of the last century. It remained barren for several years, till, during a violent storm of thunder, the entire trunk was severed to the earth by lightning, and destroyed. The part remaining in the ground afterward threw up several vigorous shoots, which were allowed to remain and finally produce fruit. Trees of this variety were first sent to England in 1819, to Mr. Robert Barclay, of Bury Hill; and several others were sent to the London Horticultural Society in 1821, by Dr. Hosack, of New York. The wood of the *Prunus domestica* is hard, close, compact, beautifully veined, and susceptible of a fine polish. When dry, it weighs from forty to fifty pounds to a cubic foot, according to the age and growth of the tree. Its texture is silky, and when washed with lime-water its color is heightened, and may be preserved by the application of varnish or wax. Unfortunately for this tree, its wood is sometimes rotten at the heart. In France and Germany it is much sought after by turners, cabinet-makers, and the manufacturers of musical instruments. The leaves are sometimes given to cattle for forage. The use of the fruit in domestic economy for dessert, and for making tarts and puddings, is well known. In France plums are principally used dry or preserved, and enter extensively into commerce. The kinds usually employed for preserving are the Brignole, the prune d'Ast, the Perdrigon blanc, the prune d'Agen, and the Ste. Catherine. In warm countries plums or prunes are dried on hurdles by solar heat; but in cold climates artificial heat is employed; the fruit being exposed to the heat of an oven and to that of the sun on alternate days. Table prunes are prepared from the larger kinds of plums, as the green-gage, and Ste. Catherine; those employed in medicine from the Ste. Julienne. The former have a very sweet and agreeable taste, and the latter are somewhat austere. Fresh, ripe plums, taken in moderate quantities, are regarded as nutritive and wholesome; but in large quantities they readily disorder the bowels; and when immature, they still more easily excite ill effects. The medicinal prunes are employed as an agreeable, mild laxative for children, and are given during convalescence from febrile and inflammatory disorders in adults.—BROWNE'S *Trees of America*.

Plush (Fr. *Panne*, *Peluche*; Germ. *Wollsammet*, *Plüsch*) is a textile fabric, having a sort of velvet nap or shag upon one side. It is composed regularly of a woof of a single woolen thread, and a two-fold warp, the one wool of two threads twisted, the other goat's or camel's hair. There are also several sorts of plush made entirely of worsted. It is manufactured, like velvet, in a loom with three treadles; two of which separate and depress the woolen warp, and the third raises the hair-warp, whereupon the weaver, throwing the shuttle, passes the woof between the woolen and hair warp; afterward, laying a brass broach or needle under that of the hair, he cuts it with a knife (*see* FUSTIAN) destined for that use, running its fine, slender point along in the hollow of the guide-broach, to the end of a piece extended upon a table. Thus the surface of the plush receives its velvety appearance. This stuff is also made of cotton and silk.

Plymouth, a sea-port of England, on the east side of a peninsula between the rivers Plym and Tamar, at the head of Plymouth Sound; latitude of Mount Wise, 50° 22′ N., long. 4° 10′ 2″ W. The port of Plymouth is distinguished for its capacity and security; it is capable of containing 2000 sail, and is one of the best harbors in the world. It consists of three divisions: Suttonport, adjoining the town; Catwater, formed by an estuary of the Plym; and the Bay of Hamoaze. At the mouth of these harbors the great bay of Plymouth Sound forms an excellent roadstead, which is now completely secure by the erection of the breakwater across the entrance. This is an isolated mole at the entrance of the Sound 5100 feet long, and opposing a barrier to the heavy swell of the Atlantic. The Sound is three miles long and four miles wide, and forms the harbor of Davenport and Plymouth.

Point net is a style of lace formerly much in vogue, but now superseded by the bobbin-net manufacture.—*See* LACE.

Points of the Compass. In *Geography* and *Navigation*, the points of division of the circle representing the horizon, or of the compass card over which the magnetic needle is suspended. A diameter of the circle being drawn to represent the meridian, or north and south directions, and another at right angles to it to represent the directions east and west, the circle is thus divided into four quarters, each of which is subdivided into eight equal parts, so that the whole circle is divided into thirty-two equal parts; and the points

of division are termed the points of the compass. Each has a particular name, indicating its place with reference to the four principal or *cardinal points;* namely, the north, south, east, and west points.—*See* COMPASS.

Polar Sea, North. We are now able to draw with nearly geographical accuracy the boundaries of the North Polar Sea. A very large portion of the northern shores of Europe, Asia, and America, which circumscribe it, have been visited, and the position of most of their bays, headlands, and rivers, geographically ascertained. By casting our eye over the North Polar chart, it will be seen that the Polar Sea of that hemisphere is an immense circular basin, which communicates with the two great oceans of the world—the Atlantic and the Pacific—by two channels, the one separating America from Europe, and the other America from Asia. It will be seen that few points of the coasts of Europe and Asia, which occupy a full half of the circumscribing circle, extend much beyond the 70th parallel of latitude; and all these points have been passed by water, though at different points and by different persons, with the single exception of the Cape Cèvero Vastochnoi, which on the charts is made to extend to the latitude 75½°. The northern coast of America, with Old Greenland, and the two channels above mentioned, complete the circle, America extending about 80° of longitude, or just two ninths of the whole circle; and of this portion the whole coast has now been ascertained, with the exception of that part which lies between Cape Turnagain of Franklin, and the land at the bottom of Prince Regent's Inlet, which the gentlemen of the Hudson's Bay Company are now (1838) exploring. This being accomplished, we shall have the whole line of the northern coast of America completed. We may, therefore, state that the average of the degree of latitude of this coast is about the same as, or rather lower than, that of Europe and Asia, and the extent of the North Polar Sea may be considered as about 2400 geographical miles in diameter, or 7200 in circumference. The interior or central parts of this sea are very little known. Several islands are scattered over its southern extremities, the largest of which is Old Greenland, whose northern limit has not yet been passed; the others are, Spitzbergen, Nova Zembla, the islands of Liaknov, or, as some have been pleased to call them, New Siberia; the North Georgian Islands of Parry, and those which form the western lands of Baffin's Bay, to which may be added the Boothia Felix of Ross, which there is no doubt is an island. Besides these, there are a number of small alluvial islands, formed at the mouths of the several rivers of the two continents; but whether any, or what number of islands may exist nearer to the Pole, we must of course remain ignorant till the Polar Sea has been further explored.

For the little which is known of this sea, we are indebted to that spirit of discovery which showed itself immediately after a passage to the East Indies had been effected round the Cape of Good Hope; not so much, it is true, for the sake of geographical discovery as that of shortening the passage by sea to the eastern parts of the world. It was obvious that if a ship could proceed from the Atlantic to the Pacific on a great circle of the sphere, or nearly so, the distance, compared with the circuitous passage round Southern Africa or Southern America, would be prodigiously shortened. The voyage of Columbus had that object; but it was soon discovered that, from the Straits of Magelhaens to the Gulf of St. Lawrence there was an uninterrupted continuity of land. Of the northern regions the information obtained has been scanty and discouraging for such an enterprise. One of the Scandinavian pirates had, indeed, been driven by stress of weather, as early as the middle of the 9th century, upon an island to the northwest, to which, from its appearance, he gave the name of Snowland, which was afterward changed to that of Iceland, by the leader of the Norwegian colonists who took refuge on that inhospitable spot; but it was not till more than a century after this that Eric Randa discovered the southern part of Old Greenland, and there are grounds for believing that in the year 1001 some of these colonists discovered Newfoundland and the coast of Labrador.

Of the South Polar Sea little or nothing may be said to be known. Captain Cook, in the years 1773 and 1774, crossed the antarctic circle in *five* places only; in longitude 39½° east, where he advanced to latitude 67½°, and met with fields and detached pieces of ice; in longitudes 101° and 110° west, between which he proceeded to latitude 71° 10′ south, the farthest progress made by him toward the South Pole, where he was stopped, or at least deemed it prudent to return, on account of the fields and mountains of ice which were scattered over the surface of the sea; and in longitudes 136° and 148° west, between which he descended to latitude 68°, and saw many floating ice islands. There are, therefore, still remaining about 340 degrees of longitude in which the antarctic circle has not been crossed, and full half the circumference of the globe which has not been visited lower to the southward than the parallel of 60° south latitude.

Mr. Weddell, a master in the navy, proceeded some three degrees farther south than Cook; and since that, two ships of Mr. Enderby discovered a long tract of land, the extent of which they did not determine.

There was little doubt of the existence of high land in the South Polar Sea, though Cook discovered none beyond the Southern Thule, or Sandwich Land, on the parallel of 60°. Without high, precipitous land, those large icebergs which he met with floating among the fields of ice could not have been formed; the *hummocks* of ice, occasioned by the agitation of the sea, and the meeting of the *fields* or *flaws* in opposite directions, seldom rise to the height of twelve or fifteen feet above the surface. The Russians, indeed, on a recent voyage of discovery, are said to have fallen in with many islands about the 70th parallel of latitude. They also circumnavigated the Sandwich Land, which was left undetermined by Cook, and conjectured that it might be a part of the great Southern Continent, which occupied so much attention of the geographers and philosophers of the last century. This idea was renewed by the recent discovery of a very considerable extent of land to the southward of Cape Horn, in latitude 63°, and seen extending from longitude 55° to 65° west. As the eastern extremity had not been seen, and the winding of the coast was to northeast, it was conjectured that it might unite with the Southern Thule of Cook, and form the long-sought-for Southern Continent. It is said, however, that the Russians have also circumnavigated this land, and that it is composed of a great cluster of islands.

The land in question has been called South Shetland, but it is no new discovery. In the account of the voyage of *the five ships of Rotterdam*, under the command of Jacob Mahn and Simon de Cordes, to the South Seas, in the year 1599, it is stated that, on approaching the Strait of Magelhaens, the yacht commanded by Dirk Gherritz was separated from all the other ships, and was carried by tempestuous weather to the south of the Strait, to 64° south latitude, where they discovered a high country, with mountains, which were covered with snow, like the land of Norway. This land of Gherritz was marked on some of the old charts, but discontinued on the more modern ones, from the uncertainty of its position with regard to longitude. There can be no doubt of its identity with the modern South Shetland. It answered to the description of the mountains of Norway, covered with snow, and is wholly barren, having neither tree nor shrub of any kind. It is unnecessary to say that it is uninhabited, there being no such people in the southern hemisphere as the Esquimaux; and it may be remarked, that no human beings are found in the Southern Ocean below the 55th

parallel of latitude, and none beyond the 50th, except on Patagonia and Tierra del Fuego. On the shores, the seals and sea-horses, which had remained from the Creation undisturbed, were so numerous, that on the first notice of the rediscovery, a whole fleet of vessels from England and North America crowded thither on speculation; but the loss of several from tempestuous weather, and a dangerous navigation, and the destruction and alarm of the objects of their cupidity, will probably cause it, for some time at least, to remain as much a land of desolation as it had been before.

For an account of Polar Sea expeditions, *see* ARCTIC OCEAN. Refer to PARRY'S *Voyages*; FRANKLIN'S *Expeditions*, etc.; *American Journal of Science*, xvi. 124; *Westminster Review*, xxxi. 273; *American Quarterly Review*, iv. 215; BLACKWOOD'S *Magazine*, ii. 368, iv. 157; *Eclectic Magazine*, xii. 43, xx. 60, xix. 414; *Edinburgh Review*, xlviii. 428, lxi. 223, lxiii. 151; *Quarterly Review*, xxviii. 372, xxxvii. 523, xxxviii. 335, lvi. 151, lxvi. 218; *North British Review*, xvi. 236, xxiv. 195, 275, 453, xxxi. 291, xxxvi. 45, 241; *Living Age*, xxv. 18, xxvi. 572, xx. 289; FRASER'S *Magazine*, xxxviii. 603; DE BOW'S *Review*, xiii. 1.

Policy of Insurance, or **Assurance**, of ships, is a contract or convention by which a person takes upon himself the risks of a sea-voyage, obliging himself to make good, in part or in whole, the losses and damages that may befall the vessel, its equipage, tackle, victualing, lading, etc., either from tempests, shipwrecks, pirates, fire, war, reprisals, in consideration of a certain sum, more or less according to the risk; which sum is paid down to the assurer by the assuree upon his signing the policy.—*See* INSURANCE.

Polynesia ("many islands") includes the multitude of islands scattered over the Pacific Ocean, and comprehends a belt chiefly within 30° on each side of the equator, and from longitude 135° E. to 135° W. Including New Zealand, the boundary extends south of the equator to lat. 47° S. The islands are distributed into numerous groups, and these groups, of an elongated form, have a general direction from northwest to southeast, and are composed of one or more larger islands, and numerous smaller ones. The principal groups to the north of the equator are the Pelew, Ladrone, or Mariane, Caroline, Radack, Marshall, Gilbert, and Sandwich Islands. South of the equator are New Ireland, New Hebrides, New Britain, Feejee, Friendly, Navigator's, Solomon's, Society, Mendana or Marquesas, Low Archipelago, Cook's, Austral, and other minor groups, besides numerous detached islands, as Easter and Pitcairn islands. With the exception of Hawaii, the largest island of Polynesia, the most considerable of the others range from 20 to 60 and 100 miles in circumference, while many do not exceed a mile or two in length. These islands are all, more or less, of coral formation; the Low Archipelago, Society Islands, Marshall, and Carolines, presenting the regular atoll form, with circular reefs and lagoons. The Friendly, New Hebrides, Solomon's, and Sandwich Islands, present fringed reefs, and have active volcanoes; summits of mountains varying from 2000 to 13,000 feet. In the lower coral islands the elevations do not exceed 500 feet. In the atoll coral islands, Darwin has supposed that a depression of surface is taking place, and that the volcanic islands are either stationary or rising. From the great predominance of ocean, the temperature of Polynesia is comparatively moderate, the climate delightful and salubrious. Mean annual temperature of Sandwich Islands 77°; temperature of Society Islands, 70° to 80°, and rarely 90°, Fahrenheit. The southeast tropical winds generally prevail, but northwest and southwest winds are not uncommon. Hurricanes are rare, and earthquakes slight and not of frequent occurrence. The refreshing coolness of the trade-winds, and a regular but not excessive supply of moisture, are favorable to a luxuriant vegetation. Soil in the valleys and in the river courses a rich volcanic mould; on the mountains less fertile. Both vegetable and animal productions are limited as to number of species. In the islands of the middle and eastern divisions not more than 500 species of plants are found. This number increases toward the west and northwest. The bread-fruit, peculiar to this region, the cocoa, banana, plantain, banyan, sugar-cane, yam, and cotton-plant, paper-mulberry, and a species of chestnut, are indigenous. Other trees and plants of tropical climates have been introduced and flourish; and arrow-root, sweet potatoes, the common potato, and maize, are now reared abundantly. There are several timber trees, especially sandal-wood, a few spices, and ornamental flowers, which, however, have little odor or decided color. The islands were all remarkably deficient in animals, thus indicating their isolated and comparatively recent origin. Turtles resort in great numbers to many localities, and fish are plentiful on the coasts. Several species of whales, the cachalot or sperm whale, Cape whale, humpback, and blackfish, are peculiar to the seas of the Pacific, and their capture has been the chief inducement for ships visiting these regions. Oxen have been introduced from New South Wales, and thrive well; and horses from South America. The natives of Polynesia are in general a well-formed, tall, active, and intelligent people. There are two distinct races, one apparently of Malay origin, by far the most numerous and intellectual, and spread over all Central and Eastern Polynesia, and speaking one common language, though varying in dialects. The other a negro or Papuan race, with negro features and color, and crisped mop-like hair, growing in separate tufts, speaking a distinct language, and exhibiting an intellect of an inferior grade, probably the first settlers of the islands, and now confined to the western part of Polynesia, and inhabiting partly or wholly New Guinea, New Britain, New Ireland, the Solomon Islands, New Caledonia, New Hebrides, and part of the Ladrone Islands. Some of the western islands, as the Ladrones, were discovered by Magelhaens in 1521, the Marquesas by Mendaña in 1595; but it was not till 1767 that Wallis, and subsequently Cook, explored and described the leading islands of this region. Soon after this, missionaries began to settle in the islands, and after many discouragements at last have succeeded in promoting Christianity and civilization in some of the principal islands; though cannibalism and savage ferocity still prevail in the majority. The population of these islands varies continually from wars, migrations, and occasional pestilence. Tahiti and some others, when first discovered, were conjectured to be greatly more populous than at present, but no proper data exist for affording even an approximation to the real numbers. Probably the population of the whole of Polynesia does not exceed one million or one million and a half. —HARPER'S *Gazetteer*.

Pomegranate (Ger. *Granatäpfel*; Fr. *Grenades*; It. *Granati*, *Melagrani*; Sp. *Granadas*), the fruit of the pomegranate-tree (*Punica granatum*). This tree, which grows to the height of 15 or 20 feet, appears to be a native of Persia, whence it has been conveyed, on the one side, to Southern Europe, and on the other to the tropical parts of Asia, and eventually to the New World. The fruit is a pulpy, many-seeded berry, the size of an orange, covered with a thick, brown, coriaceous rind. The pulp has a reddish color, and a pleasant sub-acid taste. The value of the fruit depends on the smallness of the seed and the largeness of the pulp. The finest, called by the Persians *badana*, or seedless, is imported into India from Cabul and Candahar, where the pomegranate grows in perfection. The tree thrives all the way to the equator; but within the tropics the fruit is hardly fit for use. The pomegranates brought to market from the south of Europe and the West Indies are very inferior to those of Persia.

The *Punica granatum* is a tree, in magnitude and ligneous character, bearing considerable resemblance

to the common hawthorn. In a wild state it forms a thorny bush; but when cultivated in gardens and in plantations, under favorable circumstances, it often attains a height of 15 or 20 feet.

The *Punica granatum* is indigenous to Barbary, Persia, Japan, and various parts of Asia; and has long been naturalized in the south of Europe, the West Indies, and in South America. In the Himalayas, Mr. Royle informs us that the pomegranate grows wild, and also that it is planted near villages. It forms quite a wood in Mazanderan, whence the dried seeds are exported for medical use. The famous seedless pomegranates are grown in the rich gardens lying under the snowy hills near the River Caubul. They are also described as delicious about Hadjiabad, and throughout Persia. "Though grown in most parts of India," says Mr. Royle, "large quantities, of superior quality, are yearly brought down by the northern merchants from Caubul, Cashmere, and Boodurwar." The pomegranate-tree, which partakes of the antiquity of the vine, the fig, and the olive—and which, a point of utility, is numbered with the grain-bearing plants, and with honey, all constituting the principal food of the Eastern nations, in the early stages of civilization—must possess no small degree of historical interest. It is mentioned by Theophrastus under the name of *roa*; the Phœnicians called it *sida*; the Greeks *cytinos*; and the Romans, according to Pliny, *malus punica*.

The general diffusion of the pomegranate throughout the climates suited to its growth, implies that it possesses highly valuable properties. In hot countries its utility is incontestable; for its juice is most grateful to the palate, and assuages thirst in a degree quite peculiar to it, from its pleasant acid—an acid so soft that it may, in truth, be said to be "full of melting sweetness," as Moore expresses himself. The pulp, however, which incloses the seeds, is sometimes acid, sometimes sweet; and in some cases vinous, astringent, and always refreshing. A sirup is made from the pulp by the druggists, as well as from the dried flowers, which is employed as an astringent and detergent. The rind of the fruit, on account of its astringent properties, is sometimes employed in *materia medica*, as well as in the veterinary art. It has also been used as a substitute for galls, in the manufacture of black ink, and is said to be still employed in some parts of Germany in dyeing leather red, in imitation of morocco. In the Himalayas, Mr. Royle informs us, the rind of the fruit, called *naspal*, "being very astringent, is used in medicine, as well as in dyeing. The employment by the natives of India of the bark of the root for the expulsion of the tape-worm, being now well known, since the subject was communicated by Drs. Hamilton and Fleming, is a remarkable instance of the oblivion into which even a valuable medicine may fall, as this property was well known to Dioscorides." Lord Bacon recommends the juice of pomegranates as good for liver complaints; and Dr. Woodville says it is preferable to that of oranges in cases of fever. From the flowers, with the addition of alum, there may be obtained a fine red ink. The flowers, also, were formerly used to dye cloth a light red.—BROWNE's *Trees of America*.

Ponce. *See* PORTO RICO.

Pondicherry. The name of Pondicherry is made to include all the French possessions in India, because it is the most considerable of them. It is situated on the Coromandel coast of Hindostan, in latitude 11° 57′ N. Its population in 1836 was 52,127, of whom 696 were Europeans. The French possessions in India comprise also Chandarnagore, Karikal, in the Carnatic; Mahé, in Malibar; Yanaon, in Orissa; with the territory attached to each. These have a total population of 166,000, of whom 1000 are whites. The products are rice, grain, cocoa-nuts, betel, indigo, tobacco, and cotton. The annual value of the imports is about $373,000, and of the exports about $1,200,000. The trade, nearly all being at Pondicherry, is with the Coromandel coast, Isle of Bourbon, the Mauritius, and Senegal. Pondicherry would have been a commercial point of great magnitude but for the changes of ownership, occasioned by the frequent wars of France and England. The law of the 17th May, 1826, provides that the distinction between the French and foreign factories in India shall be suppressed in the tariff, and that merchandise from any of these settlements shall pay no other duties than are imposed on the same articles brought from the French settlements.

Poplar (Ger. *Pappel*, *Pappelbaum*; Du. *Popelier*; Fr. *Peuplier*; It. *Pioppa*; Sp. *Alamo*; Lat. *Populus*). Of the poplar (*Populus* of botanists) there are about 15 species described. In most favorable situations the white poplar grows with great rapidity, sometimes sending forth shoots 16 feet long in a single season. The wood is soft, and not very durable unless kept dry; but it is light, not apt either to swell or shrink, and easily wrought. The Lombardy poplar grows rapidly, and shoots in a complete spire to a great height; its timber does not differ materially from that of the white poplar. It is very light, and is therefore well adapted for the manufacture of packing-cases. None of the species is fit for large timbers.—TREDGOLD's *Principles of Carpentry*; *Vegetable Substances*, *Library of Entertaining Knowledge*.

Population. It would be quite inconsistent with the objects and limits of this work to attempt giving in this place any explanation of the laws which regulate the progress of population. However, as it is frequently of importance in commercial questions, and in others affecting commercial interests, to be able to compare the consumption of an article with the population, we believe we shall gratify our readers by laying before them the following Table, showing the comparative population of the principal commercial countries of the world:

Countries.	Population.	
Austrian Empire, 1842..	35,730,112	
	Austria.....	23,062,561
	Hungary.....	7,864,262
	Lombardy and Venice..	4,803,289
British Empire.....	27,435,925	
	England and Wales....	17,906,831
	Scotland.....	2,879,784
	Islands in British seas..	142,016
	Ireland.....	6,515,794
	Colonies.. 5,224,477	
	North America.....	2,181,270
	West Indies.....	900,882
	Africa.....	411,463
	Australia.....	469,000
	Asia.....	1,551,350
	Europe.....	411,463
France, 1846.....	35,400,486	
	Colonies, 1841, 739,496, viz.:	
	Asia.....	167,700
	Africa and Algeria.....	272,469
	West Indies.....	255,689
	N. and S. America.....	23,348
	Australia.....	20,200
Prussia, 1849.....	16,331,187	
	Protestants.....	9,835,583
	Catholics.....	6,040,292
	Jews.....	214,867
Russian Empire, 1846...	60,008,315	
	European Russia.....	54,092,300
	Siberia.....	2,937,000
	Trans-Caucasian.....	2,648,000
	American.....	61,000
	Poland.....	4,857,700
	Finland.....	1,412,315
United States, 1851.....	23,074,706	
	White.....	19,655,202
	Free colored.....	418,573
	Slave colored.....	3,000,931
Bavaria, 1847.....	4,519,526	
	Catholics.....	3,063,694
	Protestants.....	1,181,216
	Jews.....	50,288
Belgium, 1849.....	4,353,090	
Brazil, 1850.....	5,180,000	
	now 6 to 7,000,000	
Denmark, 1845.....	2,296,497	
	Denmark proper.....	1,407,747
	Duchies.....	888,750
	Colonies.....	119,491

Countries.	Population.	
Egypt	1,927,000	
Greece	637,700	
Hamburg	188,054	
Holland, 1849	3,241,990	
	Colonies	21,786,700
Mexico, 1837	7,557,000	
Papal States, 1843	2,008,115	
Portugal, 1841	3,412,500	
	Possessions	1,722,140
	Azores	330,500
	In Africa	706,610
	In Asia	381,720
	China and Oceanica	323,310
Sardinia, 1838	4,650,308	
	Continent	4,125,725
	Isle of Sardinia	524,633
Spain, 1833	12,886,841	
	Colonies	3,717,433
Sweden & Norway, 1846	4,645,007	
	Sweden	3,316,536
	Norway	1,328,471
Turkey	35,350,000	
	Europe	15,500,000
	Asia	16,050,000
	Egypt, Tripoli, Tunis	3,800,000
Two Sicilies, 1845	8,423,316	
	Naples	6,382,706
	Sicily	2,040,610
China	367,000,000	
	Uncertain.	
COLONIES.		
British Possessions.		
Indies	154,316,120	
	British States	98,785,852
	Native States	52,650,051
	Foreign States	171,217
Canada, 1848	1,491,626	
	Eastern	768,354
	Western	723,292
Cape of Good Hope	163,116	
Australia, 1848		
New South Wales	212,000	
Western, 1848	4,622	
Van Diemen's Land, 1850	80,000	
South, 1849	45,907	
Jamaica, 1850	490,000	
Ceylon, 1843	1,442,062	
Mauritius, 1846	161,080	
French Possessions.		
Hayti	700,000	
Spanish Possessions.		
Cuba, 1850	1,400,000	
Dutch Possessions.		
Java	9,500,000	

For disquisitions on the law of population, see writings of MALTHUS, GODWIN, A. H. EVERETT, GRAY, SADLER, THORNTON, DOUBLEDAY. The subject of population is discussed in the following periodicals: *Westminster Review*, lii. 153, xlvii. 100, lvii. 408; *Quarterly Rev.* xlv. 97, xxvi. 148, xvii. 369, liii. 30; *Bankers' Mag.*, New York, iii. 457, 528 (J. H. ALEXANDER); *North Am. Rev.* lxvii. 370 (BOWEN), xxxiii. 1 (A. H. EVERETT), xvii. 288 (E. EVERETT), xxiv. 218 (SPARKS), xv. 989; HUNT'S *Merchants' Magazine*, vii. 241, 337, 529, viii. 240, 330 (TUCKER); *Edinburgh Review*, xvi. 464, xxxv. 362, li. 297, lii. 504, lxxxv. 85; *Monthly Review*, ciii. 80; BLACKWOOD'S *Magazine*, xxviii. 109, xxix. 392, xxi. 377; *British Quarterly Review*, iv. 115; *American Almanac*, 1837, 1818; *Democratic Review*, xxi. 397 (A. H. EVERETT), xvii. 297, 379, 408 (TUCKER), xxii, 11.

Porcelain, or China Ware, a very fine species of earthen-ware. The first specimens of this fabric were brought to Europe from China and Japan. The best Chinese porcelain is of a very fine texture, white, semi-transparent, and sometimes beautifully colored and gilt; is infusible, and not subject to break by the sudden application of heat or cold. The Chinese term for the article is *tse-ki*. But the Portuguese, by whom it was first brought in considerable quantities into Europe, bestowed on it the name of porcelain, from *porcella*, a cup. Common earthen-ware, sometimes of a very good quality, is manufactured in Canton, Fokien, and several other provinces of China. But it is a curious fact that the beautiful porcelain imported into Europe is made only in the town of Kingtesing, in the province of Kyangsi. Its manufacture is fully described by Duhalde, in his account of China, under the head "Porcelain and China-ware." The porcelain of Japan is decidedly inferior to that of China; very little is imported, and it is valued only as a curiosity. After porcelain began to be imported, its beauty soon brought it into great request, notwithstanding its high price, as an ornament for the houses and tables of the rich and the great. The emulation of European artists was in consequence excited. Very little information was, however, obtained as to the mode of manufacturing porcelain till the early part of last century, when the process was developed in a letter from a French Jesuit in China, who had found means to make himself pretty well acquainted with the subject. The knowledge that thus transpired, and the investigations of Reaumur and other chemists, prepared the way for the establishment of the manufacture in Europe. It was first commenced at Dresden, which has been famous ever since for the beauty of its productions; but the finest and most magnificent specimens of European china have been produced at Sèvres, in France, in the factory carried on at the expense of the French government.

British Porcelain Manufacture.—This, though unable to boast of such fine specimens of costly workmanship as have been produced at Sèvres and Dresden, is of much greater national importance. Instead of exclusively applying themselves to the manufacture of articles fitted only for the consumption of the rich, the artists of England have exerted themselves in preference to produce China-ware suitable for the middle classes; and have succeeded in producing articles at once excellent in quality, elegant in form, and cheap. We are principally indebted for the improvements made in this important manufacture to the genius and enterprise of the late Mr. Josiah Wedgwood. This extraordinary man owed none of his success to fortuitous circumstances. Devoting his mind to patient investigation, and sparing neither pains nor expense in accomplishing his aims, he gathered round him artists of talent from different countries, and drew upon the stores of science for aid in pursuing the objects of his praiseworthy ambition. The early and signal prosperity that attended his efforts served only as an incentive to urge him forward to new exertions, and as means for calling forth and encouraging talent in others, in a manner calculated to promote the welfare of his country. Previously to his time, the potteries of Staffordshire produced only inferior fabrics, flimsy as to their materials, and void of taste in their forms and ornaments; the best among them being only wretched imitations of the grotesque and unmeaning scenes and figures portrayed on the porcelain of China. But such have been the effects resulting from the exertions and example of this one individual, that the wares of that district are now not only brought into general use in England, to the exclusion of all foreign goods, which had been largely imported, but English pottery has since been sought for and celebrated throughout the civilized world, and adopted even in places where the art was previously practiced. An intelligent foreigner, M. Faujas de St. Fond, writing on this subject, says: "Its excellent workmanship, its solidity, the advantage which it possesses of sustaining the action of fire, its fine glaze impenetrable to acids, the beauty and convenience of its form, and the cheapness of its price, have given rise to a commerce so active and so universal, that, in traveling from Paris to Petersburg, from Amsterdam to the farthest part of Sweden, and from Dunkirk to the extremity of the south of France, one is served at every inn upon English ware. Spain, Portugal, and Italy are supplied with it; and vessels are loaded with it for both the Indies and the continent of America."—See the quotation in the *Account of the Porcelain Manufacture*, p. 16, in LARDNER'S *Cyclopædia*. For the statistical details with respect to the manufacture, see the article EARTHEN-WARE. The

British porcelain manufacture is principally carried on at the potteries in Staffordshire, and at Worcester, Derby, Colebrook Dale, and other places.

Murrhine Cups.—It was long a prevalent opinion among modern critics that the *vasa murrhina*, so famous in Roman history, were formed of porcelain. Pompey was the first who brought them to Rome from the East, about 64 years before the Christian era. They were used as drinking-cups, and fetched enormous prices; Nero having given, according to the common method of interpreting, £58,000 for a single cup! The extravagance of the purchaser may, in this instance, be supposed to have increased the price; so that the degree of estimation in which these cups were held may be more accurately inferred from the fact that, of all the rich spoils of Alexandria, Augustus was content to select one for his share.—SUETONIUS, lib. ii. c. 71. Pliny (lib. xxxvii. c. 2) says they were made in Persia, particularly in Karamania. But those who contend they were China-ware, chiefly found on the following line of Propertius:

Murrheaque in Parthis pocula COCTA FOCIS.—Lib. iv.

In despite, however, of this apparently decisive authority, Le Bland and Larcher have, in two very learned dissertations (*Mémoires de Littérat.* tom. xliii.), which Dr. Robertson has declared are quite satisfactory, endeavored to prove that the *vasa murrhina* were formed of transparent stone, dug out of the earth in some Eastern provinces, and that they were imitated in vessels of colored glass.—ROBERTSON'S *Disquisition on India*, note 39. Dr. Vincent (*Commerce and Navigation of the Ancients*, vol. ii. p. 725) inclines to the opposite opinion; but the weight of authority is evidently on the other side. At all events, it is plain that if the murrhine cups were really porcelain, it had been exceedingly scarce at Rome, as their price would otherwise have been comparatively moderate. But it is most probable that the ancients were wholly unacquainted with this article; which, indeed, was but little known in Europe till after the discovery of the route to India by the Cape of Good Hope. For some further details on this question, *see* KIPPINGII, *Antiq. Rom.* lib. iv. c. 3.—See *American Journal of Science*, xxvi. 233; *American Monthly Review*, ii. 117.

FOREIGN IMPORTATIONS AND EXPORTATIONS, DOMESTIC EXPORTS OF THE MANUFACTURES OF CHINA, PORCELAIN, EARTHEN AND STONE WARE, OF THE UNITED STATES.

Years.	Foreign Importations.	Foreign Exports.	Domestic Exports.
1840	$2,070,231	$63,754	$10,959
1841	1,536,450	51,570	6,737
1842	1,557,161	37,040	7,618
1843	588 036	26,338	2,907
1844	1,633,482	27,280	4,884
1845	2,439,515	22,701	7,303
1846	2,525,349	63,403	6,524
1847	2,212,241	32,690	4,758
1848	2,332,996	36,148	8,512
1849	2,261,331	39,048	10,632
1850	2,601,393	42,261	15,634
1851	3,340 622	41,100	23,000
1852	3,441,095	23,834	18,310
1853	8,178,182	15 133	53,685
1854	4 137,691	55,925	33,367
1855	3,717,670	73,092	52,119
1856	3,347,884	40,091	66,696
Average	$2,526,772	$40,723	$18 4 0

In consequence of a change in the fiscal year in 1843, but nine months are represented in that year.

Pork, the flesh of the hog. Salted and pickled pork forms a considerable article of export to the West Indies and other places.

The exports of pork from the U. States for the year ending June 30, 1857, were from the following ports:

	Barrels.	Value.
Boston	22,782	$479,539
New York	64 466	1,190,375
Baltimore	12,218	226,376
Other ports	44,389	909,777
Total	143,850	$2,805 867

TABLE EXHIBITING THE QUANTITIES AND VALUE OF PORK, BACON, AND LARD EXPORTED FROM THE UNITED STATES TO GREAT BRITAIN, FROM 1830 TO 1855, BOTH YEARS INCLUSIVE.

Years.	Pork.	Hams and Bacon.	Lard.	Value.
	Barrels.	Pounds	Pounds.	Dollars
1830	2,200	1,646	....	20,832
1831	130	2,865	....	1,893
1832	2,705	602	....	29,378
1833	921	7,430	600	10,907
1834	....	4,994	....	408
1835	12	1,815	....	845
1836	....	11,461	....	1,205
1837	....	400	....	40
1838	....	667	....	88
1839	10	150	....	241
1840	....	1,061	....	115
1841	4,709	26,394	44,305	80,379
1842	6,900	160,274	3,430,732	237,028
1843	3,230	656,328	4,509,484	305,293
1844	10,280	350,189	8,976,805	643,705
1845	14,140	96,907	5 687,675	4 7,066
1846	13,001	530,626	8,211,389	768,226
1847	73,940	14,307 105	17,798,770	3,411,557
1848	87,760	29 21 ,462	27,758,841	5,283,259
1849	111,885	58,1 0,465	21,808,265	6,482,194
1850	44,031	37 ,077,709	2 ,092,591	4 381,939
1851	9,188	14,723,109	3,623,783	1,587,351
1852	1,632	3,207,093	8,070,124	1,075,299
1853	17,156	13,297,379	9,725,186	2,290,004
1854	43,664	38,8 .0,737	20,715,141	6,193,894
1855	*54,663	30,240,161	15 349,922	5,915,120

* 5679 tierces were also exported in 1855.

EXPORTS OF PORK FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1855.

Whither exported.	Tierces.	Barrels.	Value.
Swedon and Norway	....	60	$975
Swedish West Indies	....	115	2,634
Danish West Indies	....	2,429	40,742
Hamburg	....	32	520
Bremen	....	176	2,819
Holland	3	45	745
Dutch West Indies	....	339	4,351
Dutch Guiana	....	1,797	33,040
Dutch East Indies	....	25	413
Belgium	....	1,491	24,836
England	4326	27 832	641,896
Scotland	....	724	11,654
Gibraltar	....	225	3,073
Malta	....	362	7,144
Canada	....	56,018	897,116
Other British N. A. Poss.	....	30,855	521,380
British West Indies	34	23,950	415,209
British Honduras	....	4,428	71,558
British Guiana	....	11,723	185,429
British Poss. in Africa	....	556	9,707
Other ports in Africa	....	637	10,457
British Australia	119	1,972	51,147
New Zealand	....	387	6,100
British East Indies	....	155	2,481
France on the Atlantic	....	29.123	594,138
France on the Mediter'n	....	33,755	679,826
French N. A. Possessions	....	423	7,715
French West Indies	....	505	9,627
French Guiana	....	621	12,745
Spain on the Atlantic	....	42	921
Spain on the Mediter'n	....	10	146
Canary Islands	....	30	540
Philippine Islands	....	75	1,175
Cuba	....	4,321	77,795
Porto Rico	....	3,715	65,820
Portugal	....	14	219
Cape de Verd Islands	....	20	367
Sardinia	....	3,204	51,553
Austrian Poss. in Italy	....	24	322
Turkey in Europe	....	3,264	60,068
Hayti	....	17,887	341,038
San Domingo	....	33	735
Mexico	2	....	60
Central Republic	....	270	3,977
New Granada	....	2,004	34,873
Venezuela	....	375	6,401
Brazil	....	82	1,368
Chili	....	2,775	44,440
Peru	....	235	4,586
Sandwich Islands	....	453	7,824
China	....	2,818	46,838
Whale Fisheries	....	1,541	26,053
Total	4484	274,600	$5,029,940

—*See* PROVISIONS.

Pork Trade of the West.—The *Cincinnati Price Current* contains returns of the pork trade from all the principal points in the West for the seasons of 1855-'56,

and 1856–'57. The following is a recapitulation by States of the number of hogs packed:

States.	1855–'56.	1856–'57.
Ohio	633,697	483,048
Kentucky	428,334	349,212
Indiana	482,531	316,629
Illinois	481,258	363,202
Missouri	189,904	149,244
Iowa	172,378	105,322
Tennessee	62,400	42,811
Wisconsin	39,000	15,000
Grand totals	2,489,502	1,818,468
	1,818,468	
Total deficiency, 1857.	671,034	

Port, a harbor, river, or haven, formed either by nature or art to receive and shelter shipping from the storms and waves of the open sea. Artificial ports are those which are either formed by throwing a strong mound or rampart across the harbor's mouth to some island or rock, or erecting two long barriers, which stretch from the land on each side like arms or the horns of a crescent, and nearly inclose the haven. The former of these are called *mole-heads*, and the latter *piers*.

Port is also a name given on some occasions to the larboard or left side of the ship, as in the following instances. Thus it is said, "The ship heels to port;" that is, stoops or inclines to the larboard side. "Top the yard to port," the order to make the larboard extremity of a yard higher than the other. "Port the helm," the order to put the helm over the larboard side the vessel. In all these senses this phrase appears intended to prevent any mistakes happening from the similarity of sounds in the words *starboard* and *larboard*, particularly when they relate to the helm, where a misapprehension might be attended with very dangerous consequences.

Ports, the embrasures or openings in the side of a ship of war, wherein the artillery is ranged in battery upon the decks above and below.

Port-au-Prince, the capital of Hayti, or St. Domingo, in lat. 18° 33′ 42″ N., long. 72° 27′ 11″ W. Population variously estimated, probably from 18,000 to 20,000. It is situated on the west coast of the island, at the bottom of a large and deep gulf. It was founded in 1749; since which, with few intervals, it has been the capital of French St. Domingo, as it is now of the entire island. It is partially fortified; the harbor being protected by a battery on a small island at a little distance from the shore. The country round is low and marshy; and the heat in the summer months being excessive, the climate is then exceedingly unhealthy. The buildings are principally of wood, and seldom exceed two stories in height. The entrance to the harbor is between White Island and the southern shore. The depth of water varies from about 18 feet at ebb to about 21 feet at full tide. It is customary, but not compulsory, to employ a pilot in entering the harbor. They are always on the look-out. Ships moor head and stern, at from 100 to 500 yards from shore; loading and unloading by means of boats, as there are neither docks nor quays to assist these operations. The harbor is perfectly safe, except during hurricanes, which may be expected from August to November. The commerce of Port-au-Prince is carried on by various classes of persons. The imports from Europe and America are principally consigned to European and North American commission houses, besides a few Haytien establishments. The capital is one of the ports to which foreign merchants are confined by the law of patents; but they are restricted by heavy penalties to a wholesale business with Haytiens, and to a minimum amount of goods. Of course they can not deal with the consumers, but with the native retailers, who are chiefly women, styled "merchandes;" these employ hucksters, also women, who traverse the country, attend the markets, and give an account of their transactions to their employers, either every evening, once a week, or once a month, according to their character for integrity.

This city, being the capital of the empire, centralizes the large bulk of Haytien foreign commerce. It is true that less than a third of the vessels engaged in this foreign commerce depart from its ports with full cargoes; but this is owing to the fact that it is unable to supply sufficient exports, and the laws of Hayti permit foreign vessels, after unloading at the first port, to proceed to others to make up their cargoes. The general navigation from 1846 to 1850 comprised, arrivals and departures, 1448 vessels, with an aggregate of 219,810 tons, or an annual average of 290 vessels of 43,962 tons. The flags which enter into the foreign trade of this port are, the United States, French, English, Danish, Belgian, Hamburgian, and Bremen. Notwithstanding the great efforts made by Great Britain and France in 1847 and 1848 to ameliorate the commercial and agricultural condition of Hayti, its general commerce, during the five years ending with 1850, declined at least thirty-three per cent. when compared with the preceding five years. Its European commerce, more especially, is yearly declining, while its general trade with the United States has largely increased. The number of American vessels entered and cleared during the last six months of 1854 was 122, with an average of 200 tons each. Total value of cargoes inward, $488,[illegible], consisting chiefly of provisions, lumber, and dry goods. Cargoes homeward consisted of logwood, coffee, and hemp, the value of which is omitted in the official returns. Assuming the navigation between the United States and this port to have been as active the first six months of 1855 as the last, the figures for the whole year would stand thus: Total number of American vessels entered and cleared at Port-au-Prince in 1854, 244. Official returns give as the total for 1852, 210; 185[illegible] 189; which shows an increase for each successive year.—*Commercial Relations of the United States.*

Port Aux Cayes, a sea-port of Hayti, is one of the most important of the empire. In 1850 there entered and cleared 372 vessels, measuring an aggregate of 50,574 tons. The city is generally reputed one of the most progressive in the island, and is the capital of the southern peninsula of Hayti; the best irrigated and most fertile province in the empire. Here, as in the other ports, the United States holds the first commercial rank. The chief imports from the United States are provisions, of which the consumption is heavy. During the past two or three years American merchants have also imported domestic cottons and manufactures of cotton, generally in such quantities, and with such success, as to have already disheartened all foreign competition. The French authority (*Commerce Extérieur*) says, in reference to this singular success of American merchants in this as in the other markets of Hayti: "This species of merchandise (American cottons) is in high repute for its excellent quality. It is superior to that manufactured in England, and is sold at a lower figure." France supplies a small quantity of wines, oils, and fabrics of Marseilles and Paris. Coasters plying between St. Thomas, Curaçoa, and Jamaica, import small packages of European wares, and some provisions, for which they generally find a ready market. The quantity of coffee annually exported from Aux Cayes is estimated at between four and five million pounds. During good seasons this figure rises to six million pounds. In this total, however, are included considerable quantities imported coastwise from the neighboring ports. The district proper of Aux Cayes supplies but little coffee, the principal article of culture being the sugar-cane, the produce of which, first converted into sirup, then manufactured into rum, taffa, etc., supplies the greater part of the island with spirituous liquors. Campeche-wood (logwood), the produce of which is considerable, supplies an export trade of 20,000,000 lbs.

Imports into Aux Cayes, 1850.—From the United States, $266,166; Great Britain, $246,480; France, $39,432; Hanse Towns, $29,574; other countries, $9858; total, $691,510.

Porte, the Sublime. The official title of the government of the Ottoman empire: said to be derived from a gate of the palace at Brousa, the original metropolis of that empire, called Bâb Humayoor, the sublime gate.

Porter, a liquor brewed from malt, part of which has been more highly dried than that used for ale. It is hopped in the same way as ale; and its deep color is finally given to it either by burned sugar, which usually goes under the name of *coloring*, or, more legitimately, by roasted or parched malt. Porter was first brewed in 1722. The malt liquor previously drunk consisted of three kinds—ale, beer, and "twopenny;" and a mixture of either of these kinds was a favorite beverage under the name of "half-and-half;" or a mixture was drunk called "three threads," consisting of equal portions of each of the above kinds of liquor, for a draught of which the publican had to go to three different casks. About 1722, Harwood, a London brewer, commenced brewing a malt liquor which was intended to unite the flavors of ale and beer, or ale, beer, and "twopenny;" and, having succeeded, he called his liquor "entire," or "entire butt," a name intended to intimate that it was drawn from one cask or butt only. A mixture of ale or porter, drawn from different casks, is very commonly drunk in London at the present time. Harwood's liquor obtained the name of porter from its consumption by porters and laborers. From 1722 to 1761, the retail price of porter in London was 3*d.* per pot, when it was raised to 3½*d.*, at which it continued till 1790. It has never been higher than 6*d.*

Porter's Anchor. This anchor is an English patent, and is extensively used at Southampton, and other English ports. Its peculiarity consists in giving to the arms and flukes a freedom of motion round a pivot or fulcrum at the end of the shank, thus departing at once from the rigidity usually observed in the construction of anchors. The arms and flukes are forged wholly independent of the shank, and have a hole drilled transversely through the centre for the reception of the iron bolt which connects them with the shank. The effect of this construction of a swivel anchor is, that when one fluke enters the ground the other necessarily falls down upon the shank, thereby avoiding the danger incident to the upward projection of a sharp point. The objects designed to be attained by this new construction are said to be mainly the two following: the avoidance of the consequence of what is called "fouling," by the cable passing over the exposed fluke of the anchor when the vessel is swinging in a side way; and the avoidance of injury to the vessel itself in the event of falling on her anchor.

Porters and **Porterage.** Porters are persons employed to carry messages or parcels, etc.—*See* CARMEN.

Portland, city, port of entry, and capital, Cumberland county, Maine, is situated on a peninsula at the western extremity of Casco Bay, 60 miles south-southwest of Augusta. It is 105 miles from Boston, *via* the Eastern Railroad, and 111 *via* Boston and Maine, and 294 from Montreal, *via* the Atlantic and St. Lawrence Railroad, and the Kennebec and Portland, and the Androscoggin and Kennebec, connecting it with Augusta and with Waterville. Lat. (Mount Joy), 43° 39′ 52″ N., and long. 70° 18′ 31″ W. from Greenwich, and 7° 49′ 14″ E. from Washington. Population in 1800, 3677; in 1810, 7169; in 1820, 11,581; in 1830, 12,601; in 1840, 15,318; in 1850, 20,815; and in 1854, 25,000. The peninsula projects eastwardly into the bay about three miles, and has an average width of three-fourths of a mile, forming throughout its entire length an elevated ridge, which, inland, rises into considerable hills, presenting a very beautiful appearance. There were in 1856 seven banks, with an aggregate capital of $2,000,000; an insurance office; an extensive establishment making locomotives and railroad cars, employing 175 persons; three iron founderies, three brass founderies, six machine shops, three edge-tool factories, a chain-cable factory, an extensive sperm-oil factory, two plane factories, two piano-forte factories, two tanneries, six lumber-yards, five ship-building establishments, 295 stores of various kinds, and many manufactures of small wares; ten printing-offices, issuing two daily, two tri-weekly, nine weekly, and one semi-monthly publication. Capital employed in manufactures in 1850, $761,850; value of manufactured articles, $2,153,290.

The harbor is capacious and safe, and among the best in the United States. It is protected by islands from the violence of storms, is seldom obstructed by ice, has a good entrance, and is defended by forts Preble and Scammel, the former garrisoned by United States artillery. At the eastern extremity of the city is a tower, 70 feet high, erected for the purpose of observing vessels at sea, and furnished with signals. The harbor is connected by the Cumberland and Oxford Canal, 20½ miles long, with Sebago Pond, and thence with Long Pond, etc. The Atlantic and St. Lawrence Railroad, or, as it is now called in Canada, the Grand Trunk Railroad, was commenced in 1844, and is now complete to Montreal. Through this avenue pass a large proportion of the products of the North and West for shipment to Europe and elsewhere. The foreign commerce of the city is chiefly with the West Indies and Europe. Its chief exports are lumber, ice, fish, provisions, etc. The coasting trade is principally with Boston, and during the summer a steamboat plies daily to that city. Tonnage in 1853, 104,350 tons. Portland was formerly a port of Falmouth, and 130 houses, constituting two-thirds of the village, were burned by the British in October, 1775. It was incorporated under its present name in 1786, and received a city charter in 1832. It was formerly the capital of the State of Maine.

Port Louis, or **Northwest Port**, the capital of the Mauritius, at the bottom of a triangular bay, the entrance to which is rather difficult, in lat. 20° 9′ 56″ S., long. 57° 28′ 41″ E. Every vessel approaching the harbor must hoist her flag and fire two guns; if in the night, a light must be shown, when a pilot comes on board and steers the ship to the entrance of the port. It is a very convenient port for careening and repairing, but provisions of all sorts are dear. In the hurricane months the anchorage in Port Louis is not good, and it can then only accommodate a very few vessels. The houses are low, and principally built of wood. The town and harbor are pretty strongly fortified. Almost all the foreign trade of the island is carried on here.

Porto Rico (*San Juan de*), the capital of the valuable Spanish island of the same name, on the north side of the island, on a peninsula joined to the main land by a narrow isthmus, lat. 18° 29′ 10″ N., long. 66° 7′ 2″ W. The fortifications are very strong. The town, which stands on a pretty steep declivity, is well built, clean, and contains nearly 30,000 inhabitants.

Harbor.—The harbor of Porto Rico has a striking resemblance to that of Havana, to which it is but little inferior. The entrance to it, about 300 fathoms in width, has the Moro Castle on its east side, and is defended on the west side by forts erected on two small islands. Within, the harbor expands into a capacious basin, the depth of water varying from five to six and seven fathoms. On the side opposite to the town there are extensive sand banks; but the entrance to the port, as well as the port itself, is unobstructed by any bar or shallow.

Porto Rico, *Island of*, lies in the same latitude as Jamaica. Though the smallest of the greater Antilles, it is of very considerable size. Its form is that of a parallelogram, being about 110 miles in length from

east to west, with a mean breadth of about 38, containing an area of 3750 square miles. Surface pleasantly diversified with hills and valleys; soil generally fertile. It has, however, suffered much from hurricanes; those of 1742 and 1825 having been particularly destructive. Since the breaking up of the old Spanish colonial system, the progress of Porto Rico has hardly been less rapid than that of Cuba. Her population, which in 1778 was estimated at 80,650, amounted, according to a census taken in 1836, to 357,086, of whom 188,869 were whites, and only 41,818 slaves. It is obvious from this statement that a large proportion of the free inhabitants are colored; but the law knows no distinction between the white and the colored *rotturier*; and this circumstance, as well as the whites being in the habit of freely intermixing with people of color, has prevented the growth of those prejudices and deep-rooted antipathies that prevail between the white and the black and colored population in the United States, and in the English and French islands. The population is now (1853) probably above 500,000.

Porto Rico was discovered by Columbus in 1493, at which period it is said to have had a population of 600,000 souls. In 1509 it was invaded by the Spaniards from St. Domingo, and in a few years the natives were exterminated. The island was explored and conquered by Ponce de Leon, the discoverer of Florida, while prosecuting his voyage in search of the fountain of perpetual youth. Although, during the past fifteen years, agriculture has made great progress on the island of Porto Rico, there yet remains, owing chiefly to the want of labor and good roads, a considerable portion of it uncultivated. Immense plains, which, if planted with the sugar-cane, would reward labor most bountifully, are yet lying untouched by the hand of civilization or culture, because canals are wanting, through which the water by which they are now inundated could be drawn off. The island abounds in excellent timber, but as yet it has yielded no profit to the inhabitants. There are also different kinds of the more valuable woods for cabinet-makers, such as the acajou, polysander, etc.; but they still repose undisturbed amidst the ravines of the mountains. A remedy for these evils might be found in immigration; but it has ever been the policy of the government to discourage the introduction and settlement of foreigners. The laws to that end have been particularly severe in regard to all foreigners, especially to those not professing the Roman Catholic religion. Every foreigner arriving in Porto Rico is compelled, before landing, to give some responsible resident as surety for his good behavior. After six months he must either domiciliate or leave the island. Should he select the former alternative, he must embrace the Roman Catholic faith, the only religion tolerated. An intelligent traveler, who lived for some time on the island, gives the following information relative to the laws under which foreigners could become denizens:

"Previous to the year 1828 strangers were required to produce the most undoubted evidence of being Roman Catholics, in order to become domiciled; and having satisfied the authorities on this point, they were further obliged, after five years' residence, to become naturalized. Before a stranger would be permitted to land, he must give security for good political and moral conduct; and supposing that he could gratify the requirements of the law in all these particulars, such were the jealousy and illiberality of the government, that few could be induced to remain in a country where no prospect of success appeared. In 1828, however, the leniency and more liberal policy of Don Miguel La Tone, the Captain-general, by relaxing the rigor of former requirements, contributed greatly in removing the impediments to the settlement of foreigners on the island. La Tone strictly carried out the spirit of the *Real Cedula* of 1815, having for its object the encouragement of agriculture and commerce in the Spanish colonies. Thus the *domicilio* was procured by paying a trifling sum of money, and by the applicant complying with certain formalities. A considerable immigration was the immediate effect of these measures of La Tone. Lured by the superior fertility of the soil, and the liberal policy of his administration, planters from the neighboring islands of St. Croix and St. Thomas sold their estates, and brought their capital and slaves into Porto Rico. Their example was followed by several planters from the windward British and French islands. Thus seconded by foreign enterprise and foreign capital, the island has continued to prosper in a most extraordinary degree since 1828. But notwithstanding this rapid improvement, and the continued augmentation of its staple exports, this improvement would have been greater, and the exports considerably larger, *but for the oppressive duties upon all articles of necessary consumption, and the frequent heavy exactions made by the government toward the support of the war in Spain.* These causes, by diminishing the profits of the planters, have prevented them from extending their estates. Hence the progress which has been made in the cultivation of the soil is due rather to the continued influx of new settlers with their important capital, than to the prosperity or increased industry of the old."

The slave population is almost the only producing power on the island; but this is so totally inadequate to the wants of the planters, that they are frequently obliged to procure additional help from Cuba. This, however, greatly augments their expenses, since a robust and good-working slave, who in Porto Rico may be valued at $350, can not be purchased in Cuba for less than $600. Sugar and coffee are the staple productions; while tobacco, hides, woods, cotton, fruit, and rum form also a part, though to no considerable extent, of the exports. Tobacco is cultivated entirely by free labor. The five principal commercial ports of Porto Rico are San Juan (the capital of the island), Arecibo, Mayagüez, Ponce, and Guayama.

San Juan, or *St. John*.—Although possessing a magnificent port, considered one of the best on the island, San Juan is not the first commercial place, as the products exported thence are of a very inferior quality. Of the sugar shipped from this port, as well as from the other ports of the island, the United States receive more than two-thirds of the whole. But a small quantity goes to England, and also, though rarely, to France. From the United States are imported codfish and other salt fish; salt meat, boards, lumber, hoops, staves, and butter; from England, boilers for the manufacture of sugar, machinery, small quantities of iron, and heavy supplies of earthen-ware. Spanish vessels take in cargoes at St. Thomas, and discharge at San Juan, thereby avoiding the duty applicable to all vessels from all other adjacent foreign ports, in the ports of Porto Rico. Generally speaking, the whole island of St. Thomas is but a great entrepôt of European and American manufactures destined for the markets of Cuba and Porto Rico—a fact shown by the large amount of importations from St. Thomas into both these islands. The exports from San Juan in 1853 consisted of 11,369,304 pounds of sugar; 5803 hogsheads of molasses; 376 hogsheads of rum; and 910,966 pounds of coffee. It is to be regretted that the port of San Juan, one of the best and safest of the island, should be kept in so deplorable a condition. Six or seven years ago, a vessel drawing 16 to 18 feet water could take in a full cargo at the wharf; at present, a ship of the same tonnage can receive only three-fourths of her cargo, and is compelled to leave the wharf in order to get into water deep enough to take in the balance.

Arecibo, or *Areibo*.—During the last eight years the commercial condition of this port has been highly prosperous. The imports and exports have greatly increased; splendid mansions have been erected, and several commercial houses established. The harbor,

however, is so totally unprotected that vessels are compelled to anchor in a very wide berth, and frequently, during the prevalence of north winds, are forced to retire from the shore and put out to sea. They sometimes receive cargoes under sail, without casting anchor. Accidents are, in consequence, so frequent, that seldom does a year pass without having to record the loss of one or more vessels. Imports are nearly the same as at San Juan; the exports comprise about 10,000 hogsheads of sugar, 3000 of molasses, 1000 of rum, 14,000 to 15,000 quintals of coffee, and a considerable quantity of timber for Spain, to be used in the Spanish shipyards. Arecibo also exports considerable quantities of tobacco to Germany, the United States, and Cuba, amounting in the whole to about 2,500,000 pounds.

Mayagüez, or Mayaguas.—This is the most important port on the island. It possesses large capital, and contains several costly and fine dwellings. Rapidly rebuilt after the great conflagration by which it was destroyed in 1841, Mayagüez has gained in prosperity; having been before that disaster but an inconsiderable village, it has now become the most important city on the island. The surrounding district produces large quantities of coffee, though since 1840 there has been a sensible diminution in that article. For that year the exports amounted to 80,000 quintals, while in 1853 they fell to 43,500 quintals. The coffee of Mayagüez stands in such high repute in America and Germany that purchases are frequently made in advance of the crop. Hence comes also the best sugar of the island, which is mostly imported in American bottoms into the United States. In 1853 there arrived 83 American vessels of 13,272 tons, carrying freight to the value of $223,600; and there cleared 76, of 12,680½ tons, taking cargoes worth $460,013. The molasses from this port is always of the best quality, and much sought after by American and English shippers. Besides coffee, in 1853 there were exported 165½ hogsheads of rum, 8221 hogsheads of molasses, 20,766,033 pounds of sugar, but only 4463 pounds of tobacco, showing a decrease, compared with the preceding year, of over 50,000 pounds. There were, besides, 1000 hogsheads of rum mixed with tabasco pepper (*malagueta*), a preparation constituting now a new and profitable branch of domestic industry. Imports from the United States and England are generally similar to the imports into San Juan. Within the past few years a considerable number of planters, of moderate capital, have engaged in the cultivation of cocoa with perfect success. A few quintals of it sold to Spanish merchants have found a ready appreciation at Barcelona, and the article is considered equal to the cocoa of Caraccas. It is quite probable that, in the course of a few years, cocoa will be largely exported from Mayagüez, and thus supply the deficit caused by the diminution in the exportation of coffee. In addition to the products already specified, Mayagüez exports also considerable quantities of oranges, citrons, and other fruits to the United States.

Ponce.—This port is almost as important, in a commercial point of view, as Mayagüez. In 1853 it exported even more sugar and molasses than the latter. But the long droughts frequently destroy entire crops—no rain falling, oftentimes, for five or six successive months. Notwithstanding, by dint of incessant labor, and by means of artificial irrigation, the industrious planter often succeeds in partially overcoming this drawback, and in securing a passable harvest. Like Mayagüez, Ponce possesses some few vessels, which make regular voyages to and from Spain. In 1853 the exports consisted of 27,804,269 pounds of sugar, 13,161 hogsheads of molasses, 1,876,249 pounds of coffee, 72 hogsheads of rum, and some hides. This trade employed 90 vessels from the United States, carrying 15,616 tons, and entering with cargoes of the value of $173,168; and 80 vessels of 15,208 tons, clearing with cargoes in value $684,662.

Guayama.—The drought, which affects this district even more severely than Ponce, is the chief cause of its commercial decadence. Many of the inhabitants have abandoned their establishments, and gone with their slaves to seek, in the interior of the island, a climate more congenial to the culture of the sugar-cane. The sugar of Guayama shows a fine grain and good color for refinery. In 1853 there entered the port 85 American vessels, having an aggregate of 15,471 tons, importing in value $255,153; and cleared 83, of 14,873 tons, exporting a value of $492,338. The total exports of sugar during the same year were 21,920,511 pounds; of molasses, 11,618 hogsheads; of coffee, 806,683 pounds; and of tobacco, 101,862 pounds.

Mayagüez, Ponce, and Guayama are the three places on the island which possess the greatest number of steam-engines, and machines for the manufacture of sugar. This remark applies in a special manner to Mayagüez, the climate of which is particularly favorable to the development of labor. In 1850 there were put up here ten machines of from 10 to 16 horse-power each. The exportation of rum is not in proportion to that of sugar, owing to the large consumption of that article on the island.

Among the secondary ports of the island, Aguadilla and Humacao are the most considerable. In 1853 the former exported 3,092,302 pounds of sugar, 2,438,788 pounds of coffee, 649 hogsheads of molasses, and 469,956 pounds of tobacco. The latter, in the same year, exported 4,183,233 pounds of sugar, 100,000 pounds of coffee, 1676 hogsheads of molasses, and only 11,220 pounds of tobacco, against 28,300 the preceding year. The great bulk of the coffee shipped from these two ports goes to Trieste, Genoa, and Hamburg. Germany also takes from these ports a considerable quantity of tobacco.

Fajardo and Naguaba have some trade with the French West Indies, with St. Thomas and St. Croix, consisting chiefly in an exchange of live animals and provisions for the imports from those islands. Their sugar, however, amounting annually to about 5000 hogsheads, is almost exclusively sent to the United States.

Sugar.—Previously to 1820 scarcely enough sugar was produced for the consumption of the island. According to official statements, the quantity exported from all parts of the island of Porto Rico in 1839 amounted to 69,245,783 pounds, valued at $2,423,602; while in 1853 the quantity of sugar exported amounted to 110,605,859 pounds, valued at $3,318,175, showing an increase in fourteen years of over fifty per cent. The United States alone received in 1853 74,710,336 pounds, valued at $2,244,309, or over two-thirds of the whole quantity exported.

Coffee.—The quantity exported in 1839 was 8,538,362 lbs., valued at $853,000; and in 1849, 8,615,311 lbs., valued at $516,918. In 1853 it amounted to 11,580,604 lbs., valued at $694,836. Despite this seeming increase, it is a well-known fact that the cultivation of coffee is on the decline. The Hanseatic cities receive nearly one half of the whole exportation of coffee, while the United States take but an inconsiderable quantity.

Molasses.—In 1839 there were exported 3,311,719¾ gallons, of the value of $496,759; in 1849, 4,328,135½ gallons, valued at $649,220; and in 1853, 46,630¾ hogsheads, valued at $466,307. The United States received of the quantity exported in 1853 to the value of $363,612, nearly three-fourths of the total exportation.

Cotton.—The cultivation of cotton declines yearly, and has become at this time insignificant. In 1839 there were exported 1,183,973 lbs., valued at $189,435; while in 1853 the whole amount did not exceed 280,565 lbs., valued at $28,056.

Rum.—The value of rum exported in 1839 was $16,241; and in 1853, $17,106. The exportation of this article bears no proportion to that of molasses, as rum is immoderately consumed by the common people on the island.

VALUES OF THE PRINCIPAL ARTICLES IMPORTED INTO PORTO RICO, 1848–1853.—[Made up from the "Balanzas Generales."]

Articles.	1848.	1849.	1850.	1851.	1852.	1853.
Olive oil	$85,019 50	$99,289 50	$89,197 15	$79,259 10	$99,982 65	$122,707 00
Liquids	198,638 94	187,250 70	2–,132 07	286,431 00	340,869 17	242,923 68
Meats	71,712 40	96,375 29	83,278 73	92,007 11	91,724 16	67,218 67
Spices	5,967 42	6,450 50	14,057 46	14,895 22	*15,533 18	10,657 34
Fruits, etc.	29,189 56	27,388 98	29,959 19	50,672 74	50,021 56	43,340 01
Rice	38,880 26	49,598 31	48,987 37	46,809 78	145,406 58	83,365 75
Cereals, etc.	558,958 91	580,415 98	688,859 82	1,000,319 92	1,198,142 28	692,701 49
Lard and butter	84,149 12	80,733 93	88,158 34	74,671 74	91,658 76	69,578 30
Cheese	27,314 76	25,1'3 79	30,637 76	45,888 50	67,014 58	33,837 50
Fish	360,902 00	364 488 41	436,090 91	381,208 51	402,282 21	343,023 02
Other edibles	110,086 63	112,706 09	110,020 52	164,037 40	166,031 64	135,732 06
Cottons	521,310 87	755,257 33	651,105 34	615,525 14	599,201 52	677,841 81
Woolens	52,034 03	49,2'1 84	47,544 04	50,504 36	48,744 18	75,777 62
Linens	308,440 65	4'5,699 03	310,180 17	253,582 22	267,459 22	352,494 05
Silks	68,040 44	61,578 08	62,180 06	8,645 88	93,880 46	76,406 07
Tobacco	199,929 18	143,120 94	185,580 84	232,056 45	138,440 21	124,574 56
Skins and peltries	72,403 53	58,030 87	85,049 14	121,440 15	134,141 03	106 406 23
Other edibles	110,086 63	112,706 09	110,020 52	164,037 40	166,031 64	135,732 06
Wood	233,860 00	211,196 42	216,291 80	337,188 66	254,947 98	216,867 15
Metal	26,126 60	32,088 24	24,019 34	35,446 71	71,738 15	35,674 29
Glass	12,024 97	15 163 04	20,820 16	14,7x7 11	32,157 23	25,273 74
Iron nails	36,505 36	58,275 08	58,170 54	51,278 36	42,294 26	39,741 36
Iron ware	19,051 48	23,738 55	35,493 97	42,445 57	65,179 66	36,383 21
Machines, and parts thereof, for sugar manufactories	9,855 12	18,839 28	24,183 44	27,739 16	21,166 48	15,207 52
Agricultural implements	22,174 05	22,781 25	23,582 36	49,122 87	89,706 05	98,013 91
Soap	127,431 30	134 339 10	112,488 75	156,884 00	215,040 35	97,312 10
Medicines	83,209 89	93 687 40	81,955 58	90,574 70	80,617 56	86,192 61
Furniture	61,888 02	44,179 47	44,145 02	45,756 27	64,488 08	54,568 64
Perfumery	12,438 15	18,206 91	15,626 08	17,815 00	25,167 50	25,920 00
Candles	46,652 15	16,806 63	62,078 40	65,287 32	68,045 92	48,017 38
Gold and silver	234,116 00	612,155 00	740,062 50	763,475 25	392,281 00	735,636 75
Total	$4,469,751 62	$4,181,583 89	$5,222,029 98	$6,073,870 02	$6,298,395 65	$5,335,910 36

* The "Balanza" gives this sum as $107,257 31, which is an error.

Previously to 1815, Porto Rico, being excluded from all direct intercourse with other countries, excepting Old Spain, was either stationary or but slowly progressive, the entire value of the exports in that year having amounted to only 65,274 dollars! But at that epoch a royal decree appeared, which exempted the trade between Spain and the Spanish colonies and Porto Rico from all duties for fifteen years; and she was then also permitted to carry on a free trade, under reasonable duties, with other countries. In consequence principally of these wise and liberal measures, but partly also of a considerable immigration of rich Spanish colonists from South America, Porto Rico has latterly made rapid progress. Great improvements have been effected in the police and internal administration, and roads have been constructed in all parts of the island. The exports of domestic produce from the U. S. for the fiscal year 1856–'57 were $1,783,429.

GENERAL COMPARATIVE STATEMENT OF THE AMOUNT AND CHARACTER OF THE COMMERCE OF PORTO RICO FROM 1848 TO 1853.—(From the "Balanzas Generales.")

Years.	IMPORTATION INTO PORTO RICO.				EXPORTATION FROM PORTO RICO.			
	National Products.	Foreign Products.		Total Imports.	For the national Trade.	For the foreign Trade.		Total Exports.
	In Spanish Vessels (generally).	In Spanish Vessels.	In foreign Vessels.		In Spanish Vessels (generally).	In Spanish Vessels.	In foreign Vessels.	
1848	$1,148,079	$1,7'3,310	$1,5'8,301	$4,469,751	$636,820	$238 816	$4,695,500	$5,595,136
1849	1,011,000	2,310,032	1,051,550	4,181,583	464,128	297 823	4,700,410	5,462,371
1850	1,356 961	1,875,488	1,985,579	5,222,029	288,010	271,880	5,521,642	5,877,319
1851	1,542,717	2,210,062	2,321,090	6,073,870	562,451	280,840	4,918,682	5,761,974
1852	2,030,047	2,122,784	2,144,663	6,298,395	409,618	349,718	3,8'3,002	4,632,339
1853	1,411,094	2,104,875	1,730,590	5,335,910	440,406	335,060	4,5'3,831	5,299,297

AMOUNT OF DUTIES RECEIVED, THE NUMBER OF VESSELS ENTERED AND CLEARED, AND THE RESPECTIVE TONNAGE OF THE SAME AT PORTO RICO.—[From the "Balanzas Generales."]

Years.	Duties received.			Vessels entered.		Vessels cleared.	
	On Imports.	On Exports.	Total.	Number.	Tonnage.	Number.	Tonnage.
1848	$879,374	$151,864	$1,034,239	1056	118,910	1129	123,250
1849	922,698	159,698	1,082,307	1095	124,851	1126	129,573
1850	1,011,472	177,529	1,189,001	1206	132,040	1179	131,767
1851	1,041,595	24,893	1,069,418	1324	160 586	1209	154,042
1852	1,228 095	31,077	1,259,173	1452	175,886	1252	168,766
1853	1,020,246	31,641	1,051,887	1338	151,663	1225	154,867

The tonnage of American vessels arriving in 1853 at Porto Rico amounted to 67,180, or nearly one half of the total tonnage of the island, double that of all the Spanish, and nearly triple that of all the English vessels. The ports mostly visited by American vessels were: Mayagüez, 97 vessels; Ponce, 69 vessels; Guayama, 50 vessels; and Porto Rico (San Juan), 45 vessels.

QUANTITIES OF THE PRINCIPAL PRODUCTS OF PORTO RICO, 1848–1853.

Years.	Aguardiente.	Cotton.	Coffee.	Sugar.	Hides.	Tobacco.	Molasses.	Black Cattle.
	Hogsheads.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Gallons.	Head.
1848	18[illegible]	182 477	9,613,074	101,2 8,754	745 880	2,457,449	3,867,474	4375
1849	1241[illegible]	804,052	8,615,311	100,742,717[illegible]	519,070[illegible]	2,430,540[illegible]	4,328,1354	3700
1850	572[illegible]	241,574[illegible]	11,783,684	112,120,432	514 7 2	2,973..98	4,905,913	4176
1851	347[illegible]	366 581	12,111,971	118,416,304	632 706	6,478 084	4,827,558	6063
1852	113[illegible]	218,792	11,871,703	93 681,206	598,820	5,565,730	3,857,000	6220
1853	048[illegible]	280,505	11,580,604	110,605,859	597,251	3,703 457	4,896,228	6019

The foreign Antilles, and among them especially St. Thomas and St. Croix, have the largest amount of the imports into Porto Rico. Indeed, the former, as already observed, may be considered merely as an entrepôt for European and American manufactures, serving the Spanish merchants, from its proximity to the

Spanish West Indies, as a market for all the merchandise. It will be seen that the United States occupy the first rank as regards the amount of exports, taking more than one half of the total exportations. They receive two-thirds of all the sugar, and three-fourths of all the molasses exported; these being the principal articles entering into the export trade of Porto Rico. The exportation to the United States amounted in 1853 to $2,340,000, chiefly for sugar and molasses. Spain holds the second rank in importations into, and only the fourth as respects exportations from, Porto Rico; since the foreign Antilles import more into the island, and the United States, England, and the Hanseatic cities take more from it, than does Spain, despite all differential duties in her favor, both as respects shipping and trade.

Tonnage Duties.—Ships entering the ports of the island of Porto Rico will pay, if foreign, $1 the ton; if national, 37½ cents the ton, as per register. National vessels bringing full cargoes of coals will pay no tonnage duties, although the number of tons be less than indicated by their register; foreign vessels will, however, pay 50 cents per ton, in compliance with the royal decree of December 23, 1848. But whenever a ship, either national or foreign, brings other cargo besides coals, no matter whether the coals be equal to, or more than, the amount of her tonnage, she will pay the tonnage duty in accordance with said decree. Vessels loaded with coals only are exempted from local duties, with the single exception of the fee ($23) to the captain of the port for entering and clearing. National or foreign vessels entering the ports will pay, in addition to the duties specified, 12½ cents per ton, as per register, for the purpose of deepening the harbor. Vessels arriving in the harbor of San Juan, under whatever circumstances, or for whatever purpose, will pay 12½ cents per ton for dredging and keeping the port navigable. National vessels to or from the island of St. Thomas will pay, at whatever port, the tonnage duties applicable to the flag.

COMPARATIVE STATEMENT OF THE COMMERCE BETWEEN THE UNITED STATES AND PORTO RICO, AND OTHER SPANISH WEST INDIES (EXCEPT CUBA), EXHIBITING THE VALUE OF EXPORTS TO AND IMPORTS FROM EACH COUNTRY, AND THE TONNAGE OF AMERICAN AND FOREIGN VESSELS ARRIVING FROM AND DEPARTING TO EACH COUNTRY, DURING THE YEARS DESIGNATED.

Years.	COMMERCE.				NAVIGATION.			
	Value of Exports from United States.			Value of Imports into the United States.	American Tonnage.		Foreign Tonnage.	
	Domestic Produce.	Foreign Produce.	Total.		Entered the United States.	Cleared from the United States.	Entered the United States.	Cleared from the United States.
1845	$688,149	$20,775	$708,924	$2,026,258	51,150	23,575	629	632
1846	675,441	25,905	701,346	2,271,110	54,234	30,066	487	1373
1847	925,079	33,183	8,9,064	2,141,929	38,063	20,767	1,746	1579
1848	801,722	37,012	838,734	2,106,206	45,488	35,241	513	1150
1849	523,292	33,234	556,526	1,964,861	47,584	25,870	2,192	3898
1850	816,062	93,591	909,653	2,067,866	41,768	30,744	3,074	3108
1851	961,410	57,209	1,018,619	2,480,329	48,326	36,320	7,874	6013
1852	1,016,563	39,542	1,055,105	3,001,223	58,885	35,010	12,061	5544
1853	810,411	54,143	864,554	2,800,936	47,898	30,815	15,844	9429
1854	996,886	60,937	1,051,883	2,850,353	52,228	31,014	8,710	8528
1855	1,144,581	38,937	1,183,518	2,475,978	43,249	34,190	7,380	5592

American vessels entering ports in the islands of Cuba and Porto Rico in ballast are not subjected to the payment of any tonnage duty whatever; and American vessels entering the ports in the islands of Cuba and Porto Rico, with cargoes of any description of merchandise whatsoever, are exempted from any charge of tonnage duty, if such vessels export or convey therefrom cargoes of molasses taken in at said ports. Exemption, therefore, from the liability to tonnage duty of Spanish vessels coming from ports in the islands of Cuba and Porto Rico is extended to such vessels arriving in ports of the United States, either in ballast or laden with molasses taken in at any of the said ports, together with such quantity of fresh fruit, the production of said islands, as may be deemed by the collector and naval officer, under the provisions of the forty-fifth section of the act of 2d March, 1799, to be admissible as surplus stores: provided the said vessels depart from the United States in ballast, or with their cargoes of molasses, or cargoes of the staple productions of the United States.—See *Commercial Relations with the United States*; *Manual for United States Consuls*; TURNBULL'S *Cuba and Porto Rico*; HUNT'S *Merchants' Magazine*, x. 327.

Portsmouth, a sea-port of England, in the English Channel, on the western side of the island of Portsea, at the mouth of the bay called Portsmouth Harbor, lat. 50° 47′ N., long. 1° 6′ W. Portsmouth Harbor excels every other in Great Britain in depth, capaciousness, and security. At its entrance the harbor is very narrow, but soon expands into a great width. Every where the anchorage is good, the depth sufficient for ships of any size, and in extent almost sufficient to contain the whole English navy. The roadstead of Spithead, between Portsmouth and the Isle of Wight, can contain 1000 sail with security. Ship-building and other manufactures are carried on to a considerable extent. The cod and other fisheries are actively prosecuted, and Portsmouth has considerable foreign and coasting trade. The tonnage of the port in 1853 was 26,645 tons.

Portugal (*Lusitania*), a country of southwestern Europe, forming the western portion of the Iberian peninsula, and situated between lat. 36° 57′ and 42° 8′ N., and long. 6° 15′ and 9° 32′ W., bounded east and north by Spain, south and west by the Atlantic Ocean. Capital, Lisbon. Length, north to south, 368 miles; breadth, 80 to 140 miles; and there are few passable roads. Wheat, barley, oats, flax, and hemp are cultivated in the elevated tracts; rice in the lowlands; olives, oranges, lemons, citrons, figs, and almonds in the central and southern provinces; and at the southern extremity, the American aloe, the date, and other tropical plants. The cultivation of the vine is the most important branch of industry, and the produce of the vineyards watered by the upper Douro, termed *port*, is the staple export. There are extensive forests of oak in the north, chestnut in the centre, and the sea-pine, kermes, and cork in the south. The olive oil is of inferior quality. Mules and asses are the chief beasts of burden; oxen are used for draught in the provinces. Cattle and sheep are reared in considerable numbers, but the wool is not of fine quality. Goats and hogs are numerous, and fish abound in the rivers and on the coasts. Iron, marble, and salt are the chief mineral products; the mines of tin, lead, and antimony are not worked. There are numerous salt marshes on the coast, and 200 mineral springs are enumerated. The manufactures are very limited, chiefly arms and porcelain at Lisbon, woolens at Portalegre and Fundao, cotton-spinning at Thomar, jewelry and trinkets at Lisbon and Oporto, glass at Marinha-Granne, paper at Alemquer, silks at Braganza and at Campo-Grande, near Lisbon. Lisbon, the capital of Portugal, is the principal port, and is situated on the north bank of the River Tagus, the observatory of the fort being in lat. 38° 42′ 24″ N., long. 9° 5′ 50″ W. Population, about 240,000. The harbor, or rather road, of Lisbon is one

of the finest in the world, and the quays are at once convenient and beautiful. Fort St. Julian marks the northern entrance of the Tagus. It is built on a steep, projecting rock. There is a light-house in the centre, 120 feet above the level of the sea. At the mouth of the Tagus are two large banks, called the North and South Cachops. There are two channels for entering the river — the north or little, and the south or great channel. On the middle of the South Cachop, about 1½ mile from Fort St. Julian, is the Bugio fort and light-house, the latter being 66 feet in height. The least depth of water in the north channel, on the bar, is four fathoms, and in the south six. The only danger in entering the port arises from the strength of the tide, the ebb running down at the rate of seven miles an hour; and after heavy rains the difficulty of entering is considerably augmented. The trade of the country is mostly conducted by the English and other foreigners. The population and extent of Portugal are shown by the following statistics, taken in 1854:

Population	3,500,000
Extent in square miles	34,500
Communes	260

The great fountain of wealth in Portugal is in its vineyards; and yet, under the system of political economy practiced by the government of that kingdom, wine can not be either grown, made, or exported, except under heavy restrictions and imposts. Until within the past few years, there was not sufficient corn grown in the few agricultural districts for the necessities of the country; still, corn is classed among its staples, and its importation from foreign countries prohibited, unless when, from any cause, the home supplies are inadequate to meet the demands for consumption. The following official return exhibits the entire agricultural resources of Portugal for the year 1851, and, with the exception of corn, the supply of which is constantly fluctuating, may be regarded as a fair index of the average yearly agricultural wealth of this kingdom:

Articles	Quantities.	Amount.
Corn	Moios	1,139,737
Beans (pulse)	"	178 812
Rice	"	12,252
Salt	"	466,166
Walnuts, filberts, almonds, and chestnuts	"	37,640
Figs	Arobas	838,700
Carob beans	"	248,160
Oranges and lemons	Thousand	390,000
Cattle	Heads	5,782,712
Wine (Maduro a verde)	Pipes	787,809
Alto-Douro port	"	100,000
Olive oil	"	43,632
Wool	Arobas	357,589
Silk	Pounds	315,140
Honey	Arobas	59,137
Beeswax	"	25,616

The moio is equivalent to 22·39 bushels. The aroba equals 32 lbs.

In 1831 Portugal imported 553,740 alqueires (each equal to 32 lbs.) of grain; between 1846 and 1851 she exported, as appears from her official statistics, about 1,800,000 alqueires from Caminha, and about 4,000,000 alqueires from Via na; making a total of nearly 6,000,000 alqueires, or 1,000,000 alqueires per annum; or an exportation of about twice as much as she formerly imported. With this brief reference to the natural capabilities and agricultural resources of Portugal, the laws and regulations under which that kingdom conducts its foreign commerce, the character and extent of that commerce, and the description of merchandise which constitutes the leading articles of exchange, especially between Portugal and the United States, will next be considered. For a long period the commercial relations of the United States with Portugal were regulated by such acts of legislation as the Portuguese government thought proper to adopt, with no other check than the countervailing legislation of the United States. Under this system the direct trade between the two countries in national vessels, laden with the produce and manufactures of either, was allowed on terms of full reciprocity; but the indirect trade was fettered by discriminations and restrictions, and by the countervailing duties to which they gave rise, until the treaty of commerce and navigation entered into between the two countries in 1840 placed their trade on a basis of entire reciprocity. This treaty stipulates that vessels of either country arriving in the ports of the other shall be put on the footing of national vessels; that no other or higher duties shall be levied on the produce or manufactures of either country, when imported into the other, than on similar produce, etc., of other foreign countries; that the same duties shall be levied on such importations, whether in American or Portuguese vessels; that all favors granted by either party to other nations shall become common to both; and that American vessels shall pay no higher duties of export in the ports of Portugal than national vessels. This treaty is declared to be in force for six years, and further, until the end of one year after either party shall have given notice to the other to terminate the same: no such notice having been given by either party, commercial relations between the two countries are still governed by its provisions.

Under the stipulation equalizing American and Portuguese vessels with respect to direct importations, the American flag enjoyed, during a brief period after the ratification of the treaty, special advantages over the vessels of other foreign nations. This was the result of a law passed by the Cortes in 1837 (before the treaty was adopted), by which a deduction of fifteen per cent. on all duties was allowed on merchandise imported in national bottoms. This measure, although it had given a great impulse to the national shipping of Portugal, and largely augmented importations in American bottoms, was found to exercise a disastrous effect on the public treasury, diminishing the revenue from that source about $300,000 annually. It was consequently abolished; and after the 15th January, 1842, all foreign vessels were equalized, in this respect, with the national flag. Notwithstanding Portugal possesses natural advantages and resources which might enable her to rank among the most important trading countries in Europe, her commerce with foreign nations, and particularly with the United States, has dwindled down to the mere shadow of what it was in former times; nor can much hope be indulged of a speedy commercial regeneration of this kingdom so long as her present restrictive and prohibitory regulations exist, and her unsurpassed natural resources remain under their present partial and imperfect system of development. The dismemberment of Brazil from the kingdom of Portugal (1820) would seem to mark the period of the greatest decline in her commerce with the United States. This can be best illustrated by giving the official returns for the equal periods preceding and following this event, and contrasting the results.

EXPORTS FROM THE UNITED STATES TO PORTUGAL AND DEPENDENCIES, 1810–1832.

Years.	Amount.	Years.	Amount.
1810	$7,679,210	1822	$427,065
1811	11,466,150	1823	246,648
1812	9,399,570	1824	518,836
1813	10,687,928	1825	408,160
1814	591,699	1826	313,553
1815	5,281,101	1827	357,370
1816	2,270,989	1828	221,614
1817	1,834,823	1829	222,911
1818	2,858,177	1830	279,759
1819	2,263,580	1831	294,383
1820	1,325,751	1832	206,218
Total	$62,606,298	Total	$5,756,492

Showing a falling off in the total amounts, during the eleven years compared, of $18,941,806, or, in the average annual amounts, of $4,449,255. It is proper, however, to remark, that the trade with Brazil absorbed more than a moiety of the total amount of the exports from 1810 to 1820. The general trade of Portugal with

all foreign countries has also declined during the past half century, in a ratio of nearly one-third in exports and one half in imports. This will be seen from the following comparison of imports and exports, for a series of years within the above-named period:

Years.	Imports.	Exports.	Total.
1801.....	$24,171,780	$31,379,730	$55,551,510
1816.....	29,287,430	20,228,895	49,560,315
1830.....	16,194,500	13,085,000	29,279,500
1844.....	12,282,530	8,225,665	20,508,195
1848.....	13,507,210	10,679,430	24,186,640

NAVIGATION RETURNS OF PORTUGAL FOR THE YEAR 1852.

Countries.	Arrivals.	Tonnage	Crew.	Clearances.	Tonnage.	Crew.
Portugal	5447	315,708	45,349	5777	319,834	45,752
England	1145	159,537	11,255	1223	166,074	13,603
Spain	917	11,306	5,287	952	10,695	5,881
Sweden	219	40,328	2,107	217	42,446	2,088
United States	136	37,647	2,689	125	34,925	2,532
France	98	11,741	791	95	11,684	780
Netherlands	90	9,840	621	88	8,702	616
Austria	286	57,246	3,891	310	50,125	3,194
Total	8338	643,383	71,590	8787	685,492	74,200

COMMERCE IN 1852 AND 1853.

Years.	Imports.	Exports.
	Francs.	Francs.
1852.....	33,200,670	18,179,875
1853.....	36,846,560	21,902,912

The wines which, at the exportation of 1853, were valued at 6,186,680 francs, were not put in the account of the crop of 1852. The imports of wine from Madeira into the United States for the fiscal year ending June 30, 1856, were 23,649 gallons; and from Portugal, 62,533 gallons.

It thus appears that in 1848 the exports from Portugal to all nations were only about one-third, and the imports from all nations about one half of the amount of exports and imports in 1801, or half a century ago. The general movements of trade between the United States and Portugal have varied so little during the past twenty years that they may be regarded as stationary, at least so long as the existing commercial regulations remain unchanged in both countries. During the past year, however, the government of Portugal has manifested some disposition to review and modify its entire system of commercial policy; and the good effects that have already succeeded the initiatory measures to this end, already adopted, will, it is believed, encourage it to remove altogether the onerous restrictions which have so long fettered its trade with foreign nations. In 1853 the export duty on wine was materially reduced, and equalized to all nations (a discrimination having been made, before that period, between exports to Europe and America); and the effect of this first step toward a more liberal policy is evidenced in the increased exportation of that great staple in 1853 over the preceding year, to an amount exceeding three-fourths of the whole. This will be seen from the following table. The pipe is estimated at the United States custom-house at about 113½ gallons:

EXPORTS OF WINE, BRANDY, ETC., FROM THE PORT OF OPORTO IN THE YEARS 1852 AND 1853.

Countries.	1852.	Countries.	1853.
	Pipes.		Pipes.
Great Britain.....	19,219	Great Britain.....	40,834
United States.....	4,452	Australia.....	2,531
Brazil.....	2,833	United States.....	1,658
Australia.....	2,001	Canada.....	1,002
Hamburg.....	917	Hamburg.....	923
Canada.....	902	Brazil.....	743
Russia.....	378	Russia.....	561
Bremen.....	250	Denmark.....	455
Newfoundland.....	156	Portuguese poss'ns.	357
Prussia.....	119	Bremen.....	232
France.....	16	Sweden.....	215
Holland.....	21	Newfoundland.....	163
Spain.....	2	Prussia.....	114
Sweden.....	288	France.....	15
		Holland.....	9
		Spain.....	1
Total.....	31,499	Total.....	55,813

Exports in 1853..... 55,813 pipes.
" 1852..... 31,499 "
Excess in 1853 over 1852..... 24,314 "

The subjoined statements of the commerce and navigation of Oporto during the Portuguese financial year 1854–'55, and the movements in wines and brandy the same period, are made up from returns of the United States consul at that port.

Alterations lately made in the Portuguese Tariff (1853).—Broadcloths have been reduced 12 per cent. Raw silk now pays only two-fifths of the former duty. On satins, gros-de-Naples, etc., a reduction of nearly 54 per cent. has been made. Flax has been raised to 42 cents per quintal of 128 pounds, being an advance of 200 per cent. In linens, and goods of cotton and linen, as well as woolens, no great alteration has been made. In gray cloths and white shirtings there has been a reduction of about 12 per cent. Ale pays about one-third of the old duties. Wine, which heretofore paid an import duty of about $266 per pipe, has been reduced to about one-fifth of that amount. The export duty on port has been reduced and equalized to all the world. Pianos, which formerly paid from $48 to $192 each, according to size, now pay $24 each, regardless of size. Formerly, no tea could be imported except in national vessels; the duty being, from Portuguese territories, about 1s. 9d. English (42 cents), and from other parts 4s. 3d. per pound, equal to $1 02. Now tea may be imported indirectly, in national or foreign bottoms; Portuguese vessels still enjoying the usual discriminations over foreign vessels engaged in the indirect trade. It is believed that Portugal has no treaty with any nation equalizing foreign vessels to national vessels in the indirect trade. If so, all foreign flags are equally subject, with those of the United States, to an additional duty of 20 per cent. when importing goods not the produce of the country to which they belong. The chief difficulty which foreign merchants have to encounter, in selecting a cargo for the Portuguese market, arises from the complicated and almost unintelligible terms in which the tariff of that country estimates the value of merchandise. Cottons, linens, and in many instances, even fluids, are estimated by the pound; and, owing to the great variety of specific articles under any particular genus, and the great difference in their respective prices, it were next to impossible to say, even approximately, what duty is assigned to all or any of the descriptions of merchandise which usually make up a mixed cargo. Cotton, for instance, is thus classed in the tariff of 1852: *raw*, per 101 pounds, 2½ cents (which is plain enough); *manufactured*, from 6 cents to 70 cents per pound (which is not). Should an American merchant desire to ship to Lisbon or Oporto a cargo of such American produce as would be most likely to find a ready market in exchange for the wines or fruits of Portugal, he would naturally turn to the Portuguese tariff, to ascertain the import duty on such descriptions of merchandise as he could most profitably send. The article of cotton manufactures, it has been shown, would probably afford some exercise to his skill; but let him select a cargo of tobacco. The Portuguese tariff informs him that it is admitted only when sold to government contractors; but he is left in the dark with respect to the precise duty to which it is subject. If he has a correspondent

at O, arto or Lisbon, he will inform him that the duty on tobacco is arbitrary, and depends on the terms of the particular bargain he may make with the government contractors, after his cargo shall have reached port.

This complex classification of the Portuguese tariff induced some British merchants, a few years since, to make the attempt to reduce to a fixed value the actual duties levied on some of the leading imports into Portugal from foreign countries. Below is the result of their calculations, as respects some articles of cotton manufacture. The duties, in Portuguese money, are given in *reas*, the *milrea* being equal to 1000 *reas*, or $1 12.

Articles.	Duties in Portuguese Money.	Rate per Cent.
Cotton twist, etc., under 40, per pound	50	30
Cotton bleached or dyed, under 40, per pound	80	47
Wick of candles, under 40, per pound	400	....
White cottons with glazed finish, 16 threads, etc., per pound	70	33
Cottons woven with dyed threads, up to 16, per pound	200	52
Cotton dresses, shawls, or handkerchiefs, to 16 threads, per pound	400	92
White cambrics, 21 threads or upward, per pound	100	29
Colored cambric dyed in the piece, per pound	200	56
Colored cambric in shawls, handkerchiefs, dresses, or other shapes, per pound	400	88

The duties on the different descriptions of cotton goods vary from 16 (on colored velveteens) to 96 (on striped nankeens, plain) per cent. Notwithstanding the enormous duties on cottons which the above table indicates, the manufactures of Portugal, of this description of merchandise, are confined to some coarse and very inferior description of woolens, and a few common cottons and linens. Still, while that scale of duties continues, cotton tissues can never become a profitable medium of exchange between the two countries. There is no reason, however, why the United States could not compete with Brazil in supplying the markets of Portugal with sugar, rice, rum, timber, and other articles which have been heretofore chiefly imported from that country. The rice of Carolina is far superior to Brazilian, and yet Portugal consumes annually of the latter upward of 40,000,000 pounds. Brazil supplies the Portuguese market annually with sugar to the amount of from one and a half to two millions of dollars. Both these articles can now be exported from the United States to Portugal on the same terms as from Brazil.

COMMERCE OF THE UNITED STATES WITH PORTUGAL FROM OCTOBER 1, 1820, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1821	$147,736	$66	$147,792	$356,116	....	$140,715	5,100	....
1822	102,625	18,555	121,490	422,666	$14,000	800	3,489	....
1823	48,077	300	48,377	181,094	....	13,087	1,479	1,081
1824	77,205	5,168	82,423	242,804	190	23,745	3,441	152
1825	110,015	2,824	112,830	221,079	....	15,160	3,241	723
1826	99,045	558	100,483	349,989	....	59,605	6,436	....
1827	116,103	220	116,323	263,091	14,000	31,554	4,188	....
1828	77,010	1,164	78,174	112,550	....	2,000	3,453	617
1829	43,068	628	43,716	287,151	....	13,785	2,597	....
1830	43,403	1,803	45,211	165,321	....	8,154	2,943	181
Total	$964,562	$31,266	$995,828	$2,556,503	$28,190	$283,465	35,423	2,757
Sept. 30, 1831	$39,149	$2,256	$41,505	$124,446	....	$4,746	1,598	....
1832	98,262	300	98,562	123,816	....	1,600	1,177	600
1833	73,815	5,830	79,648	170,180	$4,100	4,005	2,188	1,026
1834	42,512	16,583	59,125	315,309	....	11,013	2,923	556
1835	162,708	107,602	270,305	547,974	18,260	27,895	5,627	659
1836	83,335	13,247	51,582	275,278	3,551	990	1,434	1,200
1837	124,597	17,072	141,469	187,643	....	15,440	3,226	10,407
1838	67,976	8,023	76,063	206,864	9,000	22,577	2,029	1,041
1839	59,711	6,093	65,804	587,778	6,000	17,177	3,061	2,085
1840	97,841	5,724	103,065	222,884	....	3,053	3,651	557
Total	$789,668	$182,400	$972,068	$2,752,176	$40,891	$109,086	27,902	18,251
Sept. 30, 1841	$114,448	$7,321	$121,764	$286,568	....	$25,567	4,801	728
1842	72,723	1,388	74,111	142 587	....	5,546	3,305	787
9 mos., 1843*	59,056	1,538	60,594	40,718	....	512	2,557	543
June 30, 1844	99,553	3,565	103,118	199,705	....	3,880	5,743	172
" 15	124,650	5,419	129,769	296,903	....	7,216	5,803	960
" 46	96,316	8,453	104,769	373,259	$2,500	....	4,815	1,874
1847	56,893	1,335	58,228	288,330	....	9,372	2,537	1,883
1848	112,266	2,984	115,244	214,782	....	3,944	5,842	5,418
184	160,731	6,273	175,994	322,220	....	519	4,837	5,023
1850	172,978	5,256	178,214	339,763	....	....	2,976	7,551
Total	$1,078,333	$43,512	$1,121,845	$2,510,826	$2,500	$49,547	43,216	24,949
June 30, 1851	$167,342	$4,996	$172,338	$367,548	....	....	2,470	5,176
1852	284,064	4,129	288,193	266,864	....	$850	6,307	6,333
1853	223,051	26,559	250,208	411,155	$2,000	....	5,476	8,696
1854	127,150	23,715	150,865	243,592	200	....	2,866	5,094
1855	270,716	24,867	295,583	186,067	....	....	5,670	9,568
1856	344,098	34,101	378,199	287,166	$30	....	6,232	5,743

* Nine months to June 30, and the fiscal year from this time begins July 1.

The tonnage employed in the above trade was:

	1853.	1854.	1855.
	Tons.	Tons.	Tons.
American	8,790	4,020	12,083
Foreign	14,669	10,106	16,373
Total	23,459	14,126	28,455

The exports from the United States to Portugal consist of whale oil, whalebone, sperm candles, staves and headings, beef, pork, rice, tobacco, linseed oil, soap, nails, manufactures of iron, and sundries. The imports, as taken from the United States Treasury returns, are wool, wines, vinegar, dried fruit, salt, corks and cork-tree bark, marble, sheet and bar lead, copper, and sundries.

The exports from the United States to Portugal for the fiscal year 1856-'57 included $56,439 of unmanufactured cotton, and $121,359 of tobacco.

The tonnage of the coasting-vessels employed in the coasting-trade of Brazil varies from 40 to 420 tons each. Foreign vessels are not allowed to participate in the coasting-trade. We annex a Table showing the number and tonnage of vessels employed in the coasting-trade of Portugal in 1852.

Ports.	Number of Vessels.	Tonnage.
Oporto	358	35,518
Viana	128	8,271
Figueira	108	15,050
Aveiro	153	7,910
Caminha	15	1,412
Villa de Conde	8	101
Esposende	4	120

Foreign vessels are allowed to enter into the foreign trade, and pay the same tonnage dues as those bearing the flag of Portugal, to wit: Vessels of the United States under the treaty of 26th of August, 1840; also the vessels of the following countries under different treaties and conventions, Dutch, Danish, British, Prussian, Swedish and Norwegian, Russian, Brazilian, Belgian, Hanse Towns, French, Papal States, and Hanoverian. The indirect trade is, however, excepted. Goods not the product of the country from which the vessel sails are liable to an extra duty of 20 per cent. when brought to Portugal in foreign ships.

PORT DUES, ETC.	Rees.	Cents.
Sailing in ballast, or not fully laden, per ton	250	= 28
Laden with salt, olive oil, or wine, produce of Portugal	50	= 5 3-5
Laden with other produce of Portugal	150	= 16 4-5
In all cases when re-exporting foreign goods	250	= 28
Entering in ballast, and sailing in ballast (except in cases of distress)	250	= 28
With full cargo of grain, produce of Portugal	250	= 28
With wine, salt, or olive oil	250	= 28
With other Portuguese produce	100	= 11 1-5
Contribution to remove the bar in the port of Oporto	100	= 11 1-5

An additional tax of 15 per cent. on the amount of tonnage and bar-dues is also exacted in Oporto. Under treaty, American vessels are equalized with national vessels as to these duties. Contributions for the exchange building, five reas = one half cent, nearly. Steamers pay two-fifths less tonnage dues than sailing vessels. The contribution for the bar is the same for both. Every captain of a merchant-vessel is bound to have two manifests of the same tenor, signed by himself, and certified by the Portuguese consul or vice-consul at the port of departure. Goods omitted in his manifest, or of a different description, have to pay a sum equal to the value of the goods. Goods admissible being omitted, a fine equal to double the amount of the duties, and custom-house charges and imposts. —*United States Commercial Relations.*

Portuguese Settlements.—The Portuguese have numerous settlements in Western Africa, situated on the River Caches, the St. Domingo, and the Rio Grande. The chief settlement in Guinea is on the island of Loando; and in Benguela, that of St. Philip. There is some trade carried on between the United States and these settlements, especially at Loando. The exports from the United States to this point consist of domestic cottons, flour, and specie; imports to the United States, gum-copal, palm-oil, ivory, hides, etc. The following summary, exhibiting the general trade between the United States and Loando, during the first six months of 1854, is derived from a consular return: Number of American vessels arrived and cleared, 10, with an aggregate of 2218 tons. Value of cargoes inward, $65,000; discharged at Loando, $13,000. Value of cargoes outward, $22,000.

From a return of later date, the trade between the United States and Loando, for the last three months of 1855 appears to have been carried on by five American vessels, of some 200 tons each—three of them belonging to Salem, Massachusetts, and two to New York. Their cargoes inward, landed, consisted of dry goods, flour, rum, etc., to the value of $24,200; the total value of inward cargoes being $61,500; and their cargoes outward, of palm-oil, gum-copal, ivory, copper ore, etc., to the value of $67,100. Each of these vessels touched at Ambriz. Indeed, vessels trading to Loando usually touch at Ambriz and Ambrizette, where they have agents, to whose consignment they land part of their cargoes, and take in such produce as may be in waiting. They then touch at Loando, and leave part of their remaining cargoes; then they make for Benguela, where they usually remain from 40 to 60 days, to close their sales, and take on board gum-copal and ivory. On their homeward voyage they again touch at Ambria and Loando, at which places they complete their cargoes of gums, palm-oil, ivory, hides, and coffee.

At Ambriz there are now two American, two English, one French, and a number of Portuguese factories. Heretofore the only duty paid at this port was a small tribute to the native king, for the privilege of trading. Recent movements indicate a design on the part of the Portuguese government to establish a regular custom-house, and charge import and export duties. The claim of Portugal is predicated on its alleged title to some copper mines in the interior, which can be reached only through this port. The little kingdom of Ambriz is too weak to resist the pretensions of the Portuguese; and however novel this claim may appear to more civilized nations than the little negro kingdom of Ambriz, there is official information to the effect that, instead of free trade, United States commerce will probably hereafter encounter at this point the burdensome restrictions of Portuguese commercial legislation.

The once flourishing and vast colonies of the Portuguese were, before the year 1850, reduced to the following territories:

	Population in 1850.
ISLANDS.	
Madeira and Porto Santo	108,464
Eastern Azores	97,330
Central	69,387
Western	68,391
	343,572
AFRICA.	
Cape Verd Islands	86,738
Coast of Guinea, Bissao, etc.	4,270
St. Thomas, Princes, etc.	12,753
Angola, Benguela, and dependencies	689,127
Mozambique and dependencies	500,000
	902,888
ASIA.	
Goa, Saluto, Bardez, etc. (now conquests)	363,788
Town of Damao	33,159
Town of Diu	10,765
	407,712
OCEANIA AND CHINA.	
Macao	29,587
Islands of Timor, Solor, etc.	918,300
	947,887

For commerce, etc., of Portugal, refer to BALBI's *Essay on Portugal*; BROUGHTON's *Letters on Portugal*; HODGE's *Portuguese Expeditions*; MISS PARDOE's *Letters*; HUNT's *Merchants' Magazine*, lx. 366 (WHARTON); *Quarterly Review*, xli. 184 (SOUTHEY); *American Annual Register*, viii. 213 (J. Q. ADAMS). On the wine country of Portugal, see FRASER's *Magazine*, xxxvi. 302.

Postage—Post-office. Postage is the duty or charge imposed on letters or parcels conveyed by post; the post-office being the establishment by which such letters or parcels are conveyed. We propose, in the present article, to divide and treat the subject under the following heads:

I. Sketch of early Postal Affairs. II. The first National Post-office. III. The British Post-office. IV. Introduction of cheap Postage. V. Postal Statistics, and Rates of Postage in other Countries. VI. History of the United States Post-office. VII. The present Condition and future Prospects of the United States Post-office.

The post-office, as it exists to-day, is essentially a modern institution. Some writers have traced the origin of the POST to a very early period in the polit-

ical history of the world. They find the origin of the word post in the Latin *positus*, as applied to the postal couriers who were placed or posted at certain intervals or stations on the route over which letters or messages were conveyed. Herodotus, Xenophon, and other ancient historians, speak of postal couriers that were employed by kings, rulers, and commanders of armies. In Persia, in the time of Cyrus, stations were kept at regular intervals along the principal highways of the country, and messages were forwarded for the government by couriers, who acted as post-riders. In the Roman empire, in the time of Julius Cæsar, and during the reign of Augustus, a similar method of communication was kept up between the central government and the principal military stations. Marco Polo tells us, and his narrative is confirmed by other travelers, that Kublai Khan, the Emperor of Tartary, had regular post establishments throughout his vast empire. This was in the 13th century. In his narrative we find the following, which is particularly interesting, as giving an account of a regular post among a comparatively barbarous people, that was quite equal to the postal establishments of many modern Christian nations: "From the city of Kanbalu there are many roads leading to the different provinces, and upon each of these, that is to say, upon every great high road, at the distance of 25 or 30 miles, accordingly as the towns happen to be situated, there are stations, with houses of accommodation for travelers, called *yamb* or post-houses." [These are *mansiones equorum;* in the Chinese language *tchan*, and in the Persian *markileh*.] "These are large and handsome buildings, having well-furnished apartments, hung with silk, and provided with every thing suitable to persons of rank. Even kings may be lodged at these stations in a becoming manner, as every article required may be obtained from the towns and strong places in the vicinity; and for some of them the court makes regular provision. At each station 400 good horses are kept in constant readiness, in order that all messengers going and coming upon the business of the Grand Khan, and all embassadors may have relays, and, leaving their jaded horses, be supplied with fresh ones. Even in mountainous districts, remote from the great roads, where there are no villages, and the towns are far distant from each other, his majesty has equally caused buildings of the same kind to be erected, furnished with every thing necessary, and provided with the usual establishment of horses. He sends people to dwell upon the spot, in order to cultivate the land, and attend to the service of the post; by which means large villages are formed. In consequence of these regulations, embassadors to the court and royal messengers go and return through every province and kingdom of the empire with the greatest convenience and facility."

This is a picture of a very complete postal establishment. The Incas of Peru, in the 16th century, had a similar system of postal couriers to keep up communication between different parts of the country. There was a system of postal communication in France as early as the time of Charlemagne, and used principally for the conveyance of government dispatches. Louis XI. also employed postal couriers. "A permanent establishment of messengers for the conveyance of letters was attached to the University of Paris from the beginning of the 13th century, and indeed was not abolished until the year 1719, long after a general post had been settled in France. Other universities were similarly provided. Sometimes powerful or opulent individuals established posts for mercantile purposes, and the convenience of a particular district."—*Encyclopædia Britannica.* The date of the first regular post establishment in modern time was not far from the year 1497. There is a general coincidence in point of time of a number of leading discoveries, conquests, inventions, and improvements. Printing was invented in 1441. Constantinople was taken by the Ottomans, the Greeks driven from the East, and the Turkish empire founded in 1453. Postal couriers were employed in Great Britain as early as 1464. Printing was introduced into England in 1474. The kingdom of Spain was established by the union of Aragon and Castile, in 1479. The Cape of Good Hope was discovered in 1486, and America in 1492. The post-office was established in Germany about the year 1497. Africa was circumnavigated in 1498. The Reformation commenced in 1517. A system of punctuation by marks and pauses was introduced in 1520. Hungary was united to Austria in 1521. Magellan completed the first circumnavigation of the globe in 1522. The astronomical system of Copernicus was proclaimed in 1532. In India, as early as 1570, a system of foot-posts was established by Akbar, the head of the Mogul empire. Indian runners, noted for their speed, were employed, and one messenger, without relief, we are told, would often travel from 80 to 90 miles in a day.

II. *The first National Post-office.*—The first regular post-office was established by Maximilian, emperor of Germany, near the close of the 15th century—about the year 1497. At the head of this post establishment the emperor placed Francis, prince of Thurn and Taxis, the first postmaster-general mentioned in history. This establishment, originally started like all other government posts as a general errand-boy and message-bearer of government, soon became a powerful monopoly, and claimed the sole right of transmitting the correspondence of the people. From the time of its foundation to the present day the German post establishment has been held as a hereditary fief or property by the princes of the house of Thurn and Taxis. It has been a subject of frequent discussion whether postal business should be entirely carried on by government. There are arguments on both sides, and many against it can be found in the history of this German postal union. The Catholic religion being the religion of the state, Protestants made frequent and just complaints against the suppression and violation of correspondence in the cause of political tyranny and religious intolerance. We are informed that this was one of the direct causes of the Thirty Years' War. Lamoral, prince of Thurn and Taxis, a military leader (Catholic) as well as postmaster-general, by the assistance of his allies defeated and dispersed the Protestant Union under Frederick, the Elector Palatine. This was followed by the "Massacre of Prague," the "horrible persecution of all malcontents," the "banishment of thirty thousand Protestant families, and the total suppression of the Protestant religion." In this work the post-office was used as a machine for annoyance, espionage, persecution and warlike conquest. The very same postal concern is this day a stumbling-block and a serious impediment in the way of cheap postage between nations on the west—France, Great Britain and the United States—and people living in the eastern part of Europe. But the house of Thurn and Taxis own the post, pocket large profits, are deaf to all considerations of public good, and insist on the very highest paying (transit) rates of postage.

III. *The British Post-office.*—The Post-office of Great Britain, at once the most efficient, economical, and profitable of modern times, has a most interesting history. We find mention of postal couriers employed by government as early as the reign of King John. He summoned his barons to form the Parliament by issuing "letters patent." During this reign state accounts exhibit frequent items of charge for the carriage of letters. In the time of Edward II., there were fixed *posts* or stations where horses were kept for post-riders. In 1481, Edward IV., during his wars with Scotland, established, as stated by Gale, certain posts, twenty miles apart, where the riders relieved one another, and in this way conveyed letters one hundred miles a day. Long before there was any account of a national post-office, we meet with the superscription of letters,

"haste, poste haste." In 1581, during the reign of Elizabeth, Camden states that Thomas Randolph was chief postmaster of England, but nothing is mentioned as to his functions as a transmitter of letters.

Among the early records of postal affairs in Great Britain are various accounts of the violation of letters, particularly in the reign of Henry VIII. The English ambassador at the Court of James V., King of Scotland (Sir Ralph Sadler), gives numerous instances of the violation of letters by Cardinal Beaton. One messenger, a soldier from Berwick-on-Tweed, was employed to relieve the courier from the south on his way to Edinburgh, with dispatches for the embassador. He was called "the post." While on the way, he fell into the hands of Beaton's emissaries, and they seized the letters that were addressed to Sir Ralph Sadler, and refused to give them up. They were finally delivered, after they had been kept some days, and opened; "which," as Sir Ralph says, "being in cipher, they had kept the longer to prove their cunning in the deciphering of them, which (as I credibly am informed) they could do." A letter from the Earl of Angus, "Sir George Douglas hath to convey by post, and will, as he hath written to me, ride himself therewith to Berwick, because he dare trust no other man to carry it." He adds, "it is much ado to convey letters safely in this country." One messenger of King Henry was taken by the cardinal's party, who "threatened to hang him with all his letters about his neck." But on two notable occasions the wily cardinal—the Pope's *legatus à latere* in Scotland—had the tables turned upon him. One of his own couriers was shipwrecked and cast ashore near Bamborough Castle, was captured, and by the cardinal's letters found on him, it appeared that he ("through the authority of the Bishop of Rome") (the Pope) intended to get all power, spiritual and temporal, from the King of Scotland, while professing to be his friend. King Henry reported this to King James through his embassador. When he heard it, the incensed monarch said, "whatsoever he be in Scotland that we may know, doth not his duty both in the execution of God's laws above all, and also in the ministration of indifferent justice to our leges; by God," quoth he, "if we may know him, we shall not lett to punish him, be he spiritual or temporal."

The last notable act of this kind was when Cardinal Beaton sent Norman Leslie, son of the Earl of Rothes, and others, to Edinburgh, from his strong-hold at St. Andrews. Suspecting foul play, they "fingered the packet," and found they were the bearers of their own death-warrants. They returned by night, and at a very early hour in the morning, while the draw-bridge of the castle was lowered, rushed in and stabbed the cardinal in his own room. The journals and correspondence of this period contain various other instances of the violation of correspondence. The earliest mention of a postmaster, who had the charge of correspondence, and whose duties and privileges were defined, was in the reign of James I. of England. He was charged with "the sole taking up, sending and conveying of all packets and letters into foreign parts." The office was filled by Mathew le Questor, and by Mathew le Quester, his son. In 1635 King Charles issued a proclamation "for settling of the letter-office of England and Scotland." "This," says an English writer, "may properly be regarded as the origin of the British Post-office." By royal command, Thomas Witherings, Esq., was Postmaster-general. Posts were established from London to the Continent, and to Scotland and Ireland. In 1644 the Parliament made Edmund Pridcaux Postmaster-general, and he established a weekly mail. Cromwell made important improvements. He had an act passed "to settle the postage of England, Scotland, and Ireland." By this it was enacted that "there shall be one General Post-office, and one officer styled the Postmaster-general of England, and the comptroller of the Post-office." This officer was to have the "horsing" of all persons "riding in post." The rates of postage were fixed, and all other persons forbidden to "set up or imploy any foot-posts, horse-posts, or pacquet-boats." The postage of a letter eighty miles from London was two pence sterling; above that distance, in England, three pence; to Scotland, four pence; and to Ireland, six pence. Double letters were double these rates. The post-riders were required to ride seven miles an hour in summer and five in winter. Cromwell farmed the post-office out for £10,000 a year; and on the restoration of Charles II., in 1660, the office was rented for £21,500 a year. In 1663 the entire profits were settled on the king's brother, the Duke of York (afterward King James II.), and his heirs male. In 1685, by an order in council, a post-office was established on this continent "for the better correspondence between the colonies of America."

During the reign of James II., William Dockwra set up a local system of letter and parcel distribution in London. He was allowed to continue it for several years, until it proved profitable, and then his local letter system was seized under pretense that it encroached upon the royal prerogative. In the more modern history of the post-office there are parallel cases. In 1688 an act was passed for the establishment of a General Post-office in Scotland. In 1698 King William made a grant of the whole revennes of this office to Sir Robert Sinclair, with a subsidy besides of £300 a year. Even at this rate Sir Robert found it a losing business, and threw it up. In 1710 (9 Anne, ch. 10) an act was passed that may be considered the charter of the British Post-office. This act established a General Post-office throughout Great Britain and Ireland, the North American colonies, and the West Indies. It was all put under the control of one officer, styled her Majesty's Postmaster-general. The act provided for one chief letter-office in Edinburgh, one in Dublin, one in New York, and others in the West Indies. For a considerable period after the act of 1710, there were no relays of post-horses, one man or boy, and a horse, accomplishing an entire journey like the one from Aberdeen to Edinburgh, traveling by day and stopping at night. Up to 1768 there was only a tri-weekly mail from London to Edinburgh. That year the trips were increased to five times a week. The time required for the mail-coach to go between the two cities was from eighty-two to eighty-five hours. Until 1788, there was no direct mail from London to Glasgow. It is instructive to note the progress in the income of the British post-office for a period of two hundred years. The net and gross income of the British post-office at different periods will be seen in the following table, the last column giving the gross income in United States currency, reckoning five dollars to the pound sterling:

Years.	Net Revenue.	Gross Receipts.	Gross Receipts.
1653.....	£10,000	....	....
1663.....	21,500	....	....
1685.....	65,000	....	....
1096.....	67,922	£90,440	$452,200
1711.....	90,223	111,426	557,130
1754.....	97,365	210,663	1,053,315
1760.....	83,493	230,146	1,150,730
1770.....	156,062	305,015	1,525,075
1780.....	186,409	418,862	2,094,310
1790.....	331,170	571,863	2,859,315
1800.....	720,981	1,083,950	5,419,750
1810.....	1,188,889	1,855,746	9,278,730
1820.....	1,885,498	2,191,582	10,957,910
1830.....	1,504,020	2,265,481	11,327,405
1840.....	500,789	1,359,466	6,797,330
1845.....	761,982	1,887,576	9,437,880
1850.....	808,898	2,264,684	11,323,420
1855.....	1,065,056	2,716,420	13,582,100
1856.....	1,207,725	2,867,954	14,339,770

The first year of penny postage was in 1840.

To give the different rates of postage that have been levied at various periods since the act of Queen Anne would require a long tabular statement. In 1710 the charge for a single letter from London to Edinburgh,

and from London to Dublin, was sixpence. In England the rates were three, or four pence, according to distance; in Scotland, two, three, or four pence, and in Ireland two or four pence. The rates were altered, and generally increased in amount and also in number, in each of the three kingdoms—and without uniformity in either two—in 1765, 1784, 1797, 1801, 1805, and 1812, and in Ireland in 1813 and 1814. From two or three rates in 1710, they went on increasing in number until they reached the climax of absurdity and inconvenience in twelve different rates in England and Scotland, in 1812, and thirteen rates in Ireland, in 1814. In Scotland, in 1813, an additional half-penny was levied on all letters that were conveyed in mail-coaches. These absurd, complicated, troublesome, and multifarious rates of postage remained on the statute books until they were blown from existence by the reduction of all rates to one uniform charge of a penny, through the exertions of Mr. Rowland Hill, in 1840.

The next great improvement in the mail service of Great Britain was the introduction of mail coaches, in 1784. This was principally accomplished by the exertions of Mr. John Palmer. Like most new improvements, it was the project of an outsider, Mr. Palmer not being an officer of the post-office, but the manager of a provincial theatre. That extraordinary fatality usual in such cases took possession of nearly all prominent officials; and the Postmaster-general, members of Parliament, and other dignitaries, denounced the scheme as preposterous, undignified, and impracticable. The projector was pronounced a visionary zealot, and as unreliable as a madman. It appeared to Mr. Palmer that when passenger coaches traveled regularly over the principal roads at a much more rapid rate than the horse-posts usually did, the mails could, with advantage, be transported by them. At this day we can scarcely see tangible grounds for a violent opposition to a plan to adopt the swiftest and most reliable conveyance for the mails, except in that official jealousy, which never bears a rival near the throne, or that resents the assumption of an outsider in presuming to know any thing better than the servant of routine who is paid to carry on a concern that he feels no interest in improving. The mails were transferred to stage-coaches, all the opponents of the plan were put to shame, and Mr. John Palmer received from the Treasury the sum of £50,000, and an annuity of £3000 a year for life, for the benefits he had conferred on the nation in augmenting the national income, and increasing the facilities for correspondence.

IV. *Introduction of Cheap Postage.*—Mr. Rowland Hill, an English country gentleman, in no way connected with the government or the Post-office, set to work, in 1836, to devise a plan to effect some permanent improvements in the regulation and management of the postal establishment. He found, by referring to the official records of the Post-office Department, that while the population, the business of the country, and all branches of the national income (the post excepted) had greatly increased during the preceding twenty years, the revenue and business of the post-office had with some fluctuations, actually decreased. He compared the postal income to the revenue derived from stage-coaches, a branch of business that afforded a good index to the prosperity of the country. The following table exhibits at one view a comparison of the revenue from stage-coaches, with the net postal income; and a column showing what the net revenue of the post-office would have been in 1835 had the receipts kept pace with the revenue from coaches:

Years.	Revenue from Stage-coaches.	Increase per Cent.	Net Post-office Revenue.	Revenue which would have been.	Comparative Loss.
1815	£217,671	..	£1,557,291	£1,557,291	....
1820	273,477	25	1,519,547	1,946,000	£460,453
1825	362,631	66	1,070,219	2,585,000	914,781
1830	418,536	92	1,017,952	2,490,000	1,472,048
1835	498,407	128	1,540,300	3,550,000	2,009,700

Believing that the legitimate demand for the conveyance of letters and distribution of correspondence had increased as fast as that for the conveyance of persons and parcels, it was evident that, in effect, there was a loss in post-office revenue, amounting to £2,000,000. These facts and others were first submitted privately to the government, and in 1837 to the public, in a pamphlet, entitled "Post-office Reform, its Importance and Practicability." It was received with great favor, and in a short time passed through three editions. The author came to the following conclusions: He demonstrated clearly that the actual cost of conveying a letter by coach in the mail from London to Edinburgh—400 miles—was only one-thirty-sixth part of a penny. It must be evident that the actual difference of expense between transporting a letter one mile and delivering it, and carrying one four hundred miles to be delivered, did not justify a different rate of charge. He came to the conclusion that the large cost of distributing letters was the result of complex arrangements in the post-office, arising from many rates of postage. That these complex arrangements would be avoided if postage were charged, without regard to distance, at a UNIFORM rate. That all letters should be charged by weight, those reckoned as single letters that did not exceed half an ounce each. That the uniform charge for letters, including their delivery, should be one penny. That this rate of charge would afford the greatest facilities to the public, put a stop to correspondence through private channels, and eventually prove the most profitable to the government. That with the simplicity and economy of arrangement attending the uniform charge of a penny, there would be but little more expense attending a four-fold increase of correspondence than there was with the then numerous rates of postage. That the effect of a uniform penny rate would be to increase correspondence "in all probability at least five-and-a-quarter fold." [In 1856 the number of letters in the kingdom (478,893,808) had increased more than six-fold beyond the number in 1839 (then 75,907,572), the last year of the old rates.] That the necessary cost of primary distribution, instead of being 84 hundredths of a penny, as it was under the numerous rates of postage, would only be 32 hundredths of a penny, the difference, 52 hundredths of a penny, arising from the expensiveness of the arrangements, the excessive charges, and the consequent restriction of correspondence. That the secondary distribution of letters (the delivery) ought to be untaxed, so as not in any degree to interfere with the simplicity of arrangements attending a uniform and low rate.

A verification of Mr. Hill's predictions, almost amounting to prophecy, has been established by the working of the system. In his pamphlet, published in 1837, he predicted that the increase of correspondence, and the attendant economy of management that would result from a uniform rate of a penny, "would afford a probable net revenue"—that is, in a reasonable time—"of £1,278,000." In 1856 the net revenue was exactly £1,208,725. One statement will show the great economy of management under a uniform rate of postage. Taking the cost of carrying on the British postal establishment (transportation excepted) in 1857, before there was uniform postage, and in 1854 (with the uniform charge of a penny), and looking also at the number of letters at each period, we can see what the handling, sorting, distribution, and delivery amounts to per hundred or per thousand letters. The following is the official record:

Years.	Expense of Distribution.	Number of Letters.	Expense of each 1000 Letters.
1839.....	$2,528,852	82,470,696*	$30
1854.....	3,233,195	443,649,301	7

* This number included both franked and paid letters. Omitting free letters, the number was 75,907,572.

By the efforts of Mr. Wallace, M. P. for Greenock, Lord Ashburton, and others, a parliamentary commit-

tee was appointed; and after numerous sittings, and the examination of nearly a hundred witnesses from all classes and ranks of society, they made their report in two formidable blue-books, giving the entire testimony, and a great mass of official statistical information. It is a fact worth mentioning in this place that all great postal improvements, both in Great Britain and the United States, were commenced, carried on, and prosecuted to a successful termination, by citizens entirely unconnected with the postal establishment. So far from deriving aid from those who would be supposed to possess the ability and disposition to afford it —viz., those in the post-office—they have uniformly opposed all reforms. It was singularly true in the present inquiry. "It was found, by the commission, to be a matter of the greatest difficulty to extract from the post-office any information necessary for the elucidation of the inquiry." "Not only has the post-office been utterly barren of improvement itself, but its weight is thrown into the opposite scale." "Whenever the post-office attempted to give facts and estimates to combat Mr. Hill"—to quote from an eminent writer—"it was found that Mr. Hill was always right, and the post-office always wrong." A Chancellor of the Exchequer described the "gentlemen of the post-office" as "unwilling horses." Petitions to the number of 320, from 262 different places, and bearing over 38,000 names, were sent to Parliament, asking for the adoption of Mr. Hill's plan. In 1839 franking was abolished, and an act passed authorizing the lords of the Treasury to adopt a uniform rate of one penny on all single letters, without regard to distance. The penny postage went into operation on the 5th day of January, 1840.

The official reports of the Post-office, showing the revenue and expenditure, and the amount of correspondence, comprise the best eulogy of the principle of the uniform penny rate. It is no disparagement to Mr. Rowland Hill to say that, while he was once in favor of prepayment of postage being compulsory, he has long since receded from that idea. Prepayment is not, and never has been, compulsory in Great Britain, all letters being forwarded to the persons addressed, whether prepaid or not, with the exception of letters weighing over four ounces; and these, if not prepaid, are at once opened and returned to the writer. Letters not prepaid are charged double; and such letters, if refused or not delivered, are returned to the writer from the Returned-letter office, and the double postage then due may be collected by compulsory process. By this means the distribution of circulars and advertising sheets through the mails, without prepayment, is effectually prevented. In Great Britain it is customary to refuse all unpaid matter unless a name or the handwriting on the outside shows who the sender is; and so near universal is prepayment of all postage, that more than 98½ per cent. of all letters have their postage paid before mailing.

In Great Britain there is no Dead-letter office, and there are no "dead" letters. There is a "Returned-letter office," and all letters, and even papers and printed packages, that have not, for any reason, been delivered are at once opened or examined, and, where possible, returned to the senders. When the name is printed or written on the outside of the letter, or impressed in the seal, or where a coat of arms or device reveals the writer, the letter or package is returned unopened. As there is a letter delivery by carriers daily, or several times a day, at almost every post-office and post village, refused, misdirected, or other "stray" letters are at once known, and, by the above regulations, almost all letters that in other countries (and particularly in the United States) would be pronounced "dead," and condemned to a hopeless imprisonment for months, and then, perhaps, to be burned, are here sent back to the writers and rightful owners, and usually in less than a week from the day they are mailed. The practice now is to dispatch every letter on the day it is received at the Returned-letter office. The last annual report (1857) says: "By recent arrangements, returned letters are sent back to the writers much more quickly than formerly; every such letter (except from abroad) being now opened [where necessary], redirected and reposted on the day of its arrival at the Returned-letter office. The number of letters returned to the writers last year (1856), owing to failure in the attempts to deliver them, was nearly the same as in the previous year—viz., about 2,400,000, or about 1 in 200 of the whole number of letters posted. Owing to the same cause, about 550,000 newspapers, also, were undelivered, being about 1 in 129 of the whole number."

In the case of letters that can not be delivered, even though by the fault of the writers, the British post-office is supposed to be just as much the servant of the people as in the case of letters when originally mailed and correctly addressed, and every such letter is looked upon as a piece of property, to be sent to the person addressed, when possible, and when not, returned to the owner. All letters and packages that are prepaid, when returned, are delivered to the senders without any charge; and when not prepaid, double postage is exacted. With such system, simplicity, and facility is the returning of letters carried on, that each clerk returns two hundred per day.

The principle and operation of the British Penny-postage system is this: A minimum rate of postage is sought for that shall not be an exorbitant charge for the smallest packages the shortest distances, and this postage is paid by a stamp. Now the object is to make this stamp cover as large a number and variety of packages—written and printed—as possible. Each letter is called a "single" letter that does not exceed half an ounce in weight, and each package of printed matter—newspapers, circulars, hand-bills, pamphlets, or books—done up open at the ends or sides, is considered "single" up to four ounces. Here is the value, convenience, simplicity, and utility of UNIFORM postage, both to the public at large, and to those who handle, sort, rate, and attend to the letters and mails. Drop-letters, or more properly local letters—for they are not permitted to "drop" and become "dead"—and all local mail matter, is charged at the same rate as those that are transported five hundred miles. The consequence is readily seen. The penny stamp covers almost all—more than nineteen-twentieths—the packages that are mailed. A letter not weighing over half an ounce, local or otherwise, a newspaper, pamphlet, or other printed package, not weighing over a quarter of a pound, have the postage prepaid by the all-powerful, all-convenient, universal, uniform penny stamp. Then in larger packages the rates are not cut up so fine as to be inconvenient to either the citizen or the postmaster. Letters from half an ounce to an ounce are two postages, and after the first ounce each ounce or fraction of an ounce in excess is reckoned as two postages. In printed matter, after the first half pound, the reckoning is made by half pounds; each half pound, or fraction of a half pound, being charged two postages —two pence. All the items in this simplicity and uniformity of arrangement save a vast amount of time and trouble to the people, and the clerks and postmasters, in a nation that writes and sends by mail annually nearly six hundred million letters and printed packages, particularly as each letter and printed package has to go through from four to eight different processes or operations in the hands of the citizen, and from fifteen to twenty after it gets into the post-office. Would any other system but one that combines so much wisdom, economy, convenience, simplicity, uniformity, and utility, bring nearly six hundred million letters and packages through the post-office in a single year? A record of the business, and the revenues and correspondence of the post-office of the kingdom for a few years, will do something toward answering the question.

STATISTICS OF THE BRITISH POST-OFFICE.—[*Reduced to United States Currency.*]

REVENUE, EXPENSES, NUMBER OF LETTERS, AND NUMBER AND AMOUNT OF MONEY ORDERS IN THE UNITED KINGDOM, DURING A SERIES OF YEARS, COMMENCING WITH 1815, AND ENDING WITH 1856.

Years.	Gross Receipts.	Expenses.	Net Revenue.	Number of Letters.	Number of Money Orders.	Amount of Money Orders.
1815	$11,619,175	$3,523,195	$8,095,980	....	....	....
1825	11,343,683	3,286,800	8,056,208	....	....	....
1835	11,216,469	3,432,866	7,783,603	....	....	....
1836	11,753,012	3,603,699	8,144,313	....	....	....
1837	11,688,600	3,436,568	8,262,122	....	....	....
1838	11,731,390	3,433,841	8,297,549	....	....	....
1839	11,958,818	3,784,997	8,168,821	75,907,572	188,921	$1,565,623
1840	6,797,332	4,293,385	2,503,947	168,708,344	587,707	4 804,878
1841	7,497,093	4,690,845	2,806,248	196,500,191	1,552,845	15,637,538
1842	7,890,729	4,887,522	3,003,207	208,494,451	2,111,980	21,685,889
1843	8,104,338	4,903,252	3,201,086	220,450,306	2,501,523	25 564,204
1844	8,525,339	4,925,553	3,599,786	242,021,684	2,806,803	28,476,977
1845	9,437,883	5,627,971	3,809,912	271,410,789	3,176,126	32,060,805
1846	9,819,287	5,693,726	4,125,561	299,586,782	3.515,979	35,355,184
1847	10,005,084	5,982,600	4,022,484	322,146,243	4,031,185	39,516,886
1848	10,718,400	7,016,253	3,702,147	323,830,184	4,208,651	40,756,475
1849	10,826,749	8,032,814	4,203,935	337,399,109	4,248,891	40,763,219
1850	11,928,421	7,308,928	4,019,493	347,069,971	4,439,713	42,472,403
1851	12,110,841	6,590,918	5,519,923	360,647,187	4,681,025	44,402,104
1852	12,171,634	6,719,536	5,452,098	379,501,499	4,947,835	47,191,389
1853	12,872,039	7,003,229	5,868,640	410,817,489	5,215,290	49,580,976
1854	13,509,313	7,632,781	5,976,532	443,649,201	5,466,244	52,312,459
1855	13,582,100	8,256,820	5,325,280	459,216,176	5,807,412	55,046 395
1856	14,389,770	8,301,145	6,058,625	478,393,803	6,178,982	59,027,810

The money columns give the amounts in United States currency, calculating five dollars to the pound sterling. It will be seen that the gross and net revenue of the post-office for twenty years, from 1815 to 1835, actually declined. Then there were twelve or fourteen rates of postage for letters, averaging about six and a half pence sterling (13 cents) a letter. With a reduction to the uniform rate of a penny—less than one-sixth of the former rates—the postal revenue more than recovered in eleven years, while the number of letters sent by mail annually increased from 75,907,572 in 1839, to 478,393,803 in 1856. The remittances of money, in money orders, increased from a million and a half in 1839, to fifty-nine millions in 1856. To make a direct comparison between the use of the post-office in Great Britain and in the United States, it may be stated that, after a careful estimate, the number of letters sent through the post-office in this country since 1789, to 1856, inclusive—a period of sixty-seven years—has been 1,652,104,648, while in Great Britain, in the years 1853, 1854, 1855, and 1856, the number of letters was 1,789,076,769; or more in that country in four years, with low and uniform postage, than in this country since the formation of the government, now nearly three-quarters of a century! During ten years—from 1847 to 1856, inclusive—the population of London alone sent by post 920,527,039 letters, or more than in the entire United States during the same period; the latter numbering 888,527,549! But in Great Britain there was one uniform rate for letters, and one uniform scale by weight for printed matter, while in this country there are three rates of postage on letters, and on printed matter, from a small newspaper to a large book, the number of rates is almost one thousand! Under the post-office system of Great Britain there is a free-letter delivery, a safe way of remitting money by money orders, that is used to the extent of about sixty millions a year, and one low rate of postage that brings an annual income of over fourteen millions of dollars. In the United States the postage is higher; there is no uniformity, no letter delivery, and no money order system, and our population scarcely pay seven millions in postage. The people of Great Britain can scarcely one half of them read or write, and yet they write and send by mail almost 500,000,000 letters in a year.

The population of the United States, numbering just about the same as Great Britain, and nearly all able to read and write, only write and send by mail 131,000,000 letters in a year. Are further facts and illustrations necessary to show the superiority of the British postal system, or the relative merits of the "uniform postage" and the "complex postage" systems?

The correspondence between Great Britain and several of her colonies, and foreign countries, for the year 1856, will be seen in the following table:

ESTIMATED NUMBER OF LETTERS, NEWSPAPERS, AND BOOKS BETWEEN GREAT BRITAIN AND CERTAIN COLONIES AND FOREIGN COUNTRIES.

	Letters Outward.	Letters Inward.	Inward and Outward.	Newspapers and Books Outward.	Newspapers and Books Inward.	Inward and Outward.
Africa, West coast of	28,800	28,836	57,636	22,884	4,032	27,516
Australia	918,733	*	*	1,842,466	*	*
Belgium	3.5,811	250,564	576,375	202,740	185 460	388,200
Brazils	66,252	80,076	146,328	123,408	60,084	183,492
Bremen	57,166	49,538	106.704	19,608	*	*
Canada	358,984	396,915	755,199	908,928	424,416	1,332.444
Ceylon	28,722	37,542	66,264	114,084	22,122	136,206
East Indies; viz., Bombay, Calcutta, Madras, Aden, Penang, and Singapore	610,482	647,800	1,258,282	979,068	220,687	1,199,755
France	2,184,916	2,021,610	4,206 526	718,296	614,304	1,332,600
German Postal Union	911,957	635,145	1,547,102	586,968	184,380	771,348
Hamburg	385,445	257,640	643,094	140,592	127.868	277,460
Holland	233 632	179,827	413,459	81,636	44,808	126.444
Hong Kong	72 522	78,228	150,750	105,930	59,228	165,158
Mauritius	20,730	16,530	37,260	43,164	26,250	69.414
Mediterranean, including Malta, Alexandria, and Ionian Islands	284,786	175,056	409,842	92,802	9,420	102,222
Spain and Portugal; viz., Lisbon, Oporto, and Gibraltar	171,846	164,088	335,934	75,492	4,860	80,262
Sweden	26,015	17,253	43,268	4,776	3,264	8,040
United States	1,733,745	1,547,054	3,280,799	1,063,584	872,664	1,936,248
West Indies and Pacific	322,716	281,700	604,416	572,412	122,496	694,908

* No returns.

The total amount of correspondence in each of the three kingdoms, as well as the local and other letters in London for seventeen years, is exhibited in the following table:

NUMBER, AS NEARLY AS CAN BE ASCERTAINED, OF CHARGEABLE LETTERS DELIVERED IN GREAT BRITAIN IN THE YEAR IMMEDIATELY PRECEDING THE FIRST GENERAL REDUCTION OF POSTAGE, ON THE 5TH OF DECEMBER, 1839, AND IN EACH COMPLETE YEAR SUBSEQUENT THERETO.—[*Franked or Free letters marked* *.]

Years.	By Country Offices.	London District exclusive of Local Letters.	Localities in London District.	Total in England and Wales.	Total in Ireland.	Total in Scotland.	Total in United Kingdom.	Increase per Cent on the previous Year.
1839.....	....	....	....	59,982,520	8,801,964	7,623,148	75,907,572	....
1839.....	....	....	....	*5,172,284	*1,054,508	*336,32	*6,563,024	....
1840.....	88,071,308	23,559,835	20,372,392	132,003,525	18,210,642	18,554,167	168,768,344	122½
1841.....	103,305,677	27,066,722	23,108,722	154,471,121	20,794,207	21,284,772	196,500,191	16½
1842.....	111,115,489	29,285,282	23,389,042	163,890,713	22,328,154	22,215,583	208,434,451	16
1843.....	117,704,474	30,908,743	24,881,410	173,494 627	23,482,463	23,473,216	220,451,306	5¾
1844.....	129,0 6,028	33,575,936	26 980,400	189,652,419	25,937,188	26,502,077	242,091,684	9¾
1845.....	147,2:7,431	36,007,711	30,328,486	214,128,628	28,587,993	28,669,168	271,410,789	12
1846.....	162 624,024	39,993,031	33,261,060	235,878,755	32,572,947	31,135,060	299,586 762	10½
1847.....	175 023,407	43,757,540	34 63 1,317	253,411,764	35,473,316	33,261,163	322,146,243	7½
1848.....	180,716,102	45,901,153	33,672,747	260,289,002	31,887,481	33,563,101	325,839,184	2
1849.....	187,382,320	45,845,683	33,960,318	267,188 410	35,405,913	34,746 876	337,399,199	2½
1850.....	192,508,028	44,856,170	33,887 844	276,252 642	35,988 8 5	35 427,534	347,069,071	2½
1851.....	199,7 46,804	47,819,499	40,585,952	288,151,755	35,192,782	36 512,649	360 647,187	4
1852.....	212,083,733	51,171,423	40,403,207	304 208,363	37,440,053	37,843,152	379,591,499	5½
1853.....	232,804,177	54,402,023	42,316,314	329,722,514	40,419,665	40,675,310	410,817,489	8½
1854.....	254,022,067	56,186,159	46,191,567	358,300,636	41,284 596	44,114,009	443,649,301	8
1855.....	263,037,597	59,647,543	45 844,963	368,530,340	41,832,834	45 85 5,0 2	456,216,176	2¾
1856.....	275,453,824	64,901,321	47,894,708	388,309,853	41,851,008	48,232,942	478,393,803	4¾

POSTAL STATISTICS OF TWENTY-FIVE LEADING CITIES AND TOWNS OF GREAT BRITAIN, GIVING THE NUMBER OF PERSONS EMPLOYED, AND THE POSTAL REVENUE, LOCAL EXPENSES, AND MONEY REMITTED IN MONEY ORDERS.

Cities.	Population.	Clerks, Sub-postmasters, Receivers, etc.	Letter-carriers.	Local Expenses.	Postal Revenue.		Money Orders.	
					1855.	1856.	Issued.	Paid.
London.....	2,362,236	1207	1385	£215,653	£317,338	£334,027	£2,202,229	£3,336,679
Liverpool.....	375,955	147	82	14,029	92,842	100,379	358,646	360,874
Manchester.....	316,213	160	123	12,765	78 121	85 301	325,029	386,809
Glasgow.....	329,097	123	134	10,096	57,788	63.441	153,810	192,199
Edinburgh.....	160,302	82	74	11,043	41,922	56,270	123,271	205,583
Dublin.....	258,361	124	109	19,036	48,490	55,103	266,043	210,558
Birmingham.....	232,841	90	64	7,364	35,695	38 849	192,443	305,874
Bristol	137,328	119	53	6,158	28,510	29,067	132,477	208,289
Leeds	273,013	98	42	5,123	19,525	21,433	110,485	140,229
Newcastle	87,784	51	25	2,983	18,494	19,647	97,230	83,302
Hull	84,630	67	46	3,900	16,575	16,960	97,192	118,395
Sheffield.....	135,310	46	22	2,642	14,509	14,782	83,604	93,487
Bath	54,240	82	47	3,966	13,765	14,384	78,264	72,197
Bradford	149,543	37	25	1,866	11,824	13,136	45,032	41,228
Belfast	100,300	39	20	1,869	10,352	12,122	41,506	44,375
Exeter	40,688	69	30	2,807	10,118	11,015	65 899	77,595
Norwich.....	68,195	81	41	2,883	11,229	11,870	50,822	61,737
Southampton	35,305	54	24	2,614	12,228	11,685	76,901	70,714
Nottingham	57,407	52	28	2,206	10,528	11,266	80,727	66,701
Aberdeen	71,973	53	20	1,707	10,018	11,130	32,500	42,426
Portsmouth.....	72,096	13	16	1,637	10,858	10,804	90,555	70,043
Plymouth	52,221	29	19	1,767	10,197	10,221	64,115	67,649
Wolverhampton	119,743	23	14	1,336	8,086	8,780	50,213	33,437
Derby.....	40,609	44	20	2,171	8,202	8,650	40,448	43,194
Leicester	60,584	27	23	1,649	7,227	7,853	47,689	45,788

The rate of letter-postage between Great Britain and each of her colonies—over forty in number—is sixpence sterling, except to the Cape of Good Hope, Natal, Labuan, Gambia, Island of Ascension, Falkland Islands, and Vancouver's Island. A book-post, for the transmission of every species of printed matter, has also been established with the most of the colonies. The above table exhibits at one view the population, annual postal revenue, local post expenses—for rent of post-offices, salaries, etc., not transportation—amount of money remitted by money orders in a year, together with (second column of figures) the number of clerks, postmasters, sub-postmasters, and letter-receivers, and (third column) the number of town and rural letter-carriers in (and around) twenty-five of the leading cities and towns of Great Britain. The population is from the census of 1851, the local expenses and number of persons employed, for the year 1854, the money orders for 1856, and the postal revenue for both 1855 and 1856.

The British money order system is one of the most important adjuncts to the Post-office. This was first started as a private enterprise by certain officers of the post-office, in the year 1792. The commission charged was eight-pence to the pound sterling, making the whole business complicated and expensive. The consequence was, it afforded little profit to the projectors, and but very trifling accommodation to the public. The three officers engaged in it received less than two hundred pounds sterling each, ir annual profits, the entire commissions amounting in a year to less than four thousand pounds. August 13th, 1838, the money-order office was attached to the post-office, and the officers compensated for their rights. At first the commissions were put at six-pence sterling for all orders less than two pounds, and one and six-pence for orders between two and five pounds. These commissions were reduced on the 20th of November, 1840, to six-pence and three-pence respectively. No order is granted for more than five pounds. The number of persons employed in the money-order office at first was three. This was in 1838. In 1841 there were thirty-seven, and now in the money-order office in London alone there are nearly two hundred. We have seen in a table on a previous page [1558] the vast increase in the money-order business in the kingdom. In 1839 the number of orders was less than two hundred thousand, and the amount of money emitted about $1,570,000. In 1856 the number of orders had increased to over six millions in number, and the amount in a year to about sixty million dollars. The money order is a draft from one postmaster on another, and is paid at sight, in specie, to the person in whose favor it is drawn. It is as safe as a duplicate bank check before it is endorsed, and if proper care is used in remitting it; if it gets lost or stolen, it will be impossible for any but the rightful owner to obtain the money on it, even by committing forgery, as a casual finder

will not know the name of the person in whose favor it is drawn. It is safe to say that not one money order in five hundred thousand gets appropriated by the wrong person. All post-offices are not money-order offices.

There are in the United Kingdom 10,866 post-offices. Of these 845 are head post-offices, and 10,021 sub-post-offices. The number of post-offices where money orders are bought and sold is 2095. The net profit on money orders during several years was as follows: In 1849, £822; in 1851, £7437; in 1854, £16,167; and in 1856, £22,674. The commissions averaged less than one per cent.

One vast superiority of the British Post-office consists in the facilities for rapid delivery and local distribution in cities and towns. The postage on each local letter being one penny, the same as for letters the longest distance, there is a very large profit on the local distribution of letters, admitting that the carriers deliver every thing "free" that comes from other places. The clear profits on the local distribution of letters in London alone, after deducting the entire expense of letter-carriers, receivers, and mail-men, is over $900,000 a year. It will then be seen that the term "free-letter delivery" is a misnomer. By the figures in a table on a previous page it will be seen that the number of local letters in London annually is over forty-seven millions. The machinery for the local distribution of letters in London consists of about 1400 letter-carriers, one or two score of mail-men, with horse and cart, and about 500 sub-postmasters and letter-receivers. In all the densely populated parts of London there are hourly deliveries through the day, and more than four-fifths of the first morning delivery is accomplished between the hours of seven and a quarter past nine. More than one half is done before nine o'clock. In addition to the "receiving-houses," where stamps can be purchased and letters can be posted at all hours of night and day, there are now in use a large number of "letter-pillars" of cast iron. These convenient receptacles of letters have given great satisfaction, and are rapidly coming into use in cities, towns, and country districts. There is but one assignable cause for the extensive use, large income, and great profit, of the British Post-office. The charges are simple, uniform, and low; the accommodations numerous, and the deliveries rapid and punctual. The estimated number of book packages that passed through the British Post-office in 1856 was 3,000,000, the newspapers 71,000,000, and the letters 478,893,803, being a total number of 552,893,803 packages. This is probably one half of the entire number sent by mail in the civilized world.

The *personnel* of the Post-office of the United Kingdom is as follows:

Postmaster-general, Duke of Argyle	1
Secretary of the Post-office, Rowland Hill, Esq.	1
Assistant secretaries	2
Secretaries for Scotland and Ireland	2
Surveyors	15
Heads of Departments, etc.	19
Mail guards	204
Clerks	1,573
Letter-carriers and messengers	10,427
Postmasters and receivers	10,866
Total	23,130

The expenses of the British Post-office for 1856 were as follows:

Salaries, wages, etc.	£903,004
Hereditary pensions	29,310
Buildings	33,330
Mail conveyance by railway	376,363
Conveyance by coaches, etc.	162,837
Conveyance by water	14,300
Manufacture of postage stamps	26,164
Miscellaneous	108,822
Total	£1,660,229

It is an invariable rule in the British Post-office that all persons appointed shall be of a suitable age, and shall submit to a rigid examination, to see if they possess the necessary qualifications. Letter-carriers and sorters must be between the ages of 17 and 27 at the date of their original appointment, and shall undergo an examination by a physician to see if they possess the requisite health and strength. Wages and salaries are not exorbitant, but none are discharged except for some fault or dereliction of duty; and after a certain number of years of faithful service, they are permitted to retire on a pension, amounting to from one third to two thirds of their salary, according to the length of time they have served.

We will close our account of the post-offices of Great Britain by giving the revenue and expenditure, the rates of postage, and the various improvements introduced into the post-offices of the principal British colonies since the introduction of the penny postage into England in 1840. The revenue and expenses in each case are for 1854, except for Canada, which is for 1855.

Colonies.	Nature and Date of Improvements.	Rate or Rates of Letter Postage.	Revenue.	Expenses.
		Cents.		
Barbadoes	Inland post (1852), uniform postage and stamps	2	$6,225	$9,750
Canada	Reduced postage (1851) and postage stamps	1 to 5	387,525	510,485
Ceylon	Reduced postage (1846)	2, 3, 6, 9, and 12	38,855	42,975
Gold coast	Post established in 1858	12, 18, and 24	....	....
India	Uniform postage and postage stamps (1854–'55)	1½	1,375,835	1,515,220
Jamaica	Charge by weight instead of pieces (1843)	8, 12, 16, 20, and 24	65,040	50,410
Mauritius	District post-offices and postage stamps	4	2,215	4,900
New Brunswick	Reduced postage and postage stamps (1851)	5	40,650	54,125
Newfoundland	Inland posts (1802), and uniform postage (1858)	5	1,810	3,640
New South Wales	Reduced postage and postage stamps (1851–'54)	2 and 4	120,635	201,665
New Zealand	Uniform postage and postage stamps	4	11,045	11,150
Nova Scotia	Reduced postage and postage stamps (1851–'56)	1½ and 5	27,330	19,595
Prince Edward's Island	Uniform postage (1851)	4	4,715	10,455
South Australia	Uniform postage (1854)	4	37,385	47,790
Tasmania	Reduced postage and postage stamps (1851–'53)	2 and 4	40,990	81,455
Trinidad	Uniform postage and postage stamps (1851)	2	7,665	9,225
Victoria	Reduced rates and postage stamps (1850)	4 and 8	834,745	729,350
Western Australia	Reduced postage and postage stamps (1852–'54)	2 and 4	7,180	10,265
Total	.....	.....	$2,597,445	$3,439,215

Nearly or quite all of the improvements introduced into the colonial post-offices appear to be the direct result of the success of the penny postage in Great Britain. It will be seen that many of them cling to the old absurdity of a number of rates, all entailing great inconvenience on every person that mails a letter, and greatly multiplying the operations and increasing the labor and expense in the post-offices.

V. *Postal Statistics, and Rates of Postage in other Countries.*—There are certain peculiarities and features of interest in many of the Continental post-offices of Europe that deserve notice, leaving the prominent statistics to be given in tabular form. In the German Postal Union, in Prussia, Switzerland, Spain, and some other countries, the post-office undertakes the carriage of passengers and small parcels as well as letters and mail matter. In this species of traffic the government does not hold an absolute monopoly, but, like stage proprietors that get the mail contract, they are enabled to hold an undue competition with all outsiders, resulting from their advantages as mail carriers. In nearly all the Continental cities the government post

makes the delivery of letters a part of the postal business.

The absurdities in some of the postal systems of the Continental states consist generally of a varied scale of charges, and the adoption of so low a standard of weight as to make a great deal of useless labor in the rating of letters, besides putting other states that enter into postal relations with them to serious inconvenience. The half-ounce scale for letters is in use in the United States, Peru, New Granada, Equador, Brazil, Great Britain, Spain, Holland, Denmark, Iceland, Prussia, Austria, Baden, Bavaria, Frankfort-on-the-Maine, Hamburg, Hanover, Lübeck, Saxony, Würtemberg, and sixteen British colonies. The quarter-ounce scale is used only in France, Switzerland, Sardinia, and Tuscany; while a weight equivalent to one-third or three-eighths of an ounce is used in Portugal, Belgium, and Brunswick. Russia, Chili, and Bremen, adopt the ounce scale for single letters, Sweden a weight that is equivalent to about five-eighths of an ounce, and the Kingdom of Naples still uses the old plan of charging by the sheet. The half-ounce scale being in such extensive use, is it too much to expect that the time may soon come when all the principal commercial nations will adopt that standard, without waiting for a uniform system of weights and measures? France is the principal nation now in the way of such an arrangement. By insisting on a quarter-ounce scale for foreign letters, that government puts the public and the postal authorities of other nations to great inconvenience, and there is nothing gained by it. Such a rate can be adopted as will prove remunerative, and by having a scale reducible to greater convenience and simplicity, much labor is saved. To see this in the most striking light, let us look at the former rates in use a few years ago in Spain. Domestic letters were considered single up to six-sixteenths of an ounce, and the postage charged was one real (5 cents), with the addition of one cent for each eighth of an ounce beyond the weight considered as single. Then all letters sent to the Spanish islands were considered single up to *five*-sixteenths of an ounce, and charged thirty-five cents, with the addition of ten cents for every sixteenth of an ounce beyond! Is not this excessive fineness as absurd—except in degree—as it would be to weigh and reckon by the single grain? This old absurdity and inconvenience in weighing and rating letters in Spain has been swept away by the adoption of the regular half-ounce scale. In Great Britain, up to two ounces, there are but three rates of postage for letters, while in the United States there are nine rates. When will the convenience and economy of simplicity in the arrangement of matters having such a vast detail as postal operations be clearly understood by the nations? Let us look at one fact. There are passing through the British Post-office in a year, in round numbers, five hundred million (500,000,000) letters, and each one of these, in the various processes of sorting, rating, stamping, mailing, and delivery, goes through not far from twenty (not less) distinct processes, besides what is done in bulk, like weighing and transportation. This is by the employés of the Post-office, independent of all the care and labor of the public in considering the various charges, rates, weights, and adjustment of differences. Here, then, are *ten thousand million*—let us see how it will look in figures, 10,000,000,000—different and distinct handlings and processes of separate letters, each of them consuming and requiring more or less time, toil, talent, and care; and every useless or needed operation, turn, or thought, bestowed on a letter in its passage through the mail in Great Britain entails at once an additional five hundred million (500,000,000) processes or operations on the postal laborers annually! Will those who make laws for the post-office think of these things? Will it, need it, any longer be a matter of wonder that the annual correspondence of Great Britain has increased from 75 million letters to about 300 millions; that it is all done for a penny a letter, and that about one half of the revenue from this source is clear profit?

POSTAL REVENUE AND EXPENSES OF DIFFERENT NATIONS AT DIFFERENT PERIODS, TOGETHER WITH THE NUMBER OF RATES OF POSTAGE ON SINGLE LETTERS, WITH THOSE RATES AT THE PRESENT TIME (AS NEAR AS IT CAN BE STATED FROM AN EXAMINATION OF OFFICIAL REPORTS), ALL SUMS BEING GIVEN IN UNITED STATES CURRENCY; THE RATES OF POSTAGE IN CENTS, AND THE REVENUE AND EXPENSES IN DOLLARS.

Countries.	Letter Postage.	Number of Rates.	Date.	Postal Revenue.	Postal Expenses.	Date.	Postal Revenue.	Postal Expenses.
	Cents.							
Austria	2½ to 7½	3	1841	$3,153,400	$2,080,845	1852	$4,534,025	$4,109,300
Baden	2½ to 7½	3	1841	458,570	346,570	1852	481,815	374,645
Bavaria	2½ to 5	2	1842	354,170	....	1853	388,240	....
Belgium	2 to 4	2	1848	693,095	803,060	1852	700,355	332,340
Brazil	3½	1	1842	50,980	82,405	1851	114,385	151,510
Bremen	2 to 3	2	....	....	....	1853	5,000	2 500
Brunswick	1½ to 3	3	1848	83,745	64,315	1852	105,960	74,700
Chili	5	1	....	....	....	1853	70,455	48 585
Denmark	2	1	1841	397,780	271,019	1853	354,815	352,025
Equador	12 to 30	4	....	....	....	1852	12,475	11,140
France	2 to 4	2	1847	10,059,135	7,095,405	1852	9,321,900	6,623,925
Frankfort	1 to 7½	4	....	....	....	....	....	....
Great Britain	2	1	1840	7,797,382	4,293,385	1856	14,339,770	8,301,145
Hamburg	2½ to 7½	3	1851	39,730	16,535	1852	41,645	15,310
Hanover	3	1	1849	178,810	62,350	1852	157,060	60,200
Holland	2 to 6	3	1849	502,735	150,635	1852	676,085	311,305
Iceland	Free	1	....	....	....	....	....	....
Lübeck	2½ to 7½	3	....	....	....	1852	22,085	13,105
Naples	2 to 4	3	....	....	....	....	....	....
New Granada	8 to 12	2	1850	83,330	....	1852	101,625	....
Oldenburg	2½ to 3	2	1851	63,630	54,550	1852	61,805	60,600
Peru	6 to 48	6	....	....	....	1852	38,000	38,000
Portugal	2½	1	....	....	....	1853	184,500	158,375
Prussia	2½ to 7½	3	1843	5,615,130	4,479,220	1853	6,427,980	5,605 5 5
Russia	8	1	1842	3,3-7,745	1,899,040	1852	3,855,400	2,419,810
Sardinia	4	1	1850	6 5,580	335,190	1852	642,530	393,535
Saxony	1 to 4½	3	1849	588,780	398,185	1852	667,885	453,370
Spain	5	1	1844	1,271,000	763,000	1852	1,631,850	1,044,350
Sweden	2 to 10	9	1839	260,000	226,500	1852	331,440	3 1,940
Switzerland	1 to 3	3	1850	1,035,730	886,130	1852	1,302,925	962 420
Tuscany	2½	1	1849	152,075	79,5 5	1852	225,545	142,415
United States	1 to 10	3	1840	4,543,522	4,718,236	1850	7,020,822	10,497,863
Würtemberg	1 to 4	3	....	....	....	1852	384 800	371,435

Nearly all of the European (continental) nations make it a part of their postal business to transport passengers and parcels as well as mails. In consequence of this arrangement, an accurate comparison of the financial results of the different postal systems can not be given. The total annual revenue of the post-offices on the Continent of Europe, at the latest dates given above, amounted to $32,403,405—probably one third

of this being for goods and passengers—and the total annual expenses to $24,362,450. The post-offices of South America had an annual revenue of $368,890, with expenses to the amount of $249,235. If we assume that one gross third of the postal revenue and expenses on the Continent of Europe are on account of passenger and parcel traffic, we shall be able to make the following summary statement of the postal affairs of different nations and different parts of the world; the figures standing exclusively for the legitimate postal traffic—letters, papers, and printed documents:

Nations	Revenue.	Expenses.
Great Britain	$14,539,770	$8,391,145
British Colonies	2,497,420	3,146,230
United States	7,620,822	10,407,568
Total	$24,458,012	$21,855,243
Continental Europe	$21,606,270	$16,241,632
South America	336,890	249,235
Total	$21,943,160	$16,490,868
Grand total	$46,401,172	$38,346,111

If we add to the above the one third of the postal revenue of European countries that was deducted for parcel and passenger traffic, we shall have the sum of $57,201,307 as the total annual revenue of all the post-offices in the world (that we have given above), and $46,466,928 as the total annual expenses. Of the legitimate postal traffic—letters and printed matter—more than one half of the revenue is in the United States, Great Britain, and the British colonies.

A fair estimate of the amount of letter correspondence may be arrived at by the following calculation: The rates of postage in Great Britain being much lower than in most other countries, we may assume that one dollar of revenue in that country represents as many letters as two dollars throughout the rest of the world. The annual postal revenue of Great Britain is $14,339,770; of the British Colonies, $2,497,420; and of the rest of the world, $29,563,982. From this we conclude that the correspondence by mail in Great Britain and the British colonies amounts to rather more than the correspondence in all the other nations referred to. The correspondence through British post-offices amounts to about 500,000,000 letters annually, and—including this number—in all the nations under consideration, not far from 1,000,000,000. In this calculation, of course, we do not include China, Turkey, and other countries, of which no statistics are given. Of the fifty-one nations and colonies mentioned in the preceding and a former table (page 1560), thirty-six adopt the half-ounce scale for letters. Ten of the nations and nine British colonies have uniform postage, while in one only (Iceland) the postage is free, the entire expense being defrayed from the national treasury.

The following table has been compiled to show the actual and comparative amount of money paid in postages in each of seven different countries, during the same year (1853), along with the population, and columns, also, showing the cost of each thousand letters, together with the number of letters in a year, the number for each thousand persons, and the money paid annually (on the average) by each thousand persons. The last line gives the same statistics for Great Britain for 1839, the year before the penny postage was established. Except this last, the statistics are all for the year 1853:

Countries.	Population.	Postal Revenue.	Postal Expenses.	Number of Letters.	Cost of 1000 Letters.	Revenue per 1000 Persons.	Letters per 1000 Persons.
Switzerland	2,392,740	$447,572	$341,028	19,773,620	$23	$187	8,239
Holland	3,056,591	288,162	156,784	13,349,859	22	94	4,367
Belgium	4,426,202	755,648	327,118	11,521,975	66	171	2,603
Spain	13,936,218	1,281,761	1,095,398	30,775,986	42	94	2,209
France	35,783,170	9,321,900	6,623,925	150,000,000	39	260	4,192
United States	23,191,876	5,240,724	7,982,757	102,189,143	58	256	4,404
Great Britain	27,833,501	12,872,039	7,003,399	410,817,489	51	462	14,760
Great Britain, 1839	26,988,910	11,955,318	5,784,997	82,470,596	145	443	3,055

In those countries where the post-office engages in passenger and parcel traffic, the revenue has, in the above table, been given only for the letters and mail matter.

VI. *History of the United States Post-office.*—Having taken a rapid survey of the postal affairs of other countries and other times, we will glance at the progress and condition of the post-office in the United States. Probably the earliest mention of a legal post in the British colonies of North America is found in the General Court records of Massachusetts in 1639. We find it there recorded as follows: "It is ordered that notice be given, that Richard Fairbanks, his house in Boston, is the place appointed for all letters which are brought from beyond the seas, or are to be sent thither, are to be left with him; and he is to take care that they are to be dellvered or sent according to the directions; and he is allowed for every letter 1*d.*, and must answer all miscarriages through his own neglect in this kind, provided that no man be compelled to having his own letters except he please." In 1667, in consequence of the uncertainty and loss attending correspondence, a petition was signed by some twenty persons, "*To the Honorable General Court, now sitting in Boston.*" That petition set forth that "several of us being sensible of the loss of letters, whereby merchants, especially with their friends and employers in foreign parts, are greatly damnified; many times the letters are imputed and thrown upon the exchange, so that those who will may take them up; no person, without some satisfaction, being willing to trouble their houses therewith," etc., etc. They then request that the honorable court "will depute some mete person to take in and convey letters according to directions." After due deliberation, they did "make choice of Mr. John Hayward, the scrivener, to be the man." There are no records to show how long John Hayward kept his office, or what amount of business he did. In 1657, the colony of Virginia passed a law requiring each plantation to provide a messenger to convey the government dispatches as they arrived, each planter in succession sending a messenger to the next, and so on to the final destination. The penalty for neglecting this duty was a hogshead of tobacco. In 1672 Governor Lovelace, of New York, established "a post to goe monthly" from New York city to Boston and back. This purported to be in obedience to his Majesty's commands, "who enjoynes all his subjects in their distinct colonys to enter into a strict allyance and correspondency with each other, as likewise for the advancement of negotiation, trade, and civill commerce, and for the speedy intelligence and dispatch of affayres." It gave notice that a messenger would start on the first of January, 1673, and that "If any, therefore, have any small letters or portable goods to be conveyed to Hartford, Connecticott, Boston, or any other parts on the road, they shall be carefully delivered according to the directions, by a sworne messenger and post, who is purposely employed in that affayre. In the interim, those that bee disposed to send letters, lett them bring them to the Secretary's office, where, in a lockt box, they shall be preserved till the messenger calls for them. All persons paying the post before the bagg be sealed up." The mails at this period did not appear to have a very rapid transit. The post-riders set out from New York and Boston simultaneously, on Monday morning, and on the Saturday evening following, they met at the half-way house, Saybrook, Connecticut, where they exchanged mails, and each wended his way back, arriving on Saturday of the following week. At the present time,

instead of two weeks being required, and a semi-monthly mail only, the mails are transported between Boston and New York three times a day, each way, in from eight to eleven hours; two weeks being ample time to convey the mails from New York to Copenhagen, Denmark, to Marseilles, Berlin, Vienna, or Trieste. It is shrewdly suspected that the fatherly care exhibited by King Charles for a mail service, and a "strict allyance and correspondency" between the American colonies, was with an eye to the profits, which all went to a member of the royal family.

In 1683 William Penn established a post-office in Pennsylvania, and appointed Henry Waddy postmaster. The mails were sent to the principal towns in Pennsylvania, and to the neighboring colonies, once a week, the times of departure being regularly published "on the meeting-house door and other public places." Postal affairs in the colonies received marked attention in England, in 1685, on the accession of King James, who owned the Post, and put the profits in his own privy purse, and an order in council was made "for the better correspondence between the Colonies of America." In 1686 an order was made in New York that all letters coming from beyond sea should be delivered at the custom-house. The postage was "four-pence half-penny for a single letter, and nine-pence for every packett or double letter," "one half of the money to be given to the poor," under the direction of the Captain-general and the Council, and the other half to the officers of the custom-house.

In 1691–'92 Thomas Neal, by letters patent, was appointed Postmaster-general, with authority to erect post-offices in the American colonies. It appears, however, that he did not act himself, but appointed Colonel Andrew Hamilton, of New Jersey, Postmaster-general for all the colonies. In 1692, by the recommendation of Colonel Hamilton, the Common Council established a post-office in New York city. It was located in Broadway, opposite the end of Beaver Street. The rates of postage were, for eighty miles or under, four-pence half-penny; from New York to Philadelphia, nine-pence; and to Virginia, twelve-pence. The expense, however, was found greatly to exceed the income. For ten years there was no regular Post further east than Boston, or further west than Philadelphia. Lord Cornbury wrote home, in 1704, saying "there is no other Post upon all this continent. If I have any letter to send to Virginia or to Maryland, I must either send an express, who is often retarded for want of boats to cross those great rivers they must go over, or else for want of horses; or else I must send them by some passengers who are going thither. The least I have known any express to take hence to Virginia has been three weeks." At this period the mail was carried twice a month in stage-coaches, between Boston and New York and Philadelphia; and from New York to Albany by a foot-post, once a month. In 1732 a General Post-office was established in Virginia, and a post-office in each county. In 1736 there was a weekly mail from Philadelphia to New York and Boston. In 1737 Colonel Spottswood, formerly Governor of Virginia, appears to have been Postmaster-general, and he appointed Benjamin Franklin postmaster at Philadelphia. The following is an advertisement from Franklin's newspaper at this period:

"*October 27, 1737.—Notice is hereby given, that the Post-office of Philadelphia is now kept at* B. FRANKLIN'S, *in Market Street, and that Henry Pratt is appointed riding postmaster for all stages between Philadelphia and Newport, in Virginia, who sets out about the beginning of each month, and returns in twenty-four days, by whom gentlemen, merchants, and others, may have their letters carefully conveyed, and business faithfully transacted, he having given good security for the same to the Honorable Colonel Spottswood, Postmaster-general of all his Majesty's dominions in America.*"

Colonel Spottswood died in 1753, and the home government appointed Franklin as his successor, and he held the office for twenty-one years, till 1774, when the difficulties occurring between the colonies and the mother country, Franklin was unceremoniously turned out of office. He sympathized too strongly with the people of the colonies in their wrongs, hardships, and oppressions to be a fit instrument of the crown. He is not the last or the only instance of a postmaster losing his office for political opinions. During Franklin's administration of the Colonial Posts, numerous improvements were made. At one time he took his own conveyance, and, in company with his daughter, made a journey of several hundred miles, visiting all the principal post-offices in Pennsylvania, New Jersey, New York, and New England. With that attention to details which always marks the man of large business capacity, he set about making numerous reforms in the administration of the Post. He had as associate or assistant, Mr. William Hunter. By the terms of their appointment they were to have six hundred pounds a year, *provided they could get it!* Franklin, in giving an account of the Post-office during his administration of its affairs, after he had been turned out of the office by George the Third, makes the following pithy summary:

"The American Post-office had hitherto (*i. e.*, before 1753) never paid any thing to that of Britain. We were to have six hundred pounds a year between us, if we could make that sum out of the profits of the office. To do this, a variety of improvements were necessary; some of these were inevitably, in the beginning, expensive; so that in the first four years the office became above nine hundred pounds in debt to us. But it soon after began to repay us; and before I was displaced by a freak of the minister's, we had brought it to yield three times as much clear revenue to the crown as the Post-office in Ireland. Since that imprudent transaction, they have received from it—not one farthing!"

The practice of sending newspapers in exchange, free, dates from Franklin's administration of the Colonial Post-office. He was editor and publisher of a newspaper, and he received his exchanges free, and accorded the same privilege to other journals. The philosopher undoubtedly soon recovered his equanimity after that "freak of the minister's," for though he suffered official decapitation, he was soon after reinstated in office by a more competent authority, being unanimously appointed Postmaster-general of the United Colonies by the Continental Congress. In 1776 he vacated the office, on being appointed embassador to France. On the 7th of November of that year, Richard Bache was appointed to the office. He held the place for a little over five years, and on the 28th of January, 1782, Ebenezer Hazard was appointed Postmaster-general, and remained in office until the adoption of the Constitution, in 1789, when Samuel Osgood was appointed. The different incumbents of the office of Postmaster-general since the Revolutionary war broke out were as follows:

Benjamin Franklin, in 1775; Richard Bache, 1776; Ebenezer Hazard, 1782; Samuel Osgood, 1789; Timothy Pickering, 1791; Joseph Habersham, 1795; Gideon Granger, 1802; Return J. Meigs, 1814; John M'Lean, 1823; William T. Barry, 1829; Amos Kendall, 1835; John M. Niles, 1840; Francis Granger, March, 1841; Charles A. Wickliffe, September, 1841; Cave Johnson, 1845; Jacob Collamer, 1849; Nathan K. Hall, 1850; Samuel D. Hubbard, 1852; James Campbell, 1853; and Aaron V. Brown, in 1857.

The rates of postage from 1776 to 1816 were from 7 to 33 cents, according to distance. In 1816 the rates were fixed by act of Congress at 6¼, 10, 12½, 18¾, and 25 cents for each single letter, according to distance. These rates remained till the act of 1845, which established the half-ounce scale for single letters, and fixed the rates at five and ten cents.

The act of March 3, 1851, established the following rates: one cent for drop letters, three cents for all single letters (half ounce), for every distance not over three thousand miles, when prepaid, and five cents if not prepaid; and double these rates when over three thousand miles. The law of 1855 fixed the rates at one cent for drop letters, three cents for letters all distances under three thousand miles, and ten cents when over that distance, and all to be prepaid, or retained and sent to the dead-letter office. This law went into operation, as far as it was found practicable, on the first of April, 1855. After the first of January, 1856, all letters were required to be prepaid by stamps. In March, 1856, a law was passed making prepayment compulsory on all transient printed matter; and this law went into effect on the 1st of April, 1856. The inconveniences and inconsistencies of the law making prepayment [illegible] are numerous. At an expense of [illegible] hundred thousand dollars, nearly all letters [illegible] returned to the writers in a brief period of time after they fail or miscarry. The usage of our government is in strong contrast to that of Great Britain, where all dead or returned letters are sent to their writers at once.

It is instructive to observe the progress of our postal correspondence beyond the increase of population and the augmentation of almost all other national commercial transactions. During each period of ten years, from 1790 to 1850, the average increase of the population of the country has been 34 per cent., the exports 42 per cent., the expenses of government 95 per cent., Post-office revenue 120 per cent., and correspondence by mail 140 per cent. Thus, while the population of the country has increased in sixty years seven-fold, letter correspondence has increased four hundred and forty fold, or sixty-three times as fast as the population. In 1790, the letters sent by mail in the United States were estimated at 265,545; and in 1856, 131,450,409. The following table gives, for a period of sixty-seven years, the leading items:

STATISTICS OF THE UNITED STATES POST-OFFICE.

Years	Post-offices	Miles of mail routes	Expense of Transportation.	Total Expenses	Revenue.	Number of Letters.	Population	Letters for each Person.
1790.....	75	1,875	$22,081	$32,140	$37,935	265,545	3,130,000	0·067
1791.....	83	1,905	23,223	36,697	46,294	3 4,068	....	....
1792.....	195	5,642	32,731	54,531	67,444	472,108	....	....
1793.....	209	5,642	44,734	72,040	104,747	753,229	....	....
1794.....	450	11,184	55,005	89,973	128,047	902,629	....	....
1795.....	453	13,207	75,359	117,893	160,620	1,124,340	....	....
1796.....	468	13,207	81,489	131,572	195,067	1,365,469	....	....
1797.....	554	16,180	89,382	150,114	213,998	1,497,980	....	....
1798.....	639	16,180	107,014	179,684	232,977	1,630,839	....	....
1799.....	677	16,180	109 475	188,038	264,840	1,853,922	....	....
1800.....	903	20,817	128,644	213,994	280,804	1,965,628	5,300,000	0·370
1801.....	1,025	22,309	152,450	255,151	320,443	2,243,101	....	....
1802.....	1,114	25,315	174,671	281,916	327,045	2,289,315	....	....
1803.....	1,258	25,315	205,116	322,364	351,823	2,462,761	....	....
1804.....	1,405	29,856	205 555	317,502	389,450	2,726,150	....	....
1805.....	1,558	31,075	239,635	377,367	421,373	2,949,651	....	....
1806.....	1,710	33,431	269,083	417,234	446,106	3,122,742	....	....
1807.....	1,848	33,755	292,751	453,885	478,703	3,351,341	....	....
1808.....	1,944	34,035	305,499	462,838	466,564	3,225,948	....	....
1809.....	2,12	34,035	302,917	498,012	506,634	3,546,438	....	....
1810.....	2,300	36,406	327,966	4 5,769	551,684	3,861,788	7,240,000	0 533
1811.....	2,468	36,406	319,166	490,099	587,247	4,110,729	....	....
1812.....	2 610	39,378	340,626	549,165	619,208	4,044,456	....	....
1813.....	2 749	39,540	438,559	681,012	703,155	4,922,085	....	....
1814.....	2,870	41,736	475,002	727,126	730,370	5,112,590	....	....
1815.....	3,000	43,166	487,779	748,121	1,043,065	7,301,455	....	....
1816.....	3,260	48,176	521,570	864,022	901,782	6,732,474	....	....
1817.....	3 459	51,600	589 189	916,515	1,002,973	8,028,784	....	....
1818.....	3,618	53,473	664,611	1,035,832	1,130,935	9,041,880	....	....
1819.....	4,0.0	67,586	717,881	1,117,861	1,204,737	9,637,896	....	....
1820.....	4 500	72,492	782,4 5	1,160,936	1,111,927	8,895,415	9,638,000	0 923
1821.....	4,650	78 808	815 651	1,182,023	1,056,658	8,453,264	....	....
1822.....	4,799	82,763	788 6 8	1,167,572	1,117,420	8,939,920	....	....
1823.....	5,048	84,860	767,464	1,161,886	1,114 345	8,914,760	....	....
1824.....	5,182	84 860	768,039	1,169,199	1,154,812	9,264,496	....	....
1825.....	5,677	94,052	785,046	1,206,884	1,252,001	10,016,488	....	....
1826.....	6,150	94,052	885,100	1,309,316	1,388,417	11,110,336	....	....
1827.....	7,004	105,336	942,945	1,373,239	1,473,551	11,788,408	....	....
1828.....	7,651	114,598	1,086,312	1,623,233	1,598,134	12,785,072	....	....
1829.....	8,150	114,789	1,103,616	1,782,133	1,707,415	13,659,344	....	....
1830.....	8,450	115,176	1,274,009	1,932,708	1,850,583	13,804,664	12,866,000	1 073
1831.....	8,686	116,000	1,252,226	1,936,123	1,997,812	17,980,308	....	....
1832.....	9,205	104,467	1,482,707	2,266,172	2,258 870	20,327,130	....	....
1833.....	10,127	119,916	1,894 083	2,930,415	2,616,538	23,548,842	....	....
1834.....	10,65	112,590	1,922,431	2,896,591	2,823,707	25,443,363	....	....
1835.....	10,770	112,774	1,719,007	2,757,350	2,993,557	26,942,013	....	....
1836.....	11,04	118,264	1,638,052	2,755,624	3,398,455	30,580,095	....	....
1837.....	11,767	141,242	2,051,750	3,303,428	4,100,6 5	36,905,445	....	....
1838.....	12,519	124 8 8	5,131,308	4,621,837	4,235,078	38,115,702	....	....
1839.....	12,780	133,009	3,301,922	4,654,718	4 477,614	40,298,526	....	....
1840.....	13,468	155,739	3,213,043	4 718,236	4,543,522	40,891,6 3	17,069,000	2 395
1841.....	13,778	155,026	3,034,814	4 439,538	4,407,726	39,669,534	....	....
1842.....	12 733	149,733	4,392,196	5,674,752	5,029,507	45,265,563	....	....
1843.....	13,814	142,295	2,982,512	4,374 752	4 236,225	38,066,025	....	....
1844.....	14,103	144,687	2,982,047	4,296,513	4,237,288	38,135,592	....	....
1845.....	14,183	143,949	2,8 8,630	4 320,732	4 436 842	39,159,978	....	....
1846.....	14,601	149,679	2,597,455	4,084,392	4,089,090	41,879 781	....	....
1847.....	15,146	153,818	2,476 466	3,971,276	4,013 417	47,585,757	....	....
1848.....	16,159	163,2 8 8	2,448,766	4,326,857	4,161,078	52,364,819	....	....
1849.....	16,747	167,763	2,499,9 8 8	4,479,649	4 705,176	60,157,862	....	....
1850.....	18,417	178,672	3,095,574	5,212,955	5,552,071	69,426,453	23,192,000	2 994
1851.....	19,796	196,290	4,016,588	6,024 506	6,737,867	83,252,735	....	....
1852.....	20 901	214,284	4,136,907	7,108,459	6,823,982	85,790,524	....	....
1853.....	22 320	217,743	4 7 9,025	7,982,757	5,940,724	102,139,148	....	....
1854.....	23 548	219,135	4,925 785	8,577,4 4	6,688,597	119,634,418	....	....
1855.....	24,410	227,908	6 076 335	9,168 842	7,885,177	126,723,425	....	....
1856.....	25,565	239,642	6,765,639	10,407,868	7 620,822	131,450,409	28,000,000	4·695
Total....	....	....	$99,215,389	$155,466,524	$148,887,649	1,652,104,648	....	....

The total number of mail routes on the 30th of June, 1856, was 7972, and the number of contractors 6372. The length of routes and annual amount of transportation stand as follows:

Kind of Service.	Length of Routes	Annual Transportation.	Cost per Mile.
	Miles.	Miles.	Cts. M.
Steamboat	14,951	4,240,170	20 3
Railroad	20,323	21,809,206	10 6
Coach	50,453	19,114,991	7 0
Inferior grades	153,015	26,643,440	5 9
Total miles	239,042	71,807,807	....

The revenue and expenditures of the Post-office, and the items of which they were composed, for the years 1855 and 1856, were as follows:

EXPENDITURES OF THE UNITED STATES POST-OFFICE.

	1855.	1856.
Transportation of the mails	$6,076,335	$6,765,640
Compensation to postmasters	2,135,335	2,102,891
Pay of post-office clerks	702,617	758,081
Pay of letter-carriers	143,813	162,015
Depredations and special agents	64,454	63,592
Ship, steamboat, and way letters	18,706	17,613
Advertising	75,457	64 003
Blanks	91,158	48,533
Mail bags	54,080	43,916
Mail locks, keys, and stamps	16,173	11,087
Wrapping-paper	45,467	31,027
Postage stamps	11,904	20,705
Stamped envelopes	40,635	64,083
Office furniture	5,250	5,200
Official letters	58	....
Repayment for dead letters	7	....
Postage stamps redeemed	19	....
Patent padlock	5,000	....
Miscellaneous payments	103,011	200,080
Balance paid Great Britain	802,800	....
Balance paid Bremen	13,465	....
Balance due Great Britain	70,523	23,849
Balance due Bremen	6,130	8,038
Bad debts	....	2,582
Total expenses	$10,044,995	$10,407,868

REVENUE OF THE UNITED STATES POST-OFFICE.

	1855.	1856.
Letter postage	$3,234,550	$1,751,767
Stamps sold	2,511,318	4,235,446
Postage on printed matter	638,928	632,746
Letter carriers	143,313	162,916
Dead letters	4,976	8,583
Registered letters	....	31,466
Fines	25	70
Emoluments returned	77,203	74,800
Extra compensation overcharged	23,330	14,715
Balance due by Prussia	63,604	....
Miscellaneous receipts	7,783	5,513
Appropriation for gov't. postage	700,000	700,000
Total revenue	$7,411,830	$7,630,822

VII. *The present Condition and future Prospects of the United States Post-office.*—From the official figures given previously, we see that while the correspondence by mail and the postal revenue actually decreased during twenty years of high postage in Great Britain—ending with 1835—the revenue and correspondence both, from the date of low and uniform postage, in 1840, has greatly increased—the latter six hundred per cent. The vast economy in the management of the Post-office in that country is seen in the fact that while the correspondence incerased from 75 millions of letters in 1840, to 478 millions in 1856—at least six-fold—the expense was but little more than doubled. Had it been deemed necessary, but few figures would have been required to show clearly—what was demonstrated by Mr. Rowland Hill—that the slight diminution in the net revenue of the Post-office in Great Britain, conseqnent to the great reduction of postage in 1840, was far more than made up to the national treasury, during each and every year thereafter, in other branches of national income, and all from the direct and sole cause of the activity and prosperity of all business interests, engendered by a reduction in the rates of postage. We believe, and are confident that it is susceptible of a clear demonstration, that the principal reasons why our Post-office has not kept pace with the advancing spirit of the age, and been made as efficient as the post in several other countries, are the following: In the first place, several popular fallacies have been engendered and kept up by official post-office reports. Again, the official heads of this important department, for the last fifteen years, have almost invariably thrown their official and personal influence against all the great improvements urgently demanded by the people; and in carrying out this opposition, several of these officers have exhibited an unwarrantable interference with the legislation of the country. All of the principal improvements have been accomplished, not through their aid, but in the face of their opposition. The annual reports of the Postmaster-general, since 1852, have declared and attempted to prove that the legitimate revenue of the Post-office has been less than its legitimate expenditures, while the contrary has been the fact, as must be evident when we have a complete view of the premises. The true state of the case is—and this is the important matter that has been overlooked—the Post-office has performed a large amount of labor, and consequently been put to great expense, without any clear record or any adequate return.

The payment for and on account of letters and documents transported and delivered by the Post-office for the government—the sum of $700,000—is entirely inadequate to the service performed. To show the amount of "franked" matter sent from Washington alone, the following items were given in an official statement from the postmaster of Washington City to the Post-office Committee of the House of Representatives, as the amount of that description of mail matter for one month—January, 1854.

FREE MAIL MATTER FROM WASHINGTON FOR ONE MONTH.

	Weight.	Postage.
	Pounds.	
Letters from members of Congress	3,446	$4,664
Documents " "	693,508	110,961
Letters from Departments	7,065	6,782
Newspapers (numbering 1,110,020)	111,002	11,100
Total for one month (prepaid rates)	815,021	$133,507
For twelve months " "	9,780,242	1,602,087
Postage for twelve months, if not prepaid	....	3,158,390

The newspapers were not counted, but weighed; and as the newspapers of the country average about one and a half ounces each, these have been considered as averaging ten papers to a pound. The postmaster expressed it as his opinion that the free matter during that month, of which he gave the results, was less than the average quantity. The amount given would make about 5000 tons of "free" matter in a year, from the post-office of the city of Washington alone; or an average for each week-day of fifteen tons. Looking at this $1,602,087 due by government at prepaid rates, for the postage on free matter, outward only, from the city of Washington alone, in a year, it would be a very moderate estimate that should put the postage of the government, at the rate the citizen pays, at $2,500,000 annually. If we look at the revenue and expenses of the Post-office for ten years, and see what appropriations were made for the free matter transported for government, we shall see whether the Post-office actually supported itself or not.

Years.	Postal Expenses.	Revenue from Postages.	Appropriations that were made.	Appropriations that should have been made.
1847	$3,971,275	$3,703,999	$300,448	$2,500,000
1848	4,826,850	4,161,073	....	2,500,000
1849	4,479,049	4,595,176	200,000	2,500,000
1850	5,212,953	5,352,971	200,000	2,500,000
1851	6,024,596	6,251,973	575,880	2,500,000
1852	7,108,450	6,032,537	1,741,445	2,500,000
1853	7,982,757	6,240,724	700,000	2,500,000
1854	8,577,424	6,983,537	700,000	2,500,000
1855	10,044,936	6,711,830	700,000	2,500,000
1856	10,407,868	6,920,822	700,000	2,500,000
Total	$68,756,157	$54,014,652	$5,626,782	$25,000,000

That the Post-office did not support itself from the postage paid by citizens during the last ten years, and

also support the burden of all the "franked" matter thrown on it by government, is evident from the above figures. The "official" statement is, that the entire postal revenue for ten years was $59,641,484, and the expenditures $68,136,197; *therefore* there was a "deficiency," showing that the Post-office did not support itself by $8,494,763. But the reality is this. At the rates of postage now levied, the cost of transporting and delivering the letters and documents for the citizens and the government, for ten years, was as follows:

Postage due and paid by citizens for ten years..	$54,014,652
Postage due (but not all paid) by government...	25,000,000
Total	$79,014,652
Expenses of the Post-office for ten years.....	68,136,197
Post-office earnings exceeded the expenses by...	$10,878,455

It is clearly evident that any attempt to show whether our Post-office supports itself under the present laws, regulations, rates of postage and management, must begin by showing what are its legitimate expenses and what its legitimate income. The theory and practice of our law-makers is in strong contrast to the action of the members of the British Parliament in 1839 and 1840, at the time of the agitation and adoption of the penny postage. They at once abolished and renounced the franking privilege, on the principle that officers of the government could as well afford to pay their own postage as private citizens; that they were in that case put to far less trouble to frank and send documents for others, and that all postage necessary for carrying on the business of the government should be charged to the Treasury, like all other national or government expenses. In reality, we do not know the amount of expenses and burdens that fall on the Post-office, and yet the head of that Department has taken upon himself to say that its income is not sufficient for its legitimate support. If a merchant or man of business were to know the precise amount of income that he actually received, while he was ignorant of a large portion of his expenditures, would he, or could he, conduct and manage his affairs with prudence, judgment, and economy? It is a parallel case with our Post-office, burdened as it is annually with five thousand tons of franked matter.

The history of our Post-office for the last sixteen years discloses the following facts: Letter postage has been reduced from a scale of five rates, running from six to twenty-five cents, and averaging, perhaps, thirteen or fourteen cents a letter; first (in 1845) to five and ten, and next (in 1851) to three, five, and six cents, and lastly (in 1855) to three and ten cents; and yet there has been no sensible diminution of the postal receipts, taking one year with another. Taking the yearly increase of the postal revenue for a number of years before the first reduction as a criterion, the receipts of the Post-office in 1855 and 1856 were as large, if not larger than they would have been under the old rates. And yet the postage on each separate letter averages less than one third the charge previous to 1845. By the side of that fact it may be stated here that in the postal history of all nations there is no instance on record where a reduction of postage, however great, has been followed by any permanent reduction of the postal revenue. In public as in private affairs, the inhabitants of a country extend their patronage just in proportion to the business and economical facilities afforded them.

After the successful introduction of penny postage into Great Britain in 1840, the citizens of the United States commenced holding public meetings and petitioning Congress for a reduction of rates, and other postal improvements. The pressure and agitation were kept up from 1841 to 1845, and during that period the Postmaster-general—the Hon. Charles A. Wickliffe—used every exertion, and brought every influence, official and personal, to defeat the measure. With all this uncalled-for interference with the wishes of the people and the legislation of the country by an executive officer, the bill reducing postage to the two rates of five and ten cents was passed, and went into operation in 1845. The incumbent of this office from 1853 to 1857 —James Campbell—made every possible effort not only to defeat the wishes of the people in having the rates of postage reduced and made uniform, but to raise the then existing prepaid rate of letter postage from three to five cents, and to double all the rates on printed matter. These measures were introduced in a bill, at the solicitation of the Postmaster-general, by the chairman of the House Committee, and at once defeated, receiving only the small minority of thirty-six votes.

The efforts made by the Postmaster-general to raise the rates were successful in increasing the postage from six to ten cents on all letters that are transported over 3000 miles.

It may be uncharitable to hint that our statesmen have heretofore paid so little attention to the postal subject as to be unacquainted with its details, though it is unquestionably true that this branch of government has not received the attention that its importance demands. In examining the postal subject we can not arrive at correct results by any system of generalization, or by wholesale comparisons. It is a question of detail, of calculation, and of fact, in which certain cardinal principles can not be ignored or lost sight of. It is true that the people of Great Britain write many more letters than the people of the United States; and it is equally true that this is the consequence of receiving a far greater amount of postal accommodation for the money they pay. It is eminently true that the large and profitable amount of correspondence passing through the British Post-office is the direct result of low and uniform postage, combined with the great facilities for collecting, distributing, and delivering letters and other mail matter in cities and large towns. While we have populous cities with varied interests that require an immense local correspondence, our postal affairs are conducted in the same manner that they were in the first years of the Republic. Except by the labors of private parties, who are allowed to deliver letters from the post-office, and levy a tax for the service, or to set up private post-offices of their own, for the collection and distribution of mail matter, we have hardly an improvement or facility for distributing letters in cities to-day that did not exist seventy years ago. People who write letters may carry or send them to the post-office, and those to whom they are addressed have the privilege of calling for the same and taking them out. Except through and by the labors of the private postman and carriers, we, as a people, seem to be aware that the greatest want and the most profitable field for postal facilities is in and about our large cities and towns. In the country the distance between post-offices may be reckoned by miles, but in large cities the legitimate wants of the people are not met except by having deliveries many times a day, and places for obtaining stamps and mailing letters at every one or two hundred yards. The relative postal wants of the residents of different city and country districts, and the extent to which those wants are met, in this country and in Great Britain, may be seen by the figures representing the average number of letters written by each person in a year, in the various localities. The figures relating to the annual correspondence in this country are in whole numbers and decimals.

CORRESPONDENCE IN THE UNITED STATES.

Different Localities.	Letters per Person, annually.
Country districts at the South.....	1·6
Country districts at the North.....	3·5
Country districts throughout the Union.....	2·8
All of the Southern States.....	2·9
All of the Northern States.....	6·1
Throughout the United States.....	4·9
City of New Orleans.....	19·7
City of Cincinnati.....	21·2
City of New York.....	30·0
City of Boston.....	40·8

These figures are not supposed to be exact, but they are a very near approximation to the precise number, arrived at by a close calculation, based on the relative population and postal income. The following statement exhibits the annual correspondence per person—in whole numbers—in different localities in Great Britain:

CORRESPONDENCE IN GREAT BRITAIN.

Different Localities.	Letters per Person, annually.
Country districts of the Kingdom	8
Throughout the Kingdom	17
England alone	23
Average in cities	45
In London	48
In Manchester	57

These results are very different from what we see in this country. They all go to establish one clear, indisputable fact. They prove beyond question that the people of cities write from five to twenty times as many letters as the residents of country districts. And as we know that a very large portion of the inhabitants of cities are towns are minors, paupers, vagrants, and ignorant persons, it is clear that the adult male business population have occasion to write from a hundred to a thousand letters each per annum. We know, from the habits and wants of the population in rural districts, that the adult persons who are engaged in agricultural and mechanical pursuits do not usually carry on one-fortieth part as much correspondence as the mercantile classes in cities. Bearing these facts in mind, and remembering that there are from six to twelve deliveries a day in all parts of London, with over five hundred receiving houses and letter-pillars where letters can be mailed—averaging one for every second block or square throughout the city—bearing these facts in mind, we need not be surprised at the widely different results in that country and this, as conveyed in the following authentic figures:

ANNUAL NUMBER OF LETTERS IN DIFFERENT LOCALITIES.

Years.	London Local Letters.	London Mail Letters.	Total London Letters	Total in the United States.	Total in Great Britain.
1847	34,630,817	43,757,540	78,388,357	47,285,757	322,140,243
1848	33,072,747	45,991,153	79,063,900	52,364,810	328,830,184
1849	33,160,398	45,845,683	79,006,081	60,153,862	337,399,199
1850	38,887,841	44,856,170	83,744,014	69,426,452	347,009,071
1851	40,685,052	47,819,499	88,405,451	83,252,735	360,647,187
1852	40,463,207	51,171,423	91,574,630	95,750,524	379,501,199
1853	42,816,814	54,402,923	97,218,737	102,139,148	410,817,489
1854	46,191,569	57,186,159	103,377,728	119,634,418	443,649,201
1855	45,844,963	59,647,540	105,492,512	126,723,425	456,216,176
1856	47,894,708	64,201,321	112,856,029	131,450,409	478,393,893
Total	404,885,519	515,638,520	920,527,039	888,527,549	3,864,670,152

We see by the above that the people of London alone (less than two and a half millions) have written and sent through the post more letters in the last ten years than all the people in the United States, while the population of Great Britain—about the same as in the United States—have written almost five times as many as the people of this country. We must seek for a solution of this in the far greater postal facilities in the United Kingdom, particularly in cities, than in this country. See the gigantic results of a good local post in London. There are almost one half as many letters written and mailed in London, for distribution in the city (local letters, see first column in the preceding table), as are written in a year by all the people in America! Could we get at the results of our local distribution of letters, we should find that the number of letters written in our cities, and distributed by the government post in the place where written—"drop letters," as we very appropriately call them—we should find that they were only about one-fortieth or one-fiftieth part as many as in the cities of Great Britain. In other words, the active business population of our cities write about as many letters to go through the mails to a distance, as the same population do of that class of letters in cities in England; but of local letters, for distribution in the city where they are written, only about one-fortieth part as many.

It is as easily shown that the local correspondence of cities is much more profitable to the Post-office than correspondence that is conveyed hundreds of miles, as it is to demonstrate that the correspondence of cities is of more importance and of greater amount than the correspondence of rural districts. The whole secret of accommodating the people with a good CITY POST, and making it profitable at the same time, consists in having our means adapted to our wants. The mails are sent over the routes between New York and Boston three times a day, twice a day from New York to Washington, once a day from Charleston to New Orleans, once a week between some small country villages, once a fortnight from New York to San Francisco, and once a month from Missouri to Great Salt Lake City. By the very same rule, and for the same reasons, there should be a local distribution of letters in large cities like New York, Boston, and Philadelphia, from six to twelve times a day. The very term "free-letter delivery," as applied to the local distribution of letters in English cities, is a misnomer. It does not exist, nor is it asked for in this country. The local distribution of letters in the cities and towns of Great Britain amounts to just this: One uniform rate of postage is fixed on all single letters—local and otherwise—without regard to distance, and this postage—one penny sterling—pays for transporting the letter to the end of the route; and this, in cities and towns, means to the door of the person addressed. It unquestionably costs a shade less to circulate and deliver letters in a city—those that are mailed there for delivery—than it does to transport them hundreds of miles, and then deliver them. The actual result is this: the large number of local letters in cities, at the postage of one penny for each, pays all the expense of collection and delivery—wages of receivers, mail-men and letter carriers—while these persons collect and deliver all letters that are to go and that come from out of town, without any extra charge, and then the profit on these local letters alone—admitting that the letters from a distance are delivered "free"—is very large. The following table, made up from the official report of the year 1854, needs no explanation:

LOCAL CORRESPONDENCE IN CERTAIN CITIES IN GREAT BRITAIN, WITH THE EXPENSE OF COLLECTION AND DELIVERY.

Cities.	Number of Letters in the Mails.	Local Circulation or Drop Letters.	Gross Revenue from Local Circulation.	Wages of Letter carriers and Receivers.	Net Profit on Local Circulation.
London	57,186,159	46,191,569	$1,385,747	$761,510	$824,037
Liverpool	9,145,802	7,390,042	221,701	27,035	194,666
Manchester	10,088,556	8,149,560	244,487	38,225	206,262
Dublin	6,592,834	5,329,134	159,874	39,940	120,034
Edinburgh	4,208,094	3,401,670	102,050	20,060	81,990
Bristol	4,381,410	3,543,816	106,314	15,855	90,459
Total	91,605,561	74,005,791	$2,220,173	$901,825	$1,518,348

The total number of letter receivers and letter carriers in the United Kingdom, in 1854, with the gross amount of their salaries, was as follows:

	Number.	Salaries.
Letter receivers in the Kingdom ...	4,280	$236,742
Letter carriers in cities and towns..	4,305	804,575
Letter carriers in rural districts	4,326	601,420
Total.....	13,000	$1,642,677

Looking at the results in the two tables given above, we find that the money received for postage on the local letters, in six cities only, amounted to a larger sum than the entire cost of letter carriers and letter receivers throughout the united Kingdom of Great Britain and Ireland! And we may mention, in this connection, that the rural letter carriers penetrate all the country districts of Great Britain, the carriers in their walks going from three to six miles from every village post-office, at least once a day.

The gigantic results shown in the English Post-office are due to three or four simple principles. There is one uniform rate of postage on all single letters—those weighing not to exceed half an ounce—and this same rate also pays the postage on all parcels of printed matter—done up in packages open at the ends—so that with one kind of stamp the citizen prepays more than nineteen-twentieths of all the packages he puts in the post-office. There is in every city and village a letter delivery by carriers, from two to twelve times a day, with convenient places at every one or two hundred yards for posting letters and parcels. There is a system of remitting money by mail, through money orders or drafts, for small sums, between all the principal post-offices; and the money-order business, like the uniform postage, is based on so simple and economical a system, and is carried on with such satisfactory results, that there is combined the greatest convenience and smallest cost to the citizen, and the largest economy of management to the Post-office officials.

It is useless to say that the business of collecting and distributing letters in a city in Europe is any different process, and involves any different principles, from that of distributing letters here; for it is not true. And certainly, so far as correspondence is concerned, our social and commercial wants are like those of the residents of London, Manchester, Paris, and Berlin. Could we get at the amount of letter distribution done by private parties in our large cities, it would be found that there is a far greater correspondence carried on outside of, than through the post. And yet there is no regularity, uniformity, safety, or system, and with all the multifarious appliances, we are wretchedly served, as every one knows. Philadelphia has reported through the government Post-office a less correspondence—or at least a smaller postal revenue—in proportion to population, than any other large city in America. There a private individual carries on a very profitable and extensive system of city letter distribution. The fact is, and it can not be disguised, that our Post-office, being an exclusive government function, for long distances, should not allow private parties to carry it on for short distances in cities. We either want an efficient uniform government Post-office over the entire country, or it should be abolished altogether, or thrown open to private parties. We make the Post-office perform nearly three million dollars' worth of labor for the government, and appropriate for the same out of the Treasury less than a quarter of that sum, and then the government allows private parties to step in and set up a post in the very localities where a good postal establishment is most needed, and where it can be made the most profitable. With any thing like a critical examination of our postal establishment, and to a person of any sagacity, it is clearly evident that in the localities where a post is most needed—large cities—and where it would pay the best, there our post is most notoriously inefficient. The postal establishment labors under the following prominent disadvantages:

First. It performs a large amount of service for the government without adequate compensation. *Second.* There is not a uniform rate of postage, and the labor and expense of conducting the postal business is thereby greatly increased. *Third.* The correspondence of the country has never been stimulated and increased by low and uniform postage and the best postal facilities. *Fourth.* Our local correspondence in cities—the most profitable business of the postal establishment, when on a correct basis—labors under every disadvantage, being the cause, and justly, of constant complaint on the part of the citizens. *Fifth.* In all the large cities, in consequence of the irregularity, uncertainty, and inconveniences of the National Post-office, private posts carry off a large share of the business.

If the above premises are correct, the remedies are neither hard to find or difficult to carry out. Find the amount of matter that is sent "free" by government departments, officers and members of Congress, and have a sum paid or appropriated from some quarter sufficient to meet it. Then make one rate of postage, so low that it will not be exorbitant for single letters and the smallest packages for the shortest distances, and let this rate pay as many descriptions and sizes of written and printed packets as possible. Abolish all private posts in cities, and make a government post that is adequate to the wants of the citizens. It may be safely promised that a convenient, reliable, economical, punctual, and rapid distribution of letters in our cities will meet with all that encouragement and that extensive use that attends a good post in European cities. Send all letters and printed packages—perhaps up to a certain amount, say four or eight postages in one parcel, as is done in Great Britain—whether they are prepaid or not, and if not prepaid, charge double postage. Make a money-order system for remitting money in sums not exceeding twenty or twenty-five dollars; at first between all the larger offices, extending it as it becomes known and understood. Return all "dead" and refused letters to the writers, and enforce the payment of such postages as have not been prepaid.

The question of the most profitable rate or rates of postage may be discussed and examined for years, and we are forced to one conclusion; and that is, that there is no convenient, economical, or just system without UNIFORMITY. The truth is, several of our rates of postage are too low, not allowing a fair compensation, and others are too high. Our rate of one cent for drop letters or local letters, one cent for printed circulars, and one cent for transient newspapers, are all too low. They are not compensating; and if raised to two cents, the charge would not be considered high, provided all letters of half an ounce weight, and printed packages up to four ounces, could be sent any and every distance for the same sum. We want a two-cent rate of postage, with a two-cent postage stamp, and a total abolition of all of the one-cent rates and stamps, and the three-cent rates and stamps. It should be the minimum; that is, no letter or transient package should be mailed or sent the shortest distance for less than this sum. We would pay with this two-cent stamp our city or drop letters—and that should include delivery by a carrier, as carriers should work for salaries, and deliver every thing in cities without extra charge—our letters for all distances in the United States, all circulars, and all packages of printed matter, up to four ounces in weight, that are done up open at the ends. Is it not reasonable to suppose that there would be a sufficient increase in letters for city circulation, and to go to a distance, along with the increase of price of postage on drop letters, on printed circulars, and on transient newspapers, to make up for the loss on the three-cent letters, and the few letters that now pay ten cents? And we must bear in mind that one of the greatest arguments for a uniform rate of postage is the simplicity, economy, and cheapness that it effects in

carrying on the postal business. Twice the number of workers, with a change to a uniform rate, will suffice for an increase of letters six-fold. We have given the exact official figures, showing that the mere handling, sorting, distribution, and delivery of letters (all expenses except transportation) in Great Britain amounted to thirty dollars for each thousand letters, when there were several rates; and but seven dollars—less than one-fourth what it cost formerly—with a uniform postage. UNIFORMITY of postage is the first requisite of the British, as it is of every other postal system where it has been tried.

POSTAL STATISTICS OF THE DIFFERENT STATES.

States.	Postal Revenue, 1856.	Revenue per 1000 Persons.	Number of Letters, 1856	Letters per 1000, 1856.	Postal Expenses, 1856.	Proportion of Expenses to Receipts.	Postal Revenue, with Government Postage added.	Proportion of Expenses to Receipts.	Cost per Letter.
									c. m.
Massachusetts	$557,659	$472	11,362,071	10,028	$285,989	60	$769,290	50	1 5
Connecticut	190,924	476	3,889,907	9,700	175,181	92	268,380	66	2 0
New York	1,436,100	411	29,259,943	8,452	1,037,316	72	1,981,100	52	1 6
California	265,015	791	2,709,354	8,266	268,714	101	365,514	74	4 3
Rhode Island	62,543	375	1,274,297	7,630	39,544	63	86,277	46	1 4
Iowa	117,415	350	2,392,933	7,141	153,813	131	161,973	95	2 0
New Hampshire	100,000	308	2,037,459	6,269	99,943	100	137,950	72	2 2
Michigan	156,183	307	3,182,164	6,252	232,837	149	215,454	108	3 2
Vermont	96,639	297	1,968,980	6,058	117,831	122	133,514	89	2 7
Wisconsin	149,676	271	3,049,596	5,525	170,369	114	206,478	82	2 5
Illinois	333,620	268	6,797,370	5,463	553,337	166	460,259	120	3 6
Maine	152,710	245	3,111,403	4,987	170,745	112	210,661	81	2 4
Pennsylvania	591,220	232	12,045,863	4,737	529,796	89	815,588	64	1 9
Ohio	454,707	204	9,263,341	4,154	670,995	151	623,153	108	3 2
New Jersey	107,798	189	2,195,117	3,852	132,336	123	148,624	89	2 7
Indiana	171,410	149	3,492,409	3,037	303,972	177	236,484	129	3 9
Pacific Territories	14,046	842	146,812	3,581	38,175	272	19,276	196	5 9
Other Territories	32,979	162	671,933	3,310	112,265	340	45,495	247	7 4
Total, North	$4,987,588	$309	98,850,374	6,124	$5,186,658	104	$6,880,377	75	2 3
District of Columbia	43,731	741	801,000	15,101	88,161	67	60,326	63	1 9
Maryland	187,104	232	3,812,166	5,956	263,471	141	258,109	102	3 1
Louisiana	163,579	273	3,332,854	5,555	371,411	227	225,057	165	5 0
Delaware	19,648	202	400,320	4,127	19,477	100	27,108	72	2 2
Florida	20,058	181	408,674	3,681	105,866	527	27,670	382	11 5
Missouri	141,765	168	2,888,406	3,434	287,373	202	195,565	147	4 4
Georgia	140,070	150	2,853,868	3,052	326,406	233	193,226	169	5 1
Virginia	218,090	144	4,443,494	2,936	413,993	190	300,855	137	4 1
Texas	68,995	136	1,385,574	2,771	251,533	370	93,812	268	8 0
Alabama	109,225	131	2,225,414	2,665	324,868	297	150,675	216	6 5
South Carolina	91,808	130	1,870,449	2,649	270,437	294	126,643	214	6 4
Kentucky	121,508	111	2,471,601	2,274	224,422	185	167,548	134	4 0
Mississippi	74,444	111	1,516,765	2,257	248,703	334	102,702	242	7 3
Arkansas	27,892	110	567,956	2,240	234,177	842	38,334	610	18 3
Tennessee	101,485	93	2,067,716	1,893	198,103	195	139,998	141	4 2
North Carolina	71,887	78	1,464,668	1,589	206,068	287	99,168	208	6 4
Total, South	$1,556,308	$144	31,709,985	2,935	$3,746,313	241	$2,146,919	174	5 2
Grand total	6,587,622	244	131,450,409	4,875	8,971,132	136	9,087,622	99	3 0

By distributing $2,500,000—the supposed cost of transporting the "franked" matter for government, instead of $700,000, the sum now paid—among the different States, in the proportions of their present postal revenue, the revenue of each State would then be as seen in the last column but two. In the column of postal expenses the complete amount of expenses is not quite all stated, but all is given that is set down under the head of each State, in the official Report of the Department. If the entire sum were given, it would not alter this comparative statement, or much affect the general result. We see by this—the last column but one—that only 50 per cent. of the postal revenue of Massachusetts is used in expenses for that State, 52 per cent. in New York, and so on with the old, the thickly-settled, and the commercial States, while in Texas $268 is expended for every $100 received, and in Arkansas $610 to $100 of revenue. The sums here given as the expenses of each State are not supposed to be the exact amounts required for all the postal expenses within the State—as sometimes a mail route runs through several States, and the expenses of mail transportation over it all falls on or is set down to the State where the route commences. But as these routes generally commence at the East or North, and run West or Southwest, the largest show of expenses is made in the States farthest east. We do not claim as a literal fact that the entire expense of each letter mailed in the State of Massachusetts (see last column of table) amounts, on the average, to one cent five mills, and those in Arkansas to just eighteen cents three mills; but it is a fact that when the amount of correspondence, the postal revenue, and the postal expenses of each and every State are all fairly considered, the proportion of money received in postage in each State is, to each letter mailed in that State, as here given. We know that letters starting in New York sometimes go to Arkansas, Texas, Florida, or New Mexico, and we do not claim that the exact proportion of money due on each letter mailed in each State can be clearly adjusted, and should be charged to each citizen residing in the State. But—and here lies one great argument for a UNIFORM and a LOW rate of postage—we do know, by the preceding authentic figures, that the expense of transporting and distributing letters differs very widely in each State; and the general rule is, that the newer, the more sparsely settled, and the less commercial the State, the larger the proportion of expenses to receipts. To illustrate this in a very striking light, let us compare the postal expenses and receipts, and the amount of correspondence in the two States of New York and Massachusetts, with the amount in all of the Southern States and the region west of the Mississippi River. They stand as follows:

Localities.	Number of Letters.	Postal Revenue.	Postal Expenses.
New York and Massachusetts	40,622,054	$2,750,390	$1,423,305
Southern States and west of Mississippi River	37,686,477	2,739,277	4,318,780

While the amount of correspondence, and the postal revenue in New York and Massachusetts, exceed all south of the Potomac and Ohio, and west of the Mississippi, the expenses are less than one-third. Again, let us divide the Union into three sections, calling them the Northeast, the Middle, and the Southwestern sections, and see the comparative amount of revenue, expenses, letters, cost per 10,000 letters, and per single

letter. The Northeast section comprises New England, New York, New Jersey, and Pennsylvania; the Middle section, from Delaware to the southern boundary of Virginia and Tennessee, and west to the Mississippi, including also Missouri and California; the Southwest section includes the balance, the Gulf States, the Territories, Iowa, Arkansas, and Texas. This is the record:

Section of the Union.	Postal Revenue.	Number of Letters.	Postal Expenses.	Cost per 10,000 Letters.	Single Letter
					c. m.
Northeast section	3,295,533	67,145,120	$2,682,681	$400	1 8
Middle section	2,478,161	47,861,219	3,798,837	794	3 3
Southwest section	813,928	16,444,077	2,489,914	1514	6 7
First two	5,773,694	115,006,332	6,481,218	564	2 4
Last two	3,292,089	64,305,289	6,288,451	978	4 1
Grand total	6,587,622	131,450,409	8,971,132	682	3 0

From these facts we see and know that the expense of transporting and distributing letters is not in proportion to the distance they are carried. We see that all of the letters circulated from Maine, on the east, to Tennessee and Missouri, throughout our northeastern and middle sections, involve an average expense—transportation and every thing included—of two cents four mills a letter. It costs more to send and take care of a letter that goes fifty or a hundred miles in Florida, Arkansas, or Texas, than it does to take one from Portland, Maine, to Memphis, from Boston to St. Louis, or from New York to New Orleans.

Now our Southern brethren will do us the credit to believe that we propose nothing sectional, nothing narrow, and nothing partial. Every single fact, figure, and circumstance goes to prove, beyond all cavil, that correspondence is carried on to a far greater extent in the thickly-settled social and commercial districts of the North and East, than at the South and West. The people in these districts write the largest share of the letters, and pay by far the largest share of the postage, while with them postal expenses are comparatively light. Were there two nations placed in the relative positions of New York and New England on the one hand, and Mississippi, Louisiana, and the States of the South and Southwest on the other, the one could have a self-supporting mail system, at a uniform rate of postage, not to exceed one-quarter what would be required in the other. In the State of New York alone are written annually 29,259,943 letters, while in all of the States south of the Potomac and Ohio Rivers, Missouri, Arkansas, and Texas included, the number is but 31,709,035. The city of New York alone contributes one-tenth of the postal revenue of the nation, and writes one-tenth of the letters, being a larger proportion than is contributed by every State that borders on the Gulf of Mexico.

These are facts, and they are not held up as a reproach, but to illustrate the financial condition of our postal system, and to show that a good, an active, and an economical postal establishment is of vast importance in large towns, cities, and thickly-settled and commercial districts. The people in those localities where many letters are written, where correspondence is the life-blood of the commercial and social system, feel that they have a right to ask that a postal system shall be adapted to the wants of those on whom its support principally falls. We, as a people residing in cities and thickly-settled States, ask for not one single privilege or one charge for service that is not to be accorded to the lonely settler of New Mexico or the planter of Texas, under the same circumstances, but we do ask for a uniform rate of letter postage of just two cents for all distances; and the facts given in this article—and they challenge examination for their general correctness—these facts clearly prove, beyond a doubt, that this rate will be ample to defray the expenses of all, except, perhaps, in some forest frontiers or thinly-settled regions; and there any extra expense—if there is any—should fall on the entire treasury of the nation, instead of being levied as a partial, a special, and an unjust tax on the industrious active classes, who make extensive use of the post-office.

We want and need a convenient number of receiving-houses and letter-pillars in our cities, after the plan of the distribution system in England. These "receiving-houses" do not require to be sub-post-offices, or offices for the delivery of letters, but only for the reception of letters and the sale of stamps. Under these circumstances, a very small salary and a small commission on the sale of stamps, is sufficient to compensate the receiver.

The rights of the citizen are not attended to in this country in the management of "dead letters." In this case we have only to look at the satisfactory and just method adopted in Great Britain. There there is no "Dead-letter Office," but there is a "Returned-letter Office." Letters are not reported "dead" except they are anonymous, or when, from other circumstances, the owner can not be found. There, with the great bulk of the letters, a rapid and secure method of returning "miscarried" letters to the writers is adopted, by means of which every letter is returned on the very day it arrives at the Returned-letter Office. It is done so expeditiously, that a clerk returns 200 per day, and 1200 in a week. At this rate all of our "dead letters" could be returned, at a cost to the nation of less than one hundred thousand dollars. With a system of letter delivery in cities and towns, the refused or miscarried letters could usually be sent to the Department and returned to the writers, in from one to three weeks of the date of mailing. In England, letters that miscarry usually get back to the writers within a week of the date of mailing. Oftentimes these dead or miscarried letters would be of great advantage to the writer, particularly in informing him that his letter had not reached its destination. On the face of it would be written usually, as is practiced in England, the cause of its non-delivery.

Any person who will give it an examination will see that we have at this time a most troublesome, perplexing, and absurd system of rates; and it must, we think, be quite as clear that, in a financial and economical point of view, our proposed scale of rates is satisfactory, simple, economical, and adapted to our wants. —See *Bankers' Magazine*, New York, vol. vii., November and December, 1857. On the United States Postage System, refer to *New Englander*, vi. 393 (Leavitt), i. 392 (Bacon); Hunt's *Merchants' Magazine*, ix. 436, ii. 522 (F. O. J. Smith), x. 250 (W. H. Maclay), x. 27 (J. M. Whiton), ii. 253 (B. Bates); Niles's *Register*, xxxvi. xxxvii, and years 1830, 1834, 1835; *Democratic Review*, vi. 177; De How's *Review*, iii., v., xii: Foreign Postal System, refer to Phases, xviii. 250; *New England*, vi. 153; *Westminster Review*, xx. 411, xxix. 225, xxxiii. 491; *Quarterly Review*, lxxxvi. 37, lxiv. 282; *Foreign Quarterly*, xiii. 397; *British and Foreign Review*, viii. 451; *Living Age*, ii. 407; *Edinburgh Review*, lxx. 86.

Post Entry. When goods are weighed or measured, and the merchant has got an account thereof at the custom-house, and finds his entry, already made too small, he must make a *post* or additional *entry* for the surplusage, in the same manner as the first was done. As a merchant is always in time, prior to the clearing of the vessel, to make his post, he should take care not to over-enter, to avoid as well the advance, as the trouble of getting back the overplus. However, if this be the case, and an over-entry has been made, and more paid or bonded for customs than the goods

really landed amount to, the land-waiter and surveyor must signify the same, upon oath made, and subscribed by the person so over-entered, that neither he, nor any other person, to his knowledge, had any of the said goods over-entered on board the said ship, or any where landed the same without payment of custom; which oath must be attested by the collector or controller, or their deputies, who then compute the duties, and set down on the back of the certificate, first in words at length, and then in figures, the several sums to be paid.

Potash (Da. *Potaske*; Fr. *Potasse*; Ger. *Pottasche*; It. *Potassa*; Pol. *Potasz*; Russ. *Potasch*). If vegetables be burned, the ashes lixiviated, and the solution boiled to dryness in iron vessels, the mass left behind is the *potash* of commerce—the impure carbonate of potass of chemists. It is intensely alkaline, solid, and colored brown by the admixture of a small portion of vegetable inflammable matter, which generally becomes moist. When potash is calcined in a reverberatory furnace, the coloring matter is destroyed, it assumes a spongy texture, and a whitish pearly lustre; whence it is denominated *pearlash*. The latter generally contains from 60 to 83 or 84 per cent. of pure carbonate of potass. The ashes of those vegetables only which grow at a distance from the sea are employed in the manufacture of potash. Herbaceous plants yield the largest portion, and shrubs more than trees. It is principally manufactured in America, Russia, and Poland, the vast forests of which furnish an inexhaustible supply of ashes.

In some portions of the United States and Canada, where timber is an incumbrance upon the soil, it is felled, piled up in pyramids, and burned, solely with a view to the manufacture of potashes. The ashes are put into wooden cisterns, having a plug at the bottom of one of the sides under a false bottom; a moderate quantity of water is then poured on the mass, and some quicklime is stirred in. After standing for a few hours, so as to take up the soluble matter, the clear liquor is drawn off, evaporated to dryness in iron pots, and finally fused at a red heat into compact masses, which are gray on the outside and pink-colored within. Pearlash is prepared by calcining potashes upon a reverberatory hearth, till the whole carbonaceous matter, and the greater part of the sulphur, be dissipated; then lixiviating the mass in a cistern having a false bottom covered with straw, evaporating the clear lye to dryness in flat iron pans, and stirring it toward the end into white lumpy granulations. All kinds of vegetables do not yield the same proportion of potassa. The more succulent the plant, the more does it afford; for it is only in the juices that the vegetable salts reside, which are converted by incineration into alkaline matter. Herbaceous weeds are more productive of potash than the graminiferous species, or shrubs, and these than trees; and for a like reason twigs and leaves are more productive than timber. But plants in all cases are richest in alkaline salts when they have arrived at maturity. The soil in which they grow also influences the quantity of saline matter.

The following table exhibits the average product in potassa of several plants, according to the researches of Vauquelin, Pertuis, Kirwan, and De Saussure:

In 1000 parts.	Potassa.	In 1000 parts.	Potassa.
Pine or fir	0·45	Dry beech bark	6·00
Poplar	0·75	Fern	6·26
Trefoil	0·75	Large rush	7·22
Beechwood	1·45	Stalk of maize	17·50
Oak	1·53	Bean stalks	20·00
Boxwood	2·26	Bastard chamomile (*Anthemis cotula*, Linn.)	19·60
Willow	2·85	Sunflower stalks	20·30
Elm and maple	3·00	Common nettle	26·03
Wheat straw	3·90	Vetch plant	27·50
Bark of oak twigs	4·20	Thistles in full growth	35·37
Thistles	5·00	Dry straw of wheat before earing	47·00
Flax stems	5·00	Wormwood	73·00
Small rushes	5·08	Fumitory	70·00
Vine shoots	5·50		
Barley straw	5·80		

Stalks of tobacco, potatoes, chestnuts, chestnut husks, broom, heath, furze, tansy, sorrel, vine leaves, beet leaves, orach, and many other plants, abound in potash salts. In Burgundy, the well-known *cendres gravelées* are made by incinerating the lees of wine pressed into cakes, and dried in the sun: the ashes contain fully 16 per cent. of potassa.

EXPORTS OF POT AND PEARL ASHES FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1856.

Exported from	Tons	Value.
Portland	1	$113
Salem	1	85
Boston	21	2,047
New York	3832	426,183
Total	3855	$429,428

Potatoes (Ger. *Kartoffeln*; Du. *Aardappelen*; Fr. *Pommes de terre*; It. *Patate, Pomi di terra*; Sp. *Patatas manchegas*; Russ. *Jabloki semlenie*), the roots of the *Solanum tuberosum*, of innumerable varieties, and too well known to require any description.

Historical Notice.—The common English or Irish potato (*Solanum tuberosum*), so extensively cultivated throughout most of the temperate countries of the civilized globe, contributing, as it does, to the necessities of a large portion of the human race, as well as to the nourishment and fattening of stock, is regarded as of but little less importance in our national economy than maize, wheat, or rice. It has been found in an indigenous state in Chili, on the mountains near Valparaiso and Mendoza; also near Montevideo, Lima, Quito, as well as in Santa Fé de Bogota, and more recently in Mexico, on the flanks of the Orizaba.

The history of this plant, in connection with that of the sweet potato, is involved in obscurity, as the accounts of their introduction into Europe are somewhat conflicting, and often they appear to be confounded with one another. The common kind was doubtless introduced into Spain in the early part of the 16th century, from the neighborhood of Quito, where as well as in all Spanish countries, the tubers are known as *papas*. The first published account of it we find on record is in *La Cronica del Peru*, by Pedro de Cieca, printed at Seville in 1553, in which it is described, and illustrated by an engraving. From Spain it appears to have found its way into Italy, where it assumed the same name as the truffle. It was received by Clusius, at Vienna, in 1598, in whose time it spread rapidly in the south of Europe, and even into Germany. To England it is said to have found its way by a different route, having been brought from Virginia by Raleigh's colonists in 1586, which would seem improbable, as it was unknown in North America at that time, either wild or cultivated; and, besides, Gough, in his edition of *Camden's Britannia*, says it was first planted by Sir Walter Raleigh on his estate at Youghall, near Cork, and that it was cultivated in Ireland before its value was known in England. Gerard, in his *Herbal*, published in 1597, gives a figure of this plant, under the name of *Batata Virginiana*, to distinguish it from the sweet potato, *Batata edulis*, and recommends the root to be eaten as a "delicate dish," but not as a common food. "The sweet potato," says Sir Joseph Banks, "was used in England as a delicacy long before the introduction of our potatoes; it was imported in considerable quantities from Spain and the Canaries, and was supposed to possess the power of restoring decayed vigor." It is related that the common potato was accidentally introduced into England from Ireland at a period somewhat earlier than that noticed by Gerard, in consequence of the wrecking of a vessel on the coast of Lancashire, which had a quantity on board. In 1663, the Royal Society of England took measures for encouraging the cultivation of this vegetable, with the view of preventing famine. Notwithstanding its utility as a food became better known, no high character was attached to it; and the writers on gardening toward the end of the 17th century,

a hundred years or more after its introduction, treated of it rather indifferently. "They are much used in Ireland and America as bread," says one author, "and may be propagated with advantage to poor people." The famous nurserymen, London and Wise, did not consider it worthy of notice in their *Complete Gardener*, published in 1719. But its use gradually spread, as its excellences became better understood. It was near the middle of the last century before it was generally known either in Britain or North America, since which it has been most extensively cultivated. The period of the introduction of the common potato into the British North American colonies is not precisely known.

The culture of this plant extends through the whole of Europe, a large portion of Asia, Australia, the southern and northern parts of Africa, and the adjacent islands. On the American continent, with the exception of some sections of the torrid zone, the culture of this root extends from Labrador on the east, and Nootka Sound on the west, to Cape Horn. It resists more effectually than the cereals the frosts of the North. In this country it is principally confined to the Northern, Middle, and Western States, where, from the coolness of the climate, it acquires a farinaceous consistence highly conducive to the support of animal life. It has never been extensively cultivated in Florida, Alabama, Mississippi, nor Louisiana — perhaps from the greater facility of raising the sweet potato, its more tropical rival. Its perfection, however, depends as much upon the soil as on the climate in which it grows; for in the red loam on the banks of Bayou Bœuf, in Louisiana, where the land is new, it is stated that tubers are produced as large, savory, and as free from water as any raised in other parts of the world. The same may be said of those grown at Bermuda, Madeira, the Canaries, and numerous other ocean isles. The chief varieties cultivated in the Northern States are the Carter, the kidneys, the pink-eyes, the Mercer, the orange, the Sault St. Marie, the Merino, and the Western red; in the Middle and Western States, the Mercer, the long red or Merino, the orange, and the Western red. The yield varies from 50 to 400 bushels and upward per acre, but generally it is below 200 bushels. Within the last ten years an alarming disease, or "rot," has attacked the tubers of this plant about the time they are fully grown. It has not only appeared in nearly every part of our own country, but has spread dismay at times throughout Great Britain and Ireland, and has been felt more or less seriously in every quarter of the globe. To the greater uncertainty attending its cultivation of late years, from this cause, must be attributed the deficiency of the crop of 1849 as compared with that of 1839. This is one of the four agricultural products which, by the present census, appears smaller than it was ten years since.

Sweet Potato.—The sweet potato (*Batata edulis*) is a native of the East Indies, and of intertropical America, and was the "potato" of the old English writers in the early part of the 14th century. It was doubtless introduced into Carolina, Georgia, and Virginia, soon after their settlement by the Europeans, being mentioned as one of the cultivated products of those colonies as early as the year 1648. It grows in excessive abundance throughout the Southern States, and as far north as New Jersey and the southern part of Michigan. The varieties cultivated are the purple, the red, the yellow, and the white, the former of which is confined to the South. The amount of sweet potatoes exported from South Carolina in 1747–'48 was 700 bushels; that of the common potato exported from the United States in 1820–'21, 90,889 bushels; in 1830–'31, 112,875 bushels; in 1840–'41, 136,095 bushels; in 1850–'51, 106,842 bushels. According to the census returns of 1840, the quantity of potatoes of all sorts raised in the Union was 108,298,960 bushels; of 1850, 104,055,989 bushels, of which 38,259,196 bushels were sweet.

COMPARATIVE PRODUCTION OF POTATOES IN THE UNITED STATES IN THE YEARS 1840 AND 1850.

States and Territories.	Irish and Sweet Potatoes	
	1840	1850.
	Bushels.	Bushels
Alabama	1,708,350	5,721,205
Arkansas	208,608	181,181
California	....	10,272
Columbia, District of	12,035	31,189
Connecticut	3,414,288	2,681,875
Delaware	200,712	305,985
Florida	264,617	765,064
Georgia	1,201,366	7,213,507
Illinois	2,625,520	2,672,274
Indiana	1,525,794	2,287,048
Iowa	224 063	282,563
Kentucky	1,055,086	2,490,666
Louisiana	834,341	1,524,187
Maine	10,392,780	3,436,140
Maryland	1,036,458	979,932
Massachusetts	5,385,652	3,653,384
Michigan	2,100,205	2,361,074
Mississippi	1,630,100	5,003,277
Missouri	783,768	1,274,511
New Hampshire	6,206,606	4,504,019
New Jersey	2,072,069	3,715,254
New York	50,123,614	15,469,997
North Carolina	2,609,239	5,716,027
Ohio	5,805,021	5,245,760
Pennsylvania	9,595 663	8,032,904
Rhode Island	911,973	651,629
South Carolina	2,698,313	4 473,163
Tennessee	1,904,370	3,845,560
Texas	....	1,426,808
Vermont	8,869,751	4,951,014
Virginia	2,944,660	3,130,767
Wisconsin	419,608	1,402,956
Minnesota Territory	....	21,345
New Mexico Territory	....	3
Oregon Territory	....	94,326
Utah Territory	....	41,028
Total	108,158,100	105,740,944

EXPORTS OF POTATOES FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1856.

Whither exported.	Barrels.	Value.
Russian Possessions in N. America	40	$208
Swedish West Indies	5	10
Danish West Indies	1,164	2,707
Bremen	1	2
Dutch West Indies	490	1,088
Dutch Guiana	86	137
England	7	16
Canada	5,164	5,606
Other British North American Poss.	230	328
British West Indies	17,240	32,910
British Honduras	182	445
British Guiana	3,072	6,025
French West Indies	939	1,785
Cuba	43,252	82,966
Porto Rico	5,188	9,115
Madeira	100	250
Turkey in Asia	100	200
Porta in Africa	20	36
Hayti	184	434
San Domingo	125	240
Mexico	710	1,777
Central Republic	162	378
New Granada	629	1,347
Venezuela	682	1,592
Chili	130	142
Peru	500	500
Sandwich Islands	965	1,237
China	101	1,351
Whale Fisheries	289	670
Total	82,502	$183,031

IMPORTS OF POTATOES INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1856.

Whence imported.	Bushels	Value.
Swedish West Indies	18	$9
Hamburg	164	150
Bremen	450	270
Holland	109	74
England	2,917	1,822
Scotland	408	306
Ireland	13,178	4,269
British West Indies	63,884	41,633
France on the Atlantic	922	710
Cuba	116	110
Mexico	20	27
Peru	9,127	5,413
Sandwich Islands	26,810	12,788
China	42	22
Whale Fisheries	1,575	605
Total	120,629	$71,918

Potomac River, in Maryland and Virginia, rises in two branches, the north and the south, in and near the Alleghany Mountains, and forms, through nearly its whole course, the boundary between Virginia and Maryland. It is about 300 miles long, and enters Chesapeake Bay between Point Lookout and Smith's Point by a mouth ten miles wide. At Alexandria it is a mile and a quarter wide, 200 miles from the ocean. It is navigable for ships of the line to the navy-yard in Washington, 300 miles from the sea, and three miles below the head of tide-water. Above this it is obstructed by numerous falls and rapids. — *See* Maryland, Chesapeake.

Pound (Lat. pondus, *weight*), a measure of weight. In England two different pounds are used—the pound avoirdupois, and the pound Troy. The pound avoirdupois weighs 7000 grains Troy, and the pound Troy 5760 grains. The former is divided into 16 ounces, and the latter into 12. The pound sterling was in Saxon times, about A.D. 671, a pound Troy of silver, and a shilling was its twentieth part; consequently the latter was three times as large as it is at present. — Peacham. The value of the Roman *pondo* is not precisely known, though some suppose it was equivalent to an Attic *mina*, or £3 4*s.* 7*d.* Our avoirdupois weight (*avoir du poids*) came from the French, and contains sixteen ounces; it is in proportion to our Troy weight as seventeen to fourteen.—Chambers; see also *Bankers' Magazine*, December, 1857, 456–457. An old pound weight of geographical significance, named Easterling, divided into twelve ounces, was in use among the Anglo-Saxons some centuries before the Norman Conquest. The same weight, called the Tower, and the Moneyers' pound, was styled by early French writers the Roman and the Rochelle pound; also known among the Germans as the Cologne pound. A simple system of exchange, by which a pound of silver money, in tale, was made to equal a pound in gross weight, had been arranged by Charles the Great, in France, toward the end of the eighth century. In Britain, under the First William, of Normandy, an ordinance declared, "The weights and measures throughout the kingdom shall remain as our worthy predecessors have established." Queen Elizabeth ordered the ounce of silver, in England, to be cut into sixty pennies; so that the penny, formerly the twentieth of an ounce, thenceforth became the sixtieth part! From the termination of Queen Elizabeth's reign the coinage of English silver has generally retained a purity of 925 thousandths, called the "Sterling Standard." Another pound weight, also divided into twelve ounces, had been brought from Cairo, in Egypt, to Troyes of Champagne, in France, during the Crusades. Carried into England by foreign goldsmiths, Lombard merchants, possibly from Venice, about the year 1496, it gradually superseded the old Easterling weights, and found access into the British Mint, by decision of Henry VIII. In 1543 this king began to debase the fineness of the silver coins, and also reduced their standard weight. The British statute of 1266 established two common measures for money, weights, dry and wet quantities, with presumed consent of the people and approval by the king, which seem to render "wheat and silver money the two weights of the balance, the natural tests and standards of each other." Unfortunately for such decision, neither wheat corn grains nor silver are by nature exact weights suited for a standard, "a rule by which other things may be correctly compared, adjusted, and valued." The accredited proportions of these old measures being accessible an attempt has been made to test their quantities. Edward IV., in 1461, struck a gold coin of the value of ten shillings, named an "angel," because such an image was represented upon the face of it, with the likeness of a ship on the reverse. Henry IV. (1483 to 1509) introduced "the sovereign," or "rose noble," of gold. "The guinea," designed to be of the value of twenty shillings, but requiring subsequent correction, was not ordained till the reign of Charles II. in England. In 1821 a committee of the Royal Society, to whom the matter had been referred, proposed, and it was so decided, by act of George IV., in 1824, 1st. That the parliamentary standard yard, made by Bird, in 1760, be henceforth the legal standard of the British empire; 2d. That the parliamentary standard Troy pound weight, made in 1758, continue unaltered; 3d. That seven thousand grains be declared to constitute the pound-weight avoirdupois, now called the British imperial pound. By act of Congress of the United States, in 1828, "the brass Troy pound weight, procured by the Minister of the United States at London, in the year 1827, for the use of the Mint, shall be *the standard* of the Mint of the United States, conformably to which the coinage thereof shall be regulated." Yet we possess *three several standing weights for coinage accounts, each one derived from a distinct unitary measure taken from as many different nations.* 1st. We have a Troy standard for *quantities*, from Britain; 2d. A metrical standard for *qualities*, from France; 3d. An avoirdupois standard for *proportions*, from Spain. The sole remnant retained from the original scale of the mother country being the Troy ounce, now divided and multiplied *decimally.* — *Report* of Dr. J. H. Gibbon of the United States Mint, North Carolina. *See* Penny.

Pratique. The writing or license of this name was originally addressed by the Southern nations to the ports of Italy to which vessels were bound, and signified that the ship so licensed came from a place or country in a healthy state, and no way infected with the plague or other contagious disease. The pratique is now called a bill of health, and is still of the same intent and import.—Ashe.

Precious Metals, a designation frequently applied to gold and silver. We have given, under the articles Gold and Silver, a short account of each metal; and we now propose laying before the reader some details with respect to their supply and consumption. To enter fully into this interesting and difficult subject would require a long essay, or rather a large volume. Mr. Jacob published in 1831 an "Historical Inquiry into the Production and Consumption of the Precious Metals," in which he takes up the subject at the earliest period, and continues it to the above epoch. And though far from being so learned, complete, or satisfactory as might have been expected, this work contains a good deal of valuable information, and deserves the attention of those who take an interest in such inquiries. But within the last five or six years the subject has acquired an interest and importance with which it was not previously invested.

Supply of the Precious Metals. — Since the discovery of America, the far greater part of the supplies of gold and silver have been derived from that continent. Previously to the publication of Humboldt's great work, "*Essai Politique sur la Nouvelle Espagne*," several estimates, some of them framed by individuals of great intelligence, were in circulation, of the quantities of gold and silver imported from America. They, however, differed widely from each other, and were all framed from comparatively limited sources of information. Humboldt brought these estimates together as follows:

Authors.	Epochs.	Dollars.
Estariz	1492–1724	3,536,000,000
Solorzano	1492–1628	1,500,000,000
Moncada	1492–1505	2,000,000,000
Navarete	1510–1617	1,536,000,000
Raynal	1492–1780	6,154,000,000
Robertson	1492–1775	8,800,000,000
Necker	1763–1777	304,000,000
Gerboux	1724–1800	1,600,000,000
The Author of the *Recherches sur le Commerce*, Amsterdam, 1779	1492–1775	5,072,000,000

—*Essai sur la Nouvelle Espagne*, tome III.

But these have been wholly superseded by the more

extensive and laborious investigations of Humboldt. This illustrious traveler, besides being acquainted with all that had been written on the subject, and having ready access to official sources of information unknown to the writers already alluded to, was well versed in the theory and practice of mining, and critically examined several of the most celebrated mines. He was, therefore, incomparably better qualified for forming correct conclusions as to the past and present productiveness of the mines than any of those who had hitherto speculated on the subject. His statements have, indeed, been accused of exaggeration; and we incline to think that there are grounds for believing that this charge is, in some measure, well founded, particularly as respects the accounts of the profits made by mining, and of the extent to which the supplies of the precious metals may be increased. But this criticism applies, if at all, in a very inferior degree to the accounts Humboldt has given of the total produce of the mines, and the exports to Europe. And making every allowance for the imperfection inseparable from such investigations, it is still true that the statements in question, and the inquiries on which they are founded, are among the most valuable contributions that have been made to statistical science. According to Humboldt, the annual average supplies of the precious metals derived from America have been as follows:

	Dollars a Year at an Average.
From 1492 to 1500	250,000
" 1500 to 1545	3,000,000
" 1545 to 1600	11,000,000
" 1600 to 1700	16,000,000
" 1700 to 1750	22,500,000
" 1750 to 1803	35,300,000

—*Essai sur la Nouvelle Espagne*, iii.

The following is Humboldt's estimate of the annual produce of the mines of America at the commencement of the 19th century:

Political Divisions.	Gold.		Silver.		Value of the Gold and Silver in Dollars.
	Marks of Castile.	Kilogs.	Marks of Castile.	Kilogs.	
Vice-royalty of New Spain	7,000	1,609	2,883,220	667,512	23,000,000
Vice-royalty of Peru	3,400	782	614,030	140,478	6,240,000
Captain-generalship of Chili	12,212	2,807	29,700	6,827	2,060,000
Vice-royalty of Buenos Ayres	2,200	506	481,330	110,764	4,850,000
Vice-royalty of New Granada	20,505	4,714	....	....	2,000,000
Brazil	29,900	6,573	....	....	4,360,000
Total	75,217	17,291	3,400,840	785,581	43,500,000

Humboldt further estimated the annual produce of the European mines of Hungary, Saxony, etc., and those of Northern Asia, at the same period, at about £1,000,000 more. The *quantity* of gold produced in America at the beginning of the century was to the quantity of silver as 1 to 40; in Europe the proportions were as 1 to 10. The *value* of equal quantities of gold and silver were then in the proportion of 15 or 15½ to 1. From 1800 to 1810 the yield of the American mines continued to increase; and their produce, and that of the European and Russian mines, was then probably rather above than below $55,000,000. But in the last-mentioned year the contest began which terminated in the dissolution of the connection between Spain and her American colonies. The convulsions and insecurity arising out of this struggle—the proscription of the old Spanish families, to whom the mines principally belonged, who repaired, with the wrecks of their fortunes, some to Cuba, some to Spain, and some to Bordeaux and the south of France—caused the abandonment of several of the mines, and an extraordinary falling off in the amount of their produce. There are no means of estimating the precise extent of this decline; but according to Jacob, who collected and compared all the existing information on the subject, the total average produce of the American mines, inclusive of Brazil, during the twenty years ending with 1829, may be estimated at $20,000,000 a year; being less than half their produce at the beginning of the century!—Jacob on *Precious Metals*. It has, however, been supposed that Jacob rather exaggerated the falling off. And, at all events, the supplies of bullion obtained from Mexico and South America began, soon after the publication of his work (1831), to increase; and, notwithstanding the anarchy to which they have continued to be a prey, that increase has been maintained down to the year 1853. It appears from the returns sent home by the British consuls that the coinage of gold and silver in the Mexican mints amounted in 1817 to $16,923,948, and in 1818 to $19,506,754. But it is well known that considerable quantities of these metals are raised and exported from Mexico without being brought to the mints to be coined. And taking this item into account, we shall not, perhaps, be very wide of the mark if we estimate the entire produce of the Mexican mines in 1847 and 1848 at about 19 and 21½ millions of dollars, of which from 17 to 20½ millions were in silver. In 1842, Mr. B. H. Wilson, consul in Peru, estimated the produce of the Peruvian mines at about $5,210,000 a year.—*Parliamentary Paper*, No. 476, Session 1843. And it has since increased to $6,500,000 or $7,000,000. The produce of the Bolivian mines is usually estimated at about half the produce of those of Peru. In 1850 the produce of the Chilian mines, according to the official returns, amounted to $7,920,671.—*Annuaire de l'Economie Politique*, 1853.

Birkmyre's estimate of the production of the precious metals in 1846 and 1850, the most elaborate and valuable of any hitherto published, appeared in the London *Times* of the 19th May, 1851. We subjoin some of its principal portions.

"The quantities of gold and silver produced at the under-mentioned epochs were:

"In 1801 the quantity of pure gold produced in America was 46,331 lbs.; in Europe and Northern Asia (exclusive of China and Japan), 4,916 lbs.; total produce, 51,247 lbs.=55,910 lbs. British standard gold= £2,612,200.

"In 1846 the quantity of pure gold produced in America was 25,503 lbs.; in Europe, Africa, and Asia (exclusive of China and Japan), 89,171 lbs.; total produce, 114,674 lbs.=125,108 lbs. British standard gold= £5,846,721.

"In 1850 the quantity of pure gold produced in America was 261,731 lbs.; in Europe, Africa, and Asia (exclusive of China and Japan), 104,219 lbs.; total produce, 365,950 lbs.=399,247 lbs. British standard gold=£18,654,322.

"The above quantities are probably less than the actual production. The duties on gold in Russia on the produce of the private mines are heavy, varying from 12 to 24 per cent.; in Austria they amount to 10 per cent., in Brazil to 5 per cent., and are understood to lead to a great deal of smuggling. In other countries, such as the United States, where there are no duties, the gold and silver stated in the table are only the quantities brought to the mints to be coined, there being no means of determining the quantity used in jewelry and other arts and manufactures."

The exhaustion of the precious metals in manufactures and the arts throughout Europe and the United States probably exceeds the ordinary estimates. It is known that in England alone the weekly consumption of fine gold is equivalent to 600 ounces—used largely in gilding metals by the electrotype and the water-gilding processes.

COMPARATIVE TABLE, SHEWING THE ANNUAL PRODUCE (APPROXIMATE CALCULATION) IN VALUE OF FINE GOLD AND SILVER FOR 1846 AND 1850, THE FIRST BEING TWO YEARS BEFORE THE DISCOVERY OF THE RICH DEPOSITS OF GOLD IN CALIFORNIA; THE LATTER TWO YEARS AFTER THE DISCOVERY.

Countries.	1846.			1850.		
	Gold.	Silver.	Total.	Gold.	Silver.	Total.
California	....	....	....	£12,000,000	£62,088	£12,062,088
United States	£237,336	£1,864	£239,230	115,430	11,444	126,874
Mexico	249,753	3,457,620	3,706,773	382,901	5,383,353	5,766,254
New Grenada	252,407	42,929	295,336	252,407	42,929	295,336
Peru	96,241	1,000,583	1,096,824	96,241	1,000,583	1,096,824
Bolivia	60,357	460,191	520,548	60,357	460,191	520,548
Chili	145,585	297,029	442,614	145,585	297,029	442,614
Brazil	259,871	2,003	261,874	289,068	2,227	291,295
Total of North and South America	£1,301,560	£5,261,619	£6,563,179	£13,341,989	£7,259,824	£20,601,813
Russia	£3,414,427	£167,831	£3,582,258	£4,175,860	£171,817	£4,347,477
Norway	....	32,346	32,346	....	35,607	35,607
North Germany	357	138,022	138,379	357	138,022	138,379
Saxony	....	198,200	198,200	....	198,200	198,200
Austria	282,750	282,654	565,404	288,708	286,971	575,679
Piedmont	17,841	7,444	25,285	17,841	7,444	25,285
Spain	2,498	227,499	229,997	2,498	440,210	442,708
United Kingdom	....	109,980	109,980	....	160,000	160,000
Africa	203,900	1,056	204,956	203,900	1,056	204,956
Borneo	305,900	1,584	307,484	305,850	1,584	307,434
Ava	100,000	517	100,517	100,000	517	100,517
Malacca	72,240	374	72,614	72,240	374	72,614
Sumatra	63,710	330	64,040	63,712	330	64,040
Annam or Tonquin	30,585	53,460	84,045	30,585	53,460	84,045
Various countries*	50,975	33,000	83,975	50,975	33,000	83,975
Total of Europe, Africa, and Asia	£4,545,193	£1,254,806	£5,799,498	£5,312,533	£1,528,592	£6,840,975
Total of North and South America	1,301,560	5,261,619	6,563,179	13,341,989	7,259,824	20,601,813
Grand total	£5,846,752	£6,515,925	£12,362,677	£18,654,522	£8,788,416	£27,442,788

* Exclusive of China and Japan, which produce large quantities of gold and silver, the amount of which is quite unknown to Europeans.

Some small portion of the quantities exported to Egypt was probably detained in that country or forwarded to Australia. But by far the greater part, perhaps not less than nineteen-twentieths of the whole, was destined for, and went to, India. But although India did not, for several years prior to 1850, derive any considerable supply of bullion from Europe, she drew during that period large supplies from China. This was a consequence of the vast increase in the importations of opium into the latter. With the exception of tea and silk, China has few native products, other than the precious metals, fit for foreign markets. And the exports of the former being not much more than sufficient to pay for the products sent to her from Europe and America, a very considerable part of the cotton and opium imported from India is paid for in bullion, the increased exports of which are said to have latterly brought serious difficulties. It appears, for example, that at an average of the seventeen years ending with 1850–'51, the annual value of the merchandise exported from India to China amounted to £4,564,400 a year, and that of the merchandise imported to only £643,210, leaving a balance of no less than £3,921,190 a year to be paid in bullion, and in drafts on London and other places indebted to China. The following table, which is deduced from the account compiled by the Indian custom-house, shows the balance between the importation and exportation of treasure into and from India, for 17 years, 1834–'51. Since 1851 this current of gold and silver from Europe has largely increased, swelling the hoards of treasure in China and India.

ACCOUNT OF THE IMPORTS AND EXPORTS OF TREASURE INTO AND FROM INDIA DURING EACH OF THE 17 YEARS ENDING WITH 1850–'51.

Years.	Imports.	Exports.	Excess of Imports.
1834–'35	£1,813,023	£194,741	£1,618,282
1835–'36	2,146,465	108,109	2,038,353
1836–'37	2,036,167	263,924	1,772,243
1837–'38	2,610,101	310,656	2,299,445
1838–'39	3,010,920	347,906	2,663,014
1839–'40	1,945,264	470,523	1,474,741
1840–'41	1,786,253	366,486	1,419,767
1841–'42	1,841,375	515,076	1,326,299
1842–'43	3,443,292	215,797	3,227,495
1843–'44	4,794,678	746,076	4,048 602
1844–'45	3,752,472	1,106,840	2,645,632
1845–'46	2,495,150	816,028	679,921
1846–'47	2,939,922	713,870	2,226,052
1847–'48	1,973,391	1,426,018	547,373
1848–'49	4,204,503	2,539,743	1,664,760
1849–'50	3,396,807	971,244	2,426,562
1850–'51	3,811,809	541,289	3,270,520
Total excess of imports			£36,427,905
Average annual excess of imports			2,142,818

Now it appears from this table that the imports of bullion into India during the seventeen years ending with 1850–'51, exceeded the exports by the gross sum of £36,427,905, being at the rate of £2,142,818 a year. The following tables show the countries from which the bullion imported into India during the four years ending with 1850–'51 was derived, and those to which the bullion exported was sent.

The accumulations of gold from California and Australia have created a strong desire for India and China goods, for which specie must be paid in lieu of domestic goods or produce from England or the United States.

TREASURE IMPORTED INTO INDIA FROM 1847–'48 TO 1850–'51.

Where from.	1847–'48.	1848–'49.	1849–'50.	1850–'51.
United Kingdom	£58,649	£30,834	£20,699	£503,050
Africa	12,080	14,496	10,425	13,554
America	31,850	18,125	6,949	9,736
Arabian and Persian Gulfs	335,238	838,810	405,180	472,092
Cape of Good Hope	....	200	1,110	2,814
Ceylon	67,424	65,867	109,145	571,368
China	1,036,343	3,109,002	2,326,917	1,845,284
France	2,099	....	....	18,378
Hamburg	....	....	807	....
Mauritius and Bourbon	84,321	162,531	86,691	138,824
Pegu	42,634	54,402	84,902	76,806
Penang, Singapore, and Malacca	204,005	339,919	239,694	149,216
Sonmeanee	141	632	52	....
Suez	4,980	24,006	32,156	210,853
Sumatra	....	1,200	....	55
Total	£1,975,391	£4,204,503	£3,396,807	£3,811,809

TREASURE EXPORTED FROM INDIA FROM 1847-'48 TO 1850-'51.

Where to.	1847-'48.	1848-'49.	1849-'50.	1850-'51.
United Kingdom	£736,659	£1,498,804	£118,488	£10,173
Africa	7,892	15,405	10,221	9,511
America	5,450	2,235	....	700
Arabian and Persian Gulfs	87,152	68,270	60,460	46,060
Batavia and Java	....	....	....	2,486
Cape of Good Hope	....	1,047	54	700
Ceylon	290,908	681,547	261,828	252,288
China	32,498	528	60,661	21,000
France	....	64	6,000	....
Java	....	....	30	....
Mauritius and Bourbon	172,928	112,094	219,583	25,244
Malta and Gibraltar	....	400	....	....
New South Wales	31	300	....	100
Pegu	89,134	65,104	80,238	142,404
Penang, Singapore, and Malacca	33,295	15,398	28,684	26,242
Sonmeanee	....	....	133	....
Suez	630	78,258	24,266	4,692
Total	£1,426,088	£2,459,743	£771,244	£541,289

It appears from these tables that China furnished two-thirds or more of all the bullion imported into India during the four years ending with 1850-'51; and that till the last-mentioned year the imports from Europe were quite inconsiderable, and greatly exceeded by the exports to it. China, indeed, has been long known to be both an importer and an exporter of bullion. But it is only within the last few years, or since the importations of opium became so immense, that her exports of bullion have become so very large as to make them productive of much inconvenience. The imports of bullion into India from the United States have, till recently, been too inconsiderable to deserve notice. A direct intercourse has now been commenced between San Francisco and the eastern hemisphere; but hitherto all shipments of bullion to India and China on American account have been made through London. During the year ending the 30th June, 1852, the Americans sent gold and silver to the amount of £4,127,379 to England. But though the value of their imports from India and China during that year amounted to $14,818,991, while that of their exports thither amounted to only $3,267,675, they did not send to either a single dollar or a single dollar's worth of gold or silver direct from America.—*Report on Commerce and Navigation of the United States for* 1852, p. 36, *et seq.*

But under such circumstances there will be a corresponding increase of demand in India for the bullion of Australia and America. Indeed, the probability seems to be, from the late extraordinary importation of bullion from Europe, that the supply from China and elsewhere, notwithstanding its magnitude, had not sufficed fully to meet the wants of India. And independent of this circumstance, it is plain that a slight fall in the value of bullion in other countries would render it a still more advantageous article of export to India. And taking the vast extent and population of the peninsula into account, and the habit, universally prevalent in it, of hoarding the precious metals, it is impossible to say, supposing the treasure-current to continue to set in an easterly direction, how great a quantity of bullion might be thrown upon the markets of India and the adjacent countries before any very sensible reduction of its value was manifested. It is difficult satisfactorily to account for the extraordinary exportation of bullion to India in 1850-'52. Most probably it has been owing partly to circumstances connected with the demand for it in India, and partly to those peculiar to its supply in England and the United States. A certain portion (about $15,000,000) of the annual imports from India and China consists of remittances on account of the East India Company's home charges. But independently of this item, the imports of Indian and Chinese goods into England and the United States have latterly been so very great, that they have left a balance to be defrayed by the export of specie. Most probably, also, the occupation of the Punjab has occasioned a demand for additional supplies of currency for that province, while considerable quantities would be wanted for the Burmese expedition. The refusal to receive gold in payment of revenue, though its influence has been exaggerated, has no doubt contributed to bring about the same result, or to increase the demand for silver in India. And it further appears that the balances of treasure belonging to the Indian government in its different treasuries throughout India have lately increased to an inconvenient extent, or to about 16 millions sterling, when from 8 to 10 millions would suffice for every purpose of regularity and security. But measures are now (1853) in progress connected with the liquidation of a portion of the Indian debt which will set free a considerable portion of this surplus treasure; and will thus have the double effect of diminishing or stopping the demand for silver in India, and of enabling the country to avail itself of the services of the capital which has been abstracted from the great work of production.—See an able article in the *Economist*, 3d December, 1853. It would also seem that while circumstances were occurring in India which account for the origin of the drain for bullion to that quarter and its continuance, there was simultaneously an excess of silver in America and Europe, occasioned by the substitution of gold for that metal in the currencies of the United States and of France. And such being the case, the renewed exportation of bullion to the East appears to be sufficiently accounted for, and to have been almost a matter of course.

In addition to the increased product in the American mines, there has been within the last twenty years an extraordinary increase in the produce of the Russo-Asiatic mines and washings, or rather of the latter. In 1830, for example, the produce of the Siberian gold washings was estimated at only 5½ poods; whereas it had increased in 1840 to above 240 poods, and in 1847 to no fewer than 1361 poods. In addition to the washings the Ural mines yield from 310 to 320 poods gold. The produce from both sources amounted in 1847, according to the official returns, to 1741 poods. But it has not been so great since, being in

1848	1736	poods.
1849	1587	"
1850	1485	"
1851	1432	"

The official authorities ascribe this falling off to the exhaustion of the deposits, and the unskilfulness of those engaged in the business. But it is doubtful whether the falling off be not more apparent than real, and whether it be not occasioned by the enormous taxes which have been imposed of late years on the gold obtained from the washings. The principal tax varies according to the produce, being 5 per cent. on washings that yield from 1 to 2 poods per annum, increasing by various steps till it amounts to 32 per cent. on those which yield 50 poods. And there are other duties which, though less in amount, are of the same oppressive character.

These exorbitant duties have, no doubt, tended to lessen the produce of the washings. It is, however,

all but certain that their principal effect has been to defeat themselves by tempting the parties concerned to adopt every means by which they might be evaded; and the notorious corruption of the Russian revenue officers renders this comparatively easy. Perhaps, under the circumstances, we may not be far wrong in supposing that from a third part to a half of the produce of the washings is exempted from the duty. But taking it at a third, and supposing the taxed produce of the washings to have amounted in 1851 to 1117 poods, the real produce would be 1489 poods; to which if we add 315 poods for the produce of the mines of the Oural, the aggregate total would amount to 1804 poods. And this, equal to 72,160 lbs. Troy, makes over $18,905,000.

There has also been of late a considerable increase in the yield of the Spanish mines, which is at present supposed to amount to from $2,250,000 to $2,500,000 a year. Including the silver raised in Russia and elsewhere, and that obtained from the refining of lead, the produce of which in the United Kingdom exceeds $1,000,000 a year (*see* LEAD), the total annual production of the precious metals in Europe may be roughly estimated at about $7,500,000. On the whole, therefore, it would seem (excluding the produce of the Californian and Australian gold fields) that the aggregate production of the precious metals in Europe, America, and Asiatic Russia, may be supposed to have amounted in 1850–'51 (and it is probably about the same at present, 1853) to $70,425,000, being about $15,000,000 greater than their production in 1810, when the American mines had attained their maximum degree of productiveness. Notwithstanding the large addition made to the supply of gold by the Siberian washings, it appears to have been nearly balanced by the excess of silver produced in America and elsewhere. And the old proportion of about 15 to 1 between the values of gold and silver does not appear to have been sensibly affected previously to the discovery of the auriferous deposits in California and Australia.

Supplies of Gold from California and Australia.—But the discovery of these deposits threatens to bring about a most material change in the real, and perhaps also in the comparative values of the precious metals; and is, indeed, among the most remarkable events of which economical history has preserved any account. The gold is found in the *debris* of the quartz rocks in which it had been imbedded, sometimes in grains and flakes, and sometimes in lumps (nuggets), of varying, but occasionally of considerable magnitude. In some localities it is comparatively abundant; and the yield, both in California and Australia, is quite unprecedented, and such as would not previously have been conceived possible. The Californian deposits were discovered late in May or early in June, 1848; and notwithstanding the remoteness of the country, and the fact of its being almost destitute of inhabitants, above 5000 persons were attracted to the spot by the end of the season, who are supposed to have realized above £5,000,000. The news of the discovery and of the unexampled richness of the gold fields having spread on all sides with electrical rapidity, occasioned an extraordinary influx of immigrants from most parts of the world into California. The supplies of gold attained to an unexampled magnitude; cities rose in the wilderness as if by enchantment; the great Bay of San Francisco, which had hitherto been entirely deserted, was crowded with ships and steamers from the most distant countries; and California is now one of the States of the Union, with a population of from 250,000 to 300,000.—*See articles* GOLD, CALIFORNIA, and PRICES, for the production of gold up to the present time.

In addition to the regular shipments, very large amounts, of which no account is taken, are conveyed away from California by parties returning to Mexico, to the Eastern States, Europe, and China. Of these various estimates have been made; but the prevalent opinion in the best-informed quarters seem to be that, when they are included, and allowance is also made for the quantity retained at home, the total yield of gold in California in 1852 may be moderately reckoned at from $40,000,000 to $50,000,000.

But vast as it certainly is, this production is exceeded by that of Australia. The deposits in the latter were not discovered till 1851. And they are so very rich, and the influx of immigrants has been so extraordinary, that the gold fields of Victoria only are estimated to have produced in 1852 no fewer than 1,247,657 oz., which, taken at the rate of $18 an oz., gives a gross amount of $76,457,826—(Statement by Mr. KHULL, of Melbourne); to which, adding $15,000,000 for the estimated produce of the Sydney or New South Wales gold fields, the total produce of the continent will amount to $91,457,826. On the whole, therefore, the present annual supply of gold and silver may be estimated at about £47,000,000 or $209,905,000; viz.,

America (except California)	$43,500,000
Europe	7,500,000
Russo-Asiatic provinces	18,905,000
California	45,000,000
Australia	95,000,000
Total	$209,905,000

Consumption of the Precious Metals.—In order to form a reasonable conjecture in regard to the probable influence of this vast supply of the precious metals, it is necessary to inquire into their uses and probable consumption. And this inquiry, we regret to say, is still more difficult, and more likely to be infected with errors, than the inquiry in regard to their production. The precious metals are used as coin or currency to facilitate exchanges; as wealth which may be conveniently kept or hoarded; and they are used in the arts, as plate, in gilding, etc. The quantities employed in these functions are very large indeed. They vary, however, in different countries and periods with the circumstances peculiar to each; such, for example, as the greater or less abundance of paper money, and the degree in which the use of coins is lessened by the various devices resorted to for economizing currency; the fashion, as to plate and furniture; the feeling of security at the time; and a number of other circumstances, all liable to great and sometimes sudden changes. The gold and silver employed in Great Britain as currency, and in the customary reserves in the hands of the bankers, is supposed to amount to at least $200,000,000. In France the precious metals employed in the same way probably amount to double that sum, or to $400,000,000. The amount in the United States employed for the same purposes may be stated at $275,000,000. And we believe that we may estimate the entire sum employed as currency in Europe, America (North and South), Australia, the Cape of Good Hope, and Algeria, at about $1,900,000,000. It would be inconsistent with the objects of this article, and with the limits within which it must be confined, to engage in a discussion of the numerous, and often conflicting, statements and details on which this estimate has been founded. Some information with respect to it may be found in Chevalier's valuable treatise *De la Monnaie* (p. 326, etc.), Paris, 1850; in Stirling's *Gold Discoveries*, p. 182; in the learned and excellent tract of Tegoborski, *Essai de la Découverte des Gites Aurifères en Californie et en Australie*, etc., p. 65; and in a host of other publications. The precious metals in circulation in Russia in the early part of 1851 were estimated in the *Petersburg Gazette* (October 12, 1852) at 326,000,000 roubles, equal, at 80 cents per rouble, to $260,000,000. The greater part (190,000,000 roubles) of this currency consisted of gold. Now, supposing this sum to be employed, as above stated, as currency, we have first to inquire into its probable wear and tear and loss, and then into the probable rate of its increase. And taking into account the extraordinary extension of navigation, and the proportional risk of loss from shipwreck and other casualties, we are disposed to think that the

annual wear and tear and loss of coin may be estimated at about 1½ per cent. of the entire mass of the currency, which, taking the latter at $1,900,000,000, would amount to $28,500,000 a year. It is difficult to form any probable estimate of the rate at which the bullion used as currency may be likely to increase, supposing its value not to fall off. But considering the extremely rapid increase of refinement and population in most parts of the civilized world, and especially in America and Australia, we scarcely think that we shall be exaggerating if we estimate this increase at 3 per cent.; which on $1,900,000,000 would amount to $57,000,000 a year. It is impossible, however, supposing this estimate not to be very wide of the mark at present, to conjecture how long the currency will go on increasing in this ratio. It may, indeed, be safely taken for granted that the sphere of civilization and commerce is destined rapidly to expand. But their expansion will, no doubt, be accompanied with various contrivances for economizing the use of metallic money, so that the quantity of it in circulation can hardly be supposed to increase for any very lengthened period at the rate stated above. If it did, it would absorb an immense supply of gold. In barbarous countries, and in those entering on the career of civilization, the coins afloat may increase at the rate of 3 or 5 per cent., or more. But in countries which are more advanced its increase will be less, perhaps, than even 1 per cent.

It is equally difficult to acquire any satisfactory information in regard to the quantity of bullion consumed in the arts. Jacob estimated its amount in Europe and America, in 1850, at about $29,500,000 a year. This estimate was in various respects wide of the mark, and it was, on the whole, considerably under the true amount. And supposing the consumption of the precious metals in the arts to have amounted to 32½ or 35 million dollars in 1850, it must now be much greater. There has every where, but more especially in England, America, Germany, and Russia, been an extraordinary increase of population and wealth during the last twenty-seven years. And the taste for plate, splendid furniture, and luxurious accommodations of all sorts, has certainly increased in at least an equal degree. It is well known that speculators and those who rapidly attain to affluence are the principal buyers of plate and other costly articles. And taking these and other circumstances into account, we are disposed to conclude that the expenditure of bullion in the arts in Europe, America, and Australia can not at present (1853) be under, if it do not exceed, 70 million dollars a year. But of this a portion, estimated at about one-fifth or 20 per cent., is supposed to be obtained from the fusion of old plate, the burning of lace, picture frames, etc. And hence, if we deduct from the 70 million dollars used in the arts 20 per cent. for the old bullion, we have $56,000,000 for the total quantity of the supplies from the mines annually disposed of in this way; a considerable portion of which, including that used in the gilding of rooms, books, harness, buttons, etc., can never be again recovered or applied to any useful purpose. This quantity, however great it may appear to be, will be increased with the increase of population, and the spread of refinement and the arts; and it will also be certainly increased by any thing like a considerable fall in the value of bullion. Hence it would appear, putting these items together, that the regular annual consumption of bullion as currency and in the arts amounts to about $141,500,000; viz.,

Wear and tear, and loss of coin	$28,500,000
Increase of currency	57,000,000
Used in the arts	56,000,000
Total	$141,500,000

It may be said, perhaps, that these estimates must be exaggerated, inasmuch as the sum which, it appears from them, is annually consumed exceeds the entire produce of the mines previously to the supplies from California and Australia. But while we admit the fact to be as stated, we deny the inference which is attempted to be drawn from it. The truth is, that while the discovery of the Californian and Australian deposits has added in so great a degree to the supply of bullion, it has also added very largely to its consumption. It has given an unparalleled stimulus to emigration and commerce. The rise of wages and prices consequent on these extraordinary mutations, and on the increased exports of produce which they have occasioned, is making itself felt in the United States as well as in Europe; and hence, consequently, as well as there, a greater supply of bullion will be required to serve as currency. And while this influence is operating on the one hand, on the other the swarms of *parvenus* who are returning from the gold fields, with pockets stuffed with the produce of all sorts of successful adventures, are every where contributing to increase the demand for all sorts of things, but especially for plate, jewelry, and other ostentatious finery.

Exportation of Gold and Silver to the East.—Besides the countries already mentioned, there is a vast portion of the earth's surface, including Turkey in Asia, Persia, Hindostan, China, and other Eastern territories, into which bullion has been largely imported from the remotest era. Humboldt estimated that, of the entire produce of the American mines at the beginning of this century, amounting, as already seen, to $48,500,000, no less than $25,500,000 were sent to Asia, $17,500,000 by the Cape of Good Hope, $1,000,000 by the Levant, and $4,000,000 through the Russian frontier. Probably, however, this estimate was a good deal beyond the mark. "Humboldt, cela n'est plus douteux, estimait trop haut la valeur de l'or et de l'argent, qui s'écoulaient au commencement de ce siècle d'Europe en Asie, et portaient trop bas la déperdition qu'ils éprouvaient, dans la même temps, par le frottement et leur conversion en objets d'orfevrerie et de bijouterie."—*Dupuynode de la Monnaie*, etc., i. p. 35. There is no longer, we believe, any doubt in regard to the accuracy of the latter part of this statement; and it is pretty generally supposed that the first part is also well founded. But some years ago this immense drain began to diminish, and in 1832 and 1833 it actually set in an opposite direction. Since then it has fluctuated, sometimes inclining to the one side, and sometimes to the other. With the exception, however, of the bullion received by England in payment of the $21,000,000 due by China, under the treaty of 1842, there was not for some years any very decided movement of bullion from Europe to the East, or from the East to Europe, though, on the whole, the imports into the latter appear to have exceeded the exports; at least, this was certainly the case during the five years from 1844–'45 to 1848–'49, both inclusive. But very recently, or within the last four years (1850–'53) the drain for bullion for the East has set in with renewed force; so much so, that in 1852 no fewer than 12,655,393 oz. silver were shipped from the United Kingdom for India and Egypt.

This continued process of export of gold and silver is attributed by some writers to the excessive use of paper money, whereby the latter supersedes in commercial channels the use of the former. "There can be no doubt that the ultimate effect of a purely specie currency (or a paper currency based entirely on specie) would be in the highest degree beneficial to all departments of industry and enterprise. It is a currency that can not fluctuate. It may expand with the increased quantity of the precious metals, but there is hardly a possibility of its contracting; and its expansion must take place by the operation of causes which operate equally throughout the civilized world."—*North American Review*, January, 1858.

The following table shows the export of coin and bullion from Great Britain to the East during each of the 10 years ending with 1852.

AN ACCOUNT OF THE QUANTITIES OF GOLD AND SILVER, RESPECTIVELY, EXPORTED TO INDIA, CHINA, AND EGYPT, FROM GREAT BRITAIN, DURING EACH OF THE TEN YEARS ENDING WITH 1852, DISTINGUISHING BETWEEN BRITISH AND FOREIGN COIN, AND BETWEEN COIN AND BULLION.

Country.	Years.	British Gold Coin.	Foreign Gold Coin.	Total of Gold.	British Silver Coin	Foreign Silver Coin.	Silver Bullion.	Total of Silver.
		Ounces.	Ounces.	Ounces.	Ounces.	Ounces.	Ounces.	Ounces
To the British Possessions in India	1843	7,877	...	7,877	18,180	122,450	333,779	494,409
	1844	5,944	...	5,944	....	....	....	....
	1845	115	...	115	....	....	....	....
	1846	2,518	...	2,518	....	800	....	800
	1847	2,014	...	2,014	....	359	....	359
	1848	1,208	...	1,208	1,287	12,850	....	14,137
	1849	651	...	651	....	....	....	....
	1850	9,028	...	9,028	920	198,826	134,000	328,746
	1851	5,155	...	5,155	....	127,620	145,833	283,453
	1852	16,356	...	16,356	77,000	626,864	379,893	1,083,747
To China	1843	....	...	....	....	661,207	....	661,207
	1844	....	...	....	....	263,828	....	263,828
	1845	....	...	....	....	187,614	....	187,614
	1846	....	...	....	....	26,406	....	26,406
	1850	1,917	...	1,917	60	62,000	....	62,060
	1851	84	...	84	....	38,800	8,590	47,390
	1852	....	...	....	800	....	....	800
To Egypt	1843	2,500	...	2,500	....	15,000	....	15,000
	1844	40	...	40	40,000	600	....	40,600
	1845	250	...	250	4,200	7,000	....	11,200
	1846	3,186	...	3,186	....	....	....	....
	1847	12,546	200	12,746	2,500	9,000	....	11,500
	1848	2,420	...	2,420	....	....	....	....
	1849	921	...	921	14,000	40,000	....	54,000
	1850	13,919	...	13,919	105,289	141,177	145,483	391,945
	1851	70,437	...	70,437	126,420	2,319,688	3,808,289	6,254,397
	1852	62,341	152	62,493	140,785	8,856,613	2,580,240	11,571,636

GOLD, SILVER, AND BANK-NOTES IN THE U. S.

STATEMENT OF THE AMOUNT OF GOLD AND SILVER SUPPOSED TO BE IN CIRCULATION, OF THE AMOUNT SUPPOSED TO BE IN THE BANKS, OF THE WHOLE AMOUNT SUPPOSED TO BE IN THE COUNTRY, AND OF THE AMOUNT OF BANK-NOTES IN CIRCULATION IN DIFFERENT YEARS, ACCORDING TO THE AUTHORITIES QUOTED IN THE FOOT-NOTES.

Years.	Specie in Circulation.	Specie in the Banks.	Total of Specie in the Country.	Bank-notes in Circulation.
	Millions.	Millions.	Millions.	Millions.
1790*	....	....	9	2½
1791*	....	....	16	9
1792*	....	....	18	11½
1793*	....	....	20	11
1794*	....	....	21½	11·6
1795*	....	....	19	11
1796*	....	....	16½	10½
1797*	....	....	16	10
1798*	....	....	14	9
1799*	....	....	17	10
1800*	....	....	17½	10½
1801*	....	....	17	11
1802*	....	....	16½	10
1803*	....	....	16	11
1804*	....	....	17½	14
1805*	....	....	18	15
1806*	....	....	18½	17
1807*	....	....	20	18
1811†	....	15·4	....	28 to 30
1815†	....	17	....	45 to 47
1816†	7½	19	26½	68 to 70
1820†	....	19·8	....	44·8
1830†	10	22·1	32·1	61
1834‡	....	....	....	94
1835‡	....	....	....	103
1836‡	25	40	65	140
1837‡	35	38	73	149
1838‡	52½	35	87½	116
1839‡	42	45	87	135
1840‡	50	33	83	107
1841**	35 to 45	35	70 to 80	107
1842	....	28·4	....	83·7
1843	....	33½	....	58·5
1844††	50	50	100	75
1845‡‡	52	44	96	90
1846‡‡	55	42	97	105½
1847‡‡	85	35	120	105½
1848‡‡	66	44	112	128½
1849‡‡	77	43	120	114·7
1850‡‡	100	45	154	131
1851‡‡	138	48	186	155
1852‡‡	....	....	204	....
1853‡‡	....	....	236	....
1854‡‡	101	50	250	204·6
1855‡‡	....	54	....	187

AUTHORITIES.—* BLODGET. † GALLATIN. ‡ *Congressional Reports.* § *Treasury Report.* ‖ WOODBURY. ¶ HAZARD, *Commercial Register.* ** GOUGE, *Journal of Banking.* †† HUNT, *Merchants' Magazine.* ‡‡ Estimates.

The amounts of specie in the banks and of bank-notes in circulation from 1835 to 1855, inclusive, have been taken from the annual treasury reports on the condition of the banks. The amount of specie supposed to be in circulation in different years is according to the authorities quoted. The estimates are from Doc. 34 (p. 280), appended to the Report on Finances of December 4, 1854, except that for 1855, which has been completed from data more lately received.

AMOUNT OF COINAGE OF GOLD AND SILVER BY THE UNITED STATES MINT.

		Amount.
From January 1, 1794		
to December 31,	1830	$37,096,112 90
	1831	3,889,570 00
	1832	3,577,425 00
	1833	5,737,550 00
	1834	7,309,272 00
	1835	5,629,178 00
	1836	7,741,800 00
	1837	3,244,318 00
	1838	4,124,845 00
	1839	3,474,396 00
	1840	3,402,980 00
	1841	2,217,972 50
	1842	4,158,920 50
To June 30,	1843	12,025,057 50
	1844	7,663,780 00
	1845	5,629,647 50
	1846	6,592,757 50
	1847	22,595,835 00
	1848	6,815,562 50
	1849	11,192,711 50
	1850	33,847,838 50
	1851	63,388,883 50
	1852	57,845,597 50
	1853	64,291,477 94
	1854	60,713,865 47
	1855	44,000,302 93
	1856	52,479,116 40
	Total	$537,537,066 64

We give annexed a statement showing the movement of specie from the United States since the year 1820; also the amount that goes to England. It should be noticed that we do not send our specie to England to pay debts to that country, for the balance of trade between the two countries from 1820 to 1856 was $5,000,000 in favor of the United States. We send through England specie to pay our excessive importations of foreign manufactured goods from the Continent, and to pay for teas and other foreign productions. The aggregate loss of specie to this country in the decades since 1820 has been as follows:

	Gain.	Loss.
From the year 1820 to 1830		$2,528,849
" " " 1830 " 1840	$50,029,408	
" " " 1840 " 1850		21,893,285
" " " 1850 " 1856		213,122,045
		$237,543,129
Deduct gain from 1830 to 1840		50,029,408
Aggregate loss		$186,915,726

STATEMENT SHOWING THE EXPORTS FROM AND IMPORTS INTO OF SPECIE FROM THE UNITED STATES (DISTINGUISHING THE EXPORTS TO AND IMPORTS FROM ENGLAND) FROM OCTOBER 1, 1820 TO JULY 1, 1857.

Year ending	Exports to England.	Imports from England.	Total Exports from the U. S.	Total Imports into the U. S.
	$	$	$	$
Sept. 30, 1821..	1,933 [illegible]	645,520	10,478,080	8,064,890
1822..	75 [illegible]	90,920	10,810,180	3,660,816
1823..	30 [illegible]	282,822	6,372,987	5,067,896
1824..	31[illegible]	140,164	7,014,852	8,379,835
1825..	303,260	82,888	8,932,934	6,150,765
1826..	698,077	122,216	4,704 533	6,880,966
1827..	200,101	34,111	8,014,880	8,151,130
1828..	2,852,200	20,972	8,243,476	7,483,741
1829..	673,833	39,826	4,924,420	7,403,612
1830..	112,229	144,231	2,178,773	8,155,264
Total.....	8,247,342	1,621,679	71,673 494	69,144,645
Sept. 30, 1831..	1,615,643	130,830	9,014,931	7,305,945
1832..	1,112,293	83,683	5,656,940	9,907,584
1833..	244	31,903	2,611,701	7,970,388
1834..	270	5,806,613	2,076,758	17,911,632
1835..	39,037	1,803,438	6,477,715	13,151,447
1836..	2,509	2,322,920	4,324,336	13,400,881
1837..	1,823,070	110,290	5 976,249	10,516,414
1838..	10,187	9,009,346	3,508,446	17,747,116
1839..	3,103,490	1,420,092	8,776,743	5,505,176
1840..	1,333,786	808,306	8,417,614	8,882,813
Total.....	12,160,527	21,027,356	56,859,803	107,409,216
Sept. 30, 1841..	3,018,137	580,530	10,084,332	4 988,633
1842..	1,702,748	205,919	4,813,539	4 087,016
9 mos., 1843*..	400	14,305,714	1,520,791	22,390,559
June 30, 1844..	85,706	1,131,959	5,454,214	5,830,429
1845..	3,673,137	186,823	8,600,405	4,070,242
1846..	973,110	482,711	3,905,288	3,777,732
1847..	8,955	19,312,930	1,907,024	24,121,289
1848..	9,318,633	1,916,952	15,841,616	6,360,224
1849..	764,097	2,671,792	5,404,648	6,651,240
1850..	2,584,185	827,266	7,522,994	4,628,792
Total.....	22,078,208	41,316,601	65,010,921	86,906,156
June 30, 1851..	17,099,081	1,098,667	29,472,752	5,453,592
1852..	34,302,284	1,487,484	42,674,135	5,500,044
1853..	18,631,000	284,799	27,480,875	4,201,382
1854..	27,926,235	85,156	41,281,504	6,758 587
1855..	47,958,015	107,464	56,247,348	3,659,842
1856..	34,161,967	421,971	45,745,485	4,407,632
1857..	50,890,265	4,069,054	69,136,922	12,461,799

* Nine months to June 30, and the fiscal year from this time begins July 1.

Burying of Gold and Silver.—It is singular that, in estimating the consumption of gold and silver, Jacob did not make any allusion to the practice which has uniformly prevailed in all countries harassed by intestine commotions, or exposed to foreign invasion, of burying treasure in the earth. Of the hoards so deposited, a very considerable portion has been altogether lost; and there can be no doubt that this has been one of the principal means by which the stock of the precious metals has been kept down to its present level. Every one is aware that during the Middle Ages *treasure-trove*, or money dug from the ground by chance finders, belonged to the Crown, and formed no inconsiderable part of the royal revenue of England and other countries. The practice has always prevailed in Turkey, Persia, India, China, and generally in all parts of the East. The extortion practiced on the inhabitants, and the want of all security, make them look upon the money they have hidden as their only wealth, the only thing which they can really call their own. "In India," says Mr. Luke Scrafton, "the Hindoos bury their money under ground, often with such secrecy as not to trust their own children with the knowledge of it; and it is amazing what they will suffer rather than betray it. When their tyrants have tried all manner of corporal punishments on them, they threaten to defile them; but even that often fails; for, resentment prevailing over the love of life, they frequently rip up their bowels, or poison themselves, and carry the secret to their graves. And the sums lost in this manner in some measure account why the silver of India does not appear to increase, though there are such quantities continually coming into it, and none going out."—*On the Government of Hindostan*, p. 16, etc.; see also BERNIER, *Voyage de Mogol*, Amsterdam, 1710, I. p. 209.

The comparative security now enjoyed by the Hindoos must latterly have lessened this practice. But a habit so prevalent and so deeply rooted is not easily eradicated; and though the illegal exactions of their rulers be curbed or put an end to, there is in many parts of India a great deal of robbery and insecurity. At all events, the practice of burying treasure is still very general in it; and at this moment it prevails to a great extent throughout all the vast countries which stretch from the Adriatic to the Chinese Sea. We have been assured by persons well qualified to form an opinion that the stimulus given to the burying of treasure by the intestine commotions now prevalent in China must have already occasioned the disappearance of full 20 or 25 millions sterling! And the previous statements confirm in some measure this estimate. But we must not imagine that the burying of treasure is confined to the East. Wherever property is insecure, it is invariably resorted to. Wakefield tells us that it used to be common in Ireland (*Account of Ireland*, i. 593); and we are informed that it continues to this day to be pretty prevalent in that country. It has always been acted on to a considerable extent in Russia, Germany, Italy, and France; and in the latter, during the revolutionary anarchy, immense sums were buried, of which it is abundantly certain a large proportion will never be resuscitated. The wars and convulsions by which Europe was desolated for more than 20 years made the practice be carried to a great height in all parts of the Continent, and withdrew in this way from circulation a very considerable part of the increased produce of the mines.—STORCH, *Economie Politique*, i. 221, Paris, 1823. And large sums are still, no doubt, disposed of in the same way.

General Remarks.—These statements, how imperfect soever, are sufficient to show that the field over which the precious metals are spread is so immense, and the demand for them so great and various, and so likely to increase, that it is not easy to imagine that their value can be speedily reduced, at least in any sensible degree. Nevertheless, if we be warranted in estimating as above the present supply at $235,000,000 a year, and their consumption (including an allowance for the increasing stock of coin) at $141,500,000 a year, it would be idle to suppose that this excess of $93,500,000 beyond the existing demand should be speedily balanced, or that it should not in the end occasion a serious decline in their value. But much, or rather every thing, will depend on the continuance of the supply; and here we have nothing to go upon but the merest conjecture. The probability, indeed, would seem to be that the supply both from California and Australia will increase for some considerable time to come. Vast, however, as is the area over which the gold deposits are scattered in these countries, still there can be little or no doubt that they will gradually be exhausted. The population attracted to the "diggings" is already so great, while (in Australia, at all events) it is increasing so rapidly, and is so thoroughly imbued with the *auri sacra fames*, that it bids fair in no very long time to rifle all the richest beds. And supposing that they are either wholly, or to a considerable degree, exhausted it may be doubtful whether the gold obtained by a more laborious search, or by crushing quartz rocks, will yield more than a reasonable profit on the capital employed, if so much.

In all speculations in regard to the probable future supply of gold it should be carefully borne in mind that any considerable fall in its value would unavoidably check its production, and, consequently, tend to lessen or prevent its further fall. It is plain, for example, that a decline of 10 per cent. in the value of gold would, *ceteris paribus*, occasion the abandonment of all those mines, diggings, washings, etc., which only yield a net profit of that amount. We are aware that,

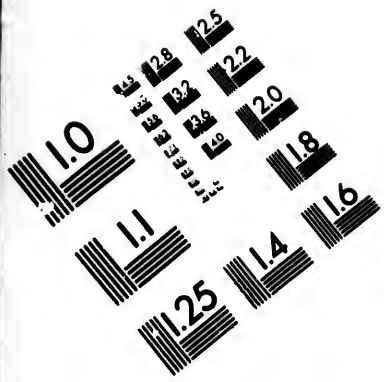
owing to the production of gold, as at present carried on, having more of a gambling character than pertains to most branches of industry, the principle now stated would not operate so speedily as might perhaps be anticipated. But of its ultimate operation there can be no question. And it may, therefore, be laid down that any reduction in the value of gold which is not accompanied by a corresponding improvement in the methods of its production inevitably tends to correct itself, or to check or hinder its further reduction. It is idle, therefore, where so much is uncertain, and indeed altogether unknown, to attempt to draw any conclusions entitled to much attention with respect to the probable future supply of the precious metals. But supposing it to go on for a few years as at present, or not materially to decline, and that their value is in consequence gradually reduced, there is no good ground for apprehending that this reduction will have any injurious results. If it take place, it will be slow, and will not suddenly affect the incomes or the position of individuals. And we have elsewhere endeavored to show that the changes which, under these conditions, may be ultimately effected by a decline in the value of bullion, will, in a national point of view, be eminently desirable and beneficial.—*Treatise on Taxation*, 2d ed., p. 375–387; see also an able article in the *American Review* for October, 1852. We have seen nothing to induce us to change or modify in any degree this opinion. Some stress has been laid on the circumstance of the sums payable under life insurances falling in value with a decrease in the value of money. But the great majority of people are, and all may be, insured in mutual insurance offices, and may provide by proper investments against loss. No fall within the compass of probability is likely seriously to affect the existing race of annuitants. And those who are now buying annuities know what they may expect, and their heirs will have them only to blame if they do not guard against probable contingencies.

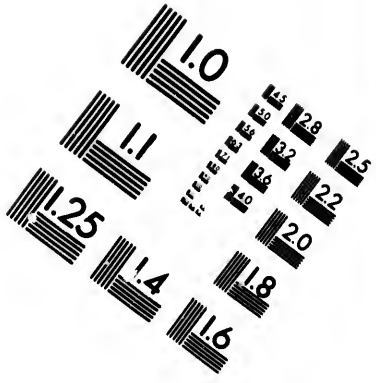
Substitution of Gold for Silver.—The production of gold has very largely increased since 1848, as compared with that of silver; and if this state of things go on, the value of silver, measured in gold, can hardly fail gradually to rise. But it is by no means clear that it will go on. The supplies of silver are increasing in most parts of the world, particularly in Mexico and Europe. And the increased supplies of quicksilver obtained from California and other places will powerfully contribute still further to augment the supplies of silver. It is also to be observed that a comparatively inconsiderable rise in the value of silver as compared with gold is sufficient, unless prevented by legislative enactments, to make the latter be used in preference to the former in the currency of those countries in which both metals are legal tender. Hitherto both gold and silver coins have been legal tender in the United States, France, and some other countries. But when such is the case the value of the coins in respect to each other has to be fixed by authority, that is, it has to be enacted that debts may be discharged by payments either of gold or silver money at the rate of so many dollars to the eagle, francs to the Napoleon d'or, shillings to the sovereign, and so on, as laid down in the Mint valuations of the different countries. And we have already explained (*art.* Coins) that, however correct at the periods when they are made, these valuations speedily become incorrect; and that whenever such is the case, it is for every body's advantage to make all payments in the metal which happens to be overvalued as compared with the other. And hence (as seen in the article referred to) the use of gold as money in preference to silver in England, and of silver in preference to gold in France and the United States.

In accordance with these statements, it would seem that the change which has taken place in the relative values of gold and silver, though not very appreciable, is quite enough to make the former be employed instead of the latter in all countries where they are equally legal tender. In 1849, for example, the gold coined in France amounted to only 27,109,560 francs, whereas in 1851 it amounted to 285,237,280 francs! In the United States the coinage of gold has increased in a somewhat similar ratio, having risen from $9,007,761 in 1849 to $62,614,492 in 1851, and to $52,846,187 in 1852. There is, therefore, every probability that in no long time gold coin will be used in these two countries in all considerable payments which are not effected by means of notes or checks. This substitution of gold for silver, while it materially enlarges the field for the employment of the former, proportionally narrows that for the employment of the latter. And hence a very considerable permanent increase may be made to the comparative supply of gold without its value, measured in silver, being materially affected. In the end, no doubt, the values of both metals will be proportioned, independently of variations of demand, to the respective costs of their production. But before this equalization can take place, they must be distributed among the various countries of the world according to the circumstances peculiar to each, including therein the novel conditions of their supply.

In Holland and India that substitution of gold for silver coin, which is taking place in the United States and France, has been hindered by the intervention of government, which has declared that silver only shall be legal tender. In Holland this was effected by laws passed in 1847 and 1849, and in India by enactments in 1835 and 1852. The value of the gold coin that was consequently liberated in Holland has been estimated at about 172,000,000 florins, a considerable portion of which has been absorbed in the new gold currency of France. We may add that the additional quantity of silver required through the cessation of gold as currency for the supply of the Dutch mints, slightly affected the price of the former, which afterward fell to nearly its old level.

In India, where wages have always been very low, the great bulk of the coin in circulation has consisted of silver; and in 1835 it was made the only legal tender. But though not legal tender, gold coins continued to circulate in India; and a proclamation issued in 1841 directed them to be received at the public treasuries. Little attention was paid to this measure at the time; but after the discovery of the gold deposits in Australia, it became obvious, if gold coins continued to be received by the public departments, that eventually none else would be paid into them; and that silver would cease to be employed except in petty payments. This contingency appears to have alarmed the government; and notice was accordingly given on the 22d of December, 1852, that from and after the 1st of January next (1853) gold coins would not be received on account of taxes or other payments due to the public. Silver has, consequently, again become in fact, as well as in law, the sole legal tender of India. A good deal of controversy has taken place in regard to this measure. It is plain, however, that by continuing to act on the proclamation of 1841, government would have practically set aside the law of 1835, which made silver the only legal tender; and would thus have made itself responsible for all the losses that might in consequence have resulted to individuals, while it would also have become liable to the risk of having its own revenues reduced by the anticipated fall in the value of gold. No doubt, therefore, the repeal of the proclamation referred to was consistent with good faith, and in some degree also with sound policy. At the same time, we regret that the situation of affairs in India should have been such as to require that an attempt should be made to exclude gold from the circulation. Most likely it would otherwise have absorbed considerable supplies of that metal; and we incline to think, for the reasons previously stated, that it will do so, notwithstanding its exclusion from the public treas-





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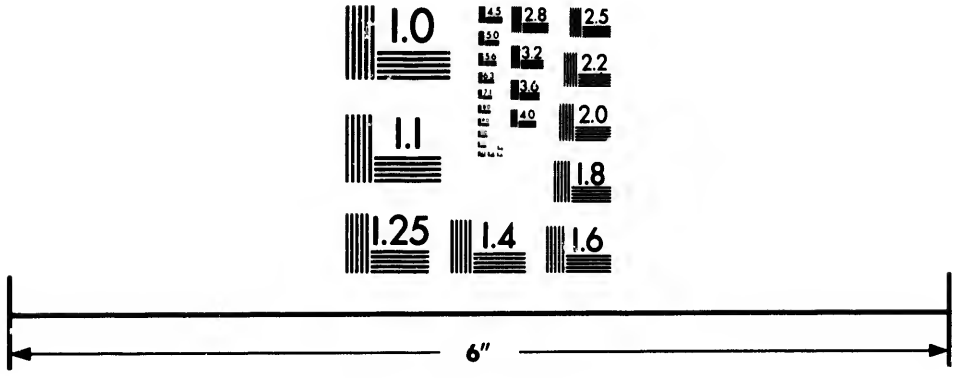

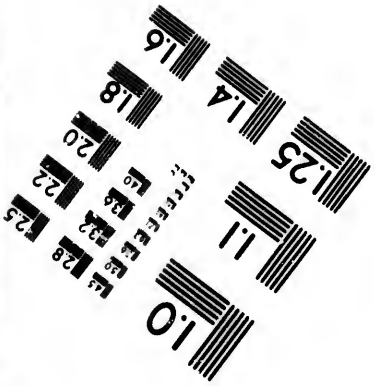

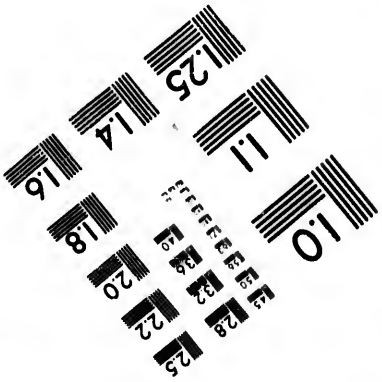

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United States imported thence produce to the value of $920. In 1833 it amounted to $1094; in 1837 to $6601; in 1840 to $16,293; and in 1841 to $47,630. The tonnage employed was, in 1835, 682 tons; in 1836, 1418 tons; in 1837, 1574 tons; in 1841, 1943 tons; in 1842, 1309 tons; in 1843, 1813 tons; and in 1844, 3217 tons—all American.

It is only within a few years, however, that the trade of the Sandwich Islands with the United States has assumed any considerable importance. The great wealth and rapidly increasing trade of California, together with the facilities which this group, from its geographical position, has always, as already intimated, been enabled to afford to whaling ships, both as a recruiting station and as regards the general supplies which such vessels require during their long cruises in distant latitudes, have recently given to these islands a commercial importance which, under other circumstances, might not have been reached for a century to come. The staples of the island have now a market in California, close at hand, and the communications with the Atlantic coast have become regular and frequent.

Owing to the prevalence of the small-pox, which first made its appearance in the month of May, 1853, and spread with such fatal malignity throughout the group as to carry off nearly 8000 victims, the trade of that year was languid; the markets were overstocked, and prices were, consequently, low and unremunerative.

The retail trade, especially, shared in this general stagnation. The whaling fleet of 1853 was about equal to that of 1852, though, generally, the results of the latter year were not equal to those of the former. The average catch of the Ochotsk fleet was over 1600 barrels, while in the Arctic seas the yield did not average more than 580 barrels. Freights also ruled low, and the demands for the productions of the islands for the markets of California were small, owing chiefly to the fact that the almost nominal difference in prices between the two places precluded all hope of realizing any profits after the payment of duties.

The following summary of the recent commerce of the Sandwich Islands has been compiled from the latest and most authentic sources:

The total amount of imports for 1853 exceeded those of 1852 by $522,082 64. From the United States they amounted to $954,919 98, being more than three-fourths of the whole amount imported. The imports for four years, from 1850 to 1853, both inclusive, were as follows:

1850	$1,085,058 70
1851	1,823,821 68
1852	759,868 54
1853	1,231,951 18

Giving an average for the four years of $1,225,175 02.

The amount of imports for 1853 exceeded the average of the past four years by $56,776 16.

COMPARISON FOR FOUR YEARS.

Foreign Exports.

1850	$46,529 72
1851	381,402 55
1852	381,143 51
1853	191,397 66

Domestic Exports.

1850	$506,522 66
1851	800,828 94
1852	257,251 69
1853	275,374 17

The revenue derived from imports was as follows:

In 1850	$121,506 76
In 1851	160,602 19
In 1852	113,091 93
In 1853	155,640 17

The arrivals were as follows:

In 1850	Merchant vessels,	409	Whale ships,	237
In 1851	"	"	446	"	"	135
In 1852	"	"	235	"	"	519
In 1853	"	"	194	"	"	585

The following summary exhibits the general commerce of the Sandwich Islands during the year 1854, as condensed from the report of the collector general of customs:

Total value of imports	$1,396,786 24
" " exports	585,122 67
Excess of imports over exports	811,663 57

Of the imports, there were from

The United States, Atlantic side		$503,506 39
" " Pacific side		343,915 55
Germany		198,488 57
Great Britain		68,578 73
Australia		56,695 19
China		53,412 11
Sea		22,659 07
Vancouver's Island		8,167 50
Tahiti		4,467 60
Callao		192 00
		$1,265,022 71
Imported free of duty		55,938 69
Goods entered in bond	$219,740 03	
Goods withdrawn from bond for consumption		25,683 56
Imports at Lahaina	$42,277 79	
" Hilo	6,258 49	
" Kawaihae	912 16	
" Kealakeakua	687 84	
		50,136 28
Total		$1,396,786 24

Analysis of Exports.

Value of foreign goods exported		$311,092 97
" domestic products,	$121,054 70	
Value furnished as supplies,	152,975 00	
		274,029 70
Total		$585,122 67

Statement showing the principal Exports in 1854 compared with those of 1853.

Exports	1853	1854.	Increase.	Decrease.
Sugar.....pounds	634,955	581,777	....	53,178
Sirup.....gallons	18,244	28,513	10,269	....
Molasses..... "	58,448	41,879	....	16,569
Salt.....barrels	3,509	5,041	1,532	....
Coffee.....pounds	50,506	91,090	40,584	....
Hides.....pieces	1,741	3,006	1,265	....
Goat skins.... "	5,690	16,890	11,200	....
Tallow.....pounds	16,459	15,408	....	1,047
Arrow-root.... "	....	6,166	6,166	....

Statement of the Quantities of Oil and Bone transhipped in 1854.

To what Country	Season	Sperm Oil.	Whale Oil.	Bone
		Gallons	Gallons	Pounds.
United States..	Spring..	49,501	257,380	28,155
" ..	Fall	60,449	1,293,365	752,329
" ..	"	46,674	104,760	654,241
Bremen	"	....	10,244	26,288
Havre.....	"	....	25,172	46,810
Total.....	.....	156,424	1,665,921	1,508,443

The total number of vessels of war at Honolulu during 1854 was 25, carrying an aggregate of 675 guns; of which number 6 were American, 9 British, and 7 French.

Of merchant vessels at the Hawaiian Islands during the year 1854, the total number was 148, measuring in the aggregate 47,288 tons; of which there were,

American, 103—measuring	33,442 tons.
British, 17— "	4,788 "

The total number of whaling vessels at the ports of the Hawaiian Islands during 1854 was 565; of which there were American 534, Bremen 8, and French 22.

The returns from the port of Hilo for the year 1854 exhibit the following commercial movement:

Total value of imports	$11,491 53
Value of exports, domestic produce	$3,328 31
Furnished as supplies &c. 89 whalers at an overcharge of $2 25 each	18,450 00
	22,273 31

The transhipments from the port of Hilo during the year were as follows:

Sperm oil	20,806 gallons.
Whale oil	114,263 "
Whalebone	92,974 pounds.

Whaling vessels at the port of Hilo in 1854:

American, 80 vessels—measuring	29,898 tons.
French, 2 " "	1,014 "
Total.. 82 " "	30,912 "

The following condensed tabular statement, made up from reliable sources, exhibits the general trade of the Sandwich Islands from 1852 to 1855, distinguishing imports from the United States from those from other countries:

Years.	Value of Imports.		Value of Exports.
	From all Countries.	From United States.	
1852	$793,869	$411,488	$688,895
1853	1,281,951	954,919	466,772
1854	1,316,787	1,028,851	585,123
1855	1,806,356	793,574	572,602
Annual average	$1,186,241	$797,458	$565,723

According to the returns made to the United States Treasury Department, the total value of exports to the Sandwich Islands for the year ending June 30, 1855, was $1,125,622, of which $929,671 was for domestic products, and only $195,951 for foreign products. From the same authority it appears that the imports into the United States from the Sandwich Islands for the same year amounted to $442,399. The carrying trade between the two countries is almost exclusively in the hands of American shippers. Of the total exports of domestic produce as given above ($929,671), there was borne in United States bottoms $928,458, while there was only $1213 carried under all foreign flags. Of the total tonnage that entered the United States from these islands in 1855 (25,009 tons), 24,807 were under the flag of the United States. More than three-fourths of the exports of the Sandwich Islands go to the United States, either on the Atlantic or Pacific side, and the statements already given show the proportion of the imports into the islands from the United States. Of the 468 whalers that touched at the islands in 1855, 436 bore the flag of the United States, 20 were French, and 8 Hawaiian. Of the 158 merchant vessels that entered the Hawaiian ports the same year, 129 were American, while there were only 8 under the British, and 1 under the French flag. Among the latest acts passed by the Hawaiian Legislature relating to commerce, which has been published in the official organ of that government, is one prohibiting the importation and sale of opium.

A considerable trade has sprung up between Washington Territory and the Sandwich Islands. Four vessels have been for some time regularly and constantly engaged in this trade, carrying (especially from Oahu) sugar, coffee, molasses, salt products of the islands, as well as foreign merchandise from the different warehouses; and bringing back, in return, lumber, shingles, ship-timber, spars, salmon, coals, etc. This trade has had the effect of entirely driving from the market the traffic previously carried on by the Hudson Bay Company between Honolulu and Vancouver's Island; "for, although," says a recent British official report on the Sandwich Islands, "Vancouver's Island possesses superior natural advantages over Washington Territory with respect to her ports and several of her productions, on the other hand, the American settlers, not being bound by any conditions that can not be easily fulfilled, their energy and private enterprise are unshackled."

A steam-mill, having two engines, one of eighty and the other of forty horse power, has been erected at the mouth of Hood's Canal, and head of the Straits of Fuca, opposite Vancouver's Island, for manufacturing lumber, shingles, laths, and planed, grooved, and tongued boards. This mill supplies the Honolulu and the San Francisco markets. Other and similar mills have been put up; and the business continues profitable, though competition is increasing. For an account of the lumber trade *via* San Francisco, *see* SAN FRANCISCO.

COMPARATIVE STATEMENT OF THE COMMERCE OF THE UNITED STATES WITH THE SANDWICH ISLANDS, EXHIBITING THE VALUE OF EXPORTS TO AND IMPORTS FROM EACH COUNTRY, AND THE TONNAGE OF AMERICAN AND FOREIGN VESSELS ARRIVING FROM AND DEPARTING TO EACH COUNTRY DURING THE YEARS DESIGNATED.

Years.	COMMERCE.				NAVIGATION.			
	Value of Exports.			Value of Imports	American Tonnage.		Foreign Tonnage	
	Domestic Produce.	Foreign Produce.	Total		Entered the United States.	Cleared from the United States.	Entered the United States.	Cleared from the United States.
1845	....	....	....	$1,556	....	....	....	....
1846	....	....	....	243,034	606	1,977	231	....
1847	....	....	....	21,039	760	1,978	....	....
1848	....	....	....	6,508	1,478	479	....	....
1849	....	....	....	43,875	3,221	3,066	....	....
1850	....	....	....	64,474	9,267	31,623	4,125	11,970
1851	....	$881	$881	16,852	18,902	36,390	3,215	12,008
1852	....	....	....	5,088	12,814	18,624	5,047	6,673
1853	....	29,406	29,406	16,575	18,111	20,260	3,914	4,118
1854	....	25,831	25,831	119,130	22,287	19,825	1,451	1,417
1855	$929,671	195,951	1,125,622	442,399	24,807	19,211	202	2,200
1856	793,089	126,847	919,405	249,704	17,774	17,550	1,092	1,817
1857	803,084	144,849	947,433	204,416	16,742	16,951	187	187

The proportion which the United States had in the total trade of the islands in 1856 is shown by the following:

	Exports.	Imports.	Total.
Total trade	$670,824	$1,151,422	$1,822,246
With the United States	249,704	919,406	1,169,110

From this exhibit we find that in 1856, 80 per cent. of the imports into the Sandwich Islands were from the United States, and that 37 per cent. of the exports were to the United States. The balance of trade in favor of the United States for the same year was $669,700.

On the whole, the statistics published for 1856 show the trade of the islands in a more favorable and healthy condition than those of any previous year since 1850. The number of merchant and whaling vessels visiting the islands during the year has been less, and the importations into the islands were $230,000 less, while the exports show an increase of about $100,000 for the year.

According to the tables published by the Collector General, the importations during 1856 are shown to be $1,151,422; the exports at only half that amount, or $583,544, omitting the sum of $87,280, which is stated to be the produce of vessels bearing the Hawaiian flag. The total exports appear as $670,824.

In estimating the "supplies" furnished to whale ships for the year 1855, it is estimated that each whale ship took, on an average, $275 worth of supplies, or island produce.

In examining the table of domestic exports, it will be observed that the exportation of staple products has not increased rapidly, though the sum total of domestics exported in 1856 is much in advance of previous years, excepting only the "potato year," 1850, which apparent increase is owing somewhat to the different estimates of the supplies furnished to whale ships. We give a comparison of some of our staple exports for four years:

Exports.	1848.	1849.	1855.	1856.
Gals. of molasses and sirup	28,978	41,235	38,804	58,802
Pounds of sugar	499,533	658,820	289,908	554,805
" coffee	58,065	28,221	77,616	68,532
Oranges	....	50,000	25,000	175,000
Goat skins	....	21,488	103,700	70,914

The domestic consumption of sugar as well as coffee

in the Islands has been greater during the past than in former years. It is supposed that the amount of sugar produced the past year is at least 500 tons, about one half of which has been exported. Of coffee the produce has been not less than 300,000 lbs. Only a small portion appears above as having been exported. But of both sugar and coffee the whaling fleet will yearly require larger supplies, as they leave home with smaller stocks, owing to the high rates these articles command in the States.

The receipts at the customs for 1856 show a falling off of about $35,000 from those of 1855, which is accounted for in part by the decrease in the importation of goods ($280,000) and spirits (3600 galls.), and these items show about the same falling off as the number of whaling and merchant vessels visiting the group.

COMPARATIVE VIEW OF THE COMMERCE OF THE SANDWICH ISLANDS FOR TEN YEARS, FROM THE YEAR 1847 TO THE YEAR 1856, GIVING THE TOTALS FOR EACH YEAR.

Years.	Total Imports.	Total Exports.	Domestic Produce exported.	Foreign Produce exported.	Total Custom house Receipts	Oil and Bone transhipped. Gals. of Sperm.	Gals. of Whale.	Pounds of Bone.	No. of National Vessels.	Merchant Vessels. No.	Merchant Vessels. Tonnage.	No. of entries of Whalers.	Gallons of Spirits consumed.
1847....	$710,138	$264,226	$262,018	$55,208	$43,801	....	....	....	4	75	....	167	3,271
1848....	605,619	300,370	266,819	33,551	55,568	....	....	....	6	90	....	254	3,443
1849....	729,739	477,845	279,743	198,102	83,231	....	....	....	12	180	....	274	5,717
1850....	1,035,058	783,052	536,522	246,529	121,506	....	....	....	12	469	90,804	237	8,252
1851....	1,023,821	691,231	509,923	381,492	160,602	104,352	909,379	901,604	7	446	87,920	220	9,500
1852....	751,803	638,395	257,251	381,142	113,001	178,490	1,182,738	3,159,951	8	235	61,065	519*	14,150
1853....	1,401,975	472,996	281,599	191,397	155,640	175,396	3,787,848	2,020,204	7	211	59,451	535*	18,123
1854....	1,590,837	885,122	274,029	311,092	152,125	156,484	1,683,922	1,479,678	16	125	47,238	525*	17,537
1855....	1,383,160	572,601	274,744	297,856	158,411	109,308	1,436,810	827,954	13	154	51,804	468*	18,318
1856....	1,151,422	670,824	466,378	204,545	123,171	121,294	1,641,579	1,074,942	9	123	42,213	366*	14,779

* These figures give the number of different *entries* of whalers at the various ports—some of the vessels entering at three, four, and even five ports during the year. The actual number of different whalers during 1856 will not exceed 240.

Ports of Entry.—The following are the only ports of entry in the Sandwich Islands, viz.: for vessels of all descriptions, Honolulu (Oahu), Lahaina (Maui), Hilo, Kealakeakua, and Kawaihae (Hawaii), and Waimea (Kauai); and for whalers, and vessels of war only, Hanalei (Kauai).

Port Charges on Merchant Vessels.—At Honolulu.—Tonnage dues, fifteen cents per ton register; pilotage, one dollar per foot each way; or half-pilotage if no pilot is employed; health certificate, one dollar; buoys, two dollars; harbor-master, three dollars; clearance, one dollar; pilot for anchoring a vessel outside which does not enter the harbor, ten dollars.

At Lahaina.—Tonnage dues the same as at Honolulu; boarding officers, five dollars; lights, one dollar; canal, if used, two dollars; clearance, one dollar.

At Hilo.—Tonnage dues, pilotage, health certificate, and clearance, the same as at Honolulu.

At Kealakeakua.—Tonnage dues the same as at Honolulu; boarding officer, five dollars; clearance, one dollar.

At Kawaihae (Hawaii), and Waimea (Kauai), the same as at Kealakeakua. Any vessel, having paid the tonnage dues at one port, complied with all the port regulations, and obtained a clearance from the collector, may go to either or all of the other ports of entry, without paying any additional tonnage dues during the same voyage.

Privileges to Whale Ships.—Whale ships are allowed to land goods to the value of $200 free of duty, and $1000 worth additional, subject to a duty of 5 per cent. *ad valorem*, without being liable to pay any tonnage dues; but if they land more than $1200 worth (including the $200 worth free of duty), they are subject to the same charges and liabilities as merchant vessels.—*See* WHALE FISHERIES.

Penalties, Restrictions, etc.—Any master of a whale ship who shall fail to produce his permit when called for is liable to a fine of not less than $10, or more than $50, to be imposed by the collector. Any vessel having cargo on board intended for a foreign port, or spirits in cargo or stores, and touching at a place not a port of entry, without a permit from a collector, is liable to pay double tonnage dues. Oil, whalebone, or any other article of merchandise, landed or transhipped without a permit, is liable to seizure or confiscation. Seamen are not allowed to be discharged at any of the ports of these Islands, except Honolulu and Lahaina. It is not lawful to discharge seamen at any of the ports of the islands without the written consent of the governor. Honolulu and Lahaina are the only ports at which native seamen are allowed to be shipped, and at these places only with the consent of the governor.

—*See United States Com. Relations*; STEWART'S *Journal*; HUNT'S *Merchants' Magazine*, xvii. 33, xviii. 316, xxiv. 185; *North American Review*, li. 503, xxvi. 59 (EVARTS), lv. 193 (R. H. DANA); *Christian Examiner*, xix. 244; DE BOW'S *Review*, xiii. 457.

Sandy Hook, Middletown township, Monmouth county, New Jersey, is a sandy beach extending north from Old Shrewsbury Inlet and the south point of the Highlands of Navesink, five miles, and is from half a mile to a mile wide. It incloses Sandy Hook Bay. The lights are on the north part. The Sandy Hook lights consist of the main light, and two beacons placed in position, for ranges of channels. The main light is in lat. 46° 27′ 42″ N., long. 73° 59′ 48″ W. from Greenwich, England.

Light-ship.—A light-ship, painted red, of about 350 tons burden, and showing two lights, is anchored off Sandy Hook. The forward light is 30 feet above the deck, and the after one 40 feet. She is also provided with a bell of 800 pounds weight, which will be rung in thick weather. She is placed in 13 fathoms water. Sandy Hook light-house bears from the light-ship west by north, distant 6¼ miles; Highland light-house, west-southwest, distant 7 miles.

Highlands of Navesink.—Navesink hills, on which two light-houses are built, extend northwest and southeast, about southwest from Sandy Hook, on the Atlantic Ocean to Raritan Bay. The correct altitudes of the following places, which present themselves to mariners as they approach them, are: Mount Mitchell, the highest point of Navesink, Monmouth county, New Jersey, 282 feet; Tompkins' Hill, on Staten Island, 307 feet; Hempstead Hill, Queen's county, Long Island, 319 feet.

Highland Lights.—On the Highlands of Navesink there are two light-houses bearing north 23° W., and south 23° E., from each other distant 100 yards. The southern light is a revolving one, on the Presnel plan; it is 248 feet above the level of the sea. The northern light is a fixed light, 246 feet 7 inches above the sea.

Ledge South Sandy Hook.—On this reef there are but 9 feet of water. The northern light on the Highlands, a little open to the eastward of the southern one, leads right on the reef. This ledge is south half east from Sandy Hook light, 7 miles distant, and about 1¼ mile from the shore, and on which the ship *William Thompson* struck.

Oil Spot.—East-southeast 1¼ mile from Sandy Hook light is the Oil Spot, having only 10 feet of water in one spot at low water. It is of a triangular shape, and about half a mile on each side in extent. The along-shore channel is inside of it.

False Hook.—1¼ mile east, a little northerly, from Sandy Hook light, there is a small shoal spot, with only 12 feet water upon it at low water. It is the remains of the old False Hook.

New York Harbor.—There are four channels over New York bar. The first is that along and parallel to the Jersey shore, inside of the Outer Middle. The second is the South Channel, between the Black Can Buoy, No. 1, and the Red Can Buoy, No. 2. The third is the Main Ship-channel, between the Red Can Buoy, No. 2, and the Black Nun Buoy, No. 1. The fourth is Gedney's Channel, between the Black Nun Buoy, No. 1, and the Red Nun Buoy, No. 2. This channel runs west by north, and is used by our largest class ships of war.—BLUNT'S *Coast Pilot.*

During the year 1857 the west beacon at Sandy Hook, the foundation of which had been undermined by the sea, was removed to a secure position by order of the Light-house Board, a new screen erected, and the main light-house fitted with a new lantern and a third order lens. Gedney's Channel into New York Bay having two feet more water than the old channels, was unknown until a few years since. The knowledge of this channel is owing to the operations of the Coast Survey. Had the true depth of this channel been known in 1778, the French fleet under Count D'Estaing would have passed into the bay and taken the assembled British naval force.—*Coast Survey Report*, 1854; *Light-house Report*, 1857.

San Francisco, a city and sea-port of the United States, in California, on the south promontory, dividing the great bay of San Francisco from the Pacific, inside the bay, and a short way to the south of its entrance. The latter, now called the Golden Gate, little more than a mile in width, has on its south side an old Spanish fort, or *presidio*, in lat. 37° 48′ 30″ N., long. 122° 27′ 23″ W. Having passed the fort, the course to the town is nearly east from three to four miles, and then south and west about as much more. The city is situated at the bottom of a bay, skirted by extensive flats, some of which are now being formed into docks. Its growth has been quite extraordinary. In the early part of 1848 it consisted only of a few rude cabins; whereas it has now an exchange, a theatre, a custom-house, sundry churches and other public buildings, with great numbers of private houses, many of which are of wood, but many also of *adobe* (sun-dried) and burned bricks, with a vast number of attached tents and booths. And while such is the metamorphosis on shore, her waters, which were formerly quite deserted, are crowded with ships and steamers from all parts of the world! San Francisco is indebted, as every one knows, for this all but miraculous transformation to the discovery of gold deposits in the beds of the tributaries of the San Joaquin and Sacramento rivers, which fall into her bay, and in the quartz of the contiguous mountains. Such, however, are the advantages of her situation, and the fertility of the adjacent country, that the exhaustion of the gold deposits, though it might check for a while, would not permanently affect the growth of the city, or the extent of her trade. To obviate the shallowness of the water close to the town, a wharf 2300 feet in length has already been projected into the bay, and to it all sorts of vessels are safely moored. The construction of extensive docks has also been commenced; and every effort is being made to provide the accommodation necessary for the rapidly increasing trade of the town.

San Francisco stands on a sandy level; and during the wet season, when it is most crowded, the streets were at first mere puddles, into which carriages sunk to the axles; while in the dry season the annoyance from dust was all but intolerable. But these inconveniences have been to a great extent obviated by flooring the streets, or covering them with stout planks, a process which has been carried to a great extent, and has had the most complete success The city has suffered much from fires, by which, indeed, it has repeatedly been laid waste. These, however, have been speedily repaired; and in a few weeks no traces are seen of the most destructive conflagrations. According, however, as houses of brick or stone are substituted for those of wood and for tents, fires will become less frequent and less destructive.

The population of San Francisco is the most motley that can be imagined; for, though Americans predominate, a large admixture is to be seen of adventurers from all parts of the world. Gambling is very prevalent; and is, perhaps, carried on to a greater extent here, during the rainy season, than in any other place either of the New or the Old World. But this is the natural result of the circumstances under which the population has been brought together; and the passion will no doubt abate as the circumstances in which it originated change or lose their influence. Lynch-law has been here reduced to a system, and carried to a greater extent than any where else; and, despite the gross abuses to which it unavoidably leads, it is the general opinion that it could not have been dispensed with. A sense of its necessity has led, not only to its being adopted, but to its being generally approved.

Nowhere in the world is there so great a disparity between the sexes as in San Francisco, there being at least from three to five men for one woman. But this disparity is gradually lessening, and with it some of the worst features in the present condition of the population. The population of the city differs widely at different periods, being crowded in the wet, and comparatively deserted in the dry season. Though by far the largest and most important town in the State, it is not its capital. That distinction has been conferred on San José in consequence of its more central situation.

The Bay of San Francisco, though, as already stated, it has a narrow entrance, expands within into one of the noblest basins that is any where to be met with, having a coast line of about 275 miles. The town has already become the seat of a very extensive trade, and will most likely be the grand emporium of the vast territory belonging to the United States on the Pacific. The trade with China, Australia, the Eastern Archipelago, and the Polynesian Islands, is even now very extensive, and several ships have been fitted out for the whale-fishery. At present, however, the principal trade of the city is with Panama on the one hand, and Oregon on the other; bringing immigrants and all sorts of manufactured goods from the former, and corn and other raw produce from the latter. But she has also an extensive trade with Chili, the eastern portion of the United States, and with Europe by Cape Horn. The importation of many sorts of products has been completely overdone, and some varieties of manufactured goods might, in 1853 and 1854, be bought in San Francisco as cheap as in Liverpool or Havre. This, however, is a species of miscalculation incident to the opening of all new markets, and will speedily correct itself. Gold bullion, with small but increasing quantities of quicksilver, and hides, have hitherto been the all but exclusive articles of export.

The subjoined tabular form gives at a comprehensive glance the amounts of the assessment, together with the rates of taxation of the city and county of San Francisco, for eight fiscal years, since the first organization of the local government, viz.:

Fiscal Years.	Rate of Taxation per Cent.	Amount of Assessments.			
		Real Estate.	Improvements.	Personal Property.	Yearly Total.
	Dls. Cts.	Dollars.	Dollars.	Dollars.	Dollars
1850-'51	2 00	16,840,054	In pers'al	4,772,160	21,621,214
1851-'52	4 10	11,141,403	ditto	2,875,440	14,016,003
1852-'53	4 41	15,676,356	ditto	2,805,881	18,481,737
1853-'54	3 88½	17,889,850	6,158,300	4,852,000	28,900,150
1854-'55	3 85½	19,765,285	9,150,935	5,837,607	34,762,827
1855-'56	3 85½	18,917,800	8,994,925	5,073,847	32,076,572
1856-'57	2 30	17,827,617	8,848,667	4,194,070	30,868,254
1857-'58	2 30	16,100,890	7,814,920	15,784,295	39,706,105

STATEMENT OF THE NUMBER OF PASSENGERS BY SEA ARRIVING AT AND DEPARTING FROM THE PORT OF SAN FRANCISCO DURING THE YEAR 1856.

ARRIVALS, YEAR 1856.

From	Men.	Women.	Children.	Total.
Panama	11,205	4026	1949	17,288
San Juan	3,144	883	121	4,148
United States ports direct	28	11	....	39
China	5,819	19	....	5,838
Great Britain	15	11	....	24
France	106	22	3	131
Hamburg	130	65	....	195
Peru	7	2	....	9
Chili	46	18	....	64
Sandwich Islands	413	72	4	489
Other Pacific Islands	13	....	....	13
Australia	188	37	....	225
Mexico	161	63	7	231
Russian Poss., N. W. Coast	45	1	1	47
Other ports	62	14	3	79
Total	20,940	5244	2081	28,265

DEPARTURES, YEAR 1856.

For	Men.	Women	Children	Total
Panama	11,256	702	450	12,408
San Juan	4,849	268	193	5,310
United States ports direct	10	4	....	14
Sandwich Islands	212	34	3	241
Other Pacific Islands	17	3	....	20
China	3,214	9	....	3,223
Peru	129	7	....	136
Australia	412	75	....	487
Mexico	479	121	....	600
Chili	292	60	....	352
Other ports	30	5	..	44
Total	20,909	1348	646	22,903

RECAPITULATION, YEAR 1856.

	Men	Women.	Children	Total
Total arrivals	20,940	5244	2081	28,265
Total departures	20,909	1348	646	22,903
Excess of arrivals	31	3896	1435	5,362

Showing a net gain of population from arrivals by sea, during the year 1856, of 5362 souls. This is a very unfavorable exhibit, and we regret to make it public. During the last six months of the year the departures were 927 souls in excess of the arrivals. It is, however, the class of population that we are losing which is the worst feature. During the last half of 1856, the departures of male adults for the Atlantic States were 2534 in excess of the arrivals.

The population has received a strong reinforcement during the past year by immigration over the plains. Early in the season exaggerated estimates were made of the extent of this immigration, as well as of the quantity of stock that would be driven over; but we do not overestimate the number when we say that fully 8000 persons were added to the permanent population of the State by the overland route during the past year, and that they brought with them 25,000 to 30,000 head of horned cattle. This is the character of population that the State needs, and if Congress would authorize the construction of a wagon road over the plains, we should see 50,000 people annually leaving the Valley of the Mississippi to make their homes on the Pacific slope of the Rocky Mountains. As matters are now, with virtually but one line of communication with the Atlantic coast, we need indulge in no brilliant hopes of the advancement of California in population of the right stamp.—*San Francisco Price Current.*

Since the preceding was written, Congress passed an act under date February 17, 1857, entitled "An Act for the construction of a wagon road from Fort Kearney, via the South Pass of the Rocky Mountains and Great Salt Lake Valley, to the eastern portion of the State of California;" 2. For a road from El Paso, on the Rio Grande, to Fort Yuma, at the mouth of the Gila; 3. For a road from Fort Defiance, in New Mexico, to the Colorado.

The following table will show the excess of arrivals over departures, and also those which have gained during the year 1856, together with the amounts of our gain and loss:

ARRIVALS AT PANAMA.

	Loss.	Gain.
Panama	....	4765
San Juan	1162	....
Chiloe	....	2115
Sandwich Islands	....	240
Other Pacific Islands	7	....
Chili	288	....
Mexico	869	....
France	....	131
Hamburg	....	195
Australia	262	....
United States ports direct	....	25
Peru	127	....
Great Britain	....	24
Other ports	....	82
Total	2215	7577
Balance in favor of California		536

EXPORT OF QUICKSILVER.

	Flasks.
To Mexico	8513
To China	1181
To New York	1500
To Peru	1567

Of the exports in 1856, 18,541 flasks were destined to Mexico; 4526 flasks to Peru; 3009 flasks to China; 2414 flasks to New York; and 250 flasks to Australia. The total value exported, according to the custom-house books, was $883,185.

OPERATIONS OF THE UNITED STATES BRANCH MINT AT SAN FRANCISCO DURING THE YEAR 1856.

Deposits.	
Gold, ounces	1,645,665 50
Silver, "	61,879 68
Coinage	
Gold coin	$25,146,400 00
Gold bars	3,047,601 30
Gold bars, refined	122,15. 65
Silver coin	184,000 00
Silver bars	25,843 30
Total coinage	$28,524,881 25

Exports of Treasure.—Statement of the amount and destination of treasure exported from San Francisco during the year 1856.

To New York	$39,705,294
To England	8,666,289
To China	1,308,852
To Panama	253,268
To Sandwich Islands	241,450
To Manilla	133,265
To New Orleans	130,000
To Peru	67,750
To Australia	56,518
To Calcutta	47,050
To Chili	11,378
To Costa Rica	9,000
To Society Islands	5,300
Total shipments of treasure in 1856	$50,697,434
" " " 1855	45,182,631
Increase in 1856	$5,514,803

GOLD PRODUCT OF CALIFORNIA, 1856.—ACTUAL SHIPMENTS FROM SAN FRANCISCO.

To New York and New Orleans, for Atlantic States		$39,8 5,264
To England direct		8,666,289
To China	$1,308,852	
Less Mexican coin included	1,000,000	
		308,852
Other foreign ports		824,029
Total manifested		$49,694,434
Atlantic passengers estimated		3,8 1,526
Coined at Branch Mint	$25,146,400	
Of which included in shipments	17,000,000	
		8,146,400
Total estimated production of gold		$61,8 0,360

COMPARATIVE PRODUCT FOR THREE YEARS.

	1854.	1855.	1856.
To New York	$46,28 ,649	$38,730,504	$3 ,8 5,294
England and foreign	5,13 ,452	9,909,626	9,799,170
Atlantic passengers	4,028,064	3,873,056	3,3 1,526
Coined at Branch Mint	4,084,307	17,5 8,300	25,146,400
Total	$60,142,272	$66,111,446	$78,800,360
Less Brit. coin shipped	2,5 0,000	8,000,000	17,000,000
Estimated production	$57,742,272	$58,111,446	$61,8 0,360

Of the annual product of the gold mines and placers of the State, it is difficult, also, to speak with any positive degree of accuracy. In the fire of May, 1851, almost the entire records of the custom-house were destroyed, together with a vast quantity of the books and papers of mercantile houses, so that we can only state

the recorded amounts exported by the mail steamers and other vessels since that epoch, which were as follows, according to official data:

ESTIMATED PRODUCE OF THE MINES OF CALIFORNIA SINCE THEIR DISCOVERY.

Previously to 1851, assumed from statistics of the United States Mint	$63,915,000
1851	45,989,000
1852	45,779,000
1853	54,965,000
1854	51,429,000
1855	45,183,000
1856	50,607,000
1857	50,043,000
Add probable amount in hands of passengers, 6 years, $10,000,000 per annum	60,000,000
Total	$468,000,000

In the foregoing estimate no account is taken of the amount of uncoined gold in the hands of miners, or lying on general deposit with the various express agents and bankers It is the opinion of those who have made inquiries on the subject, that the amount thus retained in the country is fully up to three millions of dollars. Nor is the amount shipped by sailing vessels included, an omission caused by our inability to ascertain the proportion which dust bears to coin in such shipments. The shipments of treasure to China, Manilla, Calcutta, Valparaiso, and Honolulu, the present year, amount to about $853,000.

It would be a difficult task to ascertain the total value of foreign goods imported and consumed in this region, as a great part are previously imported at the eastward, and do not require to be specifically entered in our custom-house. In stating, therefore, the amount of our direct importation of foreign goods, for the year ending the 1st of October last, at $7,490,000, we merely do so *en passant*, without reference to the actual consumption. If we were to form an opinion of our imports from the amount of our annual exports, both of produce and gold, we should say that the former would amount to at least $36,000,000, which forms nearly the whole basis of our trade.

The following is a comparative statement of the exports from San Francisco for the years 1855 and 1856:

	1855.	1856.
Treasure	$45,182,631	$50,097,434
Foreign merchandise, produce, and quicksilver	4,189,611	4,270,515
Total	$49,372,242	$54,367,949

In estimating, as we have done, the imports at only $36,000,000, or two-thirds the amount of our exportations, we presume the remaining $18,000,000 to have been absorbed by the rents and other revenues of absentees; by the interest on foreign capital; and by the remittances of miners and others to their absent families, as well as those of others whose entire earnings are sent out of the country. These are mere speculative views and opinions, but, in the absence of positive data, they may not be deemed unworthy of application.—*San Francisco Price Current.*

VALUE OF EXPORTS OTHER THAN TREASURE FROM SAN FRANCISCO DURING THE YEAR ENDING DECEMBER 31, 1856.

Australia	$1,123,367
New York	1,118,500
Mexico	731,059
Peru	337,692
Sandwich Islands	249,302
China	239,941
Russian Possessions	197,010
Chili	116,787
Society Islands	61,319
New Granada	43,196
Ports in the Pacific	35,459
Vancouver's Island	23,276
Costa Rica	19,000
East Indies	2,750
Nicaragua	2,430
Total exportation in 1856	$4,270,514
" " 1855	4,877,519
Excess in favor of 1855	$417,005

The exports of lumber in 1856 were 8,900,000 feet.

EXPORTS OF DOMESTIC PRODUCE FOR THE YEAR ENDING DECEMBER 31, 1856.

FLOUR.

Whither exported.	Barrels.	Cases.	Hf. Sacks.	Qr. Sacks.
Australia	2308	....	3290	287,454
Acapulco	50	....	....	4,000
China	1205	36	1396	7,202
Callao	....	....	1000	1,980
Honolulu	161	291	1185	5,926
Mexico	....	....	50	152
Russian Possessions	25	....	100	40
San Quentin	70	....	....	30
Tahiti	101	....	....	2,570
Vancouver's Island	....	....	....	880
Total	3920	327	7021	260,114

Wheat	bags	4,435
Barley	"	4,758
Oats	"	18,332
Grits	hhls.	5,830
Potatoes	bags	182

BUSINESS DONE AT THE CUSTOM-HOUSE OF SAN FRANCISCO DURING THE YEAR ENDING SEPTEMBER 30, 1856.

	Value	Duties
Merchandise in bond on 1st Oct., 1856	$823,094	$346,042
Received in warehouse imported from foreign ports	1,400,995	510,651
Do. transported in bond from the ports of New York, Boston, Philadelphia, and New Orleans	428,736	173,002
	$2,652,825	$1,029,695
Withdrawn from warehouse for consumption	$1,404,190	$532,183
Do. for exportation to foreign ports	425,512	114,319
Do. for transportation to the ports of New York and Boston	88,654	8,090
Remaining in warehouse on the 30th of September, 1856	734,466	315,102
	$2,652,825	$1,029,695
Imported from foreign ports, duties paid	$3,864,243	$1,149,597
Withdrawn from warehouse for consumption	1,404,190	532,183
"Free" merchandise imported from foreign ports	2,221,650	....
Total value of foreign merchandise thrown upon the market	$7,490,088	
Total duties collected	....	$1,741,781

We copy from the *San Francisco Price Current* the following statistics for the year 1856, to which we add the aggregates for the year 1857:

STATEMENT OF THE NUMBER OF VESSELS, WITH THEIR TONNAGE, ARRIVING AT AND DEPARTING FROM THE PORT OF SAN FRANCISCO DURING THE YEAR 1856.

Arrivals from	No. of Vessels.	Tons.
Atlantic domestic ports	128	147,370
Pacific domestic ports	1034	138,149
Panama	26	49,903
China	43	27,110
Nicaragua	13	15,574
Great Britain	21	11,739
Sandwich Islands	31	6,689
France	18	7,019
Mexico	33	5,531
Batavia	9	3,401
Islands in the Pacific	22	2,522
Rio de Janeiro	5	2,040
Russian Possessions, Northwest Coast	5	2,527
Manilla	7	2,031
Whaling voyage	12	2,879
Hamburg	7	2,815
Chili	11	3,085
Peru	7	879
Australia	11	3,375
British North America	1	537
Japan	2	300
Vancouver's Island	2	278
Calcutta	1	587
Costa Rica	1	182
Total	1455	440,015

RECAPITULATION FOR THE YEARS 1856-1857.

	Vessels.	Tons.
American vessels arrived from domestic ports	1102	287,519
" " " foreign ports	168	100,919
" " " whaling voyages	12	2,879
Foreign vessels arrived from foreign ports	113	89,698
Total, 1856	1455	440,015
Total, 1857	1533	427,566

Departures for	No. of Vessels.	Tons.
Pacific domestic ports	860	137,456
China	79	79,784
Peru	59	56,573
Panama	26	50,037
Calcutta	27	25,827
Nicaragua	14	18,053
Manilla	19	17,690
Sandwich Islands	42	15,555
Australia	29	14,556
Mexico	48	8,673
Russian Possessions, Northwest Coast	0	4,797
Atlantic domestic ports	7	6,009
Whaling voyages	18	3,855
Chili	21	8,502
Batavia	3	1,254
Islands in the Pacific	15	1,971
Vancouver's Island	5	638
Costa Rica	2	340
Mauritius	1	255
Singapore	5	1,469
France	1	900
Total	1283	445,867

RECAPITULATION FOR THE YEAR 1856.

	Vessels.	Tons.
American vessels departed for domestic ports	866	143,181
" " " foreign ports	288	254,771
" " " whaling voyages	18	3,855
Foreign vessels departed for domestic ports	1	211
" " " foreign ports	115	42,788
Total	1283	445,867

The tonnage arriving during the three years below stated was as follows:

	Vessels.	Tons.
Arrived in 1853	28	558,755
" 1854	620	406,114
" 1855	824	412,086

The tonnage entering from eastern domestic ports in 1853 was 260,045 tons; in 1854 it was 153,313 tons; and in 1855, 144,434 tons. The arrivals of the past year from New York are in the proportion of two tons to one from Boston, the actual figures being 89,951 tons from New York against 45,601 tons from Boston.

The tonnage from all quarters arriving in San Francisco in 1856 comprised 1455 vessels of 440,015 tons against 1520 vessels of 517,919 tons in 1855. The decrease has been in domestic coast and foreign trade, the tonnage entered from domestic Atlantic ports being somewhat larger than in 1855. The following figures illustrate this:

Arrived.	From domestic Atlantic Ports.	From domestic Pacific Ports	From foreign Ports.
	Tons.	Tons.	Tons.
1855	147,870	189,635	117,092
1856	149,370	138,149	149,617
Increase in 1856	1,500	....	....
Decrease in 1856	....	51,486	27,475

The tonnage entered from domestic Atlantic ports in 1853 was 260,045 tons; in 1854, 153,313 tons, in 1855, 147,870 tons; and in 1856, 149,370 tons. Thus it appears that the imports from that quarter have hardly decreased since 1854. The great falling off in trade is more apparent than real, as in the tonnage entering in 1855 were included the ocean steamers arriving from Benicia, and in the table of 1856 they are excluded. Undoubtedly, however, the coasting trade has fallen off 20,000 to 30,000 tons, compared with 1855, which is owing to the decreased shipments of lumber from the North.

The imports this past year from Great Britain exhibit a falling off of near 60 per cent. compared with those of 1854. The tonnage entered for four years past was as follows:

1853	35,324 tons.	1855	26,608 tons.
1854	32,111 "	1856	11,729 "

From the continent of Europe there entered in 1855, 13,242 tons against 10,434 tons in 1856.

With China the trade shows a considerable increase—the tonnage entered in 1856 being 27,110 tons against 17,296 tons in 1855. The clearances to that country have little connection with trade, and therefore there is no need of making comparisons with previous years.

The exports have been upon a larger scale to Australia in the year 1856 than to any other country. The tonnage movement for three years was as follows:

	1854.	1855	1856.
Entered.....tons	6,854	6,460	3,375
Departed ..... "	10,902	15,719	12,558

With the Sandwich Islands the trade for the years 1854–'56 was as follows:

	1854.	1855	1856
Entered.....tons	8,497	10,361	6,698
Departed ..... "	8,065	10,948	15,555

The increase noticeable in the tonnage departing for the Islands in 1856 was caused by a larger number of clippers than usual going thither to freight oil home.

With the other Pacific Islands trade since 1854 has ranged as follows:

	1854.	1855.	1856.
Entered.....tons	2551	3261	2522
Departed ..... "	2287	2715	1971

The tonnage movement for the three following years with Mexico was as follows:

	1854.	1855	1856.
Entered.....tons	3077	5,459	5581
Departed ..... "	8065	15,870	8873

EXPORTS FROM SAN FRANCISCO FOR THE YEAR 1851.

To	Treasure.	Merchandise and Produce.
New York	$35,287,718	$2,158,000
England	9,847,748	....
China	2,998,264	313,896
New Orleans	244,000	....
Panama	410,929	....
Manilla	278,900	7,143
Calcutta	34,906	....
Mexico	41,500	744,055
Sandwich Islands	86,903	285,200
Australia	32,000	314,694
Havana	80,000	....
Chili	33,479	157,698
Other ports	105,300	5,499
Russian Possessions, America	....	105,152
Peru	....	139,700
Society Islands	....	51,576
Vancouver's Island	....	30,149
San Salvador	....	7,086
Total for year	$48,976,697	$4,329,758
Treasure	....	48,976,697
Grand total	....	$53,306,455

RECAPITULATION OF THE VALUES OF FREIGHTS TO SAN FRANCISCO FOR THE YEAR 1857.

Freights on cargoes from New York		$1,309,244
" " "	Boston	469,198
" " "	Philadelphia	22,390
" " "	foreign ports	1,044,239
Total freights for the year		$2,842,671

STATEMENT OF THE TONNAGE ENTERING THE PORT OF SAN FRANCISCO DURING THE FOURTH QUARTER OF 1857, AND THE TOTALS FOR THE YEAR 1857.

Arrivals from	No. of Vessels.	Tons.	Vessels. 1857.	Tons. 1857.
Atlantic domestic ports	18	21,798	90	109,525
Pacific domestic ports	312	48,048	1233	182,436
Panama	5	8,785	24	46,260
San Juan del Sur, Nicaragua	..	....	2	1,516
Great Britain	1	617	24	16,592
France	4	2,096	18	8,335
Hamburg	1	709	9	3,428
Bremen	..	....	2	918
Peru	..	....	2	295
Mexico	12	1,504	42	6,052
Sandwich Islands	4	....	17	3,100
Society Islands	..	1,059	12	1,617
Whaling voyages	1	146	8	1,564
Rio de Janeiro	1	350	4	1,243
Russian Possessions in Amer.	2	180	8	3,793
Russia in Asia	1	160	2	285
Manilla	2	1,068	8	3,300
China	6	3,508	31	23,324
Batavia	1	973	4	1,250
Vancouver's Island	3	452	6	940
Siam	1	328	4	1,511
Singapore	..	....	1	282
Australia	3	1,138	13	4,729
Malaga	..	....	2	565
Costa Rica	..	....	3	671
Chili	..	....	5	1,589
Calcutta	1	469	3	1,090
Lombock, Dutch East Indies	..	....	1	428
Total	379	93,962	1563	427,566

RECAPITULATION FOR THE YEAR 1857.

	Vessels.	Tons.
American vessels arrived from domestic ports..	1329	291,501
" " " foreign ports....	122	89,883
" " " whaling voyages	8	1,564
Foreign vessels cleared for foreign ports.....	125	44,606
Total	1583	427,556

CLEARANCES FROM SAN FRANCISCO FOR THE LAST QUARTER AND FOR THE YEAR 1857.

Clearances for	No. of Vessels.	Tons.	Vessels. 1854.	Tons. 1857.
Atlantic domestic ports.....	2	2,033	12	16,814
Pacific domestic ports.....	37	8,205	504	92,244
Peru.....	10	6,602	55	51,347
China	12	10,264	45	38,313
Whaling voyages	2	123	9	1,338
Panama	5	10,429	33	46,373
San Juan del Sur, Nicaragua..	..	....	4	4,430
Mexico.....	18	2,575	66	23,977
Chili.....	3	1,076	24	12,466
Sandwich Islands.....	4	940	21	6,970
Society Islands	2	318	18	2,116
Manilla.....	..	....	12	8,839
East Indies	1	1,140	12	12,176
Australia	7	3,959	23	10,133
Russian Possessions in Amer..	2	552	8	3,103
Russia in Asia.....	..	....	2	705
Vancouver's Island.....	4	1,075	10	9,039
Costa Rica	..	....	2	713
Batavia	..	....	4	2,546
San Salvador.....	..	....	1	369
Tehuantepec.....	1	118	1	116
Total	105	57,478	848	337,022

RECAPITULATION FOR THE YEAR 1857.

	Vessels.	Tons.
American vessels clearing for domestic ports...	516	108,538
" " " foreign ports....	194	182,006
" " " whaling voyages.	9	1,383
Foreign vessels clearing for foreign ports.....	129	45,143
Total	848	337,022

The great discrepancy between the tonnage arriving from and clearing for domestic Pacific ports needs explanation. During the last half of the year the departures of that class of tonnage in the table above comprise only the small number of vessels which it was necessary to clear at the custom-house, on account of there being foreign goods on board exceeding $400 in value. The arrivals, which are correctly stated, are the true index of the domestic coast trade.

The declared exports of treasure, however, do not by any means comprise the whole amount of the precious metals which annually leave California. Since the great bank failures in 1855, miners who are going to the East prefer carrying their money on their persons to trusting to bills of exchange. Incidents connected with the loss of the *Central America* demonstrated that her passengers had with them a very large amount of gold; and those leaving here by every steamer for Panama take away in the aggregate heavy sums, of which no account can be got. But, at a low calculation, ten millions of dollars leave the State annually in the hands of passengers by steam and sailing vessels. The entire product yearly of our gold mines can be ascertained only approximately. Persons who are qualified by position and observation to give the most correct opinion upon the subject place the amount at seventy millions, and this amount is probably rather under than over the mark.

We are gratified to state that the value of our exports other than treasure, in 1857, shows an increase, although small, over that of tho preceding year—the figures being $4,329,758 in 1857 against $4,270,515 in 1856. The great increase is in the exports to New York, which have doubled in value, and the greatest decrease to Australia, in which the falling off is $809,000.

The exports of quicksilver in 1857 were as follows:

To Mexico	flasks 14,334
To New York	" 8,374
To China	" 3,554
To Chili	" 1,000
Total	" 27,262

The exports in the four preceding years were:

In 1853.....	flasks 18,800	In 1855.....	flasks 27,165
In 1854.....	" 20,908	In 1856.....	" 28,740

Tonnage Movement of the Port of San Francisco.—The arrivals from all quarters during the years 1855–'57 have been as follows:

	Vessels.	Tons.
1855	1590	517,919
1856	1455	444,015
1857	1583	427,556

The tonnage arriving from domestic Atlantic ports during the past year exhibits a large falling off when compared with that of 1856—that from domestic coast ports an equally large increase, and that from foreign ports a falling off of about 10 per cent. compared with 1856. The following are the figures:

Arrived.	From domestic Atlantic Ports.	From domestic Coast Ports.	From foreign Ports.
Years.	Tons	Tons.	Tons.
1856	149,370	138,149	149,617
1857	109,525	169,036	184,441
Decrease in 1857..	39,845	....	15,176
Increase in 1857 ..	....	45,887	....

The tonnage from home Atlantic ports in 1853 was 260,045 tons, being more than two and a half times larger than in 1857; the arrivals of 1854, '55, and '56 averaged about 150 000 tons. From Great Britain the tonnage arriving in 1857 was 16,992 tons against 11,729 tons in 1856, exhibiting an increase of nearly 50 per cent., but a decrease compared with preceding years. From the continent of Europe there entered in 1857, 12,681 tons against 10,434 tons in 1856. With China the import trade shows a slight falling off compared with 1856, the totals being 23,824 tons against 27,110 tons. The trade with Australia, as indicated by the tonnage arriving and departing for the past four years at San Francisco, has been as follows:

	1854.	1855.	1856.	1857.
Entered.....	6,854	6,460	3,875	4,729
Departed	10,292	15,712	12,558	10,133

The arrivals from the Sandwich Islands are the best index of the direct trade with that country (a number of the clearances thence being vessels to freight oil to the Eastern States), and for the last four years have been as follows:

1854.....tons 8,427	1856.....tons 6,683
1855..... " 10,861	1857..... " 8,900

It will thus be seen that the trade with the islands since 1855 has fallen off nearly two-thirds. In like manner as with the Sandwich Islands, the arrivals from the west coast of Mexico indicate the trade proper between the two countries, and for the past four years have been as follows:

1854 .....tons 3077	1856 .....tons 5531
1855 ..... " 3459	1857 ..... " 6059

These figures indicate a healthful and gratifying increase in the trade with Mexico, which is destined in the future to become of very great importance. The tonnage movement during the past year indicates that the imports from the Eastern States and foreign countries were about 18 per cent. less than in 1856, and although making, as a general thing, a nearer approach than ever before to being adapted to the wants of the market, have yet in many important respects been of the most excessive character, and have resulted in heavy losses to those interested in them.

Export Trade of San Francisco.—The prominent item in exports of course is, and will continue to be for many years, the product of the mines. The exports of treasure in 1857, as compared with those of the preceding years of which we have any record stands thus:

In 1851	$34,492,000	In 1855.....	$45,192,631
In 1852	45,779,000	In 1856.....	50,604,434
In 1853	54,065,000	In 1857.....	48,889,687
In 1854	51,429,000		

The exports in 1857, when compared with those of 1856, show a small falling off compared with those of 1855. There is a large item connected with the exports of last year which in reality has no bearing one way or another on the product of gold in this State.

We refer to the shipments of treasure to China and Manilla. In 1857 the exports to those points were $3,272,164, almost wholly made up of doubloons and dollars received from Mexico. San Francisco imported in 1857 $3,168,711 in specie, nearly all of which came from Mexico, and went from here to China and the East Indies. More gold every year goes to England direct, and less to New York; the figures for five years past show the change in this respect:

Exported to New York.		Exported to England.	
1853.....	$47,916,448	1853.....	$4,975,662
1854.....	46,389,649	1854.....	5,781,660
1855.....	38,780,564	1855.....	5,182,156
1856.....	39,765,294	1856.....	8,666,289
1857.....	35,287,778	1857.....	9,347,748

The Light-house Board Report for 1857 states that "the steam tender authorized by Congress in 1856, and built at the Philadelphia navy yard, will reach San Francisco probably early in the year 1858. The presence of this vessel will serve the economical purpose of transporting supplies, materials, and workmen for building and repairing the light-houses, and also, in case of incursions of the Indians from the British dominions in the Straits of Fuca and vicinity, to protect the keepers and citizens in that quarter against their attacks. Representations have been made that a light is necessary between the bays of Monterey and San Francisco, and one on Mare Island, in San Francisco Bay. The latter is recommended mainly in consideration of the difficulties at night in approaching the navy yard and Benicia."

Port Charges.—Pilotage outside Farralones, $10; inside Farralones, $8 per foot; tonnage dues, 4 cents per ton; dockage. 3 to 6 cents per ton per day; stevedore's charges, 75 cents per ton; shipping men, $5 each; ballast, rough stone, $2 25 per ton; cobble stone, $2 75; sand, $1 50. Water, 1½ cents per gallon. Day labor, $5. Port-warden, $30 to $75.

Exchange.—On Atlantic States, sight, 3 per cent.; England, sight, —d. at 47*d.* per dollar; France, sight, 4 80 frs.

Money.—Scarce at 2 to 4 per cent. on good security. Doubloons very scarce, and wanted—7 per cent. premium. Mexican dollars, do. do. 7 per cent. premium.

Rate of Interest on Money.—By an act passed March 13, 1850, the rate of interest on money was fixed at 10 per cent. where there was no special contract; but "parties may agree in writing for the payment of any rate of interest whatever on money due, or to become due on any contract. Any judgment rendered on such contract shall conform thereto, and shall bear the interest agreed upon."

San Francisco (Bay of), California. One of the best harbors of the Pacific Ocean. The entrance is very remarkable, bold, and rocky; a mile wide and 4 miles in length, with deep water and no obstructions. It then expands into an extensive bay, in which lie several islands; that of San Angelo is the largest and highest, and covered with vegetation to its very top. The next in size are Yerba Buena and Alcatraz. The Bay of San Francisco is 36 miles in length by an average of 6 in width. A large portion of its southern, eastern, and northern shores is bordered by extensive and wide mud-flats, preventing the landing, at low water, of even a boat; so much so, that the eastern shore may be said to be inaccessible for a distance of 30 miles; and this impediment prevents it from ever becoming useful, except by the construction of extensive artificial works. On the north it is bounded by the Straits of San Pablo, which divide it from the bay of that name. The Bay of San Pablo is nearly circular, about 10 miles in diameter, the largest segment of which is a mud-flat, with but a few feet of water over it. On the east side lies the channel, with a sufficient depth of water for large vessels, leading to the Straits of Karquines, at the mouth of the Sacramento River. On the western side of the Bay of San Francisco, from the Straits of San Pablo, for a distance of 15 miles, the country is broken and mountainous, and the shores rocky and indented by small bays. These obstructions reduce this extensive bay very much in size, and it becomes still more so when the safety and convenience of vessels is taken into consideration; indeed, with the deep water, cross-tides, and exposed situations, there are but two safe anchorages, viz., San Francisco and Sausalito. The Bay of San Francisco has been celebrated, from the time of its first discovery, as one of the finest in the world, and is justly entitled to that character, even under the seaman's view of a mere harbor.

San Juan, or St. John (sea-port of Porto Rico). Although possessing a magnificent port, considered one of the best on the island, San Juan is not the first commercial place, as the products exported thence are of a very inferior quality. Of the sugar shipped from this port, as well as from the other ports of the island, the United States receives more than two-thirds of the whole. But a small quantity goes to England, and also, though rarely, to France. From the United States are imported codfish and other salt fish; salt meat, boards, lumber, hoops, staves, and butter; from England, boilers for the manufacture of sugar, machinery, small quantities of iron, and heavy supplies of earthen-ware. Spanish vessels take in cargoes at St. Thomas, and discharge at San Juan, thereby avoiding the duty applicable to all vessels from all other adjacent foreign ports, in the ports of Porto Rico. Generally speaking, the whole island of St. Thomas is but a great entrepôt of European and American manufactures destined for the markets of Cuba and Porto Rico—a fact shown by the large amount of importations from St. Thomas into both these islands. The annual exports from San Juan in 1853 consisted of 11,369,304 lbs. of sugar; 5803 hhds. of molasses; 876 hhds. of rum; and 910,966 lbs. of coffee. It is to be regretted that the port of San Juan, one of the best and safest of the island, should be kept in so deplorable a condition. Six or seven years ago, a vessel drawing 16 to 18 feet water could take in a full cargo at the wharf; at present a ship of the same tonnage can receive only three-fourths of her cargo, and is compelled to leave the wharf in order to get into water deep enough to take in the balance.

San Juan de Nicaragua (*pseudo Greytown*), a sea-port town of Nicaragua, Central America, at the mouth of the San Juan, in the Caribbean Sea, lat. 10° 55′ N., long. 83° 43′ W. It is stated to have the best port on this coast between Cape Gracias à Dios and the Boco del Toro, and to be much more healthy than Chagres. It has an export trade in hides, indigo, and coin, brought down the San Juan in boats from Granada. It was almost entirely destroyed by Captain Hollins, in command of the frigate *Cyane*, July, 1851, to obtain redress for an insult to the American envoy to Central America.—*See* NICARAGUA.

San Juan del Sul, a port of Nicaragua, Central America, on the Pacific Ocean, 24 miles southwest from Nicaragua, and the maritime harbor nearest to that city. Lat. 11° 15′ 37″ N., long. 85° 52′ 56″ W. It has a good (small) harbor, surrounded by high land, except on the southwest by south, where it lies open to the ocean. It is one of the proposed termini of the canal from Lake Nicaragua.

San Salvador. This is the smallest of the Central American states, embracing but 7500 square miles, and is separated from Nicaragua by the Bay of Conchagua. The soil is in many places exceedingly fertile, but the country is generally hilly and mountainous. Indian corn, cotton, coffee, and various kinds of vegetable produce, are cultivated to some extent. The most important article of cultivation, and, indeed, the chief staple of San Salvador, is indigo, which grows in great perfection and abundance. Near the coast, the lands of Acajutla and Libertad produce the article known in commerce as the balsam of Peru, of which

about 20,000 lbs. is the annual yield. The inhabitants display much ingenuity in the manufacture of an article of female dress, called by the natives *rebosa*, which is much used in Central America and Mexico. San Salvador has a coast line along the Pacific of about 150 miles, with the ports of Acajutla and Libertad, and within the Bay of Conchagua the excellent harbor of La Union. Commercial relations between the United States and San Salvador are regulated by treaty of January 2, 1850. This treaty is based upon the principle of the most favored nation, and stipulates for reciprocity of commerce and equality of flag, without any discrimination as respects the origin of cargoes.

Sapan-wood is obtained from a species of the same tree that yields the Brazil-wood (*Cæsalpinia Sapan*, Linn.). It is a middle-sized forest tree, indigenous to Siam, Pegu, the Philippine Islands, etc. It has been employed for dyeing in the greater part of Asia for many centuries. It found its way into Europe some time before the discovery of America; and the imports are now very considerable. Its coloring matter differs but little from that of Brazil-wood, but the best sapan-wood does not yield more than half the quantity that may be obtained from an equal weight of Brazil-wood, and the color is not quite so bright.—BANCROFT *on Colors*, vol. ii. p. 329.

Sapphire (Ger. *Sapphir*; Du. *Saffiersteen*; Fr. *Saphir*; It. *Zaffiro*; Sp. *Safiro*, *Safir*; Russ. *Jachant*; Lat. *sapphirus*), a precious stone in very high estimation. Colors blue and red; also gray, white, green, and yellow. It occurs in blunt-edged pieces, in roundish pebbles, and crystallized. Varies from transparent to translucent. Refracts double. After diamond, it is the hardest substance in nature. The blue variety, or sapphire, is harder than the ruby, or red variety. Brittle, specific gravity 4 to 4·2. It is found in Bohemia, Saxony, France, etc.; but the red sapphire, or Oriental ruby, is not found in any considerable quantities any where except in Ava. Next to diamond, sapphire is the most valuable of the gems. The white and pale blue varieties, by exposure to heat, become snow-white, and, when cut, exhibit so high a degree of lustre that they are used in place of diamonds. The most highly prized varieties are the crimson and carmine red; these are the Oriental *ruby* of the jeweler; the next is *sapphire;* and last, the yellow or Oriental *topaz*. The *asterias*, or star-stone, is a very beautiful variety, in which the color is generally of a reddish violet, and the form a rhomboid, with truncated apices, which exhibit an opalescent lustre.

Sarcocolla, a sub-viscid, sweetish, and somewhat nauseous gum resin. It is brought from Arabia and Persia in small grains of a pale yellow color: the whitest, as being the freshest, is preferred. It is but seldom imported.—MILBURN'S *Orient. Com.*

Sardines, or **Sardinias** (Ger. *Sardellen*; Fr. *Sardines*; It. *Sardine*; Sp. *Sardinas*), a species of fish of the herring tribe, but smaller. They are taken in considerable quantities on our coasts, and are exceedingly plentiful on the coasts of Algarve in Portugal, Andalusia and Granada in Spain, and along the shores of Italy. The small sardines caught on the coast of Provence, in France, are esteemed the best. From 1000 to 1200 fishing smacks are engaged in catching these fish on the coast of Brittany, from June to the middle of October. The French frequently cure them in red brine; and, when thus prepared, designate them *anchoisées*, or *anchovied sardines*. These are packed in vessels previously employed for holding wine, and exported to the Levant. When perfectly fresh, sardines are accounted excellent fish; but if kept for any time, they entirely lose their flavor, and become quite insipid.

Consumption of Sardines in the United States.—The importation of sardines into the United States is increasing every year. The fisheries commence about the middle of May, and last until about the middle of October. The quantities consumed are enormous. Each evening, upon the return of the fishing smacks, they can be bought for a few cents per dozen; they are an important part of the food of the poorer classes. These fish are better, and have a flavor, when put up in oil, which they otherwise have not. They are found in great plenty from the coast of Bretagne to the mouth of the Garonne. La Rochelle is the principal depôt for the fishery. The quantity exported to the United States in 1852 was 59,840 kilogrammes; in 1853 the quantity was 76,787 kilogrammes; in 1854 the quantity was estimated at 100,000 kilogrammes, and of this more than one half, strange to say, was for California. —*Letter to the Dep. of State.*

Sardinia. The whole area of this kingdom, including Piedmont, Savoy, and Genoa, and the island of Sardinia, is estimated at 28,229 square miles, containing a population, in 1852, of over 5,000,000, viz.: the continental states 18,994 square miles, population 4,500,000; and the island of Sardinia 9235 square miles, population 500,000.

The chief staples of this kingdom are raw silk, rice, maize, wheat, chestnuts, wines, olives and olive-oil, figs, oranges, and citrons. In the island of Sardinia the productions are maize, wheat, hemp, silk, beans, and other pulse vegetables. There are several extensive vineyards, though the wines are not in much repute in foreign markets. Piedmont is considered the most productive part of the continental kingdom, and usually exports its surplus produce for the consumption of Genoa, Nice, and the regions along the coast. Silk is one of the most profitable productions.* The olive and vine are extensively cultivated; wheat and Indian corn are also grown; the latter of which, mixed with roasted chestnuts, constitutes the chief food of the rural inhabitants. The minerals of the country are valuable, consisting of iron, copper, lead, manganese, and cobalt; but, owing to bad roads and the lack of capital, they are not worked. The salt springs and mines of alabaster, marble, and slate, receive the protection of the government, and their products constitute some of the chief exports of Sardinia. The exportation of marble alone to the United States amounts annually in value to about $15,000. The manufactures consist of silks, velvets, and other silk stuffs, stockings, common linens and woolens, and the product of the tanneries; but, with the exception of silks, few of these manufactures are exported. The chief ports are Genoa, Spezzia, and Nice, on the continent, and Cagliari, on the island of Sardinia. Genoa is a free port, in which goods may be warehoused or re-exported free of duty. It is the chief outlet of the Mediterranean for the manufactures of Switzerland, Lombardy, and Piedmont.

In 1815 the republic of Genoa was ceded to the King of Sardinia, with the express stipulation that "the free port of Genoa shall be re-established, with the regulations which existed under the ancient government. Every facility shall be given by the king to the transit through his states of merchandise from that free port, under such restrictions as his majesty shall judge expedient for preventing the said merchandise being illicitly sold or consumed in the interior. It shall be subject only to the usual moderate duty." The commercial relations of the United States with Sardinia are regulated by treaty. Prior to the ratification of this treaty (November 26, 1838), the commerce of the United States with this kingdom was conducted exclusively under foreign flags. Indeed, until within a recent period, the commercial system of the Sardinian government was directly opposed to the principle of free intercourse. The treaty with the United States guarantees entire reciprocity and perfect equality with the Sardinian flag in the direct and indirect trade. The following are the stipulations of this treaty which relate to commerce:

* Piedmont and Lombardy produce more raw silk than all the rest of the world together.

Perfect reciprocity of commerce and navigation between the two countries, inhabitants of the one enjoying in the other all the privileges of subjects or citizens. Vessels in their respective ports to enjoy the same privileges, and to pay no higher duties or charges than national vessels. All commodities and merchandise, the produce of the soil or industry of the United States, or of any other country, which may be legally imported into Sardinian ports in Sardinian vessels, may also be imported by American vessels, and pay no higher duties. Sardinian vessels to enjoy the same privileges in the ports of the United States. The same principle extended to all exports from either country. The vessels of each country may enter the port of the other with cargoes from any foreign country whatever. Any duty or restriction imposed on the vessels or merchandise of the one country in the other to be extended to the vessels or merchandise of all nations. Coasting trade reserved to national vessels. Special favors to any other nation to be enjoyed by the contracting parties respectively. Vessels of either country forced into the ports of the other by stress of weather to be exempted from port charges.

Article 9 stipulates free transit from the port of Genoa across Piedmont, except for salt, gunpowder, and manufactured tobacco.

Cagliari, the capital of Sardinia, on the northeast shore of a spacious bay on the south coast of the island, lat. 39° 12′ 13″ N., long. 9° 7′ 44″ E. Population in 1850 estimated at 30,000. The city stands on a rising ground, and has an imposing effect from the sea. The public buildings and churches are numerous, and some of them splendid; but the streets are for the most part narrow, steep, and filthy. The Gulf of Cagliari extends from Pula on the west, to Cape Carbonara on the east, a distance of about twenty-four miles across, and about twelve in depth, with good anchorage every where after getting into soundings. A mole projects from the Pratique office, and ships usually lie about one mile southwest by south from it, in six or eight fathoms water, on an excellent bottom of mud. There is a very convenient pier harbor at the south angle of the tower wall, capable of containing fourteen or sixteen vessels of a tolerable size, besides small craft. Altogether Cagliari is one of the best and safest ports in the Mediterranean. Vessels belonging to Sardinia are admitted by treaty into the ports of the United States on the same terms as American vessels, with the produce or manufactures of their own or any other country.—*See* CAGLIARI.

Other usual provisions respecting the appointment of consuls, etc., are made; and, in a separate article, his Sardinian majesty continues the differential duties in favor of Sardinian ships on the importation of wheat, olive-oil, and wine, from the ports of the Black Sea, Adriatic, and Mediterranean, as far west as Cape Trafalgar. This separate clause is explained by the fact that the grain, oil, and wine trade, carried on with the ports of the Mediterranean, has always been the chief source of the commercial prosperity of Genoa. On the 12th July, 1850, this differential position was abandoned, and American vessels can now engage in the grain-carrying trade, as well as in all other kinds of commerce, between Genoa and other ports within the Mediterranean and Black seas, on terms of perfect equality with Gencese vessels. The separate article has, therefore, become a dead letter.

Genoa is the only port in Sardinia much frequented by United States vessels. The port charges are: For pilotage, according to draught; anchorage, 30 centimes* per ton; quarantine dues, 3 centimes per ton each day; board of health fees, 40 centimes per ton; measurement charges, according to size of vessel.

The shipping frequenting the port of Cagliari, on the Island of Sardinia, has considerably increased during the past ten years. This is owing to the shelter and refuge it affords in stormy weather, and to the facilities it offers for obtaining all necessary supplies.

This may be seen from the following statement, showing the number and tonnage of vessels of all nations that have visited this port since 1846:

Years.	No. of Vessels.	Tonnage.
1846	479	22,503
1847	434	48,545
1848	469	54,393
1849	601	71,959
1850	497	53,852
1851	540	56,941
1852	567	61,489
1853	639	88,785
1854	803	96,439

The chief articles of American produce consumed in Sardinia are cotton and tobacco. The former is free, and on the latter the duty is "*reserved*," it being a government monopoly. Whalebone, refined sugar rum, paints, and other minor articles, are also exported from the United States to Sardinia, but to no considerable amount.

The following table exhibits the quantity and value of cotton and tobacco exported from the United States to Sardinia from 1850 to 1855, both years inclusive:

Years.	Cotton.	Values.	Tobacco	Values
	Pounds.		Hhds.	
1850	1,566,720	$152,910	107	$9,208
1851	2,126,100	251,838	8	818
1852	5,588,928	416,982	3414	341,170
1853	1,699,026	166,422	192	21,900
1854	1,645,372	147,462	55	10,500
1855	14,777,765	1,288,387	3311	383,245

Imports into the United States from Sardinia consist chiefly of flax, olive-oil, rags, silk, piece goods, red wines, wool (unmanufactured), marble, and manufactures of wool. Marble is the most valuable article received, amounting annually to upward of $30,000

Almost all the trade of Sardinia is carried on by strangers; and even the fish on its coast and in its harbors are caught by Sicilians, Neapolitans, Tuscans, and Genbese Grain is the principal article of export In good years, the exports from the whole island may amount to 400,000 starelli, or about 500,000 bushels of wheat, 200,000 starelli of barley, 6000 starelli of maize, 100,000 starelli of beans, 200,000 starelli of peas, and 1000 starelli of lentils. The culture of vines is gradually becoming of more importance; and about 3500 Catalan pipes are exported, principally from Alghero and Ogliastro. Cheese is an important object in the rural economy of Sardinia, and considerable quantities are exported. Salt is a royal monopoly, and affords a considerable revenue. Until recently, Sweden drew almost all her supplies of this important necessary from Sardinia, and it continues to be exported in considerable quantities. Flax, linseed, hides, oil, saffron, rags, alquifoux, etc., are among the articles of export. The tunny and coral fisheries employ a good many hands; but, as already observed, they are almost wholly managed by foreigners.

ACCOUNT OF THE QUANTITIES OF THE PRINCIPAL ARTICLES EXPORTED FROM THE ISLAND OF SARDINIA TO FOREIGN COUNTRIES IN 1849, 1850, AND 1851.

Articles.	Quantities.		
	1849.	1850.	1851.
Barilla.....cwts.	862	427	2
Bones..... "	8,636	9,253	5 825
Bullocks.....No.	2,753	1,430	911
Calves..... "	70	93	19
Cheese.....cwts.	29,880	25,606	24,986
Cork-wood..... "	2,158	6,782	3,819
Cows, steers, and bulls .No.	674	456	364
Fire-wood.....cwts.	5,788	1,598	577
Fruit, fresh..... "	732	858	19
Goats, sheep, and lambs .No.	232	594	227
Grain.....cwts.	1,723	567	2,414
Lead ore..... "	8,701	4,296	16,417
Olive-oil.....imp. galls.	5,390	47	....
Skins.....cwts.	17,664	41,027	1,530
Timber, oak.....val. lire	10,220	669	67,713
Tunny fish.....cwts.	2,339	2,547	2,839
Wine.....imp. galls.	47,761	269,402	19,743

* 100 centimes are equivalent to 19·6 cents.

Almost every article of dress, whether for the gentry or the peasantry, is imported. Soap, stationery, glass, earthen-ware, and furniture, as well as sugar, coffee, drugs, etc., are also supplied by foreigners; and notwithstanding the Sards possess many rich mines, several of which were successfully wrought in antiquity, they import all their iron and steel. The only manufactures carried on in the island are those of gunpowder, salt, tobacco, and woolen caps. But salt, of which the export may be estimated at 14,000 or 15,000 tons a year, is excluded from the preceding table, on which, indeed, but little reliance can be placed.

These statements sufficiently show that the commerce of Sardinia is very far from being what might naturally be expected from her extent, fertility, admirable situation, and the excellence of her many harbors.

The following summary presents a general view of the foreign commerce of Sardinia:

1850.—Imports	111,870,000	francs.
Exports	93,966,000	"
Total foreign trade in 1850	205,736,000	"
1851.—Imports	129,790,025	francs.
Exports	73,133,000	"
Total foreign trade in 1851	202,923,000	"

Navigation in 1850..Vessels, 2420—Tonnage, 277,717
" 1851.. " 2598 " 296,280
" 1852.. " 3250 " 368,400

Of these there were under the American flag:

In 1850	Vessels, 27	Tonnage	6,176
In 1851	" 19	"	7,577
In 1852	" 88	"	10,024

The trade of the kingdom in 1858 amounted in value to 333,942,000 francs ($63,448,980) imports; and 220,630,000 francs ($41,919,700) exports. In 1852 the direct trade between the United States and Sardinia amounted to 7,725,862 francs ($1,477,818 78). In 1853 it reached as high as 18,891,561 francs (2,689,896). showing an increase of nearly 100 per cent.

The entire trade, compared with that of 1852, shows an increase of 21,500,000 francs on imports, and of 5,500,000 francs on exports. The imports comprise in values (in round numbers) as follows: Cotton, 34,000,000 francs; colonial or trans-Atlantic produce, 25,000,000; corn, 22,000,000; silks, 20,000,000; woolens, 18,000,000, etc. The exports comprise: Silks, 43,000,000 francs; wine and oil, 10,000,000 francs; rice, 8,000,000; cattle, 4,000,000, etc.

The countries with which Piedmont carries on the largest trade are as follows:

Imports.	Francs.	Exports.	Francs.
France	48,000,000	France	40,000,000
England	30,000,000	England	3,500,000
Switzerland	14,500,000	Switzerland	13,000,000
Austria	10,000,000	Austria	16,000,000
Russia	17,000,000	Russia	103,000
United States	13,000,000	United States	531,000

The customs' revenue amounted in the year 1853 to $3,464,472.

Sardinian official returns show an importation of raw cotton, direct from the United States, for 1853, of about $2,000,000 in value; and it is supposed that while of the remainder some undoubtedly came from Algeria, the greater part came indirectly from the United States, through England, Holland, etc. If, however, these Sardinian returns are compared with those prepared by the United States Treasury Department, it will appear that the direct importation of cotton from the United States must be, as it unquestionably is, largely over-estimated; while the indirect importation from English, Dutch, and other European ports is much below the actual quantities given. Thus the value of cotton exported from the United States to Sardinia in 1853, as per United States Report on Commerce and Navigation, was only $156,422; and in 1852, $416,982; making for both years the sum of $573,404, or a little more than one-fourth of the value given in the Sardinian returns for 1853 alone. The following summary presents as accurate a statement of the cotton trade of Sardinia as can be derived from a comparison of the official reports of the European countries whence cotton is re-exported, and of the United States, with the official returns of the Sardinian government. The countries given are not the only, but the principal countries, whence Sardinia imports cotton:

Pounds of Cotton imported into Sardinia for the four years ending 1854 from the Countries designated.

Years.	Great Britain.	France.	United States.	Total.
1851	2,742,320	No data.	2,136,100	4,873,420
1852	2,938,308	3,497,389	5,568,823	11,904,420
1853	3,800,864	1,483,320	1,629,025	6,079,218
1854	3,821,326	1,197,841	1,645,372	6,674,541
Average	3,165,680	2,081,519	2,744,330	7,494,150

The railroad facilities afforded at the port of Genoa for the transmission of merchandise to the interior of Italy, Switzerland, etc., have already produced a marked effect on the cotton trade of that port. It has been shown that the total quantity of cotton exported from the United States to Sardinia was, in 1851, 2,136,000 lbs.; in 1852, 5,568,823 lbs.; in 1853, 1,629,025 lbs.; in 1854, 1,645,372 lbs. In 1855 the exportation reached 14,777,765 lbs., of which the port of Genoa received 10,035,600 lbs.; and an official document received from Genoa gives the quantity received at this port from the United States, in American vessels alone, the first six months of 1856, at 12,164,000 lbs.—C. D.

Money, Weights, and Measures.—Accounts are kept in lire, reali, and soldi. 5 soldi = 1 real = 4½*d.*; 4 reali = 1 lira = 1*s.* 6*d.*; 10 reali = 1 scudo = 3*s.* 9*d.* The paper money consists of notes for 5, 10, and 20 scudi. Farm produce and the coarser metals are weighed by the *pesi di ferro:* 12 Sardinian oz. = 1 lb. = 14 oz. 5 dr. avoirdupois; 26 lbs. = 1 rubbo; 4 rubbi = 1 cantaro = 93 lbs. 8 dr. avoirdupois. The starello or corn measure is equivalent to 1 bushel 1¼ peck English. The palm = 10½ English inches.

Commerce of the United States with Sardinia from October 1, 1840, to July 1, 1856.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1841	$47,000	....	$47,000	....	....	....	....	....
1849	40,208	....	40,208	....	....	....	1,153	773
9 mos., 1843*	108,091	....	108,091	....	....	....	1,951	260
June 30, 1844	92,522	....	92,522	....	....	....	4,395	1,531
1845	102,527	$93,270	195,797	$19,850	....	$1,200	4,332	1,411
1846	283,289	976	284,250	....	....	....	9,865	1,191
1847	639,239	16,870	647,109	287	....	....	10,235	3,313
1848	175,583	15,880	193,979	....	....	....	9,162	1,988
1849	460,950	21,414	482,364	42,538	....	42,276	12,397	4,843
1850	170,764	85,136	255,900	205	....	....	7,791	6,300
Total	$2,171,460	$176,755	$2,348,215	$62,880	....	$43,476	61,281	21,663
June 30, 1851	$310,886	$19,401	$330,289	$2,802	....	....	6,741	8,479
1852	733,200	42,236	811,425	74,901	....	....	13,443	6,669
1853	195,880	27,026	222,906	171,583	....	....	11,891	7,018
1854	188,905	2,020	190,325	85,676	....	....	10,088	2,346
1855	1,638,186	143,844	1,982,030	217,229	....	$2,000	16,754	4,597
1856	2,143,977	60,961	2,204,938	317,179	....	....	17,058	3,501

* Nine months to June 30, and the fiscal year from this time begins July 1.

Sardonyx, a precious stone, a variety of chalcedony. The ancients selected this substance to engrave upon, no doubt, from its possessing two peculiar and necessary qualities: viz., hardness and tenacity, by which it is capable of receiving the finest touch or stroke of the tool without chipping, and showing the art of the engraver to the highest perfection.—MAWE *on Diamonds*.

Sarsaparilla (Ger. *Sarsaparille*; Fr. *Salsepareille*; It. *Salsapariglia*; Sp. *Zarsaparilla*), the root of the *Smilax Sarsaparilla*, a plant growing in South America and the West Indies. It is imported in bales. It is known in the London market by the names of Lisbon, Honduras, and Vera Cruz, but it is also brought from Jamaica. The Lisbon root, which is the produce of Brazil, has a reddish or dark brown cuticle, is internally farinaceous, and more free from fibre than the other kinds: the Honduras has a dirty brown, and sometimes whitish, cuticle; it is more fibrous, and has more ligneous matter than the Lisbon and Vera Cruz. It is in long, slender twigs, covered with a wrinkled brown cuticle, and has a small, woody heart. The Jamaica differs from the others, in having a deep red cuticle of a close texture, and the red color partially diffused through the ligneous part. The root is inodorous, and has a mucilaginous, very slightly bitter taste: the bark is the only useful part of the plant; the ligneous part being tasteless, inert, woody fibre.—THOMSON'S *Dispensatory*.

Sassafras (Ger. and Fr. *Sassafras*; It. *Sassafrasso*; Sp. *Sassafras*), a species of laurel (*Laurus Sassafras*, Linn.), a native of the southern parts of North America, Cochin-China, and several of the Indian islands. Sassafras wood, root, and bark have a fragrant odor, and a sweetish aromatic taste. The wood is of a brownish white color; and the bark ferruginous within, spongy, and divisible into layers. Their sensible qualities and virtues depend on an essential oil, which may be obtained separate by distilling the chips or the bark with water. It is very fragrant, hot, and penetrating to the taste, of a pale yellow color, and heavier than water. It is used only in the materia medica.—THOMSON'S *Dispensatory*.

Satin (Eng., Fr., and Germ.) is the name of a silk stuff first imported from China, which is distinguished by its very smooth, polished, and glossy surface. It is woven upon a loom with at least five-leaved healds or heddles, and as many corresponding treddles. These are so mounted as to rise and fall four at a time, raising and depressing alternately four yarns of the warp, across the whole of which the weft is thrown by the shuttle, so as to produce a uniform smooth texture, instead of the checkered work resulting from intermediate decussations, as in common webs. Satins are woven with the glossy or right side undermost, because the four-fifths of the warp, which are always left there during the action of the healds, serve to support the shuttle in its race. Were they woven in the reverse way, the scanty fifth part of the warp threads could either not support, or would be too much worn by the shuttle.

Saunders (Red) (Arab. *Sundal-ahmer*; Hind. *Ruckut-chundum*), the wood of a lofty tree (*Pterocarpus santalinus*) indigenous to various parts of India, Ceylon, Timor, etc. The wood is brought to Europe in billets, which are very heavy, and sink in water. It is extremely hard, of a fine grain, and a bright garnet red color, which brightens on exposure to the air. It is employed to dye lasting reddish brown colors on wool. It yields its coloring matter to ether and alcohol, but not to water.—THOMSON'S *Dispensatory*; BANCROFT *on Colors*, vol. ii. p. 236.

Savannah, city, port of entry, and capital of Chatham county, Georgia, is situated on the right bank of the Savannah River, 17 miles from its mouth. It is in 32° 4′ 56″ N. lat., and 81° 8′ 18″ W. long. from Greenwich, and 4° 10′ W. from Washington. It is 118 miles southwest from Charleston, 128 miles southeast from Augusta, 158 miles east-southeast from Milledgeville, 662 miles south by west from Washington. The population in 1810 was 5195; in 1820, 7523; in 1830, 7776; in 1840, 11,214; in 1850, 15,812; in 1854, 19,000. This city was founded in 1733 by General James Oglethorpe and others. It was taken by the British in 1778, but they abandoned it in 1782. On the 10th of January, 1820, 463 buildings were burned, occasioning a loss of property amounting to $4,000,000; but it has been rebuilt with additional beauty. There are in Savannah eight banks, aggregate capital $4,900,000; four printing-offices, issuing three daily and one weekly newspaper. Capital employed in manufactures, 1850, $180,550; value of manufactured articles, $256,250. Savannah is the port for an extensive region, rich in agricultural and mineral wealth, and by the immense extent of railroad converging to this point (about 1200 miles) will undoubtedly be the port of the Southern Atlantic coast. The cotton shipped from Savannah for the years 1856-'57 amounted to 327,658 bales.—*See* GEORGIA.

The recent construction of railroads from Savannah westwardly has an important bearing, present and prospective, upon the commerce of Savannah. Those in operation in 1857 are as follows:

Georgia Rail-road	292 miles.
Central, Savannah to Macon	191 "
Southwestern and Muscogee	178 "
Macon and Western (to Atlanta)	101 "
Western, to Chattanoga	138 "
Atlanta and Lagrange	87 "
Total	927 "

These roads connect either directly or indirectly with 800 miles of railroad in Tennessee.

Saxe-Meiningen (one of the Zoll-Verein). The general trade between this duchy and the United States is increasing. Her manufactures are deservedly in high repute, and are chiefly destined for the American market. They consist of leather, woolen and cotton stuffs, musical instruments, toys of every description, china, glass, iron, stone, and willow wares, slate pencils, marbles, nails, drugs, colors, wooden wares, etc.

This duchy is rich in mineral productions, and mining is pursued with considerable activity. Iron, copper, coal, alum, vitriol, marble, and salt are extensively produced, and enter largely into the exports of the duchy. Exports for the United States are transported either to Bremen, Hamburg, Antwerp, Rotterdam, or Havre.

The following statement exhibits the value of exports, the produce and manufacture of Saxe-Meiningen, to the United States, during a period of five years, from 1851 to 1855, both inclusive, specifying the countries through which said exports were shipped for the United States:

Years.	Via			Total.
	Hamburg.	Bremen.	France.	
1851	....	$20,456	....	$20,456
1852	$743	39,665	$2829	43,239
1853	5818	40,062	260	46,540
1854	247	10,368	....	10,615
1855	....	6,171	....	6,171

The exports from the United States to this duchy consist of tobacco, rice, breadstuffs, cotton, and manufactures of India-rubber, etc. The soil, owing to the vast forests and mountains which cover so much of its surface, is not favorable to agricultural pursuits; hence breadstuffs form a large item of imports from foreign countries.

Saxony (one of the Zoll-Verein). This kingdom lies in the centre of Germany, and though the soil is generally fertile in grain, and is cultivated with the greatest care, the quantity raised, even in the best harvests, is not more than sufficient for the consumption of the inhabitants. Wheat, rye, oats, barley, and potatoes are the general crops.

Saxony is rich in mines of iron, lead, copper, cobalt,

bismuth, antimony, and coal; consequently we find that mining and manufactures occupy the principal portion of its nearly 2,000,000 inhabitants. There are upward of 500 mines in active operation, the centre of which is at Freiburg. Fruit is extensively cultivated, and excellent wine is produced from the vineyards of the Elbe. The forests, which cover one-fourth of the surface, furnish fine timber, which is floated down the Elbe to Hamburg. The chief manufactures of Saxony are those of cotton, in the spinning of which the latest improvements have been introduced.* The other chief branches of manufacturing industry are linen and woolen weaving, stocking-making, and the fine porcelain of Meissen, known in commerce as Dresden china. Dresden and Leipsic are the commercial marts of Saxony. Annual fairs are held in these cities, which are attended by vast concourses of people from most of the countries of Europe and Western Asia. Leipsic is the great emporium of the book trade of Germany; and in both these cities manufactures, particularly in silk and woolen fabrics, jewelry, musical and scientific instruments, artificial flowers, etc., are carried to the very highest state of perfection. Leipsic communicates by railroad with Dresden, and the trade of the latter is conducted up and down the Elbe.

The following statement exhibits the value of exports, the produce and manufactures of Saxony, to the United States, during a period of five years, from 1851 to 1855, both inclusive, specifying the countries through which said exports were shipped for the United States:

Years.	Via						Total
	Hamburg.	Bremen.	Holland.	France.	Belgium.	England.	
1851	$115,259	$593,008	....	$82,361	$8,583	$56,755	$856,916†
1852	351,364	1,650,338	$4220	151,916	12,131	143,906	2,313,884
1853	375,496	1,657,306	2104	181,589	9,042	156,214	2,382,651
1854	231,658	945,352	6137	143,414	11,345	170,395	1,511,798†
1855	331,231	2,013,916	6437	114,745	25,303	169,915	2,710,591

† These figures are for the port of New York only, and for six months. No returns are at hand for the general trade.

Scammony (Ger. *Skammonien*; Fr. *Scammonée*; It. *Scammonea*; Sp. *Escamonea*), a gum-resin, the produce of a species of convolvulus, or creeper plant, which grows abundantly in Syria. When an incision is made into the roots, they yield a milky juice, which being kept, grows hard, and is the scammony of the shops. It is imported from Aleppo in what are called drums, weighing from 75 to 125 lbs. each; and from Smyrna in cakes like wax, packed in chests. The former is light and friable, and is considered the best; that from Smyrna is more compact and ponderous, less friable, and fuller of impurities. It has a peculiar heavy odor, not unlike that of old cheese, and a bitterish, slightly acrid taste. The color is blackish or bluish gray, changing to dirty white, or lathering when the surface is rubbed with a wet finger. Its specific gravity is 1·235. It is very liable to be adulterated; and when of a dark color, heavy, and splintery, it ought to be rejected. It is used only in medicine.—THOMSON'S *Dispensatory*.

Schooner, in *Nautical language*, a small vessel with two masts, whose mainsail and foresail are suspended from gaffs, reaching from the mast toward the stern, and stretched out below by booms, and whose foremast ends are hooked to an iron, which clasps the mast so as to turn therein as upon an axis, when the after ends are swung from one side of the vessel to the other.

Scotland, the northern portion of Great Britain, extends in its main land from lat. 54° 38′ to 58° 41′ N., and long. 1° 45′ to 6° 14′ W., and, including its islands, to lat. 60° 50′ N., and long. 8° 35′ W.

Scotland is separated from England by a waving line of the Cheviot Hills in the centre, by the Tweed, which enters the sea at Berwick, on the east, and by the Solway Firth on the west. Its eastern shores are washed by the North Sea, and its western by the Atlantic. It is of an oblong, irregular form, extending longitudinally due north and south 280 miles, and varying in breadth from 175 to 100, 50, and 30 miles. Area, 31,324 square miles, or 20,047,462 acres, 6·9 acre to a person, 92 persons to a square mile. Population in 1801, 1,599,068; in 1841, 2,620,184; in 1851, 2,888,742. For Manufacturing Districts, etc., of Scotland, *see* BLACKWOOD'S *Magazine*, l. 659, lxv. 192; *London Quarterly Review*, lxxxii. 187. For Scottish Fisheries, *see London Quarterly Review*, lxix. 226; *North British Review*, l. 326.

The relative commerce of the three leading Scotch ports, compared with the leading ports of England and Ireland, is shown in the following table, showing the declared value of British and Irish produce and manufactures exported to foreign countries for each year, from 1851 to 1855:

SCOTLAND.

Years.	Glasgow.	Leith.	Greenock.
1851.....	£3,499,000	£381,200	£491,000
1852.....	3,570,300	491,200	418,600
1853.....	4,908,000	575,000	437,500
1854.....	4,905,500	727,600	554,500
1855.....	3,916,500	536,500	452,800

ENGLAND.

Years.	London.	Liverpool.	Hull.
1851.....	£14,489,400	£37,918,600	£10,126,400
1852.....	15,802,100	38,469,500	9,894,200
1853.....	22,991,000	47,152,100	10,788,700
1854.....	23,330,200	46,719,100	10,003,100
1855.....	20,915,500	46,323,400	10,079,600

IRELAND.

Years.	Cork.	Belfast.	Dublin.
1851.....	£100,400	£50,100	£50,000
1852.....	141,000	54,500	75,100
1853.....	129,600	35,900	22,800
1854.....	148,000	28,700	41,400
1855.....	102,600	73,100	28,500

In Scotland there were in 1854–'5 forty-six savings-banks. The progress of these useful institutions is indicated by the following summary of Scotland, and of Great Britain and Ireland:

Years.	No. of Banks.	No. of Accounts.	Amount of Deposits. Scotland.	Savings Deposits. United Kingdom.
1850–'51....	43	105,161	£1,488,777	£30,277,854
1851–'52....	43	111,209	1,645,205	31,754,261
1852–'53....	45	116,113	1,837,103	33,302,260
1853–'54....	46	118,602	1,931,098	33,730,089
1854–'55....	46	....	2,011,473	34,201,721

Railways.—The progress of the railway system in Scotland has not been rapid. The following table exhibits the number of miles, capital raised per mile, and number of passengers per mile:

Years.	No. of Miles.	Capital raised per Mile.	Receipts per Mile per Annum.	
			From Passengers.	From Goods.
1849.....	795	£27,654	£680	£818
1850.....	902	27,612	664	790
1851.....	957	29,001	649	850
1852.....	970	29,476	663	958
1853.....	987	29,564	713	1075
1854.....	1019	29,792	742	1219
1855.....	1069	29,580	726	1277

—*See articles* GREAT BRITAIN and GLASGOW for an extended account of the trade and finances of Scotland. On the following page there is presented a tabular statement of the foreign commerce of the United States with Scotland for a series of twenty-seven years, showing the exports, foreign and domestic, the imports, and the tonnage cleared.

* The export of cotton tissues from the Zoll-Verein in 1853 amounted in value to $2,394,497 34, of which amount Saxony sent from her factories $2,075,399 68.

COMMERCE OF THE UNITED STATES WITH SCOTLAND, FROM OCTOBER 1, 1820, TO JULY 1, 1857.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1821.....	$1,405,448	$13,683	$1,419,131	$1,220,092	....	....	4,015	6,220
1822.....	1,615,565	10,987	1,626,552	1,831,316	....	$2,100	7,207	5,079
1823.....	1,158,405	10,104	1,168,509	1,086,133	....	3,000	4,517	8,220
1824.....	1,196,219	14,632	1,210,851	1,008,520	....	....	3,175	5,836
1825.....	1,699,526	7,657	1,707,183	1,829,464	....	1,700	7,253	2,932
1826.....	572,894	2,952	575,846	1,096,772	....	....	2,850	2,792
1827.....	1,336,199	....	1,336,199	1,068,191	....	500	7,206	7,521
1828.....	959,560	7,927	967,487	1,183,081	....	....	3,422	8,002
1829.....	895,315	19,493	914,808	1,024,215	....	....	2,699	7,099
1830.....	1,403,211	8,488	1,468,699	1,382,841	....	....	6,913	7,767
Total...	$12,304,402	$90,923	$12,395,325	$12,805,535	....	$7,300	48,264	62,008
Sept. 30, 1831.....	$1,185,142	$5,567	$1,190,709	$1,977,890	....	....	6,312	9,102
1832.....	1,125,808	20,864	1,146,762	1,580,812	....	....	5,932	9,410
1833.....	1,186,469	21,058	1,207,527	1,025,229	....	$500	2,523	9,860
1834.....	2,344,785	28,789	2,373,574	1,402,030	....	3,000	6,655	13,484
1835.....	2,830,079	10,850	2,840,929	1,639,648	....	16,800	6,890	9,356
1836.....	2,349,550	744	2,350,294	2,375,899	....	3,300	4,530	10,598
1837.....	3,441,211	12,596	3,453,807	1,188,410	....	4,060	12,641	7,924
1838.....	1,685,203	10,776	1,695,979	594,365	....	....	9,457	6,387
1839.....	1,025,832	1,256	1,027,088	150,183	....	....	2,321	5,403
1840.....	2,022,636	28,304	2,050,940	525,217	....	3,000	10,709	10,433
Total...	$19,196,865	$140,804	$19,337,669	$13,259,923	....	$31,560	66,060	91,982
Sept. 30, 1841.....	$1,920,506	$15,318	$1,935,824	$850,887	....	$1,312	7,414	8,717
1842.....	1,592,735	80,279	1,673,014	655,050	....	....	6,890	10,045
9 mos., 1843*.....	2,363,354	14,657	2,378,011	128,846	....	....	12 764	18,848
June 30, 1844.....	1,936,591	16,882	1,953,473	627,230	....	7,260	7,849	12,418
1845.....	2,011,874	54,936	2,066,810	708,187	....	....	14,732	20,810
1846.....	1,642,330	45,416	1,687,746	1,230,086	....	....	9,547	13,783
1847.....	3,645,460	162,013	3,807,473	1,837,014	....	69,565	25.815	15,630
1848.....	2,455,426	88,418	2,493,844	1,666,094	....	7,210	14,1 5	17,0:6
1849.....	3,540,950	68,472	3,608,432	1,959,320	....	....	21,032	24,:40
1850.....	3,021,740	183,679	3,205,419	2,746,670	....	....	15,753	17,276
Total...	$24 669,976	$676,070	$25,340,046	$12,800,993	....	$85,347	134,997	160,568
June 30, 1851.....	$3,811,003	$201,937	$4,072,940	$2,999,710	....	....	18,508	22,907
1852.....	2,441,148	230,635	2,071,783	2,355,947	....	....	19,856	22,288
1853.....	4,480,325	154,739	4,641,564	4,337,990	....	....	27,734	32,612
1854.....	5,997,662	190,330	5,287,998	5,930,461	....	....	22,018	23,003
1855.....	3,300,751	114,489	3,421,240	3,554,594	....	....	18,674	13,103
1856.....	3,880,376	20,166	3,906,542	4,131,596	....	....	20,235	24,975
1857.....	4,671,837	32,181	4,704,018	7,216,111	....	....	33,982	49,422

* Nine months to June 30, and the fiscal year from this time begins July 1.

Scud, the name given by seamen to loose, vapory clouds driven swiftly along by the winds. *To scud*, signifies to run directly before the wind in a gale. As the object is to keep before the sea, the foresail or fore topsail is set: the latter or the main topsail is often necessary, as the foresail is often becalmed from the height of the waves.

Scudo. *See* COINS.

Scull, an oar, so short that one can work a pair. It most generally implies an oar placed over the stern of a boat, and worked from side to side; the blade, which is turned diagonally, being always in the water. In China, where the method is well understood, large boats are impelled by a single scull with considerable velocity.

Sculptures, figures cut in stone, metal, or other solid substance, representing or describing some real or imaginary object. The art of the sculptor, or statuary, was carried to the highest pitch of excellence in ancient Greece. Fortunately, several of the works of the Grecian sculptors have been preserved, and serve at once to stimulate and direct the genius of modern artists. *Models* are casts or representations of sculptures.

Scuppers are pipes of lead inserted in openings bored from the deck through the sides of a ship, to carry the water off from the deck to the sea. To avoid the inconvenience of having the scuppers broken by the working of the ship, each is formed of two pipes, one of which is passed upward to the deck through the opening in the ship's side, and having its lower end nailed on the outside planking; the other, which is of smaller diameter, after being woolded on the outside with flannel dipped in tallow, is passed downward into the lower pipe, through the opening in the deck, and its upper end secured on the plank of the deck. In order to prevent the entrance of water by these scuppers when the ship is inclined, valves of metal are placed over the external outer ends, which close with the pressure of the external water. In merchant vessels, leather pipes, called scupper-hoses, are sometimes nailed round the opening for the same purpose. Sometimes scuppers are only leaden pipes passed through the ship's side, and turned and fastened at each end.

Scuttles, in a ship, holes in the decks, either for air or as passages to the store-rooms; also openings in a ship's side for the admission of air. If, in order to sink a ship, a hole be cut in her bottom, she is said, in *Nautical language*, to be scuttled.

Sea. The jurisdiction over the seas has long been a question of difficulty and of doubtful right. Grotius published his *Mare Liberum* against the Portuguese claim to an exclusive trade to the Indies through the South Atlantic and Indian oceans, and he proves the sea is not capable of private dominion. He vindicates the free navigation of the seas, and the right of commerce, and exposes the absurdity of the Portuguese claim. Selden's *Mare Clausum* was written in answer to the doctrine of Grotius, and he undertook to prove, by the laws, usages, and opinions of all nations, ancient and modern, that the sea was capable of private dominion. He asserted that the English had long claimed and enjoyed a supremacy over the surrounding and narrow seas. Bynkershoick concedes to Selden much of his argument, and admits that private dominion may be exercised over adjoining seas; but denies the right of the English on the ground of a want of uninterrupted possession.

The claim of dominion to close or narrow seas is still subject to discussion. As far as a nation can conveniently occupy, and that occupancy is acquired by prior possession or treaty, the jurisdiction is exclusive. Navigable rivers which flow through a territory, and the sea-coast adjoining it, and the navigable waters

included in bays, and between headlands and arms of the sea, belong to the people of the adjoining territory, as being necessary to the safety of the nation, and to the undisturbed use of the neigboring shores. The open sea is not capable of being possessed as private property. The free use of the ocean for navigation and fishing is common to all mankind, and the public jurists generally and explicitly deny the main ocean can ever be appropriated. The subjects of all nations meet there, in time of peace, on a footing of entire equality and independence. No nation has any right or jurisdiction at sea, except it be over the persons of its own subjects, in its own private and public vessels; and so far territorial jurisdiction may be considered or preserved as portions of its territory, and persons on board are protected and governed by the law of the country to which the vessels belong. They may be punished for offenses against the municipal laws of the State, committed on board of its public and private vessels at sea, and on board of its public vessels in foreign ports. This jurisdiction is confined to the ship; and no ship has a right to prohibit the approach of another at sea, or to draw round her a line of territorial jurisdiction, within which no other is at liberty to intrude. Every vessel has a right, in time of peace, to consult its own safety and convenience, and to pursue its own course and business without being disturbed, when it does not violate the rights of others. As to narrow seas and waters approaching the land, there have been many and sharp controversies among European nations concerning the claim of exclusive dominion. The questions arising on this claim are not very clearly defined and settled, and extravagant pretensions are occasionally put forward. * * * Puffendorf admits that in a narrow sea the dominion of it may belong to the sovereigns of the adjoining shores. Vattel, also, lays down the position that the various uses to which the sea contiguous to the coast may be applied, render it justly the subject of property. * * * Chitty, in his work on Commercial Law, has entered into an elaborate vindication of the British title to the four seas surrounding the British Islands, and known by the name of British Seas, and, consequently, to the exclusive right of fishing and of controlling the navigation of foreigners therein. * * * On the other hand, Sir William Scott did not treat the claim of territory to contiguous portions of the sea with much indulgence. He said the general inclination of the law was against it; for in the sea, out of the reach of cannon shot, universal law was presumed, in like manner as a common use in rivers flowing through conterminous states was presumed; and yet in both cases there might exist a peculiar property excluding the universal or common use.—KENT's *Com.* vol. i.

The United States have recognized the general limitation of a marine league, or a cannon-shot distance; but considering the contour of our coast, the law of nations would justify, and it would not be unreasonable for us to claim, the control of the waters from Cape Ann to Cape Cod, and from Nantucket to Montauk Point, and from that point to the Capes of the Delaware, and from the South Cape of Florida to some point on our coast west of the mouth of the Mississippi.

Seal (Lat. *Sigillum*), a stone, piece of metal, or other solid substance, generally round or elliptical, on which is engraved the arms, crest, name, device, etc., of some state, prince, public body, or private individual. It is employed as a stamp to make an impression on sealing-wax, thereby authenticating public acts, deeds, etc., or to close letters or packets. Seals were very early invented, and much learning has been employed in tracing their history, and explaining the figures upon them. See particularly the work of HOPKINCK, *De Sigillorum Prisco et Novo Jure*, 4to, 1642.

Seal-fishery. The seal, an amphibious animal, of which there are many varieties, is found in vast numbers in the seas round Spitzbergen, and on the coasts of Labrador and Newfoundland. Seals are principally hunted for their oil and skins. When taken in the spring of the year, when they are fattest, a full-grown seal will yield from 8 to 12 gallons of oil, and a small one from 4 to 5 gallons. The oil, when extracted before putrefaction has commenced, is beautifully transparent, free from smell, and not unpleasant in its taste. The skin, when tanned, is extensively employed in the making of shoes; and, when dressed with the hair on, serves for the covering of trunks, etc.—For an account of the imports of seal skins, *see article* FURS.

To the Esquimaux the seal is of as much importance as bread to a European. Its flesh forms their most usual food; the fat is partly dressed for eating, and partly consumed in their lamps; the liver, when fried, is esteemed, even among sailors, as an agreeable dish. The skin, which the Esquimaux dress by processes peculiar to themselves, is made water-proof. With the hair off, it is used as coverings, instead of planks, for their boats, and as outer garments for themselves; shielded with which, they can invert themselves and canoes in the water, without getting their bodies wet. It serves also for coverings for their tents, and for various other purposes. The jackets and trowsers made of seal skin by the Esquimaux are in great request among the whale-fishers for preserving them from oil and wet.—SCORESBY's *Arctic Regions*, vol. i. p. 510. Seals in fine weather prefer the ice to the water, and vast herds of them are frequently found lying on the field ice; the places where they are met with being thence called "seal meadows." The seal hunters endeavor to surprise them while sleeping, and to intercept their retreat to the water. They attack them with muskets and bludgeons, but principally the latter, they being easily dispatched by a blow on the nose. The seal-fishery has long been prosecuted to a considerable extent in the Northern seas by ships from the Elbe and the Weser. But very few ships have been sent out for *sealing* only from England, though occasionally some of the whale-ships have taken large quantities of seals. Latterly, however, the seal-fishery has been prosecuted on a large scale, and with extraordinary success, by vessels of from 60 to 120 tons each, having crews of from 16 to 30 men, fitted out from the ports of Newfoundland, Nova Scotia, etc. The business is attended with a good deal of risk, and instances frequently occur of the vessels being crushed to pieces by the collision of the fields of ice. We borrow the following details from Mr. Bliss's tract on the *Trade, Statistics, etc., of Canada and North American Possessions:*

"There is another department of the colonial fishery which has originated within no distant period, and is now of great extent and importance. The large fields of ice which, in the months of March and April, drift southward from the Polar seas, are accompanied by many herds of seals; these are found sleeping in what are called the seal meadows of the ice, and are there attacked and slaughtered in vast numbers. For this purpose the fishers of Newfoundland, from which island these voyages are principally made, without waiting till the return of spring shall have opened their harbors, saw channels through the ice for their vessels, and set sail in quest of those drifting fields, through the openings of which they work a passage, attended with great difficultics and dangers, till they encounter their prey on the seal meadows. This bold and hazardous enterprise seems well compensated by its success. The number of seals thus taken is almost incredible, and is greatly on the increase" (p. 70).—*Living Age*, xxvii. 186. *See articles* FISHERIES, OILS, NEWFOUNDLAND, and LABRADOR; *see also* M'GREGOR's *British America*, 2d edit., and SABINE's *American Fisheries*. There is a good account of the seal in LAING's *Voyage to Spitzbergen*.

Sealing-wax (Ger. *Siegellack;* Fr. *Cire d'Espagne, Cire à cacheter;* It. *Cera Lacca, Cera di Spagna;* Sp. *Lacre;* Russ. *Surgutsch*), the wax used for sealing

letters, legal instruments, etc. It is a composition of gum-lac, melted and incorporated with resin, and afterward colored with some pigment, as vermilion, verditer, ivory black, etc.

The Hindoos from time immemorial have possessed the resin lac, and were long accustomed to use it for sealing manuscripts before it was known in Europe. It was first imported from the East into Venice, and then into Spain; in which country sealing-wax became the object of a considerable commerce, under the name of Spanish wax.

If shell-lac be compounded into sealing-wax immediately after it has been separated by fusion from the palest qualities of stick or seed lac, it then forms a better and less brittle article than when the shell-lac is fused a second time. Hence sealing-wax rightly prepared in the East Indies, deserves a preference over what can be made in other countries, where the lac is not indigenous. Shell-lac can be restored in some degree, however, to a plastic and tenacious state by melting it with a very small portion of turpentine. The palest shell-lac is to be selected for bright-colored sealing-wax, the dark kind being reserved for black.

Seamen, the individuals engaged in navigating ships, barges, etc., upon the high seas. Those employed for this purpose upon rivers, lakes, or canals are denominated watermen.

Of the Rights and Duties of Seamen.—The seamen employed in the merchant service are made subject to special regulations prescribed by acts of Congress. Shipping articles are contracts in writing or in print, declaring the voyage and the term of time for which the seamen are shipped, and when they are to render themselves on board; and the articles are to be signed by every seaman or mariner on all voyages from the United States to a foreign port; and, in certain cases, to a port in another State other than an adjoining one. If there be no such contract, the master is bound to pay every seaman who performs the voyage the highest wages given at the port for a similar voyage within the next three preceding months, besides forfeiting for every seaman a penalty of twenty dollars.

The seamen are made subject to forfeitures if they do not render themselves on board to the contract, or if they desert the service; and they are liable to summary imprisonment for desertion, and to be detained until the ship be ready to sail. If the mate and a majority of the crew, after the voyage is begun, but before the vessel has left the land, deem the vessel unsafe, or not duly provided, and shall require an examination of the ship, the master must proceed to, or stop at, the nearest or most convenient port, where an inquiry is to be made, and the master and crew must conform to the judgment of the experienced persons selected by the district judge, or a justice of the peace. If the complaint shall appear to have been without foundation, the expenses and reasonable damages to have been ascertained by the judge or justice are to be deducted from the wages of the seamen. But if the vessel be found or made seaworthy, and the seamen shall refuse to proceed on the voyage, they are subjected to imprisonment until they pay double the advance made to them on the shipping contract. Fishermen engaged in the fisheries are liable to like penalties for desertion; and the fishing contract must be in writing signed by the shipper and the fishermen, and countersigned by the owner.

The articles do not determine exclusively who are the owners, and the seamen may prove by other documents the real and responsible owners. The object of the articles is to place the crew of a fishing vessel upon a footing with seamen in the merchant service, and to make them liable to the same restrictions, and entitled to the same remedies. Provision is made for the prompt recovery of seamen's wages, of which one-third is due at every port at which the vessel shall unload and deliver her cargo before the voyage be ended; and at the end of the voyage the seamen may proceed in the District Court by admiralty process against the ship, if the wages be not paid within ten days after they are discharged. The seamen having like cause of complaint, may all join in one suit, and they may proceed against the vessel within the ten days, if she be about to proceed to sea; but this remedy *in rem* does not deprive the seamen of their remedy at common law for the recovery of their wages.

Every ship belonging to a citizen of the United States, of the burden of 150 tons or upward, and navigated by six or more persons, and bound from any port in the United States to any port in the West Indies, shall be provided with a medicine-chest, properly supplied with fresh and sound medicines; and, if bound on a voyage across the Atlantic Ocean, with requisite stores of water, and salted meat, and wholesome shipbread, well secured under deck. A fund shall be raised out of the mariners' wages earned on board of any vessel of the United States, and be paid by the master to the collector of the port, on entry from a foreign port, at the rate of twenty cents per month for every seaman. The like assessment is to be made and paid on the new enrollment and license for carrying on the coasting trade, and also by persons navigating boats and rafts on the Mississippi. The moneys so raised are to be expended for the temporary relief of sick and disabled seamen in hospitals and other proper institutions established for such purpose; and the surplus moneys, when sufficiently accumulated, shall be applied to the erection of marine hospitals for the accommodation of sick and disabled seamen. The hospitals, as far as it can be done with convenience, are to receive sick foreign seamen on a charge of seventy-five cents per day, to be paid by the master of the foreign vessel.

And to relieve American seamen who may be found destitute in foreign places, it is the duty of the American consuls and commercial agents to provide for those who may be found destitute within their consular districts, and for their passages to some port in the United States, in a reasonable manner, at the expense of the United States; and American vessels are bound to take such seamen on board at the request of the consul, but not exceeding two men to every hundred tons burden of the ship, and transport them to the United States on such terms, not exceeding $10 for each person, as may be agreed on. So, if an American vessel be sold in a foreign port, and her company discharged, or a seaman be discharged with his consent, the master must pay to the consul or commercial agent three months' pay over and above the wages then due for every such seaman, two-thirds of which is to be paid over to every seaman so discharged, upon his engagement on board of any vessel to return to the United States, and the remaining third to be retained for the purpose of creating a fund for the maintenance and return of destitute American seamen in such foreign ports.

The master is personally responsible in damages for any injury or loss to the ship or cargo by reason of his negligence or misconduct. He has authority to imprison, and also inflict reasonable corporeal punishment, upon a seaman for disobedience to reasonable commands, or for disorderly, riotous, or insolent conduct. If the correction be excessive or unjustifiable, the seaman is sure to receive compensation for damages on his return to port in an action at common law. And it must be an extreme case that will justify a master to confine a seaman in a common jail in a foreign port. He can not do it as a punishment, but only by way of precaution under existing circumstances. The master may also confine a passenger who refuses to submit to the necessary discipline of the ship. The master has also the right to discharge a seaman for just causes, and put him ashore in a foreign country; but the causes must be not slight, but aggravated; such as habitual disobedience, mutinous conduct, theft, or

habitual drunkenness; and be is responsible in damages if he discharge him without just cause. This power of discharge extends to the mate and subordinate officers as well as the seamen. But it would require a case of flagrant disobedience, or gross negligence, or palpable want of skill, to authorize a captain to displace a mate, who is generally chosen with the consent of the owners, and with a view to the better safety of the ship and the security of their property.

The master must receive back a seaman whom he has discharged, if he reports and offers to return to his duty and make satisfaction; and if the master refuses, or the seaman has been unduly discharged, he may follow the ship, and recover his wages for the voyage, and his expenses for his return. The master subjects himself to fine and imprisonment if, without justifiable cause, he maliciously force an officer or mariner on shore while abroad, or leaves him behind in any foreign port or place, or refuses to bring home those whom he took out, and are in a condition and willing to return. The expense of curing a sick seaman in the course of the voyage is a charge upon the ship in the nature of additional wages during sickness.

The act of Congress requires that in seamen's shipping articles the voyage and the term of time for which the seamen may have shipped be specified. The regulation relates to voyages *from* a port in the United States, and it does not apply to a voyage commencing from a foreign port to the United States. The voyage within the attention of the statute means one having a definite commencement and end. The *terminus a quo* and the *terminus ad quem* must be stated precisely; and in a case of general adventure the term of service must be specified. A voyage from New York to the Curacoa and elsewhere means, in shipping articles, a voyage from New York to Curacoa, and the word *elsewhere* is rejected as being void for uncertainty. Seamen in the merchant service are usually hired at a certain sum, either by the month or for the voyage. In the fishing trade the seamen usually serve under an engagement to receive a portion of the profits of the adventure. The share or profits of the voyage are a substitute for regular wages, and the act of Congress (19th June, 1813) extends the admiralty jurisdiction to the cognizance of suits for shares in whaling voyages in the same form and manner as in ordinary cases of wages in the merchant service. Every seaman engaged to serve on board a ship is bound, from the nature and terms of the contract, to do his duty in the service to the utmost of his ability; and, therefore, a promise made by the master when the ship is in distress, to pay extra wages as an inducement to extraordinary exertion, is illegal and void. It would be the same if some of the crew had deserted, or were sick, or dead, or peculiar efforts became requisite; for the general engagement of the seamen is to do all they can for the good of the service under all the emergencies of the voyage.

A seaman is entitled to his whole wages for the voyage, even though he be unable to render his service by sickness or bodily injury happening in the course of the voyage, and while he was in the performance of his duty. He will equally be entitled to his wages to the end of his voyage when wrongfully discharged by the master in the course of it. The marine law distinguishes between the cases in which seamen's services are not rendered in consequence of a peril of the sea, and in which they are not rendered by reason of some illegal act, or misconduct, or fraud, of the master or owner interrupting and destroying the voyage. In the latter cases the seamen are entitled to their wages. If a seaman be wrongfully discharged on the voyage, the voyage is then ended with respect to him, and he is entitled to sue for his full wages for the voyage.

Freight is the mother of wages, and if no freight be earned no wages are due; but the freight must not be lost by the fraud or wrongful act of the master. The rule applies to cases of loss of freight by a peril of the sea. Seamen's wages in trading voyages are due *pro rata itineris*. If the seaman dies on the voyage, it was decided in the Circuit or District Court of the United States in Pennsylvania that the representatives were entitled to full wages to the end of the voyage; and on the other hand, in the District Court of South Carolina and Massachusetts, it was decided that full wages by marine law meant only full wages up to the death of the mariner. As the payment of wages depends, in general, upon the earning of freight, if a ship delivers her outward cargo, and perishes on her return voyage, and the outward freight be earned, the seamen's wages on the outward voyage are consequently due.

By the custom of merchants, seamen's wages are due at every delivering port, and their wages are not affected, without their special agreement, by any stipulation between the owners and the charterers, making the voyages out and home one entire voyage, and the freight to depend on the accomplishment of the entire voyage out and in. The owners may waive or modify their claim to freight as they please, but their acts can not deprive the seamen, without their consent, of the rights belonging to them by the general principles of the marine law. They are entitled to wages not only when the owner earns freight, but when, unless for his own act, he may earn it. The wages are due by an arrival at a port of destination, when no cargo is on board, or when the owner chooses to bring the cargo back again, and when the port of destination be not, in fact, the port of delivery. Even if the ship perishes on the outward voyage, yet, if part of the outward freight has been paid, the seamen are entitled to wages in proportion to the amount of the freight advanced, for there is an inseparable connection between freight and wages. In case of capture, the seamen taken prisoners by the captor and detained are entitled to their wages for the whole voyage, if the same be afterward performed, with a ratable deduction for the expenses of salvage. The same is the case of a vessel captured and afterward ransomed, and enabled to arrive at her port of destination. In the case of shipwreck, if any proportion of freight be paid for the cargo saved, wages of seamen are to be paid in the same proportion.

Mariners are bound to contribute out of their wages for embezzlements of the cargo, or injuries produced by the misconduct of any of the crew. But the circumstances must be such as to fix the wrong upon some of the crew; and then, if the individual be unknown, those of the crew upon whom the presumption of guilt rests stand as sureties for each other, and they must contribute ratably to the loss. Where the embezzlement has arisen from the fault, fraud, connivance, or negligence of any of the crew, they are bound to contribute to the reparation of the loss, in proportion to their wages. Where no reasonable presumption is shown against their innocence, the loss must be borne exclusively by the owner or master.

In case of shipwreck, and there be relics or materials of the ship saved, the seamen by whose exertions part of a vessel had been saved are allowed the payment of their wages, as far as the fragments of the materials would form a fund, although there was no freight earned by the owners. But in such cases where the voyage is broken up by *vis major*, and no freight earned, no wages *eo nomine* are due; and the equitable claim which seamen may have upon the remains of the wreck is rather a claim to salvage than a title to wages. Wages in such cases would be contrary to the principle of marine law—that freight is the mother of wages, and the safety of the ship the mother of freight. If, however, the seamen abandon the wreck of a ship, as being a hopeless case, and without the intention of returning to possess and save it, they lose their lien or privilege for any equitable compensation, whether as wages or salvage—their claim is extinguished; and

though other persons may possess the property which had been derelict, it belongs to the original owner, burdened for their claim for salvage.

By the act of Congress, one-third of seamen's wages is due at the port where the ship unlades and delivers her cargo, unless there be an express stipulation to the contrary; and when the voyage is ended, and the cargo or ballast is fully discharged, the wages are due, and if not paid within ten days thereafter, admiralty process may be instituted. But there is no fixed period of time within which mariners must proceed to enforce lien for wages. It does not, like other liens, depend upon possession. The seamen need not libel the vessel at the intermediate port at which they are discharged. They may disregard bottomry bonds, and pursue their liens for wages afterwards, even against a subsequent *bona fide* purchaser. It follows the ship and its proceeds, into whose hands soever they may come by title or purchase. Their demand for wages takes precedence of bottomry bonds, and is preferred to all other demands. Their claim is a sacred lien, and as long as a single plank of the ship remains the sailor is entitled, as against all other persons, to the proceeds as a security for his wages. The seamens' lien exists to the extent of the whole compensation due them. There is no difference between the case of a vessel seized abroad, and restored in specie or in value; the lien reattaches to the thing, and to whetever is substituted for it. Desertion from the ship without just cause, or the justifiable discharge of a seaman by the master for bad conduct, will work a forfeiture of the wages previously earned. Desertion is accompanied with a forfeiture of all the wages that are due; and whatever unjustifiable conduct will warrant the act of the master in discharging a seaman during the voyage, will equally deprive the seaman of his wages. But the forfeiture is saved if the seaman repents, makes compensation or offer of amends, and is restored to his duty.

The master has power to remit a forfeiture, and the penalty of forfeiture is not applied to slight faults, either of neglect or disobedience. There must either be an *habitual* neglect, or disobedience, or drunkenness, or else a single act of gross dishonesty, or some other act of a heinous and aggravated nature, to justify the discharging a seaman in a foreign port, or the forfeiture of wages; nor will the admiralty courts, except in case of great atrocity, visit the offenses of seamen with the accumulated load of forfeiture of wages and compensation in damages. They stop at the forfeiture of wages antecedently earned; and in the application of forfeiture the advance wages are made a charge on the forfeited wages, but the hospital money is apportioned ratably on the wages for the whole voyage. If the seaman quits the ship involuntarily, or is driven ashore by reason of cruel usage, and for personal safety, the wages are not forfeited. On the other hand, it is the duty of the seamen to abide by the vessel as long as reasonable hope remains; and if they desert the ship under circumstances of danger or distress from perils of the sea, when their presence and exertions might have prevented damage, or restored the ship to safety, they forfeit their wages, and are answerable in damages. And even when a seaman might well have been discharged in the course of the voyage for gross misbehavior, if the master refuses to discharge him, and leaves him in imprisonment abroad, he will in that case be entitled to his wages until his return to the United States, after deducting from the claim his time of imprisonment.—Leone Levi's *Com. Law of the World*, vol. ii. p. 226. See *Mercantile Guide*, London, 8vo; *Am. Whig Rev.*, ii. 230. Hospitals for Seamen, see *New England Review*, iii. 481; Hunt's *Merchants' Mag.*, xl. 844, xi. 230 (J. H. Lanman).

Statement of Receipts and Classification of Expenditures of the Marine Hospital Fund of the United States for the fiscal Year ending June 30, 1857.

States.	Seamen admitted.	Seamen discharged.	Board and Nursing.	Medical Services.	Medicine.	Traveling Expenses.	Clothing	Other Charges.	Funeral Expenditures	Deaths.	Total Expenditures	Hospital Money collected.
Maine	410	487	$8,875	$2,957	$478	$4	....	$291	$53	8	$12,758	$6,907
New Hampshire	113	112	783	248	12	...	....	10	6	1	1,060	197
Vermont	14	16	135	62	8	...	....	2	...	..	208	176
Massachusetts	554	554	19,094	2,624	1,625	13	....	2,854	54	25	26,816	21,627
Rhode Island	125	128	1,979	837	435	...	....	34	24	3	3,310	1,492
Connecticut	123	145	1,845	343	13	...	....	22	72	11	2,297	3,336
New York	1236	1,305	33,555	996	634	...	....	863	344	58	36,793	50,138
New Jersey	27	31	704	257	50	...	....	10	16	3	1,038	4,749
Pennsylvania	222	384	14,476	1,197	404	...	$574	279	226	30	17,159	9,972
Delaware (no return)	....	....	....	....	..	...	....	....	....	..	....	1,185
Maryland	284	251	4,361	6	..	...	....	44	100	20	4,532	7,172
District of Columbia	38	30	633	....	..	...	....	6	12	2	701	400
Virginia	220	227	4,148	2,007	301	...	5	65	83	9	6,610	6,659
North Carolina	316	393	5,767	2,632	575	...	25	190	54	8	9,274	2,300
South Carolina	173	213	3,560	137	..	...	....	41	114	19	3,662	2,225
Georgia	297	284	2,735	1,011	525	84	....	44	114	19	4,515	826
Alabama	134	146	9,325	1,904	749	...	....	636	55	9	12,701	2,756
Mississippi	11	12	5,130	2,222	68	...	....	231	...	..	7,652	324
Florida	285	295	6,882	2,369	914	...	....	1,317	90	11	11,573	1,984
Louisiana	1279	1,254	34,767	3,549	2,330	...	....	407	192	49	41,247	15,111
Texas	114	155	4,486	57	19	...	....	50	30	5	5,143	1,060
Missouri	527	438	9,887	998	448	...	....	970	100	59	12,405	4,482
Arkansas	235	195	6,864	866	499	...	....	....	252	46	8,482	....
Ohio	201	250	13,256	1,217	1,386	3	....	429	121	20	16,415	3,967
Michigan	541	518	2,750	1,741	4	...	....	82	48	8	4,625	2,157
Illinois	558	575	11,625	1,382	841	...	....	8,511	84	15	22,444	3,105
Wisconsin	197	200	2,323	877	124	...	3	74	26	4	3,430	924
Iowa (no return)	...	...	....	....	....	....	....	....	....	..	....	102
Indiana	...	...	....	....	....	....	....	2,462	....	..	2,462	304
Kentucky	25	23	12,136	2,754	1,048	...	....	1,021	241	..	17,202	1,665
Tennessee	144	111	1,029	...	...	...	....	10	13	3	1,053	732
Oregon Territory	....	....	....	....	....	....	....	....	....	..	....	163
California	1247	1,212	38,690	4,166	2,971	...	....	463	574	48	46,856	8,854
Washington Territo.	...	...	7	...	...	...	....	...	...	..	7	238
Total	9722	10,006	$253,635	$39,512	$16,485	$106	$611	$21,540	$3104	502	$343,944	$167,350

Relief of Destitute Seamen.—By the fourth section of the act of Congress, 28th February, 1803, it is made the duty of consular officers to provide for the mariners of the United States who may be found destitute within their districts sufficient subsistence and passage to the United States, in the most reasonable manner, at the expense of the United States, subject to such instruction as the Secretary of State shall give; and the section also provides for the manner in which such mariners are to be transported to the United States. If any seaman happens at a United States consulate, not from discharge from a vessel, but from shipwreck

or otherwise, the same must be stated accordingly, with the time he arrived at the consulate, so that the return will show how and when each relieved seaman happened there. And if no extra wages are received, the reasons why such wages have not been received should appear from the return, or other accompanying papers.

When American seamen are discharged in any port from sickness or any other cause, the three months' extra wages should invariably be exacted as required by the acts of February 28, 1803, and of August 18, 1856. The three months' extra wages are to be credited in consular accounts, and the two-thirds thereof are not to be paid to seamen until they shall have engaged on board some vessel to return to the United States; and then only when no disbursements shall have been made on their account. Expenses incurred for them are first to be paid, and the balance only, if any, to be returned them. On payment of the two months' extra wages to seamen, consular officers will take and forward receipts with their accounts. Whenever a ship or vessel belonging to a citizen of the United States is sold in a foreign country, and her company discharged, or when a seaman or mariner, a citizen of the United States, is with his own consent discharged in a foreign country, it is the duty of the master or commander to produce to the consular officer the certified list of his ship's company, and pay to such consular officer for every seaman or mariner so discharged, being designated on such list as a citizen of the United States, three months' pay, over and above the wages which may then be due to such mariner or seaman; two-thirds thereof to be paid by such consular officer to each seaman or mariner so discharged, upon his engagement on board of any vessel to return to the United States, and the other remaining third to be retained for the purpose of creating a fund for the payment of the passages of seamen or mariners, citizens of the United States, who may be desirous of returning to the United States, and for the maintenance of destitute American seamen.

Whenever any seaman or mariner of any vessel of the United States deserts such vessel, the master or commander of the vessel is required to note the fact and date of the desertion on the list of the crew, and to have the same officially authenticated at the port or place of the consulate or commercial agency first visited by the vessel after such desertion. If the desertion shall have occurred in a foreign country, or if, in such case, the vessel shall not visit any place where there is any consulate or commercial agency before her return to the United States, or if the desertion shall have occurred in the United States, the fact and time of desertion shall be officially authenticated before a notary public immediately at the first port or place where such vessel arrives after the desertion. All wages that may be due to such seaman or mariner, and whatever interest he may have in the cargo of such vessel, shall be forfeited to and become the property of the United States, and paid over for their use to the collector of the port where the crew of such vessel are accounted for as soon as the same can be ascertained, first deducting therefrom any expense which may necessarily have been incurred on account of such vessel in consequence of such desertion. In settling the account of such wages or interest, no allowance or deduction shall be made, except for moneys actually paid, or goods at a fair price supplied, or expenses incurred to or for such seaman or mariner, any receipt or voucher from or arrangement with such seaman or mariner to the contrary notwithstanding.

Upon the application of any seaman or mariner for a discharge, if it shall appear to the consular officer that he is entitled to his discharge under any act of Congress, or according to the general principles or usages of maritime law as recognized in the United States, he is required to discharge such seaman or mariner, and require from the master or commander of the ship or vessel from which such discharge shall be made the payment of three months' extra wages, as provided by the act approved February 28, 1803; and it shall be the duty of such master or commander to pay the same, and no such payment, or any part thereof, shall be remitted in any case, except such as are mentioned in the preceding section, and in cases of wrecked or stranded ships or vessels, or ships or vessels condemned as unfit for service, when no payment of extra wages shall be required. The extra wages required to be paid by the foregoing clause of this section are applicable to the same purposes and in the same manner as is directed by the act approved February 28, 1803, in regard to the extra wages required to be paid by that act.

If the first officer, or any officer and a majority of the crew, of any vessel make complaint in writing that she is in an unsuitable condition to go to sea, because she is leaky, or insufficiently supplied with sails, rigging, anchors, or any other equipment, or that the crew is insufficient to man her, or that her provisions, stores, and supplies are not, or have not been during the voyage, sufficient and wholesome, thereupon, in any of these or like cases, the consular officer of the port is required to appoint two disinterested competent practical men, acquainted with maritime affairs, to examine into the causes of complaint, who must, in their report, state what defects and deficiencies, if any, they find to be well founded, as well as what, in their judgment, ought to be done to put the vessel in order for the continuance of her voyage.

By the 4th section of the act of February 28, 1803, all masters and commanders of vessels belonging to citizens of the United States, and bound to some port of the same, are required and enjoined to take on board their ships or vessels, at the request of the consular officers, such American seamen as may be found in their districts respectively, and to transport them to the port in the United States to which such ships or vessels may be bound, on such terms, not exceeding ten dollars for each person, as may be agreed upon between the said masters and consular officers. And the said seamen shall, if able, be bound to do duty on board such ships or vessels according to their several abilities. To enable the master of the vessel to obtain the payment specified, the consular officer will give him a certificate, stating the names of the seamen placed on board, and the amount to be paid for their passage; on which, upon the arrival of the vessel in a port of the United States, an indorsement must be made by the collector of the customs at such port, stating that such seamen have arrived in said vessel in his district. When the certificate so indorsed is received at the Treasury Department, the amount will be paid to its holder. No master or captain of any ship or vessel is obliged to take a greater number than two men to every one hundred tons burden of the said ship or vessel on any one voyage.

Wages of Seamen.—The general rule in regard to the wages of seamen is, that such wages on board of merchant ships are payable out of the earnings for freight; and if no freight is earned, by reason of the perils of the sea or capture by the enemy, and not by the fault or neglect of the master or owner, no wages are due. The maxim that "freight is the mother of wages" is a formula which, though it has obtained general currency, is to be carefully scrutinized in its application. A distinction is to be made between those accidents by which the voyage is interrupted and the freight lost, without the fault of the owner or master, and other causes arising from the acts of the owner or master. If the voyage or freight be lost by the negligence, fraud, or misconduct of the owner or master, or voluntarily abandoned by them; if the owner has contracted for freight upon terms or contingencies differing from the general rules of the maritime law; or, if he has chartered his ship to take a freight at a

foreign port, and none is to be earned on the outward voyage—in all these cases the mariner is entitled to wages, notwithstanding no freight has accrued. Where freight is, *or might be*, earned, wages are due for the full period of employment in the ship's service, whether the freight is actually received by the owner or not. No private contract between the owner and the shipper, with regard to freight, can affect the right to wages.

If the vessel and cargo are lost on the outward voyage, before any freight is earned, and no part of either is saved by the crew, the wages of the seamen are also lost, and the original contract therefor is annulled, but the advance wages are not in such case to be returned. If the vessel is lost on the homeward voyage, and freight has been, or might have been, by the general principles of law, earned to an outward port, the wages for the outward voyage to that port are deemed to have been earned. No abatement is to be made from the wages in case of the freight being partially lost or diminished by maritime accidents or perils. If freight is earned, whether it be large or small, the whole wages, which are deemed to have been earned, are to be paid without deduction. When the vessel is lost between intermediate ports, the wages are to be calculated up to the last port of the delivery or receipt of cargo, and for half the time that the ship lies there. Where a voyage is divided by various ports of delivery, a claim for proportional wages attaches at each of such ports of delivery upon safe arrival; and all attempts to evade or invade that title, by renunciations obtained from the mariners without any consideration, by collateral bonds, or by contracts inserted in the body of the shipping articles, not usual, not fully explained to these illiterate and inexperienced persons, are ineffectual and void.

Protection and Care of Seamen.—It is provided by the 16th section of the act of July 20, 1840, that the crew of any vessel shall have the fullest liberty to lay their complaints before the consular officer in any foreign port, and shall in no respect be restrained or hindered therein by the master or any officer, unless some sufficient and valid objection exist against their landing; in which case, if any mariner desire to see the consular officer, it shall be the duty of the master to acquaint him with it forthwith, stating the reason why the mariner is not permitted to land, and that he is desired to come on board; whereupon it shall be the duty of such officer to repair on board and inquire into the causes of the complaint, and proceed therein as the act directs.

Desertion.—In countries with which the United States have stipulations by treaty or convention to authorize it, or where it is permitted by the local authorities, consular officers may apprehend deserters as fugitives from justice, and imprison them until required by their commander.—*Consular Regulations*, United States, 1856.

For further information upon the rights and duties of seamen, *see articles* AFFREIGHTMENT, CHARTER-PARTY, COMMERCE, INSURANCE, SHIPPING, etc. *See also* KENT'S *Com.* vol. iii. p. 231; PARSONS'S *Mercantile Law*, p. 385; DUNLAP'S *Digest of the Laws of the U. S.*

Seaworthy, a term applied to a ship, indicating that she is in every respect fit for her voyage. It is provided in all charter-parties that the vessel chartered shall be "tight, stanch, and strong, well appareled, furnished with an adequate number of men and mariners, tackle, provisions, etc." If the ship be insufficient in any of these particulars, the owners, though ignorant of the circumstance, will be liable for whatever damage may, in consequence, be done to the goods of the merchant; and if an insurance have been effected upon her, it will be void. But whether the condition of seaworthiness be expressed in the charter-party or not, it is always implied. "In every contract," said Lord Ellenborough, "between a person holding himself forth as the owner of a lighter or vessel ready to carry goods for hire, and the person putting goods on board, or employing his vessel or lighter for that purpose, it is a term of the contract on the part of the lighterman or carrier *implied by law*, that his vessel is tight, and fit for the purpose for which he offers and holds it forth to the public; it is the immediate foundation and substratum of the contract that it is so. *The law presumes a promise to that effect on the part of the carrier, without any actual proof;* and every reason of sound policy and public convenience requires that it should be so."

A ship is not seaworthy unless she be provided with all the documents or papers necessary for the manifestation of the ship and cargo. Neither is she seaworthy, if, during war, she be not supplied with the sails required to facilitate her escape from an enemy. "It is not sufficient to defeat the liability of the owner that he did not know that the ship was *not* seaworthy, for he ought to have known that she was so at the time he chartered her. The sufficiency of the ship is the foundation of the contract between the parties, and a ship not capable of conveying the goods in a proper state is a failure of the condition precedent to the whole contract. The seaworthiness of the ship is not a question of fraud or good intention, but it is a positive stipulation that the ship shall be so; and therefore, although the owner may himself have been deceived by the ship-builder, repairer, etc., if the vessel be, in fact, unseaworthy, have an insufficient bottom or unsound timbers, it is a breach of a preliminary condition, and is fatal, as such, to the contract."—HOLT'S *Law of Shipping.* It is only necessary, to guarantee the owners from loss, that the ship should be seaworthy at the time of her departure. She may cease to be so in a few hours, and yet they may not be liable. The question to be decided in such cases always is, whether the ship's disability arose from any defect existing in her *before* her departure, or from a cause which occasioned it *afterward.* But if a ship, within a day or two of her departure, become leaky or founder at sea, or be obliged to put back, without any visible or adequate cause to produce such an effect—such as the starting of a plank or other accident, to which the best ships are liable, and which no human prudence can prevent—the fair presumption is that she was not seaworthy when she sailed; and it will be incumbent on the owners to show that she was seaworthy at that time. They are liable for damage occasioned by every injury arising from any *original defect* in the ship, or from bad stowage; but they are not liable for any injury arising from the act of God, the king's enemies, or the perils of the sea.

It is further to be observed, that how perfect soever a ship may be, yet if, from the nature of her construction, or any other cause, she be incapable of performing the proposed voyage, with the proposed cargo on board, she is not seaworthy. *She must be in all respects fit for the trade in which she is meant to be employed.* And it is a wholesome rule that the owners should be held to a pretty strict proof of this. It has been already observed that any defect in point of seaworthiness invalidates an insurance upon a ship. There is not only an express but an implied warranty in every policy that the ship shall be "tight, stanch, and strong, etc.;" and the reason of this is plain. The insurer undertakes to indemnify the insured against the *extraordinary and unforeseen perils of the sea;* and it would be absurd to suppose that any man would insure against those perils, but in confidence that the ship is in a condition to encounter the *ordinary perils* to which every ship must be exposed in the usual course of the proposed voyage.

"In many ports certain equipments would now be considered essential which at an earlier period were not customary on the same voyages. Seaworthiness is to be measured by the standard in the ports of the country to which the vessel belongs, rather than that in the port or country where the insurance was made. * * * A vessel may be seaworthy while lying in port

for the purposes to which she is to be there applied, when she would not be for the voyage, and she may be seaworthy for one voyage and not for another. It is sufficient if she be seaworthy for the voyage when she sails. The general rule is, that the vessel must be seaworthy at the commencement of the risk, whatever that risk may be, in order to make the policy attach and charge the insurer. It was held, in the case of *Wier* vs. *Aberdeen*, that though a ship be unseaworthy at the commencement of the risk, yet, if the defect be cured before a loss, a subsequent loss is recoverable under the policy. The argument of Lord Tenterden in favor of this doctrine is very weighty, but a doubt seems to have been thrown over its solidity by the Supreme Court of the United States.—See *M'Lanahan* vs. *The Universal Insurance Co.*;" KENT's *Com.* vol. iii. p. 364.

For further information upon this subject the reader is referred to the able and excellent work of Chief-justice Abbot (Lord Tenterden) on the *Law of Shipping*, part iii.; HOLT *on Shipping*, part iii.; Mr. SERGEANT MARSHALL *on Insurance;* KENT's *Comm.* vol. iii.; and PARSONS's *Mercantile Law.*

Seeds, in *Commerce*, the grains of several species of gramina. Those of most importance are clover seed, flax or linseed, hemp seed, rape seed, mustard seed, etc.; for which see the respective articles.

Segars, or **Cigars.** *See* TOBACCO.

Seizure, in *Commerce*, the arrest of some merchandise, movable, or other matter, either in consequence of some law, or some express order of the sovereign. Contraband goods, those fraudulently entered, or landed without entering at all, or at wrong places, are subject to seizure.

Senegal and Dependencies. Gorée is the only port which foreign vessels are permitted to enter. Vessels of the United States pay a duty of 18¾ cents per ton. By decree of January 6, 1855, foreign vessels visiting Gorée are subject to a duty of 50 centimes per ton, about one half of a franc, or 9·3 cents. They are upon an equal footing with those of France in respect to navigation duties. Up to 1831, the exportation of gum Senegal was limited to France. By a royal ordinance of that year it is permitted to be exported to all countries from the port of Gorée only. Merchandise of every kind and of every production (Guineas or India-blue cloths excepted) can be imported into or exported from the island of Gorée by vessels of all nations, free of duty.

The name Senegal is derived from the great river of that name, and includes several small French colonies, embracing a number of little islands, and a strip of the main land between the Senegal and Gambia rivers. It is divided into a northern and a southern arrondissement. The total native population of these settlements amounted in 1836 to upward of 18,000. They are all Mohammedan and blacks. The soil of the islands is very poor. The main land, not near the shore, is fertile, and covered with forests. The climate is sultry, and extremely unhealthy. The rainy season lasts from June to October, and breeds fatal diseases. Gold is found near the sources of the Senegal, but attempts to form settlements there have proved abortive. Salt is quite abundant. The vegetable products are varied and luxuriant. There may be found the gigantic palm, the gum, mimosas, ebony, cotton, indigo, coffee, annatto, olives, hemp, cassia, sweet potatoes, millet, maize, etc. The wild animals are the elephant, lion, hippopotamus, boar, buffalo, tiger-cat, deer, and an immense variety of birds. Oxen, goats, mules, horses, and asses are used for domestic purposes, and sheep and hogs are bred.

The articles of export are raw hides, wax, elephant teeth, gum Senegal, cabinet woods, and gold. The value of the exports, including goods re-exported, is about $1,300,000; and the value of the imports is about $2,350,000. The imports are chiefly linen and cotton goods, ready-made clothing, brandy, liquors, wines, and some provisions.

Senna (Fr. *Sné*; Germ. *Sennablater*; It. *Senna*; Sp. *Sen*; Lat. *Cassia Senna*; Arab. *Suna*). The plant (*Cassia Senna*) which yields the leaves known in commerce and the *materia medica* by the name of senna is an annual, a native of Upper Egypt, and Bernou in Central Africa. The senna, after being collected in Upper Egypt, is packed up in bales and sent to Boullac, where it is mixed with other leaves, some of which are nearly equally good, while others are very inferior. After being mixed, it is repacked in bales at Alexandria, and sent to Europe. A great deal of senna is imported from Calcutta and Bombay, under the name of East India senna; but it is originally brought to them from Arabia.—THOMSON's *Dispensatory.* Senna is very extensively used in medicine.

Sequ.., a gold coin struck at Venice, and in several parts of the Grand Seignior's dominions. In Turkey it is called *dahob*, or piece of gold, and, according to Volney, is in value about 8*s.* 6*d.* sterling. It varies, however, considerably in its value in different countries. At Venice it is equal to about 9*s.* 2*d.* sterling.

Sewing Machines, a recent French invention for stitching. The piece of cloth is laid down flat upon a cushion; the seamstress who works the machine sits at a kind of lathe, on which the cushion is laid, and works a treadle with her foot; at each movement of the treadle a needle descends vertically and pierces the cloth, carrying with it a thread; the needle has a small hook or notch on one side, which catches and brings up a thread on its return from the hole; and thus, two or three hundred times in a minute, a thread becomes interlaced in the manner of "chain-stitch," or "tambour work." The machine, which costs twenty or thirty guineas, can embroider as much cloth in an hour as an embroideress can complete in a day. Another French machine, by M. Seneschal, of Paris, is more complex in its construction, and is intended for sewing coarse cloth. Great ingenuity is shown in the arrangement of the several parts; the machine pierces its own holes, inserts its own thread, tightens the thread after insertion, and shifts the cloth as the work advances, at the rate of forty or fifty stitches a minute. Barlow's (English) patent stitching machine for making articles of dress: two distinct threads are used, one at the front and the other at the back of the fabric, so that each stitch forms an independent fastening. Judkins's (English) sewing machine, said to be "suited to sewing either a circle, curve, or straight line, at the rate of 500 stitches per minute." There are racks or toothed arms employed, straight or curved, according to the shape of the work to be done; there are two threads, one in a reel and one in a shuttle; and a needle very ingeniously entangles these threads one in another, through the holes pierced in the cloth. The United States have also contributed to the list of machines. Of Morey's sewing machine, made at Boston, the following character is given: "By a very simple process, straight and curvilinear seams are sewn in cotton, linen, or woolen cloth with great rapidity. With one attendant, it will accomplish the work of five seamstresses; it is easily wrought, is not liable to get out of repair, and is readily applicable to almost every variety of plain stitch. In the large ready-made clothing establishments in the United States it is universally used." Among the most prominent patents now in use in this country are Grover and Baker's, Wheeler and Wilson's, and Singer's.

Sextant (Lat. *sextans*, the sixth part; the limb of the instrument being the sixth part of a complete circle), an instrument for measuring the angular distances of objects by reflection. The sextant is capable of very general application; but it is chiefly used as a nautical instrument for measuring the altitudes of celestial objects, and their apparent angular distances. It is an instrument of the utmost importance in naviga-

tion. The sextant is used in the manner of a quadrant, and contains sixty degrees, or the sixth part of a circle. It is for taking the altitude of the planets, etc. Invented by the celebrated Tycho Brahe, at Augsburg, in 1550.—VINCK'S *Astronomy*. The Arabian astronomers under the califs are said to have had a sextant of fifty-nine feet nine inches radius, about A.D. 995.—ASHE.

Shagreen (Ger. *Schagrin;* It. *Chagrin;* Russ. *Schagrim Schagren*), a kind of grained leather, used for various purposes in the arts. It is extensively manufactured at Astrakhan, in Russia.—*See* TOOKE'S *Russia*, vol. iii. p. 403.

Shallop, or **Sloop**, is a light vessel, with only a small mainmast or foremast, and lug-sails to haul up and let down on occasion. Shallops are commonly good sailers, and are therefore often used as tenders upon men-of-war.

Shammy, or **Chamois Leather** (Ger. *Sämischleder;* Fr. *Chamois;* It. *Camoscio;* Russ. *Swschanüi, Koshi*), a kind of leather dressed in oil, or tanned, and much esteemed for its softness, pliancy, and capability of bearing soap without hurt. The real shammy is prepared of the skin of the chamois goat. But leather prepared from the skins of the common goat, kid, and sheep is frequently substituted in its stead.

Shanghai, a city and river port of China, province of Kiang-su, on the Woosung River, 40 miles by water from the sea, and 169 miles east-southeast from Nankin; lat. 31° 12′ N., long. 120° 53′ E. Population estimated at from 115,000 to 135,000. It stands in a level and well-cultivated plain, producing good crops of cotton, rice, and wheat. Immediately outside the wall by which it is inclosed are several populous suburbs. Streets narrow and filthy. Foundling hospitals, tea-gardens, and vast ice-houses, are the objects most worthy of notice in the city. It has a Mint, with manufactures of silk, vegetable oils, and oil-cake (of which vast quantities are annually sent into the interior), iron ware, glass, paper, ivory ware, etc. This is the most northerly of the five Chinese ports opened to foreigners by the treaty of 1842, and, excepting Canton, it is also the most important. The river, which may be navigated by ships of 450 or 500 tons for a considerable distance above the town, crosses the Grand Canal, so that Shanghai is an entrepôt for all the vast and fertile country traversed by the canal, and by the great rivers, including the Yang-tse-Kiang and the Hoang-Ho, with which it is connected. Hence the present importance of the emporium, and hence, also, the indefinite extension to which its foreign trade will probably attain. Its inland and coasting trades are both very extensive. It is said to be annually visited by from 5000 to 6000 canal and river boats, some from very great distances, and by 1500 or 1600 coasting junks. The province of Kiang-su, in which Shanghai is situated, produces great quantities of silk; and besides supplying most part of the northern provinces of the empire, the shipments of silk to the foreigner are greater from this than from any other port. It is also well situated for the export of both green and black teas. Among the other exports are gold and silver, with oil and oil-cake, camphor, drugs, porcelain, cotton, cassia, alum, gypsum, coal, etc. Of the imports opium is by far the greatest; and at least 20,000 chests of Bombay (Malwa) and Patna opium are now annually disposed of in this market; which, supposing the chest to be worth $500, will represent an aggregate sum of $10,000,000, or £2,200,000 sterling, for which payment is almost invariably made in the precious metals! Sugar is extensively imported from Formosa, Canton, the Philippines, etc.; cotton stuffs, woolens, iron, etc., from England; with sandal-wood, birdsnests, *bêche de mer*, and other products of the Eastern Archipelago, etc. The inhabitants of Shanghai are much more hospitable and better disposed toward foreigners than those of Canton; and strangers may travel for miles into the interior all round the city with perfect security. Within the last four or five years, some very fine brick houses have been built by foreign merchants in the suburbs.—*Parl. Reports*, etc.

Commerce with the United States.—The commercial relations of the United States with China are regulated by the stipulations of the treaty of July 3, 1844. A treaty, similar in all its leading provisions, was negotiated with Great Britain in 1842, and a tariff of duties on imports and exports, and duties on tonnage, are made a part of both these treaties. Formerly, foreign intercourse, as already remarked, was confined to Canton, and hither were brought from the distant parts of the empire teas, silks, and other leading staples of China. Trade was invariably conducted through the intervention of *hong* merchants, who were licensed agents of the government, and answerable to it for all duties of import, export, and other charges accruing on the vessel, the affairs of which they managed. This system was adopted as a precautionary measure for securing the duties and other dues levied on foreign vessels; but the treaties referred to containing ample stipulations respecting this subject, the agency of the hong merchants has been abolished, and their duties transferred to the consuls of the nations to which the vessels respectively belong. The treaty between the United States and China guarantees the same commercial advantages and privileges to the citizens of the United States that are or shall be conceded to the citizens of any other foreign power. Fees and charges of every kind not comprehended in the treaty are abolished. Trade is permitted to the five ports of Kwang-chow, Amoy, Foo-chow, Ningpo, and Shanghai, and from either of the said ports to any other of them; but it is prohibited to any other ports in the empire, or along the coasts thereof, under a penalty of confiscation of vessel and cargo. Trade is subject to no restrictions as to origin or nature of cargo, or port of departure, with the exception of the article opium, which is declared contraband. Captains, on entering, are required to deposit their papers with the consul of their nation, who will notify the proper local authority of the name and tonnage of the vessel, names of the crew, and nature of cargo. Tonnage duty is fixed at 5 maces (equal to 74 cents) per ton, if the vessel is over 150 tons burden; 150 tons or under, 1 mace (equal to 14·8 cents) per ton. Before cargo can be landed, a permit must be obtained from the local authority, under a penalty of $500 and forfeiture of goods so landed.

Standards of weights and measures are to be supplied by the Chinese government to the consuls of the different nations, to secure uniformity, and prevent confusion in measures and weights of merchandise. The former limitation of foreign trade to hong merchants, appointed by the government, is abolished; and citizens of the United States are permitted to trade with any and all subjects of China, without distinction. The privilege is conceded of re-exporting into any other port any merchandise imported into any one of the five ports, without being subject to any additional duty, provided the full duty was paid when first imported, and the goods remain with their original marks unchanged; but this privilege must be specially applied for through the American consul. The other provisions of the treaty apply mostly to the privileges, and duties, and police regulations, applicable to the consuls, merchants, and citizens of the United States at the five ports. Shipping dues, formerly charged on the measurement of the ship's length and breadth, at so much per *chang*, and all the old charges of measurement, entrance, and port clearance fees, daily and monthly fees, etc., are also abolished by this treaty; and the tonnage duty on the registered tonnage of the vessel, specified in the preceding synopsis, is substituted in lieu thereof. Commercial relations between the United States and China date from a period as early as 1784. In the month of February of that year,

it appears that the *Empress of China*, a ship of 360 tons, sailed from New York for Canton, and returned the following year with a rich and valuable cargo. The success, as well as the novelty of this adventure, attracted no little attention throughout the country. The ensuing year another voyage was made, in a small vessel of only 84 tons burden, with equal success. Merchants were soon induced to engage in an enterprise which promised the most flattering results; and as early as 1789, five years after the American flag had first entered the Chinese seas, fifteen American ships arrived at Canton. Such was the origin of an extensive and profitable trade between the United States and the Celestial empire.

The geographical position, excellent shipping facilities, and proximity to the fertile valley of Yang-tse-Kiang, would seem to point to Shanghai as a port possessing pre-eminent advantages, which, when fully developed, must make it a flourishing and primary station. The following extract in relation to the trade of Shanghai is from an official communication addressed to the Department of State, dated Shanghai, August 7, 1855: "It will be observed that the export trade for the first six months of 1855 has more than doubled any previous one; and, inasmuch as the business season is just opening, it may safely be inferred that the value of exports for this year will be about double that of any previous one. The disorganized state of the rest of the empire, the equal and regular levy duties at this port, and its superior geographical position, are the main causes of the concentration of trade at this point. The imports have been small, because it has required some time to dispose of the enormous quantities which had collected at this port during the period the city was in possession of the rebels. That important branch of our trade will now, I believe, revive; and if our government will but vigorously and prudently nourish the facilities now enjoyed at this port, a commerce may be developed rivaling Calcutta in importance, and superior to any other port in the East. The great valley of the Yang-tse-Kiang is the commercial field, and this port is the entrepôt. The greatest privileges conceivable might be obtained at all the other ports, and yet one half of such facilities at this port would be productive of more advantage than could by any possibility be derived from all the other ports combined. Foo-chow will in time be a port of some importance for the purchase of a few black teas, but no more. Amoy and Ningpo never have furnished any thing worthy of notice; and Canton was only a port of trade, because the Chinese had been in the habit of going there to trade with foreigners when there were no other ports open. But the difficulty created by the rebellion has diverted the great mass of the trade from its ancient and out-of-the-way channel, and concentrated it here. And now that the Chinese find Shanghai to be nearer to their tea and silk districts than Canton, and that they can often get better prices, and always as good as at Canton, they will abandon their old and long route to a port of sale, and will continue to concentrate at Shanghai. This they have done last year, as well as the present; and already they have made contracts on next year's produce, deliverable at this port."

In another and later communication, it is stated that property in houses and lands, to the value of a million of dollars, is owned by American citizens in Shanghai.

Navigation and Trade.—The number and tonnage of American vessels, inward and outward, at the port of Shanghai, for the years designated, were as follows:

Years.	Inward.		Outward.	
	Vessels.	Tonnage.	Vessels.	Tonnage.
1849	24	9,826	24	9,877
1850	37	13,308	34	14,464
1851	54	27,634	53	26,097
1852	66	38,740	70	40,592

The number of American vessels entered at Shanghai during the first six months of 1855 was 28, with an aggregate tonnage of 27,480.

The cargoes inward consisted of stone coal, sugar, drills, general merchandise, and assorted cargoes, suitable for the Chinese markets, valued at $268,997. The cargoes outward were chiefly silk and tea, valued at $1,480,198. Of the vessels inward, there were from the Atlantic ports direct, 2, with an aggregate of 1235 tons; and from the Pacific ports 13, with an aggregate of 13,839 tons. The following is a summary of the navigation and trade of the port of Shanghai with the United States during the last six months of 1855:

Number of American vessels entered, 57; measuring 27,262 tons. Number of American vessels entered from Atlantic ports, 4; measuring 1589 tons. Number of American vessels entered from Pacific ports, 10; measuring 10,632 tons. Number of American vessels entered from foreign ports, 36; measuring 13,000 tons. The returns do not give the ports of departure of seven of the American vessels entered. The number of American vessels cleared from the port of Shanghai during the same period was 57; aggregate tonnage, 30,512 tons. Of these, 13 vessels, all freighted with tea and silk, proceeded direct to New York, and the remainder to foreign ports.

During the same period, the duties paid by the American flag to the authorities at Shanghai were:

	* Tael.	Mace.	C.	C.			
Imports	19,224	6	9	5	= in U. S. currency		$28,452
Exports	456,048	7	7	1	"	"	674,952
Tonnage dues.	13,539	8	0	0	"	"	20,088
Total duties of import, export, and tonnage							$723,442

The following statement exhibits the total tonnage of vessels at the port of Shanghai during the last six months of 1855:

British	42,865 tons.	Swedish	833 tons.
United States.	27,262 "	Spanish	1,163 "
Danish	1,895 "	Portuguese	1,126 "
Hamburg	1,828 "	Siamese	1,845 "
Dutch	3,827 "	Peruvian	764 "
Bremen	554 "	Total	82,462 "

The following is a summary statement showing the quantity of teas exported from Shanghai to the United States during the last six months of 1855:

Black tea	289,442	pounds.
Green tea	14,511,354	"
Total	14,809,796	"

All exported in 16 American vessels.

The following is a summary statement showing the quantities of teas exported from Shanghai to all countries during the last six months of 1855:

To Great Britain, in 31 vessels			21,518,927	pounds.
To United States	16	"	14,800,796	"
To Australia	7	"	1,039,674	"
To Hamburg	1	"	928,536	"
Grand total			38,277,933	"

SUMMARY STATEMENT SHOWING THE QUANTITIES OF RAW SILK, SILK PIECE GOODS, ETC., EXPORTED FROM SHANGHAI TO THE UNITED STATES (NEW YORK) DURING THE LAST SIX MONTHS OF 1855.

Articles.	Cases.	Piculs.	Catties.
Raw silk	720	526	92
Silk piece goods	1286	...	..
Nankeens	40	...	..
Straw braid	25	...	..
Rhubarb	620	379	57
Fans	10	...	..

QUANTITIES OF RAW SILK EXPORTED FROM THE PORT OF SHANGHAI DURING THE LAST SIX MONTHS OF 1855.

	Raw.	Thrown.	Coarse.	Total.
	Bales.	Bales.	Bales.	Bales.
To London	20,332	1848	519	22,699
Liverpool	1,376	333	8	1,712
Hong Kong	3,278	2495	23	5,796
Total	24,986	4676	545	30,207

* Tael = 10 mace = 100 candareens = 1000 cash = $1 48 United States currency.

The total trade of Shanghai during the period designated in the foregoing statements was thus distributed.

Vessels	Imports.	Exports.
British	141	139
American	51	55
Bremen	2	1
Danish	6	7
Dutch	8	14
Hamburg	11	11
Peruvian	3	3
Portuguese	5	5
Siamese	4	2
Spanish	5	6
Swedish	9	9
Total	245	243

Total value of the trade of Shanghai during the last six months of 1855: Imports, $2,812,019; exports, $501,786. Total trade, $3,313,305. During the last six months of 1855 great improvements were made in the navigation of the River Woosung, on which the port of Shanghai is situated, and, from having been one of the most dangerous of access in the Pacific, it has been made one of the safest and easiest. The expense of the work ($20,000) was defrayed by the Chinese authorities. A system of pilot regulations, agreed upon by the consuls of the United States, Great Britain, and France, was ratified by the superintendent of customs, and is as follows:

Pilot Regulations.—The following rules and regulations for the government of pilots, native and foreign, at the port of Shanghai are hereby issued and made binding by his excellency Chaou, superintendent of customs, in communication with the consuls of the three treaty powers:

1st. A board shall be appointed by the three consuls, sanctioned by his excellency Chaou, consisting of not less than three, nor more than five shipmasters, with whom a naval officer shall be associated, if required, before whom all persons wishing to become pilots shall appear for examination.

2d. A certificate of competency from a majority of said board being deposited at his consulate, shall entitle the person therein named to a license as a pilot. In all cases where the nationality of the applicant is other than one of those nations in treaty with China, his certificate from the board of examiners must be deposited with the senior consul, who will obtain for him the necessary license.

3d. Every pilot-boat is to hoist a red and white flag horizontal, on which the number of his boat shall appear in black.

4th. The rates of pilotage shall be by the water the ship draws, viz.: from Gutslaff, $5 per foot; from beacon-ship, $4 per foot; from any point outside Woosung, but inside beacon-ship, $3 50 per foot; from Woosung to Shanghai, $3 per foot. The same rates of pilotage are allowed for vessels outward bound.

5th. Every pilot, on boarding a ship, shall produce, for the inspection of the master, his license as a pilot.

6th. All persons acting as pilots without a license, as hereinbefore prescribed, shall have no claim for services rendered, and shall be dealt with by their own consuls, according to law, for violating these regulations; and all such cases not coming within the jurisdiction of the three treaty consuls are to be referred to the local Chinese authorities.

7th. Pilots shall be responsible for the faithful and complete discharge of their duty; and any misconduct, either from ignorance, incapacity, willful neglect, or otherwise, being known, shall entail a forfeiture of the offender's license, in addition to any other liability he may have incurred by the laws of his own country.

8th. The foregoing regulations to take effect on and after the 10th day of December, 1855.

General Regulations.—The general regulations under which foreign trade is conducted at the five ports of Canton, Amoy, Foo-chow-foo, Ningpo, and Shanghai, are such as are usually prescribed in all well-regulated ports, and are subject to such modifications, under the treaties, as the consuls of the three nations, viz.: England, France, and the United States, may from time to time fix and determine. These regulations provide amply for all the wants of foreign commerce, and guard against extortion, unnecessary delay, or capricious embarrassments, either on the part of Chinese officials, or the captains or other officers of vessels trading at any of the five ports. To give proper sanction to, and enforce the due observance of these regulations, the consuls of the three nations, in Chinese ports, are invested with judicial as well as with the ordinary consular powers, by virtue of which they are enabled to exact strict conformity to such provisions and regulations as they may deem necessary in the maintenance of good order and the faithful fulfillment of treaty obligations. Prior to 1843, as before noted, it was the custom, when foreign vessels entered the port of Canton, that a Chinese hong merchant stood security for her, and that all duties and charges were paid through such security merchant. But the several treaties having provided for the abolition of this security system, the consuls of the different treaty nations are now substituted as security for the vessels of their respective nations entering any of the five ports. Hence one of the reasons why the powers of consuls in China should be ample, and these officers invested with full powers to control the shipping of their respective nations.

During the recent troubles in China, foreign commerce at the port of Shanghai was considerably interrupted, and the custom-house at this port was abandoned by the Chinese officials, who organized in lieu thereof two other custom-houses in the interior. An arrangement was subsequently entered into between the consuls of the three treaty powers and the Chinese authorities, by virtue of which these custom-houses were suppressed, and foreign commerce was again conducted under the usual regulations.

It may be here observed that the five ports pertain to different provincial jurisdictions, having different local administrations, and not unfrequently different commercial regulations. It is by no means rare to see, notwithstanding the treaties apply to all in common, privileges enjoyed at one which are strictly interdicted at another—perhaps at the other four. Thus, in 1855, it is stated that rice was exported to the amount of 30,000 piculs (each 133⅓ lbs.) to a vessel, free, too, of all export or other duty, save a *douceur* of 200 or 300 dollars to some subordinate; while the exportation of this article is not only forbidden at Shanghai, but the death-penalty is inflicted on such of the Chinese as are detected in violating the prohibition. The same observation applies to the emigration of coolies, which is tolerated at Amoy, but strictly forbidden at the other ports. So the importation of opium, as already stated, though illegal, is openly tolerated by Chinese officials.

The state of the currency at this port has for some time attracted attention.

A letter from the United States consul at Shanghai, under date of June —, 1855, states as follows:

"The rate of exchange here has exceeded that of Canton from 25 to 30 per cent., although the distance between the two is but 800 miles, and of easy and certain communication. Under ordinary financial rules, the difference of exchange between the two places is regulated by the cost of transportation, the insurance, and a slight per cent. for brokerage. While 2½ per cent. would be a liberal allowance on these items between this port and Canton, and Hong Kong, yet exchange has varied from 25 to 30 per cent. against this port.

"China has no currency but copper cash—one of which is equal to the sixteen-hundredth part of a dollar. All large transactions, therefore, are made in pure silver, denominated by the Chinese sycee, which is measured in taels, or a weight equivalent, when at par, to $1 58 per tael. When the foreign trade became important in China, foreign dollars were introduced; and, on account of their superior qualities as a circulating medium over the ponderous sycee, became quite popular, and were universally adopted. The Carolus dollar was the first adopted; afterward the Bolivian, Peruvian, Chilian, and Mexican; but the Carolus having been first introduced, the Chinese formed a prejudice in its favor to the extent

of a discount of 10 per cent. on all others. When this port was first opened, the Chinese received the Mexican at a premium over the Carolus, and the rupee at a premium over both; but the native brokers from Canton instilled in the traders here the same prejudice which existed where they came from, and the Carolus gradually rose in value, and the other dollars sank, until the difference has become 25 or 30 per cent., which is equivalent almost to an entire exclusion from circulation. This result was chiefly brought about by the native brokers, in conjunction with a few foreign commercial houses at this port, who have obtained the exclusive control of all the Carolus dollars that are made. The Spanish government have long since discontinued their issue, but they are made at Canton, in India, and in Mexico, though not as pure as the original dollar.

"Thus this prejudice in favor of the Carolus has been fostered by a few commercial houses, until the evil consequent upon a limited currency, and one which is becoming less and less every year, is almost beyond a remedy. The longer it is permitted to exist, the more vexatious will its remedy become. The Carolus dollar is carried into the interior to pay for teas and silks, and never returns; thus each year renders the amount of circulating medium less and less. The Carolus dollar is the standard, and, therefore, as it decreases in quantity, exchange rises. The same houses which have the control of the Carolus dollar also discount all bills of exchange, and thus hold the entire commercial machinery of this port at their control. They discount bills of exchange at whatever rates they please to fix at Canton and all the other ports in China. The foreign dollars at present circulate, according to treaty, with reference to their purity in silver as compared with sycee; but here a distinction is kept up in favor of the Carolus far above its relative value in pure silver, and against all other dollars far below theirs. Thus exchange at this port rules from 25 to 30 per cent. above any other port in China.

"The United States are great consumers of green tea, and this port supplies it. The consumer pays this extraordinary exchange on the price of tea, and thus the agent here, and the importer at home, can feel no interest in ameliorating the condition of the exchanges, as it is not their loss; but, on the contrary, as they now have control of all the circulating medium, it is to their advantage and interest to let it remain so.

"I have thus briefly endeavored to show, first, that the enormous difference of exchange at this port over any other in China is produced by a combination of native and foreign merchants; and, second, that as the United States take nearly all the green teas exported from the empire, which are all purchased at this port, and as the consumer must in the end pay all charges on the imported article, therefore the consumers of the United States are the sufferers to the full extent of this exorbitant exchange. Entertaining the conviction that it is the duty of an officer to guard and protect the interests of those whom he has the honor to represent, especially when those interests are guaranteed by the laws and treaties of the land, and not to permit the advantages of a select few to be developed at the expense of the many, I will now proceed to lay before the honorable Secretary of State the course I have pursued in giving full effect to the treaty of the United States with China in the matter of the currency. To remedy the great evil which exists at this port in relation to the currency, there appeared to be but two ways: First, a combination among the merchants that they would pay and receive all dollars alike, so far as their intrinsic value should be the same. Second, the enactment of regulations by the Chinese authorities, which would place all dollars on an equality, by their agreeing to receive them alike for all government dues. The first was impossible in a community where all are merchants possessed of as many different interests, and therefore to the second I gave my attention. The manner in which I presented this subject, and carried it through to an actual assay of the various dollars, may be fully examined by reference to the entire correspondence, which I have the honor herewith to inclose. The assay as made here differs but slightly from that made at Canton; and as there is an allowance of 1½ per cent. for difference of scales, it is more than made up.

"The whole examination of the subject proved most satisfactory to his excellency the Imperial collector of customs, and his excellency has asked for twenty days to refer the matter to his superiors, prior to carrying it into practical operation. I have therefore given notice to his excellency that on and after the 12th of July next American merchants shall be allowed to discharge all their treaty obligations at this port in foreign money, at the rates as ascertained by actual assay on the 4th instant. Great results will inevitably follow the adoption of this measure. Exchange will decline 25 or 30 per cent.—that, too, just at the opening of the business season—and will assimilate with that at Canton, plus the cost of transportation, etc., etc. The circulating medium will be in the greatest abundance. The importer in the United States will, through his agent here, realize more money on his bills of exchange, consequently he can purchase more teas and silks; and, finally, as the consumers participate alike in the advantages and disadvantages, they will be enabled to purchase teas and silks subject to the same reduction in price which the importer has enjoyed."

Currency.—The only legal coin of China is the copper cash, worth the fifteenth part of a cent; though by stipulations of the treaty of 1844 the sycee is received in payment of duties. The sycee fluctuates in price with the value of silver. The shee is worth about seventy dollars. In 1853 the American merchants residing at Shanghai addressed a memorial to the United States commissioner in China, setting forth the great inconvenience to which mercantile interests in China were subjected by the absence of an adequate circulating medium between the two extremes above named, and invoking the commissioner's aid in establishing a national Mint in that empire. To the success of such a measure the sanction and co-operation of the Chinese government are indispensable. The treaty of 1844 provides that, should experience show that any modifications hereafter become requisite in those parts which relate to commerce and navigation, the two governments will, at the expiration of twelve years from the date thereof, treat amicably concerning the same, by the means of suitable persons appointed to conduct such negotiation. The time designated will soon arrive; and should such modifications as the treaty contemplates become a subject of negotiation, the question of a national Mint, and of the currency generally, will, doubtless, demand the attention of the United States Commissioner. At Shanghai an attempt has been made by the foreign consuls to cause an official substitution of the Mexican for the Carolus dollar as the money of account.—*Com. Rel. U. S.*

From official tables it is shown, 1st. That, until the year 1850, Canton was the principal port for tea, but in that year Shanghai exported 50 per cent.; and of silk, three-fourths of the whole export was from Shanghai. 2d. That the trade of Shanghai continued to increase over that of Canton, and even Foo-chow, which derives all its trade from this emporium, until the year 1855, when Shanghai exported in tea about 80 per cent. more than both Canton and Foo-chow, and in silk almost the entire amount was furnished at Shanghai. 3d. That the grand increase of the foreign trade for twelve years is an average per annum of about 3 per cent. 4th. That the increase of silk for exportation has been, on the grand aggregate, at the rate of 8¾ per cent. per annum for the past eleven years.

It appears also, 1st. That the trade of the United States in China has increased in the last ten years 1¾ per cent. per annum. 2d. That since the year 1848 the ports of Canton and Shanghai have changed commercial positions, the latter having exported more tea the last year to the United States than the whole trade amounted to when Canton was the only port opened. 3d. That Foo-chow is now a port of more commerce with the United States than Canton, and ranks next to the most important, Shanghai. 4th. That the trade in silk to the United States has developed immensely; and as this port is the great emporium for that commodity, it will probably furnish more trade than all the others combined. 5th. That for the past year the port of Shanghai has furnished more than three-fourths of the American trade in tea, and all the silk.

Up to the year 1853, exchange was steady at from 15 to 21 per cent., but the change which followed, and the variableness which is marked, arose from the fact that the city of Shanghai being taken by the rebels on the 7th September, 1853, many large losses were incurred by the wealthy Chinese, which, creating embarrassment, engendered a lack of confidence and trust, so that money became scarce and exchange began to rise. About this time foreigners began to impose the belief on the native Chinese that the Carolus dollar was the most valuable, and at the same time secured the monopoly of all obtainable over the world, and have since been having the Mexican restamped with the Carolus dies. This latter coin does not pass well, as it is too new to the Chinese; but the old and genuine Carolus dollars are almost exhausted, and, indeed, are becoming less and less every year, while just in proportion to the supply or demand exchange rises or falls.

EXPORTS OF TEA TO ALL NATIONS FROM CHINA, FROM JUNE 30, 1850, TO JUNE 30, 1855, NOT INCLUDING THE UNITED STATES.

Exported from	Years.	Pounds.
Canton	1850–'51	42,204,000
Shanghai	1850–'51	21,816,100
Canton	1851–'52	35,617,200
Shanghai	1851–'53	29,520,000
Canton	1852–'53	32,327,600
Shanghai	1852–'53	40,578 800
Canton	1853–'54	45,181,200
Foo-chow	1853–'54	6,143,000
Shanghai	1853–'54	25,943,700
Canton	1854–'55	16,123,800
Foo-chow	1854–'55	19,512,800
Shanghai	1854–'55	50,872,400

EXPORTS OF TEA AND SILK TO THE UNITED STATES FROM CHINA, WITH THE PROPORTION FROM SHANGHAI, FOR A PERIOD OF TEN YEARS.

Year ending June 30.	Total Amount of Tea from China.	Tea exported from Shanghai alone.	Silk exported from Shanghai.
	Pounds.	Pounds.	Bales.
1845	20,702,558	....	....
1846	18,502,288	....	....
1847	18,171,625	....	....
1848	19,328,640	1,740,787	....
1849	18,672,200	2,986,332	35
1850	21,757,800	5,623,708	415
1851	28,760,800	11,068,540	250
1852	34 334,000	18,000,000	298
1853	40,974,500	22,900,800	534
1854	27,867,500	16,702,400	1074

STATEMENT OF IMPORTS INTO CHINA FROM THE UNITED STATES IN THE YEAR 1852.

Merchandise	Canton	Shanghai.	Total.
American drill....pieces.	232,246	342,115	574,361
American sheeting "	42,095	88,015	130,110
American jeans... "	40,116	64,250	104,366
Cochineal .....parcels.	23,986	....	23,986
Silver.....dollars.	122,300	....	122,300
Spelter.....parcels.	*90,424	840	*90,424 / 840
	....	....	
Lead..... "	*1,125,421	17,843	*1,125,421 / †17,843
	....	....	
Ginseng..... "	209,272	....	209,272
Flour.....barrels.	3,059	....	3,059
Beef..... "	200	....	200
Pork..... "	200	....	200
Clocks.....pieces.	114	....	114
Boards.....feet.	....	18,627	18,627
Tobacco.....pounds.	5,942	....	5,942
Gold.....onnces.	1500	....	‡500 / 13,300
	13,300	....	
Cheese.....pounds.	1,000	....	1,000
Glassware.....boxes.	203	....	203
Sperm candles ....pounds.	1,000	....	1,000

* Pounds. † Piculs. ‡ Coins.

STATEMENT OF EXPORTS FROM CHINA TO THE UNITED STATES IN THE YEAR 1852.

Merchandise.	Canton.	Shanghai.	Total.
Green teas.....pounds.	8,113,472	19,809,400	27,922,872
Black teas ..... "	9,924,334	3,033,000	12,957,334
Silk piece goods...pieces.	84,708	40,868	125,576
Crape shawls .... "	305,208	....	305,208
Grass cloth ..... "	4,127	....	4,127
Nankeens.....boxes.	100	....	100
Pearl buttons .... "	39	....	39
Camphor "	1,644	....	1,644
Vermillion ..... "	131	....	131
Oil, cassia ..... "	402	....	402
Oil, anise..... "	9,190	200	9,390
Sweetmeats..... "	2,000	....	2,000
China ware ..... "	209,553	19,999	229,552
Fire-crackers .... "	9,407	2,195	11,602
Cassia.....parcels.	60,046	....	60,046
Matting .....rolls.	9,948	....	9,948
Fans and screens..boxes.	4,867	....	4,867
Split rattans.....bundles.	749	436	1,185
Raw silk.....parcels.	317	....	317
Rhubarb.....boxes.	937	....	937
Lacquered ware... "	842	....	842
Tin.....parcels.	87	....	87

The commerce of China is conducted on the basis of imports, opium, and credits on London. The imports are a trifle; opium is about 30 per cent., and the difference is made up by a direct drain on Europe in pure silver and some dollars; the former is cast into sycee, or pure silver ingots, and rarely, if ever, leaves the empire, as it is strictly forbidden by the laws.—*See* CHINA, CANTON.

Sharks' Fins form a regular article of trade to China, and are collected for this purpose in every country from the eastern shore of Africa to New Guinea. In the Canton Price-currents they are as regularly quoted as tea or opium; and the price of late years has been, according to quality, from $15 to $18 per picul, equal to from 50*s.* to 60*s.* per cwt.

Shawls (Ger. *Schalen;* Fr. *Chals, Chales;* It. *Shavali;* Sp. *Scharalos*), articles of fine wool, silk, or wool and silk, manufactured after the fashion of a large handkerchief, used in female dress. The finest shawls are imported from India, where they are highly esteemed, and cost from $250 to $1500.

Cashmere Shawls.—The shawl manufacture is believed to have originated in the valley of Cashmere, the ancient Caspira, in the northwest of India, between lat. 34° and 35° N., and long. 78° and 76° E. Though not so flourishing as it once was, the manufacture is still prosecuted in this province to a very considerable extent. The shawls are the very best that are made, possessing unequaled fineness, delicacy, and warmth. They are formed of the inner hair of a variety of the common goat (*Capra hircus*), reared on the cold, dry table-land of Thibet, elevated from 14,000 to 16,000 feet above the level of the sea. The goat thrives sufficiently well in many other countries; but in the sultry plains of Hindostan it has hardly more hair than a greyhound; and though in higher latitudes the hair is more abundant, it is for the most part shaggy and coarse. It is only in the intensely cold and dry climate of Thibet that it yields the peculiarly soft woolly hair that constitutes the material of the Indian shawl. We do not, therefore, suppose that the efforts to naturalize the shawl-goat in France will turn out well. On the contrary, we believe the chances of success would be about equal were an attempt made to breed beavers in a hot country, without water, or camels in a moist country, free from heat and drought. The inner or fine wool is covered over and protected by a quantity of long shaggy hair, which is, of course, carefully separated from it before it is manufactured. The genuine shawl-wool has been imported into Europe, and the finest Edinburgh and Paisley shawls have been produced from it. But it must be admitted that shawls have nowhere been made that can come, as respects quality, into successful competition with those of Cashmere. The manufacture has been established at Delhi and Lahore for some years; but, notwithstanding it is carried on by native Cashmerians, and though the material employed be quite the same, the fabrics are said to want the fineness of those made in Cashmere, and to have a degenerated, coarse appearance. It is difficult to account for this superiority. It has been ascribed to some peculiar quality of the water in the valley of Cashmere; but it is most probably owing to a variety of circumstances, which, though each may appear of little importance, collectively give a character to the manufacture.

The following details as to the manufacture of Cashmere shawls have been extracted from an English paper published at Delhi: "The great mart for the wool of which shawls are made is at Kilghet, which is said to be a dependency of Ladak, and situated 20 days' journey from the northern boundaries of Cashmere. There are two kinds of it: that which can be readily dyed is white; the other sort is of an ashy color, which being with difficulty changed, or, at least, improved by art, is generally woven of its natural hue. About 2 lbs. of either are obtained from a single goat once a year. After the down has been carefully separated from the hairs, it is repeatedly washed with rice starch. This process is reckoned important; and it is to the quality of the water of their valley that the Cashmerians attribute the peculiar and inimitable fineness of the fabrics produced there. At Kilghet the best raw wool is sold for about one rupee a pound. By the preparation and washing referred to, it loses one half, and the remainder being spun, three rupees' weight of

the thread is considered worth one rupee. Shawls are made of various forms, sizes, and borders, which are wrought separately, with the view of adapting them to the different markets. Those sent to Turkey used to be of the softest and most delicate texture. Carpets and counterpanes are fabricated of the hair or coarser part of the wool. From a variety of causes, among others the destruction of the Janizaries, who dressed much in shawls, the loss of royalty in Cabul, and the ruined finances of Lucknow, it is certain that the demand for this elegant commodity has greatly declined of late years. Under the Mogul emperors, Cashmere found work for 30,000 shawl-looms. In the time of the Afghan kings, the number decreased to 18,000. There are now not more than 6000 employed. We should attribute little of this diminution to the sale of English imitations among the Asiatic nations. When these counterfeits first appeared, the pretty patterns and brilliancy of the colors took the fancy of some; but their great inferiority in the softness and warmth which mark the genuine shawl soon caused the new article to be neglected. The average value of shawls exported from Cashmere amounts annually to 1,800,000 rupees. Runjeet Singh took two-thirds in kind as part of the gross revenue of the province, which was about 25 lacs a year. He is said to have sold three-fourths of what he thus received, and to have kept the remainder for his own court. Of those disposed of by him and left for sale in the valley, seven lacs' worth went to Bombay and Western India; three to Hindostan, chiefly Oude; half a lac each to Calcutta, Cabul, Herat, and Balk, whence some were carried to neighboring countries. A curious calculation of the successive exactions, from Cashmere to Bombay inclusive, which magnify the price of shawls, is herewith subjoined.

"ACTUAL COST FOR MATERIALS AND LABOR IN MAKING A PAIR OF REEL SHAWLS.

	Fd.	rs.
Four Furrukabad seers of wool	12	8
Cleaning, washing, and spinning	50	0
Dyeing	11	0
Wages to weavers	264	6
Total	337	14
Duties on the same.		
On sale and importation to Cashmere	3	14
On the thread	8	4
While the fabric is in the loom	125	0
Fees to chowdries, brokers, assessors, etc.	35	0
Total amount of duties in Cashmere	171	18
Duties from Cashmere to Amritsir	12	6
" " Amritsir to Bombay	3	6½
" at Bombay	70	0
Total from Amritsir to Bombay	85	12½
Total from Kilghet to Bombay, 171 18 and 85 12½ =	252	30½
Prime cost	337	14
Proportion of carriage	0	12
Insurance	21	0
Total cost	610	56½

"A pair of such shawls might sell for 500 rupees at Amritsir, and in Bombay for 900. The amount of the imports, and the sums levied by each government, will appear more in relief if stated as they affect a camel-load in its progress. It consists of fourteen and a half cutcha maunds, and contains, at an average, 2000 shawls of different kinds, valued, on reaching Bombay, at 28,500 Furrukabad rupees.

"The government of Lahore exacts Furrukabad rupees, 1564 6; Patialah, 61 0; Dikeneer, 43 0; Joudpore, 121 4; Bhownuggur, 20 0; total levied by native princes, 1809 0; Bombay, 10 per cent. (*ad valorem*) 2850 0."

It is not as yet generally known that the Thibet goat, from whose wool the famous Cashmere shawls are made, has been introduced successfully into the United States. This enterprising undertaking was achieved a few years since, after many difficulties, by Dr. J. B. Davis, of Columbia, South Carolina, at that time employed by the Ottoman Porte in experimenting on the growth of cotton in the Sultan's dominions. Dr. Davis succeeded, at vast expense, in securing eleven of the pure breed, which, on his way home, he exhibited in London and Paris. Since that period, the goat has been introduced from South Carolina into Tennessee, where it is said to thrive. The value of a flock may be estimated from the fact that no real Thibet goat has ever been sold for less than $1000. This enormous price, moreover, is not a speculative one, for no fleeced animal has wool of such fineness, softness, and durability. The wool of all the Thibet goats in Tennessee, for example, has been engaged at New York this year at $8 50 per pound, the purchasers designing to send it to Paisley, in Scotland, in order to be manufactured into shawls.

The prices paid for the real Cashmere shawls, or those woven in India, have sometimes been almost fabulous. A full-sized shawl, such as is called in America a "long shawl," ordinarily commands in Paris or London from $500 to $5000, according to the quality. Scarfs and square shawls, being smaller, sell for less. It is a mistake, however, to suppose that all these shawls are manufactured in India in the shape in which they are sold here. Generally, indeed, the centres and borders come out separately, and are put together afterward in sizes, and often patterns, to suit purchasers. Moreover, a large portion of the shawls sold as real India ones are actually made in France, for the Thibet goat was introduced into that country more than thirty years ago, and the Cashmere shawls imitated with considerable skill. Judges of the article pretend to say, however, that the real India shawl can be detected by its having a less evenly woven web, as also from its brighter colors. It is likewise said that the border of the genuine Cashmere shawls is invariably woven in small pieces, which are afterward sewed together, as the whole border is subsequently sewn on to the centre. But other authorities deny that . skill of India is insufficient to *broche* a shawl; in other words, to weave the border and centre in one piece, or run the pattern of the former over the latter.

Notwithstanding the successful imitation of these shawls, fashion and luxury still prefer the apparently original. Just as laces, woven by hand, bring a price more than five times as great as the same pattern woven by machinery, so a Cashmere shawl, known to have come from India, will fetch vastly more than the cleverest imitation. Probably, however, this is not all. Persons familiar with both the article and the imitation assert that the former is softer than the latter, and that this softness arises partly from the way the thread is spun, and partly because the Thibet goat, when exported from its native hills, sensibly deteriorates. There is also a shawl popularly known as the French Cashmere, which is an imitation of the imitation; but this has none or very little of the wool of the imported Thibet goat. The animal from which this valuable fleece is taken is a hardy creature, at least in its original locality; and their fine curled wool lies close to the skin, just as the under hair of the common goat lies under the upper hair.

The importation of shawls, manufactured all or in part from wool, into the United States for the year ending June 30, 1857, was as follows:

Whence imported.	Value.
Hanse Towns	$218,387
England	732,449
Scotland	332,088
France	833,973
China	86,294
Other places	63,160
Total	$2,246,351

—*See* CASHMERE, COTTON MANUFACTURES, WOOL.

Sheathing. The covering laid on the ship's bottom to defend it from the worms. Sheets of thin copper nailed on with copper nails constitutes, at present, the sheathing of all the better kinds of vessels. Lead has been used; and large-headed iron nails, called scupper nails, are used still for the same purpose on the bottoms of old hulks, piles, etc. Zinc and different

compositions have been proposed as substitutes for copper; and Sir H. Davy ingeniously suggested the application of pieces of zinc or iron upon different parts of the copper surface, which by the action of the sea-water render the latter metal electro-negative, and capable, therefore, of resisting the oxidizing and corrosive agencies of the substances held in solution. The pieces of iron or of zinc so applied have been properly called *protectors;* but by occasioning the precipitation of earthy matters upon the copper, while they effectually *protect it*, they render its surface favorable to the adhesion of weeds, barnacles, etc., and sometimes to such an extent as to interfere with the passage of the ship through the water: upon such grounds, Sir Humphrey's valuable suggestion has been neglected. When vessels are laid up in dock the protectors are in successful use. Sheathing formerly was composed of thin fir boards. By a recent application of electrotyping, plates of sheet-iron are covered with a surface of copper which effectually protects the iron from oxidation. Iron bolts are also similarly electrotyped.

Sheep (Ger. *Schafe;* Fr. *Brebis, Bêtes à laine, Moutons;* It. *Pecore;* Sp. *Pecora, Ovejas;* Russ. *Owzà;* Lat. *Oves*). Of the domestic animals belonging to Great Britain, sheep, with the exception of horses, and perhaps cattle, are by far the most important. They can be reared in situations and upon soils where other animals would not live. They afford a large supply of food, and one of the principal materials of clothing. Wool has long been a staple commodity of this country, and its manufacture employs an immense number of people. "The dressed skin," says Mr. Pennant, "forms different parts of our apparel, and is used for covers of books. The entrails, properly prepared and twisted, serve for strings for various musical instruments. The bones, calcined (like other bones, in general), form materials for tests for the refiner. The milk is thicker than that of cows, and consequently yields a greater quantity of butter and cheese; and in some places is so rich, that it will not produce the cheese without a mixture of water to make it part from the whey. The dung is a remarkably rich manure insomuch that the folding of sheep is become too useful a branch of husbandry for the farmer to neglect. To conclude; whether we consider the advantages that result from this animal to individuals in particular, or to these kingdoms in general, we may, with Columella, consider this, in one sense, as the first of the domestic quadrupeds."—Pennant's *British Zoology.*

There was between 1840 and 1850 an increase of 2,309,108 in the number of sheep in the United States. It will be useful to observe with some closeness the progress of sheep-breeding in different parts of the country. We perceive that in New England there has occurred a remarkable decrease in their number. There were in that division of the Union in 1840, 3,811,307; in 1850 the number had declined to 2,164,482; being a decrease of 1,646,855, or 45 per cent. In the five Atlantic Middle States, New York, New Jersey, Pennsylvania, Delaware, and Maryland, there was a decrease from 7,402,851 to 5,641,391, equal to 1,761,460, or about 22¼ per cent. In Pennsylvania there was a gain, however, during this period, of 155,000 sheep. We see that while there has been a positive diminution of 3,408,000 in the States above named, there has been an augmentation of 5,717,608 in those south of Maryland and west of New York. Ohio has gained most largely, having been returned as pasturing in 1840, 2,028,401; and in 1850, 3,942,929; an increase of 1,914,528, or nearly 100 per cent. In each of the States south and west of the lines above indicated, there has been a very large proportional increase in this kind of stock, and there is reasonable ground for the opinion that the hilly lands of Virginia, North and South Carolina, Tennessee, and the prairies of Illinois, Iowa, and Texas, will prove highly favorable for the rearing of sheep for their wool and pelts.

New Mexico has the extraordinary number of 377,271 sheep—more than six to each inhabitant; proving the soil and climate of that territory to be well adapted to this description of stock, and giving promise of a large addition from that quarter to the supply of wool. The importance of fostering this great branch of national production is shown by the fact, as assumed by an intelligent writer on the subject, that our population annually consumes an amount of wool equal to seven pounds for each person. If this estimate be even an approximation to correctness, we are yet very far short of producing a quantity adequate to the wants of the country; and it is equally clear that we possess an amount of unemployed land adapted to grazing, sufficient to support flocks numerous enough to clothe the people of the world. The kinds of sheep most sought for are the pure-blooded Merinos, the Saxons, the Cotswolds, the Leicestershires, the Oxfordshires, and the South Downs. The *Merinos* (including the Rambouillets), the Cotswolds, the Leicestershires, the Oxfordshires, and the Saxons, are the most highly prized for their wool. The South Downs are particularly esteemed for the excellence of their flesh, and their wool is valuable for many purposes on account of the facility with which it can be wrought.—*U. S. Patent Office Report.* *See* Shawls and Wool.

Sheer. The curve which the line of ports or of the deck presents to the eye when viewing the side of the ship. When these lines are straight, or the extremities do not rise, as is most usual, the ship is said to have a straight *sheer.*

Sheer Hulk.—A hulk permanently fitted with sheers for masting and dismasting ships.

Sheers.—Two masts or spars lashed together at or near the head, and raised to a vertical position, for the purpose of lifting the masts into or out of vessels.

Sheet. The rope attached to the aftermost or leewardmost clew or corner of a sail, to extend it to the wind. In the square sails above the courses, the ropes attached to both clews are called *sheets:* in all other cases the weathermost one is called *a tack.*

Sheet Anchor. The third of the four large anchors generally carried by a ship.

Sherry. A Spanish wine made from the grapes of Xeres, in Andalusia. Genuine sherry is a rich, dry wine, containing from 20 to 23 per cent. of alcohol: there are many varieties, and it is extensively imitated and adulterated.—*See* Wine.

Shilling. An English silver coin, equal to twelvepence, or the twentieth part of a pound. Frecherus derives the Saxon *scilling*, whence our shilling, from a corruption of *siliqua;* proving the derivation by several texts of law, and, among others, by the twenty-sixth law, *De annuis legatis.* Skinner deduces it from the Saxon *scild*, "shield," by reason of the escutcheon of arms which it has upon it. Bishop Hooper derives it from the Arabic *scheele*, signifying *a weight;* but others, with greater probability, deduce it from the Latin *silicus*, which signified in that language a quarter of an ounce, or the forty-eighth part of a Roman pound. In confirmation of this etymology, it is alleged that the shilling kept its original signification, and bore the same proportion to the Saxon pound as sicilicus did to the Roman and the Greek, being exactly the forty-eighth part of a Saxon pound.

However, the Saxon law reckons the pound in the round number at fifty shillings, but they really coined out of it only forty-eight. The value of the shilling was five-pence, but it was reduced to four-pence above a century before the Conquest; for several of the Saxon laws, made in Athelstan's reign, oblige us to take this estimate. Thus it continued to the Norman times, as one of the Conqueror's laws sufficiently ascertains; and it seems to have been the common coin by which the English payments were adjusted. After the Conquest, the French *solidus* of twelve-pence, which was in use among the Normans, was called by the English

name of shilling; and the Saxon shilling of four-pence took a Norman name, and was called the *groat*, or great coin, because it was the largest English coin then known in England. It was the opinion of bishops Fleetwood and Gibson, and of the antiquaries in general, that, though the method of reckoning by pounds, marks, and shillings, as well as by pence and farthings, had been in constant use even from the Saxon times, long before the Norman Conquest, there was never such a coin in England as either a pound or a mark, nor any shilling, till the year 1504 or 1505, when a few silver shillings or twelve-pences were coined, which have long since been solely confined to the cabinets of collectors. Mr. Clarke combats this opinion, alleging that some coins mentioned by Mr. Folkes, under Edward the First, were probably Saxon shillings new minted, and that Archbishop Ælfric expressly says that the Saxons had three names for their money—mancuses, shillings, and pennies. He also urges the different value of the Saxon shilling at different times, and its uniform proportion to the pound, as an argument that their shilling was a coin; and the testimony of the Saxon Gospels, in which the word we have translated *pieces of silver* is rendered *shillings*, which, he says, they would hardly have done if there had been no such coin as a shilling then in use. Accordingly, the Saxons expressed their shilling in Latin by *siclus* and *argenteus*. He further adds, that the Saxon shilling was never expressed by *solidus* till after the Norman settlements in England; and howsoever it altered during the long period that elapsed from the Conquest to the time of Henry the Seventh, it was the most constant denomination of money in all payments, though it was then only a species of account, or the twentieth part of the pound sterling; and when it was again revived as a coin, it lessened gradually as the pound sterling lessened, from the 28th of Edward the Third to the 43d of Elizabeth.

In the year 1560 there was a peculiar sort of shilling struck in Ireland, of the value of nine-pence English, which passed in Ireland for twelve-pence. The motto on the reverse was, *Posui Deum adjutorem meum*. Eighty-two of these shillings, according to Malynes, went to the pound. They weighed, therefore, twenty grains one fourth each, which is somewhat heavier in proportion than the English shilling of that time, sixty-two of which went to the pound, each weighing ninety-two grains seven-eighths; and the Irish shilling being valued at the Tower at nine-pence English, that is, one fourth part less than the English shilling, it should therefore proportionally weigh one fourth part less, and its full weight be somewhat more than sixty-two grains. But some of them found at this time, though much worn, weighed sixty-nine grains. In 1598 five different pieces of money of this kind were struck in England for the service of the kingdom of Ireland. These were shillings to be current in Ireland at twelve-pence each, half-shillings to be current at six-pence, and quarter-shillings at three-pence. Pennies and half-pennies were also struck of the same kind, and sent over for the payment of the army in Ireland. The money thus coined was of a very base mixture of copper and silver; and two years after there were more pieces of the same kinds struck for the same service, which were still worse; the former being three ounces of silver to nine ounces of copper, and the latter only two ounces eighteen pennyweights to nine ounces two pennyweights of the alloy.

The Dutch, Flemish, and Germans have likewise their shilling, called *schelin*, *schilling*, and *scalin*; but these, not being of the same weight or fineness with the English shilling, are not current at the same value. The English shilling is worth about twenty-three French sols; those of Holland and Germany about eleven sols and a half; those of Flanders about nine. The Dutch shillings are also called *sols de gros*, because equal to twelve gros. The Danes have copper shillings worth about one fourth of a farthing sterling.—E. B. *See* Coins.

Ship-money was first levied A.D. 1007, and caused great commotions. This impost being illegally levied by Charles the First in 1634, led to the Revolution. He assessed London in seven ships, of 4000 tons and 1560 men; Yorkshire in two ships of 600 tons, or £12,000; Bristol in one ship of 100 tons; Lancashire in one ship of 400 tons. The trial of the patriot Hampden for refusing to pay the tax, which he at first solely opposed, took place in 1638. Ship-money was included in a redress of grievances, in 1641. Hampden received a wound in a skirmish with Prince Rupert, and died June 24, 1643.

Ships. Nautical men apply the term ship to distinguish a vessel having three masts, each consisting of a lower mast, a topmast, and top-gallant mast, with their appropriate rigging. In familiar language, it is usually employed to distinguish any large vessel, however rigged; but it is also frequently used as a general designation for all vessels navigated with sails; and it is in this sense that we now employ it.

Merchant Ships.—It is hardly possible to divide merchant ships into classes, at least with any degree of precision. Their size, shape, the mode of their rigging, etc., depend not merely on the particular trade for which they are destined, but on the varying tastes and fancies of their owners. In the *articles* Charter-party, Freight, Master, Owners, Seamen, Seaworthy, etc., the law with respect to ships and shipowners, in their capacity of carriers or public servants, and the reciprocal duties and obligations of the masters and crews, is pretty fully expounded.

Ship-building.—The art is attributed to the Egyptians, as the first inventors, the first ship (probably a galley) being brought from Egypt to Greece, by Danaus, 1485 B.C.—Blain. The first double-decked ship was built by the Tyrians, 786 B.C.—Lenglet. The first double-deck vessel built in England was of 1000 tons burden, by order of Henry VII., 1509; it was called the *Great Harry*, and cost £14,000.—Stow. Before this time, 24-gun ships were the largest in the British navy, and these had no port-holes, the guns being on the upper decks only. Port-holes and other improvements were invented by Descharges, a French builder at Brest, in the reign of Louis XII., about 1500. Ship-building was first treated as a science by Hoste, 1696. A 74-gun ship was put upon the stocks at Van Diemen's Land, to be sheathed with India-rubber, 1829. —Haydn. For articles on ship-building, see *Quarterly Review*, vol. iii. 28, xl. 227, xii. 444; *Anal. Mag.*, i. 203, vi. 450; Hunt's *Merchants' Mag.*, xi. 11, xviii. 172.

State of Shipping Interest.—The complaints which were so frequent some years since in regard to the shipping interest have now wholly ceased. Most probably they never had any very good foundation; but whether that were so or not, this interest has been for some time past in a peculiarly prosperous condition. This has been occasioned partly and principally by the gold discoveries in California and Australia, or rather by the unprecedented stimulus which they have given to emigration and commerce. It is not, therefore, to be supposed that the existing state of things, as respects the shipping interest, can be permanent; for while, on the one hand, the advantages resulting from emigration will gradually diminish, on the other the supply of ships will be augmented in proportion to the greater demand for their services. However, it is all but certain that the commerce of the world is destined to increase for a long time to come; and our mercantile navy will, no doubt, continue to realize a full and fair share of the advantages resulting from this extension of trade.

Some very important changes have been made of late years, and are yet in progress, in the construction of ships. They are now built of a much larger size than formerly, of finer models, and with a power of

sailing of which no just idea could previously have been formed. Ships of 2000 tons burden are now reckoned only of little more than a medium size; and those of 2300 and 2500 tons and upward are every day becoming more and more common. It is probable, indeed, that in this, as in most other things, we shall run from one extreme into another; and that from being too small, our ships for distant voyages will become too large and unwieldy. This, however, is a point which experience only can settle, and to that it may safely be left. Iron ships are also, as previously stated, beginning to be extensively constructed; and ships are now frequently fitted out with screws and steam-engines, to be used only as a subsidiary power in calms, and against contrary winds.

Most sorts of short passage traffic are now carried on by steamers; and it is probable that in the end they will engross the greater part of the coasting trade of most countries, and of the trade between foreign countries adjacent to each other. But the improved class of sailing ships have little to fear from the competition of steamers in all the more distant branches of trade.—For general statistics in regard to the number of ships and amount of tonnage, *see articles* STEAM NAVIGATION and TONNAGE

Shipping, Laws of.—Under the general heads of AFFREIGHTMENT, CHARTER-PARTY, BILLS OF LADING, CARRIERS, COLLISION, COMMERCE, MASTERS, MARITIME LAWS, REGISTRY, SEAMEN, etc. (*see* INDEX), particular information has been given concerning the laws of shipping. We will, therefore, in this article only give a synopsis of the general laws regulating ships and shipping.

Title to Vessels.—The title of a ship, unless acquired by capture, passes by writing. A bill of sale is the proper record of title to a ship, and one which the maritime courts of all nations will look for and, in their ordinary practice, require. In Scotland, a written conveyance of property in ships has, by custom, become necessary; and in England a statute requires it with regard to British subjects. In this country, possession of a ship and acts of ownership are presumptive evidence without the aid of documentary proof, and will hold good until destroyed by contrary proof, and a sale with delivery of a ship, without a bill of sale or written instrument of any kind, will be good at law. But the presumptive title from possession can easily be destroyed; and the general rule is that no person can convey who has no title, and the fact of possession does not give title. The master of a ship has no authority to sell, unless in a case of necessity. It is generally, though not universally, considered that a sale by order of an admiralty court in a foreign port, by a petition of the master on the ground of unseaworthiness, is valid. The capture by a public enemy divests the title from the original owner after a regular condemnation by a prize court. Upon the sale of a ship in port, delivery of possession is requisite to perfect the title. If the vessel is at sea at the time of sale, possession must take place upon arrival at port.

Liability of Owner.—The owner is personally liable as owner for necessaries furnished and repairs made to a ship by order of the master. It has been a disputed question whether the mortgagee of a ship is liable before taking possession. The weight of the American decisions decides that he is not liable for repairs procured on the order of the master, if not upon the credit of the mortgagee, and if the same was not in receipt of the freight. When the vessel is at sea, the liability of the mortgagee for wages, etc., resolves itself into the question of his possession. The liability of the charterer or freighter under similar circumstances also depends upon the question of temporary ownership by their use of the vessel.

Custom-house Documents.—The United States have followed the policy of other commercial nations in giving peculiar privileges upon American-built vessels owned by our own citizens. This is obtained by a registry of vessels (*see article* REGISTRY), and which provision is intended to encourage our own trade, navigation, and ship-building. The registry of all vessels at the custom-house, and the records of the transfers also, add great security to the titles. No vessel is to be deemed as belonging to the United States, and entitled to the privileges of one, unless registered and wholly owned and commanded by a citizen of the United States.

Part Owners.—The several part owners of a ship are tenants in common, and not partners. Each has his undivided interest, and when one is appointed to manage the concerns of the ship he is called the ship's husband. If there be no definite agreement among the owners as to the employment of the ship, the majority in value may employ the ship, while the admiralty court secures the interests of the minority from injury. This practice is dictated by the commonsense view that "ships were made to plow the ocean, and not to rot by the wall." The court takes a security from the majority to a sum equal to the shares of the minority, either to bring back the ship or pay the minority the value of their shares, and in this case the ship sails wholly at the profit or risk of the majority. The distinction between part owners and partners may be stated thus: Part ownership is but a tenancy in common, and as such a part owner can only sell his undivided right, and can give title only to such; but a partner has implied authority over the joint property. A vessel may be held in partnership, but is not unless by agreement.—*See* KENT'S *Comm.*, vol. iii.

Carriage of Goods.—When the ship is hired and the cargo laden on board, the duties of the owner, and of his agent, the master, arise in respect to the commencement, progress, and termination of the voyage. When the voyage is ready, the master is bound to sail as soon as the wind and the tide permit, but he ought not to set out in very tempestuous weather. If, by the charter-party, the vessel is to sail by a given day, the master must do it, unless prevented by necessity; and if there be an understanding to sail with convoy, he is bound to go to the place of rendezvous, and place himself under the protection and control of the convoy, and continue, as far as possible, under that protection during his course. He is bound, likewise, to obtain the necessary sailing instructions for the convoy; but these covenants to sail with the first fair wind and with convoy, are not conditions precedent to the recovery of freight, and a breach of them only goes to the question of damages. The master is bound, likewise, to proceed to the port of delivery without delay, and without any unnecessary deviation from the direct and usual course. If he covenants to go to a loading port by a given time, he must do it or abide the forfeiture; and if he be forced by perils out of his regular course, he must regain it with as little delay as possible. Nothing but some just and necessary cause, as to avoid a storm, or pirates, or enemies, or to procure requisite supplies or repairs, or to relieve a ship in distress, will justify a deviation from the regular course of the voyage. If he deviates unnecessarily from the usual course, and the cargo be injured by tempests during the deviation, it is a sufficient proximate cause of the loss to entitle the freighter to recover; though if it could be shown that the same loss not only might but must have happened if there had not been any deviation, the conclusion might be otherwise. Nor has the captain any authority to substitute another voyage in the place of the one agreed between the owner and freighter of the ship. Such a power is altogether beyond the scope of his authority as master. In case of necessity, as where the ship is wrecked, or otherwise disabled in the course of the voyage, and can not be repaired, under the circumstances, without too great delay and expense, the master may procure another competent vessel to carry on the cargo and save his freight. If other means

to forward the cargo can be procured, the master must procure them or lose his freight; and if he offers to do it, and the freighter will not consent, he will then be entitled to his full freight. The master must act in port of necessity for the best interest of all concerned, and he has the power and discretion adequate to the trust, and requisite for the safe delivery of the cargo at the port of destination. If there be another vessel in the same or in a contiguous port which can be had, the duty is clear and imperative upon the master to hire it; but still the master is to exercise a sound discretion adapted to the case. He may transmit the cargo, if he has the means, or let it remain. He may bind it for repairs to the ship. He may sell part, or hypothecate the whole. If he hires another vessel for the completion of the voyage, he may charge the cargo with the increased freight arising from the hire of the new ship. The master may refuse to hire another vessel, and insist on repairing his own; and whether the freighter be bound to wait for the time to repair, or becomes entitled to her goods without any charge of freight, will depend upon circumstances. What may be a reasonable time for the merchant to wait for the repairs can not be defined, and must be governed by the facts applicable to the place and the time, and to the nature and condition of the cargo. A cargo of a perishable nature may be so deteriorated as not to endure the delay for repairs, or to be too unfit and worthless to be carried on. The captain is not bound to go to a distance to procure another vessel, and encounter serious impediments in the way of putting the cargo on board another vessel. His duty is only imperative when another vessel can be had in the same or a contiguous port, or at one within a reasonable distance, and there be no great difficulties in the way of a safe reshipment of the cargo. In the course of the voyage, the master is bound to take all possible care over the cargo; and he is responsible for every injury which might have been prevented by human foresight and prudence, and competent naval skill. He is chargeable with the most exact diligence. If the ship be captured during the voyage, the master is bound to render his exertions to rescue the property from condemnation, by interposing his neutral claims, and exhibiting all the documents in his power for the protection of the cargo.

Of the Delivery of the Goods at the Port of Destination.—On the arrival of the ship at the place of destination, the cargo is to be delivered to the consignee, or to the order of the shipper, on the production of the bill of lading and payment of the freight. The cargo is bound to the ship as well as the ship to the cargo; but the master can not detain the goods on board the ship until the freight be paid, for the merchant ought to have an opportunity to examine the condition of them previous to payment. Delivery at the wharf (where there are no special directions to the contrary) discharges the master. But there must be a delivery at the wharf to some person authorized to receive the goods, or due previous notice must have been given to the consignee of the time and place of delivery; and the master can not discharge himself by leaving them naked and exposed at the wharf. His responsibility will continue until there is actual delivery, or some act which is equivalent, or a substitute for it, unless the owner of the goods or his agent had previously assumed the charge of the goods; or at least until the consignee has had notice of the place and time of delivery, and the goods have been duly separated and designed for his use. When there are conflicting claims between consigner and consignee, or consigner and the assignee of the consignee, if the consignee has failed, he ought to deliver to the claimant on behalf of the consignee; and if the consignee has assigned the bill of lading, and the rights of the consignee be still interposed and contested, it is safest for the master to deposit the goods with some bailee, until the rights of the claimants are settled, as they can always be upon a bill of interpleader in chancery to be filed by the master. Having made a consignment, the consignee or seller has not an unlimited power to vary it at pleasure. He may do it only for the purpose of protecting himself against the insolvency of the buyer or consignee.

Responsibility of the Ship-owner.—The cases that will excuse the owners and masters for the non-delivery of the cargo must be events falling within the meaning of one of the expressions, act of God and public enemies; or they must arise from some event expressly provided for in the charter-party. Water-carriers are liable as common carriers in all the strictness and extent of the common-law rule, unless the loss happens by means of one of the excepted perils. A loss by lightning is within the exception of the act of God; but a loss by fire proceeding from any other cause is chargeable upon the ship-owner. The moment the goods are transferred from the ship or lighter to the warehouse, this extraordinary responsibility ends.

If a rock or a sand-bar be generally known, and the ship be not forced upon it by adverse winds or tempests, the loss is to be imputed to the fault of the master. But if the ship be forced upon such shallow by winds or tempests, or if the bar was occasioned by a recent and sudden collection of sand in a place where ships could before sail with safety, the loss is to be attributed to a peril of the sea. A statute in Massachusetts, passed in 1818, and re-enacted in 1835, limits the responsibility of owners for the acts of the master and mariners to the value of the ship and freight, but otherwise the owner is bound for the whole amount of the injury done by the master or crew.

Duties of the Shippers.—The duties of the charterer are to use the ship in a lawful manner, and for the purpose for which it was let. If the freighter puts on board prohibited or contraband goods, by means whereof the ship is subjected to detention and forfeiture, he must answer to the ship-owner for the consequences of the act. And if the merchant declines to lade the ship according to contract, or to furnish a return cargo, as he had engaged to do, he must render in damages due compensation for the loss.

Payment of Freight.—Freight, in its original and more common acceptation, means the hire which is earned for the transportation of goods, but in its more extensive sense it is applied to all rewards for compensation paid for the use of ships. If the hiring be of the whole ship, or for an entire part of her for the voyage, the merchant must pay the freight though he does not fully lade the ship. But if he agrees to pay in proportion to the amount of the goods put on board, and does not agree to provide a whole cargo, the owner can demand payment for the cargo actually shipped. If the merchant agrees to furnish a return cargo, and he furnishes none, and lets the ship return in ballast, he must make compensation to the amount of the freight.—Leone Levi's *Com. Law of the World.*

Analysis of the General Law of Shipping.—The sale of ships in Great Britain must be made by a bill of sale containing a recital of the certificate of registry. In France, Spain, and Sardinia, it must be made by public deed. In Holland the deed is transferred into a public register. All British subjects are authorized to possess shares in ships in Great Britain. In Spain foreigners not naturalized can not acquire the ownership of ships. In Russia this right is limited to merchants of the first and second guild. Part owners are tenants in common with each other of their respective shares in Great Britain. Each ship's husband may sell his share, but he should give preference to his part owners at equal price, provided they pay the price within three days: Spain, Prussia, Russia, Denmark, and Sweden. The responsibility of ship-owners for the acts of the captain is unlimited in Prussia and Spain, provided it be proved that such expenses turned to the advantage of the vessels. In Great Britain the own-

ere are responsible where the expenditure is for necessaries. In Portugal obligations are not binding beyond the value of the ship and freight. In France owners may relieve themselves from such obligations by the abandonment of ship and freight. In Russia the ship's husband is responsible only to the value of the ship. In the Two Sicilies, Sardinia, Holland, Greece, and Hayti, the same restriction is admitted. In the United States the seamen are not paid if the ship and freight have been lost; but their wages are preferred to bottomry bond on the ship and freight preserved.—*See* OWNERS OF SHIPS. In France the same law prevails.

Ships' Papers, the papers or documents required for the manifestation of the property of the ship and cargo, etc. They are of two sorts; viz., 1st, those required by the law of a particular country—as the certificate of registry, license, charter-party, bills of lading, bill of health, etc. (see these titles), required by the law of England to be on board British ships; and, 2d, those required by the law of nations to be on board neutral ships, to vindicate their title to that character. Mr. Sergeant Marshall, following Hubner (*De la Saisie des Bâtimens Neutres*, i. 241–252), has given the following description of the latter class of documents:

1. *The Passport, Sea Brief, or Sea Letter.*—This is a permission from the neutral state to the captain or master of the ship to proceed on the voyage proposed, and usually contains his name and residence; the name, property, description, tonnage, and destination of the ship; the nature and quantity of the cargo, the place whence it comes, and its destination; with such other matters as the practice of the place requires. This document is indispensably necessary for the safety of every neutral ship. Hubner says that it is the only paper rigorously insisted on by the Barbary corsairs; by the production of which alone their friends are protected from insult.

2. *The Proofs of Property.*—These ought to show that the ship really belongs to the subjects of a neutral state. If she appear to either belligerent to have been built in the enemy's country, proof is generally required that she was purchased by the neutral before, or captured and legally condemned and sold to the neutral after, the declaration of war; and in the latter case the *bill of sale*, properly authenticated, ought to be produced. Hubner admits that these proofs are so essential to every neutral vessel, for the prevention of frauds, that such as sail without them have no reason to complain if they be interrupted in their voyages, and their neutrality disputed.

3. *The Muster-roll.*—This, which the French call *rôle d'équipage*, contains the names, ages, quality, place of residence, and, above all, *the place of birth*, of every person of the ship's company. This document is of great use in ascertaining a ship's neutrality. It must naturally excite a strong suspicion, if the majority of the crew be found to consist of foreigners; still more, if they be natives of the enemy's country.—*See* SEAMEN.

4. *The Charter-party.*—Where the ship is chartered, this instrument serves to authenticate many of the facts on which the truth of her neutrality must rest, and should therefore be always found on board chartered ships.—*See* AFFREIGHTMENT and CHARTER-PARTY.

5. *The Bills of Lading.*—By these the captain acknowledges the receipt of the goods specified therein, and promises to deliver them to the consignee or his order. Of these there are usually several duplicates; one of which is kept by the captain, one by the shipper of the goods, and one transmitted to the consignee. This instrument, being only the evidence of a private transaction between the owner of the goods and the captain, does not carry with it the same degree of authenticity as the charter-party.—*See* BILLS OF LADING.

6. *The Invoices.*—These contain the particulars and prices of each parcel of goods, with the amount of the freight, duties, and other charges thereon, which are usually transmitted from the shippers to their factors or consignees. These invoices prove by whom the goods were shipped, and to whom consigned. They carry with them, however, but little authenticity, being easily fabricated where fraud is intended.

7. *The Log-book, or Ship's Journal.*—This contains a minute account of the ship's course, with a short history of every occurrence during the voyage. If this be faithfully kept, it will throw great light on the question of neutrality; if it be in any respect fabricated, the fraud may in general be easily detected.

8. *The Bill of Health.*—This is a certificate, properly authenticated, that the ship comes from a place where no contagious distemper prevails; and that none of the crew, at the time of her departure, were infected with any such disorder. It is generally found on board ships coming from the Levant, or from the coast of Barbary, where the plague so frequently prevails.

A ship using false or simulated papers is liable to confiscation.—MARSHALL *on Insurance.*

The reciprocal Duties of Consular Officers and Masters of American Vessels.—By an act of the Congress of the United States, approved February 28, 1803, it is in substance directed that every master of an American vessel shall, on his arrival at a foreign port, deposit his register, sea-letter, and Mediterranean passport, with the consular officer of the United States, if there be one at the port, under a penalty of $500, which the consular officer may recover in his own name for the use of the United States. Whenever a clearance from the proper officer of the port shall be produced to the consular officer, he shall deliver up all the ship's papers, provided the master shall have complied with the provisions of the above-mentioned act, and those of the 28th section of the act of August 18, 1856. Where vessels merely touch at a foreign port to try the market, or are accidentally driven into such port, and make no formal entry, it does not constitute an "*arrival*" within the meaning of the act, and the ship's papers can not be required by the consul.

As some doubt has arisen in regard to what constitutes an "arrival," attention is particularly called to the following extract from an opinion of the Supreme Court of the United States: "Our view, then, is, that the term *arrival*, as used in this act, must be construed according to the subject-matter, the object of the provision, and the expressions in other sections of this act, and in other like acts; and that according to all these, a vessel putting into a foreign port to get information, and getting it without going at all to the upper harbor or wharves, and not entering, or repairing, or breaking bulk, or discharging seamen, or being bound homeward, so as to take seamen, or needing the aid of the consul in any respect, but leaving the port in a few hours; not doing any of these, nor being required to, and duly entering and delivering her cargo at a neighboring port, where it had been sold, and there depositing her papers with the vice-consul, can not be said to have arrived at the first port, so as to come within the spirit of the penal provision as to depositing her papers with the consul. So far as regards precedents on this matter, the actual decision of one court and the opinions of two Attorneys General are in favor of our conclusion."

Vessels accidentally driven into a port are not required to deposit their papers with the consular officer, unless formal entry be afterward made, or consular services required. It is stated in the opinion of the Attorney-general of October 17, 1853, that the body of the second section of the act of 1803 contemplates an arrival at a foreign port, with a clearance from the proper officer of the port. It is the production of the clearance to the consular officer which gives to the master the right to demand a return of the ship's papers, and imposes on the consul the duty of returning them. The proviso to the section allows the consular officer, notwithstanding the clearance from the proper

officer of the port, to detain the ship's papers until certain requirements of law shall have been complied with: which are the payment of the fees due the consular officer for his services; the payment to him of three months' pay, additional to wages due, for every discharged seaman who is designated on the certified list of the ship's company as a citizen of the United States; and the taking on board, at the request of the consular officer, of destitute mariners for transportation to the United States.

This right of the consular officer attaches to the register and other papers when they shall have been lawfully deposited with him; but the statute does not compel the deposit for the purpose of giving the right of detention. Neither the section of the act which regards discharged seamen, nor that which provides for distressed seamen, nor the regulation as to consular fees, requires a deposit of the register and other papers, although the former makes it the duty of the master to exhibit to the consul a certified list of the ship's company. And the proviso above cited does not enlarge the scope of the other provisions of law as to the deposit of the papers; it only releases the consul from the duty, which would otherwise be imperative upon him, of returning the papers upon the exhibition of the clearance alone.

By the first section of the act of 1803, it is made the duty of the consular officer, immediately on the arrival of an American vessel, should the master neglect to deliver his ship's papers, as he is directed by law, to inform him of the necessity of so doing, by showing him the law that requires it, and apprising him of the penalty he will incur by refusal or neglect. If he fail to comply, a certificate of the fact, under the consular seal, must be immediately sent to the Department of State, giving a description of the vessel, the port to which she belongs, where bound, and the usual residence of the master. In such a case, it is desirable that the consul should send some other evidence of the arrival and departure of the delinquent master with his vessel besides that of his own certificate, as it has been held that such evidence of any fact is not sufficient, unless expressly or impliedly made so by statute.

Whenever the master shall produce the clearance of his vessel, and shall have complied with the directions of the acts above mentioned, having fulfilled every lawful requisition of the consul and of the local authorities, the consul shall, without delay, deliver up the papers, with a consular certificate, under seal, of the time of such delivery, and make an entry of the like period in his consular record.

Before a clearance is granted to any American vessel bound on a foreign voyage, the master thereof is required to deliver to the collector of the customs a list, containing the names, places of birth and residence, and a description of the persons who compose his ship's company, to which list the oath or affirmation of the captain is to be annexed, that it contains the names of his crew, together with the places of their birth and residence, as far as he can ascertain them; a certified copy, written in a uniform hand, without erasures or interlineations, must be delivered to the master by the collector, for which he is entitled to receive from the master the sum of twenty-five cents. The said master must then enter into bond, with sufficient security, in the sum of $400 dollars, to exhibit the aforesaid certified copy of the list to the first boarding-officer at the first port in the United States at which he shall arrive on his return thereto, and then and there also to produce the persons named therein to the said boarding-officer, whose duty it is to examine the men with such list, and to report the same to the collector.

By the act of Congress, August 18, 1856, it is made the duty of every master and commander of a ship or vessel of the United States, whenever he shall have occasion for any consular or other official service which any consular officer of the United States shall be authorized by law or usage officially to perform, and for which any fees shall be allowed by the said rates or tariffs of fees as aforesaid, to apply to such one of the said officers to perform the service as may then be officially in charge of the consulate or commercial agen-

SHIP'S DAILY JOURNAL.

In which, on the deposit of the ship's register and papers, shall be recorded, for example, as follows:

SHIP ——, OF ——, —— TONS, —— —— MASTER.

Date of entry and of service rendered.					
18 6.					
Jan.	2	Arrived —— day of ——, 18—.			
		From ——.			
		When built, ——, 18—.			
		Where built, ——.			
		Owners, —— —— and others.			
		Cargo, inward [here insert where produced or manufact'd], value	$..	...	..
		Cargo, outward [here insert where produced or manufact'd], value	...	...	..
		A B, master.			
		C D, mate.			
		E F, 2d mate.			
"	3	G H, boatswain, alias I J, sent to hospital.			
		K L, carpenter, discharged; wages paid, $50; 3 months' extra wages, at $20, $60	...	$110	00
"	2	M N, steward, reported to have been lost overboard at sea (or to have died at sea), Dec. 21, 1856, wages paid	...	10	00
"	3	O P, cook, reported to have deserted; amount of wages forfeited to the United States	...	50	00
		Q R, seaman.			
		Etc., etc.			
"	20	Shipped for voyage to ——.			
		—— ——, boatswain.			
		—— ——, carpenter.			
		—— ——, steward.			
		—— ——, cook.			
"	21	Register and papers delivered to master, bound to ——.			

NOTE.—Should any of the seamen or mariners have died at sea, or have been lost overboard, on the passage, the fact will be reported at once by the master, and a note thereof made opposite to the name of such person so deceased or lost; as, for example, see Steward. Should any seaman or mariner be discharged, or desert, a similar note of the fact must be made opposite to such deserter's or discharged seaman's name; as, for example, see Carpenter and Cook. In case any seaman or mariner has taken the name of any other seamen or mariner, who may have deserted or otherwise absented himself, after the clearing of the vessel, in the United States or elsewhere, such seaman or mariner's correct and proper name must be entered opposite the name of the seaman or mariner so deserting or absenting himself; as, for example, see Boatswain. And in the event of the seaman or mariner's taking the name of another seaman or mariner as aforesaid, entering the hospital, being discharged, or deserting, the order to the hospital, certificate of discharge or desertion, and consular returns must contain the name of said seaman or mariner so taking the place of the absconding seaman; as, for example, see Boatswain.

MARINE NOTE OF PROTEST.

Consulate of the United States of America,
Port of ——.

——, ——.

On this —— day of ——, in the year of our Lord eighteen hundred and ——, before me, —— ——, consul of the United States of America for —— and the dependencies thereof, personally appeared —— ——, master of the ship or vessel called the ——, of ——, of the burden of —— tons or thereabout, and declared that on the —— day of —— last past, he sailed in and with the said ship from the port of ——, laden with ——, and arrived in the said ship at ——, on [here insert the day and hour]; and having experienced boisterous and tempestuous weather on the voyage ——

hereby enters this Note of Protest accordingly, to serve and avail him hereafter if found necessary.

——, ——.

Attested: *Master.*

A B, *Consul.*

SHIP ——,
MARINE EXTENDED PROTEST OF —— ——, MASTER,
——, 18—.

Consulate of the United States of America,
Port of ——.

By this public instrument of declaration and protest, be it known and made manifest unto all to whom these presents shall come or may concern, that on the —— day of ——, one thousand eight hundred and ——, before me, —— ——, consul of the United States of America for ——, and the dependencies thereof, personally came and appeared —— ——, master of the ship or vessel called the ——, of ——, of the burden of —— tons, or thereabout, then lying in this port of ——, laden with —— cargo, who duly noted and entered with me the said consul his protest, for the uses and purposes hereafter mentioned; and now, on this day, to wit, the day of the date hereof, before me, the said consul, again comes the said —— ——, and requires me to extend this protest; and together with the said —— —— also come A B, mate, G H, carpenter, K L and M O, seamen, of and belonging to the said ship, all of whom being by me duly sworn on the Holy Evangelists of Almighty God, did severally voluntarily, freely, and solemnly declare, depose, and state as follows, that is to say: That these appearers, on the —— day of ——, in their capacities aforesaid, sailed in and with the said —— from the port of ——, laden with ——, and bound to the port of ——; that the said ship was then tight, staunch, and strong; had her cargo well and sufficiently stowed and secured; had her hatches well caulked and secured; was well and sufficiently manned, victualed, and furnished with all things needful and necessary for a vessel in the merchant service, and particularly for the voyage she was about to undertake; that

[Here insert narrative of the facts of the voyage as they occurred, with full and minute particulars, with dates, latitude, longitude, etc.]

And these said appearers, upon their oaths aforesaid, do further declare and say: That during the said voyage they, together with the others of the said ship's company, used their utmost endeavors to preserve the said —— and cargo from all manner of loss, damage, or injury. Wherefore the said —— ——, master, hath protested, as by these presents I, the said consul, at his special instance and request, do publicly and solemnly protest, against all and every person and persons whom it doth or may concern, and against the winds, and waves, and billows of the seas, and against all and every accident, matter, and thing, had and met with as aforesaid, whereby, and by reason whereof, the said —— or cargo already has, or hereafter shall appear to have suffered or sustained damage or injury. And do declare that all losses, damages, costs, charges, and expenses that have happened to the said —— or cargo, or to either, are, and ought to be borne by those to whom the same by right may appertain by way of average or otherwise, the same having occurred as before mentioned, and not by or through the insufficiency of the said ——, her tackle or apparel, or default or neglect of this appearer, his officers, or any of his mariners.

Thus done and protested in the port of ——, this —— day of ——, in the year of our Lord one thousand eight hundred and ——.

In testimony whereof these appearers have hereunto subscribed their names, and I, the said consul, have granted to the said master this public instrument, under my hand and the seal of this consulate, to serve and avail him and all others whom it doth or may concern, as need and occasion may require.

{ SEAL OF THE CONSUL. }

Master.
A B, *Mate.*
G H, *Carpenter.*
K L, *Seaman.*
M O, do.

—— ——, *U. S. Consul.*

Shipwrecks. *See* WRECKS.

Shoal, in the *Sea language*, denotes a place where the water is shallow; and likewise a great quantity of fishes, such as a *shoal of herrings.*

Shoes (Du. *Schoenen;* Fr. *Souliers;* Ger. *Schuhe;* It. *Scarpe;* Russ. *Baschmaki;* Sp. *Zapatos*), articles of clothing that are universally worn, and require no description. The shoe manufacture is of great value and importance.

Boot and Shoe Trade.—The annual value of boots and shoes manufactured in Massachusetts is estimated at $37,000,000, exceeding any other branch of manufacture. The demand for boots and shoes for years past has been fully equal to the production, and the trade generally of Boston has been quite up to expectation. The high prices of leather and all kinds of stock have induced manufacturers to work very cautiously, and they have turned out no more goods than were actually wanted. The trade opened in January last with a good demand and a firm market, and the purchases generally were at an advance of about 5 per cent. Early in February the trade was materially checked by the ice embargo South and West, which completely closed river and harbor navigation, and prevented the forwarding of goods. The opening of navigation in March led to an active demand, and throughout March and April the business was quite active, buyers from the South and West completely clearing the market of all desirable goods, the Spring trade closing quite satisfactorily.

The high cost of stock the past year has also been quite a check on the production, keeping it within the limits of the demand; and the same policy is likely to control the operations of manufacturers the coming year. For some months past the quantity of goods turned out has been comparatively small, and the supply on the market for Spring sales will not be likely to exceed the actual wants of the trade. The quantity of boots and shoes cleared at the custom-house has been as follows:

Years.	Quantity.	Years.	Quantity.
1847	72,424	1852	195,729
1848	79,118	1853	220,138
1849	101,371	1854	196,411
1850	147,760	1855	204,601
1851	153,912	1856	224,329

A large portion of the supplies for the West are forwarded by railroad, and are of course not included in the above statement.

In one county alone of Massachusetts (Essex) the annual product of boots and shoes in 1855, according to the census, was over $12,000,000. As this is the leading trade of the State, we enumerate the product of each county:

Barnstable	$13,300
Berkshire	110,800
Bristol	498,000
Dukes	3,000
Essex	12,192,800
Franklin	62,300
Hampden	124,100
Middlesex	6,702,100
Nantucket	10,300
Norfolk	4,987,000
Hampshire	60,400
Plymouth	4,868,700
Suffolk	193,900
Worcester	7,857,300
Total value of boots and shoes	$37,4 0,000
Leather, tanned and curried	10,934,400
Patent enameled leather	1,271,900

In the immediate vicinity of Boston there are manufactures to the extent of at least $150,000,000 annually, and of this the value added to the raw material by labor can not be less than $75,000,000. In addition, the foreign dry goods, groceries, drugs, hardware, and a multiplicity of other articles sold there, swell the trade of Boston to nearly or quite a hundred millions more. Of manufactures, the first in importance are domestic cottons; and of about fifty millions manufactured annually, they send to foreign countries less than two millions, or 4 per cent. One half of these go to the west coast of South America, the east coast of South America, and the Central American States, while the West Indies receive less than $220,000 worth of cotton manufactures from Boston in a year. The trade of Boston with Cuba during the fiscal year ending June

30, 1856, stood as follows: Value of imports, $3,683,226; exports, $1,044,359.

EXPORTS OF DOMESTIC BOOTS AND SHOES FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Pairs.	Value.
Asiatic Russia	696	$2,460
Russian Possess. in North America	480	1,060
Danish West Indies	6,283	6,657
Hamburg	4,000	8,200
Dutch West Indies	880	1,372
Dutch Guiana	86	110
England	4,500	7,580
Canada	226,629	353,044
Other British North American Poss.	111,838	118,180
British West Indies	8,643	11,860
British Honduras	9,222	13,420
British Guiana	400	271
British Possessions in Africa	1,780	1,020
Other ports in Africa	7,680	5,409
British Australia	66,602	140,465
French North American Possessions	24	64
Cuba	8,180	10,775
Porto Rico	1,715	1,707
Cape de Verd Islands	154	192
Hayti	7,077	10,685
San Domingo	522	264
Mexico	1,602	2,768
Central Republic	1,340	1,705
New Granada	7,123	10,528
Venezuela	5,674	8,074
Brazil	1,729	1,186
Uruguay, or Cisplatine Republic	400	500
Argentine Republic	14,800	14,972
Chili	10,618	15,545
Peru	6,217	6,489
Sandwich Islands	40,811	42,000
Other islands in the Pacific	1,808	1,422
China	400	620
Whale-fisheries	1,570	2,145
Total, 1857	561,591	$913,995
Total, 1856	683,149	1,060,967
Decrease	121,648	$246,972

IMPORTS OF BOOTS AND SHOES INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whence imported.	Boots and Shoes of Leather.		Boots and Shoes other than Leather.	
	Pairs.	Value.	Pairs.	Value.
Hamburg	1,309	$3,221	3,540	$1,129
Bremen	17,702	14,112	12,256	5,451
Holland	42	125	114	90
Belgium	25	74	1,172	411
England	26,310	62,662	4,110	2,102
Scotland	4	12	....	....
Canada	8,259	2,038	11	27
Other British N. A. Poss.	605	357	48	148
British West Indies	145	333	....	....
British East Indies	....	....	8	20
France on the Atlantic	25,554	38,573	10,029	5,223
France on the Mediter'n	100	159	....	....
Cuba	13	37	....	....
Sardinia	....	....	31	25
New Granada	5,007	5,873	....	....
Brazil	....	....	8,153	3,355
Sandwich Islands	30	35	....	....
China	....	....	29,315	12,594
Total	78,205	$127,651	77,787	$30,525

Shola. There is a singular substance manufactured in India from the cellular, pith-like stems of the *hedysarum lagenarium*. It closely resembles in appearance the Chinese rice-paper, and is considered to be well adapted to various purposes in the arts. The shola is wrought in India into life-buoys, boxes, bottle-cases, hats, and numerous other articles. From its loosely-cellular structure, it is a very bad conductor of heat, and this, together with its lightness, admirably fits it for the manufacture of hats. It is also advantageously fitted for purposes of ornament, as it may readily be made to present all the appearance of ivory.

Shore, a place which is washed by the sea or by some large river. Count Marsigli divides the sea-shore into three portions: the first of which is that tract of land which the sea just reaches in storms and high tides, but which it never covers; the second part of the shore is that which is covered in high tides and storms, but is dry at other times; and the third is the descent from this, and is always covered with water. The first part is only a continuation of the continent, and suffers no alteration from the neighborhood of the sea, except that it is rendered fit for the growth of some plants, and wholly unfit for that of others, by the saline steams and impregnations; and it is scarcely to be conceived by any but those who have observed it how far on land the affects of the sea can reach, so as to make the earth proper for plants which will not grow without this influence; there being several plants frequently found upon high hills and dry places at three, four, and more miles from the sea, which yet would not grow unless in the neighborhood of it, nor will they ever be found elsewhere.

The second part or portion of the shore is much more affected by the sea than the former, being frequently washed and beaten by it. Its productions are rendered salt by the water, and it is covered with sand or with the fragments of shells in the form of sand, and in some places with a tartarous matter deposited from the water. The color of this whole extent of ground is usually dusky and dull, especially where there are rocks and stones covered with a slimy matter.

The third part of the shore is more affected by the sea than either of the others; and it is covered with a uniform crust of the true nature of the bottom of the sea, except that plants and animals have their residence in it, and the decayed parts of these alter it a little.—*See* GULF STREAM and OCEAN.

Shumac, or **Sumach** (Ger. *Schmack, Sumach;* Fr. *Sumac, Roure, Roux;* It. *Sommaco;* Sp. *Zumaque;* Russ. *Sumak*). Common shumac (*Rhus coriaria*) is a shrub that grows naturally in Syria, Palestine, Spain, and Portugal. That which is cultivated in Italy, and is improperly called *young fustic,* is the *Rhus cotinus.* It is cultivated with great care: its shoots are cut down every year quite to the root; and, after being dried, they are chipped or reduced to powder by a mill, and thus prepared for the purposes of dyeing and tanning. The shumac cultivated in the neighborhood of Montpellier is called *rédoul* or *roudo.* Shumac may be considered of good quality when its odor is strong, color of a lively green, is well ground, and free from stalks. Italian shumac is used in dyeing a full high yellow, approaching to the orange, upon wool or cloth; but the color is fugitive. Common shumac is useful for drab and dove colors in calico-printing, and is also capable of dyeing black.—BANCROFT *on Colors.*

Siam. This extensive kingdom, in the southeastern part of Asia, occupies the central part of Farther India, and has on its west the British Tessarin provinces and the Bay of Bengal; on the north and northwest, Burmah and the free Laos country; on the east, Anam; and on the south, a coast line of 1470 miles along the Gulf of Siam. Its area has been differently estimated: some authors extending it to 294,720 square miles, of which there are assigned to Siam proper 141,175 square miles; 20,420 to Cambodia; 108,645 to the tributary Laos; and 24,480 to the Malay provinces. Crawford, however, who seems to have enjoyed the most favorable opportunities of correctly estimating the extent of Siam, fixes its area at 190,000 square miles.

The same authority estimates the population at 2,790,500, in 1822; but the American commissioner, who negotiated the commercial treaty with Siam on the part of the United States in 1832, gives an estimate for that period as follows:

Siamese	1,600,000
Laos	1,200,000
Malays	320,000
Chinese	500,000
Total	3,620,000

All authors concur in representing Siam as one of the most fertile and delightful countries in the East, and capable, when its immense resources are more fully developed, of sustaining an extensive and valuable foreign trade. No other country eastward of the Cape of Good Hope abounds more plentifully in all the productions suited for foreign commerce; and it is found

to be no less distinguished for the great variety of its mineral than it is acknowledged to be for its vegetable productions. The largest-sized vessels are built annually in Siam. Some of the Chinese junks, the construction of which forms an important feature in the trade with China, measure 1000 tons burden. The timbers are of a hard wood, called by the natives *marbao*, and the plank are of the finest teak in the world.

Among the large rivers of Siam, through which the internal and foreign trade of the kingdom is conducted, the Menam is the most important, as pervading the greater part of the kingdom, and almost monopolizing its trade and navigation. On this river is situated Bangkok, which has long been the great centre of the commerce of the kingdom, inland, coastwise, and foreign. The principal articles brought down this river from the higher provinces are rice and paddy, cotton, teak-timber, sapan-wood, lac, benzoin, ivory, and beeswax; while the districts east and west of the Menam furnish gamboge, cardamoms, and sugar; and the Malay provinces contribute to the trade of Bangkok tin, zinc, cotton, etc. The foreign trade is conducted chiefly with the southern ports of Anam, Java, Singapore, Pulo-Penang, and occasionally with British India, the United States, and Great Britain. The most extensive foreign trade of Siam is with China; this trade employs from 200 to 300 junks annually, having an aggregate burden of about 25,000 tons, mostly built in Siam by the Chinese. These junks make one voyage annually, leaving the Menam in June, and returning in December. The exports to the United States and to Europe comprise sugar, pepper, lac, benzoin, gamboge, tin, cardamoms, ivory, horns, and hides, with other articles of minor importance. For these they receive all kinds of textile fabrics, shawls, cotton umbrellas, iron and steel goods, steel bars, lead and spelter, earthen and glass ware, all kinds of hardware and cutlery, with fire-arms, musket-flints, etc. Formerly the British trade with Siam was carried on under treaties with the East India Company. Duty was levied on the ship, and amounted to about $1000 per fathom on the width of the vessel. The length, draught, or tonnage was not regarded; there was no import or export duty; all duties and tolls were merged in the charge on the ship.

On the 20th of March, 1833, a treaty of amity and commerce was concluded between the King of Siam and the United States by Mr. Roberts, who had been sent thither for that purpose; ratifications were exchanged at Bangkok, April 14, 1836, and the proclamation of the President gave it effect in the United States June 24, 1837. By this treaty citizens of the United States are permitted to enter and depart from any port of the kingdom with cargoes of whatever description, and to buy, sell, and exchange, without qualification or restriction, except that they are not to sell munitions of war to any other person than the king, or to import opium or export rice. The only charge to be exacted from American vessels is a measurement duty of 1700 ticals or bats for every fathom of 78 American inches in breadth, upon ships selling merchandise, and of 1500 ticals or bats per fathom on those purchasing cargoes with specie; the measurement to be made in the middle of the vessel's length upon the single deck; or if there be more than one deck, then upon the lower one; but no charge is to be made upon a vessel entering merely to refit, or for refreshment, or to inquire the state of the market. In case of a reduction of the duties upon the vessels of any foreign nation, the same reduction is to be made in favor of those of the United States. American debtors, who shall have honestly brought forward and sold all their property for the payment of their debts, are not to be proceeded against for the balance remaining due after the application of the proceeds of such sale. Merchants trading to Siam shall obey the laws and customs of the country; and if they wish to rent houses, they shall rent the king's factories, and pay the customary rent therefor. The king's officers may take account of goods brought on shore, but no duties shall be levied thereon. In case of shipwreck of an American vessel on the Siamese coast, the persons escaping shall be hospitably entertained, and the property saved shall be restored to the owners; and if a vessel of the United States shall be captured by pirates, and brought into a Siamese port, the persons on board shall be set at liberty, and the property restored to the rightful proprietors. If the privilege shall hereafter be granted to any foreign nation, other than the Portuguese, to have consuls resident in the kingdom, the same privilege shall be extended to the United States.

With a few exceptions, this treaty is a mere transcript, as regards its commercial stipulations, of the treaties of Siam with the British East India Company. Anterior to the period of its conclusion, quite a number of American vessels had visited that kingdom, and it was supposed that the treaty would open an extensive trade between Siam and the United States. Quite the contrary, however, has proved to be the case; for it is stated that not a single cargo has since been shipped under the flag of the United States. In 1850 a special commissioner was sent by the government of the United States to Siam for the purpose of negotiating a new treaty, but without success. A similar result followed the efforts of Sir J. Brooke, British envoy, who had been specially deputed to proceed to Siam for the same object. Since that period, however, and very recently (April, 1855), Sir J. Bowring, for the British government, has succeeded in negotiating a new and much more favorable treaty than the one which it supersedes with the Siamese kingdom. Efforts are now in progress on the part of the United States to negotiate a new commercial treaty with this kingdom; but until such treaty shall have been formed, the United States, being entitled, by Article 4th of the treaty of 1833, to any diminution of duties payable by foreign vessels granted at any future time to any other nation, can, of course, avail itself in that regard, as well as respecting the appointment of consuls, of the British treaty of 1855.

Of the general trade and commercial relations of Siam with nations but little, comparatively, is with certainty known. The following summary respecting the principal products of that kingdom, and their commercial importance, is made up chiefly from British official returns of recent date:

Sugar is looked upon as the principal return for British imports. Its cultivation as an article of commerce originated in the enterprise of Chinese settlers in the year 1810. In 1822 it had reached 60,000 piculs, or 3700 tons; in 1835, 185,000 piculs, or 15,295 tons. At this period the trade in sugar received a severe check, in consequence of the king monopolizing the entire trade in his own hands, and fixing his own prices both for the producer and foreign purchaser. The present king has discontinued the traffic carried on by his predecessor, and cultivators are once more free to sell to any customer. The manufacture, however, still remains burdened with various taxes, which keep up the cost of production, and check demand, so that 80,000 piculs (say 5000 to 6000 tons) are now spoken of as an average crop. The land-tax on sugar plantations is one tical per square of twenty fathoms, which, under favorable circumstances, will yield four piculs. This would amount, on production, to one *salung* (15 cents) per picul (133⅓ lbs.); and the duty which is levied on sugar, on its passage to Bangkok, is exactly double the amount of the land-tax, the payment of which, under the new treaty, will free it from any further charge on exportation. Siamese sugar is much esteemed for its whiteness and fine strong grain, and as the greater portion of the valley of the Menam, the area of which has been estimated at 22,000 square miles, is stated to be well adapted to the growth of the

cane, it is supposed that the annual sugar crop would admit of very material increase.

Rice.—The extreme facility of irrigation, and the periodical inundations of the Menam, supply with unusual certainty the fertility necessary for the growth of this cereal. Hitherto its exportation was forbidden by law; but under the new treaty it is stipulated that this prohibition shall only be enforced in times of positive scarcity. The demand for this article, both for home and Oriental consumption, is constantly on the increase; and there is every prospect that Siam will, in the course of time, rival the British province of Arracan (in the Bengal presidency) in supplying this article for the markets of China, Australia, and Europe. The annual exportation of rice in this British province is now raised to 120,000 tons—nearly 800 per cent. over the total exportation of rice from the United States in 1855. The trade with Siam, however, will always have this advantage over that with Arracan, that in the former rice and all other products are given in exchange for manufactures and other articles of trade; while in the latter the exports are paid for in bullion. Forty times the amount of seed is stated as the average yield; and the ordinary price is one tical (61 cents) per 133 lbs.

Salt.—This article is obtained of excellent quality from the extensive mud-flats which line the head of the Gulf of Siam, and at so cheap a rate that the cost of production does not exceed from one to two ticals (61 cents to $1 22) per koyan of 25 piculs, or 3400 lbs. English. Salt is, however, a special object of taxation in Siam; and the duty of $3 60 per koyan raises the above-mentioned price to seven or eight ticals ($4 27 to $4 88) per koyan, equal to about $2 88 to $3 36 per ton. The British commissioner endeavored, in negotiating the late treaty, but ineffectually, to obtain a reduction of this high duty. It is, notwithstanding its price in market, in much demand at Singapore; and the Siamese government have withdrawn all impediments hitherto existing to its shipment.

Teak.—The teak forests of Siam are situated at some considerable distance up the Menam, and the trees, when felled, are floated down in large rafts to Bangkok. There is always a brisk demand for this article, both in the markets of China and Singapore.

Sapan-wood.—The annual exportation of this dye-wood reaches from 80,000 to 100,000 piculs (from 5000 to 6000 tons). Hitherto the Siamese government have levied a tax of one tical per picul on sapan-wood, being from 50 to more than 100 per cent. upon its value; and it was with great difficulty that the British commissioner persuaded the Siamese authorities to lessen this tax to 2½ salungs per picul—being a reduction of more than one-third upon the old rate.

Rose-wood and Ebony.—These woods are abundant in Siam, and are largely shipped to China and Singapore. The export duty has been reduced one-third of former rates.

Pepper.—The production of this article had reached at one time more than 9,000,000 lbs. per annum, when an oppressive tax, imposed by the present administration of Siam, of one catty of pepper on every vine, or about 8 per cent. on the produce, in addition to an export duty of one tical (61 cents) per picul, amounting to the same percentage, caused such a check to the cultivation, that last year only 20,000 piculs were brought to market. The removal of the first of these taxes, now agreed to, will serve, it is stated, to restore the growth of this useful spice to its former flourishing condition. In 1855 the United States imported from the British and Dutch East Indies 3,301,460 lbs. of black pepper, valued at $171,008.

Cotton.—Above the line of the inundated tracts, land fit for the cultivation of cotton abounds. The crop has reached as high as 140,000 piculs (8330 tons) in a year; but owing to various causes, some of which the British commissioner has succeeded in removing, it is thought that its culture will be again encouraged, and its exportation increased.

Silk.—This product has been largely grown in the rich district of Kocat, and the crop has reached 1500 piculs per annum—valued at $150,000; but the larger markets of China being so close at hand, the silk of Siam will probably never assume much importance in the foreign trade of the kingdom.

Hemp.—This article holds out much interest to foreign traders. Its growth in Siam is only just becoming known, and it is particularly recommended on account of its great strength, and its glossy and silky texture, which would allow of its being woven up into silk fabrics. Its moderate price—10 ticals ($6 10) per picul—will enable it to compete successfully with that of Manilla.

The following list will be found to contain all the manufactures which are most suited to Siamese consumption: White and grey long cloths; white and gray madapollane; white and gray cambrics; white and gray jaconets; book lappets; velvets, plain and figured; checked fancy muslins; American drills; cotton umbrellas; figured long cloths; dyed cambrics; dyed long cloths; prints, chintzes, furnitures, and neutrals; Siam *chowls*, or dresses; Turkey red cloth; gray cotton twist; Turkey red twist; imperial red and blue twist; long ells; ladies' cloth; Spanish stripes; merinos of assorted colors; canvas; iron, steel, lead, spelter; earthen-ware, assorted; glass ware and lamps, assorted; muskets, gun-locks; brimstone, beeswax; cowries, flint-stone, musket-flints, etc.

The imports from India and China are even more varied, and consist of almost every article of manufacture, trifling or important, produced in those countries; these being required not only to meet the tastes and requirements of the Siamese, but also to supply the wants of the natives of India and China, many of whom are domiciled in Siam. The statistics of the trade of Siam are but meagre. The following table exhibits the number and tonnage of ships which left the port of Bangkok for China and Singapore, from April 1, to August 31, 1855:

Destination.	Number.	Aggregate Tonnage.	Average Tonnage.
To China	11	4850	441
To Singapore.....	9	3500	389

—*U. S. Com. Relations.*

Sicily, or Two Sicilies. The kingdom of the Two Sicilies comprises the ancient realm of Naples and the island of Sicily. Naples proper embraces an area of 31,350 square miles, and, by the census of 1854, contains a population of 6,843,355 inhabitants. Its productions are of the most valuable and varied kind; and it only requires good roads to carry the produce of the soil to market, and security and encouragement under the government, to render the Neapolitan dominions among the most profitably productive in Europe. The chief products are corn, wine, olive-oil, cotton, flax, hemp, liquorice-paste, silk, and wool.

The annual crop of wheat is between 60 and 80 million bushels, and the yearly consumption is about 40 million bushels. The annual produce of Indian corn is about 40 million bushels. The yearly production of wine is about 400,000 pipes, the greater part of which is consumed at home. About 13,000 pipes are made into brandy near Naples, and from 250 to 300 tons of argol and cream of tartar are prepared for foreign markets. About 70,000 tons of olive-oil are expressed yearly, half of which is exported to foreign markets. The quantity of cotton raised annually in the continental part of the kingdom amounts to about two million pounds. In Sicily the cultivation is greater than in Naples. The annual produce of raw silk is about 1,000,000 lbs., of which one half is consumed in the factories of the kingdom.

There are two species of wheat raised in the kingdom of the Two Sicilies—the soft, of which the best quality

of bread is made; and the hard wheat, chiefly employed in the preparation of macaroni. The principal exports of Naples proper are, olive-oil, silk, hemp, wool, wine, grain, macaroni, and coral; imports, colonial and manufactured goods, iron, and cutlery.

Prior to the ratification of the treaty between the United States and the kingdom of the Two Sicilies, of December 1, 1845, the commerce between the two countries was chiefly indirect. Having no commercial treaty, the United States flag had to contend against high duties, an exemption of 10 per cent. in favor of British and French vessels employed in the direct trade, and the extreme rigor of quarantine regulations. The indirect trade was carried on through Leghorn and the French Mediterranean ports, and was necessarily fettered with the incumbrances and burdens incident to a circuitous route. Neapolitan merchandise was taken on board American ships in these ports; while colonial goods destined for the markets of the Sicilies were sold to the French and Tuscan merchants, on whose account they were shipped to their destination, or sold direct to Neapolitan traders, by whom they were introduced under the 10 per cent. discrimination. The retaliatory duties of import and tonnage levied on the Sicilian flag in the United States virtually excluded their vessels from our ports, and the consequence was that the trade between the two countries became exceedingly limited. Indeed, in returns of the foreign trade and navigation of the Two Sicilies for a period of three years (1839, 1840, and 1841), but a single American vessel appears to have entered or cleared at the ports of that kingdom.

The treaty of 1845, which went into effect July 24, 1846, provides that there shall exist between the two countries reciprocal liberty of commerce and navigation; that no higher duties shall be imposed on importations into either country of articles from the other than from any other country; that favors granted by either party to other nations shall be common to the other; that there shall be equalization of duties, etc., on imports and exports, on vessels of either country, as also of tonnage, harbor, and light-house duties; that the stipulations of the treaty shall not apply to the coasting trade; and that no preference shall be given by either party to importations on account of the national character of vessels in which imported. The treaty to be in force ten years, with the usual twelve months' notice for its termination.

By a convention ratified July 14, 1855, two principles were recognized between the two countries as permanent and immutable, to wit: 1st. That the effects or goods belonging to citizens or subjects of a power or state at war are free from capture and confiscation when found on board of neutral vessels, except articles contraband of war; and, 2d. That the property of neutrals on board an enemy's vessel is not subject to confiscation, unless contraband of war.

In 1852 the commerce of the continental part of the kingdom of the Two Sicilies is thus given: Imports, $12,372,363; exports, $10,943,831; total, $23,316,194.

The trade represented by the preceding figures passed exclusively through the custom-houses, and does not comprise the movements at the general entrepôt of Brindisi, nor the transhipment in the roads. The principal foreign powers which participated in the commercial movements of 1853 were England, France, Austria, Sardinia, the Papal States, and Tuscany; and next in the order of importance were Holland, Sweden, Russia, Spain, Greece, the Ionian Islands, Brazil, and the United States. The value of merchandise imported into the continental part of the kingdom, it is seen above, amounted to $12,372,363. This is the value of maritime commerce with foreign nations only. The coasting trade between the different ports of the kingdom would largely augment this total, but no returns of this trade are accessible. Of the imports, sugar, coffee, and trans-Atlantic produce are chiefly supplied by England. Marseilles also furnishes small quantities of sugar and coffee from French colonies; but, owing to their superior quality and high price, they are not much in demand. The sugars from Holland, being lower priced, find a readier market. Besides these sources of supply, several Neapolitan vessels have for some years past kept up a direct intercourse between the port of Naples and Brazil. There seems no reason why the United States should not compete with England, Holland, France, and even Genoa, in supplying these trans-Atlantic necessaries to the kingdom of the Two Sicilies; nor why the carrying trade in these articles from the countries of production, or from the bonded warehouses of the United States, could not be made as profitable to American as to British, Dutch, French, or even to Genoese vessels. Genoa is a free port, and the dues for pilotage, anchorage, and quarantine are light.—*See* SARDINIA.

The subjoined statement exhibits the quantities and values of sugar and coffee respectively, exported from the United States to the kingdom of the Two Sicilies, during a period of five years, from 1851 to 1855, both inclusive, made up from the annual reports of the Secretary of the Treasury on Commerce and Navigation; followed by a statement exhibiting the quantities and values of the same articles exported to all countries; and a third exhibiting the quantities and values of cotton and tobacco exported to the Two Sicilies during the same period:

Years.	Sugar.		Coffee.	
	Pounds.	Values.	Pounds.	Values.
1851	....	....	34,279	$3,340
1852	....	....	60,928	4,919
1853	....	....	91,927	7,667
1854	....	....	....	....
1855	302,990	$4542	1,830,564	170,354

COTTON AND TOBACCO EXPORTED FROM THE UNITED STATES TO THE TWO SICILIES, FROM 1851 TO 1855.

Years.	Cotton		Tobacco.	
	Pounds.	Values.	Pounds.	Values.
1851	....	....	92,060	$10,302
1852	....	....	208,000	16,619
1853	1,063,685	$66,219	22,000	2,189
1854	327,149	31,631	1,282,000	133,582
1855	1,283,492	109,724	91,000	24,124
Aggregate.	2,634,706	$227,574	1,697,060	$186,907
Average	878,235	79,191	339,400	37,361

The following are the chief staples which the Two Sicilies draw from the United States: Tobacco, cotton, rum, flour, naval stores, etc. Of these there were exported in 1854 and 1855 in value as follows:

Description of Merchandise.	1854.	1855.
Whalebone	$1,000	....
Staves and headings	11,822	$10,715
Masts, spars, and naval stores	4,895	14,440
Flour	28,791	....
Cotton	31,631	109,724
Tobacco	133,582	24,124
Rum (from molasses)	27,256	25,579

In exchange for these staples and for miscellaneous cargoes, our ships return home laden with wines, drugs, fruits, feathers, anchovies, oil, sulphur, silks, corks, and rags; of which latter article were imported in 1854, direct from the Sicilies, 3,140,718 lbs., of the value of $90,424. Under the treaty of 1845 Sicilian and United States vessels are equalized in the ports of the two countries, when laden with the produce and manufactures of the country to which the vessels belong. The direct trade is, therefore, freed from the restrictions and incumbrances with which it was clogged prior to that period, and the commerce between the two countries has in consequence largely increased. The exports from the United States of its staples alone amount now annually to between $250,000 and $300,000, more than one half of which is shipped under the United States flag. By a royal decree bearing date 18th December, 1854, the privileges which apply to the direct trade with the Two Sicilies have been equally extended to the indirect trade in favor of those nations which have

commercial treaties with the kingdom of the Sicilies, when they shall have granted like favors to the flag of the Two Sicilies.

Under the operation of the treaty already referred to, and of the liberal privileges conceded by this decree, the commerce of the United States with the Two Sicilies is increasing. The total value of exports from the Sicilies to the United States in 1845 was $530,000. In 1854 they reached nearly $1,000,000, and in 1855 they ascended to $1,718,949. In 1845 the United States exported to the Sicilies its own staples to the amount of $70,625, against $246,151 in 1854, and $207,790 in 1855. The total trade in 1855 was $2,370,425, against $1,219,351 in 1854, and $934,725 in 1845.

The port charges in the Two Sicilies are 3½ cents per ton on equalized vessels, and 32 cents per ton on those non-equalized. Besides the tonnage duty there are sundry minor charges, including custom-house visit, entrance and clearance charges, etc., amounting in the aggregate to $3 75 per vessel on entrance; and on clearance, including compensation to brokers, $5 10. The quarantine regulations require a payment of $5 for obtaining the requisite pratique. Should the vessel be subject to quarantine, the charges are largely augmented. In order to obtain free entrance, it is necessary to exhibit a clean bill of health, signed by the Neapolitan consul at the port of clearance. It would seem, however, that vessels laden with cotton or other "susceptible" merchandise have always to undergo quarantine,* which is exceedingly strict if during the voyage sickness chanced to prevail on board.

The following is a condensed summary of the latest quarantine regulations in force at the different ports of the Two Sicilies. These regulations are revised annually, but the general principles on which they are based remain unaltered:

"Vessels proceeding from New Orleans, or any port of Louisiana, shall be excluded whenever they come unprovided with a certificate signed by the royal consul at the port of departure, attesting that the yellow fever did not exist in that State, either at the period of sailing or twenty days prior to the same.

"The places *supposed* to be infected by yellow fever are the Argentine and Paraguaian republics, Demerara, Peru, Costa Firma, Gulf of Mexico, Mississippi, Great and Little Antilles, and Savannah.

"The places *suspected* of yellow fever are Santa Martha in Columbia, Chili, Guayana (except Demerara), Ohio and Missouri, Vera Cruz, and ports of the United States, except as above."

The certificate of the Sicilian consul is indispensable to be admitted to pratiquo; but even with such protection the quarantine regulations are oppressive and uncertain, especially if any sickness has occurred on board during the voyage.

Pilotage.—Vessels arriving at Naples are seldom under the necessity of taking pilots, and hence there is no fixed regulation respecting them. Should a pilot, however, be required, one can at all times be found among the fishermen on the coast, with whom the captain must make the best bargain he can.

The principal ports are Naples, situated on a bay of the same name, having a commodious harbor, and good anchorage for any sized vessels to load and discharge cargoes; and in Sicily proper, Palermo and Messina.

The foreign trade of Naples is almost exclusively in possession of English merchants. The returns for 1855 assign two-thirds of this trade to the English flag, and the other third to the Neapolitan and other flags. Some twenty or thirty vessels from the north of Europe arrive annually with stock-fish, crushed sugar, etc., from Holland. England employs annually in the trade with Naples about one hundred and thirty vessels of small size, from one to two hundred tons each, besides a line of steamers, which regularly touch at this port, to and from Liverpool. The facilities which these steamers furnish for executing orders suitable for the Neapolitan market present the most serious obstacle to a direct trade with the United States. The privilege of the indirect trade, however, lately conceded to the American flag, may tend to increase the commercial intercourse between the two countries.

The imports from Great Britain in 1855 amounted in quantity to 34,900 tons, which at 40*s.* (@9 60) per ton gave to British shippers on freight alone the sum of @335,040, besides 10 per cent. primage. The value of these imports was estimated at £3,000,000, or $15,000,000.

The exports from Naples to Great Britain were estimated at 15,500 tons, and the value at about @7,500,000.

Besides the disadvantage already referred to, under which American vessels would have to compete with English in the trade of Naples, the quarantine regulations are such as to render any enterprise in that trade on the part of American shippers uncertain and hazardous. hese regulations, as already observed, are revised annually, and provide that, under the most favorable circumstances, a certificate from the Sicilian consul at the port of departure is indispensable to be admitted to free pratique.

A few facts relative to currency and exchange at Messina, communicated to the State Department under date of October 20, 1855, by the United States consul at that port, are subjoined:

"It is customary to draw, for all transactions with the United States, on Paris or London, and occasionally on Marseilles, Hamburg, or Genoa. American coin, gold and silver, is, and has been for some time, at a discount of f om 10 to 15 per cent.

"The only kind of Spanish dollar current here is the pillar dollar, and is at an advance of about 4 per cent.

"Exchanges are very unfavorable, and far below the rates of former years. London, 1038 grains per £; Paris and Marseilles, 41¼ grains per franc; Lyons, 41⅞, and Genoa 42 grains per franc; Leghorn, 85¼ grains per lire; Amsterdam, 88¼ grains per florin; Hamburg, 78 grains per mark-banco.

"The Sicilian *ounce* is two dollars and a half, or 30 lires, or 600 grains Sicilian currency."

Island of Sicily.—This island has an area of 10,556 square miles, and a population of 2,208,392 inhabitants. Since its annexation to the kingdom of Naples in 1736, it has experienced much of the evils of absenteeism. The revenue, except that portion of it which is paid to the Neapolitan employes who reside on the island, is drained off to be spent in enriching the metropolitan court. In this respect Sicily in some degree resembles Ireland. The resources which might be beneficially expended in making roads and other improvements, indispensable to the proper development of the industry of the island and the growth of its commerce, are squandered in other countries by an absentee nobility.*

Wheat and barley are exported in small quantities. Other chief crops are beans, pulse, maize, rice, olive-oil, oranges, lemons, almonds, and other fruit; potatoes, tobacco, flax, hemp, sumach, liquorice, and manna. In the northeast part of the island silk is produced, and it is woven at Catania; and in the western part 30,000 pipes of wine are annually made, of which about 20,000 are exported from Marsala. Sulphur is also a leading staple of the island of Sicily. It is found in tertiary formations, and its production is annually increasing. From 1838 to 1842 a monopoly in the export of sulphur was granted by the Neapolitan government to a French mercantile firm; but so vigorous was the resistance of the British government, that in 1842 the monopoly was suppressed. Since that period the

* See Consular Returns, "Naples, No. 30, December 30, 1853." Part III.

* Of the whole revenue raised in Sicily (about $10,000,000), half the amount is sent direct to Naples, never to return. * * * No country exhibits land so highly taxed, nor one in which so little good is extended to the general community.—MACGREGOR.

trade in this article has been annually increasing. These sulphur mines have been explored and worked for more than three hundred years, but it was not until chemical science had pointed out the various uses to which sulphur can be applied that its exportation had risen to any great importance. There are now about 150 mines worked in an area of 2700 miles, though the most productive mines are confined to Favara, Sommatirio, Gallizzi, and Riesi.

Mr. Macgregor gives some interesting statistics of the sulphur trade of the island of Sicily, from which it appears that in 1838 the amount on hand was 80,000 quintals; on the 1st August, 1840, it had risen to 680,000 quintals; in 1841 it reached 830,000 quintals; and in 1842 it stood as high as 1,100,000 quintals.

There entered the ports of the island of Sicily in 1843, 1435 vessels of 211,000 tons; of which from the United States there were 9 of 2500 tons; and during the same year there cleared from Sicilian ports 1427 vessels of 256,000 tons; of which from the United States there were 80 vessels, measuring 22,600 tons.

The value of imports and exports during the same year was:

Imports from all foreign countries.....	$4,522,400
Exports to " "	6,594,400
Total trade.....	$11,116,800
Imports from the United States	$272,600
Exports to " "	651,000
Total trade with the United States..	$923,600

Vessels belonging to the Two Sicilies are admitted into the ports of the United States on the same terms as American vessels only when laden with the home produce or home manufactures.

COMMERCE AND NAVIGATION OF THE SICILIES WITH FOREIGN COUNTRIES DURING THE YEAR 1854.

Countries.	Imports. Francs.	Exports. Francs.	Cleared. Vessels.	Cleared. Tons.
Austria	5,206,304	488,866	859	59,300
Denmark	....	....	1	163
Modena	....	....	3	267
Roman States	74,608	600,167	577	23,422
Spain	3,734,826	....	6	868
United States	1,283,216	547,477	17	5,153
France	10,283,455	14,752,017	395	103,750
Great Britain	19,144,004	12,607,584	200	43,330
Greece	1,061,304	79,695	12	1,239
Holland	4,276,207	250,171	14	2,727
Ionian Islands	....	....	61	3,213
Sweden and Norway	544,000	....	6	1,525
Russia	26,282,407	275,738	42	9,214
Tuscany	3,023,807	3,899,986	65	5,300
Turkey	2,768,260	136,702	20	5,577
Sardinia	2,460,871	3,006,882	254	36,651
Prussia	....	....	2	778
Tunis	....	....	10	1,036
All others	122,600	66,504	...	....
Total	80,270,478	30,717,739	2514	297,651

SHIPPING IN 1854.

	Tons.	Vessels.
Continent	10,803	202,318
Two Sicilies	2,031	47,438
Total	12,834	249,756

FOREIGN COMMERCE OF THE UNITED STATES WITH SICILY, FROM OCTOBER 1, 1830, TO JULY 1, 1857.

Years ending	Exports. Domestic.	Exports. Foreign.	Exports. Total.	Imports. Total.	Whereof there was in Bullion and Specie. Export.	Whereof there was in Bullion and Specie. Import.	Tonnage cleared. American.	Tonnage cleared. Foreign.
Sept. 30, 1831	$2,369	....	$2,369	....	....	....	378	....
1832	3,088	....	3,088	$156,017	....	....	....	332
1833	6,123	$2,940	9,063	165,714	....	....	....	376
1834	4,060	....	4,060	254,966	....	....	....	311
1835	17,373	10,884	28,257	274,548	....	$608	1,204	1,228
1836	146,183	49,714	195,897	642,090	....	....	1,457	3,148
1837	18,620	5,877	24,497	411,959	....	....	1,230	2,105
1838	25,532	21,813	47,345	345,362	....	23,600	1,012	1,824
1839	192,462	84,607	277,069	592,151	....	....	2,233	2,298
1840	303,217	33,923	337,140	649,525	....	500	1,006	3,176
Total	$719,027	$209,758	$928,785	$3,493,732	....	$24,708	8,520	14,895
Sept. 30, 1841	$474,470	$11,592	$486,062	$588,057	....	$14,800	1,913	3,566
1842	237,861	195,797	433,658	589,419	....	654	1,272	3,016
9 mos., 1843*	32,558	51,871	84,429	169,664	....	4,700	565	980
June 30, 1844	75,624	278,692	354,316	462,773	....	....	1,045	3,296
1845	70,625	334,667	405,292	529,493	....	....	445	3,628
1846	319,441	298,391	617,832	513,235	....	....	767	4,318
1847	56,809	7,218	64,117	560,088	....	....	1,423	669
1848	17,754	9,075	26,829	618,029	....	4,526	924	339
1849	24,359	4,854	29,213	530,244	....	....	1,853	223
1850	50,577	13,024	63,601	822,629	....	22,625	3,326	1,633
Total	$1,360,168	$1,205,181	$2,565,349	$5,324,631	....	$46,811	13,533	21,407
June 30, 1851	$11,743	$8,193	$19,936	$825,024	....	....	2,848	1,016
1852	55,649	10,890	66,539	600,541	....	....	6,069	3,127
1853	120,347	24,818	155,165	803,351	....	$20,000	....	....
1854	246,151	13,900	260,051	959,300	....	....	3,862	3,713
1855	207,790	443,686	651,476	1,718,949	....	4,870	4,709	3,444
1856	303,574	75,195	378,771	1,488,526	....	....	1,642	1,621
1857	1,093,954	58,963	1,152,920	1,575,953	....	....	5,934	3,119

* Nine months to June 30, and the fiscal year from this time begins July 1.

Principal Port.—Palermo, anciently Panormus, a large city and sea-port, the capital of the noble island of Sicily, on the north coast of which it is situated, the light-house being in lat. 38° 8′ 15″ N., long. 13° 21′ 56″ E. Population, 170,000. The Bay of Palermo is about five miles in depth, the city being situated on its southwest shore. A fine mole, fully one quarter of a mile in length, having a light-house and battery at its extremity, projecting in a southerly direction from the arsenal into nine or ten fathoms of water, forming a convenient port, capable of containing a great number of vessels. This immense work cost about £1,000,000 sterling in its construction; but the light-house, though a splendid structure, is said to be very ill lighted. There is an inner port, which is reserved for the use of the arsenal. Ships that do not mean to go within the mole may anchor about half a mile from it, in from 16 to 23 fathoms, mole light bearing northwest three-quarters west. A heavy sea sometimes rolls into the bay, but no danger need be apprehended by ships properly found in anchors and chain cables. In going into the bay it is necessary to keep clear of the nets of the tunny fishery, for these are so strong and well moored as to be capable of arresting a ship under sail.

Money.—Since 1818 the coins of Sicily have been the same as those of Naples, their names only differing. The ducat = 3*s.* 5·2*d.* sterling, is subdivided into 100 bajocchi and 10 pirciolì; but accounts are still generally kept in oncie, tarie, and grani: 20 grani = 1 taro; 30 tari = 1 oncia; the oncia = 3 ducats; and 1 carlino of Naples = 1 taro of Sicily. The Spanish dollar is current at 12 tari 8 grani.

Weights.—100 Sicilian pounds of 12 ounces = 70 lbs. avoirdupois = 85·11 lbs. Troy = 31·76 kilog. = 64·23 lbs. of Amsterdam = 65·58 lbs. of Hamburg.

Sierra Leone, an English settlement, near the mouth of the river of the same name, on the west coast of Africa, lat. 8° 30′ N., long. 13° 5′ W. This colony was founded partly as a commercial establishment, but more from motives of humanity. It was intended to consist principally of free blacks, who, being instructed in the Christian religion, and in the arts of Europe, should become, as it were, a focus whence civilization might be diffused among the surrounding tribes. About 1200 free negroes, who, having joined the royal standard in the American war, were obliged, at the termination of that contest, to take refuge in Nova Scotia, were conveyed thither in 1792. To these were afterward added the Maroons from Jamaica; and since the legal abolition of the slave-trade, the negroes taken in the captured vessels, and liberated by the mixed commission courts, have been carried to the colony. The total population of the colony in 1850 amounted to about 55,500, all black or colored, with the exception of about 100 whites.

Success of the Efforts to civilize the Blacks.—Great efforts have been made to introduce order and industrious habits among these persons. We are sorry, however, to be obliged to add that these efforts, though prosecuted at an enormous expense of blood and treasure, have been signally unsuccessful. There is, no doubt, some discrepancy in the accounts of the progress made by the blacks. It is, however, sufficiently clear that it has been very inconsiderable, and we do not think that any other result could be rationally anticipated. Their laziness has been loudly complained of, but without reason. Men are not industrious without a motive; and most of those motives that stimulate all classes in colder climates to engage in laborious employments are unknown to the indolent inhabitants of this burning region, where clothing is of little importance, where sufficient supplies of food may be obtained with comparatively little exertion, and where more than half the necessaries and conveniences of Europeans would be positive incumbrances. And had it been otherwise, what progress could a colony be expected to make into which there have been annually imported crowds of liberated negroes, most of whom are barbarians in the lowest stage of civilization?

Influence of the Colony upon the illicit Slave-trade.—As a means of checking the prevalence of the illicit slave-trade, the establishment of a colony at Sierra Leone has been worse than useless. The trade is principally carried on with the countries round the Bight of Biafra and the Bight of Benin, many hundred miles distant from Sierra Leone; and the mortality in the captured ships during their voyage to the latter is often very great. The truth is that this traffic will never be effectually put down otherwise than by the great powers declaring it to be *piracy*, and treating those engaged in it, wherever and by whomsoever they may be found, as sea robbers or pirates. Such a declaration would be quite conformable to the spirit of the declaration put forth by the Congress of Vienna in 1824.—*See* SLAVE-TRADE. But the jealousies with respect to the right of visitation and search are so very great, that it is exceedingly doubtful whether the maritime powers will ever be brought to concur in any declaration of the kind now alluded to; unless, however, something of this sort be done, we apprehend there are but slender grounds for supposing that the trade will be speedily suppressed.

Climate of Sierra Leone.—The soil in the vicinity of Sierra Leone seems to be but of indifferent fertility, and the climate is about the most destructive that can be imagined. The mortality among the Africans sent to it seems unusually great, and among the whites it is quite excessive. Much as we desire the improvement of the blacks, we protest against its being attempted by sending our countrymen to certain destruction in this most pestiferous of all pestiferous places. It would seem, too, that it is quite unnecessary, and that blacks may be employed to fill the official situations in the colony. But if otherwise, it should be unconditionally abandoned.

Commerce.—Commercially considered, Sierra Leone appears to quite as little advantage as in other points of view. Palm-oil is the great article of export from the west coast of Africa; and by far the largest portion of it is furnished by the coast to the west and south of the Rio Volta, many hundred miles from Sierra Leone. We doubt, indeed, whether the commerce with the latter will ever be of much importance. At all events, we hardly think that it can be expected materially to increase if it be conducted in the way in which it is affirmed that the intercourse with the liberated negroes is at present conducted.—*Reports on Colonial Possessions*, 1851, p. 175. If there be not some mistake or exaggeration in the statement now referred to, nothing can be conceived more disgraceful. Should it, however, be ascertained that an establishment is really required for the advantageous prosecution of the trade to Western Africa, it is abundantly obvious that it should be placed much farther to the south than Sierra Leone. The island of Fernando Po has been suggested for this purpose; but after the dear-bought experience we have already had, it is to be hoped that nothing will be done with respect to it without mature consideration.

ACCOUNT SHOWING THE VALUE OF THE VARIOUS ARTICLES, THE GROWTH, PRODUCE, AND MANUFACTURE OF THE COLONY AND WEST COAST OF AFRICA, EXPORTED FROM SIERRA LEONE DURING EACH OF THE YEARS FROM 1848 TO 1850, INCLUSIVE.

Articles.	1848.	1849.	1850.
	£	£	£
Arrow-root	478	492	618
Beeswax	281	680	1,952
Benni-seed	60	130	417
Bar-wood	....	16	225
Cam-wood	3,292	3,277	4,466
Coffee	38	66	2,288
Gum copal	250	1,244	1,671
Ground-nuts	13,525	7,389	17,867
" " oil	646	1,991	2,945
Ginger	22,032	10,142	14,818
Hides (dry and salted), leopard and goat skins	11,491	9,259	10,832
Ivory	1,769	3,555	15,586
Ox horns	51	....	17
Peppers and Cayenne pepper	2,978	2,631	4,721
Palm oil	11,858	48,276	24,070
" nuts	....	1,694	439
" oil	....	....	340
Rice (clean and rough)	628	....	839
Teak timber	26,336	25,452	11,648
Sundries, including curiosities, mats, etc.	2	27	55
Total	95 615	111,330	123,165

The total value of the exports of British produce and manufacture to the west coast of Africa amounted in 1851 to £658,934; but of that amount only £94,546 went to Sierra Leone. The value of the exports from the latter to the United Kingdom during the ten years ending with 1850 amounted to £63,290 a year. The only manufacture that can be said to exist in the colony is the expression of the oil from the ground-nut by means of machinery.—*See* NUTS, GROUND. In 1850, 122 ships entered the river, of which 27 were from England.

Colonial Expenses.—The pecuniary expenses occasioned to Great Britain by this colony, and the unsuccessful efforts to suppress the foreign slave-trade, have been altogether enormous. Mr. Keith Douglas is reported to have stated in the House of Commons, in July, 1831, that "down to the year 1824 the *civil* expenses of Sierra Leone amounted to £2,268,000; and that the same expenses had amounted, from 1824 to 1830, to £1,082,000. The naval expenses, from 1807 to 1824, had been £1,630,000. The payments to Spain and Portugal, to induce them to relinquish the slave-trade, amounted to £1,230,000. The expenses on account of captured slaves were £533,092. The expenses incurred on account of the mixed commission courts

were £198,000. Altogether this establishment had cost Great Britain nearly £8,000,000!" The prodigality of this expenditure is unmatched, except by its uselessness. It is doubtful whether it has prevented a single African from being dragged into slavery, or conferred the smallest real advantage on Africa. It, however, enabled the kings of Spain and Portugal to turn their mercenary humanity to good account.—For further details with respect to Sierra Leone and the trade of Western Africa, see the *Report of the Select Committee of the House of Commons on the West Coast of Africa*, Sess. 1842, and the *Parl. Paper* for 1851.

The trade between the United States and the whole of Africa is most insignificant in comparison with that between England and simply the western coast; and it is a fact especially deserving of attention, with reference to Liberia, that for some time past, while the importations from England are increasing, from the United States they are diminishing, particularly cotton goods. It is estimated that there are not less than one hundred ships regularly trading between the British ports and the coast of Africa, while a regular line of steamers plies between England and Liberia and other settlements on the coast. In addition, it is now proposed to send a steamer up the Niger River each season for the encouragement of emigrants and the protection of traders; to secure a free port at Fernando Po, by a commercial treaty with Spain, or in some other convenient locality, as an entrepôt for British merchant ships; to maintain the African squadron in its former state of efficiency, and to make Sierra Leone a free port. The following tables show the relative importance of British and American trade with Africa:

THE TRADE OF THE UNITED STATES WITH AFRICA DURING THE NINE YEARS ENDING JUNE 30, 1857.

Years.	Exports.	Imports.	Total.
1849	$708,411	$495,742	$1,204,153
1850	759,266	524,722	1,283,988
1851	1,340,644	1,163,176	2,503,820
1852	1,246,141	1,057,657	2,303,798
1853	1,610,833	1,202,986	2,813,819
1854	1,894,972	1,296,560	3,191,532
1855	1,375,005	1,337,527	2,713,432
1856	1,795,419	1,165,857	2,961,276
1857	2,484,746	1,521,665	4,006,411

The amount of tonnage cleared from the United States was as follows:

Year ending June 30.	Tonnage cleared.	
	American.	Foreign.
1850	18,077	1075
1857	22,000	742

The following returns to Parliament (as published by the London *Shipping and Mercantile Gazette*) show the increase of exports by Great Britain to the west coast of Africa, and of imports from the same coast:

Years.	Exports.	Imports.	Total.
1850	£939,479	£905,958	£1,845,387
1851	654,543	794,810	1,449,353
1852	533,725	707,024	1,240,749
1853	901,402	749,373	1,650,775
1854	768,809	905,634	1,564,443

This is independent of the British colonies of Sierra Leone, the trade of which amounted in 1854 to £1,421,865, and of the British possessions on the Gold Coast and the River Gambia, amounting to £1,547,285 more; and of those at the Cape of Good Hope and in South Africa, swelling the amount £8,383,090 more; making in all an aggregate of over £23,000,000 in 1854 for the western coast of Africa entire.—*See* BLACKWOOD'S *Magazine*, xxiii. 63, xii. 693; *Monthly Review*, cxxiii. 188; HUNT'S *Merchants' Magazine*, xv. 572; *Edinburgh Review*, lii. 355.

Silk (Lat. *Sericum*, from *Seres*, the supposed ancient name of the Chinese), a fine glossy thread or filament spun by various species of caterpillars or larvæ of the *phalæna* genus. Of these the *Phalæna atlas* produces the greatest quantity; but the *Phalæna bombyx* is that commonly employed for this purpose in Europe. The silk-worm, in its caterpillar state, which may be considered as the first stage of its existence, after acquiring its full growth (about three inches in length), proceeds to inclose itself in an oval-shaped ball or cocoon, which is formed by an exceedingly slender and long filament of fine yellow silk, emitted from the stomach of the insect preparatory to its assuming the shape of the chrysalis or moth. In this latter stage, after emancipating itself from its silken prison, it seeks its mate, which has undergone a similar transformation; and in two or three days afterward, the female having deposited her eggs (from 300 to 500 in number), both insects terminate their existence. According to Reaumur, the *phalæna* is not the only insect that affords this material—several species of the *aranea*, or spider, inclose their eggs in very fine silk.

Raw silk is produced by the operation of winding off at the same time several of the balls or cocoons (which are immersed in hot water to soften the natural gum on the filament) on a common reel, thereby forming one smooth even thread. When the skein is dry, it is taken from the reel and made up into hanks; but before it is fit for weaving, and in order to enable it to undergo the process of dyeing without furring up or separating the fibres, it is converted into one of three forms, viz., *singles*, *tram*, or *organzine*.

Singles (a collective noun) is formed of *one* of the reeled threads being twisted, in order to give it strength and firmness.

Tram is formed of two or more threads twisted together. In this state it is commonly used in weaving, as the *shoot* or *weft*.

Thrown silk is formed of two, three, or more singles, according to the substance required, being twisted together in a *contrary* direction to that in which the singles of which it is composed are twisted. This process is termed organizing, and the silk so twisted *organzine*. The art of throwing was originally confined to Italy, where it was kept a secret for a long period. Stow says it was known in England since the 5th of Queen Elizabeth, "when it was gained from the strangers;" and in that year (1562) the silk throwsters of the metropolis were united into a fellowship. They were incorporated in the year 1629, but the art continued to be very imperfect in that country until 1719.

Dates of the Introduction of Silk.—Wrought silk was brought from Persia to Greece 325 B.C. Known at Rome in Tiberius's time, when a law passed in the Senate prohibiting the use of plate of massy gold, and also forbidding men to debase themselves by wearing silk, fit only for women. Heliogabalus first wore a garment of silk A.D. 220. Silk was at first of the same value with gold, weight for weight, and was thought to grow in the same manner as cotton on trees. Silk-worms were brought from India to Europe in the 6th century. Charlemagne sent Offa, king of Mercia, a present of two silken vests A.D. 780. The manufacture was encouraged by Roger, king of Sicily, at Palermo, 1130, when the Sicilians not only bred the silk-worms, but spun and weaved the silk. The manufacture spread into Italy and Spain, and also into the south of France, a little before the reign of Francis I., about 1510; and Henry IV. propagated mulberry-trees and silk-worms throughout the kingdom, 1589. In England silk mantles were worn by some noblemen's ladies at a ball at Kenilworth Castle, 1286. Silk was worn by the English clergy in 1534. Manufactured in England in 1604, and broad silk wove from raw silk in 1620. First attempt to introduce the silk culture into the American colonies by James I., year 1622. Brought to perfection by the French refugees in London at Spitalfields, 1688. A silk-throwing mill was made in England, and fixed up at Derby, by Sir Thomas Lombe, merchant of London, modeled from the original mill then in the King of Sardinia's dominions, about 1714.—HAYDN.

Historical Sketch.—The art of rearing silk-worms, of unraveling the threads spun by them, and manufacturing the latter into articles of dress and ornament, seems to have been first practiced by the Chinese. Virgil is the earliest of the Roman writers who has been supposed to allude to the production of silk in China, and the terms he employs show how little was then known at Rome of the real nature of the article:

"Vellera quæ ut foliis depectant tenuia Seres."—*Georg.* lib. ii. lin. 121.

But it may be doubted whether Virgil do not in this line refer to cotton rather than silk. Pliny, however, has distinctly described the formation of silk by the *bombyx.*—*Hist. Nat.* It is uncertain when it first began to be introduced at Rome; but it was most probably in the age of Pompey and Julius Cæsar—the latter of whom displayed a profusion of silks in some of the magnificent theatrical spectacles with which he sought to conciliate and amuse the people. Owing principally, no doubt, to the great distance of China from Rome, and to the difficulties in the way of the intercourse with that country, which was carried on by land in caravans whose route lay through the Persian empire, and partly, perhaps, to the high price of silk in China, its cost, when it arrived at Rome, was very great; so much so that a given weight of silk was sometimes sold for an equal weight of gold; at first it was only used by a few ladies eminent for their rank and opulence. In the beginning of the reign of Tiberius, a law was passed, *ne vestis serica viros fœdaret* —that no man should disgrace himself by wearing a silken garment.—Tacitus, *Annal.* But the profligate Heliogabalus despised this law, and was the first of the Roman emperors who wore a dress composed wholly of silk (*holosericum*). The example once set, the custom of wearing silk soon became general among the wealthy citizens of Rome, and throughout the provinces. According as the demand for the article increased, efforts were made to import larger quantities; and the price seems to have progressively declined from the reign of Aurelian. That this must have been the case is obvious from the statement of Ammianus Marcellinus, that silk was in his time (anno 370) very generally worn, even by the lowest classes. *Sericum ad usum antehac nobilium, nunc etiam infimorum sine ullâ discretione proficiens.*—Lib. xviii.

China continued to draw considerable sums from the Roman empire in return for silk, now become indispensable to the Western World, till the 6th century. About the year 550, two Persian monks, who had long resided in China and made themselves acquainted with the mode of rearing the silk-worm, encouraged by the gifts and promises of Justinian, succeeded in carrying the eggs of the insect to Constantinople. Under their direction they were hatched and fed; they lived and labored in a foreign climate; a sufficient number of butterflies was saved to propagate the race, and mulberry-trees were planted to afford nourishment to the rising generations. A new and important branch of industry was thus established in Europe. Experience and reflection gradually corrected the errors of a new attempt; and the Sogdoite embassadors acknowledged in the succeeding reign that the Romans were not inferior to the natives of China in the education of the insects and the manufacture of silk.—Gibbon, *Decline and Fall.* Greece, particularly the Peloponnesus, was early distinguished by the rearing of silk-worms, and by the skill and success with which the inhabitants of Thebes, Corinth, and Argos carried on the manufacture. Until the 12th century, Greece continued to be the only European country in which these arts were practiced; but the forces of Roger, king of Sicily, having in 1147 sacked Corinth, Athens, and Thebes, carried off large numbers of the inhabitants to Palermo, who introduced the culture of the worm and the manufacture of silk into Sicily. From this Island the arts spread into Italy; and Venice, Milan, Florence, Lucca, etc., were soon after distinguished for their success in raising silk-worms, and for the extent and beauty of their manufactures of silk.—Gibbon, vol. x. p. 110; *Biographie Universelle*, art. Roger II. The silk manufacture was introduced into France in 1480, Louis XI. having invited workmen from Italy, who established themselves in Tours. The manufacture was not begun at Lyons till about 1520, when Francis I., having got possession of Milan, prevailed on some artisans of the latter city to establish themselves, under his protection, in the former. Nearly at the same period the rearing of silk-worms began to be successfully prosecuted in Provence and other provinces of the south of France. Henry IV. rewarded such of the early manufacturers as had supported and pursued the trade for twelve years with patents of nobility.

One circumstance distinguishes silk from the other three great sources of textile fabrics; viz., the silk is already a continuous filament before it reaches the hands of the manufacturer; whereas cotton, wool, and flax are all short in the fibre; and these fibres have to be combined end to end by spinning. The little silk-worm, intent upon making a warm habitation for himself, wraps or builds around him a cocoon or small egg-shaped hollow envelope, fabricated of one very long and exquisitely-fine filament of silk. This filament the silk growers—whether in Italy, Turkey, China, or India (these being the chief silk-producing countries)—unwind by various ingenious means; and many filaments are then combined into one to form a thread sufficiently strong to form into hanks or skeins. Such silk is called raw silk, and in this state most of our supply is obtained. It thence follows that the twisting and spinning machinery differs from that employed for the other three kinds of fibre mentioned above. The silk is transferred from hanks to reels, round which it is wound. It is twisted, and wound, and doubled, and wound again, and transferred from one machine to another, until there is sufficient thickness to form a thread for weaving or for sewing, and sufficient twist to give it strength.

A document of particular interest has been published, showing the arrivals of raw silk in Great Britain in each of the fifteen years from 1842 to 1856 inclusive. The entire figures are too extended for insertion, but the following abstract embodies the principal points of interest. The most remarkable feature is that, while China sent to Great Britain only 180,124 lbs. in 1842, the supply furnished by her amounted to 4,576,706 lbs. in 1854, and in 1856 was 3,723,693 lbs., notwithstanding the shipment of a large portion of her crop direct to France in consequence of the failure in that country. The next most important imports are those of Egypt. Fifteen years back—namely, in 1842—the quantity thence was 1 lb., and in 1856 it was 2,514,356 lbs. The East Indian supply has gradually declined, the crops in Bengal for the past few years having been unsatisfactory. From France, in 1842, Great Britain obtained 1,156,498 lbs., and in 1856 only 157,559 lbs. So far from having any to spare, the French manufacturers were compelled to draw upon the stocks in other countries. The imports from Italy have been similarly affected. Those from Turkey have also diminished, but this is to be attributed to the French demand. Among the countries that Great Britain has drawn upon are the United States, but the small quantities obtained must have been of Chinese growth. The supplies from Holland and Belgium, it is also assumed, must have come originally either from the Indian Archipelago or France. It appears that the largest importation ever known was in 1854, when the total was 7,535,407 lbs. Last year, however, it was almost as great, and, as prices have advanced in the two years more than 50 per cent., the money value was proportionately beyond all former precedent.

The following is an official summary of the British importations of raw silks for the years 1852-1856:

IMPORTS OF RAW SILKS INTO THE UNITED KINGDOM FOR EACH YEAR, 1852, 1853, 1854, 1855, 1856.

From	1852.	1853.	1854.	1855.	1856.
	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.
Prussia	....	....	....	12,000	5,383
Hanse Towns	2,023	9,715	1,706	13,351	1,656
Holland	271,089	182,297	155,774	95,972	91,915
Belgium	7,416	12,121	14,049	10,549	2,544
France	172,005	275,160	148,195	139,070	157,550
Sardinia	....	588	....	....	649
Tuscany	3,819	2,283	610	734	861
Papal Territories	8,530	367	4,324	....	....
Naples and Sicily	26,411	19,264	10,478	10,822	1,550
Austrian Italy	773	916	....	510	1,009
Malta	69,949	99,242	139,186	66,950	62,553
Greece	875	5,707	....	400	....
Turkey Proper	570,123	621,461	213,766	153,892	197,662
Syria and Palestina	14,464	8,650	13,737	4,227	5,925
Egypt	911,408	1,863,308	1,539,746	772,698	2,514,256
British East Indies	1,335,486	538,502	696,728	884,004	610,422
China	2,418,343	2,838,047	4,576,706	4,436,862	3,723,633
United States	948	2,180	17,667	15,652	4,330
Other ports	18,859	916	2,735	500	1,763
Total	5,832,551	6,480,724	7,535,407	6,618,852	7,383,672

AN ACCOUNT SHOWING THE QUANTITIES AND DECLARED VALUES OF BRITISH MANUFACTURED SILK GOODS EXPORTED FROM THE UNITED KINGDOM IN THE YEARS 1850, 1851, AND 1852, RESPECTIVELY, AND SPECIFYING THE COUNTRIES TO WHICH THE SAME WERE SENT, AND THE VALUES OF THOSE SENT TO EACH.

Countries to which exported	1850.	1851.	1852.
Russia	£8,579	£7,422	£6,799
Hanseatic Towns	125,639	132,739	179,536
Holland	48,543	51,445	114,030
Belgium	29,837	33,013	41,247
Channel Islands	7,007	9,589	14,955
France	176,450	160,011	257,555
Portugal, Azores, and Madeira	1,163	2,545	11,043
Spain and Canaries	9,991	9,049	12,351
Gibraltar	3,389	3,741	5,502
Italy	45,786	47,030	49,304
Turkey	12,801	7,178	6,702
Egypt	11,103	8,772	6,466
British South Africa	11,945	9,198	13,721
British East Indies	11,797	10,021	8,996
British Australia	54,376	68,736	117,113
British N. Amer. Colonies	102,291	130,161	82,971
British West Indies	25,535	29,432	19,071
Foreign West Indies	17,249	25,301	28,545
United States	446,433	408,268	464,500
Mexico	3,923	9,255	2,942
Central America	867	2,984	1,698
New Granada, Venezuela, etc.	3,498	3,670	4,574
Brazil	14,295	23,624	24,709
Uruguay	2,798	2,833	12,412
Buenos Ayres	11,194	4,656	22,696
Chili	33,342	29,902	13,782
Peru	19,946	24,869	19,193
All other countries	18,864	13,775	9,698
Total	£1,255,641	£1,326,778	£1,551,866

The silk exported from Canton consists of two leading varieties, known in commerce by the names of Canton and Nankin. The first, which is raised principally in the province of Canton, is divided into five sorts. The Nankin silk, produced in the province of Kiangnan, is divided into two sorts, known in commerce by the names of Tsatlee and Tuysaam. It is very superior to the other, and usually fetches more than double its price. East India native silk comes wholly from Bengal. About the year 1760, the East India Company introduced the Italian mode of reeling silk, which was productive of a very great improvement in the quality of the article; but we are not aware that any subsequent improvement has been effected. The silk goods brought from India are not only inferior, in point of quality, to those of Europe, but also to those of China. Turkey silk wholly consisted, some years back, of what is termed long reel and short reel brutia, a rather coarse description, suited to few buyers, and chiefly used in the ribbon trade of Coventry; but of late it has been imported of a very far superior texture and quality, coming successfully into competition with Italian and China silk. The qualities now known as brutias may be classed as follows; viz., long reel brutia, short reel brutia, long reel Mestup (being a finer thread than common brutia), short reel Mestup, Selè (a finer sort, generally in loose skeins) Demirdask (a superior kind). At Brussa, the seat of the silk trade in Asia Minor, it is now sold by the oke of 400 drams, and not by the teffee of 610 drams, as formerly: the teffee is, however, still used at Constantinople. The plains of Brussa and the adjacent villages produce different qualities, varying considerably in size, color, and quality. The village of Demirdask produces the finest, owing to the care taken by the natives in selecting the best cocoons, and attending carefully to the evenness of the thread throughout the process of reeling; consequently this description commands a high price, and is approved by our throwsters.

The water of this place is considered favorable to the brightness and glossiness of the silk, by which it may be distinguished from that of Brussa. The silk at Brussa is taken by the country people in small parcels to the bechestar or customs, where it pays duty. The proprietor, with a broker, then takes it to the silk bazar, where it is handed round to the different stands and sold to the highest bidder, resembling in this respect the mode of selling the ores in Cornwall to the different smelters.

Thus a person buying several okes at a time, assorts as well as he can the different qualities for packing. It is generally bought by speculators for the Constantinople market, and is forwarded to Ghemlek on camels for shipment per steamers to Constantinople, where it finds its way to the Mizam, or some broker's rooms, where it is sold to the different merchants. The finest longs are mostly bought for the French and Russian markets, generally the latter. The long reels are going out of use in this country, as the more modern machinery is not adapted to its use.

The prices of silk at Brussa in September, 1842, were:

1st quality Demirdask	$235	to	$240	per oke of 400 drams.
2d " "	210	to	215	" "
1st Selè	190	to	193	" "
2d Selè	180	to	185	" "
Long Mestups	165	to	...	" "
Long Brussas	150	to	...	" "
Short Brussas	170	to	175	" "

COSTS AND CHARGES ON SILK BOUGHT AT BRUSSA AND SHIPPED AT CONSTANTINOPLE FOR LONDON.

One case 46 teffees=70 okes 60 drams, at $216 50		$15,167
Packing charges and commission		428
Carriage from Brussa to Constantinople		
Loss on gold sent to Brussa		
Bills, lading, and petty expenses	$28 1-7 per	
Inward duty, 70 okes 60 drams, at $18, and 7,0/0 thereon	oke, or vs. - 131 per ct.)	2,115
Export duty, 70 okes 60 drams, at $6, and 7,0/0 thereon		
Carriage of money, ¼ per cent		
Constantinople commission, 3,0/0		531
		$18,241

Ex. 118. £105 - 46 at 4|, 194 lbs.=16s. 6d.
Discount and charges in London 2s. 3d.
——18s. 9d.

By far the greater part of the raw and thrown silk that comes from France is not the growth of that country, but of Italy; being principally conveyed by the canal of Languedoc and the Garonne to Bordeaux, whence it is shipped for England. So much is this the case, that it appears from the official accounts published by the French government, that while the aggregate quantity of the French and foreign raw and thrown silk exported from France in 1841 amounted to 1,074,144 kilograms, the portion which was of French origin amounted to only 12,294 kilograms!—*Administration des Douanes*, 1841, p. 241.

We have before us an interesting report on the production of silk, submitted to the Academy of Sciences by M. Dumas, to whom was referred a paper on the subject drawn up by M. André Jean, one of the most experienced silk growers, and for some time engaged with the most commendable perseverance and signal success in the improvement of the different varieties of silk-worms. The observations of the learned author of the report are based mainly upon the important fact that the production of cocoons in France has diminished from 26,000,000 of kilograms (about 58,500,000 lbs.) in 1853 to 7,500,000 (about 16,750,000) in 1856. To comprehend in its proper light the full effect of similar diminutions, in view of a continued and constantly increasing consumption, we must inquire what are the limits to which the production of silk extends? The aggregate production of silk in the world may be estimated at a value of at least 1,000,000,000 francs, or nearly $200,000,000. Of this sum a little over one-third is assigned to Europe, and the balance to Asia.

Annual Production of Silk in the World.

	Francs.
France	108,000,000
Italian States	281,500,000
Other countries, chiefly Spain	24,500,000
Total for Europe	414,000,000
China	425,000,000
India	120,000,000
Japan	80,000,000
Persia	23,000,000
Countries of Asia	54,800,000
Total of Asia	702,800,000
Africa	1,100,000
Oceanica	600,000
America	500,000
Aggregate total, francs	1,119,000,000

If these figures are accurate, must we not conclude from them that the aggregate quantity of silk available in commercial movements is exceedingly limited, and that a general uneasiness in the silk markets must result from any failure in the cocooneries of Italy, where one-fourth of all the silk in the world is produced, or in those even of France, which yield about one-tenth of the whole production? The falling off in the production of cocoons in France, which we have already indicated, would represent a diminution in value of from 100,000,000 of francs to 25,000,000 had the price of cocoons remained the same at both periods—namely, 1853 and 1856. But the movements of commerce have been so powerless in replacing the deficit of 19,000,000 of kilograms (nearly 42,750,000 pounds), that the price has advanced from 4 francs 50 centimes (84 cents) to 8 francs (*$1 19) per kilogram (2·20 lbs.), so that the loss falls equally upon the producer and the consumer. —For the exports of silk from China, *see articles* China, Canton, and Shanghai.

Silk Manufacture in the United States.—The introduction of silk culture into the North American colonies dates back to the first settlement of Virginia. James I., who was anxious to promote this branch of industry, several times urged the "London Company" to encourage the growth of mulberry-trees, and addressed a letter to them on the subject in 1622, conveying strict injunctions that they should use every exertion for this purpose, and stimulated the colonists to apply themselves diligently and promptly to the breeding of silk-worms, and the establishment of silk works, bestowing their labors rather in producing this rich commodity than to the growth of tobacco—an article to which his majesty had recorded and published his violent aversion. The company thus incited, showed much zeal in their endeavors to accomplish the king's wishes. A considerable number of mulberry-trees was planted; but little silk was produced, owing to difficulties involved by their dissolution soon after. In about the year 1651 the rearing of silk-worms again became a subject of interest in Virginia, and premiums were offered for its encouragement; but it does not appear that the business was ever prosecuted to any extent. The silk culture was introduced into Louisiana in 1718 by the "Company of the West." In the infant settlement of Georgia, in 1732, a piece of ground belonging to government was allotted as a nursery plantation for white mulberry-trees, and the attention of some of the settlers was soon engaged in rearing silk-worms. In 1726 a quantity of raw silk was raised in that colony, which was manufactured into a piece of stuff, and presented to the queen.

In 1749 an act of Parliament was passed for encouraging the growth of silk in Georgia and Carolina, exempting the producer from the payment of duties on importation into London. A bounty was also offered for the production of silk, and a man named Ortolengi, from Italy, was employed to instruct the colonists in the Italian mode of management. A few years before the Revolution considerable quantities of raw material began to be raised, which was said to be equal, in some cases, to the best Piedmont silk, and worked with less waste than the Chinese article.

In Carolina the culture was undertaken by the small farmers. In 1766 the House of Assembly of this province voted the sum of £1000 toward the establishment of a silk filature at Charleston, under the direction of Mr. Gilbert.

In Connecticut, attention was first directed to the rearing of silk-worms in 1760. Dr. Aspinwall, of Mansfield, from motives of patriotism, used his best exertions to introduce this important branch of rural economy. He succeeded in forming extensive nurseries of the mulberry at New Haven, Long Island, Pennsylvania, and other places. Half an ounce of mulberry seeds was sent to each parish in the colony, with such directions as his knowledge of the business enabled him to impart. In 1783 the Legislature of Connecticut passed an act granting a bounty on mulberry-trees and raw silk. It may here be stated to the honor of Connecticut that she is the only State in the Union which has continued the business without suspension, and probably has produced more silk, from the time of her commencement up to the year 1830, than all the other States.

In the year 1769, on the recommendation of Dr. Franklin, through the American Philosophical Society, a filature of raw silk was established in Philadelphia, by private subscription, and placed under the direction of an intelligent and skillful Frenchman, who, it is said, produced samples of reeled silk not inferior in quality to the best from France and Italy. In 1771 the managers purchased 2300 lbs. of cocoons—all the product of Pennsylvania, New Jersey, and Delaware. The enterprise was interrupted by the Revolution. A similar undertaking was again attempted in Philadelphia in 1830, under the supervision of M. J. D'Homergue, and cocoons were brought in abundance to the establishment from various parts of the country, and so continued for some time afterward; but for want of capital the enterprise failed.

In about the year 1831 the project of rearing silk-worms and establishing filatures of silk was renewed in various parts of the Union, and the subject was deemed to be of so much importance, that it not only attracted the attention of Congress, but afterward received encouragement from the Legislatures of several

States, by bounties offered for all the raw silk produced within their limits for certain periods of time. The business soon began to be prosecuted with extreme ardor, and continued for several years, resulting in the establishment of several nurseries of mulberry-trees, and ending in the downfall of the famous "Morus Multicaulis speculation," in 1845.

The amount of raw silk exported from Georgia in 1750 was 118 lbs.; in 1755, 138 lbs.; in 1760, 558 lbs.; in 1766, more than 20,000 lbs; in 1770, 290 lbs. From South Carolina, in 1772, 455 lbs. In the year 1765, there were raised on Silk Hope Plantation, in South Carolina, 630 lbs. of cocoons; in Mansfield, Connecticut, in 1793, 265 lbs. of raw silk; in 1827, 2430 lbs.; in 1831, 10,000 lbs.; in Connecticut, in 1844, 176,210 lbs.; in the United States, the same year, 396,790 lbs.

A remarkable circumstance is said to have occurred in the silk factory of M. Garibaldi, at Cremona. It is stated that in this factory a quantity of silk-worms, instead of forming the cocoon as usual, actually wove a kind of silk ribbon, of the breadth of an inch and the length of twelve feet.—*Year-Book of Facts*, 1857.

According to the census returns of 1840, the amount of silk cocoons raised in the United States was 61,552 lbs.; of 1850, 10,843 lbs. From the above it is obvious that the production of cocoons has decreased, since 1840, 46,709 lbs.; and since 1844, 382,027 lbs.

PRODUCTION OF RAW SILK IN THE UNITED STATES.

States and Territories.	Silk Cocoons, l.bs. 1840.	1850.
Alabama	1,592	107
Arkansas	55	28
Columbia, District of	651	..
Connecticut	17,538	328
Delaware	1,458	..
Florida	124	6
Georgia	2,992	813
Illinois	1,150	47
Indiana	370	387
Iowa	....	246
Kentucky	737	1,281
Louisiana	317	29
Maine	211	258
Maryland	2,290	39
Massachusetts	1,741	7
Michigan	266	108
Mississippi	91	2
Missouri	70	186
New Hampshire	419	191
New Jersey	1,066	23
New York	1,735	1,774
North Carolina	3,014	229
Ohio	4,317	1,552
Pennsylvania	7,202	285
Rhode Island	458	..
South Carolina	2,080	123
Tennessee	1,217	1,923
Texas	....	22
Vermont	4,286	268
Virginia	5,101	517
Total lbs.	62,647	10,843

IMPORTATIONS, EXPORTATIONS, AND HOME CONSUMPTION OF FOREIGN SILK; FOREIGN IMPORTATIONS, EXPORTATIONS, AND HOME CONSUMPTION OF MANUFACTURES OF SILK, AND TOTAL HOME CONSUMPTION OF IMPORTATIONS OF SILK AND MANUFACTURES OF SILK IN THE UNITED STATES FOR THE LAST SEVENTEEN YEARS, WITH THE YEARLY AVERAGE THEREOF.

Years.	Unmanufactured Silk.			Manufactures of Silk.			Total home Consumption of Importations of Silk and the Manufactures of Silk in the United States.
	Foreign Importations.	Foreign Exportations.	Home Consumption.	Foreign Importations.	Foreign Exportations.	Home Consumption.	
*1840	$234,235	$2,990,239	$33,996	$9,601,522	$1,015,532	$8,585,990	$8,619,986
1841	254,192	227,143	26,989	15,300,795	350,264	14,944,531	14,971,520
1842	33,402	420	32,583	9,444,341	265,159	9,179,182	9,211,764
1843	53,350	3,353	49,997	2,602,087	206,777	2,455,310	2,505,307
1844	172,953	7,102	165,851	8,310,711	230,838	8,079,873	8,245,724
1845	208,454	4,362	204,092	9,731,796	246,272	9,485,524	9,689,616
1846	216,647	23,999	192,648	10,667,649	195,753	10,471,896	10,664,544
1847	259,086	8,385	241,701	11,733,371	334,173	11,399,198	11,640,899
1848	354,973	19,858	335,115	14,543,638	340,853	14,202,780	14,537,895
1849	384,535	55,515	329,020	13,791,252	388,572	13,402,660	13,731,680
1850	401,985	7,408	393,977	17,639,624	352,637	17,286,987	17,680,964
1851	456,499	43,856	412,643	25,777,245	590,168	25,277,077	25,689,720
1852	378,747	7,143	371,604	21,051,752	604,856	21,046,897	21,418,501
1853	722,931	282	722,649	30,434,886	607,294	29,827,592	30,550,241
1854	1,099,389	7,966	1,091,423	34,696,831	843,154	33,853,677	34,945,100
1855	754,017	71,122	680,895	24,366,556	902,135	23,464,424	24,144,916
1856	991,234	4,255	986,079	30,226,532	576,513	29,650,019	30,636,098
Yearly average	$409,655	$40,728	$368,927	$17,092,074	$468,644	$16,624,330	$16,993,257

The following is the comparative total receipts of foreign silk goods at all the ports of the United States during the years 1854, 1855, 1856:

	1854.	1855.	1856.
Raw silk	$1,085,261	$742,251	$991,234
Silk piece goods	25,296,510	20,063,957	25,200,654
Hosiery and articles made on frames	1,001,299	451,003	611,298
Sewing silk	332,301	189,220	250,138
Silks, tamboured or embroidered	1,183,299	800,000	1,500,000
Silk hats and bonnets	106,139	110,586	102,827
Silk floss	14,078	9,366	16,498
Bolting cloths	48,868	60,984	70,146
Silk and worsted goods	1,504,038	1,133,839	1,335,247
Silks unspecified	6,728,906	3,480,716	3,974,974
Total imp. silks	$37,490,205	$27,052,612	$34,053,013

By the British tariff, knubs or husks of silk and waste silk, raw and thrown silk, dyed, single or tram silk, dyed organzine or crape silk, may be imported duty free; manufactures of silk generally 15 per cent. *ad valorem*.

The following table exhibits the population, consumption of imported silk, and the allotment per capita thereof; consumption of imported manufactures of silk, and the per capita thereof, and the total home consumption of importations of silk and manufactures of silk in the United States, with the allotment per capita thereof for the years 1840, 1850, and 1855; also, the production of silk in the United States, and the allotment per capita thereof, and the total consumption of foreign and domestic silk and foreign manufactures of silk in the United States, and the allotment per capita thereof, for the years 1840 and 1850:

United States.	1840.	1850.	1855.
Population	17,069,453	23,191,876	27,185,511
Consumption of imported raw silk	$33,996 00	$393,977 00	$680,495 00
Allotment per capita thereof	20	1 69	2 50
Consumption of imported manufactures of silk	8,585,990 00	17,286,987 00	23,464,421 00
Allotment per capita thereof	50 30	74 46	86 31
Home consumption of imported raw and manufactured silk	8,619,986 00	17,680,964 00	24,144,916 00
Allotment per capita thereof	50 50	76 15	88 81
Production of silk in the United States	61,653 00	10,843 00	(*)
Allotment per capita thereof	36	05	.....
Total consumption of silk	8,681,639 00	17,691,807 00	.....
Allotment per capita thereof	50 86	76 20	.....

* The census of 1855 does not furnish the manufactures of silk in the United States.

IMPORTS OF SILK INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whence imported.	Piece Goods.	Hosiery and articles made on Frames.	Sewing Silk.	Hats and Bonnets.	Manufactures not specified.	Floss.	Raw.	Bolting Cloths.
Danish West Indies	$20	....	....	....	....	....	....	....
Hamburg	108,336	$23,024	$105	....	$54,174	$762	$105	....
Bremen	1,152,226	64,886	9,403	$643	374,961	846	2,052	$3,933
Holland	97	....	10	....	72	....	....	....
Belgium	166,170	3,079	....	52	37,414	....	....	....
England	7,895,439	503,130	166,620	19,594	2,477,070	26,954	514,437	16,710
Scotland	10,641	8,540	194	319	21,837	....	....	....
Canada	728	....	8	12	1,015	....	....	....
British West Indies	....	24	....	....	....	....	....	....
British East Indies	6,788	....	....	....	5,690	....	....	....
France on the Atlantic	12,052,303	234,019	31,601	127,536	1,434,167	1,760	1,213	36,955
France on the Mediterranean	4	....	....	1,259	69	....	....	....
Spain on the Atlantic	1,734	....	....	....	....	....	....	....
Spain on the Mediterranean	1,164	....	74	....	....	....	....	....
Philippine Islands	40	....	....	....	124	....	....	....
Cuba	1,478	....	509	....	340	....	....	....
Sardinia	891	....	....	....	....	....	....	....
Tuscany	166	....	11	....	584	....	....	....
Two Sicilies	....	....	135	....	....	....	....	....
Austria	....	....	....	....	15	....	....	....
Turkey in Asia	....	....	....	....	154	....	....	....
Egypt	....	....	....	....	6	....	....	....
New Granada	114,713	1,097	492	1,777	31,943	....	....	....
Brazil	18	....	....	....	....	73	....	....
Ecuador	....	....	....	....	1	....	....	....
China	534,407	....	8,441	....	3,076	208	435,927	....
Total	$22,067,369	$839,299	$211,723	$151,192	$4,442,522	$30,612	$953,734	$57,692

FOREIGN EXPORTS OF SILK FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Piece Goods.	Hosiery and articles made on Frames.	Sewing Silk.	Hats and Bonnets.	Manufactures not specified.	Floss.	Raw.	Silk and Worsted Piece Goods.
Danish West Indies	$565	....	....	....	....	....	....	....
Hamburg	1,525	....	....	....	....	....	....	....
Bremen	....	....	....	....	....	....	$1000	....
Dutch West Indies	1,185	....	....	....	....	....	....	....
England	226	....	....	....	$3,486	....	....	....
Canada	210	....	$15	....	36,914	....	....	....
British N. Amer. Possessions	3,136	....	....	....	2,757	....	....	....
British Honduras	2,129	....	....	....	....	....	....	....
France on the Atlantic	1,000	....	....	....	398	....	3163	....
Cuba	1,815	$444	....	....	....	....	....	....
Porto Rico	505	....	....	....	....	....	....	....
Cape de Verd Islands	....	....	....	$67	....	....	....	....
Azores	344	....	....	....	....	....	....	....
Sardinia	100	....	....	....	....	....	....	....
Ports in Africa	650	....	....	....	....	....	....	....
Hayti	2,260	....	....	....	....	....	....	....
Mexico	27,173	1307	6061	665	6,524	$265	....	$1169
Central Republic	2,136	....	....	....	....	....	....	....
New Granada	13,381	....	59	....	....	....	....	....
Venezuela	204	....	....	....	983	....	....	....
Uruguay, or Cisplatine Rep.	....	....	....	....	1,400	....	....	....
Chili	28,475	....	....	....	125	....	....	....
Peru	....	....	....	....	2,422	....	....	....
Sandwich Islands	3,057	....	....	....	2,255	....	....	....
China	480	....	....	....	....	....	....	....
Total	$91,159	$1751	$6135	$732	$57,204	$265	$4163	$1169

—See *North Amer. Rev.*, xxvii. 438 (WALLENSTEIN); *Amer. Quart.*, x. 385; *Westm. Rev.*, xvi. 425, xvii. 241, xviii. 1, 228; DE BOW'S *Rev.*, v. 324, 411; *Edinb. Rev.*, xliii. 76; BLACKWOOD'S *Mag.*, xviii. 736, xxv. 685.

Silk-cotton. A beautiful silky kind of cotton is obtained from the *Bombax* and other trees; it is short and remarkably elastic, and would be very largely used were it not fragile and tender. The Hindoos spin it into a loose, course, warm kind of cloth. In Europe it has not yet been much employed; but in America a method has been discovered of applying it as a covering for so-called silk hats, for which it is said to be admirably adapted. As there is an almost boundless supply of the trees yielding these delicate fibres, there may here be a great manufacture in the future.

Silver (Ger. *Silber*; Du. *Zilver*; Da. *Solv*, Swed. *Silfver*; Fr. *Argent*; It. *Argento*; Sp. *Plata*; Port. *Prata*; Russ. *Serebro*; Pol. *Srebro*; Lat. *Argentum*; Gr. ἄργυρος; Arab. *Fuzzeh*), a metal of a fine white color, without either taste or smell; being in point of brilliancy inferior to none of the metallic bodies, if we except polished steel. It is softer than copper, but harder than gold. When melted its specific gravity is 10·474; when hammered, 10·51. In malleability it is inferior to none of the metals, if we except gold. It may be beaten out into leaves only $\frac{1}{100000}$ of an inch thick. Its ductility is equally remarkable: it may be drawn out into wire much finer than a human hair; so fine, indeed, that a single grain of silver may be extended about 400 feet in length. Its tenacity is such, that a wire of silver 0·078 inch in diameter is capable of supporting a weight of 187·13 lbs. avoirdupois without breaking. Silver is easily alloyed with copper by fusion. The compound is harder and more sonorous than silver, and retains its white color even when the proportion of copper exceeds one half. The hardness is at a maximum when the copper amounts to *one-fifth* of the silver. The standard or sterling silver of Britain, of which coin is made, is a compound of $12\frac{1}{2}$ parts silver and 1 copper. Its specific gravity is 10·2. The specific gravity of Paris standard silver, composed of 137 parts silver and 7 copper, is 10·175. The French silver coin during the old government was not nearly so fine, being composed of 261 parts silver and 27 copper, or $9\frac{3}{4}$ parts silver to 1 part copper. The Austrian silver coin contains $\frac{1.3}{28.3}$ of copper. The silver coin of the ancients was nearly pure, and appears not to have been mixed with alloy.—THOMSON'S *Chemistry*.

The most productive silver mines are in America, particularly in Mexico and Peru. There are also silver mines in Hungary, Saxony, Spain, and other parts of Europe, and in Asiatic Russia.—*See* PRECIOUS METALS.

Besides being used as a coin, or money, silver is ex-

tensively employed in the arts. The value of the silver plate annually manufactured is very considerable. Large quantities are also used in plating. Silver exists in most parts of the world, and is found mixed with other ores in various mines in Great Britain. The silver mines of South America are far the richest. A mine was discovered in the district of La Paz in 1660, which was so rich that the silver of it was often cut with a chisel. In 1749 one mass of silver, weighing 370 lbs., was sent to Spain. From a mine in Norway a piece of silver was dug, and sent to the Royal Museum at Copenhagen, weighing 560 lbs., and worth £1680. In England silver plate and vessels were first used by Wilfrid, a Northumberland bishop, a lofty and ambitious man, A.D. 709.—TYRELL'S *Hist. of England.* Silver knives, spoons, and cups were great luxuries in 1300.

Silver Coin. Silver was first coined by the Lydians, some say; others, by Phidon of Argos, 869 B.C. At Rome it was first coined by Fabius Pictor, 269 B.C. Used in Britain 25 B.C. The Saxons coined silver pennies, which were 22½ grains weight. In 1302 the penny was yet the largest silver coin in England.—*See* SHILLINGS, etc., and COIN.

The scarcity of silver in Western Europe, including Great Britain, and in this country, has given rise to the question, "Where does the silver go?" In connection with this question, we make the following extract from a paper read by Prof. R. H. Walsh, of the Dublin University:

At the time when Pliny termed it the sink of the precious metals, silver was a favorite article of export to the East. It has continued so since, but the trade of late has assumed an extraordinary magnitude. In the five years prior to 1856 over $110,000,000 worth of silver have been exported to the East through England alone, and from other countries a similar movement has been in operation. The export in 1825 was $32,000,000, and this year (1856) it is proceeding at the rate of over $45,000,000 per annum, judging from the returns that have been published for the first four months. Unlike the old movement, the present can not be permanent. The former was seldom more than might be accounted for as the distribution of silver to some of its chief consumers—the nations of the East—according as new supplies were raised elsewhere. It was, in fact, the ordinary movement from the producer to the consumer. Humboldt estimated the annual production of silver in Mexico at 1,184,000 lbs., or about $25,000,000.

But now silver goes faster to the East than it is produced throughout the world. Hence the process can not be permanent, but must come to an end as soon as the redistribution of the old stock has been effected; for the annual production of silver is only about $40,000,000; and since the export to the East through England alone is at the rate of over $45,000,000, it follows that it can not be the new supplies of silver which meet that demand and all others for the same metal, but that there must be some auxiliary fund to be drawn upon. Such a fund is furnished by a cessation in the demand for silver in several countries which before employed it most largely, but now use gold instead. Silver, which used to be coined in France and the United States at an average rate of $20,000,000 per annum, is now little employed, while much of the old coin of that metal is melted down and exported. In France, it is said that in one year (1853) so much as $60,000,000 were disposed of in this manner, and that the operation has been since proceeding at a still greater rate. In Mexico there are eight or nine mints, one of which is national, having one general law of coinage, but independent of each other, and subject to no general control. There are some characteristic differences in respect to grades of fineness and accuracy, but they seem not sufficient to call for a distinction, as the only external means of identifying is in the mint mark.

SILVER OF DOMESTIC PRODUCTION, INCLUDING SILVER PARTED FROM CALIFORNIA GOLD, DEPOSITED AT THE MINT OF THE UNITED STATES, ITS BRANCHES, AND THE ASSAY OFFICE, NEW YORK, FROM JANUARY, 1841, TO JUNE 30, 1857 (THAT FOR 1857 BEING SIX MONTHS ONLY, TO JUNE 30).

Years.	Value.	Years.	Value.
1841	$4,300	1850	$203,253
1842	6,453	1851	389,471
1843	8,640	1852	404,494
1844	30,847	1853	417,270
1845	4,769	1854	328,199
1846	3,666	1855	333,053
1847	6,407	1856	321,038
1848	6,194	1857	127,256
1849	89,112	Total	$2,700,728

STATEMENT OF AMOUNT OF SILVER COINED AT THE MINT OF THE UNITED STATES, AND THE BRANCH MINTS AT SAN FRANCISCO AND NEW ORLEANS, UNDER THE ACT OF FEBRUARY 21, 1853 (SIX MONTHS ONLY, 1857).

Years.	Mint of the United States, Philadelphia.	Branch Mint, San Francisco.	Branch Mint, New Orleans.	Total.
1853	$7,517,161	....	$1,137,000	$8,654,161
1854	5,373,270	....	3,246,000	8,619,270
1855	1,419,170	$164,075	1,918,000	3,501,245
1856	3,214,240	177,000	1,744,000	5,135,240
1857	1,427,000	50,000	....	1,477,000
Total.	$18,950,841	$391,075	$8,045,000	$27,386,916

Silver Mines of Mexico.—It is not generally known in this country that the silver mines of Mexico, which yielded to the Spaniards, between the conquest by Cortez and their expulsion by the Mexicans in 1827, $2,028,000,000, as shown by the records of the Mints, have since that period steadily and rapidly increased their product, until from an annual yield of about $20,000,000 it has risen, according to some authorities, to upward of $40,000,000 in 1856. We have no official data upon which to affirm or deny this. This vast product is from the working of a very small number of mines, while that portion of Mexico north of latitude 24°, and on our own frontier, which, according to Baron Humboldt and others, contains the richest veins —often beginning near the surface, and above water-level, and sometimes yielding vast quantities of pure native silver—have lain for many years entirely unworked and neglected. This has been in consequence of the inability of the few Mexicans scattered over those regions to cope with the wild Apache and Camanche Indians, who have held free scope there until within a few years past. They are now kept out from the states near the lower part of the Rio Grande by the filling up of the country, and by the vicinity of our newly-established military posts. Up to this time the only foreigners who have availed themselves of the opportunities of amassing fortunes from these mines are the English, and a few Germans; and they have confined themselves principally to the poorer veins of the thickly-settled Central and Southern parts of Mexico. But they are now meeting with the rewards of their enterprise.

Recently, several companies have been formed in the United States for working mines in Northern Mexico and Arizona. One of these is composed, in part, of officers of our army, who have seen and examined the localities, and some of whom have resigned their commissions for the purpose of devoting their time to the opening of these mines. Those in Arizona are so far distant, and in a country so uncultivated and so beset by Indians, that it may be the work of time and of much expense to overcome these obstacles. But that American enterprise will finally overcome them none can doubt. On the Lower Rio Grande, however, in the state of Nuevo Leon, within forty-five miles of steamboat navigation, and but forty-five miles from the Texas line, and but four days' sail from New Orleans, are some of the richest mines in the Republic of Mexico. One of these is being reopened by a very strong New York company, called the Vallecillio, and with good prospects of large returns.—*Letter from New Mexico.* *See articles* MEXICO, PRECIOUS METALS, and COINS for more extended information in regard to the production of silver.

The product of silver at different periods of the present century is estimated as follows:

	1800.	1850.	1856.
America.....	$32,891,000	$29,120,000	$30,500,000
Europe.....	4,000,000	7,280,000	8,000,000
Asia.....	....	4,100,000	5,000,000
Africa.....	400,000	....	....
Total.....	$37,291,000	$40,500,000	$43,500,000

In regard to the production of silver in Mexico, it appears that the amount of coinage in that country in 1851 was $23,166,000, of which $2,004,000 was in silver. From the year 1690 to 1800 the production of the gold and silver mines of Mexico is estimated at $1,351,000,000, and from 1800 to 1856 at $160,000,000, as the production of the silver mines alone.

Singapore, an island and British settlement at the eastern extremity of the Straits of Malacca, the town being in lat. 1° 17′ 22″ N., long. 103° 51′ 45″ E. The island is of an elliptical form, about 27 miles in its greatest length, and 11 in breadth, containing an estimated area of 275 square miles. But the whole British settlement embraces a circumference of above 120 miles; in which are included about 50 desert islets, and the seas and straits within 10 miles of the coast of the principal island. The latter is separated from the main land by a strait of the same name, of small breadth throughout, and scarcely, indeed, a quarter of a mile wide in its narrowest part, which, in the early period of European navigation, was the thoroughfare between India and China. But the grand commercial highway between the eastern and western portions of maritime Asia now passes along the south side of the island, on which the town is built, between it and a chain of desert islands about 9 miles distant; the safest and most convenient channel being so near to the island that ships in passing and repassing come close to the roads. The town is wholly indebted for its rapid rise and growing importance to its position on this strait. This has rendered it not merely a convenient entrepôt for the trade between the Western World and India on the one hand, and China on the other, but also for that between the former and the Eastern Archipelago, the Philippines, etc. It is situated on a river, or rather salt creek, navigable by lighters about three quarters of a mile from the sea. Ships lie in the roads, or open harbor, at the distance of from 1 to 2 miles from town, according to their draught of water. The assistance of a number of convenient lighters, which are always in readiness, enables them to load or unload, with scarcely any interruption, throughout the year. The creek is accessible to the lighters, and the goods are taken in and discharged at convenient quays, at the doors of the principal warehouses.

The climate of Singapore, though hot, is healthy. Fahrenheit's thermometer ranges from 71° to 89°. Being only about 80 miles from the equator, there is, of course, very little variety in the seasons. There is neither summer nor winter; and even the periodical rains are short, and not very well marked—moderate showers of rain falling for about 150 days each year. The settlement of Singapore was formed in February, 1819, and its sovereignty and property, in their present extent, confirmed to the British government in 1825, by a convention with the King of the Netherlands, and a treaty with the Malay princes to whom it belonged. Previously to its being taken possession of by the English, it had been inhabited for about eight years by a colony of Malays, half fishermen and half pirates. When the first census was taken in January, 1824, the population was found to amount to 10,683. In 1828 it had increased to 15,834, in both cases exclusive of troops, camp followers, Indian convicts, and a floating population of about 3000. In 1837 it amounted to 29,984, of whom 13,749 were Chinese settlers, and 9132 Malays, the Europeans being but few in number; and at present (1853) the population exceeds 50,000, of whom about half are Chineso.

The principal merchants and agents are Englishmen, of whom also there are a few shop-keepers, auctioneers, etc. There are also some respectable Chinese merchants; and the bulk of the shop-keepers, with the most valuable part of the laboring population, consist of Chinese. About 5000 adult males arrive annually from China by the junks, about 1000 of whom remain at Singapore, the rest dispersing themselves among the neighboring Dutch, English, and Malay settlements. The boatmen are chiefly natives of the Coromandel coast; and the Malays employ themselves as fishermen, in cutting timber, and in supplying the settlement with the rude produce of the neighborhood. There are good daily markets, open at all hours, and well supplied with vegetables, fruits, grain, fish, pork, and green turtle—the latter the cheapest animal food that can be procured. There are no export or import duties, nor anchorage, harbor, light-house dues, or any fees; but a register is kept of all exports and imports. Reports must be made to the master attendant by the masters of vessels, and invoices delivered to the superintendent of imports and exports. Though there are neither duties on imports or exports, nor on the ships frequenting the port, the revenue of Singapore amounted in 1842-'43 to 509,000 rupees, while its expenditure, civil and military, amounted to only 494,029 rupees.

United States Consular Returns from Singapore, Jan. 1, 1855.—The commercial intercourse of the United States with this consular district is governed partly by general acts of the Parliament of Great Britain, and partly by special legislation of the East India Company, through the governor and council at Calcutta. The present port regulations are supposed to be fixed, being for an indefinite period. Singapore is a free port, and the privileges permitted to commerce, as well as the restrictions imposed on it, are applicable, without distinction of flag, to all nations alike. There are no other port charges than the Pedra Branca or Straits light dues, which are three cents per registered ton on merchant vessels. National vessels of all countries are exempt from this tax. The transhipment of goods to any other port in the East India Company's possession, or to any foreign port, is freely permitted to vessels of the United States, but without any special privileges or restrictions. The moneys, weights, and measures known and in common use at Singapore, are neither those of the mother country nor those made use of in the continental possessions of the East India Company. Merchants keep their accounts in Spanish dollars, divided into one hundred parts, called cents, precisely as in our federal currency. Fractional parts of this cent are also coined, and are much in use; these are the half cent and the quarter cent, the latter being called a *pie*, or *pice*. The post-office, however, and all other offices of the British East Indian government, keep accounts only in *rupees*, *annas*, and *pice*.

Moneys.—4 pice make 1 cent; 2½ cents make 1 anna; 16 annas make 1 company's rupee (marked *R*); 100,900 rupees make 1 lac; 100 lacs make 1 crore. The company's rupee, which is here meant, is valued at 45 cents at Calcutta, while here it is now current at only 42 cents. Besides this coin, there is the old Sicca rupee (now nearly obsolete), worth here 45 cents, and the Java rupee, which is just now fluctuating at 35 to 36 cents.

Weights.—Measures of capacity are rarely used, and then only with certain articles, such as tobacco; even oils and other fluids being sold by weight. The denominations of the weights used in Singapore are taken both from the Malays and the Chinese. In naming and reducing them to the United standard value, I omit all those which are not employed commercially with and by foreign residents:

16 taels make 1 catty. (The catty is 1 lb. 5 oz. 5½ grs. avoirdupois, or 1⅓ lb.)
100 catties make 1 Chinese picul marked (Pl. or Pls.)=133⅓ lbs. avoirdupois.
2 Malay piculs make 1 char.
40 Chinese piculs make 1 koyan (or coyan).

The Malay catty weighs $24 Spanish, and the Chinese catty weighs $22½ Spanish; hence 15 catties Malay=16 catties Chinese. By the Malay, or greater picul, merchants purchase pepper, tin, etc., from the native vessels, but sell by the Chinese or Bazar picul of 133⅓ lbs. avoirdupois. Rice is sold by the koyan of 40 pls.; salt by the same measure, but weighs about 52 piculs; gold and silver thread by a particular catty of $36 weight; gold dust by the bunkal, which weighs $2=832 grs. Troy; Java tobacco is sold by the corge of 40 baskets; India piece goods by the corge of 20 pieces; wheat and grain by the bag, containing 2 Bengal maunds (the maund is 61⅓ catties).

Freight.—The rates at which ships are freighted or chartered depend on the demand for tonnage and the supply; on the kind of cargo to be transported, and on the sailing qualities of the vessels. These vary so greatly that it is impossible to give them even approximately. At the present time, for miscellaneous Straits' produce, shippers are paying $18 @ $20 per ton of 50 feet to New York or Boston.

Commissions.—While the trading ships of all other nations pay the uniform commissions of 10 per cent. (as established by the Singapore Chamber of Commerce), which include expenses of every sort for purchasing or selling, a special exception is made for what is called the "American trade," meaning that of the United States. The established charges on this are: Commissions on sales of goods or purchase of produce, free of risk, either in sales or on advances on produce, 2½ per cent. (Both of these are guaranteed for an extra 2½ per cent., or 5 per cent. in all.) On negotiating bills of exchange, 1 per cent. Other business on the usual terms. Interest on all moneys advanced is at the rate of 12 per cent. per annum, but on disbursements on account of ships while in port, 5 per cent. Added to these expenses are boat and cooly hire and warehousing, the charges for which differ widely, being governed by circumstances.

The imports from the United States, in comparison with the exports thither, are of trifling amount. I therefore state the modes and terms of purchase, as well as those of sale. Sales of imports are effected in the usual manner by private arrangement with the buyer, and sometimes also by public auction. The terms are, cash down.

Purchase of Cargo.—This is done by private contract (never at public sales) by the house to which the master of the vessel is consigned; the said house buying the goods from either the native or from the Chinese dealers, who are what is commercially styled the "first hands."

Sinhara. The sinhara, or water-nut (Trapa ?), is a native of the Cashmere, but grows abundantly in the lakes near the capital, especially in the Wurlor lake, and yields an average return of 10,000,000 lbs. of nuts a year. They are scooped up from the bottom of the lake in small nets, and afford employment to the fishermen for several months. These nuts constitute almost the only food of at least 30,000 persons for five months in the year. When extracted from the shell, they are eaten raw, boiled, roasted, fried, or dressed in various ways, after being reduced to flour.

Sinope, a town of Asia Minor, on the south coast of the Black Sea, lat. 42° 2′ 30″ N., long. 35° 9′ 45″ E. Population uncertain, probably from 8000 to 10,000. Sinope is situated on a low narrow isthmus, connecting the high rocky promontory of Ada with the main land. Its port, which is the best on this coast, on the south side of the town, is protected from the north and northeast gales by the isthmus and promontory already mentioned. Ships anchor within a third of a mile of the town, in from 13 to 17 fathoms; or nearer to it, in from 5 to 7 fathoms. There is a roadstead on the north side of the isthmus, but it is open and exposed. Sinope is one of the principal stations of the Turkish fleet; and there are docks and arsenals for its accommodation and outfit. Its exports are inconsiderable, the principal being timber, salt, cordage, fish oil, etc. In ancient times Sinope was a city of great wealth, magnitude, and importance. It was the birthplace of Diogenes the Cynic; and Mithridates made it the capital of his dominions. After its conquest by the Romans under Lucullus, it became the seat of a colony, and continued for a lengthened period to enjoy a good deal of consideration. Should civilization and the arts once more revive in the ancient Pontus, and the other countries to the south of the Black Sea, the excellence of its port could not fail to restore to Sinope some portion of its former grandeur. Even now a considerable intercourse is beginning to take place with the countries east and south of Sinope. Diarbeker on the Tigris, in lat. 37° 54′ N., long. 39° 53′ 45″ E., is one of the principal seats of Eastern commerce; and caravans set out regularly from it for Aleppo, Smyrna, and Constantinople: but any one who consults a map of Asia Minor, and of the contiguous countries, will see at once that Trebizond and the neighboring ports on the southeast coast of the Black Sea are the natural channels through which Armenia, Koordistan, and the northwestern parts of Persia may best maintain an intercourse with Europe. For further particulars as to Sinope, *see* TOURNEFORT, *Voyage du Levant*, and NORIE'S *Sailing Directions for the Black Sea.*

Skins. The term is applied in commercial language to the skins of those animals—as deer, goats, kids, lambs, etc.—which, when prepared, are used in the lighter works of book-binding, the manufacture of gloves, parchment, etc.; while the term hides is applied to the skins of the ox, horse, etc., which, when tanned, are used in the manufacture of shoes, harness, and other heavy and strong articles. Lamb and kid skins are principally used in the glove manufacture; 120 skins being supposed to produce, at an average, 18 dozen pairs of gloves.—*See* HIDES and LEATHER.

Slate (Roof) (Ger. *Schiefer*; Fr. *Ardoise*; It. *Lavagna, Lastra*; Sp. *Pizarra*), a fossil or compact stone (*argillaceous schistus*) that may be readily split into even, smooth, thin laminæ. There are several varieties of this valuable mineral, the prevailing colors being gray, blue, and brown. But the tints are very various; and slates are often marked with streaks of a different color from the ground. Slate is principally used in the covering of houses, for which purpose it is infinitely superior to thatch or tiles, and is far less expensive than lead. Good roofing slate should not absorb water; and it should be so compact as not to be decomposed by the action of the atmosphere. When properly selected, roof slates are of almost perpetual duration; but those which are spongy and imbibe moisture speedily get covered with moss, and require, at no very distant period, to be renewed.

Slaves and Slave-trade. A slave, in the ordinary sense of the term, is an individual at the absolute disposal of another, who has a right to employ and treat him as he pleases. But the state of slavery is susceptible of innumerable modifications; and it has been usual, in most countries where it has been long established, to limit in various ways the power of the master over the slave. The *slave-trade* is, of course, the business of those who deal in slaves. A great deal of learning has been employed in tracing the history of slavery, though the subject is still far from exhausted. It seems most probable that it originally grew out of a state of war. In rude, uncivilized communities, where the passion of revenge acquires a strength unknown in more advanced states of society, captives taken in war are adjudged to belong to the victors, who may either put them to the sword or reduce them to a state of servitude. In antiquity the ideas of war and slavery were inseparable. Probably in very remote ages prisoners were most commonly put to death; but the selfish gradually predominated over the more passionate feelings, and for many ages it was usual to reduce them

to the condition of slaves; being either sold by their captors to others, or employed by them as they might think fit. The practice of reducing men to a state of slavery, having once begun, was extended in various ways. The progeny of slaves or of women in a state of slavery were slaves; men born free might sell themselves as slaves; and parents had authority, in Judæa and Rome, to dispose of their children for the same purpose.—MICHAELIS *on the Laws of Moses*, ii. 163, Engl. ed. It was the law of Rome, and of most other ancient states, that the persons of debtors who had contracted obligations which they could not discharge should become the property of their creditors. "*Serri*," says Justinian, "*autem aut nascuntur aut fiunt: nascuntur ex ancillis nostris, fiunt aut jure gentium, id est ex captivitate; aut jure civili, cum liber homo major viginti annos ad pretium participandum sese venundari passus est.*" —*Instit.*, lib. i. tit. 3.

The African slave-trade was commenced by the Portuguese in 1442. It was, however, but of trifling extent till the commencement of the 16th century. In consequence, however, of the rapid destruction of the Indians employed in the mines of St. Domingo or Hayti, Charles V. authorized, in 1517, the introduction into the island of African slaves from the establishments of the Portuguese on the coast of Guinea. The concurrence of the emperor was obtained by the intercession of the celebrated Las Casas, bishop of Chiapa, who labored to protect the Indians by enslaving the Africans; though, as the latter were certainly more vigorous and capable of bearing fatigue than the former, the measure was not in reality so contradictory as it would at first sight appear to be.—ROBERTSON'S *Hist. America*. The importation of negroes into the West Indies and America, having once begun, gradually increased, until the traffic became of great extent and importance. Sir John Hawkins was the first Englishman who engaged in it; and such was the ardor with which our countrymen followed his example, that they exported from Africa more than 300,000 slaves between the years 1680 and 1700; and between 1700 and 1786, 610,000 Africans were imported into Jamaica only; to which adding the imports into the other islands and the continental colonies, and those who died on their passage, the number carried from Africa will appear immense.—BRYAN EDWARDS, *Hist. West Indies*. The importations by other nations, particularly the French and Portuguese, were also very great. We may, however, shortly observe that there can be no doubt that slavery has always existed in Africa; and it is sufficiently well known that previously to the commencement of the traffic such of the captives taken in war as could not be advantageously employed as slaves were most commonly put to death—cannibalism, the exposure of infants, and human sacrifices being then also very frequent. The slave-trade, by opening a ready and profitable market for slaves, assisted in putting an end to these enormities, though it be, at the same time, true that the desire of profiting by their sale has tempted the petty princes to make war on each other for the chance of making captives, and has given a stimulus to man-stealing and other atrocities.—*Geog. Dict.*, art. AFRICA. But those who inquire dispassionately into the subject will probably come to the conclusion that, instead of being injured, the slaves have gained by being carried from the Old to the New World. Speaking generally, the negroes are in the lowest state of abasement, possessing merely the rudiments of the most indispensable arts, a prey to the vilest superstition and tyranny, without any tincture of learning, and with little or no regard for the future. The circumstances under which they are placed in their native land may, perhaps, account for the low state in which we find them; but, however explained, the genuine negroes of Africa are admitted, even by those least inclined to depreciate them, to be for the most part "either ferocious savages, or stupid, sensual, and indolent."—PRICHARD, *History of Man*, ii. 338, 3d ed.

Abolition of Slavery.—The year 1833 was memorable for the abolition of slavery throughout the British colonies. In enacting this celebrated statute, Parliament endeavored to reconcile the apparently conflicting claims of humanity and justice, by providing for the emancipation of the slaves without prejudice to the just rights and claims of their proprietors. This was effected by assigning to the latter the sum of *twenty millions* sterling, which was distributed among them on their complying with the provisions of the act. This is, perhaps, the greatest pecuniary sacrifice ever voluntarily made by any nation in vindication of the right of property. But it was not too great for the object in view; for had that right been violated in this instance, a precedent would have been set for its violation in others, and the consequences would have been most disastrous. The measure, in fact, reflects quite as much credit on the wisdom and honesty as on the generosity of the British nation. This celebrated statute enacted that slavery should cease in all British colonial possessions on the 1st of August, 1834; when the slaves were to become apprenticed laborers, their final and complete emancipation taking place partly on the 1st of August, 1838, and partly on the 1st of August, 1840. But a clamor having been raised against the duration of the apprenticeship, its period was shortened, and the blacks became universally free in 1838.

Distribution of Slave Compensation.—The commissioners for the apportionment of the £20,000,000 granted by Parliament as compensation to slave owners, under the act 3 and 4 Will. IV., cap. 73, issued the following table, showing the average value of a slave in each colony; the number of slaves in each; the total value of the slaves, supposing the annual value of each were realized; and the proportion of the £20,000,000 received by each colony.

Colony.	Average Value of a Slave from 1822 to 1830.	Number of Slaves by the last Registration.	Relative Value of the Slaves.	Proportion of the £20,000,000 to which each Colony is entitled.
	£ s d		£	£
Bermuda	27 4 11½	4,203	114,527	50,584
Bahamas	20 18 9½	9,705	200,573	128,340
Jamaica	44 15 2½	311,692	13,951,139	6,161,927
Honduras	120 4 7½	1,920	230,844	101,958
Virgin Islands	31 16 11	5,192	165,143	72,940
Antigua	32 12 10½	29,537	964,198	425,866
Montserrat	36 17 10½	6,255	234,466	103,558
Nevis	39 9 11½	8,722	341,893	151,007
St. Christopher's	36 6 10½	20,666	750,840	331,630
Dominica	43 8 7½	14,384	624,715	275,923
Barbadoes	47 1 3½	82,807	3,897,276	1,721,345
Grenada	59 6 0	23,536	1,395,684	616,444
St. Vincent's	58 6 8	22,997	1,341,491	592,508
Tobago	45 12 0½	11,021	529,041	234,064
St. Lucia	56 18 7	13,348	750,890	335,627
Trinidad	105 4 5½	22,359	2,352,655	1,039,110
British Guiana	114 11 5½	84,915	9,729,047	4,297,117
Cape of Good Hope	73 9 11	38,427	2,824,224	1,247,401
Mauritius	69 14 3	68,613	4,783,183	2,112,632
Total	.....	780,993	45,281,738	20,000,000

Dr. Livingstone, who is acknowledged as being conversant upon subjects affecting the slave-trade, says: "I have thus ventured to state my conviction in favor of our present system, formed as it was from personal observation, and in the teeth of a strong bias to the contrary, that you may, according to your custom, and if you should deem it advisable, give this to your readers by way of helping them to both sides of the question. It is not to be supposed for a moment that the present system of coercion will result in a radical cure of the evil. *The cultivation by the Africans on their own soil of the raw materials of our manufactures, and the influence of Christian civilization alone will effect a permanent suppression of the slave-trade.* But all hope of this must be given up if the coast tribes are to be hounded on by the Europeans to hunt down the defenseless inland inhabitants, *on the absurd pretense of promoting 'free emigration.'* It is no more true that Africans take delight in hunting, buying, and selling each other than that the English glory in hanging themselves in November. I know that this is the case throughout the interior, and I was sorry at the cause of a different state of things on the borders of civilization. But we are ignorant of the sources whence statements such as that referred to arise. From meeting it in various quarters, and more especially in the mouths of slave-holders, or would-be slave employers, I am inclined to think that both it and that about the inefficiency of Her Majesty's cruisers have had their origin in those who are, directly or indirectly, abettors of slavery, and that they are promulgated by many who, like myself, had not the means of testing their truth."

Passing over the interval from the period when the slave-trade was declared to be piracy to the year 1840, we find that the number introduced into Brazil from that year to 1851, inclusive, was 348,609, or a little more than 30,000 a year. During the same period the number imported into Cuba amounted to an average of about 6000 a year. The following tables shew the importations into Brazil and Cuba from 1851 to 1854:

	Slaves.
Imported into Brazil in the year 1851	47,000
" " " 1852	60,000
" " " 1853	3,700
Total	100,700
Imported into Cuba in 1851	5,000
" " " 1852	7,924
" " " 1853	12,500
" " " 1854	10,230
	35,654
	100,700
Total	136,354

For the four years from 1851 to 1854, inclusive, this gives an average importation into both countries of something over 34,000 a year. As perhaps not more than three-fourths of the whole number was reported to the mixed commission, the yearly average for this period may be set down at 45,000. From the year 1854 there were very few, if any, slaves imported into Brazil, in consequence of the laws passed by the government of that country against the traffic. The slave-trade is now mainly, if not wholly, carried on with Cuba, which imports about 20,000 slaves every year; which, added to the total of the trade with both Brazil and Cuba since the year 1850, gives the average number imported every year, up to the present time, at about 30,000. If the profit realized on the purchase of one slave amounts, as we have shewn in the following tables, to $365, the total profits of one year's trade will therefore be about $11,000,000.

As a curious exhibit, we give the statistics showing the estimated part which this country takes in this nefarious traffic. It is estimated that in the port of New York alone about twelve vessels are fitted out every year for the slave-trade, and that Boston and Baltimore furnish each about the same number, making a fleet of thirty-six vessels all engaged in a commerce at which the best feelings of our nature revolt. If to these be added the slavers fitted out in other Eastern ports besides Boston, we will have a total of about forty, which is rather under than over the actual number. Each slaver registers from 150 to 250 tons, and costs, when ready for sea, with provisions, slave equipments, and every thing necessary for a successful trip, about $8000. Here, to start with, we have a capital of $320,000, the greater part of which is contributed by Northern men. The expenses of fitting out, and of the trip to and from the coast of Africa, may be estimated as follows:

Cost of forty slavers ready for sea	$320,000
Expenses at the port for brokerage and commission, $3000 on each vessel	120,000
Captains' and seamen's wages for the voyage	100,000
Amount paid for negroes on the coast of Africa, at $15 a head, allowing 600 to each vessel	36,000
Port charges and secret money paid at the place of landing in Cuba or other destination, $42 for each negro, allowing a diminution of 100 in each vessel by death on the passage	840,000
Total	$1,456,000

From this estimate it will be seen that the amount of capital required to fit out a fleet of slavers is about $1,500,000, upon which the profits are so immense as almost to surpass belief. In a single voyage of this fleet 24,000 human beings are carried off from different points on the slave coast; and of these 4000, or one sixth of the whole number, become victims to the horrors of the middle passage, leaving 20,000 fit for market. For each of these the trader obtains an average of $500, making a total for the whole 20,000 of $10,000,000. Now, if we estimate the number of trips made by each vessel in a year at two, we will have this increased to $20,000,000. Each vessel, it is true, can make three, and sometimes four trips, but as some of them are destroyed after the first voyage, we have placed the number at the lowest estimate. The expenses and profits of the slave-trade for a single year compare as follows:

Total expenses of two voyages	$3,000,000
Total receipts of ditto	20,000,000
Profits	$17,000,000

The laws of Congress on the subject of the slave-trade were passed March 22, 1794; May 10, 1800; February 28, 1803; March 2, 1807; April 20, 1818; March 3, 1819; May 15, 1820; March 3, 1843; September 20, 1850. Conventions on the subject of the slave-trade were held July 12, 1822; November 13, 1826, with Brazil; March 2, 1827; August 9, 1842. By the act of March 22, 1794, the slave-trade was prohibited. The act of May 10, 1800, applied to foreigners residing in the United States, and forbid citizens from being engaged in foreign ships in the slave-trade. By the act of March 2, 1807, vessels with slaves on board were to be forfeited, the naval forces to be employed to enforce the act. By the act of April 20, 1818, the importation of negroes, or persons of color, "to be held to service or labor," was prohibited. By the act of March 3, 1819, the naval ships would send to the United States, for confiscation, any ships detected in the slave-trade; a bounty was offered of $25 for each negro captured and delivered to the United States Marshal. By the act of May 15, 1820, the slave-trade was declared to be piracy, and any citizen detected in the trade should suffer death. By the act of September 20, 1850, the slave-trade in the District of Columbia was prohibited; no slave to be brought into the District for sale as merchandise; and all slave depôts to be broken up.

For discussions on slavery and slave-trade, see *For. Quart.*, xxxiv. 104; *South. Quart.*, xix. 101, xxi. 209; *Living Age*, xiv. 235, xvi. 509; *Edinb. Rev.*, viii. 385, xli. 195, xii. 355, v. 209 (Brougham), x. 199, xxxviii. 168, xxxix. 118; *Westm. Rev.*, xxxiv. 125; *Blackwood*, lv. 731; *Amer. Almanac*, 1841; *North Amer. Rev.*, xli. 170, lxxlii. 347 (Peabody); De Bow's *Rev.*, x. 658, xi. 23–184, viii. 122, ix.; *South. Lit. Mess.*, ix. 736, vii. 774.

Coolie Trade.—This trade has sprung up since vigorous efforts have been made to suppress the slave-trade proper. Although theoretically the coolie trade prom-

lsed benefits to both planters and coolie, yet practically it is only another form of the slave-trade.

The truth uttered by a late number of the *California Chronicle* in the following paragraph is but too true:

"We hear of these wretched beings dying on their passage from Canton to Callao of hunger, thirst, and foul disease engendered by close confinement, without air or nutriment, in the holds of ships; we hear of these unfortunates murdering one another in the agony of their suffering; and yet, although the thing is plain and palpable before our very eyes, the civilized, the Christian world shrugs its shoulders, exclaims 'horrible,' and leaves the helpless creatures to their fate."

In extenuation of the guilt incurred, it is alleged that the parties concerned have a contract with the coolies; but in effect the deluded victim is a slave, and not the faintest dawn of hope illumines his dark horizon. Numerous important and incontrovertible facts have been brought to the attention of our government by means of the "message from the President of the United States, communicating information in regard to the slave and coolie trade," presented to the House of Representatives one year ago.

Mr. Parker, United States Minister to China, wrote to Mr. Marcy on the 12th of February, 1856, that the following shipments of coolies had been made during the year 1855 from Swatow, an illegal port even for legal trade:

	Ships	Tonnage.	Coolies.
American	5	6,592	3050
British	3	3,821	1938
Chilian	1	500	250
Peruvian	3	1,860	1150
Total	12	12,773	6388

Mr. Parker also stated, from official information, that the number of males imported as coolies from Calcutta and Madras, from 1845 to 1852, into British Guiana and Trinidad, was 1700; and he suggested "the necessity of specific instructions emanating from the Navy Department to our men-of-war on the China station, authorizing them to resort to illegal ports, and to examine such vessels as do, and ascertain that they do not offend against law, and to make them accountable if they do." January, 1856, Mr. C. D. Mugford, at Hong Kong, notified Mr. Parker that he was agent for one of the most respectable firms in the United States, who had made a contract with the Brazilian government for sending to Rio de Janeiro some 2000 Chinese, and that part of them had been shipped, but the firm referred to were ready to abide by the decision of the governments of the United States or China as regards the legality of the trade. Subsequently, Mr. Parker addressed a public notification calling on citizens of the United States to desist from this irregular and immoral traffic.

The evidence constantly accumulating to show the horrible character of this trade calls still more loudly for its speedy suppression. The *London Times* recently published a deeply interesting communication on this subject, from which we extract the following:

"The testimony of Sir John Bowring to the lamentable condition of the Chinese emigrant can not but recall to most of our readers' minds the disclosures made a few weeks ago at the Thames Police Court in London with respect to the condition of the coolies on board the ship *Duke of Portland*, on her voyage from Hong Kong to Havana. It will be remembered that on the occasion referred to the master of the vessel made the confession that one hundred and thirty-two of the emigrants, all of whom had been taken on board, he said, in good health, had died between Hong Kong and Havana. He had 'had as many as two hundred invalids at one time,' and 'many more had died after they had landed in Cuba.' His log-book contained daily, and more than daily, entries of death. The magistrate said 'he had heard of the horrors of the middle passage when the odious slave-trade was in existence, but he never heard of any thing like this.' The counsel said, 'It is most horrible. Chinamen are brought from China to work on plantations, and this is the result. The English flag is disgraced by such a traffic.' The captain confessed, 'It is a dreadful traffic, and quite time it was put an end to.' Yet this was but an accidental disclosure of a system which was only casually brought to light in this instance by the magistrate's inspection of the log-book in a suit of wages.

"I have myself, when in Havana, heard accounts and witnessed scenes connected with this traffic which are perfectly appalling. In some instances the proportion of dead to living at the conclusion of the voyage has been as high as two hundred of the one for every three hundred of the other. In March, 1853, the British ship *Gertrude* arrived at Havana with a cargo of 198 Chinamen, and in a note appended to the return we read, 'of the *Gertrude's* 152 died.'

"Such are the horrors of this second slave-trade during the passage. When he arrives at his destination, in the majority of instances, the coolie finds that his misery has but commenced. I have seen examples of considerate treatment, and consequently of comparative comfort; but these are unhappily rare. On arriving at Havana, after passing the quarantine, the coolie, if he survive, is transferred to the highest bidder, who places him upon his plantation side by side with his slaves. His term of service is eight years; his labor as hard as his master thinks he can sustain. He receives a small payment monthly, which makes his condition by a few dollars preferable to that of the slave. He is exposed to the same toil, watched by the same overseer, with whip in hand and sword at his side, as the slave.

"On the other hand, his position is worse than that of his slave companion, inasmuch as his master's interest in him terminates after eight years. In proportion as the term of service approaches its expiration, the motive for retaining the coolie in life decreases. The slave's life is usually worked out, as the Cuban planters have themselves confessed to me, in ten years of full work. The Chinese coolie, as every one who has lived on the Cuban plantations knows, reaches his end on an average after a very much shorter term of labor. Again, the Chinaman does not bear the tropical heat with the ease with which the negro endures it."

Sloop, a vessel of one mast, the mainsail of which is attached to a gaff above, to a boom below, and to the mast on its foremost edge; different from a *cutter* by having a fixed bowsprit and a jib-stay. It is also a general name for ships of war below the size of frigates.

Smack, a vessel with one mast, commonly rigged as a sloop, and used in the coasting trade, or as a tender in the royal navy. The vessels of this name that have long plied between Leith and London are well known, and have always been noted for their security.

Smaltz, or **Smalt** (Ger. *Schmalz*; Du. *Smalt*; Fr. *Smalt*; It. *Smalto azzurro, Smaltino*; Sp. *Esmalte, Azul azur*; Russ. *Lasor*), an oxyd of cobalt, melted with siliceous earth and potash. It is a sort of glass, of a beautiful deep blue color; and being ground very fine, is known by the name of powder blue. The color of smaltz is not affected by fire; and it is consequently in great demand in the painting of earthen-ware. It is also employed in the coloring of paper, and for other purposes in the arts. Beckmann has proved that the process used in the preparation of smaltz was invented about the end of the 15th or the beginning of the 16th century; and that the blue glass of the ancients owes its color, not to the presence of cobalt or smaltz, but to that of iron.—*Hist. of Inventions*, vol. ii., art. COBALT.

Smuggling, the offense of importing prohibited articles, or of defrauding the revenue by the introduction of articles into consumption, without paying the duties chargeable upon them. It may be committed indifferently either upon the excise or customs revenue.

This crime, which occupies so prominent a place in the criminal legislation of all modern states, is wholly the result of vicious commercial and financial legislation. It is the fruit either of prohibitions of importation, or of oppressively high duties. It does not originate in any depravity inherent in man, but in the folly and ignorance of legislators. A prohibition against importing a commodity does not take away the taste for it; and the imposition of a high duty on any article occasions a universal desire to escape or evade its payment. Hence the rise and occupation of the smuggler. The risk of being detected in the clandestine introduction of commodities under any system of fiscal regulations may always be valued at a certain average rate; and wherever the duties exceed this rate, smuggling immediately takes place. Now there are plainly but two ways of checking this practice—either the temptation to smuggle must be diminished by lowering the duties, or the difficulties in the way of smuggling must be increased. The first is obviously the more natural and efficient method of effecting the object in view; but the second has been most generally resorted to, even in cases where the duties were quite excessive. Governments have uniformly almost consulted the persons employed in the collection of the revenue with respect to the best mode of rendering taxes effectual; though it is clear that the interests, prejudices, and peculiar habits of such persons utterly disqualify them from forming a sound opinion on such a subject. They can not recommend a reduction of duties as a means of repressing smuggling and increasing revenue, without acknowledging their own incapacity to detect and defeat illicit practices; and the result has been that, instead of ascribing the prevalence of smuggling to its true causes, the officers of customs and excise have almost universally ascribed it to some defect in the laws, or in the mode of administering them, and have proposed repressing it by new regulations, and by increasing the number and severity of the penalties affecting the smuggler. As might have been expected, these attempts have, in the great majority of cases, proved signally unsuccessful. And it has been invariably found that no vigilance on the part of the revenue officers, and no severity of punishment, can prevent the smuggling of such commodities as are either prohibited or loaded with oppressive duties. The smuggler is generally a popular character; and whatever the law may declare on the subject, it is ludicrous to expect that the bulk of society should ever be brought to think that those who furnish them with cheap brandy, geneva, tobacco, etc., are guilty of any very heinous offense.

"To pretend," says Dr. Smith, "to have any scruple about buying smuggled goods, though a manifest encouragement to the violation of the revenue laws, and to the perjury which almost always attends it, would in most countries be regarded as one of those pedantic pieces of hypocrisy which, instead of gaining credit with any body, seem only to expose the person who affects to practice them to the suspicion of being a greater knave than most of his neighbors. By this indulgence of the public, the smuggler is often encouraged to continue a trade which he is thus taught to consider as, in some measure, innocent; and when the severity of the revenue laws is ready to fall upon him, he is frequently disposed to defend with violence what he has been accustomed to regard as his just property; and from being at first rather imprudent than criminal, he at last too often becomes one of the most determined violators of the laws of society."—*Wealth of Nations*, p. 406. To create by means of high duties an overwhelming temptation to indulge in crime, and then to punish men for indulging in it, is a proceeding completely subversive of every principle of justice. It revolts the natural feelings of the people, and teaches them to feel an interest in the worst characters—for such smugglers generally are—to espouse their cause and avenge their wrongs. A punishment which is not proportioned to the offense, and which does not carry the sanction of public opinion along with it, can never be productive of any good effect. The true way to put down smuggling is to render it unprofitable—to diminish the temptation to engage in it; and this is not to be done by surrounding the coasts with cordons of troops, by the multiplication of oaths and penalties, and making the country the theatre of ferocious and bloody contests in the field, and of perjury and chicanery in the courts of law; but by repealing prohibitions, and reducing duties, so that their collection may be enforced with a moderate degree of vigilance; and that the forfeiture of the article may be a sufficient penalty upon the smuggler. It is in this, and in this only, that we must seek for an effectual check to illicit trafficking. Whenever the profits of the fair trader become nearly equal to those of the smuggler, the latter is forced to abandon his hazardous profession. But so long as prohibitions or oppressively high duties are kept up, or, which is, in fact, the same thing, so long as *high bounties* are held out to encourage the adventurous, the needy, and the profligate, to enter on this career, we may be assured that armies of customs officers, backed by the utmost severity of the revenue laws, will be insufficient to hinder them.

The penalty for smuggling in this country is fixed by the act of Congress, August 30, 1842, as follows: That if any person shall knowingly and willfully, with intent to defraud the revenue of the United States, smuggle or clandestinely introduce into the United States any goods, wares, or merchandise, subject to duty by law, and which should have been invoiced, without paying or accounting for the duty, or shall make out, or pass, or attempt to pass through the custom-house, any false, forged, or fraudulent invoice, every such person, his, her, or their aiders and abettors, shall be deemed guilty of a misdemeanor, and, on conviction, shall be fined in any sum not exceeding five thousand dollars, or imprisonment for any term not exceeding two years, or both, at the discretion of the court.

Smyrna, a large city and sea-port of Asiatic Turkey, on the western side of Asia Minor, lat. 33° 25′ 36″ N., long. 27° 6′ 45″ E. Population probably about 120,000, of whom 60,000 may be Turks, 40,000 Greeks, and the remainder Armenians, Franks, Jews, etc. Smyrna is situated at the bottom of a deep gulf, the entrance to which lies between the island of Mytilene on the north, and Cape Carabourun, in lat. 38° 41′ 30″ N., long. 26° 21′ E., on the south. The passage between James's Castle on the south and the opposite sand-bank is narrow; but there is from nine to ten fathoms water, with a blue clay bottom. Merchant ships anchor abreast of the city in from seven to eight fathoms; but the water is so deep that they may come close to the quays. The *inbat*, or sea-breeze, blows from morning till evening, and is always waited for by ships going up to the city. There is excellent anchorage in most parts of the gulf, merely avoiding the shoals on the north side. Smyrna is a place of great antiquity. The excellence of its port, and its admirable situation, have made it be several times rebuilt, after being destroyed by earthquakes. On approaching it from the sea, it has the appearance of an amphitheatre: the castle is at the back of the town, which it commands, on the top of the hill; but it is in a state of decay, and could oppose no resistance to an invading force. The interior of the city does not correspond to its external appearance; the streets being for the most part narrow, dirty, and ill paved. Owing to the want of cleanliness, and of all sorts of precautions on the part of the Turks, Smyrna is frequently visited by the plague. In 1814, from 50,000 to 60,000 of the inhabitants are said to have been cut off by this dreadful scourge. The trade of this city is more extensive than that of any other in the Turkish empire. The

caravans from Persia are chiefly composed of Armenians. They arrive and depart at fixed periods, which are nearly identical with those of the arrival and departure of most of the foreign ships frequenting the port. Bargains are principally effected by Jew brokers, many of whom have amassed considerable fortunes. The principal articles of import consist of grain, furs, iron, butter, etc., from Odessa and Taganrog; and of cotton stuffs and twist, silk and woolen goods, coffee, sugar, cochineal, and dye-woods, iron, tin and tin plates, rum, brandy, paper, cheese, glass, wine, etc., from Great Britain, France, Italy, the United States, etc. The exports consist principally of madder, which is the most valuable article, dried fruits, valonia, opium, silk, wool, box-wood, emery-stone, sponge, drugs, yellow berries, olive oil Turkey carpets, galls, wax, copper, hare skins, goats' wool, etc. — For further details, *see article* TURKEY, and TOURNEFORT, *Voyage au Levant*, tome ii.; MACGILL'S *Travels in Turkey*, vol. I.

QUANTITIES AND VALUES OF THE ARTICLES EXPORTED FROM SMYRNA IN 1851.

Articles.	Total Quantities exported.	Total Value of Exports.
		Piastres.
Almonds ..... qtls.	1,247	375,850
Barley ..... kilo.	13,609	122,040
Beeswax ..... qtls.	733	824,620
Bones ..... "	8,350	208,750
Box-wood ..... "	69,884	1,556,060
Broken glass ..... "	212	18,450
Bullock and lamb skins.. bales / qtls.	173 / 6,488	3,417,000
Carpets ..... bales	627	1,300,500
Cotton ..... "	11,712	9,826,450
" spun ..... "	317	338,630
Dried fruits (dates, etc.) ... qtls.	179,073	24,961,890
" dates ..... kilo.	17,425	
Drugs ..... cases	611	182,750
" ..... qtls.	32,700	4,578,000
Emery stones ..... "	45,076	2,479,180
Essence of roses ..... cases	32	1,680,000
Filth goats' wool ..... bales	1,204	4,009,160
Gums ..... cases	1,499	1,688,800
Hare skins ..... bales	288	1,200,000
Horns ..... qtls. / pairs	1,972 / 1,804	84,610
Leeches ..... cases	1,657	2,662,500
Liquorice ..... "	10	5,500
Liquors ..... "	50	27,500
" rum ..... bbls.	388	59,200
Madder root ..... "	60,736	36,288,000
Maize and millet ..... kilo.	113,950	1,481,230
Mastic ..... bbls.	3	27,000
Nut-galls ..... sacks	331	496,400
Nuts ..... qtls.	3,846	288,450
Oleaginous seeds ..... kilo.	8,836	248,010
Olive oil ..... qtls.	135	91,430
Opium* ..... cases	2,284	13,356,000
Poppy seeds ..... sacks	1,611	241,350
Provisions ..... kilo. / bbls. / qtls.	1,815 / 2,660 / 224	294,900
Rags ..... bales	1,842	184,000
Radix saponaria ..... cases	704	177,000
Salep ..... " / bbls.	105 / 10	299,000
Scammony ..... cases	266	665,000
Silk and cocoons ..... bales	684	2,135,100
Soap, to America ..... cases	48	18,400
Sponges ..... "	3,372	10,683,000
Stones ..... pieces	100,200	150,300
Storax ..... bbls.	96	25,880
Terre d'Ambre ..... qtls.	1,940	48,500
Tobacco ..... cases / bbls.	527 / 27	364,700
Valonia ..... qtls.	262,012	17,041,130
Various articles ..... cases / bbls.	1,225 / 155	546,800
Wheat ..... kilo.	15,031	270,560
White stone ..... qtls.	11,556	478,860
Wines ..... bbls.	1,629	79,750
Wool ..... bales	14,547	10,[illegible],040
Yellow berries ..... sacks	2,670	3,604,500
Total exports from Smyrna...	....	161,676,520

* Opium, 2121 cases. Of this 713 are large, and go to England; 1408 are small, and go direct to China *via* Egypt.

In his *Lettres sur la Turquie*, the well-informed M. Ubicini estimates the value of the imports into Smyrna in 1851 at 28,473,000 francs, and that of the exports at 36,682,000 francs. The coasting trade, as that between Smyrna, Constantinople, Syria, Alexandria, and the Levant generally, is usually denominated, is almost entirely in the hands of the Greeks, and is very extensive. Excluding Greeks, the port is annually visited by from 550 to 600 foreign ships. Ubicini reckons the value of the imports of English and Swiss cottons at above 14,000,000 francs; the other leading articles of imports are English and German woolens, French silks, and colonial products.

The weights and measures are the same in this city as at Constantinople, with an exception of a small difference on some of the weights. The principal weight in Smyrna is the oke, which is of two different weights. The oke used in retail is of 400 drams, and in wholesale of 380. The wholesale oke being also known as oke of 400 drams, in order to draw a distinction between the two, we will call the first, the oke of 400 drams, "real weight," and the other, the oke of 400 drams, "nominal weight." The only oke known in Constantinople is that of 400 drams, "real weight." At Smyrna, 400 drams, "nominal weight," are = 1 oke; 45 okes = 100 rotoli = 1 kintal or kantar.

At Constantinople, 400 drams, "real weight," are = 1 oke; 44 okes = 100 rotoli = 1 kintal or kantar.

Thus, 100 kintals of iron bought at Constantinople will render here $102\frac{65}{100}$ kintals, if weighed by two accurate steelyards in both places; but as they are generally very imperfectly made, the difference varies from 1 to 1½ per cent. Generally, however, 100 kintals of Constantinople render here from 102½ to 104½.

General Remarks.—Exports are generally sold for cash, and payment is made on the first Saturday following the day of sale. It sometimes occurs, however, that one half of the money is paid the first, and the other half the succeeding Saturday; but for this purpose a special agreement is generally necessary before concluding the purchase. The term of payment is seldom extended to a third Saturday. The internal duty is always paid by the seller, and is included in the prices of commodities. The exporter has no other tax to pay than the export duty. Box-wood, canary seed, hemp seed, and terra umbra, are generally sold free on board, which comprises export duty, porterage, and shipping charges. Weighing, measuring, and all other charges, are paid by the exporter. The insurance is almost exclusively effected in the United States for goods to the States. The freight for figs, raisins, gums, nut-galls, yellow berries, and valonia, is made payable in pounds sterling (£4 $\frac{84}{100}$ per pound sterling). Some houses charge a half per cent. for storage, some one per cent., and others charge no storage at all; but when they do, they actually pay for one.

Unwashed Wool.—Besides all the charges on unwashed wool, a loss of weight must be added, arising from the picking and assorting, which generally varies from 3 to 5 per cent. The export duty shown in this statement is for Anatolia, Roumelia, and Constantinople wool, which are the kinds generally exported to the United States. The duty upon the wool of Syria, Tripoli (Barbary), Bagdad, and the adjoining country, is of $0·1097 per 100 pounds. 13,085 bales, washed and unwashed wool, have been exported to the United States during the period mentioned in this statement, representing an amount of $598,178. No sales of commodities took place during the months at which the price is left blank in this statement. On all such commodities where the price is left open in the column of "retail prices," little or no consumption exists.

Leeches.—Leeches are a monopoly, and two European houses of this city have the exclusive right of exporting them, or to sell them in the market.

Sponges.—The price of this article varies considerably: that of common sponges, called "chemuches," after they had been prepared for shipment, varied from $15 to $27 per 100 lbs., and that of fine sponges from $105 to $600 per 100 lbs. The former are shipped in

bales, and are the kind most exported to the United States, and the latter in cases. They are generally bought in the lump from on board the boats which bring them from the neighboring islands by the exporters, who wash them, throw off the sand, and otherwise prepare them for shipment; consequently their price per weight depends on the quantity of sand, stones, etc., they may contain, and can only be ascertained after this operation has been gone through. The purchase of this article requires considerable skill, and oftentimes the most experienced dealers are much deceived, so much so that a difference in price of 20 to 25 per cent., more or less, is regarded as a matter of no great moment. Besides the commodities noted in this statement, 2677 bales of rags and 70 tons of emery stones have also been exported to the United States; but both of these articles are a monopoly, and are only exported by two houses of Smyrna. The trade between Smyrna and the United States is generally carried on with Boston and New York, but principally with the former place.—*United States Consul at Smyrna*, November 4, 1854. For further information, see *Com. Relat. United States; Living Age*, x. 201, xxviii. 167; Hunt's *Merchants' Magazine*, xxv. 452 (F. W. Holland).

Snuff (Germ. *Schnupftaback*; Fr. *Tabac en poudre*; It. *Tabacco da naso*; Sp. *Tabaco de polvo*; Russ. *Nosovoi tabak*), a powder in very general use as an errhine. Tobacco is the usual basis of snuff; but small quantities of other articles are frequently added to it, to vary its pungency, flavor, scent, etc. Though substantially the same, the kinds and names of snuff are infinite, and are perpetually changing There are, however, three principal sorts the first, granulated; the second, an impalpable powder; and the third, the bran or coarse part remaining after sifting the second sort. Unless taken in excess, no bad consequences result from its use.—*See* Tobacco.

Snuffboxes are made of every variety of pattern, and of an endless variety of materials. We only mention them here for the purpose of giving the following details, not elsewhere to be met with, with respect to the manufacture of Laurencekirk or Ayrshire boxes. These are made of wood, admirably jointed, painted, and varnished. These beautiful boxes were first manufactured at the village of Laurencekirk, in Kincardineshire, about 60 years since. The original inventor was a cripple hardly possessed of the power of locomotion. Instead of curtains, his bed (rather a curious work-shop) was surrounded with benches and receptacles for tools, in the contrivance and use of which he discovered the utmost ingenuity. Instead of taking out a patent, the inventor confided his secret to a joiner in the same village, who in a few years amassed considerable property; while the other died, as he had lived, in the greatest poverty. The great difficulty of the manufacture lies in the formation of the hinge, which, in a genuine box, is so delicately made as hardly to be visible. Peculiar, or, as they are called, secret tools, are required in its formation; and though greatly improved by time and experience, the mystery attached to their preparation is still so studiously kept up that the workmen employed in one shop are debarred having any communication with those employed in another.

Snuff-taking. This practice took its rise in England from the captures made of vast quantities of snuff by Sir George Rooke's expedition to Vigo in 1702. The prize of the forces having been sent home and sold, the vice soon obtained from which the revenue now draws, with tobacco, considerably more than £4,000,000 per annum. In the year ending January 5, 1854, there were imported 35,000,000 lbs. of tobacco and snuff, of which 36,400,000 lbs. were entered for home consumption.—*See* Tobacco.

Soap (Ger. *Seife*; Fr. *Savon*; It. *Sapone*; Sp. *Jabon*; Russ. *Mylo*; Lat. *Sapo*). This article was imperfectly known to the ancients. The first express mention of it occurs in Pliny and Galen; and the former declares it to be an invention of the Gauls, though he prefers the German to the Gallic soap. In remote periods clothes were cleansed by being rubbed or stamped upon in water. Nausicaa and her attendants, Homer tells us, washed theirs by treading upon them with their feet in pits of water.—*Odyssey*, book vi. The manufacture of soap began in London in 1524, before which time it was supplied by Bristol at one penny per pound. —Haydn. The soap met with in commerce is generally divided into two sorts, *hard* and *soft*: the former is made of soda and tallow or oil, and the latter of potash and similar oily matters. Soap made of tallow and soda has a whitish color, and is, therefore, sometimes denominated *white* soap; but it is usual for soapmakers, in order to lower the price of the article, to mix a considerable portion of rosin with the tallow; this mixture forms the common *yellow* soap of this country. Soap made of tallow, etc., and potash does not assume a solid form; its consistence is never greater than that of hog's lard. The properties of soft soap as a detergent do not differ materially from those of hard soap, but it is not nearly so convenient to use. The alkali employed by the ancient Gauls and Germans in the formation of soap was potash: hence we see why it was described by the Romans as an unguent. The oil employed for making soft soap in this country is whale oil. A little tallow is also added, which, by a peculiar management, is dispersed through the soap in fine white spots. The soap made in countries which produce olive oil, as the south of France, Italy, and Spain, is preferable to the soap of this country, which is usually manufactured from grease, tallow, etc.—Thomson's *Chemistry*.

The use of soap as a detergent is well known; it may, in fact, be considered as a necessary of life. Its consumption in most civilized countries is immense. Pliny informs us that soap was first invented by the Gauls; that it was composed of tallow and ashes; and that the German soap was reckoned the best.—Lib. xviii.

Society Islands. These islands, lying in the Pacific Ocean, between lat. 16° and 18° S., and long. 148° and 155° W., are under the protectorate of the French government. The principal islands of the group are Tahiti, Eimeo, Hunheine, Raiatea, Bona-bona, Tahaa, an Meura. Papiete, the capital of Tahiti, is much resorted to by American and other whalers. The exports consist of oranges, pearl-shell, arrow-root, cocoanut oil, and other native products of minor commercial importance. The intercourse between the United States and these Islands has increased with our rapidly-increasing relations with Valparaiso, Callao, Panama, the Sandwich Islands, Australia, and China. In 1852 there entered the port of Tahiti 36 vessels under the United States flag, measuring in all 5668 tons. Under all other flags there entered 141 vessels, with an aggregate of 12,817 tons. There are no import duties charged at the Society Islands, except upon spirituous liquors and wines, and on fire-arms and munitions of war. On the last-named articles these duties amount to a prohibition. These islands are under a different system of commercial legislation from that which obtains in the other French colonial settlements. No distinctions are recognized as to any foreign countries, or as to any foreign or domestic ports, with respect to entering or clearing foreign vessels, with cargoes or in ballast. As regards alcoholic and other beverages, American vessels are placed on the same footing as French vessels as to duty, while those of other nations pay double import duties. This distinction is regulated by *arrêté* No. 65, of May 8, 1853. The ports open to foreign vessels are Papiete and Taunoa, at Tahiti; and Papetoai, at Meura. No foreign vessel is permitted without a special permission, or in urgent necessity, to anchor in any other ports of the islands subject to the French protectorate. Offenders are liable to a fine of from 100

to 500 francs. The coasting trade of the islands belonging to France is reserved exclusively to vessels carrying the French or protectorate flag. The penalty for violating this restriction is, for the first offense, a fine of from 1000 to 2000 francs, and, in case of repetition, double that sum. Every captain must, within twenty-four hours after his arrival, present to the director of customs his manifest, with a detailed statement of the ammunition and arms of every kind, and also of the liquors, which, being subject to import duties, can not be landed without the authorization of the director of customs. Those who infringe this regulation are liable to a fine of from 50 to 400 francs. Making a false declaration respecting prohibited goods, or those the sale of which is restricted, is punished by a fine of from 1000 to 5000 francs.

When vessels have on board prohibited goods, spirits, arms, or ammunition, intended only for their own consumption or the defense of the ship, captains must present to the director of customs a detailed declaration of such kinds of stores within twenty-four hours after their arrival. The sale of munitions of war, powder, saltpetre, projectiles, muskets, arms of any kind, is prohibited, except under special permission from the commissioner of the empire; and should any goods of this kind be attempted to be fraudulently landed, they will be confiscated, in addition to the fine imposed by the police regulations. All spirits or liquors which may be attempted to be fraudulently landed are liable to confiscation, as well as the boat conveying them; and the captain, who is held responsible for all goods which may be on board, under whatever conditions, is liable to a fine of from 5000 to 10,000 francs. All goods admitted to entry in the French establishments of Oceania may be sold on board, provided they be not sold by retail. To effect sales of this kind, however, a license of the first class must be previously obtained, payable in advance, and for a period of three months. Sales of cargoes may also be effected on shore, by opening a store for that purpose, for which a similar license must be obtained, and for the same period. Wines and liquors, however, must be sold exclusively on shore, either through the medium of a consignee, or by the captain or his agent, having first procured the necessary licenses. Captains of vessels, whenever the length of their stay permits, must give notice of their departure at the post-office forty-eight hours beforehand; and when it is desired that a vessel should remain in port less than forty-eight hours, notice to that effect must be given on the day of arrival. If any of the fines specified in the foregoing regulations should not be paid within five days, at the farthest, from the date of condemnation, or satisfactory security not be tendered, a part or the whole of the cargo will be sold, or the vessel itself be retained, to liquidate the debt.—*Com. Relat. U. S.*

Soda. *See* ALKALI.

Solder, Sodder, or **Soder,** a metallic or mineral composition used in soldering or joining together other metals. Solders are made of gold, silver, copper, tin, bismuth, and lead. In the composition there must be some of the metal that is to be soldered mixed with some higher and finer metals. Goldsmiths usually make four kinds of solder, viz.: solder of eight, where to seven parts of silver there is one of brass or copper; solder of six, where only a sixth part is copper; solder of four, and solder of three. It is the mixture of copper in the solder that makes raised plate come always cheaper than flat.

Sound Dues. Under the head of DENMARK the reader will find a full history of this interesting commercial question, and also statistics illustrating the proportional interest which every nation had in the abolishment of the sound dues. Since the article DENMARK was in type the final treaties (including that of the United States here given) necessary for the adjustment of this question have been signed. We here annex, as a supplement to this question, the treaty between the United States and Denmark, year 1857. We also give a table showing the *pro rata* division of the indemnity which each nation agrees to pay Denmark.

On the 4th January, 1856, a meeting of the Ministers of Austria, Belgium, France, Holland, Prussia, Spain, and Sweden, and a Commissioner from Russia, met at Copenhagen to consider the disputed question. On the 17th of February another meeting of the Commission took place, when the same states were represented, with the addition of a delegate from Oldenburg. At this meeting a memorandum was presented, in which Denmark offered to accept as a compensation for the abolition of the sound dues, a sum of 35,000,000 rix dollars (about £3,888,888), which is about fifteen and a half years' purchase of 2,248,579 rix dollars, the average net revenue from the dues during the nine years of peace—1842 to 1847, and 1851 to 1853. Each state interested in the commerce of the Baltic to be responsible for the sum only which is assigned to it, but the offer to be binding on Denmark, on its acceptance by all the states whose representatives have taken part in the negotiation. This proposal has been accepted, as will be seen by the following treaty between the United States and Denmark (see next page).

In the annexed table, showing the *pro rata* amounts to be paid by each nation for the abolishment of the sound dues, it will be seen that Great Britain, Russia, and Prussia pay over 68 per cent. of the total; and that the first and second pay 56 per cent. of the total. The share apportioned to the United States is only 2 per cent., while the trade of this country would appear to be about 6 per cent. of the whole.

TABLE SHOWING THE PRO RATA DIVISION OF THE INDEMNITY TO DENMARK FOR THE ABOLISHMENT OF THE SOUND DUES TO BE PAID BY EACH NATION.

Countries.	Rix Dollars.	Per Cent.
Denmark	1,122,078	3·21
Sweden	1,500,503	4·55
Russia	9,759,993	27·80
Prussia	4,440,027	12·60
Mecklenburg	373,668	1·07
Lübeck	102,996	0·29
The Baltic in general	231,999	0·66
Norway	667,225	1·91
Hamburg	107,012	0·31
Bremen	218,583	0·62
Oldenburg	25,127	0·08
Hanover	129,387	0·35
Great Britain	10,126,855	28·90
Netherlands	1,408,060	4·02
Belgium	391,455	0·86
France	1,219,003	3·48
Spain	1,020,016	2·91
Portugal	274,823	0·77
Sardinia	22,928	0·07
Tuscany	26,196	0·08
Two Sicilies	229,013	0·65
Austria	29,434	0·08
Greece	1,401	0·00
Turkey	35,025	0·10
United States	717,829	2·03
Mexico	6,537	0·02
St. Domingo	13,059	0·04
Venezuela	6,537	0·02
New Granada	3,269	0·01
Uruguay	1,307	0·00
La Plata	3,269	0·01
Brazil	506,295	1·45
Peru	430	0·00
Buenos Ayres	16	0·00
Chili	358	0·00
China	3,269	0·01
Other countries	366,008	1·04
Total	35,000,000	100·00

As to the basis of the contribution, it would have been just to have taken the quantity of goods carried, or duties paid, by the ships of each nation through the Sound and the Belt as determining the proportions respectively to be paid to the capitalization of the dues. But this proportion has not in every case been carried out, as may be seen by comparing the foregoing table with the following, which exhibits the duties paid by every nation.

Countries.	Sailed from Baltic. Average Sum 1851-'55.	Per Cent. of the whole Amount.	Entered into Baltic. Average Sum 1851-'55	Per Cent. of the whole Amount.
PRIVILEGED	Rix Doll.		Rix Doll.	
United States	850	0·593	976	0·682
Belgium	72	0·050	50	0·047
Bremen	260	0·182	259	0·183
Denmark	11,132	7·790	12,353	8·753
Great Britain	34,702	24·326	35,755	25·360
France	2,530	1·770	2,524	1·771
Greece	6	0·004	6	0·004
Hamburg	645	0·451	451	0·319
Hanover	5,388	3·735	4,925	3·488
The Netherlands	14,338	10·033	14,462	10·244
Italy (Naples)	366	0·256	396	0·281
Lübeck	1,102	0·773	1,020	0·723
Mecklenburg	8,200	5·738	7,284	5·159
Norway	19,326	13·523	17,956	12·718
Oldenburg	1,439	1·007	1,571	1·113
Portugal	46	0·032	55	0·039
Prussia	21,933	15·348	21,456	15·198
Russia	8,467	5·925	7,583	5·371
Spain	24	0·017	23	0·016
Sweden	12,051	8·435	12,137	8·597
Austria	6	0·004	6	0·004
NON-PRIVILEGED.				
Buenos Ayres	....	....	6	0·004
Peru	6	0·004	5	0·004
Tuscany	6	0·004	7	0·005
Total	142,908	100·000	141,181	100·000

A Proclamation.—Whereas a convention between the United States of America and his Majesty the King of Denmark, for the discontinuance of the Sound dues, was concluded and signed by their respective plenipotentiaries at Washington, on the 11th day of April, 1857, which convention is as follows:

The United States of America and his Majesty the King of Denmark, being desirous to terminate amicably the differences which have arisen between them in regard to the tolls levied by Denmark on American vessels and their cargoes passing through the Sound and Belts, and commonly called the Sound dues, have resolved to conclude a convention for that purpose, and have named as their plenipotentiaries, that is to say, the President of the United States, Lewis Cass Secretary of State of the United States, and his Majesty the King of Denmark, Torben Bille, Esquire, Knight of the Dannebrog, and decorated with the Cross of Honor of the same order, his said Majesty's Chargé d'Affaires near the government of the United States, who, after having communicated to each other their full powers in due form, have agreed to and signed the following articles:

Article I. His Majesty the King of Denmark declares entire freedom of the navigation of the Sound and the Belts in favor of American vessels and their cargoes from and forever after the day when this convention shall go into effect as hereinafter provided. And it is hereby agreed that American vessels and their cargoes, after that day, shall not be subject to any charges whatever in passing the Sound or the Belts, or to any detention in the said waters; and both governments will concur, if occasion should require it, in taking measures to prevent abuse of the free flag of the United States by the shipping of other nations which shall not have secured the same freedom and exemption from charges enjoyed by that of the United States.

Article II. His Danish Majesty further engages that the passages of the Sound and Belts shall continue to be lighted and buoyed as heretofore, without any charge upon American vessels or their cargoes on passing the Sound and the Belts, and that the present establishments of Danish pilots in these waters shall continue to be maintained by Denmark. His Danish Majesty agrees to make such additions and improvements in regard to the lights, buoys, and pilot establishments in these waters as circumstances and the increasing trade of the Baltic may require. He further engages that no charge shall be made, in consequence of such additions and improvements, on American ships and their cargoes passing through the Sound and the Belts.

It is understood, however, to be optional for the masters of American vessels either to employ in the said waters Danish pilots, at reasonable rates fixed by the Danish government, or to navigate their vessels without such assistance.

Article III. In consideration of the foregoing agreements and stipulation on the part of Denmark, whereby the free and unincumbered navigation of American vessels through the Sound and the Belts is forever secured, the United States agree to pay to the government of Denmark, once for all, the sum of seven hundred and seventeen thousand eight hundred and twenty-nine rix dollars, or its equivalent, three hundred and ninety-three thousand and eleven dollars in United States currency, at London, on the day when the said convention shall go into full effect, as herein afterward provided.

Article IV. It is further agreed that any other or further privileges, rights, or advantages which may have been or may be granted by Denmark to the commerce and navigation of any other nation at the Sound and Belts, or on her coasts and in her harbors, with reference to the transit by land through Danish territory of merchandise belonging to the citizens or subjects of such nation, shall also be fully extended to, and enjoyed by, the citizens of the United States, and by their vessels and property in that quarter.

Article V. The general convention of friendship, commerce, and navigation, concluded between the United States and his Majesty the King of Denmark, on the 26th of April, 1826, and which was abrogated on the 15th of April, 1856, and the provisions contained in each and all of its articles, the 5th article alone excepted, shall, after the ratification of this present convention, again become binding upon the United States and Denmark; it being, however, understood that a year's notice shall suffice for the abrogation of the stipulations of the said convention hereby renewed.

Article VI. The present convention shall take effect as soon as the laws to carry it into operation shall be passed by the governments of the contracting parties, and the sum stipulated to be paid by the United States shall be received by or tendered to Denmark: and for the fulfillment of these purposes a period not exceeding twelve months from the signing of this convention shall be allowed.

But if, in the interval, an earlier day shall be fixed upon and carried into effect for a free navigation through the Sound and Belts in favor of any other power or powers, the same shall simultaneously be extended to the vessels of the United States and their cargoes, in anticipation of the payment of the sum stipulated in *Article III.*; it being understood, however, that in that event the government of the United States shall also pay to that of Denmark 4 per cent. interest on the said sum from the day the said immunity shall have gone into operation until the principal shall have been paid as aforesaid.

Article VII. The present convention shall be duly ratified, and the exchange of ratifications shall take place in Washington within ten months from the date hereof, or sooner if practicable.

In faith whereof the respective plenipotentiaries have signed the present convention, in duplicate, and have thereunto affixed their seals.

Done at Washington this 11th day of April, in the year of our Lord one thousand eight hundred and fifty-seven, and of the independence of the United States the eighty-first.

LEWIS CASS. [SEAL.]
TORBEN BILLE. [SEAL.]

And whereas the said convention has been duly ratified on both parts, and the respective ratifications of the same were exchanged in the city of Washington on the 12th instant by Lewis Cass, Secretary of State of the United States, and W. de Raasloff, his Danish Majesty's Chargé d'Affaires and Consul-general in the United States, on the part of their respective governments:

Now, therefore, be it known that I, James Buchanan, President of the United States of America, have caused the said convention to be made public, to the end that the same and every clause and article thereof may be observed and fulfilled with good faith by the United States and the citizens thereof.

In witness whereof I have hereunto set my hand and caused the seal of the United States to be affixed.

Done in the city of Washington, this 13th day of January, in the year of our Lord one thousand eight hundred and fifty-eight, and of the Independence of the United States the eighty-second.

[SEAL.]

JAMES BUCHANAN.

By the President:
LEWIS CASS, *Secretary of State.*

Sounding, the operation of trying the depth of the sea, and the nature of the bottom, by means of a plummet sunk from a ship to the bottom. There are two plummets used for this purpose, one of which is called the *hand-lead*, weighing about eight or nine pounds; and the other the *deep-sea lead*, which weighs from twenty-five to thirty pounds; and both are shaped like the frustum of a cone or pyramid. The former is used in shallow waters, and on approaching the land after a sea-voyage. Accordingly, the lines used for this purpose are called the *deep-sea lead line*, and the *hand-lead line*. The hand-lead line, which is usually twenty fathoms in length, is marked at every two or three fathoms; so that the depth of the water may be

ascertained either in the day or night. At the depth of two or three fathoms there are marks of black leather; at five fathoms there is a white rag; at seven, a red rag, at ten, black leather; at thirteen, black leather; at fifteen, a white rag; and at seventeen, a red rag.

Sounding with the hand-lead, which by seamen is called *heaving the lead*, is generally performed by a man who stands in the main chains to windward. Having the line quite ready to run out without interruption, he holds it nearly at the distance of a fathom from the plummet; and having swung the latter backward and forward three or four times, in order to acquire the greater velocity, he swings it round his head, and thence so far forward as is necessary; so that by the lead's sinking while the ship advances the line may be almost perpendicular when it reaches the bottom. The person sounding then proclaims the depth of the water, in a kind of song resembling the cries of hawkers in a city. Thus, if the mark of five fathoms is close to the surface of the water, he calls, "By the mark five;" and as there is no mark at four, six, eight, etc., he estimates those numbers, and calls, "By the dip four," etc.; if he judges it to be a quarter or a half more than any particular number, he calls, "And a quarter five," "and a half four," etc. If he conceives the depth to be three quarters more than a particular number, he calls it a quarter less than the next: thus, at four fathoms and three fourths he calls, "A quarter less five."

The deep-sea lead is marked with two knots at twenty fathoms, three at thirty, and four at forty, and so on to the end. It is also marked with a single knot in the middle of each interval.

Until the commencement of the plan of deep-sea soundings, as now conducted in the navy of the United States, the bottom of the sea was almost entirely unknown to us.

It has been proven that the system of deep-sea soundings formerly in use was not accurate. This was simply letting down a lead, until by a shock the line became slack; but it was found that the line would run on without end, being dragged out by under-currents, and that beyond a certain depth no shock was felt.

The plan of deep-sea soundings now in practice in our navy was suggested by Lieutenant Maury, and has been successful principally from the adoption of a lead invented by Lieutenant J. M. Brooke, U.S.N.

This method is to take a cannon-ball, bored through the middle, and a wire inserted; and so arranged that when it touches bottom the ball slips off, and the wire with the line is drawn up. The wire has a cap at the end, with some adhesive matter to attach particles of the bottom. The line is prepared for the purpose, so as to bear the weight, and yet of small resistance in sinking. Experiment has proven that while the plummet is sinking the line runs out at an increasing rate per minute; and by observing when the rate becomes constant, we get the depth, as a current would draw at a constant speed.

Mr. Maury gives this law of descent:

2*m.* 21*s.*	as an average time of descent from	400	to	500	faths.
3*m.* 26*s.*	"	"	"	1000 " 1100	"
4*m.* 29*s.*	"	"	"	1800 " 1900	"

Lieutenant Walsh, of the United States schooner *Fancy*, reported a cast with the deep-sea lead of thirty-four thousand feet without a bottom. His sounding-line was an iron wire more than eleven miles in length. Lieutenant Berryman, of the United States brig *Dolphin*, reported another unsuccessful attempt to fathom mid-ocean with a line thirty-nine thousand feet in length. Captain Dedham, of Her Britannic Majesty's ship *Herald*, reported bottom at the depth of forty-six thousand feet; and Lieutenant J. P. Parker, of the United States frigate *Congress*, afterward, in attempting to sound near the same place, let go his plummet, and saw a line fifty thousand feet long run after it as though the bottom had not been reached. The last three attempts were made according to the plan mentioned above. For further interesting items we refer to MAURY'S *Physical Geography of the Sea*.—See ATLANTIC OCEAN.

Soundings for the Atlantic Telegraph.—The result of these soundings has been to establish the hypothesis of Lieutenant Maury, of a submarine plateau from the Newfoundland Banks nearly to the coast of Ireland. We extract portions of the report of Lieutenant O. H. Berryman, U.S.N., to the Secretary of the Navy, giving an account of the experimental soundings made by him in the United States steamer *Arctic*, to corroborate the existence of this plateau.

"UNITED STATES STEAMER ARCTIC, *New York, October* 14, 1858

"Leaving New York on the night of July 18, I steered directly for St. Johns, where I arrived on the 29th. Taking in coal by the 31st, I sailed for Ireland, and commenced sounding as near on the Great Circle as possible, passing the north end of the 'Grand Banks' in latitude 48° 34' N., and one hundred and twenty fathoms water, although the best charts I have on board record one hundred and fifty-four. This difference I attribute to the mode of taking soundings at the time that survey was made. At intervals of thirty, forty, sixty, and one hundred miles, we sounded, all attended with complete success, but frequently involving many hours, both night and day, of great suspense and hard work, losing sometimes two or three thousand fathoms of line, sounding apparatus and all.

"The great plateau became so apparent in the middle of the ocean, and our fuel being considerably reduced, I determined to increase the intervals between the positions, to enable me to reach the coast of Ireland with enough soundings to complete a line entirely across. This was accomplished on the 22d of August, and I arrived in the harbor of Queenstown with only a few bushels of coal on board.

"Temperatures were taken hourly at the surface, and at twenty fathoms every four hours. Attempts were made to obtain them at the bottom and at different depths, but the results were so worthless, owing to some derangement of the thermometers, that I abandoned taking them, as they interfered very much with the more important object of sounding and obtaining bottom. On one occasion two were sent to the bottom in very deep water, and one indicated a temperature of twenty-one degrees, the other twenty-four degrees. On examining and comparing the rest of the thermometers, I found them all differing from each other so much, and some of the hands being broken, I was sure that they could not be used with any proper results.

"Currents were experienced to the eastward, from nine to fifteen miles in each twenty-four hours, between the Grand Banks and those of Ireland. No good opportunities for observing under-currents occurred, there being always either too much wind or a high sea. None appeared to affect our soundings very much—so little, indeed, that frequently the slack line would be coiled or kinked upon the bottom, showing plainly that it reached the bottom without the assistance of the lead—determining in my own mind that, however others may think, the cable or wire of the lightest kind will here reach the bottom most certainly.

"Only one of the sounding apparatus which was used remains, and is sent to the department for inspection, it being somewhat different, we believe, from any heretofore used—being an association of Brooke's and Massey's, with a weight or lead of my own adoption.

"The line used in sounding was that obtained from Boston, which proved indifferent, and was all expended before reaching Ireland, and we had to resort to two parts of smaller line furnished at the navy-yard. Having eighty thousand fathoms of the smaller size line on reels, we had it made up into one of about four thousand, and we found it decidedly the best that we have yet used, it being very strong and small.

"On both sides the interest taken in this great enterprise is very great, and it is with every satisfaction that I can state that the navy of the United States is particularly recognized as having promptly and efficiently executed the preliminary and important survey for so stupendous a work as laying a telegraphic cable of three thousand miles long across an ocean upward of two thousand fathoms deep, and nearly seventeen hundred miles wide."—O. H. BERRYMAN, U. S. N.

For a full statement of the results of these soundings in determining the proposed line of the cable of the Atlantic submarine telegraph, and for the statistics concerning this line, *see article* TELEGRAPH.

ABSTRACT OF DEEP SEA SOUNDINGS AND TEMPERATURES, WITH THEIR LATITUDES AND LONGITUDES, MADE ON BOARD THE UNITED STATES STEAMER "ARCTIC," LIEUTENANT COMMANDING O. H. BERRYMAN, UNITED STATES NAVY, BETWEEN NEWFOUNDLAND AND IRELAND, AUGUST, 1856.

Number	Miles.	Depth in Fathoms.	Latitude.	Longitude.	Barometer.	Thermometer attached.	Thermometer. Dry Bulb.	Thermometer. Wet Bulb.	Thermometer. Water Surface.
			° ′	° ′					
1	34	90	47 50	52 00	30·34	68	55	49	47
2	17	150	48 00	51 41	30·48	66	49	51	47
3	17	98	48 13	51 20	30·38	62	49	47	45
4	19	85	48 27	50 58	30·34	63	49	47	47
5	19	120	48 40	50 36	30·41	64	50	47	44
6	23	870	48 51	50 05	30·38	68	50	48	42
7	20	460	49 12	49 42	29·84	69	54	54	50
8	30	732	49 36	49 05	30·15	68	54	52	50
9	23	1080	49 40	48 29	30·25	63	58	54	51
10	66	1590	49 49	46 43	30·38	68	59	60	58
11	32	1827	49 49	45 54	30·20	64	55	56	55
12	42	1627	49 50	44 48	30·20	66	59	59	60
13	88	1600	50 15	43 08	30·10	61	55	55	53
14	83	1500	50 03	40 26	30·12	68	55	55	54
15	77	1564	50 20	38 50	30·13	69	57	56	50
16	52	1590	50 44	37 15	30·03	69	55	57	56
17	56	1650	51 06	35 50	29·89	69	58	57	57
18	64	1680	51 15	34 08	29·88	69	55	56	57
19	72	2070	51 38	32 20	29·77	68	57	57	57
20	116	2000	52 24	29 16	29·99	67	56	56	58
21	72	1830	52 26	27 18	30·06	68	56	56	57
22	35	1920	52 26	26 30	30·15	71	59	58	59
23	53	1813	52 02	24 51	30·10	68	57	57	58
24	90	1653	51 45	22 23	30·05	69	60	60	62
25	40	1590	51 45	21 19	29·94	74	59	60	62
26	41	1513	51 50	20 12	29·90	71	59	60	61
27	60	1750	51 48	18 31	29·90	72	61	62	60
28	60	1905	52 01	17 06	29·83	70	65	65	62
29	30	1513	52 05	16 05	29·66	69	59	60	59
30	39	410	52 03	15 02	29·75	71	60	61	62
31	55	255	51 43	13 44	30·48	69	62	62	61
32	10	410	51 52	13 16	30·04	68	58	60	61
33	31	717	51 54	12 27	30·05	71	58	59	61
34	38	114	51 41	11 21	30·13	69	59	61	58

NOTE.—The soundings in this table are placed in the order in which they appear on the profile, without regard to dates.

South America. The southern portion of the American continent extends from Point Gallenas, in lat. 12° 30′, to Cape Horn, in lat. 56° 30′. The extent of coast that it offers to the Caribbean Sea and the Atlantic is estimated at 11,000 miles; and the coast washed by the Pacific, it is stated by the latest geographical authority, has an approximate continuity of 5800 miles. At the southern extremity there is a group of mountainous islands, separated from the main land by the Straits of Magellan, and forming the Archipelago of Terra del Fuego, or "Land of Fire;" so called from the number of fires which its discoverer, Magellan, saw along its coast at night, supposed to have been volcanic. This archipelago, with its barren islands and rocks, must, however, be considered as the termination of the continent. Immediately north lies the vast and almost uninhabited country of Patagonia; while on the east, at a distance of from 300 to 400 miles in the South Atlantic, lie the Falkland group of islands.

The vast region known geographically as Patagonia extends from the River Negro, lat. 39°, to the Straits of Magellan, lat. 53° S., a distance of about 970 miles in length, with a breadth varying from 200 to 420 miles. It comprises two distinct physical regions, differing in surface and climate—the one lying on the west side of the Andes, the other on the east, and called, respectively, Eastern and Western Patagonia. The former is claimed by the Argentine Republic to the Straits of Magellan, and the latter by Chili, down to Cape Horn. Both sections are as yet, however, inhabited by aboriginal races, with the exception of a Chilian settlement at Port Famine, and on the Straits of Magellan. This division of Patagonia is comprised in the Chilian province of Chiloe, which is composed of the archipelago of that name; that of Chonos, of the most southern islands, and that part of the continent which extends from Rio Negro, and as far south as Cape Horn. On the eastern division there are several ports, among which are, Gallegos, in 51° 38′; Santa Cruz, in 50° 7′; San Julian, in 49° 12′; Desire, in 47° 5′; Nuevo Golfo, in 43°; and San Antonio, in 41° south. The few tribes of aboriginal Indians that inhabit this inhospitable region subsist upon the products of their fishery. The principal object of Chili in colonizing Port Famine, on the Straits, was to keep in check these nomadic tribes, though the colony has also been used for penal purposes. Cape Horn is uninhabited.

The South American continent has on its Pacific coast no large rivers. On the Atlantic, however, are the Amazon, the Orinoco, and the Plata, and a number of others, which, though not so large as those named, are equal in size, if not superior, to even the largest rivers in Europe. The Amazon is the largest river on the globe. Its principal tributaries vary in length from 1000 to 1800 miles, while the central stream is 4000 miles long, and is navigable 2200 miles from the sea. Peru, Bolivia, and Chili are the great mineral sites of South America, and produce chiefly silver, but also some gold and other metals, especially copper, which is very abundant in Chili. The most distinguishing feature in the vegetation of South America is the prodigious forests, which cover about two-thirds of the whole surface. Fruits of almost every variety abound, and indigo, coffee, sugar-cane, maize, and the cocoa-tree are among the chief products. The cultivation of the tea-tree has been attempted in Brazil, though it is believed without success; but *yerba matte*, from which is prepared the customary beverage of one half of the peninsula, grows in the greatest abundance in Paraguay. Spain and Portugal were severally the original colonists of South America—the former founding the states of Venezuela, New Granada, Bolivia, Peru, Chili, the Argentine Republic, Uruguay, and Paraguay; and the latter the vast empire of Brazil.

The South American states all achieved their independence between the years 1810 and 1825. These states, together with the colonies and other regions comprised in South America, with their respective areas, population, capitals, etc., are exhibited in the following table, derived from the latest geographical authority; though, as regards the strict accuracy of the figures given, the same remark applies that is made with reference to similar tables respecting Mexico and the Central American states:

States, etc.	Area in Square Miles.	Population.	Population to Square Mile.	Capitals.	Population.
New Granada	521,948	2,343,054	4·29	Bogota	45,000
Venezuela	426,712	1,149,356	2·69	Caraccas	53,800
Ecuador	287,638	665,000	2·32	Quito	65,000
Guiana, British	96,000	127,695	1·33	Georgetown	25,500
" Dutch	50,765	61,089	1·02	Paramaraibo	18,000
" French	27,560	22,010	0·83	Cayenne	5,000
Brazil	2,973,400	6,005,000	2·04	Rio Janeiro	266,000
Peru	498,726	2,115,423	4·24	Lima	100,000
Bolivia	473,298	1,447,000	3·06	Chuquisaca	20,000
Chili	241,952	1,153,862	4·53	Santiago	78,000
Argentine Republic	786,000	764,000	0·97	Buenos Ayres	100,000
Paraguay	72,105	300,000	4·16	Asuncion	12,000
Uruguay	73,548	120,000	1·63	Montevideo	16,000
Patagonia, east of Andes	210,000	300	....	.....	....
Falkland Islands	6,297	560	0·09	Port Stanley	300
Total	6,762,949	16,314,350	2·41		....

In the population given in the third column, no account is taken of the uncivilized Indian races, which probably number between 1,000,000 and 1,200,000 souls. These are found chiefly in the great plains of the Orinoco, Amazon, and Parana. The relative rank of the South American states, as regards their commercial intercourse with the United States, may be inferred from the subjoined comparative statement, exhibiting the values of exports to each country from the United States, and of imports from each country into the United States, during a period of four years, from 1852 to 1855, inclusive; made up from United States Treasury reports for said years:

South American States.	1854.		1855.		1856.		1857.	
	Exports.	Imports.	Exports.	Imports.	Exports.	Imports.	Exports.	Imports.
Brazil	$4,230,241	$14,110,987	$4,201,273	$15,218,935	$5,094,908	$19,262,657	$5,545,207	$21,460,738
Chili	2,198,259	3,332,167	3,420,257	3,518,896	2,867,743	2,467,819	2,007,185	2,742,499
Venezuela	1,200,883	3,072,649	1,223,449	3,616,869	1,712,774	4,202,092	1,427,578	3,860,518
Argentine Republic	761,725	2,144,971	909,427	2,545,087	1,259,863	2,322,161	1,318,807	2,784,473
Peru	685,155	1,005,406	870,546	597,018	1,244,233	217,759	507,932	208,747
Uruguay	512,957	457,179	422,172	242,709	551,329	361,086	1,006,172	368,497
Ecuador	....	57,534	66,092	12,538	....	....	....	....

—*Com. Relat. U. S.* For a complete exhibit of the commerce of each country, see articles under the proper heads.—See *North Amer. Rev.*, xii. 432 (E. Everett), xix. 158 (J. Sparks); *Westm. Rev.*, vi. 202; *Edinb. Rev.*, xliii. 299; De Bow's *Rev.*, vi. 3; *Foreign Quart. Rev.*, xviii. 455; *Christ. Rev.*, xvi. 321; *Quart. Rev.*, xxxii. 125; *Southern Quart. Rev.*, xii. 330; *Dem. Rev.*, i. and ii.—*See article* America.

Southampton, a parliamentary and municipal borough, sea-port town, and county of England, in the southern part of the county Hants, occupying a peninsula between the mouths of the Test and Itchin rivers, at the head of Southampton water, 12 miles south-southwest from Winchester, on the southwestern railroad, 72 miles southwest from London. Latitude of Saint Michael's spire, 50° 54′ N., long. 1° 24′ 2″ W. Population in 1851, 35,305. The new docks on the east of the town, opened in 1842, have an area of 208 acres, and have admitted steamers of more than 700 tons burden. The West India, Mediterranean, and other mails, have their station here, and the town communicates by steamers with all the ports of South England, the Channel islands, Ireland, and by railroad with London, and all the centre of England. The port extends from near Portsmouth to Christchurch. Here are some manufactures of silks and carpets, but ship-building and general commerce are the chief sources of wealth. Southampton is now the point of departure of the steamers for Alexandria (*see ante*, p. 20), and a stopping-place for the steamers between Bremen and New York.

South Carolina, one of the Southern United States, is situated between 32° 2′ and 35° 10′ N. lat., and between 78° 24′ and 83° 30′ W. long. It is 200 miles long and 125 broad, containing 28,000 square miles. The population in 1790 was 240,000; in 1800, 345,591; in 1810, 415,115; in 1820, 502,741; in 1830, 581,458; in 1840, 594,398; and in 1850, 668,507.

Early History.—When the Spaniards, under Vasquez Ayllon (1520 and 1526), arrived on the coasts of what we now call Carolina, and more especially South Carolina, they heard here of a great Indian king and country, both called *Chicora* or *Chicoria*, and they applied that Indian name for some time to this country, without, however, giving to it very distinct limits. The country was also sometimes called after its discoverer, *Tierra del Licenciado Ayllon*, or, shorter, *Tierra de Ayllon*, often also corrupted to *Terra de Aullon*. Under this name the Spaniards comprehended sometimes a very great part of North America, sometimes not more than this province.

French Claims.—It is curious enough that the French also, when they (1563) arrived at the locality of Ayllon's activity, heard again of an Indian king and country of that name. In their ears it sounded, however, like *Chicola* or *Chiouale*. After the French navigation to these regions we hear the country sometimes designated by the French themselves with the name *La Floride Françoise*, and other nations also called it *French Florida*. The Spaniards, of course, always considered it as a part of their Spanish Florida. The French built on their Riviere May (St. Mateo or St. John's River) a fort, which they called Fort Caroline or Carolina. Some map-makers and geographers applied this name, as an appellation of a country or territory, to the whole region. So we see, for instance, on a map of North America by Cornelius a Judæis (1593), the whole French Florida called *Carolina*, in honor of Charles IX., king of France. It is curious that the same name was afterward given to the same locality in honor of an English king.

English Settlements.—The English, since their settlements at Roanoke, comprehended the whole territory of Carolina under their widely-extended name of Virginia, after 1583. This grant had, however, very slight consequences. The country was not settled, not taken possession of, not even surveyed or explored. In the year 1663 Charles II. made another grant of all the lands between the 36th and 37th degrees of north latitude to Edward, earl of Clarendon, and some other lords and gentlemen, and this tract was again called, in his honor, *Carolina*; so that we may say we have three kings as godfathers to this province—Charles IX. of France, Charles I. and Charles II. of England. By a second more ample charter of the 24th of March, 1667, Charles II. extended the boundaries of Carolina from north latitude 29° to 36° 30′, and from east to west "until the Pacific Ocean." The country was divided into two great counties—a northern one, called the county of Albemarle, and a southern one, called Clarendon county.

In this same year (1667) William Sayle, the appointed Governor of Carolina, explored and surveyed the whole coast of the province, entering all the rivers and making astronomical observations. He no doubt, also, procured a map of the country to be made, but unhappily this map is not preserved for us. Probably the results of this first good survey of the coasts of Carolina were not then made known to the world at large; for we find still, on the edition of Champlain's maps of the year 1677, along the coasts of Carolina, this inscription. "*Terre non encore bien découverte continente a la Florida*" (a land not yet well discovered is connected with Florida).

In the year 1729 the whole great province was divided into North and South Carolina, and as the dividing point on the coast was fixed a small inlet to the west of Cape Fear, called Little River Inlet. In the year 1733 the province of Georgia was detached as a separate government of the old Territory of Carolina, and the southern boundaries of this latter were fixed at the mouth of the Savannah River, and within these boundaries the name of Carolina has been prescribed ever since. According to what we stated, we may in a certain degree consider the names of Wingandacoa, Weapomeoc, Ould Virginia, Albemarle county, as old particular designations for North Carolina; and the name of Chicora, Terra de Ayllon, Florida Françoise, Clarendon county, as particular appellations applied to South Carolina.—J. G. Kohl. *See* North Carolina.

Physical Features, etc.—The sea-coast is bordered with a series of islands, between which and the shore there is a very convenient navigation. The main land is

naturally divided into the lower and upper country. The low country extends from eighty to one hundred miles from the sea-coast, and is covered with extensive forests of pine, called pine barrens, interspersed with marshes and swamps of a rich soil. The banks of the large rivers and the creeks of this region are bordered with a belt of excellent land, producing cotton and Indian corn in abundance. The marshes and swamps in this district make fine rice plantations. The staple productions of the State are cotton and rice, great quantities of which are exported. Rice is extensively cultivated where the land can be irrigated by the tide or the overflowing of the rivers. The sea-island cotton produced on the islands along the shores is of a superior quality, and is in great demand. Gold, iron, granite, and marble, are the principal minerals.

There were in this State in 1850, 4,072,651 acres of land improved, and 12,145,049 acres of unimproved land in farms. Cash value of farms, $82,431,684; and the value of implements and machinery was $4,136,351. The number of live stock was—horses, 97,171; asses and mules, 37,483; milch cows, 193,244; working oxen, 20,507; other cattle, 533,935; sheep, 285,551; swine, 1,065,503; aggregate value, $15,060,015.

Agricultural Products, etc.—Wheat, 1,066,277 bushels; rye, 43,790; Indian corn, 16,271,451; buckwheat, 283; oats, 2,322,155; barley, 4583; peas, 1,026,960; potatoes, 1,76,494; sweet potatoes, 4,337,469; rice, 159,930,613 pounds; value of products of the orchard, $35,108; produce of market gardens, $47,286; pounds of butter made, 2,981,850; of cheese, 4970; sugar, 671 hogsheads; maple-sugar, 200 pounds; molasses, 15,901 gallons; beeswax and honey, 216,281 pounds; wool, pounds produced, 487,233; cotton, 300,901; flax, 333; silk cocoons, 123; hops, 26 pounds; tobacco, 74,285; hay, tons of, 20,925; clover seeds, 376 bushels; other grass seeds, 30; flax-seed, 55 bushels; wine, 5880 gallons. Value of home-made manufactures, $909,525; and of slaughtered animals, $1,302,637.

The Great Pedee River, 450 miles long, rises in North Carolina, and runs through the eastern part of the State. It is navigable for sloops 130 miles. The Santee, formed by the junction of the Wateree and the Congaree, rises in North Carolina, and has a sloop navigation for about 130 miles. The Saluda is a branch of the Congaree. The Edisto is navigable for large boats 100 miles. The Savannah washes the whole southwest border of the State, and is a noble stream. There are several smaller rivers, among which are Cooper, Ashley, and Combahee.

Manufactures, etc.—There were in the State in 1850, 13 cotton factories, with a capital invested of $778,000, employing 371 males and 572 females, producing goods valued at $742,220; 6 establishments with a capital of $185,700, employing 155 persons, and making 7286 tons of castings, etc., valued at $87,683; 287 flouring and grist mills, 448 saw-mills, 107 tanneries, 41 printing-offices, 45 newspapers—7 daily, 4 tri-weekly, 2 semi-weekly, 24 weekly, 1 bi-monthly, 5 monthly, and 1 quarterly publication. Capital invested in manufactures, $6,060,565; value of manufactured articles, $6,200,861.

In June, 1856, there were 9 railroads, with 846 miles of road finished and in operation, and 374 miles in course of construction. There were 16 banks and 2 branches, with a cash capital of $16,073,580.

FOREIGN COMMERCE OF THE STATE OF SOUTH CAROLINA FROM OCTOBER 1, 1820, TO JULY 1, 1857, SHOWING ALSO THE DISTRICT TONNAGE IN 1821, 1831, 1841, AND 1851.

Years ending	Exports.			Imports.	Tonnage cleared.		District Tonnage.	
	Domestic.	Foreign.	Total.	Total.	American.	Foreign.	Registered.	Enrolled and Licensed.
Sept. 30, 1821.....	$6,867,515	$332,906	$7,200 511	$3,007 118	45,342	19.5 5	16,249	17,102
1822.....	7,186,366	123,959	7,260,320	2,283,686	48,524	15,237	....	....
1823.....	6,671,998	226,816	6,898,814	2,419,101	54,637	24,069	....	....
1824.....	7,833,713	200,369	8,034,082	2,166,185	61,092	18,878	....	....
1825.....	10,876,475	180,267	11,056,742	1,892,297	57,520	17,081	....	....
1826.....	7,468,966	85,070	7,554,056	1,534,483	63,820	18,848	....	....
1827.....	8,189,496	133,065	8,322,561	1,434,106	68,854	24,601	....	....
1828.....	6 508,570	42,142	6,550,712	1,212,048	47,555	25,506	....	....
1829.....	8,134,676	40,910	8,175,586	1,159,018	66,337	24,473	....	....
1830.....	7,580,821	46,210	7,627,031	1,054,619	52,464	20,405	....	....
Total...	$77,263,536	$1,411,790	$78,680,395	$18,173,156	566,145	208,713	....	....
Sept. 30, 1831.....	$6,528,605	$46,596	$6,575,201	$1,238,163	48,426	29,015	5,802	9,040
1832.....	7,685,833	66,898	7,752,731	1,217,725	47,803	41,836	....	....
1833.....	8,337,512	96,813	8,434,325	1,517,705	49,099	37,478	....	....
1834.....	11,119,565	88,215	11,207,778	1,787,267	60,347	40,405	....	....
1835.....	11,224,298	113,718	11,338,016	1,891 8 5	48,703	33,176	....	....
1836.....	15,481,757	201,019	15,682,776	2 801,861	61,552	35,036	....	....
1837.....	11,138,992	81,169	11,220,161	2,510,860	49,609	31,256	....	....
1838.....	11,017,891	24,679	11,042,070	2,318,791	37,242	27,356	....	....
1839.....	10,318 822	66,604	10,385,426	5,086,077	51,828	30,627	....	....
1840.....	9,981,046	57,733	10,038,769	2,058,870	82,090	25,435	....	....
Total...	$100,834 791	$843,062	$101,676,853	$26,424,024	556,759	340,070	.	....
Sept. 30, 1841	$8,011,392	$31,872	$8,043,284	$1,557,431	63 469	28,716	12,953	11,441
1842.....	7 598 399	17,324	7,525,723	1,329 465	61,132	34,018	....	....
9 mos., 1843*.....	7,754,152	6,657	7,760,809	1,295,709	71,400	43,191	....	....
June 30, 1844	7,429,585	3,697	7,433,282	1,171,515	49,801	48,926	....	.
1845.....	8,784,770	5,878	8,8 0,648	1,143,158	86,768	53,912	....	....
1846.....	6,829,555	18,922	6,848,477	,002,536	69,517	27,579	....	....
1847.....	10,428,146	3,371	10,431 517	,580,65	75,429	40,792	....	....
1848.....	8,081,917	....	8,081,917	1,485,2 9	59,854	42,552	....	....
1849.....	9,690,875	1,361	9,701,17	1,475 695	88,708	58,101	....	....
1850.....	11,446 892	908	11,447,806	1,933,785	72,222	52,8 0	....	....
Total...	$80,074,663	$89,970	$86,17 4,633	$13,861,254	683,527	410,947	....	....
June 30, 1851	$15,316,578	....	$15,316,578	$2,081,312	81,336	59,172	....	17,577
1852.....	11,670,021	....	11,670 021	2,175 614	89,027	53,234	....	....
1853.....	15,400,408	....	15,400,408	1,898,517	76,366	56,200	....	....
1854.....	17 982,308	$12,708	17,995,016	1,711,3 5	85,063	39,622	....	....
1855.....	12,698,801	1,950	12,700,250	1,588,742	110 533	31,414	....	....
1856.....	17,358,209	2,251	17,360,549	1,965,253	114,065	49,255	....	....
18 7.....	16,127,444	12,999	16,140,443	2,019,786	95,0 2	47,940	....	....

* Nine months to June 30, and the fiscal year from that time begins July 1.

Principal Ports.—Charleston, lat. 32° 47′ N., long. 79° 48′ W., situated on a point of land between the Ashley and Cooper rivers, has a spacious harbor. At the entrance to the harbor there is a sand bar, of about eight miles in length, having several channels. Three of the channels can only be used by ships of large ton-

nage; one, the ships' channel, has a depth of water of twelve feet at ebb-tide, and from seventeen to twenty at flood-tide. Ships always take a pilot, on account of shifting sands, and are moored along side wharves in safety inside the harbor. It is the chief commercial emporium of the State, and the largest shipping port on the Atlantic below Baltimore. The chief exports are cotton and rice. It is connected with the interior by the South Carolina and the Northeastern railroads. The tonnage of Charleston, in 1856, was 59,128 tons.

Beaufort, on the west side of Port Royal River, an inlet of the Atlantic, and sixteen miles from the sea, has a good harbor, but on account of a bar at its mouth only small vessels can enter it. It has little or no commerce. The tonnage in 1856 was only 110 tons.—For further particulars as to South Carolina, see *Southern Quart. Rev.*, xviii. 66, xx. 273, 298, iv. 247 (Simms); De Bow's *Rev.*, viii. 24, xi. 123; *North American Rev.*, xiii. 143.

South Sea Bubble. This destructive speculation was commenced in 1710, and the company incorporated by statute in 1716. The bubble, which ruined thousands of families, exploded in 1720, and the directors' estates, to the value of £2,014,000 sterling, were seized in 1721. Mr. Knight, the cashier, absconded with £100,000; but he compounded the fraud for £10,000, and returned to England in 1743. Almost all the wealthy persons in the kingdom had become stock-jobbers and speculators in this unfortunate scheme. The artifices of the directors had raised the shares, originally of £100, to the enormous price of £1000.—*See* Charles Mackay's *History of Modern Manias; Bankers' Magazine*, N. Y.

South Sea Duties. The British act of the 9 Ann. c. 21, establishing the South Sea Company, conveyed to them the exclusive privilege of trading to the Pacific Ocean, and along the east coast of America, from the Orinoco to Cape Horn.

Sovereign (*the Coin*). The name of an ancient as well as a modern English gold coin. In Henry I.'s reign, a coin of this denomination was issued, of the value of twenty-two shillings, and one twenty-fourth part of the weight of a pound of gold. In 34 Henry VIII., sovereigns were coined of the value of twenty shillings, which afterward (4 and 6 Edward VI.) passed for twenty-four and thirty shillings. By 56 George III., sovereigns of the new gold coinage were directed to pass for twenty shillings, and they were issued from the Mint the same year (1816), and have since maintained the same value.

Sovereignty of the Seas. The claim of England is of very ancient date. Arthur was the first who assumed the sovereignty of the seas for Britain, and Alfred afterward supported this right. The sovereignty of England over the British seas was maintained by Selden, and measures were taken by government in consequence, 8 Charles I., in 1633. The Dutch, after the death of Charles I., made some attempts to obtain it, but were roughly treated by Blake and other admirals. Russia and other powers of the North armed, to avoid search, in 1780; again in 1800.—Haydn.

Soy, a species of sauce prepared in China and Japan from a small bean, the produce of the *Dolichos soja*. It is eaten with fish and other articles. It should be chosen of a good flavor, not too salt nor too sweet, of a good thick consistence, a brown color, and clear; when shaken in a glass, it should leave a coat on the surface, of a bright yellowish brown color; if it do not, it is of an inferior kind, and should be rejected. Japan soy is deemed superior to the Chinese. It is worth, in bond, from six to seven shillings sterling a gallon. It is believed to be extensively counterfeited. —Milburn's *Orient. Com.*

Spain, or **Espana** (*Iberia, Hispania*), a untry of southwestern Europe, occupying the greater part of the Iberian peninsula, and often termed colloquially "the Peninsula," extending between lat. 36° 1′ and 43° 45′ N., and long. 3° 20′ E., and 9° 21′ W., bounded north by the Bay of Biscay and by the Pyrenees, which separate it from France, east by the Mediterranean, south by the Mediterranean and the Strait of Gibraltar, and west by Portugal and the Atlantic Ocean.

Spain is rich in minerals, especially mercury, iron, copper, and lead. The celebrated gold and silver mines of the time of the Romans have long been abandoned, but mercury is extracted in great abundance from the mines of Almaden. Lead forms an important branch of mining industry. Coal is found chiefly in the Asturias; copper, tin, zinc, antimony, arsenic, and cobalt, are common, and rock-salt is abundant in the hills of Cardona. The principal rivers of Spain are, from north to south, the Ter, Llobregat, Ebro, Guadalaviar, Jucar, and Segura, flowing east to the Mediterranean. The Minho, Douro, Tagus, Guadiana, and Guadalquivir, flowing mostly through Portugal west and south to the Atlantic. Few of these are navigable, and those only for small boats near their mouths.

Spanish Colonies.—The principal are Cuba, Puerto Rico, and some smaller islands in America; the Philippine and Marrianne Islands in the Pacific, the Canary Islands in the Atlantic, Fernando Po and the Island of Annabon in the Gulf of Guinea, and Ceuta, Gomera, and Melilla in Barbary.—For a full account of the Colonies, see articles under these heads.

The Public Debt of Spain.—The following is an official return of the state of the public debt of Spain on the 30th of June, 1855:

	Reals.
Three per cent. stock, payable to bearer, and inscriptions transferable and non-transferable (internal)	2,081,011,544
Ditto given as guarantees for loans and contracts	543,012,000
Ditto deferred	1,597,189,456
Three per cents (foreign)	713,594,910
Ditto deferred	316,978,400
Consolidated bonds and other internal stock, bearing 4 per cent. interest	55,869,492
Five per cent. stock and inscriptions, transferable and non-transferable	134,178,119
Redeemable debt, 1st class	331,201,486
Certificates of current debt at 5 per cent. in paper (Certificaciones de deuda corriente al 5 por 100 á papel)	495,393,238
Non-consolidated bonds	90,847,622
Laminas Provisionales	56,867,583
Bonds payable to bearer of redeemable debt, 2d class	265,400,000
Provisional documents for interest on the deuda corriente à 5 por 100 á papel	129,552,659
Bonds of all kinds of the debt without interest (deuda sin interés)	387,328,678
Inscriptions of active debt, 5 per cent.	14,260,000
Inscriptions of English claims, 5 per cent.	90,000
Ditto in favor of French treasury	278,268,123
Ditto United States	12,000,000
Foreign passive debt	33,504,000
Inscriptions of old foreign 5 per cent. debt	79,852,000
Ditto foreign 3 per cents of 1831	1,786,133
Actions of national loan of 1821	3,774,000
Certificates of premium on the Lafflitto loan	2,301,300
Deferred debt of 1851, without interest	122,310,000
Bonds payable to bearer of foreign redeemable debt, 2d class	970,964 000
Capitals recognized to the owners of lay tithes	115,075,725
Certificates of ditto, and interest on the same	39,677,298
Proprietors of quitrents of the order of St. John of Jerusalem	91,400
Interests of the inscription in favor of the French treasury	183,760,874
Capitalizable interest at 3 per cent.	38,736,457
Interests of 4 and 5 per cent. debt, home and foreign	18,543,623
Interest in paper of the 5 per cent. current debt	407,040,748
Bonds issued for personal services (1st class).	23,978,124
State paper issued for railway undertakings (acciones de ferro carriles)	192,200,000
Loans (by decrees and laws) of 1835, 1841, 1850, 1851, and 1852	192,880,000
Treasury bills, preferable, with interest	12,251,884
Ditto, non-preferable	42,601,070
Ditto, preferable, without interest	149,870
Ditto, non-preferable, without interest	1,068,694
Total Reals, 1855	13,580,466,110

The same report states that the total amount of redeemable debt, including 1st and 2d class, purchased

since the law of 1851 to the end of June, 1855, was 934,935,271 reals, and cost the state 67,10',134 reals.

The climate of Spain varies exceedingly with elevation and position; it is warm on the coasts; the tablelands are exposed to great heat in summer, and extreme cold in winter. The soil is generally fertile, except in the elevated and arid districts of the central provinces; the chief crops are wheat, maize, barley, rice, hemp, and flax. The amount of corn is often insufficient for home consumption. The wines of Spain are much esteemed; the principal growths are those of Xeres (sherry), Rota, Malaga, Alicante, Malvasia, and Val de Penas; the other products are soda (from marine plants), honey, wax, and silk, the latter very abundant in the southeastern provinces. In the southern provinces the sugar-cane and cotton have been acclimatized, and there the orange and citron grow in great abundance. The best building timber grows in the northern coast; the cork-tree, the kermes oak, and the shumac-tree, yield valuable products. The horses of Andalusia are celebrated; the mules and asses are remarkable for beauty and size. Cattle are of good breeds. The race of sheep called the merino yields a great quantity of excellent wool; their exportation has always been prohibited, their pasturage is regulated by ancient laws, and their number is reckoned at five or six millions.

Commerce.—There is not at this time, nor has there ever been, a commercial treaty between the government of the United States and that of Spain. But two treaties of any kind have been negotiated between the two governments—one purporting to be "A treaty of friendship, limits, and navigation," signed October 27, 1795; the other, "A treaty of amity, settlement, and limits," February 22, 1821.

In regard to navigation, the first-mentioned treaty provided chiefly for a state of war, and prescribed the immunities and privileges to which the vessels of each should be entitled, in such a contingency, in the ports, harbors, bays, etc., of the other.

By article 1st, the contracting parties agree that there shall be a firm and inviolable peace and sincere friendship between his Catholic Majesty, his successors and subjects, and the United States and their citizens, without exception of persons or places.—*Art.* 7. The citizens and subjects, vessels and effects, of each of the parties, not to be liable to embargo or detention for any military expedition, or other public or private purpose, by either party.—*Art.* 13. In the event of a war between the contracting parties, the merchants residing in the dominions of either to be allowed one year from the declaration of war to remove their effects.—*Art.* 18. Ships of war of either party, when exercising right of search, to remain out of cannon-shot, and to board with two or three men only; and having seen passport, not to molest in any manner, nor force to quit her intended course, the vessel so visited. *Art.* 19. Consuls to be reciprocally established, and to be entitled to the privileges and powers enjoyed by those of the most favored nations.—*Art.* 22 (1st section). The two contracting parties to give in future to their mutual commerce all the extension and favor which the advantages of both countries may require.

The treaty of 1819, so far as it relates to navigation, confirms all the foregoing stipulations of the treaty of 1795; and as no limit was assigned to the duration of that treaty, those stipulations are still in force, and, with subsequent acts of legislation, regulate the intercourse, navigation, and commerce between the United States and its citizens, and the King of Spain, his successors and subjects, between whom it is agreed "there shall be a firm and inviolable peace and sincere friendship, without exception of persons or places." The commerce between the United States and Spain, though at all times employing but a limited capital, commenced at a period long anterior to the American Revolution. The British-American colonists were permitted, by act of Parliament, to carry on a direct trade in all articles, except tobacco and naval stores, with countries south of Cape Finisterre. This trade consisted principally in exporting from the colonies lumber, laths, and other produce (tobacco and naval stores excepted), and in bringing home return cargoes of wine, salt, fruits, and other productions of the Spanish peninsula.

After the peace of 1783, a more unrestricted trade was opened between the two countries; but, owing to the prohibition on tobacco (a policy adopted for the purpose of encouraging the growth of that article in the Spanish colonial possessions), and the high protective duties on most of the other leading staples of the United States, the trade could not have realized any hope of profitable investment, or given much encouragement to commercial enterprise. The wines, fruits, olive oil, salt, brandies, barilla, silks, and wools of Spain, would constitute a profitable and an easy exchange for the productions of the United States, particularly breadstuffs, tobacco, and cotton, if that country could be induced to relax a system of restrictive policy which has never realized the benefits it was designed to secure, and has virtually rendered Spain, to a great extent, commercially isolated from the other nations of the earth. Her legislation in regard to commercial intercourse with foreign countries would seem to be based upon the principle of possessing and securing within herself all the advantages of an extensive commerce, and all the means of luxury, wealth, and power—a principle which, however gratifying to national vanity it may be in theory, needs no other proof of its utter impracticability, if not of its inevitably pernicious consequences, than a reference to what is known of the history of Japan or China, or even to the commercial condition of Spain herself during the last half century. She has ever maintained and exercised the right to be the sole arbiter of her commercial regulations, and, as such, permits no foreign interference with her policy of excluding from her ports the produce of the industry and soil of other nations. Two features stand prominently forward in this exclusive and restrictive system: the first, the exclusion of commodities from any country, except her colonial empire, especially before its dismemberment and consequent diminution; and, secondly, by compelling the latter to consume no manufactured articles except those of Spain, with the view that all the precious metals should be sent to the mother country, where they would remain if no foreign merchandise was admitted. Notwithstanding these precautions, the precious metals were drained off to foreign countries, in exchange for the enormous contraband importations smuggled into Spain, by way of the Basque provinces, through Portugal; by way of the Mediterranean; and also even, as they were, and are to the present day, by way of Gibraltar. Besides, an extensive contraband trade with the Spanish settlements in Cuba and South America was carried on by the British-American colonies, thus draining off a large portion of the precious metals, which it was the policy of the mother country to monopolize, at a cost so fatal to her commercial prosperity. This contraband trade was, however, arrested, and after a short time totally suppressed, by the vigilance of the *guarda-costas* stationed by Spain along the coasts, and by the indiscriminate seizure of all British colonial vessels found near the shores of the Spanish colonies.

The trade with Spain of late years exhibits in a most striking manner the pernicious effect of a system of commercial intercourse which, however well it may have fulfilled its ends when Mexico, the West Indies, the South American republics, and the Spanish Polynesian Islands all poured their united treasures into the lap of Spain, and thus rendered her to a certain extent independent of other nations, has long since proved to be the most serious, if not the only, obstacle to her regaining the proud and prominent position she once held in the family of nations. The difference in the amount

of exports between the periods of 1834 and 1854 is attributable to the partial relaxation of the restrictive system within the past few years, particularly the modifications which the tariff has undergone since 1849; but the great disproportion between imports and exports, resulting in so large a balance against Spain, shows that the prohibitions and restrictions are as yet but partially abated.

Of the article of tobacco, about 6,000,000 lbs. is smuggled annually from Gibraltar into Spain, and about 4,000,000 lbs. is exported from the same depôt to Oran, Algiers, Malta, and other places. Spain, in the face of this contraband, still maintains her royal tobacco monopoly. Exclusive of the tobacco smuggled into Spain from Gibraltar, it is smuggled along the whole north and west coasts of Spain. The extension of the Spanish customs to the sea-coasts and ports of Biscay in 1844 has not diminished, but, it is asserted, has greatly increased, the contraband trade.—MACGREGOR, parts 13 and 14, p. 95.

Notwithstanding the apparently satisfactory results, the commerce of the United States with Spain, in American bottoms, is perceptibly declining. Various causes conspire to this result, among which may be regarded as the most prominent the enormous differential duties imposed on imports under all foreign flags, and the discriminating duties of port and navigation, amounting to 100 per cent. on American vessels in favor of national, and what is styled "privileged vessels;" or, in other words, the vessels of nearly all other foreign nations. Besides, American vessels are frequently exposed to local restrictions (doubtless unauthorized by the government) in the different ports, to which they must either quietly submit, or incur all the expense, delay, and trouble of protesting against the action of officials whose power in such cases is as unlimited as its exercise is arbitrary and oppressive. Vessels of the following nations are ascertained to be of this class: England, France, Holland, Portugal, Russia, Prussia, Sardinia, Belgium, Hamburg, Sweden and Norway, Tuscany, Bremen, Papal States, Denmark, Brazil, Ecuador, Lübeck, Hanover, Mecklenburg, Oldenburg, and Sicily.

This has been a subject of frequent complaint on the part of American captains, but thus far without obtaining relief. The United States consul at Malaga, under date of April 3, 1851, adverting to this subject, says: "Although subject to the Central Board at Madrid, [quarantine regulations] are almost entirely under the control of the local board of this city, * * * ordering vessels off to lazarettos, * * * in the face of clean bills of health certified by Spanish consuls, upon mere reports, without any official information to warrant such extraordinary measures."

The following table will show, approximately, to what extent the direct trade between the United States and Spain has fallen off within the past few years. Most of this trade is carried on through the port of Malaga.

TONNAGE OF AMERICAN VESSELS ENTERED AT THE PORT OF MALAGA IN THE FOLLOWING YEARS.

Years.	Tons.	Years.	Tons
1846	15,276	1850	16,600
1847	12,288	1851	11,918
1848	15,699	1852	12,610
1849	13,052	1853	11,375

The falling off in tonnage which the above table exhibits is, however, perfectly reconcilable with the comparative tables for 1854 and 1832, when we take into consideration the fact that at least one-third of the exports to the United States is carried by privileged vessels; and even national vessels, notwithstanding the discriminating duty of 10 per cent. to which they are subject in the ports of the United States, participate largely in this carrying trade, for the purpose of returning with cargoes of cotton for Malaga and Barcelona, or with codfish from Newfoundland.

The great articles of export from Spain consist (exclusive of silk manufactures) of raw products. Of these wine, olive oil, wool, fruits of various kinds, lead, quicksilver, brandy, cork-wood, salt, raw silk, wheat, etc., are the most important, and are almost all susceptible of an indefinite increase.

The great articles of import are colonial products, obtained principally from Cuba, Porto Rico, etc.; cottons and cotton wool; linens, and hemp and flax; woolens; salted fish; hardware, glass, and earthenware; timber, rice, hides, butter and cheese, etc. Subjoined is

AN ACCOUNT OF THE VALUES OF THE PRINCIPAL ARTICLES OF NATIVE PRODUCE EXPORTED FROM SPAIN IN 1849, SHOWING ALSO THE PROPORTIONAL VALUE OF EACH ARTICLE.

Articles in the Order of their importance.	Value in Reals Vellon	Amount per Cent. of Total Value.
Wine, sherry	10,830,020	....
" common	22,700,108	....
" Malaga	4,162,791	....
Total wine	106,154,179	22·76
Olive-oil	40,797,047	9·05
Flour	36,850,952	7·85
Quicksilver	36,236,840	7·71
Lead	32,561,614	6·94
Raisins	29,745,843	6·35
Wool	14,330,281	3·06
Coin	13,302,902	2·84
Cork-wood	13,181,455	2·81
Brandy	12,922,000	2·76
Cochineal	11,287,908	2·46
Silver in bars	10,004,603	2·13
Salt	9,941,827	2·11
Nuts	5,734,628	1·22
Soap	5,530,453	1·17
Silk	4,155,485	0·88
Liquorice	3,477,235	0·74
Almonds	3,441,264	0·74
Oranges	3,306,390	0·73
Silk goods	2,759,972	0·58
Saffron	2,717,525	0·57
Hides	2,577,446	0·54
Iron	2,226,905	0·47
Woolen goods	2,139,519	0·46
Wheat	1,965,844	0·42
Shoes	1,922,579	0·41
Pastas	1,830,929	0·40
Maize	1,656,215	0·35
Cattle	1,601,798	0·34
Garbanzos, or chick-pea	1,600,242	0·34
Garden stuff	1,503,122	0·32
White paper	1,479,278	0·32
Books	1,446,014	0·30
Rice	1,358,949	0·29
Sedge mattings, etc.	1,340,253	0·28
Lemons	1,209,765	0·26
Sausages	1,177,724	0·25
Hempen yarn	1,156,446	0·24
Oil of almonds	1,096,548	0·24
Kidney beans	1,087,036	0·23
Sugar	1,044,879	0·22
Salted codfish	916,768	0·20
Grapes	912,769	0·19
All other articles	30,725,090	6·56
Total	460,016,917	100·00

The importance of the trade that Spain formerly carried on with her vast possessions in the New World was at all times much exaggerated; and she, in truth, was little better than an agent in the business, the greater part of the goods sent on Spanish bottoms to the colonies being, in reality, the property of foreign merchants. Spain, notwithstanding the emancipation of Mexico and South America, has still some very valuable colonies; and, if nothing else can, the astonishing progress made by Cuba and Porto Rico since the abolition of the prohibitive system, should satisfy her of its ruinous tendency.

New Organization of Ports.—By royal decree of February 28, 1854, a new organization is made of the customs service by land and sea, the principal features of which it may be interesting to the mercantile interests of the United States to have noted. As regards the sea, it divides the service into four classes. The first class comprises importation, exportation, re-exportation, coasting-trade, and all other commercial operations in the ports of Alicante, Almeria, Barcelona, Bilboa, Cadiz, Carthagena, Palma de Majorca, San Sebastian, Santander, Seville, Tarragona, and Vigo. In the second class, comprising the ports of Carril, Palo-

mas, and Rivadeo, the importation of cotton tissues is not to be permitted. In the ports of the third class, comprising those of seventeen provinces, only certain specified articles, principally raw materials, are to be imported and exported; and in those of the fourth class, comprising sixteen provinces and the Balearic Isles, only coasting-trade operations and exports are to be allowed. As regards the land, it is divided into three classes, and the regulations are framed solely with a view to prevent smuggling. They do not, however, possess sufficient interest for insertion here at length.

The principal ports are, Alicant, a sea-port in Valencia, lat. 38° 20′ 41″ N., long. 30′ W. The harbor is open and spacious, between Cape de la Huerta on the northeast, and Isla Plana on the south, distant from each other about ten miles. Ships of considerable burden moor from one-fourth to one mile from shore, in from 30 to 40 feet of water; they are exposed to all winds from the east-northeast to south by west; but the holding-ground is good, and there is no instance of a ship having been driven from her moorings in the past twenty years.

Barcelona, the principal town of Spain on the Mediterranean, in lat. 41° 22′ N., and long. 2° 10′ E. The harbor is naturally bad, and is formed by a mole or jetty. The depth of water within the mole is from 18 to 20 feet; but there is a bar between the mole and Moujui, and which has frequently not more than ten feet. Vessels inside the mole are safe. Large vessels have to anchor outside, and are much incommoded by the winds.

Bilbao, sometimes incorrectly written Bilboa, a sea-port in the Bay of Biscay.

Cadiz, the principal commercial city and sea-port of Spain, on its southwestern coast, on the rocky and elevated extremity of a narrow, low peninsula, or tongue of land, projecting from the Isla de Leon N.N.W. about 4½ nautical miles. It is surrounded on all sides except the south—where it joins the land—by the sea, and is very strongly fortified. Population in 1837, 58,525. It is well built, and has at a distance a very striking appearance. The tower or light-house of St. Sebastian stands on the western side of the city, being in lat. 36° 31′ 7″ N., long. 6° 18′ 52″ W. It is a most conspicuous object to vessels approaching from the Atlantic. The light, which is 172 feet high, is of great brilliancy, revolves once a minute, and in fair weather may be seen more than six leagues off.

Bay of Cadiz.—The entrance to this noble basin lies between the city and the town and promontory of Rota, bearing northwest by north, distant about 1½ leagues. The bay is of very great extent, affording in most places good anchorage. The port is on the eastern side of the city, where a large mole has been constructed.

By a royal order of January 3, 1852, it was decreed that all foreign vessels belonging to countries where Spanish vessels are placed on the same footing as national, with respect to port dues and charges, should enjoy a like privilege in the ports of Spain and adjacent islands; but, practically, this decree was not permitted to apply to vessels of the United States, and they continued subject to double the amount of such dues and charges paid by other foreign and the national vessels. The reason for the non-fulfillment of this provision, as respects this country, was the refusal of the government of the United States to receive vessels in its ports on equal terms from Cuba and Porto Rico; and the government of Spain refused to accede to such condition, as it desired to secure this benefit for its marine, from wheresoever her vessels might proceed. On the 16th of June, 1854, however, the American minister at Madrid was officially informed by the Spanish Minister of State that her Majesty the Queen had been pleased to command that American vessels "be considered in the peninsula and adjacent islands like national ones, as regards the duties of port and navigation, in reciprocity for what is practiced with the Spanish vessels proceeding from the same places in the United States, and with reference to the same duties." The official notification added, that corresponding orders had been given, "under date of the 14th inst., to the general direction of custom-houses and tariffs," to carry into effect the dispositions of this order.

The effect of the above-recited royal order will be to place American shipping on an equality, as respects the duties of port and navigation, with national and privileged vessels, and thus reciprocate the terms on which Spanish vessels have been admitted into the ports of the United States since 1852. Should this be followed up by a liberal modification, or an entire abolition, of the enormous discriminating duties levied on foreign imports in the ports of Spain, the commercial intercourse between the two countries would soon become a source of industrial development and national prosperity, equally beneficial and profitable to each. The quarantine regulations of Spain have always been complicated and vexatious. They were simplified, however, by a sanitary tariff, promulgated December, 1855, a translation of which is subjoined:

TARIFF OF SANITARY DUTIES EXACTED IN THE PORTS AND LAZARETTOS OF SPAIN.

Entrance Duties.—Coasting vessels of more than twenty tons burden will pay one quarter of a real per ton for the round voyage.

Vessels proceeding from the ports of the Mediterranean and other ports of Europe, including the coast of Africa to the parallel of the Canary Islands, will pay one half of a real per ton for the round voyage.

Vessels from other places will pay one real per ton each voyage.

Quarantine Duties.—Vessels of every class will pay one quarter of a real per ton each day they are subject to quarantine, whether in actual lazarettos or undergoing observation.

Lazaretto Duties.—The fee for each person in the lazaretto will be four reals per diem.

Merchandise subject to purification will pay as follows:

The clothing and baggage of each of the crew	5 reals
The clothing and baggage of each passenger	10 "
Hides of cows, per 100	6 "
Fine skins	6 "
Goat, sheep, lamb-skins, and the skins of other small animals, per 100	2 "
Feathers, goats'-hair, soft hair, wool, cotton, hemp, and flax, per quintal	1 "
Large live animals, such as horses and mules, each	8 "
Small animals, each	4 "

Certificates of Health shall be made out, and legally attested, free of charge.

Regulations.—Vessels in quarantine defray all the expenses attending the discharge of merchandise, its transfer to the sheds and work-houses, and its purification. They, in like manner, pay as an additional duty, the expenses attending the application of hygiene measures, which must be employed before the departure or arrival of the embarkations, as the regulations dispose, or as the condition of the vessel may require. During all the incidents of quarantine, every possible facility is to be afforded to vessels, no expense being permitted without the knowledge or consent of the captain, agent, or consignee. All persons who perform quarantine in the lazarettos defray all the necessary expenses, inasmuch as the four reals per diem which is exacted from each is only the fee for residence.

Where Spanish vessels are about to depart from a port of the United States with any goods, wares, or merchandise, for any destination other than some port or place in the islands of Cuba or Porto Rico, the bond and security required by the 3d section of the act of 30th June, 1834, are exacted in all such cases, before allowing clearance or departure of the vessels.

A Spanish vessel leaving a port of Spain for a port in Cuba, but, not finding there a satisfactory market,

proceeding, without breaking bulk or taking in any goods at said island, to a port in the United States, would not on entry be subjected to any other or higher duties of tonnage or imposts than she would be if direct from a port of Spain to the United States; the voyage, under the circumstances, being regarded as continuous.

COMMERCE OF SPAIN IN THE YEAR 1854.

Countries	Imports.	Exports.
EUROPE.	Reals	Reals.
Austria	1,040,527	874,013
Belgium	2,915,339	3,849,715
Bremen and Hamburg	4,404,503	14,631,450
Sardinia	4,727,877	26,454,925
Denmark	345,368	10,985,836
Two Sicilies	42,020	1,400,458
Roman States	3,010,425	877,162
France	175,580,279	238,421,957
Netherlands	3,321,434	4,630,020
England	158,324,624	305,220,302
Portugal	5,527,270	31,915,302
Prussia	102,509	7,408,274
Russia	1,183,709	2,050,131
Sweden	24,083,380	4,276,887
Tuscany	2,395,316	12,872,205
Turkey	....	1,560,021
Great Britain	50,050,509	14,819,880
Total	442,214,919	682,669,056
ASIA.		
Philippines	25,220,166	7,651,864
English Possessions	6,506	2,101,264
Zanzibar	872,726	....
Total	26,108,398	9,752,628
AFRICA.		
Algiers	354,260	7,971,208
Egypt	1,971,748	20,160
Morocco and Tunis	265,650	570,848
Portuguese Possessions	32,000	76,849
Total	2,623,676	8,648,065
AMERICA		
Cuba and Porto Rico	148,516,232	161,013,480
Brazil	6,395,792	9,054,339
Chili	222,880	7,585,872
Ecuador	12,142,536	50,000
United States	111,728,886	57,312,251
Guatemala	2,511,300	773,650
Mexico	596,370	7,124,692
New Granada	20,040	....
Peru	8,654,520	5,623,274
Rio de Plata	10,555,391	32,083,464
Uruguay	725,054	6,816,698
Venezuela	27,118,037	1,435,037
Danish Colonies	....	411,037
French Colonies	....	16,000
English Colonies	13,323,623	5,668,840
Total	342,585,251	292,453,034
Grand total, Reals	813,485,244	993,502,783

		Entered.		Cleared.	
		Vessels.	Tons.	Vessels.	Tons.
1853	Loaded	6698	795,140	5787	629,681
	In ballast	2068	189,837	1041	158,130
	Total	8766	984,977	6828	787,811
1854	Loaded	6173	756 525	7376	828,807
	In ballast	2974	306,809	696	95,326
	Total	9447	1,063,334	8072	924,223

The marine service of Spain in 1855 consisted of four vessels of the line, nine frigates, eight corvettes, fifteen brigs of the first, and four of the second class; five schooners, six sloops, forty steamers, and three hundred and nineteen smaller craft, mounting in all 1250 ordinary, and 280 swivel guns.

The imports into and exports from Spain for the year 1856 are shown as follows:

	Value in Reals.
Imports of 1856	879,771,700
Imports of 1855	764,150,259
Increase in 1856	115,621,441
Exports in 1856	1,043,610,106
Exports in 1855	1,246,784,599
Decrease in 1856	203,174,493

From this exhibit we see that in the aggregate there was a decided decrease in the trade of Spain in the year 1856 over that of 1855.

Statement showing the American merchant vessels which arrived at Cadiz in five years, 1849 to 1853 inclusive:

Years.	Vessels.	Men.	Tons.
1849	63	801	24,310
1850	47	557	16,493
1851	46	614	18,553
1852	46	673	21,117
1853	30	379	11,667
Total	232	3024	92,140

American and other foreign vessels can only trade between Spain and other countries; they can not participate in any Spanish coasting, domestic, or internal trade.

The navigation and trade between the United States and Spain does not increase. The tariff of Spain excludes most of the staple articles of the United States, such as grain, breadstuffs, rice, tobacco, etc., the principal article of import from the United States being undressed oak staves for wine-casks. In order to promote navigation and trade between the two countries, it is necessary that high duties, prohibitions, and restrictive measures on both sides should cease.

COMPARATIVE STATEMENT OF THE COMMERCE OF THE UNITED STATES WITH SPAIN, INCLUDING THE CANARIES AND PHILIPPINE ISLANDS; EXHIBITING THE VALUE OF EXPORTS TO AND IMPORTS FROM EACH COUNTRY, AND THE TONNAGE OF AMERICAN AND FOREIGN VESSELS ARRIVING FROM AND DEPARTING TO EACH COUNTRY, DURING THE YEARS DESIGNATED.

Years.	COMMERCE.				NAVIGATION.			
	Value of Exports.			Value of Imports.	American Tonnage.		Foreign Tonnage.	
	Domestic Produce.	Foreign Produce.	Total.		Entered the United States.	Cleared from United States.	Entered the United States.	Cleared from United States.
1845	$452,091	$64,673	$516,764	$1,751,877	31,408	14,134	10,774	2,115
1846	541,903	61,843	603,746	1,930,749	27,981	10,242	6,422	8,158
1847	2,006,716	95,938	2,102,654	1,847,179	37,133	20,816	14,079	17,500
1848	2,336,141	71,647	2,407,788	2,428,539	43,677	25,276	10,849	29,637
1849	1,941,202	60,629	2,004,831	2,485,210	38,716	27,584	11,697	30 542
1850	3,399,362	131,928	4,031,290	3,504,484	42,797	27,385	30,064	48,848
1851	5 755,128	151,186	5,706,314	3,444,079	35,283	40,151	28,432	61 400
1852	3,445,080	152,417	3,597,497	3 360,332	37,908	28,074	22,402	53,532
1853	4,642,740	51,848	4,694,588	4,645,629	47,369	40,012	24,172	47,197
1854	4,650,181	78,494	4,728,675	5,192,458	45,104	58,924	16,050	41,251
1855	4,702,252	441,612	5,143,864	5,363,108	61,090	55,709	36,687	42,303

A SUMMARY OF THE AMOUNT OF NATIONAL TONNAGE, AND OF THE NUMBER OF EFFICIENT SEAMEN ENGAGED IN THE COMMERCE AND NAVAL SERVICE OF SPAIN, AS OFFICIALLY STATED, FOR THE YEAR 1853.

Districts.	Officers, Masters, Pilots, etc.	Active Seamen.	Number of Vessels over 400 Tons.	Number of Vessels from 200 to 400 Tons.	Number of Vessels from 80 to 200 Tons.	Number of Vessels from 20 to 80 Tons.	Vessels of Foreign build.	Steamers.	Vessels building.
Cadiz	2,076	13,001	4	25	62	313	39	12	13
Ferrol	3,202	22,116	11	74	342	442	18	5	62
Carthagena	7,174	20,897	15	118	380	1193	28	9	79
Havana	696	2,052	7	30	99	295	380	20	23
Manilla	93	17,772	8	16	84	1241	10	..	..
Total	13,841	75,838	45	263	967	3487	484	46	177

NOTE.—In this resumé the seamen, tonnage, etc., of the province of Porto Rico are omitted; and there are some omissions also in the provinces of Vascongados, Philippines, etc.

COMMERCE OF THE UNITED STATES WITH SPAIN ON THE ATLANTIC, FROM OCTOBER 1, 1820, TO JULY 1, 1857.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American	Foreign.
Sept. 30, 1821	$324,705	$189,900	$514,606	$254,025	....	$21,200	8,604	....
1822	116,270	67,742	184,012	322,535	$3,030	3,500	3,079	177
1823	130,966	65,166	196,932	508,487	....	5,569	4,028	....
1824	140,436	366,434	506,870	259,560	....	91,994	6,084	....
1825	73,515	82,722	156,237	244,664	....	800	2,345	....
1826	71,313	22,227	93,541	332,719	....	2,390	3,620	435
1827	74,701	47,178	121,939	154,385	....	2,300	2,245	....
1828	40,946	199,993	240,849	210,684	33,600	245	2,989	750
1829	545,753	139,732	685,485	327,402	50,000	14,450	12,719	1,550
1830	538,956	61,327	600,283	461,267	....	25,475	9,387	....
Total	$2,057,622	$1,248,181	$3,300,803	$3,075,735	$86,630	$167,925	55,650	2,912
Sept. 30, 1831	$235,684	$63,428	$299,012	$506,672	$4,000	$40,439	4,598	1,068
1832	302,584	44,681	347,265	677,483	2,050	9,029	6,033	2,068
1833	201,619	24,571	226,190	837,794	1,321	54,458	5,723	1,537
1834	202,744	25,033	227,777	640,869	9,005	2,491	6,136	1,524
1835	430,984	87,230	518,214	468,969	70,412	2,328	9,247	1,411
1836	604,929	46,280	651,209	793,798	26,214	3,400	5,971	4,021
1837	230,699	46,750	276,849	465,467	15,050	10,428	2,724	5,843
1838	137,408	12,470	149,875	254,200	12,239	78,766	5,561	1,587
1839	316,144	32,014	348,178	263,198	3,520	....	15,129	1,617
1840	137,835	5,899	143,654	220,815	1,570	3,767	11,160	2,419
Total	$2,799,927	$388,296	$3,188,223	$4,668,570	$151,781	$191,080	72,022	23,010
Sept. 30, 1841	$203,35[illegible]	$17,822	$221,145	$190,727	$12,020	$3,200	7,557	1,474
1842	333,222	1,200	334,422	79,735	....	1,842	11,656	2,818
9 mos., 1843*	50,100	240	50,340	40,029	....	7,195	2,298	302
June 30, 1844	560,631	23,808	584,439	252,127	17,743	5,148	10,427	135
1845	271,293	550	271,793	117,158	....	1,876	6,528	672
1846	345,442	....	345,442	147,363	....	4,659	6,758	2,571
1847	770,738	10,115	780,863	274,708	9,500	55,592	9,585	1,174
1848	597,797	....	597,797	277,165	....	55,429	12,926	2,209
1849	169,071	31,479	200,550	313,490	28,157	24,413	17,243	2,234
1850	605,659	28,558	634,217	380,181	27,613	....	13,700	10,583
Total	$4,916,226	$113,772	$4,029,998	$2,081,623	$95,033	$153,345	98,684	24,052
June 30, 1851	$958,713	$4,075	$962,788	$451,797	....	....	14,688	12,424
1852	498,314	28,208	526,522	842,006	$25,700	....	10,468	8,406
1853	631,494	15,551	647,045	635,646	13,581	$9,960	10,768	6,229
1854	1,390,348	....	1,390,348	538,504	....	14,082	8,940	3,164
1855	1,189,158	151,117	1,340,275	518,140	....	....	22,254	6,570
1856	1,417,949	10,306	1,428,255	582,025	....	....	18,223	7,807
1857	2,962,697	13,882	2,976,979	692,982	....	2,300	28,611	10,075

COMMERCE OF THE UNITED STATES WITH SPAIN ON THE MEDITERRANEAN, FROM OCTOBER 1, 1820, TO JULY 1, 1857.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1821	$24,225	$915	$ 25,140	$288,308	....	$5,002	1,174	....
1822	525,240	1,314	526,554	503,636	....	2,796	2,489	177
1823	20,876	19,447	40,323	473,539	....	8,540	874	....
1824	9,840	....	9,840	308,657	....	47,150	756	356
1825	18,814	6,335	25,149	332,539	....	....	1,568	....
1826	80,964	20,046	101,010	532,398	....	1,400	1,462	....
1827	62,353	7,112	69,465	460,350	....	19,200	1,912	....
1828	66,844	51,193	118,037	421,476	....	1,250	3,060	213
1829	185,952	45,700	231,652	474,120	....	15,800	4,516	....
1830	145,556	....	145,556	543,271	....	13,436	3,017	....
Total	$1,140,62	$152,102	$1,292,726	$4,138,834	....	$114,584	20,834	746
Sept. 30, 1831	$75,121	$7,198	$82,319	$709,022	....	$8,150	1,905	536
1832	186,804	1,054	187,918	740,701	....	450	3,286	1,808
1833	136,150	546	136,696	806,714	....	1,994	4,845	2,059
1834	187,473	....	187,473	1,112,365	....	3,000	4,625	2,886
1835	93,949	43,798	137,747	930,709	$25,500	31,683	6,374	3,204
1836	278,528	....	278,528	1,600,781	....	....	6,515	3,022
1837	324,187	30,246	354,433	1,931,689	21,800	2,100	1,816	4,878
1838	336,904	2,595	339,499	868,336	1,806	11,540	1,854	4,736
1839	209,724	19,000	228,724	1,597,078	19,800	2,800	5,637	2,068
1840	215,584	3,035	218,619	1,463,550	....	8,634	4,066	....
Total	$2,044,484	$107,472	$2,151,956	$11,658,145	$68,906	$70,311	40,892	15,726
Sept. 30, 1841	$173,633	$9,997	$183,630	$1,119,069	$9,534	$16,184	4,843	....
1842	221,898	16,578	238,476	1,065,640	....	....	5,319	90
9 mos., 1843*	....	....	....	415,069	....	58,777	470	....
June 30, 1844	15,766	23,340	39,106	381,237	23,340	30,383	865	....
1845	55,710	28,898	84,608	954,628	28,898	111,562	3,009	1,051
1846	82,435	47,718	130,153	804,416	47,718	15,406	5,809	327
1847	1,188,340	41,063	1,229,403	1,016,551	25,000	126,642	7,261	10,926
1848	1,741,474	6,875	1,748,349	919,316	6,875	64,089	9,189	27,313
1849	1,619,423	19,827	1,639,250	1,092,887	19,827	112,228	5,603	28,073
1850	8,250,362	96,855	3,353,217	1,702,214	85,792	407,188	9,867	34,297
Total	$8,355,031	$291,061	$8,646,092	$9,444,757	$246,894	$912,599	53,140	107,482
June 30, 1851	$4,457,331	$137,472	$4,594,803	$1,710,776	$107,043	$8,480	9,576	44,014
1852	2,718,504	114,237	2,832,741	1,443,975	87,965	1,500	6,174	37,631
1853	3,023,656	34,297	3,057,953	1,458,879	34,297	....	7,600	38,139
1854	3,212,368	31,040	3,243,408	1,579,074	31,040	....	12,140	37,224
1855	3,375,680	203,701	3,579,381	1,095,372	6,126	26,533	18,878	33,777
1856	5,948,380	57,683	6,006,063	1,620,441	29,450	19,500	12,135	60,067
1857	7,715,907	11,211	7,727,118	2,050,064	....	24,500	21,005	67,687

* Nine months to June 30, and the fiscal year from this time begins July 1.

Of the changes in the commercial policy of Spain the following particulars, furnished by the United States consul at Cadiz, will be found interesting:

"Ocronan 3, 1865.

"The Queen's decree of the 30th, and order thereon of the 31st of July of the present year, was issued, establishing a *Junta consultiva de aranceles*, or a board of consultation in relation to custom-house tariffs, regulations, and all matters relating to imports and exports, with extensive powers, and determining their attributions. The object of this board is declared to be to discuss and propose to the minister of the hacienda all reforms which they may conceive ought to be made in the custom-house tariffs, and to occupy themselves with and direct all the proceedings which may be found with respect to the understanding of the same, their application and modification; as also with respect to the reclamations of foreign powers, and those which ought to be made on the part of Spain, with respect to the agreements and treaties of navigation or commerce, and any other affair whatever relative to the mercantile legislation. This *Junta de aranceles* is to be a corporation independent in all points of any other office of the state; and as such is clothed with the same faculties, privileges, and pre-eminences which belong to the other directive centres of the ministry of the hacienda, of a permanent character. The junta is empowered, in the performance of its duties, to communicate directly with, and claim from, Spanish consuls in foreign countries, governors, and provernors of provinces, administrators of custom-houses, juntas of commerce, economical societies, etc., and any other authorities, offices, and corporations whatever, all *data* they may conceive necessary for the execution of the business committed to them. Copies of this decree and order are herewith, detailing at length the persons composing the junta, and the mode in which they are to proceed. This board is now organized, and is expected to make a report pending the next session of the Cortes. It is presumed that they will recommend the favoring of navigation under the *Spanish* flag; the admission of certain kinds of cotton manufactures, and other articles now prohibited; together with an augmentation of two millions of dollars in the custom-house revenue on imports; also the maintenance of the present monopolies of tobacco, salt, stamped paper, and the duties payable thereon."

Moneys, Weights, and Measures.—The weights and measures are the established ones of Castile; the *arroba* of solids being considered of 25 pounds, of 16 ounces to the pound; and of liquids, 32 *cuartillas*, except in the article of clive-oil, which will be deemed a solid. The *quintal* will be of 100 pounds, and the ton of 20 quintals. The yard will be of 36 inches. The money is the *real de vellon*, which is divided into 100 parts, called centimes.

Moneys.—The real vellon is valued at the custom-house of the United States at 5 cents; 20 real vellons =$1; the real of plate is double the real vellon=10 cents; 1 hard dollar=12½ dollar of exchange=10 reals of new plate=10⅝ of old plate=20 reals velion=170 quarters=361½ maravedis of old plate=680 reals vellon=$1 03½.

Gold Coinage.—The last date that we have noticed of the long-continued doubloon series of Peninsular coinage was 1824. The half doubloon of that year weighed 0·433 ounce, 865 fine; value, $7 75. The new gold coin is a piece of 100 reals, weighing 0·268 ounce, 896 fine, $4 96·3.

Silver Coinage.—The principal coin (not the largest) seems to be the piece of 4 reals, or pistareen, which before 1837 was of the weight 0·189 ounce; fineness, 810; value, 20·7 cents. The standards have been lately changed, and the new pistareen weighs 0·166 ounce, fineness, 899; value, 20·3 cents. There is also a large piece of 20 reals (dollar), worth 101·5 cents; and pieces of 10, 4, 2, and 1 real in proportion.—*United States Mint Report*, 1857.

Weights.—Gold and Silver Weight.—Gold and silver are weighed by the Castilian mark of 50 castellanos, 460 tomines, or 4800 grains.

Apothecaries' Weight.—The apothecaries' weight is the Castilian, but the ounce is divided into 8 drachmas, 24 escrupulos, 48 obolos, 144 caracteres, or 576 grains.

Commercial Weight.—One commercial pound is equal to 2 marks (Castilian), or 16 ounces. One commercial ounce=8 drachmas=16 adarmes=576 grains. One quintal of 4 arrobas, or 100 pounds,=101·44 pounds avoirdupois, or 46 kilograms. One arroba=25 pounds 7 ounces.

Measures.—Dry Measure.—Corn, salt, and other dry articles are measured by the cahiz. One cahiz=12 fanegas; one fanega=12 celemines. The celemine has various subdivisions, as ½, ⅓, ¼, etc. The fanega measures 4322¾ Spanish, or 3439 English cubic inches, and is equivalent to 1·55 English imperial bushels. Five fanegas are nearly equal to one quarter English.

Wine Measure.—One arroba of wine measures 4245 English imperial gallons. One arroba of oil, 3½ English gallons. One botta=30 arrobas of wine, or 38½ of oil. The botta contains 127½ English gallons, and the pipe 114¾ English gallons.

Long Measure.—One Spanish foot=12 pulgadas, or 144 lines, and is equivalent to 11·128 English inches, or 0·2826 of a French metre. One palmo, of 9 pulgadas, or 12 dedos,=8½ English inches. One vara, or 4 palmos,=33·384 English inches, or 0·847 of a metre. One braza=2 varas, or 6 feet. One passo=5 feet. One estadal=4 varas, or 12 feet. One cuerda=8¼ varas, or 25½ feet.

FOREIGN COMMERCE OF THE UNITED STATES WITH SPANISH AMERICAN COLONIES* (INCLUDING MEXICO), FROM OCTOBER 1, 1820, TO SEPTEMBER 30, 1824.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1821.....	$508,176	$529,559	$1,037,735	$1,114,117	$54,893	$129,462	13,208	282
1822.....	1,092,767	1,328,286	2,421,053	2,522,938	57,698	661,117	31,747	564
1823.....	1,372,526	3,229,347	4,601,873	4,842,503	....	1,950,416	33,112	....
1824.....	2,827,521	5,040,966	7,868,487	6,756,769	....	3,674,800	61,651	1554
Total...	$5,300,990	$10,628,158	$15,929,148	$15,266,377	$112,591	$6,415,795	139,718	2200

COMMERCE OF THE UNITED STATES WITH TEXAS,* FROM OCTOBER 1, 1836, TO JULY 1, 1846.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1837.....	$797,312	$210,616	$1,007,928	$163,384	$1,700	....	12,939	1,002
1838.....	1,028,818	219,062	1,247,880	165,718	825	....	28,195	397
1839.....	1,379,065	308,017	1,687,082	518,116	....	$17,400	48,503	1,008
1840.....	937,072	281,199	1,218,271	393,847	....	55,062	41,177	530
1841.....	516,255	292,044	808,296	395,026	....	65,688	32,838	18
1842.....	278,078	127,951	406,929	480,892	....	25,510	24,316	1,360
9 mos., 1843†.....	105,240	37,718	142,953	445,390	....	17,174	16,185	927
June 30, 1844.....	190,447	84,101	277,548	678,551	....	10,114	20,065	1,770
1845.....	240,736	153,056	393,792	705,324	....	46,427	18,930	2,221
1846.....	250 240	223,363	473,603	488,059	....	10,699	28,204	3,245
Total...	$5,700,163	$1,934,119	$7,634,282	$3,889,315	$2,525	$248,083	271,552	12,581

* The commerce of Texas from 1846, when it became one of the United States, may be found under the head of Texas; and the commerce of Mexico, since its independence, under the head of Mexico.

† Nine months to June 30, and the fiscal year from this time begins July 1.

COMMERCE OF THE UNITED STATES WITH SPANISH WEST INDIES [CUBA EXCEPTED], FROM OCTOBER 1, 1820, TO JULY 1, 1857.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign	Total.	Total.	Export.	Import.	American.	Foreign
Sept. 30, 1821.....	$175,217	$33,604	$208,821	$626,616	....	$12,787	11,134	....
1822	150,435	7,606	158,041	933,607	....	35,629	10,650	....
1823.....	256,038	25,495	281,533	814,076	....	22,738	8,409	1,128
1824.....	306,816	233,718	540,014	856,636	....	8,895	5,068	180
1825.....	216,102	22,156	238,258	743,627	....	5,659	5,909	75
1826.....	210,858	12,068	222,926	770,770	7,841	6,879	....	....
1827.....	215,156	16,033	228,519	1,169,612	$2,000	13,700	7,194	603
1828.....	222,101	15,577	237,868	1,120,130	1,950	8,446	7,843	323
1829.....	209,780	38,900	248,680	898,832	31,505	8,674	11,051	216
1830.....	245,636	27,523	273,159	1,307,148	21,650	7,718	8,734	480
Total...	$2,211,804	$427,710	$2,639,014	$10,099,174	$57,105	$127,137	82,991	3,014
Sept. 30, 1831.....	$261,891	$53,245	$315,046	$1,580,186	$35,683	$16,173	8,272	1,051
1832.....	322,550	72,552	395,111	1,889,182	42,360	9,127	9,848	717
1833.....	393,992	27,398	421,390	1,870,324	7,080	8,992	18,880	219
1834.....	431,805	59,722	491,527	2,246,413	11,050	11,160	15,769	741
1835.....	586,035	91,622	677,657	2,364,170	70,950	15,256	21,140	172
1836.....	594,559	65,899	660,458	3,200,043	47,086	8,600	22,079	423
1837.....	517,778	52,138	569,916	2,481,082	42,823	53,725	17,071	1,155
1838.....	692,568	30,494	723,062	2,636,152	30,473	35,783	19,538	2,446
1839.....	779,049	87,348	866,397	3,742,519	115,207	23,144	22,547	1,161
1840.....	770,470	29,208	799,628	1,898,732	31,273	46,695	22,559	962
Total...	$5,350,565	$569,616	$5,920,182	$28,926,803	$431,004	$284,655	172,187	8,996
1841.....	$721,845	$19,087	$740,932	$2,560,020	$28,923	$17,799	30,128	720
1842.....	610,813	19,718	630,531	2,517,001	12,757	68,457	29,565	1,134
9 mos., 1843*.....	442,034	11,821	453,855	1,076,155	1,872	47,043	18,361	540
June 30, 1844.....	636,962	5,177	642,139	2,425,202	4,088	27,021	28,143	683
1845.....	688,149	20,775	708,924	2,026,253	11,008	53,453	28,575	622
1846.....	675,441	25,905	701,346	2,277,110	15,054	62,079	30,056	1,373
1847.....	825,079	33,183	858,064	2,141,929	21,394	14,157	26,787	1,879
1848.....	801,722	37,012	838,734	2,100,290	21,656	29,919	35,241	1,150
1849.....	523,293	33,231	556,524	1,964,861	28,015	27,064	25,870	888
1850.....	810,062	93,591	903,653	2,067,866	68,758	2,600	30,744	5,108
Total...	$6,741,399	$308,805	$7,050,204	$21,162,863	$254,015	$346,692	283,451	14,917
June 30, 1851.....	$961,410	$57,200	$1,018,610	$2,480,329	$39,503	$345	36,320	6,013
1852.....	1,015,563	39,542	1,055,105	3,001,223	51,856	20,277	35,010	5,544
1853.....	810,411	54,143	864,554	2,580,926	47,257	18,016	30,815	9,429
1854.....	990,886	60,997	1,051,883	2,850,393	133,700	19,179	31,014	5,548
1855.....	1,144,581	88,937	1,183,518	2,475,978	16,000	23,025	34,170	5,552
1856.....	1,099,590	43,125	1,142,714	3,870,063	23,250	14,700	33,264	1,990
1857.....	1,783,429	152,045	1,935,474	5,743,600	483,315	658	37,633	3,550

* Nine months to June 30, and the fiscal year from this time begins July 1.

Specie (Fr. *espèce*), coin and bullion used as a circulating medium in distinction from paper money.—*See articles* BANKS, COINS, PRECIOUS METALS, GOLD, and SILVER.

Spectacles. An optical instrument, consisting of two lenses set in a frame, for assisting or correcting the defects of imperfect vision. The lenses are convex or concave, according to the nature of the defect to be remedied. In old age the pupil of the eye becomes flat, and the rays of light are consequently not refracted sufficiently in passing through it to meet on the retina and produce distinct vision. This defect is remedied by a convex lens, which produces a slight convergency of the rays before they enter the eye. Short-sighted people, on the contrary, require concave lenses; because, in their case, the indistinctness of vision proceeds from too great a curvature of the pupil, which causes the rays to meet in a point before they reach the retina—a defect which is remedied by giving the rays a slight divergency before they enter the eye. Spectacles were unknown to the ancients. They are generally supposed to have been invented in the 13th century, by Alexander de Spina, a monk of Florence, in Italy, about A.D. 1285.—*Gen. Hist.* They were invented by Roger Bacon, according to Dr. Plott, about 1280. Some affirm that the real inventor was Salvino; and Mr. Manni gives proofs in favor of Salvino in his *Treatise on Spectacles.*—HAYDN.

Spelter, a name frequently given to ZINC; which see.

Spermaceti (Ger. *Wallrath*; Fr. *Blanc de Baleine, Sperme de Baleine*; It. *Spermaceti*; Sp. *Esperma de Ballena*; Russ. *Spermazet*), a product obtained from the brain of the *physeter macrocephalus*, a species of whale inhabiting the Southern Ocean. The brain being dug out from the cavity of the head, the oil is separated from it by dripping. The residue is crude spermaceti, of which an ordinary-sized whale will yield twelve barrels. It then concretes into a white, crystallized, brittle, semi-transparent, unctuous substance, nearly inodorous and insipid. On being cut into small pieces it assumes a flaky aspect. It is very heavy, its specific gravity being 0·433. It is used in the manufacture of candles, in medicine, etc.

Spices (Ger. *Spezereyen*; Du. *Specerijen*; Fr. *Epiceries, Epices*; It. *Spezj, Spezierie*; Sp. *Especias, Especerias*; Port. *Especiaria*; Russ. *Prianie korenja*). Under this denomination are included all those vegetable productions which are fragrant to the smell and pungent to the palate; such as cloves, ginger, nutmegs, allspice, etc.

The ordinary spices which are used in housekeeping, and are sold by the grocer are *pepper* (white, black, and cayenne), *mustard, ginger, nutmegs, mace, pimento* or *allspice, cloves, cinnamon,* and *cassia.* All of these spices are more or less pungent to the taste and stimulating to the stomach, and are used as additions to food, not as food itself. For these qualities they depend upon an essential oil in most cases, varying in each particular case. Pepper, however, has a nitrogenized principle, similar in composition to thein and caffein, and called *piperin.*

Pepper is the produce of two allied plants (known as *Piper nigrum* and *longum*), and the part used is the berry, dried in the sun. *Black* and *white pepper* are both obtained from the berry of *Piper nigrum;* the former being the entire berry, ground, while the latter consists of the berry deprived of its outer covering, or husk, before it is reduced to powder. Long pepper is not ground, and is not much used in the present day. Pepper-corns, being these berries, are imported from Penang, Malabar, and Sumatra. The best are those

which are not too small, nor too much shrunk in drying, but which feel heavy in the hand, and sink in water. In looking at a section, the outer part, which is black, or reddish black, is easily distinguished from the inner or central, which is more or less white, and brittle, hard toward the exterior, and soft and powdery toward the centre. In separating these parts, as for the purpose of procuring the white pepper, an inner reddish covering remains attached to the internal white structure, and this being ground up with it, is faintly indicated in the pure white pepper-powder by small reddish specks. The active properties of this spice depend upon an *acrid resin*, an *essential oil*, and a substance before alluded to, called *piperin*. The outer cortical part contains the resin, in the inner coat lies the oil, and within the internal or white structure is the *piperin*.

Pepper, both black and white, is adulterated with a variety of articles—as, the flour of linseed, mustard, wheat, sago, and arrow-root. Pepper-dust, also, being the sweepings of the floors of warehouses, and known as P.D., is largely used in making up low-priced pepper. Powdered cayenne is likewise said to be used, but, according to Dr. Hassall, not to any extent. Chemistry and our natural senses are greatly at fault in detecting these adulterations; and the microscope is the chief means upon which reliance can be placed, and, as is proved, a very sufficient one.

Cayenne pepper is composed of the pods of several species of *capsicum*, which is an annual herbaceous plant, a native of America, cultivated in the West and East Indies, and to some extent in the United States. Each pod is made up of three parts, an outer skin, an inner parenchymatous substance, and a quantity of small seeds. All these are ground up to constitute the pepper sold as cayenne, but it is to the first that it chiefly owes its pungent taste. It contains a very active principle which is called *capsicin*, and of which a very minute quantity, even as little as half a grain, diffused throughout a room will set a whole party of people sneezing. This pepper is far more subject to adulterations than black and white pepper, and is in fact scarcely ever free from mixture either with red-lead, red-ochre, or common salt—four only out of ninety-eight samples examined by Dr. Hassall being perfectly genuine; thirteen presented red-lead, often in poisonous quantities, and in seven Venetian-red, red-ochre, or brick-dust, were found. Six of the samples contained salt in large quantities, with rice and coloring matter, and in the same number also appeared rice mixed with turmeric and cayenne, and colored with red-lead or some ferruginous earth. It is said that this pepper is often imported in a ground state, and therefore a good deal of this sophistication is due to foreign roguery. The mineral ingredients are easily detected by chemical means, as red-led, vermilion, etc.; but for the most of the other articles the aid of the microscope is again required. With a knowledge of the difficulty in detecting adulterations, it behooves us all to deal for our peppers only with those who are of high character and standing in the trade; but as our senses tell us pretty clearly the strength of the spice, and as all the adulterations of black and white pepper are tolerably innocent, no harm accrues, except to the purse, from the substitution of a weak spice for a strong one. In the case, however, of cayenne pepper, the presence of red-led, vermilion, or other mineral coloring matter is of serious importance, and should be cautiously avoided by a careful dealing with honest tradesmen.—*See* CAYENNE and PEPPER.

Mustard is obtained from the plants known as the black and white mustard plant (*Sinapis nigra* and *alba*). The former of these has smooth seed-vessels, and reddish or blackish-brown seeds, which are very pungent; while the latter has rough or hairy pods and yellow seeds, less pungent than those of the black mustard. The seeds of the black mustard are composed of cellulose matter, containing in addition a volatile and a fixed oil of mustard; also, two peculiar substances known as myronic acid and myrocene, all of which are deficient in white mustard seed. The fixed oil exists in the seed, but the volatile oil is formed in the same manner as the essential oil of bitter almonds, by the joint action of water, and a peculiar coagulable albuminous matter, called *myrocene*, upon a substance very imperfectly known, which is termed *myronic acid*. This acid has no smell, and is not volatile, but is bitter to the taste, and contains *sulphur* and *nitrogen*. Heat coagulates myrocene, which is necessary to the formation of the essential oil, and hence mustard should always be mixed with hot water to develop its pungent powers properly.

Adulteration in this article seems to be the rule, and a pretty invariable one; for in no single case did Dr. Hassall find pure mustard seed sold in London. The nature of the admixture was in nearly all cases the same, genuine mustard being more or less mixed with wheaten flour, and colored with turmeric. Even in the case of an article which was specially sent up from Newcastle-on-Tyne as a perfectly pure specimen, a very small quantity of turmeric was discovered, which the manufacturer afterward candidly admitted was added to the mustard for the purpose of heightening its color. This admission must be highly gratifying to the *Lancet* Commissioners, as the quantity was only two ounces in fifty-six pounds, or one part in 448. In purchasing mustard, there is no guide short of the microscope but the palate, as the full power is not developed until the flour is mixed with hot water. The adulterations are, however, only of importance as far as the money-value is concerned, as the turmeric is innocent enough of all other mischief. Most people can judge of the strength of this spice when it is used, and they may therefore readily take this as their guide in dealing with their grocer for future orders.

Ginger is cultivated in Asia, Africa, and the tropical parts of America, and is the root of the *Zingiber officinale*, a perennial plant, of which the stem reaches to the height of three or four feet. The roots are dug up at the end of the first year; they are well washed, and then they are stripped of their outer skin, or left as they are, constituting in this way the two primary divisions of ginger into *coated* and *uncoated;* in addition to which, it is sometimes imported from Jamaica in a *green* state, preserved in jars with sirup. The two first divisions are sold either in the state in which they are imported, or finely ground, and sifted with great care. Ginger owes its pungency to a volatile oil, with an acrid resin, which are contained in it, and mixed up with other vegetable substances, as gum, starch, and woody fibre. Ground ginger contains all the elementary principles of the root. It is adulterated with wheat flour, sago, potato flour, cayenne pepper, mustard husks, and turmeric powder, none of which are prejudicial to health, and the fraud is only on the pocket.

Nutmegs and *Mace* are both obtained from the nutmeg-tree, of which there are three species—*Myristica fragrans*, *M. fatua*, and *M. malabarica*. Together they are the fruit of the tree, which is similar in appearance to a pear-tree, and produces a fruit about the size of a peach, but shaped like a pear, and smooth externally. The outer fleshy part of this is the pericarp, and this when ripe separates into two longitudinal sections, within which lies the seed proper, or *nutmeg*, inclosed in two coats, besides the *mace*, which fills up the space between these and the pericarp. The tree known to botanists as *Myristica fragrans*, is cultivated in the Molucca Islands, as well as in Java, Sumatra, Singapore, Penang, the island of Bourbon, Bengal, Madagascar, and the West Indies; and these trees produce the *true nutmeg* of commerce, which is round, and of a strong aromatic flavor and smell. A second and inferior kind, called the *wild* or *false nutmeg*, is obtained from the *Myristica fatua* and *M. mala-*

barica, growing in a wild state; and they may be distinguished from the true nutmeg by being longer and paler than it. Mace is also *true* or *wild*, according as it is obtained from either kind of nutmeg-tree. As imported into this country, the true mace is of a golden or orange yellow, transparent and horny. False or wild mace is of a dark red color, and deficient in flavor and smell. The nutmeg, as well as the mace, contains a fixed, and also a volatile oil, as well as starch and woody matter.

Adulteration.—It might readily be supposed, as these spices are not powdered, but are sold as imported, that no adulteration could possibly be practiced; and it appears, in reality, that very little is attempted. The only fraud is found to consist in the abstraction of the volatile oil by distillation, which deprives the nutmeg and mace of their chief flavor and utility as spices. In order to preserve the nutmeg from insects, it is often soaked in lime water, or covered with powdered lime; but this does not seem to be a fraud, but rather a preservative. It therefore need not be guarded against, but the presence of the full complement of oil should, if possible, be insured. This can only be done in practice by attending to the flavor and smell, and comparing them with the recognized genuine article. The shape is a good guide to the true nutmeg, and purchasers should always select those of a round form, avoiding those which are like dates in appearance, or even at all elongated beyond a very slight departure from the true circle.

Pimento, or *Allspice*, also called Jamaica pepper, is the berry of a tree bearing the first name, and growing in the West Indies, from which it is imported in bags. There are two qualities of it, but only one is extensively used in this country.

Pimento, like most other spices, owes its qualities as a condiment to its essential oil, which is contained in considerable quantities in the berries mixed with gummy and resinous matter, astringent extract and fatty oil. This essential oil is readily obtained by distillation. The adulteration of this spice is so trifling as scarcely to require alluding to; and as the price of pimento at present in the London market is from 4½*d.* to 4¾*d.* per lb., with a duty of 5*s.* per cwt., the retailers make a fair profit in selling it at 8*d.* and need not have recourse to adulteration.—*See* PIMENTO.

Cloves are the flower-buds of the *Caryophillus aromaticus*, which is grown in the Moluccа Islands, Sumatra, the Mauritius, Bourbon, Cayenne, Martinique, and St. Vincent. They present a peculiar oblong appearance, too well known to need minute description, with a pungent and aromatic taste, which is highly agreeable to most people. Like the other spices, cloves contain an essential oil, besides resin, tannin, and woody fibre. The oil is extracted in considerable quantities, and sold separately for various purposes. The wholesale price is from 4½*d.* to 1*s.* 2*d.* per lb.; and the duty being 2*d.* per lb., together with the retailer's profit, bring them up to the retail price of 1*s.* for Bourbon and Cayenne, 1*s.* 4*d.* for superior Bourbon, and 2*s.* for Penang cloves.

Cinnamon and *Cassia* are the bark of two species of *Cinnamomum*; that producing the former bearing the specific name *Zeylanicum*. The cinnamon-tree is cultivated chiefly in Ceylon, but sparingly in Bombay, Malabar, and Java. The bark, as sold, is peeled from the three-year old branches, and dried in the sun; and its quality varies considerably, but its external characters are generally pretty nearly the same. Cassia, or the bark of the *Cinnamomum cassia*, is brought from China, Malabar, Bombay, and the Mauritius; it resembles the true cinnamon in flavor, though less delicate and not so sweet, and attended with a certain degree of bitterness. It is constantly substituted for cinnamon, and it is necessary, therefore, to endeavor to distinguish the one from the other by our ordinary senses, if possible.

The bark of cinnamon is not much thicker than drawing-paper, and breaks with an uneven margin, showing a coarse arrangement of its fibres. It also consists of several concentric layers of bark, one within the other. These are called *quills*, and are of a pale brown, with a sweet aromatic taste, unaccompanied by any bitterness or astringency.

Cassia bark is considerably thicker and coarser, and has a short fracture and smooth edge. It has generally only one, or at most two quills, within the external one; and the taste is a coarse imitation of cinnamon, with a strong tendency to leave an astringent bitter on the tongue. By these characters the bark of the one, when whole, may be distinguished from the other: but when powdered, the aid of the microscope is required to detect the imposition, which is extensively practiced; and, failing this, the character of the vendor is the only safeguard. Cassia buds are also imported.

The cinnamon of commerce is chiefly produced in the island of Ceylon, from the *Laurus cinnamomi* of botanists, the *Kooroondoo-gaha* of the Singhalese, a plant which appears to have flourished in that island from the earliest period. We learn from Scriptural history that this spice was employed by the Hebrews in their religious ceremonies; and there can be little doubt that their supplies were derived from the Arabian merchants who traded between the Red Sea and the East.

Mixed spice, as implied by the name, is a compound of the various ordinary spices, as ginger, pimento, cassia, etc. It is largely adulterated, and can not, therefore, be recommended, nor is its use at all required, inasmuch as the cook may in all cases use her own judgment to greater advantage.

IMPORTS OF SPICES INTO THE UNITED STATES FOR THE FISCAL YEAR ENDING JUNE 30, 1857.

Whence imported.	Mace.		Nutmegs.		Cinnamon		Cloves.		Pepper, Black	
	Pounds.	Value.	Pounds.	Value	Pounds.	Value	Pounds.	Value	Pounds	Value
Hamburg	....	....	1 507	$614	....	....	....	....	....	....
Holland	5,277	$2,689	132,533	73,943	9,339	$2,691	5,510	$2,664	....	....
Dutch West Indies	....	....	....	....	....	....	....	....	2,175	$145
Dutch Guiana	....	....	....	....	....	....	10,258	528	....	....
Dutch East Indies	10,592	5,372	49,158	22,473	19,787	1,243	....	....	1,180,080	70,154
Belgium	....	....	8,371	4,527	2,200	666	....	....	....	....
England	5,317	2,908	108,725	59,715	31,157	9,721	....	....	51,993	4 277
Scotland	....	....	3,486	1,467	....	....	....	....	42,543	4 07.
Canada	....	....	468	251	....	....	....	....	....	....
British West Indies	....	....	....	....	100	23	4,108	198	4,736	14
British Possessions in Africa	....	....	....	....	....	....	....	....	1,800	5
British Australia	....	....	400	175	....	....	....	....	....	....
British East Indies	27,789	15,785	131,878	83,965	22,660	4,521	665	546	3,650,132	199,370
France on the Atlantic	....	....	10,751	5,864	....	....	....	....	....	....
French Guiana	....	....	....	....	....	....	10,803	47	....	....
Cuba	....	....	....	....	....	....	....	....	4,009	39
Porto Rico	....	....	208	89	....	....	....	....	....	....
Madeira	....	....	....	....	....	....	....	....	60	6
Africa	....	....	....	....	....	....	1,126,937	60,918	....	....
Hayti	....	....	....	....	....	....	....	....	3,170	159
Buenos Ayres, or Argentine Repub.	....	....	801	558	....	....	....	....	....	....
China	....	....	2,149	996	....	....	....	....	8,000	501
Total	49,275	$26,754	459,440	$254,637	85,[illegible]4	$18,865	1,158,381	$65,332	4,948,698	$275,287

IMPORTS OF SPICES INTO THE UNITED STATES FOR THE FISCAL YEAR ENDING JUNE 30, 1857.—*Continued.*

Whence imported.	Pepper, Red.		Pimento.		Cassia.		Ginger, Ground.		Ginger, in Root.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Holland	....	....	....	....	2,529	$272	....	....	....	....
Dutch West Indies	....	....	1,930	$187	....	....	....	....	....	....
Dutch East Indies	....	....	....	....	22,559	1,046	....	....	....	....
England	15	$9	....	....	119,370	10,744	48	$8	115,300	$4,834
British North American Possessions	....	....	24,980	2,092	....	....	....	....	....	....
British West Indies	....	....	3,445,077	238,731	60	4	1200	24	34,916	1,724
British Honduras	....	....	....	....	....	....	....	....	180	5
British Possessions in Africa	2,460	86	....	....	....	....	....	....	302,104	10,228
British East Indies	....	....	....	....	314,076	20,512	....	....	836,684	21,784
France on the Atlantic	....	....	....	....	85,112	5,265	....	....	....	....
Spain on the Mediterrancan	5,330	281	....	....	....	....	....	....	....	....
Philippine Islands	....	....	....	....	42,000	6,884	....	....	....	....
Cuba	4,178	531	....	....	....	....	....	....	13,946	455
Porto Rico	....	....	135	12	....	....	....	....	....	....
Africa	7,371	251	....	....	....	....	....	....	168,319	4,329
Hayti	....	....	....	....	....	....	....	....	6,700	127
Mexico	19,074	1210	3,114	491	....	....	....	....	....	....
Chili	1,200	92	....	....	....	....	....	....	....	....
Sandwich Islands	....	....	....	....	....	....	....	....	358	19
China	....	....	....	....	396,513	137,256	....	....	37,044	615
Total	42,625	$2460	3,480,842	$241,503	1,432,719	$201,883	1248	$32	1,516,581	$44,128

SUMMARY OF THE IMPORTS OF SPICES INTO THE UNITED STATES FOR THE FISCAL YEARS ENDING JUNE 30, 1856–'57.

Spices.	1855–'56		1856–'57.	
	Pounds.	Value.	Pounds	Value.
Mace	44,415	$23,106	49,225	$ 0,754
Nutmegs	504,818	326,133	450,449	254,637
Cinnamon	87,218	21,145	85,234	18,825
Cloves	900,747	53,077	1,158,381	65,332
Black pepper	6,737,809	813,752	4,948,698	279,287
Red pepper	118,741	5,849	42,628	2,460
Pimento	4,006,028	352,022	3,480,842	241,503
Cassia	1,182,116	169,705	1,432,713	201,883
Ginger, ground	....	....	1,248	92
" in root	1,113,346	22,713	1,516 581	44,123
Total	15,633,040	$1,288,105	13,166,040	$1,154,876

Spikenard. This odoriferous plant belongs to the valerian order, and although its fragrance is generally considered unpleasant to European nostrils, it is so much admired by Eastern natives that some of the most esteemed Asiatic perfumes are composed of valerian and spikenard. The fragrance of spikenard is frequently mentioned in the Holy Volume. "While the king sitteth at his table, my spikenard sendeth forth the smell thereof." "There came a woman having an alabaster box of ointment of spikenard very precious." It is nevertheless unknown to English and French perfumers.—PIESSE'S *Art of Perfumery.*

Spinning. The art of spinning was ascribed by the ancients to Minerva, the goddess of wisdom, such was their veneration for it. Arcas, king of Arcadia, taught his subjects the art of spinning about 1500 B.C. Lucretia with her maids was found spinning when her husband Collatinus paid a visit to her from the camp. The wife of Tarquin was an excellent spinner; and a garment made by her, worn by Servius Tullius, was preserved in the Temple of Fortune. Augustus Cæsar usually wore no garments but such as were made by his wife, sister, or daughter. The spinning-wheel was invented at Brunswick about A.D. 1530. Till 1767, the spinning of cotton was performed by the hand spinning-wheel, when Hargrave, an ingenious mechanic, near Blackburn, made a spinning-jenny with eight spindles. Hargrave also erected the first carding-machine, with cylinders. Arkwright's machine for spinning by water was an extension of the principle of Hargrave's; but he also applied a large and small roller to expand the thread, and for this ingenious contrivance took out a patent in 1769. At first he worked his machinery by horses; but in 1771 he built a mill on the stream of the Derwent, at Cromford. In 1779, Crompton invented the mule, which is a further and wonderful improvement of this art.—PHILLIPS. *See* COTTON MANUFACTURE.

Spirit of Wine. *See* ALCOHOL.

Spirits. All inflammable liquors obtained by distillation—as brandy, rum, geneva, whisky, gin, etc.,—are comprised under this designation. See articles under these heads.

ACCOUNT OF THE SPIRITUOUS AND MALT LIQUORS PRODUCED IN THE UNITED STATES IN 1850, SHOWING THE AMOUNT OF GRAIN, ETC., CONSUMED IN THEIR PRODUCTION.—FROM THE RETURNS UNDER THE SEVENTH CENSUS.

States.	Capital invested.	Quantities and Kinds of Grain, etc., consumed.							Hands employed.	Quantities of Liquor produced.		
		Barley	Corn.	Rye.	Oats.	Apples.	Molasses.	Hops.		Ale, etc.	Whisky, etc.†	Rum, etc.
	Dollars.	Bushels.	Bushels.	Bushels	Bush	Bushels.	Hhds	Tons.		Barrels.	Gallons.	Gallons.
Maine	17,000	....	....	....	....	....	2,000	....	5	500	....	220,000
Vermont	7,000	2,500	....	....	....	....	....	1	2	....	....	....
Massachusetts	457,500	80,000	10,400	26,600	....	....	35,130	29	131	25,800	120,000	2,786,000
Rhode Island	17,000	12,500	....	....	....	....	....	6	9	3,900	....	....
Connecticut	15,000	....	20,000	20,000	....	....	....	2	20	....	130,000	1,200
New York	2,585,000	2,062,250	1,647,260	909,007	6,707	60,940	24,500	551	1380	644,700	9,231,700	2,458,600
New Jersey	402,655	103,700	284,000	58,400	....	409,700	....	42	197	54,750	1,250,530	....
Pennsylvania	1,719,960	550,105	1,483,555	517,180	24,700	51,200	10	203	911	189,581	0,548,310	1,500
Maryland	247,100	76,900	166,100	54,300	400	....	....	25	126	26,380	787,400	....
Virginia	100,915	20,000	250,700	62,080	450	....	....	14	123	5,500	379,440	....
North Carolina	21,980	....	64,650	4,700	....	....	....	....	75	....	153,030	....
South Carolina	3,475	....	18,100	....	....	....	....	....	33	....	43,000	....
Georgia	7,150	....	20,150	2,500	1,500	....	....	....	15	....	60,450	....
Alabama	500	....	....	....	....	....	25	....	2	....	....	8,000
Louisiana	8,500	10,000	....	....	....	....	....	10	8	3,000	....	....
Tennessee	66,125	3,000	258,400	5,480	....	....	....	....	159	....	657,000	....
Kentucky	168,935	65,650	551,850	30,520	....	5,000	....	18	274	19,500	1,491,745	....
Missouri	298,900	124,410	309,200	24,000	....	....	....	31	170	44,850	939,400	....
Ohio	1,262,974	330,950	3,588,140	281,750	19,500	....	....	178	1038	99,943	11,865,150	....
Indiana	334,950	118,150	1,417,900	48,700	1,000	....	....	18	287	11,005	4,639,500	....
Illinois	893,400	98,000	703,500	48,700	2,200	....	....	30	274	27,925	2,315,000	....
Michigan	139,425	32,030	212,300	19,150	....	....	....	16	98	10,320	690,000	....
Iowa	10,500	....	51,150	7,200	....	....	....	....	19	....	100,000	....
Wisconsin	98,700	91,020	29,900	200	....	....	....	28	98	31,320	127,000	....
New Mexico	7,300	....	2,000	*12,000	....	....	....	....	21	....	42,000	....
Utah	3,000	1,000	....	....	....	....	....	....	3	200	....	....
Dis. of Columb.	12,000	5,000	....	....	....	....	....	2	5	1,350	....	....
Total	8,334,254	3,787,195	11,067,761	2,143,927	56,517	526,840	61,675	1294	5487	1,177,024	42,133,955	5,500,500

* Wheat. † This includes high wines.

EXPORTS OF DOMESTIC SPIRITS FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Spirits from Grain.		Spirits from Molasses.		Spirits from other Materials.	
	Gallons.	Value.	Gallons.	Value.	Gallons.	Value.
Russia on the Black Sea	....	....	....	....	54	$80
Asiatic Russia	4,799	$5,181	....	....	....	....
Russian Possessions in North America	8,013	2,260	....	....	....	....
Danish West Indies	12,731	7,360	2,955	$1,048	....	....
Hamburg	8,337	4,929	200	90	....	....
Bremen	630	210	15,087	9,417	....	....
Dutch West Indies	14,815	8,805	....	....	....	....
Dutch Guiana	70	105	....	....	....	....
England	61,061	33,568	6,270	3,135	....	....
Scotland	3,400	1,875	....	....	....	....
Gibraltar	45,302	28,679	42,425	20,740	405	317
Malta	18,000	8,900	109,924	53,024	....	....
Canada	257,034	124,687	....	....	3,230	3,070
Other British North American Possessions	55,701	40,906	163,103	106,766	70,653	51,654
British West Indies	6,895	3,235	17,352	9,705	695	521
British Honduras	9,136	4,724	5,552	4,504	138	138
British Guiana	300	167	....	....	....	....
British Possessions in Africa	5,929	2,570	140,636	72,140	437	255
Other ports in Africa	100,314	37,134	826,668	392,373	....	....
British Australia	21,043	14,991	9,452	6,819	2,200	1,940
British East Indies	5,040	2,191	....	....	897	500
France on the Atlantic	830,566	521,013	108,458	74,350	....	....
France on the Mediterranean	368,008	220,809	157,895	88,752	16,918	13,348
French North American Possessions	1,863	706	50,107	24,415	6,213	2,813
French West Indies	....	....	8,031	3,955	....	....
Spain on the Atlantic	....	....	....	....	1,840	910
Canary Islands	....	....	800	350	....	....
Cuba	5,558	2,850	300	154	146	141
Porto Rico	13,948	7,780	....	....	1,905	845
Portugal	40,315	25,428	....	....	....	....
Madeira	....	....	4,201	1,995	....	....
Cape de Verd Islands	140	197	27,185	12,162	....	....
Sardinia	2,360	1,781	40,761	25,394	....	....
Two Sicilies	1,310	1,087	5,647	3,237	....	....
Austria	....	....	55,443	17,757	....	....
Turkey in Europe	220	400	323,824	146,832	8,188	5,544
Turkey in Asia	410	170	283,752	110,177	17,901	10,263
Hayti	2,171	1,042	1,687	865	46	34
Mexico	8,414	4,814	....	....	....	....
Central Republic	8,433	2,909	....	....	....	....
New Granada	34,889	18,349	5,283	2,688	2,067	953
Venezuela	8,549	4,770	....	....	....	....
Brazil	9,150	4,544	....	....	....	....
Uruguay, or Cisplatine Republic	90,119	43,396	27,481	11,648	....	....
Argentine Republic	63,917	32,176	6,156	3,750	13,960	10,666
Chili	9,982	4,496	2,544	1,271	18,085	13,759
Peru	5,324	2,164	1,251	563	....	....
Ecuador	433	177	....	....	300	277
Sandwich Islands	3,060	3,067	80	50	2,228	2,002
Other islands in the Pacific	636	537	....	....	....	....
China	20,565	11,185	....	....	....	....
Total	2,167,924	$1,248,234	2,378,603	$1,216,685	169,226	$120,011

IMPORTS OF SPIRITS INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whence imported.	Brandy.		From Grain.		From other Materials.		Cordials	
	Gallons.	Value.	Gallons.	Value.	Gallons.	Value.	Gallons.	Value.
Sweden and Norway	....	....	....	....	....	....	10	$15
Danish West Indies	100	$92	....	....	282,309	$128,778	113	114
Hamburg	1,684	2,276	23,012	$11,604	....	....	3,004	3,518
Bremen	571	449	454	338	14	28	1,074	1,089
Holland	2,738	2,838	1,605,991	818,382	3,200	1,749	3,971	3,827
Dutch West Indies	....	....	....	....	4,464	3,462	92	96
Dutch Guiana	....	....	....	....	2,954	1,445	....	....
Dutch East Indies	....	....	313	98	....	....	....	....
Belgium	2,663	3,011	3,808	1,925	217	113	1,171	1,172
England	18,069	82,123	93,548	78,330	6,595	6,641	1,121	1,366
Scotland	17,699	33,481	199,866	184,189	709	816	....	....
Ireland	....	....	1,102	1,221	....	....	....	....
Canada	5,040	9,161	1,318	665	5	8	7	13
Other British N. American Poss.	45	46	262	159	2,487	1,925	....	....
British West Indies	727	1,162	1,792	563	117,995	63,533	55	59
British Honduras	....	....	....	....	148	41	....	....
British Guiana	....	....	....	....	1,158	350	....	....
British East Indies	15	26	....	....	....	....	....	....
France on the Atlantic	1,455,190	2,432,112	54,470	26,140	249	267	42,161	61,209
France on the Mediterranean	1,825	2,393	....	....	....	....	6,609	10,676
Spain on the Atlantic	....	....	....	....	....	....	270	569
Spain on the Mediterranean	5,907	7,251	....	....	....	....	5,337	3,447
Canary Islands	....	....	....	....	6	2	....	....
Cuba	237	328	6	7	12,898	5,507	636	434
Porto Rico	....	....	....	....	8,235	4,080	....	....
Sardinia	....	....	....	....	....	....	265	342
Tuscany	....	....	....	....	....	....	13	12
Papal States	....	....	....	....	....	....	404	548
Two Sicilies	28	5	....	....	98	20	30	34
Austria	....	....	....	....	....	....	798	781
Hayti	....	....	....	....	240	74	....	....
Mexico	....	....	317	212	....	....	....	....
New Granada	800	508	....	....	....	....	....	....
Venezuela	....	....	....	....	43	30	61	52
Brazil	....	....	....	....	71	28	....	....
Peru	....	....	....	....	....	....	52	47
Sandwich Islands	....	....	1,448	1,002	....	....	....	....
China	....	....	300	339	....	....	30	26
Total	1,513,328	$2,527,262	1,988,037	$1,125,160	443,495	$218,907	67,374	$92,396

TABLE SHOWING THE TOTAL NUMBER OF GALLONS OF PROOF-SPIRIT DISTILLED IN ENGLAND, SCOTLAND, AND IRELAND RESPECTIVELY, DURING THE YEAR ENDING 5TH JANUARY, 1854.

	From Malt only	From a Mixture of		Total.
		Malt with unmalted Grain.	Sugar or Molasses with unmalted Grain.	
	Gallons.	Gallons.	Gallons.	Gallons.
Eng. and	....	6,319,660	989,010	7,308,670
Scotland	5,330,744	4,113,581	915,681	10,359,926
Ireland	9,726	8,759,230	4,005	8,772,961
United Kingdom.	5,340,440	19,192,471	1,908,646	26,441,557

—*See* WINE.

Spithead, a celebrated roadstead, off the south coast of England, county of Hants, between Portsea island and the Isle of Wight. It communicates westward with the Solent and Southampton Water. It is so secure from all winds except the southeast, as to have been termed by sailors "the king's bedchamber," and it is a principal rendezvous of the British navy. Portsmouth and Ryde are on its opposite sides.

Splicing, among seamen, to join the two ends of a rope together, or to unite the end of a rope to any part thereof, by interweaving the strands in a regular manner. There are several methods of splicing, according to the services for which it is intended; all of which are distinguished by particular epithets. The term is also used in architecture.

Splinters, the pieces of a ship's side, masts, decks, etc., which, being knocked off by a shot, acquire great velocity, and frequently do more damage among the men than the shot itself.

Splinter-netting, sennit made into webs, and nailed upon the inner parts of a ship's sides, to lessen the effect of the splinters.

Sponge (Ger. *Schwamm;* Fr. *Eponge;* It. *Spugna;* Sp. *Esponja*), a soft, light, very porous, and compressible substance, readily imbibing water, and as readily giving it out again. It is found adhering to rocks, particularly in the Mediterranean Sea, about the islands of the Archipelago. It was formerly supposed to be a vegetable production, but is now classed among the zoophytes; and analyzed, it yields the same principles as animal substances in general. The inhabitants in several of the Greek islands have been trained from their infancy to dive for sponges. They adhere firmly to the bottom, and are not detached without a good deal of trouble. The extraordinary clearness of the water facilitates the operations of the divers. Smyrna is the great market for sponge. The price varies from 6 to 16 piastres per oke for ordinary and dirty, and from 80 to 100 piastres per oke for fine and picked specimens. Sponge is also fished for in the Red Sea.—URE'S *Dictionary;* SAVARY'S *Letters on Greece.* About 20 miles southeast from Napoli di Romania (Nauplia), in the gulf of that name, is the small town of Cranidi, the inhabitants of which are the principal sponge-fishers of the Archipelago and Levant. The fishery is carried on partly by spearing, and partly by diving; the latter securing the sponge free from injury, which is not the case with the former. The Cranidiots are most expert divers, and anecdotes approaching to the marvelous are told of their feats. After the sponge is fished up, when perfectly free from sand, and dry, it is so very light that large pieces of it are moved with the slightest breath of air. It is customary, however, to impregnate it with sand. This is done by stringing the sponges together, and laying them on the sand to allow the ripple of the sea to slush them with the finest particles. They are then placed in heaps under piles of stones which press them closely together, so that they become when dry hard and flat, and have to be beaten and sifted. But though this be done, and though they are sometimes further washed and sifted, they will, though apparently quite clean, weigh three or four times their original weight! It is, perhaps, needless to add that they are always sold by weight. The sponges found on the Florida coast are very good, and if the fishery was more extensively prosecuted would furnish us with our consumption.

Squill (Ger. *Meerzwiebel;* Fr. *Scille, Oignon marin;* It. *Scilla, Cipolla marina;* Sp. *Cebolla albarranna*), or, as it is sometimes denominated, the *Sea onion,* is a plant with a large bulbous root, which is the only part that is used. It grows spontaneously on sandy shores in Spain and the Levant; whence we are annually supplied with the roots. They should be chosen large, plump, fresh, and full of a clammy juice: some are of a reddish color, and others white; but no difference is observed in the qualities of the two sorts. The root is very nauseous, intensely bitter, and acrimonious; much handled, it ulcerates the skin. The bulbs are brought to market preserved fresh in sand. The acrimony of the roots, on which their virtue depends, is partially destroyed by drying and long keeping, and is completely destroyed by exposure to heat above 212°. Squill is one of the most powerful and useful remedies in the materia medica.—LEWIS'S *Materia Med.;* THOMSON'S *Dispensatory.*

Stade, a small city of Hanover, on the Schwinge, 22 miles west by north of Hamburg, lat. 53° 36′ 32″ N., long. 9° 28′ 34″ E. It has very little trade; and would be quite unworthy of notice in a work of this sort, except for the circumstance that a toll or duty, charged by the Hanoverian government on goods conveyed up the Elbe to Hamburg, whether for consumption or transit, used to be charged at the castle of Brunshausen, contiguous to this town. All vessels bound for Hamburg had to heave to (and those of some countries to anchor) in passing the guard-ship opposite to the castle, and send their papers, including manifests, bills of lading, cockets, etc., on shore, that the duty, which was in general about ¼ per cent. *ad valorem,* might be computed from them. This being done, the ship was allowed to proceed, and the duty was paid at Hamburg.—*See* ELBE. It is remarkable that an obstruction of this sort should have been tolerated for so long a period. The duties fell heavily on certain descriptions of goods, particularly on some manufactured articles; and were, at an average, decidedly higher than the duties charged in Hamburg. They are most objectionable, however, from their requiring many troublesome regulations to be complied with; the unintentional deviation from any one of which exposes the cargo to confiscation, and never fails to occasion a great deal of delay, trouble, and expense. As the principal part of the foreign trade of the Elbe is in our hands, we are, of course, principally affected by the Stade toll; and considering the source of the nuisance, it is not a little astonishing it should not have been abated long ago. The sum which the Hanoverian government derived from the duties is but trifling compared with the injury they inflicted on trade; it would, consequently, be good policy for the former to sell, and for the government to buy, an exemption from so vexatious a duty; and few things would do more to extend our trade with Hamburg than the completion of an arrangement of this sort. By an order from the Hanoverian government this duty has been abolished, and vessels are permitted to navigate the Elbe paying ordinary port dues.

Stained Glass. When certain metallic oxyds or chlorids, ground up with proper fluxes, are painted upon glass, their colors fuse into its surface at a moderate heat, and make durable pictures, which are frequently employed in ornamenting the windows of churches as well as of other public and private buildings. The colors of stained glass are all transparent, and are therefore to be viewed only by transmitted light. Many metallic pigments, which afford a fine effect when applied cold on canvas or paper, are so changed by vitreous fusion as to be quite inapplicable to painting in stained glass.—*See* GLASS.

Stamps, Stamp Acts. Stamps are impres-

sions made upon paper or parchment by the government or its officers for the purpose of revenue. They always denote the price of the particular stamp, or, in other words, the tax levied upon a particular instrument stamped, and sometimes they denote the nature of the instrument itself. If the instrument is written upon paper, the stamp is impressed in relief upon the paper itself; but to a parchment instrument the stamp is attached by paste and a small piece of lead, which itself forms part of the impression. These stamps are easily forged, and at various times forgeries of them upon a large scale have been discovered. The Stamp Act was one of the main causes of the American Revolution. In England all commercial paper must be stamped to give it validity. The State of Maryland passed a Stamp Act in 1845 as a source of revenue. By this act bills of exchange, promissory notes, bonds, mortgages, and lottery tickets, were to be stamped. The ordinary annual revenue of the State was from $70,000 to $80,000. The act was repealed in 1856, by the present British Stamp Act, the charges on bills of exchange, and notes, drafts, etc., ranging from 1d. to £2 5s.; on foreign bills, from 1 penny to 10s.; on wills, from 10s. to £270 or more.

Staple, "anciently written *estaple*, cometh," says Lork Coke, "of the French word *estape*, which signifies a mart or market." It appears to have been used to indicate those marts both in Great Britain and at Bruges, Antwerp, Calais, etc., on the continent, where the principal products of a country were sold. Probably, in the first instance, these were held at such places as possessed some convenience of situation for the purpose. Afterward they appear to have been confirmed, or others appointed for the purpose by the authorities of the country. All merchandise sold for the purpose of exportation was compelled either to be sold at the "staple," or afterward brought there before exportation. This was done with the double view of accommodating the foreign merchants and also enabling the duties on exportation to be more conveniently and certainly collected. Afterward the word staple was applied to the merchandise itself which was sold at the staple.—Bouvier's *Cyclopedia*.

Starch (Ger. *Amidam*; Fr. *Amidon*; It. *Amodi, Amito*; Sp. *Amidon, Almidon*; Russ. *Kruchmal*), a substance obtained from vegetables. It has a fine white color, and is usually concreted in longish masses; it has scarcely any smell, and very little taste. When kept dry, it continues for a long time uninjured, though exposed to the air. It is insoluble in cold water; but combines with boiling water—forming with it a kind of jelly. It exists chiefly in the white and brittle parts of vegetables, particularly in tuberose roots, and the seeds of the gramineous plants. It may be extracted by pounding these parts, and agitating them in cold water, when the *parenchyma* or fibrous parts will first subside; and these being removed, a fine white powder, diffused through the water, will gradually subside, which is the starch. Or the pounded or grated substance, as the roots of potatoes, acorns, or horse chestnuts, for instance, may be put into a hair sieve, and the starch washed through with cold water, leaving the grosser matters behind. Farinaceous seeds may be ground and treated in a similar manner. Oily seeds require to have the oil expressed from them before the farina is extracted.—Thomson's *Chem.*

Imports of Starch into the United States for the Year ending June 30, 1857.

Whence Imported.	Pounds.	Value.
Bremen	477	$34
Holland	44,375	1611
England	14,655	1009
Scotland	51,484	3494
Cuba	1,891	136
Mexico	3,151	233
China	1,570	47
France and Canada	590	28
Total	118,813	$6596

Stay, a strong rope from the mast head, leading forward to support it from falling aft. It takes the name of the mast, as the fore-stay, main-topmast stay, etc. *To stay*, means to tack. To be *in stays*, is to be in the act of tacking. To *miss stays*, signifies to fail in attempting to tack.

Steam Navigation. The statistics in regard to the steam navigation of the maritime nations of the world will be found under the heads of those countries. This article, therefore, will be limited, and be comprised under the following heads: I. Invention of the Steam-engine. II. Introduction and Statistics of Ocean Steam Navigation.

I. *Invention of the Steam-engine.*—The steam-engine is the most important power that the ingenuity of man has yet devised. The first idea of it was suggested by the Marquis of Worcester, in his Century of Inventions, as "a way to drive up water by fire." It does not, however, appear that this inventor ever derived any benefit or could interest the public in favor of his discovery. The following list includes the chronology of the most important inventions and improvements of the steam-engine.

	A.D.
Papin's digester invented	1681
Capts. Savery's engine constructed for raising water	1698
Papin's engine exhibited to the British Royal Society	1699
Atmospheric engine by Savery and Newcomen	1713
First idea of steam navigation set forth in a patent obtained by Hull	1736
Watt's invention of condensation steam	1765
Watt's first patent	1769
Watt's engines built on a large scale, and his patent renewed by Parliament	1775
Thomas Paine proposed the application of steam in the United States	1778
Engine made to give a rotary	1778
Watt's expansion engine	1778
Double acting engines proposed by Dr. Flock	1779
Watt's double engine constructed and patented	1781
Marquess Jouffroy constructed an engine on the Saone	1781
Fitch's experiments in steam navigation on the Delaware	1782–84
Oliver Evans's experiments	1785–86
Ramsey experiments in Virginia	1787
W. Symington made a passage on the Clyde Canal	1789
Chancellor Livingston built a steamer on the Hudson	1797
First experiment on the Thames	1801
Trevethrick's high pressure locomotive engine (see Railroads) first used	1802
Oliver Evans's experiments in locomotive engines in Pennsylvania	1804
Manufactories warmed by steam	1806
Fulton started a steamboat on the Hudson River, built by himself, named *The Clermont*; engine by Boulton and Watt; passage to Albany in thirty-six hours. First Record of practical Steam Navigation in the World	1807
The steamboats next in order in the world were, *The Car of Neptune*, New York	1808
The Paragon "	1811
The Richmond "	1812
Steam power first used on railroads by Blenkinsop	1811
Steam vessels commenced plying on the Clyde (First in Europe)	1812
Five steam vessels in Scotland	1813
Steam used in printing London *Times*	1814
First steam vessel on the Thames, brought from Glasgow	1815
First steamer *built* in England	1815
Steamer *Savannah*, of 350 tons, made the first ocean voyage from New York to Liverpool, in twenty-two days	1819
First steamer in Ireland	1820
Captain Johnson obtained £10,000 for making the first steam voyage to India in the *Enterprise*, which sailed from Falmouth August 16	1825
Locomotive steam-carriages on railways at Liverpool, October	1829
Locomotives first used in the United States on the Mohawk and Hudson Railroad	1831
On the Baltimore and Ohio Railroad	1832
The *Great Western* arrived from Bristol at New York, and the *Sirius* from Cork, Ireland, being their first voyages	1838
First steamer on the Cunard Line arrived at Boston, fourteen days eight hours, July 18	1840

—*See* Haydn's *Dictionary of Dates*; *see* Fulton.

II. *Introduction and Statistics of Ocean Steam Navigation.*—The first steamer that ever crossed the Atlantic was the *Savannah*, Captain Moses Rogers—a vessel that was built in New York, in 1818, by Fitchet & Crocket. The engine was built by Stephen Vail and Daniel Dod,

of New Jersey. It was a paddle-wheel steamer, of 350 tons burden and 90 horse power, and sailed from New York March 29, 1819, to Savannah, Georgia, where she was owned. She next went to Charleston to take the President, James Monroe, to Savannah, and from there, on the 25th of May, 1819, started for Liverpool, where she arrived safely in 22 days. She was a full-rigged ship, a fast sailer; had steam up fourteen days of the voyage, and by steam alone could make eight knots an hour. Steamboats coming into general use on rivers, lakes, and coasting voyages soon after, it seems a little singular that no further attempts were made for nineteen years to cross the ocean by steam. The success of this successful voyage seems to have been overlooked; the great philosopher, Dionysius Lardner, having proved—to his own satisfaction, at least—that steam vessels never could cross the Atlantic!

Finally, in Bristol, England—the very port that sent out John and Sebastian Cabot to make the first actual discovery of this continent—a line of steamers was projected, and the first vessel, the *Sirius*, arrived in New York on the 23d of April, 1838. The New York papers of that date say, "Myriads of persons crowded the Battery to have a glimpse of the first steam vessel which had crossed the Atlantic from the British Isles, and arrived safely in port." The London *Times* had spoken of the project doubtfully. "There is really no mistake," said the *Times*, "in this long-talked-of project of navigating the Atlantic Ocean by steam. There is no doubt of an intention to make the attempt, and to give the experiment, as such, a fair trial. The *Sirius* is absolutely getting under weigh for America." Now, after a lapse of 20 years, there are 15 lines of steamers, numbering 46 ships, trading between this country and Europe; and 37 of these steamers run out of New York. The earliest vessels—the *Sirius*, the *Great Western*, *Royal William*, *City of Liverpool*, *British Queen*, and the *President*—were none of them long in the trade. The line established by the enterprising Samuel Cunard, and to this day bearing his name, was started in 1840, and was the first permanently successful line of transatlantic steamers ever set afloat. The first Cunard steamer (the *Britannia*) arrived at Boston July 18, 1840.

Of the transatlantic steamers eight have been lost. The *President*, the *City of Glasgow*, and the *Pacific* sailed, and, with all on board, "were never heard of more." The *Arctic* was sunk in a collision with the French steamer *Vesta*, on the banks of Newfoundland, and but few lives were saved. The *Columbia*, the *Humboldt*, the *Franklin*, and the *City of Philadelphia* were all wrecked, but no lives were lost. Since the *Sirius* sailed from England to New York, in 1838, not far from 500,000 persons have crossed the Atlantic by steam—reckoning both passengers and crews, and the voyages both ways—and of this number about 1200 have been lost. This, in the doctrine of chances, is about one-third of 1 per cent., or one voyage in 300. With greater care, with the lessons of experience, and the aid of practical science, the percentage of loss will in future undoubtedly be far less.

In comparing the screw with paddle-wheel steamers, the latter have always been considered the swiftest vessels, and have generally made the best time. Screw steamers have many advantages over those with paddle-wheels. As war vessels they are more secure, the propelling power, as well as the most of the machinery, being below the water-line, and out of the reach of shot. The engine and machinery are less expensive, take less fuel, occupy far less space, and consequently afford more room for passengers and freight. They are not usually as rapid, nor are they as great favorites with the traveling public as paddle-wheel steamers. The motion of screw steamers is more unpleasant than those with paddle-wheels; there being nothing on the sides to balance and "trim" them, they have a lurching, rolling motion.

The ordinary time made by the Cunard and Collins paddle-wheel steamers between Liverpool and New York has been from 9 to 12 days. The monster steamer *Himalaya*—a British screw steamer of over 5000 tons burden—was sent under steam from Halifax to Southampton in about 9 days. Three other screw vessels—the *Emeu*, *Lebanon*, and *Alps*—steamed from Havre New York, respectively, in 11 days 17 hours, 13 21 hours, and 13 days 12 hours. These passages not far behind the usual speed of paddle-wheel steamers.

The following is the record of the various lines transatlantic steamers, and the average time going both east and west, during the year 1856. can not be taken as positive proof of the comparative speed of the different lines, for sometimes or two unfortunate trips will greatly increase the general average. The Boston branch of the Cunard longer voyages than the New York line, in consequence of the delay occasioned by putting into Halifax.

		Eastern Passages.		Western Passages.	
		Days.	Hrs.	Days.	Hrs.
Collins	Paddle-wheel,	12	03	12	16
Cunard, New York	"	11	03	11	22
Cunard, Boston	"	11	12	13	07
Bremen	"	14	12	15	00
Old Havre	"	13	16	14	18
Havre (Vanderbilt)	"	13	00	13	00
Havre (French)	Screw,	15	00	17	00
Glasgow	"	13	08	15	12
Hamburg	"	16	00	15	12

—PLINY MILES'S *Report on Ocean Steam Navigation*.

Great Britain.—To exhibit the extent of the employment of steam vessels in the British trade to the Mediterranean, India, and China, we give a summary of the steamers owned by the Peninsular and Oriental Company:

	Screw.	Paddle-wheel.	Total.
Number	21	19	40
Tonnage	30,622	22,715	53,737

The following tabular statement gives a full exhibit of the ocean mail service of Great Britain, now carried on almost exclusively by steamships:

Lines.	Number of Steamers.	Horse Power.	Tonnage.	Number of Men.	Service commenced.	How often	Annual Compensation.
Liverpool and Isle of Man	4	790	2,083	91	1833	2 a week	$4,250
England and Ireland	4	1,284	2,408	115	1850	2 a day	125,000
Scotland and Shetland	2	300	850	42	1840	1 a week	6,000
England, Spain, and Gibraltar	4	973	2,782	200	1852	3 a month	102,500
Mediterranean, India, and China	35	12,850	46,653	2577	1853	2 a month	1,121,500
England and the United States	9	6,418	18,400	922	1850	1 a week	866,700
North America (Colonial)	2	500	1,151	66	1854	1 a month	73,500
West Indies, Mexico, and South America	20	6,308	29,454	1667	1851	3 a month	1,350,000
England, France, and Belgium	6	640	1,765	96	1854	1 a day	77,500
Channel Islands	5	797	1,852	107	1848	3 a week	20,000
West Coast of South America	7	2,396	5,719	378	1852	2 a month	125,000
Scotland and Orkney	1	60	250	16	1856	1 a day	6,500
West Coast of Africa	7	850	5,051	320	1852	1 a month	106,250
South America, Mauritius, and Calcutta	5	2,000	8,000	575	1856	1 a month	205,000
England and Australia	7	3,290	13,410	671	1857	1 a month	925,000
Total	121	42,251	140,139	8137	....	....	$5,114,700*

* There are some lines not here noticed, which swell the sum to $5,333,985.

1. The mail routes from Great Britain to Australia are shown as follows:

The route from Great Britain to her Australian colonies, via the Cape of Good Hope, includes the following distances and lengths of passage:

	Miles.	Days.
Southampton to the Cape	6,100	30
Cape to Adelaide	6,100	28
Adelaide to Sydney	1,080	6
Sydney to New Zealand	1,200	6
Total	15,080	69

2. The Suez and Singapore route is made up as follows:

	Miles.
Southampton to Gibraltar	1,150
Gibraltar to Alexandria	1,890
Alexandria to Ceylon	3,150
Ceylon to Singapore	1,700
Singapore to Sydney	4,800
Sydney to New Zealand	1,200
Total	14,490

3. The distances by way of Panama are:

	Miles.
Southampton to St. Thomas	3,020
St. Thomas to Panama	1,100
Panama to Tahiti	4,490
Tahiti to New Zealand	2,290
New Zealand to Sydney	1,200
Total	12,600

The comparative distances show a decided advantage by the Panama route, and prove that the course of trade from Great Britain to her colonies must eventually tend that way.

The ocean mail steamers of Great Britain run 2,532,231 miles per year, at a total cost to the Admiralty of £1,062,797, or $5,333,985. The ocean mail steamers of the United States run 735,792 miles per year, at a total charge on the Post-office Department of $1,329,733. The British steamers run three and a half times as many miles as ours do, and receive for it a sum more than four times as large. The average price paid to their principal companies, as the West India Royal Mail, the Cunard, the Australian, and the Peninsular and Oriental, including its Mediterranean coasting service, is 9*s.* 7*d.*, or $2 39 per mile; while the average price paid by us, or for the Collins, Havre, Bremen, Aspinwall, and Panama, San Francisco and Oregon, is $1 80½ per mile. The highest sum paid per mile by the British government is 11*s.* 4½*d.*, or $2 83½, to the Cunard Company, $2 75 to the Australian, and $2 46 to the West India; and the lowest, 6*s.* 1½*d.*, or $1 53½ to the Peninsular and Oriental, much of whose service is coasting. This is saying nothing of the Pacific and the African coasting lines. The highest sum which we pay is to the Collins line, $4 10½ per mile; and the lowest to the Havre, $1 00½ per mile; while the sums paid to all of the other companies range but little above the last figures. The lowest rate per mile paid to any of the lines under the contract was to the Pacific Mail, $1 70. It must not be forgotten that the low rates per mile of the Havre and Bremen result from those lines taking the postages since their contracts expired—a sum by no means adjusted to the service done. They had ships that they could not let lie idle. Under their regular contracts the pay per mile of the Bremen line was $2 08, and of the Havre $1 76½. While the British government pays to four of her principal transmarine services an average of $2 83 per mile, we pay to five of ours an average of $1 80½ only, or but about two-thirds as much as she does. While our total annual expenditure for foreign mails is $1,329,733, a sum by $20,267 less than that paid to the single service of the West India Royal Mail Company, that of Great Britain is $5,333,985. And while our total income from transmarine postages is $1,035,740, a sum but little short of that paid in subsidy, taking the present Bremen and Havre services at the estimates of last year for sea and inland postages combined, the income from the whole transmarine service of Great Britain, including ocean and inland postage, was, when the last report was made in 1853, £551,573, or $2,957,865; but little above half the sum paid in subsidy, and including the French, Belgian, and Dutch routes, where the postal yield was much greater than from the ocean lines. The estimates which we present below have been made with great care from distances and subsidies furnished us by the reliable First Assistant Postmaster-general, Hon. Horatio King, from the last report of the late Postmaster-general, and from the report of the British Postmaster-general, Lord Canning, before noticed. Every item is consequently authentic.

American Mail Steamers.

Lines.	Trips.	Distances.	Subsidy.	Gross Postage.	Total Miles.	Pay per Mile.
Collins	20	3,100	$385,000	$415,867	124,000	$3 10½
Bremen	13	3,700	128,937	128,937	96,000	1 34
Havre	13	3,270	88,484	88,484	85,020	1 00½
Aspinwall	24	3,900	290,000	139,616	153,600	1 88½
Pacific	24	4,200	348,250	183,238	201,600	1 70
Havana	24	660	60,000	6,183	32,112	1 86½
Vera Cruz	24	900	29,062	5,900	43,200	67
Total	..	....	$1,329,733	$1,035,740	725,732	$1 80½ average.

Total average per mile, $1 80½. Average of five principal lines, $1 80½.

British Mail Steamers.

Lines.	Trips.	Distances.	Subsidy.	Gross Postage.	Total Miles.	Pay per Mile
Cunard	52	3,120	£173,340	£148,667 10*s.*	304,000	11*s.* 4½*d.* $2 83½
Royal Mail	24	11,402	270,000	106,905	547,296	9*s.* 10*d.* $2 46
Peninsular and Oriental	24 *	....	244,000	178,186 11	796,057	6*s.* 1½*d.* $1 53½
Australian	12	14,000	185,000	53,281 19	336,000	11*s.* $2 75
Bermuda and St. Thomas	24	2,042	14,700	....	48,000	5*s.* $0 75
Panama and Valparaiso	24	2,719	25,000	5,715	130,434	3*s.* 10*d.* $0 96
West Coast Africa	12	6,245	23,250	3,196 2	149,880	2*s.* 6*d.* $0 62½
				French, Belgian, and Dutch postage.		
Channel Islands	156	132	....	74,430 8	41,184	.....
Holyhead and Kingston	730	64	....	36,153 9	93,440	.....
Liverpool and Isle of Man	112	70	....	10,032 15	14,550	.....
Shetland and Orkneys	52	200	....	....	20,800	.....
Total	..	....	£1,002,797	£551,573 7*s.*	2,532,231	9*s.* 7*d.* $2 39

Total average per mile, $2 10½. Average of four principal lines, $2 39.

* The Peninsular and Oriental Company run twice per month between Southampton and Alexandria, and between Suez and Calcutta and Hong Kong; twice per month between Marseilles and Malta; between Singapore and Sydney every two months; and three times per month between Southampton and Gibraltar, touching at Vigo, Oporto, Lisbon, and Cadiz.

It would hardly be expected that the lines of this country should run at cheaper rates than those of Great Britain, as the prime cost of ships and their repairs, fuel, wages, insurance, etc., are much cheaper there, and as they have more paying freights, in their manufactured goods. It only explains to us, what has al-

ways seemed a mystery, that while the regular companies in England were making money, nearly all of those in the United States not only had not made money, but were embarrassed more or less, and were selling their stock at 60 to 80 cents on the dollar.

The history of commercial nations admonishes us that no trading people can long maintain their ascendency without using all of the most approved means of the age for prosecuting trade. Portugal was at one time the most powerful commercial nation of the globe; and at another Holland was the mistress of the seas. But while the latter is now only a fourth-rate commercial power, the former has sunk into obscurity, and is nearly forgotten of men. At that time England and France had but a limited foreign trade, and scarcely any commercial reputation. France could more easily maintain her existence without a foreign trade than could England; and yet her matured manufactures and her products of the soil became so valuable that she sought a foreign market. England, on the contrary, had not territory enough to remain at home and yet be a great power. She matured an immense manufacturing system, and needed a market, as well as the raw material, and food for her operatives. She began to stretch her arms to the outer world, and had made very considerable strides in foreign commerce side by side with France and the German States, and in the face of the steady young opposition of the American States.

It is interesting to trace this rapid progress of steam since its first application to purposes of mail transport in 1833. An intelligent writer says, "The rise and progress of the ocean steam mail service of Great Britain is second in interest to no chapter in the maritime history of the world;" and while we acknowledge a grateful pride in the triumphs of our transatlantic brethren, we must blush with shame at our dereliction in this great, and civilizing, and enriching service of modern times. The steam marine of the United States, postal, mercantile, and naval, is to-day so insignificant in extent that we do not feel entirely certain that it is a sufficient nucleus for the growth of a respectable maritime power. The few ships that we possess are among the fleetest and the most comfortable that traverse the ocean, and have excited the admiration of the world wherever they have been seen. But their number is so small, their service so limited, their field of operation so contracted, that our large commerce and travel are dependent, in most parts of the world, on British steam mail lines for correspondence and transport, or on the slow, irregular, and uncertain communications of sailing vessels. The question here naturally suggests itself: Have we progressed in ocean steam navigation in a ratio commensurate with the improvements of the age, or of our own improvement in every thing else? And has the government of the country afforded to the people the facilities of enterprise and commercial competition which are clearly necessary to enable them to enter the contest on equal terms with other commercial countries?

List of American Ocean Steamers.—The mail service has eight lines, and 21 steamers in commission, of 48,027 registered tonnage. Much of this tonnage belongs to supply-ships, as for instance those of the Pacific Mail Steamship Company.

Collins Line.—Three steamers, 9727 tons: *Adriatic*, 4144 tons; *Atlantic*, 2849 tons; *Baltic*, 2733 tons.

Havre Line.—Two steamers, 4518 tons: *Arago*, 2240 tons; *Fulton*, 2808 tons.

Vanderbilt Bremen Line.—Three steamers, 6523 tons: *North Star*, 1867 tons; *Ariel*, 1296 tons; *Vanderbilt*, 3360 tons.

United States Mail Steamship Company.—Six steamers, 8544 tons: *Illinois*, 2128 tons; *Empire City*, 1751 tons; *Philadelphia*, 1238 tons; *Granada*, 1058 tons; *Moses Taylor*, 1200 tons; *Star of the West*, chartered, 1172 tons.

Pacific Mail Steamship Company.—Thirteen steamers, 15,421 tons: *Golden Gate*, 2067 tons; *Golden Age*, 2280 tons; *J. L. Stephens*, 2189 tons; *Sonora*, 1610 tons; *St. Louis*, 1691 tons; *Panama*, 1067 tons; *California*, 1085 tons; *Oregon*, 1069 tons; *Columbia*, 777 tons; *Republic*, 850 tons; *Northerner*, 1010 tons; *Fremont*, 576 tons; *Tokopo*, 189 tons.

Charleston, Savannah, Key West, and Havana.—One steamer; the *Isabel*, 1115 tons.

New Orleans and Mexico.—One steamer; the *Tennessee*, 1149 tons.

The Coasting Service has eight lines, and 23 steamers, of 24,071 tons registered tonnage.

New York, Havana, and New Orleans.—Two: The *Black Warrior*, 1556 tons; *Cahawba*, 1643 tons=3199 tons.

New York, Havana, and Mobile.—One: The *Quaker City*, 1428 tons.

New York and Savannah.—Four: *Alabama*, 1261 tons; *Florida*, 1261 tons; *Augusta*, 1310 tons; *Star of the South* (propeller), 900 tons=4732 tons.

New York and Charleston.—Four: *Columbia*, 1347 tons; *Nashville*, 1220 tons; *James Adger*, 1151 tons; *Marion*, 962 tons=4680 tons.

New York and Virginia.—Two: *Roanoke*, 1071 tons; *Jamestown*, 1300 tons=2371 tons.

Philadelphia and Savannah.—Two: *Keystone State* and *State of Georgia*, each about 1300 tons=2600 tons.

Boston and Baltimore.—Two: *Joseph Whitney*, 800 tons; Unknown, 800 tons=1600 tons.

New Orleans and Texas.—The *Charles Morgan, Texas, Mexico*, and *Atlantic*, averaging 600 tons each=2400 tons.

New Orleans and Key West.—The *General Rusk*, 600 tons, and the *Calhoun*, 400 tons=1000 tons.

There are also several propellers running: between New York and Charleston, New York and Portland, and between Philadelphia and the South. They are all, however, small, and irregular in their trade.

Steamers lying up, 18. Registered tonnage, 24,845 tons.

Queen of the Pacific	2801	tons.
Washington	1640	"
Prometheus	1207	"
St. Louis	1621	"
Brother Jonathan	1359	"
Oregon	1004	"
Southerner	900	"
Herman	1734	"
Northern Light	1747	"
Uncle Sam	1438	"
California	1058	"
Northerner	1012	"
Ericsson	1002	"
Star of the West	1172	"
Daniel Webster	1085	"
Orizaba	1450	"
Panama	1087	"
Fremont	576	"

—RAINEY's *Ocean Post.*

The number of transatlantic steamers, the lines running to different ports, and the tonnage, are as follows:

STEAMSHIP LINES RUNNING TO NEW YORK.

Lines.		No. of Vessels.	Tonnage.
Collins Line, Liverpool (paddle-wheel),	American	3	9,127
Cunard Line, Liverpool "	British ..	4	10,360
Scotch Line, Glasgow (screw),	..	3	6,612
Irish Line, Cork "	..	2	2,600
Cunard Line, Havre "	..	5	11,800
French Line, Havre "	French ..	3	4,500
Old Havre Line, Havre (paddle-wheel),	American	3	7,200
Vanderbilt Line, Havre "	"	3	7,600
Independent Line, Havre "	"	1	1,800
Belgian Line, Antwerp (screw)	Belgian .	5	12,500
Bremen Line, Bremen (paddle-wheel),	American	2	4,000
Hamburg Line, Hamburg (screw),	Germen .	2	2,400
Total, running to New York, 12 lines.....		36	81,189
LIVERPOOL AND BOSTON STEAMERS.			
Cunard Line, Liverpool (paddle-wheel),	British ..	4	8,100
LIVERPOOL AND PHILADELPHIA STEAMERS.			
Philadelphia Line, Liverpool (screw),	British....	3	6,856
LIVERPOOL AND PORTLAND STEAMERS.			
Portland Line, Liverpool (screw),	British	2	3,000
Total, besides New York, 3 lines.....		9	17,956
Grand total, 15 lines.....		45	99,145

Here we have an aggregate of 15 steamship lines, comprising 45 steamers of 99,145 tons burden. Of these lines seven are British, five American, one German, one French, and one Belgian. Eight lines (23 steamers) are screw propellers; and seven (28 steamers) are paddle-wheel.—PLINY MILES's *Ocean Steam Navigation.*

STATEMENT EXHIBITING THE NUMBER OF AMERICAN AND FRENCH STEAM AND SAILING VESSELS ENGAGED IN TRADE BETWEEN THE UNITED STATES AND FRANCE, AND VICE VERSA; ALSO THE NUMBER OF 200 HORSE-POWER AND UPWARD, TONNAGE, CREWS, AND THE AGGREGATE ENTERED AND CLEARED AT THE PORTS OF BOSTON, NEW YORK, AND NEW ORLEANS, DURING THE FISCAL YEAR ENDING JUNE 30, 1857.

Nationality.	Ports.	Steam Vessels. Number of Vessels.	Tonnage.	Number of Crew Men.	200 Horse-power and upward.	Sailing Vessels. Number of Vessels.	Tonnage.	Number of Crew Men.
American	Boston	...	.....	....	..	8	1,899	78
"	New York	*14	†34,092	1472	‡14	71	50,521	1417
"	New Orleans	..	....	....	..	126	96,282	2400
	Total	14	34,092	1472	14	205	148,702	3895
French	Boston	..	....	....	..	1	147	10
"	New York	15	15,168	447	15	25	5,040	288
"	New Orleans	3	2,852	319	3	3	1,170	31
	Total	8	8,020	766	8	29	6,356	329
	American excess	6	25,982	706	6	176	142,806	3561

* But three vessels were engaged in making the fourteen trips: The *Fulton*, six voyages; the *Arago*, six; and the *Vanderbilt*, two.

† Of the above amount but 7967 tons were actually employed; but by repeated trips (see above note), the tonnage was increased to the figure given in the table.

‡ But four vessels engaged, one having made two trips.

§ All far above 200 horse-power.

‖ Of this amount the actual tonnage was 4140, for reasons given in note †.

STATEMENT SHOWING THE STEAM TONNAGE OF THE SEVERAL DISTRICTS OF THE UNITED STATES ON THE 30TH OF JUNE, 1857.

Districts.		Registered.	Enrolled.
Passamaquoddy	Maine.	1,052	1,348
Portland	"	....	1,970
Portsmouth	N. Hampshire.	....	417
Burlington	Vermont.	....	4,401
Boston	Massachusetts.	1,201	7,963
Fall River	"	....	7,386
New Bedford	"	....	1,821
Nantucket	"	....	760
Providence	Rhode Island.	....	2,070
Newport	"	....	255
Middletown	Connecticut.	....	2,397
New Haven	"	....	3,007
Champlain	New York.	....	627
Oswego	"	....	3,715
Genesee	"	....	128
Oswegatchie	"	....	7,837
Buffalo Creek	"	....	42,009
Sag Harbor	"	....	174
New York	"	69,051	111,526
Dunkirk	"	....	3,759
Perth Amboy	New Jersey.	....	8,746
Burlington	"	....	3,169
Camden	"	....	4,493
Newark	"	....	1,778
Philadelphia	Pennsylvania.	....	22,367
Presque Isle	"	....	3,021
Pittsburgh	"	....	41,724
Wilmington	Delaware.	....	1,057
New Castle	"	....	202
Baltimore	Maryland.	....	17,984
Annapolis	"	....	150
Georgetown	Dist. Columb.	....	3,971
Alexandria	Virginia.	....	828
Norfolk	"	....	2,208
Petersburg	"	....	168
Richmond	"	....	1,970
Wheeling	"	....	10,814
Washington	N. Carolina.	....	259
Newbern	"	....	127
Plymouth	"	....	300
Charleston	S. Carolina.	2,218	6,018
Savannah	Georgia.	....	6,784
Pensacola	Florida.	....	376
St. Mark's	"	....	496
Mobile	Alabama.	....	21,098
New Orleans	Louisiana.	526	51,593
Teche	"	....	2,225
Nashville	Tennessee.	....	5,126
Memphis	"	....	6,775
Louisville	Kentucky.	....	25,643
Paducah	"	....	1,634
St. Louis	Missouri.	....	44,543
Chicago	Illinois.	....	7,851
Alton	"	....	155
Galena	"	....	4,563
Sandusky	Ohio.	....	293
Cuyahoga	"	....	15,577
Cincinnati	"	....	33,916
Miami (Toledo)	"	....	115
New Albany	Indiana.	....	4,266
Milwaukie	Wisconsin.	....	1,995
Detroit	Michigan.	....	30,855
Michillimackinac	"	....	1,190
Galveston	Texas.	....	3,230
Saluria	"	....	97
San Francisco	California.	12,858	11,950
Total tonnage, June, 1857		86,873	618,910

STATEMENT SHOWING THE NUMBER OF STEAM VESSELS BUILT IN THE SEVERAL STATES AND TERRITORIES OF THE UNITED STATES FROM 1823 TO 1857, INCLUSIVE.—(YEAR ENDING JUNE 30.)

Years.	Steamers.	Years.	Steamers.
1823	15	1841	78
1824	26	1842	137
1825	35	1843	70
1826	45	1844	163
1827	38	1845	163
1828	33	1846	225
1829	43	1847	198
1830	37	1848	175
1831	34	1849	208
1832	100	1850	179
1833	65	1851	233
1834	68	1852	259
1835	80	1853	271
1836	124	1854	281
1837	135	1855	253
1838	90	1856	221
1839	125	1857	263
1840	64		

From this exhibit it is apparent that, in point of numbers, there has been no increase in the steam-vessels built since the year 1851. If, however, we take into consideration the increased size of the vessels built, or the aggregate tonnage, there has been a healthy increase corresponding to the growth of the country.

STATEMENT SHOWING THE NUMBER OF STEAM VESSELS BUILT IN EACH DISTRICT OF THE UNITED STATES DURING THE YEAR ENDING JUNE 30, 1857.

Districts.	Steamers.	Districts.	Steamers.
Bath ..... Me.	1	Savannah ..... Ga.	1
Boston ..... Mass.	2	Mobile ..... Ala.	1
Providence ..... R. I.	2	New Orleans .... La.	4
Middletown .... Conn.	7	Teche ..... "	1
New London .... "	1	Nashville ..... Tenn.	1
New Haven .... "	1	Memphis ..... "	8
Oswego ..... N. Y.	1	Louisville ..... Ky.	28
Buffalo Creek ... "	23	St. Louis ..... Mo.	10
New York ..... "	21	Cuyahoga ..... Ohio	4
Camden ..... N. J.	1	Sandusky ..... "	1
Philadelphia .... Penn.	14	Cincinnati ..... "	33
Pittsburgh ..... "	68	Toledo ..... "	1
Wilmington .... Dela.	10	Detroit ..... Mich.	10
Baltimore .... Md.	2	San Francisco ... Cal.	3
Wheeling ..... Va.	14	Total	263

From the sixth annual report of the board of supervising inspectors of steamers, made to the Secretary of the Treasury, we glean the following interesting statistics:

During the five years from 1848 to 1852, inclusive, prior to the establishment of the Board of Supervisors, there were 50 steamboat explosions, causing a loss of 1155 lives, and 475 persons wounded. By other disasters during the same period, 416 lives were lost, making a total loss of 1571 lives in the five years. During the four years from 1854 to 1857, inclusive, subsequent to the passage of the steamboat law, there have been seven explosions, and 132 lives lost. By other disasters, collisions, fire, sinking, etc., there have been lost during the same time 214 lives, making a total loss for the five years of 346.

By an examination of these statements we find that for five years prior to the passage of the steamboat act we have accounts of the loss of 1571 lives, and for the five years since said passage the total loss of life on the Western rivers is 346, leaving a difference of 1225 lives.

The total number of steamers inspected during the year in the United States was 1122, with an aggregate tonnage of 464,370 tons. The number of pilots is 2584, and number of engineers 2854. The total number of passengers carried by licensed steamers was 3,610,307.

STATEMENT SHOWING THE TONNAGE EMPLOYED IN STEAM NAVIGATION IN THE UNITED STATES FROM THE YEAR 1823 TO THE YEAR 1857, INCLUSIVE.

Years	Tonnage.	Years.	Tonnage.
1823	24,819	1841	175,048
1824	21,609	1842	229,661
1825	28,061	1843	236,307
1826	34,068	1844	273,179
1827	40,197	1845	326,018
1828	39,6[illegible]	1846	347,893
1829	54,086	1847	404,841
1830	64,471	1848	427,891
1831	34,435	1849	462,304
1832	90,813	1850	525,946
1833	101,840	1851	588,807
1834	122,815	1852	643,240
1835	122,815	1853	514,097
1836	145,553	1854	676,607
1837	154,764	1855	770,265
1838	193,413	1856	673,077
1839	204,038	1857	705,784
1840	201,339		

To show the advantage which steam communication gives to a growing trade, it may be stated that "from 1840 to 1850 the total imports of Great Britain from Brazil made no increase. In 1853 they had advanced 150 per cent. on 1848; and in 1855 they had advanced over 1848—or the average of the ten years noticed—about 300 per cent. This, however, it must be recollected, was in coffee, for re-exportation; a trade which was lost to our merchants and to our shipping. Her total exports to Brazil from 1840 to 1850 were stationary at about two and a half million pounds sterling annually. In 1851—the first year after steam by the Royal Mail Company—they advanced 40 per cent.; and in 1854 they had advanced 102 per cent. on 1850. Thus her exports have doubled in five years, from a stationary point before the establishment of steam mail facilities; whereas ours have been thirteen years in making the same increase. The total trade between Brazil and Great Britain has increased in an unprecedented ratio. The combined British imports and exports up to 1850 averaged £3,645,833 annually; but in 1855 these had reached £8,162,455. Thus *the British trade increased 225 per cent. in five years after the first line of steamers was established to Brazil.*"—*Brazil and the Brazilians.*

The many instances of our dereliction in the establishment of steam mail facilities, and the failure to establish locomotive accommodations for our merchants and other business classes, call loudly for a change in our affairs, and the establishment of a national steam policy in the place of the accidental and irregular support hitherto given to foreign steam enterprise.

The conclusions which Mr. Rainey arrived at in his late work on Ocean Steam Navigation are set forth in a clear summary, which we give as follows:

1. That steam mails upon the ocean control the commerce and diplomacy of the world; that they are essential to our commercial and producing country; that we have not established the ocean mail facilities commensurate with our national ability and the demands of our commerce; and that we to-day are largely dependent on, and tributary to our greatest commercial rival, Great Britain, for the postal facilities which should be purely national, American, and under our own exclusive control.

2. That fast ocean mails are exceedingly desirable for our commerce, our defenses, our diplomacy, the management of our squadrons, our national standing, and that they are demanded by our people at large.

3. That fast steamers alone can furnish rapid transport to the mails; that these steamers can not rely on freights; that sailing vessels will ever carry staple freights at a much lower figure, and sufficiently quickly; that while steam is eminently successful in the coasting trade, it can not possibly be so in the transatlantic freighting business; and that the rapid transit of the mails, and the slower and more deliberate transport of freight, is the law of nature.

4. That high, adequate mail speed is extremely costly, in the prime construction of vessels, their repairs, and their more numerous employes; that the quantity of fuel consumed is enormous, and ruinous to unaided private enterprise; and that this is clearly proven both by theory and indisputable facts, as well as by the concurrent testimony of the ablest writers on ocean steam navigation.

5. That ocean mail steamers can not live on their own receipts; that neither the latest nor the anticipated improvements in steam shipping promise any change in this fact; that self-support is not likely to be attained by increasing the size of steamers; that the propelling power in fast steamers occupies all of the available space not devoted to passengers and express freight; and that steamers must be fast to do successful mail and profitable passenger service.

6. That sailing vessels can not successfully transport the mails; that the propeller can not transport them as rapidly or more cheaply than side-wheel vessels; that with any considerable economy of fuel and other running expenses, it is but little faster than the sailing vessel; that to patronize these slow vessels with the mails, the government would unjustly discriminate against sailing vessels in the transport of freights; that we can not in any sense depend on the vessels of the navy for the transport of the mails; that individual enterprise can not support fast steamers; and that not even American private enterprise can under any conditions furnish a sufficiently rapid steam mail and passenger marine: then it must be conceded,

I. That it is the duty of the government to its people to establish and maintain an extensive, well-organized, and rapid steam mail marine, for the benefit of production, commerce, diplomacy, defenses, the public character, and the general interests of all classes; that our people appreciate the importance of commerce, and are willing to pay for liberal postal facilities; that our trade has greatly suffered for the want of ocean mails; that we have been forced to neglect many profitable branches of industry, and many large fields of effort; and that there is positively no means of gaining and maintaining commercial ascendency except through an ocean steam mail system.

II. That the government can discharge the clear and unquestionable duty of establishing foreign mail facilities only by paying liberal prices for the transport of the mails for a long term of years, by creating and sustaining an ocean postal system, by legislating upon it systematically, and by abandoning our slavish dependence upon Great Britain.

III. That the British ocean mail system attains greater perfection and extent every year; that instead of becoming self-supporting, it costs the treasury more and more every year; that English statesmen regard its benefits as far outweighing the losses to the Treasury; that so far from abandoning, they are regularly and systematically increasing it; that it was never regarded by the whole British public with more favor than at the present time; that it is evidently one of the most enduring institutions of the country; that it necessitates a similar American system; that without it our people are denied the right and privilege of competition; and that we are thus far by no means adequately prepared for that competition, or for our own development.

OCEAN STEAM LINES OF THE WORLD.

Lines.	Service.	Ships.	Tonnage.
Cunard, paddle-wheel	Liverpool, New York, Boston, and Halifax	8	12,600
" screw	" " " "	4	4,800
North Atlantic Steamship Co.	St. Johns and Portland	3	4,800
European and American Steamship Co.	Bremen, Antwerp, Southampton, and New York	4	10,000
" " " "	Bremen, Antwerp, Southampton, to Brazil	4	9,000
London and Canada	London and Montreal	2	1,870
Liverpool and Canadian	Liverpool and Quebec	4	5,000
Liverpool, Philadelphia, and New York	Liverpool and New York	4	8,700
Glasgow and New York	Glasgow and New York	3	6,200
Belgian Transatlantic	Antwerp and New York	4	8,800
"	Antwerp and Brazil	5	6,500
Hamburg and American	Hamburg and New York	4	7,300
Hamburg and Brazilian*	Hamburg and Rio de Janeiro	2	4,500
Genoa and Brazilian	Genoa and Rio de Janeiro	4	8,000
Royal Mail Co.	Southampton, West Indies, Central America, and South America	18	21,510
" " "	Southampton, Pernambuco, Rio, Bahia, and La Plata	4	9,820
Pacific Steam Navigation Co.	Panama to Valparaiso and intermediate	7	5,719
Peninsular and Oriental Co.	Portugal, Spain, Malta, Alexandria, East Indies, China, and Australia	39	49,416
European and Australian Royal Mail Co.	Southampton, Alexandria, Suez, and Sydney	7	15,500
Australian Royal Mail Co.	Transport and other	4	7,800
Rotterdam and Mediterranean	Rotterdam, Leghorn, and Trieste	4	1,900
North of Europe Steam Navigation Co.	African	4	3,200
McIver's	Liverpool and Mediterranean	10	9,000
"	Liverpool and Havre	2	2,000
Bibby's	Liverpool and Mediterranean	11	11,700
Fowler's	" "	6	7,500
Dixon's	" " "	4	3,800
Liverpool and Australian	Liverpool and Australia	2	7,000
London and Australian	London and Australia	4	7,500
African	London, Liverpool, and Africa	5	5,000
Union Screw Co.	Southampton and Cape of Good Hope	3	1,800
Luzo-Brazileira	Lisbon and Brazil	4	8,000
Austrian Lloyds	Very large Mediterranean service	..	Unknown
Messageries Impériales	Mediterranean, Black Sea, Levant	50	"
West Hartlepool Steam Navigation Co.	Hartlepool, Hamburg, and St. Petersburg	6	"
Danube Steam Navigation Co.	Vienna, Galatz, and Constantinople	6	"
Hamburg and Spanish	Hamburg, Southampton, and all Spanish ports	2	2,000
East India Company	Suez and India, and the Bombay Mail lines	12	11,471
Spanish and Cuban	Cadiz, Havana, and Mexico	5	9,000
Companhia Brazileira	Rio de Janeiro to the Amazon and La Plata	7	5,500
Collins Company	New York and Liverpool	3	9,7.7
Havre Steam Navigation Co.	New York, Southampton, and Havre	2	4,548
Cornelius Vanderbilt	New York, Southampton, and Bremen	3	6,5.3
United States Mail Steamship Co.	New York, Havana, Aspinwall, and New Orleans	9	8,544
Pacific Mail Steamship Co.	Panama, California, and Oregon	13	16,421
New York and New Orleans	New York, Havana, and New Orleans	2	3,198
New York and Alabama	New York, Havana, and Mobile	1	1,200
Charleston and Havana	Charleston, Key West, and Havana	1	1,115
Savannah Steamship Co.	New York and Savannah	4	4,792
New York and Charleston Steamship Co.	New York and Charleston	4	4,680
New York and Virginia	New York, Norfolk, and Richmond	2	2,371
Philadelphia and Savannah	Philadelphia and Savannah	2	2,000
Boston and Baltimore	Boston and Baltimore	2	1,600
Texas Steamship Co.	New Orleans and Galveston	4	2,4.0
Southern Steamship Co.	New Orleans and Key West	2	1,000
Mexican Steamship Co.	New Orleans, Tampico, and Vera Cruz	1	160

* Building another steamer of 2500 tons for the Brazil line.
† These vessels average about 250 horse-power each. Their tonnage is large, probably 1200 tons each.

There are several other lines of ocean steamers in Europe; but it is almost impossible to ascertain any thing definite about them. The list above embraces all of the most important companies of the world. The lines are continually changing, while the vessels are passing into new bands almost every week.—*See articles* TONNAGE and the UNITED STATES.

Steel (Fr. *Acier;* Ger. *Stahl;* It. *Acciajo;* Lat. *Chalybs;* Russ. *Stal;* Sp. *Acero;* Swed. *Stål*), is iron combined with a small portion of carbon, and has been for that reason called carbureted iron. The proportion of carbon has not been ascertained with much precision. It is supposed to amount at an average to $\frac{1}{140}$ part. Steel is so hard as to be unmalleable while cold; or at least it acquires that property by being immersed, while ignited, in a cold liquid; for this immersion, though it has no effect upon iron, adds greatly to the hardness of steel. It is brittle, resists the file, cuts glass, affords sparks with flint, and retains the magnetic virtue for any length of time. It loses this hardness by being ignited, and cooled very slowly. It is malleable when red hot, but scarcely so when raised to a white heat. It may be hammered out into much thinner plates than iron. It is more sonorous; and its specific gravity when hammered is greater than that of iron—varying from 7·78 to 7·84. Steel is usually divided into three sorts, according to the method in which it is prepared; as *natural steel*, *steel of cementation*, and *cast steel*. The latter is the most valuable of all, as its texture is the most compact, and it admits of the finest polish. It is used for razors, surgeons' instruments, and similar purposes. Steel is chiefly employed in the manufacture of swords, knives, and cutting instruments of all sorts used in the arts; for which it is peculiarly adapted by its hardness, and the fineness of the edge which may be given to it.—*See* IRON.

Steelyard and Steelyard Company. A most ancient instrument, the same that is translated balance in the Pentateuch. The *Statera Romana*, or Roman steelyard, is mentioned in 515 B.C. The Steelyard Company was a company of London merchants who had the steelyard assigned to them by Henry III. A.D. 1232. They were all Flemings and Germans, and the only exporters, for many years after, of the staple commodities of England.—HAYDN.

Steer, to keep the ship on a given direction. This is done by moving the rudder by the tiller, which last is moved from that side to which the ship's head is required to be moved.

Steerage, an apartment before the great cabin, from which it is separated by a partition or bulk-head. In merchant ships it is generally the habitation of the inferior officers and crew; but in ships of war it serves

only as a hall or ante-chamber to the great or captain's cabin.—*Steerage* is also used to express the effort of the helm.—*Steerage-way* implies a sufficient degree of motion communicated to a ship for her to become susceptible of the effects of the helm in governing her course.

Stem, a circular piece of timber into which the two sides of a ship are united at the fore end; the lower end of it is scarfed to the keel, and the bowsprit rests upon its upper end; the ends of the walls and planks of the sides and bottom are let into a groove or channel cut in the middle of its surface from top to bottom. The outside of the stem is usually marked with a scale of feet answering to a perpendicular from the keel. The use of this scale is to ascertain the draught of water.—*From stem to stern*, from one end of the ship to the other.

Steppe (from the Russian *step*, a desert; also a dry plain). The steppes of Russia, which are not unlike the *landes* of Guienne in France, and the heaths of northern Germany, are in part susceptible of cultivation, and they afford pasturage for the numerous herds of the nomadic tribes. In the extensive steppes of Astrakhan, between the Volga and the Ural, the Calmucs and the Nogay Tartars rove with their cattle. They produce several sorts of flowers, herbs, and are frequented by wild goats and birds.

Sterling, an old pound weight of geographical significance, named Easterling, divided into twelve ounces, was in use among the Anglo-Saxons some centuries before the Norman Conquest. The same weight, called the Tower and the Moneyers' pound, was styled by early French writers the Roman and the Rochelle pound; also known among the Germans as the Cologne pound. A simple system of *exchange*, by which a pound of silver money, in tale, was made to equal a pound in grose weight, had been arranged by Charles the Great, in France, toward the end of the 8th century. In Britain, under the first William of Normandy, an ordinance declared "the weights and measures throughout the kingdom shall remain as our worthy predecessors have established." An act of Henry the Third, in 1266, explains the primitive initials of these ancient British, Gallic, and German standards, to all which one common derivation is imputed. "By consent of the whole realm the measure of the king was made, that is to say, an English penny of silver, called a sterling, round and without any clipping, shall weigh thirty-two wheat corns, taken from the middle of the ear. And twenty pence of silver do make one ounce; and twelve ounces of silver do make one pound; and eight pounds of silver do make a gallon of wine; and eight gallons of wine do make a London bushel, which is the eighth part of a quarter." This general arrangement for money weights and measures was that of the Eastern nations, by which Europe had been overrun. The term "Easterling" of the Norman French was transmuted on the English tongue, first to "Easterling," and finally to "Sterling." Another pound weight, also divided into twelve ounces, had been brought from Cairo, in Egypt, to Troyes of Champagne, in France, during the Crusades. Carried into England by foreign goldsmiths, Lombard merchants, possibly from Venice, about the year 1496, it gradually superseded the old Easterling weights, and found access into the British Mint by decision of Henry the Eighth. Queen Elizabeth ordered the ounce of silver in England to be cut into sixty pennies, so that the penny, forming the twentieth of an ounce, thenceforth became the sixtieth part. From the termination of Queen Elizabeth's reign, the coinage of English silver has generally retained *a purity* of 925 thousandths, called the "Sterling standard."—*See* POUND and PENNY. See also *Bankers' Magazine*, N. Y., 1856, '57.

Stettin, a city of Prussia, on the left bank of the Oder, about 36 miles from its mouth, in lat. 53° 23′ 20″ N., long. 14° 33′ E. It is well built, strongly fortified, and had in 1846 a population of 42,000. Stettin is the seat of an extensive and growing commerce; and is now, indeed, the principal port of importation in Prussia. She owes this distinction mainly to her situation. The Oder, which flows through the centre of the Prussian dominions, is navigable as far as Ratibor, near the extreme southern boundary of Prussian Silesia; and is united, by means of canals, with the Vistula, the Elbe, the Spree, etc. Stettin is, consequently, the principal emporium of some very extensive and flourishing countries; and is not only the port of Frankfort-on-the-Oder, Breslau, etc., but also of Berlin. A railway from the latter to Stettin has been completed. Hence at the proper seasons its wharves are crowded with lighters that bring down the produce of the different countries traversed by the river, and bring back colonial products, and other articles of foreign growth and manufacture. Vessels of considerable burden, or those drawing about seven or eight feet water, load and unload, by means of lighters, at the mouth of the river, at Swinemunde, the outport of Stettin, on the east coast of the isle of Usedom, in lat. 53° 55′ N., long. 14° 15′ 15″ E. Formerly there were not more then seven feet water over the bar adjacent to Swinemunde; but the harbor of the latter has recently been so much improved, by the construction of piers and breakwaters, dredging, etc., that it is now the best on the Prussian coast, and admits vessels drawing from 18 to 19 feet water. A light-house has been erected at the extremity of the eastern pier. Stettin is a free port; that is, a port into and from which all sorts of goods may be imported and re-exported free of duty. Goods brought through the Sound and imported at Stettin, and entered for home consumption in the Prussian states, were formerly charged with 2½ per cent. less duty than if they had been imported through any other channel. This was intended to reimburse the merchant for the Sound duties, and to encourage importation by this direct route in preference to that carried on through Hamburg and Embden; but now that the Sound dues are abolished there no longer exists the necessity for the bounty. There is at Stettin a great wool fair in the month of June each year.

The intercourse with the United States is solely dependent on the regulations of the Zoll-Verein. There are no privileges in favor of any nation which are denied to the United States, nor any restrictions imposed upon the commerce of any other nations. The moneys, weights, and measures, etc., etc., in the ports of this consular district are the same as established by the law of the mother country. Commission, 2 per cent. Freight—no rates can be named for want of business. Insurance done in England or the United States. Bills at three months. There are no direct exchanges with the United States.

Steward, in *Naval affairs*, is an officer in a ship of war, appointed by the purser to distribute the different species of provisions to the officers and crew. The same officer is employed for steamships and all classes of vessels for similar purposes.

Stockholm, the capital city of Sweden, situated at the junction of the Lake Maelar with an inlet of the Baltic, in lat. 59° 20′ 31″ N., long. 17° 54′ E.; a well-built, handsome city. Population in 1851, 93,070. The entrance to the harbor is intricate and dangerous, and should not be attempted without a pilot; but the harbor itself is capacious and excellent, the largest vessels lying in safety close to the quays. Stockholm possesses from a third to a half of the foreign trade of Sweden; but this is confined within comparatively narrow limits. The government has long been accustomed to endeavor to promote industry by excluding foreign products; latterly, however, this system has been considerably relaxed, with great advantage to the trade of the country, and the well-being of the people. Iron, timber, and deals form the great articles of export. Swedish iron is of very superior quality, and is

rather extensively used in Great Britain; the imports of it amounting in ordinary years to about 16,000 tons exclusive of 600 tons of steel. In addition to the above leading articles, Stockholm exports pitch, tar, copper, etc. The timber is inferior to that from the southern ports of the Baltic. The imports principally consist of colonial products, cotton, dye-stuffs, salt, British manufactured goods, hides, fish, wine, brandy, wool, fruit, etc. In seasons of scarcity corn is imported, but it is generally an article of export.

Pilotage.—Vessels bound for Stockholm take a pilot at the small island of Oja. Lands-hort light-house is erected on the southern extremity of this island, in lat. 58° 44′ 30″ N., long. 17° 52′ 15″ E. It is painted white, and is furnished with a fixed light, elevated 158 feet above the level of the sea, which may be seen under favorable circumstances five leagues off. The signal for a pilot is a flag at the fore top-mast head, or firing a gun.

The following table exhibits the commercial movements at the port of Stockholm during the year 1851, compared with the two preceding years:

Years.	Vessels entered	Tonnage.	Vessels cleared	Tonnage.	Total Vessels.	Total Tonnage
1849	669	70,728	790	79,118	1459	149,846
1850	711	71,892	783	77,478	1494	149,370
1851	851	94,218	905	95,236	1756	189,454

The following table shows the countries from which the vessels comprised in the foregoing table for 1851 cleared, and to which they sailed:

Countries.	No. of Vessels.	Tonnage.
Finland	572	44,528
Great Britain	191	36,714
Russia	178	19,790
Prussia	165	12,122
France	72	11,634
Portugal	59	10,712
Denmark	150	9,016
Hanse Towns	126	8,434
Norway	93	8,414
Brazil	27	6,526
United States	17	5,016

The following comparative table shows the values of imports and exports into and from the port of Stockholm during the years designated:

Years.	Imports. Francs.	Exports. Francs.	Total Trade. Francs
1849	21,578,000	17,342,000	38,920,000
1850	20,464,000	14,054,000	34,516, 00
1851	23,809,000	14,014,000	37,823,000

VALUE AND DESCRIPTION OF MERCHANDISE IMPORTED INTO, AND EXPORTED FROM, THE PORT OF STOCKHOLM IN 1851.

IMPORTS.

Articles.	Francs.
Cereals	3,221,000
Sugar	3,481,000
Coffee	1,759,000
Fish	7,303,000
Wines and spirits	1,173,000
Tallow	1,223,000
Raw silk	1,019,000
Tissues	2,145,000

EXPORTS.

Iron and steel	10,450,000
Copper	1,824,000
Pitch and tar	311,000
Timber and lumber	187,000

The following table exhibits the countries which participated in the general commercial movements of 1851, and the value of imports and exports assigned to each:

Year 1851. Countries.	Imports. Francs.	Exports. Francs.	Total. Francs.
Norway	1,097,000	31,000	1,128,000
Denmark	875,000	1,538,000	2,413,000
Russia	2,023,000	243,000	3,166,000
Finland	1,037,000	1,211,000	2,248,000
Prussia	960,000	2,374,000	3,334,000
Hanse Towns	6,306,000	1,307,000	7,613,000
Great Britain	2,260,000	2,897,000	5,157,000
Netherlands	586,000	281,000	867,000
France	785,000	747,000	1,532,000
Portugal	431,000	707,000	1,138,000
Brazil	4,026,000	299,000	4,325,000
United States	302,000	1,306,000	1,608,000
East Indies	1,431,000	199,000	1,631 000

Besides the countries included in the preceding table, Stockholm extends its commercial transactions to Spain, Italy, Austria, Malta and Gibraltar, Mecklenburg, Hanover, Oldenburg, Belgium, the Cape of Good Hope, and the Antilles.

It may be remarked that during this year the general commerce of Sweden exhibited an advancing tendency. This was owing, in a great measure, to the liberal policy which characterized the commercial legislation of England, dating from January 1, 1850—a policy the wisdom of which could not be more appositely illustrated than by the fact that while the total trade of Sweden with all foreign nations during this year reached as high as 55,000,000 rix dalers,* the trade with England alone covered 14,543,000 rix dalers, or more than one-fourth of the whole.

In 1852 official returns show a slight falling off in the general trade of Stockholm. It will be seen from the annexed table, from Swedish official sources, that the entire trade, imports and exports united, represents in value $6,559,027, or about $487,070 less than the total trade of 1851. This diminution affected imports, especially grains, fish, and brandies, to the extent of 1,523,494 francs, while coffee and sugar increased in value 838,816 francs; and in the export trade it was felt in the falling off the preceding year of 1,014,770 francs, chiefly on iron, steel, and copper, while the exportation of timber and pitch increased over that of 1851. In 1852 a new article of commerce entered into the export trade of Sweden. The metal *nickel* figures for the first time in the returns for this year to the amount of 101,520 francs, or $18,88272, chiefly sent to the Hanse Towns. The navigation of the port of Stockholm during 1852 presented a total tonnage of 167,686 tons: viz., entered, 81,874 tons; cleared, 85,812 tons. This is a falling off from 1851 of 21,768 tons.

Exports.—It is unnecessary to present a detailed statement of exports, inasmuch as iron, steel, and copper constitute the articles of chief value exported from the port of Stockholm. Other exports consist principally of timber (boards), pitch, and tar. These amounted in value, in 1852, to $107,533, to which is to be added for miscellaneous, not enumerated, $230,048. The total value of iron, steel, and copper exported in 1852 was: iron and steel, $1,747,515; copper, $327,213. Value of iron and steel exported from Stockholm to the United States in 1852, $8102. Great Britain, the Hanse Towns, and Denmark occupy the first rank in the order in which they are given as exporters from Stockholm. Prussia, Finland, Portugal, France, and the United States come next.

STATEMENT EXHIBITING THE GENERAL FOREIGN TRADE OF STOCKHOLM, SHOWING THE QUANTITIES AND VALUES OF IMPORTS AND EXPORTS, RESPECTIVELY, DURING THE YEAR 1853.

IMPORTS.

Description of Merchandise.	Value in Francs.
Coffee	2,901,000
Sugar	2,419,000
Cereals	1,760,000
Fish	1,040,000
Wines and spirits	888,000
Tallow	1,189,000
Tissues	1,853,000
Raw silk	892,000

EXPORTS.

Iron and steel	10,403,000
Copper	1,849,000
Wood and lumber	241,000
Pitch and tar	314,000

During the year 1853 there was a great scarcity of vessels to carry off the freight to foreign markets. The number that entered the port of Stockholm was 589, with an aggregate of 76,226 tons; and the number cleared was 927, with an aggregate of 81,916 tons. The total number entered and cleared was 1516 vessels; aggregate tonnage, 158,142 tons. The number of vessels was greater, but the tonnage was less by 9500 tons than in 1852.

* The rix daler is equivalent to 89½ cents.

Money.—Accounts are kept here, in Gottenburg, and generally throughout Sweden, in paper money, consisting of rix dollars *banco*, one rix dollar being equal to 48 skillings, and one skilling to 12 rundstycks. The exchange with London is at about 12 rix dollars banco per £, so that the rix dollar is worth about 1*s.* 8*d.* sterling. Rix dollars banco may be exchanged for specie rix dollars at the rate of 2¾ the former for one of the latter. But there are very few coins, except of copper, in circulation, the currency consisting almost wholly of notes varying from 5 skillings to 500 rix dollars banco.

Weights and Measures.—The victuali or commercial weights are punds, lippunds, and skippunds; 20 punds being equal to 1 lispund, and 20 lispunds=1 skippund. 100 lbs. Swedish commercial weight=93¾ lbs. avoirdupois=42½ kilograms=87¾ lbs. of Hamburg.

The iron weights are three-fifths of the victuali, or commercial weights; 20 marks=1 mark pund; 20 mark punds=1 mark skippund; and 7½ skippunds=1 ton English. Hence 100 punds Swedish iron weight=75 lbs. avoirdupois, and 100 lbs. avoirdupois=133⅓ lbs. Swedish iron weight.

In corn measure, 4 quarts=1 spann; 2 spann=1 tun, or barrel; 1 tun=1⅕ Winchester bushels; a last of rye from Riga=18 tuns; a last of rye from Liebau =19½ tuns; a last of rye from Stettin=22½ tuns; a last of rye from Stralsund=24 tuns. The tun of 32 kappor contains 4½ Winchester bushels.

In liquid measure, 2 stup=1 kanna; 15 kannor=1 anker; 2 ankers=1 eimer; 2 eimers=1 ahm; 1½ ahm =1 oxhoft; 2 oxhoft=1 pipe. The pipe=124¼ English wine gallons; and, consequently, the ahm=41$\frac{5}{12}$ English wine gallons, and 100 kannor=69⅓ English gallons.

The Swedish foot=11·684 English inches; the ell, or alna,=2 feet; the fathom=3 ells; the rod=8 ells.

In estimating by lasts, 1 last of pitch, ashes, etc.,= 12 barrels; 1 last of tar, oil, etc.,=13 barrels; 1 last of hemp, flax, tallow, etc.,=6 skippunds; 1 ton of Liverpool common salt=7 tons Swedish.

Port Charges at Stockholm.—The total port charges for a vessel of 500 tons (250 lasts) amount to about $277, including all expenses, in and out. For an unprivileged vessel this amount is nearly doubled.

Port Charges at Gothenburg.—Tonnage, pilotage, and all other dues and port charges on a vessel of 300 tons, amount at this port to about $167.—*Com. Relat. U. S.*

Stockings, as every one knows, are coverings for the legs. They are formed of only one thread entwined, so as to form a species of tissue, extremely elastic, and readily adapting itself to the figure of the part it is employed to cover. This tissue can not be called cloth, for it has neither warp nor woof, but it approaches closely to it; and for the purpose to which it is applied it is very superior. Silk stockings were first worn by Henry II. of France, in 1547. In 1560 Queen Elizabeth was presented with a pair of black silk stockings by her silk-woman, Mrs. Montague, and she never wore cloth ones any more.—Howell. He adds, "Henry VIII. wore ordinary cloth hose, except there came from Spain by great chance a pair of silk stockings; for Spain very early abounded with silk." Edward VI. was presented with a pair of Spanish silk stockings by his merchant, Sir Thomas Gresham; and the present was then much taken notice of.—Howell. Others relate that William Rider, a London apprentice, seeing at the house of an Italian merchant a pair of knit worsted stockings from Mantua, ingeniously made a pair like them, which he presented to the Earl of Pembroke, the first of the kind made in England, in 1561.

It is well known that the Romans and other ancient nations had no particular clothing for the legs. During the Middle Ages, however, hose or *leggins*, made of cloth, began to be used; and at a later period the art of knitting stockings was discovered. Unluckily, nothing certain is known as to the individual by whom, the place where, or when this invention was made.

It would appear from this circumstantial account that the art of knitting stockings, or at least that the first specimens of knit stockings, had been introduced into England from Spain about the middle of the 16th century; and such seems to have been the general opinion, till an allusion to the practice of knitting, in the pretended poems of Rowley, forged by Chatterton, made the subject be more carefully investigated. The result of this investigation showed clearly that the practice of knitting was well known in England, and had been referred to in acts of Parliament a good many years previously to the period mentioned by Howell. But it had then, most probably, been applied only to the manufacture of woolen stockings; and the general use of cloth hose shows that even these had not been numerous. There is no evidence to show whether the art is native to England or has been imported.—*See* Beckmann's *Inventions, article* Stockings.

It is singular that the stocking-frame, which, even in its rudest form, is a very complex and ingenious machine, that could not have been discovered accidentally, but must have been the result of deep combination and profound sagacity, should have been discovered so early as 1589—before, in fact, the business of knitting was generally introduced. The inventor of this admirable machine was Mr. William Lee, of Woodborough, in Nottinghamshire. He attempted to set up an establishment at Calverton, near Nottingham, for the manufacture of stockings, but met with no success. In this situation he applied to the queen for assistance; but, instead of meeting with that remuneration to which his genius and inventions so well entitled him, he was discouraged and discountenanced! It need not, therefore, excite surprise that Lee accepted the invitation of Henry IV. of France, who, having heard of the invention, promised him a magnificent reward if he would carry it to France. Henry kept his word, and Lee introduced the stocking-frame at Rouen with distinguished success; but after the assassination of the king, the concern got into difficulties, and Lee died in poverty at Paris. A knowledge of the machine was brought back from France to England by some of the workmen who had emigrated with Lee, and who established themselves in Nottinghamshire, which still continues to be the principal seat of the manufacture.—*See* Beckmann's *Inventions*, vol. iv.; and *Letters on the Utility and Policy of Machines*, London, 1780.

Imports of Hosiery and Articles made on Frames into the United States for the Year ending June 30, 1857.

Whence Imported.	Cotton Hosiery.	Silk Hosiery.	Woolen Hosiery.
Hamburg.....	$364,091	$23,024	$37,155
Bremen	1,037,384	64,886	199,169
England.....	1,112,385	503,130	1,372,722
France	59,359	234,619	66,772
Other places	37,068	13,640	64,411
Total year 1857.	$3,210,287	$839,299	$1,740,829

—*See articles* Cotton, Silk, and Wool.

Stock-jobber. It was about the year 1688 that the word stock-jobber was first heard in London. In the short space of four years a crowd of companies, every one of which held out to subscribers the hope of immense gains, sprang into existence; the Insurance Company, the Paper Company, the Lute-string Company, the Pearl-fishery Company, the Glass-bottle Company, the Alum Company, the Blythe Coal Company, the Sword-blade Company. There was a Tapestry Company, which would soon furnish pretty hangings for all the parlors of the middle class, and for all the bed-chambers of the higher. There was a Copper Company, which proposed to explore the mines of England, and held out a hope that they would prove not less valuable than those of Potosi. There was a Diving Company, which undertook to bring up precious effects from shipwrecked vessels, and which announced that it had laid in a stock of wonderful machines resembling complete suits of armor. In front of the helmet was a huge glass eye like that of a cyclop; and

out of the crest went a pipe through which the air was to be admitted.

The process was exhibited on the Thames. Fine gentlemen and fine ladies were invited to the show, were hospitably regaled, and were delighted by seeing the divers in their panoply descend into the river and return laden with old iron and ships' tackle. There was a Greenland Fishing Company, which could not fail to drive the Dutch whalers and herring busses out of the Northern Ocean. There was a Tanning Company, which promised to furnish leather superior to the best that was brought from Turkey or Russia. There was a society which undertook the office of giving gentlemen a liberal education on low terms, and which assumed the sounding name of the Royal Academies Company. In a pompous advertisement it was announced that the Directors of the Royal Academies Company had engaged the best masters in every branch of knowledge, and were about to issue twenty thousand tickets at twenty shillings each.

There was to be a lottery; two thousand prizes were to be drawn; and the fortunate holders of the prize were to be taught, at the charge of the Company, Latin, Greek, Hebrew, French, Spanish, conic sections, trigonometry, heraldry, japanning, fortification, bookkeeping, and the art of playing on the theorobo. Some of these companies took large mansions, and printed their advertisements in gilded letters. Others, less ostentatious, were content with ink, and met at coffeehouses in the neighborhood of the Royal Exchange. Jonathan's and Garraway's were in a constant ferment with brokers, buyers, sellers, meetings of directors, meetings of proprietors. Time-bargains soon came into fashion. Extensive combinations were formed, and monstrous fables were circulated, for the purpose of raising or depressing the price of shares.—MACAULAY.

Stocks. The public funding system originated in Venice in the 12th century, and was introduced into Florence in the year 1340. The English funding system may be said to have had its rise in 1672–'94. In the United States the term *stocks* includes United States funded loans and State loans, and the stocks or shares in various corporations, such as railroad companies, banks, funded debts of cities, etc.

In England the term *stocks* is applied mainly to government funded debt—such as consols, Bank of England stock, etc.; and the term *shares* is used when applied to the capital or joint stock of railroad, banking, and mining companies.—*See article* FUNDS.

The difficulties in which individuals are involved by their real wants, but oftener by their unruly passions, are the source of their debts. The debts of [European] nations have not a different origin. When the ordinary resources of a country were insufficient to carry into effect the private views or *impolitic wars* of the despots who ruled, or the ministers who directed it, they simply resorted to the expedient of borrowing; but when the sums loaned were inadequate to the increased expenditure, they had recourse to all sorts of *schemes, deceptions,* and *contrivances,* the better to delude the lenders, and allure their avarice. Such is the origin of the British funding system. Among states, debt may be considered a national disease; and, like other diseases in our day, has made the tour of Europe, and, we may add, of many of the new nations of America.

One set of British writers maintain that "debt and wealth are synonymous;" that "increase of debt is a [illegible] of riches;" that no happiness can exist without a national debt. The domestic [*i.e.*, the national] debt, says one of the highest authorities (Colquhoun), "*supposes* protection and *happiness*, by forming a real advantage to the rich over the poor. It has added to the capital increase of public and private buildings, and to the trade, commerce, and navigation of the country." Another, more audacious than the last, declares that "a part of the industry, a part of the [illegible], a part of the land, *belong* to the stockholders; and that by thirty millions of expenditure being in the hands of the stockholders or *dissipators*, consumption is highly stimulated." The extinction of the national debt of Great Britain, in the opinion of these economical writers, would, of course, bring misfortune and evil. "It would," says Colquhoun, "be attended with greater inconveniences than at present are experienced."

Another class of British writers, with more truth, with greater force of argument, and with more evidence of facts, contend that "poverty, misery, and the national debt, are also synonymous and identical terms;" that "taxation incurred to pay its annual interest (swallowing up thirty millions out of sixty millions of revenue, to satisfy the fund-holders), oppresses the people, destroys industry, and is equal to the curse of heaven on the agriculture, commerce, and manufactures of the nation." (McCulloch): "To maintain that this enormous taxation enriches the nation, because it abstracts a portion of its riches, is both a plain contradiction and an absurdity; taxation being always an engine of destruction to all the productive classes." "To attribute to the debt the increase of business, improvements, etc., during the late war, is an error of the most miserable kind. It is to be attributed not to the increase of debt, but to the monopoly of commerce, to the discoveries of Arkwright and Watt, and to various other causes. The nation did not improve because of the debt, but in spite of it; as it gave birth to the nefarious practice of stock-jobbing, begetting a spirit of gambling, destructive of public morals, disgraceful to the nation, and hostile to the pursuit of sober industry." "No wages, no part of the lands, belongs to the stockholders or *dissipators*; nor was any specified property pledged for the greatest part of the debt contracted. The lenders had not at the time any property mortgaged to them; consequently, they can not have at present more specified rights than they possessed when they loaned their money. To maintain the contrary is a dangerous and arbitrary assumption." "They advanced money when its value was depreciated on an average of *fifteen per cent.* They never entertained the idea of receiving payment at par, when the loans were contracted at exceedingly low prices." "It would be both folly and injustice to compel the nation to pay one hundred ounces of gold to the fund-holders, when they loaned less than eighty." "It is equally unjust to exempt this sort of property from the alteration in value to which every other kind of property in the kingdom is subject; and, consequently, the reduction of the debt—that millstone which destroys the industry and vigor of the people, *doubles* taxes, and spreads pauperism, crime, and wretchedness throughout the country—*can* be effected without any violation of the public faith." "The nation must not suffer on account of the errors of party or ministerial men. The happiness of twenty-four millions of British subjects ought not to be postponed for the sake of an insignificant portion—two hundred and eighty thousand stockholders."

Before we enter more fully on the subject, we have thus drawn a brief summary of the leading arguments and opinions of the contending parties for and against the existence of the present British national debt. It is not difficult to anticipate the American side of the argument; but on the opposite side what can we expect, where the infection of gambling is so strong that Pope, who knew his countrymen well, declared—

> "*Statesman* and *patriot* ply alike *the stocks;*
> *Peeress* and butter share alike the box;
> And *judges* job, and *bishops* bite the town,
> And *mighty dukes* pack cards for half a crown."

In the 12th century, Richard I. pawned the revenues of the crown for the payment of moneys borrowed to defray the expenses of the fanatical conquest of the Holy Land. Henry III. pawned the crown jewels and regal ornaments and robes of state. Edward I. borrowed money to pay the debts of his father, in order

to get his soul "out of purgatory," as the record states. Richard II. was deposed for extorting £1,100,000 sterling, under pretext of borrowing, which was never repaid. This was one of the chief causes of the York and Lancaster wars. In 1846, Edward III. ordered a sum of money to be lent to him. Henry IV. *obliged* the rich men of the kingdom to lend him money upon the growing taxes. Henry VIII. escaped the punishment he so justly merited for defrauding his creditors. He compelled Parliament to pass two acts, offering him "all the money he had received in loans;" thus discharging him of all obligations he had come under, and all suits that might arise thereupon. In money matters in Elizabeth's time, the people insisted upon the payment of the sums advanced to her predecessors —a demand she was wise enough to comply with. Burleigh counseled her to lay the foundation of public credit. The commonwealth contracted a large debt: at Cromwell's death it amounted to £2,474,290. Charles, by closing the exchequer in 1672, *defrauded* the creditors of the state of the sum of £2,800,000; but an arrangement took place, by which the sum of £664,226 was left at an interest of £19,027 18*s.* 6*d.* *This was the origin of the present national debt, and its whole amount before the English Revolution.*

In former times, says a British writer, loans were generally contracted for short periods. It was, moreover, an established practice that the funds assigned for the repayment should be sufficient to pay the principal and interest, and that within a certain number of years. The British system, in practice, is quite the reverse. Their ministers are satisfied if they provide for the payment of the interest, without a thought on providing for the discharge of the principal; or if they do, it is in conformity to the maxim of Linguet and Terney, "to cancel the capital by a general bankruptcy, in order to bring the state home." This maxim of Terney and Linguet was practically adopted in France some centuries ago. Brisson, in his history, enumerates FIVE national bankruptcies; but in the financial history of that country may be found a great many more. The new system originated in the republics of Venice and Genoa; and being imported by William III., has been carried by the British to the highest perfection.

After the Irish Revolution, to supply deficiencies, William had recourse to the *long annuities* which were created in 1692. £881,493 were raised on annuities of 99 years, bearing interest at 10 per cent. until 1700, and at 7 per cent. after that year, with benefit of survivorship for the lives of the nominees of those who contributed. The *short annuities* began in 1693. Eight millions was borrowed by this expedient; every subscriber receiving 14 per cent. for sixteen years, besides a lottery ticket. At this moment the scheme of the Bank of England was contrived by Patterson. The bank loaned William £1,200,000, at 8 per cent. interest; thus at the very outset taking advantage of the public distress, and setting a usurious example to their successors, who, like true Shylocks, have ever since profited by the example. Chancellor Montague about this period, to aid his sovereign, invented the scheme of issuing exchequer bills. Their issue has been at intervals ever since. The most exorbitant premiums were given for money, and the public debt was greatly increased. Public credit sunk so low, that out of five millions granted to carry on a war only two and a half, in Davenant's opinion, ever reached the exchequer. One of the constituent parts of *the funding system* is the reduction of interest from the higher to the lower denomination. This expedient, which has played so conspicuous a part in our day, was originally resorted to in 1699, when the higher interests were reduced to 5 per cent. It was the destiny of King William's reign to create, improve, and to complete *all the essential parts of the funding system* as in practice at this day. William left a national debt at the close of his reign of £16,894,702. This sum formed the nucleus of the present national debt. (These facts are chiefly collected from British parliamentary history.)

The history of the Stock Exchange a century ago is its history at the present day. "The centre of jobbing," says a writer of that time, "is the kingdom of 'Change Alley." The enormous profits made by the association, the malpractices of the greater part of its members, and the insolence of the richer ones, excited the just alarm of a steady and reflecting nation unaccustomed to such manœuvres, and the public writers began to attack their increasing power. "The villainy of stock-jobbing is called a mystery or machine of trade," says one of these writers. "This destructive hydra, this new corporation of hell," exclaims another; while one of them gives directions, in order to besiege and bring to surrender "that infamous place, 'Change Alley," "to storm it," etc. Another writer declares that "the general cry against stock-jobbing has been so long, and it has been so justly complained of as a public nuisance, that these people are hardened in crime; all their art is a mere system of cheat and delusion; their characters are as dirty as their employments; and the best thing that can be said of them is, that there *happen* to be two honest men among them." "Their employment becomes a crime. This set of men are more dangerous than all national enemies abroad." "Exchange Alley is, in fact, as dangerous to the public safety as a magazine of gunpowder to a populous city."

However, all these invectives did not obstruct the progress of the establishment; on the contrary, it became more powerful, and increased in proportion as the government was more extravagant and careless of the public money. It became, in short, an indispensable engine of the government itself; but the latter was compelled, by public opinion against the detested operations of the Exchange, and in order to keep up appearances, to pass several acts against the very operations and the very gambling it was so deeply, though secretly, fomenting. Avarice, idleness, and the hope of becoming rich in a short time without industry, eluded and evaded all the laws of British wisdom, and sometimes disregarded even the common law of the land. By a variety of measures has the power of this corporation reached its present height. Its members have not only become the exclusive masters of the British money market, but have acquired the immense power of secretly controlling and regulating the funds and money market of all Europe, and, we may add, all America. No financial operation whatever can be safely undertaken in any of those markets without consulting and obtaining the approbation of the Committee of the Stock Exchange. The agents of the Bank of England have surpassed their principals. A mere decision of a committee, composed of individuals unknown beyond their own immediate circle, is more powerful, and will produce more effect in regard to any loan or financial measure than all the laws of the sovereigns of Europe put together. However, the importance of the Stock Exchange has somewhat declined since the failure of its gigantic operations on this side of the Atlantic; and since the immense losses sustained by the British public on that occasion, it has been less attended; the number of its members being reduced at one time as low as 400.

Funding System.—The first operation of the funding system, after the peace of 1815, in consequence of the rise of public securities, was to reduce the interest on exchequer bills (1817) from 5¼ to 3½ per cent.; and while only three millions were added to the debt, above twenty-three millions were canceled. The interest of a portion of the public funds was transferred from a lower to a higher denomination; the 3 per cent. stock was converted into 3½ per cent., thereby effecting a reduction of the debt, by inducing the holders of the former stock to buy in the latter at a higher price. Thus the small sum of £3000 was created, while more

than nineteen millions of the national debt were redeemed in 1818. The next measure was the reduction of the five per cents into fours. The bank at that time had thirteen millions in their vaults; and they increased the circulation by throwing a large amount of paper into market, and by lowering the rate of interest from 5 to 4 per cent. By the union of government and banking powers, the enormous sum of £140,250,828 of 5 per cents was readily converted into £147,263,328 of 4 per cents, at an annual saving of interest of £1,222,000 at a small increase of capital only. In 1824, 4 per cents to the amount of £76,806,882 were changed into an equal amount of stock bearing an interest of 3½ per cent. This operation, besides effecting an annual saving of £381,034, had the advantage of making no addition to the capital of the debt. In 1827, £8,500,000 of debt were created, while £2,866,528 were redeemed. In 1828 the sinking fund was destroyed. On the 11th of July, it was enacted that for the future "the amount of the sinking fund be the actual surplus of the revenue over the expenditures." (Came into operation 5th July, 1829.) At that time there were no surpluses, but a large deficiency of revenue.

But although one of the three elements of the funding system was thus lost, the action of that system was not on that account discontinued. A prospective operation was contrived in May, 1830, to transfer into 3½ per cents the fours created at the reduction of the fives in 1822. One of the conditions was, that the new stock should not be subject to redemption at any time before January 5, 1849; and an option was offered to the holders to receive £70 of the new fives, or £100 of the 3½ per cents, for every £100 of 4 per cent annuities. This operation was called prospective, because the advantage of the plan is, that when the stipulated term shall have expired so much relief may be obtained by the nation from every payment of £70 employed in canceling 5 per cents as by the payment of £100 when applied to the discharge of 3½ per cents, both being redeemable at par: annual saving of this step, £700,000. In 1829, £4,900,000 were created, and £6,000,000 reduced; £154,000,000 were created in 1830, and £168,000,000 reduced; but what was the result? The committee of 1828 state, that "in a few years [says the 4th report] which preceded the virtual abandonment of the system, one hundred and twenty millions had been *added* to the capital of the national debt, while the purchases of the commissioners had fallen so far short of that sum that the unredeemed capital of the unfunded debt was *greater* at the commencement of 1823 than it had been in 1818, by the sum of twenty-five millions." In 1819 twelve millions, and in 1820 thirteen millions, were unwarrantably taken from the sinking fund. The actual reduction during the peace is, according to the Finance Committee, who declare "that the total reduction effected from 1816 to 1828 in the national debt was *only three millions and a half.*"

The writer from whom we have abridged the preceding facts concludes: "It appears that this enormous debt (which he states at eight hundred and sixty-four millions) has been chiefly raised by means of the Bank and the Stock Exchange, aided by *the delusion of the sinking fund;* and that it has been principally expended in wars, most of them undertaken against the true interests of the nation, whose topographical situation renders her independent of continental broils and quarrels. Its amount has been immensely increased in time of war, while the reductions effected in time of peace have been exceedingly limited. In the first period, of twelve years peace, ten millions were reduced; in the second, which lasted ten years, only four and a half millions; and in the last and longest, near thirty years, the amount of reduction has been so trifling that it seems almost incredible. When we consider the very inconsiderable reduction effected during so long an interval of peace, the most alarming forebodings arise for the future. The British Legislature, the economists, and the reflecting men so numerous in England, have in this subject an unbounded field for the most serious reflection." These wars were conducted through the agency of *paper money* and the funding system. Pope has very happily hit *the expedients* of the British ministry in the following lines:

> "Bless'd paper credit! last and best supply,
> That lends corruption lighter wings to fly;
> Gold imp'd by thee can compass hardest things,
> Can pocket states—can fetch or carry kings;
> A *single leaf* shall waft *an army* o'er,
> Or ship off senates to some distant shore."

—Compiled from Hamilton, Bailey, Febrer, Parliamentary authorities, and on the authority of manuscript tables obtained from the office of the British Controller in London.

Stoppage in Transitu is the seizure by the seller of goods sold on credit, during the course of their passage (transitus) to the buyer. This principle is said to have been established about 1690 in the Court of Chancery (2 Vern, 203); and it has since been acknowledged in the courts of common law. The transitus is defined to be the passage of the goods to the place agreed upon by the buyer and seller, or the place at which they are to come into the possession of the buyer. This definition does not mean that the term transitus implies continual motion; goods are in transitu while they are at rest, if they are still on the road to the place to which they have been sent. This doctrine of stoppage in transitu entitles a seller, in case of the insolvency or bankruptcy of the buyer, to stop the goods before they come into the buyer's possession. The right of stoppage in transitu is not confined to cases of buying and selling. A factor either at home or abroad, if he consigns goods to his principal by the order of the principal, and has got the goods in his own name or on his own credit, has the same right of stoppage in transitu as if he were the seller of the goods. Questions of stoppage in transitu sometimes involve difficult points of law. The right of stoppage implies that the goods are in the possession of the seller or factor when he exercises this right. Accordingly, the law of stoppage involves the law of possession of movable things. —Bohn's *Cyclopedia;* Abbott *on Shipping;* Cross *on Lien and Stoppage in Transitus;* Smith's *Leading Cases;* Russell's *Treatise on the Laws relating to Factors and Brokers.*

If the buyer has in good faith and for value sold the goods, and indorsed and delivered the bill of lading, this second purchaser holds the goods free from the first seller's right to stop them. But if the goods and bill are transferred only as a security for a debt due from the first purchaser to the transferee, the original seller may stop the goods, and hold them subject to this security, and need pay only the specific advances made on their credit or on that very bill of lading, and not a general indebtedness of the first purchaser to the second. The question has been much agitated whether the right of stoppage in transitu was a right to rescind the sale for non-payment, or only an extension of the common-law lien of the buyer on the thing sold for his price. And it seems now quite well settled, both in England and in this country, that it is the latter; that is, an extension of the lien. Important consequences might flow from this distinction. If the seller, by stopping the goods in transitu, rescinds the sale, he has no further claim for the price, nor any part of it; nor can the buyer, or any one representing him, pay the price and recover the goods against the will of the seller. If, however, he only exercises his right of lien, he holds the goods as the *property* of the buyer; and they may be redeemed by him or his representatives by paying the price for which they are a security; and if not redeemed, they become absolutely the seller's, in the same way as a pledge might become his; and if he fails

to obtain from them the full price due, he has a claim for the balance upon the buyer. All of this is not positively determined by adjudication, but it would seem to be deducible from the principle that the act of stoppage in transitu is only the exercise of a lien on the goods for their price.—PARSONS's *Mercantile Law*, p. 63; *see also* KENT's *Comm.*, vol. ii.

Storax. *See* BALSAM.

Stores, Military and Naval, include arms, ammunition, etc.—*See* NAVAL STORES.

Stores, in *Commercial navigation*, the supplies of different articles provided for the subsistence and accommodation of the ship's crew and passengers.

Stranding, in *Navigation*, the running of a ship on shore, or on the beach.

It is important to define accurately what shall be deemed a stranding. But this is no easy matter; and much diversity of opinion has been entertained with respect to it. It would, however, appear that merely striking against a rock, bank, or shore, is not a stranding; and that, to constitute it, the ship must be upon the rock, etc., for some time (how long?). Mr. Justice Park has the following observations on this subject: "It is not every touching or striking upon a fixed body in the sea or river that will constitute a stranding. Thus Lord Ellenborough held that, in order to establish a stranding, the ship must be *stationary;* for that merely striking on a rock, and *remaining there a short time* (as in the case then at the bar, about a minute and a half), and then passing on, though the vessel may have received some injury, is not a stranding. Lord Ellenborough's language is important. *Ex vi termini* stranding means lying on the shore, or something analogous to that. To use a vulgar phrase, which has been applied to this subject, if it be *touch and go* with the ship, there is no stranding. It can not be enough that the ship lie for a few moments on her beam ends. Every striking must necessarily produce a retardation of the ship's motion. If by the force of the elements she is run aground, and becomes stationary, it is immaterial whether this be on piles, on the muddy bank of a river, or on rocks on the seashore; but a mere *striking* will not do, *wherever* that may happen. I can not look to the consequences without considering the *causa causans*. There has been a curiosity in the cases about stranding not creditable to the law. A little common sense may dispose of them more satisfactorily."

This is the clearest and most satisfactory statement we have met with on this subject; still, however, it is very vague. Lord Ellenborough and Mr. Justice Park hold that, to constitute a stranding, the ship must be *stationary;* but they also hold that if she merely remain upon a rock, etc., for a *short time*, she is not to be considered as having been stationary. Hence every thing turns upon what shall be considered as a short time. And we can not help thinking that it would be better, in order to put to rest all doubts upon the subject, to decide either that every striking against a rock, the shore, etc., by which damage is done to the ship, should be considered a stranding; or that no striking against a rock, etc., should be considered as such, provided the ship be got off within a *specified time*. Perhaps a *tide* would be the most proper period that could be fixed. The English insurance companies exclude the words, "*or the ship be stranded*," from the memorandum.—*See* INSURANCE [MARINE], ABANDONMENT, and AVERAGE.

If the ship be voluntarily stranded, to escape danger from tempest or chase of an enemy, the damages from that act are to be borne by a general average, if the ship be afterward recovered and perform her voyage. But if the ship be wholly lost or destroyed by the act of running her ashore, it has been a question much discussed, and different opinions maintained, whether the cargo saved was bound to contribute to bear the loss of the ship. In the United States the general conclusion seems to be that the loss is not to be borne by general average of cargo; while the decisions in Europe go to establish the opposite.—KENT's *Comm.*, vol. iii. p. 306. It is understood that the mere stranding a ship is not of itself to be deemed a total loss, yet it may be attended with circumstances that will justify an abandonment, even though the hull of the ship should not be materially damaged; if, for instance, the cost of removal would exceed the worth of the ship.—*See* KENT's *Comm.*, vol. iii. p. 402.

Sturgeon Fishery. The sturgeon is a large, valuable, and well-known fish, of which there are several species: viz., the sturgeon, properly so called, or *Accipenser sturo;* the beluga, or *Accipenser huso;* the sevruga, or *Accipenser stellatus*, etc. The sturgeon is plentiful in the North American rivers, and on the southern shores of the Baltic; and is met with in the Mediterranean, etc. But it is found in the greatest abundance on the northern shores of the Caspian, and in the rivers Wolga and Ural; and there its fishery employs a great number of hands, and is an important object of national industry. Owing to the length and strictness of the Lents in the Greek Church, the consumption of fish in Russia is immense; and from its central position, and the facilities afforded for their conveyance by the Wolga, the products of the Caspian fishery, and those of its tributary streams, are easily distributed over a vast extent of country. Besides the pickled carcasses of the fish, caviar is prepared from the roes; and isinglass, of the best quality, from the sounds. The caviar made by the Ural Cossacks is reckoned superior to any other; and both it and isinglass are exported in considerable quantities. The belugas are sometimes of a very large size, weighing from 1000 to 1500 lbs., and yield a good deal of oil. The seal-fishery is also pretty extensively prosecuted in the Caspian. The reader will find a detailed account of the mode in which the fisheries are carried on in the Caspian, and in the rivers Wolga and Ural, in TOOKE's *Russia*.—*See* FISHERIES.

Sub-treasury. The sub-treasury system is one peculiar to the general government of the United States; whereby the separate and safe-keeping of the public funds is intrusted to special officers appointed for this purpose. From the year 1789 to the year 1846 the public funds were entrusted as deposits in numerous banking institutions throughout the Union. The failures of many of these during the years 1837–1842 led to the establishment, on the 6th August, 1846, of the Independent Treasury, or Sub-treasury. By this law of Congress, the "rooms prepared and provided in the new treasury building at the seat of government (Washington), for the use of the Treasurer of the United States, his assistants and clerks, and occupied by them, and also the fire-proof vaults and safes erected in said rooms for the keeping of the public moneys in the possession and under the immediate control of said treasurer, and such other apartments as are provided for in this act as places of deposit of the public money, are hereby constituted and declared to be the Treasury of the United States." The sub-treasuries for the reception of the public funds are at Boston, New York, Philadelphia, and other cities; generally in the buildings used and known as the custom-houses. The assistant treasurers receive the following salaries: Boston, $2500; New York, $4000; Philadelphia, Charleston, New Orleans, St. Louis, $2500 each. After the 1st January, 1847, all duties, taxes, sales of public lands, postage, and all other revenue, were made payable in gold or silver coin only; and all disbursements by or for account of the Treasury were by law made payable in the same medium.

Succory. *See* CHICORY.

Suez Canal. If we compare the mean distances between the ports of Europe and India, by the Cape of Good Hope on the one hand, and by the intended channel between the two seas on the other, we shall find an

enormous difference in favor of this latter route. This difference will be still greater if we remember that a straight line on the chart of navigation is far from being the shortest distance from one port to another, and the seaman can only reach the point for which he is steering by following a certain number of successive courses, approaching as near as possible the arc of a great circle. Thus, far from making directly for the Cape of Good Hope, vessels leaving Europe or the Atlantic ports of North America, *en route* for India, must steer for the Canaries or Azores, in order to find the trade-winds of the northern hemisphere, to make the coast of Brazil, and sight Cape Frio, or put into harbor at Rio Janeiro. This is generally the route for the Cape of Good Hope, more justly, perhaps, called the Cape of Storms. They then cross the Aguihas Bank, reach Bourbon or Mauritius, and from thence steer for India, following the routes allowed by the monsoons. Vessels in the Mediterranean again have to contend with still greater disadvantages. It often takes them fifteen days to reach the Straits of Gibraltar, westerly winds generally prevailing in this quarter, where we also find a rapid flow of the ocean waters into the Mediterranean. Thus the voyage to India takes at least five months, or five months and a half, the voyages home being rather more direct, without being sensibly shorter. Ships then run nearer to the African shore, by reason of the trade-winds of the southern hemisphere; the place of call in this case being St. Helena.

If we now examine the facilities for navigation in the three seas near the Canal of Suez, namely, the Mediterranean, the Red Sea, and the Gulf of Oman, we find:

That in the Mediterranean the winds blow from the north during the greater part of the year, change southeast in the spring, and return to the north, passing by the west and northwest.

That nearly the same takes place in the Red Sea, where the north, which is the prevailing wind, heaps the waters in the direction of Babelmandel, so that during a calm we observe a current setting northward, evidently arising from the elevated waters in the south endeavoring to recover their level. Southerly winds generally succeed a calm.

The Gulf of Oman has two monsoons—the northeast monsoon, which generally continues during the winter, and southwest monsoon, which lasts during the summer, and is frequently stormy. The change from one monsoon to the other is there, as elsewhere, accompanied by a series of storms and gales.

The considerable reduction of the distance of European ports from those of India would not be the only advantage to trade from adopting the canal between the two seas; for not only would vessels reach their point of destination much sooner, but they would find places of anchorage throughout the entire route, and also, what is of more importance still, they would meet with good markets. The navigator, after having followed the usual easy routes of the Mediterranean, would dispose of part of his cargo in the Canal of Suez, or at Djedda, would purchase ivory at Massarva, Souaken, or Derbera, which he would exchange in India for opium to take to China in exchange for silk and tea. He would complete his home cargo in colonial merchandise from Manilla, the Isles of Sunda and Ceylon; in cotton of India and Egypt; in coffee of Abyssinia or Yemen; the gum of Soudon or Hedjaz; the corn of Lower Egypt, or rice of Damietta; and these numerous operations, which now require years, would be accomplished rapidly and without danger with small capital and small vessels. In short, by reducing the time necessary for the operations of commerce, we reduce the general expense.

All nations would take advantage of the importance of the trade with India, China, and the islands of the ocean. Trade with the Red Sea, although less considerable, deserves attention; but as there is scarcely any carried on at present, it is very little known, and could only acquire importance by the opening of a canal between the two seas. The Red Sea, which is so near to us in a straight line, becomes far distant when we have to double the Cape. Babelmandel is as far from us as Pondicherry, and Souaken as far as Batavia; Suez, farther still, by this route becomes as near as Beyrout by the canal; In short, the two routes, measured from the Straits of Gibraltar to Souaken, are in the proportion of one to five.

Very few European vessels are now met with in the Red Sea. Every year we see a few belonging to the Parsees of Bombay, and manned by Lascars. The internal trade of this sea is now carried on by Arabian barks, called *dows*, or *boutres*, constructed at Suez, Djeddo, Kossair, Souaken, or Mocha, with wood from India to Singapore. These vessels are of a very small tonnage, are very sharp, and have a handsome sheer; a heavy poop, which hinders their working, and lowers it at the stern; they carry one mast, rigging a square sail; this sail and yard are struck to the foot when they lay to; about thirty men are required to hoist it again, and this operation can not be performed in less than half an hour. The tacking of these ships is as difficult as it is dangerous. The dows only sail in the daytime; they get under way about seven o'clock in the morning, sail till about four in sight of the coast, then anchor by a grappling-iron, or run aground on the sand.—*London Nautical Magazine.* See also *Southern Quarterly Review*, ix. 57.

Messrs. Conrad, A. Renaud, Megrilli J. M'Lean, and Lieusson, the members of the international commission for cutting a canal through the Isthmus of Suez, have terminated their investigations in Egypt, and given in to the viceroy a brief preliminary report. They found insuperable obstacles to directing the canal on Alexandria, and unexpected facilities for establishing a port in the Gulf of Pelusium. They are therefore unanimously of opinion that a direct canal from Suez toward the Gulf of Pelusium is the only solution of the problem of the junction of the Red Sea and the Mediterranean. "The execution thereof is easy, the success certain, the results immense for the commerce of the world." The expense of the canal and of the works connected with it will not, it is added, exceed 200,000,000 francs.

Sugar (Fr. *Sucre*; Ger. *Zucker*; It. *Zucchero*; Russ. *Sachar*; Sp. *Azucar*; Arab. *Sukhir*; Malay, *Soola*; Sans. *Surkarā*), a sweet granulated substance, too well known to require any particular description. It is every where in extensive use, and in this country ranks rather among the indispensable necessaries of life than among luxuries. In point of commercial importance, it is second to very few articles. It is chiefly prepared from the expressed juice of the *Arundo saccharifera*, or sugar-cane; but it is also procured from an immense variety of other plants, as maple, beet-root, hiren, parsnep, etc.

Species of Sugar.—The sugar met with in commerce is usually of four sorts; brown, or muscovado sugar; clayed sugar; refined, or loaf sugar; and sugar-candy. The difference between one sort of sugar and another depends altogether on the different modes in which they are prepared.

Brown, or Muscovado Sugar.—The plants or canes being crushed in a mill, the juice, having passed through a strainer, is collected in the clarifier, where it is first exposed to the action of a gentle fire, after being "tempered" (mixed with alkali), for the purpose of facilitating the separation of the liquor from its impurities. It is then conveyed into the large evaporating copper, and successively into two others, each of smaller size: the superintending boiler freeing it during the process from the scum and feculent matters which rise to the surface. The sirup then reaches the last copper vessel, called the "striking tache," where it is boiled till sufficiently concentrated to be capable of granulating in the cooler, whence it is transferred with the least

possible delay, to prevent charring. Here it soon ceases to be a liquid; and when fully crystallized, is put into hogsheads (called "potting"), placed on their ends in the curing-house, with several apertures in their bottoms, through which the molasses drain into a cistern below. In this state they remain till properly cured, when the casks are filled up and prepared for shipment.

Clayed sugar is prepared by taking the juice, as in the case of muscovado sugar, when boiled to a proper consistency, and pouring it into conical pots with the apex downward. These pots have a hole at the lower extremity, through which the molasses and sirup are allowed to drain. After this drain has continued for some time, a stratum of moistened clay is spread over the surface of the pots; the moisture of which, percolating through the mass, is found to contribute powerfully to its purification.

Refined sugar may be prepared from muscovado or clayed sugar by redissolving the sugar in water, and, after boiling it with some purifying substances, pouring it, as before, into conical pots, which are again covered with moistened clay. A repetition of this process produces *double refined* sugar. But a variety of improved processes are now resorted to.

Sugar-candy.—Solutions of brown or clayed sugar, boiled until they become thick, and then removed into a hot room, form, upon sticks or strings put into the vessels for that purpose, into crystals or candy.

Historical Notice.—The history of sugar is involved in a good deal of obscurity. It was very imperfectly known by the Greeks and Romans. Theophrastus, who lived about 320 years before the Christian era, the first writer whose works have come down to us by whom it is mentioned, calls it a sort of "honey extracted from canes or reeds." Strabo states, on the authority of Nearchus, Alexander's admiral, that "reeds in India yield honey without bees." And Seneca, who was put to death A.C. 65, alludes to sugar in a way which shows how little was then known respecting it (Epist. 84): *Aiunt*, says he, *inveniri apud Indos mel in arundinum foliis, quod aut ros illius cœli, aut ipsius arundinis humor dulcis et pinguior gignat.* Of the ancients, Dioscorides and Pliny have given the most precise description of sugar. The former says, it is "a sort of concreted honey, found upon canes, in India and Arabia Felix; it is in consistence like salt, and is, like it, brittle between the teeth." And Pliny describes it as "honey collected from canes, like a gum, white and brittle between the teeth; the largest is of the size of a hazel-nut: it is used in medicine only."—*Saccharum et Arabia fert, sed laudatius India; est autem mel in arundinibus collectum, gummium modo candidum, dentibus fragile, amplissimum nucis avellanæ magnitudine, ad medicinæ tantum usum.*—Lib. xii. c. 8. It is evident, from these statements, that the knowledge of the Greeks and Romans with respect to the mode of obtaining sugar was singularly imperfect. They appear to have thought that it was found adhering to the cane, or that it issued from it in the state of juice, and then concreted like gum. Indeed, Lucan expressly alludes to Indians near the Ganges—

Quique bibunt tenerâ dulces ab arundine succos.
—Lib. iii. l. 237.

But these statements are evidently without foundation. Sugar can not be obtained from the cane without the aid of art. It is never found native. Instead of flowing from the plant, it must be forcibly expressed, and then subjected to a variety of processes. It is not, however, quite so clear, as has been generally supposed, that the Romans were wholly unacquainted with the mode of procuring sugar. The remarkable line of Statius,

Et quas percoquit Ebusia cannas—Sylv. lib. i. v. 15,

has been conjectured, apparently on good grounds, to refer to the boiling of the juice of the cane. But the passage has been differently read, and is too enigmatical to be much depended on. Dr. Moseley conjectures, apparently with much probability, that the sugar described by Pliny and Dioscorides, as being made use of at Rome, was sugar-candy obtained from China. This, indeed, is the only sort of sugar to which their description will at all apply. And it would seem that the mode of preparing sugar-candy has been understood and practiced in China from a very remote antiquity; and that large quantities of it have been in all ages exported to India, whence, it is most probable, small quantities found their way to Rome.—*Treatise on Sugar.* This, as well as Dr. Moseley's *Treatise on Coffee*, is a very learned and able work. Europe seems to be indebted to the Saracens not only for the first considerable supplies of sugar, but for the earliest example of its manufacture. Having, in the course of the 9th century, conquered Rhodes, Cyprus, Sicily, and Crete, they introduced into them the sugar-cane, with the cultivation and preparation of which they were familiar. It is mentioned by the Venetian historians that their countrymen imported, in the 12th century, sugar from Sicily at a cheaper rate than they could import it from Egypt.—*Essai de l'Histoire du Commerce de Venise*, p. 100. The crusades tended to spread a taste for sugar throughout the Western World; but there can be no doubt that it was cultivated, as now stated, in modern Europe antecedently to the era of the crusades; and that it was also previously imported by the Venetians, Amalphitans, and others, who carried on a commercial intercourse from a very remote epoch with Alexandria and other cities in the Levant. It was certainly imported into Venice in 996.

The art of refining sugar, and making what is called loaf-sugar, is said by Dr. Moseley to be a modern European invention, the discovery of a Venetian about the end of the 15th, or the beginning of the 16th century.—MOSELEY, p. 66. But this is doubtful, for Le Grand D'Aussy has shown that white, or, as he calls it, refined sugar (*sucre blanc ou raffiné*), had been introduced into and used in France for more than a century and a half previously to the date assigned for the discovery of the process of refining in Venice. But white sugar is not necessarily, as Le Grand D'Aussy seems to suppose, refined: it may be merely clayed, like Havana sugar, which is as white as refined sugar. Loaf or lump sugar is unknown in the East, sugar-candy being the only species of refined sugar that is made use of in India, China, etc. The manufacture of sugar-candy is carried on in Hindostan, but the process is extremely rude and imperfect. In China, however, it is manufactured in a very superior manner, and large quantities are exported. When of the best description, it is in large white crystals, and is a very beautiful article. Two sorts of sugar-candy are met with at Canton, viz., Chinchew and Canton; the former being the produce of the province of Fokien, and the latter, as its name implies, of that of Canton. The Chinchew is by far the best, and is about 50 per cent. dearer than the other. Chinese sugar-candy is extensively consumed by Europeans at the different settlements throughout the East. The exports of sugar-candy from Canton in 1846 for British India and Australia amounted to 38,584 piculs, or 2296 tons. Within the last four or five years raw sugar has begun to be rather largely exported from China to England, the shipments for the latter in 1846 having amounted to 18,520 tons. But the speculation did not turn out well; and it is doubtful whether the sugar of China will be able to withstand the competition of that of Brazil and Cuba.—*Vie Privée des François*, ii. 198, ed. 1815. This sugar was imported from Egypt principally by Italians; and the probability is, that the latter were the first Europeans who practiced the art, which, however, would appear to have originated in the East. The cane had, as already seen, been introduced into Sicily, and its culture practiced previously to the middle of the 12th cen-

tury. It also was carried to Spain and cultivated by the Saracens soon after they obtained a footing in that country. The first plantations were at Valencia; but they were afterward extended to Granada and Murcia. Mr. Thomas Willoughby, who traveled over the greater part of Spain in 1664, has given an interesting account of the state of the Spanish sugar plantations, and of the mode of manufacturing the sugar. Plants of the sugar-cane were carried by the Spaniards and Portuguese to the Canary Islands and Madeira, in the early part of the 15th century; and it has been asserted by many that these islands furnished the first plants of the sugar-cane that ever grew in America.

Barbadoes is the oldest settlement of the English in the West Indies. They took possession of it in 1627, and so early as 1646 began to export sugar thence to England. The trade of Barbadoes attained its maximum in 1676, furnishing, it is said, employment, at that period, for 400 sail of vessels, averaging 150 tons burden; but this statement is most probably exaggerated.

Jamaica was discovered by Columbus in his second voyage, and was first occupied by the Spaniards. It was wrested from them by an expedition sent against it by Cromwell in 1656; and has since continued in the possession of the English, forming by far the most valuable of their West Indian colonies. At the time when it was conquered, there were only three small sugar plantations upon it. But, in consequence of the influx of English settlers from Barbadoes and the mother country, fresh plantations were speedily formed, and continued rapidly to increase.

The sugar-cane is said to have been first cultivated in San Domingo, or Hayti, in 1506. It succeeded better there than in any other of the West Indian islands. Peter Martyr, in a work published in 1530, states that in 1518 there were 28 sugar-works in San Domingo, established by the Spaniards. "It is marvelous," says he, "to consider how all things increase and prosper in the island. There are now 28 sugar-presses, wherewith great plenty of sugar is made. The canes or reeds wherein the sugar groweth are bigger and higher than in any other place, and are as big as a man's wrist, and higher than the stature of a man by the half. This is more wonderful, that whereas in Valencia, in Spain, where a great quantity of sugar is made yearly, whensoever they apply themselves to the great increase thereof, yet doth every root bring forth not past 5 or 6, or at most 7 of these reeds; whereas in San Domingo one root beareth 20, and oftentimes 30."

Sugar from San Domingo formed, for a lengthened period, the principal part of the European supplies. Previously to its devastation in 1790, no fewer than 65,000 tons of sugar were exported from the French portion of the island.

Introduction and Cultivation of the Sugar-cane in America.—Sugar-cane occurs in a wild state on many of the islands of the Pacific, but in no part of the American Continent, notwithstanding a contrary opinion has been expressed. Its cultivation and the manufacture of sugar were introduced into Europe from the East by the Saracens, soon after their conquests in the 9th century. It is stated by the Venetian historians, that their countrymen imported sugar from Sicily, in the 12th century, at a cheaper rate than they could obtain it from Egypt, where it was then extensively made. The first plantations in Spain were at Valencia, but they were extended to Granada, Murcia, Portugal, Madeira, and the Canary Islands, as early as the beginning of the 15th century. From Gomera, one of these islands, the sugar-cane was introduced into the West Indies by Columbus, in his second voyage to America, in 1493. It was cultivated to some extent in San Domingo in 1506, where it succeeded better than in any of the other islands. In 1518 there were twenty-eight plantations in that colony, established by the Spaniards, where an abundance of sugar was made, which for a long period formed the principal part of the European supplies. Barbadoes, the oldest English settlement in the West Indies, began to export sugar in 1646, and in the year 1670 the trade required four hundred vessels, averaging 150 tons burden.

The introduction of sugar-cane into Florida, Texas, California, and Louisiana, probably dates back to their earliest settlement by the Spaniards or French. It was not cultivated in the latter, however, as a staple product before the year 1751, when it was introduced by several negroes, by the Jesuits, from San Domingo. They commenced a small plantation on the banks of the Mississippi, just above the old city of New Orleans. The year following, others cultivated the plant, and made some rude attempts at the manufacture of sugar. In 1758 M. Dubreuil established a sugar estate on a large scale, and erected the first sugar-mill in Louisiana, in what is now the lower part of New Orleans. His success was followed by other plantations, and in the year 1765 there was sugar enough manufactured for home consumption; and in 1770 it had become one of the staple products of the colony. Soon after the Revolution, a large number of enterprising adventurers emigrated from the United States to Lower Louisiana, where, among other objects of industry, they engaged in the cultivation of cane, and by the year 1803 there were no less than eighty-one sugar estates on the Delta alone. Since that period, while the production of cane sugar has been annually increasing at the South, the manufacture of maple-sugar has been extending in the North and West.

The common sugar-cane is a perennial plant, very sensitive to cold, and is therefore restricted in its cultivation to regions bordering on the tropics, where there is little or no frost. In the Eastern hemisphere its production is principally confined to situations favorable to its growth, being between the fortieth parallel of north latitude and a corresponding degree south. On the Atlantic side of the Western Continent it will not thrive beyond the thirty-third degree of north latitude and the thirty-fifth parallel south. On the Pacific side it will perfect its growth some five degrees farther north or south. From the flexibility of this plant, it is highly probable that it is gradually becoming more hardy, and will eventually endure an exposure, and yield a profitable return, much farther north, along the borders of the Mississippi and some of its tributaries, than it has hitherto been produced. In most parts of Louisiana the canes yield three crops from one planting. The first season it is denominated "plant cane," and each of the subsequent growths "ratoons." But sometimes, as on the prairies of Attakapas and Opelousas, and the higher northern range of its cultivation, it requires to be replanted every year. Within the tropics, as in the West Indies and elsewhere, the ratoons continue to yield abundantly for twelve, fifteen, and even twenty-four years, from the same roots.

The cultivation of this plant is principally confined to the West Indies, Venezuela, Brazil, Mauritius, British India, China, Japan, the Sunda, Philippine, and Sandwich islands, and to the southern districts of the United States. The varieties most cultivated in the latter are the striped blue, and yellow ribbon, or Java; the red ribbon, or violet, from Java; the Creole crystalline, or Malabar; the Otaheite, the purple, the yellow, the purple-banded, and the gra[illegible] canes. The quantity of sugar produced on an acre varies from 500 to 3000 lbs., averaging, perhaps, from 800 to 1000 lbs.

Hitherto the amount of sugar and molasses consumed in the United States has exceeded the quantity produced, consequently there has been no direct occasion for their exportation. In the year 1815 it was estimated that the sugar made on the banks of the Mississippi alone amounted to 10,000,000 lbs. In 1818 the entire crop of Louisiana was only 25,000,000 lbs.; in 1850 it had reached the enormous quantity of 226,001,000 lbs., besides about 12,000,000 gallons of

molasses. According to the census of 1840, the amount of cane and maple sugar was 155,100,800 lbs., of which 119,047,720 lbs. were raised in Louisiana. By the census of 1850 the cane sugar made in this country was 247,581,000 lbs., besides 9,700,666 gallons of molasses; maple-sugar, 34,249,886 lbs., amounting to 281,830,886 lbs., showing an increase in ten years of 126,730,077 lbs.—*United States Patent Office Report*, 1850.

Adulteration.—Sugar is an article which is especially liable to adulteration; and its high price during the last few years, coupled with the high duty, has given a powerful stimulus to this nefarious practice. Perhaps we might not be far from the mark were we to estimate the quantity of foreign matters intentionally mixed up with sugar, and sold as such in England, previously to the late reduction of duties, at 10,000 or 12,000 tons a year! Sago and potato flour are the articles which have been most extensively used for this purpose. When mixed with sugar they give it a whiter and finer appearance, and, unless the dose be overdone, increase its price about *4s.* a cwt. It is extremely difficult to deal with an abuse of this sort. No doubt the fall in the price of sugar following the placing of the trade on a proper footing, and the reduction of the duty, have lessened the temptation to adulterate. But they have not wholly removed it, the materials employed to adulterate being decidedly cheaper than sugar, however supplied. In this, as in most cases of the sort, the best security against adulteration is to deal only with grocers of the highest character.

Failure of the Sugar-cane in Louisiana.—The culture of sugar-cane in Louisiana has been subject, from the period of its introduction in 1751 up to the present time, to certain unfavorable vicissitudes to which it is not liable in more southern climes. The past has been more marked, perhaps, than any preceding season, both in respect to the amount produced and to the diseases and condition or degeneracy of the cane. The spring of 1854 is represented to have been so extraordinarily dry that most of the cuttings put into the ground perished, even after they had vegetated. Indeed, some few sections only of the sugar-growing parishes were favored even with occasional vernal showers, and the crops in these sections gave better promise than those in other parts of the State. But yet in these the yield was not abundant, as the summer and fall proved otherwise unfavorable to the growth and maturity of the cane; and many planters, who had crops of fair appearance, found, upon grinding and boiling, that the actual yield of sugar to the acre was unusually small. The plant-cane, upon which the cultivators mainly depend, seems to have been a general failure throughout the State; and the small crop made was mostly saved from the stubbles or ratoons. The securing of the crop was also very unfavorable to the planter. At the commencement of the grinding there appeared to be little or no crystallizable sugar in the juice. The cane was not ripe, and the cold and unusually wet winter, which consequently required a large amount of fuel for boiling, was a great drawback; so much so that many of the planters lost a good portion of their crops by not being prepared for these exigencies, while others, rather than grind their immature cane, preferred to let it stand in the fields, even at the risk of losing a part, and did not commence boiling before the 20th of December.

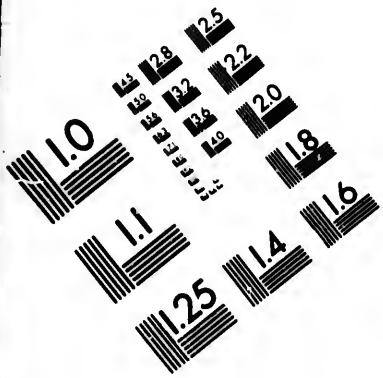
The deterioration, or falling off of the crop, has been attributed to presumed causes, one of which is that based upon the theory of Mr. Knight, of Herefordshire, in England, in the latter part of the last century, namely, that plants propagated by cuttings, or slips, deteriorate and become extinct, unless regenerated from time to time by the production of fresh stocks directly from the seeds. Mr. Knight, it would seem, based his hypothesis upon the fact that certain varieties of the apple in his neighborhood were believed to be running through their natural course, and named as instances the "Golden Pippin" and the "Nonpareil." But the particular cases thus cited failed to sustain his assumption, for the Golden Pippin is believed still to thrive well at Madeira, on many parts of the Continent of Europe, and in England, as well as the Nonpareil, just as they did in the days of Queen Anne.

The cultivated sugar-cane very rarely produces seeds, although this is said sometimes to occur even in the Southern States of this Union; but it has not been shown that the seeds have vegetated when sown; yet there is, no doubt, some country in which the course of nature is followed in this respect. Moreover, it has been averred that there is no region in which the cultivators attempt to resort to this mode of propagation, their dependence being always and entirely upon the cuttings. The theory, therefore, of the insufficiency of this means of propagating the sugar-cane, is without the least foundation, unless it can be shown that a general tendency to decay and extinction is manifested in it throughout the globe—a fact that has not been assumed, and that certainly does not exist.

That the propagation of plants, by their seeds, is the natural method, seems like an infallible proposition; and to the inquiry it naturally suggests respecting their design, if not for this use, it may be difficult to find a conclusive reply. But the vegetable kingdom presents to the mind of the observer so many apparent anomalies, that the student who refuses to progress farther until each in succession is made plain to his understanding, is not likely to proceed far in this most interesting and profitable pursuit.

It is an unfortunate, though very prevalent error, to attribute the diseases of plants to other than the real causes, since by doing so we deprive ourselves of the ability to apply the remedy appropriate to each case. A deficiency or excess of rain, heat or cold, the electric state of the atmosphere, and, what is still more likely, an unfavorable condition of the soil, doubtless more or less induce the diseases or debility of plants; and these may be either local or general. In the case of the sugar-cane of Louisiana, for instance, although it is highly desirable to introduce cuttings of new, and, if possible, better varieties, than are now cultivated in that State, there is a probable cause of deterioration to which the attention of planters has not been effectually directed. It is known that the continued production of a single species of plant upon almost any soil will eventually exhaust that soil of those elements especially required as the pabulum of that plant, if those elements be not carefully ascertained and systematically returned. Is not this probably the case with respect to the sugar-fields of Louisiana? Chemical analyses have shown that nearly one half of the inorganic matter contained in the cane itself is phosphate of lime, and nearly a fourth silica. The bare statement of this fact must assuredly suggest to every mind a prominent cause of the evil. In the continued culture of sugar upon the same lands, as of every thing else, a judicious system of rotation, with a liberal supply of guano, or other animal and phosphated manure, in connection with a due supply of well decomposed vegetable matter, is essential; and, as has been intimated, the latter must be of the kinds specially indicated.

That there has been a degeneracy in the cane, caused by exhaustion of the soil, and injudicious rotation, is obvious, from the fact that the same lands which have been under cultivation for a long period have yielded more than three times the amount of sugar to the acre in some years than in others, the productiveness having been in those cases in which the soil was in its primitive fertility, or when enriched by guano or other appropriate manures. For instance, the British and French West India Islands, some sixty or seventy years ago, yielded from 3000 to 6000 pounds of sugar to the acre. At present they do not yield a third of this amount without manure. The product in Louisiana,



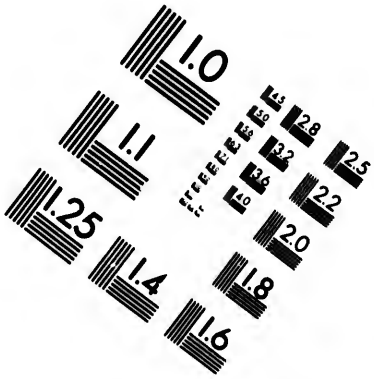
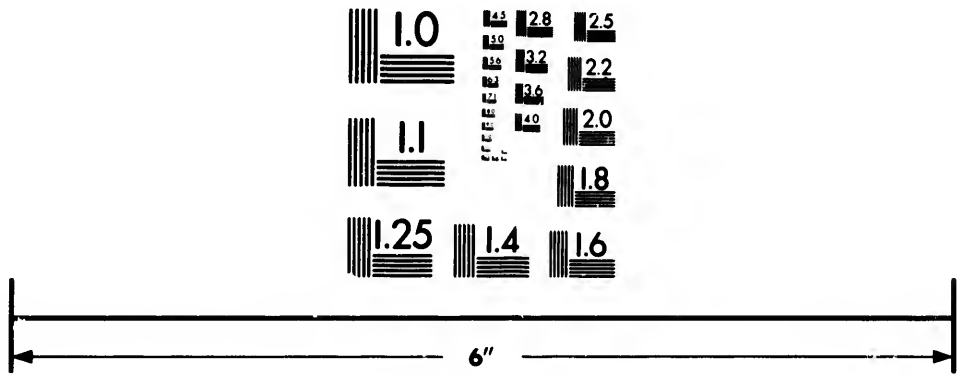
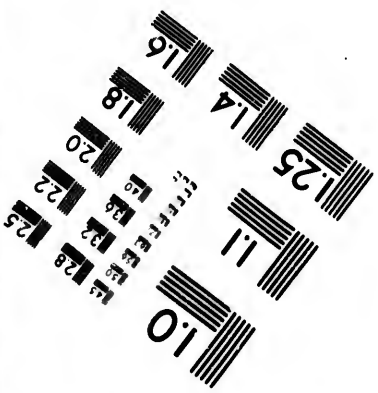
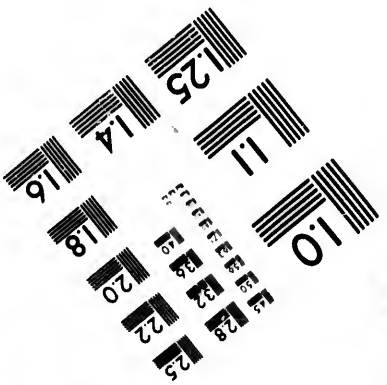


IMAGE EVALUATION TEST TARGET (MT-3)







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formerly, often reached as high as 3000 or 4000 pounds; and in some cases even to 6000 pounds; but for the last few years it has often ranged as low as from 500 to 1000 pounds to the acre. According to Commodore Perry, in his "Expedition to Japan," before the introduction of guano into Mauritius, the product of sugar on that island was from 2000 to 2500 pounds to the acre; but the increase since the application of this fertilizer has been so extraordinary as to be scarcely credible. In ordinary seasons the product has been from 6000 to 7000 pounds, and under peculiarly favorable circumstances it has even reached 8000 pounds to the acre.

The amount of raw sugar as a gross produce to the acre, in several countries of the globe, from good authorities, is as follows:

Mauritius	6000 pounds.
Brazil	5000 "
Cuba	4000 "
Isle of Bourbon	3300 "
Guadaloupe	2000 "
Vera Cruz	1900 "
Martinique	1700 "
Bengal	1600 "
St. Domingo	1100 "
Louisiana	1000 "

In order to show the fluctuations of the sugar-crop in Louisiana, we have compiled from our records the annexed statement of the sugar product of Louisiana for the past twenty-three years, showing the amount of each year's crop in hogsheads and pounds, with the gross average value per hogshead and total, the proportions taken by Atlantic ports and Western States, and the date of the first receipt of each crop. By this statement it will be seen that the total product of Louisiana from 1834 to 1856 inclusive, a period of twenty-three years, was 3,972,716 hogsheads, valued at $204,131,228, and that of this quantity the Atlantic ports took 1,317,883 hogsheads, and the Western States 1,974,103 hogsheads. The crops from 1828 (which is as far back as our estimates extend) to 1833 summed up 281,000 hogsheads; which would make the total product in a period of twenty-seven years 4,253,716 hogsheads, or 4,477,668,000 pounds. We would here remark that up to 1848 the product in hogsheads is estimated, and 1000 pounds taken as the average weight per hogshead, but for the crop since that date we have taken the figures of Mr. P. A. Champonier, as we find them in his annual statements.

Years.	Total Crop.		Average Price per Hogshead.	Total Value.	Exports from New Orleans.		First Receipts of New Crop
					Exported to Atlantic Ports.	Exported to Western States.	
	Hogsheads.	Pounds.			Hogsheads.	Hogsheads.	
1834	100,000	100,000,000	$60 00	$6,000,000	45,500	44,500	October 15.
1835	30,000	30,000,000	90 00	2,700,000	1,500	23,500	November 5.
1836	70,000	70,000,000	60 00	4,200,000	26,300	35,000	November 1.
1837	65,000	65,000,000	62 50	5,062,500	24,500	32,500	November 1.
1838	70,000	70,000,000	62 50	4,375,000	26,500	32,500	October 17.
1839	115,000	115,000,000	50 00	5,750,000	42,600	58,000	October 15.
1840	87,000	87,000,000	55 00	4,785,000	38,500	46,500	October 14.
1841	90,000	90,000,000	40 00	3,600,000	28,000	50,000	October 13.
1842	140,000	140,000,000	43 50	4,750,000	63,000	60,000	October 12.
1843	100,000	100,000,000	60 00	6,000,000	34,000	52,000	October 22.
1844	200,000	200,000,000	45 00	9,000,000	101,000	70,000	October 3.
1845	186,650	186,650,000	55 00	10,265,750	79,000	75 000	October 4.
1846	140,000	140,000,000	70 00	9,800,000	45,500	70,000	October 7.
1847	240,000	240,000,000	40 00	9,600,000	84,000	115,000	October 2.
1848	220,000	220,000,000	40 00	8,800,000	90,000	108,000	October 5.
1849	247,928	269,769,000	50 00	12,396,150	90,000	125,000	October 11.
1850	211,303	231,194,000	60 00	12,678,180	45,000	123,000	October 17.
1851	236,547	257,138,000	50 00	11,827,350	42,000	149,000	October 19.
1852	321,931	368,129,000	48 00	15,452,688	82,000	206,000	October 9.
1853	449,324	495,156,000	35 00	15,726,340	166,000	185,000	October 6.
1854	346,636	385,726,000	52 00	18,025,020	122,000	143,000	October 4.
1855	231,427	254,569,000	70 00	16,199,890	89,133	131,027	October 10.
1856	73,976	81,373,000	110 00	8,137,360	1,850	39,576	November 3.
Total....	3,972,716	4,196,668,000	.....	204,131,228	1,317,883	1,974,103	.....

In seeking a remedy for the evil here complained of in Louisiana, the minds of many have very naturally been turned to the project of replenishing the canefields of that State by the importation of a fresh supply of cuttings, of such varieties as may be found best suited to the soil and climate. Resort to this means of restoration should be promptly made on a liberal and extensive scale, so that the experiment may be thorough, and, if possible, effectual in its results. An intelligent agent should be selected for the purpose, well acquainted with the character of the cane, and the nature of the soils and climates in which it grows, as well as with the best modes of packing and transporting it to distant parts, either by land or sea; and, what would add much to his qualifications, one who is also acquainted practically with the culture of the plant and the manufacture of sugar.

Among the points on this continent from which the cuttings could be obtained might be instanced the valley of Aragua, in Venezuela, British Guiana, or some favorable locality on the coast of Brazil. On or near the Eastern continent, perhaps British India or the islands of Maritius and Java might prove suitable positions for the procurement of the varieties desired. The agent thus employed should be accurately informed or instructed with reference to the soil, climate, and elevation above the sea, of the sugar districts of these countries, as well as to the age and healthiness of the canes from which the cuttings are to be taken, the parts of the plants from which they are to be obtained, and the proper seasons of procuring them and delivering them at some accessible point in the United States near where they are intended to grow.

The varieties of cane which have hitherto been most cultivated in Louisiana are the Striped-blue Ribbon; the Green Ribbon; the Yellow Ribbon, or Java; the Red Ribbon, or Violet; the Reddish Violet; the Red striped; the Creole; Crystalline, or Malabar; the Otaheite; the Purple; the Yellow; the Purple-banded; the Gray; the Grayish White.

The *Red-striped* cane, which was originally brought from the Dutch colony of Java, and the *Violet* or *Reddish Violet*, which is only a variation from the former, are believed to be the only two varieties that will generally prosper under the climate of the sugar districts of the Southern States. All the other descriptions are too sensitive to cold, except in the warmer parts of the delta of the Mississippi, Florida, and Texas. When planted in new ground, it gives a certain amount of white canes, or those the outside of which is of a grayish white. When cultivated in old soil, however, it furnishes a good yield of violet-red cane. Again, on new ground, a part, say, from one-tenth to one-fifteenth, of the striped cane becomes white, or a dirty grayish white. There are also to be found more or less red stripes on some portions of the stalk, or on the joints; but all the rest of the stalk is entirely gray. On old ground, on the contrary, the red-striped gives red or violet red canes in about the same proportion as above. The tendency of this cane to degenerate rapidly is re-

markable in every part of America. The other varieties are not so liable to deteriorate. After once degenerating, these canes never recover their original color. —*Patent Office Report*, 1855.

Sources whence the Supply of Sugar is derived.—The West Indies, United States, Java, Brazil, Bengal, Mauritius, Siam, the Isle de Bourbon, and the Philippines, are the principal sources whence the supplies required for the European and American markets are derived. The quantities exported in 1857 from these countries, exclusive of molasses, may be estimated as follows:

	Tons.	Tons.
British Colonies.		
West Indies	180,000	
Mauritius	75,000	
British India	75,000	
		330,000
Spanish Colonies.		
Cuba	350,000	
Porto Rico	50,000	
Philippines	25,000	
		425,000
Dutch Colonies.		
Java	75,000	
Guiana	25,000	
		100,000
French Colonies.		
Martinique, Guadaloupe, Isle de Bourbon, etc.		80,000
Danish and Swedish Colonies.		
St. Thomas, St. Cruz, etc.		10,000
Brazil		95,000
United States		100,000
China, Siam, and all other parts		40,000
Production of beet-root sugar in the world		200,000
Production of sorghum and maple-sugars, principally in the United States		200,000
Aggregate tons		1,580,000

Consumption of Sugar in the World.—In the aggregate we shall not, perhaps, be far wrong in estimating the consumption of exported colonial and tropical sugar for the year 1857 as follows:

	Tons.	Tons.
The United Kingdom		420,000
France		165,000
The Netherlands, Belgium, Germany, Prussia, Austria, Hungary, and Austrian Italy, per Dutch ports, deducting re-exports to Russia and other countries	125,000	
Per Hanse Towns	40,000	
Per Antwerp	15,000	
Per Rostock, Stettin, Königsberg, and other ports on the Baltic, excluding the imports from Holland and the Hanse Towns	15,000	
Trieste, Venice, Fiume, etc.	55,000	
		250,000
Spain		50,000
Portugal		10,000
Russia		70,000
Denmark and Sweden		25,000
Italy, Sicily, Malta, Turkey, Greece, and the Levant generally		60,000
United States		435,000
Canada, Australia, Cape of Good Hope, etc.		95,000
Total tons		1,580,000

In the estimate for the United States, the production of cane sugar is included.

STATEMENT OF THE TOTAL QUANTITY OF RAW AND REFINED SUGAR ENTERED FOR HOME CONSUMPTION IN GREAT BRITAIN IN EACH OF THE FIVE YEARS ENDING 1856.

Year ending	Tons.	Tons.
July 5, 1852	368,875	increase, 55,072
" 1853	365,239	decrease, 3,636
" 1854	384,102	increase, 18,863
June 30, 1855	420,208	increase, 42,101
" 1856	372,626	decrease, 53,577

The imports have, in a partial degree, corresponded with the fluctuations in consumption, and these tables show, notwithstanding the large quantities received from the Continent toward the close of last year, and the earlier arrivals from the colonies in the present, that the imports in the year ending the 30th June last were nearly 20,000 tons less than in the preceding twelve months.

STATEMENT OF THE TOTAL QUANTITY OF RAW AND REFINED SUGAR IMPORTED INTO GREAT BRITAIN IN EACH OF THE FIVE YEARS ENDING 1856.

Year ending	Tons.	Tons.
July 5, 1852	396,261	increase, 28,796
" 1853	354,138	decrease, 42,123
" 1854	393,438	increase, 39,300
June 30, 1855	428,879	increase, 35,441
" 1856	409,226	decrease, 19,653

AVERAGE PRICES OF BROWN SUGAR IN THE MONTHS OF JANUARY, MARCH, MAY, JULY, SEPTEMBER, AND NOVEMBER IN THE PORT OF HAVANA DURING THE FOLLOWING TEN YEARS—WITH THE YEARLY AVERAGE VALUE—PRICES IN REALS

Years.	Jan.	March.	May.	July.	Sept.	Nov.	Aver.
1846	6 1/10	5 3/8	5 3/8	5 1/4	6 1/4	6 1/4	5·86
1847	5 9/10	6 1/4	6 3/8	6 1/8	6 1/4	6 3/8	6·18
1848	5 3/8	5 3/4	8 3/8	8 3/8	4 1/4	5 1/4	4·50
1849	5	5	5 1/2	5 1/2	6 1/4	5 1/4	5·61
1850	5	5 3/8	5 1/10	5 1/10	6 1/2	7	5·77
1851	6 1/4	5 3/8	5 3/10	5 1/2	5 1/4	4 9/10	5·37
1852	4 1/2	4 1/2	5 1/10	5 1/2	5 3/4	5 1/4	5·10
1853	5 1/2	5 5/8	5 1/4	5 3/8	5 5/8	5 3/8	5·61
1854	5 5/8	5 3/8	5 1/4	4 9/10	5 3/4	5 7/10	5·37
1855	5 1/4	5 3/8	5 1/2	6 1/2	7 1/2	8	6·65
Average	5·62	5·40	5·30	5·41	5·81	6	5·60

Consumption in the United States.—The consumption of sugar in the United States has been very variable, and the increase of consumption in the last half-dozen years—since the price has been low—is very great. This will be seen in the following tables. We shall first show the importation of foreign sugar. In this account we have subtracted from the quantity imported the amount *re-exported*, so that the statement below gives the prime quantity imported and used in the country for the years given.

FOREIGN SUGAR IMPORTED AND CONSUMED.

Years.	Pounds.	Years.	Pounds.
1837	96,141,352	1848	244,139,753
1840	110,041,297	1850	194,433,629
1842	160,863,475	1853	448,400,644
1845	99,752,969	1855	440,000,000

It will be seen from this that since 1845, a period of ten years, the *importation* of sugar has quadrupled.

It will also be seen that from 1837 to 1839, and from 1850 to 1853, in each period, the importation of sugar doubled. There can be no doubt, from the exhibition of the above figures, that the reduction of prices has had great influence on the importation of sugar. Let us now turn from the foreign to the domestic supply; and first the production of Louisiana and Texas.

The *New Orleans Price Current* furnishes the number of hogsheads raised in the United States for a series of years. Reducing it to pounds, at 1000 lbs. to the hogshead, we have the following result since 1837:

Years.	Pounds.	Years.	Pounds.
1837	65,000,000	1848	220,000,000
1840	87,000,000	1850	211,303,000
1842	140,000,000	1853	449,324,000
1845	186,650,000	1855	231,427,000

We find from the table that the *production* of cane sugar has doubled in the last ten years, and quadrupled in fifteen. In addition to this, the common *maple*-sugar averages about thirty millions of pounds per annum.

Now, taking the aggregate of sugar imported, and that made in the country, we have the following supply, estimated in pounds, for successive years:

TOTAL SUGAR SUPPLY.

Years.	Pounds.	Years.	Pounds.
1837	191,141,352	1848	494,129,753
1840	227,041,297	1850	435,736,629
1842	330,863,475	1853	927,424,644
1845	316,402,969	1855	871,427,000

It may safely be assumed that the average consumption of sugar in the United States is now equal to nine hundred millions of pounds per annum. Deducting from the population of the United States three millions of slaves, who probably use very little sugar, we have the consumption of sugar equal to about 40 lbs.

average for each person. But this consumption of sugar has actually trebled in ten years! This is certainly a very extraordinary fact, and indicates a great change in the habits of living among the people of the United States. That it is a real, absolute change in the habits of life, can not be doubted. Let us show its magnitude by comparing the increase of population with the increase of sugar:

Years.	Increase Population.	Increase Sugar.
1840 to 1845	16 per cent.	50 per cent.
1845 to 1850	16 "	84 "
1850 to 1855	10 "	100 "
1840 to 1855	48 "	300 "

We then see that the consumption of sugar far outruns the increase of population. In 1840 the consumption of sugar was but 16 lbs. per individual. In 1855 it is 40 lbs.

In the period of twelve years, from 1843 to 1854 inclusive, there has been a steady diminution in the *price* of sugar, but not enough to account for the change we see here. The change of prices in New Orleans sugar has been as follows:

1843 to 1846	$58 per hogshead.
1847 to 1850	47 "
1851 to 1854	46 "

The price of sugar to the consumer in the West has diminished much more rapidly than this. The increase of steamboats and the rapid decline of freights has produced a great reduction in the price of tropical products in the West; which has been steadily going on for thirty years. The *effect* of this, together with the increase of population at the West, has produced an extraordinary increase in the consumption of sugar, and especially in the valley of the Ohio. This increase in the Western States is quite remarkable. We find, by a statement in the New Orleans *Price Current*, that in twenty years, from 1834 to 1854, the export of sugar from New Orleans to the Western States amounted to one million eight hundred thousand hogsheads, or about ninety thousand hogsheads per annum; but when we examine the detail, we find the average annual increase to be very rapid. Taking the aggregate of each five years, we have the following result:

1835 to 1839, inclusive	181,500	hogsheads.
1839 to 1844 "	278,500	"
1845 to 1849 "	493,000	"
1850 to 1854 "	806,000	"
1839 to 1844	53	per cent.
1845 to 1849	80	"
1850 to 1854	70	"

The present consumption of Louisiana sugar in the Western States, to which it is carried by steamboats, amounts to an average of 160,000 hogsheads per annum. This is mainly *distributed* through the three great distributing points of the West—Cincinnati, Louisville, and St. Louis.

Another remarkable fact in the commerce in sugar is the increase of American refined sugar. At the present time the amount of refined sugars imported is not half what it was twenty years since; while the amount of sugar exported is four times as much.

Bounty on Exportation of refined Sugar.—Sugar refined in the United States, the growth and production of any other country, is entitled to an allowance of drawback equal to the amount of duties paid on the raw article, on due exportation thereof to any foreign port or place, subject only to the provisions that no drawback shall be allowed on any exportation when such drawback shall not amount to twelve dollars or more. To entitle the exporter to the benefit of said allowance of drawback, such exporter, at least six hours previous to the putting or lading any of the said refined sugar on board any vessel or other conveyance for exportation, shall lodge with the collector of the customs, for the district from which such importation is to be made, an entry setting forth his intention to export the same, and describing the marks, numbers, and packages, and designating the place where deposited, and the name of the vessel or other conveyance in or by which, and the port or place to which, the same is intended to be exported. This entry must be according to form, and, upon presentation, be verified by the oath or affirmation of the owner or agent, or other proper officer of the manufactory in which such sugar may have been refined. If any of such sugar, after it shall have been shipped for exportation, shall be unshipped for any purpose whatever, either within the limits of the United States or within four leagues of the coast thereof, or shall be relanded within the United States from on board the vessel wherein the same shall have been laden for exportation, unless the voyage shall not be proceeded on, or shall be altered from necessity or distress, to save the ship and goods from perishing, which shall be immediately made known to the collector of the nearest district; then the sugar so unshipped, together with the vessel, her boats and equipment, shall be forfeited, and may be seized by any officer of the customs or inspection.

SUGAR TRADE OF THE UNITED STATES.

IMPORTS INTO, EXPORTS FROM, AND CONSUMPTION OF FOREIGN SUGAR IN THE UNITED STATES FOR THE FIVE YEARS ENDING THE 30TH OF JUNE, 1855.—(FROM TREASURY REPORTS.)

Years.	Imports.	Exports.	Consumption
	Pounds.	Pounds.	Pounds.
1851	385,000,000	6,000,000	379,000,000
1852	457,000,000	9,000,000	448,000,000
1853	464,000,000	18,000,000	446,000,000
1854	455,000,000	52,000,000	403,000,000
1855	473,000,000	33,000,000	440,000,000

PRODUCT OF SUGAR IN THE UNITED STATES—EXPORT AND CONSUMPTION THEREOF.—(FROM CHAMPONIER'S AND TREASURY REPORTS.)

Years.	Products.	Exports.	Consumption
	Pounds.	Pounds.	Pounds.
1851	257,000,000	2,000,000	255,000,000
1852	379,000,000	6,000,000	373,000,000
1853	503,000,000	10,000,000	493,000,000
1854	393,000,000	11,000,000	382,000,000
1855	263,000,000	(no data)	263,000,000

SUGAR CROP IN TEXAS, 1855.

Counties.	Number of Hogsheads.
Brazoria	6790
Matagorda	959
Wharton	320
Fort Bend	920
Total	8989

Thus Texas produced in the year 1855 a much better crop than the preceding one, say 9,887,900 pounds against 7,513,000 pounds during the previous season.

EXPORTS OF SUGAR OF DOMESTIC PRODUCTION FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Districts.	Brown Sugar.		Refined Sugar.	
	Pounds.	Value.	Pounds.	Value.
		$		$
Passamaquoddy	850	80	....	....
Portland and Falmouth	500	40	1,100	110
Vermont	122,158	10,044	9,700	970
Salem and Beverley	....	....	19,367	2,644
Boston and Charlestown	16,873	1,964	1,047,866	227,374
New Bedford	6,500	500	3,600	380
Providence	....	....	7,707	963
New London	19,222	1,070	....	....
Stonington	5,000	600	....	....
Genesee	86,672	8,732	....	....
Oswego	568,342	57,342	414,006	48,487
Niagara	150,346	14,199	....	....
Buffalo Creek	20,901	2,042	28,213	3,140
Oswegatchie	1,600	80	....	....
New York	72,890	6,606	52,183	6,183
Champlain	852,328	01,648	9,660	1,032
Philadelphia	350	42	42,544	5,451
Baltimore	299,577	24,917	587,862	68,495
Norfolk	....	....	400	57
Charleston	545	78	....	....
New Orleans	10,252	2,025	810	99
Detroit	7,850	934	37	42
Chicago	921	110	....	....
San Francisco	....	....	12,600	2,171
Minnesota	3,675	343	4,850	718
Total	3,196,412	190,012	3,141,835	368,206

EXPORTS OF SUGAR OF FOREIGN PRODUCTION FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Brown.		White, clayed, or powdered.		Loaf and other refined.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Russia on the Baltic and North Seas	251,253	$25,728	440,415	$44,042	....	....
Russian Possessions in North America	26,912	1,125	....	....	65,560	$7,040
Danish West Indies	....	....	....	....	70,447	9,205
Hamburg	....	....	....	....	5,000	548
Holland	6,018	601	....	....	....	....
Dutch West Indies	1,800	198	....	....	80,001	8,676
Belgium	1,025,576	92,261	....	....	150,000	17,000
England	181,888	12,302	1,600	200	....	....
Malta	40,780	3,607	....	....	....	....
Canada	8,468,397	577,142	422	47	67,245	5,186
Other British North American Possessions	140,394	18,025	....	....	244,755	28,582
British West Indies	1,150	50	....	....	22,203	2,599
British Honduras	....	....	....	....	56,484	6,779
British Possessions in Africa	10,319	1,169	3,840	480	....	....
Other ports in Africa	3,843	334	....	....	10,472	1,315
French North American Possessions	95,727	8,887	1,950	254	....	....
French West Indies	....	....	....	....	1,790	178
Porto Rico	....	....	....	....	11,084	1,369
Azores	....	....	....	....	3,830	383
Sardinia	33,474	2,551	....	....	....	....
Turkey in Asia	96,780	7,512	....	....	....	....
Hayti	2,077	244	8,485	994	239,454	29,575
San Domingo	1,934	220	....	....	1,797	215
Mexico	40	9	....	....	6,800	611
Central Republic	6,350	513	....	....	....	....
New Granada	5,635	450	....	....	397,932	49,682
Venezuela	....	....	....	....	13,853	1,891
Brazil	....	....	....	....	107,713	12,409
Uruguay, or Cisplatine Republic	....	....	....	....	37,619	4,514
Buenos Ayres, or Argentine Republic	....	....	....	....	803,294	84,364
Chili	1,736,547	184,180	....	....	253,246	30,664
Ecuador	....	....	....	....	2,015	226
Sandwich Islands	11,920	1,164	....	....	3,257	453
China	....	....	....	....	8,999	964
Whale-fisheries	6,900	731	....	....	1,500	180
Total, year 1856–'7	12,163,659	$884,593	456,712	$46,017	2,106,430	$249,653
From warehouse	7,018,266	$493,583	3,840	$480	978,603	$112,914
Not from warehouse	5,150,393	391,060	452,872	45,537	2,127,827	136,739

IMPORTS OF FOREIGN SUGAR INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whence imported.	Loaf and other refined.		Candy.		Sirup of Sugar-cane.		Brown.		White, clayed, or powdered.	
	Pounds.	Value.	Pounds	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Swedish West Indies	....	....	....	....	....	....	3,564	$200	....	....
Danish West Indies	....	....	....	....	....	....	446,083	29,311	....	....
Hamburg	65,560	$7,040	530	$70	....	....	1,912	150	....	....
Bremen	....	....	2,773	395	....	....	....	....	....	....
Holland	271,008	26,033	....	....	....	....	325	62	187,073	$21,344
Dutch West Indies	....	....	....	....	....	....	375,088	23,052	....	....
Dutch Guiana	....	....	....	....	....	....	5,358,900	233,978	....	....
Dutch East Indies	....	....	....	....	....	....	2,529,745	136,069	....	....
Belgium	373,305	34,232	5,423	465	....	....	....	....	....	....
England	....	....	2,900	304	....	....	9,902	481	....	....
Scotland	....	....	....	....	....	....	16,152	1,832	....	....
Ireland	....	....	....	....	....	....	800	48	....	....
Canada	....	....	....	....	....	....	62,729	3,044	....	....
Other British N. Am. Possessions	....	....	....	....	....	....	227,810	16,143	....	....
British West Indies	....	....	....	....	....	....	17,714,663	1,028,662	....	....
British Guiana	....	....	....	....	....	....	13,725,408	710,440	....	....
British East Indies	....	....	....	....	....	....	8,288,636	854,670	....	....
France on the Atlantic	....	....	4,570	503	1,029	$53	....	....	....	....
France on the Mediterranean	7,980	701	....	....	....	....	....	....	....	....
French West Indies	....	....	....	....	....	....	2,500	178	....	....
French Guiana	....	....	....	....	....	....	486,044	14,790	....	....
Philippine Islands	....	....	....	....	....	....	21,483,037	875,543	....	....
Cuba	....	....	....	....	521	33	599,513,965	33,188,186	703,704	45,855
Porto Rico	....	....	....	....	37,344	1359	81,854,212	4,702,897	....	....
Madeira	....	....	....	....	....	....	....	....	100	6
Sardinia	....	....	890	45	....	....	....	....	....	....
Two Sicilies	....	....	....	....	....	....	620	40	....	....
Hayti	....	....	....	....	65,272	1774	1,064	100	....	....
San Domingo	....	....	....	....	....	....	31,960	1,558	....	....
Mexico	....	....	....	....	....	....	31,821	1,737	....	....
Central Republic	....	....	....	....	....	....	200	10	....	....
Venezuela	....	....	....	....	....	....	37,810	1,915	....	....
Brazil	....	....	....	....	....	....	19,101,751	1,079,340	327,307	19,615
Chili	....	....	....	....	100	50	....	....	....	....
Sandwich Islands	....	....	....	....	11,154	1006	598,499	46,161	....	....
China	....	....	2,267	165	....	....	3,576,598	168,621	....	....
Total, year 1856–'7	718,843	$68,006	18,853	$1887	115,420	$4284	774,031,815	$42,614,604	1,218,184	$86,820

The comparative consumption of sugar in Europe and America is a subject of interest. Mr. M'Culloch, the political economist, estimated the consumption of sugar in Great Britain at 24 lbs. per individual, and says this is much more than is consumed in France or any part of the continent. At present the consumption in the United States is 40 lbs. per individual; and thus we see it is much greater than in Europe, or probably any part of the world. This fact is conclusive, if no other could be had, that the people of the United States live more comfortably, and even luxuriously, than any other people in the world, because they have more real income to expend in subsistence and its comforts. High prices tend to diminish consumption. But, on the other hand, the capacity to consume was never so great as at present, owing to the general prosperity. A rapid increase of population will also have a tendency to prevent much reduction in the importation of sugar.

RECEIPTS OF FOREIGN SUGAR IN THE UNITED STATES.

FROM 1st JANUARY TO 31st DECEMBER, 1856.	Hhds. and Tierces.	Barrels.	Boxes and Cases.	Bags, Mats, and Baskets.	Total Tons of 2240 Pounds.
At New York	231,602	23,941	108,759	269,336	171,158
At Boston	28,088	1,909	73,860	189,285	88,657
At Philadelphia	28,962	2,031	16,204	24,95[illegible]	22,182
At Baltimore	23,855	8,019	16,982	8,357	19,196
At New Orleans	7,026	1,953	30,202	....	11,579
At other ports	19,673	3,203	8,942	....	12,892
Total receipts	339,151	41,056	264,089	491,933	275,662
Add stock at all the ports, January 1, 1856	5,104	....	15,767	....	5,950
Total supply	344,255	41,056	279,806	491,933	281,612
Deduct exports and shipments inland to Canada from all the ports in 1856	12,555	198	12,912	455	9,501
	331,700	41,758	266,894	491,478	272,111
Deduct stock at all the ports, January 1, 1857	13,770	....	46,669	4,000	16,819
Total consumption of foreign	317,930	41,758	220,225	487,478	255,292
FROM 1st JANUARY TO 31st DECEMBER, 1857.					
At New York	246,106	24,897	99,300	175,995	161,949
At Boston	24,712	1,647	80,223	200,866	31,730
At Philadelphia	28,639	5,173	6,330	63,161	22,802
At Baltimore	27,833	9,506	1,561	18,894	18,080
At New Orleans	34,506	1,010	14,760	8,297	20,349
At other ports	24,266	3,226	3,089	1,256	14,287
Total receipts	386,062	45,459	161,163	468,289	269,180
Add stock at all the ports, January 1, 1857	13,770	....	46,669	4,000	16,819
Total supply	400,588	45,459	207,832	472,289	285,999
Deduct exports and shipments inland to Canada from all the ports in 1857	39,468	746	20,037	80,273	28,705
	361,070	44,713	181,795	442,016	257,294
Deduct stock at all the ports, January 1, 1858	23,410	....	13,139	20,312	15,529
Total consumption of foreign	337,660	44,713	168,656	421,704	241,765

	Tons.
Consumption of foreign in 1856, as above	255,292
Consumption of foreign in 1855	192,607
Increase in 1856	62,685
Consumption of foreign in 1856	255,292
Add crop of 1855-'56, of Louisiana, Texas, Florida, etc., the bulk of which came to market in 1856, and assuming the stock 1st January each year to be equal	123,468
Would make the total consumption of cane sugar in the United States in 1856	378,760
Total consumption of domestic and foreign in 1855	377,752
Increase in 1856	1,008
Consumption of foreign in 1857, as above	241,765
Consumption of foreign in 1856	255,292
Decrease in 1857	13,527
Consumption of foreign in 1857	241,765
Add crop of 1856-'57 of Louisiana, Texas, Florida, etc., the bulk of which came to market in 1857, and assuming the stock 1st January each year to be equal	39,000
Would make the total consumption of cane sugar in the United States in 1857	280,765
Total consumption of foreign and domestic in 1856	378,760
Decrease in 1857	97,995

"The foregoing statistics present in a clear and concise view the extent of this branch of our commerce for the past year. It will be seen that the total receipts of foreign unrefined sugar into the United States, during the year ending December 31, 1857, were 269,180 tons, against receipts in 1856 of 275,662 tons, and in 1855 of 205,064 tons; and the quantity of this description taken for consumption in 1857 was 241,765 tons, against 255,292 tons in 1856, and 192,607 tons in 1855, being a decrease in the consumption of foreign in 1857, as compared with 1856, of 13,527 tons, or 5$\frac{3}{10}$ per cent.; while the total consumption of foreign and domestic in 1857 was 280,765 tons, against a total consumption in 1856 of 378,760 tons; in 1855, 377,752 tons; in 1854, 385,298 tons; in 1853, 372,989 tons; in 1852, 315,217 tons; and in 1851, 288,485 tons—making a decrease in the total deliveries for consumption in 1857, as compared with 1856, of 97,995 tons, or 25$\frac{7}{10}$ per cent. If we discard entirely the Melado, etc., the deficiency in the consumption of 1857 will be considerably greater, as it would then stand—Consumption of foreign, 220,644 tons, against a consumption of foreign in 1856 of 255,292 tons, decrease 13$\frac{7}{10}$ per cent.; or, total consumption of foreign and domestic cane sugar in 1857, 259,644 tons, against a total consumption in 1856 of 378,760 tons, being the large decrease of 31$\frac{4.0}{100}$ per cent.

"We reduce our estimate of the quantity of sugar made from molasses during the past year; the high and very unusual prices which prevailed during the largest part of it made the business an unprofitable one. After the heavy decline in the price of molasses, which took place in October, manufacturing was resumed with considerable vigor, but not to a sufficient extent to repair the previous large deficiency. An intelligent observer estimates the quantity of sugar made from molasses in 1857 at 10,300 tons, yielded from 46,000 hhds. molasses, against 11,875 tons, from 53,000 hhds. in 1856; 11,160 tons, from 50,000 hhds. in 1855; and 14,923 tons, from 66,500 hhds. in 1854; if we add to this the product of the maple-tree the past year, say 35,000 tons, and the estimated consumption of California and Oregon, 6000 tons, would make the total consumption of raw sugar in the United States in 1857, 332,065 tons, against a total consumption in 1856 of 412,135 tons—making the decrease in the consumption of all kinds, say 19$\frac{4.2}{100}$ per cent. The quantity of foreign sugar consumed in 1857 by the several ports (not including the coastwise receipts, they being embraced in the calculation at the original port of entry), was—New York, 142,187 tons; Boston, 28,111; Philadelphia, 21,157; Baltimore, 18,869; New Orleans, 20,448; and other ports, 10,993: total, 241,765 tons.

"A somewhat novel feature in this trade has been the large importation during the past year of the article known as melado, etc., the receipts into the country having reached equal to about 70,000 hhds.—say 23,400 tons sugar (deducting 50 per cent. from weight, to make them equal to ordinary grades sugar, which, it will be observed, we have done throughout the statement in all cases of receipts, stocks, and exports). We understand, however, that the importation of this article has proved far from lucrative, and the proba-

bilities are that the commerce in these goods for the year now entered upon will be comparatively small.

"Mercantile enterprise seems to have ransacked the 'uttermost parts of the earth' to procure supplies of this article, so essential to the comfort of the human family; and not only the 'highways,' but the 'by-ways' of commerce have been diligently explored, and scarce a field left ungleaned; hence we have seen within the twelve-month cargoes and invoices landed here from parts of the globe hitherto scarcely known as sugar-producing countries.

"The very extraordinary prices that sugar has commanded during the past two or three years, but especially the first half of last year, has been the means of transferring this article from the catalogue of the necessaries to that of the luxuries of life, and the consumption, as we have seen, has been greatly curtailed. If we add to this the partial, and in many parts of the country the entire failure of the fruit crops (very large quantities of sugar being usually consumed, when fruits are abundant, in the manufacture of conserves, jellies, etc.), together with the intense and almost unparalleled money panic, and rigid economic contraction, which supervened from early autumn till now, the great diminution in the consumption is readily accounted for. Bread, and a few other articles of daily use, are very difficult to economize in, at almost any valuation; but the case is different with sugar—it assumes the character of a luxury, or necessity, according to its cost.

"A by no means insignificant cause aiding the reduction of the consumption of cane sugar in this country the past year, may be traced to the unusual, and, we believe, unprecedented yield of sugar made from the maple-tree. The season was one of the most favorable remembered, extending over a period of nine weeks (three to four weeks being the usual length), and the farmers, stimulated by the prices that were current for sugar, labored indefatigably at the sap kettles; and the result is, that the product of the United States, the past season, of this description of sugar, is set down at 36 @ 38,000 tons. There are, unfortunately, no reliable data to determine the extent of the crop, but after carefully collating the information in our possession, we have no doubt that the yield was fully up to 35,000 tons—a very important item in our consumption, and contributing in no inconsiderable degree to the relief of the last year's deficiency in the product of the sugar-fields of Louisiana.

"The sanguine expectations that were entertained by many in the early part of the year with regard to the sorgo, or African and Chinese imphee, have not been realized. The experiment of cultivating this plant for its sugar properties has been entered into the past season quite extensively in many parts of the country, but, as far as we can gather, though there have been a few isolated cases of success, the general result has been unsatisfactory. A very fair quality of molasses has been produced, but there seems to be a difficulty in concentrating and granulating the sirup, owing either to a deficiency of saccharine qualities, or an ignorance in treating the juice of the cane; at all events, we believe it is generally conceded that crystallizable sugar can not be obtained here from the imphee in sufficient quantities to repay the labor and expense of cultivating it, even when sugars rule at a high currency.

"The supply of foreign needed, is governed in agreat measure by our domestic crop, and hence there is a general interest felt as to the probable extent of the yield. In our last annual statement we said that the Louisiana crop, then coming forward, was estimated at from 80,000 to 120,000 hhds.; the actual out-turn was only 73,976 hhds., against 449,324 hhds. in 1853, the large crop year."—*N. Y. Price Current*, January, 1858.

The present crop of Louisiana, concerning which such high expectations were entertained during the early part of last year, while yet growing, has again proved a comparative failure, notwithstanding a larger breadth of land was placed under cultivation. Planters having been greatly stimulated by the high currency, and having during the fall and winter months of 1856 and 1857, little or no sugar to make, were enabled to place all their laborers into their fields, and put them into a very high state of cultivation; but a late spring, a dry summer and fall, and a heavy and unexpected frost occurring on the 20th November, appointed their hopes, and the yield will not, according to the best authorities, exceed 250,000 hhds., and it may not reach that figure. The consumption of the valley of the Mississippi, including New Orleans and neighborhood, with sugars at a moderate price, is estimated at 150,000 @ 160,000 hhds. (it has reached 208 @ 210,000 hhds. when low rates prevailed), leaving available for shipment to the Gulf and Atlantic ports 80,000 @ 90,000 hhds.

The preceding tables show that the receipts into this port direct, of foreign unrefined sugar, for the year ending December 31, 1857, were 161,942, against an import of 171,156 tons in 1856, 126,844 in 1855, and 99,491 in 1854; and the quantity of foreign taken from here for consumption in 1857 was 148,892 tons, against a consumption of foreign in 1856 of 161,455; in 1855, 121,356; and in 1854, 92,500.

The port of New York has received and delivered for consumption $58\frac{81}{100}$ per cent. of the whole quantity of foreign imported into the United States during the past year.

It having been ascertained at an early period of the season that the crop of Louisiana sugar would prove not only deficient, but almost an entire failure, and that the fields of Cuba would scarcely return an average yield, an impetus was immediately given to the foreign trade, seldom if ever before witnessed, and the importation of the first six months was without a parallel in its history. The extreme and unusual prices soon told, however, with unerring effect upon the consumption, and the contrast between the departure of the year 1857 and its commencement is sharply defined; buoyancy, elasticity, and confidence marked the opening months—depression, languor, and timidity the closing ones.

The past year will be long remembered by those engaged in the sugar trade as one of unparalleled excitement, great fluctuations, and no little disaster, stamping it as far the most eventful one, at least in the present century. The prices of this article, which had been steadily advancing for nearly three years, reached in early summer their maximum, and the decline since then has been rapid and extreme; there are, however, but few interests that have suffered so greatly from the effects of the financial hurricane, that has devastated almost the whole commercial world during the past four months, as the one now under review, and the number is also still less that have withstood the storm more bravely; this fact seems to warrant the belief that the trade rests on a more than ordinary substantial basis. The losses that have been sustained, though considerable, have fallen in a great measure upon the planters and speculators of Cuba, on whose account the bulk of the stock here was held, and they having during the preceding two years realized large advances by the rapid appreciation in prices which have ruled in all the marts of the world, and which placed them in a very strong position, have been enabled to support these losses, it is believed, with comparatively little inconvenience.—*Ibid.*

At the commencement of the year the stock of foreign at this port was 9816 tons, against a stock of 3049 tons, January 1, 1856. During the early part of the month of January, the demand was quite moderate from the trade, and the refiners being generally engaged, according to custom, in making their annual repairs, etc., to their machinery, the business was

small; this dullness, however, was soon followed by an increased activity. It having been satisfactorily ascertained that the crop of Louisiana would be a very small one, refiners entered the market with spirit, and prices advanced on all kinds ¼ @ ½ of a cent. A firm, buoyant feeling prevailed throughout the month, though at the close a falling off in the demand was observable; full prices were, however, realized without difficulty, holders having constantly the advantage. On the 13th, the first arrival of new crop melado reached here, and sold at 7½ cents; and on the 15th, 87 hhds. new Cuba muscovado arrived, and was placed at 10 @ 10½ cents, the opening price the previous year being 7½ @ 8 cents. The sales and resales for the month were 75 hhds. New Orleans, 4800 hhds. and 18,600 boxes; Cuba, 1850 hhds.; Porto Rico, 280 hhds.; English Island, 288 cases and 4328 bags Brazil, and 613 hhds. melado.—For further information, see De Bow's *Review*, vii. 56 (R. S. M'Culloch), iii. 244, 294, x. 218, xii. 646, xiii. 57, 176, iv. 229, 383, 511, v. 349; *Southern Quarterly Review*, iii. 329; *North American Review*, xl. 415; *Edinburgh Review*, l. 426.

The following table shows the range of prices of sugar in New York each month, and average value of the various descriptions of sugar each year, for the past four years:

The Range of Prices of sugar at New York during four Years—1854-'57.

Years.	New Orleans.	Cuba Muscovado.	Porto Rico.	Havana, white.	Havana, brown.	Manilla.	Brazil, white.	Brazil, brown
1854.								
January	4 @ 6½	4½ @ 5½	4½ @ 6	6½ @ 7	5½ @ 6½	4½ @ 5	6½ @ 6	5 @ —
February	4 @ 6	4½ @ 5½	4½ @ 6	6½ @ 7	5 @ 6½	4½ @ 5	6½ @ 6½	5 @ —
March	4 @ 6½	4 @ 5½	4½ @ 6	6½ @ 7	5 @ 6½	4½ @ 5	6½ @ 6½	5 @ —
April	5½ @ 6	5½ @ 5½	4 @ 6	6½ @ 7	4½ @ 6½	4½ @ 5	6½ @ 6½	5 @ —
May	5½ @ 5½	4 @ 5½	4 @ 5½	6½ @ 7	5 @ 6½	4½ @ 5	....	....
June	5½ @ 5½	4 @ 5½	4 @ 5½	6½ @ 7	5 @ 6½	4½ @ 5	....	....
July	5½ @ 5½	4 @ 5½	4 @ 5½	6½ @ 7	5 @ 6½	4½ @ 5	....	....
August	4½ @ 6	4½ @ 5½	4½ @ 6½	7 @ 7½	5 @ 6½	4½ @ 5	....	....
September	4½ @ 6	4½ @ 5½	4½ @ 6½	7 @ 7½	5 @ 6½	4½ @ 5½	....	....
October	4 @ 6½	4½ @ 5	5 @ 6½	7 @ 7½	5 @ 6½	5 @ 5½	....	....
November	5 @ 6½	4½ @ 6	5 @ 6½	7 @ 7½	5 @ 7	5½ @ 5½	....	....
December	4½ @ 6	4 @ 5½	4½ @ 6½	7 @ 7½	— @ 7	5½ @ 5½	....	....
Average for the year	$4·99	$4·83	$5·83	$7·00	$5·88	$5·02	$6·50	$5·00
1855.								
January	4½ @ 5½	4 @ 5½	4½ @ 6	8½ @ 7	5 @ 6½	5½ @ 5½	....	— @ 5½
February	4 @ 6	4 @ 5	4½ @ 6	6½ @ 7	5 @ 6½	5½ @ 5½	....	— @ 5½
March	4 @ 6	4 @ 5½	4½ @ 6	6½ @ 7	5 @ 6½	5½ @ 5½	— @ 6½	— @ 5½
April	4½ @ 6	4½ @ 5½	4½ @ 6½	6½ @ 7½	5 @ 6½	5½ @ 5½	— @ 6½	....
May	4½ @ 6½	4½ @ 6½	5 @ 6½	6½ @ 7½	4½ @ 7½	5½ @ 5½	— @ 6½	....
June	5½ @ 6½	5 @ 6½	5½ @ 6½	7½ @ 7½	5 @ 7½	5½ @ 5½	....	....
July	5 @ 6½	5½ @ 6½	5½ @ 6½	7½ @ 8	5½ @ 7½	....	....	....
August	5½ @ 8	5½ @ 7½	6 @ 8	7½ @ 8½	6 @ 8	6½ @ 6½	— @ 7½	— @ 6½
September	6½ @ 8½	6½ @ 8½	7 @ 8½	8½ @ 9	6½ @ 8½	6½ @ 6½	....	....
October	6½ @ 8½	8 @ 8	6½ @ 8½	8 @ 9	6½ @ 8½	6½ @ —	....	....
November	6½ @ 8½	5½ @ 8½	6½ @ 8½	8 @ 8½	5½ @ 8	6½ @ 7½	....	....
December	7½ @ 9	6½ @ 8	7 @ 8½	8½ @ 8½	7 @ 8	7½ @ —	....	— @ 7½
Average for the year	$6·25	$6·04	$6·37	$7·60	$6·54	$6·54	$6·46	$5·97
1856.								
January	8 @ 9	7 @ 8	7 @ 8½	8½ @ 9½	7 @ 8½	7½ @ —	....	7½ @ —
February	7½ @ 9	7½ @ 8½	7½ @ 8½	9 @ 9½	7½ @ 9	7½ @ —	....	7½ @ —
March	7 @ 9	6½ @ 8½	7 @ 9	9 @ 9½	7½ @ 9½	7½ @ —	....	....
April	6½ @ 8½	6 @ 8	7 @ 9	9½ @ —	7 @ 9½	7½ @ —	....	7½ @ —
May	6½ @ 8½	6 @ 8½	6½ @ 9	9 @ 9½	7 @ 9½	7 @ 7½	....	7½ @ —
June	8½ @ 8½	6½ @ 8½	7 @ 9½	9 @ 10	7½ @ 9½	....	....	7½ @ 8
July	7½ @ 9	7½ @ 9½	7½ @ 9½	10 @ 10½	7½ @ 11	8½ @ —	....	7 @ 8½
August	8 @ 9½	8 @ 9	8½ @ 10	....	8½ @ 11	8½ @ —	10 @ 10½	8½ @ 8½
September	8 @ 9½	7½ @ 8½	7½ @ 10	11 @ 12	8½ @ 10½	....	9½ @ 10	8½ @ —
October	8 @ 10	7½ @ 9½	8 @ 10	11 @ 12	8½ @ 10½	8½ @ 8½	9½ @ 9½	8½ @ —
November	8 @ 10½	7½ @ 10½	8 @ 10½	11 @ 12½	9 @ 10½	9 @ —	....	....
December	8 @ 11	7½ @ 10½	8½ @ 10½	11½ @ 12½	9 @ 11	8½ @ 9	....	....
Average for the year	$8·83	$8·02	$8·52	$10·23	$8·90	$8·05	$9·83	$7·84
1857.								
January	9 @ 11	8 @ 10½	8½ @ 11	11½ @ 12½	8½ @ 11½	8½ @ 9½	....	— @ 9½
February	9½ @ 11	8½ @ 10½	9 @ 11	12 @ 12½	9 @ 11½	— @ 9½	....	— @ 9½
March	....	8½ @ 10½	9 @ 11	12 @ 12½	9 @ 11½	9½ @ 9½	....	— @ 9½
April	....	8½ @ 11½	9½ @ 11½	12 @ 14	9½ @ 12½	9½ @ 10½	....	— @ 9½
May	....	9½ @ 11½	9½ @ 12½	13 @ 14	10 @ 12½	— @ 10½	....	9½ @ 10½
June	....	9½ @ 11½	10 @ 12	13 @ 14	10½ @ 12½	10½ @ 10½	....	— @ 10½
July	....	7½ @ 10½	8½ @ 11½	12 @ 14	9½ @ 12½	9 @ 10½	....	....
August	....	6½ @ 10½	8 @ 11½	11½ @ 13	7½ @ 11½	8 @ 9½	....	....
September	....	6½ @ 9½	7 @ 10½	10½ @ 12½	8 @ 11	— @ 8	....	....
October	....	6 @ 8½	6½ @ 9½	10 @ 11	6 @ 10	6½ @ 6½	....	....
November	....	4½ @ 8	5½ @ 9	8½ @ 10½	5½ @ 9	6½ @ —	....	....
December	5½ @ 8½	5 @ 7½	5½ @ 8½	8½ @ 9½	5½ @ 8½	— @ 6½	....	....
Average for the year	$9·04	$8·69	$9·41	$11·87½	$9·69	$8·68	....	$9·74

—See *Shipping and Commercial List*, New York.

Beet-root Sugar.—The manufacture of sugar from beet-root is carried on to a very considerable extent in several parts of the Continent, particularly in France and the north of Germany. It began in France during the exclusion of colonial products in the reign of Napoleon, and received a severe check at the return of peace, by the admission of West India sugars at a reasonable duty. It is probable, indeed, that it would long since have been entirely extinguished but for the additions made to the duties on colonial and foreign sugars in 1820 and 1822. After the last-mentioned epoch, however, the production of beet-root sugar began rapidly to increase; and such was its progress, that though, in 1828, its produce did not exceed 4,000,000 kilograms, it amounted in 1838 to 39,199,408 kilograms.

Up to the middle of the 18th century the cane was the only plant known to contain sugar. In 1747 M. Marggraf, director of a department of the Royal Academy of Sciences in Berlin, first called attention to the saccharine substance in the parsnep, the birch juice, and carrot. At a later period, Parmentier discovered the same ingredient in the composition of corn and chestnuts. But the chemical experiments made by these savans accomplished no practical result. Yet, even before Napoleon I. had imposed on Europe the principle of absolute prohibition, the necessity of a substitute for the expensive colonial sugar was urgently felt. As

early as 1796 the beet-root was analyzed by Achard in Berlin, who obtained from 100 lbs. of the raw material 5 lbs. of white sugar and three of molasses.

It was only since 1830 that the production of indigenous sugar began to manifest its inherent strength. From three million tons in 1830, it rose to sixty-five millions, or half the consumption of the empire, in 1850, and this was accomplished under the pressure of an impost of from 16½ to 22 francs per 100 kilograms upon the home manufacture. "The last ten years have shown," remarks Mr. Tegoborsky, "that there is a vitality about the manufacture of beet-root sugar on the continent of Europe which was far from being imagined twenty or thirty years ago." Considering that in France it so quickly recovered from the blow dealt in 1843, by an impost placing it gradually on a level with the sugar of the colonies; that the terror then experienced by the French manufacturer, which made him, in many instances, abandon his establishments, was now felt by the rival colonists; that in Germany, where the tax of 1842 at first arrested the home manufacture, it immediately resumed the ascending movement, so that the production of 124,000 centners in 1843 had risen to 660,000 in 1849, or quintupled in the short space of six years.

The quantity of crystallizable sugar contained in the cane and beet-root is equally variable in both, depending on the quality of the plant, soil and climate, etc. The saccharine substance in the cane varies from 10 to 30 per cent.; in the beet-root from 5 to 13. In the former 18, in the latter 10 per cent. are generally admitted as a fair average. The difference, however, in favor of the cane is, as will be seen presently, equalized in consequence of the advantages attending the manufacture of sugar from beet-root, irrespective of those derived from the culture of the latter. In the cane 90 per cent. is liquid to 10 per cent. solid matter; in the beet-root 95 is liquid to 5 per cent. only of solid filamentous substance. The extraction of juice, by means of the hydraulic press, from the latter exceeds, therefore, by five per cent. the quantity obtained from cane. Of the 95 per cent. of liquid absolutely contained in the beet-root, from 75 to 85 per cent., on an average, are practically gained by the process of compression, while the juice extracted from the cane in the colonies represents only 50 per cent., on an average. In Bengal it is no more than 30, and where the best appliances are used it does not exceed 60. Thus, of the 10 per cent. of saccharine matter, which is absolutely contained in the beet-root, from 7½ to 8½ per cent. are realized as sugar, while from the 18 per cent. of the cane from 10 to 12 per cent. of sugar are realized, and in Bengal only 7. Hence, at this stage of the demonstration of the comparative value of cane and beet-root, respecting the practical results obtained from them, we find the difference already reduced from 9 to 5, representing their proportion of saccharine matter, to 12 to 8½, representing the sugar actually realized. The sugar of which we speak here is not yet crystallized. The process of crystallization modifies still further the above difference in favor of the beet-root. Of the 7½ to 8½ per cent. of beet-root sugar, the residue, in the form of molasses, has been diminished, in consequence of modern improvements, to from 1½ to 2½ per cent., which leaves from 6 to 7 per cent. as solid crystallized and marketable sugar.

The results obtained in this respect from cane-juice in the tropical colonies we present in the following table:

	Crystallized Sugar. Pounds.	Molasses. Pounds.
100 pounds of cane-juice subjected by the Chemist Avequin, in Louisiana, to a chemical analysis, gave	10	4
II. Experiment with 100 pounds of juice	12	5
III. " " "	10	3
IV. " " "	11	5
From 100 pounds of cane Dupuis obtained in Guadaloupe (1st experiment)	8	3
(3d experiment)		3

The natural superiority of the cane, thus reduced in the process of manufacturing, is nearly neutralized, when the fact is taken into consideration that more time is required for the cane to ripen than for the beet-root. According to an accurate estimate, four crops of the latter can be harvested against three of cane. M. Stolzel, basing his calculation upon this proportion and the foregoing data, arrives at the final result that, on an average, one hundred pounds of cane yield six pounds of crystallized sugar and three pounds of molasses; while, as above stated, one hundred pounds of beet-root yield from six to seven pounds of sugar, and from one and a half to two and a half pounds of molasses.

There is, according to the authority quoted, no difference, therefore, in the manufacture of sugar from beet-root or cane, as regards the quantity of the marketable article obtained from an equal weight of either raw material. But then there are several other important subjects yet to be considered before an opinion can be formed of the relative merits of sugar production in the tropical colonies and northern and temperate regions. In the first case, the productiveness of each acre of land in the former countries by far exceeds that of the same area in the latter. We find the difference illustrated in two tables, computed from the best authorities, by M. Stolzel. After a deduction of 15 per cent. for waste in preparing for the press, and assuming a yield of sugar equivalent to 6 per cent. on the remainder, we obtain,

	Average Crop of Beet-root per Acre.	Product of crystallizable Sugar.
	Centner.	Pounds.
In Austria	209	1405
In Bohemia	158	1061
In Prussia	228	1532
In environs of Heidelberg	191	1283
In France (Department of Nord)	272	1827
In France (other departments)	170	1142
In France (general average)	204	1370

After a deduction made in consideration of the fact above stated, that four crops of beet-root are produced in the same period as three of cane, each acre in the colonies produces,

CRYSTALLIZABLE SUGAR.

	Pounds.
In Louisiana	1000
In San Domingo	1066
In Bengal	1626
In Martinique	1680
In Vera Cruz	1880
In Guadaloupe	2000
In Isle Bourbon	3358
In Cuba	4000
In Brazil	5000

Thus the average of all these figures, or the mean annual produce of sugar per acre in the colonies, is 2400 lbs., in Europe 1360 lbs. The proportion is 18·10 in favor of cane, which is still increased by the higher value of land in Europe than in the tropics. The mean price of land per acre, according to authentic statements, is,

IN EUROPE.

Prussia	£22	7s. @	£25	5s.
Province Magdeburg	96	3s. @	104	—
Austria	15	15s. @	18	16s.
Bohemia	15	15s. @	—	—
Wurtemberg	23	6s. @	—	—
France and Belgium	32	3s. @	40	—

THE COLONIES.

San Domingo	2	2s. @	8	3s.
Jamaica	3	2s. @	6	4s.
Guiana	4	1s. @	5	8s.
Porto Rico	10	7s. @	—	—
Cuba	10	7s. @	20	14s.

The average of the whole is £40 17s. per acre for Europe, and £8 per acre for the colonies. (The average value of farm lands throughout the United States is, according to the census of 1850, $10 79; and in the Northern States it varies between $12 and $60.) To show in what manner these advantages of greater pro-

ductiveness of the land, and its lower price in the colonies, are more than counterbalanced in Europe by the lower rates of interest on the capital required for the purchase of these lands, and the erection of the factories; the more intelligent, efficient, and cheaper labor; the greater abundance and cheapness of the important item of fuel; the advantages of a home market; and the accessary profits derived from the culture of beet-root, in the shape of fodder for cattle, we reserve for a concluding article, together with a review of the practical inducements offered to the cultivators of beet-root, and the manufacture of sugar, by the conditions of the Northern and Middle States of the Union.

Maple-sugar.—A species of maple (*Acer saccharinum*, Linn.) yields a considerable quantity of sugar. It grows plentifully in the United States and in Canada, and in some districts furnishes the inhabitants with most of the sugar they make use of. Though inferior both in grain and strength to that which is produced from the cane, maple-sugar granulates better than that of the beet-root, or any other vegetable, the cane excepted. It is produced from the sap, which is obtained by perforating the tree in the spring to the depth of about two inches, and setting a vessel for its reception. The quantity afforded varies with the tree and the season. From two to three gallons may be about the daily average yield of a single tree; but some trees have yielded more than twenty gallons in a day, and others not more than a pint. The process of boiling the juice does not differ materially from what is followed with the cane juice in the West Indies. It is necessary that it should be boiled as soon after it is drawn from the tree as possible. If it be allowed to stand above twenty-four hours, it is apt to undergo the vinous and acetous fermentation, by which its saccharine quality is destroyed.—BOUCHETTE'S *British America, Timber Trees and Fruits*, Library of Entertaining Knowledge. *See article* MAPLE-SUGAR.

Chinese Sugar-cane.—This new plant seems to be destined to take an important position among our economical products. Its seeds were sent some six years ago from the north of China, by M. de Montigny, to the Geographical Society of Paris. From a cursory examination of a small field of it, growing at Verrieres in France, in the autumn of 1854, Mr. D. J. Browne, then on a mission from the U. S. Patent Office for collecting agricultural information and products, was led to infer that, from the peculiarity of the climate in which it was growing and its resemblance to Indian corn, it would flourish in any region wherever that plant would thrive. From this source he obtained some 200 pounds of the seed, which was distributed in small packages among members of Congress, with the view of experimenting with it in all parts of the Union, and thereby ascertaining its adaptation to the soil and climate, and its economical value in the United States. In numerous instances the results proved highly satisfactory, as it attained the height of twelve or fifteen feet as far north as St. Paul, Minnesota, and matured its seeds at various points in Massachusetts, New York, Pennsylvania, and Illinois. The following year, while in France on a similar mission as above, Mr. Browne obtained several bushels of the seed of this plant, grown from that reputed to have been brought from South Africa by Mr. Leonard Wray, of London, and which has since proved to be identical with that obtained in 1854.

There appears to be a doubt among many in Europe, as well as in this country, as to the true botanical name of this plant. M. Louis Vilmorin, a scientific cultivator of Paris, provisionally gave it the name of *Holcus saccharatus*, which had previously been applied to the common broom-corn, if not to other species, or at least varieties, of some allied plant. He also conjectured that it might be the *Sorghum vulgare* (Andropogon sorghum of others), and thought that it might comprehend a variety, as well as *Andropogon cafra*, *bicolor*, etc., of Kunth. Mr. Wray, who has devoted much time and attention to the cultivation of this plant, with the view of extracting sugar from its juice, at Cape Natal and other places, states that in the southeast part of Caffraria there are at least fifteen varieties of it, some of them growing to a height of twelve and fifteen feet, with stems as thick as those of the sugar-cane (*Saccharum officinale*). M. Vilmorin also says that, in a collection of seeds sent to the Museum of Natural History at Paris in 1840, by M. d'Abadie, there were thirty kinds of sorghum, among the growth of which he recognized several plants having stems of a saccharine flavor. Others are of the opinion that the common broom-corn (*Holcus saccharatus*), the chocolate or Guinea corn (*Sorghum vulgare*), and the Chinese sugar-cane (*Sorghum saccharatum*), all of which contain more or less saccharine matter, belong to the same species, but are variations caused by differences of soil and climate, or by a disposition to sport after the manner of Indian corn, and other plants under cultivation. The Chinese sugar-cane differs from the others in containing a far larger proportion of juice, and consequently is more valuable for fodder and other economical uses.

In 1760 a plant analogous to the one in question was experimented upon at Florence, in Italy, by Pietro Arduino, for the extraction of sugar; yet it must have been of a very different variety, as he describes its seeds as of a clear brown color, while those of the Chinese sugar-cane are of a shining jet black, and in appearance identical with those of the *Sorghum vulgare* of the old collections.

Description and Habit of its Growth.—The Chinese sugar-cane, when cultivated on ordinary land in the United States, somewhat after the manner of broom-corn, grows to a height of from eight to sixteen feet, while in Europe it does not attain more than half this altitude. Its stems are straight and smooth, often covered with a white bloom or down, having leaves somewhat flexuous, falling over and greatly resembling in appearance those of Indian corn, but more elegant in its form. Where cultivated in hills, containing eight or ten stalks each, it puts forth at its top a conical pinnacle of dense flowers, green at first, but changing into violet shades, and finally into dark purple, at maturity. In France, and in the central and northern sections of the United States, it has thus far proved an annual; but from observations made by M. Vilmorin, as well as some experiments in our Southern States, it is conjectured that, from the vigor and fullness of the lower part of the stalks in autumn, by protecting them during the winter, they would produce new plants the following spring. It stands dearth far better than Indian corn, and will resist the effects of considerable frost without injury, after the panicles appear, but not in its younger and more tender state. If suffered to remain in the field after the seeds have ripened and been removed, when the season is sufficiently warm and long, new panicles will shoot out at the topmost joints one or more to each stalk, and mature a second crop of seeds. The average yield of seed to each panicle is at least a gill.

Sulphur, or **Brimstone** (Fr. *Soufre*; Ger. *Schwefel*; It. *Zolfo, Solfo*; Sp. *Azufre*; Arab. *Kibreet*), a crystallized, hard, brittle substance, commonly of a greenish yellow color, without any smell, and of a weak though perceptible taste; its specific gravity is from 1·9 to 2·1. It burns with a pale blue flame, and emits a great quantity of pungent, suffocating vapors. In some parts of Italy and Sicily it is dug up in a state of comparative purity. That which is manufactured in England is obtained by the roasting of pyrites. It is denominated *rough* or *roll sulphur*, from its being cast in cylindrical moulds, and contains 7 per cent. of orpiment. The Italian roll sulphur does not contain more than 3 per cent. of a simple earth; and is, therefore, in higher estimation than the English. When

ro.. sulphur is purified, it receives the name of *sublimed sulphur*, and is in the form of a bright yellow powder. —THOMSON'S *Chemistry*, etc.

Sumatra, the most western of the Sunda islands, Asiatic Archipelago, and, next to Borneo, the largest in the eastern seas, between lat. 5° 40′ N., and 6° S., and long. 95° 20′ and 106° E., separated on the northeast from the Malay peninsula by the Strait of Malacca, having east the Java Sea, and the Strait of Sunda separating it from the island of Java, on other sides the Indian Ocean. Length northwest to southeast 1100 miles; breadth 60 to 240 miles. The area has been estimated at from 128,000 to 130,000 square miles; population 1,437,360, mostly Malays, but partly of the Papuan negro race, with Moors in the northwest, and Dutch and other foreigners. The eastern half of the island is mostly level or undulating, and along the coasts there are many sandy and marshy plains traversed by the Siak, Judrageri, Jambi, Palembang, and other rivers of large size, but which have been little explored by Europeans. Climate in the plains is less oppressive than might have been expected; at midday the thermometer usually ranges between 82° and 85°, sometimes rising to 88°; but at sunrise not more than 70° Fair. Dense fogs, thunder-storms, and waterspouts off the coast are frequent. Much of the island is occupied by dense forests. Products consist of rice, sago, millet, cocoa-nuts, betel, sugar-cane, an abundance of tropical fruits, turmeric, ginger, coffee, ratans, scented wood, teak and other timber, and the European colonists successfully cultivate the vine; but the principal articles of export are pepper to about three million pounds yearly, gold dust, copper ore, sulphur, camphor, in the north; nutmegs, cloves, and mace, in the Dutch territory of Bencoolen; and coral, benzoin, gutta percha, tin, in Palembang and Menankabow; many of which articles are brought by natives from the interior, and bartered at the ports for Indian and European manufactured goods. Iron, coal of an inferior quality, and naphtha, are among the mineral products. The inhabitants build their houses on posts, and adopt other usages of ultra-Gangetic nations; they manufacture gold and silver filagree work with great skill, also silk and cotton fabrics, earthen-wares, arms, and domestic goods generally; from Palembang, lacquered basins, cane boxes, and ratan mats of the best quality are exported to Singapore; and it is said that cannon were formerly cast at Acheen, in the northwest, which territory is, however, peopled by a race of Moorish descent. Imports, besides manufactured goods already mentioned, are opium and salt from India, coarse porcelain, iron wares, gold thread from China, striped cottons, spices, krises and other weapons from Java, Celebes, and other islands of the Archipelago. The island is divided among a number of native states, the chief being Acheen, Menankabow in the central mountain region, Batak, Siak, Jambi, Palembang, Lampong, along the east from north to south, mostly under the supremacy of the Dutch, who possess the settlements of Bencoolen and Padang, on the western coast.

Sumptuary Laws. Laws to restrain excess in dress, furniture, eating, etc. Those of Zaleucus ordained that no woman should go attended by more than one maid in the street, unless she were drunk; and that she should not wear gold or embroidered apparel, unless she designed to act unchastely, 450 B.C. —DIOG. LAERT. This law checked luxury. The *Lex Orchia* among the Romans limited the guests at feasts, and the number and quality of the dishes at an entertainment; and it also enforced that during supper, which was the chief meal among the Romans, the doors of every house should be left open. The English sumptuary laws were chiefly in the reigns of Edward III. and Henry VIII.—*See* DRESS, LUXURY, etc.

Supercargo, a person employed to oversee the cargo or sale of the cargo. The duties of a supercargo are not specially regulated by law, but are dependent upon special agreement between the owners of the cargo and himself. Generally the power of a supercargo does not extend beyond the cargo, the master alone being responsible, and has its limits in the arrival and departure from trading ports. However extended may be the authority conceded to a supercargo, such authority must be subordinate to the common interest of the vessel and cargo. When the powers of a supercargo extend to the navigation of a ship, they must be communicated through the captain, and have reference only to the destination of the ship, and not to the particular management of the ship. Even a supercargo, in cases of necessity, and acting with discretion, may bind the owners of a ship.—POTHIER, *Charte-Partie*; DODSON'S *Admiralty Rep.*, i. 278. *See articles* MASTER, INSURANCE, SHIPPING.

Superior, Lake, the largest sheet of fresh water on the face of the globe, and the most remarkable of the great American lakes, not only from its magnitude, but also from the picturesque scenery of its borders, and the interest and value attaching to its geological features. As a mining region it is one of the most important in this country, and is rich in veins of metallic copper and silver, as well as in the ores of those metals. At the present moment it may be regarded as the most valuable mining district in North America, with the exception only of the gold deposits of California.

This great lake is comprised between the 46th and 49th degrees of north latitude, and the 84th and 92d degrees of longitude, west of Greenwich. Its greatest length is 400 miles; its width in the middle is 160 miles, and its mean depth has been estimated at 900 feet. Its surface is about 600 feet above the level of the Atlantic Ocean, and its bottom is 300 feet below the level of the sea. The ancient French Jesuit fathers, who first explored and described this great lake, and published an account of it in Paris in 1636, describe the form of its shores as similar to that of a bended bow, the northern shore being the arc, and the southern the chord, while Keweenaw Point, projecting from the southern shore to the middle of the lake, is the arrow. This graphic description is illustrated by a map, prepared by them, which displays the geographical position of its shores with as much fidelity as most of the maps of our day, and proves that those early explorers were perfectly familiar with its shores. The coast of Lake Superior is formed of rocks of various kinds and of different geological groups. The whole coast of the lake is rock-bound; and in some places mountain masses of considerable elevation rear themselves from the immediate shore, while mural precipices and beetling crags oppose themselves to the surges of this mighty lake, and threaten the unfortunate mariner who may be caught in a storm upon a lee-shore with almost inevitable destruction. Small coves, or boat harbors, are abundantly afforded by the myriads of indentations upon the rocky coast; and there are a few good snug harbors for vessels of moderate capacity, such as steamboats, schooners, and the like.

The fisheries of Lake Superior are of great value to the people living upon the shores of the lake, and of some importance to the states bordering on the other and lower lakes, and the inland towns near their borders. To the poor Indian the bounties of the great lakes are of vital importance, for without the fish the native tribes would soon perish. Game has become exceedingly scarce in these thickly-wooded regions, only a few bears, rabbits, and porcupines, and some partridges, being found in the woods, and ducks in moderate numbers upon the waters. Agriculture has scarcely begun to tame the wilderness in the vicinity of the copper mines, and the only crops raised are potatoes and a few hardy northern esculents. Small cereal grains—such as oats, barley, and rye—will do well here as in Canada; and Indian corn of the northern varieties, in places not too much exposed to the

chill breezes of the lake, thrives and ripens. English grasses have not yet been cultivated, but they will undoubtedly thrive as well on the south shore of Lake Superior as in New Brunswick and Nova Scotia. The native grasses are abundant and good, but are limited to small natural prairies or to dried-up ponds. The forests are also filled with excellent timber for building purposes; and where the growth is of mixed trees, such as sugar-maple, yellow birch, and pines, the white and yellow pines are of large dimensions, and furnish good lumber.—*See* LAKES, *Commerce of*.

Sweden (*Sverige*), a country of northern Europe, forming the east and larger portion of the Scandinavian peninsula, and one of the kingdoms composing the monarchy of Sweden and Norway; situated between lat. 55° 20′ and 69° 10′ N., long. 11° 15′ and 24° 10′ E., bounded east by the Baltic, the Gulf of Bothnia and Russia, south by the Baltic, west by Norway, the Kattegat, and the Sound. Capital, Stockholm. The soil is not generally fertile, and the corn produced was formerly only about two-thirds of that required; but from the great improvements in agriculture introduced by the government within the present century, and the general introduction of the potato, the produce is now adequate to the consumption. Barley is cultivated as far north as lat. 69°, but the crops frequently fail. Rye, hemp, and potatoes are grown to lat. 66° N. Oats ripen to 63° 30′; wheat and hops cease to be cultivated with advantage beyond lat. 62° N. One-fourth of the surface is covered with forests, but the produce of timber is small; much is used for fuel, and made into charcoal for use in the mines. There are few woods to the north of lat. 64° N. The principal trees are the pine, fir, and birch. Fish are abundant on the coast, and in the lakes and rivers; the herring-fishery has greatly declined, but lobsters are exported, and salmon is caught in all the principal rivers. The mining districts of Sweden, mostly in the central provinces, extend over 16,000 square miles; the chief products are iron, which is distributed over nearly all the country, but the best is found in the län Upsala; the annual produce of all the mines is about 70,000 tons of bar iron. The richest copper mines are at Fahlun; the annual produce in all is about 1000 tons. Gold is not now sought for, and silver is procured only to a small extent. The other mineral products are cobalt, lime, coal of inferior quality, and porphyry. Manufactures are chiefly confined to articles of domestic use; the principal are woolens, sugar, tobacco, paper, linens, cotton (in small quantity); tanning is an important branch of industry. Ship-building is carried on to some extent in the ports of the Baltic. Distilling and brewing are extensively prosecuted. The internal commerce of Sweden is considerable, and Swedish vessels visit most of the Atlantic ports of America, and the Mediterranean. Government is a constitutional monarchy.—*See* NORWAY.

The Swedish monarchy, comprising Sweden and Norway, embraces an area of 292,104 square miles, and contains a population of 4,645,000 inhabitants, viz.:

Sweden.—Area,	170,096	square miles;	population, 3,316,530
Norway.— "	122,008	" "	1,328,470

Sweden and Norway have different constitutions, though they are governed by the same king. Their commercial regulations, their tariffs of duties, their laws and revenues, are all separate. Several treaties of peace, amity, and commerce have been negotiated between the United States and these countries; the latest, that of July 4th, 1827, being based upon the liberal principle of entire reciprocity, as well with Sweden and Norway as with the small but flourishing colony of St. Bartholomew, in the West Indies. The following abstract presents the principal stipulations respecting commerce and navigation:

The citizens and subjects of each of the two high contracting parties may, with perfect security for their persons, vessels, and cargoes, freely enter all the ports, places, and rivers of the territories of the other, wherever foreign commerce is permitted. The vessels of both nations, including those of the island of St. Bartholomew, whether laden or in ballast, to be treated in the ports of each, on their entrance, during their stay, and at their departure, upon the same footing as national vessels coming from the same place, with respect to the duties of tonnage, light-houses, pilotage, and port charges, and all other perquisites, duties, and charges, of whatever kind, levied in the name or to the profit of the government, the local authorities, or any private establishment whatever. All merchandise of every description, no matter of what country it may be the produce or manufacture, that may be imported into either country in national vessels (or into Sweden or Norway in vessels of the island of St. Bartholomew), may in like manner, and without paying other or higher duties or charges, of whatever kind or denomination, be imported in the vessels of the other: full and perfect reciprocity and equality in this respect being established. Similar reciprocity and equality between the vessels of each of the high contracting parties, including those of the island of St. Bartholomew, in respect to exports from either country, is established. This equality with the national flag is applicable to the vessels of the United States proceeding, either laden or in ballast, to the colony of St. Bartholomew, in the West Indies, whether from ports of the kingdom of Sweden and Norway, or from any other place whatsoever, or proceeding from the said colony, either laden or in ballast, whether bound for Sweden or Norway, or any other place whatever. The coasting trade is reserved by each party to its own flag, respectively; the navigation from one port to another in the kingdom of Sweden and Norway, or between these two countries, being considered such coasting trade as respects Sweden. Duties on the navigation between their respective territories, including the island of St. Bartholomew, in the vessels of either, to be no higher or other than those imposed on every other nation; and no prohibitions, restrictions, or differential duties, of any kind or denomination whatsoever, to be established in respect of the products of the soil or industry of either country, including the island of St. Bartholomew, which shall not equally apply to articles of like nature, the growth of any other country. The privileges of transit, and all bounties and drawbacks which may be allowed within the territories of one of the high contracting parties upon the importation or exportation of any article whatever, shall likewise be allowed on the articles of like nature, the products of the soil or industry of the other contracting party, and on the importation or exportation made in its vessels.

The 11th and 12th articles exempt from import and navigation dues (pilotage, wharfage, and light-dues excepted) the vessels of either party arriving in the ports of the other, not wishing to unload any part of their cargoes, or perform any act of trade; and the privilege is mutually conceded to unload in the ports of either such portions only of their cargoes as the captain or owner may wish, and to depart with the remainder, without paying any duties, imposts, or charges whatsoever, except for that part which shall be landed, the proper entries having been made on the vessel's manifest. It is understood, however, that all duties, imposts, or charges whatsoever, which are or may become chargeable upon the vessels themselves, must be paid at the first port where they shall break bulk, or unload part of their cargoes; but that such duties, etc., shall not be paid twice in the ports of the same country which such vessels may afterward wish to enter, unless national vessels be, in such cases, subject to such ulterior duties.

Article 16 stipulates that on direct voyages between the two countries, respectively, a bill of health, granted at the port of departure by an officer having competent power to that effect, will exempt the vessel from any

other quarantine than such as may be necessary for the visit of the health officer of the port where such vessel shall have arrived. Other sanitary regulations are mutually stipulated between the high contracting parties, equally liberal and beneficial to commerce. The treaty of 1783, so far as its stipulations are not inconsistent with the present treaty, is revived; and the usual twelve months' notice, after the expiration of nine years from the exchange of ratifications, is provided for. A separate article reserves, on the part of Sweden, certain commercial privileges to Finland, applicable to the products of that duchy, and of Sweden and Norway, respectively.

The fisheries, the mines, and the forests of this kingdom were the early sources of Swedish commerce. Macgregor, in his Tariff Regulations of Sweden, cites from Puffendorf, one of the counselors of state to the King of Sweden, the following passage, written in 1680, relative to the productions of this kingdom: "Sweden produces more copper and iron than any other kingdom in the world, and the mines are fitted by nature for that purpose, being surrounded by woods and rivers. There is a silver mine in Westmaniand. Finland brings forth pitch, and tar, and deal; and Wermanland [Carlstadt] good store of masts. The native commodities of Sweden are copper, iron, tar, pitch, masts, deals, boards, etc. In lieu of which, Sweden receives from abroad wine, brandy, salt, spices, cloth, silks, and woolen stuffs, fine linen, French manufactures of all sorts, furs, paper, and such like; all which, in some years, surpass in value the commodities exported hence. To recompense this, navigation and commerce has been encouraged of late years among the natives, and several sorts of manufactures are made, whereof those made of copper, iron, and brass would, questionless, turn to the best account, if those artists [blacksmiths and copper-smiths] were duly encouraged to settle in this kingdom."

The general character of the resources and foreign commerce of Sweden has undergone but little change since the foregoing was written. The extent and value have varied somewhat, but by no means in a ratio corresponding with the more enlightened and the more liberal commercial policy of the age. This is mainly owing to the restrictive tariff policy, which still obtains in Sweden, by which duties, equivalent in many cases to actual prohibition, are levied upon many articles of prime necessity, both for immediate consumption and manufacturing purposes.

The following table exhibits the general foreign trade of Sweden during the year 1854, compared with the general result for the preceding years designated:

NAVIGATION OF SWEDEN IN 1854.

Countries.	Arrived.		Cleared.	
	Vessels.	Lasts	Vessels.	Lasts.
Norway	1,306	56,319	982	20,774
Finland	1,556	18,697	1,442	15,996
Russia	80	1,201	78	951
Prussia	397	17,157	336	10,470
Denmark	4,415	88,814	4,400	74,035
Mecklenburg	171	7,302	142	5,953
Lübeck	579	21,251	462	19,801
Hamburg	66	4,369	33	1,769
Bremen	34	2,173	22	180
Hanover & Oldenburg	0	279	5	131
Netherlands	81	6,935	144	7,200
Belgium	27	3,340	40	0,629
Great Brit. and Ireland	1,347	[25,411	1,778	172,529
France	190	20,778	364	40,326
Spain	90	10,312	79	8,891
Portugal	179	17,569	82	7,256
Italy	33	3,565	16	2,433
Gibraltar	....	....	17	2,772
Austria	....	....	2	148
Algiers	....	....	25	3,776
United States	26	5,214	35	8,385
West Indies	10	1,256	....	....
Brazil	53	6,087	37	4,515
America generally	....	....	12	2,101
E. Indies and Australia	13	1,940	20	3,442
Cape of Good Hope	....	....	27	3,607
Total	10,648	418,555	10,574	422,168

COMMERCE OF SWEDEN IN 1854.

Countries.	Rix Dollars Banco. Imports.	Exports.
Norway	4,032,000	2,241,000
Finland	1,453,000	276,000
Russia	505,000	133,000
Prussia	1,165,000	2,630,000
Denmark	2,627,000	7,101,000
Mecklenburg	32,000	448,000
Lübeck	19,129,000	4,021,000
Hamburg	1,777,000	406,000
Bremen	421,000	321,000
Hanover and Oldenburg	1,000	38,000
Netherlands	626,000	1,881,000
Belgium	181,000	389,000
Great Britain and Ireland	9,264,000	23,068,000
France	733,000	5,685,000
Spain	504,000	1,081,000
Portugal	461,000	1,392,000
Italy	206,000	357,000
Gibraltar	....	74,000
Austria	....	253,000
Algiers	....	362,000
United States	3,250,000	2,173,000
West Indies	501,000	....
Brazil	5,071,000	626,000
America generally	....	180,000
East Indies and Australia	588,000	484,000
Cape of Good Hope	....	315,000
Total 1854	52,437,000	52,810,000
" 1847	28,040,000	30,920,000
" 1846	20,600,000	24,880,000
" 1840	18,308,000	20,437,000
" 1830	11,160,000	13,337,000
" 1821	11,143,000	12,161,000

The preceding table exhibits the following results:

Increase in 1830 over 1821	1,183,000	rix dollars banco.
" 1840 over 1830	14,268,000	"
" 1846 over 1840	6,735,000	"
" 1847 over 1846	18,480,000	"
" 1854 over 1847	46,287,000	"

Notwithstanding the annual augmentation in the general foreign commerce of Sweden, which the above summary exhibits, the trade with the United States has been marked with but little variation.

The total trade with the United States in 1847, according to Swedish official authorities, amounted in value to 3,341,000 rix dollars banco, or 858,880 rix dollars banco less than 1840, while it exceeded that of 1845 by 779,000 rix dollars banco. In the trade between the United States and Sweden and Norway, there are but comparatively few American vessels employed. The following comparative statements will show the proportion between American and foreign (mostly Swedish and Norwegian) tonnage employed in this trade. A period of ten years, from 1845 to 1854, is selected, as affording a fair average: American tonnage employed in the direct trade between the United States and Sweden and Norway, from 1845 to 1854, 47,038 tons. Average annual tonnage, 4763·8 tons. Foreign (chiefly Swedish and Norwegian) tonnage employed in the trade between the United States and Sweden and Norway, during the above period, 232,089 tons. Average annual tonnage, 23,208·9 tons, or nearly 500 per cent. of foreign over American tonnage annually employed in the trade between the United States and Norway and Sweden. In 1847 the imports of Sweden amounted to nearly 11,160,000 dollars (United States currency). Of this sum Swedish and Norwegian vessels floated nearly nine million dollars, or four-fifths of the whole. The exports reached the sum of $12,276,000, of which the Swedish flag covered over seven and a half millions, or about three-fifths of the whole.

The following are the principal colonial products entering into the imports during 1847, in kilograms of 2·20 lbs. each.

Sugar	kilogs.	8,085,000
Coffee	"	8,035,000
Cotton	"	2,072,000
Tobacco	"	1,212,000
Dye-woods	"	500,000
Wines and spirits	litres.	2,150,000

Of the exports, iron occupies the next rank to timber. The quantity exported in bars reached 82,212,000 kilograms, or about 185,000,000 lbs.

IRON (INCLUDING CAST AND OTHER STEEL) IMPORTED INTO THE UNITED STATES FROM SWEDEN AND NORWAY.

Years.	Cwt.	Values.
1845	272,496	$666,166
1846	256,668	717,116
1847	288,464	609,729
1848	290,082	740,078
1849	295,359	729,206
1850	397,281	1,025,587
1851	409,003	942,961
1852	289,391	773,674
1853	181,040	445,808
1854	208,187	510,221
1855	296,500	814,233
1856	280,690	870,759
1857	238,434	741,446

The value of iron quite equals the entire value of imports into the United States from Sweden for each year during the period specified. The export of iron ore is prohibited. The annual average quantity produced the last five years is estimated at 300,000 tons. The quantity manufactured during the same period is stated to have been 140,000, and 100,000 tons of bar iron. The annual average of the latter exported was 80,000 tons. The average price of pig-iron in Sweden is 8 rix dollars banco the skeppund—7⅓ skeppunds to the ton, or $24 the ton. The iron mines of Sweden belong to joint-stock companies principally. About two-fifths of the pig-iron is purchased and manufactured into bar-iron by iron-masters who own no mines; but the remaining three-fifths are manufactured by the companies that own the mines themselves. The production of pig-iron was formerly limited to a certain specified quantity, whether the capabilities of the mines and miners would admit of more or not. Under this unwise regulation of the government, which it is said was adopted to prevent the exhaustion of the fuel of the kingdom, the coal and forests, the annual production never exceeded 90,000 tons. These limitations have for some years been done away with; nor is there at present any limitation, beyond a matter of form, to the manufacture of bar-iron. The following statement, showing the exportation of iron from 1834 to 1849, is from Swedish official returns:

From 1834 to 1838, annual average	....	79,300 tons.
" 1839 to 1843	"	81,200 "
" 1844 to 1848	"	92,000 "
In 1849	.....	88,500 "

The above exports were destined principally to the following countries, and in annual average quantities as follows:

Great Britain	33,000 tons.
United States	19,850 "
Denmark	8,150 "
France	5,200 "

Small quantities, in the shape of cannon, bomb-shells, etc., are sent to Norway, Holland, and Denmark. The number of blast furnaces in operation in 1850 was 220; of workmen employed in mining the ore, 5241; of mines, 586. The importation of cotton in 1851, according to Swedish official authorities, amounted to 7,989,[illegible] lbs., against 1,832,431 lbs. in 1841, and 794,434 lbs. in 1831. In 1843 these authorities show an importation of 2,600,000 lbs., against 9,883,572 lbs. in 1853, which latter amount exceeded that of the importation of 1852 by 1,247,041 lbs., and that of 1850 by more than 5,200,000 lbs., being the largest of any preceding year. In 1848 the amount was 8,074,020 lbs. The value of cotton manufactures exported to Sweden in 1850 was $46,000, against $7500 only in 1851. It may be well now to inquire into the operation of the tariffs of the two countries respectively upon the leading staples of each, chiefly with a view to ascertain to what extent the importation of such products contributes to the respective customs revenue of each country. The character of the commercial legislation of the two nations, in its effects upon the importation of staple articles of prime necessity, from each into the other, will best show how far the reciprocity stipulated in the treaty of 1827 has been carried into practical operation. This inquiry may lead to useful and obvious suggestions, especially if it results in demonstrating that a positive inequality exists in practice, under which one government derives fully one-fifth of its entire customs revenue annually from a cent-per-cent. duty on a leading staple of the other, without tendering any compensating equivalent for a tax so oppressive.

The importation of unmanufactured American tobacco into Sweden and Norway (including direct and indirect importations) amounted in 1851 to more than 6,500,000 lbs., which, under a duty equal to cent-per-cent. *ad valorem*, paid into the Swedish treasury about $330,000, or one-fifth of the whole customs revenue of the kingdom—and this upon the single article of tobacco; while the entire exports of Sweden and Norway to the United States (amounting to $967,237) paid into the Treasury of the United States, at 30 per cent., but a trifle more than $290,000! In the mean time, nearly 40,000 tons of Swedish and Norwegian shipping were carrying profitable American freights on every sea, while but 4000 tons of United States shipping made single voyages direct to Sweden and Norway. Notwithstanding the most earnest and repeated remonstrances against these unequal restrictions, and this *one-sided* reciprocity, no amelioration has yet taken place in the tariff regulations of Sweden. It is true, some reductions have been admitted in the tariff of 1852 on certain articles which enter into American exports. The duties upon coffee, sugar, arrack, and undressed hides were severally reduced 33⅓, 25, 12½, and 8⅓ per cent., and upon rice in the husk, or paddy, 16⅔ per cent. But these concessions were clogged to such an extent by the repeal of the 24th article of the tariff of 1849, that American commerce, so far from gaining any advantage by them, will be found, by the simple process of striking a balance between the results of the reductions and of the repeal, to be subjected to new and oppressive burdens. The 24th article, or the differential clause, appended to the tariff of 1849, reduced the duties upon certain merchandise imported and exported in Swedish or Norwegian vessels, as follows: Swedish vessels navigating to distant countries will continue to enjoy the advantage of the following reduction in duties of customs and convoy imposts, viz.:

Of 15 per cent. on the produce and manufactures of countries situated on the continent of America north of the 25th degree of north latitude, or of any of the foreign colonies in the West Indies, if imported direct from thence in Swedish ships; and of the like reduction on Swedish produce and manufactures exported direct to foreign colonies in the West Indies.

Of 25 per cent. on Swedish produce and manufactures exported in Swedish ships direct to the island of St. Bartholomew, to places on the east coast of the continent of America south of the 25th degree of north latitude, or to the Cape of Good Hope; and the like reduction on the produce and manufactures of those countries imported direct into Sweden in Swedish vessels.

Of 33⅓ per cent. on Swedish produce and manufactures exported in Swedish ships direct to places on the other side of the Cape of Good Hope, as also to ports on the other side of Cape Horn; and on the produce and manufactures of those ports and places imported from thence direct in Swedish ships. Under the treaty, these privileges apply equally to American vessels.

The effect of the repeal of this article is, that every thing imported from America, except the articles above enumerated, has been chargeable since 1st of January, 1853—the day when the repeal took effect—with duties 15 per cent. higher than before that period. The repeal of this clause was granted as a concession, to silence the united and vigorous remonstrances of England and Holland against the operation of the Swedish tariff regulations. On the article of tobacco alone the commerce of the United States is burdened with additional duties amounting to $35,000 per annum—enough to affect materially the sale of this American staple in the markets of that country; and a trifling reduction of

duty upon rice is the only acknowledgment which the government of Sweden has yet made of the injustice of these oppressive restrictions. The following table exhibits the working of the existing treaty between the United States and Sweden during the years 1845, 1846, 1847, 1848, and 1849, so far, at least, as it relates to the commerce between the two countries. It is translated and compiled from Swedish official publications:

IMPORT AND EXPORT TRADE OF SWEDEN WITH THE UNITED STATES DURING THE YEARS SPECIFIED.

Years.	Imports.		Exports.	
	By American Tonnage.	By Swedish Tonnage.	By American Tonnage.	By Swedish Tonnage.
	Per Cent.	Per Cent.	Per Cent.	Per Cent.
1845.....	26	51	30	55
1846.....	16	56	14	67
1847.....	30	50	12	80
1848.....	20	51	16	50
1849.....	37	50	25	55

TOBACCO IMPORTED INTO SWEDEN, WITH THE PROPORTION FROM THE UNITED STATES.

Years.	Total Imports.		Direct from United States.	
	Leaf.	Stems.	Leaf.	Stems.
	Pounds.	Pounds.	Pounds.	Pounds.
1845.....	2,430,000	1,186,000	1,691,000	1,156,000
1846.....	2,624,000	1,032,000	1,679,000	991,000
1847.....	1,924,000	911,000	1,555,000	540,000
1848.....	2,186,000	1,303,000	1,462,000	999,000
1849.....	2,358,000	1,405,000	1,440,000	1,259,000

The following statement shows the amount of American tonnage arrived at Swedish ports, and amount of Swedish tonnage arrived at United States ports direct from each country, or from foreign nations; also, amount of Swedish tonnage arrived at transatlantic ports from the United States, with full cargoes:

AMERICAN TONNAGE ARRIVED AT SWEDISH PORTS.

In 1845	5500	tons.
In 1846	1700	"
In 1847	1400	"
In 1848	4000	"
In 1849	3800	"

SWEDISH TONNAGE ARRIVED AT AMERICAN PORTS.

In 1845	17,000	tons.
In 1846	14,500	"
In 1847	21,000	"
In 1848	17,000	"
In 1849	17,000	"

SWEDISH TONNAGE ARRIVED AT EUROPEAN PORTS FROM THE UNITED STATES.

In 1845	60,000	tons.
In 1846	56,000	"
In 1847	60,000	"
In 1848	53,000	"
In 1849	64,000	"

According to the laws of Sweden, each triennial Diet proposes a new tariff, which is designed to remain in force three years; the king having, in the mean time, constitutional power to lower, but not to raise, any duties whatever, provided a certain sum be obtained from the customs. The tariff of 1852 continued in force until January 1, 1855. In the Diet of 1854 many important reductions were recommended by the committee on revenue, but they declined recommending any precise change on tobacco duties. They referred this subject to the king, to whom a recommendation was made to enter into negotiations with foreign governments, with a view to obtain reductions upon Swedish produce in exchange for lighter tobacco duties. These negotiations were understood to refer chiefly to iron duties in the United States. Among the reductions proposed by this committee are the following:

Indian corn to be reduced from 40 to 10 cents per barrel.
Cotton thread, from 20 to 13 cents per pound.
Wool, from 5 cents to 1½ cent per pound.
Dye-woods, from 1 per cent. ad valorem to free.
Rope, from 20 to 13 cents per 18½ lbs.
Salt, from 30 to 14 cents per barrel.
Copper, raw, from $2 to 40 cents per 375 lbs.
Copper, refined, from $3 to $1 60 per 375 lbs.
Copper plates, from $13 35 to $9 70 per 375 lbs.
Steam-engines, from 20 and 10 per cent. to 5 per cent. ad valorem.
Tools and machinery, not specially enumerated, from 25 to 5 per cent. ad valorem.

The alterations recommended by this committee were generally adopted. After January 1, 1856, the articles prohibited by the tariff of 1855 are to be admitted at a duty equal, generally, to 25 per cent., except gunpowder, pig-iron, and certain kinds of brandy. Tobacco remains as under the tariff of 1852, and will doubtless be reserved as a basis for such negotiations as the Swedish government may have in contemplation relative to iron duties in the United States. The principal reductions, though not of great importance to American commerce with Sweden, apply to fire-arms, cheese, printed cotton, undyed cotton, yarn, codfish (dried and salted), logwood (made free), Indian corn (committee's recommendation adopted), salted meat, smoked or dried do., spermaceti candles (reduced 50 per cent.), rosin (do.), rice.

DESCRIPTION AND QUANTITIES OF CERTAIN MERCHANDISE IMPORTED INTO SWEDEN IN THE YEARS 1851 AND 1852.

Articles.		1851.	1852.
Sugar, loaf.....	pounds	54,509	821,893
" other kinds.	"	24,700,329	25,045,752
Coffee.....	"	9,013,934	10,373,004
Cotton.....	"	7,989,428	8,036,581
Tobacco stems.....	"	1,448,187	1,858,688
Wines and spirits..kanna		200,633	312,155

Besides the articles above specified, the returns for 1852 show an increase over 1851 in the following descriptions of merchandise, viz.:

Articles.		1851.	1852.
Cotton yarn.....	pounds	662,993	1,240,783
Hides.....	"	3,061,574	3,410,422
Linseed-oil.....	"	492,914	1,109,130
Coal.....	"	534,039	683,413
Cast steel.....	"	26,238	54,053
Sulphuric acid.....	"	189,225	190,834
Soap.....	"	140,408	132,250

The principal articles of which the importation in 1852 was less than that of 1851 were cocoa, fish (dried and smoked), salt, cheese, spirits of turpentine, tobacco (leaf and cut), fish-oil, wool, etc.

The exports of articles of domestic produce from the United States to Sweden and Norway for the year ending June 30, 1857, may be thus divided: Cotton, $1,249,042; tobacco, $84,871; other articles, 39,393—total, $1,373,306.

The navigation returns for 1852 show a total of 7803 vessels entered, with an aggregate of 343,693 lasts. Of the total number of vessels, there were Swedish 4154, measuring on aggregate of 133,963 lasts; 1288 vessels, carrying in all 109,272 lasts, under the Norwegian flag; 550 vessels of 34,025 lasts, belonging to Finland; and 1311 vessels, measuring 66,433 lasts, under foreign flags.—*Com. Rel. U. S.*

Principal Ports.—Gottenburgö, or more properly Göthaborg, on the southwest coast of Sweden, bordering the Cattegat, near the mouth of the River Gotha, lat. 57° 42′ 4″ N., long. 11° 57′ 45″ E. Vessels do not come up close to the city, but lie in the river or harbor, at a short distance from the shore—goods being conveyed to and from them by lighters. The depth of water in the port is 17 feet, and there is no tide, bar, or shallow.

Stockholm, the capital of Sweden, situated at the junction of Lake Mœler with an inlet into the Baltic. The entrance to the harbor is intricate and dangerous, and should not be attempted without a pilot; but the harbor itself is capacious and excellent—the largest vessels lying in close to the quays.—*See* STOCKHOLM.

Bergen, the first commercial city of Norway, situated at the head of a deep bay, in lat. 60° 24′ N., and long. 5° 20′ E. The bay is inclosed on all sides by rugged rocks and islands; the water is deep, but the entrance to the town is difficult, and needs a pilot.

Manufactures.—The value of manufactures of all kinds at registered factories was: In 1839, $5,439,123; in 1846, $7,084,947; In 1848, $8,868,348; in 1849, $9,299,899; in 1850, $9,891,072; in 1851, $9,913,866, showing an increase since 1839 of $4,474,743; since 1846, of $2,828,919; and since 1849, of $673,967.

COMMERCE OF THE UNITED STATES WITH SWEDEN AND NORWAY FROM OCTOBER 1, 1820, TO JULY 1, 1857.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	Foreign.	American.
Sept. 30, 1821	$154,313	$62,968	$217,181	$759,753	....	$10,183	1,616	964
1822	180,411	80,210	260,621	1,151,783	....	....	2,231	1,208
1823	161,037	147,191	308,228	1,617,242	....	2,000	3,050	890
1824	168,735	161,023	324,758	993,915	....	800	2,382	1,500
1825	223,164	112,378	334,542	1,335,896	....	3,080	3,435	702
1826	126,034	88,489	214,523	1,128,236	....	3,000	3,653	518
1827	307,488	307,553	609,041	1,915,507	....	4,406	3,731	1,530
1828	258,593	215,229	473,794	1,570,798	....	....	5,065	1,776
1829	122,663	126,971	249,634	1,020,910	....	2,000	2,355	1,114
1830	181,253	189,940	371,209	1,168,110	$773	1,110	3,502	4,023
Total	$1,759,920	$1,891,964	$3,151,584	$11,447,145	$773	$27,099	30,375	12,275
Sept. 30, 1831	$190,511	$86,519	$277,030	$901,812	....	....	3,329	472
1832	214,048	152,365	366,413	1,097,894	....	....	1,868	3,078
1833	244,587	70,262	314,849	1,168,897	....	....	1,806	2,898
1834	277,287	128,502	405,799	1,079,327	....	....	1,437	3,488
1835	418,078	100,160	518,238	1,285,178	....	....	1,520	2,708
1836	528,983	89,558	618,541	1,243,189	....	....	1,926	2,807
1837	211,700	208,704	420,404	1,399,901	....	....	1,881	2,984
1838	210,745	66,686	277,431	854,771	....	$5,027	1,412	1,639
1839	237,000	26,502	263,502	1,558,684	....	....	797	2,608
1840	435,092	115,104	550,296	1,217,918	....	....	1,118	5,936
Total	$3,065,981	$1,044,452	$4,110,433	$11,801,866	....	$5,027	16,447	29,711
Sept. 30, 1841	$563,766	$88,553	$652,319	$1,209,881	....	$2,000	2,216	3,816
1842	288,948	105,970	344,918	890,934	....	....	1,311	5,161
9 mos. 1843*	18,851	15,907	34,188	227,356	....	....	730	488
June 30, 1844	217,870	12,931	230,101	421,884	....	....	....	4,629
1845	250,567	22,761	273,328	627,933	....	....	340	9,243
1846	362,792	39,545	402,337	724,865	....	....	698	7,765
1847	391,847	28,340	420,187	613,698	....	....	....	6,263
1848	625,079	53,844	678,816	750,817	....	....	2,188	10,543
1849	725,381	38,506	763,787	731,846	....	....	1,591	14,718
1850	663,590	51,010	720,190	1,093,117	....	....	849	9,822
Total	$4,064,004	$386,167	$4,450,171	$7,281,936	....	$2,000	9,666	69,458
June 30, 1851	$760,800	$21,566	$782,366	$907,227	....	....	1,545	9,026
1852	752,846	25,322	778,168	775,443	....	....	3,040	6,547
1853	832,583	16,725	852,308	447,332	....	....	2,217	6,153
1854	1,095,602	29,324	1,124,926	515,179	....	....	4,731	4,896
1855	949,017	28,793	977,810	848,900	....	....	4,601	4,850
1856	1,871,645	47,718	1,919,363	871,245	....	....	9,461	8,250
1857	1,373,306	27,120	1,400,426	744,812	....	....	3,433	5,599

* Nine months to June 30, and the fiscal year from this time begins July 1.

The importation of raw cotton into Sweden in 1851 amounted to 7,989,428 lbs., being larger than the importation of the previous year by 3,838,588 lbs. It was, moreover, the largest quantity ever imported in a single year, except in 1848, when the amount was 8,074,020 lbs. In 1831 the amount imported was 794,434 lbs., and in 1841, 1,832,431 lbs. The amount of cotton twist produced in Sweden in 1851 was 6,005,081 lbs. (chiefly No. 26), and was valued at $1,311,777. In 1850 the quantity was 5,734,332 lbs., and the value $1,279,960. The amount of cotton cloth manufactured in 1851 was 1,730,000 English yards, and the number of people employed in registered cotton factories was over 3000. In 1850 the value of exported cotton manufactures was $46,000. In 1851 it decreased to $7500. In 1850, imported cotton cloth, 170,000 lbs.; imported cotton twist, 893,000 lbs.: total, 1,063,000 lbs. In 1851, imported cotton cloth, 195,500 lbs.; imported cotton twist, 1,068,000 lbs.: total, 1,263,500 lbs. Tobacco was imported in 1851 into Sweden to the amount of 4,141,509 lbs., of which only 42,642 lbs. were manufactured. Of the whole amount 2,567,982 lbs. came direct from the United States; the remainder chiefly from German ports. In 1850 the importation was 3,370,399 lbs.; 41,795 lbs. manufactured. At 79 tobacco manufactories in the kingdom there were employed, in 1851, 1277 workmen, and the sales were valued at $647,120; consisting of 200,175 lbs. of cigars, 2,750,723 lbs. of snuff, and 1,632,555 lbs. of other prepared tobacco; in all 4,583,453 lbs. Tobacco, in small quantity, and of very bad quality, is grown in the neighborhood of Stockholm, but I believe in no other part of the kingdom. It should be remembered that the accompanying table and the foregoing notices of Swedish woven goods refer only to the registered factories, and do not exhibit half of the actual manufactures of the kingdom. None of the homespun cloths are included, for which, of every description, the Swedish peasantry are remarkable, and of which, unfortunately, it is impossible to obtain exact accounts of the value or quantity. The province or county most distinguished for these productions is that of Elfsborg, of which Gottenburg is the market. The home-made manufactures of this province, over and above the amount consumed by its own inhabitants, were, in 1850 and 1851 (inclusive of stockings, quilts, and ribbons), as follows:

1850—Cotton stuffs	4,842,000	English yards.
" Linen stuffs	275,200	"
" Woolen stuffs	392,170	"
" Cotton handkerchiefs	1,448,928	pieces.
1851—Cotton stuffs	4,752,600	English yards.
" Linen stuffs	270,800	"
" Woolen stuffs	340,161	"
" Cotton handkerchiefs	1,065,261	pieces.

These quantities have slightly diminished of late years, and the registered factories are accordingly encouraged.

The homespun manufactures of Gefleborg which were sold in 1849 amounted to 1,428,883 yards; those of Westmoreland to 805,333 yards; and those of Holland to 162,700 yards.

The productions of other provinces are not given reliably; but enough is known to prove that the amount of such fabrics is considerably greater than that of the registered manufactures; and their productions, especially of linen cloth, surpass in durability, and rival in fineness, the best productions of the factories.

The value of manufactures of all kinds at registered factories was: In 1839, $5,439,128; in 1846, $7,064,947; in 1850, $9,891,072; in 1853, $10,151,724; in 1854, $11,841,613; and in 1855, $14,437,645. It will be seen, therefore, that the increase in ten years has been nearly $7,000,000 (100 per cent.), and in twelve months $2,500,000. The importation of raw cotton into Sweden in 1855 reached to 14,783,529 lbs.; in 1853 the

amount was 9,883,572 lbs.; in 1848, 2,600,000 lbs.; in 1831, 794,484 lbs.; showing an increase in twelve years of more than 12,000,000 lbs. The amount of cotton twist produced in 1855, chiefly of a quality under "No. 26," was 10,598,098 lbs., valued at $2,168,625, exceeding the amount of the preceding year by 2,893,823 lbs. The amount of cotton cloth produced does not appear to have been ascertained, as the official report gives the amount indiscriminately with linen. Their joint value in 1855 was equivalent to $652,489, nearly twice greater than in 1853. In 1845 their value was $188,787. The importation of unmanufactured tobacco into Sweden in 1855 amounted to 4,532,616 lbs., being 573,626 lbs. more than in 1854. In 1853 the amount was 4,851,722 lbs. The importation of manufactured tobacco in 1855 was 55,205 lbs., somewhat more than 10,000 lbs. less than in 1853. Considerably more than half the tobacco consumed in Sweden is imported directly from the United States. The amount directly from the United States in 1853 was over 3,100,000 lbs. The accompanying table is necessarily confined to the returns of registered factories, and, unfortunately, exact accounts of homespun fabrics, for which this country is remarkable, can not be had. The province most distinguished for these productions is that of Elfsborg, adjoining the province of Gottenburg. In Elfsborg it appears that in 1855 the home-made goods, over and above the quantity consumed by its own inhabitants (about 250,000 souls), amounted to 9,047,506 English yards of cotton cloth, together with 1,568,556 cotton handkerchiefs. Also, linen fabrics, 259,329 English yards; woolen fabrics, 392,425 English yards; showing an increase in cotton weaving since 1853 of more than 3,300,000 English yards. In the province of Gefleborg there were woven by the peasants, in their homes, no less than 2,077,000 ells (or 1,384,666 English yards) of heavy linen. Other districts also are almost equally distinguished for cotton and linen homespun fabrics of excellent quality.

REVIEW OF SWEDISH REGISTERED MANUFACTURES IN 1855, THEIR VALUES, NUMBER OF OPERATIVES, AND NUMBER OF ESTABLISHMENTS.

Species of Manufacture.	No. of Factories.	No. of Owners and Workmen.	Value of Manufactures in Swedish Rix Dollars.*
Cotton and linen, woven	80	1,665	1,851,226
Cotton twist	16	3,067	5,421,569
Woolen cloth	106	3,684	3,875,389
Silk cloth	19	779	1,082,488
Ribbon and tape	11	101	40,540
Sail-cloth	7	1,176	877,741
Stockings	18	609	247,359
Calico printing	21	177	173,478
Sugar	17	907	7,369,340
Tobacco	90	1,339	2,484,291
Paper	90	1,350	1,198,947
Leather	550	1,879	2,114,061
Dye-houses	449	1,741	876,681
Glass	17	1,133	709,911
China	2	726	414,496
Earthen-ware	58	440	169,567
Oil	52	220	1,047,805
Porter	2	197	290,900
Wax candles	1	2	221
Stearin	3	58	178,500
Soap	9	61	214,417
Rope	22	195	210,461
Clocks	133	288	45,681
Playing cards	7	82	35,573
Wall paper	2	119	65,639
Colors and acids	16	56	144,992
Coaches	29	195	189,100
Lucifer matches	7	509	125,200
Engines	29	2,057	1,047,712
Various small manufactures	630	2,586	1,298,337
Total, 1855	2439	27,905	36,094,114

* Nearly equivalent to 40 cents American currency.

—*U. S. Consular Returns*, 1857. *See* articles COTTON, COTTON MANUFACTURES, IRON, STOCKHOLM, and NORWAY, for additional information on the trade and manufactures of Sweden.

COMMERCE OF THE UNITED STATES WITH THE SWEDISH WEST INDIES, FROM OCTOBER 1, 1820, TO JULY 1, 1857.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1821	$507,077	$53,149	$560,226	$611,116	....	$292,788	20,774	888
1822	569,566	91,247	660,813	898,119	....	76,583	16,292	1080
1823	241,701	18,362	260,063	185,808	....	44,161	8,174	654
1824	204,988	39,687	244,670	102,835	....	22,520	8,288	340
1825	193,761	41,247	235,008	81,702	....	36,558	7,150	183
1826	120,573	23,284	143,857	163,946	....	40,429	4,437	....
1827	416,829	25,014	441,836	209,585	....	32,930	16,277	....
1828	611,564	23,216	634,800	375,995	....	100,634	24,558	635
1829	684,528	23,791	708,314	238,049	....	100,741	28,246	328
1830	552,700	37,727	590,427	230,530	....	157,874	19,060	284
Total	$4,199,290	$377,124	$4,430,414	$2,637,635	....	$964,195	156,116	4742
Sept. 30, 1831	$251,937	$11,111	$263,048	$218,918	....	$111,149	7,199	552
1832	141,249	7,478	148,727	58,410	....	22,215	4,651	644
1833	100,188	5,057	105,220	32,202	....	8,985	3,295	283
1834	81,040	7,902	88,942	47,314	$2400	24,429	2,619	238
1835	72,714	13,641	86,355	31,330	....	22,018	2,599	217
1836	80,925	1,020	81,845	56,414	....	10,002	2,052	....
1837	84,114	3,005	87,119	63,077	....	27,207	2,028	84
1838	74,140	4,281	78,421	46,019	....	26,018	1,045	....
1839	103,283	4,130	107,412	12,458	....	8,960	2,184	139
1840	98,710	3,610	102,320	67,545	....	49,947	2,208	180
Total	$1,087,514	$61,835	$1,149,409	$624,487	$2400	$305,863	31,475	2204
Sept. 30, 1841	$165,184	$3,707	$168,891	$19,760	....	$13,607	3,455	65
1842	129,727	3,320	133,047	28,242	....	19,475	2,668	726
9 mos., 1843*	31,228	2,346	33,574	51,818	....	45,923	949	....
June 30, 1844	63,884	1,360	65,244	23,719	$1000	23,399	1,478	141
1845	88,886	1,453	90,339	13,110	....	8,473	2,185	....
1846	138,121	3,448	141,569	5,285	1012	2,450	2,320	....
1847	110,062	3,669	113,731	....	....	....	1,607	....
1848	75,496	800	76,296	18,735	....	9,589	2,250	70
1849	95,128	737	95,865	15,962	....	9,918	2,684	547
1850	98,170	1,160	99,342	2,193	....	500	2,454	982
Total	$996,892	$21,990	$1,017,888	$167,403	$1012	$132,284	22,004	1970
June 30, 1851	$61,157	$745	$61,902	$20,001	....	$19,587	1,819	....
1852	90,802	1,993	92,795	4,264	....	3,229	2,287	195
1853	31,024	1,191	32,215	6,876	....	4,539	1,186	....
1854	12,741	....	12,741	22,590	....	13,156	967	....
1855	62,856	301	63,247	32,959	....	16,616	1,365	146
1856	60,702	....	60,702	16,193	....	2,899	1,019	85
1857	76,405	3,528	79,933	19,082	$9065	....	1,719	....

* Nine months to June 30, and the fiscal year from this time begins July 1.

Swedish West Indies.—The island of St. Bartholomew is the only possession of the Swedes in America. It belongs to the leeward group, and is situate centrally in lat. 17° 50′ N., and long. 62° 52′ W., distant 12 miles from St. Martin, and about 30 from St. Christopher. It is about 8 miles long, by from 2 to 3 miles wide, and contains an area of about 25 square miles. Capital, Gustavia. The island is of an irregular shape, and deeply indented by numerous small sandy bays, separated by bold and steep rocky acclivities of moderate height. In the interior it is hilly, but its loftiest elevations are less than 1000 feet. In most parts it is barren and sterile, but has numerous well-cultivated valleys. It produces all the staples of the West Indies—cotton, sugar, tobacco, indigo, etc., and also lignum vitæ and iron wood. Its only exports are cattle and some salt. Water is scarce, and the inhabitants depend for supply on the rains. The only harbor is La Carenage, a safe and commodious one, and much frequented. It is on the west side of the island. Close by is Gustavia, the principal town, a thriving place, having considerable commerce with the neighboring islands. The population is estimated at between 8000 and 9000, of which two-thirds are blacks. The slaves were emancipated on the 9th of October, 1847, and on this occasion the negroes tendered to the King of Sweden an address of thanks. St. Bartholomew was settled by the French in 1648, and was ceded to the Swedes in 1784, with whom it still remains.

Swedish vessels from the island of St. Bartholomew are placed on an equal footing with those of the United States by the treaty with Sweden and Norway of July 4, 1827.—*See* TREATIES, COMMERCIAL.

Switzerland (Ger. *Schweitz*; Fr. *La Suisse*; It. *La Svizzera*), a country of Central Europe, between lat. 45° 50′ and 47° 50′ N., and long. 5° 55′ and 10° 30′ E., having east the principality of Lichtenstein and the Tyrol, south Lombardy and Sardinia, west France, north and northeast Baden, Würtemberg, and Bavaria. Length 216 miles, breadth 75 to 140 miles. At an elevation of from 1000 to 1600 feet, the climate is pure and salubrious; but it is unhealthy in many of the deep and narrow valleys. Vegetation corresponds with the extremes of climate. In the Valais the fig and grape ripen at the foot of ice-clad mountains, while near their summits the rhododendron and the lichen grow at the limit of the snow line. The corn raised in Switzerland is not nearly sufficient for the supply of its population; the most productive cantons are those of the north and west. Here the vine ripens at an elevation of 1900, and in some places at 2100 feet above the sea. It is cultivated on the slopes of the Jura, and in the valleys of the Rhine, Rhone, Reuss, Limmat, and Thur. Buckwheat ripens at an elevation of 2200, and with a southern exposure at 3000 feet; barley, rye, potatoes, and pot herbs at 4000 feet. Flax and hemp are extensively grown; irrigation is judiciously managed; and, in general, agriculture is making considerable progress. The slopes of the Jura and of the Alps, and the high regions of the table-land, are covered with valuable timber trees—the oak, beech, larch, and birch. The pine grows to an elevation of 6700 feet, shrubs to 7400. The great wealth of Switzerland consists in its rich and excellent pastures, which in summer support vast numbers of cattle; the finest breeds are those of the Simmenthal, Gessenay, Gruyere, Zug, and Schwytz. The cultivation of the vine is an important branch of industry in the southwest cantons, and wine is exported. *Kirschwesser*, cider, and perry are made. Cheese is a valuable product; it is made chiefly in Gessenay, the Simmenthal, and the Emmenthal; that called Gruyere is much esteemed and extensively exported.

Switzerland has made rapid progress in manufacturing industry. The east and northeast cantons manufacture cotton goods, the chief seats of which are Appenzell and St. Gall. Silks are woven in Zurich and Basle, and linens at Bern. Neufchatel has superior printing establishments. Watches, jewelry, and musical boxes are the principal manufactures of the west cantons; here 230,000 watches are made every year. The number of individuals employed in the different branches of industry in 1846 were: Silks, 40,000; cottons, 90,000; watches and jewelry, 30,000; woolens, paper, leather, iron wares, etc., 40,000; in all, 200,000.

Switzerland contains a population of 2,390,116, and embraces an area of 15,261 square miles. Politically it is divided into twenty-two cantons, as follows:

Cantons.	Square Miles.	Population.
Appenzol	153	54,809
Aargau	508	196,720
Basle	185	73,385
Bern	2,567	457,921
Freyburg	505	99,805
St. Gall	749	169,508
Glarus	280	30,197
Geneva	91	63,032
Grisons	2,975	89,840
Lucerne	588	132,789
Neufchatel	281	70,679
Schaffhausen	116	35,278
Schwyts	339	44,159
Soleure	225	69,613
Ticino	1,087	117,397
Thurgau	379	88,810
Unterwalden	393	25,135
Uri	422	14,500
Valais	1.665	81,927
Vaud	1,185	199,453
Zug	85	17,456
Zurich	687	250,134
Total	15,261	2,390,116

A more moderate tariff than that now levied in Switzerland upon our principal staples could not be desired. For instance,

Grain of every kind pays a duty of only 3 cents per 110½ lbs.	
Rice, 3 cents	"
Salted provisions, 65 cents	"
Lard, 65 cents	"
Dried vegetables, 3 cents	"
Whale oil, 6 cents	"
Whalebone, 65 cents	"
Tobacco, 65 cents	"
Wool, raw or combed, 6 cents	"
Pot and pearl ashes, 6 cents	"
Rosin, 6 cents	"
Tallow, 6 cents	"

The commercial relations between the United States and Switzerland are regulated by treaty, exchanged November 8th, and proclaimed November 9th, 1855. Article 1 places citizens of either country residing in the other upon a footing of equality with native citizens, subject to the constitutional and legal provisions, as well federal as state and cantonal, of the contracting parties. Article 7 provides for the appointment and powers of consuls and vice-consuls in the large cities and important commercial places, in the countries of the contracting parties respectively. Article 8 provides that in all that relates to the importation, exportation, and transit of their respective products, the United States of America and the Swiss confederation shall treat each other reciprocally as the most favored nation: thus, neither of the contracting parties shall impose any higher or other duties upon the importation, exportation, or transit of the natural or industrial products of the other than are or shall be payable upon the like articles, being the produce of any other country, not embraced within its present limits. Article 10 provides that neither of the contracting parties shall grant any favor in commerce to any nation, union of nations, state, or society which shall not immediately be enjoyed by the other party. Article 11 provides that each country shall be at liberty to determine the manner of establishing the origin of its own products destined to enter the country of the other, should differential duties be established by either on the products of any nation. Article 12 provides that the territories and ports of each country shall be open to the admission of articles from the other; such articles, when imported into the United States under the national flag, or under that of one of the nations most favored by

them, shall pay the same duties as the merchandise of such nation; under any other flag it shall be treated as the merchandise of the country to which the vessel belongs. The remaining articles relate to the extradition of criminals.

By a provision of the Swiss constitution of 1848, raw materials required for manufactures, as well as for the necessaries of life, are to be admitted at the lowest possible rate of duty, while the highest import tax they can bear is to be levied upon articles of luxury. In all the other governments of Europe, if we except the Hanse Towns, tobacco is considered as an article of luxury; and it might be added, in behalf of France and England, as an article of convenience, also, for raising revenue. In these countries it is, consequently, subjected—in the former to the arbitrary exactions of the *regie*,* and in the latter to such duties as are almost equivalent to a prohibition. In Switzerland, however, whatever may be the light in which they view tobacco, whether as an article of luxury or of necessity, it is treated as an article of *trade*, and admitted at a rate of duty less for 110½ lbs. than Great Britain charges on the single pound. The effect of this liberal treatment of one of our leading staples is seen in the disproportional quantities, relatively to population, which are sent to these different countries. For example: France, with a population of 36,000,000, received an annual average of 15,000,000 lbs. of American tobacco during a period of three years (1851, 1852, and 1853), which gives about one-third of a pound to each person. Great Britain, with a population of 27,000,000, received an annual average, the same period, of 25,000,000 lbs., or nearly one pound per head; while Switzerland, with a population of 2,400,000, received more than 7,000,000 lbs., or some three pounds for each person.

The manufactures of Switzerland are the chief basis of its trade with foreign countries. As early as the 14th century Zurich became the great emporium and market for Italian products and industry; and Schwytz and Unterwalden, which, with Zurich, constituted the three original cantons, were at that period famed for their ingenious and industrious habits. The principal seats of Swiss manufactures at the present day are:

The canton of Neufchatel for printed cottons, lace, jewelry, clocks, watches, and various minor articles. Wine and cheese are also produced in this canton. Geneva for watches,† clocks, jewelry, musical boxes, enameled articles, philosophical instruments, tools, cutlery, fire-arms, etc. Zurich, Aargau, and Thurgau chiefly for cotton and silk manufactures, woolen goods, straw platting, linens, and various minor articles. St. Gall and part of Appenzel for linens, muslins, cambrics, embroidery, tambouring, etc. Basle chiefly for silk ribbons, having upward of 4000 looms employed in their manufacture. The raw materials for these manufactures are greatly enhanced in price by the expense of carriage (*transit*); and bread, flour, and other articles of food cost higher than in most other countries of Europe. The restrictions on transit through France and other adjacent countries are a heavy drawback upon the industry of Switzerland; but the proverbial frugality of the people, and the low price of labor, together with the admitted superiority of most of their manufactures over those of England and France, enable them to compete successfully with those countries in foreign markets.

The commerce of all nations enjoys equal privileges in Switzerland, but the federal council is empowered to adopt immediate measures in case the commerce of Switzerland is subjected to any extraordinary restrictions in other countries; notifying, however, such measures to the next succeeding federal assembly. Consumption duties are levied in eighteen cantons; but as they apply to only two articles—namely, wines and alcoholic liquors, neither of which the United States exports to that country—it is deemed needless to specify them. The suppression of these duties, however, affecting as they do one of the staples of France, might be compensated by a melioration in the laws applicable to the transitage of Swiss manufactures across the territories of France—a result which would prove highly advantageous to the commercial relations between the United States and Switzerland.

The whole foreign commerce of Switzerland during the year 1840 amounted to about 460,000,000 francs, or $85,000,000. Several causes have combined to develop and promote the industrial and commercial prosperity of Switzerland. In a mountainous country, covered with snow during six or eight months in the year, the inhabitants have recourse to in-door labor as a matter of necessity. Besides, their position in the centre of Europe, surrounded on all sides by manufacturing communities, stimulates their emulation, encouraged as it is by the facilities which the adjacent markets afford for the supply of raw materials. The people, at once agriculturists and artisans, and naturally industrious, find ample scope for constant and profitable employment in these two occupations, and are thus enabled to live on moderate wages. These causes have contributed to the most remarkable development of industrial pursuits, especially in the northern and western cantons. Without dwelling upon minute details in regard to the different branches of manufactures into which this mechanical industry has entered, the extraordinary success of cotton manufactures in Switzerland will be briefly considered, as necessarily bearing upon the consumption of one of the leading staples of the United States. There is, moreover, no branch of industry which more forcibly illustrates the energy and mechanical genius of the Swiss than their cotton manufactures. In 1830 the republic had in operation 400,000 spindles; in 1840, 750,000; and in 1850, 950,000; the number having more than doubled in twenty years. The cotton-spinning factories in the year last named were 200, estimated to produce annually from 18,000,000 to 20,000,000 lbs. of yarn. This progress in cotton manufactures is the more surprising, because of the heavy expense with which the raw material is burdened by transit tolls before it can reach the territory of Switzerland. The quantity passed in transit from Havre for Switzerland in 1833 and 1834 was nearly 6,000,000 lbs.; in 1843 it reached nearly 17,000,000 lbs., and constituted four-fifths of all consumed during that year in Switzerland. The entire receipt of cotton that year is put down at 22,000,000 lbs.

The following table exhibits the total quantity of raw cotton which passed through Havre in transit for Switzerland during a period embracing thirteen years:

Years.	Kilograms.	Years.	Kilograms.
1833	2,638,000	1840	4,912,000
1834	4,296,000	1841	7,307,000
1835	4,362,000	1842	9,836,000
1836	6,486,000	1843	7,622,000
1837	5,493,000	1844	7,440,000
1838	7,120,000	1845	9,431,000
1839	4,475,000		

In 1851 the importation of cotton into Switzerland amounted to 27,035 [illegible] lbs., of which 18,729,820 lbs. were from the United States. According to the *Tableau Général* of France for the years designated, Switzerland received cotton in pounds as follows, in 1851, 1852, and 1853:

	1851.	1852.	1853.
Through France	15,816,751	15,815,473	14,978,257
Of which from the United States	15,812,161	15,765,550	14,879,331
From other places	4,590	49,917	98,926

A severe restriction on the importation of cotton, and also of tobacco, to Switzerland, as well as on the reception by the United States of Swiss wares and manufactures in return, is, as already mentioned, the

* For an explanation of this term, see *Digest of France*, p. 198.

† It is estimated that from Geneva alone 240,000 watches are annually shipped, *via* Havre, to the United States.

vexatious and expensive transitage, specially through France. The oppression of this burden may be inferred from the fact that the annual average aggregate value of merchandise on which transit tolls are paid, proceeding from Switzerland, was in 1853 nearly $30,000,000; and the value of that proceeding to that republic more than half as much.

Switzerland sent in transitu to France, cotton tissues to the value of nearly $3,000,000 in 1852, and to the value of nearly $4,000,000 in 1853. By the French tariff such fabrics are excluded from France for consumption. Since 1845, Switzerland, it is stated officially, has quite superseded, in the markets of Germany and Austria, the yarns of Great Britain.

The following statement shows the quantities of cotton received by Switzerland from the United States, and of cotton stuffs sent to the United States from Switzerland, made up from Swiss official sources:

COTTON FROM THE UNITED STATES TO SWITZERLAND.

1850	15,942,740 lbs.	1852	19,065,900 lbs.
1851	13,729,320 "	1853	18,441,830 "

COTTON STUFFS FROM SWITZERLAND TO THE UNITED STATES.

1850	3,226,300 lbs.	1852	4,077,920 lbs.
1851	5,509,660 "	1853	5,265,150 "

In 1855 Switzerland returned to the United States, in exchange for raw cotton, the same article manufactured, to the value of $212,700.

In this branch of industry Switzerland is said to compete successfully with France. Her chintzes, and also her embroidered mousselines, are superior to those of Alsace; and if the French markets are closed against their admission under the operation of restrictive tariffs, they find an ample outlet in the Levant, or across the Austrian territory by the Danube. They also find markets in North and South America, the Barbary States, the East and West Indies, in the fairs and markets of Central Germany, as well as in the entrepôts of the Hanse Towns. The manufacture of tobacco in Switzerland is stated to employ 4000 persons, and to produce about 9,000,000 pounds, valued at $1,116,000. There is imported of the article annually into Switzerland, and produced in the country, as follows:

Imported	7,031,502 lbs.	Value	$436,728
Produced	800,000 "	"	24,626
Total	7,831,502 "	"	$461,354*

Of this there is consumed in Switzerland 6,740,502 lbs., of the value of $558,000; leaving for exportation 1,091,000 lbs.; and if to the value which this latter amount represents to the manufacturer be added wages of hands and other expenses of manufacturing, it is estimated that the raw tobacco costs the Swiss manufacturer about six cents per pound, while he expects to realize from the sale of the manufactured article about 72½ cents per pound.

TOBACCO IMPORTED INTO SWITZERLAND DURING A SERIES OF YEARS.

1847	lbs.	2,696,712
1848	"	3,376,804
1849	"	5,428,150
1851	"	7,264,957
1852	"	7,166,912

As American products generally reach Switzerland *via* Havre, the following table is subjoined, exhibiting the transit trade between France and Switzerland during a period of eight years, ending with 1853:

Years.	From Switzerland	To Switzerland.
1846	$13,774,000	$10,416,000
1847	14,430,000	9,300,000
1848	16,182,300	9,114,000
1849	18,600,000	10,602,000
1850	18,414,000	8,928,000
1851	18,225,000	8,928,000
1852	18,736,000	11,346,000
1853	26,598,000	10,788,000

It may be inferred from the above statement that the chief obstacle to trade between the United States and Switzerland is found in the restrictions of transitage, especially over the territories of France. If Swiss manufacturers could have their goods destined for the United States finally examined and sealed (*plombé*) at the first French frontier custom-house, then to pass on to their final destination under the protection of that seal, unopened, and consequently exempt from the re-examination and repacking which they undergo at each post, it is believed that the trade with the United States would all pass through Havre, instead of seeking, as is the case at present, the more circuitous and expensive routes *via* Liverpool and other ports. Such a change in the French transit regulations would result, also, in an annual augmentation in the general exchanges between the United States and Switzerland. Commercial returns from Switzerland are necessarily imperfect, owing to the difficulty in procuring requisite statistics from the various ports through which Swiss merchandise reaches the United States. The exports which passed through the consular district of Basle during the last six months of 1854 for the United States, amounted to $728,689 35. The total value of merchandise that passed through the consulate at Zurich for the United States was:

In 1853	$3,800,698
In 1854	4,406,072

The following statement shows the values of the goods, wares, and merchandise sent from Switzerland to the United States, covered by invoices authenticated at the consulate of Basle, for the six months ending July 1st, 1855:

Silk goods	$386,856 09
Watches and jewelry	89,067 62
Cotton	24,272 11
Straw	11,706 17
Medicines	3,696 20
Cheese and spirits	3,161 26
Silk and woolen	12,361 95
Paper-hangings	2,980 56
Leather	338 25
Mathematical instruments	356 67
Cloth	684 50
Machinery	81 40
Wooden ware	23 06
Cutlery	81 43
Total	$537,614 53

The following table exhibits the value of imports, the produce and manufacture of Switzerland, into the United States, during the years ending June, 1853, and 1855; to which is added a statement showing the ports from which said imports were cleared, with the amounts for each, made up from United States official authorities:

VALUE OF PRINCIPAL IMPORTS, THE PRODUCE AND MANUFACTURE OF SWITZERLAND, INCLUDED IN THE IMPORTATIONS FROM THE HANSE TOWNS, HOLLAND, BELGIUM, FRANCE, AND ENGLAND, DURING THE YEARS ENDING JUNE 30, 1853, AND JUNE 30, 1855.

Description of Merchandise.	Values. 1853.	Values. 1855.
Manufactures of wool	$15,932	$60,526
" cotton	323,632	242,700
" silk, etc.	3,301,896	4,346,534
" flax, linens, etc.	3,352	....
" iron and steel	19,062	28,426
" brass	326	1,050
" gold and silver	16,449	14,510
" glass	157	....
" paper, etc.	72	1,354
" wood	2,704	1,300
Watches	1,038,714	2,573,416
Watch crystals	3,961	23,790
Wearing apparel	5,344	5,940
Books, printed and other	1,562	173
Buttons	445	....
Cheese	3,225	5,702
Clocks	842	408
Drugs and medicines	91	1,669
Hats and bonnets of straw, etc.	351,949	149,853
Mathematical instruments	1,324	984
Musical boxes	3,916	7,739
Optical instruments	214	....
Cordials	1,085	....
Argol	....	5,857
Total value of imports	$5,532,984	$7,778,139

* The figures indicate the relative qualities of imported and domestic tobacco. Thus—imported, 6½ cents per pound; domestic, 3 cents per pound.

SUMMARY STATEMENT EXHIBITING THE VALUES OF THE PRINCIPAL IMPORTS, THE PRODUCE AND MANUFACTURE OF SWITZERLAND, DURING THE YEARS ENDING JUNE 30, 1853, AND JUNE 30, 1855, THE DETAILS OF WHICH APPEAR IN THE PRECEDING STATEMENT, WITH THE PORTS WHENCE CLEARED.

Via the Ports of	1853.	1855.
Hamburg	$931	$3,159
Bremen	793,342	509,168
Holland	995	9,542
Belgium	10,015	...
France	2,637,877	3,701,004
England	2,156,824	3,405,266
Total	$5,592,984	$7,178,139

Imports from the United States into Switzerland are made, for the most part, through the customs frontiers of Bern, Soleure, Basle, and Aargau, bordering on France and the southern part of Germany. Swiss statistics, especially such as relate to commerce, are so far behind those of other European governments, owing mainly to the geographical position of Switzerland, that an approximation only to fixed facts is attempted in the following tables, designed to illustrate the preceding summary of the trade between the two countries.

COMMERCE OF THE UNITED STATES WITH SWITZERLAND, EMBRACING THE AMOUNTS OF THE PRINCIPAL IMPORTS AND EXPORTS.

IMPORTATIONS INTO SWITZERLAND FROM THE UNITED STATES.

Denomination of Merchandise.	1851.	1852.	1853.
	Centners.*	Centners.	Centners.
Cotton	124,512·4	173,320	107,653
Dye-stuffs, wood, berries, roots, and herbs	24,302·2	14,464	16,204
Grains and vegetables	442,543·0	725,355	576,108
Fish-oil	3,060·4	3,000·6	3,140
Flour	141,530·8	172,323	107,023
Furs	127·1	137	58·0
Hops	564·8	648	618
Lard and tallow	3,058·1	4,553	2,341
Potash	1,221·6	791	995
Tobacco leaf	46,218·5	40,364	51,407
Manufactured cigars	3,405·8	3,699·8	4,892
Tar, rosin, and pitch	1,401·2	899	897
Turpentine and oil	2,921	2,246	2,152

EXPORTATIONS FROM SWITZERLAND TO THE UNITED STATES.

Denomination of Merchandise.	1851.	1852.	1853.
	Centners.	Centners.	Centners
Cotton stuffs	31,906	37,072	47,865
Cheese	31,854	33,896	37,866
Silk stuffs	20,787	26,674	28,287
Straw twistings	2,737	5,030	4,465
Watches, including music-boxes	551·6	342	467
Wooden manufactures	1,359·5	1,942	1,052

The trade between the United States and Switzerland is gradually on the increase. American flour, which, prior to 1847, never reached that country, is in common use now, and if reduction can be obtained on the expense of transportation through France, or on the Rhine, it may in time become as much in use as that obtained from the Baltic. During the year 1853 the following amounts of Swiss manufactured articles were exported to the United States, the papers of which passed through this consulate, nine-tenths of which were manufactured alone in the Canton of Zurich, which contains a population of but 250,000:

Silk goods, amounting to	19,312,050	francs.
Cottons (mostly from Canton St. Gall)	703,812	"
Straw goods	72,930	"
Catholic books, from Convent Einsiedel	18,065	"
Cheese	8,845	"
Calf-skins, etc.	16,779	"
Making a grand total of	20,133,500	francs.

—*Com. Rel. U. S.*

Swords were originally formed of iron taken from a mountain by the Chinese, 1879 B.C.—*Univ. Hist.* The sword was one of the earliest implements of war. The Roman swords were from twenty to thirty inches long. The broadsword and cimeter are of modern adoption. The sword of state was carried at an English king's coronation by a king of Scotland, 1194. Damascus steel swords are highly prized, and next the sword of Ferrara steel. The Scotch Highlanders were accustomed to procure the latter from the celebrated artificer named Andrea di Ferrara, and used to call them their *Andrew Ferraras*. The broadsword was forbidden to be worn in Edinburgh in 1724.—HAYDN.

* The Swiss centner is equivalent to 110¼ lbs.

Sydney, the capital of New South Wales, and of the British settlements in New Holland, or Australia, on a cove on the south side of Port Jackson, about seven miles from its mouth, lat. 33° 55′ S., long. 150° 10′ E. Population in 1846, 38,358, and now (1853) estimated at above 50,000. Owing to a want of attention at first, the streets of Sydney were laid out, and the houses built, according to the views of individuals, without any fixed or regular plan. But latterly this defect has been to a considerable degree remedied in the old streets; and the new ones are systematically laid out. The town covers a great extent of land, almost every house having a considerable piece of ground attached to it. Schools for the instruction of poor children have been established, and there are, besides two establishments dignified with the pompous title of colleges, numerous seminaries, some of them said to be very well conducted, for the education of the middle and upper classes. There are several newspapers and other periodical publications.

Sydney is admirably adapted for the capital of a great trading colony. Port Jackson is one of the finest natural basins in the world. It stretches about fifteen miles into the country, and has numerous creeks and bays; the anchorage is every where excellent, and ships are protected from every wind. The entrance to this fine bay is between two gigantic cliffs, not quite two miles apart. On the most southerly, in lat. 33° 51′ 30″ S., long. 151° 16′ 30″ E., a light-house has been erected, the lantern of which is elevated 67 feet above the ground, and about 345 feet above the sea. It is navigable for ships of any burden to the distance of fifteen miles from its entrance, or seven miles above Sydney, up what is called the Paramatta River. Ships come close up to the wharves and stores of the town, their cargoes being hoisted from the ship's hold into the warehouses. Sydney is consequently the emporium of all the settlements in this part of Australia, and has a very extensive trade. Down to the discovery of the gold fields in 1851, wool was by far the most important product raised in the colony. The increase of cattle and sheep, but especially the latter, in Australia has in truth been altogether extraordinary. Previously to the arrival of the English settlers in New South Wales in 1788, neither horse nor cow, sheep nor hog, had ever set foot on the continent. The stock they brought with them was limited in the extreme, consisting only of 7 horses, 7 head of cattle, 29 sheep, 19 goats, and 74 pigs. And from this late and scanty stock, assisted by a few subsequent importations, have been derived all the vast numbers of sheep and other useful animals now to be found in the Australian continent. For a while the rate of increase was comparatively slow. But from 1810 down to 1851, when the revolution occasioned by the gold discovery affected every branch of industry, the multiplication of sheep and other stock, especially the former, has been rapid beyond all precedent. This is shown by the following account of the sheep's wool annually imported from Australia into the United Kingdom since 1840:

Years.	Pounds.	Years.	Pounds.
1840	9,721,423	1847	26,056,315
1841	12,390,090	1849	30,034,567
1842	12,050,071	1850	35,174,671
1843	17,435,780	1850	39,018,221
1844	17,589,712	1851	41,810,137
1845	24,150,687	1852	43,197,301
1846	21,865,270		

Down to 1851 the colony of New South Wales comprised the extensive province of Port Phillip, now Victoria. But the latter was then separated from the former, and formed into an independent state, with a governor and Legislature of its own.—*See* MELBOURNE.

At the close of December, 1851, the colony of New South Wales (exclusive of Victoria) had a population

of 197,168. It had also, at the same time, 152,057 acres under crop, 116,397 horses, 1,875,257 head of cattle, and 7,306,895 sheep. During the same year the value of the imports (mostly from England) amounted to £1,563,931, and that of the exports to £1,706,912. The latter comprised, among others, the following items, viz.:

Wool	15,368,493 lbs.	Value,	£328,302
Gold bullion	144,120 oz. 17 dwt.	"	468,389
Tallow	64,464 cwt.	"	114,168
Hides		"	96,695
Whale oil	601¼ tons.	"	25,377

with neat cattle, flour and bread, bones, soap, cedar, and other woods, etc.

Harbor Dues, etc.—The colonial Legislature has also, by an act passed in 1852, suppressed all charges on shipping for harbor dues, light-house dues, fees on entering and clearing, water police dues, etc. Sydney is therefore really a free port. *See* articles AUSTRALIA, MELBOURNE, and NEW SOUTH WALES.

Moneys, Weights, and Measures.—Accounts are kept in sterling money; but Spanish dollars are most abundant. They pass current at 5*s.* each. The weights and measures are the same as those of England.

Syra, the ancient Syros, one of the islands of the Greek Archipelago, whose salubrity and fertility have been celebrated by Homer (POPE'S *Odyssey*, book xv. v. 438, etc.), in the group called the Northern Cyclades, fifteen miles west from the greater Delos, its port, on the east side of the island, being in lat. 37° 26′ 30″ N., long. 24° 57′ E. It is from nine to ten miles in length, by about five in breadth. Though rugged, it is carefully cultivated, and produces garden stuffs, wine, olives, figs, cotton, etc., with a little barley. The population in 1830 was set down by Mr. Urquhart at 4500; but we have been assured that it is at present (1853) little, if at all, short of 27 000.

It is indebted for this extraordinary increase of population to the convenience and excellence of its port and its central situation, which have made it a considerable commercial entrepôt. Though small, its harbor is accessible to line-of-battle ships. The holding ground is good, and it has in its centre about ten fathoms water. Merchantmen of from 400 to 500 tons burden moor within about 100 yards of the wharves. Winds from the southeast round to east-northeast throw in a heavy swell; but the port is well protected from winds from all other points. A light-house, with a revolving light, has been erected on Gaidoro Island, about 1½ mile southeast from the port. Most part of the trade that formerly centred at Scio is now carried on here; and the island has not only received numerous immigrants from Scio, but also from many other parts of Greece. Great Britain and most European powers have consuls in Syra; and it is also the principal seat of the Protestant missionaries to the Levant. The town is on the north side of the harbor. The oldest portion occupies the summit of a conical-shaped hill, probably the site of the acropolis of the ancient city. —*See* TOURNEFORT, *Voyage du Levant*. But the new streets and houses, of which there are many, come down to the water's edge. It has an appearance of great bustle and animation. Its copious spring of pure fresh water has been eulogized by Clarke (*Travels*). In 1848 no fewer than 468 vessels were registered at Syra, being a greater amount of shipping than belonged to any Greek port.

Syria (with **Palestine**), a large division of Asiatic Turkey, mostly between lat. 31° and 37° N., and long. 34° 30′ and 40° E.; bounded north by the Amanus Mountains, east by the Euphrates and the Arabian desert, south by Arabia Petræa, and west by the Mediterranean Sea. Estimated area, 50,000 square miles. Population about 1,865,000, mostly Mohammedans, but comprising about 345,000 Greek Christians, 260,000 Maronites and Roman Catholics, 175,000 Jews, 48,000 Druses, and 17,000 Metualis and Yezidis. The west, or coast portion, is mountainous; the east chiefly an elevated plain. After the Dead Sea, the principal lakes are those of Tiberias, or Genesareth, and Hinlash, in the valley of the Jordan; some smaller ones exist near Damascus and Antioch. The surface being very uneven, the climate and products vary greatly within short distances. Along the coasts the heat is great, and the orange, banana, and date flourish, while the summits of the mountains are seen covered with snow. In the north, and on the elevated plain east of the mountains, the climate is colder, but at Aleppo frosts are seldom severe, and snow rarely lies on the ground for more than a day at a time. The corn is nearly ripe early in May; and from June to September summer heats prevail, unbroken by any rain, though tempered in the west by sea-breezes. It is stated that the country is capable of producing sufficient to maintain ten times its present population; yet such is the rude method of agriculture, the depressed condition and insecurity of the rural population, and the uncertainty of taxation and government regulations, that in bad years corn must frequently be imported from Egypt and elsewhere. Wheat, barley, maize, millet, lentils, and sesamum, are raised in the plains, principally in the Haouran, which has always been considered the granary of Syria. Cotton and the mulberry flourish on the coast, and silk is produced on the slopes of Lebanon. The cotton annually raised in the south is estimated to amount in value to £350,000; and about 1700 cantars of silks, 10,700 cantars of tobacco, from 8000 to 10,000 cantars of gall-nuts, and 800 cantars of madder roots are annually produced. Other chief products are sheeps' wool, olive-oil, sugar, indigo, scammony, and other gums, safflower, dates, timber, hides, and skins. Sheep and other live-stock form, as in antiquity, a chief part of the wealth of the inhabitants; and, all merchandise being conveyed on the backs of animals, it is estimated that the transit trade employs 80,000 beasts, and about 30,000 drivers. About 3500 okes of sponge fished on the coast are sent to the ports of the Mediterranean annually; other fisheries are comparatively unimportant, as is mining industry. Damascus has about 4000 looms engaged in the manufacture of silks, and the same manufacture is carried on to a considerable extent in Aleppo. Cotton, and some woolen fabrics, shawls, gold and silver thread stuffs, are also woven there and elsewhere, and the total produce of the looms of Aleppo is estimated at £250,000 in annual value. Glass, earthen-wares, leather, and soap, are made in the above and other towns; and in Palestine great numbers of religious ornaments are manufactured for sale. Commerce is greatly impeded by the want of roads, those that exist being mere mule or camel tracks; also by the deficiency of good harbors. But as Syria is on the high route from Bagdad, Mosul, and Erzeroum, to Mecca, caravans annually traverse it, bringing galls, indigo, Mocha coffee, skins, Cashmere shawls, and other Indian manufactures, also the products of Asia Minor, Mesopotamia, and Persia, which are exchanged here for European manufactures and cochineal.

T.

Tacamahac, a resin obtained from the *Fagara octandra*; and likewise, it is supposed, from the *Populus balsamifera*. It comes in large oblong masses wrapped in flag leaves. It is of a light brown color, very brittle, and easily melted when heated. When pure, it has an aromatic smell, between that of lavender and musk, and dissolves completely in alcohol, water having no action upon it.—THOMSON'S *Chemistry*.

Tack, a rope used to confine the foremost lower corners of the courses and stay-sails in a fixed position when the wind crosses the ship's course obliquely. The same name is also given to the rope employed to pull out the lower corner of a studding-sail or driver to the extremity of its boom. The mainsail and foresail of a ship are furnished with a tack on each side, which is formed of a thick rope tapering to the end, and having a knot wrought upon the largest end, by which it is firmly retained in the clew of the sail. By this means one tack is always fastened to windward, at the same time that the sheet extends the sail to the leeward.

To tack, to change the course from one board to another, or turn the ship about from the starboard to the larboard tack in a contrary wind. Thus, a ship being close-hauled on the larboard tack, and turning her prow suddenly to windward, receives the impression of the wind on her head sails, by which she falls off upon the line of the starboard tack. Tacking is also used in a more enlarged sense, to employ that maneuver in navigation by which a ship makes an oblique progression windward in a zigzag direction. This, however, is more usually called *beating* or *turning to windward*.

Tackle, a machine formed by the communication of a rope with an assemblage of blocks, and known in mechanics by the name of *pulley*. Tackles are used in a ship to raise, remove, or to secure weighty bodies, to support the masts, or to extend the sails and rigging. They are movable as communicating with a runner, or fixed as being hooked in an immovable situation; and they are more or less complicated in proportion to the effect which they are intended to produce. The application of the tackle to mechanical purposes is called *hoisting* or *bowsing*. Ground tackle implies the anchors, cables, etc.

Tafferel, the uppermost part of a ship's stern, being a curved piece of wood, and usually ornamented with some device in sculpture.

Taffeta, one of the earliest species of silken manufacture, more prized formerly than now, woven very smooth and glossy. It was worn by queens, and was first made in England by John Tyce, of Shoreditch, London, 41 Elizabeth, 1598.—STOHR'S *Chron.* Taffeta has been superseded by numerous descriptions of manufacture more esteemed by the female world.—HAYDN.

Taganrog, a city of European Russia, on the north coast of the Sea of Azof, near the mouth of the River Don, lat. 47° 12′ 48″ N., long. 38° 89′ E. Population, 18,000. It has a naval hospital, a lazaretto, etc.; and there are annual fairs in May, August, and November. Taganrog is a place of considerable commercial importance. It was intended by its illustrious founder, Peter the Great, to replace Azof, the ancient emporium of the Don, the port of which had become all but inaccessible; and its whole consequence is derived from this circumstance, or from its being the entrepôt of the commerce of the countries traversed by that great river. The largest portion by far of the trade is carried on with Constantinople, Smyrna, and other Turkish ports, but a good deal is also carried on with the Italian and other foreign ports; and there is an extensive coasting trade with Odessa and other Russian ports. In 1852 the exports to foreign countries comprised, among other articles, 1,102,047 chetwerts wheat, 112,510 poods tallow, 175,336 poods wool, 26,194 poods caviare, 846,880 chetwerts linseed, etc. Seeing that Taganrog was built to obviate the difficulties that had to be encountered by vessels entering the Don, through the shallowness of the water, it might have been supposed that care would be taken to place it in a position in which it should be, in as far as possible, free from this defect. This important consideration seems, however, to have been to a great degree overlooked. The Gulf of the Don is seldom navigable by vessels drawing more than from ten to eleven feet water, and even these can not approach within less than about 700 yards of the town. They are principally loaded by carts, drawn each by a single horse, the expenses being so very considerable that it costs from 120 to 150 copecks to ship a chetwert of wheat. Without, however, altering the position of the town, these defects might be obviated with but little difficulty, by constructing a wooden pier by which vessels in the roads might be sheltered, and from which they might be laden.

It is impossible to form a correct estimate of the future magnitude of the trade of the Sea of Azof. No doubt, however, it is very great, being the natural seat of the commerce of some of the most extensive and fertile countries of Eastern Europe.

Were the navigation of the Don improved, and facilities given to foreigners entering the sea, the exports might be largely increased, even with recent prices, which have been nearly the same as those of Odessa. The harvests in the south of Russia fluctuate very greatly. The imports into the Sea of Azof are but inconsiderable, principally consisting of Greek wines, oils, dry salteries, and such like articles.

Talc, a species of fossil nearly allied to mica. It is soft, smooth, greasy to the feel, and may be split into fine plates or leaves, which are flexible, but not elastic. It has a greenish, whitish, or silver-like lustre. The leaves are transparent, and are used in many parts of India and China, as they were used in ancient Rome (PLINY, *Hist. Nat.*, lib. xxvi.), in windows instead of glass. In Bengal a seer of talc costs about two rupees, and will sometimes yield a dozen panes 12 inches by 9, or 10 by 10, according to the form of the mass, transparent enough to allow ordinary subjects to be seen at twenty or thirty yards' distance. It should be chosen of a beautiful pearl color; but it has, in general, either a yellowish or faint blue tinge. Its pure translucent flakes are frequently used by the Indians for ornamenting the bawbles employed in their ceremonies. Talc is employed in the composition of *rouge végétal*. The Romans prepared with it a beautiful blue, by combining it with the coloring fluid of particular kinds of testaceous animals. The talc brought from the Tyrolese mountains is called in commerce Venetian talc. Several varieties are found in India and Ceylon.—THOMSON'S *Chemistry*; REES' *Cyclopedia*; MILBURN'S *Oriental Commerce*; AINSLIE'S *Mat. Indica*.

Talent signifies both a weight and a coin very common among the ancients, but very different among different nations. The common Attic talent of weight contains 60 Attic minæ, or 6000 Attic drachmæ; and weighed, according to Dr. Arbuthnot, 59 lbs. 11 oz. 17½ grs. English Troy weight. There was another Attic talent, by some said to consist of 80, by others of 100 minæ. The Egyptian talent was 80 minæ; the Antiochian also 80; the Ptolemaic of Cleopatra 80⅔ that of Alexandria, 96; and the insular talent, 120. In the valuation of money, the Grecian talent, according to Dr. Arbuthnot, was equal to 60 minæ; or, reckoning the mina at £3 4*s.* 7*d.*, equal to £193 15*s.* The Syrian talent, in this valuation, consisted of 15 Attic minæ, the Ptolemaic of 20, the Antiochian of 60, the

Eubœan of 60, the Babylonic of 70, the greater Attic of 80, the Tyrian of 80, the Eginæan of 100, the Rhodian of 100, and the Egyptian of 80 minæ. There is another talent much more ancient, which Dr. Arbuthnot calls the *Homeric talent* of gold, which seems to have weighed six Attic drachmæ, or three Doric, a Doric weighing very little more than a guinea. According to this talent some reckon the treasure of King David, particularly that mentioned 1 *Chron.* xx. 14, which, according to the common reckoning, would amount in gold talents to the value of £547,500,000, and the silver to above £342,000. As David reigned in Judea after the siege of Troy, it is not improbable but Homer and he might use the same numeral talent of gold. Among the Romans there were two kinds of talents, the *little* and the *great* talent. The little was the common talent; and whenever they say simply *talentum*, they are to be understood of this. The little talent was 60 minæ or Roman pounds, the mina or pound being estimated at 100 drachmæ or denarii. It was also estimated at twenty-four great sesterces, which amounted to £60. The great talent exceeded the less by one-third part. Budæus computes that the little talent of silver was worth £75 sterling, and the greater £99 6*s.* 8*d.* sterling. The greater of gold was worth £1125 sterling.

Talent, as a species of money among the Hebrews, was sometimes used for a gold coin, the same with the shekel of gold, called also *stater*, and weighing only four drachmæ. The Hebrews reckoned by these talents, as we do by pounds, etc. Thus a million of gold, or a million of talents of gold, among them was a million of shekels, or nummi; the nummus of gold being the same weight with the shekel; viz., 4 drachmæ. But the Hebrew talent weight of silver, which they called *cicar*, was equivalent to that of 3000 shekels, or 113 lbs. 10 oz. 1 dwt. 10$\frac{1}{2}$ grs. English Troy weight., according to Arbuthnot's computation.—E. B. *See* Coins.

Tallow (Fr. *Suif*; Ger. *Talg*; It. *Sevo*, *Sego*; Russ. *Salo*, *toplenoe*; Sp. *Sebo*), animal fat melted and separated from the fibrous matter mixed with it. Its quality depends partly on the animal from which it has been prepared, but more, perhaps, on the care taken in its purification. It is firm, brittle, and has a peculiar heavy odor. When pure, it is white, tasteless, and nearly insipid; but the tallow of commerce has usually a yellowish tinge, and is divided, according to the degree of its purity and consistence, into candle and soap tallow. Tallow is an article of great importance. It is manufactured into candles and soap, and is extensively used in the dressing of leather, and in various processes of the arts. The exports of tallow from Russia amount, at an average, to about 3,810,000 poods, or 137,160,000 lbs. a year.—Tegoborski, *Forces Productives de la Russie*, i. 233. Of this immense supply, the export of the largest portion is to England; the remainder being exported to Prussia, France, the Hanse Towns, Turkey, etc.

We borrow from the work of Mr. Borrisow, on the commerce of Petersburg, the following details with respect to the tallow trade of that city: Tallow is divided into different sorts; namely, white and yellow *candle tallow*, and common and Siberian *soap tallow*; although it is allowed that the same sort often differs in quality. Tallow is brought to Petersburg from the interior; and the best soap tallow from Siberia, by various rivers, to the Lake Ladoga, and thence by the canal of Schlusselburg to the Neva. Yellow candle tallow, when good, should be clean, dry, hard when broken, and of a fine yellow color throughout. The white candle tallow, when good, is white, brittle, hard, dry, and clean. The best white tallow is brought from Woronesch. As for soap tallow, the more greasy and yellow it is, the better the quality. That from Siberia is the purest, and commonly fetches a higher price than the other sorts. The exports of tallow from Petersburg in 1852 amounted to 2,062,101 poods. Formerly the oil and tallow warehouses were the same, and this occasioned great difficulties in shipping, because all vessels or lighters taking in tallow or oil were obliged to haul down to the *ambare*, and wait in rotation for their cargoes. The consequence was, that, when much business was doing, a vessel was often detained for several weeks at the *ambare* before she could get her cargo on board. Now the tallow and oil warehouses are separated, and every article has its own place. When a shipment of tallow is made, the agent is furnished by the selector (*bracker*) with a sample from each cask. Captains, in order to obtain more freight, usually load some casks of tallow upon deck; but it is more for the interest of the owner to avoid this, if possible, because the tallow loses, through the heat of the sun, considerably, both in weight and quality. One hundred and twenty poods of tallow, gross weight, make a Petersburg last, and 63 poods a ton. The value of the tallow exported from Russia is said by M. Tegoborski to amount, at an average, to about 3,871,000 roubles, or about $15,500,000.

Exports of domestic Tallow from the United States during the Year ending June 30, 1857.

Whither exported.	Pounds.	Value.
Danish West Indies	8,750	$1,068
Hamburg	26,587	3,320
Dutch West Indies	436	55
Dutch Guiana	14,706	1,724
England	1,773,452	208,946
Malta	2,750	358
Canada	1,455,568	148,389
Other British North Am. Possessions	592,110	60,378
British West Indies	2,679	302
British Honduras	2,700	270
British Guiana	4,571	624
France on the Atlantic	40,000	4,840
French North American Possessions	9,103	882
Cuba	885,316	105,366
Porto Rico	8,858	1,010
Azores	1,100	120
Hayti	4,556	604
Mexico	12,132	1,305
New Granada	14,333	1,736
Venezuela	267,987	31,421
Chili	576,561	60,066
Total	5,698,315	$632,256

Imports of Tallow into the United States for the Year ending June 30, 1857.

Whence imported.	Pounds.	Value.
England	21,710	$1,721
British West Indies	7,700	427
British Possessions in Africa	541	69
British East Indies	32,420	2,601
Mexico	974	98
Buenos Ayres, or Argentine Republic	16,238	1,108
Sandwich Islands	86,965	6,542
Total	166,548	$12,567

Tally Trade, the name given to a system of dealing carried on in London and other large towns, by which shop-keepers furnish certain articles on credit to their customers, the latter agreeing to pay the stipulated price by certain weekly or monthly installments. In London there are about sixty or seventy tally-shops of note, and from 500 to 600 on a smaller scale. They are also spread over the country to a considerable extent, particularly in the manufacturing districts. The customers of the tally-shops are mostly women, consisting principally of the wives of laborers, mechanics, porters, etc., servant girls, and females of loose character. Few only of the more respectable classes have been infatuated enough to resort to them.

Tamarinds (Ger. *Tamarinden*; Fr. *Tamarins*; It. and Sp. *Tamarindo*; Arab. *Umblie*; Hind. *Tintiri*), the fruit of the *Tamarindus Indica*, a tree which grows in the East and West Indies, in Arabia, and Egypt. In the West Indies the pods or fruit, being gathered when ripe, and freed from the shelly fragments, are placed in layers in a cask, and boiling sirup poured over them, till the cask be filled; the sirup pervades every part quite down to the bottom; and when cool, the cask is headed for sale. The East India tamarinds are darker

colored and drier, and are said to be preserved without sugar. When good, tamarinds are free from any degree of mustiness; the seeds are hard, flat, and clean; the strings tough and entire; and a clean knife thrust into them does not receive any coating of copper. They should be preserved in closely-covered jars.—THOMSON'S *Dispensatory*. The tamarind-tree was very early introduced into England, where it sometimes is known to flower; from which circumstance it may be inferred that it would prosper in favorable localities in some of our Southern States, and probably mature its fruit. There is, perhaps, only one species of this genus; but the West Indian tamarind, believed to be only a variety, differs much from the East Indian, in the form of its fruit and the number of its seeds.

Tampico, or Santa Ana de Tamaulipas, a sea-port town of the Mexican confederation, department, and 215 miles north-northwest from Vera Cruz, on the south shore of the Lake of Ta...pico. Population, 7000. It is regularly laid out on a slope, and has some good dwellings in the old Spanish style, with military and naval hospitals, some public monuments, and well-supplied markets. It is better drained and less unhealthy than formerly. Principal exports are specie, hides, tallow, bones, and jerked beef.

IMPORTS INTO TAMPICO FROM THE UNITED STATES, WITH THE ESTIMATED DUTIES.

Years.	Amount of Cargoes.	Import Duties.
1851	$273,704	$265,278
1852	196,936	147,702
1853	843,564	632,673

The exports hence to the United States during the year 1837 amounted to $1,283,157, whereas the returns of the year 1855 only amount to the sum of $208,571. In 1834 the total amount of specie from this port was, by official returns, $9,165,178, of which over $2,000,000 went to the United States, the balance to Europe. A serious drawback to the commercial intercourse between this port and the United States is the want of direct steam conveyance. The geographical position of Tampico has many advantages over any other port in the republic, in consequence of its proximity to San Luis Potosi, where goods can be sent at 50 per cent. less in the charges of freight than from Vera Cruz, and San Luis being the key to all the principal places in the sections of the country whose commerce is supplied with foreign goods, and the spot where the goods meet from the states of Durango, Jalisco, Guanajuato, and Zacatecas, these being the principal mining states in the republic. There were twelve arrivals and departures of English packets, bringing to ...mpico 3431 quicksilver flasks, and taking thence cargoes of an aggregate value of $3,459,061; which, added to the aggregate value of other outward cargoes, makes a total of $3,994,772.

RETURNS OF AMERICAN AND FOREIGN TRADE AT THE PORT OF TAMPICO DURING THE YEAR ENDING DECEMBER 31, 1854.

Nations.	Tons.	Value of Imports.	Tons.	Value of Exports.
American vessels	2.75	$260,367	3011	$208,471
Mexican "	2764	216,700	2650	61,890
Spanish "	285	66,160	285	26,450
French "	2100	530,382	2206	....
English "	895	493,140	895	238,000
Danish "	280	111,335	280	900
Total	9259	$1,678,026	9407	$535,711

Tanning. The process of tanning leather with the bark of trees was early practiced by various nations. The use of tan was introduced into these countries from Holland by William III., for raising orange-trees. It was discontinued until about 1710, when ananas were first brought into England. Since then tan has been in general use in gardening. Great improvements were made in tanning in 1795, *et seq.*

Tapestry, an art of weaving borrowed from the Saracens; and hence its original workers in France were called Sarazinois. The invention of tapestry hangings belongs (the date is not mentioned) to the Netherlands.—GUICCIARDINI. Manufactured in France under Henry IV., by artists invited from Flanders, 1606. The art was brought into England by William Sheldon, and the first manufactory of it was established at Mortlake by Sir Francis Crane, 17 James I., 1619.—SALMON. Under Louis XIV. the art of tapestry was much improved in France.—*See* GOBELIN TAPESTRY. Very early instances of making tapestry are mentioned by the ancient poets, and also in Scripture; so that the Saracen manufacture is a revival of the art. For the tapestry wrought by Matilda of England, *see* BAYEAUX, *Tapestry*, p. 74.

Tapioca, a species of starch or white coarse powder derived from the roots of the bitter cassava (*Jatropa manihot*), an American plant raised all over South America, but principally in Brazil, where it is called *mandioc* or *manioc*. The roots of the plant, being peeled, are subjected to pressure in a kind of bag made of rushes; the juice which is forced out by this process being a deadly poison, and employed as such by the Indians to poison their arrows. But the residuum, or farinaceous matter remaining after the expulsion of the juice, is perfectly wholesome, and makes excellent bread. Tapioca, as stated above, is prepared from this residuum; and being nutritious and easy of digestion, is extensively used in the making of puddings. When dressed, it is not easily distinguished from sago.

Tar (Fr. *Goudron*; Ger. *Theer*; It. *Catrame*; Pol. *Smola gesta*; Russ. *Degot, Smola shitkaja*; Swed. *Tjara*), a thick, black, unctuous substance, chiefly obtained from the pine and other turpentine trees, by burning them in a close, smothering heat.

EXPORTS OF TAR FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Barrels.	Value.
Swedish West Indies	2	$4
Danish West Indies	370	839
Hamburg	800	1,713
Bremen	108	228
Holland	7,082	8,213
Dutch West Indies	85	210
Dutch Guiana	370	827
Dutch East Indies	723	1,612
England	27,253	63,408
Scotland	12,742	26,680
Gibraltar	270	661
Malta	130	247
Canada	2,471	9,470
Other British North Am. Possessions	6,243	12,533
British West Indies	2,887	5,850
British Honduras	210	606
British Guiana	1,478	3,158
British Possessions in Africa	805	1,687
British Australia	950	1,907
British East Indies	8,388	17,929
France on the Atlantic	3,722	5,933
France on the Mediterranean	1,929	2,353
French North American Possessions	189	402
French West Indies	598	1,239
French Guiana	442	817
Spain on the Mediterranean	1,096	2,766
Canary Islands	66	132
Philippine Islands	659	1,949
Cuba	3,215	7,511
Porto Rico	476	1,114
Portugal	285	646
Madeira	50	126
Cape de Verd Islands	75	166
Azores	290	588
Two Sicilies	815	1,602
Turkey in Europe	159	300
Turkey in Asia	400	825
Ports in Africa	1,373	3,011
Hayti	277	573
San Domingo	230	460
Mexico	962	2,676
Central Republic	50	131
New Granada	1,224	3,570
Venezuela	777	1,573
Brazil	1,380	2,754
Uruguay, or Cisplatine Republic	250	506
Argentine Republic	575	1,399
Chili	473	1,218
Peru	250	777
Ecuador	250	549
Sandwich Islands	339	1,109
Other Islands in the Pacific	26	108
China	350	1,166
Whale-fisheries	10	76
Total, year 1856–7	96,731	$208,610

Tar is an article of great commercial importance. The process followed in making it has been described as follows by Dr. Clarke: "The situation most favorable to the process is in a forest near to a marsh or bog; because the roots of the fir, from which tar is principally extracted, are always most productive in such places. A conical cavity is then made in the ground (generally in the side of a bank or sloping hill), and the roots of the fir, together with logs and billets of the same, being neatly trussed in a stack of the same conical shape, are let into this cavity. The whole is then covered with turf, to prevent the volatile parts from being dissipated, which by means of a heavy wooden mallet, and a wooden stamper, worked separately by two men, is beaten down and rendered as firm as possible above the wood. The stack of billets is then kindled, and a slow combustion of the fir takes place, without flame, as in making charcoal. During this combustion the tar exudes; and a cast-iron pan being at the bottom of the funnel, with a spout which projects through the side of the bank, barrels are placed beneath this spout to collect the fluid as it comes away. As fast as the barrels are filled they are bunged and ready for immediate exportation. From this description it will be evident that the mode of obtaining tar is by a kind of distillation *per descensum*; the turpentine, melted by fire, mixing with the sap and juices of the fir, while the wood itself, becoming charred, is converted into charcoal."

Tare, an abatement or deduction made from the weight of a parcel of goods, on account of the weight of the chest, cask, bag, etc., in which they are contained. Tare is distinguished into *real tare*, *customary tare*, and *average tare*. The first is the actual weight of the package; the second its supposed weight according to the practice among merchants; and the third is the medium tare, deduced from weighing a few packages, and taking it as the standard for the whole. In some commercial cities tares are generally fixed by custom. The prevailing practice, as to all goods that can be unpacked without injury, both at the custom-house and among merchants, is to ascertain the real tare. Sometimes, however, the buyer and seller make a particular agreement about it.

Tare, Vetch, or **Fitch**, a plant (*Vicia sativa*, Linn.) that is cultivated principally for its stem and leaves, which are used in the feeding of sheep, horses, and cattle; but partly, also, for its seed. Horses thrive better upon tares than upon clover and rye grass; and cows that are fed upon them give most milk. The seed is principally used in the feeding of pigeons and other poultry.

Tariff, or **Tarif**. First, a list of certain goods, merchandise, etc.; then a list of duties on imports or exports of such articles. This word, like many others used in commerce, is derived from the Italian, in which it is *tariffa*; this again, like numerous other expressions relating to commerce and navigation, comes from the East. In Persian it is *tarif*; in Arabian the verb *arf* signifies *to know*, which in the second form becomes *tarif*, signifying *to make known*. The substantive derived from the verb therefore signifies *notification*. The principles of a tariff depend upon the commercial policy of the state by which it is framed; and the details are constantly fluctuating with the change of interests, and with the wants of the government or community, or in pursuance of commercial treaties with other nations. The British tariff underwent seven important changes between the years 1772 and 1842; viz., in 1787, in 1809, in 1819, in 1825, in 1833, and in 1842. Finally, on 26th June, 1846, the royal assent was given to Sir Robert Peel's noted tariff—a measure which canceled the duties on several hundred articles, and pressed upon the country the adoption of free trade.

The able report of L. D. Campbell, of the House of Representatives, 1856, to the Committee of Ways and Means, is a just and comprehensive exposition of the protective (not prohibitive) system; and as such, and as being the report upon which our present tariff was mainly constructed, we need not apologise for giving extended extracts. The moderately protective tariff is essential in the early commercial and manufacturing stages of a country. And the fact that free trade may at some future time be advantageous to us does not prove its present necessity. It will be seen that, though generally assenting to the asserted fact that the purpose of revenue alone can justify the imposition of duties, yet the proofs and statistics given prove too much, and prove to the unprejudiced reader that duties are not alone necessary for revenue, but *may* be necessary for protection.

Principle and Policy of the Proposition.—The propriety of the proposed reduction of the tariff of duties upon imports is made by the President's annual message to rest, first, upon the *principle* that "the purposes of revenue alone can justify their imposition;" and, second, upon the policy of "reducing the tariff of duties upon imports, as the means of reducing the revenue to the amount annually needed for the prudent and economical administration of public affairs."

The recommendation of the message, thus analyzed, affords a principle which the President contents himself with saying "is so generally conceded, that, in readjusting the impost tables and schedules, which unquestionably require essential modifications, a departure from the principles of the present tariff is not anticipated," and a *policy* which he does not in any manner undertake to verify or illustrate. It stands in the message as a position assumed without proof, or as too plain to require demonstration.

Revenue limited by Expenditures.—Your committee perceive only one sense in which the President's doctrine concerning the purpose for which import duties may be imposed can be regarded as generally conceded. Imposts employed as a measure of taxation must be conformed to the requirements of the public revenue, or they miss the controlling object of their imposition.

Taxes of every kind must be levied at once up to the necessities, and within the limits of government expenses; in other words, the gross amount of revenue must be regulated by the demand of the government for its current expenses; and, where foreign imports are selected by the policy of the nation to bear the chief burden of its support, the tax imposed must be determined in amount by the requirements of the national treasury.

Thus far it is conceded that the purpose of revenue alone can justify their imposition; and thus far the doctrine of the message is in accordance with the sentiments of the American people. But tariffs have other legitimate purposes, and are capable of other and important uses, while kept in strict conformity to the requirements of the national treasury.

Impost Systems of all Nations protective of their productive Industry.—Our own Policy persistently governed by this Intention.—The protection of the national industry, by means of duties laid upon foreign imports, is one of the purposes which characterize the impost systems of all the governments of the earth, whose rank entitles them to consideration as authorities with us. This policy, since its adoption by the first-class nations, has undergone changes corresponding to changes of condition, both in Europe and America, but the principle has never been abandoned. The Continent of Europe holds it as firmly as ever, and Great Britain, by working it to its utmost capacity of beneficial service, has thoroughly justified the theory. Her experience is its most perfect demonstration. In the United States the doctrine has its disciples and supporters as numerous and influential as principles, rightly understood, ever secured among an intelligent and patriotic people. In the forty years of controversy to which it has been subjected in this country, the opposing theory has never obtained a victory or a concession which can

in any way entitle its advocates to claim possession of the field. Fifteen general acts of legislation have made as many changes in the details of our tariff laws, but none of them has yielded the principle of protection, direct or indirect, to our national industry.

Duties less than protective, Fluctuations of the Revenue, and Vicissitudes in the Business of the Country.—The compromise of 1833, of all the general acts of Congress imposing duties upon imports, alone seems to yield prospectively to the doctrine of a tariff for revenue without effectual incidental protection. It is the only instance of a horizontal rate of duties carried below the point of adequate encouragement of our home industry. But even under this act, the level 20 per cent. which its provisions contemplated was not to take effect until after the 30th of June, 1842. Till that date the successive reductions of all excess in the rates over 20 per cent. continued to wear the discriminating features of the protective tariff, which it modified, although the rates ran below the point of protection; and its large free list decidedly expressed the same intention. Nine years' experience of the operation of this act abundantly manifested its unfitness for any of the purposes which a policy of imposts should answer. The revenue derived from it declined in four years from twenty-nine millions to eleven; rose again in two years to twenty-three; sunk the next year to thirteen and a half; and stood three years afterward at eighteen millions. The vicissitudes in the business of the country, and the disasters which its monetary interests encountered in this period, are well remembered. They are indicated sufficiently by the following facts. The price of flour in 1837 was $10 25 per barrel; in 1842 it had fallen to $6. In 1836 twenty-five millions of dollars' worth of public lands were sold; in 1842 less than two millions of dollars' worth. In 1836 cotton was at 16·8 cents per lb., in 1842 at 8·1 cents per lb. The export had in six years risen one hundred and sixty millions of pounds, and the total value had fallen twenty-three millions of dollars.

The tariff of 1842 was a convulsive reaction of the national sentiment, awakened by the sufferings of the people under the operation of the system of the Compromise Act.

The general bankruptcy of the people which had resulted was reflected by a corresponding bankruptcy of the national treasury. In 1836 a surplus fund of twenty-eight millions had been disposed of by ordering that amount to be deposited with the States; but sixteen months afterward the fourth installment of that deposit was arrested by the necessities of the treasury; and in six years from the date of the act required to relieve the plethora, it was fifty-four millions in debt!

The single instance of a tariff that looked to revenue only, and had the opportunity to practically demonstrate its working qualities, thus proved itself to be the only one ever put upon its trial wholly incapable of answering that special intention, and at the same time had proved more mischievous to every other object which the system of import duties effects, than any other that has ever been attempted.

Established Principles of our Revenue System.—Your committee, feeling well satisfied that the policy of the nation in respect to all the points involved in legislation upon the subject of import duties is sufficiently manifest, think it well to state its principal doctrines for the service which such a statement will render to the purposes and objects of this report:

I. The revenue of the government is to be raised from the sales of public lands, duties upon imports, and from miscellaneous sources, without resorting to internal taxation, direct or indirect.

II. The revenue to be derived from import duties, amounting in the average, since the foundation of the government, to six-sevenths of the resources relied upon, shall be levied under direction of the following principles: 1st. No more money shall be collected than is necessary for the wants of the government, economically administered. 2d. The duties shall be imposed so as to operate as equally as possible throughout the Union, discriminating neither for nor against any class, or section, or interest.

III. Conforming to the objects and limitations of these rules, certain kinds of imports shall be subject to varied rates of duty, and certain others shall be exempt from duty, in such manner as shall best foster and promote home production and the general welfare of the nation; taking care to distribute the protection so afforded over every interest of the people as equally as possible.

Revenue accruing under High and Low Tariffs, respectively, in the last thirty-two Years.—Let us see how either of these points, thus necessary to the validity of the calculation, is sustained or contradicted by the history of our foreign commerce in the last thirty-two years:

Years.	Millions of Dollars.	Sales of Land in Thousands of Dollars.	Average Sales per Annum.	Millions of Dollars Customs.	Average.	Millions of Dollars difference.	
1824.....	58½	984½		17½		....	
1825.....	66½	1,216		20		Inc. 2½	Tariff of 1824, from June 30, 1824.
1826.....	57½	339½		28½	21½	Inc. 8½	
1827.....	55	1,495½		19½		Dec. 3½	
1828.....	67	1,018½	$2,086,000	23½		Inc. 3½	
1829.....	54½	1,517		22½		Dec. ½	
1830.....	49½	2,329½		22	24½	Dec. ½	Tariff of 1828, from Sept. 1, 1828.
1831.....	82½	3,210½		24		Inc. 2	
1832.....	75½	2,623½		28½		Inc. 4½	
1833.....	83½	3,967½		29	....	Inc. ½	Tariff of 1832, from March 1, 1833.
1834.....	87	4,857½		16½	....	Dec. 13	After Dec. 31, 1833, one-tenth excess over 20 per cent. deducted.
1835.....	122	14,757½		19½	....	Inc. 3½	
1836.....	158½	24,877		23½	....	Inc. 4½	One-tenth more after Dec. 31, 1835.
1837.....	113½	6,776		11	....	Dec. 12½	
1838.....	86½	3,082	7,491,000	16	....	Inc. 5	One-tenth more after Dec. 31, 1837.
1839.....	145½	7,076½		22	....	Inc. 7	
1840.....	86½	3,292		13½	....	Dec. 9½	One-tenth more after Dec. 31, 1839.
1841.....	114½	1,365½		14½	....	Inc. 1	
1842.....	88	1,325½		18	....	Inc. 3½	Half of residue after Dec. 31, 1841.
Equal to 1843.....	77	1,197		16		Dec. 2	Remaining half after June 30, 1842.
1843-'44.....	96½	2,060		26		Inc. 10	
1844-'45.....	105½	2,077	2,007,000	27½	24	Inc. 1½	Tariff of 1842, after Aug. 30, 1842.
1845-'46.....	110	2,694½		26½		Dec. 1	
1846-'47.....	116½	2,498½		23½		Dec. 2½	Tariff of 1846, after Dec. 1, 1846.
1847-'48.....	140½	3,328½	2,505,000	31½	26	Inc. 8	
1848-'49.....	132½	1,689		28½		Dec. 3½	
1849-'50.....	164	1,860		39½		Inc. 11½	
1850-'51.....	200½	2,352	2,085,000	40	45½	Inc. 9	
1851-'52.....	196	2,043		47½		Dec. 1½	
1852-'53.....	251	1,667		59		Inc. 11½	
1853-'54.....	276	8,471	7,212,000	64	58½	Inc. 5	
1854-'55.....	231½	11,497		53		Dec. 11	

Productiveness of the higher and lower Tariffs of thirty-five Years. Steadiness of the former: Unsteadiness of the latter.—The income from customs, under the same tariff, rose from thirteen millions in 1821, to seventeen and a half millions in 1822. Under the tariff of 1824, from 1825 to 1828, it rose from twenty to twenty-three and a quarter millions; under that of 1828, from 1829 to 1832, it rose gradually from twenty-two and a half to twenty-eight and a half millions. Under the Compromise Act of 1833, which reduced the duties under the act of 1832, by biennially deducting one-tenth of the excess over 20 per cent., from and after the 31st of December, 1833, until the 31st of December, 1841, when one half of the remaining excess was struck off, and on the 30th of June, 1842, the other half thereof, the revenue from the customs rose in the first three years of its operation from sixteen to twenty-three and a half millions; in the next year, 1837, sunk to eleven millions—falling twelve and a half millions in one year—and rose again in 1839 to twenty-three millions, another difference of twelve millions in two years. In 1840 it ran down nine and a half millions, and in two years more rose four and a half millions.

The first year of the operation of the tariff of 1842, the customs amounted to no more than sixteen millions; the three following years it stood very steadily at twenty-six, twenty-seven and a half, and twenty-six and a half millions, respectively. In the years 1846–'47, during seven months of which the present tariff was in operation, the customs fell two and a half millions; in the following year of famine in Europe they rose eight millions; in the year 1848–'49 they declined three and a half millions, and in the succeeding year increased eleven and a quarter millions. In the year 1850–'51 they rose again nine and a half millions above the preceding year; in 1851–'52 they declined one and three-quarter millions; in 1852–'53 they rose eleven and three-quarter millions; in 1853–'54 they again increased five millions; and in 1854–'55 fell eleven millions.

Fluctuations of the Customs, and Tendency to Excess under the same low-duty Tariff.—In this summary it will be perceived that within the last nine years the revenue from customs has five times varied from the amounts yielded in the years immediately preceding these several changes, from eight to eleven millions of dollars. During these nine years the present tariff was in operation, and an unvarying rate of duties was charged upon the imports. Its changes of productiveness to the revenue have been changes of increase, indeed, but not in any balancing proportion to the naturally increasing expenditure of a growing population; for we find by statement No. 23, of the Secretary's report, that the consumption of foreign imports, *per capita*, rose in the first four years of the period from $6 60 to $10; and the surplus in the treasury after all ordinary expenditures, and the payment of over forty millions of the public debt besides, is conclusive of this point.

Your committee have not in these statements considered the causes of the great disparity of the revenues yielded to the treasury by the different rates of duty levied upon foreign imports. They have been looking simply to the question how far, and to what effect, impost percentages of themselves affect the revenue. For the proposition presented for their consideration by the President and Secretary embraces no more, either of facts or principles, than the naked assumption that the reduction of the percentage of itself must work a reduction of the revenue.

"*Low Duties yield the larger Revenue.*" *The Doctrine and Experience of the Past.*—That this doctrine is not in accordance with the facts of a large and varied experience, covering and embracing every variety of conditions which can affect the question, is abundantly manifested by the statistics presented. Indeed the directly opposite doctrine has been held by the advocates of low duties in all controversies which the matter has hitherto undergone. In 1845, pending the discussion which substituted the present reduced tariff for the higher one of 1842, it was argued by the Secretary of the Treasury, in his report of that year, that the larger revenue is produced by the lower rates of duty. He says, "The revenue from *ad valorem* duties last year exceeded that realized from specific duties, although the average of the *ad valorem* duties was only 23·57 per cent., and the average of the specific duties 41·30, presenting another strong proof that lower duties increase the revenue." And again, he says, "While it is impossible to adopt any horizontal scale of duties, or even any arbitrary maximum, experience proves that, as a general rule, 20 per cent. *ad valorem* will yield the largest revenue."

This principle, which is a sound one, does not apply to either of the extremes of impost rates, for the one may be carried up to the point which is prohibitory, or near to it, and the other down to that which would be as nearly nugatory, and so both extremes may be made to operate alike upon the treasury; but it is true within a comparatively moderate range of difference—that is, within any such difference of percentage as any advocate of reduction would now undertake to recommend.

The facts which our financial history offers in support of this doctrine are, in general, as conclusive as these following, which your committee select from a multitude for its proof.

Under the tariff of 1842 the average duties upon protected articles was something above 40 per cent.; the average monthly receipts from customs under that act amounted to $1,991,267. Under the tariff of 1846, with its average duties below 30 per cent., the monthly receipts during the first two years of its operation reached the sum of $2,575,207.

Mr. Walker, in his report, December 11, 1848, page 3, says: "As the high duties under the act of 1842 were rapidly substituting the domestic articles, and excluding the foreign rival, the revenue must have declined. From this disastrous condition we have been saved by the tariff of 1846, yielding from reduced taxes an average excess, thus far, of more than seven millions of dollars over the average receipts from the tariff of 1842."

Twice under the operation of the Compromise Act, once after the second deduction was made upon the rates of the act of 1832, and once after the third deduction, the revenue from customs rose to the annual average of the high tariff of 1828. And in the year 1842, when its lowest rates were nearly touched, and the level 20 per cent. was nearly its maximum, the customs stood higher than in five of the previous years of its operation, and above the average of the eight preceding years.

The average annual amount of the customs yielded by the tariff of 1824 was twenty-one and a half millions; of the tariff of 1828, was twenty-four and a fourth millions. In a period of twenty-two years, rising five millions, or 23 per cent. The average of the first four years of the tariff of 1846 was thirty-three and a fourth millions—25 per cent. in four years; the average of its second four years was fifty-four and three-fourths millions; rising in eight years twenty-seven and a half millions per annum, or 133 per cent.

The average annual consumption of foreign imports *per capita* under the tariff of 1824 amounted to $5 26; under the tariff of 1828, $5 21; under that of 1842, to $5 20; while under the lower tariff of 1846, during the four years of its operation previous to the influx of the California gold, the consumption rose to $6 50 *per capita* of the population, and under the very low average duties of the whole period of the compromise the consumption stood at $7 28.

These facts show how much more productive of revenue the lower tariffs rates are than those which,

though considered higher, are yet far short of prohibiting importation, or seriously interfering with the prosperity of the carrying trade.

Causes of larger Revenue from lower Duties. — As a means of lessening the revenue derived from customs, or of lessening its proportion to the public expenditure, it is thus made apparent, by the facts of a conclusive experience, that a mere reduction of the rates of duty can not be relied upon; but, on the contrary, that the policy has always the directly opposite effect, and this for many obvious reasons.

A reduction of duties induces increased importations of foreign commodities, disturbing our money market by diminishing the available capital, and enhancing its rate of interest to our own manufacturers. The importer obtains command of the market, and to the extent to which the home competition is crippled in the production of such articles, it opens a vacancy to be supplied by importation, and adds just so much more to the customs as such supply from abroad will yield; and, therefore, so long as the country has the means of purchasing such increased quantity of foreign goods, so replacing the home product, the revenues will continue to augment, instead of diminishing, under the lower rates.

Again, an increased demand for our breadstuffs and provisions in Europe, occasioned by failure of crops there, will have the effect, under a low tariff, of inducing large importations, and, consequently, a large enhancement of the customs. In the famine year of 1847 the customs rose eight millions above the receipts of the year immediately preceding; and every deficiency of crops abroad, to the extent to which it occurs, must have a proportionate effect in the same direction.

Again, a large increase in our agricultural and manufacturing products, by affording a surplus for exportation at any price which will pay transportation, will have a similar effect.

Again, foreign wars, by increasing the demand upon us for provisions, induces a corresponding increase of our importations, and a corresponding augmentation of the revenues resulting from it.

Again, abundant products of the precious metals, by affording the means of large purchases, operate in the same way.

And again, the system of railroad and other enterprises now in active operation in this country, which demand large capital on long credits, bring loans in immense amounts, in the shape of dutiable merchandise, to swell the customs.

All the causes above mentioned, except diminished rates of duty, and great failure of crops abroad, have been in operation upon the customs since the fiscal year 1849–'50, and we have their combined effect in raising the revenue derived from this source from less than forty to over sixty-four millions of dollars per annum in the space of four years.

In the last year they fell off eleven millions, owing to the absence of some of the causes which we have noticed, but their product still stood at thirteen millions above that of the year 1849–'50, and nearly six millions above that of 1851–'52.

Alternations of Excess and Deficiency in the Revenue under Duties lower than protective.—From these facts, and the laws of national finance which they illustrate, it is obvious that the ratio of percentage imposed upon imports, acting within a moderate range of differences, is the least influential, and the most likely to deceive expectation, of all the causes which usually affect the revenues arising from them. But low duties not only disappoint the intention for which they are recommended, in the manner and for the reasons given, but, by their own inherent vices, they are not only liable, but certain, in despite of all modifying influences, ordinary and extraordinary, to work mischievously in the opposite direction—in spasmodic alternations from excess to deficiency.

The first reduction of the duties of the act of 1832, provided for by the compromise of 1833, took effect on the 1st January, 1834. At the end of that year the public debt was paid off, and there was a balance in the treasury of a little less than nine millions of dollars. In 1835 the revenue from customs and the sale of public lands rose thirteen millions and a half above the receipts from the same sources in the preceding year; and in the year 1836 they rose fourteen and a half millions more; so that at the end of the year 1836 there was a balance in the treasury of forty-six and a half millions. To dispose of this enormous surplus of public moneys, the act of 23d June, 1836, was passed, directing the deposit of twenty-eight millions with the States. But such tendency to excess in the system of national finances, like the febrile paroxysms of the human constitution, speedily passes into the stage of exhaustion. In 1837 the revenue from public lands and customs fell to eighteen millions, from forty-eight millions the year before; and on the 12th October of that year, the issue of ten millions of treasury notes was authorized to supply its deficiency for the services of the government. In 1839 the revenues rose to thirty millions—twelve millions in two years; and in two years more sunk to fifteen and three-fourth millions—another fall of nearly 100 per cent. in two years.

Thus, in the first three years of the Compromise Act we have the whole difference between twenty-one and forty-eight millions of revenue per annum resulting to the treasury, and in the next five years the still greater difference of a decline from forty-eight to fifteen and three-quarter millions. Under the operation of the second reduction, while the duties remained the same, the customs fell off from twenty-three and a half to eleven millions; and under the operation of the third reduction, they rose again to twenty-three millions—fluctuations in the revenue which baffled all calculation and destroyed all reliance.

Steadiness of the Revenue, and Adjustment to Expenditure, under protective Tariffs.—Under the tariff of 1824 the revenue varied no more than from twenty-two to twenty-five millions in four years; and under that of 1828 from twenty-five to thirty-two millions by regular increase in four years. Under that of 1842 the customs rose from the depressed point of eighteen to the steady and adequate one of twenty-seven and a half millions in four years, and the receipts from the public lands raised only from one and a third millions to two millions.

The public expenditures during the three periods of these comparatively high tariffs were very regularly covered by the national income—the first yielding five millions, the second four millions, and the last thirteen millions, or from one to three millions per annum more than the current ordinary expenses of their respective periods of operation; amounting annually to no more than such balance in the treasury as it is prudent to hold for its incidental uses.

Plethora of the Treasury under the Compromise Act, and under the Tariff of 1846.—Under the low tariff of 1833 we have first an enormous surplus in the treasury, then a large deficiency and debt. Under that of 1846 we have arrived at such a surplus of public moneys as again calls for relief; we have a balance in the treasury now of nineteen millions, and we are threatened with its augmentation to the amount of thirty millions in a year to come.

It is not intended by this contrast of the steadiness of the revenue under the highest tariffs and their happier adaptation to the wants of the treasury, against the unsteadiness of the income and its maladjustment to expenditure under the lower tariffs, to espouse the rates of duty of the particular systems cited of the one class, or to condemn the systems of the other by so sweeping a generalization; but they are arrayed here now simply to exhibit their respective workings, as

the facts and figures of their history present them to us, and that they may serve as data for the inquiry before us.

Your committee are as well aware, and feel as forcibly as any objector can, that where a number of causes are in existence, and co-operating in the result, especially when several of them are inter-dependent, and some of them independent of the others, the difficulty of determining their respective agencies is great in proportion to the complexity and diversity of the forces at work; but such difficulty, in a matter of the vast importance of that under investigation, only increases the necessity for endeavoring a solution.

The fluctuations of the national revenue during the operation of the low tariffs, and its steadiness under the higher ones, occurring in a constant connection in the last thirty-five years of our financial experience, seem to admit of a clear and instructive explanation.

The following propositions, which embrace the facts involved correctly and sufficiently to cover all the operative causes, immediate and collateral, very fully satisfy the inquiry.

A tariff of duties ranging generally below the point of adequate protection to our home production, induces large importations by the effect of diminished prices, to the extent to which the purchaser's means are relatively increased, and to the further extent of supplying the vacancy occasioned by withdrawing from the market the amount of commodities of home production which are so excluded.

Effect of low Tariffs upon the Income from the public Lands.—In 1834, the first year of the reduction under the Compromise Act, the imports for consumption rose three and a half millions, and the revenue fell off twelve millions.

In the year 1835 the imports rose again thirty-five millions, and the revenue from them was less by ten millions than in the year 1833; but nearly fifteen millions of dollars flowed into the treasury that year from the sales of the public lands, bringing the total revenue up to the total of 1833, and more than a million above it.

In the following year, 1836, the imports for consumption took another rise of thirty-seven millions; the customs reached within five and a half millions of the highest point they had ever attained under the preceding tariffs. The public lands rose to the enormous amount of twenty-five millions; and the total revenue of the year stood at seventeen millions above that of 1833—the highest mark of the high tariff years.

Under the lowest of our Tariffs the greatest Excess and the greatest Deficiency of Revenue both reached.—For nine years before 1834, the public lands had never in any one year yielded quite four millions, and the average was two, or nineteen millions in nine years; but in three years, 1834, '35, and '36, their product to the treasury was over forty-four millions. The customs for these three years, under the compromise, had fallen off from the sum of eighty-one and a half millions afforded by the three previous years of the higher tariff, to fifty-nine millions—a reduction of twenty-two and a half millions; but the revenue of the treasury, by the addition of thirty-six millions from the public lands, above their average previous yield, amounted to fourteen millions more for these three years of the compromise than for the three preceding years; and the proceeds from the sales of lands continued for three years longer to yield ten millions more than their product under any higher tariff which we had before or since. At the close of the year 1839 these movements had exhausted themselves. The customs for the three following years ran down to forty-six millions, twenty-eight millions below the ordinary expenditures of the period; the lands fell to two millions per annum, and the principal of the public debt contracted in the five preceding years stood at ten millions.

The operation of a tariff of duties below the point of protection, with the long run of nine years for its developments, is here fully presented. All the causes which could affect the results had room and time for their natural action, and their combined results are openly exhibited.

Its first effect was to nearly double our foreign importations in three years. This had the effect, by reduction of prices and glut of the market, of crushing the rival manufacturing industry at home; mills and work-shops were crippled and closed; the capital and labor driven from them sought employment in agriculture; the sales of public lands amounted to more than seven-fold the average quantity of any other period of ten years before or ten years afterward; and the term wound up with a general bankruptcy of the national treasury, and of the people, bringing with it a complete political revolution, and compelling a total change in the financial policy of the government.

The fluctuations of revenue under it are strikingly marked by the facts that the income from all sources never afterward rose to within eight millions of that of 1836, until the year 1850-'51, and had not fallen so low as in the year 1841 since the year 1821; it, in fact, touched a point below the receipts into the treasury of the year 1808. Its fluctuations in a period of five years touched both extremes of the revenue of the nation, running through thirty-four years of change; that is, the revenue had not been so low for twenty-five years before the year 1841, nor so high for fourteen years after 1836.

Greatest Fluctuation in Prices under the lowest Tariffs.—The business of the country felt these vicissitudes in our foreign commerce, and answered to them like their echo. Within a period of six years, while this tariff was developing its extremes of change, from 1836 to 1842, the highest and lowest prices of eighteen years were touched. Cotton, flour, provisions, tobacco, commodities of all kinds, labor and real estate, went up in price almost in the exact ratio that importations increased—that is, to nearly double the amount of 1833, in 1836; and in 1842, the imports falling to one half in amount, so the property, labor, and products of the country stood at half the market value of six years before. Not an interest of the country on which its national or individual welfare depended, but had in that brief period undergone convulsions unparalleled since similar causes had resulted in the great business catastrophe of 1820-'21.

Such is the history of the policy which abandoned the revenues of the government, and the industrial interests of the country, to the operation of causes not within its control.

Undue Expansion of Bank Circulation inseparable from excessive Imports of foreign Merchandise.—It has been customary with the advocates of low tariff duties to charge the inflation of prices, the rage of speculation, and the resulting revulsions in the business prosperity of the country, to excessive issues of bank paper.

The fact that such overissues always concur with inordinate rise of prices is remarkable indeed, and offers a plausible explanation of the mischief; but the other fact, of the invariable concurrence of greatly enhanced prices and excessive bank issues with the reign of low tariffs, connect these phenomena in our financial history in a category of relations which very clearly shows that they are in their nature inseparable. If this be so, the government, which has the direct control of one of these agencies in the mischief, has an indirect but absolute control over the others, and should exert it.

Fixed Ratio of Bank Issues to foreign Imports.—In 1830 the bank circulation was estimated by Mr. Gallatin at sixty-one millions; in April, 1834, the Secretary of the Treasury, Mr. Taney, estimated the circulation at eighty millions. In the four years, 1830, 1831, 1832, and 1833, which immediately preceded the first reduction under the Compromise Act, the imports con-

sumed amounted to two hundred and ninety-one millions. At the end of the next five years, 1837, the bank circulation had swollen to one hundred and forty-nine millions, and the imports for consumption for 1834, 1835, 1836, and 1837, to four hundred and eighty-one millions. Thus the increase of the imports amounted to 75 per cent. for the period of four years, and the increase of the bank circulation to 80 per cent.; and if we add the increased purchase of public lands of the latter term over the former, we have the proportion of the circulation to the expansion of business speculations induced by the reduced tariff very exactly balanced.

In May, 1837, the banks, with one consent all over the Union, suspended specie payments, and did not permanently or effectually resume till the spring of 1842; then their circulation had fallen to eighty-three millions; nor did it rise higher than eighty-nine millions again during the operation of the tariff of 1842.

Since the year 1846, the increase and decrease of bank circulation hold so exact a ratio to the several instances and rates of increase and diminution of imports for consumption for each year of the whole period, as involves a direct and unquestionable connection between them.

The tabular statement appended to this report exhibits the constancy of this connection for every single year of our financial history since 1833, and for periods of years before and since, in a ratio so nearly mathematical that there seems no doubt of the law which rules the subject, as there is none of the facts which serve to demonstrate it.

It will be seen, by reference to the tabular statements of this report, how little power other causes, which were undoubtedly active in modifying the results, had to disturb the working of that one which is here assumed to be the principal. The expansions and contractions of bank credits and issues are certainly influenced by many other causes, but the fact that they have occurred during the last forty years, year by year, in an invariable relation to the fluctuations in the amount of our foreign imports, goes far to establish the idea that the variations in our imports rule the fluctuations in our paper currency; and this law is, moreover, so energetic that it even overrules the effects naturally expected from the large supply of gold furnished to the currency from the California mines. For it is as true as it is surprising that since 1850, as before, every year of increased import has been marked by an equivalent increase of bank circulation, and every year of diminished imports has been marked by a diminished bank circulation, corresponding in amount as nearly as it is possible to conceive a primary and ruling cause can operate while minor and subordinate ones are also in play.

Low Tariffs responsible for excessive Bank Issues.—That low tariff duties are responsible for the excess of foreign importation—that these augmented imports induce excessive bank issues, and excessive bank issues swell prices inordinately, in the series of dependency which is here alleged—is rendered unquestionable, by the fact that these expansions of imports, paper circulation, and prices, never have occurred when our tariffs were high enough to foster, but always when they were so low as to discourage, home production, and to substitute the foreign commodities for domestic products in our market.

Summary of the Reasons which forbid the Abandonment of protective Duties.—Your committee derive from this investigation of the effects of our varied tariff systems upon the revenue the following conclusions:

1. The immediate effect of duties below the rates which protect our own industry from the rivalry of foreign commodities of the same kind, is a proportionate enhancement of such imports, and a corresponding increase of the revenue from customs, which either approach, equal, or exceed the revenue from customs of the higher tariffs; but in all instances is certain to disappoint any expectation of a reduction of the customs in proportion to the abatement of the rates.

2. The increase of imports consequent upon a reduction of duties below the point of adequate protection drives manufacturing capital and labor into agriculture and trade, and by this means vastly increases the revenues from the sale of the public lands and from foreign commerce, and thus makes up all deficiency in the customs, and greatly overpasses it, and so tends to a plethora in the treasury, instead of limiting its income and restraining its overflow.

3. The indirect effects of the same policy is to exhaust the sources of national and individual prosperity, and by its reaction to bankrupt the treasury and prostrate the enterprise of the country, leaving debt, public and private, to punish the extravagance which it induced and indulged.

Your committee, therefore, for reasons cogent as these, and many others which depend upon these, but are irrelevant to this issue of mere national finance, would earnestly discourage any measure which, either in principle or in details, aims at relieving the treasury of its present and prospective surplus by a reduction of the present rates of impost duties below the point which any branch of our home industry requires for its security and prosperity. To guard against any possible misconstruction, it must be observed that by the frequent allusions of this report to excessive importations of foreign goods, and the influences drawn from such excess of importation, the apparent "balance of trade" against the United States, which the statements of the Treasury Department exhibit for any single year, or for any series or groups of years, is not taken, or intended to any effect or purpose for which the difference in official value between our imports and exports has been used by either party to the controversy.

The total value or valuation of our imports, as given by the department statements, from the beginning of the government to the 30th June, 1855, amounts to 6983 millions of dollars; the exports for the same period of domestic and foreign merchandise and specie, to 6170 millions—a difference of 813 millions.

No conclusions whatever are drawn, either as to effect or amount of effect, from the data which our international account current thus offers, or seems to offer. The discussion which this point would awaken has been avoided as wholly unnecessary to the argument of this report, and possibly inconclusive and uncertain for any purpose. But although the enormous apparent balance against us in the account of our foreign trade be not reliable for the actual difference in our exchanges with the rest of the world, as it probably is not, yet the amount of the national, State, municipal, railroad, bank, and other corporation stocks and bonds held by foreigners, should be received as a subsisting balance of debt, resulting from a past balance of trade, which it must represent.

Effects of the present Tariff upon Wool-growers, Manufacturers, and upon the Revenue.—The tariff of 1846 unhappily raised the duty on all imported wools to 30 per cent., while it reduced the duty on imported flannels and blankets to 25 and 20 per cent., and on the coarser woolen fabrics to 25 per cent.

Now these low-priced manufactures of wool being the chief in quantity and value of which we were then capable, the business was prostrated by the premium which that act in effect offered to the foreign manufacturer; and the nominal protection of the wool-grower resulted in the ruin of his business, as in that of the cloth-maker. The home market was destroyed for the farmer; in the foreign he could not compete, and the flocks were sent to the slaughter, because the woolen factories had been sold at auction or converted to other services. The effects of this policy on the treasury are seen in the fact that twenty-two millions of the

surplus in the treasury, accumulated in the years 1853, 1854, and 1855, have come from customs upon woolens. In 1844 woolens yielded $3,313,495 to the customs, cottons $4,850,731; in 1855 woolens yielded $6,088,157, cottons but $3,823,294.

The cotton manufacture was protected; the woolen was abandoned; and while all the interests dependent upon it have been sacrificed, the revenue has been inflated at least four millions per annum during the last four years beyond what it would have received if the policy of the government had been as friendly to it as it has been to the cotton manufacturer; a striking illustration of the law that the certain method of limiting the amount of taxes is by limiting the amount of imports, by duties adequate to guarding the home-made commodity against extinguishment by the foreign.

Exemption of the coarser and finer Wools from Duty.—Your committee, looking straight at the question of the revenue, therefore, recommend you to exempt all wools of those qualities not generally grown in this country, costing less than fifteen and more than fifty cents per pound at the port of entry in the United States, from duty, retaining the existing tariff rate upon the intermediate qualities, and at the same time to raise the duties upon all woolen manufactures to the point of adequate protection.

The recommendation to fix the duty upon all such wools as our farmers now produce, or can easily produce, at 30 per cent., and to raise the duties upon all woolen fabrics into whose manufacture such wool enters, is made for the purpose of opening a market at home for the raw material which it can not find abroad, and diminishing the customs flowing into the treasury from woolen imports to the extent which such enhanced domestic production will replace them.

Magnitude of the Woolen Interest.—Special consideration to this interest is here given because of its magnitude, which may be estimated by the fact that, both in value of the imports and the amount of duty yielded to the treasury, woolen manufactures have been equal to those of iron, greater than cottons, and next in importance to silks, during the last ten years of our financial history.

The Secretary of the Treasury, noticing the great progress made in the manufacture and production of iron since the year 1840, states the fact that the American production in the year 1850 was $60,485,655, and the foreign import of the same year only $16,333,145, and says: "The conclusion is inevitable, that the production and manufacture of iron in the United States within a very short period of years will exclude the foreign production and manufacture." Of cotton he says: "That already the American manufacture is in possession of the home market as to all coarser fabrics, and beginning successfully the manufacture of the finer fabrics."

These are the good parts of a policy of protection so moderate that without the help of a number of independent causes, co-operating with the imposed duties, even these branches of the iron and cotton manufacture, to which the Secretary's report justly applies, would not have been sustained in the past, or given such flattering promises for the future. The protection extended to them, and which now appears in their prosperity, covers a period of not more than fourteen years, and has been efficiently operative for only about half of that time; yet, with all favoring influences concurring, under a stable policy, the enterprise and skill of our manufacturers may in time achieve a victory over the competition of cheaper and more abundant capital and labor abroad.

Depression of the Woolen Interest.—But our woolens have languished to the verge of extinction, while these two branches, of not more than equal importance, have so far prospered. In 1846 we imported for consumption $10,000,000 of woolens and $18,000,000 of cottons. In 1855 we imported for consumption $22,000,000 of woolens and only $15,500,000 of cottons, and exported of domestic cottons nearly $6,000,000; in the one case more than doubling our dependence upon foreign production, and in the other reducing it, in effect, 27 per ct.

Now we are just as capable of growing wool and manufacturing it as we are of the corresponding cotton production and manufacture. The territory of the United States, adapted to wool-growing, is as large and as favorable as all Europe possesses and devotes to the purpose; and if those qualities of the article which we do not or can not profitably cultivate were exempted from duty, and so afforded equally cheap to our own as to the foreign manufacturer, there is no natural cause in existence to prevent the immediate establishment of woolen factories sufficient to open a remunerating market for our farmers to an almost unlimited extent. There are portions of the United States in which the finest and best wool of the world has already been grown; and it is possible that this might in time be brought up to supply our entire demand for such first quality of staple; but it is certain that all the qualities between the finest and the coarsest could be supplied quite up to the demand of the market within five years from the establishment of an encouraging policy; and Congress is imperatively called upon now to decide whether so vast an interest as this shall be sustained or destroyed.

Protection to the Wool-grower and Manufacturer, or Destruction to one of the three greatest Branches of American Industry.—As the question now stands, moreover, let it not be overlooked that, if the manufacture shall be relieved of all weight which the duties upon all qualities of wool impose on it, by placing them in the free list, the wool-growing interests of the country may be seriously injured. If the manufacture is protected, as it must be by a duty of 30 per cent., the agriculturists will be taxed that much upon all the woolens they must use, while their own interests in the production of the fabrics are destroyed; and if woolens shall not be thus protected, then manufacturer and farmer are both overwhelmed, and the country is deprived of all share in one of the three greatest branches of human industry.

The consumption of woolens is at least equal in value to that of cottons in the United States, and to surrender their production and manufacture to destruction is so unwise that it is not to be supposed possible to an intelligent people. Let a home market for all the wool that can be profitably produced in this country be created by a change in the present tariff which will exempt the coarsest and finest qualities from duty, raise the duties on flannels, blankets, and those fabrics which require the middling qualities of wool which the United States can supply abundantly, and farmer and manufacturer will be restored to that prosperity of which they have been deprived, and the revenues will be reduced by the diminution of imports effected by the home supply, and all the objects of a just and wise legislation will be equally met.

Reduction of the Revenue by Protection of the Woolen Manufactures.—The customs have risen on woolens in eleven years from $3,313,495 to $6,088,157, while those on cottons have fallen from $4,850,731 to $3,823,294. Here we have a ratio of reduction in the revenue, from this source, which under parallel circumstances would, by its direct operation, reduce the annual surplus of the treasury at least four millions.

Add this probable reduction to the Secretary's estimate of the diminution promised by his proposed free list, and about nine millions of diminution in the annual revenue are fairly provided for—five millions immediately, and four millions just as soon as factories can be built, or those which have been converted from woolen to other manufactures can be restored; and sheep, which by natural increase more than double their number every year, can be reared to supply the demand.

Silks, Revenue from them.—Another and more immediately effective reduction of the revenues may be made by revising the tariff upon silks, so as to reduce the rates upon all qualities and kinds which do not compete with any established production of the article at home.

The imports have risen in value since 1847 from less than twelve to over twenty-four millions, and the customs from $2,833,850 to $6,129,583. In these nine years the total amount of duties received into the treasury from manufactures of silk is $51,893,871; while the total revenue from iron, manufactures of iron, and iron and steel, amount to only $50,136,942.

Luxuries, and the Rule for taxing them.—Silk manufactures stand highest in productiveness to the treasury of all articles enumerated in the tariff schedules. They owe this rank as sources of revenue, it seems to your committee, mainly to the misapplication of a general rule which has governed tariff legislation during those periods of financial necessity when import duties were resorted to to supply the treasury's deficiencies, and were felt to be a necessary increase of the burdens of taxation for revenue purposes. This rule holds, with some justice, that the wealthy shall contribute more liberally to the national wants than can be fairly demanded of the comparatively poor. Hence the maxim that luxuries should bear the highest revenue duties.

When this rule has the effect of lessening the burden of taxation upon the poor, it ought to have its operation; but when in altered circumstances, both of the national finances and the general condition of the people, it only operates to bar the people of moderate independence from the enjoyment of such luxuries without affording them a corresponding and compensating relief from taxation; it takes the character of ministering to the privileges of the rich, and preventing the otherwise possible enjoyment of luxuries by the whole people.

Luxury is a relative term, and must change its meaning or its application with all changes of condition in its subjects. Before the year 1832 tea and coffee were treated as luxuries by the previous tariffs, although they were more than sufficiently productive of revenue for all the wants of the government. By the act of that year they were put into the free list, probably because they did not enter into competition with any home production of a similar character and use, and possibly for the additional and equally good reason that a republican Legislature ought, by every legitimate use of the powers intrusted to it, aim at leveling up the comforts and enjoyments of the people of every condition to the better and higher that can by any means be brought within the reach of their industry and aspirations.

The imports of silk manufactures are greatly larger in value every year than those of wool; their consumption by the people of the United States must, therefore, be not only very large but very general, and whatever can be done to bring them more easily within the means of the whole community, which at the same time shall help to relieve the excess of annual revenue and damage no industrial interest of the nation, ought to be done.

For the like reasons, tropical fruits, spices, and other commodities not produced in the United States, or not embraced by, or adapted to, the industrial enterprise of our people, should be put under the same rule. With a sufficiency of revenue accruing to the treasury from other sources, the principle of free trade in all such commodities should have its utmost application in practice.

Reduction of Customs by enlarging the free List, encouraging Woolens and modifying Duties upon Silks, sufficient to relieve the Excess of Revenue.—In a judicious modification of the duties upon silks and other luxuries, your committee see a promised reduction of the revenue, based upon the statistical data before us, which, taken in connection with the measures already indicated, comes very well up to the amount of diminution demanded by the present and prospective exigencies of the treasury.

Calculations of revenue to be yielded by percentages, when the principal is of unsettled amount, and liable to be disturbed, not only by various other causes, but by the changes in the rate of duties adopted upon those calculations, are of course uncertain; but where there is nothing else to guide than estimates so based, they must be taken, and a future experience be left to settle their results into certainties. We can be safely confident that the measures which conform to the principles and laws of the subject will work in the direction intended, and this is sufficient assurance of correctness to warrant the trial. In this confidence, corroborated as it is by the teachings of the past, your committee submit these suggested changes of the present tariff for adoption.

Our System of Finance unsound and mischievous.—The management of the national revenue so as to adjust it fairly to the national expenditure, keeping the policy well within the constitutional powers of the government, and conforming it at the same time to the movements and interests of our national industry in all its vast varieties and values, is a problem which has not yet been satisfactorily solved in the practice of the government. Deficiencies and excesses have alternated in the treasury so rapidly and so largely in our past experience, that Congress is at length fairly driven from the ground of temporary experiments, and compelled to search for the principles that naturally rule the subject.

The Policy of Industrial Independence.—If the experience of mistakes teaches any thing clearly and reliably, our tariff histories are full of evidence that our home affairs can not be safely left to foreign influences, and that the accidents which lie in wait for them are not to be prevented by abandoning all legislative care of them. A nation must govern itself, or its neighbors will; and that for their own purposes and profit. If the United States were exclusively a manufacturing, or as exclusively an agricultural people, absolute free trade would be their policy, and custom-houses an absurdity.

The most extensive trade which they could attain to with foreign nations would then be their highest interest, and direct taxation for the support of the government the soundest system of national finance.

But our manufactures have now quite reached to the value of our agricultural products. Fifteen hundred millions of dollars per annum is the value of each of these two great classes of productive labor, according to the estimate of the most reliable authority; and it is neither in the character nor destiny of this great people to endure a perpetual dependence upon foreign nations for the products of skilled industry which they need for every-day consumption. British legislation aimed at restraining us, while we were her colonies, to the production of raw material from her market. If our own system were permitted to drift to the same result, we should, by our own act, voluntarily restore her empire over us in the only particular that is, or ever was, a substantial object of her ambition, and our Revolution would be a failure in every thing but the boast of political independence.

The despotism of wealth fears no rebellions; predestinated poverty has no independence to assert. Its spirit and its necessities are passive submission. The rights and liberties of a nation are declared in its political constitution, but their substance is in the industrial independence of the people. True freedom is found only in the command that men have over the resistance of the forces of nature to their dominion; and a people which achieves the control of their own conditions are never the slaves of any other power.

Dependence upon a foreign people for a market, either for agricultural or mechanical products, is industrial vassalage.

England has made herself the work-shop of the world by a viciously exaggerated system of manufacturing; and she depends day by day upon the world's unnatural submission to her system for her prosperity.

Turkey abandoned the guardianship of her prosperity to foreign dominion, and has sunk from the rank of a first-rate power in the earth to the very verge of national ruin. Her internal trade is wholly in the hands of foreign hucksters, as her national integrity is under the guardianship of foreign sovereigns. A people impoverished by a system of the lowest and least remunerative industry, and degraded in character and spirit by its necessary ignorance and feebleness, is inevitably at the mercy of its superiors in these respects.

The American people, of the same lineage, equal skill and enterprise, superior inventive genius, and holding a better territory by all the difference of its extent and variety of climate, soil, and commercial relations, as compared with Western Europe, can not possibly be held to inferior and subordinate industrial avocations.

The necessary command of our welfare, the current disposition of our own affairs, imperatively demand that we shall guard ourselves against all injurious foreign agencies and influences, by a settled system of self-defense.

Home and foreign Market for Provisions and Breadstuffs.—The home market for all our products now is at twenty-seven hundred and fifty millions to two hundred and fifty millions; but the corresponding two hundred and fifty millions of imports, for which we exchange our surplus, has the power to disturb and distract our currency, domestic exchanges, and domestic industry, to an extent which puts the treasury of the nation and the prosperity of the people at the mercy of every fluctuation in the market of London. We must conquer our independence of the money power of Europe, and we must control our national finances into conformity with our own necessities. This, it is obvious, can be done only by bracing the home market against all disturbing agencies.

The mischievous error of preferring a foreign to the home market for breadstuffs and provisions, and seducing the agriculturist into the policy of favoring it, is clearly exposed and convincingly proved by the following statement:

The population of Great Britain and Ireland is..	27,000,000
American breadstuffs and provisions shipped to the United Kingdom in 1855.....	$15,392,343
Consumption per capita	57 cents.
Workmen employed in making the iron imported from Great Britain in 1855	60,518
Representing in families of five persons each....	302,590
Three hundred and two thousand five hundred and ninety persons, at fifty-seven cents each, worth of provisions and breadstuffs	$172,476
Three hundred and two thousand five hundred and ninety Americans would consume of our provisions and breadstuffs fifty dollars each...	15,129,500

or within a trifle of the whole amount taken from us by the 27,000,000 of British people for that year.

To bring the iron imported in 1855 to the United States the equivalent of 70 American and 18 foreign vessels were entirely supported, counting the cargoes both ways. The tonnage of American vessels average 931 tons each, and they carry crews of 24½ men each, or in all, Americans, 1563; 18 foreign vessels, of 733⅓ tons each, and crews of 21⅔ men each, equal to 390 men. Each vessel is estimated to make three trips in the year, carrying six cargoes. The vessels represent a capital equal to $50 per ton.

American capital employed in carrying this iron is 65,170 tons, at $50.....	$3,258,500
British capital in 13,203 tons of shipping, at $50..	660,150
Total capital in the shipping.....	$3,918,650

Summary of Employment.

	Men.	Persons supported.
Englishmen in manufacturing ..	60,518	302,590
Englishmen in shipping	390	1,950
Americans in shipping	1,563	7,815
Total.....	62,471	312,355

Summary of Capital.

British in production of iron	$75,000,000
British in shipping.....	666,150
	75,666,150
Americans in shipping	3,258,500
Total capital supported.....	$78,924,650

Summary of Breadstuffs and Provisions.

Consumed by the British people in making iron, 302,590, at 57 cents	$172,476
In shipping, 1,950, at $5	9,750
304,540	$182,226
By Americans in shipping, 7815 men, at $50.....	390,750
Total.....	$473,976

Had the iron been made in the United States, 302,590 persons would have consumed, at $50 each, $15,129,500.

The result is, that we supported in the importation of foreign iron, in the year 1855—

Foreign capital	$75,666,150
Foreign people, 304,540.	
American capital	3,258,500
American people, 7815.	
We gained a market for breadstuffs and provisions of.....	4,722,976
And we lost a market for breadstuffs and provisions of.....	15,129,500
Loss to American farming interest, a market for	$14,656,676

The facts and figures of every other kind of imported commodities which a home production would exclude are data for a similar calculation of loss to the agricultural interest of this country.

International Exchanges.—The surplus provisions and breadstuffs which we might produce, after an evenly balanced and independent system of manufacturing should be established, would be the legitimate subject for foreign commerce, contributing to our necessary exchanges with other nations, and thus to the general welfare; but shipped at such a loss in amount and value, as they must be while they are injudiciously denied a home consumption, the undue amount of their export measures our distance from a healthy system, and from the wealth, prosperity, and independence which a true policy would secure to us.

Agricultural home Market against the foreign.—It is only the least profitable of the farmer's crops which will bear distant voyages in search of a market, and all excess which his exports find or make abroad falls back in diminished prices upon the hundred-fold stock which he sells at home, sometimes scarcely repairing by the whole net value of the exports the diminution of price which they reactively inflict upon the domestic market. For his green crops, fruits, and garden stuffs, his poultry, veal, mutton, and dairy products, he must have a market at home, or he must abandon their culture for sale. His land may be made to yield him thirty or forty dollars per acre in transportable grain, less the cost of cultivation, or he may make its product marketable abroad and worth about as much by feeding it to stock; but he can neither diversify his crops, nor maintain the fertility of his land against such a system of exhaustion; and, above all, he will not be able to make it yield three times the value of such crops in those vegetables which, with a well-sustained home market, is easily effected The difference between the market value and the profit of a farm in the Far West, and one of an equal quantity of land adjacent to a large city, illustrates the difference between a market at hand for all possible agricultural products, and a foreign one with an ocean intervening.

The farmer's wool crop has been amply protected for nine or ten years, so far as a high tariff duty upon imported wool could do, or promise to do it; but his home market has been destroyed by a countervailing

legislation leveled against the manufacturer. The opportunity of a foreign market could not tempt, as it would not reward, him for his industry in that direction. If the agriculturists of this country but considered the subject, they would discover that the market opened to them abroad for the produce of their fields is no better than for their wool.

In the year 1855 the total exports of breadstuffs and provisions from the United States fell short of thirty-nine millions of dollars. What is this to the crop of the year, worth fifteen hundred millions, that the American farmer should sacrifice the custom of a neighboring blacksmith, shoemaker, or weaver to secure it? In amount it is but the fortieth part of his crop, and one family next door to him would consume it more profitably for him, and with greater certainty of demand. Prices may be high or low under the influence of accidental causes, but the laws of nature and the principles of trade are a safe directory in any combination of circumstances; their bearing upon national policy is absolute and unvarying, and they must be obeyed or they will be avenged.

Harmony of all Industrial Interests, and Adjustment of the best economical Policy to the Necessity of the national Treasury. — That a harmony of interests naturally and necessarily exists among all the departments of national industry is a fundamental principle in political, as it is in social and religious science. It is one of those first principles which stand incontrovertible as the data of all reasoning upon the policy of human societies. So far as this inquiry has proceeded, the truth of this principle is clearly supported; and it can not be doubted that the other branches of productive and commercial business, not specially considered, must fall within the rule with an equally happy accordance. If an integral, self-sustaining, well-balanced relation holds between the manufacturing and agricultural welfare of the nation, and if the policy which is best for them is also well adjusted to the requirements of our system of national finance, the true interests of the planter, the navigator, and the merchant can not possibly be at war with them.

Cotton and Commerce.—It would exceed the limits as well as the proper province of this report, to endeavor a formal demonstration of its doctrine as it applies to cotton and commerce, and it must, therefore, be forborne; but some general considerations, which may be suggested in its support, will serve to show "the equal operation of the policy throughout the Union, discriminating neither for nor against any class, section, or interest," conformably with that maxim of our legislative system which has the dictates of justice and the spirit of the federal constitution for its authorities.

Export of Gold; Effects upon the Planting Interest.— In the first place, the system which looks to the industrial independence of the country would necessarily have the effect of retaining the gold exported to foreign countries for the purchase of all those commodities which we might advantageously manufacture for ourselves. The two hundred millions which we have sent abroad within the last six years is an excessive export, by the amount to which it has diminished the necessary home supply, and raised the rate of interest to its present inordinate height. Scarcity of capital and extravagant rates of loans leave no interest of the country uninjured, except that of the wealthy moneyholder.

At the place to which money flows it is most abundant and cheapest. The rates in London do not average more than half those that are constantly paid in our Atlantic cities, and often stand at one-third, or even lower.

Capital at 10 per cent. interest, exposed to the competition of capital at 5, has a fearful odds to contend with; but it is abundance against scarcity which is even more disastrous than the difference of rates. A prosperous business man may endure heavy interest, but a small capital must encounter the fluctuations of the market without relief, and is swamped in a storm which the heavier craft will ride out under bare poles. From the revulsions which our monetary affairs periodically suffer from this cause, no department of production or trade escapes, and the planters are usually the earliest and severest sufferers. They are most shaken by depression of prices, and by bankruptcy of their customers, from the fact that their industry is less varied, and the commodities which they require for constant consumption are less within their reach, when business is embarrassed. They must bring them from abroad, where credit and confidence are not so easily commanded as at home.

Fixed capital commands credit within the country, but mortgages are not negotiable securities at a distance.

Limit to Exportation of the precious Metals. — The drain of the precious metals, unduly induced by the import of articles which ought to be made at home, is an evil of such magnitude, that if there were not another among the incidents of excessive importation, it would of itself deserve the utmost exertion of legislative power to correct it. It is utterly from the purposes of a sound policy to speak of gold as a product of the country, and a commodity of trade, like iron or cotton, while its export is carried to the extent of crippling business, disturbing the currency, and enormously enhancing the rate of interest. However produced or derived, it is *money* to the extent required for the health of the circulation and the prosperity of business, and any policy which runs the supply below the demand is suicidal.

Cotton and Iron Manufactures in the South.—In the next place, the older planting States are not only capable of the labor of converting their raw material, both cotton and iron, into at least the coarser fabrics which are conveniently and profitably marketable, but they are now under the compulsion of necessity to so far diversify their industry, and so to divert some portion of their labor from the one business which they have been so long helping to depress, and to derive from this change the better remuneration which the work of conversion affords above that of production.

Georgia, Virginia, and North Carolina made the experiment of applying a portion of their cheaper labor to the coarser cotton fabrics, with a success which promised fairly to give them the home-market in a few years for such articles; but New England was compelled to dispute this ground with them by the failure of the tariff of 1846, to give the more advanced manufacturers of the North the opportunity of making the finer fabrics in the then existing condition of the enterprise, and the South for the time was thrown back upon her staples and a foreign market for her dependence.

Protective Policy no longer a Party or sectional Question.—But the spirit of progress, and the change of conditions which nine years have brought with them, have wrought their necessary changes in the movements of the whole country, and given us the happy promise of a better union in interests and policy than we have known in the past.

The time and the occasion for harmonizing measures are now upon us, and the fond faith which we hold in the future destiny of the Union warrants the confidence that this great people will show both the wisdom and virtue of a genuine patriotism in the settlement of all their differences.

A common Prosperity corrective of social Strifes. — Every section of the Union should be the best judge of its own policy; at all events, it will determine it for itself; but it is a happy circumstance for the United States that, in *the things which work their way determinately into the destiny of the nation*, there exists so little contrariety of opinion, and so much less difference

of drift, that there is nothing substantial required to be sacrificed by any part of the country for the good of the whole, and very little even in speculative opinion to be compromised to effect an agreement.

The people may be agitated and divided upon constitutional, moral, and religious questions, and their discussion and settlement will have proportionate effect upon the general harmony, but the measures which carry with them a general prosperity will hereafter, as heretofore, bear them through every strife, and secure the general welfare.

The prosperity of navigation, foreign, coastwise, and internal, are necessarily so directly dependent upon the productiveness and wealth of the agricultural and manufacturing business of the nation, that the simplest definition of its functions contains the proof of our proposition. It is the common carrier of all exchanges. Its business is proportioned to, as it is dependent upon, production, and must grow with all growth, and decline with all diminution of the products demanding its agency.

Relations of the Trader and the Laborer, and the Compensations of a general Progress for all Changes.—A sound political policy looks to a constant diminution of the proportionate number of intermediates between the producer and consumer.

All the modern improvements in the methods and instruments of commerce tend to the accomplishment of this great aim. Time, distance, and cost of transportation are in rapid progress of abridgment, and middlemen are, in corresponding ratio, eliminated by the process. Yet all these movements toward a better and directer relation between men whose reciprocating industries require improved conditions of intercourse is found to work as well for all the dependent as for the principal functionaries in the world's commerce. Steam has been largely substituted for human and brute power on the great thoroughfares of trade and travel, but horses have increased in number and value in direct proportion to the growth of the agency which threatened to deteriorate them. Wages and demand for human labor have, in like manner, risen under the auspices of the machinery that now does so much of the work which formerly belonged to them. All the natural labor in the nation bears but a small proportion to the artificial, which has so largely replaced it in production and transportation; yet that natural labor was never so fully employed nor so well rewarded as now; and the same law holds for every business function of society, and every species of employment which has any legitimate place or use in human life.

STATEMENT SHOWING THE CHANGES THAT HAVE TAKEN PLACE IN OUR TARIFF POLICY SINCE THE FORMATION OF THE CONSTITUTION, VIZ.:

Date.	Character of Change.	
1789....July 4,	First Tariff adopted.	
1790....August 10,	General change.	
1791....March 3,	General	"
1792....May 2,	General	"
1794....June 5,	Special	"
" " 7,	General	"
1795....January 29,	General	"
1797....March 3,	General	"
" ....July 8,	Special	"
1800....May 13,	Special	"
1804....March 26, 27,	Special	"
1812....July 1,	Special	"
1813....July 29,	Special	"
1816....February 5,	Special	" April 29, General.
1818....April 20,	Special	"
1819....March 3,	Special	"
1824....May 22,	General	"
1828....May 19,	General	" May 24, Special.
1830....May 20,	Special	" May 29, Special.
1832....July 13,	Special	" July 14, General.
1833....March 2,	Special	" March 2, Comp'se.
1841....September 11,	General	"
1842....August 30,	General	"
1846....July 30,	General	"
1848....March 29,	Special	"
" ....August 12,	Special	"
1849....January 26,	Special	"
1857....March 3,	General	"

Year 1824.—The tariff change of this year created considerable discussion and feeling. The duties collected that year were $17,878,000, with a population of 12,000,000, or $1 50 to each individual.

1828.—The general change this year was accompanied by a light increase of duties; viz., $22,681,000.

1832.—Another general change took place, followed by a rapid increase of duties after 1834, viz.:

Years.	Duties.	
1833	$29,032,000	
1834	16,214,000	$1 10 per head.
1835	19,391,000	
1836	23,409,000	$1 60 per head.

The collapse of 1837 led to a reaction, and the duties diminished for 1837–'38, showing as follows:

Years.	Duties.	Years.	Duties.
1837	$11,169,000	1840	$13,499,000
1838	16,158,000	1841	14,487,000
1839	23,137,000	1842	18,187,000
Population, 1840			17,063,000

Since the latter date the duties have increased from $1 per head to about $2 50 per head, viz.:

Years.	Duties.	Years.	Duties.
1846–'47	$23,747,500	1851–'52	$47,339,000
1847–'48	31,757,000	1852–'53	58,931,000
1848–'49	28,346,000	1853–'54	64,224,000
1849–'50	29,668,000	1854–'55	53,025,000
1850–'51	40,017,000	1855–'56	64,022,000

Since the year 1789, the aggregate revenue from all sources has been $1,886,740,084, viz.:

From customs	$1,327,151,599
From public lands	164,008,825
From miscellaneous	395,519,636
Total returns	$1,886,740,084
Total disbursements	1,837,721,045

for a period of sixty-eight years; viz., from March 4, 1789, to June 30, 1856.

By the Constitution of the United States it is provided that "no State shall, without the consent of Congress, lay any impost or duties on imports or exports, except what may be absolutely necessary for executing its inspection laws; and all such laws shall be subject to the revision and control of Congress."

The following statement has been furnished showing the changes from one rate of duty to another, as made by the tariff act of the year 1857, when applied to the importations of the year ending 30th June, 1856:

Value.	Rate, Act of 1846.	Rate, Act of 1857.
$4,552	from 40 per cent.	to 15 per cent.
25,282 "	30 "	to 15 "
277,310 "	40 "	to 8 "
321,359 "	30 "	to 8 "
12,552 "	25 "	to 8 "
449,028 "	20 "	to 8 "
697,929 "	15 "	to 8 "
153,276 "	25 "	to 4 "
2,206,360 "	20 "	to 4 "
172,170 "	15 "	to 4 "
8,315,313 "	10 "	to 4 "
1,665,930 "	30 "	Free.
70,146 "	25 "	"
153,720 "	20 "	"
1,546,715 "	15 "	"
190,778 "	10 "	"
6,929,471 "	5 "	"
The loss of revenue by additions to the free list is		$1,145,615 90
Loss of revenue by transfers to Schedule H, or 4 per cent.		775,535 67
Loss of revenue by transfers to Schedule G, or 8 per cent.		263,247 41
Loss of revenue by transfers to Schedule E, or 15 per cent.		4,922 80

Subjoined is a statement exhibiting the revenue which the importations into the United States, in the year ending 30th June, 1856, would produce under the tariff act of 1857:*

* This includes an approximation to all the changes made by the new tariff, except bleached, printed, painted, and dyed manufactures of cotton, and of delaines transferred from Schedule D to C (or 15 to 24 per cent.), and of japanned leather or skins, transferred from Schedule E to D (or 20 to 30). These changes, raising from a lower to a higher schedule, would increase the aggregate above given equal to the difference made by the transfer, and in proportion to the amount of such importations, which are not returned in such a manner as to be separated from other similar goods.

Schedule.	Value of Imports.	Rate of Duty.	Amount of Duties.
A.....	$4,001,575	30 per cent.	$1,200,472 50
B.....	8,662,188	30 "	2,598,656 40
C.....	94,159,240	24 "	22,598,219 76
D.....	71,074,265	19 "	13,504,110 35
E.....	35,288,397	15 "	5,293,334 55
F.....	5,892,347	12 "	707,081 24
G.....	6,100,422	8 "	492,833 76
H.....	3,553,050	4 "	942,122 00
Total..	$248,791,998	....	$47,336,830 56

British Tariff.—The following are some of the most important regulations of the British tariff:

Overpayments of duty made in error may be returned, if claimed within six years after date.

In case of dispute as to the proper rate of duty, the importer to deposit the amount of duty demanded, and such deposit shall be deemed the proper duty payable, unless an action be brought or commenced within three months. In the event of such action being determined against the revenue, full indemnity to be made to the importer.

The Board of Customs may remit or mitigate penalties incurred through inadvertence, or non-compliance with existing regulations.

The duties on the following goods must be paid on the first importation, and such goods shall not be warehoused for home consumption or exportation: viz., corn, grain, meal, and flour, and wood goods from British possessions.

Diamonds, bullion, lobsters, and fresh fish of British taking, may be landed without report or entry; no other goods can be unshipped or landed, except with the authority of an officer of the customs.

Where *ad valorem* goods shall have been detained as undervalued, the officers shall give a written notice of such detention to the person entering the same, and of the value thereof as estimated by them. If such goods be retained for the use of the crown, the value entered with an addition of 5 per cent., and the duties already paid on such entry, to be paid to the owner.

Goods not entered, or landed within fourteen days after the arrival of the ship, may be conveyed to the queen's warehouse; and if the duties and charges due upon such goods be not paid within three months, they may be sold, and the overplus, if any, paid to the proprietor.

Bonded goods to be cleared within five years, unless the proprietor desire to re-warehouse them, in which case they shall be examined, and the duties due upon any deficiency ascertained and paid.

If such goods be not cleared or re-warehoused within the said period, they shall be sold to defray duties and charges.

No person shall export bonded goods in any ship of less burden than fifty tons, except to the islands of Guernsey and Jersey, by regular traders not being of less than forty tons burden.

No drawback shall be allowed on goods of less value than the drawback claimed, and all such goods so entered shall be forfeited, and the person who caused them to be entered shall forfeit the sum of £200.

No tobacco, cigars, or snuff shall be imported into the Channel Islands in ships of less than 120 tons burden, nor unless in hogsheads or chests, each containing not less than two hundred pounds' weight of such tobacco or snuff, nor unless in packages each containing not less than one hundred pounds' weight of such cigars, tobacco, or snuff, not being in any manner separated or divided within such package.

The island of Malta and its dependencies shall be deemed to be in Europe.

Any person making a false declaration in any document relating to the customs, or answering untruly authorized questions put to him by the officers of customs, liable to a penalty of £100.

In case it shall appear that British vessels are subject in any foreign country to restrictions as to the voyages in which they may be engaged, or the articles imported or exported, it shall be lawful for her majesty to impose similar restrictions upon the ships of such foreign country.

No foreign goods upon which a higher duty is payable on their importation into Great Britain than on their importation into the Isle of Man, shall, after they have been delivered out of charge of the customs in the said isle, be shipped into Great Britain.

Comparative Tariffs.—The following comparative statement exhibits the gross amount of duties received upon the principal articles of foreign and colonial merchandise in Great Britain and France, respectively, during the year 1856, to which we have annexed a column showing the gross amount of duties received by the United States upon similar articles during the same year:

Articles.	Great Britain.	France.	United States.
Cocoa	$78,390	$540,520	$11,807
Coffee	2,936,820	4,010,020	11,372
Wheat	1,027,005	397,680	500
Oats	289,205	4,019	198
Rye	1,005	965	....
Barley	183,080	3,770	318
Indian corn	447,060	18,660	....
Opium	10,005	2,235	97,169
Rice	139,910	40,720	....
Casaia lignea	2,875	4,520	67,880
Cinnamon	1,835	1,765	6,343
Cloves	8,945	12,090	21,231
Mace	6,830	270	9,563
Nutmegs	53,275	3,570	130,453
Pepper	404,445	210,405	95,820
Pimento	5,015	9,175	140,808
Rum	6,945,095	63,990	288,494
Sugar	25,918,385	12,071,960	6,720,106
Tallow	342,285	90,315	302
Tea	27,631,205	57,840	7,864
Watches	77,110	70,220	880,075

The following comparative statement exhibits the amount of duties paid on the articles specified, in France and the United States, respectively, in the year 1856, all of said articles being admitted free of duty in Great Britain:

Articles.	France.	United States.
Brimstone	$43,005	$24,525
Cotton, raw	3,870,115	Free.
Cochineal	46,885	24,905
Indigo	124,175	106,374
Flax	245,315	19,869
Guano	146,210	Free.
Hemp	24,805	553,503
Hides	26,835	404,164
Mahogany	113,210	88,049
Iron in bars	125,135	1,005,885
Steel, unwrought	295,695	422,747
Lead	295,680	505,603
Spelter	7,245	20,351
Tin	9,030	728,661
Oil, whale	5,805	1,534
Oil, palm	41,575	41,631
Olive-oil	429,480	141,149
Beef, salted	8,230	124
Pork, salted	6,985	
Quicksilver	375	725
Silk, raw	29,155	151,160
Tar	9,050	....
Wool	1,038,730	496,519

The total amount of customs duty in France in 1856 was $35,330,405, on a total value of $397,955,235, or 8·87 per cent. on the whole amount; the total amount in Great Britain was $131,034,220; and the total amount in the United States was $64,022,863. If to the $35,330,405, the amount of customs paid into the French treasury in 1856, we add $36,416,640, chiefly realized from the tobacco monopoly, but made up in part also of the export duty on wines, we have $71,747,045, or amount of customs duties received by the three countries in 1856, as per existing tariffs:

Great Britain	$131,034,220
France (including revenues from tobacco and wines)	71,747,045
United States	64,022,863

The following table exhibits the comparative tariffs of the United States, Great Britain, France, Spain, Holland, Belgium, and Brazil, in regard to the principal articles exported from the United States.

COMPARATIVE STATEMENT EXHIBITING THE IMPORT DUTY LEVIED IN GREAT BRITAIN, FRANCE, AND HOLLAND ON GOODS, WARES, AND MERCHANDISE, OF THE GROWTH, PRODUCE, AND MANUFACTURE OF THE UNITED STATES; ALSO THE DUTY ON LIKE GOODS, WARES, AND MERCHANDISE IMPORTED INTO THE UNITED STATES.

Articles.	United States.	Great Britain.	France.		Holland.
			Quantity and Duty.		
	Duty, ad valorem.	Quantity and Duty.	In French Vessels.	In for'n Vessels.	Quantity and Duty
Oil, spermaceti	15 cts.	Free.	Cwt. $1 96	$2 15	Free.
" whale and fish	15	"	" 3 91	5 48	"
Fish, dried and smoked	15	"	" 3 91	4 31	"
Lumber and boards	15	Ton. $2 42	324 feet. 19	19	Cubic ell. $0 20
Manufactures of wood	24	10 per ct. ad val.	15 per ct. ad val.	15 p. c. ad val.	8 per ct. ad val.
Tar and pitch	15	Free.	Cwt. 29	34	Free.
Skins and furs	15	"	100 pieces. 10 c. to 40	19c. to 48	1 per ct. ad val.
Beef	15	"	Cwt. 1 75	1 94	220 lbs. 2 42
Tallow	8	Cwt. 86	" 1 46	1 75	" 20
Hides	4	Free.	" 24 c. to 98	48 c. to 1 46	½ per ct. ad val.
Leather	15	"	" 24 c. to 98	48 c. to 1 46	½ per ct. ad val.
Butter	15	Cwt. 1 21	" 22	32	220 lbs. 1 21
Cheese	24	" 61	" 5 c. to 1 46	5 c. to 1 61	" 2 02
Pork and Bacon	15	Free.	" 2 23	3 55	" 40 c. to 80
Lard	15	"	" 1 46	1 75	" 20
Wool	24	"	20 per ct. ad val.	20 p. c. ad val.	Free.
" less than 20 c. p. lb.	Free.	"	30 per ct. ad val.	30 p. c. ad val.	220 lbs. 2 02
Wheat	15	Bushel. 3	} Duty fixed monthly, according to price.		Ton. 1 61
Indian corn and meal	15	" 3			" 1 21
Rye, oats, and small grain	15	" 3			" 1 21
Ship bread	15	Cwt. 9	Duty same as the grain of which it is manufactured.		220 lbs. 1 8
Potatoes	24	Free.	Cwt. 5	5	3 bushels. 2
Apples	8	Bushel. 6	" 98	1 08	3 per ct. ad val.
Rice	15	Cwt. 9	" 5 c. to 59	66 c. to 88	220 lbs. 3 c. to 12
Cotton	Free.	Free.	" 98 c. to 2 93	$2 44 to 3 42	Free.
" manufactures	19 and 24	"	Prohibited.	Prohibited.	4 per ct. ad val.
Tobacco	24	Pound. 73	"	"	220 lbs. 28 c. to 4 84
" manufactured	30	" 2 18	"	"	" $4 84 to 16 13
Hemp-seed	8	Free.	Cwt. 15 c. to 64	55 c. to 79	Ton. 40
Hemp, manufactured	15	"	" $2 93 to 240 34	$2 93 to 240 34	1 to 6 per ct. ad val.
Sugar, brown	24	Cwt. 2 30	.....	.....	220 lbs. 8
" refined	24	" 3 95	Prohibited.	Prohibited.	" 14 52
Spirits	30	Gallon. 3 63	22 gallons. 38 32	38 39	Free.
Molasses	24	Cwt. 9	.....	.....	220 lbs. 1 21
Beer, ale, etc.	24	Barrel. 4 84	Cwt. 5	5	22 2-9 gallons. 1 01
Linseed oil	15	Free.	" 2 44	2 93	" 2 02
Spirits of turpentine	15	"	" 2 44	2 68	1 per ct. ad val.
Hats of fur and silk	15	Each. 24	Each (fell). 29	29	6 per ct. ad val.
Gunpowder	15	Free.	Prohibited.	Prohibited.	220 lbs. $4 84 to 16 13
Boots and shoes	24	Doz. $1 13 to 3 39	"	"	0 per ct. ad val.
Cables and cordage	19	Free.	10 per ct. ad val.	10 p. c. ad val.	6 per ct. ad val.
Salt	15	"	Cwt. 5	10 c. to 27	220 lbs. 6 45
Lead	15	"	" 2 35	2 58	Free.
Iron, pig	24	"	" 59	43	"
" bar	24	"	" 98 c. to 1 37	.....	"
" nails & castings	24	Cwt. 61	Prohibited.	Prohibited.	220 lbs. 30
" other manufact.	24	" 61 c. to 3 63	Cwt. $1 96 to 24 25	$2 15 to 26 91	1 and 2 per ct. ad val.
Copper and brass	Free.	Free.	" 1 c. to 4 89	29 c. to 5 38	220 lbs. 8
" " manuf.	24	Cwt. 2 42	" $4 85 to 92 92	$5 38 to 94 62	" 40 c. to 1 61
Drugs and medicines	15	Free.	" 5 c. to 20 54	5 c. to 21 81	1 per ct. ad val.
Wearing apparel	24	10 per ct. ad val.	Same as raw material.	Ditto.	6 per ct. ad val.
Books	8	Cwt. 7 26	Cwt. 98 c. to 9 78	$1 08 to 10 52	220 lbs. 4 03
Paper, all kinds	15 and 24	Pound. 5 c. to 6	" $7 83 to 29 34	$8 46 to 31 06	3 to 5 per ct. ad val.
Jewelry	24	10 per ct. ad val.	4½ or. 44 c. to 1 92	41 c. to 2 11	6 per ct. ad val.
Glass, fancy	24 and 30	Cwt. 2 42	Cwt. 98 c. to 12 64	$1 08 to 12 64	6 per ct. ad val.
" other kinds	15 and 24	Free.	" 59½	65	100 pieces. 1 40
Bullion	Free.	"	" 10	11	Free.
Coal	24	"	" 3 c. to 5	1 c. to 10	"
Ice	Free.	"	Free.	Free.	1 per ct. ad val.
India rubber manufact.	24	Pound. 8	Cwt. 1 16	2 15	6 per ct. ad val.
Unenumerated	15	Manufactured. 10 per ct. ad val.	.....	.....	1 per ct. ad val.
"	15	Raw. Free.	.....	.....	.....

From an examination of the comparative duties on different articles, we find that the tariff of Great Britain more nearly approaches free trade than any other. The United States and Holland follow next in order, and Spain and Brazil are the nearest the other extreme—making, in fact, protection almost prohibition. There is a great want of uniformity in the tariff charges generally, with the exception of those of the United States. In the tariffs of Spain and Brazil the duties seem to be levied arbitrarily in regard to home production, etc., and the tariff considered only in reference to the maximum duty under which the separate articles will be imported, and the total possible maximum revenue.

In the articles of every-day consumption, such as flour, provisions, etc., the tariff of Spain shows almost a prohibition, while articles of luxury are admitted on low duties.

The commerce of the United States with these countries in 1857 was in proportion to the total commerce of the country, as follows:

Year ending June 30, 1857.	Exports from United States.	Imports into United States.	Total.
Great Britain	$185,845,784	$131,003,193	$316,848,977
France	38,238,987	47,792,827	86,031,814
Spain	10,703,097	2,723,016	13,426,113
Holland	4,107,877	2,469,762	6,577,639
Belgium	5,614,226	5,060,511	10,704,737
Brazil	5,845,207	21,460,732	27,305,940
Other countries	112,875,494	150,380,299	263,255,793
Total	$362,960,682	$360,890,141	$723,850,823

From this table it appears that the six countries of which we have given a tariff summary had the following proportion of the commerce of this country for the fiscal year 1857:

In the exports from United States ..... 69 per cent.
In the imports into " ..... 58 "
In the total commerce of " ..... 64 "

If we had included the colonies of the above countries, which have the same tariff regulations as their mother countries the percentage would have been materially increased.

COMPARATIVE STATEMENT EXHIBITING THE IMPORT DUTY LEVIED IN SPAIN, BELGIUM, AND BRAZIL ON GOODS, WARES, AND MERCHANDISE, OF THE GROWTH, PRODUCE, AND MANUFACTURE OF THE UNITED STATES; ALSO THE DUTY ON LIKE GOODS, WARES, AND MERCHANDISE IMPORTED INTO THE UNITED STATES.

Articles.	United States. Duty, ad valorem.	Spain. Quantity and Duty. In Spanish Vessels.	Spain. Quantity and Duty. In for'n Vessels.	Belgium. Quantity and Duty.	Brazil. Quantity and Duty.
Oil, spermaceti	15 cts.	25 lbs. $0 58½	$0 77½	22 gallons. $3 07	5 pints. $0 25
" whale and fish	15	" 26¼	34	" 2 68	" 19
Fish, dried and smoked	15	Free.	Free.	220 lbs. 1 22½	25 per ct. ad val.
Lumber and boards	15	Each. 1¼	2	20 per ct. ad val.	9000 sq. in. 6 53
Manufactures of wood	24	15 per ct. ad val.	18 p. c. ad val.	2 per ct. ad val.	40 per ct. ad val.
Tar and pitch	15	100 lbs. 12¼	17	Ton. 35½	Cash. 95½ c. to 3 27
Skins and furs	15	Dozen. 4 1-5 c. to 9 62	4 c. to 11 56	1 per ct. ad val.	25 per ct. ad val.
Beef	15	25 lbs. 31¼	38¼	6 per ct. ad val.	32 lbs. 82
Tallow	8	100 lbs. 38¼	51	220 lbs. 0½ c. to 67½	" $1 17 to 1 63
Hides	4	" 8¼ c. to 1 30	$1 14 to 2 78	" 1-5 c. to 19	Pound. 3
Leather	15	" 8¼ c. to 1 30	$1 14 to 2 78	" 1-5 c. to 19	" 3 c. to 4
Butter	15	Pound. 8½	10½	" 1 22½	" 13
Cheese	24	25 lbs. 1 07	1 28	" 1 34	" 13
Pork and bacon	15	Pound. 4¾	5½	" 06	" 6
Lard	15	25 lbs. 1 00	1 20½	" 90	32 lbs. 1 63
Wool	24	100 lbs. 6 40	8 57	" 9 58	30 per ct. ad val.
" less than 20 c. p. lb.	Free.	" 4 79	5 75	" 9 58	30 per ct. ad val.
Wheat	15	Prohibited.	Prohibited.	" 19	32 lbs. 99
Indian corn and meal	15	"	"	" 13½ to 58	20 to 30 per ct. ad val.
Rye, oats, and small grain	15	25 lbs. 2½ c. to 1 18¾	14 c. to 1 56¼	" 11½ to 19	1½ peck. 33 c. to 99
Ship bread	15	Prohibited.	Prohibited.	" 58	33 lbs. 44
Potatoes	24	25 lbs. 1½	2	2½ bushels. 2	128 lbs. 99
Apples	8	" 8	9½	22 gallons. 30	30 per ct. ad val.
Rice	15	165 lbs. 1 70¼	2 14	220 lbs. 28½ c. to 1 82½	30 per ct. ad val.
Cotton	Free.	" 37 c. to 2 14	$1 33½ to 3 23	" 52½ c. to 77	30 per ct. ad val.
" manufactures	19 and 24	" 31½ c. to 4 67	51¼ c. to 5 51¼	" $24 53 to 57 48	43 1-5 lin. sq. 7 c. to 30
Tobacco	24	Prohibited.	Prohibited.	" $1 92 to 6 71	32 lbs. 6 53
" manufactured	30	15 per ct. ad val.	18 p. c. ad val.	" $6 70 to 45 18	60 per ct. ad val.
Hemp-seed	8	25 lbs. 5¼	6½	Ton. 4	2 per ct. ad val.
Hemp, manufactured	15	" $16 36 to 126 24	$21 83 to 140 64	220 lbs. $5 75 to 187 82	40 per ct. ad val.
Sugar, brown	24	" 10½ c. to 86	51 c. to 1 07	" 52½ c. to 83	30 per ct. ad val.
" refined	24	" 51½ c. to 1 60	$1 07 to 2 03	" 18 20	50 per ct. ad val.
Spirits	30	15 per ct. ad val.	18 p. c. ad val.	22 gallons. 83 c. to 1 53	50 per ct. ad val.
Molasses	24	15 per ct. ad val.	18 p. c. ad val.	Prohibited.	.....
Beer, ale, etc.	24	25 lbs. 53¾	60½	22 gallons. 2 43½	3 pints. 33
Linseed oil	15	" 40	48	" 2 36	Pound. 5½
Spirits of turpentine	15	100 lbs. 80½	1 07	220 lbs. 11½	" 10
Hats of fur and silk	15	30 per ct. ad val.	36 p. c. ad val.	10 per ct. ad val.	Each. 26 c. to 2 62
Gunpowder	15	15 per ct. ad val.	18 p. c. ad val.	220 lbs. 6 49½	Pound. 19
Boots and shoes	24	Prohibited.	Prohibited.	18 per ct. ad val.	Pair. 26 c. to 5 89
Cables and cordage	10	100 lbs. 3 51	3 85	1000 No. 4 04	128 lbs. 4 90
Salt	15	Prohibited.	Prohibited.	220 lbs. 6 49	1¼ peck. 17
Lead	15	100 lbs. 96¼	1 15½	" 26½	128 lbs. 3 27
Iron, pig	24	" 42¼	51	" 2 53½	.....
" bar	24	" $2 14 to 2 14	$2 56 to 3 03	" 2 40½	25 per ct. ad val.
" nails and castings	24	" $2 67 to 3 23	$3 33 to 4 24	" 2 66½	32 lbs. 2 62
" other manufact.	24	" 31½ c. to 32 07	42½ c. to 38 45	" $1 32½ to 14 87	" $2 10 to 16 78
Copper and brass	Free.	" $8 57 to 10 69	$10 69 to 13 36	" 8	25 per ct. ad val.
" " manuf.	24	" $17 14 to 33 28	$21 43 to 30 56	6 per ct. ad val.	Dozen. 5½ c. to 16 34
Drugs and medicines	15	Pound. 1 c. to 6 41	1½ c. to 7 28	1 per ct. ad val.	Pound. 2½ c. to 19 60
Wearing apparel	24	Prohibited.	Prohibited.	Free.	40 per ct. ad val.
Books	8	25 lbs. 80½ c. to 5 35	96½ c. to 6 40	Ton. 6 06	30 per ct. ad val.
Paper, all kinds	15 and 24	" 21½ c. to 3 15	25½ c. to 3 77½	3 to 15 per ct. ad val.	Ream. 9 c. to 1 96
Jewelry	24	6 per ct. ad val.	6 p. c. ad val.	5 to 6 per ct. ad val.	4 to 30 per ct. ad val.
Glass, fancy	24 and 30	Each. 6½ c. to 60 10	8½ c. to 80 16	2 to 12 per ct. ad val.	40 per ct. ad val.
" other kinds	15 and 24	25 lbs. 53¼	64½	10 per ct. ad val.	Each. 2 c. to 15 60
Bullion	Free.	Free.	Free.	Free.	30 per ct. ad val.
Coal	24	100 lbs. 2¼	10½	Ton. 2 83½	5 per ct. ad val.
Ice	Free.	" 21½	26½	2 per ct. ad val.	1728 lbs. 1 97
India rubber manufact.	24	15 per ct. ad val.	18 p. c. ad val.	2 per ct. ad val.	30 per ct. ad val.
Unenumerated	15	Manufactured. 15 per ct. ad val.	18 p. c. ad val.	.....	30 per ct. ad val.
"	15	Raw	.....	.....	.....

NEW TARIFF ACT OF THE UNITED STATES.

AN ACT REDUCING THE DUTY ON IMPORTS, AND FOR OTHER PURPOSES

Be it enacted by the Senate and House of Representatives of the United States of America, in Congress assembled, That on and after the 1st day of July, 1857, *ad valorem* duties shall be imposed, in lieu of those now imposed upon goods, wares, and merchandise imported from abroad into the United States, as follows, viz.:

Upon the articles enumerated in Schedules A and B of the tariff act of 1846, a duty of 30 per cent., and upon those enumerated in Schedules C, D, E, F, G, and H of said act, the duties of 24 per cent., 19 per cent., 15 per cent., 12 per cent., 8 per cent., and 4 per cent., respectively, with such exceptions as hereinafter made; and all articles so imported as aforesaid, and not enumerated in the said schedules, nor in Schedule I, shall pay a duty of 15 per cent.

SEC. 2. *And be it further enacted*, That all manufactures composed wholly of cotton, which are bleached, printed, painted, or dyed, and de laines, shall be transferred to Schedule C.

Japanned leather, or skins of all kinds, shall be transferred to Schedule D. Ginger, green, ripe, dried, preserved, or pickled; ochreys and ochrey earths, medicinal roots, leaves, gums and rosins in a crude state, not otherwise provided for; wares, chemical, earthen or pottery, of a capacity exceeding ten gallons, shall be transferred to Schedule E.

Borate of lime and cedella, or tow of hemp or flax, shall be transferred to Schedule F.

Antimony, crude or regulus of; barks of all kinds, not otherwise provided for; camphor, crude; cantharides; carbonate of soda; emery, in lump or pulverized; fruits, green, ripe, or dried; gums, Arabic, Barbary, copal, East India, Jeddo, Senegal, substitute, tragacanth, and all other gums and rosins in a crude state; machinery exclusively designed and expressly imported for the manufacture of flax and linen goods; sponges; tin in plates or sheets, galvanized or ungalvanized; woods, namely, cedar, lignum vitæ, ebony, box, granadilla, mahogany, rose-wood, satin-wood, and all cabinet woods, shall be transferred to Schedule G.

Acids, acetic, benzoic, boracic, citric, muriatic, white and yellow, oxalic, pyroligneous and tartaric, and all other acids of every description used for chemical or manufacturing purposes, not otherwise provided for; aloes; amber; ambergris; anise seed; annato, roncon or Orleans; arsenic; articles not in a crude state, used in dyeing or tanning, not otherwise provided for; asafœtida; asphaltum; barilla; bleaching powder, or chlorid of lime; borax, crude; boucho leaves; brimstone, crude, in bulk; cameos, mosaics, diamonds, gems, pearls, rubies, and other precious stones (not set); chalk; clay; cochineal; cocoa, cocoa-nuts, and cocoa-shells; cork-tree bark; cream of tartar; extract of indigo; extracts and

decoctions of logwood and other dye woods, not otherwise provided for; extract of madder; flint, ground; grindstones; gutta percha, unmanufactured; India rubber in bottles, slabs, or sheets, unmanufactured; India rubber, milk of; indigo; lac spirits; lac sulphur; lastings, cut in strips or patterns of the size and shape for shoes, slippers, boots, bootees, gaiters, or buttons exclusively, not combined with India rubber; manufactures of mohair cloth, silk twist, or other manufactures of cloth suitable for the manufacture of shoes, cut in slips or patterns of the size and shape for shoes, slippers, boots, bootees, gaiters or buttons exclusively, not combined with India rubber; music printed with lines, bound or unbound; oils, palm, teal, and cocoa-nut; Prussian blue; soda ash; spices of all kinds; watch materials and unfinished parts of watches and wood, or pasted, shall be transferred to Schedule H.

SEC. 3. *And be it further enacted*, That on and after the 1st day of July, 1857, the goods, wares, and merchandise mentioned in Schedule I, made part thereof, shall be exempt from duty and entitled to free entry.

SCHEDULE I. All books, maps, charts, mathematical, nautical instruments, philosophical apparatus, and all other articles whatever imported for the use of the United States.

All philosophical apparatus, instruments, books, maps, and charts; statues, statuary, busts and casts of marble, bronze, alabaster, or plaster of Paris; paintings and drawings; etchings; specimens of sculpture; cabinets of coins, medals, gems, and all collections of antiquities: *provided* the same be specially imported, in good faith, for the use of any society incorporated or established for philosophical or literary purposes, or for the encouragement of the fine arts, or for the use or by the order . any college, academy, school, or seminary of learning in the United States; animal carbon (boneblack); animals, living, of all kinds; argol, or crude tartar; articles in a crude state used in dyeing or tanning, not otherwise provided for.

Bark, Peruvian; bells, old, and bell-metal; berries, nuts, flowers, plants, and vegetables used exclusively in dyeing, or in composing dyes, but no article shall be classed as such that has undergone any manufacture; bismuth; bitter apples; bolting-cloths; bones, burned, and bonedust.

Books, maps, and charts imported by authority of the Joint Library Committee of Congress for the use of the library of Congress: *provided* that if in any case a contract shall have been made with any bookseller, importer, or other person for books, maps, or charts, in which contract the bookseller, importer, or other person aforesaid shall have paid the duty, or included the duty in said contract, in such case the duty shall not be remitted; brass in bars and pigs, or when old, and fit only to be remanufactured; Brazil-wood, brasiletto, and all other dye-woods in sticks; bullion, gold and silver; burr stones, wrought or unwrought, but unmanufactured.

Cabinets of coins, medals, and other collections of antiquities; coffee and tea, when imported direct from the place of their growth or production in American vessels, or in foreign vessels entitled by reciprocal treaties to be exempt from discriminating duties, tonnage, and other charges; coffee, the growth or production of the possessions of the Netherlands, imported from the Netherlands in the same manner; coins, gold, silver, and copper; copper ore; copper, when imported for the United States Mint; copper, in pigs or bars, or when old and fit only to be remanufactured; cotton; cutch.

Dragon's-blood.

Felt, adhesive, for sheathing vessels; flax, unmanufactured.

Garden seeds and all other seeds for agricultural, horticultural, medicinal, and manufacturing purposes, not otherwise provided for; glass, when old and fit only to be remanufactured; goods, wares, and merchandise, the growth, produce, or manufacture of the United States, exported to a foreign country and brought back to the United States in the same condition as when exported, upon which no drawback or bounty has been allowed: *provided* that all regulations to ascertain the identity thereof, prescribed by existing laws, or which may be prescribed by the Secretary of the Treasury, shall be complied with; guano.

Household effects, old and in use, of persons or families from foreign countries, if used abroad by them, and not intended for any other person or persons, or for sale.

Ice; ivory, unmanufactured; junk, old.

Linseed, but not embracing flaxseed.

Madder root; madder, ground or prepared; maps and charts; models of inventions and other improvements in the arts: *provided* that no article or articles shall be deemed a model or improvement which can be fitted for use.

Oakum; oil, spermaceti, whale and other fish, of American fisheries, and all other articles the produce of such fisheries.

Paintings and statuary; palm leaf, unmanufactured; personal and household effects (not merchandise) of citizens of the United States dying abroad; plaster of Paris or sulphate of lime, unground; platina, unmanufactured.

Rags of whatever material, except wool; ratans and reeds, unmanufactured.

Sheathing copper, but no copper to be considered such and admitted free, except in sheets of forty-eight inches long and fourteen inches wide, and weighing from fourteen to thirty-four ounces the square foot; sheathing metal, not wholly or in part of iron, ungalvanized; shingle bolts, and stave bolts; silk, raw, or as reeled from the cocoon, not being doubled, twisted, or advanced in manufacture in any way; specimens of natural history, mineralogy, or botany; substances expressly used for manures.

Tin in pigs, bars, or blocks; trees, shrubs, bulbs, plants, and roots, not otherwise provided for.

Wearing apparel in actual use, and other personal effects (not merchandise); professional books, implements, instruments, and tools of trade, occupation or employment, of persons arriving in the United States: *provided* that this exemption shall not be construed to include machinery or other articles imported for use in any manufacturing establishment, or for sale.

Sheep's wool, unmanufactured, of the value of 30 cents per pound or less at the port of exportation, and hair of the alpaca, the goat, and other like animals, unmanufactured: *provided* that any wool of the sheep, or hair of the alpaca, the goat, and other like animals, which shall be imported in any other than the ordinary condition, as now and heretofore practiced, or which shall be changed in its character for the purpose of evading the duty, or which shall be reduced in value by the intentional admixture of dirt, or any foreign substance, to 20 cents per pound or less, shall be subject to pay a duty of 24 per cent. *ad valorem*, any thing in this act to the contrary notwithstanding.

SEC. 4. *And be it further enacted*, That all goods, wares, and merchandise which shall be in the public stores on the 1st day of July aforesaid, shall be subject, on entry thereof for consumption, to no other duty than if the same had been imported respectively after that day.

SEC. 5. *And be it further enacted*, That on the entry of any goods, wares, and merchandise imported on and after the 1st day of July aforesaid, the decision of the collector of the customs at the port of importation and entry, as to their liability to duty or exemption therefrom, shall be final and conclusive against the owner, importer, consignee, or agent of any such goods, wares, and merchandise, unless the owner, importer, consignee, or agent shall, within ten days after such entry, give notice to the collector in writing of his dissatisfaction with such decision, setting forth therein distinctly and specifically his grounds of objection thereto, and shall, within thirty days after the date of such decision, appeal therefrom to the Secretary of the Treasury, whose decision on such appeal shall be final and conclusive; and the said goods, wares, and merchandise shall be liable to duty or exempted therefrom accordingly, any act of Congress to the contrary notwithstanding, unless suit shall be brought within thirty days after such decision for any duties that may have been paid or may hereafter be paid on said goods, or within thirty days after the duties shall have been paid, in cases where such goods shall be in bond.

AN ACT TO AM[illegible] THE ACT REDUCING THE DUTY ON IMPORTS, AND FOR OTHER PURPOSES, PASSED JULY 30, 1846.

Be it enacted by the Senate and House of Representatives of the United States of America, in Congress assembled, That the eighth section of the act approved July 30, 1846, and entitled "An act reducing the duty on imports, and for other purposes," be amended as follows:

SEC. 2. *And be it further enacted*, That it shall be lawful for the owner, consignee, or agent of imports which have been actually purchased or procured otherwise than by purchase, on entry of the same, to make such addition in the entry to the cost or value given in the invoice as, in his opinion, may raise the same to the true market value of such imports in the principal markets of the country whence the importation shall have been made; and to add thereto all costs and charges which, under existing laws, would form part of the true value at the port where the same may be entered, upon which the duties should be assessed. And it shall be the duty of the collector within whose district the same may be imported or entered to cause the dutiable value of such imports to be appraised, estimated, and ascertained, in accordance with the provisions of existing laws; and if the appraised value thereof shall exceed by 10 per cent. or more the value so declared on the entry, then, in addition to the duties imposed by law on the same, there shall be levied collected, and paid, a duty of 20 per cent. *ad valorem* on such appraised value: *Provided, nevertheless*, That under no circumstances shall the duty be assessed upon an amount less than the invoice or entered value, any law of Congress to the contrary notwithstanding.

Approved March 3, 1857.

COMPARATIVE TARIFFS OF THE UNITED STATES, 1846 AND 1857.

Articles.	1846.	1857.
	Per Cent.	Per Cent.
Absynthe; see *Cordials*	100	30
Acetic acid; see *Acids, acetic*, etc.	20	4
Acetous Acid; see *Acid, acetous*, etc.	20	15
Acids of every description used for chemical or for manufacturing purposes, not otherwise provided for	20	4
Acids of every description used for medicinal purposes or in the fine arts, not otherwise provided for	20	15
Acid, sulphuric; see *Sulphuric Acid*	10	4
Adhesive felt, etc.; see *Felt, adhesive*	Free.	Free.
Alabaster statuary, etc., for use of colleges, etc.; see *Philosophical Apparatus*, etc.	Free.	Free.
Alabaster and spar ornaments	40	30
Alabata; see *Argentine*	30	24
Alcornoque	5	4
Ale, beer, and porter, in casks or bottles	30	24
Almonds	40	30
Aloes	20	4
Alum	20	15
Amber beads; see *Beads*	30	24
Amber	[illegible]	4
Ambergris	[illegible]	4
Ammonia	10	8
Ammonia, sal; see *Sal Ammonia*	10	8
Anatto, rouceau, or Orleans	10	4
Anchovies, sardines, and all other fish preserved in oil	40	30
Angora, Thibet, and other goats' hair or mohair, unmanufactured, not otherwise provided for	20	15
Animal carbon; see *Bone black*	20	Free.
Animal oils; see *Oils, Neat's-foot*, etc.	20	15
Animals, living, of all kinds	20	Free.
Anise seed	20	4
Antimony, crude, or regulus of	20	8
Antiquarian paper; see *Paper*	30	24
Antiquities, collections of; see *Philosophical Apparatus*, etc.	Free.	Free.
Antiquities, collections of; see *Cabinets of Coins*, etc.	Free.	Free.
Apparatus for use of United States; see *Books, Maps*, etc.	Free.	Free.
Apparatus for use of colleges, etc.; see *Philosophical Apparatus*, etc.	Free.	Free.
Apparel; see *Clothing, ready-made*	30	24
Apples, bitter; see *Bitter Apples*	20	Free.
Arabic, gum; see *Gum Arabic*	10	8
Argentine, alabata, or German silver, manufactured or unmanufactured	30	24
Argol, or crude tartar	5	Free.
Arms, fire; see *Muskets*	30	24
Arms, side; see *Side Arms*	30	24
Arrack; see *Cordials*	100	30
Arrow-root	20	15
Arsenic	15	4
Articles embroidered with gold, silver, etc.	30	24
Articles worn by men, women, or children, of whatever material composed, made up, or made wholly or in part by hand	30	24
Articles of metal; see *Manufactures*	30	24
Articles of leather; see *Manufactures*	30	24
Articles of marble; see *Manufactures*	30	24
Articles of glass; see *Manufactures*	30	24
Articles of papier-machè; see *Manufactures*	30	24
Articles, all, imported for the use of United States; see *Books, Maps*, etc.	Free.	Free.
Articles not in a crude state, used in dyeing or tanning, not otherwise provided for	20	4
Articles in a crude state, used in dyeing or tanning, not otherwise provided for	5	Free.
Artificial flowers or feathers; see *Feathers*	30	24
Ash, soda; see *Soda-ash*	10	4
Asphaltum	20	4
Asafœtida	20	4
Asses' skins	30	24
Aubusson carpeting; see *Carpets*	30	24
Bacon	20	15
Baizes, buckings, flannels, and floor-cloths, of whatever material composed, not otherwise provided for	25	19
Balsams, cosmetics, essences, extracts, perfumes, pastes, and tinctures	30	24
Bananas	20	8
Barbary gum; see *Gum Arabic*	10	8
Barilla	10	4
Bark of the cork-tree, manufactures of; see *Manufactures*	30	24
Bark of the cork-tree, unmanufactured; see *Cork-tree Bark*	15	8
Barks of all kinds not otherwise provided for	20	8
Bark, Peruvian	15	Free.
Bark, Quilla	15	12
Barley	20	15
Barley, pearl or hulled; see *Pearl or Hulled Barley*	20	15
Bars, iron; see *Iron in Bars*	30	24
Bars, steel; see *Steel in Bars*	15	12
Bars, brass; see *Brass in Bars, etc.*	5	Free.
Bars, copper; see *Copper in Pigs*, etc.	5	Free.
Bar, tin; see *Tin in Pigs*, etc.	5	Free.
Baryies, sulphate of; see *Sulphate of Baryites*	20	15
Baskets, and all other articles composed of grass, osier, palm-leaf, straw, whalebone, or willow, not otherwise provided for	30	24
Bay rum	30	24
Beads, of amber, composition, or wax, and all other beads	30	24
Beans, Vanilla; see *Vanilla Beans*	20	15
Bed-sides; see *Carpets*	30	24
Beds, feather; see *Floss Silks*, etc.	25	19
Beef	20	15
Beer, in casks or bottles; see *Ale, Beer*, etc.	30	24
Beeswax	20	15
Bells, old, and bell-metal	5	Free.
Bend leather; see *Leather, tanned*, etc.	20	15
Benzoates	30	24
Benzoin, or Benjamin, gum; see *Gum Benzoin*, etc.	30	24
Benzoic acid; see *Acids, acetic*, etc.	20	4
Berries, vegetables, and flowers, not otherwise provided for	20	15
Berries, juniper; see *Juniper Berries*	20	15
Berries, nuts, flowers, plants, and vegetables, used exclusively in dyeing or in composing dyes; but no article shall be classed as such that has undergone any manufacture	5	Free.
Bichromate of potash; see *Chromate*	20	15
Bismuth	20	Free.
Bitter apples	20	Free.
Bituminous substances in a crude state; see *Mineral and Bituminous Substances*	20	15
Black, Frankfurt; see *Frankfort Black*	20	15
Black, ivory; see *Ivory Black*	20	15
Blank-books, bound or unbound	20	15
Blankets of all kinds	20	15
Bleaching powder, or chlorid of lime	10	4
Blocks, tin; see *Tin in Pigs*, etc.	5	Free.
Blooms; see *Iron in Bars*, etc.	30	24
Blue or Roman vitriol, or sulph. of copper	20	15
Blue, fig; see *Fig Blue*	20	15
Blue, Prussian; see *Prussian Blue*	20	4
Bone black; see *Animal Carbon*	20	Free.
Boards, planks, staves, laths, scantling, spars, hewn and sawed timber, and timber to be used in building wharves	20	15
Bockings; see *Baizes*	25	19
Bodies, hat, of wool; see *Hat Bodies*	20	15
Bologna sausages	30	24
Bolts; see *Iron in Bars*	30	24
Bolts, shingle and stave	20	Free.
Bolts, copper; see *Copper Rods*, etc.	20	15
Bolting cloths	25	Free.
Bone, manufactures of; see *Manufactures of Bone*	30	24
Bone black	20	Free.
Bone-dust	20	Free.
Bones and bone tips, unmanufactured; see *Horn and Horn Tips*	5	4
Bones, burned	20	Free.
Bonnets, flats, braids, etc., used for making; see *Flats*, etc.	30	24
Bonnets composed of certain materials; see *Hats and Bonnets*	30	24
Books, maps, and charts, imported by authority of the joint library committee of Congress for the use of the library of Congress	Free.	Free.
Books, maps, and charts, mathematical and nautical instruments, philosophical apparatus, and all other articles whatever, imported for the use of the United States	Free.	Free.
Books as personal effects of persons arriving in the United States; see *Wearing Apparel*	Free.	Free.
Books specially imported for societies; see *Philosophical Apparatus*	Free.	Free.
Botany, specimens of; see *Specimens of Natural History*	Free.	Free.
Books, blank; see *Blank Books*	20	15
Books, printed, magazines, pamphlets, and periodicals, illustrated newspapers, bound or unbound, not otherwise provided for	10	8
Books in course of printing and republication; see *Periodicals*	20	15
Boracic acid; see *Acids, acetic*, etc.	20	4

UNITED STATES' TARIFFS—*Continued.*

Articles.	1846. Per Cent.	1857. Per Cent.
Borate of lime	..	12
Borax, crude or tincal	25	4
Borax, not crude	25	10
Bottles, India rubber; see *India Rubber in Bottles*	10	4
Bottoms, copper; see *Copper Bottoms*	20	15
Bottoms, still; see *Still Bottoms*	20	15
Boneho leaves	20	4
Boxes, paper; see *Paper Boxes*	30	24
Boxes, fancy; see *Paper Boxes*	30	24
Box-wood, unmanufactured	20	8
Bracelets, braids, chains, curls, or ringlets, composed of hair, or of which hair is a component part	30	24
Braces, suspenders, webbing or other fabrics, composed wholly or in part of India rubber, not otherwise provided for	30	24
Braids, of hair; see *Bracelets*	30	24
Braids, for making hats or bonnets; see *Flats, Braids*, etc.	30	24
Braids, cotton; see *Cotton Laces*, etc.	25	19
Brandy, and other spirits distilled from grain or other materials	100	30
Brass, manufactures of; see *Manufactures of Brass*	30	24
Brass, in bars or pigs	5	Free.
Brass, old, and fit only to be remanufact'd	5	Free.
Brasiers' copper; see *Copper in Sheets*, etc.	20	15
Brazil paste	15	12
Brazil-wood, lirazilletto, and all dye-woods in sticks	5	Free.
Breccia	20	15
Bricks; see *Paving and Roofing Tiles*, etc.	20	15
Brimstone, roll; see *Roll Brimstone*	20	15
Brimstone, crude, in bulk	15	4
Bristles	5	4
Broad window glass; see *Window Glass*	20	15
Bronae liquor	20	15
Bronae powder	20	15
Bronze, casts of; see *Philosophical Apparatus*, etc.	..	Free.
Bronze, metal, in leaf; see *Metals, Dutch*, etc.	20	15
Brooms and brushes of all kinds	30	24
Brushes	30	24
Brussels carpets; see *Carpets*	30	24
Buds, cassia; see *Cassia Buds*	20	4
Building stones	10	8
Bulbs; see *Trees, Shrubs*, etc.	Free.	Free.
Bullion, gold and silver	Free.	Free.
Burgundy; see *Wines*	40	30
Burgundy pitch	25	19
Burned starch; see *Gum substitute*	10	8
Burr stones, wrought or unwrought, but unmanufactured	10	Free.
Busts; see *Philosophical Apparatus*, etc.	Free.	Free.
Butter	20	15
Buttons and button-moulds of all kinds	25	19
Cabinet and household furniture	30	24
Cabinets of coins, medals, gems, and all collections of antiquities	Free.	Free.
Cables and cordage, tarred or untarred	25	19
Cadmium	20	15
Cake, saffron; see *Saffron and Saffron Cake*	20	15
Calamine	20	15
Calomel and all other mercurial preparations	25	19
Cameos, real and imitation; and mosaics, real and imitation, when set in gold, silver, or other metal	30	24
Cameos and mosaics not set	10	4
Cameos and mosaics, imitations thereof, not set	10	8
Camphor, refined	40	30
Camphor, crude	25	8
Candles, spermaceti; see *Spermaceti Candles*	20	15
Candles, stearin; see *Stearin Candles*	20	15
Candles, tallow; see *Tallow Candles*	20	15
Candles, wax; see *Wax Candles*	20	15
Canes and sticks for walking, finished or unfinished	30	24
Cantharides	20	8
Capers, pickles, and sauces of all kinds, not otherwise provided for	30	24
Caps, hats, muffs, and tippets of fur, and all other manufactures of fur, or of which fur shall be a component material	30	24
Caps, gloves, leggins, mits, socks, stockings, wove shirts and drawers, and all similar articles made on frames, worn by men, women, or children, and not otherwise provided for	30	24
Caps, gloves, leggins, mits, socks, stockings, wove shirts and drawers, made on frames, composed wholly of cotton	20	15

UNITED STATES' TARIFFS—*Continued.*

Articles.	1846. Per Cent.	1857. Per Cent.
Caps, gloves, leggins, mits, socks, stockings, wove shirts and drawers, made on frames, composed wholly of cotton, worn by men, women, and children, when bleached, printed, painted, or dyed	20	24
Carbonate of soda; see *Sal Soda*, etc.	20	8
Carbon, animal; see *Animal Carbon*	20	Free.
Card cases, pocket-books, shell boxes, souvenirs, and all similar articles, of whatever material composed	30	24
Cards, playing; see *Playing Cards*	30	24
Carpets, carpeting, hearth-rugs, bed-sides, and other portions of carpeting, being either Aubmson, Brussels, Ingrain, Saxony, Turkey, Venetian, Wilton, or any other similar fabric	30	24
Carriages and parts of carriages	30	24
Cassia	4½	4
Cassia buds	20	4
Castings of iron	30	24
Cast-iron vessels; see *Iron, cast, Vessels of*	30	24
Cast-steel; see *Steel in Bars*	15	12
Castile-soap; see *Soap, Castile*, etc.	30	24
Castor oil	20	15
Castorum	20	15
Casts of marble, bronze, alabaster, or plaster of Paris; see *Philosophical Apparatus*, etc.	Free.	Free.
Cayenne pepper	30	4
Cedar-wood, manufactures of; see *Manufactures of Cedar-wood*	40	30
Cedar-wood, box-wood, ebony, granadilla, lignum-vitæ, mahogany, rose-wood, and satin-wood, and all cabinet woods, unmanufactured; see *Woods*	20	8
Cement, Roman; see *Roman Cement*	20	15
Chains of hair; see *Bracelets, Braids*, etc.	30	24
Chalk, red, pencils; see *Red Chalk Pencils*	30	24
Chalk	5	4
Chalk, French; see *French Chalk*	20	4
Chalk, red; see *Red Chalk*	20	4
Charts; see *Maps and Charts*	10	Free.
Cheese	30	24
China ware; see *Earthen, China, and Stone Ware*	30	24
China matting; see *Matting, China*, etc.	25	19
Chip hats and bonnets; see *Hats and Bonnets*	30	24
Chocolate	20	15
Chlorid of lime; see *Bleaching Powder*	10	..
Chromate of lead	20	15
Chromate, bichromate, hydriodate, and prussiate of potash	20	15
Chromic acid; see *Acids, acetous*, etc.	20	15
Chronometers, box or ships', and parts thereof	10	8
Cinnamon	30	4
Citric acid; see *Acids, acetic*, etc.	20	4
Claret; see *Wines*	40	30
Clay	5	4
Clay, unwrought	5	4
Clocks and parts of clocks	30	24
Clothing, ready-made, and wearing apparel of every description, of whatever material composed, made up or manufactured wholly or in part by the tailor, seamstress, or manufacturer	30	24
Cloth, suitable for the manufacture of shoes, buttons, etc., exclusively; see *Manufactures of Mohair Cloth*, etc.	5	4
Cloths, bolting; see *Bolting Cloths*	35	Free.
Cloves	40	4
Coach and harness furniture of all kinds	30	24
Coal	30	24
Cobalt	20	15
Cochineal	10	4
Cocoa-nuts	20	4
Cocoa	10	4
Cocoa shells	10	4
Cocoa-nut oil; see *Oils, Palma*, etc.	10	4
Coculus Indicus	20	15
Codilla, or tow of hemp or flax	15	12
Coffee and tea, when imported direct from the place of their growth and production, in American vessels, or in foreign vessels entitled by reciprocal treaties to be exempt from discriminating duties, tonnage, and other charges	..	Free.
Coffee, the growth or production of the possessions of the Netherlands, imported from the Netherlands in the same manner	Free.	Free.
Coins, gold, silver, and copper	Free.	Free.
Coins; see *Cabinets of Coins*	Free.	Free.
Coir; see *Jute*, etc.	20	19
Coke and culm of coal	30	24

UNITED STATES' TARIFFS—*Continued.*

Articles.	1846. Per Cent.	1857. Per Cent.
Collections of antiquities; see *Philosophical Apparatus*, etc.	Free.	Free.
Collections of antiquities; see *Cabinets of Coins*, etc.	Free.	Free.
Colored glass; see *Glass, colored*	30	24
Colors, water; see *Water Colors*	30	24
Combs of all kinds	30	24
Comfits, sweetmeats, or fruit, preserved in sugar, brandy, or molasses	40	30
Common saddlery; see *Saddlery*	20	15
Composition tops for tables, or other articles of furniture	40	30
Composition beads; see *Beads*	30	24
Composition of glass or paste, when set	30	24
Composition of glass or paste, not set	10	8
Confectionery of all kinds, not otherwise provided for	30	24
Copal, gum; see *Gums*	10	8
Copper articles, vessels, and wares; see *Manufactures*	30	24
Copper bottoms	20	15
Copper rods, bolts, nails, and spikes	20	15
Copper in sheets or plates, called brasiers' copper, and other sheets of copper not otherwise provided for	20	15
Copperas, or green vitriol, or sulph. of iron	20	15
Copper, in pigs or bars	5	Free.
Copper, when old, and fit only to be remanufactured	5	Free.
Copper, when imported for the U. S. Mint	Free.	Free.
Copper ore	Free.	Free.
Copper, sheathing; see *Sheathing Copper*	Free.	Free.
Copper coins; see *Coins*	Free.	Free.
Coral, cut or manufactured	30	24
Coral, marine; see *Marine Coral, unmanufactured*	20	15
Cordage; see *Cables and Cordage*	25	19
Cordials, absynthe, arrack, Curaçoa, kirschenwasser, liqueurs, maraschino, ratafia, and all other spirituous beverages of a similar character	100	30
Cords, cotton; see *Cotton Cords*	30	24
Corks	30	24
Cork-tree bark; see *Manufactures of the Bark of the Cork-tree*	30	24
Cork-tree bark	15	4
Corn, Indian; see *Indian Corn*	20	15
Corn meal, Indian; see *Indian Corn and Meal*	20	15
Cosmetics; see *Balsams, Cosmetics*, etc.	30	24
Cotton	Free.	Free.
Cotton cords, gimps, and galloons	30	24
Cotton, hat bodies of; see *Hat Bodies of Cotton*	30	24
Cotton, embroidered; see *Manufactures of Cotton*, etc., *embroidered*	30	24
Cotton, all manufactures of, bleached, printed, painted, or dyed; see *Manufactures of Cotton*	20 to 25	24
Cotton laces, cotton insertings, cotton trimming laces, cotton laces and braids	25	19
—when bleached, printed, painted, or dyed	25	24
Cotton, manufactures of, not otherwise provided for; see *Manufactures of Cotton not otherwise provided for*	25	19
Cotton, articles of, made on frames; see *Caps, Gloves*, etc.	20	15
—when bleached, printed, painted, or dyed	20	24
Cotton and silk, hatters' plush; see *Hatters' Plush*	20	15
Cotton velvet in the piece, composed wholly of cotton; see *Velvet in the Piece*, etc.	20	15
—when bleached, printed, painted, or dyed	20	24
Cotton and silk velvet in the piece, cotton of chief value; see *Velvet in the Piece, composed of Cotton and Silk*, etc.	20	15
Court-plaster	30	24
Crackers, fire; see *Fire-crackers*	30	24
Crayons of all kinds	30	24
Cream of tartar	20	4
Crown window glass; see *Window Glass*	20	15
Crude tartar; see *Argol*	5	Free.
Crude articles for dyeing etc.; see *Articles in a crude state*, etc.	5	Free.
Crystals for watches; see *Glass Crystals*	30	24
Cubebs	20	15
Cudbear	10	8
Culm of coal; see *Coke*	30	24
Curaçoa; see *Cordials*	100	30
Curls of hair; see *Bracelets*	30	24
Curled hair for beds; see *Hair, curled*, etc.	20	15
Currants	40	8
Cutlery of all kinds	30	24
Cutch	10	Free.
Cylinder window glass; see *Window Glass*	20	15
Darning needles; see *Needles of all kinds*	20	15

UNITED STATES' TARIFFS—*Continued.*

Articles.	1846. Per Cent.	1857. Per Cent.
Dates	40	8
Demy paper; see *Paper, demy*, etc.	30	24
Decoctions of logwood, etc.; see *Extracts and Decoctions*	20	4
De laines	25	24
Diamonds, gems, pearls, rubies, and other precious stones, and imitations of precious stones, when set in gold, silver, or other metal	30	24
Diamonds, cameos, mosaics, gems, pearls, rubies, and other precious stones, when not set	10	4
Diamonds, cameos, mosaics, gems, pearls, rubies, and other precious stones, imitations thereof, not set	10	8
Diamonds, glaziers', set or not set	15	12
Dolls, and toys of all kinds	30	24
Downs of all kinds; see *Floss Silk*, etc.	25	19
Dragon's-blood	15	Free.
Drawers wove on frames; see *Caps, Gloves*, etc.	30	24
Drawers wove on frames, wholly of cotton; see *Caps, Gloves*, etc.	20	15
Drawers, when bleached, printed, painted, or dyed	20	24
Drawing paper; see *Paper, demy*, etc.	30	24
Drawings; see *Philosoph. Apparatus*, etc.	Free.	Free.
Dressed and tanned skins; see *Skins, tanned*, etc.	20	15
Dried pulp	20	15
Dried fish; see *Fish, foreign*, etc.	20	15
Drugs, medicinal; see *Medicinal Drugs*	20	15
Dutch metal, in leaf; see *Metal, Dutch*, etc.	20	15
Dye-woods, extracts and decoctions of; see *Extracts and Decoctions*	20	4
Dye-woods in sticks; see *Brazil-wood*, etc.	5	Free.
Dye, lac; see *Lac Dye*	5	4
Dyeing, articles used for, not in a crude state; see *Articles not in a crude state*, etc.	20	4
Dyeing; see *Articles in a crude state used for dyeing*	5	Free.
Dyeing; see *Berries, Nuts*, etc., *in a crude state*	5	Free.
Earthen, China, and stone ware, and all other wares composed of earthy and mineral substances, not otherw. provided for	30	24
Earth, ochrey; see *Ochres and Ochrey Earths*	30	15
Earths, ochrey, crude or ground; see *Ochres and Ochrey Earths*	30	15
Earth, fullers'; see *Fullers' Earth*	10	8
East India gum; see *Gum Arabic*, etc.	10	8
Ebony-wood, manufactures of; see *Manufactures of Cedar-wood*, etc.	40	30
Ebony-wood, unmanufactured; see *Cedar-wood*	20	8
Effects, household; see *Household Effects*	Free.	Free.
Effects, personal and household; see *Personal and Household Effects*	Free.	Free.
Effects, not merchandise, of persons arriving in the United States; see *Wearing Apparel in actual use*	Free.	Free.
Elephant paper; see *Paper, demy*, etc.	30	24
Embroideries of gold, silver, etc.; see *Articles embroidered*, etc.	30	24
Embroidered manufactures of cotton, silk, wool, worsted; see *Manufactures of Cotton*, etc., *embroidered*	30	24
Emery, in lump or pulverized	20	8
Engravings or plates, bound or unbound	10	8
Envelopes, paper; see *Paper Envelopes*	30	24
Epaulets, galloons, laces, knots, stars, tassels, tresses, and wings of gold, silver, or other metal	30	24
Epsom salts; see *Salts, Epsom*, etc.	20	15
Essential oils; see *Oils, volatile*, etc.	30	24
Etchings; see *Philosoph. Apparatus*, etc.	Free.	Free.
Ether	20	15
Expressed oils; see *Oils, volatile*, etc.	30	24
Extracts; see *Balsams*	30	24
Extract of indigo	20	4
Extracts and decoctions of logwood and other dye-woods, not otherwise provided for	20	4
Extract of madder	20	4
Fabrics wholly or in part of India rubber; see *Braces*, etc.	30	24
Fancy boxes; see *Paper Boxes*	30	24
Fans and fire-screens of every description, of whatever material composed	30	24
Feathers and flowers, artificial or ornamental, and parts thereof, of whatever material composed	30	24
Feather-beds; see *Floss Silks*, etc.	25	19
Feathers for beds; see *Floss Silks*, etc.	25	19
Feldspar	20	15
Felt, adhesive, for sheathing vessels	Free.	Free.

UNITED STATES' TARIFFS—*Continued.*

Articles.	1846. Per Cent.	1857. Per Cent.
Fig blue	20	15
Fire-arms; see *Muskets*, etc.	30	24
Fire-crackers	30	24
Fire-screens; see *Fans and Firs-screens*	30	24
Fire-wood; see *Wood, unmanufactured*	30	24
Fish, preserved in oil; see *Anchovies*	40	30
Fish, foreign, whether fresh, smoked, salted, dried, or pickled, not otherwise provided for	20	15
Fish glue, or isinglass	20	15
Fish skins	20	15
Fish oils; see *Oils, neat's-foot*, etc.	20	15
Flags, matting, or mats of; see *Matting, China*, etc.	25	19
Flannels; see *Bairs*, etc.	25	19
Flats, braids, plaits, sparterre and willow squares, used for making hats or bonnets	30	24
Flax, manufactures of; see *Manufactures of Flax*, etc.	20	15
Flax, unmanufactured	15	Free.
Flax, tow of; see *Codilla*	15	12
Flax-seed	20	15
Flints	5	4
Flint, ground	5	4
Floor-cloths; see *Baizes*, etc.	25	19
Floor matting; see *Matting, China*, etc.	25	19
Floss silks, feather-beds, feathers for beds, and downs of all kinds	25	19
Flour, wheat; see *Wheat and Wheat Flour*	20	15
Flour, rye; see *Rye and Rye Flour*	20	15
Flour of sulphur	20	15
Flowers; see *Feathers and Flowers*	30	24
Flowers, used exclusively in dyeing, etc.; see *Berries, Nuts*, etc.	5	Free.
Flowers not otherwise provided for; see *Berries, Vegetables*, etc.	20	15
Foolscap paper; see *Paper, demy*, etc.	30	24
Frames and sticks for umbrellas, parasols, and sun-shades, finished or unfinished	30	24
Frankfort black	20	15
French chalk	20	4
Fresh fish; see *Fish, foreign*, etc.	20	15
Fruit preserved in sugar, brandy, or molasses; see *Comfits*	40	30
Fruit, green, ripe, or dried	20	8
Fullers' earth	10	8
Fulminates, or fulminating powders	20	15
Furniture, cabinet and household	30	24
Furniture; see *Composition Tablets*	40	30
Fur manufactures; see *Caps, Hats, Muffs, and Tippets of Fur*	30	24
Fur caps; see *Caps*, etc., *of Fur*	30	24
Furs, dressed, on the skin	20	15
Furs, hatters', dressed or undressed, not on the skin	10	8
Furs, undressed, when on the skin	10	8
Galloons, gold, silver, etc.; see *Epaulets*	30	24
Galloons, cotton; see *Cotton Cords*, etc.	30	24
Galvanized tin plates; see *Tin Plates, galvanized*	15	8
Gamboge	20	15
Game, prepared; see *Prepared Vegetables, Meats*, etc.	40	30
Garden seeds, and all other seeds for agricultural, horticultural, medicinal, and manufacturing purposes, not otherwise provided for	Free.	Free.
Gelatin; see *Macaroni*, etc.	30	24
Gems, set; see *Diamonds*, etc., *set*	30	24
Gems; see *Philosophical Apparatus*, etc.	Free.	Free.
Gems, not set; see *Cameos*, etc., *not set*	10	4
Gems, imitations of, not set; see *Diamonds*, etc.	10	8
German silver; see *Argentine*	30	24
German steel; see *Steel in Bars*, etc.	15	12
Gilt ware; see *Plated and Gilt Ware*	30	24
Gimps, cotton; see *Cotton Cords*, etc.	30	24
Ginger, ground	30	24
Ginger, dried, green, ripe, preserved, or pickled	40	15
Glass, cut	40	30
Glass, colored, stained, or painted	30	24
Glass crystals for watches	30	24
Glasses or pebbles for spectacles	30	24
Glass tumblers, plain, moulded, or pressed, not cut or punted	30	24
Glass, paintings on; see *Paintings on Glass*	30	24
Glass, porcelain; see *Porcelain Glass*	30	24
Glass, compositions of, set; see *Compositions of Glass or Paste, when set*	30	24
Glass, compositions of, not set; see *Compositions of Glass or Paste, not set*	10	8
Glass, window; see *Window Glass*	20	15
Glass, when old, and fit only to be remanufactured	20	Free.

UNITED STATES' TARIFFS—*Continued.*

Articles.	1846. Per Cent.	1857. Per Cent.
Glaziers' diamonds, set or not set; see *Diamonds, glaziers'*	15	12
Glauber salts; see *Salts, Epsom*, etc.	20	15
Gloves made on frames; see *Caps, Gloves*, etc., *made on Frames*	30	24
Gloves, wholly of cotton, made on frames; see *Caps, Gloves*, etc., *made on Frames*	20	15
Gloves, when bleached, printed, painted, or dyed	20	24
Glue	20	15
Glue, fish	20	15
Goats' hair, manufactures of; see *Manufactures of Goats' Hair*, etc.	25	19
Goats' hair, unmanufactured; see *Angora, Thibet, and other Goats' Hair*	20	15
Gold embroideries; see *Articles embroidered with Gold*	30	24
Gold, manufactures of; see *Manufactures of Brass*, etc.	30	24
Gold coin; see *Coin*	Free.	Free.
Gold and silver leaf	15	12
Gold-beaters' skin	10	8
Goods, wares, and merchandise, the growth, produce, or manufacture of the U. States, exported to a foreign country, and brought back to the U. S. in the same condition as when exported, upon which no drawback or bounty has been allowed, provided that all regulations to ascertain the identity thereof, prescribed by existing laws, or which may be prescribed by the Secretary of the Treasury, shall be complied with	Free.	Free.
Granadilla wood, manufactures of; see *Manufactures of Cedar-wood*, etc.	40	30
Granadilla wood, unmanufactured; see *Woods*, etc.	20	8
Grapes	30	8
Grass bonnets; see *Hats and Bonnets composed of Straw*, etc.	30	24
Grass baskets; see *Baskets*, etc., *composed of Grass*, etc.	30	24
Grass cloth	25	19
Grass, Sisal; see *Jute*, etc., *unmanufact'd*	25	19
Grass mats and matting; see *Matting, China*, etc.	25	19
Grease; see *Tallow*, etc.	10	8
Green vitriol; see *Copperas*	20	15
Green, artist's	20	15
Grindstones	5	4
Ground plaster of Paris; see *Plast. of Paris*	20	15
Gum benzoin, or Benjamin	30	8
Gums, Arabic, Barbary, copal, East India, Senegal, substitute, tragacanth, and all other gums and resins in a crude state	10	8
Guano	Free.	Free.
Gunny cloth	20	15
Gunpowder	20	15
Gutta percha, unmanufactured	20	4
Hair, human, cleansed or prepared for use	30	24
Hair of all kinds, uncleansed and unmanufactured	10	8
Hair, goats', unmanufactured; see *Angora, Thibet, and other Goats' Hair*	20	15
Hair of the alpaca, the goat, and other like animals, in certain conditions; see *Wool*	20	Free.
Hair, curled, moss, sea-weed, and all other vegetable substances used for beds or mattresses	20	15
Hair-cloth, hair seating, and all other manufactures of hair not otherwise provided for	25	19
Hair, hats, etc., of; see *Hats and Bonnets of Straw, Hair*, etc.	30	24
Hair pencils	30	24
Hair seating; see *Hair-cloth*, etc.	25	19
Hams	20	15
Harness furniture; see *Coach Furniture*	30	24
Hats; see *Hats and Bonnets*, etc.	30	24
Hats, flats, braids for making; see *Flats*, etc.	30	24
Hat bodies of cotton	30	24
Hats and bonnets, for men, women, and children, composed of straw, satin-straw, chip, grass, palm-leaf, willow, or any other vegetable substance, or of hair, whalebone, or other material, not otherwise provided for	30	24
Hats of wool	20	15
Hat bodies, made of wool, or of which wool shall be a component material of chief value	20	15
Hatters' plush, composed of silk and cotton, but of which cotton is the component material of chief value	30	15
Hearth rugs; see *Carpets*	30	24

UNITED STATES' TARIFFS—*Continued.*

Articles.	1846.	1857.
	Per Cent.	Per Cent.
Hemp, unmanufactured	30	24
Hemp, manufactured; see *Manufactures of Hemp*	20	15
Hemp, tow of; see *Codilla*	15	12
Hemp-seed and rape-seed	10	8
Hemp-seed or linseed, and rape-seed oil, and all other oils used in painting	20	15
Hides, raw, of all kinds; see *Raw Hides and Skins*	5	4
Honey	30	24
Horn, manufactures of; see *Manufactures of Bone*, etc.	30	24
Horns, horn tips, bones, bone tips, and teeth, unmanufactured	5	4
Household furniture; see *Furniture*	30	24
Household effects, old and in use, of persons or families from foreign countries, if used abroad by them, and not intended for any other person or persons, or for sale	Free.	Free.
Hulled barley; see *Pearl or Hulled Barley*	20	15
Human hair, cleansed or prepared for use	30	24
Hydriodate of potash; see *Chromate, Bichromate*, etc.	20	15
Ice	20	Free.
Illustrated newspapers; see *Books*, etc.	10	8
Imitations of wines; see *Wines*	40	30
Imitations of cameos or mosaics, set; see *Cameos*, etc., *set*	30	24
Imitations of precious stones, set; see *Diamonds*, etc., *set*	30	24
Imitations of jewelry; see *Jewelry*	30	24
Imitations of cameos and mosaics, not set; see *Cameos and Mosaics, imitations of, not set*	10	8
Imitations of diamonds, gems, etc., not set; see *Diamonds, imitations of*, etc., *not set*	10	8
Imitations of jet; see *Jet and manufact. of*	30	24
Imperial paper; see *Paper, antiquarian*, etc.	30	24
India rubber, fabrics of; see *Braces*, etc.	30	24
India rubber shoes; see *Shoes wholly of India Rubber*	30	24
India rubber, in bottles, slabs, or sheets, unmanufactured	10	4
India rubber, milk of	..	4
Indian corn and corn meal	20	15
Indigo, extract of; see *Extract of Indigo*	20	4
Indigo	10	4
Ingrain carpeting; see *Carpets*	30	24
Ink and ink powder	30	24
Insertings, cotton; see *Cotton Insertings*	25	19
Insertings, thread; see *Thread Laces*, etc.	20	15
Instruments, musical; see *Musical Instruments*	20	15
Ipecacuanha	20	15
Iridium	20	15
Iris, or orris root	20	15
Iron in bars, bloom, bolts, loops, pigs, rods, slabs, or other form, not otherwise provided for	30	24
Iron castings; see *Castings of Iron*	30	24
Iron, old or scrap; see *Old or Scrap Iron*	30	24
Iron, vessels of, cast; see *Vessels of Cast Iron*	30	24
Iron, manufactures of; see *Manufactures of Brass*, etc.	30	24
Iron, sulphate of; see *Copperas*, etc.	20	15
Iron liquor	20	15
Isinglass; see *Fish Glue*	20	15
Ivory, manufactures of; see *Manufactures of Bone*, etc.	30	24
Ivory, vegetable, manufactures of; see *Manufactures of Bone*, etc.	30	24
Ivory-black	20	15
Ivory, unmanufactured	5	Free.
Ivory nuts, or vegetable ivory	5	4
Jalap	20	15
Japanned ware of all kinds, not otherwise provided for	30	24
Japanned saddlery; see *Saddlery, common*, etc.	20	15
Japanned leather or skins of all kinds	20	19
Jeddo gum; see *Gum Arabic*	10	8
Jellies; see *Macaroni*	30	24
Jet, and manufactures of jet, and imitations thereof	30	24
Jewelry, real or imitation	30	24
Juice, licorice; see *Licorice Paste*, etc.	20	15
Julce, lemon or lime; see *Lemon and Lime Juice*	10	8
Juniper berries	20	15
Junk, old	Free.	Free.
Jute, sisal grass, coir, and other vegetable substances, unmanufactured, not otherwise provided for	25	19

UNITED STATES' TARIFFS—*Continued.*

Articles.	1846.	1857.
	Per Cent.	Per Cent.
Jute, mats, or matting; see *Matting, China*, etc.	25	19
Kelp	10	8
Kirschenwasser; see *Cordials*	100	30
Kermes, mineral; see *Mineral Kermes*	15	12
Kermes	5	4
Knitting needles; see *Needles of all kinds for sewing, darning, or knitting*	20	15
Knots of gold, silver, or other metal; see *Epaulets*, etc.	30	24
Lac spirits	20	4
Lac sulphur	20	4
Lac dye	5	4
Laces of gold, silver, or other metal; see *Epaulets*	30	24
Laces, cotton; see *Cotton Laces*, etc.	25	19
Laces, when bleached, etc.	25	24
Laces, thread; see *Thread Laces*	20	15
Lampblack	20	15
Lard	20	15
Lastings, cut in strips or patterns of the size and shape for shoes, boots, bootees, slippers, gaiters, or buttons, exclusively, not combined with India rubber	5	4
Laths; see *Boards, Plank*, etc.	20	15
Lead pencils	30	24
Lead, manufactures of; see *Manufactures of Brass*, etc.	30	24
Lead, chromate of; see *Chromate*	20	15
Lead in pigs, bars, or sheets	20	15
Lead, nitrate of; see *Nitrate of Lead*	20	15
Lead, white and red; see *White and Red Lead*	20	15
Leaden pipes	20	15
Leaden shot	20	15
Leaf, gold and silver; see *Gold and Silver Leaf*	15	12
Leather, manufactures of; see *Manufactures of Leather*	30	24
Leather, tanned, bend, or sole	20	15
Leather, upper, of all kinds	20	15
Leather, japanned	20	19
Leaves, medicinal; see *Medicinal Drugs*, etc.	20	15
Leeches	20	Free.
Leggins; see *Caps*, etc., *made on Frames*	30	24
Leggins, wholly of cotton; see *Caps*, etc., *wholly of Cotton, made on Frames*	20	15
Leggins, cotton, when bleached, printed, painted, or dyed	20	24
Lemons and limes	20	8
Lemon-peel; see *Orange and Lemon peel*	20	15
Lemon and lime juice	10	8
Letter paper; see *Paper, antiquarian*, etc.	30	24
Limes; see *Lemons and Limes*	20	8
Lime-juice; see *Lemon and Lime juice*	10	8
Limo	10	8
Lime, sulphate of, unground; see *Plaster of Paris*	Free.	Free.
Lime, chlorid of; see *Bleaching Powder*	10	4
Linen, manufactures of, embroidered; see *Manufactures of Cotton, Linen*, etc.	30	24
Linens of all kinds	20	15
Linseed, but not embracing flax-seed	10	Free.
Linseed oils; see *Hemp-seed or Linseed Oil*, etc.	20	15
Liqueurs; see *Cordials*	100	30
Liquor, iron; see *Iron Liquor*	20	15
Licorice, paste, juice, or root	20	15
Listings, woolen; see *Woolen Listings*	20	15
Litharge	20	15
Logwood, extract or decoction of; see *Extracts and Decoctions*	20	4
Loops, iron; see *Iron in Bars*, etc.	30	24
Macaroni, vermicelli, gelatine, jellies, and all other similar preparations	30	24
Mace	40	4
Machinery, exclusively designed and expressly imported for the manufacture of flax and linen goods	..	8
Madder, extract of; see *Extract of Madder*	20	4
Madder, ground or prepared	5	Free.
Madder-root	5	Free.
Madeira; see *Wines*	40	30
Magazines; see *Books*	10	8
Mahogany-wood, manufactures of; see *Manufactures of Cedar-wood*, etc.	40	30
Mahogany-wood, unmanufactured; see *Woods*, etc.	20	8
Malt	20	15
Manganese	20	15
Manna		
Manufactures of cedar-wood, grenadilla, ebony, mahogany, rose-wood, and satin-wood	40	30
Manufactures of jet; see *Jet*	30	24

UNITED STATES' TARIFFS—*Continued.*

Articles.	1846.	1857.
	Per Cent.	Per Cent.
Manufactures of the bark of the cork-tree, except corks	30	24
Manufactures of bone, shell, horn, pearl, ivory, or vegetable ivory	30	24
Manufactures, articles, vessels, and wares, not otherwise provided for, of brass, copper, gold, iron, lead, pewter, platina, silver, tin, or other metal, or of which either of those metals or any other metal shall be the component material of chief value	30	24
Manufactures composed wholly of cotton, bleached, printed, painted, or dyed	30	24
Manufactures of cotton, linen, silk, wool, or worsted, if embroidered or tamboured in the loom or otherwise, by machinery, or with the needle or other process	30	24
Manufactures, articles, vessels, and wares of glass, or of which glass shall be a component material, not otherwise provided for	30	24
Manufactures and articles of leather, or of which leather shall be a component part, not otherwise provided for	30	24
Manufactures and articles of marble, marble paving tiles, and all other marble more advanced in manufacture than in slabs or blocks in the rough	30	24
Manufactures of paper, or of which paper is a component material, not otherwise provided for	30	24
Manufactures, articles, and wares of papier-maché	30	24
Manufactures of wood, or of which wood is a component part, not otherwise provided for	30	24
Manufactures of wool, or of which wool shall be the component material of chief value, not otherwise provided for	30	24
Manufactures of hair; see *Hair-cloth, Hair Seating*, etc.	25	19
Manufactures of fur; see *Caps, Hats, Muffs, and Tippets of Fur*, etc.	30	24
Manufactures composed wholly of cotton, not otherwise provided for	25	19
Manufactures of goats' hair or mohair, or of which goats' hair or mohair shall be a component material, not otherwise provided for	25	19
Manufactures of silk, or of which silk shall be a component material, not otherwise provided for	25	19
Manufactures of worsted, or of which worsted shall be a component material, not otherwise provided for	25	19
Manufactures of flax, not otherwise provided for	20	15
Manufactures of hemp, not otherwise provided for	20	15
Manufactures of mohair cloth, silk twist, or other manufacture of cloth suitable for the manufacture of shoes, cut in clips or patterns of the size and shape for shoes, slippers, boots, bootees, gaiters, or buttons, exclusively, not combined with India rubber	5	4
Manufactures of lastings suitable for shoes, boots, bootees, or buttons, exclusively; see *Lastings*	5	4
Manures or substances expressly used for	..	Free.
Maps and charts	10	Free.
Maraschino; see *Cordials*	100	30
Marble, manufactures of; see *Manufactures of Marble*	30	24
Marble paving tile; see *Manufactures of Marble*	30	24
Marble in the rough slab or block, unmanufactured	20	15
Marine coral, unmanufactured	20	15
Marrow; see *Tallow, Marrow*, etc.	10	8
Matting, China, and other floor matting and mats, made of flags, jute, or grass	25	19
Meal, Indian corn; see *Indian Corn*	20	15
Meats, prepared; see *Prepared Vegetables, Meats*, etc.	40	30
Medals; see *Cabinets of Coins*, etc.	Free.	Free.
Medicinal preparations, not otherwise provided for	30	24
Medicinal drugs, roots, and leaves, in a crude state, not otherwise provided for	20	15
Mercurial preparations; see *Calomel*	25	19
Metal embroideries; see *Articles embroidered*	30	24
Metals, manufactures of; see *Manufactures of Brass*, etc.	30	24
Metals, silver plated; see *Silver-plated Metals*	30	24

UNITED STATES' TARIFFS—*Continued.*

Articles.	1846.	1857.
	Per Cent.	Per Cent.
Metal, Dutch and bronze, in leaf	20	15
Metals, unmanufactured, not otherwise provided for	20	15
Metal, type; see *Type Metal*	20	15
Metallic pens	30	24
Mineral waters	30	24
Mineral and bituminous substances, in a crude state, not otherwise provided for	20	15
Mineral kermes	15	12
Minerals; see *Specimens of Natural History*	Free.	Free.
Mits made on frames; see *Caps, Gloves*, etc.	30	24
Mits made on frames, when wholly of cotton; see *Caps, Gloves*, etc.	20	15
—when bleached, printed, painted, or dyed	20	24
Models of inventions and other improvements in the arts, provided that no article or articles shall be deemed a model or improvement which can be fitted for use	Free.	Free.
Mohair and silk twist; see *Silk Twist*, etc.	30	24
Mohair, manufactures of; see *Manufactures of Goats' Hair*, etc.	25	19
Molasses	30	24
Mordant, patent; see *Patent Mordant*	20	15
Mosaics, real and imitations, when set; see *Cameos*, etc.	30	24
Mosaics, not set; see *Cameos*, etc., *not set*.	10	4
Mosaics, imitations of, not set; see *Diamonds*, etc., *not set*	10	8
Moss for beds or mattresses; see *Hair, curled*, etc.	20	15
Moulds, button; see *Button and Button Moulds*	25	19
Muffs; see *Caps, Hats, Muffs*, etc.	30	24
Muriatic acid; see *Acids, acetic*, etc.	20	4
Musical instruments of all kinds, and strings for musical instruments, of whipgut, catgut, and all other strings of the same material	20	15
Music, printed with lines, bound or unbound	10	4
Muskets, rifles, and other fire-arms	30	24
Nails, copper; see *Copper Rods*, etc.	20	15
Natron	10	8
Natural history, specimens of; see *Specimens*, etc.	Free.	Free.
Neat's-foot oil; see *Oils, Neat's-foot*, etc.	20	15
Needles of all kinds, for sewing, darning, or knitting	20	15
Newspapers, illustrated; see *Books*, etc.	10	8
Nickel	5	4
Nitrate of lead	20	15
Nitrate of soda, refined, etc.; see *Saltpetre, refined*, etc.	10	8
Nitrate of soda, when crude; see *Saltpetre, when crude*	5	4
Nitric acid; see *Acids, acetous*, etc.	20	15
Nutmegs	40	4
Nuts, not otherwise provided for	30	24
Nuts, cocoa; see *Cocoa-nuts*	20	4
Nuts used exclusively in dyeing, etc.; see *Berries, Nuts*, etc.	5	Free.
Nuts, ivory; see *Ivory Nuts*	5	4
Nut-galls	5	Free.
Nux vomica	10	8
Oakum	Free.	Free.
Oats and oatmeal	20	15
Ochres and ochrey earths	30	15
Oil-cloth of every description, of whatever material composed	30	24
Oils, volatile, essential, or expressed, and not otherwise provided for	30	24
Oil, castor; see *Castor Oil*	20	15
Oil, spermaceti, whale, and other fish, of American fisheries, and all other articles the produce of such fisheries	Free.	Free.
Oils, hempseed, linseed, rape-seed, and all other oils used in painting; see *Hempseed Oil*, etc.	20	15
Oils, neat's-foot, and other animal oil, spermaceti, whale, and other fish oil, the produce of foreign fisheries	20	15
Oils, palm, seal, and cocoa-nut	10	4
Oil of vitriol; see *Sulphuric Acid*	10	4
Old or scrap iron; see *Iron, old*, etc.	30	24
Old pewter; see *Pewter, when old*, etc.	5	4
Olive-oil in casks, other than salad oil	30	24
Olive salad oil, and all other olive-oil, not otherwise provided for	30	24
Olives	30	24
Opium	20	15
Oranges, lemons, and limes	20	8
Orange and lemon peel	20	15
Orleans; see *Anatto*	10	4
Ornamental feathers or flowers; see *Feathers*	30	24
Orpiment	10	8

UNITED STATES' TARIFFS—*Continued.*

Articles.	1846.	1857.
	Per Cent.	Per Cent.
Orris or Iris root; see *Iris or Orris Root*	20	15
Osier baskets; see *Baskets composed of Grass, Osier*, etc.	30	24
Osier or willow, prepared for basket-makers' use	20	15
Oxalic acid; see *Acids, acetic*, etc.	20	4
Pack-thread; see *Twines and Pack-thread*	30	24
Paddy; see *Rice or Paddy*	20	15
Paintings and statuary	..	Free.
Paintings on glass	30	24
Painted glass; see *Glass, painted*	30	24
Paints, dry or ground in oil, not otherwise provided for	20	15
Palm leaf, unmanufactured	10	Free.
Palm-leaf baskets; see *Baskets*	30	24
Palm-leaf hats; see *Hats and Bonnets*	30	24
Palm oils; see *Oils, Palm*, etc.	10	4
Pamphlets; see *Books, printed*, etc.	10	8
Paper segars; see *Segars, Snuff*, etc.	40	30
Paper, manufactures of; see *Manufactures of Paper*, etc.	30	24
Paper, antiquarian, demy, drawing, elephant, foolscap, imperial, letter, and all other paper, not otherwise provided for.	30	24
Paper boxes, and all other fancy boxes	30	24
Paper envelopes	30	24
Paper hangings	20	15
Paper for screens or fire-boards	20	15
Paper, sheathing; see *Sheathing Paper*	20	15
Paper, music, bound or unbound; see *Music Paper*	10	4
Papier-maché; see *Manufactures of Papier-maché*	30	24
Parchment	30	24
Parasols, frames or sticks for; see *Frames or Sticks*	30	24
Parasols and sun-shades	30	24
Paris white; see *Whiting or Paris White*	20	15
Paste; see *Balsams*	30	24
Paste compositions; see *Compositions of Glass or Paste, when set*	30	24
Paste, licorice; see *Licorice Paste*	20	15
Paste, Brazil; see *Brazil Paste*	15	12
Paste compositions, if not set; see *Compositions of Glass or Paste, not set*	10	8
Pastel; see *Wood or Pastel*	10	4
Patent mordant	20	15
Paving tiles, marble; see *Manufactures of Marble*	30	24
Paving stones	20	15
Paving and roofing tiles and bricks	20	15
Pearls, when set; see *Diamonds*, etc., *set*	30	24
Pearl, manufactures of; see *Manufactures of Bone, Shell, Pearl*, etc.	30	24
Pearl or hulled barley	20	15
Pearls, not set; see *Cameos, Mosaics, Diamonds, Gems, Pearls*, etc., *not set*	10	4
Pearls, imitations thereof, not set; see *Diamonds, Pearls*, etc., *imitations thereof, not set*	10	8
Pearl, mother of	5	4
Pebbles for spectacles; see *Glasses or Pebbles for Spectacles*	30	24
Pencils, hair; see *Hair Pencils*	30	24
Pencils, lead; see *Lead Pencils*	30	24
Pencils, red-chalk; see *Red-chalk Pencils*	30	24
Pens, metallic; see *Metallic Pens*	30	24
Pepper	30	4
Perfumes; see *Balsams*, etc.	30	24
Perfumed soap; see *Soap, perfumed*	30	24
Periodicals and other works in course of printing and republication in the U. S.	20	15
Periodicals; see *Books, printed*, etc.	10	8
Personal and household effects (not merchandise) of citizens of the United States dying abroad	Free.	Free.
Peruvian bark; see *Bark, Peruvian*	15	Free.
Pewter, manufactures of; see *Manufactures of Brass*, etc.	30	24
Pewter, when old, and fit only to be remanufactured	5	4
Pickles, capers, etc.; see *Capers*, etc.	30	24
Pickled fish; see *Fish, foreign, whether fresh*, etc.	20	15
Pigs, iron; see *Iron in Bars*, etc.	30	24
Pigs, lead; see *Lead in Pigs*, etc.	20	15
Pigs, brass; see *Brass in Bars and Pigs*	5	Free.
Pigs, copper; see *Copper in Pigs*, etc.	5	Free.
Pigs, tin; see *Tin in Pigs*, etc.	5	Free.
Pimento	40	4
Pine-apples	20	8
Pipes, lead; see *Leaden Pipes*, etc.	20	15
Pitch	20	15
Pitch, Burgundy; see *Burgundy Pitch*	25	20
Plaits for bonnets, etc.; see *Plats, Braids, Plaits*, etc.	30	24

UNITED STATES' TARIFFS—*Continued.*

Articles.	1846.	1857.
	Per Cent.	Per Cent.
Planks; see *Boards, Planks*, etc.	20	15
Plants, not otherwise provided for; see *Trees, Shrubs*, etc.	Free.	Free.
Plants used exclusively in dyeing; see *Berries, Nuts*, etc.	5	Free.
Plantains	20	8
Plaster of Paris, when ground	20	15
Plaster of Paris, or sulphate of lime, unground	Free.	Free.
Plated metal, silver; see *Silver, Plated Metal*, etc.	30	24
Plates, copper; see *Copper in Sheets*, etc.	30	15
Plates, stereotype; see *Stereotype Plates*	20	15
Plates, Terne tin; see *Terne Tin Plates*	15	8
Plates, tin, galvanized or ungalvanized; see *Tin Plates, galvanized or ungalvan'd*	15	8
Plates, bound or unbound; see *Engravings or Plates*	10	8
Plated and gilt ware of all kinds	30	24
Platina, manufactures of; see *Manufactures*, etc.	30	24
Platina, unmanufactured	..	Free.
Playing cards	30	24
Plumbago	20	15
Plums	30	8
Plush, hatters'; see *Hatters' Plush*	20	15
Pocket-books; see *Card-cases*, etc.	30	24
Polishing stones	10	8
Porcelain glass; see *Glass, porcelain*	30	24
Pork	20	15
Porter, in casks or bottles; see *Ale, Beer, and Porter*	30	24
Port-wines; see *Wines*	40	30
Potash, nitrate of; see *Saltpetre, refined or partially refined*	10	8
Potash, nitrate of, when crude; see *Saltpetre or Nitrate of Soda*, etc., *when crude*	5	4
Potassium	20	15
Potash, chromate, bichromate, and prussiate of; see *Chromate*	20	15
Potatoes	30	24
Poultry, prepared; see *Prepared Vegetables, Meats*, etc.	40	30
Powder, gun; see *Gunpowder*	20	15
Powders, fulminating; see *Fulminates*	20	15
Powders, bleaching; see *Bleaching Powder*, etc.	15	4
Powder, ink; see *Ink and Ink Powder*	30	24
Precious stones, and imitations thereof; see *Diamonds*, etc., *when set*	30	24
Precious stones, not set; see *Cameos*, etc., *when not set*	10	4
Precious stones, imitations of, not set; see *Diamonds*, etc., *imitations of, not set*	10	8
Prepared vegetables, meats, poultry, and game, sealed or inclosed in cans, or otherwise	40	30
Preparations, medicinal; see *Medicinal Preparations*	30	24
Preparations, mercurial; see *Calomel*, etc.	25	19
Preparations of salts; see *Salts, Epsom*, etc.	20	15
Preserved salmon; see *Salmon, preserved*	30	24
Printed books, magazines, etc.; see *Books, printed*	10	8
Prunes	40	8
Prussian blue	20	4
Prussiate of potash; see *Chromate*, etc.	20	15
Pulp, dried; see *Dried Pulp*	20	15
Pumice	10	8
Pumice-stone	10	8
Pumpkins	20	8
Putty	20	15
Pyroligneous acid; see *Acids, acetic*, etc.	20	4
Quicksilver	20	15
Quilla bark; see *Bark, Quilla*	15	12
Quills	20	15
Quinine, sulphate of; see *Sulphate*	20	15
Rags, of whatever material, except wool	5	Free.
Raisins	40	8
Rape-seed; see *Hemp-seed*	10	8
Rape-seed oil; see *Hemp-seed*, etc., *Oil*	20	15
Ratafia; see *Cordials*	100	30
Ratans and reeds, unmanufactured	10	Free.
Raw silk; see *Silks, raw, or as reeled from the cocoon*, etc.	15	12
Raw silk; see *Silk, raw, or as reeled from the cocoon*, etc.	15	Free.
Raw hides and skins of all kinds	5	4
Red-chalk pencils	30	24
Red-chalk	20	4
Red-lead; see *White and Red Lead*	20	15
Reeds, unmanufactured; see *Ratans*, etc.	10	Free.
Regulus of Antimony; see *Antimony*, etc.	20	8
Rhubarb	20	15
Rice or paddy	20	15
Rifles; see *Muskets*	30	24

UNITED STATES' TARIFFS—*Continued.*

Articles.	1846.	1857.
	Per Cent.	Per Cent.
Ringlets of hair; see *Bracelets*	30	24
Rods, iron; see *Iron in Bars*, etc.	90	24
Rods, copper; see *Copper Rods*, etc.	90	15
Roll brimstone	90	15
Roman vitriol; see *Blue or Roman Vitriol*	90	15
Roman cement	20	15
Roofing slates, etc.	20	15
Roofing tiles; see *Paving and Roofing*, etc.	90	15
Root, iris or orris; see *Iris or Orris Root*	20	15
Root, licorice; see *Licorice Paste*, etc.	30	15
Roots, medicinal; see *Medicinal Drugs*, etc.	90	15
Root, madder; see *Madder Root*	5	Free.
Roots used exclusively in dyeing; see *Berries, Nuts*, etc.	5	Free.
Rose-wood, manufactures of; see *Manufactures of Cedar-wood*, etc.	40	30
Rose-wood, unmanufactured; see *Woods*	90	8
Rotten-stone	10	8
Roucou; see *Anatto*	10	4
Rough marble; see *Marble in the rough*	90	15
Rubies and imitations, when set; see *Diamonds*, etc.	30	24
Rubies, not set; see *Cameos*, etc., *not set*	10	4
Rubies, imitations thereof, not set; see *Diamonds*, etc., *imitations thereof, not set*	10	8
Rugs; see *Carpets*	30	24
Rye and rye flour	90	15
Saddlery of all kinds, not otherwise provided for	30	24
Saddlery, common tinned or japanned	90	15
Safflower	5	Free.
Saffron and saffron cake	90	15
Sago	20	15
Salad oil; see *Olive Salad Oil*	30	24
Sal ammonia	10	8
Salmon, preserved	30	24
Sal soda, and all carbonates of soda by whatever name designated, not otherwise provided for	20	8
Salted fish; see *Fish, foreign*, etc.	90	15
Saltpetre, or nitrate of soda or potash, when refined or partially refined	10	8
Saltpetre, or nitrate of soda or potash, when crude	5	4
Salts, Epsom, Glauber, Rochelle, and all other salts and preparations of salts, not otherwise provided for	20	15
Sardines; see *Anchovies*	40	30
Sarsaparilla	90	15
Satin-wood, manufactures of; see *Manufactures of Cedar-wood*, etc.	40	30
Satin-wood, unmanufactured; see *Woods*	90	8
Satin straw hats, bonnets, etc.; see *Hats, Bonnets*, etc.	30	24
Sauces; see *Capers*	30	24
Saxony carpeting; see *Carpets*	30	24
Scagliola tops for tables, or other articles of furniture	40	30
Scantling; see *Boards*, etc.	90	15
Scrap iron; see *Iron, old or scrap*	30	24
Sculpture, specimens of; see *Philosophical Apparatus*, etc.	Free.	Free.
Sealing-wax	30	24
Seating, hair; see *Hair-cloth*	25	19
Sea-weed for beds, mattresses, etc.; see *Hair, curled*, etc.	20	15
Seeds; see *Garden Seeds*, etc.	Free.	Free.
Seeds, hemp-seed, rape-seed; see *Hemp-seed*	10	8
Seedlac	5	4
Segars, snuff, paper segars, and all other manufactures of tobacco	40	30
Senegal gum; see *Gum Arabic*, etc.	10	8
Seppia	20	15
Sewing silk, in the gum or purified	30	24
Sewing needles; see *Needles of all kinds*	20	15
Shaddocks	90	8
Shear steel; see *Steel in Bars*	15	12
Sheathing paper	20	15
Sheathing copper, but no copper to be considered such, and admitted free, except in sheets of forty-eight inches long and fourteen inches wide, and weighing from fourteen to thirty-four ounces the square foot	Free.	Free.
Sheathing metal, not wholly or in part of iron, ungalvanized	Free.	Free.
Sheathing felt; see *Felt, adhesive*, etc.	Free.	Free.
Sheep's wool, on certain conditions; see *Wool*	30	Free.
Sheets, silver-plated metal; see *Silver-plated Metal*	30	24
Sheets, copper; see *Copper in Sheets*	20	15
Sheets, India rubber; see *India Rubber*, etc.	10	4
Sheets, lead; see *Lead in Pigs*, etc.	20	15

UNITED STATES' TARIFFS—*Continued.*

Articles.	1846.	1857.
	Per Cent.	Per Cent.
Sheets, tin; see *Tin in Plates or Sheets*	15	8
Sheets, zinc, spelter, or tentenegue; see *Zinc*, etc.	15	12
Shell, manufactures of; see *Manufactures of Bone*, etc.	30	24
Shells of cocoa; see *Cocoa Shells*	10	4
Shell boxes; see *Card-cases*, etc.	30	24
Shells, unmanufactured; see *Tortoise and other Shells*	5	4
Shellac	5	4
Sherry; see *Wines*	40	30
Shingle bolts and stave bolts	..	Free.
Shirts made on frames; see *Caps, Gloves*, etc.	30	24
Shirts made on frames, if wholly of cotton; see *Caps, Gloves*, etc.	20	15
—when bleached, printed, painted, or dyed	20	24
Shoes composed wholly of India rubber	30	24
Shoddy; see *Waste, or Shoddy*	5	4
Shot, leaden; see *Leaden Shot*	20	15
Shrubs; see *Trees, Shrubs*, etc.	..	Free.
Side arms of every description	30	24
Singles, silk; see *Silk, raw, not more advanced*, etc.	15	12
Silk, manufactures of, if embroidered; see *Manufactures of Cotton, Linen, Silk*, etc.	30	24
Silk twist, and twist composed of mohair and silk	30	24
Silk, sewing, purified; see *Sewing Silk*	30	24
Silk, sewing, in the gum; see *Sewing Silk*	30	24
Silks, floss; see *Floss Silks*	25	19
Silk, manufactures of; see *Manufactures of Silk*	25	19
Silk and cotton hatters' plush; see *Hatters' Plush*	20	15
Silk and cotton velvet in the piece, cotton chief value; see *Velvet composed of Cotton and Silk*	20	15
Silk, raw, not more advanced in manufacture than singles, tram, and thrown, or organzine	15	12
Silk, raw, or as reeled from the cocoon, not being doubled, twisted, or advanced in manufacture in any way	..	Free.
Silk twist, suitable for the manufacture exclusively of shoes, cut in slips or patterns of the size and shape for shoes, boots, bootees, or buttons, slippers, and gaiters, not combined with India rubber; see *Manufactures of Mohair Cloth*, etc.	5	4
Silver embroideries; see *Articles embroidered*, etc.	30	24
Silver, manufactures of; see *Manufactures of Brass*, etc.	30	24
Silver-plated metal, in sheets or other form	30	24
Silver leaf; see *Gold and Silver Leaf*	15	12
Silver coin; see *Coins*	Free.	Free.
Sisal grass; see *Jute*, etc.	25	19
Skins, fish; see *Fish Skins*	20	15
Skins, furs dressed on; see *Furs dressed on Skin*	20	15
Skins, gold-beaters'; see *Gold-beaters' Skins*	10	8
Skins of all kinds, japanned	25	19
Skins, tanned and dressed, of all kinds	20	15
Skins, raw, of all kinds; see *Raw Hides and Skins*, etc.	5	4
Skins of all kinds, not otherwise provided for	20	15
Slabs, iron; see *Iron in Bars*, etc.	30	24
Slabs, marble; see *Marble in the rough*	20	15
Slabs of India rubber, unmanufactured	10	4
Slates, roofing; see *Roofing Slates*	25	19
Slates other than roofing; see *Roofing Slates*, etc.	25	19
Slate pencils	20	15
Smalts	20	15
Smoked fish; see *Fish, foreign*, etc.	20	15
Snuff; see *Segars, Snuff*, etc.	40	30
Soap, Castile, perfumed, Windsor, and all other kinds	30	24
Soap stocks and stuffs; see *Tallow*	10	8
Socks made on frames; see *Caps, Gloves*, etc.	30	24
Socks made on frames, wholly of cotton; see *Caps, Gloves*, etc., *made on frames, wholly of Cotton*	20	15
—when bleached, printed, painted, or dyed	20	24
Soda, sal; see *Sal Soda*	20	8
Soda, carbonates of; see *Sal Soda*	20	8
Soda, nitrate of, refined, etc.; see *Saltpetre, refined*	10	8
Soda, nitrate of, when crude; see *Saltpetre, crude*	5	4
Soda ash	10	4
Sole leather; see *Leather, tanned*, etc.	20	15
Souvenirs; see *Card-cases*	30	24

UNITED STATES' TARIFFS—*Continued.*

Articles.	1846. Per Cent.	1857. Per Cent.
Spar ornaments; see *Alabaster and Spar Ornaments*	40	30
Spars; see *Boards, Planks*, etc.	20	15
Sparterre for hats, bonnets, etc.; see *Flats, Braids, Sparterre*, etc.	30	24
Spectacles, glasses for; see *Glasses or Feblets for Spectacles*	30	24
Specimens of sculpture; see *Philosophical Apparatus*, etc.	Free.	Free.
Specimens of natural history, mineralogy, or botany	Free.	Free.
Spelter in sheets; see *Zinc, Spelter*, etc.	15	12
Spelter, unmanufactured; see *Zinc, Spelter*, etc., *unmanufactured*	5	4
Spermaceti oil; see *Spermaceti, whale, and other Oils, of American fishery*	Free.	Free.
Spermaceti oil, foreign; see *Neat's-foot*, etc.	30	15
Spermaceti candles and tapers	30	15
Spices of all kinds	40	4
Spikes, copper; see *Copper Rods*, etc.	30	15
Spirits distilled from grain; see *Brandy*	100	30
Spirituous beverages; see *Cordials*	100	30
Spirits, lac; see *Lac Spirits*	20	4
Spirits of turpentine	20	15
Sponges	20	8
Spunk	20	15
Squills	20	15
Stained glass; see *Glass, colored, stained, or painted*	30	24
Starch	20	15
Stars of gold or silver; see *Epaulets*	30	24
Statuary; see *Paintings and Statuary*	Free.	Free.
Staves; see *Boards, Planks*, etc.	20	15
Stave bolts; see *Shingle and Stave Bolts*	20	Free.
Stearin candles and tapers	30	15
Steel, not otherwise provided for	30	15
Steel, in bars, cast, shear, or German	15	12
Stereotype plates	30	15
Sticks for walking; see *Canes*, etc.	30	24
Sticks for umbrellas; see *Frames and Sticks for Umbrellas*, etc.	30	24
Still-bottoms	30	15
Stockings made on frames; see *Caps, Gloves*, etc., *made on Frames*	30	24
Stockings, wholly of cotton, made on frames; see *Caps, Bonnets*, etc., *wholly of Cotton, made on Frames*	20	15
Stockings, when bleached, printed, painted, or dyed	20	24
Stones, precious, when set; see *Diamonds*, etc., *when set*	30	24
Stones, precious, when not set; see *Cameos*, etc., *not set*	10	4
Stones, precious, imitations thereof, not set; see *Diamonds*, etc., *imitations of, not set*	10	8
Stones, paving; see *Paving Stones*	20	15
Stones, building; see *Building Stones*	10	8
Stones, burr, unmanufactured; see *Burr Stones*	10	Free.
Stone-ware; see *Earthen, China, and Stone-ware*	30	24
Stones, polishing; see *Polishing Stones*	10	8
Stone, pumice; see *Pumice-stone*	10	8
Stone, rotten; see *Rotten-stone*	10	8
Straw baskets; see *Baskets composed of Grass, Straw*, etc.	30	24
Straw hats and bonnets; see *Hats and Bonnets composed of Straw*, etc.	30	24
Strings of whipgut or catgut for musical instruments; see *Musical Instruments*	20	15
Strings, all other, of the same material; see *Musical Instruments*	20	8
Substances expressly used for manures	..	Free.
Substitute gums or burned starch; see *Gum Arabic*	10	8
Sugar of all kinds	30	24
Sugar, sirup of; see *Sirup of Sugar*	30	24
Sulphate of lime, unground; see *Plaster of Paris*	..	Free.
Sulphate of copper; see *Blue or Roman Vitriol*	20	15
Sulphate of iron; see *Copperas*	20	15
Sulphate of barytes, crude or refined	20	15
Sulphate of quinine	20	15
Sulphate of zinc; see *White Vitriol*	20	15
Sulphuric acid, or oil of vitriol	10	4
Sulphur, flour of; see *Flour of Sulphur*	20	15
Sulphur, lac; see *Lac Sulphur*	20	4
Sumac	5	4
Sun-shades; see *Parasols and Sun-shades*	30	24
Sun-shades, frames and sticks for; see *Frames and Sticks for Parasols*	30	24
Suspenders, wholly or in part of India rubber; see *Braces*	30	24
Sweetmeats; see *Comfits*	40	30

UNITED STATES' TARIFFS—*Continued.*

Articles.	1846. Per Cent.	1857. Per Cent.
Sirup of sugar	30	24
Tallow candles	20	15
Tallow, marrow, and all other grease and soap stocks and soap stuffs, not otherwise provided for	10	8
Tanned leather; see *Leather, tanned*	20	15
Tanned and dressed skins; see *Skins, tanned and dressed*	20	15
Tanning, articles used in, not in a crude state, not otherwise provided for; see *Articles used in Dyeing or Tanning*	20	Free.
Tapers, spermaceti; see *Spermaceti Candles and Tapers*	20	15
Tapers, stearin; see *Stearin Candles and Tapers*	20	15
Tapers, wax; see *Wax Candles and Tapers*	20	15
Tapioca	20	15
Tar	20	15
Tartaric acid; see *Acids, acetic*	20	4
Tartar, cream of; see *Cream of Tartar*	20	4
Tartar, crude; see *Argols*	5	Free.
Tassels of gold, silver, or other metal; see *Epaulets*	30	24
Tea from place of production; see *Coffee and Tea*	Free.	Free.
Teeth, unmanufactured; see *Horns*, etc.	5	4
Terne tin, in plates or sheets	15	8
Terra japonica, catechu, or cutch	10	Free.
Teutenegue in sheets; see *Zinc, Spelter, and Teutenegue, in Sheets*	15	12
Teutenegue, unmanufactured; see *Zinc*, etc., *unmanufactured*	5	4
Thibet goats' hair, unmanufactured; see *Angora, Thibet*, etc.	20	15
Thread lacings and insertings	20	15
Thrown silk; see *Silk, raw, not more advanced*, etc.	15	12
Tiles, marble paving; see *Manufactures of Marble*	30	24
Tiles, roofing or paving; see *Paving and Roofing Tiles*	20	15
Timber, hewn and sawed; see *Boards, Planks*, etc.	20	15
Timber to be used in building wharves; see *Boards, Planks*, etc.	20	15
Tin, manufactures of; see *Manufactures of Brass*, etc.	30	24
Tin in plates or sheets, galvanized or ungalvanized	15	8
Tin in pigs, bars, or blocks	5	Free.
Tinned saddlery; see *Saddlery, common*	20	15
Tincal; see *Borax, crude*	25	4
Tinctures; see *Balsams*	30	24
Tippets of fur; see *Caps*, etc., *of Fur*	30	24
Tobacco, manufactures of; see *Segars*	40	30
Tobacco, unmanufactured	30	24
Tortoise and other shells, unmanufactured	5	4
Tow of hemp or flax; see *Cadilla*	15	12
Toys; see *Dolls*	30	24
Tragacanth, gum; see *Gum Arabic*, etc.	10	8
Tram, silk; see *Silks, raw, not more advanced*, etc.	15	12
Trees, shrubs, bulbs, plants, and roots, not otherwise provided for	Free.	Free.
Tresses, gold, silver, or other metal; see *Epaulets*	30	24
Trimmings, cotton; see *Cotton Laces*	25	10
Tumblers, glass; see *Glass Tumblers*	30	24
Turkey carpeting; see *Carpets*	30	24
Turmeric	5	4
Turpentine, spirits of; see *Spirits of Turpentine*	20	15
Turtle, green; see *Green Turtle*	20	15
Twines and pack-thread, of whatever materials composed	30	24
Twist, silk, or silk and mohair; see *Silk Twist*	30	24
Type metal	20	15
Types, new or old	20	15
Umbrellas	30	24
Umbrella frames and sticks; see *Frames*	30	24
Upper leather	20	15
Vanilla beans	20	15
Vegetable ivory, manufactured; see *Manufactures of Bone*, etc.	30	24
Vegetable ivory, or ivory nuts; see *Ivory Nuts*	5	4
Vegetables, prepared; see *Prepared Vegetables*	40	30
Vegetable substances used in making hats and bonnets; see *Hats and Bonnets*	30	24
Vegetable substances, unmanufactured; see *Jute*	25	19
Vegetables not otherwise provided for; see *Berries, Vegetables*	20	15
Vegetable substances used for beds and mattresses; see *Hair, curled*	20	15

UNITED STATES' TARIFFS—*Continued.*

Articles.	1846.	1857.
	Per Cent.	Per Cent.
Vegetables used exclusively in dyeing; see *Berries, Nuts*	5	Free.
Vellum	30	24
Velvet in the piece, composed wholly of cotton	90	15
Velvet, when bleached, printed, painted, or dyed	90	24
Velvet in the piece, composed of cotton and silk, but of which cotton is the component material of chief value	90	15
Venetian carpetting; see *Carpets*	30	24
Verdigris	20	15
Vermicelli; see *Macaroni*	30	24
Vermillion	20	15
Vessels of cast iron; see *Iron, cast*, etc.	30	24
Vessels of metal; see *Manufactures of Brass*, etc.	30	24
Vessels of glass; see *Manufactures of Glass*	30	24
Vinegar	30	24
Vitriol, green; see *Copperas*	20	15
Vitriol, white; see *White Vitriol, or Sulphate of Zinc*	20	12
Vitriol, oil of; see *Sulphuric Acid*	10	4
Volatile oil; see *Oils, volatile*, etc.	30	24
Wafers	30	24
Wares composed of earthy and mineral substances, not otherwise provided for; see *Earthen*, etc.	30	24
Wares, japanned; see *Japanned Wares*	30	24
Ware of metal; see *Manufactures of Brass*, etc.	30	24
Wares of glass; see *Manufactures of Glass*	30	24
Wares of papier-maché; see *Manufactures of Papier-maché*	30	24
Wares, plated and gilt; see *Plated and Gilt Wares*	30	24
Waste, or shoddy	5	4
Watches, crystals for; see *Glass Crystals for Watches*	30	24
Watches and parts of watches	10	8
Watch materials and unfinished parts of watches	10	4
Waters, mineral; see *Mineral Waters*	30	24
Water colors	30	24
Wax beads; see *Beads*	30	24
Wax, sealing; see *Sealing-wax*	30	24
Wax, bees'; see *Beeswax*	20	15
Wax candles and tapers	20	15
Wearing apparel; see *Clothing, ready-made*	30	24
Wearing apparel in actual use, and other personal effects not merchandise, professional books, implements, instruments, and tools of trade, occupation, or employment, of persons arriving in the U. States, provided that this exemption shall not be construed to include machinery or other articles imported for use in any manufacturing establishment, or for sale	Free.	Free.
Webbing, composed wholly or in part of India rubber; see *Braces*	30	24
Weld	5	Free.
Whalebone baskets; see *Baskets*	30	24
Whalebone, the produce of foreign fisheries	20	15

UNITED STATES' TARIFFS—*Continued.*

Articles.	1846.	1857.
	Per Cent.	Per Cent.
Whalebone hats and bonnets; see *Hats and Bonnets*	30	24
Whale oil, foreign; see *Oils, Neat's-foot*, etc.	20	15
Whale oil of American fisheries; see *Oils, spermaceti*, etc.	Free.	Free.
Wheat and wheat flour	20	15
White acid; see *Acids, acetic*, etc.	20	4
White and red lead	20	15
White, Paris; see *Whiting, or Paris White*	20	15
White vitriol, or sulphate of zinc	20	15
Whiting, or Paris white	20	15
Willow baskets; see *Baskets*	30	24
Willow hats and bonnets; see *Hats and Bonnets of Straw*, etc.	30	24
Willow squares for hats and bonnets; see *Flats*	30	24
Willow prepared for basket-makers' use; see *Osier and Willow*	20	15
Wilton carpeting; see *Carpets*	30	24
Window glass, broad, crown, or cylinder	20	15
Windsor soap; see *Soap*	30	24
Wines, Burgundy, Champagne, claret, Madeira, port, sherry, and all other wines and imitations of wines	40	30
Wings of gold, silver, metal; see *Epaulets*	30	24
Wood or pastel	10	4
Wood, manufactures of; see *Manufactures of Wood*	30	24
Wood, unmanufactured, not otherwise provided for	30	24
Wood, fire; see *Fire-wood*	30	24
Woods, cedar, granadilla, ebony, mahogany, rose-wood, and satin-wood, when manufactured	40	30
Woods, namely, cedar, box, ebony, lignum-vitæ, granadilla, mahogany, rose-wood, satin-wood, and all other cabinet woods, unmanufactured	20	8
Woods, dye, extracts or decoctions of; see *Extracts and Decoctions*	20	4
Woods, dye; see *Brazil-wood, and all other Dye-woods in Sticks*	5	Free.
Wool, manufactures of; see *Manufactures of Wool*, etc.	30	24
Wool, unmanufactured, not otherwise provided for	30	24
Wool costing 20 cents or less per pound	30	Free.
Woolen and worsted yarn	25	19
Wool hats; see *Hats of Wool*	20	15
Wool hat bodies; see *Hat Bodies of Wool*	20	15
Woolen flattings	20	15
Worsted manufactures; see *Manufactures of Worsted*	25	19
Works, foreign, in course of republication; see *Periodicals*	20	15
Yams	20	15
Yarn, woolen and worsted; see *Woolen and Worsted Yarn*	25	19
Yellow acid; see *Acids, acetic*, etc.	20	4
Zinc, sulphate of; see *White Vitriol*	20	15
Zinc, spelter or tenenegue, in sheets	15	12
Zinc, spelter, or tenenegue, unmanufactured	5	4

—For discussions on Protective Tariff, see *North American Review*, xi. 223 (E. EVERETT), xxx. 160, xxxii. 127 (A. H. EVERETT), xxxv. 265, lxxiii. 90 (BOWEN); *American Whig Review*, ii. iii. (GREELEY), lv. 215, 410, iii. 335, v. 313; *Edinburgh Review*, lxxii. 221; *Democratic Review*, vii. 341, ix. 329, x. 357, xiv. 291, 447; *American Quarterly Review*, x. 444, xi. 345; *Southern Quarterly Review*, ii. 582, vi. 206, viii. 213; NILES'S *Reg.*, vols. xvii., xix., xx., xxi., xxii., xxiii., xxiv.; *Southern Literary Messenger*, viii. 421. The speeches of Mr. Clay, Mr. Adams, and other statesmen, may be found in the volumes of NILES'S *Register*.

Tarpauling, a broad piece of canvas well daubed with tar, and used to cover the hatchways of a ship at sea, to prevent the penetration of the rain or sea-water which may at times rush over the decks.

Tartar (Gr. *ταρταρος, infernal;* because it is the sediment or dregs of wine), the substance which concretes upon the inside of wine-casks. It is called red and white *argol*, according to the wine from which it is obtained. When purified it is often called *cream of tartar:* it is a bitartrate of potash.—*See* ARGAL.

Tasman, Abel Jansen. History is silent in regard to the early days of this navigator and geographical discoverer. He was a Hollander by birth, and appointed by the Dutch East India Company to the command of three vessels which they had fitted out at Batavia for the discovery of new countries and a more extended commercial power. Tasman sailed September 5, 1642, and the first-fruits of his enterprise was the discovery of that part of New Holland called Van Diemen's Land, which the navigators made on 24th November. Early in December they set out again, and on the 13th they first saw the Islands of New Zealand, on which the natives successfully opposed his landing. After visiting several islands in the South Sea, some of which were previously unknown, he returned to Batavia, June 15th, 1643, having sailed round the southern hemisphere of the globe. The short-sighted policy of the Dutch East India Company prevented the publication of any account of this voyage, but a map or chart of the discoveries of Tasman was preserved at the Stadt House at Amsterdam, and some years after Dirk Rembranuts published an extract from the journal of this enterprising seaman, of which later geographical writers have been content to avail themselves. In 1856 a proposition was made in England to restore to the whole district hitherto (but unjustly)

known as Van Diemen's Land, the name of *Tasmania*, in meritorious honor of its original discoverer.

Tatta, a town in the territory of Sinde, situated about 60 miles in a direct line from the sea, at a short distance from the western bank of the River Indus, in lat. 24° 44′ N., long. 68° 17′ E. Population uncertain, probably about 8000. The streets are narrow and dirty; but the houses, though built of mud, chopped straw, and timber, are superior to the low huts seen in the adjoining towns and villages. Being situated a little above the part where the Indus divides into the two great branches by which its waters are poured into the Indian Ocean, it might be supposed that Tatta would be a place of great trade. But, owing to the unwholesomeness of the climate, the barbarism of the tribes on its banks, and other causes, its commerce has never corresponded with what might have been anticipated, looking at its position on the map. It had probably attained the acme of its prosperity in the beginning of the 16th century. In 1555 the Portuguese, by way, as they stated, of avenging the treachery of the King of Sinde, inhumanly massacred 8000 of the inhabitants, and burned the town. —*Conquêtes des Portugais*, tome iv. p. 183. It is probable that Tatta never fully recovered from this dreadful blow; but Mr. Hamilton mentions that in the 17th century it was extensive and populous, possessing much commerce, with manufactures of silk, wood, and cabinet ware. The decayed state in which we now find it has been a consequence of the misgovernment and rapacity of its present rulers, the Ameers of Sinde, under whose sway it fell more than 50 years ago. In 1635 the English established a factory at Tatta, in the view of facilitating the disposal of woolens and other goods in the countries traversed by the Indus; and the building occupied by the factory, though far from magnificent, was recently, if it be not still, the best, not in Tatta only, but in the whole country of Sinde. The chief exports are rice, shawls from Cashmere, opium from Malwah, hides, ghee, cotton, goats' wool, carpets, drugs, etc. Putchock, an article largely consumed in China, is a peculiar export of Sinde. The imports comprise a variety of articles, but the quantities are trifling: they consist principally of spices, dye-stuffs, hardware, tin, iron, etc., broadcloths, English cottons, silks, etc. But at present the trade is quite inconsiderable; and no one could believe, *à priori*, that the natural emporium of so great a river as the Indus, traversing many extensive countries, would cut so insignificant a figure in the trading world.

A very well-informed party, Dr. Buist, editor of the *Bombay Times*, has, in his work on the late expedition into Afghanistan, made the following observations on the trade of the Indus:

"The glowing descriptions of Burnes appear to have given a very exaggerated idea of the value of the internal traffic of the countries beyond the Indus. It was forgotten that where there was no industry, no manufactures or mineral wealth, no sea-coast or rivers to permit exportation, there could be little or nothing to give in exchange for imports; and that the wants of a population purely nomade must at all times be simple and singularly few. The whole of our commerce with Persia has never exceeded two millions sterling a year, rarely above one; the total of our trade with Afghanistan certainly never exceeded a million annually, and has very rarely amounted to much more than the half of one. Besides this, the Indus in reality was never closed save by its own dangerous entrances and shallow depth of water. Lord Ellenborough has opened the Indus as far as Mithen Kote; and the Sutlej, in continuation of this, to the Markunda, where it ceases to be navigable for the smallest craft. Yet the gross value of the British goods consumed by the countries adjoining does not at present amount to a quarter of a million sterling, and will not, in all likelihood, be doubled for ten years to come; the expense of maintaining troops between Kurrachee and Bukkur, both stations included, exceeding £600,000 a year; with a less force it would be unwise to think of keeping these stations at all. The great line of traffic was not along but across the Indus, by the Delhi frontier, or parallel to it at a distance of 100 miles, by Sonmeanee and Kelat. The countries beyond the Indus, besides, have always been open to the free admission of every variety of foreign imports on paying a moderate fixed duty. The chief obstruction in reaching these is irremediable by treaty, and arises from the attacks of the plundering tribes in the passes, which can not be restrained save by the payment of a black mail or subsidy."

The delta of the Indus has little in common with the delta of the Nile, except its shape. Not a fourth part of it is cultivated, and its few inhabitants principally lead a pastoral life. It is overgrown with tamarisks and other wild shrubs; and though intersected by the numerous mouths of the river, its surface is dry and arid, being almost destitute of fresh water.

Tax (Welsh *Tasg;* Fr. *Taxe;* Du. *Taxe*), a rate or duty laid by government on the income or property of individuals; an impost, a tribute, or an excise, according to the method of collecting, or the property from which collected. The first taxes levied on the people were by Solon, the first Athenian legislator, 540 B.C. The first class of citizens paid an Attic talent of silver, about £55 sterling. The next was by Darius, the son of Hystaspes, which was a land-tax by assessment, and deemed so odious that his subjects styled him, by way of derision, "Darius the Trader," 480 B.C.—D'Eon's *Historie des Finances*. Taxes in specie were first introduced in England by William I., 1067, and he raised them arbitrarily; yet subsidies in kind, as in wool, corn, and other products of England, continued till the accession of Richard II., 1377.—Haydn.

The following table exhibits the several taxes of all the states of which there are any returns, and shows the aggregate of the taxes of each state, and also of the separate species of tax:

Annual Taxes in the United States, 1850.

States.	State.	County.	School.	Poor.	Road.	All others.	Total.
Alabama	$428,690	$202,900	$7,519	$2,904	$3,000	$12,029	$668,446
Connecticut	67,947	1,101	48,669	80,444	80,117	288,065	566,343
Florida	58,616	23,630	105	....	....	2,876	85,287
Georgia	292,707	156,061	15,728	14,027	1,388	42,571	522,482
Indiana	552,463	449,616	96,786	54,838	171,554	58,153	1,383,360
Maine	381,911	141,705	234,842	102,747	563,887	327,945	1,753,037
Mississippi	779,163	436,993	81,106	7,401	4,698	80,979	1,340,100
New Hampshire	77,313	84,854	144,178	150,745	250,913	200,993	908,990
New Jersey	....	190,685	62,796	54,591	119,614	171,808	599,404
New York	....	....	....	....	....	....	7,100,255
North Carolina	114,086	144,189	42,340	66,102	660	87,906	455,343
Pennsylvania	1,536,699	1,089,272	840,066	358,757	816,867	847,891	6,089,455
Rhode Island	16,951	....	56,937	45,587	29,077	198,559	347,111
South Carolina	373,421	....	....	49,143	20,817	188,781	632,162
Texas	74,936	25,055	....	....	....	31,329	131,318
Vermont	138,538	8,578	88,930	90,809	247,801	149,763	719,414
Virginia	368,640	220,385	45,097	110,077	20,309	352,385	1,126,852
Wisconsin	93,982	151,835	75,980	9,194	72,108	167,375	570,469
Total, eighteen States...	....	....	....	....	....	....	$25,055,129

Adam Smith lays down four general maxims upon the subject of taxation, which are as follows: "1. The subjects of every state ought to contribute toward the support of the government as nearly as possible in proportion to their respective abilities; that is, in proportion to the revenue which they respectively enjoy under the protection of the state. 2. The tax which each individual is bound to pay ought to be certain, and not arbitrary. The time of payment, the manner of payment, the quantity to be paid, ought all to be clear and plain to the contributor, and to every other person. 3. Every tax ought to be levied at the time, or in the manner most likely to be convenient for the contributor to pay it. 4. Every tax ought to be so contrived as both to take out and keep out of the pockets of the people as little as possible over and above what it brings into the public treasury of the state."

The subject of taxation is ably discussed in the *Edinburgh Review*, xxxiii. xc.; *Democratic Review*, xx.; *Quarterly Review*, xxxv.; *American Quarterly Register*, viii. For further articles, see De Bow's *Review*, xiii.; Hunt's *Merchants' Magazine*, iv.; *Southern Review*, viii.; *North American Review*, xix. (De Ponceau); *Western. Review*, xlvi., xli.

Tea (in one Chinese dialect, *Cha*, in another *Te*; Du. *Te*; Fr. *Thé*; It. *Te*; Russ. *Tchai*; Hind. *Cha*; Malay, *Teh*), the leaves of the tree or shrub (*Thea viridis*, Linn.). The tea-plant ordinarily grows to the height of from three to six feet, and has a general resemblance to the myrtle, as the latter is seen in congenial situations in the southern countries of Europe. It is a polyandrous plant, of the natural order *Columniferæ*, and has a white blossom, with yellow style and anthers, not unlike those of a small dog-rose. The stem is bushy, with numerous branches, and very leafy. The leaves are alternate, on short, thick, channeled footstalks, evergreen, of a longish elliptic form, with a blunt, notched point, and serrated except at the base. These leaves are the valuable part of the plant. The *Camellias*, particularly the *Camellia sasanqua*, of the same natural family as the tea-tree, and very closely resembling it, are the only plants liable to be confounded with it by a careful observer. The leaves of the particular camellia just named are, indeed, often used in some parts of China as a substitute for those of the tea-tree. The effects of tea on the human frame are those of a very mild narcotic; and, like those of many other narcotics taken in small quantities—even of opium itself—they are exhilarating. The green varieties of the plant possess this quality in a higher degree than the black; and a stronger infusion of the former will, in most constitutions, produce considerable excitement and wakefulness. Of all narcotics, however, tea is the least pernicious; if, indeed, it be so in any degree, which we very much doubt.

The tea shrub may be described as a very hardy evergreen, growing readily in the open air, from the equator to the 45th degree of latitude. For the last sixty years it has been reared in this country, without difficulty, in green-houses; and thriving plants of it are to be seen in the gardens of Java, Singapore, Malacca, and Penang; all within six degrees of the equator. The climate most congenial to it, however, seems to be that between the 25th and 23d degrees of latitude, judging from the success of its cultivation in China. For the general purposes of commerce, the growth of good tea is confined to China; and is there restricted to five provinces, or rather parts of provinces; viz., Fokien and Canton, but more particularly the first, for black tea; and Kiang-nan, Kiang-si, and Che-kiang, but chiefly the first of these, for green. The tea districts all lie between the latitudes just mentioned, and the 115th and 122d degrees of east longitude. However, almost every province of China produces more or less tea, but generally of an inferior quality, and for local consumption only; or when of a superior quality, like some of the fine wines of France, losing its flavor when exported. The plant is also extensively cultivated in Japan, Tonquin, and Cochin-China; and in some of the mountainous parts of Ava; the people of which country use it largely as a kind of *pickle preserved in oil!* Botanically considered, the tea-tree is a single species; the green and black, with all the diversities of each, being mere varieties, like the varieties of the grape, produced by difference of climate, soil, locality, age of the crop when taken, and modes of preparation for the market. Considered as an object of agricultural produce, the tea-plant bears a close resemblance to the vine. In the husbandry of China, it may be said to take the same place which the vine occupies in the southern countries of Europe. Like the latter, its growth is chiefly confined to hilly tracts, not suited to the growth of grain. The soils capable of producing the finest kinds are within given districts, limited and partial. Skill and care, both in husbandry and preparation, are quite as necessary to the production of good tea as to that of good wine.

Cultivation.—The best wine is produced only in particular latitudes, as is the best tea; although, perhaps, the latter is not restricted to an equal degree. Only the most civilized nations of Europe and America have as yet succeeded in producing good wines; which is also the case in the East with tea; for the agricultural and manufacturing skill and industry of the Chinese are there unquestionably pre-eminent. These circumstances deserve to be attended to in estimating the difficulties which must be encountered in any attempt to propagate the tea-plant in colonial or other possessions. These difficulties are obviously very great, and perhaps all but insuperable. Most of the attempts hitherto made to raise it in foreign countries were not, indeed, of a sort from which much was to be expected. Within the last few years, however, considerable efforts have been made by the Dutch government of Java to produce tea on the hills of that island; and having the assistance of Chinese cultivators from Fokien, who form a considerable part of the emigrants to Java, a degree of success has attended them, beyond what might have been expected in so warm a climate. The Brazilians have made similar efforts; having also, with the assistance of Chinese laborers, attempted to propagate the tea shrub near Rio de Janeiro; and a small quantity of tolerably good tea has been produced. But owing to the high price of labor, and the quantity required in the cultivation and manipulation of tea, there is no probability, even were the soil suitable to the plant, that its culture can be profitably carried on in that country. It may, perhaps, succeed in Assam, where its culture is now being attempted; for labor is there comparatively cheap, and the hilly and table-lands are said to bear a close resemblance to those of the tea districts of China; but we are not sanguine in our expectations as to the result.

Cultivation of the Tea-plant in the United States.—This plant, which has so long afforded a most grateful beverage to millions of people in every civilized country of the globe, there is much reason to believe, may be successfully cultivated in favorable situations and under proper management, for local consumption, at least, in most, if not all of our Southern States. This was partially realized from an experiment made at Greenville, in the mountainous parts of South Carolina, by the late Junius Smith, in 1848 to 1852. He imported several cases of black and green tea plants, of Chinese stock, of from five to seven years' growth, and planted them in the village above named, where they remained about two years. On their removal to a plantation in that vicinity, in March, 1851, Dr. Smith stated that "they grew remarkably last summer, and are now fully rooted, with fine large main and collateral roots, with an abundance of fibrous radicles. They all stood the snow, eight or nine inches deep upon the level on the 3d of January, and the severe frosts of winter, without the slightest covering or protection,

and without the loss of a single plant. They are now all forming part of the plantation, composed of those received from China last June, and a few planted the first week in June, which germinated the 17th of September. All these young plants were thinly covered with straw. Some of them have lost their foliage; others have not. The stems do not appear to have sustained any injury. The fresh buds are beginning to shoot. I can not help thinking that we have now demonstrated the adaptation of the tea-plant to the soil and climate of this country, and succeeded in its permanent establishment within our borders."

Considering the practical bearing this subject has on the economy and agricultural interests of our Southern States, it is surprising that a single herb, which has proved of such universal acceptance, should retain this position in the world for centuries, and yet still continue to be restricted in its production almost entirely to the country of its origin, although corresponding regions, with respect to latitude, elevation above the sea, and other circumstances which modify the climate, are open to its introduction and culture, and the most intelligent, as well as the most enterprising merchants and others have ever sought to learn every fact connected with its growth and subsequent preparation. Though regarded, in general, as a luxury, and by some even as food, yet it is not an article from which the people of any country should be debarred. On the contrary, it is the policy in this case, as well as in most others, of every government to gratify the wishes of its people, and to facilitate the acquisition of this luxury by its economical importation, or, what would be far more desirable, to extend the production to its own soil. Respecting the expediency of such a measure in this country as that last named, little more need be stated than that most of our citizens will have it, and millions of dollars will annually be paid for its importation. To the argument which has often been advanced, that the very low rate of wages in China is the reason why the production of tea has not been encouraged in this country, it may be stated that, with improved machinery and other appliances, facility of transportation, robust and well-fed laborers, and probably with the aid of the Chinamen now in California, there can be little doubt that we can successfully compete, at least for local consumption, with the primitive utensils, tedious manipulations, and absence of railroads, canals, steam navigation, and even of common roads, of the enfeebled and poorly-fed Asiatics. The cost of the transportation of tea in China, say at a distance, upon an average, from the plantations to Canton, the port of shipment, of 800 to 1000 miles, at a waste of from six weeks' to two months' time, whole cargoes being constantly carried upon the backs of porters, is about four cents a pound, or about one-third of its value at the place of its growth. It is supposable that in no part of the United States, at a corresponding distance from the sea-board, would the cost of carriage be equal to one-fourth of that sum, or occupy one-tenth of the time. Dr. Jameson, superintendent of the tea plantations of the East India Company, on the Himalayan Mountains, in his report of 1847, remarks that the task-work of one laborer is to dress, weed, and keep in order three acres of tea land. In our Middle and Southern States one hand cultivates annually, and keeps in order, six acres of cotton, or fifteen of Indian corn. Therefore, assuming the amount of time for cultivating the respective crops to be equal, the American laborer would perform more than double the amount of work done by the Hindoo, which, undoubtedly, is about the difference in their physical force.

The tea-plant is not only found in China and Japan, chiefly in a cultivated state, but is indigenous in the mountains which separate China from the Burmese territories, especially in Upper Assam, bordering on the province of Yun-nan. It is also cultivated in Nepal, at an elevation of four thousand seven hundred and eighty-four feet above Bengal, in latitude 27° 42′ N.

Before proceeding in the inquiry, it would be desirable to ascertain whether one or several species of the genus *Thea* yield the several varieties of tea, as this might explain some of the discrepancies in the accounts respecting the soil and climate required for its cultivation. Some authors, among whom are Mr. Fortune and Dr. Lettsom, who traveled extensively in China, and had ample opportunities for investigating this subject, consider that all the varieties of tea may be obtained from the same plant, and that the differences are therefore due to the soil or climate, or to the age of the leaf and the mode of preparation. Others, on the contrary, are of the opinion that they are produced from at least two distinct species, *Thea viridis* and *Thea bohea*. There is no doubt, however, that the plants usually known as "Green" and "Black," when cultivated under similar circumstances, retain permanently their characteristics, and that their leaves, respectively, generally resemble those obtained after infusing good specimens of green and black tea. The green-tea-plant, moreover, is much more hardy than the black; one of the former having lived twenty years in the open air, near London, and being only killed in the very severe winter of 1837–'38, when the thermometer fell to 4½° F. Yet, from the great extent of territory over which the tea-plant is found, and from the variety of situations in which it is produced, there can be but little doubt that it is grown in very different soils, though there are, doubtless, certain physical conditions that are best suited to the production of the finest-flavored teas.

The tea-plant loves to grow in valleys, at the foot of mountains, and upon the banks of streams, where it enjoys a southern exposure to the sun, though it endures considerable variations of dryness and moisture, and of heat and cold; for it flourishes in the climate of Pekin, in latitude 40°, as well as about Canton, in 23° 8′ N.; and it is observed that the degree of cold at the former place is nearly as severe in winter as it is in some of our Middle States. The best tea, however, grows in a mild, temperate climate, the country about Nankin producing a better article than either Pekin or Canton. Mr. Bruce, who traveled in Upper Assam in 1836, describes the tea districts as consisting of little mounds or hillocks of earth, on which large trees had grown, their roots alone appearing to save them from being washed away. One thing he observes as worthy of notice, that all the Assam tea grows near water, of which it appears to be very fond, for wherever there is a small stream tea is sure to be found. He subsequently discovered, however, that tea plantations in that country were very extensive, both on the hills and in the plains. But excessive moisture, either in the soil or in the air, is not congenial to the growth of the tea-plant, as it is evident from its preference for sandy or porous soils, or the moulds, in the moist climate of Assam, but which probably would not be requisite where the climate is dry.

Mr. Fortune, who had frequent opportunities to inspect some of the most extensive tea districts of Canton, Yokein, and Chekiang, states that the soil of those of the northern provinces is much richer than it is in Quantung. "Tea shrubs," he says, "will not succeed well unless they have a rich sandy loam to grow in. The continual gathering of their leaves is very detrimental to their health, and, in fact, ultimately kills them. Hence a principal object with the grower is to keep his bushes in as robust health as possible; and this can not be done if the soil be poor. The tea plantations in the north of China are always situated on the lower and most fertile sides of the hills, and never on the low lands. The shrubs are planted in rows, about four feet apart, and about the same distance between each row, and look at a distance like little shrubberies of evergreens. The farms are small,

each consisting of from one to four or five acres; indeed, every farmer has his own little tea garden, the produce of which supplies the wants of his family, and the surplus brings him in a few dollars that are spent on the other necessaries of life." In Japan, tea is planted around the borders of fields, without regard to situation or soil.

Species of Tea.—The tea-plants are raised from nuts, or seeds, usually sown where they are to remain. Three or more are dropped into a hole, and covered with earth four or five inches deep; these come up without any further trouble, and require little culture, except that of removing weeds. The leaves are not collected from the cultivated plants until they are three years old; and, after growing nine or ten years, they are cut down, in order that the young shoots, which will then rise, may afford a greater supply of leaves. The best time to gather the tea is while the leaves are small, young, and juicy. The first gathering usually commences at about the end of February, when the leaves are young and unexpanded; the second about the beginning of April; and the third in June. The first collection, which only consists of fine tender leaves, is most esteemed, and is called by us "Imperial" tea. The second is denominated "Tootsjea," or Chinese tea, because it is infused and imbibed after the Chinese manner. The last gatherings, which are the coarsest and cheapest of all, are drunk by the people of the lowest class. Besides the three kinds of tea named above, it may be observed that, by sorting these, the varieties become still further multiplied. The Chinese, however, know nothing of "Imperial" tea, "Flower" tea, and many other names, which in Europe and America serve to distinguish the quality and the price of the article; but, besides the common tea, they distinguish two other kinds, namely, the "Voui" and "Soumlo," which are reserved for people of the first order of society, and for those who are sick. The principal varieties used in Europe and in this country are the "Green" tea, which is the "Hing," or common tea of the Chinese, and is gathered in April; the "Voui," or "Vou-tche," a delicate kind of "Young Hyson," which differs only from the other in being gathered a few weeks earlier, and consists of the young leaf-buds just as they begin to unfold; and the various descriptions of "Black" tea, which diminish in quality and value as they are collected later in the season, until they reach the lowest kind, called by us "Bohea," and by the Chinese "Ta-cha," or large tea, on account of the maturity and size of the leaves. The early leaf-buds, in spring, being covered with a white, silky down, are gathered to make "Pekoe," a corruption of the Canton word *Pa-ho*, white down. A few days' later growth produces what is sometimes styled "Blackleaved Pekoe." The more fleshy and matured leaves constitute "Souchong;" as they grow still larger and coarser, they form "Congo;" and the last and latest picking of all is the "Bohea." The variety named above, called "Voui," is a scarce and expensive article, and the picking of the leaves in so young a state does considerable injury to the plantations. The summer rains, however, which fall copiously about this season, moisten the earth and air, and, if the plants are young and vigorous, they soon push out fresh leaves.

The process of gathering tea is one of great nicety and importance. Each leaf is plucked separately from the twig; the hands of the gatherer are kept clean; and in collecting some of the finer sorts, it has been stated, upon credible authority, that he is obliged for some weeks previous to abstain from all gross food, lest his breath or perspiration might injure the flavor; to wear fine gloves while at work, and to bathe two or three times a day during this period. In the general harvest seasons, the natives are seen in little family groups on the side of every hill, when the weather is dry, engaged in gathering the tea leaves, which are stripped off rapidly and promiscuously into round baskets, made for the purpose, of split bamboo or rattan. When a sufficient quantity is gathered, it is carried home to the cottage or barn, where the operation of drying is performed. The Chinese dislike gathering the leaves on a rainy day for any description of tea, and never will do so unless necessity requires it. Some even pretend to distinguish the teas made on a rainy day from those made on a sunny day. The process of rolling and drying the leaves, it is stated, can only be learned by actual experience; yet the system adopted to attain this end is as simple as it is efficacious. Let it be borne in mind, however, that the grand object is to expel the moisture, and at the same time to retain as much as possible of the aromatic and other desirable secretions.

As to the differences of flavor and color peculiar to the green and black teas, it is well known that, in many instances, they are produced by art. In describing the green teas grown in the districts of Chekiang, Mr. Fortune remarks that "it must not be supposed that they are the green teas which are exported. The leaf has a much more natural color, and has little or none of what we call the beautiful bloom upon it, which is so much admired in Europe and America. There is now no doubt that all these blooming green teas, which are manufactured at Canton, are dyed with Prussian blue and gypsum, to suit the tastes of the 'foreign barbarians!' Indeed, the process may be seen any day during the season by those who will give themselves the trouble to seek after it. It is very likely that the same ingredients are also used in dyeing the northern green teas for the foreign market." The Chinese, it is asserted, never use these dyed teas themselves; and certainly their taste in this respect is more correct than ours. It is not to be supposed that the dye employed can produce any very bad effects upon the consumer, for, had this been the case, it would have long since been discovered. As to the opinion that green tea owes its verdure to an inflorescence acquired from plates of copper, on which it is supposed to be curled or dried, there is no foundation for the suspicion, as the infusions undergo no change on the addition of volatile alkali, which would detect the minutest portion of copper by turning the liquors blue. And, besides, the drying pans and furnaces used throughout China for this purpose are said to be invariably made of sheet-iron.—*Patent Office Report.*

Adulteration of Tea.—It might have been anticipated, from the high price of and the high duties in some countries on tea, and the facility with which it may be mixed up with foreign substances, that it would not escape adulteration; and the records of the courts of justice show that this is the case, several dealers having been convicted of this pernicious practice. The adulteration is usually effected either by the intermixture of sloe or ash leaves with fresh teas, or by mixing the latter with tea that has been already used. The penalties on such offenses are not specific; and the best, or rather the only, security on which any reliance can be placed, is to be found in the character and respectability of the parties dealing in tea. Even were he influenced by nothing else, it would be extreme folly in any person carrying on an extensive business to engage in such dishonest practices, for they can hardly fail of being detected; and the ruin of his business that would follow such exposure would far more than balance whatever gains he could hope to make by his fraudulent schemes.

Tea Trade in China.—The tea merchants commonly receive advances from the principal merchants and other capitalists of Canton; but, with this exception, are altogether independent of them; nor have the latter any exclusive privilege or claim of pre-emption. They are very numerous; those connected with the green-tea districts alone being about four hundred in number. The black-tea merchants are less numerous, but more wealthy. The greater part of the tea is

brought to Canton by land carriage or inland navigation, but chiefly by the first. It is conveyed by porters; the roads of China, in the southern provinces, not generally admitting of wheel carriages, and beasts of burden being very rare. A small quantity of black tea is brought by sea, but probably smuggled; for this cheaper mode of transportation is discouraged by government, which it deprives of the transit duties levied on inland carriage. The length of land carriage from the principal districts where the green teas are grown to Canton is probably not less than 700 miles; nor that of the black tea, over a mountainous country, less than 200 miles. The tea merchants begin to arrive in Canton about the middle of October, and the busy season continues until the beginning of March; being briskest in November, December, and January. Tea, for the most part, could, previously to the late changes, only be bought from the hong or licensed merchants; but some of these, the least prosperous in their circumstances, were supported by wealthy *outside* merchants, as they are called; and thus the trade was considerably extended. The prices in the Canton market vary from year to year with the crop, the stock on hand, and the external demand, as in any other article and in ar other market. After the season is over, or when the westerly monsoon sets in, during the month of March, and impedes the regular intercourse of foreigners with China, there is a fall in the price of tea, not only arising from this circumstance, but from a certain depreciation in quality, from the age of the tea; which, like most other vegetable productions, is injured by keeping, particularly in a hot and damp climate.

There seems to be little mystery in the selection and purchase of teas; for the business is both safely and effectively accomplished, not only by the supercargoes of the American ships, but frequently by the masters; and it was ascertained by the sales at the East India House, that there was no difference between the qualities of the teas purchased by the commanders and officers of the company's ships, without assistance from the officers of the factory, and those purchased for the company by the latter. An unusual degree of good faith, indeed, appears to be observed on the part of the Chinese merchants with respect to this commodity; for it was proved before the select committee of the House of Commons, in 1830, that it was the regular practice of the hong merchants to receive back, and return good tea for, any chest or parcel upon which any fraud might have have been practiced, which sometimes happens in the conveyance of the teas from Canton on board ship. Such restitution has occasionally been made, even at the distance of one or two years. The company enjoyed no advantage over other purchasers in the Canton market except that which the largest purchaser has in every market, viz., a selection of the teas, on the payment of the same prices as others; and this advantage they enjoyed only as respects the black teas, the Americans being the largest purchasers of green teas.

We herewith subjoin a table for calculating the cost of tea:

COMPARISON OF THE COST OF TEA PER PICUL (133⅓ LBS. AVOIRDUPOIS), WITH THE RATE PER POUND, AND TON OF 9 CWT. OR 1008 POUNDS PER TON.

Per Picul.	Exchange 4s. per Dollar.		Exchange 4s. 3d. per Dol.		Exchange 4s. 4d. per Dol.		Exchange 4s. 5d. per Dol.		Exchange 4s. 6d. per Dol.	
	Per Lb.	Per Ton.	Per Pound.	Per Ton.	Per Ton.	Per Pound.	Per Ton.	Per Pound.	Per Ton.	Per Pound.
Taels.	Pence.	£ s. d.	Pence.	£ s. d.	Pence.	£ s. d.	Pence.	£ s. d.	Pence.	£ s. d.
20 =	10	42 0 0	10·625	44 12 6	10·833	45 10 0	11·042	46 7 6	11·250	47 5 0
21 =	10½	44 2 0	11·156	46 17 1½	11·375	47 15 6	11·594	48 13 10½	11·813	49 12 3
22 =	11	46 4 0	11·687	49 1 9	12·916	50 1 0	12·146	51 0 3	12·375	51 19 6
23 =	11½	48 6 0	12·219	51 3 4½	12·458	52 6 6	12·698	53 6 7½	12·936	54 6 0
24 =	12	50 8 0	12·750	53 11 0	13·000	54 12 0	13·250	55 13 0	13·500	56 14 0
25 =	12½	52 10 0	13·281	55 15 7½	13·541	56 17 6	13·802	57 19 4½	14·063	59 1 3
26 =	13	54 12 0	13·812	58 0 3	14·083	59 3 0	14·354	60 5 9	14·625	61 8 6
27 =	13½	56 14 0	14·344	60 4 10½	14·625	61 8 6	14·906	62 12 1½	15·188	63 15 9
28 =	14	58 16 0	14·875	62 9 6	15·166	63 14 0	15·458	64 18 6	15·750	65 3 0
29 =	14½	60 18 0	15·406	64 14 1½	15·708	65 19 0	16·010	67 4 10½	16·313	68 10 3
30 =	15	63 0 0	15·937	66 18 9	16·250	68 5 0	16·562	69 11 3	16·875	70 17 6
31 =	15½	65 2 0	16·469	69 3 4½	16·791	70 10 6	17·114	71 17 7½	17·438	73 4 9
32 =	16	67 4 0	17·000	71 8 0	17·333	72 16 0	17·666	74 4 0	18·000	75 12 0
33 =	16½	69 6 0	17·531	73 12 7½	17·875	75 1 6	18·218	76 10 4½	18·563	77 19 3
34 =	17	71 8 0	18·062	75 17 3	18·416	77 7 0	18·770	78 16 9	19·125	80 6 6
35 =	17½	73 10 0	18·594	78 1 10½	18·958	79 12 6	19·323	81 3 1½	19·688	82 13 0
36 =	18	75 12 0	19·125	80 6 6	19 500	81 18 0	19·875	83 9 6½	20·250	85 1 0
37 =	18½	77 14 0	19·656	82 11 1½	20·041	84 3 6	20 427	85 15 10½	20·813	87 8 3
38 =	19	79 16 0	20·187	84 15 9	20·583	86 3 0	20·979	88 2 3	21·375	89 15 6
39 =	19½	81 18 0	20·719	87 0 4½	21·125	88 14 6	21·531	90 8 7½	21·938	92 2 9
40 =	20	84 0 0	21·250	89 5 0	21·666	91 0 0	22·083	92 15 0	22·500	94 10 0

Thus, 4*s.* 3*d.* per dollar, 1 tael per picul is equal to ½*d.* per pound.

USUAL NET WEIGHT AND MEASUREMENT OF A CHEST OF DIFFERENT DESCRIPTIONS OF TEA.

	Weight.		Solid Meas.
Bohea, whole chests....	catties 138		feet 8·956
" half "	" 84		" 5·416
" quarter "	" 46		" 3·374
Congo, chests.....	" 63 to 64		" 4·325
Souchong.....	" 60 " 62		" 4·025
Pekoe.....	" 49 " 50		" 4·333
Hyson	" 48 " 50		" 4
Hyson skin	" 48 " 50		" 4·125
Twankay, long chests..	" 62 " 65		" 4·864
Gunpowder.....	" 80 " 84		" 4·100
Imperial	" 70 " 74		" 4·074
Young hyson	" 70 " 72		" 4·220

Consumption of Tea in Europe.—Of the Continental states, Russia and Holland are the only ones in which the consumption of tea is considerable. In 1818 the imports of tea into Russia amounted to 253,429 poods, or 9,123,444 pounds, in chests, and 116,249 poods in bricks. The former consists almost entirely of the finest varieties of black tea. The consumption of tea in Holland amounts to about 3,000,000 pounds a year, the duty on which varies from 1½*d.* to 4½*d.* per pound. The consumption of France does not exceed 350,000 pounds. The importations into Hamburg vary between 1,500,000 and 2,000,000 pounds, the greater part of which is forwarded to the interior of Germany.

IMPORTS OF TEA IN THE UNITED KINGDOM IN 1851 AND 1852.

Description of Tea.	1851. Pounds.	1852. Pounds.
Bohea	2,000	....
Congo	51,055,000	48,106,000
Pouchong	44,000	15,000
Caper { plain	91,000	100,000
Caper { scented	1,455,000	1,018,000
Souchong, Oolong, etc.	4,792,000	2,160,000
Flowery and black leaf pekoe .	825,000	822,000
Orange pekoe { plain	40,000	42,000
Orange pekoe { scented	3,444,000	2,694,000
Twankay.....	115,000	341,000
Hyson skin	49,000	88,000
Hyson	957,000	809,000
Young Hyson	2,744,000	2,561,000
Imperial	409,000	393,000
Gunpowder	4,857,000	4,083,000
Sorts and Assam tea.....	621,000	652,000
For exportation only	....	7,000
Total	71,500,000	64,700,000
Black.....	62,214,000	55,586,000
Green.....	9,286,000	9,314,000

The Tea Trade of the United States.—Tea is the chief article imported from China into the United States. The consumption of the United States amounts to from

30,000,000 to 32,000,000 pounds a year. Duties on tea used to form one of the largest items of American revenue, having in some years produced $3,250,000. Their magnitude, however, was justly complained of; and it is probably owing to this circumstance that, while the consumption of tea was for several years pretty stationary in the United States, that of coffee increased with even greater rapidity than in England. The Secretary of the Treasury of the United States, in his Report for 1827, observed: "The use of tea has become so general throughout the United States, as to rank almost as a necessary of life. When to this we add that there is no rival production at home to be fostered by lessening the amount of its importation, the duty upon it may safely be regarded as too high. Upon some of the varieties of the article it considerably exceeds 100 per cent., and is believed to be generally above the level which a true policy points out. A moderate reduction of the duty will lead to an increased consumption of the article, to an extent that, in all probability, would in the end rather benefit than injure the revenue. Its tendency would be to enlarge our trade and exports to China—a trade of progressive value, as our cottons and other articles of home production (aside from specie) are more and more entering into it. It would cause more of the trade in teas to centre in our ports; the present rate of duty driving our tea ships not unfrequently to seek their markets in Europe, not in the form of reexportation, but in the direct voyage from China. It would also serve to diminish the risk of the United States losing any portion of a trade so valuable, through the policy and regulations of other nations." These judicious suggestions could not fail to command attention; and the flourishing state of the revenue in subsequent years having admitted of a very great reduction of duties, those on tea were wholly repealed. As was to be expected, the consumption has since rapidly increased. The whole imports from China to the United States in 1855 amounted to $11,048,726, of which tea covered $6,806,463. In 1854 the total imports reached $10,506,329, of which tea amounted to $6,545,115; and in 1853, $10,573,710, of which tea covered $8,174,670.

ESTIMATE, IN POUNDS' WEIGHT, OF THE QUANTITIES OF TEA EXPORTED BY SEA FROM CHINA IN 1851-'52, SPECIFYING THE COUNTRIES FOR WHICH THE SAME WERE SHIPPED, AND THE QUANTITY SHIPPED FOR EACH.

Countries.	Pounds.
The United Kingdom	65,160,000
The United States	34,347,000
Australia	8,829,000
Holland	3,000,000
India	500,000
Other places	2,200,000
Total	113,856,000

The exports of tea to Russia by land amount to 14,000,000 or 15,000,000 pounds a year.

The following tables afford a review of the quantities of tea imported into the United States from China since the commencement of that trade, so far as they can be gathered from various official returns:

Years.	Pounds.	Years.	Pounds.
1790	3,047,242	1802	4,209,823
1791	985,997	1803	6,053,529
1792	2,614,008	1804	3,622,898
1793	2,009,509	1805	5,119,441
1794	2,460,914	1806	6,870,806
1795	3,374,118	1807	8,108,774
1796	2,310,259	1808	4,812,638
1797	2,068,399	1809	1,482,690
1798	1,890,965	1810	7,839,457
1799	4,501,503	1811	5,018,118
1800	3,797,624	1812	3,050,089
1801	4,086,960		

Deducting the quantities ascertained to have been exported from the United States during the above period, we find the average annual consumption in the country to have been 3,350,000 pounds for twelve years, from 1801 to 1812, inclusive. From 1813 to 1820, inclusive, the total amount consumed or on hand can alone be given. It approximates very closely, however, the total amount imported during that period, and was as follows: Teas consumed or on hand, 26,717,917 pounds; or an average annual quantity of 3,339,740 pounds. The quantities of teas of all kinds imported into and exported from the United States, from 1821 to 1833, inclusive, together with the quantities retained for consumption, are shown as follows:

Years.	Imported.	Exported.	Consumed.
	Pounds.	Pounds.	Pounds.
1821	4,975,516	531,691	4,443,955
1822	6,689,434	1,338,846	5,305,588
1823	8,210,010	1,735,076	6,474,924
1824	8,934,487	1,148,868	7,785,619
1825	10,999,548	2,095,809	8,178,740
1826	10,009,900	1,908,672	8,100,228
1827	5,875,638	1,625,417	4,249,221
1828	7,707,427	1,417,846	6,289,581
1829	6,636,790	1,018,243	5,618,447
1830	8,609,415	1,736,324	6,873,091
1831	5,182,867	526,180	4 656,681
1832	9,906,606	1,279,262	8,627,344
1833	14 639,822	1,712,772	12,927,043

If from the imports are deducted the exports for each year, an average annual consumption, for the entire period, of 7,000,000 pounds will be given. The following statement shows the imports and exports of tea, the quantity remaining on hand or consumed each year, from 1834 to 1841, exclusive of 601,319 pounds imported during the entire period from other countries than China:

Years.	Imported.	Exported.	Consumed.
	Pounds.	Pounds.	Pounds.
1834	16,282,977	3,081,308	13,201,669
1835	14,415,572	2,082,866	12,332,706
1836	16,382,114	1,876,342	14,485,772
1837	16,082,884	2,508 286	14,475,598
1838	14,418,112	2,435,302	11,982,810
1839	9,549,817	1,592,033	7,757,784
1840	20,006,545	3,123,406	16,883,069
1841	11,560,301	660,832	10,899,469
Total	119,397,872	17,380,565	102,017,307

The preceding table will show that the average annual amount consumed, or retained on hand, during this period, was 12,752,163 pounds. The following statement exhibits the values of all imports from China into the United States from 1833 to 1841, inclusive, distinguishing the values of teas; together with the number of vessels and the tonnage employed in the trade:

Years.	Number of Vessels.	Tonnage.	Values of Imports.	Values of Teas.
1833	41	15,334	$7,511,570	$5,484,606
1834	43	15,551	7,892,927	6,217,949
1835	36	13,495	5,987,187	4 572,806
1836	43	16,418	7,324,816	5,342,811
1837	43	16,160	8,965,337	5,103,054
1838	29	11,821	4,764,536	3,317,156
1839	18	7,392	3,678,500	2,428,419
1840	35	14,774	6,040 829	5,427,010
1841	28	11,486	3,695,388	3,466,245
Total	315	122,954	$66,460,499	$42,290,053

From the preceding table it may be seen that the value of teas reached annually, during the period designated, about $4,698,894, and constituted 75 per cent. of the value of the entire imports; while the trade employed annually about thirty-five vessels, averaging 390 tons each. The preceding table is continued as follows, down to 1855, and exhibits generally the same proportion between the value of total imports from China into the United States and the value of teas:

Years.	Tonnage.	Values of Imports.	Values of Teas.
1842	12,488	$4,134,615	$4,367,101
1843	13,460	4,585,506	3,776,461
1844	15,399	4 931,225	4,075,191
1845	21,682	7,285,914	5,730,101
1846	19,245	6,573,881	5,022,600
1847	17,775	5,583,343	4,278,448
1848	24,383	8 083,406	6,217,111
1849	19,418	5 513,785	4,071,139
1850	22,414	6,503,462	4,585,720
1851	38,914	7,095,144	4,633,529
1852	78,085	10,509,250	7,144,500
1853	92,864	10,537,710	8,174,670
1854	70,426	10,506,329	6,545,115
1855	70,815	11,048,726	6,806,463

TEA EXPORTED FROM CHINA TO GREAT BRITAIN AND THE UNITED STATES, RESPECTIVELY, FOR A PERIOD OF TEN YEARS, ENDING JUNE 30, 1854.—(MADE UP FROM THE "CHINA MAIL.")

Years.	To Great Britain.	To United States.
	Pounds.	Pounds.
1845	53,570,200	20,762,558
1846	57,584,600	18,502,288
1847	53,365,000	18,171,625
1848	47,094,300	19,338,640
1849	47,242,700	18,672,300
1850	53,961,800	21,757,800
1851	64,020,100	28,760,800
1852	65,137,200	34,354,000
1853	72,906,100	40,074,500
1854	77,217,900	27,867,500

It will be noticed that these statistics agree with those given below, the latter being taken from the United States Treasury Reports.

TEA EXPORTED FROM CHINA TO GREAT BRITAIN, FRANCE, AND THE UNITED STATES, FROM 1821 TO 1840.—(FROM FRENCH AUTHORITIES.)

Years.	England.	France.	United States.	Total.
	Kilograms.	Kilograms.	Kilograms.	Kilograms.
1821	13,320,000	50,000	2,223,000	16,114,000
1822	12,315,000	14,000	2,987,000	15,316,000
1823	13,072,000	15,000	3,694,000	16,781,000
1824	14,802,000	6,000	4,010,000	18,318,000
1825	13,206,000	3,000	4,581,000	17,790,000
1826	13,428,000	151,000	4,533,000	18,112,000
1827	17,886,000	276,000	2,641,000	20,803,000
1828	14,706,000	....	3,460,000	18,166,000
1829	13,745,000	121,000	2,968,000	16,834,000
1830	14,854,000	9,000	3,863,000	18,226,000
1831	14,242,000	237,000	2,330,000	16,809,000
1832	14,260,000	47,000	4,452,000	18,758,000
1833	14,427,000	386,000	6,587,000	21,400,000
1834	14,413,000	648,000	7,319,000	22,380,000
1835	18,725,000	46,000	6,492,000	25,253,000
1836	21,800,000	116,000	7,341,000	29,277,000
1837	16,426,000	35,000	7,608,000	24,069,000
1838	19,187,000	124,000	6,485,000	24,796,000
1839	17,179,000	93,000	4,184,000	21,449,000
1840	12,610,000	264,000	9,063,000	21,937,000

In addition to the foregoing, large quantities of tea are exported from China to the Netherlands, Hanse Towns, the Levant, the Mediterrancan, and Russia. To the last-named country there were exported in 1839, 3,442,000 kilograms; and in 1840, 3,585,000 kilograms; which, added to the totals for 1839, will give for that year 24,891,000 kilograms; and for 1840, 25,522,000 kilograms.

"In the consumption of tea, the United States rank next to Great Britain. From 1815 to 1834 there were exported to the former, for consumption and re-exportation, 35,805,000 kilograms. In 1832, 4,023,000 kilograms, of which 20,000 kilograms were re-exported. In 1833-'34 the Americans exported from Canton for Europe 1,014,000 kilograms. Consumption in the United States has largely increased since tea was put on the free list of that country."

The following is a statement of the exports of tea from China to the United States for ten years, from 1845 to 1854, inclusive:

Year ending June 30.	Green.	Black.	Total.
	Pounds.	Pounds.	Pounds.
1845	13,812,099	6,950,459	20,762,558
1846, in 40 vessels	14,230,082	4,216,168	18,502,248
1847, in 37 "	13,853,132	4,318,496	18,171,628
1848, in 38 "	15,346,030	3,992,617	19,338,647
1849, in 37 "	13,818,700	4,853,600	18,672,300
1850, in 44 "	14,396,400	7,361,400	21,757,800
1851, in 64 "	15,205,700	13,315,100	28,760,800
1852, in 68 "	20,937,300	13,396,700	34,334,000
1853, in 72 "	26,489,800	14,484,700	40,074,500
1854, in 47 "	18,230,300	9,397,200	27,867,500

For the year ending June 30, 1855, the total number of pounds exported to the United States was 31,515,900, in forty-eight vessels, distributed among three ports, as follows:

	Pounds.
Canton	2,561,900
Foo-chow	5,500,800
Shanghai	23,553,200
Total, year 1854-'55	31,515,900

For the year ending June 30, 1856, it was 40,247,800 pounds, in fifty-eight vessels, distributed as follows:

	Pounds.
Canton	8,246,800
Foo-chow	10,878,900
Shanghai	21,121,100
Total, year 1855-'56	40,247,800

From July 1, 1856, to January 15, 1857, the exports to this country were 16,299,600 pounds.

	Pounds.
From Canton	997,500
From Foo-chow	5,857,200
From Shanghai	9,444,900
Total, 6½ months	16,299,600

The exports to Great Britain during the year 1855-'56 were 91,931,800 pounds; and from July 1, 1856, to January 15, 1857, 39,991,400 pounds.

EXPORTS OF TEA FROM THE UNITED STATES.

To	Year ending June 30.			
	1854.		1855.	
	Pounds.	Value.	Pounds.	Value.
England	816,918	$27,586	1,352,266	$478,631
Br. Am. Colonies	1,588,653	90,080	1,179,319	282,618
Canada	2,340,198	466,379	2,190 578	981,178
Other places	431,432	170,542	786,886	277,020
Total	5,177,196	$1,794,587	5,508,944	$2,019,442
Paying duty	4,408	1,307	60,560	16,947
Total	5,181,599	$1,795,894	5,569,504	$2,036,389

IMPORTS OF TEA INTO THE UNITED STATES.

From	Year ending June 30.			
	1854.		1855.	
	Pounds.	Value.	Pounds.	Value.
China	23,589,639	$6,545,115	24,866,615	$6,806,463
Other places	717,267	170,011	827,269	124,523
Total	24,306,906	$6,715,726	25,203,884	$6,950,986
Paying duty as non-producers	110,806	13,721	129,213	43,013
Total	24,417,712	$6,729,447	25,333,097	$6,973,999

IMPORTS OF TEA INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857, FROM PLACES OTHER THAN THAT OF ITS PRODUCTION, AND PAYING DUTIES AD VALOREM.

Whence imported.	Pounds.	Value.
Hamburg	23,698	$12,481
Holland	83	42
England	5,563	2,796
Scotland	30	9
Ireland	50	18
Canada	4,726	587
Other British North American Possess.	376	168
British West Indies	788	148
British Australia	1,000	223
British East Indies	576	25
France on the Atlantic	40	92
Cuba	2,040	165
Central Republic	814	167
Brazil	665	83
Sandwich Islands	1,474	153
China	360	226
Total	42,283	$17,315

IMPORTS OF TEA, THE GROWTH OF THE COUNTRIES EXPORTING IT, INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.—(FREE OF DUTY.)

Whence imported.	Pounds.	Value.
Dutch East Indies	21,193	$3,864
British East Indies	798,436	135,120
Philippine Islands	630	174
China	19,505,282	5,618,702
Total	20,325,541	$5,757,360

In England there are certain ports where teas may be imported. There are warehouses which may be approved of for the deposit of teas, and are to be exclusively appropriated to that purpose. No package shall be divided into smaller packages, except for the purpose of stores, nor shall the mixing of tea of any sort or sorts be permitted in the warehouses, either for home consumption or exportation. The packages shall be sorted and arranged in the warehouse by the occupier, according to their respective "chops" or "beds," so as to enable the officers to select from each the required number of packages for taring, and to ascertain the proper tare to be allowed on the package therein.

EXPORTS OF TEA, THE GROWTH OF FOREIGN COUNTRIES, FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported	Pounds.	Value.
Russian Poss. in North America..	23,037	$12,336
Swedish West Indies.....	66	44
Danish West Indies.....	11,560	4,235
Hamburg.....	111	55
Other German ports	195	67
Dutch Guiana.....	40	10
England	77,814	27,673
Gibraltar.....	360	144
Canada	2,070,113	876,661
Other British N. American Poss.	1,013,084	262,692
British West Indies.....	12,946	4,996
British Honduras	8,480	3,660
British Guiana.....	38	25
British Possessions in Africa	188	79
Other ports in Africa	8,657	2,829
British Australia	9,200	2,000
France on the Atlantic.....	250	100
French N. American Possessions.	32,307	8,686
French West Indies	350	140
Canary Islands	300	105
Cuba	5,489	1,700
Porto Rico	363	172
Portugal.....	22,383	10,199
Madeira	1,627	684
Cape de Verd Islands.....	1,068	388
Azores.....	21,164	10,152
Sardinia	4,036	1,605
Turkey in Europe	4,000	1,550
Turkey in Asia.....	1,820	619
Hayti.....	604	270
Mexico	34,609	9,907
Central Republic	168	71
New Granada	8,827	3,764
Venezuela.....	6,430	2,444
Brazil	282,079	123,873
Uruguay, or Cisplatine Republic.	23,500	8,997
Buenos Ayres, or Argentine Rep..	79,709	15,324
Chili.....	56,631	12,948
Peru.....	4,010	1,100
Sandwich Islands.....	13,728	2,728
China.....	23,000	3,877
Whale-fisheries.....	4,028	1,903
Total.....	3,867,479	$1,430,212
From warehouse.....	23,037	$12,336
Not from warehouse	3,844,442	$1,417,876

Duty on Teas.—Tea or coffee, shipped from the country of production, but not for a distinct and specific destination to persons or places in the United States, and transhipped at a foreign intermediate port for the United States, is, on importation, liable to a duty of 20 per cent. But if originally shipped in national vessels, or vessels placed on that footing by treaty, for a specific party and place in the United States, from the country of production, and so imported into the United States, these articles are entitled to free entry, although a mere transhipment may have taken place at a foreign intermediate port.

Tea or coffee, entitled to free entry when originally imported into the United States, afterward exported to a foreign port and brought back as part of the returning cargo of the exporting vessel, not having been landed abroad, is entitled to free entry on its reimportation under these circumstances. Tea and coffee, when imported direct from the place of their growth or production in American vessels, or in foreign vessels so entitled by reciprocal treaties, are exempt from duty.

Coffee, the product of a possession of the Netherlands, imported into the United States in a vessel of the Netherlands direct from such possessions, or from the Netherlands, is admitted free of duty under the tariff law of 1846, and the first article of the treaty between the United States and the Netherlands of August 26, 1852. Tea or coffee imported direct from the place of its production, in vessels of the kingdom of Prussia, and of the Hanseatic republics of Hamburg, Bremen, and Lübeck, is placed on the same footing with that imported in American or Dutch vessels.

Tea or coffee, the production of China, imported *via* Singapore, is admitted to free entry, if it be satisfactorily shown at the time of entry that it was laden on board the American importing vessel from Chinese boats or junks in Chinese waters, intended in good faith to be conveyed therein direct to a specified port of the United States, as its ultimate destination.

Teak Wood, or **Indian Oak**, the produce of the *Tectona grandis*, a large forest tree that grows in dry and elevated districts in the south of India, the Burman empire, Pegu, Ava, Siam, Java, etc. Teak timber is by far the best in the East; it works easily, and, though porous, is strong and durable; it is easily seasoned, and shrinks very little; it is of an oily nature, and therefore does not injure iron. Mr. Crawfurd says that in comparing teak and oak together, the useful qualities of the former will be found to preponderate. "It is equally strong, and somewhat more buoyant. Its durability is more uniform and decided; and to insure that durability it demands less care and preparation; for it may be put in use almost green from the forest, without danger of dry or wet rot. It is fit to endure all climates and alternations of climate."—*See* TREDGOLD'S *Principles of Carpentry;* CRAWFURD'S *Eastern Archipelago;* REES' *Cyclopædia.* The teak of Malabar, produced on the high table-land of the south of India, is deemed the best of any. It is the closest in its fibre, and contains the largest quantity of oil, being at once the heaviest and the most durable. This species of teak is used for the keel, timbers, and such parts of a ship as are under water: owing to its great weight, it is less suitable for the upper works, and is not at all fit for spars. The teak of Java ranks next to that of Malabar, and is especially suitable for planking. The Rangoon or Burman teak, and that of Siam, is not so close-grained or durable as the others. It is, however, the most buoyant, and is therefore best fitted for masts and spars. Malabar teak is extensively used in the building-yards of Bombay. Ships built wholly of it are almost indestructible by ordinary wear and tear, and instances are not rare of their having lasted from 80 to 100 years. They are said to sail indifferently, but this is probably owing as much to some defect in their construction as to the weight of the timber. Calcutta ships are never wholly built of teak; the timbers and frame-work are always of live wood, and the planking and deck only of teak. The teak of Burma, being conveyed with comparatively little difficulty to the ports of Rangoon and Maulmain, is the cheapest and most abundant of any; and it is mainly owing to the facility with which supplies of it are obtained that ship-building is now carried on so very extensively at Maulmain. It is largely exported to Calcutta and Madras.—*See* RANGOON. A species of timber called African teak is exported from the west coast of Africa; but in point of fact it is not teak, and it is destitute of several of its most valuable properties. It is, however, for some purposes, a useful species of timber.

Teasel, or **Fullers' Thistle** (Ger. *Weberdistel, Kratzdistel;* Fr. *Chardon à carder;* It. *Cardo da cardare;* Sp. *Cardencha, Cardo peinador*). This plant, which is cultivated in the north and west of England, is an article of considerable importance to clothiers, who employ the crooked awns of the heads for raising the nap on woolen cloths. For this purpose they are fixed round the periphery of a large, broad wheel, against which the cloth is held while the machine is turned. In choosing teasels, the preference should be given to those with the largest bur, and most pointed, which are generally called *male teasels.* They are mostly used in preparing and dressing stockings and coverlets; the smaller kind, commonly called the fullers' or drapers', and sometimes the *female teasels,* are used in the preparation of the finer stuffs, as cloths, rateens, etc.

Tehuantepec, Gulf of, a bay of the Pacific Ocean, Central America, bounded northwest by the state of Oaxaca, and northeast by the republic of Guatemala, lat. 16° N., long. 94° to 95° W. It receives the River Tehuantepec 10 miles south of the town.

The Isthmus of Tehuantepec, states of Oaxaca, Vera Cruz, and Tabasco, is the narrowest part of the land

separating the Gulf of Mexico from the Pacific, and is 130 miles across. It produces mahogany, fustic, logwood, cotton, drugs, cacao, indigo, gum, salt, with various kinds of grain; and its uplands abound with fine pastures. It is traversed almost throughout by the River Coatzacoalcos. This is one of the places where it has been proposed to unite the Atlantic and Pacific oceans by a canal, of which the river and some lakes would form a part.

This new inter-oceanic route is by the River Coatzacoalcos to Suchil, something over 100 miles from the sea, all the windings included, thence overland by stage to Ventosa, 130 to 140 miles; making in all about 240 miles from the Atlantic to the Pacific, to be accomplished in a day and a half from the sea. This distance will be materially diminished—the time still more so—on completion of a projected railroad from Minatitlan to Suchil, already surveyed.

From the mouth of the river to Minatitlan, twenty miles, the channel is excellent, capacious enough for the largest ocean steamships. The depth of water on the bar at low tide is 15 to 16 feet (Major Barnard says 13), and only one obstruction, a large rock, has been discovered, and that easily avoidable. From Minatitlan to Suchil the river becomes more difficult, and must be traversed by steamboats; those contemplated are, in size and fashion, not dissimilar from the Cumberland River boats. The *Leonora*, built in New York, and placed on this portion of the river a short time since, had proved of too large draught. The current is about two miles and a half an hour—from Suchil to Minatitlan, thirty-six hours. These are the termini of the projected railway, by which, when completed, a distance of 45 miles will be saved.

From Suchil to Ventosa, on the Pacific, 130 to 140 miles, the route is by the newly-made stage-road over a rough, sometimes mountainous country. The heaviest work has been on this end of the road, where also the River Puerta, fordable at times, but high and marshy in the rainy season, is to be spanned by a bridge a mile and a half in length. Some compensation is made on the other side of the mountain, however, by an old road, which has proved available from Chivela Pass to the Pacific plain. The time contracted for on the stage-road is five miles per hour—twenty-six to twenty-eight hours; between Minatitlan and Suchil the passage by steamboat will be from six to eight hours, in all about thirty-five hours, or a day and a half from ocean to ocean. The harbor of Ventosa is good, but a breakwater will be necessary. As to the probable amount of travel and business on the Tehuantepec road, when in full operation, we have no further information than is already, in various speculations, before the public. The shortest route from England, New York, and New Orleans, to the ports of the Pacific, the most flattering expectations are of course entertained respecting it.

The present population of the territory of Tehuantepec is estimated at 50,000, descendants, for the most part, of the original Aztecs. They are gregarious in their habits, living in communities numbering 3000 to 4000 each, and distant from each other five to ten miles. They are industrious, kind-hearted, and docile, but very thriftless. The government is, of course, that which at any time our *mobile* Mexican neighbors may chance to have. In general, the rights and privileges of the old Spanish colonial towns are fully enjoyed. Titles to landed property are good, and always respected. The town of Minatitlan, the capital and emporium of the territory, has at present a population of about five hundred. The commerce in the native products of the country, mahogany, dyewoods, coffee, etc., is large and increasing. The last quarter Mr. P. cleared twelve American vessels, averaging 200 tons each, and the foreign export business was about the same. The government, a short time since, appropriated the handsome sum of $50,000 for the erection of a new custom-house, the foundation of which is already laid. On the whole, what with present business and future expectations, our Tehuantepec neighbors are evidently looking up.—*United States Consul at Minatitlan.*

Tehuantepec Route.—The following figures show the distances on the Tehuantepec route from New York to San Francisco:

	Miles.
From New York to the mouth of the Coatzacoalcos	2275
Transit distance	236
Ventosa to San Francisco	2304
Total	4815

Telegraph. Long before the electric telegraph had been imagined, the art of rapidly conveying intelligence from point to point had occupied the attention of mankind, and various expedients for the accomplishment of this object had been devised. The most primitive modes of telegraphing were by means of signal-fires, torches, trumpets. More recently, since the invention of gunpowder, the cannon and sky-rockets have been used. On the invention of the aerial telegraph, or semaphore, these means were abandoned.

In the year 1684 Dr. Hooke described a plan for an aerial telegraph, and about 1704 M. Amontons instituted experiments with the same end in view. However, neither of these plans were carried into effect; and it was not until 1794 that the semaphore was actually used. In that year an aerial telegraph, the invention of M. Claude Chappé, was employed for the transmission of intelligence between Paris and Lille; the conveyance of a signal from one of these places to the other occupying only two minutes. Semaphores, mostly modifications of the plan of Chappé, were soon in use throughout Europe—in England, in 1795; Denmark, in 1802; India, in 1823; Prussia and Austria, about 1833; and Russia, in 1839.

This method of telegraphing is still in use, but is rapidly being superseded by the electric telegraph. In 1852 the only aerial telegraph line in England was between Liverpool and Holyhead. This has now, we believe, been superseded by the establishment of electric communication between those two places.

The cost of working the aerial telegraph was enormous. The line above mentioned cost in the vicinity of £1500 (about $7500) per annum; and a similar line, between London and Portsmouth, cost £8300 (about $16,500) per annum.

These telegraphs were necessarily imperfect; being limited in their power of conveying intelligence, exceedingly slow, and liable to total interruption by storms of rain and snow, fogs and darkness.

The idea of the employment of electricity as a means of conveying intelligence to a distance appears to have been long entertained, and experiments to ascertain the practicability of electrical communication between distant places were early made by scientific men throughout the civilized world. In 1729 Grey and Wheeler discovered that a current of electricity could be made to flow through considerable lengths of wire. In 1746 Winckler at Leipsic, and Le Monnier at Paris, experimented on the same subject of the transmission of the electric current through conducting bodies. In 1747 Dr. Watson, in England, repeated and extended these experiments, sending a current through two miles of wire and two of earth; sending shocks across the Thames and the New River. Dr. Franklin in 1748, and De Luc in 1749, repeated many of these experiments. In addition, experiments bearing more or less on the subject of electric telegraphy were made by Lesage in 1774, Reusser in 1794, Cavallo in 1795, Betancourt in 1798, Sömmering in 1807, and Prof. Oersted in 1819.

The first electric telegraph actually applied seems to have been the invention of M. D. F. Salva. Humboldt says his telegraph was established between Madrid and Aranjuez in 1798—a distance of about 26 miles.

In 1816 Francis Ronalds, of Hammersmith, England, constructed a telegraph of eight miles in length. This

telegraph was one of the best that had then been invented, and was capable of transmitting intelligence with considerable rapidity. In 1828 he urged the importance of his invention for government purposes, writing to Lord Melville on the subject, but without effect.

In 1827 Harrison G. Dyer, an American, constructed a telegraph on Long Island, using frictional electricity. The line was about two miles in length.

Previous to 1809 no mode of electric telegraphing capable of any extended use had been discovered. The principal cause of failure seems to have been in the employment of frictional electricity, which is, on account of its high intensity, confined with great difficulty to conducting bodies, rapid and incontinuous in its action, and, from its small quantity, devoid of energetic force.

Sömmering made a step forward by his application of galvanism to the purposes of telegraphing. In 1809 he constructed, at Munich, a telegraphic apparatus, using 35 wires. The signals were made by the decomposition of water in 35 tubes, which were in connection with the 35 wires of the line. Telegraphs employing the pure galvanic force were also invented by Schweigger, De Haer, R. Smith (Scotland, about 1843); Bain, 1846; and Morse, 1849.

Bain's was the only telegraph on this principle that was extensively used. He used a very simple apparatus, receiving the galvanic current upon chemically-prepared paper, where it made a light-blue mark. A combination of dots constituted his alphabet. This telegraph was exceedingly rapid, being capable of transmitting 1200 letters per minute. In 1850 about 200 miles of telegraph in England, and 1500 in America, were worked under Bain's patents. His plan has gone now almost entirely out of use, other and better instruments superseding it.

The property which lightning possesses of reversing or destroying the poles of the natural magnet, and of imparting magnetism to iron, had long been known; but not until 1820 was the fact turned to any useful purpose. Professor Oersted, of Copenhagen, discovered, during 1819, that if a wire charged with electricity is placed parallel to a magnetic needle, the needle will deviate from its natural position, tending to assume a position at right angles with the conducting wire; and that this deviation follows a regular law. Proceeding on the groundwork of Professor Oersted, many other discoveries were made by Arago, Ampère, Faraday, Davy, Sturgeon, and Professor Henry.

Arago and Ampère in France, and Sir H. Davy in England, discovered that a current of electricity would render steel magnetic; and Ampère found that by coiling the wire in the form of a helix round steel the effect was greatly increased. William Sturgeon, of London, in the year 1825, discovered and constructed the electro-magnet. The electro-magnet is one of the most valuable parts of the electric telegraph now in use, and has entered more or less into nearly every telegraph invented since its discovery.

Oersted's great discovery gave a new direction to the science of electric telegraphing. Galvanic telegraphs were, in turn, discarded, and magneto-electric telegraphs took their place.

Ampère was the first to make use of Oersted's discovery in telegraphing. In 1820 he invented a telegraph, using 36 magnetic needles. His plan was not practically carried into effect.

Baron de Schilling invented a needle telegraph in 1832, at St. Petersburg. His instrument had five needles, which, by their vibrations to the right or left, indicated signals. He afterward improved his instrument, using but one needle.

In 1837 Dr. Steinheil had a telegraphic instrument working a distance of 12 miles. His telegraph of one wire, and either one or two magnetic needles, as might be desired, made permanent marks on paper, and also telegraphed by sound. When writing, his needles were furnished with ink-tubes, and by their motions marks were recorded on paper; when telegraphing by sound, the needles were made to strike bells of different tones. He used the earth as part of the circuit. This was very nearly a perfect instrument, and is infinitely superior to the majority of telegraphic instruments since invented.

June 12, 1837, Messrs. Cooke & Wheatstone, in England, obtained a patent for "Improvements in giving signals and sounding alarms in distant places, by means of electric currents transmitted through metallic circuits." This seems to have been the first telegraph that was patented in Europe. Cooke & Wheatstone's first telegraph was a needle telegraph. They used five magnetic needles and five wires. An electro-magnet was used to sound an alarm. A second patent, taken out by Cooke only, was issued in April, 1838. These instruments were found to be very imperfect, and after a short trial were abandoned.

A different form of telegraph, the invention of the same parties, having but two needles, has, until very recently, been in general use in England; but the Morse system is now being adopted there and upon the Continent.

The last patent taken out by Cooke & Wheatstone is dated May 6, 1845. During the same year an act of Parliament was obtained incorporating "The Electric Telegraph Company," working these patents.

The needle telegraph is, comparatively, very slow; the average speed per message being but 14 words per minute. It is, however, yet extensively used in England. Cooke & Wheatstone took out a patent in America, but their instrument was never practically used in the United States.

Since Cooke & Wheatstone's first patent, upward of 40 patents have been taken out in England alone. Very few of the instruments since invented are in practical operation.

Morse's Telegraph.—In the year 1832 Professor S. F. B. Morse first conceived the idea of an electric telegraph; and in the year 1835 he had a telegraph constructed, the basis of his present simple and beautiful instrument. In September, 1837, he exhibited his instrument at the New York University, working through 1700 feet of wire.

Morse applied for a patent in the United States in April, 1838. This application was afterward withdrawn, and his patent was not taken out until June, 1840. In 1842 he petitioned Congress, who appropriated $30,000 to his use for the construction of a line between Washington and Baltimore. In June, 1844, Morse had his invention in successful operation between Washington and Baltimore—a distance of 40 miles. This was the only line in the United States constructed under government patronage.

The Morse Electro-magnetic Telegraph consists mainly of two parts—the receiving magnet and the registering apparatus. The receiving magnet is surrounded by fine wire, and is of the horseshoe form. An adjustable armature is placed before the poles of the receiving magnet. The main circuit passes unbroken through the receiving magnet to the next station.

The registering apparatus has a powerful horse-shoe magnet placed vertically. Above the poles of the magnet is an armature attached to one end of a movable lever, on the other end of which is a steel style for the purpose of impressing marks on paper placed immediately above the style. Intelligence is transmitted by means of breaking and closing the main circuit. For this purpose a small key is employed. When this key is pressed down, the current passes to the receiving magnet of the distant station, causing the receiving magnet to close the local circuit. On the local circuit being closed, the registering magnet becomes excited and attracts the armature downward, causing a mark on the paper, placed above the lever of

the armature. On the circuit being opened again by the operator's raising the key, all returns to its usual quiescent position. This operation is performed at every closing and breaking of the circuit. By keeping the key depressed for an instant, a dot is made; if it is depressed for a longer time, a line. A combination of dots and lines forms the telegraphic alphabet used with this system. The speed of this instrument is, in the hands of an expert, about twenty words per minute.

Professor Morse's instrument was for some time the only instrument in use in this country, and is now used to a greater extent than all other telegraphs combined.

The House Telegraph, the invention of Royal E. House, differs materially from all previously invented telegraphic instruments, printing messages in the ordinary Roman letters. Directly under a set of keys like those of the piano-forte is a shaft inclosed by a cylinder. This shaft is made to revolve rapidly by means of a treadle. The shaft and cylinder are so arranged that the cylinder can be arrested while the shaft still revolves. On one end of this cylinder is a brass wheel having fourteen teeth. A spring is so arranged, that when the shaft and cylinder revolve it will alternately strike a tooth of this brass wheel and pass into an open space; thus alternately breaking and closing the electric circuit. On the cylinder two lines of teeth project, fourteen in each line, one for each tooth and each space of the circuit wheel. These teeth are immediately below the keys, so that by pressing down a key the motion of the cylinder is stopped. By making the cylinder revolve, the circuit is rapidly broken and closed, which continues till a key is depressed. On the key being released, the revolution goes on as before. The electrical pulsations produced by the breaking and closing of the circuit are conveyed to the magnet of the distant instrument, each pulsation causing the magnet to act.

The type-wheel, a wheel having the letters of the alphabet cut upon it, is made to revolve, but is so checked by an escapement wheel that only one letter goes forward at a time. This escapement is connected by a lever with the piston of an air-chamber. This piston is caused to move horizontally backward and forward, by means of compressed air admitted alternately on different sides of the piston. A valve attached to the magnet regulates the pressure of the air on the piston. Every breaking and closing of the circuit causes the magnet, piston, and escape to act, so that for every time the circuit is broken or closed the type-wheel is advanced one letter. If any letter of the type-wheel is placed in a certain position, and the key corresponding to it is depressed, raised, and again depressed, the circuit wheel at the transmitting station and the type-wheel at the receiving station make one revolution, bringing the letter back to its former position. Any other letter is brought into the required position by pressing down its key on the keyboard of the instrument. The letter first brought into position is the dash. The type-wheel is stopped at the dash, after which the printing goes regularly on as the keys are depressed. Immediately before the type-wheel is the press, containing a narrow strip of paper. At the depression of a key the type-wheel stops, sets a crank in motion, which presses the paper forcibly against the letter opposite to it on the type-wheel. On the key being raised, the type-wheel revolves until the depression of another key, which again unlocks the press and prints a letter.

The electric current is used in this instrument to preserve equal time, that the letters in one machine may correspond to those in the other. The number of pulsations required to indicate a succession of letters is exceedingly unequal; from *a* to *b* requires one, from A to A twenty-eight pulsations.

House obtained a second patent in December, 1852. The House instrument is used to a limited extent in this country. It is still less used in England, where it is known as Jacob Brett's Telegraph. This instrument is more rapid than Morse's, printing accurately from twenty-five to thirty words per minute.

The Hughes Telegraph is the invention of David E. Hughes, of Kentucky, who obtained a patent in 1855 and in 1858. This, like the House Telegraph, is a printing telegraph, but in principle and in mechanism it is totally unlike that instrument.

The Hughes system of telegraphing combines not only all the advantages of all other existing systems, but reduces the labor which electricity has to perform to the lowest possible point. In all other systems it requires several distinct electrical impulses to form a single letter. In the House system, which is based upon the number of waves sent, the average number of impulses required to determine the intended letter is seven: in the Morse system, which is based upon the number and duration of the waves sent, the average is three and a half. To print a letter every closing or breaking of the circuit, so that every electrical impulse should determine a letter, has long been a desideratum, more particularly since the discovery that it requires an appreciable time to charge a long wire with electricity; so that on long circuits we should be obliged to send a less number of electrical waves in a given time than on a short circuit. On submerged cables this and other effects are still more marked, reducing the speed of transmission upward of two-thirds. If every wave, instead of every three waves, produced a letter, it is evident enough that the speed of transmission through the cable would be equal to that of the air-lines with the systems now in use, and that the speed of the air-lines would be increased two-thirds. The Hughes system uses but one electrical impulse per letter, and by the use of a new and exceedingly sensitive magnet can work on lines of far greater length, and with a rapidity exceeding that of any telegraph now in existence.

To carry out the one-wave system, it is essential that the type-wheels of the different instruments should revolve at precisely the same speed, so that the same letter on each type-wheel should be opposite a given point at the same time. Clock-work governed by means of a pendulum would be too slow for any practical use. Instead of a pendulum, Hughes employs as a governor a vibrating spring. This spring allows the type-wheels to revolve with any desired degree of rapidity. This governor is dependent for its correct action on a law of acoustics, viz., "that a certain number of vibrations per second produces a certain musical tone; and if there are two or more springs of the same tone, they invariably give the same number of vibrations per second." If these springs by their vibrations are made to unlock an escapement, it follows that all instruments governed by springs of the same tone must revolve in exactly the same time. The type-wheels, thus governed, revolve at the rate of 100 revolutions per minute, and the average number of letters sent at each revolution being two, it follows that the speed of the instrument is 200 letters per minute, equal to about forty words.

This is about the speed that an ordinary operator touches the keys, but not by any means the utmost speed of the instrument, as the type-wheels would revolve with undeviating accuracy at a speed of 500 instead of 100 revolutions per minute.

The magnet of the Hughes instrument, which receives the electric current from the distant station, is a combination of a natural and an electro-magnet. The attractive power of the natural magnet, exerted through the electro-magnet, holds a small armature in contact with the poles of the electro-magnet. A spring attached to the armature is so adjusted as nearly to pull the armature away from the poles of the electro-magnet. The slightest change in polarity causes the spring to pull the armature away from its resting-

place. The armature is restored to its place by means of a lever, which acts upon it at the instant it is pulled away from the electro-magnet's poles. This arrangement employs the current of electricity merely to effect a slight change in the force by which the armature is held to the magnet's poles, and it is so remarkably sensitive that the mere contact of a piece of zinc against a copper wire has been found amply sufficient to work the magnet. From its sensitiveness it requires scarcely a tenth of the battery-power used by the most sensitive of other systems.

Another wonderful and beautiful feature of this instrument is its power of writing both ways, sending and receiving messages at the same instant over one wire. This instrument thus doubles the capacity of the wire, making it do the service of two; transmitting with certainty and accuracy 200 letters each way per minute, an actual transmission of 400 letters, or 80 words, per minute. This result is accomplished by means of a peculiar arrangement of the batteries and magnets, so that the current from the transmitting station does not influence its own magnet, while it affects that of the receiving station, each magnet thus being placed under control of the distant operator.

The machinery which accomplishes results so astonishing is simple in the extreme. It consists mainly of four clock-wheels used to turn the type-wheel. These wheels are governed by the vibrating spring before explained. At the moment a current from the distant station enters the magnet the armature flies off, opens a detent which causes a small press to be locked to the wheel-work of the instrument, and then to press a strip of paper against the letter of the type-wheel opposite the press at that instant. A current is sent upon the line by means of keys arranged like those of a piano, and having the letters of the alphabet engraved upon them. At the moment one of these keys is depressed the magnet of the receiving station is made to act, and the press to print the letter corresponding to the touched key. The receiving operator has nothing to do but to tear off the messages as they arrive.

This instrument, after more than ten years of persevering thought and labor, is at last perfected, and now fulfills all the requisites of a perfect telegraph instrument—more than realizing all that has ever been claimed for it by the inventor. The remarkable ingenuity, talent, and knowledge of the principles of electrical science displayed by Professor Hughes, in the invention of his beautiful machine, deservedly place him foremost in the ranks of the laborers in this branch of art, and justify his claim of having invented a telegraph instrument which, for speed, neatness, and economy, is without a rival.

The numerous advantages that the Hughes instrument possesses over all other existing systems, particularly in the matter of speed and power of working on long circuits, will probably give it the preference in the selection of telegraphic machines with which to work the Atlantic Submarine cable. Indeed it may well be doubted if any other system can be made practically available for that purpose.

The following brief summary of the telegraph lines of the world at the close of the year 1857 will furnish some idea of the importance of the telegraphic art, and of its claims to public attention:

United States have upward of 35,000 miles of telegraph, employing a capital, as near as can be ascertained, of $4,000,000. The instruments used are the Hughes, House, and Morse machines.

British Provinces have 5000 miles of telegraph, employing a capital of $500,000.

Cuba and Mexico have short and unreliable lines, which are controlled by the governments.

England has about 10,000 miles of telegraph lines—upward of 40,000 miles of conducting wire—employing a capital estimated at a million and a half pounds sterling. In England the government has the power of ordering all government messages to take precedence of any other communications, and when deemed necessary all telegraphs are required to be placed at the sole disposal of the government. Only one instance of this kind has occurred; on the occasion of the anticipated Chartist riots in April, 1849.

France has 8000 miles of telegraph in operation, under the exclusive control of the government.

Belgium has about 550 miles of telegraph lines, constructed and controlled by the government.

Germany and Austria have nearly 10,000 miles of telegraph, controlled by the governments.

Prussia has about 4000 miles of telegraph in operation. The wires are mostly underground—controlled by the government.

Holland has 600 miles of telegraph.

Saxony and Bavaria have government lines of about 1700 miles.

Italy has 2500 miles, controlled by its different governments.

Switzerland has 1500 miles, under control of the Federal government.

Spain and Portugal have some 800 miles—controlled by the governments.

Russia.—Of the number and extent of Russian telegraph lines little is known. As near as can be estimated, they extend over 5000 miles—under government control.

India has now in operation 5000 miles of telegraph, constructed and controlled by the East India Company.

Australia has 500 miles in operation, and 800 miles nearly or quite completed.

RECAPITULATION.

	Miles.
America	45,000
England	10,000
France	8,000
Germany and Austria	10,000
Prussia	4,000
Russia	5,000
Rest of Europe	7,650
India	5,000
Australia	1,200
Other parts of the world	500
Total length of telegraph lines...	95,350

The number of messages passing over all lines in the United States is estimated at about 4,000,000 per annum.

In addition to the land lines, numerous submarine cables have been laid in different parts of the world. Annexed is a brief account of the different submarine cables, lengths, when laid, etc.

The first submarine cable was laid between Dover, England, and Calais, France, during August, 1850. This cable was about 24 miles in length. Electrical communication between England and France continued uninterrupted for about a month, when the cable was broken. Upon examination it was found that the chafing of the cable against rocks off Cape Grienez had caused it to part. A second cable was immediately relaid, larger and stronger than its predecessor, which has remained in good working order up to the present time.

In May, 1852, a submarine cable was successfully laid between Holyhead and Howth, thus connecting England with Ireland. This cable is 64 miles in length.

During May, 1853, "the Port Patrick and Carrickfergus" cable, 24 miles in length, connecting Scotland and Ireland, was laid.

In June, 1854, a cable 115 miles in length was laid between Orfordness, England, and the Hague, Holland.

A third cable, 75 miles in length, was laid in 1852, between Dover and Ostend.

In 1854 cables from Italy to Corsica, thence to Sardinia, were, after much difficulty, successfully laid down, a distance of about 75 miles.

The New York, Newfoundland, and London Telegraph Company, in 1855 made an attempt to connect the islands of Newfoundland and Cape Breton. The attempt was unsuccessful. In 1856 another attempt was made, resulting in complete success.

Summary of Submarine Cables.—The following is a correct table of the number and length of the submarine cables laid down in different parts of the world:

Cables.	Miles.	Wires	Date.
Dover and Calais	24	4	1851
Dover and Ostend	75	6	1852
Holyhead and Howth	65	1	1852
England and Holland	115	3	1853
Port Patrick and Donaghadee	13	3	1853
Second cable do., do.	13	6	1853
Italy and Corsica	65	6	1854
Corsica and Sardinia	10	6	1854
Denmark, across the Great Belt	15	3	1854
Denmark, across the Little Belt	5	3	1854
Denmark, across the Sound	12	3	1855
Across the Frith of Forth (Scotland)	4	4	1855
Varna and Balaklava (across the Black Sea)	340	1	1855
Balaklava and Eupatoria	60	1	1855
Across the Danube, at Shumla	1	1	1855
Across the Hoogly River	21	–	....
Messina to Reggio	5	1	1856
Across the Gulf of St. Lawrence	74	1	1856
Across the Straits of Northumberland, Prince Edward Island	10½	1	1853
Across the Bosphorus, at Kandilli	1	1	1856
Across the Gut of Canso, Nova Scotia	—	3	1856
Six cables across the mouths of the Danube, at the Isle of Serpents, each one mile long and having one conductor	6	6	1857
Across the Mississippi, at Paducah	1	1	1851
From Petersburg to Cronstadt	10	1	1850
Across the St. Lawrence, at Quebec	—	1	1855
Across the Soland, Isle of Wight (Eng.)	3	4	1855
Small river crossings	20	–	....
Total length of submarine cables	950		

The total length of submarine cables laid down is 950 miles, and the length of the conducting wires in all is 2660 miles. Should the attempt to lay the great Atlantic Submarine Cable next June be successful, the length of cable laid down will be increased to 2564, and the length of conducting wires to 4075 miles.

The Atlantic Telegraph.—In the year 1856 Cyrus W. Field visited England. The result of his visit was the formation of the Atlantic Telegraph Company, with a capital of £350,000, for the purpose of connecting Europe with America by a submarine telegraph cable. In August, 1857, an attempt was made to lay down the Atlantic Submarine Cable, resulting in a disastrous failure. The cable was 2500 miles in length, weighing nearly one ton per mile, capable of bearing a direct strain of over five tons without fracture. The centre of the cable was formed by seven fine copper wires, twisted into a cord $\frac{1}{16}$ of an inch thick. This strand was coated with gutta percha, forming a small rope $\frac{3}{8}$ of an inch thick; then coated with hempen twine soaked in pitch and tar; lastly, an external sheathing of 18 iron wires, each wire being a strand of seven finer wires, making in all 126 wires. The submersion was commenced on the 5th August, 1857. There were present the six steamers, *Niagara*, *Agamemnon*, *Leopard*, *Susquehanna*, *Willing*, and *Mind*, intended to assist in various parts of the operation. The cable came up from the hold of the ship, around a central block, so to the open space above decks; it was there wound round grooved sheaths, geared together by cogs, and firmly planted on girders. Thence it passed over a fifth sheath, out over the stern into the sea, sinking by its own weight. A trifling accident happened on the 6th; this was repaired; and on the 11th, 380 miles (statute) had been submerged. The engineer here concluded that there was too much "slack" in the cable's course, and some modification in the machinery was consequently made. This appears to have been badly attended to by a subordinate. The cable snapped, and thus ended the attempt of 1857.

But little doubt is now entertained that the year 1858 will see this great enterprise successfully accomplished, and the Atlantic Submarine Cable a fixed fact.

In regard to the possibility of any transmission of signals with rapidity sufficient for practical use, it may be stated that on the 9th of October, 1856, a large number of scientific men met at the offices of the Magnetic Telegraph Company, in old Broad Street London, England, to witness the operation of telegraphing through upward of 2000 miles of subterranean and submarine wires, through England, Ireland, and the Irish Sea, connected for this experiment. Signals were sent throughout the entire distance with rapidity and certainty, 250 being transmitted per minute. Professor Morse, who was present, wrote as follows: "There can be no question but that, with a cable containing a single conducting wire, of a size not exceeding that through which we worked, it would be easy to telegraph from Ireland to Newfoundland at the speed of at least eight or ten words per minute. Take it at ten words in the minute, and allowing ten words for name and address, we can safely calculate upon the transmission of a twenty-words' message in three minutes; * * * * or fourteen thousand four hundred words per day. In one word, the doubts are resolved—the difficulties overcome; success is within our reach; and the great feat of the century must shortly be accomplished."

The cost of the telegraph cable has been as follows:

Price deep-sea wire per mile	$200
Price spun yarn and iron wire per mile	265
Price outside tar per mile	20
Total per mile	$485
For 2500 miles	$1,212,500
For 10 miles deep-sea cable, at $1450 per mile	14,500
For 25 miles shore ends, at $1250 per mile	31,250
Total cost	$1,258,250

We learn from the London *Times* that a prospectus has been issued of a company to complete the long-expected telegraphic communication with British Indian territories. It is to be called the European and Indian Junction Telegraph Company, with a capital of £200,000, in £10 shares. The line selected is the same as that for the Euphrates Railway—namely, from the port of Seleucia, on the Mediterranean, to the head of the Persian Gulf, following the valley of the Euphrates; and it will connect, on the one hand, with the Austrian system of telegraphs, which is to be carried to Seleucia, and on the other with a cable to be laid by the East India Company from the Persian Gulf to the Indian port of Kurrachee. It will, therefore, supply the only link necessary to enable messages to be transmitted from London to any of the several Presidencies. Direct pecuniary support is expected from the government and the East India Company, together with a concession from Turkey, and no call is to be made until these arrangements shall have been completed. One half the shares are to be allotted to the subscribers to the Euphrates Railway, and the other half to the public.

This, in connection with the proposed construction of a continuous line of railroad from Germany to Calcutta, shows that the trade of the East is gradually assuming more importance in the eyes of European capitalists and merchants.

Tender, Legal. Legal tender of money varies in different countries. Thus, in England, Bank of England notes (except by the bank itself) and gold are legal tender for any amount. Silver to the amount of 40 shillings only.

In the United States, the gold and silver coins of the United States were made legal tender by the act of January 18, 1837, viz.: That dollars, half-dollars, quarter-dollars, dimes, and half-dimes, shall be legal tender, according to their nominal value, for any sums whatever; the gold eagle at ten dollars, the half-eagle at five dollars, and the quarter-eagle for two and a half dollars. By the act of 1849 the coinage of the double eagle, value twenty dollars, and of the gold dollar, was authorized; both of which are legal tender for any amount.—*See* COINAGE.

Owing to the reduced weight of the new silver coins authorized by Congress 3d March, 1851, and 21st February, 1853, they are no longer legal tender except in small sums, viz.:

Three-cent pieces (Act March, 1851, and 1853)						30 cts.
Half-dollars,	192 grains each,	21st Feb., 1851				
Quarter-dollars	96	"	"	"	"	$5 00
Dimes	38-40	"	"	"	"	
Half-dimes	19-20	"	"	"	"	

By the act of February, 1857, "all former acts authorizing the currency of foreign gold and silver coins, and declaring the same a legal tender in payment of debts, are hereby repealed."

In the absence of any special agreement, the only payment known to the law is by cash. The tender should properly be in cash, and must be so, if that is required. A tender of a larger sum than is due, with a requirement of change or of the balance, is not good. A lawful tender, and payment of the money into court, is a good defense to an action for the debt. But the creditor may break down this defense by proving that he demanded the money of the debtor, and the debtor refused to give it, subsequently to the tender.—PARSONS *on Mercantile Law.*

Teneriffe, the largest island of the group called the Canaries, lies between Canary and Gomera. It is of an irregular shape, 60 miles in length, with an extreme breadth of 30 miles. Not more than one-seventh is cultivable. A chain of mountains traverses the island in the direction of its greatest length, and in the middle of the broadest part rises the celebrated peak locally known as the Pico de Teyde, which, with its supports and spurs, occupies nearly two-thirds of the whole island.

The Canary Islands are in the North Atlantic Ocean, between lat. 27° 40′ and 29° 30′ N., and long. 13° 30′ and 18° 20′ W. The names of the seven principal islands, their respective area in English square miles, and their population in 1835, are given in the following table:

Islands.	Area.	Population.
Teneriffe	817	85,000
Grand Canary	758	68,000
Palma	718	33,000
Lanzarote	322	17,400
Fuertaventura	326	13,800
Gomera	169	11,700
Hierro	93	4,400

Formerly the total annual produce was estimated at about 40,000 pipes, of which 25,000 pipes were produced in Teneriffe. Between 8000 and 9000 pipes were exported. The chief exports are wine, cochineal, barilla, and orchilla. The imports consist of woolen, silk, cotton, and iron manufactures, glass, etc.

Principal Ports.—The ports of Santa Cruz de Teneriffe, Orotava, Ciudad Real de los Palmas, Aneciffe de Langarole, Puerto de Cabras, and San Sebastian, in the Canary Islands, having been declared free by royal decree proclaimed on the 10th of October, 1852, and vessels of the United States and their cargoes arriving in said ports being thus placed on the same footing with those of Spain, no discriminating duty is levied on Spanish vessels and their cargoes arriving from those ports in the ports of the United States; provided that on every such arrival the required consular certificate be filed with the collector of the port.—*See* CANARIES.

COMMERCE OF THE UNITED STATES WITH TENERIFFE AND THE CANARIES, FROM OCTOBER 1, 1820, TO JULY 1, 1857.

Years ending	Exports			Imports	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic	Foreign	Total.	Total	Export.	Import.	American.	Foreign.
Sept. 30, 1821	$74,828	$48,637	$123,465	$265,089	$7,284	....	3,003	92
1822	85,937	29,140	115,077	241,195	3,650	$470	2,849	....
1823	58,002	21,216	79,218	208,484	....	600	2,296	....
1824	42,855	20,134	62,989	95,579	6,767	3,690	1,732	130
1825	70,380	21,271	91,651	165,718	6,240	....	3,067	119
1826	42,761	21,742	64,503	173,399	4,607	....	1,901	....
1827	46,163	39,817	85 980	123,360	4,316	4,064	2,163	....
1828	33,529	8,551	42,080	222,740	2,350	1,700	1,516	....
1829	42,839	23,317	66,156	25,283	8,108	....	1,714	....
1830	19,040	610	19,650	99,878	....	....	706	....
Total	$516,324	$234,445	$750,769	$1,615,725	$43,522	$10,484	21,037	341
Sept. 30, 1831	$74,931	$3,446	$38,377	$155,159	....	....	1,418	....
1832	14,567	7,851	22,418	151,837	$6,975	$2,160	925	....
1833	24,513	15,855	39,668	148,090	8,900	....	2,342	97
1834	20,638	787	21,425	148,130	....	....	1,896	352
1835	40,195	12,710	52,905	196,802	4,842	679	2,184	194
1836	21,687	4,264	25,951	203,953	2,401	670	1,615	....
1837	27,553	7,648	35,201	255,276	7,200	....	2,157	....
1838	34,619	18,686	53 305	151,806	12,540	538	2,177	....
1839	15,572	11,939	27,511	196,755	11,652	190	1,192	....
1840	11,816	11,579	23,395	150,522	9,000	....	718	568
Total	$245,891	$94,265	$340,156	$1,730,950	$62,870	$4,232	16,516	1011
Sept. 30, 1841	$12,290	$3,499	$15,789	$144,654	....	....	1,200	....
1842	12,723	518	13,241	91,411	....	....	426	473
9 mos., 1843*	7,099	3,925	11,024	15,058	....	....	486	....
June 30, 1844	14,493	1,042	15,535	61,953	....	$1,900	861	148
1845	5,895	....	5,895	56 032	....	....	467	387
1846	13,072	4,840	17,912	62,015	....	....	645	....
1847	15,148	....	15,148	61,864	....	....	856	....
1848	9,921	1,229	11,150	55,061	....	....	859	115
1849	17,840	654	18,494	38,913	....	....	912	235
1850	20,524	5,065	25,589	85,228	$4,810	....	647	1376
Total	$129,005	$20,772	$149,777	$650,970	$4,840	$1,900	7,358	2734
June 30, 1851	$13,540	$5,639	$19,179	$27,718	$2,506	....	753	261
1852	16,471	45	16,516	51,615	....	....	713	1153
1853	23,215	1,000	24,215	81,021	....	$400	1,046	1225
1854	19,516	804	20,320	39,598	....	....	1,046	....
1855	43,911	3,144	46,297	45,155	....	....	2,147	1356
1856	30,841	2,805	33,646	16,704	....	....	2,346	1118
1857	89,027	915	89,942	44,065	....	....	3,749	1039

* Nine months to June 30, and the fiscal year from this time begins July 1.

Tennessee, one of the United States, lies between lat. 35° and 36° 30′ N., and long. 81° 30′ and 90° 10′ W. Its mean length is 400 miles, and its mean breadth 111 miles, containing 45,000 square miles. Population in 1790 was 35,691; in 1800, 105,602; in 1810, 261,727; in 1820, 422,813; in 1830, 681,904; in 1840, 829,210, and in 1850, 1,002,625. The soil is various, but generally fertile. The western part has a dark rich soil; in the middle are great quantities of excellent land. In the eastern part the mountains are mostly sterile, but the valleys are very fertile. The country has a great profusion of native timber, poplar, hickory, walnut, oak, beach, sycamore, locust, cherry, sugar-maple, etc. There are many medicinal plants. The soil produces abundantly cotton and tobacco, the staple commodities of the State; also grain, grass, and fruit. The eastern portion of the State contains the principal mineral deposits, among which are ores of iron, copper, lead, and beds

of coal. Mineral springs occur; granite and limestone abound. In the latter formation are many caverns of great extent; some have been explored for miles. There were in this State in 1850, 5,175,173 acres of land improved, and 13,808,849 unimproved land in farms. Cash value of farms, $97,851,212; and the value of implements and machinery, $5,360,210. *Live Stock.*—Horses, 270,636; asses and mules, 75,303; milch cows, 250,456; working oxen, 86,255; other cattle, 414,051; sheep, 811,591; swine, 3,104,800; value of live stock, $29,978,016.

Agricultural Products, etc.—Wheat, 1,619,386 bushels; rye, 89,137; Indian corn, 52,276,223; oats, 7,703,086; barley, 2737; buckwheat, 19,427; peas and beans, 369,321; potatoes, 1,067,844; sweet potatoes, 2,777,716; rice, 258,854 lbs.; value of products of the orchard, $52,894; produce of market gardens, $97,183; pounds of butter made, 3,139,585; of cheese, 177,681; sugar, 248 hhds.; maple-sugar, 158,557 lbs.; molasses, 7223 gallons; beeswax and honey, 1,036,572 lbs.; wool, 1,364,378 lbs. produced; cotton, 194,532; flax, 868,131; silk cocoons, 1923; hops, 1032; tobacco, 20,148,932 lbs.; hay, 74,091 tons; hemp, 597 tons; clover-seeds, 5096 bushels; other grass seeds, 9118; flax-seed, 18,901; and were made, 92 gallons of wine; value of home-made manufactures, $3,137,000; and of slaughtered animals, $6,401,000.

The Tennessee River has its chief source in this State; it is 1250 miles long, and is navigable for steamboats to Florence in Alabama, 276 miles above its entrance into the Ohio, and from the head of the Muscle Shoals for boats 250 miles farther. Cumberland River, which, rising in Kentucky, runs mainly in Tennessee, is navigable for steamboats 198 miles to Nashville, and for boats 300 farther. It enters the Ohio River in Kentucky, 60 miles from the Mississippi River. The Holston, Clinch, French, Broad, and Hiwassee, are branches of the Tennessee; Obion, Forked Deer, and Wolf rivers, in the western part of the State, flow into the Mississippi, and are navigable for boats.

Manufactures, etc.—There were in the State in 1850, 33 cotton factories, with a capital invested of $669,600, employing 310 males and 581 females, producing 363,250 yards of sheeting, etc., and 2,326,250 lbs. of yarn, valued at $510,624; four woolen factories, with a capital of $10,900, employing fifteen males and two females, manufacturing articles valued at $6310; 23 establishments making pig-iron, with a capital of $1,021,400, employing 1822 persons, producing 30,420 tons of pig-iron, etc., valued at $676,100; 16 establishments with a capital of $139,500, employing 269 persons, and making 3384 tons of castings, etc., valued at $264,325; 42 establishments with a capital of $755,050, employing 786 persons, manufacturing 10,348 tons of wrought iron, etc., valued at $670,618. Capital invested in manufactures, $7,044,144; value of manufactured articles, $9,413,701. There were in this State in 1857, 51 banks and branches, with an aggregate cash capital of $10,576,000; and in January, 1856, 15 railroads, with 455 miles of road completed and in operation.

Teredo, or Ship Worm. The following account of this worm is from a paper written by James Jarvis, who has been engaged since 1849 in a series of experiments concerning the teredo or ship worm, by order of Commodore Smith, chief of the Bureau of Yards and Docks. In order to ascertain the best composition for resisting the attacks of the teredo upon wood, he painted a number of blocks and boxes with various compounds—some he left unprepared, and some partly painted—and sunk them in Elizabeth River in the month of April. "About the 12th June the blocks and boxes were generally lifted and examined, but he never was able to discover any of the animalcule (young teredo) until about the 20th of June. At this period of the year he generally discovered minute holes in the wood by the use of a magnifying glass. After this the creature daily grows ahead, for it has no powers of locomotion; it grows like an oyster, and has a calcareous or shelly sheathing, which adheres to the surface of its burrow."

In Norfolk harbor, Virginia, they grow from six to twelve inches in length, and from three-eighths to half an inch in diameter. The wood excavated by one twelve inches long, in a season, amounted to more than a cubic inch, if in a solid piece. No signs of the teredo were discovered by him in wood deposited after. Mr. Jarvis supposes that the teredo commences to develop about the 1st of July, and continues until cold weather arrives; in Charleston, South Carolina, and further south, they develop during the whole year; whereas in the colder blasts, such as in the harbors of New England, they do but little injury, because the worm is feeble there, being like a fine thread. It is believed to be a native of the torrid seas. The teredo is not so destructive on piles sunk under water at New York city docks as those on the opposite side of the river, on the Jersey and Long Island shores; this is owing, Mr. Jarvis thinks, to the amount of filth carried down in the city sewers. In Boston, and Portsmouth, New Hampshire, harbor piles will stand twenty-five years. One open nail-hole in a sheet of copper upon a vessel's bottom will allow the worm access to pursue its work of destruction. All kinds of wood used in ship-building are attacked by it. To secure the bottoms of ships from the salt-water worm, and from coral deposits, Mr. Jarvis recommends putting three coats of white zinc paint on the dry bottom of the vessel, then copper them; and to make the whole invulnerable, put three more coats of white zinc paint upon the outer surface of the copper. To preserve piles, drive them with the bark on. There is no danger while the bark remains. The barnacle on piles does no injury. Charring is excellent, provided the fissures are well filled with hot coal tar or zinc paint, which will be found excellent to keep the shell-fish from the wood where piles may have the bark broken off before being driven.

Terra Japonica, the commercial name of catechu (cutch) and gambir. It is stated that it is obtained by boiling the wood of the trees of which it is a product. But cutch is also obtained direct from the tree by tapping in the same way as caoutchouc (India rubber). Terra japonica gives out the large portion of tannin which it contains more readily than oak bark or most other substances, and is, therefore, preferred by those tanners who work on the quick process. Latterly, also, it has been extensively used as a dye, producing a brown color.

Texas, the most southern State in the Union, is situated between lat. 26° and 36° 30′ N., and between long. 94° and 107° W. from Greenwich, and contains 325,520 square miles.

Early History of Texas.—The regions which we now comprise under the name of Texas, to the northwest of the Gulf of Mexico, were called by the Spanish governor of Jamaica, Garay, when his Captain, Pineda (1519), had sailed along them, *Provincia de Amichel*. It is a name of the origin of which we are quite in the dark. Perhaps, also, the whole northern shore of the Gulf was comprised under it. This expression, *Provincia de Amichel*, was pointed out as the original Indian name of the land. Because it was discovered by the exertions of Garay, the Spanish geographers, therefore, gave to it also the Spanish name, *Tierra de Garay* (Garay's country), which name we see on many old maps round the whole northern shore of the Gulf, including Texas. When (about 1521) the King of Spain divided the discoveries and governments of Cortez and Garay, and put the Rio de las Palmas as the northern boundary of the government of Mexico, the countries to the north were very often called *El Gobierno del Rio de los Palmas* (the government of the Palm River); and this also included a great part of the countries to the north. Because, however, the efforts of Garay to form a province in the north were

unfortunate, and because all the first attempts toward the north were either made from Mexico or from the peninsula of Florida, so these two names prevailed, and divided the whole region among each other. The great conquerors of the north, Narvaez and De Soto, entered from Cuba and from the peninsula of Florida. The names *Provincia Amichel, Tierra Garay, Gobierno del Rio de las Palmas*, disappeared soon after, and every thing round the whole Gulf of Mexico, up to the Palma River in the west, was comprised under the general name of Florida. As soon as Mexican travelers traversed the Palma River they considered themselves to be in Florida. When Moscoso (1542) made his excursion from the Red River westward to the centre of Texas, he found there innumerable herds of buffaloes, and called this country, from which he returned to the east, *La Provincia de los Vaqueros* (the province of the Herds). Some authors consequently gave that name to what we now call Texas. The Spaniards in Mexico commonly called all those wild Indians to the north of the civilized empire of Montezuma *Los Indios bravos* (the savage Indians), or *Los Chichimecas*. The whole country north of the Palma River was, therefore, very often designated as "the Province of the Chichimecas, or of the Savage Indians" (*La Provincia de los Chichimecas*, or *de los Indios bravos*). It was a custom from which also grew out the name of the Rio Bravo. When the French, under La Salle, arrived on the coasts of Texas (1685), they took possession of it under the name and as a part of their great country, *La Nouvelle France* (New France); which name, according to their notions, covered as much ground as the name of Florida, according to the Spanish ideas; that is to say, the whole eastern half of North America. The French from this time considered Texas to be a part of their dominion as far south as the Rio Bravo, and called it also Louisiana, when they had erected their Mississippi colony after 1699, and had given to it officially that name after 1712. All their old maps of Louisiana go as far down as Rio Bravo, and include Texas. Meanwhile the Spaniards had, however, taken actual possession of that province, and gave another name to it.

Some believe the word Texas to be Indian, and say that when Alonzo de Leon, in 1689, arrived among them he heard them often use the word Texas as a term of love or friendship. Others suppose that the word is Spanish, and that it implies some indication of "the manner of the Indians in constructing or covering tents or wigwams." But this seems a not well-founded supposition; for the Spanish word Teja (*plur.* Tejas) does not appear to have any thing to do with a covering of a tent or wigwam; it means simply "a tile."—See YOAKUM, *History of Texas*.

The first Frenchman who pronounced this name, in the year 1719, La Harpe (an officer in Louisiana, well known by his travels and writings), received it evidently through the Spaniar . He calls the country of the Cenis Indians *Las Tekas*. Some old French authors write also *La province de Lastikas*. In the year 1727, for the first time, a separate "governor for the province of Texas" alone was nominated; but this province extended then only as far south as the River Medina. The southwestern part of our present Texas belonged still for a long while to "the province of Coahuila."—YOAKUM, I. 393.

It is supposed that with this establishment of Texas as a new and separate government for itself (in 1727) was also connected an introduction of a new name—of *Las Nuevas Filipinas* (the new Philippines), given to this government in honor of King Philip V. At least neither Barcia nor any other author used this name before this time, while we afterward find it repeatedly in official papers and documents. The old and popular name of *Los Texas* was, however, used besides it. We see both names still on maps of a very late date; as, for instance, on a Mexican map of the year 1813, *Provincia de Texas o Nuevas Filipinas* (the province of Texas, or the new Philippines). Until 1824, the dominion of this name did, however, southward, not reach the Rio Bravo. The province of Coahuila and of Nuevo Sant Ander took away the whole southwestern quarter of Texas, as far east and north as the Rio Medina and the sources of the Colorado and Brazos. Eastward, toward Louisiana, the province of Texas and New Philippines extended to the neighborhood of the Red River, and on the shores of the Mexican Gulf to the Rio Calcasiu, and sometimes as far as the Merrmentau. In the year 1824, under the dominion of the Mexican Republic, the old connected provinces of Coahuila and Texas were again melted together into one state, under the name of *El Estado de Texas y Coahuila*. The southern part of our Texas, about the lower Rio Bravo, as far northeast as the Medina River, was not yet included in this name. It became a part of the new created *Estado de Tamaulipas*. Sometimes, and on some maps, it was tried at this period to apply to the whole of Texas the name of Fredonia, which was the particular name of Austin's colony. This has been done, for instance, in that otherwise excellent *Dictionnaire de Geographie*," edited by a society of French geographers. In the year 1836 Coahuila and Texas were divided again, and *Texas became a separate and independent State*, which was (1845) annexed to the United States, and received then, after the war of 1846, its present boundaries. These boundaries extend from this time along the Gulf of Mexico, from the mouth of the Rio Bravo in the south to the mouth of the Sabina in the east. To show how far and in what manner the boundaries of this name and State were extended toward the interior does not belong to our hydrographical researches.—J. G. KOHL.

The general aspect of the country is that of a vast inclined plane, gradually sloping from the mountains eastward to the sea, and traversed by numerous rivers, all having a southeast direction. It may be naturally divided into three regions; the first, which is level, extends along the coast with a breadth varying from 100 to 30 miles, being narrowest at the southwest. The soil of this region is principally a rich alluvion, with scarcely a stone, and singularly free from stagnant swamps. Broad woodlands fringe the banks of the rivers, between which are extensive and rich pasture lands. The second division, the largest of the three, is the undulating prairie region which extends for 150 or 200 miles farther inland, its wide, grassy tracts alternating with others that are thickly timbered. Limestone and sandstone form the common substrata of this section. The third, or mountainous region, situated principally on the west and southwest, forming part of the Sierra Madre, or Mexican Alps, is but little explored. At its remote extremity it consists of an elevated table-land, resembling the vast steppes of Asia, except in their superior fertility. The mountain sides are clothed with forests, and there are few, if any districts of country of the same extent as Texas, with so little unproductive land.

The principal rivers in the State are the Sabine, Neches, Trinidad, Brazos, Colorado, Guadaloupe, San Antonia, Nueces, and the Rio Grande. The Neches is navigable for small steamboats for more than 100 miles, Trinidad River for 300 or 400 miles, and the Brazos for half that distance. The Rio Colorado is obstructed by a raft 10 miles from its mouth; it will, when removed, be navigable for steamboats 200 miles to Austin City. The San Antonia and Neuces are navigable for only a short distance; but the Rio Grand del Norte, a noble stream, having a course of 1800 miles, will most probably, though in parts broken by rapids, become hereafter an important commercial channel. Galveston Bay, into which the Trinidad flows, is about 35 miles in length, and from 12 to 18 miles wide. The Gulf of Mexico bounds its southeastern border, on which are many bays and some good harbors. The Texan year

is divided into wet and dry seasons; the former lasts from December to March, and the latter from March to December. Snow is seldom seen except on the mountains. The country is in most parts covered with a luxuriant native grass, and it is amply supplied with timber, among which are the live oak, white, black, and post oak, hickory, walnut, sycamore, caoutchouc, etc., and on the high lands pine and cedar. The "Cross Timbers" are two lines of continuous forests of great extent. Cotton and sugar-cane are the great agricultural staples, both of which attain to great perfection. The grains chiefly cultivated are Indian corn and wheat. Peaches, melons, figs, oranges, lemons, pine-apples, dates, olives, grapes, etc., grow abundantly. Great numbers of cattle and horses are reared, and vast herds of buffaloes and wild horses wander over the prairies, while deer and game are abundant. Among its minerals are coal of a superior quality, iron ore, limestone, granite, slate, gypsum, etc. Silver mines have been wrought in the mountains, and bitumen and salt are abundant.

Manufactures, etc.—There were in the State in 1850 one woolen factory, with a capital invested of $8000, employing four males and four females, manufacturing 14,000 yards of cloth, etc., valued at $15,000; two establishments with a capital of $16,000, employing 35 persons, and making 200 tons of iron castings, etc., valued at $55,000; 38 flouring and grist mills, 89 sawmills, 22 tanneries, 34 printing-offices, three tri-weekly, two semi-weekly, and 32 weekly publications. Capital invested in manufactures, $613,238; value of manufactured articles, $1,202,885.

The principal places in the State are Austin, the capital, Galveston, Houston, Washington, Matagorda, San Felipe de Austin, San Augustine, Nacogdoches, San Antonia de Bexar, Corpus Christi, and Brownville. There were, January 1st, 1856, 36 miles of railroad built.

FOREIGN COMMERCE OF THE STATE OF TEXAS, FROM JULY 1, 1845, TO JULY 1, 1857, SHOWING ALSO THE DISTRICT TONNAGE IN 1846.

Years ending	Exports.			Imports.	Tonnage cleared.		District Tonnage.	
	Domestic.	Foreign.	Total.	Total.	American.	Foreign.	Registered.	Enrolled and Licensed.
June 30, 1846.....	....	....	....	$17,266	695	2,500	....	....
1847.....	....	....	....	29,826	117	5,587	590	987
1848.....	$12,089	$131,521	$143,610	94,024	730	2,057	....	....
1849.....	82,791	....	82,791	16,649	1035	1,631	....	....
1850.....	....	24,958	24,958	25,650	....	....	....	....
Total...	$94,880	$156,479	$251,359	$183,415	2577	11,775	....	....
June 30, 1851.....	$75,442	....	$75,442	$94,715	858	1,479	....	....
1852.....	229,334	$483,741	713,075	77,892	2269	5,199	....	....
1853.....	500,918	459,763	1,029,681	281,459	2751	5,226	....	....
1854.....	702,448	552,001	1,814,449	231,423	4875	4,838	....	....
1855.....	694,057	222,904	916,961	202,568	4924	6,040	....	....
1856.....	1,252,925	689,664	194,589	321,834	7504	3,965	....	....
1857.....	1,491,"75	....	1,491,375	309,774	6519	6,192	....	....

—*See* SPANISH COLONIES for commerce prior to the year 1846.

Thaler, a German silver coin, first coined in Joachimsthal, a valley in Bohemia. The value of the thaler is about seventy cents.—*See* COINS, GERMANY, and DOLLAR.

Thames (*Tamesis*), the principal though not the longest river of England, through the south part of which it flows mostly in an easterly direction. It rises under the name of the Isis, about two miles south of Cirencester, and 376 feet above the sea, flows at first south to near Cricklade, then east-northeast past Lechlade to near Oxford, and southeast past Oxford, Abingdon, and Wallingford to Reading, after which its course is mostly eastward to Gravesend. A few miles beyond this it expands into an estuary, which at its junction with the North Sea at the Nore, between the Isle of Sheppey and Foulness Point, is fifteen miles across, and has on its opposite banks the towns Sheerness and Southend. Total course estimated at 215 miles. At Dorchester it receives the Thamer from the north, and thenceforth assumes its proper name; other principal affluents are the Churnet, Coln, Wainrush, Evenlode, Cherwell, Colne, Brent, Lea, and Roding from the north, and the Cole, Konnet (its chief affluent), Wey, Mole, and some smaller rivers from the south. The Mersey joins its estuary at Sheerness. Its basin is of less size than that of the Severn, but no river in the world has more commercial importance. The tide flows up it for about eighty miles; it is navigable for ships of any burden to Deptford, for vessels of 200 tons to London Bridge, and for barges 130 miles farther, where it is united by the Thames and Severn Canal with the Severn, below Gloucester; it is also connected with all the centre of England by the Oxford and Warwick and Grand Junction Canals, and by other canals with Bristol, Basingstoke, Arundel, etc. Under the Romans it formed the north boundary of the province of *Britannia prima*.

The Thames is the richest river in the world. It has been erroneously said that its name is Isis till it arrives at Dorchester, when, being joined by the Thame or Tame, it assumes the name of Thames. What was the origin of this common error can not now be traced: poetical fiction, however, has perpetuated the error, and invested it with a kind of classical sanctity. It was called Thames or Tems before it came near the Thame.—CAMDEN. The river rose so high at Westminster that the lawyers were brought out of the hall in boats, A.D. 1235. Again it rose to great height, 1736, 1747, 1762, and 1791. The conservation of the Thames was given to the mayors of London, 1489. The Thames was made navigable to Oxford, 1624. It ebbed and flowed twice in three hours, 1658. Again, three times in four hours, March 22, 1682. Again, twice in three hours, November 24, 1777.—*See article* TUNNEL.

Thermometer. The invention of this instrument is ascribed to several scientific persons, all about the same time. Galileo, 1597.—LIBRI. Invented by Drebbel of Alcmaer, A.D. 1609.—BOERHAAVE. Invented by Paulo Larpi in 1609.—FULGENTIO. Invented by Sanctorio in 1610.—BORELLI. Fahrenheit's thermometer was invented about 1720; and the scale called Reaumur's soon after, 1730. The mode of construction by substituting quicksilver for spirits was invented some years subsequently.—HAYDN.

Thimble. This simple yet useful, and now indispensable appendage to the ladies' work-table, is of Dutch invention. The art of making them was brought to England by John Lofting, a mechanic from Holland, who set up a work-shop at Islington, near London, and practiced the manufacture of them in various metals with profit and success, about 1695.—HAYDN.

Thread (Ger. *Zwirn*; Du. *Garen*; Fr. *Fil*; It. *Refe*; Sp. *Hilo*, *Torzal*; Russ. *Nitki*), a small line made up of a number of fibres of some vegetable or animal substance, such as flax, cotton, or silk; whence its names of linen, cotton, or silk thread.—*See* COTTON MANUFACTURE.

Tide Gauge, a mechanical contrivance for registering the state of the tide continuously at every in-

stant of time. In the *Philos. Trans.* for 1838, there is a description of a very complete self-registering machine for this purpose, erected at Bristol by Mr. Bunt. The principal parts are an eight-day clock, which turns a vertical cylinder revolving once in twenty-four hours; a wheel, to which an alternate motion is communicated by a float rising and falling with the tide, and connected with the wheel by a wire passing over a pulley, and kept constantly strained by a counterpoise; and a small drum on the same axis with the wheel, which, by a suspending wire, communicates one-eighteenth of the vertical motion of the float to a bar carrying a pencil, which describes a curve on the cylinder, and thereby marks the fluctuations, and the time and height of high water.

Tides, the alternate rise and fall of the waters of the ocean. The moon is the principal agent in the production of the tides; but they are modified, both with respect to their height and the times at which they happen, by the action of the sun. The effect of the planets is inappreciable. Homer is the earliest profane author who speaks of the tides. Posidonius of Apamea accounted for the tides from the motion of the moon, about 79 B.C.; and Cæsar speaks of them in his fourth book of the Gallic War. The theory of the tides was first satisfactorily explained by Kepler, A.D. 1598; but the honor of a complete explanation of them was reserved for Sir Isaac Newton, who laid hold of this class of phenomena to prove universal gravitation, about 1683.

The attractive force of a body on a distant particle of matter varying inversely as the square of the distance, the particles of the earth on the side next the moon will be attracted with a greater, and those on the opposite side with a smaller force, than those which are situated intermediately. The gravitation toward the earth's centre of the particles nearest the moon will therefore be diminished, and consequently, if at liberty to move among themselves, they will rise above the general level. In like manner, the moon's attraction on the most distant particles being less than on the central ones, their relative gravitation toward the centre will also be diminished, and the waters will consequently be heaped up on the side of the earth which is turned away from the moon. Hence, if the earth were at rest, the ocean would take the form of an oblong spheroid, with its longer axis passing through the attracting body; and it may be shown from theory that the spheroid would be in equilibrium under the influence of the moon's attraction, if the longer semi-axis exceeded the shorter by about 58 inches. But in consequence of the rapid rotation of the earth about its axis, the spheroid of equilibrium is never fully formed; for before the waters can take their level, the vertex of the spheroid has shifted its position on the earth's surface, in consequence of which an immensely broad and very flat wave is formed, which follows the motions of the moon at some interval of time. In the open sea the time of high water is, in general, from two to three hours after the moon's transit over the meridian either above or below the horizon. The tidal wave, it is to be observed, is entirely different from a current: the particles of water merely rise and fall; but except when the wave passes over shallows, or approaches the shore, there is little or no progressive motion.

The waters of the ocean are affected in a similar manner by the action of the sun, under the influence of which they have a tendency to assume at every instant the form of an elongated spheroid; but although the attractive force of the sun is immensely greater than that of the moon, yet, by reason of the greater distance of the sun, the *difference* of the effect on particles situated on opposite sides of the earth (on which difference the phenomena depend) is very much less. The solar tides are therefore comparatively small with respect to the lunar tides, and, in fact, are never perceived as distinct phenomena, but become sensible only from the modifications which they produce in the heights and times of those which primarily depend on the moon. At the syzygies, when the sun and moon come to the meridian together, the tides are, *ceteris paribus*, the highest; at the quadratures, or when the sun and moon are 90° distant, the tides are least. The former are called *spring tides*, the latter *neap tides*. Although we are not in possession of data to enable us to compute the exact height either of the spring or neap tides, yet their relative heights in the open ocean probably correspond very nearly to the ellipticities of the spheroids of equilibrium that would be formed under the action of the two bodies exerted separately. Now the ellipticity of the aqueous spheroid formed by the moon's action is about five feet, and the ellipticity of that formed by the sun's action about two feet; therefore, the spring and neap tides being the sum and difference of the separate effects, the average spring tide will be to the average neap in the ratio of about 7 to 3.

The apparent time of high water at any port, in the afternoon of the day of new or full moon, is what is usually called the *establishment of the port*. Mr. Whewell calls this the *vulgar* establishment, and the mean of all the intervals of tide and transit for a half lunation he terms the *corrected* establishment. This corrected establishment is consequently the lunitidal interval corresponding to the day on which the moon passes the meridian exactly at noon or midnight.

The two tides immediately following one another, or the tides of the day and night, vary, both in height and time of high water, at any particular place with the distance of the sun and moon from the equator. As the vertex of the tide wave always tends to place itself vertically under the luminary which produces it, it is evident that, of two consecutive tides, that which happens when the moon is nearest the zenith or nadir will be greater than the other; and consequently, when the moon's declination is of the same denomination as the latitude of the place, the tide which corresponds to the upper transit will be greater than the opposite one, and *vice versa*, the differences being greatest when the sun and moon are in opposition, and in opposite tropics. This is called the *diurnal inequality*, because its cycle is one day; but it varies greatly at different places, and its laws, which appear to be governed by local circumstances, are very imperfectly known.

We have now described the principal phenomena that would take place were the earth a sphere, and covered entirely with a fluid of uniform depth. But the actual phenomena of the tides are infinitely more complicated. From the interruption of the land, and the irregular form and depth of the ocean, combined with many other disturbing circumstances, among which are the inertia of the waters, the friction on the bottom and sides, the narrowness and length of the channels, the act. of the wind, currents, difference of atmospheric pressure, etc., great variation takes place in the mean times and height of high water at places differently situated; and the inequalities above alluded to, as depending on the parallax of the moon, her position with respect to the sun, and the declination of the two bodies, are, in many cases, altogether obliterated by the effects of the disturbing influences, or can only be detected by the calculation and comparison of long series of observations.

By reason of these disturbing causes, it becomes a matter of great difficulty to trace the propagation of the tide wave, and the connection of the tides in different parts of the world. In the *Philosophical Transactions* for 1832, Sir John Lubbock published a map of the world, in which he inserted the times of high water at new and full moon at a great number of places on the globe, collected from various sources, as works on navigation, voyages, sailing directions, etc.; and,

in order that the march of the tide wave might be traced more readily, the times were expressed in Greenwich time as well as the time of the place. In the same *Transactions* for 1833, Mr. Whewell prosecuted this subject at greater length; and availing himself of *à priori* considerations, as well as of a mass of information collected in the hydrographer's office at the Admiralty, inserted in the map a series of *cotidal lines*, or lines along which high water takes place at the same instant of time. But these cotidal lines, as Sir J. Lubbock remarks, are entirely hypothetical; for we have few opportunities of determining the time of high water at a distance from the coast, though this is sometimes possible by means of a solitary island, as St. Helena.—Lubbock's *Elementary Treatise on the Tides*, 1839.

According to Mr. Whewell's deductions, the general progress of the great tide wave may be thus described: It is only in the Southern Ocean, between the latitudes of 50 and 70 degrees, that a zone of water exists of sufficient extent to allow of the tide wave being formed. Suppose, then, a line of contemporary tides, or *cotidal lines*, to be formed in the Indian Ocean, as the theory supposes, that is to say, in the direction of the meridian, and at a certain distance to the eastward of the meridian in which the moon is. As this tide wave passes the Cape of Good Hope, it sends off a derivative undulation, which advances northward up the Atlantic Ocean, preserving always a certain proportion of its original magnitude and velocity. In traveling along this ocean the wave assumes a curved form, the convex part keeping near the middle of the ocean, and ahead of the branches, which, owing to the shallower water, lag behind on the American and African coasts; so that the cotidal lines have always a tendency to make very oblique angles with the shore, and, in fact, run nearly parallel to it for great distances. The main tide, Mr. Whewell conceives, after reaching the Orkneys, will move forward in the sea bounded by the shores of Norway and Siberia on the one side, and those of Greenland and America on the other, will pass the pole of the earth, and finally end its course on the shores in the neighborhood of Behring's Straits. It may even propagate its influence through the straits, and modify the tides of the North Pacific. But a branch tide is sent off from this main tide into the German Ocean; and this, entering between the Orkneys and the coast of Norway, brings the tide to the east coast of England, and to the coasts of Holland, Denmark, and Germany. Continuing its course, part of it, at least, passes through the Strait of Dover, and meets in the British Channel the tide from the Atlantic, which arrives on the coast of Europe twelve hours later; but in passing along the English coast, another part of it is reflected from the projecting land of Norfolk upon the north coast of Germany, and again meets the tide wave on the shores of Denmark. Owing to this interference of different tide waves, the tides are almost entirely obliterated on the coast of Jutland, where their place is supplied by continual high water.

In the Pacific Ocean the tides are very small, but there are not sufficient observations to determine the forms and progress of the cotidal lines. Off Cape Horn, and round the whole shore of Terra del Fuego, from the western extremity of the Strait of Magalhaens to Staten Island, it is very remarkable that the tidal wave, instead of following the moon in its diurnal course, travels to the *eastward*. This, however, is a partial phenomenon; and a little farther to the north of the last-named places the tides set to the north and west. In the Mediterranean and Baltic seas the tides are inconsiderable, but exhibit irregularities for which it is difficult to account. The Indian Ocean appears to have high water on all sides at once, though not in the central parts at the same time.

Since the tides on our coasts are derived from the oscillations produced under the direct agency of the sun and moon in the Southern Ocean, and require a certain interval of time for their transfer, it follows that, in general, the tide is not due to the moon's transit immediately preceding, but is regulated by the position which the sun and moon had when they determined the primary tide. The time elapsed between the original formation of the tide and its appearance at any place is called the *age* of the tide, and sometimes, after Bernoulli, the *retard*. On the shores of Spain and North America the tide is a day and a half old; in the port of London it appears to be two days and a half old when it arrives.

Velocity of the Tide Wave.—In the open ocean the crest of the tide travels with enormous velocity. If the whole surface were uniformly covered with water, the summit of the tide wave, being mainly governed by the moon, would every where follow the moon's transit at the same interval of time, and consequently travel round the earth in a little more than twenty-four hours. But the circumference of the earth at the equator being about 25,000 miles, the velocity of propagation would therefore be about 1000 miles per hour. The actual velocity is perhaps nowhere equal to this, and is very different at different places. In latitude 60° south, where there is no interruption from land (excepting the narrow promontory of Patagonia), the tide wave will complete a revolution in a lunar day, and consequently travel at the rate of 670 miles an hour. On examining Mr. Whewell's map of cotidal lines, it will be seen that the great tide wave from the Southern Ocean travels from the Cape of Good Hope to the Azores in about twelve hours, and from the Azores to the southernmost point of Ireland in three hours more. In the Atlantic the hourly velocity in some cases appears to be 10° of latitude, or near 700 miles, which is almost equal to the velocity of sound through the air. From the south point of Ireland to the north point of Scotland the time is eight hours, and the velocity about 160 miles an hour along the shore. On the eastern coast of Britain, and in shallower water, the velocity is less. From Buchanness to Sunderland it is about sixty miles an hour; from Scarborough to Cromer, thirty-five miles; from the North Foreland to London, thirty miles; from London to Richmond thirteen miles an hour in that part of the river.—Whewell, *Phil. Trans.*, 1833 and 1836. It is scarcely necessary to remind the reader that the above velocities refer to the transmission of the undulation, and are entirely different from the velocity of the current to which the tide wave gives rise in shallow water.

Theory of the Tides.—The theory of the tides, considered as a consequence of solar and lunar attraction, was first sketched by Newton in the *Principia*. In the 36th and 37th propositions of the third book, he determines the forces of the sun and moon to elevate the waters of the ocean, on the supposition that the sea is a fluid of the same density as the earth, covering the whole terrestrial surface, and which takes at every instant the figure of equilibrium. He assumes, without demonstration, that this figure is an elongated spheroid. One spheroid he supposes to be formed under the action of the sun, another under the action of the moon; and, by reason of the smallness of their eccentricities, they may be conceived as superposed the one on the other. From these suppositions he deduced the general phenomena of the ebb and flow of the sea; and by comparing his theory with observations of the heights of the spring tides made at the mouth of the Avon, near Bristol, he determined the ratio of the attraction of the moon to that of the sun to be nearly 4·48 to 1; whence he deduced the mass of the earth to be to that of the moon as 39·788 to 1, the density of the sun to that of the earth as 1 to 4, and the density of the moon to that of the earth as 11 to 9. Newton's theory was defective in many points of view, but fifty

years elapsed before it received any improvement. In 1738 the subject of the tides was proposed as a prize question by the French Academy of Sciences, which gave occasion to the celebrated treatises of Daniel Bernoulli, Maclaurin, and Euler. Maclaurin's Essay is remarkable, as containing a demonstration of the theorem assumed by Newton, that the elliptic spheroid affords an equilibrium under the action of the disturbing forces: those of Bernoulli and Euler, though they furnish no new principle of equal or similar importance in point of theory, enter more into details, and contain many useful illustrations. That of Bernoulli, indeed, contains a table which has served as the model for all those (not purely empirical) which have since been formed. The next important step in the theory of the tides was taken by Laplace, who first treated the subject as a general question of hydrodynamics, and attempted to deduce the principal phenomena from the equations of the motions of fluids. But in order to simplify the equations, which are of a very complicated nature, he was forced to have recourse to the hypothesis of a fluid covering entirely a spheroid of a regular surface, and consequently the results were far from representing the actual observations of the tides at any port. The late Thomas Young (*Ency. Brit., article* TIDES) extended Laplace's method to the more general case of an ocean covering a part only of the earth's surface, and more or less irregular in its form, and attempted also to include in his calculation the effects of hydraulic friction on the times and magnitudes of the tides.

Influence of Atmospheric Pressure and Winds.—Besides the numerous causes of irregularity depending on the local circumstances, the tides are also affected by the state of the atmosphere. At Brest, the height of high water varies inversely as the height of the barometer, and rises more than eight inches for a fall of about half an inch of the barometer. At Liverpool, a fall of one-tenth of an inch in the barometer corresponds to a rise in the River Mersey of about an inch; and at the London Docks, a fall of one-tenth of an inch corresponds to a rise in the Thames of about seven-tenths of an inch. With a low barometer, the tides may therefore be expected to be high, and *vice versa*. The tide is also liable to be disturbed by winds. Sir J. Lubbock states that, in the violent hurricane of January 8, 1839, "there was no tide at Cainsborough, which is twenty-five miles up the Trent—a circumstance unknown before. At Salmarsh, only five miles up the Ouse from the Humber, the tide went on ebbing, and never flowed till the river was dry in some places; while at Ostend, toward which the wind was blowing, contrary effects were observed. During strong northwesterly gales the tide marks high water earlier in the Thames than otherwise, and does not give so much water, while the ebb-tide runs out late, and marks lower; but upon the gales abating and the weather moderating, the tides put in, and rise much higher while they also run longer before high water is marked, and with more velocity of current; nor do they run out so long or so low.—BRANDE'S *Cyclopædia*.

The tidal observations of the Pacific coast have casually led to a determination of great scientific interest, that of the average depth of the Pacific Ocean between the coasts of Japan and California. On the 23d of December, 1854, an earthquake occurred in Japan by which the town of Simoda, in the island of Niphon, was destroyed. From the imperfect accounts which have reached us, it appears that at nine A.M. on that day the severe shock of an earthquake was felt on board the Russian frigate *Diana*, then lying in the harbor of Simoda. Half an hour later the sea came into the bay in an immense wave thirty feet in height, overwhelming the town and then receding. This advance and recession occurred five times, and by 2:30 P.M. all was again quiet. The depth of the sea during these changes varied from less than eight to more than forty feet. Upon the same day an extraordinary rise and fall of water was observed at Peel's Island, one of the Bonin Islands, and the tide continued to rise and fall during the day at intervals of fifteen minutes, gradually lessening until evening.—*American Journal of Science*, January, 1858 [Prof. BACHE].

The following table contains the revised data for the principal tidal elements of a number of points on the coast of the United States, with additions to the tables published last year, furnished by the discussions of the tidal observations. These elements are selected from a large number of results obtained in the progress of the Coast Survey, only those stations being reported, as a general rule, where the observations extended through at least two lunations.

GENERAL TIDE TABLE FOR THE COAST OF THE UNITED STATES.

Stations.	States.	Rise and Fall.		
		Mean.	Spring.	Neap.
		Feet.	Feet.	Feet.
Coast from Portland to New York.				
Portland	Maine	8·8	10·0	7·6
Portsmouth	New Hampshire	8·6	9·8	7·2
Newburyport	Massachusetts	7·8	9·1	6·6
Salem	Do.	9·2	10·6	7·6
Boston Light	Do.	9·3	10·9	8·1
Boston	Do.	10·9	11·3	8·5
Nantucket	Do.	3·1	3·6	2·6
Edgartown	Do.	2·9	2·5	1·3
Holmes's Hole	Do.	1·7	1·8	1·3
Tarpaulin Cove	Do.	2·4	2·6	2·0
Wood's Hole, south side	Do.	3·9	..	..
" north side	Do.	1·5	..	..
Bird Island Light	Do.	4·4	5·3	3·5
New Bedford harbor	Do.	3·8	4·6	2·8
Newport	Rhode Island	3·9	4·6	3·1
Point Judith	Do.	3·1	3·7	2·6
Montauk Point	New York	2·0	2·5	1·4
Sandy Hook	New Jersey	4·8	5·6	4·0
New York	New York	4·3	5·4	3·4
Long Island Sound.				
Watch Hill	Rhode Island	2·7	3·1	2·3
Stonington	Connecticut	2·3	3·4	2·1
Little Gull Island	New York	2·5	2·9	2·3
New London	Connecticut	2·6	3·1	2·1
New Haven	Do.	5·3	6·4	5·1
Bridgeport	Do.	6·5	8·6	4·7
Oyster Bay, Long Island	New York	7·3	9·2	5·4
Sand's Point	Do.	7·7	8·9	6·4
New Rochelle	Do.	7·6	8·6	6·6
Throg's Neck	Do.	7·8	9·2	6·1
Coast of New Jersey.				
Cold Spring Inlet	New Jersey	4·4	5·4	3·6
Cape May	Do.	4·8	6·0	4·3
Delaware Bay and River.				
Delaware Breakwater	Delaware	3·5	4·5	3·0
Highbee	New Jersey	4·9	6·2	3·9
Egg Island Light	Do.	6·0	7·0	5·1
Mahon's Ditch	Delaware	5·3	6·0	5·0
New Castle	Do.	6·5	6·9	6·6
Philadelphia, Navy Yard	Pennsylvania	6·1	7·0	5·2
" Walnut-st. whf.	Do.	5·9	6·6	5·1
Chesapeake Bay.				
Old Point Comfort	Virginia	2·5	3·0	2·0
Point Lookout	Maryland	1·4	1·9	0·7
Annapolis	Do.	0·9	1·0	0·8
Bodkin Light	Do.	1·0	1·3	0·8
Baltimore	Do.	1·3	1·5	0·9
James River	Virginia	2·6	..	..
Richmond	Do.	2·9	..	..
Coast of North Carolina, South Carolina, Georgia, and Florida.				
Hatteras Inlet	North Carolina	2·0	2·2	1·8
Beaufort	Do.	2·8	3·3	2·2
Smithville	Do.	4·5	5·5	3·8
Charleston	South Carolina	5·3	6·3	4·6
Savannah River	Georgia	7·0	8·0	5·9
Savannah city	Do.	6·5	7·6	5·5
St. Augustine	Florida	4·2	4·7	3·5
Cape Florida	Do.	1·5	1·7	1·2
Sand Key	Do.	1·2	2·0	0·6
Key West	Do.	1·4	2·3	0·7
Tampa Bay	Do.	1·4	1·7	1·0
Cedar Keys	Do.	2·5	2·8	1·8
Western Coast.				
San Diego	California	3·7	5·0	2·3
San Pedro	Do.	3·9	4·7	2·2
San Luis Obispo	Do.	3·7	5·2	2·4
Monterey	Do.	3·4	4·3	2·5
San Francisco	Do.	3·6	4·3	2·8
Astoria	Oreg. Territory	6·1	7·3	4·5

REPORT MADE TO THE SUPERINTENDENT, SHOWING THE LEAST WATER IN CHANNEL ENTRANCES TO CERTAIN HARBORS, RIVERS, AND ANCHORAGES, ON THE COASTS OF THE UNITED STATES: PREPARED BY LIEUTENANT W. D. WHITING, AND REVISED BY LIEUTENANTS COMMANDING J. J. ALMY AND T. A. CRAVEN, U. S. N., ASSISTANTS IN THE COAST SURVEY. TIDAL DATA BY ASSISTANT L. F. POURTALES, IN CHARGE OF TIDAL DIVISION.

Places.	Limits between which Depths are given.	LEAST WATER IN CHANNEL WAY. Mean Tides. Low Water	Mean Tides. High Water.	Spring Tides. Low Water	Spring Tides. High Water	Authorities —(From Coast Survey Data when not otherwise stated.)
		Feet.	Feet.	Feet.	Feet.	
Portland, Maine	From Cape Elizabeth to Portland Light	45	53·8	44 5	54·4	1850, '53, and '54.
	*From Portland Light to breakwater...	36	44·8	35·5	45·4	
	From breakwat. to end of Munjoy Point	20	38·8	29·5	39·4	
	From breakwater to anchorage	16	24·8	15·5	25·4	
	Channel way off town and wharves	27	35·8	26·5	36·4	
	From Munjoy to railroad bridge.....	19·5	28·3	19	28·9	
Portsmouth, N. H....	From Whale's Back to Fort Constitution	42	50·6	41·4	51·8	1851.
	From Fort Constitution to the Narrows.	51	59·6	50·4	60·8	
	From the Narrows to the city	45	53·6	44·4	54·8	
	Off the wharves	63	71·6	62·4	72·8	
Salem, Massachusetts.	Northern ship channel, between Baker's and Misery Islands	52	61·2	51·3	61·9	1850 and '51.
	Southern ship channel, passing Halfway Rock, Gooseberry and Eagle Islands, to the northward, Cat Island and Coney Island to the southward.....	28	37·2	27·3	37·9	
	Inside of Salem Neck	19	23·2	18·3	23·9	1850 and '51.
Boston, "	Main ship channel, between Lovell's and Gallop's Island.....	28·5	38·5	27·8	39·1	1846, '47, '48, and '53.
	Broad sound, south channel.....	19·5	29·5	18·8	30·1	
	President's Roads, anchorage.....	31·5	41·5	30·8	42·1	
	Main ship channel, between Governor's Island and Castle Island.....	18	28	17·3	28·6	
Narragansett Bay to Prudence Island.	Entering with Boston Neck on port hand, Beavertail and Dutch Island Lights on starboard hand, passing between Canonicut Point and Hope Island.....	25	28·9	24·6	29·2	Com. Wadsworth, 1832.
	Entering with Beavertail light on the port, and Castle Hill on starboard hand, up to Goat Island	60	68·9	59·6	64·2	1849.
	Anchorage, southward and westward of Goat Island.....	33	36·9	32·6	37·2	
	Abreast of wharves, inside of Goat Isl'd	21	24·9	20·6	25·2	
	From Newport harbor, inside of Gulf Rocks, to Prudence Island	31	34·9	30·6	35·2	
	To Mount Hope Bay.....	42	45·9	41·6	46·2	
	To Mount Hope Bay, with Cormorant Rock, Sachuset Point on port, and Saughkonnet Point on starboard hand	20	23·9	19·3	24·6	
New York.....	Gedney's channel	24	28·8	23·6	29·1	
	North channel.....	22	26·8	21·6	27·1	
	South channel.....	22·5	27·3	22·1	27·6	
	Main ship channel, passing Sandy Hook to Southwest Spit buoy.....	31	35·8	30·6	36·1	From 1835 to 1853, inclusive.
	Main ship channel, after passing S.W. Spit buoy on N.E. course, one mile up the Bay for New York	22	26·8	21·6	27·1	
Delaware Bay	†Main ship channel, passing Delaware breakwater.....	61	64·5	60·4	64·9	From 1840 to 1844, inclusive.
	Off Brandywine light-house.....	41	46·5	42·4	46·9	
	Main ship channel, passing False Liston's tree, to abreast of Bombay Hook light.....	27·5	33·4	27·3	34·2	
	Blake's channel, along Hogger Shoal ..	13·5	19·4	13·3	20·2	
	Blake's channel, passing Mahon River light.....	13·5	19·4	13·3	20·2	
	Main ship channel, approaching Liston's Point.....	20	25·9	19·8	26·7	
Delaware River.....	Main ship channel, up to Reedy Island.	20	26	19·6	26 3	
	Main ship channel, opposite Reedy Island light-house.....	24·5	30·5	24·1	30·8	
	Opposite Delaware city.....	36	36	29·6	36·3	
	Up to Christiana Creek light.....	20 5	27	20·3	27·2	
	Up to Marcus Hook.....	20·5	27	20·3	27·2	
	Opposite Chester	24·5	30·7	24·4	31·2	
	Bar off Hog Island	18·5	24·7	18·4	25·2	
	Between Greenwich Point and Gloucester Point.....	31·5	37·5	31·4	38·2	
	From Greenwich Point up to Philadelphia.....	21·5	27·5	21·4	28·2	
Chesapeake Bay	From capes at entrance to Hampton Roads.....	30	32·5	29·8	32·8	1852, '53, and '54.
	Anchorage in Hampton Roads.....	57	61·5	56·8	61·8	
	From Hampton Roads to Sewall's Point	25	27·5	24·8	27·8	
	South of Sewall's Point (one mile and a half).....	21	23·5	20·8	23·8	
	Up to Norfolk.....	23	25·5	22·8	25·8	
Elizabeth River, Va..	Between Norfolk and navy yard.....	25·5	28	25·3	28·3	
Hatteras Inlet, N. C..	Over northern bar.....	12·5	14·5	12·4	14·6	1850.
	Over southern bar.....	12·5	14·5	12·4	14·6	1850.
	Over northern bar.....	12	14	11·9	14·1	1852.
	Over southern bar.....	14	16	13·9	16·1	1852.
Ocracoke Inlet.....	Over bar.....	10·7	13·1	10·5	13·3	1852.
Beaufort, N. C.	Entrance to channel	15·5	18·3	15·3	18·6	1854.
Cape Fear.....	New Inlet bar	7	11·5	6·5	12	1851, '52, and '53.
	‡Main ship channel, Cape Fear River ..	8	12·5	7·5	13	

* The depth in channel way varies between 6 and 8½ fathoms.

† Soundings varying between 10 and 15 fathoms.

‡ Subject to frequent changes.

REPORT TO THE SUPERINTENDENT OF THE UNITED STATES' COAST SURVEY.—*Continued.*

Places	Limits between which Depths are given.	LEAST WATER IN CHANNEL WAY. Mean. Low Water.	Mean. High Water.	Spring Tides. Low Water.	Spring Tides. High Water.	Authorities.—(From Coast Survey Data when not otherwise stated.)
		Feet.	Feet.	Feet.	Feet.	
Cape Fear	Western rip	8	12·5	7·5	13	1856.
	Western bar	10	14·5	9·5	15	
Georgetown, S. C.	Entrance to Winyah Bay, East and Southeast Pass	7	10·8	6·7	11·8	1851, '52, and '53.
	Anchorage inside of North Island	27	30·8	26·7	31·8	
	Up to Georgetown	9	12·8	8·7	13·1	
Charleston, S. C.	Main bar	11	16·3	10·8	17·1	1850.
	North channel	10	15·3	9·8	16·1	
	Mc Tilt's channel	7	12·3	6·8	18·1	
	Mafflit's channel	11·5	16·8	11·3	17·6	1850.
North Edisto	Over bar at entrance	13	18·8	12·5	19·4	1856.
Port Royal	Channel up to Northeast branch	19	26	18·5	26·5	Dee Barres, 1777.
	South channel	19	26	18·5	26·5	1855.
	Southeast channel	20	27	19·5	27·5	1856.
	East channel	17	24	16·5	24·5	1855.
Tybee Entrance	Bar near Tybee Island	19	26	18·4	26·5	1851 and '52.
	Tybee Roads	31	38	30·4	38·5	
Savannah	Channel up to city (Wrecks and Garden Bank)	11	17·5	10·6	18·2	Captain Gilmer, U. S. Engineers.—1856.
St. Simon's	Over bar at entrance	17	23·1	16·5	23·8	1855 and '56.
	Entrance to Sound	33	44·1	31·5	44·8	
	Turtle River, up to Blyths Island	21	27·1	20·5	27·8	
Doboy Bar and Inlet	Entrance over bar	15·5	22·1	14·7	22·5	1855.
	Anchorage in Sound	24	30·6	23·2	31	
St. Mary's River	On bar	14	19·9	13·5	20·2	Captain Mackay, U. S. Top. En. and Coast Sur.—1856.
	Channel up to St. Mary's	19	24·9	18·5	25·2	
St. John's River, Fla.	Over bar at entrance	7	11·6	6·5	12	1855.
	Channel passing up toward Jacksonville	23	25·1	22·5	25·5	
Key West	Main ship channel to middle buoy on shoals	27	28·4	26·7	29	1850 and '51.
	From shoals to anchorage	31	31·4	29·7	32	
	East channel, entering	30	31·4	29·7	32	
	On course N.N.W. half W. (light on O'Hara's Observatory), and passing between shoals	28	29·4	27·7	30	
	From fourteen feet shoals to anchorage	30	31·4	29·7	32	
	At anchorage	27	28·4	26·7	29	
	Rock Key channel	20	21·4	19·7	22	
	Sand Key channel	27	28·4	26·7	29	
	West channel	30	31·4	29·7	32	
	Northwest channel, up to abreast N.W. light	15	18·4	14·7	17	
	Over northwest channel bar	11	12·4	10·7	13	
Tortugas	Northwest channel	45	46·2	44·8	46·4	1850 and '51.
	Southwest channel	54	55·2	53·8	55·4	
	East channel	45	46·2	44·8	46·4	
	Anchorage at Garden Key	30	31·2	29·8	31·4	1854.
Cedar Keys	Channel	10	12·5	9·7	12·6	1854.
St. Mark's	Over bar	11	18·2	10·6	13·5	1852.
	Channel at middle buoy	12	14·2	11·6	14·5	
	Up to Fort St. Mark's	7	9·2	6·6	9·5	
Apalachicola†	Channel	19·5	13·6	19·2	14	Colonel Kearney, U. States Topographical Engineers. —1822.
Pensacola†	Over bar, channel	21·5	22·5	22·2	22·7	
	From bar to navy yard	28	29	27·7	29·2	
	From navy yard to city	31	32	30·7	32·2	
	*Off wharf at Pensacola	20	21	19·7	21·2	
Mobile Bay and River†	Over outer bar	21	22	20·7	22·2	From 1847 to '52, inclusive.
	Main ship channel to Fort Morgan	36	37	35·7	37·2	
	To the upper fleet	13	13	11·7	13·2	
Ship Island harbor†	Channel	19	20·3	18·7	20·6	1848.
	Northwest channel	19·5	20·8	19·2	21·1	
	Anchorage, Man-of-war harbor	18	19·3	17·7	19·6	
Cat Island harbor†	Ship channel	16	17·8	15·7	17·6	1848.
	South Pass	14	15·3	13·7	15·6	
	Shell-bank channel	15·2	16·5	14·9	16·8	
Mississippi Delta†	Pass à Loutre, north channel	9·5	10·6	9·3	10·7	1851.
	South channel	12	13·1	11·8	13·2	
Northeast Pass†	Over bar, north entrance	9·5	10·6	9·3	10·7	1851.
	Over bar, south entrance	9	10·1	8·8	10·2	1851.
Southeast Pass†	Entering	10	11·1	9·8	11·2	1851.
South Pass†	Channel	8	9·1	7·8	9·2	1852.
Southwest Pass†	Channel	13	14·1	12·8	14·2	1852.
Barataria Bay	Over bar, outside of Grand Pass	7·5	8·7	7·2	8·9	1852.
	Grand passage to Independence Island	15	16·2	14·7	16·4	
Dernière or Last Isl'd†	Channel inside and north of Ship Island Shoal light-ship	27	28·4	26·7	28·8	1853.
	Channel north of Ship Shoal, one mile from beach of Dernière Island	14	15·4	13·7	15·8	
Saline Pass†	Across the bar	7·5	0	7·2	9·3	1853.
Galveston Bay†	Galveston Bay	12	13·1	11·7	13·3	1853.
Aransas Pass†	Aransas Pass	9	10·1	8·7	10·5	1853.
Rio Grande	Rio Grande	4	4·9	3·8	5	1853.

* Varying between 20 and 24 feet of water.

† The highest tides occur at the moon's greatest declination, and are applied in the column headed "Spring Tides."

Range of the Tide.—The difference of level between high and low water is affected by various causes, but chiefly by the configuration of the land, and is very different at different places. In deep inlends of the shore, open in the direction of the tide wave, and gradually contracting like a funnel, the convergence of the water causes a very great increase of the range. Hence the very high tides in the Bristol Channel, the Bay of St. Malo, and the Bay of Fundy, where the tide is said to rise sometimes to the height of 100 feet. Promontories, under certain circumstances, exert an opposite influence, and diminish the tide.

REPORT TO THE SUPERINTENDENT, ETC.—*Continued.*

Places.	Limits between which Depths are given.	LEAST WATER IN CHANNEL WAY. Mean, lowest of Day.		Spring Tides, lowest of Day.—Mean.		Spring Tides, lowest of Day.—Moon's greatest Declination.		Date.
		Low Water.	High Water.	Low Water.	High Water.	Low Water	High Water.	
		Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	
San Diego Bay	Entrance	27·4	31·5	26·3	32·1	26·3	31·4	1851.
Monterey harbor	Near shore	30	33·9	29·5	34·2	28·9	33·8	1852.
San Francisco harbor	On the bar	33	37	32·6	27·4	31·9	36·7	1855.
	At best wharves	20	24	19·6	24·4	18·9	23·7	
Humboldt Bay	Main channel	20	24·7	19·3	25·3	18·7	25·1	1851.
Columbia River	North channel to Baker's Bay	24	36·5	25·4	30·9	22·7	30·6	1852.
	*Entrance into south channel	19	25·5	18·4	20·5	17·7	25·6	
Shoalwater Bay	North channel	22·5	29	21·6	23·5	20·9	29	1853.
	South channel	25	31·5	24·1	33	23·4	31·5	
False Dungeness	Harbor anchorage	54	60	....	....	....	....	1853.
Bellingham Bay	....	60	67	....	....	....	....	1855.

* Twenty-one feet may be carried in at mean low water by keeping a little northward and westward, nearer the breakers of the *middle sands*, and [illegible] the turn, hauling up for Cape Disappointment.

RANGE OR MEAN RISE AND FALL OF TIDES IN LONG ISLAND SOUND AND [illegible] BRANCHES.—(DATA TO APRIL, 1853.)

EASTERN SERIES.

Stations.	Feet.	Stations.	Feet.
Montauk Point	2·0	Sheffield Island	7·4
Point Judith	3·1	Huntington Bay	7·6
Beavertail Light	4·9	Great Captain's Island	7·5
Stonington	2·7	Oyster Bay	7·2
New London	2·6	Sand's Point	7·7
Sachem's Head	5·3	New Rochelle	7·6
New Haven	5·3	Throg's Neck	7·2
Bridgeport	6·6		

WESTERN SERIES.

Stations.	Feet.	Stations.	Feet.
Sandy Hook	4·8	Spitfire Pot Cove	6·3
Governor's Island	4·9	North Brother	7·2

Tide-rips.—Near the equator, and especially on this side of it in the Atlantic, mention is made, in the "abstract log," by almost every observer that passes that way, of "tide-rips," which are a commotion in the water, not unlike that produced by a conflict of tides or of other powerful currents. These "tide-rips" sometimes move along with a roaring noise, and the inexperienced navigator always expects to find his vessel drifted by them a long way out of her course; but when he comes to cast up his reckoning the next day at noon, he remarks with surprise that no current has been felt. Tide-rips are usually found in the neighborhood of the equatorial calms—that region of constant precipitation. And hence, if currents at all—if so, they are very superficial—I have thought they might be streams of rain-water, which old seamen tell us they have dipped up there fresh from the sea, running off. This conjecture, however, does not satisfy the phenomenon in all of its aspects. It is sometimes described as starting up in a calm, and then approaching the vessel with great waves and a great noise; it seems threatening enough to excite a feeling of apprehension in the minds of seamen, for it looks as if it would dash over their frail bark as it lies wallowing in the sea, and helplessly flapping its sails against the masts. Captain Higgins, of the *Maria*, when bound from New York to Brazil, thus describes, in his abstract log, one of these "tide-rips," as seen by him, 10th October, 1855, in lat. 14° N., long. 34° W.: "At three P.M. saw a tide-rip; in the centre, temperature of air 80°, water 81°. From the time it was seen to windward, about three to five miles, until it had passed to leeward out of sight, it was not five minutes. I should judge it traveled at not less than sixty miles per hour, or as fast as the bores of India. Although we have passed through several during the night, we do not find they have set the ship to the westward any; it may be that they are so soon passed that they have no influence on the ship, but they certainly beat very hard against the ship's sides, and jarred her all over. They are felt even when below, and will wake one out of sleep."—MAURY's *Physical Geography*. For further information as to TIDES, refer to *Amer. Jour. of Sci.*, xxxiv. 81, xvi. 78, xx. 205, xliv. 118, xii. (2d series) 341 (A. D. BACHE); *South. Lit. Mess.*, iv. 747; *Mass. Quart. Rev.*, ii. 77; *Quart. Rev.*, vi. 74; *Anal. Mag.*, ix. 231.

Tiles (Ger. *Dachziegel*; Fr. *Tuiles*; It. *Tegole, Embrici*; Sp. *Tejas*; Russ. *Tscherepiza*), a sort of thin bricks, dried in kilns, and used in covering and paving different kinds of buildings. The best brick earth only should be made into tiles.

Timber (Ger. *Bauholz, Zimmer*; Du. *Timmerhout*; Fr. *Bois de charpente, Bois à bâtir*; It. *Legname da fabbricare*; Sp. *Madera de construccion*; Russ. *Stroëwoi Cess*; Pol. *Cembrowina*), the term used to express every large tree squared, or capable of being squared, and fit for being employed in house or ship-building. In the language of the English customs, when a tree is sawn into thin pieces, not above seven inches broad, it is called batten; when above that breadth, such thin pieces are called deal. Wood is the general term, comprehending under it timber, dye-woods, fire-wood, etc.

The following are the contents of the loads of different species of timber, hewn and unhewn:

A load of timber, unhewn	40	cubic feet.
" square timber	50	"
" 1 inch plank	600	square feet.
" 1½ inch plank	400	"
" 2 inch plank	300	"
" 2½ inch plank	240	"
" 3 inch plank	200	"
" 3½ inch plank	170	"
" 4 inch plank	150	"

36½ Russian standard deals, 12 feet long, 1½ inch thick, 11 inches broad, make 1 load of timber.
58½ Christiana standard deals, 11 feet long, 1½ inch thick, 9 inches broad, make 1 load of timber.
53½ Dram standard deals, 10 feet long, 1½ inch thick, 9 inches broad, make 1 load of timber.
3 Riga logs make 1 load of timber.
—*See* LUMBER TRADE.

The annual demand of timber for the British navy, in war, is 60,000 loads, or 40,000 full-grown trees, a ton each, of which thirty-five will stand on an acre; in peace, 32,000 tons, or 48,000 loads. A seventy-four gun ship consumes 3000 loads, or 2000 tons of trees, the produce of fifty-seven acres in a century. Hence the whole navy consumes 102,600 acres, and 1026 per annum.—ALLNUT. England imports about 800,000 loads of timber annually, exclusively of masts, yards, staves, lathwood, etc., together with about 8,000,000 of deals and deal-ends.—*Parl. Ret.*

To overcome the difficulty of bending timber, a method has been discovered which, to judge from the accounts given by the most eminent engineers, both of America and England, will be of the greatest service in ship-building and domestic architecture, and in the construction of all pieces of furniture in which it is necessary to employ curved timber. It has been already so employed in the United States.

By this invention, which has been patented in America, the strength of the wood is increased at least 75 per cent. at the point where strength is most required. The curve, moreover, never relaxes. The timber, as in the old process, is first subjected to the influence of steam, which softens the whole mass, and puts it in a fit state for the action of a machine. The principle of

bending, as employed in this new application, is based on end-pressure, which, in condensing and turning at the same time, destroys the capillary tubes by forcing them into each other. These tubes are only of use when the tree is growing; and their amalgamation increases the density of the timber, the pressure being so nicely adjusted that the wood is neither flattened nor spread, nor is the outer circumference of the wood expanded, though the inner is contracted. Now the error of the former process, as expounded by competent judges, has arisen from the disintegrating of the fibre of the wood by expanding the whole mass over a rigid mould. Wood can be more easily compressed than expanded; therefore, it is plain that a process which induces a greater closeness in the component parts of the piece under operation—which, as it were, locks up the whole mass by knitting the fibres together—must augment the degree of hardness and power of resistance. The wood thus becomes almost impervious to damp and to the depredations of insects, while its increased density renders it less liable to take fire; and the present method of cutting and shaping timber being superseded, a saving of from two to three-fourths of the material is brought about. The action of the machine throws the cross-grains into right angles; the knots are compelled to follow the impulse of the bending; the juices are forced out of the cells of the wood, and the cavities are filled up by the interlacing fibres. In the same way, you may sometimes see in the iron of which the barrels of muskets are made a kind of dark grain which indicates that the particles of the metal, either in the natural formation or in the welding, have been strongly clinched in one another. The specimens are always greatly valued for their extraordinary toughness, as well as for a certain fantastical and mottled beauty.

Another of the good results of this new method is that the wood is seasoned by the same process as that which effects the bending. The seasoning of the wood is simply the drying of the juices, and the reduction of the mass to its minimum size before it is employed, so that there shall be no future warping. But, as we have already shown, the compression resorted to in the American system at once expels the sap; and a few hours are sufficient to convert green timber into thoroughly seasoned wood. Here is an obvious saving of time, and also of money; for the ordinary mode of seasoning, by causing the wood to lie waste for a considerable period, locks up the capital of the trader, and of course enhances the price to the purchaser. Time also will be saved in another way, in searching for pieces of wood of the proper curve for carrying out certain designs. "How delighted," says Mr. Jervis, the United States inspector of timber, "will the shipwright be to get clear of the necessity of searching for crooked pieces of timber! There need no longer be any breaking of bats in the frame, as we have been wont to break them. We shall see numbers one, two, and three futtocks, at least, all in one piece." An English engineer (Mr. Charles Mayhew) remarks, that one of the advantages of the American method is that, "in its application to all circular, wreathed, or twisted work, it not only preserves the continuous grain of the wood, which is now usually and laboriously done by narrow slips of veneer glued on cores cut across the grain, with many unsightly joints, ill concealed at best; but it will materially reduce the cost of all curved work, which now varies according to the quickness of the sweep, and will give the artist greater freedom in his design, by allowing him to introduce lines which are now cautiously avoided in order to prevent the cost of their execution." Dr. Hooker, Mr. Fairbairn, Mr. Rennie, Mr. Gallway, civil engineer, and other eminent scientific men, confirm these judgments. A specimen of bent oak now lies before us, and exhibits a beautiful continuity in the sweep of the fibres. Timber-bending has reached a new stage of development; and it is not too much to anticipate that it will have considerable influence on the industrial arts.

Tin (Ger. *Blech, Weissblech*; Fr. *Fer blanc*; It. *Latta, Banda stagnata*; Sp. *Hoja de lata*; Russ. *Blächa, Shest*; Arab. *Resas*; Sans. *Trapu* and *Ranga*), a metal which has a fine white color like silver; and when fresh, its brilliancy is very great. It has a slightly disagreeable taste, and emits a peculiar smell when rubbed. Its hardness is between that of gold and lead. Its specific gravity is 7·29. It is very malleable; *tin-foil*, or tin leaf, is about $\frac{1}{1000}$th part of an inch thick; and it might be beat out into leaves as thin again, if such were required for the purposes of art. In ductility and tenacity it is very inferior. A tin wire 0·078 inch in diameter is capable of supporting a weight of 34·7 pounds only without breaking. Tin is very flexible, and produces a crackling noise when bent. It may be readily alloyed with copper, zinc, etc., forming very valuable compounds.—THOMSON'S *Chemistry*.

The Phœnicians traded with England for this article for more than 1100 years before the Christian era. It is said that this trade first gave them commercial importance in the ancient world. Under the Saxons, our tin mines appear to have been neglected; but after the coming in of the Normans, they produced considerable revenues to the earls of Cornwall, particularly to Richard, brother of Henry III.; a charter and various immunities were granted by Edmund, Earl Richard's brother, who also framed the stannary laws, laying a duty on the tin, payable to the earls of Cornwall Edward III. confirmed the tinners in their privileges, and erected Cornwall into a dukedom, with which he invested his son, Edward the Black Prince, 1337. Since that time, the heirs apparent to the crown of England, if eldest sons, have enjoyed it successively. Tin mines were discovered in Germany, which lessened the value of those in England, till then the only tin mines in Europe, A.D. 1240.—ANDERSON. Discovered in Barbary, 1640; in India, 1740; in New Spain, 1782. England exports at present, on an average, 1500 tons of unwrought tin, besides manufactured tin and tin-plates, of the value of about £400,000.

The ores of this metal are found in comparatively few places; the principal, and perhaps the only, ones are Cornwall, Galicia, Erzgebirge in Saxony, Bohemia, the Malay countries, China, and Banca in Asia. They are peculiar to primitive rocks, generally in granite, either in veins or beds, and are often associated with copper and iron pyrites. Tin is much used as a covering to several other metals: iron is tinned, to prevent its rapid oxydation when exposed to air and moisture; and the same process is applied to copper, to avoid the injurious effects to which those who are in the habit of employing cooking utensils made of this metal are always liable. The solutions of tin in the nitric, muriatic, nitro-sulphuric, and tartaric acids, are much used in dyeing, as giving a degree of permanency and brilliancy to several colors, to be obtained by the use of no other mordants with which we are at present acquainted: tin forms the basis of pewter, in the composition of which it is alloyed with lead; when rolled into thin sheets, it is called tin-foil, and is applied, with the addition of mercury, to cover the surface of glass, thus forming looking-glasses, mirrors, etc.; and in combination with sulphur, it constitutes what is called mosaic gold.—JOYCE'S *Chem. Min.* Tin plates, known in Scotland by the name of *white iron*, are applicable to a great variety of purposes. They are formed of thin plates of iron dipped into molten tin. The tin not only covers the surface of the iron, but penetrates it completely, and gives the whole a white color. It is usual to add about one-tenth of copper to the tin, to prevent it from forming too thick a coat upon the iron. —THOMSON'S *Chemistry*.

British Tin Trade.—The tin mines of Cornwall have been worked from a very remote era. The voyages

of the Phœnicians to the Cassiterides, or tin islands, are mentioned by Herodotus (lib. iii. c. 115), Diodorus Siculus (lib. iv. p. 301, ed. 1604), and Strabo (*Geog.*, lib. iii.). Some difference of opinion has, indeed, been entertained as to the particular islands to which the Phœnicians applied the term Cassiterides; but Borlase (*Account of the Scilly Islands*, p. 72), Larcher (*Herodote*, tome iii. p. 384, ed. 1802), and the ablest critics, agree that they are the Scilly Islands, and the western extremity of Cornwall. After the destruction of Carthage, the British tin trade, which was always reckoned of peculiar importance, was carried on by the merchants of Marseilles, and subsequently by the Romans. Besides Britain, Spain furnished the ancients with considerable quantities of tin. We have no very precise information as to the purposes to which they applied this metal. It has been supposed that the Phœnicians, so famous for their purple dyes, were acquainted with the use of the solution of tin in nitro-muriatic acid in fixing that color. The best of the ancient mirrors, or *specula*, were also made of a mixture of copper and tin; and tin was used in the coating of copper vessels. —Watson's *Chemical Essays*.

In modern times, the tin mines of Cornwall and Devon have been wrought with various degrees of energy and success. Queen Elizabeth brought over some German miners, by whom some of the processes were improved. During the civil wars the mines were much neglected. At the commencement of last century, however, the business of mining was carried on with renewed vigor; and from 1720 to 1740 the annual produce was about 2100 tons. The produce went on gradually increasing, till it amounted, in the ten years from 1790 to 1800, to 3254 tons a year. During the next fifteen years the produce fell off; and for the five years ending with 1815 it was always considerably under 3000 tons a year. But in the last-mentioned year a considerable increase took place; and since 1816 the produce has been, with the exception of 1820, always above 3000 tons a year. The average produce of the mines in the year 1843 was estimated at above 5000 tons a year.

Tin, Oriental (Malay, *Timá*; Hind. *Kalai*; Siamese, *Dibuk*; Burmese, *Kye-p'kyu*, white copper), in *Commercial language* usually called Banca tin. It is found in several provinces of China; but the most extensive, and probably richest tin district in the world, exists in the Malay countries. This comprehends the whole of the peninsula, from the extreme cape to the latitude of 14° on its western side, and to 11° on its eastern, and comprehends several of the small islands lying in the route between the peninsula and Java, as far as the latitude of 8° south; so that the whole of this tin district has an extreme length of near 1200 miles. By far the greater number of the mines within these limits are as yet unwrought and unexplored. It was only in the beginning of last century that the mines of Banca, the most productive at present worked, were accidentally discovered. The whole tin of the Malay countries is the produce of alluvial ores, or what is called in Cornwall "Stream-work;" and from the abundance in which the mineral has been found by the mere washing of the soil, no attempt has hitherto been made at regular mining, or obtaining the ore from its rocky matrix. Malay tin, consequently, is grain tin, or tin in a very pure state; that being the species which alluvial ore uniformly produces. The mines, or rather excavations, are perpendicular pits of from 15 to 25 feet deep; and when the soil and a superstratum of common clay are removed, the bed containing the ore, consisting of quartz and granitic gravel, is reached. The sand and gravel are separated from the ore by passing a stream of water through the whole materials. The ore so obtained is preserved in heaps, and smelted periodically with charcoal in a blast furnace. The mine or pit is kept clear of water by the Chinese wheel. No cattle are used in any part of the process, human labor being had recourse to throughout the whole of its stages. The most imperfect part of the process is the smelting. The stream ores of Cornwall, which are generally poor, afford from 65 to 75 per cent. of grain tin; whereas, owing to the imperfection of the process, from those of Banca not more than 55 or 60 are usually obtained. The difference in the produce suggested, a few years ago, the practicability of sending the ore to England for the purpose of being smelted; and the experiment was tried; but our customs regulations not allowing the produce to be bonded and re-exported without duty, rendered the scheme abortive.

With very trifling exceptions, the whole tin of the Malay islands is mined and smelted by Chinese settlers; and before their skill and enterprise were applied to its production, the metal seems to have been obtained by the inhabitants of the countries which produced it, by processes hardly more skillful than those by which the precious metals were procured by the native inhabitants of America prior to the introduction of European skill and machinery. The following estimate has been given of the annual produce of the principal states and places producing tin:

East Coast of the Malay Peninsula.

	Piculs.
Junk Ceylon	5,000
Queda	2,000
Pera	3,000
Salangore	3,000
Malacca	4,000
Total piculs	17,000

West Coast of the Malay Peninsula and Islands.

	Piculs.
Sungora and Patani	3,000
Tringanu	7,000
Pahang	3,000
Singkep	6,000
Banca	35,000
Total piculs	53,000

This can be considered only as a rough estimate; but we believe it is not far wide of the truth. The most considerable port of exportation is Batavia; from which there is sent annually, either directly or through orders from the Dutch government or the authorities at Banca, 2000 tons. From Prince of Wales Island there is also a considerable quantity exported; and a smaller one direct to China in junks, from several of the native ports on the eastern shore of the Malay peninsula. The great marts for the consumption of tin are China, Hindostan, and the continent of Europe. The quality of the different descriptions of Malay tin, although there may be some inconsiderable difference in the quality of the original ores, seems to be derived chiefly from the greater or less skill with which the process of smelting is conducted; and this, again, necessarily depends upon the extent of capital and goodness of the machinery employed. The mining operations of Banca have long been conducted upon a larger scale, and with more skill, than in any other of the Malay countries; and, consequently, the metal produced in this island is superior by from 10 to 12 per cent.: in the market of Canton it is called "old tin," in contradistinction to "new tin," the produce of the other Malay countries. Next, in point of quality, to the produce of Banca, are those of Tringanu and Singkep, which are not more than 5 per cent. inferior to it. The tin of the state of Pera, a considerable part of which is produced by the natives themselves, without Chinese assistance, is the worst, and usually about 15 per cent. below that of Banca. The native tin of China is 10 per cent inferior to that of Banca, and is probably block-tin, like the greater part of that of Cornwall; and, like it, the produce of regular mining operations, and not alluvial. The produce of the Chinese mines is said of late years to have greatly decreased; probably owing to the great increase which has recently taken place in the produce of the Malay countries, and the cheapness and abundance with which

it finds its way to China. It should be added, that of late years, and chiefly owing to the very low price and abundance of German spelter (zinc) in the Indian market, this commodity has occasionally been fraudulently mixed with tin. The Chinese brokers of Canton, however, are sufficiently expert to detect the adulteration; and it is believed that this discreditable practice has lately ceased. The price of tin, taking the market of Singapore as the standard, has fluctuated of late years from 14 to 20 Spanish dollars per picul; equal, at the exchange of 4*s.* per dollar, to 47*s.* and 67*s.* per cwt. At an average of these prices, the annual value of the whole Malay tin will be about £240,000 per annum.—CRAWFURD's *History of the Indian Archipelago;* Dr. HORSFIELD's *MS. Statistical View of the Island of Banca; Singapore Chronicle; Canton Register*, etc.

EXPORTS OF DOMESTIC TIN FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Value.
Canada	$1174
Other British North American Possessions	518
British West Indies	89
Azores	250
Ports in Africa	66
Mexico	128
Sandwich Islands	50
Whale-fisheries	354
Total	$3629

EXPORTS OF FOREIGN TIN FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	In Pigs and Bars.	In Plates and Sheets.	Manufactures of, not specified.
Canada	$3838	$22,946	$14,420
Other British N. A. Poss.	57	2,325	....
British West Indies	....	330	....
Hayti	690	3,581	130
Mexico	1474	3,010	....
New Granada	....	274	....
Sandwich Islands	89	2,441	....
Total	$6148	$34,907	$14,550
From warehouse	1863	24,433	285
Not from warehouse	4285	10,474	14,265

IMPORTS OF TIN AND MANUFACTURES OF TIN INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whence imported.	In Pigs and Bars.	In Plates and Sheets.	Foil.	Other Manufactures.
	$	$	$	$
Hamburg	6,246	2,493	18	467
Bremen	....	....	1,116	3,603
Holland	277,347	....	....	....
Dutch East Indies	65,584	....	....	....
Belgium	27,871	2,501	4,627	6,379
England	87,788	4,782,763	2,753	16,480
Scotland	33	....	....	....
Canada	....	....	....	48
Other British N. A. Poss.	....	1,527	....	....
British West Indies	....	236	21	....
British Guiana	641	....	....	....
British East Indies	491,171	18	....	....
France on the Atlantic	39,488	....	12,830	4,840
France on the Mediter'n.	....	....	5	....
Philippine Islands	2,007	....	....	....
Cuba	....	....	....	196
New Granada	61	....	56	....
Buenos Ayres	53	....	....	....
Chili	24,602	....	....	....
Peru	318	....	....	0
Total	1,023,210	4,789,538	21,426	31,922

Tithes are the tenth part of the increase yearly arising and renewing from the profits of lands, the stock upon lands, and the personal industry of the inhabitants, and are offerings payable to the Church by law. Under the Jewish system, the tenth part of the yearly increase of their goods was due to the priests. —*Numbers*, xviii. 21; *Deut.*, xiv. 22; *Levit.*, xxvii. 30, 32.

In the earliest ages of the Christian Church, offerings were made by its members at the altar, at collections, and in other ways; and such payments were enjoined by decrees of the Church, and sanctioned by general usage. For many centuries, however, they were voluntary. But when the Church had increased in power, and began to number among its members many who adhered to it because it was the prevailing religion, it was found necessary to enforce certain fixed contributions for the support of the ministers of religion. The Church relied upon the example of the Jews, and claimed a tenth. Meanwhile, the conversion of temporal princes to Christianity, and their zeal in favor of their new faith, enabled the Church to obtain the enactment of laws to compel the payment of tithes. In England, the first instance of a law for the offering of tithes was that of Offa, King of Mercia, toward the end of the 8th century. He first gave the Church a civil right in tithes, and enabled the clergy to recover them as their legal due. The law of Offa was at a later period extended to the whole of England by King Ethelwulph.—PRIDEAUX *on Tithes;* BOHN's *Cyclopedia.*

Tobacco (Da. *Tobak;* Du. *Tabak;* Fr. *Tabac;* Ger. *Taback;* It. *Tabacco;* Pol. *Tobaka;* Russ. *Tzbak;* Sp. *Tabaco;* Arab. *Bujjerbhang;* Hind. *Tumbākū;* Malay, *Tambrâcoo*), the dried leaves of the *Nicotiana tabacum*, a plant indigenous to America, but which succeeds very well, and is extensively cultivated in most parts of the Old World. The recent leaves possess very little odor or taste; but when dried, their odor is strong, narcotic, and somewhat fetid; their taste bitter and extremely acrid. When well cured, they are of a yellowish green color. When distilled, they yield an essential oil, on which their virtue depends, and which is said to be a virulent poison. The leaves are used in various ways; being chewed, smoked, and ground and manufactured into snuff. It is in the last mentioned form that tobacco is principally used in Great Britain; and though the contrary has been often asserted, its use does not seem to be productive of any perceptible bad consequence.

Historical Sketch.—The taste for tobacco, though apparently administering only to a frivolous gratification, has given birth to a most extensive commerce, and been a powerful spur to industry. Being a native of the New World, its introduction into Europe dates only from the early part of the 16th century. Seeds of the plant were sent, in 1560, from Portugal to Catherine de' Medici, by Jean Nicot, the French embassador in that country, from whom it has received its botanical name. The notion, at one time so general, that the specific appellation tobacco was derived from its having been imported from Tobago, is now universally admitted to be without foundation. Humboldt has shown that tobacco was the term used in the Haytian language to designate the pipe, or instrument made use of by the natives in smoking the herb; and the term, having been transferred by the Spaniards from the pipe to the herb itself, has been adopted by the other nations of the ancient world.—*Essai Politique sur la Nouvelle Espagne*, vol. iii. p. 50, 2d. ed. Tobacco is believed to have been first introduced into England by the settlers who returned, in 1586, from the colony which it had been attempted to found in Virginia, under the auspices of Sir Walter Raleigh, in the preceding year. Harriott, who accompanied this expedition, gives, in his description of Virginia, an account of the tobacco plant, and of the manner in which it was used by the natives; adding, that the English, during the time they were in Virginia, and since their return home, were accustomed to smoke it after the fashion of the Indians, "and found many rare and wonderful experiments of the virtue thereof."—HAKLUYT, vol. i. p. 75. Raleigh, and other young men of fashion, having adopted the practice of smoking, it spread among the English; as it had previously spread among the Spaniards, Portuguese, French, and other continental nations. But it made its greatest progress in England after the foundation of the colony at Jamestown, in Virginia, in 1607. The soil of the colony being found particularly well fitted for the culture of tobacco, considerable quantities were raised and sent

home; and the numerous individuals interested in the colony contributed to introduce that taste for it which was diffused among all classes with astonishing rapidity. James I. attempted, by repeated proclamations and publications, some of them couched in very strong terms, to restrain the use of tobacco. But his efforts had very little effect; and the settlers in Virginia continued to experience a more rapidly increasing and better demand for tobacco than for any other product of the colony. During the earlier part of the reign of Charles I., the trade in tobacco was monopolized by the crown. This monopoly was not, however, of long continuance, and totally ceased at the breaking out of the civil war.

Tobacco plants had been early introduced into England, and were found to answer remarkably well. Their cultivation was, indeed, prohibited by James, and afterward by Charles, but apparently without effect. At length, however, the growing consumption of tobacco having excited the attention of the government financiers, it was seen that, by imposing a duty on its importation, a considerable revenue might be raised; but that, were it allowed to be freely cultivated at home, it would be very difficult to collect a duty upon it. In 1643 the Lords and Commons imposed a moderate duty, for the sake of revenue, on plantation tobacco; but instead of directly prohibiting the use of native tobacco, they burdened it with such a duty as, it was supposed, would occasion its culture to be abandoned. The facility, however, with which the duty was evaded soon satisfied the republican leaders that more vigorous measures were required to stop its cultivation, and consequently to render its importation a source of revenue. Hence, in 1652, an act was passed prohibiting the growth of tobacco in England, and appointing commissioners to see its provisions carried into effect. This act was confirmed at the Restoration, by the act Charles II., c. 34, which ordered that all tobacco plantations should be destroyed. These measures were believed at the time to have been principally brought about by the solicitations of the planters; but their real intention was not so much to conciliate or benefit the latter, as to facilitate the collection of a revenue from tobacco; and, considered in this point of view, their policy seems quite unexceptionable.

Nicotiana Tabacum.—It is thought by some that this plant received its name from Tabacco, a province of Yucatan, New Spain; others say from the island of Tobago, one of the Caribbees; and others that it is derived from Tobasco, in the Gulf of Florida. It was first observed at San Domingo, A.D. 1496; and was used freely by the Spaniards in Yucatan in 1520. Tobacco was first carried to England in the seventh year of Elizabeth, 1565, by Sir John Hawkins; but Sir Walter Raleigh and Sir Francis Drake are also mentioned as having first introduced it in England. According to *Stowe's Chronicle*, it was manufactured only for exportation for some years. The Pied Bull Inn, at Islington, was the first house in England where tobacco was smoked. In 1584 a proclamation of the English government was issued against it. The Star Chamber ordered the duties to be 6*s.* 10*d.* per lb., in the year 1614. Its cultivation was prohibited in England by Charles II. The act laying a specific duty on the importation into England was passed 1684. The cultivation was allowed in Ireland about the year 1779. In *Anderson's History of Commerce* we find that the tax was increased, and put under the excise in 1789. Various statutes have been passed by the English government relative to tobacco. The act to revive the act prohibiting the culture of tobacco in Ireland passed 2 William IV. (August, 1831). The act directing that tobacco grown in Ireland be purchased in order to its being destroyed, March 24, 1832. The quantity consumed in England in 1791 was 9,500,000 lbs., and in 1829 about 15,000,000 lbs. In 1840 the quantity had reached to 40,000,000 lbs. In 1854 the quantity imported into Great Britain was about 35,000,000 lbs., of which 2,710,000 lbs. were manufactured as cigars or snuff, and the rest unmanufactured. —HAYDN.

In some countries tobacco is principally, perhaps, used in the form of snuff; in others it is principally chewed, or again smoked; but, in one form or another, it is every where made use of. So early as 1624, Pope Urban VIII. issued a bull excommunicating those who smoked in churches! The practice of smoking was at one time exceedingly prevalent in England; but during the reign of George III. it was well-nigh superseded, at least among the higher and middle classes, by the practice of snuff-taking. Latterly, however, smoking has been extensively revived among both the rich and the poor.

We quote the following statement as to the universality of the use of tobacco from a learned paper on its "Introduction and Use," in the 22d volume (p. 142) of the *Asiatic Journal:* "In Spain, France, and Germany, in Holland, Sweden, Denmark, and Russia, the practice of smoking tobacco prevails among the rich and poor, the learned and the gay. In the United States smoking is often carried to excess. If we pass to the East, we shall find the practice almost universal. In Turkey the pipe is perpetually in the mouth; and the most solemn conferences are generally concluded with a friendly pipe, employed like the *calumet of peace* among the Indians. In the East Indies not merely all classes, but both sexes, inhale the fragrant steam; the only distinction among them consisting in the shape of the instrument employed, and the species of the herb smoked. In China the habit equally prevails; and a modern traveler in that country (Barrow) states, that every Chinese female, from the age of eight or nine years, wears, as an appendage to her dress, a small silken purse or pocket to hold tobacco and a pipe, with the use of which many of them are not unacquainted at this tender age. This prevalence of the practice at an early period among the Chinese is appealed to by M. Pallas as an evidence that 'in Asia, and especially in China, the use of tobacco for smoking is more ancient than the discovery of the New World.' He adds: 'Among the Chinese, and among the Mongol tribes who had the most intercourse with them, the custom of smoking is so general, so frequent, and has become so indispensable a luxury; the tobacco purse affixed to their belt so necessary an article of dress; the form of the pipes, from which the Dutch seem to have taken the model of theirs, so original; and, lastly, the preparation of the yellow leaves, which are merely rubbed to pieces and then put into the pipe, so peculiar, that they could not possibly derive all this from America by way of Europe; especially as India, where the practice of smoking is not so general, intervenes between Persia and China.'" This, however, is a very doubtful proposition. It seems sufficiently established that the tobacco plant was first brought from Central America (see date of introduction of tobacco), and it is most probable that it was thence carried to Siam, China, and other Eastern countries. The names given to it in all the languages of the East are obviously of European, or rather American, origin; a fact which seems completely to negative the idea of its being indigenous to the East.

Tobacco is extensively cultivated in Mexico, but only for home consumption. It might probably, however, were it not for the restrictions under which it is placed, form a considerable article of export from that country. Under the Spanish government, the tobacco monopoly was one of the principal sources of revenue; yielding from 4,000,000 to 4,500,000 dollars, exclusive of the expenses of administration, amounting to about 800,000 dollars. No tobacco was allowed to be cultivated, except in a few specified places. Commissioners, or *guardas de tabaco*, were appointed, whose duty

it was to take care that all tobacco plantations without the privileged districts should be destroyed. The government fixed the price at which the cultivators of tobacco were obliged to sell it to its agents. The sale of the manufactured tobacco was farmed out; and *cigars* were not allowed to be sold, except at the royal *estancos*. No one was allowed to use cigars of his own manufacture. This oppressive monopoly was established in 1764. It has been continued, from the difficulty of supplying the revenue which it produces, by the revolutionary governments.—HUMBOLDT, *Nouvelle Espagne*, iii. 49; POINSETT's *Notes on Mexico*, note 116, London ed.

Cuba is celebrated for its tobacco, particularly its cigars. These consist of the leaves, formed into small rolls, for the purpose of smoking. Formerly their importation into England was prohibited; but they may now be imported on paying an exorbitant duty. Havana cigars are usually reckoned the best. Previously to 1817, the cultivation and sale of tobacco were subjected to the same restrictions as in Cuba as in Mexico; but at the period mentioned the trade was thrown open. In consequence of the freedom thus given to the business, the production and exportation of tobacco are both rapidly increasing, though hardly, perhaps, so much as might have been expected, the culture of sugar and coffee being for a while reckoned more profitable; that, however, is no longer the case. —*See* CUBA for Exports.

United States.—Previous to the war of Independence, its culture had spread into Maryland, Carolina, Georgia, and Louisiana, from which nearly all Europe was supplied; but at present most of the sovereigns of the Old World derive a considerable part of their revenue from the cultivation of this plant. Independent of its production in the Middle and Southern States of the Union, tobacco is extensively cultivated in Mexico, the Spanish Main, Cuba, Brazil, Trinidad, San Domingo, Turkey, Persia, India, China, Australia, the Phillippines, and Japan. It has also been raised with success in nearly every country in Europe, Egypt, Algeria, the Cape of Good Hope, the Canaries, and numerous other islands in the ocean, Canada, New Brunswick, and on the western coast of America. The principal varieties cultivated in the United States are the Virginian, the large-leaved, the dwarf, the Cuba, and the common green tobacco.

In 1622 there were raised in Virginia 60,000 lbs. The amount exported from that colony in 1639 was 120,000 lbs.; annually for ten years preceding 1709, 28,868,666 lbs.; annually for several years preceding the Revolution, 55,000 hogsheads; in 1758, 70,000 hogsheads; from North Carolina, in 1755, 100 hogsheads; from Georgia, in 1772, 176,732 lbs. The amount exported from the United Colonies in 1772 was 97,799,2[illegible] lbs.; in 1780, 17,424,267 lbs.; from the United States, in 1787, 99,041,000 lbs; in 1791, 101,272 hogsheads, 81,122 lbs. manufactured, and 15,689 lbs. of snuff; in 1800, 78,680 hogsheads, 457,713 lbs. manufactured, and 41,453 lbs. of snuff; in 1810, 84,134 hogsheads, 495,427 lbs. manufactured, and 46,640 lbs. of snuff; in 1820-'21, 66,858 hogsheads, 1,332,949 lbs. manufactured, and 44,552 lbs. of snuff; in 1830-'31, 86,718 hogsheads, 8,633,856 lbs. manufactured, and 27,967 lbs. of snuff; in 1840-'41, 147,828 hogsheads, 7,503,644 lbs. manufactured, and 68,553 lbs. of snuff; in 1850-'51, 95,945 hogsheads, 7,235,358 lbs. manufactured, and 37,422 lbs. of snuff.

According to the census returns of 1840, the amount of tobacco raised in the United States was 219,163,319 lbs.; of 1850, 199,752,646 lbs.; showing a decrease in its culture of 19,410,673 lbs.

Great Britain.—It is assumed by British statisticians that the yearly consumption of tobacco in Great Britain and Ireland amounts to 26,000 tons; about one half of which, it is supposed, is smuggled, owing to the excessive duties (upward of 1000 per cent.) levied on the article under the tariff system of that kingdom. The quantity of cigars and snuff imported does not exceed two or three hundred weight per annum. The following table, compiled from parliamentary returns, shows the imports of tobacco into the United Kingdom, and the quantities entered at each port, during the year 1850:

Ports.	Leaf.	Manufactured and Cigars.	Total.
	Tons.	Tons.	Tons.
London	7,633	482	8,120
Liverpool	6,870	146	7,016
Bristol	455	...	455
Glasgow	414	7	421
Leith	200	...	200
Southampton	140	55	195
Other places	3	4	7
Total	15,755	694	16,[illegible]

The following return, transmitted to the House of Commons, for the year ending January 5, 1853, shows the annual consumption of tobacco in the United Kingdom, and duty levied on the same:

Ports.	Leaf.	Manufact'd and Cigars.	Total.	Duty.
	Tons.	Tons.	Tons.	Dollars.
London	4,762	69	4,831	8,744,940
Liverpool	2,755	8	2,763	4,903,160
Bristol	780	..	780	1,377,425
Glasgow	631	1	632	1,118,505
Dublin	604	3	607	1,077,525
Belfast	377	..	377	665,555
Newcastle	341	..	341	602,220
Cork	270	..	270	476,810
Limerick	258	..	258	455,020
Leith	238	1	239	422,570
Preston	170	..	170	316,500
Chester	158	..	158	279,540
Shields	147	..	147	260,125
Waterford	132	..	132	233,350
Londonderry	116	..	116	204,960
Southampton	8	5	13	40,575
Other places	904	3	907	1,603,555
Total	12,660	90	12,750	22,803,705

The following table, exhibiting the exports of tobacco from Great Britain for 1852, will show the quantities and destination of that article supplied by England to foreign countries, relatively to the quantities imported. Total quantity imported 15,700 tons, or 35,168,000 lbs.

EXPORTS FROM GREAT BRITAIN, 1852.

Places.	Hhds.	Places.	Hhds.
West coast of Africa	1725	Drammen	31
Holland	227	Christiana	20
Malta	134	Drontheim	17
San Sebastian	110	Senegal	15
Alexandria	53	Guernsey	14
Bahia	51	Liberia	10
Antwerp	44	Isle of Man	54
Rio de Janeiro	39	Sundry places	22
Gibraltar	36	Total	2602

The foregoing table shows that in 1852 there were exported from Great Britain about 2,602,000 lbs. (allowing 1000 lbs. to the hogshead) out of the 35,168,000 lbs. imported, showing the amount retained for consumption to be 32,566,000 lbs.

QUANTITIES AND VALUE OF TOBACCO (RAW) EXPORTED FROM THE UNITED STATES TO GREAT BRITAIN AND IRELAND FROM 1830 TO 1855.

Years.	Quantity.	Value.	Years.	Quantity.	Value.
	Hhds.	Dollars.		Hhds.	Dollars.
1830	20,241	1,583,971	1843	21,059	1,262,616
1831	26,785	1,882,836	1844	35,132	2,300,126
1832	36,393	2,945,480	1845	26,160	1,985,037
1833	23,884	2,259,197	1846	27,943	2,423,923
1834	30,658	2,937,090	1847	24,145	2,583,775
1835	27,583	3,400,637	1848	23,501	2,260,097
1836	37,855	4,593,449	1849	21,897	1,771,123
1837	24,783	1,879,868	1850	30,920	3,025,585
1838	25,732	2,857,202	1851	23,648	3,459,885
1839	30,330	5,404,967	1852	17,676	2,512,225
1840	27,136	3,227,880	1853	32,236	3,458,423
1841	43,141	5,114,836	1854	17,664	2,146,942
1842	36,999	2,212,207	1855	24,201*	2,57[illegible],760

* There were also exported cases and bales, included in the column of value.

The duties on imported tobacco yield to the British government over four and a half millions sterling an-

nually. For the fifty years, from 1801 to 1850, the aggregate duties collected amounted to the enormous sum of one hundred and fifty million pounds sterling! We annex the quantities imported, and the duties, at intervals of five years:

Years.	Pounds consumed	Duty paid.
1801	10,904,000	£1,209,000
1805	17,915,000	1,991,000
1810	20,[illegible],000	2,043,000
1815	17,955,000	2,504,000
1820	15,716,000	3,117,000
1825	18,761,000	3,259,000
1830	19,293,000	2,924,000
1835	21,116,000	3,381,000
1840	23,000,000	3,016,000
1845	26,161,000	4,245,000
1850	27,734,000	4,550,000

The changes in the import duties were as follows:

Years.	American.	Spanish or Portuguese.
	s. d.	s. d.
1801-'2	1 7	4 6
1803	1 7	4 8½
1804	1 8½	4 10½
1805	1 9½	4 11
1806	2 2½	5 5
1809	....	4 1½
1812	2 5	4 6
1813	2 8	4 11½
1815	3 2	5 5½
1819	4 0	6 0
1825	3 0	5 0
1826	....	3 0
1833	2 9	3 0
1842	3 0	3 0

We have no means of ascertaining the value of cigars smoked away in the United States annually.

Baden.—The cultivation of tobacco in the Grand Duchy of Baden was commenced in the early part of the present century. It has greatly increased within the last twenty years; and particularly so since the commencement of the exportation of *palatinate cigars* to the United States, and which export trade during the last twelve years has shown a constantly augmenting importance. In the Grand Duchy there are now from 18,000 to 20,000 acres of land devoted to the cultivation of tobacco. It is particularly the Baden palatinate which yields the most and best; but the cultivation extends to other parts, and even as far as Offenburg, in Breisgau. The crops of five years differed very much from each other in regard to quantity, and still more in quality. The last two crops were superior to all others.

The crops of 1851 were	100,000 cwt.
" 1852	200,000 "
" 1853	160,000 "
" 1854	150,000 "
" 1855	170,000 "
" 1856	180,000 "

The cultivation and produce of the Pfalz (Rhenish Bavaria) amounts to about half of that of Baden. As compared with other crops, the cultivation of tobacco would appear to the traveler to be on very large plantations, but the vast extent of tobacco ground in some parts of the Badish palatinate (as near Seckenheim, where they reach for miles) belong to hundreds of different persons, generally speaking, in the Baden and Bavarian palatinates; tobacco is cultivated only in detached and small pieces of ground; some few of the principal land-owners raise from 150 to 200 cwt. per annum; some not more than 5 cwt.; and others, again, not more than 3, and even down to 2 cwt. The tobacco is not put up in hogsheads, as in America; it is put up in strong bales. The finer sorts and *leaf* are put up in boxes, and exported to Spain, England, etc. Common tobacco for inland consumption is mostly sold and dispatched in a loose state.

From 1844 to 1852 the prices of tobacco, with a few exceptions, remained about the same; the lowest at 7½ florins, and the highest 15 florins, per 50 kilograms. During the years 1852-'53 the export of cigars, principally to the United States, had become so great as to make the cigar manufacturers early and important purchasers. Large purchases were also made for the *régies* of France and Austria. The latter alone bought 100,000 cwt., which, of course, produced a great rise in the market; prices went up from 12 florins to 25 florins per 50 kilograms; and since that period tobacco, like cotton and public funds, has become an article of "speculation."

The average prices for the last five years may be quoted as follows:

Say for 1851	12 to 22 florins	per 50	kilograms.
" 1852	7 to 18	"	"
" 1853	10 to 14	"	"
" 1854	12 to 25	"	"
" 1855	10 to 30	"	"
" 1856	13 to 42	"	"

The whole of the last crop was disposed of before the close of the year. Between Carlsruhe and Bruchsal the prices were from 16 to 23 florins. The first-rate tobacco of the palatinate was sold from 33 to 42 florins per 50 kilograms. According to estimate, about one half of the produce is manufactured, and the other half exported to England, Spain, and Switzerland, and to Austria and France. It is quite clear that the growing of tobacco is profitable; for it is known that on an average it costs the planter not over 12 florins per 50 kilograms; and in further evidence of the fact is the constantly increasing breadth of land devoted to the cultivation of that crop. The consumption of foreign tobacco in the Grand Duchy can not be correctly ascertained, there being no statistics [illegible] of it, but I have heard the quantity estimated at 200 cwt. per annum.

The present high prices of tobacco in the face of good crops, are caused in a great measure by the active export demand. The shippers of cigars to America, and who have now most of their own manufactories, are large and ready purchasers, and for the best kinds pay high prices. The [illegible] *régie* is a very important customer, and the French *régie* early last fall contracted with some of the Baden cigar manufactories for 100,000,000 of cigars. The improved export trade has increased the demand for tobacco of foreign growth. In Baden and Rhenish Bavaria there are no other taxes on the cultivation of tobacco except land and ground taxes, while the duty on foreign tobacco is,

On raw tobacco	7 florins	per 50	kilograms.
On manufactured tobacco	19½	"	"
On cigars	35	"	"

—*United States Com. Relat.*

France.—The revenue derived from the tobacco monopoly in France, during the first nine months of 1857, reaches the enormous sum of 127,223,000 francs, or about $25,444,600—showing an increase over the revenue derived from the same source the corresponding period of 1856 of 7,488,000 francs, or $1,497,600. The increase is owing to the larger consumption of tobacco in France, and would seem to indicate a steady market for the article in the leading countries of Europe. The tobacco monopoly, under the *régie* system, commenced in France in the year 1811. The following statement will show the amount of revenue derived from this article in quinquennial periods from that date:

1811	$1,200,000	1841	$14,897,819
1816	6,671,064	1846	17,192,216
1821	8,458,801	1851	18,440,746
1826	8,998,611	1852	19,068,816
1831	9,184,180	9 months 1856	23,947,000
1836	11,125,908	9 months 1857	25,444,000

The United States supplies about two-fifths of all the tobacco consumed in Europe, and usually from three-fourths to four-fifths of all the tobacco consumed in France. Were the monopoly abolished, and our tobacco admitted at a moderate duty, our exports of the article to France would increase at least ten-fold. The average price of American tobacco delivered at the factories of the *régie*, all expenses included, is estimated as follows:

Maryland tobacco		9·5	cents per lb.
Virginia	"	8·2	"
Kentucky	"	7·7	"
Missouri	"	7·5	"

The profits realised by the *régie*, one year with another, average nearly 450 per cent.

Netherlands.—The cultivation of tobacco in the Netherlands is subject to no restrictions, with the exception of the excise duty, to which, like all other products, it is liable. From 1800 to 1900 morgens (equal to 3600 to 3800 acres) are annually devoted to tobacco. The tobacco land is situated in the provinces of Guilderland, Overyssel, Utrecht, and Zealand. The average quantity of tobacco produced on each morgen is about 4500 lbs. The total crop is estimated at from 8,000,000 to 9,000,000 lbs. per annum.—*Annales du Commerce Extérieur*, No. 540. The quantity reserved for home consumption is about 2,000,000 lbs., of which,

Smoking tobacco, about	900,000 lbs.
Snuff	700,000 "
Covers for cigars	400,000 "

Besides the above, the Netherlands export to foreign countries about 6,000,000 lbs. of tobacco:

In the leaf	5,000,000 lbs.
Manufactured	1,000,000 "

The following table shows the annual tobacco export trade of Holland:

The Rhenish provinces	580,600 kilograms.
Russia and Great Britain	400,000 "
Sardinia	250,000 "
Norway and Denmark	80,000 "
Naples	50,000 "
Roman states	50,000 "
Spain and Portugal	80,000 "

The total quantity of tobacco grown in the Netherlands is distributed as follows:

	Kilograms.
For the manufacture of snuff and chewing tobacco	1,875,000
For cigars and cigar covers	1,775,000

Average price of the former, from 14 to 32 florins for common; 36 to 90 florins for the best, per 100 kilograms. Average price of the latter, from 14 to 32 florins for common; 60 to 90 florins for the best, per 100 kilograms. The planters of Arnhem, and some other districts, have during the past few years applied themselves to the raising of a very light, clear, yellow tobacco, for cigar covering, for which they obtain a very high price. For this purpose they employ a very active fertilizer, with a view to the large and rapid growth of the plant, which they dry by the sun with great skill and management. The average quantity of foreign tobacco annually imported is from 22,000,000 to 25,000,000 lbs., chiefly from the following places:

Maryland	5,600,000 kilo.	Varinas	120,000 kilo.
Kentucky	1,750,000 "	Manilla	75,000 "
Virginia	1,400,000 "	Colombia	36,000 "
Java	800,000 "	Brazil	30,000 "
Porto Rico	360,000 "	Havana	60,000 "
Cuba	180,000 "	Tobacco stems	145,000 "
San Domingo	120,000 "		

A third part of the tobacco imported from foreign countries is consumed in the Netherlands, the other two-thirds are exported. Germany and Belgium receive the larger portion, which consists altogether of Virginia, Maryland, Kentucky, and some Java tobacco. Besides the imports above designated, Hamburg supplies Holland annually with large quantities of tobacco of American growth. The tobacco manufactories in Holland, of the first class, are numerous. They are chiefly located at Rotterdam and Amsterdam, though many similar factories are scattered throughout the provinces. The first-class factories employ upward of a million of operatives. The average consumption of tobacco in Holland is about two kilograms (4·408 lbs.) for each individual, or 6,000,000 kilograms, or upward of 13,000,000 lbs. for the whole population. Germany offers the principal market for the Dutch tobacco trade, though considerable quantities are exported to the Levant, Italy, Austria, Belgium, Denmark, Surinam, etc.—C. D.

Tobacco is, next to salt, probably the article most universally consumed by men. In one form or another, but most generally in the form of fume or smoke, there is no climate in which it is not consumed, and no nationality that has not adopted it. To put down its use has equally baffled legislators and moralists; and, in the words of Pope on a higher subject, it may be said to be partaken of "by saint, by savage, and by sage." The civilized European and American nations are the smallest consumers of tobacco of any people, in consequence of its being every where with them an object of heavy taxation, of its being very generally a foreign commodity or high-priced, because raised in uncongenial climates, and, finally, its being for the most part confined in use to the male sex.

The duty on the importation of *raw tobacco* amounts,

In the United States to	30	per cent. ad valorem.
In Belgium to	19·9	" "
In Great Britain to	933·3	" "
In Hanover to	9·6	" "
In Holstein to	10	" "
In Holland to	3·5	" "
In Russia to	161	" "
In Switzerland to	8	" "
In Zoll-Verein to	45	" "

—German Custom Union.

Statement "respecting the Tariff Duties, Restrictions, Prohibitions, and Custom-house Regulations applicable to American Tobacco, in the principal commercial Countries of Europe."

BREMEN *levies a Tariff Duty of* ½ *of* 1 *per Cent.*—Import duty is levied at the rate given on the invoice value, with the addition of freight and insurance charges. All foreign vessels (American excepted) must be entered at this port by a licensed ship-broker, the exemption in favor of American vessels having been conceded by the Bremen Senate in 1852.

GREAT BRITAIN *levies a Duty of* 72 *Cents per lb., and* 5 *per Cent. additional.*—Tobacco, snuff, and cigars are prohibited to be imported into Great Britain, unless in vessels of not less than 120 tons burden, and into ports approved by the commissioners of customs. These ports are London, Liverpool, Bristol, Hull, Lancaster, Cowes, Falmouth, Whitehaven, Plymouth, Newcastle, Southampton, Preston, and Swansea, in England; Aberdeen, Leith, and Greenock, in Scotland; and Dublin, Belfast, Galway, Limerick, Londonderry, Newry, Sligo, Waterford, Wexford, and Drogheda, in Ireland. Duties alike from all countries and in all bottoms. The consumption of tobacco in the United Kingdom was:

Years.	Consumption.	Revenue.	Population.	Consumption per Head.
	Pounds.	£		Ounces.
1821	15,508,152	3,122,583	21,282,960	11·71
1831	19,533,841	2,964,592	24,410,439	12·80
1841	22,300,360	3,580,163	27,019,672	13·21
1851	28,062,978	4,485,768	27,492,262	16·86

In 1853 the duty amounted to £4,751,780, or $23,000,000.

FRANCE.—*Tobacco a Government Monopoly.*—In 1629 the first duties on the tobacco trade were levied. In 1674 Louis XIV. established the first monopoly in Europe. The cultivation of tobacco is prohibited except in six departments. From 1811 to 1852 there were sold by the government 1,308,838,075 lbs., which brought a clear revenue of $432,233,434. The expenses of the administration were 24 per cent. *ad valorem*. By the terms of the treaty of June 24, 1822, American produce, if imported direct to France in United States bottoms, is admitted on the payment of the same duties as apply to similar importations from countries out of Europe in French vessels. The origin of the merchandise must, however, be duly authenticated and certified by the collector at the port of exportation, and by the French consul. American tobacco is purchased by the commissioners of the *régie* for the government factories, and is admitted either in French or American vessels free of duty. In foreign vessels the duty is $1 86 per 100 kilograms (221 lbs.).

The monopoly was established in 1810 by imperial decree.

HOLLAND *levies a Duty of* 28 *Cents per* 221 *lbs.*—If imported direct from the United States, admitted on the same terms, whether in American or national vessels.

SPAIN.—*Tobacco is a Government Monopoly.*—The gross receipts from the tobacco monopoly in the years 1830–'34 were $4,950,121, and the net receipts $3,097,147. The sold tobacco amounted to 2·4 lbs. per head of the population. The net receipts of 1851 were $3,100,000. The expenses of the administration amounted to 40 per cent. of the total value. Admitted at the port of Malaga in American vessels at a duty of 20 cents, and in Spanish at a duty of 15 cents per lb. The privilege of the tobacco monopoly in Spain is rented to individuals, and yields a revenue of about $4,000,000 to $6,000,000 per annum.

BELGIUM *levies a Duty of* $1 86 *per* 221 *lbs.*—In the direct trade between the United States and Belgium the vessels of both nations are equalized by treaty. In the indirect or triangular trade there are discriminations, though frequently suspended by Belgium.

SARDINIA.—*A Government Monopoly.*—The annual revenue can not be calculated, as the Italian states are grouped in official returns of commerce.

AUSTRIA.—*A Government Monopoly.*—The monopoly exists since 1784. The gain of the government amounts to 76 per cent. *ad valorem*. The net receipts amounted in 1851 to $8,789,421, and in 1853 to $10,619,106. The consumption in the whole empire was, in 1850, 34,457,513 lbs.; in 1851, 54,217,578 lbs.; in 1852, 61,805,697 lbs.; in 1853, 57,926,925 lbs.; in 1854, 62,020,333 lbs. When imported by permission of the government, the duty is $4 85 per 110 lbs., besides 97 cents per lb. for a license to import.

SWEDEN *levies a Duty of* 5 5-6 *per lb.*—The duty is over 100 per cent., and importations from the United States are diminishing annually.

NORWAY *levies a Duty of* 4½ *cents per lb.*—Owing to a difference in the weights and measures in use in Norway, the duty is about 33·3 per cent. less than in Sweden.

PORTUGAL.—*A Government Monopoly.*—The raw article for the factories of the government is derived chiefly from Brazil, about half a million lbs. per annum being received from the United States.

STATEMENT EXHIBITING THE QUANTITIES OF AMERICAN TOBACCO EXPORTED FROM THE UNITED STATES INTO THE COUNTRIES DESIGNATED, WITH THE AMOUNTS OF DUTIES PAID THEREON, DURING THE COMMERCIAL YEAR 1855.

Countries.	Quantities.	Duties paid.
Bremen	58,058,000 lbs.	$16,652.
Great Britain	24,203,000 "	$18,297,468.
France	49,866,000 "	Average annual revenue from monopoly, $16,000,000.
Holland	17,124,000 "	$21,695,000.
Spain	7,524,000 "	Average annual revenue from monopoly, $4,600,000.
Belgium	4,010,000 "	$33,749.
Sardinia	3,311,000 "	No data from which to ascertain amt. of revenue derived from monopoly.
Austria	2,945,000 "	$129,805, besides an annual profit to the *régie* of about $7,500,000.
Sweden and Norway	1,713,000 "	$88,505.
Portugal	336,000 "	No data from which to ascertain the share of the monopoly revenue which this quantity bears; the whole amount is about $2,250,000 yearly.

The total receipts from custom duties in France for one year (1848), according to official returns, were 146,000,000 francs, of which 86,000,000 were derived from tobacco, nearly all grown in the United States.

The Austrian empire contains 36,514,397 inhabitants. The annual yield (average) of tobacco in Austria is estimated at 79,000,000 lbs. The only places where the plant is permitted to be grown are Hungary, Galicia, the Tyrol, and Venice. In Hungary it is the leading staple, the annual crop reaching as high as 68,000,000 lbs. Of this one-third is sold to the Austrian *régie*, one-third to foreign countries, and the remaining third is consumed at home. The average annual importation from the United States is from two and a half to three millions of lbs. The *régie* clears a profit of 10 cents on each lb. of raw tobacco, and the annual revenue to the government is $7,500,000.

In the states composing the Zoll-Verein the annual crop of tobacco is estimated at 55,000,000 lbs. The revenue derived from American tobacco is about $1,800,000 per annum. The duty on raw tobacco is $2 70 per 110 lbs., which, if re-exported, enjoys a drawback of $2 20 per 110 lbs. Tobacco grown within the limits of the Customs Union pays only 40 cents for the same quantity. The revenues which the government herefrom derives amount to 88 per cent. on the value.

Belgium produces annually about 1,300,000 lbs. of tobacco, and imports from 9,000,000 to 11,000,000 lbs.

Holland produces from 4,000,000 to 5,000,000 lbs., and imports annually from 80,000,000 to 35,000,000 lbs. The tobacco factories in this country are stated to give employment to "one million operatives."

Bremen imports yearly from 35,000,000 to 50,000,000 lbs. of tobacco, most of which is manufactured in that city and re-exported to foreign markets.

Hamburg imports only from 1,000,000 to 2,000,000 lbs. annually, most of which, after being manufactured, is re-exported.

The annual tobacco crop of Russia is about 25,000,000 lbs.

The annual consumption of tobacco in Spain is about 9,000,000 lbs., one-third of which is imported for the government factories from the United States.

In Portugal the culture of tobacco is prohibited by law.

The quantity of American unmanufactured tobacco annually imported into the principal commercial countries of Europe may be thus stated: For each inhabitant of Great Britain, 14 ounces; for each inhabitant of France, 10 ounces; for each inhabitant of Belgium, 2½ lbs.; for each inhabitant of Holland, 2½ lbs.; for each inhabitant of the Hanse Towns, 5 lbs.; for each inhabitant of Hanover, 3½ lbs.; for each inhabitant of Mecklenburg Schwerin and Mecklenburg Strelitz, 2 lbs.; for each inhabitant of the states of the Zoll-Verein, 1 lb.; for each inhabitant of Russia, ¼ ounce; for each inhabitant of Austria, 1 ounce; for each inhabitant of Spain, 3 ounces; and for each inhabitant of Portugal, 1½ ounce. The aggregate quantity of tobacco annually raised in these countries (exclusive of their colonies) is about 210,000,000 lbs. The aggregate quantity of tobacco raised in the United States in 1850 was 199,752,515 lbs.—*Census of* 1850.

The average annual quantity of American tobacco imported into Great Britain during a period of three years (1851, '52, '53) was 24,543,334 lbs., on which there was levied an average annual duty of $18,554,760. The average annual quantity imported into France during the same period was 14,690,000 lbs.; into Holland, 18,660,000 lbs., on which the average annual amount of duty was $24,915; into Belgium, 4,824,000 lbs., on which the average annual amount of duty was $40,600; and into the Hanse Towns, 38,637,667 lbs., on which was paid an average annual amount of $12,643 91.

The following table shows the average consumption per head of male population over 18 years of age; also net revenue from tobacco, and tax per head of population. It will be seen that the countries Steuer-Verein, Zoll-Verein, and Belgium, in their respective order, are the largest consumers per head of tobacco; and

that England, the Papal States, and Spain, in their order, produce the greatest net revenue per head:

Countries.	Average Consumption.	Net Revenue.	Per Head.
	Pounds.	Dollars.	Cents.
Austria	6·75	6,062,650	26 1-3
Zoll-Verein	9·75	1,482,800	5 1-9
Steuer-Verein (Hanover and Oldenburg, now added to former))	12·50	62,100	3 1-20
France	6·00	15,991,780	43
Russia	2·50	1,421,400	2 1-3
Portugal	3·50	1,520,700	46 2-3
Spain	4·75	6,340,410	48 2-5
Sardinia	2·75	1,230,060	27 1-4
Tuscany	2·50	424,650	24 9-10
Papal States	2·00	1,486,200	50 2-5
Two Sicilies	...	842,110	7 1-2
England	4·10	21,735,000	78 4-5
Holland	8·25	31,050	1
Belgium	9·00	140,070	3 1-5
Denmark	8·00	52,440	2 1-3
Sweden	4·37	73,830	2 1-3
Norway	6·41	116,610	4 1-3
United States*	7·00	....	....

—*Cor. Nat. Intelligencer.*

* Hypothetically.

According to the United States Census Report, the number of lbs. of tobacco in the year 1850, produced per acre, was as follows: Kentucky, 575 lbs.; Maryland, 650 lbs.; Missouri, 775 lbs.; Ohio, 730 lbs.; Tennessee, 750 lbs.; Virginia, 660 lbs. The whole number of acres for cultivation of tobacco at the same time was 400,000, which at an average of 600 lbs., five acres would produce 240,000,000 lbs. annually. The gross product for the same year was estimated to be worth $13,982,686, being about one half the duty levied on Great Britain on 27,000,000 lbs. only. Every State in the Union produces tobacco more or less. Delaware, Maine, Rhode Island, and Vermont produce so little that it was not enumerated in the year 1850.

THE TOBACCO TRADE OF THE UNITED STATES.

IMPORTS OF TOBACCO INTO THE UNITED STATES FOR THE YEARS ENDING JUNE 30, 1853, '54, '55.

	Raw State.		Snuff, etc.		Cigars.	
1853.	Lbs.	Dollars.	Lbs.	Dolls.	M.	Dollars.
Cuba	4,295,530	764,529	1,650	285	777,044	2,806,620
Oth. places	713,342	91,274	40,432	7,215	104,443	405,315
Total	5,008,872	855,803	42,082	7,500	881,487	3,211,935
1854.						
Cuba	4,582,187	700,371	18,068	2,309	71,882	2,760,229
Oth. places	810,426	94,125	74,791	11,647	81,636	623,807
Total	5,392,613	794,496	92,859	14,016	153,518	3,384,036
1855.						
Cuba	3,713,786	523,112	600	55	157,300	2,531,453
Oth. places	643,118	90,964	21,751	4,674	218,710	907,544
Total	4,356,104	614,076	22,359	4,729	376,019	3,438,997

Raw tobacco, 1855	$523,112	$90,964
Snuff	53	4,674
Cigars	2,531,453	3,438,997
Total	$3,054,618	$3,534,635

From this we see that, except to a limited extent, all our foreign tobacco comes from Cuba, and of this four-fifths is in cigars.

STATEMENT EXHIBITING THE QUANTITY AND VALUE OF TOBACCO EXPORTED ANNUALLY, FROM 1821 TO 1857, INCLUSIVE.

Years.	Hogsheads.	Value.	Average Cost per Hogshead.
1821	66,858	$5,648,902	*84 45
1822	83,169	6,222,838	74 82
1823	99,009	6,282,672	63 45
1824	77,883	4,855,566	62 34
1825	75,984	6,115,628	80 48
1826	64,098	5,347,208	83 42
1827	100,025	6,577,123	65 75
1828	96,278	5,269,960	54 73
1829	77,131	4,982,974	64 60
1830	83,810	5,596,365	66 66
1831	86,718	4,892,988	56 41
1832	106,866	5,999,709	56 17
1833	88,153	5,755,968	69 20
1834	87,979	6,595,805	74 96
1835	94,353	8,250,577	87 44
1836	109,042	10,058,640	92 24
1837	100,292	5,795,647	57 82
1838	100,593	7,392,020	73 48
1839	78,905	9,882,943	124 47
1840	119,484	9,883,957	82 72
1841	147,928	12,674,703	85 07
1842	158,710	9,540,755	60 11
1843	94,454	4,650,979	49 24
1844	163,042	8,307,255	51 50
1845	147,168	7,409,819	50 75
1846	147,998	8,478,276	57 28
1847	128,702	7,243,063	56 34
1848	120,665	7,551,129	57 78
1849	101,521	5,804,207	57 17
1850	145,729	9,951,029	68 28
1851	95,945	9,219,251	96 09
1852	137,097	10,031,268	73 17
1853	159,853	11,319,319	70 81
1854	126,107	10,016,046	79 42
1855	*150,213	14,712,468	97 94
1856	116,462	12,221,843	104 50
1857	150,848	20,662,772	132 40
Total	4,107,502	$301,191,715	....

* In addition to this export of 150,213 hogsheads for the fiscal year ending June 30, 1855, there was an export of 12,513 bales and 13,306 cases, the value of which is included in the general sum of $14,712,468.

EXPORTS OF TOBACCO FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30.

Domestic.	1853.			
	Hhds.	Cases.	Bales.	Dollars.
Hanse Towns	38,058	1,400	2,467	2,497,790
Holland	17,194	27	56	1,068,782
England	23,841	248	50	3,468,138
France	40,866	2,905	879	4,109,566
Other places	30,324	8,696	9,419	3,574,229
Total domestic	150,213	13,306	12,913	14,712,468
Foreign, all places	..	..	131,270	14,116
Total domestic and foreign exports, lbs.	..	..	..	14,726,584

Domestic.	1854.		1855.	
	Hhds.	Dollars.	Hhds.	Dollars.
Hanse Towns	35,858	2,182,549	53,851	2,822,348
Holland	25,070	1,350,336	23,33[illegible]	1,119,808
England	17,435	2,116,722	31,226	3,285,922
France	15,162	1,352,719	15,706	1,070,858
Other places	32,982	3,013,720	36,091	3,020,653
Total domestic	126,107	10,016,046	159,858	11,319,319
Foreign, all places	677,009	95,088	501,447	84,364
Total domestic and foreign exports, lbs.	..	10,111,984	..	11,403,983

EXPORTS OF MANUFACTURED TOBACCO FROM THE UNITED STATES FOR THE YEARS 1853, 1854, and 1855.

Domestic.	1853.			1854.			1855.		
	Snuff.	Manufact'd.	Value.	Snuff.	Manufact'd.	Value.	Snuff.	Manufact'd.	Value.
	Lbs.	Lbs.		Lbs.	Lbs.		Lbs.	Lbs.	
England	....	2,842,568	$507,804	10	1,457,934	$304,685	....	2,799,419	$601,810
British West Indies	17,112	483,917	52,788	7,773	428,355	58,340	14,913	878,991	42,278
Canada	7,049	1,194,954	185,299	18,984	2,530,323	375,155	18,800	1,858,806	341,315
British American Colonies	1,435	1,050,707	166,099	2,571	1,353,382	181,060	832	852,763	121,501
Australia	2,068	1,160,858	272,475	3,718	652,418	126,014	30,189	1,139,264	225,368
Other places	11,927	3,798,688	487,035	2,336	3,856,845	515,124	7,804	3,595,129	457,706
Total	39,641	10,561,692	$1,670,700	36,287	10,278,152	$1,550,527	72,534	9,625,282	$1,590,668
Foreign, all places	....	....	228,390	7,755	473,108	200,466	....	....	102,593
Total domestic and foreign exports	....	....	$1,899,909	54,042	10,746,350	$1,750,793	....	....	$1,692,661

Agreeably to official statements received at the State Department at Washington, the annual average produce of the States of Maryland, Ohio, Virginia, Tennessee, Kentucky, and Missouri, is estimated at 200,000 hogsheads, of 1200 lbs. each, of which foreign countries annually take 162,000 hogsheads, leaving about 40,000 per annum for our home consumption, which are manufactured into fine cut, smoking, and

chewing, plug chewing tobacco, and snuff. But a very small quantity is now used of these crops for the making of cigars, as the manufacturing of common grades of cigars has almost entirely ceased in this country, for reasons which will be stated hereafter. The average crops of the last few years have been under the above estimate, the exportations smaller the home consumption for the above uses somewhat larger; and foreign consumers of these kinds have been compelled to substitute other foreign tobaccos, not as desirable to them as our produce, to supply the deficiencies in our deliveries. Thus it will be perceived that of the largest product of tobacco of our own growth but one-fourth is required to supply the home demand, while, if the production could be doubled, foreign countries would be ready customers for the greatest part of it, as our tobacco leaf is of such peculiar style and quality, that, like cotton, or the leaf tobacco of the island of Cuba, it is indigenous to the soil and climate, no other soil producing the same; and therefore its culture is confined to certain sections of the country, and attempts in others have proved unsuccessful. Besides the above described sorts of leaf tobacco, five States of the Union produce a limited quantity of leaf, mostly used for the manufacture of cigars, namely, Connecticut, New York, Ohio, Pennsylvania, and Florida. The average yield in these States has been of late years as follows:

In Connecticut.....	5,000	cases of 350 lbs.	each.
In New York.....	2,000	"	" "
In Ohio.....	5,000	"	" "
In Pennsylvania.....	2,000	"	" "
In Florida	2,000	"	" "
Total.....	16,000	"	" "

Deduct from the above one quarter, or 4000 cases, of the most inferior grades, called fillers, and now used mostly for the cutting of smoking tobacco, and it leaves 12,000 cases, or about 4,000,000 lbs. for the use of the cigar-maker. In former years, about one-third of these crops were bought for exportation, chiefly by German buyers; but for the last few years the consumption for the manufacture of cigars has so considerably increased, that of the produce of the first four States very little is exported—our manufacturers paying higher prices than exporters are willing to give; and only of the crop of Florida, about one-half to two-thirds is annually exported, leaving from three to three and one half millions of lbs. of leaf of our own growth, called Spanish seed-leaf tobacco, for the home consumption of the cigar manufacturers.

The manufacturing of cigars, at prices to rival the foreign fabric, having become next to impossible, a great many operatives, who made fair wages for their own and their families' support, were forced, in consequence, to turn to other employments, particularly so in Pennsylvania and Connecticut. Other manufacturers gave their attention to better grades of cigars, for the purpose of furnishing a medium between the common German and finer and high-priced Havana cigar. The American cigar-makers, being noted for their excellent workmanship and tasty style of packing, succeeded in furnishing an article as handsomely made as the fine Havana, similar to it in appearance and flavor, although not of as fine a quality, at a more moderate price than the latter, as palatable to the great majority of smokers, who are disinclined to use the common German fabric, and, finding the genuine Havana too expensive, content themselves with the fair medium, and thus became the great patrons of this branch of trade. This class of cigars are made from onr own seed leaf and Florida tobacco for wrappers, and from Havana, Sagua, Cuba or Yara (all the produce of the island of Cuba), for fillers, and now the consumption of this sort reaches 300 to 400 millions of cigars a year, varying in prices from $12 to $22 per thousand. From 1848 to 1851, five thousand cases of seed-leaf wrappers annually were sufficient to supply the wants of the cigar-makers for home use; the value of seed-leaf wrappers ruling at 10 to 15 cents, and fillers 4 to 5½ cents; leaving a large surplus for export, principally to Germany, to be returned to us as a rival of our own offspring in the shape of low-priced German cigars. Since 1852, almost the entire crops of seed-leaf tobacco have been manufactured at home into Spanish cigars—prices for seed-leaf wrappers ranging at 20 to 35 cents, and fillers at 10 to 18 cents per lb., and a corresponding increase in the importation and consumption of its needful concomitant, the Spanish tobacco from the island of Cuba, for fillers, has taken place.

The importations of this sort of tobacco were—

In 1850, 25,000 lbs.; value, $300,000, duty paid under					$90,000
In 1851, 29,000	"	275,000	"	"	80,000
In 1852, 35,000	"	420,000	"	"	120,000
In 1853, 35,000	"	520,000	"	"	130,000
In 1854, 42,000	"	520,000	"	"	150,000
In 1855, 45,000	"	550,000	"	"	165,000
In 1856, 40,000	"	600,000	"	"	180,000

To show the extent of the export of leaf tobacco and cigars from Cuba, a large portion of which is imported into this country for cigar manufacture and consumption, we give the following statement:

QUANTITIES OF LEAF TOBACCO AND CIGARS EXPORTED FROM CUBA FROM 1848 TO 1854, BOTH INCLUSIVE.

Years.	Leaf Tobacco.	Cigars.	Years.	Leaf Tobacco.	Cigars.
	Pounds.	M.		Pounds.	M.
1848..	6,276,690	101,480	1852..	9,737,448	142,567
1849..	4,019,133	123,720	1853..	8,039,797	237,350
1850..	7,078,148	212,640	1854..	9,808,150	251,318
1851..	9,436,501	270,313			

From this we see that the exportation of leaf tobacco from Cuba has been steadily increasing, but not in the same proportion with the exports of cigars.

Added to this we give the production of tobacco in the island of Porto Rico, only a small portion of which is imported into and used in this country:

Years.	Pounds.	Years.	Pounds.
1848.....	2,457,449	1851.....	6,478,084
1849.....	2,480,540	1852.....	5,565,739
1850.....	2,973,308	1853.....	3,703,457

The fact has now become incontrovertible, that to sustain this branch of industry, the use of the finer grades of foreign material, to improve the quality of our own product, is indispensable. The census return of 1850 gives the number of tobacconists and cigar-makers in the United States as 10,823.

TOBACCO.

States and Territories.	1840.	1850.
	Pounds.	Pounds.
Alabama	273,302	164,000
Arkansas	148,439	918,936
California	....	1,000
Columbia, District of	55,550	7,500
Connecticut	471,657	1,267,024
Delaware	272	....
Florida	75,274	908,614
Georgia	162,894	423,924
Illinois	564,326	841,304
Indiana	1,920,306	1,044,020
Iowa	8,076	6,041
Kentucky	53,436,909	55,501,196
Louisiana	119,824	26,878
Maine	30	....
Maryland	24,816,012	21,407,497
Massachusetts	64,955	138,246
Michigan	1,602	1,245
Mississippi	88,471	49,960
Missouri	9,007,913	17,113,784
New Hampshire	115	59
New Jersey	1,922	870
New York	744	88,480
North Carolina	10,772,550	11,028,736
Ohio	5,042,275	12,383,459
Pennsylvania	325,018	912,651
Rhode Island	337	....
South Carolina	51,519	74,285
Tennessee	20,550,422	20,148,932
Texas	....	66,897
Vermont	585	....
Virginia	75,847,196	56,503,227
Wisconsin	115	1,265
Territories (New Mexico	....	8,467
Territories Oregon	....	335
Territories Utah	....	70
Total	221,105,419	261,350,063

A COMPARATIVE STATEMENT OF THE STOCKS, IMPORTS, AND DELIVERIES OF TOBACCO IN LIVERPOOL THE LAST TEN YEARS.

Stock 1st January.	Imports.					Deliveries.					Stock 31st December.
	Virginia.	New Orleans.	Baltimore.	Other Ports.	Total.	Home Use.	Ireland.	Export.	Coastwise.	Total.	
1848... 13,453	3269	6676	....	532	10,477	4911	3357	2355	2188	12,811	10,119
1849... 16,119	5785	5833	....	1587	13,205	4945	2970	2731	2273	12,969	16,355
1850... 16,355	2162	6422	1465	2507	12,556	4633	2783	2012	2031	11,459	17,452
1851... 17,452	1680	5932	1224	1205	10,041	5258	2329	2687	2233	12,452	15,041
1852... 15,041	8057	7819	1437	980	13,293	5243	3591	2602	3138	14,574	13,760
1853... 13,760	2723	8495	650	2410	14,278	4855	3126	2843	3191	14,015	14,023
1854... 14,023	4420	6173	1359	1003	12,955	5274	3552	2658	3267	14,751	12,227
1855... 12,227	5043	3817	1345	882	11,087	4516	3357	2430	2796	13,099	10,215
1856... 10,215	5068	3373	2043	676	12,945	4275	3549	1902	2545	12,271	10,889
1857... 10,889	3654	5203	2065	1092	12,004	5070	3728	2056	2501	13,355	9,538

The total annual sales at Liverpool and their distribution were as follows:

	1850.	1851.	1852.	1853.	1854.	1855.	1856.	1857.
For home use	7,558	5,253	5,243	4,855	5,274	4,516	4,275	5,070
For Ireland and Scotland	3,579	2,329	3,591	3,126	3,552	3,357	3,549	3,728
Coastwise	2,145	2,233	3,138	3,191	3,267	2,796	2,545	2,501
For exportation	8,312	2,637	2,602	2,843	2,658	2,430	1,902	2,056
Total sales	21,589	12,452	14,574	14,015	14,751	13,099	12,271	13,355

DELIVERIES OUT OF STORE IN 1857.—LIVERPOOL.

	Virginia Leaf.	Virginia Stemmed.	Western Leaf.	Western Stemmed.	Maryland.	Total Hogsheads, etc.
For home use	849	201	254	1901	2275	5,070
For Ireland and Scotland	1941	1125	118	549	....	3,728
For coastwise	205	1131	327	625	153	2,501
For exportation	1039	48	938	....	31	2,056
Total	3594	2505	1632	3075	2459	13,355

ESTIMATED STOCK AT LIVERPOOL ON SALE (EXCLUSIVE OF THAT HELD IN THE CHANNELS OF CONSUMPTION.

Of Virginia leaf	1174	against	2110	in 1856,	1616	in 1855,	1257	in 1854,	977	in 1853, 1,493 in 1852.
" stemmed	1086	"	1634	"	1352	"	829	"	1,217	" 1,123 "
Of Western leaf	1341	"	763	"	847	"	1147	"	4,039	" 2,175 "
" stemmed	3237	"	2502	"	4449	"	5303	"	4,600	" 5,380 "
Of Maryland	773	"	1221	"	528	"	608	"	732	" 989 "
Total	7611	"	8230	"	8292	"	9149	"	11,565	" 11,110 "

PARTICULARS OF LEAF AND STEMMED TOBACCO IMPORTED DURING THE LAST TEN YEARS, AND THE STOCK ON SALE AT THE CLOSE OF EACH YEAR.—IMPORTS.

	1848.	1849.	1850.	1851.	1852.	1853.	1854.	1855.	1856.	1857.
Virginia leaf	1,855	4,082	644	1,242	1,654	1,243	1,932	2,092	4,072	2,275
" stemmed	1,679	2,656	1,793	1,040	1,541	1,668	2,421	2,511	2,652	2,236
Kentucky leaf	1,564	2,530	3,335	1,971	2,282	5,087	1,160	1,209	1,393	2,205
" stemmed	5,556	4,473	5,348	4,565	5,878	4,903	5,651	3,012	2,184	3,342
Maryland and Ohio	23	64	1,486	1,223	1,938	1,317	1,791	1,303	2,644	1,046
Total	10,477	13,205	12,556	10,041	13,293	14,278	12,955	11,087	12,945	12,004

STOCKS ON HAND AT LIVERPOOL.

	1848.	1849.	1850.	1851.	1852.	1853.	1854.	1855.	1856.	1857.
Virginia leaf	2,852	4,170	2,380	2,254	1,634	1,146	1,538	2,178	2,631	1312
" stemmed	3,638	2,553	2,494	1,616	1,356	1,342	1,180	1,541	1,820	1491
Kentucky leaf	2,225	3,123	4,075	2,928	2,761	4,522	1,974	516	994	1567
" stemmed	7,380	6,450	7,240	7,542	6,779	5,806	6,440	4,960	3,410	3677
Maryland, etc.	24	59	1,203	701	1,230	1,207	1,115	1,020	2,034	1521
Total	16,119	16,355	17,452	15,041	13,760	14,023	12,227	10,215	10,889	9538

	1850.	1851.	1852.	1853.	1854.	1855.	1856.	1857.
Stocks in London, 31st December	26,647	22,803	18,090	17,455	11,384	10,041	11,101	10,926
" Liverpool	17,452	15,041	13,760	14,023	12,227	10,220	10,889	9,538
" Bristol, Hull, and Newcastle	1,870	1,204	2,400	2,200	2,100	1,700	1,512	1,600
" Scotland	1,985	1,370	1,453	1,500	1,300	1,800	1,921	770
" Ireland	1,600	950	1,200	1,400	900	1,100	1,000	860
Total in Great Britain	49,554	41,424	36,850	36,578	27,911	24 961	26,423	23,694

Paraguay:	1856.	1857.
Stock on 1st January	6337	3065
Imported during 12 months	1287—7624	5420—8485
Delivered " "	4559	6086
Stock on 31st December	3065 bales	2399

Greek and Turkey:	1856.	1857.
Stock on 1st January	5022	2458
Imported during 12 months	2543—7565	9547—12005
Delivered " "	5107	6068
Stock on 31st December	2458 bales	5937

It may be here stated, as important to the export trade of tobacco, and as a specimen of the inequalities of the tariff duties on tobacco in Europe, that the Norwegian tariff, which differs in many essential particulars from that of Sweden, admits tobacco considerably lower; and, owing to this fact, and to the advantages resulting from different weights, it is found that tobacco blades may be imported into Norway at a rate nearly 33·3 per cent. less than into Sweden.

The following table exhibits the prices current at Liverpool, December 31, for the years 1855, '56, '57:

Liverpool Prices.	1855.	1856.	1857.
Virginia leaf:			
Ordinary and faded	Nomin.	6 @ Nom.	Nominal.
Ordinary sound	5½@ ..	8 @ ..	7½@ 8
Fair leafy, dry	6 @ ..	9 @ 9½	8½@ 9
Good substance	6½@ ..	10 @ ..	9 @ 9½
Fine Irish	7 @ 7½	10 @ 11	10 @10½
Stemmed:			
Ordinary short dry	Nomin.	Nominal.	Nominal.
Fair dry leafy	7½@ 8	11 @ 12	10 @11
Good do. with substance	8½@ 9	13 @ ..	12 @ ..
Fine Irish	9½@10	14 @ 15	12 @13½
Western leaf:			
Ordinary	4½@ ..	Nominal.	Nominal.
Middling to fine, dark	5½@ 6½	8½@ 9½	7½@ 8½
Fine dry and colory	6½@ ..	10 @ ..	9 @10&11
Stemmed:			
Ordinary	7½@ ..	10 @ 11	10 @ ..
Middling	8 @ ..	11½@ 12½	11 @11½
Fine colory	8½@ 9	13 @ 15½	12 @13
Marylands:			
Dry leafy and sweet	6½@ ..	8 @ 8½	7 @ 8
Colory and fine	8 @ 8½	9 @ 11	9 @10
Paraguay	..@ ..	9 @ 10	9 @10
Greek and Turkey	..@ ..	8½@ ..	6 @10

IMPORTS OF TOBACCO INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whence imported.	Unmanufactured.		Snuff.		Cigars.	
	Pounds.	Value.	Pounds.	Value.	Thousand.	Value.
Sweden and Norway	264	$40	....	....	....	....
Danish West Indies	....	....	....	....	4	837
Hamburg	2,143	473	2,320	$364	18,251	58,905
Bremen	928,514	45,628	6,036	1021	80,360	275,329
Holland	66,045	3,965	3,205	640	55,171	163,698
Dutch West Indies	....	....	....	....	2	8
Dutch Guiana	....	....	....	....	2	12
Dutch East Indies	....	....	....	....	10	82
Belgium	106,035	12,514	1,131	143	198,469	650,168
England	32,074	3,705	134	73	536	4,009
Scotland	....	....	....	....	74	615
Gibraltar	....	....	....	....	120	545
Canada	....	....	....	....	37	643
British West Indies	16,801	2,310	175	44	10	109
British Honduras	14,070	974	....	....	63	343
British Australia	....	....	....	....	1,530	4,755
British East Indies	31,015	824	....	....	392	2,109
France on the Atlantic	27,798	3,241	824	321	37,873	103,389
France on the Mediterranean	....	....	....	....	70	332
French West Indies	....	....	....	....	1	10
Spain on the Mediterranean	936	79	....	....	....	....
Philippine Islands	562,430	57,837	....	....	7,731	60,828
Cuba	5,536,630	972,567	....	....	133,307	2,506,743
Porto Rico	11,629	1,170	....	....	42	378
Two Sicilies	....	....	25	5	....	....
Austria	....	....	13	6	....	....
Turkey in Asia	13,027	2,444	....	....	2	21
Ports in Africa	....	....	....	....	8	146
Hayti	276,229	42,613	....	....	....	....
San Domingo	125,045	15,182	....	....	12	240
Mexico	117,550	12,359	....	....	260	1,470
Central Republic	256	34	....	....	30	313
New Granada	1,142,236	155,335	....	....	13,547	334,530
Venezuela	150,713	18,329	....	....	12	82
Brazil	1,768	260	....	....	31	44
Chili	10,500	1,722	....	....	780	3,545
Peru	1,025	139	....	....	....	....
China	....	....	....	....	2,385	7,329
Total, year 1856-'7	8,574,632	$1,358,835	13,933	$2626	560,043	$4,221,096

EXPORTS OF THE MANUFACTURES OF DOMESTIC TOBACCO FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Snuff.		Tobacco.	
	Pounds.	Value.	Pounds.	Value.
Russia	....	....	6,000	$700
Danish West Indies	....	....	66,549	13,599
Hamburg	64	$64	81,224	16,469
Bremen	120	120	84,302	18,826
Holland	....	....	16,143	2,292
Dutch West Indies	1,300	234	104,622	23,101
Dutch Guiana	....	....	4,175	683
Belgium	....	....	4,000	837
England	....	....	836,819	186,378
Scotland	....	....	52,181	8,608
Gibraltar	....	....	133,235	20,871
Malta	....	....	166,359	32,642
Canada	14,560	3,507	1,471,030	303,140
British N. Am. Possess.	861	134	1,130,803	206,600
British West Indies	13,588	2,743	290,835	47,568
British Honduras	....	....	29,102	5,205
British Guiana	....	....	30,271	3,599
Brit. Possess. in Africa	....	....	443,352	72,639
British Australia	10,140	1,985	1,032,456	225,128
British East Indies	....	....	243,826	39,357
France on the Atlantic	1,296	648	65,076	10,189
France on the Mediter'n	590	49	71,681	11,751
French N. Am. Possess.	725	208	39,146	6,541
Spain on the Mediterr'n	200	120	10,960	589
Canary Islands	....	....	27,022	3,962
Cuba	96	48	200,072	32,673
Porto Rico	....	....	130,431	21,756
Cape de Verd Islands	....	....	6,455	1,222
Azores	....	....	280	30
Sardinia	....	....	5,051	992
Turkey in Europe	....	....	19,175	1,676
Turkey in Asia	400	94	7,817	847
Ports in Africa	....	....	63,029	19,174
Hayti	14	4	52,151	9,245
Mexico	2,577	2,093	35,476	7,149
Central Republic	....	....	1,405	211
New Granada	....	....	70,232	11,103
Venezuela	....	....	97,402	14,376
Brazil	....	....	35,798	6,003
Uruguay	....	....	32,433	4,520
Argentine Republic	....	....	15,303	2,003
Chili	800	100	122,301	16,036
Peru	....	....	19,108	4,080
Sandwich Islands	100	15	33,183	6,214
China	....	....	35,082	10,082
Whale-fisheries	....	....	16,510	3,587
Total, 1856-'7	50,401	$11,526	7,456,666	$1,447,027

We now add a summary of foreign tobacco, showing together the aggregate export trade for 1856-'7:

EXPORTS OF FOREIGN TOBACCO FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Cigars.		Manufactured, other than Snuff and Cigars.	
	M.	Value.	Pounds.	Value.
Russia	36	$148	....	....
Asiatic Russia	64	686	5,000	411
Russian Poss. in N. Am.	85	1,018	14,760	2,408
Sweden and Norway	49	1,464	....	....
Danish West Indies	217	3,394	....	....
Hamburg	64	1,653	280,024	49,602
Bremen	141	2,438	651,730	120,177
Other German ports	..	....	....	....
Holland	72	1,080	51,149	8,091
Dutch West Indies	60	1,285	....	....
Dutch Guiana	28	405	....	....
Belgium	214	3,710	151,391	32,003
England	281	7,047	25,153	5,025
Scotland	80	1,018	....	....
Malta	4	360	....	....
Canada	1,746	33,741	....	....
British N. Am. Possess.	183	2,217	10,400	1,689
British West Indies	66	657	....	....
British Honduras	49	947	....	....
British Poss. in Africa	24	530	....	....
British Australia	651	13,585	....	....
British East Indies	10	167	....	....
France on the Atlantic	362	6,760	9,480	1,902
France on the Mediter'n	15	236	....	....
French N. Am. Possess.	11	208	....	....
French West Indies	15	372	....	....
Porto Rico	7	1,580	....	....
Portugal	6	168	....	....
Cape de Verd Islands	71	527	50	11
Sardinia	9	220	....	....
Two Sicilies	50	781	....	....
Turkey in Europe	10	153	....	....
Turkey in Asia	43	595	....	....
Ports in Africa	121	1,752	....	....
Hayti	128	1,709	1,015	243
Mexico	51	621	1,500	1,449
New Granada	402	8,499	....	....
Venezuela	1,299	32,704	....	....
Brazil	739	20,427	3,000	507
Uruguay, or Claplata Rep.	113	2,908	....	....
Buenos Ayres	110	3,595	....	....
Chili	985	30,274	45,000	11,816
Peru	534	17,650	....	....
Sandwich Islands	1,398	16,590	500	51
China	15	342	....	....
Whale-fisheries	25	609	....	....
Total	11,168	$227,143	1,250,101	$241,385
From warehouse	6,241	118,786	852,817	165,518
Not from warehouse	4,927	108,357	397,284	75,867

EXPORTS OF FOREIGN TOBACCO FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Unmanufactured.		Snuff.	
	Pounds.	Value.	Pounds.	Value.
Bremen	11,651	$1,580	....	....
Other German ports	896	188	....	....
Canada	11,176	2,128	780	$156
Chili	51,933	9,760	....	....
Peru	..	....	500	200
Sandwich Islands	2,807	646	....	....
Total	77,763	$14,287	1280	$356
From warehouse	72,660	13,136	500	200
Not from warehouse	5,103	1,151	780	156

EXPORTS OF UNMANUFACTURED DOMESTIC TOBACCO FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Hhds.	Cases.	Bales.	Value.
				$
Asiatic Russia	....	10	....	300
Russian Possess. in N. Am.	....	..	40	1,200
Sweden and Norway	395	..	5	84,871
Swedish West Indies	9	..	....	1,032
Denmark	63	..	....	16,275
Danish West Indies	58	1	174	15,013
Hamburg	633	230	326	131,720
Bremen	46,045	390	3,564	4,914,356
Holland	27,738	..	190	1,909,008
Dutch West Indies	15	..	25	3,036
Dutch Guiana	59	..	....	7,049
Belgium	6,346	..	688	904,257
England	29,376	213	92	4,674,105
Scotland	892	..	....	131,887
Ireland	160	..	....	29,407
Gibraltar	332	942	8	65,841
Malta	766	199	25	119,862
Canada	811	1981	466	181,964
Other British N. A. Possess.	137	13	....	23,786
British West Indies	550	15	231	114,017
British Honduras	20	..	60	6,365
British Guiana	133	100	....	28,708
British Possessions in Africa	114	202	120	59,970
British Australia	165	20	....	22,883
British East Indies	....	14	....	4,0
France on the Atlantic	10,145	..	40	985,0 2
France on the Mediterranean	1,824	..	121	308,709
French N. Amer. Possessions	....	..	1	16
French West Indies	630	..	24	107,886
French Guiana	95	..	....	20,377
Spain on the Atlantic	7,436	..	....	1,092,414
Spain on the Mediterranean	117	..	....	27,531
Canary Islands	26	..	....	5,912
Cuba	18	..	....	3,212
Porto Rico	125	5	....	27,000
Portugal	876	..	....	121,359
Madeira	22	..	....	4,2 0
Cape de Verd Islands	82	1	92	22,471
Sardinia	5,140	..	....	682,124
Tuscany	2,033	..	....	337,40
Two Sicilies	4,144	..	....	875,208
Austria	1,538	..	....	181,5 5
Austrian Possessions in Italy	5,054	..	....	1,035,893
Turkey in Europe	25	..	....	2,091
Turkey in Asia	41	..	202	10,186
Ports in Africa	1,721	35	984	402,069
Hayti	88	284	3,995	97,760
Mexico	....	..	100	2,740
New Granada	579	..	1,600	86,345
Venezuela	150	..	41	28,226
Brazil	80	..	9	14,462
Uruguay, or Cisplatine Rep.	5	..	....	1,666
Argentine Republic	....	75	....	1,025
Chili	3	..	1,157	23,018
Peru	3	..	....	262
Sandwich Islands	....	111	20	4,308
Other Islands in the Pacific	....	50	12	1,586
Total, year 1856-'57	156,848	5631	14,432	20,260,722

—For articles on tobacco, see *American Quarterly Review*, ix. 136; DE BOW'S *Review*, xii. 656, ii. 249, xi. 394; HUNT'S *Merchants' Magazine*, x. 72, xv. 521, xvi. 396. On tobacco trade, see *American Almanac*, 1856.

Tokay, a town of northeast Hungary, county of Zemplin, on the right bank of the Theiss, at the influx of the Bodrog, 43 miles north-northwest of Debreczin. Population, 5700. It is celebrated as being the entrepôt for the famous Tokay wine, produced in the hilly tract called the Hegyalla, in the county of Zemplin, lat. 48° N., between the Bodrog and Hernad rivers. The wine of premier quality is bought up for the Imperial cellars, and only the secondary and inferior growths are exported. Much of the wine sold as Tokay is produced in other parts of Hungary. In manufacturing the genuine Tokay wine, the dried grapes are carefully separated from the others, and three sorts of wine are produced. The best is the *Essence:* this is the oily juice which runs from the fruit without any pressure. When this ceases to run, the grapes are moistened with common Tokay-must, and trodden out: this gives the *Ausbruch*. A second infusion of Tokay-must on the remaining grapes, pressed by hand, gives the *Mászlás* (Macklass).—*See* HENDERSON *on Wines; Ency. Amer.*

Tokens (Bank). These were silver pieces issued by the Bank of England, of the value of *5s.*, January 1, 1798. The Spanish dollar was at first impressed with a small profile of George III.; it was stamped on the neck of the Spanish king. Tokens were raised to the value of *5s. 6d.*, November 14, 1811. Bank tokens were also current in Ireland, where those issued by the Bank of Ireland passed for *6s.* and lesser sums until 1817. They were soon after called in, on the revision of the British coinage.

Toll, from the Saxon *Tolne;* in German *Zoll* (called in law Latin *Telonium* and *Tolnetum*, with many other variations, which may be seen in Ducange, all which Latin terms are derived apparently from τελώνιον, "collection of tribute or revenue"). Tolls may be considered a payment in money, or in kind, fixed in amount, made either under a royal grant or under a prescriptive usage, from which the existence of such a grant is implied, in consideration of some service rendered, benefit conferred, or right forborne to be exercised by the party who is entitled to such payment.

An ancient toll may be claimed by the owner of a port in respect of goods shipped or landed there. Such tolls are port tolls, more commonly called port dues. The place at which these tolls were set or assessed was anciently called the Tolsey, where, as at the modern Exchange, the merchants usually assembled, and where commercial courts were held.—BOUVIER'S *Cyclop.*

Marine tolls were first paid by vessels passing the Stade on the Elbe, A.D. 1109. They were first demanded by the Danes of vessels passing the Sound, 1341. Toll-bars in England originated in 1267, in the grant of a penny for every wagon that passed through a certain manor; and the first regular toll was collected a few years after for mending the road in London between St. Giles and Temple Bar. Tolls were also gathered for repairing the highways of Holborn Inn Lane and Martin's Lane, 1346. Toll-gates or turnpikes were used in 1663. Numerous acts relating to tolls and turnpike roads have been passed in Great Britain and the several States of the United States.—HAYDN.

By order of the London Court of Common Council, the tolls taken at the several bars of the city of London, for the wagons, carts, etc., not being the property of a citizen of London, were abolished December 25, 1854. These tolls had brought an annual revenue of only *2d.* on each cart, or about £6000.

Ton, a weight used in Great Britain and this country, usually of 2240 lbs., but sometimes of 2000 lbs., called a short ton. By act of Congress it is decided that, unless specified to the contrary, a ton weight is to be understood as two thousand two hundred and forty lbs. avoirdupois.—*See* WEIGHTS AND MEASURES.

Tonnage, in *Commercial navigation*, the number of tons burden that a ship will carry. Tonnage has long been an official term, intended originally to express the burden that a ship would carry, in order that the various dues and customs which are levied upon shipping might be levied according to the size of the vessel, or rather in proportion to her capability of carrying a burden. It has hence arisen that the term "tonnage," as applied to a ship, has become almost synonymous with that of size. It is, indeed, the only term used to give an idea of the magnitude of merchant ships, which are invariably spoken of according to

their tonnage, or as being ships of 50, of 500, or of 1000 tons. Not only are all dues and customs levied according to tonnage, but ships are also built, and sometimes sold and bought for a price per ton of their admeasurement; and they are also timbered, fastened, and have their anchors, cables, and boats, all in proportion to the same datum. Tonnage, therefore, in so far as these considerations are involved, is assumed to be a correct representation of the size of a ship.

It is evident that tonnage may express several results of measurements, and in each case may be a sufficiently fair criterion of the burden of a merchant vessel by which to levy dues; because all that is required thus far, either on the part of the government or of private interests, or on that of the owner, is, that the dues should be levied in equal proportion on all vessels. Thus, tonnage may be the product of a series of measurements, intended to express the exact size, or an approximation to the exact size of the ship. It may be the actual displacement or weight of the ship, either with or without the cargo; it may be the displacement of the cargo, or the dead weight which she will carry to a fixed draught of water; or it may be the exact capacity of the space which she has for the stowage of cargo. Yet to each of these there are important and practical objections. The first, or that by which the measured bulk of the ship would be the tonnage, might be easily evaded, and would lead to injurious results; because, as there must necessarily be fixed measuring places, such a law would have the effect of restricting vessels to that shape which would carry the greatest amount of cargo under the least possible measurements at these places. If the actual displacement, either load or light, of a vessel were to be her tonnage, it would be subject to the inconvenience that it could only be calculated correctly from the drawing of the ship, and therefore would be inapplicable to foreign ships arriving at our ports. An exact account of the draught of water, either load or light, would also be necessary, which being a variable quantity when the load draught is involved, and one of great difficulty to be determined when the light draught is required, would present almost insuperable objections; and, besides, the draught of water is a quantity easily concealed or falsified for fraudulent purposes. Above all objections, however, may be reckoned this: that if either the load or the ship represent the tonnage, it would be to the interest of the ship-builder to build large vessels with slight scantling and inadequate fastenings, that the weight of the vessel might be small in proportion to that of the cargo. If the tonnage were to express the difference between the two displacements, that is, the excess of the load displacement over the light, or the dead weight of the loading, although this would be the most correct in principle, and even mathematically correct, there is the objection that it involves a knowledge of both light and load draughts of water, and is therefore, on this account, practically, at least, as objectionable as the whole displacement. Lastly, if the tonnage were to be the space or capacity for the stowing of cargo, numerous openings would be afforded for fraudulent evasion; because the manner of measuring the ship for this space must be defined, and it is easy to build space which will not come within the limits of the defined measurements; or it is easy to build a vessel of such a form that the measurements made at given points shall not give a correct account of her capacity.

Measurement of Tonnage in the United States.—By an act of Congress, passed March 2, 1799, it is provided that, to ascertain the tonnage of any ship or vessel, the surveyor, or such other person as shall be appointed by the collector of the district to measure the same, shall, if the said ship or vessel be double-decked, take the length thereof from the fore part of the main stem to the after part of the stern-post above the upper deck, the breadth thereof at the broadest part above the main wales, half of which breadth shall be accounted the depth of such vessel; and shall then deduct from the length three-fifths of the breadth, multiplying the remainder by the breadth, and the product by the depth, and shall divide this last product by ninety-five, the quotient whereof shall be deemed the true contents or tonnage of such ship or vessel. And if such ship or vessel be single-decked, the surveyor, or other person authorized, shall take the length and breadth as above directed, in respect to a double-decked ship or vessel, shall deduct from the said length three-fifths of the breadth, and, taking the depth from the under side of the deck plank to the ceiling in the hold, shall multiply and divide as aforesaid, and the quotient shall be deemed the tonnage of such ship or vessel.

METHODS AT PRESENT IN USE AMONG FOREIGN NATIONS FOR COMPUTING THE TONNAGE OF SHIPS.

FRANCE.—The three measures of length, breadth, and depth are multiplied together, and the product is divided by 94 for the tonnage.

In single-decked vessels the length is taken from the after part of the stem on deck to the stern-post; the extreme breadth is taken, being measured inside from ceiling to ceiling, and the depth from the ceiling to the under surface of the deck.

In vessels of two decks, at Bordeaux, the length of the upper deck and that of the keelson is measured, and the mean taken for the length. But at Brest, Marseilles, and Boulogne, the mean of the length on the two decks, from the stem to the stern-post, is taken as the length. The depth of the hold from the ceiling to the under surface of the lower deck is added to that of the height between decks, and considered as the depth. The extreme inside breadth is taken in the same way as in single-decked vessels. At Bordeaux an allowance is sometimes made for the rake of the stem and stern of the vessels.

At Boulogne, in measuring steamboats, the length of the coal and engine chambers is deducted from the length of the vessel, and her breadth is taken at the fore and aft extremities of the same, the mean of which is considered as the breadth. The depth is taken inside the pumps, from the lower surface of the deck, between the timbers. At Brest measures are frequently taken with a string, although contrary to law, and an error of seven tons in the tonnage of a cutter has been the result.

GREAT BRITAIN. *See* art. GREAT BRITAIN, p. 858.

SPAIN.—The breadths are measured at the following places: 1st, at the mizzen-mast; 2d, a few feet abaft the foremast; 3d, at a point half way between the two former. The heights at which the three breadths are taken at the above places are: 1st, on a level with the deck; 2d, on a level with the upper surface of the keelson; 3d, at a level half-way between the two former positions.

To find the area at each section, the half of the sum of the upper and lower measurements is added to the middle measurement, and this sum is multiplied by the height of one above the other. Then half the areas of the fore and after section is added to that of the middle section, and this sum is multiplied by the length which the sections are apart from each other. The result will express in Burgos cubic feet the capacity of the part of the hold between the fore and after sections, and it still remains to add the spaces between these and the stem and stern-post. The former may be found, without any considerable error, by multiplying the area of the foremost section by half its distance from the stem; and the latter in the same manner, by multiplying the area of the after section by half its distance from the stern-post. It is evident that the room occupied by the pumps must be deducted from the foregoing result, in order to obtain the fair quantity of space filled by the cargo.

Having thus found the capacity of the hold of any

vessel in the above manner in Burgos cubic feet, it is to be divided by $41\frac{81}{175}$, and the result will be the amount of displacement of such vessel in tons of Burgos measure, because each ton is reckoned equal to $41\frac{81}{175}$ feet of Burgos.

PORTUGAL.—*For single-decked vessels*, the length is measured from the cabin bulkheads to the forecastle bulkheads. The depth is measured from the upper surface of the keelson to the under surface of the beams. The extreme breadth of the deck is considered the breadth. The continued product of these three dimensions will give the contents in cubic feet, which, divided by $57\frac{726}{1000}$, gives the tonnage.

Vessels of two Decks.—In these vessels two distinct operations are made; one for the hold, the other for the middle deck. For the hold: The length is measured from the heel of the bowsprit to the stern-post. The breadth is the extreme breadth of the upper deck, deducting two feet. The depth is from the upper surface of the keelson to the under surface of the beams. For the middle deck: The length is considered as half of that for the hold, the other half being allowed for cabins, etc.—the breadth as before; and for the depth, the height of the middle deck to the under surface of the beams.

The foregoing is the method adopted at Lisbon; but at Oporto the length of the vessel is taken from the second timber at the bows to the stern-post; the breadth at the widest part from the inside of each bulwark on the upper deck; and the depth from the upper surface of the keelson, to the lower surface of the beams of the upper deck at the main hatchway.

If the keelson be more than ordinarily thick, allowance is made accordingly; and where there are two decks, the thickness of the lower deck is also deducted from the depth. The length is then multiplied by the breadth, and the product by the depth. The product is then divided by 96, the number of Portuguese cubic feet contained in a ton, and the result is the tonnage of the vessel.

NAPLES.—*For vessels with two decks*, the length is measured from one end of the vessel to the other, *over all*. The length is also measured from the after part of the stem to the rudder hatch, under the poop. The mean between these two lengths is multiplied by the extreme breadth of the vessel. The depth is then taken from the bottom of the well to the lower surface of the upper or poop deck; and the above product being multiplied by this depth, and divided by 94, gives the tonnage.

For single-decked vessels, the tonnage is found by multiplying the extreme length by the extreme breadth, and the product by the extreme depth, and divided by 94, as above.

NETHERLANDS.—The length is measured on deck from the stem to the stern-post. For the breadth, the hold is divided into four portions, and two measurements taken at each of the three divisions: 1st, across the keelson, on a level with the upper surface, from ceiling to ceiling; 2d, the greatest breadth of the hold at each division. The mean of these six measurements is considered the breadth. The depths are taken at each of the foregoing points of division, from the upper surface of the keelson to the lower surface of the upper deck between the beams, and the mean of these three is resumed. The length, breadth, and depth are then multiplied together, and two-thirds of the product is considered as the tonnage. Allowance for provisions and water, cabin and ship's stores, varying from $\frac{1}{100}$ to $\frac{1.6}{100}$, is deducted from the depth before it is multiplied by the length and breadth.

NORWAY.—From the after part of the stem, the length of the ship is taken to the inner part of the stern-post. Dividing the length of the vessel into four equal parts, the breadth is measured at each of these divisions. The depth of the vessel, from the under surface of the upper deck to the keelson, is taken at the above three points of division. Then multiply the length by the mean of the three breadths, and this product by the mean of the three depths. The result of the foregoing is divided by $242\frac{1}{2}$, if there be no fractional parts of feet; but if there are, the calculation is made in inches, and the divisor becomes 822,776, the result thus obtained being the burden of the vessel in wood lasts, of 4000 Neva lbs. each. To reduce these into commerce lasts, one of which is equal to 5200 Neva lbs., it is multiplied by 10, and divided by 13.

RUSSIA.—Length of the keel in feet, multiplied by the extreme breadth over the sheathing, and the product multiplied again by half the breadth, and divided by 94, gives the number of English tons.

UNITED STATES.—If the vessel be double-decked, the *length* is taken from the fore part of the main stem to the after part of the stern-post, above the upper deck; the *breadth*, at the broadest part above the main wales, half of which breadth is accounted the *depth*. From the length *three-fifths* of the *breadth* is deducted; the remainder is multiplied by the *breadth*, and the product by the *depth*. The last product is divided by 95, and the quotient is deemed the true tonnage of such ship or vessel. *See* page 1855.

If the ship or vessel be single-decked, the *length* and *breadth* are taken as above for a double-decked vessel, and three-fifths of the breadth are deducted from the length. The depth of the hold is taken from the under side of the deck-plank to the ceiling in the hold. These are multiplied and divided as aforesaid, and the quotient is the tonnage. At some places a system of measuring, called carpenter's tonnage, appears to be adopted. The rule is as follows:

For vessels with one deck, multiply the length by the breadth of the main beam, and the product by the depth. Divide this second product by 95. *For double-decked vessels*, take half the breadth of the main beam for the depth, and work as for a single-decked vessel.

At New Orleans, the mode at present in use is to take the length from the stem to the after part of the stern-post, on the deck. Take the greatest breadth over the main hatch, and the depth from the ceiling of the hold to the lower surface of the deck at the main hatch. From the length deduct three-fifths of the breadth, multiply the remainder by the actual breadth and depth, and divide by 95 for a vessel with a single deck; but if the vessel have a double deck, half the breadth of the beam is considered as equivalent to the depth, and is multiplied accordingly.

Tonnage Duties.—By an act of Congress, May 31, 1830, it is ordered that no tonnage duties shall be paid by ships or vessels of the United States, of which the officers and two-thirds of the crew shall be citizens of the United States; and all acts imposing tonnage duties on such ship are repealed.

Under the provisions of the act of the 27th May, 1848, extending privileges to American vessels, bound from one port to another in the United States, touching at a foreign port for certain purposes, a bond for the return of the seamen and crew list, prescribed by law in cases of vessels bound on a foreign voyage, is required, and the seamen must all be accounted for.

American vessels, owned by Americans or others, without register, are subject to a tonnage duty of one dollar per ton, and 10 per cent. additional duty on the cargo, as foreign vessels.

American-built vessels, owned wholly or in part by foreigners, are subject to tonnage duty of thirty cents per ton, and 10 per cent. additional duty on cargo, unless exempt by treaty.

American vessels, on arrival from foreign ports, are subject to a tonnage duty of fifty cents per ton, unless the officers and two-thirds of the crew for the whole voyage are American citizens.

The discharge of seamen from an American vessel, although by mutual consent, certified by a consul, will

not exempt the vessel from the payment of tonnage duty incurred as above. The only exemption provided by law is in cases of sickness, death, desertion, or being made prisoners of war; which must be certified by an American consul.

All acts imposing duties on the tonnage of the ships and vessels of foreign nations, so far as they relate to the imposition of such duties, are repealed; provided that all discriminating or countervailing duties of such foreign nations, as far as they operate to the disadvantage of the United States, have been abolished.

TONNAGE STATISTICS.

THE TONNAGE OF VESSELS ENTERED AND CLEARED FROM THE PRINCIPAL COUNTRIES AND PORTS OF CHRISTENDOM.

Countries.		1851.	1852.	1853.
Great Britain	Ent'd.	7,872,024	7,887,447	7,528,387
	Cl'd.	8,108,104	8,242,702	7,479,648
United States	Ent'd.	4,993,440	5,292,880	*7,186,816
	Cl'd.	5,130,054	5,278,105	7,070,821
France	Ent'd.	....	....	4,068,781
	Cl'd.	2,121,520	2,544,785	2,307,490
Turkey, from 8 princ. ports	Ent'd.	1,689,325	....	....
	Cl'd.	1,705,968	....	....
Austria	Ent'd.	483,861	1,235,492	1,410,406
	Cl'd.	493,838	1,026,871	1,418,715
Russia	Ent'd.	472,172	547,182	† 453,548
	Cl'd.	611,368	914,194	537,954
Prussia	Ent'd.	620,378	632,114	....
	Cl'd.	1,073,998	737,948	....
Hamburg	Ent'd.	744,536	841,680	781,816
	Cl'd.	743,136	845,184	774,616
Bremen	Ent'd.	243,206	499,634	* 488,000
	Cl'd.	362,243	428,756	* 509,922
Chili	Ent'd.	475,634	....	620,000
	Cl'd.	470,924	....	....
Sweden	Ent'd.	293,454	274,226	‡ 200,880
	Cl'd.	270,620	333,834	428,384
Norway	Ent'd.	205,811	283,310	‡ 431,479
	Cl'd.	468,636	580,924	399,369
Denmark (pr.)	Ent'd.	341,504	341,818	....
	Cl'd.	312,092	324,828	....
Spain	Ent'd.	316,781	....	....
	Cl'd.	305,818	....	....
Brazil	Ent'd.	383,111	....	634,213
	Cl'd.	373,009	....	....
Two Sicilies	Ent'd.	300,266	....	† 320,088
	Cl'd.	310,909	....	297,631

* Year ending June 30, 1857. † 1853. ‡ 1854. § 1855.

These statistics are the latest that can be obtained, and are given to show the comparative tonnage rather than as accurate statements. Several discrepancies, as in the case of the tonnage of France, are unavoidable.—For more accurate statistics, see the countries under their proper heads. For the statistics in regard to the tonnage of the United States, *see article* UNITED STATES.

Tontine, a species of life annuity, with benefit of survivorship, so called from Lorenze Tonti, a Neapolitan, with whom the scheme originated, and who introduced it into France, where the first tontine was opened in 1653. The subscribers were divided into ten classes, according to their ages, or were allowed to appoint nominees, who were so divided; and a proportionate annuity being assigned to each class, those who lived longest had the benefit of their survivorship, by the whole annuity being divided among the diminished number. The terms of this tontine may be seen in the French *Enclycopedie*, Finance Division, vol. iii. In 1689 a second tontine was opened in France. The last survivor was a widow, who at the period of her death, at the age of 96, enjoyed an income of 73,500 livres for her original subscription of 300 livres. The late celebrated Mr. Jennings was an original subscriber for a £100 share in a tontine company; and being the last survivor of the shareholders, his share produced him £3000 *per annum*. He died worth £2,115,244, aged 103 years, June 19, 1798. The last French tontine was opened in 1759. They had been found very onerous, and in 1763 the Council of State determined that this sort of financial operation should not be again adopted. Tontines have seldom been resorted to in England as a measure of finance. The last for which the government opened subscriptions was in 1789. The terms may be seen in Hamilton's *Hist. Public Revenue*, p. 210. There have been numerous private tontines in England and in the United States. The Tontine Building, Wall Street, New York, was erected during the years 1792–1794, upon this principle, by an association of merchants. By the constitution under which the association was formed, 203 shares were subscribed, at $200 a share, severally depending upon a life selected by each subscriber. The old building was razed to the ground in 1855, and was superseded in the same year by a substantial edifice.

Top, a sort of platform surrounding the lower masthead, from which it projects on all sides like a scaffold. The principal intention of the top is to extend the angle with the mast, and thereby give additional support to the latter. The top is also very convenient to contain the materials necessary for extending the small sails, and for fixing and repairing the rigging and machinery with greater expedition. In ships of war the tops are furnished with swivels, musketry, and other fire-arms, and are guarded with a fence of hammocks in time of action. Finally, the top is employed as a place for looking out, either in the day or night.—E. A.

Topaz (Ger. *Topas;* Fr. *Topaze;* It. *Topazio;* Sp. *Topacio;* Russ. *Topas*). The name topaz has been restricted by M. Haüy to the stones called by mineralogists Occidental ruby, topaz, and sapphire; which, agreeing in their crystallization and most of their properties, were arranged under one species by M. Romé de Lisle. The word topaz, derived from an island in the Red Sea, where the ancients used to find topazes, was applied by them to a mineral very different from ours. One variety of our topaz they denominated chrysolite. Color, wine yellow. From pale wine yellow it passes into yellowish white, greenish white, mountain green, sky blue; from deep wine yellow into flesh red and crimson red. Specific gravity from 3·464 to 3·641.—THOMSON'S *Chemistry*.

Yellow Topaz.—In speaking of the topaz, a gem of a beautiful yellow color is always understood: it is wine yellow, of different degrees of intensity; and the fuller and deeper the tinge, the more the stone is esteemed. In hardness it yields to the spinelle. There are few gems more universal favorites than the yellow topaz, when perfect; the rich warm tone of its color, the vivacity of its lustre (which it retains even by the side of the diamond), and its large size, compared with many others, are characters which deservedly entitle it to distinction; it bears, accordingly, a high price when of good quality. It is chiefly employed for necklaces, ear-drops, bracelets, etc., in suit. No little skill and taste are required in cutting and duly proportioning this gem; the table should be perfectly symmetrical, and not too large; the bizel of sufficient depth, and the collet side should be formed in delicate steps. It works easily on the mill, and the lapidaries are in general tolerably well acquainted with it; yet it is uncommon to meet with one well cut. The yellow topaz varies in price according to its beauty and perfection. A superlatively fine stone, perfect in color and workmanship, sufficiently large for an armlet, or any other ornament, and weighing nearly 80 carats, was sold for £100. Topazes have become more common since our intercourse with Brazil; consequently, they are less in demand, and lower in price. A fine stone of 60 carats may be purchased at from £20 to £35; and smaller, calculated for ring stones, at from £2 to £5, but it is not usual to sell them by weight.

Pink Topaz.—This is made from the yellow, which, when of intense color, is put into the bowl of a tobacco pipe or small crucible, covered with ashes or sand: on the application of a low degree of heat, it changes its color from a yellow to a beautiful pink. This is performed with little hazard; and if the color produced happens to be fine, the price is much augmented.

Red Topaz.—This beautiful gem, which very seldom occurs naturally, is of a fine crimson color, tinged

with a rich brown; it is extremely rare, and generally taken to be a variety of ruby, for which I have seen it offered for sale. Its price, from its scarcity, is quite capricious; it has an exquisite pleasing color, very different from the glare of the artificial pink topaz.

Blue Topaz is also a beautiful gem, of a fine celestial blue color. It has occurred of considerable magnitude; the finest specimen known I brought in the rough from Brazil; when cut and polished, it weighed about 1¼ oz. Smaller specimens are not uncommon, and when light-colored are often taken for aqua-marinas, from which they may always be distinguished by their greater weight and hardness, etc.

White Topaz is familiarly called *Minas Nova*. It is a beautiful pellucid gem, and is used for bracelets, necklaces, etc. It possesses greater brilliancy than crystal; and, from its hardness, has been used to cover paste, etc., and to form doublets."—MAWE *on Diamonds*.

Top-mast, the second division of a mast, or that part next above the lower mast. *Top-gallant mast*, the mast next above the top-mast, and is generally the uppermost mast. *Top-sails*, large sails extending across the top-mast. *Top-gallant sails* are extended above the top-sail yards, in the same manner as the top-sails are extended above the lower yards.

Tornado (Spanish), a violent hurricane or gust of wind, which, arising suddenly from the shore, veers round to all points of the compass, and indeed has been described as blowing from all points at once. Tornadoes are usually accompanied with thunder-storms, and are generally of short duration. They are frequent in the Chinese seas and the West Indies.

Toronto, city, at one time the capital of Canada, is situated on Toronto Bay, in the township and county of York, lat. 43° 32′ N., long. 79° 20′ W. It is 45 miles northeast from Hamilton, 165 miles west from Kingston, 363 miles from Montreal, 543 miles from Quebec, and 1353 from Halifax, Nova Scotia.

The bay is a beautiful sheet of water, separated from the main body of Lake Ontario, except at its entrance, by a long narrow strip of sandy beach, the southwest termination of which is known as "*Gibraltar Point*." The city was founded in 1794 by Governor Simcoe, and is laid out in the form of a parallelogram, being above three miles long by one and a half wide; the streets, which are straight and wide, intersecting at right angles. The esplanade fronting the bay extends for a distance of two miles. In 1817 the population amounted to 1200; in 1830 to 2860; in 1842 to 15,336; in 1850 to 25,166; in 1852 to 30,763; and in 1854 to over 40,000. The city is lighted with gas, and is well supplied with water, by companies incorporated for those purposes.—*See* TRADE. From Toronto the capital was removed to Quebec, and in 1857–'58 was finally established at Ottawa, formerly Bytown.

Tortoise-shell (Fr. *Ecaille de Tortue*; It. *Scaglia de Tartaruga*; Ger. *Schilpad*; Malay, *Sisik kuvakura*), the brown and yellow scales of the *Testudo imbricata*, or tortoise, a native of the tropical seas. It is extensively used in the manufacture of combs, snuff-boxes, etc., and in inlaying and other ornamental work. The best tortoise-shell is that of the Indian Archipelago; and the finest of this quarter is obtained on the shores of the Spice Islands and New Guinea. When the finest West Indian tortoise-shell is worth, in the London market, 46*s*., the finest East Indian is worth 60*s*. per lb. Under the latter name, however, a great deal of inferior shell is imported, brought from various parts of the East Indies. The goodness of tortoise-shell depends mainly on the thickness and size of the scales, and in a smaller degree on the clearness and brilliancy of the colors. Before the opening of the British intercourse with India, the greater part of the tortoise-shell which eventually found its way to Europe was first carried to Canton, which then formed the principal mart for the commodity. It is still an article of trade from that city; but the imports and exports are inconsiderable, Singapore being now the chief mart for this article. The price at the latter varies from 750 and 900 to from 1000 to 1600 dollars per picul, according to quality.—CRAWFURD's *Indian Archipelago; Singapore Chronicle, Canton Register*.

Toulon (*Telo Martius*), a commercial and important military and naval port of France, department of Var, on a fine bay of the Mediterranean, 40 miles southwest from Draguignan. Lat. (of observatory) 43° 7′ 5″ N., long. 5° 56′ E. Population, 40,000. Mean temperature of year, 62°·2; winter, 48°·5; summer, 75°·2 Fahrenheit. It is strongly fortified, defended by a double line of bastioned fortifications, and strengthened by forts on the adjacent heights. The French consider it impregnable. It has a tribunal and chamber of commerce, tribunal of marine, school of navigation, commercial college, and public library. The streets are watered by numerous fountains. Around the harbor are immense magazines and arsenals, ship-building docks, rope and sail-works, and the *bagne* or convict prison, usually occupied by 4000 to 5000 culprits. Toulon was originally a Roman colony; it was taken by the constable of Bourbon in 1524, and by Charles V. in 1536. It was given up to the English in August, 1793; in December of the same year it was taken by the French republicans, after a memorable siege, during which Napoleon commenced his military career. *Toulon-sur-Arroux* is a commune and village, department of Saone-et-Loire, eighteen miles north-northwest from Charolles. Population about 1700.

Toys (Ger. *Spielzeug, Speilsachen*; Du. *Speelgoed*; Fr. *Jouets, Bimbelots*; It. *Trastulli*; Sp. *Dijes, Juguetes de ninnos*; Russ. *Igrushki*) include every trifling article made expressly for the amusement of children. How frivolous soever these articles may appear in the estimation of superficial observers, their manufacture employs thousands of hands, and gives bread to many families.

Children's toys are brought in immense numbers from the hilly regions of Germany, Austria, and Switzerland. The forests supply abundance of timber at very low cost; and the peasant mountaineers, simple and frugal, employ their leisure hours and the time of their children in fabricating these articles. Dealers are sure to be found who will drive a trade in these trifles in some country or other. The *Art Union Journal*, a few years ago, gave some curious information concerning the better kind of carved German toys: "The best German toys come from the town of Sonneberg, on the southeastern frontier of the forest of Thuringia. It has a population of 4000 inhabitants, of which the greater part are employed in the trade. The principal toy-merchants, numbering about thirty, provide themselves with goods from many hundred different makers of common articles, resident in the town and its vicinity; these, again, are furnished by the neighboring villagers with the requisite roughly-prepared articles in wood, which are fitted up, carved, and painted by the makers in the town. Every year about 25,000 cwts. of these goods are exported to almost every part of the world, but the manufacturers are confined to the use of wood or pasteboard, or these two materials combined. The factory from which the best toys are derived is that of Adolph Fleischmann, who employs none but first-rate workmen; and it is interesting to notice the many admirable productions these uneducated artists produce—models and groupings of figures that would cast no discredit on the atelier of a Bailey or a Westmacott."

Trade, Board of. *See* BOARD OF TRADE, p. 312.

Trade-winds (so called from their favoring commerce), easterly winds which constantly prevail, with slight variations, within the tropics. It is a common notion that the northeast trade-wind blows exactly from the northeast point nearly to the equator, when it gradually becomes more and more easterly, till at

length it blows due east; and so with the southeast trade. This notion is, however, erroneous. The trade-winds in the Atlantic and Pacific oceans extend to about 28° of latitude each side of the equator, so that a ship, after passing 30°, may expect to enter them every day. But, on first entering them, they will be found to blow from the east, or even a little southerly, and, as you advance, to draw round gradually to north-east, and even north, at the southern limit of the north-east trade, where it is commonly represented as being due east. This limit varies with the position of the sun, reaching, when the sun has a southern declination, to within three or four degrees north latitude; and, as the sun acquires a more northern declination, receding ten or twelve degrees from the equator. At this point the mariner enters the region of *calms* and *variables*, as they are called, where the wind has more or less southerly direction, and sometimes blows freshly from the south-southwest. This region varies from 150 to 550 miles, and is subject to heavy rains. On passing this range the southeast trade begins, and is subject to the same phenomena as the northeast. To the north and south of the northeast and the southeast trades westerly winds will be found generally to prevail, though less regular in the northern than in the southern hemisphere; and it has been remarked that the average of the passages made by the Liverpool packets from New York out, for a period of six years, was twenty-three days, and from Liverpool to New York, that is, from east to west, thirty-eight days.—E. A. *See* WINDS.

Trade-winds is a name given to certain remarkable aerial currents, on account of their sinal aid to navigation. In those parts of the Atlantic and Pacific oceans which are remote from the influence of the land, between the limits of about 28° or 30° north and south latitude, there is a constant easterly wind. On the north side of the equator it blows from between the north and east, and on the south side from the south and east, according to the distance from the equator; these winds are called the northeast and southeast trade-winds, and are the cold currents of air flowing from the poles to the equator, altered in direction by the rotation of the earth upon its axis. The direction and extent of the trade-winds vary with the seasons of the year, and in different parts of the world their course is entirely altered, the most remarkable modification shown being the monsoons.—*See* MONSOONS; also, *articles* ATLANTIC OCEAN, GULF STREAM, CURRENTS, WINDS.

Tragacanth, a species of gum, the produce of the *Astragalus tragacantha*, a thorny shrub growing in Persia, Crete, and the islands of the Levant. It exudes about the end of June from the stem and larger branches, and soon dries in the sun. It is inodorous, impressing a very slightly bitter taste as it softens in the mouth. It has a whitish color; is semi-transparent, and in very thin, wrinkled, vermiform pieces; it is brittle, but not easily pulverized, except in frosty weather, or in a warmed mortar. It should be chosen in long twisted pieces, white, very clear, and free from all other colors; the brown, and particularly the black pieces, should be wholly rejected.—THOMSON'S *Chemistry*; THOMSON'S *Dispensatory*; MILBURN'S *Oriental Commerce*.

Treasury Notes. A species of Treasury Notes, termed Continental currency, was issued by order of the Continental Congress. This depreciated rapidly, and no provision was made afterward for its redemption by Congress. The amount issued was estimated at $400,000,000; Mr. Jefferson calculated that the real value given for these notes was only $72,000,000. The assignats of the French Republic during the revolution were authorized by the National Assembly, in April, 1790. At one period they amounted to the enormous sum of eight millards of francs (8,000,000,000), or equivalent to nearly £350,000,000 sterling.—ALISON'S *History of Europe*. In May, 1812, Mr. Albert Gallatin, Secretary of the Treasury, recommended the issue of Treasury Notes to the extent of $4,000,000, repayable one year after date, and receivable in the mean time for government dues, and bearing 5 2-5 per cent. interest. These were authorized by act of Congress, June 30, 1812. Treasury Notes were also suggested by Mr. A. J. Dallas, Secretary of the Treasury, in January, 1815. He reported that the Treasury would require for the fiscal year $40,906,124 in addition to the ordinary revenue (see *Funding System, U. S.*, p. 607), of which $15,000,000 was to be in Treasury Notes at 5 2-5 per cent. per annum (or about 1½ cent per day for every hundred dollars).

Up to December 4, 1819, the amount issued was $36,680,794, viz.:

By act of 20th June, 1812	$5,000,000
" 25th February, 1813	5,000,000
" 4th March, 1814	10,000,000
" 26th December, 1814	8,318,400
" 24th February, 1815	8,362,394
Total	$36,680,794

Of this amount all were redeemed prior to October 1, 1824, except $19,756. Further issues of Treasury Notes was made under acts of 12th October, 1837; 21st May, 1838; and 2d March, 1839. From the year 1812 to 31st December, 1843, the total issue of Treasury Notes was $84,611,833, and amount received from loans $98,360,112, viz.:

Years.	Loans.	Treasury Notes.	Total.
1812	$10,032,400	$2,835,500	$12,837,900
1813	20,089,635	6,094,800	26,184,435
1814	15,080,546	8,297,365	23,377,911
1815	14,857,423	20,406,897	35,264,320
1816	1,357,086	8,136,849	9,494,436
1817	....	734,542	734,542
1818	....	8,765	8,765
1819	....	2,291	2,291
1820	3,040,000	824	3,040,824
1821	[illegible]0,000	324	5,000,324
1837		2,992,989	2,992,989
1838		12,716,820	12,716,820
1839		3,857,276	3,857,276
1840		5,589,547	5,589,547
1841	5,665,550	7,993,860	13,659,317
1842	11,883,405	3,425,330	14,808,735
1843	11,883,358	1,518,150	13,401,508
Total	$98,360,112	$84,611,833	$182,971,946

Of the issues between 1837 and 1843, there were outstanding September 30, 1847, $239,789. Further emissions were authorized by act of Congress, under date of 23d July, 1846, and 28th January, 1847; $10,000,000 by the act of 1846, not exceeding 6 per cent. interest; and $23,000,000 by the act of 1847; and a further issue by act of December, 1857.

In March, 1858, the bills for the new issue of Treasury Notes were opened at the Treasury Department. The result was, that $2,600,000 were taken at rates varying at 3⅛, 3⅜, 4, 4⅛, 4¼, and 4⅜. The remainder of the 5,000,000 was taken in 5 per cents. Some of the bids were for permanent investment, while others were for speculation.

There is a species of Treasury Notes in common use in England, known as Exchequer Bills. These were first created in the year 1696, two years after the incorporation of the Bank of England. They have been issued annually ever since. These bills bear an interest of 1*d.*, 1½, 2 or 2½ pence per day on each £100, equivalent to 1½ @ 3 per cent. per annum. Of these bills there were issued in 1852, £17,742,800, at 1½*d.*; 1853, £17,742,500, at 1*d.* @ 2*d.*; 1854, £16,029,600, at 2½*d.*; 1855, £17,183,000. These are a favorite investment for short periods.—*See* EXCHEQUER.

In 1768 the Empress Catharine the Second, of Russia, established the Banque d'Assignat, to issue government notes payable to bearer. The amount at first issued was 40,000,000 of roubles. In 1786 the amount was extended to 100,000,000, and they soon after rapidly depreciated.

Treaties, Commercial. By a commercial treaty is meant a treaty between two independent nations, for facilitating, and most commonly also regulating, the commerce carried on between them. During the

Middle Ages, and down, indeed, to a comparatively recent period, foreigners resident in a country, whether for commercial or other purposes, were for the most part subject to very harsh treatment. At one time it was usual in England to make aliens liable for the debts and crimes of each other; and the practice, formerly so common, of laying heavier duties on the goods imported and exported by aliens than by British subjects, is not even yet, we grieve to say, altogether abandoned. In France and some other countries, during the 14th and 15th centuries, a stranger was incapable of bequeathing property by will; and the whole of his personal as well as real estate, fell, at his death, to the king or the lord of the barony. This barbarous law was known by the name of *Droit d'Aubaine*, and was not completely abolished in France till a very late period.—ROBERTSON'S *Charles V.*, vol. i. Previously to last century, the laws with respect to shipwreck, though infinitely more humane than they had been at a more remote period, were calculated rather to promote the interest of the sovereign of the country, or the feudal lords on whose territories shipwrecked vessels might be thrown, than those of the unfortunate owners or survivors. The most serious obstacles were then also opposed by the prevalent insecurity, and the arbitrary nature of the tolls which the lords were in the habit of exacting, for the transit of commodities through the territories of one state to those of another. The practice of confiscating shipwrecked property continued in France till 1681, when it was abolished by an edict of Louis XIV. It was at one time common in Germany, to use the words of M. Bouchaud, "pour les prédicateurs de prier Dieu en chaire, *qu'il se fasse bien des naufrages sur leurs côtes!*"—*Théorie des Traités de Commerce*, p. 118. And the fact that the celebrated jurist Thomasius wrote a dissertation in defense of such prayers, affords, if possible, a still more striking proof of the spirit of the period.

Under such circumstances, it became of much importance for commercial states to endeavor to obtain, by means of treaties, that protection and security for the persons and properties of their subjects, when abroad, against unjust treatment and vexatious exactions, which they could not have obtained from the laws of the countries in which they might happen to reside. Thus it was stipulated by Edward II., in 1325, that the merchants and mariners of Venice should have power to come to England for ten years, with liberty to sell their merchandise and to return home in safety, "*without having either their persons or goods stopped on account of other people's crimes or debts.*"—ANDERSON, *anno* 1325. The commercial treaties negotiated during the 15th, 16th, and 17th centuries, are full of similar conditions; and there can be no doubt that by providing for the security of merchants and seamen when abroad, and suspending, with respect to them, the barbarous laws and practices then in force, they contributed materially to accelerate the progress of commerce and civilization. Commercial treaties were also negotiated at a very early period for the regulation of neutral commerce during war, and for defining the articles that should be deemed contraband, or which it should not be lawful for neutral ships to convey or carry to either belligerent. These are obviously points that can only be decided by express stipulations.

Instead, however, of confining commercial treaties to their legitimate and proper purposes—the security of merchants and navigators, and the facility of commercial transactions—they very soon began to be employed as engines for promoting the commerce of one country at the expense of another. For more than two centuries, those engaged in framing commercial treaties have principally applied themselves to secure, either by force or address, some exclusive advantage in favor of the ships and products of their particular countries. Hence these compacts are full of regulations as to the duties to be charged on certain articles, and the privileges to be enjoyed by certain ships, according as they were either produced by or belonged to particular countries. It was in the adjustment of these duties and regulations that the skill of the negotiator was chiefly put to the test. It was expected that he should be thoroughly acquainted with the state of every branch of industry, both in his own country and in the country with which he was negotiating; and he was to endeavor so to adjust the tariff duties, that those branches in which his own country was deficient might be benefited, and those in which the other was superior might be depressed. The idea of conducting a negotiation of this sort on a fair principle of reciprocity is of very late origin; success in circumventing, in overreaching, or in extorting, from fear or ignorance, some oppressive, but at the same time worthless privilege, was long esteemed the only proof of superior talent in negotiators.

In an able tract, attributed to Mr. Eden, afterward Lord Auckland, published in 1787 (*Historical and Political Remarks on the Tariff of the French Treaty*), there is the following outline of the qualifications necessary to the negotiator of a commercial treaty: "Besides a general knowledge of the trade and reciprocal interests of the contracting parties, he ought to be precisely acquainted with their several kinds of industry and skill; to discover their wants, to calculate their resources, and to weigh with nicety the state of their finances, and the proportionate interest of their money; nay, further, he should be able to ascertain the comparative population and strength of each country, together with the price and quality both of first materials, and also of the labor bestowed upon them: for this purpose he should inquire into the operations of every class of merchants and manufacturers concerned in the trade; should consult their expectations on each of its several branches; and collect their hopes and fears on the effect of such a commercial revolution, on the competition of rival nations. A good treaty of commerce, independent of the art of negotiation, is pronounced, by one who well knew the extent and difficulty of the subject, to be a '*master-piece of skill.*'"

It is visionary to imagine that any nation will ever continue to grant to another any exclusive advantage in her markets, unless she obtain what she reckons an equivalent advantage in the markets of the other. And if a commercial treaty stipulating for an exclusive privilege be really and *bonâ fide* observed by the country granting the privilege, we may be sure that the concessions made by the country in whose favor it is granted are sufficient fully to countervail it. Those who grasp at exclusive privileges in matters of this sort, or who attempt to extort valuable concessions from the weakness or ignorance of their neighbors, are uniformly defeated in their object. All really beneficial commercial transactions are bottomed on a fair principle of reciprocity; and that nation will always flourish most, and have the foundations of her prosperity best secured, who is a universal merchant, and deals with all the world on the same fair and liberal principles.

As early as 1783, Mr. Pitt, then Chancellor of the Exchequer, proposed a bill in the British Parliament, based upon the liberal principle of "admitting to all the ports of the British dominion American vessels loaded with goods the growth or produce of the United States, on the same terms as British vessels or goods;" but the proposition at once startled the fears of the British merchants, who, with the aid of Lord North, Mr. Fox, and Lord Sheffield, succeeded in transferring the whole subject to the discretion of the king and his council. The consequence was, that an order was immediately issued, not only excluding American vessels from all participation in the colonial trade, but prohibiting the exportation from the United States of provisions and fish, even in British bottoms.

English Treaties.—The first formal and written treaty made by England with any foreign nation was entered into A.D. 1217. The first commercial treaty was with the Flemings, 1 Edward, 1272; the second with Portugal and Spain, 1308.—ANDERSON. The chief treaties of the principal civilized nations of Europe will be found described in their respective places. The following forms an index to them:

Abo, peace of	1743
Aix-la-Chapelle	1668
Aix-la-Chapelle, peace of	1748
Akermann, peace of	1826
Alt Radstadt	1706
America, peace with	1783
Amiens, peace of	1802
Armed Neutrality	1800
Arras, treaty of	1435
Arras, treaty of	1482
Augsburg, league of	1686
Baden, peace of	1714
Barrier treaty	1715
Basle, peace of	1795
Bassein, India	1802
Bayonne, treaty of	1808
Belgium, treaty of London	1839
Belgrade, peace of	1739
Berlin, peace of	1742
Berlin decree	1806
Berlin convention	1808
Breda, peace of	1667
Bretigny, peace of	1360
Bucharest, treaty of	1812
Cambray, league of	1508
Cambray, peace of	1529
Campo-Formio, treaty of	1797
Carlowitz, peace of	1699
Carlsbad, congress of	1819
Cateau-Cambresis, peace of	1559
Chaumont, treaty of	1814
Chunar, India	1781
Cintra, convention of	1808
Closterseven, convention of	1757
Coalition, first, against France	1792
Coalition, second, against France	1799
Coalition, third, against France	1805
Coalition, fourth, against France	1806
Coalition, fifth, against France	1809
Coalition, sixth, against France	1813
Concordat	1801
Conflans, treaty of	1465
Constantinople, peace of	1719
Constantinople, treaty of	1838
Copenhagen, peace of	1660
Cressy	1544
Dresden	1745
Family compact	1761
Fontainebleau, peace of	1679
Fontainebleau, treaty of	1785
Fontainebleau, concordat at	1813
Friedwald, treaty of	1551
Fuessen, peace of	1745
Ghent, pacification of	1576
Ghent, peace of (United States)	1814
Golden Bull	1356
Grand Alliance	1689
Greece, treaty of London	1829
Hague, treaty of the	1659
Hague, treaty of the	1669
Halle, treaty of	1610
Hamburg, peace of	1762
Hanover treaty	1725
Holland, peace with	1784
Holy Alliance	1815
Hubertsberg, peace of	1763
Interim	1548
Kiel, treaty of	1814
Laybach, congress of	1721
League	1576
Leipsic, alliance of	1631
Leoben, peace of	1797
Lisbon, peace of	1668
London, treaty of (Greece)	1829
London, convention of (Turkey)	1840
Lübeck, peace of	1629
Luneville, peace of	1801
Madrid, treaty of	1526
Methuen treaty	1703
Milan decree	1807
Munster, peace of	1648
Nantes, edict of	1598
Naumberg, treaty of	1554
Nice, treaty of	1516
Nimeguen, peace of	1678
Noyon, treaty of	1516
Nuremberg, treaty of	1532
Olivia, peace of	1660
Paris, peace of (see *Paris*)	1763
Paris, treaty of	1796
Paris, peace of (Sweden)	1810
Paris, capitulation of	1814
Paris, treaty of	1814
Paris, peace of	1815
Paris, treaty of	1817
Partition, first treaty	1698
Partition, second treaty	1700
Passarowitz, peace of	1718
Passau, treaty of	1552
Petersburg, peace of	1762
Petersburg, treaty of	1772
Petersburg, treaty of	1805
Petersburg, treaty of	1810
Peterswalden, convention of	1813
Pilnitz, convention of	1791
Poland, partition of	1795
Pragmatic Sanction	1439
Pragmatic Sanction	1713
Prague, peace of	1653
Presburg, peace of	1805
Public good, league for the	1464
Pyrenees, treaty of the	1659
Quadruple Alliance	1718
Radstadt, peace of	1714
Radstadt, congress of	1797
Ratisbon, peace of	1630
Ratisbon, treaty of	1806
Religion, peace of	1555
Rhine, Confederation of the	1806
Ryswick, peace of	1697
St. Germains, peace of	1570
St. Germain-en-Laye	1679
St. Ildefonso, alliance of Spain with France	1795
Seville, peace of	1729
Sierod, peace of	1613
Smalcald, league of	1529
Spain, pacification of (London)	1834
Stettin, peace of	1570
Stockholm	1630
Stockholm, peace of	1719
Stockholm, treaty of	1724
Stockholm, treaty of	1813
Temeswar, truce of	1664
Teschen, peace of	1779
Tenain, peace of	1595
Tilsit, peace of	1807
Tolentino, treaty of	1793
Toplitz, treaty of	1813
Triple Alliance	1717
Triple Alliance of the Hague	1668
Troppau, congress of	1820
Troyes, treaty of	1420
Turkmanchay, peace of	1828
Ulm, peace of	1620
Utrecht, union of	1579
Utrecht, peace of	1713
Valeoçay, treaty of	1813
Verona, congress of	1822
Versailles, peace of	1783
Vienna, treaty of	1725
Vienna, treaty of alliance	1731
Vienna, definitive peace	1737
Vienna, peace of	1809
Vienna, treaty of, March 25	1815
Vienna, treaty of, May 31	1815
Vienna, treaty of, June 4	1815
Vossem, peace of	1763
Warsaw, treaty of	1768
Warsaw, alliance of	1683
Westminster, peace of	1674
Westminster (with Holland)	1716
Westphalia, peace of	1648
Wilna, treaty of	1561
Worms, edict of	1521
Wurtzburg, treaty of	1610

Treatics of Commerce and Navigation between the United States and foreign Nations.—The United States has treaties, conventions, or reciprocal regulations of commerce and navigation with thirty-eight foreign nations, all of which are in force, either in pursuance of the stipulations and terms expressed therein respectively, or by virtue of decrees, royal orders, or other local regulations on the part of foreign governments, on the one side, and of proclamations by the President of the United States on the other. The difficulty of referring to any particular treaty, or of ascertaining at a glance the precise character of the commercial regulations of any particular country, is obvious. With a view, chiefly, to remedy this inconvenience, the following summary of these treaties has been prepared; and it will enable all interested in the foreign trade of the United States readily to ascertain the footing on which our commerce and navigation are placed in foreign countries with which treaties exist, and the treatment to which the commerce and navigation of such foreign countries, respectively, are entitled in the ports of the United States.

The following are the foreign countries, arranged in alphabetical order, between which and the United States commercial treaties are now in force, with the dates of such treaties, respectively:

Argentine Confederation	July 10 and 27, 1853.
Austria	August 27, 1829.
Belgium	November 10, 1845.
Bolivia	November 30, 1858.
Borneo	June 23, 1850.
Chili	May 16, 1832.
China	July 3, 1844.
Costa Rica	July 10, 1851.
Denmark	April 26, 1826.
Ecuador	June 13, 1839.
France	June 24, 1822.
Great Britain	July 3, 1815.
Guatemala	March 3, 1849.
Hanover	June 10, 1846.
Holland	August 26, 1852.
Hanse Towns	December 20, 1827.
Japan	March 31, 1854.
Mecklenburg Schwerin	December 9, 1847.
Mexico	April 5, 1831, and February 2, 1848.
Morocco	September 16, 1826.
Muscat	September 21, 1833.
New Granada	December 12, 1846.
Oldenburg	March 10, 1847.
Peru	July 26, 1851.
Portugal	April 23, 1841.
Prussia	May 1, 1828.
Russia	October 6, 1832.
San Salvador	July 2, 1850.
Sandwich Islands	December 20, 1849.
Sardinia	November 26, 1838.
Siam	April 14, 1836.
Sweden and Norway	July 4, 1827.
Switzerland	November 9, 1855.
Tripoli	June 4, 1805.
Tunis	February 24, 1824.
Turkey	May 7, 1830.
Two Sicilies	December 1, 1845.
Venezuela	January 20, 1836.

By virtue of notice from the United States, the treaty with Denmark "ceased and determined," in accordance with the 11th article of the same, April 14, 1856.

On the 24th of May, 1828, an act was passed by the Congress of the United States, respecting commerce and navigation with foreign nations, in the following words: "*Be it enacted, etc.*, That, when satisfactory evidence being given to the President of the United States, by the government of any foreign nation, that no discriminating duties of tonnage or impost are imposed or levied in the ports of the said nation upon vessels wholly belonging to citizens of the United States, or upon the produce, manufactures, or merchandise imported in the same from the United States, or from any foreign country, the President is hereby authorized to issue his proclamation, declaring that the foreign discriminating duties of tonnage and impost within the United States are, and shall be, suspended and discontinued, so far as respects the vessels of the said foreign nation, and the produce, manufactures, or merchandise imported into the United States in the same, from the said foreign nation, or from any other foreign country; the said suspension to take effect from the time of such notification being given to the President of the United States, and to continue so long as the reciprocal exemption of vessels belonging to citizens of the United States, and their cargoes, as aforesaid, shall be continued, and no longer."

By virtue of proclamations issued by the President of the United States, in accordance with the provisions of the law above recited, vessels belonging to Tuscany, Brazil, and Chili, are admitted into the ports of the United States on the same terms as American vessels, with the produce or manufactures of their own, or any other country; similar reciprocity being granted in those countries, respectively, to vessels and cargoes of the United States. The dates of the proclamations of the President respecting these countries are as follows: Tuscany, September 1, 1836; Brazil, November 4, 1847; Chili, November 1, 1850.

By the President's proclamation of June 7, 1827, vessels of the Pontifical states are admitted into the ports of the United States on the same terms as American vessels only when laden with the produce and manufactures of said Pontifical states; and by similar proclamation of April 20, 1847, French vessels in ballast, or laden with the produce of St. Pierre and Miquelon, and coming directly from those islands, are treated in ports of the United States as national vessels. Like favors and privileges are, of course, conceded to vessels of the United States in the Pontifical states, and at the islands of St. Pierre and Miquelon, respectively.

Summary of Treaties with the United States.—Argentine Confederation.—Treaties of July 10 and 27, 1853, both proclaimed April 9, 1855. The former relates to the navigation of the rivers Parana and Uruguay, and the latter establishes and regulates friendship, commerce, and navigation between the Argentine Confederation and the United States. Duration of both undefined. United States vessels enter all the places and ports on the rivers Parana and Uruguay which belong to the Argentine Confederacy, and which are open to commerce, on the payment of the same custom-house duties, harbor, light, police, and pilotage dues that are paid by the vessels of the most favored nation. This restriction to equality with the vessels of the most favored nation is qualified and enlarged by the treaty of July 27, 1853, which equalizes the vessels of the United States in all the places, ports, rivers, and territories of the confederation, with the national flag, as to tonnage, light or harbor dues, pilotage, salvage in case of shipwreck, or any other local charges whatever. Merchandise introduced into any part of the territories, ports, or places of the Argentine Confederation, in vessels of the United States, is treated, in respect of duties and all other charges, as if imported in national vessels; and if such merchandise be of the growth, produce, or manufacture of the United States, it is subject to no other or higher duties than similar merchandise, the growth, produce, or manufacture of any other country. In regard to exports, United States vessels enjoy equality, as to drawbacks and bounties, with the national flag. The province of Buenos Ayres having seceded from the other provinces of the Confederation, decrees have been issued by the federal power which affect, in some respects, the commercial regulations of the republic. The latest decree of this kind is one imposing heavy differential duties on foreign merchandise introduced into the other, or fluvial provinces, through the port of Buenos Ayres. This decree, should it be carried into effect, will divert from that port, heretofore the general depôt for the trade of the other provinces, such foreign merchandise as is destined for the different points on the Parana and the Uruguay rivers.

Austria.—Treaty of August 27, 1829, to continue in force ten years from February 10, 1831, with the twelve months' notice stipulation. United States vessels are treated as national vessels, coming from the same places, in Austrian ports, whether in the direct or indirect trade. The same duties are charged on importations into Austrian ports, whether of merchandise the growth, produce, or manufacture of the United States, or of any other country; and these duties are no higher than on similar merchandise from any other country. Any favors hereafter granted by either party to the commerce or navigation of another country to become common to the other party on like conditions. The treaty establishes perfect equality between the flags of the two parties in the ports of each.

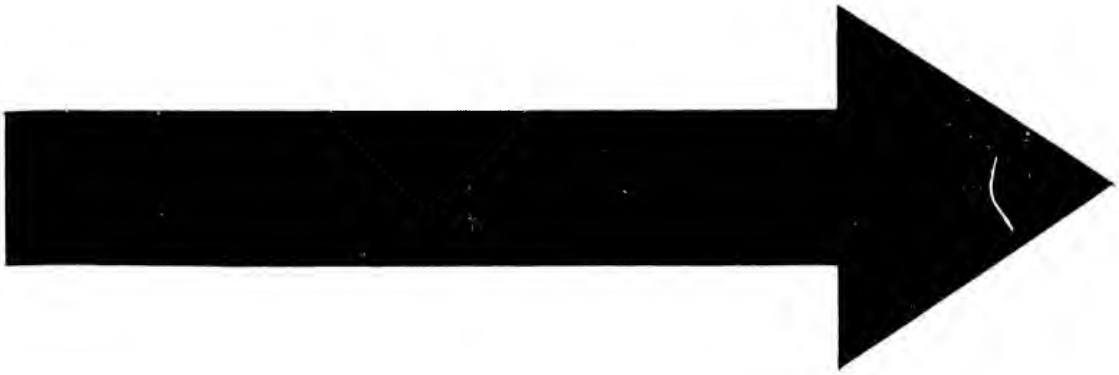
Belgium.—Treaty of November 10, 1845, to continue in force ten years from the 30th March, 1846; each party reserving the right to renounce the treaty after the expiration of that period, on giving to the other twelve months' notice of its intention to do so. United States vessels pay the same duties of tonnage, pilotage, anchorage, buoys, light-houses, clearance, brokerage, and all other charges, as Belgian vessels. This equality applies, no matter whence the vessel comes. The Belgian government guarantees restitution for any duties levied by Holland on United States vessels navigating the Scheldt. Steam-vessels of the United States engaged in regular navigation between the United States and Belgium are exempt from the payment of duties of tonnage, anchorage, buoys, and light-houses. Vessels of both parties enjoy, as to coasting trade, equal privilege with the most favored nation. The treaty restricts the equality of flags, as to duties, to the direct trade, but contains a clause providing that, "it is well understood, 1st. That the goods shall have been really put on board in the ports from which they are declared to have come; 2d. That putting in at an intermediate port by uncontrollable circumstances, duly proved, does not occasion the forfeiture of the advantage allowed to direct importation." In the indirect trade, the flag of the United States is placed on an equality with the flag of the most favored nation—except the nation of production—as to import duties. The importations of salt, and of the produce of the national fisheries, are excepted from this equality. A law of the Belgian government, of June 8, 1853, provides that "the government is empowered to allow vessels proceeding from trans-Atlantic countries, or from a port beyond the Straits of Gibraltar, to touch at an intermediate port, whether for the purpose of receiving orders or carrying on commercial transactions, by discharging or receiving cargoes." This law, while it remains in force, suspends the practical operation of that article of the treaty restricting the equality of flags to the direct trade; under its operation, the flag of the United States is equalized with the Belgian flag, whether the vessel proceeds from a port in the United States or not.—See *Report from Department of State*, Ex. Doc. No. 2, 34th Congress, 1st session, p. 135.

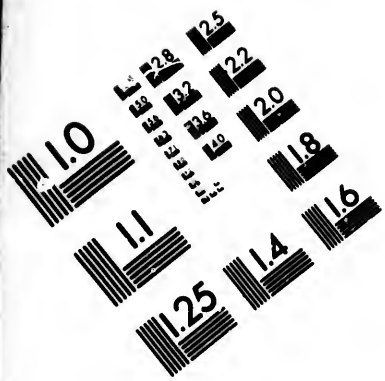
Bolivia.—Treaty, or general convention of peace, friendship, commerce, and navigation, of November 13, 1856. Ratifications exchanged May 28, 1858, and proclamation of the President of the United States issued October 3 of the same year. To continue in force twelve years from date of ratification, and further, for one year after either party gives the other notice of its intention to renounce it. The vessels of the United States visiting the "coasts or countries of Bolivia" (the port of Cobija) are placed, as to all charges and privileges, on a footing of equality with the vessels of the most favored nation. Should United States vessels, either of war (public or private), of trade, or employed in the fisheries, whether through stress of weather, want of water or provisions, pursuit of pirates or enemies, be forced into the rivers, bays, or ports of Bolivia, they shall be received and treated with humanity, and all favor and protection shall be given to them suitable to their respective exigencies. Merchandise and articles of commerce of every kind and description, the importation of which is not prohibited to all other nations, imported in vessels of the United States into Bolivia, are subject to the same duties as similar merchandise and articles imported in the vessels of the most favored nation. The merchants and citizens of the United States are allowed to manage for themselves all their commercial transactions, whether of consignment and sale of their goods, or with respect to the purchase of their return cargoes, or loading and sending off their vessels. This convention is styled the "Peru-Bolivian," and was negotiated when these two republics were confederated under one government. Peru having at a subsequent period re-established its independence of Bolivia, disavowed the convention, and a new treaty was entered into with that republic. It is still in force, however, as regards Bolivia. By a decree of January 27, 1853, the Bolivian government declared free to the commerce and mercantile navigation of all the nations of the globe the waters of the navigable rivers, which, flowing through the territories of Bolivia, empty into the Amazon and Paraguay; and, by virtue of a treaty of June 14, 1856, between Brazil and Paraguay, the navigation of the Upper Paraguay river was made free, and Bolivia opened to an Atlantic market.

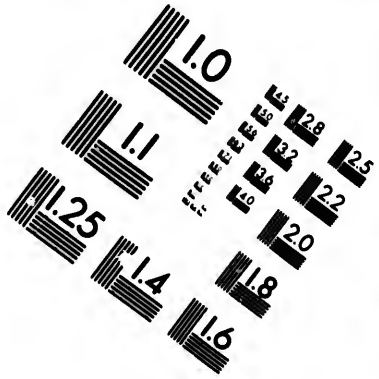
Borneo.—Convention of June 23, 1850, ratified July 11, 1853—establishes perpetual peace, friendship, and good understanding between the citizens and subjects of the two contracting parties. No higher duty than one dollar per registered ton to be levied on American vessels entering the ports of the Sultan of Borneo; and this fixed duty to be in lieu of all other charges or duties whatever. Importations in United States vessels subject only to the same duties as apply to similar importations in vessels of the most favored nation; and no prohibitions exist, either as respects importations or exportations; the latter of which, if the produce or manufacture of the sultan's dominions, to be always exempt from duty. Citizens of the United States are permitted to enter, pass through, and trade in, all parts of the sultan's dominions, and to enjoy all the privileges granted to the citizens of the most favored nations. They may also purchase, rent, occupy, and acquire, in a legal manner, all kinds of property within the dominions of the sultan.

China.—Treaty concluded July 3, 1844, and proclamation made by the President of the United States April 18, 1846. Not limited as to duration; the United States, however, reserving the right, after the expiration of twelve years from the date of the convention, to open negotiations, should it be deemed necessary to do so, for such modifications in the articles relating to commerce and navigation as may be requisite. Vessels of the United States may enter any of the five ports open to foreign commerce, viz.: Canton, Amoy, Foo-chow-Fu, Ningpo, and Shanghai, but no other ports, under penalty of confiscation of vessel and cargo. When American vessels shall have entered port, officers may be sent on board as a guard, at the expense of the custom-house; and within forty-eight hours after a vessel shall have cast anchor, the proper officer must deposit the ship's papers in the hands of the American consul, who will forthwith communicate to the superintendent of customs the name and tonnage of such vessel, the names of her men, and the character of the cargo; after which the superintendent will give a permit for discharging; or, if the master so desire, he may, within twenty-four hours depart, without breaking bulk, for another port; in which case he will not be liable to pay tonnage or other duties until he proceeds to discharge at such other port. Tonnage duties to be, on vessels of over 150 tons, 5 mace (7¼ cents) per ton; 150 tons or under, 1 mace (1¼ cents), paid only at one port. United States vessels may import and export all kinds of merchandise not prohibited in the tariff. No new restrictions or monopolies to be created. Duties to be paid in Sycee silver or in foreign money. Discharging cargo without a permit subjects the captain to a fine of $500, and the confiscation of the goods so landed; but if part of cargo only is landed, duties to be paid on such part only. Goods are not to be transhipped from on board one vessel to another, unless there be some particular occasion for doing so, which occasion shall be certified by the consul to the superintendent of customs. Imported goods, having paid duties on their resale or transit in any part of the empire, are subject to the imposition of no other duty than they were accustomed to pay at the date of the treaty. It is also provided that vessels forced in any way to take refuge in any port other than one of the free ports, shall receive friendly treatment, and the means of safety and security. The importation of opium is prohibited, but a large contraband trade is regularly carried on in this article through the connivance of Chinese officials. Saltpetre and spelter are government monopolies, and can be sold only to the government merchants. Rice and other grains are free of duty. Should a difference arise as to the value of clocks, watches, jewelry, or of other merchandise on which there is an ad valorem duty, and the parties can not agree, the question may within twenty-four hours, but not afterward, be referred to the consul of the party interested, to be adjusted by him and the superintendent of customs.

Chili.—Convention of amity, peace, commerce, and navigation of May 16, 1832; ratifications exchanged, and proclamation made April 29, 1834. To continue in force twelve years from date of exchange of ratifications, with the usual stipulation providing for twelve months' notice after that period. Vessels of the United States are placed on an equal footing in respect of charges and privileges with those of the most favored nation. Vessels driven into Chilian ports by stress of weather or other compulsory causes, to be protected, and favored in every respect, until they are placed in a condition to continue their voyage. Imports, the produce or manufacture of any country, not prohibited to be imported, subject to the same duties, charges, and fees under the United States flag as when imported in vessels of the most favored nation. Citizens and merchants of the United States are allowed to manage for themselves their own commercial operations. All favors granted to the citizens or flag of any other nation to become common, on similar conditions, to the citizens and vessels of the United States; exceptions being reserved by Chili in favor of Bolivia, the Central American states, Mexico, Peru, and the Argentine Confederation. The government of the republic of Chili notified that of the United States, under date of October 31, 1850, that no other or higher duties of tonnage or impost would be imposed on vessels of the United States, no matter whence they came, or of what origin might be their cargoes, than were levied on national vessels under like circumstances; consequently, the United States flag is now placed on a footing of







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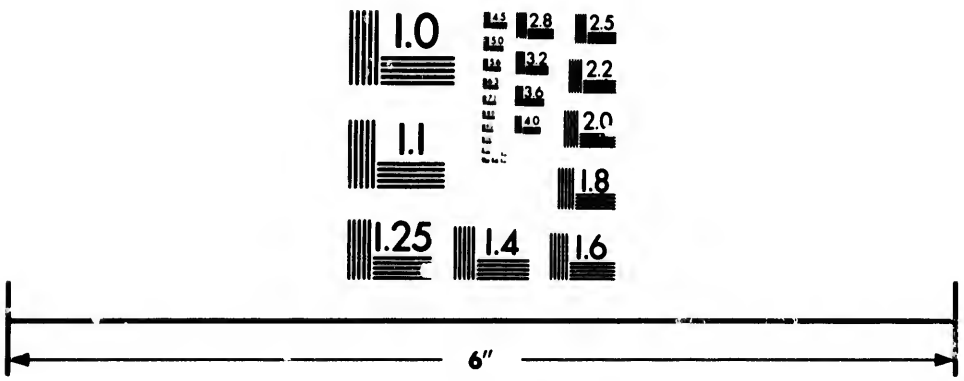

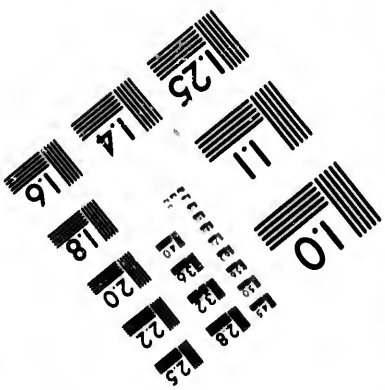

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equality, both in the direct and indirect trade, with that of Chili.

Costa Rica.—Treaty of amity, commerce, and navigation, July 10, 1851. Perpetual amity established, and the stipulations relating to navigation and commerce may be abrogated at the expiration of seven years, after the lapse of twelve months from the time that notice to that effect shall have been given by either party to the other. Vessels of the United States are placed on an equal footing with national vessels in the ports of Costa Rica as to tonnage duties, light or harbor dues, pilotage, salvage in case of damage or shipwreck, or any other local charges. Mail-packets of the United States have liberty freely and securely to come to all harbors, rivers, and places to which other foreign ships of the same description are, or may be permitted to come; to enter, anchor, and remain there, and refit, subject to the laws and statutes of the country. The coasting trade reserved by each party, respectively, to its own flag; and all favors hereafter granted to other nations by either of the two parties to become common to the other. Imports in United States vessels of articles the growth, produce, or manufacture of the United States, to be subject to the same duties as if imported in national vessels; and these duties to be no higher, nor other than are charged on similar imports the growth, produce, or manufacture of any other foreign country; similar equality of flag as to exports. By a decree of August 31, 1854, the local commercial legislation of Costa Rica was completely remodeled and materially modified. Liberty of commerce to the vessels of all nations is granted; certain descriptions of merchandise monopolized by the government, and other descriptions which are prohibited, being specified; among the latter being included rum, fire-arms, and munitions of war, which can be imported only upon special permission; and the former consisting of tobacco, gunpowder, and saltpetre, which can be admitted only on government account.

Denmark.—Convention of friendship, commerce, and navigation of April 26, 1826; ratified August 10, 1826; proclamation made October 14 of the same year. Vessels of the United States permitted to frequent all the coasts and countries of Denmark, no matter whence they may come or how they are laden, on terms of the most perfect equality as to tonnage and other charges, with the national flag the coasting trade excepted, which is reserved by each contracting party to its own flag. This equality of flags not to apply to the northern possessions of Denmark, viz.: Iceland, the Feroe Islands, and Greenland, nor to the direct navigation between Denmark and the West India colonies of his Danish majesty. In passing the Sound or the Belts, United States vessels to pay the same dues as the most favored nation. United States vessels permitted to import into any part of his Danish majesty's dominions merchandise, whether of the growth, produce, or manufacture of the United States, or of any foreign country, on the same terms, and with the same privileges as to duties, charges, and fees of every description whatever, as apply to similar imports under the national flag; and should the merchandise be of the growth, produce, or manufacture of the United States, to be subject to no other or higher duties than similar merchandise of any other foreign country. This equality, however, not to apply to the Danish possessions of Iceland, the Feroe Islands, nor to Greenland; nor the flags to be equal in the direct trade between Denmark and her West India colonies. Merchandise in United States bottoms to pay at the Sound and Belts the same duties as similar merchandise in vessels of the most favored nation. In consequence of the onerous, and, as the United States think, the illegal taxes upon the navigation and commerce of the United States at the Sound, notice was given April 14, 1855, in accordance with the provisions of article 11 of the treaty, of the desire of the United States to terminate the same at the expiration of twelve months from that date. The treaty accordingly "ceased and determined" April 14, 1856, and the commerce of the United States with Denmark is now unprotected by any treaty stipulations.

Ecuador.—Treaty of June 13, 1839; ratifications exchanged April 9, 1842; proclamation made by the President of the United States September 28, of the same year. To continue in force twelve years from the date of ratifications, and after the expiration of that period until the end of one year after either of the parties shall have given notice to the other of its intention to renounce it. Vessels of the United States placed on a footing of equality in the ports of Ecuador with the national flag, no matter whence they come, certain privileges in favor of vessels built in the dock-yard of Guayaquil being reserved; but these privileges also to be accorded to vessels of the United States, should they ever be granted to Spain, or to Mexico, or the other Hispano-American republics. Any favors hereafter granted to the commerce or navigation of other countries to become common to those of the United States. Imports in vessels of the United States, whether of the growth, produce, or manufacture of the United States or of any other country, subject to the same duties and charges as if imported in national vessels; and merchandise, the growth, produce, or manufacture of the United States, admitted on the same terms as similar merchandise of any other foreign country. United States commerce entitled to any privileges hereafter granted to the commerce of any other foreign nation. In all lawful commerce, whether as respects imports, exports, duties, drawbacks, etc., the United States flag enjoys an equality with the flag of Ecuador; the coasting trade and the reservation in favor of vessels built at Guayaquil excepted. Such vessels, when under the national flag, are, by decree of August 23, 1845, exempt from tonnage, anchorage, and other port dues, and are entitled to a reduction of 8 per cent. on all produce, merchandise, etc., imported by them, for consumption, into any of the ports of the republic.

France.—Convention of June 22, 1822, to be in force for two years from October 1, 1822; and after the expiration of that time, until one of the parties shall have declared its intention to renounce it; which declaration shall be made at least six months before it can take effect. Equality of treatment. Tonnage and other navigation dues in French ports upon American vessels, five francs per ton; in United States ports upon French vessels, 94 cents per ton. The navigation duty of 94 cents per ton is payable by American vessels, no matter from what port they may have last proceeded; but the equality of treatment as to cargoes with the French flag is applicable only when the voyage has been direct, and the origin of the merchandise is attested by certificate from the custom-house at the port of departure, *visé* by the French consul at such port. In French ports an extra duty on articles of the growth, produce, or manufacture of the United States, imported in American vessels, at 20 francs per ton of merchandise; in United States ports, upon similar products of France, imported in French vessels, an extra duty at $3 75 per ton of merchandise; these extra duties not applicable in either country to merchandise of the other destined for transit or re-exportation. Should this convention be continued in force after two years, the additional duties, at the expiration of that period, to be reduced one-fourth of their amount, and successively from year to year, so long as neither nation shall give the six months' notice of its intention to renounce it. Neither party having given the notice, the additional duties ceased to exist by the annual reduction of one-fourth, from October 1, 1827. By virtue of a ministerial decree of December 17, 1851, American vessels laden with cotton for France may touch at English ports without losing the benefit of direct importation, provided bulk be not broken, and no operation of commerce be transacted. Navigation and commerce between the United

States and French colonial possessions are regulated by the laws and decrees of the French government. American vessels proceeding direct from the United States in ballast, or laden with articles the growth or manufacture of their own country, to the islands St. Pierre and Miquelon, are treated on the same footing as national vessels.

Guatemala.—Convention of peace, amity, commerce, and navigation concluded March 8, 1849, and proclaimed by the President of the United States July 28, 1852. To continue in force twelve years from the date of the exchange of ratifications; and after that period, for twelve months after either party shall have given notice to the other of its intention to renounce it. Vessels of the United States are admitted into the ports of Guatemala, no matter whence they may have sailed, on the same terms, as to tonnage and all other navigation dues, as national vessels. Any favors granted to the navigation of other foreign nations are to become common to that of the United States, on equal conditions. The coasting trade reserved by each nation to its own flag. Imports into the ports of Guatemala in vessels of the United States, whether of articles the produce, growth, or manufacture of the United States, or of any other country, placed on the same footing, as to duties and all other dues and charges, as similar imports under the national flag; and if the articles so imported are of the growth, produce, or manufacture of the United States, they are subject to no higher or other duties than similar articles, the growth, produce, or manufacture of any other foreign country. By decree of May 6, 1852, every vessel which shall anchor in the ports of Guatemala, no matter whence it may come, is required to pay a tonnage duty of twenty-five cents per ton of measurement ascertained from her papers. Among the vessels free of this duty are—vessels in ballast anchoring for supplies, and discharging no cargo; vessels of war and regular mail or steam-packets not discharging over twenty tons of cargo; and vessels receiving on board, for exportation, produce of the country, excepting cochineal.

Great Britain.—Treaty of July 3, 1815, to continue in force four years. Continued in force ten years by the 4th article of the convention of London, October 20, 1818, and renewed indefinitely April 2, 1828, with an additional article containing the usual stipulation as to twelve months' notice. "Reciprocity treaty" concluded June 5, ratified June 9, and proclaimed by President of the United States September 11, 1854. To continue in force ten years from the date at which it went into operation (1855), with the usual stipulation as to twelve months' notice after that period. It secures reciprocal freedom of fishery on the coasts of the United States and the British provinces in America, and of trade in raw products. United States vessels admitted into British ports in Europe on the same footing as national vessels. The vessels must be built and owned in the United States, and navigated by a master and a crew three-fourths of which are citizens of the United States. Vessels of the United States permitted to touch for refreshments, but not for commerce, in the course of their voyage to or from the British territory in India, or to or from the dominions of the Emperor of China, at the Cape of Good Hope, the island of St. Helena, or such other places as may be in the possession of Great Britain, in the African or Indian seas—such vessels being subject, in all that regards this article, to the laws and regulations of the British government from time to time established. Merchandise imported into British ports in United States bottoms must consist of articles the growth, produce, or manufacture of the United States; and the same duties are charged, whether imported in United States or British vessels, as on similar produce of any other foreign country. The importation, in American vessels, of the productions of any country but the United States, is prohibited. The intercourse between the United States and the British West Indies is not affected by the treaty. The vessels of the United States are admitted into the British East India possessions on the footing of those of the most favored nation; that is, they pay the same tonnage and import duties and other charges as the vessels of such nations; but, when laden, they must proceed direct to the United States. With the British West Indies the trade was regulated, prior to 1850, by diplomatic agreement. By reciprocity treaty of 1854, a free trade in the raw staples of the United States and Canada, Newfoundland, New Brunswick, Nova Scotia, and Prince Edward Island, respectively, is established. By the act 12 and 13 Victoria, chapter 29, which went into force January 1, 1850, the comprehensive principle was adopted of admitting into the ports of Great Britain, and of British possessions, goods of any sort, in a ship of any country, from any part of the world; certain restrictions, deemed necessary either for the safety of the state or for the protection of the revenue, still remaining in force. American vessels in British ports are, therefore, equalized with British vessels as to tonnage and import duties, and all other charges whatever. By circular of the Treasury Department of the United States, October 15, 1849, instructions were issued to custom-house officers and others interested, as follows: "1. In consequence of the alteration of the British navigation laws, British vessels from British or other foreign ports will (under our existing laws), after the first day of January next, be allowed to enter in our ports with cargoes of the growth, production, or manufacture of any part of the world. 2. Such vessels and their cargoes will be admitted, from and after the date before mentioned, on the same terms as to duties, imposts and charges, as vessels of the United States and their cargoes. By the act 17 Victoria, chapter 5, the coasting trade of Great Britain is opened to foreign flags, subject only to the same regulations as apply to British vessels engaged in the same trade.

Hanover.—Treaty of June 10, 1846, to continue in force twelve years from date; and further, until either party gives to the other twelve months' notice of its intention to renounce it at the expiration of the period. Vessels of the United States received in Hanoverian ports on the same terms, as to navigation dues of every description, as national vessels; and, in the navigation of the River Elbe, are equalized with Hanoverian vessels as to the tolls collected at Brunshausen or Stade. Whatever merchandise or produce may be imported in Hanoverian vessels may also be imported in United States vessels, on terms of perfect equality as to duties, irrespective of the country of origin, or whence imported. The equality guaranteed by the treaty extends only to such vessels of the high contracting parties as are built within their respective territories, or lawfully condemned as prizes of war, or adjudged to be forfeited. It is also stipulated that vessels of the kingdom of Hanover may select their crews from any of the states of the Germanic Confederation, provided that the masters of each be a subject of the kingdom of Hanover.

Hanse Towns.—Treaty of December 20, 1827, to continue in force twelve years from date; either party reserving the right, after the expiration of that period, to renounce the treaty at the end of twelve months, after having given notice of its intention to do so. Navigation duties of every description whatever, the same on United States vessels as on national, whether in the direct or indirect trade; and perfect equality in all other respects. Imports into the ports of the Hanse Towns in vessels of the United States, subject to the same duties, charges, etc., as similar imports under the flag of the Hanse Towns. Each one of the three Hanseatic towns, Hamburg, Bremen, and Lübeck, agrees separately, and each for itself, to the stipulations of the treaty. Hanseatic vessels are entitled to equality in the ports of the United States with the national flag,

if owned exclusively by a citizen or citizens of any or either of the Hanse Towns, and of which the master shall also be a citizen of any or either of them, and provided that three-fourths of the crew shall be citizens or subjects of any or either of the said republics or towns, or of any or either of the states of the Germanic Confederation. This privilege secures to the flag of the Hanse Towns a large share of the carrying trade between the United States and the German states.

Holland.—Treaty of August 26, 1852, additional to that of January 19, 1839, and substituting for articles 1 and 2 of the latter treaty other articles; and providing that the duration of the new treaty shall be limited to the term of two years from the date of ratification (February 25, 1853), with the usual twelve months' notice. Vessels of the United States, whencesoever coming, are treated in Dutch ports, including also the foreign possessions of Holland, as national vessels, with respect to duties of tonnage, harbor dues, lighthouse, pilotage, quarantine, or other port charges of any kind whatever—the coasting trade and national fisheries being reserved. Entire reciprocity guaranteed to the flag of the United States, and perfect equality with the national flag, as to the duties of import and export, both in Dutch ports in Europe and in those of Dutch possessions abroad. All differential and discriminating duties as respects the flag are abolished. The equality as to export duties, stipulated in the treaty of 1852, applies only when the vessels of the United States clear for the same ports as national vessels. Thus the export duty on coffee in Java is the same when exported in United States bottoms as when exported in Dutch vessels, when both have the same destination; but if the Dutch vessel proceeds to Amsterdam, and the United States vessel clears for Boston, the former enjoys a discriminating privilege in respect of the amount of duty.

Japan.—Treaty concluded March 31, 1854; ratifications exchanged February 21, 1855; and proclamation made by the President of the United States June 22 of the same year. American vessels permitted to enter the ports of Hakodade and Simoda, and no other ports of the Japanese empire, unless in distress, or forced by stress of weather. The only charge for entering is for pilotage, the rates of which, for the port of Simoda, are as follows: Vessels drawing over 18 feet pay $15; over 13, and less than 18, $10; under 13, $5. Vessels of the United States are permitted to exchange only gold and silver coin, and articles of goods for other articles of goods, under such regulations as shall be temporarily established by the Japanese government. Wood, water, provisions, coal, and goods required, can only be procured through the agency of Japanese officers, appointed for that purpose. As a means of opening the commerce of Japan, or even of the ports opened to American vessels—viz., Simoda and Hakodade—the treaty has proved totally inefficient. The treaty grants the privilege to shipwrecked persons and other citizens of the United States, living temporarily at Simoda, to go where they please within the limits of seven Japanese miles from a small island in the harbor, and at Hakodade within limits hereafter to be defined. "Living temporarily" has been defined by the Japanese authorities to mean "a sojourn of four or five days on shore." Wood and water, and such supplies as could be had, have been freely sold at pretty good prices; but permission to trade, in a mercantile sense, has been absolutely refused. The privileges of this treaty are said to have been recently extended to all nations.

Mecklenburg Schwerin.—Declaration of accession to treaty with Hanover, December 9, 1847, to continue in force until June 10, 1858, with the usual twelve months' notice stipulation after that period, and a conditional six months' notice by the United States, if a contingency should occur rendering it expedient, in the opinion of that government, to renounce the treaty. Vessels of the United States subject to the same duties in the ports of the Grand Duchy of Mecklenburg Schwerin as national vessels; the coasting trade being reserved. This equality applies only to vessels built within the respective territories of each party, or lawfully condemned as prizes of war, or adjudged to be forfeited, etc., and belonging wholly to citizens of each. Importations of articles the growth, produce, or manufacture of the United States, subject to no higher duties than similar articles the growth, produce, or manufacture of any other foreign country; such duties to be the same, whether imported in vessels of the United States or in national vessels. This equality is applicable to the indirect as well as to the direct trade. Besides the stipulations contained in the treaty with Hanover, other articles are added. Import duty on raw cotton and paddy, the produce of the United States, is abolished by the treaty; and maximum rates of import duty on tobacco, rice, and whale-oil, and for transit on the Berlin-Hamburg railroad, are prescribed.

Mexico.—Treaty of April 5, 1831, revived, as to general stipulations relating to commerce and navigation, by article 17 of the treaty of February 2, 1848, and to continue in force from date of ratification of said treaty (May 30, 1848) for a period of eight years, with the usual stipulation providing for twelve months' notice after that period by either party wishing to renounce it. Vessels of the United States may enter all the open ports of the Mexican republic on the same terms, as to tonnage duties, light or harbor dues, pilotage, salvage, and all other local charges, as apply to national vessels. The coasting trade is reserved by each country respectively, to its own flag. United States vessels may import into Mexican ports merchandise, the growth, produce, or manufacture of the United States, on the same terms as if the said merchandise were imported under the national flag; the duties of import to be no higher or other than levied on similar merchandise, the growth, produce, or manufacture of the most favored nation.

Morocco.—Treaty concluded September 16, 1836, and proclamation thereof made by the President of the United States January 30, 1837; to continue in force fifty years, with the usual stipulation requiring twelve months' notice after that period by either party wishing to renounce it. United States vessels permitted to put into any ports in the dominions of the Emperor of Morocco for provisions or other supplies, without any interruption or molestation, and to put in for repairs, and to land and reload their cargoes, without paying any duty whatever. Should American vessels be cast ashore on any part of the coasts of Morocco, either by stress of weather or other cause, to be permitted to remain undisturbed until the commander may think proper to proceed on his voyage. Importations from the United States, and American commerce generally, to be on the same footing as those from Spain, or from the most favored nation for the time being. Masters forbidden to transport their cargoes on board other vessels. Merchants of the United States allowed to employ such interpreters and other agents as they shall think proper; and American citizens permitted to pass and repass the country and sea-ports whenever they please, without molestation. The tariff of duties is often arbitrarily raised in Morocco. The general rate is 10 per cent. on imports, excepting certain specified articles, on which specific duties are levied. (Tobacco is a monopoly of the government, and the trade is usually rented out at rates reaching as high as $100,000 per annum. Were the trade in this article freed from the pressure of this monopoly, its importation from the United States would be largely increased.)

Muscat.—Treaty of September 21, 1833; President's proclamation issued June 24, 1837. Establishes perpetual peace between the United States and his majesty the Sultan of Muscat and his dominions. Vessels of the United States pay 5 per cent. duties on the car-

goes landed, to be in full of all duties of import and export, tonnage, license to trade, pilotage, anchorage, or of any other charge whatever. No charge to be paid by American vessels entering any of the sultan's ports for the purpose of refitting, or refreshments, or to inquire the state of the market. The duties and other charges on commerce in the dominions of the sultan are given under the head of Navigation. The articles of muskets, powder, and balls, can be sold only to the government, in the island of Zanzibar; but in other ports of the sultan's dominions said munitions of war may be sold to the highest bidder without restriction. Duties of tonnage, import and export, license to trade, etc., to be the same for American citizens as for citizens of the most favored nation. The trade between the United States and the dominions of the Sultan of Muscat, especially the island of Zanzibar, is yearly increasing. It reaches annually in value about $1,000,000, and is carried on chiefly from Salem, Massachusetts. Articles of American manufacture most in demand in the market of Zanzibar are the various descriptions of cotton goods, the annual exportation amounting to about 6000 bales. Every facility for commercial operations is extended to American vessels and mercantile houses, and the duties or other charges never exceed those stipulated in the treaty.

New Granada.—Treaty of December 12, 1846, to continue in force twenty years, unless either party should notify the other, twelve months before the expiration of that period, of its intention to reform any or all of its stipulations; and beyond that period, for twelve months after either shall have given notice of its intention to propose such modifications. Vessels of the United States to enter all the ports of New Granada on a footing of entire equality with the vessels of that republic, without regard to the port or country whence they may have sailed. Should such vessels be driven into the ports of the republic by pirates, enemies, or from stress of weather, to be protected, and all facilities, etc., afforded them; and, unless they remain in port over forty-eight hours, to be exempt from all port or harbor charges, pilotage excepted. The coasting trade reserved by each of the contracting parties to its own flag. Duties on imports and exports under the United States flag the same as under the national flag; and on articles the growth, produce, or manufacture of the United States, these duties not to be higher or other than are levied upon similar articles, the growth, produce, or manufacture of any other foreign country. Merchandise belonging to citizens of the United States, in transit across the Isthmus of Panama, to be free from import duties, and subject only to the same tolls that are levied in like cases on merchandise belonging to citizens of New Granada. For the privileges granted on the Isthmus of Panama, the United States guarantee to New Granada the perfect neutrality of that territory, and her sovereignty and rights of property over the same. The stipulations of the treaty respecting commerce have been modified by subsequent decrees of the government of New Granada. Those of chief interest provide that the coasting trade shall be thrown open to all flags, and payment of navigation duties shall be demanded only at one port. Panama, Cartagena, Choco, Buenaventura, and Yumaco, are free ports—no other than navigation duties being charged. More recent enactments, however, impose a tonnage duty of 40 cents per ton on all vessels entering port; and a tax of $3 per pound on all mail matter crossing the Isthmus.

Oldenburg.—Declaration of accession of the Grand Duke of Oldenburg to treaty with Hanover, March 10, 1847. The same stipulations and privileges as are granted under the treaty with Hanover of June 10, 1846. The same privileges, as respects the commerce of the United States, as are extended to said commerce in Hanoverian ports. The stipulations relative to the Stade and Weser tolls, contained in the treaty between the United States and Hanover, are omitted in the declaration of accession by Oldenburg; this government having no control over, or interest in, said tolls.

Peru.—Treaty of July 26, 1851; ratifications exchanged the 16th, and proclamation made by President of the United States the 10th July, 1852. To continue in force ten years from date of ratification; and beyond that period, until twelve months shall have elapsed after either party shall have given the other notice of its intention to renounce it. No higher or other duties or charges on account of tonnage, lighthouses, or harbor dues, pilotage, quarantine, salvage, etc., to be levied on United States vessels of 200 tons or upward, than are payable in the same ports on national vessels of the same tonnage. The coasting trade is reserved by each country, respectively, to its own flag. Imports in vessels of the United States to be subject to the same duties as similar imports in national vessels; and if of the growth or manufacture of the United States, the duties to be no higher or other than on similar merchandise the growth or manufacture of any other nation. Like equality of flags as to exports. Should the tariff of Peru be changed so as to augment the duties of import or export, such change not to apply to United States commerce until the expiration of eight calendar months thereafter. Steam-vessels of the United States, if belonging to a regular line owned by citizens of the United States, to be permitted to navigate the ports of entry of Peru with the same privilege as any association or company whatsoever. The treaty provides that whale-ships of the United States shall have access to the port of Tumbez, as well as to the ports of entry of Peru, and may sail from one port to another for the purposes of refreshment and refitting; and shall be permitted to sell or barter their supplies or goods, including oil, to the amount of $200 *ad valorem* for each vessel, without paying any tonnage or harbor dues, or any duties or imposts upon the articles so sold or bartered. They shall be permitted, with like exemption from tonnage and harbor duce, to sell or barter supplies or goods, including oil, to the additional amount of $1000 *ad valorem* for each vessel, upon payment, on said additional articles, of the same duties as are payable upon like supplies or goods and oil when imported in the vessels and by the citizens of the most favored nation. A decree of the Peruvian government restricts the terms "supplies or goods, including oil," to articles the produce of the fisheries, and withholds the privileges of the stipulations of the treaty, above condensed, from all other descriptions of "goods" or merchandise.

Portugal.—Treaty of August 26, 1840; ratifications exchanged April 28, 1841; and proclamation made April 24 of the same year; to continue in force six years from date of ratifications; and further, until the end of one year after either of the contracting parties shall have given notice to the other of its intention to renounce it. Vessels of the United States arriving, either laden or in ballast, in the ports of Portugal (including Portuguese possessions), to be treated on an equal footing with national vessels coming from the same place, with respect to the duties of tonnage, lighthouse dues, pilotage, port charges, and all other charges whatever. Each party reserves to its own flag, respectively, the coasting trade. On the importation into the kingdom of Portugal and its possessions, where foreign commerce is allowed, in vessels of the United States, of any articles the growth, produce, or manufacture of the United States, no other or higher duties to be levied than on similar articles the growth, produce, or manufacture of any other foreign country; and, in all cases of direct importation, the vessels of each country to be equalized in the ports of the other. Should the indirect trade of any other foreign country be placed upon the same footing as the direct trade, similar privileges to be accorded to the United States on equal conditions. Any favor granted since the date

of the treaty, or which may hereafter be granted by either of the high contracting parties, as respects commerce and navigation, is to apply to the other party, freely if it has been freely granted, and on similar equivalents where it has been conditional. By virtue of the reciprocity, as it respects navigation, Portuguese vessels are exempt from tonnage duty in the ports of the United States. In the indirect trade with Portugal, imports under the United States flag are subject to differential duties.

Prussia.—Treaty of May 1, 1828, to continue in force twelve years, with the usual stipulation requiring twelve months' notice after that period by either party desiring to renounce it. United States vessels to be treated in Prussian ports, as to the duties of tonnage, light-houses, pilotage, salvage, and port-charges, as well as to all other duties, fees, or charges whatsoever, as national vessels. The coasting trade reserved to each country. Cargoes under the United States flag, whatever the origin, or whencesoever imported, to be subject to the same duties and charges only as if imported under the national flag. Like equality as to exportations. Articles the growth, produce, or manufacture of the United States, to be subject to the same duties as like articles the growth, produce, or manufacture of any other foreign country. Two treaties of amity and commerce were entered into between the United States and Prussia prior to that condensed above —one of July, August, and September, 1785; and the other of July 11, 1799. By article 12 of the treaty of May 1, 1828, the 12th article of the former treaty, and from the 13th article to the 24th, inclusive, of the latter, with the exception of the last paragraph in article 19, are revived, in so far as they do not affect treaties or conventions concluded by either party with other powers, during the interval between the expiration of the treaty of 1799 and the commencement of the treaty of 1828. Articles 12 of the treaties of 1785 and 1799, respectively, relate to the principle of free ships making free goods. In reference to this point, article 12 of the treaty of 1828 provides that, the parties being still desirous to establish between themselves, or in concert with other maritime powers, further provisions to insure just protection and freedom to neutral navigation and commerce, and which may, at the same time, advance the causes of civilization and humanity, engage again to treat on this subject at some future and convenient period.

Russia.—Treaty of December 6 [18], 1832, to continue in force until January 1, 1839, with the usual stipulation for twelve months' notice to renounce it by either party desiring to do so. No such notice having been given, the treaty continues in force. United States vessels arriving in Russian ports, either laden or in ballast, to be treated on the same footing as national vessels, coming from the same place, with respect to duties of tonnage. In regard to light-house duties, pilotage, and port charges, as well as to the fees and perquisites of public officers, and all other duties and charges levied upon vessels of commerce, the United States flag is placed upon the footing of the most favored nation with which Russia has no special treaty stipulating for entire reciprocity. Any favors hereafter granted to the navigation of any other foreign nation, to become common to the United States on similar or equal conditions. All kinds of merchandise and articles of commerce, being the growth, produce, or manufacture of the United States, may be imported into Russian ports on the same terms as apply to similar articles the produce or manufacture of any other foreign country; and, whether the imports be of the growth, produce, or manufacture of the United States, or of any other foreign country, perfect equality is granted with the national flag. Any favor hereafter granted to the commerce of other foreign nations to become common to the commerce of the United States. Certain special privileges to be retained by Russia in reference to commerce with Prussia, and Sweden and Norway; but they do not affect the general reciprocity stipulated in the treaty. The treaty establishes entire reciprocity between the flags of the two countries. July 22, 1854, a treaty was concluded between Russia and the United States, establishing the principle that "free ships make free goods," and containing a stipulation to the effect that other nations may, by a formal declaration of a desire to accept and be governed by the principle, become entitled to all the resulting rights and privileges. The Russian government, under date November 28, 1856, officially signifies to the government of the United States its adhesion to the principles announced in the reply of the latter government to the declarations of the Congress at Paris, April 16, 1856, in reference to privateering. The communication of the representative of the Russian government at Washington thus conveys the concurrence of the emperor: "His majesty entirely concurs in the views of the government of the United States which the Hon. Mr. Marcy has laid down in his equally lucid as temperate note of the 28th of July. The proposition of the federal government, in the opinion of his imperial majesty, deserves so much the more to be taken into consideration that the honorable Secretary of State argues not for the exclusive interest of the United States, but for those of the whole of mankind. The undersigned is accordingly instructed to notify the Hon. Mr. Marcy that his majesty the emperor accepts, for his part, the condition under which the United States consent to the abolition of privateering—namely, that the private property of the subjects and citizens of the contracting parties shall in times of war be respected by their respective naval forces, as well as by those of all the powers which may join in this declaration."

San Salvador.—Convention concluded January 2, 1850. To continue in force twenty years, if neither party notify the other twelve months before the expiration of that period of its desire to reform any of its stipulations; and beyond twenty years, until twelve months shall have elapsed after such notice shall have been given by either party. Vessels of the United States, no matter whence they may have come, or how laden, to be treated in the ports of San Salvador, as to all duties of tonnage, light-house, or any other charges of whatsoever denomination or character, as national vessels. From this equality the coasting trade is excepted, which is reserved to the national flag; but should any favors of navigation be granted hereafter to any other foreign nation, it will immediately apply to the flag of the United States. Imports into San Salvador in vessels of the United States, no matter whence imported or of what origin, to be subject to the same duties, charges, and fees of every description, as similar imports in vessels of San Salvador; and if these imports consist of articles the growth, produce, or manufacture of the United States, to be subject to no higher or other duties than similar imports, the growth, produce, or manufacture of any other foreign nation.

Sandwich Islands.—Treaty concluded December 20, 1849; ratifications exchanged August 24, 1850, and proclamation made by the President of the United States November 9, 1850. Establishes perpetual peace and amity between the United States and the Hawaiian Islands, and provides that the treaty shall continue in force ten years, with the usual stipulation providing for twelve months' notice by either party wishing to renounce it after that period. United States vessels in direct voyages, if laden, or in respect of any voyage, if in ballast, to pay the same duties of tonnage, harbor, light-houses, pilotage, quarantine, or other navigation charges of whatever kind, that are paid by national vessels. Steam vessels employed in carrying the public mails of the United States across the Pacific, or from one port to another therein, to have free access to the ports of the Sandwich Islands, to refit, refresh, land passengers and their baggage, or for any purpose per-

taining to the mail service of the United States, without being subject to any of the duties above specified. Whale-ships of the United States may enter the ports of Hilo, Kealakeakua, and Hanalei, and also the open ports of Honoluiu and Lahaina, exempt from tonnage or harbor dues of any description, with certain privileges of trade, as set forth herewith. They may also pass from port to port of the islands for the purpose of procuring refreshments, but may not land their seamen or passengers, except at Honolulu or Lahaina. The privilege of the same ports is also granted to armed vessels of the United States. Imports of merchandise, the growth, produce, or manufacture of the United States, to be subject to the same duties, whether imported in vessels of the one country or of the other; and these duties to be the same as are levied upon similar merchandise, the growth, produce, or manufacture of, or imported from, any other country. Absolute liberty of trade allowed between the citizens of the two countries, without restriction, unless in articles prohibited. Whaling vessels of the United States may trade or barter their supplies or goods, except spirituous liquors, to the amount of $200 *ad valorem* for each vessel, without being liable to pay duties therefor; and the further privilege is granted to such vessels at the ports designated above, and exempt, as therein stated, from tonnage and harbor dues, to trade or barter, except in spirituous liquors, to the further amount of $1000 *ad valorem*, by paying on the additional goods so traded or bartered the usual duties levied on similar merchandise imported under the flag of the most favored nation.

Sardinia.—Treaty of November 26, 1858, to continue in force ten years from March 13, 1859—the date of exchange of ratifications; and, after the expiration of that period, until twelve months shall have elapsed after either party shall have given notice to the other of its intention to renounce it. Vessels of the United States arriving in Sardinian ports, either laden or in ballast, to be treated, as to the duties of tonnage, lighthouses, pilotage, and port charges, as well as to all fees and charges of whatever kind or denomination, as national vessels coming from the same place. All imports in United States vessels into Sardinian ports to pay the same duties and charges only as if brought in Sardinian vessels. Imports, the growth or manufacture of the United States, to pay the same duties only as like produce of the most favored nation. The "Separate Article" of the treaty, respecting "differential duties," ceased to have effect, by virtue of a law of Sardinia, July 6, 1850. Freedom of transitage, from and to the port of Genoa, through the territories of Sardinia, is stipulated by the treaty, with specified exceptions.

Sweden and Norway.—Treaty of July 4, 1827, reviving certain articles of the treaty of April 3, 1783, together with the 1st, 2d, 4th, and 5th separate articles of the said treaty, and containing additional commercial stipulations; to continue in force ten years, with the usual stipulation requiring twelve months' notice to be given by either party desiring to renounce it, after the expiration of that period. Vessels of the United States proceeding from any port to the ports of Sweden and Norway, including those of the island of St. Bartholomew, laden or in ballast, are treated as national vessels coming from the same port, as to all duties of navigation and tonnage. Entire reciprocity and perfect equality, as to import duties and all other charges, between the flag of the United States and that of Sweden and Norway; and this reciprocity and equality applies, whether the voyage be direct from the ports of the United States, or indirect from any other foreign port.

Switzerland.—Convention signed November 25, 1850; ratifications exchanged November 8, 1855; and proclamation made November 9 of the same year. To continue in force ten years from date of ratification, if neither party gives notice to the other one year before the expiration of that period; and so on from year to year, until the expiration of twelve months after such notice shall have been given. Imports and exports to and from Switzerland take place through the ports and territories of France and other adjacent countries; and the charges of transitage, in consequence, are a heavy drawback upon the industry and commerce of the confederation. This remark applies especially to the restrictions on transitage through France. In all that relates to the importation, exportation, and transit of their respective products, the United States and the Swiss Confederation to treat each other reciprocally as the most favored nation, union of nations, etc. All future commercial privileges granted by either party to any nation, union of nations, etc., immediately to become common to the other party on equal conditions. Should differential duties be established in the Swiss Confederacy upon the products of any nation, the United States to be at liberty to determine the manner of establishing the origin of its own products destined to enter that confederacy. The frontier territory of Switzerland is divided into six departments for the collection of customs duties. The central points of these, respectively, are at Basle, Schaffhausen, Coire, Lugano, Lausanne, and Geneva. No merchandise can be imported or exported, unless by special license, except through one or other of those frontier custom-houses.

Siam.—Treaty of amity and commerce of March 20, 1833; ratifications exchanged April 14, 1836; and proclamation made by the President of the United States June 24, 1837. Establishes perpetual peace between the United States and Siam. Vessels of the United States entering any port of the Siamese dominions, and selling or purchasing cargoes of merchandise, to pay, in lieu of all import and export duties, tonnage, license to trade, or any other charges whatsoever, a measurement duty of 1700 ticals, or bats (equal to $1037), for every fathom of 78 English inches in breadth upon vessels selling merchandise, and of 1500 ticals (equal to $915) per fathom, similar measurement, upon vessels purchasing cargoes with specie. It is prohibited to sell munitions of war to any person except the king, and also to export rice or import opium, the latter being contraband. It is stipulated that if hereafter the duties payable by foreign vessels be diminished in favor of any other nation, the vessels of the United States shall be entitled to like diminution; and should any foreign nation, other than Portugal, be hereafter permitted to have consuls in Siam, the same privilege shall be accorded to the United States. United States merchants, desirous of bringing their goods on shore for trade, must deposit them in the king's factories, paying the customary rent of the country therefor. The treaty of 1833 completely suspended all commercial operations between the United States and Siam. On a vessel, say of 25 feet beam, the duty, at 1700 ticals per 78 inches, would amount to $3988 46 1 In 1855 (April) a new treaty was negotiated between Great Britain and Siam, to the privileges of which American commerce is entitled by article 4 of the treaty of 1833 between the United States and Siam. This new treaty with Great Britain authorizes that nation to have a resident consul at Bangkok, after April 6, 1856; and after the same date the measurement duty is to be abolished, and a general import duty of 3 per cent. to be paid in money or kind, at the option of the importer. Disputes as to the value of goods are to be settled by arbitrators. Opium may be imported free, but can be sold only to the opium farmer or his agent. Export duty specific.

Tripoli.—Treaty of peace and amity of June 4, 1805, not limited as to duration. Establishes a firm, inviolable, and universal peace, and a sincere friendship "on the terms of the most favored nation," and guarantees to the United States like favors with those hereafter granted to any other nation. Vessels of the United States in the ports of Tripoli to be subject to

the same duties, charges, and privileges as the vessels of the most favored nation. United States vessels destined for Tripolitan ports must be provided with proper passports; to examine which, not more than two persons, besides the rowers, are allowed to proceed from any Tripolitan man-of-war, or to go on board, unless permitted so to do by the American captain. In case of distress, United States vessels may put in, land and re-embark cargo, and repair, without the payment of duties. The commerce between the United States and Tripoli—the protection to be given to American merchants, masters of vessels, and seamen—the right of establishing consuls in the regency of Tripoli, and the privileges, immunities, and jurisdictions enjoyed by such consuls, to be on the same footing with those of the most favored nation.

Two Sicilies.—Treaty of December 1, 1845, to be in force ten years from date, either party reserving the right to terminate it after that period, on giving twelve months' notice of its intention to do so. When importing articles of the growth or the manufacture of the United States, American vessels to be on the same footing as to duties, charges, etc., with national vessels. This equality as to navigation dues applies only in respect of direct voyages if laden, or of any voyage if in ballast. Merchant vessels of the United States, forced by stress of weather, or other similar cause, into Sicilian ports, to be exempt from port and tonnage duties, provided no operation of commerce is carried on. The coasting trade is reserved by each country to its own vessels. The direct importation of articles of the growth, produce, or manufacture of the United States to be subject to the same duty, whether imported in vessels of the United States or in those of the Two Sicilies. In the indirect trade, importations under the flag of the United States into the ports of the Two Sicilies to be subject to differential duties. A decree was issued, December 18, 1854, by the King of the Two Sicilies, extending to the indirect trade of such foreign nations as would be willing to reciprocate all the advantages of the national flag. Under the act of 1828, previously given at length in the *article* SICILY, page 1714, the government of the United States has reciprocated the privileges thus granted by the government of the Two Sicilies; and the flag of the United States is therefore equalized, in Sicilian ports, with the national flag in the indirect trade.

Turkey.—Treaty concluded May 7, 1830, and ratified February 2, 1831. Not limited as to duration. Vessels of the United States to be treated, in ports of the Ottoman empire, in like manner as vessels of the most favored nation; to have the same liberty to pass the canal of the imperial residence, and to go into and come from the Black Sea, either laden or in ballast; and may be laden with the produce, manufactures, and effects of the Ottoman empire, except such as are prohibited, as well as with those of their own country. United States vessels must sail under their own flag, and are prohibited from lending their flag to the vessels of other foreign nations, or to those of the rajahs. Importations into Ottoman ports in vessels of the United States to be subject to the same duties, charges, etc., as importations under the flag of the most favored nation. American merchants established in the states of the Sublime Porte for purposes of commerce, to be at liberty to employ *semsars*—brokers or factors—of any nation or religion; such merchants or other American citizens residing in the Turkish dominions not to be amenable to Turkish tribunals for offenses committed, but to be tried by their own minister or consul, and punished according to his sentence. By virtue of the most favored-nation stipulation, vessels of the Ottoman Porte are admitted into United States ports on the same terms as American vessels. Duties, according to the tariff of the Ottoman Porte, are based upon the *ad valorem* principle; and the treaty nations usually name commissioners every five or six years, who, in concert with a commission named by the Sublime Porte, regulate the "fixed values" of merchandise imported. The present rates were fixed by a British commission of this character; and, in regard to many articles of American importation, especially cottons and rum, the mode of valuation works a practical discrimination, which can be remedied only by the action of an American commission remodeling existing valuations, as respects the manufactures of the United States.

Tunis.—Treaty of August, 1797, modified by convention of March 26, 1799, and by subsequent treaty of February 24, 1824. Establishes perpetual peace and friendship between the United States and the Bey of Tunis. Vessels of the United States permitted to enter all the ports of the kingdom of Tunis on paying the usual duties which are paid by the vessels of the most favored nations. Should the government of Tunis have need of the services of an American vessel not previously engaged, it must have the preference on paying the same freight that is usual with merchants for the same service. Commerce with Tunis under the United States flag to be conducted on precisely the same footing, as to import duties, fees, and all charges whatsoever, as is commerce under the flag of the most favored nation. American merchants to be permitted to establish themselves, transact their own business, or appoint their agents, factors, etc., in the territories belonging to the kingdom of Tunis.

Venezuela.—Treaty of peace, friendship, navigation, and commerce, concluded January 20, 1836; ratified May 31, and proclamation made by President of the United States June 30, of the same year. To continue in force twelve years from date of ratifications; and further, until either party gives twelve months' notice of its intention to renounce it. Vessels of the United States, no matter whence they come, or with what laden, to be on a footing with national vessels. The same equality, including bounties, duties, and drawbacks, to apply in regard to exportation or re-exportation. Vessels of the United States shipwrecked, foundered, or in any other way damaged, on the coasts, or within the dominions of Venezuela, to receive all necessary assistance and protection. Whatever may be imported in Venezuelan vessels may also be imported in vessels of the United States, and on the same terms, as to duties and all other charges. The same equality as to exports. Articles, the growth, produce, or manufacture of the United States, to be subject in Venezuela to no higher or other duties than similar articles, the growth, produce, or manufacture of any other foreign country. All favors hereafter granted to other foreign nations to apply equally to the United States on similar conditions. The customs, tariffs, and commercial regulations of Venezuela are subject to frequent, and, occasionally, onerous changes. The latest of these—that of April 27, 1856—imposes an extraordinary contribution upon certain imports and exports, to take effect from and after July 1, 1856. Among the exports thus affected are coffee, cocoa, indigo, hides, quinia, sarsaparilla, dye-wood, etc. The extraordinary import duty is 20 per cent. on the amount of regular duties, and 15 per cent. on all articles that are included in the free list, excepting gold and silver in bars, bullion, or dust, printing-presses, printed books, machinery, etc.—*Com. Relat. U. S.*

Trebizond, anciently Trapezus, from its resemblance to a trapezium, a town of Asia Minor, on the southeast coast of the Black Sea, lat. 40° 1′ N., long. 39° 41′ 52″ E. Population variously estimated at from 15,000 to 30,000. The town is built on the declivity of a hill rising gently from the sea. It is a place of great antiquity; and, from the year 1203 to the final subversion of the Eastern empire by Mohammed II. in the 15th century, was the seat of a dukedom, or, as it was sometimes called, an empire, comprising the country between the Phasis and the Halys. Its fortifications are still of considerable strength, at least for a

Turkish city. The space included within the walls is of great extent; but it is principally filled with gardens and groves. The houses are mean in their outward appearance, and comfortless within.—TOURNEFORT, *Voyage du Levant;* KINNEIR'S *Journey through Asia Minor.* Trebizond has two ports, one on the west and one on the east side of a small peninsula, or point of land, projecting a short way into the sea. That on the east is the best sheltered, and is the place of anchorage for the largest ships. It is, however, exposed to all but the southerly gales; but it does not appear that, with ordinary precaution, any danger need be apprehended. The ground, from one-fourth to half a mile east from the point, is clean, and holds extremely well. Ships moor with open hawse to the north, and a good hawser and stream anchor on shore, as a stern-fast. At night the wind always comes off the land. Captain Middleton says that the only bad weather is from the northwest; but that, though the swell be considerable, it does not cause any heavy strain upon the cables.—*Nautical Magazine*, vol. ii. p. 181.—At Platana, near Trebizond, and quite as exposed, Turkish vessels have from time immemorial rode in safety the whole winter; a satisfactory proof that the danger supposed to be incident to the roads along the coast is wholly visionary.—*Ibid.*

Trade.—In antiquity, and in more modern times, previously to the conquest of Constantinople by the Turks, and the exclusion of all foreign vessels from the Black Sea, Trebizond was the seat of an extensive trade. Any one, indeed, who casts his eye over a map of Western Asia must be satisfied that this city is the natural emporium of all the countries to the southeast of the Black Sea, from Kars on the east, round by Diarbeker to Amasia on the west. Erzeroum, the principal city of Armenia, is only about 135 miles southeast from Trebizond. Its merchants are distinguished by their superior attainments, and by their enterprise and activity. For a lengthened period they derived most part of their supplies of European commodities by way of Smyrna or Constantinople: nothing, however, but the impossibility of obtaining them at so convenient a port as Trebizond could have made them resort to such distant markets as those now mentioned; and it may well excite surprise, considering the period during which the Black Sea has been open, that efforts were not sooner made to establish an intercourse with Armenia, Georgia, and the northwestern parts of Persia, through this channel. We are glad, however, to have to state, that within these few years this has been done, and, notwithstanding the difficulties that necessarily attach to every attempt to open new channels of commerce with semi-civilized nations, the experiment has proved more than ordinarily successful. The policy of Russia has, of late years, given to Trebizond an importance it did not formerly possess. Previously to the 1st of January, 1832, the trade between Europe and Persia, by way of the Black Sea, principally centred in the Russian port of Redout Kaló, at the mouth of the Phasis. This was a consequence of the exemption granted in 1822 to the Russian provinces to the south of the Caucasus from the duties charged in the other parts of the empire. But the exemption having ceased at the period referred to, and the trans-Caucasian provinces having been subjected to the same duties as the other provinces, the transit trade to Persia by way of Redout Kaló, Tefiis, and the Caspian Sea, almost entirely ceased, and it is now carried on through Trebizond, Erzeroum, and Tabreez. In consequence, the increase of trade at Trebizond has been very remarkable.

Of the exports, silk is by far the most important; and next to it are nuts, saffron, tobacco, copper, wax, shawls, beans, galls, leeches, etc. Their total value was estimated in 1840 at £479,874, of which silk made nearly a half, or £210,080. *See* TURKEY.

Tree-nails, certain long cylindrical wooden pins employed to connect the planks of the ship's side and bottom to the corresponding timbers. They are superior to spike-nails or bolts of iron, which are liable to rust and loosen. The thickness of the tree-nails is usually proportioned to the length of the ship, allowing one inch to every hundred feet.

Trees (*Age of*). Among others mentioned in an article in the *American Almanac* for 1838, p. 102, are, the Wallace oak at Ellerslie, Scotland, 700 years. (Some oaks are supposed to have lived 1500 years.) *Oak* on estate of James Wadsworth, Genesee, New York, 500 years. *Yew* trees at Fountain's Abbey, England, 1200 years; and in Scotland, said to be 2500 years. *Elms*, in Switzerland, 835 years. *Cedars* on Lebanon, 800 years. *Olives*, in the Garden of Olives, Jerusalem, 800 years. *Banian*, in Hindostan, 3000 years. *Cypresses*, at Grenada, 800 years.

Tret. In *Commerce*, an allowance of 4 lbs. for every 104 lbs. for the waste which certain kinds of goods are liable to from dust, etc.

Trieste, a city and sea-port of the Austrian dominions, the capital of a district of Illyria, situated near the northeast extremity of the Gulf of Venice, lat. (of light-house) 45° 38′ 6″ N., long. 13° 46′ 5″ E. Population in 1850-'51, of the city only, 50,000 (?), and including the district comprised within the limits of the free port, 82,596. It is divided into the old and new towns. The former is built upon elevated ground; the latter, which is lower down, is laid out with greater regularity, and is partly intersected by a canal, into which vessels not drawing more than nine or ten feet water enter to load and unload. The harbor of Trieste, though rather limited in size, is easy of access, and convenient. It is protected from southerly gales by the *Molo Teresiano*, so called from the Empress Maria Theresa, at the extremity of which the new light-house, mentioned below, has been constructed. The port, with the mole, forms a crescent one and a half mile in length, being a continued quay, faced with hewn stones, with stairs and jetties for the convenience of embarkation. On the north side of the port is a dock or harbor, appropriated exclusively for vessels performing quarantine. It is walled round; and is furnished with hotels, warehouses, and every sort of accommodation required for the use of passengers and goods. Ships under 300 tons burden lie close to the quays; those of greater size moor a little farther out. The principal defects of the port are, its limited size, and its being exposed to the northwest winds, which sometimes blow with much violence, and throw in a heavy sea. The gales, however, are seldom of long continuance; and the holding ground being good, when the anchors are backed and proper precautions taken, no accident occurs. The tide at Trieste is scarcely perceptible; but the depth of water is influenced by the wind, being increased by a long-continued sirocco or southeast wind, and diminished by the prevalence of the east-northeast wind, known by the name of *Boro*. The access to the port is not obstructed by any bar or shallow; and there is good anchorage in the roads, in from 6 to 7 and 10 fathoms water. A good sailing vessel may beat in by night or by day, except it blow hard from the northeast or east-northeast, when she had better anchor in the Bay of Roses, or Pirano, where she will ride in perfect safety. Ships bound for Trieste are under no obligation to take pilots; but those entering the port for the first time would do well to take one on making the coast of Istria. Boats are always hovering off Rovigno; they are not manned by regular pilots, but by fishermen, who, though unfit to be trusted with the management of the ship, know the bearings of the places and the depth of water. The fee usually paid them for pilotage is twenty dollars; in addition to which, they are supported at the ship's expense during the performance of quarantine. The light-house at the extremity of the Theresian mole is 106 feet (Engl.) high. The light is intermittent; and may

be seen, supposing the eye of the observer to be elevated 12 feet above the level of the sea, about 12 nautical miles, or from Pirano on the side of Istria, and the shoals of Grado on the Italian coast. A light-house has also been erected on the point of Salvore, bearing from Trieste west by south, distant about 18 miles. The lantern is elevated about 103 feet above the level of the sea. From this point Pirano Bay opens, where vessels may anchor in safety in all sorts of weather.

Trieste has no command of internal navigation; but being the most convenient, or rather the only sea-port, not merely of the Illyrian provinces, but of the Duchy of Austria, and the greater part of Hungary, she possesses an extensive commerce. This has been increased by the facilities afforded to all sorts of mercantile transactions by the privilege of *porto franco* conferred on the town, and a considerable extent of contiguous country. Under this franchise, all goods, with but very few exceptions, may be imported into and exported from the city free of all duties whatever. Foreign products, when taken for consumption from Trieste into the interior, are subject to the payment of duties regulated by the interior tariff of Austria. These are very various, consisting partly of the raw and partly of the manufactured products of Austria Proper, Illyria, Dalmatia, Hungary, and Italy; with foreign articles imported and warehoused. Among the principal articles of raw produce may be specified corn, chiefly wheat and maize, with rice, wine, oil, shumac, tobacco, wax, etc.; silk, silk rags and waste, hemp, wool, flax, linen rags, hides, furs, skins, etc. The produce of the mines makes an important item, consisting of quicksilver, cinnabar, iron, lead, copper, brass, litharge, alum, vitriol, etc.; the forests of Carniola furnish timber, for ship-building and other purposes, of excellent quality and in great abundance, with staves, cork wood, box, hoops, etc.; marble also ranks under this head. Of manufactured articles, the most important are, thrown silk, silk stuffs, printed cottons from Austria and Switzerland, coarse and fine linens, and all sorts of leather. Under this head are also ranked soap, Venetian treacle, liquors, etc., with jewelry, tools and utensils of all sorts, glass-ware and mirrors, Venetian beads, refined sugar, and a host of other articles. Of foreign articles imported and reshipped, the most important are sugar, coffee, and dye-stuffs. Trieste is also a considerable depôt for all sorts of produce from the Black Sea, Turkey, and Egypt.

Customs Regulations.—The custom-house at Trieste has nothing whatever to do with the entry, reporting, etc., of vessels. When a ship arrives, she is reported to the health office; which publishes a list of arrivals and departures, with a statement of their cargoes, as they appear in the manifests. Ships are cleared by the same office, the masters being assisted by the consuls of the country to which they belong. As soon as a vessel has performed quarantine, she loads or unloads without any interference or inspection by the customs officers, or by any one else. Goods unsusceptible of contagion may be landed during quarantine. Being a free port, the bonding and warehousing system is, of course, unknown at Trieste.

Quarantine is strictly enforced at Trieste, and the establishments for facilitating its performance are complete and efficient. The Board of Health at this port is the central or principal one for the Austrian states; and maintains an active correspondence with all the principal ports, both in the Mediterranean and elsewhere. There are two lazaretto—that called St. Teresa, or Lazaretto *Nuovo*, is appropriated to vessels from the Levant and Egypt, which are, for the most part, subjected to the long or full quarantine of forty days. It is spacious, and properly guarded; having a sufficient number of military and medical officers and assistants; with extensive quays and magazines for housing and airing goods, dwelling-houses and apartments for resident officers and passengers, etc. It is, in fact, one of the most perfect establishments of the kind in existence. The other, or old (*Vecchio*) lazaretto, contiguous to the great mole, is appropriated to ships and passengers performing a quarantine of not more than twenty-eight days; and, though inferior to the former, is sufficiently capacious and convenient. The sanitary offices, including that of harbor master, are near the centre of the port; where also are moored vessels under observation for a term not exceeding eight days. Here also are facilities for communicating *viva voce* with persons under quarantine; and spacious warehouses, with adequate guards and other officers. But, notwithstanding these conveniences, if a vessel arrive having an infectious malady on board, she is not allowed to enter either lazaretto at Trieste, but is sent to an island near Venice, fitted out for the purpose, where assistance may be afforded with less risk of propagating infection.

Careening, Stores, etc.—Timber at Trieste is excellent, workmen good, and their wages moderate; so that it is a very favorable place for careening and repairing. Water is very good, but rather scarce; so that if a large supply be required, due notice must be given. Ships are served in regular rotation. Beef is very good, but rather high priced. Butter and cheese are dear; and fuel is excessively so. On the whole, therefore, Trieste can not be considered as a favorable place for the provisioning of a ship.

Banking.—There are no public banks at Trieste. The Bank of Vienna has an office here, but it is merely for the exchange of its notes for cash, or, more frequently, of large notes for small ones. These notes, being guaranteed by government, are legal tender, and in general circulation, but no other company is allowed to issue notes to be used as a circulating medium. There is not, however, any deficiency of currency. Banking business is transacted by private companies, or by individuals, who are subject to certain regulations, and are obliged to lay before competent authority an attested statement of the capital embarked in their concerns. Their business principally consists in procuring bills of exchange from other places for the use of the merchants of Trieste, or in discounting (in which latter operation they have many private competitors), at the rate of from 4 to 6 per cent. per annum, according to the nature of the paper offered, and in proportion to the scarcity or abundance of cash.

The Austrian official returns of imports from the United States for Trieste alone, it is seen, exceed the returns for all the Austrian ports, as per United States Treasury Reports. More than three-fourths of the foreign commerce of Trieste is carried on along the shores of the Mediterranean. The remainder is distributed between England, the United States, Brazil, Mexico, the Antilles, Russia, and the Netherlands. The direct trade between the port of Trieste and the two Americas, the Indies, and China, has within a few years become more active, and the tonnage specially employed by this port in such direct trans-Atlantic commerce notably augmented, in consequence of the successful competition on the part of the states lying on the basin of the Mediterranean with Trieste for a portion of this trade.

The average annual value of the general commerce of Trieste during the preceding ten years was: imports 140,000,000 francs; and exports 76,000,000 francs; a total of 216,000,000 francs.

The figures from 1839 to 1849 show an increase in imports of 70 per cent., and in exports of 8 per cent. The great difference between the increased values of total imports and exports is accounted for by the fact that but a small proportion of the produce or manufactures of Austria finds its way to foreign countries through the port of Trieste. Most of this kind of merchandise destined for the East, the United States, and South America, is forwarded by the lower Danube, by the Elbe, and by Hamburg and Bremen. Besides, this difference can not be regarded as an evidence that the

balance of trade is so heavily against Trieste, when it is considered that many millions of dollars are annually expended in the markets of this port by the 70,000 sailors, the 25,000 passengers conveyed by steamships, and the 10,000 vessels that yearly arrive there.

It is proposed, and not only with the sanction, but under the patronage of the Austrian government, to construct three first-class steamships to run regularly between New York and Trieste, touching at Corfu, Malta, Algiers, Cadiz, and Lisbon. Should this project prove successful (and the high character of its originators is a strong guarantee of its success), its effect upon the commercial and political relations of the United States must be very great. In opening new channels to the industry of the Old World, it will also increase the demand for the raw produce and manufactures of the United States. The advantages of this proposed steam communication between New York and Trieste will be greatly increased by the completion of about sixty miles of railroad between Trieste and Vienna. This, when completed (and the work is in active progress), will connect Trieste with all the principal cities of Europe, and make it the entrepôt of a large German trade. It already enjoys steam communication with the Levant, Constantinople, and Alexandria; and, when the proposed line to New York shall have been established, Trieste will become an extensive depôt for the raw materials of the United States. During the four years ending with 1853, New York received direct from Trieste merchandise to the value of $2,085,282, and exported direct to the same place goods of the value of $1,550,575. The following summary exhibits the general foreign trade of Trieste in 1851 compared with that of 1850, and also the increase:

Years.	Imports.	Exports.	Total.	Imports from U. States.
	Francs.	Francs.	Francs.	Francs.
1851	225,337,000	94,451,000	319,788,000	14,588,000
1850	202,126,000	91,347,000	293,473,000	10,547,000
Increase 1851	23,211,000	3,104,000	26,315,000	4,041,000

The following table, translated and condensed from Austrian official documents, will present an interesting statement of the number of American vessels employed in the trade of Trieste from 1842 to 1851, inclusive:

Years.	Vessels.	Years.	Vessels.
1842	33	1847	45
1843	43	1848	42
1844	51	1849	30
1845	55	1850	25
1846	60	1851	31

During the same period, the largest number that entered (the Austrian flag excepted) was 3380 vessels, under the Greek flag; and the smallest, 28, under the Belgian flag. The relative importance of the flag of each nation in the general foreign commerce of Trieste will be seen from the following condensed table:

NUMBER OF VESSELS, OF ALL NATIONS, WHICH ARRIVED AT THE PORT OF TRIESTE DURING TEN YEARS, ENDING WITH 1851, AND THE PROPORTION WHICH THE FLAG OF EACH BEARS TO THE WHOLE NUMBER.

Flags.	Number in ten Years.	Proportion to the whole.
Austrian	5280	37·50 per cent.
Greek	3386	24·0 "
English	967	6·75 "
Sicilian, etc.	724	5·0 "
Ottoman	485	3·50 "
Ionian	448	3·25 "
United States	415	3·25 "
Swedish, etc.	379	2·50 "
Russian	359	2·50 "
Sardinian	286	2·0 "
French	252	1·75 "
Danish	226	1·75 "
Dutch	222	1·25 "
Papal States	212	1·25 "
Hanseatic	126	0·90 "
Spanish	117	0·80 "
Prussian	81	0·60 "
Others	186	1·25 "

COMMERCE OF TRIESTE IN 1856.—(VALUE IN FLORINS.)

	Imports.	Exports.
Austrian ports	29,841,302	47,727,808
Foreign ports	91,627,897	61,418,602
Total by sea	120,969,199	109,146,410
Total by land	32,802,000	34,551,722

We add a tabular statement of the commercial movement of that port during a period of ten years:

Years.	Ships.	Tonnage.
1846	16,753	985,514
1847	17,321	1,007,93
1848	17,812	926,815
1849	20,553	1,260,258
1850	21,124	1,323,796
1851	24,101	1,408,802
1852	27,931	1,556,652
1853	29,317	1,675,886
1854	26,556	1,730,911
1855	21,081	1,439,197

On comparing the average of the first three years of this period with the average of the last three years (973,220 against 1,631,663), the increase within so short a space is found to be in the proportion of 68 to 100. Marseilles is far from exhibiting the same rapidity of progress. The basis of the prosperity of Trieste, besides, is all the more solid, as it is owing to the increased intercourse both with purely Austrian and foreign ports. The national trade, for instance, from 1846 to 1848, amounted to 416,700 tons average per annum; from 1853 to 1855 it had increased to 854,753 tons average per year, or more than double. During the years 1850 and 1855, inclusive, the Austrian tonnage entered in and out at Trieste was 6,206,316; foreign, 2,984,928 tons. The trade with Greece, Egypt, the Levant, and Black Sea, had risen from 257,741 tons to 496,394 tons average per year during the same period.

COMMERCE OF TRIESTE AND VENICE FOR THE YEAR 1854.

Countries.	Trieste.				Venice.			
	Entered.		Cleared.		Entered.		Cleared.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
American	55	26,007	58	28,981	8	2,749	7	2,445
Hanse Towns	29	5,713	30	6,733	13	2,310	19	1,967
Belgian	4	673	5	729	1	155	1	155
Brazilian	2	830	3	990	....	....	....	....
Lanish	16	2,079	18	2,910	4	622	2	854
French	16	2,203	14	2,080	15	1,757	15	1,757
Greek and Ionian	443	60,818	452	62,302	127	17,611	150	20,090
English	83	22,488	87	24,236	86	20,156	96	22,657
Neapolitan	447	41,544	440	36,603	191	18,009	205	22,411
Holland	62	9,668	61	9,535	13	1,974	13	1,958
Turkey	191	21,538	234	27,724	41	5,083	59	7,055
Pontifical States	397	23,319	681	37,245	13	2,074	12	1,820
Portuguese	5	1,116	5	1,234	1	100	1	100
Prussian	10	2,194	8	2,010	....	....	....	....
Russian	2	260	....	....	....	....	....	....
Sardinian	19	3,577	20	3,986	13	2,104	13	2,104
Spanish	28	4,955	24	5,721	4	1,227	4	1,227
Sweden and Norway	87	7,487	87	9,227	26	5,033	26	4,532
Tuscan	8	1,559	8	1,363	10	1,945	9	1,783
Total	1,852	238,078	2,181	263,603	566	82,948	632	92,385
Austrian	11,410	624,625	11,112	604,438	4871	388,928	4655	383,903
Total, 1854	13,262	862,703	13,293	868,086	5437	471,576	5287	476,288
Total, 1856	10,905	773,477	10,854	772,485	4831	459,661	4549	405,729

The treaty of 1829, between the United States and Austria, establishes a perfect reciprocity of commercial intercourse between the two countries. Its principal stipulations are as follows:

There shall be, between the United States territories and those of Austria, a reciprocal liberty of commerce and navigation. All the ports, places, and rivers of the territories of either power, open to foreign commerce, shall be open to the inhabitants of each respectively. Austrian vessels arriving, either laden or in ballast, in the ports of the United States, and, reciprocally, vessels of the United States, either laden or in ballast, arriving in the ports of Austria, shall be treated, on their entrance, during their stay, and at their departure, upon the same footing as national vessels coming from the same place, with respect to the duties of tonnage, light-houses, pilotage, and port charges, of whatever kind or denomination, levied in the name or to the profit of the government, the local authorities, or of any private establishment whatever. All kinds of merchandise, and articles of commerce, either the produce of the soil or of the industry of either country, which may lawfully be imported into each respectively, shall be admitted on payment of the same duties and charges, of whatever kind or denomination, as are applicable if imported under the national flag. This equalization of import duties and other charges to apply to the vessels and cargoes of each country respectively, whether they clear directly from the ports of the country to which they belong, or from the ports of any other foreign country. The produce or manufacture of either country shall be admitted into the ports of the other on the same terms as the like articles, being the produce or manufacture of any other foreign country; and no prohibition shall be imposed on the importation or exportation of any article, the produce or manufacture of either country, to or from the ports of the other, which shall not equally extend to all other nations. The vessels of both powers, respectively, shall be admitted into the ports of either, on the same terms as national vessels, with the produce or manufacture of their own or of any other country. An exact reciprocity shall be observed in the ports of the territories of either power, in respect to the vessels of the other exporting or re-exporting merchandise or produce of any country not prohibited; and the same bounties and drawbacks shall be allowed, whether such exportation or re-exportation be made in vessels of the one party or of the other. The coasting trade is reserved by each power to its own vessels, respectively. All favors hereafter granted by either party, in respect of navigation or commerce, to any other nation, shall become common to the other party, freely, if it was freely granted to such other, or on similar terms if it were conditional. The consuls, vice-consuls, agents, and commissioners of each of the high contracting parties shall enjoy, in the ports of the other, the same privileges and powers as those of the most favored nation. The treaty to continue in force for ten years, with the usual twelve months' notice by either party desiring to terminate it after that time.

Tonnage Duties.—On the 24th January, 1851, the central maritime government of Austria issued public notice that from that date the tonnage duties in force at the port of Trieste should be extended to all ports throughout the empire open to commerce. These duties are regulated by orders dated 8th November, 1845, and are as follows:

		Fl.	Kr.
National vessels, 50 tons, or under	per ton,	0	2
National vessels, 100 tons	"	0	4
National vessels, over 100 tons	"	1	6
Foreign vessels, without regard to tonnage	"	1	0

A mercantile house in New York, long engaged in the direct trade between that port and Trieste, furnishes the following statement of charges on a vessel of 1000 tons burden, entering the latter port:

	Fl.	Kr.
Cooperage, at 6 kreutzers per ton	100	0
Pilotage, at 3 kreutzers per ton	50	0
Health department upon arrival and at departure	2	52
Marine institute	12	0
Light-house dues, 7 kreutzers per ton	116	40
Total expense on a vessel of 1000 tons	281	12

The florin equals 60 kreutzers=48½ cents; consequently, the whole expenses amount to $136 37½. Whether vessels take freight for several parties, or a single house, the stevedores make the same charges for stowing away the goods. The following are their fees for principal merchandise, viz.: for cotton, 2 florins per ton; for wool, hemp, flax, oakum, and roots, 1 florin 30 kreutzers per ton. Goods of such weight as raisins (black and red), figs, olive-oil, steel, cream of tartar, argol, etc., 30 kreutzers per ton; rags, grain, sumach, laurel leaves, tobacco, yellow berries, and juniper berries, 1 florin per ton. Goods which are measured, 20 kreutzers per ton measurement. Other articles in the same proportion. In discharging vessels, the only expenses are the lighters, which are provided by the agents of the vessels, and which are paid for by the receivers of the goods, in accordance with a general tariff, which the proprietors of the lighters have fixed upon by general consent. The captains are obliged to put the goods on board the lighters at their own expense. For this purpose hands can at all times be procured at 1 florin 15 kreutzers to 1 florin 30 kreutzers per diem. (55 cents to 64 cents). Men-of-war, national as well as foreign, and vessels putting in from stress of weather, or other necessity (which must, however, be verified), and not transacting any operations of commerce, are admitted to entrance, and allowed to purchase fresh provisions and other necessaries, and to take a pilot, exempt from tonnage duties. Tonnage of national vessels to be ascertained by their register; of foreign vessels, by Austrian measurement.

Sanitary Regulations.—These are numerous and complicated; such only are subjoined as relate to vessels coming from all ports of the Americas, including all the ports of the West Indies: 1. Vessels with clean bills of health to be admitted, with crew and passengers, immediately on arrival, to free pratique. 2. Vessels with suspicious bills of health, such as having touched on their passage at suspected places, to be subjected to ten days' quarantine at the lazaretto, for passengers, crews, and susceptible goods; and goods not susceptible, to 5 days. 3. Vessels with foul bills of health to be subjected to fifteen days' quarantine at the lazaretto, for passengers, crews, and susceptible goods; and goods not susceptible, 10 days. The quarantine charges are very moderate, being, for entry and departure, upon a ship of 100 tons and upward (exclusive of 72 cents per diem for wages and food to the gondolier), about $4 32; quarantine dues upon goods, 6 kreutzers (a little more than 4½ cents) per 100 florins value ($48 50); and upon susceptible goods, 4 kreutzers (3¼ cents) per 1000 lbs. weight.

General Remarks.—The development of the maritime commerce of Austria dates back as far as 1815, or, rather, from that period down to 1830; during which it gradually attained, chiefly by the aid of steam navigation, a high state of prosperity. The great commercial activity of the empire is principally concentrated at the port of Trieste; Venice and Fiume, so far, at least, as it respects foreign trade, being but subsidiary to this vast entrepôt. Besides these, Austria possesses on the Adriatic, 25 ports of secondary rank, which claim importance chiefly from their extensive coasting trade. The principal of these are Chioggia, 15 miles south of Venice; Rovigno, in Istria; Zara, Spalato, and Ragusa, in Dalmatia. This city was founded about the middle of the 15th century, and once enjoyed an extensive trade. It still exports manufactures of silk, leather, rosoglio, anchovies, etc. It continued to be a republic under the successive protection of the Greeks, Venetians, and Turks, until 1806, when it was

erected by Napoleon into a duchy for Marshal Marmont. Trieste, Venice, and Fiume, with some small ports on the Croatian shore contiguous to Fiume, are free ports. Prior to the year 1850, all produce and merchandise of whatever description, transported from one part of the Austrian territories into another (the empire being divided by an internal customs line), were subject to duties of entrance and clearance, equally as if they had been imported from, or exported to, a foreign country. By an imperial patent, issued on the 7th June, 1850, this line was suppressed, and all duties, prohibitions, etc., previously existing, were abolished; some formalities being reserved in respect to certain articles of which the government retained the monopoly. In submitting to the emperor his *projet* for this reform, the minister of finance observed, that "the influence of such a measure, in consolidating the vast and widely-extended resources of the empire, in establishing its unity and augmenting its power, would more than counterbalance the inconsiderable reduction of $1,099,110 which it would cause in the revenues of the empire."

This liberal measure was soon after followed by another, equally beneficial to the foreign commerce of Austria—namely, the new tariff that went into operation on 1st February, 1852. In the complicated details of this tariff, there were various changes favorable to American trade. The duty on cotton, although considerably reduced from former rates, was, prior to the adoption of this tariff, 80$\frac{7}{19}$ cents per 125·5 lbs. The tariff of 1852 reduced it again 48½ cents per 110½ lbs. for one year, and the year following to about 4 cents per 110½ lbs. Since this latter period—namely, January 1, 1854—the article has been made free. Still later modifications of the Austrian tariff have been made, but they do not apply to any of the United States staples of export. Previously, tobacco was a strict government monopoly; under the new tariff, individuals are allowed to enter it for their own use, at reduced rates. Manufactured, it paid before 1852, $19 40 per 100 lbs.; under the new tariff, this was reduced to $12 12½ per 100 lbs. This duty has been retained in the new tariff of 1851, with an additional duty, however, of 1 florin per livre de Vienna (48½ cents), on unmanufactured, and 2 florins 30 kreutzers per livre de Vienna ($1 21½), on manufactured. The duties were reduced also on rice, whale oil, and the products of the whale-fishery, wooden-ware, tools, implements, and machinery for agricultural and household purposes, India rubber fabrics, etc. During the first year of the operation of the tariff of 1852, cotton twists paid $3 88 per 110½ lbs.; the ensuing year this was reduced to $3 39½. The centner before 1852 was equivalent to 125·5 lbs.; but, in order to bring about a conformity to the centner of the German Customs Union, it was fixed that year at 110½ lbs.; that being the weight of the Prussian zoll-centner. Several articles, when imported by sea, are admitted by the tariff of 1852 at rates still more moderate; for example, alum, in general rated at 72¾ cents per 110½ lbs., pays only 8$\frac{1}{19}$ cents when brought in by sea. As the United States stand on the footing of the most favored nation, by virtue of the treaty of 1829, the provisions of the tariff of 1852 have contributed considerably to the employment of United States shipping.

The commercial reform of 1852 was, in a great measure, the result, or rather one of the results, of the revolution of 1848. Immediately after tranquillity had been restored, the Baron de Bruck, then minister of commerce, was charged with an administrative commission to prepare a new tariff upon the following bases, adopted by the Council of Ministers: An assimilation, as nearly as can be, to the tariff of the German Customs Association; the substitution of specific for *ad valorem* duties; the adoption of the quintal of 110½ lbs., as a basis of quantities. On imports: The abolition of prohibitions; adequate protection to national industry; a graduating scale of duties on manufactured articles, according to the amount of labor employed thereon; a reduction of all taxes on articles of first necessity, either for manufactures or consumption. On exports: Balance-duties (weighing-dues), and all necessary formalities as simple as possible; a substitution of protective duties for prohibitions; the abolition of all premiums or drawbacks, unless in certain specified cases. On the preceding bases, the tariff which has been in part considered was submitted to the council, and had been under consideration several months, when the treaty of a customs league between Prussia and Hanover permitting no further delay, it was submitted to the emperor, and signed on the 6th day of November, 1851, at the very time that a commercial congress, to be composed of delegates from the different German states, was summoned to meet at Vienna in January, 1852. The imperial patent, which designated the 1st February, 1852, as the day on which the new tariff should go into effect, contained several orders of a temporary character. One was an extra duty of 10 per cent. on the aggregate duties levied on certain merchandise before prohibited. The duty on raw cotton was modified, and other temporary provisions were made, which, so far as they concern American trade, have been already adverted to.

Indeed, the tariff itself was not designed to be permanent. It was tried only as an experiment, and, by limitation, was to expire at the end of October, 1854; the government being meanwhile precluded, on the one hand, from raising the duties on imports for manufacturing purposes, and on the other from reducing them on articles manufactured half or in whole. At the same time, the export duties on articles of the former class could not be reduced, nor could similar duties on those of the latter be raised. The imperial patent, moreover, contained one notable provision, viz.: the duration of the tariff was to depend on the contingency of a treaty of commerce (with Prussia) being effected before the period fixed for its termination. It would shed but little light upon the commercial relations of the United States with Austria to follow up, and recount in this work, the proceedings of the commercial congress assembled at Vienna during the winter of 1852, or to recapitulate the resolutions adopted by the delegates of the southern states before presenting themselves at Berlin. It will suffice to say, that on the 19th February, 1853, a treaty was effected between Austria and Prussia, which was acquiesced in by all the other states of the Zoll-Verein. This treaty, stipulating as it does for large and reciprocal commercial concessions between the two powers, as a fitting prelude to a general customs league between all the German states, necessarily led to a revision of the tariff of 1852. This resulted in the adoption of the tariff now in force; to understand which, however, it must be borne in mind that many of the articles enumerated in that portion of the tariff, though rated at different duties when coming from foreign countries, are free when imported by the frontiers of the German Association, or coming from the interior of the associated states.

These privileged articles are specifically defined in a supplemental appendix to the tariff, dated February 10, 1854, and prefaced in the following terms: "As the first result of the arrangement entered into at Berlin by the Executive Commission, conformably to the 23d article of the treaty of commerce and of customs of the 19th February, 1853, and for the purpose of correcting some erroneous impressions, public notice is given that the following are the true constructions and modifications of the tariff of the 5th December, 1853. Said constructions and modifications shall be carried into effect so soon as they are received at the different bureaux of customs." (Then follows the list of articles coming under the special provisions of the treaty.)

The causes that compelled the revision of the tariff

of 1852, as well as the adoption of the present tariff (of 1854), are set forth in an article which appeared in the official journal, published at Vienna, of the 15th December, 1853.

In reference to the treaty with Prussia, this article holds the following language: "Other considerations induced a revision of the tariff of 1852. The treaty with Prussia is the first step in reforming the commercial policy of the empire. From it must result, at no very distant day, an Austro-German Customs Union; and a general reduction in tariff duties is the most fitting prelude to so desirable an event. Besides, the commercial treaty of August 7, 1852, concluded with Parma and Modena, removes all obstacles to an Austro-Italian Customs Union; and thus the event referred to (an Austro-German Customs Union) would present a guarantee for the prosperity and peace of the continent. The changes and modifications which could contribute to this end should command our most serious consideration. These are principally such reductions in tariff duties as are demanded by the best interests of commerce—not, however, to an extent that might in any way prove detrimental to the industrial resources of the empire. Succeeding, as it does, a restrictive system, in operation for more than half a century, the tariff of 1852 is still encumbered with onerous duties and oppressive restrictions, repugnant to a great association of states accustomed to the most liberal system of commercial policy. Besides, the augmented exports of 1852 and 1853 demonstrate the wise policy of a general reduction of tariff duties, and furnish incontestable evidence that such a measure will most effectually repair the evils of past commercial legislation." The preceding remarks contain a summary of the official *exposé* already referred to, and explain the motives that induced the general remodification of the Austrian tariff. The abolition of the government monopoly of tobacco would remove the most serious and the only remaining restriction on American commerce. The customs union with the Germanic states, so much desired by Austria, will accomplish this, if it should not be effected before that event shall happen. —*U. S. Com. Relations.* The following is an exhibit of the commerce of the U. S. with Austria for 37 years:

COMMERCE OF THE UNITED STATES WITH TRIESTE AND OTHER AUSTRIAN PORTS ON THE ADRIATIC, FROM OCTOBER 1, 1820, TO JULY 1, 1857.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1821.....	$31,181	$308,180	$340,361	$229,702	....	$98,130	1,825	....
1822.....	38,753	436,968	475,720	274,375	....	9,200	2,351	....
1823.....	25,697	919,618	945,315	189,137	....	13,288	3,818	....
1824.....	6,506	518,057	524,563	208,867	....	157,717	2,185	....
1825.....	8,834	643,568	652,402	105,830	....	2,033	3,246	....
1826.....	13,387	273,933	287,320	193,152	....	4,000	1,879	....
1827.....	42,671	234 122	276,793	163,546	....	10,304	2,090	....
1828.....	119 233	205,255	324,488	237,378	....	....	3,068	....
1829.....	499,288	280,200	689,488	191,896	....	460	6,384	129
1830.....	300,829	293,261	594,120	132,033	.	912	4,662	282
Total...	$971,098	$4,113,562	$5,110,660	$1,986,075	....	$296,083	31,578	411
Sept. 30, 1831.....	$276,561	$262,808	$539,369	$161,092	....	$1,900	4,215	....
1832.....	199,911	936,775	1,136,686	362,027	....	....	6,497	1,521
1833.....	143,517	498,447	554,964	314,611	....	....	3,504	1,701
1834.....	518,609	954,728	1 473 337	580,614	....	22,000	7,530	3,357
1835.....	818,375	384,038	1,202,413	492,567	....	4,477	6,532	2,618
1836.....	1,138,431	829,674	1,968,105	1,020,009	$2,300	2,800	8,944	4 931
1837.....	1,233,370	378,221	1,611,591	620,465	44,150	....	2,179	12,919
1838.....	643,223	125,740	768,963	672,378	....	7,019	4,974	2 7 3
1839.....	429,578	162,671	592,249	417,530	....	1,600	3,069	2,874
1840.....	1,500,351	196,264	1,786,62 1	373 365	....	....	11,828	6 681
Total...	$4,994,931	$4,659,366	$11,654,297	$4 783,727	$46,450	$40,5 6	59,132	38,745
Sept. 30, 1841.....	$1,258,776	$52,160	$1,311,756	$418 606	....	....	10,350	1,201
1842.....	748,179	136,526	884,705	413,210	....	....	10,520	361
9 mos., 1843*.....	490,240	188,938	679,178	72,957	....	....	8,079	1,782
June 30, 1844.....	1,257,287	168,735	1,426,020	232,089	....	$3,038	10,597	3,618
1845.....	1,431,102	368,775	1,801,878	321,550	....	....	15,470	9,198
1846.....	1,104,168	366,143	1,470,611	379,719	....	....	12,862	8,241
1847.....	1,175 375	73,348	1 248,723	187,341	....	7,583	7,861	5,279
1848.....	1,701,495	107,727	1,809,222	385,813	....	1,287	16,220	4,693
1849.....	942,489	454,376	1,396,865	4 2,178	....	3,900	11,176	5,763
1850.....	1,179,893	312,111	1,492,004	467,601	....	....	5,968	6,889
Total...	$11,271,303	$2,169,659	$13,430,962	$3,488,064	....	$15,808	109,702	42,415
June 30, 1851.....	2,265,573	$230,894	$2,496,467	$730,788	....	....	10,179	13 371
1852.....	2,403,530	329,889	2,733,419	308,743	....	....	14,024	13,490
1853.....	2,062,484	171,804	2,234,288	528,567	....	....	11,745	9,241
1854.....	1,697,319	206,090	1,903,609	741,919	....	$147,736	13,015	5,491
1855.....	1,277 527	122,274	1,399,801	496,283	....	....	9,517	7,029
1856.....	2,238,783	206,065	2,441,848	476 041	....	....	16,916	5,552
1857.....	2,173,065	282,616	2,455 681	422 365	....	$22,000	16,181	1,514

* Nine months to June 30, and the fiscal year from this time begins July 1.

Trinidad. Trinidad is separated from the main land of South America by the Gulf of Paria. It is about 90 miles long and 50 miles wide, with an estimated superficial area of 2020 square miles. Capital, Puerto d'España. Trinidad appears at a distance like an immense ridge of rocks along its whole north front; but on entering the Gulf of Paria, one of the most magnificent, variegated, richly luxuriant panoramas that nature ever formed is presented to the eye of the voyager. To the east the waves of the mighty Orinoco dispute for the empire of the ocean with contending billows, and the lofty mountains of Cumana rise from the horizon in stupendous majesty; and on the west appear the cape, headlands, mountains, hills, valleys, and plains of Trinidad, enameled with eternal verdure. The fecundity of the soil, its gigantic vegetation, its beautiful rivers, enchanting slopes, forests of palms, groves of citrons, and hedges of spices and perfumes, its fine azure skies and elastic atmosphere, have each and all combined to crown the isle with the appellation of "The Indian Paradise." The island is evidently a section of the opposite continent; the same strata, the same rocks, fossils, etc., are common to both. Its formation is evidently volcanic, and in many parts volcanic action is still going on, as indicated by its mud volcanoes and other cognate developments. The precious metals are not found here, nor indeed are any others, except in small quantities. Coal is found about

five miles from the shore. But the most remarkable mineral phenomenon is the asphaltum, or pitch lake, which covers an area of half a league.

Staples as in the other islands. United States vessels also export heavy quantities of iron, brass, lead (old), and hides. The imports from the United States in 1853 were $537,604, and exports to United States were $31,483. American vessels in Port of Spain in 1853, 59; tonnage, 11,472. Imports from United States from 1st January to 30th June, 1853, $308,716; imports from 1st July to 31st December, 1852, $268,148.

Port Regulations.—Upon every ship or vessel of 50 tons and upward, for every registered ton, 36 cents. Upon every ship or vessel of 25 tons and upward, but under 50 tons, for every ton of registered tonnage, 30 cents; and upon every ship or vessel under 25 tons, for every registered ton, 6 cents. Lumber, staves, bricks, slates, shingles, coal, etc., are also subject to a small wharfage duty. Sugar, cocoa, coffee, rum, indigo, etc., are liable to an export duty in this island. Trinidad embraces an area of 1970 square miles, containing a population of 45,284.

Trinity House. The full title of this corporation is, "The Master, Wardens, and Assistants of the Guild, Fraternity, or Brotherhood of the most Glorious and Undivided Trinity, and of Saint Clement, in the Parish of Deptford, Stroud, in the County of Kent"—an institution to whose members is intrusted the management of some of the most important interests of the seamen and shipping of England. The earlier records, together with the house of the corporation, were destroyed by fire in 1714; so that the origin of the institution can only now be inferred from usage and the occasional mention of its purposes in documents of a former period. A similar society, for the like purposes, was afterward established at Hull, and also another at Newcastle-upon-Tyne in 1537; which three establishments, says Hekluyt, were in imitation of that founded by the Emperor Charles V. at Seville, in Spain; who, observing the numerous shipwrecks in the voyages to and from the West Indies, occasioned by the ignorance of seamen, established, at the *Casa de Contratacion*, lectures on navigation, and a pilot-major for the examination of other pilots and mariners; having also directed books to be published on that subject for the use of navigators. According to some authorities the incorporation was founded in the year 1515. It is probable that with Henry VII. originated the scheme, afterward carried into effect by his son, Henry VIII., of forming efficient Navy and Admiralty Boards, which then first became a separate branch of public service. During the reign of Henry VIII. the arsenals at Woolwich and Deptford were founded, and the Deptford-yard establishment was subsequently placed under the direction of the Trinity House, who likewise surveyed the navy provisions and stores. The earliest official document relating to the Trinity House now extant is a charter of incorporation made by Henry VIII. in the sixth year of his reign. An exemplification of this charter was granted by George II., in the third year of his reign.

The revenue under the management of the Trinity House arises from the dues payable to the corporation on account of light-houses, buoyage and beaconage, and ballastage; and from the interest of money in the funds, and the rent of freehold property, amounting to about £166,000 annually. Hitherto by far the greater portion of this large revenue has been expended on pensions to poor disabled seamen, and on the maintenance of their widows, orphans, etc.; and it is admitted that it has been both judiciously and economically administered. It is henceforth, however, to form part of the "Mercantile Marine Fund." The act provides that payments now chargeable on the "fund" for pensions, etc., may be commuted. The expenses of light-houses, ballastage, and beaconage are also to be charged on the "fund," and the rates of toll are to be revised and fixed by her majesty in council. The ballastage rates under the Trinity House, being a charge peculiar to the Thames, are to be made peculiarly applicable to services performed for the safety and convenience of the shipping frequenting that river.

Of this corporation Lord Palmerston lately remarked, at the annual dinner given by the board of managers, "There is, indeed, a unity of operation between the government that may have to administer the affairs of this country and this body; for it is the function of the Trinity Corporation to provide pilots for those thousands of keels that plow the waves that wash our shore; and, on the other hand, to erect those lights which warn navigators from dangers which they would otherwise have to encounter, and which point out to them the havens where safety is to be obtained."—*See article* LIGHT-HOUSES.

Tripang, or **Sea Slug** (*Biche de Mer*), a species of fish of the genus *Holuthuria*, found chiefly on coral reefs in the Eastern seas, and highly esteemed in China, into which country it is imported in large quantities. It is an unseemly-looking substance, of a dirty brown color, hard, rigid, scarcely possessing any power of locomotion, or appearance of animation. Sometimes the slug is as much as two feet in length, and from seven to eight inches in circumference. A span in length, and two or three inches in girth, is, however, the ordinary size. The quality and value of the fish, however, do not by any means depend upon its size, but upon properties in it neither obvious to nor discernible by those who have not been long and extensively engaged in the trade. In shallow water the animal is taken out by the hand, but in deeper water it is sometimes speared. When taken, it is gutted, dried in the sun, and smoked over a wood fire; this being the only preparation it receives. The fishery is carried on from the western shores of New Guinea, and the southern shores of Australia, to Ceylon inclusive. Indeed, within the last few years it has been successfully prosecuted on the shores of the Mauritius. The whole produce goes to China. In the market of Macassar, the great staple of this fishery, not less than *thirty* varieties are distinguished, varying in price from five Spanish dollars a *picul* (133⅓ lbs.) to fourteen times that price, each variety being distinguished by well-known names. The quantity of tripang sent annually to China from Macassar is about 7000 piculs, or 8333 cwt.; the price usually varying from 8 dollars a picul to 110 and 115, according to quality.—CRAWFURD's *Indian Archipelago*, vol. iii. p. 441. There is also a considerable export of tripang from Manilla to Canton. Besides tripang, *fish maws* and *sharks' fins* are exported to China from every maritime country of India.

Tripoli. This regency is the most advanced of all the Barbary states, in civilization. It possesses a vast sea-coast, extending 350 leagues, from Tunis to Egypt. With the exception of where the desert meets the sea, near Monktar, the northern or maritime part of Tripoli, for a few miles from the coast, has the same fertility and productions as Morocco and Tunis. Its area is estimated at 100,000 square miles, with a population of 1,800,000. Its products are corn and fruits, in great variety and abundance; also cotton, silk, tobacco, saffron, madder, and castor-oil. In the interior, senna, dates, and galls are the principal staples. The exports consist of dates, olives, straw mats, earthen-ware, and other domestic manufactures, partly exported by sea, and partly disposed of in barter to Bedouin traders. The other manufactures of Tripoli are carpets, thick cloaks, camlets, goats'-hair sacking, prepared skins, Morocco leather, and potash. These, together with the produce of Central Africa, which annually arrives in caravans, are exchanged for European and colonial goods. The principal trade of Tripoli is with Malta, Tunis, and the Levant. The sea-ports are Tripoli, Bengazi, and Dernah, with several others of little or no importance.

The navigation and commerce of the two principal ports, for a series of years, are thus given by French authorities: In 1846 there entered, Turkish vessels, 108; Greek, 35; Tuscan, 14; Maltese, 14; French, 14; Russian, 4; English, 3; Sardinian, 1; Austrian and Sicilian, each, 1. Total, 195 vessels; of which 167 were laden with merchandise valued at 1,872,000 francs. During the same year there cleared—Turkish vessels, 78; Greek, 25; Tuscan, 15; Maltese, 18; French, 14; English, 3; Russian, 2; Sardinian, 2; Austrian and Sicilian, each, 1. Total, 159 vessels; of which 121 were laden with produce valued at 983,000 francs. In the port of Bengazi there entered the same year 142 vessels, of which 113 were laden. Provisions (chiefly barley) and tobacco are extensively and profitably imported into Tripoli. This trade is chiefly monopolized by the Turks, Greeks, and Russians. The vessels of these countries trade with the ports of the Levant, carrying to those places cargoes of salt taken on board at Zoara.

COMMERCIAL MOVEMENTS OF THE REGENCY OF TRIPOLI IN 1851 AND 1854.

		1851.	1854.
Imports	francs	2,995,000	2,217,030
Exports	"	5,817,000	3,524,000
Total	"	8,812,000	5,821,000

Navigation returns for this port in 1851 are condensed as follows:

Entered.....204 vessels.....18,360 tons.
Cleared.....191 " .....16,879 "

FOREIGN TRADE OF TRIPOLI IN 1852 AND 1853.

Countries.	Imports.		Exports	
	1852.	1853.	1852.	1853.
	Francs.	Francs.	Francs.	Francs.
Malta	1,648,000	1,667,000	2,133,329	2,698,000
Turkey	404,000	396,000	1,350,000	1,454,000
Egypt	152,000	285,000	60,000	150,000
Tunis	184,000	226,000	310,000	607,500
Tuscany	791,000	727,000	837,379	861,000
France	554,000	867,000	278,000	614,000
Algeria	4 000	....	25 000	....
Roman states	5,000	5,000	25,000	....
Austria	150,114	799,500	4,000	5,000

The duty exacted in the Tripolitan ports is four piastres per 80 kilograms—equal to about eight cents per ton. Pilots are not often employed; when required, the captain of the port must furnish them free of expense. Quarantine regulations the same as at Constantinople. Notwithstanding Tripoli is tributary to the Ottoman empire, there is a separate treaty between the United States and that regency, ratified June 4, 1805, placing the commerce between the two countries on the footing of the most favored nation.—*Com. Rel. U. S.*

Treaties.—By the treaty concluded with Tripoli June 4, 1805, it is stipulated that the consuls and agents of both nations, respectively, shall have liberty to exercise their religion in their own houses; and those of the same religion shall not be impeded in going to the consul's house at the hour of prayer. The consuls shall have liberty and personal security given them to travel within the territories of each other both by land and sea, and shall not be prevented from going on board any vessel that they may think proper to visit. They shall have, likewise, the liberty to appoint their own dragomans and brokers. In case of any dispute arising between the contracting parties, no appeal shall be made to arms, nor shall war be declared under any pretext whatever; but if the consul residing at the place where the dispute shall happen shall not be able to settle the same, the government of the country shall state its grievances in writing, and transmit it to the other; and the period of twelve calendar months shall be allowed for answers to be returned, during which time no act of hostility shall be permitted by either party; and in case the grievances are not redressed, and a war should be the event, the consuls and citizens or subjects of both parties, respectively, shall be permitted to embark, with their effects, unmolested, on board of what vessel or vessels they shall think proper. If any disputes shall arise between citizens of the United States, or any persons under their protection, such disputes shall be settled by the consul of the United States in the same manner as stated above, in Morocco. The same provision is made in the treaty with Tripoli, in respect of homicides, as in the treaty with Morocco. The care of the property of citizens of the United States dying in the regency of Tripoli is to be committed to the care of the consul, unless otherwise disposed of by will; and no hinderance is to be interposed to the execution of any will that may appear.

"The commercial intercourse of the United States within this consular district is dependent solely on the regulations of the mother country. These regulations are set forth in the tariff settled between Turkey and Great Britain on the 31st of October, 1850, and which applies also to the United States, under that clause of our treaty with Turkey which secures to us all the privileges of "the most favored nations." The commerce of the United States with this regency stands on the same footing as that of the most favored nations. It enjoys no exclusive privileges nor suffers any peculiar restrictions. There is only a port charge of about three cents the ton, which is levied equally on foreign and national vessels.

"The true par or intrinsic value of the piastre of this country is 12½ sous, French; but we reckon it at 12½ cents. The present bey has, however, issued a gold currency, composed of pieces of 100, 80, 40, 20, and 10 piastres each, which are about 20 per cent. deficient in weight; and, consequently, in gold money the piastre is worth only ten cents. The Christian population refuse to accept this new gold currency at its nominal value, but the arbitrary power of the bey compels its circulation among his own people, and prices have advanced nominally already since its appearance, without other apparent cause. Whether absolute power can effect the magical work of maintaining in free circulation two currencies of the same denominations and names, but of different intrinsic values, remains to be seen.

"The duties on exports to the United States, as to all other countries, are, on oil, 2½ piastres the metal, which is about 5·08 gallons, United States liquid measure. Thus we have 6$\frac{1}{10}$ cents per gallon. This oil is olive-oil, and is of a quality highly esteemed in Europe. The exportation of horses and camels is prohibited, and only allowed as a special favor to individuals or governments. The exportation of grain is generally confined to the bey himself, who consequently makes his own price. A very large portion of the oil is also exported by the bey. The import duties on goods of the United States are established at 3 per cent. *ad valorem* by treaty. The internal taxes on the products of the soil are levied at 10 per cent., but the management of assessors, by assessing the crop in its growing state, frequently causes the actual tax to exceed this rate. Besides, there are octroi duties, more or less heavy, on all articles of produce sold in the cities for consumption."—*Com. Rel. U. S.* *See* TREATIES, COMMERCIAL.

Tron Weight, the most ancient of the weights used in Scotland; and though its use is now prohibited by law, it is still occasionally employed in some of the rural districts in weighing wool, cheese, butter, etc. The tron pound was not a well-defined weight, but varied from twenty-one to twenty-eight ounces avoirdupois.

Trough of the Sea, in *Marine language*, the surface of water between two waves.

Troy Weight, one of the most ancient of the different kinds used in Britain. The pound English Troy contains twelve ounces, or 5760 grains. It is used in the weighing of gold, silver, and jewels; the compounding of medicines; in experiments in natural philosophy; in comparing different weights with each eth-

er; and is now made the general standard of English weight in Great Britain and in the United States.

Before the American Association for the Advancement of Science in 1857, J. B. Gibbon, Esq., Assayer of the Mint of North Carolina, read a paper on the rise and gradual discontinuance of Troy weight in coinage and commerce. He stated that about 1900 years ago, or about fifty-two years before the Christian era, Julius Cæsar had described the inhabitants of Great Britain and Gaul as making use of brass and iron rings, by weight, for money. Gold-ring money of the Celts was also annually dug up in Ireland; and similar money was employed by the Scandinavians, on the shores of the Baltic. They were multiples of one certain ounce, or integers of its proportions—the word for ounce being claimed as a purely Celtic one. Recently an embassador wrote from Antwerp that he had purchased a gold chain of Rubens with the links stamped by the goldsmiths of the day to mark their weight and fineness. In South Africa, at the present day, there was a similar employment of metal rings; and a civilized country of antiquity, as appeared from paintings still remaining on walls, employed rings which were carried to Cush or Ethiopia. Another nation had pieces of coin stamped with the likenesses of idols for the same purpose. The old pound of the Anglo-Saxons was called Easterling, from which came the modern sterling. In France there was a pound called the pound of Rochelle, and the Germans named it the pound of Cologne. A new system, by which the pound of silver in tale was also made the pound in gross, was arranged by Charlemagne in the 8th century. In England, under William the Conqueror, it was decreed that measures, weights, etc., should remain as they had been under his predecessors. In 1256, by consent of the whole realm, it was determined that the silver penny, called Easterling, should be round, and that it should be of the weight taken from the middle of the ear. Twenty of these penny-weights were to make an ounce, twenty ounces one pound; eight pounds of silver a gallon of wine; and eight gallons of wine a bushel, the eighth part of a quarter. Troy weight was supposed to have been derived from the Eastern nations, and transmitted first to Troyes, in France, from Cairo, during the crusades. From Troyes it was carried into England by the goldsmiths, and found favor there under Henry VIII., who began to debase the standard fineness of silver coins and to reduce their weight. Before this a statute established a common standard by which silver and wheat were assumed to be the natural tests, the one of the other. Unfortunately, neither was exactly suited for the purpose. It had been found by experiment with white and red wheat, forty to forty-three grains were required to balance a grain of silver, and from twenty-eight to thirty-five or thirty-six grains of white wheat effected the same thing. In short, grains were not intended to serve as a just measure for perfect comparison, multiplication, or divlsion.

Acting upon the opinion that the laws of physical nature operate uniformly, and that the heavenly bodies are governed by fixed rules alike applicable to all matter, while Sir Isaac Newton was Master of the Mint, in the reign of George I., the vibration of a pendulum in the latitude of London, on a level with the sea, was measured, and the length made to serve as the standard of the Imperial yard of Great Britain. Weights have been based upon a standard arising from a quantity of distilled water at a certain temperature, and having a certain cubic content. Upon the advice of the House of Commons, and afterward of a committee of the Royal Society, addressed to the Prince Regent, it was determined, under George IV., that the standard made by Bird in 1760 should be the legal standard of length in Great Britain; that the pound Troy should be still continued; and that 7000 grains should be the pound avoirdupois in the British empire.

By act of Congress in 1828 it was determined that the Troy pound procured by the minister in London in 1827 should be the standard, in the United States, to regulate the coinage. Yet there were three standards still in use in the United States coinage—the standard for quantities from Great Britain, the standard for purity from France, and the standard for proportion from Spain.

In the United States system many changes had been effected in the system in force at the Mint. The Troy ounce was divided decimally, and the other proportions were discarded. The French *gramme* used for silver, and the half *gramme* used for gold, with their thousandth parts, had replaced the old carat grains; and the proportion was based upon the dollar—a credited but erroneous ounce of silver, the sixteenth part of a pound avoirdupois, divided decimally for account. The act of 1772, which established the United States Mint, was founded on the report of the first Secretary; and notwithstanding many changes in the United States, the system there was still subject to the same objections as that of England, being copied from erroneous models, and not founded with scientific accuracy on systematic, uniform, and intelligible views, such as are required for the purposes of coinage, of commerce, of the arts and professions of life, as well in Great Britain as for her colonies, and by the United States.—*See* WEIGHTS.

Truck System, or Store Account, a name given to a practice that has prevailed, particularly in the mining and manufacturing districts, of paying the wages of workmen in goods instead of money. The plan has been for the masters to establish warehouses or shops; and the workmen in their employment have either got their wages accounted for to them by supplies of goods from such depôts, without receiving any money, or they have got the money, with a tacit or express understanding that they were to resort to the warehouses or shops of their master for such articles as they were furnished with.

Truffles, a sort of vegetable production, like a mushroom, formed under ground. A few have been found in Northamptonshire; they are pretty abundant in Italy, the south of France, and several other countries. They are reckoned a great delicacy. The *pâtés au truffes d'Angoulême* are highly esteemed, and are sent as presents to very distant places.—REES' *Cyclopædia.*

Trust and Trustee. A trustee is he who undertakes to discharge a trust, and a *cestui qui trust* is the person who is entitled to the benefit of a trust. A *trust*, which is, in fact, a new name given to a use, is defined by Lord Coke to be "a confidence reposed in some other, not issuing out of the land, but as a thing collateral, annexed in privity to the estate of the land, and to the person touching the land, for which *cestui que use* has no remedy but by subpœna in Chancery."

Tschaik (*Turkish ship*), is a light galley used on the Danube, and provided with a sail and rudder. The *tschaik* generally carries from two to twelve guns, and from ten to one hundred men.

Tulips. They came to England from Vienna, A.D. 1578, and have always been among our most esteemed flowers. They became an object of commerce in the 16th century; and it is recorded in the register of the city of Alcmaer, in Holland, that in the year 1639, 120 tulips, with the offsets, sold for 90,000 florins; and in particular, that one of them, called the *viceroy*, sold for 4203 guilders! The states at last put a stop to this extravagant and ruinous passion for flowers. The tulip-tree (*Liriodendron tulipifera*) was carried to England from America, about 1663.—HAYDN.

Tulip-tree (*Liriodendron tulipifera*), one of the most remarkable of our North American forest trees. In most parts of the United States the tree is known under the name of poplar-tree. The wood is of a light color, with a greater specific gravity than white pine, and is found in most of the States and Territories. The

qualities are a moderate resistance to decay, and easy manipulation. The principal defect is the liability to shrink and warp. The wood is in common use, on account of its abundance and cheapness, for the manufacture of common furniture, shingles, and dry lumber.

Tunis. The state of Tunis possesses nearly the same natural advantages of soil and climate as Morocco. In ancient times it was one of the granaries of Rome, supplying wheat, maize, barley, olives, grapes, dates, and other fruits. Tobacco, cotton, and indigo have recently been introduced as articles of culture, and small quantities of saffron and opium are also raised. The principal manufactures of Tunis are of red caps, exported to all parts of the Mediterranean; of soap, at Susa chiefly; and of woolen, silk, and linen fabrics, and morocco leather. The chief imports by sea are cochineal, raw silk, coffee, sugar, Spanish wool (to make *tarbouches*, or red caps), wines, specie, etc. Caravans arrive annually from Central Africa, bringing slaves, senna, ostrich feathers, gold dust, gum, and ivory, which are bartered for manufactured goods, spices, and gunpowder; while others, from Constantinople, bring wax, dried skins, cattle, and sheep, in return for muslins and other woven fabrics, Tunis manties, colonial produce, essences, etc.

There are no official or reliable data from which the value of the general foreign export trade of Tunis can at the present time be gathered. The following statement of the average annual exports is based upon an estimate made by the French consul, and found in MACGREGOR'S *Commercial Regulations*:

	Francs.
Olive-oil	4,000,000
Wool	1,500,000
Red caps (tarbouches)	1,800,000
Other woolens	500,000
Wheat and pulse	280,000
Nuts, dates, etc.	90,000
Cattle	100,000
Sponges	200,000
Wax	40,000
Hides	230,000
Senna	50,000
Soap	60,000
Elephants' teeth and gold dust	400,000

Total average of exports 9,259,000 francs, or nearly $2,000,000. The principal port is Tunis, situated on a salt lake, communicating with the sea by a canal or strait. Large ships anchor in the road or bay. The other chief ports are Biserta, Farina, Hammamet, Sfax, and Gerbis. The commercial relations between the United States and Tunis are regulated by treaty of February 24, 1824.—*See* TREATIES, COMMERCIAL. No official data are at hand upon which to base an estimate of the character or value of the trade between the United States and this regency. There is no direct trade, it is believed, between the United States and Tunis, commercial movements passing mainly by way of Malta and Marseilles. Macgregor gives a statement of the imports into and exports from Tunis in 1839, of which the following is a summary:

Imports	8,089,000 piastres	= 25 cents each.*
Exports	5,376,000 "	
Total	13,465,000 "	= $3,366,250

In this total the United States figured for:

Imports from Tunis	258,000 piastres.	
Exports to Tunis	268,000 "	
Total	506,000 "	= $126,500

In 1842 there entered 341 vessels, with an aggregate of 33,321 tons; and there cleared 331 vessels, measuring an aggregate of 33,425 tons. The trade is conducted chiefly under the British, Maltese, French, Neapolitan, Sardinian, Tunisian, and Austrian flags. These import wine, spirits, iron, sugar, coffee, cotton, beans, and manufactured goods; and carry back wool, hides, wax, barilla, sponge, oil, almonds, salted fish, nuts, bones, dates, corn and meal, wax, soap, tissues of wool, etc., and leeches.

* The present value of the piastre is about 12½ cents.

The authority cited gives the navigation duties in the different ports of Tunis as follows:

Duties.	Tunis.	Susa-Monastier.	Sfax and Gerbis.
Anchorage duties	$2 62½	$1 06¼	$1 06¼
Captain of port tax	....	25	31¼
Water tax	1 25	12½	....
Odabashi tax	65	....	....
Total	$4 52½	$1 43¾	$1 37½

Besides these fixed charges, there are also incidental expenses peculiar to Tunis, viz.: 1st. All vessels which enter the Goletta Canal for repairs, or for any other purpose, pay an entrance and departure duty of $5, and $1 25 besides, daily, if the vessel is above 50 tons; 2d. A vessel taking in ballast from the land is taxed $3 75; 3d. On every vessel which finds itself unsafe in the roadstead, on account of the bad quality of its cable, or from any other reason, and wishes to get under the shelter of the mole of the Goletta, a duty of 12 caroubes (18¾ cents) per ton is imposed so long as it remains there, renewable every six months. Besides this duty, the captain of the port receives 75 cents. In addition to the foregoing, the following information is condensed from official returns communicated to this Department: The total port charges on entering the Goletta (the harbor of Tunis) amount to $6 50 for lights, anchorage, health officer, etc., for vessels of over 30 tons; under 30 tons, one half that charge. These charges apply alike to all vessels, either Tunisian or foreign.

Export duties—inconsiderable, however—are levied upon oil, wool, and soap.

The import duties on goods and merchandise are regulated by treaty, and amount to 3 per cent.[1] The articles from the United States which usually find a good market in Tunis are rum, tobacco, small freights of flour, cheap cotton fabrics, provisions, cheese, salt beef, dried beef, hams, pickles, and biscuit; but it would not be advisable to risk large cargoes of these articles. The coasting trade is permitted to all foreign vessels, without paying any other duty than those named in the tariff. The quarantine regulations are: Quarantine of observation, fixed at 10 days, is only required 7 or 8 days, though the vessel pays for 10; and when coming from any port in the Mediterranean, she pays $1 25 per day. Besides this tax others are levied, amounting in the whole to $25 62½. On vessels from the Levant, these taxes, according to Macgregor, are levied for 20 days, and amount to 202 p. 8 c. ($50 52). These are the rates at the port of Tunis. At the other ports the quarantine of observation is usually 10 days; expenses nearly the same.—*Com. Rel. U. S.*

With the exception of certain privileges granted to Great Britain and Spain, no privileges permitted to the commerce of foreign nations are denied to the United States. By treaty, Great Britain obtained the privilege of exporting annually for the support of the garrison of Gibraltar, on payment of a duty of $5 per ox (though the fixed duty is $10), 2000 oxen. Spain, when formidable, obtained by treaty the following privileges, viz.: the exportation of oxen on paying a duty of $3 per ox, instead of $10; fowls at 15 cents per dozen instead of $1; pulse at 30 cents per 1½ bushel instead of 90 cents; and a proportionate reduction on all other eatables. These privileges, however, are at present disregarded. No restrictions are imposed on the commerce of other nations nor on that of the United States.

The port charges and dues levied on vessels of the United States are simply the anchorage dues, which are exacted according to the tonnage of the vessel. The U. S. Consul says, "I am led to think that the restrictions which obstruct a direct trade with the United States are the high duties levied in the United States on produce in general of this country. If such duties were reduced to a trifling amount, as they are in Great Britain, a powerful and salutary influence would be the result. Take, for example, the coarse wool of this

country, which enters so largely into our manufactures. Remove entirely, when imported from Morocco in American bottoms, the duty from this one article, and that direct trade which twenty-four years ago existed will again spring up. The great market for the wool of Morocco is even now the United States; but our ship-owners derive no benefit from the demand. It finds its way to the United States through Marseilles and Gibraltar, and French and English vessels make a monopoly of the carrying trade. If, with the extra expenses of transhipment, the additional transportation, the extra commissions, insurance, etc., our manufacturers now find it to their interest to purchase largely of the wool of this country, how much greater will be the demand, and consequently the employment, of American vessels, if a direct trade between the United States and Morocco is brought about? It is true, the export duties of this country are liable to sudden fluctuations; but contracts for certain periods can be made with the sultan, which exempt the contracting parties from being affected by those fluctuations."—*Consular Returns U. S.* 1854-'55.

Tunis, the capital of the regency of the same name, on the northern coast of Africa, the Goletta fort being in lat. 36° 48′ 30″ N., long. 10° 25′ 45″ E. The Bay of Tunis is somewhat in the form of a horseshoe. Its western extremity, Cape Carthage, is situated about four miles northeast from the Goletta; and its eastern extremity, Cape Zafran, bears from Cape Carthage east by south, distant about 13 miles. The bay is about 16 miles deep, and has good anchorage all over, in from 10 to 4 fathoms water. It is exposed to the north and northeast gales; but they seldom occasion any damage. Tunis lies on the west side of the bay, being separated from it by a large lagoon, having, where deepest, about 7 feet water. The port is at the Goletta, or channel, passing through the narrow belt of land separating the lagoon from the sea; the entrance to it is by a canal, in which there is at all times 15 feet water; and ships may use it on paying a fee of three dollars a day. It is not, however, much resorted to—all vessels of considerable burden loading and unloading from their moorings in the bay by means of lighters. The population of Tunis has been variously estimated; and may probably amount to 100,000, being the most populous of any African city after Cairo. The streets are narrow, unpaved, and filthy. The buildings, though of stone, are mean and poor; and the inhabitants present the picture of poverty and oppression. There is a fort at the Goletta of considerable strength.

Trade.—Notwithstanding the various drawbacks arising out of the nature of the government, and the ignorance and prejudices of the people, commerce and industry are in a more advanced state in Tunis than in any other part of Northern Africa, Egypt excepted. Though subject to droughts, the climate is, on the whole, excellent. The soil still preserves that exuberant fertility for which it was famous in antiquity.

Non quicquid Libycis tertt
Forveos area mossibus.—(Seneo. *in Thyest.*)

It seldom receives any other manure than that of sometimes burning the weeds and stubble; and yet, in despite of its slovenly culture, the crops are luxuriant; and there is generally a considerable excess of wheat and barley for exportation. Corn is principally shipped at the Biserta, about 50 miles west of Tunis. Olive-oil is one of the principal articles of export. It is of various qualities; some good, and some very indifferent. Susa is said to be the best place for its shipment. Soap of an excellent quality is largely manufactured in the regency. It may be had either soft or in wedges. The soft is made of barilla and pure oil, and is much esteemed. The hard soap is made from the lees of oil, and is reckoned very strong. The principal soap-works are at Susa. Little, however, is prepared on a speculative anticipation of a demand for exportation; but any quantity may be had by contracting for it a few months before the period when it is wanted. A sort of woolen skull-caps are largely exported. They are in extensive demand all over the Levant, and are nowhere made in such perfection as here. Ivory and gold dust, hides, wax, morocco leather, sponge, barilla, coral, dates, ostrich feathers, etc., are among the articles of export. The imports from Europe consist of woolens, coarse German and Irish linens, cotton stuffs, hardware, sugar, coffee, spices, tin plates, lead, alum, dye-stuffs, wine, silk, Spanish wool, etc. There is very little direct trade between Tunis and England; but a good deal is indirectly carried on, through the intervention of Malta and Gibraltar. Marseilles has probably the largest share of the trade with the regency. In 1880 there entered the different ports of Tunis 194 ships, of the burden of 20,747 tons, exclusive of those engaged in the trade with the other African states and Turkey. Exclusive of the trade by sea, a considerable trade is carried on between Tunis and the interior of Africa, by means of caravans. These import slaves, gold dust, ivory, feathers, drugs, etc. They carry back cotton stuffs, linens, hardware, spices, cochineal, etc. Naval and military stores imported into Tunis pay no duty. Other articles pay a duty of 3 per cent. *ad valorem* on a rated tariff. Obstructions arising out of monopolies, etc., are occasionally thrown in the way of exportation; and in general it is necessary, before proceeding to ship, to obtain a *tiskery*, or license to that effect, from the bey. That, however, may be, for the most part, procured without much difficulty.

Tunnels. The earliest tunnel for the purpose of internal navigation was executed by M. Riguet, in the reign of Louis XIV., at Beziers, in France. The first in England was by Mr. Brindley, in the Duke of Bridgewater's navigation, near Manchester, about 1760. Era of the Gravesend Tunnel, 1800—the report upon it, 1801. The Thames Tunnel projected by Mr. Brunel in 1823. This last wonderful undertaking was completed and opened for foot passengers March 25, 1843.—Haydn. See *Thames Tunnel.* The principal railroad tunnels in the United States are: 1. On the Dayton Railroad, at Cincinnati, 10,080 feet in length. 2. Kingwood Tunnel, on the Baltimore and Ohio Railroad, 5000 feet. 3. Blue Ridge Tunnel, on the Virginia Central Railroad, about 5000 feet. 4. The Hoosac Tunnel, through a granite formation, western portion of Massachusetts (now in progress). 5. On the Kentucky Central Railroad, between Cincinnati and Lexington, about 3500 feet. 6. The Bergen Tunnel, on the New York and Erie Railroad, near Jersey City, about 5000 feet (now in progress).

Thames Tunnel.—Projected by Mr. Brunel, to form a communication between the two sides of the river, at Rotherhithe and Wapping, the most extraordinary construction of ancient or modern times. The shaft was begun in 1825. At a distance of 544 feet from the shaft the first irruption took place, May 18, 1827. The second irruption, by which six workmen perished, January 12, 1828. The length of the tunnel is 1300 feet; its width is 35 feet; height 20 feet; clear width of each archway, including foot-path, about 14 feet: thickness of earth beneath the crown of the tunnel and the bed of the river, about 15 feet. The tunnel was opened throughout for foot passengers March 25, 1843.

Turban, the head-dress of many of the Eastern nations, consisting of two parts, a cap and a sash, the latter artfully wreathed about the head. The sash of the Turk's turban is white linen; that of the Persians, red woolen. These are the distinguishing marks of their different religions. Lophi, King of Persia, being of the sect of Ali, was the first who assumed the red color, to distinguish himself from the Turks, who are of the sect of Omar.—Haydn.

Turbith, or **Turpeth**, the cortical part of the root of a species of *Convolvulus*, brought from different parts of the East Indies. It is a longish root about the thickness of the finger, resinous, heavy, of a brownish hue

without and whitish within. It is imported cloven in the middle, lengthwise, and the heart or woody matter taken out. The best is ponderous, not wrinkled, easy to break, and discovers to the eye a large quantity of resinous matter. At first it makes an impression of sweetness on the taste; but, when chewed for some time, betrays a nauseous acrimony. It is used in medicine, but only to a small extent.—Lewis's *Mat. Medica.*

Turbith (mineral), the name given by chemists to the sub-sulphate of mercury.

Turbot (*Pleuronectes maximus*), a well-known and highly esteemed species of fish. Considerable quantities of turbot are now taken on various parts of the coasts of Great Britain, from the Orkneys to the Land's End, yet a preference is given in the London markets to those caught by the Dutch. The latter are said to have sometimes drawn as much as £80,000 in a single year for turbots sold in London.

Turkey. The countries included under the above general designation of Turkey, the Levant, etc., are Turkey (European and Asiatic), the pachalic or vice-royalty of Egypt, the kingdom of Greece, and the republic of the Ionian Islands—a group in the Mediterranean, off the west coast of Greece and Epirus, consisting of seven principal and several smaller islands.

The Ottoman empire includes Turkey in Europe, Asia Minor, Syria, Egypt, and the other tributary states in Africa and Asia. Prior to the Greek revolution, Turkey in Europe possessed an extensive maritime frontier (nearly two-thirds of her boundary), having many excellent sea-ports. The dismemberment of Greece, and other subsequent political changes, and the cession of Bessarabia and a part of Moldavia to Russia, have considerably reduced the limits of the dominions of Turkey in Europe. In Africa her power is almost annihilated, and even in Asia her authority is considerably weakened. Algeria has been wrested from her by France; Egypt merely acknowledges her sovereignty by the payment of an annual tribute; and the Arabians scarcely recognize the sultan as the head of their religion. The limits and area of the Turkish empire are not exactly defined, and, consequently, very different estimates have been formed of the extent and population both of European and Asiatic Turkey. The most recent authority estimates the area of Turkey in Europe at 210,000 square miles, and its population at about 15,000,000; and that of Turkey in Asia at 437,000 square miles, with a population of about 16,000,000. Turkey in Europe possesses a soil remarkably fertile, and a climate highly favorable to the production of the vine, olive, maize, wheat, and rice, vegetables of every description, fruits, tobacco, hemp, flax, the mulberry, various trees from which the most valuable gums are extracted; and in the southern part the sugar-cane and the cotton-tree. To these add the rich pasturages for horses, cattle, and sheep, every variety of game and fish, with a great abundance of mineral riches, together with the geographical position and excellent harbors of European Turkey, and a general idea may be formed of her great natural resources. The principal species of grain cultivated in European Turkey is Indian corn. Rice is cultivated along the banks of the Maritza and other marshy tracts in the southern provinces, but not in sufficient quantities for consumption. The deficiency is supplied by Egypt and Asia Minor.

Turkey in Asia possesses almost every natural element of industrial and commercial greatness; but agriculture is wholly neglected, and productive industry is altogether unknown.

About nine-tenths of the extensive surface of Egypt is sterile and unproductive. The remaining one-tenth, being irrigated by the overflowings of the Nile, yields the richest and most luxuriant crops, which, with the various commodities that pass through Egypt from Arabia, India, and Nubia, form the elements of a large export trade. The crops of Egypt are wheat, Indian corn, maize, rice, flax, hemp, clover, cotton, indigo, sugar-cane, tobacco, oranges, and the most delicious fruits.

The sea-ports of Turkey in Europe are as follows: Constantinople, one of the safest ports in the world, and capable of affording shelter to 1200 of the largest class ships; Salonica, at the bottom of the gulf of that name, an excellent roadstead, and much frequented; and Enos, the port of Adrianople, on the Maritza. Gallipoli and Rodosto, on the Sea of Marmora; Varna, on the Black Sea; and Ibrahilow, Taultcha, Galatz, and Jassaktchi, on the Danube, are ports of considerable commercial activity.

On the island of Candia there are two ports, Candia and Canea, but their harbors are neither commodious nor safe. Besides these, there are several other ports, which afford excellent shelter, and in the possession of a more industrious and commercial people than the Turks would attract considerable trade.

The sea-ports of Turkey in Asia are Erekli; Scutari, opposite Constantinople; some indifferent ports on the Sea of Marmora; and Smyrna, the principal port of Asia Minor, and the most important in foreign commerce.

In Egypt the sea-ports are Alexandria, Rosetta, Damietta, and Cairo, at the mouths of the Nile; and Suez and Kosseir, on the Red Sea.

The principal exports of Turkey are wool, goats' hair, cattle, horses, hides, hare-skins, wheat, raw cotton and silk, tobacco, raisins, figs, almonds, mastic and other gums, gall-nuts, vallonea, leeches, honey, wax, saffron, madder, anise seed, linseed, turpentine, safflower, orpiment, meerschaum pipes, whetstones, carpets, silk and cotton fabrics, leather, copper, and metallic wares, with Arabian, Persian, Indian, and Chinese goods.

Next to Constantinople, Adrianople and Salonica are the chief centres of trade; the former, being a principal depôt for goods brought to Constantinople from England, France, and Italy, supplies all the fairs throughout Roumelia and Bulgaria.

Next to Smyrna, Aleppo is the chief seat of commercial movements in Asia. Caravans bring to this mart pearls, shawls, Indian and Chinese goods, from Bussorah and Bagdad; camels from Arabia; cotton stuffs and thread, morocco leather, goats' hair, and galls, from the pachalics of Mosul, Diarbekir, Orfa, Aintab, etc.; furs, goats' hair, wax, gum-ammoniac, etc., from Asia Minor; silk, Mocha coffee, soap, scented woods, ambergris, drugs, and pearls, from Syria and Arabia; rice, coffee, and Egyptian produce, from Latakia; silk manufactures from Brusa and Damascus; European and United States cotton stuffs, woolens, printed muslins, hardware, watches, wrought amber, and fur, from Smyrna and Constantinople.

The treaty of Adrianople opened the Black Sea to the commerce of the world, and the passage of the Bosphorus and Hellespont is free to the flags of all nations. The importation of all articles of foreign commerce is admitted at extremely moderate duties. These are only 5 per cent., viz.: 3 per cent. on goods when landed, and 2 per cent. on their being admitted to consumption. The duties on exports of native production are 12 per cent., of which 9 per cent. is paid when the goods arrive at the port whence they are to be exported, and 3 per cent. on their being shipped. This is a very liberal tariff; though a reduction of the export duty, even should the import duty of 5 per cent. be raised to 10 or 12, would result most favorably to the commerce of Turkey with foreign countries.

Constantinople.—The harbor of Constantinople is deep, well sheltered, and sufficiently capacious to afford safe anchorage for 1200 of the largest-sized ships. Scutari, on the opposite shore of the Bosphorus, one mile distant from Constantinople, is the place of rendezvous for caravans from Persia, Armenia, and other

places in Asia that trade with European Turkey. It is also the seat of extensive silk, woo'en, and cotton manufactures.

The only European countries with which the United States could successfully compete in the trade of this port are England and Austria. The vessels of the former import iron, colonial produce, cotton and woolen tissues; and from Trieste, Austria sends also colonial produce, such as cotton, sugar, molasses, rum, rice, tobacco, etc., and the various manufactures which are always found in abundance in the extensive warehouses of that port. The number of vessels which entered Constantinople in 1852 were: sailing vessels, 9220; steam vessels, 599; total, 9819. Of these there were from Austria 459 sailing vessels; from Great Britain, 584; from France, 244; from Brazil, 16; and from the United States, 5. The share assigned to these countries respectively, in carrying the trade of Constantinople during 1852, is thus given: Under the British flag there entered during the year 1687 sailing vessels, and 66 steam vessels; under the French flag, 236 sailing, and 55 steam vessels; and under the Austrian flag, 1280 sailing, and 213 steam vessels. Under the flag of the United States there arrived five sailing vessels, and one propelled by steam. It is estimated that Constantinople requires annually, for consumption alone, about 6,500,000 lbs. of coffee, 1,200,000 lbs. of sugar, 300,000 lbs. of pepper and spice, 2000 puncheons of rum, and large quantities of cheap cotton goods. These are supplied chiefly from the markets of Western Europe, Alexandria, and North and South America.

Salonica.—Next to Constantinople, Salonica (situated at the bottom of the Gulf of Salonica), the capital of Macedonia, is the most important port of Turkey in Europe. In 1850 its maritime commerce reached upward of $3,500,000, viz.: about $2,000,000 for imports, and $1,500,000 for exports. The foreign trade of this port is chiefly engrossed by the British and French flags. The imports consist chiefly of cheap cotton and woolen cloths, and various other manufactures. Its exports are wheat, barley, maize, timber, wool, sponge, raw silk, wine, sesamum seed, tobacco, and staves. Colonial produce and manufactured goods are supplied to this port—the former from second and third hands—by England and Austria. There is nothing to prevent the United States from participating in the trade in this species of merchandise. Neither Austria nor England could compete with this country in supplying the vast quantities of colonial produce, and the cheap white and printed cottons, which are required for consumption in this market. In addition to the supplies needed to meet the daily wants of its 100,000 inhabitants, Salonica furnishes large quantities of colonial and manufactured goods for the yearly fairs of Parlepi, Lucca, and Seres, where the sales are always made for cash. The high price of French cotton and woolen cloths will always preclude the merchants of France from successful competition in this branch of trade; and the heavy expenses attending the circuitous trade through Marseilles, Smyrna, Constantinople, Trieste, and Venice, would necessarily favor direct exportations from the United States. The prices at Salonica are always from 10 to 12 per cent. higher than at Constantinople or Smyrna.

The navigation returns for the year 1853-'4 exhibit the following results:

	Inward.	Outward.
In 1853	113,4[illegible]8 tons.	111,767 tons.
In 1854	70,845 "	81,102 "

This decrease has been principally under Turkish and Greek flags, though there has also been a decrease under British, French, and Sardinian flags, but not in the same proportion.

The gross returns of trade at the port of Salonica, for the year ending December 31, 1854, show a considerable increase in the import trade, viz.: Value of imports in 1854, $3,770,235; and in 1853, $2,857,765. But the returns exhibit a still more considerable increase in the value of the outward trade, viz.: Value of exports in 1854, $5,492,080; and in 1853, $3,476,050. This large increase, both in the inward and outward trade with the port of Salonica, may be regarded as an evidence of the improving state of the country.

Galatz, a town of Moldavia, Turkey, on the left bank of the Danube, in latitude 45° 25′ N., longitude 28° E. Though at some distance inland, Galatz may be said to be the port of the Danube. Of the three principal mouths of the river, the Soulinch (or middle) mouth, in latitude 45° 10′ 30″ N., and longitude 29° 41′ 20″ E., is the only one accessible by vessels of large burden. The depth of water at its entrance varies from 10 to 14 feet; from the bar up to Galatz there is nowhere less than 18 feet. Lighters are stationed without the bar to partially unload large vessels. Vessels of 300 tons burden can lie at the quays.

COMMERCE OF MOLDAVIA IN 1855.

	Imports.	Exports.
Port of Galatz	1,377,638	126,451,025
By Austria	42,277,577	37,014,262
Total (piastres)	43,655,315	163,465,288

Smyrna.—This port, the chief commercial emporium of Turkey in Asia, has an excellent harbor, and ships of large burden can load and discharge close to the quays. Its principal foreign trade is conducted with Great Britain, Austria, France, and the United States. Its exports consist of silk, raw cotton, carpets, copper, opium, hides, madder, wool, besides goats' hair and skins, vallonea, olive-oil, drugs, gums, sponge, figs, raisins, and nut-galls. Imports comprise coffee (upward of 6,000,000 lbs. annually); woolen, cotton, and silk fabrics; metals, raw and manufactured; sugar, indigo, spirits, cochineal, and spices. The following statement shows the quantities and values of wool imported into the United States from Turkey during the five years ending June 30, 1855, together with the aggregate quantities and values of the same from all countries during the same period:

Years.	From Turkey.		From all Countries.	
	Quantities.	Values.	Quantities.	Values.
1851	5,238,292	$479,355	32,548,491	$3,835,157
1852	3,355,320	283,656	18,341,2[illegible]8	1,[illegible]30,711
1853	4,351,251	372,012	21,595,07[illegible]	2,66[illegible],718
1854	4,360,326	400,285	20,200,110	2,822,185
1855	4,676,747	416,222	18,534,415	2,072,139
Aggregate	21,981,944	$2,017,530	111,21[illegible],3 3	$13,327,910
Annual aver.	4,396,389	403,506	22,243,87[illegible]	2,645,582

From the Argentine republic the United States receives one-third of its raw wool. Next to this country ranks Turkey, in this regard; and the third place is due to Chili. In 1855, of the entire quantity imported, amounting to 18,534,415 lbs., valued at $2,072,139, there came from Turkey 4,676,747 lbs., valued at $416,222; of which Turkey in Asia supplied 4,261,250 lbs., valued at $386,305. The principal imports into Smyrna, in vessels of the United States, are coffee, sugar, rum, coarse cottons, spices, and dye-stuffs; for which they carry home, in return, cargoes of wool, opium, copper, fruit, oil of roses, and wine. The navigation of Smyrna is steadily increasing. In 1840 there entered 969 vessels of all nations, measuring 107,596 tons; of which number there were 23 American vessels, measuring 4304 tons.—*See* SMYRNA.

The commerce of this port during 1851 amounted to nearly eleven millions of dollars. This trade was thus distributed:

Great Britain	31,996,563 francs.
Austria	13,856,803 "
France	7,954,177 "
United States	6,475,945 "
Russia	2,557,906 "
Holland	911,103 "
Sardinia	637,596 "
Tuscany	466,295 "
Belgium	184,763 "

Beyrout.—Beyrout is the sea-port of Damascus, and

the chief centre of the trade of Syria. Its imports consist of muslins, cottons, tin, hardware, cloths, and various kinds of manufactures. Its exports are silk, galls, madder, gums, wine, and oils. The imports at this port in 1851 amounted to about $4,000,000, and its exports to $3,000,000. During the same year there entered and cleared 2354 vessels, measuring an aggregate of 219,277 tons. The commercial movements of the port of Beyrout and its dependent trading towns, Tripoli, Caiffa, and Latakia, amounted in 1853 to a total of 45,689,142 francs, or an increase over 1852 of 4,500,000 francs. The following summary for these years is taken from French official authorities:

	Imports.	Exports.	Total.
In 1853..... francs	23,848,740	21,840,402	45,689,142
In 1852..... "	20,863,881	20,266,860	41,130,741

The tonnage employed in the trade of Beyrout the same years was: In 1853, 209,861 tons; and in 1852, 241,978 tons. This decrease is owing to a falling off in the coasting trade, especially in cereals, occasioned by the short crops of 1853.

In the general import movement, England holds the first rank—tissues, cotton yarn, and cotton goods generally, being the chief imports from Great Britain into Syria. France occupies the second rank; the imports from that country into Beyrout in 1853 amounting in value to 3,674,726 francs. Next to France comes Austria. The returns show a value of 6,714,242 francs assigned to imports under the Austrian flag; but these figures include the value of all the merchandise imported in the Austrian steamers that ply between Constantinople and Smyrna. The actual imports from Austria into Beyrout amount to about one half of this sum. Trieste furnishes but little for the consumption of Syria. The imports into Syria from that entrepôt do not exceed 150,000 francs, and consist of colonial wares, and German tissues purchased in the warehouses of that city. Egypt supplies Syria, through the port of Beyrout, with grains, especially rice, to a value of about 2,467,950 francs. During the past few years mercantile houses of Boston, New York, and Philadelphia have established direct relations with Syria. The washed and unwashed wool of that country forms the basis of their operations. In 1854 the first cargo of refined sugar from Boston arrived at Beyrout. The success which has attended this enterprise will most probably lead to an important trade in this description of merchandise, in exchange for wool and other Syrian products. The chief obstacle to an immediate expansion of this trade appears to be the duty of 30 per cent. with which the raw wool is burdened in the United States, leaving but a small margin for profit on the importation of this leading product. How important this trade with Syria, as well as with Turkey generally, and other wool-producing countries might become, may be inferred from the following statement of facts. In 1855 there was imported into the United States, as already stated, 18,534,415 lbs. of wool. The annual production of wool in the United States, assuming that the quantity returned for 1850, as per United States census, affords a fair average—amounts to 52,516,959 lbs. This, added to the quantity imported, gives 71,051,374 lbs. The quantity annually exported reduces this figure, say, in round numbers, to 70,000,000 lbs. for consumption in the different and numerous manufactories in the United States. How much of this is consumed in the manufacture of carpets there is no means at hand of determining with any accuracy; but it is stated in a publication of high authority—the *Scientific American*—that in the village of Thompsonville, Connecticut, alone, there is used annually in the manufacture of Brussels, Axminster, and other costly qualities of carpeting, 10,000,000 lbs. of wool, or more than one half the whole quantity imported, and one-seventh part of the aggregate quantity imported and grown in the United States.

The value of the foregoing statement of facts will be better understood when it is added that the United States import annually—taking the importations of 1855 as an average—woolen manufactures of various descriptions to the value of $27,000,000, of which England furnishes nearly two-thirds. The total number of woolen manufactories in the United States in 1850 was 1559; capital invested, $28,118,650; lbs. of wool consumed, 70,862,829; value of raw material, $25,755,991; hands employed, males, 22,678; females, 16,574; value of products, $43,207,545—in which are included 82,206,652 yards of cloth, and 4,294,336 lbs. of yarn, besides blankets, hats, etc. Were the raw material supplied in sufficient quantities, the census of 1860 would probably add 100 per cent. to the preceding figures. The foreign trade of Beyrout is carried on principally by large class steamers, under the Austrian, French, and British flags, which visit this port regularly, and find always abundant freight, consisting of the products of Syria and the vast region which lies between Skaneroom and the rivers Euphrates and Tigris. The prosperity of Beyrout and the surrounding country is indicated by the fact, that while the population was only 8000 in the year 1844, it is now estimated at between 50,000 and 60,000. The steamers of the Austrian Lloyds Company, in March, 1856, are said to have numbered 59, with 10,000 horse-power, and a measurement of nearly 30,000 tons. The United States consul at that port, writing under date of October 5, 1855, says: "I learn, upon the best authority, that the people of this country consider the cloth manufactured in the United States superior in quality to that of England; but since the pieces of American goods do not uniformly contain the same number of yards like the English pieces, they are slow to purchase, owing to the power of old ideas and habits. It would be of great service to the manufacturers if they understood this fact, and would regard it."

Candia.—The commerce of this island is conducted through the ports of Retino, Canea, and Candia. Its exports consist chiefly of olive-oil, barley, wheat, wine, raisins, cotton, flax-seed, almonds, Indian corn, and soap. The agricultural productions of Candia are estimated at a value of 18,500,000 francs per annum. Its manufactures amount in value to about 6,000,000 francs, of which soap appropriates 4,000,000, and coarse cloths for consumption 2,000,000 francs. There are on the island 47 soap factories, which yield annually about 13,000,000 lbs. of soap; and 3000 oil-presses in active operation. About 40,000 lbs. of silk are produced annually on this island, of a quality equal to that of Adrianople.

The imports and exports during a period of four consecutive years were:

	Imports.	Exports.
In 1848.....	$1,050,195	$812,666
In 1849.....	1,078,030	1,237,400
In 1850.....	1,154,215	2,667,845
In 1851.....	618,680	879,474

Total number of vessels arriving in the ports of Candia in 1853, 1173, measuring an aggregate of 50,747 tons. The imports during the same year reached $1,028,212, and the exports $1,972,713. The navigation and commerce of Candia for 1854 and 1855 are shown in the subjoined statement:

Ports.	Importations.			Exportations.		
	No. of Vessels.	Tons.	Value	No. of Vessels.	Tons.	Value
Canea.....	667	31,420	$1,111,756 80	645	28,417	$770,880 16
Retino.....	135	5,148	207,448 80	139	6,057	257,655 20
Candia.....	217	10,924	378,480 60	225	10,964	569,280 00
Total for 1855.....	1019	47,501	$1,697,685 60	1009	44,438	$1,730,516 16
Total for 1854.....	891	41,122	1,070,971 00	801	40,063	1,097,669 00

PRINCIPAL IMPORTS INTO CANDIA FOR 1855.

Articles.	Quantities.	Values.
Butter.....cwt.	1649	$31,040
Dried codfish..... "	4318	25,320
Hides and leather.....	....	65,440
Hardware.....	....	7,600
Furniture.....	....	11,200
Herrings and sardines.....bbls.	5870	27,688
Rice.....	....	10,040
Rum.....	....	3,316
Soda ash.....	....	48,192
Tobacco.....	....	10,800
Cotton yarn.....	....	22,000
Brown cottons.....	....	0,000
Sundry manufactures.....	....	441,989

PRINCIPAL EXPORTS FROM CANDIA.

Articles.	Quantities.	Values.
Olive-oil.....tons	1,269	$242,261 00
Soap.....cwt.	68,845	475,525 84
Sheep skins.....No.	13,352	1,784 48
Raw silk.....pounds	8,525	22,320 00
Cheese.....cwt.	362	3,100 00
Oranges and lemons.....No.	5,000,000	1,800 00
Chestnuts.....cwt.	2,000	4,000 00

Candia abounds in produce adapted to the American market; but the direct trade between the United States and that island is as yet unimportant. So long, indeed, as the present duties of 30 and 40 per cent. are levied on their staple exports of coarse wool, olive-oil, soap, etc., it can scarcely be expected that this trade will increase to any considerable extent. It is stated, in a consular return from Candia, that a reduction of these duties, as well as of the duty on raw silk, would tend to establish a highly respectable and direct American intercourse with the ports of Candia, sufficient, probably, to compete with that of Great Britain and France. In consequence of the almost nominal duty upon the leading productions of the island in Great Britain, the commercial intercourse with England is fast increasing.

General Remarks on Turkey.—The treaty between the United States and the Ottoman Porte dates as far back as May 7, 1830. Its preamble, however, declares that it is "not limited as to duration," and it consequently regulates the intercourse between the countries at the present time. Its principal commercial features are—that the merchants of either country, in the provinces, ports, etc., of the other, shall pay the same duties and other imposts that are paid by the merchants of the most friendly or favored nation; and that merchant vessels of the United States shall have liberty to pass the canal of the imperial residence, and go and come in the Black Sea, in like manner as vessels of the most favored nation. The tariff of duties is based on an *ad valorem* system, viz.: Imports 5 per cent., and exports 12 per cent., including, as to both, internal duties. The value of merchandise may be revised every four or five years by commissioners on the part of the different governments, conjointly with agents appointed for that purpose by the Turkish government. The United States have hitherto appointed no commissioners for this adjustment of valuation; and it has been represented to the Department that the existing valuation on British merchandise, especially cotton goods and rum, subjects to heavy discriminations similar articles of the United States, owing chiefly to the difference in weight and prices. Since the return of peace, many improvements, tending to facilitate and improve the commercial intercourse of Turkey with foreign nations, have been completed or projected. Among others, the light-house system has undergone extensive improvements, and uniform light-dues established for the Bosphorus and Dardanelles, viz.: 50 piastres (between $2 and $2 50) for every 100 tons each strait, or 100 piastres per 100 tons for both, entering, and the same returning. At Constantinople there are, properly speaking, no port charges; but a small fee is required on vessels passing through the Golden Gate to discharge their cargoes.

The idea of connecting the Mediterranean with the Red Sea by means of a ship canal across the isthmus of Suez has long been entertained. The level of the latter sea is known to be higher than that of the former by thirty-two feet, and the isthmus was at one time submerged. The levelings, with a view to a canal, which were prosecuted with care during the occupation of the French army, have been followed up by the Viceroy of Egypt, and a plan of the work has recently been settled by a European commission of engineers assembled in Paris to discuss the details. This commission has rejected all plans involving indirect routes across Egypt, and has adopted the principle of a direct cutting from Suez to the Mediterranean. The entrance into the Mediterranean, to be called Port Said, will have an inner basin, and the channel will be 1312 feet in breadth. The entrance at the Red Sea, the port of Suez, will also have an inner basin, and the channel will have a breadth of 984 feet. Capital sufficient for the accomplishment of this work is said to have been subscribed, and the work actually commenced. Another canal, which has long been contempla[illegible], but opposed by Russia, as menacing the prosperity of Odessa and her trade in the Black Sea and the Levant, is now considered in a fair way of accomplishment. This canal will be about fifty miles in length, connecting the Danube with the Black Sea, and shortening the distance from Constantinople to Vienna some 500 miles, besides obviating the difficult navigation and the pestilential miasma near the mouths of that river. A charter has been granted, and a company of capitalists organized.—*Com. Rel. U. S.*

Consular Officers in Turkey.—In Mohammedan and pagan countries each Christian state asserts for its subjects more or less of exemption from the authority of the local sovereign. Thus, at the present time, throughout Christendom, the general rule prevails that foreigners are subject in all criminal and in most civil matters to the local jurisdiction; but in all Mohammedan and pagan states a different rule prevails.

The treaty between the United States and Turkey provides that "if litigations and disputes should arise between the subjects of the Sublime Porte and citizens of the United States, the parties shall not be heard, nor shall judgment be pronounced, unless the American dragoman be present. Causes in which the sum may exceed five hundred piastres shall be submitted to the Sublime Porte, to be decided according to the laws of equity and justice. Citizens of the United States of America, quietly pursuing their commerce, and not being charged or convicted of any crime or offense, shall not be molested; and even when they may have committed some offense, they shall not be arrested and put in prison by the local authorities, but they shall be tried by their minister or consul, and punished according to their offense, following in this respect the usage observed toward other Franks." Under the existing treaty between the United States and Turkey, our commerce is placed on the footing of the most favored nations; thus securing to our merchant vessels the privilege of trading to all the points of Turkey in Europe, Asia, and Africa, on the same conditions as those granted to the most favored nations. Thus our vessels may now trade to the ports of Egypt and Asia Minor, to the Turkish islands of the Archipelago, and to the Ottoman ports of Europe, and on the Asiatic shore of the Black Sea. This is at once an immense field for the enterprise of our merchants and seamen. Many facilities are thus offered for the extension of our commerce with the nations of the East; and consular officers may render important services to their countrymen by collecting all the information in their power in regard to the productions and commerce of these countries, and transmitting it to the State Department, by which it will be published from time to time for the general advantage of American citizens. —*See articles* CONSTANTINOPLE, BEYROUT, GALATZ, and SMYRNA.

COMMERCE OF THE UNITED STATES WITH TURKEY, THE LEVANT, ETC., FROM OCTOBER 1, 1820, TO JULY 1, 1857.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1821.....	$30,883	$406,997	$437,880	$397,680	....	$91,578	1,393	....
1822.....	6,124	405,197	411,321	364,677	$157,006	13,870	1,418	....
1823.....	4,817	559,783	564,600	703,761	68,000	70,381	1,876	....
1824.....	25,171	384,257	409,428	471,398	....	48,580	2,153	....
1825.....	34,373	364,591	398,964	840,799	....	22,600	1,917	....
1826.....	46,997	271,438	318,335	421,032	....	4,091	1,923	....
1827.....	151,734	470,325	602,059	783,128	50,000	11,587	3,109	....
1828.....	78,874	124,567	202,941	408,533	....	11,405	603	....
1829.....	21,600	47,384	74,984	293,237	....	488	687	....
1830.....	75,801	337,539	413,340	417,392	....	45,018	2,837	....
Total...	$461,834	$3,572,079	$3,533,912	$5,190,377	$275,006	$329,158	17,266	....
Sept. 30, 1831.....	$38,503	$298,304	$336,807	$521,508	$29,500	$6,368	2,935	....
1832.....	64,722	681,896	746,608	923,629	2,100	4,819	4,805	....
1833.....	167,208	518,471	685,679	786,044	26,451	3,674	4,514	203
1834.....	62,458	521,221	583,679	569,511	20,840	321	2,246	....
1835.....	63,202	216,822	280,024	387,553	2,752	7,360	3,010	....
1836.....	99,085	534,949	634,034	975,371	23,000	....	3,531	....
1837.....	36,659	74,653	111,312	692,161	....	2,700	484	1759
1838.....	142,448	115,461	257,909	206,533	300	4,282	1,293	....
1839.....	87,320	266,054	349,374	629,190	....	2,530	2,232	....
1840.....	119,745	156,873	276,618	563,476	1,028	....	2,187	....
Total...	$877,350	$3,184,004	$4,062,044	$6,346,060	$112,871	$31,554	27,237	1962
Sept. 30, 1841.....	$200,934	$179,612	$380,546	$614,872	$900	....	2,819	....
1842.....	125,521	76,515	202,036	370,348	....	....	1,815	....
9 mos., 1843*.....	108,465	68,014	176,479	182,854	....	$2,800	1,533	....
June 30, 1844.....	186,139	97,245	283,384	385,866	....	23	2,778	....
1845.....	115,553	49,546	165,099	781,517	....	....	1,807	....
1846.....	126,193	73,910	200,103	760,908	....	....	3,208	....
1847.....	61,570	65,672	127,242	577,710	....	2,000	1,118	....
1848.....	114,830	110,321	225,151	405,028	35,275	....	1,466	230
1849.....	193,576	85,120	278,696	374,064	....	....	1,912	300
1850.....	204,397	53,344	257,741	801,023	....	....	2,680	....
Total...	$1,437,478	$859,299	$2,296,777	$5,255,180	$36,175	$4,823	21,730	530
June 30, 1851.....	$162,204	$65,529	$227,733	$901,236	....	....	4,268	....
1852.....	265,825	50,371	316,196	656,100	....	....	3,909	322
1853.....	207,358	79,981	287,339	727,516	....	....	4,365	....
1854.....	219,496	105,702	325,198	803,114	....	....	3,948	560
1855.....	794,259	163,780	958,039	700,889	....	....	8,452	102
1856.....	1,404,768	106,657	1,511,425	741,871	....	....	13,400	1845
1857.....	527,481	78,165	605,646	731,850	....	....	7,551	....

* Nine months to June 30, and the fiscal year from this time begins July 1.

Turkey Red, a fine and durable red dyed upon calico and woolen cloth: the coloring matter used in its production is madder, but the process for producing it in perfection is tedious and complicated.—*See* BANCROFT *on Permanent Colors.*

Turmeric, the root of the *Curcuma longa*. It is externally grayish, and internally of a deep lively yellow or saffron color, very hard, and not unlike, either in figure or size, to ginger. That should be preferred which is large, new, resinous, difficult to break, and heavy. It is imported from Bengal, Java, China, etc. It has a somewhat aromatic and not very agreeable smell, and a bitterish, slightly acrid, but rather warm taste. It used to be in considerable estimation as a medicine; and is extensively used in India for culinary purposes, entering into the composition of curry powder and other articles: in Europe it is only used as a dye. It yields a beautiful bright yellow color, which, however, is extremely fugitive, and no means have hitherto been discovered of fixing it. It is sometimes employed to heighten the yellows made with weld, and to give an orange tint to scarlet; but the shade imparted by the turmeric soon disappears.—LEWIS'S *Mat. Med.*; BANCROFT *on Colors.*

Turpentine (Ger. *Turpentin*; Fr. *Térébenthine*; It. *Trementina*; Russ. *Skipidar*; Pol. *Terpentyna*). There are several species of turpentine, but all of them possess the same general and chemical properties.

1. *Common Turpentine* is a resinous juice which exudes from the Scotch fir or wild pine (*Pinus sylvestris*). The trees which are most exposed to the sun, and have the thickest barks, yield it in the greatest abundance. They begin to produce it when about forty years old. The bark of the tree is wounded and the turpentine flows out in drops, which fall into a hole, or sort of cup, previously dug at the foot of the tree, holding about 1½ pint. It is purified by being exposed to liquefy in the sun's rays, in barrels perforated in the bottom, through which it filters. In the Southern States the collection of turpentine is chiefly confided to negroes, each of whom has the charge of from 3000 to 4000 trees. The process lasts all the year, although the incisions are not made in the trees till the middle of March, and the flow of the turpentine generally ceases about the end of October. The boxes are emptied five or six times during the year, and it is estimated that 250 boxes will produce a barrel weighing 320 lbs. Turpentine has a strong, somewhat fragrant odor, and a bitter, disagreeable taste: its consistence is greater than that of honey; its color dirty yellow; and it is more opaque than the other sorts.

2. *Venice Turpentine* is the produce of the larch (*Pinus larix*). It is obtained by boring a hole into the heart of the tree about two feet from the ground, and fitting into it a small tube through which the turpentine flows into vessels prepared for its reception. It is purified by straining through cloths or hair sieves. It is more fluid, having the consistence of new honey, a yellowish color, and is less unpleasant to the smell and taste than the common turpentine. Genuine Venetian turpentine is principally obtained from the forests of Haye, in Provence; but much of that to be found in the shops comes from America, and is, perhaps, obtained from a different species of fir.

3. *Canadian Balsam*, or *Turpentine*, is obtained from incisions in the bark of the *Pinus balsamea*, a native of the coldest regions of North America. It is imported in casks, each containing about 1 cwt. It has a strong, not disagreeable odor, and a bitterish taste; is transparent, whitish, and has the consistence of copaiva balsam.

4. *Chian*, or *Cyprus Turpentine*, is obtained from the *Pistacia terebinthus*, a native of the north of Africa and the south of Europe, and cultivated in Chios and

Cyprus. It flows out of incisions made in the bark of the tree in the month of July, and is subsequently strained and purified. It has a fragrant odor, a moderately warm taste, devoid of acrimony or bitterness, and a white or very pale yellow color; it is about as consistent as thick honey, is clear, transparent, and tenacious. From its comparative high price, Chian turpentine is seldom procured genuine, being for the most part adulterated either with Venetian or common turpentine. The different species of turpentine may be dissolved in rectified spirit, or pure alcohol; and by distillation they all give similar oils, which, from their being distilled (and not from any resemblance to alcohol), are termed spirit of turpentine. If the distillation be performed with water, the produce is an essential oil, the common spirit of turpentine; and if the distillation be carried on in a *retort* without water, the product is more volatile and pungent—a concentrated oil, as it were—and is called the ethereal spirit of turpentine. The residuum that is left in both cases is a brownish, resinous mass, brittle, capable of being melted, highly inflammable, insoluble in water, but mixing freely with oils: it is the common rosin of commerce.—*Library of Entertaining Knowledge, Vegetable Substances;* THOMSON'S *Dispensatory.*

EXPORTS OF SPIRITS OF TURPENTINE FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Gallons.	Value.
Prussia	7,000	$3,545
Sweden and Norway	1,405	638
Danish West Indies	1,013	535
Hamburg	197,853	92,728
Bremen	47,592	23,208
Holland	153,838	64,488
Dutch Guiana	39	22
Dutch East Indies	1,381	862
Belgium	52,039	23,456
England	749,874	360,794
Scotland	33,308	15,219
Gibraltar	2,000	870
Malta	1,000	625
Canada	17,043	11,588
Other British North A. Possessions	3,513	1,955
British West Indies	9,099	2,990
British Honduras	282	245
British Guiana	7,708	3,869
British Possessions in Africa	3,945	2,782
British Australia	6,050	3,535
British East Indies	25,589	15,821
France on the Atlantic	6,000	3,000
France on the Mediterranean	13,076	5,119
French North American Possessions	84	40
French West Indies	967	439
Spain on the Atlantic	1,655	1
Spain on the Mediterranean	1,240	564
Philippine Islands	1,592	1,000
Cuba	26,350	13,590
Porto Rico	1,689	804
Portugal	4,520	2,333
Madeira	200	76
Sardinia	5,251	2,597
Turkey in Asia	2,720	1,395
Ports in Africa	1,160	716
Hayti	1,208	795
Mexico	1,421	660
Central Republic	125	60
New Granada	557	397
Venezuela	1,590	777
Brazil	32,801	18,096
Uruguay, or Cisplatine Republic	10,035	5,770
Argentine Republic	19,721	10,318
Chili	53,084	27,867
Peru	2,300	1,485
Ecuador	520	330
Sandwich Islands	2,765	1,836
Other Islands in the Pacific	75	90
China	1,920	1,590
Whale-fisheries	3	2
Total	1,522,177	$741,340

The manufacture of spirits of turpentine in the State of Alabama was commenced within the last eight years, and, although upon a very limited scale at first, the annual product has now reached upward of 1,600,000 gallons, and that of rosin to above 130,000 barrels. In North Carolina, where the business has been carried on for a much longer time, it is estimated that the annual product of spirits amounts to 800,000 barrels, and this would give a residue of about 3,200,000 barrels rosin. Upon this estimate the value of the spirits of turpentine annually produced in the State of North Carolina is upward of $14,000,000—nearly equal to the value of the annual agricultural product of the State of Maryland. Add to this the value of rosin when converted into oil, which at the present market value would be $19,200,000, and we find a resource in this natural product of over $33,000,000 in the State of North Carolina alone; and this estimate does not include the tar, pitch, and naphtha, which are necessary and merchantable articles, and would largely increase the amount.

EXPORTS OF ROSIN AND TURPENTINE FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Barrels.	Value.
Russia on the Baltic and North Seas	804	$1,190
Prussia	11,464	21,090
Sweden and Norway	103	175
Denmark	2,995	9,581
Danish West Indies	45	97
Hamburg	47,095	102,803
Bremen	28,239	51,856
Holland	52,457	102,750
Dutch West Indies	10	50
Dutch Guiana	20	43
Dutch East Indies	175	343
Belgium	70,154	125,957
England	271,434	792,044
Scotland	32,427	77,828
Ireland	4,528	7,082
Gibraltar	3,445	5,994
Malta	3,659	6,246
Canada	10,620	45,183
Other British North A. Possessions	2,493	8,739
British West Indies	432	653
British Guiana	5	8
British Possessions in Africa	420	802
British Australia	6,355	11,695
British East Indies	6,361	12,570
France on the Atlantic	39,477	67,330
France on the Mediterranean	4,723	7,721
French North American Possessions	10	25
French West Indies	155	200
French Guiana	11	22
Spain on the Atlantic	1,060	2,243
Spain on the Mediterranean	1,298	2,336
Canary Islands	75	135
Cuba	1,197	3,003
Porto Rico	12	21
Portugal	3,197	8,369
Madeira	215	387
Sardinia	3,243	5,738
Two Sicilies	1,358	2,443
Austria	3,940	7,554
Austrian Possessions in Italy	2,245	4,424
Turkey in Europe	1,300	2,512
Turkey in Asia	1,525	3,005
Ports in Africa	675	1,381
Hayti	35	71
Mexico	184	492
New Granada	5	11
Venezuela	1,027	3,515
Brazil	13,946	25,314
Uruguay, or Cisplatine Republic	1,180	1,950
Argentine Republic	970	1,840
Chili	2,109	4,513
Peru	650	1,328
Sandwich Islands	4	8
Other Islands in the Pacific	6	30
China	25	56
Total, 1856-'57	641,517	$1,544,572

Oil of Turpentine is the essential oil drawn from turpentine by distillation. There are two sorts of this oil: the best, red; and the second, white. It is very extensively used by house painters, and in the manufacture of varnish, etc. The distillers have been charged with using it in the preparation of gin. Oil of turpentine is very often adulterated.

Turpeth Mineral (from its yellow color, which resembles the powdered root of the *Convolvulus turpethum*), the yellow *sub-persulphate of mercury.*

Turquoise (Ger. *Türkies;* Fr. *Turquoise;* It. *Turchina;* Sp. *Turquesa*), a precious stone in considerable estimation. Its color, which is its principal recommendation, is a beautiful celestial blue, which migrates into pale blue, and is sometimes tinged with green. Specific gravity, 3·127. It is destitute of lustre, opaque, and does not admit of a high polish. It is

much worn in necklaces, and every part of ornamental jewelry, from the size of a pin's head to that of an almond; it contrasts beautifully with brilliants or pearls set in fine gold.—Mawe on *Diamonds*. Real turquoises are exclusively furnished by Persia. The mines whence they are obtained are situated near Nishapore. They are the property of the crown, and are farmed to the highest bidder. They bring a rent of from £2000 to £2700 a year.—Fraser's *Travels on the Shores of the Caspian*.

Turtle. This word is used to signify a species of dove (*Columba turtur*), and also a genus of Chelonian reptiles (*Chelone*, Brongn).

Tuscany. The Grand Duchy of Tuscany comprises an area of 8586 square miles, and contained in 1854 a population of 1,815,636 inhabitants. Its chief port is Leghorn, situated on the Mediterranean, and possessing extensive artificial facilities for commercial enterprise; indeed, the harbor is entirely artificial. Strictly speaking, Tuscany is an agricultural country—the valley of the Arno being generally considered the most fertile in Europe. The system of culture is, however, imperfect; and the consequence is, that the grain raised is insufficient for home consumption. Tuscany has long been celebrated for its mineral productions. Iron abounds in the island of Elba; copper, argentiferous lead, sulphur, mercury, alum, coal, marble, and alabaster are found in different parts of the Grand Duchy; and borax is supplied in great abundance from the borax lagoons of Volterra.

The manufactures of Tuscany are in a highly flourishing condition. These consist of straw-platting and the manufacture of straw hats, and manufactures of silk; the principal seat of this latter branch of industry being at Florence, in which city alone there are upward of 4000 looms. There are also manufactures of wool, especially of woolen cloths and carpets; manufactures of linen, of paper, alabaster, marble, porcelain, hardwares, and of metal. The internal taxes levied on every branch of productive industry throughout the Tuscan territories have long fettered the commercial activity of the country. Furniture, machinery, books, live stock—in fact, every article in daily use, has to bear enormous duties. Every walled city has its own system of taxation, so that the manufactures of one town are burdened with oppressive duties (*octroi*) before they can be admitted for sale into another. Such a system necessarily results injuriously to the commercial enterprise of Tuscany; and its effects are perceptible in the stagnant condition of the foreign commerce of that country. The chief exports of Tuscany are olive-oil, hides, straw hats, borax, rags, wool, hemp, potash, coral, marble, tallow, cork, building-timber, and paper; and the chief imports, colonial produce, salt fish, and British, German, Swiss, and French manufactures. The usual exports of the United States to Tuscany are naval stores; value thereof in 1854, $3075, and in 1855, $2930; spirits from molasses: value in 1854, $6958, and in 1855, $42,238; manufactures not enumerated, to the amount of between $2000 and $3000. In 1855 the exports of cotton from the United States to Tuscany amounted in value to $4804, and of tobacco to $171,621. The imports of the United States from Tuscany are chiefly silk, piece goods, olive-oil, almonds, figs, soap, small quantities of opium, and rags; this latter article averaging annually some six million pounds.

There is no commercial treaty between the United States and Tuscany; but American vessels enjoy perfect equality, as respects navigation and import duties, with the Tuscan flag—similar privileges having been granted to the Tuscan flag in the ports of the United States, per President's proclamation, Sept. 1, 1836.

The general foreign trade of Leghorn in 1851 was, in imports, $14,442,900; and in exports, $10,308,120. This is a falling off from the general trade of the preceding year of $993,720. This diminution in the foreign trade of Leghorn, which is every year becoming more and more perceptible, is accounted for by the fact that a large portion of the extensive trade with Lombardy, Parma, Modena, and the Pontifical states, heretofore the principal source of the commercial prosperity of this port, has passed from Leghorn, and is now carried on through the ports of Genoa, Trieste, and Ancona. Besides, the port of Leghorn has of late years been much neglected, and offers neither inducements nor proper facilities to foreign flags. Ships of heavy draught can not enter the harbor, especially if laden; and there are no suitable warehouses, not even for the marble of Carrara, one of the leading exports to the United States. To these causes of the decline of the trade of Leghorn is to be added a tax of 3 francs 36 centimes for every person who goes ashore, should he remain but an hour. The merchant marine of Tuscany in 1851 comprised 700 vessels, measuring 27,000 tons—averaging less than 40 tons to the vessel. In the year 1849 there entered the port of Leghorn 1282 vessels (exclusive of 457 steamers), of which 26 were American; and there cleared 1139 (exclusive of 454 steamers), of which 24 were American. In 1851 the arrivals were 3418 vessels, of which 23 were American.

Commerce between the United States and Tuscany, exhibiting the Value of Exports to and Imports from each Country, and the Tonnage of American and Foreign Vessels.

Years.	Value of Exports from United States.			Value of Imports from Tuscany.	American Tonnage.		Foreign Tonnage.	
	Domestic Produce.	Foreign Produce.	Total.		Entered the United States	Cleared from the U. States	Entered the United States	Cleared from the U. States
1846	....	....	....	.....	3,387	343	1,412	275
1847	....	....	....	.....	5,415	1,956	500	375
1848	$5,197	....	$5,197	.....	5,923	2,598	1,630	....
1849	30,076	....	30,076	.....	7,599	1,586	3,364	666
1850	45,664	$23,468	69,132	.....	6,701	2,537	7,871	160
1851	....	....	....	.....	5,210	1,613	4,710	485
1852	17,697	....	17,697	$210,580	11,088	1,392	4,159	235
1853	15,173	22,640	37,813	856,617	10,596	2,192	1,226	224
1854	11,735	37,032	48,767	1,152,717	12,466	2,346	4,819	387
1855	$26,017	42,669	268,686	1,709,504	10,819	2,898	7,012	237
1856	425,595	5,583	431,178	1,596,801	....	....	1,963	381
1857	337,400	....	337,400	1,759,064	....	....	2,567	....

Quarantine.—The quarantine regulations of Leghorn are the most rigorous of any other port in the Mediterranean. Ships approaching Leghorn are visited by two guards sent from the health office, one of whom always acts as pilot. The most recent authority in the possession of the Department on this subject thus sums up the quarantine regulations of this port, so far as they relate to vessels arriving from American ports:

Days of Quarantine.—According to cases of suspicion for arrivals from America.

Clean Bills—Days of Observation.—First division: from the equator to the tropic of Cancer; from 1st December to February inclusive, seven days; from 1st March to November inclusive, ten days; vessels of war two days less than merchant vessels. Second division: from the tropic of Cancer to Charleston inclusively, and from the equator to all South America, five days, from 1st December to February inclusive; seven days, from 1st March to November inclusive. Third division: from the United States between Charleston and Canada.

Doubtful Bills of Health—Days of Quarantine.—Laz-

aretto of St. Roch, all seasons, and wherever from, from 1st December to February inclusive, eighteen days; from 1st March to November inclusive, ... teen days; vessels of war, ten days; without susceptible commodities, rigid, fourteen days, from 1st December to February inclusive; eighteen days, from 1st March to November inclusive.

Foul Bills of Health—Days of Quarantine.—Lazaretto of St. Roch, all seasons, and wherever from, twenty-five days; without susceptible commodities, from 1st December to February inclusive, eighteen days; from 1st March to November inclusive, twenty-five days; susceptible commodities, days not given, but time supposed to be arbitrary, and dependent on the continuance of suspicious circumstances.

These regulations are still more rigid when vessels arrive from countries in which the plague has been known to exist. These include the Turkish Levant, Egypt, and Barbary. When vessels are subjected to a long quarantine, three medical visits are generally made; and when merely under inspection, two. In extraordinary cases a guard-boat is stationed near the vessel, and paid for at the rate of 64 cents per day. In all cases of assistance from sanitary officers, the commandant of the port determines the amount of compensation. The vessels of all nations, whether Tuscan or foreign, pay the same quarantine dues. These dues are, for each sanitary visit 80 cents, and $1 08 for the boat conveying the health officer. For each guard, per day, 58 cents; or 48 cents if food is supplied. The tonnage duties amount to $11 20 on a square-rigged vessel of 200 tons, with an additional charge of $1 60 for every twenty-five tons over that capacity.—C. D.

Parma embraces an area of 2766 square miles, containing a population in 1854 of 508,784 inhabitants. The chief productions are maize, wheat, fruit, tobacco, and silk. The principal manufactures are silk fabrics, iron wares, glass, earthen-ware, paper, straw hats, and gunpowder. Commercially, Parma possesses but little interest, her importations being exclusively by land, and limited to small quantities of sugar, coffee, and a few articles of luxury, principally of dress and ornament. Her exports are cattle, hogs, sausages, and cheese.

Modena.—This state is of less extent than Parma, and its productions scarcely suffice for the subsistence of the inhabitants. It derives some commercial importance from the marble quarries at Carrara, which seem to be inexhaustible. The trade of both these states being inland, and but poorly supplied with any basis for commercial exchanges, is, of course, very inconsiderable. By treaty of December 4, 1849, the two states of Parma and Modena adopted the tariff of Austria, and duties are consequently levied at the same rates and in the same manner as those of that empire.

Lucca.—This little state was annexed to Tuscany October 11, 1847. This took place in virtue of provisions of the Congress of Vienna, when, upon the decease of the Archduchess Maria Louisa, the Duke of Lucca became ruler of Parma. The soil is exceedingly fertile, and the culture of oil and silk is acquiring some importance—the former being generally esteemed the best in Italy, and the latter of fair quality. The imports of Lucca, when an independent state, consisted chiefly of sugar, coffee, spices, wine and spirits, salt fish, hemp, flax, cotton, wool, and various manufactures. Salt and tobacco were government monopolies, and their importation on private account was prohibited. The exports were olive-oil, to an annual value of about $160,000, and fresh fish, of $50,000—the latter sent chiefly to Leghorn from the small port of Viareggio. In manufacturing industry Lucca is said to surpass both Parma and Modena. Silk is the most important manufacture; and next rank common woolens and cottons, giving employment, in all, it is estimated, to about 6000 persons, chiefly in the city of Lucca.

San Marino.—Rural industry and the manufacture of silk constitute the chief occupation of this little republic.

Monaco.—This small principality, under the protection of Sardinia, by the treaty of November 20, 1815, enjoys a fine climate, and produces oranges, lemons, and olives in abundance. It has also rich pasturages and productive fisheries. It need only be added respecting these small states, that such articles of their own produce and manufacture, or of the United States, as are interchanged, are so blended with the trade of other countries, that any attempt to specify the quantities or values of each respectively would prove abortive, even were the amounts sufficiently large to warrant the effort.—*See articles* AUSTRIA and TRIESTE.

Tutenag, the name given in *Commercial language* to the zinc or spelter of China.—*See* ZINC. This commodity used to be smuggled from China (the exportation of unwrought metals from that empire being prohibited) to Hindostan, the Malay Archipelago, and neighboring countries, to the amount, it is supposed, of about 50,000 cwt. a year. In 1820 the British free-traders introduced German spelter or zinc for the first time into the Indian market. In 1826 the importation of tutenag from China into Calcutta ceased; and it has now been totally superseded throughout India by spelter. Of this latter commodity there were exported from Great Britain, in 1850, to the East India Company's territories and Ceylon, 11,628 cwt., besides the quantities furnished by Hamburg, Rotterdam, Antwerp, and other Continental ports.

Typhoon, the name given to a violent tornado or hurricane in the Chinese seas.—*See* STORMS.

Tyre, the principal city of Phœnicia, and the most celebrated emporium of the ancient world. This famous city was situated on the southeast coast of the Mediterranean, where the inconsiderable town of Tsour now stands, in lat. 33° 17′ N., long. 35° 14′ 35″ E. The trade that is at present carried on at Tsour is too trifling to deserve notice; but as this work is intended to give some account, however imperfect, of the revolutions in the channels of commercial enterprise, we may, perhaps, be excused for submitting a few statements with respect to the commerce carried on by so renowned a people as the Tyrians. Tyre was founded by a colony from Sidon, the most ancient of the Phœnician cities. The date of this event is not certainly known, but Larcher supposes it to have been 1690 years before the Christian era.—*Chronologie d'Hérodote.* It is singular, that while Homer mentions Sidon, he takes no notice of Tyre, whose glory speedily eclipsed that of the mother city; but this is no conclusive proof that the latter was not then a considerable emporium. The prophets Isaiah, Jeremiah, and Ezekiel, who flourished from 700 to 600 years before Christ, represent Tyre as a city of unrivaled wealth, whose "merchants were princes, and her traffickers the honorable of the earth." Originally, the city was built on the main land; but having been besieged for a lengthened period by the Babylonian monarch Nebuchadnezzar, the inhabitants conveyed themselves and their goods to an island at a little distance, where a new city was founded, which enjoyed an increased degree of celebrity and commercial prosperity. The old city was, on that account, entitled Palætyre, and the other simply Tyre. The new city continued to flourish, extending its colonies and its commerce on all sides, till it was attacked by Alexander the Great. The resistance made by the Tyrians to that conqueror showed that they had not been enervated by luxury, and that their martial virtues were nowise inferior to their commercial skill and enterprise. The overthrow of the Persian empire was effected with less difficulty than the capture of this single city. The victor had not magnanimity to treat the vanquished as their heroic conduct deserved. In despite, however, of the cruelties inflicted on the city, she rose again to considerable eminence. But the

foundation of Alexandria, by diverting the commerce that had formerly centred at Tyre into a new channel, gave her an irreparable blow; and she gradually declined, till, consistently with the denunciation of the prophet, her palaces have been leveled with the dust, and she has become "a place for the spreading of nets in the midst of the sea."

Commerce.—Phœnicia was one of the smallest countries of antiquity. It occupied that part of the Syrian coast which stretches from Aradus (the modern Rouad) on the north to a little below Tyre on the south, a distance of about 50 leagues. Its breadth was much less considerable, being for the most part bounded by Mount Libanus to the east, and Mount Carmel on the south. The surface of this narrow tract was generally rugged and mountainous; and the soil in the valleys, though moderately fertile, did not afford sufficient supplies of food to feed the population. Libanus and its dependent ridges were, however, covered with timber suitable for ship-building; and besides Tyre and Sidon, Phœnicia possessed the ports of Tripoli, Byblos, Berytus, etc. In this situation, occupying a country unable to supply them with sufficient quantities of corn, hemmed in by mountains, and by powerful and warlike neighbors on the one hand, and having on the other the wide expanse of the Mediterranean, studded with islands, and surrounded by fertile countries, to invite the enterprise of her citizens, they were naturally led to engage in maritime and commercial adventures; and became the boldest and most experienced mariners, and the greatest discoverers, of ancient times.

From the remotest antiquity, a considerable trade seems to have been carried on between the Eastern and Western worlds. The spices, drugs, precious stones, and other valuable products of Arabia and India, have always been highly esteemed in Europe, and have been exchanged for the gold and silver, the tin, wines, etc., of the latter. At the first dawn of authentic history, we find Phœnicia the principal centre of this commerce. Her inhabitants are designated in the early sacred writings by the name of Canaanites—a term which, in the language of the East, means merchants. The products of Arabia, India, Persia, etc., were originally conveyed to her by companies of traveling merchants or caravans, which seem to have been constituted in the same way, and to have performed exactly the same part in the commerce of the East, in the days of Jacob, that they do at present.—*Gen.* xxxvii. 25, etc. At a later period, however, in the reigns of David and Solomon, the Phœnicians, having formed an alliance with the Hebrews, acquired the ports of Elath and Ezion-geber, at the northeast extremity of the Red Sea. Here they fitted out fleets, which traded with the ports on that sea, and probably with those of Southern Arabia, the west coast of India, and Ethiopia. The ships are said to have visited Ophir; and a great deal of erudition has been expended in attempting to determine the exact situation of that emporium or country. We agree, however, with Heeren, in thinking that it was not the name of any particular place, but that it was a sort of general designation given to the coasts of Arabia, India, and Africa, bordering on the Indian Ocean; somewhat in the same loose way as we now use the terms East and West Indies.

The distance of the Red Sea from Tyre being very considerable, the conveyance of goods from the one to the other by land must have been tedious and expensive. To lessen this inconvenience, the Tyrians, shortly after they got possession of Elath and Ezion-geber, seized upon Rhinocolura, the port in the Mediterranean nearest to the Red Sea. The products of Arabia, India, etc., being carried hither by the most compendious route, were then put on board ships, and conveyed by a brief and easy voyage to Tyre. If we except the transit by Egypt, this was the shortest and most direct, and for that reason, no doubt, the cheapest channel by which the commerce between Southern Asia and Europe could then be conducted. But it is not believed that the Phœnicians possessed any permanent footing on the Red Sea after the death of Solomon. The want of it does not, however, seem to have sensibly affected their trade; and Tyre continued, till the foundation of Alexandria, to be the grand emporium for Eastern products, with which it was abundantly supplied by caravans from Arabia, the bottom of the Persian Gulf, and from Babylon, by way of Palmyra.

The commerce of the Phœnicians with the countries bordering on the Mediterranean was still more extensive and valuable. At an early period they established settlements in Cyprus and Rhodes. The former was a very valuable acquisition, from its proximity, the number of its ports, its fertility, and the variety of its vegetable and mineral productions. Having passed successively into Greece, Italy, and Sardinia, they proceeded to explore the southern shores of France and Spain, and the northern shores of Africa. They afterward adventured upon the Atlantic, and were the first people whose flag was displayed beyond the Pillars of Hercules.

The commerce and navigation of Tyre probably attained their maximum from 650 to 550 years before Christ. At that period the Tyrians were the factors and merchants of the civilized world, and they enjoyed an undisputed pre-eminence in maritime affairs. The prophet Ezekiel (chap. xxvii.) has described in magnificent terms the glory of Tyre, and has enumerated several of the most valuable productions found in her markets, and the countries whence they were brought. The fir-trees of Senir (Hermon), the cedars of Lebanon, the oaks of Bashan (the country to the east of Galilee), the ivory of the Indies, the fine linen of Egypt, and the purple and hyacinth of the isles of Elishah (Peloponnesus), are specified among the articles used for her ships. The inhabitants of Sidon, Arvad (Aradus), Gebel (Byblos), served her as mariners and carpenters. Gold, silver, lead, tin, iron, and vessels of brass; slaves, horses, mules, sheep, and goats; pearls, precious stones, and coral; wheat, balm, honey, oil, spices, and gums; wine, wool, and silk, are mentioned as being brought into the port of Tyre by sea, or to its markets by land, from Syria, Arabia, Damascus, Greece, Tarshish, and other places, the exact site of which it is difficult to determine.—*See* M'Culloch's *Com. Dict.*

U.

Ultramarine (Ger. *Ultramarin*; Fr. *Bleu d'outremer*; It. *Oltramarino*; Sp. *Ultramar*; Russ. *Ultramarin*), a very fine blue powder made from the blue parts of *Lapis lazuli*. It has the valuable property of neither fading nor becoming tarnished on exposure to the air or a moderate heat, and on this account is highly prized by painters. Owing to its great price, it is very apt to be adulterated. It was introduced about the end of the 15th century.

Umbrella. Described in early dictionaries as "a portable pent-house to carry in a person's hand, to screen him from violent rain or heat." Umbrellas are very ancient. It appears, by the carvings at Persepolis, that umbrellas were used at very remote periods by the Eastern princes. Niebuhr, who visited the southern part of Arabia, informs us that he saw a great prince of that country returning from a mosque preceded by some hundreds of soldiers, and that he and each of the princes of his numerous family caused a large umbrella to be carried by his side. The old china-ware in pantries and cupboards shows the Chinese shaded by an umbrella. It is said that the first person who used an umbrella in the streets of London was the benevolent Jonas Hanway, who died in 1786.—HAYDN. Of late years the manufacture of umbrellas has been improved by the use of steel ribs instead of whalebone. The coverings are mainly confined to cotton, silk, gingham, and alpaca.

EXPORTS OF UMBRELLAS AND PARASOLS OF DOMESTIC MANUFACTURE FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Value.
Gibraltar	$98
Canada	931
British North American Colonies	4328
British West Indies	268
Africa	188
Hayti	30
Mexico	341
Central Republic	65
New Granada	523
Sandwich Islands	74
Total	$6846

The exports of umbrellas and parasols of foreign manufacture for the same period were,

To Mexico	$1012
" Whale-fisheries	90
Total	$1102

IMPORTS OF UMBRELLAS, PARASOLS, AND SUN-SHADES, OF SILK AND OTHER KINDS, INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

	Value.
Hamburg	$45
Bremen	2,970
Belgium	321
England	5,301
Scotland	359
Canada	48
France on the Atlantic	53,265
Spain on the Mediterranean	60
New Granada	2,991
Total, year 1856-'57	$65,360

United Kingdom, a general term by which Great Britain and Ireland are designated.—*See articles* ENGLAND, GREAT BRITAIN, IRELAND, and SCOTLAND.

United States of America. Lat. 25° 20′ and 49° N., and long. 67° 47′ and 124° 30′ W. Length, east and west, about 2600 miles; and breadth, north and south, about 1700 miles. The United States occupy the middle zone of North America. The frontier of this vast country measures about 10,000 miles in periphery, and of this about 4000 miles are sea-coast and 1500 lake coast.

The seat of government was established as follows: At "Philadelphia," Pennsylvania, commencing 5th September, 1774, and 10th May, 1775; at "Baltimore," Maryland, 20th December, 1776; at "Philadelphia," Pennsylvania, 4th March, 1777; at "Lancaster," Pennsylvania, 27th September, 1777; at "York," Pennsylvania, 30th September, 1777; at "Philadelphia," Pennsylvania, 2d July, 1778; at "Princeton," New Jersey, 30th June, 1783; at "Annapolis," Maryland, 26th November, 1783; at "Trenton," New Jersey, 1st November, 1784; and at "New York City," New York, 11th January, 1785; Washington City, district of Columbia, was first occupied in 1800.

Physical Features.—The United States are traversed by two ranges of mountains, the Alleghanies, and the great mountain mass of North America, the Rocky Mountains. These divide the country into three distinct geographical regions; the Atlantic slope, descending from the crest of the Alleghanies to the ocean on the southeast; the great Mississippi Valley, between the Alleghanies and the Rocky Mountains; and the western declivity, from the Rocky Mountains to the Pacific. The Alleghanies are a long plateau, crested with several mountain ridges, and groups separated from each other by wide and elevated valleys. They commence in Northern Alabama and Georgia, and reach their culminating point in North Carolina, where they attain an elevation of 6476 feet; thence passing northeasterly in parallel ridges, varying in height from 2000 feet to 6000 feet, and a breadth of from 20 to 100 miles, through Virginia, Pennsylvania, New Jersey, New York, Massachusetts, Vermont, New Hampshire, and Eastern Canada, where they terminate in the bold headland of Cape Gaspè. In New York they reach their highest elevations in the spur branching off northwesterly, known as the Catskill Mountains and the Adirondack group. In Massachusetts, at Mount Washington. In Vermont it attains its highest elevation in the Green Mountains, known as the Mansfield Mountain and the Camel's Hump. In New Hampshire, in the White Mountains; and in Canada, at Mount Logan.

The Rocky Mountains take a much greater breadth, and the culminating points reach the region of eternal snows, rising in the portion passing through the United States to the height of 14,000 feet. This is the great mountain range of the continent, traversing it from Cape Horn to the Arctic Ocean, forming the longest continuous mountain mass on the face of the globe. Between this range and the Pacific coast are some minor mountain ridges, whose culminations in several places rise far above the snow line, and furnish some active volcanoes.

The Mississippi River has its entire course in the territory of the republic, and the valley drained by it, and its numerous tributaries, is one of the most fertile tracts on the earth's surface. The most noted feature of the United States is the slightly inclined plain, which extends along the entire Atlantic coast, with a breadth of from 50 to 100 miles in width; beyond this plain commences the hilly country extending to the foot of the Alleghany ridge. The soil of the Atlantic plain is sandy, but in many places highly productive; and the hilly portion has a strong, fertile soil, capable of supporting a dense population. The Pacific section is traversed by several extensive rivers, and presents a much diversified surface, with varied and picturesque scenery; but some portions are mere desert wastes. Such is said to be the case with the great California basin, the water courses of which are lost in the sands and volcanic regions, or enter lakes with no visible outlet.

Lakes.—All the great lakes, with the exception of Michigan and Champlain, lie partly in Canada, the division line passing centrally through them, and their connecting streams, for a distance of about 1500 miles. The first (the most extensive sheet of fresh water on the earth's surface) in the series is Lake Superior, the surplus waters of which, descending through the Strait of St. Marys into Lake Huron, which, with the accu-

mulated waters from Michigan, pass through the St. Clair Strait and Lake, and the Detroit into Lake Erie; whence, passing over the precipice of Niagara, and through Niagara Straits, enter Ontario; Lake Ontario has its outlet by the magnificent St. Lawrence, through Canadian territory, into the Atlantic Ocean. The following is a tabular statement of the extent of these fresh-water seas, with their depth and elevation:

Lakes.	Mean Length.	Mean Breadth.	Area.	Mean Depth.	Elevation above Sea.
	Miles.	Miles.	Sq. Miles.	Feet.	Feet.
Superior....	400	80	32,000	900	598
Michigan ...	320	70	22,400	1000	578
Green Bay..	100	20	2,000	1000	578
Huron.....	240	80	20,400	1000	578
St. Clair	20	14	360	20	570
Erie.....	240	40	9,600	84	565
Ontario.....	180	35	6,300	500	232

Lake Champlain, lying between New York and Vermont, is 128 miles long, and from 1 to 16 wide, and discharges its waters through the Sorel into the St. Lawrence. It is computed that these lakes contain 14,000 cubic miles of water—a quantity more than five-sevenths of all the fresh water of the earth. The extent of the country drained by them from the northwest angle of Lake Superior to the St. Lawrence, including also the area of the lakes themselves, is estimated at 335,515 square miles.—*See* LAKES, *Commerce of.*

Rivers.—The water courses of the United States are on an extensive scale, and afford, with the great artificial connecting links, a system of inland navigation unsurpassed. First in order are those of the Atlantic slope, the waters of which enter directly into the ocean; the principal of these are the Penobscot, the Kennebec, the Merrimac, the Connecticut, the Hudson, the Delaware, the Susquehanna, the Potomac, the James, the Cape Fear, the Great Pedee, the Savannah, the Altamaha, and St. Johns, etc. These are all navigable streams, some for a great distance inland. Second, the rivers entering the Gulf of Mexico or Sea of Cortez. The Appalachicola, the Mobile, the immense Mississippi, the Sabine, the Trinity, the Brazos, the Colorado, and the Rio Grande. The rivers entering the Pacific are the Columbia, the Sacramento and San Joaquin, the Colorado, and Gila, the latter two discharging their waters into the Gulf of California. There are many rivers entering the great lakes, and also the St. Lawrence, the great artery of Canada.—*See rivers under proper names.*

A remarkable analogy exists in the structure of the land in the United States and Central and Northern Europe. Gneiss, mica, schist, and granite, prevail over wide areas in the Alleghanies; and on the Atlantic slope, and in the high and middle latitudes of the continent, silurian strata extend over 2000 miles. The Rocky Mountains, also, are mostly silurian, except the east ridge, which is of stratified crystalline rocks, amygdaloid, and ancient volcanic productions. The coast range has the same characteristics, with immense tracts of volcanic rocks, both ancient and modern, chiefly obsidian. In North America volcanic action is entirely confined to the coast and highlands along the Pacific; but within the United States at the present day this action is dormant (with the exception of Mount St. Helens), although its activity is very apparent both to the north and south—to the north in Mount St. Elias, and to the south in the Mexican volcanoes. The principal minerals produced in the United States are iron, coal, copper, lead, and gold, with a great number of less importance. Since 1848 the great field of gold gathering has been California, where large quantities have been obtained with little labor, and both silver and quicksilver abound in the same state. Silver, however, is mostly obtained from the lead and copper mines of the Upper Mississippi and Lake Superior countries, where it is found in combination with these metals. The principal deposits of gold, otherwise than those of California, occur in the primary rocks between the River Rappahannock, in Virginia, and the Coosa, in Alabama; but it has been found in smaller quantities as far north as Maine. Gold and silver abound also in New Mexico and Western Texas, and probably in the Mesilla territory. The coal-fields of the States are of prodigious extent. Nearly one-fourth of the country between the Alleghanies and the Mississippi is composed of coal-beds; and in Pennsylvania, Maryland, Ohio, Indiana, and Illinois, coal-mining has become of vast importance to general industry. The ascertained areas of the coal formation in the under-mentioned States are as follows: In Alabama, 3400 square miles; Georgia, 150; Tennessee, 4300; Kentucky, 13,500; Virginia, 21,195; Maryland, 550; Ohio, 11,900; Indiana, 7790; Illinois, 44,000; Pennsylvania, 15,487; Michigan, 5000; and Missouri, 6000: total, 133,132 square miles. Coal has also been found on the Pacific slope—in California, Oregon, and Washington—and the mineral will no doubt be found in Texas and the adjoining country. As a general remark, it may be stated that the coal east of the highest Alleghanies takes the form of anthracite, while west, and in the valleys of the great central rivers, it is bituminous. Iron is equally abundant with coal, and is usually found in juxtaposition with it. The principal seats of iron mining are Pennsylvania, New Jersey, Ohio, Missouri, Kentucky, and Northern Michigan; and it is also extensively mined in Northern New York. Pennsylvania, however, is pre-eminent in this industry, and produces at least one half the iron mined in the United States. Copper is mined chiefly in Northern Michigan, but to a less extent in Connecticut, New York, Tennessee, North Carolina, etc.; and rich copper mines exist also in New Mexico, near the head of the Gila River. Lead is worked chiefly in Illinois, Wisconsin, and Iowa; on the Mississippi, and for many miles around the territory, in which are included Dubuque, Galena, and Mineral Point; and in these regions upward of 80,000 tons are annually produced. (With respect to other mineral products refer to the STATES severally.)

Historical Summary.—Eighteen new States have been admitted into the Union since the confederation of the original thirteen colonies, as follows:

1. *Vermont*, which formed a part of the territory of New York and New Hampshire, was admitted on the 4th March, 1791.

2. *Kentucky*, which was formerly a part of Virginia, was admitted on the 1st June, 1792.

3. *Tennessee*, formed from the territory ceded to the United States by North Carolina, and which afterward was known as the "Territory south of the Ohio River," was admitted on the 1st June, 1796.

4. *Ohio*, the first State formed from the "Territory northwest of the Ohio River"—a territory which had been ceded to the United States by Virginia and other claimants, and which was erected into a government as early as 1787, was admitted on the 29th November, 1802.

5. *Louisiana*, a part of the vast territory of the same name purchased of France by the United States in 1803, and subsequently known as the Territory of Orleans, was admitted on the 8th April, 1812.

6. *Indiana*, the second State formed to the northwest of Ohio, was admitted within its present limits on the 11th December, 1816.

7. *Mississippi*, which was formed from the territory ceded to the United States by South Carolina and Georgia, was admitted on the 10th December, 1817.

8. *Illinois*, the third of the Northwestern States, was admitted on the 3d December, 1818.

9. *Alabama*, the second State formed from the South Carolina and Georgia cessions, was admitted on the 14th December, 1819.

10. *Maine*, originally a province of Massachusetts, but having been permitted to frame a State government by that State, was admitted on the 15th March, 1820.

11. *Missouri*, the second State formed from the French purchase, was admitted on the 10th August, 1821.

12. *Arkansas*, the third State formed from the Louisiana cession, was admitted on the 15th June, 1836.

13. *Michigan*, the fourth State formed from the territory northwest of the Ohio River, was admitted on the 26th June, 1837.

14. *Florida*, which has the same limits as when ceded by Spain, was admitted on the 3d March, 1845.

15. *Texas*, which had been an independent republic for the ten preceding years, was admitted by a joint resolution of both Houses of Congress on the 29th December, 1845.

16. *Iowa*, the fourth State formed from the Territory of Louisiana, was admitted on the 28th December, 1846.

17. *Wisconsin*, the fifth State formed from the territory northwest of the Ohio River, was admitted on the 29th May, 1848.

And, 18. *California*, having been governed as a State for upward of a year, was admitted on the 9th December, 1850; and though the last, it is by no means the least important of the members of the great confederacy.

Besides these thirty-one States, which send representatives to Congress, in number according to their population, there are several local and dependent governments, which are styled "Territories of the United States." Such are the Territories of Oregon, Washington, Utah, New Mexico, and Minnesota. The Territory of Nebraska is not yet organized, nor has the vast territory set apart for the Indians any aggregate existence, but each Indian nation, within its own limits, is governed by its own laws.

1. *Oregon* was erected into a Territory on the 14th August, 1848;

2. *Minnesota* on the 3d March, 1849;

3. *Utah*; and,

4. *New Mexico*, on the 9th September, 1850; and,

5. *Washington*, originally a part of Oregon, was formed into a separate Territory at the session of Congress 1852–'53.

The only Territory now remaining without local government is that portion of the United States embraced in the Nebraska country, and the vast domain extending beyond Minnesota and Iowa westward to the Rocky Mountains, and north of the 43d parallel of north latitude. The tide of immigration, however, has already reached to the edge of the wilderness, and but a few years will elapse before settlement has progressed sufficiently to justify the organization of new governments within these immense solitudes.

The *District of Columbia*, or Federal District, is under the immediate authority of Congress, and is not represented in that body. It is the seat of the General Government.

Area of the United States.—The limits of the United States when their independence was achieved (1783) did not exceed 820,680 square miles. Louisiana, purchased from France in 1803, and Florida from Spain in 1819, added respectively an extent of 899,579 and 66,900 square miles. In 1842 and 1846 the Northern boundary was settled by treaties with Great Britain, confirming the rights of the United States to 308,052 square miles, included in the Territory of Oregon, etc. In 1846 Texas was annexed, with an area of 318,000 square miles, and by a treaty soon afterward with Mexico an area of 522,955 additional square miles was incorporated. Thus did the territory of the United States double itself in the first twenty years of its existence, and thus has it increased over three-fold in less than sixty years. The figures are given upon the authority of a statement prepared at the Topographical Bureau for the Census office, and annexed.

TERRITORIAL INCREASE OF THE UNITED STATES.

Territory.	Square Miles.
Area of the United States at the peace of 1783	820,680*
The purchase of Louisiana added (about).....	899,579*
(The limits were indefinite; those here assumed are the boundaries of the treaty of 1819, with the exception of Florida and parts of Mississippi and Alabama.)	
The acquisition of Florida (treaty of 1819), added	66,900
Admission of Texas (Emory's map of 1844)	318,300
Oregon treaty	308,052
Treaty with Mexico†	522,955
Second treaty with Mexico	27,500
Total.....	2,963,666

The territorial extent of the republic is, therefore, nearly ten times as large as that of Great Britain and France combined; three times as large as the whole of France, Britain, Austria, Prussia, Spain, Portugal, Belgium, Holland, and Denmark, together; one and a half times as large as the Russian empire in Europe; one-sixth less only than the area covered by the fifty-nine or sixty empires, states, and republics of Europe; of equal extent with the Roman empire, or that of Alexander, neither of which is said to have exceeded 3,000,000 square miles.—VOLTAIRE, *Histoire de Russie.*

Considered in lesser divisions, the calculations of the Topographical Bureau show the existence of an interior valley drained by the waters of the Mississippi and its tributaries, nearly as large as the slopes of the Pacific and Atlantic proper together, and one-third larger than the whole domain of the republic upon the adoption of the present Constitution (1789).

AREA OF EACH SLOPE AND RATIO TO THE TOTAL AREA OF THE UNITED STATES.

Territory.		Area in Square Miles.	Ratio of Area of each Slope to total Area of United States.
Pacific slope		766,002	26·09
Atlantic slope proper.....	514,416		17·52
Northern Lake region	112,649		3·83
Gulf region	325,537		11·09
Atlantic, Lake, and Gulf east and west of the Mississippi		952,602	32·44
Mississippi valley, drained by the Mississippi and its tributaries		1,217,562	41·47
Atlantic, including Northern Lake	627,065		21 35
Mississippi valley and Gulf, or Middle region	1,543,099		52·55
lly second treaty with Mexico		27,500	
Aggregate.....	.....	2,963,666	

Thus over two-fifths of the national territory is drained by the Mississippi and its tributaries, and more than one half is embraced in what may be called its *Middle Region.* One-fourth of this total area belongs to the Pacific, one-sixth to the Atlantic proper, one-twenty-sixth to the Lakes, one-ninth to the Gulf, or one-third to the Atlantic, including the Lakes and the Gulf.

From the charts prepared some years ago by Colonel Gilpin, of Missouri, it will be perceived that a circle described from the forks of the Kansas River, west of Missouri, will touch New Orleans and Galveston, or the Gulf frontier, and the 49th parallel of latitude, our northern boundary, making these points equidistant from the centre. On a larger circle, with the same centre, the points of equidistance will be San Francisco,

* These estimates are lower than those usually made. Morse, in his *Gazetteer*, estimates the area of the Union in 1786 at 1,000,000 square miles; and Major Stoddard, who took possession of Louisiana under the treaty and prepared a very valuable history of it, considers the area to be 1,307,260. These, of course, were but vague estimates, subject to after correction. Again, Oregon has generally been estimated at 341,463; Texas, 402,907; California, 448,691.—DE BOW'S *Industrial Resources*, vol. iii.

† The Mesilla valley is included in the computation.

in California, Fort Vancouver on the Columbia, in Oregon, Quebec and Boston upon the Atlantic, Hudson's Bay on the extreme north, and Havana, Vera Cruz, and the city of Mexico, on the extreme south. The various great basins, declivities, and table-lands on the continent he estimates as follows: Mississippi basin, 1,123,160 square miles; St. Lawrence, 475,400; Hudson's Bay, 1,077,200; Mackenzie basin, 898,500; Pacific declivity, 420,000; Atlantic declivity, 270,700 square miles.

Mr. Darby, in his *Geographical Dictionary*, gives the following aggregates: Valley of the Ohio, 200,000 square miles; Valley of the Mississippi proper, 180,000; Valley of the Missouri, 500,000; and the Valley of the Lower Mississippi, 330,000. Total, 1,210,000 square miles.

Lieutenant Maury compares the basins of the Old World with those which are drained into the Gulf of Mexico and Caribbean seas.

Mediterranean in Europe	1,160,000
Nile	520,000
Euphrates	196,000
Indus	312,000
Ganges	432,000
Irrawaddy	331,000
Others of India	173,000
Of Western Europe, Rhine, etc.	730,000
Total of Mediterranean India and W. Europe	3,854,000
Basin of Mississippi	982,000
Basins in Florida and Texas	529,000
Mexico and Central America	300,000
Amazon	1,796,000
Orinoco and all others of the Caribbean Sea	700,000
Total of Gulf and Caribbean Sea	4,298,000
	3,854,000
Difference in square miles	444,000

Lieutenant Maury remarks, "The area of all the valleys which are drained by the rivers of Europe which empty into the Atlantic, all the valleys that are drained by the rivers of Asia which empty into the Indian Ocean, and of all the valleys that are drained by the rivers of Africa and Europe which empty into the Mediterranean, does not cover an extent of territory as great as that included in the valleys drained by the American rivers alone, which discharge themselves into one central sea."

Dr. Patterson, of Philadelphia, made the centre of *representative population* of the Union in 1840 in the northwestern extremity of Virginia, and states that it had traveled westward since 1790, when it was in Baltimore county, Maryland, 182 miles in very nearly the same parallel of latitude.

The following table will show the area included within the several geographical divisions which are named:

Area of the several great Divisions of the United States.

Area included in	Square Miles.	Per Cent. of total Area.
The States	1,464,105	49·86
The Territories	1,472,061	50·14
Non-slaveholding States not Territories	612,597	20·86
Slaveholding States not Territories	851,508	29·00
New England States	65,038	2·21
Middle States	114,024	3·90
Southern States	258,709	8·81
Southwestern States	474,435	16·15
Northwestern States	395,319	13·46
East of the Mississippi	866,576	29·48
Between the Mississippi and Rocky Mountains	1,200,381	40·88
West of the Mississippi	2,070,590	70·52
North of latitude 36° 30′	1,970,077	67·10
South of latitude 36° 30′	966,089	32·90
West of the Rocky Mountains	870,209	29·64
East of the Rocky Mountains	2,065,957	70·36

The United States consist at the present time (1858) of thirty-one independent States and nine Territories, including the District of Columbia, whose areas will be found in the table annexed, prepared at the Topographical Bureau. It is the only official statement. There were in 1850 sixteen hundred and twenty county divisions included within the organized States and Territories, but it is impossible to give any satisfactory statement of their areas. By reference to the statistical tables of these counties in the United States Census Report, it will be found how liable they are to changes, and also what changes were actually effected between 1840 and 1850.

Area of the States and Territories of the United States.

State or Territory.	Area in Square Miles.	Per Cent. of total Area.	Rank of States, etc., Territorially.
Alabama	50,722	1·73	20
Arkansas	52,198	1·78	18
California	155,980	5·32	7
Columbia, District of	60	....	40
Connecticut	4,674	0·15	37
Delaware	2,120	0·07	38
Florida	59,268	2·02	13
Georgia	58,000	1·98	14
Illinois	55,405	1·89	16
Indiana	33,809	1·15	29
Indian Ter. (S. of Kansas)	71,127	2·42	10
Iowa	50,914	1·73	19
Kansas	114,798	3·91	9
Kentucky	37,680	1·28	28
Louisiana	41,255	1·40	26
Maine	31,766	1·08	30
Maryland	11,124	0·38	32
Massachusetts	7,800	0·26	36
Michigan	56,243	1·91	15
Minnesota Territory	166,025	5·65	6
Mississippi	47,156	1·61	22
Missouri	67,380	2·29	11
Nebraska Territory	335,882	11·44	1
New Hampshire	9,280	0·32	34
New Mexico Territory	207,077	7·05	4
New York	47,000	1·60	23
New Jersey	8,320	0·28	35
North Carolina	50,704	1·73	21
Ohio	39,964	1·36	27
Oregon Territory	185,080	6·30	5
Pennsylvania	46,000	1·57	24
Rhode Island	1,306	0·04	39
South Carolina	29,385	1·01	31
Tennessee	45,600	1·55	25
Texas	237,504	8·09	3
Utah Territory	269,170	9·17	2
Virginia	61,352	2·10	12
Vermont	10,212	0·35	33
Washington Territory	123,022	4·19	8
Wisconsin	53,924	1·84	17
Area obtained by treaty with Mexico	27,500	....	..
Aggregate	2,963,666	....	..

The Territory of Nebraska constitutes one-ninth, Utah one-eleventh, Texas one-twelfth, New Mexico one-fourteenth, Oregon one-sixteenth, Missouri and Virginia a little more than one-fiftieth each, South Carolina one-hundredth, Massachusetts one-three hundred and eightieth, and Rhode Island one-two thousand three hundredth part of the national area.

In addition to the above States, it is proposed to add to the Union the States of Minnesota (the bill for the admission having already passed the Senate), Kansas, Oregon (and, when this territory shall be more developed, a further division of Oregon will take place, adding one or more States), Ontonagnon (including the northwestern part of Michigan, and embracing territory as large in extent as New York State), Nebraska, and Washington. It is also proposed, when Texas shall increase sufficiently in population to make a division of that State advisable, to divide it into one or two more States. Ratios of representations for Congress, 1790 and 1800, 1 to 33,000; 1810, 35,000; 1820, 40,000; 1830, 47,700; 1840, 70,680; 1850, 93,420. Act of 1850 fixes the number of members at 233, to which afterward was added 1 for California; Massachusetts, Rhode Island, Connecticut, Pennsylvania, Maryland, Alabama, Tennessee, Kentucky, Missouri, Indiana, Texas, South Carolina, and Georgia, 1 member each for largest fractions. Future ratios of apportionment to be determined by the Secretary of Interior, by dividing the number 233 into whole *representative population*, giving States with largest fractions members to make up the total. Members from new States admitted shall be in addition to the 233 until the next census.

POPULATION, POPULATION TO SQUARE MILE, CAPITALS, AND POPULATION OF CAPITALS OF THE STATES AND TERRITORIES OF THE UNITED STATES IN THE YEAR 1850.

States and Territories.	Population, 1850.				Population to Square Mile.	Capitals.	Population of Capitals.
	Whites.	Free Colored.	Slaves.	Total.			
Alabama	426,514	2,265	342,844	771,628	15·9	Montgomery	8,728
Arkansas	192,189	608	47,100	209,897	4·0	Little Rock	2,167
California	91,635	962	....	92,597	0·5	Sacramento	6,820
Carolina, North	553,028	27,463	288,584	309,039	19·1	Raleigh	4,518
Carolina, South	274,563	8,960	384,984	668,507	23·8	Columbia	6,060
Columbia, District of	37,941	10,059	3,687	51,687	1089·7	WASHINGTON CITY	40,001
Connecticut	363,099	7,693	....	370,792	78·1	Hartford	13,555
Delaware	71,169	18,073	2,290	91,532	43·2	Dover	4,207
Florida	47,203	932	39,310	87,445	1·5	Tallahassee	1,391
Georgia	521,572	2,931	381,682	906,185	15·6	Columbus	5,942
Illinois	846,034	5,436	....	851,470	15·4	Springfield	4,533
Indiana	977,154	11,262	....	988,416	29·2	Indianapolis	8,091
Indian Territory	(Inhabited by about 110,000 Indians.)					.....	....
Iowa	191,881	333	....	192,214	3·8	Iowa City	1,582
Kansas Territory	(No white inhabitants in 1850.)					.....	....
Kentucky	761,413	10,011	210,981	982,405	26·1	Frankfort	3,308
Louisiana	255,491	17,462	244,809	517,762	12·5	Baton Rouge	3,905
Maine	581,813	1,356	....	583,169	16·7	Augusta	11,753
Maryland	417,043	74,723	90,366	583,034	58·0	Annapolis	3,011
Massachusetts	985,450	9,064	....	994,514	137·2	Boston	136,881
Mesilla Territory	(The population can not exceed 10,000, chiefly Indians.)					.....	....
Michigan	395,071	2,583	....	397,654	7·1	Lansing	1,229
Minnesota Territory	6,038	39	....	6,077	0·0	St. Paul	1,338
Mississippi	295,718	930	309,878	606,526	12·8	Jackson	1,881
Missouri	592,004	2,018	87,422	682,044	10·5	Jefferson City	3,000
Nebraska Territory	(No white inhabitants in 1850.)					.....	....
New Hampshire	317,456	520	....	317,976	39·6	Concord	3,576
New Mexico Territory	61,525	22	....	61,547	0·3	Santa Fé	4,846
New York	3,048,325	49,069	....	3,097,394	67·8	Albany	50,763
New Jersey	465,509	23,810	236	489,555	71·4	Trenton	6,461
Ohio	1,955,060	25,279	....	1,980,339	49·5	Columbus	17,882
Oregon Territory	12,093	55	....	12,093	0·0	Salem	600
Pennsylvania	2,258,160	53,020	....	2,311,786	49·2	Harrisburg	7,834
Rhode Island	143,875	8,670	....	147,545	122·9	Providence	41,513
Tennessee	756,836	6,422	239,459	1,002,717	22·8	Nashville	11,498
Texas	154,034	397	58,160	212,592	0·6	Austin	629
Utah Territory	11,330	24	26	11,380	0·1	Fillmore City	200
Virginia	894,800	54,333	472,528	1,421,661	23·2	Richmond	27,570
Vermont	313,402	718	....	314,120	39·2	Montpelier	2,310
Washington Territory	1,049	152	....	1,201	0·0	Olympia	200
Wisconsin	304,756	635	....	305,391	5·6	Madison	1,871
Total	19,553,068	434,495	3,204,313	23,191,876	7·0	.....	....

AGGREGATE POPULATION AND DENSITY OF THE STATES AND TERRITORIES OF THE UNITED STATES.

States and Territories	Population.							Density.	
	1790.	1800.	1810.	1820.	1830.	1840.	1850.	1840.	1850.
Alabama	....	....	....	127,901	309,527	590,756	771,623	11·65	15·21
Arkansas	....	....	....	14,273	30,388	97,574	209,897	1·37	4·02
California	....	....	....	....	....	....	92,597	....	0·59
Columbia, District of	....	14,093	24,023	33,039	39,834	43,712	51,687	437·12	361·45
Connecticut	238,141	251,002	262,042	275,202	297,675	309,978	370,792	66·32	79·33
Delaware	59,096	64,279	72,674	72,749	76,748	78,085	91,532	36·88	43·18
Florida	....	....	....	....	34,730	54,477	87,445	0·92	1·48
Georgia	82,548	162,101	252,432	340,987	516,823	691,392	906,185	11·93	15·62
Illinois	....	....	12,282	55,211	157,445	476,183	851,470	8·59	15·37
Indiana	....	4,875	24,520	147,178	343,031	685,866	988,416	20·23	29·24
Iowa	....	....	....	....	....	43,112	192,214	0·33	2·76
Kentucky	73,077	220,955	406,511	564,317	687,917	779,828	982,405	20·70	26·07
Louisiana	....	....	76,556	153,407	215,739	352,411	517,762	3·54	12·55
Maine	96,540	151,719	228,705	298,335	399,455	501,793	583,169	15·80	18·86
Maryland	319,728	341,548	380,546	407,350	447,040	470,019	583,034	42·25	52·41
Massachusetts	378,717	422,845	472,040	523,287	610,408	737,699	994,514	94·53	127·50
Michigan	....	....	4,762	8,896	31,639	212,267	397,654	3·77	7·07
Mississippi	....	8,850	40,352	75,448	136,621	375,651	606,526	7·97	12·80
Missouri	....	....	20,845	66,586	140,455	383,702	682,044	5·69	10·12
New Hampshire	141,899	183,762	214,360	244,161	269,328	284,574	317,976	30·67	34·26
New Jersey	184,139	211,949	245,555	277,575	320,823	373,306	489,555	44·87	58·84
New York	340,120	586,756	959,049	1,372,812	1,918,608	2,428,921	3,097,394	51·68	65·90
North Carolina	393,751	478,103	555,500	638,829	737,987	753,419	869,039	14·38	17·14
Ohio	....	45,365	230,760	581,434	937,903	1,519,467	1,980,329	38·02	49·55
Pennsylvania	434,373	602,361	810,091	1,049,458	1,348,233	1,724,033	2,311,780	37·48	50·26
Rhode Island	69,110	69,122	77,031	83,059	97,199	108,830	147,545	83·38	112·97
South Carolina	249,073	345,591	415,115	502,741	581,185	594,398	668,507	20·23	22·75
Tennessee	35,791	105,602	261,727	422,813	681,904	829,210	1,002,717	18·18	21·99
Texas	....	....	....	....	....	....	212,592	....	0·89
Vermont	85,416	154,465	217,713	235,764	280,652	291,948	314,120	28·59	30·76
Virginia	748,308	880,200	974,622	1,065,379	1,211,405	1,239,797	1,421,661	20·21	23·17
Wisconsin	....	....	....	....	....	30,945	305,391	0·57	5·66
Minnesota Territory	....	....	....	....	....	....	6,077	....	0·04
New Mexico Territory	....	....	....	....	....	....	61,547	....	0·80
Oregon Territory	....	....	....	....	....	....	13,294	....	0·07
Utah Territory	....	....	....	....	....	....	11,380	....	0·04
		5,305,937 Less 12		9,638,191 Less 60	5,318	6,100			
Total	3,929,827	5,305,925	7,239,814	9,638,131	12,866,020	17,069,453	23,191,876	9·55	7·90

DENSITY OF POPULATION TO SQUARE MILE IN THE UNITED STATES.

Years.	Density.	Years.	Density.	Years.	Density.
1790	4·79	1820	5·89	1850	7·90
1800	6·47	1830	7·20		
1810	4·21	1840	9·55		

For an explanation of the principle upon which the following table may be constructed, see Professor TUCKER'S *Progress of the United States*, p. 107. By starting with the population of 1790 as a basis, which was 3,020,827, and adding three per cent. for every

year, making 4,047,721 for 1791, 4,109,152 for 1792, and so on for every year until 1850, Mr. Darby, the well-known geographer, arrived at results which, when compared with the particular census years, showed as follows:

Years.	Estimated.	Census.
1800	5,281,408	5,305,925
1810	7,095,964	7,239,814
1820	9,535,182	9,638,131
1830	12,811,118	12,866,020
1840	17,217,706	17,069,453
1850	23,138,004	23,191,876

AGGREGATE POPULATION OF THE UNITED STATES FOR EACH YEAR FROM 1790 TO 1866.—(THE RATE FROM 1840 TO 1850 IS ASSUMED AS DATA FOR THE NEXT DECADE.)

Years.	Aggregate.	Years.	Aggregate.	Years.	Aggregate.
1790...	3,929,827	1814...	8,117,710	1838...	16,181,087
1791...	4,049,600	1815...	8,353,538	1839...	16,593,630
1792...	4,173,024	1816...	8,595,806	1840...	17,069,453
1793...	4,300,210	1817...	8,845,312	1841...	17,600,752
1794...	4,431,272	1818...	9,102,060	1842...	18,148,589
1795...	4,566,329	1819...	9,366,261	1843...	18,713,479
1796...	4,705,504	1820...	9,638,131	1844...	19,295,971
1797...	4,848,919	1821...	9,920,000	1845...	19,896,574
1798...	4,996,705	1822...	10,211,348	1846...	20,515,871
1799...	5,148,994	1823...	10,510,618	1847...	21,154,444
1800...	5,305,925	1824...	10,818,659	1848...	21,812,893
1801...	5,473,407	1825...	11,135,727	1849...	22,491,305
1802...	5,646,176	1826...	11,462,088	1850...	23,191,876
1803...	5,824,398	1827...	11,798,013	1851...	23,873,717
1804...	6,008,246	1828...	12,143,783	1852...	24,575,604
1805...	6,197,897	1829...	12,499,687	1853...	25,298,196
1806...	6 393,534	1830...	12,866,020	1854...	26,041,890
1807...	6,595,346	1831...	13,234,031	1855...	26,807,591
1808...	6,803,528	1832...	13,614,420	1856...	27,595,662
1809...	7,018,282	1833...	14,004,789	1857...	28,406,974
1810...	7,239,814	1834...	14,406,350	1858...	29,242,159
1811...	7,449,960	1835...	14,819,425	1859...	30,101,857
1812...	7,656,206	1836...	15,244,844	1860...	30,936,651
1813...	7,888,729	1837...	15,681,447		

The national census was conducted under the direction of the Secretary of State until the formation of the Department of the Interior (March 3, 1849), when it was made a subordinate branch of that office. The statistics were obtained by the marshals of the district courts prior to 1850, and special deputies appointed under them. Several months were usually devoted to the labor; and the returns thus obtained, being subject to the errors arising from changes and removals in the interim, consequently were not always reliable.

The following is an estimate of the progress of population from the year 1860 to the close of the century:

Years.	Aggregate.	Years.	Aggregate.	Years.	Aggregate.
1861...	32,028,400	1875...	47,087,052	1889...	71,205,122
1862...	32,982,252	1876...	48,499,608	1890...	73,392,185
1863...	33,978,928	1877...	49,954,652	1891...	75,573,619
1864...	34,998,825	1878...	51,453,291	1892...	77,840,849
1865...	35,024,231	1879...	52,996,889	1893...	80,176,063
1866...	36,089,377	1880...	54,586,705	1894...	82,581,844
1867...	37,170,958	1881...	56,224,899	1895...	85,058,784
1868...	38,286,086	1882...	57,911,130	1896...	87,610,547
1869...	39,434,668	1883...	59,648,463	1897...	90,228,863
1870...	40,617,708	1884...	61,447,916	1898...	92,935,713 8
1871...	41,836,239	1885...	63,291,853	1899...	95,728,799
1872...	43,091,532	1886...	65,190,109	1900...	98,595,512
1873...	44,384,064	1887...	67,145,917	1901...	101,553,377
1874...	45,715,585	1888...	69,160,294		

Agriculture.—The following table will show the relative number of farms, and quantity of acres in each in the several States and Territories of the United States, as well as the value of farms and implements. The unimproved land embraces such as is in occupancy and necessary to the enjoyment of the improved, though not itself reclaimed. Meadow-lands in all of the States, are therefore regarded improved.

FARMING LANDS AND IMPROVEMENTS OF THE UNITED STATES, 1850.

States and Territories.	Farms, Plantations, etc.	Acres of improved Land.	Acres of unimproved Land.	Average Number of Acres to each Farm.	Cash Value of Farms.	Value of Farming Implements and Machinery.	Average Value of Farms.	Average Value of Farms, Implements and Machinery.	Average Value of Farms, Implements, and Machinery.
Alabama	41,964	4,435,614	7,702,067	290	$64,923,224	$5,125,663	$1533	$122	$1655
Arkansas	17,158	781,530	1,816,684	146	15,265,245	1,601,296	860	90	150
California	879	39,454	3,861,531	4466	3,874,041	103,443	4440	118	4561
Columbia, District of	967	16,267	11,187	103	1,730,460	60,920	6481	151	6632
Connecticut	22,445	1,768,178	615,701	106	72,726,422	1,892,541	3240	84	3324
Delaware	6,063	580,862	375,282	158	18,880,031	510,279	3114	84	3198
Florida	4,304	349,049	1,246,240	371	6,328,109	658,795	1469	153	1622
Georgia	51,750	6,878,479	16,442,900	441	95,753,445	5,994,150	1850	114	1964
Illinois	76,208	5,039,545	6,997,667	158	96,133,990	6,405,561	1261	84	1345
Indiana	93,896	5,046,543	7,746,979	136	136,885,173	6,704,444	1453	71	1524
Iowa	14,505	824,682	1,911,382	185	16,657,567	1,172,869	1125	79	1204
Kentucky	74,777	5,968,270	10,981,478	227	155,021,262	5,169,037	2073	69	2142
Louisiana	13,422	1,530,025	3,399,018	372	75,814,398	11,576,938	5648	863	6511
Maine	46,760	2,039,506	2,515,797	97	54,861,748	2,284,557	1173	49	1222
Maryland	21,860	2,797,905	1,886,445	212	87,178,545	2,463,413	3988	113	4101
Massachusetts	34,009	2,133,436	1,222,576	99	109,076,347	3,209,584	3202	94	3296
Michigan	34,069	1,929,110	2,454,780	129	51,872,446	2,891,371	1521	85	1606
Mississippi	33,960	3,444,858	7,046,061	309	54,738,634	5,762,927	1612	170	1782
Missouri	54,476	2,938,425	6,794,245	179	63,225,543	3,981,525	1161	73	1234
New Hampshire	29,229	2,251,488	1,140,926	116	55,245,997	2,314,125	1890	79	1969
New Jersey	23,905	1,767,991	981,955	115	120,237,511	4,425,503	5030	185	5215
New York	170,621	12,408,954	6,710,120	112	554,546,642	22,064,926	3 50	129	3379
North Carolina	56,963	5,453,975	15,543,008	369	67,891,766	3,921,532	1192	69	1261
Ohio	143,807	9,851,493	8,148,600	125	858,756,608	12,750,585	2405	88	2493
Pennsylvania	127,577	8,629,619	6,294,728	117	407,576,099	14,792,541	3197	115	3312
Rhode Island	5,385	356,487	197,451	103	17,070,802	497,201	3170	92	3262
South Carolina	29,967	4,079,551	12,145,049	541	82,431,684	4,186,351	2751	138	2889
Tennessee	72,735	5,175,173	13,808,849	261	97,851,212	5,360,210	1345	74	1419
Texas	12,198	643,976	10,852,863	941	16,550,008	2,151,704	1357	176	1533
Vermont	29,763	2,601,499	1,524,413	139	63,361,227	2,739,282	2129	92	2221
Virginia	77,013	10,869,135	15,792,176	340	216,401,543	7,021,772	2810	91	2901
Wisconsin	20,177	1,045,499	1,931,159	148	28,528,563	1,641,568	1414	81	1495
Minnesota Territory	157	5,035	23,846	184	161,948	15,981	1031	102	1133
New Mexico Territory	3,750	166,201	124,370	77	1,653,922	77,960	441	21	462
Oregon Territory	1,164	132,857	299,951	372	2,849,170	183,423	2448	157	2605
Utah Territory	926	16,333	80,516	51	311,799	84,288	337	91	428
Total, 1850	1,449,075	113,032,614	180,528,009	203	$3,271,575,426	$151,587,638	$2258	$105	$2362

The average number of acres embraced in each farm in the United States is 203, valued at $2258, and upon each farm there is an average of $105 in implements and machinery. In Louisiana, so complicated is the sugar process, the average machinery is $863 to the farm. By another table prepared by sections, it would seem that only about one-thirteenth of the whole area of the organized States and Territories is improved, and about one-eighth more is occupied and not improved. In New England about twenty-six acres in the hundred are improved, in the South sixteen acres, in the Northwest twelve, and in the Southwest five. In the South the number of acres to the farm is largest, but the value per acre is most in the Middle States. The average value per acre for the Union, improved and unimproved, is $11·14. The whole number of acres occupied is 293,560,614, or nearly one-sixth part of the national domain.—*Census Report of* 1850.

Agricultural Ratio Tables of the States, 1850.

Sections.	Whole Area in Acres.	Land in use.		Proportion of Land in use to Area.		Number of Farms.	Average Value of Agricultural Implements to each Farm.	Average Number of Acres to each Farm.	Average Value per Acre.
		Improved.	Unimproved.	Improved, per Cent.	Unimproved, per Cent.				
New England	41,824,320	11,150,534	7,216,864	26·79	17·34	167,651	77·17	109·55	20·27
Middle States	78,359,360	26,260,606	16,219,717	35·72	22·10	350,293	120·51	121·08	28·07
Southern States	165,878,760	26,514,289	61,169,373	16·07	36·94	220,008	98·57	390·00	5·34
Southwestern States*	151,655,840	15,426,790	33,772,670	10·17	22·27	179,899	163·63	278·57	6·26
Northwestern States	253,004,160	32,643,567	46,963,790	12·90	18·56	512,217	79·49	155·41	11·39
California and organized Territories	629,255,680	859,890	4,340,214	·06	69	6,869	67·71	683·23	1·89
Texas	152,002,560	643,946	10,852,368	·42	7·14	12,108	176·40	942·47	1·44
Total	1,466,455,640	113,682,514	180,528,960	7·71	12·31	1,449,075	104·61	202·59	11·14

* Exclusive of Texas and California.

Live Stock upon Farms and Agricultural Productions of the States and Territories, 1840 and 1850.

States and Territories.	Horses.	Asses and Mules.	Horses, Asses, and Mules.	Horses and Mules.	Milch Cows.	Working Oxen.	Other Cattle.	Total Neat Cattle.	Neat Cattle.	Sheep.	
	1850.	1850.	1850.	1840.	1850.	1850.	1850.	1850.	1840.	1850.	1840.
Alabama	128,001	59,895	187,896	143,147	227,791	66,961	433,263	728,015	668,018	371,880	163,243
Arkansas	60,197	11,559	71,756	51,472	93,151	34,239	165,320	292,710	188,756	91,256	42,151
California	21,719	1,666	23,385	....	4,280	4,780	253,509	262,569	....	17,574	....
Columbia, District of	824	57	881	2,145	813	104	123	1,040	8,274	150	706
Connecticut	26,879	49	26,928	24,650	85,461	46,988	80,920	212,675	238,050	174,181	408,462
Delaware	13,852	791	14,643	14,421	19,248	9,797	24,166	53,211	53,883	27,503	39,247
Florida	10,848	5,002	15,850	12,043	72,876	5,794	182,415	261,085	118,081	23,311	7,178
Georgia	151,331	57,379	208,710	157,540	334,228	78,286	690,019	1,097,528	884,414	560,435	267,107
Illinois	267,653	10,573	278,226	199,285	294,671	76,156	541,209	912,036	626,274	884,048	395,672
Indiana	314,299	6,599	320,898	241,036	384,554	40,221	880,891	714,666	619,980	1,122,403	675,982
Iowa	88,536	754	89,290	16,794	45,704	21,872	69,025	136,921	89,049	149,960	15,854
Kentucky	315,682	65,609	381,291	305,852	247,475	62,274	442,763	752,512	787,099	1,102,001	1,008,240
Louisiana	89,514	44,849	134,363	99,888	105,576	54,968	414,798	575,342	381,248	110,933	98,072
Maine	41,721	55	41,776	59,208	133,556	83,898	125,890	343,390	327,255	451,577	640,264
Maryland	75,684	5,644	81,328	92,220	86,555	34,135	98,505	219,380	225,714	177,002	257,922
Massachusetts	42,217	34	42,250	61,484	130,099	46,611	83,284	259,994	282,574	188,051	378,226
Michigan	58,506	70	58,576	80,144	99,676	55,350	119,471	274,497	185,190	746,435	99,618
Mississippi	115,460	54,547	170,007	109,227	214,231	83,485	436,254	733,970	623,197	804,929	128,867
Missouri	225,319	41,667	266,986	196,082	230,169	112,168	449,173	791,510	433,575	762,511	348,018
New Hampshire	34,236	19	34,252	46,892	94,277	59,027	114,666	267,910	275,582	384,756	617,390
New Jersey	63,955	4,089	68,044	70,502	118,736	12,070	80,455	211,261	220,202	160,488	219,285
New York	447,014	963	447,977	474,543	931,324	178,900	767,406	1,877,630	1,911,244	3,463,241	5,118,777
North Carolina	148,693	25,259	173,952	166,606	221,799	87,909	434,402	693,510	617,371	515,240	538,279
Ohio	405,397	3,423	466,820	430,527	544,499	65,381	749,067	1,358,947	1,217,874	3,942,020	2,028,401
Pennsylvania	350,398	2,259	352,657	365,129	530,224	61,527	562,195	1,153,946	1,172,665	1,822,357	1,767,620
Rhode Island	6,168	1	6,169	8,024	18,636	8,139	9,375	36,261	36,891	44,296	60,146
South Carolina	97,171	37,483	134,654	129,231	193,244	30,507	563,085	777,086	572,608	295,551	232,931
Tennessee	270,636	75,393	345,989	341,400	253,456	86,253	414,051	753,762	822,851	811,591	741,593
Texas	76,760	12,463	89,223	....	217,811	51,285	661,818	930,114	....	100,530	....
Vermont	61,057	218	61,275	62,402	146,128	48,577	154,143	348,848	354,341	1,014,122	1,681,816
Virginia	272,408	21,483	293,886	326,498	317,619	89,513	669,167	1,076,299	1,024,148	1,810,004	1,293,772
Wisconsin	30,179	156	30,335	5,735	64,339	42,801	76,293	183,433	30,269	124,896	5,462
Minnesota Territory	860	14	874	....	607	635	740	2,002	....	80	....
New Mexico Territory	5,079	8,654	13,733	....	10,635	12,257	10,085	32,977	....	377,271	....
Oregon Territory	8,046	420	8,466	....	9,427	8,114	24,188	41,729	....	15,382	....
Utah Territory	2,429	325	2,754	....	4,861	5,260	2,480	12,616	....	3,262	....

Live Stock upon Farms and Agricultural Productions of the States and Territories, 1849 and 1850.

States and Territories.	Swine.		Value of Live Stock.	Value of Animals slaughtered.	Wheat, Bushels.		Rye, Bushels.		Oats, Bushels.	
	1850.	1840.	1850.	1850.	1850.	1840.	1850.	1840.	1850.	
Alabama	1,904,540	1,423,873	$21,610,112	$4,823,485	294,044	838,052	17,261	51,008	2,905,696	
Arkansas	836,737	393,058	6,647,960	1,165,319	192,633	105,878	8,047	6,319	656,183	
California	2,776	....	3,371,058	107,173	17,228	....	....	....	....	
Columbia, District of	1,635	4,673	71,643	9,038	27,370	12,147	5,509	5,081	8,184	
Connecticut	76,472	131,961	7,467,400	2,202,266	41,762	87,009	600,923	737,424	1,258,738	
Delaware	56,261	74,228	1,849,281	373,665	482,511	515,165	8,066	33,546	604,518	
Florida	209,453	92,680	2,880,058	514,685	1,027	412	1,152	305	66,586	
Georgia	2,168,617	1,457,755	25,728,416	6,339,762	1,088,534	1,801,830	53,750	60,693	3,820,044	
Illinois	1,915,907	1,495,254	24,209,253	4,972,286	9,414,575	3,335,393	83,364	88,197	10,087,241	
Indiana	2,263,776	1,629,608	22,478,555	6,567,935	6,214,458	4,049,375	78,792	129,621	5,655,014	
Iowa	323,247	104,399	3,689,275	821,164	1,530,581	154,693	19,916	3,792	1,524,345	
Kentucky	2,891,163	2,316,513	23,661,436	6,462,518	2,142,822	4,803,152	415,073	1,321,373	8,201,311	
Louisiana	597,391	323,220	11,152,275	1,458,990	417	60	475	1,812	89,687	
Maine	54,578	117,386	9,705,726	1,646,773	296,251	848,166	102,916	157,941	2,181,037	
Maryland	352,911	416,943	7,997,634	1,054,800	4,474,680	5,845,733	226,014	723,577	2,242,151	
Massachusetts	81,119	143,221	9,647,710	2,500,924	51,211	157,923	481,021	536,014	1,165,146	
Michigan	205,847	295,330	8,008,734	1,328,327	4,926,891	2,157,108	105,871	34,236	2,860,056	
Mississippi	1,582,734	1,001,203	19,493,662	3,635,532	137,990	196,626	9,696	11,444	1,502,288	
Missouri	1,702,625	1,271,161	19,887,580	3,367,106	2,981,652	1,037,936	44,268	83,608	5,278,070	
New Hampshire	63,487	121,071	8,871,901	1,522,873	185,658	422,124	183,117	308,148	973,381	
New Jersey	259,370	261,443	10,679,291	2,638,552	1,601,190	774,203	1,255,578	1,665,820	3,378,903	
New York	1,018,922	1,900,065	78,570,499	13,573,888	15,121,498	12,286,419	4,148,182	2,979,323	26,552,814	
North Carolina	1,812,813	1,649,710	17,717,647	5,767,866	2,130,102	1,900,855	229,563	213,971	4,952,078	
Ohio	1,964,779	2,009,746	44,121,741	7,439,243	14,487,351	16,571,661	425,018	814,205	13,472,742	
Pennsylvania	1,040,366	1,503,964	41,590,053	8,219,848	15,367,691	13,218,077	4,805,160	6,613,873	21,588,156	
Rhode Island	19,503	30,650	1,532,637	667,486	40	8,098	26,409	34,521	215,232	
South Carolina	1,065,503	878,532	15,060,015	3,502,637	1,066,277	968,354	43,790	44,738	2,322,155	
Tennessee	3,104,800	2,926,607	29,978,016	6,401,765	1,619,886	4,569,692	89,137	304,230	7,703,086	
Texas	692,022	....	10,412,927	1,115,137	41,720	....	3,108	....	199,017	
Vermont	66,236	203,800	12,643,228	1,861,536	535,955	495,800	176,233	230,993	2,307,734	
Virginia	1,822,843	1,992,155	33,656,050	7,502,986	11,212,616	10,109,716	458,930	1,432,799	10,170,412	
Wisconsin	153,276	51,583	4,397,985	920,178	4,286,191	212,116	81,253	1,965	5,414,672	
Territs. Minnesota	734	....	92,559	2,840	1,401	....	125	....	30,589	
Territs. New Mexico	7,514	....	1,404,629	82,125	190,516	....	....	....	5	
Territs. Oregon	30,235	....	1,870,139	164,530	211,943	....	106	....	61,214	
Territs. Utah	914	....	546,903	67,985	107,702	....	210	....	10,900	

The annexed tables embrace the returns of agricultural products according to the census of 1840 and 1850. The quantity of wheat in 1850 is believed to be understated, and the crop was also short. Rough rice is returned for 1850, and clean rice for 1840. Corrections have been made in the cotton and sugar returns since the publication of the Quarto Census, pounds having been intended by the enumerators in many cases where they returned bales or hogsheads. It is impossible to reconcile the hemp and flax returns of 1840 and 1850. No doubt in both cases tons and pounds have often been confounded. In a few of the States, such as Indiana and Illinois, the returns of 1850 were rejected altogether for insufficiency. Letters from Kentucky entitled to high credit state the water-rotted hemp for that year to be not a third as much as the census gives, and the dew-rotted to be about 22,000 tons. In this case the whole hemp crop of 1850 may have reached 35,000 or 40,000 tons, and that of 1840 25,000 to 30,000 tons. By the manufacturing schedules it appears that 18,276 tons hemp were consumed by the manufacturers of Kentucky and Missouri, and by the receipts at the cities of St. Louis, Cincinnati, and New Orleans, with proper deductions, that fourteen or fifteen thousand tons hemp were exported in the rough to other States.

AGRICULTURAL PRODUCTIONS OF THE STATES AND TERRITORIES, 1840 AND 1850.

States and Territories.	Oats, Bushels.	Indian Corn, Bushels.	Irish and Sweet Potatoes, Bushels.				Barley, Bushels.
			Irish.	Sweet.	Total.	Irish and Sweet.	
	1840.	1850.	1840.	1850.	1850.	1840.	1850.
Alabama	1,406,353	28,754,048	20,947,004	246,001	5,475,204	5,721,205	1,708,356	3,058
Arkansas	189,553	8,893,959	4,846,632	198,832	788,149	981,981	203,608	177
California	....	12,236	....	9,292	1,000	10,292	....	9,712
Columbia, District of	16,751	65,230	89,435	28,292	3,497	31,789	12,035	75
Connecticut	1,453,202	1,985,943	1,500,441	2,630,795	59	2,630,805	3,414,238	19,099
Delaware	927,405	3,145,542	2,099,359	240,542	65,443	305,985	200,719	50
Florida	13,899	1,996,809	998,974	7,898	757,226	765,054	264,617	....
Georgia	1,619,030	30,080,099	20,905,122	227,379	5,986,428	7,213,807	1,291,366	11,501
Illinois	4,988,008	57,646,984	22,634,211	2,514,861	157,438	2,672,294	2,025,520	110,795
Indiana	5,981,606	52,964,863	28,155,887	2,083,337	201,711	2,285,048	1,525,794	48,483
Iowa	216,385	8,656,799	1,406,241	276,120	6,243	282,363	234,063	25,003
Kentucky	7,155,974	58,672,591	39,847,190	1,491,487	998,179	2,490,666	1,055,095	95,343
Louisiana	107,353	10,266,373	5,952,912	95,632	1,428,453	1,524,085	834,841	....
Maine	1,076,409	1,750,056	950,528	3,436,040	....	3,436,040	10,392,280	151,731
Maryland	3,534,211	10,749,858	8,235,686	764,939	208,993	973,932	1,036,433	745
Massachusetts	1,319,680	2,345,490	1,809,192	3,585,384	....	3,585,384	5,385,652	112,385
Michigan	2,114,051	5,641,420	2,277,039	2,359,897	1,177	2,361,074	2,109,205	75,249
Mississippi	668,694	22,446,552	13,161,237	261,482	4,741,795	5,003,277	1,630,100	228
Missouri	2,234,947	35,214,537	17,332,594	930,006	335,506	1,274,511	783,788	9,631
New Hampshire	1,296,114	1,575,570	1,169,579	4,304,919	....	4,304,919	4,396,606	70,256
New Jersey	3,083,594	8,759,704	4,361,975	3,307,366	508,015	3,775,251	2,079,069	6,492
New York	20,675,847	17,854,400	10,979,286	15,398,368	5,029	15,403,397	30,125,514	3,585,050
North Carolina	3,193,941	27,941,051	23,893,763	630,318	5,066,709	5,716,027	2,609,289	2,735
Ohio	14,393,103	59,078,096	33,668,144	5,057,769	187,091	5,245,760	5,805,021	354,358
Pennsylvania	20,641,819	19,835,214	14,340,022	5,980,732	53,172	6,033,904	9,535,663	165,584
Rhode Island	171,517	529,301	450,498	651,029	....	651,029	911,978	18,875
South Carolina	1,486,208	16,271,454	14,722,808	136,494	4,337,466	4,473,960	2,608,313	4,583
Tennessee	7,035,678	52,276,223	44,986,188	1,067,844	2,777,716	3,845,560	1,904,370	2,731
Texas	....	6,028,476	....	94,645	1,339,158	1,426,803	....	4,776
Vermont	2,222,514	2,032,396	1,119,678	4,951,014	....	4,951,014	8,360,751	42,150
Virginia	13,451,642	35,254,319	34,577,591	1,316,933	1,813,634	3,130,567	2,944,660	25,457
Wisconsin	406,514	1,988,979	379,359	1,409,077	879	1,409,956	419,608	209,692
Territs. Minnesota	....	16,725	....	21,145	200	21,345	....	1,216
Territs. New Mexico	....	365,411	....	3	....	3	....	5
Territs. Oregon	....	9,218	....	91,326	....	91,326	....	....
Territs. Utah	....	9,609	....	43,968	60	44,028	....	1,799

States and Territories.	Barley, Bushels.	Buckwheat, Bushels.		Hay, Tons.		Hops, Pounds.		Clover-seed.	Other Grass Seeds.
	1840.	1850.	1840.	1850.	1840.	1850.	1840.	1850.	1850.
Alabama	7,022	348	58	32,685	12,718	276	825	138	547
Arkansas	760	175	88	3,970	586	157	....	90	436
California	....	....	....	2,038	....	....	....	....	....
Columbia, District of	924	378	272	2,379	1,331	15	28	3	....
Connecticut	33,750	229,297	203,043	516,131	426,704	554	4,573	13,841	16,628
Delaware	5,200	8,615	11,299	30,159	22,483	348	746	2,525	1,403
Florida	30	55	....	2,510	1,197	14	....	....	2
Georgia	12,979	250	141	23,449	16,970	261	773	132	428
Illinois	82,251	184,594	57,884	601,952	164,982	3,651	17,742	3,427	14,380
Indiana	28,015	149,749	49,019	403,230	178,029	92,796	38,591	18,320	11,951
Iowa	738	52,516	6,212	89,055	17,953	8,242	83	342	2,090
Kentucky	17,491	16,097	8,169	113,747	88,306	4,309	749	3,230	21,481
Louisiana	....	3	....	25,752	24,651	125	115	2	97
Maine	355,161	104,523	51,543	755,889	691,358	40,120	36,940	9,007	9,214
Maryland	3,534	103,671	73,606	157,956	106,647	1,870	2,357	15,217	2,561
Massachusetts	165,319	105,895	87,000	651,807	562 95	121,535	254,795	1,092	5,085
Michigan	127,802	472,917	113,592	404,934	12 8	10,662	11,381	16,989	9,285
Mississippi	1,654	1,121	61	12,504	171	473	154	84	533
Missouri	9,801	23,641	15,318	119,925	49,083	4,130	789	619	4,346
New Hampshire	121,899	65,365	105,103	598,854	496,107	257,174	243,425	629	8,071
New Jersey	12,501	878,934	856,117	433,950	334,861	2,133	4,531	28,380	63,051
New York	2,520,068	3,143,955	2,987,885	3,728,797	3,127,647	2,536,299	447,250	88,922	96,193
North Carolina	3,574	16,704	15,391	145,653	101,369	9,246	1,068	876	1,275
Ohio	212,440	638,060	633,139	1,448,142	1,022,037	63,731	62,195	103,197	37,310
Pennsylvania	209,393	2,193,692	2,113,742	1,842,070	1,311,643	29,088	43,481	125,030	53,913
Rhode Island	66,490	1,245	2,979	74,418	63,449	277	113	1,328	3,708
South Carolina	3,967	983	72	20,925	24,618	26	93	376	30
Tennessee	4,809	19,427	17,118	74,091	31,233	1,032	850	5,096	9,118
Texas	....	50	....	8,354	....	7	....	10	....
Vermont	54,781	209,819	228,416	866,153	836,739	288,023	48,137	700	14,936
Virginia	87,430	214,898	243,822	369,098	364,708	11,506	19,597	29,727	23,428
Wisconsin	11,062	79,878	10,654	275,662	30,938	15,930	133	485	5,093
Territs. Minnesota	....	515	....	2,919	....	....	....	....	....
Territs. New Mexico	....	100	....	....	....	....	....	....	....
Territs. Oregon	....	....	....	373	....	8	....	4	22
Territs. Utah	....	332	....	4,805	....	50	....	2	....

States and Territories.	Value of Orchard Products.	Beeswax and Honey, Pounds of.	Wax, Pounds of.	Value of Poultry.	Home-made Manufactures.	Cords of Wood sold.	Flax-seed, Bush. of.	Flax, Pounds of.	Dew-rotted Hemp, Tons.	Water-rotted Hemp, Tons.
	1840.	1850.	1840.	1840.	1850.	1840.	1850.	1850.	1850.	1850.
Alabama	$55,240	807,021	25,226	$404,904	$1,934,120	60,955	60	3,921	....	....
Arkansas	10,680	199,388	7,079	100,468	638,217	78,606	321	19,291	....	15
California	....	....	....	....	7,000	....	....	....	....	....
Columbia, District of	3,507	550	44	3,092	2,075	1,237	....	....	....	....
Connecticut	296,239	93,304	3,897	176,529	192,252	159,962	703	17,928	....	....
Delaware	23,311	41,349	1,088	47,265	83,121	67,864	904	11,174	....	....
Florida	1,035	18,971	75	61,007	75,582	9,945	....	50	....	....
Georgia	156,129	732,514	10,799	441,523	1,838,968	57,459	262	5,857	....	....
Illinois	126,756	861,444	29,178	809,994	1,155,902	134,549	10,787	160,063	....	....
Indiana	110,055	905,393	30,647	357,594	1,531,069	183,719	36,888	554,469	....	....
Iowa	50	321,711	2,182	16,539	221,292	7,804	1,959	32,666	....	....
Kentucky	434,935	1,158,019	38,445	536,439	2,459,128	264,232	75,801	2,100,116	15,432	1355
Louisiana	11,769	96,701	1,012	283,553	139,232	202,867	....	....	....	....
Maine	149,384	189,618	3,723	198,171	518,590	305,011	580	17,031	....	....
Maryland	105,740	74,802	3,674	218,765	111,828	178,181	2,446	35,686	63	....
Massachusetts	380,177	59,508	1,196	178,157	205,338	278,069	72	1,162	....	....
Michigan	16,075	359,332	4,533	82,730	349,947	54,408	519	7,152	....	....
Mississippi	14,458	207,400	6,835	369,482	1,164,020	118,423	26	665	7	....
Missouri	60,873	1,228,972	56,481	270,647	1,674,705	81,981	13,096	627,160	15,988	60
New Hampshire	230,979	117,140	1,845	107,092	393,455	116,256	189	7,652	....	....
New Jersey	464,090	156,694	10,061	336,953	112,781	340,602	16,525	132,965	....	....
New York	1,701,935	1,755,830	52,795	1,153,418	1,280,533	1,068,923	57,963	940,577	1	3
North Carolina	286,046	512,289	18,928	544,195	2,086,592	40,084	28,196	532,796	36	3
Ohio	475,871	904,375	38,959	551,193	1,712,196	373,527	188,880	4462,932	100	50
Pennsylvania	618,179	889,509	33,107	685,801	749,132	269,516	41,728	530,307	44	....
Rhode Island	32,098	3,347	165	61,702	26,405	48,666	....	85	....	....
South Carolina	52,375	215,381	15,857	396,364	909,525	171,451	55	333	....	....
Tennessee	367,105	1,036,572	50,907	606,969	2,137,700	104,914	13,964	368,131	454	141
Texas	....	380,825	....	....	266,924	....	26	1,048	....	....
Vermont	218,944	249,422	4,660	121,578	267,710	96,899	939	20,852	....	....
Virginia	705,765	880,767	65,020	754,698	2,155,312	408,530	52,313	1,000,459	88	51
Wisconsin	37	131,005	1,474	16,167	43,524	22,910	1,191	68,353	....	....
Territ's. Minnesota	....	80	....	....	....	....	....	....	....	....
Territ's. New Mexico	....	2	....	....	6,033	....	....	....	....	....
Territ's. Oregon	....	....	....	....	....	....	....	640	....	....
Territ's. Utah	....	10	....	....	1,392	....	5	550	....	....

States and Territories.	Butter and Cheese, Pounds.			States and Territories.	Butter and Cheese, Pounds.		
	Butter.	Cheese.	Total.		Butter.	Cheese.	Total.
	1850.	1850.	1850.		1850.	1850.	1850.
Alabama	4,008,811	31,412	4,040,223	Missouri	7,834,359	203,679	8,037,931
Arkansas	1,854,239	30,088	1,884,327	New Hampshire	6,977,056	5,196,563	10,173,619
California	705	150	855	New Jersey	9,487,210	365,756	9,852,966
Columbia, District of	14,872	1,500	16,372	New York	70,766,004	49,741,413	120,507,507
Connecticut	6,498,119	5,363,277	11,861,396	North Carolina	4,146,290	95,921	4,242,211
Delaware	1,055,308	5,187	1,058,495	Ohio	34,449,379	20,819,542	55,268,921
Florida	371,498	18,015	389,513	Pennsylvania	39,878,418	2,505,034	42,383,452
Georgia	4,640,559	46,976	4,687,535	Rhode Island	995,670	316,508	1,312,178
Illinois	12,536,543	1,278,235	13,804,768	South Carolina	2,981,850	4,970	2,986,820
Indiana	12,881,535	624,564	13,506,099	Tennessee	8,139,585	177,681	8,317,266
Iowa	2,171,188	209,840	2,381,028	Texas	2,344,900	95,299	2,440,199
Kentucky	9,947,523	213,954	10,161,477	Vermont	12,137,980	8,720,834	20,858,814
Louisiana	683,969	1,957	685,926	Virginia	11,089,353	436,292	11,525,651
Maine	9,343,811	2,434,454	11,678,265	Wisconsin	3,633,750	400,283	4,034,033
Maryland	3,800,160	8,975	8,810,135	Territ's. Minnesota	1,100	....	1,100
Massachusetts	8,071,370	7,088,142	15,159,512	Territ's. New Mexico	111	5,848	5,959
Michigan	7,066,878	1,011,492	8,077,870	Territ's. Oregon	211,484	36,980	248,444
Mississippi	4,846,234	21,191	4,867,425	Territ's. Utah	83,309	30,998	114,307

States and Territories.	Dew and water-rotted Hemp, Tons.	Hemp and Flax, Tons.	Maple-sugar, Pounds.	Cane-sugar, Hogsheads of 100 l.bs.	Molasses, Gallons of.	Sugar, Pounds made.	Ginned Cotton, Bales of 400 Pounds.	Cotton, gathered, Pounds of.	Rough Rice, Pounds.
	1850.	1840.	1850.	1850.	1850.	1840.	1850.	1840.	1850.
Alabama	....	5	643	57	83,438	10,143	504,429	117,138,823	2,319,269
Arkansas	15	1,039½	9,350	....	18	1,542	65,844	6,028,042	63,179
Connecticut	....	41½	59,796	....	665	51,764	....	....	....
Delaware	....	52½	....	....	50	....	....	334	....
Florida	....	2	....	2,750	952,893	275,917	45,131	12,110,533	1,075,090
Georgia	....	10½	50	840	210,245	320,744	499,091	163,302,396	38,950,691
Illinois	....	1,970½	248,904	....	8,354	899,818	....	200,947	....
Indiana	....	8,665½	2,921,192	....	180,325	3,727,795	14	180	....
Iowa	....	313½	78,407	....	3,162	41,450	....	....	....
Kentucky	17,787	9,992½	437,405	10	30,079	1,877,835	758	691,456	5,688
Louisiana	....	....	255	226,061	10,931,177	119,947,720	178,737	152,555,368	4,425,349
Maine	....	38	93,542	....	3,167	257,464	....	....	....
Maryland	67	488	47,740	....	1,430	85,206	....	5,673	....
Massachusetts	....	2½	795,525	....	4,693	570,227	....	....	....
Michigan	....	755½	2,430,794	....	19,823	1,929,784	....	....	....
Mississippi	7	10	....	8	18,318	77	454,292	199,401,577	2,719,856
Missouri	16,028	18,016½	178,910	....	5,636	274,853	....	121,122	700
New Hampshire	....	2½	1,208,863	....	9,811	1,163,368	....	....	....
New Jersey	....	3,165½	2,197	....	954	....	....	56	....
New York	4	1,130½	10,357,484	....	55,539	10,048,100	....	....	....
North Carolina	39	9,879½	27,932	....	704	7,163	50,545	51,926,199	5,465,868
Ohio	150	9,080½	4,588,909	....	197,508	6,363,886	....	....	....
Pennsylvania	44	2,649½	2,326,525	....	53,052	2,265,755	....	....	....
Rhode Island	....	½	98	....	4	59	....	....	....
South Carolina	....	....	200	77	15,904	80,000	300,901	61,710,974	150,930,613
Tennessee	535	3,344½	159,557	3	7,223	258,073	194,532	27,701,977	283,954
Texas	....	....	....	7,351	441,918	....	58,072	....	88,203
Vermont	....	29½	6,940,357	....	5,997	4,047,934	....	....	....
Virginia	139	35,594½	1,297,665	....	40,329	1,541,933	3,947	3,494,483	17,154
Wisconsin	....	2	510,076	....	9,874	185,283	....	....	....
Territ's. Minnesota	....	....	2,950	....	....	....	....	....	....
Territ's. New Mexico	....	....	....	....	4,236	....	....	....	....
Territ's. Oregon	....	....	....	....	24	....	....	....	....
Territ's. Utah	....	....	....	....	58	....	....	....	....

Agricultural Productions of the States and Territories of the U. S., 1840 and 1850.

States and Territories.	Rice, Pounds.	Tobacco, Pounds.		Wool, Pounds.		Silk Cocoons, Pounds.		Wine, Gallons.		Value of Family Goods.
	1840.	1840.	1850.	1840.	1850.	1850.	1840.	1850.	1840.	1840.
Alabama	149,019	164,990	272,309	257,118	220,252	187	1,594½	220	177	$1,654,110
Arkansas	5,454	218,236	149,439	102,695	64,945	38	95	35	....	489,750
California	....	1,000	....	5,500	....	....	....	58,055	....	....
Columbia, District of	....	7,800	55,550	525	707	....	651	863	95	75,600
Connecticut	....	1,361,624	471,657	497,454	389,870	328	17,538	4,209	2,666	296,189
Delaware	....	....	272	57,768	64,404	....	1,458½	145	329	62,116
Florida	481,430	228,614	75,274	22,247	7,295	6	134½	10	....	20,205
Georgia	12,384,792	415,224	102,894	990,019	371,303	813	2,902½	796	8,647	1,467,630
Illinois	480	641,394	564,326	2,150,113	650,907	47	1,150	2,997	474	993,567
Indiana	....	1,044,690	1,826,306	2,610,287	1,237,919	367	379	14,055	10,265	1,239,903
Iowa	....	6,641	6,076	272,306	23,039	246	....	420	....	25,966
Kentucky	16,376	55,501,196	53,436,909	2,297,453	1,780,847	1981	727	8,093	2,209	2,022,462
Louisiana	3,604,534	26,278	119,324	109,897	49,293	29	317	15	2,884	65,190
Maine	....	....	30	1,254,084	1,455,551	252	211	724	2,236	804,397
Maryland	....	21,497,497	24,816,013	477,438	488,901	30	2,290½	1,421	7,555	176,050
Massachusetts	....	138,246	64,955	985,136	941,906	7	1,741	4,688	193	231,943
Michigan	....	1,245	1,002	2,042,383	153,378	108	206	1,654	....	113,955
Mississippi	777,195	49,960	53,471	559,619	175,196	2	21	407	12	698,945
Missouri	50	17,113,784	9,007,213	1,527,164	562,935	186	70	10,593	23	1,149,544
New Hampshire	....	50	115	1,108,470	1,260,617	191	419½	344	94	538,303
New Jersey	....	$10	1,922	875,396	397,207	23	1,966	1,811	9,416	201,625
New York	....	83,189	744	10,071,801	9,845,295	1774	1,785½	9,172	6,799	4,636,547
North Carolina	2,820,388	11,984,786	16,772,359	970,738	925,044	229	3,014	11,058	28,792	1,413,243
Ohio	....	10,454,449	5,942,275	10,196,811	3,685,315	1552	4,817½	48,207	11,524	1,858,337
Pennsylvania	....	912,651	395,018	4,481,570	3,048,564	285	7,962½	25,590	14,328	1,303,093
Rhode Island	....	....	317	129,692	153,880	....	458	1,013	803	51,180
South Carolina	60,526,861	74,285	51,519	487,233	209,170	128	2,080	5,880	643	930,703
Tennessee	7,917	20,148,939	29,550,432	1,364,378	1,060,332	1223	1,217	92	653	2,886,631
Texas	....	66,897	....	131,217	....	29	....	90	....	....
Vermont	....	....	595	2,400,717	3,699,295	963	4,256	650	94	674,548
Virginia	2,956	56,803,227	75,347,106	3,980,765	2,538,374	517	3,191	5,408	13,911	2,441,679
Wisconsin	....	1,268	115	253,963	6,777	...	½	113	....	12,567
Territ's Minnesota	....	....	....	85	....	....	....	....	....	....
Territ's New Mexico	....	8,467	....	32,001	....	....	....	2,363	....	....
Territ's Oregon	....	325	....	29,686	....	....	....	....	....	....
Territ's Utah	....	70	....	9,222	....	....	....	....	....	....

Actual Crops per Acre, on the Average, as returned by the Census Marshals of the U. S. for 1849-'50.

States.	Wheat, Bush.	Rye, Bush.	Indian Corn, Bush.	Oats, Bush.	Rice, Pounds.	Tobacco, Pounds.	Seed Cotton, Pounds.	Peas and Beans, Bush.	Irish Potatoes, Bush.	Sweet Potatoes, Bush.	Barley, Bush.	Buckwheat, Bush.	Hay, Tons.	Hops, Lbs.	Hemp, dew-rotted.	Cane-sugar, Pounds.
Alabama	5	..	16	12	....	...	525	12	60	200	..	..	..	...	...	....
Arkansas	10	..	22	18	....	...	700	..	...	100	..	..	..	...	...	....
Connecticut	..	..	40	21	....	...	...	..	85	...	..	20	..	...	...	....
Delaware	11	..	30	20	....	...	...	..	...	...	..	10	..	...	...	....
Florida	15	..	..	..	1850	...	350	..	175	...	..	..	..	...	...	750
Georgia	5	7	16	18	....	...	500	5	125	400	..	..	..	...	...	....
Illinois	11	14	33	29	....	...	...	..	115	...	40	15	1½	...	...	....
Indiana	12	18	33	30	....	...	...	..	100	...	25	25	1	...	...	....
Iowa	14	..	32	36	....	...	...	..	100	...	..	..	..	...	...	....
Kentucky	8	11	24	18	....	575	....	..	130	65	..	..	1½	....	650	....
Louisiana	..	..	16	..	1400	...	550	..	...	175	..	..	..	...	...	1000
Maine	10	11	27	30	....	...	...	..	120	...	20	..	½	...	...	....
Maryland	13	18	28	21	....	650	...	..	75	...	..	..	1	...	...	....
Massachusetts	16	13	31	26	....	...	...	..	170	...	21	..	1	...	...	....
Michigan	10	..	32	26	....	...	...	..	140	...	..	14	..	...	...	....
Mississippi	9	..	18	12	....	...	650	12	105	...	..	..	..	...	...	....
Missouri	11	..	34	26	....	775	...	..	110	...	..	..	1½	...	775	....
N. Hampshire	11	14	30	30	....	...	...	..	220	...	22	..	1	...	...	....
New Jersey	11	9	33	26	....	...	...	..	75	...	18	16	..	...	...	....
New York	12	17	27	25	....	...	...	..	100	...	25	22	1½	950	...	....
North Carolina	7	15	17	10	....	...	...	..	65	...	..	..	..	...	...	....
Ohio	12	25	36	21	....	750	...	..	75	...	30	20	1½	...	...	....
Pennsylvania	15	14	20	23	....	...	...	..	75	...	..	..	1½	...	...	....
Rhode Island	..	16	..	30	....	...	...	..	100	...	18	..	..	...	...	....
South Carolina	8	..	11	12	650	...	320	18	70	...	..	..	..	...	...	....
Tennessee	7	7	21	19	....	750	300	..	130	...	..	..	..	...	...	....
Texas	15	..	20	..	....	...	750	..	250	45	..	..	..	...	...	....
Vermont	13	20	32	26	....	...	...	20	178	...	..	25	1	...	...	....
Virginia	7	5	18	13	....	660	...	..	75	...	..	7	1	...	...	....
Wisconsin	14	..	30	35	....	...	...	..	195	...	18	..	..	...	...	....

Number of Cotton, Sugar, Rice, Tobacco, and Hemp Plantations in the United States.

States.	No. of Cotton Plantations raising five Bales and over.	No. of Sugar Planters.	No. of Rice Plantations, each raising 20,000 Lbs. and over.	No. of Tobacco Plantations, each raising 500 Lbs. and over.	No. of Hemp Planters.
Alabama	16,100	....	....	....	....
Arkansas	2,175	....	....	....	....
Florida	900	959	....	....	....
Georgia	14,578	....	80	....	....
Kentucky	91	....	....	5,987	3520
Louisiana	4,205	1558	....	....	....
Maryland	....	....	....	1,726	....
Mississippi	15,110	....	....	....	....
Missouri	....	....	....	....	4807
North Carolina	2,827	....	25	....	....
South Carolina	11,522	....	446	....	....
Tennessee	4,043	....	....	2,215	....
Texas	2,262	165	....	....	....
Virginia	198	....	....	5,817	....
Total	74,031	2681	551	15,745	8327

There are in the Southern States 74,081 cotton plantations, including all producers of more than five bales; 2681 sugar planters, including the smallest; 551 estates making more than 20,000 pounds of rough rice each; 15,745 tobacco estates of 3000 pounds each and over, in Kentucky, Tennessee, and Virginia; 8327 hemp planters in Kentucky and Missouri. Only such States are taken as are considered crop States.

AGRICULTURAL PRODUCTIONS OF THE UNITED STATES AND THEIR ANNUAL VALUE, ACCORDING TO THE CENSUS OF 1850.

Articles.	Quantities.	Values.
Indian corn ..... bush.	592,070,000	$296,036,000
Wheat..... "	100,486,000	100,486,000
Cotton..... bales	2,500,000	98,604,000
Hay..... tons	13,838,000	96,870,000
Oats..... bush.	146,000,000	43,976,000
Buttor ..... lbs.	813,345,000	50,136,000
Cheese..... "	105,535,000	5,248,000
Potatoes, Irish ..... bush.	65,797,000	20,312,000
Potatoes, sweet..... "	38,208,000	10,135,000
Wool ..... lbs.	52,500,000	15,756,000
Tobacco ..... "	200,000,000	12,825,000
Cane-sugar ..... bhds.	237,000	13,378,000
Rye ..... bush.	14,188,000	7,804,000
Orchard products.....	....	7,724,000
Buckwheat..... bush.	8,956,000	6,270,000
Peas and beans..... "	9,219,000	5,763,000
Market garden products	....	5,280,000
Hemp ..... tons	34,000	5,248,000
Rice ..... lbs.	215,000,000	4,000,000
Barley..... bush.	5,167,000	3,618,000
Molasses ..... galls.	12,700,000	2,540,000
Beeswax and honey..... lbs.	14,853,000	2,378,000
Clover-seed ..... bush.	468,000	2,345,000
Maple-sugar ..... lbs.	34,253,000	1,713,000
Hops..... "	2,467,000	1,224,000
Flax-seed ..... bush.	902,000	844,000
Grass seed (besides clover) "	416,000	834,000
Flax..... lbs.	7,709,000	773,000
Wine..... galls.	221,000	444,000
Silk cocoons..... lbs.	10,800	5,000
Live stock over one year old, annual product.....	.....	175,000,000
Animals slaughtered.....	.....	55,000,000
Poultry on the basis of 1840	.....	13,000,000
Feathers.....	.....	2,000,000
Milk (not included in butter and cheese)	.....	7,000,000
Eggs.....	.....	5,000,000
Cord-wood on the basis of 1840	.....	20,000,000
Home-made manufactures, one half for agricultural part....	.....	13,746,000
Small crops, basis of Rhode Island for onions, carrots, etc.	.....	5,000,000
Residuum of crops, not consumed by stock, corn fodder, cotton seed, straw, rice flour, and manure.....	.....	100,000,000
Cattle, sheep, and pigs, under one year old.....	.....	50,000,000
Add for orchard and garden products of cities, not included in above—milk, butter, poultry, horses, cows, etc., in cities and towns.....	.....	15,000,000
Total agric. products, 1849-'50	.....	$1,999,197,000

LAND ACTUALLY CULTIVATED IN THE SEVERAL CROPS OF THE UNITED STATES, 1849-'50.

Products.	Acres.
Indian corn	31,000,000
Meadow or pasture lands—that proportion which is regarded improved, and exclusive of hay crop..	20,000,000
Hay.....	13,000,000
Wheat.....	11,000,000
Oats.....	7,500,000
Cotton	5,000,000
Rye	1,200,000
Peas and beans	1,000,000
Irish potatoes.....	1,000,000
Sweet potatoes.....	750,000
Buckwheat	600,000
Tobacco.....	400,000
Sugar	400,000
Barley.....	300,000
Rice.....	175,000
Hemp.....	110,000
Flax	100,000
Orcharde.....	500,000
Gardens.....	500,000
Vineyards.....	250,000
Other products	1,000,000
Improved, but not in actual cultivation	17,247,614
Total improved lands	113,032,614

We give the estimates of the agricultural products of the United States for the year 1855, as furnished in an official form from the Patent-office. They can not be regarded as strictly correct, but they are as nearly so as possible. It will be seen that the crop of Indian corn for the year is estimated in value at $360,000,000, while the wheat crop is estimated at only $247,500,000. The cotton crop is estimated at $136,000,000, while the hay and fodder crop is estimated at $160,000,000.

VEGETABLE PRODUCTS.

Indian corn ....bush.	600,000,000 at	$0 60..	$360,000,000
Wheat..... "	165,000,000 ..	1 50..	247,500,000
Rye..... "	14,000,000 ..	1 00..	14,000,000
Barley..... "	6,000,000 ..	0 90..	5,940,000
Oats..... "	170,000,000 ..	0 40..	68,000,000
Buckwheat..... "	10,000,000 ..	0 50..	5,000,000
Potatoes, all sorts "	110,000,000 ..	0 37..	41,250,000
Flax-seed..... "	58,000,000 ..	1 25..	72,500
Beans and peas.. "	9,500,000 ..	2 00..	18,000,000
Clover and grass seed..... "	1,000,000 ..	8 00..	8,000,000
Rice ..... lbs.	200,000,000 ..	0 04..	10,000,000
Sugar (cane).... "	505,000,000 ..	0 07..	35,350,000
Sugar (maple).. "	84,000,000 ..	0 08..	2,000,000
Molasses..... "	14,000,000 ..	0 30..	4,200,000
Wine ..... "	2,500,000 ..	1 00..	2,500,000
Hops ..... "	1,500,000 ..	0 15..	525,000
Orchard product.....			25,000,000
Garden product.....			50,000,000
Tobacco..... lbs.	190,000,000 ..	0 10..	19,000,000
Cotton..... "	1,700,000,000 ..	0 08..	136,000,000
Hemp .....tons	34,500 ..	100 00..	3,450,000
Flax ..... lbs.	800,000 ..	0 10..	80,000
Hay and fodder, tons	16,000,000 ..	20 00..	160,000,000
Pasturage.....			143,000,000
Total.....			$1,355,550,000

DOMESTIC ANIMALS AND ANIMAL PRODUCTS.

	Valuation.	Total Value.
Horned cattle .....21,000,000, at $20 each		$420,000,000
Horses, asses, and mules 5,100,000, at $60 each		306,000,000
Sheep.....23,500,000, at $2 each		47,000,000
Swine.....32,000,000, at $5 each		160,000,000
Poultry.....		200,000,000
Slaughtered animals.....		200,000,000
Butter and cheese.... 500,000,000 lbs., at 15c.		75,000,000
Milk (exclusive of that used for butter and cheese) .. 1,000,000,000 gals., at 10c.		100,000,000
Wool ..... 60,000,000 lbs., at 35c.		21,000,000
Beeswax and honey.. 10,000,000 lbs., at 15c.		2,400,000
Silk cocoons..... 5,000, at $1.....		5,000
Total.....		$1,531,405,000

The aggregate for 1857 will, no doubt, prove much larger. It is quite apparent, from the foregoing, that this is an immense country, and that our resources are of vast extent and magnitude.

From official statements a comparison is made of the extent to which the various crops are raised in England and Wales and the United States. And from this it appears that England and Wales together have only 19 per cent. of the fallow culture of the United States, and only 33 per cent. of the improved land.

Articles.	England.	United States.
	Acres.	Acres.
Wheat.....	3,807,846	11,000,000
Oats.....	1,302,782	7,500,000
Rye.....	72,721	1,200,000
Irish potatoes	192,287	1,000,000
Peas and beans.....	773,188	1,000,000
Turnips.....	2,267,200	....
Carrots.....	192,287	....
Indian corn	....	31,000,000
Barley.....	2,067,776	300,000
Cotton	....	5,000,000
Sweet potatoes.....	....	750,000
Buckwheat.....	....	600,000
Marigolds.....	177,153	....
Vetches.....	218,551	....
Total	11,071,781	59,350,000
And the total number of improved lands in gross, etc.	37,324,915	113,032,614

From this comparison we can deduce that the United States has about five times as many acres in cultivation, and, if the same skill in cultivating and sowing were used, should be able to maintain five times the population, and that without having resource to any more wild lands.

STATEMENT OF THE RECEIPTS INTO THE NATIONAL TREASURY FROM CUSTOMS, INTERNAL REVENUE, DIRECT TAXES, AND SALES OF PUBLIC LANDS, TOGETHER WITH THE EXPENDITURES OF THE UNITED STATES, EXCLUSIVE OF PAYMENTS ON ACCOUNT OF THE PUBLIC DEBT, AND FROM TRUST FUNDS, FRACTIONS EXCLUDED.

Years.	Customs.	Internal and direct Taxes.	Sales of Land and Miscellaneous.	Aggregate of Receipts.	Civil List, Foreign Intercourse, and Miscellaneous.	Military Establishment.*	Naval Establishment.	Aggregate of Expenditures.	Debt.	Population.
1789-'91....	$4,399,473	....	....	$4,399,473	$1,083,401	$835,618	$570	$1,919,589	$75,463,476	4,049,600
1792....	2,443,071	$208,943	....	2,652,014	654,257	1,223 504	55	1,877,904	77,227,924	4,178,024
1793....	4,255,306	337,706	....	4,593,019	472,480	1,237,020	....	1,710,070	80,352,634	4,300,810
1794....	4,801,065	274,090	....	5,075,155	705,598	2,733,540	61,409	3,500,547	78,427,405	4,431,272
1795....	5,588,461	337,755	....	5,926,216	1,367,087	2,673,009	410,962	4,350,658	80,747,587	4,566,329
1796....	6,567,988	475,990	$4,836	7,048,114	779,485	1,474,661	274,784	2,521,936	83,762,172	4,705,504
1797....	7,549,650	575,491	83,541	8,208,682	1,246,904	1,194,056	382,632	2,923,591	82,064,479	4,848,919
1798....	7,100,092	644,358	11,963	7,762,383	1,111,038	2,130,837	1,381,348	4,623,225	79,228,529	4,996,765
1799....	6,610,449	779,136	.....	7,389,585	1,039,392	2,582,693	2,848,482	6,480,167	78,408,670	5,148,994
1800....	9,080,933	1,543,620	444	10,624,997	1,337,613	2,625,041	3,448,716	7,411,370	82,976,294	5,305,925
1801....	10,750,779	1,582,377	167,786	12,500,882	1,114,788	1,765,477	2,111,494	4,981,669	83,038,051	5,473,407
1802....	12,438,236	823,464	188,628	13,455,328	1,462,929	1,358,589	915,562	3,737,080	80,712,632	5,646,173
1803....	10,479,418	287,060	165,676	10,932,153	1,842,636	944,058	1,215,321	4,002,825	77,054,686	5,824,398
1804....	11,098,465	101,139	487,597	11,687,201	2,191,009	1,072,017	1,189,833	4,453,859	86,427,121	6,008,946
1805....	12 936,487	49,631	540,194	13,526,312	3,768,588	991,156	1,597,500	6,357,224	82,312,150	6,197,897
1806....	14,667,698	78,865	765,246	15,508,809	2,891,037	1,540,431	1,649,641	6,081,109	75,723,971	6,393,534
1807....	15,845,522	47,784	466,163	16,359,469	1,607,897	1,564,611	1,792,064	4,984,572	69,218,399	6,595,346
1808....	16,363,550	27,370	647,939	17,038,859	1,423,286	3,196,985	1,884,068	6,504,330	65,196,318	6,803,528
1809....	7,296,021	11,562	442,292	7,749,855	1,915,804	3,771,109	2,427,759	7,414,679	57,023,192	7,018,282
1810....	8,583,309	19,879	606,549	9,209,737	1,101,145	2,565,693	1,654,944	5,311,082	53,173,217	7,239,814
1811....	13,313,923	9,969	1,040,938	14,363,423	1,367,291	2,259,747	1,965,566	5,592,604	48,005,588	7,440,950
1812....	8,958,778	5,762	710,498	9,674,968	1,683,088	12,187,046	3,059,365	17,929,499	45,209,738	7,666,206
1813....	13,224,623	8,561	835,655	14,068,839	1,729,435	19,906,362	6,446,600	28,082,397	55,962,828	7,888,729
1814....	7,998,772	3,889,482	1,135,971	11,017,225	2,308,029	20,608,366	7,311,291	30,127,686	81,487,846	8,117,740
1815....	7,282,942	6,940,733	1,287,960	15,411,634	2,908,871	15,304,700	8,660,000	26,963,571	99,833,660	8,353,538
1816....	36,306,875	9,378,344	1,717,985	47,403,204	2,989,742	16,475,412	3,908,278	23,373,432	127,334,034	8,595,806
1817....	26,283,348	4,612,388	1,991,226	32,786,962	3,518,937	8,621,075	3,814,598	15,454,610	123,491,965	8,845,312
1818....	17,176,385	1,219,413	2,606,565	21,002,363	3,235,839	7,019,140	2,953,608	13,808,674	103,466,634	9,102,060
1819....	20,283,609	813,344	3,274,423	24,371,376	3,067,212	9,346,421	1,847,646	16,260,273	95,529,648	9,366,261
1820....	15,005,612	127,847	1,635,879	16,770,331	2,592,022	6,154,518	4,887,990	13,134,530	91,015,566	9,638,131
1821....	13,004,447	98,377	1,212,966	14,315,790	2,223,122	5,181,114	3,319,243	10,723,479	89,987,428	9,930,000
1822....	17,589,762	83,017	1,803,589	19,481,961	1,967,996	5,635,187	2,224,450	9,827,642	93,546,677	10,231,348
1823....	19,088,433	44,580	916,523	20,049,536	2,022,094	5,258,295	2,508,756	9,784,155	90,875,877	10,540,678
1824....	17,878,326	40,865	984,418	18,903,609	1,795,808	5,270,255	2,904,582	15,330,145	90,269,778	10,848,659
1825....	20,098,714	28,102	1,216,090	21,342,906	2,748,544	5,622,831	3,049,084	11,490,459	83,788,453	11,135,727
1826....	23,341,332	28,228	1,393,785	24,763,345	2,600,178	6,243,236	4,218,902	13,062,316	81,054,060	11,402,088
1827....	19,712,283	22,513	1,495,845	21,230,641	2 314,777	5,675,742	4,263,818	12,254,397	73,987,357	11,798,013
1828....	23,205,524	19,611	1,018,309	24,243,504	2,986,052	5,701,203	3,918,786	12,506,041	67,475,044	12,143,783
1829....	22,681,966	25,838	1,517,175	24,224,979	3,092,214	6,250,530	3,308,745	12,651,489	58,421,414	12,499,687
1830....	21,922,391	29,141	2,329,356	24,280,888	3,228,416	6,752,689	3,239,429	13,220,534	48,565,406	12,866,020
1831....	24,224,442	17,440	3,210,815	27,452,697	3,064,346	6,045,239	3,856,183	13,863,768	39,123,192	13,234,981
1832....	28,465,237	18,422	2,623,381	31,107,040	4,574,841	7,082,877	3,956,370	16,514,088	24,322,235	13,614,420
1833....	29,032,509	3,153	3,967,682	33,003,344	5,051,740	15,096,152	3,901,357	22,049,298	7,001,699	14,004,789
1834....	16,214,957	4,216	4,857,601	21,076,774	4,399,179	10,004,428	3,956,266	18,420,467	4,760,082	14,406,350
1835....	19,391,311	14,733	4,757,691	24,163,735	3,730,167	9,420,313	3,864,929	17,095,419	37,733	14,819,425
1836....	23,409,940	1,009	4,877,180	28,288,219	5,388,371	18,466,110	5,960,188	29,655,344	37,513	15,244,344
1837....	11,169,290	....	6,363,556	18,032,846	5,524,253	19,417,974	6,852,060	31,793,787	1,878,294	15,681,447
1838....	16,158,800	....	3,214,184	19,379,984	5,666,703	19,936,312	5,375,771	31,578,785	4,857,660	16,131,087
1839....	23,137,925	....	7,361,118	30,399,043	4,994,502	14,268,981	6,225,003	25,488,647	11,983,738	16,593,630
1840....	13,499,502	....	3,494,856	18,993,588	5,581,878	11,621,438	6,124,456	23,327,772	5,125,078	17,069,453
1841....	14,487,217	....	1,470,295	15,957,512	6,490,881	13,704,882	6,001,077	26,196,840	6,737,398	17,600,752
1842....	18,187,909	....	1,456,058	19,643,967	6,775,625	9,188,460	8,397,243	24,361,837	15,028,486	18,148,589
6 mos. of 1843	7,046,844	....	1,018,482	8,065,326	2,867,289	4,158,384	3,679,718	10,698,391	26,908,953	18,713,470
1844†....	26,183,571	....	2,920,948	29,504,519	5,231,747	8,231,317	6,406,993	19,960,055	26,143,996	19,295,971
1845†....	27,528,113	....	2,241,021	29,769,134	5,608,207	9,533,203	6,228,...	370,049	16,801,647	19,896,574
1846†....	26,712,668	....	2,784,579	29,499,247	6,783,000	13,579,428	6,450,86.2	26,813,290	34,256,468	20,515,871
1847†....	23,747,864	....	2,598,926	26,346,790	6,715,854	41,281,606	7,93',632	59,451,177	45,659,659	21,154,444
1848†....	31,757,070	....	3,079,679	35,476,750	5,585,070	27,820,163	9,406,737	42,811,970	65,804,456	21,812,993
1849†....	28,346,738	....	2,737,608	31,074,347	14,017,640	17,200,936	9,859,818	57,631,667	64,104,693	22,491,305
1850†....	39,668,686	....	3,707,112	43,375,798	14,839,725	12,801,764	7,923,319	43,009,108	64,228,238	23,191,876
1851†....	49,017,568	....	3,295,412	52,312,979	17,872,967	11,811,702	8,987,798	48,005,570	62,560,405	23,873,117
1852†....	47,339,326	....	2,329,060	49,728,386	17,870,748	13,424,075	8,928,236	46,907,896	67,580,395	24,575,604
1853†....	58,991,865	....	2,405,760	61,337,574	17,175,797	15,476,826	10,801,640	43,543,263	56,536,157	25,298,128
1854†....	64,224,190	....	9,325,514	73,549,705	25,907,379	14,342,684	10,768,192	51,018,340	44,975,456	26,041,889
1855†....	53,025,794	....	11,978,136	65,003,930	24,183,487	18,900,565	13,281,541	56,365,393	39,969,731	26,807,521
1856†....	64,022,863	....	9,805,278	73,918,141	25,274,331	20,821,024	14,077,047	60,172,402	30,963,910	27,565,662
1857†....	63,875,905	....	4,755,608	68,631,513	27,531,922	24,020,049	12,736,556	64,878,827	29,060,386	28,466,974

* Including Department of the Interior for and since 1850. The above table does not include the receipts from Loans and Treasury Notes, nor the annual payments on account of the public debt. † For the year ending June 30.

STATEMENT SHOWING THE AMOUNT OF THE PUBLIC DEBT ON JULY 1, 1857, THE AMOUNT PAID AND REDEEMED SINCE, AND THE AMOUNT OUTSTANDING NOVEMBER 17, 1857.

Loans.	Public Debt July 1, 1857.	Redeemed since.	Outstanding Nov. 17, 1857.
	$ Cts.	$ Cts.	$ Cts.
1842.....	3,497,634 93	614,270 82	2,883,364 11
1846.....	34,000 00	25,300 00	8,700 00
1847.....	11,172,500 00	1,759,950 00	9,412,700 00
1848.....	10,344,241 80	1,435,900 00	8,908,341 80
Texan indemnity	5,489,000 00	28,000 00	5,461,000 00
	28,537,376 73	3,863,420 82	24,674,106 91
Texas debt.....	300,629 99	31,661 57	268,968 42
Old funded and unfunded debt	114,118 54	....	114,118 54
Treasury notes..	106,261 64	150 00	107,961 64
Total Nov., 1857.	29,060,386 90	3,895,232 39	25,165,154 51

Commerce.—By the Constitution of the United States, it is provided that Congress shall have power,

1. To lay and collect taxes, duties, imposts, and excises, to pay the debts, and provide for the common defense and general welfare of the United States; but all duties, imposts, and excises shall be uniform throughout the United States; 2. To borrow money on the credit of the United States; 3. To regulate commerce with foreign nations, and among the several States, and with the Indian tribes; 4. To establish a uniform rule of naturalization, and uniform laws on the subject of bankruptcies, throughout the United States; 5. To coin money, regulate the value thereof, and of foreign coin, and fix the standard of weights and measures; 6. To provide for the punishment of counterfeiting the securities and current coin of the United States; 7. To establish post-offices and post-roads; 8. To promote the progress of science and useful arts, by securing, for limited times, to authors and inventors

the exclusive right to their respective writings and discoveries; 9. To constitute tribunals inferior to the Supreme Courts; 10. To define and punish piracies and felonies committed on the high seas, and offenses against the law of nations; 11. To declare war, grant letters of marque and reprisal, and make rules concerning captures on land and water; 12. To raise and support armies; but no appropriation of money to that use shall be for a longer term than two years; 13. To provide and maintain a navy; 14. To make rules for the government and regulation of the land and naval forces; 15. To provide for calling forth the militia to execute the laws of the Union, suppress insurrections, and repel invasions.

Constitutional Powers.—The power "to regulate foreign commerce" enabled the government at once to place the whole country upon an equality with foreign nations; to compel them to abandon their narrow and selfish policy toward us; and to protect our own commercial interests against their injurious competitions. The power to regulate commerce "among the several States," in like manner, annihilated the causes of domestic feuds and rivalries. It compelled every State to regard the interests of each as the interests of all; and thus diffused over all the blessings of a free, active, and rapid exchange of commodities, upon the footing of perfect equality. The words being general, the sense must be general also, and embrace all subjects comprehended under them, unless there be some obvious mischief, or repugnance to other clauses, to limit them. In the case there is nothing to justify such a limitation. Commerce undoubtedly is traffic; but it is something more—it is intercourse. It describes the commercial intercourse between nations and parts of nations in all its branches, and is regulated by prescribing rules for carrying on that intercourse.

The mind can scarcely conceive a system for regulating commerce between nations which shall exclude all laws concerning navigation; which shall be silent on the admission of the vessels of one nation into the ports of another, and be confined to prescribing rules for the conduct of individuals in the actual employment of buying and selling or barter. It may, therefore, be safely affirmed that the terms of the Constitution have at all times been understood to include a power over navigation as well as over trade, over intercourse as well as over traffic.—STORY'S *Familiar Exposition of the Constitution of the United States.*

STATEMENT EXHIBITING THE VALUE OF IRON, MANUFACTURES OF IRON, AND IRON AND STEEL, STEEL, SUGAR, WINES, AND ALL FABRICS OF WHICH WOOL, COTTON, SILK, FLAX, OR HEMP, IS A COMPONENT PART, IMPORTED INTO THE UNITED STATES FOR THE YEARS 1847, '48, AND '49, AND BRANDIES FOR THE YEARS 1850 AND 1857.

Articles.	1847.	1848.	1849.		1856.		1857.	
	Value.	Value.	Value.	Duties.	Value.	Duties.	Value.	Duties.
	$	$	$	$	$	$	$	$
Iron, manufactures of iron, and iron and steel	8,781,252	12,526,854	13,831,823	4,132,780	22,641,939	6,587,975	23,320,497	6,995,619
Cast, shear, German, and other steel	1,156,458	1,284,937	1,297,138	194,698	2,538,323	422,740	2,633,614	437,958
Manufactures of wool	10,998,983	15,240,983	13,704,606	3,780,803	31,961,793	8,835,366	31,286,118	8,633,566
" cotton	15,192,875	18,421,589	15,754,841	3,911,677	25,917,999	6,333,740	28,685,726	8,035,194
" silk	11,733,371	14,543,934	13,791,232	3,553,488	30,926,532	7,604,846	27,800,319	7,010,190
" flax	5,154,837	6,624,648	5,907,242	1,184,065	11,189,463	2,238,384	11,441,542	3,288,999
" hemp	684,880	658,075	519,774	103,954	253,780	50,746	519,582	103,916
Brandies	....	....	....	....	2,859,342	2,859,342	2,527,202	2,527,202
Wines	9,877,212	9,479,817	8,048,900	2,414,670	6,796,058	2,718,423	4,274,205	1,709,612
Sugar	....	....	....	....	22,538,653	6,761,595	42,776,501	12,832,950
Articles of which wool, cotton, silk, flax, or hemp, is a component part, but not classed with either, viz.	1,965,095	2,456,652	2,459,289	613,072				
Silk and worsted goods	....	....	....	....	1,335,247	333,811	1,580,246	395,061
Embroideries of wool, cotton, silk, and linen	676,404	653,322	587,590	176,277	4,664,353	1,399,305	4,443,175	1,332,952
Clothing, ready-made, and articles of wear	370,028	263,859	170,375	35,275	1,978,344	593,503	1,918,988	575,696
Laces, thread, and insertings	....	....	....	....	410,591	82,118	321,961	64,392
" cotton insertings, trimmings, laces, braids, etc.	398,514	716,552	663,991	165,997	1,191,019	297,754	1,129,754	282,438
Cordage, untarred, tarred, and cables	67,592	239,526	146,410	36,602	132,172	33,043	156,532	39,133
Twine and pack-thread	54,809	45,575	34,478	10,313	53,821	10,146	59,957	17,987
Setnes	446	502	182	54				
Total	68,884,657	84,590,334	78,667,928	21,040,756	166,089,379	47,168,850	184,875,979	54,282,931

STATEMENT EXHIBITING A SUMMARY VIEW OF THE EXPORTS OF DOMESTIC PRODUCE, ETC., OF THE UNITED STATES DURING THE YEARS ENDING JUNE 30, 1847, '48, '49, '50, '51, '52, '53, '54, '55, '56, AND '57.

Years.	Product of						Raw Produce.	Specie and Bullion.	Total Value.
	The Sea.	The Forest.	Agriculture.	Tobacco.	Cotton.	Manufactures.			
1847	$3,408,039	$5,966,073	$68,450,383	$7,242,086	$63,415,848	$10,351,864	$2,102,838	$2,020	$150,637,404
1848	1,999,963	7,059,084	87,781,446	7,551,122	61,993,294	12,774,480	1,658,320	2,700,412	192,904,121
1849	2,547,654	5,917,994	88,858,204	5,804,207	66,396,907	11,249,877	935,178	156,874	132,666,155
1850	2,824,918	7,442,503	26,547,158	9,061,023	71,944,016	15,196,451	953,064	2,045,079	136,946,912
1851	3,294,631	7,847,022	24,369,210	9,219,251	112,315,317	20,136,907	1,437,993	18,069,580	196,489,718
1852	2,292,342	7,864,220	26,378,872	10,131,283	87,965,782	18,862,931	1,545,707	37,437,837	192,398,984
1853	3,279,413	7,915,257	33,463,573	11,319,319	109,456,404	22,599,930	1,885,264	23,548,535	213,417,607
1854	3,064,069	11,701,185	67,104,592	10,010,042	93,516,220	26,840,411	2,764,781	38,234,566	253,390,870
1855	3,510,894	12,603,837	42,567,476	14,712,468	88,143,844	28,833,290	2,373,317	53,957,418	246,708,553
1856	3,356,797	10,994,184	77,686,455	12,221,843	128,382,351	30,970,992	3,125,429	44,149,270	310,536,330
1857	3,739,644	14,699,711	75,722,096	20,260,772	131,575,859	30,895,120	2,103,105	60,078,352	338,985,065

STATEMENT EXHIBITING THE VALUE OF CERTAIN ARTICLES IMPORTED DURING THE YEARS ENDING JUNE 30, 1854, 1855, 1856, AND 1857 (AFTER DEDUCTING THE RE-EXPORTATIONS), AND THE AMOUNT OF DUTY WHICH ACCRUED ON EACH DURING THE SAME PERIODS RESPECTIVELY.

Articles.	1854.		1855.		1856.		1857.	
	Value.	Duties.	Value.	Duties.	Value.	Duties.	Value.	Duties.
	$	$	$	$	$	$	$	$
Woolens	31,119,654	8,629,180	22,076,448	6,068,157	30,705,161	8,478,552	30,848,020	8,504,131
Cottons	23,477,106	8,153,902	15,742,923	3,823,294	24,337,504	5,943,181	28,114,924	6,845,102
Hempen goods	53,824	11,681	239,593	47,919	203,735	40,747	504,214	100,843
Iron, and manufactures of	28,288,241	8,480,472	23,945,274	7,163,602	21,618,719	6,461,615	23,320,148	6,829,279
Sugar	11,604,656	3,481,397	13,284,663	3,985,399	21,295,154	6,388,549	41,596,298	12,478,871
Hemp, unmanufactured	335,632	100,689	55,458	16,637	3,427	1,028	411,662	123,499
Salt	1,290,975	258,195	1,992,587	338,517	1,954,317	390,863	2,991,365	598,273
Coal	585,926	175,777	893,925	268,147	597,094	119,418	709,486	230,846
Total	105,762,014	29,297,333	77,930,771	21,731,672	100,745,110	27,829,952	128,856,657	35,710,844

STATEMENT EXHIBITING THE VALUE OF MANUFACTURED ARTICLES OF DOMESTIC PRODUCE EXPORTED FROM THE UNITED STATES TO FOREIGN COUNTRIES, FROM JUNE 30, 1849, TO JUNE 30, 1857.

Articles.	1850.	1851.	1852.	1853.	1854.	1855.	1856.	1857.
	$	$	$	$	$	$	$	$
Wax	118,055	122,885	91,499	112,609	87,140	69,905	74,005	91,988
Refined sugar	335,056	319,588	149,921	375,730	370,488	526,403	360,444	308,206
Chocolate	2,260	2,205	2,267	10,230	12,257	2,771	1,476	1,922
Spirits from grain	48,314	86,684	48,737	141,178	269,910	834,144	800,945	1,248,234
Spirits from molasses	266,290	289,022	322,941	320,391	809,965	1,448,980	1,229,151	1,316,685
Spirits from other materials	....	....	....	....	....	101,838	95,484	120,011
Molasses	14,137	16,830	12,153	17,582	121,048	180,830	154,630	108,008
Vinegar	11,189	12,915	12,920	20,443	16,945	17,231	26,084	30,788
Beer, ale, porter, and cider	52,251	51,775	48,052	54,677	56,502	45,069	45,686	43,782
Linseed oil and spirits of turpentine	229,741	145,410	152,837	362,960	1,084,339	1,186,732	896,288	765,490
Lard oil	....	....	....	....	....	82,945	161,382	92,490
Household furniture	278,025	362,830	430,182	714,556	763,197	562,060	982,042	879,443
Coaches and other carriages	95,722	199,421	172,445	184,497	244,638	290,595	370,250	476,394
Hats	69,671	103,768	90,458	91,261	176,404	177,914	226,652	254,208
Saddlery	20,853	30,100	47,937	43,230	52,311	64,836	81,240	45,222
Tallow candles and soap, and other candles	564,963	609,782	660,054	681,362	891,586	1,111,849	1,200,764	1,242,604
Snuff and tobacco	643,332	1,143,547	1,316,622	1,671,509	1,551,471	1,500,118	1,529,907	1,458,553
Leather, boots, and shoes	193,208	458,838	438,708	678,708	896,555	1,052,408	1,313,311	1,511,709
Cordage	51,357	52,054	62,903	103,216	194,078	315,267	367,192	286,143
Gunpowder	190,352	154,257	121,580	190,049	212,700	356,051	644,974	398,944
Salt	75,108	61,424	39,816	119,729	160,026	156,879	211,495	190,699
Lead	12,797	11,774	22,795	5,540	26,874	14,296	27,512	58,624
Iron—pig, bar, and nails	154,210	215,652	118,624	131,998	308,127	288,437	286,980	397,313
" castings	79,319	154,425	191,898	220,420	450,775	306,437	288,316	289,967
" all manufactures of	1,677,792	1,975,691	1,993,807	2,097,234	3,472,467	3,158,696	3,585,712	4,197,687
Copper and brass, manufactures of	105,060	91,871	103,029	108,205	99,108	690,766	824,846	607,054
Medicinal drugs	334,780	351,555	263,852	327,073	454,780	788,114	1,066,204	880,900
Cotton piece goods:								
" printed or colored	606,661	1,000,561	926,404	1,086,107	1,147,786	2,612,655	1,966,845	1,785,685
" uncolored	3,774,407	5,571,576	6,130,591	6,926,485	4,130,140	2,907,276	4,616,264	3,715,330
" twist, yarn, and thread	17,405	37,200	34,718	22,554	40,315	....	....	....
" other manufactures of	335,981	625,808	571,638	733,648	423,065	336,250	354,900	614,153
Hemp and flax:								
" cloth and thread	1,183	1,647	5,468	2,934	24,456	2,506	809	1,066
" bags and all manufactures of	10,503	6,376	8,154	13,860	55,261	84,002	25,233	33,687
Wearing apparel	307,632	1,211,894	250,228	230,732	234,358	228,801	278,832	333,442
Earthen and stone ware	15,644	23,096	18,310	53,685	34,526	32,119	66,696	54,256
Combs and buttons	23,987	27,534	28,838	31,395	37,684	32,049	32,658	39,799
Brushes	9,827	8,257	4,385	6,612	9,601	10,856	8,385	7,824
Billiard-tables and apparatus	2,295	1,708	1,088	1,673	3,204	4,916	2,778	733
Umbrellas, parasols, and sun-shades	3,395	12,260	8,340	6,183	11,658	8,441	5,989	6,846
Manufactures of India rubber	....	....	....	....	....	1,409,107	1,093,538	643,519
Leather and morocco (not sold per pound)	9,800	13,309	18,617	6,448	17,018	36,045	5,765	2,119
Fire-engines and apparatus	3,140	9,433	16,784	9,052	6,507	14,829	20,088	21,524
Printing-presses and types	39,242	71,401	47,781	32,250	33,012	36,406	61,517	52,747
Musical instruments	91,084	55,700	67,733	52,897	126,198	106,857	135,677	127,748
Books and maps	119,415	153,912	217,902	149,604	187,335	207,218	202,502	277,447
Paper and stationery	99,696	155,664	119,585	122,212	192,339	183,637	203,013	224,767
Paints and varnish	67,507	100,834	85,369	93,090	121,823	163,096	217,179	223,320
Manufactures of glass	136,932	135,436	124,634	170,561	229,476	204,679	216,499	179,900
Manufactures of tin	13,590	27,933	23,420	22,988	30,750	14,279	13,610	5,622
Manufactures of pewter and lead	22,692	16,436	18,460	14,064	16,478	5,233	5,698	4,815
Manufactures of marble and stone	34,510	41,449	57,240	47,628	88,397	168,546	162,376	111,402
Manufactures of gold and silver, and gold leaf	4,583	69,639	20,332	11,873	1,311,513	9,051	6,116	15,477
Quicksilver	....	....	....	....	442,383	806,119	891,724	665,480
Artificial flowers and jewelry	45,283	121,013	114,738	66,397	50,471	22,043	26,396	28,070
Trunks	10,370	12,207	15,035	27,148	23,673	35,208	32,457	37,148
Bricks and lime	18,343	22,045	18,530	29,625	33,314	57,893	64,297	68,092
Articles not enumerated	3,869,671	2,793,341	2,817,459	3,788,700	4,972,084	4,014,482	3,553,613	3,292,722
Total	15,196,451	20,186,067	18,862,931	22,579,930	26,649,411	28,833,309	30,970,402	29,653,267
Gold and silver coin and bullion	2,046,870	18,060,580	37,437,937	23,548,585	33,234,566	53,957,418	44,148,979	60,078,352
Totals	17,243,130	38,256,547	56,300,768	46,148,465	65,083,977	82,790,717	75,119,371	89,731,619

The power of Congress in laying taxes is not necessarily or naturally inconsistent with that of the States. Each may lay a tax on the same property without interfering with the action of the other; for taxation is but taking small portions from the mass of property, which is susceptible of almost infinite division. In imposing taxes for state purposes, a State is not doing what Congress is empowered to do. Congress is not empowered to tax for those purposes which are within the exclusive province of the States. When, then, each government exercises the power of taxation, neither is exercising the power of the other. But when a State proceeds to regulate commerce with foreign nations or among the several States, it is exercising the very power which is granted to Congress, and is doing the very thing which Congress is authorized to do. There is no analogy, then, between the power of taxation and the power of regulating commerce.—STORY.

Domestic Trade.—And first, among the States. It is not doubted that the power of Congress extends to the regulation of navigation, and to the coasting trade and fisheries, within as well as without any State, wherever it is connected with the commerce or intercourse with any other State, or with foreign nations. It extends to the regulation and government of seamen on board of American ships, and to conferring privileges upon ships built and owned in the United States, in domestic as well as in foreign trade. It extends to quarantine laws, and pilotage laws, and wrecks of the sea. It extends as well to the navigation of vessels engaged in carrying passengers, and whether steam-vessels or of any other description, as to the navigation of vessels engaged in traffic and general coasting business. It extends to the laying of embargoes as well on domestic as on foreign voyages. It extends to the construction of light-houses, the placing of buoys and beacons, the removal of obstruction to navigation in creeks, rivers, sounds, and bays, and the establishment of securities to navigation against the inroads of the ocean. It extends also to the designation of a particular port or ports of entry and delivery for the purposes of foreign commerce. These powers have been actually exerted by the National Government under a system of laws, many of which commenced with the early establishment of the Constitution; and they have con-

tinued unquestioned unto our day, if not to the utmost range of their reach, at least to that of their ordinary application.

Many of the like powers have been applied in the regulation of foreign commerce. The commercial system of the United States has also been employed sometimes for the purpose of revenue; sometimes for the purpose of prohibition; sometimes for the purpose of retaliation and commercial reciprocity; sometimes to lay embargoes; sometimes to encourage domestic navigation, and the shipping and mercantile interest, by bounties, by discriminating duties, and by special preferences and privileges; and sometimes to regulate intercourse with a view to mere political objects, such as to repel aggressions, increase the pressure of war, or vindicate the rights of neutral sovereignty. In all these cases the right and duty have been conceded to the National Government by the unequivocal voice of the people. It may be added, that Congress have also, from the earliest period of the government, applied the same power of regulating commerce for the purpose of encouraging and protecting domestic manufactures, and Congress have never abandoned the exercise of it for such a purpose.—STORY *on the Constitution*.

STATEMENT EXHIBITING THE VALUE OF FOREIGN MERCHANDISE, IMPORTED INTO THE UNITED STATES, RE-EXPORTED, AND CONSUMED ANNUALLY, FROM 1821 TO 1857, INCLUSIVE; THE ESTIMATED POPULATION AND CONSUMPTION PER CAPITA.

Years ending	Value of foreign Merchandise.			Population.	Consumption per Capita.	Imports entered for Consumption, exclusive of Specie.	Domestic Produce exported, exclusive of Specie.	Foreign Merchandise exported, exclusive of Specie.	Total Exports, including Specie.
	Imported.	Re-exported.	Consumed and on hand.						
	$	$	$		$ Cts.	$	$	$	$
Sept. 30, 1821	62,585,724	21,392,488	41,283,236	9,969,974	4 14	43,676,405	43,671,894	10,824,429	64,974,382
1822	83,241,541	22,286,209	60,955,332	10,293,757	5 92	68,367,425	49,874,079	11,504,270	72,160,281
1823	77,579,267	27,543,622	50,035,645	10,600,540	4 71	51,308,930	47,155,408	21,172,435	74,570,080
1824	80,549,007	25,887,157	55,211,850	10,929,323	5 05	53,846,567	50,649,500	18,322,605	75,966,657
1825	96,340,075	32,530,643	63,749,432	11,262,106	5 66	66,375,722	66,893,736	23,793,588	99,535,888
1826	84,974,477	24,539,313	60,434,965	11,574,889	5 22	57,653,577	53,499,856	20,440,634	77,515,522
1827	79,484,068	23,403,133	56,080,939	11,897,672	4 71	54,001,108	57,878,117	16,431,830	83,324,837
1828	88,509,324	21,575,017	66,934,307	12,220,455	5 47	66,075,475	49,976,632	14,044,608	72,264,956
1829	74,492,527	16,658,478	57,834,049	12,243,238	4 61	54,741,571	55,087,307	12,347,344	73,858,371
1830	70,876,920	14,387,479	56,489,441	12,566,020	4 39	49,575,000	58,524,878	13,145,857	73,845,508
1831	103,191,124	20,093,526	83,157,598	13,286,364	6 25	82,808,110	59,218,583	13,077,069	81,310,583
1832	101,029,266	24,030,473	76,980,793	13,766,707	5 61	75,827,688	61,726,929	19,794,074	87,176,943
1833	108,118,311	16,822,735	89,295,576	14,127,050	6 25	88,470,087	69,450,856	15,577,876	90,140,433
1834	126,521,332	23,812,811	103,208,521	14,547,393	7 09	86,973,147	80,623,662	21,636,553	104,836,975
1835	149,895,742	20,504,495	129,391,247	14,967,736	8 64	122,007,974	100,450,481	14,756,891	121,6 3,677
1836	189,980,035	21,746,300	168,233,675	15,388,079	10 93	159,811,392	106,570,942	17,767,762	128,638,040
1837	140,989,217	21,854,962	119,134,255	15,808,422	7 53	113,310,571	94,280,895	17,102,232	117,419,378
1838	113,717,494	12,452,755	101,264,309	16,228,765	6 23	86,552,558	15,590,880	9,417,600	108,486,618
1839	162,092,132	17,414,525	144,597,607	16,649,108	8 68	145,870,816	101,625,533	10,626,140	121,028,418
1840	107,141,519	18,196,312	88,951,207	17,069,451	5 21	86,250,335	111,660,541	12,008,371	132,085,946
1841	127,946,177	16,469,081	112,477,096	17,512,507	6 38	114,776,300	103,036,238	5,181,225	127,851,803
1842	100,162,087	11,791,583	88,446,504	18,155,561	4 87	87,986,318	91,779,942	8,978,763	104,611,534
July 1, 1843	64,753,709	6,559,697	58,201,102	18,698,615	3 11	57,204,129	77,686,354	5,130,335	84,340,489
1844	108,435,035	11,484,867	96,950,168	19,241,670	5 03	96,396,548	99,531,774	6,214,068	111,206,046
1845	117,254,584	15,346,880	101,907,704	19,784,725	5 15	105,599,541	98,455,330	7,584,781	114,646,606
1846	121,691,796	11,340,623	110,345,174	20,327,780	5 42	110,048,850	101,718,042	7,865,206	113,488,518
1847	146,545,038	8,011,158	138,534,480	20,780,835	6 60	116,257,595	150,574,844	6,166,754	158,648,622
1848	154,998,928	21,128,010	133,870,918	21,413,890	6 25	140,651,902	130,203,709	7,986,802	154,032,131
1849	147,857,434	13,088,865	134,768,574	21,956,945	6 13	132,565,168	131,710,081	8,641,691	145,755,820
1850	178,108,318	14,951,808	163,186,510	22,246,301	7 02	164,032,033	134,900,233	9,475,493	151,8 8,720
1851	216,224,932	21,648,293	194,526,639	24,250,000	8 02	200,476,219	178,620,188	10,295,121	218,338,011
1852	212,945,442	17,281,882	195,656,060	24,500,000	8 00	195,072,675	154,931,147	12,037,043	209,641,825
1853	267,978,647	17,568,436	250,420,187	25,000,000	10 00	251,071,358	180,863,102	13,036,213	230,452,260
1854	304,502,391	24,856,194	279,712,187	25,750,000	10 00	275,965,818	215,150 304	21,648,304	278,241,064
1855	261,408,520	28,418,293	233,020,227	26,500,000	8 79	231,650,840	192,751,135	26,168,808	275,156,840
1856	314,039,042	16,373,578	298,261,364	27,400,000	9 18	265,650,038	266,493,051	14,781,372	326,164,008
1857	360,890,141	33,975,817	326,914,324	28,500,000	8 46	333,511,205	278,906,713	14,017,047	302,960,692
Total.....	5,307,303,299	708,3 6,122	4,599,407,177	....	...	4,497,824,033	4,010,693,853	502,119,564	5,020,462,319

FOREIGN COMMERCE OF EACH STATE AND TERRITORY, FROM JULY 1, 1856, TO JUNE 30, 1857.

States.	VALUE OF EXPORTS.						VALUE OF IMPORTS.		
	American Produce.			Foreign Produce.			In American Vessels.	In foreign Vessels.	Total.
	In American Vessels.	In foreign Vessels.	Total.	In American Vessels.	In foreign Vessels.	Total.			
	$	$	$	$	$	$	$	$	$
Maine	2,210,540	189,637	2,400,186	824,273	492,127	1,316,400	1,882,678	782,254	2,664,932
New Hampshire	....	1,834	1,834	....	....	....	988	16,568	17,556
Vermont	283,009	....	283,009	365,461	....	365,461	2,709,193	....	2,709,193
Massachusetts	11,573,933	14,998,128	26,572,061	2,842,569	731,384	3,573,953	35,016,647	11,348,994	47,365,341
Rhode Island	542,205	1,973	544,178	8,173	....	8,173	460,135	25,357	515,492
Connecticut	1,086,586	....	1,086,586	8,817	....	8,817	1,064,819	51,982	1,116,801
New York	77,423,356	41,773,945	119,197,301	12,381,414	3,224,583	15,606,997	161,791,931	74,701,554	236,493,485
New Jersey	10,613	1,571	12,184	....	....	....	3,867	....	3,867
Pennsylvania	5,868,732	1,145,789	7,014,512	154,520	15,400	169,920	14,255,078	3,600,171	17,855,249
Delaware	117,276	....	117,276	....	....	....	2,895	....	2,895
Maryland	9,074,555	4,330,339	13,405,393	163,896	137,046	300,942	8,534,843	2,046,305	10,581,208
District of Columbia	22,735	....	22,735	....	....	....	116,333	....	116,333
Virginia	5,564,067	1,670,263	7,234,330	13,884	1,495	15,379	1,203,547	326,667	1,530,154
North Carolina	389,592	24,614	414,206	....	....	....	206,746	24,748	231,494
South Carolina	10,588,352	5,539,682	16,127,434	2,421	10,548	12,969	1,720,616	299,170	2,019,786
Georgia	6,116,174	4,741,460	10,857,634	....	....	....	581,485	197,524	779,009
Florida	2,806,693	401,859	3,208,552	....	....	....	293,672	27,427	321,099
Alabama	14,400,506	6,175,481	20,575,987	....	242	242	617,730	91,360	709,090
Louisiana	71,479,119	20,068,292	91,538,371	231,336	125,155	356,491	22,207,145	2,684,822	24,891,967
Ohio	173,965	760,024	933,989	....	....	....	130,473	136,792	267,265
Michigan	81,508	1,405,715	1,487,223	....	15,383	15,383	1,018,458	100	1,018,558
Wisconsin	385,108	136,936	522,044	....	....	....	2,320	3,497	5,817
Illinois	531,162	1,053,954	1,585,096	....	308	308	107,535	218,490	326,325
Texas	989,270	502,105	1,491,375	....	....	....	124,455	178,819	303,274
California	11,084,963	1,125,816	12,210,779	1,623,869	601,283	2,225,152	4,159,665	4,978,549	9,137,414
Oregon Territory	3,907	....	3,907	....	....	....	5,090	....	5,090
Washingt. Territory	16,451	8,854	25,305	....	....	....	2,163	1,554	3,717
Minnesota Territory	....	51,140	51,140	....	....	....	....	....	....
Total, 1856-'57	232,815,826	106,165,239	338,985,065	18,620,063	5,554,954	23,975,017	259,116,170	101,778,971	360,890,141

SUMMARY STATEMENT OF THE VALUE OF THE EXPORTS OF THE GROWTH, PRODUCE, AND MANUFACTURE OF THE UNITED STATES DURING THE YEAR ENDING JUNE 30, 1857.

PRODUCT OF THE SEA.			
Fisheries:			
Oil, spermaceti	....	$1,216,888	
Oil, whale and other fish	....	363,665	
Whalebone	....	1,307,322	
Spermaceti	....	34,917	
Spermaceti candles	....	35,121	
Fish, dried or smoked	....	570,348	
Fish, pickled	....	211,383	
			$3,739,644
PRODUCT OF THE FOREST.			
Wood:			
Staves and heading	$2,055,980		
Shingles	212,805		
Boards, plank, and scantling	4,170,686		
Hewn timber	516,735		
Other lumber	638,406		
Oak bark and other dye	322,754		
All manufactures of wood	3,158,424		
Naval Stores:			
Tar and pitch	208,610		
Rosin and turpentine	1,544,572		
Ashes, pot and pearl	696,567		
Ginseng	58,331		
Skins and furs	1,116,041		
		....	14,699,711
PRODUCT OF AGRICULTURE.			
Of Animals:			
Beef	$1,218,348		
Tallow	632,286		
Hides	624,867		
Horned cattle	144,849		
Butter	593,084		
Cheese	647,423		
Pork (pickled)	2,805,867		
Hams and bacon	4,511,442		
Lard	5,144,195		
Wool	19,007		
Hogs	5,525		
Horses	195,697		
Mules	171,189		
Sheep	22,758		
		$16,736,458	
Vegetable Food:			
Wheat	$22,249,857		
Flour	25,882,316		
Indian corn	5,184,666		
Indian meal	957,791		
Rye meal	115,828		
Rye, oats, and other small grain and pulse	690,108		
Biscuit or ship bread	563,266		
Potatoes	205,616		
Apples	135,289		
Onions	77,048		
Rice	2,250,400		
		$58,333,176	
			75,069,634
Cotton	....	....	131,575,850
Tobacco	....	....	20,260,772
Hemp	....	....	49,907
Other agricultural Products:			
Flax-seed	....	$525	
Clover-seed	....	330,166	
Brown sugar	....	1[illegible]0,012	
Hops	....	84,852	
			605,555
MANUFACTURES.			
Refined sugar	....	$368,206	
Wax	....	91,083	
Chocolate	....	1,932	
Spirits from grain	....	1,248,234	
Spirits from molasses	....	1,216,635	
Spirits from other materials	....	120,011	
Molasses	....	108,003	
Vinegar	....	30,[illegible]8	
Beer, ale, porter, and cider in casks	....	26,733	
Beer, ale, porter, and cider in bottles	....	16,9[illegible]9	
Linseed oil	....	54,144	
Spirits of turpentine	....	741,345	
Household furniture	....	870,448	
Coaches and parts, and railroad cars and parts	....	476,394	
Hats of fur or silk	....	180,714	
Hats of palm-leaf	....	73,494	
Saddlery	....	45,222	
Trunks and valises	....	37,748	
Adamantine and other candles	....	677,3[illegible]8	
Soap	....	530,385	
Snuff	....	11,526	
Tobacco, manufactured	....	1,447,027	
Gunpowder	....	3[illegible]8,244	
Leather	....	497,714	
Boots and shoes	....	813,[illegible]95	
Cables and cordage	....	286,163	
Salt	....	190,699	
Lead	....	58,624	
Iron, pig	....	53,890	

SUMMARY STATEMENT OF THE VALUE OF EXPORTS, ETC.—*Continued.*

MANUFACTURES—*Continued.*			
Iron, bar	....	$64,596	
Nails	....	270,327	
Castings of	....	289,967	
All other manufactures of	....	4,197,687	
Copper and brass, and manufactures of	....	607,054	
Drugs and medicines	....	886,909	
			$17,008,439
Cotton piece Goods:			
Printed or colored	$1,735,685		
White, other than duck	3,468,280		
Duck	252,109		
All other manufactures of	614,153		
		$6,115,177	
Hemp, cloth and thread	....	1,066	
Bags and other manufactures of	....	83,687	
Wearing apparel	....	833,442	
Earthen and stone ware	....	84,256	
Combs and buttons	....	39,799	
Brushes of all kinds	....	7,324	
Billiard-tables and apparatus	....	733	
Umbrellas and parasols	....	6,846	
Morocco and leather not sold by the pound	....	2,119	
Fire-engines	....	21,524	
Printing-presses and type	....	59,747	
Musical instruments	....	127,743	
Books and maps	....	277,647	
Paper and stationery	....	224,767	
Paints and varnish	....	223,320	
Jewelry, real and mock	....	28,070	
Gold and silver, and gold leaf (manufactures of)	....	16,477	
Glass	....	179,900	
Tin	....	5,622	
Pewter and lead	....	4,818	
Marble and stone	....	111,403	
Bricks and lime	....	68,002	
India rubber boots and shoes	....	331,125	
India rubber, all other manufactures of	....	312,387	
Lard oil	....	92,490	
Oil-cake	....	1,186,930	
			9,338,485
Coal	....	....	016,601
Ice	....	....	219,316
Gold and silver coin	....	....	28,777,372
Gold and silver bullion	....	....	31,300,980
Quicksilver	....	....	665,480
Articles not enumerated:			
Manufactured	....	....	3,202,722
Raw produce	....	....	1,266,328
Total, year 1856–'57	....	....	$338,985,065

SUMMARY STATEMENT OF THE VALUE OF GOODS, WARES, AND MERCHANDISE, IMPORTED INTO THE UNITED STATES DURING THE FISCAL YEAR ENDING JUNE 30, 1857.

Species of Merchandise. FREE OF DUTY.	Value.
Animals for breed	$48,345
Bullion:	
Gold	151,585
Silver	335,114
Specie:	
Gold	6,503,051
Silver	5,473,049
Cabinets of coins, medals, and other collections of antiquities	247
Models of inventions and improvements in the arts	2,997
Teas	5,757,360
Coffee	29,386,879
Copper:	
In plates suited to the sheathing of vessels	351,311
Ore	1,440,314
Cotton, unmanufactured	62,172
Adhesive felt for sheathing vessels	20,156
Paintings and statuary of American artists	93,092
Specimens of natural history, etc.	3,240
Sheathing metal	749,372
Platina, unmanufactured	53,714
Plaster, unground	90,168
Wearing apparel and other personal effects of emigrants and citizens dying abroad	413,780
Old junk and oakum	85,459
Garden seeds, trees, shrubs, plants, etc.	330,504
Articles the produce of the United States, brought back	1,201,476
Guano	279,020
Articles specially imported for philosophical societies, colleges, seminaries of learning, schools, etc.	61,074
All other articles not subject to duty	20,781,411
Total	$66,729,306

MERCHANDISE PAYING DUTIES AD VALOREM.

Manufactures of Wool:	
Piece goods, including wool and cotton	$11,009,605
Shawls of wool, wool and cotton, silk, and silk and cotton	2,246,251

SUMMARY STATEMENT OF IMPORTS—*Continued.*

Species of Merchandise.	Value.
Manufactures of Wool:	
Blankets	$1,630,978
Hosiery and articles made on frames	1,740,829
Worsted piece goods, including cotton and worsted	11,365,669
Woolen and worsted yarn	192,147
Manufactures not specified	693,640
Flannels	105,779
Baizes and bockings	119,885
Carpeting:	
Wilton, Saxony, Aubusson, Brussels, Turkey, treble ingrained, Venetian, and other ingrained	1,784,196
Not specified	997,094
Manufactures of Cotton:	
Piece goods	21,441,082
Velvets	678,294
Cords, gimps, and galloons	213,824
Hosiery and articles made on frames	3,210,287
Twist yarn and thread	1,401,153
Hatters' plush, of silk and cotton	11,478
Manufactures not specified	1,729,618
Silk and manufactures of Silk:	
Piece goods	22,067,369
Hosiery and articles made on frames	330,200
Sewing silk	211,723
Hats and bonnets	151,199
Manufactures not specified	4,449,529
Floss	30,612
Raw	953,734
Bolting-cloths	57,602
Silk and worsted piece goods	1,580,246
Goats' hair or mohair piece goods	503,993
Manufactures of Flax:	
Linens, bleached or unbleached	9,975,338
Hosiery, and articles made on frames	6,919
Manufactures not specified	1,450,292
Manufactures of Hemp:	
Ticklenburgs, Osnaburgs, and burlaps	190,364
Articles not specified	360,469
Sail duck, Russia, Holland, and Ravens	14,180
Cotton bagging	14,069
Clothing:	
Ready-made	347,471
Articles of wear	1,571,517

SUMMARY STATEMENT OF IMPORTS—*Continued.*

Description of Merchandise.	Value.
Laces:	
Thread and insertings	$321,961
Cotton insertings, trimmings, laces, braids, etc	1,129,754
Embroideries of wool, cotton, silk, and linen	4,443,175
Floor-cloth, patent, painted, etc	9,524
Oil-cloth of all kinds	84,761
Lasting and mohair cloth for shoes and buttons	99,034
Gunny cloth and gunny bags	2,139,793
Matting, Chinese and other, of flags, etc	207,587
Hats, Caps, Bonnets, Flats, Braids, Platts, etc.:	
Of leghorn, straw, chip, grass, etc	2,246,928
Manufactures of Iron and Steel:	
Muskets and rifles	61,170
Fire-arms not specified	541,175
Side arms	5,394
Needles	250,320
Cutlery	2,140,824
Other manufactures and wares of, not specified	4,475,545
Cap or bonnet wire	6,168
Nails, spikes, tacks, etc	188,756
Chain cables	293,124
Mill saws, cross-cut, and pit saws	47,297
Anchors and parts thereof	32,080
Anvils and parts thereof	67,926
Iron, bar	4,423,935
Rod	809,901
Hoop	324,675
Sheet	1,082,389
Pig	1,001,749
Old and scrap	111,680
Railroad	7,455,696
Steel—cast, shear, and German	1,775,202
All other	858,322
Copper, and manufactures of Copper:	
In pigs, bars, and old	1,659,513
Wire	681
Braziers'	1,355
Copper bottoms	4,890
Manufactures of, not specified	166,704
Rods and bolts	20
Nails and spikes	1,723
Brass, and manufactures of Brass:	
In pigs, bars, and old	18,153
Wire	4,863
Sheet and rolled	68
Manufactures of, not specified	199,928
Tin, and manufactures of Tin:	
In pigs and bars	1,023,210
Plates and sheets	4,789,538
Foil	21,426
Manufactures of, not specified	31,922
Lead, and manufactures of Lead:	
Pig, bar, sheet, and old	2,305,768
Shot	15,437
Pipes	128
Manufactures of, not specified	2,076
Pewter, old	3,814
Manufactures of	570
Zinc, and manufactures of Zinc:	
In pigs	44,764
Sheets	546,250
Nails	2,453
Spelter	447,812
Manufactures of Gold and Silver:	
Epaulets, wings, laces, galloons, tresses, tassels, etc	40,438
Gold and silver leaf	29,509
Jewelry, real or imitations of	503,653
Gems, set	4,437
" otherwise	390,357
Manufactures of, not specified	78,131
Glaziers' diamonds	898
Clocks	79,147
Chronometers	16,442
Watches, and parts of	3,823,039
Metallic pens	108,661
Pens, in packs and otherwise	56,110
Buttons, metal	13,178
All other and button moulds	912,871
Glass, and manufactures of Glass:	
Silvered	243,762
Paintings on glass, porcelain, and colored	33,783
Polished plate	525,061
Manufactures of, not specified	142,904
Glassware, cut	113,940
" plain	79,738
Watch crystals	93,170
Bottles	89,225
Demijohns	30,399
Window glass, broad, crown, and cylinder	641,093
Paper, and manufactures of Paper:	
Writing paper	343,240
Playing cards	17,281
Papier-maché, articles and wares of	33,948
Paper-hangings	254,591
Paper and fancy boxes	36,900

SUMMARY STATEMENT OF IMPORTS—*Continued.*

Description of Merchandise.	Value.
Paper and manufactures of Paper:	
Paper, and manufactures of, not specified	178,923
Blank books	18,884
Parchment	5,750
Printed Books, Magazines, etc.:	
In English	668,597
In other languages	179,084
Periodicals and illustrated newspapers	30,497
Periodicals and other works in the course of republication	326
Engravings	182,369
Mathematical instruments	34,925
Musical instruments	484,374
Daguerreotype plates	10,068
Ink and ink powders	47,784
Leather, and manufactures of Leather:	
Tanned, bend, sole, and upper	1,606,458
Skins, tanned and dressed	809,273
Skivers	68,194
Boots and shoes	127,651
Gloves for men, women, and children	1,559,332
Manufactures of, not specified	459,161
Wares—China, porcelain, earthen, and stone	4,037,064
Plated or gilt	160,824
Japanned	46,333
Britannia	8,984
Silver-plated metal	1,903
Silver or plated wire	2,948
Saddlery—common, tinned or japanned	82,731
Plated, brass, or polished steel	195,164
Furs—undressed on the skin	518,792
Hatters' furs, dressed or undressed, not on the skin	1,572,288
Dressed on the skin	214,495
Manufactures of fur	49,956
Wood, manufactures of:	
Cabinet and household furniture	47,696
Cedar, mahogany, rose, and satin-wood	15,185
Willow	175,484
Other manufactures of	391,179
Wood, unmanufactured:	
Cedar, grenadilla, mahogany, rose, and satin	518,251
Willow	41,773
Fire-wood and other, not specified	29,457
Dye-wood in stick	306,048
Bark of the cork-tree—corks	209,573
Unmanufactured	17,692
Ivory—manufactures of	17,239
Unmanufactured	507,483
Marble—manufactures of	25,253
Unmanufactured	201,978
Burr stones	111,211
Quicksilver	961
Brushes and brooms	283,968
Black-lead pencils	88,089
Slates of all kinds	96,176
Raw hides and skins	10,010,090
Boots and shoes other than leather	30,525
India rubber—manufactures of	180,585
Unmanufactured	832,058
Hair—manufactures of	129,571
Unmanufactured	453,705
Grass cloth	43,894
Umbrellas, parasols, and sun-shades of silk and other	65,360
Unmanufactured Articles:	
Flax-seed or linseed	3,603,824
Angora, Thibet, and other goats' hair or mohair	575
Wool	2,125,744
Wines in Casks:	
Burgundy	21,637
Madeira	65,880
Sherry and St. Lucar	364,206
Port	447,564
Claret	669,403
Teneriffe and other Canary	565
Fayal and other Azores	4,704
Sicily and other Mediterranean	133,894
Austria and other of Germany	27,259
Red wines not enumerated	580,527
White wines not enumerated	252,584
Wine in Bottles:	
Burgundy	7,064
Champagne	1,148,469
Madeira	2,734
Sherry	11,139
Port	16,837
Claret	366,807
All other	273,242
Spirits, foreign distilled:	
Brandy	2,527,262
From grain	1,125,160
From other materials	218,907
Cordials	92,396
Beer, ale, and porter—in casks	221,290
In bottles	628,550
Honey	202,436

SUMMARY STATEMENT OF IMPORTS—*Continued.*

Description of Merchandise.	Value.
Molasses	$8,259,175
Oil and lione of foreign Fishing:	
Spermaceti	413
Whale and other fish	17,280
Whalebone	252
Oil—olive, in casks	74,023
" in bottles	347,396
Castor	102,502
Linseed	958,200
Rape-seed and hemp-seed	11,601
Palm	337,881
Neat's-foot and other animal	153
Essential oils	146,879
Tea and coffee from places other than those of their production, and not excepted by treaty stipulations:	
Teas	17,315
Coffee	39,379
Cocoa	187,016
Sugar—brown	42,614,604
White, clayed, or powdered	96,820
Loaf and other refined	68,906
Candy	1,887
Syrup of sugar-cane	4,284
Fruits—almonds	209,605
Currants	151,418
Prunes	108,994
Plums	118,051
Figs	219,307
Dates	17,048
Raisins	937,460
Oranges, lemons, and limes	647,544
Other green fruit	151,587
Preserved fruit	109,557
Nuts	183,144
Spices—Mace	26,754
Nutmegs	254,637
Cinnamon	19,865
Cloves	65,332
Pepper, black	279,287
" red	2,460
Pimento	241,506
Cassia	201,883
Ginger, ground	89
" root	44,123
Camphor—crude	56,314
Refined	34
Candles—wax and spermaceti	9,667
Stearin	62,187
Cheese	143,821
Soap—perfumed	51,507
Other than perfumed	139,026
Tallow	19,507
Starch	6,635
Arrow-root	25,751
Butter	18,654
Lard	420
Beef and pork	2,614
Hams and other bacon	7,294
Bristles	289,561
Saltpetre—crude	1,158,468
Refined, or partly refined	362
Indigo	1,010,509
Woad or pastel	1,201
Cochineal	440,707
Madder	1,875,472
Gums—Arabic, Senegal, etc.	143,380
Other gums	456,432
Borax	94,844

SUMMARY STATEMENT OF IMPORTS—*Continued.*

Description of Merchandise.	Value.
Copperas	$6,446
Verdigris	9,690
Brimstone—crude	152,380
Rolled	12,305
Chlorid of lime or bleaching powder	320,695
Soda ash	1,084,021
Soda, sal	86,488
Soda, carbonate of	424,024
Barilla	31,018
Sulphate of barytes	48,567
Acids, acetic, etc.	79,271
Vitriol—blue or Roman	5,834
Oil of	98
Sulphate of quinine	249,964
Licorice—root	42,091
Paste	392,569
Bark—Peruvian and Quilla	388,252
Other	258,605
Ivory and bone black	289
Opium	468,452
Glue	23,571
Gunpowder	9,688
Alum	24,586
Tobacco—unmanufactured	1,358,385
Snuff	2,626
Cigars	4,221,096
Manufactured, other than snuff and cigars	15,398
Paints—dry ochre	18,258
Red and white lead	113,070
Whiting and Paris white	29,169
Litharge	17,791
Sugar of lead	55,795
Cordage—tarred and cables	92,099
Untarred	64,488
Twine and seines	59,257
Hemp, unmanufactured	428,588
Manilla, sun, and other hemp of India	2,359,891
Jute, Sisal grass, coir, etc.	384,328
Cedilla, or tow of hemp or flax	92,520
Flax, unmanufactured	220,788
Rags of all kinds	1,448,125
Salt	2,032,583
Coal	772,668
Breadstuffs—wheat	999
Barley	3,068
Oats	110
Wheat flour	477
Rye-meal	2,070
Oat-meal	550
Potatoes	87,572
Fish, dried, smoked, or pickled:	
Dried or smoked	96,607
Salmon	3,949
Mackerel	144
Herrings and shad	49,218
All other	4,638
Value of merchandise not enumerated in the preceding abstract:	
At 5 per cent.	1,374,024
At 10 per cent.	646,016
At 15 per cent.	1,698
At 20 per cent.	3,604,767
At 25 per cent.	183,498
At 30 per cent.	2,264,645
At 40 per cent.	541,815
Paying duties	$294,160,335
Free of duty	66,729,806
Total	$360,890,141

Commercial Regulations of the United States, compiled from General Regulations of the Treasury Department, and from other official Authorities.—Vessels belonging to the following nations are admitted, under the provisions of law, treaties of commerce and navigation, or conventions, into the ports of the United States, on the same terms as American vessels, with the produce or manufactures of their own or any other country:

Argentino Confederation, Austria, Belgium, Brazil, Chili, (Denmark,*) Ecuador, Great Britain, Greece, New Granada, Guatemala, Hanover, Hanse Towns (Hamburg, Bremen, and Lübeck), Mecklenburg Schwerin, Netherlands, Oldenburg, Peru, Prussia, Russia, San Salvador, Sardinia, Sweden and Norway, Tuscany, Two Sicilies,† Venezuela.

* The treaty between the United States and Denmark expired on the 14th day of April, 1856.

† By decree of December 18, 1854, equality with the national flag is offered by the government of the Two Sicilies to the vessels of such nations as reciprocate the favor. This equality applies to the direct and indirect trade.

Vessels belonging to the following nations, with which the United States have reciprocal treaties on the footing of "the most favored nations," or with which reciprocity exists by virtue of an act of Congress of the 24th day of May, 1828, are admitted into the ports of the United States on the same terms, as respects tonnage or navigation duties, as American vessels, with the produce or manufactures of their own or any other country: Bolivia, Costa Rica, Mexico, Muscat, Ottoman empire, Portugal, and Uruguay.

The Rights of Commerce.—"As the end of the law of nations is the happiness and general perfection of the general society of mankind, it enjoins upon every nation the punctual observance of benevolence and goodwill, as well as of justice toward its neighbors. They ought to cultivate a free intercourse for commercial purposes, in order to supply each other's wants and promote each other's prosperity. The variety of climates and productions on the surface of the globe, and the facility of communication by means of rivers, lakes, and the ocean, invite to a liberal commerce, as agreea-

ble to the law of nature, and extremely conducive to national amity, industry, and happiness. The numerous wants of civilized life can only be supplied by mutual exchange between nations of the peculiar productions of each; and who that is familiar with the English classics has not dwelt with delight on the description of the extent and blessings of English commerce, which Addison has given with such graceful simplicity and such enchanting elegance in one of the *Spectator*'s visits to the Royal Exchange! But as every nation has the right, and, if disposed to exercise it, of judging for itself in respect to the policy and extent of its commercial arrangements, the general freedom of trade, however reasonably and strongly it may be inculcated in the modern school of political economy, is but an imperfect right, and necessarily subject to such regulations and restrictions as each nation may think proper to prescribe for itself."—KENT's *Comm.*

STATISTICAL VIEW OF THE COMMERCE OF THE UNITED STATES, EXHIBITING THE VALUE OF EXPORTS TO AND IMPORTS FROM EACH FOREIGN COUNTRY, AND THE TONNAGE OF AMERICAN AND FOREIGN VESSELS ARRIVING FROM AND DEPARTING TO EACH FOREIGN COUNTRY DURING THE YEAR ENDING JUNE 30, 1857.—[OFFICIAL.]

Countries.	Value of Exports.			Value of Imports.	American Tonnage.		Foreign Tonnage.	
	Domestic Produce.	Foreign Produce.	Total.		Entered the United States.	Cleared from the U. States.	Entered the United States.	Cleared from the U. States.
	$	$	$	$				
Russia on the Baltic and North Seas	4,356,836	171,465	4,528,301	1,435,304	19,684	25,408	1,888	2,716
Russia on the Black Sea	60,174	....	60,174	43,020	....	591	937	....
Asiatic Russia	20,057	26,212	46,269	....	....	....	....	280
Russian Possessions in North America	28,775	57,362	86,137	40,400	2,239	1,890	1,606	2,440
Prussia	30,788	14,311	45,099	66,127	604	949	....	1,334
Sweden and Norway	1,373,306	27,120	1,400,426	744,812	6,701	3,482	7,345	5,592
Swedish West Indies	76,405	3,528	79,933	12,082	1,661	1,719	95	....
Denmark	234,593	....	234,593	3,800	....	983	536	2,113
Danish West Indies	1,417,918	97,677	1,515,595	281,559	15,913	21,824	6,141	2,157
Hamburg	2,199,738	654,417	3,854,215	4,647,413	7,064	7,266	56,850	46,451
Bremen	11,082,107	361,888	11,443,995	10,725,523	30,346	31,470	115,485	87,919
Other German ports	....	255	255	243	....	245	147	....
Holland	3,980,633	127,244	4,107,877	2,469,762	20,805	25,297	10,062	26,282
Dutch West Indies	360,517	16,779	386,296	518,254	8,861	8,051	774	485
Dutch Guiana	343,728	6,104	349,832	374,401	8,024	6,856	1,374	806
Dutch East Indies	125,358	108,156	233,514	1,287,376	7,575	7,191	507	1,420
Belgium	3,6 8,698	1,926,6 8	5,644,326	5,060,911	36,970	40,162	16,715	14,854
England	174,523,021	3,109,131	177,630,152	123,473,520	1,047,046	911,183	344,889	388,792
Scotland	4,611,837	92,181	4,704,018	7,216,111	31,355	33,982	68,825	49,422
Ireland	3,451,614	1,000	3,451,614	113,453	2,710	23,406	16,575	22,490
Gibraltar	564,314	53,065	617,379	43,058	2,525	7,906	5,133	870
Malta	288,485	30,992	319,477	114,477	14,017	2,023	2,648	960
Canada	13,024,708	3,550,187	16,574,895	18,291,834	1,240,159	1,133,584	1,105,256	1,104,650
Other British North Am. Possessions	6,911,405	776,182	7,687,587	3,832,462	138,640	319,985	389,719	461,245
British West Indies	5,03 ,055	52,863	5,084,918	2,653,608	75,690	106,361	34,134	24,970
British Honduras	425,379	34,573	460,352	435,030	6,413	5,523	2,122	3,556
British Guiana	1,003,976	5,618	1,009,594	818,353	9,368	16,372	3,716	4,387
British Possessions in Africa	679,835	7,910	687,745	608,275	8,965	19,320	573	1,835
British Australia	3,297,131	143,553	3,440,684	65,632	3,015	47,231	1,859	5,587
British East Indies	864,893	113,03	977,937	10,766,214	109,030	63,337	4,754	6,375
France on the Atlantic	35,360,428	932,523	36,292,951	44,718,773	192,190	228,775	36,993	20,500
France on the Mediterranean	1,858,019	88,024	1,946,036	3,074,054	31,014	25,313	7,780	9,055
French North American Possessions	137,561	33,212	170,773	66,949	....	1,825	2,192	4,507
French West Indies	720,779	1,364	731,143	57,689	6,553	20,568	4,828	1,906
French Guiana	81,447	1,000	85,447	53,293	1,208	3,147	....	....
French East Indies	....	....	....	....	....	518	....	....
French Possessions in Africa	....	....	....	....	553	....	....	196
Spain on the Atlantic	2,902,097	13,882	2,975,979	692,982	33,118	28,611	5,197	10,075
Spain on the Mediterranean	7,715,907	11,211	7,727,118	2,050,634	27,229	21,005	29,697	67,687
Canary Islands	89,027	915	89,942	44,065	3,220	3,749	1,811	1,090
Philippine Islands	66,183	171,479	237,612	3,653,763	27,729	15,579	1,769	1,473
Cuba	9,37 ,582	5,543,861	14,923,443	45,243,101	684,937	596,241	61,308	14,298
Porto Rico	1,783,429	152,045	1,935,474	5,748,600	59,172	37,633	11,012	3,550
Portugal	1,619,067	16,388	1,635,445	422,836	7,540	19,347	4,669	12,063
Madeira	52,204	684	52,888	34,114	651	814	396	528
Cape de Verd Islands	63,108	1,335	64,503	25,905	1,601	2,662	785	545
Azores	62,972	17,751	80,723	50,859	3,916	3,589	908	1,589
Sardinia	3,057,901	77,567	3,135,468	217,287	9,958	15,852	7,808	6,027
Tuscany	337,400	....	337,400	1,755,009	18,593	2,567	5,730	....
Papal States	....	....	....	54,079	....	315	....	....
Two Sicilies	1,013,951	53,963	1,153,920	1,575,953	60,484	5,334	20,330	3,119
Austria	1,130,217	202,727	1,332,944	396,562	6,322	11,152	2,118	1,045
Austrian Possessions in Italy	1,042,348	29,889	1,072,737	95,808	2,093	5,029	994	499
Ionian Republic	....	....	....	11,179	....	....	470	....
Greece	....	....	....	36,533	....	....	182	....
Turkey in Europe	187,975	7,389	195,364	7,405	....	2,777	....	....
Turkey in Asia	33 ,506	76,776	410,282	794,445	9,952	4,774	320	....
Egypt	28,163	....	28,163	106,158	....	355	2,783	....
Other ports in Africa	2,306,165	176,581	2,484,746	1,521,605	14,824	22,010	678	743
Hayti	2,216,147	319,517	2,535,664	2,290,242	53,104	35,976	7,464	4,121
San Domingo	42,283	2, 6	44,349	109,574	1,504	1,020	1,905	918
Mexico	3,017,640	597,566	3,615,206	5,985,857	27,991	35,508	10,555	14,564
Central Republic	116,299	20,722	137,021	288,060	37,901	34,779	141	502
New Granada	1,770,209	267,480	2,037,689	2,468,160	136,232	124,809	2,374	1,743
Venezuela	1,360,148	67,490	1,427,578	3,860,518	24,921	17,703	3,408	2,083
Brazil	5,268,166	277,041	5,545,207	21,460,733	108,309	84,719	18,243	3,186
Uruguay, or Cisplatine Republic	976,370	29,802	1,006,172	868,297	2,289	22,412	241	2,027
Buenos Ayres, or Argentine Republic	1,202,376	111,431	1,313,807	2,784,473	16,376	36,630	496	1,605
Chili	2,473,228	433,957	2,907,185	3,742,439	14,372	42,727	7,207	11,067
Peru	447,733	58,199	507,932	906,747	128,091	66,523	1,577	6,462
Ecuador	94,546	2,630	97,176	16,803	625	1,358	....	....
Sandwich Islands	803,084	144,349	947,433	204,416	16,742	16,951	187	187
China	2,019,900	2,375,230	4,396,130	8,856,932	57,042	59,549	6,987	9,490
Other ports in Asia	....	642	642	5,660	....	....	184	....
Islands in the Pacific	72,987	....	72,987	748	1,668	1,554	1,112	1,496
Whale-fisheries	406,258	91,010	517,268	107,186	48,747	57,983	....	....
Uncertain places	29,599	....	29,599	....	....	251	....	....
Total, year 1856–'57	338,985,065	23,975,617	362,960,682	360,890,141	4,721,376	4,581,212	2,464,946	2,490,170

GENERAL STATEMENT OF FOREIGN IMPORTS INTO THE UNITED STATES FOR THE FISCAL YEAR ENDING JUNE 30, 1857.

Whence imported.	Value of Merchandise from each Country.					
	Free of Duty.	Paying Duty.	Total.	In American Vessels.	In foreign Vessels.	From the Dominions of each Power.
Russia on the Baltic and N. Seas	$55,880	$1,379,564	$1,435,394	$1,914,177	220,617	1,519,421
Russia on the Black Sea	....	43,026	43,626	....	43,026	
Russian Possessions in N. A.	15	40,385	40,400	16,234	24,166	
Prussia	....	66,127	66,127	66,127	....	66,127
Sweden and Norway	232	744,580	744,812	450,730	294,082	756,804
Swedish West Indies	2,065	10,017	12,082	12,082	....	
Denmark	....	3,309	3,309	....	3,309	
Danish West Indies	46,696	234,863	281,559	207,393	73,666	285,368
Hamburg	46,328	4,601,085	4,647,413	251,653	4,395,760	4,647,413
Bremen	183,120	10,540,403	10,723,523	5,414,951	5,308,572	10,723,523
Other German ports	....	248	248	....	248	248
Holland	221,884	2,243,878	2,467,762	1,435,614	1,034,149	4,049,876
Dutch West Indies	7,302	516,952	523,254	430,376	37,878	
Dutch Guiana	1,400	373,061	374,461	303,166	71,295	
Dutch East Indies	830,829	456,570	1,287,399	....	....	
Belgium	41,635	5,016,676	5,060,311	3,906,092	1,154,219	5,060,311
England	5,731,012	117,742,517	123,473,529	81,818,923	41,654,606	
Scotland	63,070	7,166,041	7,216,111	1,427,118	5,788,993	
Ireland	4,318	109,135	113,453	32,299	81,154	
Gibraltar	2,166	41,792	43,958	35,283	8,675	
Malta	4,424	110,053	114,477	84,760	29,717	
Canada	17,600,737	691,097	18,291,834	9,422,796	8,869,108	168,523,026
Other British N. A. Possessions	3,635,815	136,647	3,832,462	643,605	3,192,857	
British West Indies	437,809	2,225,880	2,663,698	1,924,446	739,252	
British Honduras	56,957	378,073	435,030	390,072	44,958	
British Guiana	1,492	816,871	818,353	695,844	122,509	
British Possessions in Africa	11,026	687,249	698,275	681,568	16,707	
British Australia	34,241	31,391	65,632	42,232	23,400	
British East Indies	424,408	10,341,806	10,766,214	10,357,413	408,801	
France on the Atlantic	2,032,409	42,686,364	44,718,773	30,005,477	14,713,296	
France on the Mediterranean	51,887	3,022,667	3,074,054	2,517,502	556,552	
French N. Amer. Possessions	205	94,844	95,049	....	95,049	48,000,858
French West Indies	51,675	8,014	59,689	59,460	229	
French Guiana	30,411	22,882	53,293	53,293	....	
Spain on the Atlantic	5,632	686,290	692,952	605,290	87,693	
Spain on the Mediterranean	26,307	2,028,727	2,055,034	1,315,106	734,928	
Canary Islands	....	44,065	44,065	36,808	7,257	
Philippine Islands	63,217	3,599,546	3,662,763	3,360,425	293,338	57,432,545
Cuba	1,025,190	44,217,911	45,243,101	43,050,585	2,192,516	
Porto Rico	10,428	5,738,172	5,748,600	4,893,701	854,899	
Portugal	6,948	415,888	422,836	99,385	323,451	
Madeira	8	34,106	34,114	....	34,114	
Cape de Verd Islands	14,534	11,371	25,905	11,255	14,650	533,714
Azores	33,654	17,205	50,859	48,460	2,398	
Sardinia	754	216,533	217,287	78,975	138,312	217,287
Tuscany	76,229	1,678,773	1,755,002	1,273,401	481,505	1,755,002
Papal States	60	54,612	54,672	60	54,612	54,672
Two Sicilies	51,942	1,524,011	1,575,953	1,167,330	408,623	1,575,953
Austria	22,693	373,869	396,562	141,028	255,534	422,365
Austrian Possessions in Italy	....	25,803	25,803	22,777	3,026	
Ionian Republic	....	11,179	11,179	11,179	....	11,179
Greece	....	36,533	36,533	....	36,533	36,533
Turkey in Europe	245	7,160	7,405	7,396	9	
Turkey in Asia	2,550	721,855	724,445	677,983	46,462	731,850
Egypt	400	105,753	106,153	....	106,153	106,153
Ports in Africa	161,935	1,359,730	1,521,665	1,502,197	19,468	1,521,665
Hayti	1,553,634	739,608	2,293,242	2,182,753	107,492	2,290,242
San Domingo	1,609	108,265	109,874	34,375	75,499	109,874
Mexico	5,021,291	964,566	5,985,857	3,701,317	2,284,540	5,985,857
Central Republic	111,637	176,423	288,060	213,882	74,178	288,060
New Granada	413,932	2,054,237	2,468,169	2,423,515	44,654	2,468,169
Venezuela	1,128,550	2,731,968	3,860,518	3,149,744	710,774	3,860,518
Brazil	18,030,733	3,429,995	21,460,733	19,320,149	2,140,584	21,460,733
Uruguay, or Cisplatine Repub.	....	368,297	368,297	314,550	53,737	368,297
Buenos Ayres, or Argentine Rep.	11,048	2,773,425	2,784,473	2,725,169	59,304	2,784,473
Chili	1,305,451	2,376,982	3,742,439	3,096,733	645,706	3,742,439
Peru	107,196	101,691	208,747	177,802	30,945	208,747
Ecuador	15,750	53	15,803	15,803	....	15,803
Sandwich Islands	67,200	137,216	204,416	190,415	14,001	204,416
China	5,628,835	2,728,087	8,356,922	7,865,090	491,832	8,356,922
Other ports in Asia	....	5,660	5,660	....	5,660	5,660
Whale-fisheries	80,225	20,961	107,186	90,561	16,625	107,186
Islands in the Pacific	....	748	748	748	....	748
Total, 1856-'57	$66,720,396	$294,160,825	$360,880,141	$259,116,170	$101,773,971	$360,880,141
Total, 1855-'56	56,955,706	257,684,236	314,639,942	249,972,512	64,667,430	314,639,942

From the above table we get a clear exhibit of the direction of our foreign trade as regards the imports; making a brief summary, we see the proportion borne by the following countries during the year 1856-'57:

Countries.	Imports.	Per Cent.
England	$123,479,529	34·21
France	43,792,827	12·14
Cuba	45,243,101	12·54
Brazil	21,460,733	5·94
Canada	18,291,834	5·07
British East Indies	10,766,214	2·98
Bremen	10,723,523	2·97
China	8,356,922	2·32
Scotland	7,216,111	2·00
Other countries	71,565,337	19·83
Total	$360,880,141	100·00

This summary shows that 80 per cent. of the total imports for 1856-'57 was to countries from which we imported over 2 per cent. Of the total of this 80 per cent. 51 per cent. (against 65 per cent. of exports) came from countries on the west coast of Europe, thereby showing a balance of trade in our favor in our commerce with these countries. A similar examination of our trade with the East Indies and countries in the south of Europe would show a balance of trade against this country. The same course of trade is also particularly to be remarked in regard to Cuba, Brazil, and China; as these three countries show, on an average, an aggregate balance of trade against the United States of over fifty millions of dollars.

COMMERCE OF THE UNITED STATES WITH THE PRINCIPAL COMMERCIAL COUNTRIES, EXHIBITING THE AGGREGATE VALUE OF IMPORTS FROM EACH COUNTRY, EACH YEAR, DURING A PERIOD OF THIRTY-SEVEN CONSECUTIVE YEARS, FROM 1821 TO 1857, BOTH INCLUSIVE.

VALUES OF IMPORTS INTO THE UNITED STATES FROM—

Years.	Great Britain and Dependencies.	France and Dependencies.	Spain and Dependencies.	Netherlands and Dependencies.	Sweden and Dependencies.	Denmark and Dependencies.	Portugal and Dependencies.	China.	Hanse Towns.
1821.....	$2,127,988	$5,904,581	$6,653,728	$2,934,272	$1,360,869	$1,909,780	$748,428	$3,111,951	$990,165
1822.....	39,537,829	7,059,349	12,376,841	2,768,102	1,544,907	2,535,406	881,290	5,242,536	1,778,755
1823.....	34,072,573	6,305,348	14,233,580	2,195,587	1,503,059	1,324,592	588,635	6,511,425	1,981,026
1824.....	31,750,340	9,907,412	15,857,007	2,355,625	1,101,750	2,110,666	601,779	5,618,502	2,527,830
1825.....	43,394,819	11,335,581	9,566,237	2,265,378	1,417,598	1,939,572	733,443	7,538,115	2,739,626
1826.....	33,212,353	9,588,896	9,623,420	2,174,181	1,322,182	2,117,164	765,203	7,422,186	2,816,545
1827.....	31,053,374	9,448,532	9,190,360	1,722,070	1,225,043	2,240,171	655,001	3,617,183	1,638,558
1828.....	35,571,484	10,387,595	8,167,540	1,990,411	1,946,783	2,374,069	433,555	5,839,102	2,644,392
1829.....	27,582,982	9,016,970	6,801,374	1,617,334	1,302,950	2,098,127	687,869	4,869,847	2,274,275
1830.....	29,804,984	8,243,885	8,373,981	1,356,765	1,398,640	1,671,218	471,643	5,878,141	1,873,278
1831.....	47,955,717	14,737,585	11,701,201	1,651,031	1,120,735	1,692,216	397,550	3,089,205	3,493,201
1832.....	41,498,924	13,754,615	10,863,290	2,358,474	1,150,804	1,182,708	485,264	5,844,907	2,965,096
1833.....	47,085,865	13,962,913	18,421,207	2,347,341	1,200,849	1,166,872	555,137	7,541,570	2,227,726
1834.....	52,879,298	17,557,244	13,527,454	2,197,886	1,120,541	1,684,368	646,122	7,8 2,327	3,355,856
1835.....	65,949,397	23,392,584	15,617,149	2,908,718	1,316,508	1,403,902	1,125,713	5,187,187	3,841,943
1836.....	86,029,915	37,033,285	19,345,490	3,861,514	1,299,603	1,874,840	672,670	7,324,816	4,994,820
1837.....	52,289,557	22,497,817	18,927,871	2,370,828	1,468,878	1,266,900	928,291	8,965,337	5,642,221
1838.....	43,051,181	18,087,142	15,971,394	2,194,238	900,790	1,644,805	725,058	4,764,586	2,847,358
1839.....	71,600,351	33,234,119	19,276,715	3,473,220	1,566,142	1,949,758	1,182,328	8,678,509	4,849,150
1840.....	39,130,921	17,906,197	14,011,647	2,326,896	1,275,458	976,678	588,854	6,849,829	2,921,493
1841.....	51,099,638	24,187,444	16,313,303	2,440,417	1,229,641	1,084,391	574,841	5,985,338	2,449,964
1842.....	38,613,043	17,223,390	12,176,588	2,214,520	914,176	884,391	347,684	4,984,645	2,274,019
1843.....	28,978,582	7,836,187	8,081,554	815,541	278,674	485,385	71,389	4,885,566	920,865
1844.....	45,453,129	17,053,418	13,175,351	2,136,386	445,552	696,510	257,015	4,981,255	2,136,386
1845.....	49,903,725	22,089,214	10,519,544	1,897,623	640,057	783,239	501,734	7,285,014	2,912,057
1846.....	49,066,422	24,330,882	12,370,482	1,971,680	730,150	758,127	547,474	6,5 3,881	3,147,864
1847.....	72,715,311	25,109,417	16,381,975	2,480,584	613,698	847,223	416,150	5,583,341	3,622,185
1848.....	68,935,979	28,287,791	17,388,307	2,172,166	764,602	555,855	235,877	6,083,496	6,293,280
1849.....	67,387,987	24,458,669	15,110,097	2,367,651	757,828	858,845	414,884	5,513,786	7,742,864
1850.....	85,111,507	27,636,265	15,864,748	2,732,560	1,036,310	267,986	470,820	6,003,402	8,787,874
1851.....	105,823,079	31,767,410	22,972,230	3,124,997	996,238	274,781	504,698	7,065,144	10,008,364
1852.....	102,710,840	25,869,439	24,223,283	3,290,854	779,732	308,856	404,343	10,593,950	8,171,411
1853.....	143,219,260	33,523,999	26,030,920	3,540,619	454,208	184,407	540,698	10,573,710	13,843,455
1854.....	163,018,0 5	35,972,096	25,401,338	4,376,793	587,768	294,141	804,168	10,506,329	16,966,898
1855.....	129,374,434	31,811,965	26,447,445	3,513,441	881,229	227,009	435,411	11,048,726	12,960,110
1856.....	154,051,749	40,241,903	38,482,700	4,615,436	681,457	226,158	656,242	10,454,436	14,458,512
1857.....	168,523,026	48,000,858	57,432,545	4,641,876	756,394	285,368	533,714	8,856,482	16,371,184

VALUES OF IMPORTS INTO THE UNITED STATES FROM—

Years.	Russia.	Italy.†	Hayti.	Brazil.	Mexico.	Venezuela, N. Granada, and Ecuador.	Central America.	Argentine Republic and Uruguay.	Chili.	Belgium.
1821.....	$1,854,199	$973,463	$2,246,257	$805,126	....	....	....	....	....	....
1822.....	3,307,328	1,562,033	2,341,817	1,486,567	....	....	....	....	....	....
1823.....	2,258,777	1,310,449	2,352,733	1,214,810	....	....	....	....	....	....
1824.....	2,209,663	1,029,439	2,247,235	2,074,119	....	....	....	....	....	....
1825.....	3,037,110	1,454,022	2,065,329	2,156,707	$4,044,647	$1,837,050	$56,789	$740,771	$229,599	....
1826.....	2,617,103	1,120,749	1,511,836	2,156,678	3,916,138	2,073,724	204,270	522,709	629,949	....
1827.....	2,086,077	1,013,126	1,781,300	2,060,971	5,231,867	1,550,248	251,342	80,065	184,033	....
1828.....	2,788,362	1,607,417	2,163,585	3,017,732	4,814,258	1,484,856	204,770	317,466	781,863	....
1829.....	2,218,995	1,499,588	1,749,309	2,535,467	5,026,761	1,255,316	311,951	915,199	410,118	....
1830.....	1,691,849	940,254	1,597,140	2,411,466	5,235,241	1,120,095	302,333	1,431,882	182,554	....
1831.....	1,608,338	1,704,264	1,580,578	2,375,829	5,166,745	1,207,154	198,504	926,103	413,758	....
1832.....	3,251,852	1,619,795	2,058,846	3,800,845	4,293,954	1,435,182	288,316	1,506,171	504 623	....
1833.....	2,772,550	999,134	1,740,058	5,089,643	5,422,818	1,524,822	267,740	1,377,117	334,130	$130,698
1834.....	2,595,846	1,422,063	2,113,717	4,722,969	8,066,068	1,727,188	170,968	1,430,118	787,409	185,679
1835.....	2,395,245	1,457,977	2,347,556	5,574,466	9,440,446	1,662,764	215,450	878,618	917,065	341,167
1836.....	2,778,554	1,970,246	1,828,019	7,210,190	5,615,819	1,996,650	215,304	1,053,503	811,497	480,009
1837.....	2,816,116	1,827,181	1,440,856	4,991,803	5,654,002	1,567,345	163,402	1,000,002	1,180,156	549,009
1838.....	1,898,306	944,238	1,275,762	3,151,238	3,560,709	1,015,249	155,614	1,029,539	942,095	239,928
1839.....	2,393,894	1,182,247	1,377,989	5,202,955	3,127,153	2,073,216	192,845	1,150,546	1,186,641	466,701
1840.....	2,572,427	1,157,200	1,252,824	4,027,206	4,175,001	1,572,548	189,021	787,964	1,616,859	274,867
1841.....	2,817,448	1,151,236	1,809,644	6,309,653	3,284,957	2,156,121	186,911	1,957,747	1,239,980	374,453
1842.....	1,350,106	987,528	1,266,997	5,048,814	1,995,696	1,720,558	124,904	2,417,541	831,089	619,588
1843.....	742,803	394,564	898,447	3,947,658	2,782,406	1,307,013	132,167	915,241	857,556	171,695
1844.....	1,065,419	1,046,926	1,441,244	4,883,806	2,387,092	1,625,096	189,416	1,565,155	760,370	634,777
1845.....	1,492,262	2,172,479	1,386,367	6,084,592	1,792,956	1,440,196	65,269	1,771,271	1,123,626	706,569
1846.....	1,570,054	2,082,740	1,542,963	7,441,803	1,886,621	1,570,043	116,733	825,685	1,275,960	836,372
1847.....	924,673	2,018,552	1,391,580	7,096,160	746,818	1,479,150	80,581	354,019	1,710,903	948,325
1848.....	1,319,084	2,234,129	1,367,174	7,999,648	1,581,247	1,438,907	18,873	1,549,161	1,330,451	1,225,061
1849.....	844,238	2,123,678	901,724	8,444,868	2,216,719	1,572,066	56,017	1,780,751	1,817,723	1,344,293
1850.....	1,511,572	2,927,911	1,544,771	9,324,429	2,135,866	2,012,230	261,409	2,653,877	1,796,877	2,404,154
1851.....	1,392,782	2,880,623	1,88 ,068	11,525,804	1,804,779	3,152,573	149,856	3,284,406	2,734,746	2,377,630
1852.....	1,581,621	2,226,936	1,870,672	12,239,280	1,649,206	2,872,391	868,855	2,141,389	2,062,160	2,054,043
1853.....	1,278,501	2,845,265	1,985,624	14,817,861	2,167,985	3,189,308	580,937	2,489,021	2,214,252	2,732,168
1854.....	1,541,235	3,169,421	2,357,252	14,110,387	3,463,190	4,608,703	2,360,422	2,6 2,150	3,332,167	3,462,241
1855.....	296,118*	3,709,869	2,615,525‡	15,218,935	2,882,830	5,429,004	986,403	2,787,896	3,518,806	3,398,690
1856.....	330,871	3,441,570	1,984,456	19,262,657	3,568,681	6,612,515	246,853	2,693,197	2,467,819	3,106,541
1857.....	1,519,420	3,692,914	2,400,116	21,460,735	5,985,857	6,344,400	288,060	3,152,770	3,742,439	5,060,511

* The figures for 1855 are the aggregate of those given in "Commerce and Navigation" for Russia on the Baltic and North Seas, on the Black Sea, and in American and Asiatic Russia, all embraced in prior reports under the single title, Russia.

† Italy, subsequently to 1844, is made to embrace all the Italian states—Sicily, Sardinia, Tuscany, Trioste, etc.; but after 1855, it embraces Sardinia, Tuscany, Papal states, and Two Sicilies, only.

‡ Hayti after 1855 embraces the totals given in "Commerce and Navigation" for Hayti and San Domingo (Dominican Republic), which were embodied in former reports under the single title, Hayti.

From these tables it appears that the principal increase in the countries of Europe was in Great Britain and its dependencies, France and its dependencies, Spain and its dependencies, Belgium and the Hanse Towns. The South American states that show an increase are, Brazil, Argentine Republic, and Chili. The countries in the north of Europe generally show a decrease.

SUMMARY STATEMENT OF THE COMMERCE OF THE UNITED STATES WITH THE PRINCIPAL COMMERCIAL COUNTRIES, EXHIBITING THE AGGREGATE VALUE OF EXPORTS FROM THE UNITED STATES TO EACH COUNTRY, EACH YEAR, DURING A PERIOD OF THIRTY-SEVEN CONSECUTIVE YEARS, FROM 1821 TO 1857, BOTH INCLUSIVE.

VALUES OF EXPORTS FROM THE UNITED STATES TO—

Years.	Great Britain and Dependencies.	France and Dependencies.	Spain and Dependencies.	Netherlands and Dependencies.	Sweden and Dependencies.	Denmark and Dependencies.	Portugal and Dependencies.	China.	Hanse Towns.
1821.....	$20,522,572	$6,474,718	$7,200,275	$6,092,061	$717,407	$2,327,862	$435,700	$4,200,560	$2,132,544
1822.....	30,041,337	7,075,532	8,488,212	5,801,639	921,434	2,434,048	427,471	5,235,858	2,560,015
1823.....	27,571,060	9,568,924	10,062,398	7,767,075	558,201	1,955,071	246,648	4,636,061	3,103,489
1824.....	28,027,845	10,552,304	15,307,278	3,617,389	569,428	2,188,268	518,836	5,301,171	1,863,273
1825.....	44,217,525	11,891,326	5,921,549	5,895,499	589,550	2,701,088	408,160	5,570,515	3,121,033
1826.....	28,980,010	12,106,429	6,087,351	4,704,070	358,380	2,412,875	313,553	2,066,644	2,116,097
1827.....	32,870,465	13,565,856	7,321,991	5,826,674	850,377	2,404,322	357,270	3,664,405	3,013,185
1828.....	27,026,909	12,038,341	7,204,627	3,038,357	1,108,954	3,548,107	291,614	1,492,802	2,095,251
1829.....	28,071,084	12,332,304	6,388,004	4,622,120	957,048	2,311,174	322,911	1,854,802	3,277,160
1830.....	31,647,881	11,806,238	6,049,051	4,562,437	961,729	2,014,085	279,799	742,193	2,274,880
1831.....	39,901,370	9,882,679	5,661,420	5,036,609	540,078	2,000,792	296,338	1,200,835	2,5?2,172
1832.....	37,368,556	13,244,608	6,399,183	6,035,460	515,140	2,207,551	204,218	1,260,522	4,088,212
1833.....	39,831,486	14,424,533	6,506,041	5,566,361	420,909	1,833,894	442,561	1,438,759	2,903,206
1834.....	50,797,650	16,111,412	6,296,556	4,578,799	404,741	1,857,114	352,496	1,010,483	4,650,674
1835.....	60,107,134	20,335,066	7,009,279	4,411,053	602,593	1,780,496	521,413	1,868,580	3,522,276
1836.....	64,487,550	21,441,200	8,081,668	4,796,167	700,386	2,122,469	191,007	1,104,264	4,393,682
1837.....	61,218,813	20,255,340	7,604,002	4,285,767	507,523	1,640,173	423,705	630,591	3,754,040
1838.....	58,843,392	18,262,413	7,684,006	3,772,206	355,852	1,299,927	292,131	1,516,602	3,201,645
1839.....	68,109,082	18,924,413	7,724,429	2,871,239	470,914	1,406,346	244,354	1,533,601	2,801,067
1840.....	70,420,846	22,349,154	7,017,947	4,546,085	552,546	1,193,560	321,256	1,009,966	4,198,459
1841.....	62,376,402	22,235,575	7,181,409	3,288,741	771,210	987,283	349,113	1,200,816	4,660,716
1842.....	52,306,550	18,738,866	6,826,295	4,270,776	477,965	1,047,673	302,064	1,444,397	4,564,518
1843.....	46,901,835	12,472,453	3,958,604	2,870,884	67,762	827,365	168,534	2,418,958	3,231,032
1844.....	61,721,876	16,135,436	6,751,311	3,455,385	295,345	983,156	252,170	1,756,141	3,566,687
1845.....	61,044,535	16,149,934	7,790,442	3,610,092	363,607	1,139,536	247,180	2,275,995	4,045,920
1846.....	61,685,446	15,826,851	6,702,228	2,727,445	730,150	753,927	204,976	1,331,741	4,208,620
1847.....	98,918,157	19,819,107	9,929,424	2,493,271	533,908	1,193,193	263,571	1 832,884	4,334,038
1848.....	91,592,964	20,413,360	10,143,235	2,564,053	745,119	1,135,150	345,725	2,190,013	4,321,735
1849.....	93,172,339	18,781,585	7,370,579	3,303,670	955,052	936,484	377,136	1,983,324	3,314,930
1850.....	88,388,675	20,180,094	9,931,240	3,571,607	819,532	1,168,538	387,328	1,905,217	5,200,522
1851.....	186,692,774	28,635,214	13,240,056	1,039,893	868,208	1,140,086	325,801	2,485,287	6,047,447
1852.....	132,254,251	24,512,114	11,170,153	3,230,390	850,963	1,040,788	416,833	2,063,177	6,376,957
1853.....	145,553,624	27,044,479	11,847,101	2,979,332	884,483	1,037,544	417,927	3,736,992	8,020,053
1854.....	180,297,258	32,800,841	14,332,310	3,082,310	1,137,067	1,074,867	241,278	1,398,088	12,086,258
1855.....	178,780,640	33,553,972	14,311,974	2,950,669	1,047,057	968,135	423,527	1,719,429	10,163,851
1856.....	204,126,036	43,307,584	16,680,108	4,448,082	1,930,065	1,131,516	476,044	2,558,237	14,230,371
1857.....	222,706,352	39,226,350	27,889,508	5,077,520	1,480,350	1,751,224	1,323,550	4,395,130	15,298,465

VALUES OF IMPORTS INTO THE UNITED STATES FROM—

Years.	Russia.	Italy.†	Hayti.	Brasil.	Mexico.	Venezuela, N. Granada, and Ecuador.	Central America.	Argentine Republic and Uruguay.	Chili.	Belgium.
1821.....	$928,894	$1,030,007	$2,270,601	$1,381,760	....	....	....	....	....	....
1822.....	520,081	1,450,184	2,110,811	1,463,920	....	....	....	....	....	....
1823.....	648,734	1,067,905	2,378,782	1,341,330	....	....	....	....	....	....
1824.....	231,981	664,348	2,305,155	2,301,904	....	....	....	....	....	....
1825.....	287,491	645,039	2,054,615	2,393,754	$6,470,144	$2,239,255	$99,522	$573,520	$921,438	....
1826.....	174,648	530,221	1,414,414	2,200,340	6,281,050	1,952,072	119,774	379,840	1,447,498	....
1827.....	382,244	610,221	1,331,909	1,863,806	4,173,257	944,534	224,772	151,904	1,702,001	....
1828.....	451,405	920,759	1,332,711	1,988,705	2,886,484	884,524	153,272	154,228	2,629,462	....
1829.....	386,226	901,012	975,158	1,920,927	2,531,151	767,348	238,854	626,052	1,421,134	....
1830.....	416,575	740,360	823,178	1,843,238	4,337,408	400,990	250,118	629,887	1,536,114	....
1831.....	402,709	694,525	1,318,375	2,076,065	6,178,218	658,149	306,497	653,170	1,308,185	....
1832.....	532,652	687,563	1,669,993	2,934,794	3,407,541	1,117,122	332,207	926,365	1,221,119	....
1833.....	703,805	879,186	1,427,963	3,272,101	5,498,997	957,548	575,016	699,728	1,403,940	$1,005,011
1834.....	330,894	499,557	1,436,952	2,955,851	5,265,958	795,567	184,149	971,887	1,476,356	1,458,042
1835.....	585,447	283,941	1,815,812	2,008,656	9,029,221	1,064,016	183,793	708,918	941,884	748,222
1836.....	911,013	864,009	1,240,089	3,094,936	6,041,635	829,255	183,518	334,983	937,917	2,284,060
1837.....	1,306,732	923,677	1,011,981	1,743,309	3,880,323	1,080,199	157,663	278,879	1,487,799	1,110,587
1838.....	1,048,289	452,893	910,255	2,957,194	2,164,097	724,739	243,040	296,994	1,370,264	1,614,051
1839.....	1,239,246	438,752	1,122,550	2,637,485	2,787,362	750,785	210,241	465,363	1,704,553	607,910
1840.....	1,169,481	1,473,185	1,027,214	2,506,574	2,515,341	919,123	217,946	510,006	1,728,829	2,320,655
1841.....	1,026,729	912,318	1,155,557	2,517,273	2,036,620	872,987	149,913	818,170	1,102,983	1,823,882
1842.....	836,533	820,617	899,966	2,601,502	1,534,238	763,936	69,466	681,228	1,630,676	1,610,684
1843.....	386,709	728,221	653,970	1,752,288	1,471,937	745,455	52,966	557,234	1,049,463	1,570,709
1844.....	555,414	576,328	1,128,356	2,818,259	1,794,833	656,978	150,270	966,465	1,105,221	2,003,501
1845.....	727,337	1,419,010	1,496,740	2,937,950	1,152,331	804,107	67,649	660,142	1,548,191	1,851,073
1846.....	632,467	2,202,006	1,157,142	7,441,805	1,531,180	1,576,097	120,253	411,329	1,768,576	2,981,814
1847.....	750,453	3,102,297	1,208,773	2,943,778	692,423	736,017	90,568	412,928	1,071,616	3,262,557
1848.....	1,150,010	3,295,821	1,023,815	3,372,434	4,058,436	587,031	50,378	617,656	1,924,511	2,189,935
1849.....	1,135,544	3,052,287	602,302	3,102,977	2,930,809	885,418	186,219	915,221	2,017,100	2,731,307
1850.....	864,941	3,683,707	1,350,188	3,197,114	2,012,827	2,309,614	70,109	1,126,184	1,422,721	2,543,766
1851.....	1,811,691	4,740,932	1,847,290	3,759,916	1,581,783	4,085,847	202,391	1,120,557	1,395,305	2,852,012
1852.....	1,200,480	5,408,344	1,718,903	3,021,042	2,281,029	2,309,207	473,518	992,196	2,329,133	4,203,770
1853.....	2,456,653	19,784,149	1,908,933	3,994,444	3,558,824	700,997	546,356	1,189,912	2,396,437	3,938,533
1854.....	480,616	4,154,518	2,269,725	4,239,241	3,135,486	2,188,189	308,884	1,274,682	2,193,259	5,006,894
1855.....	123,445*	3,182,839	12,245,052	4,261,273	2,022,804	2,351,586	1,202,170	1,301,599	3,426,257	3,927,240
1856.....	696,405	3,046,729	2,206,486	5,094,904	3,702,239	3,353,606	396,021	1,811,192	2,867,743	6,500,628
1857.....	4,729,881	4,625,788	1,754,528	5,545,207	3,615,206	3,502,443	187,021	2,319,979	2,107,185	5,044,926

* The figures for 1855 are the aggregate of those given in "Commerce and Navigation" for Russia on the Baltic and North Seas, on the Black Sea, and in American and Asiatic Russia, all embraced in prior reports under the single title Russia.

† Italy, subsequently to 1844, is made to embrace *all* the Italian states—Sicily, Sardinia, Tuscany, Trieste, etc.; but after 1855 it embraces Sardinia, Tuscany, Papal States, and Two Sicilies, only.

‡ Hayti after 1855 embraces the totals given in "Commerce and Navigation" for Hayti and San Domingo (Dominican Republic), which were embodied in former reports under the single title Hayti.

The following tables exhibit in a condensed manner the gross exports and imports from the United States each year from 1790 to 1821, inclusive; also the gross exports, domestic and foreign, the gross imports, the exports and imports of specie, and the tonnage cleared from the United States each year from 1821 to 1857, inclusive. The marvelous growth of the foreign trade of this country can not be more clearly shown.

STATEMENT EXHIBITING THE GROSS VALUE OF EXPORTS AND IMPORTS OF THE UNITED STATES FROM 1790 TO 1821.

Years ending Sept. 30.	Exports.			Imports.	Years ending Sept. 30.	Exports.			Imports.
	Domestic Produce.	Foreign Merchandise.	Total.	Total.		Domestic Produce.	Foreign Merchandise.	Total.	Total.
1790....	$19,666,000	$539,156	$20,205,156	$23,000,000	1806....	$41,253,727	$40,288,236	$101,536,963	$129,419,000
1791....	18,500,000	512,041	19,012,041	29,200,000	1807....	48,699,592	51,645,558	108,343,150	138,500,000
1792....	19,000,000	1,753,998	20,753,998	31,500,000	1808....	9,433,545	12,997,414	22,430,960	56,990,000
1793....	24,00 ,000	2,101,572	26,101,572	31,100,000	1809....	31,405,702	20,797,531	52,203,233	59,400,000
1794....	26,500,000	6,586,233	33,026,233	34,600,000	1810....	42,366,675	24,391,295	66,757,970	85,400,000
1795....	39,500,000	8,489,472	47,989,472	69,756,228	1811....	45,294,043	16,022,790	61,316,833	53,400,000
1796....	40,764,927	26,300,000	67,064,927	81,436,104	1812....	30,032,109	8,405,127	38,537,236	77,000,000
1797....	29,850,306	27,000,000	56,850,306	75,670,498	1813....	25,008,112	2,847,865	27,855,977	29,005,000
1798....	28,527,097	33,000,000	61,527,097	68,551,700	1814....	6,782,272	145,169	6,927,441	12,965,000
1799....	33,142,522	45,923,000	78,065,522	79,069,148	1815....	45,974,498	6,583,350	52,557,753	113,041,274
1800....	31,840,903	39,130,877	70,971,780	91,252,768	1816....	64,781,836	17,138,156	81,920,452	147,103,00
1801....	47,473,304	47,641,721	94,115,025	111,363,511	1817....	68,313,590	19,358,009	87,671,599	99,960,000
1802....	36,708,189	35,774,971	72,483,160	76,333,333	1818....	73,854,477	19,426,096	93,281,133	121,750,000
1803....	42,205,961	13,594,072	55,800,033	64,666,666	1819....	50,976,838	19,165,083	70,142,921	87,125,000
1804....	41,437,477	36,231,597	77,699,074	85,000,000	1820....	51,683,640	18,008,029	69,691,669	74,450,000
1805....	42,387,009	53,179,019	95,566,021	120,600,000	1821....	43,671,894	21,302,488	64,974,382	62,585,724

GENERAL STATEMENT OF THE ANNUAL FOREIGN COMMERCE AND NAVIGATION OF THE UNITED STATES FROM OCTOBER 1, 1820, TO JULY 1, 1857.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1821....	$43,671,894	$21,302,488	$64,974,382	$62,585,724	$10,478,051	$8,064,840	804,647	83,073
1822....	47,874,079	22,286,202	72,160,281	83,241,541	10,810,180	3,309,846	813,748	97,490
1823....	47,155,498	27,543,822	74,699,320	77,579,267	6,372,287	5,097,836	810,761	119,740
1824....	50,649,590	25,337,157	75,986,857	80,549,007	7,014,592	8,379,885	919,278	102,552
1825....	66,944,745	32,530,648	99,585,393	96,340,075	8,022,034	6,150,765	966,366	99,080
1826....	53,055,710	24,539,612	77,595,322	84,974,477	4,704,533	6,886,966	952,012	99,417
1827....	58,021,031	23,403,136	82,324,927	79,484,068	8,014,880	8,151,130	980,542	181,250
1828....	50,669,669	21,535,017	72,264,686	88,500,824	8,243,476	7,480,741	847,404	151,030
1829....	55,700,193	16,658,478	72,358,671	74,492,524	4,924,920	7,403,612	944,799	133,666
1830....	59,462,029	14,387,479	73,849,508	70,876,020	2,178,773	8,185,964	971,760	133,434
Total.....	$536,104,918	$229,643,834	$765,748,752	$708,633,427	$71,073,494	$63,144,645	9,056,617	1,146,074
Sept. 30, 1831....	$61,277,057	$20,033,526	$81,310,583	$103,191,124	$9,014,931	$7,305,945	972,504	271,194
1832....	63,137,470	24,039,473	87,176,943	101,029,266	5,959,340	5,907,544	974,865	387,505
1833....	70,317,698	19,822,735	90,140,433	108,118,311	2,611,701	7,070,368	1,142,160	407,039
1834....	81,024,162	23,312,811	104,336,973	126,521,332	2,076,758	17,911,632	1,134,020	577,760
1835....	101,189,082	20,504,495	121,693,577	149,845,742	6,477,775	13,131,447	1,400,517	639,824
1836....	106,916,680	21,746,360	128,663,040	189,980,035	4,324,336	13,400,881	1,3 5,523	674,721
1837....	95,564,414	21,854,962	117,419,376	140,989,217	5,970,249	10,510,414	1,266,622	756,2 2
1838....	96,033,891	12,452,795	108,486,616	113,717,406	3,536,046	17,747,116	1,408,761	604,166
1839....	103,533,891	17,494,525	121,028,416	162,092,132	8,776,745	5,5 5,176	1,477,128	611,831
1840....	113,985,634	18,190,312	132,085,946	107,141,515	8,417,014	8,882,815	1,647,009	706,486
Total.....	$892,889,909	$199,451,994	$1,092,341,903	$1,302,676,084	$56,830,893	$107,469,296	12,739,909	5,718,476
Sept. 30, 1841....	$106,382,722	$15,463,081	$121,851,803	$127,946,177	$10,034,332	$4,088,653	1,634,156	736,849
1842....	92,969,996	11,721,538	104,691,534	100,162,087	4,815,539	4,087,016	1,536,451	740,407
June 30, 1843*....	77,193,783	6,552,697	84,346,480	64,153,799	1,520,791	22,300,559	1,128,083	523,949
1844....	99,715,179	11,484,837	111,200,016	108,435,035	5,454,214	5,830,429	2,010,024	906,814
1845....	99,390,776	15,246,830	114,646,606	117,254,534	8,606,475	4,070,942	2,053,977	930,275
1846....	109,141,893	11,346,693	121,488,586	121,691,797	3,995,268	3,777,732	2,221,098	968,178
1847....	150,837,464	8,011,158	158,848,622	146,545,638	7,907,024	24,131,289	3,202,303	1,176,645
1848....	132,904,191	21,132,315	154,081,456	154,998,928	15,841,616	6,360,224	2,461,280	1,404,159
1849....	132,666,955	13,088,855	145,755,820	147,857,439	5,404,648	6,651,240	2,753,724	1,675,760
1850....	136,946,912	14,951,808	151,898,720	178,138,318	7,522,924	4,628,792	2,632,788	1,728,211
Total.....	$1,131,458,861	$129,105,782	$1,260,564,585	$1,267,783,782	$65,010,921	$86,908,156	20,174,804	10,791,249
June 30, 1851....	$196,682,718	$21,698,293	$218,388,011	$216,224,939	$29,479,752	$5,453,592	3,200,519	1,029,585
1852....	192,368,984	17,281,382	209,658,366	212,945,442	42,674,135	5,505,044	3,230,5 9	2,017,575
1853....	213,417,697	17,558,460	230,976,157	267,978,847	27,480,875	4,201,382	5,766,780	2,298,796
1854....	253,390,870	24,850,194	278,241,064	304,569,381	41,281,504	6,758,587	3,011,372	2,107,802
1855....	246,708,553	28,448,293	275,156,846	261,468,520	56,247,343	3,650,812	4,068,979	2,110,322
1856....	310,586,330	16,378,578	326,964,908	314,639,949	45,745,485	4,207,632	4,538,344	2,462,169
1857....	338,985,065	23,975,617	362,960,682	360,890,141	80,136,922	12,461,790	4,581,212	2,430,176

* Nine months to June 30, and the fiscal year from this time begins July 1.

The following table shows the extent and progress of the lake tonnage of the United States for the years 1855, 1856, 1857. This branch of our shipping has acquired such importance as to require a separate statement of its progress and extent. Table of vessels built at the American lake ports in the year 1857, including lakes Erie, Ontario, Huron, and Michigan.

	1855.		1856.		1857.	
	No.	Tons.	No.	Tons.	No.	Tons.
Steamers....	3	1,005	3	2,060	5	4,120
Propellers...	5	4,313	22	12,755	23	11,875
Tugs	4	251	5	895	15	1,412
Barks	2	776	5	2,438	3	1,264
Brigs	6	1,742	1	434	2	560
Schooners...	105	28,759	121	34,828	96	28,643
Scows	..	....	..	....	5	415
Total....	128	37,429	157	53,350	149	48,598

This gives our lake tonnage an increase in three years of

11 steamers.....	7,815 tons.
53 propellers	28,814 "
24 tugs	2,558 "
Total steam.....	39,217 "
10 barks	4,478 tons.
9 brigs.....	3,045 "
327 schooners.....	92,637 "
Total sail.....	100,160 "
Grand total.....	139,377 "

The value of this new tonnage is as follows:

Years.	Steam.	Sail.	Total.
1855.....	$395,000	$1,213,300	$1,608,300
1856.....	1,132,000	1,604,450	2,736,450
1857.....	1,320,200	1,423,300	2,743,500
Total....	$2,847,200	$4,241,050	$7,088,250

The total tonnage on the lakes in the Fall of 1857 was 588,868 tons, and the value of the same was $15,195,100, or nearly forty dollars per ton.

STATEMENT OF AMERICAN AND FOREIGN VESSELS, WITH THEIR TONNAGE AND CREWS, WHICH CLEARED FROM THE UNITED STATES FOR FOREIGN COUNTRIES DURING THE YEAR ENDING JUNE 30, 1857.

Cleared for	American Vessels.				Foreign Vessels.				Total.			
	Number.	Tonnage.	Crews.		Number.	Tonnage.	Crews.		Number.	Tonnage	Crews.	
			Men.	Boys.			Men.	Boys.			Men.	Boys.
Russia on the Baltic and North Seas	34	15,448	648	6	9	2,716	99	2	45	18,214	747	8
Russia on the Black Sea	2	591	26	...	....	....	....	...	2	591	26	...
Asiatic Russia	....	....	....	...	1	280	13	...	1	280	13	...
Russian Poss. in N. America	3	1,390	63	...	5	2,440	120	...	9	4,330	183	...
Prussia	2	949	58	...	4	1,334	46	...	6	2,283	74	...
Sweden and Norway	7	3,482	100	...	16	5,552	194	...	23	9,024	294	...
Swedish West Indies	10	1,719	82	...	....	....	....	...	10	1,719	82	...
Denmark	2	585	27	...	7	2,113	70	...	9	2,698	97	...
Danish West Indies	103	21,834	939	4	11	2,157	91	...	114	23,991	930	4
Hamburg	13	7,266	199	1	58	46,451	1,741	...	71	53,717	1,943	1
Bremen	29	31,470	1,516	...	145	87,919	2,970	...	174	119,389	4,516	...
Other German ports	1	245	10	...	....	....	....	...	1	245	10	...
Holland	43	25,297	661	1	55	26,282	855	2	98	51,489	1,466	3
Dutch West Indies	42	8,051	331	...	4	485	30	...	46	8,536	361	...
Dutch Guiana	31	6,856	279	8	5	805	41	...	36	7,662	320	8
Dutch East Indies	11	7,191	219	...	4	1,420	58	...	15	8,611	277	...
Belgium	52	40,162	1,017	1	12	14,854	687	...	64	55,017	1,704	1
England	866	911,183	22,551	68	410	388,792	13,313	87	1,276	1,299,975	35,864	155
Scotland	61	33,982	910	...	49	49,442	1,928	2	110	83,424	2,838	2
Ireland	58	23,406	211	2	60	22,630	752	...	118	46,036	1,263	2
Gibraltar	31	7,906	287	...	4	870	40	...	35	8,776	327	...
Malta	8	2,023	76	...	4	960	34	...	12	2,983	110	...
Canada	3,480	1,133,584	44,023	416	5,316	1,104,850	60,643	1085	8,796	2,238,234	104,666	1501
British North American Poss.	898	319,985	8,878	28	3,727	461,245	23,602	29	4,625	781,230	32,570	57
British West Indies	557	106,361	4,237	3	218	24,570	1,620	...	775	131,931	5,857	3
British Honduras	35	5,523	260	...	24	3,556	182	...	59	10,079	451	...
British Guiana	66	16,372	576	...	29	4,387	223	...	95	20,759	799	...
British Possessions in Africa	56	13,529	654	...	6	1,825	69	...	62	21,164	723	...
Other ports in Africa	88	22,010	859	15	2	742	25	...	90	22,752	924	15
British Australia	70	47,231	1,915	...	14	5,587	223	...	84	52,818	1,936	...
British East Indies	85	63,337	1,708	1	11	6,375	209	...	96	69,712	2,402	1
France on the Atlantic	271	228,775	6,360	57	36	20,580	1,283	...	307	249,275	7,658	57
France on the Mediterranean	67	25,318	800	...	20	9,055	400	4	87	34,368	1,200	4
French North American Poss.	12	1,835	72	2	30	4,597	220	...	42	6,432	292	2
French West Indies	118	20,538	822	3	11	1,906	76	...	129	22,444	898	3
French Guiana	16	3,147	137	5	....	....	....	...	16	3,147	137	5
French East Indies	1	518	20	...	....	....	....	...	1	518	20	...
French Possessions in Africa	....	....	....	...	1	176	11	...	1	176	11	...
Spain on the Atlantic	71	28,611	851	1	35	10,075	425	...	106	38,686	1,276	1
Spain on the Mediterranean	65	21,005	677	...	211	67,687	2,814	1	276	88,692	3,491	1
Canary Islands	17	3,749	147	...	4	1,090	45	...	21	4,839	192	...
Philippine Islands	18	15,570	422	...	4	1,472	73	...	22	17,051	495	...
Cuba	1,846	590,241	21,319	73	60	14,223	705	...	1,906	604,464	22,024	73
Porto Rico	213	37,633	1,537	9	21	3,550	165	...	234	41,183	1,702	9
Portugal	53	10,347	614	...	44	12,068	447	...	100	31,410	1,061	...
Madeira	4	814	33	...	3	528	26	...	7	1,242	59	...
Cape de Verd Islands	12	2,592	105	...	2	545	27	...	14	3,207	132	...
Azores	12	3,583	136	1	8	1,582	91	...	20	5,171	227	1
Sardinia	27	15,852	434	...	16	5,027	252	...	43	21,879	686	...
Tuscany	4	2,567	78	...	....	....	....	...	4	2,567	78	...
Papal States	1	315	12	...	....	....	....	...	1	315	12	...
Two Sicilies	14	5,334	163	...	11	3,119	146	...	25	8,453	309	...
Austria	22	11,152	311	1	3	1,045	32	...	25	12,197	343	1
Austrian Possessions in Italy	10	5,020	128	...	1	469	10	...	11	5,488	138	...
Turkey in Europe	9	2,777	105	...	....	....	....	...	9	2,777	105	...
Turkey in Asia	14	4,774	167	...	....	....	....	...	14	4,774	167	...
Egypt	1	355	11	...	....	....	....	...	1	355	11	...
Hayti	221	35,076	1,548	...	27	4,121	194	...	248	40,097	1,742	...
San Domingo	11	1,920	75	...	6	918	47	...	17	2,838	122	...
Mexico	164	55,596	1,617	1	96	14,564	904	...	260	50,072	2,521	1
Central Republic	37	34,779	1,570	...	2	502	27	...	39	35,281	1,597	...
New Granada	148	124,859	5,716	...	8	1,743	79	...	156	126,552	5,797	...
Venezuela	82	17,703	742	...	9	2,083	85	...	91	19,786	827	...
Brazil	281	84,712	2,994	3	10	3,186	132	...	291	87,898	3,126	3
Uruguay	66	22,412	739	...	6	2,027	71	...	72	24,439	810	...
Buenos Ayres	73	26,630	846	2	4	1,605	55	...	77	28,235	901	2
Chili	82	42,166	1,148	...	25	11,067	412	...	87	53,233	1,755	...
Peru	61	68,523	1,624	...	14	6,462	250	...	75	74,985	1,874	...
Ecuador	2	1,358	38	...	....	....	....	...	2	1,358	38	...
Sandwich Islands	42	16,951	586	...	1	187	9	...	43	17,138	595	...
Other Islands in the Pacific	7	1,354	65	1	9	1,496	89	...	16	2,850	154	1
China	58	59,549	1,562	...	20	9,480	337	...	78	69,029	1,899	...
Whale-fisheries	193	57,983	4,762	150	....	....	....	...	193	57,983	4,762	150
Uncertain places	1	231	9	...	....	....	....	...	1	231	9	...
Total clearances, 1856-'57	11,134	4,580,651	154,296	863	10,887	2,490,170	119,857	1212	22,103	7,070,821	274,157	2075
Total arrivals, 1856-'57	11,304	4,721,870	161,062	853	11,024	2,464,046	116,757	1246	22,328	7,185,916	277,850	2073

The above table gives us a clear exhibit of the national character of our carrying trade. A condensed summary shows our exports for the fiscal year ending June 30, 1857, to the principal maritime countries to be in the following proportion as to national or foreign vessels.

TONNAGE CLEARED FROM THE UNITED STATES, 1856-'57.

Countries.	American Vessels.	Foreign Vessels.	Countries.	American Vessels.	Foreign Vessels.
	Tons.	Tons.		Tons.	Tons.
Canada	1,133,584	1,104,850	Bremen	31,470	87,919
England	911,183	388,792	Scotland	33,982	49,422
Cuba	590,241	14,223	Spain	49,616	77,709
British N. American Poss.	319,985	461,245	China	59,549	1,562
France	254,068	20,555	Other countries	965,783	248,257
British West Indies	106,361	24,570			
New Granada	124,859	1,743	Total	4,580,651	2,490,170

STATEMENT SHOWING THE NAVIGATION OF EACH STATE AND TERRITORY FOR THE YEAR ENDING JUNE 30, 1857.

Tonnage entered.	American Vessels.				Foreign Vessels.				Total American and Foreign.			
	Number.	Tons.	Crews.		Number.	Tons.	Crews.		Number.	Tons.	Crews.	
			Men.	Boys.			Men.	Boys.			Men.	Boys.
Maine	334	111,815	3,201	6	572	60,291	3,500	4	906	171,005	6,701	10
New Hampshire	6	780	33	...	43	4,963	231	19	49	5,699	264	19
Vermont	519	26,454	1,437	...	806	21,979	912	...	825	47,833	2,349	...
Massachusetts	1,499	500,116	18,634	56	2,601	378,021	16,092	15	4,100	878,757	34,726	71
Rhode Island	111	22,850	1,064	5	56	9,645	406	...	167	32,495	1,470	5
Connecticut	123	22,95[illegible]	1,431	91	46	7,282	315	...	169	36,188	1,746	91
New York	5,289	2,537,278	85,446	513	5,480	1,421,833	71,620	1101	10,769	3,959,108	157,066	1614
New Jersey	...	...	...	...	17	2,125	97	...	17	2,125	97	...
Pennsylvania	470	153,743	5,102	...	141	38,192	2,092	...	611	196,86[illegible]	7,194	...
Delaware	3	472	17	...	...	...	...	...	3	472	17	...
Maryland	414	122,110	4,179	...	182	41,262	1,875	...	596	163,381	6,054	...
District of Columbia	6	1,267	48	...	...	...	...	...	6	1,267	48	...
Virginia	166	96,859	2,616	1	84	17,725	659	...	250	113,617	3,275	1
North Carolina	113	18,866	764	...	11	1,847	82	...	124	20,213	846	...
South Carolina	198	83,205	2,825	5	158	44,380	2,001	...	356	127,585	4,826	5
Georgia	111	47,851	1,135	...	130	68,017	2,175	...	241	115,868	3,310	...
Florida	152	50,084	2,456	...	37	5,812	359	...	189	64,896	2,815	...
Alabama	92	64,562	1,880	156	50	42,922	1,126	101	142	107,484	3,006	257
Louisiana	788	473,998	13,502	...	322	139,316	5,385	...	1,110	613,314	18,887	...
Ohio	249	41,506	2,031	...	358	48,818	2,858	...	607	90,414	4,889	...
Michigan	354	100,718	4,221	...	165	29,890	1,525	...	519	130 608	5,746	...
Wisconsin	41	46,063	1,520	...	6	1,439	75	...	47	47,502	1,604	...
Illinois	100	70,179	2,406	...	100	27,051	1,124	...	203	97,230	3,530	...
Texas	9	3,148	95	...	11	4,363	150	...	20	7,511	245	...
California	142	104,870	4,872	...	135	46,753	2,065	...	277	151,623	6,937	...
Oregon Territory	1	210	10	...	....	....	....	...	1	210	10	...
Washington Territory	14	1,264	68	...	4	1,140	63	...	18	2,404	131	...
Total entered	11,304	4,721,370	161,062	833	11,024	2,464,946	116,797	1140	22,328	7,186 818	277,85[illegible]	2053
Total cleared	11,136	4,581,212	154,306	803	10,969	2,490,170	119,867	1212	22,104	7 071 382	274 172	2075

STATEMENT OF THE TONNAGE OF THE UNITED STATES ANNUALLY, FROM 1789 TO 1814, INCLUSIVE.

Year ending December 31,	Registered Sail Tonnage.	Enrolled and Licensed Sail Tonnage.	Total Tonnage.	Year ending December 31,	Registered Sail Tonnage.	Enrolled and Licensed Sail Tonnage.	Total Tonnage.
1789	123,893	77,689	201,582	1802	560,380	331,724	892,104
1790	346,254	132,123	274,377	1803	597,157	352,015	949,172
1791	362,110	139,036	502,146	1804	672,530	369,874	1,042,404
1792	411,438	153,019	564,457	1805	749,341	391,027	1,140,368
1793	367,734	153,030	520,764	1806	808,265	400,451	1,208,716
1794	438,813	189,755	628,618	1807	848,307	420,241	1,268,548
1795	529,471	218,474	747,965	1808	769,054	473,542	1,242,596
1796	576,733	255,166	831,899	1809	910,059	440,222	1,350,281
1797	597,777	279,136	876,913	1810	984,269	443,515	1,424,784
1798	603,376	294,952	898,328	1811	706 852	463,650	1,232,502
1799	652,197	277,212	932,400	1812	760,624	509,373	1,269,997
1800	669,921	302,571	972,492	1813	674,853	491,776	1,166,629
1801	632,907	314,670	947,577	1814	674,683	484,577	1,159,210

COMPARATIVE VIEW OF THE REGISTERED AND ENROLLED TONNAGE OF THE U. STATES FROM 1815 TO 1857, INCLUSIVE.

Years.	Registered Tonnage.	Enrolled Tonnage.	Total Tonnage.	Registered Tonnage in the Whale-fishery.	Steam Tonnage.	Proportion of the enrolled Tonnage employed in the Coasting Trade.	Proportion of the enrolled Tonnage employed in the Cod-fishery.	Proportion of the enrolled Tonnage employed in the Mackerel-fishery.	Proportion of the enrolled Tonnage employed in the Whale-fishery.
1815	854,294	513,833	1,368,127	....	....	4-5,066	20,510	....	1 29
1816	800,750	571,458	1,372,208	....	....	479,979	37,879	....	1168
1817	805,724	590,186	1,399,911	4,871	....	481,457	53,9[illegible]0	....	349
1818	806,083	619,095	1,425,184	16,134	....	503,140	54,551	....	614
1819	612,930	647,821	1,260,751	31,700	....	523,556	65,044	....	6 6
1820	619,047	661,118	1,280,166	35,391	....	530,080	60,842	....	1053
1821	619,836	679,062	1,298,958	26,070	....	550,435	51,851	....	1924
1822	628,150	695,548	1,324,699	45,449	....	573,080	58,405	....	5133
1823	650,920	6 9,644	1,336,565	30,918	24,870	566,408	61,021	....	585
1824	66 ,972	723,190	1,350,163	33,165	21,600	589,223	68,419	....	180
1825	700,787	722,328	1,423,110	35,379	23,061	587,278	70,626	....	....
1826	737,978	790,219	1,534,199	41,757	34,058	666,420	63,761	....	226
1827	747,170	873,437	1,620,607	45,653	40,197	752,937	74,048	....	328
1828	812,619	928,772	1,741,391	54,621	39,418	758,922	74,947	....	189
1829	859,142	670,654	1,529,797	57,284	54,036	508,858	101,790	....	....
1830	556,675	615,311	1,191,776	58,911	64,471	516,918	61,554	35,978	792
1831	629,451	617,364	1,267,816	82,815	84,485	531,725	69,977	46,210	481
1832	650,989	775,460	1,439,450	72,868	90,813	640,027	54,027	47,420	377
1833	751,036	856,123	1,606,140	101,158	101,819	741,198	62,720	48,725	478
1834	857,438	901,468	1,758,907	108,040	122,815	783,616	54,403	61,082	364
1835	885,811	939,118	1,824,949	97,640	122,815	792,301	72,874	64,443	....
1836	897,774	984 328	1,882,102	144,690	145,566	873,023	62,307	64,425	1673
1837	819,447	1,086,238	1,905,685	127,242	154,764	956,980	80,551	46,816	1894
1838	822,501	1,173,047	1,995,639	119,629	183,413	1,041,105	70,064	56,649	0229
1839	854,244	1,264,234	2,096,478	131,845	204,988	1,158,551	73,158	53,183	439
1840	809,764	1,280,969	2,180,764	134,926	201,339	1,176,614	76,085	58,269	....
1841	845,908	1,184,949	2,130,744	157,405	175,088	1,107,067	66 551	11,321	....
1842	975,358	1,117,031	2,092,890	151,612	229,661	1,045,753	54 804	16,0[illegible]6	377
1843	1,009,315	1,149,297	2,158,602	152,374	236,867	1,076,155	61,224	11,775	143
1844	1,068,764	1,211,330	2,280,095	168,298	273,179	1,109,614	85,224	16,170	321
1845	1,095,172	1,321,929	2,417,092	190,6 5	326,018	1,190,898	69,8[illegible]5	21,413	206
1846	1,130,284	1,431,7 8	2,562,084	189,980	347,803	1,299,870	72,516	36,463	429
1847	1,241,312	1,567,782	2,837,045	193,658	404,844	1,452,623	70,177	31,451	....
1848	1,360,886	1,793,155	3,154,041	192,179	427,891	1,620,983	81,651	43,558	432
1849	1,438,941	1,895,078	3,334,015	180,186	462,894	1,739,410	42,970	73,853	....
1850	1,585,711	1,949,743	3,535,451	146 016	525,046	1,755,796	85,646	58,111	....
1851	1,736,307	2,044,132	3,772,439	181,644	588,697	1,854,317	87,475	60,639	....
1852	1,899,448	2,238,992	4,138,440	193,197	643,240	2,009,021	103,650	72,540	....
1853	2,103,674	2,303,336	4,407,010	198,202	514,007	2,134,256	109,227	59,850	....
1854	2 338,819	2,469,083	4 802,902	181,901	676,607	2,278,900	102,194	85,041	....
1855	2,535,136	2,676,864	5,212,001	186,773	770,285	2,491,106	103,927	21,624	70
1856	2,401,402	2,880,249	4,871,652	189,218	672,077	2,211,985	95,816	29,886	217
1857	2,463,947	2,476,875	4,940,843	. 5,711	705,784	2,300,399	104,572	28,827	70

COMPARATIVE EMPLOYMENT OF AMERICAN AND FOREIGN TONNAGE, AS SHOWN IN THE IMPORTS OF THE UNITED STATES, IN 1821, 1831, 1841, AND 1851.

States and Territories.	1821.		1831.		1841.		1851.	
	In American Vessels.	In Foreign Vessels.	In American Vessels.	In Foreign Vessels.	In American Vessels.	In Foreign Vessels.	In American Vessels.	In Foreign Vessels.
Alabama	....	....	143,320	81,115	410,358	120,461	48,736	309,710
California	....	....	....	....	....	....	4,402,700	....
Columbia, District of	398,984	....	180,573	12,982	53,868	23,400	80,527	286
Connecticut	312,000	....	405,066	....	293,221	2,768	326,858	22,126
Delaware	80,997	....	91,656	....	1,186	2,088	....	....
Florida	11,830	1,440	110,196	5,514	116,712	28,460	58,875	56,122
Georgia	757,622	245,092	236,298	163,642	299,977	149,030	404,477	317,070
Illinois	....	....	....	....	....	....	3,699	1,048
Indiana	....	....	....	....	....	....	1,754	....
Kentucky	....	....	....	....	....	....	218,576	....
Louisiana	2,697,049	682,608	5,009,622	3,797,071	8,141,488	2,115,202	10,127,466	2,202,995
Maine	972,795	7,499	832,303	103,104	574,661	126,207	668,061	248,529
Maryland	3,989,914	87,928	4,513,827	312,680	5,548,806	752,447	5,602,066	988,570
Massachusetts	14,647,778	178,064	13,982,768	286,288	18,885,442	1,482,511	23,117,834	2,597,493
Michigan	15,154	15,944	27,299	....	137,608	192	182,146	....
Mississippi	....	....	....	....	....	....	845	....
Missouri	....	....	....	....	33,875	....	622,030	....
New Hampshire	350,021	....	146,205	....	61,585	12,110	44,682	13,346
New Jersey	17,000	....	....	....	1,919	300	....	1,111
New York	21,026,635	1,702,611	58,017,033	3,460,384	66,668,760	9,024,676	105,508,635	34,977,903
North Carolina	200,873	....	186,802	9,554	214,731	5,629	125,978	80,025
Ohio	12	....	153	464	9,503	1,725	586,460	69,871
Pennsylvania	7,873,092	285,890	11,626,584	500,499	9,840,354	506,344	11,541,919	2,027,549
Rhode Island	1,030,195	2,773	502,161	....	333,920	5,663	205,209	15,421
South Carolina	1,787,530	1,210,523	853,171	384,092	1,217,955	339,476	1,646,215	434,347
Tennessee	....	....	....	....	7,523	....	64,701	....
Texas	....	....	....	....	....	....	62,745	31,970
Vermont	15,987	....	160,201	....	246,730	....	291,768	....
Virginia	946,904	131,586	383,797	104,725	351,917	25,320	227,330	325,594
Oregon Territory	....	....	....	....	....	....	103 500	....
Total	58,025,906	4 555,818	93,062,110	9,229,014	115,221,877	14,724,300	168,216,172	52,503,086

STATEMENT OF THE NUMBER AND CLASS OF VESSELS BUILT, AND THE TONNAGE THEREOF, IN THE SEVERAL STATES AND TERRITORIES OF THE UNITED STATES, FROM 1815 TO JUNE 30, 1857, INCLUSIVE.

Years.	Ships and Barks.	Brigs.	Schooners.	Sloops and Canal Boats.	Steamers.	Total.	Total Tonnage.
1815	136	224	681	274	...	1314	154,624
1816	76	122	781	424	...	1403	131,538
1817	34	86	559	394	...	1073	85,338
1818	53	85	428	332	...	898	82,421
1819	53	81	473	249	...	856	79,817
1820	21	60	601	153	...	834	47,784
1821	43	89	247	127	...	507	55 856
1822	64	131	260	108	...	625	75,316
1823	55	127	260	105	15	622	75,007
1824	56	156	377	100	20	781	90,939
1825	56	197	538	154	35	994	114,097
1826	71	187	482	227	45	1012	126 488
1827	55	153	464	241	28	994	104,342
1828	73	108	474	190	33	884	98,375
1829	41	68	485	245	42	785	77,0 8
1830	25	56	403	116	37	637	58,024
1831	72	95	416	94	34	711	85,962
1832	152	143	538	122	100	1005	144 533
1833	144	100	625	185	65	1184	161,626
1834	98	94	4 7	150	68	957	118,930
1835	25	50	701	100	30	907	46,238
1836	98	95	441	164	124	800	119,627
1837	67	72	507	168	135	949	122,087
1838	56	79	501	154	90	878	113,185
1839	83	80	430	122	125	858	120,089
1840	97	100	578	224	61	872	118,300
1841	114	101	310	157	78	760	118,893
1842	116	91	273	404	137	1021	129.083
1843	58	34	138	173	79	482	63,017
1844	73	47	204	379	103	706	103,537
1845	124	87	322	342	163	1038	140,018
1846	100	164	576	355	225	1420	188,203
1847	151	168	659	392	198	1598	243,782
1848	154	174	701	547	175	1851	318,075
1849	198	148	623	370	208	1547	256,577
1850	247	117	537	290	159	1350	272,218
1851	211	65	5 2	326	233	1367	298,403
1852	255	70	581	237	260	1443	351,470
1853	230	95	681	294	271	1710	425,572
1854	354	112	631	346	281	1774	535,016
1855	381	126	695	669	263	2034	583,450
1856	346	103	594	479	221	1703	469,393
1857	251	58	564	358	263	1434	378,804

Navigation.—When our navigation laws were first enacted in 1789, the registered tonnage of the United States was secured against the protecting navigation laws of other nations by countervailing or protecting provisions. Such provisions were, from time to time, extended, so as to countervail the prohibitory enactments of the commercial nations with which we had intercourse. These commercial restrictions have gradually yielded to the more liberal principles of free trade in the transportation of freight and passengers, until in that business we have free trade with almost all the nations of the earth, only marred by the charge of light-money to our vessels, where we charge none. The removal of restrictions, in our commercial intercourse with other nations, in the carrying business, has not been prejudicial to our foreign commercial marine. The burden of light-money, to which our tonnage, in the ports of Great Britain and other commercial nations, is subject, should be removed by mutual agreement, and the tonnage duty now charged on our vessels in the ports of France and some other countries, and on their vessels in our ports, should be taken off, and port charges equalized.

NUMBER AND CLASS OF VESSELS BUILT, AND THE TONNAGE THEREOF, IN EACH STATE AND TERRITORY OF THE UNITED STATES, DURING THE YEAR ENDING JUNE 30, 1857.

States and Territories.	Ships and Barks.	Brigs.	Schooners.	Sloops and Canal Boats.	Steamers.	Total of Vessels built.	Total Tonnage.
Maine	127	26	85	1	1	240	110,935
N. Hampshire	8	1	..	..	..	9	8,718
Vermont	..	..	1	..	..	1	65
Massachusetts	58	4	47	2	2	113	55,411
Rhode Island	4	2	3	..	2	11	3,589
Connecticut	1	1	21	13	3	39	5,040
New York	28	5	70	83	45	227	67,826
New Jersey	..	..	42	26	1	69	8,642
Pennsylvania	2	..	26	168	82	278	34,258
Delaware	1	..	10	2	10	23	4,843
Maryland	16	17	74	1	2	110	20,828
D. of Columbia	..	..	..	23	..	23	1,483
Virginia	2	..	12	4	14	32	3,932
North Carolina	..	..	19	2	..	21	1,373
South Carolina	..	..	2	4	..	6	203
Georgia	..	..	..	1	1	2	197
Florida	1	..	4	..	..	5	1,333
Alabama	..	..	1	1	1	3	221
Mississippi	..	..	6	..	..	6	136
Louisiana	..	..	6	..	5	11	920
Tennessee	..	..	..	..	4	4	1,427
Kentucky	..	..	..	..	28	28	8,462
Missouri	..	..	..	..	10	10	2,400
Illinois	..	..	8	2	..	10	2,805
Wisconsin	1	..	9	..	..	10	2,403
Ohio	1	..	31	13	39	84	22,665
Michigan	1	1	14	11	10	37	7,441
California	..	..	7	1	3	11	950
Oregon	..	1	..	..	..	1	265
Total, 1857	251	58	564	358	263	1434	378,804
Total, 1856	306	103	574	479	221	1703	469,393

The limited space allotted to the article UNITED STATES in this work precludes any attempt to give more than the statistics of the production, commerce, and navigation of the United States proper. Under their separate heads are given the imports and exports of every article of commerce—as COTTON, BREADSTUFFS, RICE, SUGAR, TOBACCO, etc.; also the trade of each individual State under its proper head; and under their proper heads the commercial law and the latest statistics regarding the United States in subjects—as COINS, COMMERCE, CANALS, CONSULS, RAILROADS, TELEGRAPH, SHIPPING, TONNAGE, etc. To all of which reference is made for more particular information regarding the United States.

Uruguay. This small republic, known also as the Banda Oriental, or the Cisplatine Republic, lies on the north coast of the estuary of the Rio de la Plata, and contains a population estimated at 120,000—the least of any of the South American States—of which about 16,000 reside at the capital, Montevideo. The soil of Uruguay is fertile, well watered by large rivers, and is peculiarly adapted to grazing and agriculture. Animal products are the staple domestic exports, and consist principally of hides, dry or salted, of horned cattle and horses; tallow, grease, bones, animal carbon, horns, horse-hair, cow-tails, sheep-skins, and wool.

Though there is no treaty existing between the United States and Uruguay, our commercial intercourse is on a footing of equality with that of other countries; being favored by no privileges, and being subjected to no restrictions not common to all other foreign nations. This intercourse is regulated by the legislation of the republic, and during the past few years has undergone several liberal and important modifications. Prior to 1849, an exorbitant impost of $15 per barrel was levied on the article of flour. By decree dated April 6th of that year, this duty was reduced to $2 50 per barrel, with a provision that "this impost shall last no longer than necessary to pay the debt incurred on the article of flour, the liquidation of which shall commence immediately." By subsequent decrees of April, 1852, the export duty on horse-hides, dry or salted, and the transit duties upon all merchandise were abolished; and the former duty of 20 cents per hide on ox and cow hides, dry or salted, was reduced to 7½ cents per hide. By the new tariff, however, of October 11, 1853, now in force, the duty on flour is fixed at 35 per cent.; and all products of the country, and all foreign merchandise free of import duty, or that has paid such duty on importation, are free of duty on being exported. The transit duty is also abolished. This tariff has been superseded by another, bearing date July 19, 1856. The provisions referred to remain, however, quite the same.

The port regulations are liberal—vessels being allowed to remain in port twelve days without entering at the custom-house, and to land samples, so as to dispose of a part or the whole of their cargoes. Should they leave within that period without effecting a sale, they are subject only to pilotage, health-visit, bill of health, and stamps.

A treaty of commerce and navigation, etc., was ratified between England and Uruguay, July 17, 1843, which expired toward the close of 1853, and was not renewed at the latest dates from Montevideo. With France a preliminary treaty was concluded April 8, 1836, to continue in force until another treaty should be agreed upon; or, should none such be subsequently entered into, then to continue fifteen years. The treaty with England, now lapsed, was based upon a principle of reciprocity; and that with France is upon the principle of the most favored nation. The merchant marine of Uruguay, it is believed, comprises but few, if any, vessels of more than sixty tons burden. It consists of about 300 vessels of between twenty and fifty tons each, averaging each about six men, or from 1800 to 2000 men in all. These are mostly engaged in the internal and coasting trade, the latter chiefly with Brazil; which trade is also open to foreign vessels, on the payment of the discriminating tonnage. Besides the above, there are five vessels, all of foreign construction, under the Uruguayan flag, measuring in the aggregate about 1500 tons, which make voyages north of the equator.

COMMERCE OF THE UNITED STATES WITH URUGUAY (FORMERLY CISPLATINE REPUBLIC), FROM OCT. 1, 1830, TO JULY 1, 1857.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1831	....	....	....	....	....	....	35	....
1832	$3,325	....	$3,325	....	....	....	370	....
1833	....	....	....	....	....	....	1,129	....
1834	....	....	....	....	....	....	4,774	....
1835	....	....	....	....	....	....	6 391	349
1836	....	....	....	....	....	....	5,734	....
1837	7,864	....	7,864	$10,510	....	....	3,502	435
1838	55,462	$24 567	60,329	18,031	$850	....	3,112	170
1839	50,998	38,302	89,300	625,439	7 875	....	8,936	162
1840	82,102	67,628	149,730	494,493	31,647	$7,597	8 197	230
Total	$189,951	$130,497	$310,548	$1,148,975	$40,192	$7,397	42,170	1,446
Sept. 30, 1841	$140 031	$16,193	$156,224	$315,234	....	$800	10,167	....
1842	201,999	67,968	269,967	581,918	$10,432	4,6.7	14,115	812
9 mos., 1843*	219,576	75 549	295,125	121,753	7 803	....	6,858	293
June 30, 1844	394,266	67 910	462,176	144,763	25 674	22,088	12,519	1,150
1845	140,986	16,150	157,136	2 ,073	23,954	....	3,262	614
1846	210 4 6	15,498	225,904	26,472	5 516	3,000	5 599	303
1847	180 535	56 3 3	236 839	112,810	3 300	1 806	3,536	786
1848	399,850	43 560	384,728	523,064	2 092	400	11,949	4 413
1849	131,638	13 080	147,727	79,924	8,000	....	2,345	2,635
1850	60 024	1 518	61,542	....	....	....	867	1,167
Total	$2,022,321	$374,917	$2,3.6,308	$1,95 ,511	$117,581	$32,501	71,247	12,382
June 30, 1851	$32,711	$13,078	$45,789	$19,114	$12,500	....	1,320	647
1852	181,156	11,917	193,073	43,707	....	....	2,906	3,537
1853	296,088	12,358	308,446	302,180	....	....	8 701	1 376
1854	456 855	6 ,102	512,957	457,179	....	....	17 8 2	1,734
1855	394 657	27,515	422,172	24 ,709	3,201	....	16,556	3 165
1856	517,842	33 480	551,323	361,036	4,333	....	12,784	535
1857	976,370	29,802	1,006,172	368,297	....	....	22,412	2,057

* Nine months to June 30, and the fiscal year from this time begins July 1.

In 1851, the number of vessels under the United States flag which entered the port of Montevideo was seventy, with an aggregate tonnage of 22,013 tons; and the number cleared was thirty-nine, with an aggregate tonnage of 12,701 tons. Imports from the United States in 1851, according to official returns of Uruguay, consisted of rum, 453 barrels; spirits of turpentine, 262 barrels; starch, 2556 casks and boxes; rice, 2169 casks; refined sugar, 1797 casks; codfish, 312 boxes; tubs and buckets, 529 dozen; bitumen, 133 barrels;

cinnamon, 150 boxes; Chinese crackers, 998½ packages; brooms, 1474 dozen; flour, 19,993 barrels; hams, 2300; gin in bottles, 34,438 dozen; gin in demijohns, 31,748; gin in pipes, 200; lumber, 3,662,881 feet; chairs, 1655 cases; tobacco (chewing), 1142 boxes; stearin candles, 1070 boxes.

By a decree of October 11, 1853, the government of Uruguay opened to all flags the navigation of the rivers and streams of the republic, on a footing of equality with the national flag; which decree was superseded by a brief enactment of June 17, 1854, as follows: *Art.* 1. The navigable rivers and streams of the republic are open to the navigation and commerce of all nations. 2. In the navigation of the rivers and streams, foreign vessels are subjected to the same regulations of police and of custom-houses with national vessels. The precise meaning of this act was at first in some doubt. It did not expressly declare whether or not it was applicable to the port of Montevideo. Upon reference to the government of Uruguay, however, by the agents of foreign governments resident at that port, it was announced that the law applies to the port of Montevideo.

Usance, a period of *one*, *two*, or *three* months, or of a fixed number of days, after the date of a bill of exchange, according to the custom of different places, before the bill becomes due. Double or treble usance is double or treble the usual time; and half usance is half the time. When a month is divided, the half usance, notwithstanding the differences in the lengths of the months, is uniformly fifteen days. Usances are calculated exclusively of the date of the bill. Bills of exchange drawn at usance are allowed the usual days of grace, and on the last of the three days the bill should be presented for payment.—*See* BILLS OF EXCHANGE and EXCHANGE.

When a bill is drawn at a certain number of days after date or after sight, those days are reckoned exclusive of the day on which the bill is drawn or accepted, and inclusive of the day on which it falls due. "After sight" is equivalent to "after acceptance;" and with regard to notes, it means "after presentment for sight." By the custom of trade, in bills and notes, a month is deemed to be a calendar or solar month. The irregularity of the respective months is not taken into the account. If a bill at one month be drawn on the 31st January, it will be due on the 28th of February, or 29th if leap-year, and, reckoning the days of grace, will be payable on the 3d of March.

The three days of grace generally allowed are reckoned exclusive of the day on which the bill falls due, and inclusive of the last day of grace. When there are no days of grace, and the bill falls due on a Sunday, Christmas-day, or Good Friday, public fast or Thanksgiving-day, or when the last of the days of grace happens on such a day, the bill becomes payable on the day preceding, and if not then paid must be treated as dishonored. A presentment for payment before the expiration of the days of grace is premature, and will not entitle the holder to charge the antecedent parties.

Days of grace are allowed on promissory notes as well as on bills, but they are not allowed on checks, or on bills or notes payable on demand.

When a month is the ordinary usance, a half usance is fifteen days.

The calculation of the time depends upon the different modes of computing time.

All places with which we are in the habit of negotiating bills compute their time as we do (except that Russia adheres to the old style), by years reckoned from a series from the birth of our Saviour, and divided each into twelve months, or 365 (or in every fourth year, 366) days.

Upon a bill drawn at a place using one style, and payable at a place using the other, if the time is to be reckoned from the date, it shall be computed according to the style of the place at which it was drawn; otherwise according to the style of the place where it is payable; and in the former case the date must be reduced or carried forward to the style of the place where the bill is payable to the time reckoned from thence.

Thus, on a bill dated the 1st May, old style, and payable here two months after date, the time must be computed from the corresponding day of May, new style, viz., May 13th; and on a bill dated 1st of May, new style, and payable at St. Petersburg two months after date, from the corresponding day of April, old style, viz., April 19th.—LEONE LEVI's *Com. Law of the World*, vol. i. p. 24.

Usquebaugh, an Irish spirituous liquor, compounded of spirits, raisins, cinnamon, and cloves.

Usury, an illegal rate of interest or compensation for the use of money. Usury is generally supposed to be unequivocally condemned in the Scriptures; but it must be remembered that the present signification of the term is very different from that in former times. We find in Exodus, xxii. 25, "If thou lend money to any of my people that is poor by thee, thou shalt not be to him as an usurer, neither shalt thou lay upon him usury;" and in Leviticus, xxv. 35, "If thy brother be waxen poor * * * * take thou no usury of him or increase." It will be seen from these extracts that the taking of any compensation from the poor is forbidden, and not a limited rate is regarded as usury. We apprehend that, in a strict acceptation of the term, 7 per cent. per annum is usury, as well as the same per cent. a month. In the present time, however, no arguments are needed to prove that money is a merchantable commodity, and therefore as much a matter of profit and subject to fluctuation as other merchandise. We will, therefore, confine ourselves to a short account of the efforts to repeal this relic of a past age, and the laws now in force in the different States.

The repeal of the usury laws in Great Britain took place August 5th, 1854, by an act of the British Parliament. Such an important change in the commercial policy of that country could not have been adopted either suddenly or without mature consideration. In fact, the change had been going on gradually for more than twenty years; and the advantages of experience were thus sought from time to time, as the restrictions were, step by step, removed, and the commercial circles of the country thus finally relieved from the operation of the former vicious laws. In the year 1833 the first important innovation upon the usury-law policy was made in England.

After four years' trial, it was found that commercial and manufacturing people of all classes pronounced the new features of the law to be advantageous in their operation to borrowers, if not to lenders. The next step was in the year 1837, when Parliament granted further relief by removing the usury restrictions upon all commercial paper having twelve months or less to mature. This would seem to cover the ground entirely, and to furnish all the relief that commercial circles could reasonably demand. But so satisfied were the English people and the English government, that the usury laws, even in their mildest form, were inoperative or prejudicial, that, after various petitions and investigations, the total abolishment of these laws was effected on the 5th August, 1854. The bill to this effect had passed the House of Lords on the 27th July preceding, and was immediately brought forward in the House of Commons, where it was favorably considered and finally passed. The passage of the bill was strongly urged in the House of Lords by the Marquis of Lansdowne, by Lord Campbell, and the Lord Chancellor. Lord Brougham supported the bill, both on mercantile and moral grounds. The Marquis of Lansdowne remarked that:

"The inconvenience which had been found to result from the operation of the laws against usury had been so many and so great, that notwithstanding strong prejudices on the subject of usury and usurers, it had been found necessary to relax those laws from time to

time. At the time of the commercial failures in the years 1836 and 1837, it was found that the greatest relief which was experienced was the result of a provision which had been introduced not long previously into the act for the renewal of the Bank charter, enabling the Bank of England to dispense with the usury laws."

Many people, in their aversion to any modification of the usury laws, are under the conviction that if the price of money is not regulated by law, they will be compelled to pay an enormous tax (ranging from 25 to 75 per cent. per annum) on loans of money. Those who seriously reflect upon the matter—who have any practical or familiar knowledge of the laws of trade—are unanimous in their opinions that all shackles of the kind should be permanently removed.

If we examine the usury laws of the different States, we will find in all elaborate and stringent enactments providing punishment and penalties for the exercise of every one's inalienable right; namely, that of using their property to the best advantage.

We give a synopsis of the usury laws of the United States as they are now in force.

States.	Legal Int.	Penalties.
Maine	6 per ct.	Loss of excess of interest and law costs.
N. Hampshire.	6 "	Loss of three times excess of interest.
Vermont.....	6 "	Loss of excess of interest.
Massachusetts.	6 "	Loss of three times the whole interest and law costs.
Rhode Island..	6 "	Loss of excess of interest.
Connecticut...	6 "	Loss of all interest.
New York	7 "	Forfeiture of contract; and, in *criminal action*, fine not exceeding $1000, and *imprisonment* not exceeding *six months*.
New Jersey ...	6 "	Contract void, and principal and interest forfeited.
Pennsylvania .	6 "	Principal and interest forfeited.
Delaware	6 "	Principal and interest forfeited.
Maryland.....	6 "	Loss of excess of interest.
Virginia	6 "	Usurious contracts void.
North Carolina	6 "	Principal and interest forfeited; and, if usury is paid, double the amount of principal and interest.
South Carolina	7 "	Loss of interest.
Georgia	7 "	Loss of interest.
Alabama.....	8 "	Loss of interest.
Arkansas	6 "	Loss of interest.
Florida	8 "	Loss of interest.
Illinois	6 "	10 per cent. allowed on contract, and loss of interest if exceeding this.
Indiana.....	6 "	Loss of five times the interest.
Iowa	6 "	10 per cent. allowed on contracts. Forfeiture of excess of interest.
Kentucky.....	6 "	Loss of interest.
Louisiana.....	8 "	Loss of interest.
Michigan	7 "	10 per cent. allowed on contracts. Forfeiture of excess of interest.
Mississippi....	6 "	10 per cent. allowed on contracts. Forfeiture of excess of interest.
Missouri	6 "	10 per cent. allowed on contracts. Forfeiture of excess of interest.
Ohio	6 "	10 per cent. allowed on contracts. Forfeiture of excess of interest.
Tennessee.. ..	6 "	Liable to an indictment for misdemeanor. Forfeiture of usurious interest, and fined.
Texas	8 "	12 per cent. allowed on contracts. Forfeiture of all interest.
Wisconsin 12	"	Loss of interest.
California 10	"	No penalty.

From this synopsis we see that the usury laws of New York are the most rigorous, and include, in criminal actions, a fine of $1000 and imprisonment of six months; in merely civil actions, a forfeiture of contract.

California is the only State that provides no penalty. The Territories are also not subject to any usury laws.

No argument is needed to prove that such absurd laws are clogs on the commercial prosperity of the country, and that in financial revulsions like the present they effectually prevent the exercise of any commercial elasticity. A parallel could be found by supposing restrictive laws against selling flour above $5 per barrel; we would then run as good a chance of starving as our merchants do of *commercially starving* for want of money when there is an abundance around them, but when the legal interest does not pay capitalists for the risk.—*See articles* BANKS, COMMERCE, INTEREST, etc. For Usury Laws, Discussions on, etc., see *Edinburgh Review*, xxvii. 339 (Defense of); *American Quarterly Review*, xxii. 177, xxi. 145; *North American Review*, xxxix. 168 (A. H. EVERETT); *Blackwood's Magazine*, xxiv. 68; *Bankers' Magazine*, New York, lv. 581 (JOHN WHIPPLE), 688 (J. R. M'CULLOCH), v. 781, 842, viii. 845, ix. 241–248 (M'VICKAR), 811; HUNT'S *Merchant's Magazine*, iii. 516, v. 40, 115; *Dem. Rev.*, xxvii. 221–328; *Quar. Rev.*, xxxiii. 186.

Utah, a territory of the United States, mostly comprised in the Great California Basin, and extending from the crest of the Rocky Mountains on the east to the Sierra Nevada on the west. It has Oregon on the north, California on the west, and New Mexico on the south. Area, 208,775 square miles. In 1850 it was divided into seven counties, and the number of dwellings and population were as follows: Dwellings, 2322; white inhabitants, 11,330; free colored, 24. The counties erected since 1850 are Deseret, Green River, Millard, Juab, and Washington.

The eastern portion of Utah is drained by the Colorado River of the Gulf of California. Its valley has been but imperfectly explored, but, as far as our knowledge exists of it, a very small portion of it only can be brought into cultivation. The remaining portion of Utah is comprised in the Great Basin, and forms a distinct and most peculiar region. The rivers all terminate within its limits, in lakes with no visible outlets. The Great Salt Lake is about 35 miles broad and 70 long, and the waters contain more salt than can be held in solution; hence its borders abound with crystallized salt, and the bottom of the lake is incrusted with it. No living creature can exist in its waters. The valleys are susceptible of cultivation, and are very fertile, where they can be irrigated. Timber, although scarce, is very durable. Iron ore exists in the mountain ridges, and several furnaces are already in operation smelting it. The temperature is more uniform in the Great Salt Lake valley than on the Atlantic coast; it rarely falls below zero. There is but little rain, except on the mountains, from March to October.

There were in this territory, in 1850, 16,333 acres of land improved, and 30,516 of unimproved in farms; cash value of farms $311,799, and the value of implements and machinery $84,288. Live stock—horses, 2429; asses and mules, 125; milch cows, 4861; working oxen, 5266; other cattle, 2189; sheep, 3262; swine, 914; value of live stock, $546,968.

Agricultural Products, etc.—Wheat, 107,702 bushels produced; rye, 210; Indian corn, 9899; oats, 10,900; barley, 1799; buckwheat, 332; peas and beans, 289; potatoes, 43,968; sweet do. 60 bushels. Value of produce of market gardens, $23,868; pounds of butter made, 83,309; of cheese, 30,998; molasses, 58 gallons; beeswax and honey, 10 lbs.; wool, lbs. produced, 9222; flax, 550; hops, 50; tobacco, 70; tons of hay, 4805; clover seeds, 2 bushels; flax-seed, 5; value of home-made manufactures, $1392; of slaughtered animals, $67,985.

The capital is Fillmore City, but the Great Salt Lake City is where the Legislature meets, and it is also the residence of the governor. The other towns are Palmyra, Springville, Provo, Cedar, Parowan, Manti, Lehi, Brownsville, etc.

Utah was a part of Alta California, which was ceded to the United States at the treaty of Guadalupe Hidalgo February, 1848. Previous to the Mexican war this territory was only known and occupied by trappers and Indians. About the time of the opening of the war, the Mormons were driven from Nauvoo, Illinois, and, after making a temporary sojourn at Council Bluffs, Iowa, they settled in Utah. They organized a government under the title of the State of Deseret, but the United States established a territorial government in 1850, by which the territory is nominally under subjection.

V.

Valonia, a species of acorn, forming a very considerable article of export from the Morea and the Levant. The more substance there is in the husk, or cup of the acorn, the better. It is of a bright drab color, which it preserves so long as it is kept dry: any dampness injures it, as it then turns black, and loses both its strength and value. It is principally used by tanners, and is always in demand. Though a very bulky article, it is uniformly bought and sold by weight. A ship can only take a small proportion of her registered tonnage of valonia, so that its freight per ton is always high.

Valparaiso, the principal sea-port of Chili, lat. (Fort St. Antonio) 33° 1′ 9″ S., long. 71° 41′ 5″ W. Population perhaps 28,000 or 30,000. The water in the bay is deep, and it affords secure anchorage, except during northerly gales, to the violence of which it is exposed; but as the holding ground is good, and the pull of the anchor against a steep hill, accidents seldom occur to ships properly found in anchors and cables. There is no mole or jetty; but the water close to the shore is so deep, that it is customary for the smaller class of vessels to carry out an anchor to the northward, and to moor the ship with the stern ashore by another cable made fast to the shore. Large ships lie a little farther off, and load and unload by means of lighters. The best shelter is in that part called the Fisherman's Bay, lying between the castle and fort St. Antonio, where, close to a clear shingle beach, there is 9 fathoms water. In the very worst weather a landing may be effected in this part of the bay.—*See* Miers's *Chili and La Plata*, i. 440, where there is a plan of Valparaiso. The harbors of Valdivia and Concepcion are much superior to that of Valparaiso; the former being, indeed, not only the best in Chili, but second to few in any part of the world. But Valparaiso, being near the capital, Santiago, and being the central depôt for the resources of the province, is most frequented. The town is conveniently situated, at the extremity of a mountainous ridge; most part of the houses being built either upon its acclivity or in its breaches. Large quantities of corn and other articles of provision are shipped here for Callao and San Francisco, but principally for the latter.

In Valparaiso, the phenomenon of the sea-breeze is finely developed. Valparaiso is situated near the southern border of the calm belt of Capricorn when it is at its farthest southern reach, which happens in our late winter and early spring—the Southern summer and autumn. This is the dry season, when the sky is singularly clear and bright. The atmosphere, being nearly in a state of equilibrium, is then ready to obey even the most feeble impulse, and to hasten toward the place of any, the slightest rarefaction.

At about ten in the morning the land begins to feel the sun, and there is a movement in the air. By 3 or 4 P.M., the sea-breeze comes rushing in from the southward and westward, and strikes the shipping in the harbor with the force of a gale. Vessels sometimes drag before it, and communication with the shore is suspended. By 6 P.M., however, the wind has spent its fury, and there is a perfect calm.—Maury's *Phys. Geography*.

United States.—The United States has ranked next after England and France in the foreign trade of Chili; but, since the incorporation of California as a State of the American Union, the first rank in this trade is now assigned to the United States flag. This trade consists in the exportation of cotton textiles, flour, salted provisions, and miscellaneous cargoes. The article of cotton manufacture called *tocuyos* is much demanded in Chili, and, until lately, imported from the manufactories of England exclusively, is now supplied by the United States, and constitutes a leading article of trade. Besides these countries, Chili has also considerable trade with several other European and South American nations. From Belgium she receives cigars, refined sugar, woolens, window-glass, gin, cheese, paper, and books; from Central America, bastard pearls, hides, indigo, cochineal, sugar, sarsaparilla, dye-woods, cotton, and coffee; for which she sends in return, from the warehouses of Valparaiso, textiles of cotton calicoes. Brazil sends no vessels to the ports of Chili; but there is some trade carried on between the two countries under the Chilian and foreign flag. Neither has Mexico any direct trade with Chili; but Hamburgian and English vessels annually supply the port of Mazatlan with valuable cargoes of European merchandise taken on board at Valparaiso. Owing to the restrictive character of Mexican commercial regulations, this trade is mostly contraband. Valparaiso is the chief port of transit for the commerce of all the republics of South America. The manufacturing industry of the southern provinces of Chili has made but little progress. There is but one establishment worthy of being specially noticed—namely, a copper foundery, which at the commencement of 1846 was in active operation; and from which that year were exported to foreign countries 4000 quintals of its productions. The ore was supplied from the ports in the northern parts of the republic, and even from the Bolivian port of Cobija. Chili is, however, essentially an agricultural country. Independently of the working of the mines of gold, silver, and copper, and the casting of these metals, almost all the mechanical industry of the republic is to be found in the flour-mills, the tanneries and currying establishments, and the tailoring shops, where the *ponchos* or *mangos* are made. There are, besides these, some establishments for the manufacture of candles and common soap. Still, there is but little probability that the manufacturing industry of Chili, at least for a great many years to come, will present any competition with the manufactured productions imported from Europe and the United States. The revenues of Chili have augmented in a ratio equal to the increase of its commercial prosperity. Its foreign debt is yearly curtailed, and the interest on it paid with such punctuality as to have raised the 6 per cent. stock in London to 108. This debt, contracted during the war of Independence, consisted originally of a loan raised in England of £1,000,000. Owing to civil wars, and the generally unsettled state of the country, the debt, with the accruing interest, soon doubled itself. Under the administration of Secretary Rengifo (in 1830), a compromise was effected with the English creditors, and its terms have since been faithfully adhered to. In 1852 this debt was reduced to $7,104,000—one half at 6 per cent., and the remainder at 3. The home debt has been reduced to less than $1,500,000, bearing 3 per cent. interest. The merchant marine of Chili has also shared in the general prosperity of the republic. Steam-vessels can at all times obtain coal in the greatest abundance, and of an excellent quality, from the mines of Talcahuano, and at many points along the coast. With such advantages for the active development of her physical and commercial resources, Chili has long since drawn to her ports the merchants of the great industrial and commercial nations of the world. Among these, England, France, Germany, and the United States, are the chief competitors for her foreign trade.

The revenues derived from import duties in 1851 amounted to $2,724,718, of which there was collected at the port of Valparaiso $2,426,631. The total amount in 1852 was $3,465,038 77. The following table exhibits the quantities and values of copper, in bars, ex-

ported from Chili to the United States, from 1850 to 1855, both inclusive:

Years.	Values.
1850	$1,008,044
1851	1,067,191
1852	1,294,481
1853	1,247,311
1854	1,367,206
1855	1,883,494

In 1852 the imports into Chili reached in value $15,347,332; and the exports from Chili amounted to $14,087,556. Compared with the preceding year, imports fell off $537,640, while the exports of 1852 show an increase over those of 1851 of $1,941,227. This perceptible advance in the export trade of Chili in 1852 is attributed to the increased activity in working the copper mines of Coquimbo and the silver mines of Copiapo, as also to several heavy shipments of flour and other products to California.

The following tabular statement exhibits the number of foreign vessels and their tonnage, and the number of national vessels, that entered Chilian ports from 1844 to 1851, both inclusive:

Years.	Foreign Vessels.	Tonnage.	Chilian Vessels.
1844	1487	374,028	14.9
1845	1452	359,850	1486
1846	1523	388,557	1529
1847	1434	360,097	1521
1848	1397	343,456	1523
1849	1777	532,259	1541
1850	2599	740,425	1734
1851	2351	690,185	899

The number of vessels that cleared in 1850 was 2497, making an aggregate of (entered and cleared) 5096 vessels, with an aggregate tonnage of 1,442,425 tons. The number cleared in 1851 was 2205, which, with the 2351 given in the table, makes a total of 4556 vessels, measuring in all 1,233,978 tons. This shows a falling off in 1851 of 540 vessels, and 208,417 tons. It will be perceived that the number of national vessels that entered Chilian ports in 1851 is put down in the table at 899. It must not, however, be inferred from this that the merchant marine of Chili actually counts that number of vessels. The figures merely indicate the number of times the national merchant flag entered Chilian ports during the year. Still, within the past few years the merchant marine of Chili has largely increased. Starting from 1848, this increase is found to be—of vessels, 100 per cent., and of tonnage over 300 per cent. This is shown by the following statement:

Years.	No. of Vessels.	Aggregate Tonnage.
1848	105	12,028
1849	119	20,022
1850	153	27,601
1851	182	34,517
1852	215	41,509

An official dispatch to the British government from Chili, under date of September 13, 1855, states that the returns of Chilian trade for 1853 and 1854 shows a great increase in both branches of import and export; but that the markets were considerably affected by the high price of provisions, which commenced in 1854, and continued up to the date of the dispatch; owing mainly to the large exportation of wheat to Australia, where it brought as high as $36 per quarter of eight bushels. Wool may be said to be, after copper, the chief article of import into the United States from Chili. The following tabular statement exhibits the quantities and values of wool imported into the United States from Chili, during the five years ending with June 30, 1855, together with the aggregate quantities and values of the same imported from all other countries for the same period—as given by United States authorities:

Years.	From all Countries.	Values.	From Chili.	Values.
	Pounds.		Pounds.	
1851	32,648,491	$3,833,157	2 109,846	$125,650
1852	18,341,208	1,930,711	1,863,189	169,616
1853	21,535 079	2,669,718	2,664,300	255,196
1854	20,200,110	2,882,185	1,857,447	161,066
1855	18,514,415	2,073,139	2,846,902	317,564

In 1848 a decree was passed by the Chilian government providing for the establishment of a statistical board. Since that period full commercial returns have been regularly published, under the title of *Estadistica Comercial de la Republica de Chile*. From these publications the following tables, exhibiting the general foreign commercial movements of Chili, from 1844 to 1851, have been compiled:

TABULAR COMPARATIVE STATEMENT EXHIBITING THE FOREIGN IMPORT AND EXPORT TRADE OF CHILI, THE PRINCIPAL COUNTRIES PARTICIPATING THEREIN, AND THE SHARE ASSIGNED TO EACH, IN 1851, AND ALSO THE TOTAL TRADE FOR A PERIOD OF EIGHT YEARS.

Countries.	Imports.	Exports.
France and colonies	$1,705,929	$851,113
Belgium	195,372	2,495
Holland	402,060	65,739
Germany	1,080,863	469,155
England and colonies	4,819,864	4,643,290
Denmark	....	1,390
Sweden and Norway	5,061	2,194
Spain and colonies	145,510	74,859
Portugal	18,108	....
Sardinia	74,410	21,309
China	220,848	42,547
United States	4,594,211	3,515,285
Mexico	23,837	7,532
Central America	42,241	10a,518
Ecuador	190,739	49,774
Brazil	624,877	513,893
Peru	1,010,644	1,179,247
Bolivia	436,988	209,902
Uruguay	10,852	61,215
Argentine Confederation	170,586	46,624
Polynesia	58,910	59,352
New Granada	....	225,483
Other countries	....	7,802
Total year 1851	$15,884,072	$12,146,391
" " 1850	11,788,198	12,426,269
" " 1849	10,722,840	10,603,447
" " 1848	8,601,357	8,353,595
" " 1847	10,068,849	8,442 085
" " 1846	10,149,186	8,115,288
" " 1845	9,104,764	7,601,152
" " 1844	8,590,674	6,687,023

TABULAR COMPARATIVE STATEMENT EXHIBITING PARTICULAR DESCRIPTIONS OF THE PRINCIPAL ARTICLES OF MERCHANDISE, AND THE RESPECTIVE VALUES THEREOF, IMPORTED INTO THE PORTS OF CHILI FROM 1849 TO 1851, BOTH INCLUSIVE.

Articles.	1849.	1850.	1851.
Ale and porter	$10,687	$16,033	$18,053
Books, printed	22,824	26,320	35,499
Calicoes	656,512	486,557	516,148
Cassimeres	223,459	235 714	236,574
Chairs	35,846	32,656	29,873
Cloth	170,561	171,217	154,572
Clothing	43,029	18 406	19,477
Coal	240,590	253,246	226,473
Cotton checks	14,628	15,166	17,506
" drillings	26,445	43,276	28,693
" handkerchiefs	102,950	92,559	66,542
" colored	56,287	56,666	9,077
" shawls	75,280	82,523	56,257
" and wool shawls	71,027	101,931	118,737
" silk and wool	49,966	43,204	42,337
" stockings	56,678	52,423	60,390
" tickings	27,116	21,459	38,498
" thread	59,541	67,025	47,638
" unbleached	681,201	475,504	615,8.5
" white	1,099,038	748,151	800,872
" and wool	166 849	160,534	159,4 3
Crape shawls	102,849	120,281	98,273
Drugs and medicines	36 581	29,051	29,081
Earthen-ware	71,292	77,855	24,029
Household furniture	22,870	46,689	52,621
Iron, assorted	77,335	130,737	85,892
Jewelry	88,503	91,758	109,983
Lastings	26,115	12,815	15,665
Liquors, assorted	13,073	10,469	15,434
Machinery	14,169	4,000	30,150
Paints	17,465	19,965	13,547
Ribbons	39,094	45,606	58,826
Rice	70,840	58,693	68,218
Saddles	17,578	15,856	19,152
Shoes and boots	35,857	21,253	43,778
Silk shawls and handkerchiefs	159,948	322,517	162,567
Soap	73,227	69,224	66,427
Sugar, refined	95,423	400,969	663,129
" crushed	226,490	336,634	800,141
Tea	21,873	21,912	49,675
Tobacco	561,760	537,240	659,985
Woolen goods	92,949	62,714	77,018
" shawls	87,421	115,073	143,501

PRINCIPAL ARTICLES OF DOMESTIC PRODUCE EXPORTED FROM THE PORTS OF CHILI FROM 1849 TO 1851, BOTH INCLUSIVE — THE PRODUCE OF THE MINES EXCEPTED.

Articles.	1849.	1850.	1851.
Wheat	$815,190	$353,610	$228,759
Flour	808,798	1,099,606	1,514,915
Biscuit	114,097	74,952	120,194
Barley	70,910	216,888	567,406
Beans	48,563	136,737	167,055
Potatoes	14,514	43,346	32,722
Nuts	55,152	40,089	78,425
Dried fruits	72,147	79,911	24,643
Salt beef	26,230	16,900	21,339
Charqui (dried beef)	74,308	26,643	34,854
Cheese	18,156	11,746	7,551
Tallow, etc.	39,043	31,046	47,554
Hides	165,942	148,395	99,795
Goat, sheep, and chinchilla skins	17,754	24,201	31,807
Wool	64,306	83,333	104,301
Hams	3,007	2,594	800
Assorted provisions	50,454	30,571	18,290
Cords and rope	26,014	7,278	4,850
Rigging for ships	988	4,510	3,825
Planks and lumber	310,014	106,372	29,795
Coal	4,933	7,500	2,540
Guano	13,645	37,708	55,392

The principal ports of Chili open to general foreign trade are Valparaiso, Coquimbo, Huasco, Coplabo, Talcahuano, Constitucion, Valdivia, and Ancud. Vessels from abroad, entering any other than open ports, are liable to seizure. Under the Chilian commercial regulations, the coasting trade is prohibited to foreign vessels; but they may discharge portions of their original cargoes in one or more ports, and load Chilian produce for a foreign port. The port charges are as follows: Tonnage dues, 25 cents per ton; light dues (where light-houses exist), 3½ cents per ton; roll and captain of the port's fees, $4; harbor-master's fees, $8. National or foreign vessels of war, national or foreign steamers, whale-ships, vessels in distress, or in ballast, or discharging under twenty packages, are exempt from tonnage and light dues. When tonnage dues have been paid at one port, they are not levied in another.

Commercial relations between the United States and Chili are regulated by the treaty of May 16, 1832—ratifications having been exchanged and proclamation made April 29, 1834. This treaty establishes the principle of "the most favored nation," and contains, besides, a stipulation providing that "free ships make free goods," and the usual guarantees for commercial reciprocity. The duration of the treaty was limited to twelve years; but, by virtue of the twelve-months' notice clause, it is still in force. Subsequent and recent commercial legislation of the Chilian government has modified and enlarged the provisions of the treaty of 1834. The principle of "the most favored nation" is but another name for differential duties between the national flag and that of the country with which such treaty is negotiated. These differential duties have been defined by Chili in a law bearing date January 8, 1834, and by various subsequent enactments. Such duties, however, have been suppressed, under certain limitations, chiefly by a law of July 16, 1850. The following is a translation of this law, so far as it relates to this subject:

Art. 1. Are suppressed, and of no force, articles 15, 16, 17, and 18 of the law of importation of the 8th January, 1834. The law defining differential duties. Is also suppressed that section of the law of August 7, 1834, by virtue of which national vessels were exempted from tonnage duties, such vessels hereafter being subjected to the same duties as foreign vessels. 2. The products of the soil and industry, and, in general, articles of commerce imported into Chili for consumption, in bottoms under a foreign flag, shall pay only the same duties as if imported under the national flag. 3. Articles of commerce imported into the republic in vessels of any nation that shall not have accepted the conditions of reciprocity established by the present law, will be subject to a surcharge, or extra duty, equal to that imposed by such nation on merchandise brought into its ports in Chilian vessels. 4. To give effect to the foregoing article, the President of the republic shall fix the amount of differential duties authorized by the foregoing article.

Several decrees have been since issued regulating the amount of these differential or countervailing duties. Their principal points are: 1. Vessels of nations that have not accepted the reciprocity law of July 16, 1850, shall pay, instead of 25 cents per ton of the vessels' measurement, 75 cents per ton. 2. Merchandise imported in such vessels shall pay, in addition to existing duties, an additional duty of 6 per cent. *ad valorem*. The President of the United States, by his proclamation bearing date November 1, 1850, accepted the reciprocity granted in the above-recited law and decrees, and all restrictions and discriminations in the commercial relations of the two countries have ceased since that period.

The customs rates of the tariff of Chili are *ad valorem* on a fixed valuation of the articles of merchandise. By the 8th chapter, articles 2, 3, and 4, of the Chilian custom-house ordinance, it is provided that the tariff of values shall be adjusted by a commission of from five to nine merchants and custom-house officials at Valparaiso, subject to the approval of the government, and the values thus fixed shall be in force one year without change.—*See* CHILI.

Value. The exchangeable value of commodities, depends, at any given period, partly on the comparative facility of their production, and partly on the relation of the supply and demand. If any two or more commodities respectively required the same outlay of capital and labor to bring them to market, and if the supply of each were adjusted exactly according to the effectual demand; that is, were they all in sufficient abundance, and no more, to supply the wants of those able and willing to pay the outlay upon them and the ordinary rate of profit at the time, they would each bring the same price, or be exchanged for the same quantity of any other commodity. But if any single commodity should happen to require more or less capital and labor for its production, while the quantity required to produce the others continued stationary, its value, as compared with them, would in the first case rise, and in the second fall; and, supposing the cost of its production not to vary, its value might be increased by a falling off in the supply, or by an increase of demand, and conversely. But it is of importance to bear in mind that all variations in price arising from any disproportion in the supply and demand of such commodities as may be freely produced in indefinite quantities are temporary only; while those that are occasioned by change in the cost of their production are permanent, at least as much so as the cause in which they originate. A general mourning occasions a transient rise in the price of black cloth; but, supposing that the fashion of wearing black were to continue, its price would not permanently vary; for those who previously manufactured blue and brown cloths, etc., would henceforth manufacture only black cloth; and, the supply being this way increased to the same extent as the demand, the price would settle at its old level. When the price of a freely produced commodity rises or falls, such variation may evidently be occasioned either by something affecting the commodity, or by something affecting the value of money. But when, instead of being confined to one, the generality of commodities rise or fall, the fair presumption is that the change is not in them, but in the money with which they are compared. Exclusive, however, of the commodities now alluded to, there is a considerable class whose producers or holders either enjoy an absolute or a partial monopoly of the supply. When such is the case, prices depend entirely or principally on the proportion between the supply and demand, and are not liable to be influenced, or only in a secondary degree, by changes in the cost of production.

Prices have been often affected by variations in the cost and supply of gold and silver, whether arising from the exhaustion of old, or the discovery of new mines, improvements in the art of mining, changes of fashion, etc. Hence it is that tables of the prices of commodities, extending for a considerable period, communicate far less solid information than is generally supposed, and, unless the necessary allowances be made, may lead to the most unfounded conclusions. The real value of any commodity depends on the quantity of labor required for its production; but supposing that we were to set about inferring this real value, or the ultimate sacrifice required to obtain the commodity, from its price, it might happen (had the quantity of labor required for its production declined, but in a less degree than the quantity required to produce gold and silver), when its value would appear to rise when it had really diminished. When, however, the rate of wages, as well as the price of commodities, is given upon authentic data, a table of prices is valuable, inasmuch as it shows the extent of the command over the necessaries and conveniences of life enjoyed by the bulk of the community during the period through which it extends. Those desirous of detailed information as to the prices of commodities in Great Britain in distant times, may consult the elaborate tables in the third volume of Sir F. M. EDEN's work *On the Poor*, and the fourth volume of MACPHERSON's *Annals of Commerce*. ARBUTHNOT's *Tables of Ancient Coins, Weights, Measures, Prices*, etc., are well known, but the statements are not much to be depended upon. The *Traité de Metrologié* of M. PAUCTON (4to, Paris, 1780) is the best work on this curious and difficult subject. See also TOOKE's *History of Prices*, vols. i.–vi., which is the most complete history of prices extant.—*See articles* COMMERCE, GOLD, MONEY, PRICES, etc.

Vancouver (or, more properly, **Quadra and Vancouver) Island**, British North America, between lat. 48° 20′ and 51° N., and long. 123° and 128° W., separated from the main land by Queen Charlotte Sound and the Gulf of Georgia. Length, northwest to southeast, 300 miles; greatest breadth, 75 miles. Estimated area, 16,000 square miles; and population, 11,463. Surface mountainous, and richly wooded. On its west coast are Nootka Sound, and many other harbors. This land was named in honor of George Vancouver. This British navigator was born about 1750. He served as midshipman under Captain Cook, in his second and third voyages. In 1790 he was appointed to command the expedition to explore the western coast of North America, to ascertain whether any navigable communication existed between the Atlantic and Pacific oceans. Of this voyage, which occupied from 1790 to 1795, he compiled an account, but died before its entire completion, May 10, 1798. The island is intersected by high mountain ranges, but it has, notwithstanding, a considerable extent of level and undulating land susceptible of cultivation. Soils very various, being principally, however, of a friable description. The best is a black vegetable mould, producing a most luxuriant vegetation. Climate peculiarly mild; but in winter the rains, accompanied with violent thunder-storms, are heavy, and almost incessant. The bays, rivers, and adjacent seas, swarm with a variety of fish, including salmon, sturgeon, herrings, etc., with seals, sea-otters, tortoises, etc., and they are also resorted to by whales. The harbors of the island are consequently well situated for carrying on an extensive and profitable fishery, and well fitted for ship-building. The mineral riches of the island have been very imperfectly explored. Beds of coal are to be met with in its northeast parts. In various localities the beds have been found cropping out at the surface, and large supplies have been obtained with but little difficulty and little expense. The native inhabitants subsist principally by hunting and fishing, especially the latter, and by cultivating the potato. They are remarkable for indolence and filth; their heads are flattened when young by artificial means; and their legs are ill formed, those of the women being frequently swollen. A settlement established by the English at Nootka Sound in 1788 was suppressed in the following year by the Spaniards, an outrage which nearly occasioned a war with Spain. Since then it has been almost wholly neglected, till within these few years that some establishments have been formed upon it by the Hudson's Bay Company. Latterly it has been proposed to make it the site of a colony that should prosecute the seal and whale fishery, for which, as already stated, it is supposed to be peculiarly well situated; and, with a view to the realizing of this project, it has been made over to the Hudson's Bay Company, on condition of their establishing a colony within its limits in the course of the five years following 1848. Coal is procured at the settlement of Nanaimo, where the Hudson's Bay Company have made a large purchase of land and commenced an extensive coal work. Two valuable beds of coal, varying from five to seven feet in thickness, are found within 100 feet of the surface; the coal is bituminous, and is greatly prized for domestic consumption and for steaming purposes. The produce of these works may be increased, by increasing the number of hands, to any desirable extent. Another source of wealth and enterprise may be found in the magnificent ship spars produced on Vancouver's Island, which, in point of size and comparative strength, are probably the most valuable in the world, and may be procured in any number, even were the demand to include the supply of spars for the whole British navy. The oil exported from this colony is procured from the native tribes inhabiting the west coast of Vancouver's Island, and is manufactured by them from the whale and dog-fish; it is of excellent quality, and has a high character in California, where it brings from two to three dollars a gallon, in consequence of its retaining its fluidity and burning freely in the coldest weather. It is estimated that a quantity equal to 10,000 gallons was purchased from the natives of the west coast last year; and, considering the imperfect means they possess for taking the fish and trying out the oil, it is not unreasonable to propose that with the use of proper means the returns of oil would be greatly increased. The oil trade is carried on by a few enterprising individuals who live among the Indians, and collect the article as it is manufactured by the natives. The number of ships with cargoes which between July 5, 1854, and July 5, 1855, entered inward was 25; tonnage, 4054. In ballast, 3; tonnage, 260. Cleared outward with cargoes, 16; tonnage, 2350. In ballast, 9; tonnage, 1353. Port Victoria has five vessels belonging to it, and Vancouver's Island is a rising and flourishing little colony, all the more to be cherished as its people seem to be on good terms with the natives and encourage them in industrial pursuits.

Van Diemen's Land, or **Tasmania**, a large island belonging to Great Britain, forming part of Australia, lying between lat. 41° 20′ and 43° 30′ S., and long. 144° 40′ and 148° 20′ W. It is supposed to contain about 27,000 square miles. This land was discovered by the Dutch navigator Tasman in 1642, and was named in honor of Anthony Van Diemen, at that time governor-general of the Dutch possessions in the East Indies; but it is now frequently called Tasmania, from its discoverer. Previously to 1798, it was supposed to form part of New Holland, but it was then ascertained to be an island. It was taken possession of by the British in 1803; and in 1804 Hobart Town, the capital, was founded. The surface is generally hilly and mountainous; but though none of the land be of the first quality, there are several moderately fertile plains, and a good deal of the hilly ground is susceptible of being cultivated. On the whole, however, it is not supposed that more than about a third

part of the entire surface of the island can be considered arable; but about a third more may be advantageously used as sheep pasture. As compared with New Holland, it is well watered. The climate, though variable, is, generally speaking, good, and suitable for European constitutions; and it is not exposed to the tremendous droughts that occasion so much mischief in New South Wales. Wheat is raised in considerable quantities; though wool is at present the staple produce of the colony. Van Diemen's Land, like New South Wales, was originally intended to serve as a penal colony, and it received between 1823 and 1850 no fewer than 53,243 convicts. It has also received, especially of late years, large numbers of free settlers. In 1850 the total population of the island, exclusive of aborigines, who perhaps do not exceed 3000 or 4000, amounted to 70,194. Of these, 45,916 were free, and 24,188 convicts. For some considerable time back great dissatisfaction was felt by the colonists at the continued importation of convicts; and latterly very vigorous measures were taken to effect its suppression. For this purpose it was in 1852–'53 finally abandoned. In truth, after the discovery of the gold-fields in the adjoining continent, it could no longer be continued.

Trade of Van Diemen's Land.—Hardware, haberdashery, apparel, cotton and linen goods, woolens, malt liquor, spirits, wine, etc., form the principal articles of import. Here, as in New South Wales, wool forms by far the most important article of export; next to it is whale-oil, and then follows wheat and flour, live stock, timber, whalebone, mimosa bark, and various less important articles. The usual excess of the imports over the exports is accounted for by the remittances to defray the cost of the convict establishment.

POPULATION, TRADE, ETC., OF VAN DIEMEN'S LAND FROM 1839 TO 1848, BOTH INCLUSIVE.

Years.	Population.	Value of Imports.	Value of Exports.	Shipping.		Total ordinary Revenue.
				Inward.	Outward.	
		£	£	Tonnage.	Tonnage.	£
1839	44,121	746,887	875,165	79,288	77,556	138,768
1840	46,057	988,856	867,007	85,081	86,701	128,210
1841	51,499	851,981	830,501	84,214	85,201	121,783
1842	58,902	587,453	532,509	82,933	82,866	121,725
1843	....	705,260	439,890	92,501	88,934	110,271
1844	....	442,988	408,790	68,402	73,756	151,136
1845	....	520,562	422,218	73,204	71,422	128,881
1846	....	561,293	582,685	74,715	79,430	107,986
1847	....	724,593	640,576	80,940	85,861	150,474
1848	70,194	694,154	490,281	91,883	95,988	129,545

The trade between the United States and Van Diemen's Land commenced in 1834, in which year our exports amounted to $7120, and from that period up to 1847 averaged annually upward of $20,000; while our imports from that colony during the same period did not exceed an annual average amount of $7000.—*See article* AUSTRALIA.

Vanilla, the fruit of the *Epidendrum vanilla*, a species of vine extensively cultivated in Mexico. It has a trailing stem, not unlike the common ivy, but not so woody, which attaches itself to any tree that grows near it. The Indians propagate it by planting cuttings at the foot of trees selected for that purpose. It rises to the height of eighteen or twenty feet; the flowers are of a greenish yellow color, mixed with white; the fruit is about eight or ten inches long, of a yellow color when gathered, but dark brown or black when imported into Europe; it is wrinkled on the outside, and full of a vast number of seeds like grains of sand, having, when properly prepared, a peculiar and delicious fragrance. It is principally used for mixing with and perfuming chocolate; and is, on that account, largely imported into Spain. Vanilla is principally gathered in the intendancy of Vera Cruz, in Mexico, at Misantla, Colipa, Vacuatla, and other places. It is collected by the Indians, who sell it to the whites (*gente de razon*), who prepare it for market. They spread it to dry in the sun for some hours, then wrap it in woolen cloths to sweat. Like pepper, it changes its color in this operation—becoming almost black. It is finally dried by exposing it to the sun for a day. There are four varieties of vanilla, all differing in price and excellence; viz., the *vanilla fina*, the *zacate*, the *rezacate*, and the *vasura*. The best comes from the forests surrounding the village of Zentila, in the intendancy of Oaxaca. According to Humboldt, the mean exportation of vanilla from Vera Cruz may amount to from 900 to 1000 milliares, worth at Vera Cruz from 80,000 to 40,000 dollars. Vanilla is also imported from Brazil, but it is very inferior. The finest Mexican vanilla is extremely high priced.—*See* HUMBOLDT, *Nouvelle Espagne*; POINSETT's *Notes on Mexico*.

Variation of the Compass, the angle which the magnetic needle makes with the plane of the true meridian. It is otherwise called the *declination*.—*See* COMPASS. For tables showing the variation in a great number of places, and its progressive, annual, and diurnal changes, *see* BREWSTER's *Treatise on Magnetism*, 1837, reprinted from the *Encyclopædia Britannica*.

Varnish (Fr. *Vernis*), a fluid which, when spread thin upon a solid surface, becomes dry, and forms a coating impervious to air and moisture. There are two kinds of varnish, namely, *spirit* and *oil varnishes*: rectified alcohol is used for the former; and for the latter fixed and volatile oils, or mixture of the two. The solid substances dissolved in the above menstrua, and which constitute what is termed the body of the varnish, are almost exclusively resinous, and are chiefly the following: 1. *Turpentine*, all the varieties of which are employed by the varnisher: they form an excellent body, and give strength and glossiness at a small expense; but they do not dry without other additions. 2. *Copal*, a peculiar resin, very difficult to dissolve, but forming a hard and durable ingredient. It is generally melted over a gentle fire previous to use. 3. *Lac*, which gives great toughness and hardness; but is often inadmissible, on account of its reddish-brown color. 4. *Mastic*, which yields a tough, hard, brilliant, and colorless varnish. 5. *Elemi*, a resin of a palo yellow green tint, and a valuable ingredient, on account of its toughness and durability. 6. *Sandarach*, a resin which imparts splendor, but which alone is not durable. 7. *Amber*, a valuable ingredient, on account of its hardness and durability; but difficult of transparent solution, and hence chiefly used in opaque varnishes. 8. *Benzoin*, added on account of its fragrancy. 9. *Anime*, which gives brilliancy and some scent. 10. *Gamboge*, for yellow varnishes. 11. *Dragon's blood*, for red varnish. These, together with turmeric, saffron, and annotta, are chiefly used on account of their color, and to cover brass and copper under the name of *lacquers*. 12. *Caoutchouc*: this extraordinary vegetable product has of late been much employed in a variety of preparations used as varnishes. It is invaluable where materials are to be rendered air-tight, as balloons, for example, and where at the same time flexibility, and even elasticity, are required; but its principal application in this way is in the manufacture of various *water-proof* articles. 13. *Asphaltum*, the varieties of which are indispensable in black oil varnishes. In making spirit varnishes, the strongest alcohol of commerce should be used (of a specific gravity not exceed-

ing 820), and its solvent power over some of the more intractable resins is sometimes improved by the addition of a little camphor. In order to prevent the agglutination of the resin, it is often requisite to mix it with sand or pounded glass, by which the surface is much increased, and the solvent energy of the spirit facilitated. The proportions in which the several ingredients are used, and the selections for particular purposes, are infinitely various. The following are a few good varnishes, in illustration of their varieties: 1. *Spirit Varnish.*—Sandarach 4 oz., seed lac 2 oz., elemi 1 oz.; digest the whole in a quart of moderately warm alcohol, and when dissolved add Venice turpentine 2 oz. 2. *Lac Varnish.*—Seed lac 8 oz.; digest for four days in a warm place with a quart of alcohol, and then strain through flannel. 3. *Turpentine Varnish.*—Mastic 12 oz., mixed with 5 oz. of pounded glass, and digested in a quart of oil of turpentine, adding at intervals about half an ounce of camphor in small pieces. When the mastic is dissolved, add to the warm fluid an ounce and a half of previously liquefied Venice turpentine, and stir the whole together. 4. *Copal Varnish.*—Copal which has been previously melted by gentle heat 8 oz., oil of turpentine 20 oz. (measure); put the oil into a flask placed in boiling water, and add the powdered copal in small portions at a time, so that it may be gradually dissolved; let it stand a few days to clear, and then pour it off, and if too thick for use, add to it a little warm oil of turpentine. This varnish dries slowly, but is very durable.—*See article* PAINTS.

Vellum, a species of fine parchment.—*See* PARCHMENT.

Velvet, a rich kind of stuff all silk, covered on the outside with a close, short, fine, soft shag, the other side being a very strong, close tissue. The nap or shag, called also the *velveting* of this stuff, is formed of part of the threads of the warp, which the workman puts on a long narrow-channeled ruler or needle, which he afterward cuts by drawing a sharp steel tool along the channel of the needle to the ends of the warp. Florence, Genoa, and some other cities of Italy, are most noted for the manufacture of velvet. There are cotton velvets manufactured in imitation of the silk ones in England.

Venezuela, a republic of South America; its territory lies chiefly between lat. 2° and 12° N., and long. 60° and 73° W., having on the east British Guiana, on the south Brazil, on the west New Granada, and on the north the Caribbean Sea. The chief wealth of Venezuela consists in its rich and extensive pastures, its mines of the precious metals, and of lead, iron, copper, etc., and its valuable forest timber. The agricultural and other products of the country which enter into its foreign commerce as articles of export are coffee, cocoa, cured hides, indigo, fustic, tobacco, cotton, cattle, mules and horses, and specie. These form the basis of the foreign commerce of Venezuela, and are exchanged for tissues of cotton, thread, silk, and wool; flour, provisions, hardware, soap, furniture, glassware, brandies, wines, etc. Conformably to the law of May 5, 1849, the ports open to foreign commerce are divided into three classes, namely: ports open for importation and exportation; ports open for importation for local consumption only, and for exportation; ports open for exportation only. This organization was simplified by a decree of April 15, 1854, of which the following is a translation:

Ciudad Bolivar, in the province of Guiana; La Guayra, in that of Caraccas; Puerto Cabello, in that of Carabobo; La Vela, in that of Coro; Maracaibo and Barcelona, in the two provinces bearing those names, are declared ports open to commerce, both for importation and exportation, without any restriction. Cumana, Carupano, Cariaquito, and Barrancas, in the province of Cumana; Pampatar and Juan Griego, in the province of Maiguerita; Soledad, in the province of Barcelona; and Cumarebo, in that of Coro, are declared ports open to commerce for importation for local consumption only, and for exportation. The custom-houses of the ports open for importation for local consumption only can not clear, under a certificate, foreign produce for other ports, open or not to commerce, except the custom-houses of Cumana, Carupano, and Cariaquito, which are allowed to deliver cockets (certificates of cargo), the two former for the ports of Cariaco and Rio Caribe, the others for the ports of Irapa and Yaguarapara.

In the year 1803 the exports of Venezuela were estimated at a value of nearly $7,000,000; of this amount La Guayra exported $2,500,000, Cumana and Barcelona $1,500,000, Maracaibo and Angostura $1,000,000, Carupano and the smaller ports the remainder. These amounts are in Venezuelan currency—in which all values, derived from Venezuelan official sources, are generally stated. The dollar of the United States is equivalent in value to $1 3½ in the present currency of Venezuela. The dollar of Mexico, Peru, Chili, Central America, and of Cuba, is that of the United States.

Internal Commerce.—The River Orinoco is now navigated as high up as Nutrias, in the province of Varinas; and the productions of the fertile countries watered by this magnificent river are thus added to the commercial wealth of the republic. A recent communication from Puerto Cabello affords the following facts: "Several mercantile firms of Puerto Cabello have applied for and obtained from the Congress of Venezuela a charter for a railroad to run nearly west from that city—51 miles—to San Felipe, in the province of Barquisimeto. The estimated cost is $1,400,000 (United States currency), exclusive of land, which, for the most part, will be afforded free of expense. The government gives all the public land and timber which may be required, either for the road or buildings, and admits the tools, iron, etc., free of duty; subscribers for $186,916 of the stock ($250,000 in Venezuelan currency). The provinces of Barquisimeto and Corabobo together take $67,290 of the stock. Of the grades, 70 per cent. will be below 30 feet to the mile, and only 5 per cent. above 50 feet. There will be 15 bridges, estimated to cost $104,590. The charter is to continue 40 years as an exclusive privilege, and 40 years more the right of property in the road is guaranteed to the company; after which it reverts to the government. The road must be commenced within two years from 1st July, 1855, and be completed within four years from the date of its commencement. John Dougherty, of New York, chief engineer of the road, estimates the annual net income at $242,222. San Felipe is situated on the Yaricia River, and is a commanding point for the collection of the products of the interior. Puerto Cabello is the best harbor in Venezuela."

The provinces of Varinas, Apure, and the two Guyanas, are now brought into direct communication with the sea: and by the establishment, in 1845, of a line of steamers under the auspices of a company from the United States, specially chartered by the Venezuelan government, and by means of the 240 sailing vessels, with a capacity of 36,000 tons, which annually ascend as high as Angostura (Ciudad Bolivar), some 250 miles from the sea, there is but little room to doubt that Venezuela is about to enter upon a career of commercial prosperity. At present, the annual exports from Apure and Varinas consist of dry hides (about 100,000), buckskins, coffee, cotton, indigo, cocoa; and from the latter province between 1,000,000 and 2,000,000 pounds of tobacco. The value of this trade to the United States will be perceived, when it is known that nearly all the hides offered in the Venezuelan markets are taken by this country.

The value of the total trade of Venezuela for the fiscal year ending June 30, 1845, has already been given. For the year ending December 31, 1845, it reached a total of $8,021,040, and the navigation employed 3209 vessels, measuring in the aggregate 190,732 tons.

COMMERCE OF THE UNITED STATES WITH VENEZUELA, FROM OCTOBER 1, 1838, TO JULY 1, 1857.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1839	$445,245	$27,736	$685,181	$1,982,702	$104,482	$35,041	9,241	1,550
1840	554,267	223,605	783,872	1,355,166	73,057	27,521	9,356	920
Total	$907,512	$502,341	$1,409,853	$3,337,868	$185,192	$62,562	18,627	2,470
Sept. 30, 1841	$532,419	$230,083	$762,502	$2,012,604	$145,717	$3,168	9,530	1,284
1842	409,380	166,832	576,212	1,543,342	71,222	27,676	9,742	3,211
9 mos.* 1843	483,077	100,425	583,502	1,191,280	21,033	95,816	8,030	884
June 30, 1844	442,491	88,741	531,232	1,428,479	45,398	5,068	8,835	1,339
1845	535,545	189,586	725,130	1,263,275	152,521	10,448	10,733	1,117
1846	584,063	197,478	781,547	1,509,000	154,043	2,059	11,125	1,244
1847	571,474	43,739	615,213	1,522,406	7,945	42,409	10,800	630
1848	400,250	62,766	463,028	1,226,611	58,511	73,577	7,631	1,565
1849	431,421	106,213	537,634	1,413,096	182,382	68,870	8,420	1,157
1850	673,462	340,008	1,018,470	1,920,247	400,480	49,730	8,569	2,617
Total	$5,158,568	$1,525,902	$6,684,470	$14,829,880	$1,250,190	$385,731	93,355	15,568
June 30, 1851	$854,779	$189,746	$1,044,525	$2,380,295	$422,075	$36,584	14,761	2,891
1852	726,024	67,389	793,413	1,191,864	94,972	22,521	11,244	3,109
1853	749,830	94,668	844,597	2,013,750	257,454	11,330	12,001	1,789
1854	1,151,604	69,270	1,220,883	3,072,849	409,868	56,861	12,203	4,074
1855	1,152,604	70,845	1,223,449	3,616,809	270,464	9,685	15,057	4,369
1856	1,643,621	69,152	1,712,774	4,202,692	560,970	22,882	25,615	1,037
1857	1,364,148	67,430	1,427,578	3,364,518	386,100	35,148	17,708	2,083

* Nine months to June 30, and the fiscal year from this time begins July 1.

COMMERCE OF VENEZUELA IN THE YEARS 1851-'52.

Countries.	Vessels.		Tonnage.	
	Entered.	Cleared.	Entered.	Cleared.
Austria	...	2	....	474
Belgium	3	...	576	....
Brazil	1	...	203	....
Sardinia	9	10	2,015	1,895
Hanse Towns	43	49	14,257	11,680
Denmark	88	87	9,021	3,350
Spain	42	87	6,059	11,224
France	46	58	10,112	10,576
United States	124	155	23,777	31,874
Great Britain	515	1013	23,033	31,829
Hayti and St. Domingo	...	2	....	320
Mexico	...	4	....	479
New Granada	...	1	....	22
Netherlands	105	175	10,307	10,788
Other places	3	...	44	....
Total 1851-'52	1069	1651	100,004	113,810

FOREIGN TRADE OF VENEZUELA, THE NATIONS PARTICIPATING THEREIN, THE SHARE ASSIGNED TO EACH, AND THE AMOUNT OF DUTIES PAID BY EACH FLAG DURING THE YEAR 1854.

Countries.	Imports.	Exports.	Import Duties.
United States	$1,180,445	$2,420,936	$313,679
Hanse Towns	733,005	1,197,085	205,917
England	1,649,813	273,212	712,870
France	632,712	1,077,532	221,154
Denmark	873,580	498,416	201,630
Spain	253,673	1,078,272	95,278
Holland	261,579	443,524	76,253
Mexico	2,032	1,000	9
Sardinia	27,710	38,811	11,340
Other countries	27,209	....	8,013
Venezuelan currency	$5,692,388	$7,139,804	$1,996,043
Or, in U. S. currency	4,243,500	5,328,200	1,445,479

During the same year there entered the different ports of Venezuela 262 vessels, measuring an aggregate of 11,608 tons; and there cleared 392 vessels, with an aggregate of 17,845 tons—all under the national flag. Of foreign vessels there entered 494 vessels, measuring in all 76,760 tons; and there cleared 743 vessels, with an aggregate of 98,152 tons—making a total of 1237 vessels, and an aggregate of 174,912 tons, under foreign flags.

The Culture and Exportation of Cotton.—Notwithstanding many portions of the republic of Venezuela are well adapted to the cultivation of the cotton-plant, this branch of industry has been gradually declining during the past ten years. This has been attributed principally to two causes: 1st. The want of roads, or other artificial means of transportation, which reduces the planters to the necessity of employing mules to convey their produce to market; thus absorbing all the profit which this branch of industry might otherwise realize. 2d. The superior inducements which the cultivation of coffee, cocoa, and other tropical produce offer, as respects the amount of labor bestowed on their production, the expense of transportation to market, and the price which such produce usually commands. To these may be added the superior quality of these latter products, for which Venezuela has acquired a high reputation in the markets of the world.

All cotton textiles which are consumed in the republic are imported from foreign countries. From the 1st July, 1849, to the 30th June, 1850, the total value of cottons imported amounted to $253,586, namely: in national vessels, $26,464; and in foreign vessels, $227,122. During the same period, the exports of raw cotton reached 660,117 lbs., valued at $44,248, viz.: in national vessels, 95,200 lbs., valued at $5810; and in foreign vessels, 564,917 lbs., valued at $38,438. The ports from which raw cotton was exported in 1849-'50, together with the quantities exported during that period, were as follows:

Puerto Cabello	461,024 pounds.
Maturin	98,200 "
La Guayra	90,698 "
La Vela	4,500 "
Ciudad Bolivar	2,800 "
Rio Coribe	2,000 "

From the above it will be perceived that, out of the fifteen ports of Venezuela, no cotton was exported from nine; among them being two of the most important—Cumana and Maracaibo—although the provinces of Cumana and Maracaibo are not only very extensive, but eminently adapted to the cultivation of this article. The species of cotton cultivated in Venezuela is what is denominated the long staple (black seed) of Louisiana and Georgia, and was introduced from the United States.

Commercial Regulations.—All foreign nations enjoy equal commercial privileges in Venezuela. Treaties exist between the republic and most of the governments of Europe and America. That with the United States was ratified May 31, 1836, and was to continue in force twelve years, with the usual twelve months' notice after that period. Such notice not having been given by either party, its provisions still continue in force. This treaty guarantees entire reciprocity and perfect liberty of trade, direct and indirect, between the two republics; and stipulates that all favors to other nations in respect of commerce and navigation, granted by either party, shall immediately become common to the other. Under the provisions of this treaty, and the commercial legislation of Venezuela, United States vessels enjoy the same privileges, and are subject to the same restrictions, as those of all other nations. American trade, however, would, it is thought, rest upon a firmer basis, and might be greatly extended by a new treaty with that republic, better adapted to the exigencies of present commercial relations than

that of 1836, entered into in the very infancy, political as well as commercial, of Venezuela.

In 1840, four years after the ratification of this treaty, the United States exported to that country 20,034 barrels of flour, valued at $147,304. In 1854 our exports of that article reached 40,097 barrels, valued at $318,732; showing an increase in the quantity and value of that one article, which we exchanged for the hides, coffee, and indigo of Venezuela, of 100 per cent.

The hides imported into the United States in 1840 amounted in value to $288,372. In 1854 they reached as high as $1,623,695; showing an increase, in that single article of our imports, of over 400 per cent. A more liberal tariff of duties on our flour and cotton goods in the ports of Venezuela would continue to augment still more largely this growing trade. The justice of such a measure will be obvious when it is considered that the principal article which the United States import from Venezuela (hides) is subject in our ports to a duty of 5 per cent. only; while the principal article which we furnish in exchange (flour) is taxed in its ports with a duty of $4 per barrel, which, at a value of from $12 to $16 per barrel (its average price in the Venezuelan markets), is equal to 25 @ 30½ per cent., besides sundry other duties which are superadded before the article can get into market. These facts are sufficiently suggestive without further comment. Duties are levied on a valuation basis, though many articles in the tariff are liable to specific duties. Instead of specifying each extra charge separately, these heavy imposts can be best illustrated by an actual case:

Custom duties on 100 barrels American flour landed at the port of La Guayra, at $4 per barrel import duty	$400 00
10 per cent. on amount of duties on account of late internal war	40 00
2 per cent. on amount of duties for wharfage	8 80
2 per cent. road tax	8 80
	$457 60
20 per cent. on aggregate amount; contribution extraordinary	91 52
	$549 12
½ per cent. for the new church on $457 60	2 29
Total duties, extras, etc.	$551 41

NAVIGATION DUES.

Tonnage duties	$0 37½	per ton =	$0 26	(U. S. cur'y.)
Anchorage	18	" =	12	"
Water	12	" =	9	"
Light-house	6	" =	4½	"
Entrance	7	" =	5	"
Clearance	2 00	" =	1 54	"
To captain of the port	3 00	" =	2 25	"
To health officer	3 00	" =	2 25	"
To interpreter	3 00	" =	2 25	"

The ton is Venezuelan measurement, generally 12½ per cent. more than that of the United States. The value of Venezuelan money differs considerably, as already noted, from that of the other South American states, though of the same denomination. The following are the legal values of some of the foreign coins in circulation in Venezuela, as fixed by the law of May 30, 1848:

One dollar of the United States equal to	$1 34½
One dollar of Peru equal to	1 34½
One dollar of Mexico equal to	1 34½
Five-franc piece of France equal to	1 25
One shilling of Great Britain equal to	31½
One guinea of Great Britain equal to	6 60

—*Com. Rel. U. S.*

Articles noted free in the tariff pay, in lieu of all extras, 15 per cent. One of the greatest impediments heretofore existing to the increase of American trade with Venezuela was the restriction imposed on the transitago of American merchandise imported expressly for the markets of New Granada. Some years since, Maracaibo was declared a place of deposit for such merchandise—a measure of the greatest importance to commerce, as nearly half the imports at that port are destined for San José de Cucuta, in New Granada. The privilege thus granted was subsequently rendered nugatory by severe restrictions and onerous duties. A more liberal decree, however, has very lately been promulgated (August 10, 1855), which must necessarily largely augment the imports into Venezuela, and thus promote the general commerce of the republic.—*See articles* CARACCAS and LA GUAYRA.

Venice (It. *Venezia*; Ger. *Venedio*; ancient, *Venetia*), a fortified city of Austrian Italy, formerly the capital of the republic of that name, on a cluster of small islands toward the northern extremity of the Adriatic, in lat. 45° 25′ 53″ N., long. 12° 20′ 31″ E. Population in 1851 about 123,000. The commerce of Venice, once the most extensive of any European city, is now comparatively trifling; and the population is gradually diminishing both in numbers and in wealth. Her imports consist of wheat and other sorts of grain from the adjoining provinces of Lombardy and the Black Sea; olive-oil, principally from the Ionian Islands; cotton stuffs and hardware from England; sugar, coffee, and other colonial products from England, the United States, Brazil, etc.; dried fish, dye-stuffs, etc. The exports principally consist of grain, raw and wrought silk, silk goods, glass wares, books, paper, woolen manufactures, fruits, cheese, etc., the products of the adjoining provinces of Italy, and of her own industry; but her manufactures, so famous in the Middle Ages, are now much decayed. The origin of Venice dates from the period of the invasion of Attila in 452, when a number of the inhabitants of Venetia, and other parts of Italy, taking refuge in the islands of the Adriatic, formed a confederation to oppose the barbarians. In 697 they elected, as the head of their government, a doge or duke (dux). The Venetian states formed themselves into a republic in 809. In 997 they took possession of the town of Narenta, a nest of pirates, and thus commenced their maritime power; they afterward subjugated all the towns of Dalmatia. The crusades were a source of aggrandizement for Venice. At the end of the 12th century, the Venetians made themselves masters of part of the Morea, Corfu, Cephalonia, and Crete. During two centuries they monopolized the commerce of India by the route of Egypt; but they lost this on the discovery of the passage by the Cape of Good Hope. The state attained the height of its prosperity in the 15th century. It began to decline at the beginning of the 16th century, and its overthrow was completed by the French in 1797. By the treaty of Presburg in 1805, it was made over, with the provinces of the continent, to the kingdom of Italy, and was held by the French till 1814, when it reverted to Austria. In 1848 the Venetians revolted against the Austrians, and held the city for several months. The government of Venice comprises eight delegations, which bear the names of their capitals: Venice, Padua, Vicenza, Verona, Rovigo, Treviso, Belluno, and Udine. Population in 1850, 2,281,732; do. of provinces, 298,425. The Gulf of Venice is formed by the Adriatic, on the northeast coast of Italy, bounded by the Piave and Brenta.

Port.—The islands on which Venice is built lie within a line of long, low, narrow islands, running north and south, and inclosing what is termed the lagoon, or shallows, that surround the city, and separate it from the main land. The principal entrance from the sea to the lagoon is at Malamocco, about 1½ league south from the city; but there are other, though less frequented entrances, both to the south and the north of this one. There is a bar outside Malamocco, on which there are not more than 10 feet at high water at spring tides; but there is a channel between the western point of the bar and the village of San Pietro, which has 16 feet water at springs, and 14 at neaps. Merchant vessels usually moor off the ducal palace; but sometimes they come into the grand canal which intersects the city, and sometimes they moor in the wider channel of the Giudecca. Vessels coming from the south for the most part make Pirano or Rovigno, on the coast of Istria, where they take on board pilots, who carry them to the

bar opposite to Malamocco. But the employment of Istrian pilots is quite optional with the master, and is not, as is sometimes represented, a compulsory regulation. When one is taken, the usual fee from l'Irano or Rovigno to the bar is 20 Austrian dollars. On arriving at the bar, ships are conducted across it and into port by pilots, whose duty it is to meet them outside, or on the bar, and of whose services they must avail themselves.

Money.—Formerly there were various methods of accounting here; but now accounts are kept, as at Genoa, in lire Italiane, divided into centesimi, or 100th parts. The lira is supposed to be of the same weight, fineness, and, consequently, value, as the franc. But the coins actually in circulation, denominated lire, are respectively equal in value to about ten cents. The latter are coined by the Austrian government.

Weights and Measures.—The commercial weights are here, as at Genoa, of two sorts: the *peso sottile* and the *peso grosso*. The French kilogram, called the libra Italiana, is also sometimes introduced.

100 pounds peso grosso	=	105·186 pounds avoirdupois.
" "	=	127·830 pounds Troy.
" "	=	47·698 kilograms.
" "	=	98 435 pounds of Hamburg.
" "	=	96·569 pounds of Amsterdam.
100 pounds peso sottile	=	66·428 pounds avoirdupois.
" "	=	80·728 pounds Troy.
" "	=	80·123 kilograms.
" "	=	62·196 pounds of Hamburg.
" "	=	60·486 pounds of Amsterdam.

The moggio, or measure for corn, is divided into 4 staje, 16 quarte, or 64 quartaroli. The staja = 2·27 bushels. The measure for wine, anfora = 4 bigonzi, or 8 mastelli, or 48 sechii, or 192 bozze, or 768 quartaruzzi. It contains 137 English wine gallons. The botta = 5 bigonzi. Oil is sold by weight or measure. The botta contains 2 migliaje, or 80 miri of 25 lbs. peso grosso. The miro = 4·028 English wine gallons. The braccio for woolen = 26·6 English inches; the braccio for silks = 24·8 do. The foot of Venice = 13·68 English inches.

The foreign commerce of Venice in 1847 amounted in value to 80,500,000 francs. The revolutionary movements of 1848, the long siege which it endured, and the suspension of its privileges as a free port, completely paralyzed its commercial movements. In 1851 these privileges were restored, and the commerce of Venice has again resumed its wonted activity.

The imports into the port of Venice in the years 1847 and 1848 were:

1847.—Foreign imports	.....	86,484,000 francs.
1848.—Foreign imports	.....	9,322,000 "

Imports and Exports to and from Venice in 1851 and 1852.

Years.		Imports.	Exports.	Total Trade.
1851	francs	25,800,300	6,734,100	32,534 400
1852	"	35,798,700	14,206,300	50,005,000

It will thus be seen that the commercial movements of the port of Venice in 1852 exceeded in value the sum of 50,000,000 francs (nearly $10,000,000), and show an increase over the totals of 1851 of 17,500,000 francs. This is to be attributed to the restoration of the commercial franchise of the port—an act of justice which was delayed until the operations of the second half year of 1851 had already commenced.

The following table exhibits the navigation of Venice during the two years under review:

1851.—Total vessels entered and cleared			1231, of 173,714 tons.
1852.—Total	"	"	1743, of 234,240 "

The following statement exhibits the imports and exports to and from Venice in 1853 compared with 1852:

Years.		Imports.	Exports.	Total Trade.
1853	francs	38,798,700	15,604,700	54,403,400
1852	"	35,798,700	14 206,300	50,005,000
Increase, 1853.	"	3,000,000	1,398,400	4,398,400

The coasting trade during the year 1853, added to the foregoing, figures a total of 20,544,400 francs, against 19,699,100 francs in 1852. Thus:

Coasting Trade of Venice in the Years 1852 and 1853.

Years.		Imports.	Exports.	Total Trade.
1853	francs	10,848,400	9,696,000	20,544,400
1852	"	10,417,300	9,281,800	19,699,100
Increase, 1853.	"	431,100	414,200	845,300

The navigation of this port in 1853, compared with that of 1852, is thus given:

	Entered.		Cleared.	
	Vessels.	Tons.	Vessels.	Tons.
1852	942	135,462	801	98,778
1853	1025	180,253	940	127,261

During these years it appears that not a single American vessel entered that port, or cleared thence for the United States. This may seem strange when the eye is cast over the following list of leading articles imported into Venice in 1852:

	Francs.
Cereals	8,123,300
Olive-oil	4,491,400
Salted fish	4,471,500
Coal	3,780,000
Salt	2,490,900
Dried fruits	1,891,500
Twist (all kinds)	1,959,200
Raw cotton	1,034,900
Wines and spirits	953,900
Iron and steel	861,200
Wax	704,900
Coffee and cocoa	427,900
Cheese	393,600
Sugar (brown and refined)	1,484,800

From a consular return, dated Venice, April 24, 1856, it appears that there entered that port in November and December, 1855, two American vessels, measuring respectively 663 and 527 tons, having cleared from Richmond and bound to Palermo, after discharge of cargo, consisting of tobacco, valued at $75,000. They left Venice for their destination in ballast. In January another American vessel, measuring 248 tons, entered in ballast, and cleared for Constantinople with a cargo of hay valued at $2500.—*Com. Rel. U. S.*

Vera Cruz, the principal sea-port on the eastern coast of Mexico; lat. 19° 11′ 52″ N., long. 96° 8′ 45″ W. Population about 16,000. Opposite the town, at the distance of about 400 fathoms, is a small island on which is built the strong castle of San Juan d'Ulloa, which commands the town. The harbor lies between the town and the castle, and is exceedingly insecure; the anchorage being so very bad that no vessel is considered safe unless made fast to rings fixed for the purpose in the castle wall: nor is this always a sufficient protection from the fury of the northerly winds (*los nortes*), which sometimes blow with tremendous violence. Humboldt mentions, in proof of what is now stated, that a ship of the line, moored by nine cables to the castle, tore, during a tempest, the brass rings from the wall, and was dashed to pieces on the opposite shore.—*Nouvelle Espagne*, ed. 2de, iv. 59. Its extreme unhealthiness is, however, a more serious drawback upon Vera Cruz than the badness of its port. It is said to be the original seat of the yellow fever. The city is well built, and the streets clean; but it is surrounded by sand hills and ponds of stagnant water, which, within the tropics, are quite enough to generate disease. The inhabitants, and those accustomed to the climate, are not subject to this formidable disorder; but all strangers, even those from the Havana and the West India Islands, are liable to the infection. No precautions can prevent its attack; and many have died at Xalapa, on the road to Mexico, who merely passed through this pestilential spot. During the period that the foreign trade of Mexico was carried on exclusively by the *flota*, which sailed periodically from Cadiz, Vera Cruz was celebrated for its fair, held at the arrival of the ships. It was then crowded with dealers from Mexico and most parts of Spanish America; but the abolition of the system of regular fleets in 1778 proved fatal to this fair, as well as to the still more celebrated fair of Porto Bello. A light-house has been erected on the northwest angle of

the Castle of San Juan. The light, which is a revolving one of great power and brilliancy, is elevated 79 feet above the level of the sea.

For a considerable period after the town of Vera Cruz had thrown off the Spanish yoke, the Castle of San Juan d'Ulloa continued in possession of the Spaniards. During this interval the commerce of Vera Cruz was almost entirely transferred to the port of Alvarado, 12 leagues to the southeast. Alvarado is built upon the left bank of a river of the same name. The bar at the mouth of the river, about 1½ mile below the town, renders it inaccessible for vessels drawing above 10 or 12 feet water. Large ships are obliged to anchor in the roads, where they are exposed to all the violence of the north winds, loading and unloading by means of lighters. Alvarado is supposed, but probably without much foundation, to be a little healthier than Vera Cruz. The trade has now mostly reverted to its old channel.

The commercial intercourse of the United States with Vera Cruz depends now solely on the regulations of the mother country (i. e., the capital). Local legislation has nothing to do with it, except as regards a few unimportant harbor dues, and municipal taxes imposed by the "ayuntamiento" (city council). The existing regulations are permanent in name, but may be regarded as temporary in fact, being liable to be changed at any moment by arbitrary decree, or utterly destroyed by "pronunciamento." There are no privileges permitted the commerce of other nations which are denied to the United States, nor are there any restrictions imposed on the commerce of other nations and not on that of the United States. It is understood that the Danish commercial treaty is the least favorable to Mexico; but, practically, all nations may be regarded as on an equal footing. Mexico takes care to make no national distinctions, but she very frequently sells special privileges to individuals, as in the cases at San Blas, Matamoras, and Mazatlan. At Vera Cruz an immense amount of raw cotton is being imported from New Orleans, on the payment of about one half the duty indicated by the existing tariff—"permits" to import that article at a greatly reduced rate having been granted to favored individuals. The regular duty is three cents per pound, but permits can now be bought up at second hand at two cents per pound.

Verd [Cape] Islands. The Cape Verd Islands are situated 329 miles west of Cape Verd, between lat. 14° 45′ and 17° 13′ N., and long. 22° 45′ and 25° 25′ W. The Archipelago consists of the following ten islands: Sal, Boavista, Mayo, Santiago (St. James), the largest, Forgo, Brava, Grande, Rombo, St. Nicolão, and St. Luzia; and four islets, Branco, Razo, St. Vicente, and St. Antão. Area estimated at 1680 square miles. Population in 1850, 86,788. The white population in the whole Archipelago is to the colored as one to twenty. The surface of the islands is in general mountainous, and some of their peaks have a considerable elevation. The volcano of Fogo is 9157 feet in height. The soil is extremely various, but mostly fertile; the absence of trees and the scarcity of water are the causes of frequent and severe distress. Chief vegetable products, maize, rice, and French beans. Coffee, introduced in 1790, has completely succeeded; the cotton shrub is indigenous; indigo grows wild, and tobacco is cultivated in some of the islands; tropical fruits are abundant. The sugar-cane and the vine are cultivated, but the manufacture of wine is prohibited. The climate of these islands is much varied by extreme heats and droughts, no rain falling during some periods for three or four years. Hence the population are frequently subject to distress and suffering. These visitations have, on several occasions during the past few years, strongly appealed to the sympathies of the civilized nations of the world in behalf of the 87,000 inhabitants of these islands.—*See article* MEXICO.

COMMERCE OF THE UNITED STATES WITH THE CAPE DE VERD ISLANDS, FROM OCTOBER 1, 1820, TO JULY 1, 1857.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1821.....	$22,176	$7,656	$29,832	$61,686	....	$3,200	825	....
1822.....	34,941	35,833	70,773	47,422	$97,525	17,073	1,049	....
1823.....	22,055	11 010	33,065	56,840	....	17,412	630	....
1824.....	51,019	21,665	72,684	66,805	2,277	30,142	1,781	67
1825.....	60,072	18,967	79,039	89,592	....	32,650	2,680	....
1826.....	33,693	9,299	48,992	104,120	....	21,448	754	134
1827.....	80,010	24,155	104,165	77,425	....	24,600	2,129	....
1828.....	67,592	9,727	77,229	82,058	....	17,545	2,488	....
1829.....	68 528	13,477	82,005	26,460	....	7,008	5,268	81
1830.....	50,530	7,778	58,338	33,758	....	15,457	2,628	....
Total...	$496,596	$159,566	$656,122	$648,525	$99,802	$215,400	18,236	282
Sept. 30, 1831.....	$45,432	$13,557	$58,989	$63,643	....	$32,927	1,200	236
1832.....	66,858	19,437	86,295	87,706	$400	27,631	2,643	162
1833.....	162,033	44,987	207,020	89,818	1,453	11,570	5,944	816
1834.....	79,511	25 886	105,397	40,633	1,250	20,028	3,391	....
1835.....	102,449	27,747	130,187	19,795	975	9,987	2,643	....
1836.....	67,210	8,246	75,456	13,813	4,100	5,422	2,987	....
1837.....	136,201	27,887	164,088	58,843	8,035	15,673	3,725	2148
1838.....	96,941	8,953	105,874	29,171	800	9,396	3,224	558
1839.....	77,188	8,415	85,553	59,528	680	4,100	3 856	....
1840.....	82,611	2,809	85,420	20,348	....	....	2,262	646
Total...	$916,375	$187,904	$1,104,279	$491,796	$18,293	$136,194	31,855	4876
Sept. 30, 1841.....	$66,926	$13,226	$80,152	$42,861	$3,603	$9,360	1,996	....
1842.....	103,557	11,529	115,086	17,866	300	8,704	3,210	....
9 mos., 1843*.....	59,227	4,978	57,205	4 713	....	2,200	1,302	167
June 30, 1844.....	65,238	5,299	70,537	4,836	....	3,000	1,037	383
1845.....	50,559	2,834	53,433	7,579	....	....	4,256	170
1846.....	31,057	685	31,783	857	....	....	1,004	548
1847.....	71,084	17,848	88,932	2,399	10,000	2,200	1,798	240
1848.....	101,723	6,849	108,572	225	1,003	....	4,084	2038
1849.....	69,647	3,815	66,462	1,853	1,575	....	2,714	4773
1850.....	47,048	2,167	49,210	....	....	....	1,886	611
Total...	$652,141	$69,230	$721,371	$82,989	$22,378	$21,464	23,947	8929
June 30, 1851.....	$57,476	$2,437	$59,913	$1,850	....	....	1,505	730
1852.....	54,425	9,651	64,076	18,129	$4,100	....	1,623	1152
1853.....	26,275	1,604	24,879	41,053	....	$13,957	2,181	....
1854.....	30,037	2,208	32,245	8,985	810	1.500	4,391	....
1855.....	56,496	3,120	59,616	24,300	3,413	7,000	5,743	243
1856.....	51,415	2,994	53,709	86,910	480	12,058	3,188	400
1857.....	63,108	1,395	64,503	25,905	....	12,000	2,663	545

* Nine months to June 30, and the fiscal year from this time begins July 1.

In 1842 the imports from the United States amounted to $57,500, employing 16 vessels with an aggregate tonnage of 1610 tons. An export duty of $5 53 per pipe is levied on wine. The duties on the principal imports from the United States are as follows:

Flour, per barrel	$1 00
Corn, per bushel	6¼
Rice, per pound	1
Staves (pipe), per 1000	1 60
Staves (hogshead), per 1000	1 20
Staves (barrel), per 1000	75
Lumber, per 1000 feet	1 00

Port charges in Madeira amount to about $18 on a vessel of any tonnage, for health officer, government visits, and custom-house fees. — *For* WEIGHTS and MEASURES, *see* p. 1943.

Verdigris (Ger. *Grünspan*; Fr. *Vert-de-gris, Verdet*; It. *Verderame*; Sp. *Cardenillo, Verdete, Verde-gris*; Russ. *Jar*), a kind of rust of copper, of a beautiful bluish green color, formed from the corrosion of copper by fermented vegetables.

Its specific gravity is 1·78. Its taste is disagreeably metallic, and, like all the compounds into which copper enters, it is poisonous. It was known to the ancients, and various ways of preparing it are described by Pliny. It is very extensively used by painters and in dyeing; it is also used to some extent in medicine. The best verdigris is made at Montpellier; the wines of Languedoc being particularly well suited for corroding copper, and forming this substance. It is generally exported in cakes of about 25 lbs. weight each. It is also manufactured in this country, by means of the refuse of cider, etc. The goodness of verdigris is judged of from the deepness and brightness of its color, its dryness, and its forming, when rubbed on the hand with a little water or saliva, smooth paste, free from grittiness. —THOMSON'S *Chemistry*; REES' *Cyclopædia*.

IMPORTS OF VERDIGRIS INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whence imported.	Pounds.	Value.
Hamburg	1,037	$302
England	790	195
British American colonies	200	41
France	30,301	9097
Spain	220	55
Total	32,548	$9,690

None of this was re-exported, so that the whole may be set down for home consumption.

Verjuice (Ger. *Agrest*; Fr. *Verjus*; It. *Agresto*; Sp. *Agraz*), a kind of harsh, austere vinegar, made of the expressed juice of the wild apple, or crab. The French give this name to unripe grapes, and to the sour liquor obtained from them.

Vermicelli (Ger. *Nudeln*; Du. *Meelneepen, Proppen*; Fr. *Vermicelli*; It. *Vermicelli, Tagliolini*; Sp. *Alcrias*), a species of wheaten paste formed into long, slender, hollow tubes, or threads, used among us in soups, broths, etc.—*See* MACARONI.

Vermilion. *See* CINNABAR.

Vermont, one of the United States of America, lies between lat. 42° 44′ and 45° 00′ 30″ N., and long. 73° 20′ W., and contains an area of 8000 square miles. Population in 1790, 85,589; in 1800, 154,465; in 1810, 217,895; in 1820, 235,764; in 1840, 291,948; and in 1850, 313,611.

Physical Features, etc.—This State presents a very considerable variety of surface. It is traversed from north to south by the Green Mountain range, some summits of which rise to a height of 4279 feet above the sea. About the centre of the State they divide into two ridges, the principal of which passes in a north-northeast direction into Canada. The Green Mountains are from ten to fifteen miles wide, much intersected by valleys abounding with springs and brooks, and are mostly covered with evergreens to their summits, from which they have derived their name. The rivers are inconsiderable; most of those flowing east are merely small tributaries of the Connecticut; those on the west side are larger; and the three principal, viz., Lamoille, Missisquo, and Winooski, rise on the east side of the principal mountain range, which they break through and enter Lake Champlain.

Lake Champlain, a considerable body of water between the States of New York and Vermont, and penetrating for a few miles into Canada. It is 140 miles in length, and from 1 to 10 in breadth, lying nearly north and south; and contains a great number of small islands, most of which belong to Vermont. The Champlain Canal, 63 miles in length, connects it with the Hudson, and large steamboats and vessels of 100 tons navigate the lake from end to end. The scenery along its shores is highly picturesque, and its waters abound in salmon, salmon-trout, sturgeon, and other fish. Lake Champlain is navigable for large vessels, and has several good harbors on the Vermont side. It is of the greatest importance to Vermont by giving her facilities for internal commerce. From the shape of the lake it gives the large amount of coast line and length of navigation, and makes up for the deficiency of navigable rivers. The American commerce of Lake Champlain in 1856 was over 20,000 tons. The climate varies according to differences of level and other circumstances. It is healthy, although the winters are severe. The soil is fertile, but more suitable for pasturage than tillage. Wool is the staple production; sheep, horses, and cattle are raised in great numbers; marble, granite, and slate are abundant, and valuable quarries of each are worked; iron ore abounds in several localities throughout the State, and from the sulphuret of iron, in Strafford and Shrewsbury, copperas is extensively manufactured. Several mineral springs occur.

There were in this State in 1850, 2,601,409 acres of land improved, and $1,524,413 of unimproved in farms; cash value of farms, $63,367,227, and the value of implements and machinery, $2,789,282. *Live Stock.*—Horses, 61,057; asses and mules, 218; milch cows, 146,128; working oxen, 48,577; other cattle, 154,143; sheep, 1,014,122; swine, 66,296; value of live stock, $12,643,228.

Agricultural Products, etc.—Wheat, 535,955 bushels; rye, 176,233; Indian corn, 2,082,396; oats, 2,307,784; barley, 42,150; buckwheat, 209,819; peas and beans, 104,649; potatoes, 4,951,014; value of products of the orchard, $315,255; produce of market gardens, $18,853; pounds of butter made, 12,137,980; of cheese, 8,720,834; maple-sugar, 6,349,357; molasses, 5997 gallons; beeswax and honey, 249,422 lbs.; wool, pounds produced, 3,400,717; flax, 20,852; silk cocoons, 268; hops, 288,023; tons of hay, 866,153; clover seeds, 760 bushels; other grass seeds, 14,936; flaxseed, 939 bushels; and were made 659 gallons of wine. Value of home-made manufactures, $267,710; of slaughtered animals, $1,861,336.

Manufactures, etc.—There were in the State in 1850, 11 cotton factories, with a capital invested of $197,500, employing 123 males and 207 females, producing sheetings, etc., valued at 280,300; 96 woolen factories, with a capital of $1,015,175, employing 800 males and 812 females, manufacturing 3,130,400 yards of cloth, valued at $1,820,763; three establishments making pig-iron, with a capital of $88,000, employing 133 persons, producing pig-iron, etc., valued at $80,000; 26 establishments, with a capital of $290,720, employing 381 persons, and making 5000 tons of castings, etc., valued at $460,831; 8 establishments, with a capital of $62,700, employing 57 persons, manufacturing 2045 tons of wrought iron, valued at $163,986; 83 flouring and grist mills; 921 saw-mills; 156 tanneries, with a capital of $411,150, employing 397 persons, valued at $587,466; 30 printing-offices; 2 daily, 1 semi-weekly, 31 weekly, and 2 monthly publications. There were on the 1st January, 1856, 8 railroads, with 516 miles of road finished and in operation. Capital employed in manufactures, $5,001,877; value of manufactured articles, $8,570,920. The principal places in the State are Montpelier, the capital, Burlington, Middlebury, Brattleboro, Norwich, St. Albans, and Castleton.

FOREIGN COMMERCE OF THE STATE OF VERMONT, FROM OCTOBER 1, 1820, TO JULY 1, 1857, SHOWING ALSO THE DISTRICT TONNAGE IN 1821, 1831, 1841, AND 1851.

Years ending	Exports.			Imports.	Tonnage cleared.		District Tonnage.	
	Domestic.	Foreign.	Total.	Total.	American.	Foreign.	Registered.	Enrolled and Licensed.
Sept. 30, 1821.....	$263,330	....	$263,330	$15,987	901	40	....	1274
1822.....	249,216	$8,478	257,694	60,899	854	40	....	....
1823.....	236,140	....	236,140	62,242	....	....	....	....
1824.....	208,258	....	208,258	161,854	665	35	....	....
1825.....	396,166	....	396,166	100,021	695	35	....	....
1826.....	884,202	....	884,202	228,650	....	....	....	....
1827.....	1,259,441	....	1,259,441	144,078	....	....	....	....
1828.....	239,010	....	239,010	177,539	....	....	....	....
1829.....	808,079	....	808,079	205,392	24,101	....	....	....
1830.....	658,256	....	658,256	140,059	10,290	....	....	....
Total...	$5,202,638	$8,478	$5,211,176	$1,305,719	46,506	140	....	....
Sept. 30, 1831.....	$925,127	....	$925,127	$166,206	20,261	....	....	877
1832.....	349,820	....	349,820	214,672	14,680	....	....	....
1833.....	377,399	....	377,399	523,260	35,166	....	....	....
1834.....	354,372	....	354,372	322,806	35,700	....	....	....
1835.....	328,151	....	328,151	217,853	26 838	....	....	....
1836.....	188,165	....	188,165	456,846	30,045	....	....	....
1837.....	138,693	....	138,693	342,449	27,011	....	....	....
1838.....	132,650	....	132,650	258,417	28 480	....	....	....
1839.....	193,886	.	193,886	413,518	44,766	....	....	....
1840.....	305,150	....	305,150	404,617	52,084	....	....	....
Total...	$3,273,413	....	$3,273,413	$3,320,630	324,986	....	....	....
Sept. 30, 1841.....	$264,005	$18,382	$247,987	$246,739	13,500	....	....	4330
1842.....	550,203	7,216	557,509	209,868	....	....	....	....
9 mos., 1843*.....	141,834	28,137	169,971	88,000	15,359	....	....	....
June 30, 1844.....	196,574	216,793	413,367	97,183	56,336	....	....	....
1845.....	213,976	328,631	542,607	81,997	52,728	....	....	....
1846.....	215,316	188,504	403,820	127,223	79,766	....	....	....
1847.....	231 985	282,313	514,298	239,641	72,064	....	....	....
1848.....	295,269	234,333	534,102	306,005	74,416	....	....	....
1849.....	299,038	388,931	688,869	147,721	97,218	325	....	....
1851.....	404,749	26,157	430,906	463,092	81,073	1,783	....	....
To'al...	$2,817,939	$1,715,497	$4,533,436	$1,957,469	542,460	2,108	....	....
June 30, 1851.....	$761,713	$304	$762,016	$691,208	104,114	17,734	....	5933
1852.....	216,089	172,025	388,113	192,593	42,973	14,666	....	....
1853.....	182,376	11,741	94,117	184,512	14,492	6,644	....	....
1854.....	816,078	1,135,166	1,445,244	237,279	29,803	10,154	....	....
1855.....	922,544	2,572,924	2,895,468	501,593	11,760	8,462	....	....
1856.....	950,607	680,843	1,031,450	1,560,118	20,057	19,737	....	....
1857.....	283,000	365,461	648,470	2,709,133	21,542	21,084	....	....

* Nine months to June 30, and the fiscal year from this time begins July 1.

Burlington, Vermont, is the principal port of the State. Its commerce by Lake Champlain, on a bay of which the town is built, is important, and its connections by railroad and steamboat afford it every facility in its prosecution. The harbor of Burlington is the best on the lake, and more vessels navigating the lake are owned here than at any other place. It is easy of access from the north and south, and to protect it from the west winds a breakwater 900 feet long was erected. Juniper Island is distant four miles from the wharf, and contains eleven acres of ground. A light-house was erected on this island in 1826; it is in the form of a truncated cone, thirty feet high, eighteen feet in diameter at the base, and twelve at the top, and is kept lighted at night during the season of navigation, from the middle of April to the 1st of December. Burlington has an extensive and fertile back country, and the mercantile business of the place amounts to about $1,000,000 annually. Tonnage in 1853, 6875; in 1856 it was 7448 tons.

Vessels. *See articles* SHIPS and TONNAGE.

Victoria (formerly called **Australia Felix** and **Port Philip**), a British colonial territory, comprising all the part of Australia south of the rivers Murrumbigee and Murray, between lat. 34° and 39° S., and long. 141° and 150° E., having on the northeast New South Wales, on the west the colony of South Australia, and on the south the ocean and Bass's Strait, separating it from Tasmania. Area, 98,000 square miles. Population in 1851, 77,345, of which 46,202 were males, and 31,143 females; in 1855, 300,000, and of these it is estimated that 5000 are aborigines. The territory derived its former name from the fine bay of Port Philip, near the centre of its coast line; besides which, here are the inlets Western Port, Corner Inlet, Lake King, Port Fairy, and Portland Bay, most of which afford good anchorage, and are the seats of incipient towns. Surface mostly undulating or level, separated into different river basins by hill chains. Temperature at Port Philip ranges from 32° to 90° in the year, and may average about 61° Fahr. Soil more fertile generally than in New South Wales, though around the borders are extensive tracts of barren land. For about 50 miles from the coast the country is almost every where of high fertility; there is also much good land on the banks of the Hume and Hovell; and although hitherto the corn raised has been inadequate for home consumption, and a supply has been imported from Tasmania, this colony bids fair to become a thriving agricultural region. Sheep and cattle rearing are, however, the principal occupations of the population, and in 1851 the live stock in the province amounted to 5,000,000 sheep, 16,500 horses, and 300,000 horned cattle. In the same year, 100 acres were planted with vines, and 1300 gallons of wine were made, chiefly near Geelong. Wheat, oats, barley, potatoes, salt from the lakes, pumice-stone, lava, and other volcanic products abundant in the western plains, are other chief articles of produce. Some veins of coal, and ores of copper, lead, and manganese, have been met with near the coast; but few, if any, mines are at present wrought. The principal towns are Melbourne and Geelong. The colony was formerly called Australia Felix, and was attached to New South Wales. It was formed into a distinct colony in 1850, under the name of the Province of Victoria. It was first settled by the British about 1831.

The commercial relations of the United States with the British possessions in Australia, New Zealand, and the Cape of Good Hope, are regulated by the orders of the local governments, within the limits prescribed to their authority by the legislation of the Imperial Parliament. The repeal of the British navigation laws abolished all the restrictions upon foreign commerce, which before that period secured to the British merchant the

monopoly of supplying the markets of these distant colonies. The trade is now open to all flags, and the vessels of every nation having commercial treaties with the mother country can freely and upon equal terms enter in the race of commercial competition. Co-operating with this liberal policy of the mother country, the discovery of gold in some of the Australian possessions in 1851 contributed largely to infuse new commercial life and vigor into that distant part of the globe. Some estimate may be formed as to the extent of the wonderful advance of these colonies in commercial and colonial greatness, the increase of their imports and exports, and the augmentation of their resources generally, by glancing over the subjoined statistics.

In 1843 the value of the imports of the colony of Victoria was $1,229,840; that of their exports, $1,539,830. Of this latter sum wool covered nearly $1,000,000, all of which was shipped to Great Britain. Value of imports in 1847, $2,188,480; of which $1,592,120 were from Great Britain. Value of exports in 1847, $3,342,555; of which wool covered $2,829,025, distributing the balance ($513,530) between the articles of beef, pork, horses, horned cattle, and tallow. Number of vessels in 1847, 423, with a tonnage of 47,885.

The following tables will exhibit the trade of the colony of Victoria from 1851 to the end of the first half of 1854:

	Imports.	Exports.
In the year 1851	$4,379,140	$4,184,210
" 1852	17,524,355	35,685,775
" 1853	70,473,235	45,412,870
In the half year of 1854	42,780,840	24,509,400

Amount of flour from the United States imported in 1853, 15,036 tons; and more than one half of the whole quantity imported. Amount imported from the United States in the half year of 1854, 3720 tons; or more than one-third of all imported.

The total exports from the United States to Australia for the year ending June 30, 1857, were as follows:

Boards	$214,892	Tobacco	$295,128
Manufac. of Wool	151,209	Boots and shoes	140,405
Bacon	111,088	Other articles	1,451,279
Flour	893,070	Total	$3,257,131

AMERICAN VESSELS WHICH ARRIVED AT MELBOURNE FROM JANUARY, 1853, TO SEPTEMBER, 1854.

From New York.

Ships	52;	average passage,	121 days.
Barks	22;	" "	118 "
Brigs	2;	" "	140 "
Schooners	7;	" "	120 "

From Boston.

Ships	25;	average passage,	112 days.
Barks	29;	" "	118 "
Brigs	2;	" "	127 "
Schooners	5;	" "	121 "

Vessels, 173; aggregate tonnage, 77,633.

Four American brigs made the passage in 90 days, and one schooner in 91 days. These vessels were laden with flour, provisions, lumber, and general cargo. When the market is not overstocked, as was the case in 1853, American flour of the best quality (and none else need be exported) brings from $15 00 to $16 80 per barrel. Twelve dollars can be laid as the fixed market price for first quality flour, at least until the Australians pay more attention to agricultural pursuits, which will hardly be the case so long as they can find gold nuggits weighing 98½ lbs. each. American provisions, hams, bacon, butter, cheese, beef, pork, preserves, furniture, wooden houses, carriages, wagons, boots, etc., are much sought for in the markets of Victoria, and always command remunerative prices. The facilities for discharging and dispatching ships have greatly increased within the past year. Before that period, 90 days was considered good dispatch; now from 12 to 30 days is the time; and, indeed, 30 days is considered unwarrantably long.

It may be interesting, and not altogether inappropriate, to notice in this place the astonishing production of gold in this colony, compared with the aggregate mining operations in other parts of the world, especially in California. The gold diggings in Victoria extend from long. 142° 35′ to 147° 30′, and from lat. 36° 20′ to 37° 40′, over districts embracing more than 300,000 square miles, or more than half the area of the colony.

VICTORIA GOLD.

	Ounces.	Amount.
From the end of September, 1851, to December 31, 1852	4,008,188	$83,707,020
From December, 1852, to December, 1853	3,090,342	50,489,080
From December, 1853, to September, 1854 (by escort only)	1,130,519	22,610,380
Total	8,829,049	$170,807,080

COMPARISON OF THE AVERAGE YEARLY PRODUCE OF GOLD.

Victoria	$60,000,000
California	55,000,000
Russia (Ural Mountains)	20,000,000
Aggregate amount (annual) of Victoria, California, and Russian mines	$135,000,000

—*See articles* AUSTRALIA and MELBOURNE.

Vikings, or Sea Kings, among the Danes or Normans leaders of piratical squadrons, who passed their lives in roving the seas in search of spoil and adventures. The younger sons of the Scandinavian kings or earls, having no inheritance but the ocean, naturally collected around their standards the youth of inferior order, who were equally destitute with themselves. These were the same who in England and Scotland, under the name of *Danes*, and on the continent under that of *Normans*, at first desolated the maritime coasts, and afterward penetrated into the interior of countries, and formed permanent settlements in their conquests.

Vine. The vine was known to Noah. A colony of vine-dressers from Phocea, in Ionia, settled at Marseilles, and instructed the South Gauls in tillage, vine-dressing, and commerce, about 600 B.C. Some think the vines are aborigines of Languedoc, Provence, and Sicily, and that they grew spontaneously on the Mediterranean shores of Italy, France, and Spain. The vine was carried into Champagne, and part of Germany, A.D. 279. The vine and sugar-cane were planted in Madeira in 1420. It was planted in England in 1552; and in the gardens of Hampton-court palace is an old and celebrated vine said to surpass any known vine in Europe.—*See* GRAPES and WINE. The following is a tradition in relation to the vine: "When Adam planted the first vine and left it, Satan approached it, and said, 'Lovely plant! I will cherish thee;' and thereupon taking three animals, a lamb, a lion, and a hog, he slayed them at the root of the tree, and their blood has been imbibed by the fruit to this day. Thus, if you take one goblet of wine, you are cheered by its influence, yet are mild and docile as the lamb; if you take two goblets, you become furious, and rave and bellow like the lion; and if you drink of the third goblet, your reason sinks, and, like the hog, you wallow in the mire."—ASHE. *See* WINE.

Vinegar (Ger. *Essig;* Du. *Azyn;* Fr. *Vinaigre;* It. *Aceto;* Sp. and Port. *Vinagre;* Russ. *Ukzus;* Lat. *Acetum*).—*See* ACID (ACETIC), for a description of vinegar. Vinegar was known nearly as soon as wine. The ancients had several kinds of vinegar which they used for drink. The Roman soldiers were accustomed to take it in their marches. The Bible represents Boaz, a rich citizen of Bethlehem, as providing vinegar for his reapers, into which they might dip their bread, and kindly inviting Ruth to share with them in their repast: hence we may infer that the harvesters at that period partook of this liquid for their refreshment—a custom still prevalent in Spain and Italy. It is conjectured that the vinegar which the Roman soldiers offered to our Saviour at his crucifixion was that which they used for their own drinking. There was, however, a kind of potent vinegar which was not proper for drinking till diluted.

EXPORTS OF VINEGAR FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Gallons.	Value.
Swedish West Indies	240	$44
Danish West Indies	540	59
Dutch West Indies	5,074	665
Dutch Guiana	491	75
Canada	53,074	8,250
Other British North American Poss.	33,140	3,749
British West Indies	20,337	3,318
British Honduras	1,805	243
British Guiana	15,500	1,669
British Possessions in Africa	3,525	509
Other ports in Africa	539	101
British East Indies	1,588	294
French West Indies	500	60
Cuba	18,354	2,381
Porto Rico	395	58
Hayti	2,850	437
Mexico	6,860	1,085
Central Republic	40	5
New Granada	6,387	918
Venezuela	890	133
Argentine Republic	6,346	818
Chili	10,750	1,684
Peru	15,167	2,583
Sandwich Islands	2,422	485
China	2,257	368
Whale-fisheries	7,754	734
Total, 1856-'57	230,06	$30,788

There were no imports of vinegar into the United States for the year 1857.

Viol and Violin. As the lyre of the Greeks was the harp of the moderns, so the viol and vielle of the Middle Ages became the modern violin. The viol was of various sizes formerly, as it is at present, and was anciently very much in use for chamber airs and songs. That of three strings was introduced into Europe by the jugglers of the 13th century. The violin was invented toward the close of the same century.—ABBÉ LENGLET. The fiddle, however, is mentioned as early as A.D. 1200, in the legendary life of St. Christopher. It was introduced into England, some say, by Charles II. in 1684.

Virginia, one of the United States of America, lies between lat. 36° 33′ and 110° 43′ N., and between long. 75° 25′ and 83° 40′ W. It is 370 miles long, and 200 miles broad at its greatest breadth, containing 61,352 square miles. Population in 1790, 747,610; in 1800, 886,149; in 1810, 974,622; in 1820, 1,065,366; in 1830, 1,211,272; in 1840, 1,239,797; and in 1850, 1,421,661.

Early History.—The coast of the country which we now name Virginia is said to have been known to the old Northmen. One of them, Gudleif Gudlaugsen, is said to have sailed in the year 1028 so far to the south. He is supposed to have called the country *Huitramannaland*, the Land of the Whitemen, which may be considered the oldest and first name under which these regions became ever known to the Europeans.

The Spaniards, since 1520, included the land under the names of *Terra de Ayllon* and *Florida*, and the French, since 1564, under the name of *Nouvelle France*. The English invented the name Virginia at first (1583) for the country lying round Pamlico and Albemarle Sound. They composed this name, it is said, for two reasons: first, because it was discovered in the reign of their Virgin Queen, Elizabeth; and, secondly, "because the country seemed still to retain the virgin purity and plenty of the first creation, and the people there the primitive innocence."

They extended this name at once over a great part of the east coast, and particularly over the vicinity of Chesapeake Bay, which was already discovered from the Roanoke settlements, and which we see included under the name of Virginia on the first map of Virginia, 1590.

When, since 1606, the Chesapeake Bay was better explored and settled, and when it became the principal centre of the English settlements on the east coast, this region was, par excellence, called Virginia, sometimes New Virginia, while the former settlements and country round Albemarle Sound, then forsaken, were sometimes (for instance, on a map of Captain J. Smith) called Ould Virginia. This was, however, more a popular manner of denomination. The official or legal name of the country was, in the year 1606, by King James I. thus confined: He called Virginia, or the Virginian territory or coast, the whole east coast of North America, from the thirty-fourth to the forty-fifth degree of north latitude. This whole territory was divided by the royal patent into two parts, a northern and a southern. The southern commenced in the south at 34° north latitude, and ended in the north at about 40° north latitude. It was called the First Colony, or the Southern Settlements in Virginia, or Virginia proper.

When Captain J. Smith and Prince Charles invented and introduced (1616) for Northern Virginia the new name of New England, the appellation Southern Virginia disappeared, and was changed to Virginia.

By the separation of the territories of Maryland (1632), of Carolana (1629), and of Carolina (1668), the name and province of Virginia lost a great deal of their former extension, and received at last their present limits, between 58° and 36½° north latitude, so far as our coast is concerned. The changes of the boundaries toward the interior regions have no interest here for us.—KOHL.

Physical Features, etc.—As regards surface and soil, this State may be divided into four sections. The eastern includes a tract of about 100 to 120 miles in width, and is generally low and level, and in some places marshy. It has a light sandy soil, mostly covered with pines. West of the line of the head of tide-water the country becomes undulating and hilly, until it attains one continuous mountain elevation known as the Blue Ridge, crossing the entire width of the State. The alluvial lands in this tract are for the most part very fertile, those of James River especially being unusually productive. The third section includes the valley between the Blue Ridge and the Alleghany Mountains. This tract, though in parts broken by mountains, is generally the most fertile and healthy part of the State. The fourth section includes the country between the Alleghany chain and the Ohio. This portion, though in many places wild and broken, has a great deal of fine fertile land, and vast deposits of coal, iron, salt, etc. Gold is found in Fluvanna and Buckingham counties and vicinity; and many valuable mineral springs exist.

There were in this State in 1850, 10,360,135 acres of land improved; and 15,792,176 unimproved land in farms; cash value of farms, $216,401,513; and the value of implements and machinery, $7,021,772. *Live Stock.*—Horses, 272,403; asses and mules, 21,483; milch cows, 317,619; working oxen, 89,513; other cattle, 669,137; sheep, 1,310,001; swine, 1,829,843. Value of live stock, $33,656,659.

Agricultural Products, etc.—Wheat, 11,212,616 bushels; rye, 458,930; Indian corn, 35,224,319; oats, 10,179, 143; barley, 25,437; buckwheat, 214,898; peas and beans, 521,579; potatoes, 1,316,933; sweet potatoes, 1,813,634; rice, 17,151 lbs.; value of products of the orchard, $177,137; produce of market gardens, $183,017; pounds of butter made, 11,089,359; of cheese, 436,292; maple-sugar, 1,227,665 lbs.; molasses, 40,322 gallons; beeswax and honey, 880,767; wool, 2,860,765 lbs. produced; cotton, 3947; flax, 1,000,450; silk cocoons, 517; hops, 11,506 lbs.; tobacco, 56,803,227; hay, 369,098 tons; hemp, 88 tons; clover seeds, 29,727 bushels; other grass seeds, 53,428; flax-seed, 52,318 bushels; and were made, 5408 gallons of wine; value of home-made manufactures, $2,156,312; of slaughtered animals, $7,502,986.

Rivers, etc.—The Potomac River separates Virginia from Maryland. James River is the largest which belongs to this State. It is 500 miles in length, and flows from the mountains in the interior behind the Blue Ridge, through which it passes. It is navigable for sloops 120 miles, and for boats much farther, and

flows into Chesapeake Bay. The Appomattox is 180 miles long, and enters James River 100 miles above Hampton Roads, and is navigable 12 miles to Petersburg. The Rappahannock, 180 miles long, and navigable 110 miles for sloops, rises in the Blue Ridge, and flows into the Chesapeake. York River enters the Chesapeake 30 miles below the Rappahannock, and is navigable 40 miles for ships. The Shenandoah enters the Potomac just before its passage through the Blue Ridge. Of the rivers west of the mountains, the Great Kanawha rises in North Carolina, passes through this State and enters the Ohio. The Little Kanawha also flows into the Ohio. The Monongahela rises in this State, though it runs chiefly in Pennsylvania. The lower part of Chesapeake Bay [illegible] wholly in this State, is 15 miles wide at its mouth, and enters the Atlantic between Cape Charles and Cape Henry.

Manufactures, etc.—There were in the State in 1850, 24 cotton factories, with a capital invested of $1,893,200, employing 1148 males and 1578 females, producing articles valued at $1,438,109; 41 woolen factories, with a capital of $324,700, manufacturing woolen goods valued at $690,802. Total capital invested in manufactures, $18,108,793. Value of manufactured articles, $20,000,000. There were in January, 1856, 21 railroads, with 1295 miles of railroad finished and in operation, and 1180 in course of construction.

Principal Ports.—Alexandria, 100 miles from the Chesapeake Bay, lat. 38° 48′ N., long. 0° 3′ W. from Washington. It is finely situated on the right bank of the Potomac, which has a depth of water here sufficient for vessels of the largest class, being about 24 feet at the wharves, and 40 feet in the channel. The tonnage in 1856 was 7221 tons. Norfolk, situated on the Elizabeth River, eight miles from Hampton Roads, Chesapeake Bay, in lat. 37° 12′ N., and long. 76° 40′ W. Its harbor is capacious and deep, easy of access, and safe in all weathers. The Roads are formed by an enlargement of James River at its mouth, in Chesapeake Bay, and they offer an anchorage unsurpassed in the world. On the opposite side of the river is Portsmouth, in connection with which it is the chief naval station of the Union. The tonnage of Norfolk in 1856 was 27,757 tons.

FOREIGN COMMERCE OF THE STATE OF VIRGINIA, FROM OCTOBER 1, 1820, TO JULY 1, 1857, SHOWING ALSO THE DISTRICT TONNAGE IN 1821, 1831, 1841, AND 1851.

Years ending	Exports.			Imports.	Tonnage cleared.		District Tonnage.	
	Domestic.	Foreign.	Total.	Total.	American.	Foreign.	Registered.	Enrolled and Licensed.
Sept. 30, 1821	$8,026,170	$53,040	$3,079,210	$1,078 4 0	23 545	6,483	12,215	45,537
1822	3,209,852	7,537	3,217,389	864,102	50,122	7,413	....	....
1823	4,000,914	5,874	4,006,788	681,810	28,866	9,320	....	....
1824	3,276,478	1 086	3,277,564	689,787	45,677	8,070	....	....
1825	4.122,840	7,180	4.129,520	558,562	41,300	7,610	....	....
1826	4,590,077	655	4,590,732	695,438	50,724	8,060	....	....
1827	4,040,737	11,201	4,657,928	431,765	53,235	7,845	....	....
1828	3,324,610	15 [illegible]	3,340,185	375,238	42,958	7,278	....	....
1829	3,783 493	3 938	3,787,431	395,352	40,620	6,771	....	....
1830	4.788 8[illegible]	2.480	4 791,584	405,780	43,715	4,365	....	....
Total	$38,775,481	$108,060	$38,884,041	$6,061,398	410,781	73,102	....	....
Sept. 30, 1831	$4,140,986	$480	$4,150,475	$488,522	48,719	11,879	12,319	24,023
1832	4,4[illegible]3,916	16,734	4,510,650	[illegible]53,630	56,783	10,383	....	....
1833	4,459,574	8,053	4,467,587	690,391	46 527	21,960	....	....
1834	5,469,240	13,853	5,483,093	837,325	49,868	17,097	....	....
1835	6,054,445	9,618	6,061,063	691,255	43,092	13,957	....	....
1836	6,044,628	148,012	6,192,640	1,106,814	42,612	16,719	....	....
1837	8,679,110	3,604	8,702,714	813,802	29,397	16,562	....	....
1838	3,977,895	8,733	3,986,228	577,142	18,779	9,711	....	....
1839	5,183,424	3,772	5,187,196	913,402	41,494	7 895	...	....
1840	4.769,957	8,283	4,778,220	545,085	48,460	6,218	....	....
Total	$18,301,515	$220,756	$18,552,271	$7,217,497	426,831	141,381	....	....
Sept. 30, 1841	$5,028,910	$1,376	$5,030,286	$377,237	53,910	9,833	18,155	32,202
1842	3,745,227	5,150	3,750,386	316,705	45,122	10,518	....	....
9 mos., 1843*	1,954,510	2,655	1,157,165	187,062	34,043	4,253	. ..	....
June 30, 1844	2,923,398	19,041	2,942,279	267,654	44,100	7,349	....	....
1845	2,101,045	3,536	2,104,581	207 658	36,189	4,521	....	....
1846	3,528,963	336	3,529,299	209,004	48,571	7,103	....	....
1847	5 645 668	12,706	5,6 8,374	396,127	63,116	35,072	....	....
1848	3,673,858	1,554	3,681,412	215,081	48 420	10,972	....	....
1849	3 369,422	4,3.0	3,373,738	241,[illegible]35	58,989	10,589	....	....
1850	3,413,158	2,488	3,415,646	426 5[illegible]9	42,091	29,867	....	....
Total	$35,989,999	$53,167	$36,043,166	$2,8[illegible]5,062	475,442	129,171	....	....
June 30, 1851	$3,687,444	$2,624	$3,690,068	$552,[illegible]33	34,161	31,186	16,337	52 462
1852	2,721,797	2,150	2,724,657	735,8[illegible]8	37,384	29,089	....	....
1853	3,302,661	4,230	3,306,791	8[illegible]9,004	35,901	27,006	....	....
1854	4.752,218	1,130	4,764,148	1,276,216	52,631	30,067	....	....
1855	4 346,320	33,599	4 379,928	855,495	48,790	22,942	....	....
1856	5,489,022	5,745	5,495,307	69[illegible],[illegible]25	43,670	24,048	....	....
1857	7.231,530	15,579	7,249,709	1,530,[illegible]24	60,224	22,506	....	....

* Nine months to June 30, and the fiscal year from this time begins July 1.

Vitriol. *See* COPPERAS.

Vitriol, Oil of. *See* ACID (SULPHURIC).

IMPORTS OF VITRIOL INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whence imported.	Blue or Roman.		Oil of.	
	Pounds.	Value.	Pounds.	Value.
Hamburg	17,320	$1054	1480	$25
Bremen	9,402	715	191	43
Belgium	2,040	135	....	..
England	66,388	3904	....	..
Canada	840	16	....	..
British West Indies	200	13	....	..
Total	15,690	$5834	1671	$ 8

Voyages. The first great voyage, or voyage properly so called, was by order of Necho, pharoah of Egypt, when some Phœnician pilots sailed from Egypt down the Arabic Gulf, round what is now called the Cape of Good Hope, entered the Mediterranean by the Straits of Gibraltar, coasted along the north of Africa, and at length arrived in Egypt, after a navigation of about three years, 604 B.C.—BLAIR, HERODOTUS. The first voyage round the world was made by a ship, part of a Spanish squadron which had been under the command of Magellan (who was killed at the Philippine Islands in a skirmish) in 1519–'20. The era of voyages of discovery was the end of the 15th century.—*See* COMMERCE, *History of*; PACIFIC OCEAN, etc.

W.

Wages. The wages of sundry workmen in England were first fixed by act of Parliament, 25 Edward III., 1350. Hay-makers had but one penny a day. Master carpenters, masons, tilers, and other coverers of houses, had not more than 3*d.* per day (about 9*d.* of the present currency, sterling), and their servants 1½*d.* —VINER'S *Statutes*. By the 23d Henry VI., 1444, the wages of a bailiff of husbandry was 23*s.* 4*d.* per annum, and clothing of the price of 5*s.*, with meat and drink; chief hind, carter, or shepherd, 20*s.*; clothing, 4*s.*: common servant of husbandry, 15*s.*; clothing, 40*d.*: woman-servant, 10*s.*; clothing, 4*s.* By the 11th Henry VII., 1495, there was a like rate of wages, only with a little advance; as, for instance, a free mason, master carpenter, rough mason, bricklayer, master tiler, plumber, glazier, carver, or joiner, was allowed from Easter to Michaelmas to take 6*d.* a day, without meat and drink; or with meat and drink, 4*d.*; from Michaelmas to Easter, to abate 1*d.* A master having under him six men was allowed 1*d.* a day extra. The following were the wages of harvest-men in England at different periods:

Years.	Per Diem. s.	d.	Years.	Per Diem. s.	d.
1350	0	1	1741	0	10
1460	0	2	1770	1	0
1568	0	4	1760	1	4
1632	0	6	1794	1	6
1688	0	8	1800	2	0
1716	0	9	1840	3	0

Wake, the track of a ship which she leaves in the water. A vessel directly astern of another is said to be in her wake.

Wales, a peninsular portion of South Britain, on its west side, between lat. 51° 23′ and 53° 26′ N., and long. 2° 41′ and 5° 17′ W., having on the east the English counties of Chester, Salop, Hereford, and Monmouth, and on other sides the Bristol and St. George's channels and the Irish Sea.

Agriculture is extremely backward. Barley and oats are the chief grain raised; the culture of potatoes and turnips is extending. Farms mostly small, averaging in South Wales only from 50 to 60 acres, where, however, the tenantry are far better lodged than in the north. Large numbers of cattle are reared for the English markets. The number of sheep is estimated at 1,2[illegible],000, and the annual produce of wool at 10,000 packs. A hardy small breed of ponies is reared, especially in the counties of Montgomery and Merioneth. The mining interest is highly important. Iron, copper, lead, silver, slate, limestone, and in the south large quantities of coal are raised, which last product is extensively exported, and used in large quantities on the spot for smelting both British and foreign ores. In 1840 South Wales had 132 furnaces in operation, consuming annually about 1,436,000 tons of coal, and producing 505,000 tons of iron; and North Wales 12 furnaces, consuming 110,000 tons of coal, and producing 26,500 tons of iron. The principal iron-works are at and around Merthyr-Tydvil, Tredegar, Aberdare, and Rhuabon; at Swansea large quantities of American and other copper ores are reduced. Manufactures of woolen fabrics, especially of flannel and hosiery, are very generally pursued in the cottages of the peasantry, particularly in North Wales, where Welshpool is the chief mart for these products. The cotton manufacture has extended into some of the northern counties; and in 1847, 1860 hands were employed in woolen, cotton, and silk factories. A manufactory of slate articles exists at Bangor. Trade principally in the export of mineral produce, cattle, and woolen goods. Principal ports, Swansea, Newport, Cardiff, Caernarvon, and Beaumaris; besides which Holyhead is a chief packet station for communication with Ireland, and Milford is a naval port, and the seat of a government dock-yard. —*See articles* ENGLAND and GREAT BRITAIN.

Walnuts, the fruit of the *Juglans*, or walnut-tree, of which there are several varieties. The walnut is a large, handsome tree, with strong spreading branches. The fruit is a pretty, large, smooth, ovate nut, containing an oily kernel divided into four lobes. The nut has been always held in high estimation; it was called by the Romans *Jovis glans*, the acorn or mast of Jove, and hence the name of the tree.

The walnut-tree is indigenous to Persia and the countries bordering on the Caspian Sea. Previously to the very general introduction of mahogany, the wood of the walnut-tree was generally, and is yet extensively used in making of furniture. It is much used by turners, and is superior to every other sort of wood for the mounting of guns. Great numbers of walnut-trees are annually consumed in the Haute Vienne and other departments of France, in the manufacture of the wooden shoes or clogs used by the peasantry. The nuts are either gathered when ripe, being served up at desserts without any preparation, or they are plucked green and pickled.—POIRET, *Histoire Philosophique des Plantes*, tome vii.; REES' *Cyclopædia*, etc.

Wampum (from *Wampi* or *Wompi*, signifying, in the Massachusetts Indian language, *white*, the color of the shells most frequent in wampum belts), shells, or strings of shells, used by the American Indians as money. These, when united, form a broad belt, which is worn as an ornament or girdle. It is sometimes called *wampumpague*, or *wampeague*, or *wampampeague*, of which *wampum* seems to be a contraction.

Wanghees, sometimes called Japan canes, a species of cane imported from China. They should be chosen pliable, tough, round, and taper; the knots at regular distances from each other, and the heavier the better. Such as are dark-colored, badly glazed, and light, should be rejected.—MILBURN'S *Orient. Com. See article* CANE.

Warehousing System. By this system is meant the provisions made for lodging imported articles in public warehouses at a reasonable rent, without payment of the duties on importation till they be withdrawn for home consumption. If re-exported, no duty is claimed.

Expediency and Origin of the Warehousing System — It is laid down by Dr. Smith, in one of his justly celebrated maxims on the subject of taxation, that "every tax ought to be levied at the time and in the manner that is most likely to be convenient for the contributor to pay it."—*Wealth of Nations*. No one can doubt the soundness of this maxim; and yet it was very strangely neglected, down to 1803, in the management of the customs. Previously to this period, the duties on most goods imported had either to be paid at the moment of their importation, or a *bond*, with sufficient security for their future payment, had to be given to the revenue officers. The hardship and inconvenience of such a system is obvious. It was often very difficult to find sureties; and the merchant, in order to raise funds to pay the duties, was frequently reduced to the ruinous necessity of selling his goods immediately on their arrival, when, perhaps, the market was already glutted. Neither was this the only inconvenience that grew out of this system; for the duties having to be paid all at once, and not by degrees as the goods were sold for consumption, their price was raised by the amount of the profit on the capital advanced in payment of the duties; competition, too, was diminished in consequence of the greater command of funds required to carry on trade under such disadvantages; and a few rich individuals were enabled to monopolize the importation of those commodities on which heavy duties were payable. The system had, besides, an obvious tendency to discourage the carrying trade. It prevented this country from becoming the entrepôt for

foreign products, by hindering the importation of such as were not immediately wanted for home consumption; and thus tended to lessen the resort of foreigners to our markets, inasmuch as it rendered it difficult, or rather impossible, for them to complete an assorted cargo. And in addition to all these circumstances, the difficulty of granting a really equivalent drawback to the exporters of such commodities as had paid duty, opened a door for the commission of every species of fraud.

Warehouses, in which unclaimed and bonded merchandise shall be stored, will hereafter be known and designated as follows:

1st. Stores owned by the United States, or hired by them, prior to the date of these instructions, the leases of which have not yet expired or been canceled. All unclaimed goods must be stored in these stores when there are such at the port available for the purpose; and they are also to be used for the storage of other foreign merchandise, as hereinafter provided. All the labor in these stores shall be performed under the superintendence of the officer in charge, at the expense of the owner or importer of the merchandise; and all charges for storage, labor, and other expenses accruing on the goods, shall not exceed the regular rates for such objects at the port.

Stores of this description will be known and designated as Class 1.

2d. Stores in the possession of an importer and in his sole occupancy, which he may desire to place under the customs lock, in addition to his own lock (said locks to be of a different character), for the purpose of storing dutiable merchandise imported by himself only.

The entire store shall be appropriated to this sole purpose, under the regulations hereinafter provided; and for the time of the customs officer necessarily required in attendance at such store, the proprietor shall pay monthly to the collector of the port a sum equivalent to the pay of such officer. All the labor on goods so stored must be performed by the importer at his own expense, under the supervision of the officer in charge. Before any importer shall be permitted to use his own store for such purpose, he shall enter into a bond in such sum and with such securities as may be approved by the collector and this Department.

Stores of this description will be known and designated as Class 2.

3d. Stores in the occupancy of persons desiring to engage in the business of storing dutiable merchandise under the warehouse acts, and of performing the labor on such goods, in what is usually termed the storage business. The labor performed on the goods in stores of this class shall be under the control and expense of the owner or occupant; and the store shall be subject to such further rules as this Department may deem necessary, from time to time, for the safe-keeping of the goods and protection of the revenue, and to be discontinued as a bonded warehouse when the public interest may require. All arrangements as regards the rates of storage and the price of labor in these stores must be made between the importer and the owner or occupant of the store, and all amounts due for storage and labor must be collected by the latter, the collector looking only to the safe custody of the merchandise for the security of the revenue.

Before any person shall be permitted to open a store of this description, he shall enter into bond in such sum and with such securities as may be approved by the collector and this Department.

Unclaimed and seized goods may be stored in this class of stores on the order of the collector; and the proprietor or occupant shall look to the goods for the storage and charges, at the usual and customary rates, and shall be liable for the safe-keeping of the merchandise as for other storage. The collector shall give no permit to withdraw such goods without payment of the legal duties and charges; and, if sold, shall cause the storage and charges to be paid out of the proceeds of the sale.

Stores of this description will be known and designated as Class 3.

These stores shall be placed in charge of an officer of the customs, under the separate and different locks of the custom-house, and the owner or occupant acting as agent for the importers warehousing their merchandise in such stores. Should the amount of business at any one store require, in the judgment of the collector, the services of more than one officer, the owner or occupant shall be required to pay monthly such additional sum as will be equivalent to the salary of such officer or officers.

4th. For the storage of wood, coal, mahogany, dyewoods, lumber, molasses, sugar in hogsheads and tierces, railroad, pig, and bar iron, anchors, chain cables, and other articles specially authorized, yards or sheds of suitable construction may be used, to be bonded in the manner herein before prescribed. These yards must be inclosed by substantial fences not less than twelve feet in height, with gates provided with suitable bars and other fastenings, so as to admit of being secured by customs locks, and must be used exclusively for the storage of the above-named merchandise, duly entered for warehousing by the owner or occupant, or for the purpose of general storage of warehoused goods; the purpose to be set forth in the application, and the bond to be taken accordingly, as in case of warehouses of the second and third classes. The sheds must be substantially constructed, with or without flooring or roofing, as this Department and the collector may require; and, when required, the roof or exterior shall be covered with slate or metal. The doors and other openings must be provided with suitable fastenings, and be secured by the different and separate locks of the occupant and the customs; and the occupant shall provide a proper room for the use of the officer in charge. Collectors of the customs may order unclaimed and seized merchandise of the description authorized (when duly entered), to be deposited in sheds or yards, to be placed in such sheds or yards under the same regulations and conditions as are provided for the deposit of unclaimed or seized goods in warehouses of Class No. 3.

Sheds and yards of the foregoing description will be designated and known as Class 4.

The owner or lessee of a store occupied for general business purposes may use the cellar or vault of such store, under the conditions hereinafter prescribed, as a bonded warehouse of Class 2, for the storage of wines and distilled spirits only, and exclusively of his own importation.

The entire cellar or vault shall be appropriated to this purpose, and shall have no opening or entrance except the one from the street, on which the separate and different locks of the customs and the owner or proprietor of the cellar shall be placed; and a bond shall be entered into by the owner according to the foregoing form of stores of Class 2.—For articles on Warehousing and Dock System, *see* HUNT'S *Merchants' Magazine*, vii., xiv., xv.; DE BOW'S *Rev.*, l.; NILES'S *Register*, xxxv., xxxvi.

Warp, in weaving, the *longitudinal* threads of a woven fabric; they are crossed by the *transverse* threads, or *woof*. *Warp*, a rope or hawser employed occasionally to remove a ship from one place to another in a port, road, or river. Hence *to warp* is to change the position of a ship by pulling her from one part of a harbor, etc., to some other, by means of warps, which are attached to buoys, to other ships, to anchors sunk in the bottom, or to certain stations upon the shore, as posts, rings, trees, etc.

Washington, the capital of the United States of America, is situated on the left bank of the Potomac, at its confluence with the Anacostia, and at the termination of the Washington branch of the Baltimore and

Ohio Railroad. Lat. (of the National Observatory) 38° 58′ 39′′·3 N., long. 77° 2′ 48′′ W. from Greenwich, England. It is 295 miles from the ocean by the course of the river, 38 from Baltimore, and 225 from New York. The population in 1800 was 3210; in 1810, 8208; in 1820, 13,247; in 1830, 18,827; in 1840, 23,364; in 1850, 45,000; and in 1854, 46,000.

The *Navy Yard* is situated on the "Anacostia," a branch of the Potomac River, at the southern termination of Eighth Street, east. It covers an area of about twenty acres, and is inclosed by a substantial brick wall, having a principal entrance at the foot of Eighth Street, through a handsome arched gateway. The mechanical operations of this establishment are various and extensive, and the skill of the workmen and the excellence of the materials employed have been satisfactorily tested in every sea. Anchors of various sizes, for the naval service, are manufactured by the use of two heavy steam-hammers (termed the "Nasmyth Hammer"), one of which weighs 8600 lbs., the other 2240 lbs. The forges for this work are kept in blast by a fan-blower attached to the steam-engine in the machinist's department. There is also in operation, in the anchor department, a direct action steam-hammer (called the "Kirk Hammer"), in connection with a blast furnace for working up into looms and bars all the scrap iron of the navy. The massive chain cables are made in another shop, which is provided with a powerful hydrostatic press for testing their strength. —*See article* DISTRICT of COLUMBIA for commerce of Washington.

Washington, a territory of the United States of America, lies between lat. 45° 25′ N., long. 108° 30′ and 124° 30′ W. Area, 113,821 square miles. It is between the Rocky Mountains on the east and the Pacific Ocean on the west, has Oregon on its south border, and the British possessions on the north. The entire population in 1850 was 1201; in 1854, estimated at 5000. It is divided into six counties, viz.: Clark, Lewis, Pacific, Pierce, Stevens, and Thurston. The country west of the Cascade Range is the only portion yet settled by a white population; it has a diversified surface, and the valleys bordering the streams have a luxuriant soil. The streams are small, the Cowlitz and other small streams entering the Columbia River on the south, the Chickeeles entering Gray's harbor on the west, and a number of other streams entering Puget Sound on the northwest. Puget Sound, Hood's Canal, and Admiralty Inlet abound with fine harbors. The Cascade Range crosses the territory from the south (at the Cascades, on the Columbia River) entirely across it to the north, rising in several peaks above the snow line, as Mount St. Helens (an active volcano), Mount Rainier, Mount Boker, etc. East of this range little is known of the capabilities of the country as an agricultural region, although there is no doubt of its being well adapted for stock raising. It is drained by the constituents of the Columbia, consisting of Kooskoosky and Peloose rivers of the Lewis Fork, and Spokane, Okonagan, Barrier, and Yakima rivers of Clark's Fork, and Cathalacades entering the Columbia River.

The Strait of *Juan de Fuca*, including the waters of Admiralty Inlet, Hood Canal, and Puget Sound, with the Archipelago of Arro up to the 49th parallel, were all surveyed by the United States Exploring Expedition. The whole is unsurpassed by any estuary in the world. They comprise many very fine harbors and safe anchorages, are entirely free from dangers, and cover an area of about 2000 square miles. The country by which these waters are surrounded is remarkably salubrious, and offers every advantage for the accommodations of a vast commercial and military marine, with conveniences for docks, and many sites for towns and cities, at all times well supplied with water, and capable of being provided with all needful supplies from the surrounding country, which is well adapted for agriculture. This strait is ninety-five miles in length; average width eleven miles (entrance eight miles in width); no dangers exist, and it may be safely navigated throughout. This territory was separated from Oregon in the year 1853, and constituted a separate territory.—HARPER'S *Gazetteer*.

Watches (Ger. *Uhren, Taschenuhren*; Fr. *Montres*; It. *Oriuoli da tasca, o da saccoccia*; Sp. *Relojes de faltriquera*; Russ. *Karmannüe tschasü*), portable machines, generally of a small size, and round, flat shape, that measure and indicate the successive portions of time, having for the most part their motions regulated by a spiral spring. When constructed on the most approved principles, and executed in the best manner, a watch is not only an exceedingly useful, but a most admirable piece of mechanism. It has exercised the genius and invention of the most skillful mechanics, as well as of some of the ablest mathematicians, for nearly three centuries. And, considering the smallness of its size, its capacity of being carried about uninjured in every variety of position, the number and complexity of its movements, and the extraordinary accuracy with which it represents the successive portions of time as determined by the rotation of the earth on its axis, we need not wonder at Dr. Paley having referred to it as a striking specimen of human ingenuity. Spring watches are constructed nearly on the same principle as pendulum clocks. Instead of the pendulum in the latter, a spring is used in the former, the isochronism of the vibrations of which corrects the unequal motions of the balance.

Historical Notice.—The invention of spring watches dates from about the middle of the 16th century, and has been warmly contested for Huygens and Hooke. The English writers generally incline in favor of the latter. Dr. Hutton says (*Mathematical Dictionary*, art. WATCH) that the words "Rob. Hooke invent., 1658," were inscribed on the dial plate of a watch presented to Charles II. in 1675. But Montucla affirms (*Histoire des Mathématiques*, tome ii. p. 413, ed. 1800) that Huygens made this "*belle découverte*" in 1656, and presented a spring watch to the states of Holland in 1657. Comparing these statements, it certainly appears that the claim of Huygens to the priority of the discovery is the better established of the two. We do not, however, believe that either of those distinguished persons owed, in this respect, any thing to the other. The probability seems to be, that the happy idea of employing a spring to regulate the motion of watches occurred to them both nearly at the same time.

Improvement of Watches.—Owing to the facility with which the longitude may be determined by the aid of accurately going watches, it is of great importance to have them made as perfect as possible. In this view, liberal premiums have been given to the makers of the best marine watches, or chronometers. In the reign of Queen Anne, Parliament offered a reward of £20,000 to any one who should make a watch, or other instrument capable of determining the longitude at sea, within certain limits. This magnificent premium was awarded, in 1764, to the celebrated John Harrison, for a marine watch, which, being tried in a voyage to Barbadoes, determined its longitude with even more than the required accuracy. Other premiums, though of inferior amount, were subsequently given to Messrs. Mudge, Arnold, Earnshaw, etc. Since 1822, two prizes, one of £300 and one of £200, have been annually given to the makers of the two chronometers adjudged to be the best, after having been submitted to a twelve-month's trial at the Royal Observatory at Greenwich. And to such perfection has the manufacture attained, that some of the chronometers employed by navigators, though carried into the most opposite climates, have not varied to the extent of two seconds in their mean rate of going throughout the year.

Watch Manufacture.—The watch-making business is largely carried on in London; the artists of which have attained to a high degree of excellence in this de-

partment. There may be about 14,000 gold and 85,000 silver watches annually assayed at Goldsmiths' Hall, London (JACOB *on the Precious Metals*, vol. ii. p. 418), the aggregate value of which is, probably, not much under £600,000. The manufacture is also carried on to a considerable extent at Liverpool, Coventry, Edinburgh, etc. Watch movements used to be extensively manufactured at Prescot, in Lancashire; but latterly, we believe, the manufacturers have been withdrawing to Liverpool. On the Continent watches are principally manufactured in Paris, Geneva, and in Neufchâtel. Some of the French and Swiss watches, particularly the latter, are excellent; but, generally speaking, they are slight, and inferior to those made in London. Paris and Geneva watches are largely exported to foreign countries, and are every where in high estimation, particularly among the ladies. Watches impressed with any mark or stamp, appearing to be or to represent any legal British assay mark or stamp, or purporting by any mark or appearance to be of the manufacture of the United Kingdom, or not having the name and place of abode of some foreign maker abroad visible on the frame and also on the face, or not being in a complete state, with all the parts properly fixed in the case, may not be imported into the United Kingdom, even for the purpose of being warehoused. —3 and 4 *Will. IV.*, c. 52, § 58.

Watches in China.—Large numbers of European watches are imported into China; and it may be worth mentioning, as a curious instance of the diversity of tastes, that the Chinese, as well as most other Eastern nations, who can afford it, uniformly *wear watches in pairs!* This sort of extravagance is not, however, confined to watches, but extends to a variety of other articles. Shawls, for example, are invariably worn in India in pairs of exactly the same pattern; and it is hardly possible, indeed, to find a native dealer who will sell a single shawl.

Watches and Clocks.—Out of thirty-one clock manufactories in New England in 1852, four have been destroyed by fire, nine have stopped by failure, and five have stopped manufacturing on account of small profits. There are still thirteen factories making clocks, but only six of them are running full time, and with a full complement of hands. These six will produce about 95,000 clocks this year. The remaining seven factories will make about 48,000 clocks, so that the total production of clocks this year will not exceed 143,000.

The Jerome Manufacturing Company, in 1853 and 1854, produced each year 444,000 clocks. Thus they must have produced more than an average of one clock per minute. The factory of J. C. Brown, during 1851 and 1852, issued from 80,000 to 100,000 clocks annually, making a total from the two establishments of over 500,000 clocks each year. The Ansonia Company manufactured about 150,000 last year. Thus it will be seen that all the thirteen factories now running will make hardly one-fourth of what was produced by three of the large factories now standing still. The question naturally arises, What shall we do for low-priced clocks in the future? There is still a large amount of fancy clocks on hand, but the wooden-frame "ogee" and "sharp-top Gothic" clocks are not being made, and there is comparatively none in the market. The wooden-frame clocks can not be made for the prices that they have been sold at. It is estimated that nearly half a million of dollars have been lost in selling clocks under the cost within the last three years. The clocks for exportation have amounted to about one million of dollars annually, which aided us in the exchanges with the old country. As an instance, we know one house that imports shawls, linen, collars, and lace goods from Scotland, and makes its exchange in clocks. But if they were to send a bill of exchange it would cost them from 7 to 8 per cent.; but sending out clocks at 5 per cent. profit or more, it makes them at least 13 per cent. on the clocks, which is a paying business. There are doubtless many similar agents in the exportation of the article, which is an advantage to ourselves; and for this reason we desire to see it fostered, and again take its place among the industrial products of our country.—*See* HUNT'S *Merchants' Magazine*, January, 1857.

The following table shows the value of clocks imported into and exported from the United States during the year ending June 30, 1855, derived from the annual report of the Secretary of the Treasury:

Countries.	Imported.	Exported.
Hamburg	$684	....
Bremen	1,481	....
Belgium	163	....
England	15,992	$4200
Ireland	50	....
Canada	5	1593
France	50,577	483
Papal States	17	....
Mexico	141	....
New Granada	4	....
Venezuela	175	....
China	59	....
Total	$69,258	$6281

IMPORTS OF WATCHES AND PARTS OF WATCHES INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whence imported.	Watches and parts of.	Watch Crystals.	
	Value.	Gross.	Value.
Russian Poss. in N. Amer.	$1,620	....	....
Hamburg	1,272	....	....
Bremen	193,029	....	....
Holland	66	....	....
Belgium	15	....	....
England	2,463,593	16,430	$28,178
Scotland	5,718	....	....
Canada	300	....	....
France	1,155,654	1,390	3,992
Cuba	50	....	....
New Granada	2,118	....	....
Venezuela	140	....	....
Brazil	1,455	....	....
Total, 1856-'57	$3,823,039	17,820	$32,170

Water. It may be thought unnecessary, perhaps, to say any thing in a work of this sort with respect to a fluid so well known and so abundant. But, besides being an indispensable necessary of life, water is, in most large cities, an *important commercial article.* It is in the latter point of view principally that we mean to consider it. Inasmuch, however, as the mode of supplying different places with water, and its price, necessarily vary in every possible way, we shall limit our remarks on these subjects to the metropolis only. The few remarks we intend to offer of a general nature will apply indifferently to any populous place, the supply of which with water occasions a considerable expense.

Quality of Water.—Dr. Ure has made the following statements with respect to the quality of water: "Water," says he, "is a very transparent fluid, possessing a moderate degree of activity with regard to organized substances, which renders it friendly to animal and vegetable life, for both which it is, indeed, indispensably necessary. Hence it acts but slightly on the organs of sense, and is therefore said to have neither taste nor smell. It appears to possess considerable elasticity, and yields in a perceptible degree to the pressure of air in the condensing machine. Native water is seldom, if ever, found perfectly pure. The waters that flow within or upon the surface of the earth contain various earthy, saline, metallic, vegetable, or animal particles, according to the substances over or through which they pass. Rain and snow water are much purer than these, although they also contain whatever floats in the air, or has been exhaled along with the watery vapors.

"The purity of water may be known by the following marks or properties of pure water: 1. Pure water is lighter than water that is not pure. 2. Pure water is more fluid than water that is not pure. 3. It has no color, smell, or taste. 4. It wets more easily than the

waters containing metallic and earthy salts, called hard waters, and feels softer when touched. 5. Soap, or a solution of soap in alcohol, mixes easily and perfectly with it. 6. It is not rendered turbid by adding to it a solution of gold in *aqua regia*; or a solution of silver, or of lead, or of mercury, in nitric acid; or a solution of acetate of lead in water.

"Water was, till modern times, considered as an elementary or simple substance; but it is now ascertained to be a compound of oxygen and hydrogen."

To evaporate water enough annually from the ocean to cover the earth, on the average, five feet deep with rain; to transport it from one zone to another; and to precipitate it in the right places, at suitable times and in the proportions due, is one of the offices of the great atmospherical machine. This water is evaporated principally from the torrid zone. [illegible] come thence, we shall have encircling the earth a belt of ocean three thousand miles in breadth from which this atmosphere evaporates a layer of water sixteen feet in depth. And to hoist up as high as the clouds, and lower down again all the water in a lake sixteen feet deep, and three thousand miles broad, and twenty-four thousand long, is the yearly business of this invisible machinery. What a powerful engine is the atmosphere! and how nicely adjusted must be all the cogs, and wheels, and springs, and *compensations* of this exquisite piece of machinery, that it never wears out nor breaks down, nor fails to do its work at the right time and in the right way!

In his annual report to the society (*Transactions of the Bombay Geographical Society* from May, 1849, to August, 1850, vol. ix.), Dr. Buist, the secretary, states, on the authority of Mr. Laidly, the evaporation at Calcutta to be "about fifteen feet annually; that between the Cape and Calcutta it averages, in October and November, nearly three-fourths of an inch daily; between 10° and 20°, in the Bay of Bengal, it was found to exceed an inch daily. Supposing this to be double the average throughout the year, we should," continues the doctor, "have eighteen feet of evaporation annually."—Maury, *Phys. Geog.*

Water for Ships.—Various improvements have been made in the art of preserving water on board ships. Of these the principal are the charring the inside of the casks in which the water is kept, and the substitution of iron tanks for casks. The latter, being made of the required shape, may be conveniently stowed into any part of the ship. In men-of-war the iron tanks serve as ballast, the water being brought up by a forcing-pump. Water is found to preserve better in them than in any other sort of vessel. Drip-stones may be employed with much advantage in the purification of water. When water is taken on board from a river into which the tide flows, it should, of course, be raised at low ebb.—*See article* Aqueduct for an account of the supply of water in New York given by the Croton Aqueduct. *See* articles Gulf Stream, Harbors, Ocean, Tides, etc.

Water-clocks. The first instruments used to measure the lapse of time, independently of the sunshine, were *clepsydræ*, or water-clocks. These were most probably vessels of water, with a small hole through the bottom; through this hole the water ran out in a certain time, possibly an hour; after which the vessel was again filled, to be emptied as before. This invention was a manifest improvement on the old sun-dials, whose perpendicular gnomon gave hours of different length at the various seasons of the year. Something similar to the hour-glass was occasionally used; and Alfred the Great, probably ignorant of these methods, adopted the burning of a taper as a measure of time.—Haydn.

Water-line, the boundary of any horizontal section of the bottom of a ship. The uppermost one is called the load water-line; the lowest the light water-line.

Water-logged, a nautical term, denoting the state of a ship when a quantity of water having been received into the hold by leaking, etc., she has in a great measure lost her buoyancy, and yields to the effect of every wave passing over the deck.

Water-mills, used for grinding corn, invented by Belisarius, the general of Justinian, while besieged in Rome by the Goths, A.D. 555. The ancients parched their corn, and pounded it in mortars. Afterward mills were invented, which were turned by men and beasts with great labor; and yet Pliny mentions wheels turned by water.—Haydn.

Water-ways, strong pieces of wood extending round the ship, at the junction of the decks with the sides, to carry off the water.

Wave. The common cause of waves is the friction of the wind upon the surface of the water. Little ridges or elevations first appear, which, by continuance of the force, gradually increase until they become rolling mountains, where the winds sweep over a great extent of water. In rounding the Cape of Good Hope, waves, or rather a swell, are met with so vast, that a few ridges and a few depressions occupy the extent of a mile. But these are not so troublesome to ships as a short swell with more perpendicular waves. The slope in the former is so gentle that the rising and falling are scarcely felt, while the latter, by the sudden plunging of the vessel, is often destructive. The velocity of waves has relation to their magnitude. The large waves just mentioned proceed at the rate of from thirty to forty miles an hour. It is a common error to suppose that the water itself advances with the speed of the wave; but, in fact, the form only advances: the substance, with the exception of a little spray, remains rising and falling in the same place with the regularity of a pendulum. When a wave, however, reaches a shallow bank or beach, the water becomes really progressive; because then, as it can not sink directly down, it falls over forward. No wave rises more than ten feet above the level of the water, which, with the ten feet of descent, gives twenty feet for the whole height of the wave above the next depression. A wave coming against any obstacle may be dashed up to a much greater elevation.—E. A. See *American Journal of Science*, lx. (W. Scoresby). *See* also articles Ocean, Tides, Water, etc.

Wax (Ger. *Wachs*; Fr. *Cire*; It. and Sp. *Cera*; Russ. *Wosk*), a vegetable product. Several plants contain wax in such abundance as to make it worth while to extract it from them. But all that is known in commerce consists of beeswax. The honey is first pressed from the comb, and the wax is then melted into cakes. It has a slight odor of honey, is insipid, and of a bright yellow hue. It is brittle, yet soft, and somewhat unctuous to the touch. It is often adulterated with earth, pea meal, resin, etc. The presence of the former may be suspected when the cake is very brittle, or when its color inclines more to gray than to yellow; and the presence of resin may be suspected when the fracture appears smooth and shining, instead of being granulated. Wax, when bleached or purified, is white, perfectly insipid, inodorous, and somewhat translucent; it is harder, less unctuous to the touch, heavier, and less fusible than yellow wax. It is sometimes adulterated with the white oxyd of lead to increase its weight, with white tallow, and with potato starch. The first is detected by melting the wax in water, when the oxyd falls to the bottom; the presence of tallow is indicated by the wax being of a dull opaque white, and wanting the transparency which distinguishes pure wax; and starch may be detected by applying sulphuric acid to the suspected wax, as the acid carbonizes the starch, without acting on the wax.—Thomson's *Chemistry*, and Dr. A. T. Thomson's *Dispensatory*.

Beeswax is prepared by draining and washing the honey-comb, which is then melted in boiling water,

strained, and cast into cakes. English and foreign wax are found in the market; the latter being chiefly imported from the Baltic, the Levant, and the coast of Barbary. Fresh wax has a peculiar honey-like odor: its specific gravity is .98. At about 150° it fuses, and at a high temperature volatilizes, and burns with a bright white flame. It is bleached by being exposed in thin slices or ribbons to light, air, and moisture, or more rapidly by the action of chlorine; but in the latter case it does not answer for the manufacture of candles, which is one of its principal applications. Wax candles are made by suspending the wicks upon a hoop over the cauldron of melted wax, which is successively poured over them from a ladle till they have acquired the proper size, so that the candle consists of a series of layers of wax; the upper end is then shaped, and the lower cut off. Attempts have been made to cast wax candles in moulds, but when thus made they burn irregularly. Bleached or white wax is generally adulterated with more or less spermaceti, and sold at different prices accordingly; in this case it has not the peculiar lustre of pure wax, and is softer and more fusible. It is also largely adulterated with stearin or stearic acid, which is detected by the odor of fat or tallow which it evolves when highly heated, and by its crumbly texture; it may also be separated to a certain extent by ether or alcohol. Wax is insoluble in water, and scarcely acted upon by the acids, so that it forms a good lute or cement: boiling alcohol and ether act partially upon it, and deposit the portion which they had dissolved, on cooling. Some varieties of vegetable wax appear to contain two distinct principles, which Dr. John has termed *cerin* and *myricin*; the former soluble, and the latter insoluble, in alcohol. Heated with the fixed alkalies, wax forms a difficultly soluble soap.

EXPORTS OF WAX FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Pounds.	Value.
Bremen	10,492	$3,112
Holland	7,499	1,889
Belgium	18,437	5,338
England	81,598	22,100
Gibraltar	1,046	303
Malta	1,405	400
Canada	125	8
France on the Atlantic	105,277	30,362
France on the Mediterranean	5,000	1,666
Spain on the Atlantic	8,475	2,367
Cuba	11,000	2,906
Portugal	600	171
Austrian Possessions in Italy	1,967	590
New Granada	12,737	5,179
Venezuela	4,906	1,772
Brazil	38,736	11,508
Peru	5,120	2,048
Sandwich Islands	48	14
China	1,000	350
Total, 1856-'57	315,378	$91,983

Way, the sea term for progress. A ship in progress is said to have *way* upon her; when stationary, to have no *way*.

Wealth. This is a relative term; for as there is only a certain amount of property in a country, so the possession of a large share by one man is the poverty of others. The instances of wealth in the early ages are many and most extraordinary. The mightiest conflagration of wealth on record is that of Sardanapulus, where riches amounting to one thousand four hundred millions sterling were destroyed.—ATHENÆUS. Cæcilius Isidorus died at Rome possessed of 4116 slaves, 3600 oxen, 200,000 head of other cattle, and money equal to three millions sterling, 8 B.C.—*Univ. Hist. See* articles BANKS, COINS, GOLD MONEY, etc.

Wear, to put the ship on the other tack by turning her round with her stern to the wind.

Wearing Apparel, generally considered to include only the clothes and personal property actually worn upon the person, and as such it is admitted free of duty into the United States.

EXPORTS OF WEARING APPAREL FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Value.
Asiatic Russia	$2,231
Russian Possessions in North America	8,433
Danish West Indies	553
Hamburg	3,324
Bremen	5,003
Holland	180
Belgium	1,250
Eastland	1,618
Sweden	200
Malta	350
Canada	47,121
Other British North American Possessions	14,278
British West Indies	179
British Honduras	52
British Guiana	306
British Australia	6,501
British East Indies	300
France on the Atlantic	5,778
France on the Mediterranean	600
Spain on the Atlantic	100
Cuba	4,382
Porto Rico	440
Sardinia	402
Two Sicilies	150
Turkey in Asia	164
Ports in Africa	1,681
Hayti	782
Mexico	[illegible]
Central Republic	[illegible]
New Granada	[illegible]
Venezuela	[illegible]
Brazil	[illegible]
Argentine Republic	1,838
Chili	[illegible]
Peru	[illegible]
Ecuador	[illegible]
Sandwich Islands	[illegible]
Other Islands in the Pacific	[illegible]
China	[illegible]
Whale-fisheries	[illegible]
Total	$33[illegible]42

Weaving, the art of forming cloth in a loom by the union or intertexture of threads. The art of weaving appears to have been practiced in China from the earliest antiquity—more than a thousand years before it was known in Europe or Asia. Poets assign the art to the spider. Women originally spun, wove, and dyed; and the origin of these arts is ascribed, by ancient nations, to different women as women's arts. The Egyptians ascribed it to Isis; the Greeks to Minerva; and the Peruvians to the wife of Manco Capac. In most Eastern countries, the employment of weaving is still performed by the women. Our Saviour's vest, or coat, had not any seam, being woven from the top throughout, in one whole piece. Perhaps, says Dr. Doddridge, this curious garment might be the work and present of some pious women who attended him, and ministered unto him of their substance, *Luke*, viii. 3. The print of a frame for weaving such a vest may be seen in CALMET'S *Dictionary*, under the word *Vestments*. Two weavers from Brabant settled at York, where they manufactured woolens, which, says King Edward, "may prove of great benefit to us and our subjects," 1331. Flemish dyers, cloth-drapers, linen-makers, silk-throwsters, etc., settled at Canterbury, Norwich, Colchester, Southampton, and other places, on account of the Duke of Alva's persecution, 1567.—*See articles* COTTON MANUFACTURES, WOOLEN MANUFACTURES, and MANUFACTURES.

Weights and Measures. Weights are used to ascertain the gravity of bodies—a quality depending partly on their magnitude, and partly on their density. Measures are used to determine the magnitude of bodies, or the space which they occupy.—For an account of the weights and measures used in foreign countries, see articles under these heads.

Weights and measures, and the stamping of gold and silver money, were invented by Phydon, tyrant of Argos, 895 B.C. *et seq.*—*Arundelian Marbles.* Weights were originally taken from grains of wheat, the lowest being still called a grain.—CHALMERS. The standard measure was originally kept at Winchester by the law of King Edgar, A.D. 972. Standards of weights and

measures were provided for the whole kingdom of England by the sheriffs of London, 8 Richard I., 1197. A public weighing-machine was set up in London, and all commodities ordered to be weighed by the city officer, called the weigh-master, who was to do justice between buyer and seller, statute 3d Edward II., 1309. —STOWE. The first statute, directing the use of avoirdupois weight, is that of 24 Henry VIII., 1532.—*Philosophical Transactions*, vol. 65, art. 3. The French adopt the metre of 3·28084, or the 10-millionth part of the distance from the pole to the equator, as the standard of measure; and the kilogram, equal to 2255 lbs. avoirdupois, as the standard of weight.—HAYDN.

Neither the magnitude nor the weight of any body can be determined, unless by comparing it with some other body selected as a standard. It is impossible, indeed, to form any idea in respect of magnitude or weight, except in relation to some definite space or weight with which we are acquainted. We say that one article weighs 1 lb., another 2 lbs., a third 3, and so on; meaning not only that these weights are to each other as 1, 2, 3, etc., but also that the weight or specific gravity of the first is equal to the known and determinate weight denominated a lb., that the second is equal to 2 lbs., and so on.

Standards of Weight and Measure.—Standards of lineal measure must have been fixed upon at the earliest period, and appear to have consisted principally of parts of the human body—as the cubit, or length of the arm from the elbow to the tip of the middle finger; the foot; the *ulna*, arm, or yard; the span; the digit, or finger; the fathom, or space from the extremity of one hand to that of the other, when they are both extended in opposite directions; the pace, etc. Large spaces were estimated by measures formed out of multiples of the smaller ones; and sometimes in day's journeys, or by the space which it was supposed an ordinary man might travel in a day, using a reasonable degree of diligence. But lineal measures can only be used to determine the magnitude of solid bodies; the magnitude of bodies in a liquid or fluid state has to be determined by what are called measures of capacity. It is probable that, in the infancy of society, shells, or other hollow instruments afforded by nature, were used as standards. But the inaccuracy of the conclusions drawn from referring to them must soon have become obvious; and it early occurred that to obtain an accurate measure of liquids nothing more was necessary than to constitute an artificial one, the dimensions, and consequently the capacity, of which should be determined by the lineal measures previously adopted. The determination of the gravity or weight of different bodies supposes the invention of the balance. Nothing is known of the steps which led to its introduction; but it was used in the remotest antiquity. It seems probable that, at first, cubes of some common lineal measure, as a foot, or the fraction of a foot, formed of copper, iron, or some other metal, were used as standards of weight. When the standard was selected, if it was desired to ascertain the specific gravity or weight of any given article, all that was necessary was to put it into one of the scales of the balance, and as many cubes or parts of cubes on the other as might be necessary to counterpoise it. Weights have, however, been frequently derived from grains of corn. Hence in this, and in some other European countries, the lowest denomination of weight is a *grain*; and 32 of these grains are directed, by the ancient statute called *Compositio Mensurarum*, to compose a pennyweight, whereof 20 make an ounce, 12 ounces a pound, and so upward.

In every country in which commercial transactions are extensively carried on, the importance of having weights and measures determined by some fixed standard becomes obvious to every one. But as the size of different parts of the human body differs in different individuals, it is necessary to select some durable article —a metallic rod, for example—of the length of an ordinary cubit, foot, etc., and to make it a standard with which all the other cubits, feet, etc., used in mensuration shall correspond. These standards have always been preserved with the greatest care: at Rome they were kept in the temple of Jupiter, and among the Jews their custody was intrusted to the family of Aaron.—PAUCTON, *Métrologie*, p. 223. The principal standards used in the ancient world were the cubit of the Jews, from which their other measures of length, capacity, and weight were derived; and the foot of the Greeks and Romans. In England, ancient historians tell us that a new, or rather a revived, standard of lineal measure was introduced by Henry I., who ordered that the ulna, or ancient ell, which corresponds to the modern yard, should be made of the exact length of his own arm, and that the other measures of length should be raised upon it. This standard has been maintained, without any sensible variation. In 1742 the Royal Society had a yard made, from a very careful comparison of the standard ells or yards of the reigns of Henry VII. and Elizabeth kept at the Exchequer. In 1758 an exact copy was made of the Royal Society's yard; and this copy having been examined by a committee of the House of Commons, and reported by them to be equal to the standard yard, it was marked as such; and this identical yard is declared, by the act 5 Geo. IV., c. 74, to be the standard of lineal measure in Great Britain.

Uniformity of Weights and Measures.—The confusion and inconvenience attending the use of weights and measures of the same denomination, but of different magnitudes, was early remarked; and there is hardly a country in which efforts have not been made to reduce them to the same uniform system. Numerous efforts have been made having this object in view, and enjoining the use of the same weights and measures, under very severe penalties. But, owing to the inveteracy of ancient customs, and the difficulty of enforcing new regulations, these statutes have always had a very limited influence, and the greatest diversity has continued to prevail, except in lineal measures.—*See article* DECIMAL WEIGHTS and MEASURES, p. 510.

Invariable or Natural Standards.—As the standards adopted in most countries have been in a great degree arbitrary, it has long been the opinion of scientific men that, to construct a more perfect system of weights and measures, some natural and unchangeable basis should be adopted. It has, indeed, been contended that the measures of the ancients were deduced from a basis of this sort; and that the *stadium* always formed an aliquot part of the earth's circumference, that part differing among different nations and authors. But no learning or ingenuity can induce any one to believe what is so obviously incredible. The ancients had no means of determining the earth's circumference with any thing like the accuracy required to render it the great unit of a system of measures; and, what is equally decisive, no ancient author ever makes the slightest allusion to any such standard.

In modern times, however, the idea of seeking for a unit of weight and measure in some unchanging natural object has been practically carried into effect. The standards that have been usually proposed for this object have been some aliquot part of the quadrant of the meridian, or the length of a pendulum vibrating seconds in some given latitude. The standard of the second pendulum has been in so far adopted into the existing system of weights and measures established in Great Britain by the act of 1823, that the length of the standard yard, as compared with that of a pendulum vibrating seconds in the latitude of London, is specified in the act as follows:

"Whereas it has been ascertained by the commissioners appointed by his majesty to inquire into the subject of weights and measures, that the said yard hereby declared to be the imperial standard yard,

when compared with a pendulum vibrating seconds of mean time in the latitude of London, in a vacuum at the level of the sea, is in the proportion of 36 inches to 39 inches and 1393 ten-thousandth parts of an inch; be it therefore enacted and declared, that if at any time hereafter the said imperial standard yard shall be lost, or shall be in any manner destroyed, defaced, or otherwise injured, it shall and may be restored by making, under the direction of the Lord High Treasurer, or the commissioners of his majesty's treasury of the United Kingdom of Great Britain and Ireland, or any three of them for the time being, a new standard yard, bearing the same proportion to such pendulum as aforesaid, as the said imperial standard yard bears to such pendulum."

"The brass Troy pound weight procured by the minister of the United States at London in 1827," was declared by act of Congress, May 19, 1828, to be "the standard Troy pound of the Mint of the United States, conformably to which the coinage thereof shall be regulated." But no direct legislation appears to have taken place in the adoption of any general standards of weights and measures. On the 29th of May, 1830, a resolution passed the Senate directing a comparison to be made, under the authority of the Secretary of the Treasury, of the weights and measures used at the principal custom-houses. This comparison was intrusted to a gentleman in every way qualified to undertake it, the late Professor Hassler, and, as might have been expected, great discrepancies were found to exist. The mean, however, corresponded nearly with the standards, as fixed by the English laws previously to, and at the epoch of, the Declaration of American independence. Measures were then taken by the Secretary of the Treasury to have uniform and accurate weights and measures, and authentic standards, made under the immediate personal superintendence of Mr. Hassler, and supplied to all the custom-houses.

While this was being done, on the 14th June, 1836, a joint resolution of Congress directed the Secretary of the Treasury "to cause a complete set of all the weights and measures adopted as standards, and now either made or in the progress of manufacture, for the use of the several custom-houses, and for other purposes, to be delivered to the governor of each State in the Union, or such person as he may appoint, for the use of the States respectively, to the end that a uniform standard of weights and measures may be established throughout the United States;" and on the 7th July, 1838, a section in the "act (chap. 169) to provide for the support of the Military Academy of the United States" provided "that the Secretary of the Treasury cause to be made, under the superintendence of Mr. Hassler, one standard balance for each state; and, when completed, that he cause them to be delivered to the respective governors for the use of the respective States."

The distribution of these standard balances, weights and measures, to the several States has been in a great measure, if not entirely, accomplished. By an act of the Legislature of Massachusetts, April 23, 1847, chap. 242, it is provided that they shall be hereafter used as the sole authorized public standard of weights and measures of this Commonwealth.

The standards of weights and measures, made in part or in whole under the direction of Mr. Hassler, says Professor Bache, have the following origin:

1. The actual standard of length is a brass scale of 82 inches in length, prepared for the survey of the coast of the United States, by Troughton, of London, and deposited in the office of weights and measures at Washington.

2. The units of capacity measure are the gallon for liquid, and the bushel for dry measure. The gallon is a vessel containing 58372·2 grains (8·3389 lbs. avoirdupois) of the standard pound of distilled water at the temperature of maximum density of water, the vessel being weighed in air in which the barometer is 30 inches at 62° Fahrenheit.

The bushel is a measure containing 543391·89 standard grains (77·6274 lbs. avoirdupois) of distilled water, at the temperature of maximum density of water, and barometer 30 inches at 62° Fahrenheit.

The gallon is thus the wine gallon of 231 cubic inches nearly, and the bushel the Winchester bushel nearly.

3. The standard of weight was the Troy pound, copied by Captain Kater, in 1827, from the imperial Troy pound, for the United States Mint, and preserved in that establishment. The avoirdupois pound is derived from this; its weight being greater than that of the Troy pound in the proportion of 7000 to 5760; that is, the avoirdupois pound is equal in weight to 7000 grains Troy.

WEIGHT AND MEASURE SYSTEMS OF THE WORLD.

I. AFRICA.—*Abyssinia.*—*Weights:* 1 rotl or rottolo =12 wakea=120 dirhems. *Dry Capacity:* At Gondar, in the interior, 1 ardeb=10 madega; at Masuah, on the Red Sea, 1 ardeb = 24 madega. The other measures are those of Cairo and Alexandria. There is no knowledge of any local system.

Algeria.—Since the acquisition of this territory by France, the French metrical system is legalized, and may be expected gradually to come into use. As yet, however, the old usances are retained.

Weights: The theory appears to be as follows:

24	carob seed	= 1 mitkal or metical, the weight for gold, etc.
8	mitkal	= 1 wakea or ounce.
27	wakea	= 1 rotl khebir or market pound.
18	wakea	= 1 do. gheddari, for fruits.
16	wakea	= 1 do. attari, for spices.
14½	wakea	= 1 do. feuddi, for silver.

100 of each of these rotl = 1 quintar or cantaro corresponding.

The values of these denominations in the Dictionary are from reported observations, and fall below what would be derived otherwise by ascending from the actual mitkal. *Liquid Capacity* is measured by the khoullé and its fractions, ½, ¼, ⅛, etc.; as *Dry Capacity*, by the saa. *Length* is measured by two different pic, the Turkish and Arab; the latter of which is used for cloth. Each is subdivided by its rob, or *eighth* part. There are no itinerary or agrarian measures indigenous.

Cape of Good Hope (Colony).—English standards are legalized and used here. The same may be said, it is supposed, of the British colonies in Senegambia and at Sierra Leone, and the smaller establishments on the Gold Coast, as well as of St. Helena and their other islands in the Atlantic. As for Mauritius, on the other side of the continent, that retains still a considerable admixture of its former French usances.

Canary Islands.—In these islands, the originals of the weights and measures are from Spain; and the variations of the actual standards, which (except in the case of the vara) seem to be in the sense of degradation, are not more than occur in continental Spain itself.

Cape Verd Islands.—This Archipelago, as well as the continental territory under the same Governor-Generalship, uses the weights and measures of Portugal. The same may be said of the Madeira Group under the same domination; of the Portuguese possessions in Angola and Benguela; and of the colonies which dwell on the other ocean, along the coasts of Sofalà and Mozambique.

Egypt.—The difference between the weights and measures actually used in Cairo and Alexandria, the principal markets of Egypt, is so small as to indicate a common original. The great variety which has been stated to exist among the cantaros (or quintals), according to the various articles intended to be weighed, is probably the result of carelessness or fraud: nor is it clear, as yet, whether this variety affects the hundred-weight or the unitary pound. It may be supposed that the weights by which the articles of greatest consumption—the necessaries of life—are determined, were

the standard from which accident or negligence has deviated. *Weight:* 1 cantaro = 56 oke = 100 rotl = 14400 drachma. The rotl does not appear to be systematically subdivided. The harsela, applied to weighing silk, is evidently the oke, under a special name. *Dry Capacity:* 1 ardeb = 24 rob. *Length:* 1 gasab = 4 derah. The Turkish pic is generally used for cloths; it is very little longer than the derah, but not correlative. *Agrarian:* 400 square gasab = 1 feddan al risach, or unitary acre.

Guinea.—*Weight:* 1 benda = 2 benda-offa = 8 eggeba = $5\frac{1}{4}$ seron = 8 piso or uzan = $10\frac{1}{2}$ quinto = 16 aguirages = 32 media-tabla = 48 akey. The last denomination, which is the special weight for gold dust, is only theoretically connected here; its actual value as reported is nearly half a grain less than the $\frac{1}{15}$ of the benda.

Liberia.—This Anglo-American negro colony at Cape Mesurado, as well as the independent one of Maryland at Cape Palmas, uses, it may be supposed, standards from the United States.

Morocco.—All the dependencies of this empire, along the western coast of Barbary, use the weights and capacity measures of Spain. There are several indigenous measures of length given in the Dictionary, but they are without uniformity.

Tripoli.—In this appanage of the Turkish empire, as well as in the dependencies of Fezzan and Barca, the weights and measures appear to be of European derivation. *Weights:* 1 cantaro = 100 rotl = 1600 uzan = 12800 termini. The metical, a special weight for gold and silver, has no connection with the others, unless it be derived in theory from an ancient rotl or pound of 12 uzan or ounces. The actual weight is reported as being exactly $\frac{1}{100}$ of the Venetian pound, from which it may have originated. *Liquid Capacity:* The mataro for oil is given by gallons in the Dictionary; from its reported weight compared with the average specific gravity, at ordinary temperatures, of that substance. *Dry Capacity:* 1 cafiso = 20 tiberi.

Tunis.—*Weight:* 1 cantaro = 100 rotl = 1600 uzan = 12800 metical or termini. In this system, where the same denominations appear to be lighter than the Tripolitan, the metical and uzan are specific weights. *Liquid Capacity* is determined by weight. *Dry Capacity:* 1 cafiso = 16 quiba = 192 saha or zah. *Length:* 1 pic (woolen) = $1\frac{1}{5}$ pic (silk) = $1\frac{1}{15}$ pic (linen). But these last proportions appear altogether accidental. In this enumeration, the remaining European settlements, viz., those of France on opposite sides of the continent in Senegambia and the Isle of Bourbon, and those of Denmark and Holland in Guinea and Ashanti, have been omitted; partly because the weights and measures of the mother countries would be naturally accepted among the settlers, but chiefly because of the insignificance in population and trade of the actual establishments. The insular appanages of the Imam of Muscat (viz., Quiloa, Zanzibar, Socotra, etc.), on the eastern side of the continent, are passed over for similar reasons; while the native powers, from Morocco through and around to Madagascar, are too uncivilized or too inaccessible, to have or to yield any thing of interest in respect to weights and measures.

II. AMERICA.—This continent, for the present purpose, is best divided (instead of the usual distinctions of North, Central, and South) into Independent and Colonial America.

Brazil.—In this empire the originals of weights and measures are from Portugal; and the actual standards are in general identical, though there are a few variations, both in value and denomination, shown in the Dictionary.

Hayti or San Domingo.—This island, which, in the numerous revolutions of policy that it has undergone, has been recently modified from a republic into a form more absolute, and nominally an empire, retains the impress of its double colonization from Spain and France, as well as in the names of localities—on the western side French, on the eastern Spanish—as in the weights and measures used there.

Mexico.—Under this republic, as well as under the numerous governments which are continually shifting or springing up in the territories of Central and South America, and which it would require a special and contemporaneous research to signalize and verify, the weights and measures of Spain have been throughout and are still recognized; with only such local variations as other causes, besides the cessation of European control and intercourse with a parent power, might be expected naturally to produce. Of course, this comprehensive field for the influence of the Spanish system does not include vast territories (such as Patagonia, for instance) which, although claimed by foreign or domestic powers, are yet, in fact, domineered over by various indigenous tribes, more or less nomadic and uncivilized. Of systematic weights and measures in those territories, there are none in modern times; and ancient ones (such as in Mexico and Peru), which recent researches have partially systematized, are omitted, as neither certain nor of practical application.

United States of America.—*Weight:* 1 Mint or Troy pound = 12 ounces = 240 penny-weight = 5760 grains; 1 apothecary pound = 12 ounces = 96 drachms = 288 scruples = 5760 grains; 1 commercial pound = 16 ounces = 256 drams = 7000 grains; 1 long ton = 20 cwt. = 80 quarters = 2240 commercial pounds; 1 short ton = 20 cwt. = 2000 commercial pounds. In the actual government standards the ounce Troy is divided decimally, down to the $\frac{1}{10000}$ part. These weights are identical with those of England. In both countries, they repose, in fact, upon actually existing masses of metal (brass) which have been individually declared by law to be the units of the system. In scientific theory, they are supposed to rest upon a permanent and universal law of Nature—the gravitation of distilled water at a certain temperature and under a certain atmospheric pressure. And in this aspect, the origination is with the grains; which must be such that 252,458 of these units, in brass, will be in just equilibrium with a cubic inch of distilled water, when the mercury stands at 30 inches in a barometer, and in a thermometer of Fahrenheit at 62 degrees both for the air and for the water. Unfortunately, the expounders of this theory in England used only the generic term *brass*, and failed to define the specific gravity of the metal to be employed: the consequence of this omission is to leave room for an error of $\frac{1}{10000}$ in every attempt to reproduce or compare the results. This is the *minimum* possible error: the *maximum* would be a function of the difference in specific gravity between the heaviest and lightest brass that can be cast.

Liquid Capacity: 1 gallon = 2 half gallons = 4 quarts = 8 pints = 16 gills. The gill is not among existing standards of public authority, though it is used in commerce. There are other denominations higher than the gallon, such as barrels, hogsheads, pipes, etc.; but these are only *vessels*, not *measures*, and are always gauged and sold by their actual capacity in gallons. The gallon, in fact, is almost exactly equivalent to a cylinder 7 inches in diameter and 6 inches high. In theory, it must contain just 231 cubic inches; and, filled with distilled water at the temperature of maximum density (say 39°·8 Fahr.), weighs, according to the official report, at that temperature and at 30 inches of the barometer, 8·339 commercial or averdupois pounds; or more nearly 58372·1754 grains. It is in the temperature only that this unit differs from the former wine gallon of Great Britain. The apothecaries use the same gallon, but divide it differently, as follows: 1 gallon = 8 pints = 128 fluid ounces = 1024 fluid drachms = 61440 minims (or drops) = 231 cubic inches. These are graduated measures; they also use sometimes the following approximate ones from vessels in domestic use: 1 tea-cup = 2 wine glasses = 8 table-spoons = 32 tea-spoons = 4 fluid ounces.

Dry Capacity: 1 bushel=2 half bushels=4 pecks=8 gallons. There are also in this, as in the former measure, higher denominations (barrels, sacks, etc.) known in commerce, whose capacity is intended to be constant. They are, however, always gauged by the bushel. This bushel is the old Winchester bushel of England. In fact, it is a cylinder 18·5 inches in diameter, and 8 inches deep. In theory, it must contain 2150·42 cubic inches; and holds of distilled water, at the temperature of maximum density and at 30 inches of the barometer, 77·0274 commercial or avoirdupois pounds; or more nearly 543301·89 grains.

Length: 1 yard=3 feet=36 inches=432 lines=5184 seconds = 02208 thirds. In the actual government standards, at the custom-houses, the yard is divided decimally into tenths and hundredths. In the measurement of cloths, muslins, linens, cotton, silk, and in general of what are termed *dry goods*, the yard only is used; subdivided into halves, quarters, eighths, sixteenths, and half sixteenths. This lowest denomination=1·125 inch. Surveyors and engineers employ neither the yard nor the inch, but use the foot and its decimal divisions. Architects and artificers reckon by the foot and subdivisions as given above. Nevertheless, the most usual and most recent workman's scales bear the foot divided into inches, and eighths and sixteenths of an inch. Mariners measure by cable lengths and fathoms: 1 cable length=120 fathoms=240 yards=720 feet. The unit of length—the yard, upon whose subdivisions all the weights and capacity measures repose for verification—is, in fact, derived from ancient arbitrary standards of England. In theory, the inch—the $\frac{1}{36}$ of the yard—is presumed to be contained 39·13929 times in the length of a pendulum that, in a vacuum and at the level of mid-tide, in the latitude of London, vibrates seconds of mean time.

Itinerary: 1 statute mile=2 half miles=4 quarter miles=7½ cable-lengths=8 furlongs=80 chains=320 perches or poles=880 fathoms=1760 yards=5280 feet =8000 links = 63360 inches; 1 nautical league = 3 equatorial miles=3·457875 statute miles. Chains and links are denominations employed by land-surveyors, thus: 1 chain=4 poles=66 feet=100 links.

Agrarian and Superficial: 1 square mile=640 acres; 1 acre=4 roods=10 square chains=160 square perches =4840 square yards=43560 square feet; 1 square yard=9 square feet=1296 square inches. Architects and builders reckon 1 square=100 square feet.

Solid: 1 cubic yard=27 cubic feet=46656 cubic inches; 1 cubic foot=12 reduced feet (plank measure) =1728 cubic inches; 1 reduced foot (plank measure) =1 square foot×1 inch thick=144 cubic inches. In practice, all planks and scantlings less than an inch in thickness are reckoned at an inch. 1 perch of masonry=1 perch (16½ feet) long×1 foot high×1½ feet thick = 25 cubic feet. In fact, the dimensions given for the perch do not result in 25 cubic feet; but this last number has been adopted for convenience. 1 cord of fire-wood=8 feet long×4 feet high×4 feet deep=128 cubic feet.

Danish Possessions.—These include Greenland, Iceland, and three of the Leeward Islands in the West Indies; viz., Santa Cruz or St. Croix, St. Thomas, and St. John. In all these the weights and measures of Denmark prevail, though in the islands the English length measures are also used.

Dutch Possessions.—Holland holds on the continent of America, the government of Surinam, which includes nominally a territory of something less than 40,000 square miles, under the name of Dutch Guiana; on the coast of Venezuela, the islands of Curaçoa and Bonaire, with some lesser islets; and among the Leeward Antilles, St. Eustatius, the south part of St. Martin, and Saba. In all these, the weights and measures of Holland prevail; except in Curaçoa, where the weights are, in fact, and the length measures, both in fact and name, those of Spain.

English Possessions.—Over the immense territories of British North America the weights and measures of England are legalized; but in Lower Canada the French settlers still use their former denominations to a great extent.

In the southern peninsula, where the general name of English Guiana covers the former Dutch colonies of Berbice, Demerara, and Essequibo, the reckoning is by the weights and measures of Holland.

The settlements in Patagonia and the adjoining Archipelago, made chiefly with a view to the whale-fishery, recognize the English standards. And as much may be said for the Falkland Isles.

Of the numerous islands and islets in the West Indies, among the Antilles and Lucayas, only the chief ones need be mentioned. The weights and measures of a few are still traceable to the source of their earlier colonization.

In the following islands the English weights and measures are used: Antigua, the Bahamas, Barbadoes, Barbuda, St. Christopher's or St. Kitts, Dominica, Grenada, Jamaica, St. Lucia (French), Montserrat, Nevis, Tobago, Tortola, Trinidad (Spanish), and St. Vincent.

In the Bermuda Group, English weights and measures are employed. All these English measures are those before the change in 1825. It would be, therefore, more literal to say, weights and measures of the United States.

French Possessions.—France holds on the continent only what used in part to be Cayenne, and is now on the maps as French Guiana; and among the West India islands, Martinique, Guadeloupe with its dependencies, Deseada or Desirade, Marie-galante, and the group of Les Saintes, together with about two-thirds (on the northern side) of St. Martin.

In Guiana, the new metrical system is legalized; but the older one continues to be used.

St. Martin reckons by the weights and measures of Holland, and Les Saintes by those of England.

The others employ the old French system, with some modifications. Thus the former English wine gallon seems to be the standard for liquids, divided as follows: 1 gallon=2 pots=4 pintes=8 chopines=16 roquilles=32 muces; of agrarian measure, 1 carré= 10,000 pas carrés. Besides these, France owns the isles of St. Pierre and Miquelon, to the south of Newfoundland, where the old system prevails.

Russian Possessions.—The extensive territories which Russia holds in the northwest corner of America across Behring's Straits are, it may be supposed, under the domain of Russian customary measures. The establishment which that empire had for nearly forty years in Upper California, at Bodega, has been some time since abandoned.

Spanish Possessions.—The magnificent appanage, continental and insular, which Spain formerly held in America has now dwindled to the islands of Cuba and Porto Rico, where the weights and measures are still those of Spain.

Swedish Possessions.—The only territory of Sweden is the small island of St. Bartholomew or St. Bart's; which, though originally colonized from France, has been so long ceded (now nearly seventy years) as to have adopted Swedish weights and measures.

III. Asia.—*An-nam.*—*Weights:* 1 quân=5 ta=10 binh=50 yen=500 cân; 1 cân (or pound)=1·6 nen= 10 luong=160 dong=1000 ly. From the ly, the subdivisions are regularly decimal; viz., the hao, hot, châu, huy, trân, and ni, which last is the atom or millionth part of the ly. The most of these are purely theoretical, for the hao is itself only 0·06 of a grain, very nearly.

Capacity: In these there is no uniformity nor authenticity, each province using different measures. In Hué there appears to be the following theoretical system: 1 hoc=10 dau=100 thang=1000 hap=10000

thuoc; 1 thuoc=1200 grains of millet=10 sao; 1 sao (or a handful)=120 grains of millet; and 1 toat=250 grains of millet. The division of the thuoc into 10 sao and 4·6875 toat would seem to indicate two different systems; but as the Tonquin millet and our own are not of the same size, we have no standard of comparison or determination.

Length: There are two thuoc or cubits; one for general use, the other, which is ⅛ longer than the former, exclusively for cloths, silks, and other woven fabrics. 1. Mercers'.—1 gon=10 that=30 truong=300 thuoc; 1 thuoc (or cll)=10 tac=100 phan=1000 ly. 2. Builders', etc.—1 mau=10 sao=30 ngu=150 thuoc; 1 thuoc (or cubit)=10 tac=100 phan=1000 ly.

Agrarian: This last series is also used by landmeasurers in giving the square content of land. They sometimes use another series (called *ruong luc*, in contradistinction to the *ruong ngu*, just given), in which the sao is equal to 16⅔ thuoc. The mau is, therefore, 10 per cent. longer in this last series; and its superficial content, when squared, 21 per cent. greater.

Itinerary: These are very vague and only approximate: 1 dam=2 ly=rather less than half a mile.

Birmah.—Weight: 1 vis=3 catty=100 tical. *Length:* 1 bamboo=28 taim=504 palgat. *Itinerary:* 1 taing=250 bamboo=7000 taim. But these are by no means certain.

China.—Weight: Almost every thing in China (timber, liquids, live stock, etc.) is sold by weight, actual or nominal. 1 shik=1½ tam=4 kwan=60 yin=120 kan or catty; 1 kan=16 leung or tael=364 chu=3840 lui=38400 shu, or kernels of grain. The weights above the yin are only nominal and for account; and those below the tael are generally denoted by the adjuncts *li, ho, tsin, fat*, etc., *i. e.*, one tenth, one hundredth, one thousandth, etc.

Capacity: This is regulated, as before said, by weight; the existing dry *measures*, which have been adopted for the convenience of commerce for grain and seeds, vary considerably in consequence of the irregularity of the material (bamboo) of which they are made. The theory is supposed to be as follows: 1 ping=5 yu=16 hok=32 shik=80 tau; 1 tau=10 shing=100 kop=200 yeuk=1000 cheuk=10000 chau=100000 tsut=1000000 kwai=6000000 suk, or grains of maize. Of all these, there are only four actual measures; viz., the tau, the shing, the half-shing, and the kop. These are also upon two different modules, distinguished by the adjuncts *shi* and *tsong*; and in proportionate capacity as 100 to 65 respectively. It may be supposed that the latter were intended for *li, said* measures; and their average contents are so reduced accordingly in the Dictionary.

Length: 1 yan=10 cheung=100 chik=1000 tsun=10000 fan. The chik, fixed by the Mathematical Board at Pekin=13·125 inches; used by tradesmen in Canton =14·625 to 14·81 inches; employed by engineers of public works=12·7 inches; and that by which distances are usually measured=12·1 inches.

Itinerary: 1 to=25 fan=125 tsun=250 li or miles; 1 li=1826 English feet. This is the count since the intervention of European mathematicians at Pekin. The former used to be 1 to=192½ li=79300 po=396500 chik; 1 li=1897½ English feet. Some ambiguity arises from the use of the same word, li (probably from European ignorance of the language in not discriminating between similar but not identical terms), as a lower measure, the $\frac{1}{10}$ of the fan. The same ambiguity extends itself also to the following series.

Agrarian: 1 klug=100 mau=400 kok=1000 fan=24000 po. But these are so uncertain that they have not been given.

Solid Measures are products of the cheung, which is generally in this series 14·6 English feet.

Hindostan.—The weights and measures of the indigenous governments of this vast country (such as, for instance, Sindh, Nepaul, and the confederated Sikhs, etc.), are either too little known or too uncertain to admit of any system. All that will be done is to give the relations of the principal measures in common use, where European domination prevails or European commerce has established itself.

British Possessions: Bombay.—Weight: 1 candy=20 maunds or maons=800 seer=24000 pice. *Dry Capacity:* 1 candy=8 para=128 adoulie. *Calcutta.—Weight:* 1 maon or maund=40 seer=640 chattac=3200 sicca. *Dry Capacity:* 1 pullie=4 raik=64 khoonké=320 chattac. *Length:* 1 haut or covid=8 gheria=72 jaob. *Itinerary:* 1 coss=4000 haut. *Agrarian:* 1 biggah=20 cottah=320 chattack=6400 square covid. The chattack is, in fact, a surface 5 covid in length by 4 covid in width. *Madras.—Weight:* 1 garcé=20 candy or baruay=400 maund or maon=3200 visay; 1 visay=40 pollam=400 varahun. *Dry Capacity:* 1 garcé=80 pura=400 marcal=3200 puddy=25600 ollock. *Liquid Capacity*, like the dry, is determined by weight; and the denominations are the same as in the latter. *Agrarian:* 1 casseney=24 maony=240 square covid.

Danish Possessions: Serampore and Tranquebar.—The weights and measures here are legally those of Denmark, and by custom those of Calcutta and Madras respectively.

French Possessions: Pondichéry.—The colonial denominations and divisions are identical with those of Madras, although the values are different.

Portuguese Possessions: Goa.—Here Portuguese weights and measures are employed.

Japan.—Weight: 1 picul=100 catty=1600 tael=16000 mas=160000 condurine. The connection of the other measures is not known.

Ottoman Asia: Aleppo, Smyrna, etc.—The weights and measures here are so variant, or are rather so mixed up with the units and values of foreign commerce, as not to admit of satisfactory classification.

Persia.—Weight: 1 batman=6 ratel=300 dirhem=600 mascals. This is the batman of Tauris; that of Shiraz, which is twice the value, appears properly to be part of the same system. The other measures are unsystematic.

Siam.—Weight: 1 picul=100 catty=2000 tael=8000 tical. *Dry Capacity:* 1 cohi=40 resti=1600 sat. *Length:* 1 vouah=2 ken=sok. *Itinerary:* 1 rocneng=2000 vouah.

IV. EUROPE.—*Austrian Empire: Vienna.—Weight:* 1 pfund=2 mark=4 vierling or vierding=16 unze=32 loth=128 quent=512 pfennig. Apothecaries': 1 pfund=1½ mark=12 unzo=96 drachma=288 scrupel=5760 gran. The mark is identical in both series, and is the unit of gold and silver weight. 1 centner=5 stein=100 pfund. *Liquid Capacity:* 1 fuder=32 eimer=128 viertel=1312 (imperial) muss; 1 muss=2 kanne=4 seidel=8 pfiff. *Dry Capacity:* 1 muth=30 metze=120 viertel=240 achtel; 1 achtel=2 mühlmassel=8 futtermassel=16 becher=128 probmetze. *Length:* 1 klafter=6 fuss=72 zoll=864 linie=10368 punkt. *Itinerary:* 1 meile=4000 klafter=24000 fuss. *Agrarian:* 1 joch or jochart=8 metze=576 square ruthe=1600 square klafter=57600 square fuss. *Prague.—Weight:* 1 centner=6 stein=120 pfund. The lower subdivisions are as in Vienna; but their values, as well as of the terms just given, correspond with a lighter pound than the imperial standard. *Liquid Capacity:* 1 strich=4 eimer=128 pinte=512 seidel. *Dry Capacity:* 1 strich=4 viertel=16 massel=192 seidel. *Agrarian:* 1 joch of Vienna=2 strich.

Venetian Lombardy: Milan.—Weight: Peso grosso: 1 libbra=4 quarto=28 oncia. Peso sottile: 1 libbra=12 oncia=288 denaro=6912 grano. Gold and silver are by the marco, subdivided as follows: 1 marco=8 oncia=192 denaro=4608 grano. Apothecary: 1 libbra peso sottile=12 oncia=96 drachma=288 scrupolo=6912 grano. In 1803 the French kilogram, with decimal subdivisions, was introduced; which is the

new Italian pound or metrical pound of the Dictionary. 1 rubbio = 10 libbra metrica = 100 oncia = 1000 grosso = 10000 denaro = 100000 grano. *Liquid Capacity:* 1 brenta = 8 staja = 6 mina = 12 quartaro = 16 bassa = 48 pinta = 96 boccale. *Dry Capacity:* 1 moggio = 8 stajo = 16 starello = 32 quartaro = 128 meta = 512 quartino. In the new metrical system capacity is reckoned as follows: 1 soma = 10 mina = 100 pinta = 1000 coppo. *Length:* 1 braccio = 12 oncia = 144 punto = 1728 atomo. New measure in 1803: 1 metro or braccio = 10 palmo = 100 dito = 1000 atomo. *Itinerary* since 1803: 1 miglio = 1000 metro. The old mile of Milan is not correlative; but appears, in theory to be equivalent to 3000 braccio. *Agrarian:* 1 pertica = 24 tavola = 96 square cavezzo = 8456 square piede The *piede*, or foot, used here is not employed in any other part of the system. It seems to have been originally $\frac{2}{3}$ of the braccio. Since 1823: 1 tornatura = 100 square palmo. The tornatura is identical with the French *are*. *Venice.*—*Weight:* Peso grosso: 1 libbra = 2 marco = 12 oncia = 72 saggio = 2304 carato = 9216 grano. Peso sottile: 1 libbra = 12 oncia = 72 saggio = 1728 carato = 6912 grano. The *peso grosso* is used in general commerce; the *marco* and its subdivisions are for gold and silver and precious stones; the *peso sottile* for drugs, colors, coffee, tea, sugar, silk, rice, and butter. This last is estimated at $\frac{12}{10}$ of the former. When used for medicines, it is subdivided as the Austrian apothecary pound. *Liquid Capacity:* 1 anfora = 4 bigonzio = 8 concia or mastello = 48 secchio = 192 bozza = 512 boccale = 768 quartuccio; 1 botta = 5 bigonzio. *Dry Capacity:* 1 moggio = 4 stajo or staro = 16 quarto = 64 quartarolo. *Length:* 1 braccio = 2 piede. This braccio is for woolens, etc.; that for silk is shorter. *Itinerary:* 1 miglio = 1000 passo = 5000 piede. *Agrarian:* 1 campo = 640 tavola, or square pertica, or square cavezzo = 25920 square piede. New measure: 1 migliajo = 1000 square passo = 25000 square piede. The metrical weights and measures, described under Milan, are also employed here as there in all governmental transactions. Otherwise the local measures are still in use. In the other parts of the Austrian dominions, such as Dalmatia, Hungary, Moravia, etc., local systems, if they ever existed, are now only discernible in the names and values of a few disconnected and apparently arbitrary measures.

Baden.—*Weight:* Old measure: 1 pfund = 32 loth = 128 quentchen. New measure: 1 pfund = 10 zehnling = 100 centass = 1000 pfennig = 10000 ass. The new measure was established in 1810, when the value of the *pfund* was taken at $\frac{1}{2}$ kilogram, and a decimal division adopted; but the old division is still retained, and is applied both to the old unit and to the new. The mark of Cologne is employed for gold and silver; and the value and subdivisions of the Nürnberg apothecary pound for drugs and medicines. *Liquid Capacity:* 1 fuder = 10 ohm = 100 stütze = 1000 mass = 10000 glas; 1 ohm = 15 decalitres of France. *Dry Capacity:* 1 zuber = 10 malter = 100 sester = 1000 mässlein = 10000 becher; 1 sester = 15 decalitres of France. *Length:* 1 ruthe = 10 fuss = 100 zoll = 1000 linie = 10000 punkt; 1 ruthe = 3 mètres of France. The old fuss was 3 per cent. shorter, but has been merged into the new one. *Itinerary:* 1 meile = 2 stunden = $8\frac{8}{9}$ kilometres of France. *Agrarian:* 1 morgen = 4 viertel or quart = 400 square ruthe = 40000 square fuss. *Solid:* 1 klafter, for fire-wood = 6 feet long × 6 feet high × 6 feet deep = 128 cubic fuss. What is here called *deep* signifies in every case the length of the billet or log.

Bavaria.—*Weight:* 1 pfund = 16 unze = 32 loth = 128 quentchen. A uniform value was established for the unit in 1811, corresponding with the new French weight. The apothecary pound was at the same time defined at $\frac{30}{50}$ of the unit, and is divided like the Nürnberg apothecary pound. Gold and silber are by the mark Cologne. *Liquid Capacity:* 1 eimer = 60 masskanne = 240 quartel. *Dry Capacity:* 1 scheffel = 6 metze = 12 viertel = 48 massel or achtel = 96 mässlein = 192 dreissiger; 1 scheffel = 208 liquid masskanne, in actual content. *Length:* 1 fuss = 12 zoll = 144 linie = 1728 punkt. This unit was established in 1809, and defined in terms of the old French measure, at 129·58 *lignes de Paris*. The near approach of this value to 8 decimètres in the new French system allows the *fuss*, as is frequently done, to be decimally divided. Thus the *elle* of Rhenish Bavaria is 4 fuss of this count, or 12 decimètres of France. The legal elle is 2 fuss $10\frac{1}{4}$ zoll of the legal value above. *Itinerary:* 1 meile = 2400 ruthe = 24000 fuss; 1 meile of Anspach = 2 stunde = 2880 ruthe = 28800 fuss. *Agrarian:* 1 juchart, morgen, or tagwerk = 400 square ruthe = 40000 square fuss. *Solid:* 1 klafter, for fire-wood = 6 feet long × 6 feet high × $3\frac{1}{2}$ feet deep = 126 cubic fuss. In Rhenish Bavaria generally, the billets are 4 feet long, which makes the klafter = 144 cubic fuss. *Augsburg: Nürnberg.*—The denominations and values of local measures retained in both of these places, and elsewhere in Bavaria, are given in the Dictionary. The apothecary weight of Nürnberg, which is general over all Germany for medicines (as the mark of Cologne is for specie), is $\frac{3}{4}$ of the old Nürnberg money pound, which last is divided as follows: 1 pfund = 2 mark = 16 unze = 16 loth = 128 quart = 512 pfennig = 8220 as-ducat. The apothecary pound, as under: 1 pfund = 12 unze = 96 drachma = 228 scrupel = 576 obolus or heller = 5760 gran.

Belgium.—*Weight:* Old measure of Brussels. Commercial: 1 livre or pond = 4 quarteron = 16 once = 64 satin = 128 gros = 9216 grains. Specie: 1 livre or pond = 2 mark = 16 once = 320 esterlin = 1280 felina = 10240 as = 1 pond Troy of Holland. The new weight is the kilogram and its decimal subdivisions, established since 1816. The apothecarics' unitary pound, subdivided like that of Nürnberg, is, since 1817, $\frac{3}{4}$ of the kilogram of France; but in this respect there is not entire uniformity. The other measures are all in value corresponding with the metrical system of France, and decimally subdivided. Thus the unit for liquids (the *vat*) and that for dry (the *mudde*) are each = 100 litres of France. The unitary *el* or *aune* = 1 mètre; the agrarian unit (the *vierkantebunder*) = 1 are of France, or nearly 4 square perches English; the metrical *mil* or mile = 1 kilomètre. Other terms remaining from the old systems, but now disconnected, are given in the Dictionary.

Bremen.—*Weight:* 1 pfund = 2 mark = 16 unze = 32 loth = 128 quentchen = 512 ort = 498·59 grammes of France, since 1818. There is another pfund used in retail commerce, which is 6 per cent. lighter than the standard. Gold and silver are weighed by the mark of Cologne, and medicines by the apothecary pound of Nürnberg. 1 schiffpfund = 20 liespfund = 290 pfund; 1 frachtpfund or pfundschwer = 300 pfund; 1 centner = 116 pfund. *Liquid Capacity:* 1 fuder = 4 oxhoft = 6 ohm = 24 anker = 120 viertel = 270 stübchen = 1080 quartier = 4320 mingel. *Dry Capacity:* 1 scheffel = 4 viertel = 16 spint. *Length:* 1 elle = 2 fuss = 24 zoll = 240 linie. Surveyors divide the fuss decimally. *Itinerary:* 1 ruthe = $2\frac{1}{2}$ klafter = 8 elle = 16 fuss. The usual meile contains 20000 Rhenish feet. *Agrarian:* 1 morgen = 120 square ruthe = 30720 square fuss. *Solid:* 1 faden = 6 feet long × 6 feet high × 2 feet deep = 72 cubic fuss. Fire-wood is also sometimes measured by the *reep* or *reif*, a circular pile $17\frac{1}{2}$ fuss in circumference, the billets varying from $4\frac{1}{2}$ to 6 fuss in length. The reif yields from 1 to 2 faden, accordingly.

Brunswick.—*Weight:* 1 pfund = 2 mark = 32 loth = 128 quentchen = 512 pfennig = 1024 heller; 1 schiffpfund = 20 liespfund = 280 pfund. Gold and silver by the mark of Cologne, medicines by the apothecary pound of Nürnberg. 1 fuder = 4 oxhoft = 6 ohm = 240 stübchen = 960 quartier = 1920 nössel; 1 fass of beer = 4 tonne = 108 stübchen = 432 quartier = 864 nössel; 1 fass of mum = 100 stübchen = 400 quartier = 900 nössel. *Dry Capacity:* 1 schuffel = 10 himt = 40 vierfass = 160

becher or löcher. *Length:* 1 elle=2 schuh=24 zoll. *Itinerary:* 1 ruthe=8 elle=16 schuh. The usual mello contains 34424 Rhenish feet. *Agrarian:* 1 morgen=120 square ruthe=60720 square schuh.

Cracow. — *Weight:* 1 funt=2 mark=48 skoyolec. Apothecary weight is that of Nürnberg. *Liquid Capacity:* 1 stangiew=2 beczka=72 garniec=288 kwart. *Dry Capacity:* 1 korzec=2 polkorzow=4 cwlore=32 garcy or garniec. *Length:* 1 stopa=12 calow=144 linlow=1728 punkt. The other measures are those of Poland.

Denmark.—*Weight:* 1 pund=2 mark=16 unze=32 lod=128 quintin=512 ort; 62 pund=weight of 1 cubic fod of rain-water at 16⅛° centigrade. Gold and silver is weighed by a pund nearly 6 per cent. lighter than, but not aliquot with, the commercial pound, and is subdivided like this last, only more minutely, into 8192 as=65536 gran. The royal Mint, however, uses the mark of Cologne. Apothecaries' weight is that of Nürnberg. 1 last=16½ skippund=144⅔ waag=325 lispund=433⅓ bismerpund=5200 pund; 1 skippund=20 lispund=320 pund. *Liquid Capacity:* 1 aam=4 anker=20 viertel=40 stübchen=77½ kande=155 pot =620 pägel. *Dry Capacity:* 1 toende=4 fjerding=8 skieppe=32 fjerdingkar=144 pot. *Length:* 1 aln=2 fod=24 tomme=288 linie. The fod represents $\frac{12}{38}$ of the pendulum beating seconds, in a vacuum, at the level of the sea, under the mean parallel of 45° north latitude. *Itinerary:* 1 miil=2400 rode=4000 favn=12000 aln=24000 fod. *Agrarian:* 1 pflug=8 toende (hartkorn)=32 toende (ädeland)=64 skieppe=256 fjerdingkar=768 album=3072 penge=17920 square rode=1792000 square fod. The measures of Holstein are chiefly those of Hamburg, and those of Norway differ only locally, not systematically, from the Danish.

France.—*Weight:* 1 kilogram=100 hectogram=100 decagram=1000 gram=10000 decigram=100000 centigram=1000000 milligram. The unit, or kilogram, is the weight of a cubic decimetre of distilled water at the temperature of maximum density, taken at 4° centigrade, or 39°·2 Fahrenheit. 1 tonneau=10 quintal=100 myriagrams=1000 kilograms. Apothecary weight has not been so symmetrically and uniformly constructed. In the French pharmaceutical Codex, the *gramme* has been adopted as the key of the system, and is considered as equivalent to ¼ of the old *drachme*. The *once*, habitually of 8 drachmes, is then 32 grams. But as this number is irrational with a decimal division, a compromise has been made as follows: 1. 1 double livre (kilogram)=2 livre=4 demi-livre=8 quarterons (of 4 onces)=1000 grams. 2. 1 once=8 gros, or drachme=640 grain=1280 demi-grain=32 grams, instead of 31¼ grams, as it must have been, if the same binary division had been carried through.

Liquid and Dry Capacity: 1 kilolitre=10 hectolitre =100 decalitre=1000 litre=10000 decilitre=100000 centilitre=1000000 millilitre. The unit or litre is the cubic decimetre; the kilolitre is therefore a cubic metre. The myrialitre=10 kilolitre.

Length and Distance: 1 myriametre=10 kilometre =100 hectometre=1000 decametre=10000 metre=100000 decimetre=1000000 centimetre=10000000 millimetre. The metre, or unit, is assumed to be the ten-millionth of the quadrant, or the forty-millionth of the whole circumference of the globe, measured over the poles. The actual value assigned to it, in spite of the pains taken in the geodetical and artistical operations, is, after all, owing to the nature of the very operations, to be considered as only a near approximation. The provisional metre of 1795 is, in fact (as more recent investigations show), nearer the most probable value aimed at than the one adopted in the law of 1799. But the utmost error is only about $\frac{1}{20000}$ of the length, or absolutely less than $\frac{1}{5000}$ of an inch.

Agrarian: 1 hectare=100 are=10000 centiare or square metres. This part of the system admits the same decimal multiplication and subdivisions as the others in theory; but, in point of fact, the intermediate terms have been rejected.

Solid: 1 decastere=10 stere=100 decistere. The stere is the cubic metre; and its content, therefore, is the same as the capacity of the kilolitre. The terms given are all that are retained in the nomenclature. The names even of the old measures of France having been interdicted since 1840 by law, their relations and combinations are of no remaining practical interest. The terms and values will be found in the Dictionary.

Frankfort.—*Weight:* 1 pfund=2 mark=16 unze=32 loth=128 quentchen=512 pfennig=1024 heller. There is also a commercial pound for retail, called *silber-pfund*, about 8 per cent. lighter than the former, but similarly divided. Flour and malt are weighed by a pound of 32$\frac{0}{10}$ loth silber-pfund, meat and butter by 33 loth of the same system, and fish by one of 35 loth. Gold and silver are reckoned by Cologne weight, and drugs and medicines by the apothecary pound of Nürnberg. *Liquid Capacity:* 1 fuder=6 ohm=120 viertel=480 eich-mass=540 neu-mass; 1 mass=4 schoppen. *Dry Capacity:* 1 malter or achtel=4 simmer=8 metzo=16 sechter=64 gescheid=256 mässchen or viertel=1024 schrott. A malter of wheat weighs from 175 to 190 lbs. flour weight; rye, 165 to 180 lbs. flour weight; barley, 150 to 165 lbs. flour weight; oats, 95 to 110 lbs. flour weight; flour, 143 lbs. flour weight. This includes the tare of the sack, which is reckoned at 3 flour pounds. *Length:* 1 werkschuh=12 zoll=144 linie; 1 ruthe=12½ werkschuh=10 feldfuss=100 zoll=1000 linie. *Agrarian:* 1 hufe =30 morgen=4800 square ruthe=480000 square feldfuss. *Solid*, for fire-wood: 1 klafter=6 W. long×7 W. high×3 W. deep=126 cubic werkschuh; 1 stecken =3½ werkschuh, cubed=43¾ cubic werkschuh.

Great Britain.—The imperial standards adopted since 1825 altered only the value of the capacity measures. The weights and the long, agrarian, and solid measures are identical with those of the United States. Capacity measures are the same, both for liquids and things dry. The origination of these is with the *gallon*, which contains 10 pounds avoirdupois of distilled water at 30 inches of the barometer and 62° Fahrenheit both for the air and the water. Eight of such gallons make the bushel. The old subdivisions and nomenclature, as far as applicable, are retained.

Weight: Troy and apothecary have been given under the head United States. Avoirdupois: 1 ton=20 hundred-weight=80 quarter=2240 pound=35840 ounce=573440 dram. Wool: 1 last=12 sack=24 wey=156 tod=312 stone=624 clove=4368 pound.

Liquid Capacity: Old wine measure: 1 tun=2 pipe =3 puncheon=4 hogshead=6 tierce=8 quarter-casks =252 gallon=1008 quart=2016 pint. Old beer measure: 1 butt=1½ puncheon=2 hogshead=3 barrel=6 kilderkin=12 firkin=108 gallon. Ale measure was the same as to the gallon and its subdivisions; but the firkin of ale was only 8 gallons, and the hogshead of ale 48 gallons, instead of 9 and 54 gallons respectively.

Dry Capacity: Old measure: 1 last=2 wey=10 quarter=20 coom=80 bushel=320 peck=640 gallons =5120 pint.

Length: 1 yard=3 feet=36 inches=108 barley-corn =432 line. Cloth measure: 1 French ell=1¼ English ell=1½ yard=2 Flemish ell=6 quarters=27 nail=54 inch.

Hamburg.—*Weight:* 1 pfund=2 mark=16 unze=32 loth=128 quentchen=512 pfennig. Gold and silver are weighed by the mark of Cologne, and medicine by Nürnberg apothecary weight. 1 schiffpfund =2½ centner=20 lispfund=280 pfund. This is sea freight; wagon weight is also called schiffpfund, but=320 pfund. *Liquid Capacity:* 1 fuder=4 oxhoft=5 tonne=6 ahm=24 anker=30 eimer=120 viertel=240 stübchen=480 kanne=960 quartier=1920 össel; 1 fass, for whale-oil=1½ tonne=7½ stechkanne=120

margel=160 quartier. *Dry Capacity:* 1 last, for wheat and grain generally, and seeds=3 wispel=30 schëffel =60 fass=120 himt=480 spint; 1 stock, for oats and barley=1½ last, and similarly subdivided. The scheffel is hardly used; the fass is the principal measure. The indications of the steelyard used for weighing grain, and quoted in the *Price Current*, is upon 1½ fass of such grain respectively. The established weight of the fass is: of barley, 68 pfund; beans, 108 pfund; oats, 52 pfund; peas, 100 pfund; rye, 81 pfund; wheat, 86 pfund. *Length:* 1 elle=2 fuss=24 zoll=192 achtel. Ship-builders, for the measurement of spars, etc., divide the fuss into 3 palm. Engineers and surveyors use the Rhenish foot and inch, decimally divided. *Itinerary:* 1 meile=200 ruthe=24000 Rhenish fuss. *Agrarian:* There are two ruthe or perches in land measure, the marschruthe equal to 7 ell, and the geestruthe to 8 ell. Of course, 1 square geestruthe=$1\frac{9}{98}$ marschruthe=256 square fuss; 1 morgen=600 square marschruthe=117600 square fuss. *Solid:* 1 klafter or faden=6½ F. long×6½ F. high×2 F. deep=$88\frac{5}{8}$ cubic fuss; 1 messbergerfaden=6½ F. long×8 F. high×2 F. deep=106½ cubic fuss.

Hanover.—Weight: 1 pfund=2 mark=16 unze=32 loth=128 quentchen=512 örtchen. Gold and silver are weighed by the mark of Cologne. The apothecary pound is ⅔ of the commercial pfund, subdivided like that of Nürnberg, which last is itself frequently used. *Liquid Capacity:* 1 fuder=4 oxhoft=6 ahm=15 eimer =24 anker=120 viertel=240 stübchen=480 kanne=960 quartier=1920 nössel; 1 fass for beer=4 tonne=104 stübchen=208 kanno=416 quartier. *Dry Capacity:* 1 last=2 wispel=16 malter=96 himt=288 drittel=384 vierfass. *Length:* 1 elle=2 fuss=24 zoll=192 achtel=288 linie. *Itinerary:* 1 meile (since 1818) =1462½ ruthe=11700 elle=25400 fuss. The old or polizei-meile was 2274 ruthe. *Agrarian:* 1 morgen of Calenberg=1½ drohn=2 vorling=120 square ruthe=30720 square fuss.

Hesse Cassel.—Weight: 1 pfund=16 unze=32 loth =128 quentchen. In retail the pfund of Berlin (which is about 3 per cent. lighter) is employed, subdivided as above. Gold and silver are by the Cologne; medicine, etc., by the Nürnberg weight. *Liquid Capacity:* 1 fuder=6 ohm=120 viertel=480 mass=1920 schoppen. *Dry Capacity:* 1 scheffel=2 himt=8 metze=32 mässchen. *Length:* 1 waldfuss or standard=12 zoll=144 linie. *Itinerary:* 1 ruthe=7 elle=14 landfuss, or surveyors' foot. The ruthe is sometimes divided decimally into 10 fuss, etc. *Agrarian:* 1 acker =150 square ruthe=29400 square landfuss. *Solid:* 1 klafter=5 F. long×5 F. high×6 F. deep=150 cubic waldfuss.

Hesse-Darmstadt.—The old weights and measures were those of Frankfort. Those established in 1821 are as follows: *Weight:* 1 pfund=32 loth=128 quentchen=512 richtpfennig=½ kilogram of France. Gold and silver are still reckoned by the mark of Cologne, and Nürnberg furnishes the apothecary weight. *Liquid Capacity:* 1 fuder=6 ohm=120 viertel=480 mass=1920 schoppen. The schoppen=½ litro of France. *Dry Capacity:* 1 malter=4 simmer=16 kümpf=64 gescheid=256 mässchen=128 litre of France. *Length* 1 klafter=10 fuss=100 zoll=1000 linie. The fuss is ⅓ metre of France; the elle is ⅔ metre. *Agrarian:* 1 morgen=4 viertel=400 square klafter=40000 square fuss. *Solid:* 1 stecken=5 F. long×5 F. high×4 F. deep=100 cubic fuss. The old stecken was 6×6×4 =144 cubic feet, old measure.

Holland.—Since 1817 the values and divisions of the weights and measures have been according to the metrical system of France, retaining more or less of the old nomenclature, as will be found under that head.

Ionian Isles.—Since 1817, when the new Constitution of these Isles was ratified by the English Parliament, the standard weights and measures have been those of Great Britain. There still remain, however, several detached usances of Turkish and Venetian origin, which will be found under their proper heads.

Lübec.—Weight: 1 pfund=2 mark=16 unze=32 loth=128 quentchen=512 pfennig. Gold and silver weight is that of Cologne; apothecary weight of Nürnberg. The schiffpfund and tonne are divided as at Hamburg. *Liquid Capacity:* 1 fuder=4 oxheft=6 ahm=24 anker=30 eimer=120 viertel=240 stübchen =480 kanne=960 quartier=1920 plank=3840 ort. *Dry Capacity:* 1 last=8 drömt=24 tonne=96 scheffel =384 fass. *Length:* 1 elle=2 fuss=24 zoll=144 linie =1728 punkt. Other usances here are the same as at Hamburg.

Lucca.—The weights and measures of this territory are, in system, the same as those of Tuscany, of which it will hereafter form a part.

Mecklenburg Schwerin.—What is under this will also apply to the other Grand Duchy of Mecklenburg Strelitz, both of whose systems of weights and length measures are those of Hamburg; while the capacity measures are, in fact, those of Lübec.

Modena.—Weight: 1 libbra or lira=12 oncia=192 ferlino; 1 libbra, for gold and silver=12 oncia=96 ottava=192 ferlino=1920 carato=7680 grano. Apothecary: 1 libbra=12 oncia=96 drachma=288 scrupolo =6912 grano. *Liquid Capacity:* 1 barile=20 fiasco= 40 boccale. *Dry Capacity:* 1 sacco=2 stajo. *Agrarian:* 1 biolca=72 tavola=288 square cavezzo=10368 square piede. The piede of Reggio has the same relations, but a different value, with that of Modena, the city. The other measures appear arbitrary.

Ottoman Empire, or Turkey in Europe.—Neither our knowledge nor, perhaps, the actual state of weights and measures in this empire, allow of their being arranged in any satisfactory, systematic exhibition; and the same may be said of the modern kingdom of Greece. The value and denominations of isolated units have been given before.

Parma.—Weight: 1 libbra=12 oncia=288 denaro =6912 grano. Gold and silver are weighed by the marco of Milan, or by the new Italian pound. The apothecary pound is identical with the commercial libra. The rubbio is 25 libbra. *Liquid Capacity* is measured as at Milan. *Dry Capacity:* 1 stajo=2 mina=16 quartarole. *Length:* 1 pertica=6 braccio di legno=72 oncia=864 punto=10368 atome. *Agrarian:* 1 biolca=6 staro=72 tavola=288 square pertica =10368 square braccio.

Portugal.—Weight: 1 arratel=2 marco or meio-arratel=4 quarta=16 onça=128 outava=384 escropulo =9216 grao. This weight, from the onça down, answers for all purposes. Gold and silver are reckoned by the marco of 8 onças, and medicines are weighed by a libbra of 12 onças, which is therefore ⅔ arratel. 1 tonelada=19½ quintal=54 arroba=1728 arratel. *Liquid Capacity:* 1 almude=2 alqueire or cantaro=12 canada=24 meia-canada=48 quartilho=96 meio-quartilho; 1 tonelada=2 pipa or beta=52 almude= 104 alqueire. *Dry Capacity:* 1 moio=15 fanga=60 alqueire=120 meio-alqueire=240 quarto=480 outava =960 maquia or meia-outava. *Length:* 1 covado=3 palmo da craveira=24 pollegada=36 dedo=144 grao =288 linha=8456 ponto. The commercial covado, called *covado avantejado*, has 24⅝ pollegadas. *Itinerary:* 1 braça=1½ passo=2 vara=6⅔ pe=10 palmo da craveira; 1 legoa=3 milha=24 estadio. *Agrarian:* 1 geira=4840 square vara.

Prussia.—The weights and measures were reformed here in 1816. *Weight:* 1 pfund=2 mark=16 unze= 32 loth=128 quentchen. The unitary pfund is $\frac{1}{10}$ of a cubic foot of distilled water, weighed, and reduced to a vacuum at the temperature of 15° Reaumur (65¾° Fahrenheit). Gold and silver are still reckoned by the mark of Cologne, to which the Prussian mark is considered as equivalent; and the apothecary pound, divided like that of Nürnberg, is ⅔ pfund. 1 schiffpfund=3 centner=15 stein=20 liespfund=330 pfund.

Liquid Capacity: 1 fuder = 6 ohm = 12 eimer = 24 anker = 720 quart = 1440 össel. The eimer contains 3840 cubic zolle or inches. *Dry Capacity:* 1 last, for wheat and rye = 4 wispel = 6 malter = 72 scheffel = 288 viertel = 1152 metze = 4508 mässchen; 1 last, for barley and oats = 48 scheffel. The scheffel is $\frac{4}{5}$ of the eimer in absolute capacity, or 3072 cubic zolle. *Length:* 1 fuss (rheinfuss) = 12 zoll = 144 linie = 1728 scrupel. This unit has been established at 139, 13 lignes de Paris. The elle is 25½ zolle. *Itinerary:* 1 ruthe = 10 landfuss = 12 rheinfuss. The landfuss is also subdivided decimally into 10 zoll = 100 linie = 1000 scrupel; 1 postmeile = 2000 ruthe = 24000 rheinfuss. *Agrarian:* 1 morgen = 180 square ruthe = 25920 square rheinfuss. *Solid:* 1 klafter = 6 F. long × 6 F. high × 3 F. deep = 108 cubic rheinfuss; 1 haufen = 4½ klafter = 18 F. long × 9 F. high × 3 F. deep = 486 cubic rheinfuss. The old values and denominations which are still retained, as well in the capital as in several principal cities, are given under those heads.

Roman States.—Under this name is intended what has, until recently, been known as the State of the Church. Late events have shown this last title to be uncertain. Two principal cities comprehend all that is systematic in weights and measures. *Bologna.*—*Weight:* 1 libbra = 12 oncia = 96 ottava = 192 ferlino = 1920 carato = 7680 grano. This weight serves also for gold and silver, though the new Italian metrical pound (the kilogram) is also employed, as well as the libbra of Rome. In Ferrara, use is still had of the marco of Milan. Apothecary: 1 libbra = 12 oncia = 96 drachma = 288 scrupolo = 6912 grano. This libbra weighs 11½ commercial oncie. *Liquid Capacity:* 1 corba = 2 mezzacorba = 4 quarterone or quarterolo = 60 boccale = 240 foglietta. *Dry Capacity:* 1 corba = 2 stajo or staro = 8 quarterone = 32 quartieino or quarteccione. These two corbe are of the same capacity. *Agrarian:* 1 tornatura = 140 square pertica = 14000 square pié. *Rome.*—*Weight:* 1 libbra = 12 oncia = 288 denaro = 6912 grano. The same weight serves for gold and silver, and for medicine. *Liquid Capacity:* 1 botta = 16 barile = 512 boccale = 2048 foglietta = 8192 quartuccio. The barile for oil contains only $\frac{7}{8}$ of the above, or 28 boccale. But oil has a proper measure, viz.: 1 soma = 2 mastello or pelle = 20 cugnatello = 80 boccale. *Dry Capacity:* 1 rubbio = 2 rubbiatella = 4 quarta = 8 quartarella = 12 staja = 16 starello = 22 scorzo = 88 quartuccio. *Length and Distance:* 1 canna (ordinary) = 2 braccio = 6 pié = 8 palmo = 24 linea; 1 canna (architects', etc.) = 7½ pié = 10 palmo = 120 oncia = 600 minuto = 1200 decimo; 1 canna di ara = 1½ braccio di ara = 9 palmo di ara; 1 catena = 10 stajolo = 57½ palmo (architects'). *Agrarian:* 1 rubbio = 4 quarta = 7 pezza = 16 scorzo = 32 quartuccio = 112 square catena = 11200 square stajolo = 870300 square palmo (architects').

Russia in Europe: St. Petersburg.—*Weight:* 1 funt = 12 lana = 32 loth = 96 zolotnic = 9216 doli. This is used for gold and silver also, and the Nürnberg weight by apothecaries. 1 packen = 3 berkowitz = 30 pud = 1200 funt. *Liquid Capacity:* 1 vedro = 4 tschetwerk = 8 osmuschka = 88 tscharkey. Since 1819 the vedro = 100 tscharkey. 1 sarokowaja = 13½ anker = 40 vedro. *Dry Capacity:* 1 tschetwert = 2 osmin = 4 pajak = 8 schetwerik = 32 tschetwerka = 64 garnetz. *Length and Distance:* 1 archine = 2 stopa = 24 verschok = 32 palez. This was the old measure. Within the last twenty years, both the English foot and the Rhine foot have come into use; and since 1851 the former has predominated, it is believed, the normal standard of value. At present the archine is divided into 16 verschok. 1 verst = 500 sashine = 1500 archine = 24000 verschok. The sashine is 7 feet exactly. Besides the verst the mile of Lithuania is also used, equivalent to 7 versts = 10 rheinmiss. *Warsaw.*—The legal weights and measures of Poland are supposed to be, since 1831, subordinate to those of the Russian empire, of which it forms a part. The establishment in 1819, while Poland had still its own Legislature, and which rested upon the French metrical system, is nearly as follows: *Weight:* 1 funt = 16 lana = 32 loth = 48 skoyciec = 128 drachme = 384 skrupulow = 9216 granew = 50688 granikow = 405504 milligrammow. The milligrammow is exactly the milligram of France. The apothecary pound is 358½ grams of France, and divided like Nürnberg weight. The old funt of Warsaw proper was $\frac{1}{12}$ lighter; and the old quintal was of 5 kamlnieck, or 160 funt. The new kamlnieck is of 25 funt. *Liquid Capacity:* 1 stangiew = 2 beczka = 50 garniec = 200 kwarti = 800 kwaterki. The kwarti is the litre of France, and the beczka, therefore, the hectolitre. Formerly the beczka was divided into 36 garniec, and 144 kwarti. *Dry Capacity:* 1 korzec = 4 cwierc = 32 garniec or garcy = 128 kwarti = 512 kwaterki. The kwarti is the same for all capacity; and the korzec is, therefore, 128 litres of France. *Length:* 1 loklec = 2 stopa = 4 cwierc = 24 calow = 288 liniow = 576 millimetrow = 576 millimetre of France; 1 sznurow = 10 pretow = 100 precikow = 150 stopa = 1000 lawek = 1800 calow. The precikow is the geometrical *foot*, used by surveyors. Itinerary distances are measured by the verst of Russia, 8 of which (= 29633 stopa) make the unitary league. *Agrarian:* 1 wloka = 30 morgow = 90 square sznurow = 9000 square pretow = 900000 square precikow.

Sardinia.—The weights and measures of the island of Sardinia, which can not be called systematic, will be found in the Dictionary. *Duchy of Genoa.*—*Weight:* 1 libbra (peso scarso) = 12 oncia = 288 denaro = 6912 grano. This is the ordinary weight of commerce, which is used also by apothecaries. The rottolo is 1½ libbra. The peso grosso is 10 per cent. heavier than the peso scarso, and has sometimes its rottolo. Gold and silver are weighed by the marco of Turin. The rubbio, or quarter of the centinajo, has 25 libbra in either weight. *Liquid Capacity:* 1 mezzaruola = 2 barile = 100 pinta = 180 amola. *Dry Capacity:* 1 mina = 8 quarto = 96 gombetta. *Length:* 1 piede liprando = 12 oncia = 144 punto = 1728 atomo; 1 piede manuale = 8 oncia; 1 canna = 4⅔ braccio = 10 palmo = 6⅔ piede manuale. But this last is hypothetical. The land surveyors use a canna of 12 palmo, which is properly a canella. But canne are found of all lengths, from 8 to 12 palmi. *Turin.*—*Weight:* 1 libbra = 1½ marco = 12 oncia = 96 ottavo = 288 denaro = 6912 grano = 165888 granottino. For gold and silver the marco is divided as under: 1 marco = 8 oncia = 192 denaro = 1152 carato = 4608 grano = 110592 granottino. The apothecary pound is 1½ marco, and is divided like the same weight at Bologna. *Liquid Capacity:* 1 carro = 10 brenta = 360 pinta = 720 boccale = 1440 quartino. *Dry Capacity:* 1 sacco = 3 stajo = 6 mina = 12 quartiere = 48 copello = 960 cucchiaro. *Length:* The smaller measures are divided as at Genoa. 1 pertica = 2 trabucco = 10⅔ raso = 12 piede liprando. *Itinerary:* 1 miglio = 1300 tesa = 4333⅓ piede liprando = 6500 piede manuale. *Agrarian:* 1 giornata = 100 tavola, or square pertica = 400 square trabucco = 14400 square piede liprando.

Saxony.—For the weights and measures of this kingdom, where there has been no recent establishment, will be taken what prevails at Leipsic. *Weight:* 1 pfund = 2 mark = 16 unze = 32 loth = 128 quentlein = 516 pfennig = 7680 gran. Gold and silver are by the mark of Cologne. Apothecary weight is that of Nürnberg. The centner, or hundred-weight, consists generally of 110 pfund, but for live stock it is only 102 pfund; that called *berg-gewicht* at the mines, is 114 pfund; and *stahl-gewicht*, for iron and steel, is 118 pfund. *Liquid Capacity:* 1 fuder = 2⅔ fass = 4 tonne = 6 ahm = 12 eimer = 14 anker = 756 kanne = 1512 nössel = 6048 quartier. The fuder of Dresden is similarly divided, but is smaller, containing only 672 kanne of Leipsic. *Dry Capacity:* 1 wispel = 2 malter = 24 scheffel = 96 viertel = 384 metze = 1536 mässchen. *Length:*

1 elle=2 fusa=24 zoll=240 linie. The fusa is also decimally divided. 1 ruthe=10 elle=16 fuss. *Itinerary:* 1 polizei-meile=2000 ruthe=16000 elle=32000 fuss; 1 post-meile = 1500 ruthe = 12000 elle = 24000 fuss. *Agrarian:* 1 morgen=800 square ruthe=76800 square fuss.

The Two Sicilies.—The weights and measures of the island of Sicily are given in the Dictionary, corresponding to the localities of Messina, Palermo, and Syracuse; they are too unsystematic to be detailed here. What follows belongs properly to the city and district of Naples. *Weight:* 1 libbra=12 oncia=360 trapeso=7200 accino. This weight is for gold and silver, for silk, for spices, for drugs and colors. All other articles are weighed by the rotolo of $2\frac{7}{9}$ libbre, or $33\frac{1}{3}$ oncie. The apothecary unit is the same libbra, but divided as follows: 1 libbra=12 oncia=120 drachma=360 scrupolo=7200 accino. *Liquid Capacity:* 1 carro=2 botta=24 barile=1440 caraffa; 1 salma, for oil=16 staja=256 quarto=320 pignata=1536 misurella. *Dry Capacity:* 1 carro=36 tomolo=864 misura. *Length and Distance:* 1 canna=8 palmo=96 oncia=480 minuto; 1 pertica or passo=$7\frac{1}{2}$ palmo; 1 miglio=$933\frac{1}{3}$ passo=7000 palmo. *Agrarian:* 1 moggia=900 square passo=50625 square palmo.

Spain.—The weights and measures given for this kingdom apply especially to Castille, and are recognized at Madrid. Considerable differences in value, and some also in nomenclature, will be found existing in several of the great provinces of Spain; as, for example, in Valencia, where long comparative independence naturally led to a result of this kind, which is further contributed to elsewhere by the remarkable number of distinct races by which Spain is peopled. But these variations are not sufficiently material to be detailed here.

Weight: 1 libra=2 marco=16 onza=128 ochava=256 adarme=768 tomine=9216 grano. Gold and silver are by the same weight; but the marco is the unit, and is divided for *gold* only, as follows: 1 marco=50 castellano=400 tomine=4800 grano. This division has been, to be sure, interdicted by law; but it still remains, and is especially exemplified in the former South American dependencies of Spain. In apothecary weight: 1 libra=$1\frac{1}{2}$ marco=12 onza=96 dracma =288 escrupulo=576 obolo=1728 caracter, or quilate =6912 grano; 1 tonelada=20 quintal=80 arroba= 2000 libra; 1 quintal macho=6 arroba=150 libra. *Liquid Capacity:* 1 arroba mayor, or cantara=4 quartilla=8 azumbre=32 quartillo=128 copa. This arroba, in theory, should contain 35 libras of distilled water, at the ordinary pressure and temperature. The arroba menor for oil is divided in the same manner, but weighs only $27\frac{1}{2}$ libras, as before. *Dry Capacity:* 1 cahiz=12 fanega=144 almude, or celemin=288 medio=576 quartillo=2304 racion=9216 ochavillo. *Length:* 1 vara=3 pie or tercia=4 palmo or quarta=6 sesma=36 pulgada=48 dedo=432 linea=5184 punto. *Distance:* 1 estadal=2 estado, toesa, or braza=$2\frac{2}{3}$ paso =4 vara=8 codo=12 pie. There is also a former estadal (before 1801), which still serves as a basis for an agrarian measure, and=11 pie. 1 cuerda=$8\frac{1}{4}$ vara= $24\frac{3}{4}$ pie=33 palmo mayor. But in Valencia: 1 cuerda =20 braza=40 vara; 1 legua (till 1568)=3 milla= 24 estadio=3000 paso=5000 vara=15000 pie; 1 legua (of Philip V.)=7605 vara=22815 pie. This was a league of which $17\frac{1}{2}$ were supposed to make a degree, and was directed to be used on all maps. 1 legua (since 1766)=4800 paso=8000 vara=24000 pie. It is by this that the distances along the great roads are marked. But there is also a legua frequently used, estimated at 800 cuerda=6600 vara=19800 pie. *Agrarian:* 1 yugada = 50 fanegada = 600 celemin = 2400 quartillo=28800 square estadale=460800 square vara. But in Valencia: 1 yugada=6 cahizada=36 fanegada =7200 square braza, and is but the $\frac{1}{1.7}$ nearly of the legal yugada. 1 arançada (for vineyards and crops of oats)=400 square estadale=48400 square pie: the estadale being here but 11 pie.

Sweden.—*Weight:* 1 skålpund (viktuallewigt)=16 untz=32 lod=128 qwintin=8848 as. There are several commercial pounds in this kingdom, applicable under different circumstances and to different articles; but none are commensurable with the skålpund, except that called *jernwigt*, or the iron pound, which is $\frac{1}{3}$ of the other. They are all to be found in the Dictionary under the word skeppund, by which multiple, indeed, they are usually counted. Gold and silver is weighed by the mark of Stockholm, which is incommensurable with the skålpund, but very nearly half of it. It is divided as follows: 1 mark=8 untz=16 lod=64 qwintin=4384 as. The apothecary pound, or libra=7416 as, and is subdivided like the Nürnberg pound. 1 skeppund=20 lispund=400 pund. *Liquid Capacity:* 1 tunna=48 kanna=96 stop=384 qwarter =1536 ort, or jungfru. *Dry Capacity:* 1 tunna=2 spann=4 half-spann=8 fjerding=32 kappe=56 kanna = 112 stop = 448 qwarter = 1792 ort. *Length:* 1 famn=3 aln=6 fot=72 tum=864 linie. But in late times the foot is divided decimally for all purposes. 1 stång=8 aln=16 fot; 1 mil=2250 stång=6000 famn = 18000 aln = 36000 fot. *Agrarian:* 1 tunna = 2 spannland=4 half-spannland=8 fjerding=32 kappland=56 kannland=$218\frac{4}{7}$ square stång=14000 square aln=56000 square fot. *Solid:* 1 vedfamn=6 F. long ×6 F. high×3 F. deep=108 cubic fot.

Switzerland.—Nearly every one of the twenty-two cantons of which this confederation is composed appears to present some variety in the values, subdivisions, and nomenclature of its weights and measure. To explain them summarily is impossible; to expose them in detail would occupy a space manifestly disproportionate to their practical interest. What prevails at Bern, Lucerne, and Zurich (the three legislative capitals, biennially in rotation, of the Swiss confederacy), is all that need be given here. *Bern.—Weight:* 1 pfund=16 unze=32 loth=128 quent=512 pfennig. This is the ordinary commercial weight; that for gold and silver, etc., is divided into 2 marks, and then like the preceding. The mark in this weight is the old marc of France; the ordinary pfund=17 ounces poids de marc of France. The apothecary weight is, in fact, about $\frac{1}{4}$ of 1 per cent. lighter than the Nürnberg; it is, no doubt, in theory the same, and is divided similarly. *Liquid Capacity:* 1 landfass = 6 saum = 24 eimer or brenter = 600 mass = 2400 vierteli = 4800 becher. *Dry Capacity:* 1 mütt=12 mäss=24 mässli =48 imml=96 achterli=192 sechszehnerli. *Length:* 1 fuss=12 zoll=144 linie=1728 secunde. The *steinbrecher fuss*, used for quarrying and building stone= 13 zoll. The elle happens to be exactly $1\frac{6\,8}{10\,0}$ of the fuss; but this is an accidental coincidence, as they are not used commensurably. *Itinerary:* 1 ruthe=$1\frac{1}{2}$ klafter=$3\frac{1}{2}$ wald-schritt=4 feld-schritt=10 fuss. The ordinary Swiss meile is no longer commensurable with any Swiss foot. It seems to have been originally $26666\frac{2}{3}$ fuss, for its length would not differ materially from that multiple of the fuss. *Agrarian:* 1 juchart, or feld acker=400 square ruthe=40000 square fuss. For woodland, the juchart is 450; for gardens, 360; for meadow land, 350 and 320; and, finally, for suburban mensuration, $312\frac{1}{2}$ square ruthe. *Solid:* 1 klafter=6 F. long×5 F. high×$3\frac{1}{2}$ F. deep=108 solid fuss. *Lucerne.—Weight:* 1 pfund=36 loth=144 quentchen. This is the division of Lucerne proper; but the weights of Zurich are also in use. Gold and silver are weighed by the mark of Zurich; but the apothecary pound is the old medicinal weight of France. *Liquid Capacity:* 1 saum=$3\frac{1}{2}$ ohm=100 mass=400 scheppen=4000 prima. *Dry Capacity:* 1 malter=4 mütt=16 viertel =32 halb-viertel=160 imml=256 becher=2560 prima. *Length:* 1 elle=2 schuh, or rheinfuss. The carpenters' foot (tischler-schuh) is nearly 3 per cent. shorter; and the builders' and surveyors' foot (feld-schuh) 10

per cent. shorter than the rheinfuss. Other measures are those of Zurich. *Zurich.—Weight:* 1 pfund=18 unze=36 loth=144 quenten; 1 pfund (of Antorf, for gold and silver, etc.)=2 mark=16 unze=32 loth=128 quent=512 pfennig. This weight is $\frac{8}{9}$ of the commercial weight. The apothecary pound is that of Lucerne. *Liquid Capacity:* 1 eimer (lauter-mass)=4 viertel=30 kopf=60 mass=120 quärtli=240 stotzen. The eimer (stadt-mass) for wine in retail is subdivided in the same manner, but is 10 per cent. smaller. 1 eimer (trübes mass)=4 viertel=32 kopf=64 mass=128 quärtli=256 stotzen. This eimer (which, as its name implies, is for wine unrefined, as the lauter-mass is for fined wine) is $\frac{1}{75}$ larger than the latter. *Dry Capacity:* 1 malter=4 mütt=16 viertel=64 vierling=256 mässli=576 immi. The malter for grain generally, and all *dry* seeds and fruits (*glatte frucht*), contains $12\frac{1}{2}$ cubic feet; that for oats and for *green* articles (leguminous growth, *rauhe frucht*) contains $12\frac{7}{8}$ cubic feet. *Length:* 1 fuss=12 zoll=144 linie=133 *lignes de Paris.* The same fuss is divided decimally by surveyors. The architectural foot, since 1820, is $\frac{6}{13\cdot50}$ longer, but divided like the ordinary fuss. 1 ruthe=2 elle=10 fuss. *Agrarian:* The ordinary juchart=400 square ruthe=4000 square fuss. There are also juchart in the same variety (except the very smallest), and similarly applicable as at Bern. *Solid:* 1 klafter, for fire-wood=6 F. long×6 F. high×4 F. deep=144 cubic fuss. There are also klafter of 72 and 108 cubic fuss, the billets being 2 and 3 feet long respectively. The klafter for turf (torb-klafter) contains 12 korb of 6 cubic fuss, each=72 cubic fuss. In 1828 a new system of weights and measures was proposed and adopted for the Cantons of Aarau, Basle, Bern, Freiburg, Lucerne, Solothurn, and Vaud, which rested upon the metrical system of France; but, except in the Canton of Vaud, it has not been generally carried out.

Tuscany.—Weight: 1 libbra=12 oncia=96 drachma=288 denaro=6912 grano. The same weight answers for gold and silver, and for apothecary use. The legal centinajo or cantaro (as in all the cases hitherto not specially mentioned) is 100 libbre; but the cantaro for wool, meat, and salt fish is yet 160 libbre. *Liquid Capacity:* 1 barile=20 fiasco=40 boccale=80 mezzetta=160 quartuccio, weighing $133\frac{1}{3}$ libbra; 1 barile for oil, or orcio=16 fiasco=32 boccale=64 mezzetta=128 quartuccio, weighing 120 libbre. The soma for oil is 2 barile. The barile of alcohol, brandy, and rum weighs 120 libbre. *Dry Capacity:* 1 moggio=8 sacco=24 staje=48 mina=96 quarto=384 metadella=768 mezzetta=1536 quartuccio=3072 bussole. *Length:* 1 canna=4 braccio=8 palmo=80 soldo=960 denaro; 1 canna (architects' and surveyors') or pertica=$2\frac{1}{2}$ passetto=5 braccio=10 palmo=60 crazia=100 soldo=300 quattrino=1200 denaro. *Itinerary:* 1 cavezzo=2 passo=6 braccio; 1 miglio=$566\frac{2}{3}$ canna (architects')=$2833\frac{1}{3}$ braccio=$5666\frac{2}{3}$ palmo. *Agrarian:* 1 saccato=10 stajolo=$13\frac{1}{4}$ stioro=165 panoro=660 square pertica=16500 square braccio.

Würtemberg.—Weight: Divided as the Prussian, from which it differs but slightly in value. Gold and silver are weighed by the mark of Cologne, and medicine by the apothecary weight of Nürnberg. *Liquid Capacity:* 1 fuder=6 eimer=96 immi=960 mass=3840 schoppen. The eimer is of a different capacity, according as it is for clear or unrefined wine. The latter is nearly $4\frac{1}{2}$ per cent. larger than the former. *Dry Capacity:* 1 scheffel=8 simri=32 vierling or viertel=64 achtel=128 mässlein=256 ecklein=1024 viertelein. *Length:* 1 fuss=10 zoll=100 linié=1000 punkt. This measure was established in 1806, when the fuss was fixed at 127 *lignes de Paris.* The elle is not aliquot with the fuss, being $214\frac{2}{7}$ *lignes de Paris.* 1 ruthe=$1\frac{1}{2}$ klafter=10 fuss. This is the modern division. In the older habits there was 1°, a ruthe of 16 fuss; 2°, one of 12 rheinfuss; and 3°, one of 15 rheinfuss. These different lengths affected, of course, the value of the acre. *Agrarian:* 1 morgen=4 viertelmorgen=384 square ruthe=38400 square fuss. This is the legal measure, which corresponds in value with the old count of 150 square ruthe (of 16 fuss in length) to the morgen. There is also the little morgen (old measure) of 150 square ruthe (No. 8)=83750 square rheinfuss; and the great morgen (old measure) containing 400 square ruthe (No. 2)=57600 square rheinfuss. 1 juchart or jauchert=$1\frac{1}{4}$ morgen.

The variations in the computation of the mile, the gallon, the hhd., and the barrel, are so great in various countries, that we give a list by way of comparison.

MILE.

Miglio, since 1803...	Austr. Lombardy.	0·6214	miles.
" d'Italia.....	Milan	1·1536	"
"	Naples.....	1·1503	"
"	Rome...	0·9252	"
"	Turin	1·5744	"
"	Tuscany	1·0276	"
"	Venice.....	1·1307	"
Mill	Denmark	4·68	"
Mijl, old measure...	Holland	3·6304	"
" marine	"	3·4591	"
" legal, Netherl.	"	0·6214	"
Mil	Sweden.....	6·6235	"
" of Norway.....	"	6·6216	"
Mile, legal	Great Britain	1	"
" marine	"	1·1428	"
"	Ireland.....	1·2727	"
"	Scotland.....	1·1273	"
"	United States	1	"
" of land	England and U. S.	640	acres.
Milha.....	Portugal.....	1·2788	miles.
" marine.....	"	1·1507	"
Milla	Spain.....	0·8648	"
" marine	"	1·1530	"
Mille, old measure..	France and Belg..	1·2111	"
" marine	"	1·1507	"
" metrical	"	0·6214	"

GALLON.

Imperial, since 1825....	Great Britain	1·20060	gallons.
For wine, Saxon	England, 1000.....	0·93506	"
" Rumford ...	" 1266.....	0·93506	"
" Winchester..	" 1266.....	1	"
" Guildhall....	" after 1490	0·96970	"
For ale and beer, 1803..	" till 1825 .	1·22078	"
For wine	Ireland.....	0·94199	"
For liquids	Scotland.....	3·68199	"
For wine	E. and W. Indies..	1	"
For liquids.....	United States	1	"
For corn, Saxon	England	0·12556	bushels.
" Rumford.....	"	0·12050	"
" Winchester..	"	0·12451	"
" Guildhall....	"	0·12060	"
Imperial, since 1825 ...	Great Britain	0·12804	"
For corn	United States	0·12500	"

BARREL.

For lamp oil.....	Cincinnati	43	gallons.
For wine and brandy..	Great Britain....	31·5	"
For beer, before 1803..	"	32·0	"
For ale, etc.....	"	36·0	"
Barcelona wine.....	London	30·0	"
Claret.....	"	2?·0	"
Lisbon	"	55·0	"
Madeira.....	"	27·5	"
Port	"	34·5	"
Sherry	"	32·5	"
Brandy, etc.....	United States....	31·5	"
For corn	Maryland	5	bushels.
For fish	"	200	pounds.
For flour	"	196	"
For lime	"	320	"
For salted provisions ..	"	31·5	gallons.

HOGSHEAD.

For wine, etc. ...	England	63	gallons.
Of claret	"	58	"
For ale.....	"	58·59744	"
For beer	"	65·92212	"
Old measure.....	Scotland	57·29745	"
For liquids	United States....	63	"
For tobacco, net .	Kentucky, mean.	1200	pounds.
" " .	Maryland, " .	800	"
" " .	Missouri " .	1200	"
" " .	Ohio " .	750	"
" " .	Virginia " .	1200	"

For the greater part of the preceding article we are indebted to the able work of J. H. Alexander, Esq., entitled *Universal Dictionary of Weights and Measures, Ancient and Modern, reduced to the standards of the U. S.*, to which we refer for more extended information.

Ancient Weights and Measures.—This subject is involved in considerable difficulty, and to enter fully into it would be quite inconsistent with our objects and limits. But the following details, abstracted from the best authorities, may be useful to such of our readers as have occasion to look into the ancient authors.

TABLE OF VARIOUS ANCIENT WEIGHTS (*according to different Authorities*).

	English Troy Grains.	
Attic obolus	8·2	Christiani.
	9·1	Arbuthnot.
	51·9	Christiani.
Attic drachma	54·6	Arbuthnot.
	69	Paucton.
Lesser mina	3392	Christiani.
	5189	Christiani.
Greater mina	5464	Arbuthnot.
	6900	Paucton.
Medical mina	6994	gr. Arbuthnot.
Talent=60 minæ=1 cwt. English.		
Old Greek drachm	146·5	Eng. Troy gr. Arb.
	69·5	=Roman denarius, Arbuthnot.
Old Greek mina	6425	do.
Egyptian mina	8326	do.
Ptolemaic mina of Cleopatra	8385	do.
Alexandrian mina of Dioscorides	9992	do.
Roman denarius	51·9	Rom. oz. Chr.
	62·5	Rom. oz. Arb.
Denarius of Nero	54·	Paucton.
" Papyrius	61·7	do.
Ounce	415·1	Christiani.
	437·2	Arbuthnot.
	431·2	Paucton.
Pound of 12 oz.	4150	Christiani.
" 12 oz.	4981	Christiani.
	5246	Arbuthnot.
	5174·4	Paucton.

SCRIPTURE MEASURES OF LENGTH.—(*Arbuthnot and Hutton.*)

	Inches.
Digit	0·7425
Palm	2·97
Span	8·91
	English Feet.
Lesser cubit	1·485
Sacred cubit	1·7325
	Yards.
Fathom	2·31
Ezekiel's reed	3·465
Arabian pole	4·62
Schœnus	46·2
Stadium	231
Sabbath day's journey	1155
	Miles.
Eastern mile	1·386
Parasang	4·158
Day's journey	33·264

GRECIAN MEASURES OF LENGTH.—(*Arbuthnot and Hutton.*)

	Inches.
Dactylos	0·75546
Doron	3·02187
Dochmos	
Dichas	7·55468
Orthodoron	33·1015
Spithame	9·06562
Pous	12·0875
	English Feet.
Pous	1·00729
Pygme	1·13203
Pygon	1·25311
Pechya	1·51093
	English Paces.
Orgya	1·00729
Stadios	100·72916
Dulos	
Milion	805·8333

ROMAN MEASURES OF LENGTH.—(*Arbuthnot and Hutton.*)

	English Inches.
Digitus transversus	0·72525
Uncia, the ounce	0·967
Palmus minor	2·901
Pes, the foot	11·604
	English Feet.
Palmipes	1·20875
Cubitus	1·4505
Gradus	2·4175
	Paces.
Passus	0·967
Stadium	120·875
Milliare	967

ROMAN DRY MEASURES.—(*Arbuthnot and Hutton.*)

	English Pints.
Hemina	0·5074
Sextarius	1·0148
	English Peck.
Modius	1·0141

ATTIC DRY MEASURES.

	English Pints.
Xestes	0·1949
Chenix	1·486
	Winch. Bushel.
Medimnus	1·0906

JEWISH DRY MEASURES (*according to Josephus*).

	English Pints.
Gachal	0·1949
Cab	3·374
Gomer	7·0152
	English Peck.
Seah	1·4615
	Winch. Bushels.
Ephah	1·0961
Latech	5·4807
	Quarter.
Corom	
Chomer	1·3702

ROMAN MEASURES FOR LIQUIDS.—(*Arbuthnot and Hutton.*)

	English Pints.
Hemina	0·59750
Sextarius	1·19518
Congius	7·1712
	Wine Gallons.
Urna	3·5857
Amphora	7·1712
	Hhds.
Culeus	2·2766

ATTIC MEASURES FOR LIQUIDS.

	English Pints.
Cotylus	0·5742
Xestes	1·1483
Chous	6·8900
	Wine Gall.
Meteetes	10·3350

JEWISH MEASURES FOR LIQUIDS.

	English Pints.
Caph	0·8612
Log	1·1483
Cab	4·5933
	Wine Gall.
Hin	1·7225
Seah	3·4450
Bath	10·3350
	Hhds.
Coron	1·0405

The following table shows the number of pounds of various articles to a bushel:

Wheat	60 pounds.	Onions	57 pounds.
Corn, shelled	56 "	Beans	60 "
Corn on the cob	70 "	Bran	20 "
Rye	56 "	Clover seed	64 "
Oats	36 "	Timothy seed	45 "
Barley	46 "	Flax-seed	45 "
Buckwheat	52 "	Hemp-seed	45 "
Irish potatoes	60 "	Blue grass seed	14 "
Sweet potatoes	50 "	Dried peaches	33 "

—For further information the reader is referred to the *Dict. of Weights and Measures*, by J. H. ALEXANDER, 8vo. Balt., 1855; *Bankers' Magazine*, iii. 299 (J. H. ALEXANDER); *North American Rev.*, xlv. (PERCIVAL), xiv. (FARRAR); *Westminster Rev.*, xvi.; *Edinb. Rev.*, lxxvii. 121; HUNT'S *Merchants' Magazine*, xii. 549, iv. 333, 434 (D. J. BROWNE); NILES'S *Register*, xiv., xv., xx., xxii., xxx., xl.; *Report of* Mr. J. Q. ADAMS, 8vo.

Weld, or Dyer's Weed (Ger. *Wau*; Du. *Wouw, Wouwe*; Fr. *Gaude*; It. *Guadarella*; Lat. *Luteola*), is an imperfect biennial, with small fusiform roots, and a leafy stem from one to three feet in height. It is a native of Great Britain, Italy, and various parts of Europe; and is cultivated for the sake of its stalk, flowers, and leaves, which are employed in the dyeing of yellow, whence its botanical name *Reseda luteola*. Weld requires the growth of nearly two summers before it comes to maturity; and the crop is liable to fail from so many causes, and is besides so exhausting, that its cultivation is by no means profitable. Weld is preferred to all other substances in giving the lively green lemon yellow. It is, however, expensive; and it is found, when employed in topical dyeing, to degrade and interfere with madder colors more than other yellows, and to stain the parts wanted to be kept white. Hence quercitron bark is now employed in calico-printing, to the almost total exclusion of weld. It is still, however, employed in dyeing silk a golden yellow, and in paper-staining.—LOUDON'S *Encyclopædia*.

West Indies (*Antilla* or *Antilles*), an Archipelago of islands which extend from the Gulf of Florida to the Gulf of Paria, and form part of the division Central America, between lat. 10° and 28° N., and long. 59° and 85° W.; bounded on the north and east by the Atlantic, and on the south by the Caribbean Sea, which separates them from the north coast of South America. The northwest group contains the largest islands, or Greater Antilles, as Cuba, San Domingo, Jamaica, and Porto Rico. The other group, or Lesser Antilles, stretching from north to south, consists of Guadeloupe, Martinique, Barbadoes, Trinidad, etc. The Bahamas form a third group. The Lesser Antilles, from Porto Rico to the Gulf of Paria, are by some writers called the Windward Islands, and the smaller group along the coast of Venezuela, the Leeward Islands; but in British charts the *Windward Islands* comprise those between lat. 10° and 15° N., and the *Leeward* those between lat. 15° and 19° N.

Leeward Islands.	
Virgin Isles	Redonda.
Anguilla	Montserrat.
St. Martin	Antigua.
St. Bartholomew	Barbuda.
Saba	Guadaloupe.
St. Eustatius	The Saintes.
St. Christopher	Deseada.
Nevis	Marie-Galante.
Dominica	

Windward Islands.	
Martinique	Curaçoa.
St. Lucia	Buen Ayre.
Barbadoes	Los Roques.
St. Vincent	Orchilla.
Bequia	Blanca.
The Grenadines	Tortuga.
Grenada	Falada.
Tobago	Margarita.
Trinidad	Cubagua.
Oruba	Coche.

The total area of the Archipelago is 95,100 square miles. Population, 3,684,000. The Lesser Antilles are of volcanic origin. Climate of the whole tropical, but modified by the surrounding ocean and the elevated land of many of the islands. Sugar, coffee, cotton, dye-woods, and spices are the chief products and exports. Of these islands, France possesses Guadaloupe, Martinique, Deseada, Marie-Galante, and part of St. Martin; to Spain belong Cuba and Porto Rico; to Denmark, Santa Cruz, St. Thomas, and St. John; to Holland, St. Eustatius, Saba, Curaçoa, and part of St. Martin; to Sweden, St. Bartholomew; Hayti is governed by rulers chosen from the citizens of each of its two governments; Margarita and adjacent isles belong to the republic of Venezuela; and Anguilla, Antigua, Barbadoes, Dominica, Grenada, Jamaica, Montserrat, Nevis, St. Christopher, St. Lucia, St. Vincent, Tobago, Tortola, Trinidad, Bahamas, and Bermudas, belong to Great Britain. Columbus landed on St. Salvador, Bahama group, in October, 1492; and the Archipelago, under the erroneous impression, at the time of discovery, that it formed part of Asia, was called the *West Indies*.

Particular descriptions are given under the heads of the various islands, and we shall therefore limit this article to the statistics of the trade between the United States and the several West Indies.

Areas of the West Indies.

	Islands.	Area in Sq. Miles.
	San Domingo	29,000
Spanish	Cuba	42,383
	Porto Rico	3,865
British.	Trinidad	2,020
	Jamaica	6,550
	Leeward Islands	864
	Windward Islands	778
	Bahamas	3,582
	Turks Island and Caicos	434
French	Guadaloupe	631
	Martinique	382
Dutch West Indies		600
Danish West Indies		192
Swedish West Indies		25
	Total square miles	91,456

British West Indies.—There are several small islands in the West India group, but they are, in a commercial point of view, too unimportant to require a separate or more special notice, being all comprised under some of the consular districts for which full returns of trade, port regulations, etc., are given in the preceding pages. American trade with the West Indies is placed on an equal footing with that of the most favored nations. Indeed, in some of the islands, as in Canada, American vessels are allowed privileges that are not sanctioned, if not expressly withheld, by the colonial regulations of the mother country. In both these divisions of the British North American possessions they are admitted, to a certain extent, to the benefits of the coasting trade; thus proving how impossible it is for the mother country to frame commercial regulations adapted, in all respects, to the wants and necessities of her colonies in distant quarters of the globe, the effect, if not the design, of which would be to embarrass and clog their intercourse with the neighboring markets.

The act of the Imperial Parliament, 13 Victoria, chap. xxix., secs. 4, 5, 6, clothes the governor-general of the East India possessions with ample powers to admit to the coasting trade, in that part of the globe, all foreign vessels, whenever, in his opinion, the requirements of commerce or the interests of her majesty's subjects in the East Indies may demand such a concession. By virtue of this authority, the coasting trade of these vast possessions is now thrown open to every flag. A similar act in favor of the West India and North American possessions would seem to be more imperatively demanded, even as a boon to British subjects in these parts, particularly in the West Indies, where but few of the staple articles of food are produced, and such as are imported are necessarily burdened with the taxes and imposts incident to reshipment coastwise, and transportation into the interior, before they reach the consumer. Such a measure would be productive of the happiest results; and, while it would impart additional stimulus to American enterprise, it would, at the same time, cheapen all the necessaries of life to the North American subjects of Great Britain, who, by reason of their geographical proximity and their different staples of trade, are the natural customers of the United States.

Official returns received at the Department of State represent American commercial intercourse with the British West Indies generally as being on the most satisfactory footing. Indeed, nothing seems wanting to render that intercourse wholly unembarrassed, save a modification, if not a total repeal, of the protective tariff now in force in Great Britain, in favor of some of the staple productions of these islands.

Danish West Indies.—The colonial possessions of Denmark are the Färoe Islands, Iceland, Greenland, and the islands of Santa Cruz, St. Thomas, and St. John, in the West Indies. Tranquebar and Serampore, in the East Indies, were sold to the English East India Company in 1846. The extent and population of these, in 1850, were as follows:

	Sq. Miles.	Population.
Färoe Islands	4 5	8,150
Iceland	38,200	60,000
Greenland	3,950	9,400
West Indies:		
Santa Cruz	74	23,720
St. Thomas	23	13,666
St. John	21	2,228
Total	42,763	116,164

Dutch West Indies.—The principal island is Curaçao, or Curaçoa, in the Caribbean Sea, belonging to the Dutch, off the north coast of Venezuela. Lat. 12° N., long. 69° W. Length, forty miles; breadth, six to ten miles. Population (1849) of Curaçoa and St. Eustache, 26,311. Shores bold; surface hilly; soil not rich, and deficient in water, yet a good deal of sugar, indigo, tobacco, and maize are raised. Principal port is Santa Anna, on the southwest side of the island, the entrance to which is narrow, but the harbor secure.

COMMERCE OF THE UNITED STATES WITH THE BRITISH WEST INDIES, FROM OCTOBER 1, 1820, TO JULY 1, 1857.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1821	$264,632	$470	$265,102	$227,346	....	$801,137	22,081	....
1822	444,601	2,540	452,141	335,537	$2,900	174,862	28,796	....
1823	1,617,345	10,122	1,627,967	1,844,381	7,319	520,730	68,340	8,654
1824	1,750,708	20,305	1,771,008	2,758,067	12,150	328,190	91,637	7,567
1825	1,635,574	11,472	1,647,046	2,437,122	490	638,216	93,967	6,807
1826	2,078,871	31,931	2,110,802	2,204,412	7,848	618,553	99,732	8,120
1827	682,105	7,470	690,575	895,207	....	313,386	26,746	7,753
1828	26,141	2,706	28,855	123,291	2,655	34,851	7,974	....
1829	1,463	5,058	6,521	240,224	4,878	79,490	5,418	....
1830	140	1,791	1,931	168,579	1,751	66,736	2,895	....
Total	$8,508,083	$93,895	$8,601,978	$11,234,716	$39,291	$4,016,162	447,072	38,901
Sept. 30, 1831	$1,417,291	$22,962	$1,441,253	$1,303,301	$1,600	$429,446	40,922	17,003
1832	1,655,449	33,828	1,689,276	1,422,237	10,879	411,924	66,780	19,357
1833	1,754,305	59,760	1,814,065	1,358,239	4,215	380,471	64,659	21,775
1834	1,582,100	64,439	1,646,539	1,168,509	3,306	432,384	51,329	18,288
1835	1,765,487	82,840	1,848,327	1,251,947	7,740	405,972	57,544	15,134
1836	1,748,355	97,631	1,845,486	1,295,387	12,069	200,228	56,295	16,276
1837	2,074,798	43,866	2,118,664	1,451,302	5,850	661,645	63,937	16,088
1838	2,080,634	120,219	2,200,852	1,635,833	81,947	1,250,705	56,760	11,245
1839	2,472,833	90,842	2,563,675	941,6 9	80,731	373,205	76,740	11,258
1840	2,907,584	58,000	2,965,584	1,048,105	5,350	552,101	78,294	13,364
Total	$19,899,335	$675,186	$20,074,521	$12,769,184	$219,740	$5,001,479	614,147	160,688
Sept. 30, 1841	$3,191,033	$41,311	$3,231,924	$855,122	$5,181	$271,300	91,587	13,402
1842	3,304,346	23,367	3,327,713	826,481	2,816	394,830	86,891	16,670
9 mos., 1843*	2,333,30)	25,671	2,357,980	837,836	1,780	647,407	75,062	14,388
June 30, 1844	4,114,218	21,828	4,136,046	687,906	1,412	345,234	123,531	26,354
1845	4,087,599	30,720	4,124,229	752,580	22,345	249,749	121,504	28,122
1846	4,915,053	32,474	4,947,557	883,678	4,000	252,881	124,135	23,342
1847	3,073,953	20,140	3,093,3 2	947,732	....	474,167	91,900	21,172
1848	4,344,136	40,947	4,384,883	1,158,563	78,635	408,254	114,848	24,416
184)	3,925,334	203,0 7	4,138,931	997,865	212,884	220,204	101,704	34,147
1850	5,617,893	178,644	5,791,449	1,126,168	119,011	239,182	93,883	29,071
Total	$37,711,593	$622,559	$38,334,102	$9,024,931	$448,962	$3,641,825	1,033,715	246,814
June 30, 1851	$3,943,530	$150,943	$4,103,509	$1,003,871	$514,803	$76,575	88,534	42,437
1852	3,512,133	7),956	3,592,089	1,030,517	62,509	96,101	99,470	38,097
1853	4,056,537	106,081	4,162,618	1,044,264	2,300	88,332	101,818	45,424
1854	4,754,398	152,277	4,90),675	1,126,477	252,156	56,749	87,389	3),878
185)	4,788,151	232,9 2	5,021,143	1,518,670	166,300	96,781	92,030	32,292
1856	4,433,008	51,644	4,484,652	2,285,249	34,000	46,534	81,139	21,480
1857	5,032,955	52,863	5,084,919	2,553,6 8	130,000	51,100	106,361	24,576

COMMERCE OF THE UNITED STATES WITH THE DANISH WEST INDIES, FROM OCTOBER 1, 1820, TO JULY 1, 1857.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1831	$1,316,296	$485,483	$1,801,779	$1,983,574	$14,631	$301,564	46,399	633
1832	1,643,474	588,256	2,231,75)	2,514,174	....	177,550	43,288	220
1833	1,231,153	631,0 2	1,862,154	1,390,504	....	342,057	32,092	560
1824	1,14 ,041	698,9 2	1,847,943	2,110,666	....	531,522	26,458	326
1825	1,231,249	598,177	1,849,425	1,4 2,765	56,724	156,093	37,790	712
1826	1,3 1,6 4	676,001	2,007,005	2,007,900	....	156,542	43,584	1,070
1827	1,493,6 1	538,130	2,001,381	2,293,341	47,350	263,312	44,358	816
1828	2,3 2,435	608,034	2,810,410	2,256,123	65,209	175,007	67,952	2,411
1829	1,943,310	282,491	2,224,411	2,053,260	61,200	154,732	56,788	1,230
1830	1,688,022	220,723	1,908,745	1,665,834	20,187	247,396	52,535	849
Total	$15,369,023	$5,336,569	$20,905,592	$19,744,150	$265,351	$2,513,754	461,889	8,899
Sept. 30, 1831	$1,431,075	$224,502	$1,645,577	$1,651,041	$40,303	$242,479	41,730	2,703
1833	1,338,494	232,341	1,575,831	1,111,366	38,045	97,127	33,782	3,303
1833	1,37 ,07)	307,200	1,546,870	1,128,709	24,783	116,783	33,642	3,512
1834	1,084,202	354,818	1,439,010	1,021,826	12,114	88,879	30,757	1,727
1835	1,255,881	201,316	1,457,196	1,282,902	27,655	71,807	35,076	581
1836	1,324,3 2	211,092	1,536,484	1,325,35)	31,549	11,675	32,965	3,231
1837	1,124,641	233,85)	1,358,492	1,164,087	18,484	2 3,835	31,657	5,199
1838	94),703	227,417	1,177,186	1,017,747	100,467	203,841	33,168	719
1833	1,014,391	803,154	1,317,585	1,465,761	165,227	48,997	33,503	3,607
184)	918,931	180,518	1,099,449	1)9,177	21,429	140,187	27,700	1,197
Total	$11,768,432	$2,485,198	$14,253,630	$13,856,676	$489,605	$1,220,464	349,920	26,284
Sept. 30, 1841	$76),903	$92,587	$852,495	$1,075,53)	$10,931	$93,303	23,464	427
1842	701,848	157,260	94 ,083	584,921	55,593	105,482	20,740	700
9 mos., 1843*	672,159	74,549	746,698	485,295	4,290	167,224	25,036	358
June 30, 1844	783,192	87,130	870,322	624,447	11,580	102,113	24,548	303
1845	833,5 3	16 ,026	9 4,42)	760,80)	67,995	32,877	28,920	1,457
1841	959,452	166,464	1,125,916	752,514	100,270	91,620	27,164	1,875
1847	836,072	152,631	98 ,303	846,749	45,000	127,2 6	22,156	4,315
1848	870,96)	76,874	953,843	535,738	34,0 6	13),831	25,579	3,065
184)	727,197	54,149	781,341	33),141	8,243	12,379	25,547	5,420
185)	867,147	114,318	981,958	267,459	27,830	58,600	19,375	2,650
Total	$8,118,91)	$1,127,379	$9,245,298	$6,272,092	$415,973	$930,725	253,379	21,076
June 30, 18 4	$902,587	$125,602	$1,028,289	$235,8 4	$243,589	$13,334	13,233	4,175
1852	810,433	120,6 7	931,136	191,745	16 ,987	9,149	20,478	6,681
1853	913,191	41,193	954,641	184,497	338,325	7,015	14,093	9,571
1854	923,925	84,936	992,950	280,744	235,754	8,412	22,846	7,784
185)	843,111	45,253	888,464	225,308	....	22,155	24,247	5,190
1856	817,2 0	80,511	904,801	225,028	43,100	5,080	21,875	955
1857	1,419,0 9	97,677	1,516,6 5	281,559	409,046	2,250	21,834	2,157

* Nine months to June 30, and the fiscal year from this time begins July 1.

COMMERCE OF THE UNITED STATES WITH THE DUTCH WEST INDIES, FROM OCTOBER 1, 1820, TO JULY 1, 1857.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1821	$633,250	$141,754	$775,043	$960,950	$84,960	$105,576	18,338	825
1822	921,072	157,704	1,078,776	1,491,023	22,450	137,928	25,649	827
1823	655,763	157,065	812,828	950,957	2,700	98,202	16,783	1244
1824	589,775	111,984	701,759	997,800	5,000	84,408	19,071	1406
1825	497,154	77,092	574,246	730,667	....	74,667	14,909	....
1826	434,125	57,426	491,551	84,217	2,400	87,141	12,733	611
1827	387,573	44,162	431,735	919,706	....	107,810	13,374	212
1828	415,543	41,616	456,959	478,397	17	89,018	11,506	329
1829	379,874	18,067	398,541	438,132	....	148,027	12,217	363
1830	349,405	42,298	391,793	286,509	2,260	127,306	17,043	124
Total	$5,139,473	$857,798	$5,991,271	$7,401,208	$68,187	$1,020,583	155,406	5033
Sept. 30, 1831	$370,857	$45,274	$416,131	$348,799	$70	$73,227	11,490	194
1832	357,520	46,644	404,164	328,832	....	85,072	9,511	80
1833	288,205	54,038	342,243	380,871	....	49,102	11,478	80
1834	294,552	62,136	356,688	354,192	....	63,494	11,266	181
1835	319,432	84,110	403,542	481,340	56,000	69,183	3,215	....
1836	406,458	67,427	473,885	521,006	22,808	25,510	3,524	223
1837	291,779	30,876	322,655	419,107	....	49,872	6,208	563
1838	204,234	46,915	251,149	382,591	28,430	35,315	2,948	168
1839	292,042	70,975	353,017	582,294	47,625	38,760	4,020	441
1840	259,438	42,916	302,354	396,479	17,157	32,342	5,790	1158
Total	$3,064,517	$551,311	$3,615,828	$4,191,401	$167,130	$471,969	67,385	9083
Sept. 30, 1841	$298,699	$34,194	$332,893	$500,197	$20,668	$62,663	6,666	720
1842	251,650	15,581	267,231	381,270	5,425	46,084	4,264	528
9 mos., 1843*	204,937	10,819	215,756	230,571	....	53,804	3,794	248
June 30, 1844	303,458	19,843	323,286	386,283	942	64,250	4,931	89
1845	304,080	33,708	337,788	363,354	17,006	27,569	5,085	....
1846	264,647	14,507	279,154	298,956	6,332	20,151	5,047	....
1847	217,214	16,355	233,569	270,038	6,225	18,647	4,370	113
1848	316,666	22,147	338,813	453,645	8,009	99,257	7,394	580
1849	317,066	50,252	367,318	453,099	34,018	39,946	14,193	357
1850	364,335	56,683	421,018	530,146	41,294	43,037	9,988	161
Total	$2,842,732	$274,094	$3,116,826	$3,995,699	$141,719	$484,116	65,007	2805
June 30, 1851	$360,898	$138,089	$504,987	$572,470	$158,541	$26,850	7,687	806
1852	299,679	17,766	317,445	552,561	1,800	20,097	4,977	715
1853	251,258	18,789	270,047	409,185	4,090	28,076	5,988	400
1854	371,380	22,065	393,445	534,978	11,425	11,912	7,925	690
1855	232,640	7,616	240,256	438,841	6,200	15,941	9,232	96
1856	323,654	6,328	329,982	536,875	6,500	5,854	7,816	664
1857	369,517	16,779	386,296	518,254	7,320	4,033	8,051	485

COMMERCE OF THE UNITED STATES WITH THE FRENCH WEST INDIES, FROM OCTOBER 1, 1820, TO JULY 1, 1857.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign
Sept. 30, 1821	$846,597	$49,838	$896,435	$966,619	....	$86,363	43,366	....
1822	918,609	42,303	961,002	969,509	$4,800	26,548	45,229	....
1823	864,218	63,377	867,595	988,013	1,576	95,127	30,119	2,326
1824	770,515	41,217	811,732	884,084	....	174,598	30,869	....
1825	937,308	74,584	1,011,956	848,068	8,046	160,388	43,589	5,787
1826	904,115	52,059	956,174	973,270	2,361	165,355	43,947	4,148
1827	979,637	61,156	1,040,853	991,330	4,110	223,408	50,001	4,536
1828	1,000,437	15,334	1,0 4,771	896,651	600	205,903	54,648	4,137
1829	1,056,639	15,768	1,072,407	777,992	3,405	286,237	65,019	4,317
1830	792,241	13,598	805,780	518,687	....	267,574	47,129	4,325
Total	$9,019,526	$429,168	$9,448,694	$8,620,723	$24,852	$1,641,731	459,947	28,876
Sept. 30, 1831	$704,833	$13,044	$717,877	$671,842	$3,842	$181,124	35,334	2,254
1832	605,793	19,182	624,975	578,857	1,123	152,116	26,077	4,448
1833	613,719	24,346	638,065	511,242	4,529	98,664	27,267	6,716
1834	561,179	19,084	580,263	416,072	800	70,956	26,909	5,314
1835	549,453	34,369	583,822	447,208	16,822	158,063	22,024	2,683
1836	471,927	30,173	502,100	417,335	13,868	92,627	18,455	2,057
1837	505,063	59,705	564,768	414,203	9,995	122,170	21,514	2,276
1838	430,008	38,889	468,897	370,050	14,200	79,604	23,168	1,871
1839	585,916	105,905	691,821	702,798	53,066	48,269	34,653	1,228
1840	433,595	80,656	514 251	335,251	1,494	101,423	25,619	1,255
Total	$5,511,486	$375,353	$5,886,839	$4,804,858	$120,689	$1,160,016	261,419	30,102
Sept. 30, 1841	$381,556	$40,966	$422,522	$198,216	....	$99,808	22,154	467
1842	495,397	23,609	519,006	199,160	....	116,261	19,730	1,780
9 mos., 1843*	281,828	13,108	294,936	135,921	$4,056	92,666	24,006	103
June 30, 1844	581,568	35,978	617,546	374,695	6,445	256,165	37,875	2,253
1845	542,455	21,648	564,103	415,032	4,990	191,334	23,150	1,234
1846	618,112	17,509	635,621	348,236	....	215,431	31,698	1,751
1847	569,126	34,038	603,164	151,366	....	114,513	22,715	2,727
1848	469,353	20,571	489,924	127,089	....	106,099	21,148	2,170
1849	180,731	14,267	194,998	71,469	....	39,750	7,485	2,786
1850	269,377	18,291	287,668	75,684	....	59,636	11,227	211
Total	$4,389,503	$259,985	$4,629,488	$2,096,818	$15,491	$1,292,323	240,748	14,752
June 30, 1851	$289,579	$20,702	$310,281	$22,999	....	$18,694	10,888	871
1852	429,846	25,598	455,444	46,287	....	42,709	16,155	2,119
1853	362,513	35,738	398,251	52,340	$1,000	23,161	12,262	4,741
1854	551,525	60,502	612,027	101,085	7,475	37,518	13,576	6,097
1855	396,857	12,864	409,701	44,434	....	42,537	17,287	1,672
1856	472 119	3,025	475,144	56,133	100	51,736	17,415	1,842
1857	729,779	1,364	731,143	59,089	....	51,107	20,538	1,966

* Nine months to June 30, and the fiscal year from this time begins July 1.

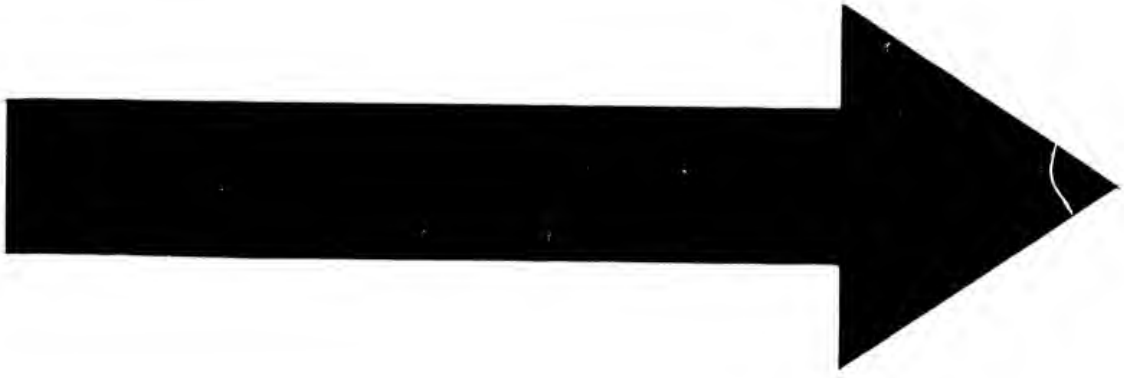
COMMERCE OF THE UNITED STATES WITH THE SPANISH WEST INDIES (CUBA EXCEPTED), FROM OCT. 1, 1820, TO JULY 1, 1857.

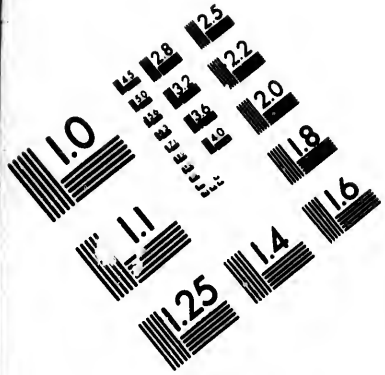
Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1821	$175,217	$33,004	$208,221	$626,516	....	$12,787	11,134	....
1822	150,435	7,606	158,041	933,667	....	35,629	10,650	....
1823	256,935	25,453	281,528	818,076	....	22,738	8,409	1,128
1824	306,896	233,718	540,614	856,696	....	8,835	5,008	180
1825	216,102	22,156	238,258	703,627	....	5,650	5,969	75
1826	310,556	15,966	326,522	770,770	....	7,841	6,879	....
1827	218,106	10,969	229,519	969,612	$2,000	13,760	7,194	668
1828	229,191	15,677	237,868	1,120,130	1,900	3,446	7,643	323
1829	209,780	38,900	248,680	808,822	31,505	8,664	11,051	216
1830	245,636	27,520	273,153	1,307,143	21,650	7,718	8,734	489
Total	$2,911,804	$427,710	$3,339,514	$9,099,174	$57,105	$127,137	82,937	3,014
Sept. 30, 1831	$261,801	$53,245	$315,046	$1,580,156	$35,683	$16,178	8,272	1,051
1832	322,550	72,552	995,111	1,889,182	42,360	9,127	9,848	717
1833	393,992	27,398	421,390	1,879,324	7,080	8,902	13,860	219
1834	431,805	59,722	491,527	2,240,413	11,050	11,160	15,769	741
1835	586,035	91,622	677,657	2,364,170	70,950	16,256	21,140	172
1836	534,559	65,899	600,458	3,209,043	47,086	8,600	22,079	423
1837	517,778	52,138	569,916	2,481,082	42,822	58,725	17,071	1,155
1838	602,503	90,484	723,052	2,636,152	30,473	36,783	19,538	2,406
1839	779,040	87,348	866,397	3,742,547	115,207	23,144	22,547	1,160
1840	770,420	29,208	799,628	1,838,732	31,272	46,076	22,559	952
Total	$5,350,506	$569,816	$5,920,182	$28,920,803	$434,004	$254,655	172,187	8,996
Sept. 30, 1841	$721,845	$28,087	$749,932	$2,560,020	$28,923	$17,799	30,129	730
1842	610,813	19,718	630,531	2,517,001	12,757	69,457	29,565	1,194
9 mos., 1843*	442,084	11,321	453,355	1,076,125	1,872	47,143	18,361	340
June 30, 1844	636,962	5,177	642,139	2,425,202	4,683	27,021	28,143	633
1845	688,149	20,775	708,924	2,026,253	11,668	58,453	28,575	622
1846	675,441	25,005	701,340	2,277,110	15,054	62,679	30,056	1,378
1847	925,979	32,985	850,064	2,141,029	21,394	14,137	26,767	1,870
1848	801,722	37,032	838,754	2,106,206	21,556	29,510	25,241	1,150
1849	529,292	29,234	558,526	1,164,561	28,005	27,664	25,376	3,908
1850	816,002	93,531	909,553	2,007,866	88,758	2,600	30,744	3,108
Total	$6,741,399	$309,865	$7,050,204	$21,102,663	$294,015	$346,092	288,451	14,917
June 30, 1851	$981,410	$57,200	$1,038,610	$3,480,320	$90,000	$545	36,320	6,018
1852	1,015,563	39,542	1,055,105	3,001,223	51,808	26,277	35,010	5,744
1853	810,411	54,143	864,554	2,806,930	47,057	18,016	30,915	9,429
1854	990,886	60,997	1,051,883	2,950,353	133,710	19,179	31,014	8,523
1855	1,144,581	38,937	1,183,518	2,475,608	16,000	23,625	34,110	5,592
1856	1,099,599	43,125	1,142,724	3,870,963	23,250	14,700	33,064	1,990
1857	1,783,429	152,045	1,935,474	5,748,600	483,495	658	37,033	3,550

COMMERCE OF THE UNITED STATES WITH THE SWEDISH WEST INDIES, FROM OCTOBER 1, 1820, TO JULY 1, 1857.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1821	$507,077	$53,149	$560,226	$611,116	....	$202,788	20,774	888
1822	569,566	91,247	660,813	393,119	....	76,583	16,282	1080
1823	241,701	18,362	260,063	185,808	....	44,181	8,174	854
1824	204,983	39,687	244,670	102,895	....	22,220	8,263	340
1825	193,761	41,947	235,008	81,702	....	36,553	7,150	132
1826	120,573	23,284	143,857	103,946	....	40,429	4,437	....
1827	416,822	25,014	441,836	209,535	....	32,920	10,277	....
1828	611,584	23,616	635,200	375,905	....	109,656	26,553	685
1829	684,528	23,791	708,314	283,040	....	100,741	28,246	328
1830	552,700	37,727	590,427	230,590	....	157,874	19,960	984
Total	$4,103,290	$377,124	$4,480,414	$2,837,635	....	$964,195	156,116	4742
Sept. 30, 1831	$251,937	$11,111	$263,048	$218,918	....	$111,142	7,190	552
1832	141,249	7,478	148,727	53,410	....	22,215	4,651	644
1833	100,163	5,057	105,220	52,202	....	8,935	3,365	289
1834	81,040	7,902	88,942	47,214	$2400	24,429	2,019	236
1835	72,714	13,641	86,355	31,390	....	22,013	2,599	217
1836	80,225	1,620	81,485	50,414	....	10,002	2,052	....
1837	84,114	3,005	87,119	38,977	....	27,207	2,028	84
1838	74,140	4,281	78,421	46,019	....	20,013	1,945	....
1839	103,282	4,130	107,412	12,458	....	3,960	2,184	139
1840	98,710	3,610	102,320	57,545	....	49,947	2,203	139
Total	$1,087,574	$61,835	$1,149,409	$624,487	$2400	$305,863	31,475	2294
Sept. 30, 1841	$165,184	$3,707	$168,891	$19,760	....	$13,607	3,455	95
1842	129,727	3,320	133,047	23,242	....	19,475	2,663	726
9 mos., 1843*	31,228	2,346	33,574	51,818	....	45,822	749	....
June 30, 1844	63,884	1,360	65,244	23,719	$1000	22,370	1,478	141
1845	88,886	1,453	90,339	12,119	....	8,473	2,135	....
1846	138,121	3,448	141,569	5,285	1012	2,450	2,359	....
1847	110,062	3,659	113,721	....	....	....	1,607	....
1848	76,476	800	76,296	13,785	....	9,589	2,260	79
1849	95,128	737	95,865	15,082	....	9,918	2,684	647
1850	98,176	1,166	99,342	2,199	....	500	2,454	982
Total	$995,892	$21,990	$1,017,888	$167,403	$2012	$132,234	22,004	1970
June 30, 1851	$61,157	$745	$61,902	$29,001	....	$19,687	1,319	....
1852	90,802	1,993	92,795	4,284	....	3,999	2,287	125
1853	31,024	1,191	32,215	6,876	....	4,539	1,196	....
1854	12,741	....	12,741	22,500	....	13,156	867	....
1855	68,856	391	69,247	32,220	....	18,810	1,865	140
1856	60,702	....	60,702	10,192	....	2,829	1,012	85
1857	76,405	3,529	79,933	12,082	$2065	....	1,719	....

* Nine months to June 30, and the fiscal year from this time begins July 1.





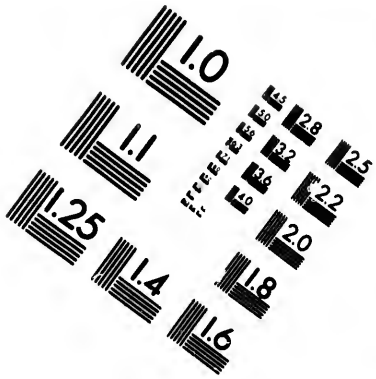
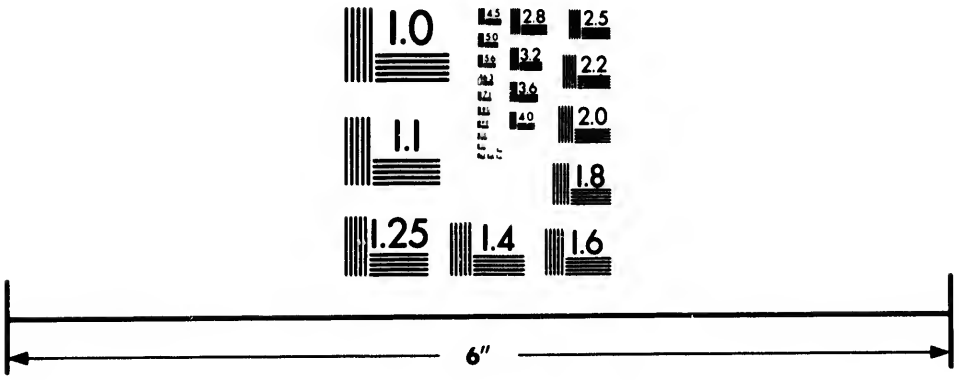
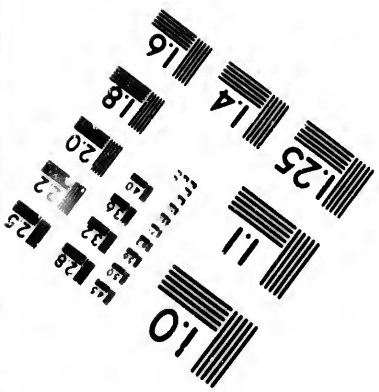
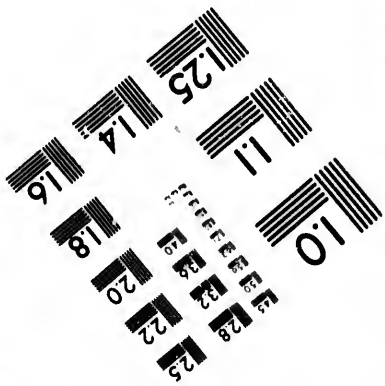


IMAGE EVALUATION TEST TARGET (MT-3)







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French West Indies.—The following table gives the general trade of France with its colonies, in 1853:

Colonies.	Imports.	Exports.
Martinique	£652,441	£765,517
Guadaloupe	493,955	570,434
Bourbon	851,547	634,946
Senegal	287,906	892,389
Cayenne	56,833	184,044
India	660,782	21,384
Algiers	1,122,304	3,395,966
St. Pierre and Miquelon, etc.	617,631	278,627
Isles Mayotte and Madagascar	3,627	36,584

The trade to Bourbon Island, Guyana, Martinique, and Guadaloupe, out and home, employed in 1848, 492 ships; in 1849, 541; in 1850, 486; in 1851, 602; in 1852, 677; in 1853, 583. The mean of the six years, 565 vessels.

Swedish West Indies.—The island of St. Bartholomew is the only possession of the Swedes in America. It belongs to the Leeward group, and is situate centrally in lat. 17° 50′ N., and long. 62° 52′ W., distant twelve miles from St. Martin, and about thirty from St. Christopher. It is about eight miles long by from two to three miles wide, and contains an area of about twenty-five square miles. Capital, Gustavia. The island is of an irregular shape, and deeply indented by numerous small sandy bays, separated by bold and steep rocky acclivities, of moderate height. In the interior it is hilly, but its loftiest elevations are less than 1000 feet. In most parts it is barren and sterile, but has numerous well-cultivated valleys. It produces all the staples of the West Indies—cotton, sugar, tobacco, indigo, etc., and also lignum vitæ and iron-wood. Its only exports are cattle and some salt. Water is scarce, and the inhabitants depend for supply on the rains. The only harbor is La Carenage, a safe and commodious one, and much frequented. It is on the west side of the island. Close by is Gustavia, the principal town, a thriving place.—For articles on British Emancipation, British Colonies, etc., see *Eclectic Review* (4th series), iv., ix.; *Christian's Quarterly Spectator*, x.; Fraser's *Magazine*, viii.; *Edinburgh Rev.*, xix., xii., xlv., xl.; *Quarterly Rev.*, xxxii., xxxviii. (Southey), xlv.; *Westminster Review*, i.; Blackwood's *Mag.*, xiv., xv., xvi., xxxi., xxxiv., lxiii.

Whalebone, a substance of the nature of horn, adhering in thin parallel laminæ to the upper jaw of the whale. These vary in size from three to twelve feet in length; the breadth of the largest at the thick end, where they are attached to the jaw, is about a foot. They are extremely elastic. All above six feet in length is called *size bone*. This article was first known in England about the year 1693. It may be worth while to remark, as evincing the ignorance that at one time prevailed with respect to the whale, that, by an old English feudal law, the *tail* of all whales belonged to the queen, as a perquisite, to furnish her majesty's wardrobe with whalebone!—Blackstone, vol. i. p. 223. The import of whalebone into the United States for a number of years past has been as follows:

	Pounds.		Pounds.
1847	3,311,980	1852	1,259,900
1848	2,003,000	1853	5,652,300
1849	2,284,101	1854	3,445,200
1850	2,829,200	1855	2,797,500
1851	3,616,530	1856	2,887,400

—*See* Whale-fisheries. Whalebone first became in use in Europe in the 17th century.—*See* p. 390.

Whale-fishery.—*Whale* (*Common*), the *Balæna mysticetus* of Linnæus, a marine animal of the cetaceous species, and the largest of all those with which men are acquainted. The whale has, it is affirmed, been found one hundred and sixty feet in length; but this is most probably an exaggeration. In the Northern seas it is at present seldom found above sixty feet long: being, however, generally killed before it arrives at its full growth, this is no proof that the animal may not formerly have attained to a much larger size. The bodies of whales are covered, immediately under the skin, with a layer of fat or *blubber*, which in a large fish is from twelve to eighteen inches thick. In young whales this fatty matter resembles hog's lard, but in old ones it is of a reddish color. This is the valuable part of the whale, and the desire to possess it has prompted man to attempt the capture of this mighty animal. The blubber yields, by expression, nearly its own weight of a thick, viscid oil (train oil). The common whale is now rarely found, except within the Arctic circle; but at a former period it was not unfrequently met with on our coasts. There is a good account of the common whale, and of the manner in which the fishery is carried on, in Mr. John Laing's *Voyage to Spitzbergen*, one of the shortest, cheapest, and best of the innumerable books published on this hackneyed subject.

1. *The Sperm Whale* (the *Cachalot* or *Physeter macrocephalus*).—The principal species are the black-headed with a dorsal fin, and the round-headed without a fin on the back, and with fistula in the snout. This whale is known at a distance by the peculiarity of his "spoutings" or "blows." He can be easily detected by whalemen, if he happens to be in company with other species of whales. He blows the water or vapor from his nostrils in a single column, to the height, perhaps, of twelve feet, inclining in a forward direction, in an angle of forty-five degrees with the horizon, and visible for several miles. There is also a wonderful regularity as to time in which he "blows," perhaps once in ten minutes. He remains on the surface of the water from forty-five to sixty minutes, and under water about the same time. Unless the whale is frightened, whalemen make quite correct calculation as to the chances of overtaking him, or meeting him, or when he will rise to the surface after he has "turned flukes." When the sperm whale is near he can be easily distinguished by the form of his head, unlike any other variety of whale. Its head is enormous in bulk, being fully more than one-third of the whole length of its body, and it ends like an abrupt and steep promontory, and so hard for several feet from its front, that it is quite difficult, if not impossible, for an iron to enter it; as impervious, indeed, to a harpoon as a bale of cotton. Besides, the sperm whale has a hump on his back, which distinguishes him from others. This hump is farther forward than the hump on the finback whale. Sperm whales have been captured from seventy to ninety feet in length, and from thirty to forty-five feet in circumference round the largest part of their bodies. It is supposed by whalemen, from their appearance, that they live, or some of them at least, to a great age. One writer on this subject thought that the sperm whale would attain the age of many hundred years, and even to a thousand years. This, however, is mere conjecture, because there are no dates or facts upon which to found a correct opinion.

It is supposed, that as the sperm whale advances in age, his head not only retains its ordinary proportions, and to appearance becomes enlarged, but the truth is, the other parts of his body, especially his extremities, do actually diminish in bulk and circumference. In some instances more oil has been taken out of the head of a sperm whale than from the other part of his body. The principal food of the sperm whale is "squid," a molluscous animal. "This is an animal of so curious an order as to merit a word of special notice. The principal peculiarity of this molluscous tribe is the possession of powerful tentacula or arms, ranged round the mouth, and provided with suckers, which give them the power of adhering to rocks, or any other substances, with surprising tenacity. Some of this tribe attain to a great size, and, as large as the whale is, will furnish it with no contemptible mouthful. In the gullet of one sperm whale an arm or tentaculum of a sea-squid was found measuring nearly twenty-seven feet long." Whalemen frequently discover large masses or junks of squid floating about, probably torn in pieces

by whales in their search after food. The flesh of the squid is soft, without bones, and somewhat transparent, like the common sun-fish seen on our shores. It is said that squid have been seen as large as an ordinary whale. This food for the sperm whale is found in great abundance in the Pacific seas.

2. *The Right Whale.*—The whale having this general cognomen belongs to the species of *Balæna mysticetus*. There are several varieties included in this species, as we shall hereafter observe, and which are distinguished by whalemen both in regard to some external peculiarity as well as the different localities where they are usually found. The right whale differs from the sperm in the following particulars: His head is sharper, more pointed—he has no "hump" on his back—the column of water which he throws up when he "blows" is divided like the tines of a fork, and it rises from his breathing-holes in a perpendicular direction, from eight to twenty feet. The right whale furnishes the bone (*baleen*) so much in common use, and called "whalebone." This bone is taken from the mouth and upper jaw of the whale, and is set along laterally in the most exact order several inches apart, decreasing in length from the centre of his mouth, or the arch of his palate, and becoming shorter farther back; while toward the lips the bone tapers away into mere bristles, forming a loose hanging fringe or border. At the bottom of this row of bone, where it penetrates the gum, and from eighteen to thirty inches downward, we find a material that resembles coarse hair, entwining and interlacing the bone, and thus forming a sort of network, and so thick, that when the whale closes his lips to press out the water the smallest kind of fish are caught in the meshes, and are unable to escape. Indeed, the edges of the bones or slabs, as they might be termed, are fringed with this coarse hair, and it extends to their extremities, as may be seen in the rough state when landed from whale ships. The length of the bones or slabs (average eight feet, longest fourteen feet) vary, in a great measure, according to the size of the fish, though some varieties of this species have larger and better bone than others. The value of the bone is enhanced, as a general thing, in proportion to its length. The principal food of the right whale is a very small red fish, called "brit." Immense shoals of these fish are seen on whale grounds, and the water to a great distance, oven for miles, becomes colored with them.

The right whale does not fight or contend with his mouth or head, as the sperm whale does, but his means of attack and defense are chiefly in his enormous flukes. He will, however, when struck, "root around," as whalemen say, and not unfrequently in this manner upset a boat. This kind of whale, and other varieties distinguished by the *baleen* or bone, have no regular time for remaining on the surface of the water after they "breach," nor in remaining under water after they "turn flukes." The length of a large right whale is about eighty feet, and some have yielded their captors 250 to 300 barrels of oil. Such a whale would perhaps weigh not far from *eighty tons*. The oil of this species of whale is less valuable than the sperm. The whalebone, which now has an advanced price in the market far beyond any previous value attached to it, is obtained from the mouth of the whale about in proportion of 1000 pounds to 100 barrels of oil.

3. *The Finback Whale.*—This is a smooth, slim fish—smaller usually than a right whale. He is found in nearly all latitudes. He has a "hump" on his back, which distinguishes him from the right whale. His head and mouth are of the same construction. This whale is known by whalemen, when seen at a suitable distance, by his "blows." The column of vapor rises in a single stream, in a vertical or perpendicular direction. This fish is termed *Finback*, on account of a fin on his back, differing in this particular from all other species of whale. The oil obtained from him is of the same quality as the right-whale oil.

4. *Bowhead Whale.*—This whale is smooth all over, having no "bonnet on his head," as whalemen say, and as right whales have. Their heads differ in shape somewhat from other whales, and hence the name *Bowhead* given to them. This species of whale, so far as known, have never been found except in the Ochotsk Sea and Arctic Ocean. The Greenland whale, and also the species called the great *Rorqual*, are doubtless included in the name which our whalemen give to the *Bowhead*. There are several other varieties of the whale tribe, and different names are attached to them, such as the "Scragg," the "Humpback," etc.; but the foregoing are all the kinds whether of interest or profit to whalemen.—*Rev.* LEWIS HOLMES.

It is probably true, as has been sometimes contended, that the Norwegians occasionally captured the whale before any other European nation engaged in so difficult and perilous an enterprise. But the early efforts of the Norwegians were not conducted on any systematic plan, and should be regarded only in the same point of view as the fishing expeditions of the Esquimaux. The Biscayans were certainly the first people who prosecuted the whale-fishery as a regular commercial pursuit. They carried it on with vigor and success in the 12th, 13th, and 14th centuries. In 1388, Edward III. relinquished to Peter de Puyanne a duty of £6 sterling a whale, laid on those brought into the port of Biarritz, to indemnify him for the extraordinary expenses he had incurred in fitting out a fleet for the service of his majesty. This fact proves beyond dispute that the fishery carried on from Biarritz at the period referred to must have been very considerable indeed; and it was also prosecuted to a greater or less extent from Cibourre, Vieux Boucau, and subsequently from Rochelle and other places.—See *Mémoire sur l'Antiquité de la Pêche de la Baleine*, by NOEL, 12mo. Paris, 1795. The whales captured by the Biscayans were not so large as those that are taken in the Polar seas, and are supposed to have been attracted southward in pursuit of herrings. They were not very productive of oil, but their flesh was used as an article of food, and the whalebone was applied to a variety of useful purposes, and brought a very high price. This branch of industry ceased long since, and from the same cause that has occasioned the cessation of the whale-fishery in many other places—the want of fish. Whether it were that the whales, from a sense of the dangers to which they exposed themselves in coming southward, no longer left the Icy Sea, or that the breed had been nearly destroyed, certain it is, that they gradually became less numerous in the Bay of Biscay, and at length ceased almost entirely to frequent that sea; and the fishers being obliged to pursue their prey upon the banks of Newfoundland and the coasts of Iceland, the French fishery rapidly fell off.

The voyages of the Dutch and English to the Northern Ocean, in order, if possible, to discover a passage through it to India, though they failed of their main object, laid open the haunts of the whale. The companions of Barentz, who discovered Spitzbergen in 1596, and of Hudson, who soon after explored the same seas, represented to their countrymen the amazing number of whales with which they were crowded. Vessels were in consequence fitted out for the Northern whale-fishery by the English and Dutch, the harpooners and a part of the crew being Biscayans. They did not, however, confine their efforts to a fair competition with each other as fishers. The Muscovy Company obtained a royal charter, prohibiting the ships of all other nations from fishing in the seas round Spitzbergen, on pretext of its having been first discovered by Sir Hugh Willoughby. There can, however, be no doubt that Barentz, and not Sir Hugh, was its original discoverer; though, supposing that the fact had been otherwise, the attempt to exclude other nations from the surrounding seas, on such a ground, was not one that could be tolerated. The Dutch, who were at the time prompt to

embark in every commercial pursuit that gave any hopes of success, eagerly entered on this new career, and sent out ships fitted equally for the purposes of fishing and of defense against the attacks of others. The Muscovy Company having attempted to vindicate its pretensions by force, several encounters took place between their ships and those of the Dutch. The conviction at length became general that there was room enough for all parties in the Northern seas; and in order to avoid the chance of coming into collision with each other, they parceled Spitzbergen and the adjacent ocean into districts, which were respectively assigned to the English, Dutch, Hamburgers, French, Danes, etc.

The Dutch, being thus left to prosecute the fishery without having their attention diverted by hostile attacks, speedily acquired a decided superiority over all their competitors. When the Europeans first began to prosecute the fishery on the coast of Spitzbergen, whales were every where found in vast numbers. Ignorant of the strength and stratagems of the formidable foe by whom they were now assailed, instead of betraying any symptoms of fear, they surrounded the ships and crowded all the bays. Their capture was in consequence a comparatively easy task, and many were killed which it was afterward necessary to abandon, from the ships being already full. While fish were thus easily obtained, it was the practice to boil the blubber on shore in the North, and to fetch home only the oil and whalebone. And perhaps nothing can give a more vivid idea of the extent and importance of the Dutch fishery in the middle of the 17th century, than the fact that they constructed a considerable village, the houses of which were all previously prepared in Holland, on the Isle of Amsterdam, on the northern shore of Spitzbergen, to which they gave the appropriate name of *Smeerenberg* (from *smeeren*, to melt, and *berg*, a mountain). This was the grand rendezvous of the Dutch whale ships, and was amply provided with boilers, tanks, and every sort of apparatus required for preparing the oil and the bone. But this was not all. The whale fi[illegible] were attended with a number of provision ships, [illegible]rgoes of which were landed at Smeerenberg; which abounded during the busy season with well-furnished shops, good inns, etc.; so that many of the conveniences and enjoyments of Amsterdam were found within about eleven degrees of the Pole! It is particularly mentioned that the sailors and others were every morning supplied with what a Dutchman regards as a very great luxury—*hot rolls* for breakfast. Batavia and Smeerenberg were founded nearly at the same period, and it was for a considerable time doubted whether the latter was not the more important establishment.—De Reste, *Histoire des Pêches*.

During the flourishing period of the Dutch fishery, the quantity of oil made in the North was so great that it could not be carried home by the whale ships; and every year vessels were sent out in ballast to assist in importing the produce of the fishery. But the same cause that had destroyed the fishery of the Biscayans, ruined that which was carried on in the immediate neighborhood of Spitzbergen. Whales became gradually less common, and more and more timid and difficult to catch. They retreated first to the open seas, and then to the great banks of ice on the eastern coast of Greenland. When the site of the fishery had been thus removed to a very great distance from Spitzbergen, it was found most economical to send the blubber direct to Holland. Smeerenberg was in consequence totally deserted, and its position is now with difficulty discoverable.

But though very extensive, the Dutch whale-fishery was not, during the first thirty years of its existence, very profitable. This arose from the circumstance of the right to carry it on having been conceded, in 1614, to an exclusive company. The expense inseparable from such great associations, the wastefulness and unfaithfulness of their servants, who were much more intent upon advancing their own interests than those of the company, increased the outlays so much, that the returns, great as they were, proved little more than adequate to defray them, and the fishery was confined within far narrower limits than it would otherwise have reached. But after various prolongations of the charter of the first company, and the formation of some new ones, the trade was finally thrown open in 1642. The effects of this measure were most salutary, and afford one of the most striking examples to be met with of the advantages of free competition. Within a few years the fishery was vastly extended; and though it became progressively more and more difficult from the growing scarcity of fish, it proved, notwithstanding these disadvantages, more profitable to the private adventurers than it had ever been to the company, and continued for above a century to be prosecuted with equal energy and success. The famous John de Witt has alluded as follows to this change in the mode of conducting the trade:

"In this respect," says he, "it is worthy of observation, that the authorized Greenland Company made heretofore little profit by their fishery, because of the great charge of setting out their ships; and that the train oil, blubber, and whale fins were not well made, handled, or cured; and being brought hither and put into warehouses, were not sold soon enough, nor to the company's best advantage. Whereas, now that every one equips their vessels at the cheapest rate, follow their fishing diligently, and manage all carefully, the blubber, train oil, and whale fins are employed for so many uses in several countries, that they can sell them with that conveniency, that though *there are now fifteen ships for one that formerly sailed out of Holland on that account*, and consequently each of them could not take so many whales as heretofore, and notwithstanding the new prohibition of France and other countries to import these commodities, and though there is greater plenty of them imported by our fishers—yet those commodities are so much raised in the value above what they were while there was a company, that the common inhabitants do exercise that fishery with profit, to the much greater benefit of our country than when it was (under the management of a company) carried on but by a few."—*True Interest of Holland*, p. 63, 8vo ed. London, 1746.

When in its most flourishing state, toward the year 1680, the Dutch whale-fishery employed about 260 ships and 14,000 sailors.

The English whale-fishery, like that of Holland, was originally carried on by an exclusive association. The Muscovy Company was, indeed, speedily driven from the field; but it was immediately succeeded by others that did not prove more fortunate. In 1725 the South Sea Company embarked largely in the trade, and prosecuted it for eight years; at the end of which, having lost a large sum, they gave it up. But the Legislature, having resolved to support the trade, granted, in 1732, a bounty of 20*s.* a ton to every ship of more than 200 tons burden engaged in it; but this premium being insufficient, it was raised, in 1749, to 40*s.* a ton, when a number of ships were fitted out, as much certainly in the inte[illegible]ton of catching the bounty as of catching fish. Deceived by the prosperous appearance of the fishery, Parliament imagined that it was firmly established, and in 1777 the bounty was reduced to 30*s.* The effect of this reduction showed the factitious nature of the trade, the vessels engaged in it having fallen off in the course of the next five years from 105 to 39! To arrest this alarming decline, the bounty was raised to its old level in 1781, and of course the trade was soon restored to its previous state of apparent prosperity. The hostilities occasioned by the American war reduced the Dutch fishery to less than half its previous amount, and gave a proportional extension to that of England. The bounty, which had in consequence become very heavy, was reduced, in 1787, to 30*s.* a ton; in 1792 it was further reduced to 25*s.*; and in 1795 it was reduced to 20*s.*, at which sum it continued till 1824, when it ceased.

It appears from accounts given in Macpherson's *Annals of Commerce* (vol. iii. and iv.), that the total

bounties paid for the encouragement of the whale-fishery, in the interval between 1750 and 1788, amounted to no less than £1,577,935. It will be seen from the official account which follows, that there are no means of furnishing any accurate account of the sums paid as bounties by Great Britain from the year 1789 to 1813, inclusive; but it is, notwithstanding, abundantly certain that the total bounties paid during the period from 1789 to 1824 considerably exceeded £1,000,000.

AN ACCOUNT OF THE NUMBER OF SHIPS ANNUALLY FITTED OUT IN GREAT BRITAIN FOR THE NORTHERN WHALE-FISHERY, OF THE TONNAGE AND CREWS OF SUCH SHIPS, AND OF THE BOUNTIES PAID ON THEIR ACCOUNT, FROM 1789 TO 1814.

Years.	Ships.	Tons.	Men.	Bounties paid.
1789	151	46,599	....	
1790	116	35,232	4482	
1791	116	33,906	4520	
1792	98	26,983	4667	
1793	82	23,487	3210	
1794	60	16,356	2250	
1795	44	11,748	1601	The documents from which the amount of bounties paid to the years 1789 to 1806 could be shown, were destroyed in the fire at the London custom-house.
1796	51	15,833	1910	
1797	60	16,871	2265	
1798	66	18,754	2633	
1799	67	19,860	2683	
1800	61	17,729	2453	
1801	64	18,568	2544	
1802	79	23,539	3129	
1803	95	28,608	3806	
1804	92	28,034	3597	
1805	91	27,570	3636	
1806	91	27,697	3715	
1807 to 1813	No accounts for these years.			
1814	112	36,576	4768	£ s. d. 43,799 11 0

We have already noticed several changes of the localities in which the whale-fishery has been carried on at different periods; and within these few years others of the same kind have taken place. The Dutch fishers first began to frequent Davis's Straits in 1719; and as the whales had not hitherto been pursued into this vast recess, they were found in greater numbers than in the seas round Spitzbergen. From about this period it was usually resorted to by about three-tenths of the Dutch ships. It was not till a comparatively late period that Davis's Straits began to be frequented by English whalers; and down to 1820, when Captain Scoresby published his elaborate and valuable work on the whale-fishery, that carried on in the Greenland seas was by far the most considerable. But it will be seen from the subjoined account, that from 1826 down to 1837 the Greenland seas were nearly abandoned. This was principally a consequence of the greater abundance of whales in Davis's Straits, but it was also in part owing to the various discoveries made by the expeditions fitted out by government for exploring the seas and inlets to the westward of Davis's Straits and Baffin's Bay having made the fishers acquainted with several new and advantageous situations for the prosecution of their business. Since 1837, however, the few ships that have been sent out have gone mostly to the Greenland seas. The sea in Davis's Straits is less incommoded with field-ice than the Greenland and Spitzbergen seas, but it abounds with icebergs; and the fishery, when carried on in Baffin's Bay and Lancaster Sound, is more dangerous, perhaps, than any that has hitherto been attempted. The subjoined table shows how rapidly the Northern fishery declined down to 1842, from which period it continued nearly stationary down to 1846, when it revived a little. During the last three years there have sailed for the Northern fishery—

1850	46 ships	11,166 tons.
1851	47 "	11,935 "
1852	49 "	13,457 "

It should, however, be observed that the fishery is rather for seals than for whales; the value of the produce obtained from the former considerably exceeding the value of that obtained from the latter.

During 1852 England imported 5519 tons spermaceti oil, which were almost wholly retained for consumption. During the same year the imports and exports of train oil were, respectively, 14,500 and 2757 tons.

The import duties that in various countries have been placed upon whale oil, the product of foreign fisheries, have operated against the whale-fishery. This may be seen from the following statement of the duties now (1857) in force in the principal maritime countries:

Belgium	82 27 per hectolitre of 20½ gallons.
Brazil	15 per cent. ad valorem.
China	5 per cent. ad valorem.
France	210 87 per 220 pounds.
Great Britain	Free.
Hanse Towns	½ to 1 per cent. ad valorem.
Holland	Free.
Russia	22½ cents per pood of 36 pounds.
Spain	88 cents per arroba of 4·245 gallons.
Sweden	5 cents per lispund of 18 2-3 pounds.
United States	Free.

Southern Whale-fishery.—This consists of three distinct branches; viz., 1st, the catch of the spermaceti whale, which furnishes the valuable substance called spermaceti (see the term); 2d, that of the common black whale of the Southern seas; and, 3d, that of the sea-elephant, or Southern walrus. The spermaceti whale (*Physeter macrocephalus*) is found in all tropical climates, and especially on the coasts of New Zealand and the adjoining seas. The ordinary duration of the voyage of a ship employed in this department of the fishery is about three years. The common black whale of the Southern seas (*Physeter microps*) is met with in various places, but principally on the coast of Brazil, in the bays on the west coast of Africa, and in some of the bays in New South Wales, Van Diemen's Land, etc. Sea-elephants (intermediate between the walrus of the Northern seas and the seal) are principally met with in the seas round the islands of Desolation, South Georgia, and South Shetland, the coast of California, etc. Vast numbers of these animals are annually captured; vessels frequently load entirely with them; and they are believed to furnish more oil than the common South Sea whale. The oil of the black whale and that of the sea-elephant are both known in the market by the name of Southern oil, and they are so very similar that those most versed in the trade can with difficulty distinguish the one from the other. Hence ships commonly engage indifferently in either fishing, as opportunity offers. The usual duration of the voyage of a ship from England in either of the last two departments, or in the two combined, varies from twelve to eighteen months.

The South Sea fishery was not prosecuted by the English to any extent till about the beginning of the American war; and as the Americans had already entered on it with vigor and success, four American harpooners were sent out in each vessel. In 1791 seventy-five whale ships were sent out to the South Sea; but the number has not been so great since, and latterly it has been unprosperous and declining, in consequence partly of the competition of the colonists in Australia, who are incomparably better situated for the prosecution of this branch of industry, and partly of that of the Americans. The *Macrocephalus*, or spermaceti whale, is particularly abundant in the neighborhood of the Spice Islands; and Mr. Crawfurd, in his valuable work on the Eastern Archipelago, entered into some details to show that the fishery carried on there was of greater importance than the spice trade. Unluckily, however, the statements on which Mr. Crawfurd founded his comparisons were entirely erroneous, neither the ships nor the men employed amounting to more than one-fifth or one-sixth part of what he represented. We subjoin a statement of the Southern whale-fishery carried on from Great Britain since 1819, exhibiting the total number of ships annually absent from Great Britain on whaling expeditions; the total number of ships that annually returned to Great Britain; and the annual imports of sperm and common oil, with the prices of each:

STATEMENT OF THE SOUTHERN WHALE-FISHERY CARRIED ON FROM GREAT BRITAIN SINCE 1819; EXHIBITING THE TOTAL NUMBER OF SHIPS ANNUALLY ABSENT FROM GREAT BRITAIN ON WHALING EXPEDITIONS; THE TOTAL NUMBER OF SHIPS THAT ANNUALLY RETURNED TO GREAT BRITAIN; AND THE ANNUAL IMPORTS OF SPERM AND COMMON OIL, WITH THE PRICES OF EACH.

Years.	Ships at Sea.	Ships returned.	Sperm Oil imported.			Common Oil imported.		Price of Sperm Oil per Ton.	Price of common Oil per Ton.	Total Value of Imports.
			Tons.			Tons.		£	£	£
1819.....	119	40	3673			4895		85	33	475.835
1820.....	137	39	2717			5.61		71	25	318,483
1821.....	123	59	3606			4570		69	19	305,190
1822.....	118	41	6011			1070		54	22	350,984
			British.	Colonial.	American.	British.	Colonial.			
1823*	114	57	6591	2.0	....	1723	668	45	21	333,6 0
1824.....	96	42	5918	150	....	742	618	40	22	273 040
1825.....	88	32	4831	65	....	1104	412	48	31	256 488
1826†	78	38	5635	388	....	454	289	55	34	350,827
1827.....	80	29	4176	8??	....	665	474	70	27	367,453
1828.....	88	20	3316	116	....	136	338	79	25	275.078
1829.....	92	26	4485	818	....	102	478	74	27	408 082
1830.....	104	25	4.57	4 8	....	419	904	72	43	392,049
1831.....	108	27	5 80	1576	....	192	1462	75	43	634 747
1832.....	106	30	5576	1589	....	402	1735	61	28	498 801
1833.....	110	10	3.51	2618	....	220	2245	62	25	437,283
1834.....	99	27	4021	2710	....	140	98 4	65	23	496 044
1835.....	83	33	5631	2960	....	511	3187	75	28	689 860
1836.....	92	26	4285	1716	....	99	4180	80	32	697,0 8
1837.....	80	18	3113	2661	....	881	49.8	84	35	616 578
18.8.....	64	21	3801	2474	....	20	7904	84	25	721.840
1839.....	77	22	4259	1822	....	170	6315	85	25	611,380
1840.....	73	16	2249	1719	1718	724	6270	104	25	587,542
1841.....	67	20	3310	1964	378	191	5433	98	31	688 4 6
1849.....	59	16	2027	873	1172	....	5317	80	40	504 680

* The ships for this and the succeeding years, as for the previous ones, do not include colonial ships, but those from Britain only.

† From this year commenced the imperial measure.

But since then the fishery has rapidly declined, and is now quite insignificant. This is seen from the following account of the ships and their tonnage cleared out for the Southern whale-fishery, viz.:

1850	8 ships	2816 tons.
1851	5 "	1905 "
1851	4 "	1503 "

French Whale-fishery.—France, which preceded the other nations of Europe in the whale-fishery, can hardly be said, for many years past, to have had much share in it. In 1784 Louis XVI. endeavored to revive the fishery. With this view he fitted out six ships at Dunkirk on his own account, which were furnished with harpooners and a number of experienced seamen brought at a great expense from Nantucket. The adventure was more successful than could have been reasonably expected, considering the auspices under which it was carried on. Several private individuals followed the example of his majesty, and in 1790 France had about forty ships employed in the fishery. The Revolutionary war destroyed every vestige of this rising trade. But since the peace, government has made great efforts for its renewal; and at present high bounties are granted to all vessels fitted out for the whale-fisheries, but especially to those engaged in the sperm fishery. These, however, have not been so successful in forcing ships into this trade as might have been anticipated; for it appears from the official accounts that in 1852 the aggregate burden of the ships cleared out for the whale-fishery amounted to only 2306 tons.—*Administration des Douanes*, 1852, p. 460; M'CULLOCH's *Dict.*

American Whale-fishery.—For a lengthened period the Americans have prosecuted the whale-fishery with greater vigor and success than, perhaps, any other people. They commenced it in 1690, and for about fifty years found an ample supply of fish on their own shores. But the whale having abandoned them, the American navigators entered with extraordinary ardor into the fisheries carried on in the Northern and Southern oceans. From 1778 to 1785 Massachusetts employed annually 183 vessels, carrying 13,820 tons, in the former; and 121 vessels, carrying 14,026 tons, in the latter. Mr. Burke, in his famous speech on American affairs in 1774, adverted to this wonderful display of daring enterprise as follows: "As to the wealth," said he, "which the colonies have drawn from the sea by their fisheries, you had all that matter fully opened at your bar. You surely thought these acquisitions of value, for they seemed to excite your envy; and yet the spirit by which that enterprising employment has been exercised ought rather, in my opinion, to have raised esteem and admiration. And pray, sir, what in the world is equal to it? Pass by the other parts, and look at the manner in which the New England people carry on the whale-fishery. While we follow them among the trembling mountains of ice, and behold them penetrating into the deepest frozen recesses of Hudson's Bay and Davis's Straits; while we are looking for them beneath the Arctic circle, we hear that they have pierced into the opposite region of polar cold—that they are at the antipodes, and engaged under the frozen serpent of the South. Falkland Island, which seemed too remote and too romantic an object for the grasp of national ambition, is but a stage and resting-place for their victorious industry. Nor is the equinoctial heat more discouraging to them than the accumulated winter of both poles. We learn that while some of them draw the line or strike the harpoon on the coast of Africa, others run the longitude and pursue their gigantic game along the coast of Brazil. No sea but what is vexed with their fisheries; no climate that is not witness of their toils. Neither the perseverance of Holland nor the activity of France—not the dexterous and firm sagacity of English enterprise—ever carried this most perilous mode of hardy industry to the extent to which it has been pursued by this recent people—a people who are still in the gristle, and not hardened into manhood."

United States Whale-fishery.—The first sperm whale taken by the Nantucket whalers was killed by Christopher Hussey. He was cruising near the shore for "right" whales, and was blown off some distance from the land by a strong northerly wind, when he fell in with a school of that species of whale, and killed one and brought it home.

At what date this adventure took place is not fully ascertained, but it is supposed that it was not far from 1712. This event imparted new life to the business, for they immediately began to build vessels of about forty tons, to whale out in the "deep," as it was then called, to distinguish it from "shore whaling." They fitted three vessels for six weeks, carried a few hogsheads—sufficient to contain the blubber of one whale—and tried out the oil after they returned home.

In 1715 there were six vessels engaged in the whal-

ing business—all sloops, from thirty to forty tons burden each, and which produced an income of nearly $5000.—MACY's *History of Nantucket*.

As the enterprise increased more capital was invested, larger vessels were built, longer voyages were made, and new localities for whales were discovered.

Fifty years later, viz., from 1771 to 1775, Massachusetts alone employed annually 183 vessels in the North Atlantic Ocean, and 121 vessels of larger burden in the South Atlantic Ocean.

The first attempt to establish the sperm-whale fishery from Great Britain was made in 1775. Nine years later the French undertook to revive the prosecution of this business. The king, Louis XVI., fitted out six ships himself from Dunkirk, and procured his experienced harpooners from Nantucket. Others emulated the example of that monarch; so that before the French Revolution that nation had forty ships in the service.

The Revolutionary war of the American colonies, and the wars of the French Revolution, nearly destroyed this flourishing branch of marine enterprise in both countries. Just previous to the war, Massachusetts employed in this service 300 vessels and 4000 seamen, about half of whom were from Nantucket alone. During that war fifteen vessels belonging to this island were lost at sea, and 134 were captured by the enemy.

It was not until the year 1782—many years after the commencement of the enterprise in Nantucket, Cape Cod, Martha's Vineyard, and other places on the Sound—that the attention of New Bedford was turned toward the whale-fishery.

From this date until the present time no permanent obstruction, with the exception of the war of 1812–'15, has occurred to impede the gradual and increasing interest given to this enterprise, and which now assumes commanding commercial importance, and develops unrivaled energy in its prosecution.

The whole number of vessels employed in the whale-fishery in this country, as before reported, is 670. Number of ships, 358; barks, 259; brigs, 17; schooners, 46. The tonnage may be put down at 220,000; value of property, at $100 per ton, $22,000,000.

The number of seamen engaged in this business, allowing 30 for each ship, 24 for a bark, 20 for a brig, and 18 for a schooner, would be more than 20,000.

The following are the receipts of the whale-fishery of the United States during the year 1857:

	Ships and Barks.	Brigs.	Schooners.	Barrels of Sperm.	Barrels of Whale.
New Bedford	106	..	2	48,336	129,557
Fairhaven	13	..	..	5,431	10,722
Dartmouth	1	..	..	350	45
Westport	8	1	1	4,751	397
Mattapoisett	3	2	1	1,778	1,760
Sippican	...	..	8	365	80
Holmes's Hole	2	..	..	835	3,876
Nantucket	5	1	1	2,857	5,879
Edgartown	3	..	1	880	3,337
Provincetown	2	1	17	1,910	2,696
Orleans	...	2	..	108	308
Gloucester	...	..	1	20	20
Beverly	1	..	..	340	30
Lynn	1	..	..	115	2,500
Boston	2	..	..	185	147
Fall River	1	..	..	700	800
Providence	1	..	..	358	5
Warren, R. I.	8	..	..	663	5,807
New London	19	2	1	3,570	27,295
Cold Spring	1	..	..	200	400
Stonington	1	..	..	....	2,600
Greenport	3	..	..	592	3,239
Mystic	3	..	..	450	4,900
Sag Harbor	2	..	1	1,457	2,100
New York	4	..	..	1,836	11,203
Total in 1857	186	9	29	77,501	225,803
Receipts in 1856	144	17	16	86,157	191,752
" " 1854	194	24	18	118,536	211,915
" " 1852	116	10	27	81,321	82,281
" " 1853	200	11	29	88,897	241,389
" " 1851	210	8	28	99,418	221,593
" " 1855	146	6	20	60,285	170,186
" " 1856	171	7	24	82,389	195,774

The *Wholemen's Shipping List*, of New Bedford, has compiled an annual statement of the results of the whale-fishery during the year 1857, including the amount of imports and exports of oil and bone, prices-current, etc. The number of American vessels employed in the whale-fishery at present includes 587 ships and barks, 18 brigs, and 49 schooners, making an aggregate of 203,148 tons. Of this number there has been in the North Pacific Ocean about 150 ships, which is a diminution of 30 as compared with the fleet employed in that quarter in 1856. But few vessels have been added to the whaling fleet during the past year, while several have been withdrawn, and two lost—the *Newton*, of New Bedford, and the *Indian Chief*, of New London—leaving the aggregate tonnage some 665 tons less than at the beginning of the year. The quantity of oil obtained by 109 ships, whose arrivals at the Sandwich Islands have been reported, averages 808 barrels, which is not very much from the average of the preceding year. In regard to the fleet in the Okhotak Sea, the accounts are somewhat conflicting—some vessels have met with good success, while others have done comparatively nothing.

The imports of oil and bone into the United States in 1857 were brought in by 173 ships and barks, 38 brigs and schooners, of which 142 belong to the seven ports embraced in the district of New Bedford, and the remainder to various ports east of New York. We annex a comparison of the imports since 1850:

Years.	Sperm Oil.	Whale Oil.	Whalebone.
	Barrels.	Barrels.	Pounds.
1850	92 892	210,608	2,869,200
1851	10,691	928,483	3,910,500
1852	78,872	84,911	1,250,100
1853	103,017	260,114	5,652,900
1854	76,696	319,837	3,445,100
1855	72,649	184,015	2,707,500
1856	81,941	197,890	2,592,700
1857	78 440	230,941	2,058,550

It will be seen from the above that the imports of sperm oil in 1857, as compared with 1856, fall short 501 barrels, while the imports of whale oil are 33,051 barrels in excess of 1856. The increased importation of the latter during the year has arisen chiefly from shipments via Sandwich Islands from vessels which had not completed their voyages; and consequently we look for a diminished import the present year, variously estimated at from 75,000 to 100,000 barrels. Considerable shipments of bone have also arrived in the same manner, which will tend still further to reduce the import of this article the present year. The stock of sperm oil, whale oil, and whalebone in importers' and speculators' hands, on the 1st of January, 1858, is given as follows:

	Sperm Oil.	Whale Oil.	Whalebone.
	Barrels.	Barrels.	Pounds.
New Bedford	27,440	64,148	125,400
Dartmouth	180	....	....
Westport	2,500	....	....
Mattapoisett	2,400	1,260	20,800
Sippican	630	....	....
New London	820	7,408	6,500
Nantucket	2,300	2,700	....
Sag Harbor	....	2,510	....
Edgartown	....	1,000	....
Warren	115	3,242	17,800
Boston and Provincetown	1,450	2,255	5,000
Mystic	170	5,000	....
Stonington	....	500	....
New York	200	....	50,000
Falmouth	100	....	....
Newport	250	400	....
Fall River	58	....	....
Beverly	200	20	....
Holmes's Hole	160	600	....
Salem	35	....	....
Total	39,307	92,193	235,500

The following is a statement of the exports of oil and whalebone from the United States for two years:

Years.	Sperm Oil.	Whale Oil.	Whalebone.
	Barrels.	Barrels.	Pounds.
1856	29,052	971	2,000,784
1857	37,231	17,407	1,835,662

The increased shipments of oil during 1857, as compared with the totals for 1856, were less the result of an actual foreign demand than a desire on the part of our importers to sustain the market here by reducing the stock. The effect, however, was directly the opposite of what had been anticipated, for, by overstocking the London market, prices declined there very rapidly, and our home markets were left without the competition resulting from a domestic and foreign demand, and prices of oil declined to a lower point than they have been since 1849. The demand for bone, however, has been unusually active, owing to the fashionable propensity of the ladies to "spread," and the price of this article advanced to a higher point in 1857 than was ever before known.

We annex a comparison of the average prices of sperm oil and whalebone for seventeen years:

Years.	Sperm Oil.	Whale Oil.	Whalebone.
1841	100 c.	30½ c.	19 c.
1842	94	31½	19½
1843	78	33½	23
1844	63	34½	35½
1845	90½	36½	40
1846	88	32½	33½
1847	87½	33½	34
1848	100½	36	30½
1849	108 9-10	39 9-10	31 8-10
1850	120 7-10	49 1-10	54 4-10
1851	127½	45 5-10	54½
1852	123½	63½	50½
1853	124½	58½	34½
1854	148½	58½	39 1-5
1855	177 9-10	71 3-10	46½
1856	109	79½	68
1857	118½	73½	97½

IMPORTATIONS OF SPERM OIL, WHALE OIL, AND WHALEBONE INTO THE UNITED STATES IN 1857.

Ports.	Sperm Oil.	Whale Oil.	Whalebone.
	Barrels.	Barrels.	Pounds.
New Bedford	41,108	127,302	1,250
Fairhaven	5,500	17,417	103,200
Dartmouth	544	49	2,100
Westport	4,765	306	....
Wareham	408	1,009	3,000
Sippican	309	68	....
Mattapoisett	2,012	2,143	20,700
Dis. of New Bedford	51,446	149,944	1,479,850
New London	3,619	28,683	89,600
Nantucket	5,456	5,736	20,200
Sag Harbor	1,100	3,875	20,100
Edgartown	880	3,351	18,400
Warren	563	5,069	35,700
Provincetown	1,981	2,712	5,800
New York	1,866	11,263	800,000
Greenport	599	3,209	5,600
Cold Spring	201	871	3,100
Stonington	103	2,050	17,800
Mystic	490	4,856	14,500
Boston	131	104	10,000
Holmes's Hole	275	3,280	14,500
Orleans	113	313	2,100
Fall River	700	800	....
Lynn	108	2,550	17,200
Providence	353	5	....
New Haven	53	....	....
Philadelphia	94	....	....
Beverly	346	40	....
Gloucester	20	20	....
Total for 1857	18,440	230,941	3,069,850

The imports of oil and whalebone the product of foreign fisheries into the United States for the year ending June 30, 1857, were as follows: Oil, $17,280; whalebone, $252; spermaceti, $413; total, $17,945.

COMMERCE OF THE UNITED STATES WITH THE WHALE-FISHERIES FOR THE YEARS 1856 AND 1857.

Years ending	Exports.			Imports.	Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total.	American.	Foreign.
June 30, 1856	$320,045	$22,290	$342,335	$58,067	54,744	670
1857	496,258	21,010	517,268	107,186	57,983	...

EXPORTS OF OIL, WHALEBONE, AND SPERMACETI (THE PRODUCT OF THE FISHERIES OF THE UNITED STATES) FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Spermaceti Oil.		Whale and other Fish.		Whalebone.		Spermaceti.		Spermaceti Candles.	
	Gallons.	Value.	Gallons.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Russia on the Black Sea	64	$60	....	....	....	....	....	....	....	....
Prussia	....	....	....	....	....	....	....	....	180	$65
Sweden and Norway	7,015	12,008	....	....	....	....	....	....	....	....
Danish West Indies	....	....	803	$702	160	$76	....	....	....	....
Hamburg	....	....	....	....	711,637	464,562	6,049	$4,265	161	81
Bremen	490	622	....	....	384,075	193,062	....	....	191	71
Holland	654	1,175	....	....	10,107	5,583	....	....	180	92
Dutch West Indies	....	....	4,541	3,514	100	45	....	....	705	236
Dutch Guiana	....	....	643	546	....	....	....	....	1,072	430
Belgium	1,638	2,998	30,801	20,431	2,900	1,806	....	....	1,250	500
England	721,837	1,073,692	46,362	35,811	277,277	197,294	67,484	29,042	....	....
Scotland	51,744	84,541	....	....	....	....	....	....	....	....
Gibraltar	....	....	....	....	1,617	980	....	....	....	....
Canada	25,801	27,843	161,208	104,717	....	....	....	....	20,869	8,070
Other British N. Am. Poss.	2,330	3,033	10,086	9,457	....	....	....	....	....	....
British West Indies	161	210	3,176	2,542	....	....	1,250	251	955	295
British Honduras	....	....	81	67	....	....	....	....	360	130
British Guiana	410	461	5,581	4,490	....	....	....	....	....	....
British Possessions in Africa	....	....	185	208	200	140	1,558	654	....	....
Other ports in Africa	....	....	....	....	....	....	....	....	5,818	1,980
British Australia	....	....	6,012	4,356	....	....	....	....	....	....
France on the Atlantic	....	....	10,310	6,127	627,219	425,866	3,896	1,363	390	136
France on the Mediterranean	....	....	....	....	4,148	2,648	....	....	....	....
French North American Poss.	....	....	333	267	....	....	....	....	....	....
French Guiana	....	....	3,185	2,714	....	....	....	....	....	....
Spain on the Atlantic	....	....	....	....	....	....	....	....	350	143
Spain on the Mediterranean	....	....	....	....	....	....	....	....	884	290
Cuba	1,051	2,877	107,388	80,409	1,160	520	....	....	15,783	5,756
Porto Rico	432	670	5,421	4,252	750	360	....	....	880	302
Portugal	....	....	250	182	12,508	13,931	....	....	....	....
Madeira	....	....	....	....	....	....	....	....	450	176
Cape de Verd Islands	....	....	....	....	....	....	....	....	217	76
Hayti	150	240	5,997	5,069	....	....	....	....	5,880	2,050
Mexico	1,363	1,737	2,886	2,446	500	219	740	279	12,754	4,791
Central Republic	....	....	128	121	....	....	....	....	....	....
New Granada	361	574	503	398	....	....	....	....	2,028	761
Venezuela	....	....	843	662	650	372	....	....	....	....
Brazil	....	....	80	66	1,202	848	510	163	18,711	6,953
Argentine Republic	....	....	171	197	....	....	....	....	....	....
Chili	3,080	3,859	6,431	7,129	....	....	....	....	2,750	650
Ecuador	....	....	....	....	....	....	....	....	1,681	572
Sandwich Islands	160	270	484	502	....	....	....	....	....	....
China	....	....	....	....	....	....	....	....	900	450
Whale-fisheries	....	....	277	258	....	....	....	....	....	....
Total year 1856-'57	$19,061	$1,816,888	414,466	$363,665	2,064,309	$1,307,322	80,987	$34,917	104,570	$35,121

For articles on Whale-fishery, see *North American Review*, xxxviii. (J. R. Williams); Hunt's *Merchants' Magazine*, xiv., xvi; *Democratic Review*, xix.; *Quarterly Review*, lxiii.; *Foreign Quarterly*, vii.; *Christian Review*, xii.; *Living Age*, xiii., xiv.; *Edinburgh Review*, lxxxvi.

Wharf, a sort of quay, constructed of wood or stone, on the margin of a roadstead or harbor, along side of which ships or lighters are brought for the sake of being conveniently loaded or unloaded.

Wharfage, the fee paid for landing goods on a wharf, or for shipping them off.

Wheat (Ger. *Weitzen*; Da. *Tarw*; Da. *Hvede*; Sw. *Hvete*; Fr. *Froment, Bled, Blé*; It. *Grano, Formento*; Sp. and Port. *Trigo*; Russ. *Pschenitza*; Pol. *Pszenica*), a species of bread-corn (*Triticum*, Linn.), by far the most important of any cultivated in Europe or North America. We are totally ignorant of the country whence this valuable grain was first derived; but it was very early cultivated in Sicily. It is raised in almost every part of the temperate zones, and in some places as high as 2000 feet above the level of the sea.

Wheat Production of the United States.—Wheat, where the soil and climate are adapted to its growth, and the requisite progress has been made in its culture, is decidedly preferred to all other grains, and, next to maize, is the most important crop in the United States, not only on account of its general use for bread, but for its safety and convenience for exportation. It is not known to what country it is indigenous, any more than our other cultivated cereals, all of which, no doubt, have been essentially improved by man. By some, wheat is considered to have been coeval with the creation, as it is known that upward of a thousand years before our era it was cultivated, and a superior variety had been attained. It has steadily followed the progress of civilization, from the earliest times, in all countries where it would grow. The introduction of this grain into the North American colonies dates back to the earliest periods of their settlement by Europeans. It was first sown, with other grains, on the Elizabeth Islands, in Massachusetts, by Gosnold, at the time he explored that coast in 1602. In 1611, wheat, as well as other grains, was also sown in Virginia; and by the year 1648 there were cultivated many hundred acres in that colony. Although premiums were offered as an encouragement of its growth in 1651, it was not much cultivated for more than a century after, in consequence of the ill-directed attention to the culture of tobacco.

Wheat was introduced into the valley of the Mississippi by the "Western Company" in 1718, where, from the careless mode of cultivating it by the early settlers, and the sudden alternations of temperature, it would only yield from five to eight fold, running to straw and blade without filling the ear. In 1746, however, the culture had so far extended, that six hundred barrels of flour were received at New Orleans from the Wabash; and by the year 1750 the French of Illinois raised three times as much wheat as they consumed, and large quantities of grain and flour were sent to the same place. Prior to the Revolution, the primitive soils of New York, New Jersey, and of New England, appear not to have rewarded the cultivation of this grain much, if any, beyond the wants of the Inhabitants. Considerable quantities were raised on the Hudson, and in some parts of New Jersey and Pennsylvania, which were exported to the West Indies, and New England, and to Great Britain, France, Portugal, and Spain, in years of scarcity, previously to 1723.

In 1776 there was entailed upon this country an enduring calamity, in consequence of the introduction of the Hessian or wheat fly, which was supposed to have been brought from Germany in some straw employed in the debarkation of Howe's troops, on the west end of Long Island. From that point this insect gradually spread in various directions, at the rate of twenty or thirty miles a year, and the wheat of the entire regions east of the Alleghanies is now more or less infested with the larvæ, as well as in large portions of the States bordering on the Ohio and Mississippi, and on the great lakes; and so great have been the ravages of these insects, that the cultivation of this grain in many places has been abandoned.

The geographical range of the wheat region in the Eastern Continent and Australia lies principally between the thirtieth and sixtieth parallel of north latitude, and between the thirtieth and fortieth degrees south, being chiefly confined to France, Spain, Portugal, Italy, Sicily, Greece, Turkey, Russia, Denmark, Norway, Sweden, Poland, Prussia, Netherlands, Belgium, Great Britain, Ireland, Northern and Southern Africa, Tartary, India, China, Australia, Van Diemen's Land, and Japan. Along the Atlantic portions of the Western Continent it embraces the tracts lying between the thirtieth and fiftieth parallels; and in the country westward of the Rocky Mountains, one or more degrees farther north. Along the west coast of South America, as well as in situations within the torrid zone, sufficiently elevated above the level of the sea and properly irrigated by natural or artificial means, abundant crops are often produced. The principal districts of the United States in which this important grain is produced in the greatest abundance, and forms a leading article of commerce, embrace the States of New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, Ohio, Kentucky, Michigan, Indiana, Illinois, Missouri, Wisconsin, and Iowa. The chief varieties cultivated in the Northern and Eastern States are the white flint, tea, Siberian, bald, Black Sea, and the Italian spring wheat; in the Middle and Western States, the Mediterranean, the Virginia white May, the blue stem, the Indiana, the Kentucky white-bearded, the old red chaff, and the Talavera. The yield varies from ten to forty bushels and upward per acre, weighing per bushel from fifty-eight to sixty-seven pounds. Within a few years a species of wheat has been introduced from Egypt, which, although it has been lying dormant two thousand years, promises to be unusually prolific. Another species from South Australia, weighing seventy pounds to the bushel, has also been introduced.

It appears that on the whole crop of the United States there was a gain, during ten years, of 15,645,000 bushels. The crop of New England decreased from 2,014,000 to 1,090,000 bushels, exhibiting a decline of 924,000 bushels, and indicating that the attention of farmers has been much withdrawn from the culture of wheat. Grouping the States from the Hudson to the Potomac, including the District of Columbia, it appears that they produced in 1849 35,085,000 bushels, against 29,936,000 in 1839. (In Virginia there was an increase of 1,128,000 bushels.) These States embrace the oldest wheat-growing region of the country, and that in which the soil and climate seem to be adapted to the permanent culture of the grain. The increase of production in the ten years has been 6,272,000 bushels, equal to 17·4 per cent. The area of tilled land in these States is 53,000,000 acres, only 30 per cent. of the number of acres returned for the whole United States, while the proportion of wheat produced is 46 per cent. of the entire crop of the country. In North Carolina there has been an increase of 170,000 bushels; but in the Southern States generally there was a considerable decrease. Indiana, Illinois, Michigan, and Wisconsin contributed to the general aggregate, under the sixth census, only 9,800,000 bushels; under the last they are shown to have produced upward of 25,000,000 bushels, an amount greater than the whole increase in the United States for the period.—*U. S. Patent Office Report.*

As a curious illustration of the fluctuations in the price of grain in Great Britain for the last two centuries we give the following table, taken from the *Encycl. Britannica.*

ACCOUNT OF THE AVERAGE PRICES OF BRITISH CORN PER IMPERIAL QUARTER, IN ENGLAND AND WALES, SINCE 1771, AS ASCERTAINED BY THE RECEIVER OF CORN RETURNS.

Years.	Wheat. £ s. d.	Barley. £ s. d.	Oats. £ s. d.	Rye. £ s. d.	Years.	Wheat. £ s. d.	Barley. £ s. d.	Oats. £ s. d.	Rye. £ s. d.
1771	2 0 7	1 6 5	0 17 2	1 15 4	1812	6 6 5	3 0 9	2 4 6	3 18 7
1772	2 12 8	1 8 1	0 16 8	1 17 9	1813	5 9 9	2 18 6	1 16 6	3 11 11
1773	2 12 7	1 9 2	0 17 8	1 14 4	1814	3 14 4	1 17 4	1 5 8	2 4 8
1774	2 14 8	1 9 4	0 18 4	1 15 4	1815	3 5 7	1 10 3	1 3 7	1 18 1
1775	2 9 10	1 4 9	0 17 0	1 18 10	1816	3 18 6	1 18 11	1 7 9	2 5 1
1776	1 19 4	1 0 9	0 15 5	1 7 6	1817	4 16 11	2 9 4	1 12 5	2 19 8
1777	2 6 11	1 1 1	0 16 1	1 8 10	1818	4 6 8	2 18 10	1 12 5	2 16 4
1778	2 8 8	1 3 4	0 16 7	1 9 2	1819	3 14 6	2 5 9	1 8 2	2 9 6
1779	1 16 8	1 0 1	0 15 5	1 4 0	1820	3 7 10	1 18 10	1 4 2	2 2 0
1780	1 16 9	0 17 6	0 15 2	1 2 10	1821	2 16 1	1 6 0	0 19 6	1 19 0
1781	2 6 0	0 17 8	0 16 1	1 7 8	1822	2 4 7	1 1 10	0 18 1	1 0 10
1782	2 9 3	1 3 2	0 15 7	1 9 8	1823	2 15 4	1 11 6	1 2 11	1 11 10
1783	2 14 8	1 11 3	1 0 5	1 16 9	1824	3 3 11	1 16 4	1 4 10	2 1 5
1784	2 10 4	1 8 3	0 18 10	1 13 3	1825	3 8 6	2 0 0	1 5 6	2 2 8
1785	2 3 1	1 4 9	0 17 8	1 8 10	1826	2 18 8	1 14 4	1 6 8	2 1 1
1786	2 0 0	1 5 1	0 18 6	1 8 0	1827	2 18 6	1 17 7	1 8 2	2 0 2
1787	2 2 5	1 2 4	0 17 2	1 8 6	1828	3 0 5	1 12 10	1 2 6	1 14 2
1788	2 6 4	1 2 8	0 16 1	1 8 6	1829	3 6 3	1 19 6	1 2 9	1 14 10
1789	2 12 9	1 3 6	0 16 6	1 10 9	1830	3 4 5	1 19 7	1 4 5	1 15 10
1790	2 14 9	1 6 3	0 19 5	1 15 0	1831	3 6 4	1 18 0	1 5 4	2 0 0
1791	2 8 7	1 6 10	0 18 1	1 13 7	1832	2 18 8	1 18 1	1 0 5	1 14 7
1792	2 3 0	....	0 16 0	1 9 10	1833	2 19 11	1 7 6	0 18 5	1 12 11
1793	2 9 8	1 11 1	1 0 6	1 16 3	1834	2 6 2	1 9 0	1 0 11	1 12 0
1794	2 19 3	1 11 6	1 1 0	1 17 5	1835	1 19 4	1 9 11	1 2 0	1 10 4
1795	3 15 9	1 17 5	1 4 5	....	1836	2 8 6	1 19 10	1 3 1	1 18 4
1796	3 18 7	1 15 4	1 1 10	....	1837	2 15 10	1 10 4	1 3 1	1 14 9
1797	2 13 9	1 7 2	0 10 8	....	1838	3 4 7	1 11 5	1 2 5	1 15 1
1798	2 11 10	1 9 0	0 19 5	....	1839	3 10 8	1 19 6	1 5 11	2 2 0
1799	3 9 0	1 16 2	1 7 0	....	1840	3 6 4	1 16 5	1 5 8	1 17 0
1800	5 18 10	2 19 10	1 19 4	....	1841	3 4 4	1 19 10	1 2 5	1 16 9
1801	5 19 6	3 8 6	1 17 0	....	1842	2 17 3	1 7 6	0 19 3	1 18 0
1802	3 9 10	1 18 4	1 0 4	....	1843	2 10 1	1 9 6	0 18 4	1 10 7
1803	2 18 10	1 5 4	1 1 6	....	1844	2 11 3	1 18 8	1 0 7	1 13 11
1804	3 2 3	1 11 0	1 4 3	....	1845	2 10 10	1 11 8	1 2 6	1 12 6
1805	4 0 9	2 4 6	1 8 4	....	1846	2 14 8	1 13 8	1 3 8	1 15 0
1806	3 10 1	1 18 8	1 7 1	....	1847	3 9 9	2 4 2	1 3 8	2 9 0
1807	3 15 4	1 19 4	1 8 4	....	1848	2 10 6	1 11 6	1 0 6	....
1808	4 1 6	....	1 13 4	....	1849	2 4 3	1 7 9	0 17 6	1 5 8
1809	4 17 4	2 7 0	1 11 5	....	1850	2 0 3	1 5 5	0 16 5	1 3 3
1810	5 6 5	2 3 1	1 8 7	2 19 5	1851	1 18 6	1 4 9	0 18 7	1 5 6
1811	4 15 3	2 2 3	1 7 7	2 8 4	1852	2 0 9	1 8 6	0 19 1	1 9 10

NOTE.—The Imperial bushel contains 2218·192 cubic inches, the Winchester bushel 2150·42 cubic inches, the former being about one thirty-second part larger than the latter.—*See* WEIGHTS and MEASURES.

BRITISH GRAIN TRADE.

ACCOUNT SHOWING THE QUANTITIES OF THE DIFFERENT VARIETIES OF FOREIGN AND COLONIAL GRAIN ENTERED FOR CONSUMPTION IN THE UNITED KINGDOM IN EACH OF THE EIGHTEEN YEARS ENDING WITH 1852, WITH THE TOTAL QUANTITIES SO ENTERED, AND THE ANNUAL ENTRIES AT AN AVERAGE OF THE ABOVE PERIOD; WITH A SIMILAR ACCOUNT FOR INDIAN CORN AND MEAL FOR THE TEN AND SEVEN YEARS ENDING WITH 1852.—(COMPILED FROM VARIOUS PARLIAMENTARY PAPERS.)

Years.	Wheat and Flour. Quarters.	Barley. Quarters.	Oats and Oat-meal. Quarters.	Rye and Rye-meal. Quarters.	Peas and Pease-meal. Quarters.	Beans and Beans-meal. Quarters.	Total entered for Consumption. Quarters.	Indian Corn and Meal. Quarters.
1835	24,864	136,153	170,144	3	26,184	63,814	430,560	....
1836	94,107	110,021	97,197	18	80,928	87,796	466,067	....
1837	244,271	47,475	324,024	19,574	87,015	101,076	843,083	....
1838	1,818,475	8,192	11,079	2,517	11,618	54,249	1,986,114	....
1839	2,711,723	594,811	812,781	152,182	170,279	1,3,591	4,615,269	....
1840	2,401,436	619,841	517,185	1,857	159,457	12,517	3,829,120	....
1841	2,147,803	212,837	27,918	518	132,857	267,67 7	3,219,685	....
1842	2,089,645	47,969	295,437	28,510	80,450	43,779	2,887,296	....
1843	980,523	223,543	45,254	2,724	45,383	45,702	1,353,121	10,225
1844	988,555	1,020,756	288,925	28,779	106,375	22,,680	2,628,350	38,711
1845	315,615	200,410	567,434	23	81,735	197,919	1,432,156	4,205
1846	2,962,928	404,614	179,412	1,710	181,811	209,874	4,754,380	757,609
1847	4,012,110	78,,681	1,788,167	253,510	193,,78	476,,53	8,1 5,6,4	4,6,3,918
1848	2,198,755	883,975	872,553	55,481	,,771	448,704	4,424,181	1,637,419
1849	5,5,,,5,4	1,544,893	1,375,585	250,030	2,,,092	482,012	9,,55,561	2,,55,061
1850	4,845,854	1,028,,67	1,153,,71	98,481	179,184	441,612	7,110,891	1,,76,,,8
1851	5,275,677	8,,,,570	1,193,546	23,072	,,,,692	3,,,,,,6	7,735,8,3	1,8,,748
1852	4,135,370	921,061	982,278	9,576	105,5,7	872,,75	6,2 9,,84	1,471,097
Totals	41,814,,,8	9,428,690	11,854,370	933,281	2,189,6,8	4,10,,88,	72,841,,,5	13,321,942
Average annual consumption for the 18 years ending 1852.)	2,489,720	523,816	630,798	51,849	121,590	228,210	4,046,789	1,332,194
Average annual consumption for the 7 years ending 1852.)	4,231,185	870,786	1,102,546	99,510	172,323	393,366	6,950,,,8	1,890,101

We give here as an interesting statement, and as showing the present liberal system of Great Britain in regard to the importation of wheat from the United States, the tariff import duties on wheat in the principal countries that import from the United States.

Countries.	Import Duties on Wheat.
Anatria	Per centner (110 pounds), 18½ cents.
Belgium	18½ cents per 220 pounds.
Brazil	20 per cent. ad valorem.
Chili	25 per cent. ad valorem when under $3 per 3½ bushels—otherwise free.
China	5 per cent. ad valorem.
Peru	75 cents per fanega of 135 bushels.
France	Tariff regulated by average monthly prices of wheat in home market.
Great Britain	24 cents per quarter (8 bushels). North American Possessions free.
Hanse Towns	½ to 1 per cent. ad valorem.
Holland	$3 20 for 1 last, or 85·20 bushels.
Mexico	Generally prohibited.
New Granada	Free.
Norway	1 toende (3·94 bushels), 66 cents.
Spain	Generally prohibited.
Cuba	$5 per quintal (101 pounds). 22 per cent. in favor of Spanish vessels.
Sweden	Per 4·157 bushels, 60 cents.
United States	15 per cent. ad valorem.

WHEAT AND WHEAT FLOUR (STATED AS QUARTERS OF WHEAT) IMPORTED INTO GREAT BRITAIN DURING EACH OF THE TEN YEARS ENDING WITH 1851, EXHIBITING THE QUANTITIES BROUGHT FROM EACH COUNTRY.

Countries.	1842.	1844.	1845.	1846.	1847.	1848.	1849	1850.	1851.	1852
	Quarters.	Quarters.	Quarters.	Quarters.	Quarters.	Quarters.	Quarters.	Quarters.	Quarters.	Quarters.
Russia	33.6.8	104 526	54,781	204,850	554,587	528,138	553,554	638,613	659,634	733,194
Sweden and Norway	678	16,782	679	218	3,647	5 346	6,4 4	856	6	546
Denmark	60,864	64,470	74,170	61,538	73,508	101,787	248,218	162,907	168,768	218 854
Prussia	659,548	551,016	424,539	360,881	494,921	528,156	618,699	635,157	690,175	452,292
Germany, viz., Hanseatic Towns, Oldenburg, Hanover, and Mecklenburg	126,521	108,922	154,971	126,572	154,807	592,591	498,934	330,041	264,721	119,681
Holland	858	11,772	1,614	473	11,800	163,978	208,48	293 465	93,414	124,063
Belgium	339	1,101	989	3,064	27,463	178.3 8	966,039	201,922	59,046	25,051
France	3,101	44,875	35,809	73,774	179,25	320,010	742,022	1,145,146	1,198,433	459,418
Spain	1	11	4,016	74,041	24,700	917	40	2,166	115	6,321
Italy	5,206	80,280	51,408	104 250	54,850	83,170	281,580	117,323	241,852	65,108
Malta	3,155	8,163	4,120	11,000	46,25	8,576	9,049	10,506	10,585	17,106
Greece	....	....	3,240	11,595	....	4,129	61,186	6,292	165	....
Turkey, including Syria, Egypt, Wallachia, and Moldavia	14 800	44,700	7,080	41,537	264,279	40,340	225,542	382,703	873,130	533,524
Cape of Good Hope	....	88	2	87	2	2	1	....	1	....
British East Indies	3,624	2,303	1,204	351	205	2.755	9,028	690	22	....
Australian Settlements	1,2 2	4,210	14,035	20 046	13,090	5 530	15,909	14 684	104	....
British N. Am. Colonies	113,416	228,009	229,819	337,105	998 7 5	189 254	142,2 5	80,894	120,680	110,088
United States of America	26,000	8 ,853	93,622	803,179	1,894,142	200,10.	617,191	537,030	911 856	1,231,804
All other parts	2,674	8	2,000	24 12	10,25	11,0 8	20 88	19,812	4 650	5,279
Total	1,064,04	1,370,263	1,141,957	2,344,142	4 464,757	3,082,231	4,85.,2 0	4 830,2 .5	5,350 412	4,104,092

Wheat Trade of the Elbe, etc.—Next to Dantzic, Hamburg is, perhaps, the greatest grain market in the north of Europe, being a depôt for large quantities of Baltic corn, and for the produce of the extensive countries traversed by the Elbe. The exports of wheat from Hamburg amounted, at an average of the eleven years ending with 1811, to 210,871 quarters a year. The price of wheat is frequently less in Hamburg than in Dantzic; but this lowness of price is altogether ascribable to the inferiority of the Holstein and Hanover wheats, which are generally met with in great abundance in Hamburg. Wheat from the Upper Elbe is of a better quality. Bohemian wheat is occasionally forwarded by the river to Hamburg; but the charges attending its conveyance from Prague amount to full 15*s.* a quarter, and prevent its being sent down, except when the price is comparatively high. In 1841 the shipments of wheat from Hamburg amounted to 507,400 quarters, of which 460,900 were for England.

French Wheat Trade.—It appears from the accounts given by the Marquis Garnier, in the last edition of his translation of the *Wealth of Nations*, that the price of the *hectolitre* of wheat at the market of Paris amounted, at an average of the nineteen years beginning with 1801 and ending with 1819, to 20 francs 53 cents, which is equal to 30 francs 80 cents the septier; or, taking the exchange at 25 francs, to 45*s.* 6*d.* the quarter. Count Chaptal, in his valuable work *Sur l'Industre Française*, published in 1819, estimates the ordinary average price of wheat throughout France at 18 francs the hectolitre, or 42*s.* 10*d.* the quarter. The various expenses attending the importation of a quarter of French wheat into London may be taken at a medium at about 6*s.* a quarter. France, however, has very little surplus produce to dispose of; so that it would be impossible for her to export any considerable quantity without occasioning a great advance of price.

The mean of the different estimates framed by Vauban, Quesnay, Expilly, Lavoisier, and Arthur Young, gives 61,519,672 septiers, or 32,810,000 quarters, as the total average growth of the different kinds of grain in France (*Peuchet Statistique Elémentaire*). We, however, took occasion, in a former article on this subject, to observe that there could not be a doubt that this estimate was a great deal too low; and the more careful investigations of late French statisticians fully confirm this remark. The annual produce of the harvest of France was lately (1843) estimated, from returns obtained under official authority, at 63,558,000 hectolitres of wheat, and 112,958,000 ditto of other sorts of grain; making in all 182,517,000 hectolitres, or 62,740,000 imperial quarters. Of this quantity it is supposed that about 16 per cent. is consumed as seed, 19 per cent. in the feeding of different species of animals, and 2 per cent. in distilleries and breweries.

The foreign grain trade of France was regulated, till within these few years, by a law which forbade exportation, except when the home prices were below certain limits, and which restrained and absolutely forbade importation, except when they were above certain other limits. The prices regulating importation and exportation differed in the different districts into which the kingdom was divided. Latterly, however, importation has been at all times allowed under graduated duties, which, like those recently existing in England, become prohibitory when the prices sink to a certain level. The frontier departments are divided into four separate districts, the prices in each district governing the duties on importation into it, so that it sometimes happens that grain warehoused in a particular port, where it is not admissible except under a high duty, has been carried to another port in another district, and admitted at a low duty. An official announcement is issued on the last day of each month, of what the duties are to be in each district during the succeeding month.

Spanish Grain Trade.—The exportation of grain from Spain was formerly prohibited under the severest penalties. But in 1820 grain and flour were both allowed to be freely exported, and in 1823 this privilege was extended to all productions (*frutos*) the growth of the soil. There is now, in fact, no obstacle whatever, except the expense of carriage, to the conveyance of grain to the sea-ports, and thence to the foreigner. Owing, however, to the grain-growing provinces being principally situated in the interior, and to the extreme badness of the roads, which renders carriage to the coast both expensive and difficult, the exports are comparatively trifling: this difficulty of carriage frequently gives rise to very great differences of prices at places in all parts of the country only a few leagues distant.

Grain Trade of Odessa.—Odessa, on the Black Sea, is the only port in southern Europe from which any considerable quantity of grain is exported. We believe, indeed, that the fertility of the soil in its vicinity has been much exaggerated; but the wheat shipped at Odessa is principally brought from Volhynia and the Polish provinces to the south of Cracow, the supplies from which are susceptible of an indefinite increase. Owing to the cataracts in the Dnieper, and the Dniester having a great number of shallows, most part of the grain brought to Odessa comes by land carriage. The expense of this mode of conveyance is not, however, nearly so great as might be supposed. The carts with grain are often in parties of 150; the oxen are pas-

tured during the night, and they take advantage of the period when the peasantry are not occupied with the harvest, so that the charge on account of conveyance is comparatively trifling.

Both soft and hard wheat are exported from Odessa; but the former, which is by far the most abundant, is only brought to England. Supposing British wheat to sell at about 60s., Odessa wheat in good order would not be worth more than 52s. in the London market; but it is a curious fact, that in the Mediterranean the estimation in which they are held is quite the reverse; at Malta, Marseilles, Leghorn, etc., Odessa wheat fetches a decidedly higher price than British wheat.

The hard wheat brought from the Black Sea comes principally from Taganrog. It is a very fine species of grain; it is full 10 per cent. heavier than British wheat, and has less than half the bran. It is used in Italy for making macaroni, vermicelli, and things of that sort; little of it has found its way to England.

The voyage from Odessa to Britain is of uncertain duration, but generally very long. It is essential to the importation of wheat in a good condition, that it should be made during the winter months. When the voyage is made in summer, unless the wheat be very superior, and be shipped in exceedingly good order, it is almost sure to heat, and has sometimes, indeed, been injured to such a degree as to require to be dug from the hold with pick-axes. Unless, therefore, means be devised for lessening the risk of damage during the voyage, there is little reason to think that Odessa wheat will ever be very largely imported into Britain.

The entire expense of importing a quarter of wheat from Odessa to London may be estimated at from 16s. to 18s. The exports of wheat from Odessa, and other ports on the Black Sea, to Constantinople, the Levant, Italy, the south of France, etc., have latterly been very large indeed. In 1846 the exports from Odessa only amounted to 1,279,502 quarters, and in 1847 to 2,016,692 ditto; the latter being, we believe, the largest exportation that ever took place in a single year from any single port. Owing to the scarcity in England, above 400,000 quarters of the above quantity were shipped for that country, but the speculation entailed a heavy loss on the importers. The price free on board at Odessa considerably exceeded 40s. a quarter.—E. B.

United States.—When we see the growth of wheat keeping up with the progress of population in the oldest States of the Union, we need have no apprehension of a decline in the cultivation of this important crop. The amount of flour exported from New Jersey in 1751 was 6424 barrels; from Philadelphia, in 1752, 125,960 barrels, besides 86,500 bushels of wheat; in 1767, 198,816 barrels, besides 367,500 bushels of wheat; in 1771, 252,744 barrels; from Savannah, in 1771, 7200 pounds; from Virginia, for some years annually preceding the Revolution, 800,000 bushels of wheat. The total exports of flour from the United States in 1791 were 619,681 barrels, besides 1,018,339 bushels of wheat; in 1800, 853,052 barrels, besides 26,853 bushels of wheat; in 1810, 798,431 barrels, besides 325,924 bushels of wheat; in 1820–'21, 1,056,119 barrels, besides 25,821 bushels of wheat; in 1830–'31, 1,806,529 barrels, besides 408,910 bushels of wheat; in 1840–'41, 1,515,817 barrels, besides 868,585 bushels of wheat; in 1845–'46, 2,289,476 barrels, besides 1,613,795 bushels of wheat; in 1846–'47, 4,382,496 barrels, besides 4,399,951 bushels of wheat; in 1850–'51, 2,202,305 barrels, besides 1,026,725 bushels of wheat. According to the census of 1840, the wheat crop of the United States amounted to 84,823,272 bushels; in 1849, according to the census of 1850, 100,503,899 bushels, although in some of the largest wheat-growing States the crop of 1849 fell far below the average. The production of the year 1857 in the United States is estimated at about 200,000,000 of bushels.

In the State of Ohio, especially, there was great deficiency, as was made apparent by the returns of the wheat crop for the ensuing year, made in pursuance of an act of the Legislature of that State. From the almost universal returns of "short crop" by the marshals in that State in 1849, which fell below that of 1839, 2,000,000 bushels, and the ascertained crop of 1850, we are fully satisfied that the average wheat crop of Ohio would appear 30 per cent. greater than shown by the census returns. The same causes which operated to diminish the wheat crop of Ohio, were not without their effects upon that of other States bordering on the upper portion of the valley of the Mississippi.

In the London exhibition very little wheat was exhibited equal to that from the United States, especially that from Genesee county, in the State of New York—a soft, white variety—to the exhibitor of which a prize medal was awarded by the Royal Commissioners, and recently transmitted to Mr. Bell by the President of the United States, the chairman of the American Executive Committee. The red Mediterranean wheat exhibited from the United States attracted much attention. The wheat from South Australia was probably superior to any exhibited, while much from our own country fell but little behind, and was unquestionably next in quality.—*Patent Office Report.*

STATEMENT SHOWING THE ANNUAL AVERAGE EXPORT PRICE OF FLOUR AT NEW YORK FROM 1800 TILL JUNE 30, 1855; ALSO THE ANNUAL AVERAGE PRICE OF FLOUR IN THE CITIES OF BOSTON, NEW YORK, PHILADELPHIA, BALTIMORE, NEW ORLEANS, AND ST. LOUIS, FROM 1800 TILL JUNE 30, 1855.

Years.	Export Price.	Boston.	New York.	Philadelphia.	Baltimore.	N. Orleans.	St. Louis.
1800	$10 00	$11 00	$9 88	$9 75	$11 42	....	....
1801	13 00	12 10	10 14	10 85	11 42	....	....
1802	9 00	8 17	6 19	6 94	7 00	....	....
1803	7 00	7 55	6 01	6 75	6 50	....	....
1804	7 75	8 97	7 15	7 91	7 33	....	....
1805	13 00	11 25	9 59	10 15	12 08	....	....
1806	7 50	8 25	7 13	7 15	7 33	....	....
1807	6 25	7 73	6 76	7 10	7 50	....	....
1808	6 00	6 25	5 15	5 59	5 75	....	....
1809	7 50	7 62	6 79	6 48	6 50	....	....
1810	8 15	9 42	8 77	9 87	9 40	....	....
1811	10 50	10 48	9 05	10 40	10 67	....	....
1812	10 75	10 90	9 08	9 95	10 12	....	....
1813	13 00	14 67	7 75	9 29	10 17	$13 50	....
1814	14 50	14 51	7 76	7 67	8 50	9 00	....
1815	9 25	8 95	8 17	8 08	7 99	9 00	....
1816	7 87	9 40	9 34	9 75	8 67	9 30	....
1817	14 75	12 27	11 79	12 12	10 31	12 50	....
1818	10 25	10 50	9 42	9 85	9 59	10 83	....
1819	8 00	7 70	6 79	7 19	6 56	9 62	....
1820	5 87	5 25	4 81	4 94	4 65	6 20	....
1821	4 25	4 42	4 85	4 02	4 64	6 23	....
1822	7 00	6 94	6 39	6 43	6 36	5 75	....
1823	7 75	7 84	6 93	6 90	6 89	6 68	....
1824	6 62	6 07	5 78	5 89	5 54	6 25	....
1825	5 87	5 57	5 19	5 00	4 98	4 91	....
1826	5 25	5 24	5 00	4 99	4 78	4 40	....
1827	5 00	5 54	5 14	5 27	5 15	5 12	....
1828	5 50	6 14	5 50	5 29	5 43	5 36	....
1829	5 00	6 81	6 54	6 26	6 37	7 20	....
1830	7 25	5 26	5 03	4 83	4 86	4 98	....
1831	5 62	6 05	5 84	5 82	5 61	5 47	....
1832	5 87	6 29	5 87	5 62	5 79	6 84	....
1833	5 50	6 11	5 70	5 85	5 69	5 98	$4 98
1834	5 00	5 43	5 07	5 21	4 99	5 19	4 50
1835	6 00	6 42	6 00	5 75	5 84	6 35	6 25
1836	7 50	8 50	7 73	7 44	9 92	8 55	8 00
1837	10 25	10 18	9 09	9 75	9 43	9 10	9 12
1838	9 00	8 55	8 02	7 81	7 84	8 67	7 87
1839	6 75	7 20	7 40	6 89	6 65	6 57	7 19
1840	5 37	5 51	5 17	5 22	5 00	4 93	4 93
1841	5 20	5 71	5 39	5 84	5 51	5 33	4 75
1842	5 00	5 07	5 07	5 47	5 20	4 54	4 56
1843	4 50	4 87	5 07	4 90	4 26	4 18	3 75
1844	4 75	5 15	4 61	4 84	4 81	4 44	4 50
1845	4 51	5 23	5 00	4 60	4 63	4 83	4 93
1846	5 18	5 58	5 19	4 79	4 53	4 38	4 50
1847	5 95	7 17	6 80	6 02	6 21	5 54	4 98
1848	6 22	6 43	5 71	5 67	5 52	4 76	5 25
1849	5 35	6 00	4 96	4 84	4 68	4 61	5 43
1850	5 00	6 00	4 86	4 97	4 89	5 31	6 25
1851	4 77	5 25	4 19	4 88	4 18	4 00	4 88
1852	4 24	5 20	4 06	4 28	4 26	4 10	5 23
1853	5 60	6 27	5 51	5 47	5 39	5 48	5 08
1854	7 88	9 25	8 02	8 14	8 13	7 60	6 09
1855	10 10	10 25	9 06	9 02	9 57	9 66	7 38

NOTE.—The price of flour for New Orleans and St. Louis could not be obtained for earlier years than those respectively given.

STATEMENT SHOWING THE PRODUCTION OF GRAIN, WINE, ETC., IN DIFFERENT COUNTRIES.

Countries.	Produce.
Austrian Empire..	1837 ..... 27,004,591 qrs.
	Wheat.....qrs. 3,466,946
	Rye and maize.....qrs. 10,066,781
	Barley.....qrs. 4,540,921
	Oats.....qrs. 9,021,643
British Empire....	Estimate, 1848.. 60,045,000 qrs.
	Wheat.....qrs. 18,225,000
	Barley.....qrs. 9,295,000
	Oats and rye.....qrs. 30,500,000
	Beans and peas.....qrs. 2,025,000
	Value of agricultural produce.....£ 215,613,811
	Spindles.....No. 27,565,000
France	1840 ..... 32,738,463 qrs.
	Wheat.....qrs. 23,927,781
	Meslin and rye.....qrs. 13,639,444
	Barley.....qrs. 5,731,497
	Oats.....qrs. 16,921,891
	Maize .....qrs. 2,921,349
	Potatoes.....qrs. 33,085,900
	Production of wine..galls. 869,250,906
Prussia	Estimate, 1846 .... £78,024,900
	Grain .....£ 26,874,900
	Potatoes .....£ 51,150,000
	Exported, 1849.
	Dantzic .....qrs. 398,227
	Stettin.....qrs. 288,476
	Königsberg .....qrs. 208,945
	Memel.....qrs. 206,245
Russian Empire...	Average estimated produce, 1848 ..... 52,622,000 qrs.
	Exported.
	Wheat.....qrs. 2,825,222
	Rye .....qrs. 196,738
	Barley .....qrs. 110,507
	Oats.....qrs. 170,835
United States	1848 ..... 118,652,440 qrs.
	Wheat.....qrs. 15,706,575
	Barley and rye.....qrs. 4,396,881
	Oats.....qrs. 23,187,500
	Buckwheat.....qrs. 1,253,800
	Indian corn .....qrs. 74,518,750
	Tobacco produced ... 218,909,000
	Prod. of agriculture.. 174,617,485
	Prod. of live stock ... 52,550,162
	1850-'51.
	Cotton crop.....bales. 2,355,257
Bavaria.....	Average estimate.
	Grain.....qrs. 1,996,924
	Potatoes .....qrs. 2,181,818
Belgium, 1849.....	Wheat.....qrs. 1,668,645
	Rye .....qrs. 1,920,427
	Barley.....qrs. 683,649
	Oats .....qrs. 2,219,478
	Potatoes .....bushels. 51,800,167
Brasil	Sugar produced .....tons. 110,000
	Coffee exported.....bags. 1,673,256
Denmark	Estimate production in Denmark and Holstein ... 7,978,216 qrs. grain
	Wheat .....qrs. 874,106
	Rye .....qrs. 1,965,426
	Barley.....qrs. 2,260,238
	Oats.....qrs. 2,884,725
	Beans and peas.....qrs. 493,711
Egypt, 1834	Wheat.....qrs. 630,000
	Beans .....qrs. 500,000
	Barley and maize ...qrs. 450,000
	Cotton, Egyptian....cwt. 6,000
	Cotton, foreign .....cwt. 200,000
	Linseed.....qrs. 87,500
Greece, 1845	Currants.....tons. 16,926
Hamburg	Exported to Great Britain from Hanseatic Towns.
	Sugar .....cwt. 3,622
Holland	1849, average of nine years, 2,987,876 qrs.
	Wheat.....qrs. 449,736
	Rye .....qrs. 952,719
	Buckwheat .....qrs. 330,091
	Barley.....qrs. 433,936
	Oats.....qrs. 821,400
Mexico	Indian corn .....qrs. 8,293,750
Papal States	Tobacco .....lbs. 1,840,000
	Oil .....lbs. 118,925,000
Portugal.....	Produce, 1849, 8,123,851 qrs. grain.
	Wheat.....qrs. 636,160
	Barley.....qrs. 213,336
	Rye .....qrs. 531,980
	Maize .....qrs. 1,660,814
	Oats.....qrs. 41,501
Sardinia	Average produce, 5,328,125 qrs.
	Wheat.....qrs. 2,509,375
	Indian corn .....qrs. 1,615,625
	Barley.....qrs. 446,875
	Chestnuts.....qrs. 343,750
	Rice.....qrs. 412,500

Countries.	Produce.
Spain....	1849 ..... 11,901,912 qrs.
	Wheat.....qrs. 5,864,250
	Barley.....qrs. 2,960,343
	Rye .....qrs. 1,923,985
	Oats and maize .....qrs. 1,243,994
	Wine exported .....galls. 4,254,836
Sweden & Norway.	Sweden, 1837.... 3,630,486 qrs.
	Wheat.....qrs. 137,998
	Rye .....qrs. 1,921,560
	Oats and peas .....qrs. 1,020,028
	Barley .....qrs. 1,013,007
	Potatoes .....qrs. 2,818,811
	Ibraila Export, 1847. Galatz, 1845.
Turkey	Wheat ....qrs. 398,558 180,039
	Barley .....qrs. 305,802 .....
	Indian corn..qrs. 620,917 157,101
Two Sicilies.....	1,204,138 qrs. grain.
	Wheat and maize ...qrs. 8,000,000
	Olive oil.....tons. 70,000
	Silk .....qrs. 1,400,000
	Cotton.....tons. 10,000
	Linseed.....qrs. 30,000
China	Exported June 30, 1849-'50.
	Tea.....83,245,800 lbs.
	Great Britain .....lbs. 53,965,800
	Other countries .....lbs. 29,283,600
	July 1, 1850, to June 20, 1851.
	Great Britain ... lbs. 60,193,306
COLONIES.	
British Possessions.	1850.
Indies	Indigo .....maunds. 119,000
Canada.....	1847, total value.... £2,576,285
	Qrs. Value.
	Wheat..... 7,558,773 £1,222,725
	Barley..... 515,727 58,919
	Oats..... 7,055,780 440,986
	Rye 446,298 50,208
	Maize 1,187,555 142,294
	Buckwheat ... 432,573 86,514
	Peas..... 1,753,836 219,380
	Potatoes..... 4,751,331 356,299
Cape of Good Hope	Hides .....pieces. 311,991
	Skins .....pieces. 261,654
	Tallow ..... lbs. 434,433
	Wool.....lbs. 1,010,907
Australia	1848.
New South Wales .	Fisheries .....£ 63,960
Ceylon	Exported to Great Britain, 1850.
	Cotton.....lbs. 807,868
Spanish Possess.	1850.
Cuba	Sugar produced .....tons. 250,000
	Total value of agricultural produce.....$ 9,821,921
Dutch Possessions.	1850.
Java.....	Indigo.....cwt. 831,436
	Pepper .....cwt. 551,605
	Cochineal.....lbs. 186,585

PRODUCTION OF WHEAT IN THE SEVERAL STATES OF THE UNION IN 1840 AND 1850.

States and Territories.	1840. Bushels.	1850. Bushels.
Alabama.....	838,052	294,044
Arkansas.....	105,878	199,639
California.....	....	17,228
Columbia, District of ..	12,147	17,870
Connecticut.....	87,000	41,762
Delaware	815,165	489,511
Florida	412	1,027
Georgia.....	1,801,880	1,068,534
Illinois	3,335,698	9,414,575
Indiana.....	4,049,375	6,214,458
Iowa.....	151,693	1,530,581
Kentucky	4,803,152	2,142,822
Louisiana.....	60	417
Maine	848,168	296,259
Maryland	8,345,783	4,494,680
Massachusetts	157,923	31,211
Michigan	2,157,103	4,925,889
Mississippi.....	196,626	137,990
Missouri	1,037,386	2,981,652
New Hampshire.....	422,124	185,658
New Jersey	774,203	1,601,190
New York	12,283,418	13,121,498
North Carolina.....	1,060,855	2,180,102
Ohio.....	15,571,551	14,487,851
Pennsylvania	13,212,077	15,367,691
Rhode Island	8,098	49
South Carolina.....	968,354	1,064,277
Tennessee	4,569,892	1,619,866
Texas	....	41,729
Vermont.....	495,800	535,955
Virginia	10,109,716	11,212,516
Wisconsin	212,116	4,286,131
Minnesota Territory...	....	1,401
New Mexico Territory .	....	196,516
Oregon Territory.....	....	211,943
Utah Territory.....	....	107,702
Total.....	89,513,270	100,485,844

EXPORTS OF DOMESTIC WHEAT AND FLOUR FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Wheat.		Flour.	
	Bushels.	Value.	Barrels.	Value.
Asiatic Russia	....	....	50	$760
Russian Possessions in North America	....	....	150	1,868
Sweden and Norway	110	$128	979	6,345
Swedish West Indies	....	....	4,502	30,439
Danish West Indies	....	....	34,708	253,649
Hamburg	....	....	1,585	10,967
Bremen	12,649	19,479	4,201	30,228
Holland	2,000	3,125	4,477	30,368
Dutch West Indies	....	....	13,937	104,392
Dutch Guiana	....	....	6,690	50,575
Dutch East Indies	....	....	2,030	14,640
Belgium	274,559	417,501	6,008	35,710
England	8,560,084	18,435 325	1,027,066	6,905,769
Scotland	1,019,520	1,544,787	121,150	687,149
Ireland	138,863	232,455	22,272	154,029
Gibraltar	24,956	41,598	46,391	310,157
Malta	....	....	478	3,792
Canada	1,655,641	1,807,457	118,857	717,245
Other British North American Possessions	149,568	221,560	436,281	2,881,803
British West Indies	14,925	23,918	245,642	1,633,027
British Honduras	....	....	15,641	96,767
British Guiana	....	....	50,017	330,773
British Possessions in Africa	9,100	20,862	19,087	133,286
Other ports in Africa	1,400	2,000	10,029	75,079
British Australia	35,929	64,653	98,355	689,070
British East Indies	531	1,040	2,579	22,704
France on the Atlantic	1,146,999	1,850,891	155,544	1,001,505
France on the Mediterranean	280,129	615,675	29,259	198,042
French North American Possessions	....	....	6,824	43,499
French West Indies	....	....	33,021	234,166
French Guiana	....	....	249	1,862
Spain on the Atlantic	361,517	594,650	72,331	499,188
Spain on the Mediterranean	393,077	646,002	155,650	1,120,717
Canary Islands	4,770	7,076	2,885	15,791
Cuba	7,907	10,171	45,145	324,410
Porto Rico	....	....	22,296	152,975
Portugal	369,802	599,086	68,671	461,148
Madeira	....	....	2,209	16,312
Cape de Verd Islands	....	....	597	4,360
Azores	....	....	392	2,198
Sardinia	12,103	17,476	1,735	12,006
Two Sicilies	249	440	12,893	84,467
Austria	....	....	10	90
Turkey in Europe	....	....	1,168	8,585
Turkey in Asia	....	....	4,028	29,279
Hayti	....	....	50,029	372,615
San Domingo	....	....	556	4,224
Mexico	....	....	24,089	179,038
Central Republic	....	....	616	4,996
New Granada	....	....	16,991	126,141
Venezuela	....	....	47,388	351,174
Brazil	....	....	507,184	3,900,467
Uruguay, or Cisplatine Republic	....	....	72,901	512,471
Argentine Republic	1,531	2,603	50,021	378,816
Chili	....	....	6,689	53,526
Peru	....	....	1,920	15,040
Ecuador	....	....	733	5,864
Sandwich Islands	....	....	3,658	30,892
Other islands in the Pacific	....	....	675	5,878
China	....	....	11,590	108,586
Whale-fisheries	....	....	2,353	17,945
Uncertain places	....	....	4,814	29,509
Total, 1856-'57	14,570,331	$22,240,857	3,712,053	$25,882,316

EXPORTS OF FOREIGN WHEAT AND FLOUR FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Wheat.		Wheat-flour.	
	Bushels.	Value.	Barrels.	Value.
England	35,670	$56,302	45,185	$210,203
Scotland	....	....	540	1,925
British N. Am. Poss.	....	....	3,355	14,449
Spain on the Atlantic	6,173	11,113	....	....
Chilea	....	....	500	2,100
Total	41,843	$67,415	50,580	$228,677
From warehouse	10,678	$17,084	2,502	$10,248
Not from warehouse	31,165	50,331	47,818	218,429

The imports of wheat into the United States are merely nominal, being, for the year ending June 30, 1857, as follows:

Whence imported.	Bushels.	Value.
Hamburg	334	$388
Sandwich Islands	300	294
Other places	24	27
Total	658	$909

Formerly the export of breadstuffs from the United States was principally made up of flour, but of late years it has been found advantageous to ship wheat in bulk, especially from the interior grain markets, without transhipment; and, as may be seen from the preceding statement, at present the export of wheat is nearly equal that of flour.

The consumption of the country, per the census figures of product, population, and export, for the years 1840 and 1850, and the rate of increase in population being known, the results are as follows:

Years.	Population.	Consumption at 3½ Bushels.	Actual Export.
1840	17,069,650	64,565,447	11,198,078
1850	23,267,726	64,182,986	8,827,017
1851	24,023,916	54,483,895	12,948,400
1852	24,780,106	66,730,815	18,600,680
1853	25,536,296	89,377,025	18,958,980
1854	26,292,486	93,023,090	28,148,565
1855	27,048,673	94,670,355	7,821,534
1856	27,804,863	97,317,020	30,000,000

Years.	Seed.	Crop.	Price in New York.
1840	8,482,727	84,827,272	$5 44
1850	11,479,922	104,479,923	5 02½
1851	12,000,000	110,032,594	6 68
1852	11,689,806	117,511,501	4 37
1853	12,500,000	121,136,048	4 94
1854	13,000,000	133,172,285	9 25
1855	13,500,000	114,991,039	9 50
1856	13,500,000	140,317,000	...

AMOUNTS OF INDIAN CORN AND CORN-MEAL, AND OF WHEAT, WHEAT FLOUR, AND WHEAT SHIP-BREAD EXPORTED FROM THE UNITED STATES DURING A PERIOD OF THIRTY-SIX YEARS, EACH ENDING ON THE 30TH OF JUNE.

Years.	Value of Corn and its Manufactures.	Value of Wheat and its Manufactures.
1821	$616,379	$4,479,857
1822	900,656	5,287,286
1823	930,489	5,151,437
1824	736,340	5,977,255
1825	878,078	4,466,679
1826	1,007,821	4,411,870
1827	1,022,464	4,645,784
1828	822,858	4,464,774
1829	974,585	5,972,920
1830	597,119	6,820,003
1831	992,051	10,712,261
1832	758,775	5,229,859
1833	871,814	5,895,157
1834	695,483	4,792,037
1835	1,217,635	4,667,881
1836	725,962	3,819,421
1837	911,854	8,253,767
1838	864,391	3,875,110
1839	709,516	7,419,252
1840	1,043,516	12,208,086
1841	995,411	8,060,568
1842	962,987	6,615,731
1843	735,915	4,339,414
1844	1,045,037	7,648,491
1845	1,053,293	6,101,666
1846	2,181,744	13,717,332
1847	18,696,546	32,739,427
1848	5,645,084	16,482,380
1849	9,185,994	13,401,748
1850	4,052,814	8,074,488
1851	2,335,415	11,834,349
1852	2,114,005	14,743,251
1853	2,084,051	19,501,817
1854	7,077,258	40,618,956
1855	8,198,893	12,583,987
1856	8,796,253	45,231,411
1857	6,142,457	48,082,531

Whip, in sea language, a rope passed through a single block or pulley.

Whirlpool, a vortex, eddy, or gulf, where the water has a circular motion. Whirlpools are produced by the meeting of currents which run in different directions. Their danger to navigation is well known, but is, perhaps, not equal to the dread which sailors entertain of them. Some of the most celebrated are the Euripus, near the coast of Negropont; the Charybdis, in the Straits of Sicily; and the Maelstrom, on the northern coast of Norway.

Whirlwind, a revolving column or mass of air, supposed with most probability to be produced by the meeting of two currents of air blowing in opposite directions, but ascribed by some to electricity. It is analogous to the *whirlpool*. When the opposite currents have the same velocity, the circulation will be maintained at the same spot; but if the motion of one of them is more rapid than that of the other, it will transport the whirling motion with its excess of celerity, and a progressive and rotatory motion are thus maintained at the same time. Whirlwinds generally occur in summer, and are most violent in tropical countries, where they frequently produce most destructive effects.

Whisky, a spirit obtained by distillation from corn, sugar, or molasses, though generally from the former. Whisky is the *national spirit*, if we may so term it, of Scotland and Ireland; but that distilled in the former is generally reckoned superior to that of the latter.—*See* SPIRITS. Whisky is a corruption of the Irish word usquebaugh. This ardent spirit may be manufactured from barley malt alone; from the raw or unmalted barley mixed with from a third to a ninth of malt; from a mixture of raw barley, wheat, rye, or oats, with from a sixth to a tenth of barley malt; or from a mixture of raw barley, or big, with sugar; or from sugar or molasses alone. When barley malt is alone used, the processes are simple, and the spirit produced has a more agreeable flavor, and is more esteemed; but, in consequence of the heavy duty on malt, distillers have been induced to employ large quantities of unmalted grain, and of late years no small proportion of sugar and molasses, adding merely enough of malt to induce the chemical conversion of the starch in the unmalted grain into grape sugar.

During the germination of barley (as in its conversion into malt) a peculiar substance is generated in the grain called *diastase*, which acts chemically on the starch of the grain, converting it first into a kind of gum called *dextrine*, and then into a sweet substance identical in composition with grape sugar. It has been found that this diastase can convert 2000 parts of starch into grape sugar; and it is of this valuable property that the distiller avails himself when he adds malt to his raw grain. To save the more expensive article malt, he uses only so much as experiment has proved will suffice to change the starch of the raw grain into sugar when mixed with it in his mash-tun. The distiller, therefore, to prepare the saccharine fluid for his operations, has to go through all the processes of brewing before he gets it ready for the still.—*See article* BREWING.

The Manufacture of Whisky.—Cincinnati has become the greatest whisky market in the world, and the Ohio Valley the most important whisky-producing region with which we are acquainted. The distilleries in the vicinity of Cincinnati are on a large scale, and they are said to exhibit many improvements devised by inventive genius. Steam is made to perform nearly all the labor. Few men are employed, and they do little else than look at the machines as they perform the work. The quantity of corn consumed in a single distillery in Cincinnati is about one thousand bushels per day, from which about 4000 gallons of whisky are produced. This gives for this single establishment a consumption of 312,000 bushels of corn per annum, and a production of 1,248,000 gallons of whisky. We have not the data upon which to base an estimate of the quantity of whisky produced in the Ohio Valley. The quantity sold in the Cincinnati market annually is about 220,000 barrels, or about 9,000,000 gallons. This is probably not more than one half the production of Ohio and Indiana alone. We presume that the production is 18,000,000 gallons, and find the consumption of corn averaging four and a half million bushels. It is probable that the production of whisky in the Ohio Valley is 50,000,000 gallons per annum, involving a consumption of 12,500,000 bushels of corn, the average value of which is $5,000,000. The demand for the article is great, and daily increasing.

White Sea. The entrance to the port of Archangel, situated on the right bank of the Dwina, about thirty miles from its mouth, is interrupted by a bar, over which vessels drawing more than fourteen feet of water can not pass. Larger ships discharge and load outside the bar. The trade of Archangel extends as far as Siberia, and along the coasts of the White Sea, east and west. Previous to the founding of St. Petersburg this was the only place of maritime commerce in the empire. Since that period its trade has considerably declined. The River Dwina is connected with the Volga and Neva by canals; but, owing to the rigor of the climate, the port of Archangel is open only from July to September. Its imports consist of colonial goods, salt, woolens, and hardwares. In 1852 there entered this port 715 vessels, with an aggregate of 56,922 tons; of which 85 were laden and 630 in ballast. These all cleared with freight. Of the arrivals there were under the English flag 273 vessels, with an aggregate tonnage of 24,297 tons.

		Archangel.	Other Ports.
Imports in 1852	francs.	1,252,000	201,000
Exports in 1852	"	20,851,000	556,000
Total, year 1852	"	22,103,000	757,000

Total custom-house receipts from the five ports of the White Sea, in 1852, 984,000 francs. These ports are Archangel, Oneg, Kola, Kemi, Sounsky. The imports of Archangel consist of dry and salted fish, sugar,

wines, and other liquors, salt, and peltries. The exports are flax, linens, linseed, timber, tar, etc.

Wigs. The wig-trade is one of the most curious connected with manufactures in hair. The French are famous in this department. There is a regular hair-harvest in some of the central districts of France; Paris firms send agents into those districts in the spring of the year, who purchase the beautiful tresses which the country maidens have been cultivating for that purpose: this hair-crop is as much an annual affair as a corn-crop in the fields. The price paid is about threepence (English) per ounce; but the agents usually pay for the hair with ribbons, handkerchiefs, and other trinkets, at fairs and markets. Not the least curious feature is, that the agents can distinguish the hair of one district from that of another not far distant—an ethnographical feat which might puzzle a learned naturalist—and attach a money value to this difference. If it be true, as is asserted, that two hundred thousand pounds' weight of women's hair is thus annually sold in the country districts of France, it must be admitted to form a very singular kind of commerce. The agents sort and clean the hair, and then dispose of it to the Paris firms at about double the former price. Then comes the art of the peruquier to fashion this hair into wigs, perukes, and scalps—some of which command a very high price. Of the "transparent wigs," the "ventilating wigs," the "bald white wigs," the "gossamer-parting wigs," the "fronts with each hair fixed separately," and other wonders of wig-making, we have been abundantly informed by our advertising peruquiers.

Wind-mills. They are of great antiquity, and some writers state them to be of Roman invention; but certainly we are indebted for the wind-mill to the Saracens. They are said to have been originally introduced into Europe by the knights of St. John, who took the hint from what they had seen in the crusades. —Baker. Wind-mills were first known in Spain, France, and Germany, in 1299.—Anderson. Wind saw-mills were invented by a Dutchman in 1633, when one was erected near the Strand, in London.

Windows. *See* Glass. There were windows in Pompeii, A.D. 79, as is evident from its ruins. It is certain that windows of some kind were glazed so early as the third century, if not before, though the fashion was not introduced until it was done by Bennet, A.D. 633. Windows of glass were used in private houses, but the glass was imported, 1777.—Anderson. In England about 6000 houses now have fifty windows and upward in each; about 275,000 have ten windows and upward; and 725,000 have seven windows, or less than seven. The window-tax in England was first enacted in order to defray the expense of and deficiency in the re-coinage of gold, 7 William III., 1695.

Winds. The prevailing winds in the Caribbean Sea and southern parts of the Gulf of Mexico are the northeast trade-winds. They have their offices to perform in the river basins of inter-tropical America, and the rains which they may discharge into the Mississippi Valley now and then are exceptions, not the rule. The winds from the north can not bring vapors from the great lakes to make rains for the Mississippi, for two reasons: 1st. The basin of the great lakes receives from the atmosphere more water in the shape of rain than they give back in the shape of vapor. The St. Lawrence River carries off the excess. 2d. The mean climate of the lake country is colder than that of the Mississippi Valley, and therefore, as a general rule, the temperature of the Mississippi Valley is unfavorable for condensing vapor from that quarter. It can not come from the Atlantic, because the greater part of the Mississippi Valley is to the windward of the Atlantic. The winds that blow across this ocean go to Europe with their vapors; and in the Pacific, from the parallels of California down to the equator, the direction of the wind at the surface is from, not toward, the basin of the Mississippi. Therefore it seemed to be established with some degree of probability, or, if that expression be too strong, with something like apparent plausibility, that the rain winds of the Mississippi Valley do not, as a general rule, get their vapors from the North Atlantic Ocean, nor from the Gulf of Mexico, nor from the great lakes, nor from that part of the Pacific Ocean over which the northeast trade-winds prevail.

Southeast Trade-winds.—After the northeast trades have blown out their season, which in India ends in April, the great arid plains of Central Asia, of Tartary, Thibet, and Mongolia, become heated up; they rarefy the air of the northeast trades, and cause it to ascend. This rarefaction and ascent, by their demand for an in-draught, are felt by the air which the southeast trade-winds bring to the equatorial Doldrums of the Indian Ocean: it rushes over into the northern hemisphere to supply the upward draught from the heated plains as the southwest monsoons. The forces of diurnal rotation assist to give these winds their westing. Thus the southeast trades, in certain parts of the Indian Ocean, are converted, during the summer and early autumn, into southwest monsoons. These then come from the Indian Ocean and Sea of Arabia loaded with moisture, and, striking with it perpendicularly upon the Ghauts, precipitate upon that narrow strip of land between this range and the Arabian Sea an amount of water that is truly astonishing. Here, then, are not only the conditions for causing more rain, now on the west, now on the east side of this mountain range, but the conditions also for the most copious precipitation. Accordingly, when we come to consult rain-gauges, and to ask meteorological observers in India about the fall of rain, they tell us that on the western slopes of the Ghauts it sometimes reaches the enormous depth of twelve or fifteen inches in one day. Were the Andes stretched along the eastern instead of the western coast of America, we should have an amount of precipitation on their eastern slopes that would be truly astonishing; for the water which the Amazon and the other majestic streams of South America return to the ocean would still be precipitated between the sea-shore and the crest of these mountains. These winds of India then continue their course to the Himalaya range as dry winds. In crossing this range, they are subjected to a lower temperature than that to which they were exposed in crossing the Ghauts. Here they drop more of their moisture in the shape of snow and rain, and then pass over into the thirsty lands beyond with scarcely enough vapor in them to make even a cloud. Thence they ascend into the upper air, there to become counter-currents in the general system of atmospherical circulation.

Rain-winds are the winds which convey the vapor from the sea, where it is taken up, to other parts of the earth, where it is let down either as snow, hail, or rain. As a general rule, the trade-winds may be regarded as the evaporating winds; and when, in the course of their circuit, they are converted into monsoons, or the variables of either hemisphere, they then generally become also the rain-winds—especially the monsoons—for certain localities. Thus the southwest monsoons of the Indian Ocean are the rain-winds for the west coast of Hindostan. In like manner, the African monsoons of the Atlantic are the winds which feed the springs of the Niger and the Senegal with rains. Upon every water-shed which is drained into the sea, the precipitation, for the whole extent of the shed so drained, may be considered as greater than the evaporation, by the amount of water which runs off through the river into the sea. In this view, all rivers may be regarded as immense rain-gauges, and the volume of water annually discharged by any one as an expression of the quantity which is annually evaporated from the sea, carried back by the winds, and precipitated throughout the whole extent of the valley that is drain-

ed by it. Now, if we knew the rain-winds from the dry, for each locality and season generally throughout such a basin, we should be enabled to determine, with some degree of probability at least, as to the part of the ocean from which such rains were evaporated. And thus, notwithstanding all the eddies caused by mountain chains and other uneven surfaces, we might detect the general course of the atmospherical circulation over the land as well as the sea, and make the general courses of circulation in each valley as obvious to the mind of the philosopher as is the current of the Mississippi, or of any other great river, to his senses.

These investigations as to the rain-winds at sea indicate that the vapors which supply the sources of the Amazon with rain are taken up from the Atlantic Ocean by the northeast and southeast trade-winds; and many circumstances, some of which have already been detailed, tend to show that the winds which feed the Mississippi with rains get their vapor in the southeast trade-wind region of the other hemisphere. For instance, we know from observation that the trade-wind regions of the ocean, beyond the immediate vicinity of the land, are, for the most part, rainless regions, and that the trade-wind zones may be described, in a hyetographic sense, as the evaporating regions. They also show, or rather indicate, as a general rule, that, leaving the polar limits of the two trade-wind systems, and approaching the nearest pole, the precipitation is greater than the evaporation until the point of maximum cold is reached.

And we know also that, as a general rule, the southeast and northeast trade-winds, which come from a lower and go to a higher temperature, are the evaporating winds, *i. e.*, they evaporate more than they precipitate; while those winds which come from a higher and go to a lower temperature are the rain-winds, *i. e.*, they precipitate more than they evaporate. That such is the case, not only do researches indicate, but reason teaches, and philosophy intimates. These views, therefore, suggest the inquiry as to the sufficiency of the Atlantic, after supplying the sources of the Amazon and its tributaries with their waters, to supply also the sources of the Mississippi and the St. Lawrence, and of all the rivers, great and small, of North America and Europe. A careful study of the rain-winds, in connection with the *Wind and Current Charts*, will probably indicate to us the "springs in the ocean" which supply the vapors for the rains that are carried off by those great rivers. "All the rivers run into the sea; yet the sea is not full; unto the place from whence the rivers come, thither they return again."—Maury's *Phys. Geog.*

Wind-sails, in a ship, are made of common sailcloth, and are usually twenty-five and thirty feet long according to the size of the ship, and are of the form of a cone ending obtusely. When they are made use of, they are hoisted by ropes to about two-thirds or more of their height, with their bases distended circularly, and their apex hanging downward in the hatchways of the ship. Above each of these one of the common sails is so disposed that the greatest part of the air rushing against it is directed into the wind-sail, and conveyed into the body of the ship, to produce ventilation, etc.

Windward, in sea-language, denotes any thing toward that point from whence the wind blows, in respect of a ship: thus windward tide is the tide which runs against the wind.

Wine (Ger. *Wein*; Fr. *Vin*; It. and Sp. *Vino*; Port. *Vinho*; Russ. *Wino*, *Winogradnoe winoe*; Lat. *Vinum* Gr. Οἶνος; Arab. *Khamr*), the fermented juice of the grape, or berries of the vine (*Vitis vinifera*). The vine is indigenous to Persia and the Levant; but it is now found in most temperate regions. The limits within which it is cultivated in the northern hemisphere of the Old World vary from about 15° to 48° and 52°; but in North America it is not cultivated farther north than 38° or 40°. It is rarely grown at a greater altitude than 3000 feet. From Asia the vine was introduced into Greece, and thence into Italy. The Phoceans, who founded Marseilles, carried the vine to the south of France; but it is doubtful whether it was introduced into Burgundy till the age of the Antonines. The ancient writers give the most contradictory accounts with respect to the introduction of the vine into Gaul.—*See the learned and excellent work of* Le Grand d'Aussy, *Vie Privée des Français*. The species of *Vitis* indigenous to North America is very different from the *Vitis vinifera*. In favorable seasons the vine ripens in the open air in England; and in the 11th and 12th centuries considerable quantities of inferior wine were made from native grapes. Vineyards are now, however, unknown in Great Britain; but the grapes raised in hot-houses, and used in desserts, are excellent. The vine grows in every sort of soil; but that which is light and gravelly seems best suited for the production of fine wines. It succeeds extremely well in volcanic countries. The best wines of Italy are produced in the neighborhood of Vesuvius; the famous Tokay wine is also made in a volcanic district, as are several of the best French wines; many parts of the south of France bearing evident marks of extinct volcanoes. Hermitage is grown among the *débris* of granite rocks. The most favorable situation for a vineyard is upon a rising ground or hill facing the southeast, and the situation should not be too confined;

> ———apertos
> Bacchus amat colles.

The art of expressing and fermenting the juice of the grape appears to have been practiced from the remotest antiquity. The sacred writings tell us that Noah planted a vineyard soon after the deluge (*Gen.* ix. 20); and a modern Latin poet ingeniously represents the vine as a gift from Heaven, to console mankind for the miseries entailed upon them by that grand catastrophe!

> Omnia vastatis ergo quum cernoret arvis
> Desolata Deus, nobis felicia vini
> Dona dedit; tristes hominum quo munere fovit
> Reliquias, mundi solatus vite ruinam!
> *Vanierii Præd. Rusticum*, lib. xi.

Species of Wine.—There are many varieties of vines; and this circumstance, combined with differences of soil, climate, mode of preparation, etc., occasions an extreme variety in the species of wine. But between places immediately contiguous to each other, and where even a careful observer would hardly remark any difference, the qualities of the wines, though produced by the same species of grape, and treated in the same way, are often very different. A great deal evidently depends upon the aspect of the vineyard; and it is probable that a good deal depends on peculiarities of soil. But whatever may be the cause, it is certain that there are wines raised in a few limited districts, such as Tokay, Johannisberger, Constantia, the best Burgundy, Champagne, Claret, etc., that no art or care has hitherto succeeded in producing of equal goodness in other places.

The leading character of wine must be referred to the *alcohol* which it contains, and upon which its intoxicating powers principally depend; not exclusively, however; for some of the lighter wines, if brisk and effervescent, seem to derive from the admixture of carbonic acid a peculiar exhilarating power not directly proportional to their alcoholic contents. And again, we find other wines, among which certain Burgundies stand foremost, which are eminently heating, though not very strong. The following table shows the quantity of alcohol (of the specific gravity of 825 at 60°), by measure, contained in 100 parts by measure of the respective wines. Some other vinous and spirituous liquors have been added, for the purpose of showing the relation which they bear to wine in the proportion of alcohol which they contain.

PROPORTION OF SPIRIT PER CENT.

	By Measure.	Average.
1. Lissa	26·47	
"	24·85	
"	15·90	
		25·41
2. Raisin wine	26·40	
" "	25·77	
" "	23·20	
		25·12
3. Marsala	26·63	
"	25·05	
"	18·40	
		25·09
4. Port	25·83	
"	24·29	
"	23·71	
"	23·39	
"	22·30	
"	21·40	
"	19·00	
		22·06
5. Madeira	24·43	
" "	23·93	
" (Sercial)	21·40	
"	19·20	
		22·27
6. Currant wine	20·55	
7. Sherry	19·81	
"	19·83	
"	18·79	
"	18·25	
" (very old)	23·80	
		19·17
8. Teneriffe	19·79	
9. Colares	10·75	
10. Lachryma Christi	19·70	
11. Constantia	14·0	
" (white)	19·25	
12. " (red)	18·22	
13. Lisbon	18·94	
14. Malaga (1666)	18·94	
15. Bucellas	18·49	
16. Red Madeira	22·50	
" "	18·40	
17. Cape Muschat	18·25	
18. Cape Madeira	22·94	
" "	20·50	
" "	18·11	
19. Stein wine	10 60	
20. Grape wine	18·11	
21. Calcavella	19·20	
"	18·10	
22. Vidonia	19·25	
23. Alba Flora	17·26	
24. Malaga	17·26	
25. White Hermitage	17·43	
26. Rousillon	19·00	
"	17·26	
27. Alcatico	16·20	
28. Ætna	30·00	
29. Claret	17·11	
"	16·32	
"	14·08	
"	12·91	
		15·20
30. Malmsey Madeira	16·40	
31. Lunel	15·52	
32. Sherraz (red)	15·52	
" (white)	19·80	
33. Syracuse	15·28	
34. Sauterne	14·22	
35. Grenache	21·24	
36. Burgundy	16·60	
"	15·22	
"	14·53	
"	11·95	
" (30 years in bottle)	12·16	
		17·84
37. Hock	14·37	
"	13·00	
" (old in cask)	8·88	
		12·08
38. Johannisberger (1788)	8·71	
39. Rudisheimer (1811)	10·72	
40. Rhenish	7·36	
41. Nice	14·36	
42. Barsac	13·86	
43. Tent	13·66	
44. Champagne (still)	13.80	
" (sparkling)	12·80	
" (red)	12·51	
" "	11·30	
		12·01
45. Red Hermitage	12·32	
46. Vin de Grave	13·94	
" "	12·80	
47. Frontignac	12·79	
48. Cote Rotie	12·33	
49. Gooseberry wine	11·84	
50. Orange wine (average of six samples made by a London manufacturer)	11·25	
51. Tokay	9·88	
52. Elder wine	8·79	
53. Cider (highest average)	9·87	
Cider (lowest average)	5·21	
54. Perry (average of four samples)	7·20	
55. Mead	7·32	
56. Ale (Burton)	8·83	
" (Edinb'rgh)	6·20	
" (Dorchester)	5·56	
57. Brown stout	6 80	
58. London porter (average)	4·26	
59. London small beer (average)	1·93	
60. Brandy	53·39	
61. Rum	53·88	
62. Gin	51·60	
63. Scotch whiskey	54·32	
64. Irish whisky	53·90	

It is necessary, however, to observe that the proportion of alcohol in the same wine varies materially according to the age of the wine and other circumstances, and that wines having the same quantities of alcohol in each may, notwithstanding, differ essentially in every other respect. Practically wines are distinguished by their color, hardness or softness on the palate, their aroma, and their being still or effervescing. In many cases, too, the same variety of wine may be distinguished into a number of sub-varieties, differing more or less in one or more of these particulars. Thus, in the case of Champagne, some varieties are red, and others white or straw-colored; some are dry and others sweet; the aroma of one variety differs from that of another; and, while some are still, others have every different degree of effervescing power. The same variety exists in the case of clarets, and, indeed, of almost every description of wine.

The differences in the qualities of wines depend partly on differences in the vines, but more on the differences of the soils in which they are planted, in the exposure of the vineyards, and in the treatment of the grapes, and the mode of manufacturing the wine. Though the vine grows in every sort of soil, a rising ground, or gently-sloping hill facing the south, with a loose, gravelly, or rather volcanic soil, is by far the best situation for a vineyard. It is in such situations that all the finest wines are produced.

It would be useless, in a work of this kind, to attempt characterizing the different sorts of wine used. Port and sherry have long enjoyed a decided preponderance in the markets; and it must be admitted that, when of good quality and sparingly used, they are very unexceptionable wines. But they are often harsh, and have the disadvantage of being strong and heating, so that they can not be taken, to any thing like excess, by most persons with impunity. They are well enough for a glass or two, but they are not wines for conversation or society. It is not probable, indeed, had it not been for the high differential duties with which French wines were so long burdened, that the use of port and sherry would ever have been so general; and since the abolition of the differential duty in 1831, French wines have begun gradually, though slowly, to make their way from the highest, to which they have hitherto been mostly confined, among the middle classes. They are, indeed, superior in almost all respects to every other variety. The best growths of claret, Champagne, and Burgundy, seem to unite all the qualities required to constitute perfect wines. Had they been known in antiquity, we apprehend they would have engrossed most part of the praise so profusely lavished on the Pramnian, Cecuban, Falernian, and other renowned wines of Greece and Rome.—BRANDE'S *Dict.*

Ancient Wines.—The wines of Lesbos and Chios among the Greeks, and the Falernian and Cecuban among the Romans, have acquired an immortality of renown. Great uncertainty, however, prevails as to the nature of these wines. Dr. Henderson thinks that the most celebrated of them all, the Falernian, approached, in its most essential characters, near to Madeira. In preparing their wines, the ancients often inspissated them till they became of the consistence of honey, or even thicker. These were diluted with water previously to their being drunk; and, indeed, the habit of mixing wine with water seems to have prevailed much more in antiquity than in modern times.

Modern Wines.—The principal wines made use of in England are port, sherry, claret, Champagne, Madeira, hock, Marsala, Cape, etc.

Port, the after-dinner wine, is produced in the province of Upper Douro, in Portugal; and is shipped at Oporto, whence its name. When it arrives in England, it is of a dark purple or inky color; has a full, rough body, with an astringent bitter-sweet taste, and a strong flavor and odor of brandy. After it has remained some years longer in the wood, the sweetness, roughness, and astringency of the flavor abate; but it is only after it has been kept 10 or 15 years in bottle that the odor of the brandy is completely subdued, and the genuine aroma of the wine developed. When kept to too great an age, it becomes tawny, and loses its peculiar flavor. During the process of melioration, a considerable portion of the extractive and coloring matter is precipitated on the sides of the vessels in the form of crust. In some wines this change occurs much earlier than in others. A large quantity of brandy is always mixed with the wine shipped from Oporto for England. Genuine unmixed port-wine is very rarely met with. We have been so long accustomed to the compounded article, that, were it possible to procure it unmixed, it is doubtful whether it would be at all suited to our taste. According to Mr. Brande's analysis, on which, however, owing to the differences in the quality of the wine, no great stress can be laid, port, as used in England, contains about 23 per cent. of alcohol.

EXPORTATION OF WINE FROM LISBON, 1853–1855.

To what Ports.	1853.	1854.	1855.
	Pipes.	Pipes.	Pipes.
Aalborg	....	....	12
Algiers	....	....	2
Ajuda	9	....	....
Amsterdam	59	10	½
Angola	355	160	326
Australia	702	25	....
Bahia	3,858	2,964	2,277
Benguela	135	93	77
Bergen	1	....	....
Bissau	10	....	....
Bologne	....	....	½
Bristol	42	13	16
Buenos Ayres	....	½	....
Capo Verd	307	....	52
Cadiz	....	½	....
Ceara	47	21½	....
China	2	....	....
Copenhagen	....	40	....
Cork	3	....	8½
Cronstadt	1	....	....
Dublin	135	154	69½
Elsinore	1	426	54
Genoa	7	8	5
Gibraltar	4	....	0½
Glasgow	10	15	6
Goa	118	54	106
Gothenburg	....	40	1½
Halifax	....	4	....
Hamburg	726	707	998
Havre	36	13	32½
Island of Corisco	....	7	....
Jersey	53	....	....
Kragoroe	....	1	....
Leith	3	6½	....
Libau	5	1	....
Liverpool	251	311	87½
London	1,377	1,198	806
Macao	534	293	681
Maranhao	835	659	866
Marseilles	4	23	23
Mayagao	....	....	1½
Memel	....	....	56
Mozambique	86	15	54
Mogador	....	....	½
Montevideo	3	0½	....
Nantes	1	24	17½
Newcastle	5	....	....
Newfoundland	9	49½	22
New York	1,215	102	322
Onim	....	....	9
Ostend	....	1	5½
Para	638	1,051½	636
Parahiba	172	....	....
Pernambuco	1,937	1,710	1,060
Petersburg	588	....	....
Plymouth	28	....	....
Poole	....	1	....
Porto Alegre	....	205	....
Portsmouth	1	1	....
Quebec	....	....	185
Renders	....	....	½
Riga	158	....	....
Rio Grande	903	864	620
Rio de Janeiro	11,673	14,605	8,835
Rio la Plata	....	1½	....
Rouen	3	2½	½
Saffi	....	....	½
Santos	....	99	....
Sedovey	457	1½	....
Singapore	10	....	....
Sligo	1	....	....
Sodorham	....	....	1
Southampton	15	25½	12
Stavanger	1	....	....
Stockholm	3	1½	28½
St. Thomas	33	53	22
Toulon	3	....	....
Wlaardingen	13	11	1
Total	27,647	25,966½	17,700½

SUMMARY OF THE EXPORTATION OF OIL, BRANDY, AND WINE FROM LISBON THE YEARS SPECIFIED.

Years.	Oil.	Brandy.	Wine.
	Pipes.	Pipes.	Pipes.
1853	4206	47	27,647
1854	269	38	25,966
1855	2523	83	17,700
Total	6998	168	71,403

Oporto Wine Company.—The quality of the wine shipped from Oporto has been materially injured by the monopoly so long enjoyed by the Oporto Wine Company. This company was originally founded in 1756, during the administration of the Marquis Pombal. A certain extent of territory was marked out by its charter as the only district on the Douro in which wine could be raised for exportation: the absolute disposal of the wines raised in this district was placed in the hands of the company, who were further authorized to fix the prices to be paid for them to the cultivators, to prepare them for exportation, and to fix the price at which they should be sold to foreigners! It is obvious that a company with such powers could not be any thing else than an intolerable nuisance. What could be more arbitrary and unjust than to interdict the export of all wines raised out of the limits of the company's territory? But even in its own district, its proceedings were oppressive and injurious. The company annually fixed, by a fiat of their own, two rates of prices—one for the *vinho de feitoria*, or wine for exportation; the other for *vinho de ramo*, or wine for home consumption—at which the cultivators were to be paid, whatever might be the quality of their wines! They had, therefore, no motive to exert superior skill and ingenuity; but contented themselves with endeavoring to raise, at the least possible expense, the greatest supply of *vinho de feitoria*, for which the company allowed the highest price. All emulation was thus effectually extinguished, and the proprietors who possessed vineyards of a superior quality adulterated their wines with inferior growths, so as to reduce them to the average standard. "In this way," says Dr. Henderson, "the finer products of the Douro vintages have remained, in a great measure, unknown to us; and port-wine has come to be considered as a single liquor, if I may use the expression, of nearly uniform flavor and strength; varying, it is true, to a certain extent in quality, but still always approaching to a definite standard, and admitting of few degrees of excellence. The manipulations, the admixtures—in one word, the *adulterations*—to which the best wines of the Cimo do Douro are subjected, have much the same effect as if all the growths of Burgundy were to be mingled in one immense vat, and sent into the world as the only true Burgundian wine. The delicious produce of Romanée, Chambertin, and the Clos Vougéout, would disappear, and in their places we should find nothing better than a second-rate Beaune or Macon wine."—*History of Ancient and Modern Wines.* Not only, however, did the Oporto Wine Company deteriorate the quality, but they also raised the price of their wines to an enormous height. Secured against the competition of their countrymen, and enjoying down to 1831 a nearly absolute monopoly of the British markets for red wines by means of the high duties on those of France, they filled their pockets at our expense. At the very moment when the company were shipping wine for England at £40 a pipe, they frequently shipped the same wine to other countries at £20.—FLEETWOOD WILLIAMS *on the Wine Trade.* And the authentic tables published by Balbi show that the price of wine was trebled and quadrupled under the management of this corporation.—*Essai Statistique sur le Royaume de Portugal.*

It is long since the injurious influence of the company on the commerce of England was distinctly perceived and pointed out. So far back as 1767, the Board of Trade laid a memorial before his majesty in council, in which they state, "With respect to many particular regulations of the Oporto Company, which we think justly objected to by the merchants as highly grievous and oppressive, we have not thought it necessary to enter into a minute description of them, being of opinion that one general and fatal objection lies against them all; viz., that they all contribute to establish in the company a monopoly against your majesty's subjects from which by treaty they have a right to be exempted." But notwithstanding this authoritative exposition of the injury done to the English by this monopoly, and the experience which every subse-

quent year afforded of its mischievous influence, such was the inveteracy of ancient prejudice, that it was not till 1831 that we took that step which, had it been taken a century before, would have rid ourselves of its evils as well as a host of others, by equalizing the duties on French and Portuguese wines, and putting an end to the injurious preference given to the latter by the Methuen treaty. In 1833 Don Pedro, whose daughter had been raised to the Portuguese throne mainly by the intervention of the English, issued a decree abolishing the Old Oporto Company. And it might have been supposed that once abated, the nuisance would not have been again revived. But such was not the case. A new wine company was subsequently established, with privileges little less oppressive than those of the old company. And as the taste for French wine had made little progress among us in the interval, we suffered from the monopoly and adulterations practiced and sanctioned by the new company, as we had done from those of its predecessor. Its mischievous influence being further aggravated by a heavy export duty on wine shipped to any port in Europe, was latterly so intolerable, that to defeat it considerable quantities of port were imported by the circuitous route of the United States. However, the firm remonstrances of the British government, and the growing dissatisfaction of the Portuguese themselves, have at length succeeded in establishing a more equitable and less illiberal system. In October 1852, the new company was abolished, equal duties (about 14*s.* a pipe) were imposed on all wines exported, and considerable, though not entire, freedom was given to the trade.—For further details, *see article* OPORTO.

Sherry is of a deep amber color; when good, it has a fine aromatic odor; its taste is warm, with some degree of the agreeable bitterness of the peach kernel. When new, it tastes harsh and fiery; it is mellowed by being allowed to remain 4 or 5 years or longer in the wood; but it does not attain to its full flavor and perfection until it be kept for 15 or 20 years. It is a very strong wine, containing about 19 per cent. of alcohol. It is principally produced in the vicinity of Xeres, not far from Cadiz, in Spain. It is very extensively used in England as a dinner wine. Dry sherry, or *amontillado*, when genuine and old, fetches a very high price. Perhaps no wine is so much adulterated as sherry. With the exception of Marsala, the consumption of sherry has been far more influenced than that of any other wine by the reduction of the duties in 1825. In 1852 the quantity retained for home consumption amounted to 2,606,857 gallons, being 458,000 gallons more than double the quantity retained for consumption at an average of 1823 and 1824.

The province of Valencia, in Spain, produces a great variety of wines. Large quantities of a strong, sweetish red wine, called Benicarlo, from the port whence it is shipped, is exported to Cette. It is thence conveyed, by the Canal of Languedoc, to Bordeaux, where it is mixed up with the poorer sorts of the wines of the Gironde, to which it gives color, body, and durability. The *Val de Peñas*, a pleasant red wine of La Mancha, said by Swinburne to be "the most drinkable, for common use, of any in Spain" (*Travels in Spain*, p. 319, 4to ed.), has probably been commended beyond its deserts. But in whatever estimation it may be held in its native province, we doubt whether it is ever likely to be acceptable to foreigners. When carried to the coast, it is conveyed in goat skins smeared with pitch. This gives it the *olor de bota*, by which it is disagreeably distinguished.

Claret, the term generally used in England, though not in France, to designate the red wines, the produce of the Gironde. Of these, Lafitte, Latour, Château-Margaux, and Haut-Brion, are so generally and deservedly esteemed, that they always sell at 20 to 30 per cent. higher than any others of the department. The first-mentioned is the most choice and delicate, and is characterised by its silky softness on the palate, and its charming perfume, which partakes of that of the violet and the raspberry. The Latour has a fuller body, and at the same time a considerable aroma, but wants the softness of the Lafitte. The Château-Margaux, on the other hand, is lighter, and possesses all the delicate qualities of the Lafitte, except that it has not quite so high a flavor. The Haut-Brion, again, has more spirit and body than any of the preceding, but is rough when new, and requires to be kept six or seven years in the wood; while the others become fit for bottling in much less time.

Among the second-rate wines, that of Rozan, in the parish of St. Margaux, approaches in some respects to the growth of the Château-Margaux; Gorce, in the same territory, is little inferior to Latour; and the vineyards of Leoville, Larose, Bran-Mouton, Pichon-Longueville, and Calon, in the canton of Pauillac, afford wines of good flavor, which, in favorable years, have much of the excellence of the finer growths, from which, indeed, some of the best can with difficulty be distinguished. Among the third and fourth class wines are those of Pauillac, St. Julien de Regnac, St. Estephe, Canon, St. Emilion, the wines of Haut Medoc, etc. These have each some distinguishing peculiarity; but it requires a *connoisseur* to discriminate between the cognate varieties. In good years the quality is very superior. The aroma of the first growths is seldom fully developed till after they have been kept eight or nine years; but the secondary qualities come to perfection a year or two sooner. The color often grows darker as the wine advances in age, in consequence of the deposition of a portion of its tartar; but when well made, and thoroughly fined, it seldom deposits any crust. See the valuable work of Dr. HENDERSON *on Ancient and Modern Wines*; and JULLIEN, *Topographie de Vignobles*. Bordeaux wines are very rarely exported in a state of purity. We have given in the article BORDEAUX some account of the treatment to which those shipped for England are subjected, and to it we beg to refer the reader.

Champagne—so called from the province of France, of which it is the produce—is one of the most deservedly esteemed of the French wines. The wines of Champagne are divided into the two grand classes of white and red wines, and each of these, again, into still and sparkling; but there is a great variety in the flavor of the produce of different vineyards. Sillery is universally allowed to be the best of the still wines. It is dry, of a light amber color, has considerable body, and a charming aroma. "Le corps" (says M. Jullien), "le spiritueux, le charmant bouquet, et les vertus toniques dont il est pourvu, lui assurent la priorité sur tous les autres."—*Topographie de tous les Vignobles*. Dr. Henderson agrees with Jullien in considering it as one of the wholesomest of the Champagne wines. The sparkling wines are, however, the most popular, at least in England. Of these, the wine of Ay, five leagues south from Rheims, is perhaps the best. It is lighter and sweeter than Sillery, and has an exquisite flavor and aroma. That which merely creams on the surface (*demi-mousseux*) is preferred to the full frothing wine (*grand-mousseux*). Being bright, clear, and sparkling, it is as pleasing to the eye as it is grateful to the palate.

"Cernis micanti concolor ut vitro
Latex in auras, gemmeus aspici,
Scintillet exultim; utque dulces
Naribus illecebras propinet
"Sucet latentis proditor halitus!
Ut spuma motu tactus turbido
Crystallinum lætis referre
Mox oculis properet nitorem."

Hautvilliers, about four leagues from Rheims and one from Epernay, used formerly to produce wine that equaled, and sometimes surpassed, the wine of Ay. But it is no longer cultivated with the same care; so that, though still very good, it only ranks in the second

class. The best of the red wines of Champagn are those of Verzy, Verzenay, Mailly, Bouzy, and St. Ba. le. "Ils ont une belle couleur, du corps, du spiritueux, et surtout beaucoup de finesse, de sève, et de bouquet."—JULLIEN. The Clos St. Thierry, in the vicinity of Rheims, produces wine which, according to Jullien, unites the color and the aroma of Burgundy to the lightness of Champagne. The province of Champagne produces altogether about 1,100,000 hectolitres of wine; of which, however, the finest growths make but a small part. The principal trade in wine is carried on at Rheims, Avise, and Epernay. The vaults in which the vintages are stored are excavated in a rock of calcareous tufa to the depth of 30 or 40 feet. Those of M. Moet, at Epernay, are the most extensive, and few travelers pass through the place without going to see them. The briskest wines (*grands-mousseux*) keep the worst.—JULLIEN.

Burgundy.—The best wines of this province, though not so popular as those of Champagne, probably because they are very apt to be injured by a sea-voyage, enjoy the highest reputation. "In richness of flavor and perfume, and all the more delicate qualities of the juice of the grape, they unquestionably rank as the first in the world; and it was not without reason that the dukes of Burgundy, in former times, were designated as the *princes des bons vins*."—HENDERSON. M. Jullien is not less decided: "Les vins des premiers crus, lorsqu'ils proviennent d'une bonne année, réunissent, dans de justes proportions, *toutes les qualités qui constituent les vins parfaits;* ils n'ont besoin d'aucun méiange, d'aucune préparation pour attendre leur plus haut degré de perfection. Ces opérations, que l'on qualifie dans certains pays de *soins qui aident* à la qualité, sont toujours nuisibles aux vins de Bourgogne."

Romané-Conti, Chambertin, the Clos Vougeôt, and Richebourg, are the most celebrated of the red wines of Burgundy. Chambertin was the favorite wine of Louis XIV. and of Napoleon. It is the produce of a vineyard of that name, situated seven miles south from Dijon, and furnishing each year from 130 to 150 puncheons, from an extent of about 65 acres. It has a fuller body and color, and greater durability, than the Romané, with an aroma nearly as fragrant. The white wines of Burgundy are less numerous, and, consequently, less generally known, than the others; but they maintain the highest rank among French white wines, and are not inferior to the red either in aroma or flavor. The entire annual produce of wine in Burgundy and Beaujolais may at present be estimated, at an average, at nearly 3,500,000 hectolitres, of which about 750,000 suffice for the consumption of the inhabitants. Since the revolution, the cultivation of the vine has been greatly extended in the province. Many of the new vineyards having necessarily been planted in comparatively unfavorable situations, a notion has been gaining ground that the wines of Burgundy are degenerating. This, however, is not the case. On the contrary, the quantity of *bons crus*, instead of being diminished, has increased considerably; though, as the supply of inferior wines has increased in a still greater degree, the fine wines bear a less proportion to the whole than they did previously to the revolution.—JULLIEN. The principal trade in Burgundy is carried on at Dijon, Gevrey, Châlons-sur-Saône, etc. Besides the above, France has a great variety of other excellent wines.

ACCOUNT OF THE QUANTITIES AND VALUE OF THE WINES EXPORTED FROM FRANCE IN 1852; DISTINGUISHING BETWEEN THOSE OF THE GIRONDE AND THOSE OF OTHER DEPARTMENTS, AND BETWEEN THOSE EXPORTED IN CASKS AND BOTTLES; AND SPECIFYING THE QUANTITIES OF THOSE SENT TO EACH COUNTRY AND THEIR TOTAL VALUE.—(ADMINISTRATION DES DOUANES FOR 1852, p. 241.)

Countries to which exported.	Wine in Casks.				Wine in Bottles.			
	Of the Gironde.		Of other Departments.		Of the Gironde.		Of other Departments.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Hectolitres.	Francs.	Hectolitres.	Francs.	Hectolitres.	Francs.	Hectolitres.	Francs.
Russia	22,940		18,540		814		7,324	
Sweden	1,237		4,643		102		500	
Norway	2,514		2,003		....		....	
Denmark	8,586		7,720		154		....	
German League	31,640		9,183		384		5,599	
Holland	78,192		14,013		642		....	
Belgium	68,365		32,362		459		10,990	
Hanse Towns	88,586		65,111		2,727		2,900	
Hanover	14,908		....		....		....	
Mecklenburg Schwerin	2,535		....		....		....	
England	10,174		10,416		4,970		10,355	
Spain	....		2,746		496		815	
Austria	....		9,212		218		420	
Sardinian States	....		527,058		....		1,633	
The Two Sicilies	....		....		....		577	
Tuscany	....		89,789		....		438	
Roman States	....		7,579		....		306	
Switzerland	....		126,399		....		652	
Turkey	....		3,593		....		993	
Egypt	....		7,430		....		563	
Algeria	2,307		407,836		371		517	
Mauritius	51,942		....		581		....	
India, English	3,125	29,682,064	2,896	38,364,132	2,223	8,072,010	422	19,284,658
" Dutch	3,014		....		1,080		....	
" French	1,642		....		....		....	
United States	161,070		66,204		24,465		19,101	
Hayti	....		3,789		....		657	
Cuba and Porto Rico	3,139		2,040		1,812		1,660	
St. Thomas	....		....		295		370	
Brazil	9,207		42,510		....		974	
Mexico	2,639		....		4,036		578	
Venezuela	1,359		....		529		521	
New Granada	....		....		....		417	
Peru	3,199		....		3,290		916	
Chili	5,574		....		3,097		779	
Rio de la Plata	17,157		26,639		676		....	
Uruguay	25,566		14,755		1,062		409	
Guadaloupe	8,235		9,535		....		....	
Martinique	7,429		26,904		283		....	
Bourbon	36,016		17,943		391		....	
Senegal	10,216		....		....		....	
Cayenne	2,794		9,848		....		....	
Fisheries	1,508		4,180		....		....	
Guatemala	....		....		....		534	
Other places	6,879		19,021		1,038		1,972	
Totals	690,867	29,682,064	1,538,505	38,364,132	56,060	8,072,010	74,172	19,284,658

This makes a total export of 2,419,604 hectolitres, worth 95,408,464 francs, or £3,816,000. About ten years ago the exports did not exceed 1,500,000 hectolitres, so that there has been a large increase in the interval. And were France to adopt a liberal commercial policy, it is not easy to say to how great an extent her exports of wine, in the production of which she is immeasurably superior to every other country, might be increased. Exclusive of the above, there were exported from France in the same year 18,968 hectolitres *of vins de liqueurs*, valued at 2,001,836 francs.

The total produce of the vineyards of France is estimated at about 85,000,000 hectolitres (770,000,000 imp. gallons), worth 540,000,000 francs (£21,600,000). We beg to refer the reader to the article BORDEAUX for an account of the influence of the French system of commercial policy on this great department of industry. The question, whether the wines of Champagne or Burgundy were entitled to the preference, was agitated during the reign of Louis XIV. with extraordinary keenness. The celebrated Charles Coffin, rector of the University of Beauvais, published, during this controversy, the classical ode, partly quoted above, in which Champagne is eulogized, and its superiority vindicated with a spirit, vivacity, and delicacy worthy of the theme. The citizens of Rheims were not ungrateful to the poet, but liberally rewarded him with an appropriate and munificent donation of the wine he had so happily panegyrized. Gréneau wrote an ode in praise of Burgundy; but, unlike its subject, it was flat and insipid, and failed to procure any recompense to its author. The different pieces in this amusing controversy were collected and published in octavo, at Paris, in 1712.—*See* LE GRAND D'AUSSY, *Vie Privée des Français*, and the *Biographie Universelle, art.* COFFIN (CHARLES). Erasmus attributes the restoration of his health to his having drunk liberally of Burgundy; and has eulogized it in the most extravagant terms. An epistle of his, quoted by Le Grand d'Aussy, shows that Falstaff and he would have spent an evening together more agreeably than might have been supposed: "Le premier qui enseigna l'art de faire ce vin (Bourgogne), ou qui en fit present, ne doit-il point passer plutôt pour nous avoir donné la vie que pour nous avoir gratifié d'une liqueur."—*Vie Privée des Français.*

Bordeaux Vintage of 1856.—The following table exhibits the yield of wine in the Gironde in years of full crop, compared with the actual yield of 1856, and the prices ruling at the close of the year:

	Full Crop of former Years.	Crop of 1856.	Price per Bbl. of four Hhds.
1855.	Bbls.	Bbls.	Francs.
Château Latour, St. Lambert..	80	30	5600@5700
Château Lafite, Pauillac	125	50	5600@5700
Mouton, Brune, Pauillac	80	30	5000
Gruaud, Larose, St. Julien	150	25	4000
Pichon Longueville, St. Lambert.....	100	11	4000
Cos. Destournel, St. Estèppe ..	125	30	3700
Lagrange, Cabarrus, St. Julien	225	45	3000
Kirwan, Cantenac	45	8	3000
La Lagune, Ludon.....	32	4	3000
Milon, Duhart, Pauillac.....	50	23	2400
Pontet Canet, Pauillac.....	140	35	2000
Jurine, Pauillac.....	90	20	2000
Bruno Devez, St. Laurent.....	90	15	2000
Château d'Auzac, Labarde	75	21	2000
Cos. Labory, St. Estèphe	90	21	2000
Lynch, Moussas, Pauillac	60	25	2000
Ducasse, Moussas, Pauillac ...	110	30	2000
Cantemerle, Macau	160	30	2000
Solberg, MacDaniel, Margaux .	35	8	2000
1854.			
Château Lafite, Pauillac	125	60	3000
Mouton, Brune, Pauillac.....	80	33	2800

WHITE WINES.

		Price per Bbl. of four Hhds.
1856. Entre-deux-meres	francs	325@ 380
Cotes	"	450@ 600
Petit Preignac	"	800
Petit Bouton.....	"	1000

Madeira—so called from the island of that name—is a wine that has long been in high estimation in this and other countries. Plants of the vine were conveyed from Crete to Madeira in 1421, and have succeeded extremely well. There is a considerable difference in the flavor and other qualities of the wines of Madeira: the best are produced on the south side of the island. Though naturally strong, they receive an addition of brandy when racked from the vessels in which they have been fermented, and another portion is thrown in previously to their exportation. This is said to be required to sustain the wine in the high temperature to which it is subjected in its passage to and from India and China, to which large quantities of it are sent, it being found that it is mellowed and its flavor materially improved by the voyage. It does not, however, necessarily follow that the wines which have made the longest voyages are always the best. Much must obviously depend on the original quality of the wine; and many of the parcels selected to be sent to India are so inferior, that the wine, when brought to London, does not rank so high as that which has been imported direct. But when the parcel sent out has been well chosen, it is very much matured and improved by the voyage; and it not only fetches a higher price, but is in all respects superior to the direct importations. Most of the adventitious spirit is dissipated in the course of the Indian voyage.

Madeira wines may be kept for a very long period. "Like the ancient vintages of the Surrentine hills, they are truly *firmissima vina*, retaining their qualities unimpaired in both extremes of climate, suffering no decay, and constantly improving as they advance in age. Indeed, they can not be pronounced in condition until they have been kept for ten years in the wood, and afterward allowed to mellow nearly twice that time in bottle; and even then they will hardly have reached the utmost perfection of which they are susceptible. When of good quality, and matured as above described, they lose all their original harshness, and acquire that agreeable pungency, that bitter sweetishness, which was so highly prized in the choicest wines of antiquity, uniting great strength and richness of flavor with an exceedingly fragrant and diffusible aroma. The nutty taste, which is often very marked, is not communicated, as some have imagined, by means of bitter almonds, but is inherent in the wine."—HENDERSON.

The wines of Madeira have latterly fallen into disrepute in England. The growth of the island, when greatest, was very limited—not exceeding 20,000 pipes, of which a considerable quantity went to the West Indies and America. Hence, when Madeira was a fashionable wine in England, every sort of deception was practiced with respect to it, and large quantities of spurious trash were disposed of for the genuine vintage of the island. This naturally brought the wine into discredit, so that sherry has been for several years the fashionable white wine. It is difficult, however, to imagine that adulteration was ever practiced to a greater extent upon Madeira than it is now practiced upon sherry. It is not, therefore, improbable that a reaction may take place in favor of Madeira. The quantity entered for home consumption in England in 1827 amounted to 308,295 gallons, whereas the quantity entered for home consumption in 1852 amounted to only 69,730 gallons.

Malmsey, a very rich, luscious species of Madeira, is made from grapes grown on rocky grounds exposed to the full influence of the sun's rays, and allowed to remain on the vine till they are over-ripe. The trade in Madeira wine is carried on at Funchal, the capital of the island, in lat. 32° 37′ N., long. 17° 6′ W. Weights and measures same as at Lisbon. Madeira is said to have suffered very severely from the disease that has recently attacked the vine.

Teneriffe wine—so called from the island of that name—resembles Madeira, and is not unfrequently substituted in its stead; but it wants the full body and rich flavor of the best growths of Madeira.

German Wines.—The wines of Germany imported into England are principally produced on the banks of the Rhine and Moselle. The Rhine wines constitute a distinct order by themselves. They are drier than the French white wines, and are characterized by a delicate flavor and aroma, called in the country *gâre*, which is quite peculiar to them, and of which it would, therefore, be in vain to attempt the description. A notion prevails that they are naturally acid, and the inferior kinds, no doubt, are so; but this is not the constant character of the Rhine wines, which in good years have no perceptible acidity to the taste, at least not more than is common to them with the growths of warmer regions. Their chief distinction is their extreme durability. The wines made in warm, dry years are always in great demand, and fetch very high prices. The Johannisberger stands at the head of the Rhine wines. It has a very choice flavor and perfume, and is characterized by an almost total want of acidity. The vineyard is the property of Prince Metternich. The Steinberger ranks next to the Johannisberger. It is the strongest of all the Rhenish wines, and in favorable years has much flavor and delicacy. The produce of certain vineyards on the banks of the Moselle is of superior quality. The better sorts are clear and dry, with a light, pleasant flavor and high aroma; but they sometimes contract a slaty taste from the strata on which they grow. They arrive at maturity in five or six years; though, when made in a favorable season, they will keep twice that time without experiencing any deterioration.—HENDERSON on *Wines*.

Tokay—so called from a town in Hungary, near which it is produced, on the Theiss, 44 miles north-northwest from Debreczin. It is the finest of all the liqueur wines. It consists of three varieties, viz.: the *Essence*, flowing spontaneously from the ripest grapes, and corresponding with the *Mustum sponte defluens antequam calcentur uvæ* of the ancients; the *Ausbruch*, obtained by pressing the grapes with the hand, a small quantity of good new wine, or must, being at the same time poured over them; and the *Maslas*, or inferior variety, produced by pouring a larger quantity of less choice must over the same berries, and subjecting them to the action of the press. Of these varieties, the first, which is made only in very small quantities, is in the highest degree sweet and luscious, and is more sought for as a rarity than as being pleasant to the palate. It is on the Ausbruch that the reputation of Tokay depends. Mr. Paget says, "It is sweet, rich, but not cloying; strong, full-bodied, but mild, bright, and clear; and has a peculiar flavor of most exquisite delicacy. I never tasted it in perfection but at private tables, and that only twice; I could then have willingly confessed it the finest wine in the world." The Maslas, or inferior variety, is a much thinner wine, rather sweet, with a preponderating flavor of the dried grape. Mr. Paget estimates the entire produce of the Tokay vineyards in ordinary years at about 250,000 eimers, of about sixteen bottles each. The best Ausbruch is very dear, and but little that is genuine is seen in England.—PAGET'S *Travels in Hungary*, i. 481; HENDERSON, p. 228; JULLIEN, p. 446.

Italian Wines.—The Sicilian white wine called Marsala, from the town (the ancient Lilybœum) whence it is shipped, and near which it is made, is now pretty largely consumed in England; the entries for home consumption having increased from 79,686 gallons in 1823 to 387,750 in 1852; an extraordinary increase, particularly when it is considered that during the same period, the consumption of most sorts of wine has been nearly stationary. Latterly, however, it has been rather declining. Marsala is a dry wine, the best qualities closely resembling the lighter sorts of Madeira; but the increased demand for it seems to have been owing as much to its cheapness as to any peculiarity of quality. It is, however, when good, an agreeable dinner wine. Marsala has been brought to its present state of perfection and repute by the care and exertions of two Englishmen, the Messrs. Woodhouse, established in Sicily, who have an extensive factory in the neighborhood of Marsala. The wine is shipped in large quantities for America, whence a considerable quantity is again conveyed to the West Indies, where it is not unfrequently disposed of as real Madeira. With the exception of Marsala, very little wine either of Sicily or Italy is imported into England. The wines of those countries are, indeed, without perhaps a single exception, very inferior to those of France. The natives bestow no care upon the culture of the vine, and their ignorance, obstinacy, and want of skill in the preparation of wine, are said to be almost incredible. In some districts, as in Tuscany and parts of Naples, the art is, no doubt, better understood and practiced than in others; the *Montepulciano* of the former, said, by Redi (*Bacco in Toscana*), to be *d'ogni vino il re*, and the *Lacrima Christi* of the latter, being the most celebrated varieties. But the lacrima is better known by name than in reality, it being made in small quantities, and mostly reserved for the royal cellars.—HENDERSON. And, despite the superior quality of those now mentioned, had not the Falernian, Cecuban, and other famous ancient wines, been incomparably better than the best of those that are at present produced, they never would have elicited the glowing panegyrics of Horace.—M'CULLOCH'S *Com. Dict.*

Few things are more striking to a visitor in Italy from the north of Europe than the straight rows of trees of all kinds that run through the corn-fields, at the foot of which vines are planted, and trained so as to extend in elegant festoons from one tree to another, exhibiting the pendent clusters of grapes. If the same mode of training the vines were attempted in the somewhat colder climates of France and Germany, the shade of the trees would prevent the grapes from ripening. This effect is not produced in Lombardy, where the berries become ripe, and, when eaten, are of good flavor; but the wine produced from them is, in general, of a bad or very indifferent quality. Though much of the wine is produced from such vines in the corn-fields as are distinguished by the names of *Campi Arativi Vitati*, or of *Campi Arborati Vitati*, and from vines planted in rows at such a distance from each other as to admit of maize being grown between them, and called *Ronchi*; yet in some parts are vineyards properly so called, because, like those of France and Germany, they alone occupy the ground, and are, like them, supported by props. The best wine is produced from the *Ronchi*, and more especially from the vineyards properly so called, in which, however, each vine produces less in quantity than those trained from tree to tree. The amount of produce varies greatly according to different years, different districts, and different modes of cultivation. From an approximate estimation made on many farms of various soils, it would appear that in the most productive districts the average produce of large vines trained to the trees around the corn-fields is from 48 to 52 gallons for 100 vines; and the average produce of vineyards, properly so called, from 58 to 65 gallons of wine to the acre.

In Lombardy the wine is generally of a bad quality. Its production is left chiefly to that description of cultivators before noticed under the name of colonists, who exercise little discretion and little care, either in the choice of the kind of grapes they plant or in the management of the juice. Their chief care is to obtain the largest quantity, without much regard to the flavor or the aptitude of keeping; and commonly, as soon as it is made, they divide it in equal shares with their landlords. One cause to which the inferiority of the wine is attributed arises from the general predilection in favor of red wine, or, as it is called, *Vino Nero*, which is prized according to the darkness of its color. In order to produce this deep color, the skins of the grapes are left, in the first part of the process,

to ferment with the juice. Sometimes this is suffered to continue during eight or ten days in a vat before the liquor is drawn off, and sometimes still longer, as the longer it continues the darker the wine becomes. The best wines are produced in the district near Varese, on the sunny slopes of the hills round the lakes of Como and Garda, and in the Val Calleppio, in the province of Bergamo. The wines of the localities of Sassella and Inferno, in the Valtelline, maintain the ancient renown of the Rhætian wines, relished by Augustus and celebrated by Virgil.

The wine of the Venetian provinces is, upon the whole, of a much better quality; its superiority is owing to the nature of the soil, to a better choice of the kinds of grapes that are planted, and to the more careful preparation of their juice. The best qualities are produced in the province of Treviso, in the Berici and Euganean Hills, between Vicenza and Padua, in some districts of the province of Udine, and, above all, in the province of Verona, well known for its *Valpolicella*, the best common wine in the kingdom.

There is no old wine in the country, except in small quantities, and in the hands of a few amateur proprietors. The wine of each vintage is sold in the course of the following year; and when any of it is kept, even though it should not have become, or shown a tendency to become, vinegar, it will sell at a lower price than new wine, because it is milder, and less agreeable to the taste of the consumer.—E. B.

Previous to 1851, the annual quantity of wine produced in the kingdom, in average years, was 85,837,705 gallons, of which 52,823,203 gallons were produced in the Venetian, and 33,014,502 in the Lombard provinces. The produce of Lombardy not being sufficient for the consumption of its population, nearly 4,402,000 gallons a year more were imported either from the Venetian provinces, which produced much more than was required for their own consumption, or from the neighboring states of Modena, Piedmont, and the Papal territory, according to the respective local produce and prices. But since 1851, when the *oidium* attacked all the vines of the country, the produce has so fearfully diminished, that in 1856 the government found it necessary to grant a reduction of the direct land-tax on lands chiefly cultivated with vines, in proportion to the ascertained amount of loss. The whole produce of Lombardy in 1852 was reduced to 11,004,834 gallons, and that of the Venetian provinces, in 1854, to 7,538,311 gallons of wine. The respective loss of each province was as follows:

GOVERNMENT OF MILAN.

	Gallons of Wine produced in 1838.	1852.
Mantua	10,347,405	3,439,077
Milan	3,800,585	998,975
Brescia	3,674,825	747,178
Pavia	3,264,430	651,112
Bergamo	2,732,434	1,247,090
Como	2,665,305	1,988,853
Cremona	2,663,170	1,981,750
Sondrio	2,325,190	90,514
Lodi	1,962,910	964,464
Total	33,436,251	12,109,213

GOVERNMENT OF VENICE.

	Gallons of Wine produced in 1847.	1854.
Padova	10,454,592	2,531,112
Vicenza	9,904,350	1,320,580
Udine	9,574,296	1,216,582
Verona	8,583,770	660,290
Treviso	7,483,287	748,329
Rovigo	2,961,740	552,154
Venezia	2,751,209	528,232
Belluno	896,174	187,082
Total	53,109,328	7,538,311

Wines of Greece and Cyprus.—The soil in most parts of Greece and of the Grecian islands is admirably fitted for the growth of the vine; and in antiquity they produced some of the choicest wines. But the rapacity of the Turks, and the insecurity of person and property that has always prevailed under their miserable government, has effectually prevented the careful cultivation of the vine, and has occasioned in many places its total abandonment. It may, however, be fairly presumed, now that Greece has emancipated herself from the iron yoke of her oppressors, that the culture of the vine will attract some portion of that attention to which it is justly entitled, and that at no distant period wine will form an important article of export from Greece. Nowhere, perhaps, has the destructive influence of Turkish barbarism and misgovernment been so apparent as in Candia and Cyprus. While these two renowned and noble islands were possessed by the Venetians they supplied all Europe with the choicest dessert wines. Bacci affirms that, toward the end of the 16th century, Candia sent annually 200,000 casks of malmsey to the Adriatic, whereas at present it hardly produces sufficient to supply the wants of its few impoverished inhabitants.—HENDERSON. The wines of Cyprus, particularly those produced from the vineyard called the Commandery, from its having belonged to the Knights of Malta, were still more highly esteemed than those of Crete. In the earlier part of last century the total produce of the vintage of the island was supposed to amount to above 2,000,000 gallons, of which nearly one half was exported; but now the wine grown and exported does not amount to one-tenth part of these quantities! The oppression of which they have been the victims has reduced the peasantry to the extreme of indigence. The present population of the island is not supposed to exceed 60,000—a number insufficient to have peopled one of its many ancient cities; and small as this number is, it is constantly diminishing by the inhabitants availing themselves of every opportunity of emigrating.

Cape Wines.—The famous Constantia wine is the produce of two contiguous farms of that name at the base of Table Mountain, between eight and nine miles from Cape Town. The wine is very rich and luscious, though, according to Henderson, it yields in point of flavor and aroma to the muscadine wines of Languedoc and Roussillon. But, with this exception, most part of the Cape wines brought to England have an earthy, disagreeable taste, are often acid, want flavor and aroma, and are, in fact, altogether execrable.

American Wine.—The extent of our territory over which the wine culture may be advantageously diffused has long afforded a subject of much speculation. It early attracted the attention of the first colonists, who not only attempted to form vineyards of the European vine, but to make wine from our own native grapes. Although the subject has been zealously and sedulously pursued at various periods since, all those dwelling on the easterly half of the continent who have made trial of the foreign grape have never been able to bring their designs to perfection; and those who have tested their skill in our native varieties have only met with partial success; yet a degree of perseverance and enthusiasm seems to have pervaded all the votaries of this delightful pursuit, and a warm and mutual interchange of views and sentiments has existed among them, which has been comparatively unknown in other species of culture. Although the operators in recent times, from being interspersed over so great an extent of territory, are consequently more widely separated, still the connecting link, by a friendly co-operation in one common cause, may justly and appropriately assimilate their united exertions to that joyous period in the history of France when, during the reign of Probus, thousands of all ages and sexes united in one spontaneous and enthusiastic effort for the restoration of their vineyards. Indeed, when the far greater limits of our domain are considered, the combined efforts of our fellow-countrymen can not fail to produce effects even more important, from the great extent of their influence, and cause each section of our republic reciprocally to respond to the efforts of others, with all their attendant advantages and blessings.

The earliest attempt to establish a vineyard in the British North American colonies was by the "London Company" in Virginia, prior to 1620. By the year 1630 the prospects were sufficiently favorable to warrant the importation of several French *vignerons*, who, it was alleged, ruined them by bad management. Wine was also made in Virginia in 1647, and in 1651 premiums were offered for its production. On the authority of Beverley, who wrote prior to 1722, there were vineyards in that colony which produced 750 gallons a year. Beauchamp Plantagenet, in his "Description of the Province of New Albion," published in London in 1648, states that the English settlers in Uvedale (now Delaware) had vines running on mulberry and sassafras trees, and that there were four kinds of grapes. "The first," says he, "is the Tholouse Muscat, sweet scented; the second, the great foxe and thick grape, after five moneths reaped, being boyled and salted, and well fined, it is a strong red Xeres; the third, a light claret; the fourth, a white grape, creeps on the land, maketh a pure gold-color wine: Tenis Pale, the Frenchman, of these four made eight sorts of excellent wine; and of the Muscat, acute boyled, that the second draught will fox [intoxicate] a reasonable pate, four moneths old; and here may be gathered and made two hundred tun in the vintage moneth, and replanted, will mend." An attempt to establish a vineyard near Philadelphia was made by William Penn in 1683; also by Andrew Dore in 1685; but neither succeeded.

In 1769 the French settlers on Illinois River made upward of 100 hogsheads of strong wine from the American wild grape.

The quantity of wine annually produced in the United States has become a subject of some discussion since the appearance of the return in the Seventh Census on that interest. The census of 1840 gave 124,000 gallons as the produce of that year. It has been stated in the public prints that since the period the culture of the grape, and the manufacture of wine therefrom, have grown into a business of considerable importance in the States bordering on the Ohio River, and that several hundred acres have been planted in vineyards in that valley, which yield at the rate of more than 45,000 gallons of wine a year. The total product of the Union in 1850 was given at 221,249 gallons. But during the intervening period there had been added to our own territory California and New Mexico, which in the latter year produced 60,718 gallons. This quantity deducted from the aggregate, leaves 160,531 gallons for the portion of the Union covered by the returns of 1840—indicating a gain of only 36,000 gallons. This is probably an understatement, but it seems to prove that no considerable progress has yet been made toward supplying by a home production the demand, to meet which importations of foreign wines to a very large amount are annually made. The consumption of wine in the United States, though by no means general, amounts in the aggregate to a large sum. The imports during the year ending June, 1851, were 6,160,000 gallons, of which probably three-fourths consisted of the wines of France. The value or invoice cost of the article was $2,370,000. The average consumption of foreign wines was, therefore, in quantity but about one quarter of a gallon for each person, and in value only ten cents. The coincidence is somewhat remarkable, that this is almost precisely the rate of consumption of imported wine among the people of Great Britain. But in France, according to official returns, there is produced and retained for consumption 900,000,000 gallons of wine, allowing 25¾ gallons to each person in the population.

It appears, from other tables in our census returns, that the quantity of ale and spirituous liquors produced in the United States in 1850 exceeded 86,000,000 gallons. The amount exported was balanced by the imports, and the quantity rejected, in forming the above estimate, for the sake of preserving round numbers; the consumption of malt and spirituous liquors for manufacturing purposes, and as a beverage, appears to have been at the rate of nearly four gallons per head. It is the opinion of many, whose inquiries upon the subject entitle them to respect, that among what are called "civilized" nations, the vice of inebriation has always been found to prevail most extensively where the vine is not cultivated; while, on the other hand, where this species of culture is widely disseminated, the temperance of the people is proverbial. If such be the case, we may proudly hope that the day is not far distant when America will fully establish and claim a rivalry with the most favored land of the vine and the olive, and exultingly disclaim being tributary to any foreign clime.—*Patent Office Report.*

Concerning the wine culture in this country, which is yet in its infancy, we find in a recent German publication some interesting facts from the pen of Dr. Gumprecht. The author explains the causes of the failure of the manifold attempts to domesticate the European grapes in the United States by comparative thermometrical and hygrometrical statements, from which it appears that the ill success is attributable to the greater proportion of moisture to which the vine is subjected here, while the temperature is more favorable in Philadelphia, Cincinnati, or St. Louis than in Paris, Dresden, or Prague. The Catawba grape, an indigenous variety, is now extensively cultivated in the West and Southwest, and the Catawba wine bids fair to become an important article of commerce. In 1851 the vineyards comprised less than three thousand acres, the greater proportion of which was in the vicinity of Cincinnati, whence the grape culture has since spread, along both banks of the Ohio, to Pittsburgh and Cairo, and in a southerly direction through Kentucky and Tennessee to Alabama, and westwardly into Missouri.

On the Ohio an acre yields on an average 500 gallons of wine—an immense yield compared with the average of France, which is only 200 gallons. In 1853, however, which was the most fruitful year since 1848, the yield was most extraordinary, averaging along the Ohio 650 gallons to the acre, some vineyards producing from 800 to 900 gallons. The wine-growers of Ohio are mainly Germans and their descendants.

In 1852, notwithstanding the comparatively small area devoted to wine growing, the produce of wine in the United States was estimated at 500,000 gallons; and in 1851 the mammoth cellar of Messrs. Longworth and Zimmerman, at Cincinnati, contained 80,000 gallons. In a few years the product will doubtless be doubled and trebled, since the present high prices of wine pay the producer a fair profit, and the demand is so great that the Cincinnati wine-dealers are scarcely able to keep a stock on hand.

The juice of the grape is manufactured either into still wine or sparkling wine. The latter, in the preparation of which, as in that of Champagne, liquor is added, is the most sought after, and its production has already increased to such an extent that Buchanan estimated the value of sparkling wines raised in Ohio at $175,000 per annum.

The wine produced in the United States is mostly of the description known as the white wine, but little of it being red. The value of the wine depends, as in Europe, on the character of the soil, the mode of treatment, and the weather. The years 1846, 1848, and 1851 produced the best wines, both here and in Europe; the vintage of 1853 was also a good one. In general, the product of the Catawba grape has the finest flavor and the greatest durability; it improves in quality for thirty years. According to an analysis made in 1846, the American wines contain from 7 to 11 per cent. of alcohol. A sample of Catawba hock from Longman's cellar, seven years of age, was proved by an analysis to contain from 11 to 11$\frac{6}{10}$ per cent. of alcohol; and a sample of red wine, of the Cape spe-

cies, was found to contain 9½ per cent. Buchanan states that the proportion of alcohol in the American wines is about the same as in the wines of France and Germany. Brande, however, contends that the French Graves wine contains 13·94, Barsac 13·86, Sauterne 14·22, Rudesheimer of 1800 12·22, and Hock 14·37 per cent. of alcohol.

The prices of American wines may be considered high. Ten to twelve bottles of stored still wine cost from $5 to $8, and sparkling wine brought $12 in 1854. New wine ranges from 40 cents to $1 10.

Of the recent territorial acquisitions of the United States, California, and Florida will probably ere long be ranked among the wine-producing States. In California the efforts of the old Catholic missionaries to cultivate the grape resulted satisfactorily, and the manufacture of wine from the domestic grape of Florida was also attended with success. Sir John Hawkins reports that in 1694 the settlers in Florida realized twenty hogsheads of palatable wine from the native grape. The good results which were anticipated from this discovery were, thanks to the political disturbances in which that colony became involved, never realized.

In Canada West, where certain species of wild grapes are very abundant, the manufacture of wine, recently introduced, has been attended with the most signal success. Buchanan's Journal pronounces it superior to the imported port-wine.—*N. Y. Eve. Post.*

The following statement shows the production of wine in the several States of the Union in the years 1840 and 1850, according to the census returns:

PRODUCTION OF WINE IN THE UNITED STATES IN 1840 AND 1850.—(CENSUS REPORT.)

States and Territories.	1840.	1850
	Gallons.	Gallons.
Alabama	177	220
Arkansas	....	35
California	....	58,065
Columbia, District of	25	860
Connecticut	2,666	4,260
Delaware	322	145
Florida	....	10
Georgia	8,647	706
Illinois	474	2,997
Indiana	16,265	14,055
Iowa	....	420
Kentucky	2,209	8,008
Louisiana	2,884	15
Maine	2,236	724
Maryland	7,585	1,451
Massachusetts	193	4,688
Michigan	....	1,054
Mississippi	12	407
Missouri	22	10,561
New Hampshire	94	344
New Jersey	9,416	1,811
New York	6,799	9,172
North Carolina	28,752	11,068
Ohio	11,524	48,207
Pennsylvania	14,328	25 590
Rhode Island	803	1,013
South Carolina	642	5,880
Tennessee	603	92
Texas	....	90
Vermont	94	659
Virginia	13,911	5,408
Wisconsin	....	113
New Mexico Territory	....	2,363
Totals	124,734	221,240

WINE, SPIRITS, ETC., IMPORTED ANNUALLY INTO THE UNITED STATES, FROM 1846 TO 1857, INCLUSIVE.

Date.	WINE IN CASKS.											
	Madeira.		Sherry.		Sicily.		Port.		Claret.		Other red Wine.	
	Gallons.	Value.	Gallons.	Value.	Gallons.	Value.	Gallons.	Value.	Gallons.	Value.	Gallons.	Value.
1846*	3 919	$3,075	4,685	$6,491	14,579	$9,617	38,593	$25,714	873,895	$134,588	....	....
1847	16,754	30,575	18,665	23,418	31,180	15,000	223,615	156,878	993,198	218,239	340,987	$60,096
1845	101,176	145,237	28,616	38,289	110,500	46,038	260,593	162,858	1,051,862	249,668	495,558	143,210
1846	109,797	122,805	26,538	41,761	209,131	74,000	372,528	148,895	961,851	249,703	954,646	316,821
1846†	117,117	128,613	14,543	26,194	21,281	8,933	80,991	62,851	294,433	111,453	1,072,589	328.814
1847‡	13,806	5,717	77,521	56,061	92,631	24,210	8,075	3,701	591,656	119,844	539,454	119,411
1848	44,634	21,630	215,535	109,183	190,204	67,364	501,123	170,134	1,2 7,071	221,416	781,078	180,918
1849	103,971	105,302	170,784	128,510	130,851	32,231	711,208	272,700	1,012,701	268,836	904,458	221,177
1850	303,125	150,096	212,092	118,952	91,123	24,933	626,211	305,354	1,919,764	267,445	1,460,256	265,188
1851	163,941	116,068	250,277	154,668	301,010	98,975	762,967	349,849	1,940,121	280,838	1,245,201	236,727
1852	216,683	106,917	168,610	97,680	91,746	22,563	614,816	240,238	2,702 612	405,390	1,172,816	229,350
1853	226,403	105,628	313,048	185,819	190,395	46,794	662,791	268,005	2,835,802	482,527	1,674,415	317,482
1854	129,391	54,270	415,258	244,028	68 870	23,191	393,197	177,925	2,045,474	491,065	1,854,885	450,195
1855	71,919	46,445	383,378	208,414	197,700	65,359	186,460	97,987	1,371,409	440,681	1,519,505	459,185
1856	41,393	32,051	398,392	270,317	184,194	61,951	264,816	158,729	1,516,018	561,440	607,534	285,111
1857	106,551	65 880	514,649	364,906	280,346	123,804	600,219	407,564	1,897,108	669,403	1,186,293	560,527

Date.	WINE, BRANDY, AND GRAIN SPIRITS.						OTHER SPIRITS, BEER, ALE, AND PORTER.					
	Other white Wine.		Brandy.		Grain Spirits.		Other Spirits.		Beer, Ale, and Porter from England.		Beer, Ale, and Porter from Scotland	
	Gallons.	Value.	Gallons.	Value.	Gallons.	Value.	Gallons.	Value.	Gallons.	Value.	Gallons.	Value.
1846*	125,882	$28,205	191,832	$1 6,207	259,129	$121,547	135,3 9	$32,055	6,612	$57,08 8	7,423	$6,335
1847	268,414	75,060	782,510	606,633	416,918	171,015	210,477	78 027	107,489	102,157	19,236	18,345
1845	591,735	211,183	1,081,314	819,459	606,311	262,513	270,484	78,957	79,302	73,729	26,711	21,284
1846	705,808	310,241	963,147	880,231	677,785	345,352	221,344	81,718	117,621	110,397	38,461	39,831
1846†	618,267	296,736	331,108	255,451	136,323	86,073	65,477	28,862	46,146	42,987	2,151	1.895
1847‡	278,482	69,831	623,309	575,631	327,635	143 549	160,747	67,806	132,157	67,305	15,375	8,657
1848	840,687	193,358	1,370,111	1,135,089	676,683	327,493	228,671	75,943	230,008	101,171	39,582	21,533
1849	971,895	210,139	2,904,091	1,347,514	706,276	327,957	542,492	145,784	146,478	118,253	52,297	30,488
1850	1,088,801	215,253	4,145,809	2,659,537	751,183	361,078	330,169	113,779	156,735	129,957	52,856	41,790
1851	1,085 374	209,847	3,163,783	2,128,679	984,417	564,204	309,214	100,853	275,336	180,01^	88,179	56 736
1852	925,379	195,879	2,751,810	1,702,729	865,301	294,386	359,677	98,940	262,838	186,964	110,752	67,804
1853	1,275,290	305,287	3,851,956	3,251,408	1,060,456	424 638	336,477	106,501	307,420	284,347	131,357	77 414
1854	1,379,888	380,204	2,152,966	2,225,544	1,197,254	564,569	399,683	128,308	825,571	424,876	270,064	128 667
1855	939,954	322,257	1,024,497	1,479,362	1,190,642	575,566	597,572	151,378	910,252	559,960	345,016	188,157
1856	517,135	183,499	1,715,717	2,850,342	1,582,126	773,276	772,644	288,404	792,155	504,146	329,486	193,690
1857	721,417	306,739	1,513,328	2,527,202	1,983,037	1,125,10	443,495	218,907	1,048,963	619,727	375,706	221,316

* Nine months. † Five months. ‡ Seven months.

There were no exports of wine of domestic production from the United States for the fiscal year 1856–'57.

The exports of foreign wine from the United States for the year ending June 30, 1857, were as follows:

	Value.
Madeira	$6,101
Sherry and St. Lucar	11,993
Port	14,081
Claret	27,091
Sicily	9,316
Red wine unenumerated	54,818
White wine unenumerated	3,646
Champagne	22,140

Wings. In naval matters, passages along the sides of the ship between the fore and after cockpit.

Wire. The invention of drawing wire is ascribed to Rodolph of Nuremberg, A.D. 1410. Mills for this purpose were first set up at Nuremberg in 1563. The first wire-mill in England was erected at Mortlake, in 1663.—MORTIMER. The astonishing ductility, which is one of the distinguishing qualities of gold, is no way more conspicuous than in gilt wire. A cylinder of 48 ounces of silver, covered with a coat of gold weighing only one ounce, is usually drawn into a wire two yards

of which only weigh one grain; so that 98 yards of the wire weigh no more than 49 grains, and one single grain of gold covers the whole 98 yards; and the thousandth part of a grain is above one-eighth of an inch long.—Halley. Eight grains of gold covering a cylinder of silver are commonly drawn into a wire 13,000 feet long; yet so perfectly does it cover the silver, that even a microscope does not discover any appearance of the silver underneath.—Boyle.

Wisconsin, one of the northwestern United States, lies between lat. 42° 30′ and 49° 30′ N., and between long. 86° 50′ and 96° W., being 600 miles long and 150 broad. It contains about 53,924 square miles. Population in 1840, 30,945; in 1845, 150,000; and in 1850, 305,191.

The portion south of Green Bay, Fox and Wisconsin rivers, is composed of timbered and prairie lands, with some swamps and wet prairies, having a vegetable soil from one to two feet deep. North of the Wisconsin River commences a hilly region, swelling as it proceeds north into a mountainous country, with a rugged and broken surface, creating many rapids and falls in the streams, and affording many wild and picturesque views. The northwest part of the State is covered with immense forests of pine and much rough land, especially bordering Lake Superior. On the ridge dividing the waters flowing north into Lake Superior, and those flowing south into the Mississippi, are many small lakes, in which fish are abundant. Bordering on the Mississippi and Wisconsin rivers the soil is rich, and the land generally heavily timbered. Wisconsin is rich in minerals; the great Mississippi lead region lies mostly within its limits; iron ore of the best quality exists bordering the sources of all the streams entering the Mississippi, and copper along the shores of Lake Superior; marble, limestone, sandstone, gypsum, and other variety of minerals abound.

There were in this State in 1850, 1,015,499 acres of land improved, and 1,931,159 of unimproved land in farms; cash value of farms, $28,528,503; and the value of implements and machinery, $1,611,568. *Live Stock.*—Horses, 30,179; asses and mules, 156; milch cows, 64,339; working oxen, 42,801; other cattle, 76,293; sheep, 124,896; swine, 159,276: value of live stock, $4,897,885.

Agricultural Products.—Wheat, 4,286,131 bushels; rye, 81,253; Indian corn, 1,988,979; oats, 3,414,672; barley, 209,692; buckwheat, 79,878; peas and beans, 20,657; potatoes, 1,402,077; sweet potatoes, 879; value of products of the orchard, $4823; produce of market gardens, $32,142; pounds of butter made, 3,633,750; of cheese, 400,283; maple-sugar, 610,076; molasses, 9874 gallons; beeswax and honey, 131,005 lbs.; wool, 253,963; flax, 68,393; hops, 15,930; tobacco, 1268; hay, tons of, 275,662; hemp, 2; clover seeds, 483 bushels; other grass seeds, 5003; flaxseed, 1191; and were made 113 gallons of wine: value of home-made manufactures, $43,624; of slaughtered animals, $920,178.

The principal rivers are the Mississippi, which flows along its western border for a distance of 275 miles. The Wisconsin has its entire course within the State, flows centrally, and enters the Mississippi on its western border. It is navigable to the portage of Fox or Neenah River, where a canal is being made, which, when completed, with the contemplated improvements of Fox River, will make a navigable communication between the Mississippi and the lakes. The Chippewa enters the Mississippi farther northwest, and is a large river, and St. Croix River forms a portion of its extreme eastern boundary. Rock River rises and flows partly in this State. The other principal rivers are the Menominee on its eastern border, entering Green Bay, and the Montreal, entering Lake Superior; there are also other small streams entering Lake Superior. The Milwaukee, Sheboygan, as well as others, enter Lake Michigan. The other most noted streams are the Wolf, Bad Axe, and Black Rivers. The principal lakes within its borders are Winnebago, Horicon, Koshkonong, and the four lakes in the south, and many small ones in the north. The principal places in the State are Madison, the capital, Milwaukee, Racine, Kenosha, Oosaukee, Green Bay, Jamesville, and Prairie du Chien. There were in January, 1854, four railroads in the State, with 647 miles of road finished and in operation, and there were 10 banks with a cash capital of $600,000.

Manufactures, etc.—There were in the State in 1850, 9 woolen factories, with a capital invested of $31,225, employing 25 males, manufacturing 36,000 yards of cloth and 74,350 lbs. of yarn, valued at $87,992; 1 establishment making pig-iron, with a capital of $15,000, employing 60 persons, and making 1000 tons of pig-iron, valued at $27,000; 15 establishments, with a capital of $116,350, employing 228 persons, producing 1342 tons of castings, etc., valued at $216,195; 75 flouring and grist mills, 412 saw-mills; 34 tanneries; 42 printing-offices, issuing 6 daily, 5 tri-weekly, 36 weekly, and 1 monthly publication.

Foreign Commerce of the State of Wisconsin from July 1, 1853, to July 1, 1857.

Years ending	Exports.	Imports	Tonnage cleared	
	Total.	Total.	American.	Foreign.
June 30, 1854.....	$30,464	$19,174	....	....
1855.....	174,057	48,153	8,149	400
1856.....	345,496	27,684	32,012	2710
1857.....	522,044	5,817	46,086	2906

At the close of the year 1857, the number of banks in Wisconsin had increased to 73, with a combined capital of $5,600,000, and bank-note circulation $3,000,000, the latter being secured by a collateral deposit of State stocks.

Woad (Ger. *Waid*; Du. *Weede*; Fr. *Pastel, Guède, Vouède*; It. *Guadone, Guado, Glastro*; Sp. *Pastel, Glasto*), the *Isatis tinctoria* of botanists, a biennial plant, with a fusiform fibrous root, and smooth branchy stem, rising from three to five feet in height. Woad is indigenous to most parts of Europe; and was extensively used from a very remote period, down to the general introduction of indigo, in the dyeing of blue. It is still cultivated to a considerable extent in France; but in England its cultivation is chiefly restricted to a few districts in Lincolnshire. After being bruised by machinery, to express the watery part, it is formed into balls, which ferment and fall into a dry powder, which is sold to the dyer. Woad is now seldom employed without a mixture of indigo. By itself it is incapable of giving a bright and deep blue color; but the color which it does give is very durable. The best methods of conducting the fermentation and preparation of woad are still so very ill understood, that the goodness of any parcel of it can never be ascertained till it be actually used; so that it has the disadvantage of being purchased under the greatest uncertainty as to its true value. At the proper age, indigo plants yield about thirty times as much coloring matter, and of a far superior quality, as an equal weight of woad; so that there is no prospect that any improvement that may be made in its preparation will ever render it, either in goodness or cheapness, a rival of the former.—Loudon's *Encyl. of Agriculture*; Bancroft on *Colors*.

Woods. Mr. Holtzapffel, in his elaborate work on "Turning," gives a very minute description and classification of the various kinds of wood used in the arts. He first points out the well-known structural difference between *exogens* and *endogens*, which leads to a separation of all kinds of trees into two great groups; all the true woods (as they are sometimes termed) are exogens; whereas the endogens include the grasses, bamboos, palms, etc. In the countries where bamboos and palms are indigenous, the smaller stems are used as tubes for the conveyance of water, and the larger pieces as joists, etc. In the larger kinds of palm, the fibres appear like streaks or wires imbedded in a substance similar to cement or pith.

IMPORTS OF WOOD AND MANUFACTURES OF WOOD, ETC., INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whence imported.	Manufactures of Wood.				Unmanufactured Wood.				Corks.	Unmanufactured Cork.
	Cabinet and Household Furniture.	Cedar, Mahogany, Rose, and Satin.	Willow.	Other Manufactures of.	Cedar, Granadilla, Mahogany, Rose, and Satin.	Willow.	Fire-wood and other not specified.	Dye-wood in Stick.		
Russian Poss. in N. Am.	....	....	....	....	....	....	$664	....	....	....
Sweden and Norway	....	....	....	$51	....	....	....	....	....	....
Danish West Indies	....	....	....	....	....	....	10	....	....	....
Hamburg	$1,019	$828	$5,808	61,583	$511	$3,367	18	....	$144	....
Bremen	679	907	119,240	110,836	345	683	....	$110	5,704	$28
Holland	788	....	80	1,158	....	....	....	....	....	....
Dutch West Indies	....	....	....	....	695	....	1,741	18,166	....	....
Dutch Guiana	....	....	....	....	....	....	57	1,616	....	....
Dutch East Indies	....	....	....	42	....	....	....	700	....	....
Belgium	80	$41	600	4,850	....	16,082	....	258	....	....
England	1,880	4,765	1,506	66,680	678	....	....	7,393	1,700	171
Scotland	....	60	....	1,040	....	....	....	....	....	508
Ireland	....	....	....	113	....	....	....	....	....	....
Gibraltar	....	....	....	....	....	....	....	....	1,498	....
Canada	25	....	18	26,205	....	....	1,252	2	....	....
Other British N. A. Poss.	....	....	....	3,752	78	....	7	1,466	....	26
British West Indies	....	50	....	458	7,355	....	3,298	89,206	....	....
British Honduras	....	....	....	....	28,881	....	....	27,584	....	....
British Guiana	....	....	....	50	111	....	91	80	....	....
British Poss. in Africa	....	....	....	....	....	....	....	524	....	....
Other ports in Africa	....	....	10	556	....	....	353	4,795	....	....
British Australia	....	....	....	....	....	....	1,488	....	....	....
British East Indies	426	....	17	1,010	....	....	160	9,144	....	....
France on the Atlantic	39,443	7,408	54,605	86,649	81,639	21,458	....	80	26,982	11
France on the Mediter'n.	....	90	....	68	....	203	....	9	83,609	10
French Guiana	....	....	....	....	....	....	71	....	....	....
Spain on the Atlantic	....	....	11	10	....	....	....	....	49,670	309
Spain on the Mediter'n.	....	....	....	82	....	....	....	....	22,280	....
Philip. Ine Islands	55	....	....	179	....	....	....	22,181	....	....
Cuba	252	85	....	137	126,956	....	939	6,916	....	....
Porto Rico	....	....	....	....	1,891	....	790	822	....	....
Portugal	....	....	9	....	....	....	....	....	10,856	11,674
Madeira	....	....	21	144	....	....	....	....	....	....
Azores	....	68	....	....	....	....	....	....	....	....
Sardinia	73	....	....	26	....	....	....	....	192	....
Tuscany	660	666	....	7,847	....	....	....	....	....	....
Papal States	....	....	....	....	....	....	....	....	237	....
Two Sicilies	63	....	96	13	....	....	....	....	6,912	4,855
Austria	101	....	318	14	....	....	....	....	....	....
Turkey in Asia	....	....	....	1,130	....	....	525	....	....	....
Hayti	....	....	....	....	104,404	....	1,636	516,515	....	....
San Domingo	....	....	....	....	33,248	....	9,801	2,977	....	....
Mexico	....	....	....	65	43,312	....	137	52,212	....	....
Central Republic	....	....	....	....	860	....	....	6,694	....	....
New Granada	....	....	....	1,035	291	....	1,323	29,753	988	....
Venezuela	....	....	....	1,463	1,959	....	1,735	81,522	....	....
Brazil	....	....	....	639	154,346	....	1,445	9,011	....	....
Chili	....	....	....	54	....	....	2,051	33,377	....	....
Sandwich Islands	....	....	....	3	....	....	....	....	....	....
China	2,207	17	....	13,779	....	....	25	....	....	....
Total year 1856-'57	$47,696	$15,185	$175,484	$341,171	$518,251	$41,773	$23,457	$866,048	$201,572	$17,092

The natives of the Isthmus of Darien pick out the fibres from some of the palms, and use them as nails; in some specimens they are as hard as rose-wood. Some of the smallest palms are imported into this country for walking-sticks, under the names of partridge and Penang canes. Of the four or five hundred varieties of palm-trees known to exist, only a very small number are imported. The palm woods so imported are sparingly employed for cabinet and marquetry work, for billiard cues, for snuff-boxes, etc. The twisted palm walking-sticks are the central stems or midribs of the leaves of the date palm: they are twisted when green, and stretched with heavy weights until they are thoroughly dry. The nut, or fruit, of many of this group of plants is applicable to uses in the arts; such as the betel-nut or areca-nut, whose substance is made into necklaces, the tops of walking-sticks, and other small objects; the cocoa-nut, whose shell yields the fibre or coir, now used in England for a great variety of purposes, and the hard portion of the shell, which is turned into cups, vases, buttons, etc.; the coquilla-nut, the shell of which, being hard and close-textured, is turned into knobs of umbrellas and parasols, small toys, etc. With respect to the simple wants and primitive arts of the people among whom the palms and bamboos grow, the uses of those plants are very numerous; of the *Cocos nucifera*, or cocoa-nut palm, for example, the fruit is eaten, the husk of the nut supplies coir for cordage, the leaves are used for making baskets and mats, the lower part of the stem yields wood fitted for joists and other kinds of carpentry, and different portions of the plant are made to yield oil, sugar, palm wine, and arrack.

But it is the exogenous or true woods which render the more important services to man, so far as regards the stem or wood itself. The fibres do not appear to differ in size or bulk so much as in density and distance; these two last-named differences give rise to the distinction between hard and soft woods — the former comprising oak, mahogany, ebony, rose-wood, etc.; and the latter willow, alder, deal, etc. Another classification is that which springs from the direction of the fibres; if the annual or longitudinal fibres be tolerably straight, and very little interwoven with the medullary rays or interrupted by knots, the wood becomes elastic and easily rent; such are lance-wood, hickory, ash, etc.; but if the fibres are more crossed and interlaced, the wood becomes less elastic, and more rigid and tough; such are oak, beech, mahogony, etc.; and if the fibres be entangled to a still greater degree, they produce the non-elastic, tough, cross-grained woods, such as elm, lignum-vitæ, etc. Another mode of classification, traced with some minuteness by Mr. Holtzapffel, is that which is determined by the beauty of the surface presented by woods. The knots, occasioned by the junction of a branch with the stem; the curls, produced by the confused filling in of the space between the forks or springings of the branches, as in the yew; the gnarled appearance of the roots, formed at the points of junction of the rootlets or arms of the root with the body of the root itself, as in walnut wood; the pollard growths of the oak and other trees, which

owe the beauty of their grain to a crowding together of the little germs that produce the numerous shoots at the top; the ripple-mark surface, occasioned by a serpentine form of the grain, as in satin-wood and sycamore; the bird's-eye pattern, occasioned by a peculiar compression of the grain in isolated spots, as in some kinds of maple; the silver-grain, which results from a marked distinctness in the medullary rays, as in the plane, sycamore, and beech—all give rise to variations in the appearance of the surface of wood, which are the mainspring of the beauty observable in cabinet work. Another and very obvious mode of classifying woods is in respect to their color.

Mr. Holtzapffel gives a tabular view of all the kinds of wood commonly used in this country. The list includes nearly eighty species of trees, without naming the varieties of each species. He classifies them according to the services which they are calculated to render. One group includes *building* woods, subdivided into those fitted for ship-building, for house carpentry, and for hydraulic engineering; another group includes the woods most useful for *machinery* and *mill-work*, subdivided according as the wood is suitable for frame-work, for rollers, for teeth of wheels, or for foundery patterns; a third group comprises the *turnery* woods, subdivided into common soft woods, hard woods, and Tunbridge-ware woods; a fourth group is made up of *furniture* woods, separated into common and best; a fifth group comprises *ornamental* foreign woods; a sixth group consists of *dye-woods*, arranged according to color; while a miscellaneous group is formed, subdivided according to the elasticity, the toughness, the even grain, or the durability of the wood. Of course many kinds of wood find a place in two or more of these groups; but the table is valuable, inasmuch as it brings together before the eye the names of all those woods which resemble each other in some one manufacturing quality.

The following tables show the exports (distinguishing between domestic and foreign production) of wood and its manufactures for the year ending June 30, 1857:

EXPORTS OF WOOD AND MANUFACTURES OF WOOD OF DOMESTIC PRODUCTION FROM THE UNITED STATES FOR THE FISCAL YEAR ENDING JUNE 30, 1857.

Whither exported.	Staves and Heading.		Shingles.		Boards, Plank, and Scantling.		Hewn Timber.	Other Lumber.	Oak Bark and other Dye.	All manufactures of Wood.
	M.	Value.	M.	Value.	M. Feet.	Value.	Value.	Value.	Value.	Value.
Russia on the Black Sea	....	....	....	....	....	....	....	$2,450	....	....
Asiatic Russia	....	....	....	....	....	....	....	....	....	$715
Russian North America	....	....	120	$426	....	....	....	55	....	115
Prussia	....	....	....	....	....	....	....	....	$450	....
Sweden and Norway	....	....	....	....	....	....	....	....	....	808
Swedish West Indies	....	....	1	22	38	$630	....	....	....	28
Denmark	10	$627	....	....	5	77	....	....	....	827
Danish West Indies	648	23,578	3,359	13,343	7,808	142,263	....	1,555	....	16,818
Hamburg	96	8,175	....	....	742	13,038	....	706	7,680	66,674
Bremen	184	12,781	....	....	687	10,640	$2,586	8,812	38,706	41,968
Holland	1,759	98,055	....	....	613	9,815	12,873	70,590	36,269	10,358
Dutch West Indies	8	395	36	180	2,939	39,302	....	....	....	2,594
Dutch Guiana	....	....	20	90	2,167	30,159	....	51	....	1
Dutch East Indies	....	....	....	....	....	....	....	....	....	[illegible]
Belgium	323	24,190	....	....	10	173	....	6,276	2,464	8,908
England	2,594	165,549	....	....	4,821	74,766	321,075	98,723	164,260	155,791
Scotland	245	18,259	....	....	120	1,809	45,410	3,007	7,619	6,876
Ireland	8,885	7,209	....	....	2,665	83,161	29,192	6,965	....	882
Gibraltar	147	9,466	....	....	36	616	....	....	336	4,016
Malta	....	....	....	....	5	108	....	....	....	1,200
Canada	394	7,839	21,638	54,553	85,645	864,103	51,883	2,187	2,706	142,433
British North America	239	17,559	105	206	2,790	44,023	35,201	920	284	62,569
British West Indies	12,675	199,310	20,664	64,040	22,668	300,544	1,840	2,284	236	45,207
British Honduras	....	....	953	3,887	945	16,025	....	1,004	142	13,103
British Guiana	766	18,430	....	....	4,050	58,273	....	55	....	12,496
British Poss. in Africa	513	40,784	213	646	1,549	34,947	....	3,088	....	19,749
Other ports in Africa	438	33,494	822	2,920	1,322	22,472	....	12,120	....	23,953
British Australia	27	1,560	....	....	8,203	214,892	....	37,934	....	251,209
British East Indies	137	9,282	....	....	1,848	33,090	....	14,205	....	21,379
France on the Atlantic	2,068	145,951	....	....	1,785	29,712	13,041	116,329	35,985	14,401
France on the Mediterr'n	769	49,162	....	....	1,240	14,970	5,849	25,410	13,711	6,418
French North America	3	438	280	515	107	1,076	....	318	....	17,961
French West Indies	1,559	29,546	6,383	17,520	16,521	217,604	....	174	....	6,065
French Guiana	4	240	....	....	326	5,561	....	76	....	2,275
Spain on the Atlantic	2,576	158,517	....	....	1,171	19,547	7,625	....	....	1,218
Spain on the Mediterr'n	2,018	144,267	....	....	2,152	29,472	7,745	8,661	....	1,820
Canary Islands	7	603	....	....	2,635	36,724	....	13,042	....	408
Philippine Islands	....	....	....	....	....	....	....	....	....	955
Cuba	7,335	561,674	3,131	7,404	68,403	876,142	5,144	138,464	200	1,675,248
Porto Rico	21,580	114,336	3,155	14,741	4,443	117,504	....	6,432	....	1 [illegible]904
Portugal	1,136	96,460	20	60	331	4,896	....	90	11,100	6,386
Madeira	....	....	....	....	437	6,339	....	....	....	1,084
Cape de Verd Islands	....	....	71	181	73	1,102	....	153	....	1,068
Azores	14	928	....	....	1,216	16,761	711	1,182	....	2,139
Sardinia	55	2,666	....	....	270	5,100	....	233	....	1,849
Two Sicilies	372	18,295	....	....	243	3,083	....	6,050	....	5,199
Austria	....	....	....	....	....	....	....	....	390	....
Austrian Italy	....	....	....	....	....	....	....	....	....	100
Turkey in Europe	....	....	....	....	3	100	....	....	....	372
Turkey in Asia	4	270	....	....	37	742	....	....	....	1,205
Hayti	8	663	1,242	7,475	3,978	64,721	....	1,208	....	20,260
San Domingo	....	....	2,555	5,783	2,450	20,011	....	....	....	44
Mexico	9	723	1,598	1,304	2,017	58,069	....	5,890	....	21,576
Central Republic	....	....	115	344	274	4,885	....	277	....	2,251
New Granada	28	1,687	723	3,682	1,658	32,139	....	2,256	....	24,069
Venezuela	33	1,401	100	600	621	12,408	....	....	....	15,418
Brazil	56	5,293	....	....	5,743	87,040	2,560	3,670	....	42,327
Uruguay	3	267	153	921	5,822	101,935	....	797	....	9,657
Argentine Republic	40	3,215	1,171	4,218	12,976	185,074	....	2,531	88	27,845
Chili	260	19,519	50	150	9,706	207,119	....	14,406	....	42,575
Peru	30	2,600	....	....	1,876	38,147	....	....	....	10,064
Ecuador	....	....	134	615	3	105	....	....	....	1,343
Sandwich Islands	7	185	1,085	4,887	1,014	22,541	....	3,574	....	17,185
Pacific Islands	....	....	356	1,427	91	403	....	11,910	....	1,006
China	7	450	460	425	75	2,495	....	1,185	....	8,292
Whale-fisheries	....	....	....	....	7,518	94,528	....	....	....	124,186
Total, year 1856–'57	65,570	$2,055,980	70,640	$212,805	309,165	$4,176,686	$516,705	$638,406	$322,764	$8,158,424

EXPORTS OF WOOD AND MANUFACTURES OF WOOD OF FOREIGN PRODUCTION FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Manufactures of Wood.				Unmanufactured Wood.			
	Cabinet and Household Furniture.	Cedar, Mahogany, Rose, and Satin.	Willow.	Other Manufactures of.	Cedar, Grenadilla, Mahogany, Rose, and Satin.	Willow.	Fire-wood, and other not specified.	Dye-wood in Stick.
Russia on the Baltic and North Seas	....	....	....	....	$4,450	....	$2,742	$52,918
Asiatic Russia	....	....	....	$300	....	....	....	....
Prussia	....	....	....	....	....	....	....	13,066
Sweden and Norway	....	....	....	....	4,792	....	....	16,186
Danish West Indies	....	....	....	....	....	....	....	636
Hamburg	....	....	....	....	4,166	....	....	167,815
Bremen	....	....	....	....	28,141	....	....	49,527
Holland	....	....	....	....	10,204	....	....	28,143
Belgium	....	....	....	....	16,540	....	....	55,232
England	....	....	....	4,206	51,165	....	123	315,759
Scotland	....	....	....	....	....	....	....	9,138
Gibraltar	....	....	....	....	618	....	....	2,300
Malta	....	....	....	....	1,008	....	1,083	6,247
Canada	....	$74	$624	3,098	....	....	....	213
Other British North American Poss.	....	....	....	420	5,708	....	619	1,516
British West Indies	....	....	....	....	....	....	24	6,180
British Australia	....	....	....	....	....	....	2,987	....
British East Indies	....	....	....	....	14,042	$2811	805	5,478
France on the Atlantic	$559	....	....	....	1,630	....	....	35,728
France on the Mediterranean	....	....	....	....	....	....	....	20,048
Spain on the Atlantic	....	....	....	....	....	....	....	1,408
Spain on the Mediterranean	....	....	....	....	....	....	....	9,060
Canary Islands	....	....	....	....	196	....	....	66
Cuba	....	....	....	23,409	....	....	....	168
Portugal	....	....	....	....	255	....	....	5,234
Azores	....	....	....	....	2,670	....	....	27
Sardinia	....	....	....	....	940	....	....	9,380
Two Sicilies	....	....	....	....	6,520	....	....	4,242
Austria	....	....	....	....	4,523	....	2,275	53,559
Austrian Possessions in Italy	....	....	....	....	....	....	....	4,275
Turkey in Europe	....	....	....	....	....	....	....	514
Turkey in Asia	....	....	....	....	1,105	....	....	7,143
Mexico	....	....	....	1,488	....	....	....	750
New Granada	1800	....	....	....	....	....	....	....
Brazil	....	....	....	....	....	....	....	78
Uruguay, or Cisplatine Republic	....	....	....	....	335	....	....	214
Buenos Ayres, or Argentine Republic	....	....	....	....	840	....	....	336
Chili	....	....	....	1,160	....	....	150	....
Sandwich Islands	388	....	....	9	....	....	....	....
China	....	....	....	....	....	....	1,488	....
Whale-fisheries	....	....	....	1,109	....	....	....	....
Total, year 1856-'57	$2747	$74	$624	$35,288	$192,742	$.811	$12,226	$378,143
From warehouse	....	....	....	$17,564	$46,428	$2811	$4,668	$340,308
Not from warehouse	$2747	$74	$624	17,724	106,314	....	7,558	537,835

Wool (Ger. *Wolle*; Du. *Wol*; Da. *Uld*; Swed. *Ull*; Fr. *Laine*; It. and Sp. *Lana*; Port. *Lã, Lãa*; Russ. *Wolna, Scherst*; Pol. *Welna*; Lat. *Lana*), a kind of soft hair or down. The term is not very well defined. It is applied both to the fine hair of animals, as sheep, rabbits, some species of goats, the vicuna, etc.; and to fine vegetable fibres, as cotton. In this article, however, we refer only to the wool of sheep—an article which has continued, from the earliest period down to the present day, to be of primary importance, having always formed the principal part of the clothing of mankind in most temperate regions.

Species of Wool.—It has been customary to divide wool into two great classes—long and short wools; and these again into subordinate classes, according to the fineness of the fibre. Short wool is used in the cloth manufacture; and is, therefore, frequently called clothing wool. It may vary in length from one to three or four inches; if it be longer, it requires to be cut or broken to prepare it for the manufacture. The *felting* property of wool is known to every one. The process of hat-making, for example, depends entirely upon it. The wool of which hats are made is neither spun nor woven; but locks of it, being thoroughly intermixed and compressed in warm water, cohere and form a solid, tenacious substance.

Cloth and woolen goods are made from wool possessing this property; the wool is carded, spun, woven, and then, being put in the fulling-mill, the process of felting takes place. The strokes of the mill make the fibres cohere; the piece subjected to the operation contracts in length and breadth, and its texture becomes more compact and uniform. This process is essential to the beauty and strength of woolen cloth. But the long wool of which stuffs and worsted are made is deprived of its felting properties. This is done by passing the wool through heated iron combs, which takes away the laminæ or feathery part of the wool, and approximates it to the nature of silk or cotton. Long or combing wool may vary in length from three to eight inches. The shorter combing wools are principally used for hose, and are spun softer than the long combing wools; the former being made into what is called hard, and the latter into soft worsted yarn. The fineness of the hair or fibre can rarely be estimated, at least for any useful purpose, except by the wool sorter or dealer, accustomed by long habit to discern those minute differences that are quite inappreciable by common observers. In sorting wools, there are frequently eight or ten different species in a single fleece; and if the best wool of one fleece be not equal to the finest sort, it is thrown to a 2d, 3d, or 4th, or to a still lower sort, of an equal degree of fineness with it. The best English short native fleeces, such as the fine Norfolk and Southdown, are generally divided by the wool-sorter into the following sorts, all varying in fineness from each other: viz. 1. Primo; 2. Choice; 3. Super; 4. Head; 5. Downrights; 6. Seconds; 7. Fine Abb; 8. Course Abb; 9. Livery; 10. Short, coarse, or breech wool. The relative value of each varies, according to the greater demand for coarse, fine, or middle cloths.

The softness of the fibre is a quality of great importance. It is not dependent on the fineness of the fibre; and consists of a peculiar feel, approaching to that of silk or down. The difference in the value of two pieces of cloth made of two kinds of wool equally fine, but one distinguished for its softness and the other for the opposite quality, is such, that, with the same process and expense of manufacture, the one will be worth from 20 to 25 per cent. more than the other. Mr. Bakewell showed that the degree of softness depends principally on the nature of the soil on which sheep

are fed; that sheep pastured on chalk districts, or light calcareous soils, usually produce hard wool; while the wool of those that are pastured on rich, loamy, argillaceous soils, is always distinguished by its softness. Of the foreign wools, the Saxon is generally softer than the Spanish. Hard wools are all defective in their *felting* properties. In clothing wool, the color of the fleece should always approach as much as possible to the purest white; because such wool is not only necessary for cloths dressed white, but for all cloths that are to be dyed bright colors, for which a clear white ground is required to give a due degree of richness and lustre. Some of the English fine-wooled sheep, as the Norfolk and Southdown, have black or gray faces and legs. In all such sheep there is a tendency to grow gray wool on some part of the body, or to produce some gray fibres intermixed with the fleece, which renders the wool unfit for many kinds of white goods; for though the black hairs may be too few and minute to be detected by the wool sorter, yet when the cloth is stoved they become visible, forming reddish spots, by which its color is much injured. The Herefordshire sheep, which have white faces, are entirely free from this defect, and yield a fleece without any admixture of gray hairs.

The cleanness of the wool is an important consideration. The Spanish wool, for example, is always scoured after it is shorn; whereas the English wool is only imperfectly washed on the sheep previously to its being shorn. In consequence, it is said that while a pack of English clothing wool of 240 lbs. weight will waste about 70 lbs. in the manufacture, the same quantity of Spanish will not waste more than 48 lbs. Cleanness, therefore, is an object of much importance to the buyer. Before the recent improvements in the spinning of wool by machinery, great length and strength of staple was considered indispensable in most combing wools. The fleeces of the long-wooled sheep fed in the rich marshes of Kent and Lincoln used to be reckoned peculiarly suitable for the purposes of the wool-comber; but the improvements alluded to have effected a very great change in this respect, and have enabled the manufacturer to substitute short wool of three inches staple in the place of long combing wool, in the preparation of most worsted articles. A great alteration has, in consequence, taken place in the proportion of long to short wool since 1800; there having been in the interim, according to Mr. Hubbard's calculations, an increase of 132,053 packs in the quantity of the former produced in England, and a decrease of 72,820 in the quantity of the latter.

Whiteness of fleece is of less importance in the long combing than in clothing wool, provided it be free from gray hairs. Sometimes, however, the fleece has a dingy brown color, called a *winter stain*, which is a sure indication that the wool is not in a thoroughly sound state. Such fleeces are carefully thrown out by the wool sorter, being suitable only for goods that are to be dyed black. The fineness of heavy combing wool is not of so much consequence as its other qualities. The Merino or Spanish breed of sheep was introduced into England about the close of last century. George III. was a great patron of this breed, which was for several years a very great favorite. But it has been ascertained that, though the fleece does not much degenerate, the carcass, which is naturally ill-formed, and affords comparatively little weight of meat, does not improve; and as the farmer, in the kind of sheep which he keeps, must look not only to the produce of wool, but also to the butcher market, his interest is rather to return to the native breeds, and to give up the Spanish sheep. They have, however, been of considerable service to the flocks of England; having been judiciously crossed with the Southdown, Ryeland, etc.

Dr. Anderson, in a memorial subjoined to the "Report of the Committee of the Highland Society," proves, from indisputable records, that from the earliest times down to the reign of Queen Elizabeth, the wool of Great Britain was not only superior to that of Spain, but accounted the finest in the universe; and that even in the times of the Romans a manufacture of woolen cloths was established at Winchester for the use of the emperors. In later times, wool was manufactured in England, and is mentioned in A.D. 1185, but not in any quantity until 1331, when the weaving of it was introduced by John Kempe and other artisans from Flanders. This was the real origin of the English wool manufactures, Edward III., 1331.—RYMER'S *Fœdera*. The exportation prohibited, 1337. The exportation of English wool, and the importation of Irish wool into England prohibited, 1696. The non-exportation law repealed, 1824.—HAYDN.

Alpaca Wool.—The alpaca is one among many species of the llama, the wool of which is very beautiful. The first visit of these animals to Europe was an adventurous one. Thirty-six traveled across the whole breadth of South America, from Lima to Buenos Ayres, in 1808, and were there shipped to Europe as a present to the Empress Josephine. At Cadiz the poor animals were ill-treated by a rabble, and only a small number were ultimately preserved in Spain; they never reached Josephine. By degrees it was found that alpaca wool was longer, softer, more pliant, and more lustrous than sheep's wool, and the manufacturers of Bradford began to import it for use. Queen Victoria possesses one or two of these animals at Windsor, and some articles of dress were made from the alpaca wool in 1844: one was an apron, entirely of alpaca; another was a striped and figured dress, with silk warp, alpaca weft, and alternate silk and alpaca figures; a third was a plaid dress, woven with an intermixture of alpaca, silk, and worsted; while a fourth was a plain black dress, with cotton warp and alpaca weft. Many attempts have been made to establish the breed of the alpaca in England, but hitherto the enterprise has not been commercially successful.

That alpaca wool is coming extensively into use in England is shown by the imports: in 1836 to 1840 they averaged 7000 bales per annum; in 1841 to 1845, the average was 13,000 bales; in 1846 to 1850, more than 20,000.—*See* ALPACA.

Cashmere Wool.—It is an interesting feature in the modern history of the woolen manufacture, that the wool, or rather hair, of the Cashmere goat is becoming a favorite material in cloth of the better kind. Not that all the "Cashmeres" of the shops are really Cashmeres; the *morals* of trade has not yet reached the point when things are called by their right names; and the beautiful Asiatic valley is quite innocent of the greater part of those products which rejoice in the name of "Cashmeres." Still the high-born and the wealthy occasionally purchase shawls which were really made in that region, and (what is more interesting to us) attempts are being made to naturalize the animal which produces the beautiful filamentous material in question. The fleece of the Cashmere goat consists of two very different kinds of fibre—one of which is a fine, soft, pliable, rich wool, equal to the finest lamb's wool; while the other, called *kemp*, is a hard, stiff, coarse, rough kind of hair. The kemp may be used in the manufacture of coarse cloth; but every fibre must be removed before the fine wool can be employed in shawl-making. This removal is very difficult and tedious, and will be a bar to the spread of the manufacture, unless some expeditious system to effect it can be devised. Prince Albert has some Cashmere goats at Windsor; and some few months before the Great Exhibition was opened he caused the fleeces of those goats to be forwarded to two manufacturing firms, one near Leeds, and one near Halifax, there to be subjected to manufacturing processes. The separation of the fine wool from the kemp was a slow manipulative process, which many persons undertook voluntarily and pleasurably. Of course the expense which would attend

such a mode of manufacture for ordinary sale would be quite disproportionate to the result obtained; but the prince's praiseworthy object was answered by showing that the Cashmere goat *can* be reared, and that the fleecy covering can be wrought into cloth. The articles produced from the wool in question consisted of a piece of white cloth, with silk warp and Cashmere weft, woven with a brocaded figure; a piece of similar character, but dyed; two shawls made wholly of the Cashmere wool; and a piece of coarse woolen cloth made from the kemp or hair.—*See* CASHMERE.

Mauchamp Merino Wool.—In 1828 M. Graux, a farmer at Mauchamp, in the French department of Aisne, had a lamb which, as it grew up, became remarkable for the long, smooth, straight, and silky character of the fibres of the wool. He resolved to insure, so far as he could, a perpetuation of these valuable qualities in the progeny of the lamb. In 1830 he had one ram and one owe whose wool was of this peculiar kind; in 1831 he had four rams and one ewe of the desired kind; and by 1833 the number was much increased. Thenceforward the progeny was very remarkable; some of the lambs, like their mothers, had the curled elastic wool of ordinary merino sheep; while the others, like their sires, had the long silky wool. As years advanced, M. Graux was able to obtain a breed of sheep which combined in the wool nearly all the qualities of the two former kinds; and thus originated the Mauchamp wool, which now sells in France for 25 per cent. above the best merino. It is found to be nearly equal to the real Cashmere wool in flexible delicacy of fibre, as a material for Cashmere shawls; and when combined with the real Cashmere, it imparts a strength in which that wool is deficient.

Deterioration or Change in the Character of British Wool.—It appears to be sufficiently established, by the evidence taken before the House of Lords in 1828, and other authorities, that a considerable deterioration, or rather, perhaps, change, has taken place in the quality of British wool, particularly during the 30 preceding years. The great object of the agriculturist has been to increase the weight of the carcass and the quantity of the wool; and it seems very difficult, if not quite impossible, to accomplish this without injuring the fineness of the fleece. Mr. Culley says, that the Herefordshire sheep, that produce the finest wool, are kept lean, and yield 1½ lb. each; he adds, "if they be better kept, they grow large and produce more wool, but of an inferior quality." This would seem to be universally true. The great extension of the turnip husbandry, and the general introduction of a larger breed of sheep, appears, in every instance, to have lessened the value of the fleece. Speaking of the Norfolk fleeces, Mr. Fison, a wool sorter, says that 25 years ago the weight was 2½ lbs. a fleece, and that now it is 3 lbs. or 3½ lbs. But according to a table furnished by the same gentleman, containing the results of his experience, it appears that of 15 tods, or 420 lbs., of clothing wool grown in Norfolk in 1790, 200 lbs. were *prime*, while in 1828 the same quantity of Norfolk wool only yielded 14 lbs. prime. The statements of other witnesses are to the same effect. According to the estimate in Mr. Luccock's *Treatise on English Wool*, which has always enjoyed the highest reputation, the produce of all sorts of wool in England in 1800 was 384,000 packs, of 240 lbs. a pack. But Mr. Hubbard, a very intelligent and extensive wool-stapler at Leeds has shown that, supposing Mr. Luccock's estimate of the number of sheep to be correct, the quantity of wool produced in 1828 could not, owing to the greater weight of the fleece, be estimated at less than 463,169 packs; and it is now (1814) believed to amount to fully 500,000 packs. It is, therefore, probable, notwithstanding the decline in the price of wool, that, taking into account the greater weight of the carcass, and the greater weight of the fleece, sheep produce more at present to the farmer than at any former period.

We give below a statement of the quantity of the wool imported into Great Britain in fifteen years, from 1840 to 1854, inclusive.

Years.	Germany.	Australia.	Total.
	Pounds.	Pounds.	Pounds.
1840	21,813,664	9,7 5,248	49,446,284
1841	20,959,375	12,300,262	50,170,974
1842	18,613,209	12,573,956	45,881,639
1843	16,805,443	17,433,780	49,218,608
1844	24,847,883	17,032,247	66 718,761
1845	18,484,786	24,177,217	76,818,755
1846	15,888,705	21,789,340	65,255,452
1847	12,078,814	26,056,815	62,5 2,508
1848	14,429,161	30,018,221	70,864,847
1849	12,750,911	35 876,171	70,768 647
1850	9,168,731	39,018,221	74,326,718
1851	8,219,236	41,810,517	83,311,975
1852	12,765,253	43,297,402	93,761,458
1853	11,584,800	47,077,010	119,3 6,549
1854	11,448,518	47,489,650	106,121,995

AN ACCOUNT OF THE QUANTITIES OF SHEEP AND LAMBS' WOOL, FOREIGN AND COLONIAL, IMPORTED INTO GREAT BRITAIN IN THE YEAR 1851, DISTINGUISHING THE COUNTRIES FROM WHICH THEY CAME, AND THE QUANTITIES BROUGHT FROM EACH.

Imports.	Sheep and Lambs' Wool, foreign and colonial.
	Pounds.
Russia, northern ports	584,007
Russian ports within the Black Sea	5,212,130
Denmark, including Iceland	1,057,910
Prussia	42,211
Hanseatic Towns	3,216,020
Holland	142,082
Belgium	496,783
France	908,314
Portugal proper	2,356,632
Spain	383,150
Gibraltar	448,120
Sardinian territories	14,156
Tuscany	408,157
Papal territories	158,534
Naples and Sicily	220,436
Austrian territories	495 804
Malta	181,255
Turkish dominions	831,240
Egypt, Syria, and Palestine	1,748,692
Morocco	967,010
British possessions in South Africa	5,816,591
British territories in India	4,549,520
China	69,546
West Australia	668,595
South Australia	3,392,608
New South Wales	14,772,132
Victoria	17,209,521
Van Diemen's Land	5,198,983
New Zealand	809,208
United States	594,017
Brazil	179,946
Buenos Ayres or Argentine Republic	853,194
Chili	129,221
Peru	1,675,644
All other places	45,185
Total	81,398,793

Re-exports.	All Sorts.
	Pounds.
Russia	28,402
Sweden	285,533
Norway	14,000
Hanseatic Towns	800,632
Holland	1,100,483
Belgium	7,718,407
France	1,496,811
Italy	190,317
United States	2,029,968
Other places	47,170
Total	13,711,725

Of late years Russia has become of primary importance among the wool exporting countries, especially from her ports on the Black Sea. Provided tranquillity could be maintained in South Africa, the probability is that it would in no very lengthened period rival New South Wales as a wool exporting country. Alpaca, and other wools of that sort, come from Peru; goats' wool comes principally from Turkey, but the best is that of Thibet.

United States.—Analogous in the uses for which it serves to cotton, wool is a product of only less importance to the prosperity of the country than that leading staple of our agriculture and commerce. It is a very gratifying fact that though the number of sheep has

increased in ten years but 12 per cent., the aggregate weight of their fleeces has augmented 46 per cent. In 1840 there were 19,311,874 sheep, yielding 35,802,114 lbs. of wool, equal to 1·84 lb. per head. In 1850 the average weight of each fleece was 2·481bs., from which it would appear that such an improvement had taken place in the various breeds of the American sheep as to increase their average product about 32 per cent. throughout the United States. And a critical analysis of the returns of sheep and wool proves not only that our breeds are capable of such improvement, but that it has actually taken place.

In Vermont the greatest attention has been given to sheep-breeding; time, money, and intelligence having been freely applied to the great object of obtaining a breed combining weight and fineness of fleece. These efforts have succeeded so well, that although the number of sheep in that State had declined nearly one half in the period from the sixth to the seventh census, the yield of wool remained nearly the same. The average weight of the fleece in this State in 1840 was 2·2 lbs., and in 1850 it had increased to 3·71, the gain being almost equal to 70 per cent. In Massachusetts, also, where strenuous exertions have been made—though not on so large a scale as in Vermont—to improve their sheep, a correspondingly beneficial result has been obtained, and the average weight of the fleece has been increased from 2·5 to 3·1 lbs. The State of New York produced 226,000 lbs. more wool in 1850, from 8,453,000 sheep, than from 5,118,000 in 1840, showing that the weight of the fleece had been raised from less than two to nearly three pounds. Our imports of wool during ten years have varied as follows:

QUANTITY AND VALUE OF WOOL IMPORTED INTO THE UNITED STATES FROM 1841 TO 1850, INCLUSIVE.

Years.	Quantity.	Value.
1841..... pounds	15,906,410	$1,091,953
1842..... "	11,420,958	797,422
1843—9 months "	3,517,100	245,000
1844..... "	14,008,000	851,460
1845..... "	23,333,040	1,689,794
1846..... "	16,558,247	1,134,226
1847..... "	8,460,109	555,822
1848..... "	11,341,429	857,084
1849..... "	17,869,022	1,177,847
1850..... "	18,660,794	1,031,691

By this statement it is shown that the quantity of wool brought into the country of late years amounts to almost one-third of that produced in it; while at former periods, as from 1841 to 1845, the amount was nearly one half. The largest proportion of this imported wool came from Buenos Ayres and the neighboring states on the Rio de la Plata, and is of a coarse and cheap variety, costing from six to eight cents per pound. It always will be cheaper to bring this kind of wool from regions where sheep are reared without care or labor, than to produce it at home; but there is no country in the world in which sheep may, by judicious treatment, be made a source of greater wealth and comfort to its inhabitants than the United States. The importations of wool in 1850–'51 exhibit a remarkable increase over the preceding or any former year, amounting in quantity to 32,548,693 lbs., and to the value of $3,800,000.

PRODUCTION OF WOOL IN THE UNITED STATES IN THE YEARS 1840 AND 1850, ACCORDING TO THE CENSUS REPORTS.

States and Territories.		1840.	1850.
Atabama.....	pounds	220,353	657,118
Arkansas.....	"	64,943	182,595
California.....	"	....	5,520
Columbia, Dist of..	"	707	525
Connecticut.....	"	889,870	497,454
Delaware.....	"	64,464	57,768
Florida.....	"	7,285	23,247
Georgia.....	"	371,303	999,010
Illinois.....	"	650,007	2,159,118
Indiana.....	"	1,237,019	2,610,237
Iowa.....	"	23,039	273,598
Kentucky.....	"	1,736,847	2,297,433
Louisiana.....	"	49,283	109,807
Maine.....	"	1,405,551	1,364,034
Maryland.....	"	488,201	477,438
Massachusetts.....	"	941,906	885,136
Michigan.....	"	153 875	2,043,283
Mississippi.....	"	175,196	559,619
Missouri.....	"	562,265	1,627,164
New Hampshire...	"	1,260,517	1,108,476
New Jersey.....	"	397,207	875,996
New York.....	"	9,845,2 5	10,071,301
North Carolina....	"	626,044	970,738
Ohio.....	"	3,685,215	10,196,271
Pennsylvania.....	"	3,043,564	4,481,870
Rhode Island.....	"	188,830	129,692
South Carolina....	"	299,170	487,293
Tennessee.....	"	1,060,332	1,364,378
Texas.....	"	....	131,917
Vermont.....	"	3,893,235	3,400,717
Virginia.....	"	2,533,374	2,866,765
Wisconsin.....	"	6,777	253,963
Minnesota Territory	"	....	85
New Mexico "	"	....	32,501
Oregon "	"	....	29,686
Utah "	"	....	9,222
Totals.....		35,892,114	52,516,989

EXPORTS OF WOOL FROM THE UNITED STATES FOR THE FISCAL YEARS ENDING JUNE 30, 1853, 1854, 1855.

	1853.		1854.		1855.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Domestic wool.....	216,472	$26,567	114,268	$33,805	88,836	$27,802
Foreign wool.....	209,194	51,387	195,143	41,668	728,964	131,442
Total.....	425,666	$77,954	309,411	$75,503	817,799	$159,244

IMPORTS OF WOOL INTO THE UNITED STATES FOR THE FISCAL YEARS ENDING JUNE 30, 1853, 1854, 1855.

Whence Imported.	1853.		1854.		1855.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
England.....	8,884,595	$778,469	1,396,514	$261,827	972,434	$153,144
France.....	2,205,861	280,300	12,487	3,437	940,828	131,664
Turkey.....	4,351,250	372,012	4,300,326	400,285	4,201,250	388,505
Argentine Republic.....	5,745,657	588,653	6,255,6 8	854,232	5,966,969	627,718
Chili.....	2,664,300	253,190	1,857,447	161,666	2,840,002	247,564
Other places.....	2,743,207	400,688	6,317,638	1,081,788	5,537,532	450,844
Total.....	21,595,079	$2,669,718	20,200,110	$2,822,185	18,534,415	$2,072,130

Woolen Manufacture, the art of forming wool into cloth and stuffs. The manufacture of cloth was known, it is supposed, in all civilized countries, and in very remote ages, and probably of linen also. Woolen cloths were made an article of commerce in the time of Julius Cæsar, and are familiarly alluded to by him. They were made in England before A.D. 1200, and the manufacture became extensive in the reign of Edward III., 1331. They were then called Kendal cloth and Halifax cloth.—E. B. See *article* WOOL. Blankets were first made in England about A.D. 1340.—CAMDEN. No cloth but of Wales or Ireland to be imported into England, 1463. The art of dyeing brought into England, 1608.—*See article* DYEING. Medleys, or mixed broadcloth, first made, 1614. Manufacture of fine cloth begun at Sedan, in France, under the patronage of Cardinal Mazarine, 1646. British and Irish woolens prohibited in France, 1677. All persons obliged to be buried in woolen, or the persons directing the burial otherwise to forfeit £5, 29 Charles II., 1678. The manufacture of cloth greatly improved in England by Flemish settlers, 1688. Injudiciously restrained in Ireland, 11 William III., 1698. The exportation from Ireland wholly prohibited, except to certain ports of England, 1701. English manufacture encouraged by 10 Anne, 1712, and 2 George I., 1715. Greater in

Yorkshire in 1785, than in all England at the Revolution.—CHALMERS.

Woolen Goods, Varieties of.—The variety of goods which come under the designation of woolen manufactures is obviously increasing every year. "Broadcloth" and "narrow cloth," "Clarendons" and "Petershams," "Cashmeres," "Cashmerettes," "kerseys," "tweeds," "tartans," "linsey-woolseys," "angolas," "vicuñas," "Venetians," "llamas," "Sardinians," "Himalayas," "moleskins," "doeskins," "beavers," "trowserings," "vestings," "coatings"—there is really no end to the names; for the manufacturers, not content with having distinguishing names for particular materials and particular modes of manufacture, conjure up new names, on any or no grounds, for the sake of novelty. Many of the names, however, might be made significant of really curious novelties in the manufacture. Thus there is a new "bis-unique cloth," of double thickness, the two surfaces having different patterns, so that the wearer may have either side outward at his pleasure. There is a cloth wholly made from beaver fur—soft, light, and warm—for winter garments. There is, as a third example, the comically-named Irish "rumswizzle," a very excellent brownish frieze made of undyed foreign wool.

Shoddy Trade.—The greater number, perhaps, of our readers may never have heard of that branch of the woolen manufacture called the *shoddy trade*, which has grown up of late years, and is now of very considerable value and importance. It is principally carried on at Dewsbury, in England, in the centre of the clothing district. Shoddy cloth is fabricated either wholly or partly of old wool; and instead of being neglected, or used only as manure, old woolen rags are now every where carefully collected, and conveyed to Dewsbury. After being subjected to various processes, they are torn to pieces by the aid of powerful machinery, and reduced to their original state of wool; and this wool, being respun, either with or without an admixture of fresh wool, is again made into cloth! Formerly, shoddy cloth was used only for padding and such like purposes; but now blankets, flushings, druggets, carpets, and table-covers, cloth for pilot and Petersham great-coats, etc., are either wholly or partly made of shoddy. The clothing of the army, and the greater part of that of the navy, consists principally of the same material, which, in fact, is occasionally worn by every body. Large quantities of shoddy cloth are exported. Great improvements have been effected of late years, not only in the fabric of the cloth, but also in the dyes: this is especially seen in the cloth for soldiers' uniforms, which is no longer of a brick-dust color, but makes a much nearer approach to scarlet. The beautiful woolen table-covers are made wholly of shoddy, being printed by *aqua fortis* from designs drawn in London and Manchester, and cut on holly and other blocks on the spot. The analogy between this manufacture and that of paper is so striking that it must force itself on the attention of every one, the vilest and most worthless materials being converted in both into the most beautiful and useful fabrics. The shoddy trade is, in fact, one of the greatest triumphs of art and civilization. Though of comparatively recent origin, it is rapidly extending itself. It is most active in summer, and is much more languid in winter.

United States.—The development and growth of our woolen manufactures depends now entirely upon our tariff. To enable our mills to compete with foreign mills, we must have a tariff to counteract the hostile legislation of those foreign countries which overrun our market with their fabrics. When England, France, Prussia, and Austria import wool for their broadcloths, free of duty, the United States must do the same; or these European manufacturers, in whose favor our tax on imported wool operates, will surpass us so largely in our own markets, that we shall be compelled to stop all our broadcloth spindles. This has been the effect of the tariff of 1846 upon our woolen manufactures; and the prospect of relief to be afforded by Mr. Campbell's bill will give life to this decaying branch of our industry.

The relations of the tariff to our woolen manufactures has attracted so much attention of late, that the following table, showing the rate of duty fixed on wool by the various tariffs enacted by Congress since 1789, will be found interesting.

TARIFF DUTIES ON IMPORTED WOOL FROM 1789.

January, 1789, to April, 1816—free.
April, 1816, to May, 1824—15 per cent. ad valorem.
May, 1824, to June, 1825—costing under 10 cents per lb., 15 per cent. ad valorem.
May, 1824, to June, 1825—costing over 10 cents per lb., 20 per cent. ad valorem.
June, 1825, to June, 1826—costing under 10 cents per lb., 15 per cent. ad valorem.
June, 1825, to June, 1826—costing over 10 cents per lb., 25 per cent. ad valorem.
June, 1826, to June, 1828—costing under 10 cents per lb., 15 per cent. ad valorem.
June, 1826, to June, 1828—costing over 10 cents per lb., 30 per cent. ad valorem.
June, 1828, to June, 1829—4 cents per lb. specific, and 40 per cent. ad valorem.
June, 1829, to June, 1830—4 cents per lb. specific, and 45 per cent. ad valorem.
June, 1830, to June, 1832—4 cents per lb. specific, and 50 per cent. ad valorem.
June, 1832, to June, 1842—costing under 8 cents per lb., free.
June, 1832, to June, 1842—costing over 8 cents per lb., 4 cents specific, and 40 per cent. ad valorem.
June, 1842, to July, 1846—costing under 7 cents per lb., 5 per cent. ad valorem.
June, 1842, to July, 1846—costing over 7 cents per lb., 3 cents specific, and 30 per cent. ad valorem.
July, 1846, to March 3, 1857—all wool 30 per cent. ad valorem.
March 3, 1857, wool 24 per cent. Less than 20 cents a pound, at the place of exportation, free.

The fluctuations in this table are remarkable, and, considering their frequency and the extremes to which they run, it is surprising that capital should have been invested in woolen manufactures in this country.

"The statistics upon the production and importation of wool, and manufactures of wool, have been prepared with care, in order to place the questions connected with the production and importation of wool and manufactures of wool, involved in the proposition to admit wool as a raw material free of duty, fully and fairly before Congress. It will be seen that in 1840, according to the census of that year, we manufactured woolen goods to the value of $20,696,999; and that in addition we imported manufactures of wool to the value of $8,652,785; making our consumption of the manufactures of wool $29,349,784, and the consumption of $1 71 94-100 for each person then in the United States. The census of 1840 does not give the number of factories devoted to, nor the capital employed in the manufacture of wool. The census of 1850 shows there were 1559 factories in the United States, with 28,118,650 of capital devoted to the manufacture of wool, with the particular States in which the factories were situated; also that the manufactures of wool amounted to $13,207,545, and we imported manufactures of wool to the value of $16,976,575, making our consumption of manufactures of wool $60,184,120, and the consumption of $2 59½ for each person in the United States. If we estimate the increased value of our woolen manufactures since 1850 at the ratio of the increase between 1840 and 1850, it gives our manufactures of wool at $56,406,786, for the year 1855; and we find the value of our importations of manufactures of wool for 1855 to be $23,297,384, making our consumption $79,701,170, and $2 93 18-100 as the consumption of each person then in the United States. These tables also show, at the periods of 1840, 1850, and 1855, the value of the wool produced in the United States, and also the value of wool imported into the United States at the same periods, less the exports of wool. They also show the value of the wool, in the imported manufactures of wool, at each of those periods, estimating the value of

the wool at one-third of the value of the imports, and exhibit the value of the wool consumed by each person in 1840 at 71 26-100 cents; in 1850 at 75 18-100 cents; and in 1855 at 92 19-100 cents; and that we consumed in 1840 $3,704,092 more than we produced; in 1850, $7,817,771; and in 1855, $9,078,690. There are no data from which to exhibit the number of factories, nor the amount of capital employed in the manufacture of wool, in 1855, nor the character of the goods manufactured; but it is represented that all our factories heretofore engaged in the manufacture of broadcloths and the finer woolen fabrics have been forced to abandon that description of manufacture, and yield our markets for those articles to the foreign manufacturer. These tables show that in 1855 we consumed $23,297,384 of the manufactures of wool more than we manufactured, and that we consumed $9,678,690 of wool more than we produced, estimating the wool in the manufactured article at one-third of the value. Now we import $1,940,697 of wool for our manufacturers, who pay a duty of 30 per cent. upon it; and we import $23,297,384 of the manufactures of wool, on which we pay different rates of duty, viz.: 30 per cent. on part, 25 per cent. on part, and 20 per cent. on part; while with wool free of duty in other manufacturing countries, the duty operates a discrimination against the labor and capital of our own people. This is peculiarly the case as to the coarser fabrics, which we admit at less duty than we impose upon wool.

"The climate of the United States is such that manufactures of wool are used winter and summer in some of the States, and in the winter months in all, and the finer fabrics are used in all. It is an article, for clothing and other uses, that our climate and our habits do not permit us to dispense with, and which our people can and will manufacture for themselves, if our tariff laws are arranged so as not to discriminate against them, and in favor of other manufacturing nations.

"When we first imposed a tax on foreign wool, Great Britain and other manufacturing nations taxed it also, and as high as we taxed it. We discriminated in the tax upon the manufactures of wool, imposing a higher tax upon the finer fabrics; whereupon Great Britain and other manufacturing nations repealed their tax on wool, and secured to their manufacturers the advantage of obtaining the raw material free of duty. This advantage over us they will continue to enjoy as long as our tax is continued. The reasons why they admit wool free are to be found in the fact that they manufacture more than they produce, and it is necessary they should be able to sell cheap, in order to enter advantageously the markets of the world, and it may be also to secure the market of the United States, to the suppression of manufacturing in this country. We also manufacture more wool than we produce, and consume more manufactures of wool than we manufacture, and continue our tax on wool. The duty on wool was imposed to promote its production in the United States, and was expected to enhance the price. It has failed to secure the object for which it was imposed. The production has not kept pace with our population and consumption of woolen manufactures, and although the prices have been fair, they have not been such as to make wool-growing as profitable a pursuit as many others in the country. In the trial of ten years under the tariff of 1846, there is no greater production of wool, in proportion to the population, than there was prior to that time. It is said we do not produce the inferior-priced wools, costing twenty cents per pound or less; nor the higher-priced wools, costing fifty cents or more to the pound, and that it is the lower and higher priced wools that we import for our manufactures, and that the duty has no effect, and does not enhance the price of the wool that we produce; in consequence of which we are undersold in our own markets, in both the finer and coarser fabrics; and that the repeal of the tariff on low and the higher priced wools would not affect the price of the wool we produce, and would enable our manufacturers to use more of our wool, by judicious mixture with foreign wool, and give them a fairer competition for the home market, and induce the manufacture of the finer fabrics in this country. There would be difficulty in the execution of such a tariff, because it would be the interest of the importer to put the foreign value of his wool above the fifty or below the twenty cents to obtain free entry. It is believed these causes would render the tax uncertain and unpopular, and make free trade in wool more desirable and more beneficial to the wool-grower as well as the manufacturer. In Great Britain the tax on the foreign wool, when it was as much as sixpence a pound, did not enhance the price to the English wool-grower, although it had been imposed and continued, as well to encourage the growth of wool at home as for revenue. The English prices-current and statistics show that the price of wool ranged higher the very first year after the duty was repealed than it had for years before, and has continued to range higher ever since. It is confidently believed such would be the case in this country if the duty on the importation of wool was repealed, thereby giving our manufacturers wool on the same terms the foreign manufacturers obtain theirs, viz.: by purchase in the open markets of the world, and that they would be encouraged to increase and extend their business in order to enjoy the benefit of the home market for their goods, the consequences of which would be a constant and greater home demand, at higher and better prices.

"The ratio at which our population is increasing will render necessary a continued increase in the manufactures of wool required for consumption. The importance of a home supply of this useful and indispensable article of clothing calls for the most careful investigation of the effects of our laws, and a prompt remedy by their repeal wherever they shall be found prejudicial to a constant and cheap supply from the capital and labor of our own people."—*U. S. Treasury Report*, December, 1856.

IMPORTS OF WOOLENS INTO THE UNITED STATES FOR THE YEARS ENDING JUNE 30, 1853, 1854, 1855.

Whence imported.	Cloths and Cassimeres.	Merino Shawls	Blankets.	Hosiery.	Worsted Goods.	Yarn.	Woolen Embroidaries	Manufactures not specified.	Flannels.	Carpets.
1853.	$	$	$	$	$	$	$	$	$	$
England	5,741,229	785,304	1,383,753	872,842	7,266,348	147,187	19,132	229,178	85,272	1,296,932
Hanse Towns	2,447,767	130,872	404	54,360	509,708	123,056	7,584	22,004	10,750	1,195
France	2,233,472	229,187	52,472	30,220	1,839,476	1,394	9,579	25,008	5,160	13,467
Other places	629,442	266,219	13,964	90,264	180,855	9,259	780	50,717	5,199	26,888
Total	11,071,906	1,402,582	1,455,659	1,047,686	9,796,387	280,896	28,925	1,026,907	106,381	1,338,482
1854.										
England	7,999,690	723,228	1,697,977	1,072,919	7,380,607	233,493	23,239	1,182,375	102,906	2,353,344
Bremen	3,526,327	94,419	2,046	93,382	540,592	47,857	1,621	64,937	9,213	528
France	1,771,432	525,132	82,528	36,450	2,211,944	2,936	2,507	57,297	19,733	15,657
Other places	762,134	333,293	8,039	79,106	242,826	75,055	7,899	83,455	11,227	7,334
Total	13,159,583	1,476,072	1,790,590	1,272,857	10,375,879	359,341	35,266	1,388,064	143,079	2,381,863
1855.										
England	4,547,075	963,161	1,144,683	791,982	5,916,361	98,190	....	212,915	111,038	1,567,140
Bremen	1,991,526	174,624	3,126	124,393	471,284	18,966	....	14,851	11,514	579
France	1,650,113	563,358	20,982	43,037	1,993,971	2,161	....	15,277	8,761	18,435
Other places	956,147	538,961	1,851	124,545	268,940	41,282	....	31,471	5,478	28,010
Total	9,144,861	2,240,104	1,170,642	1,083,957	8,590,506	160,599	....	274,514	134,811	1,604,155

EXPORTS OF WOOL AND MANUFACTURES OF WOOL OF FOREIGN PRODUCTION FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Angora, Thibet, and other Goats' Hair or Mohair.	Wool.	Piece Goods, including Wool and Cotton.	Shawls of Wool, Wool and Cotton, Silk and Silk and Cotton.	Blankets.	Hosiery and Articles in Frames.	Piece Goods, including Cotton and Worsted.	Woolen and Worsted Yarn.	Manufactures of, not specified.	Flannels.	Carpeting.
Asiatic Russia	....	....	$1,100	....	$701	....	....	....	....	....	$219
Russian Possess. in N. Am.	....	....	1,019	$373	....	....	....	....	....	....	....
Sweden and Norway	....	$360	....	....	....	....	....	....	....	....	....
Danish West Indies	....	....	....	687	....	....	....	....	....	....	....
Hamburg	....	334	607	....	....	....	....	....	....	....	....
Bremen	....	....	800	....	....	....	....	....	....	....	....
England	....	926	791	9,975	....	....	....	....	....	....	....
Scotland	....	....	....	1,237	....	....	....	....	....	....	....
Canada	$283	....	9,948	....	722	$43	$3,606	....	$280,488	$82	280
Other British N. Am. Poss.	....	....	8,979	3,401	....	....	2,589	....	5,094	690	....
British Honduras	....	....	....	405	....	....	....	....	....	....	....
British Australia	....	....	4,092	....	....	....	....	....	2,012	....	....
France on the Atlantic	....	....	1,728	85	....	....	1,968	....	....	....	....
French North Amer. Poss.	....	....	462	....	....	....	....	....	....	....	....
Cuba	....	....	....	22,075	700	493	....	....	....	....	....
Porto Rico	....	....	....	488	....	....	....	....	....	....	....
Turkey in Asia	....	....	....	1,735	....	....	....	....	....	....	....
Ports in Africa	....	....	....	455	....	....	....	....	4,753	....	....
Hayti	....	....	....	....	1885	....	10,825	....	....	....	....
Mexico	....	....	4,602	10,538	2385	....	701	....	84	....	....
Central Republic	....	....	....	1,732	....	....	....	....	....	....	....
New Granada	....	....	1,025	3,865	372	170	....	....	....	....	....
Venezuela	....	....	....	1,937	....	....	....	....	....	....	....
Chili	....	....	792	2,225	....	....	....	....	....	....	....
Peru	....	....	420	472	....	....	....	....	....	....	....
Sandwich Islands	....	....	10,448	688	373	1478	1,873	....	1,475	534	....
China	....	....	217	....	....	....	....	$649	....	....	....
Total, 1856-'57	$283	$920	$47,145	$63,063	$6638	$2184	$21,062	$649	$293,912	$1306	$499
From warehouse	....	$226	$36,037	$35,109	$3700	$536	$17,697	....	$184 598	$1224	$219
Not from warehouse	$283	694	11,108	27,954	2938	1648	3,355	$649	109,314	82	280

IMPORTS OF WOOL AND MANUFACTURES OF WOOL INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whence imported.	Angora, Thibet, and other Goats' Hair or Mohair.	Wool.	Piece Goods, including Wool and Cotton.	Shawls of Wool, Wool and Cotton, Silk, and Silk and Cotton.	Blankets.	Hosiery and Articles made on Frames.	Piece Goods, including Cotton and Worsted.	Woolen and Worsted Yarn.	Manufactures not specified.	Flannels.	Carpets.
Russia on the Baltic and North Seas	...	....	....	....	....	....	....	....	....	....	1,612
Russia on Black Sea	...	43,626	....	....	....	....	....	....	....	....	....
Danish West Indies	...	3,308	....	....	....	....	....	....	....	....	....
Hamburg	...	151	975,271	63,884	160	37,775	225,595	85,527	8,393	5,803	223
Bremen	39	520	1,688,381	154,503	286	199,169	790,820	36,211	27,522	9,807	500
Holland	...	....	11,219	2,686	8	3,993	1,771	228	415	....	225
Dutch West Indies	...	1,960	....	....	....	....	....	....	....	....	....
Dutch Guiana	...	2 8	....	....	....	....	....	....	....	....	....
Belgium	...	....	909,331	12,929	....	45,651	18,445	838	3,194	52	1,104
England	498	104,756	5,771,932	732,440	1,592,383	1,372,722	7,156,118	68,177	694,116	60,898	2,135,691
Scotland	...	....	42,439	332,088	542	11,414	133,602	....	5,073	317	19,830
Ireland	...	....	....	....	....	588	....	....	....	....	....
Gibraltar	...	8,670	....	....	....	....	....	....	....	....	667
Malta	...	62,313	....	....	....	....	....	....	....	....	....
Canada	...	5	1,402	163	217	22	345	3	2,181	72	195
Other Brit. N. A. Pos.	...	....	42	....	....	1,790	238	14	71	....	....
British West Indies	...	643	....	....	....	36	....	....	....	....	108
British Honduras	...	....	....	762	....	....	....	....	....	....	....
British Guiana	...	6.51	....	....	....	....	....	....	....	....	....
British Pos. in Africa	...	183,420	....	....	....	....	....	....	17	....	....
Other ports in Africa	...	....	....	34	....	....	....	....	....	....	....
British Australia	...	456	41	....	....	....	....	....	....	....	....
British East Indies	...	8,665	....	18,896	....	....	....	..	182	....	88
France on the Atl'tic	98	864	1,659,470	833,973	31,458	66,772	3,022,823	....	72,311	22,760	20,495
France on the Med'n.	...	165,816	....	....	5,868	....	....	....	....	....	....
Spain on the Med'n.	...	1,040	61	....	....	....	....	....	....	....	....
Philippine Islands	...	....	....	378	....	....	....	....	....	....	....
Cuba	...	....	....	2,452	....	....	....	....	....	....	....
Azores	...	513	....	....	....	....	240	....	....	....	....
Tuscany	...	30,477	313	2	....	....	....	....	....	....	22
Austria	...	560	....	107	....	883	....	....	....	....	....
Turkey in Europe	...	5,135	....	....	....	....	....	....	....	....	....
Turkey in Asia	...	395,332	....	220	....	....	....	....	....	....	451
Mexico	...	3,054	....	....	....	....	....	....	....	....	....
Central Republic	...	899	....	....	....	....	....	....	....	....	....
New Granada	...	312	48,380	5,111	51	8	5,738	90	....	....	....
Venezuela	...	118	....	....	....	....	....	....	....	....	....
Brazil	...	14,455	....	....	....	....	....	....	....	....	....
Uruguay	...	10,102	....	....	....	....	....	....	....	....	....
Argentine Republic	...	694,736	....	....	....	....	....	....	....	....	....
Chili	...	364,610	878	....	....	....	....	....	....	....	....
Sandwich Islands	...	1,061	408	....	....	....	....	128	....	....	....
China	...	12,080	5	85,294	....	....	15	....	....	....	79
Total, 1856-'57	575	2,125,744	11,909,606	2 246,351	1,630,973	1,740,829	11,565,669	192,147	813,47.0	105,779	2,181,216

NUMBER OF ESTABLISHMENTS, CAPITAL EMPLOYED, RAW MATERIAL USED, HANDS EMPLOYED, AND AVERAGE WAGES PER MONTH, IN THE MANUFACTURE OF WOOL IN THE UNITED STATES, 1850.

States.	Number of Establishments in operation.	Capital invested.	Pounds of Wool used.	Tons of Coal.	Value of all raw Material.	Number of Hands employed.		Average Wages per Month.		Value of entire Products.
						Males.	Females.	Males.	Females.	
Maine	56	$467,600	1,488,434	....	$495,940	310	314	$22 57	$11 77	$753,300
New Hampshire	61	2,437,700	3,604,103	3,000	1,267,329	926	1,201	22 86	14 53	2,127,745
Vermont	72	883,300	2,828,100	....	830 684	683	710	24 46	11 84	1,570,101
Massachusetts	119	9,089,842	22,220,052	15,400	8,071,671	6,167	4,963	22 95	14 22	12,770,565
Rhode Island	45	1,018,000	4,103,370	2,082	1,468,900	987	771	20 70	15 18	2,361,825
Connecticut	149	3,773,953	9,414,100	7,912	3,325,709	2,907	2,581	24 12	12 86	6,465,216
New York	240	4,159,370	12,538,785	....	5,838,292	4,202	2,412	19 97	11 76	7,080,894
New Jersey	41	494,274	1,510,289	1,589	648,867	411	487	25 22	8 60	1,164,440
Pennsylvania	389	3,005,064	7,560,379	10,777	3,282,718	3,490	2,236	19 28	10 41	5,821,866
Delaware	8	148,500	393,000	45	204,172	122	18	18 79	17 33	251,019
Maryland	33	244,000	430,300	100	165,568	262	109	18 50	11 89	295,140
Virginia	121	302,840	1,554,110	357	488,800	478	190	18 17	9 01	841,013
North Carolina	1	18,000	30,000	....	18,950	15	15	18 00	7 00	23,750
Georgia	3	68,000	153,818	....	80,302	40	38	27 47	14 10	88,750
Texas	1	3,000	50,000	....	10,000	4	4	20 00	20 00	15,000
Tennessee	4	10,000	6,200	....	1,875	15	2	17 05	5 00	6,310
Kentucky	25	249,826	673,900	....	205,287	256	62	16 30	11 11	318,319
Ohio	130	870,220	1,657,726	2,110	578,423	908	298	20 14	10 90	1,111,027
Michigan	15	94,000	162,250	....	43,402	78	51	21 65	11 47	90,242
Indiana	33	171,545	413 350	90	120,486	180	57	21 81	11 05	205,802
Illinois	16	154,500	396,964	987	115,367	124	54	22 00	12 52	206,572
Missouri	1	20,000	80,000	1,071	16,000	15	10	32 00	6 50	56,000
Iowa	1	10,000	14,500	....	3,500	7	....	11 14	....	13,000
Wisconsin	9	31,225	134,200	....	32,630	25	....	22 43	....	87,992
District of Columbia	1	700	5,000	....	1,630	2	....	30 00	....	2,400
Total, 1850	1559	$28,118,650	70,862,829	46,370	$25,755,983	22,618	16,574	....	....	$43,207,555

None in South Carolina, Florida, Alabama, Mississippi, Louisiana, Arkansas, or California.

EXPORTS OF WOOL OF DOMESTIC PRODUCTION FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Pounds.	Value.
England	1,002	$3,517
Canada	42,800	12,490
Other British N. A. Possessions	9,400	3,000
Total	53,202	$19,007

Wreck, in *Navigation*, is usually understood to mean any ship or goods driven ashore, or found floating at sea in a deserted or unmanageable condition. But in the legal sense of the word in England, *wreck* must have come to land; when at sea, it is distinguished by the barbarous appellations of *flotsam*, *jetsam*, and *lagan*. In nothing, perhaps, has the beneficial influence of the advance of society in civilization been more apparent than in the regulations with respect to the persons and property of shipwrecked individuals. In most rude and uncivilized countries their treatment has been cruel in the extreme. Among the early Greeks and Romans strangers and enemies were regarded in the same point of view.—*Hostis apud antiquos, peregrinus dicebatur.—Pomp. Festus*; see also CICERO *de Offic.* Where such inhospitable sentiments prevailed, the conduct observed toward those that were shipwrecked could not be otherwise than barbarous; and in fact they were, in most instances, either put to death or sold as slaves. But as law and good order grew up, and commerce and navigation were extended, those who escaped from the perils of the sea were treated in a way less repugnant to the dictates of humanity; and at length the Roman law made it a capital offense to destroy persons shipwrecked, or to prevent their saving the ship; and the stealing even of a plank from a vessel shipwrecked or in distress made the party liable to answer for the whole ship and cargo.—*Pand.* 47, 9, 3.

During the gloomy period which followed the subversion of the Roman empire, and the establishment of the Northern nations in the southern parts of Europe, the ancient barbarous practices with respect to shipwreck were every where renewed. Those who survived were in most countries reduced to servitude, and their goods were every where confiscated for the use of the lord on whose manor they had been thrown.—ROBERTSON's *Charles V.* But nothing, perhaps, can so strongly evince the prevalence and nature of the enormities as the efforts that were made, as soon as governments began to acquire authority, for their suppression. The regulations as to shipwreck in the Laws of Oleron are, in this respect, most remarkable. The 35th and 38th articles state, that "pilots, in order to ingratiate themselves with their lords, did, like faithless and treacherous villains, sometimes willingly run the ship upon the rocks," etc.; for which offense they are held to be accursed and excommunicated, and punished as thieves and robbers. The fate of the lord is still more severe. "He is to be apprehended, his goods confiscated and sold, and himself fastened to a post or stake in the midst of his own mansion-house, which being fired at the four corners, all shall be burned together; the walls thereof be demolished; the stones pulled down; and the site converted into a market-place, for the sale only of hogs and swine, to all posterity." The 31st article recites, that when a vessel was lost by running on shore, and the mariners had landed, they often, instead of meeting with help, "were attacked by people more barbarous, cruel, and inhuman, than mad dogs; who, to gain their moneys, apparel, and other goods, did sometimes murder and destroy these poor distressed seamen. In this case, the lord of the country is to execute justice, by punishing them in their persons and their estates; and is commanded to plunge them in the sea till they be half dead, and then to have them drawn forth out of the sea and stoned to death." Such were the dreadful severities by which it was attempted to put a stop to the crimes against which they were directed. The violence of the remedy shows better than any thing else how inveterate the disease had become.

But the fact that divines did not scruple to prostitute religious worship by praying that the adjacent coasts might be enriched with shipwrecks, affords, perhaps, the most striking proof of the barbarism of the times referred to. And incredible as it may seem, this practice was continued down to a comparatively recent epoch. "Cependant il y a encore en Allemagne des pays où la coutume de confisquer les biens naufragés n'est point encore abolie. Il y a même des endroits où les ministres predicateurs ne font pas difficulté de prier Dieu en chaire qu'il se fasse bien des naufrages sur leurs côtes. Et ces prieres, Thomasius a entrepris sérieusement de les justifier; mais par des raisons si singulieres, qu'elles ne valoient pas la peine que Barbeyrac a prisé de les refuter."—VALIN, *Commentaire sur l'Ordonnance de* 1681, ii. 586. *See also* PUFFENDORFF, *Droit de la Nature et des Gens*, par *Barbeyrac*, ii. 706.

The law of England, like that of other modern countries, adjudged wrecks to belong to the king. But the rigor and injustice of this law was modified so early as

the reign of Henry I., when it was ruled, that if any person escaped alive out of the ship, it should be no wreck. And after various modifications, it was decided, in the reign of Henry III., that if goods were cast on shore, having any marks by which they could be identified, they were to revert to the owners, if claimed any time within a year and a day. By the statute 27 Edw. III., c. 13, if a ship be lost and the goodr come to land, they are to be delivered to the merchants, paying only a reasonable reward or SALVAGE (which see) to those who saved or preserved them. But these ancient statutes, owing to the confusion and disorder of the t mes, were very ill enforced; and the disgraceful practices previously alluded to continued to the middle of last century. A statute of Anne (12 Ann. st. 2, c. 18), confirmed by the 4 Geo. I., c. 12, in order to put a stop to the atrocities in question, orders all head officers and others of the towns near the sea, upon application made to them, to summon as many hands as are necessary, and send them to the relief of any ship in distress, on forfeiture of £100; and in case of any assistance given, salvage is to be assessed by three justices, and paid by the owners. Persons secreting any goods cast ashore are to forfeit treble their value; and if they willfully do any act by which the ship is lost or destroyed, they are guilty of felony without benefit of clergy. But even this statute seems not to have been sufficient to accomplish the end in view; and in 1753, a new statute (26 Geo. II., c. 19) was enacted, the preamble of which is as follows: "Whereas, notwithstanding the good and salutary laws now in being against plundering and destroying vessels in distress, and against taking away shipwrecked, lost, or stranded goods, many wicked enormities have been committed, to the disgrace of the nation, and the grievous damage of merchants and mariners of our own and other countries, be it," etc.; and it is then enacted, that the preventing of the escape of any person endeavoring to save his life, or wounding him with intent to de roy him, or putting out false lights in order to bring any vessel into danger, shall be capital felony. By the same statute, the pilfering of any goods cast ashore is made petty larceny.

We regret, however, to have to state that the plunder of shipwrecked property is still by no means uncommon on the British coasts. The committee on shipwrecks in 1843 state, that "there is on many parts of the coast a want of that moral principle which should inculcate a just regard for the rights of such property. It is looked upon as a chance gift, which every one has a right to scramble for as he can, notwithstanding the laws which have been passed, from the earliest period, to prevent or punish such depredations. The plunder of shipwrecked property on the coasts has been carried on to an enormous extent, and this seems to have arisen from there having been no persons on the spot, when a wreck had taken place, to look after the property." The committee state that the establishment of the coast-guard has done much to repress these abuses. The latter, however, can not legally interfere, except when the castaway articles are subject to customs duties; and the committee suggest that all abandoned property should be vested in the government in trust for those to whom it may belong, as is done in France and Holland.—*Report of Committee* of 1843, p. viii.

The old English doctrine of wrecks was founded upon the ancient laws of Europe, confiscating stolen goods on conviction of the thief, without paying any regard to the right of the real owner.

"By the common law, as it was laid down by Sir William Blackstone, goods wrecked were adjudged to belong to the king, and the property was lost to the owner. This he admits was not consonant to reason and humanity; and the rigor of the common law was softened by the statute of West. 1, 3 Edw. I., ch. 4, which declared that if any thing alive escaped the shipwreck, be it man or animal, it was not a legal wreck, and the owner was entitled to reclaim his property within a year and a day. Upon this statute the legal doctrine of wrecks has stood to this day. St. Germain, the author of the *Doctor and Student*, did not seem to think that even the law under this statute stood with conscience, for why should the owner forfeit the shipwrecked goods, though it should happen that no man, dog, or cat (to use the words of the statute), should come alive unto the land out of the ship? The only rational ground of the claim on the part of the crown is, that the true owner can not be ascertained. The imperial edict of the Emperor Constantine was more just than the English statute, for it gave the wrecked goods in every event to the owner; "and this statute is upon just principles, not depending upon the casual escape of an animal." "The statutes of New York, Massachusetts, and other American States, are like the edict of Constantine," "for they declare that nothing that shall be cast by the sea upon the land shall be adjudged a wreck, but the goods shall be kept safely for the space of a year for the true owner, to whom the same is to be delivered on his paying a reasonable salvage; and if the goods be not reclaimed within that time, they shall be sold, and the proceeds accounted for the State."—KENT's *Comm.*, Lect. XXXIV.

The journal of the *Société des Arts*, gives in a late number an analysis of the statistics of the wrecks which occurred upon the coasts and in the seas of the British Isles in the year 1856, as follows:

Years.	Wrecks.	Collisions.	Together.	Lives lost.
1852.....	758	57	1015	820
1853.....	759	73	832	980
1854.....	893	94	987	1340
1855.....	894	247	1141	469
1856.....	837	316	1153	521
Total.....	4341	787	5128	4348

This shows that the number of collisions at sea has regularly increased in a proportion truly frightful; from 57 in 1852, it became 316 in 1856, or five times greater.

For the year 1856, the number of wrecks and collisions is distributed monthly as follows: January, 149; February, 154; March, 96; April, 74; May, 57; June, 32; July, 48; August, 51; September, 98; October, 99; November, 129; December, 166; total, 1153. The tonnage of these vessels amounted to 229,936; the number of men employed to 10,014, of whom 521 perished.

Of the wrecked vessels, 314, or nearly one-third the entire number, were employed solely in the carriage of coals. The coal trade is, then, for England the most dangerous of all that which causes the greatest loss of life, no doubt because the vessels employed for this trade are badly selected, badly commanded, in a very bad condition, and indeed often quite unseaworthy.

Of these wrecks 506 occurred on the east coast, between Dungeness and Pentland Frith; 307 on the west, from Land's End to Greenock; 119 on the south, from Land's End to Dungeness; 155 on the coasts of Ireland; 12 upon the Isle of Scilly; 11 upon the Isle of Lundy; 5 upon the Isle of Man; and 36 upon the Isles of the North, Orkney, etc.

Of the causes which led to these losses there were 148 wrecks from storms; 17 abandoned on account of unseaworthiness; 37 sunk on same account; 10 losses from absence of proper signals; 33 from fogs and currents; 5 from defective compass; 3 from imperfect charts; 6 by error in calculation of the point; 12 by error of estimation; 7 by error of pilot; 3 through absence of pilot; 21 by neglect of soundings; 2 on account of drunkenness; 9 on account of general negligence; 10 by neglecting to heave to; 1 by coming in contact with a foundered vessel; 4 by fire; 4 by capsizing; 7 by causes unknown.

The Duties of Consular Officers.—By the third section of the act of Congress of April 14, 1792, consular officers, in cases where ships or vessels of the United States shall be stranded on the coast of their respective con-

sulates, are required, as far as the laws of the country permit, to take proper measures, as well for saving such ships or vessels, their cargoes, and appurtenances, as for storing and securing the effects and merchandise saved, and for taking an inventory or inventories thereof; and the merchandise and effects saved, with the inventory or inventories, must, after deducting therefrom the expense, be delivered to the owner or owners. But no consular officer is permitted to take possession of any such goods, wares, merchandise, or other property, when the master, owner, or consignee thereof is present, or capable of taking possession of the same. In the execution of the duties prescribed by this part of the act, every consular officer is instructed that all vessels, parts of vessels, and any portion of their cargo, belonging to citizens of the United States, saved, and brought into the consular jurisdiction after being wrecked, or in consequence of any disaster at sea, are to be proceeded with in the same manner as if the vessel had stranded within the consular jurisdiction; and if salvage be claimed and allowed by a competent tribunal, the remainder of the effects, or the proceeds thereof, if sold, shall be disposed of in the same manner as is directed in the twenty-first chapter of these instructions respecting the estates of persons dying intestate; provided, in the case of salvage, that the court deciding the same will permit the consular officer to receive the effects and remainder of the property after the salvage is paid. In some countries (as in Sweden) chartered companies have the privilege of taking possession of all property wrecked; in others it may be vested in particular magistrates or officers. In such cases the consular officer is not to interfere with the legal function of the proper officer, but he may ask leave, as the representative of the absent master or owner, or as his official adviser if he be present, to assist at the taking of the inventory, the sale, and all other proceedings in relation to the property. It is his duty to protect the interest of the owner, and, if his reasonable requests are not complied with, to take the necessary evidence of the facts in the case, and transmit it to the Department of State.

When any American vessel is wrecked within his jurisdiction, the consular officer is to give immediate notice to the Department of State, naming the vessel and her owners or master. and giving in detail as many of the circumstances attending the loss of the property as may be known at the time. When there is no impediment from the laws of the country, all proceedings in relation to property wrecked are to be the same as those prescribed in the case of property of intestates, and so also with regard to the taking possession and disposing of whatever effects, whether wrecked, abandoned, or otherwise, unrepresented within a consulate, belonging to any citizen of the United States. He will promptly render such assistance as may be in his power to his shipwrecked countrymen, and institute, whenever it is practicable, energetic proceedings for the protection of their property; but this instruction gives no authority to incur any expense therefor in the expectation of its being defrayed by the Department of State, the appropriation for the relief and protection of American seamen in foreign countries which is made by Congress not being applicable to such purposes. Whenever it is necessary for the safety of the property, the consular officer will apply to the local authorities for assistance.

Wreck of an American Vessel.—No parts of an American vessel, nor any of her equipments, wrecked either in our own or foreign waters, are to be regarded in legal contemplation as "goods, wares, or merchandise," when returned to the person or persons owning the vessel at the time of the wreck, and on proper proof of identification. If, however, they have been subjects of purchase and sale, they become "merchandise," within the meaning of the law, and, as such, become liable to duty on importation, according to their classification under the tariff, and value determined by appraisement.

The parts or equipments of a foreign vessel wrecked in waters not of the United States, and brought into our ports, must be regarded, on importation into the United States, as merchandise, and liable to duty.

In the case of an American vessel bound on a coasting voyage from Buffalo to Detroit, and forced by stress of weather on the Canadian shore, where she was wrecked, it was decided by the Department that the merchandise recovered from the wreck was entitled to free entry, on being returned to the United States, on satisfactory proof that the articles of foreign origin composing her cargo had once paid duty in the United States, and that she was bound in good faith on a coasting voyage, with no intention of touching at a foreign port of destination.

The tackle, apparel, furniture, and ship stores of a foreign vessel wrecked on the coast of the United States, on being recovered and brought into the ports of the United States, to be admitted to free entry, not being considered as goods, wares, or merchandise subject to duty, within the meaning of the law.

Number of Shipwrecks.—The loss of property by shipwreck is very great. It appears from an examination of *Lloyd's List* from 1793 to 1829, that the losses in the British mercantile navy only amounted, at an average of that period, to about 557 vessels a year, of the aggregate burden of about 66,000 tons, or to above 1-40th part of its entire amount in ships and tonnage. The following account of the casualties of British shipping in 1829 is taken from *Lloyd's List:*

On foreign Voyages.—157 wrecked; 284 driven on shore, of which 224 are known to have been got off, and probably more; 21 foundered or sunk; 1 run down; 35 abandoned at sea, 8 of them afterward carried into port; 12 condemned as unseaworthy; 6 upset, 1 of them righted; 27 missing, one of them a packet, no doubt foundered. *Coasters and Colliers.*—100 wrecked; 297 driven on shore, of which 121 known to have been got off, and probably more; 67 foundered or sunk, 4 of them raised; 6 run down; 13 abandoned, 5 of them afterward carried in; 3 upset, 2 of them righted; 16 missing, no doubt foundered. During the year, 4 steam vessels were wrecked; 4 driven on shore, but got off; and 2 sunk. It seemed, from the returns given in the Report of the Commons' Committee of 1843 on Shipwrecks, that these casualties were becoming less frequent. At all events, it appeared that at an average of the three years ending with 1835, 610 ships were annually lost, and that notwithstanding the increase of shipping in the interval, at an average of 1841 and 1842, the annual loss amounted to only 611 ships; the average burden of the lost ships being in both cases, as near as can be ascertained, 210 tons. Hence, if we estimate the value of the ships and cargoes at £20 a ton, the loss of property in 1841 and 1842, from shipwreck only, will have been £2,566,200 a year! The loss of life is not exactly known, but it may be taken at from 1000 to 1500 individuals a year. The increased employment of steamships, the multiplication of lights, and the improvement of harbors, all tend to diminish the number of casualties; and yet they continue to be extremely numerous. In 1852, for example, when the mercantile navy of the United Kingdom (except the colonies) comprised 26,146 ships, there were 1115 wrecks. Of these 533 were total losses, and 582 were partial but heavy losses, the ships being obliged to discharge; 33 of the former, and 24 of the latter, were occasioned by collisions. The loss of lives was estimated at 920. These heavy losses might be diminished by building better and stronger ships. No doubt, however, the carelessness, ignorance, and incapacity of the masters is the great source of loss; and nothing, certainly, will do so much to obviate this as the plan now adopted of making the obtaining of a certificate of fitness, after undergoing an examination by a public board,

indispensable to ar.e any individual to be appointed to the command of a ship. During the war with France, 32 ships of the line went to the bottom, besides 7 fifty-gun ships, 86 frigates, and a vast number of smaller vessels. And the losses sustained by the navies of France, Spain, Holland, Denmark, etc., must have very greatly exceeded those of ours. Hence, as Mr. Lyell has observed, it is probable that a greater number of monuments of the skill and industry of man will, in the course of ages, be collected together in the bed of the ocean, than will be seen at one time on the surface of the continent.—*Principles of Geology.*

Writing. Pictures were undoubtedly the first essay toward writing. The most ancient remains of writing which have been transmitted to us are upon hard substances, such as stones and metals, used by the ancients for edicts, and matters of public notoriety. Athotes, or Hermes, is said to have written a history of the Egyptians, and to have been the author of hieroglyphics, 2112 B.C.—USHER. Writing is said to have been taught to the Latins by Europa, daughter of Agenor, King of Phœnicia, 1494 B.C.—THUCYDIDES. Cadmus, the founder of Cadmea, 1493 B.C., brought the Phœnician letters into Greece.—VOSSIUS. The commandments were written on two tables of stone, 1491 B.C.—USHER. The Greeks and Romans used waxed table-books, and continued the use of them long after papyrus was known.—*See* PAPYRUS, PARCHMENT, PAPER. "I would check the petty vanity of those who slight good penmanship, as below the notice of a scholar, by reminding them that Mr. Fox was distinguished by the clearness and firmness, Mr. Professor Porson by the correctness and elegance, and Sir William Jones by the ease and beauty, of the characters they respectively employed."—DR. PARR.

Y.

Yacht, formerly a vessel of state, usually employed to convey princes, embassadors, and other great personages from one kingdom to another. As the principal design of a yacht is to accommodate the passengers, it is usually fitted with a variety of convenient apartments, with suitable furniture. Private pleasure-boats, when sufficiently large for a sea-voyage, are also termed *yachts.* A more modern use of the term is to designate the model boats built for speed and for racing.

Yachts of the present day include both steam and sailing vessels. The yacht *America,* built by Mr. Steers, of New York, and afterward the winner of the prize at the yacht race, 22d August, 1851, at Cowes, in England, gave American ship-wrights a wider reputation than before. Vessels belonging to the British, American, French, and Russian yacht clubs are released from quarantine upon the same conditions as ships of war in British ports.

By acts of Congress, the Secretary of the Treasury is authorized to cause yachts, used and employed exclusively as pleasure vessels, and designed as models of naval architecture, and entitled to be enrolled as American vessels, to be licensed on terms which will authorize them to proceed from port to port of the United States without entering or clearing at the custom-house. Such license shall be in such form as the Secretary of the Treasury may prescribe: Provided, such vessels so enrolled and licensed shall not be allowed to transport merchandise or carry passengers for pay: And provided, further, that the owner of any such vessel, before taking out such license, shall give a bond, in such form and for such amount as the Secretary of the Treasury shall prescribe, conditional that the said vessel shall not engage in any unlawful trade, nor in any way violate the revenue laws of the United States, and shall comply with the laws in all other respects.

All such vessels shall, in all respects except as above, be subject to the laws of the United States, and shall be liable to seizure and forfeiture for any violation of the provisions of this act.

All such licensed yachts shall use a signal, of the form, size, and colors prescribed by the Secretary of the Navy; and the owners thereof shall at all times permit the naval architects in the employ of the United States to examine and copy the models of said yachts.

Yanan, or **Yanaon,** a French settlement within the limits of the British presidency of Madras, situate near the bifurcation of the Godavery (a river rising in the Deccan), and the river or harbor of Coringa, and about nine miles above the embouchure of the former. The mouth of the Godavery is obstructed by sand-banks, which preclude the entrance of ships; but the Coringa River has a deep channel, which admits of vessels of 200 tons burden proceeding as high as Yanan. The French territory dependent on the factory stretches along the banks of the two rivers a distance of six miles, and contains an area of 8147 acres, which in 1836 were classified as follows:

Land under cultivation	acres 4310
Woods and forests	" 862
Barren land	" 215
Public estates	" 2760

The population in 1840 was 6880. Lat. 16° 44′, and long. 82° 16′.

Yard, a long measure used in England, of 3 feet, or 36 inches.—*See* WEIGHTS and MEASURES.

Yarn (Ger. *Garn;* Du. *Garen;* Fr. *Fil;* It. *Filato;* Sp. *Hilo;* Port. *Fio;* Russ. *Prasha*), wool, cotton, flax, etc., spun into thread.—*See articles* COTTON, LINEN, WOOL, etc.

Year, Lunar. This is the space of time which comprehends twelve lunar months, or 354 days, 8 hours, 48 minutes, and was in use among the Chaldeans, Persians, and ancient Jews. Once in every three years was added another lunar month, so as to make the solar and lunar year nearly agree. But though the months were lunar, the year was . . ; that is, the first month was of thirty days, and the second of twenty-nine, and so alternately; and the month added triennially was called the second Adar. The Jews afterward followed the Roman manner of computation.—HAYDN. *See* ALMANAC, CALENDAR.

Yucatan, a peninsular state of Mexico, Central America, mostly between lat. 17° 30′ and 21° 30′ N., and long. 87° and 91° W., having north and west the Gulf of Mexico, east the Caribbean Sea, and landward British Honduras, Guatemala, Chiapas, and Tabasco. Area, 7364 square leagues, or 52,947 square miles. Population in 1850, 680,948. Surface mostly level, fertile in the south, but deficient in regular supplies of water, though so inundated in summer as greatly to impede agriculture, in which, as well as manufactures, it appears to be behind the more northern portions of Mexico. Cattle are numerous. Other chief sources of wealth are maize, cotton, rice, tobacco, pepper, sugar-cane, dye-woods, hides, and soap, mostly exported from Campeachy and Sisal. It is divided into five dependencies and eighteen districts. Principal cities and towns, Merida, the capital, Valladolid, Isamal, Campeachy, and Tekae. It also comprises the remarkable ruins of Uxmal, Chi-chen, Kabah, and Zayi. The *Bay of Yucatan* is a name sometimes given to the sea immediately north of the Bay of Honduras. The *Channel of Yucatan,* between that country and Cuba, is 120 miles across.

Z.

Zaffer, or **Zafre**. After the sulphur, arsenic, and other volatile parts of cobalt have been expelled by calcination, the residuum is sold, mixed or unmixed with fine sand, under the above name. When the residuum is melted with silicious earth and potash, it forms a kind of blue glass, known by the name of smalta (*see* SMALTZ), of great importance in the arts. When smalta is ground very fine, it receives in commerce the name of *powder blue*. Zaffer, like smaltz, is employed in the manufacture of earthen-ware and China, for painting the surface of the pieces a blue color. It suffers no change from the most violent fire. It is also employed to tinge the crystal glasses, made in imitation of opaque and transparent precious stones, of a blue color. It is almost wholly brought from Germany.—*See article* DYES.

Zante, one of the Ionian islands, Mediterranean, eight miles south of Cephalonia. Lat. of north point, 37° 56′ 5″ N., long. 20° 41′ 5″ E. Length 23½ miles, breadth 6 to 11 miles. Population in 1844, 38,929. Surface mountainous in the west, flat and well cultivated in the east. Climate mild, and the island still deserves to be called the flower of the Levant, but is subject to destructive earthquakes. It has numerous olive gardens and vineyards, and produces pomegranates, melons, peaches, and citrous; but its principal export is currants. A small quantity of wine is made, half of which is exported. Olive-oil is inferior in quality. Bitumen is procured from pits in the south, and salt is manufactured chiefly for home use. *Zante*, the capital and only town on the east coast, is the largest in the republic. Population, 20,000. It is well built, and its square has a monument to Sir T. Maitland; its port is protected by a wall, and has a light-house. It is the see of a Greek protopapas and a Roman Catholic bishop. It was nearly destroyed by an earthquake on 30th October, 1841. Of the recent changes in the commercial policy of the Ionian Islands, the following letter from the United States Consul at Zante, under date of October 4, 1855, gives the details:

"*Currants.*—The blight which has ruined the crops of three successive years has also damaged that of this year to such an extent that Zante has produced only 600,000 pounds, and Cephalonia 6,000,000 pounds of fruit, which has been already sold and shipped for England at the enormous price of $100, $120, and $122 per thousand pounds. It is hoped that next year, by applying pulverized sulphur on the fruit before it gets attacked by the blight, the plants will yield an abundant crop. The experiment made this year has proved satisfactory. Cargoes of sulphur daily arrive from Sicily and Lombardy for this purpose.

"*Wine.*—The grape vine is affected to the same extent as the currant. The production of this year is not sufficient for local consumption.

"*Olive-oil.*—The crop of the year 1855 is very abundant. It is calculated thus: Zante, 60,000 barrels; Cephalonia, 6000 barrels; Sta. Maura, 30,000 barrels; Paxo and Ithaca, 30,000 barrels; Corfu, 150,000 barrels: total, 276,000 Ionian barrels for exportation. It is hoped that this enormous production will give vigor to trade and navigation, which has been for so many years in perfect stagnation. Besides the usual affairs for Austria, England, and France, a large quantity of this fluid will probably be exported to the ports of Russia at the Black Sea by Ionian vessels."

The principle upon which duties are levied upon goods imported in the Ionian Islands, is the flag under which these are transported. If by vessels of nations under treaty with these states, duty is from 10 to 14 per cent. less, according to articles, than on those forwarded by vessels of nations which are not under treaty. In this last condition the American flag stands, and this is the principal impediment to a more regular intercourse of business between the Ionian Islands and the United States. To stop this, there is but one way, namely, to put the American flag on an equal footing with the Ionian. To insure this, Ionian vessels must enjoy the same privileges in the United States that American vessels enjoy in the Ionian Islands. The negotiation must take place in London, through the American embassador and the English government; because, according to the Ionian constitution, all diplomatic questions and agreements between these and foreign states must be attended to by the government of the protecting sovereign. This done, every other difficulty in introducing and encouraging American trade in this market can be easily obviated. The articles enumerated in the following table always find a ready market here. The islands provide also the eastern coasts of the kingdom of Greece and Albania with these articles by transit. All these articles, corn, etc., excepted, are imported here from second-hand markets. As regards freight, one example will suffice to prove whether it is worthy the attention of American navigation or not. A vessel of 200 tons chartered for the Black Sea, going in ballast, gets about $3300, 5 per cent. primage, and a gratuity of about $40 and even $100, according to circumstances. Money can be returned to the United States for goods sold here by bills drawn through London at three months date. In order to obtain money on goods shipped for the United States, a credit must be opened in London to value with bills of lading. Legal interest on money, 10 per cent. per annum.

Olive-oil.—All the islands produce this fluid, and export for Russia, England, and Trieste. Its price varies according to demand. The average price is from $8 to $10 per barrel. This is an extensive article of commerce, and one of the principal productions of the islands. It not only affords wealth to the natives of every class, and encourages commerce, but provides also the immense soap factories of the place with the principal material out of which soap is made for consumption and exportation.

Currants.—All remedies, other than sulphur, adopted by proprietors to stop the blight have proved abortive. Sulphur only gave a happy result. Although this is a remedy upon which proprietors can now rely, still they have a great many difficulties to overcome before they see their hopes realized. The first of these is the fixing the epoch or time when the plants and fruit thereof are to be sulphured. This varies according to the quality of the soil, the temperature of the atmosphere, and the difference of climate of the various localities that produce currants. Besides these primitive difficulties, we perceive another, which we consider by far greater. The most part of the proprietors are so badly off, on account of the failure of the crop for four consecutive years, that it is absolutely out of their power to provide sulphur and encounter the expenses required for such an operation. Still, in spite of all these difficulties, it is generally hoped that the crop of this year will be comparatively abundant.

Zanzibar, or **Zanguebar**, an island off the east coast of Africa, lat. of town 6° 27′ 7″ S., long. 39° 33′ E. Length of island about 40 miles, breadth 15 miles. Population upward of 200,000, consisting of Arabs, Sowily Africans, and Negro slaves. Population of the town of Zanzibar about 80,000. The island is the metropolis of the Imaum of Muscat's possessions on the east coast of Africa. The town called Shanganny is situated on a low point of sand, has a wooden fort, and is irregularly built. The situation is very unhealthy for Europeans. A considerable trade is carried on with Arabia, and the ports in the Red Sea. Between the west shore of the island and main land are dangerous shoals, and several islets, the largest of which is Tumbal. Ship-building, stone masonry, carpenters, goldsmiths, silversmiths, coppersmiths, and blacksmiths' work is carried on, besides manufactures of inferior cotton goods and trinkets. The exports are cloves, ivory, sharks' fins, sandal-wood, amber, shells, and cocoa-nuts.

The principal produce of the island is cloves—the annual produce being from 2,000,000 to 3,000,000 lbs., of which the sultan himself produces about 1,000,000 lbs. The value of American trade with Zanzibar may be estimated at about $1,000,000 annually; it is carried on chiefly from Salem, Massachusetts. Outward cargoes consist almost exclusively of New England manufactured cotton goods, the consumption of which reaches an annual average of about 6000 bales. The return cargoes are composed of ivory, gum-copal, cloves, hides, and some minor articles. Voyages from the United States usually occupy a year—vessels always calling at the Persian Gulf and ports of the Red Sea. In 1851 there were ten or twelve American vessels, of about 250 tons each, regularly engaged in this trade. The relations existing between American houses (several of which have been for years established at Zanzibar) and the sultan and his officials are of the most friendly and liberal character. The stipulations of the treaty with the United States are faithfully observed, and every desirable commercial facility freely extended to American commerce.

Zea, Indian Corn, or Maize. *See* MAIZE.

Zedoary (Ger. *Zittwer;* Fr. *Zédoaire;* It. *Zedoaria;* Sp. *Cedoaria;* Arab. *Judwar;* Hind. *Nirbisi*), the root of a plant which grows in Malabar, Ceylon, Cochin China, etc., of which there are three distinct species. It is brought home in pieces of various sizes, externally wrinkled, and of an ash color, but internally of a brownish red. Those roots which are heavy and free from worms are to be chosen, rejecting those which are decayed and broken. The odor of zedoary is fragrant, and somewhat like that of camphor; the taste biting, aromatic, and bitterish, with some degree of acrimony. It was formerly employed in medicine, but is scarcely ever used by modern practitioners.—MILBURN'S *Orient. Com.*

Zinc, or Spelter (Ger. *Zink;* Fr. *Zinc;* It. *Zinco;* Sp. *Zinco, Cinck;* Russ. *Schpiauter;* Lat. *Zincum*), a metal of a brilliant white color, with a shade of blue, composed of a number of thin plates adhering together. When this metal is rubbed for some time between the fingers, they acquire a peculiar taste, and emit a very perceptible smell. It is rather soft; tinging the fingers, when rubbed upon them, with a black color. The specific gravity of melted zinc varies from 6·861 to 7·1, the lightest being esteemed the purest. When hammered, it becomes as high as 7·1908. This metal forms, as it were, the limit between the brittle and the malleable metals. Its malleability is by no means to be compared with that of copper, lead, or tin; yet it is not brittle, like antimony or arsenic. When struck with a hammer, it does not break, but yields, and becomes somewhat flatter; and, by a cautious and equal pressure, it may be reduced to thin plates, which are supple and elastic, but can not be folded without breaking. When heated to about 400°, it becomes so brittle that it may be reduced to powder in a mortar. It possesses a certain degree of ductility, and may, with care, be drawn out into wire. Its tenacity is such, that a wire whose diameter is equal to $\frac{1}{10}$th of an inch is capable of supporting a weight of about 26 lbs. Zinc has never been found in a state of purity. The word zinc occurs for the first time in the writings of Paracelsus, who died in 1541; but the method of extracting it from its ores was not known till the early part of last century. —THOMSON'S *Chemistry.* The compounds of zinc and copper are of great importance.—*See* BRASS.

The discovery of this metal, so far as the fact is known, is due to the moderns. It is said to have been long known in China, however, and is noticed by European writers as early as A.D. 1231; though the method of extracting it from the ore was unknown for nearly 500 years after. A mine of zinc was discovered in Yorkshire, England, in 1809. Zincography was introduced in London shortly after the invention of lithography became known in England, in 1817.—HAYDN.

IMPORTS OF ZINC INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whence imported.	In Pigs.	Sheets.	Nails.
	Value.	Value.	Value.
Denmark	....	$3,368	....
Danish West Indies	$60	....	....
Hamburg	....	120,535	....
Holla.	....	6,218	....
Dutch West Indies	282	....	....
Belgium	26,047	394,337	$2376
England	....	20,616	77
Scotland	3,679	....	....
British N. Am. Poss.	....	1,172	....
British West Indies	....	4	....
France on the Atlantic	15,366	....	....
Total, 1856-'57	$44,704	$546,250	$2453

Zinc Paint.—The zinc paint, now brought before public notice, illustrates at once the ingenuity shown in devising means for remedying an evil, and the difficulty of applying the remedy in opposition to popular custom. White-lead is deleterious to health, and nothing has succeeded in rendering it otherwise. Hence attempts are being made to find a substitute; and zinc seems at present the best fitted for this office. The manufacture of the white oxyd of zinc is a beautiful example of chemical action. Metallic zinc is heated in a furnace to which a current of air is admitted; the zinc vaporizes; the vapor passes into a series of chambers; and here it collects on the walls as a light downy flocculent oxyd, which is scraped off and removed. When ground up with linseed oil, the oxyd forms a white paint, which may be the ground or substance for other colors used in house-painting. Then comes the rivalry between the two "whites"—the oxyd of zinc and the carbonate of lead. The chemical virtues of the former are insisted upon; but the advocates for the latter have not failed to point out the qualities in which it is unquestionably the better of the two—especially in drying more quickly than the zinc white, and having more "body" or substance. One among many proposed modes of applying the zinc white is in floor-cloth painting. In this manufacture oil paint is laid on thickly, first with a brush and afterward through the medium of carved blocks. The quantity of paint consumed is so large, that the white-lead contained in it becomes a sad enemy to the men employed in the processes; and hence a recent attempt has been made to adopt zinc white as a substitute.

Zoll-Verein. The Germanic confederation of states for purposes of commerce came into practical operation by the treaty of March 22, 1833. Prior to that period, the states of which the union is composed did not allow of the introduction of merchandise across their respective frontiers without the payment of duties; numerous prohibitions existed, and the commercial relations between sovereignties, whose territories were contiguous, were fettered with oppressive and vexatious restrictions. To introduce a better system of commercial policy, and to remove all unnecessary burdens, which only tend to clog commercial enterprise and choke up the natural channels of trade between neighboring powers, these independent sovereignties have become, for commercial purposes, a consolidated government; one line of customs on the geographical boundary has been established; one tariff of duties on imports, exports, and transit, is enforced for all; and the revenue thus derived is distributed among the members of the confederation, in proportion to the population of each.—For exception to this mode of distributing the revenue, *see* FRANKFORT-ON-THE-MAINE.

The origin of this customs union may be traced to causes, political as well as commercial, having their existence long anterior to the treaty of 1833. Immediately after its organization, with Prussia at its head, had been proclaimed, alarms were spread throughout England, based upon the mistaken idea that the confederation was planned under the influence of Russia, as a part of her grand political scheme against British prosperity and influence; a fallacy which for a time

derived no inconsiderable plausibility from the adoption, by most of the states of the confederation, of the long-existing restrictive tariff of Prussia. British merchants became alarmed; and even the government itself shared, to some extent, in the popular delusion, which imaged forth the ruin of British trade, as the inevitable consequence of the united adoption, by nearly all the states of northern and southwestern Germany, of the commercial policy of the power which it was supposed the secret diplomacy of Russia had placed at the head of the *anti-British* league.

This delusion, however, was but of short duration; indeed, the general panic which it excited throughout England was quieted by the more experienced minds of that nation itself, who, viewing the formation of the Zoll-Verein in a more philosophic light, refuted the erroneous notions which had so generally obtained respecting it, and demonstrated its purely Germanic origin, by their panegyrics on those whose forecast and wisdom had conceived the project, and whose indomitable perseverance had accomplished its fulfillment. Among those whose able writings contributed most to enlighten England, as well as other nations, on the history and objects of the Zoll-Verein, Macgregor, the British statistician, occupies the first rank. Prussia, from her geographical position, was at that time more exposed to attack than any other country in Europe. Her Rhenish provinces weakened rather than strengthened her power. Easily accessible from Austria, Russia, and the Baltic, and, in the event of war, open to immediate attack on the side of France and Belgium, the Prussian cabinet was convinced that in the military strength of the territories possessed by Prussia before the treaty of Vienna consisted her only defensive strength. When the first French revolution broke out, Austria and several German states had to meet the troops of France long before they approached the Prussian frontiers; now the latter lay immediately exposed to an army marching in from France and Belgium. Hence the safety of Prussia depended, in the event of war, upon uniting all Germany by one common bond of mutual interest and security. Besides, the sagacity of the Prussian cabinet was doubly quickened by the French revolution of 1830, which had spread apprehension throughout the whole of Germany, particularly when the republican infection had spread among the students of the German universities, who, under the name of "Young Germany," had excited no little alarm on the part of the several German governments. The Belgian revolution succeeded; and then Austria shared in the apprehensions and uneasiness which had so long been felt by Prussia. The Polish revolution quickly followed; and now Prussia was ready to make any sacrifices in order to unite Germany under an apparently commercial, but in reality a political and national bond.

The necessity of such a union was at once promulgated with extraordinary industry. The press and the ablest political economists were enlisted in the general cause. Volumes were scattered among the people. The illiberal commercial systems of England and France; the prohibitory duties which Russia had just imposed on Poland, virtually closing the best market which Saxony had hitherto found for her fabrics—these considerations were strenuously urged to prove that a general union of fiscal interests was necessary for the present and future prosperity and protection of the country, and for maintaining Germany among the great powers of Europe. Their governments and people being thus prepared for union, the kingdoms of Prussia, Bavaria, Würtemberg, and Saxony, with Hesse Cassel, signed the treaty of March 22, 1833, organizing the German Customs Association, or Zoll-Verein. The Thuringian and other states, Baden, Nassau, and the free city of Frankfort-on-the-Maine, joined at subsequent periods; and on the 1st of January, 1854 (by treaty of September 7, 1851, between Prussia and Hanover), Brunswick, Hanover, and Oldenburg. A new convention has been concluded, not varying, however, materially from the one it superseded, but providing that in January, 1858, commissioners from all the federal states shall meet at the place of sitting of the Diet, on being summoned by it, in order to bring into operation more extended relaxations than those now proposed; and then, if the now existing impediments (arising from the difference of circumstances and interests) to a perfect commercial and customs union of the whole of Germany are removed, to effect that union by way of treaty. In the mean time, by a separate article, every federal state is required to take care, in concluding or prolonging any treaties of commerce and traffic, that the same shall not hinder nor embarrass a complete commercial union of Germany, or a further approach thereto, at least not beyond the year 1858.

In the annual and triennial congress of delegates from the several states of the union, which the convention provides shall meet for settling the accounts, agreeing to alterations in the tariff, etc., Prussia has only one vote, like each of the other states. This, however, is not the only concession which she has made to the other sovereigns of the league. A reference to the geographical positions of the several states of the Zoll-Verein will show that many have no customs frontier to guard against smuggling, or along which to maintain custom-houses; while all receive an equal share of the revenue collected on goods entering along the general line of the boundary. The consequence is, that Prussia sacrifices about two millions of dollars annually to the revenues of the other states, exclusive of the fiscal loss sustained by the consumption of smuggled goods introduced along the Rhine, and along Lake Constance, into Baden, Würtemberg, and Bavaria. But Prussia was prepared for these, or even greater fiscal sacrifices, to realize the primary object of her policy—that of extending her power, as she may be said to have done, from the frontiers of France and Belgium to those of Austria and Russia—from the Alps to the Baltic; while the different states of Germany composing the union, by the removal of those barricades of national defense and international intercourse, and of the numerous lines of customs and customs officers which previously belted every large and petty state in Germany—by free trade among themselves, and the free opportunity of interchanging ideas and of receiving intelligence, may be said to have become consolidated and strengthened into one great nation.

Among the regulations of the Zoll-Verein, it is provided "that the advantage enjoyed by the inhabitants of the states of the union may be extended in reciprocity, according to circumstances, to foreign countries; while, on the contrary, disadvantageous restrictions imposed on the commerce of the union by foreign states should be retaliated by judicious measures, to be adopted for that purpose;" also, that the tariff of the union may be rectified every three years, and published for the next three years, eight weeks before the commencement of the first year—alteration in the rates of certain duties or items in the tariff to be made, if necessary, once a year, and to be published eight weeks before the 1st January, on which day such alteration to be in force. Article 23 of the convention provides "that a meeting of plenipotentiaries of the respective states shall be convened in June each year, to settle accounts, and agree to any change or modification of duties." By this article all the provisions for a change in the tariff have been retained. It therefore remains for other countries to reciprocate with the Zoll-Verein for an interchange of their respective productions and fabrics.

Natural Resources of the principal States composing the Zoll-Verein.—The states composing the Zoll-Verein possess the most abundant natural resources. The forests of Germany are extensive and valuable, and her mineral

riches are in many parts equal, and in some superior, to those of France. The soil, though in some parts of the north light and rocky, is generally fertile, and produces all kinds of corn and culinary vegetables, besides hemp, flax, tobacco, maize, etc.; while in the Rhenish countries, and in some parts south of Cologne, vineyards are extensively cultivated, which produce those agreeable and cool wines generally called Hock and Moselle, the consumption of which is rapidly increasing in the United States. The physical aspect of the states of the confederacy presents almost every feature of natural or cultivated appearance. "The lowlands, light soils, and alluvions of the north; the hilly country of Nassau; the undulations of Westphalia, of the Moselle, and west of the Rhine; the highlands of the Black Forest, and the Odenwald, Thuringia, and Suabia, of Darmstadt, Würtemberg, and Baden, to the south; the mountains of the Harz and Taunus; the Erz-gebirge of Saxony; the valleys, plains, and heights of Silesia; the plains and Alps of Bavaria; the Rhine, Danube, Elbe, and numerous other rivers; rocks, cornfields, vineyards, and pastures, are the principal aspect of the confederation."

In facilities for commercial intercommunication, nature has been equally bountiful to Germany. About sixty navigable rivers, or branches of rivers, intersect this country. They are generally connected by means of canals and railroads, some of which are still in progress of construction.

The Rhine, from its excellent navigation to the ocean, may be considered one vast port, the principal entrepôts of which are Cologne, Coblentz, Mayence, and Frankfort-on-the-Maine. The Danube carries down the produce of Germany to Austria, Hungary, and the Black Sea. The Elbe, navigable from Bohemia to Hamburg, and to the sea, waters Bohemia, Saxony, and Prussia, and is connected with the Danube by railroad, at a point where that river is navigable to Lintz, the capital of Upper Austria, from which steamboats ply to Vienna and the Black Sea. The Memel, and its numerous branches, bring down the timber and other produce of Poland and Lithuania to the ports of the Baltic; and the Oder and Vistula flow through Prussia, and are navigable to the Baltic.

On the 1st of January, 1854, the German Customs Union, or the Zoll-Verein, entered upon the third period of its existence. The first continued eight years—from the commencement of 1834 to the end of 1841; the second, twelve years—from the commencement of 1842 to the end of 1853; and the third, upon which it entered at the beginning of 1854, is to continue also for twelve years. Two facts of importance mark the commencement of the third period: one, the accession of the Steuer-Verein; the other, the conclusion of a commercial treaty between Austria and Prussia, which may be regarded as the basis of a future Austro-Germanic Customs League. The following recapitulation of facts connected with these two important events are compiled from official documents, and are deemed necessary to a clear comprehension of the present as well as of the prospective *status* of the Zoll-Verein. On the 7th of September, 1851, the two kingdoms of Prussia and of Hanover separately concluded a treaty of a customs union, which, ten years before, had been a subject of fruitless negotiation, reserving the question of a union between their respective Customs Associations (the Zoll-Verein and the Steuer-Verein). As the stipulations of this treaty would require a reconstruction of the Zoll-Verein, and, consequently, a renunciation of the treaty of 1841 between the old members of that league, the Prussian cabinet, in the following November, gave notice of this renunciation, not for the purpose of retiring from a league so beneficial in all its results, but with a view of reorganizing it on a new basis. The Prussian government further gave notice that it would soon communicate propositions to that end, and that a conference, or congress, to take the subject into consideration, would assemble at Berlin.

The following statement will prove interesting, as exhibiting the revenue and population of the Zoll-Verein from its commencement down to the year 1851:

Years.	Population.	Revenue in Thalers.
1834	23,478,120	14,515,722
1835	23,478,120	16,580,180
1836	25,150,216	18,462,873
1837	25,150,898	17,997,295
1838	26,048,970	20,419,287
1839	26,048,971	20,869,488
1840	26,048,991	21,606,191
1841	27,194,116	22,295,459
1842	27,578,710	23,738,794
1843	27,622,815	25,762,023
1844	28,409,136	26,850,794
1845	28,409,566	27,915,956
1846	28,508,436	26,791,969
1847	29,461,581	27,834,088
1848	29,460,764	23,083,138
1849	29,461,628	24,144,573
1850	29,800,063	23,595,092
1851	29,728,335	22,545,687

—*Com. Rel. U. S.* For the port regulations of Prussia, *see* PRUSSIA; and for more extended information regarding the states composing the Zoll-Verein the reader is referred to the articles on the states separately.

ALPHABETICAL INDEX

TO

IMPORTANT SUBJECTS

UPON WHICH INFORMATION CAN BE FOUND IN ADDITION TO THAT GIVEN UNDER THEIR PROPER HEADS.

Abandonment, 1057.
Acceptance, 170, 173, 1029.
Acetic acid, 5.
Acid, 1209, 1884, 1600.
Adjustment, 1044, 1057.
Admiralty, 557.
Adulteration of food, 691.
Advertising, 1425.
Affreightment, 291, 751.
Africa, 274, 435, 441 (cotton), 790, 805, 882, 835, 994, 1118, 1205, 1378, 1384, 1443, 1469, 1717, 1943 (weights and measures).
African Company, 895.
Agent, 646, 1051.
Agriculture, 246, 602, 704, 812, 849, 1091, 1802, 1896.
Aguardiente, 488.
Alabama, 141, 439 (cotton), 1034, 1365.
Ale, 158, 212, 990, 1159, 1749.
Alexandria, 577, 584.
Algiers, 440 (cotton), 741, 1943.
Alicante, 1742.
Aliens, 1009, 1347.
Alliance, Holy, 984.
Alloys, 425 (copper).
Allspice, 1531, 1748.
Almanac, 238.
Alpaca wool, 1987.
America, 227 [North, 371], 383, 438 (cotton), 800, 1444, 1576 [South, 1736], 1754, 1944.
American commerce, 385.
Ammonia, 24, 1668.
Amoy, 260, 1700.
Amsterdam, Bank of, 121; canals, 248.
Anchors, 226, 271, 428, 1148, 1545.
Ancient coins, 852.
Annuities, 1039, 1063, 1067, 1857.
Antwerp, 383.
Aquafortis, 7.
Arabia, 9, 223, 547, 1145, 1384.
Archangel, 1334, 1971.
Architecture, Naval, 1590.
Arcs, Meridian, 572.
Arctic Ocean, 802, 892, 1447, 1539.
Ardent spirit, 17.
Arecibo, 1546.
Argand lamps, 1229.
Argentine Confederation, 219, 1172, 1862, 1913.
Arkansas, 139, 1034.
Arkwright, 465.
Armament, 257.
Artificial flowers, 688.
Asbestos, 87.
Ashes, 1571.
Asia, 428, 832, 1030, 1112, 1656, 1711, 1945.
Asia Minor. *See* Turkey and the Levant.
Asphaltum, 180.
Assay, 490.
Assurance. *See* Insurance.
Astronomy, 793.
Asuncion, 1493.
Athens, 380.
Atlantic Ocean, 241, 500, 915, 1785.
Atlantic telegraph. *See* Telegraph.
Atrata, 87.
Auction, 257.
Australasia, 1459, 1540.
Australia, 9 [Colonies, 365], 366, 833, 1341, 1424, 1459, 1576, 1586, 1754, 1789, 1932.
Australia Felix. *See* Victoria.
Austria, 250 (canals), 876, 998, 1179, 1608, 1862, 1871, 1928, 1946.
Average, 1043, 1588.
Azimuth compass, 897.
Azores, 654.

Bacon, 974, 1543.
Baden, Duchy of, 1847, 1946.
Baggage, 600.
Bags, 919.
Balance of trade, 631.
Bale, Cotton, 460.
Ballast, 565.
Balm of Gilead, 87, 819.
Balm of Peru, 88.
Baltic Sea, 249, 528, 537, 619.
Baltimore, 1839.
Banana, 1537.
Banda, Oriental, 1918.
Bandana handkerchiefs, 468.
Bank-notes, 97, 384.
Bank of England, 98, 100, 1278.
Bank of France, 121.
Bank of United States, 144.
Bankruptcy, 237, 1033.
Banks, 1, 281, 294, 309, 476, 480, 537, 544, 546, 761, 786, 1078, 1096, 1203, 1274, 1463, 1579, 1798, 1859.
Banks, Irish, 119.
Banks, Provincial, 114.
Banks, Scotch, 117.
Baracoa, 497.
Barbadoes, 865.
Barbary States. *See* Morocco, Tripoli, Tunis, etc.
Barcelona, 1742.
Barges, 184.
Barratry, 1043.
Barrel, 1952.
Bavaria, 250 (canals), 1179, 1847, 1948.
Bay of Chaleurs, 1402.
Bay of Fundy, 764.
Beacons, 1238, 1251.
Beads, 55.
Beaver, 282, 764.
Beef, 283, 490, 875.
Beer, 17, 212, 715, 990, 1159, 1308.
Beeswax, 1940.
Beet sugar, 716, 1776.
Behring, 500.
Belgium, 51, 213, 214, 341 (coins), 458 (cotton), 815, 1179, 1807, 1862, 1913, 1947.
Belize, 984.
Bell Rock light-house, 1221.
Bells, 700.
Bengal, 230, 236, 508, 579, 989, 1024, 1028.
Benzoic acid, 6.
Benzoin, 88.
Benzole, 1470.
Bills of exchange, 94, 294, 622, 1029, 1450, 1918.
Bills of health, 1601, 1708.
Bills of lading, 1708.
Biography, 568.
Birch canoes, 258.
Bitumen, 69, 1389.
Bituminous coal, 318.
Black Sea, 1460.
Blockades, 1898.
Blue vitriol, 1127.
Boats, 28, 157, 223, 258, 427, 432, 506, 515, 658, 779, 887, 1005, 1151, 1176, 1210, 1219, 1285, 1895, 1456, 1532, 1591, 1627, 1650, 1690, 1729, 1879, 1996.
Bobbins, 1156.
Bolivia, 31, 342 (coins), 1166, 1863.
Bombay, 231, 1024.
Bonds, 476.
Book-keeping, 281, 1147, 1199.
Books, 167, 1208, 1426.
Boots and shoes, 1196, 1710.
Boracic acid, 6.
Borneo, 1155, 1863.
Bosphorus, 401.
Boston, 1002, 1058, 1425, 1710, 1839.
Bottomry, 1046, 1324, 1629.
Bounties, 665, 742, 1772.
Bourbon Island, 741.
Brandy, 193, 1551.
Brass, 48.
Brazil, 30, 83, 336, 435, 457, 459 (cotton), 1490, 1514, 1550, 1637, 1757, 1807 (tariff), 1913, 1944.
Breadstuffs, 218, 685, 843, 844, 1802.
Breakwater, Delaware, 519, 681, 937, 1268.
Bremen, 931, 1180, 1947.
Brewing. *See* Beer.
Bridges, 602, 704, 1279.
Brimstone, 1778.
Britain. *See* Great Britain.
British Guiana, 908.
British North American Possessions, 883, 1154, 1376, 1401, 1404, 1452, 1588, 1663, 1668.
Brokers, 1042.
Bruges, 882.
Brunswick, Georgia, 809.
Brussels carpet, 277.
Bubbles, Commercial, 397, 1177, 1789.
Buccaneers, 748.

Buenos Ayres, 1172.
Building, 1890 (ships).
Bullion, 71, 628, 1578.
Bunk, 433.
Buoys, 1238, 1252.
Burgundy, 1977.
Burmah, 1625.
Butter, 294, 477, 508, 815.

Cables, 271, 428, 616, 837, 956, 966, 1647, 1830.
Cacao-nu , 304, 332.
Cadiz, 1742.
Cagliari, 1 386.
Cairo, 273, 439.
Calcutta, 1021, 1027, 1473.
Calendar, 1427.
California, 344 (coins), 645, 833, 836, 1034, 1575, 1586, 1604, 1621 (railroads), 1679.
Calms, 554.
Camels, 273.
Camphor, 243.
Canada, 146, 254, 675, 883, 1154, 1178, 1375, 1602, 1614 (railroads), 1663.
Canals, 21 (Red Sea and Nile), 36 (Atlantic and Pacific), 212, 238, 602, 703, 842, 975, 1165, 1428, 1485, 1765.
Canaries, 1743, 1832, 1943.
Candia, 1467, 1884.
Canes, 1625, 1936.
Canoe, 28.
Canton, 302, 1699.
Caoutchouc, 919, 1025.
Cape de Verd Islands, 1930, 1943.
Cape Haytien, 961, 964.
Cape Horn, 991.
Cape of Good Hope, 268, 269, 837, 1118.
Capital, 375.
Caps, 947.
Carats, 71.
Caravans, 66, 229, 242, 509.
Carbonic acid, 6.
Cardenas, 497.
Cardinal Points, 397.
Carding-machines, 464.
Cargo. *See* Freight.
Caribbean Sea, 915.
Carpets, 711.
Carriage, 1706.
Carriages, 312, 921.
Cartagena, 1410.
Carthage, 380.
Cashmere, 1702, 1987.
Caspian Sea, 1656.
Cassia, 1748.
Casting, 699.
Catechu, 1833.
Cayenne, 741, 912 [pepper, 1512, 1747].
Cayman Islands, 1126.
Census, 1541.
Central America, 342 (coins), 432, 907, 1442, 1913.
Ceylon, 337, 370.
Chagres, 1412.
Champagne, 1976.
Channel, 610.
Charcoal, 760, 1104.
Charges, Consular, 414.
Charleston, 1738, 1840.
Charms, 13.
Charter party, 13, 752, 1708.
Charts, 227, 518, 1001, 1317, 1846, 1398.
Chasing, 601, 1629.
Cheese, 224, 477, 508.
Cherbourg Breakwater, 938.
Chesapeake and Ohio Canal, 258.
Chesapeake Bay, 519.
Chestnut, 981.
Chihua, 1353.
Chili, 342 (coins), 1863, 1913, 1921.
China, 68, 259 [Cochin, 331], 342 (coins), 428, 461 (cottan manufactures), 650, 695, 697, 921, 927, 988, 1295, 1387, 1478, 1554, 1657, 1698, 1719, 1720, 1725, 1820, 1822, 1843, 1863, 1913, 1946.
China-ware, 1542.
Chincha Islands, 902.
Chinese sugar-cane, 1778.
Chronometers, 1280.
Cigars, 488, 1851.
Cincinnati, 974.
Cinnamon, 287, 288, 870, 1748.
Cinq Codes, 394.
Cisplatine Republic, 1918.
Citric acid, 6, 1203.
Citron, 165.
Civic companies, 396.
Claims, Court of, 476.
Claret, 1976.
Climates, 436 (cotton), 574, 618, 1113.
Clocks, 1280, 1938.
Cloth, 681, 845, 1297, 1987.
Clothing, 1941.
Clover, 956.
Cloves, 1749.
Clyde, 821.
Coak. *See* Coke.
Coal, 356, 498, 757, 783, 1104, 1144, 1403, 1470, 1613.
Coasting trade, 673, 869.
Coast survey, 570, 945, 1242, 1317, 1838.
Cochineal, 256, 567.
Cocoa-nut, 287, 870, 1483.
Cod-fisheries, 665, 672.
Coffee, 370, 489, 693, 954, 1367, 1548, 1639, 1826.
Coinage, 61, 62, 69, 95, 272, 365, 499, 516, 541, 627, 830, 1031, 1096, 1351, 1360, 1511, 1579, 1654, 1680, 1701.
Coins, 2, 3, 4, 8, 12, 28, 47, 63, 69, 76, 86, 166, 263, 286, 423, 427, 483, 504, 513, 525, 542, 554, 555, 564, 567, 653, 684, 700, 776, 837, 897, 913, 1119, 12[illegible]9, 1286, 1324, 1528, 1601, 1603, 1626, 1646, 1649, 1651, 1697, 1704, 1724, 1739, 1759, 1791, 1835, 1854.
Coke, 356, 1104.
Collins steamers, 1754.
Collision, 1043.
Cologne water, 582.
Colombia, 908, 1408.
Colonies, 386, 716, 740 [British, 878, 988, 1020], [Dutch, 1397], [Spanish, 1746].
Columbia River, 1841.
Columbus, Christopher, 799.
Commandite en companies, 396.
Commerce, 66, 68, 273, 362 (colonies), 717, 797, 1017, 1398, 1804, 1905.
Commercial agents, 403, 415.
Commercial law, 55, 567, 696, 906, 1029, 1040, 1179, 1188, 1456, 1495, 1794.
Commercial policy, 402.
Commercial treaties. *See* Treaties.
Commission, 521, 647.
Companies, Africa, 15.
Companies, Dutch, 89.
Companies, East India, 574, 1279.
Companies, Hudson's Bay, 766, 802, 995.
Companies, Northwest, 765.
Companies, Russian, 1658.
Companies, Stock, 394, 1145.
Compass, 275, 518, 542, 1302, 1319, 1538.
Connecticut, 1034.
Constantinople, 381, 1882.
Consular agents, 415.
Consuls, 590, 1501, 1694, 1708, 1885, 1991.
Contraband, 1898, 1730.
Contract, 71, 200, 518, 1042.
Convoy, 394, 484.
Cook, Captain, 802.
Coolie trade, 1728.
Copenhagen, 527.
Copper, 48, 203, 603, 1703.
Copper coins, 286.
Copyright, 190.
Corfu, 1085.
Corn, 210, 843, 876.
Cornelian, 15.
Corporations, 396.
Cosmetics, 1649.—*See* Perfumes.
Costa Rica, 337, 1441, 1864.
Cotton, 19, 235, 271, 582, 585, 679, 712, 729, 731, 873, 874, 917, 932, 954, 1366, 1419, 1515, 1645, 1654, 1658, 1686, 1713, 1723, 1784, 1787, 1903.
Cotton manufactures, 9, 59, 165, 182, 185, 239, 242, 267, 274, 304, 311, 356, 503, 589, 542, 593, 661, 681, 712, 761, 774, 815, 821, 845, 1017, 1119, 1150, 1156, 1283, 1297, 1311, 1329, 1386, 1589, 1785.
Court of Admiralty, 10.
Cream of tartar, 58, 1818.
Credit, Letters of, 1204.
Credit Mobilier, 122, 124.
Credits, 378.
Crimea, 1460.
Cronstadt, 1667.
Croton aqueduct, 55, 1435.
Crystals, 681.
Cuba, 425 (copper), 949, 1742, 1846, 1851.
Cunard steamers, 1754.
Currants, 889.
Currency, 1370, 1579.
Currents, Ocean, 915, 986, 1481.
Customs, 3, 53, 418, 509, 516, 640, 749, 1169, 1570, 1597, 1629, 1706, 1729, 1794.
Cutlery, 946, 1152, 1887.
Cutters, 184.
Cyclopedia. *See* Encyclopedia.

Damascus, 273.
Danish colonies, 368, 1954.
Dantzic, 526.
Danube, 619, 776.
Darie, 8.
Darien, Isthmus of, 1484.
Dead letters, 1557.
Debt, 622, 764, 848, 1034, 1094, 1271, 1390, 1430, 1436, 1464, 1739, 1763.
Degree, 569, 795.
Delaware, 135, 267, 1034.
Delaware and Hudson Canal, 253.
Delaware Bay, 519.
Denmark, 249 (canals), 428, 588, 653, 1180, 1662, 1667, 1733, 1864, 1913, 1948 (weights and measures), 1954.
Deposit, Banks of, 93.
Desertion, 1694.
Detroit, 1358.
Dike, 567, 975.
Diplomacy, 407.
Discount, 108.
District of Columbia, 1937.
Docks, 232, 243 [Dry, 548], 894, 944, 1267, 1276, 1395.
Dock-yards, 552.
Domain, 600.
Domicile, 1050.
Drafts, 294.
Dragon's blood, 88.
Dress, 433.
Drugs, 243, 358, 432, 481, 645, 776, 1455, 1479, 1522, 1602, 1632, 1647, 1661, 1674, 1688, 1689, 1697, 1751, 1881, 1886.
Drummond light, 1227.
Dry-rot, 658.
Dues, Sound. *See* Sound Dues.
Dues, Stade, 923.—*See* Tolls.
Dundee, 1263.
Dutch, 39 [Colonies, 368], [East India Company, 396], 976, 1132, 1397 [West Indies, 1954], [Whale-fishery, 1960].

Dutch Guiana, 911.
Duties, 237, 503, 544, 556, 1082, 1481.
Dyes, 5, 49, 275, 476, 498, 546, 554, 556, 567, 714, 774, 780, 1150, 1155, 1297, 1384, 1478, 1596, 1603, 1661, 1688, 1729, 1886, 1891, 1931, 1953, 1983, 1997.
Dye-woods, 154, 1161.

Earth, 787.
Earthen-ware, 1543.
East India Company, British, 395, 434 (cotton), 441, 574, 1014, 1474.
East India Company, Dutch, 396.
East Indies, British. *See* INDIA.
East Indies, Dutch, 1136, 1454, 1779.
East Indies, French, 1541. — *See* FRANCE.
Ecuador, 612, 1864.
Eddystone light-house, 1220.
Egypt, 18, 229, 440 (cotton), 459, 1443, 1943.
Elbe, 923, 929, 1967.
Electric telegraph. *See* TELEGRAPH.
Electrotyping, 1537.
Elsineur, 527, 535.
Emancipation, 1727.
Embassador, 590.
Embroideries, 1159.
Emden, 928.
Emigrants, 925, 1499.
Emigration, 1008.
Encyclopedia, 507, 541.
Endorsement, 168, 172, 1020.
Enemies, 1050.
Engine, 663.
England, 212, 430 (corn laws), 667, 826, 846, 970, 1070, 1276, 1451, 1689, 1967.
Engrossing, 696.
Enrollment, 1627.
Erie Canal, 253, 1428.
Erie, Lake, 1162.
Erie, Port, 1511.
Etching, 611.
Europe, 1623.
Euxine Sea, 182.
Exchange, Bills of, 94, 167, 1918.
Exchange, Royal, 1650.
Exchange, Stock, 1763.
Exchequer, 1.
Expeditions, 56, 1629.
Exports, 1904.

Factor, 213.
Factories, 259.
Feathers, 555, 585, 1604.
Fees, Consular, 414.
Felting, 948.
Filigree, 660.
Finance. *See* BANKS and MONEY.
Finland, 1170, 1654.
Fire-arms, 1534.
Fire-escape, 1208.
Fire insurance, 1058.
Firs, 1532.
Fish, 46, 84, 185, 284, 332, 583, 688, 921, 1271, 1480, 1877.
Fisheries, 184 [Pearl, 287], 289, 333, 387, 604, 717, 721, 741, 960, 1154, 1199, 1242, 1357, 1396, 1401, 1405, 1506, 1528 [Salmon, 1668], 1685, 1691, 1702, 1765 [Whale, 1958], 1963.
Flags, 1509.
Flanders, 382.
Flax, 713, 9[illegible] 1092, 1147, 1261, 1655.
Fleet, 684.
Florida, 143, 1034, 1151, 1249.
Florin, 982.
Flour, 208, 486, 490, 694, 875.
Fluoric acid, 6.
Fog signals, 1252.
Foo-chow, 689.
Foo-chow-foo, 260, 1700.
Food, 1330.
Food, Adulteration of, 11.
Foreigners, 599.
Fractions, Decimal, 516.
France, 192, 229, 250 (canals), 277, 287, 295, 337 (coffee), 341 (coins), 368 (colonies), 375, 455 (cotton), 649, 665, 765, 952, 1033, 1071, 1102, 1157, 1180, 1229, 1285, 1294, 1324, 1397, 1438, 1450, 1494, 1609 (railroads), 1777, 1805 (tariff), 1825, 1847, 1855, 1864, 1918, 1956 (West Indies), 1962 (whale-fishery), 1977 (wine).
France, Bank of, 121, 1948 (weights and measures).
Franking, 1569.
Franklin, Sir John, 802.
Free trade, 385.
Freight, 82, 291, 1045, 1588, 1607, 1619, 1629, 1693, 1707.
French East India Company, 578.
French Guiana, 912.
Fresnel lights, 1226, 1240.
Fruits, 295, 477, 499, 514, 660, 908, 1203, 1261, 1311, 1386, 1477, 1505, 1532, 1537, 1538, 1540, 1593, 1604, 1634, 1792, 1793.
Fuei, 1104, 1242, 1508.
Fuertoventura, 256.
Fullers' thistle, 1826.
Funding system, 1763.
Funds, 400.
Furnaces, 1099.
Furs, 283, 616, 1455, 1509, 1661.

Galatz, 513, 775, 1883.
Galena, 1193.
Gallic acid, 6.
Gall-nuts, 1456.
Gallon, 1952.
Galveston, 1840.
Gas, 760, 1227.
Gauge, 775.
Gauntlet, 783.
Genoa, 381, 1686.
Geodesy, 322, 569.
Georgia, 143, 438 (cotton), 1034, 1634, 1688.
German Commercial Union, 813, 1596, 1998.
Germany [Banks of, 122], 342 (coins), 510, 597, 649, 747, 922, 928, 1103, 1179, 1470, 1554, 1593, 1648, 1979, 1998.
Gin, 785, 1147.
Gin, Cotton, 442.
Ginger, 1747.
Glass, 37, 483, 681, 1751.
Glut, 524.
Gold, 36, 241, 272 [coins, 345], 353, 365, 626, 1031, 1157, 1342, 1361, 1537, 1574, 1581, 1586, 1654, 1680, 1803.
Gold Coast, 913.
Gold discovery, 78.
Gonaives, 961.
Good Hope, Cape of, 267, 269, 837, 1118, 1943.
Grace, Days of, 515, 638, 843.
Grain, 685, 1267, 1456, 1462, 1660, 1749, 1965.
Gramme, 1152.
Grass seeds, 956.
Great Britain, 251 (canals), 315 (coal), 347 (coins), 361 (colonies), 375, 384, 425 (copper), 430 (corn laws), 458 (cotton), 469 (cotton manufactures), 599, 601, 648, 667, 675, 997, 1019, 1033, 1087, 1100, 1181, 1192, 1281, 1263, 1266, 1274, 1438, 1451, 1511, 1554, 1610 (railroads), 1704, 1719, 1753, 1771, 1805 (tariff), 1825, 1842, 1846, 1865, 1913, 1936, 1948 (weights and measures), 1955 (West Indies), 1960 (whale-fishery), 1966, 1988 (wool).
Grecian coins, 352.
Greece, 380, 1181, 1502.
Ground-nut, 1452.
Guadaloupe, 741.
Guatemala, 1865.
Guayama, 1547.
Guayaquil, 614.
Guerrero, 1354.
Guiana, 895, 1943.
Guiana, British, 741, 808.
Guiana, Dutch, 1494.
Guiana, French, 284.
Guild, 913.
Gulf of St. Lawrence, 1178.
Gulf Stream, 826, 500.
Gums, 156, 778, 782, 819, 1152, 1155, 1470, 1478, 1661, 1685, 1791, 1833, 1859, 1886.
Gutta-percha, 267, 1025.

Hair, 243, 1972.
Halibut, 673.
Hamburg, Bank of, 121, 931, 1181, 1948.
Hams, 83.
Handkerchiefs, 92, 467.
Hanover, 946, 1181, 1865, 1949.
Hanse Towns, 211, 382, 457 (cotton), 526, 922, 930, 1180, 1288, 1865, 1913.
Harbors, 477, 601, 860, 1257, 1544, 1839.
Hardware, 505, 606, 714, 1387, 1512.
Hargreaves, James, 463.
Hartshorn, 24.
Havana, 484, 497.
Haven. *See* HARBOR.
Hayti, 267, 342 (coins), 841, 1119, 1181, 1544, 1674, 1767, 1913, 1944.
Hazel-nut, 1454.
Health, Bill of, 178.
Hemp, 714, 837, 919, 1147, 1527, 1655.
Herrings, 604, 668, 673, 1405.
Hides, 502, 1195, 1515, 1726.
Hindostan, 222, 498, 1010. — *See* INDIA.
History of Commerce, 879.
Hogs. *See* PORK TRADE.
Hogshead, 1952.
Holland, 39, 248 (canals), 378, 382, 1134, 1182, 1396, 1649, 1806 (tariff), 1866, 1949.
Holland, New, 76.
Holstein, Duchy of, 530.
Hong Kong, 261.
Hongs, 259, 264.
Honolulu, 1675.
Hooks, 676.
Horizon, Artificial, 62, 537.
Hose and hosiery, 1761.
Hospital [Greenwich, 895], 1694.
Hudson, Henry, 519.
Hudson River, 1428.
Hudson's Bay Company, 766, 802.
Hungary, 851.
Hurl-Gate, 966.
Huron, Lake, 1163.
Hydriodic acid, 6.
Hydrocyanic acid, 7.
Hydrography, 323.

Ibraila, 777.
Iceland moss, 1381.
Illinois, 137, 253, 283, 296, 1034, 1193.
Immigrants, 594.
Imports and exports, 629, 1799, 1907, 1910.
Impost. *See* TARIFF and TAXES.
India, British, 20, 163, 222, 230, 242, 276, 281, 383, 441 (cotton), 461, 498, 575, 576, 616, 650, 791, 989, 1004, 1027, 1161, 1301, 1334, 1474, 1575, 1660, 1703, 1712, 1725, 1754, 1818.
India, French East India Company, 578.
Indiana, 137, 253, 1034.

Indian corn, 210, 429.
India rubber, 267, 919, 1297, 1766.
Indigo, 284, 567, 1018.
Indorsement, 168, 172.
Ink, 1025.
Inland exchange, 622.
Inland navigation, 247, 975.
Inns, 274.
Insolvency, 150.
Insolvents, 150.
Insurance, Fire, 1208.
Insurance, Life, 8, 49, 1857.
Insurance, Marine, 2, 10, 13, 79, 200, 291, 356, 525, 590, 684, 750, 1209, 1270, 1324, 1540, 1588, 1629, 1673, 1693, 1696, 1765.
Interest, 764, 1039, 1063, 1919.
Invontions, 1501.
Invoices, 1708.
Ionian Islands, 890, 1182, 1997.
Iowa, 1034.
Ireland, 158, 252 (canals), 510, 563, 597, 846, 1071, 1611 (railroads), 1689.
Irish banks, 119.
Iron, 48, 282, 505, 603, 695, 696, 699, 714, 780, 946, 1387, [illegible]8, 1782, 1903.
Islands [Coral, 428], [Ice, 1005].
Isle of Wight, 477.
Isthmus of Darien, 1484.
Isthmus of Suez, 1766.
Isthmus of Tehuantepec, 1826.
Italy, 248 (canals), 649, 779, 786, 798, 826, 1182, 1388, 1451, 1486, 1913, 1950, 1979.

Jaconet, 467.
Jamaica, 364.
Japan, 1159, 1387, 1866.
Java, 154, 337.
Jenny spinning, 463.
Jersey City, 1415.
Jetsam, 684.
Jettison, 1046.
Jewelry. *See* PRECIOUS STONES.
Jewish coins, 352.
Jobber, Stock, 1761.
Joint-stock companies, 394.
Juniper berries, 165.
Junks, 266, 1146.
Jurisdiction of Consuls, 406.
Jute, 967.

Kane, Dr. E. K., 896.
Kentucky, 138, 1034.
Key West, 683, 1840.
Kiachta, 1057.
Kingston, 1128.

Labrador, 1404.
Lace, 830, 1093.
Lading, Bill of, 178.
Lakes, 245 [Champlain, 289], 426 (copper), [Erie, 615], [Huron, 1001], 1088, 1244, 1250, 1472 [Superior, 1779], 1891.
Lamps, 1229, 1240.
Lanyard, 1169.
La Plata River, 220.
Larch, 1532.
Lard, 487.
Latitude, 519, 569, 795, 992.
Law of nations, 417, 1043.
Law's bubble, 397.
Laws, Corn, 430.
Laws of Commerce. *See* COMMERCIAL LAW.
Laws of merchants, 1847.
Laws of navigation. *See* NAVIGATION LAWS.
Laws of shipping. *See* SHIPPING, LAWS OF.
Lazarettos. *See* QUARANTINE.
Lead, Black, 181.
Lead, Sounding, 1734.
League, Hanseatic, 930.
Leather, 221, 502, 592, 607, 1659, 1698.
Leeward Islands, 1954.
Legal tender, 97, 1831.
Leghorn, 1888.
Leases, 1231.
Letters, 1558.
Letters of Marque, 1589.
Levant [Company, 395], 401, 417, 507, 514, 1871, 1882.
Liability of carriers, 280.
Liberia, 466 (cotton).
Life-boats, 1214, 1297.
Life-buoy, 222, 1212, 1227.
Life-preservers, 429.
Life insurance, 8, 49, 1062, 1857.
Light-houses, 481, 558, 755, 870, 1167, 1877.
Light-ships, 1229, 1237.
Lignum vitæ, 898.
Lime, 285, 851, 920.
Limited partnerships, 1496.
Linen, 510, 541, 555, 606, 677, 678, 713, 1092, 1156, 1178.
Linseed, 680.
Liquor, 499, 814, 819.
Lisbon, 1975.
Lithography, 611.
Liverpool, 602, 1755.
Live stock, 1897.
Llama, 29.
Lloyds', 1041.
Loans, 1763.
Loans, Maritime, 1324.
Lobos Islands, 900.
Locomotives, 1606.
Logarithms, 1389.
Log-book, 1708.
London, 601, 1650.
Long-boat, 184.
Longitude, 325, 519, 569, 795.
Loom, 461.
Losses, 1042, 1057.
Louisiana, 140, 439 (cotton), 682, 1034, 1417, 1768, 1769.
Lübeck, 526, 1182.
Lucca, 1889.
Lucifer matches, 1333.
Lumber, 296, 305, 510, 1536, 1842, 1984.

Mace, 1747.
Mackerel, 672.
Madeira, 1978.
Madras, 231.
Magnet, 1270.
Magnetic needle, 397.
Magnetic telegraph. *See* TELEGRAPH.
Mahogany, 985.
Mails, 20, 21, 1753. *See* POSTAGE.
Maine, 253 (canals), 1034, 1245, 1545.
Maize, 429.
Malaga, 1741.
Malic acid, 6.
Mälstroem, 1272.
Malt, 17, 608.
Malta, 1183.
Manhattan Island, 1433.
Manilla, 1526, 1743.
Manufacture, 460 (cotton), 539, 544, 593, 605, 679, 710, 761, 864, 929, 1016, 1263, 1288, 1297, 1829, 1652, 1785, 1903.
Maple-sugar, 1778.
Maps, 291, 327, 793, 1001.
Marine insurance, 2, 10, 13, 79, 200, 291, 356, 525, 590, 684, 750, 1041, 1209, 1629, 1673, 1693, 1696, 1765.
Mariners. *See* SEAMEN.
Mariner's compass, 897.
Maritime laws, 1188, 1632, 1898, 1590, 1629, 1673, 1690, 1694.
Markets, 524, 648.
Marmora, Sea of, 401, 414, 513.
Martha's Vineyard, 1247.
Martin, 767.
Martinique, 368, 745, 1326.
Maryland, 90, 134, 295, 1035.
Masters, 1692, 1707.
Massachusetts, 128, 196, 671, 1002, 1085, 1247, 1500, 1619 (railroads), 1710.
Mastic, 916.
Matanzas, 497.
Mayagüez, 1547.
M'Clure, Captain, 802.
Measures, 8, 47, 288, 296, 498 [Decimal, 517], 654, 663, 696, 726, 1152, 1194, 1266, 1358, 1494, 1509, 1512, 1533, 1941.
Mecca, 273.
Mecklenburg, 1648, 1866.
Meconic acid, 6.
Mediterranean Sea, 500, 619, 737, 1744.
Meerschaum pipes, 1533.
Melbourne, 1983.
Mercantile actions, 374.
Mercantile laws, 1450.
Merchandise, 1752.
Merchant adventurers, 12.
Merchants, 505, 554, 1653.
Mercury, 1604.
Meridian, 570, 1279.
Merino wool, 1988.
Metals, 424 (copper), 830, 1192, 1306, 1443, 1522, 1537, 1733, 1842.
Mexico, 342 (coins), 437 (cotton), 459, 832, 1724, 1745, 1793, 1866, 1913, 1929, 1944.
Mezzotint, 611.
Michigan, 539, 1035.
Michigan, Lake, 1165.
Middle Ages, Commerce of, 381.
Mile, 1952.
Milk, 477, 508, 690, 694.
Mines, 240, 602, 709, 1089.
Mining [Coal, 314], 483, 688, 696, 699, 949, 1098, 1167.
Ministers, Foreign, 407, 590.
Mink, 767.
Minnesota, 773.
Mint, 340, 346, 353, 1511, 1579, 1680.
Mississippi River, 139, 682, 915, 1287, 1394, 1417, 1423, 1840.
Mississippi State, 139, 1035.
Missouri River, 1363.
Missouri State, 143, 1035, 1107, 1110, 1664.
Mobile, 1840.
Mobilier, Credit, 480.
Modena, 1889.
Mohammedan States, 417.
Molasses, 488, 1420, 1548, 1651, 1768.
Moldavia, 776.
Money, 15, 72, 427 (copper), 544, 626, 764, 1078, 1203, 1274, 1586, 1792, 1919, 1936.
Money orders, 1559.
Monopolies, 377, 524, 696, 1583, 1848.
Mont de Piété, 1203, 1503.
Montreal, 245, 1603.
Mooring, 46.
Morocco, 1368, 1866, 1944.
Morocco leather, 1198.
Mother of pearl, 1507.
Mulberry-tree, 714.
Mule jenny, 465.
Muriatic acid, 6.
Muscat, 1866.
Muskrat, 767.
Muslins, 467.
Mustard, 1747.
Muster-roll, 1708.

Nankeens, 463.
Naples, 1471, 1713, 1856.
Nations, Law of. *See* LAW OF NATIONS.
Naturalization, 22.
Nautical Almanac, 28.
Naval stores, 61, 257, 280, 875, 916, 917.
Navesink light, 1247.
Navigation, Laws of, 1317, 1765.
Navigation, Steam, 1752.

Navigation, 28, 157, 247, 396, 488, 515, 569, 575, 915, 919, 971, 979, 1199, 1279, 1291, 1311, 1331, 1398, 1462, 1536, 1601, 1626, 1629, 1633, 1635, 1646, 1661, 1697.
Navigators, 308, 510.
Navy, 681, 684.
Navy yard, 558.
Needle, Magnetic, 397, 518, 542.
Negotiable paper. *See* PROMISSORY NOTES and BILLS OF EXCHANGE.
Nests, Birds', 179.
Netherlands [Bank of, 121], 343 (coins), 382, 974, 1856, 1913.
Neutral, 419, 1056, 1823.
Neutrality, 1050.
Neutrality, Armed, 60, 526.
Neva River, 1667.
New Brunswick, British Province, 1668.
New England, 128, 1617 (railroads).
Newfoundland, 664, 667, 1668, 1669.
New Granada, 280, 343 (coins), 832, 1484, 1867.
New Hampshire, 1035.
New Holland, 76, 804.
New Jersey, 135, 253 (canals), 1035, 1247.
New Orleans, 1288, 1840.
New South Wales, 833, 1789.
Newspapers, 12 (advertisements), 1558.
New York City, 582, 1247, 1369, 1390, 1678, 1755, 1776, 1839.
New York State, 130, 221, 253 (canals). 996, 1035, 1496, 1616 (railroads), 1671.
New Zealand, 804.
Nicaragua, 36, 1626.
Niger, 805.
Nile, 18, 439 (cotton).
Ningpo, 260, 1700.
Nitric acid, 7.
Noah's ark, 58.
North America, 33, 227, 863 (colonies), 371, 384, 438 (cotton), 800.
North Carolina, 142, 267, 353, 1036, 1248, 1737.
North Sea. *See* ARCTIC OCEAN.
Northwest Company, 765.
Northwest passage, 802, 1148.
Norway, 304, 343 (coins), 842, 1183, 1272, 1760, 1780, 1856.
Notes, Bank, 98.
Notes, Promissory. *See* PROMISSORY NOTES.
Nova Scotia, 669, 921.
Nutmegs, 1747.
Nutria, 768.
Nuts, 205, 281, 295, 780, 1300, 1534, 1726, 1936.

Oak, 428, 780, 1266.
Oak bark, 153.
Oakum, 241.
Oats, 686.
Observatories, 570.
Ocean, Arctic, 57.
Ocean, Atlantic, 73, 241, 506, 915.
Ocean, Indian, 1024.
Ocean, Pacific, 500, 1491.
Ocean steam navigation. *See* STEAM NAVIGATION.
Odessa, 1636, 1967.
Ohio, 136, 306, 309, 974, 1036.
Ohio River, 1363.
Oil-cloth, 682.
Oil of vitriol, 7.
Oils [Camphor, 224], 282 [Clove, 311], [Cod liver, 384], [Shark, 334], 373, 616 [Fusel, 774], 780, 1227, 1242, 1405 [Olive, 1471], [Palm, 1483], [Rape, 1625], [Whale, 1958].
Oil-stone, 988.
Ojaca, 1354.
Oldenburg, 930, 1867.
Olibanum, 700.
Olive oil, 1467.
Olives, 887.
Ontario, Lake, 246, 1162.
Opium, 234, 261, 1013, 1021.
Oporto, 1551, 1975.
Ordnance, 258, 399, 505 [Survey, 571], 917, 918.
Oregon, 369.
Ores, 1100.
Ornaments, 567.
Orris root, 1098.
Ostrich feathers, 657.
Ottar of roses, 75.
Otter, 768.
Owner of ships, 1706.
Oxalic acid, 7.
Oysters, 287.

Pacific Ocean, 1540.
Pacific Railroad, 1621.
Pack, 86.
Painted glass, 827.
Painting, 600, 755, 1470.
Paints, 422, 782, 1194, 1501, 1998.
Palermo, 1716.
Palestine, 1790.
Palm oil, 1469, 1717.
Panama, 69, 513, 1410.
Panama Isthmus, 36, 37, 1441.
Papal Dominions, 308.
Paper, 1605, 1626, 1635.
Paper money, 72, 628.
Para, 31.
Paraguay, 72.
Parana River, 1173.
Parasols, 1891.
Paris, 719.
Parma, 1889.
Par of exchange, 626.
Parry, Edward, 802.
Partnerships, 396 (companies), 420.
Passengers, 596, 876, 1009, 1619, 1680.
Passports, 415, 1708.
Pawnbrokers, 52, 1203.
Pearl ashes, 24.
Pearls [Fisheries, 287], 616, 1382.
Peat, 757, 1104.
Peddlers, 956.
Peltry, 770.
Pencils, Lead, 181, 477, 921.
Pennsylvania, 133, 253 (canals), 1036, 1107, 1523.
Penny postage, 1555.
Pensacola, 683.
Pensions, 49.
Pepper, 284, 300, 1713, 1746.
Perfumes, 308, 432, 700, 921, 1386, 1647.
Periodicals, 1426, 1600, 1749.
Persia, 67, 223, 276, 509.
Peru, 241, 343 (coins), 899, 1261, 1867.
Peruvian bark, 152, 1410.
Pest-houses, 1601.
Philadelphia, 685, 1511, 1839.
Philippine Islands, 1312, 1743.
Phœnicia, 379, 1890.
Phosphoric acid, 7.
Piers, 942.
Pilotage, 232, 871.
Pimento, 1748.
Pinnaces, 184.
Pipes, 990, 1348.
Pirate, 214.
Pisa, 381.
Pitch, 222, 509, 1392, 1793, 1886.
Pittsburgh, 1107.
Plaster, Court, 476.
Plata River, 220, 1172.
Plumbago, 181.
Policies, 1047, 1051.
Polynesia, 1459.
Ponce, 1547.
Poppy, 1475.
Population, 285, 622, 726, 1895.
Porcelain, 715.
Pork trade, 83, 735, 876, 978.
Port, 935, 1889, 1974.
Port au Prince, 959.
Porter, 17, 158.
Portland, Maine, 1305, 1839.
Porto Rico, 496, 1684, 1742.
Ports, Cinque, 808.
Portsmouth [England, 553], [New Hampshire, 1414, 1889].
Portugal, 459 (cotton), 799, 1184, 1264, 1295, 1299, 1476, 1856, 1867, 1913, 1949.
Postage, 1753.
Post-office, 21, 1512, 1553.
Potass, 24, 1672.
Pound sterling, 1759.
Powder. *See* GUNPOWDER.
Power, 993.
Prairies, 242, 538.
Precious metals, 36, 95, 240, 883, 885, 1537, 1723, 1803.
Precious stones, 243, 274, 275, 540, 594, 783, 1016, 1119, 1136, 1170, 1472, 1506, 1646, 1650, 1685, 1688, 1857, 1887.
Premiums, 1042.
Preservers, Life, 1211.
Press-gang, 1010.
Prices, 102, 523, 685, 833, 1798, 1923.
Principles of commerce, 876.
Printing, 919, 1582.
Privateering, 1323, 1399.
Production, 523.
Promissory note, 1029, 1450.
Protection, 748, 1797.
Protest, 175, 1451, 1709.
Provincial banks, 114.
Provisions, 1336, 1421, 1543, 1802.
Prussia, 211, 250 (canals), 343 (coins), 812, 1103, 1153, 1343, 1609, 1759, 1868, 1949, 1998.
Prussic acid, 7.
Public lands, 1168.
Punta Arenas, 433.
Pyroligneous acid, 5.
Pyx, Trial of, 70.

Quadrant, 919.
Quebec, 244, 1376.
Quicksilver, 240, 1348, 1680.

Rafts, 1209.
Rags, 1488.
Railroads, 400, 704, 986, 1013, 1098, 1109, 1430, 1485, 1647, 1688, 1689.
Raisins, 1307.
Rape-seed [Oil, 1242], 1264.
Ratan, 1626.
Reciprocity treaty, 246 (Canada), 247, 675, 752.
Red River, 1363.
Resins, 916, 1791, 1925.—*See* GUMS.
Respondentia, 1046.
Revenue [Cutters, 506], 622, 723, 1081, 1094, 1159.
Revenue, Laws of, 1042, 1795.
Rhine, 778.
Rhode Island, 1036, 1593.
Rhumb line, 1392.
Ribbons, 1633.
Rice, 1012, 1713.
Right of search, 1399.
Rio de Janeiro, 336.
Rivers, 618.
Roads, 1295.
Rockets [Congreve, 399], 1213.
Rome, 381.
Roots, 293, 303, 370, 756.
Roses, Ottar of, 75.
Rosin. *See* TURPENTINE.
Rot, Dry, 558.
Royal Exchange, 896, 1278.
Russia, 56, 250 (canals), 343 (coins), 425, 458 (cotton), 481, 482, 650, 662, 832, 968, 1151, 1159, 1171, 1184, 1334, 1460, 1608 (railroads), 1635, 1665, 1791, 1792, 1824, 1868, 1913, 1950.

Rum, 488, 1749.
Rupees, Lac of, 1156.
Russian Company, 395.
Rye, 210.

Sables, 767.
Sails, 267.
Saint Clair, Lake, 1168.
St. Helena, 965, 1003.
St. Jago, 497.
St. Kitt's, 306.
St. Lawrence, 244, 1178, 1394, 1402.
St. Louis, 283.
St. Petersburg, 1658.
St. Pierre, 743.
St. Thomas, 530.
Sale [Bill of, 178], 421 (contract), 646, 1764.
Salmon, 1405.
Salonica, 1883.
Salt, 604, 710.
Salvage, 3.
San Domingo, 214, 336, 364, 744, 957, 1544, 1768.
San Francisco, 240, 1841.
San Juan, 1441 [Porto Rico, 1546].
San Salvador, 83, 1868.
Sandwich Islands, 1868.
Sandy Hook, 326.
Santa Cruz, 530.
Sardinia, 229, 458 (cotton), 1184, 1860, 1950.
Savannah, 809, 1840.
Savings banks, 148.
Saxony, 1201, 1950.
Schleswig, Duchy of, 530.
Scotch banks, 117.
Scotland, 252 (canals), 311, 545, 697, 820, 846, 1071, 1202, 1263, 1611 (railroads).
Scurvy, 1336.
Sea, Caspian, 281.
Sea, Dead, 515.
Sea-island cotton, 443, 444.
Sea of Azof, 1460.
Sea of Marmora, 401, 414, 513.
Sea of Okotsk, 501.
Seals, 668, 768, 1405.
Seamen, 467, 415, 481, 538, 543, 592, 1010, 1709.
Search, Right of, 1399.
Seas, 971, 1394, 1457, 1711.
Seas, Sovereignty of the, 1739.
Sea-worthy, 1043.
Seeds, 274, 311, 443, 498, 680, 956, 969, 1204, 1264.
Segars. *See* CIGARS.
Seignorage, 628.
Seizure of vessels, 388.
Senegal, 741.
Shanghai, 259, 260, 302.
Shawls, 243, 281, 711.
Sheep, 1348.
Sheffield, 505.
Shellac, 1156, 1692.
Shells, 289, 477, 991, 1858.
Sheriffs, 84.
Sherry, 1976.
Shipping, Laws of, 2, 10, 13, 78, 183, 200, 222, 291, 356, 407, 525, 543, 590, 592, 697, 750, 866, 877, 979, 1039, 1165, 1208, 1239, 1319, 1331, 1399, 1533, 1589, 1601, 1627, 1629, 1673, 1692.
Ships, 44, 52, 58, 86, 163, 167, 191, 201, 226, 243, 266, 271, 272, 275, 397, 414, 425, 428, 433, 477, 483, 515, 538, 551, 557, 696, 699, 755, 779, 782, 919, 920, 927, 947, 949, 956, 965, 984, 1045, 1145, 1148, 1152, 1154, 1176, 1185, 1199, 1203, 1210, 1253, 1278, 1291, 1311, 1330, 1383, 1390, 1392, 1395, 1396, 1439, 1456, 1478, 1480, 1582, 1590, 1602, 1624, 1627, 1629, 1635, 1636, 1647, 1650, 1661, 1690, 1698, 1703, 1729, 1751, 1758, 1779, 1791, 1833, 1841, 1871, 1916, 1937, 1940, 1973, 1996.
Shipping, 257, 414, 421, 481, 518, 542, 558, 717, 722, 738, 856, 858, 1159, 1242, 1696, 1910.
Ship's papers, 332.
Shipwreck. *See* WRECKS.
Shoals, 329.
Shoes [Makers of, 428], 1196.
Siam, 92, 150, 348 (coins), 1869.
Siberia, 1656.
Sicilies, Two, 1115, 1185, 1349, 1482, 1870, 1951.
Sidon, 370.
Sierra Leone, 914, 1207.
Sight bill, 178.
Signals, 1252.
Silk, 303, 607, 684, 714, 851, 1093, 1699.
Silk manufactures, 213, 510, 714, 1119, 1294, 1368, 1538, 1688, 1791, 1861.
Silver, 36 [Coins, 346], 358, 383, 1157, 1574, 1579, 1654.
Simoda, 1133.
Singapore, 266, 919.
Skins, 283, 502, 764, 970, 1107, 1195, 1455.
Slaughter-houses, 3.
Slave-trade, 1123, 1717.
Smyrna, 514, 1883.
Snuff-boxes, 499.
Soda, 26.
Somers' Isles, 165.
Sorghum, 1778.
Sound dues, 527, 534, 588, 931, 1854.
Soundings, 501, 1194.
South America, 83, 832.
South Carolina, 142, 290, 438 (cotton), 1036, 1248, 1633.
Southern Ocean, 1589.
South Sea bubble, 397.
Spain, 22, 151, 167, 251 (canals), 382, 457 (cotton), 487, 666, 831, 1033, 1185, 1306, 1609 (railroads), 1674, 1807 (tariff), 1855, 1913, 1951, 1957 (West Indies), 1975.
Spanish Colonies, 365, 367, 1957.
Speculation, 377, 1584.
Sperm whale, 1958.
Spices, 275, 281, 307, 308, 311, 370, 498, 694, 820, 843, 1296, 1386, 1454, 1531.
Spindles, 463, 679.
Spinning, 59, 228, 461, 463, 679.
Spinning-jenny, 463.
Spirits, 17, 60, 545, 608, 707, 785, 814, 1093, 1289, 1650, 1971.
Spirits of turpentine. *See* TURPENTINE.
Stade dues, 923, 930.
Stages, 312, 1606.
Stamps, 476, 1557.
Standard of coins, 340.
Starch, 690.
Stationery, 1485.
Steam-engine, 761, 1606, 1752.
Steamers, 21, 357, 621, 859, 1841, 1656, 1752.
Steel, 48, 505, 510.
Sterling silver, 349.
Stock companies, 394, 1145.
Stock exchange, 1472.
Storax, 88.
Store, Bill of, 179.
Stores, Naval. *See* NAVAL STORES.
Storms, 1001.
Straits of Dover, 555.
Straits of Gibraltar, 817.
Stranding, 1046.
Straw hats, 948.
Submarine telegraph. *See* TELEGRAPH.
Succory, 298.
Suez, Isthmus of, 21.
Sugar, 235, 489, 490, 694, 707, 716, 781, 954, 1315, 1335, 1369, 1420, 1515, 1527, 1548, 1640, 1645, 1712, 1903.
Sulphuric acid, 7.
Sulphurous acid, 7.
Sumac, 1711.
Sumatra, 937, 1513.
Superior, Lake, 426 (copper), 1164.
Supply, 522, 1583.
Surinam, 911.
Survey, Coast, 821, 570.
Sweden, 240 (canals), 343 (coins), 425, 459 (cotton), 504, 1103, 1185, 1448, 1759, 1869, 1918, 1951, 1957 (West Indies).
Sweet potatoe, 1571.
Switzerland, 458 (cotton), 1186, 1869, 1951.
Swords, 510.
Syria, 166.

Tallow, 1666.
Tampico, 1858.
Tanning, 546, 1195, 1833, 1921.
Tapestry, 829.
Tar, 1392.
Tares, 27.
Tariff, 12, 282, 297, 387, 418, 503, 544, 556, 680, 718, 738, 742, 745, 749, 865, 955, 1082, 1142, 1169, 1356, 1396, 1407, 1551, 1570, 1592, 1658, 1729, 1786, 1874, 1990.
Tartar, 58.
Tartaric acid, 8.
Tasmania, 1924.
Taxes, 71, 724, 1435, 1584, 1844.
Tea, 264, 265, 303, 601, 1151, 1657, 1699, 1702.
Tehuantepec, Isthmus of, 36.
Telegraph, 73, 602, 1258, 1283 [Atlantic, 1735].
Temperature, 618.
Tender, Legal, 97.
Teneriffe, 255.
Tennessee, 139, 1036.
Texas, 242, 437 (cotton), 780, 1038, 1745, 1772.
Thames, 1881.
Thermometer, 153, 1118.
Tides, 616, 986, 1896.
Tiles, 212.
Timber, 559, 658, 943, 1152, 1176, 1291, 1390, 1391, 1456, 1759, 1833, 1984.
Timbuctoo, 805.
Timothy seeds, 957.
Tincal, 191.
Tobacco, 91, 487, 488, 531, 730, 874, 876, 982, 1419, 1548, 1686, 1732, 1741, 1788, 1903.
Tobasco, 1352.
Tckay, 1979.
Tolls [Canal, 254], 535, 537, 923, 932, 1607, 1733.
Tonnage, 237, 738, 871, 1159, 1165 [Steam, 1756], 1916, 1916.
Torches, 677.
Toronto, 1876.
Trade, 1584.
Trade, Balance of, 84, 631.
Trade, Board of, 184.
Trade, Coasting, 319.
Trade, Free, 748.
Trade-winds, 73, 241, 1372, 1972.
Tramroads, 1605.
Transit duties, 237.
Transit routes, 986, 1485.
Transitu, Stoppage in, 1764.
Treasure. *See* PRECIOUS METALS.
Treasury, 663 [Sub, 1765], 1797.
Treasury notes, 640.
Treaties, 410, 664 [Reciprocity, 675], 732, 883, 888, 986, 1022, 1132, 1178, 1407, 1408, 1521, 1597, 1734, 1874, 1878, 1885, 1923.
Tree, Cotton, 434.
Tret, 27.
Trinidad, 497.
Trinity House, 857, 1258.
Tripoli, 1869, 1944.
Tunis, 1186, 1870, 1944.
Turpentine, 422, 509, 1392, 1793.

Turkey, 56, 276, 848 (coins), 895 (company), 401, 404, 509, 513, 556, 850, 1187, 1545, 1669, 1720, 1730, 1870, 1871.
Tuscany, 1187, 1200, 1952.
Two Sicilies, 18.—*See* SICILIES.
Tyre, 379, 880.

Underwriter, 1037, 1054, 1270.
United Kingdom. *See* GREAT BRITAIN.
United States, 387, 389, 419, 669, 675, 818, 861, 879, 945, 979, 1002, 1034, 1049, 1105, 1133, 1188, 1451, 1597, 1771, 1795, 1820, 1921.
United States and France, 727.
United States, Banking in, 125.
United States, Bank of, 144.
United States canals, 254.
United States coal, 516.
United States coast, 320.
United States coast survey, 321.
United States coffee, 338.
United States coins, 343.
United States colonies, 362.
United States, Commerce of, 840, 875.
United States consular system, 406.
United States copper, 426.
United States cotton, 437, 442.
United States cotton manufactures, 471.
United States currency, 502.
United States emigrants, 595, 1008.
United States fisheries, 333.
United States light-house system, 1233.
United States pilots, 1530.
United States Post-office, 1562.
United States production of gold, 354.
United States public lands, 1169.
United States railroads, 1615.
United States shipping, 1627.
United States steam tonnage, 1756.
United States tonnage, 1856.
United States treaties, 1022.
United States usury laws, 1920.
United States weights and measures, 1944.
United States whale-fishery, 1962.
United States wheat, 1968.
United States wine, 1980.
United States wool, 1988.
Upland cotton, 436, 443.
Upper Canada, 245.
Uric acid, 8.
Uruguay, 1374.
Uruguay River, 1178.
Usances, 638.
Usury, 1067, 1072.

Valetta, 1309.
Vancouver's Island, 757.
Van Diemen's Land, 804, 1818.
Variation of the compass, 398.
Varnish, 422, 1136, 1159, 1482, 1674.
Vellum, 1494.
Venezuela, 272, 337, 1159, 1870, 1913.
Venice, 381, 798, 826, 1873.
Venice, Bank of, 121.
Vera Cruz, 1352.
Verd Islands, Cape, 271.
Vermont, 1036.
Vessels. *See* SHIPS.
Victoria, 833, 1341, 1782.
Vienna, 29.
Vinegar, 5, 659, 1600, 1931.
Violins, 660.
Virginia, 141, 267, 927, 1036, 1168, 1248, 1635.
Vitriol, 427.
Volga, 619, 1657.
Voyages, 1043.

Wages, 1695.
Wales, 847, 1613 (railroads).
Walnuts, 1300.
War, Contraband of, 418.
Wares, Wedgwood, 574.
Watches, 306, 310, 1280, 1787.
Water, 53.
Waves, 936.
Wax, 988, 1691.
Wealth, 374.
Weaving, 1283, 1937.
Wedgwood ware, 574.
Weights, 8, 63, 76, 83, 230 [Decimal, 517], 726, 1152, 1176, 1573, 1602, 1791, 1854, 1878.
Wells, Artesian, 61.
West Indies, 151, 275, 337 [Colonies, 363], 488 [Danish, 533], 555 [French, 743], [British, 880], [Spanish, 957], 1120, 1544, 1546, 1662, 1667, 1674, 1727 [Spanish, 1746], [Swedish, 1786].
Western Islands, 654.
Whale-fisheries, 388, 671, 947, 1400, 1468, 1676, 1746.
Wheat, 208, 210, 236, 511, 685, 843, 1269, 1461.
Whisky, 1749.
White fish, 1357.
Wicks, 257.
Wilton carpet, 278.
Winds, 47, 73, 1372, 1858.
Windward Islands, 1954.
Wines, 12, 192, 228, 256, 289, 809, 706, 733, 812, 845, 887, 999, 1299, 1307, 1476, 1551, 1704, 1854, 1903.
Wisconsin, 138, 1036.
Wismar, 1048.
Wood, 157, 179, 202, 205, 225, 229, 244, 284, 295, 428, 476, 498, 507, 554, 558, 583, 587, 593, 658, 757, 841, 898, 917, 944, 966, 988, 991, 1112, 1176, 1261, 1271, 1291, 1302, 1315, 1382, 1390, 1443, 1455, 1472, 1483, 1504, 1532, 1536, 1538, 1541, 1587, 1604, 1647, 1673, 1685, 1688, 1713, 1826, 1883, 1841, 1879.
Wool, 29, 398, 839, 1175, 1342, 1655, 1704, 1731, 1789, 1800.
Woolen manufactures, 243, 275, 281, 311, 658, 677, 711, 761, 851, 1538, 1702, 1799, 1826.
Wrecks, 526, 547, 1058, 1166, 1209, 1215, 1603.

Yarns, 356, 461.
Yawls, 184.
Year, Fiscal, 663.
Yeddo, 1144.
Yucatan, 1161, 1352.

Zante, 1085.
Zinc, 203, 427, 1889.
Zoll-Verein, 211, 1593, 1688, 1759.
Zones, 573.
Zuyder Zee, 249.

THE END.